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Evolved Universal Terrestrial Radio Access (E-UTRA) and
Evolved Packet Core (EPC);
Common test environments for User Equipment (UE)
conformance testing
(3GPP TS 36.508 version 16.5.0 Release 16)**



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Contents

| | |
|---|----|
| Intellectual Property Rights | 2 |
| Legal notice | 2 |
| Modal verbs terminology..... | 2 |
| Foreword..... | 28 |
| Introduction | 28 |
| 1 Scope | 29 |
| 2 References | 29 |
| 3 Definitions, symbols and abbreviations | 32 |
| 3.1 Definitions..... | 32 |
| 3.2 Symbols..... | 32 |
| 3.3 Abbreviations | 32 |
| 4 Common test environment | 33 |
| 4.1 Environmental conditions..... | 33 |
| 4.1.1 Temperature..... | 33 |
| 4.1.2 Voltage..... | 33 |
| 4.2 Common requirements of test equipment..... | 34 |
| 4.2.1 General functional requirements..... | 34 |
| 4.2.2 Minimum functional requirements | 35 |
| 4.2.2.1 Supported Cell Configuration | 35 |
| 4.2.2.1.1 Supported Channels..... | 35 |
| 4.2.2.2 Support of T _{cell} timing offset | 36 |
| 4.2.2.3 Supported Sidelink Configuration..... | 36 |
| 4.2.2.3.1 Supported Sidelink Channels..... | 36 |
| 4.3 Reference test conditions..... | 37 |
| 4.3.1 Test frequencies | 37 |
| 4.3.1.1 FDD Mode Test frequencies | 41 |
| 4.3.1.1.1 FDD reference test frequencies for operating band 1 | 41 |
| 4.3.1.1.1A FDD reference test frequencies for CA in operating band 1..... | 42 |
| 4.3.1.1.2 FDD reference test frequencies for operating band 2 | 42 |
| 4.3.1.1.2A FDD reference test frequencies for CA in operating band 2..... | 43 |
| 4.3.1.1.3 FDD reference test frequencies for operating band 3 | 45 |
| 4.3.1.1.3A FDD reference test frequencies for CA in operating band 3..... | 45 |
| 4.3.1.1.4 FDD reference test frequencies for operating band 4 | 46 |
| 4.3.1.1.4A FDD reference test frequencies for CA in operating band 4..... | 47 |
| 4.3.1.1.5 FDD reference test frequencies for operating band 5 | 48 |
| 4.3.1.1.5A FDD reference test frequencies for CA in operating band 5..... | 48 |
| 4.3.1.1.6 FDD reference test frequencies for operating band 6 | 49 |
| 4.3.1.1.7 FDD reference test frequencies for operating band 7 | 49 |
| 4.3.1.1.7A FDD reference test frequencies for CA in operating band 7..... | 50 |
| 4.3.1.1.8 FDD reference test frequencies for operating band 8 | 51 |
| 4.3.1.1.8A FDD reference test frequencies for CA in operating band 8..... | 52 |
| 4.3.1.1.9 FDD reference test frequencies for operating band 9 | 52 |
| 4.3.1.1.10 FDD reference test frequencies for operating band 10 | 52 |
| 4.3.1.1.11 FDD reference test frequencies for operating band 11 | 53 |
| 4.3.1.1.12 FDD reference test frequencies for operating band 12 | 53 |
| 4.3.1.1.12A FDD reference test frequencies for CA in operating band 12..... | 53 |
| 4.3.1.1.13 FDD reference test frequencies for operating band 13 | 54 |
| 4.3.1.1.14 FDD reference test frequencies for operating band 14 | 54 |
| 4.3.1.1.15 FDD reference test frequencies for operating band 15 | 54 |
| 4.3.1.1.16 FDD reference test frequencies for operating band 16 | 54 |
| 4.3.1.1.17 FDD reference test frequencies for operating band 17 | 54 |
| 4.3.1.1.18 FDD reference test frequencies for operating band 18 | 55 |
| 4.3.1.1.19 FDD reference test frequencies for operating band 19 | 55 |

| | | |
|--------------------------|--|------|
| 4.3.1.1.20 | FDD reference test frequencies for operating band 20 | 55 |
| 4.3.1.1.21 | FDD reference test frequencies for operating band 21 | 56 |
| 4.3.1.1.22 | FDD reference test frequencies for operating band 22 | 56 |
| 4.3.1.1.23 | FDD reference test frequencies for operating band 23 | 56 |
| 4.3.1.1.23A | FDD reference test frequencies for CA in operating band 23..... | 57 |
| 4.3.1.1.24 | FDD reference test frequencies for operating band 24 | 57 |
| 4.3.1.1.25 | FDD reference test frequencies for operating band 25 | 57 |
| 4.3.1.1.25A | FDD reference test frequencies for CA in operating band 25..... | 58 |
| 4.3.1.1.26 | FDD reference test frequencies for operating band 26 | 58 |
| 4.3.1.1.27 | FDD reference test frequencies for operating band 27 | 59 |
| 4.3.1.1.27A | FDD reference test frequencies for CA in operating band 27..... | 59 |
| 4.3.1.1.28 | FDD reference test frequencies for operating band 28 | 60 |
| 4.3.1.1.29 | FDD reference test frequencies for CA in operating band 29..... | 61 |
| 4.3.1.1.31 | FDD reference test frequencies for operating band 31 | 61 |
| 4.3.1.1.32 | FDD reference test frequencies for CA in operating band 32..... | 61 |
| 4.3.1.1.33 to | | |
| 4.3.1.1.64 | | Void |
| | | 62 |
| 4.3.1.1.65 | FDD reference test frequencies for operating band 65 | 62 |
| 4.3.1.1.66 | FDD reference test frequencies for operating band 66 | 63 |
| 4.3.1.1.66A | FDD reference test frequencies for CA in operating band 66..... | 64 |
| 4.3.1.1.67 | FDD reference test frequencies for CA in operating band 67..... | 82 |
| 4.3.1.1.68 | FDD reference test frequencies for operating band 68 | 83 |
| 4.3.1.1.69 | FDD reference test frequencies for operating band 69 | 83 |
| 4.3.1.1.70 | FDD reference test frequencies for operating band 70 | 83 |
| 4.3.1.1.70A | FDD reference test frequencies for CA in operating band 70..... | 84 |
| 4.3.1.1.71 | FDD reference test frequencies for operating band 71 | 84 |
| 4.3.1.1.72 | FDD reference test frequencies for operating band 72 | 84 |
| 4.3.1.1.73 | FDD reference test frequencies for operating band 73 | 85 |
| 4.3.1.1.74 | FDD reference test frequencies for operating band 74 | 85 |
| 4.3.1.1.75 to 4.3.1.1.84 | FFS | 85 |
| 4.3.1.1.85 | FDD reference test frequencies for operating band 85 | 85 |
| 4.3.1.2 | TDD Mode Test frequencies | 86 |
| 4.3.1.2.1 | TDD reference test frequencies for Operating Band 33 | 86 |
| 4.3.1.2.2 | TDD reference test frequencies for Operating Band 34 | 86 |
| 4.3.1.2.3 | TDD reference test frequencies for Operating Band 35 | 86 |
| 4.3.1.2.4 | TDD reference test frequencies for Operating Band 36 | 87 |
| 4.3.1.2.5 | TDD reference test frequencies for Operating Band 37 | 87 |
| 4.3.1.2.6 | TDD reference test frequencies for Operating Band 38 | 87 |
| 4.3.1.2.6A | TDD reference test frequencies for CA in operating band 38 | 88 |
| 4.3.1.2.7 | TDD reference test frequencies for Operating Band 39 | 88 |
| 4.3.1.2.7A | TDD reference test frequencies for CA in Operating Band 39..... | 89 |
| 4.3.1.2.8 | TDD reference test frequencies for Operating Band 40 | 89 |
| 4.3.1.2.8A | TDD reference test frequencies for CA in operating band 40 | 90 |
| 4.3.1.2.9 | TDD reference test frequencies for Operating Band 41 | 96 |
| 4.3.1.2.9A | TDD reference test frequencies for CA in operating band 41 | 97 |
| 4.3.1.2.10 | TDD reference test frequencies for Operating Band 42 | 111 |
| 4.3.1.2.10A | TDD reference test frequencies for CA in operating band 42 | 111 |
| 4.3.1.2.11 | TDD reference test frequencies for Operating Band 43 | 120 |
| 4.3.1.2.12 | TDD reference test frequencies for Operating Band 44 | 120 |
| 4.3.1.2.13 | TDD reference test frequencies for Operating Band 45 | 120 |
| 4.3.1.2.14 | TDD reference test frequencies for Operating Band 46 | 121 |
| 4.3.1.2.14A | TDD reference test frequencies for CA in operating Band 46..... | 121 |
| 4.3.1.2.15 | TDD reference test frequencies for Operating Band 47 | 122 |
| 4.3.1.2.16 | TDD reference test frequencies for Operating Band 48 | 123 |
| 4.3.1.2.16A | TDD reference test frequencies for CA in operating band 48 | 123 |
| 4.3.1.2.17 | TDD reference test frequencies for Operating Band 53 | 125 |
| 4.3.1.3 | HRPD Test frequencies..... | 125 |
| 4.3.1.3.1 | HRPD test frequencies for Band Class 0..... | 125 |
| 4.3.1.3.2 | HRPD test frequencies for Band Class 1 | 125 |
| 4.3.1.3.3 | HRPD test frequencies for Band Class 3 | 125 |
| 4.3.1.3.4 | HRPD test frequencies for Band Class 4..... | 125 |

| | | |
|------------|---|-----|
| 4.3.1.3.5 | HRPD test frequencies for Band Class 6 | 126 |
| 4.3.1.3.6 | HRPD test frequencies for Band Class 10 | 126 |
| 4.3.1.3.7 | HRPD test frequencies for Band Class 15 | 126 |
| 4.3.1.4 | 1xRTT Test frequencies | 126 |
| 4.3.1.4.1 | 1xRTT test frequencies for Band Class 0 | 126 |
| 4.3.1.4.2 | 1xRTT test frequencies for Band Class 1 | 126 |
| 4.3.1.4.3 | 1xRTT test frequencies for Band Class 3 | 127 |
| 4.3.1.4.4 | 1xRTT test frequencies for Band Class 4 | 127 |
| 4.3.1.4.5 | 1xRTT test frequencies for Band Class 6 | 127 |
| 4.3.1.4.6 | 1xRTT test frequencies for Band Class 10 | 127 |
| 4.3.1.4.7 | 1xRTT test frequencies for Band Class 15 | 127 |
| 4.3.1.5 | MFBI Test frequencies | 127 |
| 4.3.1.5.1 | MFBI Test frequencies for operation band 2 overlapping with band 25 | 128 |
| 4.3.1.5.2 | MFBI Test frequencies for operation band 3 overlapping with band 9 | 128 |
| 4.3.1.5.3 | MFBI Test frequencies for operation band 4 overlapping with band 10 | 128 |
| 4.3.1.5.4 | MFBI Test frequencies for operation band 5 overlapping with band 18 | 128 |
| 4.3.1.5.5 | MFBI Test frequencies for operation band 5 overlapping with band 19 | 129 |
| 4.3.1.5.6 | MFBI Test frequencies for operation band 5 overlapping with band 26 | 129 |
| 4.3.1.5.7 | MFBI Test frequencies for operation band 9 overlapping with band 3 | 129 |
| 4.3.1.5.8 | MFBI Test frequencies for operation band 10 overlapping with band 4 | 129 |
| 4.3.1.5.9 | MFBI Test frequencies for operation band 12 overlapping with band 17 | 129 |
| 4.3.1.5.10 | MFBI Test frequencies for operation band 17 overlapping with band 12 | 130 |
| 4.3.1.5.11 | MFBI Test frequencies for operation band 18 overlapping with band 5 | 130 |
| 4.3.1.5.12 | MFBI Test frequencies for operation band 18 overlapping with band 26 | 130 |
| 4.3.1.5.13 | MFBI Test frequencies for operation band 18 overlapping with band 27 | 130 |
| 4.3.1.5.14 | MFBI Test frequencies for operation band 19 overlapping with band 5 | 130 |
| 4.3.1.5.15 | MFBI Test frequencies for operation band 19 overlapping with band 26 | 130 |
| 4.3.1.5.16 | MFBI Test frequencies for operation band 25 overlapping with band 2 | 131 |
| 4.3.1.5.17 | MFBI Test frequencies for operation band 26 overlapping with band 5 | 131 |
| 4.3.1.5.18 | MFBI Test frequencies for operation band 26 overlapping with band 18 | 131 |
| 4.3.1.5.19 | MFBI Test frequencies for operation band 26 overlapping with band 19 | 132 |
| 4.3.1.5.20 | MFBI Test frequencies for operation band 26 overlapping with band 27 | 132 |
| 4.3.1.5.21 | MFBI Test frequencies for operation band 27 overlapping with band 18 | 133 |
| 4.3.1.5.22 | MFBI Test frequencies for operation band 27 overlapping with band 26 | 133 |
| 4.3.1.5.23 | MFBI Test frequencies for operation band 33 overlapping with band 39 | 133 |
| 4.3.1.5.24 | MFBI Test frequencies for operation band 38 overlapping with band 41 | 133 |
| 4.3.1.5.25 | MFBI Test frequencies for operation band 39 overlapping with band 33 | 133 |
| 4.3.1.5.26 | MFBI Test frequencies for operation band 41 overlapping with band 38 | 134 |
| 4.3.1.5.27 | MFBI Test frequencies for operation band 66 overlapping with band 4 | 134 |
| 4.3.1.5.28 | MFBI Test frequencies for operation band 66 overlapping with band 10 | 134 |
| 4.3.1.6 | WLAN Test frequencies | 135 |
| 4.3.1.6.1 | WLAN Test frequencies for 2.4 GHz ISM Band | 135 |
| 4.3.1.6.2 | WLAN Test frequencies for 5 GHz ISM Band | 135 |
| 4.3.1.7 | Bluetooth Test frequencies | 135 |
| 4.3.1.7.1 | Bluetooth Test frequencies for 2.4 GHz ISM Band | 135 |
| 4.3.2 | Radio conditions | 135 |
| 4.3.2.1 | Normal propagation condition | 135 |
| 4.3.3 | Physical channel allocations | 135 |
| 4.3.3.1 | Antennas | 135 |
| 4.3.3.2 | Downlink physical channels and physical signals | 136 |
| 4.3.3.3 | Mapping of downlink physical channels and signals to physical resources | 136 |
| 4.3.3.4 | Uplink physical channels and physical signals | 143 |
| 4.3.3.5 | Mapping of uplink physical channels and signals to physical resources | 143 |
| 4.3.4 | Signal levels | 143 |
| 4.3.4.1 | Downlink signal levels | 143 |
| 4.3.4.2 | Uplink signal levels | 144 |
| 4.3.5 | Standard test signals | 144 |
| 4.3.5.1 | Downlink test signals | 144 |
| 4.3.5.2 | Uplink test signals | 144 |
| 4.3.6 | Physical layer parameters | 144 |
| 4.3.6.1 | Downlink physical layer parameters | 144 |
| 4.3.6.1.1 | Physical layer parameters for DCI format 0 | 144 |

| | | |
|------------|--|-----|
| 4.3.6.1.1A | Physical layer parameters for DCI format 0C | 145 |
| 4.3.6.1.1B | Physical layer parameters for DCI format 0A | 146 |
| 4.3.6.1.1C | Physical layer parameters for DCI format 0B | 146 |
| 4.3.6.1.2 | Physical layer parameters for DCI format 1 | 147 |
| 4.3.6.1.3 | Physical layer parameters for DCI format 1A | 147 |
| 4.3.6.1.3A | Physical layer parameters for DCI format 1B | 148 |
| 4.3.6.1.4 | Physical layer parameters for DCI format 1C | 148 |
| 4.3.6.1.5 | Physical layer parameters for DCI format 2 | 149 |
| 4.3.6.1.6 | Physical layer parameters for DCI format 2A | 150 |
| 4.3.6.1.6A | Physical layer parameters for DCI format 3B | 150 |
| 4.3.6.1.6B | Physical layer parameters for DCI format 4A | 151 |
| 4.3.6.1.6C | Physical layer parameters for DCI format 4B | 151 |
| 4.3.6.1.7 | Physical layer parameters for DCI format 5 | 152 |
| 4.3.6.1.7A | Physical layer parameters for DCI format 5A | 152 |
| 4.3.6.1.8 | Physical layer parameters for DCI format 6-0A | 152 |
| 4.3.6.1.9 | Physical layer parameters for DCI format 6-0B | 154 |
| 4.3.6.1.10 | Physical layer parameters for DCI format 6-1A | 155 |
| 4.3.6.1.11 | Physical layer parameters for DCI format 6-1B | 157 |
| 4.3.6.1.12 | Physical layer parameters for DCI format 6-2 | 158 |
| 4.3.6.1.13 | Physical layer parameters for DCI format 7-0A | 159 |
| 4.3.6.1.14 | Physical layer parameters for DCI format 7-0B | 160 |
| 4.3.6.1.15 | Physical layer parameters for DCI format 7-1A | 161 |
| 4.3.6.1.16 | Physical layer parameters for DCI format 7-1B | 162 |
| 4.3.6.1.17 | Physical layer parameters for DCI format 7-1C | 163 |
| 4.3.6.1.18 | Physical layer parameters for DCI format 7-1D | 164 |
| 4.3.6.1.19 | Physical layer parameters for DCI format 7-1E | 165 |
| 4.3.6.1.20 | Physical layer parameters for DCI format 7-1F | 166 |
| 4.3.6.1.21 | Physical layer parameters for DCI format 7-1G | 167 |
| 4.4 | Reference system configurations | 167 |
| 4.4.1 | Simulated network scenarios | 167 |
| 4.4.1.1 | Single cell network scenarios | 167 |
| 4.4.1.2 | E-UTRA single mode multi cell network scenarios | 167 |
| 4.4.1.3 | E-UTRA dual mode multi cell network scenarios | 168 |
| 4.4.1.4 | 3GPP Inter-RAT network scenarios | 168 |
| 4.4.1.5 | 3GPP2 Inter-RAT network scenarios | 168 |
| 4.4.1.6 | WLAN Inter-RAT network scenarios | 168 |
| 4.4.1.7 | Bluetooth Inter-RAT network scenarios | 168 |
| 4.4.2 | Simulated cells | 168 |
| 4.4.3 | Common parameters for simulated E-UTRA cells | 176 |
| 4.4.3.1 | Common configurations of system information blocks | 176 |
| 4.4.3.1.1 | Combinations of system information blocks | 176 |
| 4.4.3.1.2 | Scheduling of system information blocks | 181 |
| 4.4.3.2 | Common contents of system information messages | 186 |
| - | <i>MasterInformationBlock</i> | 186 |
| - | <i>SystemInformation</i> | 187 |
| - | <i>SystemInformation-BR-r13</i> | 187 |
| - | <i>SystemInformationBlockType1</i> | 189 |
| - | <i>SystemInformationBlockType1-BR-r13</i> | 192 |
| 4.4.3.3 | Common contents of system information blocks | 196 |
| - | <i>SystemInformationBlockType2</i> | 196 |
| - | <i>SystemInformationBlockType3</i> | 199 |
| - | <i>SystemInformationBlockType4</i> | 200 |
| - | <i>SystemInformationBlockType5</i> | 200 |
| - | <i>SystemInformationBlockType6</i> | 204 |
| - | <i>SystemInformationBlockType7</i> | 206 |
| - | <i>SystemInformationBlockType8</i> | 207 |
| - | <i>SystemInformationBlockType9</i> | 210 |
| - | <i>SystemInformationBlockType10</i> | 210 |
| - | <i>SystemInformationBlockType11</i> | 212 |
| - | <i>SystemInformationBlockType12</i> | 214 |
| - | <i>SystemInformationBlockType13</i> | 215 |
| - | <i>SystemInformationBlockType14</i> | 215 |

| | | |
|-----------|--|-----|
| - | <i>SystemInformationBlockType15</i> | 216 |
| - | <i>SystemInformationBlockType17</i> | 217 |
| - | <i>SystemInformationBlockType18</i> | 217 |
| - | <i>SystemInformationBlockType19</i> | 224 |
| - | <i>SystemInformationBlockType20</i> | 229 |
| - | <i>SystemInformationBlockType21</i> | 229 |
| - | <i>SystemInformationBlockType24</i> | 230 |
| 4.4.3.4 | Channel-bandwidth-dependent parameters in system information blocks..... | 233 |
| 4.4.4 | Common parameters for simulated UTRA cells..... | 234 |
| 4.4.4.1 | Common contents of system information blocks for UTRA cells..... | 234 |
| - | System Information Block type 19..... | 234 |
| 4.4.4.2 | UTRA SIB scheduling for inter EUTRA - UTRA test..... | 238 |
| 4.4.4.3 | UTRA SIB scheduling for inter EUTRA – UTRA - GERAN test..... | 238 |
| 4.4.5 | Common parameters for simulated GERAN cells..... | 239 |
| 4.4.6 | Common parameters for simulated CDMA2000 cells..... | 242 |
| 4.4.7 | Default parameters specific for simulated cells..... | 243 |
| 4.4.7.1 | Common contents of HRPD Overhead messages..... | 243 |
| 4.4.7.2 | Common contents of 1XRTT Overhead messages..... | 248 |
| 4.4.7.2.1 | Configuration sequence number..... | 248 |
| 4.4.7.2.2 | Over Head messages..... | 249 |
| 4.4.8 | Common parameters for simulated WLAN AP's..... | 258 |
| 4.4.9 | Common parameters for simulated Bluetooth beacon's..... | 259 |
| 4.5 | Generic procedures..... | 260 |
| 4.5.1 | UE test states..... | 260 |
| 4.5.2 | UE Registration (State 2)..... | 265 |
| 4.5.2.1 | Initial conditions..... | 266 |
| 4.5.2.2 | Definition of system information messages..... | 266 |
| 4.5.2.3 | Procedure..... | 267 |
| 4.5.2.4 | Specific message contents..... | 270 |
| 4.5.2A | UE Registration, UE Test Mode Activated (State 2A)..... | 273 |
| 4.5.2A.1 | Initial conditions..... | 273 |
| 4.5.2A.2 | Definition of system information messages..... | 273 |
| 4.5.2A.3 | Procedure..... | 274 |
| 4.5.2A.4 | Specific message contents..... | 277 |
| 4.5.2AA | UE Registration in cell supporting BL/CE UE (State 2-CE)..... | 277 |
| 4.5.2AA.1 | Initial conditions..... | 277 |
| 4.5.2AA.2 | Definition of system information messages..... | 277 |
| 4.5.2AA.3 | Procedure..... | 278 |
| 4.5.2AA.4 | Specific message contents..... | 278 |
| 4.5.2AB | UE Registration, UE Test Mode Activated in cell supporting BL/CE UE (State 2A-CE)..... | 278 |
| 4.5.2AB.1 | Initial conditions..... | 278 |
| 4.5.2AB.2 | Definition of system information messages..... | 278 |
| 4.5.2AB.3 | Procedure..... | 279 |
| 4.5.2AB.4 | Specific message contents..... | 279 |
| 4.5.2B | UE Registration, pre-registration on HRPD (State 2B)..... | 279 |
| 4.5.2B.1 | Initial conditions..... | 279 |
| 4.5.2B.2 | Definition of system information messages..... | 279 |
| 4.5.2B.3 | Procedure..... | 280 |
| 4.5.2B.4 | Specific message contents..... | 285 |
| 4.5.2C | UE Registration, pre-registration on 1xRTT (State 2C)..... | 286 |
| 4.5.2C.1 | Initial conditions..... | 286 |
| 4.5.2C.2 | Definition of system information messages..... | 286 |
| 4.5.2C.3 | Procedure..... | 288 |
| 4.5.2C.4 | Specific message contents..... | 288 |
| 4.5.2D | UE Registration, 2 PDN for RAN Assisted WLAN Interworking (State 2)..... | 294 |
| 4.5.2D.1 | Initial conditions..... | 294 |
| 4.5.2D.2 | Definition of system information messages..... | 294 |
| 4.5.2D.3 | Procedure..... | 295 |
| 4.5.2D.4 | Specific message contents..... | 295 |
| 4.5.3 | Generic Radio Bearer Establishment (State 3)..... | 297 |
| 4.5.3.1 | Initial conditions..... | 297 |
| 4.5.3.2 | Definition of system information messages..... | 297 |

| | | |
|-----------|---|-----|
| 4.5.3.3 | Procedure | 298 |
| 4.5.3.4 | Specific message contents | 300 |
| 4.5.3A | Generic Radio Bearer Establishment, UE Test Mode Activated (State 3A) | 300 |
| 4.5.3A.1 | Initial conditions | 300 |
| 4.5.3A.2 | Definition of system information messages | 300 |
| 4.5.3A.3 | Procedure | 301 |
| 4.5.3A.4 | Specific message contents | 301 |
| 4.5.3AA | Generic Radio Bearer Establishment (State 3-CE) | 301 |
| 4.5.3AA.1 | Initial conditions | 301 |
| 4.5.3AA.2 | Definition of system information messages | 301 |
| 4.5.3AA.3 | Procedure | 301 |
| 4.5.3AA.4 | Specific message contents | 301 |
| 4.5.3AB | Generic Radio Bearer Establishment, UE Test Mode Activated (State 3A-CE) | 301 |
| 4.5.3AB.1 | Initial conditions | 301 |
| 4.5.3AB.2 | Definition of system information messages | 302 |
| 4.5.3AB.3 | Procedure | 302 |
| 4.5.3AB.4 | Specific message contents | 302 |
| 4.5.3B | Generic Radio Bearer Establishment, pre-registered on HRPD (State 3B) | 302 |
| 4.5.3B.1 | Initial conditions | 302 |
| 4.5.3B.2 | Definition of system information messages | 302 |
| 4.5.3B.3 | Procedure | 302 |
| 4.5.3B.4 | Specific message contents | 302 |
| 4.5.3C | Generic Radio Bearer Establishment, pre-registered on 1xRTT (State 3C) | 302 |
| 4.5.3C.1 | Initial conditions | 302 |
| 4.5.3C.2 | Definition of system information messages | 303 |
| 4.5.3C.3 | Procedure | 303 |
| 4.5.3C.4 | Specific message contents | 303 |
| 4.5.3D | Generic Radio Bearer Establishment for RAN Assisted WLAN Interworking (State 3) | 303 |
| 4.5.3D.1 | Initial conditions | 303 |
| 4.5.3D.2 | Definition of system information messages | 303 |
| 4.5.3D.3 | Procedure | 304 |
| 4.5.3D.4 | Specific message contents | 304 |
| 4.5.3E | Control plane CIoT connection request (State 3-CP) | 304 |
| 4.5.3E.1 | Initial conditions | 304 |
| 4.5.3E.2 | Definition of system information messages | 304 |
| 4.5.3E.3 | Procedure | 305 |
| 4.5.3E.4 | Specific message contents | 305 |
| 4.5.3EA | Control plane CIoT connection request, UE Test Mode Activated (State 3A-CP) | 305 |
| 4.5.3EA.1 | Initial conditions | 305 |
| 4.5.3EA.2 | Definition of system information messages | 305 |
| 4.5.3EA.3 | Procedure | 305 |
| 4.5.3EA.4 | Specific message contents | 305 |
| 4.5.3F | User plane CIoT connection request (State 3-UP) | 306 |
| 4.5.3F.1 | Initial conditions | 306 |
| 4.5.3F.2 | Definition of system information messages | 306 |
| 4.5.3F.3 | Procedure | 306 |
| 4.5.3F.4 | Specific message contents | 306 |
| 4.5.3FA | User plane CIoT connection request, UE Test Mode Activated (State 3A-UP) | 306 |
| 4.5.3FA.1 | Initial conditions | 306 |
| 4.5.3FA.2 | Definition of system information messages | 307 |
| 4.5.3FA.3 | Procedure | 307 |
| 4.5.3FA.4 | Specific message contents | 307 |
| 4.5.4 | Loopback Activation (State 4) | 307 |
| 4.5.4.1 | Initial conditions | 307 |
| 4.5.4.2 | Definition of system information messages | 307 |
| 4.5.4.3 | Procedure | 307 |
| 4.5.4.4 | Specific message contents | 307 |
| 4.5.4A | Loopback Activation in cell supporting BL/CE UE (State 4-CE) | 307 |
| 4.5.4A.1 | Initial conditions | 307 |
| 4.5.4A.2 | Definition of system information messages | 308 |
| 4.5.4A.3 | Procedure | 308 |
| 4.5.4A.4 | Specific message contents | 308 |

| | | |
|-----------|--|-----|
| 4.5.4B | Loopback Activation user plane (State 4A-UP)..... | 308 |
| 4.5.4B.1 | Initial conditions | 308 |
| 4.5.4B.2 | Definition of system information messages | 308 |
| 4.5.4B.3 | Procedure | 308 |
| 4.5.4B.4 | Specific message contents..... | 308 |
| 4.5.5 | HRPD registration (State H2)..... | 309 |
| 4.5.5.1 | Initial conditions | 309 |
| 4.5.5.2 | Definition of system information messages | 309 |
| 4.5.5.3 | Procedure | 309 |
| 4.5.5.4 | Specific message contents..... | 309 |
| 4.5.5A | HRPD registration, pre-registration on E-UTRAN (State H2A) | 309 |
| 4.5.5A.1 | Initial conditions | 309 |
| 4.5.5A.2 | Definition of system information messages | 309 |
| 4.5.5A.3 | Procedure | 309 |
| 4.5.5A.4 | Specific message contents..... | 309 |
| 4.5.6 | HRPD session establishment (State H3)..... | 310 |
| 4.5.6.1 | Initial conditions | 310 |
| 4.5.6.2 | Definition of system information messages | 310 |
| 4.5.6.3 | Procedure | 310 |
| 4.5.6.4 | Specific message contents..... | 310 |
| 4.5.6A | HRPD session establishment, pre-registered on E-UTRAN (State H3A)..... | 310 |
| 4.5.6A.1 | Initial conditions | 310 |
| 4.5.6A.2 | Definition of system information messages | 310 |
| 4.5.6A.3 | Procedure | 310 |
| 4.5.6A.4 | Specific message contents..... | 310 |
| 4.5.7 | Out of Coverage (State 5) | 311 |
| 4.5.7.1 | Initial conditions | 311 |
| 4.5.7.2 | Definition of system information messages | 311 |
| 4.5.7.3 | Procedure | 311 |
| 4.5.8 | Out of Coverage, V2X setup (State 5-V2X) | 311 |
| 4.5.8.1 | Initial conditions | 311 |
| 4.5.8.2 | Definition of system information messages | 311 |
| 4.5.8.3 | Procedure | 311 |
| 4.5.9 | Out of Coverage, Test Loopback Activation, V2X setup (State 5A-V2X)..... | 311 |
| 4.5.9.1 | Initial conditions | 311 |
| 4.5.9.2 | Definition of system information messages | 312 |
| 4.5.9.3 | Procedure | 312 |
| 4.5.9.4 | Specific message contents..... | 312 |
| 4.5A | Other generic procedures..... | 313 |
| 4.5A.1 | Procedure for IP address allocation in the U-plane..... | 313 |
| 4.5A.2 | Tracking area updating procedure..... | 313 |
| 4.5A.3 | Procedure for IMS signalling..... | 314 |
| 4.5A.3.1 | Specific message contents..... | 315 |
| 4.5A.3A | Procedure for IMS Signalling over UTRA | 315 |
| 4.5A.3A.1 | Initial conditions | 315 |
| 4.5A.3A.2 | Procedure | 316 |
| 4.5A.3A.3 | Specific message contents..... | 317 |
| 4.5A.3B | Procedure for preventing IMS Signalling over GERAN | 319 |
| 4.5A.3B.1 | Initial conditions | 319 |
| 4.5A.3B.2 | Procedure | 320 |
| 4.5A.3B.3 | Specific message contents..... | 320 |
| 4.5A.4 | Generic Test Procedure for IMS Emergency call establishment in EUTRA: Normal Service | 321 |
| 4.5A.4.1 | Initial conditions | 321 |
| 4.5A.4.2 | Definition of system information messages | 321 |
| 4.5A.4.3 | Procedure | 321 |
| 4.5A.4.4 | Specific message contents..... | 324 |
| 4.5A.5 | Generic Test Procedure for IMS Emergency call establishment in EUTRA: Limited Service..... | 325 |
| 4.5A.5.1 | Initial conditions | 325 |
| 4.5A.5.2 | Definition of system information messages | 325 |
| 4.5A.5.3 | Procedure | 326 |
| 4.5A.5.4 | Specific message contents..... | 329 |
| 4.5A.6 | Generic Test Procedure for IMS MO speech call establishment in E-UTRA..... | 331 |

| | | |
|------------|---|-----|
| 4.5A.6.1 | Initial conditions | 331 |
| 4.5A.6.2 | Definition of system information messages | 331 |
| 4.5A.6.3 | Procedure | 332 |
| 4.5A.6.4 | Specific message contents..... | 333 |
| 4.5A.7 | Generic Test Procedure for IMS MT Speech call establishment in E-UTRA | 333 |
| 4.5A.7.1 | Initial conditions | 333 |
| 4.5A.7.2 | Definition of system information messages | 333 |
| 4.5A.7.3 | Procedure | 334 |
| 4.5A.7.4 | Specific message contents..... | 336 |
| 4.5A.8 | Generic Test Procedure for IMS MO video call establishment in E-UTRA..... | 336 |
| 4.5A.8.1 | Initial conditions | 336 |
| 4.5A.8.2 | Definition of system information messages | 336 |
| 4.5A.8.3 | Procedure | 337 |
| 4.5A.8.4 | Specific message contents..... | 338 |
| 4.5A.9 | Generic Test Procedure for IMS MT video call establishment in E-UTRA | 338 |
| 4.5A.9.1 | Initial conditions | 338 |
| 4.5A.9.2 | Definition of system information messages | 338 |
| 4.5A.9.3 | Procedure | 339 |
| 4.5A.9.4 | Specific message contents..... | 339 |
| 4.5A.10 | Generic Test Procedure for IMS MO speech and aSRVCC in E-UTRA..... | 340 |
| 4.5A.10.1 | Initial conditions | 340 |
| 4.5A.10.2 | Definition of system information messages | 340 |
| 4.5A.10.3 | Procedure | 341 |
| 4.5A.10.4 | Specific message contents..... | 342 |
| 4.5A.11 | Generic Test Procedure for IMS MO add video establishment in E-UTRA..... | 342 |
| 4.5A.11.1 | Initial conditions | 342 |
| 4.5A.11.2 | Definition of system information messages | 342 |
| 4.5A.11.3 | Procedure | 342 |
| 4.5A.11.4 | Specific message contents..... | 343 |
| 4.5A.12 | Generic Test Procedure for IMS MT add video establishment in E-UTRA | 343 |
| 4.5A.12.1 | Initial conditions | 343 |
| 4.5A.12.2 | Definition of system information messages | 343 |
| 4.5A.12.3 | Procedure | 343 |
| 4.5A.12.4 | Specific message contents..... | 344 |
| 4.5A.14 | Generic Test Procedure for IMS XCAP establishment in EUTRA | 344 |
| 4.5A.14.1 | Initial conditions | 344 |
| 4.5A.14.2 | Definition of system information messages | 344 |
| 4.5A.14.3 | Procedure | 345 |
| 4.5A.14.4 | Specific message contents..... | 345 |
| 4.5A.15 | Generic Test Procedure for EPS Bearer Deactivation | 345 |
| 4.5A.15.1 | Initial conditions | 345 |
| 4.5A.15.2 | Definition of system information messages | 345 |
| 4.5A.15.3 | Procedure | 346 |
| 4.5A.15.4 | Specific message contents..... | 346 |
| 4.5A.15A | Generic Test Procedure for User or Network Initiated EPS Bearer Deactivation..... | 347 |
| 4.5A.15A.1 | Initial conditions | 347 |
| 4.5A.15A.2 | Definition of system information messages | 347 |
| 4.5A.15A.3 | Procedure | 347 |
| 4.5A.15A.4 | Specific message contents..... | 348 |
| 4.5A.16 | Generic Test Procedure to establish additional PDN connectivity | 348 |
| 4.5A.16.1 | Initial conditions | 348 |
| 4.5A.16.2 | Definition of system information messages | 348 |
| 4.5A.16.3 | Procedure | 349 |
| 4.5A.16.4 | Specific message contents..... | 349 |
| 4.5A.17 | Generic Test Procedure for user initiated release of additional PDN connectivity..... | 350 |
| 4.5A.17.1 | Initial conditions | 350 |
| 4.5A.17.2 | Definition of system information messages | 350 |
| 4.5A.17.3 | Procedure | 351 |
| 4.5A.17.4 | Specific message contents..... | 351 |
| 4.5A.18 | Generic Test Procedure for network initiated release of additional PDN connectivity | 352 |
| 4.5A.18.1 | Initial conditions | 352 |
| 4.5A.18.2 | Definition of system information messages | 353 |

| | | |
|------------|--|-----|
| 4.5A.18.3 | Procedure | 353 |
| 4.5A.18.4 | Specific message contents | 353 |
| 4.5A.19 | Generic Test Procedure for IMS MO speech call establishment in E-UTRA / EVS | 354 |
| 4.5A.19.1 | Initial conditions | 354 |
| 4.5A.19.2 | Definition of system information messages | 354 |
| 4.5A.19.3 | Procedure | 354 |
| 4.5A.19.4 | Specific message contents | 355 |
| 4.5A.20 | Generic Test Procedure for IMS MT speech call establishment in E-UTRA / EVS | 355 |
| 4.5A.20.1 | Initial conditions | 355 |
| 4.5A.20.2 | Definition of system information messages | 355 |
| 4.5A.20.3 | Procedure | 355 |
| 4.5A.20.4 | Specific message contents | 355 |
| 4.5A.21 | Generic Test Procedure for IMS MO Customized Alerting Tones and speech establishment in E-UTRA | 356 |
| 4.5A.21.1 | Initial conditions | 356 |
| 4.5A.21.2 | Definition of system information messages | 356 |
| 4.5A.21.3 | Procedure | 356 |
| 4.5A.21.4 | Specific message contents | 356 |
| 4.5A.22 | Communication with the ProSe Function: Initial Access | 356 |
| 4.5A.22.1 | Initial conditions | 356 |
| 4.5A.22.2 | Definition of system information messages | 356 |
| 4.5A.22.3 | Procedure | 357 |
| 4.5A.22.4 | Specific message contents | 359 |
| 4.5A.22A | Communication with the ProSe Function: Subsequent Access | 359 |
| 4.5A.22A.1 | Initial conditions | 359 |
| 4.5A.22A.2 | Definition of system information messages | 359 |
| 4.5A.22A.3 | Procedure | 359 |
| 4.5A.22A.4 | Specific message contents | 360 |
| 4.5A.23 | Generic Test Procedure for IMS registration in EPC / WLAN | 360 |
| 4.5A.23.1 | Initial conditions | 360 |
| 4.5A.23.2 | Definition of system information messages | 360 |
| 4.5A.23.3 | Procedure | 361 |
| 4.5A.23.4 | Specific message contents | 361 |
| 4.5A.23A | Generic Test Procedure for IPsec Tunnel Disconnection in EPC / WLAN | 361 |
| 4.5A.23A.1 | Initial conditions | 361 |
| 4.5A.23A.2 | Definition of system information messages | 361 |
| 4.5A.23A.3 | Procedure | 361 |
| 4.5A.23A.4 | Specific message contents | 361 |
| 4.5A.24 | Generic Test Procedure for IMS emergency call establishment in EPC / WLAN | 362 |
| 4.5A.24.1 | Initial conditions | 362 |
| 4.5A.24.2 | Definition of system information messages | 362 |
| 4.5A.24.3 | Procedure | 362 |
| 4.5A.24.4 | Specific message contents | 362 |
| 4.5A.25 | Generic Test Procedure for XCAP establishment in EPC / WLAN | 362 |
| 4.5A.25.1 | Initial conditions | 362 |
| 4.5A.25.2 | Definition of system information messages | 362 |
| 4.5A.25.3 | Procedure | 363 |
| 4.5A.25.4 | Specific message contents | 363 |
| 4.5A.26 | Generic Test Procedure for eCall over IMS establishment in EUTRA: Normal Service | 363 |
| 4.5A.26.1 | Initial conditions | 363 |
| 4.5A.26.2 | Definition of system information messages | 363 |
| 4.5A.26.3 | Procedure | 363 |
| 4.5A.26.4 | Specific message contents | 365 |
| 4.5A.27 | Generic Test Procedure for eCall over IMS establishment in EUTRA: eCall Only Support | 366 |
| 4.5A.27.1 | Initial conditions | 366 |
| 4.5A.27.2 | Definition of system information messages | 366 |
| 4.5A.27.3 | Procedure | 366 |
| 4.5A.27.4 | Specific message contents | 368 |
| 4.5A.28 | Generic Test Procedure for Converged IP Communications establishment in EUTRA | 369 |
| 4.5A.28.1 | Initial conditions | 369 |
| 4.5A.28.2 | Definition of system information messages | 369 |
| 4.5A.28.3 | Procedure | 369 |

| | | |
|-----------|--|-----|
| 4.5A.28.4 | Specific message contents | 369 |
| 4.5A.29 | Generic Test Procedure for Converged IP Communications establishment in EPC / WLAN | 370 |
| 4.5A.29.1 | Initial conditions | 370 |
| 4.5A.29.2 | Definition of system information messages | 371 |
| 4.5A.29.3 | Procedure | 371 |
| 4.5A.29.4 | Specific message contents | 371 |
| 4.5A.30 | Generic Test Procedure for IMS Re-registration in E-UTRAN | 371 |
| 4.5A.30.1 | Initial conditions | 371 |
| 4.5A.30.2 | Definition of system information messages | 371 |
| 4.5A.30.3 | Procedure | 371 |
| 4.5A.30.4 | Specific message contents | 372 |
| 4.6 | Default RRC message and information elements contents | 372 |
| 4.6.1 | Contents of RRC messages | 372 |
| - | <i>CounterCheck</i> | 372 |
| - | <i>CounterCheckResponse</i> | 372 |
| - | <i>CSFBParametersRequestCDMA2000</i> | 373 |
| - | <i>CSFBParametersResponseCDMA2000</i> | 373 |
| - | <i>DLInformationTransfer</i> | 373 |
| - | <i>HandoverFromEUTRAPreparationRequest</i> | 374 |
| - | <i>LoggedMeasurementConfiguration</i> | 375 |
| - | <i>MasterInformationBlock-SL</i> | 376 |
| - | <i>MasterInformationBlock-SL-V2X</i> | 377 |
| - | <i>MBMSCountingRequest</i> | 377 |
| - | <i>MBMSCountingResponse</i> | 378 |
| - | <i>MBMSInterestIndication</i> | 378 |
| - | <i>MBSFNAreaConfiguration</i> | 379 |
| - | <i>MeasurementReport</i> | 379 |
| - | <i>MobilityFromEUTRACommand</i> | 380 |
| - | <i>Paging</i> | 380 |
| - | <i>RRCCConnectionReconfiguration</i> | 381 |
| - | <i>RRCCConnectionReconfiguration (SideLink)</i> | 388 |
| - | <i>RRCCConnectionReconfiguration (V2X)</i> | 395 |
| - | <i>RRCCConnectionReconfigurationComplete</i> | 396 |
| - | <i>RRCCConnectionReestablishment</i> | 397 |
| - | <i>RRCCConnectionReestablishmentComplete</i> | 397 |
| - | <i>RRCCConnectionReestablishmentReject</i> | 397 |
| - | <i>RRCCConnectionReestablishmentRequest</i> | 398 |
| - | <i>RRCCConnectionReject</i> | 398 |
| - | <i>RRCCConnectionRelease</i> | 399 |
| - | <i>RRCCConnectionRequest</i> | 399 |
| - | <i>RRCCConnectionResume</i> | 400 |
| - | <i>RRCCConnectionResumeComplete</i> | 400 |
| - | <i>RRCCConnectionResumeRequest</i> | 401 |
| - | <i>RRCCConnectionSetup</i> | 401 |
| - | <i>RRCCConnectionSetupComplete</i> | 402 |
| - | <i>SCGFailureInformationNR</i> | 403 |
| - | <i>SCPTMConfiguration</i> | 405 |
| - | <i>SCPTMConfiguration-BR</i> | 406 |
| - | <i>SecurityModeCommand</i> | 407 |
| - | <i>SecurityModeComplete</i> | 407 |
| - | <i>SecurityModeFailure</i> | 407 |
| - | <i>SidelinkUEInformation</i> | 408 |
| - | <i>SidelinkUEInformation (V2X)</i> | 409 |
| - | <i>UECapabilityEnquiry</i> | 410 |
| - | <i>UECapabilityInformation</i> | 411 |
| - | <i>UEInformationRequest</i> | 419 |
| - | <i>UEInformationResponse</i> | 420 |
| - | <i>ULHandoverPreparationTransfer</i> | 420 |
| - | <i>ULInformationTransfer</i> | 421 |
| - | <i>UEAssistanceInformation</i> | 421 |
| - | <i>ULInformationTransferMRDC</i> | 422 |
| 4.6.2 | System information blocks | 422 |

| | | |
|-------|---|-----|
| 4.6.3 | Radio resource control information elements | 422 |
| - | BCCH-Config-DEFAULT | 422 |
| - | CellSelectionInfoCE-r13-DEFAULT | 423 |
| - | CQI-ReportAperiodic-r10-DEFAULT | 423 |
| - | CQI-ReportConfig-DEFAULT | 424 |
| - | CQI-ReportConfig-r10-DEFAULT | 424 |
| - | CQI-ReportConfig-v1130-eIMTA | 429 |
| - | CQI-ReportConfig-v1250-DEFAULT | 431 |
| - | CQI-ReportConfigSCell-r10-DEFAULT | 432 |
| - | CQI-ReportPeriodic-r10-DEFAULT | 432 |
| - | CSI-RS-ConfigNZP-r11-DEFAULT | 433 |
| - | CSI-RS-ConfigZP-r11-DEFAULT | 433 |
| - | DMRS-Config-r11-DEFAULT | 434 |
| - | DRB-ToAddModList-RECONFIG | 434 |
| - | EPDCCH-Config-r11-DEFAULT | 434 |
| - | EPDCCH-Config-r11-eIMTA | 437 |
| - | FreqHoppingParameters-r13-DEFAULT | 439 |
| - | PCCH-Config-DEFAULT | 440 |
| - | PCCH-Config-v1310-DEFAULT | 440 |
| - | PHICH-Config-DEFAULT | 440 |
| - | PDSCH-ConfigCommon-DEFAULT | 441 |
| - | PDSCH-ConfigCommon-v1310-DEFAULT | 441 |
| - | PDSCH-ConfigDedicated-DEFAULT | 441 |
| - | PDSCH-ConfigDedicated-v1130-DEFAULT | 442 |
| - | PhysicalConfigDedicatedSCell-r10-DEFAULT | 443 |
| - | PhysicalConfigDedicatedSCell-r10-eIMTA | 446 |
| - | PRACH-Config-DEFAULT | 447 |
| - | PRACH-Config-v1310-DEFAULT | 448 |
| - | PRACH-ConfigSIB-DEFAULT | 450 |
| - | PRACH-ConfigSIB-v1310-DEFAULT | 451 |
| - | PUCCH-ConfigCommon-DEFAULT | 456 |
| - | PUCCH-ConfigCommon-v1310-DEFAULT | 456 |
| - | PUCCH-ConfigDedicated-DEFAULT | 457 |
| - | PUCCH-ConfigDedicated-v1020-DEFAULT | 458 |
| - | PUCCH-ConfigDedicated-v1130-DEFAULT | 459 |
| - | PUCCH-ConfigDedicated-v1250-DEFAULT | 459 |
| - | PUCCH-ConfigDedicated-r13-DEFAULT | 460 |
| - | PUSCH-ConfigCommon-DEFAULT | 461 |
| - | PUSCH-ConfigCommon-v1310DEFAULT | 461 |
| - | PUSCH-ConfigDedicated-r13DEFAULT | 462 |
| - | PUSCH-ConfigDedicated-v1130-DEFAULT | 462 |
| - | PUSCH-ConfigDedicated-v1250-DEFAULT | 462 |
| - | PUSCH-ConfigDedicated--DEFAULT | 463 |
| - | PUSCH-EnhancementsConfig-r14-DEFAULT | 463 |
| - | RACH-ConfigCommon-DEFAULT | 464 |
| - | Rach-ConfigDedicated-DEFAULT | 466 |
| - | RadioResourceConfigCommon-DEFAULT | 467 |
| - | RadioResourceConfigCommonSCell-r10-DEFAULT | 470 |
| - | RadioResourceConfigCommonSIB-DEFAULT | 473 |
| - | RadioResourceConfigDedicated-SRB1 | 474 |
| - | RadioResourceConfigDedicated-SRB2-DRB(n,m) | 475 |
| - | RadioResourceConfigDedicated-DRB(n,m) | 476 |
| - | RadioResourceConfigDedicated-SRB4 | 476 |
| - | RadioResourceConfigDedicated-HO-TO-EUTRA(n,m) | 477 |
| - | RadioResourceConfigDedicated-AM-DRB-ADD(bid) | 478 |
| - | RadioResourceConfigDedicated-UM-DRB-ADD(bid) | 478 |
| - | RadioResourceConfigDedicated- DRB-REL(bid) | 479 |
| - | RadioResourceConfigDedicated-HO | 479 |
| - | RadioResourceConfigDedicatedSCell-r10-DEFAULT | 479 |
| - | RadioResourceConfigDedicated-SCell_AddMod | 480 |
| - | RadioResourceConfigDedicated-V2X | 480 |
| - | RadioResourceConfigDedicated-EN-DC-Split | 481 |

| | | |
|-------|--|-----|
| - | RadioResourceConfigDedicated-EN-DC_Split_DRB_Rel(bid)..... | 482 |
| - | RadioResourceConfigDedicated-EN-DC-SRB2-DRB | 482 |
| - | RLC-Config-DRB-AM-RECONFIG | 483 |
| - | RLC-Config-DRB-UM-RECONFIG | 483 |
| - | RLC-Config-SRB-AM-RECONFIG..... | 483 |
| - | SCellToAddMod-r10-DEFAULT | 484 |
| - | SCellToRelease-r10-DEFAULT | 484 |
| - | SCG-Configuration-r12-DEFAULT | 485 |
| - | SchedulingRequest-Config-DEFAULT | 489 |
| - | SchedulingRequestConfigSCell-r13-DEFAULT | 489 |
| - | SL-CommResourcePoolV2X-r14-DEFAULT | 490 |
| - | SL-CommTxPoolSensingConfig-r14-DEFAULT | 491 |
| - | SL-InterFreqInfoV2X-r14-DEFAULT | 492 |
| - | SlotOrSubslotPDSCH-Config-r15-DEFAULT | 492 |
| - | SlotOrSubslotPUSCH-Config-r15-DEFAULT | 493 |
| - | SPDCCH-Config-r15-DEFAULT | 494 |
| - | SPUCCH-Config-r15-DEFAULT | 495 |
| - | UplinkPowerControlCommon-v1530-DEFAULT | 495 |
| - | SL-PSSCH-TxConfig-r14-DEFAULT | 496 |
| - | SL-TxPoolToAddMod-r14-DEFAULT | 496 |
| - | SL-TxPoolToReleaseListV2X-r14-DEFAULT | 497 |
| - | SL-V2X-ConfigDedicated-r14-DEFAULT | 498 |
| - | SL-V2X-InterFreqUE-Config-r14-DEFAULT | 500 |
| - | SL-V2X-PreconfigCommPool-r14-DEFAULT | 501 |
| - | SL-V2X-PreconfigFreqInfo-r14-DEFAULT | 502 |
| - | SoundingRS-UL-ConfigCommon-DEFAULT | 503 |
| - | SoundingRS-UL-ConfigDedicated-DEFAULT | 503 |
| - | SoundingRS-UL-ConfigDedicatedAperiodic-r10-DEFAULT | 504 |
| - | SRB-ToAddModList-RECONFIG..... | 504 |
| - | SRS-TPC-PDCCH-Config-r14-DEFAULT | 505 |
| - | TDD-Config-DEFAULT | 505 |
| - | TPC-PDCCH-Config-DEFAULT | 505 |
| - | TPC-PDCCH-ConfigSCell-r13-DEFAULT | 506 |
| - | UplinkPowerControlCommon-DEFAULT | 506 |
| - | UplinkPowerControlCommonSCell-r10-DEFAULT | 507 |
| - | UplinkPowerControlCommon-v1020-DEFAULT | 507 |
| - | UplinkPowerControlCommonSCell-v1310-DEFAULT | 508 |
| - | UplinkPowerControlDedicated-DEFAULT | 508 |
| - | UplinkPowerControlDedicated-v1020-DEFAULT | 509 |
| - | UplinkPowerControlDedicated-v1130-DEFAULT | 509 |
| - | UplinkPowerControlDedicated-v1250-DEFAULT | 509 |
| - | UplinkPowerControlDedicated-v1530-DEFAULT | 510 |
| - | UplinkPowerControlDedicatedSCell-r10-DEFAULT | 510 |
| - | UplinkPowerControlDedicatedSCell-v1310-DEFAULT | 510 |
| - | RadioResourceConfigDedicated-DRB-Mod..... | 510 |
| - | RadioResourceConfigDedicated-PCell-PATTERN | 511 |
| - | OtherConfig-r9..... | 511 |
| - | WLAN-OffloadConfig-r12 | 513 |
| - | EIMTA-MainConfig-r12-DEFAULT | 514 |
| - | EIMTA-MainConfigServCell-r12-DEFAULT | 514 |
| - | LWIP-Configuration-GENERIC..... | 515 |
| - | LWA-Configuration-GENERIC | 516 |
| - | LWIP-Configuration-W2-GENERIC..... | 517 |
| - | LWA-Configuration-W2-GENERIC | 518 |
| 4.6.4 | Security control information elements..... | 518 |
| - | SecurityConfigHO-DEFAULT | 518 |
| - | SecurityConfigSMC-DEFAULT | 519 |
| 4.6.5 | Mobility control information elements | 520 |
| - | MobilityControlInfo-HO | 520 |
| 4.6.6 | Measurement information elements..... | 522 |
| - | MeasConfig-DEFAULT | 523 |
| - | MeasGapConfig-GP1 | 524 |

| | | |
|-------|---|-----|
| - | MeasGapConfig-CE..... | 524 |
| - | MeasGapConfig-GP2..... | 524 |
| - | MeasDS-Config-DEFAULT..... | 525 |
| - | MeasCSI-RS-Config-DEFAULT..... | 525 |
| - | MeasObjectCDMA2000-GENERIC..... | 526 |
| - | ReportConfigToAddModList_DEFAULT..... | 526 |
| - | MeasIdToAddModList_DEFAULT..... | 526 |
| - | MeasObjectEUTRA-GENERIC..... | 527 |
| - | MeasObjectGERAN-GENERIC..... | 528 |
| - | MeasObjectNR-GENERIC..... | 528 |
| - | MeasObjectUTRA-GENERIC..... | 529 |
| - | MeasObjectWLAN-W2-GENERIC..... | 529 |
| - | QuantityConfig-DEFAULT..... | 530 |
| - | ReportConfigEUTRA-A1..... | 532 |
| - | ReportConfigEUTRA-A2..... | 533 |
| - | ReportConfigEUTRA-A3..... | 534 |
| - | ReportConfigEUTRA-A4..... | 535 |
| - | ReportConfigEUTRA-A5..... | 536 |
| - | ReportConfigEUTRA-A6..... | 538 |
| - | ReportConfigEUTRA-PERIODICAL..... | 538 |
| - | ReportConfigInterRAT-B1-GERAN..... | 539 |
| - | ReportConfig-B1-NR-r15..... | 539 |
| - | ReportConfigInterRAT-B1-UTRA..... | 540 |
| - | ReportConfigInterRAT-B2-CDMA2000..... | 541 |
| - | ReportConfigInterRAT-B2-GERAN..... | 542 |
| - | ReportConfigInterRAT-B2-UTRA..... | 543 |
| - | ReportConfigInterRAT-B2-NR..... | 544 |
| - | -..... ReportConfigInterRAT-SFTD..... | 545 |
| - | ReportConfigInterRAT-PERIODICAL..... | 545 |
| - | ReportConfigInterRAT-W2-WLAN..... | 546 |
| - | ReportConfigInterRAT-W3-WLAN..... | 546 |
| - | ReportConfigEUTRA-C1..... | 547 |
| - | ReportConfigEUTRA-C2..... | 548 |
| - | ReportConfigEUTRA-PERIODICAL-CSI-RS..... | 549 |
| - | ReportConfigEUTRA-V1..... | 549 |
| - | ReportConfigEUTRA-V2..... | 550 |
| - | ReportConfigEUTRA-H1..... | 550 |
| - | ReportConfigEUTRA-H2..... | 551 |
| 4.6.7 | Other information elements..... | 551 |
| - | FlightPathInfoReportConfig..... | 551 |
| - | RRC-TransactionIdentifier-DL..... | 551 |
| - | RRC-TransactionIdentifier-UL..... | 552 |
| 4.6.8 | Channel-bandwidth-dependent parameters..... | 552 |
| 4.7 | Default NAS message and information element contents..... | 552 |
| 4.7.1 | Security protected NAS messages..... | 553 |
| 4.7.2 | Contents of EMM messages..... | 554 |
| - | ATTACH ACCEPT..... | 554 |
| - | ATTACH COMPLETE..... | 558 |
| - | ATTACH REJECT..... | 558 |
| - | ATTACH REQUEST..... | 559 |
| - | AUTHENTICATION FAILURE..... | 561 |
| - | AUTHENTICATION REJECT..... | 562 |
| - | AUTHENTICATION REQUEST..... | 562 |
| - | AUTHENTICATION RESPONSE..... | 563 |
| - | CS SERVICE NOTIFICATION..... | 563 |
| - | CONTROL PLANE SERVICE REQUEST..... | 564 |
| - | DETACH ACCEPT (UE originating detach)..... | 564 |
| - | DETACH ACCEPT (UE terminated detach)..... | 565 |
| - | DETACH REQUEST (UE originating detach)..... | 565 |
| - | DETACH REQUEST (UE terminated detach)..... | 566 |
| - | DOWNLINK NAS TRANSPORT..... | 566 |

| | | |
|--------|---|-----|
| - | EMM INFORMATION | 567 |
| - | EMM STATUS | 567 |
| - | EXTENDED SERVICE REQUEST | 568 |
| - | GUTI REALLOCATION COMMAND | 568 |
| - | GUTI REALLOCATION COMPLETE | 569 |
| - | IDENTITY REQUEST | 569 |
| - | IDENTITY RESPONSE | 569 |
| - | SECURITY MODE COMMAND | 570 |
| - | SECURITY MODE COMPLETE | 571 |
| - | SECURITY MODE REJECT | 571 |
| - | SERVICE ACCEPT | 571 |
| - | SERVICE REJECT | 572 |
| - | SERVICE REQUEST | 572 |
| - | TRACKING AREA UPDATE ACCEPT | 573 |
| - | TRACKING AREA UPDATE COMPLETE | 576 |
| - | TRACKING AREA UPDATE REJECT | 577 |
| - | TRACKING AREA UPDATE REQUEST | 578 |
| - | UPLINK NAS TRANSPORT | 580 |
| 4.7.3 | Contents of ESM messages | 581 |
| - | ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT | 581 |
| - | ACTIVATE DEDICATED EPS BEARER CONTEXT REJECT | 582 |
| - | ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST | 583 |
| - | ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT | 585 |
| - | ACTIVATE DEFAULT EPS BEARER CONTEXT REJECT | 585 |
| - | ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST | 587 |
| - | BEARER RESOURCE ALLOCATION REJECT | 593 |
| - | BEARER RESOURCE ALLOCATION REQUEST | 593 |
| - | BEARER RESOURCE MODIFICATION REJECT | 594 |
| - | BEARER RESOURCE MODIFICATION REQUEST | 595 |
| - | DEACTIVATE EPS BEARER CONTEXT ACCEPT | 596 |
| - | DEACTIVATE EPS BEARER CONTEXT REQUEST | 596 |
| - | ESM DATA TRANSPORT | 597 |
| - | ESM DUMMY MESSAGE | 597 |
| - | ESM INFORMATION REQUEST | 598 |
| - | ESM INFORMATION RESPONSE | 599 |
| - | ESM STATUS | 600 |
| - | MODIFY EPS BEARER CONTEXT ACCEPT | 601 |
| - | MODIFY EPS BEARER CONTEXT REJECT | 601 |
| - | MODIFY EPS BEARER CONTEXT REQUEST | 602 |
| - | NOTIFICATION | 603 |
| - | PDN CONNECTIVITY REJECT | 603 |
| - | PDN CONNECTIVITY REQUEST | 604 |
| - | PDN DISCONNECT REJECT | 606 |
| - | PDN DISCONNECT REQUEST | 607 |
| 4.7A | Default TC message and information element contents | 607 |
| - | ACTIVATE TEST MODE | 607 |
| - | ACTIVATE TEST MODE COMPLETE | 608 |
| - | CLOSE UE TEST LOOP | 609 |
| - | CLOSE UE TEST LOOP COMPLETE | 612 |
| - | DEACTIVATE TEST MODE | 612 |
| - | DEACTIVATE TEST MODE COMPLETE | 612 |
| - | OPEN UE TEST LOOP | 613 |
| - | OPEN UE TEST LOOP COMPLETE | 613 |
| - | UE TEST LOOP MODE C MBMS PACKET COUNTER REQUEST | 613 |
| - | UE TEST LOOP MODE C MBMS PACKET COUNTER RESPONSE | 613 |
| - | UE TEST LOOP PROSE PACKET COUNTER REQUEST | 614 |
| - | UE TEST LOOP PROSE PACKET COUNTER RESPONSE | 614 |
| - | UE TEST LOOP MODE F SCPTM PACKET COUNTER REQUEST | 614 |
| - | UE TEST LOOP MODE F SCPTM PACKET COUNTER RESPONSE | 615 |
| 4.7B | Default UTRA message and information element contents | 616 |
| 4.7B.1 | UTRA RRC messages | 616 |
| - | HANDOVER TO UTRAN COMMAND | 616 |

| | | |
|--------|--|-----|
| - | HANDOVER FROM UTRAN COMMAND | 628 |
| - | MEASUREMENT CONTROL..... | 628 |
| - | MEASUREMENT REPORT | 630 |
| - | PHYSICAL CHANNEL RECONFIGURATION | 631 |
| - | PHYSICAL CHANNEL RECONFIGURATION COMPLETE | 633 |
| - | RRC CONNECTION REQUEST | 633 |
| - | SECURITY MODE COMMAND | 634 |
| - | SECURITY MODE COMPLETE | 634 |
| - | UTRAN MOBILITY INFORMATION..... | 634 |
| - | UTRAN MOBILITY INFORMATION CONFIRM..... | 634 |
| 4.7B.2 | UTRA NAS messages | 634 |
| 4.7C | Default DS-MIPv6 message and information element contents..... | 644 |
| 4.7C.1 | IKEv2 messages..... | 644 |
| - | IKEv2 IKE_SA_INIT Request..... | 644 |
| - | IKE_SA_INIT Response..... | 647 |
| - | IKE_AUTH Request | 648 |
| - | IKE_AUTH Response..... | 651 |
| 4.7C.2 | Messages used to perform DS-MIPv6 registration and deregistration..... | 655 |
| - | Router Advertisement | 655 |
| - | Binding Update | 656 |
| - | Binding Acknowledgement..... | 657 |
| - | Binding Revocation Indication..... | 658 |
| - | Binding Revocation Acknowledgement..... | 659 |
| 4.7D | Default GERAN message and information element contents | 660 |
| 4.7D.1 | GPRS message..... | 660 |
| - | PS HANDOVER COMMAND..... | 660 |
| 4.7E | Default HTTP messages for communication with the ProSe Function | 661 |
| - | HTTP Request..... | 661 |
| - | HTTP Response | 661 |
| 4.7F | Default ProSe messages | 662 |
| 4.7F.1 | ProSe discovery messages | 662 |
| - | DISCOVERY_REQUEST | 662 |
| - | DISCOVERY_RESPONSE..... | 663 |
| - | MATCH_REPORT | 667 |
| - | MATCH_REPORT_ACK..... | 668 |
| - | PC5_DISCOVERY | 669 |
| 4.7F.2 | Messages transmitted over the PC3ch interface..... | 673 |
| - | USAGE_INFORMATION_REPORT_LIST..... | 673 |
| - | USAGE_INFORMATION_REPORT_LIST_RESPONSE | 675 |
| 4.7F.3 | ProSe Direct Communication Messages..... | 676 |
| - | DIRECT_COMMUNICATION_ACCEPT | 676 |
| - | DIRECT_COMMUNICATION_KEEPALIVE..... | 676 |
| - | DIRECT_COMMUNICATION_KEEPALIVE_ACK | 677 |
| - | DIRECT_COMMUNICATION_RELEASE | 677 |
| - | DIRECT_COMMUNICATION_RELEASE_ACCEPT | 677 |
| - | DIRECT_COMMUNICATION_REQUEST..... | 678 |
| - | DIRECT_SECURITY_MODE_COMMAND | 679 |
| - | DIRECT_SECURITY_MODE_COMPLETE | 680 |
| - | KEY_REQUEST | 680 |
| - | KEY_RESPONSE | 681 |
| - | MIKEY Key Delivery Message | 682 |
| - | MIKEY Verification Message | 685 |
| 4.7G | Default IKEv2 message and information element contents..... | 686 |
| - | IKE_SA_INIT request | 686 |
| - | IKE_SA_INIT response | 688 |
| - | IKE_AUTH_request | 688 |
| - | IKE_AUTH response | 689 |
| 4.7H | Default TLS message and information element contents | 689 |
| - | ClientHello | 689 |
| - | ServerHello | 689 |
| - | ServerKeyExchange | 690 |
| - | ServerHelloDone..... | 690 |

| | | |
|-----------|---|-----|
| - | ClientKeyExchange..... | 690 |
| - | ChangeCipherSpec..... | 690 |
| - | Finished..... | 690 |
| 4.7I | Default AT Command message and information element..... | 691 |
| - | AT Command +CATM..... | 691 |
| - | AT Command +CCUTLE..... | 691 |
| - | AT Command +CUTCR..... | 691 |
| - | AT Command +CUSPCREQ..... | 692 |
| 4.8 | Reference radio bearer configurations..... | 692 |
| 4.8.1 | General..... | 692 |
| 4.8.2 | SRB and DRB parameters and combinations..... | 692 |
| 4.8.2.1 | SRB and DRB parameters..... | 692 |
| 4.8.2.1.1 | SRB configurations..... | 692 |
| 4.8.2.1.2 | DRB PDCP configurations..... | 693 |
| 4.8.2.1.3 | DRB RLC configurations..... | 695 |
| 4.8.2.1.4 | DRB Logical Channel configurations..... | 696 |
| 4.8.2.1.5 | MAC configurations..... | 697 |
| 4.8.2.1.6 | Physical Layer configurations..... | 701 |
| 4.8.2.1.7 | DRB configurations..... | 711 |
| 4.8.2.2 | SRB and DRB combinations..... | 711 |
| 4.8.2.2.1 | Combinations on DL-SCH and UL-SCH..... | 711 |
| 4.8.3 | UTRA reference radio parameters and combinations..... | 711 |
| 4.8.4 | GERAN reference PDP context parameters..... | 712 |
| 4.9 | Common test USIM, CSIM and ISIM parameters..... | 712 |
| 4.9.1 | General..... | 712 |
| 4.9.1.1 | Definitions..... | 712 |
| 4.9.1.2 | Definition of the test algorithm for authentication..... | 712 |
| 4.9.1.2.1 | Authentication and key derivation in the test USIM, CSIM and ISIM and SS..... | 712 |
| 4.9.1.2.2 | Generation of re-synchronization parameters in the USIM, CSIM and ISIM..... | 713 |
| 4.9.1.2.3 | Using the authentication test algorithm for UE conformance testing..... | 713 |
| 4.9.2 | Default parameters for the test USIM, CSIM and ISIM..... | 713 |
| 4.9.3 | Default settings for the Elementary Files (EFs)..... | 713 |
| 4.9.3.1 | Modified contents of the USIM Elementary Files and additional USIM Elements files at the DF ProSe level..... | 713 |
| 4.9.3.2 | Modified contents of the CSIM Elementary Files..... | 720 |
| 4.9.3.3 | Modified contents of the USIM Elementary Files and additional USIM Elements files at the MCPTT level..... | 731 |
| 4.9.3.4 | Modified contents of the USIM Elementary Files and additional USIM Elements files at the DF _{V2X} level..... | 732 |
| 4.9.3.5 | Modified contents of the Elementary Files for eCall over IMS..... | 733 |
| 4.10 | V2X reference configuration..... | 733 |
| 4.10.1 | Reference configuration for V2X Sidelink Communication..... | 733 |
| 4.10.1.1 | V2X Sidelink Communication <i>Preconfiguration</i> for out-of-network coverage operation..... | 733 |
| 4.10.2 | V2X management data object configuration..... | 734 |
| 4.11 | GNSS Requirements for V2X and MCS testing..... | 737 |
| 4.11.1 | General..... | 737 |
| 4.11.2 | GNSS Scenarios..... | 737 |
| 4.12 | GNSS Requirements for aerial testing..... | 741 |
| 4.12.1 | General..... | 741 |
| 4.12.2 | GNSS Scenarios..... | 741 |
| 5 | Test environment for RF test..... | 744 |
| 5.1 | Requirements of test equipment..... | 744 |
| 5.2 | RF Reference system configurations..... | 744 |
| 5.2.1 | Common parameters for simulated E-UTRA cells..... | 744 |
| 5.2.1.1 | Combinations of system information blocks..... | 744 |
| 5.2.1.2 | Scheduling of system information blocks..... | 745 |
| 5.2.1.3 | Common contents of system information messages..... | 745 |
| 5.2A | Generic RF procedures..... | 746 |
| 5.2A.1 | UE RF test states..... | 747 |
| 5.2A.1A | Registered, Idle Mode, UE Test Mode Activated (State 2A-RF)..... | 748 |
| 5.2A.1A.1 | Initial conditions..... | 748 |

| | | |
|------------|---|-----|
| 5.2A.1A.2 | Definition of system information messages | 748 |
| 5.2A.1A.3 | Procedure | 749 |
| 5.2A.1A.4 | Specific message contents | 750 |
| 5.2A.1AA | Registered, Idle Mode, UE Test Mode Activated in cell supporting BL/CE UE (State 2A-RF-CE)..... | 752 |
| 5.2A.1AA.1 | Initial conditions | 752 |
| 5.2A.1AA.2 | Definition of system information messages | 752 |
| 5.2A.1AA.3 | Procedure | 752 |
| 5.2A.1AA.4 | Specific message contents..... | 753 |
| 5.2A.2 | Generic Default Radio Bearer Establishment, UE Test Mode Activated (State 3A-RF)..... | 753 |
| 5.2A.2.1 | Initial conditions | 753 |
| 5.2A.2.2 | Definition of system information messages | 753 |
| 5.2A.2.3 | Procedure | 753 |
| 5.2A.2.4 | Specific message contents..... | 754 |
| 5.2A.2A | DC MCG/SCG Dedicated RB established, UE Test Mode Activate (State 3A-RF-DC1)..... | 754 |
| 5.2A.2A.1 | Initial conditions | 754 |
| 5.2A.2A.2 | Definition of system information messages | 754 |
| 5.2A.2A.3 | Procedure | 754 |
| 5.2A.2A.4 | Specific message contents..... | 754 |
| 5.2A.2AA | Generic Default Radio Bearer Establishment, UE Test Mode Activated in cell supporting BL/CE UE (State 3A-RF-CE) | 755 |
| 5.2A.2AA.1 | Initial conditions | 755 |
| 5.2A.2AA.2 | Definition of system information messages | 755 |
| 5.2A.2AA.3 | Procedure | 756 |
| 5.2A.2AA.4 | Specific message contents..... | 756 |
| 5.2A.2B | DC Split Default RB established, UE Test Mode Activate (State 3A-RF-DC2) | 757 |
| 5.2A.2B.1 | Initial conditions | 757 |
| 5.2A.2B.2 | Definition of system information messages | 757 |
| 5.2A.2B.3 | Procedure | 757 |
| 5.2A.2B.4 | Specific message contents..... | 758 |
| 5.2A.2C | Generic Default Radio Bearer Establishment, UE Test Mode Activated, V2X Setup (State 3A-RF-V2X)..... | 758 |
| 5.2A.2C.1 | Initial conditions | 758 |
| 5.2A.2C.2 | Definition of system information messages | 758 |
| 5.2A.2C.3 | Procedure | 758 |
| 5.2A.2C.4 | Specific message contents..... | 758 |
| 5.2A.3 | Loopback Activation without looped data (State 4A-RF) | 758 |
| 5.2A.3.1 | Initial conditions | 758 |
| 5.2A.3.2 | Definition of system information messages | 759 |
| 5.2A.3.3 | Procedure | 759 |
| 5.2A.3.4 | Specific message contents..... | 759 |
| 5.2A.3A | DC MCG/SCG DRBs Loopback Activation without looped data (State 4A-RF-DC1)..... | 759 |
| 5.2A.3A.1 | Initial conditions | 759 |
| 5.2A.3A.2 | Definition of system information messages | 760 |
| 5.2A.3A.3 | Procedure | 760 |
| 5.2A.3A.4 | Specific message contents..... | 760 |
| 5.2A.3AA | Loopback Activation without looped data in cell supporting BL/CE UE (State 4A-RF-CE)..... | 760 |
| 5.2A.3AA.1 | Initial conditions | 760 |
| 5.2A.3AA.2 | Definition of system information messages | 760 |
| 5.2A.3AA.3 | Procedure | 761 |
| 5.2A.3AA.4 | Specific message contents..... | 761 |
| 5.2A.3B | DC Split DRB Loopback Activation without looped data (State 4A-RF-DC2) | 761 |
| 5.2A.3B.1 | Initial conditions | 761 |
| 5.2A.3B.2 | Definition of system information messages | 761 |
| 5.2A.3B.3 | Procedure | 761 |
| 5.2A.3B.4 | Specific message contents..... | 761 |
| 5.2A.3C | Loopback Activation without looped data, V2X Setup (State 4A-RF-V2X)..... | 761 |
| 5.2A.3C.1 | Initial conditions | 761 |
| 5.2A.3C.2 | Definition of system information messages | 762 |
| 5.2A.3C.3 | Procedure | 762 |
| 5.2A.3C.4 | Specific message contents..... | 762 |
| 5.2A.4 | Procedure to configure SCC | 762 |
| 5.2 A.41. | Specific message contents..... | 762 |

| | | |
|------------|--|-----|
| 5.2A.4.1.1 | Exceptions for all CA tests | 762 |
| 5.2A.4.1.2 | Exceptions for UL CA tests | 763 |
| 5.2A.5 | Exceptions for feICIC tests | 764 |
| 5.2A.5.1 | Specific message contents | 764 |
| 5.2A.5.1.1 | Neighbour cell info for all feICIC test cases | 764 |
| 5.2A.6 | Exceptions for NAICS tests | 765 |
| 5.2A.6.1 | NAICS specific RRC Connection reconfiguration procedure | 765 |
| 5.2A.6.1.1 | Procedure | 765 |
| 5.2A.6.1.1 | Specific message contents | 765 |
| 5.2A.6.2 | Specific message contents | 765 |
| 5.2A.6.2.1 | RRCConnectionReconfiguration for setting up and releasing NAICS configuration in NAICS test cases | 766 |
| 5.2A.7 | Procedure to retrieve additional UE Capabilities for Rel-11 and higher UEs that support frequencyBandRetrieval_r11 | 767 |
| 5.2A.7.1 | Initial conditions | 767 |
| 5.2A.7.2 | Definition of system information messages | 768 |
| 5.2A.7.3 | Procedure | 768 |
| 5.2A.7.4 | Specific message contents | 768 |
| 5.2A.8 | Exceptions for DL Control channel interference mitigation (Type A and Type B) tests | 769 |
| 5.2A.8.1 | Specific message contents | 769 |
| 5.2A.8.1.1 | Neighbour cell info for all CCIM test cases | 769 |
| 5.3 | Default RRC message and information elements contents | 769 |
| 5.3.1 | Radio resource control information elements | 769 |
| 5.3.2 | Measurement information elements | 771 |
| 5.4 | Default NAS message and information elements contents | 771 |
| 5.5 | Reference radio bearer configurations | 771 |
| 5.5.1 | SRB and DRB parameters | 771 |
| 5.5.1.1 | MAC configurations | 771 |
| 5.5.1.2 | Physical Layer configurations | 773 |
| 5.5.1.3 | SRB and DRB combinations | 774 |
| 5.5.1.3.1 | Combinations on DL-SCH and UL-SCH | 774 |
| 6 | Test environment for Signalling test | 775 |
| 6.1 | Requirements of test equipment | 775 |
| 6.2 | Reference test conditions | 775 |
| 6.2.1 | Physical channel allocations | 775 |
| 6.2.1.1 | Antennas | 775 |
| 6.2.1.2 | Downlink physical channels and physical signals | 775 |
| 6.2.1.3 | Mapping of downlink physical channels and signals to physical resources | 776 |
| 6.2.1.4 | Uplink physical channels and physical signals | 776 |
| 6.2.1.5 | Mapping of uplink physical channels and signals to physical resources | 776 |
| 6.2.2 | Signal levels | 776 |
| 6.2.2.1 | Downlink signal levels | 776 |
| 6.2.2.2 | Measurement accuracy and side conditions | 777 |
| 6.2.2.3 | Uplink signal levels | 778 |
| 6.2.3 | Default test frequencies | 779 |
| 6.2.3.1 | Test frequencies for signalling test | 779 |
| 6.2.3.2 | Test frequencies for CA signalling test | 782 |
| 6.2.3.3 | Test frequencies for ProSe signalling test | 794 |
| 6.2.3.4 | Test frequencies for MFBI frequency band priority adjustment signalling test | 795 |
| 6.2.3.5 | Test frequencies for V2X Communication | 795 |
| 6.3 | Reference system configurations | 796 |
| 6.3.1 | Default parameter specific for simulated cells | 796 |
| 6.3.1.1 | Intra-frequency neighbouring cell list in SIB4 for E-UTRA cells | 796 |
| 6.3.1.2 | Inter-frequency carrier frequency list in SIB5 for E-UTRA cells | 796 |
| 6.3.1.3 | UTRA carrier frequency list in SIB6 for E-UTRA cells | 797 |
| 6.3.1.4 | GERAN carrier frequency group list in SIB7 for E-UTRA cells | 798 |
| 6.3.1.5 | CDMA2000 HRPD carrier frequency list in SIB8 for E-UTRA cells | 798 |
| 6.3.1.6 | CDMA2000 1xRTT carrier frequency list in SIB8 for E-UTRA cells | 799 |
| 6.3.1.7 | E-UTRA carrier frequency list in SIB19 for UTRA cells | 799 |
| 6.3.1.8 | NR carrier frequency list in SIB24 for E-UTRA cells | 799 |
| 6.3.2 | Default configurations for NAS test cases | 799 |

| | | |
|------------|--|-----|
| 6.3.2.1 | Simulated network scenarios for NAS test cases | 799 |
| 6.3.2.2 | Simulated NAS cells | 800 |
| 6.3.2.3 | Broadcast system information..... | 801 |
| 6.3.2.3.1 | Intra-frequency neighbouring cell list in SIB4 for E-UTRA NAS cells..... | 801 |
| 6.3.2.3.2 | Inter-frequency carrier frequency list in SIB5 for E-UTRA NAS cells..... | 802 |
| 6.3.3 | Cell configurations..... | 802 |
| 6.3.3.1 | Full cell configuration..... | 803 |
| 6.3.3.2 | Minimum uplink cell configuration | 803 |
| 6.3.3.3 | Broadcast only cell configuration | 803 |
| 6.3.3.3A | Virtual cell configuration..... | 803 |
| 6.3.3.4 | Application of different cell configurations | 803 |
| 6.3.4 | SCell configurations | 804 |
| 6.4 | Generic procedures..... | 804 |
| 6.4.1 | Initial UE states and setup procedures | 804 |
| 6.4.1.1 | Initial UE states and setup procedures | 804 |
| 6.4.1.2 | Dedicated Bearer Establishment (to state 5) | 805 |
| 6.4.1.2.1 | Initial conditions..... | 805 |
| 6.4.1.2.2 | Definition of system information messages..... | 806 |
| 6.4.1.2.3 | Procedure..... | 806 |
| 6.4.1.2.4 | Specific message contents | 806 |
| 6.4.1.2A | DC MCG/SCG Dedicated Bearer Establishment (to state 5A) | 806 |
| 6.4.1.2A.1 | Initial conditions | 806 |
| 6.4.1.2A.2 | Definition of system information messages..... | 806 |
| 6.4.1.2A.3 | Procedure..... | 806 |
| 6.4.1.2A.4 | Specific message contents | 807 |
| 6.4.1.2B | DC Split Dedicated Bearer Establishment (to state 5B)..... | 807 |
| 6.4.1.2B.1 | Initial conditions..... | 807 |
| 6.4.1.2B.2 | Definition of system information messages..... | 807 |
| 6.4.1.2B.3 | Procedure..... | 807 |
| 6.4.1.2B.4 | Specific message contents | 808 |
| 6.4.1.3 | Loopback Activation (to state 6)..... | 808 |
| 6.4.1.3.1 | Initial conditions | 808 |
| 6.4.1.3.2 | Definition of system information messages..... | 808 |
| 6.4.1.3.3 | Procedure..... | 809 |
| 6.4.1.3.4 | Specific message contents | 809 |
| 6.4.1.3A | DC MCG/SCG DRB Loopback Activation (to state 6A)..... | 809 |
| 6.4.1.3A.1 | Initial conditions | 809 |
| 6.4.1.3A.2 | Definition of system information messages..... | 809 |
| 6.4.1.3A.3 | Procedure..... | 809 |
| 6.4.1.3A.4 | Specific message contents | 809 |
| 6.4.1.3B | DC Split DRB Loopback Activation (to state 6B)..... | 809 |
| 6.4.1.3B.1 | Initial conditions | 809 |
| 6.4.1.3B.2 | Definition of system information messages..... | 810 |
| 6.4.1.3B.3 | Procedure..... | 810 |
| 6.4.1.3B.4 | Specific message contents | 810 |
| 6.4.2 | Test procedures..... | 810 |
| 6.4.2.1 | Introduction..... | 810 |
| 6.4.2.2 | Test procedure to check RRC_IDLE state | 810 |
| 6.4.2.3 | Test procedure to check RRC_CONNECTED state | 811 |
| 6.4.2.4 | Test procedure Paging (for NAS testing)..... | 811 |
| 6.4.2.5 | Test procedure for no response to paging (for NAS testing)..... | 811 |
| 6.4.2.6 | Test procedure to check that a dedicated EPS bearer context is active (for NAS testing) | 812 |
| 6.4.2.7 | Test procedure to check that UE is camped on a new E-UTRAN cell..... | 812 |
| 6.4.2.7A | Test procedure to check that UE is camped on E-UTRAN cell upon mobility from another RAT | 813 |
| 6.4.2.7B | Test procedure to check that UE is camped on a new E-UTRAN cell / UP CIoT | 817 |
| 6.4.2.8 | Test procedure to check that UE is camped on a new UTRAN cell..... | 817 |
| 6.4.2.9 | Test procedure to check that UE is camped on a new GERAN cell..... | 818 |
| 6.4.2.10 | Test procedure to check that UE performs tracking area updating procedure without ISR and security reconfiguration after successful completion of handover from UTRA | 819 |
| 6.4.3 | Reference test procedures for TTCN development..... | 821 |
| 6.4.3.1 | UE triggered establishment of a dedicated EPS bearer context | 822 |
| 6.4.3.2 | UE triggered establishment of a default EPS bearer context associated with an additional PDN..... | 823 |

| | | |
|-------------|--|-----|
| 6.4.3.3 | UE triggered modification of an EPS bearer context | 825 |
| 6.4.3.4 | UE triggered deletion of an EPS bearer context..... | 826 |
| 6.4.3.5 | UE triggered CS call | 827 |
| 6.4.3.6 | UE triggered MO SMS over SGs..... | 828 |
| 6.4.3.7 | CS fallback to UTRAN procedures (LAI of UTRAN cell same as the LAI received in combined Attach procedure in EUTRA cell)..... | 828 |
| 6.4.3.7.1 | CS fallback to UTRAN with redirection / MT call (PS bearers not established) | 829 |
| 6.4.3.7.2 | CS fallback to UTRAN with redirection / MO call (PS bearers not established) | 830 |
| 6.4.3.7.3 | CS fallback to UTRAN with redirection / MT call (PS bearer established) | 831 |
| 6.4.3.7.4 | CS fallback to UTRAN with redirection / MO call (PS bearer established) | 831 |
| 6.4.3.7.5 | CS fallback to UTRAN with Handover / MT call | 832 |
| 6.4.3.7.5.1 | Specific message contents..... | 833 |
| 6.4.3.7.6 | CS fallback to UTRAN with Handover / MO call..... | 834 |
| 6.4.3.7.6.1 | Specific message contents..... | 835 |
| 6.4.3.7.7 | CS fallback to UTRAN with Handover / emergency call..... | 836 |
| 6.4.3.7.7.1 | Specific message contents..... | 837 |
| 6.4.3.8 | CS fallback to GERAN procedures (LAI of GERAN cell same as the LAI received in combined Attach procedure in EUTRA cell)..... | 837 |
| 6.4.3.8.1 | CS fallback to GERAN with redirection or CCO / MT call (DTM not supported)..... | 838 |
| 6.4.3.8.2 | CS fallback to GERAN with redirection or CCO / MO call (DTM not supported) | 839 |
| 6.4.3.8.3 | CS fallback to GERAN with PS Handover / MT call (EDTM not supported) | 839 |
| 6.4.3.8.4 | CS fallback to GERAN with PS Handover / MO call (EDTM not supported)..... | 839 |
| 6.4.3.8.5 | CS fallback to GERAN with PS Handover / MT call (EDTM supported) | 839 |
| 6.4.3.9 | SRVCC Handover to UTRA | 839 |
| 6.4.3.9.1 | Specific message contents | 840 |
| 6.4.3.10 | Offload to WLAN | 840 |
| 6.4.3.10.1 | Specific message contents | 841 |
| 6.4.3.11 | Offload from WLAN..... | 841 |
| 6.4.3.11.1 | Specific message contents | 842 |
| 6.4.3.12 | Check UE does not offload to WLAN | 842 |
| 6.4.3.12.1 | Specific message contents | 842 |
| 6.4.3.13 | Check UE does not Offload to E-UTRAN..... | 842 |
| 6.4.3.14 | Procedure for UE initiated detach at non-switch-off | 843 |
| 6.4.3.13.1 | Specific message contents | 843 |
| 6.4.3A | Test case postambles..... | 843 |
| 6.4.3A.1 | Introduction..... | 843 |
| 6.4.3A.2 | Reference end states | 843 |
| 6.5 | Default RRC message and information element contents | 846 |
| 6.5.1 | Measurement information elements..... | 847 |
| - | MeasConfig-DEFAULT | 847 |
| - | MeasGapConfig-GP1 | 847 |
| - | MeasGapConfig-GP2..... | 848 |
| - | MeasGapConfig-CE..... | 848 |
| 6.6 | Default NAS message and information element contents | 848 |
| 6.6.1 | Reference default EPS bearer contexts | 848 |
| 6.6.2 | Reference dedicated EPS bearer contexts..... | 849 |
| 6.6A | Default SMS over SGs message and information element contents..... | 858 |
| 6.6A.1 | CM-sublayer messages | 859 |
| - | CP-ACK..... | 859 |
| - | CP-DATA | 859 |
| 6.6A.2 | Short Message Relay Layer (SM-RL) messages | 859 |
| - | RP-ACK RPDU | 859 |
| - | RP-DATA RPDU..... | 860 |
| 6.6A.3 | Short Message Transfer Layer (SM-TL) messages | 860 |
| - | SMS-DELIVER | 860 |
| - | SMS-SUBMIT | 861 |
| 6.6B | Reference radio bearer configurations..... | 861 |
| 6.6B.1 | SRB and DRB parameters and combinations | 861 |
| 6.6B.1.1 | SRB and DRB parameters..... | 861 |
| 6.6B.1.1.1 | Physical Layer configurations | 861 |
| 6.7 | Timer Tolerances..... | 862 |
| 6.8 | SideLink reference configuration | 862 |

| | | |
|-----------|---|-----|
| 6.8.1 | Reference configuration for Direct Communication..... | 862 |
| 6.8.1.1 | ProSe Direct Communication <i>Preconfiguration</i> for out-of-network coverage operation | 862 |
| 6.8.2 | Reference configuration for V2X Sidelink Communication..... | 865 |
| 6.8.2.1 | V2X Sidelink Communication <i>Preconfiguration</i> for out-of-network coverage operation..... | 865 |
| 7 | Test environment for RRM tests | 865 |
| 7.1 | Requirements of <i>test</i> equipment | 865 |
| 7.2 | RRM Reference system configurations | 865 |
| 7.2.1 | Common parameters for simulated E-UTRA cells | 865 |
| 7.2.1.1 | Combinations of system information blocks | 865 |
| 7.2.1.2 | Scheduling of system information blocks | 865 |
| 7.2.1.3 | Common contents of system information messages | 865 |
| 7.2.2 | Common parameters for simulated GERAN cells | 867 |
| 7.2.2.1 | Mapping of GERAN cells | 867 |
| 7.2A | Generic RRM procedures | 868 |
| 7.2A.1 | UE RRM test states..... | 868 |
| 7.2A.2 | UE Registration, UE Test Mode Activated (State 2A-RF) | 868 |
| 7.2A.2A | UE Registration, UE Test Mode Activated in cell supporting BL/CE UE (State 2A-RF-CE) | 868 |
| 7.2A.3 | Generic Default Radio Bearer Establishment, UE Test Mode Activated (State 3A-RF)..... | 869 |
| 7.2A.3A | DC MCG/SCG Dedicated RB established, UE Test Mode Activated (State 3A-RF-DC1)..... | 869 |
| 7.2A.3AA | Generic Default Radio Bearer Establishment, UE Test Mode Activated in cell supporting BL/CE UE (State 3A-RF-CE) | 869 |
| 7.2A.3B | DC Split Default RB established, UE Test Mode Activated (State 3A-RF-DC2) | 869 |
| 7.2A.3C | Generic Default Radio Bearer Establishment, UE Test Mode Activated, V2X Setup (State 3A-RF-V2X) | 869 |
| 7.2A.4 | Generic Default Radio Bearer Establishment, UE Test Mode Activated, pre-registration on HRPD (State 3B-RF)..... | 869 |
| 7.2A.4.1 | Initial conditions | 869 |
| 7.2A.4.2 | Definition of system information messages | 869 |
| 7.2A.4.3 | Procedure | 870 |
| 7.2A.4.4 | Specific message contents..... | 870 |
| 7.2A.5 | Procedure to configure SCC | 870 |
| 7.2A.6 | Exceptions for feCIC tests..... | 870 |
| 7.2B | Other generic RRM procedures..... | 870 |
| 7.2B.1 | Tracking area updating procedure..... | 870 |
| 7.3 | Default RRC message and information elements contents | 872 |
| 7.3.1 | Contents of RRC messages..... | 872 |
| 7.3.2 | Radio resource control information elements | 872 |
| 7.3.3 | Measurement information elements..... | 873 |
| 7.3A | Default UTRA message and information element contents | 874 |
| 7.3A.1 | UTRA RRC messages | 874 |
| 7.4 | Default NAS message and information elements contents..... | 874 |
| 7.5 | Reference radio bearer configurations..... | 874 |
| 7.5.1 | SRB and DRB parameters | 874 |
| 7.5.1.1 | MAC configurations..... | 874 |
| 8 | NB-IoT test environment..... | 876 |
| 8.1 | NB-IoT Common test environment..... | 876 |
| 8.1.1 | NB-IoT Environmental conditions | 876 |
| 8.1.2 | NB-IoT Common requirements of test equipment..... | 876 |
| 8.1.3 | NB-IoT Reference test conditions | 876 |
| 8.1.3.1 | NB-IoT Test frequencies..... | 876 |
| 8.1.3.1.1 | NB-IoT FDD Mode Test frequencies | 877 |
| 8.1.3.1.2 | NB-IoT TDD Mode Test frequencies..... | 895 |
| 8.1.3.2 | NB-IoT Radio conditions..... | 896 |
| 8.1.3.2.1 | NB-IoT Normal propagation condition | 896 |
| 8.1.3.3 | NB-IoT Physical channel allocations | 896 |
| 8.1.3.3.1 | NB-IoT Antennas | 896 |
| 8.1.3.3.2 | NB-IoT Downlink physical channels and physical signals | 896 |
| 8.1.3.3.3 | NB-IoT Mapping of downlink physical channels and signals to physical resources..... | 897 |
| 8.1.3.3.4 | NB-IoT Uplink physical channels and physical signals | 899 |
| 8.1.3.3.5 | NB-IoT Mapping of uplink physical channels and signals to physical resources | 899 |

| | | |
|-------------|--|-----|
| 8.1.3.4 | NB-IoT Signal levels..... | 899 |
| 8.1.3.4.1 | NB-IoT Downlink signal levels..... | 899 |
| 8.1.3.4.2 | NB-IoT Uplink signal levels..... | 899 |
| 8.1.3.5 | NB-IoT Standard test signals | 900 |
| 8.1.3.5.1 | NB-IoT Downlink test signals..... | 900 |
| 8.1.3.5.2 | NB-IoT Uplink test signals..... | 900 |
| 8.1.3.6 | NB-IoT Physical layer parameters | 900 |
| 8.1.3.6.1 | NB-IoT Downlink physical layer parameters..... | 900 |
| 8.1.4 | NB-IoT Reference system configurations..... | 903 |
| 8.1.4.1 | NB-IoT Simulated network scenarios | 903 |
| 8.1.4.1.1 | NB-IoT Single cell network scenarios..... | 903 |
| 8.1.4.1.2 | NB-IoT single mode multi cell network scenarios | 903 |
| 8.1.4.2 | NB-IoT Simulated cells..... | 904 |
| 8.1.4.3 | NB-IoT Common parameters for simulated cells | 907 |
| 8.1.4.3.1 | NB-IoT Common configurations of system information blocks | 907 |
| 8.1.4.3.1.1 | NB-IoT Combinations of system information blocks | 907 |
| 8.1.4.3.1.2 | NB-IoT Scheduling of system information blocks | 908 |
| 8.1.4.3.2 | NB-IoT Common contents of system information messages | 909 |
| - | MasterInformationBlock-NB | 909 |
| - | SystemInformation-NB | 911 |
| - | SystemInformationBlockType1-NB | 912 |
| 8.1.4.3.3 | NB-IoT Common contents of system information blocks..... | 913 |
| - | SystemInformationBlockType2-NB | 913 |
| - | SystemInformationBlockType3-NB | 914 |
| - | SystemInformationBlockType4-NB | 914 |
| - | SystemInformationBlockType5-NB | 915 |
| - | SystemInformationBlockType14-NB | 916 |
| - | SystemInformationBlockType15-NB | 917 |
| - | SystemInformationBlockType16-NB | 917 |
| - | SystemInformationBlockType20-NB | 917 |
| - | SystemInformationBlockType22-NB | 918 |
| 8.1.5 | NB-IoT Generic procedures..... | 918 |
| 8.1.5.0 | General | 918 |
| 8.1.5.1 | NB-IoT UE test states | 919 |
| 8.1.5.2 | NB-IoT UE Attach, Connected mode (State 2-NB)..... | 920 |
| 8.1.5.2.0 | General | 920 |
| 8.1.5.2.1 | Initial conditions..... | 921 |
| 8.1.5.2.2 | Definition of system information messages..... | 921 |
| 8.1.5.2.3 | Procedure..... | 922 |
| 8.1.5.2.4 | Specific message contents | 924 |
| 8.1.5.2A | NB-IoT UE Attach, Connected mode, UE Test Mode Activated (State 2A-NB) | 924 |
| 8.1.5.2A.0 | General | 924 |
| 8.1.5.2A.1 | Initial conditions..... | 924 |
| 8.1.5.2A.2 | Definition of system information messages..... | 925 |
| 8.1.5.2A.3 | Procedure..... | 925 |
| 8.1.5.2A.4 | Specific message contents | 925 |
| 8.1.5.2B | NB-IoT UE Attach, Connected Mode, UE Test Loopback Activated (State 2B-NB) | 926 |
| 8.1.5.2B.1 | Initial conditions..... | 926 |
| 8.1.5.2B.2 | Definition of system information messages..... | 926 |
| 8.1.5.2B.3 | Procedure..... | 926 |
| 8.1.5.2B.4 | Specific message contents | 926 |
| 8.1.5.3 | NB-IoT UE Registered, Idle Mode (State 3-NB)..... | 927 |
| 8.1.5.3.1 | Initial conditions..... | 927 |
| 8.1.5.3.2 | Definition of system information messages..... | 928 |
| 8.1.5.3.3 | Procedure..... | 928 |
| 8.1.5.3.4 | Specific message contents | 928 |
| 8.1.5.3A | NB-IoT UE Registered, Idle Mode, UE Test Mode Activated (State 3A-NB) | 928 |
| 8.1.5.3A.1 | Initial conditions..... | 928 |
| 8.1.5.3A.2 | Definition of system information messages..... | 928 |
| 8.1.5.3A.3 | Procedure..... | 928 |
| 8.1.5.3A.4 | Specific message contents | 928 |
| 8.1.5.4 | Void..... | 929 |

| | | |
|-------------|---|-----|
| 8.1.5A | Other generic procedures | 929 |
| 8.1.5A.1 | Procedure for IP address allocation in the CP CIoT..... | 929 |
| 8.1.5A.2 | Test procedure to check UE response to Paging for Control Plane CIoT MT access | 929 |
| 8.1.5A.2.1 | Initial conditions..... | 929 |
| 8.1.5A.2.2 | Definition of system information messages..... | 929 |
| 8.1.5A.2.3 | Procedure..... | 930 |
| 8.1.5A.2.4 | Specific message contents | 931 |
| 8.1.5A.3 | Test procedure to check UE initiation of Control Plane CIoT MO user data transfer non-SMS transport | 934 |
| 8.1.5A.3.1 | Initial conditions..... | 934 |
| 8.1.5A.3.2 | Definition of system information messages..... | 934 |
| 8.1.5A.3.3 | Procedure..... | 935 |
| 8.1.5A.3.4 | Specific message contents | 935 |
| 8.1.5A.3A | Test procedure to check UE initiation of Control Plane CIoT MO user data transfer SMS transport | 939 |
| 8.1.5A.3A.1 | Initial conditions..... | 939 |
| 8.1.5A.3A.2 | Definition of system information messages..... | 939 |
| 8.1.5A.3A.3 | Procedure..... | 940 |
| 8.1.5A.3A.4 | Specific message contents | 940 |
| 8.1.5A.4 | Test procedure to check release of PDN connectivity before leaving RRC-CONNECTED for attach without PDN | 944 |
| 8.1.5A.4.1 | Initial conditions..... | 944 |
| 8.1.5A.4.2 | Definition of system information messages..... | 944 |
| 8.1.5A.4.3 | Procedure..... | 945 |
| 8.1.5A.4.4 | Specific message contents | 945 |
| 8.1.5A.5 | Test procedure to check that NB-IoT UE is camped on a new NB-IOT cell | 945 |
| 8.1.5A.6 | Test procedure to check that NB-IoT UE resume RRC connection on a new NB-IOT cell | 946 |
| 8.1.5A.7 | 947 | |
| 8.1.5A.8 | Test procedure to check RRC_CONNECTED state for NB-IoT | 947 |
| 8.1.5A.9 | Test Procedure to establish radio bearers in User Plane..... | 947 |
| 8.1.5A.9.1 | Initial conditions..... | 947 |
| 8.1.5A.9.2 | Definition of system information messages..... | 947 |
| 8.1.5A.9.3 | Procedure..... | 948 |
| 8.1.5A.9.4 | Specific message contents | 948 |
| 8.1.6 | NB-IoT Default RRC message and information elements contents..... | 948 |
| 8.1.6.1 | NB-IoT Contents of RRC messages..... | 949 |
| - | <i>DLInformationTransfer-NB</i> | 949 |
| - | <i>Paging-NB</i> | 949 |
| - | <i>RRCCConnectionReconfiguration-NB</i> | 950 |
| - | <i>RRCCConnectionReconfigurationComplete-NB</i> | 950 |
| - | <i>RRCCConnectionReestablishment-NB</i> | 951 |
| - | <i>RRCCConnectionReestablishmentComplete-NB</i> | 951 |
| - | <i>RRCCConnectionReestablishmentRequest-NB</i> | 952 |
| - | <i>RRCCConnectionReject-NB</i> | 952 |
| - | <i>RRCCConnectionRelease-NB</i> | 953 |
| - | <i>RRCCConnectionRequest-NB</i> | 953 |
| - | <i>RRCCConnectionResume-NB</i> | 954 |
| - | <i>RRCCConnectionResumeComplete-NB</i> | 954 |
| - | <i>RRCCConnectionResumeRequest-NB</i> | 955 |
| - | <i>RRCCConnectionSetup-NB</i> | 955 |
| - | <i>RRCCConnectionSetupComplete-NB</i> | 956 |
| - | <i>UECapabilityEnquiry-NB</i> | 957 |
| - | <i>UECapabilityInformation-NB</i> | 957 |
| - | <i>ULInformationTransfer-NB</i> | 958 |
| 8.1.6.2 | NB-IoT System information blocks | 958 |
| 8.1.6.3 | NB-IoT Radio resource control information elements | 958 |
| - | BCCH-Config-NB-DEFAULT | 958 |
| - | DL-CarrierConfigCommon-NB-DEFAULT..... | 958 |
| - | PCCH-Config-NB-DEFAULT..... | 959 |
| - | NPDCCH-ConfigDedicated-NB-DEFAULT | 959 |
| - | NPDSCH-ConfigCommon-NB-DEFAULT | 959 |
| - | NPRACH-ConfigSIB-NB-DEFAULT..... | 960 |

| | | |
|-----------|--|-----|
| - | NPUSCH-ConfigCommon-NB-DEFAULT | 960 |
| - | NPUSCH-ConfigDedicated-NB-DEFAULT | 960 |
| - | RACH-ConfigCommon-NB-DEFAULT | 961 |
| - | RadioResourceConfigCommonSIB-NB-DEFAULT | 961 |
| - | RadioResourceConfigDedicated-NB-SRB | 962 |
| - | RadioResourceConfigDedicated-NB-DRB(n) | 962 |
| - | RadioResourceConfigDedicated-NB-DRB-ADD(bid) | 963 |
| - | RadioResourceConfigDedicated-NB-DRB-REL(bid) | 963 |
| - | RLC-Config-NB-SRB-RECONFIG..... | 963 |
| - | SRB-ToAddModList-NB-RECONFIG..... | 964 |
| - | UplinkPowerControlCommon-NB-DEFAULT | 964 |
| - | UplinkPowerControlDedicated-NB-DEFAULT | 964 |
| - | RadioResourceConfigDedicated-NB-DRB-Mod | 964 |
| 8.1.6.4 | NB-IoT Security control information elements..... | 965 |
| 8.1.6.5 | NB-IoT Other information elements | 965 |
| - | RRC-TransactionIdentifier-DL | 965 |
| - | RRC-TransactionIdentifier-UL | 965 |
| 8.1.7 | NB-IoT Default NAS message and information element contents | 965 |
| 8.1.7A | NB-IoT Default TC message and information element contents | 965 |
| 8.1.8 | NB-IoT Reference radio bearer configurations..... | 966 |
| 8.1.8.1 | General | 966 |
| 8.1.8.2 | NB-IoT SRB and DRB parameters and combinations | 966 |
| 8.1.8.2.1 | NB-IoT SRB and DRB parameters..... | 966 |
| 8.1.9 | NB-IoT Common test USIM parameters | 968 |
| 8.1.9.1 | General | 968 |
| 8.2 | NB-IoT Test environment for RF test | 968 |
| 8.2.1 | NB-IoT Requirements of test equipment | 968 |
| 8.2.2 | NB-IoT RF Reference system configurations..... | 969 |
| 8.2.2.1 | NB-IoT Common parameters for simulated E-UTRA cells | 969 |
| 8.2.2.1.1 | NB-IoT Combinations of system information blocks..... | 969 |
| 8.2.2.1.2 | NB-IoT Scheduling of system information blocks | 969 |
| 8.2.2.1.3 | NB-IoT Common contents of system information messages | 969 |
| 8.2.2A | NB-IoT Generic RF procedures..... | 969 |
| 8.2.3 | NB-IoT Default RRC message and information elements contents..... | 969 |
| 8.2.3.1 | NB-IoT Radio resource control information elements | 969 |
| 8.2.4 | NB-IoT Default NAS message and information elements contents..... | 970 |
| 8.2.5 | NB-IoT Reference radio bearer configurations..... | 970 |
| 8.2.5.1 | NB-IoT SRB and DRB parameters | 970 |
| 8.3 | NB-IoT Test environment for Signalling test..... | 970 |
| 8.3.1 | NB-IoT Requirements of test equipment | 970 |
| 8.3.2 | NB-IoT Reference test conditions | 970 |
| 8.3.2.1 | NB-IoT Physical channel allocations | 970 |
| 8.3.2.2 | NB-IoT Signal levels..... | 971 |
| 8.3.2.2.1 | NB-IoT Downlink signal levels..... | 971 |
| 8.3.2.3 | NB-IoT Default test frequencies | 971 |
| 8.3.2.3.1 | NB-IoT Test frequencies for signalling test | 971 |
| 8.3.3 | NB-IoT Reference system configurations..... | 972 |
| 8.3.3.1 | NB-IoT Default parameters specific for simulated cells | 973 |
| 8.3.3.1.1 | Intra-frequency neighbouring cell list in SIB4-NB for NB-IoT cells | 973 |
| 8.3.3.1.2 | Inter-frequency carrier frequency list in SIB5-NB for NB-IoT cells..... | 973 |
| 8.3.3.2 | NB-IoT Default configurations for NAS test cases..... | 974 |
| 8.3.3.3 | NB-IoT Cell configurations | 975 |
| 8.3.4 | NB-IoT Generic signalling procedures | 975 |
| 8.3.4.1 | NB-IoT Initial UE states and setup procedures..... | 975 |
| 8.3.4.2 | NB-IoT Reference procedures and test procedures for TTCN development | 975 |
| 8.3.4.3 | NB-IoT Test case postambles for TTCN development | 975 |
| 8.3.5 | NB-IoT Default RRC message and information element contents | 975 |
| 8.3.6 | NB-IoT Default NAS message and information element contents | 975 |
| 8.3.7 | NB-IoT Timer tolerances | 975 |
| 8.4 | NB-IOT Test environment for RRM tests..... | 975 |
| 8.4.1 | NB-IoT Requirements of test equipment | 975 |
| 8.4.2 | NB-IoT RRM Reference system configurations..... | 976 |

| | | |
|-------------------------------|---|-------------|
| 8.4.2.1 | NB-IoT Common parameters for simulated NB-IoT cells..... | 976 |
| 8.4.2.1.1 | NB-IoT Combinations of system information blocks..... | 976 |
| 8.4.2.1.2 | NB-IoT Scheduling of system information blocks | 976 |
| 8.4.2.1.3 | NB-IoT Common contents of system information messages | 976 |
| 8.4.2A | NB-IoT Generic RRM procedures..... | 976 |
| 8.4.3 | NB-IoT Default RRC message and information elements contents..... | 976 |
| 8.4.3.1 | NB-IoT Radio resource control information elements | 976 |
| 8.4.4 | NB-IoT Default NAS message and information elements contents..... | 976 |
| 8.4.5 | NB-IoT Reference radio bearer configurations..... | 977 |
| 8.4.5.1 | NB-IoT SRB and DRB parameters | 977 |
| Annex A (informative): | Connection Diagrams | 978 |
| Annex B (informative): | Change history | 1118 |
| History | | 1160 |

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

- 1 presented to TSG for information;
- 2 presented to TSG for approval;
- 3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

The definition of the Conformance Tests for UE in E-UTRAN will be a complex task as the complete test suite covers RF, EMC and Protocol aspects of the UE.

Each test requires a Test Environment to be defined in which the UE has to operate to defined standards, constraints and performance. The overall task can be simplified if there are a number of well defined and agreed Common Test Environments where every one can be used for a number of tests. Hence the present document defines testing conditions that are common to several tests avoiding the need to duplicate the same information for every single test.

The present document defines default values for a variety of common areas. Where values are not specified in test cases, the defaults in the present document will apply. If specified, the test case values will take precedence.

1 Scope

The present document contains definitions of reference conditions and test signals, default parameters, reference radio bearer configurations used in radio bearer interoperability testing, common radio bearer configurations for other test purposes, common requirements for test equipment and generic set-up procedures for use in conformance tests for the 3rd Generation E-UTRAN User Equipment (UE).

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document unless the context in which the reference is made suggests a different Release is relevant (information on the applicable release in a particular context can be found in e.g. test case title, description or applicability, message description or content).

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 23.003: "Numbering, addressing and identification".
- [3] 3GPP TS 23.122: "Non-Access-Stratum functions related to Mobile Station (MS) in idle mode".
- [4] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".
- [5] 3GPP TS 34.108: "Common Test Environments for User Equipment (UE); Conformance testing".
- [6] 3GPP TS 34.109: "Terminal logical test interface; Special conformance testing functions".
- [7] 3GPP TS 34.123-1: "User Equipment (UE) conformance specification; Part 1: Protocol conformance specification".
- [8] 3GPP TS 34.123-2: "User Equipment (UE) conformance specification; Part 2: Implementation conformance statement (ICS) specification".
- [9] 3GPP TS 34.123-3: "User Equipment (UE) conformance specification; Part 3: Abstract test suites (ATs)".
- [10] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2".
- [11] 3GPP TS 36.302: "Evolved Universal Terrestrial Radio Access (E-UTRA); Services provided by the physical layer".
- [12] 3GPP TS 36.304: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode".
- [13] 3GPP TS 36.306: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities".
- [14] 3GPP TS 36.321: "Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification".
- [15] 3GPP TS 36.322: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Link Control (RLC) protocol specification".

- [16] 3GPP TS 36.323: "Evolved Universal Terrestrial Radio Access (E-UTRA); Packet Data Convergence Protocol (PDCP) specification".
- [17] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol Specification".
- [18] 3GPP TS 36.523-1: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification".
- [19] 3GPP TS 36.523-2: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 2: Implementation Conformance Statement (ICS) proforma specification".
- [20] 3GPP TS 36.523-3: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 3: Abstract Test Suites (ATS)".
- [21] 3GPP TS 36.521-1: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: conformance testing".
- [22] 3GPP TS 36.521-2: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 2: Implementation Conformance Statement (ICS)".
- [23] 3GPP TR 24.801: "3GPP System Architecture Evolution; CT WG1 aspects".
- [24] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Access Network (E-UTRAN) access".
- [25] 3GPP TS 51.010-1: "Mobile Station (MS) conformance specification; Part 1: Conformance specification".
- [26] ISO/IEC 9646 (all parts): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework".
- [27] 3GPP TS 36.101: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception".
- [28] 3GPP TS 24.301: "Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3".
- [29] 3GPP TS 36.213: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures".
- [30] 3GPP TS 36.104: "Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception".
- [31] 3GPP TS 33.401: "3GPP System Architecture Evolution (SAE); Security architecture".
- [32] 3GPP TS 31.101: "UICC-terminal interface; Physical and logical characteristics".
- [33] 3GPP TS 31.102: "Characteristics of the Universal Subscriber Identity Module (USIM) application".
- [34] 3GPP TS 36.521-3: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 3: Radio Resource Management conformance testing".
- [35] 3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation".
- [36] 3GPP2 TSG-C C.S0038-B v1.0: "Signalling Conformance Specification for High Rate Packet Data Air Interface".

- [37] 3GPP2 TSG-C C.S0043-A v1.0: "Signalling Conformance Test Specification for cdma2000 Spread Spectrum Systems".
- [38] 3GPP TS 36.509: "Evolved Universal Terrestrial Radio Access (E-UTRA); Special conformance testing functions for User Equipment (UE)"
- [39] 3GPP TS 36.133: "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for support of radio resource management"
- [40] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3"
- [41] 3GPP TS 23.402: "Architecture enhancements for non-3GPP accesses"
- [42] 3GPP2 X.S0057-0-B v1.0 "E-UTRAN - eHRPD Connectivity and Interworking: Core Network Aspects"
- [43] 3GPP TS 34.229-1: "Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification "
- [44] 3GPP2 C.S0024-B v3.0: "cdma2000 High Rate Packet Data Air Interface Specification".
- [45] 3GPP TS 31.103: "Characteristics of the IP Multimedia Services Identity Module (ISIM) application".
- [46] 3GPP TS 34.229-1: "Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification".
- [47] 3GPP TS 34.229-3: "Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); User Equipment (UE) conformance specification; Part 3: Abstract Test Suite (ATS)".
- [48] 3GPP2 C.S0065-B v2.0: "cdma2000 Application on UICC for Spread Spectrum Systems".
- [49] 3GPP2 C.S0005-F v1.0: "Upper Layer (Layer 3) Signalling Standard for cdma2000 Spread Spectrum Systems – Release A, Addendum 2".
- [50] 3GPP TS 34.121-1: "User Equipment (UE) conformance specification; Radio transmission and reception (FDD); Part 1: Conformance specification "
- [51] 3GPP TS 34.122: "Terminal conformance specification; Radio transmission and reception (TDD)".
- [52] GSMA PRD IR.92: "IMS Profile for Voice and SMS".
- [53] 3GPP TS 24.302: "Access to the 3GPP Evolved Packet Core (EPC) via non-3GPP access networks; Stage 3".
- [54] Void
- [55] 3GPP TS 33.402: "3GPP System Architecture Evolution (SAE); Security aspects of non-3GPP accesses".
- [56] GSMA PRD IR.88: "LTE and EPC Roaming Guidelines".
- [57] IETF RFC 5996: "Internet Key Exchange Protocol Version 2 (IKEv2)".
- [58] 3GPP TS 24.334: "Proximity-services (ProSe) User Equipment (UE) to ProSe function protocol aspects; Stage 3".
- [59] 3GPP TS 23.303: "Proximity-based services (ProSe); Stage 2"
- [60] 3GPP TS 33.303: "Proximity-based Services (ProSe); Security aspects"

- [61] 3GPP TS 33.220: "Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA)"
- [62] 3GPP TS 36.212: "Multiplexing and channel coding"
- [63] IETF RFC 4346: "The Transport Layer Security (TLS) Protocol Version 1.1".
- [64] 3GPP TS 33.310: "Network Domain Security (NDS); Authentication Framework (AF)".
- [65] 3GPP TS 26.114: "IP Multimedia Subsystem (IMS); Multimedia Telephony; Media handling and interaction".
- [66] 3GPP TS 24.483: "Mission Critical Push To Talk (MCPTT) Management Object (MO)".
- [67] 3GPP TS 38.508-1: "5GS; Common test environments for User Equipment (UE) conformance testing"
- [68] 3GPP TS 37.571-1: "User Equipment (UE) conformance specification for UE positioning; Part 1: Terminal conformance"
- [69] 3GPP TS 37.571-5: "User Equipment (UE) conformance specification for UE positioning; Part 5: Test scenarios and assistance data"
- [70] STANAG 4294: "NATO STANAG 4294. Navstar Global Positioning System (GPS) System Characteristics"
- [71] 3GPP TS 38.523-1: "5GS; User Equipment (UE) conformance specification; Part 1: Protocol Conformance Specification"
- [72] 3GPP TS 38.133: "New Radio (NR); Requirements for support of radio resource management".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1] apply, unless specified below:

B: a value followed by "B" is a binary value.

H: a value followed by "H" is a hexadecimal value.

3.2 Symbols

For the purposes of the present document, the following symbols apply:

| | |
|---------------|--|
| N_{DL} | Downlink EARFCN |
| N_{RB} | Transmission bandwidth configuration, expressed in units of resource blocks |
| N_{RB_agg} | Aggregated Transmission Bandwidth Configuration. The number of the aggregated RBs within the fully allocated Aggregated Channel bandwidth. |
| N_{UL} | Uplink EARFCN |

3.3 Abbreviations

For the purposes of the present document, the abbreviations specified in TR 21.905 [1] apply, with any additional abbreviations specified below:

| | |
|---------|---|
| 1xRTT | 1x Radio Transmission Technology |
| BR | Bandwidth Reduced |
| BR-BCCH | Bandwidth Reduced Broadcast Control Channel |
| BL | Bandwidth reduced Low complexity |

| | |
|--------|--|
| CA | Carrier Aggregation |
| CC | Component Carrier |
| CE | Coverage Enhancement |
| DRB | (user) Data Radio Bearer |
| EARFCN | E-UTRA Absolute Radio Frequency Channel Number |
| ECM | EPS Connection Management |
| eIMTA | Enhanced Interference Management and Traffic Adaptation |
| EMM | EPS Mobility Management |
| ENB | Evolved Node B |
| EPRE | Energy Per Resource Element |
| ESM | EPS Session Management |
| HRPD | High Rate Packet Data |
| MAC | Media Access Control |
| MBS | Metropolitan Beacon System |
| MCS | Mission Critical Services |
| MTC | Machine Type Communication |
| OFDM | Orthogonal Frequency Division Multiplexing |
| RBs | Resource Blocks |
| ROHC | Robust Header Compression |
| SS | System Simulator |
| TH | Temperature High |
| TL | Temperature Low |
| TP | Transmission Point |
| V2X | Vehicle-to-Everything |
| VH | Higher extreme Voltage |
| VL | Lower extreme Voltage |
| xCH_RA | xCH-to-RS EPRE ratio for the channel xCH in all transmitted OFDM symbols not containing RS |
| xCH_RB | xCH-to-RS EPRE ratio for the channel xCH in all transmitted OFDM symbols containing RS |

4 Common test environment

4.1 Environmental conditions

The requirements in this clause apply to all types of UE(s).

4.1.1 Temperature

The UE shall fulfil all the requirements in the full temperature range of:

Table 4.1.1-1: Temperature Test Environment

| | |
|----------------|---|
| +15°C to +35°C | for normal conditions (with relative humidity up to 75 %) |
| -10°C to +55°C | for extreme conditions (see IEC publications 68-2-1 and 68-2-2) |

Outside this temperature range the UE, if powered on, shall not make ineffective use of the radio frequency spectrum. In no case shall the UE exceed the transmitted levels as defined in TS 36.101 [27] for extreme operation.

The normative reference for this requirement is TS 36.101 [27] Annex E.1.

Some tests are performed also in extreme temperature conditions. These test conditions are denoted as TL (temperature low, -10°C) and TH (temperature high, +55°C).

4.1.2 Voltage

The UE shall fulfil all the requirements in the full voltage range, i.e. the voltage range between the extreme voltages.

The manufacturer shall declare the lower and higher extreme voltages and the approximate shutdown voltage. For the equipment that can be operated from one or more of the power sources listed below, the lower extreme voltage shall not be higher, and the higher extreme voltage shall not be lower than that specified below.

Table 4.1.2-1: Voltage Test Environment

| Power source | Lower extreme voltage | Higher extreme voltage | Normal conditions voltage |
|-----------------------------|-----------------------|------------------------|---------------------------|
| AC mains | 0,9 * nominal | 1,1 * nominal | nominal |
| Regulated lead acid battery | 0,9 * nominal | 1,3 * nominal | 1,1 * nominal |
| Non regulated batteries: | | | |
| Leclanché | 0,85 * nominal | Nominal | Nominal |
| Lithium | 0,95 * nominal | 1,1 * Nominal | 1,1 * Nominal |
| Mercury/nickel & cadmium | 0,90 * nominal | | Nominal |

Outside this voltage range the UE if powered on, shall not make ineffective use of the radio frequency spectrum. In no case shall the UE exceed the transmitted levels as defined in TS 36.101 [27] for extreme operation. In particular, the UE shall inhibit all RF transmissions when the power supply voltage is below the manufacturer declared shutdown voltage.

The normative reference for this requirement is TS 36.101 [27] Annex E.2.

Some tests are performed also in extreme voltage conditions. These test conditions are denoted as VL (lower extreme voltage) and VH (higher extreme voltage).

4.2 Common requirements of test equipment

Mobile conformance testing can be categorized into 3 distinct areas:

- RF Conformance Testing.
- EMC Conformance Testing.
- Signalling Conformance Testing.

The test equipment required for each category of testing may or not be different, depending on the supplier of the test equipment. However, there will be some generic requirements of the test equipment that are essential for all three categories of test, and these are specified in this clause.

In addition, there will be requirements to test operation in multi-system configurations (e.g. EUTRAN plus UTRAN). However, these would not form a common test equipment requirement for the three test areas and are not considered in the present document.

The test equipment shall use the same number of Tx antennas for all parts of the tests, Initial condition and Test procedure, as specified in the minimum requirement.

4.2.1 General functional requirements

NOTE: This clause has been written such that it does not constrain the implementation of different architectures and designs of test equipment.

All test equipment used to perform conformance testing on a UE shall provide a platform suitable for testing UE's that are either:

- a) FDD Mode; or
- b) TDD Mode; or
- c) both FDD/TDD Modes.

All test equipment shall provide (for the mode(s) supported) the following minimum functionality.

- The capability of emulating a single E-UTRA cell with the appropriate channels to allow the UE to register on the cell.

- The capability to allow the UE to set up an RRC connection with the system simulator, and to maintain the connection for the duration of the test.
- The capability (for the specific test):
 - to select and support an appropriate radio bearer for the downlink;
 - to set the appropriate downlink power levels;
 - to set up and support the appropriate radio bearer for the uplink;
 - to set and control the uplink power levels.

4.2.2 Minimum functional requirements

4.2.2.1 Supported Cell Configuration

The System Simulator shall provide the capability to simulate a minimum number of cells (of the appropriate E-UTRA Mode) whose number and capabilities are governed by the test cases that need to be performed (test cases are defined in 3GPP TS 36.523-1 [18](Signalling), 3GPP TS 36.521-1 [21] (RF) and 3GPP TS 36.521-3 [34] (RRM). For this purpose test cases can be split into two different categories: Tests that require only one cell and Tests that require several cells.

To perform test cases requiring one cell, the system simulator must provide a cell offering the capabilities to perform all the test cases in this category.

To perform test cases requiring several cells, additional cells must be provided by the system simulator. The additional cells, however, need only provide a minimum set of capabilities so as to support the first cell in carrying out the multicell test cases.

The type and number of channels (especially physical channels) constitute an important set of capabilities for a cell. The following clauses list possible channels that may be supported by the SS. Each channel type, however, and the minimum number of channels needed are only mandatory if specific test cases require them.

The mapping between Logical and Transport channels is as described in 3GPP TS 36.321 [14]. Similarly the mapping between Transport channels and Physical channels is as described in 3GPP TS 36.211, TS 36.302 and TS 36.212. The reference measurement channels (mapping between Transport channels and Physical channels for PDSCH/PDCCH) are defined in 3GPP TS 36.521-1[21] annex A

4.2.2.1.1 Supported Channels

4.2.2.1.1.1 Logical channels

| Logical channel | Minimum number | Comments |
|-----------------|----------------|---|
| BCCH | 1 | |
| BR-BCCH | 1 | For testing of BL/CE UE. |
| CCCH | 1 | |
| DCCH | 2 | |
| PCCH | 1 | |
| DTCH | n <FFS> | Depending on SS's support for RB service testing (See clause 12 of 3GPP TS 36.523-1 [18]) |

4.2.2.1.1.2 Transport channels

| Transport channel | Minimum number | Comments |
|-------------------|----------------|----------|
| BCH | 1 | |
| PCH | 1 | |
| RACH | 1 | |
| DL-SCH | n <FFS> | |
| UL-SCH | n <FFS> | |

4.2.2.1.1.3 Physical channels

| Physical channel | Minimum number | Comments |
|------------------|----------------|--|
| PBCH | 1 | Physical Broadcast Channel |
| PCFICH | 1 | The physical control format indicator channel carries information about the number of OFDM symbols used for transmission of PDCCHs in a subframe |
| PDCCH | 1 | The physical downlink control channel carries scheduling assignments and other control information. |
| MPDCCH | 1 | The MTC physical downlink control channel carries scheduling assignments and other control information for BL/CE UE. |
| PDSCH | 1 | Physical Downlink Shared Channel |
| PHICH | [1] | The PHICH carries the hybrid-ARQ ACK/NAK |
| PUCCH | 1 | The physical uplink control channel carries uplink control information |
| PUSCH | 1 | Physical Uplink Shared Channel |
| PRACH | 1 | Physical Random Access Channel |

4.2.2.1.1.4 Physical signals

| Physical signal | Minimum number | Comments |
|----------------------------------|----------------|-----------------------|
| Demodulation reference signal | NA | UL |
| Sounding Reference signal | NA | UL TBD, if applicable |
| Cell-specific Reference Signal | NA | DL |
| UE-specific reference signal | NA | DL |
| Primary synchronisation signal | NA | DL |
| Secondary synchronisation signal | NA | DL |

4.2.2.2 Support of T_{cell} timing offset

The timing offset in terms of frame start timing between any pair of TDD cells shall be $< [3\mu\text{s}]$. For FDD cells there is no such restriction.

4.2.2.3 Supported Sidelink Configuration

The System Simulator shall provide the capability to simulate a minimum number of UEs whose number and capabilities are governed by the test cases that need to be performed (test cases are defined in 3GPP TS 36.523-1 [18] (Signalling), 3GPP TS 36.521-1 [21] (RF) and 3GPP TS 36.521-3 [34] (RRM)). For this purpose test cases can be split into two different categories: Tests that require only one simulated UE and Tests that require several simulated UEs.

To perform test cases requiring one simulated UE, the system simulator shall provide a UE offering the capabilities to perform all the test cases in this category.

The type and number of sidelink channels (especially physical channels) constitute an important set of capabilities for a simulated UE. The following clauses list possible sidelink channels that may be supported by the SS. Each channel type, however, and the minimum number of channels needed are only mandatory if specific test cases require them.

The mapping between Logical and Transport channels is as described in 3GPP TS 36.321 [14]. Similarly the mapping between Transport channels and Physical channels is as described in 3GPP TS 36.211, TS 36.302 and TS 36.212.

4.2.2.3.1 Supported Sidelink Channels

4.2.2.3.1.1 Logical channels

| Logical channel | Minimum number | Comments |
|-----------------|----------------|----------|
|-----------------|----------------|----------|

| | | |
|-------|---|--|
| STCH | 1 | |
| SBCCH | 1 | |

4.2.2.3.1.2 Transport channels

| Transport channel | Minimum number | Comments |
|-------------------|----------------|----------|
| SL-BCH | 1 | |
| SL-DCH | 1 | |
| SL-SCH | 1 | |

4.2.2.3.1.3 Physical channels

| Physical channel | Minimum number | Comments |
|------------------|----------------|-------------------------------------|
| PSBCH | 1 | Physical Sidelink Broadcast CHannel |
| PSCCH | 1 | Physical Sidelink Control CHannel |
| PSDCH | 1 | Physical Sidelink Discovery CHannel |
| PSSCH | 1 | Physical Sidelink Shared CHannel |

4.2.2.3.1.4 Physical signals

| Physical signal | Minimum number | Comments |
|----------------------------------|----------------|--------------------------|
| Sidelink Synchronization Signals | NA | Sidelink Synchronization |

4.3 Reference test conditions

This clause contains the reference test conditions, which apply to all test cases unless otherwise specified.

4.3.1 Test frequencies

The test frequencies are based on the E-UTRA frequency bands defined in the core specifications.

The raster spacing is 100 KHz.

E-UTRA/FDD is designed to operate in paired bands of 3GPP TS 36.101 [27]. The reference test frequencies for the RF and Signalling test environment for each of the operating bands are defined in sub clause 4.3.1.1.

E-UTRA/TDD is designed to operate in unpaired bands of 3GPP TS 36.101 [27]. The reference test frequencies for the RF and Signalling test environment for each of the operating bands are defined in sub clause 4.3.1.2.

For non-CA Signalling testing, E-UTRA frequency to be tested is mid range and E-UTRA channel bandwidth to be tested is 5MHz for all operating bands for all test cases as the default configuration unless specific channel bandwidth is specified for the operating band below:

For Band 11, 13, 18 and 20, channel bandwidth to be tested is 10 MHz as the default configuration.

For Band 38, 39, 40, 41 and 42, channel bandwidth to be tested is 20 MHz as the default configuration.

For operating band 46, the test frequencies defined in Clause 4.3.1.2.14 and 4.3.1.2.14A are derived based on the rules defined in TS 36.104 [30], table 5.7.3-1 Note 3.

For CA Signalling testing with two component carriers, E-UTRA frequencies to be tested are according to sub clause 6.2.3.2 and the E-UTRA channel bandwidth combination is according to Table 4.3.1-1.

Table 4.3.1-1: Default E-UTRA channel bandwidth combinations for CA Signalling testing with two component carriers

| CA configuration (Band(s),BW Class,BW Combination Set) | CA Channel Bandwidth combination carrier 1 + carrier 2 [MHz + MHz] | Comment |
|--|---|--|
| Intra-band contiguous and Bandwidth Class C | 20+20 | This channel bandwidth combination is used for all Intra-band contiguous CA configurations using Bandwidth Class C unless specific channel bandwidth combination is specified for a CA configuration or CA Bandwidth Combination Set by specific entries in this table below. |
| Intra-band contiguous and Bandwidth Class B | 5+5 | This channel bandwidth combination is used for all Intra-band contiguous CA configurations using Bandwidth Class B unless specific channel bandwidth combination is specified for a CA configuration or CA Bandwidth Combination Set by specific entries in this table below. |
| Inter-band CA and CA Bandwidth Class Combination A-A | 10 + 10 | This channel bandwidth combination is used for all Inter-band CA configurations using Bandwidth Class Combination A-A unless specific channel bandwidth combination is specified for a CA configuration or CA Bandwidth Combination Set by specific entries in this table below. |
| CA_1A-19A | 15 + 10 | This channel bandwidth combination is used for Inter-band CA configuration CA_1A-19A. |
| CA_1A-21A | 15 + 15 | This channel bandwidth combination is used for Inter-band CA configuration CA_1A-21A. |
| CA_1A-41A | 10 + 20 | This channel bandwidth combination is used for Inter-band CA configuration CA_1A-41A. |
| CA_1A-42A | 15 + 20 | This channel bandwidth combination is used for Inter-band CA configuration CA_1A-42A. |
| CA_3A-19A | 20 + 10 | This channel bandwidth combination is used for Inter-band CA configuration CA_3A-19A. |
| CA_3A-41A | 20 + 20 | This channel bandwidth combination is used for Inter-band CA configuration CA_3A-41A. |
| CA_3A-42A | 20 + 20 | This channel bandwidth combination is used for Inter-band CA configuration CA_3A-42A. |
| CA_19A-21A | 10 + 15 | This channel bandwidth combination is used for Inter-band CA configuration CA_19A-21A. |
| CA_19A-42A | 10 + 20 | This channel bandwidth combination is used for Inter-band CA configuration CA_19A-42A. |
| CA_21A-42A | 15 + 20 | This channel bandwidth combination is used for Inter-band CA configuration CA_21A-42A. |
| CA_25A-26A | 20 + 20 | This channel bandwidth combination is used for Inter-band CA configuration CA_25A-26A. |
| CA_26A-41A | 10 + 20 | This channel bandwidth combination is used for Inter-band CA configuration CA_26A-41A. |
| CA_28A-41A | 10 + 20 | This channel bandwidth combination is used for Inter-band CA configuration CA_28A-41A. |

| | | |
|------------|---------|---|
| CA_28A-42A | 10 + 20 | This channel bandwidth combination is used for Inter-band CA configuration CA_28A-42A. |
| CA_39A-41A | 20+20 | This channel bandwidth combination is used for Inter-band CA configuration CA_39A-41A. |
| CA_41C-41C | 20 + 20 | This channel bandwidth combination is used for Intra-band CA configuration CA_41C-41C. |
| CA_41A-42A | 20 + 20 | This channel bandwidth combination is used for Inter-band CA configuration CA_41A-42A. |
| CA_39C | 20 + 10 | This channel bandwidth combination is used for Intra-band contiguous CA configuration CA_39C. |

For CA Signalling testing with three component carriers, E-UTRA frequencies to be tested are according to sub clause 6.2.3.2 and the E-UTRA channel bandwidth combination is according to Table 4.3.1-2.

Table 4.3.1-2: Default E-UTRA channel bandwidth combinations for CA Signalling testing with three component carriers

| CA configuration (Band(s),BW Class,BW Combination Set) | CA Channel Bandwidth combination carrier 1 + carrier 2 + carrier 3 [MHz + MHz + MHz] | Comment |
|---|---|---|
| Intra-band contiguous and Bandwidth Class D | 20+20+20 | This channel bandwidth combination is used for all Intra-band contiguous CA configurations using Bandwidth Class D unless specific channel bandwidth combination is specified for a CA configuration or CA Bandwidth Combination Set by specific entries in this table below. |
| Inter-band CA and CA Bandwidth Class Combination A-A-A | 10+10+10 | This channel bandwidth combination is used for all Inter-band contiguous CA configurations using Bandwidth Class Combination A-A-A unless specific channel bandwidth combination is specified for a CA configuration or CA Bandwidth Combination Set by specific entries in this table below. |
| Mixed Inter-band and Intra- band contiguous CA and CA Bandwidth Class Combination A-C or C-A | 10+20+20 (A-C) or 20+20+10 (C-A) | This channel bandwidth combination is used for all mixed Inter-band and Intra-band contiguous CA configurations using Bandwidth Class combination A-C or C-A unless specific channel bandwidth combination is specified for a CA configuration or CA Bandwidth Combination Set by specific entries in this table below. |
| Mixed Inter-band and Intra- band contiguous CA and CA Bandwidth Class Combination A-B or B-A | 10+5+5 (A-B) or 5+5+10 (B-A) | This channel bandwidth combination is used for all mixed Inter-band and Intra-band contiguous CA configurations using Bandwidth Class combination A-B or B-A unless specific channel bandwidth combination is specified for a CA configuration or CA Bandwidth Combination Set by specific entries in this table below. |

For RF testing, E-UTRA frequencies to be tested are low range, mid range and high range for all supported operating bands by default. E-UTRA channel bandwidths to be tested are lowest bandwidth, 5MHz bandwidth and highest bandwidth for all supported operating bands by default. Actual test configurations are specified case by case and stated in test case itself as the initial conditions.

The lowest bandwidth, 5MHz bandwidth and highest bandwidth are selected from the combined table which includes nominal and additional channel bandwidth.

In the case 5MHz bandwidth is not supported by the UE, E-UTRA channel bandwidth to be tested is only lowest bandwidth and highest bandwidth.

If channel bandwidth to be tested is equal to the lowest or highest channel bandwidth, then the same channel bandwidth is not required to be tested twice.

In addition to the default channel bandwidths to be tested specified above, for Bands 2, 4, 18, 19, 20 and 25, an industry requirement of testing in 10MHz channel bandwidth is allowed for test cases in chapters 6 and 7 in TS 36.521-1 [21].

Editor's note: For RF testing, an industry requirement of testing in 10MHz channel bandwidth is requested for Bands 2, 4, 18, 19, 20 and 25 for test cases in chapters 6 and 7 in TS 36.521-1 [21], changing the existing test points to address this is being discussed in RAN5 and will be considered pending technical justification.

For A-GNSS, MBS, WLAN and BLE testing in TS 37.571-1 [68], the E-UTRA frequency and channel bandwidth to be tested follow the same rules as for Signalling testing above.

For intra-band non-contiguous CA (CA_XA-XA) test frequencies have been defined following the basic assumption that CC1 uses the Low Range frequency of the band, while CC2 the High Range frequency. Additional test frequencies not following this rule, are (should be) identified by notes.

For sidelink direct communication and sidelink direct discovery, operating band and bandwidth are specified in section 5.5D and 5.6D in TS 36.101 [27]. Sidelink direct communication and sidelink direct discovery operates in half duplex mode using the uplink frequency of corresponding band.

For V2X sidelink communication, operating band and bandwidth are specified in section 5.5G and 5.6G in TS 36.101 [27]. V2X sidelink communication operates in half duplex mode using the uplink frequency of corresponding band.

4.3.1.1 FDD Mode Test frequencies

4.3.1.1.1 FDD reference test frequencies for operating band 1

Table 4.3.1.1.1-1: Test frequencies for E-UTRA channel bandwidth for operating band 1

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 18025 | 1922.5 | 25 | 2112.5 |
| | 10 | 18050 | 1925 | 50 | 2115 |
| | 15 | 18075 | 1927.5 | 75 | 2117.5 |
| | 20 | 18100 | 1930 | 100 | 2120 |
| Mid Range | 5/10/15/20 | 18300 | 1950 | 300 | 2140 |
| High Range | 5 | 18575 | 1977.5 | 575 | 2167.5 |
| | 10 | 18550 | 1975 | 550 | 2165 |
| | 15 | 18525 | 1972.5 | 525 | 2162.5 |
| | 20 | 18500 | 1970 | 500 | 2160 |

4.3.1.1.1A FDD reference test frequencies for CA in operating band 1

Table 4.3.1.1.1A-1: Test frequencies for CA_1C

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | |
|-------|---|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low | 75+75 | 75 | 18075 | 1927.5 | 75 | 2117.5 | 75 | 18225 | 1942.5 | 225 | 2132.5 |
| | 100+100 | 100 | 18100 | 1930 | 100 | 2120 | 100 | 18298 | 1949.8 | 298 | 2139.8 |
| Mid | 75+75 | 75 | 18225 | 1942.5 | 225 | 2132.5 | 75 | 18375 | 1957.5 | 375 | 2147.5 |
| | 100+100 | 100 | 18201 | 1940.1 | 201 | 2130.1 | 100 | 18399 | 1959.9 | 399 | 2149.9 |
| High | 75+75 | 75 | 18375 | 1957.5 | 375 | 2147.5 | 75 | 18525 | 1972.5 | 525 | 2162.5 |
| | 100+100 | 100 | 18302 | 1950.2 | 302 | 2140.2 | 100 | 18500 | 1970 | 500 | 2160 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.1.1A-2: Test frequencies for CA_1A-1A

| Test Frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | Wgap [MHz] | CC2 Note1 | | | | |
|----------------------|---|--------------|-----------------|--------------------------|-----------------|--------------------------|---------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Max WGap | 25+25 | 25 | 18025 | 1922.5 | 25 | 2112.5 | 50 | 25 | 18575 | 1977.5 | 575 | 2167.5 |
| | 25+50 | 25 | 18025 | 1922.5 | 25 | 2112.5 | 45 | 50 | 18550 | 1975 | 550 | 2165 |
| | | 50 | 18050 | 1925 | 50 | 2115 | 45 | 25 | 18575 | 1977.5 | 575 | 2167.5 |
| | 25+75 | 25 | 18025 | 1922.5 | 25 | 2112.5 | 40 | 75 | 18525 | 1972.5 | 525 | 2162.5 |
| | | 75 | 18075 | 1927.5 | 75 | 2117.5 | 40 | 25 | 18575 | 1977.5 | 575 | 2167.5 |
| | 25+100 | 25 | 18025 | 1922.5 | 25 | 2112.5 | 35 | 100 | 18500 | 1970 | 500 | 2160 |
| | | 100 | 18100 | 1930 | 100 | 2120 | 35 | 25 | 18575 | 1977.5 | 575 | 2167.5 |
| | 50+50 | 50 | 18050 | 1925 | 50 | 2115 | 40 | 50 | 18550 | 1975 | 550 | 2165 |
| | | 50+75 | 50 | 18050 | 1925 | 50 | 2115 | 35 | 75 | 18525 | 1972.5 | 525 |
| | 50+100 | | 75 | 18075 | 1927.5 | 75 | 2117.5 | 35 | 50 | 18550 | 1975 | 550 |
| | | 50+100 | 50 | 18050 | 1925 | 50 | 2115 | 30 | 100 | 18500 | 1970 | 500 |
| | 75+75 | | 100 | 18100 | 1930 | 100 | 2120 | 30 | 50 | 18550 | 1975 | 550 |
| | | 75+100 | 75 | 18075 | 1927.5 | 75 | 2117.5 | 30 | 75 | 18525 | 1972.5 | 525 |
| | 75+100 | | 75 | 18075 | 1927.5 | 75 | 2117.5 | 25 | 100 | 18500 | 1970 | 500 |
| 100+100 | | 100 | 18100 | 1930 | 100 | 2120 | 25 | 75 | 18525 | 1972.5 | 525 | 2162.5 |
| | 100+100 | 100 | 18100 | 1930 | 100 | 2120 | 20 | 100 | 18500 | 1970 | 500 | 2160 |
| Refsens ² | | 25+100 | 25 | 18175 | 1937.5 | 175 | 2127.5 | 20 | 100 | 18500 | 1970 | 500 |
| | 100+100 | 100 | 18250 | 1945 | 250 | 2135 | 5 | 100 | 18500 | 1970 | 500 | 2160 |

Note 1: Carriers in increasing frequency order.
Note 2: Test point derived with regard to REFSSENS requirements.

4.3.1.1.2 FDD reference test frequencies for operating band 2

Table 4.3.1.1.2-1: Test frequencies for E-UTRA channel bandwidth for operating band 2

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 18607 | 1850.7 | 607 | 1930.7 |
| | 3 | 18615 | 1851.5 | 615 | 1931.5 |
| | 5 | 18625 | 1852.5 | 625 | 1932.5 |
| | 10 | 18650 | 1855 | 650 | 1935 |
| | 15 [1] | 18675 | 1857.5 | 675 | 1937.5 |
| | 20 [1] | 18700 | 1860 | 700 | 1940 |

| | | | | | |
|---|--|-------|--------|------|--------|
| Mid Range | 1.4/3/5/10 15 ^[1] /20 ^[1] | 18900 | 1880 | 900 | 1960 |
| High Range | 1.4 | 19193 | 1909.3 | 1193 | 1989.3 |
| | 3 | 19185 | 1908.5 | 1185 | 1988.5 |
| | 5 | 19175 | 1907.5 | 1175 | 1987.5 |
| | 10 | 19150 | 1905 | 1150 | 1985 |
| | 15 ^[1] | 19125 | 1902.5 | 1125 | 1982.5 |
| | 20 ^[1] | 19100 | 1900 | 1100 | 1980 |
| NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed. | | | | | |

4.3.1.1.2A FDD reference test frequencies for CA in operating band 2

Table 4.3.1.1.2A-1: Test frequencies for CA_2A-2A

| Test Frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | Wgap [MHz] | CC2 Note1 | | | | |
|---|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Max WGap | 25+25 | 25 | 18625 | 1852.5 | 625 | 1932.5 | 50 | 25 | 19175 | 1907.5 | 1175 | 1987.5 |
| | 25+50 | 25 | 18625 | 1852.5 | 625 | 1932.5 | 45 | 50 | 19150 | 1905 | 1150 | 1985 |
| | | 50 | 18650 | 1855 | 650 | 1935 | 45 | 25 | 19175 | 1907.5 | 1175 | 1987.5 |
| | 25+75 | 25 | 18625 | 1852.5 | 625 | 1932.5 | 40 | 75 | 19125 | 1902.5 | 1125 | 1982.5 |
| | | 75 | 18675 | 1857.5 | 675 | 1937.5 | 40 | 25 | 19175 | 1907.5 | 1175 | 1987.5 |
| | 50+50 | 50 | 18650 | 1855 | 650 | 1935 | 40 | 50 | 19150 | 1905 | 1150 | 1985 |
| | 25+100 | 25 | 18625 | 1852.5 | 625 | 1932.5 | 35 | 100 | 19100 | 1900 | 1100 | 1980 |
| | | 100 | 18700 | 1860 | 700 | 1940 | 35 | 25 | 19175 | 1907.5 | 1175 | 1987.5 |
| | 50+75 | 50 | 18650 | 1855 | 650 | 1935 | 35 | 75 | 19125 | 1902.5 | 1125 | 1982.5 |
| | | 75 | 18675 | 1857.5 | 675 | 1937.5 | 35 | 50 | 19150 | 1905 | 1150 | 1985 |
| | 50+100 | 50 | 18650 | 1855 | 650 | 1935 | 30 | 100 | 19100 | 1900 | 1100 | 1980 |
| | | 100 | 18700 | 1860 | 700 | 1940 | 30 | 50 | 19150 | 1905 | 1150 | 1985 |
| | 75+75 | 75 | 18675 | 1857.5 | 675 | 1937.5 | 30 | 75 | 19125 | 1902.5 | 1125 | 1982.5 |
| | 75+100 | 75 | 18675 | 1857.5 | 675 | 1937.5 | 25 | 100 | 19100 | 1900 | 1100 | 1980 |
| | | 100 | 18700 | 1860 | 700 | 1940 | 25 | 75 | 19125 | 1902.5 | 1125 | 1982.5 |
| | 100+100 | 100 | 18700 | 1860 | 700 | 1940 | 20 | 100 | 19100 | 1900 | 1100 | 1980 |
| Note 1: Carriers in increasing frequency order. | | | | | | | | | | | | |

Table 4.3.1.1.2A-2: Test frequencies for CA_2C

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | |
|-------|---|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low | 25+100 | 25 | 18633 | 1853.3 | 633 | 1933.3 | 100 | 18750 | 1865 | 750 | 1945 |
| | | 100 | 18700 | 1860 | 700 | 1940 | 25 | 18817 | 1871.7 | 817 | 1951.7 |
| | 50+75 | 50 | 18653 | 1855.3 | 653 | 1935.3 | 75 | 18773 | 1867.3 | 773 | 1947.3 |
| | | 75 | 18675 | 1857.5 | 675 | 1937.5 | 50 | 18795 | 1869.5 | 795 | 1949.5 |
| | 50+100 | 50 | 18655 | 1855.5 | 655 | 1935.5 | 100 | 18799 | 1869.9 | 799 | 1949.9 |
| | | 100 | 18700 | 1860 | 700 | 1940 | 50 | 18844 | 1874.4 | 844 | 1954.4 |
| | 75+75 | 75 | 18675 | 1857.5 | 675 | 1937.5 | 75 | 18825 | 1872.5 | 825 | 1952.5 |
| | 75+100 | 75 | 18678 | 1857.8 | 678 | 1937.8 | 100 | 18849 | 1874.9 | 849 | 1954.9 |
| | | 100 | 18700 | 1860 | 700 | 1940 | 75 | 18871 | 1877.1 | 871 | 1957.1 |
| | 100+100 | 100 | 18700 | 1860 | 700 | 1940 | 100 | 18898 | 1879.8 | 898 | 1959.8 |
| Mid | 25+100 | 25 | 18808 | 1870.8 | 808 | 1950.8 | 100 | 18925 | 1882.5 | 925 | 1962.5 |
| | | 100 | 18875 | 1877.5 | 875 | 1957.5 | 25 | 18992 | 1889.2 | 992 | 1969.2 |
| | 50+75 | 50 | 18829 | 1872.9 | 829 | 1952.9 | 75 | 18949 | 1884.9 | 949 | 1964.9 |
| | | 75 | 18851 | 1875.1 | 851 | 1955.1 | 50 | 18971 | 1887.1 | 971 | 1967.1 |
| | 50+100 | 50 | 18806 | 1870.6 | 806 | 1950.6 | 100 | 18950 | 1885 | 950 | 1965 |
| | | 100 | 18851 | 1875.1 | 851 | 1955.1 | 50 | 18995 | 1889.5 | 995 | 1969.5 |
| | 75+75 | 75 | 18825 | 1872.5 | 825 | 1952.5 | 75 | 18975 | 1887.5 | 975 | 1967.5 |
| | 75+100 | 75 | 18803 | 1870.3 | 803 | 1950.3 | 100 | 18974 | 1887.4 | 974 | 1967.4 |
| | | 100 | 18826 | 1872.6 | 826 | 1952.6 | 75 | 18997 | 1889.7 | 997 | 1969.7 |
| | 100+100 | 100 | 18801 | 1870.1 | 801 | 1950.1 | 100 | 18999 | 1889.9 | 999 | 1969.9 |
| High | 25+100 | 25 | 18983 | 1888.3 | 983 | 1968.3 | 100 | 19100 | 1900 | 1100 | 1980 |
| | | 100 | 19050 | 1895 | 1050 | 1975 | 25 | 19167 | 1906.7 | 1167 | 1986.7 |
| | 50+75 | 50 | 19005 | 1890.5 | 1005 | 1970.5 | 75 | 19125 | 1902.5 | 1125 | 1982.5 |
| | | 75 | 19027 | 1892.7 | 1027 | 1972.7 | 50 | 19147 | 1904.7 | 1147 | 1984.7 |
| | 50+100 | 50 | 18956 | 1885.6 | 956 | 1965.6 | 100 | 19100 | 1900 | 1100 | 1980 |
| | | 100 | 19001 | 1890.1 | 1001 | 1970.1 | 50 | 19145 | 1904.5 | 1145 | 1984.5 |
| | 75+75 | 75 | 18975 | 1887.5 | 975 | 1967.5 | 75 | 19125 | 1902.5 | 1125 | 1982.5 |
| | 75+100 | 75 | 18929 | 1882.9 | 929 | 1962.9 | 100 | 19100 | 1900 | 1100 | 1980 |
| | | 100 | 18951 | 1885.1 | 951 | 1965.1 | 75 | 19122 | 1902.2 | 1122 | 1982.2 |
| | 100+100 | 100 | 18902 | 1880.2 | 902 | 1960.2 | 100 | 19100 | 1900 | 1100 | 1980 |

Note 1: Carriers in increasing frequency order.

4.3.1.1.3 FDD reference test frequencies for operating band 3

Table 4.3.1.1.3-1: Test frequencies for E-UTRA channel bandwidth for operating band 3

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|--|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 19207 | 1710.7 | 1207 | 1805.7 |
| | 3 | 19215 | 1711.5 | 1215 | 1806.5 |
| | 5 | 19225 | 1712.5 | 1225 | 1807.5 |
| | 10 | 19250 | 1715 | 1250 | 1810 |
| | 15 ^[1] | 19275 | 1717.5 | 1275 | 1812.5 |
| | 20 ^[1] | 19300 | 1720 | 1300 | 1815 |
| Mid Range | 1.4/3/5/10 15 ^[1] /20 ^[1] | 19575 | 1747.5 | 1575 | 1842.5 |
| High Range | 1.4 | 19943 | 1784.3 | 1943 | 1879.3 |
| | 3 | 19935 | 1783.5 | 1935 | 1878.5 |
| | 5 | 19925 | 1782.5 | 1925 | 1877.5 |
| | 10 | 19900 | 1780 | 1900 | 1875 |
| | 15 ^[1] | 19875 | 1777.5 | 1875 | 1872.5 |
| | 20 ^[1] | 19850 | 1775 | 1850 | 1870 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.3A FDD reference test frequencies for CA in operating band 3

Table 4.3.1.1.3A-1: Test frequencies for CA_3C

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | |
|---------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low | 25+100 | 25 | 19233 | 1713.3 | 1233 | 1808.3 | 100 | 19350 | 1725 | 1350 | 1820 |
| | | 100 | 19300 | 1720 | 1300 | 1815 | 25 | 19417 | 1731.7 | 1417 | 1826.7 |
| | 50+100 | 50 | 19255 | 1715.5 | 1255 | 1810.5 | 100 | 19399 | 1729.9 | 1399 | 1824.9 |
| | | 100 | 19300 | 1720 | 1300 | 1815 | 50 | 19444 | 1734.4 | 1444 | 1829.4 |
| | 75+100 | 75 | 19278 | 1717.8 | 1278 | 1812.8 | 100 | 19449 | 1734.9 | 1449 | 1829.9 |
| | | 100 | 19300 | 1720 | 1300 | 1815 | 75 | 19471 | 1737.1 | 1471 | 1832.1 |
| 100+100 | 100 | 19300 | 1720 | 1300 | 1815 | 100 | 19498 | 1739.8 | 1498 | 1834.8 | |
| Mid | 25+100 | 25 | 19483 | 1738.3 | 1483 | 1833.3 | 100 | 19600 | 1750.0 | 1600 | 1845.0 |
| | | 100 | 19550 | 1745 | 1550 | 1840 | 25 | 19667 | 1756.7 | 1667 | 1851.7 |
| | 50+100 | 50 | 19481 | 1738.1 | 1481 | 1833.1 | 100 | 19625 | 1752.5 | 1625 | 1847.5 |
| | | 100 | 19526 | 1742.6 | 1526 | 1837.6 | 50 | 19670 | 1757.0 | 1670 | 1852.0 |
| | 75+100 | 75 | 19478 | 1737.8 | 1478 | 1832.8 | 100 | 19649 | 1754.9 | 1649 | 1849.9 |
| | | 100 | 19501 | 1740.1 | 1501 | 1835.1 | 75 | 19672 | 1757.2 | 1672 | 1852.2 |
| 100+100 | 100 | 19476 | 1737.6 | 1476 | 1832.6 | 100 | 19674 | 1757.4 | 1674 | 1852.4 | |
| High | 25+100 | 25 | 19733 | 1763.3 | 1733 | 1858.3 | 100 | 19850 | 1775 | 1850 | 1870 |
| | | 100 | 19800 | 1770 | 1800 | 1865 | 25 | 19917 | 1781.7 | 1917 | 1876.7 |
| | 50+100 | 50 | 19706 | 1760.6 | 1706 | 1855.6 | 100 | 19850 | 1775 | 1850 | 1870 |
| | | 100 | 19751 | 1765.1 | 1751 | 1860.1 | 50 | 19895 | 1779.5 | 1895 | 1874.5 |
| | 75+100 | 75 | 19679 | 1757.9 | 1679 | 1852.9 | 100 | 19850 | 1775 | 1850 | 1870 |
| | | 100 | 19701 | 1760.1 | 1701 | 1855.1 | 75 | 19872 | 1777.2 | 1872 | 1872.2 |
| 100+100 | 100 | 19652 | 1755.2 | 1652 | 1850.2 | 100 | 19850 | 1775 | 1850 | 1870 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.1.3A-2: Test frequencies for CA_3A-3A

| Test Frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | Wgap [MHz] | CC2 Note1 | | | | |
|----------------------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Max WGap | 15+25 | 15 | 19215 | 1711.5 | 1215 | 1806.5 | 67 | 25 | 19925 | 1782.5 | 1925 | 1877.5 |
| | | 25 | 19225 | 1712.5 | 1225 | 1807.5 | 67 | 15 | 19935 | 1783.5 | 1935 | 1878.5 |
| | 25+25 | 25 | 19225 | 1712.5 | 1225 | 1807.5 | 65 | 25 | 19925 | 1782.5 | 1925 | 1877.5 |
| | | 25+50 | 25 | 19225 | 1712.5 | 1225 | 1807.5 | 60 | 50 | 19900 | 1780 | 1900 |
| | 25+75 | 50 | 19250 | 1715 | 1250 | 1810 | 60 | 25 | 19925 | 1782.5 | 1925 | 1877.5 |
| | | 25 | 19225 | 1712.5 | 1225 | 1807.5 | 55 | 75 | 19875 | 1777.5 | 1875 | 1872.5 |
| | 50+50 | 75 | 19275 | 1717.5 | 1275 | 1812.5 | 55 | 25 | 19925 | 1782.5 | 1925 | 1877.5 |
| | | 50 | 19250 | 1715 | 1250 | 1810 | 55 | 50 | 19900 | 1780 | 1900 | 1875 |
| | 25+100 | 25 | 19225 | 1712.5 | 1225 | 1807.5 | 50 | 100 | 19850 | 1775 | 1850 | 1870 |
| | | 100 | 19300 | 1720 | 1300 | 1815 | 50 | 25 | 19925 | 1782.5 | 1925 | 1877.5 |
| | 50+75 | 50 | 19250 | 1715 | 1250 | 1810 | 50 | 75 | 19875 | 1777.5 | 1875 | 1872.5 |
| | | 75 | 19275 | 1717.5 | 1275 | 1812.5 | 50 | 50 | 19900 | 1780 | 1900 | 1875 |
| | 50+100 | 50 | 19250 | 1715 | 1250 | 1810 | 45 | 100 | 19850 | 1775 | 1850 | 1870 |
| | | 100 | 19300 | 1720 | 1300 | 1815 | 45 | 50 | 19900 | 1780 | 1900 | 1875 |
| | 75+75 | 75 | 19275 | 1717.5 | 1275 | 1812.5 | 45 | 75 | 19875 | 1777.5 | 1875 | 1872.5 |
| | | 75+100 | 75 | 19275 | 1717.5 | 1275 | 1812.5 | 40 | 100 | 19850 | 1775 | 1850 |
| 100+100 | 100 | 19300 | 1720 | 1300 | 1815 | 40 | 75 | 19875 | 1777.5 | 1875 | 1872.5 | |
| | 100 | 19300 | 1720 | 1300 | 1815 | 35 | 100 | 19850 | 1775 | 1850 | 1870 | |
| Refsens ² | 25+100 | 25 | 19575 | 1747.5 | 1575 | 1842.5 | 15 | 100 | 19850 | 1775 | 1850 | 1870 |
| | 50 + 100 | 50 | 19600 | 1750 | 1600 | 1845 | 10 | 100 | 19850 | 1775 | 1850 | 1870 |

Note 1: Carriers in increasing frequency order.
 Note 2: Test point derived with regard to REFSENS requirements.

Table 4.3.1.1.3A-3: Test frequencies for CA_3B

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | |
|-------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low | 15+25 | 15 | 19216 | 1711.6 | 1216 | 1806.6 | 25 | 19255 | 1715.5 | 1255 | 1810.5 |
| | | 25 | 19225 | 1712.5 | 1225 | 1807.5 | 15 | 19264 | 1716.4 | 1264 | 1811.4 |
| Mid | 25+25 | 25 | 19225 | 1712.5 | 1225 | 1807.5 | 25 | 19273 | 1717.3 | 1273 | 1812.3 |
| | | 15+25 | 15 | 19551 | 1745.1 | 1551 | 1840.1 | 25 | 19590 | 1749.0 | 1590 |
| | 25+25 | 25 | 19560 | 1746.0 | 1560 | 1841.0 | 15 | 19599 | 1749.9 | 1599 | 1844.9 |
| High | 15+25 | 25 | 19551 | 1745.1 | 1551 | 1840.1 | 25 | 19599 | 1749.9 | 1599 | 1844.9 |
| | | 15 | 19886 | 1778.6 | 1886 | 1873.6 | 25 | 19925 | 1782.5 | 1925 | 1877.5 |
| | 25+25 | 25 | 19895 | 1779.5 | 1895 | 1874.5 | 15 | 19934 | 1783.4 | 1934 | 1878.4 |
| | | 25 | 19877 | 1777.7 | 1877 | 1872.7 | 25 | 19925 | 1782.5 | 1925 | 1877.5 |

Note 1: Carriers in increasing frequency order.

4.3.1.1.4 FDD reference test frequencies for operating band 4

Table 4.3.1.1.4-1: Test frequencies for E-UTRA channel bandwidth for operating band 4

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 19957 | 1710.7 | 1957 | 2110.7 |
| | 3 | 19965 | 1711.5 | 1965 | 2111.5 |
| | 5 | 19975 | 1712.5 | 1975 | 2112.5 |

| | | | | | |
|------------|------------------|-------|--------|------|--------|
| | 10 | 20000 | 1715 | 2000 | 2115 |
| | 15 | 20025 | 1717.5 | 2025 | 2117.5 |
| | 20 | 20050 | 1720 | 2050 | 2120 |
| Mid Range | 1.4/3/5/10/15/20 | 20175 | 1732.5 | 2175 | 2132.5 |
| High Range | 1.4 | 20393 | 1754.3 | 2393 | 2154.3 |
| | 3 | 20385 | 1753.5 | 2385 | 2153.5 |
| | 5 | 20375 | 1752.5 | 2375 | 2152.5 |
| | 10 | 20350 | 1750 | 2350 | 2150 |
| | 15 | 20325 | 1747.5 | 2325 | 2147.5 |
| | 20 | 20300 | 1745 | 2300 | 2145 |

4.3.1.1.4A FDD reference test frequencies for CA in operating band 4

Table 4.3.1.1.4A-1: Test frequencies for CA_4A-4A

| Test Frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | Wgap [MHz] | CC2 Note1 | | | | |
|-------------------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low WGap | 25+25 | 25 | 20125 | 1727.5 | 2125 | 2127.5 | 5 | 25 | 20225 | 1737.5 | 2225 | 21 |
| | 50+50 | 50 | 20100 | 1725 | 2100 | 2125 | 5 | 50 | 20250 | 1740 | 2250 | 2 |
| | 50+100 | 50 | 20095 | 1724.5 | 2095 | 2124.5 | 5 | 100 | 20255 | 1740.5 | 2255 | 21 |
| | 100+100 | 100 | 20050 | 1720 | 2050 | 2120 | 5 | 100 | 20300 | 1745 | 2300 | 2 |
| Max WGap | 25+25 | 25 | 19975 | 1712.5 | 1975 | 2112.5 | 35 | 25 | 20375 | 1752.5 | 2375 | 21 |
| | 25+50 | 25 | 19975 | 1712.5 | 1975 | 2112.5 | 30 | 50 | 20350 | 1750 | 2350 | 2 |
| | | 50 | 20000 | 1715 | 2000 | 2115 | 30 | 25 | 20375 | 1752.5 | 2375 | 21 |
| | 25+75 | 25 | 19975 | 1712.5 | 1975 | 2112.5 | 25 | 75 | 20325 | 1747.5 | 2325 | 21 |
| | | 75 | 20025 | 1717.5 | 2025 | 2117.5 | 25 | 25 | 20375 | 1752.5 | 2375 | 21 |
| | 50+50 | 50 | 20000 | 1715 | 2000 | 2115 | 25 | 50 | 20350 | 1750 | 2350 | 2 |
| | | 25+100 | 25 | 19975 | 1712.5 | 1975 | 2112.5 | 20 | 100 | 20300 | 1745 | 2300 |
| | 100 | | 20050 | 1720 | 2050 | 2120 | 20 | 25 | 20375 | 1752.5 | 2375 | 21 |
| | 50+75 | 50 | 20000 | 1715 | 2000 | 2115 | 20 | 75 | 20325 | 1747.5 | 2325 | 21 |
| | | 75 | 20025 | 1717.5 | 2025 | 2117.5 | 20 | 50 | 20350 | 1750 | 2350 | 2 |
| | 50+100 | 50 | 20000 | 1715 | 2000 | 2115 | 15 | 100 | 20300 | 1745 | 2300 | 2 |
| | | 100 | 20050 | 1720 | 2050 | 2120 | 15 | 50 | 20350 | 1750 | 2350 | 2 |
| | 75+75 | 75 | 20025 | 1717.5 | 2025 | 2117.5 | 15 | 75 | 20325 | 1747.5 | 2325 | 21 |
| | 75+100 | 75 | 20025 | 1717.5 | 2025 | 2117.5 | 10 | 100 | 20300 | 1745 | 2300 | 2 |
| | | 100 | 20050 | 1720 | 2050 | 2120 | 10 | 75 | 20325 | 1747.5 | 2325 | 21 |
| 100+100 | 100 | 20050 | 1720 | 2050 | 2120 | 5 | 100 | 20300 | 1745 | 2300 | 2 | |

Note 1: Carriers in increasing frequency order.

4.3.1.1.5 FDD reference test frequencies for operating band 5

Table 4.3.1.1.5-1: Test frequencies for E-UTRA channel bandwidth for operating band 5

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 20407 | 824.7 | 2407 | 869.7 |
| | 3 | 20415 | 825.5 | 2415 | 870.5 |
| | 5 | 20425 | 826.5 | 2425 | 871.5 |
| | 10 [1] | 20450 | 829 | 2450 | 874 |
| Mid Range | 1.4/3/5 10 [1] | 20525 | 836.5 | 2525 | 881.5 |
| High Range | 1.4 | 20643 | 848.3 | 2643 | 893.3 |
| | 3 | 20635 | 847.5 | 2635 | 892.5 |
| | 5 | 20625 | 846.5 | 2625 | 891.5 |
| | 10 [1] | 20600 | 844 | 2600 | 889 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.5A FDD reference test frequencies for CA in operating band 5

Table 4.3.1.1.5A-1: Test frequencies for CA_5B

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | | |
|-------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|-------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | |
| Low | 15+25 | 15 | 20416 | 825.6 | 2416 | 870.6 | 25 | 20455 | 829.5 | 2455 | 874.5 | |
| | | 25 | 20425 | 826.5 | 2425 | 871.5 | 15 | 20464 | 830.4 | 2464 | 875.4 | |
| | 25+50 | 25 | 20428 | 826.8 | 2428 | 871.8 | 50 | 20500 | 834 | 2500 | 879 | |
| | 50+25 | 50 | 20450 | 829 | 2450 | 874 | 25 | 20522 | 836.2 | 2522 | 881.2 | |
| Mid | 15+25 | 50+50 | 50 | 20450 | 829 | 2450 | 874 | 50 | 20549 | 838.9 | 2549 | 883.9 |
| | | 15 | 20501 | 834.1 | 2501 | 879.1 | 25 | 20540 | 838.0 | 2540 | 883.0 | |
| High | 25+50 | 25 | 20510 | 835.0 | 2510 | 880.0 | 15 | 20549 | 838.9 | 2549 | 883.9 | |
| | | 25 | 20478 | 831.8 | 2478 | 876.8 | 50 | 20550 | 839 | 2550 | 884 | |
| | 50+25 | 50 | 20500 | 834 | 2500 | 879 | 25 | 20572 | 841.2 | 2572 | 886.2 | |
| | 50+50 | 50 | 20476 | 831.6 | 2476 | 876.6 | 50 | 20575 | 841.5 | 2575 | 886.5 | |
| High | 15+25 | 15 | 20586 | 842.6 | 2586 | 887.6 | 25 | 20625 | 846.5 | 2625 | 891.5 | |
| | | 25 | 20595 | 843.5 | 2595 | 888.5 | 15 | 20634 | 847.4 | 2634 | 892.4 | |
| High | 25+50 | 25 | 20528 | 836.8 | 2528 | 881.8 | 50 | 20600 | 844 | 2600 | 889 | |
| | 50+25 | 50 | 20550 | 839 | 2550 | 884 | 25 | 20622 | 846.2 | 2622 | 891.2 | |
| | 50+50 | 50 | 20501 | 834.1 | 2501 | 879.1 | 50 | 20600 | 844 | 2600 | 889 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.1.5A-2: Test frequencies for CA_5A-5A

| Test Frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | Wgap [MHz] | CC2 Note1 | | | | |
|-------------------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Max WGap | 25+25 | 25 | 20425 | 826.5 | 2425 | 871.5 | 15 | 25 | 20625 | 846.5 | 2625 | 891.5 |
| | 25+50 | 25 | 20425 | 826.5 | 2425 | 871.5 | 10 | 50 | 20600 | 844 | 2600 | 889 |
| | | 50 | 20450 | 829 | 2450 | 874 | 10 | 25 | 20625 | 846.5 | 2625 | 891.5 |
| | 50+50 | 50 | 20450 | 829 | 2450 | 874 | 5 | 50 | 20600 | 844 | 2600 | 889 |

Note 1: Carriers in increasing frequency order.

4.3.1.1.6 FDD reference test frequencies for operating band 6

Table 4.3.1.1.6-1: Test frequencies for E-UTRA channel bandwidth for operating band 6

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 20675 | 832.5 | 2675 | 877.5 |
| | 10 ^[1] | 20700 | 835 | 2700 | 880 |
| Mid Range | 5 | 20700 | 835 | 2700 | 880 |
| | 10 ^[1] | 20700 | 835 | 2700 | 880 |
| High Range | 5 | 20725 | 837.5 | 2725 | 882.5 |
| | 10 ^[1] | 20700 | 835 | 2700 | 880 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

NOTE: For Band 6 testing, the Mobile Country Code shall be set to (MCC = '442/443').

4.3.1.1.7 FDD reference test frequencies for operating band 7

Table 4.3.1.1.7-1: Test frequencies for E-UTRA channel bandwidth for operating band 7

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|------------------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 20775 | 2502.5 | 2775 | 2622.5 |
| | 10 | 20800 | 2505 | 2800 | 2625 |
| | 15 | 20825 | 2507.5 | 2825 | 2627.5 |
| | 20 ^[1] | 20850 | 2510 | 2850 | 2630 |
| Mid Range | 5/10/15 20 ^[1] | 21100 | 2535 | 3100 | 2655 |
| High Range | 5 | 21425 | 2567.5 | 3425 | 2687.5 |
| | 10 | 21400 | 2565 | 3400 | 2685 |
| | 15 | 21375 | 2562.5 | 3375 | 2682.5 |
| | 20 ^[1] | 21350 | 2560 | 3350 | 2680 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.7A FDD reference test frequencies for CA in operating band 7

Table 4.3.1.1.7A-1: Test frequencies for CA_7C

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | |
|---------|---|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low | 50+100 | 50 | 20805 | 2505.5 | 2805 | 2625.5 | 100 | 20949 | 2519.9 | 2949 | 2639.9 |
| | | 100 | 20850 | 2510 | 2850 | 2630 | 50 | 20994 | 2524.4 | 2994 | 2644.4 |
| | 75+50 | 75 | 20825 | 2507.5 | 2825 | 2627.5 | 50 | 20945 | 2519.5 | 2945 | 2639.5 |
| | 75+75 | 75 | 20825 | 2507.5 | 2825 | 2627.5 | 75 | 20975 | 2522.5 | 2975 | 2642.5 |
| | 75+100 | 75 | 20828 | 2507.8 | 2828 | 2627.8 | 100 | 20999 | 2524.9 | 2999 | 2644.9 |
| | | 100 | 20850 | 2510 | 2850 | 2630 | 75 | 21021 | 2527.1 | 3021 | 2647.1 |
| 100+100 | 100 | 20850 | 2510 | 2850 | 2630 | 100 | 21048 | 2529.8 | 3048 | 2649.8 | |
| Mid | 50+100 | 50 | 21006 | 2525.6 | 3006 | 2645.6 | 100 | 21150 | 2540 | 3150 | 2660 |
| | | 100 | 21051 | 2530.1 | 3051 | 2650.1 | 50 | 21195 | 2544.5 | 3195 | 2664.5 |
| | 75+50 | 75 | 21051 | 2530.1 | 3051 | 2650.1 | 50 | 21171 | 2542.1 | 3171 | 2662.1 |
| | 75+75 | 75 | 21025 | 2527.5 | 3025 | 2647.5 | 75 | 21175 | 2542.5 | 3175 | 2662.5 |
| | 75+100 | 75 | 21003 | 2525.3 | 3003 | 2645.3 | 100 | 21174 | 2542.4 | 3174 | 2662.4 |
| | | 100 | 21026 | 2527.6 | 3026 | 2647.6 | 75 | 21197 | 2544.7 | 3197 | 2664.7 |
| 100+100 | 100 | 21001 | 2525.1 | 3001 | 2645.1 | 100 | 21199 | 2544.9 | 3199 | 2664.9 | |
| High | 50+100 | 50 | 21206 | 2545.6 | 3206 | 2665.6 | 100 | 21350 | 2560 | 3350 | 2680 |
| | | 100 | 21251 | 2550.1 | 3251 | 2670.1 | 50 | 21395 | 2564.5 | 3395 | 2684.5 |
| | 75+50 | 75 | 21277 | 2552.7 | 3277 | 2672.7 | 50 | 21397 | 2564.7 | 3397 | 2684.7 |
| | 75+75 | 75 | 21225 | 2547.5 | 3225 | 2667.5 | 75 | 21375 | 2562.5 | 3375 | 2682.5 |
| | 75+100 | 75 | 21179 | 2542.9 | 3179 | 2662.9 | 100 | 21350 | 2560 | 3350 | 2680 |
| | | 100 | 21201 | 2545.1 | 3201 | 2665.1 | 75 | 21372 | 2562.2 | 3372 | 2682.2 |
| 100+100 | 100 | 21152 | 2540.2 | 3152 | 2660.2 | 100 | 21350 | 2560 | 3350 | 2680 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.1.7A-2 : Test frequencies for CA_7B

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | |
|-------|---|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low | 75+25 | 75 | 20825 | 2507.5 | 2825 | 2627.5 | 25 | 20918 | 2516.8 | 2918 | 2636.8 |
| Mid | 75+25 | 75 | 21076 | 2532.6 | 3076 | 2652.6 | 25 | 21169 | 2541.9 | 3169 | 2661.9 |
| High | 75+25 | 75 | 21327 | 2557.7 | 3327 | 2677.7 | 25 | 21420 | 2567.0 | 3420 | 2687.0 |

Note 1: Carriers in increasing frequency order

Table 4.3.1.1.7A-2: Test frequencies for CA_7A-7A

| Test Frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | Wgap [MHz] | CC2 Note1 | | | | |
|----------------------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Max WGap | 25+25 | 25 | 20775 | 2502.5 | 2775 | 2622.5 | 60 | 25 | 21425 | 2567.5 | 3425 | 2687.5 |
| | 25+50 | 25 | 20775 | 2502.5 | 2775 | 2622.5 | 55 | 50 | 21400 | 2565 | 3400 | 2685 |
| | | 50 | 20800 | 2505 | 2800 | 2625 | 55 | 25 | 21425 | 2567.5 | 3425 | 2687.5 |
| | 25+75 | 25 | 20775 | 2502.5 | 2775 | 2622.5 | 50 | 75 | 21375 | 2562.5 | 3375 | 2682.5 |
| | | 75 | 20825 | 2507.5 | 2825 | 2627.5 | 50 | 25 | 21425 | 2567.5 | 3425 | 2687.5 |
| | 50+50 | 50 | 20800 | 2505 | 2800 | 2625 | 50 | 50 | 21400 | 2565 | 3400 | 2685 |
| | 25+100 | 25 | 20775 | 2502.5 | 2775 | 2622.5 | 45 | 100 | 21350 | 2560 | 3350 | 2680 |
| | | 100 | 20850 | 2510 | 2850 | 2630 | 45 | 25 | 21425 | 2567.5 | 3425 | 2687.5 |
| | 50+75 | 50 | 20800 | 2505 | 2800 | 2625 | 45 | 75 | 21375 | 2562.5 | 3375 | 2682.5 |
| | | 75 | 20825 | 2507.5 | 2825 | 2627.5 | 45 | 50 | 21400 | 2565 | 3400 | 2685 |
| | 50+100 | 50 | 20800 | 2505 | 2800 | 2625 | 40 | 100 | 21350 | 2560 | 3350 | 2680 |
| | | 100 | 20850 | 2510 | 2850 | 2630 | 40 | 50 | 21400 | 2565 | 3400 | 2685 |
| | 75+75 | 75 | 20825 | 2507.5 | 2825 | 2627.5 | 40 | 75 | 21375 | 2562.5 | 3375 | 2682.5 |
| | 75+100 | 75 | 20825 | 2507.5 | 2825 | 2627.5 | 35 | 100 | 21350 | 2560 | 3350 | 2680 |
| 100 | | 20850 | 2510 | 2850 | 2630 | 35 | 75 | 21375 | 2562.5 | 3375 | 2682.5 | |
| 100+100 | 100 | 20850 | 2510 | 2850 | 2630 | 30 | 100 | 21350 | 2560 | 3350 | 2680 | |
| Refsens ² | 75+100 | 75 | 21025 | 2527.5 | 3025 | 2647.5 | 15 | 100 | 21350 | 2560 | 3350 | 2680 |
| | 100+100 | 100 | 21000 | 2525 | 3000 | 2645 | 15 | 100 | 21350 | 2560 | 3350 | 2680 |
| | 25+100 | 25 | 20975 | 2522.5 | 2975 | 2642.5 | 25 | 100 | 21350 | 2560 | 3350 | 2680 |
| | 25+50 | 25 | 21025 | 2527.5 | 3025 | 2647.5 | 30 | 50 | 21400 | 2565 | 3400 | 2685 |
| | 50+100 | 50 | 21000 | 2525 | 3000 | 2645 | 20 | 100 | 21350 | 2560 | 3350 | 2680 |
| | | 100 | 21100 | 2535 | 3100 | 2655 | 15 | 50 | 21400 | 2565 | 3400 | 2685 |

Note 1: Carriers in increasing frequency order.
 Note 2: Test point derived with regard to REFSENS requirements.

4.3.1.1.8 FDD reference test frequencies for operating band 8

Table 4.3.1.1.8-1: Test frequencies for E-UTRA channel bandwidth for operating band 8

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 21457 | 880.7 | 3457 | 925.7 |
| | 3 | 21465 | 881.5 | 3465 | 926.5 |
| | 5 | 21475 | 882.5 | 3475 | 927.5 |
| | 10 [1] | 21500 | 885 | 3500 | 930 |
| Mid Range | 1.4/3/5 10 [1] | 21625 | 897.5 | 3625 | 942.5 |
| High Range | 1.4 | 21793 | 914.3 | 3793 | 959.3 |
| | 3 | 21785 | 913.5 | 3785 | 958.5 |
| | 5 | 21775 | 912.5 | 3775 | 957.5 |
| | 10 [1] | 21750 | 910 | 3750 | 955 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.8A FDD reference test frequencies for CA in operating band 8

Table 4.3.1.1. 8 A-1: Test frequencies for CA_8B

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | |
|-------|---|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low | 25+50 | 25 | 21478 | 882.8 | 3478 | 927.8 | 50 | 21550 | 890 | 3550 | 935 |
| | 50+25 | 50 | 21500 | 885 | 3500 | 930 | 25 | 21572 | 892.2 | 3572 | 937.2 |
| | 50+50 | 50 | 21500 | 885 | 3500 | 930 | 50 | 21599 | 894.9 | 3599 | 939.9 |
| Mid | 25+50 | 25 | 21578 | 892.8 | 3578 | 937.8 | 50 | 21650 | 900.0 | 3650 | 945.0 |
| | 50+25 | 50 | 21600 | 895.0 | 3600 | 940.0 | 25 | 21672 | 902.2 | 3672 | 947.2 |
| | 50+50 | 50 | 21576 | 892.6 | 3576 | 937.6 | 50 | 21675 | 902.5 | 3675 | 947.5 |
| High | 25+50 | 25 | 21678 | 902.8 | 3678 | 947.8 | 50 | 21750 | 910 | 3750 | 955 |
| | 50+25 | 50 | 21700 | 905 | 3700 | 950 | 25 | 21772 | 912.2 | 3772 | 957.2 |
| | 50+50 | 50 | 21651 | 900.1 | 3651 | 945.1 | 50 | 21750 | 910 | 3750 | 955 |

Note 1: Carriers in increasing frequency order.

4.3.1.1.9 FDD reference test frequencies for operating band 9

Table 4.3.1.1.9-1: Test frequencies for E-UTRA channel bandwidth for operating band 9

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|--|-----------------|------------------------------|-----------------|-----------------------------------|
| Low Range | 5 | 21825 | 1752.4 | 3825 | 1847.4 |
| | 10 | 21850 | 1754.9 | 3850 | 1849.9 |
| | 15 ^[1] | 21875 | 1757.4 | 3875 | 1852.4 |
| | 20 ^[1] | 21900 | 1759.9 | 3900 | 1854.9 |
| Mid Range | 5/10 15 ^[1] /20 ^[1] | 21975 | 1767.4 | 3975 | 1862.4 |
| High Range | 5 | 22125 | 1782.4 | 4125 | 1877.4 |
| | 10 | 22100 | 1779.9 | 4100 | 1874.9 |
| | 15 ^[1] | 22075 | 1777.4 | 4075 | 1872.4 |
| | 20 ^[1] | 22050 | 1774.9 | 4050 | 1869.9 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.10 FDD reference test frequencies for operating band 10

Table 4.3.1.1.10-1: Test frequencies for E-UTRA channel bandwidth for operating band 10

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------|-----------------|------------------------------|-----------------|--------------------------------|
| Low Range | 5 | 22175 | 1712.5 | 4175 | 2112.5 |
| | 10 | 22200 | 1715 | 4200 | 2115 |
| | 15 | 22225 | 1717.5 | 4225 | 2117.5 |
| | 20 | 22250 | 1720 | 4250 | 2120 |
| Mid Range | 5/10/15/20 | 22450 | 1740 | 4450 | 2140 |
| High Range | 5 | 22725 | 1767.5 | 4725 | 2167.5 |
| | 10 | 22700 | 1765 | 4700 | 2165 |
| | 15 | 22675 | 1762.5 | 4675 | 2162.5 |
| | 20 | 22650 | 1760 | 4650 | 2160 |

4.3.1.1.11 FDD reference test frequencies for operating band 11

Table 4.3.1.1.11-1: Test frequencies for E-UTRA channel bandwidth for operating band 11

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 22775 | 1430.4 | 4775 | 1478.4 |
| | 10 ^[1] | 22800 | 1432.9 | 4800 | 1480.9 |
| Mid Range | 5 / 10 ^[1] | 22850 | 1437.9 | 4850 | 1485.9 |
| High Range | 5 | 22925 | 1445.4 | 4925 | 1493.4 |
| | 10 ^[1] | 22900 | 1442.9 | 4900 | 1490.9 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.12 FDD reference test frequencies for operating band 12

Table 4.3.1.1.12-1: Test frequencies for E-UTRA channel bandwidth for operating band 12

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|--|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 23017 | 699.7 | 5017 | 729.7 |
| | 3 | 23025 | 700.5 | 5025 | 730.5 |
| | 5 ^[1] | 23035 | 701.5 | 5035 | 731.5 |
| | 10 ^[1] | 23060 | 704 | 5060 | 734 |
| Mid Range | 1.4/3 5 ^[1] /10 ^[1] | 23095 | 707.5 | 5095 | 737.5 |
| High Range | 1.4 | 23173 | 715.3 | 5173 | 745.3 |
| | 3 | 23165 | 714.5 | 5165 | 744.5 |
| | 5 ^[1] | 23155 | 713.5 | 5155 | 743.5 |
| | 10 ^[1] | 23130 | 711 | 5130 | 741 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.12A FDD reference test frequencies for CA in operating band 12

Table 4.3.1.1.12A-1: Test frequencies for CA_12B

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | |
|-------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low | 25+25 | 25 | 23035 | 701.5 | 5035 | 731.5 | 25 | 23083 | 706.3 | 5083 | 736.3 |
| | 25+50 | 25 | 23038 | 701.8 | 5038 | 731.8 | 50 | 23110 | 709 | 5110 | 739 |
| Mid | 25+25 | 25 | 23071 | 705.1 | 5071 | 735.1 | 25 | 23119 | 709.9 | 5119 | 739.9 |
| | 25+50 | 25 | 23048 | 702.8 | 5048 | 732.8 | 50 | 23120 | 710 | 5120 | 740 |
| High | 25+25 | 25 | 23107 | 708.7 | 5107 | 738.7 | 25 | 23155 | 713.5 | 5155 | 743.5 |
| | 25+50 | 25 | 23058 | 703.8 | 5058 | 733.8 | 50 | 23130 | 711 | 5130 | 741 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.1.12A-2: Test frequencies for CA_12A-12A

| Test Frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | Wgap [MHz] | CC2 Note1 | | | | |
|-------------------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Max WGap | 25+25 | 25 | 23035 | 701.5 | 5035 | 731.5 | 7 | 25 | 23155 | 713.5 | 5155 | 743.5 |

Note 1: Carriers in increasing frequency order.

4.3.1.1.13 FDD reference test frequencies for operating band 13

Table 4.3.1.1.13-1: Test frequencies for E-UTRA channel bandwidth for operating band 13

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-------------------------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 ^[1] | 23205 | 779.5 | 5205 | 748.5 |
| | 10 ^[1] | 23230 | 782 | 5230 | 751 |
| Mid Range | 5 ^[1] /10 ^[1] | 23230 | 782 | 5230 | 751 |
| High Range | 5 ^[1] | 23255 | 784.5 | 5255 | 753.5 |
| | 10 ^[1] | 23230 | 782 | 5230 | 751 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.14 FDD reference test frequencies for operating band 14

Table 4.3.1.1.14-1: Test frequencies for E-UTRA channel bandwidth for operating band 14

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-------------------------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 ^[1] | 23305 | 790.5 | 5305 | 760.5 |
| | 10 ^[1] | 23330 | 793 | 5330 | 763 |
| Mid Range | 5 ^[1] /10 ^[1] | 23330 | 793 | 5330 | 763 |
| High Range | 5 ^[1] | 23355 | 795.5 | 5355 | 765.5 |
| | 10 ^[1] | 23330 | 793 | 5330 | 763 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.15 FDD reference test frequencies for operating band 15

[FFS; not yet specified in TS 36.101]

4.3.1.1.16 FDD reference test frequencies for operating band 16

[FFS; not yet specified in TS 36.101]

4.3.1.1.17 FDD reference test frequencies for operating band 17

Table 4.3.1.1.17-1: Test frequencies for E-UTRA channel bandwidth for operating band 17

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-------------------------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 ^[1] | 23755 | 706.5 | 5755 | 736.5 |
| | 10 ^[1] | 23780 | 709 | 5780 | 739 |
| Mid Range | 5 ^[1] /10 ^[1] | 23790 | 710 | 5790 | 740 |
| High Range | 5 ^[1] | 23825 | 713.5 | 5825 | 743.5 |
| | 10 ^[1] | 23800 | 711 | 5800 | 741 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.18 FDD reference test frequencies for operating band 18

Table 4.3.1.1.18-1: Test frequencies for E-UTRA channel bandwidth for operating band 18

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|--|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 23875 | 817.5 | 5875 | 862.5 |
| | 10 ^[1] | 23900 | 820 | 5900 | 865 |
| | 15 ^[1] | 23925 | 822.5 | 5925 | 867.5 |
| Mid Range | 5/10 ^[1] /15 ^[1] | 23925 | 822.5 | 5925 | 867.5 |
| High range | 5 | 23975 | 827.5 | 5975 | 872.5 |
| | 10 ^[1] | 23950 | 825 | 5950 | 870 |
| | 15 ^[1] | 23925 | 822.5 | 5925 | 867.5 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.19 FDD reference test frequencies for operating band 19

Table 4.3.1.1.19-1: Test frequencies for E-UTRA channel bandwidth for operating band 19

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|--|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 24025 | 832.5 | 6025 | 877.5 |
| | 10 ^[1] | 24050 | 835 | 6050 | 880 |
| | 15 ^[1] | 24075 | 837.5 | 6075 | 882.5 |
| Mid Range | 5/10 ^[1] /15 ^[1] | 24075 | 837.5 | 6075 | 882.5 |
| High range | 5 | 24125 | 842.5 | 6125 | 887.5 |
| | 10 ^[1] | 24100 | 840 | 6100 | 885 |
| | 15 ^[1] | 24075 | 837.5 | 6075 | 882.5 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.20 FDD reference test frequencies for operating band 20

Table 4.3.1.1.20-1: Test frequencies for E-UTRA channel bandwidth for operating band 20

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|---|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 24175 | 834.5 | 6175 | 793.5 |
| | 10 ^[1] | 24200 | 837 | 6200 | 796 |
| | 15 ^[1] | 24225 | 839.5 | 6225 | 798.5 |
| | 20 ^[1] | 24250 | 842 | 6250 | 801 |
| Mid Range | 5/10 ^[1] /15 ^[1] /20 ^[1] | 24300 | 847 | 6300 | 806 |
| High range | 5 | 24425 | 859.5 | 6425 | 818.5 |
| | 10 ^[1] | 24400 | 857 | 6400 | 816 |
| | 15 ^[1] | 24375 | 854.5 | 6375 | 813.5 |
| | 20 ^[1] | 24350 | 852 | 6350 | 811 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.21 FDD reference test frequencies for operating band 21

Table 4.3.1.1.21-1: Test frequencies for E-UTRA channel bandwidth for operating band 21

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|--|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 24475 | 1450.4 | 6475 | 1498.4 |
| | 10 ^[1] | 24500 | 1452.9 | 6500 | 1500.9 |
| | 15 ^[1] | 24525 | 1455.4 | 6525 | 1503.4 |
| Mid Range | 5/10 ^[1] /15 ^[1] | 24525 | 1455.4 | 6525 | 1503.4 |
| High range | 5 | 24575 | 1460.4 | 6575 | 1508.4 |
| | 10 ^[1] | 24550 | 1457.9 | 6550 | 1505.9 |
| | 15 ^[1] | 24525 | 1455.4 | 6525 | 1503.4 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.22 FDD reference test frequencies for operating band 22

Table 4.3.1.1.22-1: Test frequencies for E-UTRA channel bandwidth for operating band 22

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 24625 | 3412.5 | 6625 | 3512.5 |
| | 10 | 24650 | 3415 | 6650 | 3515 |
| | 15 | 24675 | 3417.5 | 6675 | 3517.5 |
| | 20 | 24700 | 3420 | 6700 | 3520 |
| Mid Range | 5/10/15/20 | 25000 | 3450 | 7000 | 3550 |
| High Range | 5 | 25375 | 3487.5 | 7375 | 3587.5 |
| | 10 | 25350 | 3485 | 7350 | 3585 |
| | 15 | 25325 | 3482.5 | 7325 | 3582.5 |
| | 20 | 25300 | 3480 | 7300 | 3580 |

4.3.1.1.23 FDD reference test frequencies for operating band 23

Table 4.3.1.1.23-1: Test frequencies for E-UTRA channel bandwidth for operating band 23

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|---------------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 25507 | 2000.7 | 7507 | 2180.7 |
| | 3 | 25515 | 2001.5 | 7515 | 2181.5 |
| | 5 | 25525 | 2002.5 | 7525 | 2182.5 |
| | 10 | 25550 | 2005 | 7550 | 2185 |
| | 15 | 25575 | 2007.5 | 7575 | 2187.5 |
| | 20 | 25600 | 2010 | 7600 | 2190 |
| Mid Range | 1.4/3 5 / 10 / 15 / 20 | 25600 | 2010 | 7600 | 2190 |
| High Range | 1.4 | 25693 | 2019.3 | 7693 | 2199.3 |
| | 3 | 25685 | 2018.5 | 7685 | 2198.5 |
| | 5 | 25675 | 2017.5 | 7675 | 2197.5 |
| | 10 | 25650 | 2015 | 7650 | 2195 |
| | 15 | 25625 | 2012.5 | 7625 | 2192.5 |
| | 20 | 25600 | 2010 | 7600 | 2190 |

4.3.1.1.23A FDD reference test frequencies for CA in operating band 23

Table 4.3.1.1.23A-1: Test frequencies for CA_23A-23A

| Test Frequency ID | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | Wgap [MHz] | CC2 Note 1 | | | | |
|-------------------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|------------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Max WGap | 25+50 | 25 | 25525 | 2002.5 | 7525 | 2182.5 | 5 | 50 | 25650 | 2015 | 7650 | 2195 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.1.23A-2: Test frequencies for CA_23B

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | |
|--------------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low/Mid/High | 25+75 | 25 | 25531 | 2003.1 | 7531 | 2183.1 | 75 | 25624 | 2012.4 | 7624 | 2192.4 |
| | 50+50 | 50 | 25551 | 2005.1 | 7551 | 2185.1 | 50 | 25650 | 2015 | 7650 | 2195 |

Note 1: Carriers in increasing frequency order.

4.3.1.1.24 FDD reference test frequencies for operating band 24

Table 4.3.1.1.24-1: Test frequencies for E-UTRA channel bandwidth for operating band 24

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 25725 | 1629 | 7725 | 1527.5 |
| | 10 | 25750 | 1631.5 | 7750 | 1530 |
| Mid Range | 5/10 | 25870 | 1643.5 | 7870 | 1542 |
| High Range | 5 | 26015 | 1658 | 8015 | 1556.5 |
| | 10 | 25990 | 1655.5 | 7990 | 1554 |

4.3.1.1.25 FDD reference test frequencies for operating band 25

Table 4.3.1.1.25-1: Test frequencies for E-UTRA channel bandwidth for operating band 25

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|---|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 26047 | 1850.7 | 8047 | 1930.7 |
| | 3 | 26055 | 1851.5 | 8055 | 1931.5 |
| | 5 | 26065 | 1852.5 | 8065 | 1932.5 |
| | 10 | 26090 | 1855 | 8090 | 1935 |
| | 15 ^[1] | 26115 | 1857.5 | 8115 | 1937.5 |
| | 20 ^[1] | 26140 | 1860 | 8140 | 1940 |
| Mid Range | 1.4/3/5/10/15 ^[1] /20 ^[1] | 26365 | 1882.5 | 8365 | 1962.5 |
| High Range | 1.4 | 26683 | 1914.3 | 8683 | 1994.3 |
| | 3 | 26675 | 1913.5 | 8675 | 1993.5 |
| | 5 | 26665 | 1912.5 | 8665 | 1992.5 |
| | 10 | 26640 | 1910 | 8640 | 1990 |
| | 15 ^[1] | 26615 | 1907.5 | 8615 | 1987.5 |
| | 20 ^[1] | 26590 | 1905 | 8590 | 1985 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.25A FDD reference test frequencies for CA in operating band 25

Table 4.3.1.1.25A-1: Test frequencies for CA_25A-25A

| Test Frequency ID | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | Wgap [MHz] | CC2 Note 1 | | | | |
|----------------------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|------------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Max WGap | 25+25 | 25 | 26065 | 1852.5 | 8065 | 1932.5 | 55 | 25 | 26665 | 1912.5 | 8665 | 1992.5 |
| | 25+50 | 25 | 26065 | 1852.5 | 8065 | 1932.5 | 50 | 50 | 26640 | 1910 | 8640 | 1990 |
| | | 50 | 26090 | 1855 | 8090 | 1935 | 50 | 25 | 26665 | 1912.5 | 8665 | 1992.5 |
| | 50+50 | 50 | 26090 | 1855 | 8090 | 1935 | 45 | 50 | 26640 | 1910 | 8640 | 1990 |
| | 25+100 | 25 | 26065 | 1852.5 | 8065 | 1932.5 | 40 | 100 | 26590 | 1905 | 8590 | 1985 |
| | | 100 | 26140 | 1860 | 8140 | 1940 | 40 | 25 | 26665 | 1912.5 | 8665 | 1992.5 |
| | 50+75 | 50 | 26090 | 1855 | 8090 | 1935 | 40 | 75 | 26615 | 1907.5 | 8615 | 1987.5 |
| | | 75 | 26115 | 1857.5 | 8115 | 1937.5 | 40 | 50 | 26640 | 1910 | 8640 | 1990 |
| | 50+100 | 50 | 26090 | 1855 | 8090 | 1935 | 35 | 100 | 26590 | 1905 | 8590 | 1985 |
| | | 100 | 26140 | 1860 | 8140 | 1940 | 35 | 50 | 26640 | 1910 | 8640 | 1990 |
| | 75+75 | 75 | 26115 | 1857.5 | 8115 | 1937.5 | 35 | 75 | 26615 | 1907.5 | 8615 | 1987.5 |
| | 75+100 | 75 | 26115 | 1857.5 | 8115 | 1937.5 | 30 | 100 | 26590 | 1905 | 8590 | 1985 |
| | | 100 | 26140 | 1860 | 8140 | 1940 | 30 | 75 | 26615 | 1907.5 | 8615 | 1987.5 |
| | 100+100 | 100 | 26140 | 1860 | 8140 | 1940 | 25 | 100 | 26590 | 1905 | 8590 | 1985 |
| Refsens ² | 25+50 | 25 | 26415 | 1887.5 | 8415 | 1967.5 | 15 | 50 | 26640 | 1910 | 8640 | 1990 |
| | 50+50 | 50 | 26440 | 1890 | 8440 | 1970 | 10 | 50 | 26640 | 1910 | 8640 | 1990 |

Note 1: Carriers in increasing frequency order.
 Note 2: Test point derived with regard to REFSENS requirements.

4.3.1.1.26 FDD reference test frequencies for operating band 26

Table 4.3.1.1.26-1: Test frequencies for E-UTRA channel bandwidth for operating band 26

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 26697 | 814.7 | 8697 | 859.7 |
| | 3 | 26705 | 815.5 | 8705 | 860.5 |
| | 5 | 26715 | 816.5 | 8715 | 861.5 |
| | 10 ^[1] | 26740 | 819 | 8740 | 864 |
| | 15 ^[1] | 26765 | 821.5 | 8765 | 866.5 |

| | | | | | |
|---|--|-------|-------|------|-------|
| Mid Range | 1.4/3/5/10 ^[1] 15 ^[1] | 26865 | 831.5 | 8865 | 876.5 |
| High Range | 1.4 | 27033 | 848.3 | 9033 | 893.3 |
| | 3 | 27025 | 847.5 | 9025 | 892.5 |
| | 5 | 27015 | 846.5 | 9015 | 891.5 |
| | 10 ^[1] | 26990 | 844 | 8990 | 889 |
| | 15 ^[1] | 26965 | 841.5 | 8965 | 886.5 |
| NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed. | | | | | |

4.3.1.1.27 FDD reference test frequencies for operating band 27

Table 4.3.1.1.27-1: Test frequencies for E-UTRA channel bandwidth for operating band 27

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|---|---------------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 27047 | 807.7 | 9047 | 852.7 |
| | 3 | 27055 | 808.5 | 9055 | 853.5 |
| | 5 | 27065 | 809.5 | 9065 | 854.5 |
| | 10 ^[1] | 27090 | 812 | 9090 | 857 |
| Mid Range | 1.4/3/5/10 ^[1] | 27125 | 815.5 | 9125 | 860.5 |
| High Range | 1.4 | 27203 | 823.3 | 9203 | 868.3 |
| | 3 | 27195 | 822.5 | 9195 | 867.5 |
| | 5 | 27185 | 821.5 | 9185 | 866.5 |
| | 10 ^[1] | 27160 | 819 | 9160 | 864 |
| NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed. | | | | | |

4.3.1.1.27A FDD reference test frequencies for CA in operating band 27

Table 4.3.1.1.27A-1: Test frequencies for CA_27B

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | CC2 Note 1 | | | | |
|---|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low | 6+25 | 6 | 27048 | 807.8 | 9048 | 852.8 | 25 | 27078 | 810.8 | 9078 | 855.8 |
| | 15+25 | 15 | 27056 | 808.6 | 9056 | 853.6 | 25 | 27095 | 812.5 | 9095 | 857.5 |
| | 25+25 | 25 | 27065 | 809.5 | 9065 | 854.5 | 25 | 27113 | 814.3 | 9113 | 859.3 |
| | 6+50 | 6 | 27051 | 808.1 | 9051 | 853.1 | 50 | 27102 | 813.2 | 9102 | 858.2 |
| | 15+50 | 15 | 27059 | 808.9 | 9059 | 853.9 | 50 | 27119 | 814.9 | 9119 | 859.9 |
| Mid | 6+25 | 6 | 27101 | 813.1 | 9101 | 858.1 | 25 | 27131 | 816.1 | 9131 | 861.1 |
| | 15+25 | 15 | 27101 | 813.1 | 9101 | 858.1 | 25 | 27140 | 817.0 | 9140 | 862.0 |
| | 25+25 | 25 | 27101 | 813.1 | 9101 | 858.1 | 25 | 27149 | 817.9 | 9149 | 862.9 |
| | 6+50 | 6 | 27080 | 811.0 | 9080 | 856.0 | 50 | 27131 | 816.1 | 9131 | 861.1 |
| | 15+50 | 15 | 27079 | 810.9 | 9079 | 855.9 | 50 | 27139 | 816.9 | 9139 | 861.9 |
| High | 6+25 | 6 | 27155 | 818.5 | 9155 | 863.5 | 25 | 27185 | 821.5 | 9185 | 866.5 |
| | 15+25 | 15 | 27146 | 817.6 | 9146 | 862.6 | 25 | 27185 | 821.5 | 9185 | 866.5 |
| | 25+25 | 25 | 27137 | 816.7 | 9137 | 861.7 | 25 | 27185 | 821.5 | 9185 | 866.5 |
| | 6+50 | 6 | 27109 | 813.9 | 9109 | 858.9 | 50 | 27160 | 819.0 | 9160 | 864.0 |
| | 15+50 | 15 | 27100 | 813.0 | 9100 | 858.0 | 50 | 27160 | 819.0 | 9160 | 864.0 |
| Note 1: Carriers in increasing frequency order. | | | | | | | | | | | |

4.3.1.1.28 FDD reference test frequencies for operating band 28

Table 4.3.1.1.28-1: Test frequencies for E-UTRA channel bandwidth for operating band 28

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|---|---------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 3 | 27225 | 704.5 | 9225 | 759.5 |
| | 5 | 27235 | 705.5 | 9235 | 760.5 |
| | 10 ^[1] | 27260 | 708 | 9260 | 763 |
| | 15 ^[1] | 27285 | 710.5 | 9285 | 765.5 |
| | 20 ^[1] | 27310 | 713 | 9310 | 768 |
| Mid Range | 3 | 27375 | 719.5 | 9375 | 774.5 |
| | 5 | 27385 | 720.5 | 9385 | 775.5 |
| | 10 ^[1] | 27410 | 723 | 9410 | 778 |
| | 15 ^[1] | 27435 | 725.5 | 9435 | 780.5 |
| | 20 ^[1,2] | 27460 | 728 | 9460 | 783 |
| High Range | 3 | 27645 | 746.5 | 9645 | 801.5 |
| | 5 | 27635 | 745.5 | 9635 | 800.5 |
| | 10 ^[1] | 27610 | 743 | 9610 | 798 |
| | 15 ^[1] | 27585 | 740.5 | 9585 | 795.5 |
| | 20 ^[1] | 27560 | 738 | 9560 | 793 |
| NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed. | | | | | |
| NOTE 2: Mid Range for 20 MHz moved due to note 2 in Table 5.6.1-1 of TS 36.101 [27]. | | | | | |
| NOTE 3: For CA_18A-28A and CA_1A-18A-28A use test frequencies in Table 4.3.1.1.28-2. | | | | | |
| NOTE 4: For CA_19A-28A and CA_1A-19A-28A use test frequencies in Table 4.3.1.1.28-3. | | | | | |

Table 4.3.1.1.28-2: Test frequencies for E-UTRA channel bandwidth for operating band 28 in CA_18A-28A and CA_1A-18A-28A

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|---|---------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 27235 | 705.5 | 9235 | 760.5 |
| | 10 ^[1] | 27260 | 708 | 9260 | 763 |
| Mid Range | 5/10 ^[1] | 27360 | 718 | 9360 | 773 |
| High Range | 5 | 27485 | 730.5 | 9485 | 785.5 |
| | 10 ^[1] | 27460 | 728 | 9460 | 783 |
| NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed. | | | | | |

Table 4.3.1.1.28-3: Test frequencies for E-UTRA channel bandwidth for operating band 28 in CA_19A-28A and CA_1A-19A-28A

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|---|-------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 27385 | 720.5 | 9385 | 775.5 |
| | 10 ¹ | 27410 | 723 | 9410 | 778 |
| Mid Range | 5/10 ¹ | 27510 | 733 | 9510 | 788 |
| High Range | 5 | 27635 | 745.5 | 9635 | 800.5 |
| | 10 ¹ | 27610 | 743 | 9610 | 798 |
| NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed. | | | | | |

4.3.1.1.29 FDD reference test frequencies for CA in operating band 29

Table 4.3.1.1.29-1: Test frequencies for E-UTRA channel bandwidth for operating band 29

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-------------------|---------------------------|-----------------|-----------------------------|
| Low Range | 3 | NA ^[1] | NA | 9675 | 718.5 |
| | 5 | NA ^[1] | NA | 9685 | 719.5 |
| | 10 | NA ^[1] | NA | 9710 | 722 |
| Mid Range | 3 5 / 10 | NA ^[1] | NA | 9715 | 722.5 |
| High Range | 3 | NA ^[1] | NA | 9755 | 726.5 |
| | 5 | NA ^[1] | NA | 9745 | 725.5 |
| | 10 | NA ^[1] | NA | 9720 | 723 |

NOTE 1: Restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.

4.3.1.1.30 FDD reference test frequencies for operating band 30

Table 4.3.1.1.30-1: Test frequencies for E-UTRA channel bandwidth for operating band 30

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 27685 | 2307.5 | 9795 | 2352.5 |
| | 10 | 27710 | 2310 | 9820 | 2355 |
| Mid Range | 5/10 | 27710 | 2310 | 9820 | 2355 |
| High Range | 5 | 27735 | 2312.5 | 9845 | 2357.5 |
| | 10 | 27710 | 2310 | 9820 | 2355 |

Note 1: The uplink transmission is not allowed at this band for the UE with the externally vehicle-mounted antennas.

4.3.1.1.31 FDD reference test frequencies for operating band 31

Table 4.3.1.1.31-1: Test frequencies for E-UTRA channel bandwidth for operating band 31

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|---|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 27767 | 453.2 | 9877 | 463.2 |
| | 3 ^[1] | 27775 | 454 | 9885 | 464 |
| | 5 ^[1] | 27785 | 455 | 9895 | 465 |
| Mid Range | 1.4/3 ^[1] / 5 ^[1] | 27785 | 455 | 9895 | 465 |
| High Range | 1.4 | 27803 | 456.8 | 9913 | 466.8 |
| | 3 ^[1] | 27795 | 456 | 9905 | 466 |
| | 5 ^[1] | 27785 | 455 | 9895 | 465 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.32 FDD reference test frequencies for CA in operating band 32

Table 4.3.1.1.32-1: Test frequencies for E-UTRA channel bandwidth for operating band 32

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-------------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | NA ^[1] | NA | 9945 | 1454.5 |
| | 10 | NA ^[1] | NA | 9970 | 1457 |
| | 15 | NA ^[1] | NA | 9995 | 1459.5 |
| | 20 | NA ^[1] | NA | 10020 | 1462 |

| | | | | | |
|--|------------|-------------------|----|-------|--------|
| Mid Range | 5/10/15/20 | NA ^[1] | NA | 10140 | 1474 |
| High Range | 5 | NA ^[1] | NA | 10335 | 1493.5 |
| | 10 | NA ^[1] | NA | 10310 | 1491 |
| | 15 | NA ^[1] | NA | 10285 | 1488.5 |
| | 20 | NA ^[1] | NA | 10260 | 1486 |
| NOTE 1: Restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell. | | | | | |

4.3.1.1.33 to 4.3.1.1.64 Void

Note: Sub-clauses 4.3.1.1.33 to 4.3.1.1.64 are marked as void as bands 33 to 64 are TDD bands. TDD bands are specified in sub-clause 4.3.1.2.

4.3.1.1.65 FDD reference test frequencies for operating band 65

Table 4.3.1.1.65-1: Test frequencies for E-UTRA channel bandwidth for operating band 65

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 131079 | 1920.7 | 65543 | 2110.7 |
| | 3 | 131087 | 1921.5 | 65551 | 2111.5 |
| | 5 | 131097 | 1922.5 | 65561 | 2112.5 |
| | 10 | 131122 | 1925 | 65586 | 2115 |
| | 15 | 131147 | 1927.5 | 65611 | 2117.5 |
| | 20 | 131172 | 1930 | 65636 | 2120 |
| Mid Range | 1.4/3/5/10/15/20 | 131522 | 1965 | 65986 | 2155 |
| High Range | 1.4 | 131965 | 2009.3 | 66429 | 2199.3 |
| | 3 | 131957 | 2008.5 | 66421 | 2198.5 |
| | 5 | 131947 | 2007.5 | 66411 | 2197.5 |
| | 10 | 131922 | 2005 | 66386 | 2195 |
| | 15 | 131897 | 2002.5 | 66361 | 2192.5 |
| | 20 | 131872 | 2000 | 66336 | 2190 |

4.3.1.1.66 FDD reference test frequencies for operating band 66

Table 4.3.1.1.66-1: Test frequencies for E-UTRA channel bandwidth for operating band 66

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|--------------------------------|--|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 131979 | 1710.7 | 66443 | 2110.7 |
| | 3 | 131987 | 1711.5 | 66451 | 2111.5 |
| | 5 | 131997 | 1712.5 | 66461 | 2112.5 |
| | 10 | 132022 | 1715 | 66486 | 2115 |
| | 15 | 132047 | 1717.5 | 66511 | 2117.5 |
| | 20 | 132072 | 1720 | 66536 | 2120 |
| Mid Range Tx ¹ | 1.4/3/5/10/15/20 | 132322 | 1745 | 66786 | 2145 |
| Mid Range | 1.4/3/5/10/15/20 | 132422 | 1755 | 66886 | 2155 |
| Paired High Range ² | 1.4 | 132665 | 1779.3 | 67129 | 2179.3 |
| | 3 | 132657 | 1778.5 | 67121 | 2178.5 |
| | 5 | 132647 | 1777.5 | 67111 | 2177.5 |
| | 10 | 132622 | 1775 | 67086 | 2175 |
| | 15 | 132597 | 1772.5 | 67061 | 2172.5 |
| | 20 | 132572 | 1770 | 67036 | 2170 |
| High Range ³ | 1.4 | NA | NA | 67329 | 2199.3 |
| | 3 | NA | NA | 67321 | 2198.5 |
| | 5 | NA | NA | 67311 | 2197.5 |
| | 10 | NA | NA | 67286 | 2195 |
| | 15 | NA | NA | 67261 | 2192.5 |
| | 20 | NA | NA | 67236 | 2190 |
| Note 1: | Applicable for transmitter testing. | | | | |
| Note 2: | Applicable if UL is configured on the CC. | | | | |
| Note 3: | Applicable if no UL is configured on the CC. | | | | |

4.3.1.1.66A FDD reference test frequencies for CA in operating band 66

Table 4.3.1.1.66A-1: Test frequencies for CA_66B

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | |
|-------------------|---|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low | 25+25 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 25 | 132045 | 1717.3 | 66509 | 2117.3 |
| | 25+50 | 25 | 132000 | 1712.8 | 66464 | 2112.8 | 50 | 132072 | 1720 | 66536 | 2120 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 25 | 132094 | 1722.2 | 66558 | 2122.2 |
| | 25+75 | 25 | 132002 | 1713 | 66466 | 2113 | 75 | 132095 | 1722.3 | 66559 | 2122.3 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 25 | 132140 | 1726.8 | 66604 | 2126.8 |
| 50+50 | 50 | 132022 | 1715 | 66486 | 2115 | 50 | 132121 | 1724.9 | 66585 | 2124.9 | |
| Mid | 25+25 | 25 | 132398 | 1752.6 | 66862 | 2152.6 | 25 | 132446 | 1757.4 | 66910 | 2157.4 |
| | 25+50 | 25 | 132375 | 1750.3 | 66839 | 2150.3 | 50 | 132447 | 1757.5 | 66911 | 2157.5 |
| | | 50 | 132397 | 1752.5 | 66861 | 2152.5 | 25 | 132469 | 1759.7 | 66933 | 2159.7 |
| | 25+75 | 25 | 132353 | 1748.1 | 66817 | 2148.1 | 75 | 132446 | 1757.4 | 66910 | 2157.4 |
| | | 75 | 132398 | 1752.6 | 66862 | 2152.6 | 25 | 132491 | 1761.9 | 66955 | 2161.9 |
| | 50+50 | 50 | 132373 | 1750.1 | 66837 | 2150.1 | 50 | 132472 | 1760 | 66936 | 2160 |
| High ² | 25+25 | 25 | 132647 | 1777.5 | 67111 | 2177.5 | 25 | NA | NA | 67159 | 2182.3 |
| | 25+50 | 25 | 132647 | 1777.5 | 67111 | 2177.5 | 50 | NA | NA | 67183 | 2184.7 |
| | | 50 | 132622 | 1775 | 67086 | 2175 | 25 | NA | NA | 67158 | 2182.2 |
| | 25+75 | 25 | 132647 | 1777.5 | 67111 | 2177.5 | 75 | NA | NA | 67204 | 2186.8 |
| | | 75 | 132597 | 1772.5 | 67061 | 2172.5 | 25 | NA | NA | 67154 | 2181.8 |
| | 50+50 | 50 | 132622 | 1775 | 67086 | 2175 | 50 | NA | NA | 67185 | 2184.9 |
| High ³ | 25+25 | 25 | 132599 | 1772.7 | 67063 | 2172.7 | 25 | 132647 | 1777.5 | 67111 | 2177.5 |
| | 25+50 | 25 | 132550 | 1767.8 | 67014 | 2167.8 | 50 | 132622 | 1775. | 67086 | 2175 |
| | | 50 | 132572 | 1770 | 67036 | 2170 | 25 | 132644 | 1777.2 | 67108 | 2177.2 |
| | 25+75 | 25 | 132504 | 1763.2 | 66968 | 2163.2 | 75 | 132597 | 1772.5 | 67061 | 2172.5 |
| | | 75 | 132549 | 1767.7 | 67013 | 2167.7 | 25 | 132642 | 1777 | 67106 | 2177 |
| 50+50 | 50 | 132523 | 1765.1 | 66987 | 2165.1 | 50 | 132622 | 1775 | 67086 | 2175 | |

Note 1: Carriers in increasing frequency order.
 Note 2: Applicable for intra-band contiguous CA without UL CA.
 Note 3: Applicable for intra-band contiguous CA with UL CA.

Table 4.3.1.1.66A-2: Test frequencies for CA_66C

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | |
|-------------------|---|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low | 50+75 | 50 | 132025 | 1715.3 | 66489 | 2115.3 | 75 | 132145 | 1727.3 | 66609 | 2127.3 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 50 | 132167 | 1729.5 | 66631 | 2129.5 |
| | 50+100 | 50 | 132027 | 1715.5 | 66491 | 2115.5 | 100 | 132171 | 1729.9 | 66635 | 2129.9 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 50 | 132216 | 1734.4 | 66680 | 2134.4 |
| | 75+75 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 75 | 132197 | 1732.5 | 66661 | 2132.5 |
| | 75+100 | 75 | 132050 | 1717.8 | 66514 | 2117.8 | 100 | 132221 | 1734.9 | 66685 | 2134.9 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 75 | 132243 | 1737.1 | 66707 | 2137.1 |
| | 100+25 | 100 | 132072 | 1720 | 66536 | 2120 | 25 | 132189 | 1731.7 | 66653 | 2131.7 |
| | | 25 | 132005 | 1713.3 | 66469 | 2113.3 | 100 | 132122 | 1725.0 | 66586 | 2125.0 |
| 100+100 | 100 | 132072 | 1720 | 66536 | 2120 | 100 | 132270 | 1739.8 | 66734 | 2139.8 | |
| Mid | 50+75 | 50 | 132351 | 1747.9 | 66815 | 2147.9 | 75 | 132471 | 1759.9 | 66935 | 2159.9 |
| | | 75 | 132373 | 1750.1 | 66837 | 2150.1 | 50 | 132493 | 1762.1 | 66957 | 2162.1 |
| | 50+100 | 50 | 132328 | 1745.6 | 66792 | 2145.6 | 100 | 132472 | 1760 | 66936 | 2160 |
| | | 100 | 132373 | 1750.1 | 66837 | 2150.1 | 50 | 132517 | 1764.5 | 66981 | 2164.5 |
| | 75+75 | 75 | 132347 | 1747.5 | 66811 | 2147.5 | 75 | 132497 | 1762.5 | 66961 | 2162.5 |
| | 75+100 | 75 | 132325 | 1745.3 | 66789 | 2145.3 | 100 | 132496 | 1762.4 | 66960 | 2162.4 |
| | | 100 | 132348 | 1747.6 | 66812 | 2147.6 | 75 | 132519 | 1764.7 | 66983 | 2164.7 |
| | 100+25 | 100 | 132397 | 1752.5 | 66861 | 2152.5 | 25 | 132514 | 1764.2 | 66978 | 2164.2 |
| | | 25 | 132330 | 1745.8 | 66794 | 2145.8 | 100 | 132447 | 1757.5 | 66911 | 2157.5 |
| 100+100 | 100 | 132323 | 1745.1 | 66787 | 2145.1 | 100 | 132521 | 1764.9 | 66985 | 2164.9 | |
| High ² | 50+75 | 50 | 132622 | 1775 | 67086 | 2175 | 75 | NA | NA | 67206 | 2187 |
| | | 75 | 132597 | 1772.5 | 67061 | 2172.5 | 50 | NA | NA | 67181 | 2184.5 |
| | 50+100 | 50 | 132622 | 1775 | 67086 | 2175 | 100 | NA | NA | 67230 | 2189.4 |
| | | 100 | 132572 | 1770 | 67036 | 2170 | 50 | NA | NA | 67180 | 2184.4 |
| | 75+75 | 75 | 132597 | 1772.5 | 67061 | 2172.5 | 75 | NA | NA | 67211 | 2187.5 |
| | 75+100 | 75 | 132597 | 1772.5 | 67061 | 2172.5 | 100 | NA | NA | 67232 | 2189.6 |
| | | 100 | 132572 | 1770 | 67036 | 2170 | 75 | NA | NA | 67207 | 2187.1 |
| | 100+25 | 100 | 132572 | 1770 | 67036 | 2170 | 25 | NA | NA | 67153 | 2181.7 |
| | | 25 | 132647 | 1777.5 | 67111 | 2177.5 | 100 | NA | NA | 67228 | 2189.2 |
| 100+100 | 100 | 132572 | 1770 | 67036 | 2170 | 100 | NA | NA | 67234 | 2189.8 | |
| High ³ | 50+75 | 50 | 132477 | 1760.5 | 66941 | 2160.5 | 75 | 132597 | 1772.5 | 67061 | 2172.5 |
| | | 75 | 132499 | 1762.7 | 66963 | 2162.7 | 50 | 132619 | 1774.7 | 67083 | 2174.7 |
| | 50+100 | 50 | 132428 | 1755.6 | 66892 | 2155.6 | 100 | 132572 | 1770 | 67036 | 2170 |
| | | 100 | 132473 | 1760.1 | 66937 | 2160.1 | 50 | 132617 | 1774.5 | 67081 | 2174.5 |
| | 75+75 | 75 | 132447 | 1757.5 | 66911 | 2157.5 | 75 | 132597 | 1772.5 | 67061 | 2172.5 |
| | 75+100 | 75 | 132401 | 1752.9 | 66885 | 2152.9 | 100 | 132572 | 1770 | 67036 | 2170 |
| | | 100 | 132423 | 1755.1 | 66887 | 2155.1 | 75 | 132594 | 1772.2 | 67058 | 2172.2 |
| | 100+25 | 100 | 132522 | 1765 | 66986 | 2165 | 25 | 132639 | 1776.7 | 67103 | 2176.7 |

| | | | | | | | | | | | |
|---------|--|-----|--------|--------|-------|--------|-----|--------|--------|-------|--------|
| | | 25 | 132455 | 1758.3 | 66919 | 2158.3 | 100 | 132572 | 1770.0 | 67036 | 2170.0 |
| | 100+100 | 100 | 132374 | 1750.2 | 66838 | 2150.2 | 100 | 132572 | 1770 | 67036 | 2170 |
| Note 1: | Carriers in increasing frequency order. | | | | | | | | | | |
| Note 2: | Applicable for intra-band contiguous CA without UL CA. | | | | | | | | | | |
| Note 3: | Applicable for intra-band contiguous CA with UL CA. | | | | | | | | | | |

Table 4.3.1.1.66A-3: Test frequencies for CA_66A-66A

| Test Frequency ID | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | Wgap [MHz] | CC2 Note1 | | | | |
|-----------------------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low WGap ² | 25+25 | 25 | 20125 | 1727.5 | 2125 | 2127.5 | 5 | 25 | NA | NA | 2225 | 2137.5 |
| | 50+50 | 50 | 20100 | 1725 | 2100 | 2125 | 5 | 50 | NA | NA | 2250 | 2140 |
| | 50+100 | 50 | 20095 | 1724.5 | 2095 | 2124.5 | 5 | 100 | NA | NA | 2255 | 2140.5 |
| | 100+100 | 100 | 20050 | 1720 | 2050 | 2120 | 5 | 100 | NA | NA | 2300 | 2145 |
| Max WGap ² | 25+25 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 80 | 25 | NA | NA | 67311 | 2197.5 |
| | 25+50 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 75 | 50 | NA | NA | 67286 | 2195 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 75 | 25 | NA | NA | 67311 | 2197.5 |
| | 25+75 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 70 | 75 | NA | NA | 67261 | 2192.5 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 70 | 25 | NA | NA | 67311 | 2197.5 |
| | 50+50 | 50 | 132022 | 1715 | 66486 | 2115 | 70 | 50 | NA | NA | 67286 | 2195 |
| | 25+100 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 65 | 100 | NA | NA | 67236 | 2190 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 65 | 25 | NA | NA | 67311 | 2197.5 |
| | 50+75 | 50 | 132022 | 1715 | 66486 | 2115 | 65 | 75 | NA | NA | 67261 | 2192.5 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 65 | 50 | NA | NA | 67286 | 2195 |
| | 50+100 | 50 | 132022 | 1715 | 66486 | 2115 | 60 | 100 | NA | NA | 67236 | 2190 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 60 | 50 | NA | NA | 67286 | 2195 |
| | 75+75 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 60 | 75 | NA | NA | 67261 | 2192.5 |
| | 75+100 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 55 | 100 | NA | NA | 67236 | 2190 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 55 | 75 | NA | NA | 67261 | 2192.5 |
| | 100+100 | 100 | 132072 | 1720 | 66536 | 2120 | 50 | 100 | NA | NA | 67236 | 2190 |
| Max WGap ³ | 25+25 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 60 | 25 | 132647 | 1777.5 | 67111 | 2177.5 |
| | 25+50 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 55 | 50 | 132622 | 1775 | 67086 | 2175 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 55 | 25 | 132647 | 1777.5 | 67111 | 2177.5 |
| | 25+75 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 50 | 75 | 132597 | 1772.5 | 67061 | 2172.5 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 50 | 25 | 132647 | 1777.5 | 67111 | 2177.5 |
| | 50+50 | 50 | 132022 | 1715 | 66486 | 2115 | 50 | 50 | 132622 | 1775 | 67086 | 2175 |
| | 25+100 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 45 | 100 | 132572 | 1770 | 67036 | 2170 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 45 | 25 | 132647 | 1777.5 | 67111 | 2177.5 |
| | 50+75 | 50 | 132022 | 1715 | 66486 | 2115 | 45 | 75 | 132597 | 1772.5 | 67061 | 2172.5 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 45 | 50 | 132622 | 1775 | 67086 | 2175 |
| | 50+100 | 50 | 132022 | 1715 | 66486 | 2115 | 40 | 100 | 132572 | 1770 | 67036 | 2170 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 40 | 50 | 132622 | 1775 | 67086 | 2175 |
| | 75+75 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 40 | 75 | 132597 | 1772.5 | 67061 | 2172.5 |
| | 75+100 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 35 | 100 | 132572 | 1770 | 67036 | 2170 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 35 | 75 | 132597 | 1772.5 | 67061 | 2172.5 |

| | | | | | | | | | | | | |
|---------|--|-----|--------|------|-------|------|----|-----|--------|------|-------|------|
| | 100+100 | 100 | 132072 | 1720 | 66536 | 2120 | 30 | 100 | 132572 | 1770 | 67036 | 2170 |
| Note 1: | Carriers in increasing frequency order. | | | | | | | | | | | |
| Note 2: | Applicable for intra-band non-contiguous CA without UL CA. | | | | | | | | | | | |
| Note 3: | Applicable for intra-band non-contiguous CA with UL CA. | | | | | | | | | | | |

Table 4.3.1.1.66A-4: Test frequencies for CA_66D

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | | CC3 Note1 | | | | |
|------------|---|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Low | 25+100+100 | 25 | 132005 | 1713.3 | 66469 | 2113.3 | 100 | 132122 | 1725.0 | 66586 | 2125.0 | 100 | 132320 | 1744.8 | 66784 | 2144.8 |
| | | 100 | 132072 | 1720.0 | 66536 | 2120.0 | 25 | 132189 | 1731.7 | 66653 | 2131.7 | 100 | 132306 | 1743.4 | 66770 | 2143.4 |
| | | 100 | 132072 | 1720.0 | 66536 | 2120.0 | 100 | 132270 | 1739.8 | 66734 | 2139.8 | 25 | 132387 | 1751.5 | 66851 | 2151.5 |
| | 50+75+100 | 50 | 132027 | 1715.5 | 66491 | 2115.5 | 75 | 132147 | 1727.5 | 66611 | 2127.5 | 100 | 132318 | 1744.6 | 66782 | 2144.6 |
| | | 50 | 132027 | 1715.5 | 66491 | 2115.5 | 100 | 132171 | 1729.9 | 66635 | 2129.9 | 75 | 132342 | 1747.0 | 66806 | 2147.0 |
| | | 75 | 132050 | 1717.8 | 66514 | 2117.8 | 50 | 132170 | 1729.8 | 66634 | 2129.8 | 100 | 132314 | 1744.2 | 66778 | 2144.2 |
| | | 75 | 132050 | 1717.8 | 66514 | 2117.8 | 100 | 132221 | 1734.9 | 66685 | 2134.9 | 50 | 132365 | 1749.3 | 66829 | 2149.3 |
| | | 100 | 132072 | 1720.0 | 66536 | 2120.0 | 50 | 132216 | 1734.4 | 66680 | 2134.4 | 75 | 132336 | 1746.4 | 66800 | 2146.4 |
| | | 100 | 132072 | 1720.0 | 66536 | 2120.0 | 75 | 132243 | 1737.1 | 66707 | 2137.1 | 50 | 132363 | 1749.1 | 66827 | 2149.1 |
| | 75+75+75 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 75 | 132197 | 1732.5 | 66661 | 2132.5 | 75 | 132347 | 1747.5 | 66811 | 2147.5 |
| | 75+75+100 | 75 | 132050 | 1717.8 | 66514 | 2117.8 | 75 | 132200 | 1732.8 | 66664 | 2132.8 | 100 | 132371 | 1749.9 | 66835 | 2149.9 |
| | | 75 | 132050 | 1717.8 | 66514 | 2117.8 | 100 | 132221 | 1734.9 | 66685 | 2134.9 | 75 | 132392 | 1752.0 | 66856 | 2152.0 |
| | | 100 | 132072 | 1720.0 | 66536 | 2120.0 | 75 | 132243 | 1737.1 | 66707 | 2137.1 | 75 | 132393 | 1752.1 | 66857 | 2152.1 |
| | 50+100+100 | 50 | 132027 | 1715.5 | 66491 | 2115.5 | 100 | 132171 | 1729.9 | 66635 | 2129.9 | 100 | 132369 | 1749.7 | 66833 | 2149.7 |
| | | 100 | 132072 | 1720.0 | 66536 | 2120.0 | 50 | 132216 | 1734.4 | 66680 | 2134.4 | 100 | 132360 | 1748.8 | 66824 | 2148.8 |
| | | 100 | 132072 | 1720.0 | 66536 | 2120.0 | 100 | 132270 | 1739.8 | 66734 | 2139.8 | 50 | 132414 | 1754.2 | 66878 | 2154.2 |
| | 75+100+100 | 75 | 132050 | 1717.8 | 66514 | 2117.8 | 100 | 132221 | 1734.9 | 66685 | 2134.9 | 100 | 132419 | 1754.7 | 66883 | 2154.7 |
| | | 100 | 132072 | 1720.0 | 66536 | 2120.0 | 75 | 132243 | 1737.1 | 66707 | 2137.1 | 100 | 132414 | 1754.2 | 66878 | 2154.2 |
| | | 100 | 132072 | 1720.0 | 66536 | 2120.0 | 100 | 132270 | 1739.8 | 66734 | 2139.8 | 75 | 132441 | 1756.9 | 66905 | 2156.9 |
| | 100+100+100 | 100 | 132072 | 1720.0 | 66536 | 2120.0 | 100 | 132270 | 1739.8 | 66734 | 2139.8 | 100 | 132468 | 1759.6 | 66932 | 2159.6 |
| Mid | 25+100+100 | 25 | 132231 | 1735.9 | 66695 | 2135.9 | 100 | 132348 | 1747.6 | 66812 | 2147.6 | 100 | 132546 | 1767.4 | 67010 | 2167.4 |
| | | 100 | 132305 | 1743.3 | 66769 | 2143.3 | 25 | 132422 | 1755.0 | 66886 | 2155.0 | 100 | 132539 | 1766.7 | 67003 | 2166.7 |
| | | 100 | 132298 | 1742.6 | 66762 | 2142.6 | 100 | 132496 | 1762.4 | 66960 | 2162.4 | 25 | 132613 | 1774.1 | 67077 | 2174.1 |
| | 50+75+100 | 50 | 132254 | 1738.2 | 66718 | 2138.2 | 75 | 132374 | 1750.2 | 66838 | 2150.2 | 100 | 132545 | 1767.3 | 67009 | 2167.3 |
| | | 50 | 132253 | 1738.1 | 66717 | 2138.1 | 100 | 132397 | 1752.5 | 66861 | 2152.5 | 75 | 132568 | 1769.6 | 67032 | 2169.6 |
| | | 75 | 132279 | 1740.7 | 66743 | 2140.7 | 50 | 132399 | 1752.7 | 66863 | 2152.7 | 100 | 132543 | 1767.1 | 67007 | 2167.1 |
| | | 75 | 132276 | 1740.4 | 66740 | 2140.4 | 100 | 132447 | 1757.5 | 66911 | 2157.5 | 50 | 132591 | 1771.9 | 67055 | 2171.9 |
| | | 100 | 132301 | 1742.9 | 66765 | 2142.9 | 50 | 132445 | 1757.3 | 66909 | 2157.3 | 75 | 132565 | 1769.3 | 67029 | 2169.3 |
| | | 100 | 132299 | 1742.7 | 66763 | 2142.7 | 75 | 132470 | 1759.8 | 66934 | 2159.8 | 50 | 132590 | 1771.8 | 67054 | 2171.8 |
| | 75+75+75 | 75 | 132272 | 1740.0 | 66736 | 2140.0 | 75 | 132422 | 1755.0 | 66886 | 2155.0 | 75 | 132572 | 1770.0 | 67036 | 2170.0 |
| | 75+75+100 | 75 | 132250 | 1737.8 | 66714 | 2137.8 | 75 | 132400 | 1752.8 | 66864 | 2152.8 | 100 | 132571 | 1769.9 | 67035 | 2169.9 |
| | | 75 | 132251 | 1737.9 | 66715 | 2137.9 | 100 | 132422 | 1755.0 | 66886 | 2155.0 | 75 | 132593 | 1772.1 | 67057 | 2172.1 |
| | | 100 | 132273 | 1740.1 | 66737 | 2140.1 | 75 | 132444 | 1757.2 | 66908 | 2157.2 | 75 | 132594 | 1772.2 | 67058 | 2172.2 |
| | 50+100+100 | 50 | 132229 | 1735.7 | 66693 | 2135.7 | 100 | 132373 | 1750.1 | 66837 | 2150.1 | 100 | 132571 | 1769.9 | 67035 | 2169.9 |
| | | 100 | 132278 | 1740.6 | 66742 | 2140.6 | 50 | 132422 | 1755.0 | 66886 | 2155.0 | 100 | 132566 | 1769.4 | 67030 | 2169.4 |
| | | 100 | 132274 | 1740.2 | 66738 | 2140.2 | 100 | 132472 | 1760.0 | 66936 | 2160.0 | 50 | 132616 | 1774.4 | 67080 | 2174.4 |
| 75+100+100 | 75 | 132226 | 1735.4 | 66690 | 2135.4 | 100 | 132397 | 1752.5 | 66861 | 2152.5 | 100 | NA | NA | 67059 | 2172.3 | |

| | | | | | | | | | | | | | | | | |
|------|-------------|-----|--------|--------|-------|--------|-----|--------|--------|-------|--------|-----|----|----|-------|--------|
| | | 100 | 132251 | 1737.9 | 66715 | 2137.9 | 75 | 132422 | 1755.0 | 66886 | 2155.0 | 100 | NA | NA | 67057 | 2172.1 |
| | | 100 | 132249 | 1737.7 | 66713 | 2137.7 | 100 | 132447 | 1757.5 | 66911 | 2157.5 | 75 | NA | NA | 67082 | 2174.6 |
| | 100+100+100 | 100 | 132224 | 1735.2 | 66688 | 2135.2 | 100 | 132422 | 1755.0 | 66886 | 2155.0 | 100 | NA | NA | 67084 | 2174.8 |
| High | 25+100+100 | 25 | 132457 | 1758.5 | 66921 | 2158.5 | 100 | NA | NA | 67038 | 2170.2 | 100 | NA | NA | 67236 | 2190.0 |
| | | 100 | 132538 | 1766.6 | 67002 | 2166.6 | 25 | NA | NA | 67119 | 2178.3 | 100 | NA | NA | 67236 | 2190.0 |
| | | 100 | 132524 | 1765.2 | 66988 | 2165.2 | 100 | NA | NA | 67186 | 2185.0 | 25 | NA | NA | 67303 | 2196.7 |
| | 50+75+100 | 50 | 132481 | 1760.9 | 66945 | 2160.9 | 75 | NA | NA | 67065 | 2172.9 | 100 | NA | NA | 67236 | 2190.0 |
| | | 50 | 132479 | 1760.7 | 66943 | 2160.7 | 100 | NA | NA | 67087 | 2175.1 | 75 | NA | NA | 67258 | 2192.2 |
| | | 75 | 132508 | 1763.6 | 66972 | 2163.6 | 50 | NA | NA | 67092 | 2175.6 | 100 | NA | NA | 67236 | 2190.0 |
| | | 75 | 132502 | 1763.0 | 66966 | 2163.0 | 100 | NA | NA | 67137 | 2180.1 | 50 | NA | NA | 67281 | 2194.5 |
| | | 100 | 132530 | 1765.8 | 66994 | 2165.8 | 50 | NA | NA | 67138 | 2180.2 | 75 | NA | NA | 67258 | 2192.2 |
| | | 100 | 132526 | 1765.4 | 66990 | 2165.4 | 75 | NA | NA | 67161 | 2182.5 | 50 | NA | NA | 67281 | 2194.5 |
| | 75+75+75 | 75 | 132497 | 1762.5 | 66961 | 2162.5 | 75 | NA | NA | 67111 | 2177.5 | 75 | NA | NA | 67261 | 2192.5 |
| | 75+75+100 | 75 | 132451 | 1757.9 | 66915 | 2157.9 | 75 | NA | NA | 67065 | 2172.9 | 100 | NA | NA | 67236 | 2190.0 |
| | | 75 | 132452 | 1758.0 | 66916 | 2158.0 | 100 | NA | NA | 67087 | 2175.1 | 75 | NA | NA | 67258 | 2192.2 |
| | | 100 | 132473 | 1760.1 | 66937 | 2160.1 | 75 | NA | NA | 67108 | 2177.2 | 75 | NA | NA | 67258 | 2192.2 |
| | 50+100+100 | 50 | 132430 | 1755.8 | 66894 | 2155.8 | 100 | NA | NA | 67038 | 2170.2 | 100 | NA | NA | 67236 | 2190.0 |
| | | 100 | 132484 | 1761.2 | 66948 | 2161.2 | 50 | NA | NA | 67092 | 2175.6 | 100 | NA | NA | 67236 | 2190.0 |
| | | 100 | 132475 | 1760.3 | 66939 | 2160.3 | 100 | NA | NA | 67137 | 2180.1 | 50 | NA | NA | 67281 | 2194.5 |
| | 75+100+100 | 75 | 132403 | 1753.1 | 66867 | 2153.1 | 100 | NA | NA | 67038 | 2170.2 | 100 | NA | NA | 67236 | 2190.0 |
| | | 100 | 132430 | 1755.8 | 66894 | 2155.8 | 75 | NA | NA | 67065 | 2172.9 | 100 | NA | NA | 67236 | 2190.0 |
| | | 100 | 132425 | 1755.3 | 66889 | 2155.3 | 100 | NA | NA | 67087 | 2175.1 | 75 | NA | NA | 67258 | 2192.2 |
| | 100+100+100 | 100 | 132376 | 1750.4 | 66840 | 2150.4 | 100 | NA | NA | 67038 | 2170.2 | 100 | NA | NA | 67236 | 2190.0 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.1.66A-5: Test frequencies for CA_66A-66C

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | Wgap [MHz] | CC2 Note1 | | | | | CC3 Note1 | | | | |
|------------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------|-----------------|-----------------------|-----------------|-----------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Max Wgap | 25+25+100 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 60 | 100 | NA | NA | 67186 | 2185 | 25 | NA | NA | 67303 | 2196.7 |
| | | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 60.8 | 25 | NA | NA | 67119 | 2178.3 | 100 | NA | NA | 67236 | 2190 |
| | 25+50+75 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 60.5 | 50 | NA | NA | 67141 | 2180.5 | 75 | NA | NA | 67261 | 2192.5 |
| | | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 60.2 | 75 | NA | NA | 67163 | 2182.7 | 50 | NA | NA | 67283 | 2194.7 |
| | 25+50+100 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 55.6 | 50 | NA | NA | 67092 | 2175.6 | 100 | NA | NA | 67236 | 2190 |
| | | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 55.1 | 100 | NA | NA | 67137 | 2180.1 | 50 | NA | NA | 67281 | 2194.5 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 55 | 100 | NA | NA | 67186 | 2185 | 25 | NA | NA | 67303 | 2196.7 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 55.8 | 25 | NA | NA | 67119 | 2178.3 | 100 | NA | NA | 67236 | 2190 |
| | 25+75+75 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 55 | 75 | NA | NA | 67111 | 2177.5 | 75 | NA | NA | 67261 | 2192.5 |
| | 25+75+100 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 50.4 | 75 | NA | NA | 67065 | 2172.9 | 100 | NA | NA | 67236 | 2190 |
| | | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 50.1 | 100 | NA | NA | 67087 | 2175.1 | 75 | NA | NA | 67258 | 2192.2 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 50 | 100 | NA | NA | 67186 | 2185 | 25 | NA | NA | 67303 | 2196.7 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 50.8 | 25 | NA | NA | 67119 | 2178.3 | 100 | NA | NA | 67236 | 2190 |
| | 25+100+100 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 45.2 | 100 | NA | NA | 67038 | 2170.2 | 100 | NA | NA | 67236 | 2190 |
| | 25+100+100 | 100 | 132072 | 1720 | 66536 | 2120 | 45 | 100 | NA | NA | 67186 | 2185 | 25 | NA | NA | 67303 | 2196.7 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 45.8 | 25 | NA | NA | 67119 | 2178.3 | 100 | NA | NA | 67236 | 2190 |
| | 50+50+75 | 50 | 132022 | 1715 | 66486 | 2115 | 55.5 | 50 | NA | NA | 67141 | 2180.5 | 75 | NA | NA | 67261 | 2192.5 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 55.2 | 75 | NA | NA | 67163 | 2182.7 | 50 | NA | NA | 67283 | 2194.7 |
| | 50+50+100 | 50 | 132022 | 1715 | 66486 | 2115 | 50.6 | 50 | NA | NA | 67092 | 2175.6 | 100 | NA | NA | 67236 | 2190 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 50.1 | 100 | NA | NA | 67137 | 2180.1 | 50 | NA | NA | 67281 | 2194.5 |
| | 50+75+75 | 50 | 132022 | 1715 | 66486 | 2115 | 50 | 75 | NA | NA | 67111 | 2177.5 | 75 | NA | NA | 67261 | 2192.5 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 50.5 | 50 | NA | NA | 67141 | 2180.5 | 75 | NA | NA | 67261 | 2192.5 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 50.2 | 75 | NA | NA | 67163 | 2182.7 | 50 | NA | NA | 67283 | 2194.7 |
| | 50+75+100 | 50 | 132022 | 1715 | 66486 | 2115 | 45.4 | 75 | NA | NA | 67065 | 2172.9 | 100 | NA | NA | 67236 | 2190 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 45.1 | 100 | NA | NA | 67087 | 2175.1 | 75 | NA | NA | 67258 | 2192.2 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 45.6 | 50 | NA | NA | 67092 | 2175.6 | 100 | NA | NA | 67236 | 2190 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 45.5 | 50 | NA | NA | 67141 | 2180.5 | 75 | NA | NA | 67261 | 2192.5 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 45.2 | 75 | NA | NA | 67163 | 2182.7 | 50 | NA | NA | 67283 | 2194.7 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 45.1 | 100 | NA | NA | 67137 | 2180.1 | 50 | NA | NA | 67281 | 2194.5 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 45.5 | 50 | NA | NA | 67141 | 2180.5 | 75 | NA | NA | 67261 | 2192.5 |
| 100 | | 132072 | 1720 | 66536 | 2120 | 45.2 | 75 | NA | NA | 67163 | 2182.7 | 50 | NA | NA | 67283 | 2194.7 | |
| 50+100+100 | 50 | 132022 | 1715 | 66486 | 2115 | 40.2 | 100 | NA | NA | 67038 | 2170.2 | 100 | NA | NA | 67236 | 2190 | |
| | 100 | 132072 | 1720 | 66536 | 2120 | 40.6 | 50 | NA | NA | 67092 | 2175.6 | 100 | NA | NA | 67236 | 2190 | |

| | | | | | | | | | | | | | | | | |
|-------------|-----|--------|--------|-------|--------|------|-----|----|----|-------|--------|-----|----|----|-------|--------|
| | 100 | 132072 | 1720 | 66536 | 2120 | 40.1 | 100 | NA | NA | 67137 | 2180.1 | 50 | NA | NA | 67281 | 2194.5 |
| 75+75+75 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 45 | 75 | NA | NA | 67111 | 2177.5 | 75 | NA | NA | 67261 | 2192.5 |
| 75+75+100 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 40.4 | 75 | NA | NA | 67065 | 2172.9 | 100 | NA | NA | 67236 | 2190 |
| | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 40.1 | 100 | NA | NA | 67087 | 2175.1 | 75 | NA | NA | 67258 | 2192.2 |
| | 100 | 132072 | 1720 | 66536 | 2120 | 40 | 75 | NA | NA | 67111 | 2177.5 | 75 | NA | NA | 67261 | 2192.5 |
| 75+100+100 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 35.2 | 100 | NA | NA | 67038 | 2170.2 | 100 | NA | NA | 67236 | 2190 |
| | 100 | 132072 | 1720 | 66536 | 2120 | 35.4 | 75 | NA | NA | 67065 | 2172.9 | 100 | NA | NA | 67236 | 2190 |
| | 100 | 132072 | 1720 | 66536 | 2120 | 35.1 | 100 | NA | NA | 67087 | 2175.1 | 75 | NA | NA | 67258 | 2192.2 |
| 100+100+100 | 100 | 132072 | 1720 | 66536 | 2120 | 30.2 | 100 | NA | NA | 67038 | 2170.2 | 100 | NA | NA | 67236 | 2190 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.1.66A-6: Test frequencies for CA_66C-66A

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | | Wgap [MHz] | CC3 Note1 | | | | |
|----------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Max Wgap | 25+25+100 | 100 | 132072 | 1720 | 66536 | 2120 | 25 | 132189 | 1731.7 | 66653 | 2131.7 | 60.8 | 25 | NA | NA | 67311 | 2197.5 |
| | | 25 | 132005 | 1713.3 | 66469 | 2113.3 | 100 | 132122 | 1725 | 66586 | 2125 | 60 | 25 | NA | NA | 67311 | 2197.5 |
| | 25+50+75 | 50 | 132025 | 1715.3 | 66489 | 2115.3 | 75 | 132145 | 1727.3 | 66609 | 2127.3 | 60.2 | 25 | NA | NA | 67311 | 2197.5 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 50 | 132167 | 1729.5 | 66631 | 2129.5 | 60.5 | 25 | NA | NA | 67311 | 2197.5 |
| | 25+50+100 | 50 | 132027 | 1715.5 | 66491 | 2115.5 | 100 | 132171 | 1729.9 | 66635 | 2129.9 | 55.1 | 25 | NA | NA | 67311 | 2197.5 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 50 | 132216 | 1734.4 | 66680 | 2134.4 | 55.6 | 25 | NA | NA | 67311 | 2197.5 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 25 | 132189 | 1731.7 | 66653 | 2131.7 | 55.8 | 50 | NA | NA | 67286 | 2195 |
| | | 25 | 132005 | 1713.3 | 66469 | 2113.3 | 100 | 132122 | 1725 | 66586 | 2125 | 55 | 50 | NA | NA | 67286 | 2195 |
| | 25+75+75 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 75 | 132197 | 1732.5 | 66661 | 2132.5 | 55 | 25 | NA | NA | 67311 | 2197.5 |
| | | 25+75+100 | 75 | 132050 | 1717.8 | 66514 | 2117.8 | 100 | 132221 | 1734.9 | 66685 | 2134.9 | 50.1 | 25 | NA | NA | 67311 |
| | 100 | | 132072 | 1720 | 66536 | 2120 | 75 | 132243 | 1737.1 | 66707 | 2137.1 | 50.4 | 25 | NA | NA | 67311 | 2197.5 |
| | 100 | | 132072 | 1720 | 66536 | 2120 | 25 | 132189 | 1731.7 | 66653 | 2131.7 | 50.8 | 75 | NA | NA | 67261 | 2192.5 |
| | 25 | | 132005 | 1713.3 | 66469 | 2113.3 | 100 | 132122 | 1725 | 66586 | 2125 | 50 | 75 | NA | NA | 67261 | 2192.5 |
| | 25+100+100 | 100 | 132072 | 1720 | 66536 | 2120 | 100 | 132270 | 1739.8 | 66734 | 2139.8 | 45.2 | 25 | NA | NA | 67311 | 2197.5 |
| | 25+100+100 | 100 | 132072 | 1720 | 66536 | 2120 | 25 | 132189 | 1731.7 | 66653 | 2131.7 | 45.8 | 100 | NA | NA | 67236 | 2190 |
| | | 25 | 132005 | 1713.3 | 66469 | 2113.3 | 100 | 132122 | 1725 | 66586 | 2125 | 45 | 100 | NA | NA | 67236 | 2190 |
| | 50+50+75 | 50 | 132025 | 1715.3 | 66489 | 2115.3 | 75 | 132145 | 1727.3 | 66609 | 2127.3 | 55.2 | 50 | NA | NA | 67286 | 2195 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 50 | 132167 | 1729.5 | 66631 | 2129.5 | 55.5 | 50 | NA | NA | 67286 | 2195 |
| | 50+50+100 | 50 | 132027 | 1715.5 | 66491 | 2115.5 | 100 | 132171 | 1729.9 | 66635 | 2129.9 | 50.1 | 50 | NA | NA | 67286 | 2195 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 50 | 132216 | 1734.4 | 66680 | 2134.4 | 50.6 | 50 | NA | NA | 67286 | 2195 |
| | 50+75+75 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 75 | 132197 | 1732.5 | 66661 | 2132.5 | 50 | 50 | NA | NA | 67286 | 2195 |
| | | 50 | 132025 | 1715.3 | 66489 | 2115.3 | 75 | 132145 | 1727.3 | 66609 | 2127.3 | 50.2 | 75 | NA | NA | 67261 | 2192.5 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 50 | 132167 | 1729.5 | 66631 | 2129.5 | 50.5 | 75 | NA | NA | 67261 | 2192.5 |
| | 50+75+100 | 75 | 132050 | 1717.8 | 66514 | 2117.8 | 100 | 132221 | 1734.9 | 66685 | 2134.9 | 45.1 | 50 | NA | NA | 67286 | 2195 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 75 | 132243 | 1737.1 | 66707 | 2137.1 | 45.4 | 50 | NA | NA | 67286 | 2195 |
| | | 50 | 132027 | 1715.5 | 66491 | 2115.5 | 100 | 132171 | 1729.9 | 66635 | 2129.9 | 45.1 | 75 | NA | NA | 67261 | 2192.5 |
| | | 50 | 132025 | 1715.3 | 66489 | 2115.3 | 75 | 132145 | 1727.3 | 66609 | 2127.3 | 45.2 | 100 | NA | NA | 67236 | 2190 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 50 | 132167 | 1729.5 | 66631 | 2129.5 | 45.5 | 100 | NA | NA | 67236 | 2190 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 50 | 132216 | 1734.4 | 66680 | 2134.4 | 45.6 | 75 | NA | NA | 67261 | 2192.5 |
| | 50+100+100 | 100 | 132072 | 1720 | 66536 | 2120 | 100 | 132270 | 1739.8 | 66734 | 2139.8 | 40.2 | 50 | NA | NA | 67286 | 2195 |
| 50 | | 132027 | 1715.5 | 66491 | 2115.5 | 100 | 132171 | 1729.9 | 66635 | 2129.9 | 40.1 | 100 | NA | NA | 67236 | 2190 | |
| 100 | | 132072 | 1720 | 66536 | 2120 | 50 | 132216 | 1734.4 | 66680 | 2134.4 | 40.6 | 100 | NA | NA | 67236 | 2190 | |
| 75+75+75 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 75 | 132197 | 1732.5 | 66661 | 2132.5 | 45 | 75 | NA | NA | 67261 | 2192.5 | |

| | | | | | | | | | | | | | | | | |
|-------------|-----|--------|--------|-------|--------|-----|--------|--------|-------|--------|------|-----|----|----|-------|--------|
| 75+75+100 | 75 | 132050 | 1717.8 | 66514 | 2117.8 | 100 | 132221 | 1734.9 | 66685 | 2134.9 | 40.1 | 75 | NA | NA | 67261 | 2192.5 |
| | 100 | 132072 | 1720 | 66536 | 2120 | 75 | 132243 | 1737.1 | 66707 | 2137.1 | 40.4 | 75 | NA | NA | 67261 | 2192.5 |
| | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 75 | 132197 | 1732.5 | 66661 | 2132.5 | 40 | 100 | NA | NA | 67236 | 2190 |
| 75+100+100 | 100 | 132072 | 1720 | 66536 | 2120 | 100 | 132270 | 1739.8 | 66734 | 2139.8 | 35.2 | 75 | NA | NA | 67261 | 2192.5 |
| | 75 | 132050 | 1717.8 | 66514 | 2117.8 | 100 | 132221 | 1734.9 | 66685 | 2134.9 | 35.1 | 100 | NA | NA | 67236 | 2190 |
| | 100 | 132072 | 1720 | 66536 | 2120 | 75 | 132243 | 1737.1 | 66707 | 2137.1 | 35.4 | 100 | NA | NA | 67236 | 2190 |
| 100+100+100 | 100 | 132072 | 1720 | 66536 | 2120 | 100 | 132270 | 1739.8 | 66734 | 2139.8 | 30.2 | 100 | NA | NA | 67236 | 2190 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.1.66A-7: Test frequencies for CA_66A-66B

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | | | Wgap [MHz] | CC2 Note1 | | | | | CC3 Note1 | | | | |
|-----------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------|-----------------|-----------------------|-----------------|-----------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Max Wgap | 25+25+25 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 75.2 | 25 | NA | NA | 67263 | 2192.7 | 25 | NA | NA | 67311 | 2197.5 |
| | 25+25+50 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 70.3 | 25 | NA | NA | 67214 | 2187.8 | 50 | NA | NA | 67286 | 2195 |
| | | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 70 | 50 | NA | NA | 67236 | 2190 | 25 | NA | NA | 67308 | 2197.2 |
| | 25+25+50 | 50 | 132022 | 1715 | 66486 | 2115 | 70.2 | 25 | NA | NA | 67263 | 2192.7 | 25 | NA | NA | 67311 | 2197.5 |
| | 25+25+75 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 65.7 | 25 | NA | NA | 67168 | 2183.2 | 75 | NA | NA | 67261 | 2192.5 |
| | | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 65.2 | 75 | NA | NA | 67213 | 2187.7 | 25 | NA | NA | 67306 | 2197 |
| | 25+25+75 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 65.2 | 25 | NA | NA | 67263 | 2192.7 | 25 | NA | NA | 67311 | 2197.5 |
| | 25+25+100 | 100 | 132072 | 1720 | 66536 | 2120 | 60.2 | 25 | NA | NA | 67263 | 2192.7 | 25 | NA | NA | 67311 | 2197.5 |
| | 25+50+50 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 65.1 | 50 | NA | NA | 67187 | 2185.1 | 50 | NA | NA | 67286 | 2195 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 65.3 | 25 | NA | NA | 67214 | 2187.8 | 50 | NA | NA | 67286 | 2195 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 65 | 50 | NA | NA | 67236 | 2190 | 25 | NA | NA | 67308 | 2197.2 |
| | 25+50+75 | 50 | 132022 | 1715 | 66486 | 2115 | 60.7 | 25 | NA | NA | 67168 | 2183.2 | 75 | NA | NA | 67261 | 2192.5 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 60.2 | 75 | NA | NA | 67213 | 2187.7 | 25 | NA | NA | 67306 | 2197 |
| | 25+50+75 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 60.3 | 25 | NA | NA | 67214 | 2187.8 | 50 | NA | NA | 67286 | 2195 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 60 | 50 | NA | NA | 67236 | 2190 | 25 | NA | NA | 67308 | 2197.2 |
| | 25+50+100 | 100 | 132072 | 1720 | 66536 | 2120 | 55.3 | 25 | NA | NA | 67214 | 2187.8 | 50 | NA | NA | 67286 | 2195 |
| | | 100 | 132072 | 1720 | 66536 | 2120 | 55 | 50 | NA | NA | 67236 | 2190 | 25 | NA | NA | 67308 | 2197.2 |
| | 25+75+75 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 55.7 | 25 | NA | NA | 67168 | 2183.2 | 75 | NA | NA | 67261 | 2192.5 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 55.2 | 75 | NA | NA | 67213 | 2187.7 | 25 | NA | NA | 67306 | 2197 |
| | 25+75+100 | 100 | 132072 | 1720 | 66536 | 2120 | 50.7 | 25 | NA | NA | 67168 | 2183.2 | 75 | NA | NA | 67261 | 2192.5 |
| 100 | | 132072 | 1720 | 66536 | 2120 | 50.2 | 75 | NA | NA | 67213 | 2187.7 | 25 | NA | NA | 67306 | 2197 | |
| 50+50+50 | 50 | 132022 | 1715 | 66486 | 2115 | 60.1 | 50 | NA | NA | 67187 | 2185.1 | 50 | NA | NA | 67286 | 2195 | |
| 50+50+75 | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 55.1 | 50 | NA | NA | 67187 | 2185.1 | 50 | NA | NA | 67286 | 2195 | |
| 50+50+100 | 100 | 132072 | 1720 | 66536 | 2120 | 50.1 | 50 | NA | NA | 67187 | 2185.1 | 50 | NA | NA | 67286 | 2195 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.1.66A-8: Test frequencies for CA_66B-66A

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | | Wgap [MHz] | CC3 Note1 | | | | |
|-----------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| Max Wgap | 25+25+25 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 25 | 132045 | 1717.3 | 66509 | 2117.3 | 75.2 | 25 | NA | NA | 67311 | 2197.5 |
| | 25+25+50 | 25 | 132000 | 1712.8 | 66464 | 2112.8 | 50 | 132072 | 1720 | 66536 | 2120 | 70 | 25 | NA | NA | 67311 | 2197.5 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 25 | 132094 | 1722.2 | 66558 | 2122.2 | 70.3 | 25 | NA | NA | 67311 | 2197.5 |
| | 25+25+50 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 25 | 132045 | 1717.3 | 66509 | 2117.3 | 70.2 | 50 | NA | NA | 67286 | 2195 |
| | 25+25+75 | 25 | 132002 | 1713 | 66466 | 2113 | 75 | 132095 | 1722.3 | 66559 | 2122.3 | 65.2 | 25 | NA | NA | 67311 | 2197.5 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 25 | 132140 | 1726.8 | 66604 | 2126.8 | 65.7 | 25 | NA | NA | 67311 | 2197.5 |
| | 25+25+75 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 25 | 132045 | 1717.3 | 66509 | 2117.3 | 65.2 | 75 | NA | NA | 67261 | 2192.5 |
| | 25+25+100 | 25 | 131997 | 1712.5 | 66461 | 2112.5 | 25 | 132045 | 1717.3 | 66509 | 2117.3 | 60.2 | 100 | NA | NA | 67236 | 2190 |
| | 25+50+50 | 50 | 132022 | 1715 | 66486 | 2115 | 50 | 132121 | 1724.9 | 66585 | 2124.9 | 65.1 | 25 | NA | NA | 67311 | 2197.5 |
| | | 25 | 132000 | 1712.8 | 66464 | 2112.8 | 50 | 132072 | 1720 | 66536 | 2120 | 65 | 50 | NA | NA | 67286 | 2195 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 25 | 132094 | 1722.2 | 66558 | 2122.2 | 65.3 | 50 | NA | NA | 67286 | 2195 |
| | 25+50+75 | 25 | 132002 | 1713 | 66466 | 2113 | 75 | 132095 | 1722.3 | 66559 | 2122.3 | 60.2 | 50 | NA | NA | 67286 | 2195 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 25 | 132140 | 1726.8 | 66604 | 2126.8 | 60.7 | 50 | NA | NA | 67286 | 2195 |
| | 25+50+75 | 25 | 132000 | 1712.8 | 66464 | 2112.8 | 50 | 132072 | 1720 | 66536 | 2120 | 60 | 75 | NA | NA | 67261 | 2192.5 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 25 | 132094 | 1722.2 | 66558 | 2122.2 | 60.3 | 75 | NA | NA | 67261 | 2192.5 |
| | 25+50+100 | 25 | 132000 | 1712.8 | 66464 | 2112.8 | 50 | 132072 | 1720 | 66536 | 2120 | 55 | 100 | NA | NA | 67236 | 2190 |
| | | 50 | 132022 | 1715 | 66486 | 2115 | 25 | 132094 | 1722.2 | 66558 | 2122.2 | 55.3 | 100 | NA | NA | 67236 | 2190 |
| | 25+75+75 | 25 | 132002 | 1713 | 66466 | 2113 | 75 | 132095 | 1722.3 | 66559 | 2122.3 | 55.2 | 75 | NA | NA | 67261 | 2192.5 |
| | | 75 | 132047 | 1717.5 | 66511 | 2117.5 | 25 | 132140 | 1726.8 | 66604 | 2126.8 | 55.7 | 75 | NA | NA | 67261 | 2192.5 |
| | 25+75+100 | 25 | 132002 | 1713 | 66466 | 2113 | 75 | 132095 | 1722.3 | 66559 | 2122.3 | 50.2 | 100 | NA | NA | 67236 | 2190 |
| 75 | | 132047 | 1717.5 | 66511 | 2117.5 | 25 | 132140 | 1726.8 | 66604 | 2126.8 | 50.7 | 100 | NA | NA | 67236 | 2190 | |
| 50+50+50 | 50 | 132022 | 1715 | 66486 | 2115 | 50 | 132121 | 1724.9 | 66585 | 2124.9 | 60.1 | 50 | NA | NA | 67286 | 2195 | |
| 50+50+75 | 50 | 132022 | 1715 | 66486 | 2115 | 50 | 132121 | 1724.9 | 66585 | 2124.9 | 55.1 | 75 | NA | NA | 67261 | 2192.5 | |
| 50+50+100 | 50 | 132022 | 1715 | 66486 | 2115 | 50 | 132121 | 1724.9 | 66585 | 2124.9 | 50.1 | 100 | NA | NA | 67236 | 2190 | |

Note 1: Carriers in increasing frequency order.

4.3.1.1.67 FDD reference test frequencies for CA in operating band 67

Table 4.3.1.1.67-1: Test frequencies for E-UTRA channel bandwidth for operating band 67

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|--|-----------------|-------------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | NA ^[1] | NA | 67361 | 740.5 |
| | 10 | NA ^[1] | NA | 67386 | 743 |
| | 15 | NA ^[1] | NA | 67411 | 745.5 |
| Mid Range | 5/10/15/20 | NA ^[1] | NA | 67436 | 748 |
| High Range | 5 | NA ^[1] | NA | 67511 | 755.5 |
| | 10 | NA ^[1] | NA | 67486 | 753 |
| | 15 | NA ^[1] | NA | 67461 | 750.5 |
| NOTE 1: Restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell. | | | | | |

4.3.1.1.68 FDD reference test frequencies for operating band 68

Table 4.3.1.1.68-1: Test frequencies for E-UTRA channel bandwidth for operating band 68

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 132697 | 700.5 | 67561 | 755.5 |
| | 10 | 132722 | 703 | 67586 | 758 |
| | 15 | 132747 | 705.5 | 67611 | 760.5 |
| Mid Range | 5/10/15 | 132822 | 713 | 67686 | 768 |
| High Range | 5 | 132947 | 725.5 | 67811 | 780.5 |
| | 10 | 132922 | 723 | 67786 | 778 |
| | 15 | 132897 | 720.5 | 67761 | 775.5 |

4.3.1.1.69 FDD reference test frequencies for operating band 69

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-------------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | NA ^[1] | NA | 67861 | 2572.5 |
| | 10 | NA ^[1] | NA | 67886 | 2575 |
| | 15 | NA ^[1] | NA | 67911 | 2577.5 |
| | 20 | NA ^[1] | NA | 67936 | 2580 |
| Mid Range | 5/10/15/20 | NA ^[1] | NA | 68086 | 2595 |
| High Range | 5 | NA ^[1] | NA | 68311 | 2617.5 |
| | 10 | NA ^[1] | NA | 68286 | 2615 |
| | 15 | NA ^[1] | NA | 68261 | 2612.5 |
| | 20 | NA ^[1] | NA | 68236 | 2610 |

NOTE 1: Restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.

4.3.1.1.70 FDD reference test frequencies for operating band 70

Table 4.3.1.1.70-1: Test frequencies for E-UTRA channel bandwidth for operating band 70

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|--------------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 132997 | 1697.5 | 68361 | 1997.5 |
| | 10 | 133022 | 1700 | 68386 | 2000 |
| | 15 | 133047 | 1702.5 | 68411 | 2002.5 |
| Paired Mid Range ¹ | 5/10/15 | 133047 | 1702.5 | 68411 | 2002.5 |
| Mid Range ² | 5/10/15 | NA | NA | 68461 | 2007.5 |
| Paired High Range ¹ | 5 | 133097 | 1707.5 | 68461 | 2007.5 |
| | 10 | 133072 | 1705 | 68436 | 2005 |
| | 15 | 133047 | 1702.5 | 68411 | 2002.5 |
| High Range ² | 5 | NA | NA | 68561 | 2017.5 |
| | 10 | NA | NA | 68536 | 2015 |
| | 15 | NA | NA | 68511 | 2012.5 |

Note 1: Applicable if UL is configured on the CC.

Note 2: Applicable if no UL is configured on the CC.

4.3.1.1.70A FDD reference test frequencies for CA in operating band 70

Table 4.3.1.1.70A-1: Test frequencies for CA_70C

| Test Frequency ID ² | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | | | CC2 Note1 | | | | |
|--------------------------------|-------------------------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|-----------|-----------------|-----------------------|-----------------|-----------------------|
| | | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] | BW [RB] | N _{UL} | f _{UL} [MHz] | N _{DL} | f _{DL} [MHz] |
| 1 | 25+100 | 25 | 132997 | 1697.5 | 68361 | 1997.5 | 100 | NA | NA | 68478 | 2009.2 |
| 2 ³ | 50+75 | 50 | 133072 | 1705 | 68386 | 2000 | 75 | NA | NA | 68506 | 2012 |
| 3 | 75+50 | 75 | 133047 | 1702.5 | 68411 | 2002.5 | 50 | NA | NA | 68531 | 2014.5 |

Note 1: Carriers in increasing frequency order.
 Note 2: These reflect the CA operation scenarios defined for CA_70C.
 Note 3: This combination is for 295MHz Tx-Rx separation in CA operation.

4.3.1.1.71 FDD reference test frequencies for operating band 71

Table 4.3.1.1.71-1: Test frequencies for E-UTRA channel bandwidth for operating band 71

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 133147 | 665.5 | 68611 | 619.5 |
| | 10 | 133172 | 668 | 68636 | 622 |
| | 15 | 133197 | 670.5 | 68661 | 624.5 |
| | 20 | 133222 | 673 | 68686 | 627 |
| Mid Range | 5/10/15 | 133297 | 680.5 | 68761 | 634.5 |
| | 20 | 133322 | 683 | 68786 | 637 |
| High Range | 5 | 133447 | 695.5 | 68911 | 649.5 |
| | 10 | 133422 | 693 | 68886 | 647 |
| | 15 | 133397 | 690.5 | 68861 | 644.5 |
| | 20 | 133372 | 688 | 68836 | 642 |

4.3.1.1.72 FDD reference test frequencies for operating band 72

Table 4.3.1.1.72-1: Test frequencies for E-UTRA channel bandwidth for operating band 72

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|---|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 133479 | 451.7 | 68943 | 461.7 |
| | 3 ^[1] | 133487 | 452.5 | 68951 | 462.5 |
| | 5 ^[1] | 133497 | 453.5 | 68961 | 463.5 |
| Mid Range | 1.4/3 ^[1] / 5 ^[1] | 133497 | 453.5 | 68961 | 463.5 |
| High Range | 1.4 | 133515 | 455.3 | 68979 | 465.3 |
| | 3 ^[1] | 133507 | 454.5 | 68971 | 464.5 |
| | 5 ^[1] | 133497 | 453.5 | 68961 | 463.5 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.73 FDD reference test frequencies for operating band 73

Table 4.3.1.1.73-1: Test frequencies for E-UTRA channel bandwidth for operating band 73

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|---|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 133529 | 450.7 | 68993 | 460.7 |
| | 3 ^[1] | 133537 | 451.5 | 69001 | 461.5 |
| | 5 ^[1] | 133547 | 452.5 | 69011 | 462.5 |
| Mid Range | 1.4/3 ^[1] / 5 ^[1] | 133547 | 452.5 | 69011 | 462.5 |
| High Range | 1.4 | 133565 | 454.3 | 69029 | 464.3 |
| | 3 ^[1] | 133557 | 453.5 | 69021 | 463.5 |
| | 5 ^[1] | 133547 | 452.5 | 69011 | 462.5 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.1.74 FDD reference test frequencies for operating band 74

Table 4.3.1.1.74-1: Test frequencies for E-UTRA channel bandwidth for operating band 74

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 133579 | 1427.7 | 69043 | 1475.7 |
| | 3 | 133587 | 1428.5 | 69051 | 1476.5 |
| | 5 | 133597 | 1429.5 | 69061 | 1477.5 |
| | 10 | 133622 | 1432 | 69086 | 1480 |
| | 15 | 133647 | 1434.5 | 69111 | 1482.5 |
| | 20 | 133672 | 1437 | 69136 | 1485 |
| Mid Range | 1.4/3/5/10/15/20 | 133787 | 1448.5 | 69251 | 1496.5 |
| High Range | 1.4 | 133995 | 1469.3 | 69459 | 1517.3 |
| | 3 | 133987 | 1468.5 | 69451 | 1516.5 |
| | 5 | 133977 | 1467.5 | 69441 | 1515.5 |
| | 10 | 133952 | 1465 | 69416 | 1513 |
| | 15 | 133927 | 1434.5 | 69391 | 1510.5 |
| | 20 | 133902 | 1460 | 69366 | 1508 |

4.3.1.1.75 to 4.3.1.1.84 FFS

Note: Sub-clauses 4.3.1.1.75 to 4.3.1.1.84 are marked as FFS as bands 75 to 84 are not yet defined in TS 36.101 [27].

4.3.1.1.85 FDD reference test frequencies for operating band 85

Table 4.3.1.1.85-1: Test frequencies for E-UTRA channel bandwidth for operating band 85

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-------------------------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 ^[1] | 134027 | 700.5 | 70391 | 730.5 |
| | 10 ^[1] | 134052 | 703 | 70416 | 733 |
| Mid Range | 5 ^[1] /10 ^[1] | 134092 | 707 | 70456 | 737 |
| High Range | 5 ^[1] | 134157 | 713.5 | 70521 | 743.5 |
| | 10 ^[1] | 134132 | 711 | 70496 | 741 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.2 TDD Mode Test frequencies

4.3.1.2.1 TDD reference test frequencies for Operating Band 33

Table 4.3.1.2.1-1: Test frequencies for E-UTRA channel bandwidth for operating band 33

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 5 | 36025 | 1902.5 |
| | 10 | 36050 | 1905 |
| | 15 | 36075 | 1907.5 |
| | 20 | 36100 | 1910 |
| Mid Range | 5/10/15/20 | 36100 | 1910 |
| High Range | 5 | 36175 | 1917.5 |
| | 10 | 36150 | 1915 |
| | 15 | 36125 | 1912.5 |
| | 20 | 36100 | 1910 |

4.3.1.2.2 TDD reference test frequencies for Operating Band 34

Table 4.3.1.2.2-1: Test frequencies for E-UTRA channel bandwidth for operating band 34

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 5 | 36225 | 2012.5 |
| | 10 | 36250 | 2015 |
| | 15 | 36275 | 2017.5 |
| Mid Range | 5/10/15 | 36275 | 2017.5 |
| High Range | 5 | 36325 | 2022.5 |
| | 10 | 36300 | 2020 |
| | 15 | 36275 | 2017.5 |

4.3.1.2.3 TDD reference test frequencies for Operating Band 35

Table 4.3.1.2.3-1: Test frequencies for E-UTRA channel bandwidth for operating band 35

| Test Frequency ID | Bandwidth [MHz] | EARFCN [MHz] | Frequency (UL and DL) [MHz] |
|-------------------|------------------|--------------|-----------------------------|
| Low Range | 1.4 | 36357 | 1850.7 |
| | 3 | 36365 | 1851.5 |
| | 5 | 36375 | 1852.5 |
| | 10 | 36400 | 1855 |
| | 15 | 36425 | 1857.5 |
| | 20 | 36450 | 1860 |
| Mid Range | 1.4/3/5/10/15/20 | 36650 | 1880 |
| High Range | 1.4 | 36943 | 1909.3 |
| | 3 | 36935 | 1908.5 |
| | 5 | 36925 | 1907.5 |
| | 10 | 36900 | 1905 |
| | 15 | 36875 | 1902.5 |
| | 20 | 36850 | 1900 |

4.3.1.2.4 TDD reference test frequencies for Operating Band 36

Table 4.3.1.2.4-1: Test frequencies for E-UTRA channel bandwidth for operating band 36

| Test Frequency ID | Bandwidth [MHz] | EARFCN [MHz] | Frequency (UL and DL) [MHz] |
|-------------------|------------------|--------------|-----------------------------|
| Low Range | 1.4 | 36957 | 1930.7 |
| | 3 | 36965 | 1931.5 |
| | 5 | 36975 | 1932.5 |
| | 10 | 37000 | 1935 |
| | 15 | 37025 | 1937.5 |
| | 20 | 37050 | 1940 |
| Mid Range | 1.4/3/5/10/15/20 | 37250 | 1960 |
| High Range | 1.4 | 37543 | 1989.3 |
| | 3 | 37535 | 1988.5 |
| | 5 | 37525 | 1987.5 |
| | 10 | 37500 | 1985 |
| | 15 | 37475 | 1982.5 |
| | 20 | 37450 | 1980 |

4.3.1.2.5 TDD reference test frequencies for Operating Band 37

Table 4.3.1.2.5-1: Test frequencies for E-UTRA channel bandwidth for operating band 37

| Test Frequency ID | Bandwidth [MHz] | EARFCN [MHz] | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------------|-----------------------------|
| Low Range | 5 | 37575 | 1912.5 |
| | 10 | 37600 | 1915 |
| | 15 | 37625 | 1917.5 |
| | 20 | 37650 | 1920 |
| Mid Range | 5/10/15/20 | 37650 | 1920 |
| High Range | 5 | 37725 | 1927.5 |
| | 10 | 37700 | 1925 |
| | 15 | 37675 | 1922.5 |
| | 20 | 37650 | 1920 |

4.3.1.2.6 TDD reference test frequencies for Operating Band 38

Table 4.3.1.2.6-1: Test frequencies for E-UTRA channel bandwidth for operating band 38

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 5 | 37775 | 2572.5 |
| | 10 | 37800 | 2575 |
| | 15 | 37825 | 2577.5 |
| | 20 | 37850 | 2580 |
| Mid Range | 5/10/15/20 | 38000 | 2595 |
| High Range | 5 | 38225 | 2617.5 |
| | 10 | 38200 | 2615 |
| | 15 | 38175 | 2612.5 |
| | 20 | 38150 | 2610 |

4.3.1.2.6A TDD reference test frequencies for CA in operating band 38

Table 4.3.1.2.6A-1: Test frequencies for CA_38C

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | CC2 Note1 | | |
|-------|-------------------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 75+75 | 75 | 37825 | 2577.5 | 75 | 37975 | 2592.5 |
| | 100+100 | 100 | 37850 | 2580 | 100 | 38048 | 2599.8 |
| Mid | 75+75 | 75 | 37925 | 2587.5 | 75 | 38075 | 2602.5 |
| | 100+100 | 100 | 37901 | 2585.1 | 100 | 38099 | 2604.9 |
| High | 75+75 | 75 | 38025 | 2597.5 | 75 | 38175 | 2612.5 |
| | 100+100 | 100 | 37952 | 2590.2 | 100 | 38150 | 2610 |

Note 1: Carriers in increasing frequency order.

4.3.1.2.7 TDD reference test frequencies for Operating Band 39

Table 4.3.1.2.7-1: Test frequencies for E-UTRA channel bandwidth for operating band 39

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 5 | 38275 | 1882.5 |
| | 10 | 38300 | 1885 |
| | 15 | 38325 | 1887.5 |
| | 20 | 38350 | 1890 |
| Mid Range | 5/10/15/20 | 38450 | 1900 |
| High Range | 5 | 38625 | 1917.5 |
| | 10 | 38600 | 1915 |
| | 15 | 38575 | 1912.5 |
| | 20 | 38550 | 1910 |

4.3.1.2.7A TDD reference test frequencies for CA in Operating Band 39

Table 4.3.1.2.7A-1: Test frequencies for CA_39C

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | CC2 Note1 | | |
|-------|---|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 25+100 | 25 | 38283 | 1883.3 | 100 | 38400 | 1895.0 |
| | | 100 | 38350 | 1890 | 25 | 38467 | 1901.7 |
| | 50+100 | 50 | 38305 | 1885.5 | 100 | 38449 | 1899.9 |
| | | 100 | 38350 | 1890 | 50 | 38494 | 1904.4 |
| | 75+100 | 75 | 38328 | 1887.8 | 100 | 38499 | 1904.9 |
| | | 100 | 38350 | 1890 | 75 | 38521 | 1907.1 |
| Mid | 25+100 | 25 | 38358 | 1890.8 | 100 | 38475 | 1902.5 |
| | | 100 | 38425 | 1897.5 | 25 | 38542 | 1909.2 |
| | 50+100 | 50 | 38356 | 1890.6 | 100 | 38500 | 1905.0 |
| | | 100 | 38401 | 1895.1 | 50 | 38545 | 1909.5 |
| | 75+100 | 75 | 38353 | 1890.3 | 100 | 38524 | 1907.4 |
| | | 100 | 38376 | 1892.6 | 75 | 38547 | 1909.7 |
| High | 25+100 | 25 | 38433 | 1898.3 | 100 | 38550 | 1910 |
| | | 100 | 38500 | 1905.0 | 25 | 38617 | 1916.7 |
| | 50+100 | 50 | 38406 | 1895.6 | 100 | 38550 | 1910 |
| | | 100 | 38451 | 1900.1 | 50 | 38595 | 1914.5 |
| | 75+100 | 75 | 38379 | 1892.9 | 100 | 38550 | 1910 |
| | | 100 | 38401 | 1895.1 | 75 | 38572 | 1912.2 |

Note 1: Carriers in increasing frequency order.

4.3.1.2.8 TDD reference test frequencies for Operating Band 40

Table 4.3.1.2.8-1: Test frequencies for E-UTRA channel bandwidth for operating band 40

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|--------------------|--------|--------------------------------|
| Low Range | 5 | 38675 | 2302.5 |
| | 10 | 38700 | 2305 |
| | 15 | 38725 | 2307.5 |
| | 20 | 38750 | 2310 |
| Mid Range | 5/10/15/20 | 39150 | 2350 |
| High Range | 5 | 39625 | 2397.5 |
| | 10 | 39600 | 2395 |
| | 15 | 39575 | 2392.5 |
| | 20 | 39550 | 2390 |

4.3.1.2.8A TDD reference test frequencies for CA in operating band 40

Table 4.3.1.2.9A-0: Test frequencies for CA_40A-40A

| Test Frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | Wgap [MHz] | CC2 Note1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max WGap | 50+50 | 50 | 38700 | 2305 | 80 | 50 | 39600 | 2395 |
| | 50+75 | 50 | 38700 | 2305 | 75 | 75 | 39575 | 2392.5 |
| | | 75 | 38725 | 2307.5 | 75 | 50 | 39600 | 2395 |
| | 50+100 | 50 | 38700 | 2305 | 70 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 70 | 50 | 39600 | 2395 |
| | 75+75 | 75 | 38725 | 2307.5 | 70 | 75 | 39575 | 2392.5 |
| | 75+100 | 75 | 38725 | 2307.5 | 65 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 65 | 75 | 39575 | 2392.5 |
| 100+100 | 100 | 38750 | 2310 | 60 | 100 | 39550 | 2390 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.8A-1: Test frequencies for CA_40C

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | CC2 Note1 | | |
|---------|-------------------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 50+100 | 50 | 38705 | 2305.5 | 100 | 38849 | 2319.9 |
| | | 100 | 38750 | 2310 | 50 | 38894 | 2324.4 |
| | 75+75 | 75 | 38725 | 2307.5 | 75 | 38875 | 2322.5 |
| | 75+100 | 75 | 38728 | 2307.8 | 100 | 38899 | 2324.9 |
| | | 100 | 38750 | 2310 | 75 | 38921 | 2327.1 |
| 100+100 | 100 | 38750 | 2310 | 100 | 38948 | 2329.8 | |
| Mid | 50+100 | 50 | 39056 | 2340.6 | 100 | 39200 | 2355.0 |
| | | 100 | 39101 | 2345.1 | 50 | 39245 | 2359.5 |
| | 75+75 | 75 | 39075 | 2342.5 | 75 | 39225 | 2357.5 |
| | 75+100 | 75 | 39053 | 2340.3 | 100 | 39224 | 2357.4 |
| | | 100 | 39076 | 2342.6 | 75 | 39247 | 2359.7 |
| 100+100 | 100 | 39051 | 2340.1 | 100 | 39249 | 2359.9 | |
| High | 50+100 | 50 | 39406 | 2375.6 | 100 | 39550 | 2390 |
| | | 100 | 39451 | 2380.1 | 50 | 39595 | 2394.5 |
| | 75+75 | 75 | 39425 | 2377.5 | 75 | 39575 | 2392.5 |
| | 75+100 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | | 100 | 39401 | 2375.1 | 75 | 39572 | 2392.2 |
| 100+100 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.8A-2: Test frequencies for CA_40D

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | CC3 Note1 | | |
|-------------|---|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 50+100+100 | 50 | 38705 | 2305.5 | 100 | 38849 | 2319.9 | 100 | 39047 | 2339.7 |
| | | 100 | 38750 | 2310 | 50 | 38894 | 2324.4 | 100 | 39038 | 2338.8 |
| | | 100 | 38750 | 2310 | 100 | 38948 | 2329.8 | 50 | 39092 | 2344.2 |
| | 75+100+100 | 75 | 38728 | 2307.8 | 100 | 38899 | 2324.9 | 100 | 39097 | 2344.7 |
| | | 100 | 38750 | 2310 | 75 | 38921 | 2327.1 | 100 | 39092 | 2344.2 |
| | | 100 | 38750 | 2310 | 100 | 38948 | 2329.8 | 75 | 39119 | 2346.9 |
| 100+100+100 | 100 | 38750 | 2310 | 100 | 38948 | 2329.8 | 100 | 39146 | 2349.6 | |
| Mid | 50+100+100 | 50 | 38957 | 2330.7 | 100 | 39101 | 2345.1 | 100 | 39299 | 2364.9 |
| | | 100 | 39006 | 2335.6 | 50 | 39150 | 2350 | 100 | 39294 | 2364.4 |
| | | 100 | 39002 | 2335.2 | 100 | 39200 | 2355 | 50 | 39344 | 2369.4 |
| | 75+100+100 | 75 | 38954 | 2330.4 | 100 | 39125 | 2347.5 | 100 | 39323 | 2367.3 |
| | | 100 | 38979 | 2332.9 | 75 | 39150 | 2350 | 100 | 39321 | 2367.1 |
| | | 100 | 38977 | 2332.7 | 100 | 39175 | 2352.5 | 75 | 39346 | 2369.6 |
| 100+100+100 | 100 | 38952 | 2330.2 | 100 | 39150 | 2350 | 100 | 39348 | 2369.8 | |
| High | 50+100+100 | 50 | 39208 | 2355.8 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |
| | | 100 | 39262 | 2361.2 | 50 | 39406 | 2375.6 | 100 | 39550 | 2390 |
| | | 100 | 39253 | 2360.3 | 100 | 39451 | 2380.1 | 50 | 39595 | 2394.5 |
| | 75+100+100 | 75 | 39181 | 2353.1 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |
| | | 100 | 39208 | 2355.8 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | | 100 | 39203 | 2355.3 | 100 | 39401 | 2375.1 | 75 | 39572 | 2392.2 |
| 100+100+100 | 100 | 39154 | 2350.4 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.8A-3: Test frequencies for CA_40E

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | CC3 Note1 | | | CC4 Note1 | | |
|-----------------|---|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 75+75+75+100 | 75 | 38728 | 2307.8 | 75 | 38878 | 2322.8 | 75 | 39028 | 2337.8 | 100 | 39199 | 2354.9 |
| | 75+75+100+100 | 75 | 38728 | 2307.8 | 75 | 38878 | 2322.8 | 100 | 39049 | 2339.9 | 100 | 39247 | 2359.7 |
| | | 75 | 38728 | 2307.8 | 100 | 38899 | 2324.9 | 75 | 39070 | 2342 | 100 | 39241 | 2359.1 |
| | | 100 | 38750 | 2310 | 75 | 38921 | 2327.1 | 75 | 39071 | 2342.1 | 100 | 39242 | 2359.2 |
| | 75+100+100+100 | 75 | 38728 | 2307.8 | 100 | 38899 | 2324.9 | 100 | 39097 | 2344.7 | 100 | 39295 | 2364.5 |
| | | 100 | 38750 | 2310 | 75 | 38921 | 2327.1 | 100 | 39092 | 2344.2 | 100 | 39290 | 2364 |
| | | 100 | 38750 | 2310 | 100 | 38948 | 2329.8 | 75 | 39119 | 2346.9 | 100 | 39290 | 2364 |
| | 100+100+100+100 | 100 | 38750 | 2310 | 100 | 38948 | 2329.8 | 100 | 39146 | 2349.6 | 100 | 39344 | 2369.4 |
| | Mid | 75+75+75+100 | 75 | 38903 | 2325.3 | 75 | 39053 | 2340.3 | 75 | 39203 | 2355.3 | 100 | 39374 |
| 75+75+100+100 | | 75 | 38879 | 2322.9 | 75 | 39029 | 2337.9 | 100 | 39200 | 2355 | 100 | 39398 | 2374.8 |
| | | 75 | 38882 | 2323.2 | 100 | 39053 | 2340.3 | 75 | 39224 | 2357.4 | 100 | 39395 | 2374.5 |
| | | 100 | 38904 | 2325.4 | 75 | 39075 | 2342.5 | 75 | 39225 | 2357.5 | 100 | 39396 | 2374.6 |
| 75+100+100+100 | | 75 | 38855 | 2320.5 | 100 | 39026 | 2337.6 | 100 | 39224 | 2357.4 | 100 | 39422 | 2377.2 |
| | | 100 | 38880 | 2323 | 75 | 39051 | 2340.1 | 100 | 39222 | 2357.2 | 100 | 39420 | 2377 |
| | | 100 | 38880 | 2323 | 100 | 39078 | 2342.8 | 75 | 39249 | 2359.9 | 100 | 39420 | 2377 |
| 100+100+100+100 | | 100 | 38853 | 2320.3 | 100 | 39051 | 2340.1 | 100 | 39249 | 2359.9 | 100 | 39447 | 2379.7 |
| High | 75+75+75+100 | 75 | 39079 | 2342.9 | 75 | 39229 | 2357.9 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | 75+75+100+100 | 75 | 39031 | 2338.1 | 75 | 39181 | 2353.1 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |
| | | 75 | 39037 | 2338.7 | 100 | 39208 | 2355.8 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | | 100 | 39058 | 2340.8 | 75 | 39229 | 2357.9 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | 75+100+100+100 | 75 | 38983 | 2333.3 | 100 | 39154 | 2350.4 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |
| | | 100 | 39010 | 2336 | 75 | 39181 | 2353.1 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |
| | | 100 | 39010 | 2336 | 100 | 39208 | 2355.8 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | 100+100+100+100 | 100 | 38956 | 2330.6 | 100 | 39154 | 2350.4 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.8A-4: Test frequencies for CA_40A-40A

| Test Frequency ID | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | Wgap [MHz] | CC2 Note1 | | |
|-------------------|---|--------------|--------------------|-----------------------------|---------------|--------------|--------------------|-----------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max WGap | 50+50 | 50 | 38700 | 2305 | 80 | 50 | 39600 | 2395 |
| | 50+75 | 50 | 38700 | 2305 | 75 | 75 | 39575 | 2392.5 |
| | | 75 | 38725 | 2307.5 | 75 | 50 | 39600 | 2395 |
| | 50+100 | 50 | 38700 | 2305 | 70 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 70 | 50 | 39600 | 2395 |
| | 75+75 | 75 | 38725 | 2307.5 | 70 | 75 | 39575 | 2392.5 |
| | 75+100 | 75 | 38725 | 2307.5 | 65 | 100 | 39550 | 2390 |
| 100 | | 38750 | 2310 | 65 | 75 | 39575 | 2392.5 | |
| 100+100 | 100 | 38750 | 2310 | 60 | 100 | 39550 | 2390 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.8A-5: Test frequencies for CA_40A-40C

| Test Frequency ID | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | Wgap [MHz] | CC2 Note1 | | | CC3 Note1 | | |
|-------------------|---|--------------|--------------------|-----------------------------|---------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max WGap | 100+50+100 | 100 | 38750 | 2310 | 50.6 | 50 | 39406 | 2375.6 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 50.1 | 100 | 39451 | 2380.1 | 50 | 39595 | 2394.5 |
| | 100+75+75 | 100 | 38750 | 2310 | 50 | 75 | 39425 | 2377.5 | 75 | 39575 | 2392.5 |
| | 100+75+100 | 100 | 38750 | 2310 | 45.4 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 45.1 | 100 | 39401 | 2375.1 | 75 | 39572 | 2392.2 |
| | 100+100+100 | 100 | 38750 | 2310 | 40.2 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.8A-6: Test frequencies for CA_40C-40C

| Test frequency ID | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | Wgap [MHz] | CC3 Note1 | | | CC4 Note1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max Wgap | 50+50+100+100 | 50 | 38705 | 2305.5 | 100 | 38849 | 2319.9 | 40.7 | 50 | 39406 | 2375.6 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 50 | 38894 | 2324.4 | 40.7 | 100 | 39451 | 2380.1 | 50 | 39595 | 2394.5 |
| | | 50 | 38705 | 2305.5 | 100 | 38849 | 2319.9 | 40.2 | 100 | 39451 | 2380.1 | 50 | 39595 | 2394.5 |
| | | 100 | 38750 | 2310 | 50 | 38894 | 2324.4 | 41.2 | 50 | 39406 | 2375.6 | 100 | 39550 | 2390 |
| | 50+75+75 100 | 50 | 38705 | 2305.5 | 100 | 38849 | 2319.9 | 40.1 | 75 | 39425 | 2377.5 | 75 | 39575 | 2392.5 |
| | | 100 | 38750 | 2310 | 50 | 38894 | 2324.4 | 40.6 | 75 | 39425 | 2377.5 | 75 | 39575 | 2392.5 |
| | | 75 | 38725 | 2307.5 | 75 | 38875 | 2322.5 | 40.6 | 50 | 39406 | 2375.6 | 100 | 39550 | 2390 |
| | | 75 | 38725 | 2307.5 | 75 | 38875 | 2322.5 | 40.1 | 100 | 39451 | 2380.1 | 50 | 39595 | 2394.5 |
| | 75+75+75+75 | 75 | 38725 | 2307.5 | 75 | 38875 | 2322.5 | 40 | 75 | 39425 | 2377.5 | 75 | 39575 | 2392.5 |
| | 75+75+75+100 | 75 | 38725 | 2307.5 | 75 | 38875 | 2322.5 | 35.4 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | | 75 | 38725 | 2307.5 | 75 | 38875 | 2322.5 | 35.1 | 100 | 39401 | 2375.1 | 75 | 39572 | 2392.2 |
| | | 75 | 38728 | 2307.8 | 100 | 38899 | 2324.9 | 35.1 | 75 | 39425 | 2377.5 | 75 | 39575 | 2392.5 |
| | | 100 | 38750 | 2310 | 75 | 38921 | 2327.1 | 35.4 | 75 | 39425 | 2377.5 | 75 | 39575 | 2392.5 |
| | 50+75+100+100 | 50 | 38705 | 2305.5 | 100 | 38849 | 2319.9 | 35.5 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | | 50 | 38705 | 2305.5 | 100 | 38849 | 2319.9 | 35.2 | 100 | 39401 | 2375.1 | 75 | 39572 | 2392.2 |
| | | 75 | 38728 | 2307.8 | 100 | 38899 | 2324.9 | 35.7 | 50 | 39406 | 2375.6 | 100 | 39550 | 2390 |
| | | 75 | 38728 | 2307.8 | 100 | 38899 | 2324.9 | 35.2 | 100 | 39451 | 2380.1 | 50 | 39595 | 2394.5 |
| | | 100 | 38750 | 2310 | 50 | 38894 | 2324.4 | 36 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 50 | 38894 | 2324.4 | 35.7 | 100 | 39401 | 2375.1 | 75 | 39572 | 2392.2 |
| | | 100 | 38750 | 2310 | 75 | 38921 | 2327.1 | 36 | 50 | 39406 | 2375.6 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 75 | 38921 | 2327.1 | 35.5 | 100 | 39451 | 2380.1 | 50 | 39595 | 2394.5 |
| | 50+100+100+100 | 50 | 38705 | 2305.5 | 100 | 38849 | 2319.9 | 30.3 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 50 | 38894 | 2324.4 | 30.8 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 100 | 38948 | 2329.8 | 30.8 | 50 | 39406 | 2375.6 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 100 | 38948 | 2329.8 | 30.3 | 100 | 39451 | 2380.1 | 50 | 39595 | 2394.5 |
| | 75+75+100+100 | 75 | 38725 | 2307.5 | 75 | 38875 | 2322.5 | 30.2 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 100 | 38948 | 2329.8 | 30.2 | 75 | 39425 | 2377.5 | 75 | 39575 | 2392.5 |

| | | | | | | | | | | | | | | |
|--|---------------------|-----|-------|--------|-----|-------|--------|------|-----|-------|--------|-----|-------|--------|
| | | 75 | 38728 | 2307.8 | 100 | 38899 | 2324.9 | 30.5 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | | 75 | 38728 | 2307.8 | 100 | 38899 | 2324.9 | 30.2 | 100 | 39401 | 2375.1 | 75 | 39572 | 2392.2 |
| | | 100 | 38750 | 2310 | 75 | 38921 | 2327.1 | 30.8 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 75 | 38921 | 2327.1 | 30.5 | 100 | 39401 | 2375.1 | 75 | 39572 | 2392.2 |
| | 75+100+ 100+100 | 75 | 38728 | 2307.8 | 100 | 38899 | 2324.9 | 25.3 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 75 | 38921 | 2327.1 | 25.6 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 100 | 38948 | 2329.8 | 25.6 | 75 | 39379 | 2372.9 | 100 | 39550 | 2390 |
| | | 100 | 38750 | 2310 | 100 | 38948 | 2329.8 | 25.3 | 100 | 39401 | 2375.1 | 75 | 39572 | 2392.2 |
| | 100+100+ 100+100 | 100 | 38750 | 2310 | 100 | 38948 | 2329.8 | 20.4 | 100 | 39352 | 2370.2 | 100 | 39550 | 2390 |

Note 1: Carriers in increasing frequency order.

4.3.1.2.9 TDD reference test frequencies for Operating Band 41

Table 4.3.1.2.9-1: Test frequencies for E-UTRA channel bandwidth for operating band 41

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 5 | 39675 | 2498.5 |
| | 10 | 39700 | 2501 |
| | 15 | 39725 | 2503.5 |
| | 20 | 39750 | 2506 |
| Mid Range | 5/10/15/20 | 40620 | 2593 |
| High Range | 5 | 41565 | 2687.5 |
| | 10 | 41540 | 2685 |
| | 15 | 41515 | 2682.5 |
| | 20 | 41490 | 2680 |

4.3.1.2.9A TDD reference test frequencies for CA in operating band 41

Table 4.3.1.2.9A-1: Test frequencies for CA_41C

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | CC2 Note1 | | |
|----------------------|---|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 25+100 | 25 | 39683 | 2499.3 | 100 | 39800 | 2511 |
| | | 100 | 39750 | 2506 | 25 | 39867 | 2517.7 |
| | 50+75 | 50 | 39703 | 2501.3 | 75 | 39823 | 2513.3 |
| | | 75 | 39725 | 2503.5 | 50 | 39845 | 2515.5 |
| | 50+100 | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 |
| | 75+75 | 75 | 39725 | 2503.5 | 75 | 39875 | 2518.5 |
| | 75+100 | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 |
| 100 | | 39750 | 2506 | 75 | 39921 | 2523.1 | |
| 100+100 | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | |
| Mid | 25+100 | 25 | 40528 | 2583.8 | 100 | 40645 | 2595.5 |
| | | 100 | 40595 | 2590.5 | 25 | 40712 | 2602.2 |
| | 50+75 | 50 | 40549 | 2585.9 | 75 | 40669 | 2597.9 |
| | | 75 | 40571 | 2588.1 | 50 | 40691 | 2600.1 |
| | 50+100 | 50 | 40526 | 2583.6 | 100 | 40670 | 2598.0 |
| | | 100 | 40571 | 2588.1 | 50 | 40715 | 2602.5 |
| | 75+75 | 75 | 40545 | 2585.5 | 75 | 40695 | 2600.5 |
| | 75+100 | 75 | 40523 | 2583.3 | 100 | 40694 | 2600.4 |
| | | 100 | 40546 | 2585.6 | 75 | 40717 | 2602.7 |
| | 100+100 | 100 | 40521 | 2583.1 | 100 | 40719 | 2602.9 |
| 100+100 ² | 100 | 40529 | 2583.9 | 100 | 40712 | 2602.2 | |
| High | 25+100 | 25 | 41373 | 2668.3 | 100 | 41490 | 2680 |
| | | 100 | 41440 | 2675 | 25 | 41557 | 2686.7 |
| | 50+75 | 50 | 41395 | 2670.5 | 75 | 41515 | 2682.5 |
| | | 75 | 41417 | 2672.7 | 50 | 41537 | 2684.7 |
| | 50+100 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | 75+75 | 75 | 41365 | 2667.5 | 75 | 41515 | 2682.5 |
| | 75+100 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| 100 | | 41341 | 2665.1 | 75 | 41512 | 2682.2 | |
| 100+100 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 | |
| Note 1: | Carriers in increasing frequency order. | | | | | | |
| Note 2: | This test frequency is applicable only for intra-band contiguous CA which requires channel spacing to be less than nominal channel spacing. | | | | | | |

Table 4.3.1.2.9A-2: Test frequencies for CA_41A-41A

| Test Frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | Wgap [MHz] | CC2 Note1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max WGap | 25+25 | 25 | 39675 | 2498.5 | 184 | 25 | 41565 | 2687.5 |
| | 25+50 | 25 | 39675 | 2498.5 | 179 | 50 | 41540 | 2685 |
| | | 50 | 39700 | 2501 | 179 | 25 | 41565 | 2687.5 |
| | 25+75 | 25 | 39675 | 2498.5 | 174 | 75 | 41515 | 2682.5 |
| | | 75 | 39725 | 2503.5 | 174 | 25 | 41565 | 2687.5 |
| | 50+50 | 50 | 39700 | 2501 | 174 | 50 | 41540 | 2685 |
| | 25+100 | 25 | 39675 | 2498.5 | 169 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 169 | 25 | 41565 | 2687.5 |
| | 50+75 | 50 | 39700 | 2501 | 169 | 75 | 41515 | 2682.5 |
| | | 75 | 39725 | 2503.5 | 169 | 50 | 41540 | 2685 |
| | 50+100 | 50 | 39700 | 2501 | 164 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 164 | 50 | 41540 | 2685 |
| | 75+75 | 75 | 39725 | 2503.5 | 164 | 75 | 41515 | 2682.5 |
| | 75+100 | 75 | 39725 | 2503.5 | 159 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 159 | 75 | 41515 | 2682.5 |
| | 100+100 | 100 | 39750 | 2506 | 154 | 100 | 41490 | 2680 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.9A-3: Test frequencies for CA_41D

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | CC3 Note1 | | | |
|--------------------------|---|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | |
| Low | 50+75+100 | 50 | 39705 | 2501.5 | 75 | 39825 | 2513.5 | 100 | 39996 | 2530 | |
| | | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 75 | 40020 | 2530 | |
| | | 75 | 39728 | 2503.8 | 50 | 39848 | 2515.8 | 100 | 39992 | 2530 | |
| | | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 50 | 40043 | 2535 | |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 75 | 40014 | 2532 | |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 50 | 40041 | 2535 | |
| | 50+100+100 | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 100 | 40047 | 2535 | |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 100 | 40038 | 2534 | |
| | | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 50 | 40092 | 2540 | |
| | 75+75+100 | 75 | 39728 | 2503.8 | 75 | 39878 | 2518.8 | 100 | 40049 | 2535 | |
| | | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 75 | 40070 | 2535 | |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 75 | 40071 | 2538 | |
| | 75+100+100 | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 100 | 40097 | 2540 | |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 100 | 40092 | 2540 | |
| | | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 75 | 40119 | 2542 | |
| | 100+100+100 | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 100 | 40146 | 2545 | |
| | Mid | 50+75+100 | 50 | 40452 | 2576.2 | 75 | 40572 | 2588.2 | 100 | 40743 | 2605 |
| | | | 50 | 40451 | 2576.1 | 100 | 40595 | 2590.5 | 75 | 40766 | 2607 |
| 75 | | | 40477 | 2578.7 | 50 | 40597 | 2590.7 | 100 | 40741 | 2605 | |
| 75 | | | 40474 | 2578.4 | 100 | 40645 | 2595.5 | 50 | 40789 | 2609 | |
| 100 | | | 40499 | 2580.9 | 50 | 40643 | 2595.3 | 75 | 40763 | 2607 | |
| 100 | | | 40497 | 2580.7 | 75 | 40668 | 2597.8 | 50 | 40788 | 2609 | |
| 50+100+100 | | 50 | 40427 | 2573.7 | 100 | 40571 | 2588.1 | 100 | 40769 | 2607 | |
| | | 100 | 40476 | 2578.6 | 50 | 40620 | 2593 | 100 | 40764 | 2607 | |
| | | 100 | 40472 | 2578.2 | 100 | 40670 | 2598 | 50 | 40814 | 2612 | |
| 75+75+100 | | 75 | 40448 | 2575.8 | 75 | 40598 | 2590.8 | 100 | 40769 | 2607 | |
| | | 75 | 40449 | 2575.9 | 100 | 40620 | 2593 | 75 | 40791 | 2610 | |
| | | 100 | 40471 | 2578.1 | 75 | 40642 | 2595.2 | 75 | 40792 | 2610 | |
| 75+100+100 | | 75 | 40424 | 2573.4 | 100 | 40595 | 2590.5 | 100 | 40793 | 2610 | |
| | | 100 | 40449 | 2575.9 | 75 | 40620 | 2593 | 100 | 40791 | 2610 | |
| | | 100 | 40447 | 2575.7 | 100 | 40645 | 2595.5 | 75 | 40816 | 2612 | |
| 100+100+100 | | 100 | 40422 | 2573.2 | 100 | 40620 | 2593 | 100 | 40818 | 2612 | |
| 100+100+100 ² | | 100 | 40437 | 2574.7 | 100 | 40620 | 2593 | 100 | 40803 | 2611 | |
| High | | 50+75+100 | 50 | 41199 | 2650.9 | 75 | 41319 | 2662.9 | 100 | 41490 | 268 |
| | 50 | | 41197 | 2650.7 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682 | |
| | 75 | | 41226 | 2653.6 | 50 | 41346 | 2665.6 | 100 | 41490 | 268 | |
| | 75 | | 41220 | 2653 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684 | |
| | 100 | | 41248 | 2655.8 | 50 | 41392 | 2670.2 | 75 | 41512 | 2682 | |
| | 100 | | 41244 | 2655.4 | 75 | 41415 | 2672.5 | 50 | 41535 | 2684 | |
| | 50+100+100 | 50 | 41148 | 2645.8 | 100 | 41292 | 2660.2 | 100 | 41490 | 268 | |
| | | 100 | 41202 | 2651.2 | 50 | 41346 | 2665.6 | 100 | 41490 | 268 | |
| | | 100 | 41193 | 2650.3 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684 | |
| | 75+75+100 | 75 | 41169 | 2647.9 | 75 | 41319 | 2662.9 | 100 | 41490 | 268 | |
| | | 75 | 41170 | 2648 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682 | |
| | | 100 | 41191 | 2650.1 | 75 | 41362 | 2667.2 | 75 | 41512 | 2682 | |
| | 75+100+100 | 75 | 41121 | 2643.1 | 100 | 41292 | 2660.2 | 100 | 41490 | 268 | |
| | | 100 | 41148 | 2645.8 | 75 | 41319 | 2662.9 | 100 | 41490 | 268 | |
| | | 100 | 41143 | 2645.3 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682 | |
| | 100+100+100 | 100 | 41094 | 2640.4 | 100 | 41292 | 2660.2 | 100 | 41490 | 268 | |

1: Carriers in increasing frequency order.

2: This test frequency is applicable only for intra-band contiguous CA which requires channel spacing to be less than nominal channel spacing.

Table 4.3.1.2.9A-4: Test frequencies for CA_41C-41A

| Test Frequency ID | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note 1 | | | Wgap [MHz] | CC3 Note 1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|------------|--------------------|--------------------------|------------|------------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max WGap | 25+25+100 | 25 | 39683 | 2499.3 | 10 | 3980 | 2511 | 164 | 25 | 41565 | 2687.5 |
| | | 100 | 39750 | 2506 | 25 | 39867 | 2517.7 | 164.05 | 25 | 41565 | 2687.5 |
| | 25+50+100 | 25 | 39683 | 2499.3 | 10 | 3980 | 2511 | 159 | 50 | 41540 | 2685 |
| | | 50 | 39705 | 2501.5 | 10 | 39849 | 2515.9 | 159.1 | 25 | 41565 | 2687.5 |
| | | 100 | 39750 | 2506 | 25 | 39867 | 2517.7 | 159.05 | 50 | 41540 | 2685 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 159.1 | 25 | 41565 | 2687.5 |
| | 25+75+75 | 75 | 39725 | 2503.5 | 75 | 39875 | 2518.5 | 159 | 25 | 41565 | 2687.5 |
| | 25+75+100 | 25 | 39683 | 2499.3 | 10 | 3980 | 2511 | 154 | 75 | 41515 | 2682.5 |
| | | 75 | 39728 | 2503.8 | 10 | 39899 | 2520.9 | 154.1 | 25 | 41565 | 2687.5 |
| | | 100 | 39750 | 2506 | 25 | 39867 | 2517.7 | 154.05 | 75 | 41515 | 2682.5 |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 154.15 | 25 | 41565 | 2687.5 |
| | 50+50+100 | 50 | 39705 | 2501.5 | 10 | 39849 | 2515.9 | 154.1 | 50 | 41540 | 2685 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 154.1 | 50 | 41540 | 2685 |
| | 50+75+75 | 75 | 39725 | 2503.5 | 75 | 39875 | 2518.5 | 154 | 50 | 41540 | 2685 |
| | 25+100+100 | 25 | 39683 | 2499.3 | 10 | 3980 | 2511 | 149 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 25 | 39867 | 2517.7 | 149.05 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 10 | 39948 | 2525.8 | 149.2 | 25 | 41565 | 2687.5 |
| | 50+75+100 | 50 | 39705 | 2501.5 | 10 | 39849 | 2515.9 | 149.1 | 75 | 41515 | 2682.5 |
| | | 75 | 39728 | 2503.8 | 10 | 39899 | 2520.9 | 149.1 | 50 | 41540 | 2685 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 149.1 | 75 | 41515 | 2682.5 |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 149.15 | 50 | 41540 | 2685 |
| | 75+75+75 | 75 | 39725 | 2503.5 | 75 | 39875 | 2518.5 | 149 | 75 | 41515 | 2682.5 |
| | 50+100+100 | 50 | 39705 | 2501.5 | 10 | 39849 | 2515.9 | 144.1 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 144.1 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 10 | 39948 | 2525.8 | 144.2 | 50 | 41540 | 2685 |
| | 75+75+100 | 75 | 39725 | 2503.5 | 75 | 39875 | 2518.5 | 144 | 100 | 41490 | 2680 |
| | | 75 | 39728 | 2503.8 | 10 | 39899 | 2520.9 | 144.1 | 75 | 41515 | 2682.5 |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 144.15 | 75 | 41515 | 2682.5 |
| | 75+100+100 | 75 | 39728 | 2503.8 | 10 | 39899 | 2520.9 | 139.1 | 100 | 41490 | 2680 |

| | | | | | | | | | | | |
|--|-------------|-----|-------|------|---------|-----------|------------|------------|-----|-----------|------------|
| | | 100 | 39750 | 2506 | 75 | 3992 1 | 2523. 1 | 139.1 5 | 100 | 4149 0 | 2680 |
| | | 100 | 39750 | 2506 | 10 0 | 3994 8 | 2525. 8 | 139.2 | 75 | 4151 5 | 2682. 5 |
| | 100+100+100 | 100 | 39750 | 2506 | 10 0 | 3994 8 | 2525. 8 | 134.2 | 100 | 4149 0 | 2680 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.9A-5: Test frequencies for CA_41A-41C

| Test Frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | Wgap [MHz] | CC2 Note1 | | | CC3 Note1 | | |
|-------------------|-------------------------------------|------------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max WGap | 25+25+100 | 25 | 39675 | 2498.5 | 164.05 | 25 | 41373 | 2668.3 | 100 | 41490 | 2680 |
| | | 25 | 39675 | 2498.5 | 164 | 100 | 41440 | 2675 | 25 | 41557 | 2686.7 |
| | 25+50+100 | 25 | 39675 | 2498.5 | 159.1 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | | 25 | 39675 | 2498.5 | 159.1 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | | 50 | 39700 | 2501 | 159.05 | 25 | 41373 | 2668.3 | 100 | 41490 | 2680 |
| | 25+75+75 | 25 | 39675 | 2498.5 | 159 | 75 | 41365 | 2667.5 | 75 | 41515 | 2682.5 |
| | | 25+75+100 | 25 | 39675 | 2498.5 | 154.15 | 75 | 41319 | 2662.9 | 100 | 41490 |
| | 25+75+100 | 25 | 39675 | 2498.5 | 154.1 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | | 75 | 39725 | 2503.5 | 154.05 | 25 | 41373 | 2668.3 | 100 | 41490 | 2680 |
| | | 75 | 39725 | 2503.5 | 154 | 100 | 41440 | 2675 | 25 | 41557 | 2686.7 |
| | | 50+50+100 | 50 | 39700 | 2501 | 154.1 | 50 | 41346 | 2665.6 | 100 | 41490 |
| | 50+50+100 | 50 | 39700 | 2501 | 154.1 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | | 25+100+100 | 25 | 39675 | 2498.5 | 149.2 | 100 | 41292 | 2660.2 | 100 | 41490 |
| | 100 | | 39750 | 2506 | 149.05 | 25 | 41373 | 2668.3 | 100 | 41490 | 2680 |
| | 100 | | 39750 | 2506 | 149 | 100 | 41440 | 2675 | 25 | 41557 | 2686.7 |
| | 50+75+75 | 50 | 39700 | 2501 | 154 | 75 | 41365 | 2667.5 | 75 | 41515 | 2682.5 |
| | | 50+75+100 | 50 | 39700 | 2501 | 149.15 | 75 | 41319 | 2662.9 | 100 | 41490 |
| | 50 | | 39700 | 2501 | 149.1 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | 75 | | 39725 | 2503.5 | 149.1 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | 75 | | 39725 | 2503.5 | 149.1 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | 75+75+75 | 75 | 39725 | 2503.5 | 149 | 75 | 41365 | 2667.5 | 75 | 41515 | 2682.5 |
| | 50+100+100 | 50 | 39700 | 2501 | 144.2 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 144.1 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 144.1 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | 75+75+100 | 75 | 39725 | 2503.5 | 144.15 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | | 75 | 39725 | 2503.5 | 144.1 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | | 100 | 39750 | 2506 | 144 | 75 | 41365 | 2667.5 | 75 | 41515 | 2682.5 |
| | 75+100+100 | 75 | 39725 | 2503.5 | 139.2 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 139.15 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 139.1 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| 100+100+100 | 100 | 39750 | 2506 | 134.2 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.9A-6: Test frequencies for CA_41C-41C

| Test frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | Wgap [MHz] | CC3 Note1 | | | CC4 Note1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max Wgap | 50+50+100+100 | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 134.7 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 134.7 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 134.2 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 135.2 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | 50+75+75+100 | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 134.1 | 75 | 41365 | 2667.5 | 75 | 41515 | 2682.5 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 134.6 | 75 | 41365 | 2667.5 | 75 | 41515 | 2682.5 |
| | | 75 | 39725 | 2503.5 | 75 | 39875 | 2518.5 | 134.6 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | | 75 | 39725 | 2503.5 | 75 | 39875 | 2518.5 | 134.1 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | 50+75+100+100 | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 129.5 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 129.7 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 129.2 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 130 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | | 75 | 40523 | 2583.3 | 100 | 40694 | 2600.4 | 50.2 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 129.5 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 130 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | | 75 | 40523 | 2583.3 | 100 | 40694 | 2600.4 | 49.7 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | 50+100+100+100 | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 124.3 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 124.8 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 124.8 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 124.3 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | 75+75+75+100 | 75 | 40523 | 2583.3 | 100 | 40694 | 2600.4 | 49.6 | 75 | 41365 | 2667.5 | 75 | 41515 | 2682.5 |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 129.4 | 75 | 41365 | 2667.5 | 75 | 41515 | 2682.5 |
| | | 75 | 39725 | 2503.5 | 75 | 39875 | 2518.5 | 129.4 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | | 75 | 39725 | 2503.5 | 75 | 39875 | 2518.5 | 129.1 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | 75+75+100+100 | 75 | 39725 | 2503.5 | 75 | 39875 | 2518.5 | 124.2 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 124.2 | 75 | 41365 | 2667.5 | 75 | 41515 | 2682.5 |
| | 75+100+100+100 | 75 | 40523 | 2583.3 | 100 | 40694 | 2600.4 | 39.8 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |

| | | | | | | | | | | | | | | |
|--|---------------------|-----|-------|------|-----|-------|--------|-------|-----|-------|--------|-----|-------|--------|
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 119.6 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 119.6 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 119.3 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | 100+100+ 100+100 | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 114.4 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.9A-7: Test frequencies for CA_41A-41D

| Test frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | Wgap [MHz] | CC2 Note1 | | | CC3 Note1 | | | CC4 Note1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max Wgap | 25+50+ 75+100 | 25 | 39675 | 2498.5 | 144.9 | 50 | 41199 | 2650.9 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | | 25 | 39675 | 2498.5 | 144.7 | 50 | 41197 | 2650.7 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | | 25 | 39675 | 2498.5 | 145.1 | 75 | 41226 | 2653.6 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | | 25 | 39675 | 2498.5 | 144.5 | 75 | 41220 | 2653 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | | 25 | 39675 | 2498.5 | 144.8 | 100 | 41248 | 2655.8 | 50 | 41392 | 2670.2 | 75 | 41512 | 2682.2 |
| | | 25 | 39675 | 2498.5 | 144.4 | 100 | 41244 | 2655.4 | 75 | 41415 | 2672.5 | 50 | 41535 | 2684.5 |
| | 25+50+ 100+100 | 25 | 39675 | 2498.5 | 139.8 | 50 | 41148 | 2645.8 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | | 25 | 39675 | 2498.5 | 140.2 | 100 | 41202 | 2651.2 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | | 25 | 39675 | 2498.5 | 139.3 | 100 | 41193 | 2650.3 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | 25+75+ 75+100 | 25 | 39675 | 2498.5 | 139.4 | 75 | 41169 | 2647.9 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | | 25 | 39675 | 2498.5 | 139.5 | 75 | 41170 | 2648 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | | 25 | 39675 | 2498.5 | 139.1 | 100 | 41191 | 2650.1 | 75 | 41362 | 2667.2 | 75 | 41512 | 2682.2 |
| | 25+75+ 100+100 | 25 | 39675 | 2498.5 | 134.6 | 75 | 41121 | 2643.1 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | | 25 | 39675 | 2498.5 | 134.8 | 100 | 41148 | 2645.8 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | | 25 | 39675 | 2498.5 | 134.3 | 100 | 41143 | 2645.3 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | 25+100+ 100+100 | 25 | 39675 | 2498.5 | 129.4 | 100 | 41094 | 2640.4 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | 50+50+ 75+100 | 50 | 39700 | 2501 | 139.9 | 50 | 41199 | 2650.9 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | | 50 | 39700 | 2501 | 139.7 | 50 | 41197 | 2650.7 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | | 50 | 39700 | 2501 | 140.1 | 75 | 41226 | 2653.6 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | | 50 | 39700 | 2501 | 139.5 | 75 | 41220 | 2653 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |

| | | | | | | | | | | | | | |
|--------------------|-------|-------|--------|-------|-------|--------|--------|-------|--------|--------|-------|--------|--------|
| | 50 | 39700 | 2501 | 139.8 | 100 | 41248 | 2655.8 | 50 | 41392 | 2670.2 | 75 | 41512 | 2682.2 |
| | 50 | 39700 | 2501 | 139.4 | 100 | 41244 | 2655.4 | 75 | 41415 | 2672.5 | 50 | 41535 | 2684.5 |
| 50+50+ 100+100 | 50 | 39700 | 2501 | 134.8 | 50 | 41148 | 2645.8 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | 50 | 39700 | 2501 | 135.2 | 100 | 41202 | 2651.2 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | 50 | 39700 | 2501 | 134.3 | 100 | 41193 | 2650.3 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| 50+75+ 75+100 | 50 | 39700 | 2501 | 134.4 | 75 | 41169 | 2647.9 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | 50 | 39700 | 2501 | 134.5 | 75 | 41170 | 2648 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | 50 | 39700 | 2501 | 134.1 | 100 | 41191 | 2650.1 | 75 | 41362 | 2667.2 | 75 | 41512 | 2682.2 |
| | 75 | 39725 | 2503.5 | 134.9 | 50 | 41199 | 2650.9 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | 75 | 39725 | 2503.5 | 134.7 | 50 | 41197 | 2650.7 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | 75 | 39725 | 2503.5 | 135.1 | 75 | 41226 | 2653.6 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | 75 | 39725 | 2503.5 | 134.5 | 75 | 41220 | 2653 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | 75 | 39725 | 2503.5 | 134.8 | 100 | 41248 | 2655.8 | 50 | 41392 | 2670.2 | 75 | 41512 | 2682.2 |
| | 75 | 39725 | 2503.5 | 134.4 | 100 | 41244 | 2655.4 | 75 | 41415 | 2672.5 | 50 | 41535 | 2684.5 |
| 50+75+ 100+100 | 50 | 39700 | 2501 | 129.6 | 75 | 41121 | 2643.1 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | 50 | 39700 | 2501 | 129.8 | 100 | 41148 | 2645.8 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | 50 | 39700 | 2501 | 129.3 | 100 | 41143 | 2645.3 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | 75 | 39725 | 2503.5 | 129.8 | 50 | 41148 | 2645.8 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | 75 | 39725 | 2503.5 | 130.2 | 100 | 41202 | 2651.2 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | 75 | 39725 | 2503.5 | 129.3 | 100 | 41193 | 2650.3 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | 100 | 39750 | 2506 | 129.9 | 50 | 41199 | 2650.9 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | 100 | 39750 | 2506 | 129.7 | 50 | 41197 | 2650.7 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | 100 | 39750 | 2506 | 130.1 | 75 | 41226 | 2653.6 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | 100 | 39750 | 2506 | 129.5 | 75 | 41220 | 2653 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| | 100 | 39750 | 2506 | 129.8 | 100 | 41248 | 2655.8 | 50 | 41392 | 2670.2 | 75 | 41512 | 2682.2 |
| 100 | 39750 | 2506 | 129.4 | 100 | 41244 | 2655.4 | 75 | 41415 | 2672.5 | 50 | 41535 | 2684.5 | |
| 50+100+ 100+100 | 50 | 39700 | 2501 | 124.4 | 100 | 41094 | 2640.4 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | 100 | 39750 | 2506 | 124.8 | 50 | 41148 | 2645.8 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | 100 | 39750 | 2506 | 125.2 | 100 | 41202 | 2651.2 | 50 | 41346 | 2665.6 | 100 | 41490 | 2680 |
| | 100 | 39750 | 2506 | 124.3 | 100 | 41193 | 2650.3 | 100 | 41391 | 2670.1 | 50 | 41535 | 2684.5 |
| 75+75+ 75+100 | 75 | 39725 | 2503.5 | 129.4 | 75 | 41169 | 2647.9 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |
| | 75 | 39725 | 2503.5 | 129.5 | 75 | 41170 | 2648 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 |
| | 75 | 39725 | 2503.5 | 129.1 | 100 | 41191 | 2650.1 | 75 | 41362 | 2667.2 | 75 | 41512 | 2682.2 |
| 75+75+ 100+100 | 75 | 39725 | 2503.5 | 124.6 | 75 | 41121 | 2643.1 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | 75 | 39725 | 2503.5 | 124.8 | 100 | 41148 | 2645.8 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 |

| | | | | | | | | | | | | | | | |
|--|---|-----|-------|--------|-------|-----|-------|--------|-----|-------|--------|-----|-------|--------|--|
| | | 75 | 39725 | 2503.5 | 124.3 | 100 | 41143 | 2645.3 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 | |
| | | 100 | 39750 | 2506 | 124.4 | 75 | 41169 | 2647.9 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 | |
| | | 100 | 39750 | 2506 | 124.5 | 75 | 41170 | 2648 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 | |
| | | 100 | 39750 | 2506 | 124.1 | 100 | 41191 | 2650.1 | 75 | 41362 | 2667.2 | 75 | 41512 | 2682.2 | |
| | 75+100+ 100+100 | 75 | 39725 | 2503.5 | 119.4 | 100 | 41094 | 2640.4 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 | |
| | | 100 | 39750 | 2506 | 119.6 | 75 | 41121 | 2643.1 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 | |
| | | 100 | 39750 | 2506 | 119.8 | 100 | 41148 | 2645.8 | 75 | 41319 | 2662.9 | 100 | 41490 | 2680 | |
| | | 100 | 39750 | 2506 | 119.3 | 100 | 41143 | 2645.3 | 100 | 41341 | 2665.1 | 75 | 41512 | 2682.2 | |
| | 100+100+ 100+100 | 100 | 39750 | 2506 | 114.4 | 100 | 41094 | 2640.4 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 | |
| | Note 1: Carriers in increasing frequency order. | | | | | | | | | | | | | | |

Table 4.3.1.2.9A-8: Test frequencies for CA_41D-41A

| Test frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | CC3 Note1 | | | Wgap [MHz] | CC4 Note1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max Wgap | 25+50+ 75+100 | 50 | 39705 | 2501.5 | 75 | 39825 | 2513.5 | 100 | 39996 | 2530.6 | 144.4 | 25 | 41565 | 2687.5 |
| | | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 75 | 40020 | 2533 | 144.5 | 25 | 41565 | 2687.5 |
| | | 75 | 39728 | 2503.8 | 50 | 39848 | 2515.8 | 100 | 39992 | 2530.2 | 144.8 | 25 | 41565 | 2687.5 |
| | | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 50 | 40043 | 2535.3 | 144.7 | 25 | 41565 | 2687.5 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 75 | 40014 | 2532.4 | 145.1 | 25 | 41565 | 2687.5 |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 50 | 40041 | 2535.1 | 144.9 | 25 | 41565 | 2687.5 |
| | 25+50+ 100+100 | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 100 | 40047 | 2535.7 | 139.3 | 25 | 41565 | 2687.5 |
| | | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 100 | 40038 | 2534.8 | 140.2 | 25 | 41565 | 2687.5 |
| | | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 50 | 40092 | 2540.2 | 139.8 | 25 | 41565 | 2687.5 |
| | 25+75+ 75+100 | 75 | 39728 | 2503.8 | 75 | 39878 | 2518.8 | 100 | 40049 | 2535.9 | 139.1 | 25 | 41565 | 2687.5 |
| | | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 75 | 40070 | 2538 | 139.5 | 25 | 41565 | 2687.5 |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 75 | 40071 | 2538.1 | 139.4 | 25 | 41565 | 2687.5 |
| | 25+75+ 100+100 | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 100 | 40097 | 2540.7 | 134.3 | 25 | 41565 | 2687.5 |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 100 | 40092 | 2540.2 | 134.8 | 25 | 41565 | 2687.5 |
| | | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 75 | 40119 | 2542.9 | 134.6 | 25 | 41565 | 2687.5 |

| | | | | | | | | | | | | | |
|--------------------|--------------------|-------|--------|------|-------|--------|--------|-------|--------|--------|-------|-------|--------|
| 25+100+ 100+100 | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 100 | 40146 | 2545.6 | 129.4 | 25 | 41565 | 2687.5 |
| 50+50+ 75+100 | 50 | 39705 | 2501.5 | 75 | 39825 | 2513.5 | 100 | 39996 | 2530.6 | 139.4 | 50 | 41540 | 2685 |
| | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 75 | 40020 | 2533 | 139.5 | 50 | 41540 | 2685 |
| | 75 | 39728 | 2503.8 | 50 | 39848 | 2515.8 | 100 | 39992 | 2530.2 | 139.8 | 50 | 41540 | 2685 |
| | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 50 | 40043 | 2535.3 | 139.7 | 50 | 41540 | 2685 |
| | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 75 | 40014 | 2532.4 | 140.1 | 50 | 41540 | 2685 |
| | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 50 | 40041 | 2535.1 | 139.9 | 50 | 41540 | 2685 |
| 50+50+ 100+100 | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 100 | 40047 | 2535.7 | 134.3 | 50 | 41540 | 2685 |
| | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 100 | 40038 | 2534.8 | 135.2 | 50 | 41540 | 2685 |
| | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 50 | 40092 | 2540.2 | 134.8 | 50 | 41540 | 2685 |
| 50+75+ 75+100 | 75 | 39728 | 2503.8 | 75 | 39878 | 2518.8 | 100 | 40049 | 2535.9 | 134.1 | 50 | 41540 | 2685 |
| | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 75 | 40070 | 2538 | 134.5 | 50 | 41540 | 2685 |
| | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 75 | 40071 | 2538.1 | 134.4 | 50 | 41540 | 2685 |
| | 50 | 39705 | 2501.5 | 75 | 39825 | 2513.5 | 100 | 39996 | 2530.6 | 134.4 | 75 | 41515 | 2682.5 |
| | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 75 | 40020 | 2533 | 134.5 | 75 | 41515 | 2682.5 |
| | 75 | 39728 | 2503.8 | 50 | 39848 | 2515.8 | 100 | 39992 | 2530.2 | 134.8 | 75 | 41515 | 2682.5 |
| | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 50 | 40043 | 2535.3 | 134.7 | 75 | 41515 | 2682.5 |
| | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 75 | 40014 | 2532.4 | 135.1 | 75 | 41515 | 2682.5 |
| | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 50 | 40041 | 2535.1 | 134.9 | 75 | 41515 | 2682.5 |
| 50+75+ 100+100 | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 100 | 40097 | 2540.7 | 129.3 | 50 | 41540 | 2685 |
| | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 100 | 40092 | 2540.2 | 129.8 | 50 | 41540 | 2685 |
| | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 75 | 40119 | 2542.9 | 129.6 | 50 | 41540 | 2685 |
| | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 100 | 40047 | 2535.7 | 129.3 | 75 | 41515 | 2682.5 |
| | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 100 | 40038 | 2534.8 | 130.2 | 75 | 41515 | 2682.5 |
| | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 50 | 40092 | 2540.2 | 129.8 | 75 | 41515 | 2682.5 |
| | 50 | 39705 | 2501.5 | 75 | 39825 | 2513.5 | 100 | 39996 | 2530.6 | 134.4 | 100 | 41490 | 2680 |
| | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 75 | 40020 | 2533 | 129.5 | 100 | 41490 | 2680 |
| | 75 | 39728 | 2503.8 | 50 | 39848 | 2515.8 | 100 | 39992 | 2530.2 | 129.8 | 100 | 41490 | 2680 |
| | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 50 | 40043 | 2535.3 | 129.7 | 100 | 41490 | 2680 |
| | 100 | 39750 | 2506 | 50 | 39894 | 2520.4 | 75 | 40014 | 2532.4 | 130.1 | 100 | 41490 | 2680 |
| | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 50 | 40041 | 2535.1 | 129.9 | 100 | 41490 | 2680 |
| | 50+100+ 100+100 | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 100 | 40146 | 2545.6 | 124.4 | 50 | 41540 |
| 50 | | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 100 | 40047 | 2535.7 | 124.3 | 100 | 41490 | 2680 |
| 100 | | 39750 | 2506 | 50 | 39894 | 2520.4 | 100 | 40038 | 2534.8 | 125.2 | 100 | 41490 | 2680 |
| 100 | | 39750 | 2506 | 100 | 39948 | 2525.8 | 50 | 40092 | 2540.2 | 124.8 | 100 | 41490 | 2680 |

| | | | | | | | | | | | | | |
|---------------------|-----|-------|--------|-----|-------|--------|-----|-------|--------|-------|-----|-------|--------|
| 75+75+ 75+100 | 75 | 39728 | 2503.8 | 75 | 39878 | 2518.8 | 100 | 40049 | 2535.9 | 129.1 | 75 | 41515 | 2682.5 |
| | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 75 | 40070 | 2538 | 129.5 | 75 | 41515 | 2682.5 |
| | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 75 | 40071 | 2538.1 | 129.4 | 75 | 41515 | 2682.5 |
| 75+75+ 100+100 | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 100 | 40097 | 2540.7 | 124.3 | 75 | 41515 | 2682.5 |
| | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 100 | 40092 | 2540.2 | 124.8 | 75 | 41515 | 2682.5 |
| | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 75 | 40119 | 2542.9 | 124.6 | 75 | 41515 | 2682.5 |
| | 75 | 39728 | 2503.8 | 75 | 39878 | 2518.8 | 100 | 40049 | 2535.9 | 124.1 | 100 | 41490 | 2680 |
| | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 75 | 40070 | 2538 | 124.5 | 100 | 41490 | 2680 |
| | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 75 | 40071 | 2538.1 | 124.4 | 100 | 41490 | 2680 |
| 75+100+ 100+100 | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 100 | 40146 | 2545.6 | 119.4 | 75 | 41515 | 2682.5 |
| | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 100 | 40097 | 2540.7 | 119.3 | 100 | 41490 | 2680 |
| | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 100 | 40092 | 2540.2 | 119.8 | 100 | 41490 | 2680 |
| | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 75 | 40119 | 2542.9 | 119.6 | 100 | 41490 | 2680 |
| 100+100+ 100+100 | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 100 | 40146 | 2545.6 | 114.4 | 100 | 41490 | 2680 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.9A-9: Test frequencies for CA_41E

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | CC3 Note1 | | | CC4 Note1 | | |
|---|---|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 75+75+75+100 | 75 | 39725 | 2503.5 | 75 | 39875 | 2518.5 | 75 | 40025 | 2533.5 | 100 | 40200 | 2551.0 |
| | 75+75+100+100 | 75 | 39725 | 2503.5 | 75 | 39725 | 2518.5 | 100 | 40050 | 2536.0 | 100 | 40250 | 2556.0 |
| | | 75 | 39725 | 2503.5 | 100 | 39900 | 2521.0 | 75 | 40075 | 2538.5 | 100 | 40250 | 2556.0 |
| | | 100 | 39750 | 2506.0 | 75 | 39925 | 2523.5 | 75 | 40075 | 2538.5 | 100 | 40250 | 2556.0 |
| | 75+100+100+100 | 75 | 39725 | 2503.5 | 100 | 39900 | 2521.0 | 100 | 40100 | 2541.0 | 100 | 40300 | 2561.0 |
| | | 100 | 39750 | 2506.0 | 75 | 39925 | 2523.5 | 100 | 40100 | 2541.0 | 100 | 40300 | 2561.0 |
| | | 100 | 39750 | 2506.0 | 100 | 39950 | 2526.0 | 75 | 40125 | 2543.5 | 100 | 40300 | 2561.0 |
| 100+100+100+100 | 100 | 39750 | 2506.0 | 100 | 39950 | 2526.0 | 100 | 40150 | 2546.0 | 100 | 40350 | 2566.0 | |
| Mid | 75+75+75+100 | 75 | 40370 | 2568.0 | 75 | 40520 | 2583.0 | 75 | 40670 | 2598.0 | 100 | 40845 | 2615.5 |
| | 75+75+100+100 | 75 | 40345 | 2565.5 | 75 | 40495 | 2580.5 | 100 | 40670 | 2598.0 | 100 | 40870 | 2618.0 |
| | | 75 | 40345 | 2565.5 | 100 | 40520 | 2583.0 | 75 | 40695 | 2600.5 | 100 | 40870 | 2618.0 |
| | | 100 | 40370 | 2568.0 | 75 | 40545 | 2585.5 | 75 | 40695 | 2600.5 | 100 | 40870 | 2618.0 |
| | 75+100+100+100 | 75 | 40320 | 2563.0 | 100 | 40495 | 2580.5 | 100 | 40695 | 2600.5 | 100 | 40895 | 2620.5 |
| | | 100 | 40345 | 2565.5 | 75 | 40520 | 2583.0 | 100 | 40695 | 2600.5 | 100 | 40895 | 2620.5 |
| | | 100 | 40345 | 2565.5 | 100 | 40545 | 2585.5 | 75 | 40720 | 2603.0 | 100 | 40895 | 2620.5 |
| 100+100+100+100 | 100 | 40320 | 2563.0 | 100 | 40520 | 2583.0 | 100 | 40720 | 2603.0 | 100 | 40920 | 2623.0 | |
| High | 75+75+75+100 | 75 | 41015 | 2632.5 | 75 | 41165 | 2647.5 | 75 | 41315 | 2662.5 | 100 | 41490 | 2680.0 |
| | 75+75+100+100 | 75 | 40965 | 2627.5 | 75 | 41115 | 2642.5 | 100 | 41290 | 2660.0 | 100 | 41490 | 2680.0 |
| | | 75 | 40965 | 2627.5 | 100 | 41140 | 2645.0 | 75 | 41315 | 2662.5 | 100 | 41490 | 2680.0 |
| | | 100 | 40990 | 2630.0 | 75 | 41165 | 2647.5 | 75 | 41315 | 2662.5 | 100 | 41490 | 2680.0 |
| | 75+100+100+100 | 75 | 40915 | 2622.5 | 100 | 41090 | 2640.0 | 100 | 41290 | 2660.0 | 100 | 41490 | 2680.0 |
| | | 100 | 40940 | 2625.0 | 75 | 41115 | 2642.5 | 100 | 41290 | 2660.0 | 100 | 41490 | 2680.0 |
| | | 100 | 40940 | 2625.0 | 100 | 41140 | 2645.0 | 75 | 41315 | 2662.5 | 100 | 41490 | 2680.0 |
| 100+100+100+100 | 100 | 40890 | 2620.0 | 100 | 41090 | 2640.0 | 100 | 41290 | 2660.0 | 100 | 41490 | 2680.0 | |
| Note 1: Carriers in increasing frequency order. | | | | | | | | | | | | | |

Table 4.3.1.2.9A-10: Test frequencies for CA_41F

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | CC3 Note1 | | | CC4 Note1 | | | CC5 Note1 | | |
|---|---|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 50+75+100+100+100 | 50 | 39705 | 2501.5 | 75 | 39825 | 2513.5 | 100 | 39996 | 2530.6 | 100 | 40194 | 2550.4 | 100 | 40392 | 2570.2 |
| | 50+100+100+100+100 | 50 | 39705 | 2501.5 | 100 | 39849 | 2515.9 | 100 | 40047 | 2535.7 | 100 | 40245 | 2555.5 | 100 | 40443 | 2575.3 |
| | 75+75+100+100+100 | 75 | 39728 | 2503.8 | 75 | 39878 | 2518.8 | 100 | 40049 | 2535.9 | 100 | 40247 | 2555.7 | 100 | 40445 | 2575.5 |
| | 75+100+100+100+1100 | 75 | 39728 | 2503.8 | 100 | 39899 | 2520.9 | 100 | 40097 | 2540.7 | 100 | 40295 | 2560.5 | 100 | 40493 | 2580.3 |
| | | 100 | 39750 | 2506 | 75 | 39921 | 2523.1 | 100 | 40092 | 2540.2 | 100 | 40290 | 2560 | 100 | 40488 | 2579.8 |
| 100+100+100+100+100 | 100 | 39750 | 2506 | 100 | 39948 | 2525.8 | 100 | 40146 | 2545.6 | 100 | 40344 | 2565.4 | 100 | 40542 | 2585.2 | |
| Mid | 50+75+100+100+100 | 50 | 40254 | 2556.4 | 75 | 40374 | 2568.4 | 100 | 40545 | 2585.5 | 100 | 40743 | 2605.3 | 100 | 40941 | 2625.1 |
| | 50+100+100+100+100 | 50 | 40229 | 2553.9 | 100 | 40373 | 2568.3 | 100 | 40571 | 2588.1 | 100 | 40769 | 2607.9 | 100 | 40967 | 2627.7 |
| | 75+75+100+100+100 | 75 | 40250 | 2556 | 75 | 40400 | 2571 | 100 | 40571 | 2588.1 | 100 | 40769 | 2607.9 | 100 | 40967 | 2627.7 |
| | 75+100+100+100+1100 | 75 | 40226 | 2553.6 | 100 | 40397 | 2570.7 | 100 | 40595 | 2590.5 | 100 | 40793 | 2610.3 | 100 | 40991 | 2630.1 |
| | | 100 | 40251 | 2556.1 | 75 | 40422 | 2573.2 | 100 | 40593 | 2590.3 | 100 | 40791 | 2610.1 | 100 | 40989 | 2629.9 |
| 100+100+100+100+100 | 100 | 40224 | 2553.4 | 100 | 40422 | 2573.2 | 100 | 40620 | 2593 | 100 | 40818 | 2612.8 | 100 | 41016 | 2632.6 | |
| High | 50+75+100+100+100 | 50 | 40803 | 2611.3 | 75 | 40923 | 2623.3 | 100 | 41094 | 2640.4 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | 50+100+100+100+100 | 50 | 40752 | 2606.2 | 100 | 40896 | 2620.6 | 100 | 41094 | 2640.4 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | 75+75+100+100+100 | 75 | 40773 | 2608.3 | 75 | 40923 | 2623.3 | 100 | 41094 | 2640.4 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | 75+100+100+100+1100 | 75 | 40725 | 2603.5 | 100 | 40896 | 2620.6 | 100 | 41094 | 2640.4 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| | | 100 | 40752 | 2606.2 | 75 | 40923 | 2623.3 | 100 | 41094 | 2640.4 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 |
| 100+100+100+100+100 | 100 | 40698 | 2600.8 | 100 | 40896 | 2620.6 | 100 | 41094 | 2640.4 | 100 | 41292 | 2660.2 | 100 | 41490 | 2680 | |
| Note 1: Carriers in increasing frequency order. | | | | | | | | | | | | | | | | |

4.3.1.2.10 TDD reference test frequencies for Operating Band 42

Table 4.3.1.2.10-1: Test frequencies for E-UTRA channel bandwidth for operating band 42

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 5 | 41615 | 3402.5 |
| | 10 | 41640 | 3405 |
| | 15 | 41665 | 3407.5 |
| | 20 | 41690 | 3410 |
| Mid Range | 5/10/15/20 | 42590 | 3500 |
| High Range | 5 | 43565 | 3597.5 |
| | 10 | 43540 | 3595 |
| | 15 | 43515 | 3592.5 |
| | 20 | 43490 | 3590 |

4.3.1.2.10ATDD reference test frequencies for CA in operating band 42

Table 4.3.1.2.10A-1: Test frequencies for CA_42C

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | CC2 Note1 | | |
|---|-------------------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 25+100 | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 |
| | | 100 | 41690 | 3410 | 25 | 41807 | 3421.7 |
| | 50+100 | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 |
| | | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 |
| | 75+100 | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 |
| | | 100 | 41690 | 3410 | 75 | 41861 | 3427.1 |
| 100+100 | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | |
| Mid | 25+100 | 25 | 42498 | 3490.8 | 100 | 42615 | 3502.5 |
| | | 100 | 42565 | 3497.5 | 25 | 42682 | 3509.2 |
| | 50+100 | 50 | 42496 | 3490.6 | 100 | 42640 | 3505 |
| | | 100 | 42541 | 3495.1 | 50 | 42685 | 3509.5 |
| | 75+100 | 75 | 42493 | 3490.3 | 100 | 42664 | 3507.4 |
| | | 100 | 42516 | 3492.6 | 75 | 42687 | 3509.7 |
| 100+100 | 100 | 42491 | 3490.1 | 100 | 42689 | 3509.9 | |
| High | 25+100 | 25 | 43373 | 3578.3 | 100 | 43490 | 3590 |
| | | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | 50+100 | 50 | 43346 | 3575.6 | 100 | 43490 | 3590 |
| | | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | 75+100 | 75 | 43319 | 3572.9 | 100 | 43490 | 3590 |
| | | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| 100+100 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 | |
| Note 1: Carriers in increasing frequency order. | | | | | | | |

Table 4.3.1.2.10A-2: Test frequencies for CA_42A-42A

| Test Frequency ID | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | Wgap [MHz] | CC2 Note1 | | |
|----------------------|-------------------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max WGap | 25+25 | 25 | 41615 | 3402.5 | 190 | 25 | 43565 | 3597.5 |
| | 25+50 | 25 | 41615 | 3402.5 | 185 | 50 | 43540 | 3595 |
| | | 50 | 41640 | 3405 | 185 | 25 | 43565 | 3597.5 |
| | 25+75 | 25 | 41615 | 3402.5 | 180 | 75 | 43515 | 3592.5 |
| | | 75 | 41665 | 3407.5 | 180 | 25 | 43565 | 3597.5 |
| | 50+50 | 50 | 41640 | 3405 | 180 | 50 | 43540 | 3595 |
| | 25+100 | 25 | 41615 | 3402.5 | 175 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 175 | 25 | 43565 | 3597.5 |
| | 50+75 | 50 | 41640 | 3405 | 175 | 75 | 43515 | 3592.5 |
| | | 75 | 41665 | 3407.5 | 175 | 50 | 43540 | 3595 |
| | 50+100 | 50 | 41640 | 3405 | 170 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 170 | 50 | 43540 | 3595 |
| | 75+100 | 75 | 41665 | 3407.5 | 165 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 165 | 75 | 43515 | 3592.5 |
| 100+100 | 100 | 41690 | 3410 | 160 | 100 | 43490 | 3590 | |
| Refsens ² | 100+100 | 100 | 42590 | 3500 | 70 | 100 | 43490 | 3590 |

Note 1: Carriers in increasing frequency order.
 Note 2: Test point derived with regard to REFSENS requirements.

Table 4.3.1.2.10A-3: Test frequencies for CA_42D

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | CC3 Note1 | | |
|-------------|-------------------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 25+100+100 | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 100 | 41938 | 3434.8 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 25 | 42005 | 3441.5 |
| | 50+100+100 | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 100 | 41987 | 3439.7 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 50 | 42032 | 3444.2 |
| | 75+100+100 | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 100 | 42037 | 3444.7 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 75 | 42059 | 3446.9 |
| 100+100+100 | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 100 | 42086 | 3449.6 | |
| Mid | 25+100+100 | 25 | 42399 | 3480.9 | 100 | 42516 | 3492.6 | 100 | 42714 | 3512.4 |
| | | 100 | 42466 | 3487.6 | 100 | 42664 | 3507.4 | 25 | 42781 | 3519.1 |
| | 50+100+100 | 50 | 42397 | 3480.7 | 100 | 42541 | 3495.1 | 100 | 42739 | 3514.9 |
| | | 100 | 42442 | 3485.2 | 100 | 42640 | 3505 | 50 | 42784 | 3519.4 |
| | 75+100+100 | 75 | 42394 | 3480.4 | 100 | 42565 | 3497.5 | 100 | 42763 | 3517.3 |
| | | 100 | 42417 | 3482.7 | 100 | 42615 | 3502.5 | 75 | 42786 | 3519.6 |
| 100+100+100 | 100 | 42392 | 3480.2 | 100 | 42590 | 3500 | 100 | 42788 | 3519.8 | |
| High | 25+100+100 | 25 | 43175 | 3558.5 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 43242 | 3565.2 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | 50+100+100 | 50 | 43148 | 3555.8 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 43193 | 3560.3 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | 75+100+100 | 75 | 43121 | 3553.1 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 43143 | 3555.3 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| 100+100+100 | 100 | 43094 | 3550.4 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.10A-4: Test frequencies for CA_42C-42A

| Test Frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | Wgap [MHz] | CC3 Note1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max WGap | 25+25+100 | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 170 | 25 | 43565 | 3597.5 |
| | | 100 | 41690 | 3410 | 25 | 41807 | 3421.7 | 170.8 | 25 | 43565 | 3597.5 |
| | 25+50+100 | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 165 | 50 | 43540 | 3595 |
| | | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 165.1 | 25 | 43565 | 3597.5 |
| | | 100 | 41690 | 3410 | 25 | 41807 | 3421.7 | 165.8 | 50 | 43540 | 3595 |
| | 25+75+100 | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 | 165.6 | 25 | 43565 | 3597.5 |
| | | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 160 | 75 | 43515 | 3592.5 |
| | | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 160.1 | 25 | 43565 | 3597.5 |
| | | 100 | 41690 | 3410 | 25 | 41807 | 3421.7 | 160.8 | 75 | 43515 | 3592.5 |
| | 50+50+100 | 100 | 41690 | 3410 | 75 | 41861 | 3427.1 | 160.4 | 25 | 43565 | 3597.5 |
| | | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 160.1 | 50 | 43540 | 3595 |
| | | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 | 160.6 | 50 | 43540 | 3595 |
| | 25+100+100 | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 155 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 25 | 41807 | 3421.7 | 155.8 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 155.2 | 25 | 43565 | 3597.5 |
| | 50+75+100 | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 | 155.6 | 75 | 43515 | 3592.5 |
| | | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 155.1 | 75 | 43515 | 3592.5 |
| | | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 155.1 | 50 | 43540 | 3595 |
| | | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 | 155.6 | 75 | 43515 | 3592.5 |
| | 50+100+100 | 100 | 41690 | 3410 | 75 | 41861 | 3427.1 | 155.4 | 50 | 43540 | 3595 |
| | | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 150.1 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 | 150.6 | 100 | 43490 | 3590 |
| | 75+75+100 | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 150.2 | 50 | 43540 | 3595 |
| | | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 150.1 | 75 | 43515 | 3592.5 |
| | | 100 | 41690 | 3410 | 75 | 41861 | 3427.1 | 150.4 | 75 | 43515 | 3592.5 |
| | 75+100+100 | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 145.1 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 75 | 41861 | 3427.1 | 145.4 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 145.2 | 75 | 43515 | 3592.5 |
| | 100+100+100 | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 140.2 | 100 | 43490 | 3590 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.10A-5: Test frequencies for CA_42A-42C

| Test Frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | Wgap [MHz] | CC2 Note1 | | | CC3 Note1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max WGap | 25+25+100 | 25 | 41615 | 3402.5 | 170.8 | 25 | 43373 | 3578.3 | 100 | 43490 | 3590 |
| | | 25 | 41615 | 3402.5 | 170 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | 25+50+100 | 25 | 41615 | 3402.5 | 165.6 | 50 | 43346 | 3575.6 | 100 | 43490 | 3590 |
| | | 25 | 41615 | 3402.5 | 165.1 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | | 50 | 41640 | 3405 | 165.8 | 25 | 43373 | 3578.3 | 100 | 43490 | 3590 |
| | 25+75+100 | 50 | 41640 | 3405 | 165 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | | 25 | 41615 | 3402.5 | 160.4 | 75 | 43319 | 3572.9 | 100 | 43490 | 3590 |
| | | 25 | 41615 | 3402.5 | 160.1 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| | | 75 | 41665 | 3407.5 | 160.8 | 25 | 43373 | 3578.3 | 100 | 43490 | 3590 |
| | 50+50+100 | 75 | 41665 | 3407.5 | 160 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | | 50 | 41640 | 3405 | 160.6 | 50 | 43346 | 3575.6 | 100 | 43490 | 3590 |
| | | 50 | 41640 | 3405 | 160.1 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | 25+100+100 | 25 | 41615 | 3402.5 | 155.2 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 155.8 | 25 | 43373 | 3578.3 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 155 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | 50+75+100 | 100 | 41690 | 3410 | 155.1 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | | 50 | 41640 | 3405 | 155.4 | 75 | 43319 | 3572.9 | 100 | 43490 | 3590 |
| | | 50 | 41640 | 3405 | 155.1 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| | | 75 | 41665 | 3407.5 | 155.6 | 50 | 43346 | 3575.6 | 100 | 43490 | 3590 |
| | 50+100+100 | 75 | 41665 | 3407.5 | 155.1 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | | 50 | 41640 | 3405 | 150.2 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 150.6 | 50 | 43346 | 3575.6 | 100 | 43490 | 3590 |
| | 75+75+100 | 100 | 41690 | 3410 | 150.1 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | | 75 | 41665 | 3407.5 | 150.4 | 75 | 43319 | 3572.9 | 100 | 43490 | 3590 |
| | | 75 | 41665 | 3407.5 | 150.1 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| | 75+100+100 | 75 | 41665 | 3407.5 | 145.2 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 145.4 | 75 | 43319 | 3572.9 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 145.1 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| | 100+100+100 | 100 | 41690 | 3410 | 140.2 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.10A-6: Test frequencies for CA_42C-42C

| Test frequency ID | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | Wgap [MHz] | CC3 Note1 | | | CC4 Note1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max Wgap | 25+25+100+100 | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 150.8 | 25 | 43373 | 3578.3 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 25 | 41807 | 3421.7 | 150.8 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 150 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | | 100 | 41690 | 3410 | 25 | 41807 | 3421.7 | 151.6 | 25 | 43373 | 3578.3 | 100 | 43490 | 3590 |
| | 25+50+100+100 | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 145.6 | 50 | 43346 | 3575.6 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 25 | 41807 | 3421.7 | 145.9 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 145.1 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | | 100 | 41690 | 3410 | 25 | 41807 | 3421.7 | 146.4 | 50 | 43346 | 3575.6 | 100 | 43490 | 3590 |
| | | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 145.9 | 25 | 43373 | 3578.3 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 | 145.6 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 145.1 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 | 146.4 | 25 | 43373 | 3578.3 | 100 | 43490 | 3590 |
| | 25+75+100+100 | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 140.4 | 75 | 43319 | 3572.9 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 25 | 41807 | 3421.7 | 140.9 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| | | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 140.1 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| | | 100 | 41690 | 3410 | 25 | 41807 | 3421.7 | 141.2 | 75 | 43319 | 3572.9 | 100 | 43490 | 3590 |
| | | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 140.9 | 25 | 43373 | 3578.3 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 75 | 41861 | 3427.1 | 140.4 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 140.1 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | | 100 | 41690 | 3410 | 75 | 41861 | 3427.1 | 141.2 | 25 | 43373 | 3578.3 | 100 | 43490 | 3590 |
| | 25+100+100+100 | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 135.2 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 25 | 41807 | 3421.7 | 136 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 136 | 25 | 43373 | 3578.3 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 135.2 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | 50+50+100+100 | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 140.7 | 50 | 43346 | 3575.6 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 | 140.7 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 140.2 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 | 141.2 | 50 | 43346 | 3575.6 | 100 | 43490 | 3590 |

| | | | | | | | | | | | | | |
|---------------------|-----|-------|--------|-----|-------|--------|-------|-----|-------|--------|-----|-------|--------|
| 50+75+ 100+100 | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 135.5 | 75 | 43319 | 3572.9 | 100 | 43490 | 3590 |
| | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 | 135.7 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 135.2 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 | 136 | 75 | 43319 | 3572.9 | 100 | 43490 | 3590 |
| | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 135.7 | 50 | 43346 | 3575.6 | 100 | 43490 | 3590 |
| | 100 | 41690 | 3410 | 75 | 41861 | 3427.1 | 135.5 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 135.2 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| 50+100+ 100+100 | 100 | 41690 | 3410 | 75 | 41861 | 3427.1 | 136 | 50 | 43346 | 3575.6 | 100 | 43490 | 3590 |
| | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 130.3 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | 100 | 41690 | 3410 | 50 | 41834 | 3424.4 | 130.8 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 130.8 | 50 | 43346 | 3575.6 | 100 | 43490 | 3590 |
| 75+75+ 100+100 | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 130.3 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 130.5 | 75 | 43319 | 3572.9 | 100 | 43490 | 3590 |
| | 100 | 41690 | 3410 | 75 | 41861 | 3427.1 | 130.5 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 130.2 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| 75+100+ 100+100 | 100 | 41690 | 3410 | 75 | 41861 | 3427.1 | 130.8 | 75 | 43319 | 3572.9 | 100 | 43490 | 3590 |
| | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 125.3 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | 100 | 41690 | 3410 | 75 | 41861 | 3427.1 | 125.6 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 125.6 | 75 | 43319 | 3572.9 | 100 | 43490 | 3590 |
| 100+100+ 100+100 | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 125.3 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 120.4 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 120.4 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 120.4 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.10A-7: Test frequencies for CA_42A-42D

| Test frequency ID | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | Wgap [MHz] | CC2 Note1 | | | CC3 Note1 | | | CC4 Note1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max Wgap | 25+25+ 100+100 | 25 | 41615 | 3402.5 | 151 | 25 | 43175 | 3558.5 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 25 | 41615 | 3402.5 | 150.2 | 100 | 43242 | 3565.2 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | 25+50+ 100+100 | 25 | 41615 | 3402.5 | 145.8 | 50 | 43148 | 3555.8 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 25 | 41615 | 3402.5 | 145.3 | 100 | 43193 | 3560.3 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |

| | | | | | | | | | | | | | | |
|---------------------|--------------------|-------|--------|--------|-------|-------|--------|--------|-------|--------|--------|-------|--------|--------|
| | | 50 | 41640 | 3405 | 146 | 25 | 43175 | 3558.5 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 50 | 41640 | 3405 | 145.2 | 100 | 43242 | 3565.2 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | 25+75+ 100+100 | 25 | 41615 | 3402.5 | 140.6 | 75 | 43121 | 3553.1 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 25 | 41615 | 3402.5 | 140.3 | 100 | 43143 | 3555.3 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| | | 75 | 41665 | 3407.5 | 141 | 25 | 43175 | 3558.5 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 75 | 41665 | 3407.5 | 140.2 | 100 | 43242 | 3565.2 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | 25+100+ 100+100 | 25 | 41615 | 3402.5 | 135.4 | 100 | 43094 | 3550.4 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 136 | 25 | 43175 | 3558.5 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 135.2 | 100 | 43242 | 3565.2 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | 50+50+ 100+100 | 50 | 41640 | 3405 | 140.8 | 50 | 43148 | 3555.8 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 50 | 41640 | 3405 | 140.3 | 100 | 43193 | 3560.3 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | 50+75+ 100+100 | 50 | 41640 | 3405 | 135.6 | 75 | 43121 | 3553.1 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 50 | 41640 | 3405 | 135.3 | 100 | 43143 | 3555.3 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| | | 75 | 41665 | 3407.5 | 135.8 | 50 | 43148 | 3555.8 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 75 | 41665 | 3407.5 | 135.3 | 100 | 43193 | 3560.3 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | 50+100+ 100+100 | 50 | 41640 | 3405 | 130.4 | 100 | 43094 | 3550.4 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 130.8 | 50 | 43148 | 3555.8 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 130.3 | 100 | 43193 | 3560.3 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | 75+75+ 100+100 | 75 | 41665 | 3407.5 | 130.6 | 75 | 43121 | 3553.1 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 75 | 41665 | 3407.5 | 130.3 | 100 | 43143 | 3555.3 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| 75+100+ 100+100 | 75 | 41665 | 3407.5 | 125.4 | 100 | 43094 | 3550.4 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 | |
| | 100 | 41690 | 3410 | 125.6 | 75 | 43121 | 3553.1 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 | |
| | 100 | 41690 | 3410 | 125.3 | 100 | 43143 | 3555.3 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 | |
| 100+100+ 100+100 | 100 | 41690 | 3410 | 120.4 | 100 | 43094 | 3550.4 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.10A-8: Test frequencies for CA_42D-42A

| Test frequency ID | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | CC3 Note1 | | | Wgap [MHz] | CC4 Note1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |

| | | | | | | | | | | | | | | |
|---------------------|--------------------|-------|--------|--------|-------|--------|--------|-------|--------|--------|-------|-------|--------|--------|
| Max Wgap | 25+25+ 100+100 | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 100 | 41938 | 3434.8 | 150.2 | 25 | 43565 | 3597.5 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 25 | 42005 | 3441.5 | 151 | 25 | 43565 | 3597.5 |
| | 25+50+ 100+100 | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 100 | 41987 | 3439.7 | 145.3 | 25 | 43565 | 3597.5 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 50 | 42032 | 3444.2 | 145.8 | 25 | 43565 | 3597.5 |
| | | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 100 | 41938 | 3434.8 | 145.2 | 50 | 43540 | 3595 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 25 | 42005 | 3441.5 | 146 | 50 | 43540 | 3595 |
| | 25+75+ 100+100 | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 100 | 42037 | 3444.7 | 140.3 | 25 | 43565 | 3597.5 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 75 | 42059 | 3446.9 | 140.6 | 25 | 43565 | 3597.5 |
| | | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 100 | 41938 | 3434.8 | 140.2 | 75 | 43515 | 3592.5 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 25 | 42005 | 3441.5 | 141 | 75 | 43515 | 3592.5 |
| | 25+100+ 100+100 | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 100 | 42086 | 3449.6 | 135.4 | 25 | 43565 | 3597.5 |
| | | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 100 | 41938 | 3434.8 | 135.2 | 100 | 43490 | 3590 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 25 | 42005 | 3441.5 | 136 | 100 | 43490 | 3590 |
| | 50+50+ 100+100 | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 100 | 41987 | 3439.7 | 140.3 | 50 | 43540 | 3595 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 50 | 42032 | 3444.2 | 140.8 | 50 | 43540 | 3595 |
| 50+75+ 100+100 | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 100 | 42037 | 3444.7 | 135.3 | 50 | 43540 | 3595 | |
| | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 75 | 42059 | 3446.9 | 135.6 | 50 | 43540 | 3595 | |
| | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 100 | 41987 | 3439.7 | 135.3 | 75 | 43515 | 3592.5 | |
| | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 50 | 42032 | 3444.2 | 135.8 | 75 | 43515 | 3592.5 | |
| 50+100+ 100+100 | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 100 | 42086 | 3449.6 | 130.4 | 50 | 43540 | 3595 | |
| | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 100 | 41987 | 3439.7 | 130.3 | 100 | 43490 | 3590 | |
| | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 50 | 42032 | 3444.2 | 130.8 | 100 | 43490 | 3590 | |
| 75+75+ 100+100 | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 100 | 42037 | 3444.7 | 130.3 | 75 | 43515 | 3592.5 | |
| | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 75 | 42059 | 3446.9 | 130.6 | 75 | 43515 | 3592.5 | |
| 75+100+ 100+100 | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 100 | 42086 | 3449.6 | 125.4 | 75 | 43515 | 3592.5 | |
| | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 100 | 42037 | 3444.7 | 125.3 | 100 | 43490 | 3590 | |
| | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 75 | 42059 | 3446.9 | 125.6 | 100 | 43490 | 3590 | |
| 100+100+ 100+100 | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 100 | 42086 | 3449.6 | 120.4 | 100 | 43490 | 3590 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.10A-9: Test frequencies for CA_42E

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | CC3 Note1 | | | CC4 Note1 | | |
|-----------------|---|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 25+100+100+100 | 25 | 41623 | 3403.3 | 100 | 41740 | 3415 | 100 | 41938 | 3434.8 | 100 | 42136 | 3454.6 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 100 | 42086 | 3449.6 | 25 | 42203 | 3461.3 |
| | 50+100+100+100 | 50 | 41645 | 3405.5 | 100 | 41789 | 3419.9 | 100 | 41987 | 3439.7 | 100 | 42185 | 3459.5 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 100 | 42086 | 3449.6 | 50 | 42230 | 3464 |
| | 75+100+100+100 | 75 | 41668 | 3407.8 | 100 | 41839 | 3424.9 | 100 | 42037 | 3444.7 | 100 | 42235 | 3464.5 |
| | | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 100 | 42086 | 3449.6 | 75 | 42257 | 3466.7 |
| 100+100+100+100 | 100 | 41690 | 3410 | 100 | 41888 | 3429.8 | 100 | 42086 | 3449.6 | 100 | 42284 | 3469.4 | |
| Mid | 25+100+100+100 | 25 | 42300 | 3471 | 100 | 42417 | 3482.7 | 100 | 42615 | 3502.5 | 100 | 42813 | 3522.3 |
| | | 100 | 42367 | 3477.7 | 100 | 42565 | 3497.5 | 100 | 42763 | 3517.3 | 25 | 42880 | 3529 |
| | 50+100+100+100 | 50 | 42298 | 3470.8 | 100 | 42442 | 3485.2 | 100 | 42640 | 3505 | 100 | 42838 | 3524.8 |
| | | 100 | 42343 | 3475.3 | 100 | 42541 | 3495.1 | 100 | 42739 | 3514.9 | 50 | 42883 | 3529.3 |
| | 75+100+100+100 | 75 | 42295 | 3470.5 | 100 | 42466 | 3487.6 | 100 | 42664 | 3507.4 | 100 | 42862 | 3527.2 |
| | | 100 | 42318 | 3472.8 | 100 | 42516 | 3492.6 | 100 | 42714 | 3512.4 | 75 | 42885 | 3529.5 |
| 100+100+100+100 | 100 | 42293 | 3470.3 | 100 | 42491 | 3490.1 | 100 | 42689 | 3509.9 | 100 | 42887 | 3529.7 | |
| High | 25+100+100+100 | 25 | 42977 | 3538.7 | 100 | 43094 | 3550.4 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 43044 | 3545.4 | 100 | 43242 | 3565.2 | 100 | 43440 | 3585 | 25 | 43557 | 3596.7 |
| | 50+100+100+100 | 50 | 42950 | 3536 | 100 | 43094 | 3550.4 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 42995 | 3540.5 | 100 | 43193 | 3560.3 | 100 | 43391 | 3580.1 | 50 | 43535 | 3594.5 |
| | 75+100+100+100 | 75 | 42923 | 3533.3 | 100 | 43094 | 3550.4 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 |
| | | 100 | 42945 | 3535.5 | 100 | 43143 | 3555.3 | 100 | 43341 | 3575.1 | 75 | 43512 | 3592.2 |
| 100+100+100+100 | 100 | 42896 | 3530.6 | 100 | 43094 | 3550.4 | 100 | 43292 | 3570.2 | 100 | 43490 | 3590 | |

Note 1: Carriers in increasing frequency order.

4.3.1.2.11 TDD reference test frequencies for Operating Band 43

Table 4.3.1.2.11-1: Test frequencies for E-UTRA channel bandwidth for operating band 43

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 5 | 43615 | 3602.5 |
| | 10 | 43640 | 3605 |
| | 15 | 43665 | 3607.5 |
| | 20 | 43690 | 3610 |
| Mid Range | 5/10/15/20 | 44590 | 3700 |
| High Range | 5 | 45565 | 3797.5 |
| | 10 | 45540 | 3795 |
| | 15 | 45515 | 3792.5 |
| | 20 | 45490 | 3790 |

4.3.1.2.12 TDD reference test frequencies for Operating Band 44

Table 4.3.1.2.12-1: Test frequencies for E-UTRA channel bandwidth for operating band 44

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 3 | 45605 | 704.5 |
| | 5 | 45615 | 705.5 |
| | 10 | 45640 | 708 |
| | 15 | 45665 | 710.5 |
| | 20 | 45690 | 713 |
| Mid Range | 3/5/10/15/20 | 46090 | 753 |
| High Range | 3 | 46575 | 801.5 |
| | 5 | 46565 | 800.5 |
| | 10 | 46540 | 798 |
| | 15 | 46515 | 795.5 |
| | 20 | 46490 | 793 |

4.3.1.2.13 TDD reference test frequencies for Operating Band 45

Table 4.3.1.2.13-1: Test frequencies for E-UTRA channel bandwidth for operating band 45

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 5 | 46615 | 1449.5 |
| | 10 | 46640 | 1452 |
| | 15 | 46665 | 1454.5 |
| | 20 | 46690 | 1457 |
| Mid Range | 5/10/15/20 | 46690 | 1457 |
| High Range | 5 | 46765 | 1464.5 |
| | 10 | 46740 | 1462 |
| | 15 | 46715 | 1459.5 |
| | 20 | 46690 | 1457 |

4.3.1.2.14 TDD reference test frequencies for Operating Band 46

Table 4.3.1.2.14-1: Test frequencies for E-UTRA channel bandwidth for operating band 46

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 20 | 46890 | 5160 |
| Mid Range | 20 | 50690 | 5540 |
| High Range | 20 | 54340 | 5905 |

NOTE 1: In Rel-13, restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.

4.3.1.2.14A TDD reference test frequencies for CA in operating Band 46

Table 4.3.1.2.14A-1: Test frequencies for CA_46C

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | CC2 Note1 | | |
|-------|--|--------------|--------------------|--------------------------|--------------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 100+100 | 100 | 46890 | 5160.0 | 100 | 47088 | 5179.8 |
| Mid | 100+100 | 100 | 50692 | 5540.2 | 100 | 50890 | 5560 |
| High | 100+100 | 100 | 54142 | 5885.2 | 100 | 54340 | 5905 |

NOTE 1: Carriers in increasing frequency order.
NOTE 2: In Rel-13, restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.

Table 4.3.1.2.14A-2: Test frequencies for CA_46D

| Range | CC-Combo / N _{RB_agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | CC3 Note1 | | |
|-------|--|--------------|--------------------|--------------------------|--------------|--------------------|--------------------------|--------------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 100+100+100 | 100 | 46892 | 5160.2 | 100 | 47090 | 5180 | 100 | 47288 | 5199.8 |
| Mid | 100+100+100 | 100 | 50492 | 5520.2 | 100 | 50690 | 5540 | 100 | 50888 | 5559.8 |
| High | 100+100+100 | 100 | 53942 | 5865.2 | 100 | 54140 | 5885 | 100 | 54338 | 5904.8 |

NOTE 1: Carriers in increasing frequency order.
NOTE 2: In Rel-13, restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.

Table 4.3.1.2.14A-3: Test frequencies for CA_46E

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | CC3 Note1 | | | CC4 Note1 | | |
|-------|---|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 100+100+100+100 | 100 | 46890 | 5160 | 100 | 47088 | 5179.8 | 100 | 47289 | 5199.9 | 100 | 47490 | 5220 |
| Mid | 100+100+100+100 | 100 | 50490 | 5520 | 100 | 50688 | 5539.8 | 100 | 50889 | 5559.9 | 100 | 51090 | 5580 |
| High | 100+100+100+100 | 100 | 53740 | 5845 | 100 | 53941 | 5865.1 | 100 | 54142 | 5885.2 | 100 | 54340 | 5905 |

NOTE 1: Carriers in increasing frequency order.

NOTE 2: In Rel-13, restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.

Table 4.3.1.2.14A-4: Test frequencies for CA_46A-46A

| Test Frequency ID | CC- Combo / N _{RB,agg} [RB] | CC1 Note1 | | | Wgap [MHz] | CC2 Note1 | | |
|-------------------------|--|--------------|--------------------|-----------------------------|---------------|--------------|--------------------|-----------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max WGap | 100+100 | 100 | 46890 | 5160 | 745 | 100 | 54340 | 5905 |

NOTE 1: Carriers in increasing frequency order.
NOTE 2: In Rel-13, restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.

4.3.1.2.15 TDD reference test frequencies for Operating Band 47

Table 4.3.1.2.15-1: Test frequencies for E-UTRA channel bandwidth for operating band 47

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|--------------------|--------|--------------------------------|
| Low Range | 10 | 54590 | 5860 |
| | 20 | 54640 | 5865 |
| Mid Range | 10/20 | 54890 | 5890 |
| High Range | 10 | 55190 | 5920 |
| | 20 | 55140 | 5915 |

Table 4.3.1.2.15-2: Test frequencies for V2X_47B

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | |
|-------|---|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 50+50 | 50 | 54590 | 5860 | 50 | 54689 | 5869.9 |
| Mid | 50+50 | 50 | 54841 | 5885.1 | 50 | 54940 | 5895 |
| High | 50+50 | 50 | 55091 | 5910.1 | 50 | 55190 | 5920 |

Note 1: Carriers in increasing frequency order.

4.3.1.2.16 TDD reference test frequencies for Operating Band 48

Table 4.3.1.2.16-1: Test frequencies for E-UTRA channel bandwidth for operating band 48

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 5 | 55265 | 3552.5 |
| | 10 | 55290 | 3555.0 |
| | 15 | 55315 | 3557.5 |
| | 20 | 55340 | 3560.0 |
| Mid Range | 5/10/15/20 | 55990 | 3625.0 |
| High Range | 5 | 56715 | 3697.5 |
| | 10 | 56690 | 3695.0 |
| | 15 | 56665 | 3692.5 |
| | 20 | 56640 | 3690.0 |

4.3.1.2.16A TDD reference test frequencies for CA in operating band 48

Table 4.3.1.2.16A-1: Test frequencies for CA_48C

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | |
|---------|---|--------------|--------------------|--------------------------|--------------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 25+100 | 25 | 55273 | 3553.3 | 100 | 55390 | 3565 |
| | | 100 | 55340 | 3560 | 25 | 55457 | 3571.7 |
| | 50+100 | 50 | 55295 | 3555.5 | 100 | 55439 | 3569.9 |
| | | 100 | 55340 | 3560 | 50 | 55484 | 3574.4 |
| | 75+100 | 75 | 55318 | 3557.8 | 100 | 55489 | 3574.9 |
| 100 | | 55340 | 3560 | 75 | 55511 | 3577.1 | |
| Mid | 25+100 | 25 | 55898 | 3615.8 | 100 | 56015 | 3627.5 |
| | | 100 | 55965 | 3622.5 | 25 | 56082 | 3634.2 |
| | 50+100 | 50 | 55896 | 3615.6 | 100 | 56040 | 3630 |
| | | 100 | 55941 | 3620.1 | 50 | 56085 | 3634.5 |
| | 75+100 | 75 | 55893 | 3615.3 | 100 | 56064 | 3632.4 |
| 100 | | 55916 | 3617.6 | 75 | 56087 | 3634.7 | |
| High | 25+100 | 25 | 56523 | 3678.3 | 100 | 56640 | 3690 |
| | | 100 | 56590 | 3685 | 25 | 56707 | 3696.7 |
| | 50+100 | 50 | 56496 | 3675.6 | 100 | 56640 | 3690 |
| | | 100 | 56541 | 3680.1 | 50 | 56685 | 3694.5 |
| | 75+100 | 75 | 56469 | 3672.9 | 100 | 56640 | 3690 |
| 100 | | 56491 | 3675.1 | 75 | 56662 | 3692.2 | |
| 100+100 | 100 | 56442 | 3670.2 | 100 | 56640 | 3690 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.16A-2: Test frequencies for CA_48A-48A

| Test Frequency ID | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | Wgap [MHz] | CC2 Note1 | | |
|-------------------|-------------------------------------|-----------|--------------------|--------------------------|------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Max WGap | 25+25 | 25 | 55265 | 3552.5 | 140 | 25 | 56715 | 3697.5 |
| | 25+50 | 25 | 55265 | 3552.5 | 135 | 50 | 56690 | 3695 |
| | | 50 | 55290 | 3555 | 135 | 25 | 56715 | 3697.5 |
| | 25+75 | 25 | 55265 | 3552.5 | 130 | 75 | 56665 | 3692.5 |
| | | 75 | 55315 | 3557.5 | 130 | 25 | 56715 | 3697.5 |
| | 50+50 | 50 | 55290 | 3555 | 130 | 50 | 56690 | 3695 |
| | 25+100 | 25 | 55265 | 3552.5 | 125 | 100 | 56640 | 3690 |
| | | 100 | 55340 | 3560 | 125 | 25 | 56715 | 3697.5 |
| | 50+75 | 50 | 55290 | 3555 | 125 | 75 | 56665 | 3692.5 |
| | | 75 | 55315 | 3557.5 | 125 | 50 | 56690 | 3695 |
| | 50+100 | 50 | 55290 | 3555 | 120 | 100 | 56640 | 3690 |
| | | 100 | 55340 | 3560 | 120 | 50 | 56690 | 3695 |
| | 75+100 | 75 | 55315 | 3557.5 | 115 | 100 | 56640 | 3690 |
| | | 100 | 55340 | 3560 | 115 | 75 | 56665 | 3692.5 |
| 100+100 | 100 | 55340 | 3560 | 110 | 100 | 56640 | 3690 | |

Note 1: Carriers in increasing frequency order.

Table 4.3.1.2.16A-3: Test frequencies for CA_48D

| Range | CC-Combo / N _{RB,agg} [RB] | CC1 Note1 | | | CC2 Note1 | | | CC3 Note1 | | |
|-------------|-------------------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|-----------|--------------------|--------------------------|
| | | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] | BW [RB] | N _{UL/DL} | f _{UL/DL} [MHz] |
| Low | 25+100+100 | 25 | 55273 | 3553.3 | 100 | 55390 | 3565 | 100 | 55588 | 3584.8 |
| | | 100 | 55340 | 3560 | 100 | 55538 | 3579.8 | 25 | 55655 | 3591.5 |
| | 50+100+100 | 50 | 55295 | 3555.5 | 100 | 55439 | 3569.9 | 100 | 55637 | 3589.7 |
| | | 100 | 55340 | 3560 | 100 | 55538 | 3579.8 | 50 | 55682 | 3594.2 |
| | 75+100+100 | 75 | 55318 | 3557.8 | 100 | 55489 | 3574.9 | 100 | 55687 | 3594.7 |
| | | 100 | 55340 | 3560 | 100 | 55538 | 3579.8 | 75 | 55709 | 3596.9 |
| 100+100+100 | 100 | 55340 | 3560 | 100 | 55538 | 3579.8 | 100 | 55736 | 3599.6 | |
| Mid | 25+100+100 | 25 | 55799 | 3605.9 | 100 | 55916 | 3617.6 | 100 | 56114 | 3637.4 |
| | | 100 | 55866 | 3612.6 | 100 | 56064 | 3632.4 | 25 | 56181 | 3644.1 |
| | 50+100+100 | 50 | 55797 | 3605.7 | 100 | 55941 | 3620.1 | 100 | 56139 | 3639.9 |
| | | 100 | 55842 | 3610.2 | 100 | 56040 | 3630 | 50 | 56184 | 3644.4 |
| | 75+100+100 | 75 | 55794 | 3605.4 | 100 | 55965 | 3622.5 | 100 | 56163 | 3642.3 |
| | | 100 | 55817 | 3607.7 | 100 | 56015 | 3627.5 | 75 | 56186 | 3644.6 |
| 100+100+100 | 100 | 55792 | 3605.2 | 100 | 55990 | 3625 | 100 | 56188 | 3644.8 | |
| High | 25+100+100 | 25 | 56325 | 3658.5 | 100 | 56442 | 3670.2 | 100 | 56640 | 3690 |
| | | 100 | 56392 | 3665.2 | 100 | 56590 | 3685 | 25 | 56707 | 3696.7 |
| | 50+100+100 | 50 | 56298 | 3655.8 | 100 | 56442 | 3670.2 | 100 | 56640 | 3690 |
| | | 100 | 56343 | 3660.3 | 100 | 56541 | 3680.1 | 50 | 56685 | 3694.5 |
| | 75+100+100 | 75 | 56271 | 3653.1 | 100 | 56442 | 3670.2 | 100 | 56640 | 3690 |
| | | 100 | 56293 | 3655.3 | 100 | 56491 | 3675.1 | 75 | 56662 | 3692.2 |
| 100+100+100 | 100 | 56244 | 3650.4 | 100 | 56442 | 3670.2 | 100 | 56640 | 3690 | |

Note 1: Carriers in increasing frequency order.

4.3.1.2.17 TDD reference test frequencies for Operating Band 53

Table 4.3.1.2.17-1: Test frequencies for E-UTRA channel bandwidth for operating band 53

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 1.4 | 60147 | 2484.2 |
| | 3 | 60155 | 2485 |
| | 5 | 60165 | 2486 |
| | 10 | 60190 | 2488.5 |
| Mid Range | 1.4/3/5/10 | 60198 | 2489.3 |
| High Range | 1.4 | 60248 | 2494.3 |
| | 3 | 60240 | 2493.5 |
| | 5 | 60230 | 2492.5 |
| | 10 | 60205 | 2490 |

4.3.1.3 HRPD Test frequencies

4.3.1.3.1 HRPD test frequencies for Band Class 0

Table 4.3.1.3.1-1: Test frequencies for HRPD in Band Class 0

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.23 | 1013 | 824.70 | 869.70 |
| Mid Range | 1.23 | 356 | 835.68 | 880.68 |
| High Range | 1.23 | 779 | 848.37 | 893.37 |

4.3.1.3.2 HRPD test frequencies for Band Class 1

Table 4.3.1.3.2-1: Test frequencies for HRPD in Band Class 1

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.25 | 25 | 1851.25 | 1931.25 |
| Mid Range | 1.25 | 600 | 1880.00 | 1960.00 |
| High Range | 1.25 | 1175 | 1908.75 | 1988.75 |

4.3.1.3.3 HRPD test frequencies for Band Class 3

Table 4.3.1.3.3-1: Test frequencies for HRPD in Band Class 3

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.25 | 1120 | 888.00 | 833.00 |
| Mid Range | 1.25 | 872 | 898.90 | 843.90 |
| High Range | 1.25 | 76 | 915.95 | 860.95 |

4.3.1.3.4 HRPD test frequencies for Band Class 4

Table 4.3.1.3.4-1: Test frequencies for HRPD in Band Class 4

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.25 | 100 | 1755.00 | 1845.00 |
| Mid Range | 1.25 | 300 | 1765.00 | 1855.00 |
| High Range | 1.25 | 525 | 1776.25 | 1866.25 |

4.3.1.3.5 HRPD test frequencies for Band Class 6

Table 4.3.1.3.5-1: Test frequencies for HRPD in Band Class 6

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.25 | 125 | 1926.25 | 2116.25 |
| Mid Range | 1.25 | 200 | 1930.00 | 2120.00 |
| High Range | 1.25 | 350 | 1937.50 | 2127.50 |

4.3.1.3.6 HRPD test frequencies for Band Class 10

Table 4.3.1.3.6-1: Test frequencies for HRPD in Band Class 10

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.25 | 100 | 808.50 | 853.50 |
| Mid Range | 1.25 | 500 | 821.00 | 866.00 |
| High Range | 1.25 | 820 | 898.50 | 937.50 |

4.3.1.3.7 HRPD test frequencies for Band Class 15

Table 4.3.1.3.7-1: Test frequencies for HRPD in Band Class 15

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.25 | 75 | 1713.75 | 2113.75 |
| Mid Range | 1.25 | 450 | 1732.50 | 2132.50 |
| High Range | 1.25 | 800 | 1750.00 | 2150.00 |

4.3.1.4 1xRTT Test frequencies

4.3.1.4.1 1xRTT test frequencies for Band Class 0

Table 4.3.1.4.1-1: Test frequencies for 1xRTT in Band Class 0

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.23 | 1013 | 824.70 | 869.70 |
| Mid Range | 1.23 | 356 | 835.68 | 880.68 |
| High Range | 1.23 | 779 | 848.37 | 893.37 |

4.3.1.4.2 1xRTT test frequencies for Band Class 1

Table 4.3.1.4.2-1: Test frequencies for 1xRTT in Band Class 1

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.25 | 25 | 1851.25 | 1931.25 |
| Mid Range | 1.25 | 600 | 1880.00 | 1960.00 |
| High Range | 1.25 | 1175 | 1908.75 | 1988.75 |

4.3.1.4.3 1xRTT test frequencies for Band Class 3

Table 4.3.1.4.3-1: Test frequencies for 1xRTT in Band Class 3

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.25 | 1120 | 888.00 | 833.00 |
| Mid Range | 1.25 | 872 | 898.90 | 843.90 |
| High Range | 1.25 | 76 | 915.95 | 860.95 |

4.3.1.4.4 1xRTT test frequencies for Band Class 4

Table 4.3.1.4.4-1: Test frequencies for 1xRTT in Band Class 4

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.25 | 100 | 1755.00 | 1845.00 |
| Mid Range | 1.25 | 300 | 1765.00 | 1855.00 |
| High Range | 1.25 | 525 | 1776.25 | 1866.25 |

4.3.1.4.5 1xRTT test frequencies for Band Class 6

Table 4.3.1.4.5-1: Test frequencies for 1xRTT in Band Class 6

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.25 | 225 | 1931.25 | 2121.25 |
| Mid Range | 1.25 | 275 | 1933.75 | 2123.75 |
| High Range | 1.25 | 375 | 1938.75 | 2128.75 |

4.3.1.4.6 1xRTT test frequencies for Band Class 10

Table 4.3.1.4.6-1: Test frequencies for 1xRTT in Band Class 10

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.25 | 100 | 808.50 | 853.50 |
| Mid Range | 1.25 | 500 | 821.00 | 866.00 |
| High Range | 1.25 | 820 | 898.50 | 937.50 |

4.3.1.4.7 1xRTT test frequencies for Band Class 15

Table 4.3.1.4.7-1: Test frequencies for 1xRTT in Band Class 15

| Test Frequency ID | Bandwidth [MHz] | Channel Number | Frequency of Uplink [MHz] | Frequency of Downlink [MHz] |
|-------------------|-----------------|----------------|---------------------------|-----------------------------|
| Low Range | 1.25 | 75 | 1713.75 | 2113.75 |
| Mid Range | 1.25 | 450 | 1732.50 | 2132.50 |
| High Range | 1.25 | 800 | 1750.00 | 2150.00 |

4.3.1.5 MFBI Test frequencies

NOTE: MFBI test frequencies are not used for TS 36.521-1, TS 36.521-3 and TS 37.571-1.

4.3.1.5.1 MFBI Test frequencies for operation band 2 overlapping with band 25

- same as per Table 4.3.1.1.2-1

4.3.1.5.2 MFBI Test frequencies for operation band 3 overlapping with band 9

Table 4.3.1.5.2-1: Test frequencies for E-UTRA channel bandwidth for operating band 3 overlapping with band 9

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|--|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 19606 | 1750.6 | 1606 | 1845.6 |
| | 3 | 19614 | 1751.4 | 1614 | 1846.4 |
| | 5 | 19624 | 1752.4 | 1624 | 1847.4 |
| | 10 | 19649 | 1754.9 | 1649 | 1849.9 |
| | 15 ^[1] | 19674 | 1757.4 | 1674 | 1852.4 |
| | 20 ^[1] | 19699 | 1759.9 | 1699 | 1854.9 |
| Mid Range | 1.4/3/5/10 15 ^[1] /20 ^[1] | 19774 | 1767.4 | 1774 | 1862.4 |
| High Range | 1.4 | 19942 | 1784.2 | 1942 | 1879.2 |
| | 3 | 19934 | 1783.4 | 1934 | 1878.4 |
| | 5 | 19924 | 1782.4 | 1924 | 1877.4 |
| | 10 | 19899 | 1779.9 | 1899 | 1874.9 |
| | 15 ^[1] | 19874 | 1777.4 | 1874 | 1872.4 |
| | 20 ^[1] | 19849 | 1774.9 | 1849 | 1869.9 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.5.3 MFBI Test frequencies for operation band 4 overlapping with band 10

- same as per Table 4.3.1.1.4-1.

4.3.1.5.4 MFBI Test frequencies for operation band 5 overlapping with band 18

Table 4.3.1.5.4-1: Test frequencies for E-UTRA channel bandwidth for operating band 5 overlapping with band 18

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 20407 | 824.7 | 2407 | 869.7 |
| | 3 | 20415 | 825.5 | 2415 | 870.5 |
| | 5 | 20425 | 826.5 | 2425 | 871.5 |
| Mid Range | 1.4/3/5 | 20430 | 827 | 2430 | 872 |
| High Range | 1.4 | 20453 | 829.3 | 2453 | 874.3 |
| | 3 | 20445 | 828.5 | 2445 | 873.5 |
| | 5 | 20435 | 827.5 | 2435 | 872.5 |

4.3.1.5.5 MFBI Test frequencies for operation band 5 overlapping with band 19

Table 4.3.1.5.5-1: Test frequencies for E-UTRA channel bandwidth for operating band 5 overlapping with band 19

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|------------------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 20467 | 830.7 | 2467 | 875.7 |
| | 3 | 20475 | 831.5 | 2475 | 876.5 |
| | 5 | 20485 | 832.5 | 2485 | 877.5 |
| | 10 ^[1] | 20510 | 835 | 2510 | 880 |
| Mid Range | 1.4/3/5 10 ^[1] | 20535 | 837.5 | 2535 | 882.5 |
| High Range | 1.4 | 20603 | 844.3 | 2603 | 889.3 |
| | 3 | 20595 | 843.5 | 2595 | 888.5 |
| | 5 | 20585 | 842.5 | 2585 | 887.5 |
| | 10 ^[1] | 20560 | 840 | 2560 | 885 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.5.6 MFBI Test frequencies for operation band 5 overlapping with band 26

- same as per Table 4.3.1.1.5-1

4.3.1.5.7 MFBI Test frequencies for operation band 9 overlapping with band 3

- same as per Table 4.3.1.1.9-1

4.3.1.5.8 MFBI Test frequencies for operation band 10 overlapping with band 4

Table 4.3.1.5.8-1: Test frequencies for E-UTRA channel bandwidth for operating band 10 overlapping with band 4

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 22175 | 1712.5 | 4175 | 2112.5 |
| | 10 | 22200 | 1715 | 4200 | 2115 |
| | 15 | 22225 | 1717.5 | 4225 | 2117.5 |
| | 20 | 22250 | 1720 | 4250 | 2120 |
| Mid Range | 5/10/15/20 | 22375 | 1732.5 | 4375 | 2132.5 |
| High Range | 5 | 22575 | 1752.5 | 4575 | 2152.5 |
| | 10 | 22550 | 1750 | 4550 | 2150 |
| | 15 | 22525 | 1747.5 | 4525 | 2147.5 |
| | 20 | 22500 | 1745 | 4500 | 2145 |

4.3.1.5.9 MFBI Test frequencies for operation band 12 overlapping with band 17

Table 4.3.1.5.9-1: Test frequencies for E-UTRA channel bandwidth for operating band 12 overlapping with band 17

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|--|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 23067 | 704.7 | 5067 | 734.7 |
| | 3 | 23075 | 705.5 | 5075 | 735.5 |
| | 5 ^[1] | 23085 | 706.5 | 5085 | 736.5 |
| | 10 ^[1] | 23110 | 709 | 5110 | 739 |
| Mid Range | 1.4/3 5 ^[1] /10 ^[1] | 23120 | 710 | 5120 | 740 |
| High Range | 1.4 | 23173 | 715.3 | 5173 | 745.3 |

| | | | | | |
|---|--------|-------|-------|------|-------|
| | 3 | 23165 | 714.5 | 5165 | 744.5 |
| | 5 [1] | 23155 | 713.5 | 5155 | 743.5 |
| | 10 [1] | 23130 | 711 | 5130 | 741 |
| NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed. | | | | | |

4.3.1.5.10 MFBI Test frequencies for operation band 17 overlapping with band 12

- same as per Table 4.3.1.1.17-1

4.3.1.5.11 MFBI Test frequencies for operation band 18 overlapping with band 5

Table 4.3.1.5.11-1: Test frequencies for E-UTRA channel bandwidth for operating band 18 overlapping with band 5

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 23947 | 824.7 | 5947 | 869.7 |
| | 3 | 23955 | 825.5 | 5955 | 870.5 |
| | 5 | 23965 | 826.5 | 5965 | 871.5 |
| Mid Range | 1.4/3/5 | 23970 | 827 | 5970 | 872 |
| High Range | 1.4 | 23993 | 829.3 | 5993 | 874.3 |
| | 3 | 23985 | 828.5 | 5985 | 873.5 |
| | 5 | 23975 | 827.5 | 5975 | 872.5 |

4.3.1.5.12 MFBI Test frequencies for operation band 18 overlapping with band 26

- same as per Table 4.3.1.1.18-1

4.3.1.5.13 MFBI Test frequencies for operation band 18 overlapping with band 27

Table 4.3.1.5.13-1: Test frequencies for E-UTRA channel bandwidth for operating band 18 overlapping with band 27

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 23857 | 815.7 | 5857 | 860.7 |
| | 3 | 23865 | 816.5 | 5865 | 861.5 |
| | 5 | 23875 | 817.5 | 5875 | 862.5 |
| Mid Range | 1.4/3/5 | 23895 | 819.5 | 5895 | 864.5 |
| High Range | 1.4 | 23933 | 823.3 | 5933 | 868.3 |
| | 3 | 23925 | 822.5 | 5925 | 867.5 |
| | 5 | 23915 | 821.5 | 5915 | 866.5 |

4.3.1.5.14 MFBI Test frequencies for operation band 19 overlapping with band 5

- same as per Table 4.3.1.1.19-1

4.3.1.5.15 MFBI Test frequencies for operation band 19 overlapping with band 26

- same as per Table 4.3.1.1.19-1

4.3.1.5.16 MFBI Test frequencies for operation band 25 overlapping with band 2

Table 4.3.1.5.16-1: Test frequencies for E-UTRA channel bandwidth for operating band 25 overlapping with band 2

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|--|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 26047 | 1850.7 | 8047 | 1930.7 |
| | 3 | 26055 | 1851.5 | 8055 | 1931.5 |
| | 5 | 26065 | 1852.5 | 8065 | 1932.5 |
| | 10 | 26090 | 1855 | 8090 | 1935 |
| | 15 ^[1] | 26115 | 1857.5 | 8115 | 1937.5 |
| | 20 ^[1] | 26140 | 1860 | 8140 | 1940 |
| Mid Range | 1.4/3/5/10 15 ^[1] /20 ^[1] | 26340 | 1880 | 8340 | 1960 |
| High Range | 1.4 | 26633 | 1909.3 | 8633 | 1989.3 |
| | 3 | 26625 | 1908.5 | 8625 | 1988.5 |
| | 5 | 26615 | 1907.5 | 8615 | 1987.5 |
| | 10 | 26590 | 1905 | 8590 | 1985 |
| | 15 ^[1] | 26565 | 1902.5 | 8565 | 1982.5 |
| | 20 ^[1] | 26540 | 1900 | 8540 | 1980 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.5.17 MFBI Test frequencies for operation band 26 overlapping with band 5

Table 4.3.1.5.17-1: Test frequencies for E-UTRA channel bandwidth for operating band 26 overlapping with band 5

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-------------------|--|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 26797 | 824.7 | 8797 | 869.7 |
| | 3 | 26805 | 825.5 | 8805 | 870.5 |
| | 5 | 26815 | 826.5 | 8815 | 871.5 |
| | 10 ^[1] | 26840 | 829 | 8840 | 874 |
| | 15 ^[1] | 26865 | 831.5 | 8865 | 876.5 |
| | Mid Range | 1.4/3/5/10 ^[1] 15 ^[1] | 26915 | 836.5 | 8915 |
| High Range | 1.4 | 27033 | 848.3 | 9033 | 893.3 |
| | 3 | 27025 | 847.5 | 9025 | 892.5 |
| | 5 | 27015 | 846.5 | 9015 | 891.5 |
| | 10 ^[1] | 26990 | 844 | 8990 | 889 |
| | 15 ^[1] | 26965 | 841.5 | 8965 | 886.5 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.5.18 MFBI Test frequencies for operation band 26 overlapping with band 18

Table 4.3.1.5.18-1: Test frequencies for E-UTRA channel bandwidth for operating band 26 overlapping with band 18

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|---------------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 26707 | 815.7 | 8707 | 860.7 |
| | 3 | 26715 | 816.5 | 8715 | 861.5 |
| | 5 | 26725 | 817.5 | 8725 | 862.5 |
| | 10 ^[1] | 26750 | 820 | 8750 | 865 |
| Mid Range | 1.4/3/5/10 ^[1] | 26775 | 822.5 | 8775 | 867.5 |

| | | | | | |
|---|-------------------|-------|-------|------|-------|
| High Range | 1.4 | 26843 | 829.3 | 8843 | 874.3 |
| | 3 | 26835 | 828.5 | 8835 | 873.5 |
| | 5 | 26825 | 827.5 | 8825 | 872.5 |
| | 10 ^[1] | 26800 | 825 | 8800 | 870 |
| NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed. | | | | | |

4.3.1.5.19 MFBI Test frequencies for operation band 26 overlapping with band 19

Table 4.3.1.5.19-1: Test frequencies for E-UTRA channel bandwidth for operating band 26 overlapping with band 19

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|---|--|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 26857 | 830.7 | 8857 | 875.7 |
| | 3 | 26865 | 831.5 | 8865 | 876.5 |
| | 5 | 26875 | 832.5 | 8875 | 877.5 |
| | 10 ^[1] | 26900 | 835 | 8900 | 880 |
| Mid Range | 1.4/3/5/10 ^[1] 15 ^[1] | 26925 | 837.5 | 8925 | 882.5 |
| High Range | 1.4 | 26993 | 844.3 | 8993 | 889.3 |
| | 3 | 26985 | 843.5 | 8985 | 888.5 |
| | 5 | 26975 | 842.5 | 8975 | 887.5 |
| | 10 ^[1] | 26950 | 840 | 8950 | 885 |
| NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed. | | | | | |

4.3.1.5.20 MFBI Test frequencies for operation band 26 overlapping with band 27

Table 4.3.1.5.20-1: Test frequencies for E-UTRA channel bandwidth for operating band 26 overlapping with band 27

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|---|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 26697 | 814.7 | 8697 | 859.7 |
| | 3 | 26705 | 815.5 | 8705 | 860.5 |
| | 5 | 26715 | 816.5 | 8715 | 861.5 |
| Mid Range | 1.4/3/5 | 26740 | 819 | 8740 | 864 |
| High Range | 1.4 | 26783 | 823.3 | 8783 | 868.3 |
| | 3 | 26775 | 822.5 | 8775 | 867.5 |
| | 5 | 26765 | 821.5 | 8765 | 866.5 |
| NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed. | | | | | |

4.3.1.5.21 MFBI Test frequencies for operation band 27 overlapping with band 18

Table 4.3.1.5.21-1: Test frequencies for E-UTRA channel bandwidth for operating band 27 overlapping with band 18

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 27127 | 815.7 | 9127 | 860.7 |
| | 3 | 27135 | 816.5 | 9135 | 861.5 |
| | 5 | 27145 | 817.5 | 9145 | 862.5 |
| Mid Range | 1.4/3/5 | 27165 | 819.5 | 9165 | 864.5 |
| High Range | 1.4 | 27203 | 823.3 | 9203 | 868.3 |
| | 3 | 27195 | 822.5 | 9195 | 867.5 |
| | 5 | 27185 | 821.5 | 9185 | 866.5 |

4.3.1.5.22 MFBI Test frequencies for operation band 27 overlapping with band 26

Table 4.3.1.5.22-1: Test frequencies for E-UTRA channel bandwidth for operating band 27 overlapping with band 26

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 27117 | 814.7 | 9117 | 859.7 |
| | 3 | 27125 | 815.5 | 9125 | 860.5 |
| | 5 | 27135 | 816.5 | 9135 | 861.5 |
| Mid Range | 1.4/3/5 | 27160 | 819 | 9160 | 864 |
| High Range | 1.4 | 27203 | 823.3 | 9203 | 868.3 |
| | 3 | 27195 | 822.5 | 9195 | 867.5 |
| | 5 | 27185 | 821.5 | 9185 | 866.5 |

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

4.3.1.5.23 MFBI Test frequencies for operation band 33 overlapping with band 39

- same as per Table 4.3.1.2.1-1

4.3.1.5.24 MFBI Test frequencies for operation band 38 overlapping with band 41

- same as per Table 4.3.1.2.6-1

4.3.1.5.25 MFBI Test frequencies for operation band 39 overlapping with band 33

Table 4.3.1.5.25-1: Test frequencies for E-UTRA channel bandwidth for operating band 39 overlapping with band 33

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 5 | 38475 | 1902.5 |
| | 10 | 38500 | 1905 |
| | 15 | 38525 | 1907.5 |
| | 20 | 38550 | 1910 |
| Mid Range | 5/10/15/20 | 38550 | 1910 |
| High Range | 5 | 38625 | 1917.5 |
| | 10 | 38600 | 1915 |
| | 15 | 38575 | 1912.5 |
| | 20 | 38550 | 1910 |

4.3.1.5.26 MFBI Test frequencies for operation band 41 overlapping with band 38

Table 4.3.1.5.26-1: Test frequencies for E-UTRA channel bandwidth for operating band 41 overlapping with band 38

| Test Frequency ID | Bandwidth [MHz] | EARFCN | Frequency (UL and DL) [MHz] |
|-------------------|-----------------|--------|-----------------------------|
| Low Range | 5 | 40415 | 2572.5 |
| | 10 | 40440 | 2575 |
| | 15 | 40465 | 2577.5 |
| | 20 | 40490 | 2580 |
| Mid Range | 5/10/15/20 | 40640 | 2595 |
| High Range | 5 | 40865 | 2617.5 |
| | 10 | 40840 | 2615 |
| | 15 | 40815 | 2612.5 |
| | 20 | 40790 | 2610 |

4.3.1.5.27 MFBI Test frequencies for operation band 66 overlapping with band 4

Table 4.3.1.5.27-1: Test frequencies for E-UTRA channel bandwidth for operating band 66 overlapping with band 4

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 1.4 | 131979 | 1710.7 | 66443 | 2110.7 |
| | 3 | 131987 | 1711.5 | 66451 | 2111.5 |
| | 5 | 131997 | 1712.5 | 66461 | 2112.5 |
| | 10 | 132022 | 1715 | 66486 | 2115 |
| | 15 | 132047 | 1717.5 | 66511 | 2117.5 |
| | 20 | 132072 | 1720 | 66536 | 2120 |
| Mid Range | 1.4/3/5/10/15/20 | 132197 | 1732.5 | 66661 | 2132.5 |
| High Range | 1.4 | 132415 | 1754.3 | 66879 | 2154.3 |
| | 3 | 132407 | 1753.5 | 66871 | 2153.5 |
| | 5 | 132397 | 1752.5 | 66861 | 2152.5 |
| | 10 | 132372 | 1750 | 66836 | 2150 |
| | 15 | 132347 | 1747.5 | 66811 | 2147.5 |
| | 20 | 132322 | 1745 | 66786 | 2145 |

4.3.1.5.28 MFBI Test frequencies for operation band 66 overlapping with band 10

Table 4.3.1.5.28-1: Test frequencies for E-UTRA channel bandwidth for operating band 66 overlapping with band 10

| Test Frequency ID | Bandwidth [MHz] | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range | 5 | 131997 | 1712.5 | 66461 | 2112.5 |
| | 10 | 132022 | 1715 | 66486 | 2115 |
| | 15 | 132047 | 1717.5 | 66511 | 2117.5 |
| | 20 | 132072 | 1720 | 66536 | 2120 |
| Mid Range | 5/10/15/20 | 132197 | 1732.5 | 66736 | 2140 |
| High Range | 5 | 132547 | 1767.5 | 67011 | 2167.5 |
| | 10 | 132522 | 1765 | 66986 | 2165 |
| | 15 | 132447 | 1757.5 | 66961 | 2162.5 |
| | 20 | 132472 | 1760 | 66936 | 2160 |

4.3.1.5.29 MFBI Test frequencies for operation band 4 overlapping with band 66

- same as per Table 4.3.1.1.4-1.

4.3.1.5.30 MFBI Test frequencies for operation band 10 overlapping with band 66

- same as per Table 4.3.1.1.10-1.

4.3.1.6 WLAN Test frequencies

4.3.1.6.1 WLAN Test frequencies for 2.4 GHz ISM Band

Table 4.3.1.6.1-1: Test frequencies for WLAN for 2.4 GHz Band

| Test Frequency ID | Bandwidth [MHz] | WLAN Channel Number | Centre Frequency (UL and DL)[MHz] |
|-------------------|-----------------|---------------------|-----------------------------------|
| Low Range (1) | 20 | 1 | 2412 |
| Mid Range (2) | 20 | 6 | 2437 |
| High Range (3) | 20 | 11 | 2462 |

4.3.1.6.2 WLAN Test frequencies for 5 GHz ISM Band

Table 4.3.1.6.1-1: Test frequencies for WLAN for 5 GHz Band

| Test Frequency ID | Bandwidth [MHz] | WLAN Channel Number | Centre Frequency (UL and DL)[MHz] |
|-------------------|-----------------|---------------------|-----------------------------------|
| Low Range (1) | 20 | 48 | 5240 |
| Mid Range (2) | 20 | 56 | 5280 |
| High Range (3) | 20 | 64 | 5320 |

4.3.1.7 Bluetooth Test frequencies

4.3.1.7.1 Bluetooth Test frequencies for 2.4 GHz ISM Band

Table 4.3.1.7.1-1: Test frequencies for Bluetooth for 2.4 GHz Band

| Test Frequency ID | Channel Bandwidth [MHz] | Operating Band (UL and DL)[MHz] |
|--|-------------------------|---------------------------------|
| Mid Range (1) | 1 (Note 1) | 2402 - 2480 |
| Note 1: Bluetooth adopts FHSS to use the Operating Band 2402MHz – 2480MHz. | | |

4.3.2 Radio conditions

4.3.2.1 Normal propagation condition

The downlink connection between the System Simulator and the UE is without Additive White Gaussian Noise, and has no fading or multipath effects.

The uplink connection between the UE and System Simulator is without Additive White Gaussian Noise, and has no fading or multipath effects.

4.3.3 Physical channel allocations

4.3.3.1 Antennas

If the UE has two Rx antennas, the same downlink signal is applied to each one. Both UE Rx antennas shall be connected unless otherwise stated in the test case.

If the UE has one Rx antenna, the downlink signal is applied to it.

4.3.3.2 Downlink physical channels and physical signals

The Downlink Physical channels and Physical signals used and their relative powers are specified for single SS Tx antenna in table 4.3.3.2-1 and for two SS Tx antennas in table 4.3.3.2-2. The details of downlink power allocation for PDSCH channel are described in TS 36.213 [29] clause 5.2. For BL-UE testing, PHICH is not required and MPDCCH is required.

Table 4.3.3.2-1: Power allocation for OFDM symbols and reference signals, single SS Tx antenna

| Physical Channel | EPRE Ratio |
|------------------|-------------------|
| PBCH | PBCH_RA = 0 dB |
| | PBCH_RB = 0 dB |
| PSS | PSS_RA = 0 dB |
| SSS | SSS_RA = 0 dB |
| PCFICH | PCFICH_RB = 0 dB |
| PDCCH | PDCCH_RA = 0 dB |
| | PDCCH_RB = 0 dB |
| MPDCCH | MPDCCH_RA = 0 dB |
| | MPDCCH_RB = 0 dB |
| PDSCH | PDSCH_RA = 0 dB |
| | PDSCH_RB = 0 dB |
| PHICH | PHICH_RB = 0 dB |
| PMCH | PMCH_RA = 0 dB |
| MBSFN RS | MBSFN_RS_RA = 0dB |

Table 4.3.3.2-2: Power allocation for OFDM symbols and reference signals, two SS Tx antennas

| Physical Channel | EPRE Ratio |
|------------------|-------------------|
| PBCH | PBCH_RA = 0 dB |
| | PBCH_RB = 0 dB |
| PSS | PSS_RA = 0 dB |
| SSS | SSS_RA = 0 dB |
| PCFICH | PCFICH_RB = 0 dB |
| PDCCH | PDCCH_RA = 0 dB |
| | PDCCH_RB = 0 dB |
| MPDCCH | MPDCCH_RA = 0 dB |
| | MPDCCH_RB = 0 dB |
| PDSCH | PDSCH_RA = -3 dB |
| | PDSCH_RB = -3 dB |
| PHICH | PHICH_RB = 0 dB |
| PMCH | PMCH_RA = 0 dB |
| MBSFN RS | MBSFN_RS_RA = 0dB |

NOTE: MBSFN RS is not defined downlink physical channels in TS 36.211 [35].

4.3.3.3 Mapping of downlink physical channels and signals to physical resources

Parameters for mapping of downlink physical channels and signals are specified as follows.

Normal Cyclic Prefix

N_{ID}^{cell} , Physical layer cell identity = 0 is used as the default physical layer cell identity

CFI = 3 for 1.4, 3 and 5 MHz system bandwidths
 = 2 for 10, 15 and 20 MHz system bandwidths

= 2 if PMCH is configured ('mbsfn-SubframeConfiguration' is present in SIB2)

N_g = 1

PHICH duration = Normal

For Signalling testing, the default system bandwidth is 5/10/20 MHz and single SS Tx antenna is used unless specified otherwise in the test case. The mapping of downlink physical channels to physical resources for Single Tx Antenna is

described in table 4.3.3.3-1 for 5/10MHz system bandwidth FDD and table 4.3.3.3-2 for 5/20MHz system bandwidth TDD.

For RF testing, the mapping of DL physical channels to resource element is defined TS 36.521-1 [21] Annex C.1.

Table 4.3.3.3-1: Mapping of DL Physical Channels to Resource Elements for Single SS Tx Antenna and 5/10 MHz System Bandwidth (FDD)

| Physical channel | Time Domain Location | Frequency Domain Location | Note |
|------------------|--|---|---|
| PBCH | Symbols 0 to 3 of slot 1 of subframe 0 of each radio frame | Occupies 72 subcarriers centred on the DC subcarrier | Mapping rule is specified in TS36.211 [35] sub clause 6.6.4 |
| PSS | Symbol 6 of slot 0 and 10 of each radio frame | Occupies 62 subcarriers centred on the DC subcarrier. Additional 10 subcarriers (5 on each side) adjacent to the centred 62 subcarriers are reserved. | Mapping rule is specified in TS36.211 [35] sub clause 6.11.1.2 |
| SSS | Symbol 5 of slots 0 and 10 of each radio frame | Occupies 62 subcarriers centred on the DC subcarrier. Additional 10 subcarriers (5 on each side) adjacent to the centred 62 subcarriers are reserved. | Mapping rule is specified in TS36.211 [35] sub clause 6.11.2.2 |
| PCFICH | Symbol 0 of each subframe | Maps into 4 REGs uniformly spread in the frequency domain over the whole system bandwidth. | Mapping rule is specified in TS36.211 [35] sub clause 6.7.4 - CELL_ID = 0 |
| PHICH | Symbol 0 of each subframe | Each PHICH group maps into 3 REGs in the frequency domain on the REGs not assigned to PCFICH over the whole system bandwidth, | Mapping rule is specified in TS36.211 [35] sub clause 6.9.3 - CELL_ID = 0 - Number of PHICH groups = $4(BW=5 \text{ MHz})/7(BW=10\text{MHz})$ |
| PDCCH | Symbols 0, 1, 2 of each subframe (BW=5MHz) | The remaining REGs not allocated to both PCFICH and PHICH are used for PDCCH | Mapping rule is specified in TS36.211 [35] sub clause 6.8.5 - CFI = 3 (BW=5MHz) |
| | Symbols 0, 1 of each subframe (BW=10MHz) | | Mapping rule is specified in TS36.211 [35] sub clause 6.8.5 - CFI = 2(BW=10MHz) |
| | Symbols 0, 1 of each MBSFN subframe | | Mapping rule is specified in TS36.211 [35] sub clause 6.8.5 - CFI = 2 |
| MPDCCH | Same as PDSCH | For Subframe 0, subcarriers corresponding to resource elements not allocated to RS, PSS, SSS and PBCH (core set and repetitions) and reserved for PBCH antenna ports 3 and 4 on the 72 central subcarriers. For Subframe 5, subcarriers corresponding to resource elements not allocated to RS, PSS and SSS. For Subframe 9, subcarriers corresponding to resource elements not allocated to RS, PSS, SSS and PBCH (repetitions). For other subframes, subcarriers corresponding to resource elements not allocated to RS. | Mapping rule is specified in TS36.211 [35] sub clause 6.8B.5 |

| | | | |
|-------|--|---|--|
| PDSCH | All remaining OFDM symbols of each subframe not allocated to PDCCH | For Subframe 0, REs not allocated to RS, PSS, SSS and PBCH is allocated to PDSCH For Subframe 5, REs not allocated to RS, PSS and SSS is allocated to PDSCH For other subframes, REs not allocated to RS is allocated to PDSCH | |
| PMCH | MBSFN region of MBSFN subframes | REs not allocated to MBSFN RS is allocated to PMCH | |

NOTE: In case a single cell-specific RS is configured, cell-specific RS shall be assume to be present on antenna ports 0 and 1 for the purpose of mapping a symbol-quadruplet to a REG (resource element group). (See TS 36.211 [35] sub clause 6.2.4).

Table 4.3.3.3-2: Mapping of DL Physical Channels to Resource Elements for Single SS Tx Antenna and 5/20 MHz System Bandwidth (TDD)

| Physical channel | Time Domain Location | Frequency Domain Location | Note |
|------------------|---|---|---|
| PBCH | Symbols 0 to 3 of slot 1 of subframe 0 of each radio frame | Occupies 72 subcarriers centred on the DC subcarrier | Mapping rule is specified in TS36.211 [35] subclause 6.6.4 |
| PSS | Symbol 2 of slot 2 and 12 of each radio frame | Occupies 62 subcarriers centred on the DC subcarrier. Additional 10 subcarriers (5 on each side) adjacent to the centred 62 subcarriers are reserved. | Mapping rule is specified in TS36.211 [35] subclause 6.11.1.2 |
| SSS | Symbol 6 of slots 1 and 11 of each radio frame | Occupies 62 subcarriers centred on the DC subcarrier. Additional 10 subcarriers (5 on each side) adjacent to the centred 62 subcarriers are reserved. | Mapping rule is specified in TS36.211 [35] subclause 6.11.2.2 |
| PCFICH | Symbol 0 of each downlink subframe and Special subframe | Maps into 4 REGs uniformly spread in the frequency domain over the whole system bandwidth. | Mapping rule is specified in TS36.211 [35] subclause 6.7.4 - CELL_ID = 0 |
| PHICH | Symbol 0 of each downlink subframe and Special subframe | Each PHICH group maps into 3 REGs in the frequency domain on the REGs not assigned to PCFICH over the whole system bandwidth. | Mapping rule is specified in TS36.211 [35] subclause 6.9.3 - CELL_ID = 0 - Number of PHICH groups = $4(BW=5MHz)/13(BW=20MHz)$ |
| PDCCH | Symbols 0, 1 of subframe 1, 6 and Symbols 0, 1, 2 of other downlink subframes (BW=5MHz) | The remaining REGs not allocated to both PCFICH and PHICH are used for PDCCH | Mapping rule is specified in TS36.211 [35] subclause 6.8.5 - CFI = 3 (BW=5MHz) |
| | Symbols 0, 1 of subframe 1, 6 and Symbols 0, 1 of other downlink subframes (BW=20MHz) | | Mapping rule is specified in TS36.211 [35] subclause 6.8.5 - CFI = 2 (BW=20MHz) |
| | Symbols 0, 1 of each MBSFN subframe | | Mapping rule is specified in TS36.211 [35] sub clause 6.8.5 - CFI = 2 |
| MPDCCH | Same as PDSCH | <p>For Subframe 0, subcarriers corresponding to resource elements not allocated to RS, SSS and PBCH (core set and repetitions) and reserved for PBCH antenna ports 3 and 4 on the 72 central subcarriers.</p> <p>For Subframe 5, subcarriers corresponding to resource elements not allocated to RS, SSS and PBCH (repetitions).</p> <p>For Subframe 1 and 6, resource elements not allocated to RS, PSS, GP and UpPTS.</p> <p>For other subframes, subcarriers corresponding to resource elements not allocated to RS.</p> | Mapping rule is specified in TS36.211 [35] sub clause 6.8B.5 |

| | | | |
|-------|---|--|--|
| PDSCH | All remaining OFDM symbols of each downlink subframe and DwPTS not allocated to PDCCH | <p>For Subframe 0, REs not allocated to RS, SSS and PBCH is allocated to PDSCH</p> <p>For Subframe 5, REs not allocated to RS and SSS is allocated to PDSCH</p> <p>For Subframe 1 and 6, REs not allocated to RS, PSS, GP and UpPTS is allocated to PDSCH</p> <p>For other downlink subframes, REs not allocated to RS is allocated to PDSCH</p> | |
| PMCH | MBSFN region of MBSFN subframes | REs not allocated to MBSFN RS is allocated to PMCH | |

NOTE 1: In case a single cell-specific RS is configured, cell-specific RS shall be assume to be present on antenna ports 0 and 1 for the purpose of mapping a symbol-quadruplet to a REG (resource element group). (See TS 36.211 [35] subclause 6.2.4)

NOTE 2: In case the default TDD configuration for subframe assignment and special subframe patterns (see subclause 4.6.3)

4.3.3.4 Uplink physical channels and physical signals

[FFS].

4.3.3.5 Mapping of uplink physical channels and signals to physical resources

[FFS].

4.3.4 Signal levels

4.3.4.1 Downlink signal levels

The downlink power settings in table 4.3.4.1-1 are used unless otherwise specified in a test case.

Table 4.3.4.1-1: Default Downlink power levels

| | Unit | Channel bandwidth | | | | | |
|--|-----------|-------------------|-------|-------|--------|--------|--------|
| | | 1.4 MHz | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz |
| Number of RBs | | 6 | 15 | 25 | 50 | 75 | 100 |
| Channel BW Power | dBm | -66 | -62 | -60 | -57 | -55 | -54 |
| RS EPRE | dBm/15kHz | -85 | -85 | -85 | -85 | -85 | -85 |
| Note 1: The channel bandwidth powers are informative, based on -85dBm/15kHz RS_EPRES, then scaled according to the number of RBs and rounded to the nearest integer dBm value. Full RE allocation with no boost or deboost is assumed. | | | | | | | |
| Note 2: The power level is specified at each UE Rx antenna. | | | | | | | |

It is [FFS] whether there is a requirement to specify constant power throughout all OFDM symbols, and if so how unallocated Resource elements should be treated.

The default signal level uncertainty is +/-3dB at each test port, for any level specified. If the uncertainty value is critical for the test purpose a tighter uncertainty is specified for the related test case in TS 36.521-1 [21] Annex F or in TS 36.521-3 [34] Annex F

4.3.4.2 Uplink signal levels

[FFS]

4.3.5 Standard test signals

4.3.5.1 Downlink test signals

[FFS]

4.3.5.2 Uplink test signals

[FFS]

4.3.6 Physical layer parameters

4.3.6.1 Downlink physical layer parameters

4.3.6.1.1 Physical layer parameters for DCI format 0

Default physical layer parameters for DCI format 0 are specified in table 4.3.6.1.1-1.

Table 4.3.6.1.1-1: Physical layer parameters for DCI format 0

| Parameter | Value | Value in binary |
|---|---|-----------------|
| Flag for format 0/format 1A differentiation | format 0 | "0" |
| Hopping flag | w/o Hopping | "0" |
| Resource block assignment and hopping resource allocation | Depending on test parameters | - |
| Modulation and coding scheme and redundancy version | Depending on test parameters | - |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - |
| TPC command for scheduled PUSCH | 0 dB (accumulated TPC) | "01" |
| Cyclic shift for DM RS | 0 | "000" |
| UL index (TDD only) | 2 bits as defined in sections 5.1.1.1 and 8 of TS 36.213. This field is present only for TDD configuration 0 | - |
| Downlink Assignment Index (TDD only) | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the total number of PDSCH subframes with and without PDCCH and PDCCH indicating downlink SPS release in the window. This field is present only for TDD configuration 1-6 | - |
| CQI request | w/o aperiodic CQI | "0" |

4.3.6.1.1A Physical layer parameters for DCI format 0C

Default physical layer parameters for DCI format 0C are specified in table 4.3.6.1.1A-1.

Table 4.3.6.1.1A-1: Physical layer parameters for DCI format 0C

| Parameter | Value | Value in binary |
|--|---|-----------------|
| Flag for format 0C/format 1A differentiation | format 0 | "0" |
| Resource allocation type | This field is only present if $N_{RB}^{UL} \leq N_{RB}^{DL}$. The interpretation of this field is provided in section 8.1 of TS 36.213. | - |
| Frequency Hopping flag | w/o Hopping | "0" |
| Resource block assignment | Depending on test parameters | - |
| Modulation and coding scheme | 5 bits as defined in 8.6 of TS 36.213. | - |
| Repetition number | No repetitions 3 bits as defined in section 8.0 of 36.213 | "000" |
| HARQ process number | Depending on test parameters, 3bits for FDD, 4 bits for TDD. | - |
| New data indicator | 1 bit. | - |
| Redundancy version | 2 bits. | "00" |
| TPC command for scheduled PUSCH | 0 dB (accumulated TPC) | "01" |
| Cyclic shift for DM RS and OCC index | 3 bits as defined in 5.5.2.1.1 of TS 36.211. | - |
| UL index | 2 bits as defined in 5.1.1.1, 7.2.1, 8 and 8.4 of TS 36.213. (this field is present only for TDD operation with uplink-downlink configuration 0) | - |
| Downlink Assignment Index (DAI) | 2 bits as defined in section 7.3 of TS 36.213 (This field is present only for cases with TDD primary cell and either TDD operation with uplink-downlink configurations 1-6 or FDD operation.) | - |
| CSI request | 1, 2 or 3 bits as defined in section 7.2.1 of TS 36.213. | - |
| Modulation order override | 1 bit as defined in section x.x of TS 36.213. | - |
| Precoding information | Number of bits as specified in Table 5.3.3.1.8-1 of TS 36.212 | - |

4.3.6.1.1B Physical layer parameters for DCI format 0A

Default physical layer parameters for DCI format 0A are specified in table 4.3.6.1.1B-1.

Table 4.3.6.1.1B-1: Physical layer parameters for DCI format 0A

| Parameter | Value | Value in binary |
|--|--|-----------------|
| Carrier indicator | 0 or 3 bits. This field is present according to the definitions in TS 36.213. | not present |
| Flag for format 0A/format 1A differentiation | format 0A | "0" |
| PUSCH trigger A | non-triggered scheduling | "0" |
| Timing offset | 0 | "0000" |
| Resource block assignment | Depending on test parameters | - |
| Modulation and coding scheme | Depending on test parameters | - |
| HARQ process number | Depending on test parameters | - |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | |
| Redundancy version | 2 bits. | "00" |
| TPC command for scheduled PUSCH | 0 dB (accumulated TPC) | "01" |
| Cyclic shift for DM RS and OCC index | 3 bits as defined in 5.5.2.1.1 of TS 36.211 | |
| CSI request | w/o aperiodic CQI | "0" |
| SRS request | w/o SRS | "0" |
| PUSCH starting position | 25us in symbol 0 | "01" |
| PUSCH ending symbol | the last symbol of the subframe | "0" |
| Channel Access type | channel access Type 2 | "1" |
| Channel Access Priority Class | 1 | "01" |

4.3.6.1.1C Physical layer parameters for DCI format 0B

Default physical layer parameters for DCI format 0B are specified in table 4.3.6.1.1C-1.

Table 4.3.6.1.1C-1: Physical layer parameters for DCI format 0B

| Parameter | Value | Value in binary |
|--------------------------------------|--|-----------------|
| Carrier indicator | 0 or 3 bits. This field is present according to the definitions in TS 36.213. | not present |
| PUSCH trigger A | non-triggered scheduling | "0" |
| Timing offset | 0 | "0000" |
| Number of scheduled subframes | 4 | "11" |
| Resource block assignment | Depending on test parameters | - |
| Modulation and coding scheme | Depending on test parameters | - |
| HARQ process number | Depending on test parameters | - |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - |
| Redundancy version | 2 bits. | "00" |
| TPC command for scheduled PUSCH | 0 dB (accumulated TPC) | "01" |
| Cyclic shift for DM RS and OCC index | 3 bits as defined in 5.5.2.1.1 of TS 36.211 | |
| CSI request | w/o aperiodic CQI | "0" |
| SRS request | w/o SRS | "0" |
| PUSCH starting position | 25us in symbol 0 | "01" |
| PUSCH ending symbol | the last symbol of the subframe | "0" |
| Channel Access type | channel access Type 2 | "1" |
| Channel Access Priority Class | 1 | "01" |

4.3.6.1.2 Physical layer parameters for DCI format 1

Default physical layer parameters for DCI format 1 are specified in table 4.3.6.1.2-1.

Table 4.3.6.1.2-1: Physical layer parameters for DCI format 1

| Parameter | Value | Value in binary |
|--------------------------------------|---|-----------------|
| Resource allocation header | Resource allocation type 0 | "0" |
| Resource block assignment | Depending on test parameters | - |
| Modulation and coding scheme | Depending on test parameters | - |
| HARQ process number | Depending on test parameters, 3bits for FDD, 4 bits for TDD. | - |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - |
| Redundancy version | Depending on test parameters | "00" |
| TPC command for PUCCH | 0 dB (accumulated TPC) | "01" |
| Downlink Assignment Index (TDD only) | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the number of PDSCH with PDCCH and PDCCH indicating downlink SPS release in the window up to the present subframe. This is present for all the uplink-downlink configurations and only applies to uplink -downlink configuration 1-6 | - |

4.3.6.1.3 Physical layer parameters for DCI format 1A

Default physical layer parameters for DCI format 1A are specified in table 4.3.6.1.3-1.

Table 4.3.6.1.3-1: Physical layer parameters for DCI format 1A

| Parameter | Value | Value in binary |
|---|---|-----------------|
| Flag for format 0/format 1A differentiation | format 1A | "1" |
| Localized/Distributed VRB assignment flag | Localized VRB assignment | "0" |
| Resource block assignment | Depending on test parameters | - |
| Modulation and coding scheme | Depending on test parameters | - |
| HARQ process number | Depending on test parameters, 3bits for FDD, 4 bits for TDD. | - |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - |
| Redundancy version | Depending on test parameters | "00" |
| TPC command for PUCCH | 0 dB (accumulated TPC) | "01" |
| Downlink Assignment Index (TDD only) | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the number of PDSCH with PDCCH and PDCCH indicating downlink SPS release in the window up to the present subframe. This is present for all the uplink-downlink configurations and only applies to uplink -downlink configuration 1-6 | - |

4.3.6.1.3A Physical layer parameters for DCI format 1B

Default physical layer parameters for DCI format 1B are specified in table 4.3.6.1.3A-1.

Table 4.3.6.1.3A-1: Physical layer parameters for DCI format 1B

| Parameter | Value | Value in binary |
|---|---|-----------------|
| Localized/Distributed VRB assignment flag | Localized VRB assignment | "0" |
| Resource block assignment | Depending on test parameters | - |
| Modulation and coding scheme | Depending on test parameters | - |
| HARQ process number | Depending on test parameters, 3bits for FDD, 4 bits for TDD. | - |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - |
| Redundancy version | Depending on test parameters | "00" |
| TPC command for PUCCH | 0 dB (accumulated TPC) | "01" |
| Downlink Assignment Index (TDD only) | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the number of PDSCH with PDCCH and PDCCH indicating downlink SPS release in the window up to the present subframe. This is present for all the uplink-downlink configurations and only applies to uplink -downlink configuration 1-6 | - |
| TPMI information for precoding | Set for codebook index according to TS 36.211 Table 6.3.4.2.3-1 for 2 Tx antenna ports and Table 6.3.4.2.3-2 for 4 Tx antenna ports corresponding to the single layer transmission | - |
| PMI confirmation for precoding | Set for every transmission, 1 for precoding according to the latest reported PMI on PUSCH, 0 for precoding according to the indicated TPMI in the TPMI information field | - |

4.3.6.1.4 Physical layer parameters for DCI format 1C

Default physical layer parameters for DCI format 1C are specified in table 4.3.6.1.4-1.

Table 4.3.6.1.4-1: Physical layer parameters for DCI format 1C

| Parameter | Value | Value in binary |
|----------------------------|------------------------------|-----------------|
| gap value (N_RB >= 50) | gap1 | "0" |
| Resource block assignment | depending on test parameters | - |
| Transport block size index | depending on test parameters | - |

4.3.6.1.5 Physical layer parameters for DCI format 2

Default physical layer parameters for DCI format 2 are specified in table 4.3.6.1.5-1.

Table 4.3.6.1.5-1: Physical layer parameters for DCI format 2

| Parameter | Value | Value in binary |
|--|--|-----------------|
| Resource allocation header | Resource allocation type 0 | "0" |
| Resource block assignment | Depending on test parameters | - |
| TPC command for PUCCH | 0 dB (accumulated TPC) | "01" |
| Downlink Assignment Index (TDD only) | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the number of PDSCH with PDCCH and PDCCH indicating downlink SPS release in the window up to the present subframe. This is present for all the uplink-downlink configurations and only applies to uplink-downlink configuration 1-6 | - |
| HARQ process number | Depending on test parameters, 3bits for FDD, 4 bits for TDD. | - |
| Transport block to codeword swap flag | No swap | "0" |
| Modulation and coding scheme (transport block 1) | Depending on test parameters | - |
| New data indicator (transport block 1) | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - |
| Redundancy version (transport block 1) | Depending on test parameters | - |
| Modulation and coding scheme (transport block 2) | Depending on test parameters | - |
| New data indicator (transport block 2) | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - |
| Redundancy version (transport block 2) | Depending on test parameters | - |
| Precoding information | Set for every transmission according to 36.212 Table 5.3.3.1.5-4 for 2 Tx antenna ports and Table 5.3.3.1.5-5 for 4 Tx antenna ports | - |

4.3.6.1.6 Physical layer parameters for DCI format 2A

Default physical layer parameters for DCI format 2A are specified in table 4.3.6.1.6-1.

Table 4.3.6.1.6-1: Physical layer parameters for DCI format 2A

| Parameter | Value | Value in binary |
|--|--|-----------------|
| Resource allocation header | Resource allocation type 0 | "0" |
| Resource block assignment | depending on test parameters | - |
| TPC command for PUCCH | 0 dB (accumulated TPC) | "01" |
| Downlink Assignment Index (TDD only) | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the number of PDSCH with PDCCH and PDCCH indicating downlink SPS release in the window up to the present subframe. This is present for all the uplink-downlink configurations and only applies to uplink-downlink configuration 1-6 | - |
| HARQ process number | depending on test parameters, 3bits for FDD, and 4 bits for TDD. | - |
| Transport block to codeword swap flag | No swap | "0" |
| Modulation and coding scheme (transport block 1) | depending on test parameters | - |
| New data indicator (transport block 1) | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - |
| Redundancy version (transport block 1) | depending on test parameters | - |
| Modulation and coding scheme (transport block 2) | depending on test parameters | - |
| New data indicator (transport block 2) | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - |
| Redundancy version (transport block 2) | depending on test parameters | - |
| Precoding information | N/A for 2 Tx antenna ports. For 4 Tx antenna ports, set for every transmission according to 36.212 Table 5.3.3.1.5A-2 | - |

4.3.6.1.6A Physical layer parameters for DCI format 3B

Default physical layer parameters for DCI format 3B are specified in table 4.3.6.1.6A-1 for up to 5 TDD SCells configured without PUCCH/PUSCH.

Table 4.3.6.1.6A-1: Physical layer parameters for DCI format 3B for up to 5 TDD SCells configured without PUCCH/PUSCH

| Parameter | Value | Value in binary |
|------------------------------|--|-----------------|
| SRS request (block number 1) | 1 bit. The interpretation of this field is provided in section 8.2 of TS 36.213. | "1" |
| TPC command (block number 1) | 0 dB (accumulated TPC) | "01" |

4.3.6.1.6B Physical layer parameters for DCI format 4A

Default physical layer parameters for DCI format 4A are specified in table 4.3.6.1.6B-1.

Table 4.3.6.1.6B-1: Physical layer parameters for DCI format 4A for eLAA

| Parameter | Value | Value in binary |
|---|---|-----------------|
| Carrier indicator | 0 or 3 bits. This field is present according to the definitions in TS 36.213. | not present |
| PUSCH trigger A | non-triggered scheduling | "0" |
| Timing offset | 0 | "0000" |
| Resource block assignment | Depending on test parameters | - |
| HARQ process number | 2 bits. | "00" |
| Redundancy version | Depending on test parameters | - |
| TPC command for scheduled PUSCH | 0 dB (accumulated TPC) | "01" |
| Cyclic shift for DM RS and OCC index | 3 bits as defined in 5.5.2.1.1 of TS 36.211 | |
| CSI request | w/o aperiodic CQI | "0" |
| SRS request | w/o SRS | "0" |
| PUSCH starting position | 25us in symbol 0 | "01" |
| PUSCH ending symbol | the last symbol of the subframe | "0" |
| Channel Access type | channel access Type 2 | "1" |
| Channel Access Priority Class | 1 | "01" |
| Modulation and coding scheme and redundancy version for transport block 1 | Depending on test parameters | - |
| New data indicator for transport block 1 | Depending on test parameters | - |
| Modulation and coding scheme and redundancy version for transport block 2 | Depending on test parameters | - |
| New data indicator for transport block 2 | Depending on test parameters | - |
| Precoding information and number of layers | Depending on test parameters | - |

4.3.6.1.6C Physical layer parameters for DCI format 4B

Default physical layer parameters for DCI format 4B are specified in table 4.3.6.1.6C-1.

Table 4.3.6.1.6C-1: Physical layer parameters for DCI format 4B for eLAA

| Parameter | Value | Value in binary |
|---|---|-----------------|
| Carrier indicator | 0 or 3 bits. This field is present according to the definitions in TS 36.213. | not present |
| PUSCH trigger A | non-triggered scheduling | "0" |
| Timing offset | 0 | "0000" |
| Number of scheduled subframes | 4 | "11" |
| Resource block assignment | Depending on test parameters | - |
| HARQ process number | Depending on test parameters | - |
| Redundancy version | 2 bits. | "00" |
| TPC command for scheduled PUSCH | 0 dB (accumulated TPC) | "01" |
| Cyclic shift for DM RS and OCC index | 3 bits as defined in 5.5.2.1.1 of TS 36.211 | |
| CSI request | w/o aperiodic CQI | "0" |
| SRS request | w/o SRS | "0" |
| PUSCH starting position | 25us in symbol 0 | "01" |
| PUSCH ending symbol | the last symbol of the subframe | "0" |
| Channel Access type | channel access Type 2 | "1" |
| Channel Access Priority Class | 1 | "01" |
| Modulation and coding scheme and redundancy version for transport block 1 | Depending on test parameters | - |
| New data indicator for transport block 1 | Depending on test parameters | - |
| Modulation and coding scheme and redundancy version for transport block 2 | Depending on test parameters | - |
| New data indicator for transport block 2 | Depending on test parameters | - |
| Precoding information and number of layers | Depending on test parameters | - |

4.3.6.1.7 Physical layer parameters for DCI format 5

Default physical layer parameters for DCI format 5 are specified in table 4.3.6.1.7-1.

Table 4.3.6.1.7-1: Physical layer parameters for DCI format 5

| Parameter | Value | Value in binary |
|---|------------------------------|-----------------|
| Resource for PSCCH | Depending on test parameters | - |
| TPC command for PSCCH and PSSCH | | "0" |
| Frequency hopping flag | w/o hopping | "0" |
| Resource block assignment and hopping resource allocation | | |
| Time resource pattern | Depending on test parameters | |

4.3.6.1.7A Physical layer parameters for DCI format 5A

Default physical layer parameters for DCI format 5A are specified in table 4.3.6.1.7A-1.

Table 4.3.6.1.7A-1: Physical layer parameters for DCI format 5A

| Parameter | Value | Value in binary |
|--|------------------------------|-----------------|
| Carrier indicator | Pcell's frequency | "0" |
| Lowest index of the subchannel allocation | Depending on test parameters | |
| Frequency resource location | Depending on test parameters | |
| Time gap between initial transmission and retransmission | Depending on test parameters | |

4.3.6.1.8 Physical layer parameters for DCI format 6-0A

Default physical layer parameters for DCI format 6-0A for scheduling of PUSCH are specified in table 4.3.6.1.8-1.

Table 4.3.6.1.8-1: Physical layer parameters for DCI format 6-0A

| Parameter | Value | Value in binary | Condition |
|--|---|-----------------|-----------|
| Flag format 6-0A/format 6-1A differentiation | format 0A | "0" | Condition |
| Frequency hopping flag | w/o Hopping | "0" | |
| Resource block assignment - narrowband index | $n_{NB} = 0$ according to section 5.2.4 in TS 36.211 | "0" | RF |
| | See TS 36.523-3 clause 7.3.3.9 | | SIG |
| Resource block assignment – UL resource allocation | Depending on test parameters 5 bits provide the resource allocation using UL resource allocation type 0 within the indicated narrowband | - | |
| Modulation and coding scheme | Depending on test parameters | - | |
| Repetition number | No repetitions 2 bits as defined in section 8.0 of 36.213 | "00" | |
| HARQ process number | Depending on test parameters, 3 bits | - | |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - | |
| Redundancy version | Depending on test parameters | - | |
| TPC command for scheduled PUSCH | 0 dB (accumulated TPC) | "01" | |
| UL index (TDD only) | 2 bits as defined in sections 5.1.1.1 and 8 of TS 36.213. This field is present only for TDD configuration 0 | - | |
| Downlink Assignment Index (TDD only) | 2 bits as defined in Table 7.3 in TS 36.213. It represents the total number of PDSCH subframes with and without PDCCH and PDCCH indicating downlink SPS release in the window. This field is present only for TDD configuration 1-6 | - | |
| CSI request | w/o aperiodic CQI | "0" | |
| SRS request | 1 bit. The interpretation of this field is provided in section 8.2 of TS 36.213. | "0" | |
| DCI subframe repetition number | 0 | "00" | |

| Condition | Explanation |
|-----------|-------------------------------------|
| RF | For RF, performance and RRM testing |
| SIG | For protocol testing |

4.3.6.1.9 Physical layer parameters for DCI format 6-0B

Default physical layer parameters for DCI format 6-0B are specified in table 4.3.6.1.9-1.

Table 4.3.6.1.9-1: Physical layer parameters for DCI format 6-0B

| Parameter | Value | Value in binary | Condition |
|--|---|-----------------|-----------|
| Flag for format 6-0B/format 6-1B differentiation | format 0B | "0" | |
| Resource block assignment - narrowband index | $n_{NB} = 0$ according to section 5.2.4 in TS 36.211= 0 according to section 5.2.4 in TS 36.211 | "0" | RF |
| | See TS 36.523-3 clause 7.3.3.9 | | SIG |
| Resource block assignment – UL resource allocation | Depending on test parameters. 3 bits provide the resource allocation within the indicated narrowband as specified in section 8.1.3 of 36.213. | - | |
| Modulation and coding scheme | Depending on test parameters | - | |
| Repetition number | No repetitions 3 bits as defined in section 8.0 of 36.213 | "000" | |
| HARQ process number | Depending on test parameters, 1 bit | - | |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - | |
| DCI subframe repetition number | 0 | "00" | |

| Condition | Explanation |
|-----------|-------------------------------------|
| RF | For RF, performance and RRM testing |
| SIG | For protocol testing |

4.3.6.1.10 Physical layer parameters for DCI format 6-1A

Default physical layer parameters for DCI format 6-1A for scheduling of PDSCH are specified in table 4.3.6.1.10-1.

Default physical layer parameters for DCI format 6-1A for scheduling of random access procedure are specified in table 4.3.6.1.10-2

Table 4.3.6.1.10-1: Physical layer parameters for DCI format 6-1A (PDSCH)

| Parameter | Value | Value in binary | Condition |
|--|---|-----------------|-----------|
| Flag format 6-0A/format 6-1A differentiation | format 6-1A | "1" | |
| Frequency hopping flag | w/o Hopping | "0" | |
| Resource block assignment - narrowband index | $n_{NB} = 0$ according to clause 6.2.7 in TS 36.211 | "0" | RF |
| | See TS 36.523-3 clause 7.3.3.9 | | SIG |
| Resource block assignment – DL resource allocation | Depending on test parameters 5 bits provide the resource allocation using DL resource allocation type 2 within the indicated narrowband | - | |
| Modulation and coding scheme | Depending on test parameters | - | |
| Repetition number | No repetitions | | |
| | 2 bits as defined in section 7.1.11 of 36.213 | "00" | |
| HARQ process number | Depending on test parameters, 3bits for FDD, 4 bits for TDD. | - | |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - | |
| Redundancy version | Depending on test parameters | - | |
| TPC command for PUCCH | 0 dB (accumulated TPC) | "01" | |
| Downlink Assignment Index | Number of bits as specified in TS 36.212, Table 5.3.3.1.2-2. This field is reserved when the configured maximum repetition number is larger than 1 for either PDSCH or MPDCCH. | - | |
| Antenna port(s) and scrambling identity | 2 bits indicating the values 0 to 3, as specified in TS 36.212, Table 5.3.3.1.5C-1. This field is present only if PDSCH transmission is configured with TM9. | - | |
| SRS request | 1 bit. The interpretation of this field is provided in section 8.2 of TS 36.213. | "0" | |
| TPMI information for precoding | Number of bits as specified in TS 36.212, Table 5.3.3.1.3A-1. Set for codebook index according to TS 36.211 Table 6.3.4.2.3-1 or Table 6.3.4.2.3-2 corresponding to the single-layer transmission. This field is present only if PDSCH transmission is configured with TM6. | - | |
| PMI confirmation for precoding | Set for every transmission, 1 for precoding according to the latest reported PMI on PUSCH, 0 for precoding according to the indicated TPMI in the TPMI information field | - | |
| HARQ-ACK resource offset | No offset 2 bits as defined in TS 36.213, Table 10.1.2.1-1 | "0" | |
| DCI subframe repetition number | 0 2 bits as defined in sub-clause 9.1.5 of TS 36.213 | "00" | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|-----|-------------------------------------|
| RF | For RF, performance and RRM testing |
| SIG | For protocol testing |

Table 4.3.6.1.10-2: Physical layer parameters for DCI format 6-1A (random access)

| Parameter | Value | Value in binary | Condition |
|---|---|-----------------|-----------|
| Flag format 6-0A/format 6-1A differentiation | format 6-1A | "1" | |
| Frequency hopping flag | w/o Hopping | "0" | |
| Resource block assignment - narrowband index | $n_{NB} = 0$ according to clause 6.2.7 in TS 36.211 | "0" | RF |
| | See TS 36.523-3 clause 7.3.3.9 | | SIG |
| Resource block assignment – DL resource allocation | All 5 bits set to 1 | "11111" | |
| Preamble Index | 0 | "000000" | |
| PRACH Mask Index | All | "0000" | |
| Starting CE level | Level 0 | "00" | |
| NOTE: All the remaining bits in format 6-1A for compact scheduling assignment of one PDSCH codeword are set to zero | | | |

| Condition | Explanation |
|-----------|-------------------------------------|
| RF | For RF, performance and RRM testing |
| SIG | For protocol testing |

4.3.6.1.11 Physical layer parameters for DCI format 6-1B

Default physical layer parameters for DCI format 6-1B are specified in table 4.3.6.1.11-1.

Table 4.3.6.1.11-1: Physical layer parameters for DCI format 6-1B

| Parameter | Value | Value in binary | Condition |
|--|--|-----------------|-----------|
| Flag for format 6-0B/format 6-1B differentiation | format 6-1B | "1" | |
| Resource block assignment - narrowband index | $n_{NB} = 0$ according to clause 6.2.7 in TS 36.211 | "0" | RF |
| | See TS 36.523-3 clause 7.3.3.9 | | SIG |
| Resource block assignment - DL resource allocation | 6 PRBs | "1" | |
| Modulation and coding scheme | Depending on test parameters | - | |
| Repetition number | No repetitions 3 bits as defined in section 8.0 of 36.213 | "000" | |
| HARQ process number | Depending on test parameters, 1 bit | - | |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - | |
| HARQ-ACK resource offset | No offset 2 bits as defined in TS 36.213, Table 10.1.2.1-1 | "0" | |
| DCI subframe repetition number | 0– 2 bits as defined in sub-clause 9.1.5 of TS 36.213 | "00" | |

| Condition | Explanation |
|-----------|-------------------------------------|
| RF | For RF, performance and RRM testing |
| SIG | For protocol testing |

4.3.6.1.12 Physical layer parameters for DCI format 6-2

Default physical layer parameters for DCI format 6-2 are specified in table 4.3.6.1.12-1 for direct indication and in Table 4.3.6.1.12-2 for paging.

Table 4.3.6.1.12-1: Physical layer parameters for DCI format 6-2 for direct Indication (Flag=0)

| Parameter | Value | Value in binary |
|---|--|-----------------|
| Flag for paging/direct indication differentiation | Direct indication | "0" |
| Direct Indication information | 8 bits provide direct indication of system information update and other fields, as defined in TS 36.331. | - |
| Reserved | Reserved information bits are added until the size is equal to that of format 6-2 with Flag=1 | - |

Table 4.3.6.1.12-2: Physical layer parameters for DCI format 6-2 for paging (Flag=1)

| Parameter | Value | Value in binary |
|---|---|-----------------|
| Flag for paging/direct indication differentiation | Paging | "1" |
| Resource block assignment | Depending on test parameters | - |
| Modulation and coding scheme | Depending on test parameters | - |
| Repetition number | {1,2,4,8} | Not configured |
| DCI subframe repetition number | 0 2 bits as defined in sub-clause 9.1.5 of TS 36.213 | "00" |

4.3.6.1.13 Physical layer parameters for DCI format 7-0A

Default physical layer parameters for DCI format 7-0A are specified in table 4.3.6.1.13-1.

Table 4.3.6.1.13-1: Physical layer parameters for DCI format 7-0A

| Parameter | Value | Value in binary |
|---|---|-----------------|
| Flag for DL/UL differentiation | 0 | "0" |
| Resource block assignment | Depending on test parameters | - |
| Modulation and coding scheme | Depending on test parameters | - |
| HARQ process number | Depending on test parameters | - |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - |
| Redundancy version | Depending on test parameters | "00" |
| TPC command for scheduled PUSCH | 0 dB (accumulated TPC) | "01" |
| DMRS pattern (only for PUSCH with subslot TTI) | 2 bits as defined in section 5.5.2.1.2 in TS 36.211 | "00" |
| Cyclic shift for DMRS and IFDMA configuration | 1 bit as defined in section 5.5.2.1.1 in TS 36.211 | - |
| UL index (TDD only) | 2 bits as defined in sections 5.1.1.1, 7.2.1, 8 and 8.4 of TS 36.213. This field is present only for TDD configuration 0 | - |
| Downlink Assignment Index (TDD only) | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the total number of PDSCH slots with and without SPDCCH and SPDCCH indicating downlink SPS release in the window. This field is present only for TDD configuration 1-6 | - |
| CSI request | 1, 2 or 3 bits as defined in section 7.2.1 of TS 36.213 | - |
| SRS request (TDD only) | w/o SRS | "0" |
| Beta offset indicator (only for PUSCH with subslot TTI) | 1 bit as defined in section 8.6.3 of TS 36.213 | - |
| Cyclic Shift Field mapping table for DMRS | 1 bit as defined in section 5.5.2.1.1 of TS 36.211 | - |

4.3.6.1.14 Physical layer parameters for DCI format 7-0B

Default physical layer parameters for DCI format 7-0B are specified in table 4.3.6.1.14-1.

Table 4.3.6.1.14-1: Physical layer parameters for DCI format 7-0B

| Parameter | Value | Value in binary |
|---|---|-----------------|
| Flag for DL/UL differentiation | 0 | "0" |
| Resource block assignment | Depending on test parameters | - |
| Modulation and coding scheme | Depending on test parameters | - |
| HARQ process number | Depending on test parameters | - |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - |
| Redundancy version | Depending on test parameters | "00" |
| TPC command for scheduled PUSCH | 0 dB (accumulated TPC) | "01" |
| DMRS pattern (only for PUSCH with subslot TTI) | 2 bits as defined in section 5.5.2.1.2 in TS 36.211 | "00" |
| Cyclic shift for DMRS and IFDMA configuration | 1 bit as defined in section 5.5.2.1.1 in TS 36.211 | - |
| UL index (TDD only) | 2 bits as defined in sections 5.1.1.1, 7.2.1, 8 and 8.4 of TS 36.213. This field is present only for TDD configuration 0 | - |
| Downlink Assignment Index (TDD only) | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the total number of PDSCH slots with and without SPDCCH and SPDCCH indicating downlink SPS release in the window. This field is present only for TDD configuration 1-6 | - |
| CSI request | 1, 2 or 3 bits as defined in section 7.2.1 of TS 36.213 | - |
| SRS request (TDD only) | w/o SRS | "0" |
| Beta offset indicator (only for PUSCH with subslot TTI) | 1 bit as defined in section 8.6.3 of TS 36.213 | - |
| Cyclic Shift Field mapping table for DMRS | 1 bit as defined in section 5.5.2.1.1 of TS 36.211 | - |
| Precoding information and number of layers | 3 bits for transmission with 2 antenna ports and 6 bits for transmission with 4 antenna ports. The interpretation of this field is provided in Table 5.3.3.1.16-1 or Table 5.3.3.1.16-2 of TS 36.212 | - |

4.3.6.1.15 Physical layer parameters for DCI format 7-1A

Default physical layer parameters for DCI format 7-1A are specified in table 4.3.6.1.15-1.

Table 4.3.6.1.15-1: Physical layer parameters for DCI format 7-1A

| Parameter | Value | Value in binary | Condition |
|---|---|-----------------|-----------|
| Flag for DL/UL differentiation | 1 | "1" | |
| Resource block assignment | Depending on test parameters | - | |
| Modulation and coding scheme | Depending on test parameters | - | |
| HARQ process number | Depending on test parameters | - | |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - | |
| Redundancy version | Depending on test parameters | "00" | |
| TPC command for slot-SPUCCH or subslot-SPUCCH | 0 dB (accumulated TPC) | "01" | |
| DMRS position indicator (only for PDSCH with subslot TTI) | 1 | "1" | |
| Downlink Assignment Index | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the number of PDSCH with PDCCH and PDCCH indicating downlink SPS release in the window up to the present subframe. This is present for all the uplink-downlink configurations and only applies to uplink -downlink configuration 1-6 | - | |
| SRS request (TDD only) | 1 bit. The interpretation of this field is provided in section 8.2 of TS 36.213 | "0" | |
| Used/Unused SPDCCH resource indication | 2 bits. The interpretation of this field is provided in section 6.4.2 of TS 36.211 | - | |
| SPUCCH resource indication | 2 bits as defined in section 10.1.2 of TS 36.213 | - | |

4.3.6.1.16 Physical layer parameters for DCI format 7-1B

Default physical layer parameters for DCI format 7-1B are specified in table 4.3.6.1.16-1.

Table 4.3.6.1.16-1: Physical layer parameters for DCI format 7-1B

| Parameter | Value | Value in binary | Condition |
|---|---|-----------------|-----------|
| Flag for DL/UL differentiation | 1 | "1" | |
| Resource block assignment | Depending on test parameters | - | |
| Modulation and coding scheme | Depending on test parameters | - | |
| HARQ process number | Depending on test parameters | - | |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - | |
| Redundancy version | Depending on test parameters | "00" | |
| TPC command for slot-SPUCCH or subslot-SPUCCH | 0 dB (accumulated TPC) | "01" | |
| DMRS position indicator (only for PDSCH with subslot TTI) | 1 | "1" | |
| Downlink Assignment Index | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the number of PDSCH with PDCCH and PDCCH indicating downlink SPS release in the window up to the present subframe. This is present for all the uplink-downlink configurations and only applies to uplink -downlink configuration 1-6 | - | |
| SRS request (TDD only) | 1 bit. The interpretation of this field is provided in section 8.2 of TS 36.213 | "0" | |
| Used/Unused SPDCCH resource indication | 2 bits. The interpretation of this field is provided in section 6.4.2 of TS 36.211 | - | |
| SPUCCH resource indication | 2 bits as defined in section 10.1.2 of TS 36.213 | - | |
| Precoding information | 1 bit for transmission with 2 antenna ports and 2 bits for transmission with 4 antenna ports. For transmission with 4 antenna ports, the precoding information field is defined according to Table 5.3.3.1.18-1 of TS 36.212 | - | |

4.3.6.1.17 Physical layer parameters for DCI format 7-1C

Default physical layer parameters for DCI format 7-1C are specified in table 4.3.6.1.17-1.

Table 4.3.6.1.17-1: Physical layer parameters for DCI format 7-1C

| Parameter | Value | Value in binary | Condition |
|---|---|-----------------|-----------|
| Flag for DL/UL differentiation | 1 | "1" | |
| Resource block assignment | Depending on test parameters | - | |
| Modulation and coding scheme | Depending on test parameters | - | |
| HARQ process number | Depending on test parameters | - | |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - | |
| Redundancy version | Depending on test parameters | "00" | |
| TPC command for slot-SPUCCH or subslot-SPUCCH | 0 dB (accumulated TPC) | "01" | |
| DMRS position indicator (only for PDSCH with subslot TTI) | 1 | "1" | |
| Downlink Assignment Index | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the number of PDSCH with PDCCH and PDCCH indicating downlink SPS release in the window up to the present subframe. This is present for all the uplink-downlink configurations and only applies to uplink -downlink configuration 1-6 | - | |
| SRS request (TDD only) | 1 bit. The interpretation of this field is provided in section 8.2 of TS 36.213 | "0" | |
| Used/Unused SPDCCH resource indication | 2 bits. The interpretation of this field is provided in section 6.4.2 of TS 36.211 | - | |
| SPUCCH resource indication | 2 bits as defined in section 10.1.2 of TS 36.212 | - | |
| Precoding information | 4 bits for transmission with 2 antenna ports and 7 bits for transmission with 4 antenna ports. For transmission with 4 antenna ports, the precoding information field is defined according to Table 5.3.3.1.19-1 and Table 5.3.3.1.19-2 of TS 36.212 | - | |

4.3.6.1.18 Physical layer parameters for DCI format 7-1D

Default physical layer parameters for DCI format 7-1D are specified in table 4.3.6.1.18-1.

Table 4.3.6.1.18-1: Physical layer parameters for DCI format 7-1D

| Parameter | Value | Value in binary | Condition |
|---|---|-----------------|-----------|
| Flag for DL/UL differentiation | 1 | "1" | |
| Resource block assignment | Depending on test parameters | - | |
| Modulation and coding scheme | Depending on test parameters | - | |
| HARQ process number | Depending on test parameters | - | |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - | |
| Redundancy version | Depending on test parameters | "00" | |
| TPC command for slot-SPUCCH or subslot-SPUCCH | 0 dB (accumulated TPC) | "01" | |
| DMRS position indicator (only for PDSCH with subslot TTI) | 1 | "1" | |
| Downlink Assignment Index | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the number of PDSCH with PDCCH and PDCCH indicating downlink SPS release in the window up to the present subframe. This is present for all the uplink-downlink configurations and only applies to uplink -downlink configuration 1-6 | - | |
| SRS request (TDD only) | 1 bit. The interpretation of this field is provided in section 8.2 of TS 36.213 | "0" | |
| Used/Unused SPDCCH resource indication | 2 bits. The interpretation of this field is provided in section 6.4.2 of TS 36.211 | - | |
| SPUCCH resource indication | 2 bits as defined in section 10.1.2 of TS 36.213 | - | |
| TPMI information for precoding | 2 bits for transmission with 2 antenna ports and 4 bits for transmission with 4 antenna ports. The interpretation of this field is provided in Table 6.3.4.2.3-1 or Table 6.3.4.2.3-1 of TS 36.211 | - | |
| PMI confirmation for precoding | 1 bit as specified in Table 5.3.3.1.3A-2 of TS 36.212 | - | |

4.3.6.1.19 Physical layer parameters for DCI format 7-1E

Default physical layer parameters for DCI format 7-1E are specified in table 4.3.6.1.19-1.

Table 4.3.6.1.19-1: Physical layer parameters for DCI format 7-1E

| Parameter | Value | Value in binary | Condition |
|---|---|-----------------|-----------|
| Flag for DL/UL differentiation | 1 | "1" | |
| Resource block assignment | Depending on test parameters | - | |
| Modulation and coding scheme | Depending on test parameters | - | |
| HARQ process number | Depending on test parameters | - | |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - | |
| Redundancy version | Depending on test parameters | "00" | |
| TPC command for slot-SPUCCH or subslot-SPUCCH | 0 dB (accumulated TPC) | "01" | |
| DMRS position indicator (only for PDSCH with subslot TTI) | 1 | "1" | |
| Downlink Assignment Index | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the number of PDSCH with PDCCH and PDCCH indicating downlink SPS release in the window up to the present subframe. This is present for all the uplink-downlink configurations and only applies to uplink -downlink configuration 1-6 | - | |
| SRS request (TDD only) | 1 bit. The interpretation of this field is provided in section 8.2 of TS 36.213 | "0" | |
| Used/Unused SPDCCH resource indication | 2 bits. The interpretation of this field is provided in section 6.4.2 of TS 36.211 | - | |
| SPUCCH resource indication | 2 bits as defined in section 10.1.2 of TS 36.213 | - | |
| Number of layers and antenna ports | 2 bits as defined in Table 5.3.3.1.21-1 in TS 36.212. | "00" | |

4.3.6.1.20 Physical layer parameters for DCI format 7-1F

Default physical layer parameters for DCI format 7-1F are specified in table 4.3.6.1.20-1.

Table 4.3.6.1.20-1: Physical layer parameters for DCI format 7-1F

| Parameter | Value | Value in binary | Condition |
|---|---|-----------------|-----------|
| Flag for DL/UL differentiation | 1 | "1" | |
| Resource block assignment | Depending on test parameters | - | |
| Modulation and coding scheme | Depending on test parameters | - | |
| HARQ process number | Depending on test parameters | - | |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - | |
| Redundancy version | Depending on test parameters | "00" | |
| TPC command for slot-SPUCCH or subslot-SPUCCH | 0 dB (accumulated TPC) | "01" | |
| DMRS position indicator (only for PDSCH with subslot TTI) | 1 | "1" | |
| Downlink Assignment Index | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the number of PDSCH with PDCCH and PDCCH indicating downlink SPS release in the window up to the present subframe. This is present for all the uplink-downlink configurations and only applies to uplink -downlink configuration 1-6 | - | |
| SRS request (TDD only) | 1 bit. The interpretation of this field is provided in section 8.2 of TS 36.213 | "0" | |
| Used/Unused SPDCCH resource indication | 2 bits. The interpretation of this field is provided in section 6.4.2 of TS 36.211 | - | |
| SPUCCH resource indication | 2 bits as defined in section 10.1.2 of TS 36.213 | - | |
| Antenna port(s), scrambling identity and number of layers | 3 bits as specified in Table 5.3.3.1.22-1 in TS 36.212. | "00" | |

4.3.6.1.21 Physical layer parameters for DCI format 7-1G

Default physical layer parameters for DCI format 7-1G are specified in table 4.3.6.1.21-1.

Table 4.3.6.1.21-1: Physical layer parameters for DCI format 7-1G

| Parameter | Value | Value in binary | Condition |
|---|---|-----------------|-----------|
| Flag for DL/UL differentiation | 1 | "1" | |
| Resource block assignment | Depending on test parameters | - | |
| Modulation and coding scheme | Depending on test parameters | - | |
| HARQ process number | Depending on test parameters | - | |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 | - | |
| Redundancy version | Depending on test parameters | "00" | |
| TPC command for slot-SPUCCH or subslot-SPUCCH | 0 dB (accumulated TPC) | "01" | |
| DMRS position indicator (only for PDSCH with subslot TTI) | 1 | "1" | |
| Downlink Assignment Index | 2 bits as defined in Table 7.3-X in TS 36.213. It represents the number of PDSCH with PDCCH and PDCCH indicating downlink SPS release in the window up to the present subframe. This is present for all the uplink-downlink configurations and only applies to uplink -downlink configuration 1-6 | - | |
| SRS request (TDD only) | 1 bit. The interpretation of this field is provided in section 8.2 of TS 36.213 | "0" | |
| Used/Unused SPDCCH resource indication | 2 bits. The interpretation of this field is provided in section 6.4.2 of TS 36.211 | - | |
| Antenna port(s), scrambling identity and number of layers | 3 bits as specified in Table 5.3.3.1.22-1 in TS 36.212. | - | |
| PDSCH RE Mapping and Quasi-Co-Location Indicator | 2 bits as defined in sections 7.1.9 and 7.1.10 of TS 36.213 | - | |

4.4 Reference system configurations

The reference system configurations specified in this sub clause apply to all test cases unless otherwise specified.

4.4.1 Simulated network scenarios

The UE will eventually have to operate in either single mode networks (FDD or TDD), dual mode networks (FDD+TDD), or inter-RAT networks ((FDD or TDD) + (UTRA FDD, UTRA TDD, GSM, HRPD or 1xRTT)).

For

Simulated network scenarios to be tested are listed in this sub clause.

NOTE 1: The number of cells specified does not necessarily correspond to the maximum number of resources to be configured simultaneously in test equipment. Please refer to Table 6.1-1 for such information.

NOTE 2: For NAS test cases see sub clause 6.3.2.

4.4.1.1 Single cell network scenarios

For FDD and TDD basic single cell environment, Cell 1 is used.

4.4.1.2 E-UTRA single mode multi cell network scenarios

For FDD or TDD basic intra-frequency multi cell environment, Cell 1, Cell 2 and Cell 4 are used.

For FDD or TDD basic inter-frequency multi cell environment, Cell 1, Cell 3 and Cell 6 are used.

For FDD or TDD basic inter-band cell environment, Cell 1 and Cell 10 are used.

For FDD or TDD multi tracking area intra-frequency multi cell environment, Cell 1 and Cell 11 are used.

For FDD or TDD multi tracking area inter-frequency multi cell environment, Cell 1 and Cell 23 are used.

For FDD or TDD multi PLMN inter-frequency multi cell environment, Cell 1, Cell 12, Cell 13 and Cell 14 are used.

4.4.1.3 E-UTRA dual mode multi cell network scenarios

For FDD and TDD basic multi cell environment, Cell 1, Cell 10 and Cell 31 are used.

For FDD and TDD multi PLMN multi cell environment, Cell 1, Cell 28, Cell 29 and Cell 30 are used.

In addition, E-UTRA single mode multi cell network scenarios defined in clause 4.4.1.2 are combined with the dual mode scenarios defined in this clause when additional intra or inter-frequency cells are used.

4.4.1.4 3GPP Inter-RAT network scenarios

For FDD and TDD basic inter-RAT cell environment with UTRA FDD or UTRA TDD, Cell 1 and Cell 5 are used.

For FDD and TDD inter-RAT cell environment with multi UTRA FDD or UTRA TDD cells, Cell 1 and Cell 7, Cell 8 and Cell 9 is used.

For FDD and TDD inter-RAT cell environment with GERAN, Cell 1 and Cell 24 are used.

For FDD and TDD inter-RAT cell environment with multi GERAN cells, Cell 1 and Cell 25, Cell 26 are used.

For FDD and TDD inter-RAT cell environment with (UTRA FDD or UTRA TDD) and GERAN, Cell 1, Cell 5 and Cell 24 are used.

4.4.1.5 3GPP2 Inter-RAT network scenarios

For FDD and TDD inter-RAT cell environment with HRPD, Cell 1 and Cell 15 are used.

For FDD and TDD inter-RAT cell environment with multi HRPD cells, Cell 1 and Cell 15, Cell 16 and Cell 17 are used.

For FDD and TDD inter-RAT cell environment with 1xRTT, Cell 1 and Cell 19 are used.

For FDD and TDD inter-RAT cell environment with multi 1xRTT cells, Cell 1 and Cell 19, Cell 20 and Cell 21 are used.

4.4.1.6 WLAN Inter-RAT network scenarios

For FDD and TDD inter-RAT cell environment with WLAN, Cell 1, Cell 27, Cell 27a and Cell 27b are used.

4.4.1.7 Bluetooth Inter-RAT network scenarios

For FDD and TDD inter-RAT cell environment with Bluetooth, Cell 1, Cell 40 and Cell 41 are used.

4.4.2 Simulated cells

NOTE: For NAS test cases see subclause 6.3.2.

NOTE: Test frequency and range defined in table 4.4.2-1 do not apply to 36.521-1 test cases.

Test frequencies and simulated cells are defined in table 4.4.2-1. For E-UTRA cells, f1 is the default test frequency. For UTRA cells, f8 is the default test frequency. For GERAN cells, f11 is the default test frequency. For CDMA2000 HRPD cells, f14 is the default test frequency. For CDMA 2000 1xRTT cells, f17 is the default test frequency. For WLAN cells, f20 is the default test frequency.

Default parameters for simulated cells are specified in table 4.4.2-1A and table 4.4.2-2.

Common parameters for simulated cells are specified in subclauses 4.4.3 to 4.4.6A.

Other cell specific parameters are specified in subclause 4.4.7.

Table 4.4.2-1: Definition of test frequencies and simulated cells

| Test frequency | RAT | Operating band | Range | Simulated cells |
|----------------|----------------|--|--|--|
| f1 | E-UTRA | Operating band under test | Mid (Note 1, Note 5, Note 8) | Cell 1, Cell 1a, Cell 2, Cell 4, Cell 11 (Note 4) |
| f2 | E-UTRA | Operating band under test | High (Note 1, Note 6, Note 8) | Cell 3, Cell 12, Cell 23 |
| f3 | E-UTRA | Operating band under test | Low (Note 1, Note 7, Note 8) | Cell 6, Cell 13 |
| f4 | E-UTRA | Operating band under test | (Note 1) | Cell 14 |
| f5 | E-UTRA | Operating band for inter-band cells | Mid (Note 1) | Cell 10, Cell 30, Cell 31 |
| f6 | E-UTRA | Operating band for inter-band cells | High (Note 1) | Cell 28, Cell 29, Cell 36 (Note 10) |
| f7 | E-UTRA | Operating band for inter-band cells | Low (Note 1) | Cell 35 (Note 10) |
| f8 | UTRA | Operating band for UTRA cells | Mid (Note 2) | Cell 5, Cell 7 |
| f9 | UTRA | Operating band for UTRA cells | High (Note 2) | Cell 8 |
| f10 | UTRA | Operating band for UTRA cells | Low (Note 2) | Cell 9 |
| f11 | GERAN | Operating band for GERAN cells | Mid (Note 3) | Cell 24 |
| f12 | GERAN | Operating band for GERAN cells | High (Note 3) | Cell 25 |
| f13 | GERAN | Operating band for GERAN cells | Low (Note 3) | Cell 26 |
| f14 | CDMA2000 HRPD | Operating band for CDMA2000 HRPD cells | Mid (Note 9) | Cell 15, Cell 16 |
| f15 | CDMA2000 HRPD | Operating band for CDMA2000 HRPD cells | High | Cell 17 |
| f16 | CDMA2000 HRPD | Operating band for CDMA2000 HRPD cells | Low (Note 9) | Cell 18 |
| f17 | CDMA2000 1xRTT | Operating band for CDMA2000 1xRTT cells | Mid | Cell 19, Cell 20 |
| f18 | CDMA2000 1xRTT | Operating band for CDMA2000 1xRTT cells | High | Cell 21 |
| f19 | CDMA2000 1xRTT | Operating band for CDMA2000 1xRTT cells | Low | Cell 22 |
| f20 | WLAN | Operating band for WLAN AP's | Mid | Cell 27, Cell 27a |
| f21 | E-UTRA | Operating band for Inter-band cells (third band) | Low (Note 10) | Cell 32 |
| f22 | E-UTRA | Operating band for Inter-band cells (third band) | Mid (Note 10) | Cell 33 |
| f23 | E-UTRA | Operating band for Inter-band cells (third band) | High (Note 10) | Cell 34 |
| f24 | UTRA | Operating band for Inter-RATcells (third band) | Low (Note 10) | Cell 37 |
| f25 | UTRA | Operating band for Inter-RATcells (third band) | Mid (Note 10) | Cell 38 |
| f26 | UTRA | Operating band for Inter-RATcells (third band) | High (Note 10) | Cell 39 |
| f27 | Bluetooth | Operating band for Bluetooth beacon's | Mid | Cell 40, Cell 41 |
| f28 | WLAN | Operating band for WLAN AP's | High | Cell 27b |

- | | |
|----------|---|
| Note 1: | For signalling test, see clause 6.2.3. |
| Note 2: | See TS 34.108 [5] clause 5.1. |
| Note 3: | For signalling test, see clause 6.3.1.4. For RRM test, see clause 7.2.2.1. |
| Note 4: | For signalling test, simultaneous co-existence of Cell 2 with Cell 11 is not allowed. |
| Note 5: | For RRM test with intra-band contiguous CA, the set of contiguous component carriers are "Mid", with the test frequencies specified in clauses 4.3.1.1.xA for FDD and 4.3.1.2.xA for TDD |
| Note 6: | For RRM test with intra-band contiguous CA, the set of contiguous component carriers are "High", with the test frequencies specified in clauses 4.3.1.1.xA for FDD and 4.3.1.2.xA for TDD |
| Note 7: | For RRM test with intra-band contiguous CA, the set of contiguous component carriers are "Low", with the test frequencies specified in clauses 4.3.1.1.xA for FDD and 4.3.1.2.xA for TDD. |
| Note 8: | For RRM test with intra-band non-contiguous CA, the test frequencies for the set of non-contiguous component carriers are specified in clauses 4.3.1.1.xA for FDD and 4.3.1.2.xA for TDD without any regard to range. Thus "Low", "Mid" and "High" information in this table does not apply. Unless otherwise stated, test point with maximum Wgap is chosen. |
| Note 9: | For signalling test with band combination E-UTRA band 25 or EUTRA band 2 and HRPD/1xRTT band Class 1, F14 is 'low' and F16 is 'Mid'. |
| Note 10: | For RRM IncMon Test Cases. |

Table 4.4.2-1A: Default E-UTRA parameters for simulated cells

| cell ID | E-UTRAN Cell Identifier | | Physical layer cell identity | rootSequenceIndex or rootSequenceIndexHighSpeed FDD | rootSequenceIndex or rootSequenceIndexHighSpeed TDD |
|---------|-----------------------------------|-----------------|------------------------------|---|---|
| | eNB Identifier | Cell Identity | | | |
| Cell 1 | '0000 0000 0000 0000 0001'B | '0000 0000'B | 0 | 22 | 0 |
| Cell 1a | '0000 0000 0000 0000 0001'B | '0000 0001'B | 1 | 22 | 0 |
| Cell 2 | '0000 0000 0000 0000 0001'B | '0000 0010'B | 2 | 86 | 8 |
| Cell 3 | '0000 0000 0000 0000 0010'B | '0000 0011'B | 3 | 22 | 0 |
| Cell 4 | '0000 0000 0000 0000 0011'B | '0000 0100'B | 4 | 150 | 16 |
| Cell 6 | '0000 0000 0000 0000 0100'B | '0000 0110'B | 6 | 22 | 0 |
| Cell 10 | '0000 0000 0000 0000 0101'B | '0000 1010'B | 10 | 22 | 0 |
| Cell 11 | '0000 0000 0000 0000 0110'B | '0000 1011'B | 11 | 214 | 24 |
| Cell 12 | '0000 0000 0000 0000 0010'B | '0000 1100'B | 12 | 86 | 8 |
| Cell 13 | '0000 0000 0000 0000 0100'B | '0000 1101'B | 13 | 86 | 8 |
| Cell 14 | '0000 0000 0000 0000 0111'B | '0000 1110'B | 14 | 22 | 0 |
| Cell 23 | '0000 0000 0000 0000 0110'B | '0001 0111'B | 23 | 150 | 16 |
| Cell 28 | '0000 0000 0000 0000 0010'B | '0001 1100'B | 28 | 86 | 8 |
| Cell 29 | '0000 0000 0000 0000 0100'B | '0001 1101'B | 29 | 86 | 8 |
| Cell 30 | '0000 0000 0000 0000 0111'B | '0001 1110'B | 30 | 86 | 8 |
| Cell 31 | '0000 0000 0000 0000 0110'B | '0001 1111'B | 31 | 214 | 24 |
| Cell 32 | '0000 0000 0000 0000 0001'B | '0010 0000'B | 32 | 22 | 0 |
| Cell 33 | '0000 0000 0000 0000 0001'B | '0010 0001'B | 33 | 22 | 0 |
| Cell 34 | '0000 0000 0000 0000 0001'B | '0010 0010'B | 34 | 22 | 0 |
| Cell 35 | '0000 0000 0000 0000 0001'B | '0010 0011'B | 35 | 22 | 0 |

| | | | | | |
|---------|-----------------------------------|-----------------|----|----|---|
| Cell 36 | '0000 0000 0000 0000 0001'B | '0010 0100'B | 36 | 22 | 0 |
|---------|-----------------------------------|-----------------|----|----|---|

Table 4.4.2-2: Default NAS parameters for simulated cells

| cell ID | Tracking Area | | | TA# list (Note 1) | GUTI (Note 2) | | M-TMSI | |
|---------------------|---------------|----------|-----|----------------------|---------------|----------------|--------|--|
| | TA# | PLMN | | | TAC | MME Identifier | | |
| | | MCC | MNC | | | MME Group ID | | MME Code |
| Cell 1 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | Arbitrarily selected according to TS 23.003 subclause 2.8 [2]. |
| Cell 1a | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Cell 2 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Cell 3 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Cell 4 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Cell 6 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Cell 10 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Cell 11 | TAI-2 | (Note 3) | | 2 | TAI-2 | 32769 | 1 | |
| Cell 23 | TAI-2 | (Note 3) | | 2 | TAI-2 | 32769 | 1 | |
| Cell 12, Cell 28 | TAI-3 | 002 | 11 | 1 | TAI-3 | 32769 | 1 | |
| Cell 13, Cell 29 | TAI-4 | 003 | 21 | 1 | TAI-4 | 32769 | 1 | |
| Cell 14, Cell 30 | TAI-5 | 004 | 31 | 1 | TAI-5 | 32769 | 1 | |
| Cell 31 | TAI-2 | (Note 3) | | 2 | TAI-2 | 32769 | 1 | |
| Cell 32 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Cell 33 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Cell 34 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Cell 35 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Cell 36 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |

Note 1: The value(s) in the column TA# list indicates TAI(s) included in the response messages of the registration procedure (ATTACH ACCEPT or TRACKING AREA UPDATE ACCEPT) when the UE performs the registration procedure on a corresponding cell.

Note 2: The value in the column GUTI indicates GUTI included in the response messages of the registration procedure (ATTACH ACCEPT or TRACKING AREA UPDATE ACCEPT) when the UE performs the registration procedure on a corresponding cell.

Note 3: Set to the same Mobile Country Code and Mobile Network Code stored in EF_{IMSI} on the test USIM card (subclause 4.9.3).

Table 4.4.2-3: Default HRPD parameters for simulated cells

| Cell ID | SectorID | ColorCode | Pilot PN Offset | CountryCode |
|---------|----------------------------------|----------------------------------|-----------------|-------------|
| Cell 15 | Set according to PIXIT parameter | Set according to PIXIT parameter | 50 | (Note 1) |
| Cell 16 | Set according to PIXIT parameter | Set according to PIXIT parameter | 100 | (Note 1) |
| Cell 17 | Set according to PIXIT parameter | Set according to PIXIT parameter | 150 | (Note 1) |
| Cell 18 | Set according to PIXIT parameter | Set according to PIXIT parameter | 200 | (Note 1) |

Note 1: Set to the same Mobile Country Code stored in EF_{IMSI} on the test USIM card (subclause 4.9.3).

Table 4.4.2-4: Default 1XRTT parameters for simulated cells

| Cell ID | SID | NID | BASE_ID | Pilot PN Offset | REG_ZONE | MCC | IMSI_11_12 |
|---------|-----|----------------------------------|----------------------------------|-----------------|----------|--------|------------|
| Cell 19 | 200 | Set according to PIXIT parameter | Set according to PIXIT parameter | 50 | 1 | Note 1 | Note 2 |
| Cell 20 | 200 | Set according to PIXIT parameter | Set according to PIXIT parameter | 100 | 1 | Note 1 | Note 2 |
| Cell 21 | 200 | Set according to PIXIT parameter | Set according to PIXIT parameter | 150 | 2 | Note 1 | Note 2 |
| Cell 22 | 200 | Set according to PIXIT parameter | Set according to PIXIT parameter | 200 | 3 | Note 1 | Note 2 |

Note 1: Set to the same Mobile Country Code stored in EFIMSI on the test USIM card (subclause 4.9.3).
Note 2: Set to the same Mobile Network Code stored in EFIMSI on the test USIM card (subclause 4.9.3).

Table 4.4.2-5: Neighbouring cell list for 1XRTT cells

| Cell ID | Intra Frequency | Inter Frequency Cells | | |
|---------|-----------------|-----------------------|---------|---------|
| Cell 19 | cell 20 | Cell 21 | cell 22 | X |
| Cell 20 | cell 19 | Cell 21 | cell 22 | X |
| Cell 21 | X | cell 19 | cell 20 | cell 22 |
| Cell 22 | X | cell 19 | cell 20 | cell 21 |

4.4.3 Common parameters for simulated E-UTRA cells

The parameters specified in this sub clause apply to all simulated E-UTRA cells unless otherwise specified.

4.4.3.1 Common configurations of system information blocks

For BL/CE testing the same content of system information blocks SIB2 to SIB20 are used for broadcasting on BCCH and/or BCCH-BR.

4.4.3.1.1 Combinations of system information blocks

The combination of system information blocks required by a test case depends on the test case scenario. In this clause, the following combinations of system information blocks are defined.

Combination 1 is the default combination which applies to the following test case scenarios:

- E-UTRA FDD single cell scenario
- E-UTRA TDD single cell scenario
- E-UTRA FDD intra-frequency multi cell scenario
- E-UTRA TDD intra-frequency multi cell scenario
- E-UTRA FDD and E-UTRA TDD dual mode multi cell roaming scenario
- 3GPP inter-RAT E-UTRA FDD + NR FDD multi cell scenario for RRM
- 3GPP inter-RAT E-UTRA FDD + NR TDD multi cell scenario for RRM
- 3GPP inter-RAT E-UTRA TDD + NR FDD multi cell scenario for RRM
- 3GPP inter-RAT E-UTRA TDD + NR TDD multi cell scenario for RRM

Combination 2 applies to the following test case scenarios:

- E-UTRA FDD intra-frequency multi cell scenario with neighbouring cell related information
- E-UTRA TDD intra-frequency multi cell scenario with neighbouring cell related information

Combination 3 applies to the following test case scenarios:

- E-UTRA FDD inter-frequency multi cell scenario
- E-UTRA TDD inter-frequency multi cell scenario
- E-UTRA FDD inter-band multi cell scenario
- E-UTRA TDD inter-band multi cell scenario
- E-UTRA FDD and E-UTRA TDD dual mode multi cell non-roaming scenario
- E-UTRA FDD intra-band carrier aggregation component carriers cell scenario
- E-UTRA FDD inter-band carrier aggregation component carriers cell scenario
- E-UTRA TDD intra-band carrier aggregation component carriers cell scenario
- E-UTRA FDD and E-UTRA TDD inter-band carrier aggregation component carriers cell scenario
- E-UTRA FDD dual connectivity cell scenario
- E-UTRA TDD dual connectivity cell scenario

Combination 4 applies to the following test case scenarios:

- 3GPP inter-RAT E-UTRA FDD + UTRA FDD multi cell scenario
- 3GPP inter-RAT E-UTRA TDD + UTRA LCR TDD multi cell scenario
- 3GPP inter-RAT E-UTRA TDD + UTRA FDD multi cell scenario

Combination 5 applies to the following test case scenarios:

- 3GPP inter-RAT E-UTRA FDD + GERAN multi cell scenario
- 3GPP inter-RAT E-UTRA TDD + GERAN multi cell scenario

Combination 6 applies to the following test case scenarios:

- 3GPP2 inter-RAT E-UTRA FDD + HRPD multi cell scenario
- 3GPP2 inter-RAT E-UTRA TDD + HRPD multi cell scenario
- 3GPP2 inter-RAT E-UTRA FDD + 1xRTT multi cell scenario
- 3GPP2 inter-RAT E-UTRA TDD + 1xRTT multi cell scenario

Combination 7 applies to the following test case scenarios:

- E-UTRA FDD + home eNB multi cell scenario
- E-UTRA TDD + home eNB multi cell scenario

Combination 8 applies to the following test case scenarios:

- E-UTRA FDD ETWS single cell scenario
- E-UTRA TDD ETWS single cell scenario

Combination 9 applies to the following test case scenarios:

- E-UTRA FDD inter-frequency + 3GPP inter-RAT UTRA multi-cell scenario

- E-UTRA TDD inter-frequency + 3GPP inter-RAT UTRA multi-cell scenario

Combination 10 applies to the following test case scenarios:

- 3GPP inter-RAT E-UTRA FDD + UTRA FDD + GERAN multi cell scenario
- 3GPP inter-RAT E-UTRA TDD + UTRA LCR TDD + GERAN multi cell scenario.

Combination 10a applies to the following test case scenarios:

- E-UTRA FDD inter-frequency + 3GPP inter-RAT E-UTRA FDD + UTRA FDD + GERAN multi cell scenario
- E-UTRA TDD inter-frequency + 3GPP inter-RAT E-UTRA TDD + UTRA LCR TDD + GERAN multi cell scenario

Combination 11 applies to the following test case scenarios:

- 3GPP inter-RAT E-UTRA FDD + UTRA FDD + home eNB multi cell scenario
- 3GPP inter-RAT E-UTRA TDD + UTRA LCR TDD + home eNB multi cell scenario

Combination 12 applies to the following test case scenarios:

- E-UTRA FDD inter-frequency + GERAN cell scenario
- E-UTRA TDD inter-frequency + GERAN cell scenario

Combination 13 applies to the following test case scenarios:

- E-UTRA FDD inter-frequency + home eNB
- E-UTRA TDD inter-frequency + home eNB

Combination 14 applies to the following test case scenarios:

- 3GPP inter-RAT E-UTRA FDD + GERAN + home eNB multi cell scenario
- 3GPP inter-RAT E-UTRA TDD + GERAN + home eNB multi cell scenario

Combination 15 applies to the following test case scenarios:

- 3GPP E-UTRA FDD single cell scenario + MBMS
- 3GPP E-UTRA TDD single cell scenario + MBMS
- 3GPP E-UTRA FDD intra-frequency multi cell scenario + MBMS
- 3GPP E-UTRA TDD intra-frequency multi cell scenario + MBMS

Combination 16 applies to the following test case scenarios:

- 3GPP E-UTRA FDD inter-frequency multi cell scenario + MBMS
- 3GPP E-UTRA TDD inter-frequency multi cell scenario + MBMS

Combination 17 applies to the following test case scenarios:

- 3GPP E-UTRA FDD + CMAS single cell scenario
- 3GPP E-UTRA TDD + CMAS single cell scenario

Combination 18 applies to the following test case scenarios:

- 3GPP E-UTRA FDD + MBMS inter-frequency multi cell scenario (non-MBMS cell broadcasting SIB15)
- 3GPP E-UTRA TDD + MBMS inter-frequency multi cell scenario (non-MBMS cell broadcasting SIB15)
- 3GPP E-UTRA FDD + SC-PTM inter-frequency multi cell scenario (non- SC-PTM cell broadcasting SIB15)

- 3GPP E-UTRA TDD + SC-PTM inter-frequency multi cell scenario (non- SC-PTM cell broadcasting SIB15)

Combination 19 applies to the following test case scenarios:

- 3GPP E-UTRA FDD + MBMS intra-frequency multi cell scenario (MBMS cell broadcasting SIB15)
- 3GPP E-UTRA TDD + MBMS intra-frequency multi cell scenario (MBMS cell broadcasting SIB15)

Combination 20 applies to the following test case scenarios:

- 3GPP E-UTRA FDD + MBMS inter-frequency multi cell scenario (MBMS cell broadcasting SIB15)
- 3GPP E-UTRA TDD + MBMS inter-frequency multi cell scenario (MBMS cell broadcasting SIB15)
- 3GPP E-UTRA FDD + MBMS inter-band multi cell scenario (MBMS cell broadcasting SIB15)
- 3GPP E-UTRA TDD + MBMS inter-band multi cell scenario (MBMS cell broadcasting SIB15)

Combination 21 applies to the following test case scenarios:

- E-UTRA FDD SIMTC single cell scenario
- E-UTRA TDD SIMTC single cell scenario

Combination 22 applies to the following test case scenarios:

- RAN assisted WLAN offload: E-UTRA FDD + WLAN AP scenarios
- RAN assisted WLAN offload: E-UTRA TDD + WLAN AP scenarios

Combination 23 is the default combination which applies to the following test case scenarios:

- E-UTRA FDD single cell scenario + sidelink direct communication
- E-UTRA TDD single cell scenario + sidelink direct communication
- E-UTRA FDD intra-frequency multi cell scenario + sidelink direct communication
- E-UTRA TDD intra-frequency multi cell scenario + sidelink direct communication

Combination 24 is the default combination which applies to the following test case scenarios:

- E-UTRA FDD single cell scenario + sidelink direct discovery
- E-UTRA TDD single cell scenario + sidelink direct discovery
- E-UTRA FDD intra-frequency multi cell scenario + sidelink direct discovery
- E-UTRA TDD intra-frequency multi cell scenario + sidelink direct discovery

Combination 25 applies to the following test case scenarios:

- 3GPP E-UTRA FDD single cell scenario + SC-PTM
- 3GPP E-UTRA TDD single cell scenario + SC-PTM
- 3GPP E-UTRA FDD intra-frequency multi cell scenario + SC-PTM
- 3GPP E-UTRA TDD intra-frequency multi cell scenario + SC-PTM

Combination 26 applies to the following test case scenarios:

- 3GPP E-UTRA FDD inter-frequency multi cell scenario + SC-PTM
- 3GPP E-UTRA TDD inter-frequency multi cell scenario + SC-PTM

Combination 27 applies to the following test case scenarios:

- 3GPP E-UTRA FDD + SC-PTM intra-frequency multi cell scenario (SC-PTM cell broadcasting SIB15)

- 3GPP E-UTRA TDD + SC-PTM intra-frequency multi cell scenario (SC-PTM cell broadcasting SIB15)

Combination 28 applies to the following test case scenarios:

- 3GPP E-UTRA FDD + SC-PTM inter-frequency multi cell scenario (SC-PTM cell broadcasting SIB15)
- 3GPP E-UTRA TDD + SC-PTM inter-frequency multi cell scenario (SC-PTM cell broadcasting SIB15)
- 3GPP E-UTRA FDD + SC-PTM inter-band multi cell scenario (SC-PTM cell broadcasting SIB15)
- 3GPP E-UTRA TDD + SC-PTM inter-band multi cell scenario (SC-PTM cell broadcasting SIB15)

Combination 29 is the default combination which applies to the following test case scenarios:

- E-UTRA FDD single cell scenario + V2X sidelink communication.
- E-UTRA TDD single cell scenario + V2X sidelink communication.
- E-UTRA FDD intra-frequency multi cell scenario + V2X sidelink communication.
- E-UTRA TDD intra-frequency multi cell scenario + V2X sidelink communication.
- E-UTRA FDD inter-frequency + V2X sidelink communication with inter-frequency scheduling
- E-UTRA TDD inter-frequency + V2X sidelink communication with inter-frequency scheduling
- E-UTRA FDD inter-band + V2X sidelink communication with inter-frequency scheduling
- E-UTRA TDD inter-band + V2X sidelink communication with inter-frequency scheduling

Combination 30 applies to the following test case scenarios:

- E-UTRA FDD intra-band carrier aggregation component carriers cell scenario + E-UTRA FDD intra-frequency neighbour.
- E-UTRA FDD inter-band carrier aggregation component carriers cell scenario+ E-UTRA FDD intra-frequency neighbour.
- E-UTRA TDD intra-band carrier aggregation component carriers cell scenario+ E-UTRA FDD intra-frequency neighbour.
- E-UTRA FDD and E-UTRA TDD inter-band carrier aggregation component carriers cell scenario+ E-UTRA FDD intra-frequency neighbour.

Combination 31 applies to the following test case scenarios:

- 3GPP inter-RAT E-UTRA FDD + NR FDD multi cell scenario
- 3GPP inter-RAT E-UTRA FDD + NR TDD multi cell scenario
- 3GPP inter-RAT E-UTRA TDD + NR FDD multi cell scenario
- 3GPP inter-RAT E-UTRA TDD + NR TDD multi cell scenario

Table 4.4.3.1.1-1: Combinations of system information blocks

| Combination No. | System information block type | | | | | | | | | | | | | | | | | | | |
|-----------------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | SI B2 | SI B3 | SI B4 | SI B5 | SI B6 | SI B7 | SI B8 | SI B9 | SI B10 | SI B11 | SI B12 | SI B13 | SI B14 | SI B15 | SI B17 | SI B18 | SI B19 | SI B20 | SI B21 | SI B24 |
| 1 | X | X | | | | | | | | | | | | | | | | | | |
| 2 | X | X | X | | | | | | | | | | | | | | | | | |
| 3 | X | X | | X | | | | | | | | | | | | | | | | |
| 4 | X | X | | | X | | | | | | | | | | | | | | | |
| 5 | X | X | | | | X | | | | | | | | | | | | | | |
| 6 | X | X | | | | | X | | | | | | | | | | | | | |
| 7 | X | X | X | | | | | X | | | | | | | | | | | | |
| 8 | X | X | | | | | | | X | X | | | | | | | | | | |
| 9 | X | X | | X | X | | | | | | | | | | | | | | | |
| 10 | X | X | | | X | X | | | | | | | | | | | | | | |
| 10a | X | X | | X | X | X | | | | | | | | | | | | | | |
| 11 | X | X | X | | X | | | X | | | | | | | | | | | | |
| 12 | X | X | | X | | X | | | | | | | | | | | | | | |
| 13 | X | X | X | X | | | | X | | | | | | | | | | | | |
| 14 | X | X | X | | | X | | X | | | | | | | | | | | | |
| 15 | X | X | | | | | | | | | | X | | | | | | | | |
| 16 | X | X | | X | | | | | | | | X | | | | | | | | |
| 17 | X | X | | | | | | | | X | | | | | | | | | | |
| 18 | X | X | | X | | | | | | | | | | X | | | | | | |
| 19 | X | X | | | | | | | | | X | | | X | | | | | | |
| 20 | X | X | | X | | | | | | | X | | | X | | | | | | |
| 21 | X | X | | | | | | | | | | X | | | | | | | | |
| 22 | X | X | | | | | | | | | | | | | X | | | | | |
| 23 | X | X | | | | | | | | | | | | | | X | | | | |
| 24 | X | X | | | | | | | | | | | | | | | X | | | |
| 25 | X | X | | | | | | | | | | | | | | | | X | | |
| 26 | X | X | | X | | | | | | | | | | | | | | X | | |
| 27 | X | X | | | | | | | | | | | | X | | | | X | | |
| 28 | X | X | | X | | | | | | | | | | X | | | | X | | |
| 29 | X | X | | | | | | | | | | | | | | | | | X | |
| 30 | X | X | X | X | | | | | | | | | | | | | | | | |
| 31 | X | X | | | | | | | | | | | | | | | | | | X |

4.4.3.1.2 Scheduling of system information blocks

The scheduling configurations for combinations of system information blocks are defined in the following tables.

Table 4.4.3.1.2-1: Scheduling for combination 1

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |

Table 4.4.3.1.2-2: Scheduling for combination 2

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB4 |

Table 4.4.3.1.2-3: Scheduling for combination 3

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB5 |

Table 4.4.3.1.2-4: Scheduling for combination 4

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB6 |

Table 4.4.3.1.2-5: Scheduling for combination 5

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB7 |

Table 4.4.3.1.2-6: Scheduling for combination 6

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB8 |

Table 4.4.3.1.2-7: Scheduling for combination 7

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB4 |
| 4 | See sub clause 4.4.3.4 | SIB9 |

Table 4.4.3.1.2-8: Scheduling for combination 8

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB11 |
| 4 | See sub clause 4.4.3.4 | SIB10 |

Table 4.4.3.1.2-9: Scheduling for combination 9

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB5, SIB6 |

Table 4.4.3.1.2-10: Scheduling for combination 10

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB6 |
| 4 | See sub clause 4.4.3.4 | SIB7 |

Table 4.4.3.1.2-10a: Scheduling for combination 10a

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB5, SIB6 |
| 4 | See sub clause 4.4.3.4 | SIB7 |

Table 4.4.3.1.2-11: Scheduling for combination 11

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB4 |
| 4 | See sub clause 4.4.3.4 | SIB6 |
| 5 | See sub clause 4.4.3.4 | SIB9 |

Table 4.4.3.1.2-12: Scheduling for combination 12

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB5 |
| 4 | See sub clause 4.4.3.4 | SIB7 |

Table 4.4.3.1.2-13: Scheduling for combination 13

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB4 |
| 4 | See sub clause 4.4.3.4 | SIB5 |

Table 4.4.3.1.2-14: Scheduling for combination 14

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB4 |
| 4 | See sub clause 4.4.3.4 | SIB7 |
| 5 | See sub clause 4.4.3.4 | SIB9 |

Table 4.4.3.1.2-15: Scheduling for combination 15

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB13 |

Table 4.4.3.1.2-16: Scheduling for combination 16

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB5 |
| 4 | See sub clause 4.4.3.4 | SIB13 |

Table 4.4.3.1.2-17: Scheduling for combination 17

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB12 |

Table 4.4.3.1.2-18: Scheduling for combination 18

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB5 |
| 4 | See sub clause 4.4.3.4 | SIB15 |

Table 4.4.3.1.2-19: Scheduling for combination 19

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB13 |
| 4 | See sub clause 4.4.3.4 | SIB15 |

Table 4.4.3.1.2-20: Scheduling for combination 20

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB5 |
| 4 | See sub clause 4.4.3.4 | SIB13 |
| 5 | See sub clause 4.4.3.4 | SIB15 |

Table 4.4.3.1.2-21: Scheduling for combination 21

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB14 |

Table 4.4.3.1.2-22: Scheduling for combination 22

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB17 |

Table 4.4.3.1.2-23: Scheduling for combination 23

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB18 |

Table 4.4.3.1.2-24: Scheduling for combination 24

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB19 |

Table 4.4.3.1.2-25: Scheduling for combination 25

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB20 |

Table 4.4.3.1.2-26: Scheduling for combination 26

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB5 |
| 4 | See sub clause 4.4.3.4 | SIB20 |

Table 4.4.3.1.2-27: Scheduling for combination 27

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB15 |
| 4 | See sub clause 4.4.3.4 | SIB20 |

Table 4.4.3.1.2-28: Scheduling for combination 28

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB5 |
| 4 | See sub clause 4.4.3.4 | SIB15 |
| 5 | See sub clause 4.4.3.4 | SIB20 |

Table 4.4.3.1.2-29: Scheduling for combination 29

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB21 |

Table 4.4.3.1.2-30: Scheduling for combination 30

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB4 |
| 4 | See sub clause 4.4.3.4 | SIB5 |

Table 4.4.3.1.2-31: Scheduling for combination 31

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 16 | SIB2 |
| 2 | See sub clause 4.4.3.4 | SIB3 |
| 3 | See sub clause 4.4.3.4 | SIB24 |

4.4.3.2 Common contents of system information messages

- *MasterInformationBlock*

The *MasterInformationBlock* includes the system information transmitted on BCH.

Table 4.4.3.2-1: MasterInformationBlock

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---------------------------------------|--|--|------------------|
| Information Element | Value/remark | Comment | Condition |
| MasterInformationBlock ::= SEQUENCE { | | | |
| dl-Bandwidth | Downlink system bandwidth under test. | | |
| phich-Config SEQUENCE {} | PHICH-Config-DEFAULT | See subclause 4.6.3 | |
| systemFrameNumber | A valid value as defined in TS 36.331 [17] | | |
| schedulingInfoSIB1-BR-r13 | 0 | Value 0 means that SystemInformationBlockType1-BR is not scheduled. | |
| schedulingInfoSIB1-BR-r13 | 10 | 4 PDSCH repetitions and 504 bits TBS carrying for PDSCH carrying SystemInformationBlockType1-BR (TS 36.213 [23] Table 7.1.6.1 and Table 7.1.7.2.7-1) | CEmodeA, CEmodeB |
| spare | '0000 0000 00'B | | |
| spare | '0000 0'B | | CEmodeA, CEmodeB |
| } | | | |

| Condition | Explanation |
|-----------|----------------------------|
| CEmodeA | CE mode A test environment |
| CEmodeB | CE mode B test environment |

- **SystemInformation**

The *SystemInformation* message is used to convey one or more System Information Blocks. All the SIBs included are transmitted with the same periodicity.

Table 4.4.3.2-2: SystemInformation

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|-----------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformation ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| systemInformation-r8 SEQUENCE { | | | |
| sib-TypeAndInfo SEQUENCE (SIZE (1..maxSIB)) OF CHOICE {} | See subclause 4.4.3.1 | | |
| criticalExtensionsFuture SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |

- **SystemInformation-BR-r13**

The *SystemInformation-BR-r13* message is used to convey one or more System Information Blocks for Bandwidth Redused cell environment . All the SIBs included are transmitted with the same periodicity.

Table 4.4.3.2-2A: SystemInformation-BR-r13

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|-----------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformation-BR-r13 ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| systemInformation-r8 SEQUENCE { | | | |
| sib-TypeAndInfo SEQUENCE (SIZE (1..maxSIB)) OF CHOICE {} | See subclause 4.4.3.1 | | |
| criticalExtensionsFuture SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |

- *SystemInformationBlockType1*

SystemInformationBlockType1 contains information relevant when evaluating if a UE is allowed to access a cell and defines the scheduling of other system information.

Table 4.4.3.2-3: *SystemInformationBlockType1*

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|--------------------------------|--|-------------------------------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { | | | |
| cellAccessRelatedInfo SEQUENCE { | | | |
| plmn-IdentityList SEQUENCE (SIZE (1..6)) OF SEQUENCE { | 1 entry | | |
| plmn-Identity[1] SEQUENCE { | | | |
| mcc SEQUENCE (SIZE (3)) OF MCC-NMC-Digit | See table 4.4.2-2 | For NAS test cases, see table 6.3.2.2-1. | |
| mnc SEQUENCE (SIZE (2..3)) OF MCC-NMC-Digit | See table 4.4.2-2 | For NAS test cases, see table 6.3.2.2-1. | |
| } | | | |
| cellReservedForOperatorUse[1] | notReserved | | |
| } | | | |
| trackingAreaCode | See table 4.4.2-2 | For NAS test cases, see table 6.3.2.2-1. | |
| cellIdentity | Cell ID for the simulated cell | | |
| cellBarred | notBarred | | |
| intraFreqReselection | notAllowed | | |
| csg-Indication | FALSE | | |
| csg-Identity | Not present | | |
| } | | | |
| cellSelectionInfo SEQUENCE { | | | |
| q-RxLevMin | -70 (-140 dBm) | For RF/RRM test cases | RF |
| | -53 (-106 dBm) | For signalling test cases in normal coverage | |
| | -27 (-54dBm) | For signalling test cases in enhanced coverage The value has been selected such that the UE at signal levels for "Serving cell" and "Suitable neighbour intra-frequency cell" are applied then the cell selection criterion for normal coverage is not fulfilled. | SIG AND (CEmodeA OR CEmodeB) |
| q-RxLevMinOffset | Not present | | |
| } | | | |
| p-Max | Not present | | |
| freqBandIndicator | Operating band under test. | | |
| freqBandIndicator | 64 | maxFBI | Band > 64 |
| schedulingInfoList SEQUENCE (SIZE (1..maxSI-Message)) OF SEQUENCE {} | See subclause 4.4.3.1 | | |
| tdd-Config SEQUENCE {} | Not present | | FDD |
| tdd-Config SEQUENCE {} | TDD-Config-DEFAULT | See subclause 4.6.3 | TDD |
| si-WindowLength | ms20 | To allow sufficient number of retransmissions. | |
| systemInfoValueTag | 0 | | |
| nonCriticalExtension SEQUENCE { | | | |
| lateNonCriticalExtension SEQUENCE { | Not present | | |
| nonCriticalExtension SEQUENCE { | | | Band > 64 |
| freqBandIndicator-v9e0 | Operating band under test. | | |
| } | | | |
| } | | | |
| nonCriticalExtension SEQUENCE { | | | |
| ims-EmergencySupport-r9 | True | Support IMS emergency call in limited service mode. | |
| cellSelectionInfo-v920 SEQUENCE {} | Not present | | |
| cellSelectionInfo-v920 SEQUENCE {} | | | QBASED |
| q-QualMin-r9 | -20 (-20dB) | | |
| q-QualMinOffset-r9 | Not present | | |

| | | | |
|------------------------------------|-------------|----------------------------------|--------------|
| } | | | |
| nonCriticalExtension SEQUENCE { | Not present | | |
| tdd-Config-v1130 | Not present | | |
| cellSelectionInfo-v1130 | Not present | | |
| nonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE { | | | UECAT0 |
| cellAccessRelatedInfo-v1250 | | | |
| SEQUENCE { | | | |
| category0Allowed-r12 | True | Cat 0 Allowed | |
| } | | | |
| cellSelectionInfo-v1250 | Not present | | |
| freqBandIndicatorPriority-r12 | Not present | | |
| nonCriticalExtension SEQUENCE{ | | | |
| hyperSFN-r13 | Not present | | |
| eDRXAllowed-r13 | Not present | | |
| cellSelectionInfoCE-r13 | Not present | | |
| bandwidthReducedAccessRelatedInfo- | Not present | | |
| r13 | | | |
| nonCriticalExtension SEQUENCE { | | | eCalloverIMS |
| eCallOverIMS-Support-r14 | True | Support eCall over IMS services. | |
| tdd-Config-v1430 | Not present | | |
| cellAccessRelatedInfoList-r14 | Not present | | |
| SEQUENCE {} | | | |
| nonCriticalExtension | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|--------------|---|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| QBASED | This condition applies to Quality based cell (re)selection signalling test cases. |
| UECAT0 | This condition applies when UE under test is a UE of Category 0. |
| RF | For RF, performance and RRM testing |
| SIG | For protocol testing |
| CEmodeA | CE mode A test environment |
| CEmodeB | CE mode B test environment |
| Band > 64 | If band > 64 is selected |
| eCalloverIMS | eCall over IMS test environment |

- *SystemInformationBlockType1-BR-r13*

SystemInformationBlockType1-BR-r13 contains information relevant when evaluating if a UE in a Bandwith Reduced cell environment is allowed to access a cell and defines the scheduling of other system information.

Table 4.4.3.2-3A: *SystemInformationBlockType1-BR-r13*

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|--------------------------------|---|---------------------------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1-BR-r13 ::= SEQUENCE { | | | |
| cellAccessRelatedInfo SEQUENCE { | | | |
| plmn-IdentityList SEQUENCE (SIZE (1..6)) OF SEQUENCE { | 1 entry | | |
| plmn-Identity[1] SEQUENCE { | | | |
| mcc SEQUENCE (SIZE (3)) OF MCC-NMC-Digit | See table 4.4.2-2 | For NAS test cases, see table 6.3.2.2-1. | |
| mnc SEQUENCE (SIZE (2..3)) OF MCC-NMC-Digit | See table 4.4.2-2 | For NAS test cases, see table 6.3.2.2-1. | |
| } | | | |
| cellReservedForOperatorUse[1] | notReserved | | |
| } | | | |
| trackingAreaCode | See table 4.4.2-2 | For NAS test cases, see table 6.3.2.2-1. | |
| cellIdentity | Cell ID for the simulated cell | | |
| cellBarred | notBarred | | |
| intraFreqReselection | notAllowed | | |
| csg-Indication | FALSE | | |
| csg-Identity | Not present | | |
| } | | | |
| cellSelectionInfo SEQUENCE { | | | |
| q-RxLevMin | -70 (-140 dBm) | For RF/RRM test cases | RF |
| | -27 (-54 dBm) | For signalling test cases | SIG and ENHANCED COVERAGE |
| | -53 (-106 dBm) | For signalling test cases | SIG and NORMAL COVERAGE |
| q-RxLevMinOffset | Not present | | |
| } | | | |
| p-Max | Not present | | |
| freqBandIndicator | Operating band under test. | | |
| freqBandIndicator | 64 | maxFBI | Band > 64 |
| schedulingInfoList SEQUENCE (SIZE (1..maxSI-Message)) OF SEQUENCE {} | See subclause 4.4.3.1 | | |
| tdd-Config SEQUENCE {} | Not present | | FDD |
| tdd-Config SEQUENCE {} | TDD-Config-DEFAULT | See subclause 4.6.3 | TDD |
| si-WindowLength | ms20 | To allow sufficient number of retransmissions. | |
| systemInfoValueTag | 0 | | |
| nonCriticalExtension SEQUENCE { | | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE { | | | Band > 64 |
| freqBandIndicator-v9e0 | Operating band under test. | | |
| } | | | |
| } | | | |
| nonCriticalExtension SEQUENCE { | | | |
| ims-EmergencySupport-r9 | True | Support IMS emergency call in limited service mode. | |
| cellSelectionInfo-v920 SEQUENCE {} | Not present | | |
| cellSelectionInfo-v920 SEQUENCE {} | | | QBASED |
| q-QualMin-r9 | -20 (-20dB) | | |
| q-QualMinOffset-r9 | Not present | | |
| } | | | |
| nonCriticalExtension SEQUENCE { | | | |
| tdd-Config-v1130 | Not present | | |

| | | | |
|--|---------------------------------|--|--------------|
| cellSelectionInfo-v1130 | Not present | | |
| nonCriticalExtension SEQUENCE { | | | |
| cellAccessRelatedInfo-v1250 SEQUENCE { | | | |
| category0Allowed-r12 | Not Present | | |
| category0Allowed-r12 | True | Cat 0 Allowed | UECAT0 |
| } | | | |
| cellSelectionInfo-v1250 | Not present | | |
| freqBandIndicatorPriority-r12 | Not present | | |
| nonCriticalExtension SEQUENCE { | | | |
| hyperSFN-r13 | Not present | | |
| eDRX-Allowed-r13 | Not present | | |
| eDRX-Allowed-r13 | True | | eDRX |
| cellSelectionInfoCE-r13 | CellSelectionInfoCE-r13-DEFAULT | | |
| bandwidthReducedAccessRelatedInfo-r13 SEQUENCE { | | | |
| si-WindowLength-BR-r13 | ms20 | To allow sufficient number of retransmissions. | |
| si-RepetitionPattern-r13 | every2ndRF | ENUMERATED {everyRF, every2ndRF, every4thRF, every8thRF} | |
| schedulingInfoList-BR-r13 SEQUENCE (SIZE (1..maxSI-Message)) OF SEQUENCE { | n entries | n is the same number of entries, and listed in the same order, as in SchedulingInfoList (without suffix) | |
| si-Narrowband-r13[1] | 1 | | |
| si-Narrowband-r13[1] | 2 | | 20MHz BW |
| si-TBS-r13[1] | b712 | | |
| | | | |
| si-Narrowband-r13[n] | 1 | | |
| si-Narrowband-r13[n] | 2 | | 20MHz BW |
| si-TBS-r13[n] | b712 | | |
| } | | | |
| fdd-DownlinkOrTddSubframeBitmapBR-r13 | Not present | All non-MBSFN subframes are considered as valid subframes for FDD downlink or TDD transmissions | |
| fdd-UplinkSubframeBitmapBR-r13 | Not present | All FDD uplink subframes are considered as valid subframes | |
| startSymbolBR-r13 | 3 | | FDD |
| | 2 | | TDD |
| si-HoppingConfigCommon-r13 | off | | |
| si-ValidityTime-r13 | True | | |
| systemInfoValueTagList-r13 SEQUENCE (SIZE (1..maxSI-Message)) OF | n entries | n is the same number of entries, and listed in the same order, as in SchedulingInfoList (without suffix) | |
| SystemInfoValueTagSI-r13[1] | 0 | | |
| | | | |
| SystemInfoValueTagSI-r13[n] | 0 | | |
| } | | | |
| nonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE { | | | FREQ HOPPING |
| freqHoppingParametersDL-r13 SEQUENCE { | | | |
| mpdcch-pdsch-HoppingNB-r13 | nb4 | 4 narrowbands | |
| interval- | | | |
| DLHoppingConfigCommonModeA-r13 CHOICE { | | | |
| interval-FDD-r13 | int4 | | FDD |
| interval-TDD-r13 | Int5 | | TDD |

| | | | |
|--|-------------|--|-----|
| } | | | |
| interval- DLHoppingConfigCommonModeB-r13 CHOICE { | | | |
| interval-FDD-r13 | int16 | | FDD |
| interval-TDD-r13 | int20 | | TDD |
| } | | | |
| mpdcch-pdsch-HoppingOffset-r13 | 2 | INTEGER (1..16 (maxAvailNarrowBands-r13)) | |
| } | | | |
| nonCriticalExtension | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|----------------------|--|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| QBASED | This condition applies to Quality based cell (re)selection signalling test cases. |
| UECAT0 | This condition applies when UE under test is a UE of Category 0. |
| eDRX | This condition applies when UE under test is in enhanced coverage and eDRX is allowed. |
| RF | For RF, performance and RRM testing |
| SIG | For Signalling tests |
| FREQ HOPPING | This condition applies when MPDCCH/PDSCH frequency hopping is used |
| NORMAL COVERAGE | Normal coverage testing |
| ENHANCED COVERAGE | This condition applies for enhanced coverage testing |
| 20MHz BW | Used for cells with 20MHz bandwidth |
| Band > 64 | If band > 64 is selected |

4.4.3.3 Common contents of system information blocks

- *SystemInformationBlockType2*

The IE *SystemInformationBlockType2* contains radio resource configuration information that is common for all UEs.

Table 4.4.3.3-1: *SystemInformationBlockType2*

| Derivation Path: 36.331 clause 6.3.1 | | | |
|--|---|--|---------------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { | | | |
| ac-BarringInfo SEQUENCE {} | Not present | | |
| radioResourceConfigCommon SEQUENCE {} | RadioResourceConfigCommonSIB-DEFAULT | See subclause 4.6.3 | |
| ue-TimersAndConstants SEQUENCE { | | | |
| t300 | ms1000 | Typical value in real network | |
| t301 | ms1000 | Typical value in real network | |
| t310 | ms1000 | Typical value in real network | |
| n310 | n1 | | |
| t311 | ms10000 | Typical value in real network | |
| n311 | n1 | | |
| } | | | |
| freqInfo SEQUENCE { | | | |
| ul-CarrierFreq | Not present | Default UL EARFCN applies | |
| ul-Bandwidth | Not Present | | |
| additionalSpectrumEmission | 1 (NS_01) | A-MPR doesn't apply by default. See TS 36.101 table 6.2.4-1. | |
| additionalSpectrumEmission | 32 | When IE AdditionalSpectrumEmission - v10I0 is used, 32 should be set to IE AdditionalSpectrumEmission. | NS value > 32 |
| } | | | |
| mbsfn-SubframeConfigList | Not present | | |
| mbsfn-SubframeConfigList SEQUENCE (SIZE (1..maxMBSFN-Allocations)) OF SEQUENCE { | | | MBMS |
| radioframeAllocationPeriod | n4 | | |
| radioframeAllocationOffset | 1 | | FDD |
| | 0 | | TDD |
| subframeAllocation CHOICE{ | | | |
| oneFrame | '100000' B | | FDD |
| | '000010' B | | TDD |
| } | | | |
| } | | | |
| timeAlignmentTimerCommon | sf750 | 'sf750' is applicable to the widest range of mobility (up to about 360km/h). | |
| lateNonCriticalExtension SEQUENCE { | Not present | | |
| lateNonCriticalExtension SEQUENCE { | | OCTET STRING (CONTAINING SystemInformationBlockType2 -v8h0-IEs) | NS value > 32 |
| multiBandInfoList | Not present | | |
| nonCriticalExtension SEQUENCE { | | | |
| ul-CarrierFreq-v9e0 | Not present | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | OCTET STRING (CONTAINING SystemInformationBlockType2 -v10m0-IEs) | |
| freqInfo-v10I0 SEQUENCE { | | | |
| additionalSpectrumEmission-v10I0 | Specify the network signaling value corresponding to the E-UTRA Band defined in TS 36.101 table 6.2.4-1 | | |
| multiBandInfoList-v10I0 | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |

| | | | |
|---|-------------|---|------------|
| } | | | |
| Dummy | Not present | This field is not used in the specification. If received it shall be ignored by the UE. | |
| } | | | |
| } | | | |
| } | | | |
| unicastFreqHoppingInd-r13 | true | Enabled only for CE Mode test cases requiring frequency hopping. | CEfreqHopp |
| cloT-EPS-OptimisationInfo-r13 SEQUENCE (SIZE (1.. maxPLMN-r11)) OF SEQUENCE { | | | CloT-test |
| up-CloT-EPS-Optimisation-r13 | true | | |
| cp-CloT-EPS-Optimisation-r13 | true | | |
| attachWithoutPDN-Connectivity-r13 | false | | |
| } | | | |
| useFullResumeID-r13 | Not present | | |
| plmn-InfoList-r15 | Not present | | |
| plmn-InfoList-r15 SEQUENCE (SIZE (1..maxPLMN-r11)) OF SEQUENCE { | 1 entry | | 5G |
| upperLayerIndication-r15[1] | true | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|---------------|---|
| MBMS | MBMS cell environment |
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| CEfreqHopp | Used when frequency hopping is used in CE test cases |
| CloT-test | CloT test environment |
| NS value > 32 | When A-MPR applies with Network Signaling value > 32 |
| 5G | Applicable to 5G test cases defined in TS 38.523-1 [71] |

- *SystemInformationBlockType3*

The IE *SystemInformationBlockType3* contains cell re-selection information common for intra-frequency, inter-frequency and/or inter-RAT cell re-selection (i.e. applicable for more than one type of cell re-selection but not necessarily all) as well as intra-frequency cell re-selection information other than neighbouring cell related.

Table 4.4.3.3-2: *SystemInformationBlockType3*

| Derivation Path: 36.331 clause 6.3.1 | | | |
|--|---|--|---------------------------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType3 ::= SEQUENCE { | | | |
| cellReselectionInfoCommon SEQUENCE { | | | |
| q-Hyst | dB0 | To reduce interference between intra-frequency multiple cells | |
| speedStateReselectionPars SEQUENCE {} | Not present | | |
| } | | | |
| cellReselectionServingFreqInfo SEQUENCE { | | | |
| s-NonIntraSearch | Not present | | |
| threshServingLow | 0 (0 dB) | Typical value in real network | |
| cellReselectionPriority | 4 | A middle value in the range has been selected. | |
| } | | | |
| intraFreqCellReselectionInfo SEQUENCE { | | | |
| q-RxLevMin | -70 (-140 dBm) | For RF/RRM test cases | |
| | -106 dBm | For signalling test cases | |
| p-Max | Not present | | |
| s-IntraSearch | Not present | | |
| allowedMeasBandwidth | Not present | The downlink bandwidth of the serving cell applies. | |
| presenceAntennaPort1 | FALSE | | |
| | TRUE | At least two cell-specific antenna ports are used in all neighbouring cells. | All neighCells with port1 |
| neighCellConfig | '01'B (No MBSFN subframes are present in all neighbour cells) | MBSFN doesn't apply by default. | |
| t-ReselectionEUTRA | 0 | Typical value in real network | |
| t-ReselectionEUTRA-SF | Not present | | |
| } | | | |
| lateNonCriticalExtension { | | | |
| s-IntraSearch-v920 SEQUENCE {} | Not present | | |
| s-NonIntraSearch-v920 SEQUENCE {} | Not present | | |
| q-QualMin-r9 | Not present | | |
| | -20 (-20dB) | | QBASED |
| threshServingLowQ-r9 | Not present | | |
| | 3 (3dB) | | QBASED |
| cellSelectionInfoCE-r13 | CellSelectionInfoCE-r13-DEFAULT | | CEmodeA, CEmodeB |
| | Not present | | |
| t-ReselectionEUTRA-CE-r13 | 0 | | CEmodeA, CEmodeB |
| | Not present | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|---------------------------|---|
| QBASED | See the definition below table 4.4.3.2-3. |
| All neighCells with port1 | Used for all neighbouring cells with at least two cell-specific antenna ports |
| CEmodeA | CE mode A test environment |
| CEmodeB | CE mode B test environment |

- *SystemInformationBlockType4*

The IE *SystemInformationBlockType4* contains neighbouring cell related information relevant only for intra-frequency cell re-selection. The IE includes cells with specific re-selection parameters as well as blacklisted cells.

Table 4.4.3.3-3: *SystemInformationBlockType4*

| Derivation Path: 36.331 clause 6.3.1 | | | |
|--|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| <i>SystemInformationBlockType4</i> ::= SEQUENCE { intraFreqNeighCellList SEQUENCE (SIZE (1..maxCellIntra)) OF SEQUENCE {} | Not present | Not required unless Qoffset configuration is tested. When Qoffset configuration is tested, see table 6.3.1.1-1. | |
| intraFreqBlackCellList SEQUENCE (SIZE (1..maxCellBlack)) OF SEQUENCE {} | Not present | Not required unless Blacklisted cell list configuration is tested. When Blacklisted cell list configuration is tested, see table 6.3.1.1-1. | |
| csg-PhysCellIdRange SEQUENCE {} | Not present | | NonCSG |
| csg-PhysCellIdRange SEQUENCE { start | Physical Cell ID of the cell on which this SIB is transmitted | | CSG |
| range | Not present | The UE shall apply value 1 in case the field is absent, in which case only the physical cell identity value indicated by <i>start</i> applies. | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|------------------------------------|
| NonCSG | SIB4 transmitted on a non-CSG cell |
| CSG | SIB4 transmitted on a CSG cell |

- *SystemInformationBlockType5*

The IE *SystemInformationBlockType5* contains information relevant only for inter-frequency cell re-selection i.e. information about other E-UTRA frequencies and inter-frequency neighbouring cells relevant for cell re-selection. The IE includes cell re-selection parameters common for a frequency as well as cell specific re-selection parameters.

Table 4.4.3.3-4: *SystemInformationBlockType5*

| Derivation Path: 36.331 clause 6.3.1 | | | |
|---|--|---|---------------------------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType5 ::= SEQUENCE { interFreqCarrierFreqList SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE { | | | |
| | The same number of entries as the configured inter-freq carriers. For Signalling test cases except NAS, see table 6.3.1.2-1. For NAS test cases when cells are on same PLMN, see table 6.3.2.3.2-1. | n denotes the index of the entry | |
| dl-CarrierFreq[n] | Downlink EARFCN under test For Signalling test cases except NAS, see table 6.3.1.2-1. For NAS test cases when cells are on same PLMN, see table 6.3.2.3.2-1. | | |
| dl-CarrierFreq[n] | 65535 | maxEARFCN | Band > 64 |
| q-RxLevMin[n] | -65 (-130 dBm) | For RF/RRM test cases | |
| | -106 dBm | For signalling test cases | |
| p-Max[n] | Not present | | |
| t-ReselectionEUTRA[n] | 0 | Typical value in real network | |
| t-ReselectionEUTRA-SF[n] | Not present | Not required unless speed-dependent cell re-selection is tested. | |
| threshX-High[n] | 2 (4 dB) | This value should be higher than threshServingLow of the serving cell to avoid ping-pong with lower priority cells. | |
| threshX-Low[n] | 1 (2 dB) | | |
| allowedMeasBandwidth[n] | See subclause 4.4.3.4 | Channel-bandwidth-dependent parameter | |
| presenceAntennaPort1[n] | FALSE | | |
| | TRUE | At least two cell-specific antenna ports are used in all neighbouring cells. | All neighCells with port1 |
| cellReselectionPriority[n] | 4 | The same priority as the one used for serving cell in SIB 3. | |
| neighCellConfig[n] | '01'B (No MBSFN subframes are present in all neighbour cells) | MBSFN doesn't apply by default. | |
| q-OffsetFreq[n] | dB0 | Q_{offset} doesn't apply by default. | |
| interFreqNeighCellList[n] SEQUENCE (SIZE (1..maxCellInter)) OF SEQUENCE { | Not present | Not required unless Q_{offset} configuration is tested. | |

| | | | |
|--|---|--|-----------|
| interFreqBlackCellList[n] SEQUENCE (SIZE (1..maxCellBlack)) OF SEQUENCE {} | Not present | Not required unless Blacklisted cell list configuration is tested. | |
| q-QualMin-r9[n] | Not present | | |
| | -20 (-20dB) | | QBASED |
| threshX-Q-r9[n] SEQUENCE {} | Not present | | |
| threshX-Q-r9[n] SEQUENCE { | | | QBASED |
| threshX-HighQ-r9 | 5 (5dB) | | |
| threshX-LowQ-r9 | 5 (5dB) | | |
| } | | | |
| } | | | |
| SystemInformationBlockType5-v8h0-IEs SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | Band > 64 |
| interFreqCarrierFreqList-v9e0 SEQUENCE { (SIZE (1..maxFreq)) OF SEQUENCE { | | | |
| dl-CarrierFreq-v9e0[n] | Downlink EARFCN under test For Signalling test cases except NAS, see table 6.3.1.2-1. For NAS test cases when cells are on same PLMN, see table 6.3.2.3.2-1 | | |
| } | | | |
| } | | | |
| } | | | |
| interFreqCarrierFreqList-v1250[n] SEQUENCE {} | Not present | | |
| interFreqCarrierFreqListExt-r12[n] SEQUENCE {} | Not present | | |
| interFreqCarrierFreqListExt-v1280[n] SEQUENCE {} | Not present | | |
| interFreqCarrierFreqList-v1310[n] SEQUENCE {} | Not present | | |
| interFreqCarrierFreqListExt-v1310[n] SEQUENCE {} | Not present | | |
| } | | | |

| Condition | Explanation |
|---------------------------|---|
| QBASED | See the definition below table 4.4.3.2-3. |
| All neighCells with port1 | Used for all neighbouring cells with at least two cell-specific antenna ports |
| Band > 64 | If band > 64 is selected |

- *SystemInformationBlockType6*

The IE *SystemInformationBlockType6* contains information relevant only for inter-RAT cell re-selection i.e. information about UTRA frequencies and UTRA neighbouring cells relevant for cell re-selection. The IE includes cell re-selection parameters common for a frequency.

Table 4.4.3.3-5: *SystemInformationBlockType6*

| Derivation Path: 36.331 clause 6.3.1 | | | |
|--|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType6 ::= SEQUENCE { | | | |
| carrierFreqListUTRA-FDD SEQUENCE (SIZE (1..maxUTRA-FDD-Carrier)) OF SEQUENCE { | Not present | | UTRA-TDD |
| carrierFreqListUTRA-FDD SEQUENCE (SIZE (1..maxUTRA-FDD-Carrier)) OF SEQUENCE { | The same number of entries as the configured UTRA FDD carriers For Signalling test cases, see table 6.3.1.3-1 | n denotes the index of the entry | UTRA-FDD |
| carrierFreq[n] | Downlink UARFCN under test For Signalling test cases, see table 6.3.1.3-1 | | |
| cellReselectionPriority[n] | 3 | | |
| threshX-High[n] | 2 (4 dB) | | |
| threshX-Low[n] | 1 (2 dB) | | |
| q-RxLevMin[n] | -40 (-79 dBm) | The same value as defined in TS 34.108 [5], table 6.1.1. | |
| p-MaxUTRA[n] | 21 (21 dBm) | The same value as defined in TS 34.108 [5], table 6.1.1. | |
| q-QualMin[n] | -24 (-24 dB) | The same value as defined in TS 34.108 [5], table 6.1.1. | |
| threshX-Q-r9[n] SEQUENCE { | Not present | | |
| threshX-Q-r9[n] SEQUENCE { | | | QBASED |
| threshX-HighQ-r9 | 9 (9dB) | | |
| threshX-LowQ-r9 | 9 (9dB) | | |
| } | | | |
| } | | | |
| carrierFreqListUTRA-TDD SEQUENCE (SIZE (1..maxUTRA-TDD-Carrier)) OF SEQUENCE { | Not present | | UTRA-FDD |
| carrierFreqListUTRA-TDD SEQUENCE (SIZE (1..maxUTRA-TDD-Carrier)) OF SEQUENCE { | The same number of entries as the configured UTRA TDD carriers For Signalling test cases, see table 6.3.1.3-1 | n denotes the index of the entry | UTRA-TDD |
| carrierFreq[n] | Downlink UARFCN under test For Signalling test cases, see table 6.3.1.3-1 | | |
| cellReselectionPriority[n] | 3 | | |
| threshX-High[n] | 2 (4 dB) | | |
| threshX-Low[n] | 1 (2 dB) | | |
| q-RxLevMin[n] | -41 (-81 dBm) | The same value as defined in TS 34.108 [5], table 6.1.6a | |
| p-MaxUTRA[n] | 21 (21 dBm) | The same value as defined in TS 34.108 [5], table 6.1.6a | |
| } | | | |
| t-ReselectionUTRA | 0 | Typical value in real network | |
| t-ReselectionUTRA-SF | Not present | | |
| } | | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|----------|---|
| UTRA-FDD | UTRA FDD cell environment |
| UTRA-TDD | UTRA TDD cell environment |
| QBASSED | See the definition below table 4.4.3.2-3. |

- **SystemInformationBlockType7**

The IE *SystemInformationBlockType7* contains information relevant only for inter-RAT cell re-selection i.e. information about GERAN frequencies relevant for cell re-selection. The IE includes cell re-selection parameters for each frequency.

Table 4.4.3.3-6: SystemInformationBlockType7

| Derivation Path: 36.331 clause 6.3.1 | | | |
|--|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType7 ::= SEQUENCE { | | | |
| t-ReselectionGERAN | 0 | | |
| t-ReselectionGERAN-SF | Not present | | |
| carrierFreqsInfoListSEQUENCE (SIZE (1..maxGNFG)) OF SEQUENCE { | The same number of entries as the configured GERAN carriers For RRM test cases, see table 7.2.2.1-1 For Signalling test cases, see table 6.3.1.4-1 | <i>n</i> denotes the index of the entry | |
| carrierFreqs [<i>n</i>] SEQUENCE { | | | |
| startingARFCN[<i>n</i>] | Set the corresponding starting ARFCN of the GERAN cells under test. For RRM test cases, see table 7.2.2.1-1 For Signalling test cases, see table 6.3.1.4-1 | | |
| bandIndicator[<i>n</i>] | Set according to the band used for GERAN cells under test | | |
| followingARFCNs[<i>n</i>] CHOICE { | | | |
| explicitListOfARFCNs[<i>n</i>] | Set the corresponding ARFCN of GERAN cells under test For RRM test cases, see table 7.2.2.1-1 For Signalling test cases, see table 6.3.1.4-1 | | |
| } | | | |
| } | | | |
| commonInfo[<i>n</i>] SEQUENCE { | | | |
| cellReselectionPriority[<i>n</i>] | 2 | | |
| ncc-Permitted[<i>n</i>] | '01000000'B | NCC=1 permitted | |
| q-RxLevMin[<i>n</i>] | 2 | | |
| p-MaxGERAN[<i>n</i>] | 0 | | |
| threshX-High[<i>n</i>] | 2 | | |
| threshX-Low[<i>n</i>] | 2 | | |
| } | | | |
| } | | | |
| } | | | |

- *SystemInformationBlockType8*

The IE *SystemInformationBlockType8* contains information relevant only for inter-RAT cell re-selection i.e. information about CDMA2000 frequencies and CDMA2000 neighbouring cells relevant for cell re-selection. The IE includes cell re-selection parameters common for a frequency as well as cell specific re-selection parameters.

Table 4.4.3.3-7: *SystemInformationBlockType8*

| Derivation Path: 36.331 clause 6.3.1 | | | |
|--|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType8 ::= SEQUENCE { | | | |
| systemTimeInfo SEQUENCE { | | | |
| cdma-EUTRA-Synchronisation | TRUE | | |
| cdma-SystemTime CHOICE { | | | |
| synchronousSystemTime | A valid value as per TS 36.331 and calculated by the SS | | |
| } | | | |
| } | | | |
| searchWindowSize | 5 | | |
| parametersHRPD SEQUENCE {} | Not present | | 1XRTT |
| parametersHRPD SEQUENCE { | | | HRPD |
| preRegistrationInfoHRPD SEQUENCE { | | | |
| preRegistrationAllowed | FALSE | | |
| preRegistrationZoned | Not present | | |
| secondaryPreRegistrationZonedList | Not present | | |
| } | | | |
| cellReselectionParametersHRPD SEQUENCE { | | | |
| bandClassList SEQUENCE (SIZE (1..maxCDMA-BandClass)) OF SEQUENCE { | 1 entry | | |
| bandClass | Operating band class under test. | ENUMERATED {bc0, bc1, bc2, bc3, bc4, bc5, bc6, bc7, bc8, bc9, bc10, bc11, bc12, bc13, bc14, bc15, bc16, bc17, spare14, spare13, spare12, spare11, spare10, spare9, spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1, ...} | |
| cellReselectionPriority | 1 | | |
| threshX-High | 30(-30) | INTEGER (0..63) | |
| threshX-Low | 32(-32) | INTEGER (0..63) | |
| } | | | |
| neighCellList SEQUENCE (SIZE (1..16)) OF SEQUENCE { | 1 entry | | |
| bandClass | Operating band class under test | ENUMERATED {bc0, bc1, bc2, bc3, bc4, bc5, bc6, bc7, bc8, bc9, bc10, bc11, bc12, bc13, bc14, bc15, bc16, bc17, spare14, spare13, spare12, spare11, spare10, spare9, spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1, ...} | |
| neighCellsPerFreqList SEQUENCE (SIZE (1..16)) OF SEQUENCE { | The same number of entries as the configured CDMA2000 HRPD frequencies For Signalling test cases, see table 6.3.1.5-1 | <i>n</i> denotes the index of the entry | |

| | | | |
|--|---|---|-------|
| arfcn[n] | ARFCN of the CDMA2000 HRPD frequency For Signalling test cases, see table 6.3.1.5-1 | INTEGER (0..2047) | |
| physCellIdList[n] SEQUENCE (SIZE (1..16)) OF {INTEGER (0..maxPNOffset) } | Physical Cell ID List of the CDMA2000 HRPD frequency For Signalling test cases, see table 6.3.1.5-1 | INTEGER (0..maxPNOffset) | |
| } | | | |
| } | | | |
| t-ReselectionCDMA2000 | 0 | INTEGER (0..7) | |
| t-ReselectionCDMA2000-SF | Not Present | | |
| } | | | |
| } | | | |
| parameters1XRTT SEQUENCE { | Not present | | HRPD |
| parameters1XRTT SEQUENCE { | | | 1XRTT |
| csfb-RegistrationParam1XRTT SEQUENCE { | | | |
| longCodeState1XRTT | A valid value, calculated and updated by the SS | BIT STRING (SIZE (42)) OPTIONAL | |
| cellReselectionParameters1XRTT SEQUENCE { | | | |
| bandClassList SEQUENCE (SIZE (1..maxCDMA-BandClass)) OF SEQUENCE { | 1 entry | | |
| bandClass | Operating band class under test | ENUMERATED {bc0, bc1, bc2, bc3, bc4, bc5, bc6, bc7, bc8, bc9, bc10, bc11, bc12, bc13, bc14, bc15, bc16, bc17, spare14, spare13, spare12, spare11, spare10, spare9, spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1, ...} | |
| cellReselectionPriority | 0 | | |
| threshX-High | 30(-30) | INTEGER (0..63) | |
| threshX-Low | 32(-32) | INTEGER (0..63) | |
| } | | | |
| neighCellList SEQUENCE (SIZE (1..16)) OF SEQUENCE { | 1 entry | | |
| bandClass | Operating band class under test | ENUMERATED {bc0, bc1, bc2, bc3, bc4, bc5, bc6, bc7, bc8, bc9, bc10, bc11, bc12, bc13, bc14, bc15, bc16, bc17, spare14, spare13, spare12, spare11, spare10, spare9, spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1, ...} | |
| neighCellsPerFreqList SEQUENCE (SIZE (1..16)) OF SEQUENCE { | The same number of entries as the configured CDMA2000 1xRTT frequencies For Signalling test cases, see table 6.3.1.6-1 | <i>n</i> denotes the index of the entry | |

| | | | |
|--|---|--------------------------|--|
| arfcn[n] | ARFCN of the CDMA2000 1xRTT frequency For Signalling test cases, see table 6.3.1.6-1 | INTEGER (0..2047) | |
| physCellIdList[n] SEQUENCE (SIZE (1..16)) OF {INTEGER (0..maxPNOffset) } | Physical Cell ID List of the CDMA2000 1xRTT frequency For Signalling test cases, see table 6.3.1.6-1 | INTEGER (0..maxPNOffset) | |
| } | | | |
| } | | | |
| t-ReselectionCDMA2000 | 0 | INTEGER (0..7) | |
| t-ReselectionCDMA2000-SF | Not Present | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|---------------------------------|
| HRPD | CDMA2000 HRPD cell environment |
| 1XRTT | CDMA2000 1XRTT cell environment |

- *SystemInformationBlockType9*

The IE *SystemInformationBlockType9* contains a home eNB name (HNB Name).

Table 4.4.3.3-8: SystemInformationBlockType9

| Derivation Path: 36.331 clause 6.3.1 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType9 ::= SEQUENCE { | | | |
| hnb-Name | "3gppTest" | | |
| } | | | |

- *SystemInformationBlockType10*

The IE *SystemInformationBlockType10* contains an ETWS primary notification.

Table 4.4.3.3-9: *SystemInformationBlockType10*

| Derivation Path: 36.331 clause 6.3.1 | | | |
|---|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType10 ::= SEQUENCE { | | | |
| messageIdentifier | '0001 0001 0000 0010'B | ETWS message identifier for earthquake and tsunami message [see TS 23.041] | |
| serialNumber - Geographical Scope (2 bit) - Message Code (10 bit) - Emergency User Alert (1 bit) - Popup (1 bit) - Update Number (4 bit) | '0011 0000 0000 0000'B Octet 1 bit 7 ~ 6 Octet 1 bit 5 ~ Octet 2 bit 4 Octet 1 bit 5 Octet 1 bit 4 Octet 2 bit 3 ~ 0 | Cell wide; '11 0000 0000'B Activate emergency user alert; Activate popup; For each update, incremented by one. [see TS 23.041] | |
| warningType - Warning Type Value (7 bit) - Emergency User Alert (1 bit) - Popup (1 bit) - Padding (7 bit) | '0000 0101 1000 0000'B Octet 1 bit 7 ~ 1 Octet 1 bit 0 Octet 2 bit 7 Octet 2 bit 6 ~ bit 0 | Earthquake and Tsunami; Activate emergency user alert; Activate Popup. [see TS 23.041] '000 0000'B | |
| warningSecurityInfo | Not present | | |
| } | | | |

- *SystemInformationBlockType11*

The IE *SystemInformationBlockType11* contains an ETWS secondary notification.

Table 4.4.3.3-10: *SystemInformationBlockType11* (1st Segment)

| Derivation Path: 36.331 clause 6.3.1 | | | |
|---|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| <i>SystemInformationBlockType11</i> ::= SEQUENCE { | | | |
| messageIdentifier | '0001 0001 0000 0010'B | ETWS message identifier for earthquake and tsunami message [see TS 23.041] | |
| serialNumber - Geographical Scope (2 bit) - Message Code (10 bit) - Emergency User Alert (1 bit) - Popup (1 bit) - Update Number (4 bit) | '0011 0000 0000 0000'B Octet 1 bit 7 ~ 6 Octet 1 bit 5 ~ Octet 2 bit 4 Octet 1 bit 5 Octet 1 bit 4 Octet 2 bit 3 ~ 0 | Cell wide; '11 0000 0000'B Activate emergency user alert; Activate popup; For each update, incremented by one. [see TS 23.041] | |
| warningMessageSegmentType | notLastSegment | | |
| warningMessageSegmentNumber | 0 | | |
| warningMessageSegment | Octetstring of N | where $N \geq 1$ and less than 1246. [see TS 23.041] | |
| dataCodingScheme | Bitstring (8) ID of the alphabet/coding and the applied language [see TS 23.041] | Provided as PIXITs [see TS 36.523-3 [20] cl. 9] | |
| } | | | |

Table 4.4.3.3-11: SystemInformationBlockType11 (2nd Segment)

| Derivation Path: 36.331 clause 6.3.1 | | | |
|--|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType11 ::= SEQUENCE { | | | |
| messageIdentifier | '0001 0001 0000 0010'B | ETWS message identifier for earthquake and tsunami message [see TS 23.041] | |
| serialNumber - Geographical Scope (2 bit) | '0011 0000 0000 0000'B Octet 1 bit 7 ~ 6 | Cell wide; | |
| - Message Code (10 bit) | Octet 1 bit 5 ~ Octet 2 bit 4 | '11 0000 0000'B | |
| - Emergency User Alert (1 bit) | Octet 1 bit 5 | Activate emergency user alert; | |
| - Popup (1 bit) | Octet 1 bit 4 | Activate popup; | |
| - Update Number (4 bit) | Octet 2 bit 3 ~ 0 | For each update, incremented by one. [see TS 23.041] | |
| warningMessageSegmentType | notLastSegment | | |
| warningMessageSegmentNumber | 1 | | |
| warningMessageSegment | Octetstring of N | where N ≥ 1 and less than 1246. [see TS 23.041] | |
| dataCodingScheme | Not present | | |
| } | | | |

Table 4.4.3.3-12: SystemInformationBlockType11 (3rd Segment)

| Derivation Path: 36.331 clause 6.3.1 | | | |
|--|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType11 ::= SEQUENCE { | | | |
| messageIdentifier | '0001 0001 0000 0010'B | ETWS message identifier for earthquake and tsunami message [see TS 23.041] | |
| serialNumber - Geographical Scope (2 bit) | '0011 0000 0000 0000'B Octet 1 bit 7 ~ 6 | Cell wide; | |
| - Message Code (10 bit) | Octet 1 bit 5 ~ Octet 2 bit 4 | '11 0000 0000'B | |
| - Emergency User Alert (1 bit) | Octet 1 bit 5 | Activate emergency user alert; | |
| - Popup (1 bit) | Octet 1 bit 4 | Activate popup; | |
| - Update Number (4 bit) | Octet 2 bit 3 ~ 0 | For each update, incremented by one. [see TS 23.041] | |
| warningMessageSegmentType | lastSegment | | |
| warningMessageSegmentNumber | 2 | | |
| warningMessageSegment | Octetstring of N | where N ≥ 1 and less than 1246. [see TS 23.041] | |
| dataCodingScheme | Not present | | |
| } | | | |

- *SystemInformationBlockType12*

The IE *SystemInformationBlockType12* contains an CMAS notification.

Table 4.4.3.3-12a: *SystemInformationBlockType12* (1st Segment)

| Derivation Path: 36.331 clause 6.3.1 | | | |
|---|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType11 ::= SEQUENCE { | | | |
| messageIdentifier-r9 | '0001 0001 0001 0010'B | CMAS CBS Message Identifier for CMAS Presidential Level Alerts (see TS 23.041)) | |
| serialNumber-r9 | '0011 0000 0000 0000'B | | |
| warningMessageSegmentType | notLastSegment | | |
| warningMessageSegmentNumber | 0 | | |
| warningMessageSegment | Octetstring of N | where N ≥ 1 and less than 1246. (see TS 23.041) | |
| dataCodingScheme | -Bitstring (8) ID of the alphabet/coding and the applied language [see TS 23.041] | Provided as PIXITs [see TS 36.523-3 [20] cl. 9] | |
| lateNonCriticalExtension | Not present | | |
| } | | | |

Table 4.4.3.3-12b: *SystemInformationBlockType12* (2nd Segment)

| Derivation Path: 36.331 clause 6.3.1 | | | |
|---|------------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType11 ::= SEQUENCE { | | | |
| messageIdentifier-r9 | '0001 0001 0001 0010'B | CMAS CBS Message Identifier for CMAS Presidential Level Alerts (see TS 23.041) | |
| serialNumber-r9 | '0011 0000 0000 0000'B | | |
| warningMessageSegmentType | notLastSegment | | |
| warningMessageSegmentNumber | 1 | | |
| warningMessageSegment | Octetstring of N | where N ≥ 1 and less than 1246. (see TS 23.041) | |
| dataCodingScheme | Not present | | |
| lateNonCriticalExtension | Not present | | |
| } | | | |

Table 4.4.3.3-12c: *SystemInformationBlockType12* (3rd Segment)

| Derivation Path: 36.331 clause 6.3.1 | | | |
|---|------------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType11 ::= SEQUENCE { | | | |
| messageIdentifier-r9 | '0001 0001 0001 0010'B | CMAS CBS Message Identifier for CMAS Presidential Level Alerts (see TS 23.041) | |
| serialNumber-r9 | '0011 0000 0000 0000'B | | |
| warningMessageSegmentType | lastSegment | | |
| warningMessageSegmentNumber | 2 | | |
| warningMessageSegment | Octetstring of N | where N ≥ 1 and less than 1246. (see TS 23.041) | |
| dataCodingScheme | Not present | | |
| lateNonCriticalExtension | Not present | | |
| } | | | |

- *SystemInformationBlockType13*

The IE *SystemInformationBlockType13* contains the information required to acquire the MBMS control information associated with one or more MBSFN areas.

Table 4.4.3.3-13: *SystemInformationBlockType13*

| Derivation Path: 36.331 clause 6.3.1 | | | |
|---|--------------|-------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType13 ::= SEQUENCE { | | | |
| mbsfn-AreaInfoList-r9 SEQUENCE | | | |
| (SIZE(1..maxMBSFN-Area)) OF SEQUENCE { | | | |
| mbsfn-Areaid-r9 | 0 | | |
| non-MBSFNregionLength | 2 | | |
| notificationIndicator-r9 | 0 | | |
| mcch-Config-r9 SEQUENCE { | | | |
| mcch-RepetitionPeriod-r9 | rf32 | | |
| mcch-Offset-r9 | 1 | | FDD |
| | 0 | | TDD |
| mcch-ModificationPeriod-r9 | rf512 | | |
| sf-AllocInfo-r9 | '100000'B | | FDD |
| | '000010'B | | TDD |
| signallingMCS-r9 | n2 | | |
| } | | | |
| } | | | |
| notificationConfig-r9 SEQUENCE { | | | |
| notificationRepetitionCoeff-r9 | n4 | | |
| notificationOffset-r9 | 1 | | FDD |
| | 0 | | TDD |
| notificationSF-Index-r9 | 1 | Subframe #1 | FDD |
| | 5 | Subframe #9 | TDD |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

- *SystemInformationBlockType14*

The IE *SystemInformationBlockType14* contains the EAB parameters.

Table 4.4.3.3-13A: SystemInformationBlockType14

| Derivation Path: 36.331 clause 6.3.1 | | | |
|---|---------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType14-r11 ::= SEQUENCE { | | | |
| eab-Param-r11 CHOICE { | | | |
| EAB-Config-r11 ::= SEQUENCE { | | | |
| eab-Category-r11 | a | EAB applies to all UEs in the PLMN ENUMERATED {a, b, c} | |
| eab-BarringBitmap-r11 | '1111111111'B | All UE classes 0-9 BIT STRING (SIZE (10)) | |
| } | | | |
| } | | | |
| lateNonCriticalExtension | Not Present | | |
| } | | | |

- **SystemInformationBlockType15**

The IE *SystemInformationBlockType15* contains the MBMS Service Area Identities (SAI) of the current and/ or neighbouring carrier frequencies.

Table 4.4.3.3-14: SystemInformationBlockType15

| Derivation Path: 36.331 clause 6.3.1 | | | |
|--|---|--|--|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType15 ::= SEQUENCE { | | | |
| mbms-SAI-IntraFreq-r11[1] SEQUENCE (SIZE (1..maxSAI-MBMS-r11)) OF { INTEGER (0..65535) } | 1 | 1 entry INTEGER (0..65535) | |
| mbms-SAI-InterFreqList-r11 | Not present | | MBMS_intra Freq, SCPTM_intraFreq |
| mbms-SAI-InterFreqList-r11[n] SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE { | The same number of entries as the configured inter-freq carriers providing the MBMS service in the test case (including additional bands, if any) | <i>n</i> denotes the index of the entry | MBMS_inter Freq, SCPTM_interFreq |
| dl-CarrierFreq-r11 | Downlink EARFCN under test, see table 6.3.1.2-1. | | |
| mbms-SAI-List-r11[n] SEQUENCE (SIZE (1..maxSAI-MBMS-r11)) OF { INTEGER (0..65535) } | The same number of entries as the configured MBMS SAIs providing the MBMS service in the test case for the specific frequency | <i>n</i> denotes the index of the entry INTEGER (0..65535) | |
| lateNonCriticalExtension | Not present | | MBMS_intra Freq, MBMS_inter Freq, SCPTM_intraFreq, SCPTM_interFreq |
| } | | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|-----------------|--|
| MBMS_intraFreq | SIB15 transmitted for a MBMS intra-band cell environment (MBMS service only provided for intra-frequency cells). |
| MBMS_interFreq | SIB15 transmitted for a MBMS inter-frequency cell environment (MBMS service provided on multiple frequencies within a band). |
| SCPTM_intraFreq | SIB15 transmitted for a SC-PTM intra-band cell environment (SC-PTM service only provided for intra-frequency cells). |
| SCPTM_interFreq | SIB15 transmitted for a SC-PTM inter-frequency cell environment (SC-PTM service provided on multiple frequencies within a band). |

- **SystemInformationBlockType17**

The IE *SystemInformationBlockType17* contains information relevant for RAN Assisted WLAN interworking

Table 4.4.3.3-15: SystemInformationBlockType17

| Derivation Path: 36.331 clause 6.3.1 | | | |
|--|----------------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType17-r12 ::= SEQUENCE { | | | |
| wlan-OffloadInfoPerPLMN-List-r12 [1] SEQUENCE (SIZE (1..maxPLMN-r11)) OF { | | 1 Entry | |
| wlan-OffloadConfigCommon-r12 | WLAN-OffloadConfig-DEFAULT | | |
| wlan-Id-List-r12 [1] SEQUENCE (SIZE (1..maxWLAN-Id-r12)) OF { | | 1 Entry | |
| wlan-Identifiers SEQUENCE{ | | | |
| ssid-r12 | Set as per Table 4.4.8-1 | OCTET STRING (SIZE (1..32)) Service Set Identifier (SSID) defined in IEEE 802.11-2012 | |
| bssid-r12 | Not present | | |
| hessid-r12 | Not present | | |
| } | | | |
| } | | | |
| lateNonCriticalExtension | Not present | | |
| } | | | |

- **SystemInformationBlockType18**

The IE *SystemInformationBlockType18* contains the resource pool information for sidelink direct communication.

Table 4.4.3.3-16: SystemInformationBlockType18

| Derivation Path: 36.331 clause 6.3.1 | | | |
|---|--|--|-------------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType18-r12 ::= SEQUENCE { commConfig-r12 SEQUENCE { | | | |
| commRxPool-r12 SEQUENCE (SIZE (1..maxSL-RxPool-r12)) OF SL-CommResourcePool-r12 { | | 3 Rx pools | |
| SL-CommResourcePool-r12[1] SEQUENCE { | | RxPool 1 A monitoring UE can receive on the resources of this pool when a transmitting UE uses the TxPoolNormal 1 | |
| sc-CP-Len-r12 | normal | | |
| sc-Period-r12 | sf40 | | |
| sc-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 25 | | BW5 BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 49 | | BW5 BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |
| subframeBitmap-r12 | 11000000 00000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| data-CP-Len-r12 | normal | | |
| dataHoppingConfig-r12 SEQUENCE { | | | |
| hoppingParameter-r12 | 0 | | |
| numSubbands-r12 | ns1 | | |
| rb-Offset-r12 | 0 | | |
| } | | | |
| ue-SelectedResourceConfig-r12 SEQUENCE { | | | |
| data-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 25 | | BW5 BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 49 | | BW5 BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |
| subframeBitmap-r12 | 00000000 00000000 11110000 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| trpt-Subset-r12 | 001 | | |
| } | | | |
| rxParametersNCell-r12 | Not present | | |
| txParameters-r12 | Not present | | |
| } | | | |
| SL-CommResourcePool-r12[2] SEQUENCE { | | RxPool 2 A monitoring UE can receive on the resources of this pool when a transmitting UE uses the TxPoolNormal 2 | |
| sc-CP-Len-r12 | normal | | |
| sc-Period-r12 | sf40 | | |

| | | | |
|--|--|---|------|
| sc-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 | | BW5 |
| | 25 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 | | BW5 |
| | 49 | | BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |
| subframeBitmap-r12 | 00110000 00000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| data-CP-Len-r12 | normal | | |
| dataHoppingConfig-r12 SEQUENCE { | | | |
| hoppingParameter-r12 | 0 | | |
| numSubbands-r12 | ns1 | | |
| rb-Offset-r12 | 0 | | |
| } | | | |
| ue-SelectedResourceConfig-r12 SEQUENCE { | | | |
| data-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 | | BW5 |
| | 25 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 | | BW5 |
| | 49 | | BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |
| subframeBitmap-r12 | 00000000 00000000 00111100 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| trpt-Subset-r12 | 001 | | |
| } | | | |
| rxParametersNCell-r12 SEQUENCE { | | | |
| tdd-Config-r12 SEQUENCE {} | Not present | | |
| syncConfigIndex-r12 | 1 | Entry 2 in discSyncConfig-r12 (SL-SyncConfig-r12[2]) | |
| } | | | |
| txParameters-r12 | Not present | | |
| } | | | |
| SL-CommResourcePool-r12[3] SEQUENCE { | | RxPool 3 | |
| | | A monitoring UE can receive on the resources of this pool when a transmitting UE uses the TxPoolExceptional 1 | |
| sc-CP-Len-r12 | normal | | |
| sc-Period-r12 | sf40 | | |
| sc-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 | | BW5 |
| | 25 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 | | BW5 |
| | 49 | | BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |

| | | | |
|--|--|-------------------|------|
| subframeBitmap-r12 | 00001100 00000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| data-CP-Len-r12 | normal | | |
| dataHoppingConfig-r12 SEQUENCE { | | | |
| hoppingParameter-r12 | 0 | | |
| numSubbands-r12 | ns1 | | |
| rb-Offset-r12 | 0 | | |
| } | | | |
| ue-SelectedResourceConfig-r12 SEQUENCE { | | | |
| data-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 | | BW5 |
| | 25 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 | | BW5 |
| | 49 | | BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |
| subframeBitmap-r12 | 00000000 00000000 00001111 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| trpt-Subset-r12 | 001 | | |
| } | | | |
| rxParametersNCell-r12 | Not present | | |
| txParameters-r12 | Not present | | |
| } | | | |
| commTxPoolNormalCommon-r12 SEQUENCE (SIZE (1..maxSL-TxPool-r12)) OF SL- CommResourcePool-r12 { | | 2 Tx pools Normal | |
| SL-CommResourcePool-r12[1] SEQUENCE { | | TxPool 1 | |
| sc-CP-Len-r12 | normal | | |
| sc-Period-r12 | sf40 | | |
| sc-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 | | BW5 |
| | 25 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 | | BW5 |
| | 49 | | BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |
| subframeBitmap-r12 | 11000000 00000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| data-CP-Len-r12 | normal | | |
| dataHoppingConfig-r12 SEQUENCE { | | | |
| hoppingParameter-r12 | 0 | | |
| numSubbands-r12 | ns1 | | |
| rb-Offset-r12 | 0 | | |
| } | | | |
| ue-SelectedResourceConfig-r12 SEQUENCE { | | | |
| data-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 | | BW5 |
| | 25 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 | | BW5 |
| | 49 | | BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |

| | | | |
|--|--|-----------|------|
| subframeBitmap-r12 | 00000000 00000000 11110000 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| trpt-Subset-r12 | 001 | | |
| } | | | |
| rxParametersNCell-r12 | Not present | | |
| txParameters-r12 SEQUENCE { | | | |
| sc-TxParameters-r12 SEQUENCE { | | | |
| alpha-r12 | al0 | | |
| p0-r12 | 31 | | |
| } | | | |
| dataTxParameters-r12 SEQUENCE { | | | |
| alpha-r12 | al0 | | |
| p0-r12 | 0 | | |
| } | | | |
| } | | | |
| } | | | |
| SL-CommResourcePool-r12[2] SEQUENCE { | | TxPool 2 | |
| sc-CP-Len-r12 | normal | | |
| sc-Period-r12 | sf40 | | |
| sc-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 | | BW5 |
| | 25 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 | | BW5 |
| | 49 | | BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |
| subframeBitmap-r12 | 00110000 00000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| data-CP-Len-r12 | normal | | |
| dataHoppingConfig-r12 SEQUENCE { | | | |
| hoppingParameter-r12 | 0 | | |
| numSubbands-r12 | ns1 | | |
| rb-Offset-r12 | 0 | | |
| } | | | |
| ue-SelectedResourceConfig-r12 SEQUENCE { | | | |
| data-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 | | BW5 |
| | 25 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 | | BW5 |
| | 49 | | BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |
| subframeBitmap-r12 | 00000000 00000000 00111100 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| trpt-Subset-r12 | 001 | | |
| } | | | |
| rxParametersNCell-r12 | Not present | | |
| txParameters-r12 SEQUENCE { | | | |
| sc-TxParameters-r12 SEQUENCE { | | | |
| alpha-r12 | al0 | | |
| p0-r12 | 31 | | |
| } | | | |
| dataTxParameters-r12 SEQUENCE { | | | |
| alpha-r12 | al0 | | |

| | | | |
|--|--|---|------|
| p0-r12 | 0 | | |
| } | | | |
| } | | | |
| } | | | |
| commTxPoolExceptional-r12 SEQUENCE (SIZE (1..maxSL-TxPool-r12)) OF SL-CommResourcePool-r12 { | | 1 Tx pool Exceptional | |
| SL-CommResourcePool-r12[1] SEQUENCE { | | TxExceptionalPool 1 | |
| sc-CP-Len-r12 | normal | | |
| sc-Period-r12 | sf40 | | |
| sc-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 | | BW5 |
| | 25 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 | | BW5 |
| | 49 | | BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |
| subframeBitmap-r12 | 00001100 00000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| data-CP-Len-r12 | normal | | |
| dataHoppingConfig-r12 SEQUENCE { | | | |
| hoppingParameter-r12 | 0 | | |
| numSubbands-r12 | ns1 | | |
| rb-Offset-r12 | 0 | | |
| } | | | |
| ue-SelectedResourceConfig-r12 SEQUENCE { | | | |
| data-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 | | BW5 |
| | 25 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 | | BW5 |
| | 49 | | BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |
| subframeBitmap-r12 | 00000000 00000000 00001111 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| trpt-Subset-r12 | 001 | | |
| } | | | |
| rxParametersNCell-r12 | Not present | | |
| txParameters-r12 SEQUENCE { | | | |
| sc-TxParameters-r12 SEQUENCE { | | | |
| alpha-r12 | al0 | | |
| p0-r12 | 31 | | |
| } | | | |
| dataTxParameters-r12 SEQUENCE { | | | |
| alpha-r12 | al0 | | |
| p0-r12 | 0 | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| commSyncConfig-r12 SEQUENCE (SIZE (1..maxSL-SyncConfig-r12)) OF SL-SyncConfig-r12 { | | 2 configuration reception/transmission of synchronisation signals | |

| | | | |
|---|--|--|--|
| SL-SyncConfig-r12[1] SEQUENCE { | | SyncConfig 1 | |
| | | To be used for transmission | |
| syncCP-Len-r12 | normal | | |
| syncOffsetIndicator-r12 | 2 | | |
| slssid-r12 | 30 | | |
| txParameters-r12 SEQUENCE { | | | |
| syncTxParameters-r12 SEQUENCE { | | | |
| alpha-r12 | al0 | | |
| p0-r12 | 31 | | |
| } | | | |
| syncTxThreshIC-r12 | 7 | -85dBm The threshold for starting transmission of SLSS | |
| } | | | |
| rxParamsNCell-r12 | Not present | | |
| } | | | |
| SL-SyncConfig-r12[2] SEQUENCE { | | SyncConfig 2 | |
| | | To be used for reception. RxPool Pool 2 is referring to this SyncConfig 2 | |
| syncCP-Len-r12 | normal | | |
| syncOffsetIndicator-r12 | 25 | | |
| slssid-r12 | 40 | | |
| txParameters-r12 | Not Present | | |
| rxParamsNCell-r12 SEQUENCE { | | | |
| physCellId-r12 | Set to the physical cell identity of the PCell | | |
| discSyncWindow-r12 | w1 | | |
| } | | | |
| } | | | |
| } | | | |
| lateNonCriticalExtension | Not present | | |
| } | | | |
| Note 1: For convenience the difference between the different pools is only in the relevant setting of the <i>subframeBitmap</i> . | | | |
| Note 2: Note that the resources defined by the first entry in <i>preconfigComm</i> defined in clause 6.8.1.1 (used for transmission by an out of coverage UE) should not overlap (see TS 36.331 [17], clause 9.3.2) with those of the pool(s) covering scheduled transmissions by in coverage UEs which are defined here for SIB18. | | | |

| Condition | Explanation |
|-----------|---|
| BW5 | 5 MHz channel bandwidth cell environment |
| BW10 | 10 MHz channel bandwidth cell environment |
| FDD | FDD cell environment |

- *SystemInformationBlockType19*

The IE *SystemInformationBlockType19* contains the resource pool information for sidelink direct discovery.

Table 4.4.3.3-17: SystemInformationBlockType19

| Derivation Path: 36.331 clause 6.3.1 | | | |
|---|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType19-r12 ::= SEQUENCE { discConfig-r12 SEQUENCE { | | | |
| discRxPool-r12 SEQUENCE SIZE (1..maxSL-TxPool-r12) OF SL-DiscResourcePool-r12 { | | 2 RxPools For convenience the difference between the pools is only in <i>subframeBitmap</i> . | |
| SL-DiscResourcePool-r12[1] SEQUENCE { | | RxPool 1 A monitoring UE can receive on the resources of this pool when a transmitting UE uses the TxPoolCommon 1 | |
| cp-Len-r12 | normal | | |
| discPeriod-r12 | rf128 | | |
| numRetx-r12 | 0 | | |
| numRepetition-r12 | 1 | | |
| tf-ResourceConfig-r12 SEQUENCE { | | SL-TF-ResourceConfig-r12 | |
| prb-Num-r12 | 12 | | BW5 |
| | 24 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 23 | | BW5 |
| | 48 | | BW10 |
| offsetIndicator-r12 | 160 | small-r12 | FDD |
| | 163 | | TDD |
| subframeBitmap-r12 | 11000000 00000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| | 11000000 00000000 | bs16-r12 | TDD |
| } | | | |
| txParameters-r12 | Not present | | |
| rxParameters-r12 | Not present | | |
| } | | | |
| SL-DiscResourcePool-r12[2] SEQUENCE { | | RxPool 2 A monitoring UE can receive on the resources of this pool when a transmitting UE uses the TxPoolCommon 2 | |
| cp-Len-r12 | normal | | |
| discPeriod-r12 | rf128 | | |
| numRetx-r12 | 0 | | |
| numRepetition-r12 | 1 | | |
| tf-ResourceConfig-r12 SEQUENCE { | | SL-TF-ResourceConfig-r12 | |
| prb-Num-r12 | 12 | | BW5 |
| | 24 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 23 | | BW5 |
| | 48 | | BW10 |
| offsetIndicator-r12 | 160 | small-r12 | FDD |

| | | | |
|---|--|--|------|
| | 163 | | TDD |
| subframeBitmap-r12 | 00110000 00000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| | 00110000 00000000 | bs16-r12 | TDD |
| } | | | |
| txParameters-r12 | Not present | | |
| rxParameters-r12 | Not present | | |
| } | | | |
| discTxPoolCommon-r12 SEQUENCE SIZE (1..maxSL-TxPool-r12) OF SL-DiscResourcePool-r12 { | | 2 TxPools For convenience the difference between the pools is only in <i>subframeBitmap</i> . | |
| SL-DiscResourcePool-r12[1] SEQUENCE { | | TxPool 1 | |
| cp-Len-r12 | normal | | |
| discPeriod-r12 | rf128 | | |
| numRetx-r12 | 0 | | |
| numRepetition-r12 | 1 | | |
| tf-ResourceConfig-r12 SEQUENCE { | | SL-TF- ResourceConfig- r12 | |
| prb-Num-r12 | 12 | | BW5 |
| | 24 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 23 | | BW5 |
| | 48 | | BW10 |
| offsetIndicator-r12 | 160 | small-r12 | FDD |
| | 163 | | TDD |
| subframeBitmap-r12 | 11000000 00000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| bs42-r12 | 11000000 00000000 | bs16-r12 | TDD |
| } | | | |
| txParameters-r12 SEQUENCE { | | | |
| txParametersGeneral-r12 SEQUENCE { | | SL-TxParameters- r12 | |
| alpha-r12 | al0 | | |
| p0-r12 | 31 | P0-SL-r12 | |
| } | | | |
| ue-SelectedResourceConfig-r12 SEQUENCE { | | | |
| poolSelection-r12 | NULL | random-r12 | |
| txProbability-r12 | p100 | | |
| } | | | |
| } | | | |
| rxParameters-r12 | Not present | | |
| } | | | |
| SL-DiscResourcePool-r12[2] SEQUENCE { | | TxPool 2 | |
| cp-Len-r12 | normal | | |
| discPeriod-r12 | rf128 | | |
| numRetx-r12 | 0 | | |
| numRepetition-r12 | 1 | | |
| tf-ResourceConfig-r12 SEQUENCE { | | SL-TF- ResourceConfig- r12 | |
| prb-Num-r12 | 12 | | BW5 |
| | 24 | | BW10 |

| | | | |
|--|--|---|------|
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 23 | | BW5 |
| | 48 | | BW10 |
| offsetIndicator-r12 | 160 | small-r12 | FDD |
| | 163 | | TDD |
| subframeBitmap-r12 | 00110000 00000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| | 00110000 00000000 | bs16-r12 | TDD |
| } | | | |
| txParameters-r12 SEQUENCE { | | | |
| txParametersGeneral-r12 SEQUENCE { | | SL-TxParameters-r12 | |
| alpha-r12 | al0 | | |
| p0-r12 | 31 | P0-SL-r12 | |
| } | | | |
| ue-SelectedResourceConfig-r12 SEQUENCE { | | | |
| poolSelection-r12 | NULL | random-r12 | |
| txProbability-r12 | p100 | | |
| } | | | |
| rxParameters-r12 | Not Present | | |
| } | | | |
| discTxPowerInfo-r12 SEQUENCE (SIZE (maxSL-DiscPowerClass-r12)) OF SL-DiscTxPowerInfo-r12 { | | | |
| SL-DiscTxPowerInfo-r12[1] SEQUENCE { | | UE range class 'short' | |
| discMaxTxPower-r12 | 23 | | |
| } | | | |
| SL-DiscTxPowerInfo-r12[2] SEQUENCE { | | UE range class 'medium' | |
| discMaxTxPower-r12 | 16 | | |
| } | | | |
| SL-DiscTxPowerInfo-r12[3] SEQUENCE { | | UE range class 'long' | |
| discMaxTxPower-r12 | 10 | | |
| } | | | |
| discSyncConfig-r12 SEQUENCE (SIZE (1..maxSL-SyncConfig-r12)) OF SL-SyncConfig-r12 { | 2 configurations reception/transmission of synchronisation signals | | |
| SL-SyncConfig-r12[1] SEQUENCE { | SyncConfig 1 | To be used for transmission | |
| syncCP-Len-r12 | normal | | |
| syncOffsetIndicator-r12 | 35 | | |
| slssid-r12 | 30 | | |
| txParameters-r12 SEQUENCE { | | | |
| syncTxParameters-r12 SEQUENCE { | | SL-TxParameters-r12 | |
| alpha-r12 | al0 | | |
| p0-r12 | 31 | | |
| } | | | |
| syncTxThreshIC-r12 | 0 | (-infinity) SLSS will not be transmitted | |
| syncInfoReserved-r12 | Not Present | | |
| } | | | |
| rxParamsNCell-r12 SEQUENCE {} | Not present | | |
| } | | | |
| SL-SyncConfig-r12[2] SEQUENCE { | SyncConfig 2 | | |
| syncCP-Len-r12 | normal | | |
| syncOffsetIndicator-r12 | 25 | | |

| | | | |
|---------------------------------|--|---|--|
| slssid-r12 | 40 | | |
| txParameters-r12 SEQUENCE { | | | |
| syncTxParameters-r12 SEQUENCE { | | SL-TxParameters-r12 | |
| alpha-r12 | al0 | | |
| p0-r12 | 4 | | |
| } | | | |
| syncTxThreshIC-r12 | 7 | -85dBm The threshold for starting transmission of SLSS | |
| syncInfoReserved-r12 | Not Present | | |
| } | | | |
| rxParamsNCell-r12 SEQUENCE { | | | |
| physCellId-r12 | Set to the physical cell identity of the PCell | | |
| discSyncWindow-r12 | w1 | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| discInterFreqList-r12 | Not present | | |
| lateNonCriticalExtension | | | |
| ... | | | |
| } | | | |

| Condition | Explanation |
|-----------|---|
| FDD | FDD cell environment |
| TDD | TDD cell environment (TDD config 1) |
| BW5 | 5 MHz channel bandwidth cell environment |
| BW10 | 10 MHz channel bandwidth cell environment |

- **SystemInformationBlockType20**

The IE *SystemInformationBlockType20* contains the information required to acquire the SC-PTM control information.

Table 4.4.3.3-18: SystemInformationBlockType20

| Derivation Path: 36.331 clause 6.3.1 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType20-r13 ::= SEQUENCE { | | | |
| sc-mcch-RepeticionPeriod-r13 | Rf32 | | |
| sc-mcch-Offset-r13 | 1 | | |
| sc-mcch-FirstSubframe-r13 | 0 | | |
| sc-mcch-duration-r13 | Not present | | |
| sc-mcch-ModificationPeriod-r13 | Rf512 | | |
| lateNonCriticalExtension | | | |
| } | | | |

- **SystemInformationBlockType21**

The IE *SystemInformationBlockType21* contains the resource pool information for V2X sidelink communication.

Table 4.4.3.3-19: SystemInformationBlockType21

| Derivation Path: 36.331 clause 6.3.1 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType21-r14 ::= SEQUENCE { | | | |
| sl-V2X-ConfigCommon-r14 SEQUENCE { | | | |

| | | | |
|--|---|------------------------------------|--|
| v2x-CommRxPool-r14 | Not present | | |
| v2x-CommTxPoolNormalCommon-r14 | Not present | | |
| p2x-CommTxPoolNormalCommon-r14 | Not present | | |
| v2x-CommTxPoolExceptional-r14 | Not present | | |
| v2x-SyncConfig-r14 | Not present | | |
| v2x-InterFreqInfoList-r14 SEQUENCE (SIZE (0..maxFreqV2X-1-r14)) OF SL-InterFreqInfoV2X-r14 | | 1 entry | |
| { | | | |
| SL-InterFreqInfoV2X-r14[1] | SL-InterFreqInfoV2X-r14-DEFAULT using condition SIB | | |
| } | | | |
| v2x-ResourceSelectionConfig-r14 | Not present | | |
| zoneConfig-r14 SEQUENCE {} | Not present | | |
| typeTxSync-r14 | enb | ENUMERATED {gnss, enb, ue, spare1} | |
| thresSL-TxPrioritization-r14 | Not present | | |
| anchorCarrierFreqList-r14 | Not present | | |
| offsetDFN-r14 | Not present | | |
| cbr-CommonTxConfigList-r14 | Not present | | |
| } | | | |
| lateNonCriticalExtension | Not present | | |
| } | | | |

- *SystemInformationBlockType24*

The IE *SystemInformationBlockType24* contains information relevant only for inter-RAT cell re-selection i.e. information about NR frequencies and NR neighbouring cells relevant for cell re-selection. The IE includes cell re-selection parameters common for a frequency.

Table 4.4.3.3-20: SystemInformationBlockType24

| Derivation Path: TS 36.331 [17], clause 6.3.1 | | | |
|--|---|--|-------------------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType24-r15 ::= SEQUENCE { | | | |
| carrierFreqListNR-r15 SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE { | The same number of entries as the configured NR carriers For Signalling test cases, see Table 6.3.1.8-1. | n denotes the index of the entry | |
| carrierFreq-r15[n] | Downlink NR ARFCN of SSB under test | For signalling test cases see TS 38.508-1 [67] subclause 6.2.3. Otherwise, see TS 38.508-1 [67] subclause 4.3.1. | |
| multiBandInfoList-r15 [n] SEQUENCE (SIZE (1..maxMultiBandsNR-r15)) OF SEQUENCE { | Not present | | |
| multiBandInfoListSUL-r15[n] SEQUENCE (SIZE (1..maxMultiBandsNR-r15)) OF SEQUENCE { | Not present | | |
| measTimingConfig-r15[n] SEQUENCE { | | | |
| periodicityAndOffset-r15 CHOICE { | | | |
| sf20 | 0 | | FR1 |
| sf160 | 0 | | FR2 |
| } | | | |
| ssb-Duration-r15 | sf2 | | FR1 |
| | sf3 | | FR2 |
| } | | | |
| subcarrierSpacingSSB-r15[n] | kHz15 | | SCS_15kHz |
| | kHz30 | | SCS_30kHz |
| | kHz120 | | SCS_120kHz |
| ss-RSSI-Measurement-r15[n] | Not present | | |
| cellReselectionPriority-r15[n] | 5 | | |
| cellReselectionSubPriority-r15[n] | Not present | | |
| threshX-High-r15[n] | 2 (4 dB) | | |
| threshX-Low-r15[n] | 1 (2 dB) | | |
| threshX-Q-r15[n] | Not present | | |
| threshX-Q-r15[n] SEQUENCE { | | | QBASED |
| threshX-HighQ-r15 | 5 (5 dB) | | |
| threshX-LowQ-r15 | 5 (5 dB) | | |
| } | | | |
| q-RxLevMin-r15[n] | -70 (-140 dBm) | For RF/RRM test cases | |
| | -55 (-110 dBm) | For signalling test cases | |
| q-RxLevMinSUL-r15[n] | -70 (-140 dBm) | For RF/RRM test cases | SUL |
| | -55(-110 dBm) | For signalling test cases | |
| p-MaxNR-r15[n] | 23 | | FR1 |
| | 26 | | FR2 FR1_RF_PC2 |
| ns-PmaxListNR-r15[n] | Not present | | |
| q-QualMin-r15[n] | Not present | | |
| | -20 (-20dB) | | QBASED |
| deriveSSB-IndexFromCell-r15[n] | False | | |
| maxRS-IndexCellQual-r15[n] | Not present | | |
| threshRS-Index-r15[n] | Not present | | |
| } | | | |
| t-ReselectionNR-r15 | 0 | | |
| t-ReselectionNR-SF-r15 | Not present | Not required unless speed-dependent cell re-selection is tested. | |
| lateNonCriticalExtension | Not present | | |

| | | | |
|---|--|--|--|
| } | | | |
|---|--|--|--|

| Condition | Explanation |
|------------|--|
| SCS_15kHz | SCS=15kHz for frequency of the cell according to TS 38.508-1 [67] clause 6.2.3 for signalling test cases and clause 4.3.1 otherwise |
| SCS_30kHz | SCS=30kHz for frequency of the cell according to TS 38.508-1 [67] clause 6.2.3 for signalling test cases and clause 4.3.1 otherwise |
| SCS_120kHz | SCS=120kHz for frequency of the cell according to TS 38.508-1 [67] clause 6.2.3 for signalling test cases and clause 4.3.1 otherwise |
| QBASED | This condition applies to Quality based cell (re)selection signalling test cases. |
| FR1_RF_PC2 | FR1 RF testing with Power Class 2 |

4.4.3.4 Channel-bandwidth-dependent parameters in system information blocks

The default values of parameters in system information blocks which depend on the channel bandwidth are defined in table 4.4.3.4-1.

Table 4.4.3.4-1: Channel-bandwidth-dependent parameters

| Information Element | Channel bandwidth | | | | | | Comment |
|-------------------------------|-------------------|-------|-------|--------|--------|--------|---------|
| | 1.4 MHz | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20MHz | |
| SIB3 periodicity | 64 | 64 | 32 | 32 | 32 | 32 | |
| SIB4 periodicity | 128 | 128 | 64 | 64 | 64 | 64 | |
| SIB5 periodicity | 128 | 128 | 64 | 64 | 64 | 64 | |
| SIB6 periodicity | 128 | 128 | 64 | 64 | 64 | 64 | |
| SIB7 periodicity | 128 | 128 | 64 | 64 | 64 | 64 | |
| SIB8 periodicity | 128 | 128 | 64 | 64 | 64 | 64 | |
| measurement Bandwidth in SIB5 | mbw6 | mbw15 | mbw25 | mbw50 | mbw75 | mbw100 | |
| SIB9 periodicity | 128 | 128 | 64 | 64 | 64 | 64 | |
| SIB10 periodicity | 64 | 64 | 32 | 32 | 32 | 32 | |
| SIB11 periodicity | 64 | 64 | 32 | 32 | 32 | 32 | |
| SIB12 periodicity | 64 | 64 | 32 | 32 | 32 | 32 | |
| SIB13 periodicity | 64 | 64 | 32 | 32 | 32 | 32 | |
| SIB15 periodicity | 64 | 64 | 32 | 32 | 32 | 32 | |
| SIB17 periodicity | 128 | 128 | 64 | 64 | 64 | 64 | |
| SIB18 periodicity | | | 32 | 32 | - | 32 | |
| SIB19 periodicity | | | 64 | 64 | 64 | 64 | |
| SIB20 periodicity | 64 | 64 | 32 | 32 | 32 | 32 | |
| SIB21 periodicity | | | | 32 | | 32 | |
| SIB24 periodicity | 128 | 128 | 64 | 64 | 64 | 64 | |

4.4.4 Common parameters for simulated UTRA cells

The parameters specified in this subclause apply to all simulated UTRA cells unless otherwise specified.

Default UTRA parameters for simulated cells are specified in table 4.4.4-1 and table 4.4.4-2.

Other parameters are specified in TS 34.108 [5].

Table 4.4.4-1: Default parameters for simulated UTRA cells

| cell ID | Primary scrambling code for FDD | Cell parameters ID for TDD |
|---------|---------------------------------|----------------------------|
| Cell 5 | 100 | 0 |
| Cell 7 | 150 | 4 |
| Cell 8 | 200 | 8 |
| Cell 9 | 250 | 12 |
| Cell 37 | 300 | 16 |
| Cell 38 | 350 | 20 |
| Cell 39 | 400 | 24 |

Table 4.4.4-2: Default NAS parameters for simulated UTRA cells

| | PLMN | | Location Area Identification | | Routing Area Identification | | TMSI | P-TMSI signature |
|---------|---|-----|------------------------------|-----|-----------------------------|-----|---|---|
| | MCC | MNC | LA# | LAC | RA# | RAC | | |
| Cell 5 | (Note 1) | | LAI-1 | 1 | RAI-1 | 1 | Arbitrarily selected according to TS 23.003 subclause 2.4 [2] | Arbitrarily selected according to TS 23.003 subclause 2.7 [2] |
| Cell 7 | (Note 1) | | LAI-1 | 1 | RAI-1 | 1 | | |
| Cell 8 | (Note 1) | | LAI-1 | 1 | RAI-1 | 1 | | |
| Cell 9 | (Note 1) | | LAI-1 | 1 | RAI-1 | 1 | | |
| Cell 37 | (Note 1) | | LAI-1 | 1 | RAI-1 | 1 | | |
| Cell 38 | (Note 1) | | LAI-1 | 1 | RAI-1 | 1 | | |
| Cell 39 | (Note 1) | | LAI-1 | 1 | RAI-1 | 1 | | |
| Note 1: | Set to the same Mobile Country Code and Mobile Network Code stored in EF _{TMSI} on the test USIM card (subclause 4.9.3). | | | | | | | |

4.4.4.1 Common contents of system information blocks for UTRA cells

- System Information Block type 19

The system information block type 19 contains Inter-RAT frequency and priority information to be used in the cell.

Table 4.4.4.1-1: System Information Block type 19

| Derivation Path: 25.331 clause 11.3 | | | |
|--|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| SysInfoType19 ::= SEQUENCE { | | | |
| utra-PriorityInfoList SEQUENCE { | | | |
| utra-ServingCell SEQUENCE { | | | |
| priority | 3 | | |
| s-PrioritySearch1 | 0 (0dB) | | |
| s-PrioritySearch2 | Not present | default value is 0 | |
| threshServingLow | 0 (0dB) | | |
| } | | | |
| utran-FDD-FrequencyList SEQUENCE (SIZE(1..maxNumFDDFreqs)) OF SEQUENCE {} | Not present | | |
| utran-TDD-FrequencyList SEQUENCE (SIZE(1..maxNumTDDFreqs)) OF SEQUENCE {} | Not present | | |
| gsm-PriorityInfoList SEQUENCE (SIZE (1..maxNumGSMCellGroup)) OF SEQUENCE {} | Not present | | |
| eutra-FrequencyAndPriorityInfoList SEQUENCE (SIZE (1..maxNumEUTRAFreqs)) OF SEQUENCE { | The same number of entries as the configured eutra carriers For Signalling test cases, see table 6.3.1.7-1 | <i>n</i> denotes the index of the entry | |
| earfcn[<i>n</i>] | Downlink EARFCN under test For Signalling test cases, see table 6.3.1.7-1 | | |
| measurementBandwidth[<i>n</i>] | Set according to EUTRA band ChBw in Table 5.6- 1 of TS36.104. | | |
| priority[<i>n</i>] | 4 | | |
| qRxLevMinEUTRA[<i>n</i>] | -53 (-106 dBm) | For signalling test cases | |
| | -70 (-140 dBm) | For RF/RRM test cases | |
| threshXhigh[<i>n</i>] | 2 (4 dB) | | |
| threshXlow[<i>n</i>] | 1 (2 dB) | | |
| eutra-blackListedCellList[<i>n</i>] | Not present | | |
| eutraDetection[<i>n</i>] | TRUE | | |
| } | | | |
| eutra-FrequencyAndPriorityInfoList | Not present | | Band > 64 |
| v920NonCriticalExtensions SEQUENCE { | | | QBASED |
| va80NonCriticalExtensions SEQUENCE { | | | Band > 64 |
| vb30NonCriticalExtensions SEQUENCE { | | | |
| vb50NonCriticalExtensions SEQUENCE { | | | |
| sysInfoType19-vb50ext SEQUENCE { | | | |
| numberOfApplicableEARFCN | 0 | | |
| eutra- FrequencyAndPriorityInfoExtensionList SEQUENCE (SIZE (1..maxNumEUTRAFreqs)) OF SEQUENCE { | | | |
| earfcn | Downlink EARFCN under test For Signalling test cases, see table 6.3.1.7-1 | | |
| measurementBandwidth | Set according to EUTRA band ChBw in Table 5.6- 1 of TS 36.104. | | |
| priority | 4 | | |
| qRxLevMinEUTRA | -53 (-106 dBm) | For signalling test cases | |
| | -70 (-140 dBm) | For RF/RRM test cases | |
| threshXhigh | 2 (4 dB) | | |
| threshXlow | 1 (2 dB) | | |
| qqualMinEUTRA | Not present | | |
| threshXhigh2 | Not present | | |
| threshXlow2 | Not present | | |
| eutra-blackListedCellList | Not present | | |

| | | | |
|--|--|------------------------------|-----------|
| eutraDetection | TRUE | | |
| } | | | |
| } | | | |
| vb80NonCriticalExtensions SEQUENCE {} | | | |
| } | | | |
| } | | | |
| } | | | |
| sysInfoType19-v920ext SEQUENCE { | | | |
| utra-PriorityInfoList-v920ext SEQUENCE { | | | |
| threshServingLow2 | 7 (7dB) | default value is 0 | |
| } | | | |
| eutra-FrequencyAndPriorityInfoList-v920ext (SIZE (1..maxNumEUTRAFreqs)) OF SEQUENCE { | | | |
| qQualMinEUTRA[n] | -20 (-20dB) | | |
| threshXhigh2[n] | 5 (5dB) | | |
| threshXlow2[n] | 5 (5dB) | | |
| } | | | |
| v920NonCriticalExtensions SEQUENCE { | | | Band > 64 |
| va80NonCriticalExtensions SEQUENCE { | | | |
| vb30NonCriticalExtensions SEQUENCE { | | | |
| vb50NonCriticalExtensions SEQUENCE { | | | |
| sysInfoType19-vb50ext SEQUENCE { | | | |
| numberOfApplicableEARFCN | 0 | | |
| eutra- FrequencyAndPriorityInfoExtensionList SEQUENCE (SIZE (1..maxNumEUTRAFreqs)) OF SEQUENCE { | | | |
| earfcn | Downlink EARFCN under test For Signalling test cases, see table 6.3.1.7-1 | | |
| measurementBandwidth | Set according to EUTRA band ChBw in Table 5.6- 1 of TS 36.104. | | |
| priority | 4 | | |
| qRxLevMinEUTRA | -53 (-106 dBm) | For signalling test cases | |
| | -70 (-140 dBm) | For RF/RRM test cases | |
| threshXhigh | 2 (4 dB) | | |
| threshXlow | 1 (2 dB) | | |
| qqualMinEUTRA | Not present | | |
| threshXhigh2 | Not present | | |
| threshXlow2 | Not present | | |
| eutra-blackListedCellList | Not present | | |
| eutraDetection | TRUE | | |
| } | | | |
| } | | | |
| vb80NonCriticalExtensions SEQUENCE {} | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| nonCriticalExtensions SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|---|
| QBASED | See the definition below table 4.4.3.2-3. |
| Band > 64 | If band > 64 is selected |

4.4.4.2 UTRA SIB scheduling for inter EUTRA - UTRA test

Table 4.4.4.2-1: UTRA SIB schedule

| Block Type | MIB | SB1 | SIB1 | SIB2 | SIB3 | SIB4 | SIB5/SIB5bis | SIB6 | SIB7 | SIB11 | SIB12 | SIB18 | SIB19 |
|------------|-----|-----|------|------|------|------|--------------|------|------|-------|-------|-------|-------|
| SIB_REP | 8 | 16 | 64 | 64 | 64 | 64 | 64 | 64 | 16 | 64 | 64 | 64 | 64 |
| SEG_COUNT | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 1 | 3 | 1 | 1 | 2 |

Table 4.4.4.2-2: UTRA SIB-repeat period

| | | | | | | | | |
|--------------------|-----|-----|------------|--------------|-----|--------------|--------------|--------------|
| Frame No / SIB_POS | 0 | 2 | 4 | 6 | 8 | 10 | 12 | 14 |
| Block Type | MIB | SB1 | SIB7 | SIB6 | MIB | SIB6 | SIB6 | SIB6 |
| Frame No / SIB_POS | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 |
| Block Type | MIB | SB1 | SIB7/SIB3 | SIB1/SIB2 | MIB | SIB12 | SIB19 | SIB19 |
| Frame No / SIB_POS | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 |
| Block Type | MIB | SB1 | SIB7/SIB18 | SIB5/SIB5bis | MIB | SIB5/SIB5bis | SIB5/SIB5bis | SIB5/SIB5bis |
| Frame No / SIB_POS | 48 | 50 | 52 | 54 | 56 | 58 | 60 | 62 |
| Block Type | MIB | SB1 | SIB7/SIB4 | - | MIB | SIB11 | SIB11 | SIB11 |

4.4.4.3 UTRA SIB scheduling for inter EUTRA – UTRA - GERAN test

Table 4.4.4.3-1: UTRA SIB schedule

| Block Type | MIB | SB1 | SIB1 | SIB2 | SIB3 | SIB4 | SIB5/SIB5bis | SIB7 | SIB11 | SIB16 | SIB18 | SIB19 |
|-----------------|-----|-----|------|------|------|------|--------------|------|-------|-------|-------|-------|
| SIB Rep | 8 | 16 | 128 | 128 | 64 | 64 | 128 | 32 | 128 | 128 | 128 | 128 |
| Max. No of seg. | 1 | 2 | 1 | 1 | 1 | 1 | 4 | 1 | 3 | 8 | 1 | 3 |

Table 4.4.4.3-2: UTRA SIB-repeat period

| | | | | | | | | |
|---------------------------|-----|-----|-----|------------------|-----|------------------|------------------|------------------|
| Frame No / SIB_POS | 0 | 2 | 4 | 6 | 8 | 10 | 12 | 14 |
| Block Type | MIB | SB1 | SB1 | - | MIB | SIB1 | SIB18 | SIB2 |
| Frame No / SIB_POS | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 |
| Block Type | MIB | SB1 | SB1 | SIB7 | MIB | SIB3 | - | SIB4 |
| Frame No / SIB_POS | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 |
| Block Type | MIB | SB1 | SB1 | SIB5/ SIB5bis | MIB | SIB5/ SIB5bis | SIB5/ SIB5bis | SIB5/ SIB5bis |
| Frame No / SIB_POS | 48 | 50 | 52 | 54 | 56 | 58 | 60 | 62 |
| Block Type | MIB | SB1 | SB1 | SIB7 | MIB | SIB11 | SIB11 | SIB11 |
| Frame No / SIB_POS | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 |
| Block Type | MIB | SB1 | SB1 | SIB16 | MIB | SIB16 | SIB16 | SIB16 |
| Frame No / SIB_POS | 80 | 82 | 84 | 86 | 88 | 90 | 92 | 94 |
| Block Type | MIB | SB1 | SB1 | SIB7 | MIB | SIB3 | SIB19 | SIB4 |
| Frame No / SIB_POS | 96 | 98 | 100 | 102 | 104 | 106 | 108 | 110 |
| Block Type | MIB | SB1 | SB1 | SIB16 | MIB | SIB16 | SIB16 | SIB16 |
| Frame No / SIB_POS | 112 | 114 | 116 | 118 | 120 | 122 | 124 | 126 |
| Block Type | MIB | SB1 | SB1 | SIB7 | MIB | SIB19 | SIB19 | - |

4.4.5 Common parameters for simulated GERAN cells

The parameters specified in this subclause apply to all simulated GERAN cells unless otherwise specified.

See TS 51.010 [25].

The contents of SYSTEM INFORMATION TYPE 2 Quarter message specified below are identical for all GERAN cells.

Table 4.4.5-1: System Information 2 Quater

| Derivation Path: 44.018 Table 10.5.2.33b.1 | | | |
|--|----------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| System information 2Quater | | | |
| L2 pseudo length | 1 | | |
| PROTOCOL DISCRIMINATOR | '0110'B | RR management Protocol | |
| SKIP INDICATOR | '0000'B | | |
| MESSAGE TYPE | '00000111'B | | |
| SI 2QUATER REST OCTETS | | | |
| BA Indicator | 0 | | |
| 3G BA Indicator | 0 | | |
| MP Change Mark | 0 | | |
| SI2Q Index | 0 | | |
| SI2Q Count | 0 | | |
| Measurement_Parameters Description | 0 | Not Present | |
| GPRS_Real Time Difference Description | 0 | Not Present | |
| GPRS_BSIC Description | 0 | Not Present | |
| GPRS_REPORT PRIORITY Description | 0 | Not Present | |
| GPRS_MEASUREMENT_Parameters Description | 0 | Not Present | |
| NC Measurement Parameters | 0 | Not Present | |
| extension length | 0 | Not Present | |
| 3G Neighbour Cell Description | 0 | Not Present | |
| 3G Measurement Parameters Description | 0 | Not Present | |
| GPRS_3G_MEASUREMENT Parameters Description | 0 | Not Present | |
| Additions in release 5 | H | | |
| 3G Additional Measurement Parameters Description | 0 | Not Present | |
| 3G ADDITIONAL MEASUREMENT Parameters Description 2 | 0 | Not Present | |
| Additions in release 6 | H | | |
| 3G_CCN_ACTIVE | 0 | | |
| Additions in release 7 | H | | |
| 700_REPORTING_OFFSET | 0 | Not Present | |
| 810_REPORTING_OFFSET | 0 | Not Present | |
| Additions in release 8 | H | | |
| Priority and E-UTRAN Parameters Description | 1 | Present | |
| Serving Cell Priority Parameters Description | 1 | Present Note: Values as defined from TS 45.008, section 10.4 Table 3 | |
| GERAN_PRIORITY | 2 | | |
| THRESH_Priority_Search | 15 (always) | | |
| THRESH_GSM_low | 0 | | |
| H_Prio | 0 | | |
| T_Reselection | 0 | | |
| 3G Priority Parameters Description | 0 | Not Present | |
| E-UTRAN Parameters Description | 1 | Present | |
| E-UTRAN_CCN_ACTIVE | 0 | CCN not supported | |
| E-UTRAN_Start | 1 | | |
| E-UTRAN_Stop | 1 | | |
| E-UTRAN Measurement Parameters Description | 0 | Not Present | |
| GPRS E-UTRAN Measurement Parameters Description | 0 | Not Present | |
| Repeated E-UTRAN Neighbour Cells { | 1 | Present | |
| EARFCN | Same as cell 1 | This field specifies the E-UTRA Absolute Radio Frequency Channel Number as defined in 3GPP TS 36.104. | |
| EARFCN | 65535 | | Band > 64 |

| | | | |
|--|--|--|-----------|
| Measurement Bandwidth | Set according to EUTRA band under test | | |
| E-UTRAN_PRIORITY | '100'B | Same as cell 1 as defined in 3GPP TS 36.104. | |
| THRESH_E-UTRAN_high | '00010'B | Actual value =4 dB | |
| THRESH_E-UTRAN_low | '00010'B | Actual value =4 dB | |
| E-UTRAN_QRXLEVMIN | 17 (-106 dBm) | For signalling test cases | |
| | 0 (-140 dBm) | For RF/RRM test cases | |
| }** 0 | | End of Repeated E-UTRAN Neighbour cells structure. Note: When this message is used in Tics where more than one E-UTRA cells are active, this structure needs to be specified for each cell. EARFCN and EUTRAN_PRIORITY will then need to be configured to the corresponding EUTRAN cell | |
| Repeated E-UTRAN Not Allowed Cells | 0 | Not Present | |
| Repeated E-UTRAN PCID to TA mapping | 0 | Not Present | |
| 3G CSG Description | 0 | | |
| E-UTRAN CSG Description | 0 | | |
| Additions in release 9 | L | | |
| Additions in release 9 | H | | Band > 64 |
| Enhanced Cell Reselection Parameters | 0 | | |
| CSG Cells Reporting Description | 0 | | |
| Additions in release 10 | H | | |
| INIT_PWR_RED | 0 | | |
| NC2_CSG_PCCN_permitted | 0 | | |
| Additions in release 11 | H | | |
| Extended EARFCNs Description | 1 | | |
| Repeated EARFCN_extended { | 1 | Present | |
| EARFCN_extended | Same as cell 1 | This field specifies the E-UTRA Absolute Radio Frequency Channel Number as defined in 3GPP TS 36.104. | |
| }** 0 | | End of Repeated EARFCN_extended | |
| Extended EARFCNs Description for CSG Cells | 0 | | |
| spare padding | spare padding | | |

| Condition | Explanation |
|-----------|--------------------------|
| Band > 64 | If band > 64 is selected |

4.4.6 Common parameters for simulated CDMA2000 cells

The parameters specified in this subclause apply to all simulated HRPD or 1xRTT cells unless otherwise specified.

See C.S0038-B [36] for HRPD cells and C.S0043-A [37] for 1xRTT cells.

4.4.7 Default parameters specific for simulated cells

Default parameters specific for simulated cells are specified in this subclause.

4.4.7.1 Common contents of HRPD Overhead messages

- QuickConfig

The QuickConfig message is used to indicate a change in the overhead messages' contents and to provide frequently changing information.

Table 4.4.7.1-1: QuickConfig

| Derivation Path: C.S0024-B clause 7.11.6.2.1 | | | |
|--|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| MessageID | 0x0 | 0-255; | |
| ColorCode | See table 4.4.2-3 | 0 – 255 | |
| SectorID24 | Least significant 24 bits of Sector ID given in table 4.4.2-3 | 24 bits | |
| SectorSignature | A valid value and same as used for SectorParameters | 16 bits | |
| AccessSignature | A valid value and same as used for AccessParameters | 16 bits | |
| Redirect | 0X0 | 0-1 | |
| RPCCount63To0 | A valid value corresponding to the value of px_MACIndex | 0-63 | |
| ForwardTrafficValid63To0 | A valid value corresponding to the value of px_MACIndex | 0-1; RPCCount63To0 occurrences | |
| RPCCount127To64Included | A valid value corresponding to the value of px_MACIndex | 0 or 1 bits | |
| RPCCount127To64 | A valid value corresponding to the value of px_MACIndex | 0 or 6 bits | |
| ForwardTrafficValid127To64 | A valid value corresponding to the value of px_MACIndex | 0 or 1 bits;RPCCount127To64 occurrences | |
| RPCCount130To383Included | Not Present or a valid value corresponding to the value of px_MACIndex | 0 or 1 bits | |
| RPCCount130To383 | Not Present or a valid value corresponding to the value of px_MACIndex | 0 or 8 bits | |
| ForwardTrafficValid130To383 | Not Present or a valid value corresponding to the value of px_MACIndex | 0 or 1 bits | |
| Reserved | 0X0 | 0 – 7 bits as needed all set to zero | |

- SectorParameters

The SectorParameters message is used to convey sector specific information to the access terminals.

Table 4.4.7.1-2: SectorParameters

| Derivation Path: C.S0024-B clause 7.11.6.2.2 | | | |
|--|---|--|----------------|
| Information Element | Value/remark | Comment | Condition |
| MessageID | 0x01 | 0-255 | |
| CountryCode | See table 4.4.2-3 | 0 – 999; Depends on test case | |
| SectorID | See table 4.4.2-3 | 128 bit value | |
| SubnetMask | 0x40 | 8 bits | |
| SectorSignature | Any valid value | 16 bits | |
| Latitude | Any valid value | 22 bits | |
| Longitude | Any valid value | 23 bits | |
| RouteUpdateRadiusOverhead | 0x0 | 11 bits | |
| LeapSeconds | 'A valid value, calculated and updated by the SS' | 8 bits | |
| LocalTimeOffset | Any valid value | 11 bits | |
| ReverseLinkSilenceDuration | 0x1 or 0x0 | 2 bits | |
| ReverseLinkSilencePeriod | 0x1 or 0x0 | 2 bits | |
| ChannelCount | 0x1 or 0x0 | 5 bits | |
| Channel | | 24 bits; ChannelCount occurrences; Sub-clause 13.1 in 3GPP2 C.S0024-B v3.0 | |
| SystemType | 0x00 | 8 bits | |
| BandClass | Set according to PIXIT parameter | 5 bits; Depends on test case | |
| ChannelNumber | Set according to PIXIT parameter | 11 bits; Depends on BandClass | |
| NeighborCount | 0x0 | 5 bits | No_NeighPN Inc |
| | 16 | | NeighPNInc |
| NeighborPilotPN | Not Present | | No_NeighPN Inc |
| | Pilots PN's of configured cells [FFS] | | NeighPNInc |
| NeighborChannelIncluded | 0x0 | 1 bit; NeighbourCount occurrences | NeighPNInc |
| | Not Present | | No_NeighPN Inc |
| NeighborChannel | Not Present | 0 or 24 bits; NeighbourCount occurrences | |
| NeighborSearchWindowSizeIncluded | 0x0 | 1 bit | |
| NeighborSearchWindowSize | Not Present | 0 or 4 bits; NeighbourCount occurrences | |
| NeighborSearchWindowOffsetIncluded | 0x0 | 1 bit | |
| NeighborSearchWindowOffset | Not Present | 0 or 3 bits; NeighbourCount occurrences | |
| ExtendedChannelIncluded | 0x0 or Not Present | 0 or 1 bits; The number of cdma2000 high rate packet data extended channels available to the access terminal on this sector; Note 1; | |
| ExtendedChannelCount | Not Present | 0 or 5 bits | |
| ExtendedChannel | Not Present | 24 bits; 0 or ExtendedChannelCount occurrences | |
| AccessHashingChannelMaskIncluded | 0x0 or Not Present | 0 or 1 bits; AccessHashingChannelMaskL length occurrences of this field and AccessHashingChannelMask if set as AccessHashingChannelMask; Note 1; | |

| | | | |
|--|--------------------|--|--|
| AccessHashingMaskLength | Not Present | 0 or 4 bits; 0<=AccessHashingChannelMaskLength<=(ChannelCount + ExtendedChannelCount), | |
| AccessHashingChannelMaskSameAsPrevious | Not Present | 1 bit; AccessHashingChannelMaskLength occurrences of this field and AccessHashingChannelMask if set as AccessHashingChannelMask | |
| AccessHashingChannelMask | Not Present | 0 or AccessHashingMaskLength+1 | |
| RouteUpdateTriggerCodeIncluded | 0x0 or Not Present | 0 or 1 bits; Note 1; | |
| RouteUpdateTriggerCode | Not Present | 0 or 12 bits | |
| RouteUpdateTriggerMaxAge | Not Present | 0 or 4 bits | |
| PriorSessionGAUP | 0x0 or Not Present | 0 or 1 bits; Note 1; | |
| FPDCHSupportedInclude | 0x0 or Not Present | 0 or 1 bits; Note 1; | |
| FPDCHSupported | Not Present | 0 or 1 bits | |
| SecondaryColorCodeIncluded | 0x0 or Not Present | 0 or 1 bits; Note 1; | |
| SecondaryColorCodeCount | Not Present | 0 or 3 bits | |
| SecondaryColorCode | Not Present | 8 bits | |
| PilotGroupIDLoopIncluded | 0x0 or Not Present | 0 or 1 bits; Note 1; | |
| PilotGroupIDIncluded | Not Present | 0 or 1 bits | |
| PilotGroupID | Not Present | 0 or 3 bits | |
| IsSectorMultiCarrierCapable | 0x0 or Not Present | 0 or 1 bits; Note 1; | |
| ReverseBandClass | Not Present | 0 or 5 bits | |
| ReverseChannelNumber | Not Present | 0 or 11 bits | |
| Reserved | 0X0 | 0 – 7 bits as needed all set to zero | |
| Note 1: As no Non reserved fields following this are included, it can be Not Present; If not present, AT assumes as 0x0. | | | |

| Condition | Explanation |
|---------------|--------------------------------|
| No_NeighPNInc | No neighbour Pilot PN included |
| NeighPNInc | Neighbor Pilot PN's included |

- AccessParameters

The AccessParameters message is used to convey Access Channel information to the access terminals.

Table 4.4.7.1-3: AccessParameters

| Derivation Path: C.S0024-B clause 9.4.6.2.6 | | | |
|--|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| MessageID | 0x1 | 0-255 | |
| Access Cycle Duration | 16 slots or 64 slots | 16,12,64,128 slots | |
| Access Signature | Any valid value | 16 bits Note1. | |
| OpenLoopAdjust | Set according to PIXIT parameter for default open loop adjust | 8bits(-84 – 115 dB); Actual value is -1 times | |
| ProbelInitialAdjust | 0x0(0 dB) | 5 bits(-16 – 15 db) | |
| ProbeNumStep | 0x5 | 4bits(1 – 15) | |
| PowerStep | 0x8(4 dB) | 4 bits(0 – 7.5 dB) | |
| PreambleLength | 0x2 | 3bits(1 – 7) | |
| CapsuleLengthMax | 0x2 or 0x4 | 4 bits | |
| APersistence | 0x0 or 0x1 | 6 bits; 'NACMPAPersist = 4' occurrences | |
| APersistence | 0x0 or 0x1 | 6 bits | |
| APersistence | 0x0 or 0x1 | 6 bits | |
| APersistence | 0x0 or 0x1 | 6 bits | |
| Reserved | 0X0 | 0 – 7 bits as needed all set to zero | |
| Note 1: The value specified is the value to be used when the AccessParameters is being sent first time. At every change of content of AccessParameters message it is incremented by 1. | | | |

Sync

The access network broadcasts the Sync message to convey basic network and timing information

Table 4.4.7.1-4: Sync

| Derivation Path: C.S0024-B clause 7.3.6.2.1 | | | |
|---|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| MessageID | 0x0 | 0-255 | |
| MaximumRevision | 0x1 | 8 bits ; Clause 1.15 of 3GPP2 C.S0024-B v3.0 | |
| MinimumRevision | 0x1 | 8 bits; Clause 1.15 of 3GPP2 C.S0024-B v3.0 | |
| Pilot PN Offset | See table 4.4.2-3 | 0 – 511 | |
| CDMA System Time | A valid value, calculated and updated by the SS | 37 bits | |

4.4.7.2 Common contents of 1XRTT Overhead messages

4.4.7.2.1 Configuration sequence number

In general, a base station maintains a configuration sequence number CONFIG_SEQ for configuration messages transmitted on the Paging channel and increments by 1 modulo 64 whenever any of the following messages being transmitted are modified:

System Parameters Message

Neighbor List Message (Band Class 0 only)

CDMA Channel List Message

Extended System Parameters Message

Extended Neighbor List Message (band classes other than Band Class 0).

For simplicity reasons the System Simulator may use any value for this configuration sequence number CONFIG_SEQ.

4.4.7.2.2 Over Head messages

- CDMA Channel List Message

Table 4.4.7.2.2-1: CDMA Channel List Message

| Derivation Path: C.S0005 clause 3.7.2.3.2.4 | | | |
|---|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PILOT_PN | See table 4.4.2-4 | 9 bits; | |
| CONFIG_MSG_SEQ | Set to 'CONFIG_SEQ' of base station as per clause 4.4.7.2.1 | 6 bits; | |
| CDMA_FREQ | Set according to PIXIT parameter or as per clause 4.3.1.4 | 11 bits | |

- System Parameters Message

Table 4.4.7.2.2-2: System Parameters Message

| Derivation Path: C.S0005 clause 3.7.2.3.2.1 | | | |
|---|---|---|------------------|
| Information Element | Value/remark | Comment | Condition |
| PILOT_PN | See table 4.4.2-4 | 9 bits | |
| CONFIG_MSG_SEQ | Set to 'CONFIG_SEQ' of base station as per clause 4.4.7.2.1 | 6 bits | |
| SID | See table 4.4.2-4 | 15 bits | |
| NID | See table 4.4.2-4 | 16 bits | |
| REG_ZONE | See table 4.4.2-4 | 12 bits | |
| TOTAL_ZONES | 1 | 3 bits | |
| ZONE_TIMER | 0 or 1 | 3 bits; 1 or 2 minutes | |
| MULT_SIDS | 0 or 1 | 1 bits; Mobile shall not or shall store SID_NID_List containing different SID's | |
| MULT_NIDS | 0 or 1 | 1 bits; Mobile shall not or shall store SID_NID_List containing different NID's | |
| BASE_ID | See table 4.4.2-4 | 16 bits | |
| BASE_CLASS | 1 | 4 bits | BandClass1_4 |
| | 0 | | Not BandClass1_4 |
| PAGE_CHAN | 1 | 3 bits; Number of Paging Channels | |
| MAX_SLOT_CYCLE_INDEX | 1 or 0 | 3 bits; Maximum Slot Cycle index | |
| HOME_REG | 1 | 1 bits; Home registration enabled | |
| FOR_SID_REG | 1 | 1 bits; SID roamer registration enabled | |
| FOR_NID_REG | 1 | 1 bits; NID roamer registration enabled | |
| POWER_UP_REG | 1 | 1 bits; power-up registration enabled | |
| POWER_DOWN_REG | Set according to PIXIT parameter | 1 bits; power-down registration enabled as per PIXIT | |
| PARAMETER_REG | 0 or 1 | 1 bits; parameter change registration disabled or enabled | |
| REG_PRD | 0 | 7 bits; registration period; No timer Based Registration | |
| BASE_LAT | Any valid value | 22 bits; Base Station Latitude | |
| BASE_LONG | Any valid value | 23 bits; Base Station Longitude | |
| REG_DIST | 0 | 11 bits; Distance based registration disabled | |
| SRCH_WIN_A | 8 | 4 bits; Search Window size for Active Set; 60 PN Chips | |
| SRCH_WIN_N | 8 | 4 bits; Search Window Size for the neighbor set; 60 PN Chips | |
| SRCH_WIN_R | 8 | 4 bits; Search window size for the remaining set; 60 PN Chips | |
| NGHBR_MAX_AGE | 0 | 4 bits; Minimum Neighbour set age | |
| PWR_REP_THRESH | 0, 1 or 5 | 5 bits; Power control reporting threshold | |
| PWR_REP_FRAMES | 0, 4 or 7 | 4 bits; power control reporting frame count; 5 or 28 frames | |
| PWR_THRESH_ENABLE | 0 | 1 bits; threshold report mode disabled | |
| PWR_PERIOD_ENABLE | 0 | 1 bits; periodic report mode disabled | |

| | | | |
|---------------------|-------------------|--|--------------------|
| PWR_REP_DELAY | 0 or 14 | 5 bits; 0 or 56 frames | |
| RESCAN | 0 | 1 bit; re-initialize and re-acquire the system | |
| T_ADD | 28 (-14 dB Ec/Io) | 6bits; Pilot detection threshold (-14 dB Ec/Io) | |
| T_DROP | 32 | 6 bits; Pilot drop threshold (-16 dB Ec/Io) | |
| T_COMP | 5 | 4; Active set versus candidate set comparison threshold (2.5 dB) | |
| T_TDROPT | 3 | 4 bits; Drop timer value (4 sec) | |
| EXT_SYS_PARAMETER | 1 | 1 bit; Extended System Parameters message present | |
| EXT_NGHR_LST | 1 | 1 bit; Extended neighbor list not present | BandClass1_3_4 |
| | 0 | | Not BandClass1_3_4 |
| GEN_NGHR_LST | 0 | 1 bit; General neighbor list not sent | |
| GLOBAL_REDIRECT | 0 | 1 bit; Global service redirection message not transmitted | |
| PRI_NGHR_LST | 0 | 1 bit; Private neighbor list message not transmitted | |
| USER_ZONE_ID | 0 | 1 bit; User zone Identification not transmitted | |
| EXT_GLOBAL_REDIRECT | 0 | 1 bit; Extended global redirection not transmitted | |
| EXT_CHAN_LST | 0 | 1 bit; Extended channel list not sent | |

| Condition | Explanation |
|----------------|------------------------------|
| BandClass1_4 | If Band Class is 1 or 4 |
| BandClass1_3_4 | If Band Class is 1 or 3 or 4 |

- Access Parameters Message

Table 4.4.7.2.2-3: Access Parameters message

| Derivation Path: C.S0005 clause 3.7.2.3.2.2 | | | |
|---|-------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| PILOT_PN | See table 4.4.2-4 | 9 bits; | |
| ACC_MSG_SEQ | 0,1,2..63 | 6 bits; Access Message Sequence; 0 is used in initial transmission and incremented by 1 modulo 64 every time Access Parameters message is modified; for simplicity reasons any value may be used | |
| ACC_CHAN | 0 | 5 bits; Number of access channels -1 | |
| NOM_PWR | 0 | 4 bits; Nominal transmit power offset in dB | |
| INIT_PWR | 0 | 5 bits; Initial power offset in dB | |
| PWR_STEP | 1 or 3 | 3 bits; Power increment | |
| NUM_STEP | Any valid value | 4 bits; 5 access probes/ sequence | |
| MAX_CAP_SZ | 2 or 7 | 3 bits; Maximum Access channel message capsule size =2 or 7 +3 frames | |
| PAM_SZ | Any valid value | 4 bits; Access Channel preamble length = 2+1 frames | |
| PSIST(0-9) | 0 | 6 bits; Persistence value for access overload classes 0-9 | |
| PSIST(10) | 0 | 3 bits; Persistence value for access overload classes 10 | |
| PSIST(11) | 0 | 3 bits; Persistence value for access overload classes 11 (emergency) | |
| PSIST(12) | 0 | 3 bits; Persistence value for access overload classes 12 | |
| PSIST(13) | 0 | 3 bits; Persistence value for access overload classes 13 | |
| PSIST(14) | 0 | 3 bits; Persistence value for access overload classes 14 | |
| PSIST(15) | 0 | 3 bits; Persistence value for access overload classes 15 | |
| MSG_PSIST | 0 | 3 bits; Persistence modifier for access channel attempts for message transmissions | |
| REG_PSIST | 0 | 3 bits; Persistence modifier for Access Channel attempts for registrations | |
| PROBE_PN_RAN | 4 or 0 | 4 bits; Time Randomization for Access Channel probes= 0 to 15 PN chips | |
| ACC_TMO | 3, 4 or 5 | 4 bits; Acknowledgement timeout = (value +2) * 80 ms | |
| PROBE_BKOFF | 1 or 0 | 4 bits; Access Channel probe back off = no back off | |
| BKOFF | 1 or 0 | 4 bits; Access channel probe sequence backoff range =no back off | |
| MAX_REQ_SEQ | Any valid value | 4 bits; Max number of access probe sequences for an access channel request | |
| MAX_RSP_SEQ | Any valid value | 4 bits; Max number of access probe sequences for an access channel response | |
| AUTH | 0 | 2 bits; No authentication data in access channel messages | |
| RAND | Not present | 0 or 32 bits | |
| NOM_PWR_EXT | 0 | 1 bits; Extended nominal transmit power | |

- Extended System Parameters Message

Table 4.4.7.2.2-4: Extended System Parameters Message

| Derivation Path: C.S0005 clause 3.7.2.3.2.13 | | | |
|--|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| PILOT_PN | See table 4.4.2-4 | 9 bits | |
| CONFIG_MSG_SEQ | Set to 'CONFIG_SEQ' of base station as per clause 4.4.7.2.1 | 6 bits | |
| DELETE_FOR_TMSI | 0 | 1 bits; Delete foreign TMSI | |
| USE_TMSI | 0 or 1 | 1 bits; Use TMSI indicator | |
| PREF_MSID_TYPE | 3 | 2 bits; Preferred Access Channel MSID Type | |
| MCC | See table 4.4.2-4 | 10 bits | |
| IMSI_11_12 | See table 4.4.2-4 | 7 bits; 11th and 12th digits of the IMSI | |
| TMSI_ZONE_LEN | 1 or 0 | 4 bits | |
| TMSI_ZONE | 1 or Not present | 8 bits if present | |
| BCAST_INDEX | 0 | 3 bits | |
| IMSI_T_SUPPORTED | 0 | 1 bits | |
| P_REV | 6 | 8 bits | |
| MIN_P_REV | 6 | 8 bits | |
| SOFT_SLOPE | 0 | 6 bits | |
| ADD_INTERCEPT | 0 | 6 bits; 0 dB | |
| DROP_INTERCEPT | 0 | 6 bits; 0 dB | |
| PACKET_ZONE_ID | 0 | 8 bits; Packet data service zone not supported | |
| MAX_NUM_ALT_SO | 0 | 3 bits | |
| RESELECT_INCLUDED | 0 | 1 bits; System reselection parameters not included | |
| EC_THRESH | Not present | 0 or 5 bits | |
| EC_I0_THRESH | Not present | 0 or 5 bits | |
| PILOT_REPORT | 1 or 0 | 1 bits; Pilot Report indicator; the MS reports or does not report additional pilots which have strengths exceeding T_ADD | |
| NGHBR_SET_ENTRY_INFO | 0 | 1 bits | |
| ACC_ENT_HO_ORDER | Not present | 0 or 1 bits | |
| NGHBR_SET_ACCESS_INFO | 0 | 1 bits | |
| ACCESS_HO | Not present | 0 or 1 bits | |
| ACCESS_HO_MSG_RSP | Not present | 0 or 1 bits | |
| ACCESS_PROBE_HO | Not present | 0 or 1 bits | |
| ACC_HO_LIST_UPD | Not present | 0 or 1 bits | |
| ACC_PROBE_HO_OTHER_MSG | Not present | 0 or 1 bits | |
| MAX_NUM_PROBE_HO | Not present | 0 or 3 bits | |
| NGHBR_SET_SIZE | Not present | 0 or 6 bits | |
| ACCESS_ENTRY_HO | Not present | 1 bits; Access Entry Handoff not permitted | |
| ACCESS_HO_ALLOWED | Not present | 1 bits | |
| BROADCAST_GPS_ASST | 0 | 1 bits; Broad cast GPS not supported | |
| QPCH_SUPPORTED | 0 | 1 bits; Quick PCH not supported | |
| NUM_QPCH | Not present | 0 or 2 bits | |
| QPCH_RATE | Not present | 0 or 1 bits | |
| QPCH_POWER_LEVEL_PAGE | Not present | 0 or 3 bits | |
| QPCH_CCI_SUPPORTED | Not present | 0 or 1 bits | |
| QPCH_POWER_LEVEL_CONFIG | Not present | 0 or 3 bits | |
| SDB_SUPPORTED | 0 | 1 bits; Short Data burst not supported | |
| RLGAIN_TRAFFIC_PILOT | 0 | 6 bits; 0 dB Gain adjustment of Reverse traffic channel | |
| REV_PWR_CNTL_DELAY_INCL | 0 | 1 bits | |
| REV_PWR_CNTL_DELAY | Not present | 0 or 2 bits | |

- Neighbor List Message

This message is sent when EXT_NGHRBR_LST in Systems parameter message is set as '0'B i.e. the band class is 0;

Table 4.4.7.2.2-6: Neighbor List Message

| Derivation Path: C.S0005 clause 3.7.2.3.2.3 | | | |
|---|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| PILOT_PN | See table 4.4.2-4 | 9 bits | |
| CONFIG_MSG_SEQ | Set to 'CONFIG_SEQ' of base station as per clause 4.4.7.2.1 | 6 bits | |
| PILOT_INC | 10 or 1 | 4 bits; Pilot PN Sequence offset index increment = $n * 50$ | |
| NGHBR_CONFIG(n) | 0 or Not present | | |
| NGHBR_PN(n) | See table 4.4.2-4 or Not Present | 9 bits if present | |
| Note 1: the elements with index n are repeated as per table 4.4.2-5 | | | |

- Extended Neighbor List Message

This message is sent when EXT_NGHRBR_LST in Systems parameter message is set as '1'B i.e. the band class is not 0;

Table 4.4.7.2.2-7: Extended Neighbor List Message

| Derivation Path: C.S0005 clause 3.7.2.3.2.14 | | | |
|--|---|--|---------------|
| Information Element | Value/remark | Comment | Condition |
| PILOT_PN | See table 4.4.2-4 | 9 bits | |
| CONFIG_MSG_SEQ | Set to 'CONFIG_SEQ' of base station as per clause 4.4.7.2.1 | 6 bits | |
| PILOT_INC | 10 or 1 | 4 bits; Pilot PN Sequence offset index increment = $n * 50$ | |
| NGHBR_CONFIG(n) | 0 or Not present | 3 bits if present; Neighbor configuration where neighbor base station has same number of frequencies having paging channels as the current base station; | |
| NGHBR_PN(n) | See table 4.4.2-4 or Not present | 9 bits if present | |
| SEARCH_PRIORITY(n) | 1, 2 or Not present | 2 bits if present; Medium search priority | |
| FREQ_INCL(n) | 1 | 1 bit | InterFreqCell |
| | 0 or Not present | | |
| NGHBR_BAND(n) | Set according to PIXIT parameter | 0 or 5 bits | InterFreqCell |
| | Not present | | |
| NGHBR_FREQ(n) | Set according to PIXIT parameter | 0 or 11 bits | InterFreqCell |
| | Not Present | | |
| Note 1: The elements with index n are repeated as per table 4.4.2-5. The SS can transmit up to 7 neighbour intra frequency cell information. The parameters for the first cell should be set as per table 4.4.2-4. | | | |

| Condition | Explanation |
|---------------|---|
| InterFreqCell | If the configured neighbour cell is on a different frequency compared to the cell in which Extended Neighbour list message is being transmitted |

Sync channel Messages

Table 4.4.7.2.2-8: Sync Channel Message

| Derivation Path: C.S0005 clause 3.7.2.3.2.26 | | | |
|--|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| P_REV | 6 | 8 bits; Protocol revision level | |
| MIN_P_REV | 6 | 8 bits; Minimum protocol revision level | |
| SID | See table 4.4.2-4 | 15 bits | |
| NID | See table 4.4.2-4 | 16 bits | |
| PILOT_PN | See table 4.4.2-4 | 9 bits | |
| LC_STATE | A valid value, calculated and updated by the SS | 42 bits; Long code State | |
| SYS_TIME | A valid value, calculated and updated by the SS | 36 bits; System time | |
| LP_SEC | A valid value, calculated and updated by the SS | 8 bits; The number of leap seconds | |
| LTM_OFF | A valid value, calculated and updated by the SS | 6 bits; Offset of local time from System time | |
| DAYLT | A valid value, calculated and updated by the SS | 1 bits; Daylight savings indicator | |
| PRAT | 0 | 2 bits; Paging Channel Data rate=9600 bps | |
| CDMA_FREQ | Set according to PIXIT parameter or as per clause 4.3.1.4 | 11 bits; Frequency assignment | |
| EXT_CDMA_FREQ | Set according to PIXIT parameter or as per clause 4.3.1.4 | 11 bits; Extended frequency assignment | |

4.4.8 Common parameters for simulated WLAN AP's

The parameters specified in this subclause apply to all simulated WLAN APs unless otherwise specified.

Default WLAN parameters for simulated APs are specified in table 4.4.8-1.

Table 4.4.8-1: Default parameters for simulated WLAN APs

| Parameter | Value | Condition |
|---|---|-----------|
| SSID | 3GPP WLAN InterWorking | |
| Security | [WPA2] | |
| Hot Spot 2.0 Support | Yes | |
| Trusted/Un-Trusted non 3GPP Access | Un-Trusted | |
| EAP-AKA Procedure | CHAP | |
| Beacon RSSI | 42 (-86 dBm), NOTE 1 | OFFLOAD |
| Beacon RSSI | Configured at the SS according to PIXIT parameter | IMSoWLAN |
| NOTE 1: The power level is specified at each UE Rx antenna. | | |

| Condition | Explanation |
|-----------|-------------------------|
| OFFLOAD | WLAN offload scenarios |
| IMSoWLAN | IMS over WLAN scenarios |

Table 4.4.8-2: Default parameters for simulated WLAN APs (2nd WLAN)

| Parameter | Value | Condition |
|------------------------------------|---|-----------|
| SSID | 3GPP WLAN InterWorking 2 | |
| Security | [WPA2] | |
| Hot Spot 2.0 Support | Yes | |
| Trusted/Un-Trusted non 3GPP Access | Un-Trusted | |
| EAP-AKA Procedure | CHAP | |
| Beacon RSSI | 42 (-86 dBm), NOTE 1 | OFFLOAD |
| Beacon RSSI | Configured at the SS according to PIXIT parameter | IMSoWLAN |

NOTE 1: The power level is specified at each UE Rx antenna.

| Condition | Explanation |
|-----------|-------------------------|
| OFFLOAD | WLAN offload scenarios |
| IMSoWLAN | IMS over WLAN scenarios |

4.4.9 Common parameters for simulated Bluetooth beacon's

The parameters specified in this subclause apply to all simulated Bluetooth beacons unless otherwise specified.

Default Bluetooth parameters for simulated beacons are specified in table 4.4.9-1.

Table 4.4.9-1: Default parameters for simulated Bluetooth beacons

| Parameter | Value | Condition |
|------------------------------|----------------------|-----------|
| Bluetooth Core Specification | 4.0 and forward | |
| Classic Bluetooth/ BLE | Classic Bluetooth | |
| LOCAL NAME | 3GPP BT InterWorking | |
| Beacon RSSI | 42 (-86 dBm), NOTE 1 | |

NOTE 1: The power level is specified at each UE Rx antenna.

Table 4.4.9-2: Default parameters for simulated Bluetooth beacons (2nd Bluetooth)

| Parameter | Value | Condition |
|------------------------------|------------------------|-----------|
| Bluetooth Core Specification | 4.0 and forward | |
| Classic Bluetooth/ BLE | Classic Bluetooth | |
| LOCAL NAME | 3GPP BT InterWorking 2 | |
| Beacon RSSI | 42 (-86 dBm), NOTE 1 | |

NOTE 1: The power level is specified at each UE Rx antenna.

4.5 Generic procedures

This clause describes UE test states which can be used in the initial condition of many test cases defined in TS 36.521-1 [21], TS 36.523-1 [18] and TS 36.523-3 [34] or other procedures defined in this specification. This section also defines a set of procedures to bring the UE into these states.

4.5.1 UE test states

NOTE: The need to have a procedure for the transition from State 4/State 3 to State 2 is for further study and it can added if the technical motivation for this procedure can be justified.

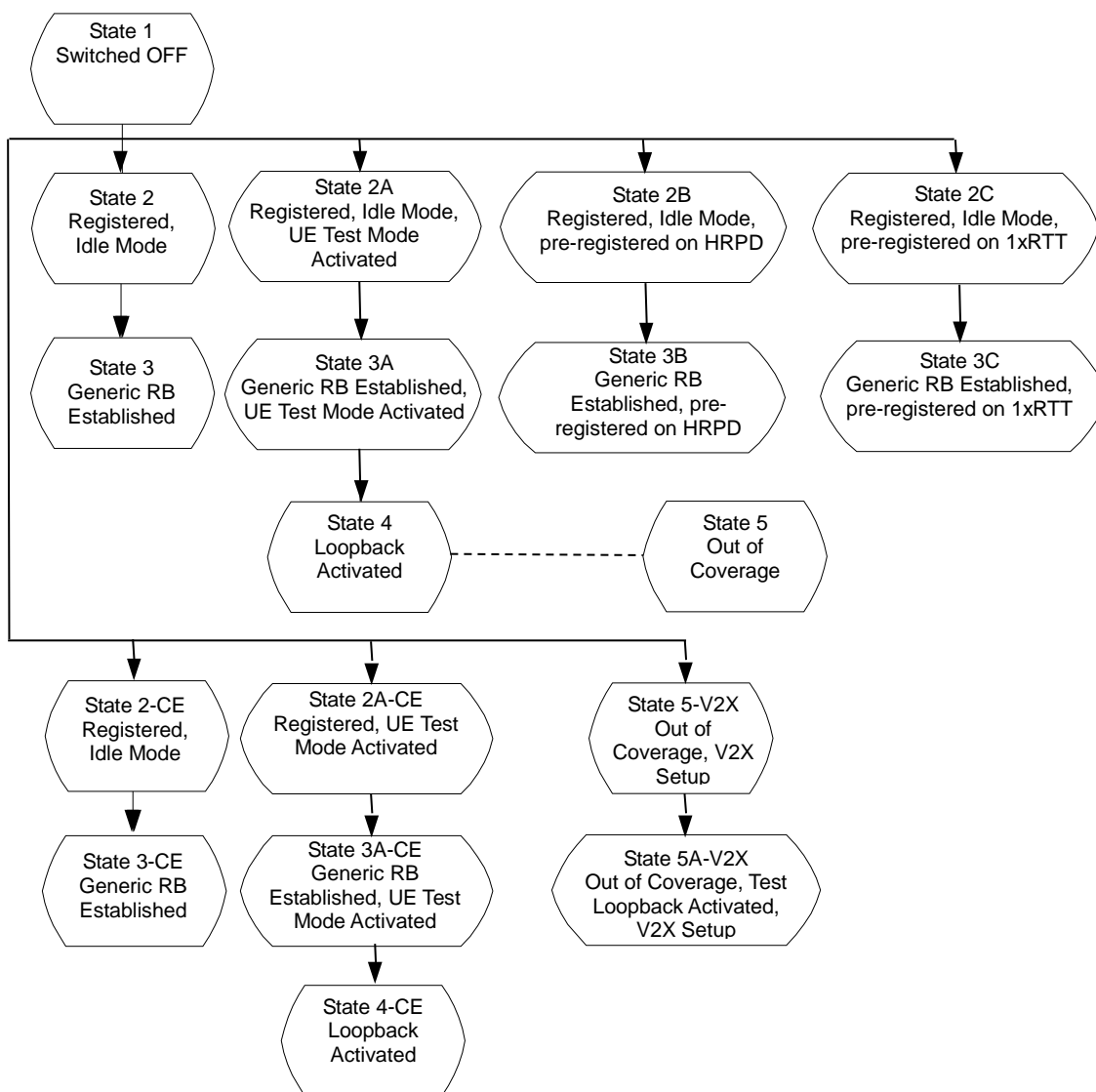


Figure 4.5.1-1: E-UTRAN UE Test States for Basic Generic Procedures

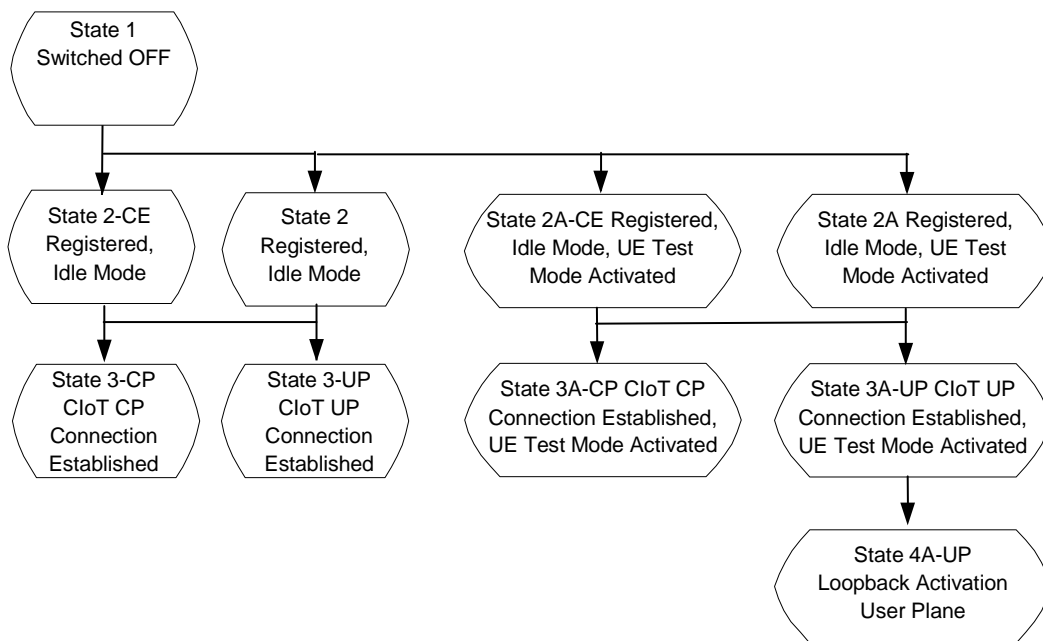


Figure 4.5.1-2: E-UTRAN UE Test States for Clot

NOTE: Transition to state 5 is performed only when Test Loop Mode E is required to be performed when UE is out of coverage.

In order that the UE can set up a call or session in E-UTRAN, there are a number of procedures to be undertaken in a hierarchical sequence to move between known states. The sequences are shown in figure 4.5.1-1 and the status of the relevant protocols in the UE in the different states are given in table 4.5.1-1.

Table 4.5.1-1: The E-UTRAN UE states

| | | RRC | ECM | EMM | ESM | UE Test Mode |
|-------------|---|--|---------------|----------------|--|--------------|
| State 1 | Switched OFF | ---- | ---- | ---- | ---- | ---- |
| State 2 | Registered, Idle Mode | RRC_IDLE | ECM-IDLE | EMM-REGISTERED | 1 default EPS bearer context active. 2 default EPS bearer contexts active (only for RAN Assisted WLAN interworking) | Not active |
| State 2-CE | Registered, Idle Mode, Cell supporting BL/CE UE | RRC_IDLE | ECM-IDLE | EMM-REGISTERED | 1 default EPS bearer context active. | Not active |
| State 2A | Registered, Idle Mode, UE Test Mode Activated | RRC_IDLE | ECM-IDLE | EMM-REGISTERED | 1 default EPS bearer context active. | Active |
| State 2A-CE | Registered, Idle Mode, Cell supporting BL/CE UE, UE Test Mode Activated | RRC_IDLE | ECM-IDLE | EMM-REGISTERED | 1 default EPS bearer context active. | Active |
| State 2B | Registered, Idle Mode, pre-registered on HRPD | RRC_IDLE | ECM-IDLE | EMM-REGISTERED | 1 default EPS bearer context active. | Active |
| State 2C | Registered, Idle Mode, pre-registered on 1xRTT | RRC_IDLE | ECM-IDLE | EMM-REGISTERED | 1 default EPS bearer context active. | Active |
| State 3 | Generic RB Established | RRC_CONNECTED 1 + N ($0 \leq N \leq 7$) data radio bearers configured as specified in the test cases. 2 + N ($0 \leq N \leq 7$) data radio bearers configured as specified in the test cases (only for for RAN Assisted WLAN interworking) | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active and N ($0 \leq N \leq 7$) dedicated EPS bearers active as specified in the test cases. 2 default EPS bearer contexts active and N ($0 \leq N \leq 7$) dedicated EPS bearers active as specified in the test cases (only for RAN Assisted WLAN interworking) | Not active |
| State 3-CP | CloT CP Connection Established | RRC_CONNECTED | ECM-CONNECTED | EMM-REGISTERED | - | Not active |
| State 3A-CP | CloT CP Connection Established, UE Test Mode Activated | RRC_CONNECTED | ECM-CONNECTED | EMM-REGISTERED | - | Active |
| State 3-UP | CloT UP Connection Established | RRC_CONNECTED | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active. | Not active |

| | | | | | | |
|-------------|--|---|---------------|----------------|--|------------|
| State 3A-UP | CloT UP Connection Established, UE Test Mode Activated | RRC_CONNECT ED | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active. | Active |
| State 4A-UP | Loopback Activation User Plane | RRC_CONNECT ED | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active. | Active |
| State 3-CE | Generic RB Established, Cell supporting BL/CE UE | RRC_CONNECT ED 1 + N ($0 \leq N \leq 7$) data radio bearers configured as specified in the test cases. | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active and N ($0 \leq N \leq 7$) dedicated EPS bearers active as specified in the test cases. | Not active |
| State 3A | Generic RB Established, UE Test Mode Activated | RRC_CONNECT ED 1 + N ($0 \leq N \leq 7$) data radio bearers configured as specified in the test cases | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active and N ($0 \leq N \leq 7$) dedicated EPS bearers active as specified in the test cases | Active |
| State 3A-CE | Generic RB Established, UE Test Mode Activated, Cell supporting BL/CE UE, UE Test Mode Activated | RRC_CONNECT ED 1 + N ($0 \leq N \leq 7$) data radio bearers configured as specified in the test cases | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active and N ($0 \leq N \leq 7$) dedicated EPS bearers active as specified in the test cases | Active |
| State 3B | Generic RB Established, pre-registered on HRPD | RRC_CONNECT ED 1 + N ($0 \leq N \leq 7$) data radio bearers configured as specified in the test cases | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active and N ($0 \leq N \leq 7$) dedicated EPS bearers active as specified in the test cases | Active |
| State 3C | Generic RB Established, pre-registered on 1xRTT | RRC_CONNECT ED 1 + N ($0 \leq N \leq 7$) data radio bearers configured as specified in the test cases | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active and N ($0 \leq N \leq 7$) dedicated EPS bearers active as specified in the test cases | Active |
| State 4 | Loopback Activated | RRC_CONNECT ED 1 + N ($0 \leq N \leq 7$) data radio bearers configured as specified in the test cases | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active and N ($0 \leq N \leq 7$) dedicated EPS bearers active as specified in the test cases | Active |
| State 4-CE | Loopback Activated, Cell supporting BL/CE UE | RRC_CONNECT ED 1 data radio bearer configured | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active | Active |
| State 5 | Out of Coverage | Any Cell Selection state | ----- | ----- | ----- | Active |
| State 5-V2X | Out of Coverage, V2X setup | Any Cell Selection state | ----- | ----- | ----- | Not active |

| | | | | | | |
|--------------|--|--------------------------|-------|-------|-------|--------|
| State 5A-V2X | Out of Coverage, Loopback Activated, V2X setup | Any Cell Selection state | ----- | ----- | ----- | Active |
|--------------|--|--------------------------|-------|-------|-------|--------|

NOTE: Refer to TS 24.301 [28] subclause 5.5.1.1 for more details on the ESM state.

NOTE: Refer to TS 36.509 [38] for details regarding UE test mode and UE Loopback.

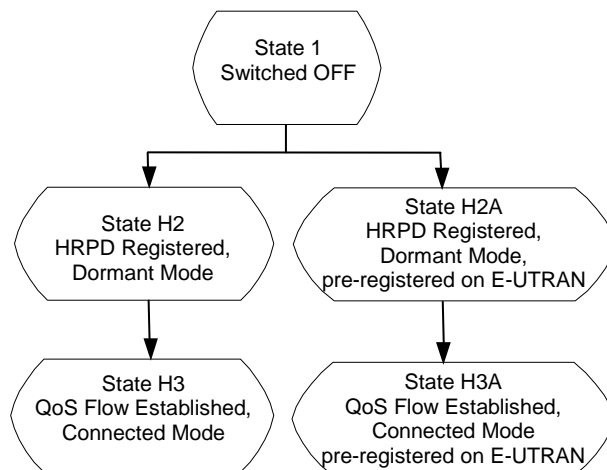


Figure 4.5.1-2: HRPD UE Test States for Basic Generic Procedures

In order for the UE to set up a session in an HRPD RAN, there are a number of procedures that need to be performed in a certain sequence to move between known UE states. These states and sequences are shown in figure 4.5.1-2. HRPD UE states are described in table 4.5.1-2.

Table 4.5.1-2: Description of HRPD UE states

| State | Description |
|-------|---|
| H2 | The UE is registered on the HRPD network, but has no active connection to the network. The Inter-RAT Idle State Protocol (IR-ISP) is in Monitor State. The UE should be ready to perform a non-optimised cell reselection to E-UTRAN (as per [41] cl. 8 and [42] cl. 14.1). |
| H3 | The UE is registered on the HRPD network, and has an active network connection. The UE should be ready to perform a non-optimised handover to E-UTRAN (as per [41] cl. 8). |
| H2A | Same state as State H2, but the UE is also pre-registered in E-UTRAN. The UE should be ready to perform an optimised cell reselection to E-UTRAN (as per [41] cl. 9.6). |
| H3A | Same state as State H3, but the UE is also pre-registered in E-UTRAN. The UE should be ready to perform an optimised handover to E-UTRAN (as per [41] cl. 9.5). |

4.5.2 UE Registration (State 2)

IF pc_ue_CategoryDL_M1 THEN use the procedure for State 2-CE according to clause 4.5.2AA ELSE use the procedure defined in the present clause.

NOTE: The statement to use alternate procedure for CAT M1 UE (pc_ue_CategoryDL_M1 is set) is to enable LTE legacy protocol test cases to be used for CAT M1 UE testing. Any CAT M1 or CE specific test cases should not rely on this statement, but refer directly to the relevant CE specific state.

UE Registration depends on the specific configuration of a UE, which is expressed by PICS according to TS 36.523-2 [19]. In order to reduce complexity and to achieve testability several assumptions and definitions are made:

- An IMS capable UE is compliant to GSMA PRD IR.92 [52];

- During initial UE registration the UE requests for one or two PDN connectivities;
- When the UE requests for two PDN connectivities:
 - it re-uses the existing RRC connection for signalling regarding the 2nd PDN connectivity;
 - one of the PDN connectivities is for IMS;
- If the UE is configured with an APN for XCAP only usage (pc_XCAP_only_APN==true), connectivity to this PDN is not established during the initial UE registration;
- As for any 2nd PDN connectivity request security protection is already established the UE provides a valid APN in the PDN CONNECTIVITY REQUEST.

In detail the following UE configurations are supported:

| Configuration | Condition | Explanation |
|--|--|---|
| IMS_Only | pc_IMS AND NOT pc_Provide_Internet_as_second_APN AND NOT pc_Provide_IMS_as_second_APN | UE is configured to request for IMS PDN connectivity only |
| Internet_Only | NOT pc_IMS | UE does not support IMS |
| IMS_Internet | pc_IMS AND pc_Provide_Internet_as_second_APN | UE is configured to request for IMS PDN connectivity first and then to request for an internet PDN connectivity |
| Internet_IMS | pc_IMS AND pc_Provide_IMS_as_second_APN | UE is configured to request for an internet PDN connectivity first and then to request for the IMS PDN connectivity |
| NOTE 1: pc_Provide_Internet_as_second_APN and pc_Provide_IMS_as_second_APN are mutually exclusive i.e. shall not be true at the same time. | | |
| NOTE 2: IMS_Only configuration is not considered for EN-DC test cases defined in TS 38.523-1 [71] | | |

Further auxiliary definitions:

| Configuration | Condition |
|--------------------|--|
| PDN1_IMS | IMS_Only OR IMS_Internet |
| PDN2_IMS | Internet_IMS |
| PDN1_INTERNET_ONLY | Internet_Only |
| MULTI_PDN | IMS_Internet OR Internet_IMS |
| XCAP_SIGNALLING | test case requires XCAP signalling |
| EN-DC | Applicable to EN-DC test cases defined in TS 38.523-1 [71] |

4.5.2.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test UICC shall be inserted. This shall contain either ISIM and USIM applications or only a USIM application on UICC.
- If RAN Assisted WLAN interworking test cases are being performed for ANDSF rules using RAN provided thresholds, ANDSF rules to match the RAN rules defined in TS 36.304 shall be available in the UE.

4.5.2.2 Definition of system information messages

The default system information messages are used.

4.5.2.3 Procedure

Table 4.5.2.3-1: UE registration procedure (state 1 to state 2)

| Step | Procedure | Message Sequence | |
|--------|--|------------------|--|
| | | U - S | Message |
| 1 | | <-- | RRC: SYSTEM INFORMATION (BCCH) |
| 2 | UE transmits an <i>RRCConnectionRequest</i> message. | --> | RRC: <i>RRCConnectionRequest</i> |
| 3 | SS transmits an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> |
| 4 | The UE transmits an <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and to initiate the Attach procedure by including the ATTACH REQUEST message. The PDN CONNECTIVITY REQUEST message is piggybacked in ATTACH REQUEST | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: ATTACH REQUEST NAS: PDN CONNECTIVITY REQUEST |
| 5 | The SS transmits an AUTHENTICATION REQUEST message to initiate the EPS authentication and AKA procedure. | <-- | RRC: <i>DLInformationTransfer</i> NAS: AUTHENTICATION REQUEST |
| 6 | The UE transmits an AUTHENTICATION RESPONSE message and establishes mutual authentication. | --> | RRC: <i>ULInformationTransfer</i> NAS: AUTHENTICATION RESPONSE |
| 7 | The SS transmits a NAS SECURITY MODE COMMAND message to activate NAS security. | <-- | RRC: <i>DLInformationTransfer</i> NAS: SECURITY MODE COMMAND |
| 8 | The UE transmits a NAS SECURITY MODE COMPLETE message and establishes the initial security configuration. | --> | RRC: <i>ULInformationTransfer</i> NAS: SECURITY MODE COMPLETE |
| - | EXCEPTION: Steps 9a1 to 9a2 describe behaviour that depends on UE configuration; the "lower case letter" identifies a step sequence that take place if the UE has ESM information which needs to be transferred. | - | - |
| 9a1 | IF the UE sets the ESM information transfer flag in the last PDN CONNECTIVITY REQUEST message THEN the SS transmits an ESM INFORMATION REQUEST message to initiate exchange of protocol configuration options and/or APN. | <-- | RRC: <i>DLInformationTransfer</i> NAS: ESM INFORMATION REQUEST |
| 9a2 | The UE transmits an ESM INFORMATION RESPONSE message to transfer protocol configuration options and/or APN. | --> | RRC: <i>ULInformationTransfer</i> NAS: ESM INFORMATION RESPONSE |
| 10 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 11 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 12 | The SS transmits a <i>UECapabilityEnquiry</i> message including <i>RAT-Type eutra</i> to initiate the UE radio access capability transfer procedure. | <-- | RRC: <i>UECapabilityEnquiry</i> |
| 13 | The UE transmits a <i>UECapabilityInformation</i> message to transfer UE radio access capability. | --> | RRC: <i>UECapabilityInformation</i> |
| - | EXCEPTION: Steps 13Aa1 to 13Aa2 describe behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place depending on the UE implementation. | - | - |
| 13Aa 1 | IF EN-DC, then, the SS transmits a <i>UECapabilityEnquiry</i> message including <i>RAT-Type eutra-nr</i> and <i>nr</i> to initiate the UE radio access capability transfer procedure. | <-- | RRC: <i>UECapabilityEnquiry</i> |
| 13Aa 2 | The UE transmits a <i>UECapabilityInformation</i> message to transfer UE radio access capability. | --> | RRC: <i>UECapabilityInformation</i> |

| | | | |
|-------------------|---|-----|--|
| 14 | The SS transmits an <i>RRCConnectionReconfiguration</i> message to establish the default bearer with condition SRB2-DRB(1, 0) according to 4.8.2.2.1.1. This message includes the ATTACH ACCEPT message. The ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message is piggybacked in ATTACH ACCEPT. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ATTACH ACCEPT NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST |
| 15 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of default bearer. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| - | EXCEPTION: In parallel to the event described in step 16 below, if initiated by the UE the generic procedure for IP address allocation in the U-plane specified in TS 36.508 subclause 4.5A.1 takes place performing IP address allocation in the U-plane. | - | - |
| - | EXCEPTION: IF PDN1_IMS THEN in parallel to the event described in step 16 below the generic procedure for IMS signalling in the U-plane specified in TS 36.508 subclause 4.5A.3 takes place if requested by the UE | - | - |
| 16 | This message includes the ATTACH COMPLETE message. The ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message is piggybacked in ATTACH COMPLETE. | --> | RRC: <i>ULInformationTransfer</i> NAS: ATTACH COMPLETE NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT |
| - | EXCEPTION: Steps 16a1 to 16c1 describe behaviour that depends on test case requirements and UE behaviour; the "lower case letter" identifies the different branches. | - | - |
| 16a1 | IF IMS VoPs is set to '0' in ATTACH ACCEPT at step 14 THEN the procedure according to Table 4.5.2.3-2 takes place | - | - |
| 16a2 - 16b6 | Void. | - | - |
| 16c1 | ELSE IF MULTI_PDN = TRUE THEN The generic procedure for UE establishing additional PDN connectivity as specified in TS 36.508 subclause 4.5A.16 takes place | - | - |
| 17 | The SS transmits an <i>RRCConnectionRelease</i> message to release RRC connection and move to RRC_IDLE (State 2). | <-- | RRC: <i>RRCConnectionRelease</i> |
| - | EXCEPTION: Steps 18a1 to 18b1 describe behaviour that depends on UE capabilities/configuration and test requirements; the "lower case letter" identifies a step sequence that takes place if one of those is supported/configured. | - | - |
| 18a1 | IF additional PDN has been established AND (pc_XCAP_only_APN OR NOT XCAP_SIGNALLING) AND pc_UE_supports_user_initiated_PDN_disconnect THEN the non-IMS PDN shall be released as specified in TS 36.508 subclause 4.5A.17 | - | - |
| 18b1 | IF additional PDN has been established AND (pc_XCAP_only_APN OR NOT XCAP_SIGNALLING) AND NOT pc_UE_supports_user_initiated_PDN_disconnect THEN the non-IMS PDN shall be released as specified in TS 36.508 subclause 4.5A.18 | - | - |

| |
|--------------|
| NOTE 1: Void |
| NOTE 2: Void |

Table 4.5.2.3-2: Specific behaviour when IMS voice is not supported by the network

| Step | Procedure | U - S | Message Sequence Message |
|---|---|-------|--|
| - | EXCEPTION: Steps 1a1 to 1b6 describe behaviour that depends on UE configuration; the "lower case letter" identifies the different branches | - | - |
| 1a1 | IF pc_voice_PS_1_CS_2, pc_attach and pc_TAU_connected_in_IMS are set to TRUE (Note 1) THEN The UE transmits a TRACKING AREA UPDATE REQUEST message. | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE REQUEST |
| 1a2 | The SS transmits a TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE ACCEPT |
| 1a3 | The UE transmits a TRACKING AREA UPDATE COMPLETE message. | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE COMPLETE |
| 1b1 | ELSE IF pc_voice_PS_1_CS_2, pc_attach and pc_TAU_idle_in_IMS are set to TRUE (Note 2) THEN The SS transmits an <i>RRCCConnectionRelease</i> message to release the RRC connection. | <-- | RRC: <i>RRCCConnectionRelease</i> |
| 1b2 | The UE transmits an <i>RRCCConnectionRequest</i> message. | --> | RRC: <i>RRCCConnectionRequest</i> |
| 1b3 | The SS transmit an <i>RRCCConnectionSetup</i> message. | <-- | RRC: <i>RRCCConnectionSetup</i> |
| 1b4 | The UE transmits an <i>RRCCConnectionSetupComplete</i> message including a TRACKING AREA UPDATE REQUEST message. | --> | RRC: <i>RRCCConnectionSetupComplete</i> NAS: TRACKING AREA UPDATE REQUEST |
| 1b5 | The SS transmits a TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE ACCEPT |
| 1b6 | The UE transmits a TRACKING AREA UPDATE COMPLETE message. | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE COMPLETE |
| 2 | start timer Timer_1 = 5 s | - | - |
| - | EXCEPTION: Steps 3a1 to 3b1 describe behaviour that depends on UE behaviour; the "lower case letter" identifies the different branches | - | - |
| 3a1 | The generic procedure for UE establishing additional PDN connectivity as specified in TS 36.508 subclause 4.5A.16 takes place | - | - |
| 3a2 | Stop Timer_1 | - | - |
| 3b1 | Timer_1 expires | - | - |
| NOTE 1: The procedure is used with specific message with no IMS voice network support. The UE is configured for voice domain preference IMS PS voice preferred, CS Voice as secondary and to initiate EPS attach. The UE implementation supports TAU in connected mode, | | | |
| NOTE 2: The procedure is used with specific message with no IMS voice network support. The UE is configured for voice domain preference IMS PS voice preferred, CS Voice as secondary and to initiate EPS attach. The UE implementation supports TAU in idle mode, | | | |

4.5.2.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the exceptions below.

Table 4.5.2.4-1: RRCConnectionRequest (Step 2)

| Derivation Path: Table 4.6.1-16 | | | |
|-------------------------------------|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionRequest ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionRequest-r8 SEQUENCE { | | | |
| ue-Identity | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5.2.4-2: UECapabilityInformation (Steps 13 and 13Aa2)

| Derivation Path: Table 4.6.1-23 | | | |
|--|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UECapabilityInformation ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| ueCapabilityInformation-r8 | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5.2.4-3: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (Step 14)

| Derivation Path: Table 4.7.3-6 with condition IMS_PDN_ConnEstab for PDN1_IMS and NOT IMS_PDN_ConnEstab | | | |
|--|--|--|---|
| Information Element | Value/remark | Comment | Condition |
| EPS bearer identity | '0101'B | arbitrary value used for PDN connectivity being maintained during the test case | PDN1_IMS OR (PDN2_IMS AND ImsVoPS0_NoImsPDN) OR NOT MULTI_PDN |
| EPS bearer identity | '1100'B | arbitrary value used for additional PDN connectivity which may be released before entering the test procedure of the test case | MULTI_PDN AND NOT PDN1_IMS AND NOT (PDN2_IMS AND ImsVoPS0_NoImsPDN) |
| EPS bearer identity | '0101'B | arbitrary value used for IMS PDN connectivity being maintained during EN-DC test case | EN-DC AND PDN1_IMS |
| EPS bearer identity | '1100'B | arbitrary value used for non-IMS PDN connectivity being maintained during EN-DC test case | EN-DC AND (PDN1_INT ERNET_ONLY OR PDN2_IMS) |
| PDN address | | | IPv4_addresses_only |
| Length of PDN address contents | 5 octets | | |
| PDN type value | '001'B | IPv4 | |
| PDN address information | IPv4 address | The SS provides a valid IPv4 address | NOT IPv4-DHCP |
| | 0.0.0.0 | DHCPv4 is to be used to allocate the IPv4 address | IPv4-DHCP |
| ESM cause | IF "PDN type" IE in step 4 is 'IPv4v6' THEN '00110010'B ELSE Not present | "PDN type IPv4 only allowed" | |

NOTE: The default message contents specified in table 4.7.3-6 apply unless the condition IPv4_address_only in table 4.5.2.4-3 is true.

| Condition | Explanation |
|-------------------|--|
| IPv4_address_only | This condition applies if the test case preamble description indicates that the UE is allocated an IPv4 address only. |
| IPv4-DHCP | If in the last PDN CONNECTIVITY REQUEST or ESM INFORMATION RESPONSE sent prior to this message, the IE Protocol configuration options contains a configuration protocol option = '000B00H' ("IPv4 address allocation via DHCPv4", length of contents = 0). Note 1: This condition is used in conjunction with IPv4 or IPv4v6 as indicated in the "PDN address row" just above. Note 2: If both messages, PDN CONNECTIVITY REQUEST and ESM INFORMATION RESPONSE, are received and contain a Protocol configuration options IE then the IE from the message which is received later shall be used. |
| ImsVoPS0_NoImsPDN | If the test case sets IMS VoPS to 0 AND (pc_UE_NoReqIMS_IMSVoPS_0 == TRUE) |

Table 4.5.2.4-4: TRACKING AREA UPDATE REQUEST (Steps 16a1 and 16b4)

| |
|--|
| Derivation Path: 36.508 Table 4.7.2-27 with condition combined_TA_LA |
|--|

Table 4.5.2.4-5: TRACKING AREA UPDATE ACCEPT (Steps 16a2 and 16b5)

| |
|--|
| Derivation Path: 36.508 Table 4.7.2-24 with condition combined_TA_LA |
|--|

4.5.2A UE Registration, UE Test Mode Activated (State 2A)

IF `pc_ue_CategoryDL_M1` THEN use the procedure for State 2A-CE according to clause 4.5.2AB ELSE use the procedure defined in the present clause.

NOTE: The statement to use alternate procedure for CAT M1 UE (`pc_ue_CategoryDL_M1` is set) is to enable LTE legacy protocol test cases to be used for CAT M1 UE testing. Any CAT M1 or CE specific test cases should not rely on this statement, but refer directly to the relevant CE specific state.

The same assumptions and definitions apply as in clause 4.5.2.

4.5.2A.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test USIM shall be inserted.

4.5.2A.2 Definition of system information messages

The default system information messages are used.

4.5.2A.3 Procedure

Table 4.5.2A.3-1: UE registration with test mode activation procedure (state 1 to state 2A)

| Step | Procedure | Message Sequence | |
|----------|---|------------------|--|
| | | U - S | Message |
| 1 to 9a2 | Same procedure for steps 1 to 9a2 as specified in the procedure in clause 4.5.2.3 | - | - |
| 10 | The SS transmits an ACTIVATE TEST MODE message to activate UE radio bearer test mode procedure. | <-- | RRC: <i>DLInformationTransfer</i> TC: ACTIVATE TEST MODE |
| 11 | The UE transmits an ACTIVATE TEST MODE COMPLETE message. | --> | RRC: <i>ULInformationTransfer</i> TC: ACTIVATE TEST MODE COMPLETE |
| 12 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 13 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 14 | The SS transmits a <i>UECapabilityEnquiry</i> message including <i>RAT-Type eutra</i> to initiate the UE radio access capability transfer procedure. | <-- | RRC: <i>UECapabilityEnquiry</i> |
| 15 | The UE transmits a <i>UECapabilityInformation</i> message to transfer UE radio access capability. | --> | RRC: <i>UECapabilityInformation</i> |
| - | EXCEPTION: Steps 15Aa1 to 15Aa2 describe behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place depending on the UE implementation. | - | - |
| 15Aa 1 | IF EN-DC, then, the SS transmits a <i>UECapabilityEnquiry</i> message including <i>RAT-Type eutra-nr</i> and <i>nr</i> to initiate the UE radio access capability transfer procedure. | <-- | RRC: <i>UECapabilityEnquiry</i> |
| 15Aa 2 | The UE transmits a <i>UECapabilityInformation</i> message to transfer UE radio access capability. | --> | RRC: <i>UECapabilityInformation</i> |
| 16 | The SS transmits an <i>RRCConnectionReconfiguration</i> message to establish the default bearer with condition SRB2-DRB(1, 0) according to 4.8.2.2.1.1. This message includes the ATTACH ACCEPT message. The ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message is piggybacked in ATTACH ACCEPT. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ATTACH ACCEPT NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST |
| 17 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of default bearer. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| - | EXCEPTION: In parallel to the event described in step 18 below the generic procedure for IP address allocation in the U-plane specified in TS 36.508 subclause 4.5A.1 takes place performing IP address allocation in the U-plane if requested by the UE. | - | - |
| 18 | This message includes the ATTACH COMPLETE message. The ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message is piggybacked in ATTACH COMPLETE. | --> | RRC: <i>ULInformationTransfer</i> NAS: ATTACH COMPLETE NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT |
| - | EXCEPTION: Steps 18a1 to 18c1 describe behaviour that depends on UE configuration; the "lower case letter" identifies a step sequence that takes place when the UE is configured in a certain way. | - | - |
| 18a1 | IF IMS voice not supported and <i>pc_voice_PS_1_CS_2</i> , <i>pc_attach</i> and <i>pc_TAU_connected_in_IMS</i> are set to TRUE (Note 1) THEN The UE transmits a TRACKING AREA UPDATE REQUEST message. | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE REQUEST |

| | | | |
|---|---|-----|---|
| 18a2 | The SS transmits a TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE ACCEPT |
| 18a3 | The UE transmits a TRACKING AREA UPDATE COMPLETE message. | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE COMPLETE |
| 18b1 | ELSE IF IMS voice not supported and pc_voice_PS_1_CS_2, pc_attach and pc_TAU_idle_in_IMS are set to TRUE (Note 2) THEN The SS transmits an <i>RRCCConnectionRelease</i> message to release the RRC connection. | <-- | RRC: <i>RRCCConnectionRelease</i> |
| 18b2 | The UE transmits an <i>RRCCConnectionRequest</i> message. | --> | RRC: <i>RRCCConnectionRequest</i> |
| 18b3 | The SS transmit an <i>RRCCConnectionSetup</i> message. | <-- | RRC: <i>RRCCConnectionSetup</i> |
| 18b4 | The UE transmits an <i>RRCCConnectionSetupComplete</i> message including a TRACKING AREA UPDATE REQUEST message. | --> | RRC: <i>RRCCConnectionSetupComplete</i> NAS: TRACKING AREA UPDATE REQUEST |
| 18b5 | The SS transmits a TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE ACCEPT |
| 18b6 | The UE transmits a TRACKING AREA UPDATE COMPLETE message. | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE COMPLETE |
| 18c1-18c3 | ELSE IF MULTI_PDN = TRUE THEN Steps from 1 to 3 from the generic procedure for UE establishing additional PDN connectivity as specified in TS 36.508 subclause 4.5A.16 takes place | - | - |
| - | EXCEPTION: In parallel to the event described in step 18c4 below the generic procedure for IP address allocation in the U-plane specified in TS 36.508 subclause 4.5A.1 takes place performing IP address allocation in the U-plane if requested by the UE. | - | - |
| 18c4 | The UE transmits an ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message | --> | RRC: <i>ULInformationTransfer</i> NAS:ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT |
| 19 | The SS transmits an <i>RRCCConnectionRelease</i> message to release RRC connection and move to RRC_IDLE (State 2A). | <-- | RRC: <i>RRCCConnectionRelease</i> |
| - | EXCEPTION: Steps 20a1 to 20b1 describe behaviour that depends on UE capabilities/configuration; the "lower case letter" identifies a step sequence that takes place if one of those is supported/configured. | - | - |
| 20a1 | IF MULTI_PDN AND pc_UE_supports_user_initiated_PDN_disconnect THEN the non-IMS PDN shall be released as specified in TS 36.508 subclause 4.5A.17 | - | - |
| 20b1 | IF MULTI_PDN AND NOT pc_UE_supports_user_initiated_PDN_disconnect THEN the non-IMS PDN shall be released as specified in TS 36.508 subclause 4.5A.18 | - | - |
| NOTE 1: The procedure is used with specific message with no IMS voice network support. The UE is configured for voice domain preference IMS PS voice preferred, CS Voice as secondary and to initiate EPS attach. The UE implementation supports TAU in connected mode. | | | |
| NOTE 2: The procedure is used with specific message with no IMS voice network support. The UE is configured for voice domain preference IMS PS voice preferred, CS Voice as secondary and to initiate EPS attach. The UE implementation supports TAU in idle mode. | | | |

4.5.2A.4 Specific message contents

All specific message contents shall be referred to clause 4.6, 4.7 and 4.7A with the exceptions below.

Table 4.5.2A.4-1: RRCConnectionRequest (Step 2)

| Derivation Path: Table 4.6.1-16 | | | |
|-------------------------------------|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionRequest ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionRequest-r8 SEQUENCE { | | | |
| ue-Identity | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5.2A.4-2: UECapabilityInformation (Steps 15 and 15Aa2)

| Derivation Path: Table 4.6.1-23 | | | |
|--|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UECapabilityInformation ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| ueCapabilityInformation-r8 | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5.2A.4-3: TRACKING AREA UPDATE REQUEST (Steps 18a1 and 18b4)

| |
|--|
| Derivation Path: 36.508 Table 4.7.2-27 with condition combined_TA_LA |
|--|

Table 4.5.2A.4-4: TRACKING AREA UPDATE ACCEPT (Steps 18a2 and 18b5)

| |
|--|
| Derivation Path: 36.508 Table 4.7.2-24 with condition combined_TA_LA |
|--|

4.5.2AA UE Registration in cell supporting BL/CE UE (State 2-CE)

The same assumptions and definitions apply as in clause 4.5.2.

4.5.2AA.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test USIM shall be inserted.

4.5.2AA.2 Definition of system information messages

The default system information messages are used with the exceptions below.

Table 4.5.2AA.2-1: MasterInformationBlock

| |
|---|
| Derivation Path: 36.508 Table 4.4.3.2-1 using condition CEmodeB if the test case specifically tests CE mode B else use condition CEmodeA. |
|---|

Table 4.5.2AA.2-2: SystemInformation-BR-r13

| |
|---|
| Derivation Path: 36.508 Table 4.4.3.2-2A. |
|---|

Table 4.5.2AA.2-3: SystemInformationBlockType1-BR-r13

| |
|--|
| Derivation Path: 36.508 Table 4.4.3.2-3A using condition ENHANCED COVERAGE if the BL/CE UE initial condition is intended to be in enhanced coverage; else use condition NORMAL COVERAGE. |
|--|

4.5.2AA.3 Procedure

Table 4.5.2AA.3-1: UE registration procedure (state 1 to state 2-CE)

| Step | Procedure | Message Sequence | |
|-----------|---|------------------|--|
| | | U - S | Message |
| 1 | In addition to the system information broadcasted on BCCH the SS broadcasts <i>SystemInformation-BR-r13</i> , <i>SystemInformationBlockType1-BR-r13</i> and other relevant system information blocks as required by the specified combinations of system information blocks specified for the test case on BCCH-BR. | <-- | RRC: SYSTEM INFORMATION (BCCH and BCCH-BR) |
| 2 to 18b1 | Same procedure for steps 2 to 18b1 as specified in the procedure in clause 4.5.2.3 | - | - |

4.5.2AA.4 Specific message contents

Same specific message content as in clause 4.5.2.4 with the exception below:

- In addition to any other conditions use the condition CEmodeB if the test case specifically tests CE mode B else use condition CEmodeA.

4.5.2AB UE Registration, UE Test Mode Activated in cell supporting BL/CE UE (State 2A-CE)

The same assumptions and definitions apply as in clause 4.5.2.

4.5.2AB.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test USIM shall be inserted.

4.5.2AB.2 Definition of system information messages

Same system information message content as in clause 4.5.2AA.2.

4.5.2AB.3 Procedure

Table 4.5.2AB.3-1: UE registration procedure (state 1 to state 2A-CE)

| Step | Procedure | Message Sequence | |
|------------|---|------------------|--|
| | | U - S | Message |
| 1 | In addition to the system information broadcasted on BCCH the SS broadcasts <i>SystemInformation-BR-r13</i> , <i>SystemInformationBlockType1-BR-r13</i> and other relevant system information blocks as required by the specified combinations of system information blocks specified for the test case on BCCH-BR. | <-- | RRC: SYSTEM INFORMATION (BCCH and BCCH-BR) |
| 2 to 9a2 | Same procedure for steps 2 to 9a2 as specified in the procedure in clause 4.5.2.3 | - | - |
| 10 to 20b1 | Same procedure for steps 10 to 20b1 as specified in the procedure in clause 4.5.2A.3 | - | - |

4.5.2AB.4 Specific message contents

Same specific message content as in clause 4.5.2A.4 with the exception below:

- In addition to any other conditions use the condition CEmodeB if the test case specifically tests CE mode B else use condition CEmodeA.

4.5.2B UE Registration, pre-registration on HRPD (State 2B)

The same assumptions and definitions apply as in clause 4.5.2.

4.5.2B.1 Initial conditions

System Simulator:

- Cell 1
- Cell 1 is transmitting SystemInformationBlockType8

User Equipment:

- The Test USIM shall be inserted.

4.5.2B.2 Definition of system information messages

Table 4.5.2B.2-1: SystemInformationBlockType1 for cell 1 (Steps 1-41, Table 4.5.2B.3-2)

| Derivation Path: 36.508 Table 4.4.3.2-3 | | | |
|---|--|--------------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { | | | |
| schedulingInformation ::= SEQUENCE (SIZE (1..maxSI-Message)) OF SEQUENCE {} | Combination 6 in TS 36.508 section 4.4.3.1 | SIB2, SIB3 and SIB 8 are transmitted | |
| } | | | |

Table 4.5.2B.2-2: SystemInformationBlockType8 for cell 1 (Steps 1-41, Table 4.5.2B.3-2)

| Derivation Path: 36.508 Table 4.4.3.3-7, condition HRPD | | | |
|--|------------------------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType8 ::= SEQUENCE { | | | |
| parametersHRPD SEQUENCE { | | | |
| preRegistrationInfoHRPD SEQUENCE { | | | |
| preRegistrationAllowed | TRUE | | |
| preRegistrationZoneld | ColorCode | | |
| secondaryPreRegistrationZoneldList | Not present | | |
| SEQUENCE (SIZE (1..2)) OF SEQUENCE { | | | |
| PreRegistrationZoneldHRPD | Not present | | |
| } | | | |
| } | | | |
| cellReselectionParametersHRPD SEQUENCE { | | | |
| bandClassList SEQUENCE (SIZE (1..maxCDMA-BandClass)) OF SEQUENCE { | 1 entry | | |
| bandClass | Band Class of frequency under test | ENUMERATED {bc0, bc1, bc2, bc3, bc4, bc5, bc6, bc7, bc8, bc9, bc10, bc11, bc12, bc13, bc14, bc15, bc16, bc17, spare14, spare13, spare12, spare11, spare10, spare9, spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1, ...} | |
| cellReselectionPriority | 3 | | |
| threshX-High | 30(-30) | INTEGER (0..63) | |
| threshX-Low | 32(-32) | INTEGER (0..63) | |
| } | | | |
| neighCellList SEQUENCE (SIZE (1..16)) OF SEQUENCE { | 1 entry | | |
| bandClass | Band Class of frequency under test | ENUMERATED {bc0, bc1, bc2, bc3, bc4, bc5, bc6, bc7, bc8, bc9, bc10, bc11, bc12, bc13, bc14, bc15, bc16, bc17, spare14, spare13, spare12, spare11, spare10, spare9, spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1, ...} | |
| } | | | |
| } | | | |
| t-ReselectionCDMA2000 | 3 | INTEGER (0..7) | |
| } | | | |
| } | | | |
| } | | | |

4.5.2B.3 Procedure

Table 4.5.2B.3-1 shows the cell power levels during the procedure.

Table 4.5.2B.3-1: Time instances of cell power level and parameter changes

| | Parameter | Unit | Cell 1 | | Remark |
|-----------|-----------------------|-------------|---------------|--|---------------|
| T0 | Cell-specific RS EPRE | dBm/15kHz | -75 | | - |

Table 4.5.2B.3-2: UE registration with HRPD pre-registration procedure (state 1 to state 2B)

| Step | Procedure | Message Sequence | |
|---------|--|------------------|------------------------------|
| | | U - S | Message |
| 1 to 16 | Same procedure for steps 1 to 16 as specified in the procedure in clause 4.5.2.3 | - | - |
| - | EXCEPTION: IF MULTI_PDN = TRUE THEN in parallel to the events described in steps 17 to 40 below, the generic procedure for UE establishing additional PDN connectivity as specified in TS 36.508 subclause 4.5A.16 takes place | | |
| 17 | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>UATIRequest</i> message on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 18 | The SS transmits a <i>DLInformationTransfer</i> containing a tunneled <i>UATIAssignment</i> message on Cell 1. | <-- | <i>DLInformationTransfer</i> |
| 19 | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>UATIComplete</i> message on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 20 | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>AlternateLinkOpenReq</i> message on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 21 | The SS transmits a <i>DLInformationTransfer</i> containing a tunneled <i>AlternateLinkOpenConf</i> message on Cell 1. | <-- | <i>DLInformationTransfer</i> |
| 22 | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>AlternateLinkOpenComplete</i> on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 23 | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>ConfigurationRequest</i> message for SCP configuration on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 24 | The SS transmits a <i>DLInformationTransfer</i> containing a tunneled <i>ConfigurationResponse</i> message for SCP configuration on Cell 1. | <-- | <i>DLInformationTransfer</i> |
| 25 | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>ConfigurationRequest</i> message for Stream protocol on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 26 | The SS transmits a <i>DLInformationTransfer</i> containing a tunneled <i>ConfigurationResponse</i> message for Stream protocol accepting EMPA bound to service network on Cell 1. | <-- | <i>DLInformationTransfer</i> |
| 27 | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>EMPA ConfigurationRequest</i> message or <i>MMPA ConfigurationRequest</i> message on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 28 | The SS transmits a <i>DLInformationTransfer</i> containing a tunneled <i>EMPA ConfigurationResponse</i> message or <i>MMPA ConfigurationResponse</i> message on Cell 1. | <-- | <i>DLInformationTransfer</i> |
| 29 | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>ConfigurationComplete</i> message on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 30 | The SS transmits a <i>DLInformationTransfer</i> containing a tunneled <i>EMPA ConfigurationRequest</i> message or <i>MMPA ConfigurationRequest</i> message on Cell 1. | <-- | <i>DLInformationTransfer</i> |
| 30A | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>EMPA ConfigurationResponse</i> message or <i>MMPA ConfigurationResponse</i> message on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 30B | The SS transmits an <i>DLInformationTransfer</i> containing a tunneled <i>SoftConfigurationComplete</i> message on Cell 1. | <-- | <i>DLInformationTransfer</i> |
| 30C | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>AlternateLinkCloseReq</i> message on Cell 1. | --> | <i>ULInformationTransfer</i> |

| | | | |
|-----|---|------|------------------------------|
| 30D | The SS transmits a <i>DLInformationTransfer</i> containing a tunneled <i>AlternateLinkCloseConf</i> message on Cell 1. | <-- | <i>DLInformationTransfer</i> |
| 31 | Optionally tunneled device level authentication may take place on Cell 1. | <--> | - |
| 32 | Optionally tunneled Location Update procedure may take place if the SS is configured to support it. | <--> | - |
| 32A | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>AlternateLinkOpenReq</i> message on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 32B | The SS transmits a <i>DLInformationTransfer</i> containing a tunneled <i>AlternateLinkOpenConf</i> message on Cell 1. | <-- | <i>DLInformationTransfer</i> |
| 32C | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>AlternateLinkOpenComplete</i> message on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 33 | Tunneled PPP LCP negotiation is performed between the UE and the SS. EAP-AKA' is selected as the authentication protocol. | <--> | - |
| 33A | After entering PPP LCP Open State, optionally tunneled PPP Version Capability Indicaiton and/or Max PPP Inactivity Timer negotiation may take place. | <--> | - |
| 34 | Tunneled EAP-AKA' is performed between the UE and the SS. | <--> | - |
| 35 | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>VSNCP Configure-Request</i> message, including a PDN-ID, PDN Type, APN, PDN Address, Protocol Configuration Options, and Attach Type = "handover". The Address Allocation Preference option contained in the Protocol Configuration Options indicates whether the UE wants to perform the IP address allocation during the attach procedure or deferred IP address allocation. PDN Type indicates the UE's IP capability (IPv4, IPv6 or IPv4/v6) | --> | <i>ULInformationTransfer</i> |
| 36 | The SS transmits a <i>DLInformationTransfer</i> containing a tunneled <i>VSNCP Configure-Ack</i> message. | <-- | <i>DLInformationTransfer</i> |
| 37 | The SS transmits a <i>DLInformationTransfer</i> containing a tunneled <i>VSNCP Configure-Request</i> message including the PDN-ID configuration option. | <-- | <i>DLInformationTransfer</i> |
| 38 | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>VSNCP Configure-Ack</i> message. | --> | <i>ULInformationTransfer</i> |
| 39 | Optionally deferred IP address allocation using tunnelled IETF messages can take place depending on the Address Allocation Preference indicated by the UE at Step 35. | <--> | |
| 39A | The UE transmits an <i>ULInformationTransfer</i> containing a tunneled <i>AlternateLinkCloseReq</i> message on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 39B | The SS transmits a <i>DLInformationTransfer</i> containing a tunneled <i>AlternateLinkCloseConf</i> message on Cell 1. | <-- | <i>DLInformationTransfer</i> |
| 40 | Void | | |
| 41 | The SS transmits an <i>RRCCConnectionRelease</i> message on Cell 1. | <-- | <i>RRCCConnectionRelease</i> |
| - | EXCEPTION: Steps 42a1 to 42b1 describe behaviour that depends on UE capabilities/configuration; the "lower case letter" identifies a step sequence that takes place if one of those is supported/configured. | - | - |

| | | | |
|---|--|---|---|
| 42a1 | IF MULTI_PD AND pc_UE_supports_user_initiated_PDN_disconnect THEN the non-IMS PDN shall be released as specified in TS 36.508 subclause 4.5A.17 | - | - |
| 42b1 | IF MULTI_PD AND NOT pc_UE_supports_user_initiated_PDN_disconnect THEN the non-IMS PDN shall be released as specified in TS 36.508 subclause 4.5A.18 | - | - |
| <p>Note 1: The sequence in steps 17-40 lists important eHRPD procedures. More protocol negotiations can happen based on UE capability and SS emulation.</p> <p>Note 2: Message contents of tunnelled CDMA2000 messages (steps 17-40) are not checked in terms of conformance testing.</p> | | | |

NOTE: If step 31 is performed, an alternative link establishment procedure is also performed.

4.5.2B.4 Specific message contents

All specific message contents shall be referred to clause 4.6, 4.7 and 4.7A with the exceptions below.

Table 4.5.2B.4-1: RRCConnectionRequest (Step 2, Table 4.5.2B.3-2)

| Derivation Path: Table 4.6.1-16 | | | |
|-------------------------------------|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionRequest ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionRequest-r8 SEQUENCE { | | | |
| ue-Identity | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5.2B.4-2: UECapabilityInformation (Step13, Table 4.5.2B.3-2)

| Derivation Path: Table 4.6.1-23 | | | |
|--|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UECapabilityInformation ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| ueCapabilityInformation-r8 | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5.2B.4-3: UATI Request message (Step 17, Table 4.5.2B.3-2)

| Field | Value/remark | Comment | Condition |
|---------------------------|-------------------------|--------------|-----------|
| SAPState | '0'B | SAP Header | |
| SessionConfigurationToken | 16 bits, Set by UE | | |
| ConnectionLayerFormat | 1 bit, Set by UE | | |
| ATI Record | 34 bits, RATI set by UE | | |
| Reserved | '0000'B | | |
| MessageID | '00000000'B | UATI Request | |
| TransactionID | 8 bits, Set by UE | | |

Table 4.5.2B.4-4: UATI Assignment message (Step 18, Table 4.5.2B.3-2)

| Field | Value/remark | Comment | Condition |
|---------------------------|-----------------------------------|-----------------|-----------|
| SAPState | '1'B | SAP Header | |
| SessionConfigurationToken | '0' | | |
| ConnectionLayerFormat | 1 bit, Set by SS | | |
| ATI Record | 34 bits, RATI set in UATI Request | | |
| Reserved | '0000'B | | |
| MessageID | '00000001'B | UATI Assignment | |
| MessageSequence | 8 bits, Set by SS | | |
| Reserved1 | '0000000'B | | |
| SubnetIncluded | '1'B | | |
| UATISubnetMask | '1101000'B | | |
| UATI104 | 104 bits, Set by SS | | |
| UATIColorCode | 8 bits, Set to ColorCode | | |
| UATI024 | 24 bits, Set by SS | | |
| UpperOldUATILength | '0000'B | | |
| Reserved2 | '0000'B | | |

4.5.2C UE Registration, pre-registration on 1xRTT (State 2C)

The same assumptions and definitions apply as in clause 4.5.2.

4.5.2C.1 Initial conditions

System Simulator:

- Cell 1
- Cell 1 is transmitting SystemInformationBlockType8

User Equipment:

- The Test USIM shall be inserted.
- The UE is switched OFF.

4.5.2C.2 Definition of system information messages

Table 4.5.2C.2-1: SystemInformationBlockType1 for cell 1 (Steps 1-19, Table 4.5.2C.3-2)

| Derivation Path: 36.508 Table 4.4.3.2-3 | | | |
|---|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { schedulingInformation ::= SEQUENCE (SIZE (1..maxSI-Message)) OF SEQUENCE {} } | Combination 6 in TS 36.508 section 4.4.3.1 | SIB2, SIB3 and SIB 8 are transmitted | |

Table 4.5.2C.2-2: *SystemInformationBlockType8* for cell 1 (Steps 1-19, Table 4.5.2C.3-2)

| Derivation Path: 36.508 Table 4.4.3.3-7, condition 1XRTT | | | |
|--|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType8 ::= SEQUENCE { | | | |
| parameters1XRTT SEQUENCE { | | | |
| csfb-RegistrationParam1XRTT SEQUENCE { | | | |
| Sid | SID under test For Signalling test cases, see table 4.4.2-4 | BIT STRING (SIZE (15)) | |
| Nid | NID under test For Signalling test cases, see table 4.4.2-4 | BIT STRING (SIZE (16)) | |
| multipleSID | TRUE | BOOLEAN | |
| multipleNID | TRUE | BOOLEAN | |
| homeReg | TRUE | BOOLEAN | |
| foreignSIDReg | TRUE | BOOLEAN | |
| foreignNIDReg | TRUE | BOOLEAN | |
| parameterReg | TRUE | BOOLEAN | |
| powerUpReg | TRUE | BOOLEAN | |
| registrationPeriod | '0000000' | BIT STRING (SIZE (7)) | |
| registrationZone | Registration zone under test For Signalling test cases, see table 4.4.2-4 | BIT STRING (SIZE (12)) | |
| totalZone | '001'B | BIT STRING (SIZE (3)) | |
| zoneTimer | '000'B or '001'B | BIT STRING (SIZE (3)) | |
| } | | | |
| longCodeState1XRTT | A valid value, calculated and updated by the SS | BIT STRING (SIZE (42)) OPTIONAL | |
| cellReselectionParameters1XRTT SEQUENCE { | | | |
| bandClassList SEQUENCE (SIZE (1..maxCDMA -BandClass)) OF SEQUENCE { | 1 entry | | |
| bandClass | Band Class of frequency under test | ENUMERATED {bc0, bc1, bc2, bc3, bc4, bc5, bc6, bc7, bc8, bc9, bc10, bc11, bc12, bc13, bc14, bc15, bc16, bc17, spare14, spare13, spare12, spare11, spare10, spare9, spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1, ...} | |
| cellReselectionPriority | 3 | | |
| threshX-High | 30(-30) | INTEGER (0..63) | |
| threshX-Low | 32(-32) | INTEGER (0..63) | |
| } | | | |
| } | | | |
| csfb-RegistrationParam1XRTT-v920{ | | | |
| powerDownReg-r9 | TRUE | | |
| } | | | |
| } | | | |
| } | | | |

4.5.2C.3 Procedure

Table 4.5.2C.3-1 shows the cell power levels after the preamble.

Table 4.5.2C.3-1: Time instances of cell power level and parameter changes

| | Parameter | Unit | Cell 1 | | Remark |
|----|-----------------------|-----------|--------|--|--------|
| T0 | Cell-specific RS EPRE | dBm/15kHz | -60 | | - |

Table 4.5.2C.3-2: UE registration with 1xRTT pre-registration procedure (state 1 to state 2C)

| Step | Procedure | Message Sequence | |
|--|---|------------------|---------------------------------------|
| | | U - S | Message |
| 1 to 16 | Same procedure for steps 1 to 16 as specified in the procedure in clause 4.5.2.3 | - | - |
| - | EXCEPTION: IF MULTI_PDN = TRUE THEN in parallel to the events described in steps 16A to 18 below, the generic procedure for UE establishing additional PDN connectivity as specified in TS 36.508 subclause 4.5A.16 takes place | | |
| 16A | The UE transmits a <i>CSFBParametersRequestCDMA2000</i> on Cell 1? | --> | <i>CSFBParametersRequestCDMA2000</i> |
| 16B | The SS transmits a <i>CSFBParametersResponseCDMA2000</i> on Cell 1. | <<-- | <i>CSFBParametersResponseCDMA2000</i> |
| 17 | The UE transmits an <i>ULInformationTransfer</i> containing a 1xRTT GCSNA Encapsulated Registration message on Cell 1. | --> | <i>ULInformationTransfer</i> |
| 17A | The SS transmits a <i>DLInformationTransfer</i> containing a GCSNA Ack message on Cell 1. | <<-- | <i>DLInformationTransfer</i> |
| 18 | The SS transmits a <i>DLInformationTransfer</i> containing a 1x RTT GCSNA Encapsulated Registration Accept Order on Cell 1. | <<-- | <i>DLInformationTransfer</i> |
| 19 | The SS transmits an <i>RRCCConnectionRelease</i> message on Cell 1. | <<-- | <i>RRCCConnectionRelease</i> |
| - | EXCEPTION: Steps 20a1 to 20b1 describe behaviour that depends on UE capabilities/configuration; the "lower case letter" identifies a step sequence that takes place if one of those is supported/configured. | - | - |
| 20a1 | IF MULTI_PDN AND pc_UE_supports_user_initiated_PDN_disconnect THEN the non-IMS PDN shall be released as specified in TS 36.508 subclause 4.5A.17 | - | - |
| 20b1 | IF MULTI_PDN AND NOT pc_UE_supports_user_initiated_PDN_disconnect THEN the non-IMS PDN shall be released as specified in TS 36.508 subclause 4.5A.18 | - | - |
| Note: Message contents of tunnelled CDMA2000 messages (steps 17-18) are not checked in terms of conformance testing. | | | |

Table 4.5.2C.3-3: Void

4.5.2C.4 Specific message contents

All specific message contents shall be referred to clause 4.6, 4.7 and 4.7A with the exceptions below.

Table 4.5.2C.4-1: RRCConnectionRequest (Step 2, Table 4.5.2C.3-2)

| Derivation Path: Table 4.6.1-16 | | | |
|-------------------------------------|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionRequest ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionRequest-r8 SEQUENCE { | | | |
| ue-Identity | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5.2C.4-2: UECapabilityInformation (Step 13, Table 4.5.2C.3-2)

| Derivation Path: Table 4.6.1-23 | | | |
|--|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UECapabilityInformation ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| ueCapabilityInformation-r8 | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5.2C.4-3: Void**Table 4.5.2C.4-4: Void****Table 4.5.2C.4-5: CSFBParametersResponseCDMA2000 (Step 16B, Table 4.5.2C.3-2)**

| Derivation Path: 36.508 Table 4.6.1-2 | | | |
|---|-----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| CSFBParametersResponseCDMA2000 ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| csfbParametersResponseCDMA2000-r8 SEQUENCE { | | | |
| Rand | Random Challenge Data set by SS | | |
| mobilityParameters | Set according to Table 4.5.2C.4-6 | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5.2C.4-6: *mobilityParameters* (CDMA2000Parameters) (Step 16B, Table 4.5.2C.3-2)

| Information Element | Value/remark | Comment | Condition |
|---------------------------------------|------------------|---------|-----------|
| RecordType | '00000000'B | | |
| SIDIncluded | '1'B | | |
| SID | The same as SIB8 | | |
| NIDIncluded | '1'B | | |
| NID | The same as SIB8 | | |
| REG_ZONEIncluded | '1'B | | |
| REG_ZONE | The same as SIB8 | | |
| TOTAL_ZONESIncluded | '1'B | | |
| TOTAL_ZONES | The same as SIB8 | | |
| ZONE_TIMERIncluded | '1'B | | |
| ZONE_TIMER | The same as SIB8 | | |
| PACKET_ZONE_IDIncluded | '0'B | | |
| PACKET_ZONE_ID | Not present | | |
| PZIDHystParametersIncluded | '0'B | | |
| PZ_HYST_ENABLED | Not present | | |
| PZ_HYST_INFO_INCL | Not present | | |
| PZ_HYST_LIST_LEN | Not present | | |
| PZ_HYST_ACT_TIMER | Not present | | |
| PZ_HYST_TIMER_MUL | Not present | | |
| PZ_HYST_TIMER_EXP | Not present | | |
| P_REVIncluded | '1'B | | |
| P_REV | '00000110'B | | |
| MIN_P_REVIncluded | '1'B | | |
| MIN_P_REV | '00000110'B | | |
| '0'B NEG_SLOT_CYCLE_INDEX_SUPIncluded | | | |
| NEG_SLOT_CYCLE_INDEX_SUP | Not present | | |
| ENCRYPT_MODEIncluded | '0'B | | |
| ENCRYPT_MODE | Not present | | |
| ENC_SUPPORTEDIncluded | '0'B | | |
| ENC_SUPPORTED | Not present | | |
| SIG_ENCRYPT_SUPIncluded | '0'B | | |
| SIG_ENCRYPT_SUP | Not present | | |
| MSG_INTEGRITY_SUPIncluded | '0'B | | |
| MSG_INTEGRITY_SUP | Not present | | |
| SIG_INTEGRITY_SUP_INCLIncluded | '0'B | | |
| SIG_INTEGRITY_SUP_INCL | Not present | | |
| SIG_INTEGRITY_SUPIncluded | '0'B | | |
| SIG_INTEGRITY_SUP | Not present | | |
| AUTHIncluded | '1'B | | |
| AUTH | '00'B | | |
| MAX_NUM_ALT_SOIncluded | '1'B | | |
| MAX_NUM_ALT_SO | '000'B | | |
| USE_SYNC_IDIncluded | '0'B | | |
| USE_SYNC_ID | Not present | | |
| MS_INIT_POS_LOC_SUP_INDIncluded | '0'B | | |
| MS_INIT_POS_LOC_SUP_IND | Not present | | |
| MOB_QOSIncluded | '0'B | | |
| MOB_QOS | Not present | | |
| BAND_CLASS_INFO_REQIncluded | '0'B | | |
| BAND_CLASS_INFO_REQ | Not present | | |
| BAND_CLASSIncluded | '1'B | | |
| BAND_CLASS | '00000'B | | |
| BYPASS_REG_INDIncluded | '0'B | | |
| BYPASS_REG_IND | Not present | | |
| '0'B ALT_BAND_CLASSIncluded | | | |
| ALT_BAND_CLASS | Not present | | |
| MAX_ADD_SERV_INSTANCEIncluded | '0'B | | |
| MAX_ADD_SERV_INSTANCE | Not present | | |
| HOME_REGIncluded | '1'B | | |
| HOME_REG | The same as SIB8 | | |
| FOR_SID_REGIncluded | '1'B | | |
| FOR_SID_REG | The same as SIB8 | | |
| FOR_NID_REGIncluded | '1'B | | |
| FOR_NID_REG | The same as SIB8 | | |

| | | | |
|------------------------------------|---|--|--|
| POWER_UP_REGIncluded | '1'B | | |
| POWER_UP_REG | The same as SIB8 | | |
| POWER_DOWN_REGIncluded | '1'B | | |
| POWER_DOWN_REG | The same as SIB8 | | |
| PARAMETER_REGIncluded | '1'B | | |
| PARAMETER_REG | The same as SIB8 | | |
| REG_PRDIncluded | '1'B | | |
| REG_PRD | The same as SIB8 | | |
| REG_DISTIncluded | '0'B | | |
| REG_DIST | Not present | | |
| PREF_MSID_TYPEIncluded | '1'B | | |
| PREF_MSID_TYPE | '11'B | | |
| EXT_PREF_MSID_TYPEIncluded | '0'B | | |
| EXT_PREF_MSID_TYPE | Not present | | |
| MEID_REQDIncluded | '0'B | | |
| MEID_REQD | Not present | | |
| MCCIncluded | '1'B | | |
| MCC | See the Table 4.4.2-4 Note 1, Note 2 | | |
| IMSI_11_12Included | '1'B | | |
| IMSI_11_12 | See the Table 4.4.2-4 Note 1, Note 2 | | |
| IMSI_T_SUPPORTEDIncluded | '1'B | | |
| IMSI_T_SUPPORTED | '0'B | | |
| RECONNECT_MSG_INDIncluded | '0'B | | |
| RECONNECT_MSG_IND | Not present | | |
| RER_MODE_SUPPORTEDIncluded | '0'B | | |
| RER_MODE_SUPPORTED | Not present | | |
| TKZ_MODE_SUPPORTEDIncluded | '0'B | | |
| TKZ_MODE_SUPPORTED | Not present | | |
| TKZ_IDIncluded | '0'B | | |
| TKZ_ID | Not present | | |
| PILOT_REPORTIncluded PILOT_REPORT | '0'B | | |
| PILOT_REPORT | Not present | | |
| SDB_SUPPORTEDIncluded | '0'B | | |
| SDB_SUPPORTED | Not present | | |
| AUTO_FCSO_ALLOWEDIncluded | '0'B | | |
| AUTO_FCSO_ALLOWED | Not present | | |
| SDB_IN_RCNM_INDIncluded | '0'B | | |
| SDB_IN_RCNM_IND | Not present | | |
| FPC_FCH_Included | '1'B | | |
| FPC_FCH_INIT_SETPT_RC3 | '00011000'B | | |
| FPC_FCH_INIT_SETPT_RC4 | '00011000'B | | |
| FPC_FCH_INIT_SETPT_RC5 | '00011000'B | | |
| FPC_FCH_INIT_SETPT_RC11 | '00000000'B | | |
| FPC_FCH_INIT_SETPT_RC12 | '00000000'B | | |
| T_ADD_Included | '0'B | | |
| T_ADD | Not present | | |
| PILOT_INC_Included | '1'B | | |
| PILOT_INC | '0010'B | | |
| RAND_Included | '0'B | | |
| RAND | Not present | | |
| LP_SEC_Included | '1'B | | |
| LP_SEC | '00000000'B | | |
| LTM_OFF_Included | '1'B | | |
| LTM_OFF | '000000'B | | |
| DAYLT_Included | '1'B | | |
| DAYLT | '0'B | | |
| GCSNAL2AckTimer_Included | '1'B | | |
| GCSNAL2AckTimer | '00000001'B | | |
| GCSNASequenceContextTimer_Included | '1'B | | |
| GCSNASequenceContextTimer | '00000101'B | | |

Table 4.5.2C.4-7: *ULInformationTransfer* (Step 17, Table 4.5.2C.3-2)

| Derivation Path: 36.508 Table 4.6.1-25 | | | |
|--|-----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ULInformationTransfer ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| ulInformationTransfer-r8 SEQUENCE { | | | |
| dedicatedInformationType CHOICE { | | | |
| dedicatedInfoCDMA2000-1XRTT | Set according to Table 4.5.2C.4-8 | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5.2C.4-8: 1xRTT GCSNA Encapsulated Registration message (Step 17, Table 4.5.2C.3-2)

| Information Element | Value/remark | Comment | Condition |
|-----------------------------|---------------------|-------------------------------|-----------|
| MessageID | '00000001'B | GCSNA1xCircuitService message | |
| GCSNAOption | '00000001'B | | |
| AlternativeGCSNAOption_INCL | '0'B | | |
| IWSIDIncl | '0'B | | |
| AckRequired | '1'B | | |
| StopDupDetect | '0'B | | |
| MessageSequence | Set by UE | | |
| NumTLACEncapsulated1xL3PDU | '00'B | | |
| Reserved | '0000'B | | |
| 1xLogicalChannel | '0'B | | |
| 1xProtocolRevision | '00000110'B | | |
| MsgType | '00000001'B | Registration message | |
| NumTLACHeaderRecords | '0001'B | | |
| TLACHeaderRecordType | '0000'B | | |
| TLACHeaderRecordLength | 8 bits, Set by UE | | |
| MSID_TYPE | '011'B | | |
| MSID_LEN | 4 bits, Set by UE | | |
| MSID | Variable, Set by UE | | |
| Reserved | '0000000'B | | |
| 1xL3PDULength | 16 bits, Set by UE | | |
| REG_TYPE | '0001'B | Power up registration | |
| SLOT_CYCLE_INDEX | '010'B | | |
| MOB_P_REV | 8 bits, Set by UE | | |
| SCM | 8 bits, Set by UE | | |
| MOB_TERM | '1'B | | |
| RETURN_CAUSE | '1'B | | |
| QPCH_SUPPORTED | '1'B | | |
| ENHANCED_RC | '1'B | | |
| UZID_INCL | '0'B | | |

Table 4.5.2C.4-9: 1xRTT CS Registration Accept Order (Step 18, Table 4.5.2C.3-2)

| Information Element | Value/remark | Comment | Condition |
|-----------------------------|--------------------|------------------------------|-----------|
| MessageID | '00000001'B | | |
| GCSNAOption | '00000001'B | | |
| AlternativeGCSNAOption_INCL | '0'B | | |
| IWSIDIncl | '0'B | | |
| AckRequired | '0'B | | |
| StopDupDetect | '0'B | | |
| MessageSequence | 6 bits, Set by SS | | |
| NumTLACEncapsulated1xL3PDU | '00'B | | |
| Reserved | '0000'B | | |
| 1xLogicalChannel | '0'B | | |
| 1xProtocolRevision | '0000110'B | | |
| MsgType | '00000111'B | Order message | |
| NumTLACHeaderRecords | '0000'B | | |
| Reserved | '000'B | | |
| 1xL3PDULength | 16 bits, Set by SS | | |
| ORDER | '011011'B | Registration Accept Order | |
| ADD_RECORD_LEN | '001'B | | |
| ORDQ | '00000000'B | | |

Table 4.5.2C.4-10: ATTACH ACCEPT (Step 14, Table 4.5.2C.3-2)

| Derivation Path: 36.508 clause 4.7.2 | | | |
|--------------------------------------|--------------|----------------------------------|-----------------------|
| Information Element | Value/remark | Comment | Condition |
| EPS attach result | '0001'B | EPS only | |
| EMM cause | '0001 0010'B | #18 "CS domain not available" | combined_E PS_IMSI |

4.5.2D UE Registration, 2 PDN for RAN Assisted WLAN Interworking (State 2)

The same assumptions and definitions apply as in clause 4.5.2.

4.5.2D.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test UICC shall be inserted. This shall contain either ISIM and USIM applications or only a USIM application on UICC.

4.5.2D.2 Definition of system information messages

The default system information messages are used.

4.5.2D.3 Procedure

Table 4.5.2D.3-1: UE registration procedure (state 1 to state 2)

| Step | Procedure | Message Sequence | |
|-------|---|------------------|-----------------------------------|
| | | U - S | Message |
| 1-16 | Steps 1 to 16 of the generic test procedure for UE registration sub clause 4.5.2.3. | - | - |
| | EXCEPTION: Step17 depends on UE configuration, executed if UE does not automatically trigger additional PDN Connection. | | |
| 17 | Cause the UE to request connectivity to an additional PDN (see Note 1) | | |
| 18-21 | The generic procedure for UE establishing additional PDN connectivity as specified in TS 36.508 subclause 4.5A.16 takes place | | |
| 22 | The SS transmits an <i>RRCCConnectionRelease</i> message to release RRC connection and move to RRC_IDLE (State 2). | <-- | RRC: <i>RRCCConnectionRelease</i> |

NOTE 1: The request of connectivity to an additional PDN may be performed by MMI or AT command.

4.5.2D.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the exceptions below.

Table 4.5.2D.4-1: *RRCCConnectionRequest* (Step 2)

| Derivation Path: Table 4.6.1-16 | | | |
|---|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| <i>RRCCConnectionRequest</i> ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| <i>rrcConnectionRequest-r8</i> SEQUENCE { | | | |
| ue-Identity | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5.2D.4-2: *UECapabilityInformation* (Step 13)

| Derivation Path: Table 4.6.1-23 | | | |
|---|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| <i>UECapabilityInformation</i> ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| ueCapabilityInformation-r8 | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5.2D.4-3: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (Step 14 a)

| Derivation Path: Table 4.7.3-6 with condition IMS_PDN_ConnEstab for PDN1_IMS and NOT IMS_PDN_ConnEstab else | | | |
|---|--|--|----------------------------|
| Information Element | Value/remark | Comment | Condition |
| EPS bearer identity | '0101'B | arbitrary value used for PDN connectivity being maintained during the test case | PDN1_IMS OR NOT MULTI_PDN |
| EPS bearer identity | '1100'B | arbitrary value used for additional PDN connectivity which may be released before entering the test procedure of the test case | MULTI_PDN AND NOT PDN1_IMS |
| PDN address | | | IPv4_addresses_only |
| Length of PDN address contents | 5 octets | | |
| PDN type value | '001'B | IPv4 | |
| PDN address information | IPv4 address | The SS provides a valid IPv4 address | NOT IPv4-DHCP |
| | 0.0.0.0 | DHCPv4 is to be used to allocate the IPv4 address | IPv4-DHCP |
| ESM cause | IF "PDN type" IE in step 4 is 'IPv4v6' THEN '00110010'B ELSE Not present | "PDN type IPv4 only allowed" | |
| WLAN offload indication | Not present | | NOT PDN1_Offload |
| WLAN offload indication | | | PDN1_Offload |
| WLAN offload acceptability | '0001'B | Offloading the traffic of the PDN connection via a WLAN when in S1 mode is acceptable | |

NOTE: The default message contents specified in table 4.7.3-6 apply unless the condition IPv4_address_only in table 4.5.2D.4-3 is true.

| Condition | Explanation |
|-------------------|--|
| IPv4_address_only | This condition applies if the test case preamble description indicates that the UE is allocated an IPv4 address. |
| IPv4-DHCP | If in the last PDN CONNECTIVITY REQUEST or ESM INFORMATION RESPONSE sent prior to this message, the IE Protocol configuration options contains a configuration protocol option = '000B00H' ("IPv4 address allocation via DHCPv4", length of contents = 0). Note 1: This condition is used in conjunction with IPv4 or IPv4v6 as indicated in the "PDN address row" just above. Note 2: If both messages, PDN CONNECTIVITY REQUEST and ESM INFORMATION RESPONSE, are received and contain a Protocol configuration options IE then the IE from the message which is received later shall be used. |
| PDN1_Offload | This condition applies if the test execution requests the first PDN connection PDN1 to be offloaded to WLAN |

Table 4.5.2D.4-4: Message ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (step 19)

| Derivation path: Table 4.7.3-6 with condition IMS_PDN_ConnEstab for ADD_IMS and NOT IMS_PDN_ConnEstab else and table 4.6.1-8 with condition AM-DRB-ADD(1) for ADD_IMS or with condition AM-DRB-ADD(8) else | | | |
|--|--------------|--|------------------|
| Information Element | Value/Remark | Comment | Condition |
| EPS bearer identity | '0101'B | arbitrary value used for PDN connectivity being maintained during the test case | PDN2_IMS |
| EPS bearer identity | '1100'B | arbitrary value used for additional non-IMS PDN connectivity | NOT PDN2_IMS |
| Procedure transaction identity | PTI-1 | SS re-uses the particular PTI defined by UE for this present additional PDN connectivity request procedure | |
| WLAN offload indication | Not present | | PDN1_Offload |
| WLAN offload indication | | | NOT PDN1_Offload |
| WLAN offload acceptability | '0001'B | Offloading the traffic of the PDN connection via a WLAN when in S1 mode is acceptable | |

| Condition | Explanation |
|--------------|---|
| PDN1_Offload | This condition applies if the test execution requests the first PDN connection PDN1 to be offloaded to WLAN |

4.5.3 Generic Radio Bearer Establishment (State 3)

IF pc_ue_CategoryDL_M1 THEN use the procedure for State 3-CE according to clause 4.5.3AA ELSE use the procedure defined in the present clause.

NOTE: The statement to use alternate procedure for CAT M1 UE (pc_ue_CategoryDL_M1 is set) is to enable LTE legacy protocol test cases to be used for CAT M1 UE testing. Any CAT M1 or CE specific test cases should not rely on this statement, but refer directly to the relevant CE specific state.

4.5.3.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2).

4.5.3.2 Definition of system information messages

The default system information messages are used.

4.5.3.3 Procedure

The establishment of generic radio bearer connection is assumed to always be mobile terminated.

Table 4.5.3.3-1: Generic Radio Bearer establishment procedure (state 2 to state 3)

| Step | Procedure | Message Sequence | |
|------|--|------------------|---|
| | | U - S | Message |
| 1 | Void | | |
| 2 | SS sends a <i>Paging</i> message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE <i>pagingRecordLists</i> . | <-- | RRC: <i>Paging</i> (PCCH) |
| 3 | UE transmits an <i>RRCConnectionRequest</i> message. | --> | RRC: <i>RRCConnectionRequest</i> |
| 4 | SS transmit an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> |
| 5 | The UE transmits an <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the SERVICE REQUEST message. (State3) | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: SERVICE REQUEST |
| 6 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 7 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 8 | The SS configures a new data radio bearer, associated with the default EPS bearer context. IF the test case using state 3 as an initial state is using N additional data radio bearers ($0 \leq N \leq 7$), the <i>RRCConnectionReconfiguration</i> message contains the configuration of these additional data radio bearers in the drb-ToAddModify IE and one ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message per additional data radio bearer. The <i>RRCConnectionReconfiguration</i> message is using condition SRB2-DRB(1+n, m) where n and m are the number of DRBs associated with dedicated EPS bearer contexts and configured respectively with RLC-AM and RLC-UM ($n+m = N$). | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST ... ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| - | EXCEPTION: the steps 9 and 10a1 to 10a3 (if present) happen in any order. | - | - |
| 9 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer context. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 10a1 | IF $N \geq 1$ (see step 8), the UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message matching with the 1st ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message included in step 8. | --> | RRC: <i>ULInformationTransfer</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| 10a2 | IF $N \geq 2$ (see step 8), the UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message matching with the 2nd ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message included in step 8. | --> | RRC: <i>ULInformationTransfer</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| 10a3 | IF $N \geq 3$ (see step 8), the UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message matching with the 3rd ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message included in step 8. | --> | RRC: <i>ULInformationTransfer</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |

| | | | |
|------|--|-----|---|
| 10a4 | IF $N \geq 4$ (see step 8), the UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message matching with the 4th ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message included in step 8. | --> | RRC: ULInformationTransfer NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| 10a5 | IF $N \geq 5$ (see step 8), the UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message matching with the 5th ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message included in step 8. | --> | RRC: ULInformationTransfer NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| 10a6 | IF $N \geq 6$ (see step 8), the UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message matching with the 6th ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message included in step 8. | --> | RRC: ULInformationTransfer NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| 10a7 | IF $N = 7$ (see step 8), the UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message matching with the 7th ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message included in step 8. | --> | RRC: ULInformationTransfer NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |

4.5.3.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5.3A Generic Radio Bearer Establishment, UE Test Mode Activated (State 3A)

IF `pc_ue_CategoryDL_M1` THEN use the procedure for State 3A-CE according to clause 4.5.3AB ELSE use the procedure defined in the present clause.

NOTE: The statement to use alternate procedure for CAT M1 UE (`pc_ue_CategoryDL_M1` is set) is to enable LTE legacy protocol test cases to be used for CAT M1 UE testing. Any CAT M1 or CE specific test cases should not rely on this statement, but refer directly to the relevant CE specific state.

4.5.3A.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state, UE Test Mode Activated (State 2A for Signalling testing).
- The UE shall be in Registered, Idle Mode state, UE Test Mode Activated (State 2A-RF for RF and RRM testing).
- The UE shall be in Registered, Idle Mode state, UE Test Mode Activated (State 2A or State 2A-RF for UE positioning testing).

4.5.3A.2 Definition of system information messages

The default system information messages are used.

4.5.3A.3 Procedure

Same procedure as specified in the procedure in clause 4.5.3.3.

4.5.3A.4 Specific message contents

All specific message contents shall be referred to clause 4.6, 4.7 and 4.7A.

4.5.3AA Generic Radio Bearer Establishment (State 3-CE)

4.5.3AA.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2-CE).

4.5.3AA.2 Definition of system information messages

The default system information messages as specified in clause 4.5.2AA.2.

4.5.3AA.3 Procedure

Table 4.5.3AA.3-1: UE registration procedure (state 2-CE to state 3-CE)

| Step | Procedure | U - S | Message Sequence Message |
|-----------|---|-------|--------------------------|
| 1 | Void | | |
| 2 to 10a7 | Same procedure for steps 2 to 10a7 as specified in the procedure in clause 4.5.3.3. | - | - |

4.5.3AA.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the exception below:

- In addition to any other conditions use the condition CEmodeB if the test case specifically tests CE mode B else use condition CEmodeA.

4.5.3AB Generic Radio Bearer Establishment, UE Test Mode Activated (State 3A-CE)

4.5.3AB.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state, UE Test Mode Activated (State 2A-CE for Signalling testing).
- The UE shall be in Registered, Idle Mode state, UE Test Mode Activated (State 2A-RF-CE for RF and RRM testing).

4.5.3AB.2 Definition of system information messages

The default system information messages are used as specified in clause 4.5.2AA.2.

4.5.3AB.3 Procedure

Table 4.5.3AB.3-1: UE registration procedure (State 2A-CE/2A-RF-CE to state 3A-CE)

| Step | Procedure | U - S | Message Sequence Message |
|-----------|--|-------|--------------------------|
| 1 | Void | | |
| 2 to 10a7 | Same procedure for steps 2 to 10a7 as specified in the procedure in clause 4.5.3.3 | - | - |

4.5.3AB.4 Specific message contents

All specific message contents shall be referred to clause 4.6, 4.7 and 4.7A with the exception below:

- In addition to any other conditions use the condition CEmodeB if the test case specifically tests CE mode B else use condition CEmodeA.

4.5.3B Generic Radio Bearer Establishment, pre-registered on HRPD (State 3B)

4.5.3B.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state, pre-registered on HRPD (State 2B).

4.5.3B.2 Definition of system information messages

The default system information messages are used.

4.5.3B.3 Procedure

Same procedure as specified in the procedure in clause 4.5.3.3.

4.5.3B.4 Specific message contents

All specific message contents shall be referred to clause 4.6, 4.7 and 4.7A.

4.5.3C Generic Radio Bearer Establishment, pre-registered on 1xRTT (State 3C)

4.5.3C.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state, pre-registered on 1xRTT (State 2C).

4.5.3C.2 Definition of system information messages

The default system information messages are used.

4.5.3C.3 Procedure

Same procedure as specified in the procedure in clause 4.5.3.3.

4.5.3C.4 Specific message contents

All specific message contents shall be referred to clause 4.6, 4.7 and 4.7A.

4.5.3D Generic Radio Bearer Establishment for RAN Assisted WLAN Interworking (State 3)

4.5.3D.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2) as per 4.5.2D establishing 2 PDN connections.

4.5.3D.2 Definition of system information messages

The default system information messages are used.

4.5.3D.3 Procedure

The establishment of generic radio bearer connection is assumed to always be mobile terminated.

Table 4.5.3D.3-1: Generic Radio Bearer establishment procedure (state 2 to state 3)

| Step | Procedure | U - S | Message Sequence Message |
|--------|---|-------|---|
| 1-7 | Steps 1 to 16 of the generic test procedure for Radio Bearer Establishment sub clause 4.5.3.3 | - | - |
| 8 | The SS configures a 2 new data radio bearer, associated with the 2 default EPS bearer contexts. IF the test case using state 3 as an initial state is using N additional data radio bearers ($0 \leq N \leq 7$), the <i>RRCCONNECTIONRECONFIGURATION</i> message contains the configuration of these additional data radio bearers in the drb-ToAddModify IE and one ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message per additional data radio bearer. The <i>RRCCONNECTIONRECONFIGURATION</i> message is using condition SRB2-DRB(1+n, m) where n and m are the number of DRBs associated with dedicated EPS bearer contexts and configured respectively with RLC-AM and RLC-UM ($n+m = N$). | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST ... ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 9-10a7 | Steps 9 to 10a7 of the generic test procedure for Radio Bearer Establishment sub clause 4.5.3.3 | - | - |

4.5.3D.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5.3E Control plane CIoT connection request (State 3-CP)

4.5.3E.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.
- TS 36.508 condition CIoT-test apply.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2 or 2-CE).

4.5.3E.2 Definition of system information messages

The default system information messages are used.

4.5.3E.3 Procedure

The establishment of generic radio bearer connection is assumed to always be mobile terminated.

Table 4.5.3E.3-1: Generic control plane CIoT connection request procedure (state 3-CP)

| Step | Procedure | U - S | Message Sequence Message |
|------|---|-------|--|
| 1 | Void | | |
| 2 | SS sends a <i>Paging</i> message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE <i>pagingRecordLists</i> . | <-- | RRC: <i>Paging</i> (PCCH) |
| 3 | UE transmits an <i>RRCCONNECTIONREQUEST</i> message. | --> | RRC: <i>RRCCONNECTIONREQUEST</i> |
| 4 | SS transmit an <i>RRCCONNECTIONSETUP</i> message. | <-- | RRC: <i>RRCCONNECTIONSETUP</i> |
| 5 | The UE transmits an <i>RRCCONNECTIONSETUPCOMPLETE</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the CONTROL PLANE SERVICE REQUEST message. | --> | RRC: <i>RRCCONNECTIONSETUPCOMPLETE</i> NAS: CONTROL PLANE SERVICE REQUEST |
| 6 | The SS transmits a SERVICE ACCEPT message. | <-- | RRC: DLInformationTransfer NAS: SERVICE ACCEPT |

4.5.3E.4 Specific message contents

All specific message contents shall be referred to clauses 4.6 and 4.7.

4.5.3EA Control plane CIoT connection request, UE Test Mode Activated (State 3A-CP)

4.5.3EA.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.
- TS 36.508 condition CIoT-test apply.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2A or 2A-CE).

4.5.3EA.2 Definition of system information messages

The default system information messages are used.

4.5.3EA.3 Procedure

Same procedure as specified in the procedure in clause 4.5.3E.3.

4.5.3EA.4 Specific message contents

All specific message contents shall be referred to clauses 4.6 and 4.7.

4.5.3F User plane CIoT connection request (State 3-UP)

4.5.3F.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.
- TS 36.508 conditions CIoT-test and UP-CIoT applies.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2 or 2-CE).

4.5.3F.2 Definition of system information messages

The default system information messages are used.

4.5.3F.3 Procedure

The establishment of generic radio bearer connection is assumed to always be mobile terminated.

Table 4.5.3F.3-1: Generic user plane CIoT connection request procedure (state 3-UP)

| Step | Procedure | Message Sequence | |
|------|---|------------------|---|
| | | U - S | Message |
| 1 | Void | | |
| 2 | SS sends a <i>Paging</i> message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE <i>pagingRecordLists</i> . | <-- | RRC: <i>Paging</i> (PCCH) |
| 3 | UE transmits an <i>RRCCONNECTIONRESUMEREQUEST</i> message. | --> | RRC: <i>RRCCONNECTIONRESUMEREQUEST</i> |
| 4 | SS transmit an <i>RRCCONNECTIONRESUME</i> message. | <-- | RRC: <i>RRCCONNECTIONRESUME</i> |
| 5 | The UE transmits an <i>RRCCONNECTIONRESUMECOMplete</i> message. | --> | RRC: <i>RRCCONNECTIONRESUMECOMplete</i> |

4.5.3F.4 Specific message contents

All specific message contents shall be referred to clauses 4.6 and 4.7.

4.5.3FA User plane CIoT connection request, UE Test Mode Activated (State 3A-UP)

4.5.3FA.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.
- TS 36.508 conditions CIoT-test and UP-CIoT applies.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2 or 2-CE).

4.5.3FA.2 Definition of system information messages

The default system information messages are used.

4.5.3FA.3 Procedure

Same procedure as specified in the procedure in clause 4.5.3F.3.

4.5.3FA.4 Specific message contents

All specific message contents shall be referred to clauses 4.6 and 4.7.

4.5.4 Loopback Activation (State 4)

IF `pc_ue_CategoryDL_M1` THEN use the procedure for State 4-CE according to clause 4.5.4A ELSE use the procedure defined in the present clause.

NOTE: The statement to use alternate procedure for CAT M1 UE (`pc_ue_CategoryDL_M1` is set) is to enable LTE legacy protocol test cases to be used for CAT M1 UE testing. Any CAT M1 or CE specific test cases should not rely on this statement, but refer directly to the relevant CE specific state.

4.5.4.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Generic RB Establishment state, UE Test Mode Activated (State 3A).

4.5.4.2 Definition of system information messages

The default system information messages are used.

4.5.4.3 Procedure

Table 4.5: 4.3-1: Loopback activation procedure (state 3A to state 4)

| Step | Procedure | Direction | Message Sequence |
|------|--|-----------|--|
| | | UE - SS | Message |
| 1 | The SS transmits a CLOSE UE TEST LOOP message to enter the UE test loop mode. | <-- | RRC: <i>DLInformationTransfer</i> TC: CLOSE UE TEST LOOP |
| 2 | The UE transmits a CLOSE UE TEST LOOP COMPLETE message to confirm that loopback entities for the radio bearer(s) have been created and loop back is activated (State 4). | --> | RRC: <i>ULInformationTransfer</i> TC: CLOSE UE TEST LOOP COMPLETE |

4.5.4.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7A.

4.5.4A Loopback Activation in cell supporting BL/CE UE (State 4-CE)

4.5.4A.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Generic RB Established, UE Test Mode Activated, Cell supporting BL/CE UE, UE Test Mode Activated (State 3A-CE).

4.5.4A.2 Definition of system information messages

Same system information message content as in clause 4.5.2AA.2.

4.5.4A.3 Procedure

Table 4.5.4A.3-1: Loopback activation procedure (state 2A-CE to state 4-CE)

| Step | Procedure | Direction | Message Sequence |
|------|--|-----------|--|
| | | UE - SS | Message |
| 1 | The SS transmits a CLOSE UE TEST LOOP message to enter the UE test loop mode. | <-- | RRC: <i>DLInformationTransfer</i> TC: CLOSE UE TEST LOOP |
| 2 | The UE transmits a CLOSE UE TEST LOOP COMPLETE message to confirm that loopback entities for the radio bearer(s) have been created and loop back is activated (State 4). | --> | RRC: <i>ULInformationTransfer</i> TC: CLOSE UE TEST LOOP COMPLETE |

4.5.4A.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7A.

4.5.4B Loopback Activation user plane (State 4A-UP)

4.5.4B.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.
- TS 36.508 conditions CIoT-test and UP-CIoT applies.

User Equipment:

- User plane CIoT connection request, UE Test Mode Activated (State 3A-UP).

4.5.4B.2 Definition of system information messages

The default system information messages are used.

4.5.4B.3 Procedure

Same procedure as specified in the procedure in clause 4.5.4A.3.

4.5.4B.4 Specific message contents

All specific message contents shall be referred to clauses 4.6 and 4.7.

4.5.5 HRPD registration (State H2)

Editor's note: The default parameter and system information will depend on progress in Clause 4.4, once it is finalised RAN5 can refer to them accordingly.

4.5.5.1 Initial conditions

System Simulator:

- Cell 1 and Cell 15.
- Cell 1 has a lower reselection priority than Cell 15.
- Cell 15 is transmitting default overhead messages.

User Equipment:

- The Test USIM shall be inserted (State 1).

4.5.5.2 Definition of system information messages

The default overhead messages as specified in clause 4.4 are used.

4.5.5.3 Procedure

Editor note: procedure needs to be specified.

4.5.5.4 Specific message contents

Editor's note: message contents need to be specified where necessary.

4.5.5A HRPD registration, pre-registration on E-UTRAN (State H2A)

Editor's note: The default parameter and system information will depend on progress in Clause 4.4, once it is finalised RAN5 can refer to them accordingly.

4.5.5A.1 Initial conditions

System Simulator:

- Cell 1 and Cell 15.
- Cell 1 has a lower reselection priority than Cell 15.
- Cell 15 is transmitting default overhead messages.

User Equipment:

- The Test USIM shall be inserted (State 1).

4.5.5A.2 Definition of system information messages

The default overhead messages as specified in clause 4.4 are used.

4.5.5A.3 Procedure

Editor's note: procedure needs to be specified.

4.5.5A.4 Specific message contents

Editor's note: message contents need to be specified where necessary.

4.5.6 HRPD session establishment (State H3)

Editor's note: The default parameter and system information will depend on progress in Clause 4.4, once it is finalised RAN5 can refer to them accordingly.

4.5.6.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in HRPD Registered, Dormant Mode state (State H2).

4.5.6.2 Definition of system information messages

The default overhead messages as specified in clause 4.4 are used.

4.5.6.3 Procedure

Editor's note: procedure needs to be specified.

4.5.6.4 Specific message contents

Editor's note: message contents need to be specified where necessary.

4.5.6A HRPD session establishment, pre-registered on E-UTRAN (State H3A)

Editor's note: The default parameter and system information will depend on progress in Clause 4.4, once it is finalised RAN5 can refer to them accordingly.

4.5.6A.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in HRPD Registered, Dormant Mode, pre-registered on E-UTRAN state (State H2A).

4.5.6A.2 Definition of system information messages

The default overhead messages as specified in clause 4.4 are used.

4.5.6A.3 Procedure

Same procedure as specified in the procedure in clause 4.5.6.3

4.5.6A.4 Specific message contents

Editor's note: message contents need to be specified where necessary.

4.5.7 Out of Coverage (State 5)

Out of coverage UE operation is applicable only for sidelink direct communication. In this case UE uses preconfigured radio parameters for transmission and reception of side link direct communication. UE remains in any cell selection state.

4.5.7.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under the condition that there is no reference signal and SIB transmission by the cell.

User Equipment:

- The Test UICC shall be inserted. This shall contain either ISIM and USIM applications or only a USIM application on UICC.

4.5.7.2 Definition of system information messages

MIB and SIBs are not transmitted.

4.5.7.3 Procedure

UE remains in any cell selection state and search for any available cell.

4.5.8 Out of Coverage, V2X setup (State 5-V2X)

4.5.8.1 Initial conditions

System Simulator:

- No E-UTRA cell configured
- 1 GNSS simulator
- 1 simulated V2V UE (transmitter or receiver according to specific test case configuration)

User Equipment:

- If supported by the UE, the Test UICC shall be inserted. This shall contain either ISIM and USIM applications or only a USIM application on UICC.

4.5.8.2 Definition of system information messages

None.

4.5.8.3 Procedure

UE remains in any cell selection state and search for any available cell.

4.5.9 Out of Coverage, Test Loopback Activation, V2X setup (State 5A-V2X)

The same assumptions and definitions apply as in clause 4.5.8. State 5A-V2X shall be invoked either in Receive Mode or in Transmit Mode, depending on the test purpose.

4.5.9.1 Initial conditions

System Simulator:

- No E-UTRA cell configured
- 1 GNSS simulator
- 1 simulated V2X UE (transmitter or receiver according to specific test case configuration)

User Equipment:

- The UE shall be in Out of Coverage, V2X setup state (State 5-V2X)

4.5.9.2 Definition of system information messages

None.

4.5.9.3 Procedure

Table 4.5.9.3-1: Out of Coverage, Test Loopback Activation, V2X setup procedure (state 5-V2X to state 5A-V2X)

| Step | Procedure | Message Sequence | |
|--|---|------------------|---|
| | | U | S |
| 1 | Trigger UE to activate UE test loop mode. NOTE: The activation of UE test loop mode may be performed by MMI or AT command (+CATM). | - | - |
| 2A | Trigger UE to close UE test loop back mode E (Receive Mode). NOTE: Closing of UE test loop mode E may be performed by MMI or AT command (+CCUTLE) | - | - |
| 2B | Trigger UE to close UE test loop back mode E (Transmit Mode). NOTE: Closing of UE test loop mode E may be performed by MMI or AT command (+CCUTLE) | - | - |
| 3 | Trigger UE to reset or clear the current UTC time that has been calculated from GNSS. NOTE: The UTC time can be reset or clear on the UE using AT command (+CUTCRC). | - | - |
| Note 1: If State 5A-V2X was invoked in Receive Mode use Step 2A; if State 5A-V2X was invoked in Transmit Mode use Step 2B. | | | |

4.5.9.4 Specific message contents

All specific message contents shall be referred to clause 4.7I with the exceptions below.

Table 4.5.9.4-1: AT COMMAND: +CATM (Step 1)

Derivation Path: Table 4.7I-1: +CATM with condition Activation

Table 4.5.9.4-2A: AT COMMAND: +CCUTLE (Step 2A)

Derivation Path: Table 4.7I-2: +CCUTLE with condition Close and Receive.

Table 4.5.9.4-2B: AT COMMAND: +CCUTLE (Step 2B)

| |
|---|
| Derivation Path: Table 4.7I-2: +CCUTLE with condition Close and Transmit. |
|---|

Table 4.5.9.4-3: AT COMMAND: +CUTCR (Step 3)

| |
|---------------------------------------|
| Derivation Path: Table 4.7I-3: +CUTCR |
|---------------------------------------|

4.5A Other generic procedures

4.5A.1 Procedure for IP address allocation in the U-plane

The purpose of this procedure is to allow the successful completion of IP address allocation if it is initiated by the UE therefore the result from the execution of the Procedure for IP address allocation in the U-plane shall not lead to assignment of a verdict.

Depending on the UE configuration there may be unpredictable delay in the start of the procedure. A guarding time of 1.2 sec is suggested within which the procedure is expected to start. If the timer expires then the test procedure, from which the Procedure for IP address allocation in the U-plane is called, shall advance to the next specified step.

Table 4.5A.1-1: Procedure for IP address allocation in the U-plane

| Step | Procedure | Message Sequence | |
|------|--|------------------|---------|
| | | U - S | Message |
| - | EXCEPTION: Step 1 below and Step 1 in Table 4.5A.1-2 describe behaviour that depends on the contents of the latest PDN CONNECTIVITY REQUEST message sent by the UE prior to this procedure. | - | - |
| - | EXCEPTION: In parallel to the event described in step 1 below the step specified in Table 4.5A.1-2 may take place. | - | - |
| 1 | If the "PDN type" in the latest PDN CONNECTIVITY REQUEST message prior to this procedure was 'IPv4' or 'IPv4v6' then, IPv4 address allocation by DHCPv4 may occur on the user plane bearer established for the default EPS bearer context activated with the latest ACTIVATE DEFAULT EPS BEARER CONTEXT message prior to this procedure. | - | - |

Table 4.5A.1-2: Procedure for IP address allocation in the U-plane, parallel behaviour

| Step | Procedure | Message Sequence | |
|------|---|------------------|---------|
| | | U - S | Message |
| 1 | If the "PDN type" in the latest PDN CONNECTIVITY REQUEST message prior to this procedure was 'IPv6' or 'IPv4v6' then stateless address auto configuration occurs on the user plane bearer established for the default EPS bearer context activated with the latest ACTIVATE DEFAULT EPS BEARER CONTEXT message prior to this procedure. | - | - |

4.5A.2 Tracking area updating procedure

The procedure is defined in table 4.5A.2.1-1.

Table 4.5A.2.1-1: Tracking area updating procedure

| Step | Procedure | Message Sequence | |
|------|--|------------------|--|
| | | U - S | Message |
| 1 | The SS transmits system information on the cell specified in the test case. | <-- | RRC: SYSTEM INFORMATION (BCCH) |
| 2 | The UE transmits an <i>RRCCConnectionRequest</i> message on the cell specified in the test case. | --> | RRC: <i>RRCCConnectionRequest</i> |
| 3 | SS transmits an <i>RRCCConnectionSetup</i> message. | <-- | RRC: <i>RRCCConnectionSetup</i> |
| 4 | The UE transmits an <i>RRCCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and a TRACKING AREA UPDATE REQUEST message is sent to update the registration of the actual tracking area. | --> | RRC: <i>RRCCConnectionSetupComplete</i> NAS: TRACKING AREA UPDATE REQUEST |
| 5 | SS responds with TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE ACCEPT |
| 6 | The UE transmits a TRACKING AREA UPDATE COMPLETE | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE COMPLETE |
| 7 | The SS transmits an <i>RRCCConnectionRelease</i> message to release RRC connection and move to RRC_IDLE. | <-- | RRC: <i>RRCCConnectionRelease</i> |

NOTE 1: The periodic tracking area updating timer T3412 is deactivated by default during the attach procedure (TS 36.508 clause 4.7.2).

NOTE 2: The SS does not initiate authentication and NAS SECURITY MODE COMMAND are not performed (reuse of keys allocated during the attach procedure).

4.5A.3 Procedure for IMS signalling

The purpose of this procedure is to allow the successful completion of IMS signalling if it is initiated by the UE.

The UE may initiate IMS registration according TS 24.229 [40] clause 5.1. The procedure is applicable for UEs with IMS support (TS 36.523-2 A.4.4-1/25).

Table 4.5A.3-1: Procedure for IMS signalling in the U-plane

| Step | Procedure | Message Sequence | |
|---------------------------|---|------------------|---------|
| | | U - S | Message |
| 1-9 | Void | - | - |
| - | EXCEPTION: Steps 10a1 to 10a2b1 describe a transaction that depends on the UE capability | | |
| 10a1 | IF pc_IMS then the SS starts timer Timer_1 = 10 s (Note 1) | - | - |
| - | EXCEPTION: Steps 10a2a1 to 10a2b1 describe a transaction that depends on the UE implementation | - | - |
| 10a2 a1- 10a2 a9 | Registration procedure according TS 34.229-1 [43] subclause C.2 (steps 3-11) Note: SS cancels timer Timer_1 at step 10a2a1. | - | - |
| 10a2 b1 | The SS waits for Timer_1 expiry | - | - |
| Note 1: | Depending on the UE configuration there may be unpredictable delay in the start of the procedure. A guarding time of [10] sec is suggested within which the procedure is expected to start. If the timer expires then the test procedure, from which the Procedure for IMS signalling U-plane is called, shall advance to the next specified step | | |

4.5A.3.1 Specific message contents

REGISTER (Step 10a2a2)

Use the default message “REGISTER” in TS 34.229-1 [43] annex A.1.1 with conditions A1, A31 and (NOT A34).

REGISTER (Step 10a2a4)

Use the default message “REGISTER” in TS 34.229-1 [43] annex A.1.1 with conditions A2, A31 and (NOT A34).

4.5A.3A Procedure for IMS Signalling over UTRA

The purpose of this procedure is to allow the successful completion of IMS signalling if it is initiated by the UE.

The UE may initiate IMS registration according TS 24.229 [40] clause 5.1. The procedure is applicable for UEs with IMS support (TS 36.523-2 A.4.4-1/25).

4.5A.3A.1 Initial conditions

System Simulator:

- 1 UTRA cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test UICC shall be inserted. This shall contain either ISIM and USIM applications or only a USIM application on UICC.
- The UE is in state Registered, Idle Mode (state 3 or 7) according to TS 34.108 [5]

4.5A.3A.2 Procedure

Table 4.5A.3A.2-1: Procedure for IMS Signalling over UTRA

| Step | Procedure | Message Sequence | |
|--------------------------------|--|------------------|---|
| | | U - S | Message |
| - | EXCEPTION: Steps 1a1 to 1a2b1 describe a transaction that depends on UE capability. | - | - |
| 1a1 | IF pc_IMS then the SS starts timer Timer_1 = 10 s | - | - |
| | EXCEPTION: Steps 1a2a1 to 1a2a15 describe a transaction that depends on the UE supporting IMS over UTRA. | - | - |
| 1a2a1 | UE transmits a RRC CONNECTION REQUEST message. | --> | RRC CONNECTION REQUEST |
| 1a2a2 | SS transmits a RRC CONNECTION SETUP message. | <-- | RRC CONNECTION SETUP |
| 1a2a3 | The UE transmits a RRC CONNECTION SETUP COMPLETE message | --> | RRC CONNECTION SETUP COMPLETE |
| 1a2a4 | The UE transmits a SERVICE REQUEST message | --> | INITIAL DIRECT TRANSFER |
| 1a2a5 | SS transmits a GMM AUTHENTICATION AND CIPHERING REQUEST message | <-- | GMM AUTHENTICATION AND CIPHERING REQUEST |
| 1a2a6 | The UE transmits a GMM AUTHENTICATION AND CIPHERING RESPONSE | --> | GMM AUTHENTICATION AND CIPHERING RESPONSE |
| 1a2a7 | SS transmits a SECURITY MODE COMMAND message | <-- | SECURITY MODE COMMAND |
| 1a2a8 | UE transmits a SECURITY MODE COMPLETE message | --> | SECURITY MODE COMPLETE |
| 1a2a9 | The UE transmits a ACTIVATE PDP CONTEXT REQUEST message | --> | ACTIVATE PDP CONTEXT REQUEST |
| 1a2a10 | The SS transmits a RADIO BEARER SETUP message | <-- | RADIO BEARER SETUP |
| 1a2a11 | The UE transmits a RADIO BEARER SETUP COMPLETE message | --> | RADIO BEARER SETUP COMPLETE |
| 1a2a13 | The SS transmits a ACTIVATE PDP CONTEXT ACCEPT message | <-- | ACTIVATE PDP CONTEXT ACCEPT |
| - | IF initiated by the UE for IP address allocation | - | - |
| 1a2a13 A1a | IP address allocation in the U-plane specified in TS 34.108 [5] subclause 7.2.6 takes place performing IP address allocation in the U-plane. | - | - |
| 1a2a13 A2- 1a2a13 A10 | Registration procedure according TS 34.229-1 [43] subclause C.2 (steps 3-11) whereby the UE is allowed to retransmit the requests in steps 4, 6, and 8 when using UDP. Note: SS cancels timer Timer_1 at step 1a2a13a1. | - | - |
| 1a2a14 | Upon completion of the U-plane signalling, the SS transmits a RRC CONNECTION RELEASE message | <-- | RRC CONNECTION RELEASE |
| 1a2a15 | The UE transmits a RRC CONNECTION RELEASE COMPLETE message | --> | RRC CONNECTION RELEASE COMPLETE |
| 1a2b1 | The SS waits for Timer_1 expiry | | |

4.5A.3A.3 Specific message contents

Table 4.5A.3A.3-1: ACTIVATE PDP CONTEXT REQUEST (Step 1a2a9)

| Derivation Path: 24.008 Table 9.5.1 | | | |
|-------------------------------------|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Requested NSAPI | | | |
| NSAPI value | '0101'B | NSAPI 5 | |
| Requested LLC SAPI | | | |
| LLC SAPI value | '0011'B | LLC SAPI 3 | |
| Requested PDP address | | | |
| PDP type organisation | '0001' | IETF allocated address | |
| PDP type number | Any value between '00100001'B, '01010111'B, '10001101'B | The allowed values are respectively IPv4, IPv6, IPv4v6 and "unused but interpreted as ipv4 by the network" | |
| Address information | Not present | | |
| Access point name | Not present or any allowed value | | |
| Protocol configuration options | Any allowed Value | The SS shall remember this IE and its contents because this affects subsequent SS behaviour, e.g. coding of ACTIVATE PDP CONTEXT ACCEPT | |

Table 4.5A.3A.3-2: ACTIVATE PDP CONTEXT ACCEPT (Step 1a2a13)

| Derivation Path: 24.008 Table 9.5.2 | | | |
|--|---|--|---------------|
| Information Element | Value/remark | Comment | Condition |
| Negotiated LLC SAPI | | | |
| LLC SAPI value | Same as requested in ACTIVATE PDP CONTEXT REQUEST | | |
| PDP address | | | |
| PDP type number | '00100001'B | IPv4 | IPv4 |
| PDN address information | IPv4 address | The SS provides a valid IPv4 address | NOT IPv4-DHCP |
| | 0.0.0.0 | DHCPv4 is to be used to allocate the IPv4 address | IPv4-DHCP |
| PDP type number | '01010111'B | IPv6 | IPv6 |
| PDN address information | IPv6 address | The SS provides a valid IPv6 address | |
| PDP type number | '10001101'B | IPv4v6 | IPv4v6 |
| PDN address information (Octets 5 to 8) | IPv4 address | The SS provides a valid IPv4 address | NOT IPv4-DHCP |
| | 0.0.0.0 | DHCPv4 is to be used to allocate the IPv4 address | IPv4-DHCP |
| PDN address information (Octets 9 to 24) | IPv6 address | The SS provides a valid IPv6 address | IPv6 |
| Protocol configuration options | | | |
| Configuration protocol | '000'B | | |
| Container ID 1 | '0001'H | | P-CSCF IPv6 |
| Length of container ID 1 contents | | Length value determined by the TTCN implementation | |
| Container ID 1 contents | IPv6 address | P-CSCF IPv6 Address | |
| Container ID 2 | '000C'H | | P-CSCF IPv4 |
| Length of container ID 2 contents | | Length value determined by the TTCN implementation | |
| Container ID 2 contents | IPv4 address | P-CSCF IPv4 Address | |
| Container ID n | '0003'H | n assigned to next available number | DNS IPv6 |
| Length of container ID n contents | | Length value determined by the TTCN implementation | |
| Container ID n contents | IPv6 address | DNS IPv6 Address | |
| Container ID n+1 | '000D'H | n assigned to next available number | DNS IPv4 |
| Length of container ID n+1 contents | | Length value determined by the TTCN implementation | |
| Container ID n+1 contents | IPv4 address | DNS IPv4 Address | |

| Condition | Explanation |
|-------------|--|
| IPv4 | If the ACTIVATE PDP CONTEXT REQUEST message, contains the PDN type as lpv4 |
| IPv6 | If the ACTIVATE PDP CONTEXT REQUEST message, contains the PDN type as lpv6 |
| IPv4v6 | If the ACTIVATE PDP CONTEXT REQUEST message, contains the PDN type as lpv4v6 |
| IPv4-DHCP | If the ACTIVATE PDP CONTEXT REQUEST message sent prior to this message, the IE Protocol configuration options contains a configuration protocol option "IPv4 address allocation via DHCPv4", length of contents = 0). Note 1: This condition is used in conjunction with IPv4 or IPv4v6 as indicated in the "PDN address row" just above. |
| P-CSCF IPv6 | If the ACTIVATE PDP CONTEXT REQUEST sent prior to this message, the Protocol configuration options and the additional parameter list was included with a "P-CSCF IPv6 Address Request". Note 1: This condition is only applicable for UEs with IMS support (TS 36.523-2 A.4.4-1/25). |
| P-CSCF IPv4 | If in the ACTIVATE PDP CONTEXT REQUEST message sent prior to this message, the Protocol configuration options and the additional parameter list was included with a "P-CSCF IPv4 Address Request" Note 1: This condition is only applicable for UEs with IMS support (TS 36.523-2 A.4.4-1/25). |
| DNS IPv6 | If the ACTIVATE PDP CONTEXT REQUEST message sent prior to this message, the Protocol configuration options and the additional parameter list was included with a "DNS IPv6 Address Request". |
| DNS IPv4 | If the ACTIVATE PDP CONTEXT REQUEST message sent prior to this message, the Protocol configuration options and the additional parameter list was included with a "DNS IPv4 Address Request". |

4.5A.3B Procedure for preventing IMS Signalling over GERAN

The purpose of this procedure is to prevent IMS signalling if it is initiated by the UE.

The UE may initiate IMS registration according TS 24.229 [40] clause 5.1. The procedure is applicable for UEs with IMS support (TS 36.523-2 A.4.4-1/25).

4.5A.3B.1 Initial conditions

System Simulator:

- 1 GERAN cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test UICC shall be inserted. This shall contain either ISIM and USIM applications or only a USIM application on UICC.
- The UE is GPRS attached according to TS 51.010 [25]

4.5A.3B.2 Procedure

Table 4.5A.3B.2-1: Procedure for IMS Signalling over GERAN

| Step | Procedure | Message Sequence | |
|-------|---|------------------|------------------------------|
| | | U - S | Message |
| - | EXCEPTION: Steps 1a1 to 1a2b1 describe a transaction that depends on UE capability. | - | - |
| 1a1 | IF pc_IMS then the SS starts timer Timer_1 = 10 s | - | - |
| | EXCEPTION: Steps 1a2a1 to 1a2a4 describe a transaction that depends on the UE supporting IMS over GERAN | - | - |
| 1a2a1 | UE transmits CHANNEL REQUEST | --> | CHANNEL REQUEST |
| 1a2a2 | SS sends IMMEDIATE ASSIGNMENT | <-- | IMMEDIATE ASSIGNMENT |
| 1a2a3 | The UE transmits a ACTIVATE PDP CONTEXT REQUEST message | --> | ACTIVATE PDP CONTEXT REQUEST |
| 1a2a4 | The SS transmits a ACTIVATE PDP CONTEXT REJECT message | <-- | ACTIVATE PDP CONTEXT REJECT |
| 1a2a5 | The SS waits for 5 seconds | - | - |
| 1a2b1 | The SS waits for Timer_1 expiry | | |

4.5A.3B.3 Specific message contents

Table 4.5A.3B.3-1: ACTIVATE PDP CONTEXT REQUEST (Step 1a2a3)

| Derivation Path: 24.008 Table 9.5.1 | | | |
|-------------------------------------|----------------------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Requested NSAPI | | | |
| NSAPI value | '0101'B | NSAPI 5 | |
| Requested LLC SAPI | | | |
| LLC SAPI value | '0011'B | LLC SAPI 3 | |
| Requested PDP address | | | |
| PDP type organisation | '0001' | IETF allocated address | |
| PDP type number | Any allowed value | The allowed values are respectively IPv4, IPv6, IPv4v6 and "unused but interpreted as Ipv4 by the network" | |
| Address information | Not present | | |
| Access point name | Not present or any allowed value | | |
| Protocol configuration options | Any allowed Value | The SS shall remember this IE and its contents because this affects subsequent SS behaviour, e.g. coding of ACTIVATE PDP CONTEXT ACCEPT | |

Table 4.5A.3B.3-2: ACTIVATE PDP CONTEXT REJECT (Step 1a2a4)

| Derivation Path: 24.008 Table 9.5.3 | | | |
|--|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | '1010'B | | |
| Transaction identifier | Same as requested in ACTIVATE PDP CONTEXT REQUEST | | |
| Activate PDP context reject message identity | '01000011'B | | |
| SM cause | '42'O | #66 Requested APN not supported in current RAT and PLMN combination | |
| Protocol configuration options | omit | | |
| Back-off timer value | omit | | |
| Re-attempt indicator | omit | | |

4.5A.4 Generic Test Procedure for IMS Emergency call establishment in EUTRA: Normal Service

4.5A.4.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2).

4.5A.4.2 Definition of system information messages

The default system information messages are used.

4.5A.4.3 Procedure

The establishment of IMS emergency call is assumed to always be mobile originated.

Table 4.5A.4.3-1: EUTRA/EPS signalling for IMS Emergency Call

| St | Procedure | Message Sequence | |
|----|--|------------------|--|
| | | U - S | Message |
| 1 | Make the UE attempt an IMS emergency call | - | - |
| 2 | The UE transmits an <i>RRCConnectionRequest</i> message with 'establishmentCause' set to 'emergency'. | --> | <i>RRCConnectionRequest</i> |
| 3 | SS transmit an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> |
| 4 | The UE transmits an <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the SERVICE REQUEST message. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: SERVICE REQUEST |
| 5 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 6 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 7 | The SS configures a new data radio bearer, associated with the default EPS bearer context. The <i>RRCConnectionReconfiguration</i> message is using condition SRB2-DRB(1, 0). The DRB associated with default EPS bearer context obtained during the attach procedure is established | <-- | RRC: <i>RRCConnectionReconfiguration</i> |
| 8 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer context. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 9 | The UE transmits a PDN CONNECTIVITY REQUEST message to request an additional PDN, with 'Request type' set to 'emergency ('0100'B) '. | --> | PDN CONNECTIVITY REQUEST |
| 10 | The SS configures a new data radio bearer, associated with the default EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains the ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message. EPS bearer context #2 (QCI 5) according to table 6.6.1-1: Reference default EPS bearer context is used. Note: The APN is set to the test APN defined for emergency bearer services. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST |
| - | EXCEPTION: In parallel to the events described in steps 11 to 15 below, the behaviour in table 4.5A.4.3-2 occurs. (Optional IP address allocation followed by IMS emergency registration and IMS emergency speech call establishment) | - | - |
| 11 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer for emergency call. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 12 | The UE transmits an ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULInformationTransfer</i> NAS:ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT |
| 13 | The SS configures a new RLC-UM data radio bearer, associated with the dedicated EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains the ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message. EPS bearer context #4 (QCI 1) according to table 6.6.2-1: Reference dedicated EPS bearer contexts is used. Note: the same PDN address is applicable because the linked EPS bearer ID refers to the default EBC allocated in step 10 | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 14 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer for emergency IMS signalling. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |

| | | | |
|----|---|-----|--|
| 15 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | RRC: ULInformationTransfer NAS:ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
|----|---|-----|--|

Table 4.5A.4.3-2: Parallel behaviour

| St | Procedure | Message Sequence | |
|------|--|------------------|---------|
| | | U - S | Message |
| - | EXCEPTION: Step 1 describes behaviour that depends on the UE behaviour. | - | - |
| 1 | If initiated by the UE the generic procedure for IP address allocation in the U-plane specified in TS 36.508 subclause 4.5A.1 takes place performing IP address allocation in the U-plane. | - | - |
| 2-5 | Steps 1-4 expected sequence defined in annex C.20 of TS 34.229-1 [35]. Emergency registration procedure is performed. | - | - |
| 6-10 | Steps 1-5 defined in annex C.22 of TS 34.229-1 [35]. IMS Emergency call for EPS is established. | - | - |

4.5A.4.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the exceptions below.

Table 4.5A.4.4-1: Message ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (step 10, Table 4.5A.4.3-1)

| Derivation path: Table 4.7.3-6 and table 4.6.1-8 with condition AM-DRB-ADD(2) | | | |
|---|---|---|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Access point name | sos | APN value as recommended by IR.88 clause 6.4 [56] | |
| EPS QoS | According to reference default EPS bearer context #2 – in table 6.6.1-1 | SS defines an additional dedicated EPS QoS | |

Table 4.5A.4.4-3: Message ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST (step 13, Table 4.5A.4.3-1)

| Derivation path: Table 4.7.3-3 and table 4.6.1-8 with condition UM-DRB-ADD(3) | | | |
|---|---|--|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Linked EPS bearer identity | Default EBId-2 (same value like in table 4.5A.4.4-1) | | |
| EPS QoS | According to reference dedicated EPS bearer context #1 - in table 6.6.2-1 | SS defines an additional dedicated EPS QoS | |
| TFT | According to reference dedicated EPS bearer context #1 - in table 6.6.2-1 | | |

Table 4.5A.4.4-4: PDN CONNECTIVITY REQUEST (step 9)

| Derivation Path: Table 4.7.3-20 | | | |
|---------------------------------|--------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Access point name | Not present or any value | | |

4.5A.5 Generic Test Procedure for IMS Emergency call establishment in EUTRA: Limited Service

4.5A.5.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE is switched on and camped on the cell in EMM-DEREGISTERED.LIMITED-SERVICE state.

4.5A.5.2 Definition of system information messages

The default system information messages are used.

4.5A.5.3 Procedure

The establishment of IMS emergency call is assumed to always be mobile originated.

Table 4.5A.5.3-1: EUTRA/EPS signalling for IMS Emergency Call in limited service

| St | Procedure | Message Sequence | |
|-----------|---|------------------|--|
| | | U - S | Message |
| 1 | Make the UE attempt an IMS emergency call | - | - |
| 2 | The UE transmits an <i>RRCConnectionRequest</i> message with 'establishmentCause' set to 'emergency'. | --> | <i>RRCConnectionRequest</i> |
| 3 | SS transmits an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> |
| 4 | The UE transmits an <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and to initiate the Attach procedure by including the ATTACH REQUEST message, EPS attach type set to "EPS emergency attach" ('0110'B). The PDN CONNECTIVITY REQUEST message is piggybacked in ATTACH REQUEST, with 'Request type' set to 'emergency ('0100'B)'. - EXCEPTION: Steps 5a1 to 5a2b1 describe behaviour that depends on the UE ID sent in the ATTACH REQUEST message in step 4 and take place only if the UE does not send IMEI. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: ATTACH REQUEST NAS: PDN CONNECTIVITY REQUEST |
| 5a1 | The SS transmits an AUTHENTICATION REQUEST message to initiate the EPS authentication and AKA procedure. | <-- | RRC: <i>DLInformationTransfer</i> NAS: AUTHENTICATION REQUEST |
| - | EXCEPTION: Steps 5a2a1 to 5a2b1 describe behaviour that depends on the UE state; the "lower case letter" identifies a step sequence that takes place if the UE is in a particular state. | - | - |
| 5a2 a1 | UE transmits an AUTHENTICATION RESPONSE message and establishes mutual authentication. | --> | RRC: <i>ULInformationTransfer</i> NAS: AUTHENTICATION RESPONSE |
| 5a2 b1 | UE transmits an AUTHENTICATION FAILURE message with EMM cause #20 "MAC failure" or EMM cause #21 "synch failure". (Note 2) | --> | RRC: <i>ULInformationTransfer</i> NAS: AUTHENTICATION FAILURE |
| 6a1 | Void | - | - |
| 6b1 | Void | - | - |
| 7 | The SS transmits a NAS SECURITY MODE COMMAND message to activate NAS security selecting. Note: If UE has sent Authentication Failure in step 5a2b16b1 or the behaviour described in steps 5a1 to 5a2b1 does not take place, KSI value is set to "000" and EIA0 (NULL integrity), and EEA0 (NULL ciphering) algorithms are used. | <-- | RRC: <i>DLInformationTransfer</i> NAS: SECURITY MODE COMMAND |
| 8 | The UE transmits a NAS SECURITY MODE COMPLETE message and establishes the initial security configuration. | --> | RRC: <i>ULInformationTransfer</i> NAS: SECURITY MODE COMPLETE |
| - | EXCEPTION: Steps 9a1 to 9a2 describe behaviour that depends on UE configuration; the "lower case letter" identifies a step sequence that take place if the UE has ESM information which needs to be transferred. | - | - |
| 9a1 | IF the UE sets the ESM information transfer flag in the last PDN CONNECTIVITY REQUEST message THEN the SS transmits an ESM INFORMATION REQUEST message to initiate exchange of protocol configuration options and/or APN. | <-- | RRC: <i>DLInformationTransfer</i> NAS: ESM INFORMATION REQUEST |
| 9a2 | The UE transmits an ESM INFORMATION RESPONSE message to transfer protocol configuration options and/or APN. | --> | RRC: <i>ULInformationTransfer</i> NAS: ESM INFORMATION RESPONSE |

| | | | |
|----|--|-----|--|
| 10 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. Note: If UE has sent Authentication Failure in step 5a2b1, or the behaviour described in steps 5a1 to 5a2b1 does not take place, then, eia0 (NULL integrity), and eea0 (NULL ciphering) algorithms are used. | <-- | RRC: <i>SecurityModeCommand</i> |
| 11 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 12 | The SS transmits a <i>UECapabilityEnquiry</i> message to initiate the UE radio access capability transfer procedure. | <-- | RRC: <i>UECapabilityEnquiry</i> |
| 13 | The UE transmits a <i>UECapabilityInformation</i> message to transfer UE radio access capability. | --> | RRC: <i>UECapabilityInformation</i> |
| 14 | The SS transmits an <i>RRCConnectionReconfiguration</i> message to establish the default bearer with condition SRB2-DRB(1, 0). The DRB associated with default EPS bearer context #2 (QCI 5) according to table 6.6.1-1: Reference default EPS bearer contexts, obtained during the attach procedure, is established. This message includes the ATTACH ACCEPT message with EPS attach result set to "EPS only" ('001'B). The ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message is piggybacked in ATTACH ACCEPT. Note: The APN is set to the test APN defined for emergency bearer services | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ATTACH ACCEPT NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST |
| - | EXCEPTION: In parallel to the events described in steps 15 to 19 below, the behaviour in table 4.5A.5.3-2 occurs. (Optional IP address allocation followed by IMS emergency speech call establishment) | - | - |
| 15 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of default bearer. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 16 | This message includes the ATTACH COMPLETE message. The ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message is piggybacked in ATTACH COMPLETE. | --> | RRC: <i>ULInformationTransfer</i> NAS: ATTACH COMPLETE NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT |
| 17 | The SS configures a new RLC-UM data radio bearer, associated with the dedicated EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains the ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message. EPS bearer context #4 (QCI 1) according to table 6.6.2-1: Reference dedicated EPS bearer contexts is used. Note: the same PDN address is applicable because the linked EPS bearer ID refers to the default EBC allocated in step 10 | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 18 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer for emergency IMS signalling. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 19 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULInformationTransfer</i> NAS:ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |

| | |
|---------|---|
| Note 1: | Void |
| Note 2: | EMM cause #26 "non-EPS authentication unacceptable" is not expected to happen as SS will not set the "separation bit" in the AMF field of AUTN as 0 |

Table 4.5A.5.3-2: Parallel behaviour

| St | Procedure | Message Sequence | |
|-----|--|------------------|---------|
| | | U - S | Message |
| - | EXCEPTION: Step 1 describes behaviour that depends on the UE behaviour. | - | - |
| 1 | If initiated by the UE the generic procedure for IP address allocation in the U-plane specified in TS 36.508 subclause 4.5A.1 takes place performing IP address allocation in the U-plane. | - | - |
| 2-6 | Steps 1-5 defined in annex C.22 of TS 34.229-1 [35]. IMS Emergency call for EPS is established. | - | - |

4.5A.5.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the exceptions below.

Table 4.5A.5.4-1: SECURITY MODE COMMAND (step 7, Table 4.5A.5.3-1)

| Derivation Path: Table 4.7.2-19 | | | |
|--|---|--|-----------------------|
| Information Element | Value/remark | Comment | Condition |
| Type of integrity protection algorithm | Set according to PIXIT parameter for default integrity protection algorithm | | NOT NullAlgorithmUsed |
| | EIA0 | | NullAlgorithmUsed |
| Type of ciphering algorithm | Set according to PIXIT parameter for default ciphering algorithm | | NOT NullAlgorithmUsed |
| | EEA0 | | NullAlgorithmUsed |
| NAS key set identifier | | | |
| NAS key set identifier | The valid NAS key set identifier. | | NOT NullAlgorithmUsed |
| | '000'B | | NullAlgorithmUsed |
| TSC | '0'B | native security context (for KSI _{ASME}) | |
| Spare half octet | '0000'B | | |

| Condition | Explanation |
|-------------------|--|
| NullAlgorithmUsed | UE has sent Authentication Failure in step 5ab1 (Table 4.5A.5.3-1), or the behaviour described in steps 5a1 to 5a2b1 does not take place (Table 4.5A.5.3-1). |

Table 4.5A.5.4-2: SecurityModeCommand (step 10, Table 4.5A.5.3-1)

| Derivation Path: Table 4.6.1-19 | | | |
|------------------------------------|----------------------------------|------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SecurityModeCommand ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| securityModeCommand-r8 SEQUENCE { | | | |
| securityConfigSMC | SecurityConfigSMC-LimitedService | Table 4.5A.5.4-3 | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

Table 4.5A.5.4-3: SecurityConfigSMC-LimitedService (Table 4.5A.5.4-2)

| Derivation Path: Table 4.6.4-2 | | | |
|--|---|---------|-----------------------|
| Information Element | Value/remark | Comment | Condition |
| SecurityConfigSMC- LimitedService ::= SEQUENCE { | | | |
| securityAlgorithmConfig SEQUENCE { | | | |
| cipheringAlgorithm | Set according to PIXIT parameter for default ciphering algorithm | | NOT NullAlgorithmUsed |
| | eea0 | | NullAlgorithmUsed |
| integrityProtAlgorithm | Set according to PIXIT parameter for default integrity protection algorithm | | NOT NullAlgorithmUsed |
| | eia0 | | NullAlgorithmUsed |
| } | | | |

| Condition | Explanation |
|-------------------|---|
| NullAlgorithmUsed | UE has sent Authentication Failure in step 5a2b1 (Table 4.5A.5.3-1), or the behaviour described in steps 5a1 to 5a2b1 (Table 4.5A.5.3-1) does not take place. |

Table 4.5A.5.4-4: Message ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST (step 17, Table 4.5A.5.3-1)

| Derivation path: Table 4.7.3-3 and table 4.6.1-8 with condition UM-DRB-ADD(3) | | | |
|---|--|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Linked EPS bearer identity | Default EBId-2 (same value as in table 4.5A.5.4-4) | | |
| EPS QoS | See Reference dedicated EPS bearer context #4 in table 6.6.2-1 | | |
| TFT | See Reference dedicated EPS bearer context #4 in table 6.6.2-1 | | |

Table 4.5A.5.4-5: Message ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (step 14, Table 4.5A.5.3-1)

| Derivation path: Table 4.7.3-6 and table 4.6.1-8 with condition AM-DRB-ADD(2) | | | |
|---|---|---|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Access point name | sos | APN value as recommended by IR.88 clause 6.4 [56] | |
| EPS QoS | According to reference default EPS bearer context #2 – in table 6.6.1-1 | SS defines an additional dedicated EPS bearer | |

Table 4.5A.5.4-6: Message ESM INFORMATION RESPONSE (step 9a2, Table 4.5A.5.3-1)

| Derivation Path: Table 4.7.3-14 | | | |
|---------------------------------|--------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Access point name | Not present or any value | | |

4.5A.6 Generic Test Procedure for IMS MO speech call establishment in E-UTRA

4.5A.6.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2).

4.5A.6.2 Definition of system information messages

The default system information messages are used.

4.5A.6.3 Procedure

Table 4.5A.6.3-1: EUTRA/EPS signalling for IMS MO speech call

| St | Procedure | Message Sequence | |
|----------|---|------------------|---|
| | | U - S | Message |
| 1 | Make the UE attempt an IMS speech call | - | - |
| 2 | The UE transmits an <i>RRCCONNECTIONREQUEST</i> message with 'establishmentCause' set to 'mo-Data'. | --> | <i>RRCCONNECTIONREQUEST</i> |
| 3 | SS transmit an <i>RRCCONNECTIONSETUP</i> message. | <-- | RRC: <i>RRCCONNECTIONSETUP</i> |
| 4 | The UE transmits an <i>RRCCONNECTIONSETUPCOMPLETE</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the SERVICE REQUEST message. | --> | RRC: <i>RRCCONNECTIONSETUPCOMPLETE</i> NAS: SERVICE REQUEST |
| 5 | The SS transmits a <i>SECURITYMODECOMMAND</i> message to activate AS security. | <-- | RRC: <i>SECURITYMODECOMMAND</i> |
| 6 | The UE transmits a <i>SECURITYMODECOMPLETE</i> message and establishes the initial security configuration. | --> | RRC: <i>SECURITYMODECOMPLETE</i> |
| 7 | The SS configures a new data radio bearer, associated with the default EPS bearer context. The <i>RRCCONNECTIONRECONFIGURATION</i> message is using condition SRB2-DRB(1, 0). The DRB associated with default EPS bearer context obtained during the attach procedure is established | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> |
| - | EXCEPTION: In parallel to the events described in steps 8 below, the behaviour in table 4.5A.6.3-2 occurs. (IMS MTSI MO speech call establishment) | - | - |
| 8 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer context. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| - | EXCEPTION: Steps 9a1 to 11b1 describe behaviour that depends on the UE category. | - | - |
| 9a1-11a1 | IF not pc_ue_CategoryDL_M1 THEN steps 3-4 from the expected sequence defined in annex C.21 of TS 34.229-1 [35]. MTSI MO speech call for EPS take place. | - | - |
| 9b1-11b1 | IF pc_ue_CategoryDL_M1 THEN steps 3-4 from the expected sequence defined in annex C.21d of TS 34.229-1 [35]. MTSI MO speech call for EPS / UE category M1 take place. | - | - |
| 12 | The SS configures a new RLC-UM data radio bearer with condition DRB (0,1), associated with the dedicated EPS bearer context. <i>RRCCONNECTIONRECONFIGURATION</i> message contains the ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message. EPS bearer context #4 (QCI 1) according to table 6.6.2-1: Reference dedicated EPS bearer contexts. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| - | EXCEPTION: In parallel to the events described in steps 13-14 below, the behaviour in table 4.5A.6.3-3 occurs. (IMS MTSI MO speech call establishment) | - | - |
| 13 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message to confirm the establishment of the new data radio bearer, associated with the dedicated EPS bearer. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 14 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | RRC: ULInformationTransfer NAS:ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |

Table 4.5A.6.3-2: Parallel behaviour

| St | Procedure | Message Sequence | |
|-----|--|------------------|---------|
| | | U - S | Message |
| - | . EXCEPTION: Steps 1a1 to 1b1 describe behaviour that depends on the UE category. | | |
| 1a1 | IF not pc_ue_CategoryDL_M1 THEN THEN the step 2 expected sequence defined in annex C.21 of TS 34.229-1 [35]. UE sends INVITE take place. | - | - |
| 1b1 | IF pc_ue_CategoryDL_M1 THEN THEN Step 2 from the expected sequence defined in annex C.21d of TS 34.229-1 [35]. UE sends INVITE take place. | - | - |

Table 4.5A.6.3-3: Parallel behaviour

| St | Procedure | Message Sequence | |
|-----------------|--|------------------|---------|
| | | U - S | Message |
| - | . EXCEPTION: Steps 1a1 to 8b1 describe behaviour that depends on the UE category. | | |
| 1a1 - 8a1 | IF not pc_ue_CategoryDL_M1 THEN HEN the steps from the 5-13 expected sequence defined in annex C.21 of TS 34.229-1 [35]. MTSI MO speech call for EPS take place. | - | - |
| 1b1 - 8b1 | IF pc_ue_CategoryDL_M1 THEN the steps 5-13 from the expected sequence defined in annex C.21d of TS 34.229-1 [35]. MTSI MO speech call for EPS / UE category M1 take place. | - | - |

4.5A.6.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.7 Generic Test Procedure for IMS MT Speech call establishment in E-UTRA

4.5A.7.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2).

4.5A.7.2 Definition of system information messages

The default system information messages are used.

4.5A.7.3 Procedure

Table 4.5A.7.3-1: EUTRA/EPS signalling for IMS MT speech call

| St | Procedure | Message Sequence | |
|-----------|--|------------------|---|
| | | U - S | Message |
| 1 | SS sends a <i>Paging</i> message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE <i>pagingRecordLists</i> . | <-- | RRC: <i>Paging</i> (PCCH) |
| 2 | The UE transmits an <i>RRCConnectionRequest</i> message with 'establishmentCause' set to 'mt-Access'. | --> | <i>RRCConnectionRequest</i> |
| 3 | SS transmit an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> |
| 4 | The UE transmits an <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the SERVICE REQUEST message. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: SERVICE REQUEST |
| 5 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 6 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 7 | The SS configures a new data radio bearer, associated with the default EPS bearer context. The <i>RRCConnectionReconfiguration</i> message is using condition SRB2-DRB(1, 0). The DRB associated with default EPS bearer context obtained during the attach procedure is established | <-- | RRC: <i>RRCConnectionReconfiguration</i> |
| 8 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer context. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| - | EXCEPTION: Steps 9a1 to 12b3 describe behaviour that depends on the UE category. | | |
| 9a1-12a3 | IF not pc_ue_CategoryDL_M1 THEN THEN the steps 1-6 from the expected sequence defined in annex C.11 of TS 34.229-1 [35]. MTSI MT speech call take place. | - | - |
| 9b1-12b3 | IF pc_ue_CategoryDL_M1 THEN steps 1-6 from the expected sequence defined in annex C.11d of TS 34.229-1 [35]. MTSI MT speech call / UE category M1 take place. | - | - |
| 13 | The SS configures a new RLC-UM data radio bearer with condition DRB (0,1), associated with the dedicated EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains the ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 14 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the dedicated EPS bearer. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 15 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | RRC: ULInformationTransfer NAS:ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| - | EXCEPTION: Steps 18a1 to 22b1 describe behaviour that depends on the UE category. | | |
| 16a1-17 | Void | - | - |
| 18a1-22a1 | IF not pc_ue_CategoryDL_M1 THEN steps 7-11 from the expected sequence defined in annex C.11 of TS 34.229-1 [35] MTSI MT speech call take place. | - | - |
| 18b1-22b1 | IF pc_ue_CategoryDL_M1 THEN the steps 7-11 from the expected sequence defined in annex C.11d of TS 34.229-1 [35] MTSI MT speech call / UE category M1 take place. | - | - |
| - | EXCEPTION: Steps 23Aa1 to 23Ab1 describe behaviour that depends on the UE category. | | |

| | | | |
|-------------------|--|---|---|
| 23A a1 | IF not pc_ue_CategoryDL_M1 THEN step 11A from the expected sequence defined in annex C.11 of TS 34.229-1 [35] MTSI MT speech call take place. | - | - |
| 23A b1 | IF pc_ue_CategoryDL_M1 THEN step 11A from the expected sequence defined in annex C.11d of TS 34.229-1 [35] MTSI MT speech call / UE category M1 take place. | - | - |
| - | EXCEPTION: Steps 23a1 to 24b1 describe behaviour that depends on the UE category. | | |
| 23a1 - 24a1 | IF not pc_ue_CategoryDL_M1 THEN steps 12-13 expected sequence defined in annex C.11 of TS 34.229-1 [35] MTSI MT speech call take place. | - | - |
| 23b1 - 24b1 | IF pc_ue_CategoryDL_M1 THEN steps 12-13 from the expected sequence defined in annex C.11d of TS 34.229-1 [35] MTSI MT speech call / UE category M1 take place. | - | - |
| - | EXCEPTION: Steps 25a1 to 26b1 describe behaviour that depends on the UE category. | | |
| 25a1 - 26a2 | IF not pc_ue_CategoryDL_M1 THEN steps 14-15 from the expected sequence defined in annex C.11 of TS 34.229-1 [35] MTSI MT speech call take place. | - | - |
| 25b1 - 26b1 | IF pc_ue_CategoryDL_M1 THEN steps 14-15 from the expected sequence defined in annex C.11d of TS 34.229-1 [35] MTSI MT speech call / UE category M1 take place. | - | - |

4.5A.7.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.8 Generic Test Procedure for IMS MO video call establishment in E-UTRA

4.5A.8.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2).

4.5A.8.2 Definition of system information messages

The default system information messages are used.

4.5A.8.3 Procedure

Table 4.5A.8.3-1: EUTRA/EPS signalling for IMS MO video call

| St | Procedure | Message Sequence | |
|------|--|------------------|--|
| | | U - S | Message |
| 1 | Make the UE attempt an IMS video call | - | - |
| 2 | The UE transmits an <i>RRCConnectionRequest</i> message with 'establishmentCause' set to 'mo-Data'. | --> | <i>RRCConnectionRequest</i> |
| 3 | SS transmit an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> |
| 4 | The UE transmits an <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the SERVICE REQUEST message. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: SERVICE REQUEST |
| 5 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 6 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 7 | The SS configures a new data radio bearer, associated with the default EPS bearer context. The <i>RRCConnectionReconfiguration</i> message is using condition SRB2-DRB(1, 0). The DRB associated with default EPS bearer context obtained during the attach procedure is established | <-- | RRC: <i>RRCConnectionReconfiguration</i> |
| - | EXCEPTION: In parallel to the events described in steps 8 below, the behaviour in table 4.5A.8.3-2 occurs. (IMS MTSI MO video call establishment) | - | - |
| 8 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer context. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 9-11 | Steps 3-4 expected sequence defined in annex C.25 of TS 34.229-1 [35]. MTSI MO video call for EPS. | - | - |
| 12 | The SS configures two new RLC-UM data radio bearers with condition DRB (0,2), associated with the dedicated EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains one ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message per additional data radio bearer. One EPS bearer context #4 (QCI 1) and one EPS bearer context #3 (QCI 2) according table 6.6.2-1: Reference dedicated EPS bearer contexts. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| - | EXCEPTION: In parallel to the events described in steps 13-14 below, the behaviour in table 4.5A.8.3-3 occurs. (IMS MTSI MO video call establishment). | - | - |
| 13 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the dedicated EPS bearer. EPS bearer context #4 (QCI 1) according table to 6.6.2-1: Reference dedicated EPS bearer contexts. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 14 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message for the first bearer. | --> | RRC: ULInformationTransfer NAS:ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| 15 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message for the second bearer. | --> | RRC: ULInformationTransfer NAS:ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |

Table 4.5A.8.3-2: Parallel behaviour

| St | Procedure | Message Sequence | |
|----|--|------------------|---------|
| | | U - S | Message |
| 1 | Step 2 expected sequence defined in annex C.25 of TS 34.229-1 [35]. UE sends INVITE. | - | - |

Table 4.5A.8.3-3: Parallel behaviour

| St | Procedure | Message Sequence | |
|-----|---|------------------|---------|
| | | U - S | Message |
| 1-8 | Steps 5-13 expected sequence defined in annex C.25 of TS 34.229-1 [35]. MTSI MO video call for EPS. | - | - |

4.5A.8.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.9 Generic Test Procedure for IMS MT video call establishment in E-UTRA

4.5A.9.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2).

4.5A.9.2 Definition of system information messages

The default system information messages are used.

4.5A.9.3 Procedure

Table 4.5A.9.3-1: EUTRA/EPS signalling for IMS MT video call

| St | Procedure | Message Sequence | |
|-------|---|------------------|--|
| | | U - S | Message |
| 1 | SS sends a <i>Paging</i> message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE <i>pagingRecordLists</i> . | <-- | RRC: <i>Paging</i> (PCCH) |
| 2 | The UE transmits an <i>RRCConnectionRequest</i> message with 'establishmentCause' set to 'mt-Access'. | --> | <i>RRCConnectionRequest</i> |
| 3 | SS transmit an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> |
| 4 | The UE transmits an <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the SERVICE REQUEST message. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: SERVICE REQUEST |
| 5 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 6 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 7 | The SS configures a new data radio bearer, associated with the default EPS bearer context. The <i>RRCConnectionReconfiguration</i> message is using condition SRB2-DRB(1, 0). The DRB associated with default EPS bearer context obtained during the attach procedure is established | <-- | RRC: <i>RRCConnectionReconfiguration</i> |
| 8 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer context. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 9-12b | Steps 1-6 expected sequence defined in annex C.26 of TS 34.229-1 [35]. MTSI MT video call. | - | - |
| 13 | The SS configures a new RLC-UM data radio bearer with condition DRB (0,2), associated with the dedicated EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains one ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message per additional data radio bearer. One EPS bearer context #4 (QCI 1) and one EPS bearer context #3 (QCI 2) according table 6.6.2-1: Reference dedicated EPS bearer contexts. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 14 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the dedicated EPS bearer. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 15 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message for the first bearer. | --> | RRC: ULInformationTransfer NAS:ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| 16 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message for the second bearer. | --> | RRC: ULInformationTransfer NAS:ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| 17-18 | Void | - | - |
| 19-27 | Steps 7-15 expected sequence defined in annex C.26 of TS 34.229-1 [35]. MTSI MT video call for EPS. | - | - |

4.5A.9.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.10 Generic Test Procedure for IMS MO speech and aSRVCC in E-UTRA

4.5A.10.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2).

4.5A.10.2 Definition of system information messages

The default system information messages are used.

4.5A.10.3 Procedure

Table 4.5A.10.3-1: EUTRA/EPS signalling for IMS MO speech to alerting state

| St | Procedure | Message Sequence | |
|------|---|------------------|---|
| | | U - S | Message |
| 1 | Make the UE attempt an IMS speech call | - | - |
| 2 | The UE transmits an <i>RRCConnectionRequest</i> message with 'establishmentCause' set to 'mo-Data'. | --> | <i>RRCConnectionRequest</i> |
| 3 | SS transmit an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> |
| 4 | The UE transmits an <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the SERVICE REQUEST message. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: SERVICE REQUEST |
| 5 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 6 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 7 | The SS configures a new data radio bearer, associated with the default EPS bearer context. The <i>RRCConnectionReconfiguration</i> message is using condition SRB2-DRB(1, 0). The DRB associated with default EPS bearer context obtained during the attach procedure is established | <-- | RRC: <i>RRCConnectionReconfiguration</i> |
| - | EXCEPTION: In parallel to the events described in steps 8 below, the behaviour in table 4.5A.10.3-2 occurs. Initiate MTSI MO speech. | - | - |
| 8 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer context. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 9-11 | Steps 3-4 expected sequence defined in annex C.21 of TS 34.229-1 [35]. MTSI MO speech call for EPS. | - | - |
| 12 | The SS configures a new RLC-UM data radio bearer with condition DRB (0,1), associated with the dedicated EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains the ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message. EPS bearer context #4 (QCI 1) according to table 6.6.2-1: Reference dedicated EPS bearer contexts. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| | EXCEPTION: In parallel to the events described in steps 13-14 below, the behaviour in table 4.5A.10.3-3 occurs. MTSI MO speech call to alerting state. | - | - |
| 13 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the dedicated EPS bearer. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 14 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULInformationTransfer</i> NAS:ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |

Table 4.5A.10.3-2: Parallel behaviour

| St | Procedure | Message Sequence | |
|----|--|------------------|---------|
| | | U - S | Message |
| 1 | Step 2 expected sequence defined in annex C.21 of TS 34.229-1 [35]. UE sends INVITE. | - | - |

Table 4.5A.10.3-3: Parallel behaviour

| St | Procedure | Message Sequence | |
|-----|--|------------------|---------|
| | | U - S | Message |
| 1-7 | Steps 5-11 expected sequence defined in annex C.21 of TS 34.229-1 [35]. MTSI MO speech call to alerting state for EPS. | - | - |

4.5A.10.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.11 Generic Test Procedure for IMS MO add video establishment in E-UTRA

4.5A.11.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall execute 4.5A.6.

4.5A.11.2 Definition of system information messages

The default system information messages are used.

4.5A.11.3 Procedure

Table 4.5A.11.3-1: EUTRA/EPS signalling for IMS MO add video

| St | Procedure | Message Sequence | |
|-----|---|------------------|---|
| | | U - S | Message |
| 1 | Make the UE attempt add IMS video to the voice call. | - | - |
| 2-4 | Steps 2-4 expected sequence defined in expected sequence test case 17.1.4 of TS 34.229-1 [35]. MO Speech, add video remove video. | - | - |
| 5 | The SS configures a new RLC-UM data radio bearer with condition DRB (0,1), associated with the dedicated EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains the ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message. EPS bearer context #3 (QCI 2) according to table 6.6.2-1: Reference dedicated EPS bearer contexts. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| - | EXCEPTION: In parallel to the events described in steps 6-7 below, the behaviour in table 4.5A.11.3-2 occurs. (IMS MTSI MO video call establishment). | - | - |
| 6 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the dedicated EPS bearer. EPS bearer context #3 (QCI 2) according table to 6.6.2-1: Reference dedicated EPS bearer contexts. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 7 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message for the first bearer. | --> | RRC: <i>ULInformationTransfer</i> NAS:ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |

Table 4.5A.11.3-2: Parallel behaviour

| St | Procedure | Message Sequence | |
|-----|--|------------------|---------|
| | | U - S | Message |
| 1-6 | Steps 5-10 expected sequence defined in test case 17.1.4 of TS 34.229-1 [35]. MO Speech, add video remove video. | - | - |

4.5A.11.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.12 Generic Test Procedure for IMS MT add video establishment in E-UTRA

4.5A.12.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall execute 4.5A.7.

4.5A.12.2 Definition of system information messages

The default system information messages are used.

4.5A.12.3 Procedure

Table 4.5A.12.3-1: EUTRA/EPS signalling for IMS MT add video

| St | Procedure | Message Sequence | |
|------|---|------------------|--|
| | | U - S | Message |
| 1-3b | Steps 1-5 expected sequence defined in expected sequence test case 17.2.4 of TS 34.229-1 [35]. MT Speech, add video remove video. | - | - |
| 4 | The SS configures a new RLC-UM data radio bearer with condition DRB (0,1), associated with the dedicated EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains the ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message. EPS bearer context #3 (QCI 2) according to table 6.6.2-1: Reference dedicated EPS bearer contexts. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 5 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the dedicated EPS bearer. EPS bearer context #3 (QCI 2) according to table 6.6.2-1: Reference dedicated EPS bearer contexts. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 6 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message for the first bearer. | --> | RRC: <i>ULInformationTransfer</i> NAS:ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| 7-8 | Void | - | - |
| 9-12 | Steps 6-9 expected sequence defined in test case 17.2.4 of TS 34.229-1 [35], MT Speech, add video remove video. | - | - |

4.5A.12.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.13 Void

4.5A.14 Generic Test Procedure for IMS XCAP establishment in EUTRA

4.5A.14.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2).
- If `pc_XCAP_only_APN==true` then the UE is connected to the IMS PDN only
- else the UE is connected to the IMS PDN and the Internet PDN which is used for XCAP signalling.

4.5A.14.2 Definition of system information messages

The default system information messages are used.

4.5A.14.3 Procedure

Table 4.5A.14.3-1: EUTRA/EPS signalling for XCAP

| St | Procedure | Message Sequence | |
|----|--|------------------|--|
| | | U - S | Message |
| 1 | Make the UE attempt XCAP signalling. | - | - |
| 2 | The UE transmits an <i>RRCConnectionRequest</i> message with 'establishmentCause' set to 'mo-Data'. | --> | <i>RRCConnectionRequest</i> |
| 3 | SS transmit an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> |
| 4 | The UE transmits an <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the SERVICE REQUEST message. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: SERVICE REQUEST |
| 5 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 6 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 7 | The SS configures a new data radio bearer, associated with the default EPS bearer context. The <i>RRCConnectionReconfiguration</i> message is using condition SRB2-DRB(1, 0) in case of pc_XCAP_only_APN==true or using condition SRB2-DRB(2, 0) in case of pc_XCAP_over_Internet_APN==true. The DRBs associated with the respective default EPS bearer context obtained during the attach procedure are established | <-- | RRC: <i>RRCConnectionReconfiguration</i> |
| 8 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer context. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| | EXCEPTION: IF pc_XCAP_only_APN THEN additional PDN connectivity shall be established as specified in TS 36.508 subclause 4.5A.16 (condition: NOT_ADD_IMS) | | |

4.5A.14.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.15 Generic Test Procedure for EPS Bearer Deactivation

4.5A.15.1 Initial conditions

The EPS bearer to be deactivated has been established before. The EPS bearer has to be specified.

4.5A.15.2 Definition of system information messages

The system information messages applicable in the test case are used.

4.5A.15.3 Procedure

Table 4.5A.15.3-1: Procedure for EPS Bearer Deactivation

| Step | Procedure | Message Sequence | |
|------|--|------------------|--|
| | | U - S | Message |
| 1 | The SS transmits an <i>RRCConnectionReconfiguration</i> message to deactivate an EPS bearer. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: DEACTIVATE EPS BEARER CONTEXT REQUEST |
| - | EXCEPTION: In parallel to the event described in step2 the step specified in Table 4.5A.15.3-2 should take place. | - | - |
| 2 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the deactivation of EPS bearer. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 3 | Void | - | - |

Table 4.5A.15.3-2: Procedure for EPS Bearer Deactivation (parallel behaviour)

| Step | Procedure | Message Sequence | |
|------|--|------------------|--|
| | | U - S | Message |
| 1 | The UE transmits an <i>ULInformationTransfer</i> message to accept deactivation of the EPS bearer. | --> | RRC: <i>ULInformationTransfer</i> NAS: DEACTIVATE EPS BEARER CONTEXT ACCEPT |

4.5A.15.4 Specific message contents

Table 4.5A.15.4-1: Message DEACTIVATE EPS BEARER CONTEXT REQUEST (step 1, Table 4.5A.15.3-1)

| Derivation path: Table 4.7.3-12 and table 4.6.1-8 with condition and condition NETWORK-INITIATED | | | |
|--|---------------------|--|-----------|
| Information Element | Value/Remark | Comment | Condition |
| EPS bearer identity | EPS bearer identity | Same value as in the activation message. | |
| ESM cause | 00100100 | regular deactivation | |

Table 4.5A.15.4-2: Message DEACTIVATE EPS BEARER CONTEXT ACCEPT (step 2, Table 4.5A.15.3-1)

| Derivation Path: Table 4.7.3-11 | | | |
|---------------------------------|---------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| EPS bearer identity | EPS bearer identity | The same value as the value set in DEACTIVATE EPS BEARER CONTEXT REQUEST message. | |
| Procedure transaction identity | 0 | No procedure transaction identity assigned | |

4.5A.15A Generic Test Procedure for User or Network Initiated EPS Bearer Deactivation

4.5A.15A.1 Initial conditions

The EPS bearer to be deactivated has been established before. The EPS bearer has to be specified.

4.5A.15A.2 Definition of system information messages

The system information messages applicable in the test case are used.

4.5A.15A.3 Procedure

Table 4.5A.15A.3-1: Procedure for EPS Bearer Deactivation

| Step | Procedure | Message Sequence | |
|------|---|------------------|--|
| | | U - S | Message |
| - | EXCEPTION: Step 1Aa describes behaviour that depends on UE capabilities/configuration; the "lower case letter" identifies a step sequence that takes place if one of those is supported/configured. The SS shall wait up to 5s for the UE to trigger the PDN Disconnect procedure. NOTE: The specified wait period of 5s is a working assumption to facilitate test case implementation. | - | - |
| 1Aa | The UE transmits a PDN DISCONNECT REQUEST | --> | RRC: <i>ULInformationTransfer</i> PDN DISCONNECT REQUEST |
| 1 | The SS transmits an <i>RRCConnectionReconfiguration</i> message to deactivate an EPS bearer. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: DEACTIVATE EPS BEARER CONTEXT REQUEST |
| - | EXCEPTION: In parallel to the event described in step2 the step specified in Table 4.5A.15A.3-2 should take place. | - | - |
| 2 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the deactivation of EPS bearer. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |

Table 4.5A.15A.3-2: Procedure for EPS Bearer Deactivation (parallel behaviour)

| Step | Procedure | Message Sequence | |
|------|--|------------------|--|
| | | U - S | Message |
| 1 | The UE transmits an <i>ULInformationTransfer</i> message to accept deactivation of the EPS bearer. | --> | RRC: <i>ULInformationTransfer</i> NAS: DEACTIVATE EPS BEARER CONTEXT ACCEPT |

4.5A.15A.4 Specific message contents

Table 4.5A.15A.4-1: Message DEACTIVATE EPS BEARER CONTEXT REQUEST (step 1, Table 4.5A.15.3-1)

| Derivation path: Table 4.7.3-12 and table 4.6.1-8 with condition and condition NETWORK-INITIATED | | | |
|--|---------------------|--|-----------|
| Information Element | Value/Remark | Comment | Condition |
| EPS bearer identity | EPS bearer identity | Same value as in the activation message. | |
| ESM cause | 00100100 | regular deactivation | |

Table 4.5A.15A.4-2: Message DEACTIVATE EPS BEARER CONTEXT ACCEPT (step 2, Table 4.5A.15.3-1)

| Derivation Path: Table 4.7.3-11 | | | |
|---------------------------------|---------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| EPS bearer identity | EPS bearer identity | The same value as the value set in DEACTIVATE EPS BEARER CONTEXT REQUEST message. | |
| Procedure transaction identity | 0 | No procedure transaction identity assigned | |

4.5A.16 Generic Test Procedure to establish additional PDN connectivity

The same assumptions and definitions apply as in clause 4.5.2 and in addition:

| Condition | Explanation |
|----------------|---|
| ADD_IMS | true if this procedure is part of the initial registration (PDN2_IMS==true according to definitions in clause 4.5.2); false for all other cases |
| MobileData_OFF | Mobile data associated with Internet PDN is disabled on the DUT. It is configured via setting px_MobileDataOn (TS 36.523-3[20] Table 9.1-1) = false |

4.5A.16.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The UE is in Registered, RRC_CONNECTED state (State 2).

4.5A.16.2 Definition of system information messages

The default system information messages are used.

4.5A.16.3 Procedure

Table 4.5A.16.3-1: Establishment of additional PDN connectivity

| St | Procedure | Message Sequence | |
|-----|---|------------------|--|
| | | U - S | Message |
| - | EXCEPTION: Depending upon UE configuration Step 0a1 may be performed | - | - |
| 0a1 | If IMS_Internet and MobileData_OFF then the request of connectivity to an additional PDN is performed by MMI or AT command with APN "Internet". | - | - |
| 1 | The UE transmits a PDN CONNECTIVITY REQUEST message to request an additional PDN. | --> | RRC: <i>ULInformationTransfer</i> NAS: PDN CONNECTIVITY REQUEST |
| 2 | The SS configures a new data radio bearer, associated with the additional default EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains the ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST |
| 3 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of additional default bearer. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| - | EXCEPTION: In parallel to the event described in step 4 below, if initiated by the UE the generic procedure for IP address allocation in the U-plane specified in TS 36.508 subclause 4.5A.1 takes place performing IP address allocation in the U-plane. | - | - |
| - | EXCEPTION: IF ADD_IMS THEN in parallel to the event described in step 4 below the generic procedure for IMS signalling in the U-plane specified in TS 36.508 subclause 4.5A.3 takes place if requested by the UE | - | - |
| 4 | The UE transmits an ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULInformationTransfer</i> NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT |

4.5A.16.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the exceptions below.

Table 4.5A.16.4-1: PDN CONNECTIVITY REQUEST (step 1)

| Derivation Path: Table 4.7.3-20 | | | |
|---------------------------------|-------------------|----------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Access point name | Any allowed value | The UE includes a new APN. | |

Table 4.5A.16.4-2: Message ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (step 2)

| Derivation path: Table 4.7.3-6 with condition IMS_PDN_ConnEstab for ADD_IMS and NOT IMS_PDN_ConnEstab else and table 4.6.1-8 with condition AM-DRB-ADD(1) for ADD_IMS or with condition AM-DRB-ADD(8) else | | | |
|---|--------------|--|-------------|
| Information Element | Value/Remark | Comment | Condition |
| EPS bearer identity | '0101'B | arbitrary value used for PDN connectivity being maintained during the test case | ADD_IMS |
| EPS bearer identity | '1100'B | arbitrary value used for additional non-IMS PDN connectivity | NOT ADD_IMS |
| Procedure transaction identity | PTI-1 | SS re-uses the particular PTI defined by UE for this present additional PDN connectivity request procedure | |

Table 4.5A.16.4-3: Message ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT (step 4)

| Derivation path: Table 4.7.3-4 | | | |
|--------------------------------|--------------------------------|--|-----------|
| Information Element | Value/Remark | Comment | Condition |
| EPS bearer identity | (same value as used in step 2) | | |
| Procedure transaction identity | 0 | No procedure transaction identity assigned | |

4.5A.17 Generic Test Procedure for user initiated release of additional PDN connectivity

4.5A.17.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2) with connectivity at least to two PDNs

4.5A.17.2 Definition of system information messages

The default system information messages are used.

4.5A.17.3 Procedure

Table 4.5A.17.3-1: Release of additional PDN connectivity

| St | Procedure | Message Sequence | |
|---|---|------------------|--|
| | | U - S | Message |
| 1 | Cause the UE to request disconnection from the additional PDN (see Note 1) | - | - |
| 2 | The UE transmits an <i>RRCCONNECTIONREQUEST</i> | --> | <i>RRCCONNECTIONREQUEST</i> |
| 3 | SS transmit an <i>RRCCONNECTIONSETUP</i> message. | <-- | RRC: <i>RRCCONNECTIONSETUP</i> |
| - | EXCEPTION: Steps 4a1 to 4b1 describe behaviour which depends on earlier network indication of supported features. | - | - |
| 4a1 | IF the network indicated support of EXTENDED SERVICE REQUEST for packet services in the preceding ATTACH ACCEPT message, THEN the UE transmits an <i>RRCCONNECTIONSETUPCOMPLETE</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the EXTENDED SERVICE REQUEST message | --> | RRC: <i>RRCCONNECTIONSETUPCOMPLETE</i> NAS: EXTENDED SERVICE REQUEST |
| 4b1 | ELSE, the UE transmits an <i>RRCCONNECTIONSETUPCOMPLETE</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the SERVICE REQUEST message. | --> | RRC: <i>RRCCONNECTIONSETUPCOMPLETE</i> NAS: SERVICE REQUEST |
| 5 | The SS transmits a <i>SECURITYMODECOMMAND</i> message to activate AS security. | <-- | RRC: <i>SECURITYMODECOMMAND</i> |
| 6 | The UE transmits a <i>SECURITYMODECOMPLETE</i> message and establishes the initial security configuration. | --> | RRC: <i>SECURITYMODECOMPLETE</i> |
| 7 | The SS transmits a <i>RRCCONNECTIONRECONFIGURATION</i> message to establish SRB2 and DRBs associated with all default EPS bearer contexts | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> |
| 8 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message to confirm the establishment of SRB2 and DRBs associated with all default EPS bearer contexts. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 9 | The UE transmits a PDN DISCONNECT REQUEST | --> | RRC: <i>ULINFORMATIONTRANSFER</i> PDN DISCONNECT REQUEST |
| 10 | The SS transmits a DEACTIVATE EPS BEARER CONTEXT REQUEST message included in an <i>RRCCONNECTIONRECONFIGURATION</i> message. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> NAS: DEACTIVATE EPS BEARER CONTEXT REQUEST |
| 11 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message to confirm the release of the bearer. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 12 | The UE transmits a DEACTIVATE EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULINFORMATIONTRANSFER</i> DEACTIVATE EPS BEARER CONTEXT ACCEPT |
| 13 | The SS transmits an <i>RRCCONNECTIONRELEASE</i> message to release RRC connection | <-- | RRC: <i>RRCCONNECTIONRELEASE</i> |
| NOTE 1: The request to disconnect from a PDN may be performed by MMI or AT command; in any case the EPS bearer identity of the Default EPS Bearer of the PDN to be released needs to be handed over to the UE | | | |

4.5A.17.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the exceptions below.

Table 4.5A.17.4-1: *RRCCONNECTIONRECONFIGURATION* (step 7)

| |
|--|
| Derivation path: 36.508 table 4.6.1-8 using condition SRB2-DRB(2, 0) |
| NOTE: The bid for the AM DRBs shall be 1 and 8 instead of 1 and 2. |

Table 4.5A.17.4-2: PDN DISCONNECT REQUEST (step 9)

| Derivation Path: TS 36.508 Table 4.7.3-22 | | | |
|---|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| EPS bearer identity | '0000' | "no EPS bearer identity assigned" | |
| Procedure transaction identity | PTI-1 | UE assigns a particular PTI not yet used between 1 and 254 | |
| Linked EPS bearer identity | (bearer identity as handed over at step 1) | | |

Table 4.5A.17.4-3: RRCConnectionReconfiguration (step 10)

| Derivation path: 36.508 table 4.6.1-8 using condition DRB-REL(8) |
|--|
|--|

Table 4.5A.17.4-4: DEACTIVATE EPS BEARER CONTEXT REQUEST (step 10)

| Derivation Path: TS 36.508 Table 4.7.3-12 | | | |
|---|---|---|--------------|
| Information Element | Value/remark | Comment | Condition |
| EPS bearer identity | (same as in Linked EPS bearer identity of step 9) | | |
| Procedure transaction identity | PTI-1 | SS re-uses the particular PTI defined by UE for this present PDN disconnection procedure. | UE-INITIATED |
| ESM cause | 00100100 | regular deactivation | |

Table 4.5A.17.4-5: DEACTIVATE EPS BEARER CONTEXT ACCEPT (step 12)

| Derivation Path: TS 36.508 Table 4.7.3-11 | | | |
|---|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| EPS bearer identity | (same as in DEACTIVATE EPS BEARER CONTEXT REQUEST of step 10) | The same value as the value set in DEACTIVATE EPS BEARER CONTEXT REQUEST message. | |
| Procedure transaction identity | 0 | No procedure transaction identity assigned | |

4.5A.18 Generic Test Procedure for network initiated release of additional PDN connectivity

4.5A.18.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2) with connectivity at least to two PDNs

4.5A.18.2 Definition of system information messages

The default system information messages are used.

4.5A.18.3 Procedure

Table 4.5A.18.3-1: Release of additional PDN connectivity

| St | Procedure | Message Sequence | |
|-----|--|------------------|--|
| | | U - S | Message |
| 1-7 | Steps 1 to 7 of the generic radio bearer establishment procedure (TS 36.508 4.5.3.3-1) | | |
| 8 | The SS transmits a <i>RRCCONNECTIONRECONFIGURATION</i> message to establish SRB2 and DRBs associated with all default EPS bearer contexts | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> |
| 9 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message to confirm the establishment of SRB2 and DRBs associated with all default EPS bearer contexts. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 10 | SS releases the PDN connectivity by transmitting a <i>RRCCONNECTIONRECONFIGURATION</i> containing a DEACTIVATE EPS BEARER CONTEXT REQUEST | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> NAS: DEACTIVATE EPS BEARER CONTEXT REQUEST |
| 11 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message to confirm the release of the bearer. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 12 | The UE transmits a DEACTIVATE EPS BEARER CONTEXT ACCEPT message. | --> | DEACTIVATE EPS BEARER CONTEXT ACCEPT |
| 13 | The SS transmits an <i>RRCCONNECTIONRELEASE</i> message to release RRC connection | <-- | RRC: <i>RRCCONNECTIONRELEASE</i> |

4.5A.18.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the exceptions below.

Table 4.5A.18.4-1: RRCCONNECTIONRECONFIGURATION (step 8)

| |
|--|
| Derivation path: 36.508 table 4.6.1-8 using condition SRB2-DRB(2, 0) |
| NOTE: The bid for the AM DRBs shall be 1 and 8 instead of 1 and 2. |

Table 4.5A.18.4-2: RRCCONNECTIONRECONFIGURATION (step 10)

| |
|--|
| Derivation path: 36.508 table 4.6.1-8 using condition DRB-REL(8) |
|--|

Table 4.5A.18.4-3: DEACTIVATE EPS BEARER CONTEXT REQUEST (step 10)

| Derivation Path: TS 36.508 Table 4.7.3-12 | | | |
|---|---|------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| EPS bearer identity | (identity of default EPS bearer associated with the PDN to be released) | | |
| ESM cause | 00011010 | Insufficient resources | |

Table 4.5A.18.4-4: DEACTIVATE EPS BEARER CONTEXT ACCEPT (step 12)

| Derivation Path: TS 36.508 Table 4.7.3-11 | | | |
|---|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| EPS bearer identity | (same as in DEACTIVATE EPS BEARER CONTEXT REQUEST of step 10) | The same value as the value set in DEACTIVATE EPS BEARER CONTEXT REQUEST message. | |
| Procedure transaction identity | 0 | No procedure transaction identity assigned | |

4.5A.19 Generic Test Procedure for IMS MO speech call establishment in E-UTRA / EVS

4.5A.19.1 Initial conditions

See clause 4.5A.6.1.

4.5A.19.2 Definition of system information messages

The default system information messages are used.

4.5A.19.3 Procedure

Table 4.5A.19.3-1: EUTRA/EPS signalling for IMS MO speech call / EVS

| St | Procedure | Message Sequence | |
|------|---|------------------|--|
| | | U – S | Message |
| 1-7 | Same as table 4.5A.6.3-1, steps 1-7. | | |
| - | EXCEPTION: In parallel to the events described in steps 8 below, the behaviour in table 4.5A.19.3-2 occurs. (IMS MTSI MO speech call establishment) | - | - |
| 8 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer context. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 9-11 | Steps 3-4 expected sequence defined in annex C.44 of TS 34.229-1 [35]. MTSI MO speech call for EPS / EVS. | - | - |
| 12 | The SS configures a new RLC-UM data radio bearer with condition DRB (0,1), associated with the dedicated EPS bearer context. <i>RRCCONNECTIONRECONFIGURATION</i> message contains the ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message. EPS bearer context #4 (QCI 1) according to table 6.6.2-1: Reference dedicated EPS bearer contexts. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| - | EXCEPTION: In parallel to the events described in steps 13-14 below, the behaviour in table 4.5A.19.3-3 occurs. (IMS MTSI MO speech call establishment) | - | - |
| 13 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message to confirm the establishment of the new data radio bearer, associated with the dedicated EPS bearer. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 14 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULINFORMATIONTRANSFER</i> NAS:ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |

Table 4.5A.19.3-2: Parallel behaviour

| St | Procedure | Message Sequence | |
|----|--|------------------|---------|
| | | U - S | Message |
| 1 | Step 2 expected sequence defined in annex C.44 of TS 34.229-1 [35]. UE sends INVITE. | - | - |

Table 4.5A.19.3-3: Parallel behaviour

| St | Procedure | Message Sequence | |
|-----|--|------------------|---------|
| | | U - S | Message |
| 1-9 | Steps 5-13 expected sequence defined in annex C.44 of TS 34.229-1 [35]. MTSI MO speech call for EPS / EVS. | - | - |

4.5A.19.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.20 Generic Test Procedure for IMS MT speech call establishment in E-UTRA / EVS

4.5A.20.1 Initial conditions

See clause 4.5A.6.1.

4.5A.20.2 Definition of system information messages

The default system information messages are used.

4.5A.20.3 Procedure

Table 4.5A.20.3-1: EUTRA/EPS signalling for IMS MT speech call / EVS

| St | Procedure | Message Sequence | |
|-------|--|------------------|---------|
| | | U - S | Message |
| 1-8 | Same as table 4.5A.7.3-1, steps 1-8. | | |
| 9-11b | Steps 1-6 expected sequence defined in annex C.45 of TS 34.229-1 [35], MTSI MT speech call for EPS / EVS. | - | - |
| 12-14 | Same as table 4.5A.7.3-1, steps 13-15. | | |
| 15-16 | Void | - | - |
| 17-25 | Steps 7-15 expected sequence defined in annex C.45 of TS 34.229-1 [35], MTSI MT speech call for EPS / EVS. | - | - |
| 26 | Void | - | - |

4.5A.20.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.21 Generic Test Procedure for IMS MO Customized Alerting Tones and speech establishment in E-UTRA

4.5A.21.1 Initial conditions

See clause 4.5A.6.1

4.5A.21.2 Definition of system information messages

The default system information messages are used.

4.5A.21.3 Procedure

Table 4.5A.21.3-1: EUTRA/EPS signalling for IMS MO CAT and speech call

| St | Procedure | Message Sequence | |
|-------|---|------------------|---------|
| | | U - S | Message |
| 1-12 | See table 4.5A.6.3-1, steps 1-12 | - | - |
| - | EXCEPTION: In parallel to the events described in steps 13-14 below, the behaviour in table 4.5A.21.3-2 occurs. (IMS MTSI MO CAT and speech call establishment) | - | - |
| 13-14 | See table 4.5A.6.3-1, steps 13-14 | - | - |

Table 4.5A.21.3-2: Parallel behaviour

| St | Procedure | Message Sequence | |
|------|--|------------------|---------|
| | | U - S | Message |
| 1-14 | Steps 5-18 expected sequence defined in 20.1.4 of TS 34.229-1 [35]. MTSI MO CAT and speech call for EPS. | - | - |

4.5A.21.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.22 Communication with the ProSe Function: Initial Access

4.5A.22.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2).

4.5A.22.2 Definition of system information messages

The default system information messages are used.

4.5A.22.3 Procedure

The procedure is only applicable for `pc_Provide_ProSe == true`.

The HTTP signalling between the UE and the ProSe function is done over TLS i.e. the UE connects to TCP port 443 (HTTPS) and starts TLS handshake.

Table 4.5A.22.3-1: Communication with the ProSe Function

| St | Procedure | Message Sequence | |
|------|---|------------------|---|
| | | U - S | Message |
| 1 | The UE transmits an <code>RRConnectionRequest</code> message with 'establishmentCause' set to 'mo-Data '. | --> | <i>RRConnectionRequest</i> |
| 2 | SS transmit an <code>RRConnectionSetup</code> message. | <-- | RRC: <i>RRConnectionSetup</i> |
| 3 | The UE transmits an <code>RRConnectionSetupComplete</code> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the SERVICE REQUEST message. | --> | RRC: <i>RRConnectionSetupComplete</i> NAS: SERVICE REQUEST |
| 4 | The SS transmits a <code>SecurityModeCommand</code> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 5 | The UE transmits a <code>SecurityModeComplete</code> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 6 | The SS configures a new data radio bearer, associated with the default EPS bearer context. The <code>RRConnectionReconfiguration</code> message is using condition SRB2-DRB(1, 0). The DRB associated with default EPS bearer context obtained during the attach procedure is established | <-- | RRC: <i>RRConnectionReconfiguration</i> |
| 7 | The UE transmits an <code>RRConnectionReconfigurationComplete</code> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer context. | --> | RRC: <i>RRConnectionReconfigurationComple</i> <i>e</i> |
| 8-10 | Steps 1-3 of procedure 4.5A.16.3. | - | - |
| - | EXCEPTION: In parallel to the event described in step 11 below, the behaviour described in Table 4.5A.22.3-2 takes place. | - | - |
| 11 | The UE transmits an <code>ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT</code> message. | --> | RRC: <i>ULInformationTransfer</i> NAS: <i>ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT</i> |

Table 4.5A.22.3-2: Parallel behaviour

| St | Procedure | Message Sequence | |
|----------|--|------------------|--|
| | | U - S | Message |
| - | EXCEPTION: Step 1a1 describes behaviour that depends on UE configuration; the "lower case letter" identifies a step sequence that take place if the UE does not have a preconfigured IP address. | - | - |
| 1a1 | If initiated by the UE the generic procedure for IP address allocation in the U-plane specified in TS 36.508 subclause 4.5A.1 takes place performing IP address allocation in the U-plane. | - | - |
| 2 | The UE transmits a ClientHello message including PSK-based ciphersuites. | --> | TLS: ClientHello |
| 3 | The SS transmits the ServerHello, ServerKeyExchange and ServerHelloDone messages indicating GBA as required. | <-- | TLS: ServerHello TLS: ServerKeyExchange TLS: ServerHelloDone |
| 4-7 | The generic procedure for GBA authentication according TS 34.229-1 [43] subclause C.29.2 (steps 1-4) takes place. | - | - |
| 8 | The UE transmits the ClientKeyExchange including a PSK identity, ChangeCipherSpec and Finished messages. | --> | TLS: ClientKeyExchange TLS: ChangeCipherSpec TLS: Finished |
| 9 | The SS transmits the ChangeCipherSpec and Finished messages. | <-- | TLS: ChangeCipherSpec TLS: Finished |
| - | EXCEPTION: Steps 10a1 to 10d2 describe behaviour which depends on the ProSe Procedure being applied | - | - |
| 10a 1 | IF ANNOUNCE/MONITOR REQUEST THEN The UE transmits a DISCOVERY_REQUEST message over the PC3 (UE to ProSe Function) interface. | --> | HTTP Request containing DISCOVERY_REQUEST |
| 10a 2 | The SS transmits a DISCOVERY_RESPONSE message over the PC3 (UE to ProSe Function) interface. | <-- | HTTP Response containing DISCOVERY_RESPONSE |
| 10a 3 | The UE transmits a <i>SidelinkUEInformation</i> message. | --> | <i>SidelinkUEInformation</i> |
| 10b 1 | IF MATCH REPORT THEN The UE transmits a MATCH_REPORT message over the PC3 (UE to ProSe Function) interface. | --> | HTTP Request containing MATCH_REPORT |
| 10b 2 | The SS transmits a MATCH_REPORT_ACK message over the PC3 (UE to ProSe Function) interface. | <-- | HTTP Response containing MATCH_REPORT_ACK |
| 10c 1 | IF UREGISTRATION THEN The UE transmits an UE_REGISTRATION_REQUEST message over the PC3 (UE to ProSe Function) interface. | --> | HTTP Request containing UE_REGISTRATION_REQUEST |
| 10c 2 | The SS transmits an APPLICATION_REGISTRATION_RESPONSE message with a response-register. | <-- | HTTP Response containing UE_REGISTRATION_RESPONSE |
| 10d 1 | IF USAGEINFOREPORT THEN The UE transmits an USAGE_INFORMATION_REPORT_LIST message over the PC3ch (UE to ProSe Function) interface. | --> | HTTP Request containing USAGE_INFORMATION_REPORT_LIST |
| 10d 2 | SS sends USAGE_INFORMATION_REPORT_LIST_RESPONSE message. | <-- | HTTP Response containing USAGE_INFORMATION_REPORT_LIST_RESPONSE |

| Condition | Explanation |
|--------------------------|---|
| ANNOUNCE/MONITOR REQUEST | Steps applicable to Announce request procedure OR Monitor request procedure |
| MATCH REPORT | Steps applicable to Match report procedure |
| UEREISTRATION | Steps applicable to EPC-level ProSe discovery / UE registration procedure |
| USAGEINFOREPORT | Steps applicable to usage information report list sending procedure. |

4.5A.22.4 Specific message contents

HTTP specific message contents shall be referred to clause 4.7E.

ProSe specific message contents shall be referred to clause 4.7F.

TLS specific message contents shall be referred to clause 4.7H.

Further specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.22A Communication with the ProSe Function: Subsequent Access

4.5A.22A.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered Idle Mode state (State 2), or in state Generic RB Established (State 3).
- The Communication with the ProSe Function: Initial Access in subclause 4.5A22 has taken place since the UE was switched on.

4.5A.22A.2 Definition of system information messages

The default system information messages are used.

4.5A.22A.3 Procedure

The procedure is only applicable for `pc_Provide_ProSe == true`.

The HTTP signalling between the UE and the ProSe function is done over an already established TLS connection.

Table 4.5A.22A.3-1: Communication with the ProSe Function

| St | Procedure | Message Sequence | |
|-----------|--|------------------|---|
| | | U - S | Message |
| - | EXCEPTION: Steps 1a1 to 1a7 describe behaviour that depends on UE configuration; the "lower case letter" identifies a step sequence that takes place if the UE is in RRC_IDLE state. | - | - |
| 1a1 | The UE transmits an RRCConnectionRequest message with 'establishmentCause' set to 'mo-Data'. | --> | RRC: RRCConnectionRequest |
| 1a2 | SS transmit an RRCConnectionSetup message. | <-- | RRC: RRCConnectionSetup |
| 1a3 | The UE transmits an RRCConnectionSetupComplete message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the SERVICE REQUEST message. | --> | RRC: RRCConnectionSetupComplete NAS: SERVICE REQUEST |
| 1a4 | The SS transmits a SecurityModeCommand message to activate AS security. | <-- | RRC: SecurityModeCommand |
| 1a5 | The UE transmits a SecurityModeComplete message and establishes the initial security configuration. | --> | RRC: SecurityModeComplete |
| 1a6 | The SS configures two new data radio bearers, associated with the two default EPS bearer contexts. The RRCConnectionReconfiguration message is using condition SRB2-DRB(2, 0). | <-- | RRC: RRCConnectionReconfiguration |
| 1a7 | The UE transmits an RRCConnectionReconfigurationComplete message to confirm the establishment of the new data radio bearers, associated with the default EPS bearer contexts. | --> | RRC: RRCConnectionReconfigurationComplete |
| 2-10 | Void | | |
| - | EXCEPTION: Steps 10a1 to 10d2 describe behaviour which depends on the ProSe Procedure being applied | - | - |
| 10a1-10d2 | Steps 10a1-10d2 of Table 4.5A.22.3-2. | - | - |

4.5A.22A.4 Specific message contents

HTTP specific message contents shall be referred to clause 4.7E.

ProSe specific message contents shall be referred to clause 4.7F.

Further specific message contents shall be referred to clause 4.6 and 4.7.

4.5A.23 Generic Test Procedure for IMS registration in EPC / WLAN

4.5A.23.1 Initial conditions

System Simulator:

- WLAN Cell 27 according to Table 4.4.8-1 with condition IMSoWLAN.

User Equipment:

- The UE is in state Switched OFF (state 1).

4.5A.23.2 Definition of system information messages

N/A

4.5A.23.3 Procedure

Table 4.5A.23.3-1: IMS registration in EPC / WLAN

| St | Procedure | Message Sequence | |
|------|---|------------------|---------|
| | | U - S | Message |
| 1 | The UE is switched on | - | - |
| 2 | The UE associates with the WLAN AP and obtains the local IP address | - | - |
| 3 | The UE performs a dynamic selection of ePDG using DNS query | - | - |
| 4 | The UE establishes an IPsec tunnel using the IKEv2 protocol as defined in 3GPP TS 33.402 [55] clause 8.2.2, Figure 8.2.2-1. | - | - |
| 5-13 | The UE performs the IMS registration procedure according TS 34.229-1 [43] subclause C.2c (steps 2-9). | - | - |

4.5A.23.4 Specific message contents

None

4.5A.23A Generic Test Procedure for IPsec Tunnel Disconnection in EPC / WLAN

4.5A.23A.1 Initial conditions

System Simulator:

- WLAN Cell 27 according to Table 4.4.8-1 with condition IMSoWLAN.

User Equipment:

- The UE has established an ePDG Tunnel.

4.5A.23A.2 Definition of system information messages

N/A

4.5A.23A.3 Procedure

Table 4.5A.23A.3-1: Generic Test Procedure for IPsec Tunnel Disconnection in EPC / WLAN

| St | Procedure | Message Sequence | |
|--|--|------------------|---------|
| | | U - S | Message |
| 1 | The UE initiates a disconnection from the existing IPsec tunnel as defined in 3GPP TS 24.302 [53] clause 7.2.4.1, which is acknowledged by the SS. | | |
| NOTE: It is assumed that the WLAN AP association remains throughout the procedure. | | | |

4.5A.23A.4 Specific message contents

None

4.5A.24 Generic Test Procedure for IMS emergency call establishment in EPC / WLAN

4.5A.24.1 Initial conditions

System Simulator:

- WLAN Cell 27 according to Table 4.4.8-1 with condition IMSoWLAN.

User Equipment:

- The UE has selected an ePDG and is registered onto the IMS network according to clause 4.5A.23.

4.5A.24.2 Definition of system information messages

N/A

4.5A.24.3 Procedure

Table 4.5A.24.3-1: IMS emergency call establishment in EPC / WLAN

| St | Procedure | Message Sequence | |
|--|--|------------------|---------|
| | | U - S | Message |
| 1 | The UE is triggered to initiate an emergency call | - | - |
| 2 | Void | - | - |
| 3 | The UE performs a dynamic selection of an ePDG that supports emergency services using DNS query | - | - |
| 4 | The UE establishes an additional IPsec tunnel using the IKEv2 protocol as defined in 3GPP TS 33.402 [55] clause 8.2.2, Figure 8.2.2-1. | - | - |
| NOTE 1: It is assumed that the WLAN AP association remains throughout the procedure. | | | |
| NOTE 2: This procedure is based on 3GPP Release 14. | | | |

4.5A.24.4 Specific message contents

None

4.5A.25 Generic Test Procedure for XCAP establishment in EPC / WLAN

This procedure is applicable only for the case when pc_WLAN_XCAP_without_PDN is set to false.

4.5A.25.1 Initial conditions

System Simulator:

- WLAN Cell 27 according to Table 4.4.8-1 with condition IMSoWLAN.

User Equipment:

- The UE has selected an ePDG and is registered onto the IMS network according to clause 4.5A.23.

4.5A.25.2 Definition of system information messages

N/A

4.5A.25.3 Procedure

Table 4.5A.25.3-1: IMS XCAP establishment in EPC / WLAN

| St | Procedure | Message Sequence | |
|----|--|------------------|---------|
| | | U - S | Message |
| 1 | Make the UE attempt XCAP signalling. | --> | - |
| 2 | The UE establishes an additional PDN and IPsec tunnel using the IKEv2 protocol as defined in 3GPP TS 33.402 [55] clause 8.2.2, Figure 8.2.2-1. | - | - |

4.5A.25.4 Specific message contents

N/A

4.5A.26 Generic Test Procedure for eCall over IMS establishment in EUTRA:
Normal Service

4.5A.26.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE is in state Registered, Idle Mode (State 2)

4.5A.26.2 Definition of system information messages

The default system information messages are used.

4.5A.26.3 Procedure

The establishment of eCall over IMS is assumed to always be mobile originated.

Note: The trigger to initiate MO call will be part of test case from where the generic procedure is called.

Table 4.5A.26.3-1: EUTRA/EPS signalling for eCall over IMS

| St | Procedure | Message Sequence | |
|-------|--|------------------|--|
| | | U - S | Message |
| 1-8a7 | Steps 3 to 10a7 of the generic radio bearer establishment procedure from TS 36.508 subclause 4.5.3.3-3 are executed | - | - |
| 9 | The UE transmits a PDN CONNECTIVITY REQUEST message to request an additional PDN, with 'Request type' set to 'emergency ('0100'B)'. | --> | NAS: PDN CONNECTIVITY REQUEST |
| 10 | The SS configures a new data radio bearer, associated with the default EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains the ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message. EPS bearer context #2 (QCI 5) according to table 6.6.1-1: Reference default EPS bearer context is used. Note: The APN is set to the test APN defined for emergency bearer services. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST |
| - | EXCEPTION: In parallel to the events described in steps 11 to 15 below, the behaviour in table 4.5A.26.3-2 occurs. (Optional IP address allocation followed by IMS emergency registration and eCall over IMS establishment) | - | - |
| 11 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer for emergency call. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 12 | The UE transmits an ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULInformationTransfer</i> NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT |
| 13 | The SS configures a new RLC-UM data radio bearer, associated with the dedicated EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains the ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message. EPS bearer context #4 (QCI 1) according to table 6.6.2-1: Reference dedicated EPS bearer contexts is used. Note: the same PDN address is applicable because the linked EPS bearer ID refers to the default EBC allocated in step 2 | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 14 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer for emergency IMS signalling. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 15 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULInformationTransfer</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |

Table 4.5A.26.3-2: Parallel behaviour

| St | Procedure | Message Sequence | |
|-----|--|------------------|---------|
| | | U - S | Message |
| - | EXCEPTION: Step 1 describes behaviour that depends on the UE behaviour. | - | - |
| 1 | If initiated by the UE the generic procedure for IP address allocation in the U-plane specified in TS 36.508 subclause 4.5A.1 takes place performing IP address allocation in the U-plane. | - | - |
| 2-5 | Steps 1-4 expected sequence defined in annex C.20 of TS 34.229-1 [35]. Emergency registration procedure is performed. | - | - |
| 6-8 | Steps 1-3 defined in annex C.47 of TS 34.229-1 [35] Generic Test Procedure for NG eCall setup. | - | - |

4.5A.26.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the exceptions below.

Table 4.5A.26.4-1: PDN CONNECTIVITY REQUEST (step 9, Table 4.5A.26.3-1)

| Derivation Path: Table 4.7.3-20 | | | |
|---------------------------------|--------------------------|-----------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Request type | '0100'B | Emergency | |
| Access point name | Not present or any value | | |

Table 4.5A.26.4-2: Message ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (step 10, Table 4.5A.26.3-1)

| Derivation path: Table 4.7.3-6 and table 4.6.1-8 with condition AM-DRB-ADD(2) | | | |
|---|---|---|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Access point name | sos | APN value as recommended by IR.88 clause 6.4 [56] | |
| EPS QoS | According to reference default EPS bearer context #2 – in table 6.6.1-1 | SS defines an additional dedicated EPS QoS | |

Table 4.5A.26.4-3: Message ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST (step 13, Table 4.5A.26.3-1)

| Derivation path: Table 4.7.3-3 and table 4.6.1-8 with condition UM-DRB-ADD(3) | | | |
|---|---|--|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Linked EPS bearer identity | Default EBId-2 (same value like in table 4.5A.4.4-1) | | |
| EPS QoS | According to reference dedicated EPS bearer context #1 - in table 6.6.2-1 | SS defines an additional dedicated EPS QoS | |
| TFT | According to reference dedicated EPS bearer context #1 - in table 6.6.2-1 | | |

4.5A.27 Generic Test Procedure for eCall over IMS establishment in EUTRA: eCall Only Support

4.5A.27.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE is in state Switched OFF (State 1).

4.5A.27.2 Definition of system information messages

The default system information messages are used.

4.5A.27.3 Procedure

The establishment of eCall over IMS is assumed to always be mobile originated.

Note: The generic procedure is defined as per TS 23.401 [24] clause 4.3.12.1.

Table 4.5A.27.3-1: EUTRA/EPS signalling for eCall over IMS (eCall only Support)

| St | Procedure | Message Sequence | |
|---|--|------------------|---|
| | | U - S | Message |
| 1 | The UE is switched on and SS waits 15 sec to allow the UE to camp on the serving cell and enter and remain in substate EMM-DEREGISTERED.eCALL-INACTIVE. | - | - |
| 2 | Make the UE attempt an eCall (See Note 1) | - | - |
| 3-18 | Steps 1 to 16 of the generic test procedure for UE registration sub clause 4.5.2.3. | - | - |
| 19 | The UE transmits a PDN CONNECTIVITY REQUEST message to request an additional PDN, with 'Request type' set to 'emergency ('0100'B)'. Note: The APN is set to the test APN defined for emergency bearer services. | --> | NAS: PDN CONNECTIVITY REQUEST |
| 20 | The SS configures a new data radio bearer, associated with the default EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains the ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message. EPS bearer context #2 (QCI 5) according to table 6.6.1-1: Reference default EPS bearer context is used. Note: The APN is set to the test APN defined for emergency bearer services. | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST |
| - | EXCEPTION: In parallel to the events described in steps 21 to 25 below, the behaviour in table 4.5A.27.3-2 occurs. (Optional IP address allocation followed by IMS emergency registration and eCall over IMS establishment) | - | - |
| 21 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer for emergency call. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 22 | The UE transmits an ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message. | --> | RRC: ULInformationTransfer NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT |
| 23 | The SS configures a new RLC-UM data radio bearer, associated with the dedicated EPS bearer context. <i>RRCConnectionReconfiguration</i> message contains the ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message. EPS bearer context #4 (QCI 1) according to table 6.6.2-1: Reference dedicated EPS bearer contexts is used. Note: the same PDN address is applicable because the linked EPS bearer ID refers to the default EBC allocated in step 2 | <-- | RRC: <i>RRCConnectionReconfiguration</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 24 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer for emergency IMS signalling. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 25 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | RRC: ULInformationTransfer NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| Note 1: The request to originate a manual or Automatic eCall may be performed by MMI or AT command. | | | |

Table 4.5A.27.3-2: Parallel behaviour

| St | Procedure | Message Sequence | |
|-----|--|------------------|---------|
| | | U - S | Message |
| - | EXCEPTION: Step 1 describes behaviour that depends on the UE behaviour. | - | - |
| 1 | If initiated by the UE the generic procedure for IP address allocation in the U-plane specified in TS 36.508 subclause 4.5A.1 takes place performing IP address allocation in the U-plane. | - | - |
| 2-5 | Steps 1-4 expected sequence defined in annex C.20 of TS 34.229-1 [35]. Emergency registration procedure is performed. | - | - |
| 6-8 | Steps 1-3 defined in annex C47 of TS 34.229-1 [35] Generic procedure for NG eCall Setup. | - | - |

4.5A.27.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the exceptions below.

Table 4.5A.27.4-1: PDN CONNECTIVITY REQUEST (step 19)

| Derivation Path: Table 4.7.3-20 | | | |
|---------------------------------|--------------------------|-----------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Request type | '0100'B | Emergency | |
| Access point name | Not present or any value | | |

Table 4.5A.27.4-2: Message ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (step 20, Table 4.5A.27.3-1)

| Derivation path: Table 4.7.3-6 and table 4.6.1-8 with condition AM-DRB-ADD(2) | | | |
|---|---|---|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Access point name | sos | APN value as recommended by IR.88 clause 6.4 [56] | |
| EPS QoS | According to reference default EPS bearer context #2 – in table 6.6.1-1 | SS defines an additional dedicated EPS QoS | |

Table 4.5A.27.4-3: Message ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST (step 23, Table 4.5A.27.3-1)

| Derivation path: Table 4.7.3-3 and table 4.6.1-8 with condition UM-DRB-ADD(3) | | | |
|---|---|--|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Linked EPS bearer identity | Default EBId-2 (same value like in table 4.5A.4.4-1) | | |
| EPS QoS | According to reference dedicated EPS bearer context #1 - in table 6.6.2-1 | SS defines an additional dedicated EPS QoS | |
| TFT | According to reference dedicated EPS bearer context #1 - in table 6.6.2-1 | | |

4.5A.28 Generic Test Procedure for Converged IP Communications establishment in EUTRA

4.5A.28.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4.

User Equipment:

- The UE is in state Switched OFF (state 1) according to [18].

4.5A.28.2 Definition of system information messages

N/A

4.5A.28.3 Procedure

Table 4.5A.28.3-1: Converged IP Communications service establishment in E-UTRA

| St | Procedure | Message Sequence | |
|-------|--|------------------|---------|
| | | U - S | Message |
| 1 | The UE is switched on | | |
| 2-16 | Steps 2-16 of the generic procedure for UE registration specified in TS 36.508 subclause 4.5.2.3 are performed. | - | - |
| 17-20 | Steps 1-4 of the generic procedure to establish an additional PDN Connection specified in TS 36.508 subclause 4.5A.16. | | |

4.5A.28.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the exceptions below.

Table 4.5A.26.4-1: PDN CONNECTIVITY REQUEST (step 17)

| Derivation Path: Table 4.7.3-20 | | | |
|---------------------------------|-------------------|----------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Access point name | Any allowed value | The UE includes a new APN. | |

Table 4.5A.28.4-2: Message ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (step 18)

| Derivation path: Table 4.6.1-8 with condition AM-DRB-ADD(1) for ADD_IMS or with condition AM-DRB-ADD(8) else | | | |
|---|---|--|----------------------------|
| Information Element | Value/Remark | Comment | Condition |
| EPS bearer identity | '0101'B | arbitrary value used for PDN connectivity being maintained during the test case | ADD_IMS_MultiMedia and SMS |
| EPS bearer identity | '1100'B | arbitrary value used for additional non-IMS PDN connectivity | ADD_IMS_Advanced_Messaging |
| Procedure transaction identity | PTI-1 | SS re-uses the particular PTI defined by UE for this present additional PDN connectivity request procedure | |
| EPS QoS | See Reference default EPS bearer context #2 in table 6.6.1-1 | | |
| Access point name | APN as provided in ESM INFORMATION RESPONSE or PDN CONNECTIVITY REQUEST | | |

| Condition | Expression | Explanation |
|----------------------------|--|---|
| ADD_IMS_MultiMedia and SMS | pc_IMS AND pc_Provide_IMS_as_second_APN | UE performs IMS registration for multi-media telephony and SMSoIP first, and IMS registration for advanced messaging services second. |
| ADD_IMS_Advanced_Messaging | pc_IMS AND NOT pc_Provide_IMS_as_second_APN | UE performs IMS registration for advanced messaging services first, and IMS registration for multi-media telephony and SMSoIP second. |

Table 4.5A.28.4-3: Message ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT (step 20)

| Derivation path: Table 4.7.3-4 | | | |
|--------------------------------|--------------------------------|--|-----------|
| Information Element | Value/Remark | Comment | Condition |
| EPS bearer identity | (same value as used in step 2) | | |
| Procedure transaction identity | 0 | No procedure transaction identity assigned | |

4.5A.29 Generic Test Procedure for Converged IP Communications establishment in EPC / WLAN

4.5A.29.1 Initial conditions

System Simulator:

- WLAN Cell 27 according to Table 4.4.8-1 in [18].

User Equipment:

- The UE has selected an ePDG and is registered onto the IMS network according to 4.5A.23.

4.5A.29.2 Definition of system information messages

N/A

4.5A.29.3 Procedure

Table 4.5A.29.3-1: Converged IP Communications service establishment in EPC / WLAN

| St | Procedure | Message Sequence | |
|--|---|------------------|---------|
| | | U - S | Message |
| 1 | The UE establishes an IPsec tunnel using the IKEv2 protocol as defined in 3GPP TS 33.402 [55] clause 8.2.2, Figure 8.2.2-1. | - | - |
| 2-9 | The UE performs the IMS registration procedure according TS 34.229-1 [43] subclause C.2c (steps 2-9). | | |
| NOTE: It is assumed that the WLAN AP association remains throughout the procedure. | | | |

4.5A.29.4 Specific message contents

FFS

4.5A.30 Generic Test Procedure for IMS Re-registration in E-UTRAN

The purpose of this procedure is to allow the successful completion of IMS Re-registration if it is initiated by the UE when moving from HPLMN to VPLMN and vice versa on E-UTRAN.

4.5A.30.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Registered, Idle Mode state (State 2).

4.5A.30.2 Definition of system information messages

The default system information messages are used.

4.5A.30.3 Procedure

Table 4.5A.30.3-1: Procedure for IMS Re-registration in E-UTRAN

| St | Procedure | Message Sequence | |
|-------------------------|---|------------------|---------|
| | | U - S | Message |
| - | EXCEPTION: Steps 1a1 to 1a2a10/1a2b1 describe behaviour that depends on the UE capability | - | - |
| 1a1 | IF pc_IMS then the SS starts timer Timer_1 = 10s. | - | - |
| - | EXCEPTION: Steps 1a2a1 to 1a2b1 describe a behaviour that depends on the UE implementation | - | - |
| 1a2a 1- 1a2a 7 | Steps 3 to 9 of the generic radio bearer establishment procedure in TS 36.508 subclause 4.5.3.3 are executed. | - | - |

| | | | |
|-------------------------|---|---|---|
| 1a2a 8- 1a2a 9 | The UE performs IMS re-registration using the generic procedure defined in 34.229-1 [35] Annex C.46. Note: SS cancels timer Timer_1 at step 1a2a8. | - | - |
| 1a2a 10 | The SS releases the RRC connection. | - | - |
| 1a2b 1 | The SS waits for Timer_1 expiry | - | - |

4.5A.30.4
Specific
message
contents

All specific message contents shall be referred to clause 4.6 and 4.7 with exceptions below.

REGISTER (Step 1a2a8)

Use the default message “REGISTER” in TS 34.229-1 [43] annex A.1.1 with conditions A2, A31 and (NOT A34).

4.6 Default RRC message and information elements contents

This clause contains the default values of common RRC messages and information elements, which unless indicated otherwise in specific clauses of TS 36.521-1 [21], TS 36.521-3 [34], TS 36.523-1 [18] and other clauses in this specification. All the messages and information elements are listed in alphabetical order.

4.6.1 Contents of RRC messages

– *CounterCheck*

Table 4.6.1-0a: CounterCheck

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--------------------------------------|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| CounterCheck ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| counterCheck-r8 SEQUENCE { | | | |
| drb-CountMSB-InfoList | Set according to specific message content | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

– *CounterCheckResponse*

Table 4.6.1-0b: CounterCheckResponse

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--------------------------------------|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| CounterCheckResponse ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| counterCheckResponse-r8 SEQUENCE { | | | |
| drb-CountInfoList | Set according to specific message content | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *CSFBParametersRequestCDMA2000*

Table 4.6.1-1: CSFBParametersRequestCDMA2000

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| CSFBParametersRequestCDMA2000 ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| csfbParametersRequestCDMA2000-r8 SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *CSFBParametersResponseCDMA2000*

Table 4.6.1-2: CSFBParametersResponseCDMA2000

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| CSFBParametersResponseCDMA2000 ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| csfbParametersResponseCDMA2000-r8 SEQUENCE { | | | |
| rand | Set according to specific message content | | |
| mobilityParameters | Set according to specific message content | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |

– *DLInformationTransfer*

Table 4.6.1-3: DLInformationTransfer

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--------------------------------------|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| DLInformationTransfer ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| dlInformationTransfer-r8 SEQUENCE { | | | |
| dedicatedInfoType CHOICE { | | | |
| dedicatedInfoNAS | Set according to specific message content | | |
| } | | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |

– *HandoverFromEUTRAPreparationRequest***Table 4.6.1-4: HandoverFromEUTRAPreparationRequest**

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| HandoverFromEUTRAPreparationRequest ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| handoverFromEUTRAPreparationRequest-r8 SEQUENCE { | | | |
| cdma2000-Type | type1XRTT | | |
| rand | A random value, generated by the SS | | |
| mobilityParameters | Set according to specific message content | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

- LoggedMeasurementConfiguration

Table 4.6.1-4.0A: LoggedMeasurementConfiguration

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| LoggedMeasurementConfiguration-r10 ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| loggedMeasurementConfiguration-r10 SEQUENCE { | | | |
| traceReference-r10 SEQUENCE { | | | |
| plmn-Identity-r10 SEQUENCE { | | | |
| mcc SEQUENCE (SIZE (3)) OF MCC-NMC-Digit | See table 4.4.2-2 | | |
| mnc SEQUENCE (SIZE (2..3)) OF MCC-NMC-Digit | See table 4.4.2-2 | | |
| } | | | |
| traceId-r10 | '0EF'H | OCTET STRING (SIZE (3)) | |
| } | | | |
| traceRecordingSessionRef-r10 | '1A'H | OCTET STRING (SIZE (2)) | |
| tce-Id-r10 | '5'H | OCTET STRING (SIZE (1)) | |
| absoluteTimeInfo-r10 | Set to value corresponding to the absolute time when the message is sent | BIT STRING (SIZE (48)), see TS 36.331 clause 6.3.6 for format. | |
| areaConfiguration-r10 | Not present | | |
| loggingDuration-r10 | min120 | ENUMERATED { min10, min20, min40, min60, min90, min120, spare2, spare1} | |
| loggingInterval-r10 | ms10240 | ENUMERATED { ms1280, ms2560, ms5120, ms10240, ms20480, ms30720, ms40960, ms61440} | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

- *MasterInformationBlock-SL***Table 4.6.1-4A0: *MasterInformationBlock-SL***

| Derivation Path: 36.331 clause 6.5.2 | | | |
|--|--|---------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MasterInformationBlock-SL ::= SEQUENCE { | | | |
| sl-Bandwidth-r12 | =the value of the corresponding field included in the preconfigured sidelink parameters (i.e. <i>preconfigGeneral</i> in <i>SL-Preconfiguration</i>), Table 6.8.1.1-1 | | |
| tdd-ConfigSL-r12 SEQUENCE { | | | |
| subframeAssignmentSL-r12 | =the value of the corresponding field included in the preconfigured sidelink parameters (i.e. <i>preconfigGeneral</i> in <i>SL-Preconfiguration</i> , Table 6.8.1.1-1) | | |
| } | | | |
| directFrameNumber-r12 | according to the subframe used to transmit the SLSS | | |
| directSubframeNumber-r12 | according to the subframe used to transmit the SLSS | | |
| inCoverage-r12 | TRUE | UE is in E-UTRAN coverage | |
| reserved-r12 | 000000000000000000 | | |
| } | | | |

- *MasterInformationBlock-SL-V2X***Table 4.6.1-4A1: MasterInformationBlock-SL-V2X**

| Derivation Path: 36.331 clause 6.5.2 | | | |
|--|---|---------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MasterInformationBlock-SL-V2X-r14 ::= SEQUENCE { | | | |
| sl-Bandwidth-r14 | =the value of the corresponding field included in the preconfigured sidelink parameters (i.e. <i>SL-V2X-PreconfigFreqInfo-r14</i> in <i>SL-V2X-Preconfiguration</i> , Table 4.10.1.1-1) | | |
| tdd-ConfigSL-r14 SEQUENCE { | | | |
| subframeAssignmentSL-r12 | =the value of the corresponding field included in the preconfigured sidelink parameters (i.e. <i>SL-V2X-PreconfigFreqInfo-r14</i> in <i>SL-V2X-Preconfiguration</i> , Table 4.10.1.1-1) | | |
| } | | | |
| directFrameNumber-r14 | according to the subframe used to transmit the SLSS | | |
| directSubframeNumber-r14 | according to the subframe used to transmit the SLSS | | |
| inCoverage-r14 | TRUE | UE is in E-UTRAN coverage | |
| reserved-r14 | 00000000000000000000000000000000 | | |
| } | | | |

- *MBMScountingRequest***Table 4.6.1-4AA: MBMScountingRequest**

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| MBMScountingRequest-r10 ::= SEQUENCE { | | | |
| countingRequestList-r10 SEQUENCE (SIZE (1.. maxServiceCount)) OF SEQUENCE { | | | |
| tmgi-r10 SEQUENCE { | | | |
| plmn-Id-r9 CHOICE{ | | | |
| plmn-Index-r9 | 1 | | |
| } | | | |
| serviceId-r9 | '000000'0 | MBMS service ID (TS 24.008 clause 10.5.6.13), OCTET STRING (SIZE (3)) | |
| } | | | |
| } | | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE { | Not present | | |
| } | | | |

– *MBMSCountingResponse*

Table 4.6.1-4AB: MBMSCountingResponse

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MBMSCountingResponse-r10 ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| countingResponse-r10 OF SEQUENCE { | | | |
| mbsfn-AreaIndex-r10 | Not present | | |
| countingResponseList-r10 SEQUENCE (SIZE (1.. maxServiceCount)) OF SEQUENCE { | | | |
| countingResponseService-r10 | 0 | | |
| } | | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |

– *MBMSInterestIndication*

Table 4.6.1-4AC: MBMSInterestIndication

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|---|--------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| interestIndication-r11 OF SEQUENCE { | | | |
| mbms-FreqList-r11[n] SEQUENCE (SIZE (1..maxFreqMBMS-r11)) OF { INTEGER (0..maxEARFCN2) } | The number of entries is set according to specific message content. | INTEGER (0..maxEARFCN2) | |
| mbms-Priority-r11 | Not checked | ENUMERATED {true} | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | MBMS |
| nonCriticalExtension SEQUENCE { | | | SC-PTM |
| mbms-Services-r13 SEQUENCE (SIZE (0..maxMBMS-ServiceListPerUE-r13)) OF SEQUENCE { | | | |
| tmgi-r13 SEQUENCE { | | | |
| plmn-Id-r9 CHOICE { | | | |
| plmn-Index-r9 | 1 | | |
| } | | | |
| serviceId-r9 | '000001'H | OCTET STRING (SIZE (3)) | |
| } | | | |
| } | | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|-------------------------|
| MBMS | MBMS cell environment |
| SC-PTM | SC-PTM cell environment |

– *MBSFNAreaConfiguration*

Table 4.6.1-4A: MBSFNAreaConfiguration

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|---------------------|-------------------------|------------------|
| Information Element | Value/remark | Comment | Condition |
| MBSFNAreaConfiguration-r9 ::= SEQUENCE { | | | |
| commonSF-Alloc-r9 SEQUENCE (SIZE (1..maxMBSFN-Allocations)) OF SEQUENCE { | | | |
| radioframeAllocationPeriod | n4 | | |
| radioframeAllocationOffset | 1 | | FDD |
| | 0 | | TDD |
| subframeAllocation CHOICE { | | | |
| oneFrame | '100000'B | | FDD |
| | '000010'B | | TDD |
| } | | | |
| commonSF-AllocPeriod-r9 | rf8 | | |
| pmch-InfoList-r9 SEQUENCE (SIZE (0..maxPMCH-PerMBSFN)) OF SEQUENCE { | | | |
| pmch-Config-r9 SEQUENCE { | | | |
| sf-AllocEnd-r9 | 1 | | |
| dataMCS-r9 | 0 | | |
| mch-SchedulingPeriod-r9 | rf8 | | |
| } | | | |
| mbms-SessionInfoList-r9 SEQUENCE (SIZE (0..maxSessionPerPMCH)) OF SEQUENCE { | | | |
| MBMS-SessionInfo-r9 SEQUENCE { | | | |
| tmgi-r9 SEQUENCE { | | | |
| plmn-Id-r9 CHOICE{ | | | |
| plmn-Index-r9 | 1 | | |
| } | | | |
| serviceld-r9 | '000000'O | OCTET STRING (SIZE (3)) | |
| } | | | |
| sessionId-r9 | Not present | | |
| logicalChannelIdentity-r9 | 1 | | |
| } | | | |
| } | | | |

– *MeasurementReport*

Table 4.6.1-5: MeasurementReport

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|---|----------------|------------------|
| Information Element | Value/remark | Comment | Condition |
| MeasurementReport ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| measurementReport-r8 SEQUENCE { | | | |
| measResults | Set according to specific message content | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *MobilityFromEUTRACommand***Table 4.6.1-6: *MobilityFromEUTRACommand***

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MobilityFromEUTRACommand ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| mobilityFromEUTRACommand-r8 SEQUENCE { | | | |
| csFallbackIndicator | Set according to specific message content | | |
| purpose CHOICE { | Set according to specific message content | | |
| handover | | | |
| cellChangeOrder | | | |
| } | | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |

– *Paging***Table 4.6.1-7: *Paging***

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Paging ::= SEQUENCE { | | | |
| pagingRecordList SEQUENCE (SIZE (1..maxPageRec)) OF SEQUENCE { | 1 entry | | |
| ue-Identity[1] CHOICE { | | | |
| s-TMSI | Set to the value of the S-TMSI of the UE | | |
| } | | | |
| cn-Domain[1] | ps | | |
| } | | | |
| systemInfoModification | Not present | | |
| etws-Indication | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |

– *RRCConnectionReconfiguration*

Table 4.6.1-8: *RRCConnectionReconfiguration*

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|---|---------|---|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionReconfiguration ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| rrcConnectionReconfiguration-r8 ::= SEQUENCE { | | | |
| measConfig | Not present | | |
| | MeasConfig-DEFAULT | | MEAS |
| mobilityControlInfo | Not present | | |
| | MobilityControlInfo-HO | | HO, HO-TO-EUTRA |
| dedicatedInfoNASList | Not present | | |
| | Set according to specific message content | | SRB2-DRB(n, m) DRB(n, m) SRB1-SRB2-DRB(n,m) AM-DRB-ADD(bid) UM-DRB-ADD(bid) DRB-REL(bid) DRB-Mod MCG_and_split EN-DC_SRB2-DRB |
| radioResourceConfigDedicated | Not present | | |
| | RadioResourceConfigDedicated-SRB2-DRB(n, m) | | SRB2-DRB(n, m) |
| | RadioResourceConfigDedicated-DRB(n, m) | | DRB(n, m) |
| | RadioResourceConfigDedicated-AM-DRB-ADD(bid) | | AM-DRB-ADD(bid) |
| | RadioResourceConfigDedicated-UM-DRB-ADD(bid) | | UM-DRB-ADD(bid) |
| | RadioResourceConfigDedicated-DRB-REL(bid) | | DRB-REL(bid) |
| | RadioResourceConfigDedicated-HO | | HO |
| | RadioResourceConfigDedicated-HO-TO-EUTRA(n, m) | | HO-TO-EUTRA(n, m) |
| | RadioResourceConfigDedicated-DRB-Mod | | DRB-Mod |
| | RadioResourceConfigDedicated-SCell_AddMod | | SCell_AddMod |
| | RadioResourceConfigDedicated-PCell-PATTERN | | PCell-PATTERN |
| | RadioResourceConfigDedicated-EN-DC-Split | | MCG_and_split |
| | RadioResourceConfigDedicated-EN-DC_Split_DRB_Rel(bid) | | EN-DC_Split_Rel(bid) |
| | RadioResourceConfigDedicated-SRB4 | | SRB4 |
| | RadioResourceConfigDedicated-EN-DC-SRB2-DRB | | EN-DC_SRB2-DRB |

| | | | |
|--|---|---|--|
| securityConfigHO | Not present | | |
| | SecurityConfigHO-DEFAULT | | HO, HO-TO-EUTRA |
| nonCriticalExtension SEQUENCE { | | RRConnectionReconfiguration-v890-IEs | |
| lateNonCriticalExtension SEQUENCE { | | RRConnectionReconfiguration-v8m0-IEs | 4Rx_PCC |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE { | | RRConnectionReconfiguration-v10i0-IEs | |
| antennaInfoDedicatedPCell-v10i0 SEQUENCE { | | | |
| maxLayersMIMO-r10 | fourLayers | | |
| } | | | |
| nonCriticalExtension SEQUENCE {} | Not present | RRConnectionReconfiguration-v10i0-IEs | |
| } | | | |
| nonCriticalExtension SEQUENCE { | | RRConnectionReconfiguration-v920-IEs | |
| otherConfig-r9 | OtherConfig-r9 | | OtherConfig |
| fullConfig-r9 | Not present | | |
| nonCriticalExtension SEQUENCE { | | RRConnectionReconfiguration-v1020-IEs | |
| sCellToReleaseList-r10 | Not present | | |
| sCellToAddModList-r10 SEQUENCE (SIZE (1..maxSCell-r10)) OF | The same number of entries as the configured SCell(s) | <i>n</i> denotes the index of the entry | SCell_AddMod |
| sCellToAddMod-r10[n] | SCellToAddMod-r10-DEFAULT | | |
| } | | | |
| nonCriticalExtension SEQUENCE { | | RRConnectionReconfiguration-v1130-IEs | |
| systemInformationBlockType1Dedicated-r11 | Not present | | |
| nonCriticalExtension SEQUENCE { | | RRConnectionReconfiguration-v1250-IEs | |
| wlan-OffloadInfo-r12 CHOICE {} | Not present | | |
| wlan-OffloadInfo-r12 CHOICE { | | | |
| release | NULL | | WLAN-OffloadRelease |
| setup SEQUENCE { | | | WLAN-OffloadSetup |
| wlan-OffloadConfigDedicated-r12 | WLAN-OffloadConfig-DEFAULT | | |
| t350-r12 | min10 | | |
| } | | | |
| scg-Configuration-r12 | Not present | | |
| scg-Configuration-r12 | SCG-Configuration-r12-DEFAULT | | PSCell_Release, PSCell_Mod, PSCell_Add_Split_DRB, PSCell_Add_SCG_DRB |
| sl-SyncTxControl-r12 | Not present | | |
| sl-DiscConfig-r12 | Not present | | |
| sl-CommConfig-r12 | Not present | | |

| | | | |
|----------------------------------|----------------------------------|---|---|
| nonCriticalExtension SEQUENCE {} | Not present | RRConnectionR econfiguration- v1310-IEs | |
| nonCriticalExtension SEQUENCE { | | RRConnectionR econfiguration- v1310-IEs | LWA |
| lwa-configuration-r13 | Set as specified in test case | | |
| } | | | |
| nonCriticalExtension SEQUENCE { | | RRConnectionR econfiguration- v1310-IEs | LWIP |
| lwip-configuration-r13 | Set as specified in test case | | |
| } | | | |
| nonCriticalExtension SEQUENCE { | | RRConnectionR econfiguration- v1310-IEs | MCG_and_S CG, MCG_and _split, SCG- DRB(n,m), MCG_NR_P DCP, EN- DC_PSCell_ Rel, SRB_NR_P DCP, EN- DC_EmbedN R_RRCReco n, EN- DC_Embed_ RBConfig, EN- DC_PSCell_ HO |
| nonCriticalExtension SEQUENCE { | | RRConnectionR econfiguration- v1430-IEs | |
| nonCriticalExtension SEQUENCE { | | RRConnectionR econfiguration- v1510-IEs | |
| nr-Config-r15 CHOICE { | | | |
| Release | | | EN- DC_PSCell_ Rel |
| setup SEQUENCE { | | | MCG_and_S CG, MCG_and_s plit, SCG- DRB(n,m), MCG_NR_P DCP, EN- DC_EmbedN R_RRCReco n, EN- DC_Embed_ RBConfig, EN- DC_PSCell_ HO |
| endc-ReleaseAndAdd-r15 | false | | |

| | | | |
|---------------------------------|--|--|----------------------------|
| nr-SecondaryCellGroupConfig-r15 | OCTET STRING including the RRCReconfiguration message and the IE secondaryCellGroup according TS 38.508-1 [67], table 4.6.1-13 with condition EN-DC. | | MCG_and_SCG |
| | OCTET STRING including the RRCReconfiguration message, the IE secondaryCellGroup according TS 38.508-1 [67], table 4.6.1-13 with condition EN-DC and the IE PDCP-Config according TS 38.508-1 [67], table 4.6.3-99 with condition Split. | | MCG_and_split |
| | OCTET STRING including the RRCReconfiguration message and the IE secondaryCellGroup according TS 38.508-1 [67], table [4.8.1-2]. | | SCG-DRB(n,m) |
| | OCTET STRING including the test case specific RRCReconfiguration | | EN-DC_EmbedNR_RRCRecon |
| | OCTET STRING including the RRCReconfiguration message and the IE secondaryCellGroup according TS 38.508-1 [67], table 4.6.1-13 with condition EN-DC_HO | | EN-DC_PSCell_HO |
| p-MaxEUTRA-r15 | Not present | | |
| | 20 | p-MaxEUTRA-r15 value when pc_dynamicPowerSharing is set to FALSE | NOT pc_dynamicPowerSharing |
| } | | | |
| } | | | |
| sk-Counter-r15 | 0 | | |
| | Not Present | | EN-DC_NR_CA |
| nr-RadioBearerConfig1-r15 | OCTET STRING including RadioBearerConfig according TS 38.508-1 [67], [table 4.6.3-132] with condition EN-DC_DRB. | | MCG_and_SCG, MCG_and_split |
| | OCTET STRING including RadioBearerConfig according TS 38.508-1 [67], table [4.8.1-3]. | | SCG-DRB(n,m) |

| | | | |
|----------------------------------|--|---------------------------------------|--|
| | OCTET STRING including RadioBearerConfig according TS 38.508-1 [67], table [4.6.3-132] with condition MCG_NR_PDCP | | MCG_NR_PDCP |
| | OCTET STRING including RadioBearerConfig according TS 38.508-1 [67], table 4.6.3-132 with condition SRB_NR_PDCP | | SRB_NR_PDCP |
| | OCTET STRING including the test case specific RadioBearerConfig | | EN-DC_Embed_RBConfig |
| | OCTET STRING including RadioBearerConfig according TS 38.508-1 [67], table 4.6.3-132 with conditions EN-DC_DRB and Re-establish_PDCP | | EN-DC_PSCell_HO AND RBConfig_KeyChange |
| | OCTET STRING including RadioBearerConfig according TS 38.508-1 [67], table 4.6.3-132 with conditions EN-DC_DRB and Recover_PDCP | | EN-DC_PSCell_HO AND RBConfig_NoKeyChange |
| nr-RadioBearerConfig2-r15 | Not present | | |
| tdm-PatternConfig-r15 | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | RRConnectionReconfiguration-v1530-IEs | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|------------------------|--|
| SRB2-DRB(n,m) | Establishment of a SRB and DRB combination with n x AM DRB and m x UM DRB (including establishment of SRB2) |
| DRB(n,m) | Establishment of additional n x AM DRB:s and m x UM DRB:s (SRB2 should already be established) |
| AM-DRB-ADD(bid) | Establishment of a single additional AM DRB with bearer identity bid (SRB2 should already be established) |
| UM-DRB-ADD(bid) | Establishment of a single additional UM DRB with bearer identity bid (SRB2 should already be established) |
| DRB-REL(bid) | Release of the DRB with bearer identity bid |
| HO | Intra LTE handover |
| MEAS | A measurement is configured |
| HO-TO-EUTRA(n,m) | Inter-RAT handover to E-UTRA including the establishment of a SRB1, SRB2 and n x AM DRB plus m x UM DRB |
| <i>nonFullConfig</i> | The field is not present in case of handover within E-UTRA when the <i>fullConfig</i> is included or in case of handover of handover to E-UTRA; otherwise it is optional present, need ON. |
| DRB-Mod | Modification of already established DRB ID 2 and is used for sending Modify EPS Bearer Context Request message (SRB2 should already be established) |
| SCell_AddMod | Addition or modification of SCell(s) |
| PCell-PATTERN | eICIC Serving Cell Pattern |
| OtherConfig | Other Configuration is configured |
| WLAN-OffloadSetup | When Dedicated WLAN Offload parameters need to be configured in UE |
| WLAN-OffloadRelease | When Dedicated WLAN Offload parameters need to be released in UE |
| PSCell_Mod | Modification of PSCell(s) |
| PSCell_Release | Release of PSCell |
| PSCell_Add_Split_DRB | Add PSCell(s) and setup of Split DRB |
| PSCell_Add_SCG_DRB | Add PSCell(s) and setup of SCG DRB |
| 4Rx_PCC | For 4Rx testcases with more than 2 Layers on PCC |
| MCG_and_SCG | EN-DC with MCG and SCG. |
| MCG_and_split | EN-DC with MCG and split. |
| SCG-DRB(n,m) | EN-DC establishment of additional n x AM DRB:s and m x UM DRB:s in SCG. |
| EN-DC_PSCell_Rel | Release of EN-DC PSCell |
| EN-DC_Split_Rel(bid) | Release of E-UTRA leg of EN-DC Split DRB with bearer identity bid |
| MCG_NR_PDCP | EN-DC configuration of MCG DRB with NR PDCP. |
| SRB_NR_PDCP | EN-DC configuration of SRB1 and SRB2 with NR PDCP. |
| EN-DC_SRB2-DRB | Establishment of SRB2 and DRB combination for EN-DC |
| EN-DC_EmbedNR_RRCRecon | To modify NR Cell Configuration in EN-DC by including RRCReconfiguration |
| EN-DC_EmbedNR_RBConfig | To modify NR RB Configuration in EN-DC by including RadioBearerConfig |
| SRB4 | Establishment of SRB4 |
| LWA | LWA is being configured |
| LWIP | LWIP is being configured |
| EN-DC_PSCell_HO | RRCReconfiguration to perform PSCell handover (SCG change) in EN-DC |
| RBConfig_KeyChange | RadioBearerConfig to perform PSCell handover (SCG change) with security key change in EN-DC |
| RBConfig_NoKeyChange | RadioBearerConfig to perform PSCell handover (SCG change) without security key change in EN-DC |
| EN-DC_NR_CA | Addition, modification or release of NR SCell |

– *RRCConnectionReconfiguration (SideLink)*

Table 4.6.1-8A: *RRCConnectionReconfiguration (SideLink)*

| Derivation Path: 36.508 table 4.6.1-8 | | | |
|---|--|---|------------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionReconfiguration ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcConnectionReconfiguration-r8 SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| sl-SyncTxControl-r12 SEQUENCE { | | | |
| networkControlledSyncTx-r12 | off | This field indicates whether the UE shall transmit synchronisation information (i.e. become synchronisation source). Value On indicates the UE to transmit synchronisation information while value Off indicates the UE to not transmit such information. | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| sl-DiscConfig-r12 SEQUENCE { | | | DISC |
| discTxResources-r12 CHOICE { | | | |
| release | NULL | | RELEASE |
| setup CHOICE { | | | SETUP |
| scheduled-r12 SEQUENCE { | | | SCHEDULE D |
| discTxConfig-r12 SEQUENCE { | | | |
| cp-Len-r12 | normal | | |
| discPeriod-r12 | rf32 | | |
| numRetx-r12 | 0 | | |
| numRepetition-r12 | 1 | | |
| tf-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 12 | | BW5 |
| | 24 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 23 | | BW5 |
| | 48 | | BW10 |
| offsetIndicator-r12 | 160 | small-r12 | FDD |
| | 163 | | TDD |
| subframeBitmap-r12 | 00000000 11000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| | 00000000 11000000 | bs16-r12 | TDD |
| } | | | |
| } | | | |
| } | | | |
| txParameters-r12 SEQUENCE { | | | |
| txParametersGeneral-r12 | | | |
| SEQUENCE { | | | |
| alpha-r12 | al0 | | |
| p0-r12 | 31 | | |
| } | | | |
| ue-SelectedResourceConfig-r12 | Not present | | |
| } | | | |
| rxParameters-r12 | Not present | | |

| | | | |
|---|--------|---|-------------|
| } discTF-IndexList-r12 SEQUENCE (SIZE (1..maxSL-TF-IndexPair-r12)) OF SL-TF-IndexPair-r12 { | | | |
| SL-TF-IndexPair-r12[1] SEQUENCE | | | |
| { | | | |
| discSF-Index-r12 | 1 | INTEGER (1..200) | |
| discPRB-Index-r12 | 1 | INTEGER (1.. 50) | |
| } | | | |
| } | | | |
| discHoppingConfig-r12 SEQUENCE { | | | |
| a-r12 | 1 | INTEGER (1..200) Per cell parameter: $N_{PSDCH}^{(1)}$ see TS 36.213 [29, 14.3.1]. | |
| b-r12 | 1 | INTEGER (1..10) Per UE parameter: $N_{PSDCH}^{(2)}$ see TS 36.213 [29, 14.3.1]. | |
| c-r12 | n1 | ENUMERATED {n1, n5} Per cell parameter: $N_{PSDCH}^{(3)}$ see TS36.213 [29, 14.3.1] | |
| } | | | |
| } | | | |
| ue-Selected-r12 SEQUENCE { | | | UE-SELECTED |
| discTxPoolDedicated-r12 SEQUENCE { | | | |
| poolToReleaseList-r12 SEQUENCE (SIZE (1..maxSL-TxPool-r12)) OF SL-TxPoolIdentity-r12 { | | | RELEASE |
| SL-TxPoolIdentity-r12[1] | 1 | | |
| } | | | |
| poolToAddModList-r12 SEQUENCE (SIZE (1..maxSL-TxPool-r12)) OF SL-DiscTxPoolToAddMod-r12 | | 2 TxPools | SETUP |
| SL-DiscTxPoolToAddMod-r12[1] ::= SEQUENCE { | | TxPool 1 | |
| poolIdentity-r12 | 1 | | |
| pool-r12 SEQUENCE { | | | |
| cp-Len-r12 | normal | | |
| discPeriod-r12 | rf32 | | |
| numRetx-r12 | 0 | | |
| numRepetition-r12 | 1 | | |
| tf-ResourceConfig-r12 | | | |
| SEQUENCE { | | | |
| prb-Num-r12 | 12 | | BW5 |
| | 24 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 23 | | BW5 |
| | 48 | | BW10 |
| offsetIndicator-r12 | 160 | small-r12 | FDD |
| | 163 | | TDD |

| | | | |
|--|--|--|------|
| subframeBitmap-r12 | 00000000 00110000 00000000 00000000 00000000 | bs40-r12 | FDD |
| | 00000000 00110000 | bs16-r12 | TDD |
| } | | | |
| txParameters-r12 SEQUENCE { | | | |
| txParametersGeneral-r12 | | | |
| SEQUENCE { | | | |
| alpha-r12 | al0 | | |
| p0-r12 | 31 | | |
| } | | | |
| ue-SelectedResourceConfig-r12 SEQUENCE { | | | |
| poolSelection-r12 | | <i>rsrpBased-r12</i> | |
| SEQUENCE { | | | |
| threshLow-r12 | 3 | -90dBm | |
| threshHigh-r12 | 4 | -80dBm | |
| } | | | |
| txProbability-r12 | p100 | 100% the probability of transmitting announcement in a discovery period when configured with a pool of resources | |
| } | | | |
| } | | | |
| rxParameters-r12 | Not present | | |
| } | | | |
| } | | | |
| SL-DiscTxPoolToAddMod-r12[2] | | TxPool 2 | |
| ::= SEQUENCE { | | | |
| poolIdentity-r12 | 2 | | |
| pool-r12 SEQUENCE { | | | |
| cp-Len-r12 | normal | | |
| discPeriod-r12 | rf32 | | |
| numRetx-r12 | 0 | | |
| numRepetition-r12 | 1 | | |
| tf-ResourceConfig-r12 | | | |
| SEQUENCE { | | | |
| prb-Num-r12 | 12 | | BW5 |
| | 24 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 23 | | BW5 |
| | 48 | | BW10 |
| offsetIndicator-r12 | 160 | small-r12 | FDD |
| | 163 | | TDD |
| subframeBitmap-r12 | 00000000 00000011 00000000 00000000 00000000 | bs40-r12 | FDD |
| | 00000000 00000011 | bs16-r12 | TDD |
| } | | | |
| txParameters-r12 SEQUENCE { | | | |
| txParametersGeneral-r12 | | | |
| SEQUENCE { | | | |
| alpha-r12 | al0 | | |
| p0-r12 | 31 | | |
| } | | | |

| | | | | |
|--|-------------|--|--|---------------|
| ue-SelectedResourceConfig- r12 SEQUENCE { | | | | |
| poolSelection-r12 SEQUENCE { | | | <i>rsrpBased-r12</i> | |
| threshLow-r12 | 4 | | -80dBm | |
| threshHigh-r12 | 5 | | -70dBm | |
| } | | | | |
| txProbability-r12 | p100 | | 100% the probability of transmitting announcement in a discovery period when configured with a pool of resources | |
| } | | | | |
| } | | | | |
| rxParameters-r12 | Not present | | | |
| } | | | | |
| } | | | | |
| } | | | | |
| } | | | | |
| } | | | | |
| } | | | | |
| } | | | | |
| } | | | | |
| discTF-IndexList-v1260 CHOICE { | | | | |
| release | NULL | | | |
| setup SEQUENCE { | | | | |
| discTF-IndexList-r12b SEQUENCE (SIZE (1..maxSL-TF-IndexPair-r12)) OF SL-TF- IndexPair-r12b | | | | |
| SL-TF-IndexPair-r12b[1] SEQUENCE { | | | | |
| discSF-Index-r12b | 1 | | INTEGER (1..209) | |
| discPRB-Index-r12b | 1 | | INTEGER (1..49) | |
| } | | | | |
| } | | | | |
| } | | | | |
| } | | | | |
| } | | | | |
| } | | | | |
| } | | | | |
| } | | | | |
| sl-DiscConfig-r12 | Not Present | | | COMM |
| sl-CommConfig-r12 | Not Present | | | DISC |
| sl-CommConfig-r12 SEQUENCE { | | | | COMM |
| commTxResources-r12 CHOICE { | | | | |
| release | NULL | | | RELEASE |
| setup CHOICE { | | | | SETUP |
| scheduled-r12 SEQUENCE { | | | | SCHEDULE D |
| sl-RNTI-r12 | '1FF1'H | | | |
| mac-MainConfig-r12 SEQUENCE { | | | | |
| periodic-BSR-TimerSL | sf20 | | | |
| retx-BSR-TimerSL | sf320 | | | |
| } | | | | |
| } | | | | |
| } | | | | |

| | | | |
|---|--|---|-------------|
| sc-CommTxConfig-r12 SEQUENCE { | | SL-CommResourcePool-r12 Indicates a pool of resources for SC when E-UTRAN schedules Tx resources (i.e. when indices included in DCI format 5 indicate the actual data resources to be used as specified in TS 36.212 [61, 5.3.3.1.9]). | |
| sc-CP-Len-r12 | normal | | |
| sc-Period-r12 | sf40 | | |
| sc-TF-ResourceConfig-r12 SEQUENCE { | | | |
| prb-Num-r12 | 13 25 | | BW5 BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 49 | | BW5 BW10 |
| offsetIndicator-r12 | 0 | small-r12 | |
| subframeBitmap-r12 | 00000000 11000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| } | | | |
| data-CP-Len-r12 | normal | | |
| dataHoppingConfig-r12 SEQUENCE { | | | |
| hoppingParameter-r12 | 0 | | |
| numSubbands-r12 | ns1 | | |
| rb-Offset-r12 | 0 | | |
| } | | | |
| ue-SelectedResourceConfig-r12 | Not present | | |
| rxParametersNCell-r12 | Not present | | |
| txParameters-r12 | Not present | | |
| } | | | |
| mcs-r12 | 0 | | |
| } | | | |
| ue-Selected-r12 SEQUENCE { | | | UE-SELECTED |
| commTxPoolNormalDedicated-r12 SEQUENCE { | | | |
| poolToReleaseList-r12 SEQUENCE (SIZE (1..maxSL-TxPool-r12)) OF SL-TxPoolIdentity-r12 { | | | RELEASE |
| SL-TxPoolIdentity-r12[1] | 1 | INTEGER (1..maxSL-TxPool-r12) | |
| } | | | |
| poolToAddModList-r12 SEQUENCE (SIZE (1..maxSL-TxPool-r12)) OF SL-CommTxPoolToAddMod-r12 | | 1 TxPool | SETUP |
| SL-CommTxPoolToAddMod-r12[1] | | TxPool 1 | |
| ::= SEQUENCE { | | | |
| poolIdentity-r12 | 1 | INTEGER (1..maxSL-TxPool-r12) | |
| pool-r12 SEQUENCE { | | | |
| sc-CP-Len-r12 | normal | | |

| | | | | |
|------------|----------------------------------|--|-----------|------|
| | sc-Period-r12 | sf40 | | |
| | sc-TF-ResourceConfig-r12 | | | |
| SEQUENCE { | | | | |
| | prb-Num-r12 | 13 | | BW5 |
| | | 25 | | BW10 |
| | prb-Start-r12 | 0 | | |
| | prb-End-r12 | 24 | | BW5 |
| | | 49 | | BW10 |
| | offsetIndicator-r12 | 0 | small-r12 | |
| | subframeBitmap-r12 | 00000011 00000000 00000000 00000000 00000000 | bs40-r12 | FDD |
| | } | | | |
| | data-CP-Len-r12 | normal | | |
| SEQUENCE { | dataHoppingConfig-r12 | | | |
| | hoppingParameter-r12 | 0 | | |
| | numSubbands-r12 | ns1 | | |
| | rb-Offset-r12 | 0 | | |
| | } | | | |
| SEQUENCE { | ue-SelectedResourceConfig-r12 | | | |
| SEQUENCE { | data-TF-ResourceConfig-r12 | | | |
| | prb-Num-r12 | 13 | | BW5 |
| | | 25 | | BW10 |
| | prb-Start-r12 | 0 | | |
| | prb-End-r12 | 24 | | BW5 |
| | | 49 | | BW10 |
| | offsetIndicator-r12 | 0 | small-r12 | |
| | subframeBitmap-r12 | 00000000 00000000 00000011 11000000 00000000 | bs40-r12 | FDD |
| | } | | | |
| | trpt-Subset-r12 | 001 | | |
| | } | | | |
| | rxParametersNCell-r12 | Not present | | |
| | txParameters-r12 | Not present | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | nonCriticalExtension SEQUENCE {} | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|-------------|---|
| DISC | Only SideLink Discovery configuration provided |
| COMM | Only SideLink Communication configuration provided |
| RELEASE | Release Discovery/Communication Resources |
| SETUP | Setup Discovery/Communication Resources |
| SCHEDULED | The resources the UE can use are scheduled by the NW. |
| UE-SELECTED | The resources the UE can use are to be selected by the UE from set of resources provided by the NW. |
| FDD | FDD cell environment |
| TDD | TDD cell environment (TDD config 1) |

– *RRCCONNECTIONRECONFIGURATION (V2X)*

Table 4.6.1-8B: RRCCONNECTIONRECONFIGURATION (V2X)

| Derivation Path: 36.508 table 4.6.1-8 | | | |
|---|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONRECONFIGURATION ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcConnectionReconfiguration-r8 SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| sl-V2X-ConfigDedicated-r14 | SL-V2X-ConfigDedicated-r14-DEFAULT condition SCHEDULED and SETUP | | |
| sCellToAddModListExt-v14xy | Not present | | |
| perCC-GapIndicationRequest-r14 | Not present | | |
| systemInformationBlockType2Dedicated-r14 | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

RRCConnectionReconfigurationComplete

Table 4.6.1-9: RRCConnectionReconfigurationComplete

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|---|---------|---|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionReconfigurationComplete ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionReconfigurationComplete-r8 SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| nonCriticalExtension SEQUENCE { | | | MCG_and_SCG, MCG_and_s plit, SCG- DRB(n,m) |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| scg-ConfigResponseNR-r15 | OCTET STRING including the RRCReconfigurationComplete message according TS 38.508-1 [67], table 4.6.1-14. | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|---------------|---|
| MCG_and_SCG | EN-DC with MCG and SCG. |
| MCG_and_split | EN-DC with MCG and split. |
| SCG-DRB(n,m) | EN-DC establishment of additional n x AM DRB:s and m x UM DRB:s in SCG. |

– *RRCCONNECTIONREESTABLISHMENT***Table 4.6.1-10: RRCCONNECTIONREESTABLISHMENT**

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|-----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONREESTABLISHMENT ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcConnectionReestablishment-r8 SEQUENCE { | | | |
| radioResourceConfigDedicated | RadioResourceConfigDedicated-SRB1 | | |
| nextHopChainingCount | 0 | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCONNECTIONREESTABLISHMENTCOMPLETE***Table 4.6.1-11: RRCCONNECTIONREESTABLISHMENTCOMPLETE**

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONREESTABLISHMENTCOMPLETE ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionReestablishmentComplete-r8 SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCONNECTIONREESTABLISHMENTREJECT***Table 4.6.1-12: RRCCONNECTIONREESTABLISHMENTREJECT**

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONREESTABLISHMENTREJECT ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionReestablishmentReject-r8 SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCConnectionReestablishmentRequest***Table 4.6.1-13: RRCCConnectionReestablishmentRequest**

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCConnectionReestablishmentRequest ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionReestablishmentRequest-r8 SEQUENCE { | | | |
| ue-Identity | Set according to specific message content | | |
| reestablishmentCause | Set according to specific message content | | |
| spare | Present but contents not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCConnectionReject***Table 4.6.1-14: RRCCConnectionReject**

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCConnectionReject ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcConnectionReject-r8 SEQUENCE { | | | |
| waitTime | 3(seconds) | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCoNNECTIONRelease*

Table 4.6.1-15: RRCCoNNECTIONRelease

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--------------------------------------|-------------------------------------|-----------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCoNNECTIONRelease ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcCoNNECTIONRelease-r8 SEQUENCE { | | | |
| releaseCause | other | | |
| | rrc-Suspend | | UP-CIoT |
| redirectedCarrierInfo | Not present | | |
| idleModeMobilityControllInfo | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| nonCriticalExtension SEQUENCE {} | | | UP-CIoT |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| resumelDentity-r13 | A valid value, calculated by the SS | BIT STRING (SIZE(40)) | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|-----------------|
| UP-CIoT | User plane Clot |

– *RRCCoNNECTIONRequest*

Table 4.6.1-16: RRCCoNNECTIONRequest

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--------------------------------------|----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCoNNECTIONRequest ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcCoNNECTIONRequest-r8 SEQUENCE { | | | |
| ue-Identity CHOICE { | | | |
| s-TMSI | Any allowed value | | |
| } | | | |
| establishmentCause | Present but contents not checked | | |
| spare | Present but contents not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCConnectionResume***Table 4.6.1-16A: RRCConnectionResume**

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionResume-r13 ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcConnectionResume-r13 SEQUENCE { | | | |
| radioResourceConfigDedicated-r13 | RadioResourceConfigDedicated-SRB2-DRB(1, 0) | | |
| nextHopChainingCount-r13 | 0 | | |
| measConfig-r13 | Not present | | |
| antennaInfoDedicatedPCell-r13 | Not present | | |
| drb-ContinueROHC-r13 | Not present | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCConnectionResumeComplete***Table 4.6.1-16B: RRCConnectionResumeComplete**

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionResumeComplete-r13 ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionResumeComplete-r13 SEQUENCE { | | | |
| selectedPLMN-Identity-r13 | Not checked | | |
| dedicatedInfoNAS-r13 | Not checked | | |
| rif-InfoAvailable-r13 | Not checked | | |
| logMeasAvailable-r13 | Not checked | | |
| connEstFailInfoAvailable-r13 | Not checked | | |
| mobilityState-r13 | Normal | | |
| mobilityHistoryAvail-r13 | Not checked | | |
| logMeasAvailableMBSFN-r13 | Not checked | | |
| lateNonCriticalExtension | Not checked | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCONNECTIONRESUMEREQUEST*

Table 4.6.1-16C: RRCCONNECTIONRESUMEREQUEST

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONRESUMEREQUEST-r13 ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionResumeRequest-r13 SEQUENCE { | | | |
| resumeIdentity-r13 CHOICE { | | | |
| truncatedResumeID-r13 | Present but contents not checked | | |
| } | | | |
| shortResumeMAC-I-r13 | Present but contents not checked | | |
| resumeCause-r13 | mt-Access | | |
| spare | Present but contents not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCONNECTIONSETUP*

Table 4.6.1-17: RRCCONNECTIONSETUP

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--------------------------------------|-----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONSETUP ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcConnectionSetup-r8 SEQUENCE { | | | |
| radioResourceConfigDedicated | RadioResourceConfigDedicated-SRB1 | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

RRCConnectionSetupComplete

Table 4.6.1-18: RRCConnectionSetupComplete

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|----------------------------------|---------|--------------------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionSetupComplete ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcConnectionSetupComplete-r8 SEQUENCE { | | | |
| selectedPLMN-Identity | 1 | | |
| registeredMME | Not checked | | |
| dedicatedInfoNAS | Present but contents not checked | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| nonCriticalExtension SEQUENCE { | | | UP-CIoT or CP-CIoT |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| up-CIoT-EPS-Optimisation-r13 | true | | UP-CIoT |
| cp-CIoT-EPS-Optimisation-r13 | true | | CP-CIoT |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|---|
| UP-CIoT | If user plane CloT supported (TS 36.523-2, A.4.4-1/132). Note 1: This condition is only applicable if also condition CloT-test apply. |
| CP-CIoT | If control plane CloT supported (TS 36.523-2, A.4.4-1/nnn). Note 1: This condition is only applicable if also condition CloT-test apply. |

– *SCGFailureInformationNR*

Table 4.6.1-18AA: *SCGFailureInformationNR*

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SCGFailureInformationNR-r15 ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| sgsFailureInformationNR-r15-IEs SEQUENCE { | | | |
| failureReportSCG-NR-r15 SEQUENCE { | | | |
| failureType-r15 | Any allowed value | t310-Expiry, OR randomAccessPro blem, OR rlc-MaxNumRetx, OR synchReconfigFail ureSCG, OR scg- reconfigFailure, OR srb3- IntegrityFailure | |
| measResultFreqListFailNR-r15 SEQUENCE (SIZE (1..maxFreqNR-r15)) OF SEQUENCE { | <i>n</i> entries of MeasResultFreqFailNR- r15 | <i>n</i> denotes the number of NR frequencies the UE is configured to measure by measConfig | |
| MeasResultFreqFailNR-r15 SEQUENCE { | entry [1] | | |
| carrierFreq-r15 | Downlink ARFCN of ssbFrequency | ARFCN-ValueNR- r15 | |
| measResultCellListNR-r15 SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE { | <i>n</i> entries of MeasResultCellNR-r15 | <i>n</i> denotes the number of reported cells/CSI-RS resources | |
| MeasResultCellNR-r15 SEQUENCE { | entry [1] | | |
| PhysCellIdNR-r15 | INTEGER (0.. 1007) | the physical layer identity (PCI) of an NR cell | |
| MeasResultNR-r15 SEQUENCE { | | | |
| RSRP-RangeNR-r15 | as specified in TS 38.508-1 [67], Table 4.6.3-152 | Integer value for RSRP measurements | |
| RSRQ-RangeNR-r15 | as specified in TS 38.508-1 [67], Table 4.6.3-153 | Integer value for RSRQ measurements | |
| RS-SINR-RangeNR-r15 | as specified in TS 38.508-1 [67], Table 4.6.3-172 | Integer value for SINR measurements | |
| } | | | |
| MeasResultSSB-IndexList-r15 SEQUENCE (SIZE (1..maxRS-IndexReport-r15)) OF SEQUENCE { | <i>n</i> entries of MeasResultSSB-Index- r15 | <i>n</i> denotes the number of RS indices for RRM | |
| MeasResultSSB-Index-r15 SEQUENCE { | entry [1] | | |
| RS-IndexNR-r15 | INTEGER (0.. maxRS- Index-1-r15) | | |
| MeasResultNR-r15 SEQUENCE { | | | |
| RSRP-RangeNR-r15 | as specified in TS 38.508-1 [67], Table 4.6.3-152 | Integer value for RSRP measurements | |
| RSRQ-RangeNR-r15 | as specified in TS 38.508-1 [67], Table 4.6.3-153 | Integer value for RSRQ measurements | |
| RS-SINR-RangeNR-r15 | as specified in TS 38.508-1 [67], Table 4.6.3-172 | Integer value for SINR measurements | |
| } | | | |
| } | | | |

| | | | |
|--------------------------------------|--|---|--|
| ... | | <i>MeasResultSSB-Index-r15</i> entry [x] if any | |
| } | | | |
| } | | | |
| ... | | <i>MeasResultCellNR-r15</i> entry [x] if any | |
| } | | | |
| } | | | |
| ... | | | |
| } | | | |
| measResultSCG-r15 | containing the NR <i>MeasResultSCG-Failure</i> IE as specified in TS 38.508-1 [67], Table 4.6.3-80 | | |
| } | | | |
| nonCriticalExtension SEQUENCE {} | | | |
| } | | | |
| } | | | |
| criticalExtensionsFuture SEQUENCE {} | | | |
| } | | | |
| } | | | |

– SCPTMConfiguration

Table 4.6.1-18a: SCPTMConfiguration

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|--------------|-------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SCPTMConfiguration-r13 ::= SEQUENCE { | | | |
| sc-mtch-InfoList-r13 SEQUENCE (SIZE (0..maxSC-MTCH-r13)) OF SEQUENCE { | | | |
| mbmsSessionInfo-r13 SEQUENCE { | | | |
| tmgi-r13 SEQUENCE { | | | |
| plmn-Id-r9 CHOICE { | | | |
| plmn-Index-r9 | 1 | | |
| } | | | |
| } | | | |
| serviceld-r9 | '000001'H | OCTET STRING (SIZE (3)) | |
| } | | | |
| sessionId-r13 | Not present | | |
| } | | | |
| g-RNTI-r13 | '0100'H | | |
| sc-mtch-schedulingInfo-r13 SEQUENCE { | | | |
| on-DurationTimerSCPTM-r13 | Not present | | |
| drx-InactivityTimerSCPTM-r13 | Not present | | |
| schedulingPeriodStartOffsetSCPTM-r13 CHOICE { | | | |
| sf20 | Not present | | |
| } | | | |
| } | | | |
| sc-mtch-neighbourCell-r13 | Not present | | |
| } | | | |
| scptm-NeighbourCellList-r13 SEQUENCE (SIZE (1..maxNeighCell-SCPTM-r13)) OF SEQUENCE { | | | |
| physCellId-r13 | Not present | | |
| carrierFreq-r13 | Not present | | |
| } | | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |

– SCPTMConfiguration-BR

Table 4.6.1-18b: SCPTMConfiguration-BR

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|--------------|-------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SCPTMConfiguration-BR-r14 ::= | SEQUENCE { | | |
| sc-mtch-InfoList-r14 SEQUENCE (SIZE (0..maxSC-MTCH-BR-r14)) OF SEQUENCE { | | | |
| sc-mtch-CarrierFreq-r14 | FFS | | |
| mbmsSessionInfo-r14 SEQUENCE { | | | |
| tmgi-r13 SEQUENCE { | | | |
| plmn-Id-r9 CHOICE { | | | |
| plmn-Index-r9 | 1 | | |
| } | | | |
| serviceld-r9 | '000001'H | OCTET STRING (SIZE (3)) | |
| } | | | |
| sessionId-r13 | Not present | | |
| } | | | |
| g-RNTI-r14 | '0100'H | | |
| sc-mtch-schedulingInfo-r14 | Not present | | |
| sc-mtch-neighbourCell-r14 | Not present | | |
| mpdcch-Narrowband-SC-MTCH-r14 | 1 | | |
| mpdcch-NumRepetition-SC-MTCH-r14 | r1 | | |
| mpdcch-StartSF-SC-MTCH-r14 CHOICE { | | | |
| fdd-r14 | v1 | | FDD |
| tdd-r14 | v1 | | TDD |
| } | | | |
| mpdcch-PDSCH-HoppingConfig-SC-MTCH-r14 | off | | |
| mpdcch-PDSCH-CEmodeConfig-SC-MTCH-r14 | ce-ModeA | | CEmodeA |
| | ce-ModeB | | CEmodeB |
| mpdcch-PDSCH-MaxBandwidth-SC-MTCH-r14 | bw1dot4 | | |
| mpdcch-Offset-SC-MTCH-r14 | zero | | |
| p-a-r14 | Not present | | |
| } | | | |
| scptm-NeighbourCellList-r13 SEQUENCE (SIZE (1..maxNeighCell-SCPTM-r13)) OF SEQUENCE { | | | |
| physCellId-r13 | Not present | | |
| carrierFreq-r13 | Not present | | |
| } | | | |
| p-b-r14 | Not present | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| CEmodeA | Used for CE mode A testing |
| CEmodeB | Used for CE mode B testing |

– *SecurityModeCommand***Table 4.6.1-19: SecurityModeCommand**

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--------------------------------------|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SecurityModeCommand ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| securityModeCommand-r8 SEQUENCE { | | | |
| securityConfigSMC | SecurityConfigSMC-DEFAULT | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

– *SecurityModeComplete***Table 4.6.1-20: SecurityModeComplete**

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--------------------------------------|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SecurityModeComplete ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| securityModeComplete-r8 SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *SecurityModeFailure***Table 4.6.1-21: SecurityModeFailure**

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--------------------------------------|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SecurityModeFailure ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| securityModeFailure-r8 SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

SidelinkUEInformation

Table 4.6.1-21A: SidelinkUEInformation

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|---|-------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SidelinkUEInformation-r12 ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| sidelinkUEInformation-r12 SEQUENCE { | | | |
| commRxInterestedFreq-r12 | set according to specific message content. | INTEGER (0..maxEARFCN2) | |
| commTxResourceReq-r12 SEQUENCE { | | | |
| carrierFreq-r12 | set according to specific message content. | INTEGER (0..maxEARFCN2) | |
| destinationInfoList-r12 SEQUENCE (SIZE (1..maxSL-Dest-r12)) OF SEQUENCE { | The number of entries is set according to specific message content. | | |
| SL-DestinationIdentity-r12 | set according to specific message content | BIT STRING (SIZE (24)) | |
| } | | | |
| } | | | |
| discRxInterest-r12 | set according to specific message content. | ENUMERATED {true} | |
| discTxResourceReq-r12 | set according to specific message content. | INTEGER (1..63) | |
| lateNonCriticalExtension | Not Present | | |
| nonCriticalExtension SEQUENCE {} | Not Present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

SidelinkUEInformation (V2X)

Table 4.6.1-21B: SidelinkUEInformation (V2X)

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|---|------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SidelinkUEInformation-r12 ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| sidelinkUEInformation-r12 SEQUENCE { | | | |
| commRxInterestedFreq-r12 | Not Present | | |
| commTxResourceReq-r12 | Not Present | | |
| discRxInterest-r12 | Not Present | | |
| discTxResourceReq-r12 | Not Present | | |
| lateNonCriticalExtension | Not Present | | |
| nonCriticalExtension SEQUENCE { | | | |
| nonCriticalExtension SEQUENCE { | | | |
| v2x-CommRxInterestedFreqList-r14 | Not Present | | |
| v2x-CommRxInterestedFreqList-r14 SEQUENCE (SIZE (1..maxFreqV2X-r14)) OF INTEGER (0..maxFreqV2X-1-r14) | set according to specific message content | INTEGER (0..maxFreq) | COND_RX |
| p2x-CommTxType-r14 | Not Present | | |
| v2x-CommTxResourceReq-r14 | Not Present | | |
| v2x-CommTxResourceReq-r14 SEQUENCE (SIZE (1..maxFreqV2X-r14)) OF SEQUENCE { | | | COND_TX |
| carrierFreqCommTx-r14 | set according to specific message content | | |
| v2x-TypeTxSync-r14 | set according to specific message content | | |
| v2x-DestinationInfoList-r14 SEQUENCE (SIZE (1..maxSL-Dest-r12)) OF SEQUENCE { | The number of entries is set according to specific message content. | | |
| SL-DestinationIdentity-r12 | set according to specific message content | BIT STRING (SIZE (24)) | |
| } | | | |
| } | | | |
| nonCriticalExtension | Not Present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|---|
| COND_RX | UE intends to receive V2X sidelink communication |
| COND_TX | UE intends to transmit V2X sidelink communication |

– *UECapabilityEnquiry*

Table 4.6.1-22: UECapabilityEnquiry

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UECapabilityEnquiry ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| ueCapabilityEnquiry-r8 SEQUENCE { | | | |
| ue-CapabilityRequest SEQUENCE (SIZE (1..maxRAT-Capabilities)) OF RAT-Type { | 1,2 or 3 entries | | |
| RAT-Type[1] | eutra | | |
| RAT-Type[2] | eutra-nr | | EN-DC |
| RAT-Type[3] | nr | | NR, EN_DC |
| } | | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| nonCriticalExtension SEQUENCE {} | | | EN-DC, NR |
| nonCriticalExtension SEQUENCE {} | | | |
| nonCriticalExtension SEQUENCE {} | | | |
| nonCriticalExtension SEQUENCE {} | | | |
| nonCriticalExtension SEQUENCE { | | | |
| requestedFreqBandsNR-MRDC-r15 | OCTET STRING including the FreqBandList IE according TS 38.508-1 [67], table 4.6.4-21. | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|--|
| EN-DC | Used in E-UTRA-NR dual connectivity test cases |
| NR | Used in NR test cases |

– *UECapabilityInformation*

Table 4.6.1-23: *UECapabilityInformation*

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UECapabilityInformation ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| ueCapabilityInformation-r8 SEQUENCE { | | | |
| ue-CapabilityRAT-ContainerList SEQUENCE (SIZE (1..maxRAT-Capabilities)) OF SEQUENCE { | 1 entry | | |
| rat-Type | Set according to specific message content | | |
| ueCapabilityRAT-Container | | | |
| ue-EUTRA-Capability SEQUENCE { | | | |
| accessStratumRelease | Same as indicated in TC applicability in TS 36.523-2 [19] | | |
| ue-Category | Not checked | | |
| pdcp-Parameters SEQUENCE { | | | |
| supportedROHC-Profiles SEQUENCE { | | | |
| profile0x0001 | Not checked | | |
| profile0x0001 | true | | ROHC |
| profile0x0002 | Not checked | | |
| profile0x0002 | true | | ROHC |
| profile0x0003 | Not checked | | |
| profile0x0004 | Not checked | | |
| profile0x0006 | Not checked | | |
| profile0x0101 | Not checked | | |
| profile0x0102 | Not checked | | |
| profile0x0103 | Not checked | | |
| profile0x0104 | Not checked | | |
| } | | | |
| maxNumberROHC-ContextSessions | Not checked | | |
| } | | | |
| phyLayerParameters | Not checked | | |
| rf-Parameters | Not checked | | |
| measParameters | Not checked | | |
| featureGroupIndicators | | | |
| -- FGI 1 | Not checked | | |
| -- FGI 2 | Not checked | | |
| -- FGI 3 | Not checked | | |
| -- FGI 4 | Not checked | | |
| -- FGI 5 | Not checked | | |
| -- FGI 6 | Not checked | | |
| -- FGI 7 | Not checked | | |
| -- FGI 8 | Not checked | | |
| -- FGI 9 | Not checked | | |
| -- FGI 10 | Not checked | | |
| -- FGI 11 | Not checked | | |
| -- FGI 12 | Not checked | | |
| -- FGI 13 | Not checked | | |
| -- FGI 14 | Not checked | | |
| -- FGI 15 | Not checked | | |
| -- FGI 16 | Not checked | | |
| -- FGI 17 | Not checked | | |
| -- FGI 18 | Not checked | | |
| -- FGI 19 | Not checked | | |
| -- FGI 20 | Not checked | | |
| -- FGI 21 | Not checked | | |
| -- FGI 22 | Not checked | | |
| -- FGI 23 | Not checked | | |
| -- FGI 24 | Not checked | | |
| -- FGI 25 | Not checked | | |
| -- FGI 26 | Not checked | | |
| -- FGI 27 | Not checked | | |
| -- FGI 28 | Not checked | | |

| | | | |
|--------------------------------------|------------------|--------------|-----------|
| -- FGI 29 | Not checked | | |
| -- FGI 30 | Not checked | | |
| -- FGI 31 | Not checked | | |
| -- FGI 32 | '0'B (Undefined) | | |
| interRAT-Parameters SEQUENCE { | | | |
| utraFDD | Not checked | | |
| utraTDD128 | Not checked | | |
| utraTDD384 | Not checked | | |
| utraTDD768 | Not checked | | |
| geran | Not checked | | |
| cdma2000-HRPD | Not checked | | |
| cdma2000-1xRTT | Not checked | | |
| cdma2000-1xRTT | Not checked | | |
| } | | | |
| nonCriticalExtension SEQUENCE { | | | |
| phyLayerParameters-v920 | Not checked | | |
| interRAT-ParametersGERAN-v920 | Not checked | | |
| interRAT-ParametersUTRA-v920 | Not checked | | |
| interRAT-ParametersCDMA2000-v920 | Not checked | | |
| deviceType-r9 | Not checked | | |
| csg-ProximityIndicationParameters-r9 | Not checked | | |
| neighCellSI-AcquisitionParameters-r9 | Not checked | | |
| son-Parameters-r9 | Not checked | | |
| nonCriticalExtension SEQUENCE { | | | |
| lateNonCriticalExtension SEQUENCE { | | | |
| featureGroupIndRel9Add-r9 | | | |
| -- FGI 33 | Not checked | | |
| -- FGI 34 | Not checked | | |
| -- FGI 35 | Not checked | | |
| -- FGI 36 | Not checked | | |
| -- FGI 37 | Not checked | | |
| -- FGI 38 | Not checked | | |
| -- FGI 39 | Not checked | | |
| -- FGI 40 | Not checked | | |
| -- FGI 41 | Not checked | | |
| -- FGI 42-64 | '0'B (Undefined) | | |
| fdd-Add-UE-EUTRA-Capabilities-r9 | | | |
| SEQUENCE { | | | |
| phyLayerParameters-r9 | Not checked | | |
| featureGroupIndicators-r9 | | BITSTRING 32 | |
| -- FGI 1F | Not checked | | |
| -- FGI 2F | Not checked | | |
| -- FGI 3F | Not checked | | FDD = TDD |
| -- FGI 4F | Not checked | | |
| -- FGI 5F | Not checked | | FDD = TDD |
| -- FGI 6F | Not checked | | FDD = TDD |
| -- FGI 7F | Not checked | | FDD = TDD |
| -- FGI 8F | Not checked | | |
| -- FGI 9F | Not checked | | |
| -- FGI 10F | Not checked | | |
| -- FGI 11F | Not checked | | |
| -- FGI 12F | Not checked | | |
| -- FGI 13F | Not checked | | FDD = TDD |
| -- FGI 14F | Not checked | | FDD = TDD |
| -- FGI 15F | Not checked | | |
| -- FGI 16F | Not checked | | FDD = TDD |
| -- FGI 17F | Not checked | | FDD = TDD |
| -- FGI 18F | Not checked | | FDD = TDD |
| -- FGI 19F | Not checked | | |
| -- FGI 20F | Not checked | | FDD = TDD |
| -- FGI 21F | Not checked | | FDD = TDD |
| -- FGI 22F | Not checked | | |
| -- FGI 23F | Not checked | | |
| -- FGI 24F | Not checked | | |
| -- FGI 25F | Not checked | | FDD = TDD |

| | | | |
|--------------------------------------|-----------------------------|--------------|-----------|
| -- FGI 26F | Not checked | | |
| -- FGI 27F | Not checked | | |
| -- FGI 28F | Not checked | | |
| -- FGI 29F | Not checked | | |
| -- FGI 30F | Not checked | | FDD = TDD |
| -- FGI 31F | Not checked | | FDD = TDD |
| -- FGI 32F | '0'B (Undefined) if present | | |
| featureGroupIndRel9Add-r9 | | BITSTRING 32 | |
| -- FGI 33F | Not checked | | |
| -- FGI 34F | Not checked | | |
| -- FGI 35F | Not checked | | |
| -- FGI 36F | Not checked | | |
| -- FGI 37F | Not checked | | |
| -- FGI 38F | Not checked | | |
| -- FGI 39F | Not checked | | |
| -- FGI 40F | Not checked | | |
| -- FGI 41F | Not checked | | |
| -- FGI 42F-64F | '0'B (Undefined) if present | | |
| interRAT-ParametersGERAN-r9 | Not checked | | |
| interRAT-ParametersUTRA-r9 | Not checked | | |
| interRAT-ParametersGERAN-r9 | Not checked | | |
| interRAT-ParametersCDMA2000-r9 | Not checked | | |
| neighCellSI-AcquisitionParameters-r9 | Not checked | | |
| } | | | |
| tdd-Add-UE-EUTRA-Capabilities-r9 | | | |
| SEQUENCE { | | | |
| phyLayerParameters-r9 | Not checked | | |
| featureGroupIndicators-r9 | | BITSTRING 32 | |
| -- FGI 1T | Not checked | | |
| -- FGI 2T | Not checked | | |
| -- FGI 3T | Not checked | | FDD = TDD |
| -- FGI 4T | Not checked | | |
| -- FGI 5T | Not checked | | FDD = TDD |
| -- FGI 6T | Not checked | | FDD = TDD |
| -- FGI 7T | Not checked | | FDD = TDD |
| -- FGI 8T | Not checked | | |
| -- FGI 9T | Not checked | | |
| -- FGI 10T | Not checked | | |
| -- FGI 11T | Not checked | | |
| -- FGI 12T | Not checked | | |
| -- FGI 13T | Not checked | | FDD = TDD |
| -- FGI 14T | Not checked | | FDD = TDD |
| -- FGI 15T | Not checked | | |
| -- FGI 16T | Not checked | | FDD = TDD |
| -- FGI 17T | Not checked | | FDD = TDD |
| -- FGI 18T | Not checked | | FDD = TDD |
| -- FGI 19T | Not checked | | |
| -- FGI 20T | Not checked | | FDD = TDD |
| -- FGI 21T | Not checked | | FDD = TDD |
| -- FGI 22T | Not checked | | |
| -- FGI 23T | Not checked | | |
| -- FGI 24T | Not checked | | |
| -- FGI 25T | Not checked | | FDD = TDD |
| -- FGI 26T | Not checked | | |
| -- FGI 27T | Not checked | | |
| -- FGI 28T | Not checked | | |
| -- FGI 29T | Not checked | | |
| -- FGI 30T | Not checked | | FDD = TDD |
| -- FGI 31T | Not checked | | FDD = TDD |
| -- FGI 32T | '0'B (Undefined) if present | | |
| featureGroupIndRel9Add-r9 | | BITSTRING 32 | |
| -- FGI 33T | Not checked | | |

| | | | |
|--------------------------------------|-----------------------------|--------------|--|
| -- FGI 34T | Not checked | | |
| -- FGI 35T | Not checked | | |
| -- FGI 36T | Not checked | | |
| -- FGI 37T | Not checked | | |
| -- FGI 38T | Not checked | | |
| -- FGI 39T | Not checked | | |
| -- FGI 40T | Not checked | | |
| -- FGI 41T | Not checked | | |
| -- FGI 42T-64T | '0'B (Undefined) if present | | |
| interRAT-ParametersGERAN-r9 | Not checked | | |
| interRAT-ParametersUTRA-r9 | Not checked | | |
| interRAT-ParametersGERAN-r9 | Not checked | | |
| interRAT-ParametersCDMA2000-r9 | Not checked | | |
| neighCellSI-AcquisitionParameters-r9 | Not checked | | |
| } | | | |
| nonCriticalExtension SEQUENCE { | Not checked | | |
| interRAT-ParametersUTRA-v9c0 | Not checked | | |
| nonCriticalExtension SEQUENCE { | | | |
| phyLayerParameters-v9d0 | Not checked | | |
| nonCriticalExtension SEQUENCE { | | | |
| rf-Parameters-v9e0 | Not checked | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |
| nonCriticalExtension SEQUENCE { | | | |
| ue-Category-v1020 | Not checked | | |
| phyLayerParameters-v1020 | Not checked | | |
| rf-Parameters-v1020 | Not checked | | |
| measParameters-v1020 | Not checked | | |
| featureGroupIndRel10-r10 | | BITSTRING 32 | |
| -- FGI 101 | Not checked | | |
| -- FGI 102 | Not checked | | |
| -- FGI 103 | Not checked | | |
| -- FGI 104 | Not checked | | |
| -- FGI 105 | Not checked | | |
| -- FGI 106 | Not checked | | |
| -- FGI 107 | Not checked | | |
| -- FGI 108 | Not checked | | |
| -- FGI 109 | Not checked | | |
| -- FGI 110 | Not checked | | |
| -- FGI 111 | Not checked | | |
| -- FGI 112 | Not checked | | |
| -- FGI 113 | Not checked | | |
| -- FGI 114 | Not checked | | |
| -- FGI 115 | Not checked | | |
| -- FGI 116 | Not checked | | |
| -- FGI 117-132 | '0'B (Undefined) if present | | |
| interRAT-ParametersCDMA2000-v1020 | Not checked | | |
| ue-BasedNetwPerfMeasParameters-r10 | Not checked | | |
| interRAT-ParametersUTRA-TDD-v1020 | Not checked | | |
| nonCriticalExtension SEQUENCE { | Not checked | | |
| fdd-Add-UE-EUTRA-Capabilities-v1060 | Not checked | | |
| tdd-Add-UE-EUTRA-Capabilities-v1060 | Not checked | | |
| rf-Parameters-v1060 | Not checked | | |
| nonCriticalExtension SEQUENCE { | | | |
| rf-Parameters-v1090 | Not checked | | |
| nonCriticalExtension SEQUENCE { | | | |

| | | | | |
|--------------------|-------------------------------------|-------------|--|--|
| | pdcp-Parameters-v1130 | Not checked | | |
| | phyLayerParameters-v1130 | Not checked | | |
| | rf-Parameters-v1130 | Not checked | | |
| | measParameters-v1130 | Not checked | | |
| v1130 | interRAT-ParametersCDMA2000- | Not checked | | |
| | otherParameters-r11 | Not checked | | |
| v1130 | fdd-Add-UE-EUTRA-Capabilities- | Not checked | | |
| v1130 | tdd-Add-UE-EUTRA-Capabilities- | Not checked | | |
| | nonCriticalExtension SEQUENCE { | Not checked | | |
| | phyLayerParameters-v1170 | Not checked | | |
| | ue-Category-v1170 | Not checked | | |
| | nonCriticalExtension SEQUENCE { | | | |
| | rf-Parameters-v1180 | Not checked | | |
| | mbms-Parameters-r11 | Not checked | | |
| v1180 | fdd-Add-UE-EUTRA-Capabilities- | Not checked | | |
| v1180 | tdd-Add-UE-EUTRA-Capabilities- | Not checked | | |
| | nonCriticalExtension SEQUENCE { | | | |
| | ue-Category-v11a0 | Not checked | | |
| | measParameters-v11a0 | Not checked | | |
| | nonCriticalExtension SEQUENCE { | | | |
| | phyLayerParameters-v1250 | Not checked | | |
| | rf-Parameters-v1250 | Not checked | | |
| | rlc-Parameters-r12 | Not checked | | |
| v1250 | ue-BasedNetwPerfMeasParameters- | Not checked | | |
| | ue-Category-v1250 | Not checked | | |
| | wlan-IW-Parameters-r12 | Not checked | | |
| | measParameters-v1250 | Not checked | | |
| | dc-Parameters-r12 | Not checked | | |
| | mbms-Parameters-v1250 | Not checked | | |
| | mac-Parameters-r12 | Not checked | | |
| | fdd-Add-UE-EUTRA-Capabilities-v1250 | Not checked | | |
| | tdd-Add-UE-EUTRA-Capabilities-v1250 | Not checked | | |
| | sl-Parameters-r12 | Not checked | | |
| | nonCriticalExtension SEQUENCE {} | | | |
| | ue-CategoryDL-v1260 | Not checked | | |
| | nonCriticalExtension { | | | |
| | rf-Parameters-v1270 | Not checked | | |
| | nonCriticalExtension { | | | |
| | phyLayerParameters-v1280 | Not checked | | |
| | nonCriticalExtension { | | | |
| v1280 | phyLayerParameters- | Not checked | | |
| | nonCriticalExtension { | | | |
| | ue-CategoryDL-v1310 | Not checked | | |
| | ue-CategoryUL-v1310 | Not checked | | |
| | pdcp-Parameters-v1310 | Not checked | | |
| | rlc-Parameters-v1310 | Not checked | | |
| | mac-Parameters-v1310 | Not checked | | |
| v1310 | phyLayerParameters- | Not checked | | |
| | rf-Parameters-v1310 | Not checked | | |
| | measParameters-v1310 | Not checked | | |
| | dc-Parameters-v1310 | Not checked | | |
| | sl-Parameters-v1310 | Not checked | | |
| | scptm-Parameters-r13 | Not checked | | |
| | ce-Parameters-r13 | Not checked | | |
| ParametersWLAN-r13 | interRAT- | Not checked | | |
| | laa-Parameters-r13 | Not checked | | |
| | lwa-Parameters-r13 | Not checked | | |

| | | | | |
|-------------------------------------|------------------------|-------------|--|-----------|
| v1310 | wlan-IW-Parameters- | Not checked | | |
| | lwip-Parameters-r13 | Not checked | | |
| Capabilities-v1310 | fdd-Add-UE-EUTRA- | Not checked | | |
| Capabilities-v1310 | tdd-Add-UE-EUTRA- | Not checked | | |
| | nonCriticalExtension { | | | |
| | ce-Parameters-v1320 | Not checked | | |
| | rf-Parameters-v1320 | Not checked | | |
| SEQUENCE { | nonCriticalExtension | Not checked | | |
| SEQUENCE { | nonCriticalExtension | | | Aerial UE |
| SEQUENCE { | nonCriticalExtension | | | |
| SEQUENCE { | nonCriticalExtension | | | |
| SEQUENCE { | nonCriticalExtension | | | |
| nonCriticalExtension SEQUENCE { | | | | |
| nonCriticalExtension SEQUENCE { | | | | |
| nonCriticalExtension SEQUENCE { | | | | |
| nonCriticalExtension SEQUENCE { | | | | |
| nonCriticalExtension SEQUENCE { | | | | |
| nonCriticalExtension SEQUENCE { | | | | |
| nonCriticalExtension SEQUENCE { | | | | |
| Capability-v1530-IEs SEQUENCE { | UE-EUTRA- | | | |
| measParameters-v1530 SEQUENCE { | | | | |
| heightMeas-r15 | | Not checked | | |
| multipleCellsMeasExtension-r15 | | Not checked | | |
| | } | | | |
| phyLayerParameters-v1530 SEQUENCE { | | | | |
| | ul- | Not checked | | |
| PowerControlEnhancements-r15 | | | | |
| | } | | | |
| otherParameters-v1530 SEQUENCE { | | | | |
| flightPathPlan-r15 | | Not checked | | |
| | } | | | |
| nonCriticalExtension SEQUENCE { | | Not checked | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |
| | } | | | |

– *UEInformationRequest*Table 4.6.1-23A: *UEInformationRequest*

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|------------------------------|---------|------------------------|
| Information Element | Value/remark | Comment | Condition |
| UEInformationRequest-r9 ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| ueInformationRequest-r9 SEQUENCE { | | | |
| rach-ReportReq-r9 | FALSE | | |
| rlf-ReportReq-r9 | FALSE | | |
| | TRUE | | RLF report |
| nonCriticalExtension SEQUENCE { | | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE { | Not present | | |
| nonCriticalExtension SEQUENCE { | | | Logged MDT, ConEstFail |
| logMeasReportReq-r10 | true | | Logged MDT |
| | Not present | | |
| nonCriticalExtension SEQUENCE { } | Not present | | |
| nonCriticalExtension SEQUENCE { } | | | |
| connEstFailReportReq-r11 | true | | ConEstFail |
| | Not present | | |
| nonCriticalExtension SEQUENCE { } | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|------------|---|
| Logged MDT | Used for Logged MDT test cases |
| ConEstFail | Used for RRC connection establishment failure report related test cases |
| RLF report | Used for Radio Link Failure Logging test cases |

UEInformationResponse

Table 4.6.1-23B: UEInformationResponse

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UEInformationResponse-r9 ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| ueInformationResponse-r9 SEQUENCE { | | | |
| rach-Report-r9 SEQUENCE {} | Not checked | | |
| rlf-Report-r9 SEQUENCE {} | Not checked | | |
| nonCriticalExtension SEQUENCE { | | | |
| lateNonCriticalExtension | Not checked | | |
| nonCriticalExtension SEQUENCE { | | | |
| logMeasReport-r10 SEQUENCE {} | Not checked | | |
| nonCriticalExtension SEQUENCE { | Not checked | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

ULHandoverPreparationTransfer

Table 4.6.1-24: ULHandoverPreparationTransfer

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ULHandoverPreparationTransfer ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| ulHandoverPreparationTransfer-r8 SEQUENCE { | | | |
| cdma2000-Type | type1XRTT | | |
| meid | Set to the 56 bit CDMA2000 mobile identification number of the UE | | |
| dedicatedInfo | Set according to specific message content | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

ULInformationTransfer

Table 4.6.1-25: *ULInformationTransfer*

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--------------------------------------|----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ULInformationTransfer ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| ulInformationTransfer-r8 SEQUENCE { | | | |
| dedicatedInfoType CHOICE { | | | |
| dedicatedInfoNAS | Present but contents not checked | | |
| } | | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

UEAssistanceInformation

Table 4.6.1-26: *UEAssistanceInformation*

| Derivation Path: 36.331, Clause 6.2.2 | | | |
|--|---------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UEAssistanceInformation-r11 ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| UEAssistanceInformation-r11-IEs SEQUENCE { | | | |
| powerPreferenceIndication-r11 | lowPowerConsumption | | Low_Power |
| powerPreferenceIndication-r11 | normal | | Normal |
| laterNonCriticalExtension | Not Present | | |
| nonCriticalExtension SEQUENCE { | | | V2X |
| sps-AssistanceInformation-r14 SEQUENCE { | | | SL_SPS |
| trafficPatternInfoListSL-r14 SEQUENCE (SIZE (1..maxTrafficPattern-r14)) OF SEQUENCE{ | | | |
| trafficPeriodicity-r14 | Any allowed value | | |
| timingOffset-r14 | Any allowed value - | | |
| priorityInfoSL-r14 | Any allowed value | | |
| logicalChannelIdentityUL-r14 | Any allowed value | | |
| messageSize-r14 | Any allowed value | | |
| } | | | |
| trafficPatternInfoListUL-r14 | Not Present | | |
| } | | | |
| DelayBudgetReport-r14 ::= CHOICE { | | | eVoLTE |
| type1 | ms0 | | DRX_Cycle |
| type2 | ms0 | | Coverage |
| } | | | |
| nonCriticalExtension | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|-----------|--|
| Low_Power | The UE indicates that it prefers a configuration primarily optimised for power saving |
| Normal | The UE indicates that it does not prefer a configuration primarily optimised for power saving |
| V2X | V2X Sidelink Communication |
| SL_SPS | Sidelink SPS configuration |
| eVoLTE | The UE Indicates it prefers adjustment to connected mode DRX or coverage enhancement configuration |
| DRX_Cycle | The UE indicates that it prefers an adjustment in the connected mode DRX cycle length |
| Coverage | The UE indicates that it prefers coverage enhancement configuration change |

– *ULInformationTransferMRDC*

Table 4.6.1-27: ULInformationTransferMRDC

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ULInformationTransferMRDC-r15 ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| ulInformationTransferMRDC-r15 SEQUENCE { | | | |
| ul-DCCH-MessageNR-r15 | OCTET STRING including the MeasurementReport message according TS 38.508-1 [67], table 4.6.1-7. | | |
| lateNonCriticalExtension | Not checked | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

4.6.2 System information blocks

See subclause 4.4.3.3 in this document.

4.6.3 Radio resource control information elements

Table 4.6.3-0A: Void

Table 4.6.3-0B: Void

– *BCCH-Config-DEFAULT*

Table 4.6.3-1: BCCH-Config-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| BCCH-Config-DEFAULT ::= SEQUENCE { | | | |
| modificationPeriodCoeff | n4 | To provide reliable delivery of SI change notifications. | |
| } | | | |

– CellSelectionInfoCE-r13-DEFAULT

Table 4.6.3-1AB: CellSelectionInfoCE-r13-DEFAULT

| Derivation Path: 36.331 clause 6.3.4 | | | |
|--|----------------|---------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| CellSelectionInfoCE-r13 ::= SEQUENCE { | | | |
| q-RxLevMinCE-r13 | -70 (-140 dBm) | For RF/RRM test cases | |
| | -53 (-106 dBm) | For signalling test cases | |
| q-QualMinRSRQ-CE-r13 | Not present | | |
| } | | | |

– CQI-ReportAperiodic-r10-DEFAULT

Table 4.6.3-1A: CQI-ReportAperiodic-r10-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| CQI-ReportAperiodic-r10 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| cqi-ReportModeAperiodic-r10 | rm30 | | |
| | rm20 | | CEmodeA |
| | FFS | | CEmodeB |
| aperiodicCSI-Trigger-r10 | Not present | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------------|
| CEmodeA | CE mode A test environment |
| CEmodeB | CE mode B test environment |

– CQI-ReportConfig-DEFAULT

Table 4.6.3-2: CQI-ReportConfig-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|---|--------------|
| Information Element | Value/remark | Comment | Condition |
| CQI-ReportConfig-DEFAULT ::= SEQUENCE { | | | |
| cqi-ReportModeAperiodic | rm30 | | |
| | rm20 | | CEmodeA |
| | FFS | | CEmodeB |
| nomPDSCH-RS-EPRE-Offset | 0 | | |
| cqi-ReportPeriodic | Not present | | |
| cqi-ReportPeriodic CHOICE { | | | CQI_PERIODIC |
| setup SEQUENCE { | | | |
| cqi-PUCCH-ResourceIndex | 0 | | |
| cqi-pmi-ConfigIndex | 25 | (see Table 7.2.2-1A in TS 36.213) | FDD |
| | 24 | (see Table 7.2.2-1C in TS 36.213) | TDD |
| cqi-FormatIndicatorPeriodic CHOICE { | | | |
| widebandCQI | NULL | | |
| } | | | |
| ri-ConfigIndex | 483 | (see Table 7.2.2-1B in TS 36.213) | FDD |
| | 484 | (see Table 7.2.2-1B in TS 36.213) This value for TDD is selected together with cqi-pmi-ConfigIndex based on TDD configuration 1. | TDD |
| simultaneousAckNackAndCQI | FALSE | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|--------------|---|
| CQI_PERIODIC | When periodic CQI reporting should be enabled |
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| CEmodeA | CE mode A test environment |
| CEmodeB | CE mode B test environment |

– CQI-ReportConfig-r10-DEFAULT

Table 4.6.3-2AA: CQI-ReportConfig-r10-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|---------------------------------|---------|--------------|
| Information Element | Value/remark | Comment | Condition |
| CQI-ReportConfig-r10 ::= SEQUENCE { | | | |
| cqi-ReportAperiodic-r10 | CQI-ReportAperiodic-r10-DEFAULT | | |
| nomPDSCH-RS-EPRE-Offset | 0 | | |
| cqi-ReportPeriodic-r10 | Not present | | |
| | CQI-ReportPeriodic-r10-DEFAULT | | CQI_PERIODIC |
| pmi-RI-Report-r9 | Not present | | |
| csi-SubframePatternConfig-r10 | Not present | | |
| } | | | |

| Condition | Explanation |
|------------------|---|
| CQI_PERIODIC | When periodic CQI reporting should be enabled |

– CQI-ReportConfig-v1130-DEFAULT

Table 4.6.3-2ABA: CQI-ReportConfig-v1130-DEFAULT

| | | | |
|---|--|--|--|
| } | | | |
|---|--|--|--|

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

– CQI-ReportConfig-v1130-eIMTA

Table 4.6.3-2ABB: CQI-ReportConfig-v1130-eIMTA

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| CQI-ReportConfig-v1130-eIMTA ::= SEQUENCE { | | | |
| cqi-ReportPeriodic-v1130 SEQUENCE { | | | |
| simultaneousAckNackAndCQI-Format3-r11 | Not present | | |
| cqi-ReportPeriodicProcExtToReleaseList-r11 | Not present | | |
| cqi-ReportPeriodicProcExtToAddModList-r11 | 1 entry | | |
| SEQUENCE (SIZE (1..maxCQI-ProcExt-r11)) OF SEQUENCE { | | | |
| cqi-ReportPeriodicProcExtId-r11[1] SEQUENCE { | | | |
| cqi-ReportPeriodicProcExtId-r11 | 1 | | |
| cqi-pmi-ConfigIndex-r11 | Not present | | |
| cqi-FormatIndicatorPeriodic-r11 CHOICE { | | | |
| widebandCQI-r11 SEQUENCE { | | | |
| csi-ReportMode-r11 | Not present | | |
| } | | | |
| subbandCQI-r11 SEQUENCE { | | | |
| k | Not present | | |
| periodicityFactor-r11 | Not present | | |
| } | | | |
| } | | | |
| ri-ConfigIndex-r11 | Not present | | |
| csi-ConfigIndex-r11 CHOICE { | | | |
| release | NULL | | |
| setup SEQUENCE { | | | |
| cqi-pmi-ConfigIndex2-r11 | Not present | | |
| ri-ConfigIndex2-r11 | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| cqi-ReportBoth-r11 SEQUENCE { | | | |
| csi-IM-ConfigToReleaseList-r11 | Not present | | |
| csi-IM-ConfigToAddModList-r11 SEQUENCE (SIZE (1..maxCSI-IM-r11)) OF SEQUENCE { | 1 entry | | |
| csi-IM-ConfigId-r11[1] | 1 | | |
| resourceConfig-r11[1] | 2 | | FDD |
| | 2 | | TDD |
| subframeConfig-r11[1] | 1 | | FDD |
| | 3 | | TDD |
| } | | | |
| csi-ProcessToReleaseList-r11 | Not present | | |
| csi-ProcessToAddModList-r11 SEQUENCE (SIZE (1..maxCSI-Proc-r11)) OF SEQUENCE { | 1 entry | | |
| csi-ProcessId-r11[1] | 1 | | |
| csi-RS-ConfigNZPId-r11[1] | 1 | | |
| csi-IM-ConfigId-r11[1] | 1 | | |
| p-C-AndCBSRList-r11[1] SEQUENCE (SIZE (1..2)) OF SEQUENCE { | 1 entry | | |
| p-C-r11[1] | -6 | | |
| codebookSubsetRestriction-r11[1] | 1111111 | | |
| } | | | |
| cqi-ReportBothProc-r11[1] SEQUENCE { | | | |
| ri-Ref-CSI-ProcessId-r11 | 1 | | |
| pmi-RI-Report-r11 | Not present | | |
| } | | | |
| cqi-ReportPeriodicProcId-r11[1] | 1 | | |
| cqi-ReportAperiodicProc-r11[1] SEQUENCE { | | | |
| cqi-ReportModeAperiodic-r11 | Not present | | |
| trigger01-r11 | Not present | | |
| trigger10-r11 | Not present | | |
| trigger11-r11 | Not present | | |
| } | | | |
| alternativeCodebookEnabledFor4TXProc-r12 | Not present | | |
| csi-IM-ConfigIdList-r12[1] CHOICE { | | | |

| | | | |
|--|-------------|--|--|
| Setup SEQUENCE (SIZE (1..2)) OF{ | 1 entry | | |
| CSI-IM-ConfigId-r12[1] | Not present | | |
| } | | | |
| } | | | |
| cqi-ReportAperiodicProc2-r12[1] CHOICE { | | | |
| setup SEQUENCE { | | | |
| cqi-ReportModeAperiodic-r11 | Not present | | |
| trigger01-r11 | Not present | | |
| trigger10-r11 | Not present | | |
| trigger11-r11 | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

– CQI-ReportConfig-v1250-DEFAULT

Table 4.6.3-2ACA: CQI-ReportConfig-v1250-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|---------|--------------|
| Information Element | Value/remark | Comment | Condition |
| CQI-ReportConfig-v1250 | Not present | | DL 256QAM |
| CQI-ReportConfig-v1250 ::= SEQUENCE { | | | |
| csi-SubframePatternConfig-r12 CHOICE { | | | |
| setup SEQUENCE { | | | |
| csi-MeasSubframeSets-r12 | 0001100111 | | |
| } | | | |
| } | | | |
| cqiCQI-ReportBoth-v1250 | Not present | | DL 256QAM |
| cqiCQI-ReportBoth-v1250 SEQUENCE { | | | |
| csi-IM-ConfigToReleaseListExt-r12 | Not present | | |
| csi-IM-ConfigToAddModListExt-r12 SEQUENCE { | 1 entry | | |
| csi-IM-ConfigId-v1250[1] | 1 | | |
| resourceConfig-r12[1] | 2 | | FDD |
| | 2 | | TDD |
| subframeConfig-r12[1] | 1 | | FDD |
| | 3 | | TDD |
| } | | | |
| } | | | |
| cqi-ReportAperiodic-v1250 | Not present | | |
| altCQI-Table-r12 | Not present | | |
| | allSubframes | | DL 256QAM |
| } | | | |

| Condition | Explanation |
|-----------|------------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| TM10 | Transmission mode 10 |
| DL 256QAM | When DL 256QAM is used |

– CQI-ReportConfigSCell-r10-DEFAULT

Table 4.6.3-2AB: CQI-ReportConfigSCell-r10-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------------------------|---------|--------------|
| Information Element | Value/remark | Comment | Condition |
| CQI-ReportConfigSCell-r10 ::= SEQUENCE { | | | |
| cqi-ReportModeAperiodic-r10 | rm30 | | |
| nomPDSCH-RS-EPRE-Offset-r10 | 0 | | |
| cqi-ReportPeriodicSCell-r10 | Not present | | |
| | CQI-ReportPeriodic-r10-DEFAULT | | CQI_PERIODIC |
| pmi-RI-Report-r10 | Not present | | |
| } | | | |

| Condition | Explanation |
|--------------|---|
| CQI_PERIODIC | When periodic CQI reporting should be enabled |

– CQI-ReportPeriodic-r10-DEFAULT

Table 4.6.3-2AC: CQI-ReportPeriodic-r10-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|--------------------------|
| Information Element | Value/remark | Comment | Condition |
| CQI-ReportPeriodic-r10 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| cqi-PUCCH-ResourceIndex-r10 | 0 | | |
| cqi-PUCCH-ResourceIndexP1-r10 | Not present | | |
| cqi-pmi-ConfigIndex | 25 | | FDD |
| | 24 | | TDD |
| cqi-FormatIndicatorPeriodic-r10 CHOICE { | | | |
| widebandCQI-r10 SEQUENCE { | | | |
| csi-ReportMode-r10 | Not present | | |
| } | | | |
| } | | | |
| ri-ConfigIndex | Not present | | SCell_Config |
| | 483 | | FDD and NOT SCell_Config |
| | 484 | | TDD and NOT SCell_Config |
| simultaneousAckNackAndCQI | FALSE | | |
| cqi-Mask-r9 | Not present | | |
| csi-ConfigIndex-r10 | Not present | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|--------------|---|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| SCell_Config | CQI-ReportPeriodic configuration for SCell. |

Table 4.6.3-2AD: Void

Table 4.6.3-2AE: Void

– CSI-RS-ConfigNWP-r11-DEFAULT

Table 4.6.3-2AF: CSI-RS-ConfigNWP-r11-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| CSI-RS-ConfigNWP-r11 ::= SEQUENCE { | | | |
| csi-RS-ConfigNWPId-r11 | 1 | | |
| antennaPortsCount-r11 | an2 | | |
| resourceConfig-r11 | 0 | | FDD |
| | 0 | | TDD |
| subframeConfig-r11 | 1 | | FDD |
| | 3 | | TDD |
| scramblingIdentity-r11 | 0 | | |
| qcl-CRS-Info-r11 SEQUENCE { | | | |
| qcl-ScramblingIdentity-r11 | 0 | | |
| crs-PortsCount-r11 | n2 | | |
| mbsfn-SubframeConfigList-r11 CHOICE { | | | |
| release | NULL | | |
| setup SEQUENCE { | | | |
| subframeConfigList | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

– CSI-RS-ConfigZP-r11-DEFAULT

Table 4.6.3-2AG: CSI-RS-ConfigZP-r11-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| CSI-RS-ConfigZP-r11 ::= SEQUENCE { | | | |
| csi-RS-ConfigZPId-r11 | 1 | | |
| resourceConfigList-r11 | 0010000000000000 | | |
| subframeConfig-r11 | 1 | | FDD |
| | 3 | | TDD |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

– DMRS-Config-r11-DEFAULT

Table 4.6.3-2AH: DMRS-Config-r11-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| DMRS-Config-r11 ::= CHOICE { | | | |
| release | NULL | | |
| setup SEQUENCE { | | | |
| scramblingIdentity-r11 | 0 | | |
| scramblingIdentity2-r11 | 1 | | |
| } | | | |
| } | | | |

– DRB-ToAddModList-RECONFIG

Table 4.6.3-2A: DRB-ToAddModList-RECONFIG

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|----------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| DRB-ToAddModList ::= SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE { | 2 Entries | | |
| eps-BearerIdentity[1] | Not present | | |
| drb-Identity[1] | 1 | | |
| pdcp-Config[1] | Not present | | |
| rlc-Config[1] | RLC-Config-DRB-AM-RECONFIG | | |
| logicalChannelIdentity[1] | Not present | | |
| logicalChannelConfig[1] | Not present | | |
| eps-BearerIdentity[2] | Not present | | |
| drb-Identity[2] | 2 | | |
| pdcp-Config[2] | Not present | | |
| rlc-Config[2] | RLC-Config-DRB-AM-RECONFIG | | |
| logicalChannelIdentity[2] | Not present | | |
| logicalChannelConfig[2] | Not present | | |
| } | | | |

– EPDCCH-Config-r11-DEFAULT

Table 4.6.3-2B: EPDCCH-Config-r11-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|---|---------|--------------------|
| Information Element | Value/remark | Comment | Condition |
| EPDCCH-Config-r11 ::= SEQUENCE{ | | | |
| config-r11{ | | | |
| setup SEQUENCE { | | | |
| subframePatternConfig-r11{ } | Not present | | CEmodeA, CEmodeB |
| subframePatternConfig-r11{ | | | |
| setup SEQUENCE { | | | |
| subframePattern-r11 CHOICE { | | | |
| subframePatternFDD-r10 | 00000000000000000000 00000000000000000000 1111111110 1111111101 1111111011 1111110111 | | FDD FDD AND TM9 |
| subframePatternTDD-r10{ | | | TDD |
| subframeConfig1-5-r10 | 0000000000 0000000000 1100111001 1100111001 | | TM9 |

| | | | |
|--|----------------------|--|---------------------|
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| startSymbol-r11 | Not present | | |
| | 2 | | TM9 |
| setConfigToReleaseList-r11 | Not present | | |
| setConfigToAddModList-r11 SEQUENCE { | 2 entry | | |
| setConfigId-r11[1] | 0 | | |
| transmissionType-r11[1] | distributed | | |
| | localized | | TM10 |
| resourceBlockAssignment-r11[1] SEQUENCE{ | | | |
| numberPRB-Pairs-r11 | n4 | | |
| | n2 | | TM9 |
| | n8 | | TM10 |
| resourceBlockAssignment-r11 | 101001000101101110 | | |
| | 10010011000 | | TM9 |
| | 11100100101110110011 | | TM10 |
| | 001101100 | | |
| } | | | |
| dmrs-ScramblingSequenceInt-r11[1] | 0 | | |
| pucch-ResourceStartOffset-r11[1] | 0 | | |
| re-MappingQCL-ConfigListId-r11[1] | Not present | | |
| | 0 | | TM10 |
| setConfigId-r11[2] | 1 | | |
| transmissionType-r11[2] | distributed | | |
| | localized | | TM9, TM10 |
| resourceBlockAssignment-r11[2] SEQUENCE{ | | | |
| numberPRB-Pairs-r11 | n8 | | |
| resourceBlockAssignment-r11 | 11100100101110110011 | | |
| | 001101100 | | |
| } | | | |
| dmrs-ScramblingSequenceInt-r11[2] | 0 | | |
| pucch-ResourceStartOffset-r11[2] | 0 | | |
| re-MappingQCL-ConfigListId-r11[2] | Not present | | |
| | 0 | | TM10 |
| } | | | |
| setConfigToAddModList-r11 SEQUENCE { | 1 entry | | CEmodeA, CEmodeB |
| setConfigId-r11[1] | 0 | | |
| transmissionType-r11[1] | distributed | | |
| resourceBlockAssignment-r11[1] SEQUENCE{ | | | |
| numberPRB-Pairs-r11 | n2 | | |
| resourceBlockAssignment-r11 | 1110 | | SIG |
| | 0000 | | RF |

| | | | |
|-----------------------------------|-------------|--|--------------------------------|
| } | | | |
| dmrs-ScramblingSequenceInt-r11[1] | 0 | | |
| pucch-ResourceStartOffset-r11[1] | 0 | | |
| re-MappingQCL-ConfigListId-r11[1] | Not present | | |
| numberPRB-Pairs-v1310 CHOICE[1] { | | | |
| Setup | n6 | | |
| } | | | |
| mpdcch-config-r13 CHOICE[1] { | | | |
| setup SEQUENCE { | | | |
| csi-NumRepetitionCE-r13 | sf1 | | |
| mpdcch-pdsch-HoppingConfig-r13 | off | | |
| mpdcch-StartSF-UESS-r13 CHOICE { | | | |
| fdd-r13 | v1 | | FDD |
| tdd-r13 | v1 | | TDD |
| } | | | |
| mpdcch-NumRepetition-r13 | r1 | No repetitions to reduce impact on legacy E-UTRA test cases for category M1 UEs. | |
| mpdcch-Narrowband-r13 | 5 | Narrowband index 4 | RF and 20 MHz BW |
| | 4 | Narrowband index 3 | RF and (15 MHz BW or 5 MHz BW) |
| | 7 | Narrowband index 6 | RF and 10 MHz BW |
| | 2 | Narrowband index 1 | RF and 3 MHz BW |
| | 1 | Narrowband index 0 | RF and 1.4 MHz BW |
| | | Value as specified in TS 36.523-3 clause 7.3.3.9 | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|------------|--|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| TM9 | Transmission mode 9 |
| TM10 | Transmission mode 10 |
| CEmodeA | CE mode A test environment |
| CEmodeB | CE mode B test environment |
| RF | Used for RF, performance and RRM testing |
| SIG | Used for protocol testing |
| 20 MHz BW | Used for cells with 20 MHz bandwidth |
| 15 MHz BW | Used for cells with 15 MHz bandwidth |
| 10 MHz BW | Used for cells with 10 MHz bandwidth |
| 5 MHz BW | Used for cells with 5 MHz bandwidth |
| 3 MHz BW | Used for cells with 3 MHz bandwidth |
| 1.4 MHz BW | Used for cells with 1.4 MHz bandwidth |

– EPDCCH-Config-r11-eIMTA

Table 4.6.3-2C: EPDCCH-Config-r11-eIMTA

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| EPDCCH-Config-r11-eIMTA ::= SEQUENCE{ | | | |
| config-r11{ | | | |
| setup SEQUENCE { | | | |
| subframePatternConfig-r11{ | | | |
| setup SEQUENCE { | | | |
| subframePattern-r11 CHOICE { | | | |
| subframePatternFDD-r10 | 00000000000000000000000000000000 | | FDD |
| | 1111111110 1111111101 | | FDD, TM9 |
| | 1111111011 1111110111 | | |
| subframePatternTDD-r10{ | | | TDD |
| subframeConfig1-5-r10 | 0000000000 0000000000 | | |
| | 1100111001 1100111001 | | TM9 |
| } | | | |
| } | | | |
| } | | | |
| startSymbol-r11 | Not present | | |
| | 2 | | TM9 |
| setConfigToReleaseList-r11 | Not present | | |
| setConfigToAddModList-r11 SEQUENCE { | 2 entry | | |
| setConfigId-r11[1] | 0 | | |
| transmissionType-r11[1] | distributed | | |
| | localized | | TM10 |
| resourceBlockAssignment-r11[1] SEQUENCE{ | | | |
| numberPRB-Pairs-r11 | n4 | | |
| | n2 | | TM9 |
| | n8 | | TM10 |
| resourceBlockAssignment-r11 | 101001000101101110 | | |
| | 10010011000 | | TM9 |
| | 11100100101110110011 | | TM10 |
| | 001101100 | | |
| } | | | |
| dmrs-ScramblingSequenceInt-r11[1] | 0 | | |
| pucch-ResourceStartOffset-r11[1] | 0 | | |
| re-MappingQCL-ConfigListId-r11[1] | Not present | | |
| | 0 | | TM10 |
| csi-RS-ConfigZPId2-r12[1] | Not present | | |
| csi-RS-ConfigZPId2-r12[1] CHOICE { | | | |
| Setup { | | | |
| CSI-RS-ConfigZPId-r11[1] | 1 | | TM10 |
| } | | | |
| } | | | |
| setConfigId-r11[2] | 1 | | |
| transmissionType-r11[2] | distributed | | |
| | localized | | TM9, TM10 |
| resourceBlockAssignment-r11[2] SEQUENCE{ | | | |
| numberPRB-Pairs-r11 | n8 | | |
| resourceBlockAssignment-r11 | 11100100101110110011 | | |
| | 001101100 | | |
| } | | | |
| dmrs-ScramblingSequenceInt-r11[2] | 0 | | |
| pucch-ResourceStartOffset-r11[2] | 0 | | |
| re-MappingQCL-ConfigListId-r11[2] | Not present | | |
| | 0 | | TM10 |
| csi-RS-ConfigZPId2-r12[2] | Not present | | |
| csi-RS-ConfigZPId2-r12[2] CHOICE { | | | |
| Setup { | | | |
| CSI-RS-ConfigZPId-r11[2] | 1 | | TM10 |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| | | |
|---|--|--|
| } | | |
|---|--|--|

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| TM9 | Transmission mode 9 |
| TM10 | Transmission mode 10 |

– FreqHoppingParameters-r13-DEFAULT

Table 4.6.3-2D: FreqHoppingParameters-r13-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| FreqHoppingParameters-r13-DEFAULT::= SEQUENCE { | | | |
| mpdcch-pdsch-HoppingNB-r13 | Not present | | |
| interval-DLHoppingConfigCommonModeA-r13 CHOICE { | Not present | | |
| interval-DLHoppingConfigCommonModeB-r13 CHOICE { | Not present | | |
| interval-ULHoppingConfigCommonModeA-r13 CHOICE { | | | |
| interval-FDD-r13 | int4 | | FDD |
| interval-TDD-r13 | int5 | | TDD |
| } | | | |
| interval-ULHoppingConfigCommonModeB-r13 CHOICE { | | | |
| interval-FDD-r13 | int16 | | FDD |
| interval-TDD-r13 | int20 | | TDD |
| } | | | |
| mpdcch-pdsch-HoppingOffset-r13 | Not present | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

– HighSpeedConfig-r14-DEFAULT

Table 4.6.3-2E: HighSpeedConfig-r14-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| HighSpeedConfig-r14-DEFAULT::= SEQUENCE { | | | |
| highSpeedEnhancedMeasFlag-r14 | true | | |
| highSpeedEnhancedDemodulationFlag-r14 | true | | |
| } | | | |

– HighSpeedConfigSCell-r14-DEFAULT

Table 4.6.3-2F: HighSpeedConfigSCell-r14-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| HighSpeedConfig-r14-DEFAULT ::= SEQUENCE { | | | |
| highSpeedEnhancedDemodulationFlag-r14 | true | | |
| } | | | |

– PCCH-Config-DEFAULT

Table 4.6.3-3: PCCH-Config-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|--------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PCCH-Config-DEFAULT ::= SEQUENCE { | | | |
| defaultPagingCycle | rf128 | Typical value in real network. | |
| nB | oneT | | |
| } | | | |

– PCCH-Config-v1310-DEFAULT

Table 4.6.3-3A: PCCH-Config-v1310-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| PCCH-Config-v1310DEFAULT ::= SEQUENCE { | | | |
| paging-narrowBands-r13 | 1 | | |
| mpdcch-NumRepetition-Paging-r13 | r16 | | |
| nB-v1310 | Not present | Not present means that nB value in PDCCH-Config applies. | |
| } | | | |

| Condition | Explanation |
|-----------|--|
| RF | Used for RF, performance and RRM testing |
| SIG | Used for protocol testing |

– PHICH-Config-DEFAULT

Table 4.6.3-4: PHICH-Config-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| PHICH-Config-DEFAULT ::= SEQUENCE { | | | |
| phich-Duration | normal | | |
| phich-Resource | one | Ng=1 has been selected to ensure enough PHICH resources from the real network point of view. | |
| } | | | |

– PDSCH-ConfigCommon-DEFAULT

Table 4.6.3-5: PDSCH-ConfigCommon-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|-----------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PDSCH-ConfigCommon-DEFAULT ::= SEQUENCE { referenceSignalPower | 18 (dBm) | | |
| p-b | 0 ($\rho_B / \rho_A = 1$) | | 1TX |
| | 1 ($\rho_B / \rho_A = 1$) | | 2TX, 4TX |
| } | | | |

| Condition | Explanation |
|-----------|-----------------------------|
| 1TX | 1 SS Tx antenna environment |
| 2TX | 2 SS Tx antenna environment |
| 4TX | 4 SS Tx antenna environment |

– PDSCH-ConfigCommon-v1310-DEFAULT

Table 4.6.3-5A: PDSCH-ConfigCommon-v1310-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------------|-----------------|
| Information Element | Value/remark | Comment | Condition |
| PDSCH-ConfigCommon-v1310-DEFAULT ::= SEQUENCE { pdsch-maxNumRepetitionCEmodeA-r13 | r16 | Minimum value | CEmodeA AND SIG |
| | [r32] | Maximum value | CEmodeA AND RF |
| pdsch-maxNumRepetitionCEmodeB-r13 | r192 | Minimum value | CEmodeB AND SIG |
| | [2048] | Maximum value | CEmodeB AND RF |
| } | | | |

| Condition | Explanation |
|-----------|--|
| CEmodeA | CE mode A test environment |
| CEmodeB | CE mode B test environment |
| RF | Value used for RF, performance and RRM testing |
| SIG | Value used for protocol testing |

– PDSCH-ConfigDedicated-DEFAULT

Table 4.6.3-6: PDSCH-ConfigDedicated-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| PDSCH-ConfigDedicated-DEFAULT ::= SEQUENCE { p-a | dB-3 for signalling test cases; dB0 for others | dB-3 for signalling test cases to reduce interference from PDSCH of intra-frequency neighbour cells | 1TX |
| | dB-3 | | 2TX, 4TX |
| } | | | |

– PDSCH-ConfigDedicated-v1130-DEFAULT

Table 4.6.3-6AA: PDSCH-ConfigDedicated-v1130-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|-------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PDSCH-ConfigDedicated-v1130 ::= SEQUENCE { | | | |
| dmrs-ConfigPDSCH-r11 | DMRS-Config-r11-DEFAULT | | |
| qcl-Operation | typeB | | |
| re-MappingQCLConfigToReleaseList-r11 | Not present | | |
| re-MappingQCLConfigToAddModList-r11 | 1 entry | | |
| SEQUENCE (SIZE (1..maxRE-MapQCL-r11)) OF SEQUENCE { | | | |
| pdsch-RE-MappingQCL-ConfigId-r11[1] | 1 | | |
| optionalSetOfFields-r11[1] SEQUENCE { | 0 | | TM10 |
| crs-PortsCount-r11 | Not present | | |
| crs-FreqShift-r11 | Not present | | |
| mbsfn-SubframeConfigList-r11{ | | | |
| setup SEQUENCE { | | | |
| subframeConfigList | Not present | | |
| } | | | |
| } | | | |
| pdsch-Start-r11 | Not present | | |
| } | 2 | | TM10 |
| csi-RS-ConfigZPId-r11[1] | 1 | | |
| qcl-CSI-RS-ConfigNZPId-r11[1] | 1 | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| TM10 | Transmission mode 10 |

– PhysicalConfigDedicatedSCell-r10-DEFAULT

Table 4.6.3-6A: PhysicalConfigDedicatedSCell-r10-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--|---------|--------------|
| Information Element | Value/remark | Comment | Condition |
| PhysicalConfigDedicatedSCell-r10-DEFAULT ::= SEQUENCE { | | | |
| nonUL-Configuration-r10 SEQUENCE { | | | |
| antennaInfo-r10 SEQUENCE { | | | |
| transmissionMode-r10 | tm1 | | 1TX |
| | tm2 | | 2TX |
| codebookSubsetRestriction-r10 | Not present | | |
| ue-TransmitAntennaSelection | release | | |
| } | | | |
| crossCarrierSchedulingConfig-r10 | Not present | | |
| csi-RS-Config-r10 | Not present | | |
| pdsch-ConfigDedicated-r10 | PDSCH-ConfigDedicated-DEFAULT | | |
| } | | | |
| ul-Configuration-r10 | Not present | | |
| ul-Configuration-r10 SEQUENCE { | | | UL CA |
| antennaInfoUL-r10 | Not present | | |
| pusch-ConfigDedicatedSCell-r10 | Not present | | |
| uplinkPowerControlDedicatedSCell-r10 | UplinkPowerControlDedicatedSCell-r10-DEFAULT | | |
| cqi-ReportConfigSCell-r10 | CQI-ReportConfigSCell-r10-DEFAULT | | |
| soundingRS-UL-ConfigDedicated-r10 | Not present | | |
| soundingRS-UL-ConfigDedicated-v1020 | Not present | | |
| soundingRS-UL-ConfigDedicatedAperiodic-r10 | Not present | | |
| } | | | |
| cqi-ReportConfigSCell-v1250 | Not present | | |
| | CQI-ReportConfig-v1250-DEFAULT | | DL 256QAM |
| pucch-Cell-r13 | Not present | | |
| | true | | PUCCH-SCell1 |
| pucch-SCell | Not present | | |
| pucch-SCell CHOICE { | | | PUCCH-SCell |
| setup SEQUENCE { | | | |
| pucch-ConfigDedicated-r13 | PUCCH-ConfigDedicated-r13-DEFAULT | | |
| schedulingRequestConfig-r13 | SchedulingRequestConfigSCell-r13-DEFAULT | | |
| tpc-PDCCH-ConfigPUCCH-SCell-r13 | TPC-PDCCH-ConfigSCell-r13-DEFAULT | | |
| pusch-ConfigDedicated-r13 | Not present | | |
| uplinkPowerControlDedicated-r13 | UplinkPowerControlDedicatedSCell-v1310-DEFAULT | | |
| } | | | |
| } | | | |
| crossCarrierSchedulingConfig-r13 | Not present | | |
| pdcch-ConfigSCell-r13 | Not present | | |
| cqi-ReportConfig-v1310 | Not present | | |
| pdsch-ConfigDedicated-v1310 | Not present | | |
| soundingRS-UL-ConfigDedicated-v1310 | Not present | | |
| soundingRS-UL-ConfigDedicatedUpPTsExt-r13 | Not present | | |
| soundingRS-UL-ConfigDedicatedAperiodic-v1310 | Not present | | |
| soundingRS-UL-ConfigDedicatedAperiodicUpPTsExt-r13 | Not present | | |
| csi-RS-Config-v1310 | Not present | | |
| Laa-ScellConfiguration-r13 | Not present | | |
| Laa-ScellConfiguration-r13 SEQUENCE { | | | LAA |
| subframeStartPosition | 's0' | | |

| | | | |
|--|--|--|---------------|
| Laa-SCellSubframeConfig | '00000000' | | |
| } | | | |
| csi-RS-ConfigNZPTToAddModListExt-r13 | Not present | | |
| csi-RS-ConfigNZPTToReleaseListExt-r13 | Not present | | |
| laa-SCellConfiguration-v1430 SEQUENCE { | | | eLAA |
| pdcch-ConfigLAA-r14 SEQUENCE { | | | |
| maxNumberOfSchedSubframes-Format0B-r14 | sf4 | | |
| maxNumberOfSchedSubframes-Format4B-r14 | sf4 | | |
| } | | | |
| } | | | |
| typeB-SRS-TPC-PDCCH-Config-r14 | SRS-TPC-PDCCH-Config-r14-DEFAULT condition SETUP | | SRS-Switching |
| uplinkPUSCH-LessPowerControlDedicated-v14xy SEQUENCE { | | | SRS-Switching |
| p0-UE-PeriodicSRS | 0 | | |
| p0-UE-AperiodicSRS | 0 | | |
| accumulationEnabled | true | | |
| } | | | |
| soundingRS-UL-PeriodicConfigDedicatedList-r14 SEQUENCE (SIZE (1..2)) OF SEQUENCE { | | | SRS-Switching |
| soundingRS-UL-ConfigDedicated | SoundingRS-UL-ConfigDedicated-DEFAULT | | |
| } | | | |
| soundingRS-UL-PeriodicConfigDedicatedUpPTsExtList-r14 | Not Present | | |
| soundingRS-UL-AperiodicConfigDedicatedList-r14 | Not Present | | |
| soundingRS-UL-ConfigDedicatedApUpPTsExtList-r14 | Not Present | | |
| uplinkPowerControlDedicatedSCell-v1530 | Not present | | |
| } | | | |

| Condition | Explanation |
|---------------|--|
| UL CA | When UL Carrier Aggregation is used |
| 1TX | 1 SS Tx antenna environment |
| 2TX | 2 SS Tx antenna environment |
| DL 256QAM | When DL 256QAM is used |
| LAA | For LAA test cases |
| SRS-Switching | SRS transmission is switched to a PUSCH-less TDD SCell |
| PUCCH-SCell1 | When PUCCH feedback of this SCell is sent on the PUCCH SCell |
| PUCCH-SCell | When this SCell is configured as PUCCH SCell |
| eLAA | When this SCell is configured as uplink LAA SCell |
| Aerial UE | For Aerial vehicles |

PhysicalConfigDedicatedSCell-r10-eIMTA

Table 4.6.3-6B: PhysicalConfigDedicatedSCell-r10-eIMTA

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PhysicalConfigDedicatedSCell-r10-eIMTA ::= SEQUENCE { | | | |
| nonUL-Configuration-r10 SEQUENCE { | | | |
| antennaInfo-r10 SEQUENCE { | | | |
| transmissionMode-r10 | tm1 | | 1TX |
| | tm2 | | 2TX |
| codebookSubsetRestriction-r10 | Not present | | |
| ue-TransmitAntennaSelection | release | | |
| } | | | |
| crossCarrierSchedulingConfig-r10 | Not present | | |
| csi-RS-Config-r10 | Not present | | |
| pdsch-ConfigDedicated-r10 | PDSCH-ConfigDedicated-DEFAULT | | |
| } | | | |
| ul-Configuration-r10 | Not present | | |
| ul-Configuration-r10 SEQUENCE { | | | UL CA |
| antennaInfoUL-r10 | Not present | | |
| pusch-ConfigDedicatedSCell-r10 | Not present | | |
| uplinkPowerControlDedicatedSCell-r10 | UplinkPowerControlDedicatedSCell-r10-DEFAULT | | |
| cqi-ReportConfigSCell-r10 | CQI-ReportConfigSCell-r10-DEFAULT | | |
| soundingRS-UL-ConfigDedicated-r10 | Not present | | |
| soundingRS-UL-ConfigDedicated-v1020 | Not present | | |
| soundingRS-UL-ConfigDedicatedAperiodic-r10 | Not present | | |
| } | | | |
| antennaInfo-v1250 | Not present | | eIMTA |
| eimta-MainConfigSCell-r12 | EIMTA-MainConfigServCell-r12-DEFAULT | | eIMTA |
| | Not present | | |
| cqi-ReportConfigSCell-v1250 | CQI-ReportConfig-v1250-DEFAULT | | eIMTA |
| | Not present | | |
| uplinkPowerControlDedicatedSCell-v1250 | UplinkPowerControlDedicated-v1250-DEFAULT | | eIMTA |
| | Not present | | |
| csi-RS-Config-v1250 | Not present | | eIMTA |
| } | | | |

| Condition | Explanation |
|-----------|--------------------------------------|
| UL CA | When UL Carrier Aggregation is used. |
| 1TX | 1 SS Tx antenna environment |
| 2TX | 2 SS Tx antenna environment |
| eIMTA | eIMTA cell environment |

PRACH-Config-DEFAULT

Table 4.6.3-7: PRACH-Config-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| PRACH-Config-DEFAULT ::= SEQUENCE { | | | |
| rootSequenceIndex | See clause 4.4.2, Table 4.4.2-1A and clause 6.3.2.2 Table 6.3.2.2-2 | See table 5.7.2-4 in TS 36.211 for PRACH format 0-3 | FDD |
| | See clause 4.4.2, Table 4.4.2-1A and clause 6.3.2.2 Table 6.3.2.2-2 | See table 5.7.2-5 in TS 36.211 for PRACH format 4 | TDD |
| prach-ConfigInfo SEQUENCE { | | | |
| prach-ConfigIndex | 3 | Typical value in real network for FDD (see table 5.7.1-1 and 5.7.1-2 in TS 36.211) | FDD |
| | 51 | Typical value in real network for TDD (see table 5.7.1-3 and 5.7.1-4 in TS 36.211) | TDD |
| highSpeedFlag | FALSE (Unrestricted set) | High speed train configuration doesn't apply by default. | |
| zeroCorrelationZoneConfig | 5 (N _{cs} configuration = 5) | Assuming cell radius is up to approximately 3 km. | FDD |
| | 4 (N _{cs} configuration = 4) | Assuming cell radius is up to approximately 1 km. | TDD |
| prach-FreqOffset | See subclause 4.6.8 | Channel-bandwidth-dependent parameter | |
| } | | | |
| } | | | |
| Note: Although PRACH format 0-3 is applicable for both FDD and TDD, the PRACH format 4 is used as default for testing for TDD. | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

- PRACH-Config-v1310-DEFAULT

Table 4.6.3-7A: PRACH-Config-v1310-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--|--|--------------------------|
| Information Element | Value/remark | Comment | Condition |
| PRACH-Config-v1310-DEFAULT ::= SEQUENCE { | | | |
| rsrp-ThresholdsPrachInfoList-r13 SEQUENCE (SIZE(1..3)) OF { | Not present | | |
| rsrp-ThresholdsPrachInfoList-r13 SEQUENCE (SIZE(1..3)) OF { | 1 entry | Threshold values to determine the CE level for PRACH | CEmodeA |
| RSRP-Range[1] | 42 | -99dBm | |
| } | | | |
| mpdcch-startSF-CSS-RA-r13 CHOICE { | | | |
| fdd-r13 | v1 | | FDD |
| tdd-r13 | v1 | ENUMERATED { v1, v2, v4, v5, v8, v10, v20, spare } | TDD |
| } | | | |
| prach-HoppingOffset-r13 | Not present | | |
| prach-ParametersListCE-r13 SEQUENCE (SIZE(1..maxCE-Level-r13)) OF SEQUENCE { | 2 entries | 1: CE level 0 2: CE level 1 | CEmodeA |
| PRACH-ParametersCE-r13[1] SEQUENCE { | | | |
| prach-ConfigIndex-r13[1] | 3 | | RF |
| | 4 | | SIG_FDD OR RRM_FDD |
| | 53 | | SIG_TDD OR RRM_TDD |
| prach-FreqOffset-r13[1] | See subclause 4.6.8 | Same as prach-FrequencyOffset | |
| prach-StartingSubframe-r13[1] | sf2 | | |
| maxNumPreambleAttemptCE-r13[1] | n5 | | |
| numRepetitionPerPreambleAttempt-r13[1] | n1 | | |
| mpdcch-NarrowbandsToMonitor-r13 SEQUENCE (SIZE(1..2)) OF INTEGER (1..maxAvailNarrowBands-r13)[1] { | 1 entry | | |
| mpdcch-NarrowbandsToMonitor-r13[1] | 1 | | RF OR RRM |
| | Value as specified in TS 36.523-3 clause 7.3.3.9 | | SIG |
| } | | | |
| mpdcch-NumRepetition-RA-r13[1] | r1 | | |
| prach-HoppingConfig-r13[1] | off | | |
| } | | | |
| PRACH-ParametersCE-r13[2] SEQUENCE { | | | |
| prach-ConfigIndex-r13[2] | 3 | | RF |
| | 4 | | SIG_FDD OR RRM_FDD |
| | 53 | | SIG_TDD OR RRM_TDD |
| prach-FreqOffset-r13[2] | See subclause 4.6.8 | | |
| prach-StartingSubframe-r13[2] | sf128 | | |
| maxNumPreambleAttemptCE-r13[2] | n5 | | |
| numRepetitionPerPreambleAttempt-r13[2] | n128 | | |
| mpdcch-NarrowbandsToMonitor-r13 SEQUENCE (SIZE(1..2)) OF INTEGER (1..maxAvailNarrowBands-r13)[2] { | 1 entry | | |
| mpdcch-NarrowbandsToMonitor-r13[1] | 1 | | RF OR RRM |
| | Value as specified in TS 36.523-3 clause 7.3.3.9 | | SIG |
| } | | | |
| mpdcch-NumRepetition-RA-r13[2] | r4 | | |
| prach-HoppingConfig-r13[2] | off | | |
| } | | | |
| } | | | |

| | | | |
|----------------------|---|--|--|
| initial-CE-level-r13 | 0 | | |
| } | | | |

| Condition | Explanation |
|-----------|---|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| RF | Used for RF, performance and RRM testing |
| RRM | Used for RRM testing |
| RRM_FDD | Used for RRM testing in FDD cell environment |
| RRM_TDD | Used for RRM testing in TDD cell environment |
| SIG | Used for protocol testing |
| SIG_FDD | Used for protocol testing in FDD cell environment |
| SIG_TDD | Used for protocol testing in TDD cell environment |
| CEmodeA | Used for CE mode A testing |

– PRACH-Config-v1430-DEFAULT

Table 4.6.3-7B: PRACH-Config-v1430-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| PRACH-Config-v1430-DEFAULT ::= SEQUENCE { rootSequenceIndexHighSpeed-r14 | See clause 4.4.2, Table 4.4.2-1A and clause 6.3.2.2 Table 6.3.2.2-2 | See table 5.7.2-4 in TS 36.211 for PRACH format 0-3 | FDD |
| | See clause 4.4.2, Table 4.4.2-1A and clause 6.3.2.2 Table 6.3.2.2-2 | See table 5.7.2-4 in TS 36.211 for PRACH format 0-3 | TDD |
| prach-ConfigIndexHighSpeed-r14 | 3 | Typical value in real network for FDD (see table 5.7.1-1 and 5.7.1-2 in TS 36.211) | FDD |
| | 33 | Typical value in real network for TDD (see table 5.7.1-3 and 5.7.1-4 in TS 36.211) | TDD |
| zeroCorrelationZoneConfigHighSpeed-r14 | 11 (N_{CS} configuration = 118) | Restricted set type B is used | FDD |
| | 11 (N_{CS} configuration = 118) | Restricted set type B is used | TDD |
| prach-FreqOffsetHighSpeed-r14 | See subclause 4.6.8 | Channel-bandwidth-dependent parameter | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

- PRACH-ConfigSIB-DEFAULT

Table 4.6.3-7a: PRACH-ConfigSIB-DEFAULT

| |
|---|
| Derivation Path: 36.508 clause 4.6.3 Table 4.6.3-7 PRACH-Config-DEFAULT |
|---|

- PRACH-ConfigSIB-v1310-DEFAULT

Table 4.6.3-7b: PRACH-ConfigSIB-v1310-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|---------------------|--|--|
| Information Element | Value/remark | Comment | Condition |
| PRACH-ConfigSIB-v1310-DEFAULT ::= SEQUENCE { | | | |
| rsrp-ThresholdsPrachInfoList-r13 SEQUENCE (SIZE(1..3)) OF { | 1 entry | Threshold values to determine the CE level 1 for PRACH. RSRP-Range values according to mapping table in TS 36.133 Table 9.1.14.3.3-1. | CEmodeA PRACH_2CE |
| RSRP-Range[1] | 40 | -101dBm | |
| } | | | |
| rsrp-ThresholdsPrachInfoList-r13 SEQUENCE (SIZE(1..3)) OF { | 2 entries | Threshold values to determine the CE level 1, 2 and 3 for PRACH. RSRP-Range values according to mapping table in TS 36.133 Table 9.1.14.3.3-1. | CEmodeB PRACH_3CE |
| RSRP-Range[1] | 42 | -99 dBm | |
| RSRP-Range[2] | 34 | -107 dBm | |
| } | | | |
| rsrp-ThresholdsPrachInfoList-r13 SEQUENCE (SIZE(1..3)) OF { | 3 entries | Threshold values to determine the CE level 1, 2 and 3 for PRACH. RSRP-Range values according to mapping table in TS 36.133 Table 9.1.14.3.3-1. | CEmodeB PRACH_4CE |
| RSRP-Range[1] | 49 | -92 dBm | |
| RSRP-Range[2] | 42 | -99 dBm | |
| RSRP-Range[3] | 34 | -107 dBm | |
| } | | | |
| mpdcch-startSF-CSS-RA-r13 CHOICE { | | | |
| fdd-r13 | v1 | | FDD |
| tdd-r13 | v2 | | TDD |
| } | | | |
| prach-HoppingOffset-r13 | Not present | | |
| prach-ParametersListCE-r13 SEQUENCE (SIZE(1..maxCE-Level-r13)) OF SEQUENCE { | 2 entries | 1: CE level 0 2: CE level 1 | CEmodeA PRACH_2CE |
| prach-ConfigIndex-r13[1] | 3 4 53 | | RF SIG_FDD OR RRM_FDD SIG_TDD OR RRM_TDD |
| prach-FreqOffset-r13[1] | See subclause 4.6.8 | Same as prach-FrequencyOffset | |
| prach-StartingSubframe-r13[1] | sf2 | | |
| maxNumPreambleAttemptCE-r13[1] | n5 | | |
| numRepetitionPerPreambleAttempt-r13[1] | n1 | | |
| mpdcch-NarrowbandsToMonitor-r13 SEQUENCE (SIZE(1..2)) OF INTEGER (1..maxAvailNarrowBands-r13)[1] | 1 entry | | |

| | | | |
|--|--|---|--------------------------|
| mpdcch-NarrowbandsToMonitor-r13[1] | 1 | | RF |
| | Value as specified in TS 36.523-3 clause 7.3.3.9 | | SIG |
| mpdcch-NumRepetition-RA-r13[1] | r1 | | |
| prach-HoppingConfig-r13[1] | off | | |
| prach-ConfigIndex-r13[2] | 3 | | RF |
| | 4 | | SIG_FDD OR RRM_FDD |
| | 53 | | SIG_TDD OR RRM_TDD |
| prach-FreqOffset-r13[2] | See subclause 4.6.8 | | |
| prach-StartingSubframe-r13[2] | sf128 | | |
| maxNumPreambleAttemptCE-r13[2] | n5 | | |
| numRepetitionPerPreambleAttempt-r13[2] | n128 | | |
| mpdcch-NarrowbandsToMonitor-r13 SEQUENCE (SIZE(1..2)) OF INTEGER (1..maxAvailNarrowBands-r13)[2] | 1 entry | | |
| mpdcch-NarrowbandsToMonitor-r13[1] | 1 | | RF |
| | Value as specified in TS 36.523-3 clause 7.3.3.9 | | SIG |
| mpdcch-NumRepetition-RA-r13[2] | r4 | | |
| prach-HoppingConfig-r13[2] | off | | |
| } | | | |
| prach-ParametersListCE-r13 SEQUENCE (SIZE(1..maxCE-Level-r13)) OF SEQUENCE { | 3 entries | 1: CE level 0 2: CE level 1 3: CE level 2 | PRACH_3C E |
| prach-ConfigIndex-r13[1] | 3 | | RF |
| | 4 | | SIG_FDD OR RRM_FDD |
| | 53 | | SIG_TDD OR RRM_TDD |
| prach-FreqOffset-r13[1] | See subclause 4.6.8 | | |
| prach-StartingSubframe-r13[1] | sf2 | | |
| maxNumPreambleAttemptCE-r13[1] | n5 | | |
| numRepetitionPerPreambleAttempt-r13[1] | n1 | | |
| mpdcch-NarrowbandsToMonitor-r13 SEQUENCE (SIZE(1..2)) OF INTEGER (1..maxAvailNarrowBands-r13)[1] | 1 entry | | |
| mpdcch-NarrowbandsToMonitor-r13[1] | 1 | | RF |
| | Value as specified in TS 36.523-3 clause 7.3.3.9 | | SIG |
| mpdcch-NumRepetition-RA-r13[1] | r1 | | |
| prach-HoppingConfig-r13[1] | Off | | |
| prach-ConfigIndex-r13[2] | 3 | | RF |
| | 4 | | SIG_FDD OR RRM_FDD |
| | 53 | | SIG_TDD OR RRM_TDD |
| prach-FreqOffset-r13[2] | See subclause 4.6.8 | | |
| prach-StartingSubframe-r13[2] | Sf64 | | |
| maxNumPreambleAttemptCE-r13[2] | n5 | | |
| numRepetitionPerPreambleAttempt-r13[2] | n64 | | |
| mpdcch-NarrowbandsToMonitor-r13 SEQUENCE (SIZE(1..2)) OF INTEGER (1..maxAvailNarrowBands-r13)[2] | 1 entry | | |
| mpdcch-NarrowbandsToMonitor-r13[1] | 1 | | RF |
| | Value as specified in TS 36.523-3 clause 7.3.3.9 | | SIG |
| mpdcch-NumRepetition-RA-r13[2] | r16 | | |
| prach-HoppingConfig-r13[2] | Off | | |

| | | | |
|--|--|--|--------------------------|
| prach-ConfigIndex-r13[3] | 3 | | RF |
| | 4 | | SIG_FDD OR RRM_FDD |
| | 53 | | SIG_TDD OR RRM_TDD |
| prach-FreqOffset-r13[3] | See subclause 4.6.8 | | |
| prach-StartingSubframe-r13[3] | sf128 | | |
| maxNumPreambleAttemptCE-r13[3] | n5 | | |
| numRepetitionPerPreambleAttempt-r13[3] | n128 | | |
| mpdcch-NarrowbandsToMonitor-r13 SEQUENCE (SIZE(1..2)) OF INTEGER (1..maxAvailNarrowBands-r13)[3] | 1 entry | | |
| mpdcch-NarrowbandsToMonitor-r13[1] | 1 | | RF |
| | Value as specified in TS 36.523-3 clause 7.3.3.9 | | SIG |
| mpdcch-NumRepetition-RA-r13[3] | r64 | | |
| prach-HoppingConfig-r13[3] | Off | | |
| } | | | |
| prach-ParametersListCE-r13 SEQUENCE (SIZE(1..maxCE-Level-r13)) OF SEQUENCE { | 4 entries | 1: CE level 0 2: CE level 1 3: CE level 2 4: CE level 3 | CEmodeB PRACH_4C E |
| prach-ConfigIndex-r13[1] | 3 | | RF |
| | 4 | | SIG_FDD OR RRM_FDD |
| | 53 | | SIG_TDD OR RRM_TDD |
| prach-FreqOffset-r13[1] | See subclause 4.6.8 | | |
| prach-StartingSubframe-r13[1] | sf2 | | |
| maxNumPreambleAttemptCE-r13[1] | n5 | | |
| numRepetitionPerPreambleAttempt-r13[1] | n1 | | |
| mpdcch-NarrowbandsToMonitor-r13 SEQUENCE (SIZE(1..2)) OF INTEGER (1..maxAvailNarrowBands-r13)[1] | 1 entry | | |
| mpdcch-NarrowbandsToMonitor-r13[1] | 1 | | RF |
| | Value as specified in TS 36.523-3 clause 7.3.3.9 | | SIG |
| mpdcch-NumRepetition-RA-r13[1] | r1 | | |
| prach-HoppingConfig-r13[1] | Off | | |
| prach-ConfigIndex-r13[2] | 3 | | RF |
| | 4 | | SIG_FDD OR RRM_FDD |
| | 53 | | SIG_TDD OR RRM_TDD |
| prach-FreqOffset-r13[2] | See subclause 4.6.8 | | |
| prach-StartingSubframe-r13[2] | sf32 | | |
| maxNumPreambleAttemptCE-r13[2] | n5 | | |
| numRepetitionPerPreambleAttempt-r13[2] | n32 | | |
| mpdcch-NarrowbandsToMonitor-r13 SEQUENCE (SIZE(1..2)) OF INTEGER (1..maxAvailNarrowBands-r13)[2] | 1 entry | | |
| mpdcch-NarrowbandsToMonitor-r13[1] | 1 | | RF |
| | Value as specified in TS 36.523-3 clause 7.3.3.9 | | SIG |
| mpdcch-NumRepetition-RA-r13[2] | r4 | | |
| prach-HoppingConfig-r13[2] | Off | | |
| prach-ConfigIndex-r13[3] | 3 | | RF |
| | 4 | | SIG_FDD OR RRM_FDD |

| | | | |
|--|--|--|--------------------------|
| | 53 | | SIG_TDD OR RRM_TDD |
| prach-FreqOffset-r13[3] | See subclause 4.6.8 | | |
| prach-StartingSubframe-r13[3] | sf64 | | |
| maxNumPreambleAttemptCE-r13[3] | n5 | | |
| numRepetitionPerPreambleAttempt-r13[3] | n64 | | |
| mpdcch-NarrowbandsToMonitor-r13 SEQUENCE (SIZE(1..2)) OF INTEGER (1..maxAvailNarrowBands-r13)[3] | 1 entry | | |
| mpdcch-NarrowbandsToMonitor-r13[1] | 1 | | RF |
| | Value as specified in TS 36.523-3 clause 7.3.3.9 | | SIG |
| mpdcch-NumRepetition-RA-r13[3] | r16 | | |
| prach-HoppingConfig-r13[3] | Off | | |
| prach-ConfigIndex-r13[4] | 3 | | RF |
| | 4 | | SIG_FDD OR RRM_FDD |
| | 53 | | SIG_TDD OR RRM_TDD |
| prach-FreqOffset-r13[4] | See subclause 4.6.8 | | |
| prach-StartingSubframe-r13[4] | sf128 | | |
| maxNumPreambleAttemptCE-r13[4] | n5 | | |
| numRepetitionPerPreambleAttempt-r13[4] | n128 | | |
| mpdcch-NarrowbandsToMonitor-r13 SEQUENCE (SIZE(1..2)) OF INTEGER (1..maxAvailNarrowBands-r13)[4] | 1 entry | | |
| mpdcch-NarrowbandsToMonitor-r13[1] | 1 | | RF |
| | Value as specified in TS 36.523-3 clause 7.3.3.9 | | SIG |
| mpdcch-NumRepetition-RA-r13[4] | r64 | | |
| prach-HoppingConfig-r13[4] | Off | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|---|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| RF | Used for RF, performance and RRM testing |
| RRM | Used for RRM testing |
| RRM_FDD | Used for RRM testing in FDD cell environment |
| RRM_TDD | Used for RRM testing in TDD cell environment |
| SIG | Used for protocol testing |
| SIG_FDD | Used for protocol testing in FDD cell environment |
| SIG_TDD | Used for protocol testing in TDD cell environment |
| CEmodeA | Used for CE mode A testing using 2 CE levels |
| CEmodeB | Used for CE mode B testing using 4 CE levels |
| PRACH_2CE | Used for RRM testing using reference PRACH Configurations PRACH_2CE in TS 36.521-3 clause A.9 |
| PRACH_3CE | Used for RRM testing using reference PRACH Configurations PRACH_3CE in TS 36.521-3 clause A.9 |
| PRACH_4CE | Used for RRM testing using reference PRACH Configurations PRACH_4CE in TS 36.521-3 clause A.9 |

– PUCCH-ConfigCommon-DEFAULT

Table 4.6.3-8: PUCCH-ConfigCommon-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| PUCCH-ConfigCommon-DEFAULT ::= SEQUENCE { | | | |
| deltaPUCCH-Shift | ds2 | Assuming typical values of the maximum delay spread | |
| nRB-CQI | See subclause 4.6.8 | Channel-bandwidth-dependent parameter | |
| nCS-AN | 6 | | |
| n1PUCCH-AN | 0 | | |
| } | | | |

- PUCCH-ConfigCommon-v1310-DEFAULT

Table 4.6.3-8A: PUCCH-ConfigCommon-v1310-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|-------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PUCCH-ConfigCommon-v1310-DEFAULT ::= SEQUENCE { | | | |
| n1PUCCH-AN-InfoList-r13 SEQUENCE (SIZE(1..maxCE-Level-r13)) OF INTEGER (0..2047) | 2 entries | | CEmodeA |
| n1PUCCH-AN-InfoList-r13[1] | 2 | | |
| n1PUCCH-AN-InfoList-r13[2] | 2 | | |
| n1PUCCH-AN-InfoList-r13 SEQUENCE (SIZE(1..maxCE-Level-r13)) OF INTEGER (0..2047) | 4 entries | | CEmodeB |
| n1PUCCH-AN-InfoList-r13[1] | 0 | INTEGER (0..2047) | |
| n1PUCCH-AN-InfoList-r13[2] | 0 | INTEGER (0..2047) | |
| n1PUCCH-AN-InfoList-r13[3] | 0 | INTEGER (0..2047) | |
| n1PUCCH-AN-InfoList-r13[4] | 0 | INTEGER (0..2047) | |
| pucch-NumRepetitionCE-Msg4-Level0-r13 | n4 | | |
| pucch-NumRepetitionCE-Msg4-Level1-r13 | n4 | | |
| pucch-NumRepetitionCE-Msg4-Level2-r13 | n16 | | CEmodeB |
| pucch-NumRepetitionCE-Msg4-Level3-r13 | n16 | | CEmodeB |
| } | | | |

| Condition | Explanation |
|-----------|----------------------------|
| CEmodeA | Used for CE mode A testing |
| CEmodeB | Used for CE mode B testing |

– PUCCH-ConfigDedicated-DEFAULT

Table 4.6.3-9: PUCCH-ConfigDedicated-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| PUCCH-ConfigDedicated-DEFAULT ::= SEQUENCE { | | | |
| ackNackRepetition CHOICE { | | | |
| release | NULL | | |
| } | | | |
| tddAckNackFeedbackMode | Not present | | FDD |
| | multiplexing | Multiplexing is selected as default to align with RAN4's assumptions in RF tests. | TDD |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

– PUCCH-ConfigDedicated-v1130-DEFAULT

Table 4.6.3-9AA: PUCCH-ConfigDedicated-v1130-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PUCCH-ConfigDedicated-v1130-DEFAULT ::= SEQUENCE { | | | |
| n1PUCCH-AN-CS-v1130 CHOICE { | | | |
| release | NULL | | |
| setup SEQUENCE { | 2 entries | | |
| n1PUCCH-AN-CS-ListP1-r11[1] | FFS | | |
| n1PUCCH-AN-CS-ListP1-r11[2] | FFS | | |
| } | | | |
| } | | | |
| nPUCCH-Param-r11 CHOICE { | | | |
| release | NULL | | |
| setup SEQUENCE { | | | |
| nPUCCH-Identity-r11 | FFS | | |
| n1PUCCH-AN-r11 | FFS | | |
| } | | | |
| } | | | |
| } | | | |

– PUCCH-ConfigDedicated-v1250-DEFAULT

Table 4.6.3-9AB: PUCCH-ConfigDedicated-v1250-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PUCCH-ConfigDedicated-v1250-DEFAULT ::= SEQUENCE { | | | |
| nkaPUCCH-Param-r12 CHOICE { | | | |
| setup SEQUENCE { | | | |
| nkaPUCCH-AN-r12 | FFS | | |
| } | | | |
| } | | | |
| } | | | |

– PUCCH-ConfigDedicated-r13-DEFAULT

Table 4.6.3-9AC: PUCCH-ConfigDedicated-r13-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|--|------------------|
| Information Element | Value/remark | Comment | Condition |
| PUCCH-ConfigDedicated-r13-DEFAULT ::= SEQUENCE { | | | |
| ackNackRepetition-R13 CHOICE { | | | |
| release | NULL | | |
| } | | | |
| tddAckNackFeedbackMode | Not present | | FDD |
| | multiplexing | Multiplexing is selected as default to align with RAN4's assumptions in RF tests. | TDD |
| pucch-Format-r13 CHOICE {} | Not present | | |
| twoAntennaPortActivatedPUCCH-Format1a1b-r13 | Not present | | |
| simultaneousPUCCH-PUSCH-r13 | Not present | | |
| n1PUCCH-AN-RepP1-r13 | Not present | | |
| nPUCCH-Param-r13 CHOICE {} | Not present | | |
| nkaPUCCH-Param-r13 CHOICE {} | Not present | | |
| spatialBundlingPUCCH | FALSE | | |
| spatialBundlingPUSCH | FALSE | | |
| harq-TimingTDD | FALSE | | |
| codebooksizeDetermination-r13 | Not present | | |
| maximumPayloadCoderate-r13 | 0 | | |
| pucch-NumRepetitionCE-r13 CHOICE {} | Not present | | |
| pucch-NumRepetitionCE-r13 CHOICE { | | | CEmodeA, CEmodeB |
| setup CHOICE { | | | |
| modeA SEQUENCE { | | | CEmodeA |
| pucch-NumRepetitionCE-format1-r13 | r1 | No repetitions used for protocol and performance testing to reduce the round trip time for large signaling messages. | |
| pucch-NumRepetitionCE-format2-r13 | r1 | | |
| } | | | |
| modeB SEQUENCE { | | | CEmodeB |
| pucch-NumRepetitionCE-format1-r13 | r4 | | |
| pucch-NumRepetitionCE-format2-r13 | r4 | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------------|
| CEmodeA | Used for CE mode A testing |
| CEmodeB | Used for CE mode B testing |

PUSCH-ConfigCommon-DEFAULT

Table 4.6.3-10: PUSCH-ConfigCommon-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| PUSCH-ConfigCommon-DEFAULT ::= SEQUENCE { | | | |
| pusch-ConfigBasic SEQUENCE { | | | |
| n-SB | 1 | Typical configuration in real network | |
| hoppingMode | interSubFrame | Typical configuration in real network | |
| pusch-HoppingOffset | See subclause 4.6.8 | Channel-bandwidth-dependent parameter | |
| enable64QAM | FALSE | | |
| | TRUE | | UL64QAM |
| } | | | |
| ul-ReferenceSignalsPUSCH SEQUENCE { | | | |
| groupHoppingEnabled | TRUE | In accordance with "the RAN5 LTE UE Feature list". | |
| groupAssignmentPUSCH | 0 | Typical value in real network | |
| sequenceHoppingEnabled | FALSE | In accordance with "the RAN5 LTE UE Feature list". | |
| cyclicShift | 0 | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|---------------------------|
| UL64QAM | Used for UL 64QAM testing |

PUSCH-ConfigCommon-v1310DEFAULT

Table 4.6.3-10A: PUSCH-ConfigCommon-v1310-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| PUSCH-ConfigCommon-v1310-DEFAULT ::= SEQUENCE { | | | |
| pusch-maxNumRepetitionCEmodeA-r13 | Not present | Default value (r8) as defined in TS 36.213 [29, clause 8.0] apply (minimum value for CE Mode A) | CEmodeA |
| pusch-maxNumRepetitionCEmodeB-r13 | r192 | Set to minimum value for CE Mode B | CEmodeB |
| pusch-HoppingOffset-v13xy | Not present | No PUSCH frequency hopping | |
| } | | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|---------|----------------------------|
| CEmodeA | Used for CE mode A testing |
| CEmodeB | Used for CE mode B testing |

– PUSCH-ConfigDedicated-r13DEFAULT

Table 4.6.3-11: PUSCH-ConfigDedicated-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PUSCH-ConfigDedicated-DEFAULT ::= SEQUENCE { | | | |
| betaOffset-ACK-Index | 9 | | |
| betaOffset-RI-Index | 6 | | |
| betaOffset-CQI-Index | 6 | | |
| } | | | |

Table 4.6.3-11A: Void

– PUSCH-ConfigDedicated-v1130-DEFAULT

Table 4.6.3-11AA: PUSCH-ConfigDedicated-v1130-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PUSCH-ConfigDedicated-v1130-DEFAULT ::= SEQUENCE { | | | |
| pusch-DMRS-r11 CHOICE { | | | |
| release | NULL | | |
| setup SEQUENCE { | | | |
| nPUSCH-Identity-r11 | FFS | | |
| nDMRS-CSH-Identity-r11 | FFS | | |
| } | | | |
| } | | | |
| } | | | |

– PUSCH-ConfigDedicated-v1250-DEFAULT

Table 4.6.3-11AB: PUSCH-ConfigDedicated-v1250-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PUSCH-ConfigDedicated-v1250-DEFAULT ::= SEQUENCE { | | | |
| UciOnPUSCH CHOICE { | | | |
| setup SEQUENCE { | | | |
| betaOffset-ACK-Index-SubframeSet2-r12 | 9 | | |
| betaOffset-RI-Index-SubframeSet2-r12 | 6 | | |
| betaOffset-CQI-Index-SubframeSet2-r12 | 6 | | |
| betaOffsetMC-r12 SEQUENCE { | | | |
| betaOffset-ACK-Index-MC-SubframeSet2-r12 | Not present | | |
| betaOffset-RI-Index-MC-SubframeSet2-r12 | Not present | | |
| betaOffset-CQI-Index-MC-SubframeSet2-r12 | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

– PUSCH-ConfigDedicated--DEFAULT

Table 4.6.3-11AC: PUSCH-ConfigDedicated-r13-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| PUSCH-ConfigDedicated-r13-DEFAULT ::= SEQUENCE { | | | |
| betaOffset-ACK-Index-r13 | 9 | | |
| betaOffset2-ACK-Index-r13 | Not present | | |
| betaOffset-RI-Index-r13 | 6 | | |
| betaOffset-CQI-Index-r13 | 6 | | |
| betaOffsetMC-r13 SEQUENCE {} | Not present | | |
| groupHoppingDisabled-r13 | Not present | | |
| dmrs-WithOCC-Activated-r13 | Not present | | |
| pusch-DMRS-r11 | Not present | | |
| uciOnPUSCH | Not present | | |
| pusch-HoppingConfig-r13 | Not Present | No PUSCH frequency hopping for BL UEs and UEs in CE | |
| } | | | |

– PUSCH-EnhancementsConfig-r14-DEFAULT

Table 4.6.3-11AD: PUSCH-EnhancementsConfig-r14-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|---------|--------------------------|
| Information Element | Value/remark | Comment | Condition |
| PUSCH-EnhancementsConfig-r14-DEFAULT ::= CHOICE { | | | |
| Release | NULL | | PuschEnhancement_Release |
| Setup SEQUENCE { | | | PuschEnhancement_Setup |
| pusch-HoppingOffsetPUSCH-Enh-r14 | 1 | | |
| interval-ULHoppingPUSCH-Enh-r14 CHOICE{ | | | |
| interval-FDD-PUSCH-Enh-r14 | int1 | FDD | |
| interval-TDD-PUSCH-Enh-r14 | int1 | TDD | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|--------------------------|--|
| PuschEnhancement_Release | UE is not allowed to apply PUSCH enhancement |
| PuschEnhancement_Setup | UE is allowed to apply PUSCH enhancement. |

– RACH-ConfigCommon-DEFAULT

Table 4.6.3-12: RACH-ConfigCommon-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|-------------------|---|--------------------|
| Information Element | Value/remark | Comment | Condition |
| RACH-ConfigCommon-DEFAULT ::= SEQUENCE { | | | |
| preambleInfo SEQUENCE { | | | |
| numberOfRA-Preambles | n52 | Assuming the number of dedicated preambles is 12. | |
| preamblesGroupAConfig SEQUENCE { | Not present | | |
| } | | | |
| powerRampingParameters SEQUENCE { | | | |
| powerRampingStep | dB2 | | |
| preambleInitialReceivedTargetPower | dBm-104 (default) | Thermal noise = -113 dBm NF = 5 dB IoT = 6 dB Required SNR = -8 dB (See table 8.4.2-1 in TS 36.104 [30]) -> -110 dB (default value is acceptable) | |
| } | | | |
| ra-SupervisionInfo SEQUENCE { | | | |
| preambleTransMax | n6 | Under the condition of Case 1 in RAN1 simulation assumptions, an UE with pathloss of CDF = 90% reaches the maximum transmit power in 4 successive retransmissions. 6 has been selected considering the margin of 2. | |
| ra-ResponseWindowSize | sf10 | The maximum value is preferable. | |
| mac-ContentionResolutionTimer | sf48 | Allows for a sufficient number of msg3 retransmissions. | |
| } | | | |
| maxHARQ-Msg3Tx | 4 | Under the condition of Target SIR = 2 dB, the probability of 2 transmissions is less than 1%. 4 has been selected considering the margin of 2. | |
| preambleTransMax-CE-r13 | Not present | | |
| preambleTransMax-CE-r13 | n6 | Same as preambleTransMax | CEmodeA or CEmodeB |
| RACH-CE-LevelInfoList-r13 | Not present | | |
| RACH-CE-LevelInfoList-r13 SEQUENCE (SIZE (1..maxCE-Level-r13)) OF RACH-CE-LevelInfo-r13 | 2 entries | first two 2 entries [1] and [2] of list to be used | CEmodeA |

| | | | |
|---|-----------|---|---------|
| RACH-CE-LevelInfoList-r13 SEQUENCE (SIZE (1..maxCE-Level-r13)) OF RACH-CE-LevelInfo-r13 | 4 entries | | CEmodeB |
| RACH-CE-LevelInfo-r13[1] SEQUENCE { | | | |
| preambleMappingInfo-r13 SEQUENCE { | | | |
| firstPreamble-r13 | 0 | | |
| lastPreamble-r13 | 14 | | |
| } | | | |
| ra-ResponseWindowSize-r13 | sf20 | | |
| mac-ContentionResolutionTimer-r13 | sf80 | Allows for a sufficient number of msg3 retransmissions. Longer time for increasing CE levels. | |
| rar-HoppingConfig-r13 | off | | |
| } | | | |
| RACH-CE-LevelInfo-r13[2] SEQUENCE { | | | |
| preambleMappingInfo-r13 SEQUENCE { | | | |
| firstPreamble-r13 | 15 | | |
| lastPreamble-r13 | 29 | | |
| } | | | |
| ra-ResponseWindowSize-r13 | sf80 | | |
| mac-ContentionResolutionTimer-r13 | sf120 | | |
| rar-HoppingConfig-r13 | off | | |
| } | | | |
| RACH-CE-LevelInfo-r13[3] SEQUENCE { | | | |
| PreambleMappingInfo-r13[3] SEQUENCE { | | | |
| firstPreamble-r13 | 30 | | |
| lastPreamble-r13 | 44 | | |
| } | | | |
| ra-ResponseWindowSize-r13 | sf180 | | |
| mac-ContentionResolutionTimer-r13 | sf200 | | |
| rar-HoppingConfig-r13 | off | | |
| } | | | |
| RACH-CE-LevelInfo-r13[4] SEQUENCE { | | | |
| preambleMappingInfo-r13 SEQUENCE { | | | |
| firstPreamble-r13 | 45 | | |
| lastPreamble-r13 | 60 | | |
| } | | | |
| ra-ResponseWindowSize-r13 | sf320 | | |
| mac-ContentionResolutionTimer-r13 | sf480 | | |
| rar-HoppingConfig-r13 | off | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------------|
| CEmodeA | Used for CE mode A testing |
| CEmodeB | Used for CE mode B testing |

Rach-ConfigDedicated-DEFAULT

Table 4.6.3-12A: Rach-ConfigDedicated-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Rach-ConfigDedicated-DEFAULT ::= SEQUENCE { | | | |
| ra-PreambleIndex | 52 | | |
| ra-PRACH-MaskIndex | 0 | | |
| } | | | |

– RadioResourceConfigCommon-DEFAULT

Table 4.6.3-13: RadioResourceConfigCommon-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--|---------|----------------------------------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigCommon-DEFAULT ::= SEQUENCE { | | | |
| rach-ConfigCommon | RACH-ConfigCommon-DEFAULT | | |
| prach-Config | PRACH-Config-DEFAULT | | |
| pdsch-ConfigCommon | Not present | | |
| | PDSCH-ConfigCommon-DEFAULT | | FullConfig, HO-to-EUTRA |
| pusch-ConfigCommon | PUSCH-ConfigCommon-DEFAULT | | |
| phich-Config | Not present | | |
| | PHICH-Config-DEFAULT | | FullConfig, HO-to-EUTRA |
| pucch-ConfigCommon | Not present | | SAME-BW |
| | PUCCH-ConfigCommon-DEFAULT | | DIFF-BW, FullConfig, HO-to-EUTRA |
| soundingRSUL-ConfigCommon | SoundingRS-UL-ConfigCommon-DEFAULT | | |
| uplinkPowerControlCommon | Not present | | |
| | UplinkPowerControlCommon-DEFAULT | | FullConfig, HO-to-EUTRA |
| antennaInfoCommon | Not present | | |
| antennaInfoCommon SEQUENCE { | | | 2TX |
| antennaPortsCount | an2 | | |
| } | | | |
| antennaInfoCommon SEQUENCE { | | | 4TX |
| antennaPortsCount | an4 | | |
| } | | | |
| antennaInfoCommon SEQUENCE { | | | FullConfig, HO-to-EUTRA |
| antennaPortsCount | an1 | | |
| } | | | |
| p-Max | Not present | | |
| tdd-Config | Not present | | FDD or LAA SCell |
| | TDD-Config-DEFAULT | | TDD |
| ul-CyclicPrefixLength | len1 | | |
| uplinkPowerControlCommon-v1020 | UplinkPowerControlCommon-v1020-DEFAULT | | CA |
| | Not present | | |
| tdd-Config-v1130 | Not present | | |
| pusch-ConfigCommon-v1270 | Not present | | |
| prach-Config-v1310 | Not present | | |
| | PRACH-Config-v1310-DEFAULT | | CEmodeA, CEmodeB |
| freqHoppingParameters-r13 | Not present | | |
| | FreqHoppingParameters-r13-DEFAULT | | (CEmodeA OR CEmodeB) AND SIG |
| pdsch-ConfigCommon-v1310 | Not present | | |
| | PDSCH-ConfigCommon-v1310-DEFAULT | | CEmodeA, CEmodeB |
| pucch-ConfigCommon-v1310 | Not present | | |
| | PUCCH-ConfigCommon-v1310-DEFAULT | | CEmodeA, CEmodeB |

| | | | |
|--------------------------------|--|--|------------------|
| pusch-ConfigCommon-v1310 | Not present | | |
| | PUSCH-ConfigCommon-v1310-DEFAULT | | CEmodeA, CEmodeB |
| uplinkPowerControlCommon-v1310 | Not present | | |
| highSpeedConfig-r14 | Not present | | |
| | HighSpeedConfig-r14-DEFAULT | | HighSpeedEnhance |
| prach-Config-v1430 | Not present | | |
| | PRACH-Config-v1430-DEFAULT | | HighSpeedEnhance |
| uplinkPowerControlCommon-v1530 | Not present | | |
| | uplinkPowerControlCommon-v1530-DEFAULT | | Short-TTI |
| } | | | |

| Condition | Explanation |
|------------------|--|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| 2TX | Used for cells with two antenna ports |
| 4TX | Used for cells with four antenna ports |
| SAME-BW | Source and target cell are configured with same bandwidth |
| DIFF-BW | Source and target cell are configured with different bandwidth |
| UL CA | When UL Carrier Aggregation is used. |
| FullConfig | Handover with full configuration option (Rel-9 or later) |
| HO-to-EUTRA | Inter-RAT handover to E-UTRA |
| CA | For Carrier Aggregation Test cases |
| CEmodeA | Used for CE mode A testing |
| CEmodeB | Used for CE mode B testing |
| LAA SCell | For LAA SCell environment |
| SIG | For Signalling test cases |
| HighSpeedEnhance | High speed test environment |
| Short-TTI | When short TTI is used |

– RadioResourceConfigCommonSCell-r10-DEFAULT

Table 4.6.3-13A: RadioResourceConfigCommonSCell-r10-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--|---------|---------------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigCommonSCell-r10-DEFAULT ::= SEQUENCE { | | | |
| nonUL-Configuration-r10 SEQUENCE { | | | |
| dl-Bandwidth-r10 | Same downlink bandwidth as used for target SCell | | |
| antennaInfoCommon-r10 SEQUENCE { | | | |
| antennaPortsCount | an1 | | 1TX |
| antennaPortsCount | an2 | | 2TX |
| antennaPortsCount | an4 | | 4TX |
| } | | | |
| mbsfn-SubframeConfigList-r10 | Not present | | |
| phich-Config-r10 | PHICH-Config-DEFAULT | | |
| pdsch-ConfigCommon-r10 | PDSCH-ConfigCommon-DEFAULT | | |
| tdd-Config-r10 | Not present | | FDD |
| } | TDD-Config-DEFAULT | | TDD |
| } | | | |
| ul-Configuration-r10 | Not present | | |
| ul-Configuration-r10 SEQUENCE { | | | UL CA |
| ul-FreqInfo-r10 SEQUENCE { | | | |
| ul-CarrierFreq-r10 | Not present | | |
| ul-Bandwidth-r10 | Not present | | |
| additionalSpectrumEmissionSCell-r10 | 1 (CA_NS_01) | | |
| } | | | |
| p-Max-r10 | Not present | | |
| uplinkPowerControlCommonSCell-r10 | UplinkPowerControlCommonSCell-r10-DEFAULT | | |
| soundingRS-UL-ConfigCommon-r10 | SoundingRS-UL-ConfigCommon-DEFAULT | | |
| ul-CyclicPrefixLength-r10 | len1 | | |
| prach-ConfigSCell-r10 | Not present | | FDD |
| } | FFS | | TDD |
| pusch-ConfigCommon-r10 | PUSCH-ConfigCommon-DEFAULT | | |
| } | | | |
| pusch-ConfigCommon-v1270 | Not present | | |
| pusch-ConfigCommon-v1270 SEQUENCE { | | | UL64QAM |
| enable64QAM-v1270 | true | | |
| } | | | |
| pucch-ConfigCommon-r13 | Not present | | |
| } | PUCCH-ConfigCommon-DEFAULT | | PUCCH SCell |
| uplinkPowerControlCommonSCell-v1310 | Not present | | |
| } | UplinkPowerControlCommonSCell-v1310 | | PUCCH SCell |
| ul-Configuration-r14 SEQUENCE { | | | SRS-Switching |
| ul-FreqInfo-r14 SEQUENCE { | | | |
| ul-CarrierFreq-r14 | Not present | | |
| ul-Bandwidth-r14 | Not present | | |
| additionalSpectrumEmissionSCell-r14 | 1 (CA_NS_01) | | |
| } | | | |
| p-Max-r14 | Not present | | |
| soundingRS-UL-ConfigCommon-r14 | SoundingRS-UL-ConfigCommon-DEFAULT | | |
| ul-CyclicPrefixLength-r14 | len1 | | |
| prach-ConfigSCell-r14 | Not Present | | |
| uplinkPowerControlCommonPUSCH-LessCell-v14xy SEQUENCE { | | | |

| | | | |
|-------------------------------|----------------------------------|----------------------------------|-------------------|
| p0-Nominal-PeriodicSRS-r14 | -85 | Same as default PUSCH p0-Nominal | |
| p0-Nominal-AperiodicSRS-r14 | -85 | Same as default PUSCH p0-Nominal | |
| alpha-SRS-r14 | al08 | | |
| } | | | |
| harq-ReferenceConfig-r14 | Not Present | | |
| soundingRS-FlexibleTiming-r14 | Not Present | | |
| } | | | |
| highSpeedConfigSCell-r14 | Not Present | | |
| | HighSpeedConfigSCell-r14-DEFAULT | | HighSpeed Enhance |
| prach-Config-v1430 | Not present | | |
| | PRACH-Config-v1430-DEFAULT | | HighSpeed Enhance |
| } | | | |

| Condition | Explanation |
|------------------|---|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| UL CA | When UL Carrier Aggregation is used. |
| 1TX | Used for SCell with one antenna port |
| 2TX | Used for SCell with two antenna ports |
| 4TX | Used for SCell with four antenna ports |
| SRS-Switching | SRS transmission is switched to a PUSCH-less TDD SCell. |
| HighSpeedEnhance | High speed test environment |
| PUCCH-SCell | When this SCell is configured as PUCCH SCell |
| UL64QAM | Used for UL 64QAM testing for SCell |

RadioResourceConfigCommonSIB-DEFAULT

Table 4.6.3-14: RadioResourceConfigCommonSIB-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--|---------|------------------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigCommonSIB-DEFAULT ::= SEQUENCE { | | | |
| rach-ConfigCommon | RACH-ConfigCommon-DEFAULT | | |
| bcch-Config | BCCH-Config-DEFAULT | | |
| pcch-Config | PCCH-Config-DEFAULT | | |
| prach-Config | PRACH-ConfigSIB-DEFAULT | | |
| pdsch-ConfigCommon | PDSCH-ConfigCommon-DEFAULT | | |
| pusch-ConfigCommon | PUSCH-ConfigCommon-DEFAULT | | |
| pucch-ConfigCommon | PUCCH-ConfigCommon-DEFAULT | | |
| soundingRS-UL-ConfigCommon | SoundingRS-UL-ConfigCommon-DEFAULT | | |
| uplinkPowerControlCommon | UplinkPowerControlCommon-DEFAULT | | |
| ul-CyclicPrefixLength | len1 | | |
| uplinkPowerControlCommon-v1020 | Not present | | |
| | UplinkPowerControlCommon-v1020-DEFAULT | | CA |
| rach-ConfigCommon-v1250 | Not present | | |
| pusch-ConfigCommon-v1270 | Not present | | |
| pusch-ConfigCommon-v1270 SEQUENCE { | | | UL64QAM |
| enable64QAM-v1270 | true | | |
| } | | | |
| bcch-Config-v1310 | Not present | | |
| pcch-Config-v1310 | Not present | | |
| | PCCH-Config-v1310-DEFAULT | | CEmodeA, CEmodeB |
| freqHoppingParameters-r13 | Not Present | | |
| | FreqHoppingParameters-r13-DEFAULT | | CEmodeA, CEmodeB |
| pdsch-ConfigCommon-v1310 | Not present | | |
| | PDSCH-ConfigCommon-v1310-DEFAULT | | CEmodeA, CEmodeB |
| pusch-ConfigCommon-v1310 | Not present | | |
| | PUSCH-ConfigCommon-v1310-DEFAULT | | CEmodeA, CEmodeB |
| prach-ConfigCommon-v1310 | Not present | | |
| | PRACH-ConfigSIB-v1310-DEFAULT | | CEmodeA, CEmodeB |
| pucch-ConfigCommon-v1310 | Not present | | |
| | PUCCH-ConfigCommon-v1310-DEFAULT | | CEmodeA, CEmodeB |
| highSpeedConfig-r14 | Not present | | |
| | HighSpeedConfig-r14-DEFAULT | | HighSpeedEnhance |
| prach-Config-v1430 | Not present | | |
| | PRACH-Config-v1430-DEFAULT | | HighSpeedEnhance |
| } | | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|------------------|------------------------------------|
| CA | For Carrier Aggregation test cases |
| CEmodeA | Used for CE mode A testing |
| CEmodeB | Used for CE mode B testing |
| HighSpeedEnhance | High speed test environment |
| UL64QAM | Used for UL 64QAM testing |

– RadioResourceConfigDedicated-SRB1

Table 4.6.3-15: RadioResourceConfigDedicated-SRB1

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-SRB1 ::= SEQUENCE { | | | |
| srb-ToAddModList SEQUENCE (SIZE (1..2)) OF SEQUENCE { | 1 entry, with value SRB-ToAddMod-DEFAULT using condition SRB1 | | |
| drb-ToAddModList | Not present | | |
| drb-ToReleaseList | Not present | | |
| mac-MainConfig CHOICE { | | | |
| explicitValue | MAC-MainConfig-SRB | See subclause 4.8.2 | |
| } | | | |
| sps-Config | Not present | | |
| physicalConfigDedicated | PhysicalConfigDedicated-DEFAULT using condition SRB1 | For signalling test cases see subclause 6.6B.1.1.1. Otherwise, see subclause 4.8.2 | |
| } | | | |

RadioResourceConfigDedicated-SRB2-DRB(n,m)

Table 4.6.3-16: RadioResourceConfigDedicated-SRB2-DRB(n,m)

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-SRB2-DRB(n, m) ::= SEQUENCE { | | n is the number of AM RLC DRBs (1..N) m is the number of UM RLC DRBs (0..M) | |
| srb-ToAddModList SEQUENCE (SIZE (1..2)) OF SEQUENCE { | 1 entry | | |
| srb-ToAddMod[1] | SRB-ToAddMod-DEFAULT using condition SRB2 | See subclause 4.8.2 | |
| } | | | |
| drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE { | n+m entries | | |
| drb-ToAddMod[k, k=1..n] | DRB-ToAddMod-DEFAULT (k) using condition AM | n AM RLC DRBs See subclause 4.8.2 | |
| drb-ToAddMod[k, k=n+1..n+m] | DRB-ToAddMod-DEFAULT (k) using condition UM | m UM RLC DRBs See subclause 4.8.2 | m>0 |
| } | | | |
| drb-ToReleaseList | Not present | | |
| mac-MainConfig CHOICE { | | | |
| explicitValue | MAC-MainConfig-RBC using condition DRX_L (note) | See subclause 4.8.2 | m=0 |
| | MAC-MainConfig-RBC using condition DRX_S (note) | See subclause 4.8.2 | m>0 |
| } | | | |
| sps-Config | Not present | | |
| physicalConfigDedicated | PhysicalConfigDedicated-DEFAULT using condition RBC | For signalling test cases see subclause 6.6B.1.1.1. Otherwise, see subclause 4.8.2 | |
| } | | | |
| NOTE: In cases where no RLC-UM bearer is configured, large DRX Cycle length is used. In cases where at least one RLC-UM bearer is configured, small DRX Cycle length is used. | | | |

| Condition | Explanation |
|-----------|------------------------|
| m=0 | m is equal to zero |
| m>0 | m is greater than zero |

RadioResourceConfigDedicated-DRB(n,m)

Table 4.6.3-17: RadioResourceConfigDedicated-DRB(n,m)

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-DRB(n, m) ::= SEQUENCE { | | n is the number of AM RLC DRBs (0..N) m is the number of UM RLC DRBs (0..M) | |
| srb-ToAddModList | Not present | | |
| drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE { | n+m entries | BID is the total number of established DRBs in the UE, before applying the contents of this IE | |
| drb-ToAddMod[k, k=BID+1..BID+n] | DRB-ToAddMod-DEFAULT (k) using condition AM | n AM RLC DRBs See subclause 4.8.2 | n>0 |
| drb-ToAddMod[k, k= BID+1+n.. BID+n+m] | DRB-ToAddMod-DEFAULT (k) using condition UM | m UM RLC DRBs See subclause 4.8.2 | m>0 |
| } | | | |
| drb-ToReleaseList | Not present | | |
| mac-MainConfig | Not present (note) | | m=0 |
| mac-MainConfig CHOICE { | | | m>0 |
| explicitValue | MAC-MainConfig-RBC using condition DRX_S (note) | See subclause 4.8.2 | |
| } | | | |
| sps-Config | Not present | | |
| physicalConfigDedicated | Not present | | |
| } | | | |
| NOTE: In cases where no RLC-UM bearer is added, existing DRX configuration is used without modification. In cases where at least one RLC-UM bearer is added, small DRX Cycle length is used. | | | |

| Condition | Explanation |
|-----------|------------------------|
| n>0 | n is greater than zero |
| m=0 | m is equal to zero |
| m>0 | m is greater than zero |

RadioResourceConfigDedicated-SRB4

Table 4.6.3-17A: RadioResourceConfigDedicated-SRB4

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|-----------------------|---------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-SRB4 ::= SEQUENCE { | | | |
| srb-ToAddModExtList-r15 SEQUENCE (SIZE (1)) OF SEQUENCE { | 1 entry | | |
| srb-ToAddMod | SRB4-ToAddMod-DEFAULT | See subclause 4.8.2 | |
| } | | | |
| } | | | |

RadioResourceConfigDedicated-HO-TO-EUTRA(n,m)

Table 4.6.3-18: RadioResourceConfigDedicated-HO-TO-EUTRA(n,m)

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-HO-TO-EUTRA(n, m) ::= SEQUENCE { | | n is the number of AM RLC DRBs (1..N) m is the number of UM RLC DRBs (0..M) | |
| srb-ToAddModList SEQUENCE (SIZE (1..2)) OF SEQUENCE { | 2 entries | | |
| srb-ToAddMod[1] | SRB-ToAddMod-DEFAULT using condition SRB1 | See subclause 4.8.2 | |
| srb-ToAddMod[2] | SRB-ToAddMod-DEFAULT using condition SRB2 | See subclause 4.8.2 | |
| } | | | |
| drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE { | n+m entries | | |
| drb-ToAddMod[k, k=1..n] | DRB-ToAddMod-DEFAULT (k) using condition AM | n AM RLC DRBs See subclause 4.8.2 | |
| drb-ToAddMod[k, k=n+1..n+m] | DRB-ToAddMod-DEFAULT (k) using condition UM | m UM RLC DRBs See subclause 4.8.2 | m>0 |
| } | | | |
| drb-ToReleaseList | Not present | | |
| mac-MainConfig CHOICE { | | | |
| explicitValue | MAC-MainConfig-RBC using condition DRX_L (note) | See subclause 4.8.2 | m=0 |
| | MAC-MainConfig-RBC using condition DRX_S (note) | See subclause 4.8.2 | m>0 |
| } | | | |
| sps-Config | Not present | | |
| physicalConfigDedicated | PhysicalConfigDedicated-DEFAULT using condition RBC | For signalling test cases see subclause 6.6B.1.1.1. Otherwise, see subclause 4.8.2 | |
| } | | | |
| NOTE: In cases where no RLC-UM bearer is configured, large DRX Cycle length is used. In cases where at least one RLC-UM bearer is configured, small DRX Cycle length is used. | | | |

| Condition | Explanation |
|-----------|------------------------|
| m=0 | m is equal to zero |
| m>0 | m is greater than zero |

- RadioResourceConfigDedicated-AM-DRB-ADD(bid)

Table 4.6.3-18A: RadioResourceConfigDedicated-AM-DRB-ADD(bid)

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--|----------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-AM-DRB-ADD(bid) ::= SEQUENCE { | | bid is the bearer identity | |
| srb-ToAddModList | Not present | | |
| drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE { | one entry | | |
| drb-ToAddMod[1] | DRB-ToAddMod- DEFAULT (bid) using condition AM | See subclause 4.8.2 | |
| } | | | |
| drb-ToReleaseList | Not present | | |
| mac-MainConfig | Not present | | |
| sps-Config | Not present | | |
| physicalConfigDedicated | Not present | | |
| } | | | |

- RadioResourceConfigDedicated-UM-DRB-ADD(bid)

Table 4.6.3-18B: RadioResourceConfigDedicated-UM-DRB-ADD(bid)

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---|----------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-UM-DRB-ADD(bid) ::= SEQUENCE { | | bid is the bearer identity | |
| srb-ToAddModList | Not present | | |
| drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE { | one entry | | |
| drb-ToAddMod[1] | DRB-ToAddMod- DEFAULT (bid) using condition UM | See subclause 4.8.2 | |
| } | | | |
| drb-ToReleaseList | Not present | | |
| mac-MainConfig CHOICE { | | | |
| explicitValue | MAC-MainConfig-RBC using condition DRX_S (note) | See subclause 4.8.2 | |
| } | | | |
| sps-Config | Not present | | |
| physicalConfigDedicated | Not present | | |
| } | | | |
| NOTE: Since one RLC-UM bearer is added, small DRX Cycle length is used. | | | |

- RadioResourceConfigDedicated- DRB-REL(bid)

Table 4.6.3-18C: RadioResourceConfigDedicated-DRB-REL(bid)

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|----------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-DRB-REL(bid) ::= SEQUENCE { | | bid is the bearer identity | |
| srb-ToAddModList | Not present | | |
| drb-ToAddModList | Not present | | |
| drb-ToReleaseList SEQUENCE (SIZE (1..maxDRB)) OF | one entry | | |
| drb-Identity[1] | bid | | |
| mac-MainConfig | Not present | | |
| sps-Config | Not present | | |
| physicalConfigDedicated | Not present | | |
| } | | | |

- RadioResourceConfigDedicated-HO

Table 4.6.3-19: RadioResourceConfigDedicated-HO

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-HO ::= SEQUENCE { | | | |
| srb-ToAddModList | Not present | | |
| drb-ToAddModList | Not present | | |
| drb-ToReleaseList | Not present | | |
| mac-MainConfig | Not present | | |
| sps-Config | Not present | | |
| physicalConfigDedicated | PhysicalConfigDedicated-DEFAULT using condition RBC-HO | For signalling test cases see subclause 6.6B.1.1.1. Otherwise, see subclause 4.8.2 | |
| } | | | |

- RadioResourceConfigDedicatedSCell-r10-DEFAULT

Table 4.6.3-19AA: RadioResourceConfigDedicatedSCell-r10-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicatedSCell-r10 ::= SEQUENCE { | | | |
| physicalConfigDedicatedSCell-r10 | PhysicalConfigDedicatedSCell-r10-DEFAULT | | |
| } | | | |

RadioResourceConfigDedicated-SCell_AddMod

Table 4.6.3-19AAA: RadioResourceConfigDedicated-SCell_AddMod

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-SCell_AddMod ::= SEQUENCE { | | | |
| srb-ToAddModList | Not present | | |
| drb-ToAddModList | Not present | | |
| drb-ToReleaseList | Not present | | |
| mac-MainConfig | MAC-MainConfig-RBC using condition SCell_AddMod | See subclause 4.8.2 | |
| sps-Config | Not present | | |
| physicalConfigDedicated | PhysicalConfigDedicated-DEFAULT using condition SCell_AddMod | For signalling test cases see subclause 6.6B.1.1.1. Otherwise, see subclause 4.8.2 | |
| } | | | |

Table 4.6.3-19AAAA: Void

RadioResourceConfigDedicated-V2X

Table 4.6.3-19AAAAA: RadioResourceConfigDedicated-V2X-SPS

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|-------------------------------|------------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-V2X-SPS ::= SEQUENCE { | | | |
| sps-Config-v1430 SEQUENCE { | | | |
| ul-SPS-V-RNTI-r14 | Not Present | | |
| sl-SPS-V-RNTI-r14 | '1034'H | | |
| sps-ConfigUL-ToAddModList-r14 | Not Present | | |
| sps-ConfigUL-ToReleaseList-r14 | Not Present | | |
| sps-ConfigSL-ToAddModList-r14 SEQUENCE (SIZE (1..maxConfigSPS-r14)) OF SEQUENCE { | | | SL_ADD |
| sps-ConfigIndex-r14 | 1 | INTEGER (1..maxConfigSPS-r14) | |
| semiPersistSchedIntervalSL-r14 | sf20 | ENUMERATED { sf20 } | |
| } | | | |
| sps-ConfigSL-ToReleaseList-r14 SEQUENCE (SIZE (1..maxConfigSPS-r14)) OF SEQUENCE { | | | SL_RELEASE |
| SPS-ConfigIndex-r14 | 1 | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|------------|---|
| SL_ADD | Add SPS configuration for V2X communication over Sidelink |
| SL_RELEASE | Release SPS configuration for V2X communication over Sidelink |

RadioResourceConfigDedicated-EN-DC-Split

Table 4.6.3-19AAAAAB: RadioResourceConfigDedicated-EN-DC-Split

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-EN-DC-Split ::= SEQUENCE { | | | |
| srb-ToAddModList SEQUENCE (SIZE (1..2)) OF SEQUENCE { | 1 entry | | |
| srb-ToAddMod[1] | SRB-ToAddMod-DEFAULT using condition SRB2 | See subclause 4.8.2 | |
| } | | | |
| drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE { | 2 entries | | |
| drb-ToAddMod[1] | DRB-ToAddMod-DEFAULT (8) using condition AM | See subclause 4.8.2 | |
| drb-ToAddMod[2] | DRB-ToAddMod-EN-DC-Split | See subclause 4.8.2 | |
| } | | | |
| drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE { | 3 entries | | MULTI_PDN |
| drb-ToAddMod[1] | DRB-ToAddMod-DEFAULT (1) using condition AM | See subclause 4.8.2 | |
| drb-ToAddMod[2] | DRB-ToAddMod-DEFAULT (8) using condition AM | See subclause 4.8.2 | |
| drb-ToAddMod[3] | DRB-ToAddMod-EN-DC-Split | See subclause 4.8.2 | |
| } | | | |
| drb-ToReleaseList | Not present | | |
| mac-MainConfig CHOICE { | | | |
| explicitValue | MAC-MainConfig-RBC using condition DRX_L | See subclause 4.8.2 | |
| } | | | |
| sps-Config | Not present | | |
| physicalConfigDedicated | PhysicalConfigDedicated-DEFAULT using condition RBC | For signalling test cases see subclause 6.6B.1.1.1. Otherwise, see subclause 4.8.2 | |
| } | | | |

- RadioResourceConfigDedicated-EN-DC_Split_DRB_Rel(bid)

Table 4.6.3-19AAAAAC: RadioResourceConfigDedicated-DRB-REL(bid)

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-EN-DC_Split_DRB_Rel(bid) ::= SEQUENCE { | | bid is the bearer identity of EN-DC Split DRB | |
| srb-ToAddModList | Not present | | |
| drb-ToAddModList | Not present | | |
| drb-ToReleaseList SEQUENCE (SIZE (1..maxDRB)) OF | one entry | | |
| drb-Identity[1] | bid | | |
| mac-MainConfig | Not present | | |
| sps-Config | Not present | | |
| physicalConfigDedicated | Not present | | |
| } | | | |

- RadioResourceConfigDedicated-EN-DC-SRB2-DRB

Table 4.6.3-19AAAAAD: RadioResourceConfigDedicated-EN-DC-SRB2-DRB

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-SRB2-DRB ::= SEQUENCE { | | | |
| srb-ToAddModList SEQUENCE (SIZE (1..2)) OF SEQUENCE { | 1 entry | | |
| srb-ToAddMod[1] | SRB-ToAddMod-DEFAULT using condition SRB2 | See subclause 4.8.2 | |
| } | | | |
| drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE { | 1 entry | | |
| drb-ToAddMod[1] | DRB-ToAddMod-DEFAULT (8) using condition AM | See subclause 4.8.2 | |
| } | | | |
| drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE { | 2 entries | | MULTI_PDN |
| drb-ToAddMod[1] | DRB-ToAddMod-DEFAULT (1) using condition AM | See subclause 4.8.2 | |
| drb-ToAddMod[2] | DRB-ToAddMod-DEFAULT (8) using condition AM | See subclause 4.8.2 | |
| } | | | |
| drb-ToReleaseList | Not present | | |
| mac-MainConfig CHOICE { | | | |
| explicitValue | MAC-MainConfig-RBC using condition DRX_L SCG_Add_EN-DC | See subclause 4.8.2 | |
| } | | | |
| sps-Config | Not present | | |
| physicalConfigDedicated | PhysicalConfigDedicated-DEFAULT using condition RBC | For signalling test cases see subclause 6.6B.1.1.1. Otherwise, see subclause 4.8.2 | |
| } | | | |

– RLC-Config-DRB-AM-RECONFIG

Table 4.6.3-19A: RLC-Config-DRB-AM-RECONFIG

| Derivation Path: 36.508 table 4.8.2.1.3.2-1: RLC-Config-DRB-AM | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RLC-Config-DRB-AM-RECONFIG ::= CHOICE { | | | |
| am SEQUENCE { | | | |
| ul-AM-RLC SEQUENCE { | | | |
| t-PollRetransmit | ms85 | | |
| pollPDU | p64 | | |
| pollByte | kB250 | | |
| maxRetxThreshold | t8 | | |
| } | | | |
| dl-AM-RLC SEQUENCE { | | | |
| t-Reordering | ms85 | | |
| t-StatusProhibit | ms50 | | |
| } | | | |
| } | | | |
| } | | | |

– RLC-Config-DRB-UM-RECONFIG

Table 4.6.3-19B: RLC-Config-DRB-UM-RECONFIG

| Derivation Path: 36.508 table 4.8.2.1.3.1-1: RLC-Config-DRB-UM | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RLC-Config-DRB-UM-RECONFIG ::= CHOICE { | | | |
| um-Bi-Directional SEQUENCE { | | | |
| ul-UM-RLC SEQUENCE { | | | |
| sn-FieldLength | Size10 | | |
| } | | | |
| dl-UM-RLC SEQUENCE { | | | |
| sn-FieldLength | Size10 | | |
| t-Reordering | ms55 | | |
| } | | | |
| } | | | |
| } | | | |

– RLC-Config-SRB-AM-RECONFIG

Table 4.6.3-19C: RLC-Config-SRB-AM-RECONFIG

| Derivation Path: 36.331 clause 6.3.2, 9.2.1 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RLC-Config-SRB-AM-RECONFIG ::= CHOICE { | | | |
| am SEQUENCE { | | | |
| ul-AM-RLC SEQUENCE { | | | |
| t-PollRetransmit | ms50 | | |
| pollPDU | pInfinity | Default | |
| pollByte | kBinfinity | Default | |
| maxRetxThreshold | t6 | | |
| } | | | |
| dl-AM-RLC SEQUENCE { | | | |
| t-Reordering | ms40 | | |
| t-StatusProhibit | ms0 | Default | |
| } | | | |
| } | | | |
| } | | | |

– SCellToAddMod-r10-DEFAULT

Table 4.6.3-19D: SCellToAddMod-r10-DEFAULT

| Derivation Path: 36.331 clause 6.2.2 | | | |
|--|---|-----------|---------------|
| Information Element | Value/remark | Comment | Condition |
| SCellToAddMod-r10 ::= SEQUENCE { | | | |
| sCellIndex-r10 | Set according to specific message content | | |
| cellIdentification-r10 SEQUENCE { | | | |
| physCellId-r10 | Set according to specific message content | | |
| dl-CarrierFreq-r10 | Set according to specific message content | | |
| dl-CarrierFreq-r10 | 65535 | maxEARFCN | Band > 64 |
| } | | | |
| radioResourceConfigCommonSCell-r10 | RadioResourceConfigCommonSCell-r10-DEFAULT | | |
| radioResourceConfigDedicatedSCell-r10 | RadioResourceConfigDedicatedSCell-r10-DEFAULT | | |
| dl-CarrierFreq-v1090 | Set according to specific message content | | Band > 64 |
| antennaInfoDedicatedSCell-v10i0 ::= SEQUENCE { | | | |
| maxLayersMIMO-r10 | fourLayers | | 4Rx_SCC |
| } | | | |
| srs-SwitchFromServCellIndex-r14 | 0 | | SRS-Switching |
| } | | | |

| Condition | Explanation |
|---------------|---|
| Band > 64 | If band > 64 is selected |
| 4Rx_SCC | For 4Rx testcases with more than 2 Layers on SCC |
| SRS-Switching | SRS transmission is switched to a PUSCH-less TDD SCell. |

– SCellToRelease-r10-DEFAULT

Table 4.6.3-19E: SCellToRelease-r10-DEFAULT

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| sCellToReleaseList-r10 SEQUENCE (SIZE (1..maxSCell-r10) OF SEQUENCE { | | | |
| sCellIndex-r10[1] | 1 | | |
| } | | | |

– SCG-Configuration-r12-DEFAULT

Table 4.6.3-19F: SCG-Configuration-r12-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---|---|--|
| Information Element | Value/remark | Comment | Condition |
| scg-Configuration-r12 CHOICE { | | | |
| release | NULL | | PSCell_Release |
| setup SEQUENCE { | | | PSCell_Mod, PSCell_Add_Split_DRB, PSCell_Add_SCG_DRB |
| scg-ConfigPartMCG-r12 SEQUENCE { | | | |
| scg-Counter-r12 | 0 | INTEGER (0..65535) | |
| powerCoordinationInfo-r12 SEQUENCE { | | | |
| p-MeNB-r12 | 6 (30%) | INTEGER (1..16) mapped to 0..15 in Table 5.1.4.2-1 in TS 36.213 for power allocation for DC (0% - 100%) | |
| p-SeNB-r12 | 6 (30%) | INTEGER (1..16) mapped to 0..15 in Table 5.1.4.2-1 in TS 36.213 for power allocation for DC (0% - 100%) | |
| powerControlMode-r12 | 1 | DC power control mode 1 | |
| } | | | |
| } | | | |
| scg-ConfigPartSCG-r12 SEQUENCE { | | | PSCell_Add_Split_DRB, PSCell_Add_SCG_DRB |
| radioResourceConfigDedicatedSCG-r12 SEQUENCE { | | | |
| drb-ToAddModListSCG-r12 SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE { | 1 entry | | |
| DRB-ToAddModSCG-r12[1] SEQUENCE { | | | |
| drb-Identity-r12 | Same DRB ID as used for the MCG | | PSCell_Add_Split_DRB |
| drb-Identity-r12 | BID+1 | BID is the total number of established DRBs in the UE, before applying the contents of this IE | PSCell_Add_SCG_DRB |
| drb-Type-r12 CHOICE { | | | |
| split-r12 | NULL | | PSCell_Add_Split_DRB |
| scg-r12 SEQUENCE { | | | PSCell_Add_SCG_DRB |
| eps-BearerIdentity-r12 | BID+5 | drb-Identity-r12+4 | |
| pdcp-Config-r12 | PDCP-Config-DRB-AM | | |
| } | | | |
| } | | | |
| rlc-ConfigSCG-r12 | RLC-Config-DRB-AM | | |
| rlc-Config-v1250 | Not present | | |
| logicalChannelIdentitySCG-r12 | 2 | drb-Identity-r12+2 | |
| logicalChannelConfigSCG-r12 | LogicalChannelConfig-DRB using condition LO | | |
| } | | | |
| } | | | |
| mac-MainConfigSCG-r12 | Not present | | |
| rlf-TimersAndConstantsSCG-r12 | Not present | | |

| | | | |
|--|--|--|----------------|
| } | | | |
| sCellToReleaseListSCG-r12 | Not Present | | |
| pSCellToAddMod-r12 SEQUENCE { | | | |
| sCellIndex-r12 | Set according to specific message content | | |
| cellIdentification-r12 SEQUENCE { | | | |
| physCellId-r12 | Set according to specific message content | | |
| dl-CarrierFreq-r12 | Set according to specific message content | | |
| } | | | |
| } | | | |
| radioResourceConfigCommonPSCell-r12 SEQUENCE { | | | |
| basicFields-r12 | RadioResourceConfigCommonSCell-r10-DEFAULT | | |
| pucch-ConfigCommon-r12 | PUCCH-ConfigCommon-DEFAULT | | |
| rach-ConfigCommon-r12 | RACH-ConfigCommon-DEFAULT | | |
| uplinkPowerControlCommonPSCell-r12 SEQUENCE { | | | |
| deltaF-PUCCH-Format3-r12 | deltaF0 | Same value as in UplinkPowerControlCommon-v1020-DEFAULT used for the PCell | RM coding |
| | deltaF4 | | Dual RM coding |
| deltaF-PUCCH-Format1bCS-r12 | deltaF1 | Same value as in UplinkPowerControlCommon-v1020-DEFAULT used for the PCell | |
| p0-NominalPUCCH-r12 | -117 (-117 dBm) | Same value as in UplinkPowerControlCommon-DEFAULT used for the PCell | |
| deltaFList-PUCCH-r12 SEQUENCE { | | | |
| deltaF-PUCCH-Format1 | deltaF0 | Same value as in UplinkPowerControlCommon-DEFAULT used for the PCell | |
| deltaF-PUCCH-Format1b | deltaF3 | Same value as in UplinkPowerControlCommon-DEFAULT used for the PCell | |
| deltaF-PUCCH-Format2 | deltaF0 | Same value as in UplinkPowerControlCommon-DEFAULT used for the PCell | |
| deltaF-PUCCH-Format2a | deltaF0 | Same value as in UplinkPowerControlCommon-DEFAULT used for the PCell | |
| deltaF-PUCCH-Format2b | deltaF0 | Same value as in UplinkPowerControlCommon-DEFAULT used for the PCell | |
| } | | | |

| | | | |
|--|--|--|---------|
| } | | | |
| } | | | |
| radioResourceConfigDedicatedPSCell-r12 SEQUENCE { | | | |
| physicalConfigDedicatedPSCell-r12 | PhysicalConfigDedicated-DEFAULT | For signalling test cases see subclause 6.6B.1.1.1. Otherwise, see subclause 4.8.2 | |
| sps-Config-r12 | Not present | | |
| naics-Info-r12 | Not present | | |
| } | | | |
| antennaInfoDedicatedPSCell-v1280 | Not present | | |
| } | | | |
| sCellToAddModListSCG-r12 | Not Present | | |
| mobilityControlInfoSCG-r12 | | | |
| t307-r12 | ms2000 | ENUMERATED {ms50, ms100, ms150, ms200, ms500,ms1000, ms2000} | |
| ue-IdentitySCG-r12 | Any allowed value | | |
| rach-ConfigDedicated-r12 | Rach-ConfigDedicated-DEFAULT | | |
| cipheringAlgorithmSCG-r12 | Set according to PIXIT parameter for default ciphering algorithm | | For SIG |
| | eea0 | | For RF |
| } | | | |
| } | | | |

| Condition | Explanation |
|----------------------|--------------------------------------|
| PSCell_Mod | Modification of PSCell(s) |
| PSCell_Release | Release of PSCell |
| PSCell_Add_Split_DRB | Add PSCell(s) and setup of Split DRB |
| PSCell_Add_SCG_DRB | Add PSCell(s) and setup of SCG DRB |
| RM coding | Used for Reed-Muller coding |
| Dual RM coding | Used for Dual Reed-Muller coding |
| For SIG | Used for signalling test cases |
| For RF | Used for RF/RRM test cases |

SchedulingRequest-Config-DEFAULT

Table 4.6.3-20: SchedulingRequest-Config-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---------------------|---------------------------------------|---|
| Information Element | Value/remark | Comment | Condition |
| SchedulingRequest-Config-DEFAULT ::= CHOICE { setup SEQUENCE { | | | |
| sr-PUCCH-ResourceIndex | See subclause 4.6.8 | Channel-bandwidth-dependent parameter | |
| sr-ConfigIndex | 30 | | FDD |
| | 32 | | FDD and (CEmodeA or CEmodeB) and 3 MHz BW |
| | 27 | | TDD |
| dsr-TransMax | n4 | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|-------------------------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| CEmodeA | Used for CE mode A testing |
| CEmodeB | Used for CE mode B testing |
| 3 MHz BW | Used for cells with 3 MHz bandwidth |

Table 4.6.3-20A: Void

SchedulingRequestConfigSCell-r13-DEFAULT

Table 4.6.3-20B: SchedulingRequestConfigSCell-r13-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---------------------|---------------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SchedulingRequestConfigSCell-r13 ::= CHOICE { setup SEQUENCE { | | | |
| sr-PUCCH-ResourceIndex-r13 | See subclause 4.6.8 | Channel-bandwidth-dependent parameter | |
| sr-PUCCH-ResourceIndexP1-r13 | Not present | | |
| sr-ConfigIndex-r13 | 30 | | FDD |
| | 27 | | TDD |
| dsr-TransMax-13 | n4 | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

Table 4.6.3-20B: Void

– SL-CommResourcePoolV2X-r14-DEFAULT

Table 4.6.3-20C: SL-CommResourcePoolV2X-r14-DEFAULT

| Derivation Path: 36.331 clause 6.3.8 | | | |
|---|----------------------|-----------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SL-CommResourcePoolV2X-r14-DEFAULT ::= SEQUENCE { | | | |
| sl-OffsetIndicator-r14 | Not present | | |
| sl-Subframe-r14 CHOICE { | | | |
| bs20-r14 | 11110000000000000000 | | BITMAP_1 |
| | 00001111000000000000 | | BITMAP_2 |
| | 00000000111100000000 | | BITMAP_3 |
| | 00000000000011110000 | | BITMAP_4 |
| | 00000000000000001111 | | BITMAP_5 |
| | 11111111111111111111 | | BITMAP_6 |
| } | | | |
| adjacencyPSCCH-PSSCH-r14 | true | BOOLEAN | |
| sizeSubchannel-r14 | n5 | | BW10 |
| | n10 | | BW20 |
| numSubchannel-r14 | n10 | | |
| startRB-Subchannel-r14 | 0 | | |
| startRB-PSCCH-Pool-r14 | Not present | | |
| rxParametersNCell-r14 | Not present | | |
| dataTxParameters-r14 {} | Not present | | |
| dataTxParameters-r14 SEQUENCE { | | | COND_TX |
| alpha-r12 | a10 | | |
| p0-r12 | 31 | | |
| } | | | |
| zoneID-r14 | Not present | INTEGER (0..7) | |
| threshS-RSSI-CBR-r14 | Not present | INTEGER (0..45) | |
| poolReportId-r14 | Not present | | |
| cbr-pssch-TxConfigList-r14 | Not present | | |
| resourceSelectionConfigP2X-r14 | Not present | | |
| syncAllowed-r14 | Not present | | |
| restrictResourceReservationPeriod-r14 | Not present | | |
| } | | | |

| Condition | Explanation |
|-----------|--|
| BW10 | 10 MHz channel bandwidth for V2X communication |
| BW20 | 20 MHz channel bandwidth for V2X communication |

– SL-CommTxPoolSensingConfig-r14-DEFAULT

Table 4.6.3-20D: SL-CommTxPoolSensingConfig-r14-DEFAULT

| Derivation Path: 36.331 clause 6.3.8 | | | |
|---|-------------------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SL-CommTxPoolSensingConfig-r14-DEFAULT ::= SEQUENCE { | | | |
| pssch-TxConfigList-r14 | SL-PSSCH-TxConfig-r14-DEFAULT | | |
| thresPSSCH-RSRP-List-r14 SEQUENCE (SIZE (64)) OF SL-ThresPSSCH-RSRP-r14 { | | | |
| SL-ThresPSSCH-RSRP-r14[n] | 1 | For n=1,2,...,64, where n denotes the index for the threshold used for sensing based UE autonomous resource selection | |
| } | | | |
| restrictResourceReservationPeriod-r14 SEQUENCE (SIZE (1..maxReservationPeriod-r14)) OF SL-RestrictResourceReservationPeriod-r14 { | | | |
| SL-RestrictResourceReservationPeriod-r14[1] | v0dot2 | | |
| SL-RestrictResourceReservationPeriod-r14[2] | v0dot5 | | |
| SL-RestrictResourceReservationPeriod-r14[3] | v1 | | |
| SL-RestrictResourceReservationPeriod-r14[4] | v2 | | |
| SL-RestrictResourceReservationPeriod-r14[5] | v3 | | |
| SL-RestrictResourceReservationPeriod-r14[6] | v4 | | |
| SL-RestrictResourceReservationPeriod-r14[7] | v5 | | |
| SL-RestrictResourceReservationPeriod-r14[8] | v6 | | |
| SL-RestrictResourceReservationPeriod-r14[9] | v7 | | |
| SL-RestrictResourceReservationPeriod-r14[10] | v8 | | |
| SL-RestrictResourceReservationPeriod-r14[11] | v9 | | |
| SL-RestrictResourceReservationPeriod-r14[12] | v10 | | |
| } | | | |
| probResourceKeep-r14 | v0 | | |
| p2x-SensingConfig-r14 | Not present | | |
| sl-ReselectAfter-r14 | Not present | | |
| } | | | |

– SL-InterFreqInfoV2X-r14-DEFAULT

Table 4.6.3-20E: SL-InterFreqInfoV2X-r14-DEFAULT

| Derivation Path: 36.331 clause 6.3.8 | | | |
|--|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SL-InterFreqInfoV2X-r14-DEFAULT ::= SEQUENCE { | | | |
| plmn-IdentityList-r14 | Not present | | |
| v2x-CommCarrierFreq-r14 | set according to the specific test configuration | | |
| sl-MaxTxPower-r14 | Not present | INTEGER (-30..33) | |
| sl-Bandwidth-r14 | n50 | ENUMERATED {n6, n15, n25, n50, n75, n100} | BW10 |
| | n100 | | BW20 |
| v2x-SchedulingPool-r14 | SL-CommResourcePoolV2X-r14-DEFAULT using conditions BITMAP_4 and COND_TX | | SCHEDULED |
| | Not present | | SIB |
| v2x-UE-ConfigList-r14 | SL-V2X-InterFreqUE-Config-r14-DEFAULT using condition SIB | | SIB |
| | SL-V2X-InterFreqUE-Config-r14-DEFAULT using condition RRC | | RRC |
| additionalSpectrumEmissionV2X-r14 | Not present | | |
| } | | | |

| Condition | Explanation |
|-----------|--|
| SIB | Inter-frequency V2X configuration for SIB21 |
| RRC | Inter-frequency V2X configuration for RRCConnectionReconfiguration |
| BW10 | 10 MHz channel bandwidth for V2X communication |
| BW20 | 20 MHz channel bandwidth for V2X communication |
| SCHEDULED | The resources the UE can use are scheduled by the NW. |

– SlotOrSubslotPDSCH-Config-r15-DEFAULT

Table 4.6.3-20EA: SlotOrSubslotPDSCH-Config-r15-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|-----------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SlotOrSubslotPDSCH-Config-r15-DEFAULT ::= SEQUENCE { | | | |
| altCQI-TableSTTI-r15 | Not present allSubframes | | DL 256QAM |
| resourceAllocation-r15 | resourceAllocationType0 | | |
| tbsIndexAlt-STTI-r15 | Not present | | |
| tbsIndexAlt2-STTI-r15 | Not present | | |
| tbsIndexAlt3-STTI-r15 | Not present | | |
| } | | | |

| Condition | Explanation |
|-----------|------------------------|
| DL 256QAM | When DL 256QAM is used |

– SlotOrSubslotPUSCH-Config-r15-DEFAULT

Table 4.6.3-20EB: SlotOrSubslotPUSCH-Config-r15-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SlotOrSubslotPUSCH-Config-r15-DEFAULT ::= SEQUENCE { | | | |
| betaOffsetSlot-ACK-Index-r15 | 9 | | |
| betaOffset2Slot-ACK-Index-r15 | Not present | | |
| betaOffsetSubslot-ACK-Index-r15 SEQUENCE (SIZE(1..2)) OF | 1 entry | | |
| | 9 | | |
| betaOffset2Subslot-ACK-Index-r15 | Not present | | |
| betaOffsetSlot-RI-Index-r15 | 6 | | |
| betaOffsetSubslot-RI-Index-r15 SEQUENCE (SIZE(1..2)) OF | 1 entry | | |
| | 6 | | |
| betaOffsetSlot-CQI-Index-r15 | 6 | | |
| betaOffsetSubslot-CQI-Index-r15 SEQUENCE (SIZE(1..2)) OF | 1 entry | | |
| | 6 | | |
| enable256QAM-SlotOrSubslot-r15 | Not present | | |
| resourceAllocationOffset-r15 | Not present | | |
| ul-DMRS-IFDMA-SlotOrSubslot-r15 | FALSE | | |
| } | | | |

– SPDCCH-Config-r15-DEFAULT

Table 4.6.3-20EC: SPDCCH-Config-r15-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|-------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SPDCCH-Config-r15-DEFAULT ::= SEQUENCE { | | | |
| spdcch-L1-ReuseIndication-r15 | n1 | | |
| spdcch-SetConfig-r15 SEQUENCE (SIZE(1..4)) OF SEQUENCE { | 1 entry | | |
| spdcch-SetConfigId-r15 | 0 | | |
| spdcch-SetReferenceSig-r15 | dmrs | | |
| transmissionType-r15 | localised | | |
| spdcch-NoOfSymbols-r15 | Not present | | |
| dmrs-ScramblingSequenceInt-r15 | 0 | | |
| dci7-CandidatesPerAL-PDCCH-r15 SEQUENCE (SIZE(1..4)) OF | 4 entries | | |
| | 1 | AL=1 | |
| | 2 | AL=2 | |
| | 0 | AL=4 | |
| | 0 | AL=8 | |
| dci7-CandidateSetsPerAL-SPDCCH-r15 SEQUENCE (SIZE(1..2)) OF | 2 entries | | |
| DCI7-CandidatesPerAL-SPDCCH-r15 SEQUENCE (SIZE(1..4)) OF | 4 entries | | |
| | 1 | AL=1 | |
| | 0 | AL=2 | |
| | 1 | AL=4 | |
| | 0 | AL=8 | |
| DCI7-CandidatesPerAL-SPDCCH-r15 SEQUENCE (SIZE(1..4)) OF | 4 entries | | |
| | 1 | AL=1 | |
| | 1 | AL=2 | |
| | 0 | AL=4 | |
| | 0 | AL=8 | |
| resourceBlockAssignment-r15 SEQUENCE { | | | |
| numberRB-InFreq-domain-r15 | 8 | | |
| resourceBlockAssignment-r15 | 11100100101110110011001101100 | | |
| } | | | |
| subslotApplicability-r15 | 11001 | | |
| al-StartingPointSPDCCH-r15 SEQUENCE (SIZE(1..4)) OF | 4 entries | | |
| | 2 | AL=1 | |
| | 2 | AL=2 | |
| | 0 | AL=4 | |
| | 0 | AL=8 | |
| subframeType-r15 | all | | |
| rateMatchingMode-r15 | m2 | | |
| } | | | |
| } | | | |

– SPUCCH-Config-r15-DEFAULT

Table 4.6.3-20ED: SPUCCH-Config-r15-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|-------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SPUCCH-Config-r15-DEFAULT ::= SEQUENCE { | | | |
| spucch-Set-r15 SEQUENCE (SIZE(1..4)) OF SEQUENCE { | 1 entry | | |
| n1SubslotSPUCCH-AN-List-r15 SEQUENCE (SIZE(1..4)) OF | 4 entries | | |
| | 101 | INTEGER (0..1319) | |
| | 102 | | |
| | 103 | | |
| | 104 | | |
| n1SlotSPUCCH-FH-AN-List-r15 | 101 | | |
| n1SlotSPUCCH-NoFH-AN-List-r15 | 101 | | |
| n3SPUCCH-AN-List-r15 | 101 | | |
| n4SPUCCHSlot-Resource-r15 | Not present | | |
| n4SPUCCHSubslot-Resource-r15 | Not present | | |
| n4maxCoderateSlotPUCCH-r15 | Not present | | |
| n4maxCoderateSubslotPUCCH-r15 | Not present | | |
| n4maxCoderateMultiResourceSlotPUCCH-r15 | Not present | | |
| n4maxCoderateMultiResourceSubslotPUCCH-r15 | Not present | | |
| } | | | |
| twoAntennaPortActivatedSPUCCH-Format1a1b | Not present | | |
| twoAntennaPortActivatedSPUCCH-Format1a3 | Not present | | |
| } | | | |

– UplinkPowerControlCommon-v1530-DEFAULT

Table 4.6.3-20EF: UplinkPowerControlCommon-v1530-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------------|---------|-----------------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlCommon-v1530-DEFAULT ::= SEQUENCE { | | | |
| deltaFList-PUCCH-r15 SEQUENCE { | | | |
| deltaF-slotSPUCCH-Format1-r15 | deltaF0 | | |
| deltaF-slotSPUCCH-Format1a-r15 | deltaF6 deltaF4 | | SPUCCH-freqHopp |
| deltaF-slotSPUCCH-Format1b-r15 | deltaF8 deltaF5 | | SPUCCH-freqHopp |
| deltaF-slotSPUCCH-Format3-r15 | deltaF8 | | |
| deltaF-slotSPUCCH-RM-Format4-r15 | deltaF17 | | |
| deltaF-slotSPUCCH-TBCC-Format4-r15 | deltaF14 | | |
| deltaF-subslotSPUCCH-Format1and1a-r15 | deltaF9 | | |
| deltaF-subslotSPUCCH-Format1b-r15 | deltaF10 | | |
| deltaF-subslotSPUCCH-RM-Format4-r15 | deltaF19 | | |
| deltaF-subslotSPUCCH-TBCC-Format4-r15 | deltaF17 | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------------|--|
| SPUCCH-freqHopp | This condition applies when SPUCCH frequency hopping is used |

– SL-PSSCH-TxConfig-r14-DEFAULT

Table 4.6.3-20F: SL-PSSCH-TxConfig-r14-DEFAULT

| Derivation Path: 36.331 clause 6.3.8 | | | |
|--|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SL-PSSCH-TxConfig-r14-DEFAULT ::= SEQUENCE { | | | |
| typeTxSync-r14 | enb | | |
| thresUE-Speed-r14 | kmpH200 | | |
| parametersAboveThres-r14 SEQUENCE { | | | |
| minMCS-PSSCH-r14 | 0 | | |
| maxMCS-PSSCH-r14 | 15 | | |
| minSubChannel-NumberPSSCH-r14 | 1 | | |
| maxSubchannel-NumberPSSCH-r14 | 50 | | BW10 |
| | 100 | | BW20 |
| allowedRetxNumberPSSCH-r14 | both | ENUMERATED {n0, n1, both, spare1} | RF |
| | n0 | | SIG |
| maxTxPower-r14 | Not present | | |
| } | | | |
| parametersBelowThres-r14 SEQUENCE { | | | |
| minMCS-PSSCH-r14 | 4 | | |
| maxMCS-PSSCH-r14 | 25 | | |
| minSubChannel-NumberPSSCH-r14 | 1 | | |
| maxSubchannel-NumberPSSCH-r14 | 50 | | BW10 |
| | 100 | | BW20 |
| allowedRetxNumberPSSCH-r14 | n1 | ENUMERATED {n0, n1, both, spare1} | RF |
| | n0 | | SIG |
| maxTxPower-r14 | Not present | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|--|
| BW10 | 10 MHz channel bandwidth for V2X communication |
| BW20 | 20 MHz channel bandwidth for V2X communication |
| RF | For RF, performance and RRM testing |
| SIG | For protocol testing |

– SL-TxPoolToAddMod-r14-DEFAULT

Table 4.6.3-20G: SL-TxPoolToAddMod-r14-DEFAULT

| Derivation Path: 36.331 clause 6.3.8 | | | |
|--|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SL-TxPoolToAddMod-r14-DEFAULT ::= SEQUENCE { | | | |
| poolIdentity-r14 | 1 | | |
| pool-r14 | SL- CommResourcePoolV2X -r14-DEFAULT using conditions BITMAP_5 and COND_TX | | |
| } | | | |

– SL-TxPoolToReleaseListV2X-r14-DEFAULT

Table 4.6.3-20H: SL-TxPoolToReleaseListV2X-r14-DEFAULT

| Derivation Path: 36.331 clause 6.3.8 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SL-TxPoolToReleaseListV2X-r14-DEFAULT ::= SEQUENCE (SIZE (1..maxSL-V2X-TxPool-r14)) OF SL-V2X-TxPoolIdentity-r14 { | | | |
| SL-V2X-TxPoolIdentity-r14[1] | 1 | | |
| } | | | |

– SL-V2X-ConfigDedicated-r14-DEFAULT

Table 4.6.3-20HA: SL-V2X-ConfigDedicated-r14-DEFAULT

| Derivation Path: 36.331 clause 6.3.8 | | | |
|--|---|------------------------|-------------|
| Information Element | Value/remark | Comment | Condition |
| SL-V2X-ConfigDedicated-r14-DEFAULT ::= SEQUENCE { | | | |
| commTxResources-r14 CHOICE { | Not present | | |
| commTxResources-r14 CHOICE { | | | SCHEDULE D |
| release | NULL | | RELEASE |
| setup CHOICE { | | | SETUP |
| scheduled-r14 SEQUENCE { | | | |
| sl-V-RNTI-r14 | '1111'H | BIT STRING (SIZE (16)) | |
| mac-MainConfig-r14 SEQUENCE { | | | |
| periodic-BSR-TimerSL | sf20 | | |
| retx-BSR-TimerSL | sf20 | | |
| } | | | |
| v2x-SchedulingPool-r14 | Not present | | |
| mcs-r14 | Not present | INTEGER (0..31) | |
| logicalChGroupInfoList-r14 SEQUENCE (SIZE (1..maxLCG-r13)) OF SL-PriorityList-r13 | | 4 entries | |
| SL-PriorityList-r13[1] ::= SEQUENCE (SIZE (1..maxSL-Prio-r13)) OF SL-Priority-r13 { | | | |
| SL-Priority-r13[1] | 1 | | |
| SL-Priority-r13[2] | 2 | | |
| } | | | |
| SL-PriorityList-r13[2] ::= SEQUENCE (SIZE (1..maxSL-Prio-r13)) OF SL-Priority-r13 { | | | |
| SL-Priority-r13[1] | 3 | | |
| SL-Priority-r13[2] | 4 | | |
| } | | | |
| SL-PriorityList-r13[3] ::= SEQUENCE (SIZE (1..maxSL-Prio-r13)) OF SL-Priority-r13 { | | | |
| SL-Priority-r13[1] | 5 | | |
| SL-Priority-r13[2] | 6 | | |
| } | | | |
| SL-PriorityList-r13[4] ::= SEQUENCE (SIZE (1..maxSL-Prio-r13)) OF SL-Priority-r13 { | | | |
| SL-Priority-r13[1] | 7 | | |
| SL-Priority-r13[2] | 8 | | |
| } | | | |
| } | | | |
| ue-Selected-r14 | Not present | | |
| } | | | |
| } | | | |
| v2x-InterFreqInfoList-r14 SEQUENCE (SIZE (0..maxFreqV2X-1-r14)) OF SL-InterFreqInfoV2X-r14 { | | | |
| SL-InterFreqInfoV2X-r14[1] | SL-InterFreqInfoV2X-r14-DEFAULT using condition RRC | | UE-SELECTED |
| SL-InterFreqInfoV2X-r14[1] | SL-InterFreqInfoV2X-r14-DEFAULT using condition RRC and SCHEDULED | | SCHEDULE D |
| } | | | |
| thresSL-TxPrioritization-r14 | Not present | | |
| typeTxSync-r14 | enb | | |
| cbr-DedicatedTxConfigList-r14 | Not present | | |
| } | | | |

| Condition | Explanation |
|------------------|---|
| SCHEDULED | The resources the UE can use are scheduled by the NW. |
| UE-SELECTED | The resources the UE can use are to be selected by the UE from set of resources provided by the NW. |
| RELEASE | Release Communication Resources for V2X Sidelink communication |
| SETUP | Setup Communication Resources for V2X Sidelink communication |

– SL-V2X-InterFreqUE-Config-r14-DEFAULT

Table 4.6.3-20I: SL-V2X-InterFreqUE-Config-r14-DEFAULT

| Derivation Path: 36.331 clause 6.3.8 | | | |
|--|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SL-V2X-InterFreqUE-Config-r14-DEFAULT ::= SEQUENCE { | | | |
| physCellIdList-r14 | Not present | | |
| typeTxSync-r14 | enb | | |
| v2x-SyncConfig-r14 | Not present | | |
| v2x-CommRxPool-r14 SEQUENCE (SIZE (1..maxSL-V2X-RxPool-r14)) OF SL-CommResourcePoolV2X-r14 { | | | |
| SL-CommResourcePoolV2X-r14[1] | SL-CommResourcePoolV2X-r14-DEFAULT using conditions BITMAP_1 | | |
| SL-CommResourcePoolV2X-r14[2] | SL-CommResourcePoolV2X-r14-DEFAULT using conditions BITMAP_2 | | |
| SL-CommResourcePoolV2X-r14[3] | SL-CommResourcePoolV2X-r14-DEFAULT using conditions BITMAP_3 | | |
| SL-CommResourcePoolV2X-r14[4] | SL-CommResourcePoolV2X-r14-DEFAULT using conditions BITMAP_4 | | |
| SL-CommResourcePoolV2X-r14[5] | SL-CommResourcePoolV2X-r14-DEFAULT using conditions BITMAP_5 | | |
| } | | | |
| v2x-CommTxPoolNormal-r14 SEQUENCE (SIZE (1..maxSL-V2X-TxPool-r14)) OF SL-CommResourcePoolV2X-r14 { | | | |
| SL-CommResourcePoolV2X-r14[1] | SL-CommResourcePoolV2X-r14-DEFAULT using conditions BITMAP_1 and COND_TX | | SIB |
| | SL-CommResourcePoolV2X-r14-DEFAULT using conditions BITMAP_5 and COND_TX | | RRC |
| } | | | |
| p2x-CommTxPoolNormal-r14 | Not present | | |
| v2x-CommTxPoolExceptional-r14 | SL-CommResourcePoolV2X-r14-DEFAULT using conditions BITMAP_3 and COND_TX | | |
| v2x-ResourceSelectionConfig-r14 | SL-CommTxPoolSensingConfig-r14-DEFAULT | | |
| zoneConfig-r14 | Not present | | |
| offsetDFN-r14 | Not present | | |
| } | | | |

| Condition | Explanation |
|-----------|---|
| SIB | UE configuration for Sidelink communication mode 4 for SIB21 |
| RRC | UE configuration for Sidelink communication mode 4 for RRCConnectionReconfiguration |

– SL-V2X-PreconfigCommPool-r14-DEFAULT

Table 4.6.3-20J: SL-V2X-PreconfigCommPool-r14-DEFAULT

| Derivation Path: 36.331 clause 9.3.2 | | | |
|---|----------------------|-----------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SL-V2X-PreconfigCommPool-r14-DEFAULT ::= SEQUENCE { | | | |
| sl-OffsetIndicator-r14 | Not present | | |
| sl-Subframe-r14 CHOICE { | | | |
| bs20-r14 | 11110000000000000000 | | BITMAP_1 |
| | 00001111000000000000 | | BITMAP_2 |
| | 00000000111100000000 | | BITMAP_3 |
| | 00000000000011110000 | | BITMAP_4 |
| | 00000000000000001111 | | BITMAP_5 |
| | 11111111111111111111 | | BITMAP_6 |
| } | | | |
| adjacencyPSCCH-PSSCH-r14 | true | BOOLEAN | |
| sizeSubchannel-r14 | n5 | | BW10 |
| | n10 | | BW20 |
| numSubchannel-r14 | n10 | | |
| startRB-Subchannel-r14 | 0 | | |
| startRB-PSCCH-Pool-r14 | Not present | | |
| dataTxParameters-r14 | 31 | p0-r12 | |
| zoneID-r14 | Not present | INTEGER (0..7) | |
| threshS-RSSI-CBR-r14 | Not present | INTEGER (0..45) | |
| cbr-pssch-TxConfigList-r14 | Not present | | |
| resourceSelectionConfigP2X-r14 | Not present | | |
| syncAllowed-r14 | Not present | | |
| restrictResourceReservationPeriod-r14 | Not present | | |
| } | | | |

| Condition | Explanation |
|-----------|---|
| BW10 | 10 MHz channel bandwidth cell environment |
| BW20 | 20 MHz channel bandwidth cell environment |

– SL-V2X-PreconfigFreqInfo-r14-DEFAULT

Table 4.6.3-20K: SL-V2X-PreconfigFreqInfo-r14-DEFAULT

| Derivation Path: 36.331 clause 9.3.2 | | | |
|---|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SL-V2X-PreconfigFreqInfo-r14-DEFAULT ::= SEQUENCE { | | | |
| v2x-CommPreconfigGeneral-r14 SEQUENCE { | | SL-PreconfigGeneral-r12 | |
| rohc-Profiles-r12 SEQUENCE { | | -- PDCP configuration | |
| profile0x0001-r12 | false | | |
| profile0x0002-r12 | false | | |
| profile0x0004-r12 | false | | |
| profile0x0006-r12 | false | | |
| profile0x0101-r12 | false | | |
| profile0x0102-r12 | false | | |
| profile0x0104-r12 | false | | |
| } | | | |
| carrierFreq-r12 | f1 as per table 6.2.3.5-1 | ARFCN-ValueEUTRA-r9 | |
| maxTxPower-r12 | 26 | | |
| additionalSpectrumEmission-r12 | 1(NS_01) | A-MPR doesn't apply by default. See TS 36.101 table 6.2.4-1 | |
| sl-bandwidth-r12 | Set according to specific message content | | |
| tdd-ConfigSL-r12 SEQUENCE { | | TDD-ConfigSL-r12 | |
| subframeAssignment | none | | |
| reserved-r12 | '00000000000000000000' | | |
| additionalSpectrumEmission-v1440 | Not present | | |
| } | | | |
| } | | | |
| v2x-CommPreconfigSync-r14 | Not present | | |
| v2x-CommRxPoolList-r14 SEQUENCE (SIZE (1..maxSL-V2X-RxPoolPreconf-r14)) OF SL-V2X-PreconfigCommPool-r14 { | 1 entry | | |
| SL-V2X-PreconfigCommPool-r14[1] | SL-V2X-PreconfigCommPool-r14-DEFAULT using condition BITMAP_6 | | |
| } | | | |
| v2x-CommTxPoolList-r14 SEQUENCE (SIZE (1..maxSL-V2X-TxPoolPreconf-r14)) OF SL-V2X-PreconfigCommPool-r14 { | | | |
| SL-V2X-PreconfigCommPool-r14[1] | SL-V2X-PreconfigCommPool-r14-DEFAULT using conditions BITMAP_6 and COND_TX | | |
| } | | | |
| p2x-CommTxPoolList-r14 | Not present | | |
| v2x-ResourceSelectionConfig-r14 | SL-CommTxPoolSensingConfig-r14-DEFAULT | | |
| zoneConfig-r14 | Not present | | |
| syncPriority-r14 | gnss | | |
| thresSL-TxPrioritization-r14 | Not present | | |
| offsetDFN-r14 | Not present | | |
| } | | | |

SoundingRS-UL-ConfigCommon-DEFAULT

Table 4.6.3-21: SoundingRS-UL-ConfigCommon-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SoundingRS-UL-ConfigCommon-DEFAULT ::= SEQUENCE { | | | |
| setup SEQUENCE { | | | |
| -srs-BandwidthConfig | See subclause 4.6.8 | Channel-bandwidth-dependent parameter | |
| srs-SubframeConfig | sc0 | Assuming SRS density is high (see Table 5.5.3.3-1 in TS 36.211) | FDD |
| | sc4 | Assuming SRS density is high (see Table 5.5.3.3-2 in TS 36.211) | TDD |
| ackNackSRS-SimultaneousTransmission | TRUE | Typical value in real network | |
| srs-MaxUpPts | Not Present | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

SoundingRS-UL-ConfigDedicated-DEFAULT

Table 4.6.3-22: SoundingRS-UL-ConfigDedicated-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|--|-------------|
| Information Element | Value/remark | Comment | Condition |
| SoundingRS-UL-ConfigDedicated-DEFAULT ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| srs-Bandwidth | bw0 bw3 | | SRSFreqHopp |
| srs-HoppingBandwidth | hbw0 | | |
| freqDomainPosition | 0 | | |
| duration | TRUE | | |
| srs-ConfigIndex | 20 | See Table 8.2-1 in TS 36.213 | FDD |
| | 31 | INTEGER (0..1023) See Table 8.2-2 in TS 36.213 | TDD |
| transmissionComb | 0 | | |
| cyclicShift | cs0 | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|-------------|---------------------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| SRSFreqHopp | Used for SRS frequency hopping. |

Table 4.6.3-22AA: Void

– SoundingRS-UL-ConfigDedicatedAperiodic-r10-DEFAULT

Table 4.6.3-22AB: SoundingRS-UL-ConfigDedicatedAperiodic-r10-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SoundingRS-UL-ConfigDedicatedAperiodic-r10 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| srs-ConfigIndexAp-r10 | 10 | | |
| srs-ConfigApDCI-Format4-r10 | Not present | | |
| srs-ActivateAp-r10 | Not present | | |
| } | | | |
| } | | | |

– SRB-ToAddModList-RECONFIG

Table 4.6.3-22A: SRB-ToAddModList-RECONFIG

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|----------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SRB-ToAddModList ::= SEQUENCE (SIZE (1..2)) OF SEQUENCE { | 2 Entries | | |
| srb-Identity[1] | 1 | | |
| rlc-Config[1] CHOICE { | | | |
| explicitValue | RLC-Config-SRB-AM-RECONFIG | | |
| logicalChannelConfig[1] CHOICE { | | | |
| defaultValue | NULL | | |
| } | | | |
| srb-Identity[2] | 2 | | |
| rlc-Config[2] CHOICE { | | | |
| explicitValue | RLC-Config-SRB-AM-RECONFIG | | |
| } | | | |
| logicalChannelConfig[2] CHOICE { | | | |
| defaultValue | NULL | | |
| } | | | |
| } | | | |

SRS-TPC-PDCCH-Config-r14-DEFAULT

Table 4.6.3-22B: SRS-TPC-PDCCH-Config-r14-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| SRS-TPC-PDCCH-Config-r14-DEFAULT ::= SEQUENCE { | | | |
| release | NULL | | RELEASE |
| setup SEQUENCE { | | | SETUP |
| srs-TPC-RNTI-r14 | '1100'H | | |
| startingBitOfFormat3B-r14 | 0 | | |
| fieldTypeFormat3B-r14 | 4 | 1 bit SRS request, 2 bit TPC command | |
| srs-CC-SetIndexlist- | Not present | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|---|
| RELEASE | Release PDCCH configuration for SRS TPC |
| SETUP | Setup PDCCH configuration for SRS TPC |

TDD-Config-DEFAULT

Table 4.6.3-23: TDD-Config-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| TDD-Config-DEFAULT ::= SEQUENCE { | | | |
| subframeAssignment | sa1 | | |
| specialSubframePatterns | Ssp6 | | |
| } | | | |

TPC-PDCCH-Config-DEFAULT

Table 4.6.3-24: TPC-PDCCH-Config-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---------------------------------------|--------------------|---------|----------------|
| Information Element | Value/remark | Comment | Condition |
| TPC-PDCCH-Config-DEFAULT ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| tpc-RNTI | '03FF'H '01FA'H | | PUCCH PUSCH |
| tpc-Index CHOICE { | | | |
| indexOfFormat3 | 1 | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|-------------|
| PUCCH | For PUCCH |
| PUSCH | For PUSCH |

– TPC-PDCCH-ConfigSCell-r13-DEFAULT

Table 4.6.3-24A: TPC-PDCCH-ConfigSCell-r13-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| TPC-PDCCH-ConfigSCell-r13-DEFAULT ::= CHOICE | | | |
| { | | | |
| setup SEQUENCE { | | | |
| tpc-Index-PUCCH-SCell-r13 CHOICE { | | | |
| indexOfFormat3 | 1 | | |
| } | | | |
| } | | | |
| } | | | |

– UplinkPowerControlCommon-DEFAULT

Table 4.6.3-25: UplinkPowerControlCommon-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|-----------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlCommon-DEFAULT ::= SEQUENCE { | | | |
| p0-NominalPUSCH | -85 (-85 dBm) | Typical value in real network | |
| alpha | alpha08 (0.8) | Typical value in real network | |
| p0-NominalPUCCH | -117 (-117 dBm) | Thermal noise = -121 dBm NF = 5 dB IoT = 6 dB Required SNR = -7.5 dB (1-bit A/N) -> -117 dB | |
| deltaFList-PUCCH SEQUENCE { | | | |
| deltaF-PUCCH-Format1 | deltaF0 | In accordance with RAN1 simulation results | |
| deltaF-PUCCH-Format1b | deltaF3 | In accordance with RAN1 simulation results | |
| deltaF-PUCCH-Format2 | deltaF0 | In accordance with RAN1 simulation results | |
| deltaF-PUCCH-Format2a | deltaF0 | In accordance with RAN1 simulation results | |
| deltaF-PUCCH-Format2b | deltaF0 | In accordance with RAN1 simulation results | |
| } | | | |
| deltaPreambleMsg3 | 4 | | |
| } | | | |

– UplinkPowerControlCommonSCell-r10-DEFAULT

Table 4.6.3-25A: UplinkPowerControlCommonSCell-r10-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|---------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlCommonSCell-r10 ::= SEQUENCE { | | | |
| p0-NominalPUSCH-r10 | -85 (-85 dBm) | | |
| alpha-r10 | al08 (0.8) | | |
| } | | | |

– UplinkPowerControlCommon-v1020-DEFAULT

Table 4.6.3-25AA: UplinkPowerControlCommon-v1020-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|---------|----------------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlCommon-v1020-DEFAULT ::= SEQUENCE { | | | |
| deltaF-PUCCH-Format3-r10 | deltaF0 | | RM coding |
| | deltaF4 | | Dual RM coding |
| deltaF-PUCCH-Format1bCS-r10 | deltaF1 | | |
| } | | | |

| Condition | Explanation |
|----------------|----------------------------------|
| RM coding | Used for Reed-Muller coding |
| Dual RM coding | Used for Dual Reed-Muller coding |

– UplinkPowerControlCommonSCell-v1310-DEFAULT

Table 4.6.3-25AB: UplinkPowerControlCommonSCell-v1310-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|-----------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlCommonSCell-v1310-DEFAULT ::= SEQUENCE { | | | |
| p0-NominalPUCCH | -117 (-117 dBm) | Same value as in UplinkPowerControlCommon-DEFAULT used for the PCell | |
| deltaFList-PUCCH SEQUENCE { | | | |
| deltaF-PUCCH-Format1 | deltaF0 | Same value as in UplinkPowerControlCommon-DEFAULT used for the PCell | |
| deltaF-PUCCH-Format1b | deltaF3 | Same value as in UplinkPowerControlCommon-DEFAULT used for the PCell | |
| deltaF-PUCCH-Format2 | deltaF0 | Same value as in UplinkPowerControlCommon-DEFAULT used for the PCell | |
| deltaF-PUCCH-Format2a | deltaF0 | Same value as in UplinkPowerControlCommon-DEFAULT used for the PCell | |
| deltaF-PUCCH-Format2b | deltaF0 | Same value as in UplinkPowerControlCommon-DEFAULT used for the PCell | |
| } | | | |
| deltaF-PUCCH-Format3-r12 | Not present | | |
| deltaF-PUCCH-Format1bCS-r12 | Not present | | |
| deltaF-PUCCH-Format4-r13 | Not present | | |
| deltaF-PUCCH-Format5-13 | Not present | | |
| } | | | |

– UplinkPowerControlDedicated-DEFAULT

Table 4.6.3-26: UplinkPowerControlDedicated-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlDedicated-DEFAULT ::= SEQUENCE { | | | |
| p0-UE-PUSCH | 0 | | |
| deltaMCS-Enabled | en0 | | |
| accumulationEnabled | TRUE | | |
| p0-UE-PUCCH | 0 | | |
| pSRS-Offset | 3 (-6 dB) | | |
| filterCoefficient | fc4 | | |
| } | | | |

UplinkPowerControlDedicated-v1020-DEFAULT

Table 4.6.3-26A: UplinkPowerControlDedicated-v1020-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-------------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlDedicated-v1020 ::= SEQUENCE { | | | |
| deltaTxD-OffsetListPUCCH-r10 | Not Present | | |
| deltaTxD-OffsetListPUCCH-r10 SEQUENCE { | | | TxD |
| deltaTxD-OffsetPUCCH-Format1-r10 | dB0 | | |
| deltaTxD-OffsetPUCCH-Format1a1b-r10 | dB0 | | |
| deltaTxD-OffsetPUCCH-Format22a2b-r10 | dB0 | | |
| deltaTxD-OffsetPUCCH-Format3-r10 | dB0 | | |
| } | | | |
| pSRS-OffsetAp-r10 | 0 | | SRSAp |
| } | | | Not present |
| } | | | |

| Condition | Explanation |
|-----------|---|
| TxD | When PUCCH Transmission Diversity is performed. |
| SRSAp | Aperiodic SRS configured |

UplinkPowerControlDedicated-v1130-DEFAULT

Table 4.6.3-26BA: UplinkPowerControlDedicated-v1130-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlDedicated-v1130 -DEFAULT ::= SEQUENCE { | | | |
| pSRS-Offset-v1130 | FFS | | |
| pSRS-OffsetAp-v1130 | FFS | | |
| deltaTxD-OffsetListPUCCH-v1130 = SEQUENCE { | | | |
| deltaTxD-OffsetPUCCH-Format1bCS-r11 | FFS | | |
| } | | | |
| } | | | |

UplinkPowerControlDedicated-v1250-DEFAULT

Table 4.6.3-26BB: UplinkPowerControlDedicated-v1250-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|---------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlDedicated-v1250 ::= SEQUENCE { | | | |
| set2PowerControlParameter CHOICE { | | | |
| setup SEQUENCE { | | | |
| tpc-SubframeSet-r12 | 0001100111 | | |
| p0-NominalPUSCH-SubframeSet2-r12 | -85 (-85 dBm) | | |
| alpha-SubframeSet2-r12 | al08 (0.8) | | |
| p0-UE-PUSCH-SubframeSet2-r12 | 0 | | |
| } | | | |
| } | | | |
| } | | | |

– UplinkPowerControlDedicated-v1530-DEFAULT

Table 4.6.3-26BC: UplinkPowerControlDedicated-v1530-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlDedicated-v1530 ::= SEQUENCE { | | | |
| alpha-UE-r15 | al0 | | |
| p0-UE-PUSCH-r15 | 1 | | |
| } | | | |

– UplinkPowerControlDedicatedSCell-r10-DEFAULT

Table 4.6.3-26B: UplinkPowerControlDedicatedSCell-r10-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlDedicatedSCell-r10 ::= SEQUENCE { | | | |
| p0-UE-PUSCH-r10 | 0 | | |
| deltaMCS-Enabled-r10 | en0 | | |
| accumulationEnabled-r10 | TRUE | | |
| pSRS-Offset-r10 | 7 | | |
| pSRS-OffsetAp-r10 | 7 | | |
| filterCoefficient-r10 | fc4 | | |
| pathlossReferenceLinking-r10 | sCell | | |
| } | | | |

– UplinkPowerControlDedicatedSCell-v1310-DEFAULT

Table 4.6.3-26C: UplinkPowerControlDedicatedSCell-v1310-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlDedicatedSCell-v1310 ::= SEQUENCE { | | | |
| p0-UE-PUCCH | 0 | | |
| deltaTxD-OffsetListPUCCH-r10 | Not present | | |
| } | | | |

- RadioResourceConfigDedicated-DRB-Mod

Table 4.6.3-27: RadioResourceConfigDedicated-DRB-Mod

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-DRB ::= SEQUENCE { | | | |
| srb-ToAddModList | Not present | | |
| drb-ToAddModList | DRB-ToAddModList-RECONFIG | | |
| } | | | |
| drb-ToReleaseList | Not present | | |
| mac-MainConfig | Not present | | |
| sps-Config | Not present | | |
| physicalConfigDedicated | Not present | | |
| } | | | |

RadioResourceConfigDedicated-PCell-PATTERN

Table 4.6.3-28: RadioResourceConfigDedicated-PCell-PATTERN

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---------------------------------------|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| measSubframePatternPCell ::= CHOICE { | | | |
| MeasSubframePattern-r10 ::= CHOICE { | | | |
| subframePatternFDD-r10 | '00110011001100110011001100110011001100110011' B | | |
| subframePatternTDD-r10 | FFS | | |
| } | | | |
| } | | | |

OtherConfig-r9

Table 4.6.3-29: OtherConfig-r9

| Derivation Path: 36.331 clause 6.3.6 | | | |
|---|--------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| OtherConfig-r9 ::= SEQUENCE { | | | |
| reportProximityConfig-r9 ::= SEQUENCE { | | | |
| proximityIndicationEUTRA-r9 | Not Present | | |
| proximityIndicationUTRA-r9 | Not Present | | |
| } | | | |
| IDC-Config-r11 SEQUENCE { | | | |
| idc-Indication-r11 | Not Present | | |
| autonomousDenialParameters-r11 ::= SEQUENCE { | | | |
| autonomousDenialSubframes-r11 | Not Present | | |
| autonomousDenialValidity-r11 | Not Present | | |
| } | | | |
| } | | | |
| PowerPrefIndicationConfig-r11 CHOICE { | | | |
| Release | NULL | | Release |
| setup SEQUENCE { | | | Setup |
| powerPrefIndicationTimer-r11 | s30 | | |
| } | | | |
| } | | | |
| delayBudgetReportingConfig-r14 CHOICE{ | | | eVoLTE |
| Release | NULL | | Release |
| setup SEQUENCE{ | | | Setup |
| delayBudgetReportingProhibitTimer-r14 | s0 | | |
| } | | | |
| } | | | |
| ObtainLocationConfig-r11 ::= SEQUENCE { | | | |
| obtainLocation-r11 | Not present | | |
| } | | | |
| sps-AssistanceInfoReport-r14 | Not present | | |
| measConfigAppLayer-r15 | Not present | | |
| measConfigAppLayer-r15 ::= CHOICE { | | | QMC |
| Release | NULL | | |
| setup SEQUENCE { | | | |
| measConfigAppLayerContainer-r15 | Octets string (1...1000) | | |
| serviceType | qoe | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|------------------|---|
| eVoLTE | The UE is configured to setup or release delayBudgetReport in case of VoLTE enhancement |
| QMC | The UE is configured to setup or release application layer QoE measurement report |
| Setup | The UE is allowed to send power preference indications or send delaybudgetreport. |
| Release | The UE is not allowed to send power preference indications or send delay budgetreport. |

WLAN-OffloadConfig-r12

Table 4.6.3-30: WLAN-OffloadConfig-DEFAULT

| Derivation Path: 36.331 clause 6.3.6 | | | |
|---|---|--------------------------------|-----------------|
| Information Element | Value/remark | Comment | Condition |
| WLAN-OffloadConfig-r12::= SEQUENCE { | | | |
| thresholdRSRP-r12 | Not Present | | |
| thresholdRSRP-r12::= SEQUENCE { | | | RSRP |
| thresholdRSRP-Low-r12 | Set according to specific message content | | |
| thresholdRSRP-High-r12 | Set according to specific message content | | |
| } | | | |
| thresholdRSRQ-r12 | Not Present | | RSRQ |
| thresholdRSRQ-r12::= SEQUENCE { | | | |
| thresholdRSRQ-Low-r12 | Set according to specific message content | | |
| thresholdRSRQ-High-r12 | Set according to specific message content | | |
| } | | | |
| thresholdRSRQ-OnAllSymbolsWithWB-r12 | Not Present | | |
| thresholdRSRQ-OnAllSymbols-r12 | Not Present | | |
| thresholdRSRQ-WB-r12 | Not Present | | |
| thresholdChannelUtilization-r12 | Not Present | | |
| thresholdChannelUtilization-r12::= SEQUENCE { | | | ChanUtilization |
| thresholdChannelUtilizationLow-r12 | Set according to specific message content | | |
| thresholdChannelUtilizationHigh-r12 | Set according to specific message content | | |
| } | | | |
| thresholdBackhaul-Bandwidth-r12 | Not Present | | |
| thresholdBackhaul-Bandwidth-r12::= SEQUENCE { | | | BackhaulBW |
| thresholdBackhaulDL-BandwidthLow-r12 | Set according to specific message content | | |
| thresholdBackhaulDL-BandwidthHigh-r12 | Set according to specific message content | | |
| thresholdBackhaulUL-BandwidthLow-r12 | Set according to specific message content | | |
| thresholdBackhaulUL-BandwidthHigh-r12 | Set according to specific message content | | |
| } | | | |
| thresholdBeaconRSSI-r12 | Not Present | | |
| thresholdBeaconRSSI-r12::= SEQUENCE { | | | BeaconRSSI |
| thresholdBeaconRSSI-Low-r12 | Set according to specific message content | | |
| thresholdBeaconRSSI-High-r12 | Set according to specific message content | | |
| } | | | |
| offloadPreferenceIndicator-r12 | '1111 1111 1111 1111'B | All IP flows enabled | |
| t-SteeringWLAN-r12 | 0 | Typical value in real networks | |
| } | | | |

| Condition | Explanation |
|-----------------|--|
| RSRP | If RSRP based thresholds are to be used |
| RSRQ | If RSRQ based thresholds are to be used |
| ChanUtilization | If Channel Utilization based thresholds are to be used |
| BackhaulBW | If Backhaul bandwidth thresholds are to be used |
| BeaconRSSI | If Beacon RSSI Thresholds are to be used |

EIMTA-MainConfig-r12-DEFAULT

Table 4.6.3-31: EIMTA-MainConfig-r12-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| EIMTA-MainConfig-r12 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| eimta-RNTI-r12 | Set to the value of the C-RNTI of the UE | | |
| eimta-CommandPeriodicity-r12 | sf10 | | |
| eimta-CommandSubframeSet-r12 | 1111111111 | | FDD |
| | 1100011000 | | TDD |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

EIMTA-MainConfigServCell-r12-DEFAULT

Table 4.6.3-32: EIMTA-MainConfigServCell-r12-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| EIMTA-MainConfigServCell-r12 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| eimta-UL-DL-ConfigIndex-r12 | 1 | | |
| eimta-HARQ-ReferenceConfig-r12 | Sa2 | | |
| mbsfn-SubframeConfigList-v1250 | Not present | | |
| mbsfn-SubframeConfigList-v1250 ::= CHOICE { | | | MBMS |
| setup SEQUENCE { | | | |
| mbsfn-SubframeConfigList | Not present | | |
| mbsfn-SubframeConfigList SEQUENCE (SIZE (1..maxMBSFN-Allocations)) OF SEQUENCE { | | | MBMS |
| radioframeAllocationPeriod | n4 | | |
| radioframeAllocationOffset | 1 | | FDD |
| | 0 | | TDD |
| subframeAllocation CHOICE{ | | | |
| oneFrame | '100000' B | | FDD |
| | '000010' B | | TDD |
| fourFrames | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|-----------------------|
| MBMS | MBMS cell environment |
| FDD | FDD cell environment |
| TDD | TDD cell environment |

LWIP-Configuration-GENERIC

Table 4.6.3-33: LWIP-Configuration-GENERIC (SSID)

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--|------------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| LWIP-Configuration-r13 CHOICE { | | | |
| setup SEQUENCE { | | | |
| lwip-MobilityConfig-r13 SEQUENCE { | | | |
| wlan-ToReleaseList-r13 OF SEQUENCE { | 1 entry | | RELEASE |
| ssid-r12[1] | SSID | | |
| bssid-r12 | Not Present | | |
| hessid-r12 | Not Present | | |
| } | | | |
| wlan-ToAddList-r13 OF SEQUENCE { | 1 entry | | ADD |
| ssid-r12[1] | SSID | | |
| bssid-r12 | Not Present | | |
| hessid-r12 | Not Present | | |
| } | | | |
| associationTimer-r13 | s10 | 10 seconds | SUCCESS |
| successReportRequested-r13 | true | | SUCCESS |
| } | | | |
| TunnelConfigLWIP-r13 SEQUENCE { | | | |
| ip-Address-r13 CHOICE { | | | |
| ipv4-r13 | [IP address of the LWIP- SeGW, reachable from the WLAN side] | | |
| ipv6-r13 | [IP address of the LWIP- SeGW, reachable from the WLAN side] | | |
| } | | | |
| ike-Identity-r13 SEQUENCE { | | | |
| idl-r13 | [IKE Identity] | | |
| } | | | |
| lwip-Counter-r13 | 1 | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|--|
| ADD | Add a WLAN entry to the mobility configuration |
| RELEASE | Release a WLAN entry from the mobility configuration |
| SUCCESS | Request a WLAN status report after association |

– LWA-Configuration-GENERIC

Table 4.6.3-34: LWA-Configuration-GENERIC (SSID)

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|------------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| LWA-Configuration-r13 CHOICE { | | | |
| setup SEQUENCE { | | | |
| lwa-MobilityConfig-r13 SEQUENCE { | | | |
| wlan-ToReleaseList-r13 OF SEQUENCE { | 1 entry | | RELEASE |
| ssid-r12[1] | SSID | | |
| bssid-r12 | Not Present | | |
| hessid-r12 | Not Present | | |
| } | | | |
| wlan-ToAddList-r13 OF SEQUENCE { | 1 entry | | ADD |
| ssid-r12[1] | SSID | | |
| bssid-r12 | Not Present | | |
| hessid-r12 | Not Present | | |
| } | | | |
| associationTimer-r13 | s10 | 10 seconds | SUCCESS |
| successReportRequested-r13 | true | | SUCCESS |
| } | | | |
| lwa-WT-Counter-r13 | 1 | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|--|
| ADD | Add a WLAN entry to the mobility configuration |
| RELEASE | Release a WLAN entry from the mobility configuration |
| SUCCESS | Request a WLAN status report after association |

– LWIP-Configuration-W2-GENERIC

Table 4.6.3-35: LWIP-Configuration-W2-GENERIC (SSID1, SSID2)

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--|------------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| LWIP-Configuration-r13 CHOICE { | | | |
| setup SEQUENCE { | | | |
| lwip-MobilityConfig-r13 SEQUENCE { | | | |
| wlan-ToReleaseList-r13 OF SEQUENCE { | 1 entry | | |
| ssid-r12[1] | SSID1 | | |
| bssid-r12 | Not Present | | |
| hessid-r12 | Not Present | | |
| } | | | |
| wlan-ToAddList-r13 OF SEQUENCE { | 1 entry | | |
| ssid-r12[1] | SSID2 | | |
| bssid-r12 | Not Present | | |
| hessid-r12 | Not Present | | |
| } | | | |
| associationTimer-r13 | s10 | 10 seconds | SUCCESS |
| successReportRequested-r13 | true | | SUCCESS |
| } | | | |
| TunnelConfigLWIP-r13 SEQUENCE { | | | |
| ip-Address-r13 CHOICE { | | | |
| ipv4-r13 | [IP address of the LWIP- SeGW, reachable from the WLAN side] | | |
| ipv6-r13 | [IP address of the LWIP- SeGW, reachable from the WLAN side] | | |
| } | | | |
| ike-Identity-r13 SEQUENCE { | | | |
| idl-r13 | [IKE Identity] | | |
| } | | | |
| lwip-Counter-r13 | 1 | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|--|
| SUCCESS | Request a WLAN status report after association |

– LWA-Configuration-W2-GENERIC

Table 4.6.3-36: LWA-Configuration-W2-GENERIC (SSID1, SSID2)

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|------------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| LWA-Configuration-r13 CHOICE { | | | |
| setup SEQUENCE { | | | |
| lwa-MobilityConfig-r13 SEQUENCE { | | | |
| wlan-ToReleaseList-r13 OF SEQUENCE { | 1 entry | | |
| ssid-r12[1] | SSID1 | | |
| bssid-r12 | Not Present | | |
| hessid-r12 | Not Present | | |
| } | | | |
| wlan-ToAddList-r13 OF SEQUENCE { | 1 entry | | |
| ssid-r12[1] | SSID2 | | |
| bssid-r12 | Not Present | | |
| hessid-r12 | Not Present | | |
| } | | | |
| associationTimer-r13 | s10 | 10 seconds | SUCCESS |
| successReportRequested-r13 | true | | SUCCESS |
| } | | | |
| lwa-WT-Counter-r13 | 1 | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|--|
| SUCCESS | Request a WLAN status report after association |

4.6.4 Security control information elements

– SecurityConfigHO-DEFAULT

Table 4.6.4-1: SecurityConfigHO-DEFAULT

| Derivation Path: 36.331 clause 6.2.2, 6.3.3 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SecurityConfigHO-DEFAULT ::= SEQUENCE { | | | |
| handoverType CHOICE { | | | |
| intraLTE SEQUENCE { | | | |
| securityAlgorithmConfig | Not present | | |
| keyChangeIndicator | FALSE | | |
| nextHopChainingCount | 0 | | |
| } | | | |
| } | | | |
| } | | | |

SecurityConfigSMC-DEFAULT

Table 4.6.4-2: SecurityConfigSMC-DEFAULT

| Derivation Path: 36.331 clause 6.2,2, 6.3.3 | | | |
|---|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SecurityConfigSMC-DEFAULT ::= SEQUENCE { | | | |
| securityAlgorithmConfig SEQUENCE { | | | |
| cipheringAlgorithm | Set according to PIXIT parameter for default ciphering algorithm | | For SIG |
| | eea0 | | For RF |
| integrityProtAlgorithm | Set according to PIXIT parameter for default integrity protection algorithm | | For SIG |
| | spare1 or eia0-v920 | This IE is set to one of the algorithms supported by the UE as indicated in the IE "UE network capability" in the ATTACH REQUEST message. | For RF |
| | eia1 | | |
| | eia2 | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|--------------------------------|
| For SIG | Used for signalling test cases |
| For RF | Used for RF/RRM test cases |

4.6.5 Mobility control information elements

- MobilityControlInfo-HO

Table 4.6.5-1: MobilityControlInfo-HO

| Derivation Path: 36.331 clause 6.3.4 | | | |
|--|---|------------------|-------------------------|
| Information Element | Value/remark | Comment | Condition |
| MobilityControlInfo-HO ::= SEQUENCE { | | | |
| targetPhysCellId | Set according to specific message content | | |
| carrierFreq SEQUENCE { | | | |
| dl-CarrierFreq | Set according to specific message content | | |
| ul-CarrierFreq | Set according to specific message content | | FDD |
| ul-CarrierFreq | Not present | | TDD |
| } | | | |
| carrierFreq SEQUENCE { } | Not present | | Band > 64 |
| carrierBandwidth | Not present | | SAME-BW |
| carrierBandwidth SEQUENCE { | | | DIFF-BW |
| dl-Bandwidth | Same downlink bandwidth as used for target cell | | |
| ul-Bandwidth | Not present | | TDD |
| ul-Bandwidth | Same uplink bandwidth as used for target cell | | FDD and Asymmetric-BW |
| } | | | |
| additionalSpectrumEmission | Not present | | |
| | 1 | | HO-TO-EUTRA |
| t304 | ms1000 | | |
| newUE-Identity | SS arbitrarily selects a value between '003C'H and 'FFF2'H. | | |
| radioResourceConfigCommon | RadioResourceConfigCommon-DEFAULT | | |
| rach-ConfigDedicated | Not present | | |
| | Rach-ConfigDedicated-DEFAULT | | FullConfig, HO-TO-EUTRA |
| carrierFreq-v9e0 SEQUENCE { | | | Band > 64 |
| dl-CarrierFreq-v9e0 | Set according to specific message content | | |
| } | | | |
| mobilityControlInfoV2X-r14 SEQUENCE { | | | HO-V2X |
| v2x-CommTxPoolExceptional-r14 SEQUENCE { | | | |
| sl-OffsetIndicator-r14 | 0 | small-r12 | |
| sl-Subframe-r14 | 00000000 11110000 0000 | bs20-r14 | |
| adjacencyPSCCH-PSSCH-r14 | TRUE | BOOLEAN | |
| sizeSubchannel-r14 | n5 | ENUMERATED {n5} | BW10 |
| | n10 | ENUMERATED {n10} | BW20 |
| numSubchannel-r14 | n5 | ENUMERATED {n5} | |
| startRB-Subchannel-r14 | 0 | | |
| startRB-PSCCH-Pool-r14 | Not present | | |
| rxParametersNCell-r14 | Not present | | |
| dataTxParameters-r14 SEQUENCE { | | | |
| alpha-r12 | al0 | | |
| p0-r12 | 31 | | |
| } | | | |
| zoneID-r14 | Not present | | |
| } | | | |
| v2x-CommRxPool-r14 SEQUENCE { | | | |
| sl-OffsetIndicator-r14 | 0 | small-r12 | |

| | | | |
|------------------------------|------------------------------|---------------------|------|
| sl-Subframe-r14 | 00001111 00000000 0000 | bs20-r14 | |
| adjacencyPSCCH-PSSCH-r14 | TRUE | BOOLEAN | |
| sizeSubchannel-r14 | n5 | ENUMERATED {n5} | BW10 |
| | n10 | ENUMERATED {n10} | BW20 |
| numSubchannel-r14 | n5 | ENUMERATED {n5} | |
| startRB-Subchannel-r14 | 0 | | |
| startRB-PSCCH-Pool-r14 | Not present | | |
| rxParametersNCell-r14 | Not present | | |
| dataTxParameters-r14 | Not present | | |
| zoneID-r14 | Not present | | |
| } | | | |
| v2x-CommSyncConfig-r14 | Not present | | |
| cbr-MobilityTxConfigList-r14 | Not present | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|---------------|--|
| SAME-BW | Source and target cell are configured with same bandwidth |
| DIFF-BW | Source and target cell are configured with different bandwidth |
| Band > 64 | If band > 64 is selected |
| HO-V2X | V2X sidelink communication handover |
| BW10 | 10 MHz channel bandwidth for V2X communication |
| BW20 | 20 MHz channel bandwidth for V2X communication |
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| HO-TO-EUTRA | Inter-RAT handover to E-UTRA |
| Asymmetric-BW | Target cell is configured with different dl-bandwidth and ul-bandwidth |

4.6.6 Measurement information elements

- *FreqBandIndicatorNR-r15*

Table 4.6.6-0: FreqBandIndicatorNR-r15

| Derivation Path: TS 36.331 [17], clause 6.3.4 | | | |
|---|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| FreqBandIndicatorNR-r15 | NR Operating band under test | | |

- MeasConfig-DEFAULT

Table 4.6.6-1: MeasConfig-DEFAULT

| Derivation Path: 36.331, clause 6.3.5 | | | |
|--|----------------------------------|--|--------------------------|
| Information Element | Value/remark | Comment | Condition |
| MeasConfig-DEFAULT ::= SEQUENCE { | | | |
| measObjectToRemoveList | Not present | | |
| measObjectToAddModList | Not present | | |
| | MeasObjectEUTRA-GENERIC | | RF |
| reportConfigToRemoveList | Not present | | |
| reportConfigToAddModList | Not present | | |
| | ReportConfigToAddModList_DEFAULT | | RF |
| measIdToRemoveList | Not present | | |
| measIdToAddModList | Not present | | |
| | MeasIdToAddModList_DEFAULT | | RF |
| quantityConfig | QuantityConfig-DEFAULT | | |
| measGapConfig | Not present | | |
| | MeasGapConfig-GP1 | | INTER-FREQ, UTRAN |
| | MeasGapConfig-GP2 | | GERAN, INTER-RAT |
| | MeasGapConfig-CE | | intraFreq-CE-NeedForGaps |
| s-Measure | Not present | | |
| preRegistrationInfoHRPD | Not present | | |
| speedStatePars | Not present | | |
| measObjectToAddModList-v9e0 SEQUENCE { | | | Band > 64 and RF |
| measObjectEUTRA-v9e0 SEQUENCE { | N entries | N needs to be the same number of entries as in measObjectToAddModList | |
| carrierFreq-v9e0[n] | Downlink EARFCN for Freq | | |
| } | | | |
| } | | | |
| measScaleFactor-r12 | sf-EUTRA-cf1 | specifies the factor for scaling the measurement performance requirements in TS 36.133 | IncMon |
| heightThreshRef-r15 | Not present | | |
| } | | | |
| Note: For signalling test, table 6.5.1-1 is applied. | | | |

| Condition | Explanation |
|--------------------------|--|
| INTER-FREQ | For E-UTRA inter-freq measurements |
| INTER-RAT | For inter-RAT measurements with UTRAN and GERAN |
| Band > 64 | If band > 64 is selected |
| intraFreq-CE-NeedForGaps | For UE having set pc_intraFreq-CE-NeedForGaps to TRUE. |
| RF | For RF, performance and RRM testing |
| IncMon | For IncMon RRM testing |

- MeasGapConfig-GP1

Table 4.6.6-1A: MeasGapConfig-GP1

| Derivation Path: 36.331, clause 6.3.5 | | | |
|---------------------------------------|--------------|--------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasGapConfig-GP1 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| gapOffset CHOICE { | | | |
| gp0 | 0 | TGRP = 40 ms | |
| } | | | |
| } | | | |
| } | | | |

- MeasGapConfig-CE

Table 4.6.6-1BA: MeasGapConfig-CE

| Derivation Path: 36.331, clause 6.3.5 | | | |
|---------------------------------------|--------------|--------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasGapConfig-CE ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| gapOffset CHOICE { | | | |
| gp0 | 20 | TGRP = 40 ms | |
| } | | | |
| } | | | |
| } | | | |

- MeasGapConfig-GP2

Table 4.6.6-1B: MeasGapConfig-GP2

| Derivation Path: 36.331, clause 6.3.5 | | | |
|---------------------------------------|--------------|--------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasGapConfig-GP2 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| gapOffset CHOICE { | | | |
| gp1 | 0 | TGRP = 80 ms | |
| } | | | |
| } | | | |
| } | | | |

- MeasDS-Config-DEFAULT

Table 4.6.6-1CA: MeasDS-Config-DEFAULT

| Derivation Path: 36.331, clause 6.3.5 | | | |
|---|-------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasDS-Config-DEFAULT ::= CHOICE { | | | |
| release | NULL | | |
| setup SEQUENCE { | | | |
| dmTc-PeriodOffset-r12 CHOICE { | | | |
| ms160-r12 | 10 | | |
| } | | | |
| ds-OccasionDuration-r12 CHOICE { | | | |
| durationFDD-r12 | 1 | | FDD |
| durationTDD-r12 | 2 | | TDD |
| } | 1 | | LAA SCell |
| } | | | |
| measCSI-RS-ToRemoveList-r12 | Not present | | |
| measCSI-RS-ToAddModList-r12 SEQUENCE (SIZE (1..maxCSI-RS-Meas-r12)) OF MeasCSI-RS- Config-r12 { | | | |
| } | Not present | | |
| } | MeasCSI-RS-Config- Default | | CSI-RS |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|---------------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |
| CSI-RS | For CSI-RS measurements |
| LAA SCell | For LAA SCell environment |

- MeasCSI-RS-Config-DEFAULT

Table 4.6.6-1CB: MeasCSI-RS-Config-DEFAULT

| Derivation Path: 36.331, clause 6.3.5 | | | |
|--|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasCSI-RS-Config-DEFAULT ::= SEQUENCE { | | | |
| measCSI-RS-Id-r12 | Set according to specific message content | | |
| physCellId-r12 | Set according to specific message content | | |
| scramblingIdentity-r12 | 1 | | |
| resourceConfig-r12 | 2 | | |
| subframeOffset-r12 | 0 | | |
| csi-RS-IndividualOffset-r12 | 0 | | |
| } | | | |

– MeasObjectCDMA2000-GENERIC

Table 4.6.6-1C: MeasObjectCDMA2000-GENERIC

| Derivation Path: 36.331 clause 6.3.5 | | | |
|---|---------------------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasObjectCDMA2000-GENERIC ::= SEQUENCE { | | | |
| cdma2000-Type | As per specific message content | [type1XRTT, typeHRPD] | |
| carrierFreq SEQUENCE { | | | |
| bandClass | As per specific message content | Should be one of the following: bc0, bc1, bc2, bc3, bc4, bc5, bc6, bc7, bc8, bc9, bc10, bc11, bc12, bc13, bc14, bc15, bc16, bc17, spare14, spare13, spare12, spare11, spare10, spare9, spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1, ... | |
| arfcn | Downlink channel number | INTEGER (0 to 2047) | |
| } | | | |
| searchWindowSize | As per specific message content | INTEGER (0..15) | |
| offsetFreq | 0 (0 dB) | | |
| cellsToRemoveList | Not present | | |
| cellsToAddModList | [Not present] | | |
| cellForWhichToReportCGI | Not present | | |
| } | | | |

– ReportConfigToAddModList_DEFAULT

Table 4.6.6-1D: ReportConfigToAddModList_DEFAULT

| Derivation Path: 36.331, clause 6.3.5 | | | |
|---|----------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigToAddModList_DEFAULT ::= SEQUENCE { | 1 entry | | |
| reportConfigId[1] | IdReportConfig-A3 | | |
| reportConfig[1] | ReportConfigEUTRA-A3 | | |
| } | | | |

– MeasIdToAddModList_DEFAULT

Table 4.6.6-1E: MeasIdToAddModList_DEFAULT

| Derivation Path: 36.331, clause 6.3.5 | | | |
|---|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasIdToAddModList_DEFAULT ::= SEQUENCE { | 1 entry | | |
| measId[1] | 1 | | |
| measObjectId[1] | IdMeasObject-f1 | | |
| reportConfigId[1] | IdReportConfig-A3 | | |
| } | | | |

- MeasObjectEUTRA-GENERIC

Table 4.6.6-2: MeasObjectEUTRA-GENERIC(Freq)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--|---|---|---------------------------|
| Information Element | Value/remark | Comment | Condition |
| MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE { | | | |
| carrierFreq | Downlink EARFCN for Freq | | |
| carrierFreq | 65535 | maxEARFCN | Band > 64 |
| allowedmeasBandwidth | The number of the resource blocks for Freq | | |
| presenceAntennaPort1 | FALSE | | |
| | TRUE | At least two cell-specific antenna ports are used in all neighbouring cells. | All neighCells with port1 |
| neighbourCellConfig | '01'B (No MBSFN subframes are present in all neighbour cells) | MBSFN doesn't apply by default. | |
| offsetFreq | 0 (dB 0) | | |
| cellsToRemoveList | Not present | | |
| cellsToAddModList | Not present | | |
| blackCellsToRemoveList | Not present | | |
| blackCellsToAddModList | Not present | | |
| cellForWhichToReportCGI | Not present | | |
| measCycleSCell-r10 | sf512 | | SCell_EXIST |
| measSubframePatternConfigNeigh-r10 | Not present | | |
| measDS-Config-r12 | MeasDS-Config-DEFAULT | | DS_Meas |
| reducedMeasPerformance-r12 | TRUE | For reduced measurement performance, otherwise it is normal measurement performance | IncMon |
| rmtc-Config-r13 | Not present | | |
| tx-ResourcePoolToRemoveList-r14 | Not present | | |
| tx-ResourcePoolToAddList-r14 | Not present | | |
| } | | | |

| Condition | Explanation |
|---------------------------|---|
| SCell_EXIST | When SCell exists on the carrier frequency indicated by <i>carrierFreq</i> |
| All neighCells with port1 | Used for all neighbouring cells with at least two cell-specific antenna ports |
| DS_Meas | Used for discovery signals measurement on the carrier frequency indicated by <i>carrierFreq</i> |
| Band > 64 | If band > 64 is selected |
| IncMon | For IncMon RRM testing |

- MeasObjectGERAN-GENERIC

Table 4.6.6-2A: MeasObjectGERAN-GENERIC(Freq)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--|---|-----------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasObjectGERAN-GENERIC(Freq) ::= SEQUENCE { | | | |
| carrierFreqs SEQUENCE { | | | |
| startingARFCN | Downlink GERAN ARFCN of Freq | | |
| bandIndicator | Set according to the band used for GERAN cells under test | | |
| followingARFCNs CHOICE { | | | |
| explicitListOfARFCNs | Set the corresponding ARFCN of GERAN cells under test | | |
| } | | | |
| } | | | |
| offsetFreq | 0 (dB 0) | | |
| ncc-Permitted | '01000000'B | NCC=1 permitted | |
| cellForWhichToReportCGI | Not present | | |
| } | | | |

- MeasObjectNR-GENERIC

Table 4.6.6-2B: MeasObjectNR-GENERIC (Freq)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|---|--------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasObjectNR-GENERIC(Freq) ::= SEQUENCE { | | | |
| carrierFreq-r15 | Downlink ARFCN of ssbFrequency | | |
| rs-ConfigSSB-r15 ::= SEQUENCE { | | | |
| measTimingConfig-r15 ::= SEQUENCE { | | | |
| periodicityAndOffset-r15 CHOICE { | | | |
| sf20-r15 | 0 | | |
| } | | | |
| ssb-Duration-r15 | sf5 | | |
| } | | | |
| subcarrierSpacingSSB-r15 | kHz15 | | FR1_FDD |
| | kHz30 | | FR1_TDD |
| | kHz120 | | FR2_TDD |
| } | | | |
| threshRS-Index-r15 | Not present | | |
| maxRS-IndexCellQual-r15 | Not present | | |
| offsetFreq-r15 | 0 | | |
| blackCellsToRemoveList-r15 | Not present | | |
| blackCellsToAddModList-r15 | Not present | | |
| quantityConfigSet-r15 | 1 | | |
| cellsForWhichToReportSFTD-r15 | Not present | | |
| cellForWhichToReportCGI-r15 | Not present | | |
| deriveSSB-IndexFromCell-r15 | Not present | | |
| ss-RSSI-Measurement-r15 | Not present | | |
| bandNR-r15 CHOICE { | | | |
| Setup | FreqBandIndicatorNR-r15 | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------------|
| FR1_FDD | FDD frequency range < 6GHz |
| FR1_TDD | TDD frequency range < 6GHz |
| FR2_TDD | TDD frequency range > 6GHz |

- MeasObjectUTRA-GENERIC

Table 4.6.6-3: MeasObjectUTRA-GENERIC(Freq)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|---|-------------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasObjectUTRA-GENERIC(Freq) ::= SEQUENCE { | | | |
| carrierFreq | Downlink UARFCN of Freq | | |
| offsetFreq | 0 (dB 0) | | |
| cellsToRemoveList | Not present | | |
| cellsToAddModList | Not present | For UTRA, the neighbouring cell list needs to be provided in specific test cases. | |
| cellForWhichToReportCGI | Not present | | |
| reducedMeasPerformance-r12 | TRUE | For reduced measurement performance, otherwise it is normal measurement performance | IncMon |
| } | | | |

| Condition | Explanation |
|-----------|------------------------|
| IncMon | For IncMon RRM testing |

- MeasObjectWLAN-W2-GENERIC

Table 4.6.6-3AB: MeasObjectWLAN-W2-GENERIC (Freq, SSID1, SSID2)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|--------------|---|-----------|
| Information Element | Value/Remark | Comment | Condition |
| measObjectWLAN-r13 SEQUENCE { | | | |
| carrierFreq-r13 | Freq | WLAN band and carrier as used in test setup for 2 entries | |
| wlan-ToAddModList-r13 OF SEQUENCE { | | 2 entries | |
| ssid-r12[1] | SSID1 | | |
| ssid-r12[2] | SSID2 | | |
| } | | | |
| wlan-ToRemoveList-r13 | Not Present | | |
| } | | | |

- QuantityConfig-DEFAULT

Table 4.6.6-3A: QuantityConfig-DEFAULT

| Derivation Path: 36.331, clause 6.3.5 | | | |
|---|--------------|---------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| QuantityConfig-DEFAULT ::= SEQUENCE { | | | |
| quantityConfigEUTRA SEQUENCE { | | | |
| filterCoefficientRSRP | Not present | DEFAULT fc4 | |
| filterCoefficientRSRQ | Not present | DEFAULT fc4 | |
| } | | | |
| quantityConfigUTRA SEQUENCE {} | Not present | | |
| quantityConfigUTRA SEQUENCE { | | | UTRAN |
| measQuantityUTRA-FDD | cpich-EcN0 | | |
| measQuantityUTRA-FDD | cpich-RSCP | For signalling test cases | |
| measQuantityUTRA-TDD | pccpch-RSCP | | |
| filterCoefficient | Not present | DEFAULT fc4 | |
| } | | | |
| quantityConfigGERAN SEQUENCE {} | Not present | | |
| quantityConfigGERAN SEQUENCE { | | | GERAN |
| measQuantityGERAN | rsi | | |
| filterCoefficient | Not present | DEFAULT fc2 | |
| } | | | |
| quantityConfigCDMA2000 SEQUENCE {} | Not present | | |
| quantityConfigCDMA2000 SEQUENCE { | | | CDMA2000 |
| measQuantityCDMA2000 | [FFS] | | |
| } | | | |
| quantityConfigEUTRA-v1250 SEQUENCE { | | | |
| filterCoefficientCSI-RSRP-r12 | Not present | DEFAULT fc4 | CSI-RSRP |
| } | | | |
| quantityConfigEUTRA-v1310 | Not present | | |
| quantityConfigEUTRA-v1310 SEQUENCE { | | | RS-SINR |
| filterCoefficientRS-SINR-r13 | Not present | DEFAULT fc4 | |
| } | | | |
| quantityConfigWLAN-r13 | Not present | | |
| quantityConfigWLAN-r13 SEQUENCE { | | | WLAN |
| measQuantityWLAN-r13 | rsiWLAN | | |
| filterCoefficientRS-SINR-r13 | Not present | DEFAULT fc4 | |
| } | | | |
| quantityConfigNRList-r15 | Not present | | |
| quantityConfigNRList-r15 (SIZE (1..maxQuantSetsNR-r15)) OF SEQUENCE { | 2 entries | | NR |
| measQuantityCellNR-r15[1] SEQUENCE { | | | |
| filterCoeff-RSRP-r15 | Not present | DEFAULT fc4 | |
| filterCoeff-RSRQ-r15 | Not present | DEFAULT fc4 | |
| filterCoefficient-SINR-r13 | Not present | DEFAULT fc4 | |
| } | | | |
| measQuantityRS-IndexNR-r15[1] | Not present | | |
| measQuantityRS-IndexNR-r15[1] SEQUENCE { | | | SSB_INDEX |
| filterCoeff-RSRP-r15 | Not present | DEFAULT fc4 | |
| filterCoeff-RSRQ-r15 | Not present | DEFAULT fc4 | |
| filterCoefficient-SINR-r13 | Not present | DEFAULT fc4 | |
| } | | | |
| measQuantityCellNR-r15[2] SEQUENCE { | | | |
| filterCoeff-RSRP-r15 | Not present | DEFAULT fc4 | |
| filterCoeff-RSRQ-r15 | Not present | DEFAULT fc4 | |
| filterCoefficient-SINR-r13 | Not present | DEFAULT fc4 | |
| } | | | |
| measQuantityRS-IndexNR-r15[2] | Not present | | |
| measQuantityRS-IndexNR-r15[2] SEQUENCE { | | | SSB_INDEX |
| filterCoeff-RSRP-r15 | Not present | DEFAULT fc4 | |
| filterCoeff-RSRQ-r15 | Not present | DEFAULT fc4 | |
| filterCoefficient-SINR-r13 | Not present | DEFAULT fc4 | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|---|
| UTRAN | For inter-RAT measurements with UTRAN |
| GERAN | For inter-RAT measurements with GERAN |
| CDMA2000 | For inter-RAT measurements with CDMA2000 |
| CSI-RSRP | For CSI-RSRP measurements |
| RS-SINR | For RS-SINR measurements |
| WLAN | For inter-RAT measurements with WLAN |
| NR | For inter-RAT measurements with NR |
| SSB_INDEX | SSB index is required to be included in measurement report. |

- ReportConfigEUTRA-A1

Table 4.6.6-4: ReportConfigEUTRA-A1(Thres)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-A1(Thres) ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventA1 SEQUENCE { | | | |
| a1-Threshold CHOICE { | | | |
| threshold-RSRP | Thres+140 | Thres is actual threshold value in dBm | |
| } | | | |
| } | | | |
| } | | | |
| hysteresis | 0 (0 dB) | | |
| timeToTrigger | ms256 | | |
| } | | | |
| triggerQuantity | rsrp | | |
| reportQuantity | both | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| } | | | |

- ReportConfigEUTRA-A2

Table 4.6.6-5: ReportConfigEUTRA-A2(Thres)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-A2(Thres) ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventA2 SEQUENCE { | | | |
| a2-Threshold CHOICE { | | | |
| threshold-RSRP | Thres+140 | Thres is actual threshold value in dBm | |
| } | | | |
| } | | | |
| } | | | |
| hysteresis | 0 (0 dB) | | |
| timeToTrigger | ms320 | | |
| } | | | |
| triggerQuantity | rsrp | | |
| reportQuantity | both | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| } | | | |

ReportConfigEUTRA-A3

Table 4.6.6-6: ReportConfigEUTRA-A3

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-A3 ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventA3 SEQUENCE { | | | |
| a3-Offset | 0 (0 dB) | To reduce interference between intra-frequency multiple cells | |
| reportOnLeave | FALSE | | |
| } | | | |
| } | | | |
| hysteresis | 0 (0 dB) | | |
| timeToTrigger | ms640 | | |
| } | | | |
| triggerQuantity | rsrp | | |
| reportQuantity | both | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| si-RequestForHO-r9 | Not Present | | |
| ue-RxTxTimeDiffPeriodical-r9 | Not Present | | |
| includeLocationInfo-r10 | Not Present | | |
| reportAddNeighMeas-r10 | Not Present | | |
| alternativeTimeToTrigger-r12 | Not Present | | |
| useT312-r12 | Not Present | | |
| usePSCell-r12 | Not Present | | |
| aN-Threshold1-v1250 | Not Present | | |
| a5-Threshold2-v1250 | Not Present | | |
| reportStrongestCSI-RSS-r12 | Not Present | | |
| reportCRS-Meas-r12 | Not Present | | |
| triggerQuantityCSI-RS-r12 | Not Present | | |
| reportSSTD-Meas-r13 | Not Present | | |
| rs-sinr-Config-r13 | Not Present | | |
| useWhiteCellList-r13 | Not Present | | |
| measRSSI-ReportConfig-r13 | Not Present | | |
| includeMultiBandInfo-r13 | Not Present | | |
| ul-DelayConfig-r13 | Not Present | | |
| ue-RxTxTimeDiffPeriodicalTDD-r13 | Not Present | | |
| purpose-v1430 | Not Present | | |
| maxReportRS-Index-r15 | Not Present | | |
| includeBT-Meas-r15 | Not Present | | |
| includeWLAN-Meas-r15 | Not Present | | |
| purpose-r15 | Not Present | | |
| numberOfTriggeringCells-r15 | 2 | | Aerial UE |
| a4-a5-ReportOnLeave-r15 | Not Present | | |
| } | | | |

| Condition | Explanation |
|-----------|---------------------|
| Aerial UE | For Aerial vehicles |

- ReportConfigEUTRA-A4

Table 4.6.6-6AA: ReportConfigEUTRA-A4(Thres)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|----------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-A4 ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventA4 SEQUENCE { | | | |
| a4-Threshold CHOICE{ | | | |
| threshold-RSRP | Thres + 140 | Thres is actual threshold value in dBm | Not RSRQ |
| threshold-RSRQ | Thres * 2 + 40 | Thres is actual threshold value in dB | RSRQ |
| } | | | |
| } | | | |
| } | | | |
| hysteresis | 0 (0 dB) | | |
| timeToTrigger | ms0 | | |
| } | | | |
| } | | | |
| triggerQuantity | rsrp | | Not RSRQ |
| | rsrq | | RSRQ |
| reportQuantity | both | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| si-RequestForHO-r9 | Not Present | | |
| ue-RxTxTimeDiffPeriodical-r9 | Not Present | | |
| includeLocationInfo-r10 | Not Present | | |
| reportAddNeighMeas-r10 | Not Present | | |
| alternativeTimeToTrigger-r12 | Not Present | | |
| useT312-r12 | Not Present | | |
| usePSCell-r12 | Not Present | | |
| aN-Threshold1-v1250 | Not Present | | |
| a5-Threshold2-v1250 | Not Present | | |
| reportStrongestCSI-RS-r12 | Not Present | | |
| reportCRS-Meas-r12 | Not Present | | |
| triggerQuantityCSI-RS-r12 | Not Present | | |
| reportSSTD-Meas-r13 | Not Present | | |
| rs-sinr-Config-r13 | Not Present | | |
| useWhiteCellList-r13 | Not Present | | |
| measRSSI-ReportConfig-r13 | Not Present | | |
| includeMultiBandInfo-r13 | Not Present | | |
| ul-DelayConfig-r13 | Not Present | | |
| ue-RxTxTimeDiffPeriodicalTDD-r13 | Not Present | | |
| purpose-v1430 | Not Present | | |
| maxReportRS-Index-r15 | Not Present | | |
| includeBT-Meas-r15 | Not Present | | |
| includeWLAN-Meas-r15 | Not Present | | |
| purpose-r15 | Not Present | | |
| numberOfTriggeringCells-r15 | 2 | | Aerial UE |
| a4-a5-ReportOnLeave-r15 | Not Present | | |
| } | | | |

| Condition | Explanation |
|-----------|---|
| RSRQ | When RSRQ based measurement is applied |
| Aerial UE | See the definition below table 4.6.6-6. |

- ReportConfigEUTRA-A5

Table 4.6.6-6AB: ReportConfigEUTRA-A5(Thres1, Thres2)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|-----------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-A5 ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventA5 SEQUENCE { | | | |
| a5-Threshold1 CHOICE{ | | | |
| threshold-RSRP | Thres1 + 140 | Thres1 is actual threshold value in dBm | Not RSRQ |
| threshold-RSRQ | Thres1 * 2 + 40 | Thres1 is actual threshold value in dB | RSRQ |
| } | | | |
| a5-Threshold2 CHOICE{ | | | |
| threshold-RSRP | Thres2 + 140 | Thres2 is actual threshold value in dBm | Not RSRQ |
| threshold-RSRQ | Thres2 * 2 + 40 | Thres2 is actual threshold value in dB | RSRQ |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| hysteresis | 0 (0 dB) | | |
| timeToTrigger | ms0 | | |
| } | | | |
| } | | | |
| triggerQuantity | rsrp | | Not RSRQ |
| | rsrq | | RSRQ |
| reportQuantity | both | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| si-RequestForHO-r9 | Not Present | | |
| ue-RxTxTimeDiffPeriodical-r9 | Not Present | | |
| includeLocationInfo-r10 | Not Present | | |
| reportAddNeighMeas-r10 | Not Present | | |
| alternativeTimeToTrigger-r12 | Not Present | | |
| useT312-r12 | Not Present | | |
| usePSCell-r12 | Not Present | | |
| aN-Threshold1-v1250 | Not Present | | |
| a5-Threshold2-v1250 | Not Present | | |
| reportStrongestCSI-RS-r12 | Not Present | | |
| reportCRS-Meas-r12 | Not Present | | |
| triggerQuantityCSI-RS-r12 | Not Present | | |
| reportSSTD-Meas-r13 | Not Present | | |
| rs-sinr-Config-r13 | Not Present | | |
| useWhiteCellList-r13 | Not Present | | |
| measRSSI-ReportConfig-r13 | Not Present | | |
| includeMultiBandInfo-r13 | Not Present | | |
| ul-DelayConfig-r13 | Not Present | | |
| ue-RxTxTimeDiffPeriodicalTDD-r13 | Not Present | | |
| purpose-v1430 | Not Present | | |
| maxReportRS-Index-r15 | Not Present | | |
| includeBT-Meas-r15 | Not Present | | |
| includeWLAN-Meas-r15 | Not Present | | |
| purpose-r15 | Not Present | | |
| numberOfTriggeringCells-r15 | 2 | | Aerial UE |
| a4-a5-ReportOnLeave-r15 | Not Present | | |
| } | | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|-----------|---|
| RSRQ | See the definition below table 4.6.6-6AA. |
| Aerial UE | See the definition below table 4.6.6-6. |

- ReportConfigEUTRA-A6

Table 4.6.6-6A: ReportConfigEUTRA-A6

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-A6 ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventA6-r10 SEQUENCE { | | | |
| a6-Offset-r10 | 0 (0 dB) | | |
| a6-ReportOnLeave-r10 | FALSE | | |
| } | | | |
| } | | | |
| hysteresis | 0 (0 dB) | | |
| timeToTrigger | ms640 | | |
| } | | | |
| triggerQuantity | rsrp | | |
| reportQuantity | both | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| si-RequestForHO-r9 | Not Present | | |
| ue-RxTxTimeDiffPeriodical-r9 | Not Present | | |
| includeLocationInfo-r10 | Not Present | | |
| reportAddNeighMeas-r10 | Not Present | | |
| } | | | |

- ReportConfigEUTRA-PERIODICAL

Table 4.6.6-7: ReportConfigEUTRA-PERIODICAL

| Derivation Path: 36.331 clause 6.3.5 | | | |
|---|----------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-PERIODICAL ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| periodical SEQUENCE { | | | |
| purpose | reportStrongestCells | | |
| } | | | |
| } | | | |
| triggerQuantity | rsrp | | |
| reportQuantity | both | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | infinity | | |
| } | | | |

- ReportConfigInterRAT-B1-GERAN

Table 4.6.6-7A: ReportConfigInterRAT-B1-GERAN(GERAN-Thres)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|---|---------------------|------------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigInterRAT-B1-GERAN(GERAN-Thres) ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventB1 SEQUENCE { | | | |
| b1-Threshold CHOICE { | | | |
| b1-ThresholdGERAN | (GERAN-Thres + 110) | GERAN-Thres is actual value in dBm | |
| } | | | |
| } | | | |
| } | | | |
| hysteresis | 0 | INTEGER(0..30) | |
| timeToTrigger | ms0 | | |
| } | | | |
| } | | | |
| maxReportCells | 6 | In line with RAN4 requirement | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| } | | | |

- ReportConfig-B1-NR-r15

Table 4.6.6-7AA: ReportConfig-B1-NR-r15(NR_Thres)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|--------------|--------------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfig-B1-NR ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventB1-NR-r15 SEQUENCE{ | | | |
| b1-ThresholdNR-r15 CHOICE{ | | | |
| nr-RSRP-r15 | NR_Thres | NR_Thres is actual RSCP value in dBm | |
| } | | | |
| reportOnLeave-r15 | FALSE | | |
| } | | | |
| } | | | |
| hysteresis | 0 | | |
| timeToTrigger | ms0 | | |
| } | | | |
| maxReportCells | 6 | | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| } | | | |

- ReportConfigInterRAT-B1-UTRA

Table 4.6.6-7B: ReportConfigInterRAT-B1-UTRA(UTRA-Thres)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|---|-----------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigInterRAT-B1-UTRA(UTRA-Thres) ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventB1 SEQUENCE { | | | |
| b1-Threshold CHOICE { | | | |
| b1-ThresholdUTRA CHOICE { | | | |
| utra-EcN0 | (UTRA-Thres * 2 + 49) | UTRA-Thres is actual Ec/NO value in dB | UTRA-FDD |
| utra-RSCP | UTRA-Thres + 115 | For signalling test cases UTRA-Thres is actual RSCP value in dBm | UTRA-FDD |
| utra-RSCP | UTRA-Thres + 115 | UTRA-Thres is actual RSCP value in dBm | UTRA-TDD |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| hysteresis | 3 (1.5 dB) | | |
| timeToTrigger | ms0 | | |
| } | | | |
| } | | | |
| maxReportCells | 6 | In line with RAN4 requirement | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| } | | | |

| Condition | Explanation |
|-----------|---------------------------|
| UTRA-FDD | UTRA FDD cell environment |
| UTRA-TDD | UTRA TDD cell environment |

- ReportConfigInterRAT-B2-CDMA2000

Table 4.6.6-7C: ReportConfigInterRAT-B2-CDMA2000(EUTRA-Thres, CDMA2000-Thres)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--|-----------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigInterRAT-B2-CDMA2000(EUTRA-Thres, CDMA2000-Thres) ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventB2 SEQUENCE { | | | |
| b2-Threshold1 CHOICE { | | | |
| threshold-RSRP | EUTRA-Thres+140 | EUTRA-Thres is actual threshold value in dBm | |
| } | | | |
| b2-Threshold2 CHOICE { | | | |
| b2-Threshold2CDMA2000 | [30 (-15 dB)] | Integer (0..63) | |
| } | | | |
| } | | | |
| Hysteresis | [2 (1 dB)] | INTEGER(0..30) | |
| timeToTrigger | ms0 | | |
| } | | | |
| maxReportCells | [8] | | |
| reportInterval | [ms2048] | Range: ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, min1, min6, min12, min30, min60, spare3, spare2, spare1 | |
| reportAmount | [r1] | Range: r1, r2, r4, r8, r16, r32, r64, infinity | |
| } | | | |

Table 4.6.6-7D: Void

- ReportConfigInterRAT-B2-GERAN

Table 4.6.6-7E: ReportConfigInterRAT-B2-GERAN(EUTRA-Thres, GERAN-Thres)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--|-------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigInterRAT-B2-GERAN(EUTRA-Thres, GERAN-Thres) ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventB2 SEQUENCE { | | | |
| b2-Threshold1 CHOICE { | | | |
| threshold-RSRP | EUTRA-Thres+140 | EUTRA-Thres is actual threshold value in dBm | |
| } | | | |
| b2-Threshold2 CHOICE { | | | |
| b2-Threshold2GERAN | GERAN-Thres + 110 | GERAN-Thres is actual value in dBm | |
| } | | | |
| } | | | |
| } | | | |
| hysteresis | 0 | INTEGER(0..30) | |
| timeToTrigger | ms0 | | |
| } | | | |
| maxReportCells | 6 | In line with RAN4 requirement | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| } | | | |

- ReportConfigInterRAT-B2-UTRA

Table 4.6.6-8: ReportConfigInterRAT-B2-UTRA(EUTRA-Thres, UTRA-Thres)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--|---------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigInterRAT-B2-UTRA(EUTRA-Thres, UTRA-Thres) ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventB2 SEQUENCE { | | | |
| b2-Threshold1 CHOICE { | | | |
| threshold-RSRP | EUTRA-Thres+140 | EUTRA-Thres is actual threshold value in dBm | |
| } | | | |
| b2-Threshold2 CHOICE { | | | |
| b2-Threshold2UTRA CHOICE { | | | |
| utra-EcN0 | UTRA-Thres * 2 + 49 | UTRA-Thres is actual Ec/NO value in dB | UTRA-FDD |
| utra-RSCP | UTRA-Thres + 115 | For signalling test cases UTRA-Thres is actual RSCP value in dBm | UTRA-FDD |
| utra-RSCP | UTRA-Thres + 115 | UTRA-Thres is actual RSCP value in dBm | UTRA-TDD |
| } | | | |
| } | | | |
| } | | | |
| hysteresis | 3 (1.5 dB) | | |
| timeToTrigger | ms0 | | |
| } | | | |
| } | | | |
| maxReportCells | 6 | In line with RAN4 requirement | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| } | | | |

| Condition | Explanation |
|-----------|---------------------------|
| UTRA-FDD | UTRA FDD cell environment |
| UTRA-TDD | UTRA TDD cell environment |

- ReportConfigInterRAT-B2-NR

Table 4.6.6-8A: ReportConfigInterRAT-B2-NR(EUTRA-Thres, NR-Thres)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|---|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigInterRAT-B2-NR ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventB2-NR-r15 SEQUENCE{ | | | |
| b2-Threshold1-r15 CHOICE{ | | | |
| threshold-RSRP | EUTRA Thres | EUTRA Thres is an entry value into a mapping table in TS 36.133 [39] | |
| } | | | |
| b2-Threshold2NR-r15 CHOICE{ | | | |
| nr-RSRP-r15 | NR Thres | NR Thres is an entry value into a mapping table in TS 38.133 [72] | |
| } | | | |
| reportOnLeave-r15 | FALSE | | |
| } | | | |
| } | | | |
| Hysteresis | 3 (1.5 dB) | | |
| timeToTrigger | ms1024 | | |
| } | | | |
| } | | | |
| reportInterval | ms1024 | | |
| reportAmount | infinity | | |
| reportQuantityCellNR-r15 SEQUENCE { | | | |
| ss-rsrp | TRUE | | |
| ss-rsrq | FALSE | | |
| ss-sinr | FALSE | | |
| } | | | |
| maxReportRS-Index-r15 | Not present | | |
| reportQuantityRS-IndexNR-r15 | Not present | | |
| reportRS-IndexResultsNR | Not present | | |
| reportSFTD-Meas-r15 | Not present | | |
| } | | | |

- ReportConfigInterRAT-SFTD

Table 4.6.6-8B: ReportConfigInterRAT-SFTD

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--|----------------------|---------|------------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigInterRAT-PERIODICAL ::= SEQUENCE | | | |
| { | | | |
| triggerType CHOICE { | | | |
| periodical SEQUENCE { | | | |
| purpose | reportStrongestCells | | |
| } | | | |
| } | | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| si-RequestForHO-r9 | Not present | | |
| reportQuantityUTRA-FDD-r10 | Not present | | |
| includeLocationInfo-r11 | Not present | | |
| b2-Threshold1-v1250 | Not present | | |
| reportQuantityWLAN-r13 | Not present | | |
| reportQuantityCellNR-r15 | Not present | | |
| maxReportRS-Index-r15 | | | |
| reportQuantityRS-IndexNR-r15 | | | |
| reportRS-IndexResultsNR | | | |
| reportSFTD-Meas-r15 | neighborCells | | INTER-RAT |
| | pSCell | | INTRA-FREQ |
| } | | | |

| Condition | Explanation |
|------------|--------------------------------------|
| INTER-RAT | For Inter-RAT SFTD measurement |
| INTRA-FREQ | For Intra-frequency SFTD measurement |

ReportConfigInterRAT-PERIODICAL

Table 4.6.6-9: ReportConfigInterRAT-PERIODICAL

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--|----------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigInterRAT-PERIODICAL ::= SEQUENCE | | | |
| { | | | |
| triggerType CHOICE { | | | |
| periodical SEQUENCE { | | | |
| purpose | reportStrongestCells | | |
| } | | | |
| } | | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | infinity | | |
| } | | | |

Table 4.6.6-9A: ReportConfigInterRAT-W1-WLAN (ThreshDB)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|--------------|---------------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| ReportConfigInterRAT ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | 1 entry | | |
| eventID CHOICE { | | | |
| eventW1-r13 SEQUENCE { | 1 entry | | |
| w1-Threshold-r13 | ThreshDB+101 | | |
| } | | | |
| hysteresis | 2 | 2 * .5 is 1dB | |
| timeToTrigger | ms5120 | 5120ms | |
| } | | | |
| } | | | |
| } | | | |

– ReportConfigInterRAT-W2-WLAN

Table 4.6.6-9B: ReportConfigInterRAT-W2-WLAN (Thresh1DB, Thresh2DB)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|---------------|---------------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| ReportConfigInterRAT ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | 1 entry | | |
| eventID CHOICE { | | | |
| eventW2-r13 SEQUENCE { | 2 entries | | |
| w2-Threshold1-r13 | Thresh1DB+101 | | |
| w2-Threshold2-r13 | Thresh2DB+101 | | |
| } | | | |
| hysteresis | 2 | 2 * .5 is 1dB | |
| timeToTrigger | ms5120 | 5120ms | |
| } | | | |
| } | | | |
| } | | | |

– ReportConfigInterRAT-W3-WLAN

Table 4.6.6-9C: ReportConfigInterRAT-W3-WLAN (ThreshDB)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|--------------|---------------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| ReportConfigInterRAT ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | 1 entry | | |
| eventID CHOICE { | | | |
| eventW3-r13 SEQUENCE { | 1 entry | | |
| W3-Threshold-r13 | ThreshDB+101 | | |
| } | | | |
| hysteresis | 2 | 2 * .5 is 1dB | |
| timeToTrigger | ms5120 | 5120ms | |
| } | | | |
| } | | | |
| } | | | |

- ReportConfigEUTRA-C1

Table 4.6.6-10: ReportConfigEUTRA-C1(Thres)

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|-----------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-C1 ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventC1-r12 SEQUENCE { | | | |
| c1-Threshold-r12 | Thres+140 | Thres is actual threshold value in dBm | |
| c1-ReportOnLeave-r12 | FALSE | | |
| } | | | |
| } | | | |
| hysteresis | 0 (0 dB) | | |
| timeToTrigger | ms640 | | |
| } | | | |
| triggerQuantity | rsrp | | |
| reportQuantity | sameAsTriggerQuantity | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| si-RequestForHO-r9 | Not Present | | |
| ue-RxTxTimeDiffPeriodical-r9 | Not Present | | |
| includeLocationInfo-r10 | Not Present | | |
| reportAddNeighMeas-r10 | Not Present | | |
| alternativeTimeToTrigger-r12 | Not Present | | |
| useT312-r12 | Not Present | | |
| usePSCell-r12 | Not Present | | |
| aN-Threshold1-v1250 | Not Present | | |
| a5-Threshold2-v1250 | Not Present | | |
| reportStrongestCSI-RSs-r12 | false | | |
| reportCRS-Meas-r12 | false | | |
| triggerQuantityCSI-RS-r12 | true | | |
| } | | | |

- ReportConfigEUTRA-C2

Table 4.6.6-11: ReportConfigEUTRA-C2

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|-----------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-C2 ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventC2-r12 SEQUENCE { | | | |
| c2-RefCSI-RS-r12 | 1 | | |
| c2-Offset-r12 | 2 | The actual value is IE value * 0.5 dB. | |
| c2-ReportOnLeave-r12 | FALSE | | |
| } | | | |
| } | | | |
| hysteresis | 0 (0 dB) | | |
| timeToTrigger | ms640 | | |
| } | | | |
| triggerQuantity | rsrp | | |
| reportQuantity | sameAsTriggerQuantity | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| si-RequestForHO-r9 | Not Present | | |
| ue-RxTxTimeDiffPeriodical-r9 | Not Present | | |
| includeLocationInfo-r10 | Not Present | | |
| reportAddNeighMeas-r10 | Not Present | | |
| alternativeTimeToTrigger-r12 | Not Present | | |
| useT312-r12 | Not Present | | |
| usePSCell-r12 | Not Present | | |
| aN-Threshold1-v1250 | Not Present | | |
| a5-Threshold2-v1250 | Not Present | | |
| reportStrongestCSI-RSs-r12 | false | | |
| reportCRS-Meas-r12 | false | | |
| triggerQuantityCSI-RS-r12 | true | | |
| } | | | |

- ReportConfigEUTRA-PERIODICAL-CSI-RS

Table 4.6.6-12: ReportConfigEUTRA-PERIODICAL-CSI-RS

| Derivation Path: 36.331 clause 6.3.5 | | | |
|---|----------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-PERIODICAL ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| periodical SEQUENCE { | | | |
| purpose | reportStrongestCells | | |
| } | | | |
| } | | | |
| triggerQuantity | rsrp | | |
| reportQuantity | both | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | infinity | | |
| si-RequestForHO-r9 | Not Present | | |
| ue-RxTxTimeDiffPeriodical-r9 | Not Present | | |
| includeLocationInfo-r10 | Not Present | | |
| reportAddNeighMeas-r10 | Not Present | | |
| alternativeTimeToTrigger-r12 | Not Present | | |
| useT312-r12 | Not Present | | |
| usePSCell-r12 | Not Present | | |
| aN-Threshold1-v1250 | Not Present | | |
| a5-Threshold2-v1250 | Not Present | | |
| reportStrongestCSI-RSs-r12 | true | | |
| reportCRS-Meas-r12 | false | | |
| triggerQuantityCSI-RS-r12 | false | | |
| } | | | |

- ReportConfigEUTRA-V1

Table 4.6.6-13: ReportConfigEUTRA-V1

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-V1 ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventV1-r14 SEQUENCE { | | | |
| v1-Threshold-r14 | 50 | | |
| } | | | |
| } | | | |
| } | | | |
| hysteresis | 0 (0 dB) | | |
| timeToTrigger | ms0 | | |
| } | | | |
| triggerQuantity | rsrp | | Not RSRQ |
| reportQuantity | both | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| purpose-v14xy | sidelink | | |
| } | | | |

- ReportConfigEUTRA-V2

Table 4.6.6-14: ReportConfigEUTRA-V2

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-V2 ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventV2-r14 SEQUENCE { | | | |
| v2-Threshold-r14 | 10 | | |
| } | | | |
| } | | | |
| hysteresis | 0 (0 dB) | | |
| timeToTrigger | ms0 | | |
| } | | | |
| triggerQuantity | rsrp | | Not RSRQ |
| reportQuantity | both | | |
| maxReportCells | 1 | | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| purpose-v14xy | sidelink | | |
| } | | | |

- ReportConfigEUTRA-H1

Table 4.6.6-15: ReportConfigEUTRA-H1

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-H1 ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventH1-r15 SEQUENCE { | | | |
| h1-ThresholdOffset-r15 | 0 (0m) | | |
| h1-Hysteresis-15 | 5 (5m) | | |
| } | | | |
| } | | | |
| hysteresis | 0 (0 dB) | IE ignored by UE when h1-Hysteresis-15 is configured. | |
| timeToTrigger | ms0 | | |
| } | | | |
| triggerQuantity | rsrp | IE ignored by UE for event H1 | |
| reportQuantity | both | IE ignored by UE for event H1 | |
| maxReportCells | 1 | IE ignored by UE for event H1 | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| } | | | |

- ReportConfigEUTRA-H2

Table 4.6.6-16: ReportConfigEUTRA-H2

| Derivation Path: 36.331 clause 6.3.5 | | | |
|--------------------------------------|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| ReportConfigEUTRA-H2 ::= SEQUENCE { | | | |
| triggerType CHOICE { | | | |
| event SEQUENCE { | | | |
| eventId CHOICE { | | | |
| eventH2-r15 SEQUENCE { | | | |
| h2-ThresholdOffset-r15 | 15 (30m) | | |
| h2-Hysteresis-15 | 10 (10m) | | |
| } | | | |
| } | | | |
| hysteresis | 0 (0 dB) | IE ignored by UE when h2-Hysteresis-15 is configured. | |
| timeToTrigger | ms0 | | |
| } | | | |
| triggerQuantity | rsrp | IE ignored by UE for event H2 | |
| reportQuantity | both | IE ignored by UE for event H2 | |
| maxReportCells | 1 | IE ignored by UE for event H2 | |
| reportInterval | ms1024 | | |
| reportAmount | r1 | | |
| } | | | |

4.6.7 Other information elements

- FlightPathInfoReportConfig

Table 4.6.7-0: FlightPathInfoReportConfig

| Derivation Path: 36.331 clause 6.3.6 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| FlightPathInfoReportConfig-r15 ::= SEQUENCE { | | | |
| maxWayPointNumber-r15 | 1 | | |
| includeTimeStamp-r15 | Not present | | |
| } | | | |

- RRC-TransactionIdentifier-DL

Table 4.6.7-1: RRC-TransactionIdentifier-DL

| Derivation Path: 36.331 clause 6.3.6 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRC-TransactionIdentifier-DL ::= | 0..3 | | |

RRC-TransactionIdentifier-UL

Table 4.6.7-2: RRC-TransactionIdentifier-UL

| Derivation Path: 36.331 clause 6.3.6 | | | |
|--------------------------------------|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRC-TransactionIdentifier-UL ::= | 0..3 | The same value as the value of RRC-TransactionIdentifier-DL in the downlink message initiating the procedure | |

4.6.8 Channel-bandwidth-dependent parameters

The default values of parameters which depend on the channel bandwidth are defined in table 4.6.8-1.

Table 4.6.8-1: Channel-bandwidth-dependent parameters

| Information Element | Channel bandwidth | | | | | | Comment |
|--|-------------------|-------|--|---|---|--|--|
| | 1.4 MHz | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20MHz | |
| Prach-FrequencyOffset or prach-FreqOffsetHighSpeed-r14 | 0 | 1 | 2 | 4 | 6 | 8 | Typical value in real network |
| nRB-CQI | 0 | 0 | 2 | 4 | 6 | 8 | Selected based on typical maximum number of UEs. |
| Pusch-HoppingOffset | 0 | 2 | 4 | 8 | 12 | 16 | Typical value in real network |
| sr-PUCCH-ResourceIndex | 0 | 10 | 20 | 41 | 62 | 84 | |
| sr-SlotSPUCCH-IndexFH-r15 | 0 | 10 | 20 | 41 | 62 | 84 | |
| sr-SlotSPUCCH-IndexNoFH-r15 | 0 | 10 | 20 | 41 | 62 | 84 | |
| sr-SubslotSPUCCH-ResourceList-r15 | 0 | 10 | 20 | 41 | 62 | 84 | |
| srs-BandwidthConfig | FFS | FFS | bw3 ($m_{SRS,b}$, N_b) = (20, 1), (4, 5), (4, 1), (4, 1) | bw2 ($m_{SRS,b}$, N_b) = (40, 1), (20, 2), (4, 5), (4, 1) | bw2 ($m_{SRS,b}$, N_b) = (60, 1), (20, 3), (4, 5), (4, 1) | bw2 ($m_{SRS,b}$, N_b) = (80, 1), (40, 2), (20, 2), (4, 5) | Selected in accordance with pucch-ResourceSize. |

4.7 Default NAS message and information element contents

This clause contains the default values of common NAS messages and information elements, which apply to all test cases unless otherwise specified. All the messages and information elements are listed in alphabetical order.

4.7.1 Security protected NAS messages

In subclauses 4.7.2 and 4.7.3 in this document, all the NAS messages are described in the plain NAS message format.

When a NAS message is security protected, the message shall be contained by SECURITY PROTECTED NAS MESSAGE unless contained by another NAS message.

The default contents of SECURITY PROTECTED NAS MESSAGE message are defined in table 4.7.1-1.

Table 4.7.1-1: SECURITY PROTECTED NAS MESSAGE

| Derivation Path: 24.301 clause 8.2.23 | | | |
|---------------------------------------|--|--|--------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0001'B | Integrity protected | UNCIPHERED |
| | '0010'B | Integrity protected and ciphered | CIPHERED |
| | '0011'B | Integrity protected with new EPS security context | UNCIPHERED-NEW |
| | '0100'B | Integrity protected and ciphered with new EPS security context | CIPHERED-NEW |
| | '0101'B | Integrity protected and partially ciphered NAS message | CIPHERED-PARTIALLY |
| Message authentication code | The calculated value of MAC-I for this message. | The value of MAC-I is calculated by SS using Sequence number sent by UE. | SENT-BY-SS |
| | The same value as the XMAC-I value calculated by SS. | | SENT-BY-UE |
| Sequence number | The internal counter of the SS | | SENT-BY-SS |
| | Any allowed value | | SENT-BY-UE |
| NAS message | Set according to specific message content | | |

| Condition | Explanation |
|--------------------|---|
| UNCIPHERED | This condition applies to unciphered NAS message exchange |
| CIPHERED | This condition applies to ciphered NAS message exchange |
| UNCIPHERED-NEW | This condition applies to unciphered NAS message exchange with new EPS security context |
| CIPHERED-NEW | This condition applies to ciphered NAS message exchange with new EPS security context |
| CIPHERED-PARTIALLY | This condition applies to partially ciphered NAS message exchange |
| SENT-BY-SS | Use for the message sent from SS to UE |
| SENT-BY-UE | Use for the message sent from UE to SS |

When a valid NAS security context exists, unless specified otherwise in other clauses of the present specification or in a test case, for every DL NAS message sent within SECURITY PROTECTED NAS MESSAGE message, the condition CIPHERED applies.

4.7.2 Contents of EMM messages

- ATTACH ACCEPT

This message is sent by the SS to the UE.

Table 4.7.2-1: ATTACH ACCEPT

| Derivation Path: 24.301 clause 8.2.1 | | | |
|--|--|---|-------------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Attach accept message identity | '0100 0010'B | Attach accept | |
| EPS attach result | '0001'B | EPS only | EPS_only |
| | '0010'B | combined EPS/IMSI attach | combined_EPS_IMSI |
| Spare half octet | '0000'B | | |
| T3412 value | | | |
| Timer value | '0 0000'B | | |
| Unit | '111'B | value indicates that the timer is deactivated. | |
| TAI list | | | |
| Length of tracking area identity list contents | '0000 0110'B | 6 octets | |
| Partial tracking area identity list 1 | | | |
| Number of elements | '0 0000'B | 1 element | |
| Type of list | '00'B | list of TACs belonging to one PLMN, with non-consecutive TAC values | |
| MCC | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| MNC | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| TAC 1 | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| ESM message container | ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message to activate the default bearer | | |
| ESM message container | ESM DUMMY MESSAGE | | CloT_Attach_WithoutPD N |
| GUTI | | | |
| Length of EPS mobile identity contents | '0000 1011'B | 11 octets | |
| Type of identity | '110'B | GUTI | |
| Odd/even indication | '0'B | even number of identity digits and also when the GUTI is used | |
| MCC | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| MNC | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| MME Group ID | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| MME Code | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| M-TMSI | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| Location area identification | Not present | | EPS_only |
| Location area identification | | | |

| | | | |
|------------------------------------|---|--|------------------------|
| MCC | MCC of the EUTRA cell from which this message is sent | | combined_E PS_IMSI |
| MNC | MCC of the EUTRA cell from which this message is sent | | |
| LAC | 1 | | |
| MS identity | Not present | | EPS_only |
| MS identity | | | combined_E PS_IMSI |
| Length of mobile identity contents | '0000 0101'B | 5 octets | |
| Type of identity | '100'B | TMSI/P-TMSI/M-TMSI | |
| Odd/even indication | '0'B | even number of identity digits and also when the TMSI/P-TMSI or TMGI and optional MBMS Session Identity is used | |
| TMSI | TMSI-1 | | |
| EMM cause | Not present | | |
| T3402 value | Not present | | |
| T3423 value | Not present | | |
| Equivalent PLMNs | Not present | | |
| Emergency number list | Not present | | |
| EPS network feature support | '0000 0001'B | IMS voice over PS session in S1 mode supported | |
| EPS network feature support | '0000 0011'B | IMS voice over PS session in S1 mode supported, emergency bearer services in S1 mode supported | Rel-9 |
| EPS network feature support | '1000 0011 0000 1111'B | IMS voice over PS session in S1 mode, emergency bearer services in S1 mode, CP Clot, ePCO, HC-CP Clot, S1-U data and UP Clot supported | Clot |
| EPS network feature support | '1100 0000 0000 1100'B | Clot control plane optimization indicated, Attach Without PDN supported, ePCO supported, Header Compression for Clot control plane supported | Clot_CP AND pc_NB |
| EPS network feature support | '1000 0000 0000 1011'B | CP Clot supported, ePCO supported, S1-U data transfer supported, Clot user plane optimization indicated | Clot_UP AND pc_NB |
| EPS network feature support | '1000 0000 0000 1010'B | CP Clot supported, ePCO supported, S1-U data transfer only indicated | S1-U Only AND pc_NB |

| | | | |
|--------------------------------|------------------------|--|--|
| EPS network feature support | '0010 0000 0000 0000'B | EXTENDED SERVICE REQUEST for packet services indicated | ESRPS |
| EPS network feature support | '0000 0011 0000 1000'B | - IMS voice over PS session in S1 mode supported - emergency bearer services in S1 mode supported - ePCO supported - Interworking without N26 interface not supported | NR |
| Additional update result | Not present | | |
| Additional update result | '0010' B | "SMS only" | additional_update_result_SMS OR CloT_SMSOnly |
| T3412 extended value | Not present | | Rel-10 |
| T3324 value | Not present | | |
| Extended DRX parameters | Not present | | |
| DCN-ID | Not present | | |
| SMS services status | Not present | | |
| Non-3GPP NW provided policies | Not present | | |
| T3448 value | Not present | | |
| Network policy | Not present | | |
| T3447 value | Not present | | |
| Extended emergency number list | Not present | | |
| Ciphering key data | Not present | | |

| Condition | Explanation |
|------------------------------|--|
| EPS_only | This condition applies if the UE is configured to initiate EPS attach or if explicitly specified. |
| combined_EPS_IMSI | This condition applies if the UE is configured to initiate combined EPS/IMSI attach or if explicitly specified. This condition does not apply for NB-S1. |
| additional_update_result_SMS | If the UE requested "SMS only" in the Additional update type IE and combined_EPS_IMSI condition applies |
| CloT_Attach_WithoutPDN | If the UE wants to attach without PDN for CloT optimization |
| CloT_CP | If test case requires control plane CloT optimization |
| CloT_SMSOnly | If SMS Only is indicated in the ATTACH REQ received earlier |
| CloT_UP | If test case requires user plane CloT optimization |
| S1-U data Only | If S1-U data transfer Only is indicated |
| CloT | If in the last ATTACH REQUEST, the UE network capability was included with the "CP CloT" (octet 8, bit 3) or the "UP CloT" and "S1-U data" (octet 8, bit 4 and bit 5). Note 1: This condition is only applicable for E-UTRA UEs (TS 36.523-2 A.4.1-1/1 or A.4.1-1/2). |
| ESRPS | If the test case requires the network to indicate support of EXTENDED SERVICE REQUEST for packet services (ESRPS) |
| NR | Used in NR test cases (TS 38.523-1 [71]) |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- ATTACH COMPLETE

This message is sent by the UE to the SS.

Table 4.7.2-2: ATTACH COMPLETE

| Derivation Path: 24.301 clause 8.2.2 | | | |
|--------------------------------------|--|---|------------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Attach complete message identity | '0100 0011'B | Attach complete | |
| ESM message container | ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message | | |
| ESM message container | ESM DUMMY MESSAGE | | CloT_Attach_WithoutPDN |

| Condition | Explanation |
|------------------------|---|
| CloT_Attach_WithoutPDN | If the UE wants to attach without PDN for CloT optimization |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- ATTACH REJECT

This message is sent by the SS to the UE.

Table 4.7.2-3: ATTACH REJECT

| Derivation Path: 24.301 clause 8.2.3 | | | |
|--------------------------------------|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Attach reject message identity | '0100 0100'B | Attach reject | |
| EMM cause | Set according to specific message content. | | |
| ESM message container | Set according to specific message content. | | |

NOTE: If this message includes the EMM cause set to #3, #6, #7, #8, #11, #12, #13, #14, #15, #25 or #35, it is sent within SECURITY PROTECTED NAS MESSAGE message. Otherwise this message is sent without integrity protection.

- ATTACH REQUEST

This message is sent by the UE to the SS.

Table 4.7.2-4: ATTACH REQUEST

| Derivation Path: 24.301 clause 8.2.4 | | | |
|--|---|--|---------------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Attach request message identity | '0100 0001'B | Attach request | |
| EPS attach type | '0001'B | EPS attach | EPS_only |
| | '0010'B | combined EPS/IMSI attach | combined_EPS_IMSI |
| NAS key set identifier | Any allowed value | | |
| EPS mobile identity | Any allowed value | | |
| UE network capability | Any allowed value | | |
| UE network capability | | | EN-DC |
| All octets with the exception of octet 9, bit 5 | Any allowed value | | |
| Dual connectivity with NR (DCNR) (octet 9, bit 5) | 1 | dual connectivity with NR supported | |
| UE network capability | | | NR |
| All octets with the exception of octet 8, bit 8 and octet 9, bit 6 | Any allowed value | | |
| Extended protocol configuration options (ePCO) (octet 8, bit 8) | '1' | Extended protocol configuration options IE supported | |
| N1 mode supported (N1mode) (octet 9, bit 6) | 1 | N1 mode supported | |
| ESM message container | PDN CONNECTIVITY REQUEST message to request PDN connectivity to the default PDN | | |
| ESM message container | ESM DUMMY MESSAGE | | CloT_Attach_WithoutPDN |
| Old P-TMSI signature | Not present or any allowed value | | |
| Additional GUTI | Not present or any allowed value | | |
| Last visited registered TAI | Not present or any allowed value | | |
| DRX parameter | Not present or any allowed value | | |
| MS network capability | Not present or any allowed value | | |
| Old location area identification | Not present or any allowed value | | |
| TMSI status | Not present or any allowed value | | |
| Mobile station classmark 2 | Not present or any allowed value | | |
| Mobile station classmark 3 | Not present or any allowed value | | |
| Supported Codecs | Not present or any allowed value | | |
| Additional update type | Not present | | EPS_only |
| Additional update type | Any allowed value | | EPS_only_with_SMS |
| Additional update type | Not present or any allowed value | | combined_EPS_IMSI or CloT |
| Voice domain preference and UE's usage setting | Not present or any allowed value | | |
| Device properties | Not present or any allowed value | | |
| Old GUTI type | Not present or any allowed value | | |
| MS network feature support | Not present or any allowed value | | |

| | | | |
|---|------------------------------------|--|-------------|
| TMSI based NRI container | Not present or any allowed value | | |
| T3324 value | Not present or any allowed value | | |
| T3412 extended value | Not present or any allowed value | | |
| Extended DRX parameters | Not present or any allowed value | | |
| UE additional security capability | Any allowed value (NOTE 1, NOTE 2) | | EN-DC OR NR |
| UE status | Not present or any allowed value | | |
| Additional information requested | Not present or any allowed value | | |
| NOTE 1: For a UE supporting dual connectivity with NR, if the UE supports one of the encryption algorithms for 5GS in bits 8 to 5 of octet 3, it shall support the same algorithms for E-UTRAN as specified in 3GPP TS 33.401 [41]. | | | |
| NOTE 2: For a UE supporting dual connectivity with NR, if the UE supports one of the integrity protection algorithms for 5GS in bits 8 to 5 of octet 5, it shall support the same algorithms for E-UTRAN as specified in 3GPP TS 33.401 [41]. | | | |

| Condition | Explanation |
|------------------------|---|
| EPS_only | See the definition below table 4.7.2-1. |
| combined_EPS_IMSI | See the definition below table 4.7.2-1. |
| CloT_Attach_WithoutPDN | If the UE wants to attach without PDN for CloT optimization |
| EPS_only_with_SMS | If the UE wants to perform EPS attach with SMS only for CloT optimization |
| CloT | If UE supports CloT Optimisation |
| EN-DC | Used in E-UTRA-NR dual connectivity test cases (TS 38.523-1 [71]) |
| NR | Used in NR test cases (TS 38.523-1 [71]) |

NOTE: This message is sent integrity protected when a valid security context exists and without integrity protection otherwise.

- AUTHENTICATION FAILURE

This message is sent by the UE to the SS.

Table 4.7.2-5: AUTHENTICATION FAILURE

| Derivation Path: 24.301 clause 8.2.5 | | | |
|--------------------------------------|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Authentication failure message type | '0101 1100'B | Authentication failure | |
| EMM cause | '0001 0100'B | Mac failure | |
| Authentication failure parameter | Not present | See TS 24.301 [28] subclause 8.2.5.2 | |

NOTE: The security protection of this message is the same as the previous AUTHENTICATION REQUEST message.

- AUTHENTICATION REJECT

This message is sent by the SS to the UE.

Table 4.7.2-6: AUTHENTICATION REJECT

| Derivation Path: 24.301 clause 8.2.6 | | | |
|--------------------------------------|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Authentication reject message type | '0101 0100'B | Authentication reject | |

NOTE: This message is sent without integrity protection.

- AUTHENTICATION REQUEST

This message is sent by the SS to the UE.

Table 4.7.2-7: AUTHENTICATION REQUEST

| Derivation Path: 24.301 clause 8.2.7 | | | |
|---|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Authentication request message type | '0101 0010'B | Authentication request | |
| NAS key set identifier _{ASME} | | | |
| NAS key set identifier | An arbitrarily selected value between '000'B and '110'B, different from the valid NAS key set identifier of the UE if such a value exists. | | |
| TSC | '0'B | native security context (for KSI _{ASME}) | |
| Spare half octet | '0000'B | | |
| Authentication parameter RAND (EPS challenge) | An arbitrarily selected 128 bits value | | |
| Authentication parameter AUTN (EPS challenge) | See TS 24.301 [28] subclause 9.9.3.2 | | |

NOTE: Within a test execution this message is sent without integrity protection before NAS security mode control procedure has been successfully completed; and sent integrity protected and ciphered within SECURITY PROTECTED NAS MESSAGE message after NAS security mode control procedure has been successfully completed. SS does not maintain information for NAS security mode control procedure after a TC is completed.

- AUTHENTICATION RESPONSE

This message is sent by the UE to the SS.

Table 4.7.2-8: AUTHENTICATION RESPONSE

| Derivation Path: 24.301 clause 8.2.8 | | | |
|--------------------------------------|--------------------------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Authentication response message type | '0101 0011'B | Authentication response | |
| Authentication response parameter | See TS 24.301 [28] subclause 9.9.3.4 | | |

NOTE: When sent in response to an AUTHENTICATION REQUEST message which is not integrity protected and not ciphered, the AUTHENTICATION RESPONSE message may be sent integrity protected when a valid security context exists and without integrity protection otherwise.

- CS SERVICE NOTIFICATION

This message is sent by the SS to the UE.

Table 4.7.2-8A: CS SERVICE NOTIFICATION

| Derivation Path: 24.301 clause 8.2.9 | | | |
|--|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| CS service notification message identity | '01100100'B | CS Service notification | |
| Paging identity | '1'B | TMSI | |
| CLI | Not present | | |
| SS Code | Not present | | |
| LCS indicator | Not present | | |
| LCS client identity | Not present | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- CONTROL PLANE SERVICE REQUEST

This message is sent by the UE to the SS.

Table 4.7.2-28: CONTROL PLANE SERVICE REQUEST

| Derivation Path: 24.301 clause 8.2.33 | | | |
|--|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Control plane service request message identity | '0100 1101'B | Control plane service request | |
| Data service type | | | |
| Data service type value | Any allowed value | | |
| "Active" flag | '0'B | No radio bearer establishment requested | |
| NAS key set identifier | | | |
| NAS key set identifier | The valid NAS key set identifier of the UE | | |
| TSC | '0'B | native security context (for KSI _{ASME}) | |
| ESM message container | Not present or PDN CONNECTIVITY REQUEST message to request PDN connectivity to the default PDN | | |
| NAS message container | Not present or set according to specific message content | | |
| EPS bearer context status | Not present or (octet 3 = '00100000'B and octet 4 = '00000000'B) | | |
| Device properties | Not present or Any allowed value | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message as an integrity protected message. If the ESM Message Container or NAS message container is present, this element is ciphered - so the whole message is then integrity protected and partially ciphered.

- DETACH ACCEPT (UE originating detach)

This message is sent by the SS to the UE.

Table 4.7.2-9: DETACH ACCEPT

| Derivation Path: 24.301 clause 8.2.10.1 | | | |
|---|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Detach accept message identity | '0100 0110'B | Detach accept | |

NOTE: This message is sent using the same security protection as in the previous DETACH REQUEST message received from the UE.

- DETACH ACCEPT (UE terminated detach)

This message is sent by the UE to the SS.

Table 4.7.2-10: DETACH ACCEPT

| Derivation Path: 24.301 clause 8.2.10.2 | | | |
|---|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Detach accept message identity | '0100 0110'B | Detach accept | |

NOTE: This message is sent without integrity protection before NAS security mode control procedure has been successfully completed and sent within SECURITY PROTECTED NAS MESSAGE message after NAS security mode control procedure has been successfully completed.

- DETACH REQUEST (UE originating detach)

This message is sent by the UE to the SS.

Table 4.7.2-11: DETACH REQUEST

| Derivation Path: 24.301 clause 8.2.11.1 | | | |
|---|---|---|-------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Detach request message identity | '0100 0101'B | Detach request | |
| Detach type | | | |
| Type of detach | '001'B | EPS detach | EPS_only |
| | '011'B | combined EPS/IMSI detach | Combined_EPS_IMSI |
| Switch off | '1'B | switch off | |
| NAS key set identifier | | | |
| NAS key set identifier | The valid NAS key set identifier. | | |
| TSC | Any Value | | |
| GUTI or IMSI | If the UE has a valid GUTI, set to the GUTI, otherwise set to the IMSI of the UE. | | |

| Condition | Explanation |
|-------------------|---|
| EPS_only | See the definition below table 4.7.2-1. |
| Combined_EPS_IMSI | See the definition below table 4.7.2-1. |

NOTE: This message is sent with integrity protection before SS has started the ciphering and integrity and ciphered protected after SS has started the ciphering.

- DETACH REQUEST (UE terminated detach)

This message is sent by the SS to the UE.

Table 4.7.2-12: DETACH REQUEST

| Derivation Path: 24.301 clause 8.2.11.2 | | | |
|---|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Detach request message identity | '0100 0101'B | Detach request | |
| Detach type | Set according to specific message content. | | |
| Spare half octet | '0000'B | | |
| EMM cause | Set according to specific message content. | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- DOWNLINK NAS TRANSPORT

This message is sent by the SS to the UE.

Table 4.7.2-12A: DOWNLINK NAS TRANSPORT

| Derivation Path: 24.301 clause 8.2.12 | | | |
|---|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Downlink NAS transport message identity | '0110 0010'B | Downlink NAS transport | |
| NAS message container | Set according to specific message content | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- EMM INFORMATION

This message is sent by the SS to the UE.

Table 4.7.2-13: EMM INFORMATION

| Derivation Path: 24.301 clause 8.2.13 | | | |
|---------------------------------------|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| EMM information message identity | '0110 0001'B | EMM information | |
| Full name for network | Set according to specific message content. | | |
| Short name for network | Set according to specific message content. | | |
| Local time zone | Set according to specific message content. | | |
| Universal time and local time zone | Set according to specific message content. | | |
| Network daylight saving time | Set according to specific message content. | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- EMM STATUS

This message is sent by the UE or by the SS.

Table 4.7.2-14: EMM STATUS

| Derivation Path: 24.301 clause 8.2.14 | | | |
|---------------------------------------|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| EMM status message identity | '0110 0000'B | EMM status | |
| EMM cause | Set according to specific message content. | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- EXTENDED SERVICE REQUEST

This message is sent by the UE to the SS.

Table 4.7.2-14A: EXTENDED SERVICE REQUEST

| Derivation Path: 24.301 clause 8.2.15 | | | |
|---|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Extended service request message identity | '0100 1100'B | Extended service request | |
| Service type | '0001'B | mobile terminating CS fallback or 1xCS fallback | |
| NAS key set identifier | | | |
| NAS key set identifier | The valid NAS key set identifier. | | |
| TSC | '0'B | native security context (for KSI _{ASME}) | |
| M-TMSI | If the UE has a valid M-TMSI, set to the M-TMSI, otherwise set to the IMSI of the UE. | | |
| CSFB response | '001'B | CS fallback accepted by the UE | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- GUTI REALLOCATION COMMAND

This message is sent by the SS to the UE.

Table 4.7.2-15: GUTI REALLOCATION COMMAND

| Derivation Path: 24.301 clause 8.2.16 | | | |
|--|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| GUTI reallocation command message identity | '0101 0000'B | GUTI reallocation command | |
| GUTI | Set according to specific message content. | | |
| TAI list | Set according to specific message content. | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- GUTI REALLOCATION COMPLETE

This message is sent by the UE to the SS.

Table 4.7.2-16: GUTI REALLOCATION COMPLETE

| Derivation Path: 24.301 clause 8.2.17 | | | |
|---|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| GUTI reallocation complete message identity | '0101 0001'B | GUTI reallocation complete | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- IDENTITY REQUEST

This message is sent by the SS to the UE.

Table 4.7.2-17: IDENTITY REQUEST

| Derivation Path: 24.301 clause 8.2.18 | | | |
|---------------------------------------|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Identity request message identity | '0101 0101'B | Identity request | |
| Identity type | '0001'B | IMSI | |
| Spare half octet | '0000'B | | |

NOTE: This message is sent without integrity protection before NAS security mode control procedure has been successfully completed and sent within SECURITY PROTECTED NAS MESSAGE message after NAS security mode control procedure has been successfully completed.

- IDENTITY RESPONSE

This message is sent by the UE to the SS.

Table 4.7.2-18: IDENTITY RESPONSE

| Derivation Path: 24.301 clause 8.2.19 | | | |
|---------------------------------------|----------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Identity response message | '0101 0110'B | Identity response | |
| Mobile identity | IMSI of the UE | | |

NOTE: This message is sent without integrity protection before NAS security mode control procedure has been successfully completed and sent within SECURITY PROTECTED NAS MESSAGE message after NAS security mode control procedure has been successfully completed.

SECURITY MODE COMMAND

This message is sent by the SS to the UE.

Table 4.7.2-19: SECURITY MODE COMMAND

| Derivation Path: 24.301 clause 8.2.20 | | | |
|--|---|---|--------------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Security mode command message identity | '0101 1101'B | Security mode command | |
| Selected NAS security algorithms | | | |
| Type of integrity protection algorithm | Set according to PIXIT parameter for default integrity protection algorithm | | For SIG |
| | 0(reserved or eia0) | This IE is set to one of the algorithms supported by the UE as indicated in the IE "UE network capability" in the ATTACH REQUEST message. | For RF |
| | eia1 | | |
| | eia2 | | |
| Type of ciphering algorithm | Set according to PIXIT parameter for default ciphering algorithm | | For SIG |
| | eea0 | | For RF |
| NAS key set identifier | | | |
| NAS key set identifier | The valid NAS key set identifier. | | |
| TSC | '0'B | native security context (for KSI _{ASME}) | |
| Spare half octet | '0000'B | | |
| Replayed UE security capabilities | Set according to the received UE security capabilities | | |
| IMEISV request | Not present | | |
| Replayed nonce _{UE} | Not present | | |
| Nonce _{MME} | Not present | | |
| Hash _{MME} | Not present | | |
| Replayed UE additional security capability | Set to the value received in the Attach/TAU Request | | EN-DC_duringRegistration |

| Condition | Explanation |
|--------------------------|--|
| For SIG | Used for signalling test cases |
| For RF | Used for RF/RRM test cases |
| EN-DC_duringRegistration | If the UE supports E-UTRA-NR dual connectivity NR ([71] pc_EN_DC) and this message is sent during an Attach or TAU procedure |

NOTE: This message is always sent integrity protected with new EPS security context.

- SECURITY MODE COMPLETE

This message is sent by the UE to the SS.

Table 4.7.2-20: SECURITY MODE COMPLETE

| Derivation Path: 24.301 clause 8.2.21 | | | |
|---|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Security mode complete message identity | '0101 1110'B | Security mode complete | |
| IMEISV | Not present | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message with new EPS security context.

- SECURITY MODE REJECT

This message is sent by the UE to the SS.

Table 4.7.2-21: SECURITY MODE REJECT

| Derivation Path: 24.301 clause 8.2.22 | | | |
|---------------------------------------|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Security mode reject message identity | '0101 1111'B | Security mode reject | |
| EMM cause | The value is set according to specific message content. | | |

NOTE: This message is sent without integrity protection before NAS security mode control procedure has been successfully completed and sent within SECURITY PROTECTED NAS MESSAGE message after NAS security mode control procedure has been successfully completed.

- SERVICE ACCEPT

This message is sent by the SS to the UE.

Table 4.7.2-21A: SERVICE ACCEPT

| Derivation Path: 24.301 clause 8.2.34 | | | |
|---------------------------------------|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Service accept message identity | '0100 1111'B | Service accept | |
| EPS bearer context status | The same value as the value set in CONTROL PLANE SERVICE REQUEST | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- SERVICE REJECT

This message is sent by the SS to the UE.

Table 4.7.2-22: SERVICE REJECT

| Derivation Path: 24.301 clause 8.2.24 | | | |
|---------------------------------------|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Service reject message identity | '0100 1110'B | Service reject | |
| EMM cause | Set according to specific message content. | | |
| T3442 value | Not present | | |

NOTE: If this message includes the EMM cause set to #3, #6, #7, #8, #11, #12, #13, #14, #15, #25 or #35, it is sent within SECURITY PROTECTED NAS MESSAGE message. Otherwise this message is sent without integrity protection.

- SERVICE REQUEST

This message is sent by the UE to the SS.

Table 4.7.2-23: SERVICE REQUEST

| Derivation Path: 24.301 clause 8.2.25 | | | |
|---------------------------------------|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '1100'B | Security header for the SERVICE REQUEST message | |
| KSI and sequence number | | | |
| Sequence number (short) | The 5 least significant bits of the NAS COUNT value applicable when this message is sent for sequence number. | | |
| KSI | The effective KSI value. | | |
| Message authentication code (short) | The 2 least significant octets of the resulting message authentication code | | |

- TRACKING AREA UPDATE ACCEPT

This message is sent by the SS to the UE.

Table 4.7.2-24: TRACKING AREA UPDATE ACCEPT

| Derivation Path: 24.301 clause 8.2.26 | | | |
|--|---|---|----------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Tracking area update accept message identity | '0100 1001'B | Tracking area update accept | |
| EPS update result | '0000'B | TA updated | TA_only |
| | '0001'B | combined TA/LA updated | combined_TA_LA |
| Spare half octet | '0000'B | | |
| T3412 value | Not present | | Periodic |
| T3412 value | | | |
| Timer value | '0 0000'B | | |
| Unit | '111'B | value indicates that the timer is deactivated. | |
| GUTI | | | |
| Length of EPS mobile identity contents | '0000 1011'B | 11 octets | |
| Type of identity | '110'B | GUTI | |
| Odd/even indication | '0'B | even number of identity digits and also when the GUTI is used | |
| MCC | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| MNC | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| MME Group ID | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| MME Code | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| M-TMSI | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| TAI list | | | |
| Length of tracking area identity list contents | '0000 0110'B | 6 octets | |
| Partial tracking area identity list 1 | | | |
| Number of elements | '0 0000'B | 1 element | |
| Type of list | '00'B | list of TACs belonging to one PLMN, with non-consecutive TAC values | |
| MCC | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| MNC | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| TAC 1 | See table 4.4.2-2 in this document | For NAS test cases, see table 6.3.2.2-1. | |
| EPS bearer context status | The same value as the value set in TRACKING AREA UPDATE REQUEST message | | |
| Location area identification | Not present | | TA_only |
| Location area identification | | | combined_TA_LA |
| MCC | MCC of the EUTRA cell from which this message is sent | | |

| | | | |
|------------------------------------|---|--|--|
| MNC | MCC of the EUTRA cell from which this message is sent | | |
| LAC | 1 | | |
| MS identity | Not present | | TA_only |
| MS identity | | | combined_TA_LA |
| Length of mobile identity contents | '0000 0101'B | 5 octets | |
| Type of identity | '100'B | TMSI/P-TMSI/M-TMSI | |
| Odd/even indication | '0'B | even number of identity digits and also when the TMSI/P-TMSI or TMGI and optional MBMS Session Identity is used | |
| TMSI | TMSI-1 | | |
| EMM cause | Not present | | |
| T3402 value | Not present | | |
| T3423 value | Not present | | |
| Equivalent PLMNs | Not present | | |
| Emergency number list | Not present | | |
| EPS network feature support | 0000 0001'B | IMS voice over PS session in S1 mode supported | |
| EPS network feature support | '1100 0000 0000 1100'B | CloT control plane optimization indicated, Attach Without PDN supported, ePCO supported, Header Compression for CloT control plane supported | (CloT_CP OR CloT_CP_S MSONly) AND pc_NB |
| EPS network feature support | '1000 0000 0000 1011'B | CP CloT supported, ePCO supported, S1-U data transfer supported, CloT user plane optimization indicated | CloT_UP AND pc_NB |
| EPS network feature support | '1000 0000 0000 1010'B | CP CloT supported, ePCO supported, S1-U data transfer Only indicated | S1-U Only AND pc_NB |
| EPS network feature support | '0000 0011 0000 1000'B | - IMS voice over PS session in S1 mode supported - emergency bearer services in S1 mode supported - ePCO supported - Interworking without N26 interface not supported | NR |
| Additional update result | Not present | | |
| Additional update result | '0010' B | "SMS only" | TAU_additional_update_result_SMS OR CloT_CP_S MSONly |

| | | | |
|---|--|--|--------|
| T3412 extended value | Not present | | Rel-10 |
| T3324 value | Not present | | |
| Extended DRX parameters | Not present | | |
| Header compression configuration status | Not present or set according to specific message content | | |
| DCN-ID | Not present | | |
| SMS services status | Not present | | |
| Non-3GPP NW provided policies | Not present | | |
| T3448 value | Not present | | |
| Network policy | Not present | | |
| T3447 value | Not present | | |
| Extended emergency number list | Not present | | |
| Ciphering key data | Not present | | |

| Condition | Explanation |
|----------------------------------|--|
| TA_only | This condition applies if the UE is configured to initiate EPS attach or if explicitly specified. |
| combined_TA_LA | This condition applies if the UE is configured to initiate combined EPS/IMSI attach or if explicitly specified. This condition does not apply for NB-S1. |
| Periodic | This condition applies if in the last TRACKING AREA UPDATE REQUEST sent prior to this message, the EPS update type Value = '011'B (periodic updating). |
| TAU_additional_update_result_SMS | If the UE requested "SMS only" in the Additional update type IE and combined_TA_LA. |
| CloT_CP | If test case requires control plane CloT optimization |
| CloT_CP_SMSOnly | If test case requires control plane CloT optimization and SMS Only is indicated |
| CloT_UP | If test case requires user plane CloT optimization |
| S1-U data Only | If S1-U data transfer Only is indicated |
| NR | Used in NR test cases (TS 38.523-1 [71]) |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- TRACKING AREA UPDATE COMPLETE

This message is sent by the UE to the SS.

Table 4.7.2-25: TRACKING AREA UPDATE COMPLETE

| Derivation Path: 24.301 clause 8.2.27 | | | |
|--|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Tracking area update complete message identity | '0100 1010'B | Tracking area update complete | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- TRACKING AREA UPDATE REJECT

This message is sent by the SS to the UE.

Table 4.7.2-26: TRACKING AREA UPDATE REJECT

| Derivation Path: 24.301 clause 8.2.28 | | | |
|--|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Tracking area update reject message identity | '0100 1011'B | Tracking area update reject | |
| EMM cause | Set according to specific message content. | | |

NOTE: If this message includes the EMM cause set to #3, #6, #7, #8, #11, #12, #13, #14, #15, #25 or #35, it is sent within SECURITY PROTECTED NAS MESSAGE message. Otherwise this message is sent without integrity protection.

- TRACKING AREA UPDATE REQUEST

This message is sent by the UE to the SS.

Table 4.7.2-27: TRACKING AREA UPDATE REQUEST

| Derivation Path: 24.301 clause 8.2.29 | | | |
|--|--|--|------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Tracking area update request message identity | '0100 1000'B | Tracking area update request | |
| EPS update type | | | |
| EPS update type Value | '000'B | TA updating | TA_only |
| | '001'B | Combined TA/LA updating | combined_TA_LA |
| "Active" flag | '0'B | No bearer establishment requested | |
| NAS key set identifier | | | |
| NAS key set identifier | The valid NAS key set identifier of the UE | | |
| TSC | '0'B | native security context (for KSI _{ASME}) | |
| Old GUTI | Any allowed value | | |
| Non-current native NAS key set identifier | Not present | | |
| GPRS ciphering key sequence number | Not present | | |
| Old P-TMSI signature | Not present | | |
| Additional GUTI | Not present | | |
| Nonce _{UE} | Not present | | |
| UE network capability | Not present or any allowed value | | |
| UE network capability | | | EN-DC |
| All octets with the exception of octet 9, bit 5 | Any allowed value | | |
| Dual connectivity with NR (DCNR) (octet 9, bit 5) | 1 | dual connectivity with NR supported | |
| UE network capability | | | NR |
| All octets with the exception of octet 8, bit 8 and octet 9, bit 6 | Any allowed value | | |
| Extended protocol configuration options (ePCO) (octet 8, bit 8) | 1 | ePCO supported | |
| N1 mode supported (N1mode) (octet 9, bit 6) | 1 | N1 mode supported | |
| Last visited registered TAI | Not present or any allowed value | | |
| DRX parameter | Not present or any allowed value | | |
| UE radio capability information update needed | Not present or any allowed value | | |
| EPS bearer context status | Not present or (octet 3 = '00100000'B and octet 4 = '00000000'B) | | |
| MS network capability | Not present or any allowed value | | |
| Old location area identification | Not present or any allowed value | | |
| TMSI status | Not present or any allowed value | | |
| Mobile station classmark 2 | Not present or any allowed value | | |
| Mobile station classmark 3 | Not present or any allowed value | | |
| Supported Codecs | Not present or any allowed value | | |
| Additional update type | Not present | | TA_only |
| Additional update type | Not present or any allowed value | | combined_TA_LA |
| Additional update type | Any allowed value | | TA_only_with_SMS |

| | | | |
|---|------------------------------------|--|-------------|
| Additional update type | Not present or any allowed value | | CloT |
| Voice domain preference and UE's usage setting | Not present or any allowed value | | |
| Old GUTI type | Not present or any allowed value | | |
| Device properties | Not present or any allowed value | | |
| MS network feature support | Not present or any allowed value | | |
| TMSI based NRI container | Not present or any allowed value | | |
| T3324 value | Not present or any allowed value | | |
| T3412 extended value | Not present or any allowed value | | |
| Extended DRX parameters | Not present or any allowed value | | |
| UE additional security capability | Any allowed value (NOTE 1, NOTE 2) | | EN-DC OR NR |
| UE status | Not present or any allowed value | | |
| Additional information requested | Not present or any allowed value | | |
| NOTE 1: For a UE supporting dual connectivity with NR, if the UE supports one of the encryption algorithms for 5GS in bits 8 to 5 of octet 3, it shall support the same algorithms for E-UTRAN as specified in 3GPP TS 33.401 [41]. | | | |
| NOTE 2: For a UE supporting dual connectivity with NR, if the UE supports one of the integrity protection algorithms for 5GS in bits 8 to 5 of octet 5, it shall support the same algorithms for E-UTRAN as specified in 3GPP TS 33.401 [41]. | | | |

| Condition | Explanation |
|-------------------|--|
| TA_only | See the definition below table 4.7.2-24. |
| combined_TA_LA | See the definition below table 4.7.2-24. |
| EPS_only_with_SMS | If the UE wants to update for EPS attach with SMS only for CloT optimization |
| CloT | If UE supports CloT Optimisation |
| EN-DC | Used in E-UTRA-NR dual connectivity test cases (TS 38.523-1 [71]) |
| NR | Used in NR test cases (TS 38.523-1 [71]) |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- UPLINK NAS TRANSPORT

This message is sent by the UE to the SS.

Table 4.7.2-27A: UPLINK NAS TRANSPORT

| Derivation Path: 24.301 clause 8.2.30 | | | |
|---------------------------------------|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | EMM | | |
| Security header type | '0000'B | Plain NAS message, not security protected | |
| Uplink NAS transport message identity | '0100 0011'B | Uplink NAS transport | |
| NAS message container | Set according to specific message content | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

4.7.3 Contents of ESM messages

- ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT

This message is sent by the UE to the SS.

Table 4.7.3-1: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT

| Derivation Path: 24.301 clause 8.3.1 | | | |
|---|--|--|------------------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | The same value as the value set in ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message | | |
| Procedure transaction identity | '0000 0000'B | No procedure transaction identity assigned | |
| Activate dedicated EPS bearer context accept message identity | '1100 0110'B | Activate dedicated EPS bearer context accept | |
| Protocol configuration options | Not present or any allowed value | | NOT (pc_NB or pc_NonIP_P DN) |
| Protocol configuration options | Not present | | pc_NB or pc_NonIP_P DN |
| NBIFOM container | Not present or any allowed value | | |
| Extended protocol configuration options | Not present or any allowed value | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- ACTIVATE DEDICATED EPS BEARER CONTEXT REJECT

This message is sent by UE to the SS.

Table 4.7.3-2: ACTIVATE DEDICATED EPS BEARER CONTEXT REJECT

| Derivation Path: 24.301 clause 8.3.2 | | | |
|---|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | The same value as the value set in ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message. | | |
| Procedure transaction identity | '0000 0000'B | No procedure transaction identity assigned | |
| Activate dedicated EPS bearer context reject message identity | '1100 0111'B | Activate dedicated EPS bearer context reject | |
| ESM cause | The value is set according to specific message content. | | |
| Protocol configuration options | Not present | | |
| NBIFOM container | Not present or any allowed value | | |
| Extended protocol configuration options | Not present or any allowed value | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST

This message is sent by the SS to the UE.

Table 4.7.3-3: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST

| Derivation Path: 24.301 clause 8.3.3 | | | |
|--|---|---|-----------------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | Arbitrarily selected value between '0101'B and '1111'B. | | |
| Procedure transaction identity | '0000 0000'B | No procedure transaction identity assigned | NETWORK-INITIATED |
| | The same value as the value set in BEARER RESOURCE MODIFICATION REQUEST message or BEARER RESOURCE ALLOCATION REQUEST message | | UE-INITIATED |
| Activate dedicated EPS bearer context request message identity | '1100 0101'B | Activate dedicated EPS bearer context request | |
| Linked EPS bearer identity | The EPS bearer identity of the associated default bearer | | |
| Spare half octet | '0000'B | | |
| EPS QoS | See Reference dedicated EPS bearer context #1 in table 6.6.2-1 | | |
| TFT | See Reference dedicated EPS bearer context #1 in table 6.6.2-1 | | |
| Transaction identifier | Not present | | |
| | Distinct value between 0 and 127 calculated on basis of the EPS bearer identity. | | pc_UTRAN AND/OR pc_GERAN |
| Negotiated QoS | See Reference dedicated EPS bearer context #1 in table 6.6.2-1 | | |
| Negotiated LLC SAPI | See Reference dedicated EPS bearer context #1 in table 6.6.2-1 | | |
| Radio priority | See Reference dedicated EPS bearer context #1 in table 6.6.2-1 | | |
| Packet flow Identifier | Not present | | |
| | '0000 0000'B | Best Effort | pc_GERAN |
| Protocol configuration options | See Reference dedicated EPS bearer context #1 in table 6.6.2-1 | | NOT (pc_NB or pc_NonIP_PDN) |
| Protocol configuration options | Not present | | pc_NB or pc_NonIP_PDN |
| WLAN offload container | Not present | | |
| NBIFOM container | Not present | | |
| Extended protocol configuration options | Not present | | NOT (pc_NB or pc_NonIP_PDN) |
| Extended protocol configuration options | See Reference dedicated EPS bearer context #1 in table 6.6.2-1 | | pc_NB or pc_NonIP_PDN |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|-------------------|----------------------------------|
| NETWORK-INITIATED | Network initiated ESM procedures |
| UE-INITIATED | UE initiated ESM procedures |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT

This message is sent by the UE to the SS.

Table 4.7.3-4: ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT

| Derivation Path: 24.301 clause 8.3.4 | | | |
|---|--|--|------------------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | The same value as the value set in ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message | | |
| Procedure transaction identity | '0000 0000'B | No procedure transaction identity assigned | |
| Activate default EPS bearer context accept message identity | '1100 0010'B | Activate default EPS bearer context accept | |
| Protocol configuration options | Not present or any allowed value | | NOT (pc_NB or pc_NonIP_P DN) |
| Protocol configuration options | Not present | | pc_NB or pc_NonIP_P DN |
| Extended protocol configuration options | Not present or any allowed value | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- ACTIVATE DEFAULT EPS BEARER CONTEXT REJECT

This message is sent by UE to the SS.

Table 4.7.3-5: ACTIVATE DEFAULT EPS BEARER CONTEXT REJECT

| Derivation Path: 24.301 clause 8.3.5 | | | |
|---|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | The same value as the value set in ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message. | | |
| Procedure transaction identity | '0000 0000'B | No procedure transaction identity assigned | |
| Activate default EPS bearer context reject message identity | '1100 0011'B | Activate default EPS bearer context reject | |
| ESM cause | The value is set according to specific message content. | | |
| Protocol configuration options | Not present | | |
| Extended protocol configuration options | Not present | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST

This message is sent by the SS to the UE.

Table 4.7.3-6: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST

| Derivation Path: 24.301 clause 8.3.6 | | | |
|--|---|---|--|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | An arbitrarily selected value between '0101'B and '1111'B. | | |
| Procedure transaction identity | The same value as the value set in the latest PDN CONNECTIVITY REQUEST message sent prior to this message. | | |
| Activate default EPS bearer context request message identity | '1100 0001'B | Activate default EPS bearer context request | |
| EPS QoS | See Reference default EPS bearer context #1 in table 6.6.1-1 | | NOT IMS_PDN_ConnEstab |
| EPS QoS | See Reference default EPS bearer context #2 in table 6.6.1-1 | | IMS_PDN_ConnEstab |
| Access point name | The SS defines a Default APN | | NOT IMS_PDN_ConnEstab AND NOT APN_Provided |
| Access point name | APN as provided in ESM INFORMATION RESPONSE or PDN CONNECTIVITY REQUEST | | NOT IMS_PDN_ConnEstab AND APN_Provided |
| Access point name | IMS. mnc<MNC>.mcc<MCC>.gprs The <MNC> and <MCC> are set to the same values as in IMSI. | | IMS_PDN_ConnEstab AND NOT APN_Provided |
| Access point name | Use APN Network Identifier provided in ESM INFORMATION RESPONSE or PDN CONNECTIVITY REQUEST message and the APN Operator Identifier mnc<MNC>.mcc<MCC>.gprs. The <MNC> and <MCC> are set to the same values as in IMSI. | | IMS_PDN_ConnEstab AND APN_Provided |
| PDN address | | | IPv4 |
| Length of PDN address contents | 5 octets | | |
| PDN type value | '001'B | IPv4 | |
| PDN address information | IPv4 address | The SS provides a valid IPv4 address | NOT IPv4-DHCP |
| | 0.0.0.0 | DHCPv4 is to be used to allocate the IPv4 address | IPv4-DHCP |
| PDN address | | | IPv6 |
| Length of PDN address contents | 9 octets | | |
| PDN type value | '010'B | IPv6 | |
| PDN address information | IPv6 interface identifier | The SS provides a valid IPv6 interface identifier | |
| PDN address | | | IPv4v6 |
| Length of PDN address contents | 13 octets | | |
| PDN type value | '011'B | IPv4v6 | |

| | | | |
|---|--|--|---------------------------------------|
| PDN address information (Octets 4 to 11) | IPv6 interface identifier | The SS provides a valid IPv6 interface identifier | |
| PDN address information (Octets 12 to 15) | IPv4 address | The SS provides a valid IPv4 address | NOT IPv4-DHCP |
| | 0.0.0.0 | DHCPv4 is to be used to allocate the IPv4 address | IPv4-DHCP |
| PDN address | | | CloT_CP_N ON_IP |
| Length of PDN address contents | 2 octets | | |
| PDN type value | '101'B | Non-IP PDN | |
| PDN address information (Octets 4 to 7) | Coded as 0 | spare | |
| Transaction identifier | Not present | | |
| Transaction identifier | Distinct value between 0 and 127 calculated on basis of the EPS bearer identity. | | pc_UTRAN AND/OR pc_GERAN |
| Negotiated QoS | See Reference default EPS bearer context #1 in table 6.6.1-1 | | |
| Negotiated LLC SAPI | See Reference default EPS bearer context #1 in table 6.6.1-1 | | |
| Radio priority | See Reference default EPS bearer context #1 in table 6.6.1-1 | | |
| Packet flow Identifier | Not present | | |
| Packet flow Identifier | '0000 0000'B | Best Effort | pc_GERAN |
| APN-AMBR | See Reference default EPS bearer context #1 in table 6.6.1-1 | | |
| ESM cause | Not present | | |
| Protocol configuration options | Not present | | pc_NB or pc_NonIP_P DN |
| Protocol configuration options | | | NOT (pc_NB or pc_NonIP_P DN) |
| Configuration protocol | See Reference default EPS bearer context #1 in table 6.6.1-1 | | |
| Container ID 1 | '0001'H | | P-CSCF IPv6 |
| Length of container ID 1 contents | | Length value determined by the TTCN implementation | |
| Container ID 1 contents | IPv6 address | P-CSCF IPv6 Address | |
| Container ID 2 | '000C'H | | P-CSCF IPv4 |
| Length of container ID 2 contents | | Length value determined by the TTCN implementation | |
| Container ID 2 contents | IPv4 address | P-CSCF IPv4 Address | |
| Container ID n | '0003'H | n assigned to next available number | DNS IPv6 |
| Length of container ID n contents | | Length value determined by the TTCN implementation | |
| Container ID n contents | IPv6 address | DNS IPv6 Address | |

| | | | |
|-------------------------------------|------------------------|---|------------------------------|
| Container ID n+1 | '000D'H | n assigned to next available number | DNS IPv4 |
| Length of container ID n+1 contents | | Length value determined by the TTCN implementation | |
| Container ID n+1 contents | IPv4 address | DNS IPv4 Address | |
| Container ID n+2 | '001D'H | n assigned to next available number | Interworking _with_5GS |
| Length of container ID n+2 contents | | Length value determined by the TTCN implementation | |
| Container ID n+2 contents | Session-AMBR | Session-AMBR | |
| Session AMBR | | | |
| Unit for Session-AMBR for downlink | '000 00101' | Value is incremented in multiples of 256 Kbps | |
| Session-AMBR for downlink | '0000 0000 0000 0100'B | 1024 Kbps | |
| Unit for Session-AMBR for uplink | '000 00101' | Value is incremented in multiples of 256 Kbps | |
| Session-AMBR for uplink | '0000 0000 0000 0100'B | 1024 Kbps | |
| Container ID n+3 | '001C'H | n assigned to next available number | Interworking _with_5GS |
| Length of container ID n+3 contents | | Length value determined by the TTCN implementation | |
| Container ID n+3 contents | QoS rules | QoS rules according to TS 38.508-1 [67] Table 4.8.2.1-1 | NOT IMS_PDN_ ConnEstab |
| Container ID n+3 contents | QoS rules | QoS rules according to TS 38.508-1 [67] Table 4.8.2.1-2 | IMS_PDN_ ConnEstab |
| Container ID n+4 | '001F'H | n assigned to next available number | Interworking _with_5GS |
| Length of container ID n+4 contents | | Length value determined by the TTCN implementation | |
| Container ID n+4 contents | Qos flow descriptions | Qos flow descriptions according to TS 38.508-1 [67] 4.8.2.3-1 | NOT IMS_PDN_ ConnEstab |
| Container ID n+4 contents | Qos flow descriptions | Qos flow descriptions refer to TS 38.508-1 [67] 4.8.2.3-2 | IMS_PDN_ ConnEstab |
| Container ID n+5 | '001B'H | n assigned to next available number | Interworking _with_5GS |
| Length of container ID n+5 contents | | Length value determined by the TTCN implementation | |

| | | | |
|---|--|--|------------------------------|
| Container ID n+5 contents | S-NSSAI | S-NSSAI same as the allowed NSSAI in TS 38.508-1 [67] Table 4.7.1-7: REGISTRATION ACCEPT | |
| WLAN offload indication | Not present | | |
| WLAN offload indication | | | WLAN |
| WLAN offload acceptability | '0001'B | Offloading the traffic of the PDN connection via a WLAN when in S1 mode is acceptable | |
| NBIFOM container | Not present | | |
| Header compression configuration | Not present or set according to specific message content | | |
| Control plane only indication | Not present | | |
| Control plane only indication | '0001'B | | CloT_Contr olPlane_PD N |
| Extended protocol configuration options | Not present | | NOT (pc_NB or pc_NonIP_P DN) |
| Extended protocol configuration options | | | pc_NB or pc_NonIP_P DN |
| Configuration protocol | See Reference default EPS bearer context #1 in table 6.6.1-1 | | |
| Container ID n | '0003'H | n assigned to next available number | DNS IPv6 |
| Length of container ID n contents | | Length value determined by the TTCN implementation | |
| Container ID n contents | IPv6 address | DNS IPv6 Address | |
| Container ID n+1 | '000D'H | n assigned to next available number | DNS IPv4 |
| Length of container ID n+1 contents | | Length value determined by the TTCN implementation | |
| Container ID n+1 contents | IPv4 address | DNS IPv4 Address | |
| Serving PLMN rate control | Not present | | |
| Serving PLMN rate control | 'FFFF'H | Maximum number of ESM DATA TRANSPORT messages allowed per 6 min interval is not restricted | CloT_Contr olPlane_PD N |

| Condition | Explanation |
|-----------------------|--|
| IPv4 | If in the last PDN CONNECTIVITY REQUEST sent prior to this message, the PDN type = '001'B |
| IPv6 | If in the last PDN CONNECTIVITY REQUEST sent prior to this message, the PDN type = '010'B |
| IPv4v6 | If in the last PDN CONNECTIVITY REQUEST sent prior to this message, the PDN type = '011'B |
| IPv4-DHCP | If in the last PDN CONNECTIVITY REQUEST or ESM INFORMATION RESPONSE sent prior to this message, the IE Protocol configuration options contains a configuration protocol option = '000B00H' ("IPv4 address allocation via DHCPv4", length of contents = 0). Note 1: This condition is used in conjunction with IPv4 or IPv4v6 as indicated in the "PDN address row" just above. Note 2: If both messages, PDN CONNECTIVITY REQUEST and ESM INFORMATION RESPONSE, are received and contain a Protocol configuration options IE then the IE from the message which is received later shall be used. |
| P-CSCF IPv6 | If in the last PDN CONNECTIVITY REQUEST or ESM INFORMATION RESPONSE sent prior to this message, the Protocol configuration options and the additional parameter list was included with a "P-CSCF IPv6 Address Request" Note 1: This condition is only applicable for UEs with IMS support (TS 36.523-2 A.4.4-1/25). Note 2: If both messages, PDN CONNECTIVITY REQUEST and ESM INFORMATION RESPONSE, are received and contain a Protocol configuration options IE then the IE from the message which is received later shall be used. |
| P-CSCF IPv4 | If in the last PDN CONNECTIVITY REQUEST or ESM INFORMATION RESPONSE sent prior to this message, the Protocol configuration options and the additional parameter list was included with a "P-CSCF IPv4 Address Request" Note 1: This condition is only applicable for UEs with IMS support (TS 36.523-2 A.4.4-1/25). Note 2: If both messages, PDN CONNECTIVITY REQUEST and ESM INFORMATION RESPONSE, are received and contain a Protocol configuration options IE then the IE from the message which is received later shall be used. |
| DNS IPv6 | If in the last PDN CONNECTIVITY REQUEST or ESM INFORMATION RESPONSE sent prior to this message, the Protocol configuration options and the additional parameter list was included with a "DNS IPv6 Address Request". Note: If both messages, PDN CONNECTIVITY REQUEST and ESM INFORMATION RESPONSE, are received and contain a Protocol configuration options IE then the IE from the message which is received later shall be used. |
| DNS IPv4 | If in the last PDN CONNECTIVITY REQUEST or ESM INFORMATION RESPONSE sent prior to this message, the Protocol configuration options and the additional parameter list was included with a "DNS IPv4 Address Request". Note: If both messages, PDN CONNECTIVITY REQUEST and ESM INFORMATION RESPONSE, are received and contain a Protocol configuration options IE then the IE from the message which is received later shall be used. |
| APN_Provided | If in the last PDN CONNECTIVITY REQUEST or ESM INFORMATION RESPONSE sent prior to this message an Access Point Name was included NOTE: APN_Provided is equivalent to pc_Provide_IMS_APN for establishment of the first PDN connectivity during initial registration and if the first PDN is IMS (see table 4.7.3-14) |
| IMS_PDN_ConnEstab | If this message refers to establishment of connectivity to the IMS PDN (only applicable if the UE supports IMS according to TS 36.523-2 A.4.4-1/25). |
| WLAN | If the message is being sent for RAN Assisted WLAN interworking. |
| Clot_ControlPlane_PDN | If the associated PDN connection is only for control plane Clot optimization |
| Clot_CP_NON_IP | If the UE requests a Non-IP type PDN |
| Interworking_with_5GS | If the UE has indicated support of N1, then the SS shall include these IEs to provide details for the interworking with 5GS. Applicable to 5G test cases defined in TS 38.523-1 [71]. |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- BEARER RESOURCE ALLOCATION REJECT

This message is sent by the SS to the UE.

Table 4.7.3-6A: BEARER RESOURCE ALLOCATION REJECT

| Derivation Path: 24.301 clause 8.3.7 | | | |
|--|--|-----------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| Procedure transaction identity | The value indicated in BEARER RESOURCE ALLOCATION REQUEST message. | | |
| Bearer resource allocation reject message identity | '1101 0101'B | Bearer resource allocation reject | |
| ESM cause | Set according to specific message content. | | |
| Protocol configuration options | Not present | | |
| NBIFOM container | Not present | | |
| Extended protocol configuration options | Not present | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- BEARER RESOURCE ALLOCATION REQUEST

This message is sent by the UE to the SS.

Table 4.7.3-6B: BEARER RESOURCE ALLOCATION REQUEST

| Derivation Path: 24.301 clause 8.3.8 | | | |
|---|---|------------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| Procedure transaction identity | Any value from 1 to 254 | | |
| Bearer resource allocation request message identity | '1101 0100'B | Bearer resource allocation request | |
| Linked EPS bearer identity | The EPS bearer identity of the associated default bearer. | | |
| Spare half octet | '0000'B | | |
| Traffic flow aggregate | | | |
| Number of packet filters | Greater than 0 and less than or equal to 16 | | |
| E bit | Any allowed value | | |
| TFT operation code | '001'B | Create new TFT | |
| Packet filter list | Any allowed value | | |
| Parameters list | Not present or any allowed value | | |
| Required traffic flow QoS | Any allowed value | | |
| Protocol configuration options | Not present or any allowed value | | |
| NBIFOM container | Not present or any allowed value | | |
| Extended protocol configuration options | Not present or any allowed value | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- BEARER RESOURCE MODIFICATION REJECT

This message is sent by the SS to the UE.

Table 4.7.3-7: BEARER RESOURCE MODIFICATION REJECT

| Derivation Path: 24.301 clause 8.3.9 | | | |
|--|--|-------------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| Procedure transaction identity | The value indicated in BEARER RESOURCE MODIFICATION REQUEST message. | | |
| Bearer resource modification reject message identity | '1101 0111'B | Bearer resource modification reject | |
| ESM cause | Set according to specific message content. | | |
| Protocol configuration options | Not present | | |
| NBIFOM container | Not present | | |
| Extended protocol configuration options | Not present | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- BEARER RESOURCE MODIFICATION REQUEST

This message is sent by the UE to the SS.

Table 4.7.3-8: BEARER RESOURCE MODIFICATION REQUEST

| Derivation Path: 24.301 clause 8.3.10 | | | |
|---|--|---|-------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| Procedure transaction identity | Any value from 1 to 254 | | |
| Bearer resource modification request message identity | '1101 0110'B | Bearer resource modification request | |
| EPS bearer identity for packet filter | The EPS bearer identity of the associated dedicated EPS bearer related with packet filter. | | |
| Spare half octet | '0000'B | | |
| Traffic flow aggregate | Any allowed value | | |
| Traffic flow aggregate | | | RELEASE-REQUESTED |
| Number of packet filters | Greater than 0 and less than or equal to 16 | | |
| E bit | Any allowed value | | |
| TFT operation code | '101'B | Delete packet filters from existing TFT | |
| Packet filter list | Any allowed value | | |
| Parameters list | Not present or any allowed value | | |
| Required traffic flow QoS | Not present or any allowed value | | |
| ESM cause | Not present | | |
| | '0010 0100'B | Regular deactivation | RELEASE-REQUESTED |
| Protocol configuration options | Not present or any allowed value | | |
| NBIFOM container | Not present or any allowed value | | |
| Header compression configuration | Not present or any allowed value | | |
| Extended protocol configuration options | Not present or any allowed value | | |

| Condition | Explanation |
|-------------------|--|
| RELEASE-REQUESTED | UE requests the release of bearer resources. |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

Table 4.7.3-9: (Void)

Table 4.7.3-10: (Void)

- DEACTIVATE EPS BEARER CONTEXT ACCEPT

This message is sent by the UE to the SS.

Table 4.7.3-11: DEACTIVATE EPS BEARER CONTEXT ACCEPT

| Derivation Path: 24.301 clause 8.3.9 | | | |
|---|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | The same value as the value set in DEACTIVATE EPS BEARER CONTEXT REQUEST message. | | |
| Procedure transaction identity | '0000 0000'B | No procedure transaction identity assigned | |
| Deactivate EPS bearer context accept message identity | '1100 1110'B | Deactivate EPS bearer context accept | |
| Protocol configuration options | Not present or any allowed value | | |
| Extended protocol configuration options | Not present or any allowed value | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- DEACTIVATE EPS BEARER CONTEXT REQUEST

This message is sent by the SS to the UE.

Table 4.7.3-12: DEACTIVATE EPS BEARER CONTEXT REQUEST

| Derivation Path: 24.301 clause 8.3.10 | | | |
|--|--|--|-------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | Set according to specific message content. | | |
| Procedure transaction identity | '0000 0000'B | No procedure transaction identity assigned | NETWORK-INITIATED |
| | The same value as the value set in PDN DISCONNECT REQUEST message or BEARER RESOURCE MODIFICATION REQUEST message. | | UE-INITIATED |
| Deactivate EPS bearer context request message identity | '1100 1101'B | Deactivate EPS bearer context request | |
| ESM cause | Set according to specific message content. | | |
| Protocol configuration options | Not present | | |
| NBIFOM container | Not present | | |
| Extended protocol configuration options | Not present | | |

| Condition | Explanation |
|-------------------|----------------------------------|
| NETWORK-INITIATED | Network initiated ESM procedures |
| UE-INITIATED | UE initiated ESM procedures |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- ESM DATA TRANSPORT

This message is sent by the UE or by the SS.

Table 4.7.3-12A: ESM DATA TRANSPORT

| Derivation Path: 24.301 clause 8.3.25 | | | |
|---------------------------------------|--|---------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| Procedure transaction identity | Any value from 1 to 254 | | |
| ESM data transport message identity | '1110 1011'B | ESM data transport | |
| User data container | set according to specific message content | | |
| Release assistance indication | Not present or set according to specific message content | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- ESM DUMMY MESSAGE

This message is sent by the SS to the UE or by the UE to the SS.

Table 4.7.3-12B: ESM DUMMY MESSAGE

| Derivation Path: 24.301 clause 8.3.12A | | | |
|--|---|---------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| Procedure transaction identity | The value indicated in ESM DUMMY MESSAGE message. | | |
| ESM information request message identity | '1101 1100'B | ESM dummy message | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- ESM INFORMATION REQUEST

This message is sent by the SS to the UE.

Table 4.7.3-13: ESM INFORMATION REQUEST

| Derivation Path: 24.301 clause 8.3.11 | | | |
|--|--|---------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| Procedure transaction identity | The value indicated in PDN CONNECTIVITY REQUEST message. | | |
| ESM information request message identity | '1101 1001'B | ESM information request | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- ESM INFORMATION RESPONSE

This message is sent by the UE to the SS.

Table 4.7.3-14: ESM INFORMATION RESPONSE

| Derivation Path: 24.301 clause 8.3.12 | | | |
|---|---|-------------------------------------|------------------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| Procedure transaction identity | The same value as the value set in ESM INFORMATION REQUEST message. | | |
| ESM information response message identity | '1101 1010'B | ESM information response | |
| Access point name | Not present or any allowed value | | Internet_AP N |
| Access point name | Not present | | IMS_APN_D efault |
| Access point name | Any allowed value | | IMS_APN_P rovided |
| Protocol configuration options | Not present or any allowed value | | NOT (pc_NB or pc_NonIP_P DN) |
| Protocol configuration options | If present including at least the following container | | Interworking _with_5GS |
| Container ID n | '001A'H | n assigned to next available number | |
| Length of container ID n contents | | 1 octet | |
| Container ID n contents | PDU session ID | PDU session ID assigned by the UE | |
| Protocol configuration options | Not present | | pc_NB or pc_NonIP_P DN |
| Extended protocol configuration options | Not present or any allowed value | | |
| Extended protocol configuration options | If present including at least the following container | | Interworking _with_5GS |
| Container ID n | '001A'H | n assigned to next available number | |
| Length of container ID n contents | | 1 octet | |
| Container ID n contents | PDU session ID | PDU session ID assigned by the UE | |

| Condition | Expression | Explanation |
|-----------------------|--|---|
| IMS_APN_Provided | pc_IMS AND NOT pc_Provide_IMS_as_second_APN AND pc_Provide_IMS_APN | IMS APN shall be provided by the UE: |
| IMS_APN_Default | pc_IMS AND NOT pc_Provide_IMS_as_second_APN AND NOT pc_Provide_IMS_APN | No IMS APN shall be provided by the UE; IMS APN is default APN |
| Internet_APN | NOT pc_IMS OR pc_Provide_IMS_as_second_APN | |
| Interworking_with_5GS | | If the UE has indicated support of N1, then the SS shall include this IE to provide details for the interworking with 5GS. Applicable to 5G test cases defined in TS 38.523-1 [71]. Note: The PDU session ID container shall be sent in either the Protocol configuration options or the Extended protocol configuration options IE. |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- ESM STATUS

This message is sent by the UE or by the SS.

Table 4.7.3-15: ESM STATUS

| Derivation Path: 24.301 clause 8.3.13 | | | |
|---------------------------------------|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | Set according to specific message content. | | |
| Procedure transaction identity | '0000 0000'B | No procedure transaction identity assigned | |
| ESM status message identity | '1110 1000'B | ESM status | |
| ESM cause | Set according to specific message content. | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- MODIFY EPS BEARER CONTEXT ACCEPT

This message is sent by the UE to the SS.

Table 4.7.3-16: MODIFY EPS BEARER CONTEXT ACCEPT

| Derivation Path: 24.301 clause 8.3.14 | | | |
|---|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | The same value as the value set in MODIFY EPS BEARER CONTEXT REQUEST message. | | |
| Procedure transaction identity | '0000 0000'B | No procedure transaction identity assigned | |
| Modify EPS bearer context accept message identity | '1100 1010'B | Modify EPS bearer context accept | |
| Protocol configuration options | Not present or any allowed value | | |
| NBIFOM container | Not present or any allowed value | | |
| Extended protocol configuration options | Not present or any allowed value | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- MODIFY EPS BEARER CONTEXT REJECT

This message is sent by the UE to the SS.

Table 4.7.3-17: MODIFY EPS BEARER CONTEXT REJECT

| Derivation Path: 24.301 clause 8.3.15 | | | |
|---|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | The same value as the value set in MODIFY EPS BEARER CONTEXT REQUEST message. | | |
| Procedure transaction identity | '0000 0000'B | No procedure transaction identity assigned | |
| Modify EPS bearer context reject message identity | '1100 1011'B | Modify EPS bearer context reject | |
| ESM cause | The value is set according to specific message content. | | |
| Protocol configuration options | Not present | | |
| NBIFOM container | Not present | | |
| Extended protocol configuration options | Not present | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- MODIFY EPS BEARER CONTEXT REQUEST

This message is sent by the SS to the UE.

Table 4.7.3-18: MODIFY EPS BEARER CONTEXT REQUEST

| Derivation Path: 24.301 clause 8.3.16 | | | |
|--|---|--|-------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | Set according to specific message content. | | |
| Procedure transaction identity | '0000 0000'B | No procedure transaction identity assigned | NETWORK-INITIATED |
| | The same value as the value set in BEARER RESOURCE MODIFICATION REQUEST message or BEARER RESOURCE ALLOCATION REQUEST message. | | UE-INITIATED |
| Modify EPS bearer context request message identity | '1100 1001'B | Modify EPS bearer context request | |
| New EPS QoS | Use the same value as used in Activate EPS Bearer Context Request message | | |
| TFT | According to reference dedicated EPS bearer context #2 except for TFT operation code which is set to '100'B and TFT identifier is set to '001 10000'B.. | | |
| New QoS | Not Present. | | |
| Negotiated LLC SAPI | Not Present. | | |
| Radio priority | Not Present. | | |
| Packet flow Identifier | Not Present. | | |
| | '0000 0000'B | Best Effort | pc_GERAN |
| APN-AMBR | Not Present. | | |
| Protocol configuration options | Not present | | |
| WLAN offload container | Not present | | |
| NBIFOM container | Not present | | |
| Header compression configuration | Not present | | |
| Extended protocol configuration options | Not present | | |

| Condition | Explanation |
|-------------------|----------------------------------|
| NETWORK-INITIATED | Network initiated ESM procedures |
| UE-INITIATED | UE initiated ESM procedures |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- NOTIFICATION

This message is sent by the SS to the UE.

Table 4.7.3-18A: NOTIFICATION

| Derivation Path: 24.301 clause 8.3.18A | | | |
|--|--|---|--------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| | The same value as the value set in ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message for IMS signalling. | | SRVCC-HO-CANCELLED |
| Procedure transaction identity | '0000 0000'B | No procedure transaction identity assigned | |
| Notification message identity | '1101 1011'B | Notification | |
| Notification indicator | '0000 0001'B | SRVCC handover cancelled, IMS session re-establishment required | SRVCC-HO-CANCELLED |

| Condition | Explanation |
|--------------------|--------------------------------------|
| SRVCC-HO-CANCELLED | Used if SRVCC handover is cancelled. |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- PDN CONNECTIVITY REJECT

This message is sent by the SS to the UE.

Table 4.7.3-19: PDN CONNECTIVITY REJECT

| Derivation Path: 24.301 clause 8.3.17 | | | |
|--|--|---------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| Procedure transaction identity | The same value as the value set in PDN CONNECTIVITY REQUEST message. | | |
| PDN connectivity reject message identity | '1101 0001'B | PDN connectivity reject | |
| ESM cause | The value is set according to specific message content. | | |
| Protocol configuration options | Not present | | |
| NBIFOM container | Not present | | |
| Extended protocol configuration options | Not present | | |

NOTE: This message is sent without integrity protection before NAS security mode control procedure has been successfully completed and sent within SECURITY PROTECTED NAS MESSAGE message after NAS security mode control procedure has been successfully completed.

- PDN CONNECTIVITY REQUEST

This message is sent by the UE to the SS.

Table 4.7.3-20: PDN CONNECTIVITY REQUEST

| Derivation Path: 24.301 clause 8.3.20 | | | |
|---|---|---|------------------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| Procedure transaction identity | Any value from 1 to 254 | | |
| PDN connectivity request message identity | '1101 0000'B | PDN connectivity request | |
| Request type | '0001'B | initial request | |
| PDN type | Any value between '001'B, '010'B, '011'B and '100'B | The allowed values are respectively IPv4, IPv6, IPv4v6 and "unused but interpreted as IPv6 by the network" | |
| PDN type | '101'B | Non-IP | CloT_CP_N ON_IP |
| ESM information transfer flag | Not present or any allowed value | | |
| Access point name | Not present | The value is mandatory when the PDN CONNECTIVITY REQUEST message is sent together with an ATTACH REQUEST message. | |
| Protocol configuration options | Not present or any allowed value | The value received from the UE does not affect the possible verdict associated with the message when received by the SS. The SS shall remember if this IE is present and its contents because this affects subsequent SS behaviour, e.g. coding of ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST. | NOT (pc_NB or pc_NonIP_P DN) |
| Protocol configuration options | Not present | | pc_NB or pc_NonIP_P DN |
| Protocol configuration options | If present including at least the following container | | Interworking _with_5GS |
| Container ID n | '001A'H | n assigned to next available number | |
| Length of container ID n contents | | 1 octet | |
| Container ID n contents | PDU session ID | PDU session ID assigned by the UE | |
| NBIFOM container | Not present or any allowed value | | |
| Header compression configuration | Not present or any allowed value | | |

| | | | |
|---|---|-------------------------------------|---------------------------|
| Extended protocol configuration options | Not present or any allowed value | | |
| Extended protocol configuration options | If present including at least the following container | | Interworking _with_5GS |
| Container ID n | '001A'H | n assigned to next available number | |
| Length of container ID n contents | | 1 octet | |
| Container ID n contents | PDU session ID | PDU session ID assigned by the UE | |

| Condition | Explanation |
|-----------------------|---|
| CloT_CP_NON_IP | If the UE requests a Non-IP type PDN |
| Interworking_with_5GS | If the UE has indicated support of N1, then the SS shall include this IE to provide details for the interworking with 5GS. Applicable to 5G test cases defined in TS 38.523-1 [71]. Note: The PDU session ID container shall be sent in either the Protocol configuration options or the Extended protocol configuration options IE. |

NOTE: This message is sent without integrity protection before NAS security mode control procedure has been successfully completed and sent within SECURITY PROTECTED NAS MESSAGE message after NAS security mode control procedure has been successfully completed.

- PDN DISCONNECT REJECT

This message is sent by the SS to the UE.

Table 4.7.3-21: PDN DISCONNECT REJECT

| Derivation Path: 24.301 clause 8.3.19 | | | |
|---|--|---------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| Procedure transaction identity | The value indicated in PDN DISCONNECT REQUEST message. | | |
| PDN disconnect reject message identity | '1101 0011'B | PDN disconnect reject | |
| ESM cause | Set according to specific message content. | | |
| Protocol configuration options | Not present | | |
| Extended protocol configuration options | Not present | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

- PDN DISCONNECT REQUEST

This message is sent by the UE to the SS.

Table 4.7.3-22: PDN DISCONNECT REQUEST

| Derivation Path: 24.301 clause 8.3.20 | | | |
|---|---|---------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | ESM | | |
| EPS bearer identity | '0000'B | No EPS bearer identity assigned | |
| Procedure transaction identity | Any value from 1 to 254 | | |
| PDN disconnect request message identity | '1101 0010'B | PDN disconnect request | |
| Linked EPS bearer identity | The EPS bearer identity of the associated default bearer. | | |
| Spare half octet | '0000'B | | |
| Protocol configuration options | Not present or any allowed value | | |
| Extended protocol configuration options | Not present or any allowed value | | |

NOTE: This message is always sent within SECURITY PROTECTED NAS MESSAGE message.

4.7A Default TC message and information element contents

This clause contains the default values of common TC (Test Control, see [38]) messages and information elements, which apply to all test cases unless otherwise specified. All the messages and information elements are listed in alphabetical order.

- ACTIVATE TEST MODE

This message is sent by the SS to the UE embedded in a RRC *DLInformationTransfer* message.

Table 4.7A-1: ACTIVATE TEST MODE

| Derivation Path: 36.509 clause 6.5 | | | |
|------------------------------------|-----------------|---------------------|-------------------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 0 1 0 0 | | |
| UE test loop mode | 0 0 0 0 0 0 0 0 | UE test loop mode A | UE TEST LOOP MODE A (default) |
| UE test loop mode | 0 0 0 0 0 0 0 1 | UE test loop mode B | UE TEST LOOP MODE B |
| UE test loop mode | 0 0 0 0 0 0 1 0 | UE test loop mode C | UE TEST LOOP MODE C |
| UE test loop mode | 0 0 0 0 0 0 1 1 | UE test loop mode D | UE TEST LOOP MODE D |
| UE test loop mode | 0 0 0 0 0 1 0 0 | UE test loop mode E | UE TEST LOOP MODE E |
| UE test loop mode | 0 0 0 0 0 1 0 1 | UE test loop mode F | UE TEST LOOP MODE F |

| Condition | Explanation |
|---------------------|---|
| UE TEST LOOP MODE A | UE test loop function configured for UE test loop mode A operation. |
| UE TEST LOOP MODE B | UE test loop function configured for UE test loop mode B operation. |
| UE TEST LOOP MODE C | UE test loop function configured for UE test loop mode C operation. |
| UE TEST LOOP MODE D | UE test loop function configured for UE test loop mode D operation. |
| UE TEST LOOP MODE E | UE test loop function configured for UE test loop mode E operation. |
| UE TEST LOOP MODE F | UE test loop function configured for UE test loop mode F operation. |

- **ACTIVATE TEST MODE COMPLETE**

This message is sent by the UE to the SS embedded in a RRC *ULInformationTransfer* message.

Table 4.7A-2: ACTIVATE TEST MODE COMPLETE

| Derivation Path: 36.509 clause 6.6 | | | |
|------------------------------------|-----------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 0 1 0 1 | | |

- CLOSE UE TEST LOOP

This message is sent by the SS to the UE embedded in a RRC *DLInformationTransfer* message.

Table 4.7A-3: CLOSE UE TEST LOOP

| Derivation Path: 36.509 clause 6.1 | | | |
|--|------------------------------------|---|-------------------------------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 0 0 0 0 | | |
| UE test loop mode | 0 0 0 0 0 0 0 0 | UE test loop mode A | UE TEST LOOP MODE A (default) |
| UE test loop mode A LB setup | | | |
| Length of UE test loop mode A LB setup list in bytes | 0 | No LB setup list. No scaling (UL RLC SDU size will be equal to the received DL SDU size) | |
| UE test loop mode B LB setup | Not present | | |
| UE test loop mode C LB setup | Not present | | |
| UE test loop mode D LB setup | Not present | | |
| UE test loop mode E LB setup | Not present | | |
| UE test loop mode F setup | Not present | | |
| UE test loop mode | 0 0 0 0 0 0 0 1 | UE test loop mode B | UE TEST LOOP MODE B |
| UE test loop mode A LB setup | Not present | | |
| UE test loop mode B LB setup | | | |
| IP PDU delay | 0 0 0 0 0 0 0 0 | No delay | |
| UE test loop mode C LB setup | Not present | | |
| UE test loop mode D LB setup | Not present | | |
| UE test loop mode E LB setup | Not present | | |
| UE test loop mode F setup | Not present | | |
| UE test loop mode | 0 0 0 0 0 0 1 0 | UE test loop mode C | UE TEST LOOP MODE C |
| UE test loop mode A LB setup | Not present | | |
| UE test loop mode B LB setup | Not present | | |
| UE test loop mode C LB setup | | MTCH ID | |
| MBSFN area identity | 0 0 0 0 0 0 0 0 | 0, same value as broadcasted in the default <i>SystemInformationBlock Type13</i> message | |
| MCH identity | 0 0 0 0 0 0 0 0 | 0, same value as indicated in the default MBSFNAreaConfiguration message | |
| Logical channel identity | 0 0 0 0 0 0 0 1 | 1, same value as indicated in the default MBSFNAreaConfiguration message | |
| UE test loop mode D LB setup | Not present | | |
| UE test loop mode E LB setup | Not present | | |
| UE test loop mode F setup | Not present | | |
| UE test loop mode | 0 0 0 0 0 0 1 1 | UE test loop mode D | UE TEST LOOP MODE D |
| UE test loop mode A LB setup | Not present | | |
| UE test loop mode B LB setup | Not present | | |
| UE test loop mode C LB setup | Not present | | |
| UE test loop mode D LB setup | | | |
| Discovery Announce or Monitor | 0 0 0 0 0 0 0 0 | 0, triggered to monitor sidelink direct discovery by default. | |
| Length of UE test loop mode D Monitor list in bytes | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 0 byte because by default no specific App code is monitored individually. The UE will collectively monitor all App codes. | |
| UE test loop mode E LB setup | Not present | | |
| UE test loop mode F setup | Not present | | |
| UE test loop mode | 0 0 0 0 0 1 0 0 | UE test loop mode E | UE TEST LOOP MODE E |
| UE test loop mode A LB setup | Not present | | |
| UE test loop mode B LB setup | Not present | | |
| UE test loop mode C LB setup | Not present | | |
| UE test loop mode D LB setup | Not present | | |
| UE test loop mode E LB setup | | | |

| | | | |
|---|-----------------|---|--|
| Length of UE test loop mode E Monitor setup contents in bytes | 0 0 0 0 0 0 1 | 1 to account for first 1 octet which is always present. By default no specific Group Destination ID code is monitored individually. The UE will collectively monitor packets for all Group Destination IDs. | |
| Communication Transmit or Receive | 0 0 0 0 0 0 0 | 0, triggered to receive sidelink direct communication by default. | |
| UE test loop mode F setup | Not present | | |
| UE test loop mode | 0 0 0 0 0 1 0 0 | UE test loop mode E | UE TEST LOOP MODE E (V2X Reception) |
| UE test loop mode A LB setup | Not present | | |
| UE test loop mode B LB setup | Not present | | |
| UE test loop mode C LB setup | Not present | | |
| UE test loop mode D LB setup | Not present | | |
| UE test loop mode E LB setup | | | |
| Length of UE test loop mode E Monitor setup contents in bytes | 0 0 0 0 0 0 1 | 1 to account for first 1 octet which is always present. By default no specific Group Destination ID code is monitored individually. The UE will collectively monitor packets for all Group Destination IDs. | |
| Communication Transmit or Receive | 0 0 0 0 0 0 1 0 | '10' indicates V2X UE triggered to receive V2X communication by default. | |
| UE test loop mode F setup | Not present | | |
| UE test loop mode | 0 0 0 0 0 1 0 0 | UE test loop mode E | UE TEST LOOP MODE E (V2X Transmission) |
| UE test loop mode A LB setup | Not present | | |
| UE test loop mode B LB setup | Not present | | |
| UE test loop mode C LB setup | Not present | | |
| UE test loop mode D LB setup | Not present | | |
| UE test loop mode E LB setup | | | |
| Length of UE test loop mode E Monitor setup contents in bytes | 0 0 0 0 0 0 1 | 1 to account for first 1 octet which is always present. By default no specific Group Destination ID code is monitored individually. The UE will collectively monitor packets for all Group Destination IDs. | |
| Communication Transmit or Receive | 0 0 0 0 0 0 1 1 | '11' indicates V2X UE triggered to transmit V2X communication by default. | |
| UE test loop mode F setup | Not present | | |
| UE test loop mode | 0 0 0 0 0 1 0 1 | UE test loop mode F | UE TEST LOOP MODE F |
| UE test loop mode A LB setup | Not present | | |
| UE test loop mode B LB setup | Not present | | |
| UE test loop mode C LB setup | Not present | | |
| UE test loop mode D LB setup | Not present | | |
| UE test loop mode E LB setup | Not present | | |
| UE test loop mode F setup | | SC-MTCH ID | |
| g-RNTI | '0100'H | same value as indicated in the default SCPTM-Configuration message | |

| Condition | Explanation |
|--|---|
| UE TEST LOOP MODE A | UE test loop function configured for UE test loop mode A operation. |
| UE TEST LOOP MODE B | UE test loop function configured for UE test loop mode B operation. |
| UE TEST LOOP MODE C | UE test loop function configured for UE test loop mode C operation. |
| UE TEST LOOP MODE D | UE test loop function configured for UE test loop mode D operation. |
| UE TEST LOOP MODE E | UE test loop function configured for UE test loop mode E operation. |
| UE TEST LOOP MODE E (V2X Reception) | UE test loop function configured for UE test loop mode E operation with V2X reception. |
| UE TEST LOOP MODE E (V2X Transmission) | UE test loop function configured for UE test loop mode E operation with V2X transmission. |
| UE TEST LOOP MODE F | UE test loop function configured for UE test loop mode F operation. |

- CLOSE UE TEST LOOP COMPLETE

This message is sent by the UE to the SS embedded in a RRC *ULInformationTransfer* message.

Table 4.7A-4: CLOSE UE TEST LOOP

| Derivation Path: 36.509 clause 6.2 | | | |
|------------------------------------|---------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 0 0 1 | | |

- DEACTIVATE TEST MODE

This message is sent by the SS to the UE embedded in a RRC *DLInformationTransfer* message.

Table 4.7A-5: DEACTIVATE TEST MODE

| Derivation Path: 36.509 clause 6.7 | | | |
|------------------------------------|-----------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 0 1 1 0 | | |

- DEACTIVATE TEST MODE COMPLETE

This message is sent by the UE to the SS embedded in a RRC *ULInformationTransfer* message.

Table 4.7A-6: DEACTIVATE TEST MODE COMPLETE

| Derivation Path: 36.509 clause 6.8 | | | |
|------------------------------------|-----------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 0 1 1 1 | | |

- OPEN UE TEST LOOP

This message is sent by the SS to the UE embedded in a RRC *DLInformationTransfer* message.

Table 4.7A-7: OPEN UE TEST LOOP

| Derivation Path: 36.509 clause 6.3 | | | |
|------------------------------------|---------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 0 1 0 | | |

- OPEN UE TEST LOOP COMPLETE

This message is sent by the UE to the SS embedded in a RRC *ULInformationTransfer* message.

Table 4.7A-8: OPEN UE TEST LOOP COMPLETE

| Derivation Path: 36.509 clause 6.4 | | | |
|------------------------------------|---------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 0 1 1 | | |

- UE TEST LOOP MODE C MBMS PACKET COUNTER REQUEST

This message is sent by the SS to the UE embedded in a RRC *DLInformationTransfer* message.

Table 4.7A-9: UE TEST LOOP MODE C MBMS PACKET COUNTER REQUEST

| Derivation Path: 36.509 clause 6.10 | | | |
|-------------------------------------|-----------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 1 0 0 1 | | |

- UE TEST LOOP MODE C MBMS PACKET COUNTER RESPONSE

This message is sent by the UE to the SS embedded in a RRC *ULInformationTransfer* message.

Table 4.7A-10: UE TEST LOOP MODE C MBMS PACKET COUNTER RESPONSE

| Derivation Path: 36.509 clause 6.11 | | | |
|-------------------------------------|-----------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 1 0 1 1 | | |
| MBMS Packet Counter Value | | | |

- UE TEST LOOP PROSE PACKET COUNTER REQUEST

This message is sent by the SS to the UE embedded in a RRC *DLInformationTransfer* message.

Table 4.7A-11: UE TEST LOOP PROSE PACKET COUNTER REQUEST

| Derivation Path: 36.509 clause 6.13 | | | |
|-------------------------------------|-----------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 1 1 0 0 | | |

- UE TEST LOOP PROSE PACKET COUNTER RESPONSE

This message is sent by the UE to the SS embedded in a RRC *ULInformationTransfer* message.

Table 4.7A-12: UE TEST LOOP PROSE PACKET COUNTER RESPONSE

| Derivation Path: 36.509 clause 6.14 | | | |
|--|-----------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 1 1 0 1 | | |
| ProSe Direct Discovery Packet Counter(s) Value | | | Mode D |
| ProSe Direct Communication PSCCH Packet Counter(s) Value | | | Mode E |
| ProSe Direct Communication STCH Packet Counter(s) Value | | | Mode E |

| Condition | Explanation |
|-----------|--|
| Mode D | This IE is present if UE test loop function is configured for UE test loop mode D operation else it shall be absent. |
| Mode E | This IE is present if UE test loop function is configured for UE test loop mode E operation else it shall be absent |

- UE TEST LOOP MODE F SCPTM PACKET COUNTER REQUEST

This message is sent by the SS to the UE embedded in a RRC *DLInformationTransfer* message.

Table 4.7A-13: UE TEST LOOP MODE F SCPTM PACKET COUNTER REQUEST

| Derivation Path: 36.509 clause 6.15 | | | |
|-------------------------------------|-----------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 1 1 1 0 | | |

- UE TEST LOOP MODE F SCPTM PACKET COUNTER RESPONSE

This message is sent by the UE to the SS embedded in a RRC *ULInformationTransfer* message.

Table 4.7A-14: UE TEST LOOP MODE F SCPTM PACKET COUNTER RESPONSE

| Derivation Path: 36.509 clause 6.16 | | | |
|-------------------------------------|-----------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 1 1 1 1 | | |
| SCPTM Packet Counter Value | | | |

4.7B Default UTRA message and information element contents

4.7B.1 UTRA RRC messages

– HANDOVER TO UTRAN COMMAND

Table 4.7B.1-1: HANDOVER TO UTRAN COMMAND

| Derivation Path: 25.331, clause 10.2.16a | | | |
|--|--|---------|--|
| Information Element | Value/remark | Comment | Condition |
| New U-RNTI | U-RNTI-Short | | |
| - SRNC identity | 0000 0000 0001B | | |
| - S-RNTI-2 | 00 0000 0001B | | |
| Ciphering algorithm | UEA0 or UEA1. The indicated algorithm must be one of the algorithms supported by the UE. | | |
| RNC support for change of UE capability | FALSE | | |
| New H-RNTI | Not present | | UTRA FDD PS RB, UTRA TDD PS RB, UTRA Speech, UTRA PS RB + Speech, UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DC H |
| | '1010 1010 1010 1010' | | UTRA HSDPA RB, UTRA HSUPA/H SDPA RB |
| New Primary E-RNTI | Not present | | UTRA FDD PS RB, UTRA TDD PS RB, UTRA HSDPA RB, UTRA Speech, UTRA PS RB + Speech. ,UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DC H |
| | '1010 1010 1010 1010' | | UTRA HSUPA/H SDPA RB |
| New Secondary E-RNTI | Not present | | |
| Default configuration for CELL_FACH | Not present | | |
| CHOICE <i>specification mode</i> | Complete specification | | |

| | | | |
|--|---|--|---|
| <p>- Signalling RB information to setup List</p> | <p>Same as the corresponding IE in the RRC CONNECTION SETUP message (Transition to CELL_DCH or HS-PDSCH in CELL_FACH) using condition A1 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RRC CONNECTION SETUP message in TS 34.108 clause 9.1.2 for UTRA-TDD.</p> | | <p>UTRA FDD PS RB, UTRA HSDPA RB, UTRA Speech, UTRA PS RB + Speech, UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DCH</p> |
| | <p>Same as the corresponding IE in the RRC CONNECTION SETUP message in TS 34.108 clause 9.2.2</p> | | <p>UTRA TDD PS RB</p> |
| | <p>Same as the corresponding IE in the RRC CONNECTION SETUP message (Transition to CELL_DCH or HS-PDSCH in CELL_FACH) using condition A3 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RRC CONNECTION SETUP (Transition to CELL_DCH) (1.28 Mcps TDD option) message in TS 34.108 clause 9.1.2 for UTRA-TDD.</p> | | <p>UTRA HSUPA/HSDPA RB</p> |
| <p>- RAB information to setup list</p> | <p>Same as the corresponding IE in the RADIO BEARER SETUP message using condition A2 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A2 in TS 34.108 clause 9.1.2 for UTRA-TDD.</p> | | <p>UTRA Speech, UTRA PS RB + Speech, UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DCH</p> |

| | | | |
|--|--|--|---|
| | <p>Same as the corresponding IE in the RADIO BEARER SETUP message using condition A3 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A3 in TS 34.108 clause 9.1.2 for UTRA-TDD.</p> | | <p>UTRA FDD PS RB, UTRA PS RB + Speech</p> |
| | <p>Same as the corresponding IE in the RADIO BEARER SETUP message using condition A11 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A11 in TS 34.108 clause 9.1.2 for UTRA-TDD.</p> | | <p>UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DC H</p> |
| | <p>Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A3 in TS 34.108 clause 9.2.2 for UTRA-TDD.</p> | | <p>UTRA TDD PS RB</p> |
| | <p>Same as the corresponding IE in the RADIO BEARER SETUP message using condition A10 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A10 in TS 34.108 clause 9.1.2 for UTRA-TDD.</p> | | <p>UTRA HSDPA RB</p> |
| | <p>Same as the corresponding IE in the RADIO BEARER SETUP message using condition A14 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A13 in TS 34.108 clause 9.1.2 for UTRA-TDD.</p> | | <p>UTRA HSUPA/H SDPA RB</p> |

| | | | |
|---|--|--|---|
| <p>- UL Transport channel information common for all transport channels</p> | <p>Same as the corresponding IE in the RADIO BEARER SETUP message using condition A2 in TS 34.108 clause 9.1.1 for UTRA-FDD Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A2 in TS 34.108 clause 9.1.2 for UTRA-TDD</p> | | <p>UTRA Speech, UTRA PS RB + Speech, UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DC_H</p> |
| | <p>Same as the corresponding IE in the RADIO BEARER SETUP message using condition A3 in TS 34.108 clause 9.1.1 UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A3 in TS 34.108 clause 9.2.2 UTRA-TDD.</p> | | <p>UTRA FDD PS RB, UTRA TDD PS RB</p> |
| | <p>Same as the corresponding IE in the RADIO BEARER SETUP message using condition A10 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A10 in TS 34.108 clause 9.1.2 for UTRA-TDD.</p> | | <p>UTRA HSDPA RB</p> |
| | <p>Same content as the corresponding IE in the RADIO BEARER SETUP message using condition A14 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same content as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A13 in TS 34.108 clause 9.1.2 for UTRA-TDD.</p> | | <p>UTRA HSUPA/HSDPA RB</p> |

| | | | |
|--|--|--|---|
| - Added or Reconfigured UL TrCH information | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A2 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A2 in TS 34.108 clause 9.1.2 for UTRA-TDD | | UTRA Speech, UTRA PS RB + Speech, UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DCH |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A3 in TS 34.108 clause 9.1.1 | | UTRA FDD PS RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A10 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A10 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSDPA RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A11 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A11 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DCH |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A14 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A13 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSUPA/HSDPA RB |
| - Added or Reconfigured UL TrCH information | 2 Entries | | UTRA TDD PS RB |
| - Added or Reconfigured UL TrCH information[1] | Same as the corresponding IE in the RRC CONNECTION SETUP message (1.28 Mcps TDD) in TS 34.108 clause 9.2.2. | | UTRA TDD PS RB |

| | | | |
|--|---|--|--|
| - Added or Reconfigured UL TrCH information[2] | Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A3 in TS 34.108 clause 9.2.2. | | UTRA TDD PS RB |
| - DL Transport channel information common for all transport channels | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A2 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A2 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA Speech, UTRA PS RB + Speech, UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DC H |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A3 in TS 34.108 clause 9.1.1 | | UTRA FDD PS RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A3 in TS 34.108 clause 9.2.2. | | UTRA TDD PS RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A10 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A10 in TS 34.108 clause 9.1.2 for UTRAT-TDD. | | UTRA HSDPA RB |
| | Same content as the corresponding IE in the RADIO BEARER SETUP message using condition A14 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A13 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSUPA/H SDPA RB |

| | | | |
|--|--|--|---|
| - Added or Reconfigured DL TrCH information | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A2 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A2 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA Speech, UTRA PS RB + Speech, UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DCH |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A3 in TS 34.108 clause 9.1.1 | | UTRA FDD PS RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A11 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A11 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DCH |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A10 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A10 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSDPA RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A14 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A13 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSUPA/HSDPA RB |
| - Added or Reconfigured DL TrCH information | 2 Entries | | UTRA TDD PS RB |
| - Added or Reconfigured DL TrCH information[1] | Same as the corresponding IE in the RRC CONNECTION SETUP message (1.28 Mcps TDD) in TS 34.108 clause 9.2.2. | | UTRA TDD PS RB |

| | | | |
|--|---|--|--|
| - Added or Reconfigured DL TrCH information[2] | Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A3 in TS 34.108 clause 9.2.2. | | UTRA TDD PS RB |
| - Uplink DPCH info | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A2 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A13 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA Speech, UTRA PS RB + Speech, UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DC H |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A3 in TS 34.108 clause 9.1.1 | | UTRA FDD PS RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A3 in TS 34.108 clause 9.2.2. | | UTRA TDD PS RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A10 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A10 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSDPA RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A14 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A13 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSUPA/H SDPA RB |

| | | | |
|---------------------------------|---|--|---|
| - E-DCH Info | Not present | | UTRA FDD PS RB, UTRA TDD PS RB, UTRA HSDPA RB, UTRA Speech, UTRA PS RB + Speech, UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DC H |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A14 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A13 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSUPA/H SDPA RB |
| - Downlink HS-PDSCH Information | Not present | | UTRA FDD PS RB, UTRA TDD PS RB, UTRA Speech, UTRA PS RB + Speech, UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DC H |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A10 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A10 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSDPA RB |

| | | | |
|---|--|--|--|
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A14 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A13 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSUPA/H SDPA RB |
| - Downlink information common for all radio links | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A2 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A2 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA Speech, UTRA PS RB + Speech, UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DC H |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A4 in TS 34.108 clause 9.1.1 | | UTRA FDD PS RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A3 in TS 34.108 clause 9.2.2. | | UTRA TDD PS RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A10 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A10 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSDPA RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A14 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A13 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSUPA/H SDPA RB |

| | | | |
|---|--|--|--|
| - Downlink information for each radio link list | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A2 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A2 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA Speech, UTRA PS RB + Speech, UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DC H |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A3 in TS 34.108 clause 9.1.1 | | UTRA FDD PS RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A3 in TS 34.108 clause 9.2.2. | | UTRA TDD PS RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A10 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A10 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSDPA RB |
| | Same as the corresponding IE in the RADIO BEARER SETUP message using condition A14 in TS 34.108 clause 9.1.1 for UTRA-FDD. Same as the corresponding IE in the RADIO BEARER SETUP message (1.28 Mcps TDD) using condition A13 in TS 34.108 clause 9.1.2 for UTRA-TDD. | | UTRA HSUPA/H SDPA RB |
| Frequency info | Set according to the frequency of the target UTRA cell. | | |
| Multi-frequency Info | Not present | | |
| Maximum allowed UL TX power | 21dBm | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|---|--|
| UTRA Speech | Establishment of the UTRA reference configuration as specified in Table 4.8.3-1 using the condition "UTRA Speech". |
| UTRA FDD PS RB | Establishment of the UTRA FDD reference configuration as specified in Table 4.8.3-1 using the condition "UTRA FDD PS RB". |
| UTRA TDD PS RB | Establishment of the UTRA TDD reference configuration as specified in Table 4.8.3-1 using the condition "UTRA TDD PS RB". |
| UTRA HSDPA RB | Establishment of the UTRA reference configuration as specified in Table 4.8.3-1 using the condition "UTRA HSDPA RB". |
| UTRA HSUPA/HSDPA RB | Establishment of the UTRA reference configuration as specified in Table 4.8.3-1 using the condition "UTRA HSUPA/HSDPA RB". |
| UTRA PS RB + Speech | Establishment of the UTRA reference configuration as specified in Table 4.8.3-1 using the condition "UTRA PS RB + Speech". |
| UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DCH | Establishment of the UTRA reference configuration as specified in Table 4.8.3-1 using the condition "UTRA Speech + Packet RAB Setup after Speech RAB Setup in Cell DCH". |

HANDOVER FROM UTRAN COMMAND

Table 4.7B.1-2: HANDOVER FROM UTRAN COMMAND

| Derivation Path: 25.331, clause 10.2.15 | | | |
|---|--|-------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Message Type | | | |
| Integrity check info | | | |
| - Message authentication code | SS calculates the value of MAC-I for this message and writes to this IE. The first/ leftmost bit of the bit string contains the most significant bit of the MAC-I. | | |
| - RRC Message sequence number | SS provides the value of this IE, from its internal counter. | | |
| SR-VCC Info | Not present | | |
| Activation time | Now | | |
| RAB Info | | | |
| - RAB identity | 0000 0101B The first/ leftmost bit of the bit string contains the most significant bit of the RAB identity. | | |
| - CN domain identity | PS domain | | |
| - NAS Synchronization Indicator | Not present | | |
| - Re-establishment timer | Use T315 | | |
| Inter-system message | | | |
| - CHOICE System type | E-UTRA | | |
| - E-UTRA message | RRConnectionReconfiguration using condition HO-TO-EUTRA(1,0) | See Table 4.6.1-8 | |

MEASUREMENT CONTROL

Table 4.7B.1-3: MEASUREMENT CONTROL

| Derivation Path: 25.331, clause 10.2.17 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Message Type | | | |

| | | | |
|---|--|--|-----------|
| RRC transaction identifier | Arbitrarily selects an unused integer between 0 to 3 | | |
| Integrity check info | | | |
| - Message authentication code | SS calculates the value of MAC-I for this message and writes to this IE. The first/ leftmost bit of the bit string contains the most significant bit of the MAC-I. | | |
| - RRC message sequence number | SS provides the value of this IE, from its internal counter. | | |
| Measurement Identity | 3 | | |
| Measurement Command | Setup | | |
| Measurement Reporting Mode | | | |
| - Measurement Report Transfer Mode | Acknowledged mode RLC | | |
| - Periodical Reporting/Event Trigger Reporting Mode | Event trigger | | |
| Additional measurement list | Not present | | |
| CHOICE Measurement type | Inter-RAT measurement | | |
| - CHOICE Inter-RAT measurement objects | E-UTRA frequency list | | |
| - CHOICE E-UTRA frequency removal | Remove no frequencies | | |
| - New frequencies | | | |
| - E-UTRA carrier frequency | Downlink EARFCN of E-UTRA Cell | | |
| - E-UTRA carrier frequency | 65535 | | Band > 64 |
| - EARFCN extension | Downlink EARFCN of E-UTRA Cell | | Band > 64 |
| - Measurement bandwidth | Same downlink system bandwidth as used for E-UTRA Cell | | |
| - Blacklisted cells list | Not present | | |
| - Inter-RAT measurement quantity | | | |
| - Measurement quantity for UTRAN quality estimate | | | |
| - Filter coefficient | 0 | | |
| - CHOICE mode | FDD | | FDD_UTRA |
| - Measurement quantity | CPICH Ec/N0 | | |
| - Measurement quantity | CPICH RSCP | For signalling tests cases. | |
| - CHOICE mode | TDD | | TDD_UTRA |
| - Measurement quantity | Primary CCPCH RSCP | | |
| - CHOICE system | E-UTRA | | |
| - Measurement quantity | RSRP | | |
| - Filter coefficient | 0 | | |
| - Inter-RAT reporting quantity | | | |
| - UTRAN estimated quality | FALSE | | |
| - CHOICE system | E-UTRA | | |
| - Reporting quantity | both | | |
| - Reporting cell status | Not present | | |
| - CHOICE report criteria | Inter-RAT measurement reporting criteria | | |
| - Parameters required for each event | 1 entry | | |
| - Inter-RAT event identity | Set according to specific test. | | |
| - Threshold own system | -66 dB | | |
| - W | 0 | | |
| - Threshold other system | -55 (-80 dBm) | When measurement quantity is RSRP, range should be (-115..-19), the actual value = | |

| | | | |
|--|---|-----------------------------------|----------------------------------|
| | | Threshold other system - 25 [dBm] | |
| - Hysteresis | 0 | | |
| - Time to trigger | 10 ms | | |
| - Reporting cell status | | | |
| - CHOICE reported cell | Report cells within active set or within virtual active set or of the other RAT | | |
| - Maximum number of reported cells | 2 | | |
| - Idle Interval Information | Not present | | |
| CELL_DCH measurement occasion info LCR | | | LCR_TDD_UTRA |
| - cellDCHMeasOccasionSequence | 1 entry | | |
| - Pattern sequence identifier | 0 | | |
| - Status Flag | activate | | |
| - Measurement purpose | '00001' | | |
| - Measurement occasion pattern sequence parameters | | | |
| - k | 3 | | |
| - Offset | 0 | | |
| - M_Length | 1 | | |
| - Timeslot Bitmap | Not Present | | |
| DPCH Compressed mode status info | Not Present | | FDD_UTRA AND NOT Compressed_mode |
| DPCH Compressed mode status info | | | FDD_UTRA AND Compressed_mode |
| - TGPS reconfiguration CFN | (Current CFN + (250 – TTI/10msec)) mod 256 | | |
| - Transmission gap pattern sequence | 1 entry | | |
| - TGPSI | 1 | | |
| - TGPS Status Flag | activate | | |
| - TGCFN | (Current CFN + (252 – TTI/10msec)) mod 256 | | |
| DPCH Compressed mode status info | Not present | | TDD_UTRA |

| Condition | Explanation |
|-----------------|---|
| FDD_UTRA | FDD UTRA cell environment |
| TDD_UTRA | TDD UTRA cell environment |
| LCR_TDD_UTRA | LCR TDD UTRA cell environment |
| Compressed_mode | The UE Support of Compressed mode (TS 36.523-2 table A.4.4-1/28). |
| Band > 64 | If band > 64 is selected |

MEASUREMENT REPORT

Table 4.7B.1-4: MEASUREMENT REPORT

| Derivation Path: 25.331, clause 10.2.19 | | | |
|---|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Message Type | | | |
| Integrity check info | | | |
| - Message authentication code | This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS. The first/ leftmost bit of the bit string contains the most significant bit of the MAC-I. | | |

| | | | |
|--|--|--|-----------|
| - RRC Message sequence number | This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value. | | |
| Activation time | $(256 + \text{CFN} - (\text{CFN} \bmod 8 + 8)) \bmod 256$ | | |
| Measurement identity | 3 | | |
| Measured Results | Not present | | |
| Measured results on RACH | Not present | | |
| Additional measured results | Not present | | |
| Event results | Not present | | |
| Inter-RAT cell info indication | Not present | | |
| E-UTRA Measured Results | | | |
| - E-UTRA measured results list | 1 entry | | |
| - E-UTRA Carrier Frequency | | | |
| - Measured E-UTRA cells | 1 entry | | |
| - Physical Cell Identity | PhysicalCellIdentity of E-UTRA Cell | | |
| - RSRP | Set according to specific test. | | |
| - RSRQ | Set according to specific test. | | |
| E-UTRA Event Results | | | |
| - Inter-RAT event identity | Set according to specific test. | | |
| - E-UTRA events results list | 1 entry | | |
| - E-UTRA Carrier Frequency | Downlink EARFCN of E-UTRA Cell | | |
| - E-UTRA Carrier Frequency | 65535 | | Band > 64 |
| - Reported cells | 1 entry | | |
| - Physical Cell Identity | PhysicalCellIdentity of E-UTRA Cell | | |
| - E-UTRA events results extension list | | | Band > 64 |
| - EARFCN extension | Downlink EARFCN of E-UTRA Cell | | |

| Condition | Explanation |
|-----------|--------------------------|
| Band > 64 | If band > 64 is selected |

PHYSICAL CHANNEL RECONFIGURATION

Table 4.7B.1-5: PHYSICAL CHANNEL RECONFIGURATION

| Derivation Path: 25.331, clause 10.2.22 | | | |
|---|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Message Type | | | |
| RRC transaction identifier | Arbitrarily selects an unused integer between 0 to 3 | | |
| Integrity check info | | | |
| - Message authentication code | SS calculates the value of MAC-I for this message and writes to this IE. The first/ leftmost bit of the bit string contains the most significant bit of the MAC-I. | | |
| - RRC message sequence number | SS provides the value of this IE, from its internal counter. | | |
| Integrity protection mode info | Not Present | | |
| Ciphering mode info | Not Present | | |
| Activation time | Not Present | | |

| | | | |
|--|--|--|-----|
| Delay restriction flag | Not Present | | |
| New U-RNTI | Not Present | | |
| New C-RNTI | Not Present | | |
| New H-RNTI | Not Present | | |
| New Primary E-RNTI | Not Present | | |
| New Secondary E-RNTI | Not Present | | |
| RRC State indicator | CELL_DCH | | |
| UE Mobility State Indicator | Not Present | | |
| UTRAN DRX cycle length coefficient | Not Present | | |
| CN information info | Not Present | | |
| URA identity | Not Present | | |
| RNC support for change of UE capability | Not Present | | |
| Reconfiguration in response to requested change of UE capability | Not Present | | |
| Downlink counter synchronization info | Not Present | | |
| Frequency info | Not Present | | |
| DTX-DRX timing information | Not Present | | |
| DTX-DRX Information | Not Present | | |
| HS-SCCH less Information | Not Present | | |
| MIMO parameters | Not Present | | |
| HARQ Info | Not Present | | |
| Maximum allowed UL TX power | Not Present | | |
| CHOICE channel requirement | Not Present | | |
| E-DCH Info | Not Present | | |
| Downlink HS-PDSCH Information | Not Present | | |
| Downlink information common for all radio links | | | |
| - Downlink DPCH info common for all RL | Not Present | | |
| - DPCH compressed mode info | Not Present | | TDD |
| - DPCH compressed mode info | | | FDD |
| - TGPSI | 1 | | |
| - TGPS Status Flag | Deactivate | | |
| - TGCFN | Not Present | | |
| - Transmission gap pattern sequence configuration parameters | | | |
| - TGMP | E-UTRA measurement | | |
| - TGPRC | Infinity | | |
| - TGSN | 8 | | |
| - TGL1 | 10 | | |
| - TGL2 | Not Present | | |
| - TGD | undefined | | |
| - TGPL1 | 12 | | |
| - TGPL2 | Not Present | | |
| - RPP | Mode 0 | | |
| - ITP | Mode 0 | | |
| - CHOICE UL/DL Mode | UL and DL, UL only or DL only (depending on the UE capability) | | |
| - Downlink compressed mode method | HLS(or not sent, depending on the UE capability) | | |
| - Uplink compressed mode method | HLS(or not sent, depending on the UE capability) | | |
| - Downlink frame type | B | | |
| - DeltaSIR1 | 20 (2.0) | | |
| - DeltaSIRAfter1 | 10 (1.0) | | |
| - DeltaSIR2 | Not Present | | |
| - DeltaSIRAfter2 | Not Present | | |
| - N identify abort | Not Present | | |
| - T Reconfirm abort | Not Present | | |
| - TX Diversity mode | Not Present | | |
| - SSDT information | Not Present | | |
| - Default DPCH Offset Value | Not Present | | |
| Downlink information for each radio link | Not Present | | |
| MBMS PL Service Restriction Information | Not Present | | |

– PHYSICAL CHANNEL RECONFIGURATION COMPLETE

Table 4.7B.1-6: PHYSICAL CHANNEL RECONFIGURATION COMPLETE

| Derivation Path: 25.331, clause 10.2.23 | | | |
|---|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Message Type | | | |
| Integrity check info | | | |
| - Message authentication code | This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS. The first/ leftmost bit of the bit string contains the most significant bit of the MAC-I. | | |
| - RRC Message sequence number | This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value. | | |
| Uplink integrity protection activation info | Not checked | | |
| COUNT-C activation time | Not checked | | |
| Uplink counter synchronization info | Not checked | | |

– RRC CONNECTION REQUEST

Table 4.7B.1-7: RRC CONNECTION REQUEST

| Derivation Path: 25.331, clause 10.2.39 | | | |
|---|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Message Type | | | |
| Predefined configuration status information | To be checked against requirement if specified | | |
| Initial UE identity | | | |
| - CHOICE UE id type | | | |
| - TMSI and LAI (GSM-MAP) | Set to the UE's TMSI and LAI. | | |
| Establishment cause | To be checked against requirement if specified | | |
| Protocol error indicator | FALSE | | |
| UE Specific Behaviour Information 1 idle | This IE will not be checked by default behaviour, but in specific test case. | | |
| Domain indicator | Not checked | | |
| Call type | Not checked | | |
| UE capability indication | Not checked | | |
| MBMS Selected Services | Not checked | | |
| Support for F-DPCH | Not checked | | |
| UE Mobility State Indicator | Not Present | | |
| Support for Enhanced F-DPCH | Not checked | | |
| HS-PDSCH in CELL_FACH | Not checked | | |
| MAC-ehs support | Not checked | | |
| DPCCH Discontinuous Transmission support | Not checked | | |
| Support of common E-DCH | Not checked | REL-8 | |
| Multi cell support | Not checked | REL-8 | |
| Pre-redirectio n info | Not checked | REL-8 | |
| Support of MAC-i/is | Not checked | REL-8 | |
| Support of SPS operation | Not checked | REL-8 | |
| Support for CS Voice over HSPA | Not checked | REL-8 | |
| Dual cell MIMO support | Not checked | REL-9 | |
| System Information Container Stored Indicator | Not checked | REL-9 | |

| | | | |
|----------------------------------|-------------|--|--|
| Measured results on RACH | Not checked | | |
| Access stratum release indicator | Not checked | | |

– SECURITY MODE COMMAND

Table 4.7B.1-n: SECURITY MODE COMMAND

| Derivation Path: 25.331, clause 10.2.43 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| FFS | | | |

– SECURITY MODE COMPLETE

Table 4.7B.1-n: SECURITY MODE COMPLETE

| Derivation Path: 25.331, clause 10.2.44 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| FFS | | | |

– UTRAN MOBILITY INFORMATION

Table 4.7B.1-n: UTRAN MOBILITY INFORMATION

| Derivation Path: 34.108 clause 9.1.1 (UTRAN MOBILITY INFORMATION message) | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UTRAN MOBILITY INFORMATION | | | |
| CN information info | | | |
| - PLMN identity | Not present | | |
| - CN common GSM-MAP NAS system information | | | |
| - GSM-MAP NAS system information | 00 01H | | |
| - CN domain related information | | | |
| - CN domain identity | PS | | |
| - CN domain specific NAS system information | | | |
| - GSM-MAP NAS system information | 01 00H | | |
| - CN domain specific DRX cycle length coefficient | 7 | | |
| - CN domain identity | CS | | |
| - CN domain specific NAS system information | | | |
| - GSM-MAP NAS system information | 1E 01H | | |
| - CN domain specific DRX cycle length coefficient | 7 | | |

– UTRAN MOBILITY INFORMATION CONFIRM

Table 4.7B.1-n: UTRAN MOBILITY INFORMATION CONFIRM

| |
|---|
| Derivation Path: 34.108 clause 9.1.1 (UTRAN MOBILITY INFORMATION CONFIRM message) |
|---|

4.7B.2 UTRA NAS messages

This section contains default message contents for UTRA NAS messages.

In 3GPP TS 36.523-1 [18]:

- UTRA NAS messages are defined as exceptions, IE by IE, to the messages defined in this section;
- UTRA NAS messages not defined in this section are specified completely.

The following messages are not specified in this section:

- AUTHENTICATION REQUEST (CS)
- AUTHENTICATION RESPONSE (CS)
- DETACH REQUEST (CS & PS)
- DETACH ACCEPT (CS & PS)
- IDENTITY REQUEST (CS & PS)
- IDENTITY RESPONSE (CS & PS)
- P-TMSI REALLOCATION COMMAND (PS)
- P-TMSI REALLOCATION COMPLETE (PS)
- SERVICE REQUEST (PS)

Table 4.7B.2-1: ROUTING AREA UPDATE REQUEST

| Derivation path: 24.008 table 9.4.14 | | | |
|--|---|---|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Update type | 000 'RA updating' or 001 'combined RA/LA updating' 010 'combined RA/LA updating with IMSI attach' | In NMO I, depending on capability and domain preference for voice and SMS, the UE may initiate either PS only or CS/PS registration procedures. | |
| GPRS ciphering key sequence number | Any allowed value | | |
| Old routing area identification | Any allowed value | | |
| MS Radio Access capability | Any allowed value | The checking of this IE is expected to be covered in UMTS test cases. | |
| Old P-TMSI signature | Not present or any allowed value | For test cases where no "UE" statement indicates that a P-TMSI signature was previously registered, whether or not the UE includes this IE depends on previous USIM contents. | |
| Requested READY timer value | Not present or any allowed value | The checking of this IE is expected to be covered in UMTS test cases. | |
| DRX parameter | Not present or any allowed value | The checking of this IE is expected to be covered in UMTS test cases. | |
| TMSI status | 0 'no valid TMSI available' or not present | | |
| P-TMSI | Not present or any allowed value | | |
| MS network capability | Any allowed value | The checking of this IE is expected to be covered in UMTS test cases. | |
| PDP context status | Any allowed value | The checking of this IE is expected to be covered in UMTS test cases. | |
| PS LCS Capability | Not present or any allowed value | The checking of this IE is expected to be covered in UMTS test cases. | |
| MBMS context status | Not present | | |
| UE network capability | Any allowed value (must be present) | No detailed checking by default but should be aligned with PICS | |
| Additional mobile identity | Not present or any allowed value | | |
| Additional old routing area identification | Not present or any allowed value | | |

| | | | |
|--|----------------------------------|---|--|
| Mobile station classmark 2 | Not present or any allowed value | This IE shall be included if the MS supports SRVCC to GERAN or UTRAN. | |
| Mobile station classmark 3 | Not present or any allowed value | This IE shall be included if the MS supports SRVCC to GERAN. | |
| Supported Codecs | Not present or any allowed value | | |
| Voice domain preference and UE's usage setting | Not present or any allowed value | Rel-9 | |
| P-TMSI type | Any allowed value | Rel-10 | |

Table 4.7B.2-2: ROUTING AREA UPDATE ACCEPT

| Derivation path: 24.008 table 9.4.15 | | | |
|--------------------------------------|---|---|---|
| Information Element | Value/Remark | Comment | Condition |
| Force to standby | 0 'Force to standby not indicated' | | |
| Update result | 000 'RA updated' | | IF the UE indicated 000 'RA updating' in the previous RAU request message |
| | 001 'combined RA/LA updated' | | IF the UE indicated 001 'combined RA/LA updating' in the previous RAU request message |
| | 1 'No follow-on proceed' | | |
| Periodic RA update timer | 111 (deactivated) | | |
| Routing area identification | 1 | Value in table 4.4.4-2 for simulated UTRA cells. | |
| P-TMSI signature | Arbitrary value | | |
| Allocated P-TMSI | Arbitrary value | 2 most significant bits = 11 to indicate SGSN | |
| MS identity | Not present | Is never present in case of RA only procedure, and RA/LA procedures do not necessarily change TMSI | |
| List of Receive N PDU Numbers | Not present | Realistic network value | |
| Negotiated READY timer value | Not present | | |
| GMM cause | Not present | | |
| T3302 value | Not present | | |
| Cell Notification | Not present | This IE is for A/Gb mode only. | |
| Equivalent PLMNs | Not present | | |
| PDP context status | Same value as the one received in the RAU request message | | UTRAN |
| PDP context status | 0 | NSAPI(0) - NSAPI(15) is set to 0, which means that the SM state of all PDP contexts is PDP-INACTIVE | GERAN |
| Network feature support | Not present | | |
| Emergency Number List | Not present | | |
| MBMS context status | Not present | | |
| Requested MS Information | Not present | | |
| T3319 value | Not present | | |
| T3323 value | Not present | | |

| Condition | Explanation |
|-----------|------------------------|
| UTRAN | UTRAN cell environment |
| GERAN | GERAN cell environment |

Table 4.7B.2-3: ROUTING AREA UPDATE COMPLETE

| Derivation path: 24.008 table 9.4.16 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| List of Receive N PDU Numbers | Not present | | |
| Inter RAT handover information | Not present | | |
| E-UTRAN inter RAT handover information | Not present | | |

Table 4.7B.2-4: LOCATION UPDATING REQUEST

| Derivation path: 24.008 table 9.2.17 | | | |
|--------------------------------------|----------------------------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Location updating type | Any allowed value | | |
| Ciphering key sequence number | Any allowed value | | |
| Location area identification | Any allowed value | | |
| Mobile station classmark | Any allowed value | | |
| Mobile identity | Any allowed value | | |
| Mobile station classmark for UMTS | Any allowed value | | |
| Additional update parameters | Not present or any allowed value | | |

Table 4.7B.2-5: LOCATION UPDATING ACCEPT

| Derivation path: 24.008 table 9.2.15 | | | |
|--------------------------------------|-----------------|---|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Location area identification | 1 | | |
| Mobile identity | | | |
| TMSI | Arbitrary value | 2 most significant bits = 00 to indicate VLR | |
| Follow on proceed | Present | This IE is unnecessary in non-CS fallback test cases. | |
| CTS permission | Absent | | |
| Equivalent PLMNs | Absent | | |
| Emergency Number List | Absent | | |

Table 4.7B.2-6: ATTACH REQUEST

| Derivation path: 24.008 table 9.4.1 | | | |
|--|---|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| MS network capability | Any allowed value | | |
| Attach type | 001 'GPRS attach' or 011 'Combiner GPRS/IMS attach' | | |
| GPRS ciphering key sequence number | Any allowed value | | |
| DRX parameter | Any allowed value | | |
| P-TMSI or IMSI | Any allowed value | | |
| Old routing area identification | Any allowed value | | |
| MS Radio Access capability | Any allowed value | | |
| Old P-TMSI signature | Not present or any allowed value | | |
| Requested READY timer value | Not present or any allowed value | | |
| TMSI status | 0 'no valid TMSI available' or not present | | |
| PS LCS Capability | Not present or any allowed value | | |
| Mobile station classmark 2 | Not present or any allowed value | | |
| Mobile station classmark 3 | Not present or any allowed value | | |
| Supported Codecs | Not present or any allowed value | | |
| UE network capability | Any allowed value (must be present) | | |
| Additional mobile identity | Not present or any allowed value | | |
| Additional old routing area identification | Not present or any allowed value | | |
| Voice domain preference and UE's usage setting | Not present or any allowed value | Rel-9 | |
| P-TMSI type | Not present or any allowed value | Rel-10 | |

Table 4.7B.2-7: ATTACH ACCEPT

| Derivation path: 24.008 table 9.4.2 | | | |
|-------------------------------------|--------------------------------------|---|---|
| Information Element | Value/Remark | Comment | Condition |
| Attach result | 001 'GPRS only attached' | | IF the UE indicated 001 'GPRS attach' in the previous attach request message |
| | 011 'combined GPRS/IMS I attached' | | IF the UE indicated 011 'Combined GPRS/IMS I attach' in the previous attach request message |
| Force to standby | 000 'Force to standby not indicated' | | |
| Periodic RA update timer | 111 (deactivated) | | |
| Radio priority for SMS | 100 'priority level 4 (lowest)' | | |
| Radio priority for TOM8 | 100 'priority level 4 (lowest)' | | |
| Routing area identification | 1 | | |
| P-TMSI signature | Arbitrary value | | |
| Negotiated READY timer value | Not present | | |
| Allocated P-TMSI | Arbitrary value | 2 most significant bits = 11 to indicate SGSN | |
| MS identity | Not present | | IF the UE indicated 001 'GPRS attach' in the previous attach request message |
| | Arbitrary value | 2 most significant bits = 00 to indicate VLR | IF the UE indicated 011 'Combined GPRS/IMS I attach' in the previous attach request message |
| GMM cause | Not present | | |
| T3302 value | Not present | | |
| Cell Notification | Not present | | |
| Equivalent PLMNs | Not present | | |
| Network feature support | Not present | | |
| Emergency Number List | Not present | | |
| Requested MS Information | Not present | | |
| T3319 value | Not present | | |
| T3323 value | Not present | | |

Table 4.7B.2-8: ATTACH COMPLETE

| Derivation path: 24.008 table 9.4.3 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Inter RAT handover information | Not present | | |
| E-UTRAN inter RAT handover information | Not present | | |

Table 4.7B.2-9: AUTHENTICATION AND CIPHERING REQUEST

| Derivation path: 24.008 table 9.4.9 | | | |
|-------------------------------------|--------------------------------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Ciphering algorithm | Any allowed value | | |
| IMEISV request | 000 'IMEISV not requested' | | |
| Force to standby | 000 'Force to standby not indicated' | | |
| A&C reference number | Any allowed value | | |

Table 4.7B.2-10: AUTHENTICATION AND CIPHERING RESPONSE

| Derivation path: 24.008 table 9.4.10 | | | |
|--------------------------------------|-----------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| A&C reference number | Arbitrary value | | |
| Spare half octet | 0000 | | |

Table 4.7B.2-11: TMSI REALLOCATION COMMAND

| Derivation path: 24.008 table 9.2.20 | | | |
|--------------------------------------|-------------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Location area identification | Any allowed value | | |
| Mobile identity | Any allowed value | | |

Table 4.7B.2-12: TMSI REALLOCATION COMPLETE

| Derivation path: 24.008 table 9.2.21 | | | |
|--------------------------------------|--|--|--|
|--------------------------------------|--|--|--|

Table 4.7B.2-13: CM SERVICE REQUEST

| Derivation path: 24.008 table 9.2.11 | | | |
|--------------------------------------|----------------------------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| CM service type | Any allowed value | | |
| Ciphering key sequence number | Any allowed value | | |
| Mobile station classmark | Any allowed value | | |
| Mobile identity | Any allowed value | | |
| Priority | Not present or any allowed value | | |
| Additional update parameters | Not present or any allowed value | | |

4.7C Default DS-MIPv6 message and information element contents

4.7C.1 IKEv2 messages

- IKEv2 IKE_SA_INIT Request

This message is sent by the UE to the SS.

Table 4.7C.1-1: Message IKE_SA_INIT Request

| Field | Value/remark | Comment | Condition |
|------------------------------|---------------|---|-----------|
| IKE Header | | | |
| Initiator's IKE_SA SPI | Set by the UE | | |
| Responder's IKE_SA SPI | 0 | First message in IKE_SA_INIT exchange | |
| Next Payload | '00100001'B | SA | |
| Exchange Type | '00100010'B | IKE_SA_INIT | |
| Security Association Payload | | | |
| Next Payload | '00100010'B | KE | |
| More proposal | '00000010'B | | |
| Proposal # | '00000001'B | First cryptographic suite (section 6.5 of TS 33.234) | |
| Protocol ID | '00000001'B | IKE | |
| SPI size | '00000000'B | | |
| Number of transforms | '00000010'B | | |
| More transform | '00000011'B | This is the transform for confidentiality | |
| Transform type | '00000001'B | Encryption | |
| Transform ID | '00000011'B | 3DES in CBC mode (ENCR_3DES) | |
| More transform | '00000011'B | This is the transform for prf | |
| Transform type | '00000010'B | PRF | |
| Transform ID | '00000010'B | PRF_HMAC_SHA1 (HMAC-SHA1) | |
| More transform | '00000011'B | This is the transform for integrity | |
| Transform type | '00000011'B | Integrity | |
| Transform ID | '00000010'B | HMAC-SHA1-96 (AUTH_HMAC_SHA1_96) | |
| Last transform | '00000000'B | This is the transform for DH | |
| Transform type | '00000100'B | DH | |
| Transform ID | '00000010'B | Diffie-Hellman group 2 (1024-bit MODP) | |
| Last proposal | '00000000'B | | |
| Proposal # | '00000010'B | Second cryptographic suite (section 6.5 of TS 33.234) | |
| Protocol ID | '00000001'B | IKE | |
| SPI size | '00000000'B | | |
| Number of transforms | '00000010'B | | |
| More transform | '00000011'B | This is the transform for confidentiality | |
| Transform type | '00000001'B | Encryption | |
| Transform ID | '00001011'B | AES with 128-bit keys in CBC mode (ENCR_AES_CBC) | |
| More transform | '00000011'B | This is the transform for prf | |
| Transform type | '00000010'B | PRF | |
| Transform ID | '00000100'B | PRF_AES128_XCBC_AES-XCBC-PRF-128 | |

| | | | |
|-----------------------------------|---|---|---------------------------|
| More transform | '00000011'B | This is the transform for integrity | |
| Transform type | '00000011'B | Integrity | |
| Transform ID | '00000101'B | AES-XCBC-MAC-96 (AUTH_AES-XCBC -96) | |
| Last transform | '00000000'B | This is the transform for DH | |
| Transform type | '00000100'B | DH | |
| Transform ID | '00000010'B | Diffie-Hellman group 2 (1024-bit MODP) | |
| Key Exchange Payload | | | |
| Next Payload | '00101000'B | Nonce | |
| DH Group # | '00000000000000010'B | DH group 2 | |
| Key Exchange data | Set by the UE | | |
| Nonce Payload | | | |
| Next Payload | '00101001'B | Notify | UE IKE INIT HA |
| Nonce data | Random number set by the UE | | |
| REDIRECT_SUPPORTED Notify Payload | | | UE IKE INIT HA |
| Next Payload | '00000000'B | No Next Payload | UE IKE INIT HA |
| Protocol ID | '00000000'B | Notification is not specific to a particular security association | UE IKE INIT HA |
| SPI size | '00000000'B | SPI field not present | UE IKE INIT HA |
| Notify Message Type | '0100000000010110'B | REDIRECT_SUPPORTED | UE IKE INIT HA |
| REDIRECT_FROM Notify Payload | | | UE IKE INIT HA Redirected |
| Next Payload | '00000000'B | No next payload | UE IKE INIT HA Redirected |
| Protocol ID | '00000000'B | Notification is not specific to a particular security association | UE IKE INIT HA Redirected |
| SPI size | '00000000'B | SPI field not present | UE IKE INIT HA Redirected |
| Notify Message Type | '0100000000010110'B | REDIRECT_FROM | UE IKE INIT HA Redirected |
| GW Ident Type | Any allowed value (IPv6 or IPv4 or HA FQDN) | Set depending on how the UE has discovered the HA in the preamble | UE IKE INIT HA Redirected |
| New Responder GW Identity | Depends on GW Ident type | | UE IKE INIT HA Redirected |

| Condition | Explanation |
|---------------------------|---|
| UE IKE INIT HA | Part of IKE_INIT_SA request message sent to HA only |
| UE IKE INIT HA Redirected | Part of IKE_INIT_SA request message sent to HA only after a REDIRECT payload was received in a previous IKEV2 messages exchange |

- IKE_SA_INIT Response

This message is sent by the SS to the UE.

Table 4.7C.1-2: Message IKE_SA_INIT Response

| Field | Value/remark | Comment | Condition |
|------------------------------|--|-----------------|-----------|
| IKE Header | | | |
| Initiator's IKE_SA SPI | Same as that set by the UE in IKE_SA_INIT request | | |
| Responder's IKE_SA SPI | Set by the SS | | |
| Next Payload | '00100001'B | SA | |
| Exchange Type | '00100010'B | IKE_SA_INIT | |
| Security Association Payload | | | |
| Next Payload | '00100010'B | KE | |
| Proposal | One of the 2 proposals included in IKE_SA_INIT at Step 1 | | |
| Key Exchange Payload | | | |
| Next payload | '00 101000'B | Nonce | |
| DH Group # | '0000000000000010'B | DH group 2 | |
| Key Exchange data | Set by the SS | | |
| Nonce Payload | | | |
| Next t payload | '00000000'B | No Next Payload | |
| Nonce data | Set by the SS | | |

- IKE_AUTH_Request

This message is sent by the UE to the SS.

Table 4.7C.1-3: Message IKE_AUTH Request

| Field | Value/remark | Comment | Condition |
|--------------------------------------|--|-----------------------------|-----------------|
| IKE Header | | | |
| Initiator's IKE_SA SPI | Same as that set by the UE in IKE_INIT_SA Request | | |
| Responder's IKE_SA SPI | Same as that set by the SS in IKE_INIT_SA Response | | |
| Next Payload | '00101110'B | E | |
| Exchange Type | '00100011'B | IKE_AUTH | |
| Encrypted Payload | | | |
| Next Payload | '00100011'B | IDi | UE IKE AUTH1 |
| Initialization Vector | Random value set by the UE | | UE IKE AUTH1 |
| Encrypted IKE Payloads | | | UE IKE AUTH1 |
| Identification – Initiator Payload | | | UE IKE AUTH1 |
| Next Payload | '00101111'B | CP | UE IKE AUTH1 |
| ID Type | 00000010B | | UE IKE AUTH1 |
| ID | Set to MN-NAI | | UE IKE AUTH1 |
| Configuration Payload | | | UE IKE AUTH1 |
| Next Payload | '00100001'B | SA | UE IKE AUTH1 |
| CFG Type | '00000001'B | Request | UE IKE AUTH1 |
| Configuration Attribute | '00010000'B | MIP6_HOME_PR EFIX attribute | UE IKE AUTH1 HA |
| Length | '0000000000000000'B | | UE IKE AUTH1 HA |
| Security Association Payload | | | UE IKE AUTH1 |
| Next Payload | '00101100'B | TSi | UE IKE AUTH1 |
| Proposals | Any set of allowed values | | UE IKE AUTH1 |
| Traffic Selector – Initiator Payload | | | UE IKE AUTH1 |
| Next Payload | '00101100'B | TSr | UE IKE AUTH1 |
| Traffic selector data | Any allowed set of values | | UE IKE AUTH1 |
| Traffic Selector – Responder Payload | | | UE IKE AUTH1 |
| Next Payload | '00100100'B | IDr | UE IKE AUTH1 |
| Traffic selector data | Any allowed set of values | | UE IKE AUTH1 |
| Identification – Responder Payload | | | UE IKE AUTH1 |
| Next Payload | '00000000'B | No Next Payload | UE IKE AUTH1 |
| ID Type | '00000010'B | | UE IKE AUTH1 |
| ID | APN | | UE IKE AUTH1 |
| Next Payload | '00110000'B | EAP | UE IKE AUTH2 |
| Initialization Vector | Random value set by the UE | | UE IKE AUTH2 |
| Encrypted IKE Payloads | | | UE IKE AUTH2 |

| | | | |
|-----------------------------------|---|---|--------------|
| Extensible Authentication Payload | | | UE IKE AUTH2 |
| Next Payload | '00000000'B | No Next Payload | UE IKE AUTH2 |
| Code | '00000010'B | Response | UE IKE AUTH2 |
| Type | '00010111'B | AKA | UE IKE AUTH2 |
| Subtype | | AKA-Challenge | UE IKE AUTH2 |
| Attribute type | '00000011'B | AT_RES | UE IKE AUTH2 |
| AT_RES | See TS 24.301 [28] subclause 9.9.3.4 | | UE IKE AUTH2 |
| Next Payload | '00100111'B | AUTH | UE IKE AUTH3 |
| Initialization Vector | Random value set by the UE | | UE IKE AUTH3 |
| Encrypted IKE Payloads | | | UE IKE AUTH3 |
| Authentication Payload | | | UE IKE AUTH3 |
| Next Payload | '00000000'B | No Next Payload | UE IKE AUTH3 |
| Auth Method | '00000010'B | Shared Key Integrity code | UE IKE AUTH3 |
| Auth Data | derived from the MSK obtained from AKA exchange | RFC 4306 defines the function to derive this key (section 2.15) | UE IKE AUTH3 |
| Padding | Set by the UE | Fields from Encrypted payload | |
| Pad Length | Set by the UE | Fields from Encrypted payload | |
| Integrity checksum data | Set by the UE | Fields from Encrypted payload | |

| Condition | Explanation |
|-----------------|--|
| UE IKE AUTH1 | Part of IKE_AUTH request message sent to HA or ePDG after the reception of IKE_INIT_SA response |
| UE IKE AUTH1 HA | Part of IKE_AUTH request message sent to HA after the reception of IKE_INIT_SA response |
| UE IKE AUTH2 | Part of IKE_AUTH request message sent to HA or ePDG after the reception of IKE_SA response message containing the certificate payload CERT |
| UE IKE AUTH3 | Part of IKE_AUTH request message sent to HA or ePDG after the reception of IKE_SA response containing EAP and encryption payloads only |

- IKE_AUTH Response

This message is sent by the SS to the UE.

Table 4.7C.1-4: Message IKE_AUTH Response

| Field | Value/remark | Comment | Condition |
|------------------------------------|--|-------------------------------|--------------|
| IKE Header | | | |
| Initiator's IKE_SA SPI | Same as that set by the UE in IKE_SA_INIT request | | |
| Responder's IKE_SA SPI | Same as that set by the SS in IKE_SA_INIT response | | |
| Next Payload | '00101110'B | E | |
| Exchange Type | '00100011'B | IKE_AUTH | |
| Encrypted Payload | | | |
| Next Payload | '00100100'B | IDr | SS IKE AUTH1 |
| Initialization Vector | Set by the SS | | SS IKE AUTH1 |
| Encrypted IKE Payloads | | | SS IKE AUTH1 |
| Identification – Responder Payload | | | SS IKE AUTH1 |
| Next Payload | '00100101'B | CERT | SS IKE AUTH1 |
| ID Type | '00000010'B | | SS IKE AUTH1 |
| ID | APN | | SS IKE AUTH1 |
| Certificate Payload | | | SS IKE AUTH1 |
| Next Payload | '00110000'B | EAP | SS IKE AUTH1 |
| Cert encoding | '00000100'B | X.509 certificate - signature | SS IKE AUTH1 |
| Certificate data | Set by the SS | DER encoded X.509 certificate | SS IKE AUTH1 |
| Extensible Authentication Payload | | | SS IKE AUTH1 |
| Next Payload | '00000000'B | No Next Payload | SS IKE AUTH1 |
| Code | '00000001'B | Request | SS IKE AUTH1 |
| Type | '00010111'B | AKA | SS IKE AUTH1 |
| Subtype | | AKA-Challenge | SS IKE AUTH1 |
| Attribute type | '00000001'B | AT_RAND | SS IKE AUTH1 |
| AT_RAND | An arbitrarily selected 128 bits value | | SS IKE AUTH1 |
| Attribute Type | '00000010'B | AT_AUTN | SS IKE AUTH1 |
| AT_AUTN | See TS 24.301 [28] subclause 9.9.3.2 | | SS IKE AUTH1 |
| Next Payload | '00110000'B | EAP | SS IKE AUTH2 |
| Initialization Vector | Set by the SS | | SS IKE AUTH2 |
| Encrypted IKE Payloads | | | SS IKE AUTH2 |
| Extensible Authentication Payload | | | SS IKE AUTH2 |
| Next Payload | '00000000'B | No Next Payload | SS IKE AUTH2 |
| Code | '00000011'B | Success | SS IKE AUTH2 |
| Next Payload | '00101111'B | CP | SS IKE AUTH3 |
| Auth Method | '00000010'B | Shared Key Integrity code | SS IKE AUTH3 |

| | | | |
|--------------------------------------|---|---|--------------------------|
| Auth Data | derived from the MSK obtained from AKA exchange | RFC 4306 defines the function to derive this key (section 2.15) | SS IKE AUTH3 |
| Configuration Payload | | | SS IKE AUTH3 |
| Next Payload | '00100001'B | SA | SS IKE AUTH3 |
| CFG Type | '00000010'B | Reply | SS IKE AUTH3 |
| Configuration Attribute | '00010000'B | MIP6_HOME_PR EFIX attribute | SS IKE AUTH3 HA |
| Length | '0000000000010101'B | | SS IKE AUTH3 HA |
| Prefix lifetime | Any allowed value | | SS IKE AUTH3 HA |
| Home Prefix | IPv6 prefix – 16 bytes | | SS IKE AUTH3 HA |
| Prefix length | '10000000'B | Prefix length must be 64 | SS IKE AUTH3 HA |
| Notify Payload | | | SS IKE AUTH3 HA redirect |
| Next Payload | '00100001'B | SA | SS IKE AUTH3 HA redirect |
| Protocol ID | '00000000'B | Notification is not specific to a particular security association | SS IKE AUTH3 HA redirect |
| SPI Size | '00000000'B | SPI field not present | SS IKE AUTH3 HA redirect |
| Notify Message Type Length | '0100000000010111'B | REDIRECT | SS IKE AUTH3 HA redirect |
| GW Ident Type | '00000101'B | | SS IKE AUTH3 HA redirect |
| New Responder GW Identity | IPv6 address of the HA to relocate | | SS IKE AUTH3 HA redirect |
| GW Ident Type | '00000001'B | | SS IKE AUTH3 HA redirect |
| New Responder GW Identity | IPv4 address of the HA to relocate | Optional | SS IKE AUTH3 HA redirect |
| Security Association Payload | | | SS IKE AUTH3 |
| Next Payload | '00101101' | TSi | SS IKE AUTH3 |
| Proposal | One of the 2 proposals included in IKE_AUTH Request at Step 3 | | SS IKE AUTH3 |
| Traffic Selector – Initiator Payload | | | SS IKE AUTH3 |
| Next Payload | '00101100'B | TSr | SS IKE AUTH3 |
| Traffic Selector data | Any allowed set of values | | SS IKE AUTH3 |
| Traffic Selector – Responder Payload | | | SS IKE AUTH3 |
| Next Payload | '00000000'B | No Next Payload | SS IKE AUTH3 |

| | | | |
|-------------------------|---------------|--------------------------------|--|
| Padding | Set by the SS | Fields from Encryption payload | |
| Pad Length | Set by the SS | Fields from Encryption payload | |
| Integrity checksum data | Set by the SS | Fields from Encryption payload | |

| Condition | Explanation |
|--------------------------|---|
| SS IKE AUTH1 | Part of IKE_AUTH request message sent to the UE as part of the first IKE_AUTH Response message |
| SS IKE AUTH2 | Part of IKE_AUTH request message sent to the UE as part of the second IKE_AUTH Response message |
| SS IKE AUTH3 | Part of IKE_AUTH request message sent to the UE as part of the third IKE_AUTH Response message |
| SS IKE AUTH3 HA | Part of IKE_AUTH request message sent to the UE as part of the third IKE_AUTH Response message when the UE interacts with HA |
| SS IKE AUTH3 HA_redirect | Part of IKE_AUTH request message sent to the UE as part of the third IKE_AUTH Response message when the UE interacts with HA and the UE gets redirected |

4.7C.2 Messages used to perform DS-MIPv6 registration and deregistration

- Router Advertisement

This message is sent by the SS to the UE.

Table 4.7C.2-1: Message Router Advertisement

| Field | Value/remark | Comment | Condition |
|--------------------|-------------------------------------|---|-----------|
| Type | '10000110'B | | |
| Code | '00000000'B | | |
| Checksum | Set by SS | ICMP checksum | |
| Cur Hop Limit | '00000000'B | Unspecified | |
| M | Set by the SS | | |
| O | Set by the SS | Depends on access network specific settings | |
| H | '0'B | | |
| Prf | Set by the SS | Depends on access network specific settings | |
| Prf | Set by the SS | Depends on access network specific settings | |
| P | Set by the SS | Depends on access network specific settings | |
| Reserved | '00000'B | | |
| Router Lifetime | Set by the SS | | |
| Reachable Time | Set by the SS | | |
| Retrans Timer | Set by the SS | | |
| type | '00000011'B | Prefix Information Option | |
| Length | '00000100'B | | |
| Prefix length | Set by the SS | | |
| L | '1'B | | |
| A | Set by the SS | | |
| Valid Lifetime | Set by the SS | | |
| Preferred Lifetime | Set by the SS | | |
| Prefix | Set as per specific message content | | |

- Binding Update

This message is sent by the UE to the SS.

Table 4.7C.2-2: Message Binding Update

| Information Element | Value/remark | Comment | Condition |
|----------------------------------|--|------------------------|-----------------------|
| IPv4 Source Address | UE IPv4 CoA (IPv4 address acquired by UE during network attachment) | | UE IPv4 |
| IPv4 Destination Address | IPv4 of Home Agent discovered during preamble | | UE IPv4 |
| UDP header | | | UE IPv4 |
| Source Port | Set by UE | | UE IPv4 |
| Destination port | '0001000001011111'B | | UE IPv4 |
| IPv6 Source Address | UE IPv6 CoA (IPv6 address acquired by the UE during network attachment) | | IPv6 visited |
| | IPv6 Home Address configured by the UE from Home Network Prefix assigned to UE during preamble | | UE IPv6-home, UE IPv4 |
| IPv6 Destination Address | IPv6 of Home Agent discovered during preamble | | |
| Destination Header | IPv6 Home Address configured by the UE from Home Network Prefix assigned to the UE during preamble | | IPv6 visited |
| Payload Proto | '00111011'B | | |
| MH Type | '00000101'B | Binding Update message | |
| Sequence Number | Any allowed value | | |
| Lifetime | Any allowed non-zero value | | IPv6 visited |
| | '0000000000000000'B | | UE IPv6-home |
| A | '1'B | | |
| H | '1'B | | |
| L | Not checked | | |
| K | '1'B | | |
| M | '0'B | | |
| R | '1'B | | |
| P | '0'B | | |
| F | '0'B | | |
| IPv4 Home Address option | Set to the value "0.0.0.0" to request allocation for the UE. The "P" flag is set to '0'B. The Prefix Length is set to the requested prefix length of '32'. | Optional | |
| Alternate Care-of Address option | Same IPv6 address as that inserted in the IP Source Address field | | UE IPv6-visited |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|-----------------|---|
| UE IPv4 | UE is in an IPv4 visited network (see RFC 5555) |
| UE IPv6-home | UE is in an IPv6 home network (see RFC 5555) |
| UE IPv6-visited | UE is in an IPv6 visited network (see RFC 5555) |

- Binding Acknowledgement

This message is sent by the SS to the UE.

Table 4.7C.2-3: Message Binding Acknowledgement

| Information Element | Value/remark | Comment | Condition |
|-------------------------------------|--|--|--------------------------|
| IPv4 Source Address | IPv4 Home Agent address | | UE IPv4 |
| IPv4 Destination Address | Same value as UE IPv4 CoA in IP Source Address from Binding Update | | UE IPv4 |
| UDP header | | | UE IPv4 |
| Source Port | '0001000001011111'B | | UE IPv4 |
| Destination port | Same as Source port in Binding Update | | UE IPv4 |
| IPv6 Source Address | IPv6 Home Agent address | | |
| IPv6 Destination Address | Same value as UE IPv6 CoA in IP Source Address from Binding Update | | UE IPv6-visited |
| | IPv6 Home Address | | UE IPv6-home, UE IPv4 |
| Routing Header | Same value as UE IPv6 Home Address in Destination Header from Binding Update | | UE IPv6-visited |
| Payload Proto | '00111011'B | | |
| MH Type | '00000110'B | Binding Acknowledgement message | |
| Status | '00000000'B | Binding Update accepted | |
| K | Set by the SS | | |
| R | '1'B | | |
| P | '0'B | | |
| Sequence Number | Same value as that sent by the UE in the Binding Update | | |
| Lifetime | '0000000010010110'B | 10 min | UE IPv6-visited, UE IPv4 |
| | '0000000000000000'B | | UE IPv6-home |
| IPv4 Address Acknowledgement option | IPv4 Home Address allocated to the UE | Present if IPv4 Home Address option was included by the UE in Binding Update | |
| Binding Refresh Advice option | '0000000010010110'B | 10 min | |

| Condition | Explanation |
|-----------------|---|
| UE IPv4 | UE is in an IPv4 visited network (see RFC 5555) |
| UE IPv6-home | UE is in an IPv6 home network (see RFC 5555) |
| UE IPv6-visited | UE is in an IPv6 visited network (see RFC 5555) |

- Binding Revocation Indication

This message is sent by the SS to the UE.

Table 4.7C.2-4: Binding Revocation Indication

| Field | Value/remark | Comment | Condition |
|--------------------------|--|---------|-----------------|
| IPv4 Header | | | UE IPv4 |
| IPv4 Source Address | UE IPv4 Home Agent address | | UE IPv4 |
| UDP header | | | UE IPv4 |
| Source Port | Set by SS | | UE IPv4 |
| Destination port | '0001000001011111'B | | UE IPv4 |
| IPv6 Header | | | |
| IPv6 Source Address | IPv6 Home Agent address | | |
| IPv6 Destination Address | IPv6 Home Address configured by UE from Home Network Prefix assigned to UE during preamble | | UE IPv4 |
| | IPv6 CoA | | UE IPv6-visited |
| Routing Header | IPv6 Home Address configured by the UE from Home Network Prefix assigned to the UE during preamble | | UE IPv6-visited |
| B.R. Type | '00000001'B | B.R.I | |
| Sequence Number | Set by the SS | | |
| Revocation Trigger | '00000001'B | | |
| P | '0'B | | |
| G | '0'B | | |
| V | '0'B | | |

| Condition | Explanation |
|-----------------|---|
| UE IPv4 | UE is in an IPv4 visited network (see RFC 5555) |
| UE IPv6-visited | UE is in an IPv6 visited network (see RFC 5555) |

- Binding Revocation Acknowledgement

This message is sent by the UE to the SS.

Table 4.7C.2-5: Binding Revocation Acknowledgement

| Information Element | Value/remark | Comment | Condition |
|--------------------------|--|--------------------------|-----------------|
| IPv4 Header | | | UE IPv4 |
| IPv4 Source Address | IPv4 CoA | | UE IPv4 |
| IPv4 Destination Address | UE IPv4 Home Agent Address | | UE IPv4 |
| UDP header | | UDP header | UE IPv4 |
| Source Port | '0001000001011111'B | Source Port | UE IPv4 |
| Destination port | Same as Source port in Binding Revocation | Destination port | UE IPv4 |
| IPv6 Header | | | |
| IPv6 Source Address | IPv6 Home Address configured by UE | | UE IPv4 |
| | IPv6 CoA | | UE IPv6-visited |
| IPv6 Destination Address | IPv6 of Home Agent address | IPv6 Destination Address | |
| Destination Header | IPv6 Home Address configured by the UE | | UE IPv6-visited |
| B.R. Type | '00000010'B | B.R.A | |
| Sequence Number | Same value as Sequence Number sent by the SS in Binding Revocation | | |
| Status | '00000000'B | Success | |
| P | '0'B | | |
| G | '0'B | | |
| V | '0'B | | |

| Condition | Explanation |
|-----------------|---|
| UE IPv4 | UE is in an IPv4 visited network (see RFC 5555) |
| UE IPv6-visited | UE is in an IPv6 visited network (see RFC 5555) |

4.7D Default GERAN message and information element contents

4.7D.1 GPRS message

– PS HANDOVER COMMAND

Table 4.7D.1-1: PS HANDOVER COMMAND

| Derivation Path: 44.060 clause 11.2.43.1 | | | |
|--|---|---------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PAGE_MODE | Default | | |
| Global TFI | TFI of mobile station uplink TBF | | |
| CONTAINER_ID | 00 | | |
| PS Handover to A/Gb Mode Payload | 00 | PS Handover RR Info | |
| PS Handover RR Info flag | 00 | | |
| PS Handover Radio Resources IE | Present | | |
| Handover Reference | 0 | | |
| ARFCN | default ARFCN for BCCH of GERAN cell | | |
| SI | 00 | Non-synchronized | |
| NCI | 0 | | |
| BSIC | BSIC of GERAN cell | | |
| 0 <CCN_ACTIVE> | not present | | |
| 0 <3G_CCN_ACTIVE> | not present | | |
| 0 <CCN Support Description> | not present | | |
| Frequency Parameters | default PDTCH of GERAN cell | | |
| NETWORK_CONTROL_ORDER | 2 | | |
| 0 <Global Packet Timing Advance> | not present | | |
| EXTENDED_DYNAMIC_ALLOCATION | 0 | | |
| RLC_RESET | 1 | RLC is reset | |
| 0 <PO> | not present | | |
| 0 <Uplink Control Timeslot> | not present | | |
| 0 GPRS mode | Uplink TBF assignment for default PDTCH of GERAN cell | | |
| 0 <NAS Container for PS Handover IE> | not present | | |

4.7E Default HTTP messages for communication with the ProSe Function

- HTTP Request

This message is sent by the UE to the SS.

Table 4.7E-1: HTTP Request

| Header/param | Value/remark | Comment | Condition |
|---|-------------------------------------|---------|-----------|
| Request-Line Method Request-URI Version | "POST" Request-URI "HTTP 1.1" | | |
| Content-Type media-type | "application/3gpp-prose+xml" | | |
| Content-Length value | length of the message body | | |
| Message-body | PC3 Control Protocol messages | | |
| Note: HTTP request may contain further headers which are ignored. | | | |

- HTTP Response

This message is sent by the SS to the UE.

Table 4.7E-2: HTTP Response

| Header/param | Value/remark | Comment | Condition |
|---|-------------------------------|---------|-----------|
| Status-Line Version Code Reason | "HTTP 1.1" 200 "OK" | | |
| Content-Type media-type | "application/3gpp-prose+xml" | | |
| Content-Length value | length of the message body | | |
| Message-body | PC3 Control Protocol messages | | |

4.7F Default ProSe messages

4.7F.1 ProSe discovery messages

- DISCOVERY_REQUEST

This message is sent by the UE to the SS.

Table 4.7F.1-1: DISCOVERY_REQUEST

| Derivation path: 24.334 [57], clause 11.2.4.2. | | | |
|--|---------------------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| discovery-request[1] { | | | |
| transaction-ID | Any allowed value | | |
| command | 2 | monitor | |
| | 1 | announce | |
| UE-identity | IMSI | | |
| ProSe-Application-ID | px_ProSeMonApplicationIdentity1 | | |
| application-identity | Any allowed value | | |
| } | | | |
| ... | | | |
| discovery-request[N]{} } | Any allowed value if present | A UE can include one or multiple transactions in one DISCOVERY_REQUEST message for one or more ProSe Application IDs | |

- DISCOVERY_RESPONSE

This message is sent by the SS to the UE.

Table 4.7F.1-2: DISCOVERY_RESPONSE

| Derivation path: 24.334 [57], clause 11.2.4.3. | | | |
|--|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| Current-time | Current UTC time | | |
| Max-Offset | 32 | 32 seconds | |
| response-announce[1] { | | | |
| transaction-ID | Same as that included by UE in the relevant DISCOVERY_REQUEST message and the relevant discovery-request | | |
| ProSe Application Code[1] { | | 184 bits See TS 23.003 [2], section 24.3. | |
| PLMN ID { | | 24 bits The PLMN ID of the ProSe Function that assigned the ProSe Application Code, i.e. Mobile Country Code (MCC) and Mobile Network Code (MNC). | |
| Scope | '10' | "country-specific scope", i.e. only MNC is wild carded | |
| Spare | '0' | | |
| E | '1' | For Rel-12 MCC and the MNC of the ProSe Function that has assigned the ProSe Application Code are included in the PLMN ID in ProSe Application Code | |
| MCC | The MCC part of the The PLMN ID of the ProSe Function that assigned the ProSe Application Code (the relevant PLMN will be set in the TC) | fixed length of 10 bits and shall be coded as the binary representation of their decimal value | |
| MNC | The MNC part of the The PLMN ID of the ProSe Function that assigned the ProSe Application Code (the relevant PLMN will be set in the TC) | fixed length of 10 bits and shall be coded as the binary representation of their decimal value | |
| } | | | |
| TemporaryID | 1111111100000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000011111111 | 160 bits - see setting of bit 'E' above. A temporary identity that corresponds to the ProSe Application ID Name. | |
| } | | | |

| | | | |
|--------------------------|--|--|--|
| validity-timer-T4000 | 5 | Indicating the time during which the Application Code is valid Integer in the 1-525600 range representing the timer value in unit of minutes | |
| discovery-key | 1000100000001000 0100010000001000 0010001000001000 0001000100001000 0000100010001000 0000010001001000 0000001000101000 0000000100011000 | 128-bit As defined in TS 33.303 [60] and TS 33.220 [61] | |
| } | | | |
| response-monitor[1] { | | | |
| transaction-ID | Same as that included by UE in the relevant DISCOVERY_REQUEST message and the relevant discovery-request | | |
| discovery-filter[1] { | | | |
| ProSe Application Code { | | 184 bits See TS 23.003 [2], section 24.3. | |
| PLMN ID { | | 24 bits The PLMN ID of the ProSe Function that assigned the ProSe Application Code, i.e. Mobile Country Code (MCC) and Mobile Network Code (MNC). | |
| Scope | '10' | "country-specific scope", i.e. only MNC is wild carded | |
| Spare | '0' | | |
| E | '1' | For Rel-12 MCC and the MNC of the ProSe Function that has assigned the ProSe Application Code are included in the PLMN ID in ProSe Application Code | |
| MCC | The MCC part of the The PLMN ID of the ProSe Function that assigned the ProSe Application Code (the relevant PLMN will be set in the TC) | fixed length of 10 bits and shall be coded as the binary representation of their decimal value | |

| | | | |
|---------------------------|--|---|--|
| MNC | The MNC part of the The PLMN ID of the ProSe Function that assigned the ProSe Application Code (the relevant PLMN will be set in the TC) | fixed length of 10 bits and shall be coded as the binary representation of their decimal value | |
| } | | | |
| TemporaryID | 1111111100000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000011111111 | 160 bits - see setting of bit 'E' above. A temporary identity that corresponds to the ProSe Application ID Name. | |
| } | | | |
| ProSe Application Mask[1] | 0000111111111100 00000000 1111111111111111 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 | 184 bits - The length of the ProSe Application Mask is the same as the length of ProSe Application Code Full matching for the MCC part is required, as well as for the first 16 bits of the Temporary ID in order a received ProSe Application Code to result in a match | |
| ProSe Application Mask[2] | 0000111111111100 00000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 0000000000000000 1111111111111111 | 184 bits - The length of the ProSe Application Mask is as same as the length of ProSe Application Code Full matching for the MCC part is required, as well as for the last 16 bits of the Temporary ID | |
| TTLTimer T4002 | 5 | Indicating the time during which the filter is valid Integer in the 1-525600 range representing the timer value in unit of minutes | |
| } | | | |
| } | | | |
| response-reject | Not Present | | |

MATCH_REPORT

This message is sent by the UE to the SS.

Table 4.7F.1-3: MATCH_REPORT

| Derivation path: 24.334 [57], clause 11.2.4.4. | | | |
|--|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| transaction-ID | a new transaction ID | | |
| ProSe-Application-Code | A code received in a PC5_DISCOVERY message for which there was a match event and for which the UE does not have an associated ProSe Application ID | The expected value will be set in the relevant TC. | |
| UE-identity | IMSI | | |
| Monitored-PLMN-id | The monitored in the TC PLMN | The expected value will be set in the relevant TC. | |
| VPLMN-id | Not included | | |
| MIC | MIC of the PC5_DISCOVERY message that contained the ProSe Application Code for which there was a match event | | |
| UTC-based Counter | <ul style="list-style-type: none"> - the 28 most significant bits of the UTC-based counter shall be set to the 28 most significant bits of the UTC time provided by the lower layers for the PC5_DISCOVERY message that contained the ProSe Application Code for which there was a match event encoded as specified in TS 24.334 [57], subclause 12.2.2.18; and - the 4 least significant bits of the UTC-based counter shall be set to the 4 least significant bits of the UTC-based counter contained in the PC5_DISCOVERY message that contained the ProSe Application Code for which there was a match event, as specified in 3GPP TS 33.303 [60] | The UTC is expressed in unit of seconds and coded in binary format as the 32 least significant bits of the Coordinated Universal Time as defined in 3GPP TS 36.331 [17] | |
| metadata-flag | Any allowed value | | |

- MATCH_REPORT_ACK

This message is sent by the SS to the UE.

Table 4.7F.1-4: MATCH_REPORT_ACK

| Derivation path: 24.334 [57], clause 11.2.4.5. | | | |
|--|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Current-Time | Current UTC time | | |
| match-ack { | | | |
| transaction-ID | the transaction ID received in the MATCH_REPORT | | |
| ProSe-Application-ID | | a ProSe Application ID which the UE does not have | |
| validity-timer-T4004 | 4 | 4 min | |
| metadata | Not Present | | |
| match-report-refresh-timer-T4006 | 1 | 1 min | |
| } | | | |

- PC5_DISCOVERY

This message is sent by the UE or by the SS-UE.

Table 4.7F.1-5: PC5_DISCOVERY for open ProSe direct discovery

| Derivation path: 24.334 [57], Table 11.2.5.1.1. | | | |
|---|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| ProSe Application Code { | | | |
| PLMN ID | Same as the PLMN ID provided in the DISCOVERY_RESPONSE message sent during the latest Monitor request procedure | | |
| TemporaryID | Same as the TemporaryID provided in the DISCOVERY_RESPONSE message sent during the latest Monitor request procedure | | |
| } | | | |
| MIC | Computed by UE based on Message Type, discovery-key and ProSe Application Code included by SS in DISCOVERY_RESPONSE sent during the latest Monitor request procedure, and UTC-based counter associated with the discovery slot. See TS 33.303 [60], A.2. The 32 least significant bits of the output of the KDF, TS 33.220 [61], Annex B. | | |
| UTC-based Counter LSB | four least significant bits of the UTC-based counter associated with the discovery slot | The UTC is expressed in unit of seconds and coded in binary format as the 32 least significant bits of the Coordinated Universal Time as defined in 3GPP TS 36.331 [17] | |

Table 4.7F.1-5A: PC5_DISCOVERY for Group Member Discovery Announcement

| Derivation path: 24.334 [57], Table 11.2.5.1.7. | | | |
|---|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Message Type { | | | |
| Discovery type | '01'B | "Restricted discovery" | |
| Content type | '0110' | "Group Member Discovery Announcement or Group Member Discovery Response" | |
| Discovery model | '01' | "Model A" | |
| } | | | |
| Discovery Group ID | The configured Discovery Group ID parameter identifying the discovery group to be announced | 24-bit long bit string | |
| User Info ID | The configured User Info ID for the group member discovery parameter | Announcer Info 48-bit long bit string | |
| ProSe UE ID | The configured Layer 2 ID used for unicast communication | 24-bit long bit string | |
| Spare | | The length of this parameter is variable and is indicated in a message where this parameter is included | |
| MIC | Computed in accordance with TS 33.303 [60], A.2. | | |
| UTC-based Counter LSB | | Set to the eight least significant bits of the UTC-based counter The UTC is expressed in unit of seconds and coded in binary format as the 32 least significant bits of the Coordinated Universal Time as defined in 3GPP TS 36.331 [17] | |

Table 4.7F.1-5B: PC5_DISCOVERY for Group Member Discovery Solicitation

| Derivation path: 24.334 [57], Table 11.2.5.1.8. | | | |
|---|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Message Type { | | | |
| Discovery type | '01'B | "Restricted discovery" | |
| Content type | '0111' | "Group Member Discovery Solicitation" | |
| Discovery model | '10' | "Model B" | |
| } | | | |
| Discovery Group ID | The configured Discovery Group ID parameter identifying the discovery group to be solicited | 24-bit long bit string | |
| User Info ID | The configured User Info ID for the group member discovery parameter | Discoverer Info 48-bit long bit string | |
| GMDS Composition { | | | |
| TUII | Any value | | |
| TGII | Any value | | |
| } | | | |
| Target User Info | IF TUII='1' THEN the User Info ID of the targeted discoveree user - 48-bit long bit string ELSE Not present | | |
| Target Group Info | IF TGII='1' THEN ProSe Layer 2 Group ID - 24-bit long bit string ELSE Not present | | |
| Spare | | The length of this parameter is variable and is indicated in a message where this parameter is included | |
| MIC | Computed in accordance with TS 33.303 [60], A.2. | | |
| UTC-based Counter LSB | | Set to the eight least significant bits of the UTC-based counter The UTC is expressed in unit of seconds and coded in binary format as the 32 least significant bits of the Coordinated Universal Time as defined in 3GPP TS 36.331 [17] | |

Table 4.7F.1-5C: PC5_DISCOVERY for Group Member Discovery Response

| Derivation path: 24.334 [57], Table 11.2.5.1.9. | | | |
|---|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Message Type { | | | |
| Discovery type | '01'B | "Restricted discovery" | |
| Content type | '0110' | "Group Member Discovery Announcement or Group Member Discovery Response" | |
| Discovery model | '10' | "Model B" | |
| } | | | |
| Discovery Group ID | The received Discovery Group ID parameter of the PC5_DISCOVERY message for Group Member Discovery Solicitation | 24-bit long bit string | |
| User Info ID | The configured User Info ID for the group member discovery parameter | Discoveree Info 48-bit long bit string | |
| ProSe UE ID | The configured Layer 2 ID used for unicast communication | 24-bit long bit string | |
| Spare | | The length of this parameter is variable and is indicated in a message where this parameter is included | |
| MIC | Computed in accordance with TS 33.303 [60], A.2. | | |
| UTC-based Counter LSB | | Set to the eight least significant bits of the UTC-based counter The UTC is expressed in unit of seconds and coded in binary format as the 32 least significant bits of the Coordinated Universal Time as defined in 3GPP TS 36.331 [17] | |

4.7F.2 Messages transmitted over the PC3ch interface

- USAGE_INFORMATION_REPORT_LIST

This message is sent by the UE to the SS.

Table 4.7F.2-1: USAGE_INFORMATION_REPORT_LIST

| Derivation path: 24.334 [57], clause 11.3.4.2. | | | |
|--|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| transaction-ID | Any allowed value | | |
| UE-identity | IMSI | | |
| usage-information-report[1] { | 1 Report | | |
| sequence-number | 1 | First report after power up | |
| coverage { | | | |
| in-coverage | FALSE | The UE was out of E-UTRAN coverage | |
| timestamp | Not Present or Any allowed Value | | |
| location[1] | Not Present | UE was out of coverage i.e. the UE was not camping on nor the UE was in the EMM-CONNECTED mode on any E-UTRA cell | |
| } | | | |
| group[1] { | | The UE is configured to report the group parameters, see EF _{PROSE_UIRC} | |
| prose-layer2-group-ID | As preconfigured in EF _{PROSE_POLICY} | | |
| prose-group-IP-multicast-address | As preconfigured in EF _{PROSE_POLICY} | | |
| first-transmission-timestamp | Any allowed Value | | |
| first-reception-timestamp | Any allowed Value | | |
| UE-source-IP-address | Any allowed Value | | |
| prose-UE-id | As preconfigured in EF _{PROSE_POLICY} | | |
| transmitter { | | | |
| source-IP-address | Any allowed Value | | |
| prose-UE-id | Any allowed value | | |
| } | | | |
| transmission { | | | |
| in-coverage | FALSE | | |
| ECGI | Not Present | | |
| amount | Any allowed Value | | |
| timestamp | Any allowed Value | | |
| radio-resources-ind | 2 | the configured radio resources were used | |
| radio-frequency | <i>carrierFreq-r12</i> , Table 6.8.1.1-1 | the configured radio frequency | |
| } | | | |
| reception { | | | |
| in-coverage | FALSE | | |
| ECGI | Not Present | | |
| amount | Any allowed Value | | |
| timestamp | Any allowed Value | | |
| radio-resources-ind | 2 | the configured radio resources | |
| radio-frequency | <i>carrierFreq-r12</i> , Table 6.8.1.1-1 | the configured radio frequency | |
| } | | | |
| ..} | | | |

| | | | |
|-----------------------|---|--|--|
| radio-parameter-set { | 2 entries in any order referring to SL-Preconfiguration-r12, Table 6.8.1.1-1 SLCONF1 and SLCONF2 | | |
| { | Entry 1 | | |
| params | the radio parameters used for ProSe direct communication, see SL-Preconfiguration-r12, Table 6.8.1.1-1 cond SLCONF1 | | |
| timestamp | Any allowed Value | | |
| } | | | |
| { | Entry 2 | | |
| params | the radio parameters used for ProSe direct communication, see SL-Preconfiguration-r12, Table 6.8.1.1-1 cond SLCONF2 | | |
| timestamp | Any allowed Value | | |
| } | | | |
| } | | | |
| app-specific-info | Any allowed Value | | |

- USAGE_INFORMATION_REPORT_LIST_RESPONSE

This message is sent by the SS to the UE.

Table 4.7F.2-2: USAGE_INFORMATION_REPORT_LIST_RESPONSE

| Derivation path: 24.334 [57], clause 11.3.4.3. | | | |
|--|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| response-accept { | | | |
| transaction-ID | The value of the transaction ID of the related USAGE_INFORMATION_REPORT_LIST message | | |
| } | | | |
| response-reject { | Not present | | |
| transaction-ID | | | |
| cause-value | | | |
| } | | | |

4.7F.3 ProSe Direct Communication Messages

- DIRECT_COMMUNICATION_ACCEPT

This message can be sent by the UE or the SS.

Table 4.7F.3-0A: DIRECT_COMMUNICATION_ACCEPT

| Derivation path: 24.334 [57], clause 11.4.3.1.1. | | | |
|--|---|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| Sequence Number | 0 | incremented for each outgoing new PC5 Signalling message | |
| IP Address Config | Any allowed value | | |
| Link Local IPv6 Address | Present if the IP Address Config IE is set to 'address allocation not support' Not Present otherwise | 128-bit IPv6 address | |

- DIRECT_COMMUNICATION_KEEPALIVE

This message can be sent by the UE or the SS.

Table 4.7F.3-0B: DIRECT_COMMUNICATION_KEEPALIVE

| Derivation path: 24.334 [57], clause 11.4.5.1.1. | | | |
|--|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Sequence Number | The Sequence number used in the previously sent PC5 Signalling message + 1 | | |
| Keepalive Counter | 0 if this is the first keepalive message being sent otherwise - the value sent in the preceeding acknowledged DIRECT_COMMUNICATION_KEEPALIVE message + 1, or, - the same value if this is a retransmission | | |
| Maximum Inactivity Period | Any allowed value or Not present | | |

- DIRECT_COMMUNICATION_KEEPALIVE_ACK

This message can be sent by the UE or the SS.

Table 4.7F.3-0C: DIRECT_COMMUNICATION_KEEPALIVE_ACK

| Derivation path: 24.334 [57], clause 11.4.6.1.1. | | | |
|--|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Sequence Number | The Sequence number used in the previously sent PC5 Signalling message + 1 | | |
| Keepalive Counter | the same value as the one received in the preceeding DIRECT_COMMUNICATION_KEEPALIVE message | | |

- DIRECT_COMMUNICATION_RELEASE

This message can be sent by the UE or the SS.

Table 4.7F.3-0D: DIRECT_COMMUNICATION_RELEASE

| Derivation path: 24.334 [57], clause 11.4.7.1.1. | | | |
|--|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Sequence Number | The Sequence number used in the previously sent PC5 Signalling message + 1 | | |
| Release Reason | Any allowed value | | |

- DIRECT_COMMUNICATION_RELEASE_ACCEPT

This message can be sent by the UE or the SS.

Table 4.7F.3-0E: DIRECT_COMMUNICATION_RELEASE_ACCEPT

| Derivation path: 24.334 [57], clause 11.4.8.1.1. | | | |
|--|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Sequence Number | The Sequence number used in the previously sent PC5 Signalling message + 1 | | |

- DIRECT_COMMUNICATION_REQUEST

This message can be sent by the UE or the SS.

Table 4.7F.3-0F: DIRECT_COMMUNICATION_REQUEST

| Derivation path: 24.334 [57], clause 11.4.2.1.1. | | | |
|--|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Sequence Number | 0 | incremented for each outgoing new PC5 Signalling message | |
| User Info { | | | |
| Type of User Info | Any allowed value | | |
| Odd/even indication | Any allowed value | Reflecting the number of identity digits | |
| Identity digits | Any allowed value | | |
| } | | | |
| IP Address Config | Any allowed value | | |
| Maximum Inactivity Period | Any allowed value | | |
| Nonce_1 | Any allowed value | 128-bit nonce value generated by the UE which initiated the procedure | |
| UE Security Capabilities | Any allowed value | | |
| MSB of K _{D-sess} ID | Any allowed value | the 8 most significant bits of the K _{D-sess} ID | |
| K _D ID | Any allowed value | | |
| Relay Service Code | Not present | | |
| Signature | Any allowed value | ECCSI signature content structure is specified in 3GPP TS 33.303 [60] IETF RFC 6507 | |
| Link Local IPv6 Address | Present if the IP Address Config IE is set to 'address allocation not support' Not Present otherwise | 128-bit IPv6 address | |

- DIRECT_SECURITY_MODE_COMMAND

This message can be sent by the UE or the SS.

Table 4.7F.3-0G: DIRECT_SECURITY_MODE_COMMAND

| Derivation path: 24.334 [57], clause 11.4.12.1.1. | | | |
|---|--|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Sequence Number | The Sequence number used in the previously sent PC5 Signalling message + 1 | | |
| UE Security Capabilities | Any allowed value | | |
| Nonce 2 | Any allowed value | 128-bit nonce value generated by the UE which initiated the procedure | |
| Chosen Algorithms | Any allowed value | | |
| LSB of K_{D-sess} ID | Any allowed value | the 8 least significant bits of the K_{D-sess} ID. | |
| MSB of K_D ID | Any allowed value or Not included | the 8 most significant bits of the K_{D-sess} ID | |
| K_D Freshness | Any allowed value or Not included | 128-bit nonce value generated by initiating PKMF to ensure that any calculated K_D is fresh | |
| GPI | Any allowed value or Not included | the GBA Push Information as defined in 3GPP TS 33.223 | |
| User Info { | | | |
| Type of User Info | Any allowed value | | |
| Odd/even indication | Any allowed value | Reflecting the number of identity digits | |
| Identity digits | Any allowed value | | |
| } | | | |
| Signature | Any allowed value | ECCSI signature content structure is specified in 3GPP TS 33.303 [60] IETF RFC 6507 | |
| Encrypted Payload | Any allowed value | encrypted data encapsulating the shared secret key to be used for the established link The exact content structure is specified in 3GPP TS 33.303 [60] | |

- DIRECT_SECURITY_MODE_COMPLETE

This message can be sent by the UE or the SS.

Table 4.7F.3-0H: DIRECT_SECURITY_MODE_COMPLETE

| Derivation path: 24.334 [57], clause 11.4.13.1. | | | |
|---|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| Sequence Number | The Sequence number used in the previously sent PC5 Signalling message + 1 | | |
| LSB of KD ID | Any allowed value or Not present | Optional 16 least significant bits of KD ID | |

- KEY_REQUEST

This message is sent by the UE to the SS.

Table 4.7F.3-1: KEY_REQUEST

| Derivation path: 33.303 [60], clause E.4.2. | | | |
|---|-------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| transaction-ID | Any allowed value | | |
| AlgorithmAvailable | Any allowed value | Encryption algorithm the UE supports for one-to-many communications | |
| GroupKeyReq { | One entry | | |
| GroupId | Any allowed value | Group that the UE is requesting keys for (Range 0-167777215) | |
| PGKId | 0 | UE does not have any PGKs for this group | |
| anyExt | Not Present | | |
| } | | | |
| PRUKId | Not Present | | |
| KDRequest | Not Present | | |
| Key Exchange Payload | Not Present | | |
| GroupKeyStop | Not Present | | |
| PSDiscoverySecurityCapabilities | Not Present | | |
| RelayDiscoveryKeyRequest | Not Present | | |
| RelayDiscoveryKeyStop | Not Present | | |
| GroupMemberDiscoveryKeyRequest | Not Present | | |
| GroupMemberDiscoveryKeyStop | Not Present | | |
| anyExt | Not Present | | |

- KEY_RESPONSE

This message is sent by the SS to the UE.

Table 4.7F.3-2: KEY_RESPONSE

| Derivation path: 33.303 [60], clause E.4.3. | | | |
|---|--------------------------------------|-----------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| transaction-ID | Same as that received in KEY_REQUEST | | |
| GroupNotSupported | Not Present | | |
| GroupResponse { | One entry | | |
| GroupID | Same as that received in KEY_REQUEST | | |
| GroupMemberID | 1 | | |
| AlgorithmInfo | '001'B | EPS encryption algorithm 128-EEA1 | |
| } | | | |
| Key-info { | One entry | | |
| PMK-ID | '0000000000000001'H | | |
| PMK | '00000000000000000000000000000001'H | | |
| } | | | |
| PRUKInfo | Not Present | | |
| PRUKErr | Not Present | | |
| KDRResponse | Not Present | | |
| KDErr | Not Present | | |
| RelayNotSupported | Not Present | | |
| RelayResponse | Not Present | | |
| GroupMemberDiscoveryNotSupported | Not Present | | |
| GroupMemberDiscoveryResponse | Not Present | | |
| CurrentTime | Not Present | | |
| MaxOffset | Not Present | | |
| anyExt | Not Present | | |

- MIKEY Key Delivery Message

This message is sent by the SS to the UE.

Table 4.7F.3-3: MIKEY Key Delivery Message

| Derivation path: 33.303 [60], clause D.3. | | | |
|---|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| MIKEY Common Header { | | | |
| version | '00000001'B | | |
| data type | '00000000'B | Pre-shared key message | |
| Next payload | '00000101'B | Next payload is timestamp | |
| V | '1'B | Response expected | |
| PRF func | '0000000'B | | |
| CSB ID | Random number | Any 32 bit random number | |
| #CS | '00000000'B | | |
| CS ID map type | '00000001'B | Empty map | |
| CS ID map Info | FFS | | |
| } | | | |
| Timestamp Payload { | | | |
| Next payload | '00001011'B | Next payload is RAND | |
| TS Type | '00000010'B | Value 2 corresponds to Counter | |
| TS Value | '0001'B | Replay counter. | |
| } | | | |
| RAND Payload { | | | |
| Next payload | '00000110'B | Next payload is ID | |
| RAND len | '00010000'B | 16 Bytes RAND | |
| RAND | 128-bit random number | | |
| } | | | |
| IDI payload { | | | |
| Next payload | '00000110'B | Next payload is ID | |
| ID Type | 0 | | |
| ID len | Length of ID Data | | |
| ID data | Group Identity PGK ID @ FQDN of the ProSe Key Management Function | | |
| } | | | |
| IDr payload { | | | |
| Next payload | '00000001'B | Next payload is KEMAC | |
| ID Type | 0 | | |
| ID len | Length of ID Data | | |
| ID data | PMK identity of the PMK used to protect the MIKEY message @ the FQDN of the ProSe Key Management Function | | |
| } | | | |
| KEMAC Payload { | | | |
| Next payload | '00000000'B | This is the last payload | |
| Encr alg | '00000001'B | AES-CM-128 | |
| Encr data len | Length of Encr Data | | |
| Encr Data { | | Key Data payload is encrypted and carried | |
| Next payload | '00000000'B | This is the last payload | |
| Type | '0000'B | TEK | |
| KV | '0010'B | The key has a start and expiration time | |
| Key data len | '0000000010000000'B | 128 bits | |

| | | | |
|------------|--|----------------|--|
| Key data | '0000 0000 0000 0000 0000 0000 0000 0001'[OCT] | PGK | |
| KV data { | | | |
| VF length | FFS | | |
| Valid from | FFS | | |
| VT length | FFS | | |
| Valid to | FFS | | |
| } | | | |
| } | | | |
| Mac alg | '00000001'B | HMAC-SHA-1-160 | |
| MAC | Message Authentication Code of the message | | |
| } | | | |

4.7G Default IKEv2 message and information element contents

- IKE_SA_INIT request

This message is sent by the UE to the SS.

Table 4.7G-1: IKE_SA_INIT request

| Derivation path: IETF RFC 5996 [57] | | | |
|-------------------------------------|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| IKE Header | | | |
| Initiator's IKE_SA SPI | Not checked | | |
| Responder's IKE_SA SPI | 0 | First message in IKE_SA_INIT exchange | |
| Next Payload | '00100001'B | SA | |
| Exchange Type | '00100010'B | IKE_SA_INIT | |
| Security Association Payload | | The presence of all Transform type and related Transform ID are checked. These are allowed in one or more Proposals in any combination. | |
| Next Payload | '00100010'B | KE | |
| More proposal | Not checked | | |
| Proposal # | Not checked | Cryptographic suite | |
| Protocol ID | '00000001'B | IKE | |
| SPI size | Not checked | | |
| Number of transforms | Not checked | | |
| More transform or Last transform | Not checked | | |
| Transform type | '00000001'B | Encryption Algorithm | |
| Transform ID | '00000011'B | ENCR_3DES | |
| More transform or Last transform | Not checked | | |
| Transform type | '00000001'B | Encryption Algorithm | |
| Transform ID | '00001100'B | ENCR_AES_CBC | |
| More transform or Last transform | Not checked | | |
| Transform type | '00000010'B | Pseudorandom Function | |
| Transform ID | '00000010'B | PRF_HMAC_SHA 1 | |
| More transform or Last transform | Not checked | | |
| Transform type | '00000011'B | Integrity Algorithm | |
| Transform ID | '00000010'B | AUTH_HMAC_SHA A1_96 | |
| More transform or Last transform | Not checked | | |
| Transform type | '00000011'B | Integrity Algorithm | |
| Transform ID | '00000101'B | AUTH_AES_XCBC_96 | |
| More transform or Last transform | Not checked | | |
| Transform type | '00000100'B | Diffie-Hellman group | |
| Transform ID | '00000010'B | 1024-bit MODP | |
| Last transform or More transform | Not checked | | |
| Transform type | '00000100'B | Diffie-Hellman group | |
| Transform ID | '00001110'B | 2048-bit MODP | |
| Key Exchange Payload | | | |
| Next Payload | '00101000'B | Nonce | |
| Diffie-Hellman Group Num | '0000000000000010'B or '0000000000001110'B | DH group 2 or 14 | |
| Key Exchange data | Not checked | | |
| Nonce Payload | | | |
| Next Payload | '00000000'B | No Next Payload if Nonce is the last payload | |
| Nonce data | Not checked | | |

NOTE 1: The order of Payloads/fields is not checked, unless explicitly specified. Additional Payloads/fields are ignored.
 NOTE 2: The Check for Next Payload is to check the presence of (SA, KE, Nonce and No Next Payload). The SS shall not reject as invalid a message with those payloads in any other order.

- IKE_SA_INIT response

This message is sent by the SS to the UE.

Table 4.7G-2: IKE_SA_INIT response

| Derivation path: IETF RFC 5996 [57] | | | |
|-------------------------------------|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| IKE Header | | | |
| Initiator's IKE_SA SPI | Same as that set by the UE in IKE_SA_INIT request | | |
| Responder's IKE_SA SPI | Set by the SS | | |
| Next Payload | '00100001'B | SA | |
| Exchange Type | '00100010'B | IKE_SA_INIT | |
| Security Association Payload | | | |
| Next Payload | '00100010'B | KE | |
| Proposal | One of the proposals included in IKE_SA_INIT request | | |
| Key Exchange Payload | | | |
| Next Payload | '00101000'B | Nonce | |
| Diffie-Hellman Group Num | One of the proposals included in IKE_SA_INIT request | | |
| Key Exchange data | Set by the SS | | |
| Nonce Payload | | | |
| Next Payload | '00000000'B | No Next Payload if Nonce is the last payload | |
| Nonce data | Set by the SS | | |

- IKE_AUTH_request

This message is sent by the UE to the SS.

Table 4.7G-3: IKE_AUTH request

| Derivation path: IETF RFC 5996 [57] | | | |
|---|---|-------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| IKE Header | | | |
| Next Payload | '00101111'B or '00110000'B or '00100111'B | CP or EAP or AUTH | |
| Exchange Type | '00100011'B | IKE_AUTH | |
| NOTE 1: The order of Payloads/fields is not checked, unless explicitly specified. Additional Payloads/fields are ignored. | | | |

- IKE_AUTH response

This message is sent by the SS to the UE.

Table 4.7G-4: IKE_AUTH response

| Derivation path: IETF RFC 5996 [57] | | | |
|-------------------------------------|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| | | The presence and values for applicable fields are provided according to the test model [see TS 36.523-3 [20] cl. 4.4.6]. | |

4.7H Default TLS message and information element contents

NOTE: Non handshake protocol details are ignored.

- ClientHello

This message is sent by the UE to the SS.

Table 4.7H-1: ClientHello

| Field | Value/remark | Comment | Condition |
|-------------------|--|---|-----------|
| Protocolversion | At least TLS 1.1 | TLS protocol versions 1.1 is defined in RFCs 4346 [62]. | |
| Random | Not checked | | |
| SessionID | Empty | | |
| CipherSuite | A list of supported cryptographic options including one or more PSK-based ciphersuites | | |
| CompressionMethod | A list including CompressionMethod.null | | |

- ServerHello

This message is sent by the SS to the UE.

Table 4.7H-2: ServerHello

| Field | Value/remark | Comment | Condition |
|-------------------|--|---|-----------|
| Protocolversion | TLS 1.1 | | |
| Random | A SS generated random structure different from ClientHello | | |
| SessionID | Identity of the TLS session generated by SS | | |
| CipherSuite | One of the PSK-based ciphersuites listed in ClientHello | Ciphersuite according to PIXIT parameter (see TS 36.523-3 [20] cl. 9) | |
| CompressionMethod | CompressionMethod.null | | |

- **ServerKeyExchange**

This message is sent by the SS to the UE.

Table 4.7H-3: ServerKeyExchange

| Field | Value/remark | Comment | Condition |
|-------------------|----------------------|---------|-----------|
| psk identity hint | "3GPP-bootstrapping" | | |

- **ServerHelloDone**

This message is sent by the SS to the UE.

Table 4.7H-4: ServerHelloDone

| Field | Value/remark | Comment | Condition |
|--------------------------|--------------|---------|-----------|
| Note: No fields present. | | | |

- **ClientKeyExchange**

This message is sent by the UE to the SS.

Table 4.7H-5: ClientKeyExchange

| Field | Value/remark | Comment | Condition |
|--------------|--|---------|-----------|
| psk identity | Concatenation of "3GPP-bootstrapping", "." and B-TID | | |

- **ChangeCipherSpec**

This message is sent by the UE or the SS.

Table 4.7H-6: ChangeCipherSpec

| Field | Value/remark | Comment | Condition |
|-------|--------------|---------|-----------|
| Enum | 1 | | |

- **Finished**

This message is sent by the UE or the SS.

Table 4.7H-7: Finished

| Field | Value/remark | Comment | Condition |
|--------|--------------------------|--|-----------|
| opaque | Not checked | | UE |
| opaque | SS generated verify_data | The verify data contains the hash of the handshake messages. For details, see the RFC for TLS defined in annex E of 3GPP TS 33.310 [63]. | SS |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|----|-----------------|
| UE | Sent by the UE. |
| SS | Sent by the SS. |

4.71 Default AT Command message and information element

- AT Command +CATM

This AT Command is sent by the SS to the UE.

Table 4.71-1: +CATM

| Derivation Path: 27.007 clause 15 | | | |
|-----------------------------------|--------------|---------|--------------|
| Field | Value/remark | Comment | Condition |
| +CATM= | | | |
| <status> | 0 | | Activation |
| <status> | 1 | | Deactivation |

| Condition | Explanation |
|--------------|------------------------------|
| Activation | Activate UE test loop mode. |
| Deactivation | Deactivate UE test loop mode |

- AT Command +CCUTLE

This AT Command is sent by the SS to the UE.

Table 4.71-2: +CCUTLE

| Derivation Path: 27.007 clause 15 | | | |
|-----------------------------------|--------------|---------|-----------|
| Field | Value/remark | Comment | Condition |
| + CCUTLE = | | | |
| <status> | 1 | | Open |
| <status> | 0 | | Close |
| <direction> | 1 | | Transmit |
| <direction> | 0 | | Receive |
| <format> | 1 | | Receive |
| <length> | 1 | | Receive |
| <monitor_list> | HEX '0000AA' | | Receive |

| Condition | Explanation |
|-----------|--|
| Open | Open UE test loop back mode E. |
| Close | Close UE test loop back mode E |
| Transmit | UE is configured to transmit V2X communication packets |
| Receive | UE is configured to receive V2X communication packets |

- AT Command +CUTCR

This AT Command is sent by the SS to the UE.

Table 4.71-3: +CUTCR

| Derivation Path: 27.007 clause 15 | | | |
|-----------------------------------|--------------|--|-----------|
| Field | Value/remark | Comment | Condition |
| +CUTCR | | This AT command has no additional fields | |

- AT Command +CUSPCREQ

This AT Command is sent by the SS to the UE.

Table 4.7I-4: +CUSPCREQ

| Derivation Path: 27.007 clause 15 | | | |
|-----------------------------------|--------------|--|-----------|
| Field | Value/remark | Comment | Condition |
| +CUSPCREQ | | This AT command has no additional fields | |

4.8 Reference radio bearer configurations

4.8.1 General

4.8.2 SRB and DRB parameters and combinations

4.8.2.1 SRB and DRB parameters

4.8.2.1.1 SRB configurations

Table 4.8.2.1.1-1: SRB-ToAddMod-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SRB-ToAddMod-DEFAULT ::= SEQUENCE { | | | |
| srb-Identity | 1 | | SRB1 |
| | 2 | | SRB2 |
| rlc-Config CHOICE { | | | |
| defaultValue | | | |
| } | | | |
| logicalChannelConfig CHOICE { | | | |
| defaultValue | | | |
| } | | | |
| } | | | |

Table 4.8.2.1.1-2: SRB4-ToAddMod-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SRB-ToAddMod-DEFAULT ::= SEQUENCE { | | | |
| Srb-Identity | 2 | | |
| rlc-Config CHOICE { | | | |
| am SEQUENCE { | | | |
| ul-AM-RLC SEQUENCE { | | | |
| t-PollRetransmit | ms45 | | |
| pollPDU | infinity | | |
| pollByte | infinity | | |
| maxRetxThreshold | t4 | | |
| } | | | |
| dl-AM-RLC SEQUENCE { | | | |
| t-Reordering | ms35 | | |
| t-StatusProhibit | ms0 | | |
| } | | | |
| } | | | |
| } | | | |
| logicalChannelConfig CHOICE { | | | |
| explicitValue ::= SEQUENCE { | | | |
| ul-SpecificParameters SEQUENCE { | | | |
| priority | 15 | | |
| prioritisedBitRate | infinity | | |
| bucketSizeDuration | ms50 | | |
| logicalChannelGroup | 0 | | |
| } | | | |
| } | | | |
| } | | | |
| srb-Identity-v1530 | 4 | | |
| } | | | |

4.8.2.1.2 DRB PDCP configurations

4.8.2.1.2.1 DRB PDCP configurations for UM RLC

Table 4.8.2.1.2.1-1: PDCP-Config-DRB-UM

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|---------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PDCP-Config-DRB-UM ::= SEQUENCE { | | | |
| discardTimer | ms100 | Suitable for real time services | |
| rlc-AM SEQUENCE {} | Not present | | |
| rlc-UM SEQUENCE { | | | |
| pdcpc-SN-Size | Len12bits | | |
| } | | | |
| headerCompression CHOICE { | | | |
| notUsed | NULL | | |
| } | | | |
| } | | | |

4.8.2.1.2.2 DRB PDCP configurations for AM RLC

Table 4.8.2.1.2.2-1: PDCP-Config-DRB-AM

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|---|--------------------|
| Information Element | Value/remark | Comment | Condition |
| PDCP-Config-DRB-AM ::= SEQUENCE { | | | |
| discardTimer | Infinity | | |
| rlc-AM SEQUENCE { | | | |
| statusReportRequired | TRUE | | |
| } | | | |
| rlc-UM SEQUENCE {} | Not present | | |
| headerCompression CHOICE { | | | |
| notUsed | NULL | | |
| } | | | |
| ul-DataSplitDRB-ViaSCG-r12 | TRUE | Uplink transmission of split DRB PDCP SDUs configured to be transmitted on the PSCell | DC_Setup_Split_DRB |
| t-Reordering-r12 | ms200 | ENUMERATED {ms0, ms20, ms40, ms60, ms80, ms100, ms120, ms140, ms160, ms180, ms200, ms220, ms240, ms260, ms280, ms300, ms500, ms750} | DC_Setup_Split_DRB |
| uplinkDataCompression-r15 SEQUENCE { | | | UDC |
| bufferSize-r15 | kbyte2 | ENUMERATED {kbyte2, kbyte4, kbyte8, spare1} | |
| dictionary-r15 | Not present | ENUMERATED {sip-SDP, operator} | |
| } | | | |
| } | | | |

| Condition | Explanation |
|--------------------|---|
| DC_Setup_Split_DRB | Setup of Split DRB |
| UDC | Setup of DRB with uplinkDataCompression |

4.8.2.1.3 DRB RLC configurations

4.8.2.1.3.1 DRB UM RLC configurations

Table 4.8.2.1.3.1-1: RLC-Config-DRB-UM

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|---------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RLC-Config-DRB-UM ::= CHOICE { | | | |
| um-Bi-Directional SEQUENCE { | | | |
| ul-UM-RLC SEQUENCE { | | | |
| sn-FieldLength | Size10 | | |
| } | | | |
| dl-UM-RLC SEQUENCE { | | | |
| sn-FieldLength | Size10 | | |
| t-Reordering | ms50 | ms50 provides sufficient margin | |
| } | | | |
| } | | | |
| } | | | |

4.8.2.1.3.2 DRB AM RLC configurations

Table 4.8.2.1.3.2-1: RLC-Config-DRB-AM

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RLC-Config-DRB-AM ::= CHOICE { | | | |
| am SEQUENCE { | | | |
| ul-AM-RLC SEQUENCE { | | | |
| t-PollRetransmit | ms80 | | |
| pollPDU | p128 | | |
| pollByte | kB125 | | |
| maxRetxThreshold | t4 | | |
| } | | | |
| dl-AM-RLC SEQUENCE { | | | |
| t-Reordering | ms80 | Is sufficient for 5 HARQ transmissions | |
| t-StatusProhibit | Ms60 | Should be equal to or smaller than t-PollRetransmit. | |
| } | | | |
| } | | | |
| } | | | |

4.8.2.1.4 DRB Logical Channel configurations

Table 4.8.2.1.4-1: LogicalChannelConfig-DRB

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| LogicalChannelConfig-DRB ::= SEQUENCE { | | | |
| ul-SpecificParameters SEQUENCE { | | | |
| priority | 6 | | HI |
| | 13 | | LO |
| prioritisedBitRate | kBps0 | PBR is disabled. | |
| bucketSizeDuration | ms100 | | |
| logicalChannelGroup | 1 | | HI |
| | 2 | | LO |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|--|
| HI | Used for DRBs with high logical channel priority |
| LO | Used for DRBs with low logical channel priority |

4.8.2.1.5 MAC configurations

Table 4.8.2.1.5-1: MAC-MainConfig-RBC

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|--|----------------------------------|
| Information Element | Value/remark | Comment | Condition |
| MAC-MainConfig-RBC ::= SEQUENCE { | | | |
| ul-SCH-Config | Not present | | SCell_AddMod |
| ul-SCH-Config SEQUENCE { | | | |
| maxHARQ-Tx | n5 | | |
| periodicBSR-Timer | sf20 | | |
| | Infinity | | no_periodic_BSR_or_PHR |
| retxBSR-Timer | sf320 | | |
| | sf10240 | | no_periodic_BSR_or_PHR |
| ttiBundling | FALSE | | |
| } | | | |
| drx-Config | Not present | | NOT pc_FeatGrp_5 or SCell_AddMod |
| drx-Config CHOICE { | | | pc_FeatGrp_5 AND DRX_S |
| setup SEQUENCE { | | | |
| onDurationTimer | psf2 | | |
| | psf5 | | For SIG and HalfDuplex |
| drx-InactivityTimer | psf100 | | |
| drx-RetransmissionTimer | psf16 | | |
| longDRX-CycleStartOffset CHOICE { | | sf40 typical value in real network for real-time services. | |
| sf40 | 4 | | For SIG |
| | 0 | | For RF |
| } | | | |
| shortDRX | Not present | | |
| } | | | |
| } | | | |
| drx-Config CHOICE { | | | pc_FeatGrp_5 AND DRX_L |
| setup SEQUENCE { | | | |
| onDurationTimer | psf6 | | |
| drx-InactivityTimer | psf1920 | | |
| drx-RetransmissionTimer | psf16 | | |
| longDRX-CycleStartOffset CHOICE { | | sf1280 typical value in real network for best-effort services. | |
| sf1280 | 4 | | For SIG |
| | 0 | | For RF |
| } | | | |
| shortDRX | Not present | | |
| } | | | |
| } | | | |
| timeAlignmentTimerDedicated | sf750 | | |
| shortTTI-AndSPT-r15 | Not present | | |
| shortTTI-AndSPT-r15 CHOICE { | | | Short-TTI |
| | | | |
| setup SEQUENCE { | | | |
| periodicBSR-Timer-r15 | sf20 | | |
| proc-Timeline-r15 | nplus4set1 | | UE_ProcessingTimeline_Set1 |

| | | | |
|--|-------------|--|----------------------------|
| | nplus6set2 | | UE_ProcessingTimeline_Set2 |
| } | | | |
| } | | | |
| phr-Config CHOICE { | | | no_periodic_BSR_or_PHR |
| release | NULL | | |
| } | | | |
| phr-Config | Not present | | SCell_AddMod and RF |
| phr-Config CHOICE { | | | |
| setup SEQUENCE { | | | |
| periodicPHR-Timer | sf500 | | |
| prohibitPHR-Timer | sf200 | | |
| dl-PathlossChange | dB3 | | |
| } | | | |
| } | | | |
| sr-ProhibitTimer-r9 | Not present | | |
| mac-MainConfig-v1020 | Not present | | |
| mac-MainConfig-v1020 SEQUENCE { | | | SCell_AddMod |
| sCellDeactivationTimer-r10 | rf32 | | |
| extendedBSR-Sizes-r10 | setup | | |
| extendedPHR-r10 | setup | | |
| } | | | |
| stag-ToReleaseList-r11 | Not present | | |
| stag-ToAddModList-r11 | Not present | | |
| drx-Config-v1130 | Not present | | |
| e-HARQ-Pattern-r12 | Not present | | |
| dualConnectivityPHR | Not present | | |
| dualConnectivityPHR CHOICE { | | | SCG_Add_EN-DC |
| setup SEQUENCE { | | | |
| phr-ModeOtherCG-r12 | real | | |
| } | | | |
| } | | | |
| logicalChannelSR-Config-r12 CHOICE {} | Not present | | |
| extendedPHR2-r13 | Not present | | |
| eDRX-Config-CycleStartOffset-r13 CHOICE {} | Not present | | |
| eDRX-Config-CycleStartOffset-r13 CHOICE {} | Not present | | |
| drx-Config-r13 CHOICE {} | Not present | | |
| } | | | |

| Condition | Explanation |
|----------------------------|--|
| DRX_S | Used for DRX configuration with small DRX cycle length |
| DRX_L | Used for DRX configuration with large DRX cycle length |
| no_periodic_BSR_or_PHR | Used to disable BSR and PHR |
| For SIG | Used for DRX configuration in Protocol testing |
| For RF | Used for DRX configuration in RRM testing |
| SCell_AddMod | Addition or modification of SCell |
| HalfDuplex | Used during Type B HalfDuplexOperation |
| SCG_Add_EN-DC | Used during SCG addition of NR cell on EN-DC test cases |
| Short-TTI | When short TTI is used |
| UE_ProcessingTimeline_Set1 | Used for UE capability supporting processing timeline Set1 |
| UE_ProcessingTimeline_Set2 | Used for UE capability supporting processing timeline Set2 |

Table 4.8.2.1.5-2: MAC-MainConfig-SRB

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MAC-MainConfig-SRB ::= SEQUENCE { | | | |
| ul-SCH-Config SEQUENCE { | | | |
| maxHARQ-Tx | n5 | | |
| periodicBSR-Timer | sf20 | | |
| retxBSR-Timer | sf320 | | |
| ttiBundling | FALSE | | |
| } | | | |
| drx-Config CHOICE { | | | |
| release | NULL | | |
| } | | | |
| timeAlignmentTimerDedicated | sf750 | | |
| phr-Config CHOICE { | | | |
| setup SEQUENCE { | | | |
| periodicPHR-Timer | sf500 | | |
| prohibitPHR-Timer | sf200 | | |
| dl-PathlossChange | dB3 | | |
| } | | | |
| } | | | |
| } | | | |

4.8.2.1.6 Physical Layer configurations

Table 4.8.2.1.6-1: PhysicalConfigDedicated-DEFAULT

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|-------------------------------------|---------------------|---|
| Information Element | Value/remark | Comment | Condition |
| PhysicalConfigDedicated-DEFAULT ::= SEQUENCE { pdsch-ConfigDedicated | PDSCH-ConfigDedicated-DEFAULT | See subclause 4.6.3 | SRB1 or HO-TO-EUTRA or PSCell_Mod or PSCell_Add_Split_DRB or PSCell_Add_SCG_DRB |
| | Not present | | RBC or RBC-HO or SCell_AddMod |
| pucch-ConfigDedicated | PUCCH-ConfigDedicated-DEFAULT | See subclause 4.6.3 | SRB1 and not (CE Mode A or CE Mode B)) or RBC-HO or HO-TO-EUTRA or PSCell_Mod or PSCell_Add_Split_DRB or PSCell_Add_SCG_DRB |
| | Not present | | RBC or SCell_AddMod or CEmodeA or CEmodeB |
| pusch-ConfigDedicated | PUSCH-ConfigDedicated-DEFAULT | See subclause 4.6.3 | SRB1 or HO-TO-EUTRA or PSCell_Mod or PSCell_Add_Split_DRB or PSCell_Add_SCG_DRB |
| | Not present | | RBC or RBC-HO or SCell_AddMod |
| uplinkPowerControlDedicated | UplinkPowerControlDedicated-DEFAULT | See subclause 4.6.3 | SRB1 or HO-TO-EUTRA or PSCell_Mod or PSCell_Add_Split_DRB or PSCell_Add_SCG_DRB |
| | Not present | | RBC or RBC-HO or SCell_AddMod |

| | | | |
|--------------------------------------|---|-----------------------|--|
| tpc-PDCCH-ConfigPUCCH | Not present | | SRB1 or SCell_AddMod |
| | TPC-PDCCH-Config-DEFAULT using condition PUCCH | See subclause 4.6.3 | RBC or RBC-HO or HO-TO-EUTRA or PSCell_Mod or PSCell_Add_Split_DRB or PSCell_Add_SCG_DRB |
| tpc-PDCCH-ConfigPUSCH | Not present | | SRB1 SCell_AddMod |
| | TPC-PDCCH-Config-DEFAULT using condition PUSCH | See subclause 4.6.3 | RBC or RBC-HO or HO-TO-EUTRA or PSCell_Mod or PSCell_Add_Split_DRB or PSCell_Add_SCG_DRB |
| cqi-ReportConfig | CQI-ReportConfig-DEFAULT | See subclause 4.6.3 | SRB1 or HO-TO-EUTRA or PSCell_Mod or PSCell_Add_Split_DRB or PSCell_Add_SCG_DRB |
| | CQI-ReportConfig-DEFAULT using condition CQI_PERIODIC | See subclause 4.6.3 | (RBC or RBC-HO) and not RBC-HO-CA |
| | Not present | | CA HalfDuplex |
| soundingRS-UL-ConfigDedicated | Not present | | SRB1 or HO-TO-EUTRA SCell_AddMod PSCell_Add Mod HalfDuplex |
| | SoundingRS-UL-ConfigDedicated-DEFAULT | See subclause 4.6.3 | RBC or RBC-HO |
| antennaInfo CHOICE { | | | |
| explicitValue SEQUENCE { | | | 2TX or 4TX |
| transmissionMode | tm3 | | |
| codebookSubsetRestriction CHOICE { | | | |
| n2TxAntenna-tm3 | '11' | BIT STRING (SIZE (2)) | 2TX |
| n4TxAntenna-tm3 | '1111' | BIT STRING (SIZE (4)) | 4TX |
| } | | | |
| ue-TransmitAntennaSelection CHOICE { | | | |
| Release | NULL | | |
| } | | | |
| } | | | |

| | | | |
|--|---|---------------------|---|
| defaultValue | NULL | | |
| } | | | |
| schedulingRequestConfig | SchedulingRequest-Config-DEFAULT | See subclause 4.6.3 | SRB1 or RBC-H or HO-TO-EUTRA |
| | Not present | | RBC SCell_AddMod or PSCell_AddMod |
| cqi-ReportConfig-v920 | Not present | | |
| antennaInfo-v920 | Not present | | |
| antennaInfo-r10 | Not present | | |
| antennaInfoUL-r10 | Not present | | |
| cif-Presence-r10 | FALSE | | SCell_AddMod |
| | Not present | | |
| cqi-ReportConfig-r10 | CQI-ReportConfig-r10-DEFAULT | | SCell_AddMod or RBC-HO-CA |
| | Not present | | |
| csi-RS-Config-r10 | Not present | | |
| pucch-ConfigDedicated-v1020 | PUCCH-ConfigDedicated-v1020-DEFAULT | | SCell_AddMod |
| pusch-ConfigDedicated-v1020 | Not present | | |
| schedulingRequestConfig-v1020 | Not present | | |
| soundingRS-UL-ConfigDedicated-v1020 | Not present | | |
| soundingRS-UL-ConfigDedicatedAperiodic-r10 | Not present | | |
| uplinkPowerControlDedicated-v1020 | UplinkPowerControlDedicated-v1020-DEFAULT | | SCell_AddMod and (TxD or SRSAP) |
| | Not present | | |
| additionalSpectrumEmissionCA-r10 | Not present | | |
| additionalSpectrumEmissionCA-r10 | Not present | | SCell_AddMod and Intra-BC CA |
| additionalSpectrumEmissionCA-r10 CHOICE { | | | SCell_AddMod and Inter-B CA and UL CA |
| setup SEQUENCE { | | | |
| additionalSpectrumEmissionPCell-r10 | Not present | | |
| } | | | |
| } | | | |
| epdcch-Config-r11 | EPDCCH-Config-r11-DEFAULT | | ePDCCH or (Not(RBC) and (CE Mode A or CE Mode B)) |
| | Not present | | |
| csi-RS-ConfigNZPToReleaseList-r11 | Not present | | |
| csi-RS-ConfigNZPToAddModList-r11 | Not present | | |
| csi-RS-ConfigNZPToAddModList-r11 SEQUENCE (SIZE (1..maxCSI-RS-NZP-r11)) OF { | 1 entry | | DL_CoMP |
| CSI-RS-ConfigNZP-r11[1] | CSI-RS-ConfigNZP-r11-DEFAULT | | |
| } | | | |
| csi-RS-ConfigZPToReleaseList-r11 | Not present | | |
| csi-RS-ConfigZPToAddModList-r11 | Not present | | |
| csi-RS-ConfigZPToAddModList-r11 SEQUENCE (SIZE (1..maxCSI-RS-ZP-r11)) OF { | 1 entry | | DL_CoMP |
| CSI-RS-ConfigZP-r11[1] | CSI-RS-ConfigZP-r11-DEFAULT | | |
| } | | | |

| | | | |
|--|---|--|------------------------------------|
| pdsch-ConfigDedicated-v1130 | PDSCH-ConfigDedicated-v1130-DEFAULT | | DL_CoMP |
| | Not present | | |
| cqi-ReportConfig-v1130 | CQI-ReportConfig-v1130-DEFAULT | | DL_CoMP |
| | Not present | | |
| pusch-EnhancementsConfig-r14 | PUSCH-EnhancementsConfig-r14-DEFAULT | | eVoLTE |
| | Not present | | |
| pucch-ConfigDedicated-v1130 | PUCCH-ConfigDedicated-v1130-DEFAULT | | UL_CoMP |
| | Not present | | |
| pusch-ConfigDedicated-v1130 | PUSCH-ConfigDedicated-v1130-DEFAULT | | UL_CoMP |
| | Not present | | |
| uplinkPowerControlDedicated-v1130 | UplinkPowerControlDedicated-v1130-DEFAULT | | UL_CoMP |
| | Not present | | |
| cqi-ReportConfigPCell-v1250 | CQI-ReportConfig-v1250-DEFAULT | | DL 256QAM |
| | Not present | | |
| uplinkPowerControlDedicated-v1250 | Not present | | |
| pusch-ConfigDedicated-v1250 | Not present | | |
| csi-RS-Config-v1250 | Not present | | |
| pdsch-ConfigDedicated-v1280 | Not present | | |
| pdsch-ConfigDedicated-v1310 | Not present | | |
| pucch-ConfigDedicated-r13 | Not present | | |
| | PUCCH-ConfigDedicated-r13-DEFAULT | | Not (RBC) and (CEmodeA or CemodeB) |
| pusch-ConfigDedicated-r13 | Not present | | |
| pdccch-CandidateReductions-r13 | Not present | | |
| cqi-ReportConfig-v1310 | Not present | | |
| soundingRS-UL-ConfigDedicated-v1310 | Not present | | |
| soundingRS-UL-ConfigDedicatedUpPTsExt-r13 | Not present | | |
| soundingRS-UL-ConfigDedicatedAperiodic-v1310 | Not present | | |
| soundingRS-UL-ConfigDedicatedAperiodicUpPTsExt-r13 | Not present | | |
| csi-RS-Config-v1310 | Not present | | |
| ce-Mode-r13 CHOICE { | Not present | | |
| ce-Mode-r13 CHOICE { | | | Not (RBC) and (CEmodeA OR CemodeB) |
| Setup | ce-ModeA | | CEmodeA |
| setup | ce-ModeB | | CEmodeB |
| } | | | |
| physicalConfigDedicatedSTTI-r15 | Not present | | |
| physicalConfigDedicatedSTTI-r15 CHOICE { | | | Short-TTI |
| setup SEQUENCE{ | | | |
| antennaInfoDedicatedSTTI-r15 CHOICE { | | | |
| setup SEQUENCE{ | | | |
| transmissionModeDL-MBSFN-r15 | tm9 | | |
| transmissionModeDL-nonMBSFN-r15 | tm9 | | |
| maxLayersMIMO-STTI-r15 | fourLayers | | |
| slotSubslotPDSCH-TxDiv-2Layer-r15 | Not present | | |
| slotSubslotPDSCH-TxDiv-4Layer-r15 | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| antennaInfoUL-STTI-r15 SEQUENCE { | | | |

| | | | |
|---|---|--|-----------|
| transmissionModeUL-STTI-r15 | tm1 | | |
| } | | | |
| pucch-ConfigDedicated-v1530 | Not present | | |
| schedulingRequestConfig-v1530 | Not present | | |
| uplinkPowerControlDedicatedSTTI-r15 SEQUENCE{ | | | |
| accumulationEnabledSTTI-r15 | TRUE | | |
| uplinkPower-CSIPayload | FALSE | | |
| } | | | |
| semiOpenLoopSTTI-r15 | Not present | | |
| slotOrSubslotPDSCH-Config-r15 | SlotOrSubslotPDSCH-Config-r15-DEFAULT | | |
| slotOrSubslotPUSCH-Config-r15 | SlotOrSubslotPUSCH-Config-r15-DEFAULT | | |
| spdcch-Config-r15 | SPDCCH-Config-r15-DEFAULT | | |
| spucch-Config-r15 | SPUCCH-Config-r15-DEFAULT | | |
| srs-DCI7-TriggeringConfig-r15 | Not present | | |
| shortProcessingTime-r15 | Not present | | |
| shortTTI-r15 SEQUENCE{ | | | |
| dl-STTI-Length-r15 | slot | | |
| ul-STTI-Length-r15 | slot | | |
| } | | | |
| } | | | |
| uplinkPowerControlDedicated-v1530 | Not present | | |
| uplinkPowerControlDedicated-v1530 | UplinkPowerControlDedicated-v1530-DEFAULT | | Aerial UE |
| } | | | |

Note: For signalling test, table 6.6B.1.1.1-1 is applied.

| Condition | Explanation |
|----------------------|---|
| SRB1 | Used at configuration of SRB1 during RRC connection (re-)establishment |
| RBC | Used at configuration of a radio bearer combination during SRB2+DRB establishment |
| 2TX | Used for cells with two antenna ports |
| 4TX | Used for cells with four antenna ports |
| RBC-HO | Used during Handover |
| RBC-HO-CA | Used during Handover when Carrier Aggregation is configured for the source cells |
| SCell_AddMod | Addition or modification of SCell |
| HO-TO-EUTRA | Inter-RAT handover to E-UTRA |
| ePDCCH | Used at configuration of ePDCCH |
| DL_CoMP | Used for DL CoMP |
| UL_CoMP | Used for UL CoMP |
| CA | For Carrier Aggregation Test cases |
| TxD | When PUCCH Transmission Diversity is performed. |
| SRSap | Aperiodic SRS configured |
| Intra-BC CA | Intra-band contiguous Carrier Aggregation |
| Inter-B CA | Inter-band Carrier Aggregation |
| UL CA | When UL Carrier Aggregation is used. |
| PSCell_Mod | Modification of PSCell |
| PSCell_Add_Split_DRB | Add PSCell(s) and setup of Split DRB |
| PSCell_Add_SCG_DRB | Add PSCell(s) and setup of SCG DRB |
| CEmodeA | Used for CE mode A testing |
| CEmodeB | Used for CE mode B testing |
| HalfDuplex | Used during Type B HalfDuplexOperation |
| DL 256QAM | When DL 256QAM is used |
| eVoLTE | When VoLTE enhancement is used. |
| Aerial UE | For Aerial vehicles |
| Short-TTI | When short TTI is used |

Table 4.8.2.1.6-1A: PhysicalConfigDedicated-eIMTA

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|---|-----------------------|-------------------------------------|
| Information Element | Value/remark | Comment | Condition |
| PhysicalConfigDedicated-eIMTA ::= SEQUENCE { | | | |
| pdsch-ConfigDedicated | PDSCH-ConfigDedicated-DEFAULT | See subclause 4.6.3 | SRB1 or HO-TO-EUTRA |
| | Not present | | RBC or RBC-HO SCell_AddMod |
| pucch-ConfigDedicated | PUCCH-ConfigDedicated-DEFAULT | See subclause 4.6.3 | SRB1 or RBC-HO or HO-TO-EUTRA |
| | Not present | | RBC SCell_AddMod |
| pusch-ConfigDedicated | PUSCH-ConfigDedicated-DEFAULT | See subclause 4.6.3 | SRB1 or HO-TO-EUTRA |
| | Not present | | RBC or RBC-HO SCell_AddMod |
| uplinkPowerControlDedicated | UplinkPowerControlDedicated-DEFAULT | See subclause 4.6.3 | SRB1 or HO-TO-EUTRA |
| | Not present | | RBC or RBC-HO SCell_AddMod |
| tpc-PDCCH-ConfigPUCCH | Not present | | SRB1 SCell_AddMod |
| | TPC-PDCCH-Config-DEFAULT using condition PUCCH | See subclause 4.6.3 | RBC or RBC-HO or HO-TO-EUTRA |
| tpc-PDCCH-ConfigPUSCH | Not present | | SRB1 SCell_AddMod |
| | TPC-PDCCH-Config-DEFAULT using condition PUSCH | See subclause 4.6.3 | RBC or RBC-HO or HO-TO-EUTRA |
| cqi-ReportConfig | CQI-ReportConfig-DEFAULT | See subclause 4.6.3 | SRB1 or HO-TO-EUTRA |
| | CQI-ReportConfig-DEFAULT using condition CQI_PERIODIC | See subclause 4.6.3 | RBC or RBC-HO |
| | Not present | | CA |
| soundingRS-UL-ConfigDedicated | Not present | | SRB1 or HO-TO-EUTRA SCell_AddMod |
| | SoundingRS-UL-ConfigDedicated-DEFAULT | See subclause 4.6.3 | RBC or RBC-HO |
| antennaInfo CHOICE { | | | |
| explicitValue SEQUENCE { | | | 2TX |
| transmissionMode | tm3 | | |
| codebookSubsetRestriction CHOICE { | | | |
| n2TxAntenna-tm3 | '11' | BIT STRING (SIZE (2)) | |

| | | | |
|--|---|---------------------|---------------------------------------|
| } | | | |
| ue-TransmitAntennaSelection CHOICE { | | | |
| Release | NULL | | |
| } | | | |
| defaultValue | NULL | | |
| } | | | |
| schedulingRequestConfig | SchedulingRequest-Config-DEFAULT | See subclause 4.6.3 | SRB1 or RBC-H or HO-TO-EUTRA |
| | Not present | | RBC SCell_AddMod |
| cqi-ReportConfig-v920 | Not present | | |
| antennaInfo-v920 | Not present | | |
| antennaInfo-r10 | Not present | | |
| antennaInfoUL-r10 | Not present | | |
| cif-Presence-r10 | FALSE | | SCell_AddMod |
| | Not present | | |
| cqi-ReportConfig-r10 | CQI-ReportConfig-r10-DEFAULT | | SCell_AddMod |
| | Not present | | |
| csi-RS-Config-r10 | Not present | | |
| pucch-ConfigDedicated-v1020 | PUCCH-ConfigDedicated-v1020-DEFAULT | | SCell_AddMod |
| pusch-ConfigDedicated-v1020 | Not present | | |
| | | | |
| schedulingRequestConfig-v1020 | Not present | | |
| soundingRS-UL-ConfigDedicated-v1020 | Not present | | |
| soundingRS-UL-ConfigDedicatedAperiodic-r10 | Not present | | |
| uplinkPowerControlDedicated-v1020 | UplinkPowerControlDedicated-v1020-DEFAULT | | SCell_AddMod and (TxD or SRSAP) |
| | Not present | | |
| additionalSpectrumEmissionCA-r10 | Not present | | |
| additionalSpectrumEmissionCA-r10 | Not present | | SCell_AddMod and Intra-BC CA |
| additionalSpectrumEmissionCA-r10 CHOICE { | | | SCell_AddMod and Inter-B CA and UL CA |
| setup SEQUENCE { | | | |
| additionalSpectrumEmissionPCell-r10 | 1 (CA_NS_01) | | |
| } | | | |
| } | | | |
| epdcch-Config-r11 | EPDCCH-Config-r11-eIMTA | | ePDCCH |
| | Not present | | |
| csi-RS-ConfigNZPToReleaseList-r11 | Not present | | |
| csi-RS-ConfigNZPToAddModList-r11 | Not present | | |
| csi-RS-ConfigNZPToAddModList-r11 SEQUENCE (SIZE (1..maxCSI-RS-NZP-r11)) OF { | 1 entry | | DL_CoMP |
| CSI-RS-ConfigNZP-r11[1] | CSI-RS-ConfigNZP-r11-DEFAULT | | |
| } | | | |
| csi-RS-ConfigZPToReleaseList-r11 | Not present | | |
| csi-RS-ConfigZPToAddModList-r11 | Not present | | |
| csi-RS-ConfigZPToAddModList-r11 SEQUENCE (SIZE (1..maxCSI-RS-ZP-r11)) OF { | 1 entry | | DL_CoMP |
| CSI-RS-ConfigZP-r11[1] | CSI-RS-ConfigZP-r11-DEFAULT | | |

| | | | |
|-----------------------------------|---|--|---------|
| } | | | |
| pdsch-ConfigDedicated-v1130 | PDSCH-ConfigDedicated-v1130-DEFAULT | | DL_CoMP |
| | Not present | | |
| cqi-ReportConfig-v1130 | CQI-ReportConfig-v1130-eIMTA | | DL_CoMP |
| | Not present | | |
| pucch-ConfigDedicated-v1130 | PUCCH-ConfigDedicated-v1130-DEFAULT | | UL_CoMP |
| | Not present | | |
| pusch-ConfigDedicated-v1130 | PUSCH-ConfigDedicated-v1130-DEFAULT | | UL_CoMP |
| | Not present | | |
| uplinkPowerControlDedicated-v1130 | UplinkPowerControlDedicated-v1130-DEFAULT | | UL_CoMP |
| | Not present | | |
| antennaInfo-v1250 | Not present | | |
| eimta-MainConfig-r12 | EIMTA-MainConfig-r12-DEFAULT | | eIMTA |
| | Not present | | |
| eimta-MainConfigPCell-r12 | EIMTA-MainConfigServCell-r12-DEFAULT | | eIMTA |
| | Not present | | |
| pucch-ConfigDedicated-v1250 | PUCCH-ConfigDedicated-v1250-DEFAULT | | eIMTA |
| | Not present | | |
| cqi-ReportConfigPCell-v1250 | CQI-ReportConfig-v1250-DEFAULT | | eIMTA |
| | Not present | | |
| uplinkPowerControlDedicated-v1250 | UplinkPowerControlDedicated-v1250-DEFAULT | | eIMTA |
| | Not present | | |
| pusch-ConfigDedicated-v1250 | PUSCH-ConfigDedicated-v1250-DEFAULT | | eIMTA |
| | Not present | | |
| csi-RS-Config-v1250 | Not present | | |
| } | | | |

| Condition | Explanation |
|--------------|---|
| SRB1 | Used at configuration of SRB1 during RRC connection (re-)establishment |
| RBC | Used at configuration of a radio bearer combination during SRB2+DRB establishment |
| 2TX | Used for cells with two antenna ports |
| RBC-HO | Used during Handover |
| RBC-HO-CA | Used during Handover when Carrier Aggregation is configured for the source cells |
| SCell_AddMod | Addition or modification of SCell |
| HO-TO-EUTRA | Inter-RAT handover to E-UTRA |
| ePDCCH | Used at configuration of ePDCCH |
| DL_CoMP | Used for DL CoMP |
| UL_CoMP | Used for UL CoMP |
| CA | For Carrier Aggregation Test cases |
| TxD | When PUCCH Transmission Diversity is performed. |
| SRSap | Aperiodic SRS configured |
| Intra-BC CA | Intra-band contiguous Carrier Aggregation |
| Inter-B CA | Inter-band Carrier Aggregation |
| UL CA | When UL Carrier Aggregation is used. |
| eIMTA | eIMTA cell environment |

4.8.2.1.7 DRB configurations

Table 4.8.2.1.7-1: DRB-ToAddMod-DEFAULT(bid)

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|---|-----------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| DRB-ToAddMod-DEFAULT(bid) ::= SEQUENCE { | | bid is the bearer identity (1..8) | |
| eps-BearerIdentity | bid+4 | | |
| drb-Identity | bid | | |
| pdcp-Config | PDCP-Config-DRB-AM | | AM |
| | PDCP-Config-DRB-UM | | UM |
| rlc-Config | RLC-Config-DRB-AM | | AM |
| | RLC-Config-DRB-UM | | UM |
| logicalChannelIdentity | bid+2 | | |
| logicalChannelConfig | LogicalChannelConfig-DRB using condition LO | | UM |
| | LogicalChannelConfig-DRB using condition HI | | AM |
| } | | | |

| Condition | Explanation |
|-----------|-----------------|
| AM | Used for AM DRB |
| UM | Used for UM DRB |

Table 4.8.2.1.7-2: DRB-ToAddMod-EN-DC-Split

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| DRB-ToAddMod-EN-DC-Split ::= SEQUENCE { | | | |
| eps-BearerIdentity | 6 | | |
| drb-Identity | 2 | | |
| pdcp-Config | Not present | | |
| rlc-Config | RLC-Config-DRB-AM | | |
| logicalChannelIdentity | Not present | | |
| logicalChannelConfig | LogicalChannelConfig-DRB using condition HI | | |
| } | | | |

4.8.2.2 SRB and DRB combinations

4.8.2.2.1 Combinations on DL-SCH and UL-SCH

4.8.2.2.1.1 SRB1 and SRB2 for DCCH + n x AM DRB + m x UM DRB, where n=1..N and m=0..M

This SRB and DRB combination is setup with UE Registration procedure and the Generic Radio Bearer Establishment or Generic Radio Bearer Establishment, UE Test Mode Activated procedure using specific message content - the default *RRCCONNECTIONRECONFIGURATION* message with condition SRB2-DRB(n, m).

4.8.3 UTRA reference radio parameters and combinations

Table 4.8.3-1 defines UTRA reference radio parameters and combinations to be used in E-UTRA and UTRA inter-RAT test cases.

Table 4.8.3-1: UTRA reference radio parameters and combinations

| Condition | Reference configuration | Comment |
|---------------------|-----------------------------------|--|
| UTRA Speech | TS 34.108 subclause 6.10.2.4.1.4 | Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH |
| UTRA FDD PS RB | TS 34.108 subclause 6.10.2.4.1.26 | Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH |
| UTRA HSDPA RB | TS 34.108 subclause 6.10.2.4.5.1 | Interactive or background / UL:64 DL: [max bit rate depending on UE category] / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH |
| UTRA HSUPA/HSDPA RB | TS 34.108 subclause 6.10.2.4.6.3 | Streaming or interactive or background / UL: [max bit rate depending on UE category and TTI] DL: [max bit rate depending on UE category] / PS RAB + UL: [max bit rate depending on UE category and TTI] DL: [max bit rate depending on UE category] SRBs for DCCH on E-DCH and HS-DSCH |
| UTRA PS RB + Speech | TS 34.108 subclause 6.10.2.4.1.40 | Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB+ UL:3.4 DL: 3.4 kbps SRBs for DCCH |

4.8.4 GERAN reference PDP context parameters

Table 4.8.4-1 defines GERAN reference PDP context parameters to be used in E-UTRA and GERAN inter-RAT test cases.

Table 4.8.4-1: GERAN reference PDP context parameters

| Condition | Reference configuration | Comment |
|-----------|--|---|
| GPRS | TS 51.010-1 subclause 40.5, Test PDP context3. | Test PDP context3 is the default Test PDP context which is used in the GERAN Inter-RAT GPRS test cases where no particular Test PDP contexts are specified. Compression is always turned off if nothing else is stated explicitly in the test case. |

4.9 Common test USIM, CSIM and ISIM parameters

This clause defines default parameters for programming the elementary files of the test UICC when running conformance test cases defined in 3GPP TS 36.523-1[18].

4.9.1 General

See clause 8.1 in 3GPP TS 34.108 [5].

4.9.1.1 Definitions

See clause 8.1.1 in 3GPP TS 34.108 [5].

4.9.1.2 Definition of the test algorithm for authentication

Same as clause 8.1.2 in 3GPP TS 34.108[5].

4.9.1.2.1 Authentication and key derivation in the test USIM, CSIM and ISIM and SS

UE and SS calculate Ck, Ik, AUTN, RES[XRES] as in clause 8.1.2.1 in 3GPP TS 34.108 [5]. Derivation of K_{ASME} and other E-UTRA Keys shall be as defined in Annex A of 3GPP TS 33.401 [31], using Key derivation function HMAC-SHA-256 algorithm.

4.9.1.2.2 Generation of re-synchronization parameters in the USIM, CSIM and ISIM

Same as clause 8.1.2.1 in 3GPP TS 34.108[5].

4.9.1.2.3 Using the authentication test algorithm for UE conformance testing

See clause 8.1.2.3 in 3GPP TS 34.108 [5].

4.9.2 Default parameters for the test USIM, CSIM and ISIM

Same as clause 8.2 in 3GPP TS 34.108 [5].

4.9.3 Default settings for the Elementary Files (EFs)

The format and coding of elementary files of the USIM are defined in 3GPP TS 31.101 [32] and 3GPP TS 31.102 [33]. Those of the ISIM are defined in 3GPP TS 31.101 [32] and 3GPP TS 31.103 [45]. Those of the CSIM are defined in 3GPP2 C.S0065-B [48].

The settings of the elementary files at the MF and USIM ADF (Application DF) level resp. the ISIM ADF (Application DF) level are the same as section 8.3 in 3GPP TS 34.108 [5] resp. section 4.2 in 3GPP TS 34.229-1 Annex E [46] and 3GPP TS 34.229-3 Annex B.1 [47] with the exceptions listed below. The settings of the elementary files at the CSIM ADF (Application DF) level as specified below. Note that some files may be updated by the UE based on information received from the SS.

4.9.3.1 Modified contents of the USIM Elementary Files and additional USIM Elements files at the DF ProSe level

EF_{AD} (Administrative Data)

- Additional information:

Byte 3 (second byte of additional information):

b3 is used to indicate whether the USIM enables the Public Safety UE to use the ME provisioning parameters for Public Safety usage, in the cases described in TS 24.334 [57].

- b3=1: the ME is authorized to use the parameters stored in the USIM or in the ME for ProSe services for Public Safety usage, as described in TS 24.334 [57] without contacting the ProSe Function.

EF_{EPSLOC} (EPS location information)

File size: 18 Bytes

Default values: Bytes 1 to 12 (HEX): FF FF FF FF FF FF FF FF FF FF FF FF (GUTI)

Bytes 13 to 17 (HEX): 42 F6 18 FF FE (Last visited registered TAI)

Byte 18 (BIN): 00000001 (EPS update status = "not updated")

Bytes 13 to 17: TAI-MCC = 246 (bytes 13 to 14) and TAI-MNC = 81 (byte 15) are frequently used. The TAC (bytes 16 to 17) is set to "FF FE" since this, in conjunction with byte 18 setting of "01", is used to ensure that the UE performs Attach at the beginning of a test.

Bytes in this file (e.g. GUTI in bytes 1 to 12) may be updated as a result of a tracking area update attempt by the UE.

EF_{EPSNSC} (EPS NAS Security Context)

The programming of this EF follows default parameter written in 3GPP TS 31.102 [23], annex E.

EF_{NASCONFIG} (Non Access Stratum Configuration)

File size: 28 Bytes

Default values: Bytes 1 to 28 (HEX): FF FF ... FF

The programming of this EF follows the specific USIM requirements given in 3GPP TS 36.523-1 [18].

EF_{UST} (USIM Service Table):

| Services | | Activated | Version |
|--|-------|-----------|---------|
| Service n°101 | ProSe | Optional | |
| Note: Only ProSe related services indicated. | | | |

EF_{PROSE_ANN} (ProSe Announcing Parameters)

If service n°1 is "available" in the ProSe Service Table (EF_{PST}), this file shall be present.

Two PLMNs are authorised for restricted ProSe direct discovery for public safety. Consequently two records associated with each different PLMN are provided.

PLMN1

File size: 7 Bytes

Default values: Bytes 1 to 7 (HEX): A0 05 80 03 00 F1 10

The PLMN code of the operator in which the UE is authorized to use restricted ProSe direct discovery announcing for public safety consists of MCC = 001 and MNC = 01. An authorized announcing range is not specified.

PLMN2

File size: 7 Bytes

Default values: Bytes 1 to 7 (HEX): A0 07 80 03 00 F1 10

The PLMN code of the operator in which the UE is authorized to use restricted ProSe direct discovery announcing for public safety consists of MCC = 001 and MNC = 02. An authorized announcing range is not specified.

Model Tag '82'

Coding: Value = '03' (the UE is authorised for Restricted Model A announcing policy and for Restricted Model B discoverer policy)

EF_{PROSE_MON} (ProSe Monitoring Parameters)

If service n°1 is "available" in the ProSe Service Table (EF_{PST}), this file shall be present.

Two PLMNs are authorised for restricted ProSe direct discovery monitoring for public safety. Consequently two records associated with each different PLMN are provided.

PLMN1

File size: 7 Bytes

Default values: Bytes 1 to 7 (HEX): A0 05 80 03 00 F1 10

The PLMN code of the operator in which the UE is authorized to use restricted ProSe direct discovery monitoring for public safety consists of MCC = 001 and MNC = 01.

PLMN2

File size: 7 Bytes

Default values: Bytes 1 to 7 (HEX): A0 07 80 03 00 F1 10

The PLMN code of the operator in which the UE is authorized to use ProSe direct discovery monitoring for public safety consists of MCC = 001 and MNC = 02.

Model Tag '82'

Coding: Value = '03' (the UE is authorised for Restricted Model A monitoring policy and for Restricted Model B discoveree policy)

EF_{PROSEFUNC} (HPLMN ProSe Function)

If service n°2 is "available" in the ProSe Service Table (EF_{PST}), this file shall be present.

File size: 7 Bytes

Default values: Bytes 1 to 7 (HEX): 80 05 01 AC 16 02 67

The type of the HPLMN ProSe Function address is set to IPv4 and the address equals the IP address of the Internet PDN (= 172.22.2.103).

EF_{PROSE_RADIO_COM} (ProSe Direct Communication Radio Parameters)

If service n°3 is "available" in the ProSe Service Table (EF_{PST}), this file shall be present.

This EF contains the radio parameters to be used for ProSe direct communication for public safety when the UE is not served by E-UTRAN, as described in TS 24.334 [57].

File size: 100 Bytes

Default values: Bytes 1 to 12 (HEX): A0 FF 80 12 32 D9 4A 63 55 A3 32
 Bytes 13 to 24 (HEX): D2 D1 63 55 A3 32 D6 0D 63 59 47
 Bytes 25 to 36 (HEX): 81 25 00 13 1D DE 02 00 00 00 04 29
 Bytes 37 to 48 (HEX): 50 00 00 03 00 18 00 28 C0 00 00 00
 Bytes 48 to 60 (HEX): 03 F0 60 03 00 05 00 FF FF 00 00 00
 Bytes 61 to 72 (HEX): 1F 84 80 12 B2 D9 4A 63 55 A3 B2 D2
 Bytes 73 to 84 (HEX): D1 63 55 A3 B2 D6 0D 63 59 47 81 25
 Bytes 85 to 96 (HEX): 00 13 1D DE 02 00 00 00 04 29 50 00
 Bytes 97 to 108 (HEX): 00 03 00 18 00 28 30 00 00 00 03 F0
 Bytes 109 to 120 (HEX): 60 03 00 05 00 00 00 FF FF 00 00 1F
 Bytes 121 to 122 (HEX): 84

High level requirements

ProSe Direct Communication not served by E-UTRAN:

- Coding: Value = '03'; indicates that UE is authorised to perform one-to-many and one-to-one ProSe direct communication when not served by E-UTRAN

ProSe Radio parameters information:

First data object:

Geographical Area - Polygon Tag '80'

Point 1

Degrees of latitude: 35.753056

Degrees of longitude: 139.689167

Point 2

Degrees of latitude: 35.735278

Degrees of longitude: 139.689167

Point 3

Degrees of latitude: 35.744167

Degrees of longitude: 139.709167

Radio parameters Tag '81' (First data object)

Coded as *SL-Preconfiguration* in Table 6.8.1.1-1 condition SLCONF1 using Band 3 and 5MHz bandwidth as example.

Second data object:

Geographical Area - Polygon Tag '80'

Point 1

Degrees of latitude: -35.753056

Degrees of longitude: 139.689167

Point 2

Degrees of latitude: -35.735278

Degrees of longitude: 139.689167

Point 3

Degrees of latitude: -35.744167

Degrees of longitude: 139.669167

Radio parameters Tag '81' (First data object)

Coded as *SL-Preconfiguration* in Table 6.8.1.1-1 condition SLCONF2 using Band 3 and 5MHz bandwidth as example.

EF_{PROSE_RADIO_MON} (ProSe Direct Discovery Monitoring Radio Parameters)

If service n°4 is "available" in the ProSe Service Table (EF_{PST}), this file shall be present.

This EF contains the radio parameters to be used for ProSe direct communication for public safety when the UE is not served by E-UTRAN, as described in TS 24.334 [57].

High level requirements

ProSe Direct Discovery monitoring not served by E-UTRAN:

- Coding: Value = '03'; indicates that UE is authorised to perform ProSe direct discovery model A monitoring and ProSe direct discovery model B discoveree operation when not served by E-UTRAN

ProSe Radio parameters information same as the one in EF_{PROSE_RADIO_COM}

EF_{PROSE_RADIO_ANN} (ProSe Direct Discovery Announcing Radio Parameters)

If service n°5 is "available" in the ProSe Service Table (EF_{PST}), this file shall be present.

This EF contains the radio parameters to be used for ProSe direct communication for public safety when the UE is not served by E-UTRAN, as described in TS 24.334 [57].

High level requirements

ProSe Direct Discovery monitoring not served by E-UTRAN:

- Coding: Value = '03'; indicates that UE is authorised to perform ProSe direct discovery model A announcing and ProSe direct discovery model B discoverer operation when not served by E-UTRAN

ProSe Radio parameters information same as the one in EF_{PROSE_RADIO_COM}EF_{PROSE_POLICY} (ProSe Policy Parameters)

If service n°6 is "available" in the ProSe Service Table (EF_{PST}), this file shall be present.

This EF contains the policy parameters to be used for ProSe direct communication for public safety, as described in TS 24.334 [57].

File size: 63 Bytes

Default values: Bytes 1 to 12 (HEX): A0 3D 80 03 00 00 01 81 03 00 00 01
 Bytes 13 to 24 (HEX): 82 04 E0 00 00 02 83 01 01 84 04 AC
 Bytes 25 to 36 (HEX): 16 02 68 85 22 00 00 00 00 00 00
 Bytes 37 to 48 (HEX): 00 00 00 00 00 00 00 00 00 00 00
 Bytes 49 to 60 (HEX): 00 00 00 00 00 00 00 00 00 00 00
 Bytes 61 to 63 (HEX): 02 01 10

The value of the ProSe Layer-2 Group ID is 1.

The value of ProSe UE ID is 2.

The value of ProSe Group IP multicast address is 224.0.0.1

Address type value is '01' (indicates IPv4)

The IPv4 address of the source, i.e. Device Under Test is 172.22.2.104.

For the Group related security. The value of PGK is 2, the value of PGK Id is 1, and, the algorithm is 128-EEA1.

EF_{PROSE_PLMN} (ProSe PLMN Parameters)

If service n°3 is "available" in the ProSe Service Table (EF_{PST}), this file shall be present.

Specifies the PLMNs in which the UE is authorised to perform ProSe direct communication when served by E-UTRAN.

Two PLMNs are authorised for ProSe direct communication. Consequently two records associated with each different PLMN are provided.

PLMN1

File size: 7 Bytes

Default values: Bytes 1 to 7 (HEX): A0 05 80 03 00 F1 10

The PLMN code of the operator in which the UE is authorized to use ProSe direct communication consists of MCC = 001 and MNC = 01.

PLMN2

File size: 7 Bytes

Default values: Bytes 1 to 7 (HEX): A0 07 80 03 00 F1 10

The PLMN code of the operator in which the UE is authorized to use ProSe direct communication consists of MCC = 001 and MNC = 02.

EF_{PROSE_GC} (ProSe Group Counter)

If service n°7 is "available" in the ProSe Service Table (EF_{PST}), this file shall be present.

File size: 10 Bytes

Default values: Bytes 1 to 9 (HEX): 80 07 00 00 01 00 02 00 03

The value of the ProSe Layer-2 Group ID is 1.

The value of PTK ID is 2.

The Counter for the PGK used in the group is 3.

EF_{PST} (ProSe Service Table)

If service n°101 is "available" in the ProSe Service Table (EF_{UST}), this file shall be present.

File size: 2 Bytes

Default values: Bytes 1 to 2 (HEX): 24 00

This translates to:

| Services | | Activated | Version |
|---|---|-------------------|----------------|
| Service n°1: | ProSe direct discovery parameters | Optional | |
| Service n°2: | HPLMN ProSe Function | Optional | |
| Service n°3: | ProSe Direct Communication radio parameters | Optional | |
| Service n°4: | ProSe Direct Discovery monitoring radio parameters | Optional | |
| Service n°5: | ProSe Direct Discovery announcing radio parameters | Optional | |
| Service n°6: | ProSe policy parameters | Optional | |
| Service n°7: | ProSe group counter | Optional | |
| Service n°8: | ProSe Usage Information Reporting configuration | Optional (Note 1) | |
| Service n°9: | UICC ProSe Direct Communication usage information reporting | Optional | |
| Service n°10: | ProSe Group Member Discovery parameters | Optional | |
| Service n°11: | ProSe Relay parameters | Optional (Note 2) | |
| Note 1: If service n°9 is "available", then service n°8 shall also be "available". | | | |
| Note 2: If service n°10 is "available", then service n°1 shall also be "available". | | | |

EF_{PROSE_UIRC} (ProSe UsageInformationReportingConfiguration)

If service n°8 is "available" in the ProSe Service Table (EF_{PST}), this file shall be present.

This EF contains the description of the configuration to be used by the UE for reporting the usage information for direct communication for public safety, as described in TS 24.334 [57].

ProSe UsageInformationReportingConfiguration parameters information:

| Description | Value | Comments |
|--|-------|---|
| ProSe ServerAddress | | No server address is provided, the UE shall upload the usage information reports to the IP address of the HPLMN ProSe Function. |
| ProSe CollectionPeriod | 1 | The time interval, in unit of minutes, at which the UE shall generate the usage information reports |
| ProSe ReportingWindow | 5 | The time window, in unit of minutes, during which the UE shall upload the usage information report to the server |
| ProSe ReportGroupParameters | 1 | The UE shall report the group parameters in the usage information |
| ProSe ReportTimeStampsFirstTransmissionAnd Reception | 1 | The UE shall report the time stamps of the first transmission/reception during the collection period in the usage information |
| ProSe ReportDataTransmitted | 3 | The UE shall report the amount of data transmitted during the collection period in the usage information with location information |
| ProSe ReportDataReceived | 3 | The UE shall report the amount of data received during the collection period in the usage information with location information |
| ProSe ReportTimeStampsOutOfCoverage | 1 | The UE shall report the time stamps when it went in and out of E-UTRAN coverage during the collection period in the usage information |
| ProSe ReportLocationInCoverage | 1 | The UE shall report the list of locations of the UE when in E-UTRAN coverage during the collection period in the usage information |
| ProSe ReportRadioParameters | 1 | The UE shall report the radio parameters used for ProSe direct communication (i.e. indicator of which radio resources used and radio frequency used) during the reporting period in the usage information |

EF_{PROSE_GM_DISCOVERY} (ProSe Group Member Discovery Parameters)

If service n°10 is "available" in the ProSe Service Table, this file shall be present.

This EF contains the ProSe discovery parameters for public safety, as described in TS 24.334 [57]. This file shall be used only if the ME is authorized as per content of EFAD or received service authorization from the ProSe Function.

User Info ID = 1. Indicates the user information which is sent by the announcing or discoverer or discoveree UE over the air during Group Member Discovery procedures.

Discovery Group ID = 1. Indicates the group ID of the discovery group that the UE belongs to when group member discovery is performed.

Application Layer Group ID = 1. Indicates the Application Layer Group ID identifying an application layer group that the UE belongs to

EF_{PROSE_RELAY} (ProSe Relay Parameters)

If service n°11 is "available" in the ProSe Service Table, this file shall be present.

This EF contains the authorized PLMNs for ProSe UE-to-network relay for public safety, as described in TS 24.334 [57]. This file shall be used only if the ME is authorized as per content of EFAD or received service authorization from the ProSe Function.

PLMN1

File size: 7 Bytes

Default values: Bytes 1 to 7 (HEX): A0 05 80 03 00 F1 10

Relay type Value = '02' (the UE is not authorised to act as a ProSe UE-to-network relay, and, the UE is authorised to use a ProSe UE-to-network relay).

EF_{PROSE_RELAY_DISCOVERY} (ProSe Relay Discovery Parameters)

If service n°11 is "available" in the ProSe Service Table, this file shall be present.

This EF contains the ProSe direct discovery parameters when it is used for ProSe UE-to-network relay discovery for public safety, as described in TS 24.334 [37]. This file shall be used only if the ME is authorized as per content of EFAD or received service authorization from the ProSe Function.

User Info ID = 1. Indicates the user information which is sent by the announcing or discoverer or discoveree UE over the air during Group Member Discovery procedures.

Remote UE parameters information

Relay Service Code = 1. Indicates the connectivity service that the ProSe UE-to-network relay provides to public safety applications.

User Info ID of Relay = 2. Indicates the user information of the ProSe UE-to-network relay that the remote UE seeks to discover during ProSe UE-to-network relay discovery procedures.

IP Versions '01' (indicates IPv4)

For Security Content. The value of PSDK is 2.

Bitmask of keys = '07' DUSK, DUCK and DUIK are to be used

DUCK encryption bitmask - all bits set to '1'. 184-bit bitmask which uses bit "1" to mark the positions of the bits for which the DUCK encryption is applied

4.9.3.2 Modified contents of the CSIM Elementary Files

EF_{COUNT} (Call Count)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{IMSI_M} (IMSI_M)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{IMSI_T} (IMSI_T)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{TMSI} (TMSI)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{AH} (Analog Home SID)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{AOP} (Analog Operational Parameters)

The programming of this EF is a test house option.

EF_{ALOC} (Analog Location and Registration Indicators)

The programming of this EF is a test house option.

EF_{CDMAHOME} (CDMA Home SID, NID)

Record size: 5 Bytes

Record count:6

Record 1:

Default values: Bytes 1 to 2 (HEX): E8 03 (CDMA Home SID (SIDp): 1000)

Bytes 3 to 4 (HEX): AE 08 (CDMA Home NID (NIDp): 2222)

Bytes 5 (HEX): 00 (Band Class: 0 (800 MHz cellular band))

Record 2:

Default values: Bytes 1 to 2 (HEX): E8 03 (CDMA Home SID (SIDp): 1000)

Bytes 3 to 4 (HEX): AE 08 (CDMA Home NID (NIDp): 2222)

Bytes 5 (HEX): 01 (Band Class: 1 (1.8 to 2.0 GHz PCS band))

Record 3:

Default values: Bytes 1 to 2 (HEX): E8 03 (CDMA Home SID (SIDp): 1000)

Bytes 3 to 4 (HEX): AE 08 (CDMA Home NID (NIDp): 2222)

Bytes 5 (HEX): 03 (Band Class: 3 (832 to 925 MHz JTACS band))

Record 4:

Default values: Bytes 1 to 2 (HEX): E8 03 (CDMA Home SID (SIDp): 1000)

Bytes 3 to 4 (HEX): AE 08 (CDMA Home NID (NIDp): 2222)

Bytes 5 (HEX): 04 (Band Class: 4 (1.75 to 1.87 GHz Korean PCS band))

Record 5:

Default values: Bytes 1 to 2 (HEX): E8 03 (CDMA Home SID (SIDp): 1000)

Bytes 3 to 4 (HEX): AE 08 (CDMA Home NID (NIDp): 2222)

Bytes 5 (HEX): 05 (Band Class: 5 (450 MHz NMT band))

Record 6:

Default values: Bytes 1 to 2 (HEX): E8 03 (CDMA Home SID (SIDp): 1000)

Bytes 3 to 4 (HEX): AE 08 (CDMA Home NID (NIDp): 2222)

Bytes 5 (HEX): 06 (Band Class: 6 (2 GHz IMT-2000 band))

EF_{ZNREGI} (CDMA Zone-Based Registration Indicators)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{SNREGI} (CDMA System-Network Registration Indicators)

The programming of this EF is a test house option.

EF_{DISTREGI} (CDMA Distance-Based Registration Indicators)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{ACCOLC} (Access Overload Class ACCOLCp)

The 4 LSB of this 1 byte file are der-bit access overload class indicator is derived from the last digit of the associated decimal representation of the IMSI_M via decimal to binary conversion.

File size: 1 byte

Default value: Bits 4 to 7 are reserved and set to '0000'. Bits 0 to 3 are derived from the last digit of the associated decimal representation of the IMSI_M via decimal to binary conversion.

EF_{TERM} (Call Termination Mode Preferences)

The programming of this EF is a test house option.

EF_{SSCI} (Suggested Slot Cycle Index)

The programming of this EF is a test house option.

EF_{ACP} (Analog Channel Preferences)

The programming of this EF is a test house option.

EF_{PRL} (Preferred Roaming List)

File size: 18 Bytes

Default values: Bytes 1 to 18 (HEX): 00 12 00 00 00 00 40 01 21 00 02 80 00 50 00 00 6E DB

The interpretation of the default values read as follows:

PRL ID – 0

Preferred only – 0

Default roaming indication – 0

Number of Acquisition Records – 1

Number of system records – 1

EF_{RUIMID} (Removable UIMID)

This EF stores a 32-bit electronic identification number (ID) unique to the CSIM or a 32-bit pseudo-UIMID of the CSIM. It is specified by the CSIM manufacturer.

EF_{CSIM_ST} (CSIM Service Table)

Services will be allocated and activated as follows.

| Services | | Activated | Version |
|---------------|--|-----------|---------|
| Service n°1: | Local Phone Book | Option | |
| Service n°2: | Fixed Dialling Numbers (FDN) | Option | |
| Service n°3: | Extension 2 | Option | |
| Service n°4: | Service Dialling Numbers (SDN) | Option | |
| Service n°5: | Extension3 | Option | |
| Service n°6: | Short Message Storage | Yes | |
| Service n°7: | Short Message Parameters (SMP) | Yes | |
| Service n°8: | HRPD | Yes | |
| Service n°9: | Service Category Program for BC-SMS | Option | |
| Service n°10: | CDMA Home Service Provider Name | Yes | |
| Service n°11: | Data Download via SMS Broadcast (for CCAT) | Option | |
| Service n°12: | Data Download via SMS-PP (for CCAT) | Option | |
| Service n°13: | Call Control (for CCAT) | Option | |
| Service n°14: | 3GPD-SIP | Option | |

| Services | | Activated | Version |
|---------------|---|-----------|---------|
| Service n°15: | 3GPD-MIP | Option | |
| Service n°16: | AKA | Yes | |
| Service n°17: | IP-based Location Services (LCS) | Option | |
| Service n°18: | BCMCS | Option | |
| Service n°19: | Multimedia Messaging Service (MMS) | Option | |
| Service n°20: | Extension 8 | Option | |
| Service n°21: | MMS User Connectivity Parameters | Option | |
| Service n°22: | Application Authentication | Option | |
| Service n°23: | Group Identifier Level 1 | Option | |
| Service n°24: | Group Identifier Level 2 | Option | |
| Service n°25: | De-Personalization Control Keys | Option | |
| Service n°26: | Cooperative Network List | Option | |
| Service n°27: | Outgoing Call Information (OCI) | Option | |
| Service n°28: | Incoming Call Information (ICI) | Option | |
| Service n°29: | Extension 5 | Option | |
| Service n°30: | Multimedia Storage | Option | |
| Service n°31: | Image (EFIMG) | Option | |
| Service n°32: | Enabled Services Table | Yes | |
| Service n°33: | Capability Configuration Parameters (CCP) | Option | |
| Service n°34: | SF_EUIMID-based EUIMID | Option | |
| Service n°35: | Messaging and 3GPD Extensions | Option | |
| Service n°36: | Root Certificates | Option | |
| Service n°37: | WAP Browser | Option | |
| Service n°38: | Java | Option | |
| Service n°39: | Reserved for CDG | No | |
| Service n°40: | Reserved for CDG | No | |
| Service n°41: | IPv6 | Option | |
| Service n°42: | Proactive CSIM (for CCAT) | Option | |

EF_{SPC} (Service Programming Code)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{OTAPASPC} (OTAPA/SPC_Enabled)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{NAMLOCK} (NAM_LOCK)

The programming of this EF is a test house option.

EF_{OTA} (OTASP/OTAPA Features)

The programming of this EF is a test house option.

EF_{SP} (Service Preferences)

The programming of this EF is a test house option.

EF_{ESN_MEID_ME} (ESN_ME or MEID_ME)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{LI} (Language Indication)

The programming of this EF is a test house option.

EF_{FDN} (Fixed Dialling Numbers)

The programming of this EF is a test house option.

EF_{SMS} (Short Messages)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{SMSP} (Short Message Service Parameters)

Record size: 12 Bytes

Record count: 1

Record 1:

Default values: Bytes 1 to 23 (HEX): 00 02 10 02 5D FE FF FF 02 F5 FF FF FF FF FF FF FF
08 03 08 01 C0

The interpretation of the default values in this record read as follows:

Teleservice Identifier: CDMA Cellular Messaging Teleservice [CMT-95]

Parameter Indicators: MSG_ENCODING, Validity Period, Bearer Data

Message Encoding: 7-bit ASCII

Validity Period: Indefinite

Bearer Data:

Priority Indicator: Emergency

EF_{SMSS} (SMS Status)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{SSFC} (Supplementary Services Feature Code Table)

The programming of this EF is a test house option.

EF_{SPN} (CDMA Home Service Provider Name)

File size: 35 Bytes

Default values: Bytes 1 to 35 (HEX): 01 02 01 44 65 66 61 75 6C 74 20 53 65 72 76 69 63 65 20 50 72 6F
76 69 64 65 72 20 4E 61 6D 65 FF FF FF

The interpretation of the default values read as follows:

Display Condition: Display of registered system is required

Character Encoding: 7-bit ASCII

Language Indicator: 1 (English)

Service Provider Name: "Default Service Provider Name"

EF_{USGIND} (UIMID/SF_EUIMID Usage Indicator)

The programming of this EF is a test house option.

EF_{AD} (Administrative Data)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{MDN} (Mobile Directory Number)

The programming of this EF is a test house option.

EF_{MAXPRL} (Maximum PRL)

The programming of this EF is a test house option.

EF_{SPCS} (SPC Status)

If EF_{SPC} is set to default value of '00 00 00', then EF_{SPCS} shall be set to '00', otherwise it shall be set to '01'.

EF_{ECC} (Emergency Call Codes)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{ME3GPDOPC} (ME 3GPD Operation Capability)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{3GPDOPM} (3GPD Operation Mode)

The programming of this EF is a test house option.

EF_{SIPCAP} (SimpleIP Capability Parameters)

The programming of this EF is a test house option.

EF_{MIPCAP} (MobileIP Capability Parameters)

The programming of this EF is a test house option.

EF_{SIPUPP} (SimpleIP User Profile Parameters)

The programming of this EF is a test house option.

EF_{MIPUPP} (MobileIP User Profile Parameters)

The programming of this EF is a test house option.

EF_{SIPSP} (SimpleIP Status Parameters)

The programming of this EF is a test house option.

EF_{MIPSP} (MobileIP Status Parameters)

The programming of this EF is a test house option.

EF_{SIPPAPSS} (SimpleIP PAP SS Parameters)

The programming of this EF is a test house option.

EF_{PUZL} (Preferred User Zone List)

The programming of this EF is a test house option.

EF_{MAXPUZL} (Maximum PUZL)

The programming of this EF is a test house option.

EF_{MECRP} (ME-specific Configuration Request Parameters)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{HRPDCAP} (HRPD Access Authentication Capability Parameters)

File size: 3 Bytes

Default values: Bytes 1 to 3 (HEX): 20 F8 80

The interpretation of the default values read as follows:

Maximum NAI Length: 32

Maximum Length of Shared Secret: 31

Authentication Algorithms: PPP CHAP

EF_{HRPDUAPP} (HRPD Access Authentication User Profile Parameters)

File size: 14 Bytes

Default values: Bytes 1 to 14 (HEX): 0D 0B 61 62 63 40 78 79 7A 2E 63 6F 6D 10

The interpretation of the default values read as follows:

HRPD Profile NAI: "abc@xyz.com"

HRPD Profile Authentication Algorithm: CHAP

EF_{CSSPR} (CUR_SSPP_P_REV)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{ATC} (Access Terminal Class)

The programming of this EF is a test house option.

EF_{EPRL} (Extended Preferred Roaming List)

File size: 129 Bytes

Default values: Bytes 1 to 16 (HEX): 00 81 00 00 03 00 01 80 00 04 00 0A 04 01 64 03

Bytes 17 to 32 (HEX): 0B 0B 04 01 64 03 F5 0A 04 0A 58 08 19 0B 04 0A

Bytes 33 to 48 (HEX): 58 0C 97 0A 02 31 13 0B 02 30 C8 71 C0 02 00 10

Bytes 49 to 64 (HEX): 1F 01 00 C8 FF FF 00 80 00 38 E0 08 00 00 80 00

Bytes 65 to 80 (HEX): 71 E0 12 00 10 1F 01 00 C8 FF FF 00 80 00 38 E0

Bytes 81 to 96 (HEX): 18 00 00 80 00 71 C0 22 00 10 1F 01 00 C8 FF FF

Bytes 97 to 112 (HEX): 00 80 80 38 E0 28 00 00 80 80 71 E0 02 00 10 1F

Bytes 113 to 128 (HEX): 01 00 C8 FF FF 00 80 80 38 E0 08 00 00 80 80 2B

Byte 129 (HEX): 6B

The interpretation of the default values read as follows:

PRL ID – 0

List Type: IS-683D

Preferred only – 0

Default roaming indication – 0

Number of acquisition records – 6

- Index: 0, Type: CDMA Generic, Band: 0, Channel: 356 and 779
- Index: 1, Type: HDR Generic Band: 0, Channel: 356 and 1013
- Index: 2, Type: CDMA Generic, Band: 1, Channel: 600 and 25
- Index: 3, Type: HDR Generic, Band: 1, Channel: 600 and 1175
- Index: 4, Type: CDMA Generic, Band: 6, Channel: 275
- Index: 5, Type: HDR Generic, Band: 6, Channel: 200

Number of records in the Common Subnet Table – 0

Number of system records – 8

- Acquisition Index: 1, Type: IS-856, Roam Indicator: 0, Subnet ID: /0, Association Tag: 0
- Acquisition Index: 3, Type: IS-856, Roam Indicator: 0, Subnet ID: /0, Association Tag: 0
- Acquisition Index: 5, Type: IS-856, Roam Indicator: 0, Subnet ID: /0, Association Tag: 1
- Acquisition Index: 1, Type: IS-856, Roam Indicator: 0, Subnet ID: /0, Association Tag: 1
- Acquisition Index: 0, Type: MCC-MNC-based, Roam Indicator: 0, Subnet ID: MCC-MNC SID/NID, MCC: 001, MNC: 01, SID: 200, NID: 65535100, Association Tag: 0
- Acquisition Index: 2, Type: MCC-MNC-based, Roam Indicator: 0, Subnet ID: MCC-MNC SID/NID, MCC: 001, MNC: 01, SID: 200, NID: 65535100, Association Tag: 0
- Acquisition Index: 4, Type: MCC-MNC-based, Roam Indicator: 0, Subnet ID: MCC-MNC SID/NID, MCC: 001, MNC: 01, SID: 200, NID: 65535100, Association Tag: 1
- Acquisition Index: 0, Type: MCC-MNC-based, Roam Indicator: 0, Subnet ID: MCC-MNC SID/NID, MCC: 001, MNC: 01, SID: 200, NID: 65535, Association Tag: 1

EF_{MSPL} (Multimode system selection System Priority List)

File size: 18 Bytes

Default values: Bytes 1 to 18 (HEX): 00 0F 01 00 01 01 01 03 07 08 02 0C 00 3E 00 FF FF FF

The interpretation of the default values read as follows:

Current MMSS_P_REV – 1

MLPL Version ID – 1

MLPL Identification – 1

Number of MLPL Records – 1

- Index: 1, Location Parameter Type Value: default, MSPL Index: 1

EF_{MLPL} (Multimode system selection Location associated Priority List)

File size: 18 Bytes

Default values: Bytes 1 to 18 (HEX): 00 09 01 00 01 01 01 00 01 FF FF FF FF FF FF FF FF

The interpretation of the default values read as follows:

Current MMSS_P_REV – 1

MSPL Version ID – 1

MSPL Block 1:

MSPL Identification – 1,

Number of MSPL ID1 records – 3

- Index 1: System Type: EUTRA, Priority Class: Home Only, System Priority: 1, Higher Priority Search Time: 64 minutes, Network Capability Indicator: no Network CAP used
- Index 2: System Type: cdma2000 HRPD, Priority Class: Home + Preferred, System Priority: 1, Higher Priority Search Time: 64 minutes, Network Capability Indicator: no Network CAP used
- Index 3: System Type: cdma2000 AI, Priority Class: Any, System Priority: 1, Higher Priority Search Time: 64 minutes, Network Capability Indicator: no Network CAP used

EF_{BCSMScfg} (Broadcast Short Message Configuration)

The programming of this EF is a test house option.

EF_{BCSMSpref} (Broadcast Short Message Preference)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{BCSMStable} (Broadcast Short Message Table)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{BCSMSp} (Broadcast Short Message Parameter)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{BAKPARA} (Currently used BAK Parameters)

The programming of this EF is a test house option.

EF_{UpBAKPARA} (Updated BAK Parameters)

The programming of this EF is a test house option.

EF_{MMSN} (MMS Notification)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{EXT8} (Extension 8)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{MMSICP} (MMS Issuer Connectivity Parameters)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{MMSUP} (MMS User Preferences)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{MMSUCP} (MMS User Connectivity Parameters)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{AuthCapability} (Authentication Capability)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{3GCIK} (3G Cipher and Integrity Keys)

The programming of this EF is a test house option.

EF_{DCK} (De-Personalization Control Keys)

The programming of this EF is a test house option.

EF_{GID1} (Group Identifier Level 1)

The programming of this EF is a test house option.

EF_{GID2} (Group Identifier Level 2)

The programming of this EF is a test house option.

EF_{CDMACNL} (CDMA Co-operative Network List)

The programming of this EF is a test house option.

EF_{HOME_TAG} (Home System Tag)

The programming of this EF is a test house option.

EF_{GROUP_TAG} (Group Tag List)

The programming of this EF is a test house option.

EF_{SPECIFIC_TAG} (Specific Tag List)

The programming of this EF is a test house option.

EF_{CALL_PROMPT} (Call Prompt List)

The programming of this EF is a test house option.

EF_{SF_EUIMID} (Short Form EUIMID)

Specified by CSIM Manufacturer.

EF_{EST} (Enabled Service Table)

The programming of this EF is a test house option.

EF_{HiddenKey} (Key for hidden phone book entries)

The programming of this EF is a test house option.

EF_{LCSVER} (LCS Protocol Version)

The programming of this EF is a test house option.

EF_{LCSCP} (LCS Connectivity Parameter)

The programming of this EF is a test house option.

EF_{SDN} (Service Dialling Numbers)

The programming of this EF is a test house option.

EF_{EXT2}(Extension2)

The programming of this EF is a test house option.

EF_{EXT3}(Extension3)

The programming of this EF is a test house option.

EF_{ICI} (Incoming Call Information)

The programming of this EF is a test house option.

EF_{OCI} (Outgoing Call Information)

The programming of this EF is a test house option.

EF_{EXT5} (Extension 5)

The programming of this EF is a test house option.

EF_{CCP2} (Capability Configuration Parameters 2)

The programming of this EF is a test house option.

EF_{AppLabels} (Application Labels)

The programming of this EF is a test house option.

EF_{Model} (Device Model Information)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{RC} (Root Certificates)

The programming of this EF is a test house option.

EF_{SMSCAP} (SMS Capabilities)

File size: 4 Bytes

Default values: Bytes 1 to 4 (HEX): 3C 08 07 01

The interpretation of the default values read as follows:

SMS Retry Period: 60 seconds

SMS Retry Interval: 8 seconds

SMS Flags:

Send On Access: True

Send on Traffic: True

Send as Standard EMS: True

SMS Preferred Service Option: SO 6

EF_{MIPFlags} (MobileIP Flags)

The programming of this EF is a test house option.

EF_{3GPDUPPEExt} (3GPD User Profile Parameters Extension)

The programming of this EF is a test house option.

EF_{IPv6CAP} (IPv6 Capabilities)

The programming of this EF is a test house option.

EF_{TCPConfig} (TCp Configurations)

The programming of this EF is a test house option.

EF_{DGC} (Data Generic Configurations)

The programming of this EF is a test house option.

EF_{WAPBrowserCP} (WAP Browser Connectivity Parameters)

The programming of this EF is a test house option.

EF_{WAPBrowserBM} (WAP Browser Bookmarks)

The programming of this EF follows default parameter written in 3GPP2 C.S0065-B [48], Annex E.

EF_{MMSConfig} (MMS Configuration)

The programming of this EF is a test house option.

EF_{JDL} (Java Download URL)

The programming of this EF is a test house option.

4.9.3.3 Modified contents of the USIM Elementary Files and additional USIM Elements files at the MCPTT level

EF_{UST} (USIM Service Table)

| Services | Description | Activated | Version |
|---|-------------|-----------|---------|
| Service n°109 | MCPTT | Optional | |
| Note: Only the relevant MCPTT related services indicated. | | | |

EF_{MST} (MCPTT Service Table)

If service n°109 is "available" in the USIM Service Table or service n°15 is "available" in the ISIM Service Table, this file shall be present. This EF indicates the coding of the MCPTT management objects and which MCPTT services are available. If a service is not indicated as available in the MCPTT Service Table, the ME shall not select this service.

Coding of the MCPTT management objects = '00' (XML format).

| Services | Description | Activated | Version |
|--------------|----------------------------|-----------|---------|
| Service n°1: | UE configuration data | | |
| Service n°2: | User configuration data | | |
| Service n°3: | Group configuration data | | |
| Service n°4: | Service configuration data | | |

EF_{MCPTT_CONFIG} (MCPTT configuration data)

If service n°1, 2, 3 or 4 is "available" in the MCPTT Service Table, this file shall be present.

Encoded in XML format (as specified in the MCPTT Service Table).

| MCPTT configuration data objects | Tag Values | Condition |
|---|------------|---|
| MCPTT UE configuration data | '80' | Shall be present if service n°1 is "available" in the MCPTT service table |
| MCPTT User configuration data | '81' | Shall be present if service n°2 is "available" in the MCPTT service table |
| MCPTT Group configuration data | '82' | Shall be present if service n°3 is "available" in the MCPTT service table |
| MCPTT Service configuration data | '83' | Shall be present if service n°4 is "available" in the MCPTT service table |
| Note: MCPTT configuration data objects, as specified in 3GPP TS 24.483 [66] Annex B.2, Annex B3, Annex B.4 and Annex B.5. | | |

4.9.3.4 Modified contents of the USIM Elementary Files and additional USIM Elements files at the DF_{V2X} level

EF_{UST} (USIM Service Table):

| Services | | Activated | Version |
|--|-----|-----------|---------|
| Service n°119 | V2X | Optional | |
| Note: Only V2X related services indicated. | | | |

EF_{VST} (V2X Service Table)

If service n°119 is "available" in the USIM Service Table, this file shall be present. This EF indicates the coding of the V2X management objects and which V2X services are available.

File size: 2 Bytes

Default values: Bytes 1 to 2 (HEX): 00 01

Coding of the V2X management objects is XML format described in TS 24.385 [97].

Service n°1 V2X configuration data is supported.

EF_{V2X_CONFIG} (V2X configuration data)

This EF contains zero, one or more V2X configuration data objects, as specified in TS 24.385 [97].

File size: 1+X Bytes

Default values: Bytes 1 (HEX): 80

Bytes 2 to X (HEX): Coding result of V2X management objects

Coding of the V2X management objects is XML format described in TS 24.385.

V2X configuration data object tag:

| V2X configuration data objects | Tag Values | Condition |
|---|------------|---|
| V2X configuration data | '80' | Shall be present if service n°1 is "available" in the V2X service table |
| Note: V2X configuration data objects, as specified in 4.10.2. | | |

4.9.3.5 Modified contents of the Elementary Files for eCall over IMS

For the eCall over IMS test cases EFs shall be extended as follows:

- Table 4.9.3.5-1 specifies the EF extensions for test cases for eCall capable supporting UEs,
- Table 4.9.3.5-2 specifies the EF extensions for test cases for eCall only supporting UEs.

Table 4.9.3.5-1: EF extensions eCall capable UEs

| EF field | Value |
|----------------------|---|
| EF _{UST} | Service n°4 Service Dialling Numbers (SDN), Service n°99 URI support by UICC, Service n°89 eCall Data and Service n°112 eCall Data over IMS are available |
| EF _{EST} | Services n°4 Service Dialling Numbers (SDN), Service n°99 URI support by UICC, Service n°89 eCall Data and Service n°112 eCall Data over IMS are enabled |
| EF _{SDN} | Two entries of SDNs, eCall Test Number (123456) and eCall reconfiguration number (345678) |
| EF _{SDNURI} | Two entries of SDNs, eCall Test Number (tel:123456) and eCall reconfiguration number (tel:345678) |

Table 4.9.3.5-2: EF extensions for eCall only UEs

| EF field | Value |
|----------------------|---|
| EF _{UST} | Service n°2 Fixed Dialling Numbers (FDN), Service n°99 URI support by UICC, Service n°89 eCall Data and Service n°112 eCall Data over IMS are available |
| EF _{EST} | Service n°2 Fixed Dialling Numbers (FDN), Service n°99 URI support by UICC, Service n°89 eCall Data and Service n°112 eCall Data over IMS are enabled |
| EF _{FDN} | Two entries of FDNs, eCall Test Number (123456) and eCall reconfiguration number (345678) |
| EF _{FDNURI} | Two entries of FDNs, eCall Test Number (tel:123456) and eCall reconfiguration number (tel:345678) |

4.10 V2X reference configuration

This clause contains the default reference pre-configurations, which apply to all V2X test cases unless otherwise specified.

4.10.1 Reference configuration for V2X Sidelink Communication

ROHC compression is not applied in test cases simulating in coverage and out-of-coverage scenarios.

Ciphering is not configured on SLRB.

4.10.1.1 V2X Sidelink Communication *Preconfiguration* for out-of-network coverage operation

The IE *SL-V2X-Preconfiguration* contains the resource pool information for V2X sidelink communication.

Table 4.10.1.1-1: SL-V2X-Preconfiguration

| Derivation Path: 36.331 clause 9.3.2 | | | |
|---|--------------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SL-V2X-Preconfiguration-r14 ::= SEQUENCE { | | | |
| v2x-PreconfigFreqList-r14 SEQUENCE (SIZE (1..maxFreqV2X-r14)) OF SEQUENCE { | | | |
| SL-V2X-PreconfigFreqInfo-r14[1] | SL-V2X-PreconfigFreqInfo-r14-DEFAULT | | |
| } | | | |
| anchorCarrierFreqList-r14 | Not present | | |
| cbr-PreconfigList-r14 | Not present | | |
| } | | | |

Table 4.10.1.1-2: SL-V2X-Preconfiguration for V2X sidelink communication with MCC

| Derivation Path: 36.331 clause 9.3.2 | | | |
|---|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SL-V2X-Preconfiguration-r14 ::= SEQUENCE { | | | |
| v2x-PreconfigFreqList-r14 SEQUENCE (SIZE (1..maxFreqV2X-r14)) OF SEQUENCE { | 2 entries of SL-V2X-PreconfigFreqInfo-r14 | | |
| SL-V2X-PreconfigFreqInfo-r14 [1] | SL-V2X-PreconfigFreqInfo-r14-DEFAULT | | |
| SL-V2X-PreconfigFreqInfo-r14 [2] | SL-V2X-PreconfigFreqInfo-r14-DEFAULT | | |
| } | | | |
| anchorCarrierFreqList-r14 | Not present | | |
| cbr-PreconfigList-r14 | Not present | | |
| } | | | |

4.10.2 V2X management data object configuration

V2X management data object is specified in 3GPP TS 24.385. This subclause provides the default content of V2X management object for conformance testing.

The V2X management data object can be configured in USIM or pre-configured in ME.

| Derivation Path: TS 24.385 clause 5 | | |
|-------------------------------------|--|--|
| V2X management objects | MO Values | Comment |
| <X> | N/A | |
| Name | Default Management Object for Conformance Testing | |
| V2XoverPC5 | N/A | |
| Expiration | BIN'000000000000000001001111000110100000000' | 31st January 2012 00:31:00 (GPS time) (UTC time: TBD) |
| ServedByEUTRAN | N/A | |
| AuthorizedPLMNs | N/A | |
| <X> | N/A | |
| PLMN | Set to the same Mobile Country Code and Mobile Network Code stored in EF _{IMSI} on the test USIM card | |
| NotServedByEUTRAN | N/A | |
| Authorized | 1 | Indicates that the UE is authorized to use V2X communication over PC5 when the UE is not served by E-UTRAN for V2X communication |
| RadioParameters | N/A | |
| <X> | N/A | |
| RadioParametersContents | Set as defined in <i>SL-V2X-Preconfiguration</i> in subclause 4.10 | |
| GeographicalArea | N/A | |
| Polygon | N/A | |
| <X> | N/A | |
| Coordinates | N/A | |
| <X> | N/A | |
| Latitude | Set as defined in GNSS scenario used by specific test case | |
| Longitude | Set as defined in GNSS scenario used by specific test case | |
| OperatorManaged | 0 | Indicates that the radio parameters are "non-operator managed" |
| AuthorizedV2XServiceList | N/A | |
| <X> | N/A | |
| V2XServiceIdentifier | HEX '3000' | |
| DestinationLayer2ID | HEX '0000AA' | Same as default Destination Layer2ID defined in Table 4.71-2 |
| PPPPtoPDBMappingRule | N/A | |
| <X> | N/A | 1 st entry of PPPPtoPDBMappingRule |
| ProSePerPacketPriority | 1 | |
| PacketDelayBudget | 100 | |
| <X> | N/A | 2 nd entry of PPPPtoPDBMappingRule |
| ProSePerPacketPriority | 2 | |
| PacketDelayBudget | 100 | |
| <X> | N/A | 3 rd entry of PPPPtoPDBMappingRule |
| ProSePerPacketPriority | 3 | |
| PacketDelayBudget | 100 | |
| <X> | N/A | 4 th entry of PPPPtoPDBMappingRule |
| ProSePerPacketPriority | 4 | |
| PacketDelayBudget | 100 | |

| | | |
|---------------------------------------|--|---|
| <X> | N/A | 5 th entry of PPPtoPDBMappingRule |
| ProSePerPacketPriority | 5 | |
| PacketDelayBudget | 100 | |
| <X> | N/A | 6 th entry of PPPtoPDBMappingRule |
| ProSePerPacketPriority | 6 | |
| PacketDelayBudget | 100 | |
| <X> | N/A | 7 th entry of PPPtoPDBMappingRule |
| ProSePerPacketPriority | 7 | |
| PacketDelayBudget | 100 | |
| <X> | N/A | 8 th entry of PPPtoPDBMappingRule |
| ProSePerPacketPriority | 8 | |
| PacketDelayBudget | 100 | |
| DefaultDestinationLayer2ID | Not present | |
| PrivacyConfig | Not present | |
| V2XServiceIDtoV2XFrequencyMappingRule | Not present | |
| V2XoverLTEUu | | |
| Expiration | BIN'00000000000000000001001111000110100000000' | 31st January 2012 00:31:00 (GPS time) (UTC time: TBD) |
| AuthorizedPLMNs | N/A | |
| <X> | N/A | |
| PLMN | Set to the same Mobile Country Code and Mobile Network Code stored in EF _{IMSI} on the test USIM card | |
| V2XASMBMConfig | N/A | |
| TMGI | MBMS Service ID set to HEX '000000' MCC and MNC are the same Mobile Country Code and Mobile Network Code stored in EF _{IMSI} on the test USIM card | |
| SAIList | N/A | |
| <X> | N/A | |
| SAI | 0 | |
| Frequency | f1 as per table 6.2.3.3-2 using the same band as cell1 | |
| SDPInV2XASMBMConfig | vnd.3gpp.v2x | |
| V2XServiceIdentifierUnrelated | N/A | |
| V2XMBMConfigs | N/A | |
| <X> | N/A | |
| V2XMBMConfig | N/A | |
| TMGI | MBMS Service ID set to HEX '000000' MCC and MNC are the same Mobile Country Code and Mobile Network Code stored in EF _{IMSI} on the test USIM card | |
| SAIList | N/A | |
| <X> | N/A | |
| SAI | 0 | |
| Frequency | f1 as per table 6.2.3.3-2 using the same band as cell1 | |

| | | |
|-----------------------------|--|--|
| SDPInV2XASMBMSConfig | vnd.3gpp.v2x | |
| V2XServiceIdentifierRelated | N/A | |
| AuthorizedV2XServiceList | N/A | |
| <X> | N/A | |
| V2XServiceIdentifier | HEX '3000' | |
| V2XMBMSConfigs | N/A | |
| TMGI | MBMS Service ID set to HEX '000000' MCC and MNC are the same Mobile Country Code and Mobile Network Code stored in EF _{IMSI} on the test USIM card | |
| SAIList | N/A | |
| <X> | N/A | |
| SAI | 0 | |
| Frequency | f1 as per table 6.2.3.3-2 using the same band as cell1 | |
| SDPInV2XASMBMSConfig | vnd.3gpp.v2x | |

4.11 GNSS Requirements for V2X and MCS testing

4.11.1 General

This clause defines the GNSS scenarios and requirements which apply for all V2X and MCS test cases that require simulated GNSS signals, unless otherwise specified.

The term SV ID used in this clause is defined as the satellite PRN for GPS and Modernized GPS, as Code Number for Galileo, as the satellite Slot Number for GLONASS and as the Ranging Code Number for BDS.

4.11.2 GNSS Scenarios

The following GNSS scenarios shall be used.

- Yuma / Rinex Almanac data: the required file(s) available in the GNSS data sig zip file specified in TS 37.571-5 [68] Annex B are given in Table 4.11.2-1.

Table 4.11.2-1: Yuma / Rinex Almanac data files for V2X and MCS testing

| GNSS supported by UE | Yuma / Rinex file(s) ⁽¹⁾ |
|---|-------------------------------------|
| GPS | Sig GNSS 1-3 Yuma.txt |
| GLONASS | Sig GNSS 1-1 AGL.txt |
| Galileo | Sig GNSS 1-2 Yuma.txt |
| BDS | FFS |
| Note 1: Where the UE supports more than one GNSS then all the relevant Yuma / Rinex data files are used | |

- UE location(s) and motion:

Latitude: the simulated latitude(s) are given in Table 4.11.2-3

Longitude: the simulated longitude(s) are given in Table 4.11.2-3

Height: the simulated height is 30m

Motion: the simulated motion(s) are given in Table 4.11.2-2

Table 4.11.2-2: UE location(s) and motion(s) for V2X and MCS testing

| Scenario number and description | Step # | Action (Location details given in Table 4.11.2-3) | Notes |
|---|--------|---|---|
| Scenario #1: static in Geographical area #1 Note 1 | 1 | Static at location #1 | |
| Scenario #2: move from inside Geographical area #1 to outside Geographical area #1 Note 1 | 1 | Static at location #1 | |
| | 2 | Trigger from test case to move in a straight line at 15m/s from current location to next location | Simulation leaves Geographical area #1 after 905 m, 60s after the trigger. An additional 1s is added to allow for UE position accuracy of +/- 15m. An additional 10s is added to allow for UE position update. Total time 71s |
| | 3 | Static at location #2 | |
| Scenario #3: move from zone id0 to zone id1 to zone id3 to zone id2 | 1 | Static at location #3 | |
| | 2 | Trigger from test case to move in a straight line at 2m/s from current location to next location | Simulation crosses the boundary between zone id0 and zone id1 47s after the trigger. An additional 7.5s is added to allow for UE position accuracy of +/- 15m. An additional 10s is added to allow for UE position update. Total time 64.5s |
| | 3 | Static at location #4 | |
| | 4 | Trigger from test case to move in a straight line at 2m/s from current location to next location | Simulation crosses the boundary between zone id1 and zone id3 42s after the trigger. An additional 7.5s is added to allow for UE position accuracy of +/- 15m. An additional 10s is added to allow for UE position update. Total time 59.5s |
| | 5 | Static at location #5 | |
| | 6 | Trigger from test case to move in a straight line at 2m/s from current location to next location | Simulation crosses the boundary between zone id3 and zone id2 47s after the trigger. An additional 7.5s is added to allow for UE position accuracy of +/- 15m. An additional 10s is added to allow for UE position update. Total time 64.5s |
| | 7 | Static at location #6 | |
| Scenario #4: move from inside Geographical area #1 to location #7 and then location #8 inside Geographical area #1 Note 1 | 1 | Static at location #1 | |
| | 2 | Trigger from test case to move in a straight line at 10m/s from current location to next location | Simulation takes approximately 10 secs to move from location #1 to location #7 |
| | 3 | Static at location #7 | |
| | 4 | Trigger from test case to move in a straight line at 10m/s from current location to next location | Simulation takes approximately 10 secs to move from location #7 to location #8 |
| | 5 | Static at location #8 | |
| Note 1: Geographical area #1 is defined in clause 4.9.3.1 and is defined by three points with the following coordinates: Point 1: latitude: 35.753056, longitude: 139.689167 Point 2: latitude: 35.735278, longitude: 139.689167 Point 3: latitude: 35.744167, longitude: 139.709167 | | | |

Table 4.11.2-3: Location descriptions for V2X and MCS testing

| Location number | Description for information only | Latitude (degrees) | Longitude (degrees) |
|-----------------|--|--------------------|---------------------|
| #1 | Approximate centre of Geographical area #1 | 35.74428 | 139.69916 |
| #2 | Approximately 1720m due west of location #1, outside Geographical area #1 | 35.74428 | 139.68017 |
| #3 | Centre of zone id0 inside Geographical area #1, see Table 4.11.2-4 and Figure 4.11.2-1 | 35.74478 | 139.70333 |
| #4 | Centre of zone id1 inside Geographical area #1, see Table 4.11.2-4 and Figure 4.11.2-1 | 35.74478 | 139.70540 |
| #5 | Centre of zone id3 inside Geographical area #1, see Table 4.11.2-4 and Figure 4.11.2-1 | 35.74523 | 139.70716 |
| #6 | Centre of zone id2 inside Geographical area #1, see Table 4.11.2-4 and Figure 4.11.2-1 | 35.74523 | 139.70508 |
| #7 | Approximately 100m due west of location #1, inside Geographical area #1 | 35.74428 | 139.69806 |
| #8 | Approximately 100m due west of location #7, inside Geographical area #1 | 35.74428 | 139.69695 |

Table 4.11.2-4: Zone id calculations for V2X testing

| Description | Latitude (degrees) | Longitude (degrees) | Long distance from 0,0 in m (x) Note 1 | Lat distance from 0,0 in m (y) Note 1 | Values for zone_id calculation (Nx, Ny = 2, L = 100, W = 50 Note 2) Note 3 |
|---|--------------------|---------------------|---|--|---|
| Centre of zone id0 | 35.74478 | 139.70333 | 11061850 | 3957225 | $y_1=0, x_1=0$ |
| Centre of zone id1 | 35.74478 | 139.70540 | 11061950 | 3957225 | $y_1=0, x_1=1$ |
| Centre of zone id2 | 35.74523 | 139.70508 | 11061850 | 3957275 | $y_1=1, x_1=0$ |
| Centre of zone id3 | 35.74523 | 139.70716 | 11061950 | 3957275 | $y_1=1, x_1=1$ |
| <p>Note 1: all distances are +/- 1m</p> <p>Note 2: zone length (longitude) is set to 100m, zone width (latitude) is set to 50m in accordance with TS 36.523-1 [18] Table 24.1.8.3.3-1 and Table 24.1.9.3.3-1, this allows for the accuracy with which a UE can define its position which is assumed to be +/- 15m. Zone id longitude modulus and zone id latitude modulus are set to 2 in accordance with TS 36.523-1 [18] Table 24.1.8.3.3-1 and Table 24.1.9.3.3-1.</p> <p>Note 3: zone ids are calculated according to TS 36.331 [17] clause 5.10.13.2</p> | | | | | |

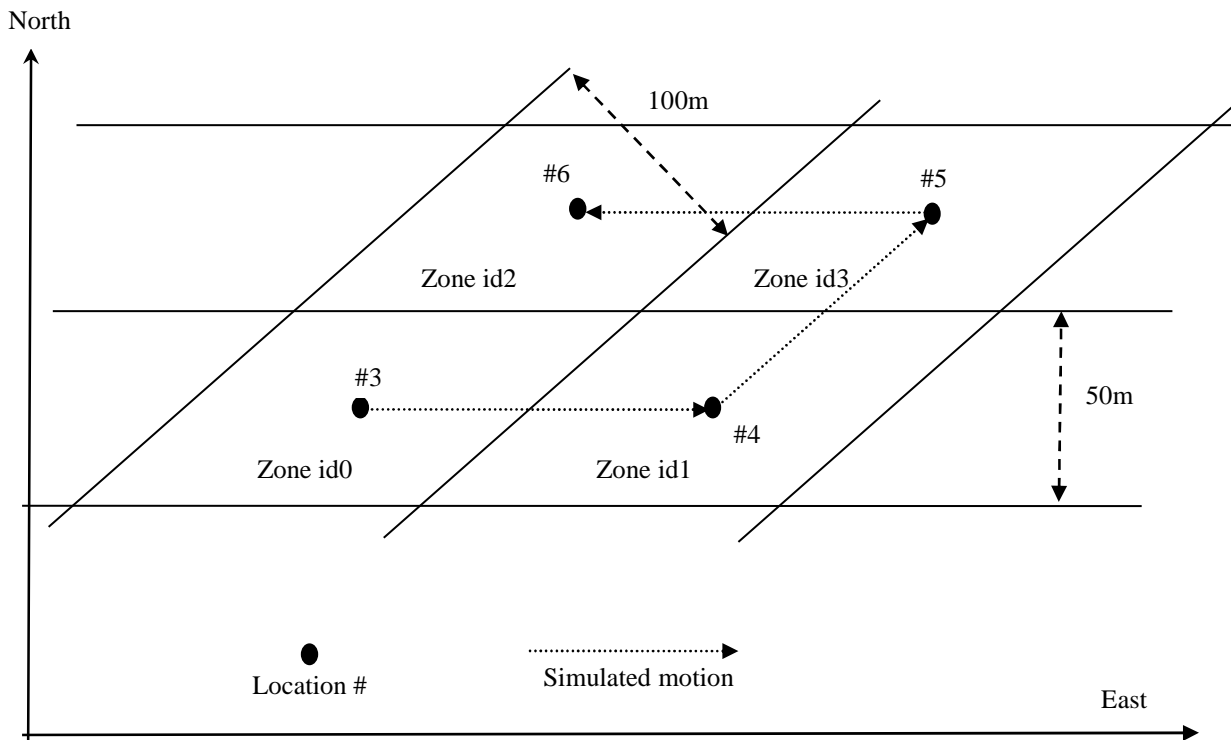


Figure 4.11.2-1: Zones and motions for scenario #3 for V2X testing (not to scale)

- Nominal start time:
1st January 2012 00:31:00 (GPS time) (UTC time: TBD).
- Visible satellites to be simulated are given in Table 4.11.2-5 and are above 15 degrees elevation with respect to the UE. These satellites have been selected to give a reasonable HDOP for the duration of the test.

Table 4.11.2-5: Satellites to be simulated for V2X and MCS testing

| GNSS supported by UE | SV IDs of Satellites to be simulated ⁽¹⁾ |
|----------------------|---|
| GPS | 1, 11, 17, 20, 23, 28 |
| GLONASS | 3, 4, 9, 10, 18, 20 |
| Galileo | 5, 10, 11, 18, 19, 20 |
| BDS | FFS |

Note 1: Where the UE supports more than one GNSS then all the relevant satellites are simulated

- The levels of the simulated satellites are given in Table 4.11.2-6 and shall be generated with an accuracy of +/- [1] dB. These conditions are defined for when there is no GNSS assistance data available at the UE and are specified in TS 36.133 [39] clause B.6.

Table 4.11.2-6: GNSS Reference Signal Power Requirements

| System | Parameters | Unit | Value |
|--|---|------|--------|
| | Number of generated satellites per system | - | 6 |
| GPS ⁽¹⁾ | Reference signal power level for all satellites | dBm | -128.5 |
| Galileo | Reference signal power level for all satellites | dBm | -127 |
| GLONASS | Reference signal power level for all satellites | dBm | -131 |
| BDS | Reference signal power level for all satellites | dBm | -133 |
| NOTE 1: "GPS" here means GPS L1 C/A, Modernized GPS, or both, dependent on UE capabilities. | | | |
| NOTE 2: The DUT UE shall support at least one system and will be configured for the supported system(s). | | | |

- Ionospheric model: simulated values are given in Tables 4.11.2-7 and 4.11.2-8.

Table 4.11.2-7: Klobuchar ionospheric model for GPS or GLONASS or BDS if supported by the UE

| Model element | Units | Value/remark |
|---------------|--------------------------------|-----------------|
| alfa0 | seconds | 4.6566129 10E-9 |
| alfa1 | sec/semi-circle | 1.4901161 10E-8 |
| alfa2 | sec/(semi-circle) ² | -5.96046 10E-8 |
| alfa3 | sec/(semi-circle) ³ | -5.96046 10E-8 |
| beta0 | seconds | 79872 |
| beta1 | sec/semi-circle | 65536 |
| beta2 | sec/(semi-circle) ² | -65536 |
| beta3 | sec/(semi-circle) ³ | -393216 |

Table 4.11.2-8: neQuick ionospheric model for Galileo if supported by the UE

| Model Element | Units | Value/remark |
|---------------|-------------------------------------|--------------|
| ai0 | solar flux unit | 64.4 |
| ai1 | solar flux unit/degree | 0 |
| ai2 | solar flux unit/degree ² | 0 |

- Tropospheric model: STANAG with SRI equal to 324.8, as defined in STANAG 4294 [70].

4.12 GNSS Requirements for aerial testing

4.12.1 General

This clause defines the GNSS scenarios and requirements which apply for all aerial test cases that require simulated GNSS signals, unless otherwise specified.

The term SV ID used in this clause is defined as the satellite PRN for GPS and Modernized GPS, as Code Number for Galileo, as the satellite Slot Number for GLONASS and as the Ranging Code Number for BDS.

4.12.2 GNSS Scenarios

The following GNSS scenarios shall be used.

- Yuma / Rinex Almanac data: the required file(s) available in the GNSS data sig zip file specified in TS 37.571-5 [68] Annex B are given in Table 4.12.2-0.

Table 4.12.2-0: Yuma / Rinex Almanac data files for Aerial testing

| GNSS supported by UE | Yuma / Rinex file(s) ⁽¹⁾ |
|----------------------|-------------------------------------|
| GPS | globalAlmanac_gpsYuma.txt |
| GLONASS | globalAlmanac_glonass.agl |
| Galileo | globalAlmanac_galileo.xml |
| BDS | FFS |

Note 1: Where the UE supports more than one GNSS then all the relevant Yuma / Rinex data files are used

- UE location(s) and motion:

Latitude: the simulated latitude is given in Table 4.12.2-2

Longitude: the simulated longitude is given in Table 4.12.2-2

Height: the simulated heights above sea level are given in Table 4.12.2-2

Motion: the simulated motion(s) are given in Table 4.12.2-1

Table 4.12.2-1: UE locations and motions for aerial testing

| Scenario number and description | Step # | Action (Location details given in Table 4.12.2-3) | Notes |
|--|--------|--|--|
| Scenario #1: move from location #1 to location #2 to location #3 | 1 | Static at location #1 | |
| | 2 | Trigger from test case to move in a straight line at 5m/s from current location to next location | |
| | 3 | Static at location #2 | |
| | 4 | Trigger from test case to move in a straight line at 5m/s from current location to next location | Simulation will take 40 seconds to move between locations given the nominal values specified in the test case. An additional 10 seconds is added to allow for UE position update. Total time 50 seconds. |
| | 5 | Static at location #3 | |

Table 4.12.2-2: Location descriptions for aerial testing

| Location number | Latitude (degrees) | Longitude (degrees) | Height above sea level (m) | Notes |
|-----------------|--------------------|---------------------|----------------------------|-------|
| #1 | 43.308318 | -5.697122 | See test case | |
| #2 | 43.308318 | -5.697122 | See test case | |
| #3 | 43.308318 | -5.697122 | See test case | |

- Nominal start time:

Current date at 07:31:00 (GPS time).

- Visible satellites to be simulated are given in Table 4.12.2-3 and are above 15 degrees elevation with respect to the UE. These satellites have been selected to give a reasonable HDOP for the duration of the test.

Table 4.12.2-3: Satellites to be simulated for Aerial testing

| GNSS supported by UE | SV IDs of Satellites to be simulated ⁽¹⁾ |
|----------------------|---|
| GPS | 2, 12, 14, 24, 25, 29 |
| GLONASS | 4, 5, 13, 14, 15, 23 |
| Galileo | 2, 7, 8, 11, 19, 30 |
| BDS | 13, 15, 19, 27, 28, 30 |

Note 1: Where the UE supports more than one GNSS then all the relevant satellites are simulated

- The levels of the simulated satellites are given in Table 4.11.2-6 and shall be generated with an accuracy of +/- 1 dB.

- Ionospheric model: simulated values are given in Tables 4.11.2-7 and 4.11.2-8.
- Tropospheric model: STANAG with SRI equal to 324.8, as defined in STANAG 4294 [70].

5 Test environment for RF test

This section contains all the exceptions of the common test parameters specified in clause 4 for specific needs of test cases defined in TS 36.521-1 [21]. Exceptions specified in clause 5 overwrite the parameter settings of clause 4; exceptions defined within the test cases overwrite parameter settings of clause 4 and 5.

5.1 Requirements of test equipment

No common RF test environment requirements are specified in addition to the common requirements described in clause 4.2. Specific RF requirements are indicated within the test cases defined in TS 36.521-1 [21].

5.2 RF Reference system configurations

5.2.1 Common parameters for simulated E-UTRA cells

For BL/CE testing the same content of system information blocks SIB2, SIB3, SIB5 and SIB13 are used for broadcasting on BCCH and/or BCCH-BR.

5.2.1.1 Combinations of system information blocks

The combination of system information blocks required by a test case depends on the test case scenario. In this clause, the following combinations of system information blocks are defined.

Combination 1 is the default combination which applies to the following test case scenarios:

- E-UTRA FDD single cell scenario
- E-UTRA TDD single cell scenario
- E-UTRA FDD intra-frequency multi cell scenario
- E-UTRA TDD intra-frequency multi cell scenario

Combination 2 applies to the following test case scenarios:

- E-UTRA FDD + MBMS
- E-UTRA TDD + MBMS

Combination 3 applies to the following test case scenarios:

- E-UTRA FDD intra-band carrier aggregation component carriers cell scenario
- E-UTRA FDD inter-band carrier aggregation component carriers cell scenario
- E-UTRA TDD intra-band carrier aggregation component carriers cell scenario

The combinations of system information blocks for test cases in TS 36.521-1 [21] is defined in table 5.2.1.1-1.

Table 5.2.1.1-1: Combinations of system information blocks

| Combination No. | System information block type | | | | | | | | | | | |
|-----------------|-------------------------------|------|------|------|------|------|------|------|-------|-------|-------|-------|
| | SIB2 | SIB3 | SIB4 | SIB5 | SIB6 | SIB7 | SIB8 | SIB9 | SIB10 | SIB11 | SIB12 | SIB13 |
| 1 | X | X | | | | | | | | | | |
| 2 | X | X | | | | | | | | | | X |
| 3 | X | X | | X | | | | | | | | |

5.2.1.2 Scheduling of system information blocks

The scheduling configurations for combinations of system information blocks are defined in the following tables. SIB1 will be transmitted during subframes#5 which SFN mod 2 = 0, and SIB2+SIB3 will be transmitted during subframes#5 which SFN mod 2 = 1 with 8 radio frames periodicity. SIB5 will be transmitted during subframes#5 which SFN mod 2 = 1 with 64 radio frames periodicity

Table 5.2.1.2-1: Scheduling for combination 1

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 8 | SIB2, SIB3 |

Table 5.2.1.2-2: Scheduling for combination 2

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 8 | SIB2, SIB3 |
| 2 | 64 | SIB13 |

Table 5.2.1.2-3: Scheduling for combination 3

| Scheduling Information No. | Periodicity [radio frames] | Mapping of system information blocks |
|----------------------------|----------------------------|--------------------------------------|
| 1 | 8 | SIB2, SIB3 |
| 2 | 64 | SIB5 |

5.2.1.3 Common contents of system information messages

- MasterInformationBlock

As defined in Table 4.4.3.2-1 without exceptions.

- SystemInformation

As defined in Table 5.2.1.3-1As defined in Table without exceptions.

Table 5.2.1.3-1: SystemInformation

| Derivation Path: Clause 4.4.3.2 Table 4.4.3.2-2 | | | |
|--|-----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformation ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| systemInformation-r8 SEQUENCE { | | | |
| sib-TypeAndInfo SEQUENCE (SIZE (1..maxSIB)) OF CHOICE {} | See subclause 5.2.1.1 and 5.2.1.2 | | |
| criticalExtensionsFuture SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |

- SystemInformationBlockType1

As defined in Table 4.4.3.2-3 with the following exceptions:

Table 5.2.1.3-2: SystemInformationBlockType1 exceptions

| Derivation Path: Clause 4.4.3.2 Table 4.4.3.2-3 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { | | | |
| si-WindowLength | ms40 | | |
| } | | | |

- SystemInformationBlockType1-BR-r13

As defined in Table 4.4.3.2-3 with the following exceptions:

Table 5.2.1.3-2A: SystemInformationBlockType1-BR-r13 exceptions

| Derivation Path: Clause 4.4.3.2 Table 4.4.3.2-3A | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1-BR-r13 ::= SEQUENCE { | | | |
| si-WindowLength-BR-r13 | ms40 | | |
| } | | | |

- SystemInformationBlockType2

As defined in Table 4.4.3.3-1 with the following exceptions:

Table 5.2.1.3-3: SystemInformationBlockType2 exceptions

| Derivation Path: Clause 4.4.3.3 Table 4.4.3.3-1 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { | | | |
| timeAlignmentTimerCommon | infinity | | |
| } | | | |

5.2A Generic RF procedures

The UE test state used for testing is specified in the individual test cases in the corresponding test specification TS 36.521-1 [21] or TS 36.521-3 [34].

This clause describes UE test states which can be used in the initial condition of many test cases defined in TS 36.521-1 [21] and TS 36.521-3 [34].

5.2A.1 UE RF test states

Table 5.2A.1-1: The E-UTRAN UE states

| | | RRC | ECM | EMM | ESM | UE Test Mode |
|-----------------|--|--|---------------|----------------|--|--------------|
| State 2A-RF | Registered, Idle Mode, UE Test Mode Activated | RRC_IDLE | ECM-IDLE | EMM-REGISTERED | 1 default EPS bearer context active | Active |
| State 2A-RF-CE | Registered, Idle Mode, Cell supporting BL/CE UE, UE Test Mode Activated | RRC_IDLE | ECM-IDLE | EMM-REGISTERED | 1 default EPS bearer context active | Active |
| State 3A-RF | Generic Default RB Established, UE Test Mode Activated | RRC_CONNECTED 1 data radio bearer configured | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active | Active |
| State 3A-RF-CE | Generic Default RB Established, Cell supporting BL/CE UE, UE Test Mode Activated | RRC_CONNECTED 1 data radio bearer configured | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active | Active |
| State 3A-RF-DC1 | DC MCG/SCG Dedicated RB established, UE Test Mode Activated | RRC_CONNECTED 2 data radio bearers configured | ECM_CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active on the PCell 1 dedicated EPS bearer context(s) active on the PSCell | Active |
| State 3A-RF-DC2 | DC Split Default RB established, UE Test Mode Activated | RRC_CONNECTED 1 data radio bearer configured | ECM_CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active on the PCell and PSCell with UL transmission of PDCP SDUs on PSCell | Active |
| State 3A-RF-V2X | Generic Default RB Established, UE Test Mode Activated, V2X Setup | RRC_CONNECTED 1 data radio bearer configured | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active | Active |
| State 3B-RF | Reserved for E-UTRAN UE state for RRM testing as described in Table 7.2A.1-1 | | | | | |
| State 4A-RF | Loopback Activation without looped data | RRC_CONNECTED | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active | Active |
| State 4A-RF-CE | Loopback Activation without looped data, Cell supporting BL/CE UE | RRC_CONNECTED | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active | Active |

| | | | | | | |
|------------------------|---|---------------|---------------|----------------|--|--------|
| State 4A-RF- DC1 | DC MCG/SCG DRBs Loopback Activation without looped data | RRC_CONNECTED | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active on the PCell 1 dedicated EPS bearer context(s) active on the PSCell | Active |
| State 4A-RF- DC2 | DC Split DRB Loopback Activation without looped data | RRC_CONNECTED | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active on the PCell and PSCell | Active |
| State 4A-RF- V2X | Loopback Activation without looped data, V2X Setup | RRC_CONNECTED | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active | Active |

5.2A.1A Registered, Idle Mode, UE Test Mode Activated (State 2A-RF)

5.2A.1A.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test USIM shall be inserted.

5.2A.1A.2 Definition of system information messages

The default system information messages are used.

5.2A.1A.3 Procedure

Table 5.2A.1A.3-1: UE registration with test mode activation procedure (state 1 to state 2A-RF)

| Step | Procedure | Message Sequence | |
|----------|---|------------------|--|
| | | U - S | Message |
| 1 to 9a2 | Steps 1 to 9a2 as specified in the procedure in clause 4.5.2.3 take place | - | - |
| 10 | The SS transmits an ACTIVATE TEST MODE message to activate UE radio bearer test mode procedure. | <-- | RRC: <i>DLInformationTransfer</i> TC: ACTIVATE TEST MODE |
| 11 | The UE transmits an ACTIVATE TEST MODE COMPLETE message. | --> | RRC: <i>ULInformationTransfer</i> TC: ACTIVATE TEST MODE COMPLETE |
| 12 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 13 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 14 | The SS transmits a <i>UECapabilityEnquiry</i> message to initiate the UE radio access capability transfer procedure. | <-- | RRC: <i>UECapabilityEnquiry</i> |
| 15 | The UE transmits a <i>UECapabilityInformation</i> message to transfer UE radio access capability. | --> | RRC: <i>UECapabilityInformation</i> |
| 16 | The SS transmits an <i>RRCCONNECTIONRECONFIGURATION</i> message to establish the default bearer with condition SRB2-DRB(1, 0) according to 4.8.2.2.1.1. This message includes the ATTACH ACCEPT message. The ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message is piggybacked in ATTACH ACCEPT. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> NAS: ATTACH ACCEPT NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST |
| 17 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message to confirm the establishment of default bearer. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| - | EXCEPTION: In parallel to the event described in step 18 below the generic procedure for IP address allocation in the U-plane specified in TS 36.508 subclause 4.5A.1 takes place performing IP address allocation in the U-plane if requested by the UE. | | |
| 18 | This message includes the ATTACH COMPLETE message. The ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message is piggybacked in ATTACH COMPLETE. | --> | RRC: <i>ULInformationTransfer</i> NAS: ATTACH COMPLETE NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT |
| - | EXCEPTION: Steps 18a1 to 18b6 describe behaviour that depends on UE configuration; the "lower case letter" identifies a step sequence that takes place if a particular configuration has been chosen | - | - |
| 18a1 | IF IMS voice not supported and pc_voice_PS_1_CS_2, pc_attach and pc_TAU_connected_in_IMS are set to TRUE (Note 1) THEN the UE transmits a TRACKING AREA UPDATE REQUEST message. | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE REQUEST |
| 18a2 | The SS transmits a TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE ACCEPT |
| 18a3 | The UE transmits a TRACKING AREA UPDATE COMPLETE message. | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE COMPLETE |
| 18b1 | ELSE IF IMS voice not supported and pc_voice_PS_1_CS_2, pc_attach and | <-- | RRC: <i>RRCCONNECTIONRELEASE</i> |

| | | | |
|--|---|-----|---|
| | pc_TAU_idle_in_IMS are set to TRUE (Note 2) THEN the SS transmits an <i>RRCConnectionRelease</i> message to release the RRC connection. | | |
| 18b2 | The UE transmits an <i>RRCConnectionRequest</i> message. | --> | RRC: <i>RRCConnectionRequest</i> |
| 18b3 | The SS transmit an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> |
| 18b4 | The UE transmits an <i>RRCConnectionSetupComplete</i> message including a TRACKING AREA UPDATE REQUEST message. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: TRACKING AREA UPDATE REQUEST |
| 18b5 | The SS transmits a TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE ACCEPT |
| 18b6 | The UE transmits a TRACKING AREA UPDATE COMPLETE message. | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE COMPLETE |
| 19 | The SS transmits an <i>RRCConnectionRelease</i> message to release RRC connection and move to RRC_IDLE (State 2A-RF). | <-- | RRC: <i>RRCConnectionRelease</i> |
| <p>NOTE 1: The procedure is used with specific message with no IMS voice network support. The UE is configured for voice domain preference IMS PS voice preferred, CS Voice as secondary and to initiate EPS attach. The UE implementation supports TAU in connected mode.</p> <p>NOTE 2: The procedure is used with specific message with no IMS voice network support. The UE is configured for voice domain preference IMS PS voice preferred, CS Voice as secondary and to initiate EPS attach. The UE implementation supports TAU in idle mode.</p> | | | |

5.2A.1A.4 Specific message contents

All specific message contents shall be referred to clause 4.6, 4.7 and 4.7A with the exceptions below.

Table 5.2A.1A.4-1: *RRCConnectionRequest* (Step 2 and 19b2)

| Derivation Path: Table 4.6.1-16 | | | |
|--|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| <i>RRCConnectionRequest</i> ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| <i>rrcConnectionRequest-r8</i> SEQUENCE { | | | |
| ue-Identity | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

Table 5.2A.1A.4-2: *UECapabilityInformation* (Step 15)

| Derivation Path: Table 4.6.1-23 | | | |
|---|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| <i>UECapabilityInformation</i> ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| ueCapabilityInformation-r8 | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

Table 5.2A.1A.4-3: ATTACH ACCEPT (Step 16)

| Derivation Path: TS 36.508 Table 4.7.2-1 | | | |
|--|--------------|--|--|
| Information Element | Value/remark | Comment | Condition |
| EPS network feature support | '0000 0000'B | IMS voice over PS session in S1 mode not supported | NON pc_Disable_ E- UTRA_NOI MSVoIP |
| | '0000 0001'B | IMS voice over PS session in S1 mode supported | pc_Disable_ E- UTRA_NOI MSVoIP |
| Additional update result | Not present | | |

Table 5.2A.1A.4-4: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (Step 16)

| Derivation Path: Table 4.7.3-6 | | | |
|--------------------------------|--|--------------------------------------|--|
| Information Element | Value/remark | Comment | Condition |
| EPS QoS | See Reference default EPS bearer context #1 in table 6.6.1-1 | | NON pc_Disable_ E- UTRA_NOI MSVoIP |
| | See Reference default EPS bearer context #2 in table 6.6.1-1 | | pc_Disable_ E- UTRA_NOI MSVoIP |
| Access point name | The SS defines a Default APN or, if the UE transmits an ESM INFORMATION RESPONSE message providing an APN, the SS shall use this value if it is not the IMS APN. If it is the default IMS APN, the SS defines a Default APN. | | NON pc_Disable_ E- UTRA_NOI MSVoIP |
| | IMS.apn.epc.mnc<MNC>.mcc<MCC>.3gppnetwork.org The <MNC> and <MCC> are set to the same values as in IMSI. | | pc_Disable_ E- UTRA_NOI MSVoIP |
| PDN address | | | IPv4v6 |
| Length of PDN address contents | 5 octets | | |
| PDN type value | '001'B | IPv4 | |
| PDN address information | IPv4 address | The SS provides a valid IPv4 address | |
| ESM cause | IF "PDN type" IE in step 4 is 'IPv4v6' THEN '00110010'B ELSE Not present | "PDN type IPv4 only allowed" | |

Table 5.2A.1A.4-5: TRACKING AREA UPDATE REQUEST (Steps 19a1 and 19b4)

| Derivation Path: 36.508 Table 4.7.2-27 with condition combined_TA_LA |
|--|
|--|

Table 5.2A.1A.4-6: TRACKING AREA UPDATE ACCEPT (Steps 19a2 and 19b5)

| Derivation Path: 36.508 Table 4.7.2-24 with condition combined_TA_LA | | | |
|--|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| EPS network feature support | '0000 0000'B | IMS voice over PS session in S1 mode not supported | |
| Additional update result | Not present | | |

5.2A.1AA Registered, Idle Mode, UE Test Mode Activated in cell supporting BL/CE UE (State 2A-RF-CE)

The same assumptions and definitions apply as in clause 5.2A.1A.

5.2A.1AA.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test USIM shall be inserted.

5.2A.1AA.2 Definition of system information messages

The default system information messages are used with the exceptions below.

Table 5.2A.1AA.2-1: *MasterInformationBlock*

| |
|---|
| Derivation Path: 36.508 Table 4.4.3.2-1 using condition CEmodeB if the test case specifically tests CE mode B else use condition CEmodeA. |
|---|

Table 5.2A.1AA.2-2: *SystemInformation-BR-r13*

| |
|---|
| Derivation Path: 36.508 Table 4.4.3.2-2A. |
|---|

Table 5.2A.1AA.2-3: *SystemInformationBlockType1-BR-r13*

| |
|---|
| Derivation Path: 36.508 Table 4.4.3.2-3A. |
|---|

5.2A.1AA.3 Procedure

For RF testing of BL-UE use the same procedure as in clause 5.2A.1A.3 with the exception below:

- BR-BCCH replaces BCCH.

For RF testing of non-BL UE supporting CE use the procedure in Table 5.2A.1AA.3-1.

Table 5.2A.1AA.3-1: UE registration procedure (state 1 to state 2A-RF-CE)

| Step | Procedure | Message Sequence | |
|----------|---|------------------|--|
| | | U - S | Message |
| 1 | In addition to the system information broadcasted on BCCH the SS broadcasts <i>SystemInformation-BR-r13</i> , <i>SystemInformationBlockType1-BR-r13</i> and other relevant system information blocks as required by the specified combinations of system information blocks specified for the test case on BCCH-BR. | <-- | RRC: SYSTEM INFORMATION (BCCH and BCCH-BR) |
| 2 to 9a2 | Same procedure for steps 2 to 9a2 as specified in the procedure in clause 4.5.2.3 | - | - |
| 10 to 19 | Same procedure for steps 10 to 19 as specified in the procedure in clause 5.2A.1A.3 | - | - |

5.2A.1AA.4 Specific message contents

Same specific message content as in clause 5.2A.1A.4 with the exception below:

- In addition to any other conditions use the condition CEmodeB if the test case specifically tests CE mode B else use condition CEmodeA.

5.2A.2 Generic Default Radio Bearer Establishment, UE Test Mode Activated (State 3A-RF)

In tests referring to test mode State 3A-RF, in order to avoid any uncontrollable transmission of uplink U-plane data, test mode State 4A-RF (specified in 5.2A.3) may be used and configured instead.

5.2A.2.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test USIM shall be inserted.

5.2A.2.2 Definition of system information messages

The default system information messages are used.

5.2A.2.3 Procedure

Table 5.2A.2.3-1: UE registration with default EPS bearer establishment and test mode activation procedures

| Step | Procedure | Message Sequence | |
|---------|---|------------------|--------------------------------|
| | | U - S | Message |
| 1 | | <-- | RRC: SYSTEM INFORMATION (BCCH) |
| 2 to 18 | Steps 2 to 18 as specified in the procedure in clause 5.2A.1A.3 take place. | - | - |

For Rel-11 or higher UEs, that support *frequencyBandRetrieval_r11*, where the UE has not sent all supported [band combinations in UECapabilityInformation \(Step 15](#) of table 5.2A.2.3-1) the following procedure shall be executed after the completion of the procedure in table 5.2A.2.3-1:

Table 5.2A.2.3-2: Retrieval of additional UE capabilities for Rel-11 and higher UEs that support frequencyBandRetrieval_r11

| Step | Procedure | Message Sequence | |
|--------|---|------------------|---------|
| | | U - S | Message |
| 1 to 3 | Steps 1 to 3 as specified in the procedure in clause 5.2A.7.3 take place. | - | - |

5.2A.2.4 Specific message contents

All specific message contents shall be referred to clause 5.2A.1A.4 with the exception below:

- In addition to any other conditions use the condition CEmodeB if the test case specifically tests CE mode B else use condition CEmodeA.

5.2A.2A DC MCG/SCG Dedicated RB established, UE Test Mode Activate (State 3A-RF-DC1)

5.2A.2A.1 Initial conditions

System Simulator:

- 2 cells, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The UE shall be in Generic Default RB Established, UE Test Mode Activated (State 3A-RF).

5.2A.2A.2 Definition of system information messages

The default system information messages are used.

5.2A.2A.3 Procedure

The establishment of MCG/SCG dedicated radio bearer connection is assumed to always be mobile terminated.

Table 5.2A.2A.3-1: Procedure for MCG/SCG dedicated bearer establishment

| Step | Procedure | Message Sequence | |
|------|--|------------------|---|
| | | U - S | Message |
| 1 | The SS adds the PSCell and configures a new SCG data radio bearer and the associated dedicated EPS bearer context. | <-- | RRC: RRCConnectionReconfiguration NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 2 | The UE transmits an RRCConnectionReconfigurationComplete message to confirm the establishment of the new SCG data radio bearer, associated with the dedicated EPS bearer context in the NAS message. | --> | RRC: RRCConnectionReconfigurationComplete |
| 3 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |

5.2A.2A.4 Specific message contents

All specific message contents shall be referred to clause 5.2A.1A.4, with exceptions as below.

Table 5.2A.2A.4-1: RRCConnectionReconfiguration (Step 1, Table 5.2A.2A.3-1)

Derivation Path: 36.508, Table 4.6.1-8 using condition PSCell_Add_SCG_DRB

5.2A.2AA Generic Default Radio Bearer Establishment, UE Test Mode Activated in cell supporting BL/CE UE (State 3A-RF-CE)

In tests referring to test mode State 3A-RF-CE, in order to avoid any uncontrollable transmission of uplink U-plane data, test mode State 4A-RF-CE (specified in 5.2A.3AA) may be used and configured instead.

5.2A.2AA.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test USIM shall be inserted.

5.2A.2AA.2 Definition of system information messages

The default system information messages are used with the exceptions below.

Table 5.2A.2AA.2-1: MasterInformationBlock

Derivation Path: 36.508 Table 4.4.3.2-1 using condition CEmodeB if the test case specifically tests CE mode B else use condition CEmodeA.

Table 5.2A.2AA.2-2: SystemInformation-BR-r13

Derivation Path: 36.508 Table 4.4.3.2-2A.

Table 5.2A.2AA.2-3: SystemInformationBlockType1-BR-r13

| Derivation Path: 36.508 Table 4.4.3.2-3A | | | |
|--|--------------|--|------------------------------------|
| Information Element | Value/remark | Comment | Condition |
| schedulingInfoList-BR-r13 SEQUENCE (SIZE (1..maxSI-Message)) OF SEQUENCE { | n entries | n is the same number of entries, and listed in the same order, as in SchedulingInfoList (without suffix) | |
| si-Narrowband-r13[1] | 1 | Narrowband index 0 | 1.4 MHz BW |
| si-Narrowband-r13[1] | 2 | Narrowband index 1 | 3 MHz BW |
| si-Narrowband-r13[1] | 4 | Narrowband index 3 | 5 MHz BW or 15 MHz BW or 20 MHz BW |
| si-Narrowband-r13[1] | 6 | Narrowband index 5 | 10 MHz BW |
| si-TBS-r13[1] | b712 | | |
| | | | |
| si-Narrowband-r13[n] | 1 | Narrowband index 0 | 1.4 MHz BW |
| si-Narrowband-r13[n] | 2 | Narrowband index 1 | 3 MHz BW |
| si-Narrowband-r13[n] | 4 | Narrowband index 3 | 5 MHz BW or 15 MHz BW or 20 MHz BW |
| si-Narrowband-r13[n] | 6 | Narrowband index 5 | 10 MHz BW |
| si-TBS-r13[n] | b712 | | |
| } | | | |

| Condition | Explanation |
|------------|---------------------------------------|
| 1.4 MHz BW | Used for cells with 1.4 MHz bandwidth |
| 3 MHz BW | Used for cells with 3 MHz bandwidth |
| 5 MHz BW | Used for cells with 5 MHz bandwidth |
| 10 MHz BW | Used for cells with 10 MHz bandwidth |
| 15 MHz BW | Used for cells with 15 MHz bandwidth |
| 20 MHz BW | Used for cells with 20 MHz bandwidth |

5.2A.2AA.3 Procedure

For RF testing of BL-UE use the procedure in Table 5.2A.2AA.3-1. For RF testing of non-BL UE supporting CE use the procedure in Table 5.2A.2AA.3-2.

Table 5.2A.2AA.3-1: UE registration with default EPS bearer establishment and test mode activation procedures

| Step | Procedure | Message Sequence | |
|---------|---|------------------|-----------------------------------|
| | | U - S | Message |
| 1 | | <-- | RRC: SYSTEM INFORMATION (BR-BCCH) |
| 2 to 18 | Steps 2 to 18 as specified in the procedure in clause 5.2A.1A.3 take place. | - | - |

Table 5.2A.2AA.3-2: UE registration procedure (state 1 to state 2A-RF-CE)

| Step | Procedure | Message Sequence | |
|---------|---|------------------|--|
| | | U - S | Message |
| 1 | In addition to the system information broadcasted on BCCH the SS broadcasts <i>SystemInformation-BR-r13</i> , <i>SystemInformationBlockType1-BR-r13</i> and other relevant system information blocks as required by the specified combinations of system information blocks specified for the test case on BCCH-BR. | <-- | RRC: SYSTEM INFORMATION (BCCH and BCCH-BR) |
| 2 to 18 | Steps 2 to 18 as specified in the procedure in clause 5.2A.1A.3 take place. | - | - |

5.2A.2AA.4 Specific message contents

All specific message contents shall be referred to clause 5.2A.1A.4 with the exceptions below:

- In addition to any other conditions use the condition CEmodeB if the test case specifically tests CE mode B else use condition CEmodeA.

Table 5.2A.2AA.4-1: MPDCCH-Config-r13

| Derivation Path: 36.508 Table 4.6.3-2B | | | |
|--|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| mpdcch-config-r13 CHOICE[1] { | | | |
| setup SEQUENCE { | | | |
| mpdcch-config-r13 CHOICE[1] { | | | |
| setup SEQUENCE { | | | |
| csi-NumRepetitionCE-r13 | sf1 | | |
| mpdcch-pdsch-HoppingConfig-r13 | off | | |
| mpdcch-StartSF-U ESS-r13 CHOICE { | | | |
| fdd-r13 | v1 | | FDD |
| tdd-r13 | v1 | | TDD |
| } | | | |
| mpdcch-NumRepetition-r13 | r1 | No repetitions to reduce impact on legacy E-UTRA test cases for category M1 UEs. | |
| mpdcch-Narrowband-r13 | 1 | Narrowband index 0 | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |
| TDD | TDD cell environment |

5.2A.2B DC Split Default RB established, UE Test Mode Activate (State 3A-RF-DC2)

5.2A.2B.1 Initial conditions

Same as in sub-clause 5.2A.2A.1.

5.2A.2B.2 Definition of system information messages

The default system information messages are used.

5.2A.2B.3 Procedure

The establishment of split dedicated radio bearer connection is assumed to always be mobile terminated.

Table 5.2A.2B.3-1: Procedure for Dual Connectivity Split default bearer establishment

| Step | Procedure | Message Sequence | |
|------|--|------------------|---|
| | | U - S | Message |
| 4 | The SS adds a PSCell and configures new split data radio bearer | <-- | RRC: RRCConnectionReconfiguration |
| 5 | The UE transmits an RRCConnectionReconfigurationComplete message to confirm the establishment of the split data radio bearer with UL transmission of PDCP SDUs on the PSCell | --> | RRC: RRCConnectionReconfigurationComplete |

5.2A.2B.4 Specific message contents

All specific message contents shall be referred to clause 5.2A.1A.4, with exceptions as below.

Table 5.2A.2B.4-1: RRCConnectionReconfiguration (Step 4, Table 5.2A.2A.3-1)

| |
|---|
| Derivation Path: 36.508, Table 4.6.1-8 using condition PSCell_Add_Split_DRB |
|---|

5.2A.2C Generic Default Radio Bearer Establishment, UE Test Mode Activated, V2X Setup (State 3A-RF-V2X)

5.2A.2C.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- 1 V2V transmitter for receiver characteristics or 1 V2V receiver for transmitter characteristics
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test USIM shall be inserted.

5.2A.2C.2 Definition of system information messages

The default system information messages are used with the exceptions below:

Table 5.2A.1B.2-1: SystemInformationBlockType21

| |
|---|
| Derivation Path: 36.508 Table 4.4.3.3-19. |
|---|

5.2A.2C.3 Procedure

For RF testing of V2X Communication, use the same procedure as in clause 5.2A.2.3.

5.2A.2C.4 Specific message contents

All specific message contents shall be referred to clause 5.2A.1A.4, with exceptions as below:

Table 5.2A.2A.4-1: RRCConnectionReconfiguration (Step 16, Table 5.2A.1A.3-1)

| |
|--|
| Derivation Path: 36.508, Table 4.6.1-8B using conditions SETUP and SCHEDULED |
|--|

5.2A.3 Loopback Activation without looped data (State 4A-RF)

Editor's note: Test mode State 4A-RF is used and configured as an alternative to test mode State 3A-RF, to avoid any uncontrollable transmission of uplink U-plane data.

5.2A.3.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The UE shall be in Generic RB Establishment state, UE Test Mode Activated (State 3A-RF).

5.2A.3.2 Definition of system information messages

The default system information messages are used.

5.2A.3.3 Procedure

Table 5.2A.3.3-1: UE registration with default EPS bearer establishment and test mode activation procedures

| Step | Procedure | Message Sequence | |
|------|--|------------------|--|
| | | U - S | Message |
| 1 | The SS transmits a CLOSE UE TEST LOOP message to enter the UE test loop mode. | <-- | RRC: <i>DLInformationTransfer</i> TC: CLOSE UE TEST LOOP |
| 2 | The UE transmits a CLOSE UE TEST LOOP COMPLETE message to confirm that loopback entities for the radio bearer(s) have been created and loop back is activated. | --> | RRC: <i>ULInformationTransfer</i> TC: CLOSE UE TEST LOOP COMPLETE |

5.2A.3.4 Specific message contents

All specific message contents shall be referred to clause 4.5.4.4, with the exceptions below.

Table 5.2A.3.4-1: CLOSE UE TEST LOOP (in the preamble) (Step 1 in Table 5.2A.3.3-1)

| Derivation Path: 36.509 clause 6.1 | | | |
|--|---|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | 1 1 1 1 | | |
| Skip indicator | 0 0 0 0 | | |
| Message type | 1 0 0 0 0 0 0 0 | | |
| UE test loop mode | 0 0 0 0 0 0 0 0 | UE test loop mode A | |
| UE test loop mode A LB setup | | | |
| Length of UE test loop mode A LB setup list in bytes | 0 0 0 0 0 0 1 1 | Length of one LB setup DRB (3 bytes) | |
| LB setup DRB | 0 0 0 0 0 0 0 0, 0 0 0 0 0 0 0 0, 0 0 0 Q4 Q3 Q2 Q1 Q0 | UL PDCP SDU size = 0 bits (0 bytes) Q4..Q0 = Data Radio Bearer identity number for the default radio bearer. See 36.509 clause 6.1 | |
| UE test loop mode B LB setup | Not present | | |
| UE test loop mode B LB setup | Not present | | |

5.2A.3A DC MCG/SCG DRBs Loopback Activation without looped data (State 4A-RF-DC1)

Editor’s note: Test mode State 4B-RF is used and configured as an alternative to test mode State 3B-RF, to avoid any uncontrollable transmission of uplink U-plane data.

5.2A.3A.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The UE shall be in DC MCG/SCG Dedicated RB established, UE Test Mode Activated (State 3A-RF-DC1).

5.2A.3A.2 Definition of system information messages

Same as in sub-clause 5.2A.3.2.

5.2A.3A.3 Procedure

Same as in sub-clause 5.2A.3.3.

5.2A.3A.4 Specific message contents

Same as in sub-clause 5.2A.3.4.

5.2A.3AA Loopback Activation without looped data in cell supporting BL/CE UE (State 4A-RF-CE)

Editor's note: Test mode State 4A-RF-CE is used and configured as an alternative to test mode State 3A-RF-CE, to avoid any uncontrollable transmission of uplink U-plane data.

5.2A.3AA.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The UE shall be in Generic RB Establishment state, UE Test Mode Activated (State 3A-RF).

5.2A.3AA.2 Definition of system information messages

The default system information messages are used with the exceptions below.

Table 5.2A.3AA.2-1: *MasterInformationBlock*

| |
|---|
| Derivation Path: 36.508 Table 4.4.3.2-1 using condition CEmodeB if the test case specifically tests CE mode B else use condition CEmodeA. |
|---|

Table 5.2A.3AA.2-2: *SystemInformation-BR-r13*

| |
|---|
| Derivation Path: 36.508 Table 4.4.3.2-2A. |
|---|

Table 5.2A.2AA.2-3: *SystemInformationBlockType1-BR-r13*

| |
|---|
| Derivation Path: 36.508 Table 4.4.3.2-3A. |
|---|

5.2A.3AA.3 Procedure

Table 5.2A.3.3-1: UE registration with default EPS bearer establishment and test mode activation procedures

| Step | Procedure | Message Sequence | |
|------|--|------------------|--|
| | | U - S | Message |
| 1 | The SS transmits a CLOSE UE TEST LOOP message to enter the UE test loop mode. | <-- | RRC: <i>DLInformationTransfer</i> TC: CLOSE UE TEST LOOP |
| 2 | The UE transmits a CLOSE UE TEST LOOP COMPLETE message to confirm that loopback entities for the radio bearer(s) have been created and loop back is activated. | --> | RRC: <i>ULInformationTransfer</i> TC: CLOSE UE TEST LOOP COMPLETE |

5.2A.3AA.4 Specific message contents

Same as in clause 5.2A.3.4.

5.2A.3B DC Split DRB Loopback Activation without looped data (State 4A-RF-DC2)

Editor's note: Test mode State 4C-RF is used and configured as an alternative to test mode State 3C-RF, to avoid any uncontrollable transmission of uplink U-plane data.

5.2A.3B.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The UE shall be in DC Split Default RB established, UE Test Mode Activated (State 3A-RF-DC2).

5.2A.3B.2 Definition of system information messages

Same as in sub-clause 5.2A.3.2.

5.2A.3B.3 Procedure

Same as in sub-clause 5.2A.3.3.

5.2A.3B.4 Specific message contents

Same as in sub-clause 5.2A.3.4.

5.2A.3C Loopback Activation without looped data, V2X Setup (State 4A-RF-V2X)

Editor's note: Test mode State 4A-RF-V2X is used and configured as an alternative to test mode State 3A-RF-V2X, to avoid any uncontrollable transmission of uplink U-plane data.

5.2A.3C.1 Initial conditions

System Simulator:

- 1 cell, default parameters.

- 1 GNSS simulator
- 1 V2V transmitter for receiver characteristics or 1 V2V receiver for transmitter characteristics
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The UE shall be in Generic RB Establishment state, UE Test Mode Activated, V2X Setup (State 3A-RF-V2X).

5.2A.3C.2 Definition of system information messages

Same as in sub-clause 5.2A.3.2.

5.2A.3C.3 Procedure

Same as in sub-clause 5.2A.3.3.

5.2A.3C.4 Specific message contents

All specific message contents shall be referred to clause 5.2A.3.4, with exceptions as below:

Table 5.2A.3C.4-1: ACTIVATE TEST MODE: V2X Communication

Derivation Path: 36.508, Table 4.7A-1 using condition UE TEST LOOP MODE E

Table 5.2A.3C.4-2: CLOSE UE TEST LOOP: V2X Communication

Derivation Path: 36.508, Table 4.7A-3 using condition UE TEST LOOP MODE E

5.2A.4 Procedure to configure SCC

Table 5.2A.4.-1: UE RRC reconfiguration with sCELLToAdd

| Step | Procedure | Message Sequence | |
|------|--|------------------|--|
| | | U - S | Message |
| 1 | The SS transmits an <i>RRCConnectionReconfiguration(sCellToAdd ModList)</i> message to establish the SCC(s). | <-- | RRC: <i>RRCConnectionReconfiguration</i> |
| 2 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> |
| 3 | If not all SCCs are established, then repeat step 1 and 2. | | |

5.2 A.41. Specific message contents

All specific message contents shall be referred to clause 4.5.2A.4, with exceptions as below.

5.2A.4.1.1 Exceptions for all CA tests

RRCConnectionReconfiguration

Table 5.2A.4.1.1-1: RRCConnectionReconfiguration

Derivation Path: Clause 4.6.1 Table 4.6.1-8, condition SCell_AddMod

MAC configurations

Table 5.2A.4.1.1-2: MAC-MainConfig-RBC

| Derivation Path: Clause 4.8.2.1.5 Table 5.5.1.1-1, condition Scell_AddMod | | | |
|---|--------------|---------|--------------|
| Information Element | Value/remark | Comment | Condition |
| MAC-MainConfig-RBC ::= SEQUENCE { | | | |
| mac-MainConfig-v1020SEQUENCE { | | | SCell_AddMod |
| sCellDeactivationTimer-r10 | Not present | | |
| extendedBSR-Sizes-r10 | Not Present | | |
| extendedPHR-r10 | Not Present | | |
| } | Setup | | UL CA |
| } | | | |
| } | | | |

| Condition | Explanation |
|--------------|-----------------------------------|
| SCell_AddMod | Addition or modification of Scell |
| UL CA | This condition is used for UL CA. |

5.2A.4.1.2 Exceptions for UL CA tests

RadioResourceConfigCommonSCell-r10-DEFAULT

Table 5.2A.4.1.2-1: RadioResourceConfigCommonSCell-r10-DEFAULT

| Derivation Path: Clause 4.6.3 Table 4.6.3-13A | | | |
|---|---------------|--|---------------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigCommonSCell-r10 ::= SEQUENCE { | | | |
| ul-Configuration-r10 SEQUENCE { | | | UL CA |
| ul-FreqInfo-r10 SEQUENCE { | | | |
| ul-CarrierFreq-r10 | Not Present | For FDD: If absent, the (default) value determined from the default TX-RX frequency separation defined in 3GPP TS 36.101 [27], table 5.7.3-1 applies. For TDD: This parameter is absent and it is equal to the downlink frequency. | |
| ul-Bandwidth-r10 | Not Present | Same downlink bandwidth as used for target SCell | |
| additionalSpectrumEmissionSCell-r10 | 31 (CA_NS_31) | | Intra-B UL CA |
| additionalSpectrumEmissionSCell-r10 | 1 (NS_01) | | Inter-B UL CA |
| } | | | |
| soundingRS-UL-ConfigCommon-r10 | release | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|---------------|--------------------------------------|
| UL CA | When UL Carrier Aggregation is used. |
| Intra-B UL CA | Intra-band Carrier Aggregation |
| Inter-B UL CA | Inter-band Carrier Aggregation |

PhysicalConfigDedicatedSCell-r10-DEFAULT

Table 5.2A.4.1.2-2: PhysicalConfigDedicatedSCell-r10-DEFAULT

| Derivation Path: Clause 4.6.3 Table 4.6.3-6A | | | |
|---|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PhysicalConfigDedicatedSCell-r10 ::= SEQUENCE { | | | |
| ul-Configuration-r10 | Present | | |
| ul-Configuration-r10 SEQUENCE { | | | UL CA |
| antennaInfoUL-r10 | Not Present | | |
| pusch-ConfigDedicatedSCell-r10 | Not present | | |
| uplinkPowerControlDedicatedSCell-r10 | UplinkPowerControlDedicatedSCell-r10-DEFAULT | | |
| cgi-ReportConfigSCell-r10 | Not present | | |
| soundingRS-UL-ConfigDedicated-r10 | Not present | | |
| soundingRS-UL-ConfigDedicated-v1020 | Not present | | |
| soundingRS-UL-ConfigDedicatedAperiodic-r10 | Not present | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|--------------------------------------|
| UL CA | When UL Carrier Aggregation is used. |

5.2A.5 Exceptions for felCIC tests

5.2A.5.1 Specific message contents

All specific message contents shall be referred to clause 4.6, with exceptions as below.

5.2A.5.1.1 Neighbour cell info for all felCIC test cases

Table 5.2A.5.1.1-1: RRCConnectionReconfiguration

| Derivation Path: clause 4.6.1, Table 4.6.1-8: RRCConnectionReconfiguration | | | |
|--|---|---------|----------------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionReconfiguration ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| rrcConnectionReconfiguration-r8 SEQUENCE { | | | |
| radioResourceConfigDedicated | RadioResourceConfigDedicated-SRB2-DRB(n, m) | | SRB2-DRB(n, m) |
| securityConfigHO | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

Table 5.2A.5.1.1-2: RadioResourceConfigDedicated-SRB2-DRB(n, m)

| Derivation Path: clause 4.6.3, Table 4.6.3-16 RadioResourceConfigDedicated-SRB2-DRB(n,m) | | | |
|---|--------------------------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-SRB2-DRB(n, m) ::= SEQUENCE { | | | |
| neighCellsCRS-Info-r11 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| CRS-AssistanceInfoList-r11 ::= SEQUENCE (SIZE (1..maxCellReport)) OF CRS-AssistanceInfo-r11 | | | |
| CRS-AssistanceInfo-r11 ::= SEQUENCE { | | CRS information for all the configured neighbour cells | |
| physCellId-r11 | Based on simulated cell requirements | | |
| antennaPortsCount-r11 | Based on simulated cell requirements | | |
| mbsfn-SubframeConfigList-r11 | Based on simulated cell requirements | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

5.2A.6 Exceptions for NAICS tests

5.2A.6.1 NAICS specific RRC Connection reconfiguration procedure

5.2A.6.1.1 Procedure

Table 5.2A.6.1.1-1: Procedure for RRC connection reconfiguration

| Step | Procedure | Message Sequence | |
|------|--|------------------|---|
| | | U - S | Message |
| 1 | The SS transmits and RRCConnectionReconfiguration message. | <-- | RRC: RRCConnectionReconfiguration |
| 2 | The UE transmits an RRCConnectionReconfigurationComplete message | --> | RRC: RRCConnectionReconfigurationComplete |

5.2A.6.1.1 Specific message contents

Same as in 5.2A.6.2 with the condition “NAICS_ONLY”.

5.2A.6.2 Specific message contents

All specific message contents shall be referred to clause 4.6, with exceptions as below.

5.2A.6.2.1 RRCConnectionReconfiguration for setting up and releasing NAICS configuration in NAICS test cases

Table 5.2A.6.2.1-1: RRCConnectionReconfiguration

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|---|---------|---------------------------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionReconfiguration ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| rrcConnectionReconfiguration-r8 SEQUENCE { | | | |
| dedicatedInfoNASList | Not present | | NAICS_ONLY, NAICS_RELEASE |
| | Set according to specific message content | | SRB2-DRB_NAICS(n, m) |
| radioResourceConfigDedicated | RadioResourceConfigDedicated-SRB2-DRB_NAICS_ONLY | | NAICS_ONLY |
| | RadioResourceConfigDedicated-SRB2-DRB_NAICS(n, m) | | SRB2-DRB_NAICS(n, m) |
| | RadioResourceConfigDedicated_NAICS_RELEASE | | NAICS_RELEASE |
| securityConfigHO | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|---------------------|--|
| SRB2-DRB_NAICS(n,m) | Establishment of a SRB and DRB combination with n x AM DRB and m x UM DRB (including establishment of SRB2) plus NAICS information |
| NAICS_ONLY | Stand alone NAICS set-up |
| NAICS_RELEASE | Standalone release of all NAICS configurations |

Table 5.2A.6.2.1-2: RadioResourceConfigDedicated-SRB2-DRB_NAICS(n, m)

| Derivation Path: clause 4.6.3, Table 4.6.3-16 RadioResourceConfigDedicated-SRB2-DRB(n,m) | | | |
|--|--------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-SRB2-DRB_NAICS(n, m) ::= SEQUENCE { | | | |
| neighCellsCRS-Info-r11 | NeighCellsCRS-Info_NAICS | | |
| } | | | |

Table 5.2A.6.2.1-3: RadioResourceConfigDedicated-SRB2-DRB_NAICS_ONLY

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-SRB2-DRB_NAICS_ONLY ::= SEQUENCE { | | | |
| neighCellsCRS-Info-r11 | NeighCellsCRS-Info_NAICS | | |
| } | | | |

Table 5.2A.6.2.1-4: *NeighCellsCRS-Info_NAICS*

| Derivation Path: 36.331 clause 6.3.2 | | | |
|--|--------------------------------------|----------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| neighCellsCRS-Info-r11 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| naics-Info-r12 ::= CHOICE { | | | |
| setup ::= SEQUENCE { | | | |
| neighCellsToReleaseList-r12 | Not present | | |
| neighCellsToAddModList-r12 SEQUENCE (SIZE (1..maxNeighCell-r12)) OF NeighCellsInfo-r12 | | | |
| NeighCellsInfo-r12 ::= SEQUENCE { | | | |
| physCellId-r12 | Based on simulated cell requirements | | |
| p-b-r12 | Based on simulated cell requirements | | |
| crs-PortsCount-r12 | Based on simulated cell requirements | | |
| mbsfn-SubframeConfig-r12 | Not present | | |
| p-aList-r12 SEQUENCE (SIZE (1..maxP-a-PerNeighCell-r12)) OF P-a | | | |
| P-a | dB-6 | | |
| P-a | dB-3 | | |
| P-a | dB0 | | |
| transmissionModeList-r12 | '01110110'B | Transmission modes 2,3,4,8 and 9 | |
| resAllocGranularity-r12 | 1 | | |
| } | | | |
| servCellp-a-r12 | Not present | | |
| } | | | |
| } | | | |
| } | | | |

Table 5.2A.6.2.1-5: *RadioResourceConfigDedicated_NAICS_RELEASE*

| Derivation Path: 36.331 clause 6.3.2 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-SRB2-DRB_NAICS_ONLY ::= SEQUENCE { | | | |
| neighCellsCRS-Info-r11 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| naics-Info-r12 ::= CHOICE { | | | |
| release | NULL | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

5.2A.7 Procedure to retrieve additional UE Capabilities for Rel-11 and higher UEs that support frequencyBandRetrieval_r11

5.2A.7.1 Initial conditions

System Simulator:

- 1 cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 5

User Equipment:

- The Test USIM shall be inserted.

5.2A.7.2 Definition of system information messages

The default system information messages are used.

5.2A.7.3 Procedure

Table 5.2A.7.3-1: Procedure to retrieve additional UE capabilities

| Step | Procedure | Message Sequence | |
|------|--|------------------|-------------------------------------|
| | | U - S | Message |
| 1 | If the UE sent <i>freqBandretrieval-r11</i> in previous <i>UECapabilityInformation</i> , the SS transmits a <i>UECapabilityEnquiry</i> message to initiate the UE radio access capability transfer procedure | <-- | RRC: <i>UECapabilityEnquiry</i> |
| 2 | The UE transmits a <i>UECapabilityInformation</i> message to transfer UE radio access capability. | --> | RRC: <i>UECapabilityInformation</i> |
| 3 | If the UE did not report all supported E-UTRA bands relevant to the tested bands, repeat steps 1 and 2. | | |

5.2A.7.4 Specific message contents

Table 5.2A.7.4-1: *UECapabilityEnquiry* (Step 1)

| Derivation Path: Clause 6.2.2 Table 4.6.1-22 | | | |
|--|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| <i>UECapabilityEnquiry</i> ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| ueCapabilityEnquiry-r8 SEQUENCE { | | | |
| ue-CapabilityRequest | eutra | | |
| nonCriticalExtension SEQUENCE { | | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE { | | | |
| requestedFrequencyBands-r11 SEQUENCE (SIZE (1..16)) OF SEQUENCE{ | | | |
| FreqBandIndicator-r11 | | | |
| } | | | |
| nonCriticalExtension SEQUENCE {} | Not Present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

5.2A.8 Exceptions for DL Control channel interference mitigation (Type A and Type B) tests

5.2A.8.1 Specific message contents

All specific message contents shall be referred to clause 4.6, with exceptions as below.

5.2A.8.1.1 Neighbour cell info for all CCIM test cases

Table 5.2A.5.1.1-1: RRCConnectionReconfiguration

| Derivation Path: clause 4.6.1, Table 4.6.1-8: RRCConnectionReconfiguration | | | |
|--|---|---------|----------------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionReconfiguration ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| rrcConnectionReconfiguration-r8 SEQUENCE { | | | |
| radioResourceConfigDedicated | RadioResourceConfigDedicated-SRB2-DRB(n, m) | | SRB2-DRB(n, m) |
| securityConfigHO | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

Table 5.2A.5.1.1-2: RadioResourceConfigDedicated-SRB2-DRB(n, m)

| Derivation Path: clause 4.6.3, Table 4.6.3-16 RadioResourceConfigDedicated-SRB2-DRB(n,m) | | | |
|---|--------------------------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-SRB2-DRB(n, m) ::= SEQUENCE { | | | |
| neighCellsCRS-Info-r13 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| CRS-AssistanceInfoList-r13 ::= SEQUENCE (SIZE (1..maxCellReport)) OF CRS-AssistanceInfo-r13 | | | |
| CRS-AssistanceInfo-r13 ::= SEQUENCE { | | CRS information for all the configured neighbour cells | |
| physCellId-r13 | Based on simulated cell requirements | | |
| antennaPortsCount-r13 | Based on simulated cell requirements | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

5.3 Default RRC message and information elements contents

5.3.1 Radio resource control information elements

As defined in clause 4.6.3 with the following exceptions:

Table 5.3.1-1: TDD-Config-DEFAULT

| Derivation Path: Clause 4.6.3 Table 4.6.3-23 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| TDD-Config-DEFAULT ::= SEQUENCE { | | | |
| subframeAssignment | sa1 | | |
| specialSubframePatterns | ssp4 | | RF |
| } | | | |

| Condition | Explanation |
|-----------|--|
| RF | For all the RF tests specified in 36.521-1 |

Table 5.3.1-2: RadioResourceConfigCommonSIB-DEFAULT

| Derivation Path: Clause 4.6.3 Table 4.6.3-14 | | | |
|---|----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigCommonSIB-DEFAULT ::= SEQUENCE { | | | |
| rach-ConfigCommon | RACH-ConfigCommon-DEFAULT | | |
| bcch-Config | BCCH-Config-DEFAULT | | |
| pcch-Config | PCCH-Config-DEFAULT | | |
| prach-Config | PRACH-ConfigSIB-DEFAULT | | |
| pdsch-ConfigCommon | PDSCH-ConfigCommon-DEFAULT | | |
| pusch-ConfigCommon | PUSCH-ConfigCommon-DEFAULT | | |
| pucch-ConfigCommon | PUCCH-ConfigCommon-DEFAULT | | |
| soundingRS-UL-ConfigCommon CHOICE { | | | |
| release | NULL | | |
| } | | | |
| uplinkPowerControlCommon | UplinkPowerControlCommon-DEFAULT | | |
| ul-CyclicPrefixLength | len1 | | |
| } | | | |

Table 5.3.1-3: PRACH-Config-DEFAULT

| Derivation Path: Clause 4.6.3 Table 4.6.3-7 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PRACH-Config-DEFAULT ::= SEQUENCE { | | | |
| prach-ConfigInfo SEQUENCE { | | | |
| prach-ConfigIndex | 3 | | TDD |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| TDD | TDD cell environment |

Table 5.3.1-4: RadioResourceConfigCommonSCell-r10-DEFAULT

| Derivation Path: Clause 4.6.3 Table 4.6.3-13A | | | |
|---|--------------|---------|------------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigCommonSCell-r10 ::= SEQUENCE { | | | |
| ul-Configuration-r10 | Not Present | | DL CA only |
| } | | | |

Table 5.3.1-5: PhysicalConfigDedicatedSCell-r10-DEFAULT

| Derivation Path: Clause 4.6.3 Table 4.6.3-6A | | | |
|---|--------------|---------|------------|
| Information Element | Value/remark | Comment | Condition |
| PhysicalConfigDedicatedSCell-r10 ::= SEQUENCE { | | | |
| ul-Configuration-r10 | Not Present | | DL CA only |
| } | | | |

| Condition | Explanation |
|------------|-----------------------------------|
| DL CA only | When DL CA without UL CA is used. |

5.3.2 Measurement information elements

As defined in clause 4.6.6 with the following exceptions:

Table 5.3.2-1: MeasDS-Config-DEFAULT

| Derivation Path: clause 4.6.6 Table 4.6.6-1B | | | |
|--|--------------|---------|--------------|
| Information Element | Value/remark | Comment | Condition |
| MeasDS-Config-DEFAULT ::= CHOICE { | | | |
| release | NULL | | |
| setup SEQUENCE { | | | |
| dmtc-PeriodOffset-r12 CHOICE { | | | |
| ms40-r12 | 0 | | LAA_Receiver |
| ms80-r12 | 0 | | LAA_DemodCSI |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|--------------|--|
| LAA_Receiver | Used for LAA receiver characteristics test cases |
| LAA_DemodCSI | Used for LAA demodulation and CSI reporting test cases |

5.4 Default NAS message and information elements contents

5.5 Reference radio bearer configurations

5.5.1 SRB and DRB parameters

5.5.1.1 MAC configurations

As defined in clause 4.8.2.1.5 with the following exceptions:

Table 5.5.1.1-1: MAC-MainConfig-RBC

| Derivation Path: Clause 4.8.2.1.5, Table 4.8.2.1.5-1 | | | |
|--|--------------|-----------------------------------|--------------|
| Information Element | Value/remark | Comment | Condition |
| MAC-MainConfig-RBC ::= SEQUENCE { | | | |
| ul-SCH-Config | Not present | | SCell_AddMod |
| ul-SCH-Config SEQUENCE { | | | |
| maxHARQ-Tx | n1 | Only one transmission per UL HARQ | |
| } | | | |
| drx-Config | Not present | | SCell_AddMod |
| drx-Config CHOICE { | | | |
| release | NULL | | |
| } | | | |
| timeAlignmentTimerDedicated | infinity | | |
| } | | | |

| Condition | Explanation |
|--------------|-----------------------------------|
| SCell_AddMod | Addition or modification of Scell |

5.5.1.2 Physical Layer configurations

Table 5.5.1.2-1: PhysicalConfigDedicated-DEFAULT

| Derivation Path: Clause 4.8.2.1.6 Table 4.8.2.1.6-1 | | | |
|---|--|---------------------|--|
| Information Element | Value/remark | Comment | Condition |
| PhysicalConfigDedicated-DEFAULT ::= SEQUENCE { | | | |
| pdsch-ConfigDedicated | PDSCH-ConfigDedicated-DEFAULT | See subclause 4.6.3 | SRB1 |
| | Not present | | RBC |
| pucch-ConfigDedicated | PUCCH-ConfigDedicated-DEFAULT | See subclause 4.6.3 | SRB1 |
| | Not present | | RBC |
| pusch-ConfigDedicated | PUSCH-ConfigDedicated-DEFAULT | See subclause 4.6.3 | SRB1 |
| | Not present | | RBC |
| uplinkPowerControlDedicated | UplinkPowerControlDedicated-DEFAULT | See subclause 4.6.3 | SRB1 |
| | Not present | | RBC |
| tpc-PDCCH-ConfigPUCCH | Not present | | SRB1 |
| | TPC-PDCCH-Config-DEFAULT using condition PUCCH | See subclause 4.6.3 | RBC |
| tpc-PDCCH-ConfigPUSCH | Not present | | SRB1 |
| | TPC-PDCCH-Config-DEFAULT using condition PUSCH | See subclause 4.6.3 | RBC |
| cqi-ReportConfig | Not present | | SRB1 |
| | Not present | | RBC |
| soundingRS-UL-ConfigDedicated | Not present | | SRB1 |
| | Not present | | RBC |
| antennaInfo CHOICE { | | | |
| defaultValue | NULL | | |
| } | | | |
| schedulingRequestConfig | Not present | | SRB1 |
| | SchedulingRequestConfig-DEFAULT | See subclause 4.6.3 | SRB1 and HalfDuplex and (CEmodeA or CEmodeB) |
| | Not present | See subclause 4.6.3 | RBC |
| } | | | |
| cqi-ReportConfig-r10 | Not present | | SCell_AddMod |

| Condition | Explanation |
|--------------|---|
| SRB1 | Used at configuration of SRB1 during RRC connection (re-)establishment |
| RBC | Used at configuration of a radio bearer combination during SRB2+DRB establishment |
| SCell_AddMod | Addition or modification of SCell |
| CEmodeA | Used for CE mode A testing |
| CEmodeB | Used for CE mode B testing |
| HalfDuplex | Used during Type B HalfDuplex Operation |

5.5.1.3 SRB and DRB combinations

5.5.1.3.1 Combinations on DL-SCH and UL-SCH

5.5.1.3.1.1 SRB1 and SRB2 for DCCH + n x AM DRB + m x UM DRB, where $n=1$ and $m=0$

This SRB and DRB combination is setup in UE Registration procedure and the Generic Radio Bearer Establishment with UE Test Mode Activated using specific message content - the default *RRCConnectionReconfiguration* message with condition SRB2-DRB(n , m).

6 Test environment for Signalling test

6.1 Requirements of test equipment

The requirements of test equipment specified in this subclause apply to Signalling test cases defined in TS 36.523-1 [18], in addition to the common requirements of test equipment specified in clause 4.2 of this specification.

Test equipment shall be able to simulate cells of Radio Access Technology (RAT) E-UTRA, UTRA, GSM or HRPD / 1xRTT. Regardless of respective RAT, the overall number and configuration of cells to be simulated simultaneously by test equipment shall not exceed the resources specified in the following Table 6.1-1:

Table 6.1-1: Maximum resources in terms of number / configuration of cells to be simulated simultaneously in a test setup

| Simulation of | Max. number / configuration of cells (SISO / SIMO) | Max. number / configuration of cells (MIMO) |
|---|---|---|
| E-UTRA single-mode networks (FDD or TDD) | 3x cells | n/a |
| E-UTRA dual-mode networks (FDD and TDD) | 3x cells | n/a |
| E-UTRA networks involving Carrier Aggregation | 4x cells | n/a |
| Mixed E-UTRA / UTRA networks | 3x cells | n/a |
| Mixed E-UTRA / GSM networks | 3x cells | n/a |
| Mixed E-UTRA / HRPD or 1xRTT networks | 3x cells | n/a |
| Mixed E-UTRA / UTRA / GSM networks | 3x cells | n/a |
| Note 1: | No differentiation between cell configuration types (as defined in clause 6.3.3) here, because these types are relevant to specific test cases and their TTCN-3 implementation only. | |
| Note 2: | Only network scenarios specified in clause 4.4.1 and 6.3.2.1 have been covered. | |
| Note 3: | In case of Carrier Aggregation, each cell can act as a PCell, an SCell, or a standalone cell (not used as a CA component carrier). In Release 10 a maximum of 1 SCell can be aggregated with a PCell. | |
| Note 4: | Virtual Cells are not included in the maximum cell number as they do not require resources in the SS. | |

Exceptions to the requirements outlined above are possible but need special evidence to be provided explicitly in the test case prose and should be allowed only if the test case purpose cannot be met otherwise.

Test equipment shall be able to simulate one or more UEs with PC5 interface for sidelink direct communication and/or sidelink direct discovery or V2X sidelink communication.

6.2 Reference test conditions

The reference test conditions specified in this subclause apply to all Signalling test cases defined in TS 36.523-1 [18] unless otherwise specified, in addition to the common reference test conditions specified in subclause 4.3 of this specification.

6.2.1 Physical channel allocations

6.2.1.1 Antennas

If the UE has two or more Rx antennas, the same downlink signal is applied to each one, except if MIMO is tested. All UE Rx antennas shall be connected.

If the UE has one Rx antenna, the downlink signal is applied to it.

6.2.1.2 Downlink physical channels and physical signals

Power allocation of downlink physical channels for Signalling test cases is specified in table 6.2.1.2-1.

Table 6.2.1.2-1: Power allocation for OFDM symbols and reference signals for Signalling test cases

| Physical Channel | EPRE Ratio | Comment |
|-----------------------------------|-------------------|---|
| PBCH | PBCH_RA = 0 dB | |
| | PBCH_RB = 0 dB | |
| PSS | PSS_RA = 0 dB | |
| SSS | SSS_RA = 0 dB | |
| PCFICH | PCFICH_RB = 0 dB | |
| PDCCH | PDCCH_RA = 0 dB | |
| | PDCCH_RB = 0 dB | |
| PDSCH (BCCH, BR-BCCH, CCCH, PCCH) | PDCCH_RA = 0 dB | To be consistent with default physical channel configuration in TS 36.331 [17], 9.2.4 |
| | PDCCH_RB = 0 dB | |
| PDSCH (DCCH, DTCH) | PDSCH_RA = -3 dB | To reduce interference from PDSCH of intra-frequency neighbour cells |
| | PDSCH_RB = -3 dB | To reduce interference from PDSCH of intra-frequency neighbour cells |
| PHICH | PHICH_RB = 0 dB | |
| PMCH | PMCH_RA = 0 dB | |
| MBSFN RS | MBSFN_RS_RA = 0dB | |

NOTE: MBSFN RS is not defined downlink physical channels in TS 36.211 [35].

6.2.1.3 Mapping of downlink physical channels and signals to physical resources

Same as clause 4.3.3.3

6.2.1.4 Uplink physical channels and physical signals

The SideLink Physical channels and Physical signals used and their powers relative to configured SS-UE power are specified in table 6.2.1.4-1.

Table 6.2.1.4-1: Relative power allocation for OFDM symbols and signals for SideLink test cases

| Physical Channel | EPRE Ratio |
|------------------|------------|
| PSSS | 0 dB |
| SSSS | 0 dB |
| PSDCH | 0 dB |
| PSBCH | 0 dB |
| PSCCH | 0 dB |
| PSSCH | 0 dB |

6.2.1.5 Mapping of uplink physical channels and signals to physical resources

[FFS].

6.2.2 Signal levels

6.2.2.1 Downlink signal levels

The default settings of suitable cells and non-suitable cells for E-UTRA are specified in table 6.2.2.1-1.

Cells which are expected to be undetectable for UE under test shall fulfil the condition of non-suitable "Off" cell in table 6.2.2.1-1.

Table 6.2.2.1-1: Default settings of suitable / non-suitable cells

| Power level type | E-UTRAN (Note 1-3) | | UTRAN | GERAN |
|--|-----------------------|-------------|---|----------------------|
| | Unit | Power level | | |
| Serving cell | dBm/15kHz | -85 | Table 6.1.1 (FDD) / 6.1.6a (TDD) [5] | Table 6.1.10 [5] |
| Suitable neighbour intra-frequency cell | dBm/15kHz | -91 | Table 6.1.2 (FDD) / 6.1.7 (TDD) [5] | n/a |
| Suitable neighbour inter-frequency cell | dBm/15kHz | -97 | Table 6.1.2 (FDD) / 6.1.7 (TDD) [5] | Table 6.1.10 [5] |
| Non-suitable cell | dBm/15kHz | -115 | Table 6.1.3 (FDD) / 6.1.8 (TDD) [5] | Table 6.1.11 [5] |
| Non-suitable "Off" cell | dBm/15kHz | ≤ -145 | Table 6.1.4 (FDD) / 6.1.9 (TDD) [5] | Cell is switched-off |
| Note 1: The power level is specified in terms of cell-specific RS EPRE instead of RSRP as RSRP is a measured value and cannot be directly controlled by the SS. Note 2: Power levels are specified based on the precondition that q-Hyst, a3-Offset and hysteresis are 0 dB. Note 3: The power level is specified at each UE Rx antenna. | | | | |

The default signal level uncertainty is specified in table 6.2.2.1-2 for any level specified, unless a tighter uncertainty is specified by a test case in TS 36.523-1 [18].

Table 6.2.2.1-2: SS signal level uncertainty

| | Absolute signal level uncertainty for each cell | Relative signal level uncertainty between multiple cells |
|---|--|--|
| Intra-frequency | +/-3 dB at each test port | +/-3 dB |
| Inter-frequency | +/-3 dB at each test port | See Note 1 |
| Note 1: For Inter-frequency cells the relative signal level uncertainty between multiple cells is determined by the absolute uncertainty of each cell, and does not have any additional constraint. | | |

Cell-specific RS EPRE setting should be equal to or higher than -115 dBm except for Non-suitable "Off" cell. The figure is chosen to ensure that for all bands the DL signal is within the RSRP measurement range specified in TS 36.133 [39] clauses 9.1.2 and 9.1.3, taking into account the SS default absolute signal level uncertainty.

NOTE: (The power spectral density of a white noise source; specified in TS 36.133 [39]) can be assumed to be -Infinity [dBm/15kHz] for all intra and inter frequency test cases. It is applicable to both idle mode and connected mode in TS 36.523-1 [18], unless otherwise specified in specific test cases.

For test cases requiring AWGN (Noc), the default level uncertainty is specified in table 6.2.2.1-3 for any level specified, unless a tighter uncertainty is specified by a test case in TS 36.523-1 [18].

Table 6.2.2.1-3: SS AWGN level uncertainty

| | Absolute AWGN level uncertainty for each frequency |
|-----------------|--|
| Intra-frequency | +/-3 dB at each test port |
| Inter-frequency | +/-3 dB at each test port |

6.2.2.2 Measurement accuracy and side conditions

Measurement accuracy shall be considered in setting downlink power levels.

RSRP measurement accuracy in E-UTRA RRC_IDLE state is specified in table 6.2.2.2-1, derived from TS 36.133 [39] clauses 4.2.2.3 and 4.2.2.4. This measurement accuracy is applicable to idle mode test cases specified in TS 36.523-1 [18]. For the serving cell and suitable neighbour cells, the following side conditions shall be satisfied including the effect of signal level uncertainty.

- RSRP \geq -121 dBm
- RSRP $\hat{E}_s/I_{ot} \geq$ -4 dB
- SCH_RP \geq -121 dBm
- SCH $\hat{E}_s/I_{ot} \geq$ -4 dB

Table 6.2.2.2-1: RSRP measurement accuracy in E-UTRA RRC_IDLE state

| | Absolute RSRP measurement accuracy | Relative RSRP measurement accuracy |
|-----------------|------------------------------------|------------------------------------|
| Intra-frequency | +/-6 dB | +/-3 dB |
| Inter-frequency | +/-6 dB | +/-5 dB |

RSRP measurement accuracy in E-UTRA RRC_CONNECTED state is specified in table 6.2.2.2-2, derived from TS 36.133 [39] clauses 9.1.2 and 9.1.3 selecting Normal condition. The ranges and side conditions in TS 36.133 [39] clauses 9.1.2 and 9.1.3 apply. This measurement accuracy is applicable to connected mode test cases specified in TS 36.523-1 [18]. For the serving cell and suitable neighbour cells, the following side conditions shall be satisfied including the effect of signal level uncertainty.

- RSRP \geq -124 dBm
- RSRP $\hat{E}_s/I_{ot} >$ -6 dB- I_o : -118 dBm/15kHz ... -70 dBm/BWChannel (for absolute RSRP measurement accuracy)
- I_o : -118 dBm/15kHz ... -50 dBm/BWChannel (for relative RSRP measurement accuracy)

Table 6.2.2.2-2: RSRP measurement accuracy in E-UTRA RRC_CONNECTED state

| | Absolute RSRP measurement accuracy | Relative RSRP measurement accuracy |
|-----------------|------------------------------------|------------------------------------|
| Intra-frequency | +/-6 dB | +/-3 dB |
| Inter-frequency | +/-6 dB | +/-6 dB |

Signal level difference between the serving cell and any suitable intra-frequency neighbour cell shall be nominally 6 dB to satisfy the measurement accuracy requirement and its side conditions specified in TS 36.133 [39]. This figure is chosen based on the following preconditions for intra-frequency cells.

- Interference to reference signals from reference signals of other cells is eliminated by Physical Cell Identity shifting as specified in TS 36.523-3 [20].
- Interference to reference signals from PDSCH with SI-RNTI of other cells is negligible because it's sparse enough.
- Interference to reference signals from PDSCH of the serving cell is controlled by satisfying the conditions of clauses 6.2.2.1 and 6.2.2.2.
- Interference to P-SS/S-SS from P-SS/S-SS of other cells is eliminated by frame timing shifting as specified in TS 36.523-3 [20].
- Interference to P-SS/S-SS from PDSCH of other cells is eliminated by PDSCH resource allocation as specified in TS 36.523-3 [20].

6.2.2.3 Uplink signal levels

The default settings of SS-UE is specified in table 6.2.2.3-1.

Table 6.2.2.3-1: Default settings of SS-UE power

| Power level type | SS-UE (Note 1) | | Absolute signal level uncertainty for each SS-UE |
|---|-------------------|-------------|--|
| | Unit | Power level | |
| SS-UE (default value) | dBm/15kHz | -85 | +/-3 dB |
| Note 1: The power level is specified at each Rx antenna of the UE under test. | | | |

6.2.3 Default test frequencies

The default channel bandwidth of 5/10/20 MHz is applied to the signalling test. The test frequencies are defined so that no frequency overlapping takes place, in order to avoid unnecessary inter-frequency interference.

For sidelink direct discovery, the default channel bandwidth of 5/10/15/20 MHz is applied to the signalling test for all ProSe bands except band 14 where default bandwidth is 5/10 MHz and bands 31, 72 where default bandwidth is 5 MHz. For sidelink direct communication the default channel bandwidth of 10 MHz is applied to the signalling test except bands 31, 72 where bandwidth is 5 MHz.

For V2X communication, the default channel bandwidth of 10/20 MHz is applied to the signalling test for all V2X bands.

For Band 13, Band 18, Band 31 and Band 72, only one test frequency f_1 is defined. All operating Bands except Band 13, Band 18, Band 31 and Band 72 can accommodate at least two test frequencies f_1 and f_2 ($f_1 < f_2$). An additional test frequency f_3 can be defined for the operating Bands with at least triple of the default bandwidth. The fourth test frequency f_4 ($f_3 < f_1 < f_4 < f_2$) is applicable to the operating Bands which have at least quadruple of the default bandwidth.

To the single cell signalling test with channel bandwidth different from the default bandwidths of the operating bands, Mid Range defined in clause 4.3.1 is applied.

6.2.3.1 Test frequencies for signalling test

Test frequencies for signalling test are specified in table 6.2.3.1-1 and 6.2.3.1-1a for FDD and table 6.2.3.1-2 and 6.2.3.1-2a for TDD. Except f_4 and a few f_1 , f_5 which are specified according to EARFCN of the concerned operating Bands, the majority of the test frequencies in table 6.2.3.1-1, 6.2.3.1-1a, 6.2.3.1-2 and 6.2.3.1-2a are specified in terms of Low, Mid and High which are referred to the Low Range, Mid Range and High Range in clause 4.3.1.

Test frequencies for signalling test of MFBI are specified in table 6.2.3.1-1b and 6.2.3.1-1c for FDD and table 6.2.3.1-2b and 6.2.3.1-2c for TDD. Except f_4 and a few f_1 , f_5 which are specified according to EARFCN of the concerned operating Bands, the majority of the test frequencies in table 6.2.3.1-1b, 6.2.3.1-1c, 6.2.3.1-2b and 6.2.3.1-2c are specified in terms of Low, Mid and High which are referred to the Low Range, Mid Range and High Range in clause 4.3.1.

Table 6.2.3.1-1: Test frequencies for E-UTRA FDD(5MHz)

| E-UTRA Operating Band | Bandwidth [MHz] | f1, f5 | | f2, f6 | | f3, f7 | | f4 | |
|-----------------------|--------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} |
| 1 | 60 | Mid | Mid | High | High | Low | Low | 18350 | 350 |
| 2 | 60 | Mid | Mid | High | High | Low | Low | 18950 | 950 |
| 3 | 75 | Mid | Mid | High | High | Low | Low | 19625 | 1625 |
| 4 | 45 | Mid | Mid | High | High | Low | Low | 20225 | 2225 |
| 5 | 25 | Mid | Mid | High | High | Low | Low | 20575 | 2575 |
| 6 | 10 | Low | Low | High | High | N/A | N/A | N/A | N/A |
| 7 | 70 | Mid | Mid | High | High | Low | Low | 21150 | 3150 |
| 8 | 35 | Mid | Mid | High | High | Low | Low | 21675 | 3675 |
| 9 | 35 | Mid | Mid | High | High | Low | Low | 22025 | 4025 |
| 10 | 60 | Mid | Mid | High | High | Low | Low | 22500 | 4500 |
| 12 | 17 | Low | Low | High | High | Mid | Mid | N/A | N/A |
| 14 | 10 | Low | Low | High | High | N/A | N/A | N/A | N/A |
| ... | | | | | | | | | |
| 17 | 12 | Low | Low | High | High | N/A | N/A | N/A | N/A |
| 19 | 15 | Mid | Mid | High | High | Low | Low | N/A | N/A |
| 21 | 15 | Mid | Mid | High | High | Low | Low | N/A | N/A |
| 22 | 80 | Mid | Mid | High | High | Low | Low | 24950 | 6950 |
| ... | | | | | | | | | |
| 23 | 20 | 25575 | 7575 | High | High | Low | Low | 25625 | 7625 |
| 24 | 34 | Mid | Mid | High | High | Low | Low | 25920 | 7920 |
| 25 | 65 | Mid | Mid | High | High | Low | Low | 26415 | 8415 |
| 26 | 35 | Mid | Mid | High | High | Low | Low | 26915 | 8915 |
| 27 | 17 | Mid | Mid | High | High | Low | Low | N/A | N/A |
| 28 | 45 | Mid | Mid | High | High | Low | Low | 27560 | 9560 |
| 30 | 10 | Low | Low | High | High | N/A | N/A | N/A | N/A |
| 31 | 5 | Mid | Mid | N/A | N/A | N/A | N/A | N/A | N/A |
| ... | | | | | | | | | |
| 65 | 90 | Mid | Mid | High | High | Low | Low | 131422 | 65886 |
| 66 | 70+90 ¹ | Mid | Mid | High | High | Low | Low | 132272 | 66736 |
| 68 | 30 | Mid | Mid | High | High | Low | Low | 132867 | 67731 |
| ... | | | | | | | | | |
| 70 | 15+25 ¹ | Mid | Mid | High | High | Low | Low | N/A | N/A |
| 71 | 35 | Mid | Mid | High | High | Low | Low | 133247 | 68711 |
| 72 | 5 | Mid | Mid | N/A | N/A | N/A | N/A | N/A | N/A |
| 73 | 5 | Mid | Mid | N/A | N/A | N/A | N/A | N/A | N/A |
| 74 | 43 | Mid | Mid | High | High | Low | Low | 133882 | 69336 |
| 85 | 18 | Low | Low | High | High | Mid | Mid | N/A | N/A |

NOTE 1: Asymmetric operating band (UL + DL)

Table 6.2.3.1-1a: Test frequencies for E-UTRA FDD(10MHz)

| E-UTRA Operating Band | Bandwidth [MHz] | f1, f5 | | f2, f6 | | f3, f7 | | f4 | |
|-----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} |
| 11 | 20 | Low | Low | High | High | N/A | N/A | N/A | N/A |
| 13 | 10 | Mid | Mid | N/A | N/A | N/A | N/A | N/A | N/A |
| 18 | 15 | Low | Low | N/A | N/A | N/A | N/A | N/A | N/A |
| 20 | 30 | Mid | Mid | High | High | Low | Low | N/A | N/A |
| 23 | 20 | Low | Low | High | High | N/A | N/A | N/A | N/A |

Table 6.2.3.1-1b: Test frequencies for E-UTRA FDD(5MHz) MFBI

| E-UTRA Operating Band | MFBI Overlapping Band | Bandwidth [MHz] | f1, f5 | | f2, f6 | | f3, f7 | | f4 | |
|-----------------------|-----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} |
| 2 | 25 | 60 | Mid | Mid | High | High | Low | Low | 18950 | 950 |
| 3 | 9 | 35 | Mid | Mid | High | High | Low | Low | 19824 | 1824 |
| 4 | 10 | 45 | Mid | Mid | High | High | Low | Low | 20225 | 2225 |
| 4 | 66 | 45 | Mid | Mid | High | High | Low | Low | 20225 | 2225 |
| 5 | 18 | 6 | Mid | Mid | N/A | N/A | N/A | N/A | N/A | N/A |
| 5 | 19 | 25 | Mid | Mid | High | High | Low | Low | 20585 | 2585 |
| 5 | 26 | 25 | Mid | Mid | High | High | Low | Low | 20575 | 2575 |
| 9 | 3 | 35 | Mid | Mid | High | High | Low | Low | 22025 | 4025 |
| 10 | 4 | 45 | Mid | Mid | High | High | Low | Low | 22425 | 4425 |
| 10 | 66 | 60 | Mid | Mid | High | High | Low | Low | 22425 | 4425 |
| 12 | 17 | 12 | Low | Low | High | High | N/A | N/A | N/A | N/A |
| 17 | 12 | 12 | Low | Low | High | High | N/A | N/A | N/A | N/A |
| 19 | 5 | 15 | Mid | Mid | High | High | Low | Low | N/A | N/A |
| 19 | 26 | 15 | Mid | Mid | High | High | Low | Low | N/A | N/A |
| 25 | 2 | 60 | Mid | Mid | High | High | Low | Low | 26415 | 8415 |
| 26 | 5 | 25 | Mid | Mid | High | High | Low | Low | 26915 | 8915 |
| 26 | 18 | 15 | Mid | Mid | High | High | Low | Low | N/A | N/A |
| 26 | 19 | 15 | Low | Low | High | High | N/A | N/A | N/A | N/A |
| 26 | 27 | 10 | Mid | Mid | High | High | Low | Low | N/A | N/A |
| 27 | 18 | 9 | Low | Low | High | High | N/A | N/A | N/A | N/A |
| 27 | 26 | 10 | Low | Low | High | High | N/A | N/A | N/A | N/A |
| 66 | 4 | 45 | Mid | Mid | High | High | Low | Low | 132247 | 66711 |
| 66 | 10 | 60 | Mid | Mid | High | High | Low | Low | 132247 | 66711 |

Table 6.2.3.1-1c: Test frequencies for E-UTRA FDD(10MHz) MFBI

| E-UTRA Operating Band | MFBI Overlapping Band | Bandwidth [MHz] | f1, f5 | | f2, f6 | | f3, f7 | | f4 | |
|-----------------------|-----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} |
| 18 | 5 | 6 | Low | Low | N/A | N/A | N/A | N/A | N/A | N/A |
| 18 | 26 | 15 | Low | Low | N/A | N/A | N/A | N/A | N/A | N/A |
| 18 | 27 | 9 | Low | Low | N/A | N/A | N/A | N/A | N/A | N/A |

Table 6.2.3.1-2: Test frequencies for E-UTRA TDD (5MHz)

| E-UTRA Operating Band | Bandwidth [MHz] | f1, f5 | f2, f6 | F3, f7 | f4 |
|-----------------------|-----------------|--------|--------|--------|-------|
| 33 | 20 | 36075 | High | Low | 36125 |
| 34 | 15 | Mid | High | Low | N/A |
| 35 | 60 | Mid | High | Low | 36700 |
| 36 | 60 | Mid | High | Low | 37300 |
| 37 | 20 | 37625 | High | Low | 37675 |
| ... | | | | | |
| 43 | 100 | Mid | High | Low | 44640 |
| 44 | 50 | Mid | High | Low | 46115 |
| 45 | 20 | 46665 | High | Low | 46715 |
| ... | | | | | |
| 53 | 11.5 | Low | High | N/A | N/A |

Table 6.2.3.1-2a: Test frequencies for E-UTRA TDD(20MHz)

| E-UTRA Operating Band | Bandwidth [MHz] | f1, f5 | f2, f6 | f3, f7 | f4 |
|-----------------------|-----------------|--------|--------|--------|-------|
| 38 | 50 | Low | High | N/A | N/A |
| 39 | 40 | Low | High | N/A | N/A |
| 40 | 100 | Mid | High | Low | 39350 |
| 41 | 194 | Mid | High | Low | 40970 |
| 42 | 200 | Mid | High | Low | 43040 |
| ... | | | | | |
| 48 | 150 | Mid | High | Low | 56315 |

Table 6.2.3.1-2b: Test frequencies for E-UTRA TDD (5MHz) MFBI

| E-UTRA Operating Band | MFBI Overlapping Band | Bandwidth [MHz] | f1, f5 | f2, f6 | F3, f7 | f4 |
|-----------------------|-----------------------|-----------------|--------|--------|--------|-------|
| 33 | 39 | 20 | 36075 | High | Low | 36125 |

Table 6.2.3.1-2c: Test frequencies for E-UTRA TDD(20MHz) MFBI

| E-UTRA Operating Band | MFBI Overlapping Band | Bandwidth [MHz] | f1, f5 | f2, f6 | f3, f7 | f4 |
|-----------------------|-----------------------|-----------------|--------|--------|--------|-----|
| 38 | 41 | 50 | Low | High | N/A | N/A |
| 39 | 33 | 20 | Low | High | N/A | N/A |
| 41 | 38 | 50 | High | Low | Mid | N/A |

6.2.3.2 Test frequencies for CA signalling test

Test frequencies for CA signalling testing are specified in Table 6.2.3.2-1 for CA Intra-Band contiguous case; in Tables 6.2.3.2-2 for CA Inter-band case and in Table 6.2.3.2-4 for Intra-Band Non-Contiguous case.

NOTE 1: Alternative test frequencies for additional channel bandwidth combinations may need to be specified when new CA configurations or CA Bandwidth Combination Sets are introduced in TS 36.101 subclause 5.6A.

For CA Intra-Band contiguous scenarios then f1, f2 and f3 are used.

NOTE 2: f2 and f3 are not adjacent frequencies; hence those cannot be used simultaneously as Pcell and SCell for CA Intra-Band contiguous scenarios.

For CA Inter-Band scenarios then f1, f2, f5 and f6 are used.

NOTE 3: Table 6.2.3.2-2 specifies the test frequencies for operation with PCell in the frequency band mentioned first (= carrier 1) and SCell in the frequency band mentioned second (= carrier 2) in the E-UTRA CA Configuration name acc. to TS 36.101 subclause 5.6A (e.g. PCell in band 1 and SCell in band 5 for CA_1A-5A configuration), for operation with switched allocation of PCell and SCell. SCell in the frequency band mentioned first (= carrier 1) and PCell in the frequency band mentioned second (= carrier 2) in the E-UTRA CA Configuration name (given that UL is supported in both frequency bands in question).

NOTE 4: For operation with switched allocation f1 is mapped to f5, f2 is mapped to f6, f5 is mapped to f1, f6 is mapped to f2

For CA Intra-Band non-contiguous scenarios then f1, f2 and f3 are used.

Table 6.2.3.2-1: Test frequencies for E-UTRA PCell and SCell for CA contiguous Intra-band operation

| E-UTRA CA Configuration | Width of Operating band [MHz] | CC Combination / N _{RB_agg} | Test Frequency | CC N _{RB} | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-------------------------------|--------------------------------------|----------------|--------------------|-----------------|---------------------------|-----------------|-----------------------------|
| CA_1C | 60 | 100 + 100 | f1 | CC 100 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 100 | 18498 | 1969.8 | 498 | 2159.8 |
| | | | f3 | CC 100 | 18102 | 1930.2 | 102 | 2120.2 |
| CA_2C | 60 | 100 + 100 | f1 | CC 100 | 18901 | 1880.1 | 901 | 1960.1 |
| | | | f2 | CC 100 | 19099 | 1899.9 | 1099 | 1979.9 |
| | | | f3 | CC 100 | 18703 | 1860.3 | 703 | 1940.3 |
| CA_3C | 60 | 100 + 100 | f1 | CC 100 | 19505 | 1740.5 | 1505 | 1835.5 |
| | | | f2 | CC 100 | 19703 | 1760.3 | 1703 | 1855.3 |
| | | | f3 | CC 100 | 19307 | 1720.7 | 1307 | 1815.7 |
| CA_5B | 25 | 50+50 | f1 | CC_50 | 20476 | 831.6 | 2476 | 876.6 |
| | | | f2 | CC_50 | 20575 | 841.5 | 2575 | 886.5 |
| | | | f3 | N/A | N/A | N/A | N/A | N/A |
| CA_7B | 70 | 75+25 | f1 | CC 100 | 21050 | 2530 | 3050 | 2650 |
| | | | f2 | CC 100 | 21248 | 2549.8 | 3248 | 2669.8 |
| | | | f3 | CC 100 | 20852 | 2510.2 | 2852 | 2630.2 |
| CA_7C | 70 | 100 + 100 | f1 | CC 100 | 21050 | 2530 | 3050 | 2650 |
| | | | f2 | CC 100 | 21248 | 2549.8 | 3248 | 2669.8 |
| | | | f3 | CC 100 | 20852 | 2510.2 | 2852 | 2630.2 |
| CA_8B | 35 | 50+50 | f1 | CC 50 | 21651 | 900.1 | 3651 | 945.1 |
| | | | f2 | CC_50 | 21750 | 910 | 3750 | 955 |
| | | | f3 | CC_50 | 21552 | 890.2 | 3552 | 935.2 |
| CA_12B | 17 | 25+25 | f1 | CC_25 | 23095 | 707.5 | 5095 | 737.5 |
| | | | f2 | CC_25 | 23143 | 712.3 | 5143 | 742.3 |
| | | | f3 | CC_25 | 23047 | 702.7 | 5047 | 732.7 |
| CA_23B | 20 | 50+50 | f1 | CC_50 | 25551 | 2005.1 | 7551 | 2185.1 |
| | | | f2 | CC_50 | 25650 | 2015 | 7650 | 2195 |
| | | | f3 | N/A | N/A | N/A | N/A | N/A |
| CA_27B | 17 | 25+25 | f1 | CC_25 | 27100 | 813 | 9100 | 858 |
| | | | f2 | CC_25 | 27148 | 817.8 | 9148 | 862.8 |
| | | | f3 | CC_25 | 27050 | 808 | 9050 | 853 |
| CA_38C | 50 | 100 + 100 | f1 | CC 100 | 37901 | 2585.1 | 37901 | 2585.1 |
| | | | f2 | CC 100 | 38099 | 2604.9 | 38099 | 2604.9 |
| | | | f3 | N/A | N/A | N/A | N/A | N/A |
| CA_39C | 40 | 100 + 50 | f1 | CC 100 | 38401 | 1895.1 | 38401 | 1895.1 |
| | | | f2 | CC 50 | 38545 | 1909.5 | 38545 | 1909.5 |
| | | | f3 | NA | NA | NA | NA | NA |
| CA_40C | 100 | 100 + 100 | f1 | CC 100 | 39051 | 2340.1 | 39051 | 2340.1 |
| | | | f2 | CC 100 | 39249 | 2359.9 | 39249 | 2359.9 |
| | | | f3 | CC 100 | 38853 | 2320.3 | 38853 | 2320.3 |
| CA_41C | 194 | 100 + 100 | f1 | CC 100 | 40521 | 2583.1 | 40521 | 2583.1 |
| | | | f2 | CC 100 | 40719 | 2602.9 | 40719 | 2602.9 |
| | | | f3 | CC 100 | 40323 | 2563.3 | 40323 | 2563.3 |
| CA_42C | 200 | 100+100 | f1 | CC 100 | 42491 | 3490.1 | 42491 | 3490.1 |
| | | | f2 | CC 100 | 42689 | 3509.9 | 42689 | 3509.9 |
| | | | f3 | CC 100 | 42293 | 3470.3 | 42293 | 3470.3 |
| CA_48C | 150 | 100 + 100 | f1 | CC 100 | 55891 | 3615.1 | 55891 | 3615.1 |
| | | | f2 | CC 100 | 56089 | 3634.9 | 56089 | 3634.9 |
| | | | f3 | CC 100 | 55693 | 3595.3 | 55693 | 3595.3 |
| CA_66B | 70+90 ¹ | 50+50 | f1 | CC_50 | 132322 | 1745 | 66786 | 2145 |
| | | | f2 | CC_50 | 132421 | 1754.9 | 66885 | 2154.9 |
| | | | f3 | CC_50 | 132223 | 1735.1 | 66687 | 2135.1 |
| CA_66C | 70+90 ¹ | 100+100 | f1 | CC 100 | 132322 | 1745 | 66786 | 2145 |
| | | | f2 | CC 100 | 132520 | 1764.8 | 66984 | 2164.8 |
| | | | f3 | CC 100 | 132124 | 1725.2 | 66588 | 2125.2 |
| CA_70C | 15+25 ¹ | 75+50 | f1 | CC 75 | 133047 | 1702.5 | 68411 | 2002.5 |
| | | | f2 | CC 50 | N/A | N/A | 68531 | 2014.5 |
| | | | f3 | N/A | N/A | N/A | N/A | N/A |

NOTE 1: Asymmetric operating band (UL + DL)

Table 6.2.3.2-2: Test frequencies for E-UTRA PCell and SCell for CA Inter-band operation and E-UTRA PCell and PSCell for DC Inter-band operation (two bands)

| E-UTRA CA Configuration | Width of Operating bands [MHz+MHz] | CC Combination / N _{RB_agg} | Test Frequency | CC N _{RB} | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------------|------------------------------------|--------------------------------------|----------------|--------------------|-----------------|---------------------------|-----------------|-----------------------------|
| CA_1A-3A, DC_1A-3A | 60+75 | 50 + 50 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | 18550 | 1975 | 550 | 2165 |
| | | | f5 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |
| | | | f6 | CC 50 | 19900 | 1780 | 1900 | 1875 |
| CA_1A-5A, DC_1A-5A | 60+25 | 50 + 50 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | [18550] | [1975] | [550] | [2165] |
| | | | f5 | CC 50 | 20450 | 829 | 2450 | 874 |
| | | | f6 | CC 50 | 20600 | 844 | 2600 | 889 |
| CA_1A-7A, DC_1A-7A | 60 + 70 | 50 + 50 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | 18550 | 1975 | 550 | 2165 |
| | | | f5 | CC 50 | 21100 | 2535 | 3100 | 2655 |
| | | | f6 | CC 50 | 21400 | 2565 | 3400 | 2685 |
| CA_1A-8A, DC_1A-8A | 60 + 35 | 50 + 50 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | 18550 | 1975 | 550 | 2165 |
| | | | f5 | CC 50 | 21625 | 897.5 | 3625 | 942.5 |
| | | | f6 | CC 50 | 21750 | 910 | 3750 | 955 |
| CA_1A-11A | 60 + 20 | 100 + 50 | f1 | CC 100 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 100 | 18500 | 1970 | 500 | 2160 |
| | | | f5 | CC 50 | 22800 | 1432.9 | 4800 | 1480.9 |
| | | | f6 | CC 50 | 22900 | 1442.9 | 4900 | 1490.9 |
| CA_1A-18A | 60 + 15 | 50 + 50 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | 18550 | 1975 | 550 | 2165 |
| | | | f5 | CC 50 | 23900 | 820 | 5900 | 865 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_1A-19A, DC_1A-19A | 60+15 | 75 + 50 | f1 | CC 75 | 18324 | 1952.4 | 324 | 2142.4 |
| | | | f2 | CC 75 | 18525 | 1972.5 | 525 | 2162.5 |
| | | | f5 | CC 50 | 24100 | 840 | 6100 | 885 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_1A-20A | 60 + 30 | 50 + 50 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | 18550 | 1975 | 550 | 2165 |
| | | | f5 | CC 50 | 24200 | 837 | 6200 | 796 |
| | | | f6 | CC 50 | 24400 | 857 | 6400 | 816 |
| CA_1A-21A, DC_1A-21A | 60+15 | 75 + 75 | f1 | CC 75 | 18324 | 1952.4 | 324 | 2142.4 |
| | | | f2 | CC 75 | 18525 | 1972.5 | 525 | 2162.5 |
| | | | f5 | CC 75 | 24525 | 1455.4 | 6525 | 1503.4 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_1A-26A | 60 + 35 | 50 + 50 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | 18550 | 1975 | 550 | 2165 |
| | | | f5 | CC 50 | 26865 | 831.5 | 8865 | 876.5 |
| | | | f6 | CC 50 | 26990 | 844 | 8990 | 889 |
| CA_1A-28A | 60+45 | 50 + 50 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | 18550 | 1975 | 550 | 2165 |
| | | | f5 | CC 50 | 27410 | 723 | 9410 | 778 |
| | | | f6 | CC 50 | 27610 | 743 | 9610 | 798 |
| CA_1A-40A | 60 + 100 | 50 + 100 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | 18550 | 1975 | 550 | 2165 |
| | | | f5 | CC 100 | 39150 | 2350 | 39150 | 2350 |
| | | | f6 | CC 100 | 39550 | 2390 | 39550 | 2390 |
| CA_1A-41A | 60 + 194 | 50 + 100 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | 18550 | 1975 | 550 | 2165 |
| | | | f5 | CC 100 | 40620 | 2593 | 40620 | 2593 |
| | | | f6 | CC 100 | 41490 | 2680 | 41490 | 2680 |
| CA_1A-41C | 60+194 | 50+100+100 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | 18550 | 1975 | 550 | 2165 |
| | | | f5 | CC 100 | 40521 | 2583.1 | 40521 | 2583.1 |
| | | | f6 | CC 100 | 40719 | 2602.9 | 40719 | 2602.9 |
| CA_1A-42A | 60 + 200 | 75 + 100 | f1 | CC 75 | 18324 | 1952.4 | 324 | 2142.4 |

| | | | | | | | | |
|-------------------------|----------------------------|------------|----|--------|--------|--------|-------|--------|
| | | | f2 | CC 75 | 18525 | 1972.5 | 525 | 2162.5 |
| | | | f5 | CC 100 | 42590 | 3500 | 42590 | 3500 |
| | | | f6 | CC 100 | 43490 | 3590 | 43490 | 3590 |
| CA_1A-42C | 60+200 | 50+100+100 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | 18550 | 1975 | 550 | 2165 |
| | | | f5 | CC 100 | 42491 | 3490.1 | 42491 | 3490.1 |
| | | | f6 | CC 100 | 42689 | 3509.9 | 42689 | 3509.9 |
| CA_1A-46A ³ | 60+775 | 50+100 | f1 | CC 50 | 18300 | 1950 | 300 | 2140 |
| | | | f2 | CC 50 | 18550 | 1975 | 550 | 2165 |
| | | | f5 | CC 100 | 50690 | 5540 | 50690 | 5540 |
| | | | f6 | CC 100 | 53940 | 5865 | 53940 | 5865 |
| CA_2A-4A, DC_2A-4A | 60 + 45 | 50 + 50 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 50 | 20175 | 1732.5 | 2175 | 2132.5 |
| | | | f6 | CC 50 | 20350 | 1750 | 2350 | 2150 |
| CA_2A-5A | 60+25 | 50 + 50 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 50 | 20450 | 829 | 2450 | 874 |
| | | | f6 | CC 50 | 20600 | 844 | 2600 | 889 |
| CA_2A-7A, DC_2A-7A | 60 + 70 | 50 + 50 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 50 | 21100 | 2535 | 3100 | 2655 |
| | | | f6 | CC 50 | 21400 | 2565 | 3400 | 2685 |
| CA_2A-12A | 60 + 17 | 50 + 50 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 50 | 23060 | 704 | 5060 | 734 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_2A-13A, DC_2A-13A | 60 + 10 | 50 + 50 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 50 | 23230 | 782 | 5230 | 751 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_2A-14A | 60 + 10 | 50 + 50 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 50 | 23330 | 793 | 5330 | 763 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_2A-17A | 60+12 | 50 + 50 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 50 | 23790 | 710 | 5790 | 740 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_2A-28A | 60+45 | 50 + 50 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 50 | 27410 | 723 | 9410 | 778 |
| | | | f6 | CC 50 | 27610 | 743 | 9610 | 798 |
| CA_2A-29A | 60+11 | 50 + 50 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 50 | N/A | N/A | 9720 | 723 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_2A-30A | 60+10 | 50 + 50 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 50 | 27710 | 2310 | 9820 | 2355 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_2A-46A ³ | 60+775 | 50+100 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 100 | 50690 | 5540 | 50690 | 5540 |
| | | | f6 | CC 100 | 53940 | 5865 | 53940 | 5865 |
| CA_2A-66A | 60+(70+90) ₂ | 50+100 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 100 | 132422 | 1755 | 66886 | 2155 |
| | | | f6 | CC 100 | 132572 | 1770 | 67036 | 2170 |
| CA_2A-71A | 60+35 | 50+50 | f1 | CC 50 | 18900 | 1880 | 900 | 1960 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f5 | CC 50 | 133297 | 680.5 | 68761 | 634.5 |
| | | | f6 | CC 50 | 133422 | 693 | 68886 | 647 |
| CA_3A-5A, | 75+25 | 50 + 50 | f1 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |

| | | | | | | | | |
|-------------------------|----------|------------|----|--------|---------|--------|--------|--------|
| DC_3A-5A | | | f2 | CC 50 | [19900] | [1780] | [1900] | [1875] |
| | | | f5 | CC 50 | 20450 | 829 | 2450 | 874 |
| | | | f6 | CC 50 | 20600 | 844 | 2600 | 889 |
| CA_3C-5A | 75+25 | 100+100+50 | f1 | CC 100 | 19475 | 1737.5 | 1475 | 1832.5 |
| | | | f2 | CC 100 | 19673 | 1757.3 | 1673 | 1852.3 |
| | | | f5 | CC 50 | 20450 | 829 | 2450 | 874 |
| CA_3A-7A, DC_3A-7A | 75+70 | 50 + 50 | f6 | CC 50 | 20600 | 844 | 2600 | 889 |
| | | | f1 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |
| | | | f2 | CC 50 | [19900] | [1780] | [1900] | [1875] |
| CA_3A-8A, DC_3A-8A | 75+35 | 50+50 | f5 | CC 50 | 21100 | 2535 | 3100 | 2655 |
| | | | f6 | CC 50 | 21400 | 2565 | 3400 | 2685 |
| | | | f1 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |
| CA_3A-11A | 75+20 | 75+50 | f2 | CC 50 | 19900 | 1780 | 1900 | 1875 |
| | | | f5 | CC 50 | 21625 | 897.5 | 3625 | 942.5 |
| | | | f6 | CC 50 | 21750 | 910 | 3750 | 955 |
| CA_3A-19A, DC_3A-19A | 75+15 | 100+50 | f1 | CC75 | 19674 | 1757.4 | 1674 | 1852.4 |
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC50 | 22800 | 1432.9 | 4800 | 1480.9 |
| CA_3A-20A, DC_3A-20A | 75+30 | 50+50 | f6 | N/A | N/A | N/A | N/A | N/A |
| | | | f1 | CC 100 | 19575 | 1747.5 | 1575 | 1842.5 |
| | | | f2 | CC 100 | 19850 | 1775 | 1850 | 1870 |
| CA_3A-26A, DC_3A-26A | 75 + 35 | 50 + 50 | f5 | CC 50 | 24100 | 840 | 6100 | 885 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| | | | f1 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |
| CA_3A-27A | 75 + 17 | 50 + 25 | f2 | CC 50 | 19900 | 1780 | 1900 | 1875 |
| | | | f5 | CC 50 | 24200 | 837 | 6200 | 796 |
| | | | f6 | CC 50 | 24400 | 857 | 6400 | 816 |
| CA_3A-28A | 75+45 | 50+50 | f1 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |
| | | | f2 | CC 50 | 19900 | 1780 | 1900 | 1875 |
| | | | f5 | CC 50 | 27435 | 725.5 | 9435 | 780.5 |
| CA_3A-69A | 75 + 50 | 50 + 50 | f6 | CC 50 | 27610 | 743 | 9610 | 798 |
| | | | f1 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |
| | | | f2 | CC 50 | 19900 | 1780 | 1900 | 1875 |
| CA_3A-32A | 75+44 | 50+50 | f5 | CC 50 | N/A | N/A | 68086 | 2595 |
| | | | f6 | CC 50 | N/A | N/A | 68286 | 2615 |
| | | | f1 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |
| CA_3A-38A | 75 + 50 | 50 + 50 | f2 | CC 50 | 19900 | 1780 | 1900 | 1875 |
| | | | f5 | CC 50 | N/A | N/A | 10140 | 1474 |
| | | | f6 | CC 50 | N/A | N/A | 10310 | 1491 |
| CA_3A-40A | 75 + 100 | 50 + 100 | f1 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |
| | | | f2 | CC 50 | 19900 | 1780 | 1900 | 1875 |
| | | | f5 | CC 50 | 38000 | 2595 | 38000 | 2595 |
| CA_3A-41A | 75 + 194 | 100 + 100 | f6 | CC 50 | 38200 | 2615 | 38200 | 2615 |
| | | | f1 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |
| | | | f2 | CC 50 | 19900 | 1780 | 1900 | 1875 |
| CA_3A-42A | 75 + 200 | 100 + 100 | f5 | CC 100 | 39150 | 2350 | 39150 | 2350 |
| | | | f6 | CC 100 | 39550 | 2390 | 39550 | 2390 |
| | | | f1 | CC 100 | 19575 | 1747.5 | 1575 | 1842.5 |
| CA_3A-42C | 75+200 | 50+100+100 | f2 | CC 100 | 19850 | 1775 | 1850 | 1870 |
| | | | f5 | CC 100 | 40620 | 2593 | 40620 | 2593 |
| | | | f6 | CC 100 | 41490 | 2680 | 41490 | 2680 |
| CA_3A-42C | 75 + 200 | 50+100+100 | f1 | CC 100 | 19575 | 1747.5 | 1575 | 1842.5 |
| | | | f2 | CC 100 | 19850 | 1775 | 1850 | 1870 |
| | | | f5 | CC 100 | 42590 | 3500 | 42590 | 3500 |
| CA_3A-42C | 75 + 200 | 50+100+100 | f6 | CC 100 | 43490 | 3590 | 43490 | 3590 |
| | | | f1 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |
| | | | f2 | CC 50 | 19900 | 1780 | 1900 | 1875 |

| | | | | | | | | |
|-------------------------|--------|---------|----|--------|--------|--------|-------|--------|
| | | | f2 | CC 50 | 19900 | 1780 | 1900 | 1875 |
| | | | f5 | CC 100 | 42491 | 3490.1 | 42491 | 3490.1 |
| | | | f6 | CC 100 | 42689 | 3509.9 | 42689 | 3509.9 |
| CA_3A-46A ³ | 75+775 | 50+100 | f1 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |
| | | | f2 | CC 50 | 19900 | 1780 | 1900 | 1875 |
| | | | f5 | CC 100 | 50690 | 5540 | 50690 | 5540 |
| | | | f6 | CC 100 | 53940 | 5865 | 53940 | 5865 |
| CA_4A-5A | 45+25 | 50 + 50 | f1 | CC 50 | 20175 | 1732.5 | 2175 | 2132.5 |
| | | | f2 | CC 50 | 20350 | 1750 | 2350 | 2150 |
| | | | f5 | CC 50 | 20450 | 829 | 2450 | 874 |
| | | | f6 | CC 50 | 20600 | 844 | 2600 | 889 |
| CA_4A-7A, DC_4A-7A | 45+70 | 50+50 | f1 | CC 50 | 20175 | 1732.5 | 2175 | 2132.5 |
| | | | f2 | CC 50 | 20350 | 1750 | 2350 | 2150 |
| | | | f5 | CC 50 | 21100 | 2535 | 3100 | 2655 |
| | | | f6 | CC 50 | 21400 | 2565 | 3400 | 2685 |
| CA_4A-12A, DC_4A-12A | 45+17 | 50+50 | f1 | CC 50 | 20175 | 1732.5 | 2175 | 2132.5 |
| | | | f2 | CC 50 | 20350 | 1750 | 2350 | 2150 |
| | | | f5 | CC 50 | 23130 | 711 | 5130 | 741 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_4A-13A, DC_4A-13A | 45+10 | 50 + 50 | f1 | CC 50 | 20175 | 1732.5 | 2175 | 2132.5 |
| | | | f2 | CC 50 | 20350 | 1750 | 2350 | 2150 |
| | | | f5 | CC 50 | 23230 | 782 | 5230 | 751 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_4A-17A, DC_4A-17A | 45+12 | 50 + 50 | f1 | CC 50 | 20175 | 1732.5 | 2175 | 2132.5 |
| | | | f2 | CC 50 | 20350 | 1750 | 2350 | 2150 |
| | | | f5 | CC 50 | 23790 | 710 | 5790 | 740 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_4A-28A | 45+45 | 50 + 50 | f1 | CC 50 | 20175 | 1732.5 | 2175 | 2132.5 |
| | | | f2 | CC 50 | 20350 | 1750 | 2350 | 2150 |
| | | | f5 | CC 50 | 27410 | 723 | 9410 | 778 |
| | | | f6 | CC 50 | 27610 | 743 | 9610 | 798 |
| CA_4A-29A | 45+11 | 50 + 50 | f1 | CC 50 | 20175 | 1732.5 | 2175 | 2132.5 |
| | | | f2 | CC 50 | 20350 | 1750 | 2350 | 2150 |
| | | | f5 | CC 50 | N/A | N/A | 9720 | 723 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_4A-30A | 45+10 | 50 + 50 | f1 | CC 50 | 20175 | 1732.5 | 2175 | 2132.5 |
| | | | f2 | CC 50 | 20350 | 1750 | 2350 | 2150 |
| | | | f5 | CC 50 | 27710 | 2310 | 9820 | 2355 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_4A-46A ³ | 54+775 | 50+100 | f1 | CC 50 | 20175 | 1732.5 | 2175 | 2132.5 |
| | | | f2 | CC 50 | 20350 | 1750 | 2350 | 2150 |
| | | | f5 | CC 100 | 50690 | 5540 | 50690 | 5540 |
| | | | f6 | CC 100 | 53940 | 5865 | 53940 | 5865 |
| CA_4A-71A | 45+35 | 50+50 | f1 | CC 50 | 20175 | 1732.5 | 2175 | 2132.5 |
| | | | f2 | CC 50 | 20350 | 1750 | 2350 | 2150 |
| | | | f5 | CC 50 | 133297 | 680.5 | 68761 | 634.5 |
| | | | f6 | CC 50 | 133422 | 693 | 68886 | 647 |
| CA_5A-7A, DC_5A-7A | 25+70 | 50 + 50 | f1 | CC 50 | 20450 | 829 | 2450 | 874 |
| | | | f2 | CC 50 | 20600 | 844 | 2600 | 889 |
| | | | f5 | CC 50 | 21100 | 2535 | 3100 | 2655 |
| | | | f6 | CC 50 | 21400 | 2565 | 3400 | 2685 |
| CA_5A-12A, DC_5A-12A | 25+17 | 50+50 | f1 | CC 50 | 20525 | 836.5 | 2525 | 881.5 |
| | | | f2 | CC 50 | 20600 | 844 | 2600 | 889 |
| | | | f5 | CC 50 | 23130 | 711 | 5130 | 741 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_5A-13A | 25+10 | 50 + 50 | f1 | CC 50 | 20450 | 829 | 2450 | 874 |
| | | | f2 | CC 50 | 20600 | 844 | 2600 | 889 |
| | | | f5 | CC 50 | 23230 | 782 | 5230 | 751 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_5A-17A | 25+12 | 50 + 50 | f1 | CC 50 | 20525 | 836.5 | 2525 | 881.5 |
| | | | f2 | CC 50 | 20600 | 844 | 2600 | 889 |
| | | | f5 | CC 50 | 23790 | 710 | 5790 | 740 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_5A-25A | 25+65 | 50 + 50 | f1 | CC 50 | 20525 | 836.5 | 2525 | 881.5 |

| | | | | | | | | |
|-------------------------|-------------------------|--------------|----|--------|---------|--------|--------|--------|
| | | | f2 | CC 50 | 20600 | 844 | 2600 | 889 |
| | | | f5 | CC 50 | 26363 | 1882.5 | 8365 | 1962.5 |
| | | | f6 | CC 50 | 26640 | 1910 | 8640 | 1990 |
| CA_5A-29A | 25 + 11 | 50 + 50 | f1 | CC 50 | 20525 | 836.5 | 2525 | 881.5 |
| | | | f2 | CC 50 | 20600 | 844 | 2600 | 889 |
| | | | f5 | CC 50 | N/A | N/A | 9720 | 723 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_5A-30A | 25+10 | 50 + 50 | f1 | CC 50 | 20525 | 836.5 | 2525 | 881.5 |
| | | | f2 | CC 50 | 20600 | 844 | 2600 | 889 |
| | | | f5 | CC 50 | 27710 | 2310 | 9820 | 2355 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_5A-40A | 25 + 100 | 50 + 100 | f1 | CC 50 | 20525 | 836.5 | 2525 | 881.5 |
| | | | f2 | CC 50 | 20600 | 844 | 2600 | 889 |
| | | | f5 | CC 100 | 39150 | 2350 | 39150 | 2350 |
| | | | f6 | CC 100 | 39600 | 2395 | 39600 | 2395 |
| CA_5A-40C | 25 + 100 | 50 + 100+100 | f1 | CC 50 | 20525 | 836.5 | 2525 | 881.5 |
| | | | f2 | CC 50 | 20600 | 844 | 2600 | 889 |
| | | | f5 | CC 100 | 39051 | 2340.1 | 39051 | 2340.1 |
| | | | f6 | CC 100 | 39249 | 2359.9 | 39249 | 2359.9 |
| CA_5A-66A | 25+(70+90) ² | 50+100 | f1 | CC 50 | 20525 | 836.5 | 2525 | 881.5 |
| | | | f2 | CC 50 | 20600 | 844 | 2600 | 889 |
| | | | f5 | CC 100 | 132422 | 1755 | 66886 | 2155 |
| | | | f6 | CC 100 | 132572 | 1770 | 67036 | 2170 |
| CA_7A-8A | 70+35 | 50+50 | f1 | CC 50 | 21100 | 2535 | 3100 | 2655 |
| | | | f2 | CC 50 | [21400] | [2565] | [3400] | [2685] |
| | | | f5 | CC 50 | 21625 | 897.5 | 3625 | 942.5 |
| | | | f6 | CC 50 | 21750 | 910 | 3750 | 955 |
| CA_7A-12A | 70+17 | 50+50 | f1 | CC 50 | 21100 | 2535 | 3100 | 2655 |
| | | | f2 | CC 50 | [21400] | [2565] | [3400] | [2685] |
| | | | f5 | CC 50 | 23130 | 711 | 5130 | 741 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_7A-20A, DC_7A-20A | 70+30 | 50 + 50 | f1 | CC 50 | 21100 | 2535 | 3100 | 2655 |
| | | | f2 | CC 50 | [21400] | [2565] | [3400] | [2685] |
| | | | f5 | CC 50 | 24200 | 837 | 6200 | 796 |
| | | | f6 | CC 50 | 24400 | 857 | 6400 | 816 |
| CA_7A-22A | 70+80 | 50+50 | f1 | CC 50 | 21100 | 2535 | 3100 | 2655 |
| | | | f2 | CC 50 | [21400] | [2565] | [3400] | [2685] |
| | | | f1 | CC 50 | 24650 | 3415 | 6650 | 3515 |
| | | | f2 | CC 50 | 25350 | 3485 | 7350 | 3585 |
| CA_7A-28A, DC_7A-28A | 70+45 | 50+50 | f1 | CC 50 | 21100 | 2535 | 3100 | 2655 |
| | | | f2 | CC 50 | [21400] | [2565] | [3400] | [2685] |
| | | | f5 | CC 50 | 27410 | 723 | 9410 | 778 |
| | | | f6 | CC 50 | 27610 | 743 | 9610 | 798 |
| CA_7A-46A ³ | 70+775 | 50+100 | f1 | CC 50 | 21100 | 2535 | 3100 | 2655 |
| | | | f2 | CC 50 | [21400] | [2565] | [3400] | [2685] |
| | | | f5 | CC 100 | 50690 | 5540 | 50690 | 5540 |
| | | | f6 | CC 100 | 53940 | 5865 | 53940 | 5865 |
| CA_8A-11A | 35 + 20 | 50 + 50 | f1 | CC 50 | 21750 | 910 | 3750 | 955 |
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC 50 | 22800 | 1432.9 | 4800 | 1480.9 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_8A-20A | 35 + 30 | 50 + 50 | f1 | CC 50 | 21625 | 897.5 | 3625 | 942.5 |
| | | | f2 | CC 50 | 21750 | 910 | 3750 | 955 |
| | | | f5 | CC 50 | 24200 | 837 | 6200 | 796 |
| | | | f6 | CC 50 | 24400 | 857 | 6400 | 816 |
| CA_8A-27A | 35 + 17 | 50 + 25 | f1 | CC 50 | 21625 | 897.5 | 3625 | 942.5 |
| | | | f2 | CC 50 | 21750 | 910 | 3750 | 955 |
| | | | f5 | CC 25 | 27125 | 815.5 | 9125 | 860.5 |
| | | | f6 | CC 25 | 27185 | 821.5 | 9185 | 866.5 |
| CA_8A-28A | 35 + 45 | 50 + 50 | f1 | CC 50 | 21625 | 897.5 | 3625 | 942.5 |
| | | | f2 | CC 50 | 21750 | 910 | 3750 | 955 |
| | | | f5 | CC 50 | 27410 | 723 | 9410 | 778 |
| | | | f6 | CC 50 | 27610 | 743 | 9610 | 798 |
| CA_8A-40A | 35 + 100 | 50 + 100 | f1 | CC 50 | 21625 | 897.5 | 3625 | 942.5 |

| | | | | | | | | |
|------------|---------------------------|--------------|----|--------|--------|--------|-------|--------|
| | | | f2 | CC 50 | 21750 | 910 | 3750 | 955 |
| | | | f5 | CC 100 | 39150 | 2350 | 39150 | 2350 |
| | | | f6 | CC 100 | 39550 | 2390 | 39550 | 2390 |
| CA_8A-41A | 35 + 194 | 50 + 100 | f1 | CC 50 | 21651 | 900.1 | 3651 | 945.1 |
| | | | f2 | CC 50 | 21750 | 910 | 3750 | 955 |
| | | | f5 | CC 100 | 40521 | 2583.1 | 40521 | 2583.1 |
| | | | f6 | CC 100 | 40719 | 2602.9 | 40719 | 2602.9 |
| CA_8A-41C | 35 + 194 | 50 + 100+100 | f1 | CC 50 | 21651 | 900.1 | 3651 | 945.1 |
| | | | f2 | CC 50 | 21750 | 910 | 3750 | 955 |
| | | | f5 | CC 100 | 40521 | 2583.1 | 40521 | 2583.1 |
| | | | f6 | CC 100 | 40719 | 2602.9 | 40719 | 2602.9 |
| CA_8A-42A | 35+200 | 50 + 100 | f1 | CC 50 | 21625 | 897.5 | 3625 | 942.5 |
| | | | f2 | CC 50 | 21750 | 910 | 3750 | 955 |
| | | | f5 | CC 100 | 42590 | 3500 | 42590 | 3500 |
| | | | f6 | CC 100 | 43490 | 3590 | 43490 | 3590 |
| CA_11A-18A | 20+15 | 50 + 50 | f1 | CC 50 | 22800 | 1432.9 | 4800 | 1480.9 |
| | | | f2 | CC 50 | 22900 | 1442.9 | 4900 | 1490.9 |
| | | | f5 | CC 50 | 23900 | 820 | 5900 | 865 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_11A-28A | 20+30 | 50 + 50 | f1 | CC 50 | 22800 | 1432.9 | 4800 | 1480.9 |
| | | | f2 | CC 50 | 22900 | 1442.9 | 4900 | 1490.9 |
| | | | f5 | CC 50 | 27410 | 723 | 9410 | 778 |
| | | | f6 | CC 50 | 27610 | 743 | 9610 | 798 |
| CA_11A-41A | 20+194 | 50 + 100 | f1 | CC 50 | 22800 | 1432.9 | 4800 | 1480.9 |
| | | | f2 | CC 50 | 22900 | 1442.9 | 4900 | 1490.9 |
| | | | f5 | CC 100 | 40521 | 2583.1 | 40521 | 2583.1 |
| | | | f6 | CC 100 | 40719 | 2602.9 | 40719 | 2602.9 |
| CA_11A-41C | 20+194 | 50 + 100+100 | f1 | CC 50 | 22800 | 1432.9 | 4800 | 1480.9 |
| | | | f2 | CC 50 | 22900 | 1442.9 | 4900 | 1490.9 |
| | | | f5 | CC 100 | 40521 | 2583.1 | 40521 | 2583.1 |
| | | | f6 | CC 100 | 40719 | 2602.9 | 40719 | 2602.9 |
| CA_11A-42A | 20+200 | 50 + 100 | f1 | CC 50 | 22800 | 1432.9 | 4800 | 1480.9 |
| | | | f2 | CC 50 | 22900 | 1442.9 | 4900 | 1490.9 |
| | | | f5 | CC 100 | 42590 | 3500 | 42590 | 3500 |
| | | | f6 | CC 100 | 43490 | 3590 | 43490 | 3590 |
| CA_11A-42C | 20+200 | 50 + 100+100 | f1 | CC 50 | 22800 | 1432.9 | 4800 | 1480.9 |
| | | | f2 | CC 50 | 22900 | 1442.9 | 4900 | 1490.9 |
| | | | f5 | CC 100 | 42491 | 3490.1 | 42491 | 3490.1 |
| | | | f6 | CC 100 | 42689 | 3509.9 | 42689 | 3509.9 |
| CA_12A-25A | 17+65 | 50 + 50 | f1 | CC 50 | 23060 | 704 | 5060 | 734 |
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC 50 | 26363 | 1882.5 | 8365 | 1962.5 |
| | | | f6 | CC 50 | 26640 | 1910 | 8640 | 1990 |
| CA_12A-30A | 17+10 | 50 + 50 | f1 | CC 50 | 23060 | 704 | 5060 | 734 |
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC 50 | 27710 | 2310 | 9820 | 2355 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_12A-66A | 17+(70+90) ² | 50 + 100 | f1 | CC 50 | 23060 | 704 | 5060 | 734 |
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC 100 | 132422 | 1755 | 66886 | 2155 |
| | | | f6 | CC 100 | 132572 | 1770 | 67036 | 2170 |
| CA_13A-66A | 10 + (70+90) ² | 50 + 100 | f1 | CC 50 | 23230 | 782 | 5230 | 751 |
| | | | f2 | CC 50 | N/A | N/A | N/A | N/A |
| | | | f5 | CC 100 | 132422 | 1755 | 66886 | 2155 |
| | | | f6 | CC 100 | 132572 | 1770 | 67036 | 2170 |
| CA_14A-30A | 10+10 | 50 + 50 | f1 | CC 50 | 23330 | 793 | 5330 | 763 |
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC 50 | 27710 | 2310 | 9820 | 2355 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_14A-66A | 10+(70+90) ² | 50 + 100 | f1 | CC 50 | 23330 | 793 | 5330 | 763 |
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC 100 | 132422 | 1755 | 66886 | 2155 |
| | | | f6 | CC 100 | 132572 | 1770 | 67036 | 2170 |
| CA_18A-28A | 15+30 | 50 + 50 | f1 | CC 50 | 23900 | 820 | 5900 | 865 |

| | | | | | | | | |
|---------------------------|----------|------------|----|--------|-------|--------|-------|--------|
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC 50 | 27360 | 718 | 9360 | 773 |
| | | | f6 | CC 50 | 27460 | 728 | 9460 | 783 |
| CA_19A-21A, DC_19A-21A | 15+15 | 50+75 | f1 | CC 50 | 24075 | 837.5 | 6075 | 882.5 |
| | | | f2 | N/A | N/A | N/A | N/A | |
| | | | f5 | CC 75 | 24525 | 1455.4 | 6525 | 1503.4 |
| | | | f6 | N/A | N/A | N/A | N/A | |
| CA_19A-28A | 15+30 | 50+50 | f1 | CC 50 | 24075 | 837.5 | 6075 | 882.5 |
| | | | f2 | N/A | N/A | N/A | N/A | |
| | | | f5 | CC 50 | 27360 | 718 | 9360 | 773 |
| | | | f6 | CC 50 | 27460 | 728 | 9460 | 783 |
| CA_19A-42A | 15 + 200 | 50 + 100 | f1 | CC 50 | 24075 | 837.5 | 6075 | 882.5 |
| | | | f2 | N/A | N/A | N/A | N/A | |
| | | | f5 | CC 100 | 42590 | 3500 | 42590 | 3500 |
| | | | f6 | CC 100 | 43490 | 3590 | 43490 | 3590 |
| CA_19A-42C | 15+200 | 50+100+100 | f1 | CC 50 | 24075 | 837.5 | 6075 | 882.5 |
| | | | f2 | N/A | N/A | N/A | N/A | |
| | | | f5 | CC 100 | 42491 | 3490.1 | 42491 | 3490.1 |
| | | | f6 | CC 100 | 42689 | 3509.9 | 42689 | 3509.9 |
| CA_20A-28A | 30+45 | 50 + 50 | f1 | CC 50 | 24300 | 847 | 6300 | 806 |
| | | | f2 | CC 50 | 24400 | 857 | 6400 | 816 |
| | | | f5 | CC 50 | 27410 | 723 | 9410 | 778 |
| | | | f6 | CC 50 | 27610 | 743 | 9610 | 798 |
| CA_20A-31A | 30+5 | 50 + 25 | f1 | CC 50 | 24300 | 847 | 6300 | 806 |
| | | | f2 | CC 50 | 24400 | 857 | 6400 | 816 |
| | | | f5 | CC 25 | 27785 | 455 | 9895 | 465 |
| | | | f6 | N/A | N/A | N/A | N/A | |
| CA_20A-32A | 30+44 | 50 + 50 | f1 | CC 50 | 24300 | 847 | 6300 | 806 |
| | | | f2 | CC 50 | 24400 | 857 | 6400 | 816 |
| | | | f5 | CC 50 | N/A | N/A | 10140 | 1474 |
| | | | f6 | CC 50 | N/A | N/A | 10310 | 1491 |
| CA_20A-40A | 30+100 | 50 + 100 | f1 | CC 50 | 24300 | 847 | 6300 | 806 |
| | | | f2 | CC 50 | 24400 | 857 | 6400 | 816 |
| | | | f5 | CC 100 | 39150 | 2350 | 39150 | 2350 |
| | | | f6 | CC 100 | 39550 | 2390 | 39550 | 2390 |
| CA_20A-67A | 30+20 | 50 + 50 | f1 | CC 50 | 24300 | 847 | 6300 | 806 |
| | | | f2 | CC 50 | 24400 | 857 | 6400 | 816 |
| | | | f5 | CC 50 | N/A | N/A | 67386 | 743 |
| | | | f6 | CC 50 | N/A | N/A | 67486 | 753 |
| CA_21A-42A | 15+200 | 75 + 100 | f1 | CC 75 | 24525 | 1455.4 | 6525 | 1503.4 |
| | | | f2 | N/A | N/A | N/A | N/A | |
| | | | f5 | CC 100 | 42491 | 3490.1 | 42491 | 3490.1 |
| | | | f6 | CC 100 | 42689 | 3509.9 | 42689 | 3509.9 |
| CA_21A-42C | 15+200 | 75+100+100 | f1 | CC 75 | 24525 | 1455.4 | 6525 | 1503.4 |
| | | | f2 | N/A | N/A | N/A | N/A | |
| | | | f5 | CC 100 | 42491 | 3490.1 | 42491 | 3490.1 |
| | | | f6 | CC 100 | 42689 | 3509.9 | 42689 | 3509.9 |
| CA_23A-29A | 20+11 | 50 + 50 | f1 | CC 50 | 25550 | 2005 | 7550 | 2185 |
| | | | f2 | CC 50 | 25650 | 2015 | 7650 | 2195 |
| | | | f5 | CC 50 | N/A | N/A | 9720 | 723 |
| | | | f6 | N/A | N/A | N/A | N/A | |
| CA_25A-26A | 65+35 | 50 + 50 | f1 | CC 50 | 26365 | 1882.5 | 8365 | 1962.5 |
| | | | f2 | CC 50 | 26640 | 1910 | 8640 | 1990 |
| | | | f5 | CC 50 | 26865 | 831.5 | 8865 | 876.5 |
| | | | f6 | CC 50 | 26990 | 844 | 8990 | 889 |
| CA_25A-41A | 65+194 | 50 + 50 | f1 | CC 50 | 26365 | 1882.5 | 8365 | 1962.5 |
| | | | f2 | CC 50 | 26640 | 1910 | 8640 | 1990 |
| | | | f5 | CC 50 | 40620 | 2593 | 40620 | 2593 |
| | | | f6 | CC 50 | 41540 | 2685 | 41540 | 2685 |
| CA_25A-41C | 65+194 | 50+100+100 | f1 | CC 50 | 26363 | 1882.5 | 8365 | 1962.5 |
| | | | f2 | CC 50 | 26640 | 1910 | 8640 | 1990 |
| | | | f5 | CC 100 | 40521 | 2583.1 | 40521 | 2583.1 |
| | | | f6 | CC 100 | 40719 | 2602.9 | 40719 | 2602.9 |
| CA_26A-41A | 60 + 194 | 50 + 100 | f1 | CC 50 | 26865 | 831.5 | 8865 | 876.5 |

| | | | | | | | | |
|---------------------------|-----------------|-----------------|----|--------|--------|--------|-------|--------|
| | | | f2 | CC 50 | 26990 | 844 | 8990 | 889 |
| | | | f5 | CC 100 | 40620 | 2593 | 40620 | 2593 |
| | | | f6 | CC 100 | 41490 | 2680 | 41490 | 2680 |
| CA_26A-41C | 60+194 | 50+100+100 | f1 | CC 50 | 26865 | 831.5 | 8865 | 876.5 |
| | | | f2 | CC 50 | 26990 | 844 | 8990 | 889 |
| | | | f5 | CC 100 | 40521 | 2583.1 | 40521 | 2583.1 |
| | | | f6 | CC 100 | 40719 | 2602.9 | 40719 | 2602.9 |
| CA_28A-41A | 45+194 | 50 + 100 | f1 | CC 50 | 27410 | 723 | 9410 | 778 |
| | | | f2 | CC 50 | 27610 | 743 | 9610 | 798 |
| | | | f5 | CC 100 | 40620 | 2593 | 40620 | 2593 |
| | | | f6 | CC 100 | 41490 | 2680 | 41490 | 2680 |
| CA_28A-41C | 45+194 | 50+100+100 | f1 | CC 50 | 27410 | 723 | 9410 | 778 |
| | | | f2 | CC 50 | 27610 | 743 | 9610 | 798 |
| | | | f5 | CC 100 | 40521 | 2583.1 | 40521 | 2583.1 |
| | | | f6 | CC 100 | 40719 | 2602.9 | 40719 | 2602.9 |
| CA_28A-42A | 45+200 | 50 + 100 | f1 | CC 50 | 27410 | 723 | 9410 | 778 |
| | | | f2 | CC 50 | 27610 | 743 | 9610 | 798 |
| | | | f5 | CC 100 | 42590 | 3500 | 42590 | 3500 |
| | | | f6 | CC 100 | 43490 | 3590 | 43490 | 3590 |
| CA_28A-42C | 45+200 | 50+100+100 | f1 | CC 50 | 27410 | 723 | 9410 | 778 |
| | | | f2 | CC 50 | 27610 | 743 | 9610 | 798 |
| | | | f5 | CC 100 | 42491 | 3490.1 | 42491 | 3490.1 |
| | | | f6 | CC 100 | 42689 | 3509.9 | 42689 | 3509.9 |
| CA_29A-30A ¹ | 11+10 | 50+50 | f1 | CC 50 | N/A | N/A | 9720 | 723 |
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC 50 | 27710 | 2310 | 9820 | 2355 |
| | | | f6 | N/A | N/A | N/A | N/A | N/A |
| CA_29A-66A ¹ | 11+(70+90) 2 | 50+100 | f1 | CC 50 | N/A | N/A | 9720 | 723 |
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC 100 | 132422 | 1755 | 66886 | 2155 |
| | | | f6 | CC 100 | 132572 | 1770 | 67036 | 2170 |
| CA_29A-70A ¹ | 11+(15+25) 2 | 50+75 | f1 | CC 50 | N/A | N/A | 9720 | 723 |
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC 75 | 133047 | 1702.5 | 68411 | 2002.5 |
| | | | f6 | CC 75 | N/A | N/A | N/A | N/A |
| CA_29A-70C ¹ | 11+(15+25) 2 | 50+75+50 | f1 | CC 50 | N/A | N/A | 9720 | 723 |
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC 75 | 133047 | 1702.5 | 68411 | 2002.5 |
| | | | f6 | CC 50 | N/A | N/A | 68531 | 2014.5 |
| CA_30A-66A | 10+(70+90) 2 | 50+100 | f1 | CC 50 | 27710 | 2310 | 9820 | 2355 |
| | | | f2 | N/A | N/A | N/A | N/A | N/A |
| | | | f5 | CC 100 | 132422 | 1755 | 66886 | 2155 |
| | | | f6 | CC 100 | 132572 | 1770 | 67036 | 2170 |
| CA_39A-41A, DC_39A-41A | 40+194 | 100+100 | f1 | CC 100 | 38350 | 1890 | 38350 | 1890 |
| | | | f2 | CC 100 | 38550 | 1910 | 38550 | 1910 |
| | | | f5 | CC 100 | 40620 | 2593 | 40620 | 2593 |
| | | | f6 | CC 100 | 41490 | 2680 | 41490 | 2680 |
| CA_41A-42A, DC_41A-42A | 194+200 | 100 + 100 | f1 | CC 100 | 40620 | 2593 | 40620 | 2593 |
| | | | f2 | CC 100 | 41490 | 2680 | 41490 | 2680 |
| | | | f5 | CC 100 | 42590 | 3500 | 42590 | 3500 |
| | | | f6 | CC 100 | 43490 | 3590 | 43490 | 3590 |
| CA_41A-42C | 194+200 | 100+100+10 0 | f1 | CC100 | 40620 | 2593 | 40620 | 2593 |
| | | | f2 | CC 100 | 41490 | 2680 | 41490 | 2680 |
| | | | f5 | CC 100 | 42491 | 3490.1 | 42491 | 3490.1 |
| | | | f6 | CC 100 | 42689 | 3509.9 | 42689 | 3509.9 |
| CA_41A-46A ³ | 194+775 | 100+100 | f1 | CC 100 | 40620 | 2593 | 40620 | 2593 |
| | | | f2 | CC 100 | 41490 | 2680 | 41490 | 2680 |
| | | | f5 | CC 100 | 50690 | 5540 | 50690 | 5540 |
| | | | f6 | CC 100 | 53940 | 5865 | 53940 | 5865 |
| CA_41C-42A | 194+200 | 100+100+10 0 | f1 | CC 100 | 40521 | 2583.1 | 40521 | 2583.1 |
| | | | f2 | CC 100 | 40719 | 2602.9 | 40719 | 2602.9 |
| | | | f5 | CC 100 | 42590 | 3500 | 42590 | 3500 |
| | | | f6 | CC 100 | 43490 | 3590 | 43490 | 3590 |
| CA_42A-46A ³ | 200+775 | 100+100 | f1 | CC 100 | 42590 | 3500 | 42590 | 3500 |

| | | | | | | | | |
|---------------------------|-------------------------|---------------|----|--------|--------|--------|-------|--------|
| | | | f2 | CC 100 | 43490 | 3590 | 43490 | 3590 |
| | | | f5 | CC 100 | 50690 | 5540 | 50690 | 5540 |
| | | | f6 | CC 100 | 53940 | 5865 | 53940 | 5865 |
| CA_46A-66A ^{1,3} | $775+(70+90)^2$ | 100+100 | f1 | CC 100 | 50690 | 5540 | 50690 | 5540 |
| | | | f2 | CC 100 | 53940 | 5865 | 53940 | 5865 |
| | | | f5 | CC 100 | 132422 | 1755 | 66886 | 2155 |
| | | | f6 | CC 100 | 132572 | 1770 | 67036 | 2170 |
| CA_46A-66C ^{1,3} | $775+(70+90)^2$ | 100+100+100 | f1 | CC 100 | 50690 | 5540 | 50690 | 5540 |
| | | | f2 | CC 100 | 53940 | 5865 | 53940 | 5865 |
| | | | f5 | CC 100 | 132322 | 1745 | 66786 | 2145 |
| | | | f6 | CC 100 | 132520 | 1764.8 | 66984 | 2164.8 |
| CA_46A-70A ^{1,3} | $775+(15+25)^2$ | 100+75 | f1 | CC 100 | 50690 | 5540 | 50690 | 5540 |
| | | | f2 | CC 100 | 53940 | 5865 | 53940 | 5865 |
| | | | f5 | CC 75 | 133047 | 1702.5 | 68411 | 2002.5 |
| | | | f6 | CC 75 | N/A | N/A | N/A | N/A |
| CA_46C-66A ^{1,3} | $775+(70+90)^2$ | 100+100+100 | f1 | CC 100 | 50692 | 5540.2 | 50692 | 5540.2 |
| | | | f2 | CC 100 | 50890 | 5560 | 50890 | 5560 |
| | | | f5 | CC 100 | 132422 | 1755 | 66886 | 2155 |
| | | | f6 | CC 100 | 132572 | 1770 | 67036 | 2170 |
| CA_66A-70A | $(70+90)^2 + (15+25)^2$ | 100+75 | f1 | CC 100 | 132422 | 1755 | 66886 | 2155 |
| | | | f2 | CC 100 | 132572 | 1770 | 67036 | 2170 |
| | | | f5 | CC 75 | 133047 | 1702.5 | 68411 | 2002.5 |
| | | | f6 | CC 75 | N/A | N/A | N/A | N/A |
| CA_66A-70C | $(70+90)^2 + (15+25)^2$ | 100+75+50 | f1 | CC 100 | 132422 | 1755 | 66886 | 2155 |
| | | | f2 | CC 100 | 132572 | 1770 | 67036 | 2170 |
| | | | f5 | CC 75 | 133047 | 1702.5 | 68411 | 2002.5 |
| | | | f6 | CC 50 | N/A | N/A | 68531 | 2014.5 |
| CA_66A-71A | $(70+90)^2 + 35$ | 100+100+ 50 | f1 | CC 100 | 132422 | 1755 | 66886 | 2155 |
| | | | f2 | CC 100 | 132572 | 1770 | 67036 | 2170 |
| | | | f5 | CC 50 | 133297 | 680.5 | 68761 | 634.5 |
| | | | f6 | CC 50 | 133422 | 693 | 68886 | 647 |
| CA_66C-70A | $(70+90)^2 + (15+25)^2$ | 100+100+75 | f1 | CC 100 | 132322 | 1745 | 66786 | 2145 |
| | | | f2 | CC 100 | 132520 | 1764.8 | 66984 | 2164.8 |
| | | | f5 | CC 75 | 133047 | 1702.5 | 68411 | 2002.5 |
| | | | f6 | CC 75 | N/A | N/A | N/A | N/A |
| CA_66C-70C | $(70+90)^2 + (15+25)^2$ | 100+100+75+50 | f1 | CC 100 | 132322 | 1745 | 66786 | 2145 |
| | | | f2 | CC 100 | 132520 | 1764.8 | 66984 | 2164.8 |
| | | | f5 | CC 75 | 133047 | 1702.5 | 68411 | 2002.5 |
| | | | f6 | CC 50 | N/A | N/A | 68531 | 2014.5 |
| CA_66C-71A | $(70+90)^2 + 35$ | 100+100+ 50 | f1 | CC 100 | 132322 | 1745 | 66786 | 2145 |
| | | | f2 | CC 100 | 132520 | 1764.8 | 66984 | 2164.8 |
| | | | f5 | CC 50 | 133297 | 680.5 | 68761 | 634.5 |
| | | | f6 | CC 50 | 133422 | 693 | 68886 | 647 |
| CA_70A-71A | $(15+25)^2 + 35$ | 75+50 | f1 | CC 75 | 133047 | 1702.5 | 68411 | 2002.5 |
| | | | f2 | CC 75 | N/A | N/A | N/A | N/A |
| | | | f5 | CC 50 | 133297 | 680.5 | 68761 | 634.5 |
| | | | f6 | CC 50 | 133422 | 693 | 68886 | 647 |
| CA_70C-71A | $(15+25)^2 + 35$ | 75+50+50 | f1 | CC 75 | 133047 | 1702.5 | 68411 | 2002.5 |
| | | | f2 | CC 50 | N/A | N/A | 68531 | 2014.5 |
| | | | f5 | CC 50 | 133297 | 680.5 | 68761 | 634.5 |
| | | | f6 | CC 50 | 133422 | 693 | 68886 | 647 |

Note 1: Exceptionally the second band test frequencies of this CA combination shall be used for PCell and the first band test frequencies of this CA combination shall be used for the SCell respectively.

Note 2: Asymmetric operating band (UL + DL).

Note 3: Band 46 is restricted to E-UTRA operation when carrier aggregation is configured. In Rel-13 the downlink only operating band 46 is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.

Table 6.2.3.2-3: Void

Table 6.2.3.2-4: Test frequencies for E-UTRA PCell and SCell for CA non-contiguous Intra-band operation

| E-UTRA CA Configuration | Width of Operating band [MHz] | CC Combination / N _{RB_agg} | Test Frequency | CC N _{RB} | N _{UL} | Frequency of Uplink [MHz] | N _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-------------------------------|--------------------------------------|----------------|--------------------|-----------------|---------------------------|-----------------|-----------------------------|
| CA_2A-2A | 60 | 50 + 50 | f1 | CC 50 | 18650 | 1855 | 650 | 1935 |
| | | | f2 | CC 50 | 19150 | 1905 | 1150 | 1985 |
| | | | f3 | CC 50 | 18900 | 1880 | 900 | 1960 |
| CA_3A-3A | 75 | 50 + 50 | f1 | CC 50 | 19250 | 1715 | 1250 | 1810 |
| | | | f2 | CC 50 | 19900 | 1780 | 1900 | 1875 |
| | | | f3 | CC 50 | 19575 | 1747.5 | 1575 | 1842.5 |
| CA_4A-4A | 45 | 50 + 50 | f1 | CC 50 | 20000 | 1715 | 2000 | 2115 |
| | | | f2 | CC 50 | 20350 | 1750 | 2350 | 2150 |
| | | | f3 | CC 50 | 20175 | 1732.5 | 2175 | 2132.5 |
| CA_5A-5A | 25 | 50 + 50 | f1 | CC 50 | 20450 | 829 | 2450 | 874 |
| | | | f2 | CC 50 | 20600 | 844 | 2600 | 889 |
| | | | f3 | N/A | N/A | N/A | N/A | N/A |
| CA_7A-7A | 70 | 50 + 50 | f1 | CC 50 | 20800 | 2505 | 2800 | 2625 |
| | | | f2 | CC 50 | 21400 | 2565 | 3400 | 2685 |
| | | | f3 | CC 50 | 21100 | 2535 | 3100 | 2655 |
| CA_23A-23A | 20 | 25 + 50 | f1 | CC 25 | 25525 | 2002.5 | 7525 | 2182.5 |
| | | | f2 | CC 50 | 25650 | 2015 | 7650 | 2195 |
| | | | f3 | N/A | N/A | N/A | N/A | N/A |
| CA_25A-25A | 65 | 50 + 50 | f1 | CC 50 | 26090 | 1855 | 8090 | 1935 |
| | | | f2 | CC 50 | 26640 | 1910 | 8640 | 1990 |
| | | | f3 | CC 50 | 26365 | 1882.5 | 8365 | 1962.5 |
| CA_41A-41A | 194 | 100 + 100 | f1 | CC 100 | 39750 | 2506 | 39750 | 2506 |
| | | | f2 | CC 100 | 41490 | 2680 | 41490 | 2680 |
| | | | f3 | CC 100 | 40620 | 2593 | 40620 | 2593 |
| CA_41A-41C | 194 + 194 | 100 + 100 | f1 | CC 100 | 39750 | 2506 | 39750 | 2506 |
| | | | f2 | CC 100 | 41490 | 2680 | 41490 | 2680 |
| | | | f3 | CC 100 | 40620 | 2593 | 40620 | 2593 |
| CA_42A-42A | 200 | 100 + 100 | f1 | CC 100 | 41690 | 3410 | 41690 | 3410 |
| | | | f2 | CC 100 | 43490 | 3590 | 43490 | 3590 |
| | | | f3 | CC 100 | 42590 | 3500 | 42590 | 3500 |
| CA_66A-66A | 70+90 ¹ | 50 + 50 | f1 | CC 50 | 132022 | 1715 | 66486 | 2115 |
| | | | f2 | CC 50 | 132622 | 1775 | 67086 | 2175 |
| | | | f3 | CC 50 | 132322 | 1745 | 66786 | 2145 |

NOTE 1: Asymmetric operating band (UL + DL)

6.2.3.3 Test frequencies for ProSe signalling test

Test frequencies for ProSe direct discovery and communication signalling testing are specified in Table 6.2.3.3-1 and Table 6.2.3.3-2, these are derived from section 4.3.1 using uplink mid range frequency (i.e. f1 in Table 6.2.3.1-1) for supported ProSe Bands as specified in TS 36.101 table 5.6D.

Table 6.2.3.3-1: Test frequencies for E-UTRA cells and Sidelink Discovery

| E-UTRA ProSe Band | E-UTRA Operating Band | Default Operating BW MHz | f1 | | f2 | | f3 | | f4 | |
|-------------------|-----------------------|--------------------------|---------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} |
| 2 | 2 | 5 | Refer to Table 6.2.3.1-1 | | | | | | | |
| 3 | 3 | 5 | Refer to Table 6.2.3.1-1 | | | | | | | |
| 4 | 4 | 5 | Refer to Table 6.2.3.1-1 | | | | | | | |
| 7 | 7 | 5 | Refer to Table 6.2.3.1-1 | | | | | | | |
| 14 | 14 | 5 | Refer to Table 6.2.3.1-1 | | | | | | | |
| 20 | 20 | 10 | Refer to Table 6.2.3.1-1a | | | | | | | |
| 26 | 26 | 5 | Refer to Table 6.2.3.1-1 | | | | | | | |
| 28 | 28 | 5 | Refer to Table 6.2.3.1-1 | | | | | | | |
| 31 | 31 | 5 | Refer to Table 6.2.3.1-1 | | | | | | | |
| 41 | 41 | 20 | Refer to Table 6.2.3.1-2a | | | | | | | |
| 68 | 68 | 5 | Refer to Table 6.2.3.1-1 | | | | | | | |
| 72 | 72 | 5 | Refer to Table 6.2.3.1-1 | | | | | | | |

Table 6.2.3.3-2: Test frequencies for E-UTRA cells and Sidelink Communication

| E-UTRA ProSe Band | E-UTRA Operating Band | Default Operating BW MHz | f1 | | f2 | | f3 | | f4 | |
|-------------------|-----------------------|--------------------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} |
| 3 | 3 | 10 | FFS | FFS | FFS | FFS | FFS | FFS | FFS | FFS |
| 7 | 7 | 10 | FFS | FFS | FFS | FFS | FFS | FFS | FFS | FFS |
| 14 | 14 | 10 | FFS | FFS | FFS | FFS | FFS | FFS | FFS | FFS |
| 20 | 20 | 10 | Table 6.2.3.1-1a | | | | | | | |
| 26 | 26 | 10 | FFS | FFS | FFS | FFS | FFS | FFS | FFS | FFS |
| 28 | 28 | 10 | FFS | FFS | FFS | FFS | FFS | FFS | FFS | FFS |
| 31 | 31 | 5 | FFS | FFS | FFS | FFS | FFS | FFS | FFS | FFS |
| 68 | 68 | 5 | FFS | FFS | FFS | FFS | FFS | FFS | FFS | FFS |
| 72 | 72 | 5 | FFS | FFS | FFS | FFS | FFS | FFS | FFS | FFS |

6.2.3.4 Test frequencies for MFBI frequency band priority adjustment signalling test

Test frequencies for MFBI frequency band priority adjustment signalling testing are specified in Table 6.2.3.4-1, these are derived from section 4.3.1 using uplink mid range frequency.

Table 6.2.3.4-1: MFBI frequency band priority adjustment test frequency/Inter-band CA

| E-UTRA CA Configuration | Width of Operating bands [MHz+MHz] | CC Combination / N _{RB_agg} | E-UTRA Operating Band | MFBI Operating Band | MFBI Overlapping Band | f1, f5 |
|-------------------------|------------------------------------|--------------------------------------|-----------------------|---------------------|-----------------------|------------|
| CA_39A-41A | 40+194 | 100+100 | 39 | 38 | 41 | Mid (Note) |

Note: For f1, Mid refer to Table 4.3.1.2.7-1. For f5, Mid refer to Table 4.3.1.5.26-1.

6.2.3.5 Test frequencies for V2X Communication

Test frequencies for V2X communication signalling testing are specified in Table 6.2.3.5-1, these are derived from section 4.3.1 using uplink mid, low and high range frequency for supported V2X communication Bands as specified in TS 36.101 table 5.6G.

Table 6.2.3.5-1: Test frequencies for V2X Communication

| E-UTRA V2X Communication Band | Bandwidth [MHz] | Default Operating BW MHz | f5 | | f6 | | f7 | |
|-------------------------------|-----------------|--------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} |
| 47 | 60 | 10 | Mid | Mid | High | High | Low | Low |
| 47 | 60 | 20 | Mid | Mid | High | High | Low | Low |

6.3 Reference system configurations

The reference system configurations specified in this subclause apply to all Signalling test cases defined in TS 36.523-1 [18] unless otherwise specified, in addition to the common reference system configurations specified in subclause 4.4 of this specification.

For Signalling testing, MIMO (Multiple Input Multiple Output) is not applied for all cell configurations regardless of UE MIMO functionality. Only one SS Tx antenna is used.

One or two UE antennas are used for all signalling test cases. (*1)

(*1) Two UE antennas configuration is possible for UE diversity case.

6.3.1 Default parameter specific for simulated cells

Default parameters specific for simulated cells are specified in this subclause.

6.3.1.1 Intra-frequency neighbouring cell list in SIB4 for E-UTRA cells

Intra-frequency neighbouring cell list for signalling test cases is defined in table 6.3.1.1-1. This table is referred to in the default contents of IE *intraFreqNeighbouringCellList* in *SystemInformationBlockType4* defined in table 4.4.3.3-3.

Table 6.3.1.1-1: Intra-frequency neighbouring cell lists for E-UTRA cells

| cell ID | Test Frequency | intra-frequency neighbouring cell list | | | | | | |
|---------|----------------|--|---------------|--------|---------|------------------|-----|-----|
| | | number of entries | physCellId[n] | | | q-OffsetCell [n] | | |
| | | | 1 | 2 | 3 | 1 | 2 | 3 |
| Cell 1 | f1 | 3 | Cell 2 | Cell 4 | Cell 11 | dB0 | dB0 | dB0 |
| Cell 2 | f1 | 3 | Cell 1 | Cell 4 | Cell 11 | dB0 | dB0 | dB0 |
| Cell 4 | f1 | 3 | Cell 1 | Cell 2 | Cell 11 | dB0 | dB0 | dB0 |
| Cell 11 | f1 | 3 | Cell 1 | Cell 2 | Cell 4 | dB0 | dB0 | dB0 |
| Cell 3 | f2 | 1 | Cell 23 | - | - | dB0 | - | - |
| Cell 23 | f2 | 1 | Cell 3 | - | - | dB0 | - | - |

NOTE: The intra-frequency E-UTRA neighbouring cell list for signalling NAS test cases when cells are on same PLMN is defined in table 6.3.2.3.1-1.

6.3.1.2 Inter-frequency carrier frequency list in SIB5 for E-UTRA cells

Inter-frequency E-UTRA carrier frequency list for signalling test cases is defined in table 6.3.1.2-1. This table is referred to in the default contents of IE *interFreqCarrierFreqList* in *SystemInformationBlockType5* defined in table 4.4.3.3-4.

Table 6.3.1.2-1: Inter-frequency carrier frequency lists for E-UTRA cells

| cell ID | Test Frequency | interFreqCarrierFreqList | | | |
|---------------------------------------|--|--------------------------|-------------------|----|----|
| | | number of entries | dl-CarrierFreq[n] | | |
| | | | 1 | 2 | 3 |
| Cell 1 Cell 2 Cell 4 Cell 11 | f1 | 3 | f2 | f3 | f5 |
| Cell 3 Cell 23 | f2 | 3 | f1 | f3 | f5 |
| Cell 6 | f3 | 3 | f1 | f2 | f5 |
| Cell 10 | f5 | 3 | f1 | f2 | f3 |
| Note 1: | The inter-frequency E-UTRA carrier frequency list for signalling NAS test cases when cells are on same PLMN is defined in table 6.3.2.3.2-1. | | | | |
| Note 2: | Depending on the Band under test, f3 may not be applicable. | | | | |
| Note 3: | In case of Test frequency f1, f2 and f3, dl-CarrierFreq f5 as part of inter-frequency list is applicable only in case of multi-band scenarios. | | | | |
| Note 4: | In case of Test frequency f5, dl-CarrierFreq f1 as part of inter-frequency list is applicable only in case of multi-band scenarios. | | | | |

In the case of dual mode multi-cell network scenarios as defined in subclause 4.4.1.3, inter-frequency E-UTRA carrier frequency list for signalling test cases is defined in table 6.3.1.2-2.

Table 6.3.1.2-2: Inter-frequency carrier frequency lists for E-UTRA cells in dual mode scenario

| cell ID | Test Frequency | interFreqCarrierFreqList | | | |
|---------------------------------|----------------|--------------------------|-------------------|----|----|
| | | number of entries | dl-CarrierFreq[n] | | |
| | | | 1 | 2 | 3 |
| Cell 1 Cell 2 Cell 4 | f1 | 3 | f2 | f5 | f6 |
| Cell 3 | f2 | 3 | f1 | f5 | f6 |
| Cell 10, Cell 30, Cell 31 | f5 | 3 | f1 | f2 | f6 |
| Cell 28, Cell 29 | f6 | 3 | f1 | f2 | f5 |

6.3.1.3 UTRA carrier frequency list in SIB6 for E-UTRA cells

UTRA carrier frequency list for signalling test cases is defined in table 6.3.1.3-1. This table is referred to in the default contents of IE *carrierFreqListUTRA-FDD* and *carrierFreqListUTRA-TDD* in *SystemInformationBlockType6* defined in table 4.4.3.3-5.

Table 6.3.1.3-1: UTRA carrier frequency lists for E-UTRA cells

| interFreqCarrierFreqList | | | |
|--------------------------------|----------------|----|-----|
| number of entries | carrierFreq[n] | | |
| | 1 | 2 | 3 |
| 3 | f8 | f9 | f10 |
| Note: Band VI has two entries. | | | |

Table 6.3.1.3-2: Mapping of UTRA cell with TS 34.108 [5]

| UTRA cell | Frequency | UTRA cell in TS 34.108, clause 6.1 | UTRA frequency in TS 34.108 |
|---|-----------|------------------------------------|-----------------------------|
| Cell 5 | f8 | Cell 1 | High (Note 2) |
| Cell 7 | f8 | Cell 2 | High (Note 2) |
| Cell 8 | f9 | Cell 4 | Mid (Note 2) |
| Cell 9 | f10 | Cell 7 | Low |
| Note 1: The following simultaneous co-existences in the test are not allowed: <ul style="list-style-type: none"> - cells on f1 (eUTRA cell 1, cell 2, cell 4, cell 11) and f9 (UTRA cell 8); - cells on f2 (eUTRA cell 3, cell 12, cell 23) and f8 (UTRA cell 5, cell 7); - cells on f3 (eUTRA cell 6, Cell 13) and f10 (UTRA cell 9). Note 2: On UTRA Band VI, the Low range test frequency is applied to f9 for Cell 8, and f8 for Cell 5 and Cell 7. Note 3: The combinations of the referred TS 34.108 UTRA Cell index and frequency in this table override that specified in TS 34.108. | | | |

6.3.1.4 GERAN carrier frequency group list in SIB7 for E-UTRA cells

GERAN carrier frequency group list for signalling test cases is defined in table 6.3.1.4-1. This table is referred to in the default contents of IE *carrierFreqsInfoList* in *SystemInformationBlockType7* defined in table 4.4.3.3-6.

Table 6.3.1.4-1: GERAN carrier frequency group list for E-UTRA cells

| carrierFreqsInfoList | | | | |
|----------------------|-----------|------------------|-------------------------|------------------|
| number of entries | index (n) | carrierFreqs[n] | | |
| | | startingARFCN[n] | explicitListOfARFCNs[n] | |
| | | | number of entries | ARFCN-ValueGERAN |
| 1 | 1 | f11 | 2 | f12, f13 |

Table 6.3.1.4-2: Mapping of GERAN cells with TS 51.010-1 [25]

| GERAN cell | Frequency | GERAN cell in TS 51.010-1, clause 40 |
|------------|-----------|--------------------------------------|
| Cell 24 | f11 | Cell A |
| Cell 25 | f12 | Cell D |
| Cell 26 | f13 | Cell B |

NOTE 2: Unless otherwise stated, GERAN cells 24/25/26 take the default values of GERAN cells A/B/D as defined in TS 51.010 clause 40.

6.3.1.5 CDMA2000 HRPD carrier frequency list in SIB8 for E-UTRA cells

CDMA2000 HRPD carrier frequency list for signalling test cases is defined in table 6.3.1.5-1. This table is referred to in the default contents of IE *cellReselectionParametersHRPD* in *SystemInformationBlockType8* defined in table 4.4.3.3-7.

Table 6.3.1.5-1: CDMA2000 HRPD carrier frequency list for E-UTRA cells

| neighCellsPerFreqList | | | | | |
|-----------------------|-----------|----------|-------------------|-------|--------------------|
| number of entries | index (n) | arfcn[n] | physCellIdList[n] | | |
| | | | number of entries | index | PhysCellIdCDMA2000 |
| 3 | 1 | f14 | 2 | 1 | Cell 15 |
| | | | | 2 | Cell 16 |
| | 2 | f15 | 1 | 1 | Cell 17 |
| | | | | 3 | f16 |

6.3.1.6 CDMA2000 1xRTT carrier frequency list in SIB8 for E-UTRA cells

CDMA2000 1xRTT carrier frequency list for signalling test cases is defined in table 6.3.1.6-1. This table is referred to in the default contents of IE *cellReselectionParameters1XRTT* in *SystemInformationBlockTyp8* defined in table 4.4.3.3-7.

Table 6.3.1.6-1: CDMA2000 1xRTT carrier frequency list for E-UTRA cells

| neighCellsPerFreqList | | | | | |
|-----------------------|-----------|----------|-------------------|-------|--------------------|
| number of entries | index (n) | arfcn[n] | physCellIdList[n] | | |
| | | | number of entries | index | PhysCellIdCDMA2000 |
| 3 | 1 | f17 | 2 | 1 | Cell 19 |
| | | | | 2 | Cell 20 |
| | 2 | f18 | 1 | 1 | Cell 21 |
| | | | | 3 | f19 |

6.3.1.7 E-UTRA carrier frequency list in SIB19 for UTRA cells

E-UTRA carrier frequency list for signalling test cases is defined in table 6.3.1.7-1. This table is referred to in the default contents of IE *eutra-FrequencyAndPriorityInfoList* in System Information Block type 19 defined in table 4.4.4.1-1.

Table 6.3.1.7-1: E-UTRA carrier frequency list for UTRA cells

| eutra-FrequencyAndPriorityInfoList | | | | | |
|--|-----------|----|----|----|---|
| number of entries | earfcn[n] | | | | |
| | 1 | 2 | 3 | 4 | - |
| 4 | f1 | f2 | f3 | f4 | - |
| Note: Depending on the Band under test, f2, f3 and f4 may not be applicable. | | | | | |

6.3.1.8 NR carrier frequency list in SIB24 for E-UTRA cells

NR carrier frequency list for signalling test cases is defined in table 6.3.1.8-1. This table is referred to in the default contents of IE *carrierFreqListNR-r15* in System Information Block type 24 defined in Table 4.4.3.3-20.

Table 6.3.1.8-1: NR carrier frequency list for E-UTRA cells

| carrierFreqListNR-r15 | | | | | |
|--|-------------|------|------|------|---|
| number of entries | nr-arfcn[n] | | | | |
| | 1 | 2 | 3 | 4 | - |
| 4 | NRf1 | NRf2 | NRf3 | NRf4 | - |
| Note 1: Depending on the NR Band under test, NRf2, NRf3 and NRf4 may not be applicable. | | | | | |
| Note 2: NRf1, NRf2, NRf3 and NRf4 are defined in TS 38.508-1[67] clause 4.4.2 and 6.2.3. | | | | | |

6.3.2 Default configurations for NAS test cases

The default configurations specified in this subclause apply only to NAS test cases. They apply to all NAS test cases unless otherwise specified.

6.3.2.1 Simulated network scenarios for NAS test cases

Simulated network scenarios for NAS test cases to be tested are specified in the pre-test conditions of each individual test case.

NOTE: The number of cells specified does not necessarily correspond to the maximum number of resources to be configured simultaneously in test equipment. Please refer to Table 6.1-1 for such information.

Any combination is allowed with the following restrictions:

- Cell E should not be used if Cell G or Cell H is used, otherwise two different PLMNs will be operated on the same frequency
- a maximum 3 cells on the same frequency can be used, i.e. only 3 cells out of cells A, B, C, D and M may be used simultaneously in each individual test case when cells in the test case are in different PLMNs (refer to Table 6.3.2.2-3).

6.3.2.2 Simulated NAS cells

Simulated NAS cells and default parameters are specified in table 6.3.2.2-1.

Unless otherwise specified, the default parameters specified in section 4 also apply to all NAS cells.

Table 6.3.2.2-1: Default parameters for simulated NAS cells

| NAS cell ID | Tracking Area | | | TA# list (Note 1) | GUTI (Note 2) | | M-TMSI | |
|--|---------------|----------|-----|-------------------|---------------|----------------|--|----------|
| | TA# | PLMN | | | TAC | MME Identifier | | |
| | | MCC | MNC | | | MME Group ID | | MME Code |
| Cell A | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | Arbitrarily selected according to TS 23.003 subclause 2.8 [2]. | |
| Cell B | TAI-2 | (Note 3) | | 2 | TAI-2 | 32770 | | |
| Cell C | TAI-3 | (Note 3) | | 3 | TAI-3 | 32771 | | |
| Cell D | TAI-4 | (Note 3) | | 4 | TAI-4 | 32772 | | |
| Cell E | TAI-12 | 002 | 101 | 3 | TAI-12 | 32777 | | |
| Cell F | | | | | | | | |
| Cell G | TAI-7 | (Note 4) | 02 | 1 | TAI-7 | 32775 | | |
| Cell H | TAI-8 | (Note 4) | 02 | 2 | TAI-8 | 32776 | | |
| Cell I | TAI-9 | 002 | 101 | 1 | TAI-9 | 32777 | | |
| Cell J | TAI-10 | 003 | 101 | 1 | TAI-10 | 32778 | | |
| Cell K | TAI-9 | 002 | 101 | 1 | TAI-9 | 32777 | | |
| Cell L | TAI-11 | 002 | 101 | 2 | TAI-11 | 32779 | | |
| Cell M | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | | |
| <p>Note 1: The value(s) in the column TA# list indicates TAI(s) included in the response messages of the registration procedure (ATTACH ACCEPT or TRACKING AREA UPDATE ACCEPT) when the UE performs the registration procedure on a corresponding cell.</p> <p>Note 2: The value in the column GUTI indicates GUTI included in the response messages of the registration procedure (ATTACH ACCEPT or TRACKING AREA UPDATE ACCEPT) when the UE performs the registration procedure on a corresponding cell.</p> <p>Note 3: Set to the same Mobile Country Code and Mobile Network Code stored in EF_{IMSI} on the test USIM card (subclause 4.9.3).</p> <p>Note 4: Set to the same Mobile Country Code stored in EF_{IMSI} on the test USIM card (subclause 4.9.3).</p> <p>Note 5: Cell A is a serving cell and the other cells are suitable neighbour cells. The definitions are specified in subclause 6.2.2.1.</p> | | | | | | | | |

Table 6.3.2.2-2: Default cell identifiers for simulated NAS cells when cells are in same PLMN

| NAS cell ID | Frequency | E-UTRAN Cell Identifier | | Physical layer cell identity | rootSequenceIndex FDD | rootSequenceIndex TDD |
|-------------|-----------|-------------------------|---------------|------------------------------|-----------------------|-----------------------|
| | | eNB Identifier | Cell Identity | | | |

| | | | | | | |
|--------|----|--------------------------------|-----------------|----|-----|----|
| Cell A | f1 | '0000 0000 0000 0001 0001'B | '0000 0001'B | 1 | 22 | 0 |
| Cell B | f1 | '0000 0000 0000 0001 0001'B | '0000 0010'B | 2 | 86 | 8 |
| Cell C | f2 | '0000 0000 0000 0001 0010'B | '0000 0011'B | 3 | 22 | 0 |
| Cell D | f1 | '0000 0000 0000 0001 0001'B | '0000 0100'B | 4 | 150 | 16 |
| Cell E | NA | NA | NA | NA | NA | NA |
| Cell F | NA | NA | NA | NA | NA | NA |
| Cell G | NA | NA | NA | NA | NA | NA |
| Cell H | NA | NA | NA | NA | NA | NA |
| Cell I | NA | NA | NA | NA | NA | NA |
| Cell J | NA | NA | NA | NA | NA | NA |
| Cell M | f2 | '0000 0000 0000 0010 0001'B | '0001 0001'B | 17 | 86 | 8 |

Table 6.3.2.2-3: Default cell identifiers for simulated NAS cells when cells are in different PLMNs

| NAS cell ID | PLMN | Frequency | E-UTRAN Cell Identifier | | Physical layer cell identity | rootSequenceIndex FDD | rootSequenceIndex TDD |
|-------------|-----------------------------|-------------|--------------------------------|-----------------|------------------------------|-----------------------|-----------------------|
| | | | eNB Identifier | Cell Identity | | | |
| Cell A | MCC/MNC= MCC/MNC in USIM | f1 | '0000 0000 0000 0010 0001'B | '0000 0001'B | 1 | 22 | 0 |
| Cell B | MCC/MNC= MCC/MNC in USIM | f1 | '0000 0000 0000 0010 0001'B | '0000 0010'B | 2 | 86 | 8 |
| Cell C | MCC/MNC= MCC/MNC in USIM | f1 | '0000 0000 0000 0010 0001'B | '0000 0011'B | 3 | 150 | 16 |
| Cell D | MCC/MNC= MCC/MNC in USIM | f1 | '0000 0000 0000 0010 0001'B | '0000 0100'B | 4 | 214 | 24 |
| Cell E | MCC=002 MNC=101 | f2 | '0000 0000 0000 0011 0101'B | '0001 0111'B | 23 | 22 | 0 |
| Cell F | NA | NA | NA | NA | NA | NA | NA |
| Cell G | MCC = MCC in USIM MNC=02 | f2 | '0000 0000 0000 0010 0010'B | '0000 1011'B | 11 | 86 | 8 |
| Cell H | MCC= MCC in USIM MNC=02 | f2 | '0000 0000 0000 0010 0010'B | '0000 1100'B | 12 | 150 | 16 |
| Cell I | MCC=002 MNC=101 | f3 (Note 1) | '0000 0000 0000 0010 0011'B | '0000 1101'B | 13 | 22 | 0 |
| Cell J | MCC=003 MNC=101 | f4 (Note 1) | '0000 0000 0000 0010 0100'B | '0000 1110'B | 14 | 22 | 0 |
| Cell K | MCC=002 MNC=101 | f3 (Note 1) | '0000 0000 0000 0010 0011'B | '0000 1111'B | 15 | 86 | 8 |
| Cell L | MCC=002 MNC=101 | f3 (Note 1) | '0000 0000 0000 0010 0011'B | '0001 0000'B | 16 | 150 | 16 |
| Cell M | MCC/MNC= MCC/MNC in USIM | f1 | '0000 0000 0000 0010 0001'B | '0001 0001'B | 17 | 278 | 32 |

Note 1: The test frequency f3 or f4 is allocated to the cell if f1 and f2 are already allocated to the cells in the test. Otherwise, f1 or f2 is allocated, instead.

6.3.2.3 Broadcast system information

6.3.2.3.1 Intra-frequency neighbouring cell list in SIB4 for E-UTRA NAS cells

Intra-frequency neighbouring cell list of the same PLMN for the NAS signalling test is defined in table 6.3.2.3.1-1 when SIB4 to be broadcast.

Table 6.3.2.3.1-1: Intra-freq. lists in SIB4 for NAS test cases (same PLMN)

| NAS cell ID | Test Frequency | Intra-frequency neighbouring cell list | | |
|-------------|----------------|--|---------------|--------|
| | | number of entries | physCellId[n] | |
| | | | 1 | 2 |
| Cell A | f1 | 2 | Cell B | Cell D |
| Cell B | f1 | 2 | Cell A | Cell D |
| Cell D | f1 | 2 | Cell A | Cell B |
| Cell C | f2 | 1 | Cell M | N/A |
| Cell M | f2 | 1 | Cell C | N/A |

6.3.2.3.2 Inter-frequency carrier frequency list in SIB5 for E-UTRA NAS cells

Inter-frequency neighbouring carrier and cell lists for NAS signalling test cases are defined in table 6.3.2.3.2-1 for same PLMN and table 6.3.2.3.2-2 for different PLMN.

Table 6.3.2.3.2-1: Inter-freq. lists in SIB5 for NAS test cases (same PLMN)

| NAS cell ID | Test Frequency | interFreqCarrierFreqList | | |
|----------------------------|----------------|--------------------------|-------------------|----|
| | | number of entries | dl-CarrierFreq[n] | |
| | | | 1 | 2 |
| Cell A Cell B Cell D | f1 | 1 | f2 | NA |
| Cell C Cell M | f2 | 1 | f1 | NA |

NOTE: Operating on Band 13, SIB5 is not broadcast.

Table 6.3.2.3.2-2: Inter-freq. lists in SIB5 for NAS test cases (different PLMN)

| NAS cell ID | Test Frequency | interFreqCarrierFreqList | | | Condition |
|--|----------------|--------------------------|-------------------|----|------------|
| | | number of entries | dl-CarrierFreq[n] | | |
| | | | 1 | 2 | |
| Cell A Cell B Cell C Cell D Cell M | f1 | 0 | NA | NA | |
| Cell G Cell H | f2 | 0 | NA | NA | |
| Cell I Cell K Cell L | f3 | 0 | NA | NA | E-NOT-CONF |
| | | 1 | f2 | | E-CONF |
| Cell J | f4 | 0 | NA | NA | |
| Cell E | f2 | 1 | f3 | NA | |

| Condition | Explanation |
|------------|--------------------------------------|
| E-NOT-CONF | cell E is not configured in the test |
| E-CONF | cell E is configured in the test |

6.3.3 Cell configurations

For the purpose of test not involving Carrier Aggregation, three types of SS cell configurations are defined, full (Active) cell configuration, broadcast only cell configuration and minimum uplink cell configuration.

The abovementioned configurations can also be used in Carrier Aggregation test cases, either for PCells or SCells. However another configuration, the virtual cell configuration, can additionally be used for an SCell that is not active.

6.3.3.1 Full cell configuration

Full cell configuration is also called active cell configuration. The cell configuration, in minimum, has all defined DL and UL physical channels configured, i.e.

in DL: PBCH, PCFICH, PDCCH, PDSCH, PHICH,

in UL: PRACH, PUCCH, PUSCH.

The DL and UL Reference and synchronization (both primary and secondary) signals are also configured.

6.3.3.2 Minimum uplink cell configuration

In this cell configuration,

in DL: physical channels capable of transmission, i.e. PBCH, PCFICH, PDCCH, PDSCH are configured;

DL physical reference and synchronization (both primary and secondary) signals are also configured.

In UL: PRACH is configured. SS shall report any detection of PRACH preambles, in order to assign test verdicts. Decoding the preambles is not required.

6.3.3.3 Broadcast only cell configuration

In this cell configuration,

in DL: physical channels capable of transmission, i.e. PBCH, PCFICH, PDCCH, PDSCH are configured;

DL physical reference and synchronization (both primary and secondary) signals are also configured.

in UL: no physical resources are configured, neither channels, nor signals.

6.3.3.3A Virtual cell configuration

In this cell configuration,

in DL: no physical resources are configured, neither channels, nor signals;

in UL: no physical resources are configured, neither channels, nor signals.

6.3.3.4 Application of different cell configurations

By default, the cells specified in 36.523-1 are defined with the full cell configuration, unless it is explicitly specified as either the broadcast only, minimum uplink, or virtual cell configuration. The full cell configuration is suitable for UE to start camping, establish RRC connection or hand over from another active cell.

The broadcast only cells identified as 'DL only' can be applied in some RRC measurement test cases to those neighbour cells which UE shall not camp on during the test case execution.

The capability of a minimum uplink cell is much weaker than a full cell, but stronger than a broadcast only cell in UL. This cell configuration identified as 'min UL' can be applied in the idle mode test cases to those neighbour cells which a conformant UE shall not camp on during the test case execution.

The virtual cell configuration can only be used in Carrier Aggregation test cases as an SCell which is not active, i.e. the UE has it configured via RRC signalling but does not need to send or receive anything in this SCell.

If a cell configuration is specified in a test case it shall remain unchanged throughout the test case specification. In addition, there shall not be any requirement in the test specification or test implementation for a cell reconfiguration from one of the above configurations to the other.

For the UE conformance test, the broadcast only cell configuration can be replaced and implemented with the minimum uplink or full cell configurations. The minimum uplink cell configuration can also be implemented with the full cell configuration. The replacements in the implementation have no impact on the test purposes and the test requirements. The implementation guidelines are referred to 36.523-3.

6.3.4 SCell configurations

For the purpose of System Simulator resource management for Carrier Aggregation testing the following types of SCell configurations are defined:

- Active SCell: A cell that becomes an SCell at any point of time during the test case and which, while being an SCell, is activated.
- Inactive SCell: A cell that becomes an SCell at any point of time during the test case, but is never activated while being an SCell.

SCell activation is defined as sending an Activation/Deactivation MAC Control Element (ref. 36.321 cl. 6.1.3.8) to the UE to activate the SCell.

The SCell type does not depend on what the cell is used for in the test case while not being an SCell, and does not directly relate to the cell type specified in section 6.3.3. In particular an Inactive SCell can still be used as full cell or broadcast only cell (e.g. for measurements to be performed on such a cell), and may be used for UE dedicated traffic while not acting as an SCell.

Also note that an Active SCell will not become an Inactive SCell if the SCell is deactivated via Activation/Deactivation MAC Control Element or after the *sCellDeactivationTimer* timer expires.

6.4 Generic procedures

This clause describes UE test states which can be used in the initial condition of many test cases defined in TS 36.523-1 [18] in addition to the states already specified in clause 4.5 of this specification.

6.4.1 Initial UE states and setup procedures

6.4.1.1 Initial UE states and setup procedures

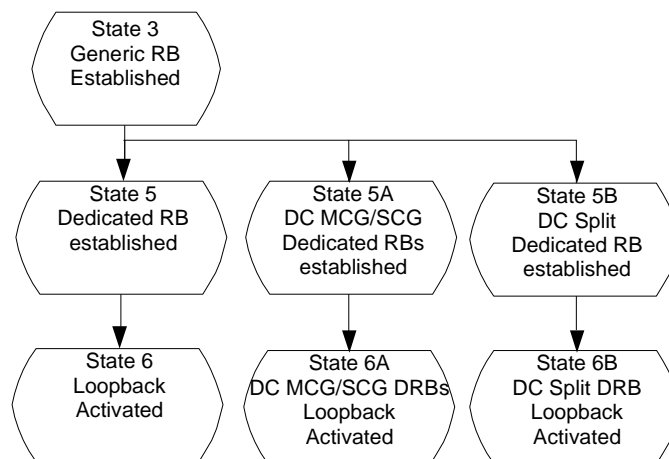


Figure 6.4.1.1-1: Initial UE states

In order that the UE can set up a call or session in E-UTRAN, there are a number of setup procedures to be undertaken in a hierarchical sequence to move between known states. The sequences are shown in figure 6.4.1.1-1 and the status of the relevant protocols in the UE in the different states are given in table 6.4.1.1-1. State 3 is defined in clause 4.5.1.

Table 6.4.1.1-1: Protocol state for each initial UE state

| | | RRC | ECM | EMM | ESM |
|----------|-------------------------------------|---------------|---------------|----------------|---|
| State 5 | Dedicated RB established | RRC_CONNECTED | ECM_CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active N dedicated EPS bearer context(s) active |
| State 5A | DC MCG/SCG Dedicated RB established | RRC_CONNECTED | ECM_CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active on the PCell 1 dedicated EPS bearer context(s) active on the PCell 1 dedicated EPS bearer context(s) active on the PSCell |
| State 5B | DC Split Dedicated RB established | RRC_CONNECTED | ECM_CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active on the PCell 1 dedicated EPS bearer context(s) active as a Split DRB on the PCell and the PSCell with UL transmission of PDCP SDUs on PSCell |
| State 6 | Loopback Activated | RRC_CONNECTED | ECM_CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active N dedicated EPS bearer context(s) active |
| State 6A | DC MCG/SCG DRB Loopback Activated | RRC_CONNECTED | ECM_CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active 1 dedicated EPS bearer context(s) active on the PCell 1 dedicated EPS bearer context(s) active on the PSCell |
| State 6B | DC Split DRB Loopback Activated | RRC_CONNECTED | ECM_CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active 1 dedicated EPS bearer context(s) active as a Split DRB on the PCell and the PSCell with UL transmission of PDCP SDUs on PSCell |

6.4.1.2 Dedicated Bearer Establishment (to state 5)

6.4.1.2.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Generic RB established (State 3).

6.4.1.2.2 Definition of system information messages

The default system information messages are used.

6.4.1.2.3 Procedure

The establishment of dedicated radio bearer connection is assumed to always be mobile terminated.

Table 6.4.1.2.3-1: Procedure for dedicated bearer establishment

| Step | Procedure | Message Sequence | |
|------|---|------------------|---|
| | | U - S | Message |
| 1 | The SS configures new data radio bearer(s) and the associated dedicated EPS bearer context(s). | <-- | RRC: RRCConnectionReconfiguration NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 2 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new data radio bearer(s), associated with the dedicated EPS bearer context(s) in the NAS message. | --> | RRC: RRCConnectionReconfigurationComplete |
| 3 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |

6.4.1.2.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7.

6.4.1.2A DC MCG/SCG Dedicated Bearer Establishment (to state 5A)

6.4.1.2A.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Generic RB established (State 3).

6.4.1.2A.2 Definition of system information messages

The default system information messages are used.

6.4.1.2A.3 Procedure

The establishment of MCG/SCG dedicated radio bearer connection is assumed to always be mobile terminated.

Table 6.4.1.2A.3-1: Procedure for MCG/SCG dedicated bearer establishment

| Step | Procedure | Message Sequence | |
|------|--|------------------|---|
| | | U - S | Message |
| 1 | The SS configures new MCG data radio bearer and the associated dedicated EPS bearer context. | <-- | RRC: RRCConnectionReconfiguration NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 2 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new MCG data radio bearer, associated with the dedicated EPS bearer context in the NAS message. | --> | RRC: RRCConnectionReconfigurationComplete |
| 3 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| 4 | The SS adds a PSCell and configures new SCG data radio bearer and the associated dedicated EPS bearer context. | <-- | RRC: RRCConnectionReconfiguration NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 5 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new SCG data radio bearer(s), associated with the dedicated EPS bearer context in the NAS message. | --> | RRC: RRCConnectionReconfigurationComplete |
| 6 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |

6.4.1.2A.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the following exceptions:

Table 6.4.1.2A.4-1: RRCConnectionReconfiguration (Step 1, Table 6.4.1.2A.3-1)

| |
|---|
| Derivation Path: 36.508, Table 4.6.1-8 using conditions AM-DRB-ADD(1) |
|---|

Table 6.4.1.2A.4-2: RRCConnectionReconfiguration (Step 4, Table 6.4.1.2A.3-1)

| |
|--|
| Derivation Path: 36.508, Table 4.6.1-8 using conditions PSCell_Add_SCG_DRB |
|--|

6.4.1.2B DC Split Dedicated Bearer Establishment (to state 5B)

6.4.1.2B.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Generic RB established (State 3).

6.4.1.2B.2 Definition of system information messages

The default system information messages are used.

6.4.1.2B.3 Procedure

The establishment of split dedicated radio bearer connection is assumed to always be mobile terminated.

Table 6.4.1.2B.3-1: Procedure for Dual Connectivity Split dedicated bearer establishment

| Step | Procedure | Message Sequence | |
|------|---|------------------|---|
| | | U - S | Message |
| 1 | The SS configures new MCG data radio bearer and the associated dedicated EPS bearer context. | <-- | RRC: RRCConnectionReconfiguration NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 2 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the new MCG data radio bearer, associated with the dedicated EPS bearer context in the NAS message. | --> | RRC: RRCConnectionReconfigurationComplete |
| 3 | The UE transmits an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| 4 | The SS adds a PSCell and configures a split data radio bearer with UL transmission of PDCP SDUs on the PSCel. | <-- | RRC: RRCConnectionReconfiguration |
| 5 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the establishment of the split data radio bearer | --> | RRC: RRCConnectionReconfigurationComplete |
| 6 | Void | - | - |

6.4.1.2B.4 Specific message contents

All specific message contents shall be referred to clause 4.6 and 4.7 with the following exceptions:

Table 6.4.1.2B.4-1: RRCConnectionReconfiguration (Step 1, Table 6.4.1.2A.3-1)

| |
|---|
| Derivation Path: 36.508, Table 4.6.1-8 using conditions AM-DRB-ADD(1) |
|---|

Table 6.4.1.2B.4-2: RRCConnectionReconfiguration (Step 4, Table 6.4.1.2A.3-1)

| |
|--|
| Derivation Path: 36.508, Table 4.6.1-8 using conditions PSCell_Add_Split_DRB |
|--|

6.4.1.3 Loopback Activation (to state 6)

6.4.1.3.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in Dedicated Radio Bearer Established (State 5).

6.4.1.3.2 Definition of system information messages

The default system information messages are used.

6.4.1.3.3 Procedure

Table 6.4.1.3.3-1: Procedure for loopback activation

| Step | Procedure | Message Sequence | |
|------|--|------------------|--|
| | | U - S | Message |
| 1 | The SS transmits an ACTIVATE RB TEST MODE message to activate UE radio bearer test mode procedure. | <-- | RRC: DLInformationTransfer TC: ACTIVATE RB TEST MODE |
| 2 | The UE transmits an ACTIVATE RB TEST MODE COMPLETE message. | --> | RRC: ULInformationTransfer TC: ACTIVATE RB TEST MODE COMPLETE |
| 3 | The SS transmits a CLOSE UE TEST LOOP message to enter the UE test loop mode. | <-- | RRC: DLInformationTransfer TC: CLOSE UE TEST LOOP |
| 4 | The UE transmits a CLOSE UE TEST LOOP COMPLETE message to confirm that loopback entities for the radio bearer(s) have been created and loop back is activated (State 6). | --> | RRC: ULInformationTransfer TC: CLOSE UE TEST LOOP COMPLETE |

6.4.1.3.4 Specific message contents

All specific message contents shall be referred to clause 4.6, 4.7 and 4.7A.

6.4.1.3A DC MCG/SCG DRB Loopback Activation (to state 6A)

6.4.1.3A.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in DC MCG/SCG Dedicated Radio Bearer Established (State 5A).

6.4.1.3A.2 Definition of system information messages

The default system information messages are used.

6.4.1.3A.3 Procedure

Same procedure as in sub-clause 6.4.1.3.3.

6.4.1.3A.4 Specific message contents

All specific message contents shall be referred to clause 4.6, 4.7 and 4.7A.

6.4.1.3B DC Split DRB Loopback Activation (to state 6B)

6.4.1.3B.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 4.4, unless otherwise specified in the test case.

User Equipment:

- The UE shall be in DC Split Dedicated Radio Bearer Established (State 5B).

6.4.1.3B.2 Definition of system information messages

The default system information messages are used.

6.4.1.3B.3 Procedure

Same procedure as in sub-clause 6.4.1.3.3.

6.4.1.3B.4 Specific message contents

All specific message contents shall be referred to clause 4.6, 4.7 and 4.7A.

6.4.2 Test procedures

6.4.2.1 Introduction

This section defines test procedures which can be used within test procedure sequences for test steps where checking the UE state is needed.

For each test procedure,

- at the start of the test procedure,
 - the System Simulator condition and the value of system information messages are the ones applicable in the test case referring to this test procedure, as they are after the execution of the test step immediately preceding the test step where the test procedure is used;
 - the initial UE condition is one indicated in the test case referring to this procedure, as it is after the execution of the test step immediately preceding the test step where the test procedure is used.
- at the end of the test procedure,
 - the System Simulator condition after the test procedure execution is complete is the same as before it is started (this should not be changed by the test procedure).

6.4.2.2 Test procedure to check RRC_IDLE state

This procedure aims at checking whether the UE is in RRC_IDLE on a certain cell of a test case or not.

Table 6.4.2.2-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|-------|---|------------------|--|----|---------|
| | | U - S | Message/PDU/SDU | | |
| 0 | The SS waits 1 second. | - | - | - | - |
| 1 | The SS sends RRC <i>Paging</i> message with UE S-TMSI on the cell(s) specified in the test case. | <-- | RRC: <i>Paging</i> (PCCH) | - | - |
| 2 | Check: Does the UE send an <i>RRCConnectionRequest</i> message on the cell specified in the test case ? | --> | RRC: <i>RRCConnectionRequest</i> | | P |
| 3 | The SS transmits a <i>RRCConnectionSetup</i> message | <-- | RRC: <i>RRCConnectionSetup</i> | - | - |
| 4 | The UE transmits an <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the SERVICE REQUEST message. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: SERVICE REQUEST | - | - |
| 5 - 6 | Void | - | - | - | - |
| 7 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> | - | - |
| 8 | The UE transmits a <i>SecurityModeComplete</i> message. | --> | RRC: <i>SecurityModeComplete</i> | - | - |
| 9 | The SS transmits a <i>RRCConnectionReconfiguration</i> message to establish the default bearer with condition SRB2-DRB(1, 0) according to 4.8.2.2.1.1, | <-- | RRC: <i>RRCConnectionReconfiguration</i> | - | - |
| 10 | The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message. | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> | - | - |
| 11 | The SS release the RRC connection. | <-- | RRC: <i>RRCConnectionRelease</i> | - | - |

6.4.2.3 Test procedure to check RRC_CONNECTED state

Table 6.4.2.3-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|--------------------------------|----|---------|
| | | U - S | Message/PDU/SDU | | |
| 1 | The SS sends <i>UECapabilityEnquiry</i> message to the UE. | <-- | <i>UECapabilityEnquiry</i> | - | - |
| 2 | Check: Does the UE send a <i>UECapabilityInformation</i> message? | --> | <i>UECapabilityInformation</i> | | P |

6.4.2.4 Test procedure Paging (for NAS testing)

This procedure aims at checking whether the UE is in registered with a certain S-TMSI.

For the PS domain this procedure is identical to the procedure in 6.4.2.2 except that the S-TMSI as indicated in step 1 is the one explicitly specified in the test step calling this procedure.

For the CS domain the test procedure is FFS (i.e. it shall be avoided to make use of CS paging in the test case design).

6.4.2.5 Test procedure for no response to paging (for NAS testing)

This procedure aims at checking that the UE ignores paging messages with a specified identity.

The procedure is defined in table 6.4.2.5-1.

Table 6.4.2.5-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|-----------------------------|----|---------|
| | | U - S | Message | | |
| 0 | The SS waits 1 second. | - | - | - | - |
| 1 | The SS transmits a paging message using the UE identity and the CN domain which are both specified in the referring test step, and on the cell which is specified in the referring test step. | <-- | Paging | - | - |
| 2 | Check: Does the UE send an <i>RRCCONNECTIONREQUEST</i> message on the cell where the paging was transmitted within the next 3s? | --> | <i>RRCCONNECTIONREQUEST</i> | | F |

6.4.2.6 Test procedure to check that a dedicated EPS bearer context is active (for NAS testing)

This procedure aims at checking that a dedicated EPS bearer context is active.

The procedure is defined in table 6.4.2.6-1.

Table 6.4.2.6-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|--|----|---------|
| | | U - S | Message | | |
| 1 | The SS modifies existing data radio bearer(s) and the associated EPS bearer context(s) with Bearer QoS update. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> NAS: MODIFY EPS BEARER CONTEXT REQUEST | - | - |
| 2 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message to confirm the modification of the existing data radio bearer(s), associated with the EPS bearer context(s) in the NAS message. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> | - | - |
| 3 | Check: Does the UE transmit a MODIFY EPS BEARER CONTEXT ACCEPT message? | --> | RRC: <i>ULINFORMATIONTRANSFER</i> NAS: MODIFY EPS BEARER CONTEXT ACCEPT | | P |

6.4.2.7 Test procedure to check that UE is camped on a new E-UTRAN cell

This procedure aims at checking whether the UE is camping on a new E-UTRAN cell with different TAI of a test case or not.

The procedure is defined in table 6.4.2.7-1.

Table 6.4.2.7-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|--|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits an <i>RRCConnectionRequest</i> message on the cell specified in the test case. | --> | RRC: <i>RRCConnectionRequest</i> | - | - |
| 2 | SS transmit an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> | - | - |
| 3 | The UE transmits an <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and a TRACKING AREA UPDATE REQUEST message is sent to update the registration of the actual tracking area. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: TRACKING AREA UPDATE REQUEST | - | - |
| 4 | SS responds with TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE ACCEPT | - | - |
| 5 | Check: Does the UE send a TRACKING AREA UPDATE COMPLETE on the cell specified in the test case? | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE COMPLETE | - | P |
| 6 | The SS transmits an <i>RRCConnectionRelease</i> message to release RRC connection and move to RRC_IDLE. | <-- | RRC: <i>RRCConnectionRelease</i> | - | - |

NOTE 1: The periodic tracking area updating timer T3412 is deactivated by default during the attach procedure (TS 36.508 clause 4.7.2).

NOTE 2: The SS does not initiate authentication and NAS SECURITY MODE COMMAND are not performed (reuse of keys allocated during the attach procedure).

6.4.2.7A Test procedure to check that UE is camped on E-UTRAN cell upon mobility from another RAT

This procedure aims at checking whether the UE is camping on a E-UTRAN cell upon mobility from another RAT after Inter RAT reselection.

The procedure if PDP context was established before inter RAT reselection, is defined in table 6.4.2.7A-1.

Table 6.4.2.7A-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|--|--|------------------|--|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits a <i>RRCConnectionRequest</i> message on the cell specified in the test case. | --> | RRC: <i>RRCConnectionRequest</i> | - | - |
| 2 | SS transmit an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> | - | - |
| 3 | The UE transmits a <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and a TRACKING AREA UPDATE REQUEST message is sent to update the registration of the actual tracking area. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: TRACKING AREA UPDATE REQUEST | - | - |
| 4 | The SS transmits a NAS SECURITY MODE COMMAND message to activate NAS security (mapped security context) (Note 1). | <-- | RRC: <i>DLInformationTransfer</i> NAS: SECURITY MODE COMMAND | - | - |
| 5 | The UE transmits a NAS SECURITY MODE COMPLETE message and establishes the initial security configuration. | --> | RRC: <i>ULInformationTransfer</i> NAS: SECURITY MODE COMPLETE | - | - |
| 6 | SS responds with TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE ACCEPT | - | - |
| 7 | Check: Does the UE send a TRACKING AREA UPDATE COMPLETE on the cell specified in the test case? | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE COMPLETE | - | P |
| 8 | The SS transmits an <i>RRCConnectionRelease</i> message to release RRC connection and move to RRC_IDLE. | <-- | RRC: <i>RRCConnectionRelease</i> | - | - |
| Note 1: Step 4 and 5 are executed only when UE and SS does not have a native security context. | | | | | |

The procedure if PDP context was not established before inter RAT reselection, is defined in table 6.4.2.7A-2.

Table 6.4.2.7A-2: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|--|--|------------------|--|----|---------|
| | | U - S | Message | | |
| - | EXCEPTION: For Rel-8 and Rel-9 steps 1 to 6 are optional and depend on UE implementation. A Rel-10 UE directly starts attach procedure from step 6. | - | - | - | - |
| 1 | The UE transmits a <i>RRCConnectionRequest</i> message on the cell specified in the test case. | --> | RRC: <i>RRCConnectionRequest</i> | - | - |
| 2 | SS transmit an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> | - | - |
| 3 | The UE transmits a <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and a TRACKING AREA UPDATE REQUEST message is sent to update the registration of the actual tracking area. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: TRACKING AREA UPDATE REQUEST | - | - |
| 4 | The SS transmits a TRACKING AREA UPDATE REJECT message with cause #40 (No EPS bearer context activated) to force attach the UE | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE REJECT | - | - |
| - | EXCEPTION: Step 5 describes the behaviour that depends on UE behaviour (Note 1). | - | - | - | - |
| 5 | The SS transmits an <i>RRCConnectionRelease</i> message to release RRC connection and move to RRC_IDLE. | <-- | RRC: <i>RRCConnectionRelease</i> | - | - |
| - | EXCEPTION: Step 6 describes a behaviour which depends on the UE capability | - | - | - | - |
| 6 | IF NOT <i>pc_Auto_PDN_Connectivity</i> , the user initiates an attach by MMI or by AT command. (Note 2) | - | - | - | - |
| 7-22 | Steps 2 to 17 of the generic UE Registration procedure (4.5.2.3-1) are executed to successfully complete the Attach procedure. | - | - | - | - |
| Note 1: SS waits for 1.5 second to receive the Attach Request on the existing RRC Connection. In case Attach Request is not received within 1.5 second, existing RRC Connection is released. | | | | | |
| Note 2: The request is assumed to be triggered by AT command AT+CGDCONT=1,"IP" followed by AT+CGACT=1 | | | | | |

6.4.2.7A.1 Specific message contents

Table 6.4.2.7A.1-1: TRACKING AREA UPDATE REQUEST (Step 3, table 6.4.2.7A-1, 6.4.2.7A-2)

| Derivation Path: 36.508 clause 4.7.2 | | | |
|---|--|---|-------------------------------|
| Information Element | Value/remark | Comment | Condition |
| EPS update type | | | |
| EPS update type Value | '000'B | TA updating | TA_only |
| | '001'B or '010'B | Combined TA/LA updating or combined TA/LA updating with IMSI attach | No_LAU_CombinedRAU_GERAN_UTRA |
| | '010'B | Combined TA/LA updating with IMSI attach | LAU_CombinedRAU_GERAN_UTRA |
| "Active" flag | Any allowed value | | |
| NAS key set identifier | | | |
| NAS key set identifier | The valid NAS key set identifier of the UE | | |
| TSC | '0'B | native security context (for KSI _{ASME}) | Native_Security_Context |
| | '1'B | mapped security context (for KSI _{SGSN}) | Mapped_Security_Context |
| GPRS ciphering key sequence number | Not present or any allowed value | | |
| Old P-TMSI signature | Any allowed value | | |
| Additional GUTI | Not present or any allowed value | | |
| Nonce _{UE} | Not present or any allowed value | | |
| UE radio capability information update needed | Not present or any allowed value | | |
| EPS bearer context status | Not present or (octet 3 = '00100000'B or '01100000'B) and octet 4 = '00000000'B) | | Bearer_Established |
| | Not present or (octet 3 = '00000000'B and octet 4 = '00000000'B) | | No_Bearer_Established |

| Condition | Explanation |
|-------------------------------|--|
| TA_only | See the definition below table 4.7.2-24. |
| combined_TA_LA | See the definition below table 4.7.2-24. |
| Native_Security_Context | UE has performed AKA on the EUTRA Cell |
| Mapped_Security_Context | UE has performed AKA on the UTRA/GERAN Cell |
| No_LAU_CombinedRAU_GERAN_UTRA | UE has not performed location area update procedure or a combined routing area update procedure in A/Gb or lu mode |
| LAU_CombinedRAU_GERAN_UTRA | UE has performed location area update procedure or a combined routing area update procedure in A/Gb or lu mode |
| Bearer_Established | Bearer is Established when UE earlier camped at UTRAN/GERAN cell or UE previously successfully camped in EUTRA cell. |
| No_Bearer_Established | Bearer is not Established when UE earlier camped at UTRAN/GERAN cell and UE did not previously camped in EUTRA cell. |

This message is sent integrity protected when a valid security context exists and without integrity protection otherwise.

6.4.2.7B Test procedure to check that UE is camped on a new E-UTRAN cell / UP ClOT

This procedure aims at checking whether the UE is camping on a new E-UTRAN cell with different TAI of a test case or not.

The procedure is defined in table 6.4.2.7B-1.

Table 6.4.2.7B-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|----|--|------------------|--|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits an <i>RRCCONNECTIONRESUMEREQUEST</i> message on the cell specified in the test case. | --> | RRC: <i>RRCCONNECTIONRESUMEREQUEST</i> | - | - |
| 2 | SS transmit an <i>RRCCONNECTIONRESUME</i> message. | <-- | RRC: <i>RRCCONNECTIONRESUME</i> | - | - |
| 3 | The UE transmits an <i>RRCCONNECTIONRESUMECOMplete</i> message to confirm the successful completion of the connection establishment and a TRACKING AREA UPDATE REQUEST message is sent to update the registration of the actual tracking area. | --> | RRC: <i>RRCCONNECTIONRESUMECOMplete</i> NAS: TRACKING AREA UPDATE REQUEST | - | - |
| 4 | SS responds with TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE ACCEPT | - | - |
| 5 | Check: Does the UE send a TRACKING AREA UPDATE COMPLETE on the cell specified in the test case? | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE COMPLETE | - | P |
| 6 | The SS transmits an <i>RRCCONNECTIONRELEASE</i> message to release RRC connection and move to RRC_IDLE. | <-- | RRC: <i>RRCCONNECTIONRELEASE</i> | - | - |

Table 6.4.2.7B-2: *RRCCONNECTIONRELEASE* (Step 6)

| Derivation Path: 36.331 clause 6.2.2 | | | |
|---|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| <i>RRCCONNECTIONRELEASE</i> ::= SEQUENCE { | | | |
| <code>rrc-TransactionIdentifier</code> | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| <code>rrcConnectionRelease-r8</code> SEQUENCE { | | | |
| <code>releaseCause</code> | other | | |
| <code>redirectedCarrierInfo</code> | Not present | | |
| <code>idleModeMobilityControlInfo</code> | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

6.4.2.8 Test procedure to check that UE is camped on a new UTRAN cell

This procedure aims at checking whether the UE is camping on a new UTRAN cell of a test case or not.

The procedure is defined in table 6.4.2.8-1.

Table 6.4.2.8-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|--|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits a RRC CONNECTION REQUEST message on the cell specified in the test case. | --> | RRC: RRC CONNECTION REQUEST | - | - |
| 2 | The SS transmits an RRC CONNECTION SETUP message. | <-- | RRC: RRC CONNECTION SETUP | - | - |
| 3 | The UE transmits an RRC CONNECTION SETUP COMPLETE message. | --> | RRC: RRC CONNECTION SETUP COMPLETE | - | - |
| 4 | The UE transmits a ROUTING AREA UPDATE REQUEST message. | --> | RRC: INITIAL DIRECT TRANSFER NAS: ROUTING AREA UPDATE REQUEST | - | - |
| 5 | The SS transmits a SECURITY MODE COMMAND message. | <-- | RRC: SECURITY MODE COMMAND | - | - |
| 6 | The UE transmits a SECURITY MODE COMPLETE message. | --> | RRC: SECURITY MODE COMPLETE | - | - |
| 7 | The SS transmits a ROUTING AREA UPDATE ACCEPT message. | <-- | RRC: DOWNLINK DIRECT TRANSFER NAS: ROUTING AREA UPDATE ACCEPT | - | - |
| 8 | The UE transmits a ROUTING AREA UPDATE COMPLETE message. | --> | RRC: UPLINK DIRECT TRANSFER NAS: ROUTING AREA UPDATE COMPLETE | - | - |
| 9 | The SS transmits a RRC CONNECTION RELEASE message. | <-- | RRC: RRC CONNECTION RELEASE | - | - |
| 10 | Check: Does the UE transmit an RRC CONNECTION RELEASE COMPLETE message on the cell specified in the test? | --> | RRC: RRC CONNECTION RELEASE COMPLETE | - | P |

NOTE: The TS 34.108 [5] and TS 34.123-1 [7] use Network Mode of Operation I as default, for this reason a combined MM/GMM procedure is performed.

6.4.2.9 Test procedure to check that UE is camped on a new GERAN cell

This procedure aims at checking whether the UE is camping on a new GERAN cell of a test case or not.

The procedure is defined in table 6.4.2.9-1.

Table 6.4.2.9-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|---------------------------------------|----|---------|
| | | U - S | Message | | |
| 1 | Check: Does the UE send a CHANNEL REQUEST message on the cell(s) specified in the test case? | --> | CHANNEL REQUEST | - | - |
| 2 | An uplink TBF is established in order to allow the UE to transmit a ROUTING AREA UPDATE REQUEST message signalling. | - | - | - | - |
| 3 | The UE transmits a ROUTING AREA UPDATE REQUEST message. | --> | ROUTING AREA UPDATING REQUEST | - | - |
| 4 | A downlink TBF is established by the SS in order to transmit the AUTHENTICATION AND CIPHERING REQUEST message | - | - | - | - |
| 5 | The SS transmits an AUTHENTICATION AND CIPHERING REQUEST message. | <-- | AUTHENTICATION AND CIPHERING REQUEST | - | - |
| 6 | An uplink TBF is established in order to allow the UE to transmit an AUTHENTICATION AND CIPHERING RESPONSE message | - | - | - | - |
| 7 | The UE transmits an AUTHENTICATION AND CIPHERING RESPONSE message. | --> | AUTHENTICATION AND CIPHERING RESPONSE | - | - |
| 8 | A downlink TBF is established by the SS in order to transmit the ROUTING AREA UPDATE ACCEPT message | - | - | - | - |
| 9 | The SS transmits a ROUTING AREA UPDATE ACCEPT message. | <-- | ROUTING AREA UPDATING ACCEPT | - | - |
| 10 | An uplink TBF is established in order to allow the UE to transmit a ROUTING AREA UPDATE COMPLETE message | | | - | - |
| 11 | The UE transmits a ROUTING AREA UPDATE COMPLETE message. | --> | ROUTING AREA UPDATING COMPLETE | - | P |

NOTE: The TS 51.010-1 [25] uses Network Mode of Operation I as default, for this reason a combined MM/GMM procedure is performed.

6.4.2.10 Test procedure to check that UE performs tracking area updating procedure without ISR and security reconfiguration after successful completion of handover from UTRA

This procedure aims at checking whether the UE performs tracking area updating procedure where ISR is not activated and security reconfiguration after successful completion of handover from UTRA.

The procedure is defined in table 6.4.2.10-1.

Table 6.4.2.10-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|-----|--|------------------|---|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits an <i>ULInformationTransfer</i> message on the cell specified in the test case. This message includes a TRACKING AREA UPDATE REQUEST message. | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE REQUEST | - | - |
| 2 | The SS transmits a <i>DLInformationTransfer</i> message on the cell specified in the test case. This message includes a TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE ACCEPT | - | - |
| 3 | The UE transmits an <i>ULInformationTransfer</i> message on the cell specified in the test case. This message includes a TRACKING AREA UPDATE COMPLETE message. | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE COMPLETE | - | - |
| - | EXCEPTION: Steps 4a1 to 4a2 describe behaviour that depends on the IE included in TRACKING AREA UPDATE REQUEST in step 1. | - | - | - | - |
| 4a1 | IF TRACKING AREA UPDATE REQUEST transmitted in step 1 does not contain a valid <i>KSI_{ASME}</i> THEN the SS transmits a <i>DLInformationTransfer</i> message on the cell specified in the test case. This message includes an AUTHENTICATION REQUEST message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: AUTHENTICATION REQUEST | - | - |
| 4a2 | The UE transmits an <i>ULInformationTransfer</i> message on the cell specified in the test case. This message includes an AUTHENTICATION RESPONSE message. | --> | RRC: <i>ULInformationTransfer</i> NAS: AUTHENTICATION RESPONSE | - | - |
| 5 | The SS transmits a <i>DLInformationTransfer</i> message on the cell specified in the test case. This message includes a SECURITY MODE COMMAND message to take the native EPS security context into use. | <-- | RRC: <i>DLInformationTransfer</i> NAS: SECURITY MODE COMMAND | - | - |
| 6 | The UE transmits an <i>ULInformationTransfer</i> message on the cell specified in the test case. This message includes a SECURITY MODE COMPLETE message. | --> | RRC: <i>ULInformationTransfer</i> NAS: SECURITY MODE COMPLETE | - | - |
| 7 | The SS transmits an <i>RRCConnectionReconfiguration</i> message to perform intra cell handover and security reconfiguration on the cell specified in the test case. | <-- | RRC: <i>RRCConnectionReconfiguration</i> | - | - |
| 8 | Check: Does the UE transmit an <i>RRCConnectionReconfigurationComplete</i> message on the cell specified in the test case? | --> | RRC: <i>RRCConnectionReconfigurationComplete</i> | - | P |

Table 6.4.2.10-2: Message TRACKING AREA UPDATE REQUEST (step 1, Table 6.4.2.10-1)

| Derivation Path: 36.508 clause 4.7.2-27 | | | |
|---|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| NAS key set identifier | | | |
| NAS key set identifier | The valid NAS key set identifier of the UE | mapped security context (for KSI _{SGSN}) | |
| TSC | 1 | | |
| Non-current native NAS key set identifier | | | |
| NAS key set identifier | The valid NAS key set identifier of the UE | native security context (for KSI _{ASME}) | |
| TSC | 0 | | |
| Old P-TMSI signature | any allowed value | | |
| Additional GUTI | any allowed value | | |

Table 6.4.2.10-3: RRCConnectionReconfiguration (step 7, Table 6.4.2.10-1)

| Derivation Path: 36.508, Table 4.6.1-8 |
|--|
|--|

Table 6.4.2.10-4: SecurityConfigHO (IE in RRCConnectionReconfiguration, Table 6.4.2.10-3)

| Derivation Path: 36.508, Table 4.6.4-1 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SecurityConfigHO ::= SEQUENCE { | | | |
| handoverType CHOICE { | | | |
| intraLTE SEQUENCE { | | | |
| keyChangeIndicator | TRUE | | |
| nextHopChainingCount | 0 | | |
| } | | | |
| } | | | |
| } | | | |

6.4.3 Reference test procedures for TTCN development

This clause describes reference test procedures for the purpose of TTCN development.

6.4.3.1 UE triggered establishment of a dedicated EPS bearer context

Table 6.4.3.1-1: Test procedure sequence

| St | Procedure | Message Sequence | |
|---|--|------------------|--|
| | | U - S | Message |
| 1 | Cause the UE to request bearer resource allocation of dedicated EPS bearer associated with first PDN connectivity. (see Note 1) | - | - |
| - | EXCEPTION: Steps 2a1 to 2a7 describe behaviour that depends on RRC state; the "lower case letter" identifies a step sequence that takes place if the UE is in RRC_IDLE state. | - | - |
| 2a1 | IF the UE is in RRC_IDLE state THEN the UE transmits an <i>RRCCONNECTIONREQUEST</i> message. | --> | RRC: <i>RRCCONNECTIONREQUEST</i> |
| 2a2 | The SS transmits an <i>RRCCONNECTIONSETUP</i> message. | <-- | RRC: <i>RRCCONNECTIONSETUP</i> |
| 2a3 | The UE transmits an <i>RRCCONNECTIONSETUPCOMPLETE</i> including the SERVICE REQUEST message. | --> | RRC: <i>RRCCONNECTIONSETUPCOMPLETE</i> NAS: SERVICE REQUEST |
| 2a4 | The SS transmits a <i>SECURITYMODECOMMAND</i> message to activate AS security. | <-- | RRC: <i>SECURITYMODECOMMAND</i> |
| 2a5 | The UE transmits a <i>SECURITYMODECOMPLETE</i> message and establishes the initial security configuration. | --> | RRC: <i>SECURITYMODECOMPLETE</i> |
| 2a6 | The SS transmits an <i>RRCCONNECTIONRECONFIGURATION</i> message to configure data radio bearer(s) associated with the existing EPS bearer context. The <i>RRCCONNECTIONRECONFIGURATION</i> message is using condition SRB2-DRB(n, m) where n and m are the number of DRBs associated with existing EPS bearer contexts and configured respectively with RLC-AM and RLC-UM. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> |
| 2a7 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 3 | The UE transmits an <i>ULINFORMATIONTRANSFER</i> message including the BEARER RESOURCE ALLOCATION REQUEST message. | --> | RRC: <i>ULINFORMATIONTRANSFER</i> NAS: BEARER RESOURCE ALLOCATION REQUEST |
| 4 | The SS transmits an <i>RRCCONNECTIONRECONFIGURATION</i> message including the ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message to establish the dedicated EPS bearer context. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST |
| 5 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 6 | The UE transmits an <i>ULINFORMATIONTRANSFER</i> message including the ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULINFORMATIONTRANSFER</i> NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT |
| Note 1: The request is assumed to be triggered by AT command +CGDSCONT, and +CGACT (activated). | | | |
| Note 2: If UE sends IP related data this shall be handled by the SS. | | | |

6.4.3.2 UE triggered establishment of a default EPS bearer context associated with an additional PDN

Table 6.4.3.2-1: Test procedure sequence

| St | Procedure | Message Sequence | |
|-----|--|------------------|--|
| | | U - S | Message |
| 1 | Cause the UE to request connectivity to an additional PDN. (see Note 1) | - | - |
| - | EXCEPTION: Steps 2a1 to 2a7 describe behaviour that depends on RRC state; the "lower case letter" identifies a step sequence that takes place if the UE is in RRC_IDLE state. | - | - |
| 2a1 | IF the UE is in RRC_IDLE state THEN the UE transmits an <i>RRCCONNECTIONREQUEST</i> message. | --> | RRC: <i>RRCCONNECTIONREQUEST</i> |
| 2a2 | The SS transmits an <i>RRCCONNECTIONSETUP</i> message. | <-- | RRC: <i>RRCCONNECTIONSETUP</i> |
| 2a3 | The UE transmits an <i>RRCCONNECTIONSETUPCOMPLETE</i> including the SERVICE REQUEST message. | --> | RRC: <i>RRCCONNECTIONSETUPCOMPLETE</i> NAS: SERVICE REQUEST |
| 2a4 | The SS transmits a <i>SECURITYMODECOMMAND</i> message to activate AS security. | <-- | RRC: <i>SECURITYMODECOMMAND</i> |
| 2a5 | The UE transmits a <i>SECURITYMODECOMPLETE</i> message and establishes the initial security configuration. | --> | RRC: <i>SECURITYMODECOMPLETE</i> |
| 2a6 | The SS transmits an <i>RRCCONNECTIONRECONFIGURATION</i> message to configure data radio bearer(s) associated with the existing EPS bearer context. The <i>RRCCONNECTIONRECONFIGURATION</i> message is using condition SRB2-DRB(n, m) where n and m are the number of DRBs associated with existing EPS bearer contexts and configured respectively with RLC-AM and RLC-UM. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> |
| 2a7 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 3 | The UE transmits an <i>ULINFORMATIONTRANSFER</i> message including the PDN CONNECTIVITY REQUEST message. | --> | RRC: <i>ULINFORMATIONTRANSFER</i> NAS: PDN CONNECTIVITY REQUEST |
| 4 | The SS transmits an <i>RRCCONNECTIONRECONFIGURATION</i> message including the ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message to establish the default EPS bearer context. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST |
| 5 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| - | EXCEPTION: In parallel to the event described in step 6 below, the generic procedure for IP address allocation in the U-plane specified in TS 36.508 subclause 4.5A.1 takes place performing IP address allocation in the U-plane. | - | - |
| 6 | The UE transmits an <i>ULINFORMATIONTRANSFER</i> message including the ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULINFORMATIONTRANSFER</i> NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT |

Note 1: The request is assumed to be triggered by AT command +CGDCONT and +CGACT (activated).
Note 2: If UE sends IP related data this shall be handled by the SS.

Table 6.4.3.2-2: Message PDN CONNECTIVITY REQUEST (step 3, Table 6.4.3.2-1)

| Derivation Path: TS 36.508 Table 4.7.3-20 | | | |
|---|---------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| EPS bearer identity | 0000 | No EPS bearer identity assigned | |
| Procedure transaction identity | PTI-1 | UE assigns a particular PTI not yet used between 1 and 254 | |
| ESM information transfer flag | Not present | This IE is only used during an attach procedure. | |
| Access point name | APN-1(New PDN name) | The requested PDN is different from default PDN | |

6.4.3.3 UE triggered modification of an EPS bearer context

Table 6.4.3.3-1: Test procedure sequence

| St | Procedure | Message Sequence | |
|---|--|------------------|--|
| | | U - S | Message |
| 1 | Cause the UE to request bearer resource modification of EPS bearer associated with first PDN connectivity. (see Note 1) | - | - |
| - | EXCEPTION: Steps 2a1 to 2a7 describe behaviour that depends on RRC state; the "lower case letter" identifies a step sequence that takes place if the UE is in RRC_IDLE state. | - | - |
| 2a1 | IF the UE is in RRC_IDLE state THEN the UE transmits an <i>RRCCONNECTIONREQUEST</i> message. | --> | RRC: <i>RRCCONNECTIONREQUEST</i> |
| 2a2 | The SS transmits an <i>RRCCONNECTIONSETUP</i> message. | <-- | RRC: <i>RRCCONNECTIONSETUP</i> |
| 2a3 | The UE transmits an <i>RRCCONNECTIONSETUPCOMPLETE</i> including the SERVICE REQUEST message. | --> | RRC: <i>RRCCONNECTIONSETUPCOMPLETE</i> NAS: SERVICE REQUEST |
| 2a4 | The SS transmits a <i>SECURITYMODECOMMAND</i> message to activate AS security. | <-- | RRC: <i>SECURITYMODECOMMAND</i> |
| 2a5 | The UE transmits a <i>SECURITYMODECOMPLETE</i> message and establishes the initial security configuration. | --> | RRC: <i>SECURITYMODECOMPLETE</i> |
| 2a6 | The SS transmits an <i>RRCCONNECTIONRECONFIGURATION</i> message to configure data radio bearer(s) associated with the existing EPS bearer context. The <i>RRCCONNECTIONRECONFIGURATION</i> message is using condition SRB2-DRB(n, m) where n and m are the number of DRBs associated with existing EPS bearer contexts and configured respectively with RLC-AM and RLC-UM. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> |
| 2a7 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 3 | The UE transmits an <i>ULINFORMATIONTRANSFER</i> message including the BEARER RESOURCE MODIFICATION REQUEST message. | --> | RRC: <i>ULINFORMATIONTRANSFER</i> NAS: BEARER RESOURCE MODIFICATION REQUEST |
| 4 | The SS transmits an <i>RRCCONNECTIONRECONFIGURATION</i> message including the MODIFY EPS BEARER CONTEXT REQUEST message to modify the EPS bearer context. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> NAS: MODIFY EPS BEARER CONTEXT REQUEST |
| 5 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 6 | Check: Does the UE transmit an <i>ULINFORMATIONTRANSFER</i> message including the MODIFY EPS BEARER CONTEXT ACCEPT message? | --> | RRC: <i>ULINFORMATIONTRANSFER</i> NAS: MODIFY EPS BEARER CONTEXT ACCEPT |
| Note 1: The request is assumed to be triggered by AT command +CGCMOD. | | | |
| Note 2: If UE sends IP related data this shall be handled by the SS. | | | |

6.4.3.4 UE triggered deletion of an EPS bearer context

Table 6.4.3.4-1: Test procedure sequence

| St | Procedure | Message Sequence | |
|--|--|------------------|--|
| | | U - S | Message |
| 1 | Cause the UE to request bearer resource release of dedicated EPS bearer associated with first PDN connectivity. (see Note 1) | - | - |
| - | EXCEPTION: Steps 2a1 to 2a7 describe behaviour that depends on RRC state; the "lower case letter" identifies a step sequence that takes place if the UE is in RRC_IDLE state. | - | - |
| 2a1 | IF the UE is in RRC_IDLE state THEN the UE transmits an <i>RRCCONNECTIONREQUEST</i> message. | --> | RRC: <i>RRCCONNECTIONREQUEST</i> |
| 2a2 | The SS transmits an <i>RRCCONNECTIONSETUP</i> message. | <-- | RRC: <i>RRCCONNECTIONSETUP</i> |
| 2a3 | The UE transmits an <i>RRCCONNECTIONSETUPCOMPLETE</i> including the SERVICE REQUEST message. | --> | RRC: <i>RRCCONNECTIONSETUPCOMPLETE</i> NAS: SERVICE REQUEST |
| 2a4 | The SS transmits a <i>SECURITYMODECOMMAND</i> message to activate AS security. | <-- | RRC: <i>SECURITYMODECOMMAND</i> |
| 2a5 | The UE transmits a <i>SECURITYMODECOMPLETE</i> message and establishes the initial security configuration. | --> | RRC: <i>SECURITYMODECOMPLETE</i> |
| 2a6 | The SS transmits an <i>RRCCONNECTIONRECONFIGURATION</i> message to configure data radio bearer(s) associated with the existing EPS bearer context. The <i>RRCCONNECTIONRECONFIGURATION</i> message is using condition SRB2-DRB(n, m) where n and m are the number of DRBs associated with existing EPS bearer contexts and configured respectively with RLC-AM and RLC-UM. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> |
| 2a7 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 3 | The UE transmits an <i>ULINFORMATIONTRANSFER</i> message including the BEARER RESOURCE MODIFICATION REQUEST message. | --> | RRC: <i>ULINFORMATIONTRANSFER</i> NAS: BEARER RESOURCE MODIFICATION REQUEST |
| 4 | The SS transmits an <i>RRCCONNECTIONRECONFIGURATION</i> message including the DEACTIVATE EPS BEARER CONTEXT REQUEST message to delete EPS bearer context. | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION</i> NAS: DEACTIVATE EPS BEARER CONTEXT REQUEST |
| 5 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> message | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE</i> |
| 6 | The UE transmits an <i>ULINFORMATIONTRANSFER</i> message including the DEACTIVATE EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULINFORMATIONTRANSFER</i> NAS: DEACTIVATE EPS BEARER CONTEXT ACCEPT |
| Note 1: The request is assumed to be triggered by AT command +CGACT (deactivated). | | | |
| Note 2: If UE sends IP related data this shall be handled by the SS. | | | |

6.4.3.5 UE triggered CS call

Table 6.4.3.5-1: Test procedure sequence

| St | Procedure | Message Sequence | |
|---|---|------------------|---|
| | | U - S | Message |
| 1 | Cause the UE to originate CS call. (see Note 1) | - | - |
| - | EXCEPTION: Steps 2a1 to 2b1 describe behaviour that depends on RRC state; the "lower case letter" identifies a step sequence that takes place depending on RRC state. | - | - |
| 2a1 | IF the UE is in RRC_IDLE state THEN the UE transmits an <i>RRCCoordinateRequest</i> message. | --> | RRC: <i>RRCCoordinateRequest</i> |
| 2a2 | The SS transmits an <i>RRCCoordinateSetup</i> message. | <-- | RRC: <i>RRCCoordinateSetup</i> |
| 2a3 | The UE transmits an <i>RRCCoordinateSetupComplete</i> including the EXTENDED SERVICE REQUEST message. | --> | RRC: <i>RRCCoordinateSetupComplete</i> NAS: EXTENDED SERVICE REQUEST |
| 2b1 | ELSE The UE transmits an <i>ULInformationTransfer</i> message including the EXTENDED SERVICE REQUEST message. | --> | RRC: <i>ULInformationTransfer</i> NAS: EXTENDED SERVICE REQUEST |
| Note 1: The request is assumed to be triggered by AT command D. | | | |

6.4.3.6 UE triggered MO SMS over SGs

Table 6.4.3.6-1: Test procedure sequence

| St | Procedure | Message Sequence | |
|---|--|------------------|--|
| | | U - S | Message |
| 1 | Cause the UE to originate SMS message. (see Note 1) | - | - |
| - | EXCEPTION: Steps 2a1 to 2a7 describe behaviour that depends on RRC state; the "lower case letter" identifies a step sequence that takes place if the UE is in RRC_IDLE state. | - | - |
| 2a1 | IF the UE is in RRC_IDLE state THEN the UE transmits an <i>RRCCConnectionRequest</i> message. | --> | RRC: <i>RRCCConnectionRequest</i> |
| 2a2 | The SS transmits an <i>RRCCConnectionSetup</i> message. | <-- | RRC: <i>RRCCConnectionSetup</i> |
| 2a3 | The UE transmits an <i>RRCCConnectionSetupComplete</i> including the SERVICE REQUEST message. | --> | RRC: <i>RRCCConnectionSetupComplete</i> NAS: SERVICE REQUEST |
| 2a4 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 2a5 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 2a6 | The SS transmits an <i>RRCCConnectionReconfiguration</i> message to configure data radio bearer(s) associated with the existing EPS bearer context. The <i>RRCCConnectionReconfiguration</i> message is using condition SRB2-DRB(n, m) where n and m are the number of DRBs associated with existing EPS bearer contexts and configured respectively with RLC-AM and RLC-UM. | <-- | RRC: <i>RRCCConnectionReconfiguration</i> |
| 2a7 | The UE transmits an <i>RRCCConnectionReconfigurationComplete</i> message. | --> | RRC: <i>RRCCConnectionReconfigurationComplete</i> |
| 3 | The UE transmits an <i>ULInformationTransfer</i> message including the UPLINK NAS TRANSPORT message to send the SMS message. | --> | RRC: <i>ULInformationTransfer</i> NAS: UPLINK NAS TRANSPORT |
| 4 | The SS transmits a <i>DLInformationTransfer</i> message including the DOWNLINK NAS TRANSPORT message to acknowledge receipt of the SMS message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: DOWNLINK NAS TRANSPORT |
| 5 | The SS transmits a <i>DLInformationTransfer</i> message including the DOWNLINK NAS TRANSPORT message to send the delivery report. | <-- | RRC: <i>DLInformationTransfer</i> NAS: DOWNLINK NAS TRANSPORT |
| 6 | The UE transmits an <i>ULInformationTransfer</i> message including the UPLINK NAS TRANSPORT message to acknowledge receipt of the delivery report. | --> | RRC: <i>ULInformationTransfer</i> NAS: UPLINK NAS TRANSPORT |
| Note 1: The request is assumed to be triggered by AT command +CMGW and +CMSS. | | | |

6.4.3.7 CS fallback to UTRAN procedures (LAI of UTRAN cell same as the LAI received in combined Attach procedure in EUTRA cell)

All procedures specified in this clause are referred to the UTRA target cell where the UE has been redirected or handed over from the EUTRA cell after a CS call requested. The default message contents are found in TS 34.108 [5], clause 9.

The procedures in 6.4.3.7.1 – 6.4.3.7.4 are applied if the UE supports (EUTRA) RRC connection release with redirection and Multi Cell System Information to UTRAN. The procedures in 6.4.3.7.5 - 6.4.3.7.7 are applied if the UE supports PS HO from EUTRA to UTRAN.

6.4.3.7.1 CS fallback to UTRAN with redirection / MT call (PS bearers not established)

Table 6.4.3.7.1-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|--|---|------------------|-------------------------------|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits an RRC CONNECTION REQUEST message. | --> | RRC CONNECTION REQUEST | - | - |
| 2 | The SS transmits an RRC CONNECTION SETUP message. | <-- | RRC CONNECTION SETUP | - | - |
| 3 | The UE transmits an RRC CONNECTION SETUP COMPLETE message. | --> | RRC CONNECTION SETUP COMPLETE | - | - |
| - | EXCEPTION: In parallel to the events described in step 4 to 15 the step specified in Table 6.4.3.7.1-2 takes place. | - | - | - | - |
| 4 | Check: Does the UE transmit a PAGING RESPONSE message? | --> | PAGING RESPONSE | - | P |
| 5-15 | Steps 7 to 17 of the generic test procedure in TS 34.108 [5] subclause 7.2.3.1.3 are performed using the UTRA reference radio bearer parameters and combination "UTRA Speech" according to subclause 4.8.3 and Table 4.8.3-1. NOTE: Mobile terminating CS call is established. | - | - | - | - |
| 16 | The SS transmits a SECURITY MODE COMMAND message for the PS domain. See Note 1. | <-- | SECURITY MODE COMMAND | - | - |
| 17 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 18 | The SS transmits a ROUTING AREA UPDATE ACCEPT message. | <-- | ROUTING AREA UPDATE ACCEPT | - | - |
| 19 | The UE transmits a ROUTING AREA UPDATE COMPLETE message. | --> | ROUTING AREA UPDATE COMPLETE | - | - |
| Note 1: A real network will initiate the security mode command procedure for the PS domain immediately after receiving the ROUTING AREA UPDATE REQUEST, but in this test procedure it was chosen to complete the procedure for CS domain first, in order to avoid the possibility of a security mode command procedure running in parallel with another RRC procedure. | | | | | |

Table 6.4.3.7.1-2: Parallel behaviour

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|-----------------------------|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits a ROUTING AREA UPDATE REQUEST message. | --> | ROUTING AREA UPDATE REQUEST | - | - |

6.4.3.7.2 CS fallback to UTRAN with redirection / MO call (PS bearers not established)

Table 6.4.3.7.2-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|--|---|------------------|-------------------------------|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits an RRC CONNECTION REQUEST message. | --> | RRC CONNECTION REQUEST | - | - |
| 2 | The SS transmits an RRC CONNECTION SETUP message. | <-- | RRC CONNECTION SETUP | - | - |
| 3 | The UE transmits an RRC CONNECTION SETUP COMPLETE message. | --> | RRC CONNECTION SETUP COMPLETE | - | - |
| - | EXCEPTION: In parallel to the events described in step 4 to 15 the step specified in Table 6.4.3.7.2-2 takes place. | - | - | - | - |
| 4 | Check: Does the UE transmit a CM SERVICE REQUEST message? | --> | CM SERVICE REQUEST | - | P |
| 5-15 | Steps 6 to 16 of the generic test procedure in TS 34.108 [5] subclause 7.2.3.2.3 are performed using the UTRA reference radio bearer parameters and combination "UTRA Speech" according to subclause 4.8.3 and Table 4.8.3-1. NOTE: Mobile originating CS call is established. | - | - | - | - |
| 16 | The SS transmits a SECURITY MODE COMMAND message for the PS domain. See Note 1. | <-- | SECURITY MODE COMMAND | - | - |
| 17 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 18 | The SS transmits a ROUTING AREA UPDATE ACCEPT message. | <-- | ROUTING AREA UPDATE ACCEPT | - | - |
| 19 | The UE transmits a ROUTING AREA UPDATE COMPLETE message. | --> | ROUTING AREA UPDATE COMPLETE | - | - |
| Note 1: A real network will initiate the security mode command procedure for the PS domain immediately after receiving the ROUTING AREA UPDATE REQUEST, but in this test procedure it was chosen to complete the procedure for CS domain first, in order to avoid the possibility of a security mode command procedure running in parallel with another RRC procedure. | | | | | |

Table 6.4.3.7.2-2: Parallel behaviour

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|-----------------------------|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits a ROUTING AREA UPDATE REQUEST message. | --> | ROUTING AREA UPDATE REQUEST | - | - |

6.4.3.7.3 CS fallback to UTRAN with redirection / MT call (PS bearer established)

Table 6.4.3.7.3-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|------|---|------------------|-----------------------------|----|---------|
| | | U - S | Message | | |
| 1-19 | Steps 1-19 of table 6.4.3.7.1-1. NOTE: Mobile terminating CS call is established and Routing Area Update procedure is performed | | | - | - |
| 20 | Check: Does the UE transmit a SERVICE REQUEST message? | --> | SERVICE REQUEST | - | P |
| 21 | SS transmits a RADIO BEARER SETUP message, using the UTRA reference radio bearer parameters and combination "UTRA PS RB + Speech" according to subclause 4.8.3 and Table 4.8.3-1. NOTE: Mobile originating packet switched session is established. | <-- | RADIO BEARER SETUP | - | - |
| 22 | The UE transmits a RADIO BEARER SETUP COMPLETE message | --> | RADIO BEARER SETUP COMPLETE | - | - |

6.4.3.7.4 CS fallback to UTRAN with redirection / MO call (PS bearer established)

Table 6.4.3.7.4-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|------|---|------------------|-----------------------------|----|---------|
| | | U - S | Message | | |
| 1-19 | Steps 1-19 of table 6.4.3.7.2-1. NOTE: Mobile originating CS call is set up and Routing Area Update procedure is performed | - | - | - | - |
| 20 | Check: Does the UE transmit a SERVICE REQUEST message? | --> | SERVICE REQUEST | - | P |
| 21 | SS transmits a RADIO BEARER SETUP message, using the UTRA reference radio bearer parameters and combination "UTRA PS RB + Speech" according to subclause 4.8.3 and Table 4.8.3-1. NOTE: Mobile originating packet switched session is established. | <-- | RADIO BEARER SETUP | - | - |
| 22 | The UE transmits a RADIO BEARER SETUP COMPLETE message | --> | RADIO BEARER SETUP COMPLETE | - | - |

6.4.3.7.5 CS fallback to UTRAN with Handover / MT call

Table 6.4.3.7.5-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|------|---|------------------|------------------------------------|----|---------|
| | | U - S | Message | | |
| 1 | Check: Does the UE transmit a HANDOVER TO UTRAN COMPLETE message? | --> | HANDOVER TO UTRAN COMPLETE | - | P |
| - | EXCEPTION: In parallel to the events described in step 2a1 to 9 the steps specified in table 6.4.3.7.5-2 takes place. | - | - | - | - |
| - | Exception: Steps 2a1 to 2a10 and 2b1 to 2b9 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that takes place if a capability is supported. Note: One sequence of steps 2a1 to 2a10 or 2b1 to 2b9 are executed | - | - | - | - |
| 2a1 | IF the UE does not determine the LAI of the new UTRAN cell, THEN Check: Does the UE transmit a LOCATION UPDATING REQUEST message? | --> | LOCATION UPDATING REQUEST | - | P |
| 2a2 | The SS transmits AUTHENTICATION REQUEST | <-- | AUTHENTICATION REQUEST | - | - |
| 2a3 | The UE transmits AUTHENTICATION RESPONSE | --> | AUTHENTICATION RESPONSE | - | - |
| 2a4 | The SS transmits a SECURITY MODE COMMAND message for the CS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 2a5 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 2a6 | The SS transmits a LOCATION UPDATING ACCEPT message. | <-- | LOCATION UPDATING ACCEPT | - | - |
| 2a7 | The SS transmits a SECURITY MODE COMMAND message for the PS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 2a8 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 2a9 | The SS transmits an UTRAN MOBILITY INFORMATION message to notify CN information. | <-- | UTRAN MOBILITY INFORMATION | - | - |
| 2a10 | The UE transmits an UTRAN MOBILITY INFORMATION CONFIRM message. | --> | UTRAN MOBILITY INFORMATION CONFIRM | - | - |
| | Exception: Steps 2b1 to 2b4 takes place if pc_UMI_ProcNeeded_DuringCSFB | | | | |
| 2b1 | The SS transmits a SECURITY MODE COMMAND message for the PS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 2b2 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 2b3 | The SS transmits an UTRAN MOBILITY INFORMATION message to notify CN information. | <-- | UTRAN MOBILITY INFORMATION | - | - |
| 2b4 | The UE transmits an UTRAN MOBILITY INFORMATION CONFIRM message. | --> | UTRAN MOBILITY INFORMATION CONFIRM | - | - |
| 2b5 | Check: Does the UE transmit a PAGING RESPONSE? | --> | PAGING RESPONSE | - | P |
| 2b6 | The SS transmits AUTHENTICATION REQUEST | <-- | AUTHENTICATION REQUEST | - | - |
| 2b7 | The UE transmits AUTHENTICATION RESPONSE | --> | AUTHENTICATION RESPONSE | - | - |
| 2b8 | The SS transmits a SECURITY MODE COMMAND message for the CS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 2b9 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 3-9 | Steps 11 to 17 of the generic test procedure in TS 34.108 subclause 7.2.3.1.3 are performed using the UTRA reference radio bearer parameters and combination "UTRA PS RB + Speech" according to subclause 4.8.3 and | - | - | - | - |

| | | | | | |
|----|--|-----|------------------------------|---|---|
| | Table 4.8.3-1. NOTE: Mobile terminating CS call is established. | | | | |
| 10 | The SS transmits a ROUTING AREA UPDATE ACCEPT. | <-- | ROUTING AREA UPDATE ACCEPT | - | - |
| 11 | The UE sends ROUTING AREA UPDATE COMPLETE. | --> | ROUTING AREA UPDATE COMPLETE | - | - |

Table 6.4.3.7.5-2: Parallel behaviour

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|-----------------------------|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits a ROUTING AREA UPDATE REQUEST message. | --> | ROUTING AREA UPDATE REQUEST | - | - |

6.4.3.7.5.1 Specific message contents

Table 6.4.3.7.5.1-1: Void**Table 6.4.3.7.5.1-2: LOCATION UPDATING ACCEPT (step 2a6 of table 6.4.3.7.5-1)**

| Derivation Path: TS 36.508 Table 4.7B.2-5 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Mobile identity | Not present | | |

6.4.3.7.6 CS fallback to UTRAN with Handover / MO call

Table 6.4.3.7.6-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|------|---|------------------|------------------------------------|----|---------|
| | | U - S | Message | | |
| 1 | Check: Does the UE transmit a HANDOVER TO UTRAN COMPLETE message? | --> | HANDOVER TO UTRAN COMPLETE | - | P |
| - | EXCEPTION: In parallel to the events described in step 2a1 to 9 the steps specified in table 6.4.3.7.6-2 takes place. | - | - | - | - |
| - | Exception: Steps 2a1 to 2a12 and 2b1 to 2b9 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that takes place if a capability is supported. Note: One sequence of steps 2a1 to 2a12 or 2b1 to 2b9 are executed | - | - | - | - |
| 2a1 | IF the UE does not determine the LAI of the new UTRAN cell, THEN Check: Does the UE transmit a LOCATION UPDATING REQUEST message? | --> | LOCATION UPDATING REQUEST | - | P |
| 2a2 | The SS transmits AUTHENTICATION REQUEST | <-- | AUTHENTICATION REQUEST | - | - |
| 2a3 | The UE transmits AUTHENTICATION RESPONSE | --> | AUTHENTICATION RESPONSE | - | - |
| 2a4 | The SS transmits a SECURITY MODE COMMAND message for the CS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 2a5 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 2a6 | The SS transmits a LOCATION UPDATING ACCEPT message. | <-- | LOCATION UPDATING ACCEPT | - | - |
| 2a7 | Check: Does the UE transmit a CM SERVICE REQUEST? | --> | CM SERVICE REQUEST | - | P |
| 2a8 | The SS transmits a SECURITY MODE COMMAND message for the PS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 2a9 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 2a10 | The SS transmits an UTRAN MOBILITY INFORMATION message to notify CN information. | <-- | UTRAN MOBILITY INFORMATION | - | - |
| 2a11 | The UE transmits an UTRAN MOBILITY INFORMATION CONFIRM message. | --> | UTRAN MOBILITY INFORMATION CONFIRM | - | - |
| 2a12 | The SS transmits a CM SERVICE ACCEPT message. | <-- | CM SERVICE ACCEPT | - | - |
| | Exception: Steps 2b1 to 2b4 takes place if pc_UMI_ProcNeeded_DuringCSFB | | | | |
| 2b1 | The SS transmits a SECURITY MODE COMMAND message for the PS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 2b2 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 2b3 | The SS transmits an UTRAN MOBILITY INFORMATION message to notify CN information. | <-- | UTRAN MOBILITY INFORMATION | - | - |
| 2b4 | The UE transmits an UTRAN MOBILITY INFORMATION CONFIRM message. | --> | UTRAN MOBILITY INFORMATION CONFIRM | - | - |
| 2b5 | Check: Does the UE transmit a CM SERVICE REQUEST? | --> | CM SERVICE REQUEST | - | P |
| 2b6 | The SS transmits AUTHENTICATION REQUEST | <-- | AUTHENTICATION REQUEST | - | - |
| 2b7 | The UE transmits AUTHENTICATION RESPONSE | --> | AUTHENTICATION RESPONSE | - | - |
| 2b8 | The SS transmits a SECURITY MODE COMMAND message for the CS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 2b9 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 3 | The UE transmits a SETUP message. | --> | SETUP | - | - |

| | | | | | |
|-----|--|-----|------------------------------|---|---|
| 4-9 | Steps 11 to 16 of the generic test procedure in TS 34.108 subclause 7.2.3.2.3 are performed using the UTRA reference radio bearer parameters and combination "UTRA PS RB + Speech" according to subclause 4.8.3 and Table 4.8.3-1. NOTE: Mobile originating CS call is established. | - | - | - | - |
| 10 | The SS transmits a ROUTING AREA UPDATE ACCEPT. | <-- | ROUTING AREA UPDATE ACCEPT | - | - |
| 11 | The UE sends ROUTING AREA UPDATE COMPLETE. | --> | ROUTING AREA UPDATE COMPLETE | - | - |

Table 6.4.3.7.6-2: Parallel behaviour

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|-----------------------------|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits a ROUTING AREA UPDATE REQUEST message. | --> | ROUTING AREA UPDATE REQUEST | - | - |

6.4.3.7.6.1 Specific message contents

None.

Table 6.4.3.7.6.1-1: LOCATION UPDATING ACCEPT (step 2a6 of table 6.4.3.7.6-1)

| Derivation Path: TS 36.508 Table 4.7B.2-5 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Mobile identity | Not present | | |

6.4.3.7.7 CS fallback to UTRAN with Handover / emergency call

Table 6.4.3.7-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|------|---|------------------|------------------------------------|----|---------|
| | | U - S | Message | | |
| 1 | Check: Does the UE transmit a HANDOVER TO UTRAN COMPLETE message? | --> | HANDOVER TO UTRAN COMPLETE | - | P |
| - | EXCEPTION: In parallel to the events described in step 2a1 to 9 the steps specified in table 6.4.3.7.7-2 takes place. | - | - | - | - |
| - | Exception: Steps 2a1 to 2a12 and 2b1 to 2b9 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that takes place if a capability is supported. Note: One sequence of steps 2a1 to 2a12 or 2b1 to 2b9 are executed | - | - | - | - |
| 2a1 | IF the UE does not determine the LAI of the new UTRAN cell, THEN Check: Does the UE transmit a LOCATION UPDATING REQUEST message? | --> | LOCATION UPDATING REQUEST | - | P |
| 2a2 | The SS transmits AUTHENTICATION REQUEST | <-- | AUTHENTICATION REQUEST | - | - |
| 2a3 | The UE transmits AUTHENTICATION RESPONSE | --> | AUTHENTICATION RESPONSE | - | - |
| 2a4 | The SS transmits a SECURITY MODE COMMAND message for the CS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 2a5 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 2a6 | The SS transmits a LOCATION UPDATING ACCEPT message. | <-- | LOCATION UPDATING ACCEPT | - | - |
| 2a7 | Check: Does the UE transmit a CM SERVICE REQUEST? | --> | CM SERVICE REQUEST | - | P |
| 2a8 | The SS transmits a SECURITY MODE COMMAND message for the PS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 2a9 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 2a10 | The SS transmits an UTRAN MOBILITY INFORMATION message to notify CN information. | <-- | UTRAN MOBILITY INFORMATION | - | - |
| 2a11 | The UE transmits an UTRAN MOBILITY INFORMATION CONFIRM message. | --> | UTRAN MOBILITY INFORMATION CONFIRM | - | - |
| 2a12 | The SS transmits a CM SERVICE ACCEPT message. | <-- | CM SERVICE ACCEPT | - | - |
| | Exception: Steps 2b1 to 2b4 takes place if pc_UMI_ProcNeeded_DuringCSFB | | | | |
| 2b1 | The SS transmits a SECURITY MODE COMMAND message for the PS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 2b2 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 2b3 | The SS transmits an UTRAN MOBILITY INFORMATION message to notify CN information. | <-- | UTRAN MOBILITY INFORMATION | - | - |
| 2b4 | The UE transmits an UTRAN MOBILITY INFORMATION CONFIRM message. | --> | UTRAN MOBILITY INFORMATION CONFIRM | - | - |
| 2b5 | Check: Does the UE transmit a CM SERVICE REQUEST? | --> | CM SERVICE REQUEST | - | P |
| 2b6 | The SS transmits AUTHENTICATION REQUEST | <-- | AUTHENTICATION REQUEST | - | - |
| 2b7 | The UE transmits AUTHENTICATION RESPONSE | --> | AUTHENTICATION RESPONSE | - | - |
| 2b8 | The SS transmits a SECURITY MODE COMMAND message for the CS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 2b9 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 3 | The UE transmits an EMERGENCY SETUP | --> | EMERGENCY SETUP | - | - |

| | | | | | |
|-----|--|-----|------------------------------|---|---|
| | message. | | | | |
| 4-9 | Steps 12 to 17 of the test procedure in TS 34.123-1 [7] subclause 13.2.1.1 are performed using the UTRA reference radio bearer parameters and combination "UTRA PS RB + Speech" according to subclause 4.8.3 and Table 4.8.3-1. NOTE: Emergency call is established.. | - | - | - | - |
| 10 | The SS transmits a ROUTING AREA UPDATE ACCEPT. | <-- | ROUTING AREA UPDATE ACCEPT | - | - |
| 11 | The UE sends ROUTING AREA UPDATE COMPLETE. | --> | ROUTING AREA UPDATE COMPLETE | - | - |

Table 6.4.3.7.7-2: Parallel behaviour

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|-----------------------------|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits a ROUTING AREA UPDATE REQUEST message. | --> | ROUTING AREA UPDATE REQUEST | - | - |

6.4.3.7.7.1 Specific message contents

UTRAN MOBILITY INFORMATION (step 2a10 & 2b1 of table 6.4.3.7.7-1): same as Table 6.4.3.7.5.1-1

Table 6.4.3.7.7.1-1: LOCATION UPDATING ACCEPT (step 2a6 of table 6.4.3.7.7-1)

| Derivation Path: TS 36.508 Table 4.7B.2-5 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Mobile identity | Not present | | |

6.4.3.8 CS fallback to GERAN procedures (LAI of GERAN cell same as the LAI received in combined Attach procedure in EUTRA cell)

All procedures specified in this clause are referred to the GERAN target cell where the UE has been redirected or handed over from the EUTRA cell after a CS call requested. The default message contents are found in TS 34.108 [5], clause 9.

The procedures in 6.4.3.8.1 – 6.4.3.8.4 are applied if the UE supports (EUTRA) RRC connection release with redirection or Cell Change order and Multi Cell System Information to GERAN.

6.4.3.8.1 CS fallback to GERAN with redirection or CCO / MT call (DTM not supported)

Table 6.4.3.8.1-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|-------|--|------------------|------------------------|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits a CHANNEL REQUEST message. | --> | CHANNEL REQUEST | - | - |
| 2 | The SS transmits an IMMEDIATE ASSIGNMENT message. | <-- | IMMEDIATE ASSIGNMENT | - | - |
| 3 | Void | - | - | - | - |
| - | EXCEPTION: In parallel to the events described in step 4 to 19 the steps specified in table 6.4.3.8.1-2 takes place | - | - | - | - |
| 4 | Check: Does the UE transmit a PAGING RESPONSE message? | --> | PAGING RESPONSE | - | P |
| 4A | The UE transmits a <i>Classmark Change</i> message | --> | CLASSMARK CHANGE | - | - |
| - | EXCEPTION: Step 4B describes behaviour that depends on the UE capability. | - | - | - | - |
| 4B | IF <i>pc_UTRA</i> then the UE transmits a <i>Utran Classmark</i> message | --> | UTRAN CLASSMARK CHANGE | - | - |
| 5-19 | Steps 5 to 19 of the generic test procedure in TS 51.010-1 sub clause 10.3.3 are performed NOTE: Mobile terminating CS call is established. | - | - | - | - |
| 20 | The SS transmits DISCONNECT. | <-- | DISCONNECT | - | - |
| 21 | The UE transmits RELEASE.. | --> | RELEASE | - | - |
| 22 | The SS transmits RELEASE COMPLETE. | <-- | RELEASE COMPLETE | - | - |
| 23 | The SS transmits CHANNEL RELEASE, with GPRS Resumption Field set to 1 | <-- | CHANNEL RELEASE | - | - |
| 24-34 | Steps 1 to 11 of the generic test procedure in sub clause 6.4.2.9 are performed. | - | - | - | - |

Table 6.4.3.8.1-2: Parallel behaviour

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|-------------------------|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits a GPRS SUSPENSION REQUEST message. | --> | GPRS SUSPENSION REQUEST | - | - |

6.4.3.8.2 CS fallback to GERAN with redirection or CCO / MO call (DTM not supported)

Table 6.4.3.8.2-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|-------|--|------------------|------------------------|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits a CHANNEL REQUEST message. | --> | CHANNEL REQUEST | - | - |
| 2 | The SS transmits an IMMEDIATE ASSIGNMENT message. | <-- | IMMEDIATE ASSIGNMENT | - | - |
| 3 | Void | - | - | - | - |
| - | EXCEPTION: In parallel to the events described in step 4 to 17 the steps specified in table 6.4.3.8.2-2 takes place | - | - | - | - |
| 4 | Check: Does the UE transmit a CM SERVICE REQUEST message? | --> | CM SERVICE REQUEST | - | P |
| 4A | The UE transmits a <i>Classmark Change</i> message | --> | CLASSMARK CHANGE | - | - |
| - | EXCEPTION: Step 4B describes behaviour that depends on the UE capability. | - | - | - | - |
| 4B | IF <i>pc_UTRA</i> then the UE transmits a Utran <i>Classmark</i> message | --> | UTRAN CLASSMARK CHANGE | - | - |
| 5-17 | Steps 5 to 17 of the generic test procedure in TS 51.010-1 sub clause 10.2.3 are performed NOTE: Mobile originating CS call is established. | - | - | - | - |
| 18 | The SS transmits DISCONNECT. | <-- | DISCONNECT | - | - |
| 19 | The UE transmits RELEASE.. | --> | RELEASE | - | - |
| 20 | The SS transmits RELEASE COMPLETE. | <-- | RELEASE COMPLETE | - | - |
| 21 | The SS transmits CHANNEL RELEASE, with GPRS Resumption Field set to 1 | <-- | CHANNEL RELEASE | - | - |
| 22-32 | Steps 1 to 11 of the generic test procedure in sub clause 6.4.2.9 are performed. | - | - | - | - |

Table 6.4.3.8.2-2: Parallel behaviour

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|-------------------------|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits a GPRS SUSPENSION REQUEST message. | --> | GPRS SUSPENSION REQUEST | - | - |

6.4.3.8.3 CS fallback to GERAN with PS Handover / MT call (EDTM not supported)

Same as test procedure sequence in 36.523-1 [18] clause 13.1.11.3.2 from steps 11 to end.

6.4.3.8.4 CS fallback to GERAN with PS Handover / MO call (EDTM not supported)

Same as test procedure sequence in 36.523-1 [18] clause 13.1.12.3.2 from steps 4 to end.

6.4.3.8.5 CS fallback to GERAN with PS Handover / MT call (EDTM supported)

Same as test procedure sequence in 36.523-1 [18] clause 13.1.13.3.2 from steps 7 to end.

6.4.3.9 SRVCC Handover to UTRA

The procedure specified in this clause are referred to the UTRA target cell where the UE has been SRVCC handed over from the EUTRA cell. The default message contents are found in TS 34.108 [5], clause 9.

Table 6.4.3.9-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|------------------------------------|----|---------|
| | | U - S | Message | | |
| 1 | Check: Does the UE transmit a HANDOVER TO UTRAN COMPLETE message? | --> | HANDOVER TO UTRAN COMPLETE | - | P |
| - | EXCEPTION: In parallel to the events described in step 2 to 7 the steps specified in table 6.4.3.9-2 takes place. | - | - | - | - |
| 2 | The SS transmits a SECURITY MODE COMMAND message for the CS domain. | <-- | SECURITY MODE COMMAND | - | - |
| 3 | The UE transmits a SECURITY MODE COMPLETE message. | --> | SECURITY MODE COMPLETE | - | - |
| 4 | The SS transmits an UTRAN MOBILITY INFORMATION message to notify CN information. | <-- | UTRAN MOBILITY INFORMATION | - | - |
| 5 | The UE transmits an UTRAN MOBILITY INFORMATION CONFIRM message. | --> | UTRAN MOBILITY INFORMATION CONFIRM | - | - |
| 6 | The SS transmits a TMSI REALLOCATION COMMAND message. | <-- | TMSI REALLOCATION COMMAND | - | - |
| 7 | The UE transmits a TMSI REALLOCATION COMPLETE message. | --> | TMSI REALLOCATION COMPLETE | - | - |
| 8 | The SS transmits a ROUTING AREA UPDATE ACCEPT. | <-- | ROUTING AREA UPDATE ACCEPT | - | - |
| 9 | The UE sends ROUTING AREA UPDATE COMPLETE. | --> | ROUTING AREA UPDATE COMPLETE | - | - |

Table 6.4.3.9-2: Parallel behaviour

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|-----------------------------|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits a ROUTING AREA UPDATE REQUEST message. | --> | ROUTING AREA UPDATE REQUEST | - | - |

6.4.3.9.1 Specific message contents

Table 6.4.3.9.1-1: SECURITY MODE COMMAND (step 2, Table 8.4.1.2.3.2-1)

| Derivation Path: 34.108 clause 9.1.1 (SECURITY MODE COMMAND message) | | |
|--|-----------|--------------|
| Information Element | Condition | Value/remark |
| Ciphering mode info | | Not Present |

6.4.3.10 Offload to WLAN

The procedure specified in this clause is referred to the WLAN target AP where the UE has been offloaded from the EUTRA cell.

Table 6.4.3.10-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|--|--|------------------|---------|----|---------|
| | | U - S | Message | | |
| 1 | UE associates with the WLAN AP and obtains the local IP address if it has not already done. Note 1 | - | - | - | - |
| - | EXCEPTION: Step 2 is optional, and is executed if initiated by UE | - | - | - | - |
| 2 | UE performs a dynamic selection of ePDG using DNS query | - | - | - | - |
| 3 | UE initiates Authentication and Authorization (EAP-AKA) using CHAP as defined in 33.402 [55] clause 6.5.3 | - | - | - | - |
| 4-9 | Check: The UE establishes IPsec tunnel using the IKEv2 protocol as defined in 3GPP TS 33.402 [55] clause 8.2.2, Figure 8.2.2-1; Procedure as defined in 23.402 [41] clause 8.2.3 steps 4-9 | - | - | - | P |
| | Exception: Steps 10a1 to 10a3 takes place if UE is in RRC Connected state. Note 2 | | | - | - |
| 10a1 - 10a3 | The generic test procedure in TS 36.508 subclause 4.5A.15.3 is executed. | - | - | - | P |
| - | EXCEPTION: Steps 11a1 to 11a2b1 describes a transaction that depends on offload of IMS PDN. | | | | |
| 11a1 | IF IMS PDN is offloaded SS starts timer Timer_1 = 10 s (Note 3) | | | | |
| - | EXCEPTION: Steps 11a2a1 to 11a2a2 describe a transaction that depends on offload of IMS PDN and UE implementation | | | | |
| 11a2 a1- 11a2 a2 | IF initiated by the UE, Re-Registration procedure according to TS 34.229-1 [43] sub clause C.XX takes place on WLAN AP. | | | | |
| 11a2 b1 | The SS waits for Timer_1 expiry | | | | |
| <p>Note 1: If the UE has not already associated with WLAN AP it may take long time (up to 60 seconds) to associate with WLAN AP as it may need to scan, authenticate, obtain IP address etc.</p> <p>Note 2: If UE is in RRC Idle state then as per 24.301[28] clause 6.4.2.2, the offloaded PDN is implicitly released.</p> <p>Note 3: A guarding time of [10] sec is suggested within which the procedure is expected to start. If the timer expires then the test procedure, from which the Procedure for IMS Re-Registration is called, shall advance to the next specified step.</p> | | | | | |

6.4.3.10.1 Specific message contents

None

6.4.3.11 Offload from WLAN

The procedure specified in this clause is referred to the EUTRA cell where the UE has been previously offloaded from the EUTRA cell and now the Offload from WLAN AP back to EUTRA cell happens.

Table 6.4.3.11-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|-----|---|------------------|-----------------|----|---------|
| | | U - S | Message | | |
| | Exception: Steps 1 to 9 are executed if the UE is in RRC Idle state in EUTRA cell. | | | - | - |
| 1 | Check: Does UE transmit an <i>RRCConnectionRequest</i> message with <i>establishmentCause</i> set to 'mo-Data' followed by a SERVICE REQUEST message? | --> | SERVICE REQUEST | - | |
| 2-9 | The SS establishes SRB2 and DRB associated with non offloaded default EPS bearer context by executing steps 3-10a7 in the generic test procedure in TS 36.508 subclause 4.5.3.3 | - | - | - | - |
| 10 | Check: Does the UE establish additional PDN connection for offloaded PDN by executing the generic test procedure in TS 36.508 subclause 4.5A.16.3. | - | - | - | P |
| 11 | Network initiated IPsec tunnel disconnection procedures defined by the IKEv2 protocol in IETF RFC 5996 [57] is executed on WLAN AP | - | - | - | - |

6.4.3.11.1 Specific message contents

None

6.4.3.12 Check UE does not offload to WLAN

The procedure specified in this clause is referred to the WLANAP.

Table 6.4.3.12-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|----|--|------------------|---------|----|---------|
| | | U - S | Message | | |
| - | Exception: In parallel to step 1 parallel behaviour in table 6.4.3.12-2 may be optionally executed. | - | - | - | - |
| 1 | Check: IF UE initiates Authentication and Authorization (EAP-AKA) using CHAP as defined in 33.402 [55] clause 6.5.3 in the next 60 seconds | - | - | - | F |

Table 6.4.3.12-2: Parallel Behaviour

| St | Procedure | Message Sequence | | TP | Verdict |
|----|--|------------------|---------|----|---------|
| | | U - S | Message | | |
| 1 | UE associates with the WLAN AP and obtains the local IP address if it has not already done | - | - | - | - |

6.4.3.12.1 Specific message contents

None

6.4.3.13 Check UE does not Offload to E-UTRAN

The procedure specified in this clause are referred to the EUTRA cell.

Table 6.4.3.13-1: Test procedure sequence

| St | Procedure | Message Sequence | | | TP | Verdict |
|----|--|------------------|--|--|----|---------|
| | | U - S | Message | | | |
| | Exception: Steps 1a to 1b describe behaviour that depends on the state; the "lower case letter" identifies a step sequence that take place. IF UE is in 'Idle' state step 1a takes and if in 'Connected' state step 1b takes | | | | - | - |
| 1a | Check: Does UE transmit an <i>RRConnectionRequest</i> in the next 15 seconds | --> | <i>RRConnectionRequest</i> | | - | F |
| 1b | Check: Does the UE transmits a PDN CONNECTIVITY REQUEST message to request an additional PDN. In the next 15 seconds | --> | RRC: <i>ULInformationTransfer</i> NAS: PDN CONNECTIVITY REQUEST | | - | F |

6.4.3.14 Procedure for UE initiated detach at non-switch-off

The purpose of this procedure is to allow a UE to perform UE initiated detaching.

Table 6.4.3.14-1: Procedure for optional UE initiated detaching

| Step | Procedure | Message Sequence | | | |
|------|---|------------------|----------------|---|---|
| | | U - S | Message | | |
| 1 | The UE transmits a DETACH REQUEST message with the Detach type IE indicating "EPS detach" to regain normal service. | --> | DETACH REQUEST | - | - |
| 2 | The SS responds the DETACH ACCEPT message. | <-- | DETACH ACCEPT | - | - |

6.4.3.13.1 Specific message contents

None

6.4.3A Test case postambles

6.4.3A.1 Introduction

In order to make test cases perfectly reproducible, the UE under test is switched off after the test procedure sequence of a test case is complete. In order to make it possible to run a number of test cases without any manual operation, it is important that the SS can properly handle any possible signalling from the UE between the end of the test procedure sequence and until the UE is off.

After the last verdict of a test procedure sequence is assigned, it is necessary to:

- terminate any ongoing signalling procedure,
- switch off the UE.

Usually, this can be performed by completing necessary TAU/LAU/RAU procedures, completing any ongoing voice call (CS or IMS), and switching off the UE with a detach procedure.

6.4.3A.2 Reference end states

Test procedures in TS 36.523-1 may only partially terminate ongoing signalling procedures, provided they indicate a reference end state at the end of the test procedure sequence, so that a matching procedure in TS 36.523-3 can be executed to switch off the UE.

Reference end states definitions include the necessary pieces of information to predict UE behaviour during the postambles.

If any extra information was stored in the UE or the USIM due to the test procedure sequence, it should be removed explicitly by the test procedure sequence, before the UE can be left in a reference end state.

Table 6.4.3A.2-1: Reference end states

| Name | Description | Optional information |
|---|--|--|
| E-UTRA idle (E1) | The UE: - is camped on an E-UTRA cell, and RRC idle and - registered for EPS services and EPS update status is "updated" and - is registered for non-EPS services and update status is updated (if CS fallback or SMS over SGs is supported) and - has one or more default EPS bearer context are active, zero or more dedicated EPS bearer contexts are active. | The test case may indicate that the UE is not registered for non-EPS services, though the UE supports CS fallback or SMS over SGs. |
| E-UTRA connected (E2) | Same as E-UTRA idle , except that: - the UE is RRC connected and - DRBs for all active EPS bearer contexts are established. | Same as for E-UTRA idle . |
| E-UTRA connected, T3440 started (E2_T3440) | Same as E-UTRA idle , except that: - the UE is RRC connected and - Timer T3440 is started in UE. | Same as for E-UTRA idle |
| E-UTRA test mode (E3) | Same as E-UTRA connected and - test mode is active and - test loop is closed. | Same as for E-UTRA idle |
| E-UTRA deregistered (E4) | The UE is: - camped on an E-UTRA cell, and idle and - not registered of EPS services and - not registered for non-EPS services. | |
| E-UTRA manual selection (E5) | Same as E-UTRA idle , except that: - the UE is in manual PLMN selection mode | Same as for E-UTRA idle |
| UTRA idle (U1) | The UE is: - camped on a UTRA cell, RRC idle and - IMSI attached and update status is "updated" (if the UE supports CS domain) and - GPRS attached, GPRS update state is "updated", and zero or one or several PDP context(s) with interactive or background QoS are active. | The test case may indicate that the UE is not IMSI attached though the UE supports CS domain |
| UTRA connected (U2) | Same as UTRA idle , except that: - the UE is in CELL_DCH state and - a RAB associated with the active PDP context is established. | The test case may indicate that the UE is not IMSI attached though the UE supports CS domain. |
| UTRA handover (U3) | The UE: - was E-UTRA connected and - has completed a handover to UMTS and - hasn't yet sent or received any NAS signalling on the target UTRAN cell. | Same as for UTRA connected |
| UTRA CS fallback (U4) | The UE: - was E-UTRA idle or E-UTRA connected and - has transmitted an EXTENDED SERVICE REQUEST message due to MO or MT CS fallback call and - either the UE has completed a handover to UMTS or the UE has been redirected to UMTS and has established the RRC connection to a UTRA cell, and the target UTRA cell has activated security and RABs for all previously active EPS bearer contexts were established and - the UE hasn't yet sent or received any NAS signalling on the target UTRAN cell | |
| UTRA CS call (U5) | The UE was in UTRAN CS fallback and the UE has completed LAU/RAU procedure if necessary and has established a CS call or the UE was in E-UTRAN connected and the UE has completed LAU/RAU procedure if necessary and has performed a handover to UTRAN with SRVCC. | |
| UTRA deregistered (U6) | The UE is: - camped on a UTRA cell, and idle and - not registered GPRS/non-GPRS services | |
| GERAN idle (G1) | The UE: - is camped on an GERAN cell, in idle mode and GPRS idle state and - is registered for PS services and GPRS update status is "updated" and zero or one or several PDP context(s) with interactive or background QoS are active. - is IMSI attached (if CS domain is supported) | |

| | | |
|--------------------------------|---|--|
| GERAN PS handover (G2) | The UE: - was E-UTRA connected and - has performed a PS handover procedure to a GERAN cell and - hasn't yet sent or received any NAS signalling on the target GERAN cell. | |
| GERAN CS fallback (G3) | The UE: - was E-UTRA idle or E-UTRA connected and - has transmitted an EXTENDED SERVICE REQUEST message due to MO or MT CS fallback call and - either the UE has completed a PS handover to GERAN or a CCO to GERAN or the UE has been redirected to GERAN and has entered dedicated mode, and if DTM is supported, - the UE hasn't yet sent or received any NAS signalling on the target GERAN cell | |
| GERAN CS call (G4) | The UE was in GERAN CS fallback and the UE has established a CS call or the UE was in E-UTRAN connected and has performed a handover to GERAN with SRVCC. | |
| GERAN deregistered (G5) | The UE is: - camped on a GERAN cell, and idle and - not registered GPRS/non-GPRS services | |
| 1xRTT state 1 (1x1) | FFS | |
| ... | ... | |
| HRPD state 1 (H1) | FFS | |
| ... | ... | |

6.5 Default RRC message and information element contents

The default RRC message and information element contents specified in this subclause apply to all Signalling test cases defined in TS 36.523-1 [18] unless otherwise specified, in addition to the default RRC message and information element contents specified in subclause 4.6 of this specification.

6.5.1 Measurement information elements

- MeasConfig-DEFAULT

Table 6.5.1-1: MeasConfig-DEFAULT

| Derivation Path: 36.331, clause 6.3.5 | | | |
|---------------------------------------|------------------------|---------|--------------------------|
| Information Element | Value/remark | Comment | Condition |
| MeasConfig-DEFAULT ::= SEQUENCE { | | | |
| measObjectToRemoveList | Not present | | |
| measObjectToAddModList | Not present | | |
| reportConfigToRemoveList | Not present | | |
| reportConfigToAddModList | Not present | | |
| measIdToRemoveList | Not present | | |
| measIdToAddModList | Not present | | |
| quantityConfig | QuantityConfig-DEFAULT | | |
| measGapConfig | Not present | | |
| | MeasGapConfig-GP1 | | INTER-FREQ, UTRAN |
| | MeasGapConfig-GP2 | | GERAN, INTER-RAT |
| | MeasGapConfig-CE | | intraFreq-CE-NeedForGaps |
| s-Measure | Not present | | |
| preRegistrationInfoHRPD | Not present | | |
| speedStatePars | Not present | | |
| } | | | |

| Condition | Explanation |
|--------------------------|--|
| INTER-FREQ | For E-UTRA inter-freq measurements |
| UTRAN | For inter-RAT measurements with UTRAN |
| GERAN | For inter-RAT measurements with GERAN |
| INTER-RAT | For inter-RAT measurements with UTRAN and GERAN |
| intraFreq-CE-NeedForGaps | For UE having set pc_intraFreq-CE-NeedForGaps to TRUE. |

- MeasGapConfig-GP1

Table 6.5.1-2: MeasGapConfig-GP1

| Derivation Path: 36.331, clause 6.3.5 | | | |
|---------------------------------------|--------------|--------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasGapConfig-GP1 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| gapOffset CHOICE { | | | |
| gp0 | 30 | TGRP = 40 ms | |
| } | | | |
| } | | | |
| } | | | |

- MeasGapConfig-GP2

Table 6.5.1-3: MeasGapConfig-GP2

| Derivation Path: 36.331, clause 6.3.5 | | | |
|---------------------------------------|--------------|--------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasGapConfig-GP2 ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| gapOffset CHOICE { | | | |
| gp1 | 30 | TGRP = 80 ms | |
| } | | | |
| } | | | |
| } | | | |

- MeasGapConfig-CE

Table 6.5.1-4: MeasGapConfig-CE

| Derivation Path: 36.331, clause 6.3.5 | | | |
|---------------------------------------|--------------|--------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MeasGapConfig-CE ::= CHOICE { | | | |
| setup SEQUENCE { | | | |
| gapOffset CHOICE { | | | |
| gp0 | 20 | TGRP = 40 ms | |
| } | | | |
| } | | | |
| } | | | |

6.6 Default NAS message and information element contents

The default NAS message and information element contents specified in this subclause apply to all Signalling test cases defined in TS 36.523-1 [18] unless otherwise specified, in addition to the default NAS message and information element contents specified in subclause 4.7 of this specification.

6.6.1 Reference default EPS bearer contexts

The following table defines Reference default EPS bearer contexts. Default EPS bearer context1 is the default "default EPS bearer context" which is used in the common procedures and test cases where no particular default EPS bearer context is specified.

Table 6.6.1-1: Reference default EPS bearer contexts

| Parameters | Reference default EPS bearer context #1 | Reference default EPS bearer context #2 | Reference default EPS bearer context #3 |
|--|---|---|---|
| EPS QoS | | | |
| QCI (Note 1) | 9 (non-GBR QCI) | 5 (non-GBR QCI) | 69 (Note 5) (non-GBR QCI) |
| Maximum bit rate for uplink | 64 kbps (Note 2) | 64 kbps (Note 2) | 64 kbps (Note 2) |
| Maximum bit rate for downlink | 64 kbps (Note 2) | 64 kbps (Note 2) | 64 kbps (Note 2) |
| Guaranteed bit rate for uplink | 64 kbps (Note 2) | 64 kbps (Note 2) | 64 kbps (Note 2) |
| Guaranteed bit rate for downlink | 64 kbps (Note 2) | 64 kbps (Note 2) | 64 kbps (Note 2) |
| Maximum bit rate for uplink (extended) | 0 | 0 | 0 |
| Maximum bit rate for downlink (extended) | 0 | 0 | 0 |
| Guaranteed bit rate for uplink (extended) | 0 | 0 | 0 |
| Guaranteed bit rate for downlink (extended) | 0 | 0 | 0 |
| Negotiated QoS | Note 3, Note 4 | Note 3, Note 4 | Note 3, Note 4 |
| Negotiated LLC SAPI | Note 4 | Note 4 | Note 4 |
| Radio priority | Note 4 | Note 4 | Note 4 |
| APN-AMBR | Not present | Not present | Not present |
| Configuration protocol | PPP | PPP | PPP |
| Note 1: For all non-GBR QCIs, the maximum and guaranteed bit rates shall be ignored. Note 2: According to TS 24.301, the UE ignores these parameters for a non-GBR QCI. Note 3: Parameters included for UEs capable of UTRAN according to TS 34.123-3 clause 8.10. Note 4: Parameters included for UEs capable of GERAN according to TS 51.010 subclause 40.5. Note 5: QCI 69 is used for MCPTT delay sensitive signalling | | | |

6.6.2 Reference dedicated EPS bearer contexts

The following table defines Reference dedicated EPS bearer contexts. Dedicated EPS bearer context #1 is the default "dedicated EPS bearer context" which is used in the common procedures and test cases where no particular dedicated EPS bearer context is specified.

Table 6.6.2-1: Reference dedicated EPS bearer contexts, first set

| Parameters | Reference dedicated EPS bearer context #1 | Reference dedicated EPS bearer context #2 | Reference dedicated EPS bearer context #3 | Reference dedicated EPS bearer context #4 | Reference dedicated EPS bearer context #5 |
|---|---|--|---|---|---|
| Linked EPS bearer identity | Reference default EPS bearer #1 | Reference default EPS bearer #1 | Reference default EPS bearer #2 | Reference default EPS bearer #2 | Reference default EPS bearer #3 |
| EPS QoS | | | | | |
| QCI (Note 1) | 1 (GBR QCI) | 5 (non-GBR QCI) | 2 (GBR QCI) | 1 (GBR QCI) | 65 (Note 8) (GBR QCI) |
| Maximum bit rate for uplink | 384 kbps | 384 kbps (Note 2) | 2104 (Note 7) | 384 kbps | 384 kbps |
| Maximum bit rate for downlink | 384 kbps | 384 kbps (Note 2) | 2104 (Note 7) | 384 kbps | 384 kbps |
| Guaranteed bit rate for uplink | 128 kbps | 128 kbps (Note 2) | 2104 (Note 7) | 128 kbps | 128 kbps |
| Guaranteed bit rate for downlink | 128 kbps | 128 kbps (Note 2) | 2104 (Note 7) | 128 kbps | 128 kbps |
| Maximum bit rate for uplink (extended) | 0 | 0 | 0 | 0 | 0 |
| Maximum bit rate for downlink (extended) | 0 | 0 | 0 | 0 | 0 |
| Guaranteed bit rate for uplink (extended) | 0 | 0 | 0 | 0 | 0 |
| Guaranteed bit rate for downlink (extended) | 0 | 0 | 0 | 0 | 0 |
| TFT | | | | | |
| TFT operation code | "create new TFT" | "create new TFT" | "create new TFT" | "create new TFT" | "create new TFT" |
| E bit | 0 | 0 | 0 | 0 | 0 |
| Packet filters (Note 5) | 1, 2 | 3 | 5 | 4 | 4 |
| Negotiated QoS | | | | | |
| Traffic Class | conversational | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | conversational | conversational | conversational |
| Delivery Order | 'no' | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 'no' | 'no' | 'no' |
| Delivery of erroneous SDU | 'no' | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 'no' | 'no' | 'no' |
| Maximum SDU size | 150 | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 1400 | 150 | 150 |
| Maximum bit rate for uplink | 384 kbps | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 432 kbps | 384 kbps | 384 kbps |
| Maximum bit rate for | 384 kbps | See "PDP | 432 kbps | 384 kbps | 384 kbps |

| | | | | | |
|---|-------------------|---|-------------------|-------------------|-------------------|
| downlink | | ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | | | |
| Residual BER | $5 \cdot 10^{-2}$ | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 10^{-5} | $5 \cdot 10^{-2}$ | $5 \cdot 10^{-2}$ |
| SDU error ratio | 10^{-2} | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | $7 \cdot 10^{-3}$ | 10^{-2} | 10^{-2} |
| Transfer delay | 80 ms | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 130 ms | 80 ms | 75 ms |
| Traffic Handling priority | 0 | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 0 | 0 | 0 |
| Guaranteed bit rate for uplink | 0 | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 0 | 0 | 0 |
| Guaranteed bit rate for downlink | 0 | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 0 | 0 | 0 |
| Signalling Indication | 0 | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 0 | 0 | 0 |
| Source Statistics Descriptor | 0 | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 0 | 1 | 0 |
| Maximum bit rate for downlink (extended) | 0 | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 0 | 0 | 0 |
| Guaranteed bit rate for downlink (extended) | 0 | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 0 | 0 | 0 |
| Maximum bit rate for uplink (extended) | 0 | See "PDP ContextDchForLTE" (Note 3); | 0 | 0 | 0 |

| | | | | | |
|---|------------|---|---|------------|---|
| | | See "PDP context3" (Note 6) | | | |
| Guaranteed bit rate for uplink (extended) | 0 | See "PDP ContextDchForLTE" (Note 3); See "PDP context3" (Note 6) | 0 | 0 | 0 |
| Negotiated LLC SAPI | 3 (Note 6) | See "PDP context3" (Note 6) | - | 3 (Note 6) | - |
| Radio priority | 1 (Note 6) | See "PDP context3" (Note 6) | - | 1 (Note 6) | - |
| Protocol configuration options | - | - | - | - | - |
| <p>Note 1: For all non-GBR QCIs, the maximum and guaranteed bit rates shall be ignored.</p> <p>Note 2: According to TS 24.301, the UE ignores these parameters for a non-GBR QCI.</p> <p>Note 3: Parameters included for UEs capable of UTRAN according to TS 34.123-3 clause 8.10 (table 8.10.1 and 8.10.2).</p> <p>Note 5: This row refers to the reference packet filters defined in the tables below. For each reference dedicated EPS bearer context, a list of reference packet filter numbers is provided.</p> <p>Note 6: Parameter included for UEs capable of GERAN; when value is not provided then value from TS 51.010 subclause 40.5 is applied.</p> <p>Note 7: This value shall reflect the highest possible bandwidth requirement of the H.264 codec to EPS bearer mappings as specified in Appendix E of TS 26.114 [64].</p> <p>Note 8: QCI 65 is used for MCPTT voice.</p> | | | | | |

Table 6.6.2-1A: Reference dedicated EPS bearer contexts, second set

| Parameters | Reference dedicated EPS bearer context #6 | Reference dedicated EPS bearer context #7 | Reference dedicated EPS bearer context #8 | | |
|---|---|---|---|--|--|
| Linked EPS bearer identity | Reference default EPS bearer #1 | Reference default EPS bearer #2 | Reference default EPS bearer #2 | | |
| EPS QoS | | | | | |
| QCI (Note 1) | 8 (non-GBR QCI) | 79 (non-GBR QCI) | 66 (GBR QCI) | | |
| Maximum bit rate for uplink | 384 kbps (Note 2) | 384 kbps (Note 2) | 384 kbps | | |
| Maximum bit rate for downlink | 384 kbps (Note 2) | 384 kbps (Note 2) | 384 kbps | | |
| Guaranteed bit rate for uplink | 128 kbps (Note 2) | 128 kbps (Note 2) | 128 kbps | | |
| Guaranteed bit rate for downlink | 128 kbps (Note 2) | 128 kbps (Note 2) | 128 kbps | | |
| Maximum bit rate for uplink (extended) | 0 | 0 | 0 | | |
| Maximum bit rate for downlink (extended) | 0 | 0 | 0 | | |
| Guaranteed bit rate for uplink (extended) | 0 | 0 | 0 | | |
| Guaranteed bit rate for downlink (extended) | 0 | 0 | 0 | | |
| TFT | | | | | |
| TFT operation code | "create new TFT" | "create new TFT" | "create new TFT" | | |
| E bit | 0 | 0 | 0 | | |
| Packet filters (Note 3) | 6, 7 | 8 | 9 | | |
| Negotiated QoS | | | | | |
| Traffic Class | - | - | Conversational | | |
| Delivery Order | - | - | 'no' | | |
| Delivery of erroneous SDU | - | - | 'no' | | |
| Maximum SDU size | - | - | 150 | | |
| Maximum bit rate for uplink | - | - | 384 kbps | | |
| Maximum bit rate for downlink | - | - | 384 kbps | | |
| Residual BER | - | - | $5 \cdot 10^{-2}$ | | |
| SDU error ratio | - | - | 10^{-2} | | |
| Transfer delay | - | - | 75 ms | | |
| Traffic Handling priority | - | - | 0 | | |
| Guaranteed bit rate for uplink | - | - | 0 | | |
| Guaranteed bit rate for downlink | - | - | 0 | | |
| Signalling Indication | - | - | 0 | | |
| Source Statistics Descriptor | - | - | 0 | | |
| Maximum bit rate for downlink (extended) | - | - | 0 | | |
| Guaranteed bit rate for downlink (extended) | - | - | 0 | | |
| Maximum bit rate for uplink (extended) | - | - | 0 | | |
| Guaranteed bit rate for uplink (extended) | - | - | 0 | | |
| Negotiated LLC SAPI | - | - | - | | |

| | | | | | |
|--|---|---|---|--|--|
| Radio priority | - | - | - | | |
| Protocol configuration options | - | - | - | | |
| <p>Note 1: For all non-GBR QCI, the maximum and guaranteed bit rates shall be ignored.</p> <p>Note 2: According to TS 24.301, the UE ignores these parameters for a non-GBR QCI.</p> <p>Note 3: This row refers to the reference packet filters defined in the tables below. For each reference dedicated EPS bearer context, a list of reference packet filter numbers is provided.</p> | | | | | |

Table 6.6.2-2: Reference packet filter #1

| Derivation path: 24.008 table 10.5.162 | | | |
|--|--|--------------------------------------|------------|
| Information Element | Value/Remark | Comment | Condition |
| Identifier | 0 0 0 1 0 0 0 0 | DL only filter, ID=0 | |
| Evaluation precedence | (0 0 0 0 0 0 0 0) + EPS Bearer ID - 6 | 0 to 7 | |
| Component type 1 ID | 0 0 0 1 0 0 0 0 | IPv4 remote address type | remotelPv4 |
| | 0 0 1 0 0 0 0 0 | IPv6 remote address type | remotelPv6 |
| Component type 1 Value | remoteAddress 255.255.255.255 | See note 1 | remotelPv4 |
| | remoteAddress ff:ff:ff:ff:ff:ff: ff:ff:ff:ff:ff:ff:ff:ff | See note 1 | remotelPv6 |
| Component type 2 ID | 0 1 0 1 0 0 0 0 | Single remote port type | |
| Component type 2 Value | 31 160 + EPS Bearer ID - 6 | | |
| Component type 3 ID | 0 0 1 1 0 0 0 0 | Protocol identifier/Next header type | |
| Component type 3 Value | 17 | UDP | |
| <p>Note 1: remoteAddress should be set to the address of an IP server able to send a flow of downlink IP/UDP packets to the UE. remotelPv4 applies if the UE has acquired an IPv4 address only, remotelPv6 applies if the UE has acquired an IPv6 address only, or both an IPv6 and an IPv4 address.</p> | | | |

Table 6.6.2-3: Reference packet filter #2

| Derivation path: 24.008 table 10.5.162 | | | |
|---|--|--|----------------|
| Information Element | Value/Remark | Comment | Condition |
| Identifier | 0 0 1 0 0 0 0 1 | UL only filter, ID=1 | |
| Evaluation precedence | (0 0 0 0 0 0 0 0) + EPS Bearer ID - 6 + 8 | 8 to 15 | |
| Component type 1 ID | 0 0 0 1 0 0 0 0 | IPv4 remote address type | remotelPv 4 |
| | 0 0 1 0 0 0 0 0 | IPv6 remote address type | remotelPv 6 |
| Component type 1 Value | remoteAddress 255.255.255.255 | See note 1 | remotelPv 4 |
| | remoteAddress ff:ff:ff:ff:ff:ff: ff:ff:ff:ff:ff:ff:ff:ff | See note 1 | remotelPv 6 |
| Component type 2 ID | 0 1 0 1 0 0 0 0 | Single remote port type | |
| Component type 2 Value | 61 000 + EPS Bearer ID - 6 | | |
| Component type 3 ID | 0 0 1 1 0 0 0 0 | Protocol identifier/Next header type | |
| Component type 3 Value | 17 | UDP | |
| Note 1: remoteAddress should be set to the address of an IP server able to process a flow of uplink IP/UDP packets received from the UE. When configured together with packet filter #1, remoteAddress is the same as that for packet filter #1. remotelPv4 applies if the UE has acquired an IPv4 address only, remotelPv6 applies if the UE has acquired an IPv6 address only, or both an IPv6 and an IPv4 address. | | | |

Table 6.6.2-4: Reference packet filter #3

| Derivation path: 24.008 table 10.5.162 | | | |
|---|--|-------------------------------|----------------|
| Information Element | Value/Remark | Comment | Condition |
| Identifier | 0 0 1 1 0 0 1 0 | Bidirectional filter, ID=2 | |
| Evaluation precedence | 0 0 0 0 1 1 1 1 | Lowest priority | |
| Component type 1 ID | 0 0 0 1 0 0 0 0 | IPv4 remote address type | remotelPv 4 |
| | 0 0 1 0 0 0 0 0 | IPv6 remote address type | remotelPv 6 |
| Component type 1 Value | remoteAddress 255.255.255.255 | See note 1 | remotelPv 4 |
| | remoteAddress ff:ff:ff:ff:ff:ff: ff:ff:ff:ff:ff:ff:ff:ff | See note 1 | remotelPv 6 |
| Note 1: remoteAddress should be set to the address of an IP server able to process a uplink IP packets from the UE and transmit downlink IP packets to the UE. remotelPv4 applies if the UE has acquired an IPv4 address only, remotelPv6 applies if the UE has acquired an IPv6 address only, or both an IPv6 and an IPv4 address. | | | |

Table 6.6.2-5: Reference packet filter #4

| Derivation path: 24.008 table 10.5.162 | | | |
|--|--|--|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Identifier | 0 0 1 1 0 0 1 1 | Bidirectional, ID=3 | |
| Evaluation precedence | (0 0 0 0 0 0 0 0) + EPS Bearer ID – 6 | 0 to 7 | |
| Component type 1 ID | 0 1 0 1 0 0 0 1 | Remote port range type | |
| Component type 1 Value | media port | SS speech media port as used in the SDP negotiation (RTP remote port); see Note 1 | |
| | media port + 1 | RTCP remote port; see Note 1 | |
| Component type 2 ID | 0 0 1 1 0 0 0 0 | Protocol identifier/Next header type | |
| Component type 2 Value | 17 | UDP | |
| Note 1: Acc. to TS 26.114 and RFC 4566 a "media port" can be understood as the transport port to which a media stream is sent. | | | |

Table 6.6.2-6: Reference packet filter #5

| Derivation path: 24.008 table 10.5.162 | | | |
|--|--|--|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Identifier | 0 0 1 1 0 1 0 0 | Bidirectional, ID=4 | |
| Evaluation precedence | (0 0 0 0 0 0 0 0) + EPS Bearer ID – 6 | 0 to 7 | |
| Component type 1 ID | 0 1 0 1 0 0 0 1 | Remote port range type | |
| Component type 1 Value | media port | SS video media port as used in the SDP negotiation (RTP remote port); see Note 1 | |
| | media port + 1 | RTCP remote port; see Note 1 | |
| Component type 2 ID | 0 0 1 1 0 0 0 0 | Protocol identifier/Next header type | |
| Component type 2 Value | 17 | UDP | |
| Note 1: Acc. to TS 26.114 and RFC 4566 a "media port" can be understood as the transport port to which a media stream is sent. | | | |

Table 6.6.2-7: Reference packet filter #6

| Derivation path: 24.008 table 10.5.162 | | | |
|---|---|--------------------------------------|-------------|
| Information Element | Value/Remark | Comment | Condition |
| Identifier | 0 0 0 1 0 0 0 0 | DL only filter, ID=0 | |
| Evaluation precedence | (0 0 0 0 0 0 0 0) + EPS Bearer ID - 6 | 0 to 7 | |
| Component type 1 ID | 0 0 0 1 0 0 0 0 | IPv4 remote address type | remoteIPv4 |
| | 0 0 1 0 0 0 0 0 | IPv6 remote address type | remoteIPv6 |
| Component type 1 Value | remoteAddress 255.255.255.255 | See note 1 | remoteIPv4 |
| | remoteAddress ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff | See note 1 | remoteIPv6 |
| Component type 2 ID | 0 0 1 1 0 0 0 0 | Protocol identifier/Next header type | |
| Component type 2 Value | 1 | ICMP | remote IPv4 |
| Component type 2 Value | 58 | ICMPv6 | remote IPv6 |
| Note 1: remoteAddress is the address of a network entity and the filter matches for ICMP/ICMPv6 packets sent to the UE with remote address being source address. remoteIPv4 applies if the UE has acquired an IPv4 address only, remoteIPv6 applies if the UE has acquired an IPv6 address only, or both an IPv6 and an IPv4 address. | | | |

Table 6.6.2-8: Reference packet filter #7

| Derivation path: 24.008 table 10.5.162 | | | |
|--|---|--------------------------------------|------------|
| Information Element | Value/Remark | Comment | Condition |
| Identifier | 0 0 1 0 0 0 0 1 | UL only filter, ID=1 | |
| Evaluation precedence | (0 0 0 0 0 0 0 0) + EPS Bearer ID - 6 + 8 | 8 to 15 | |
| Component type 1 ID | 0 0 0 1 0 0 0 0 | IPv4 remote address type | remoteIPv4 |
| | 0 0 1 0 0 0 0 0 | IPv6 remote address type | remoteIPv6 |
| Component type 1 Value | remoteAddress 255.255.255.255 | See note 1 | remoteIPv4 |
| | remoteAddress ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff | See note 1 | remoteIPv6 |
| Component type 2 ID | 0 0 1 1 0 0 0 0 | Protocol identifier/Next header type | |
| Component type 2 Value | 1 | ICMP | Ping |
| Component type 2 Value | 58 | ICMPv6 | Ping |
| Note 1: remoteAddress is the address of a network entity and the filter matches for ICMP/ICMPv6 packets sent by the UE with remote address being destination address. When configured together with packet filter #1, remoteAddress is the same as that for packet filter #6. remoteIPv4 applies if the UE has acquired an IPv4 address only, remoteIPv6 applies if the UE has acquired an IPv6 address only, or both an IPv6 and an IPv4 address. | | | |

Table 6.6.2-9: Reference packet filter #8

| Derivation path: 24.008 table 10.5.162 | | | |
|---|--|--|----------------|
| Information Element | Value/Remark | Comment | Condition |
| Identifier | 0 0 1 0 0 0 0 1 | UL only filter, ID=1 | |
| Evaluation precedence | (0 0 0 0 0 0 0 0) + EPS Bearer ID - 6 + 8 | 8 to 15 | |
| Component type 1 ID | 0 0 0 1 0 0 0 0 | IPv4 remote address type | remoteIPv 4 |
| | 0 0 1 0 0 0 0 0 | IPv6 remote address type | remoteIPv 6 |
| Component type 1 Value | remoteAddress 255.255.255.255 | See note 1 | remoteIPv 4 |
| | remoteAddress ff:ff:ff:ff:ff:ff: ff:ff:ff:ff:ff:ff | See note 1 | remoteIPv 6 |
| Component type 2 ID | 0 0 1 1 0 0 0 0 | Protocol identifier/Next header type | |
| Component type 2 Value | 17 | UDP | |
| Note 1: remoteAddress should be set to the address of an IP server able to process a flow of uplink IP/UDP packets received from the UE. When configured together with packet filter #1, remoteAddress is the same as that for packet filter #1. remoteIPv4 applies if the UE has acquired an IPv4 address only, remoteIPv6 applies if the UE has acquired an IPv6 address only, or both an IPv6 and an IPv4 address. | | | |

Table 6.6.2-10: Reference packet filter #9

| Derivation path: 24.008 table 10.5.162 | | | |
|--|--|--|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Identifier | 0 0 1 1 0 1 0 1 | Bidirectional filter, ID=5 | |
| Evaluation precedence | (0 0 0 0 0 0 0 0) + EPS Bearer ID - 6 | 0 to 7 | |
| Component type 1 ID | 0 1 0 1 0 0 0 1 | Remote port range type | |
| Component type 1 Value | media port | SS video media port as used in the SDP negotiation (RTP remote port); see Note 1 | |
| | media port + 1 | RTCP remote port; see Note 1 | |
| Component type 2 ID | 0 0 1 1 0 0 0 0 | Protocol identifier/Next header type | |
| Component type 2 Value | 17 | UDP | |
| Note 1: Acc. to TS 26.114 and RFC 4566 a "media port" can be understood as the transport port to which a media stream is sent. | | | |

6.6A Default SMS over SGs message and information element contents

The default SMS over SGs message and information element contents specified in this subclause apply to all SMS over SGs Signalling test cases defined in TS 36.523-1 [18] unless otherwise specified. All the messages and information elements are listed in alphabetical order.

6.6A.1 CM-sublayer messages

- CP-ACK

This message is sent between the SS and the UE, in both directions.

Table 6.6A.1-1: Message CP-ACK

| Derivation Path: 24.011 clause 7.2.2 | | | |
|--------------------------------------|-------------------|--------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | '1001'B | SMS messages | |
| Transaction identifier | Any allowed value | | |
| Message type | '00000100'B | CP-ACK | |

- CP-DATA

This message is sent between the SS and the UE, in both directions.

Table 6.6A.1-2: Message CP-DATA

| Derivation Path: 24.011 clause 7.2.1 | | | |
|--------------------------------------|---|--------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Protocol discriminator | '1001'B | SMS messages | |
| Transaction identifier | Any allowed value | | |
| Message type | '00000001'B | CP-DATA | |
| CP-User data | RP-ACK RPDU or RP-DATA RPDU (as specified in the test case) | | |

6.6A.2 Short Message Relay Layer (SM-RL) messages

- RP-ACK RPDU

This message is sent between the SS and the UE, in both directions.

Table 6.6A.2-1: Message RP-ACK RPDU

| Derivation Path: 24.011 clause 7.3.3 | | | |
|--------------------------------------|--|---------------------|--------------|
| Information Element | Value/remark | Comment | Condition |
| RP-Message Type | '010'B | RP-ACK_PDU uplink | Uplink_SMS |
| | '011'B | RP-ACK_PDU downlink | Downlink_SMS |
| RP-Message Reference | Same as in associated (preceding) RP-DATA RPDU | | |
| RP-User Data | Not present or any allowed value | | Uplink_SMS |
| | Not present | | Downlink_SMS |

| Condition | Explanation |
|--------------|--|
| Uplink_SMS | This condition applies when the message is sent by the UE to the SS. |
| Downlink_SMS | This condition applies when the message is sent by the SS to the UE. |

- RP-DATA RPDU

This message is sent between the SS and the UE, in both directions.

Table 6.6A.2-2: Message RP-DATA RPDU

| Derivation Path: 24.301 clause 8.2.23 | | | |
|---------------------------------------|--|--|------------------|
| Information Element | Value/remark | Comment | Condition |
| RP-Message Type | '001'B | RP-DATA_PDU downlink | Downlink_S MS |
| | '000'B | RP-DATA_PDU uplink | Uplink_SMS |
| RP-Message Reference | Any allowed value | | |
| RP-Originator Address | Any allowed value | originating Service Centre address | Downlink_S MS |
| | Not present | | Uplink_SMS |
| RP-Destination Address | Not present | | Downlink_S MS |
| | Any allowed value | destination Service Centre address | Uplink_SMS |
| RP-User Data | SMS-SUBMIT or SMS- DELIVER (as set in the test case) | | |

| Condition | Explanation |
|--------------|--|
| Uplink_SMS | See the definition below table 6.6A.2-1. |
| Downlink_SMS | See the definition below table 6.6A.2-1. |

6.6A.3 Short Message Transfer Layer (SM-TL) messages

- SMS-DELIVER

This message is sent by the SS to the UE.

Table 6.6A.3-1: Message SMS-DELIVER

| Derivation Path: 23.040 clause 9.2.2.1 | | | |
|--|-------------------------------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| TP-MTI | '00'B | SMS-DELIVER | |
| TP-MMS | '1'B | No more messages are waiting for the MS in this SC | |
| TP-RP | Any allowed value | | |
| TP-UDHI | '0'B | | |
| TP-SRI | '0'B | | |
| TP-OA | Any allowed value | | |
| TP-PID | '0000000'B | | |
| TP-DCS | Any allowed value | | |
| TP-SCTS | Any allowed value | | |
| TP-UDL | 160 | | |
| TP-UD (140 octets) | text of message (160 characters) | The 160 characters in TP- UD shall include at least one occurrence of each character in the default alphabet (see 3GPP TS 23.038, clause 6.2.1). | |

- SMS-SUBMIT

This message is sent by the UE to the SS.

Table 6.6A.3-2: Message SMS-SUBMIT

| Derivation Path: 23.040 clause 9.2.2.2 | | | |
|--|----------------------------------|------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| TP-MTI | '01'B | SMS-SUBMIT | |
| TP-RD | Any allowed value | | |
| TP-VPF | Any allowed value | | |
| TP-RP | Any allowed value | | |
| TP-UDHI | Not present or any allowed value | | |
| TP-SRR | Not present or any allowed value | | |
| TP-MR | Any allowed value | | |
| TP-DA | Any allowed value | | |
| TP-PID | '00000000'B | | |
| TP-DCS | Any allowed value | | |
| TP-VP | Not present or any allowed value | | |
| TP-UDL | 160 | | |
| TP-UD (140 octets) | text of message (160 characters) | | |

6.6B Reference radio bearer configurations

6.6B.1 SRB and DRB parameters and combinations

6.6B.1.1 SRB and DRB parameters

6.6B.1.1.1 Physical Layer configurations

Table 6.6B.1.1.1-1: PhysicalConfigDedicated-DEFAULT

| Derivation Path: TS 36.508 clause 4.8.2.1.6, Table 4.8.2.1.6-1 | | | |
|--|---|---------------------------|---|
| Information Element | Value/remark | Comment | Condition |
| PhysicalConfigDedicated-DEFAULT ::= SEQUENCE { | | | |
| cqi-ReportConfig | CQI-ReportConfig-DEFAULT using condition CQI_PERIODIC | See subclause 4.6.3 | SRB1 or RBC or RBC-HO or HO-TO-EUTRA |
| soundingRS-UL-ConfigDedicated | SoundingRS-UL-ConfigDedicated-DEFAULT | See subclause 4.6.3 | (SRB1 or RBC or RBC-HO or HO-TO-EUTRA) and not (CEmodeA or CEmodeB) |
| | Not present | Not applicable for CAT M1 | CEmodeA or CEmodeB |
| } | | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|-------------|---|
| SRB1 | Used at configuration of SRB1 during RRC connection (re-)establishment |
| RBC | Used at configuration of a radio bearer combination during SRB2+DRB establishment |
| 2TX | Used for cells with two antenna ports |
| RBC-HO | Used during Handover |
| HO-TO-EUTRA | Inter-RAT handover to E-UTRA |
| CEmodeA | CE mode A test environment |
| CEmodeB | CE mode B test environment |

6.7 Timer Tolerances

The timer tolerances specified for the test environment in this subclause apply to all Signalling test cases defined in TS 36.523-1 [18] unless otherwise specified

All the timers used during testing are within a tolerance margin given by the equation below. If for a specific test a different tolerance value is required then this should be specified in the relevant test document (i.e. the document where the test is described).

Timer tolerance = 10%, or $5 \times \text{RTT}$, whichever value is the greater.

Where $\text{RTT} = 8 \text{ TTIs}$ for FDD, and $\text{RTT} = \text{Maximum RTT}$ from Table 6.7-1 for TDD (see Note).

NOTE: Since the exact RTT for TDD varies depending on the UL/DL configurations and subframe number [29], the maximum RTT is defined in Table 6.7-1.

Table 6.7-1: Maximum RTT for TDD UL/DL configurations

| UL/DL Configuration | Maximum RTT (TTIs) |
|---|--------------------|
| 0 | 10 |
| 1* | 11 |
| 2 | 12 |
| 3 | 15 |
| 4 | 16 |
| 5 | TBD |
| 6 | 11 |
| *Note: Default UL/DL configuration defined in Table 4.6.3-23 of TS 36.508 | |

6.8 SideLink reference configuration

The reference test configurations specified in 6.8.1 apply to all SideLink Signalling test cases defined in TS 36.523-1 [18].

The reference test configurations specified in 6.8.2 apply to all V2X SideLink Signalling test cases defined in TS 36.523-1 [18].

6.8.1 Reference configuration for Direct Communication

ROHC compression is not applied in the signalling test cases simulating in coverage and out-of-coverage scenarios.

Unless otherwise specified, ciphering is not configured on SLRB.

6.8.1.1 ProSe Direct Communication *Preconfiguration* for out-of-network coverage operation

The IE *SL-Preconfiguration* contains the resource pool information for sidelink direct communication.

Table 6.8.1.1-1: SL-Preconfiguration

| Derivation Path: 36.331 clause 9.3.2 | | | |
|---|--|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| SL-Preconfiguration-r12 ::= SEQUENCE { | | | |
| preconfigGeneral-r12 SEQUENCE { | | SL-PreconfigGeneral-r12 | |
| rohc-Profiles-r12 SEQUENCE { | | -- PDCP configuration | |
| profile0x0001-r12 | false | | |
| profile0x0002-r12 | false | | |
| profile0x0004-r12 | false | | |
| profile0x0006-r12 | false | | |
| profile0x0101-r12 | false | | |
| profile0x0102-r12 | false | | |
| profile0x0104-r12 | false | | |
| } | | | |
| carrierFreq-r12 | f1 as per table 6.2.3.3-2 using the same band as cell1 | ARFCN-ValueEUTRA-r9 | |
| maxTxPower-r12 | 0 | | |
| additionalSpectrumEmission-r12 | 1 | | |
| sl-bandwidth-r12 | see table 6.2.3.3-2 using the same bandwidth as cell1 | | |
| tdd-ConfigSL-r12 SEQUENCE { | | TDD-ConfigSL-r12 | |
| subframeAssignment | none | FDD | |
| } | | | |
| reserved-r12 | '00000000000000000000' | | |
| } | B | | |
| preconfigSync-r12 SEQUENCE { | | SL-PreconfigSync-r12 | |
| syncCP-Len-r12 | normal | SL-CP-Len-r12 | |
| syncOffsetIndicator1-r12 | 1 | SL-OffsetIndicatorSync-r12 | |
| | | Synchronisation resources are present in those SFN and subframes which satisfy the relation: (SFN*10+ Subframe Number) mod 40 = SL-OffsetIndicatorSync | |
| syncOffsetIndicator2-r12 | 2 | SL-OffsetIndicatorSync-r12 | |
| syncTxParameters-r12 | 23 | P0-SL-r12 | |
| syncTxThreshOoC-r12 | 0 | (-110dBm/15kHz) | |
| filterCoefficient-r12 | fc0 | | |
| syncRefMinHyst-r12 | dB0 | | |
| syncRefDiffHyst-r12 | dB0 | | |
| } | | | |
| preconfigComm-r12 SEQUENCE (SIZE (1..maxSL-TxPool-r12)) OF SL-PreconfigCommPool-r12 { | 1 entry | SL-PreconfigCommPoolList4-r12 | |
| SL-PreconfigCommPool-r12 SEQUENCE { | | -- This IE is same as SL-CommResourceP | |

| | | | |
|---------------------------------------|--|-----------------------------------|---------|
| | | ool with rxParametersNCelI absent | |
| sc-CP-Len-r12 | normal | SL-CP-Len-r12 | |
| sc-Period-r12 | sf40 | SL-PeriodComm-r12 | |
| sc-TF-ResourceConfig-r12 SEQUENCE { | | SL-TF-ResourceConfig-r12 | |
| prb-Num-r12 | 13 | | BW5 |
| | 25 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 | | BW5 |
| | 49 | | BW10 |
| offsetIndicator-r12 | 0 | SL-OffsetIndicator-r12 | |
| subframeBitmap-r12 | 00011000 00000000 00000000 00000000 00000000 | bs40-r12 | SLCONF1 |
| | 00000110 00000000 00000000 00000000 00000000 | | SLCONF2 |
| } | | | |
| sc-TxParameters-r12 | 0 | INTEGER (-126..31) | |
| data-CP-Len-r12 | Normal | SL-CP-Len-r12 | |
| data-TF-ResourceConfig-r12 SEQUENCE { | | SL-TF-ResourceConfig-r12 | |
| prb-Num-r12 | 13 | | BW5 |
| | 25 | | BW10 |
| prb-Start-r12 | 0 | | |
| prb-End-r12 | 24 | | BW5 |
| | 49 | | BW10 |
| offsetIndicator-r12 | 0 | SL-OffsetIndicator-r12 | |
| subframeBitmap-r12 | 00000000 11111111 11111111 00000000 00000000 | bs40-r12 | SLCONF1 |
| | 00000000 00000000 00000000 11111111 11111111 | | SLCONF2 |
| } | | | |
| dataHoppingConfig-r12 SEQUENCE { | | SL-HoppingConfigComm-r12 | |
| hoppingParameter-r12 | 0 | INTEGER (0..504), | |
| numSubbands-r12 | ns1 | ENUMERATED {ns1, ns2, ns4} | |
| rb-Offset-r12 | 0 | INTEGER (0..110) | |
| } | | | |
| dataTxParameters-r12 | 0 | INTEGER (-126..31) | |
| trpt-Subset-r12 | 010 | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|--|
| BW5 | when sl-bandwidth-r12 is set to 5 MHz |
| BW10 | when sl-bandwidth-r12 is set to 10 MHz |
| SLCONF1 | SideLink Configuration 1 |
| SLCONF2 | SideLink Configuration 2 (a limited number of Radio Parameters which differ to those in SLCONF1 are provided to allow means for easily recognisable different UE transmissions when UE respects them). |

6.8.2 Reference configuration for V2X Sidelink Communication

ROHC compression is not applied in the signalling test cases simulating in coverage and out-of-coverage scenarios.

Ciphering is not configured on SLRB.

6.8.2.1 V2X Sidelink Communication *Preconfiguration* for out-of-network coverage operation

The V2X Sidelink communication preconfigurations for single V2X component carrier or V2X intra-band contiguous multi-carrier are defined in Table 4.10.1.1-1 and Table 4.10.1.1-2 respectively.

7 Test environment for RRM tests

This section contains all the exceptions of the common test parameters specified in clause 4 for specific needs of test cases defined in TS 36.521-3 [34], TS 34.121-1 [50] and TS 34.122 [51]. Exceptions specified in clause 7 overwrite the parameter settings of clause 4; exceptions defined within the test cases overwrite parameter settings of clause 4 and 7.

This clause describes UE test states which can be used in the initial condition for TS 36.521-3 [34], TS 34.121-1 [50] and TS 34.122 [51].

7.1 Requirements of *test* equipment

<void>

7.2 RRM Reference system configurations

7.2.1 Common parameters for simulated E-UTRA cells

7.2.1.1 Combinations of system information blocks

<void>

7.2.1.2 Scheduling of system information blocks

<void>

7.2.1.3 Common contents of system information messages

- SystemInformationBlockType2

As defined in Table 4.4.3.3-1 with the following exceptions:

Table 7.2.1.3-1: SystemInformationBlockType2 exceptions

| Derivation Path: Clause 4.4.3.3, Table 4.4.3.3-1 SystemInformationBlockType2 | | | |
|--|--------------|--|------------------|
| Information Element | Value/remark | Comment | Condition |
| mbsfn-SubframeConfigList SEQUENCE | Not Present | MBSFN not applicable for eMTC RRM Test cases | CEmodeA, CEmodeB |
| mbsfn-SubframeConfigList ::= SEQUENCE (SIZE (1..maxMBSFN-Allocations)) OF SEQUENCE { | | | FDD |
| radioframeAllocationPeriod | n1 | Every radio frame is with MBSFN subframe | |
| radioframeAllocationOffset | 0 | | |
| subframeAllocation CHOICE { | | | |
| oneFrame | '111111'B | Subframe 1, 2, 3, 6, 7, 8 is used for MBSFN | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------------|
| FDD | FDD cell environment |
| CEmodeA | CE mode A test environment |
| CEmodeB | CE mode B test environment |

- SystemInformationBlockType3

As defined in Table 4.4.3.3-2 with the following exceptions:

Table 7.2.1.3-2: SystemInformationBlockType3 exceptions

| Derivation Path: Clause 4.4.3.3, Table 4.4.3.3-2 SystemInformationBlockType3 | | | |
|--|---|---------|------------------------------------|
| Information Element | Value/remark | Comment | Condition |
| neighCellConfig | '10'B (The MBSFN subframe allocations of all neighbour cells are identical to or subsets of that in the serving cell) | | FDD with E-UTRA FDD neighbour cell |
| | '01'B (No MBSFN subframes are present in all neighbor cells) | | CEmodeA, CEmodeB |

| Condition | Explanation |
|------------------------------------|---|
| FDD with E-UTRA FDD neighbour cell | FDD cell environment with a E-UTRA FDD neighbour cell |
| CEmodeA | CE mode A test environment |
| CEmodeB | CE mode B test environment |

- SystemInformationBlockType5

As defined in Table 4.4.3.3-3 with the following exceptions:

Table 7.2.1.3-3: SystemInformationBlockType5 exceptions

| Derivation Path: Clause 4.4.3.3, Table 4.4.3.3-4 SystemInformationBlockType5 | | | |
|--|---|---------|---|
| Information Element | Value/remark | Comment | Condition |
| neighCellConfig[<i>n</i>] | '10'B (The MBSFN subframe allocations of all neighbour cells are identical to or subsets of that in the serving cell) | | FDD with E-UTRA FDD neighbour cell |
| | '11'B (Different UL/DL allocation in neighbouring cells for TDD compared to the serving cell) | | FDD with E-UTRA TDD neighbour cell, TDD with E-UTRA FDD neighbour cell |
| | '01'B (No MBSFN sub frames are present in all neighbor cells) | | CEmodeA, CEmodeB |

| Condition | Explanation |
|------------------------------------|---|
| FDD with E-UTRA FDD neighbour cell | FDD cell environment with a E-UTRA FDD neighbour cell |
| FDD with E-UTRA TDD neighbour cell | FDD cell environment with a E-UTRA TDD neighbour cell |
| TDD with E-UTRA FDD neighbour cell | TDD cell environment with a E-UTRA FDD neighbour cell |
| CEmodeA | CE mode A test environment |
| CEmodeB | CE mode B test environment |

- SystemInformationBlockType7

As defined in Table 4.4.3.3-6 with the following exceptions:

Table 7.2.1.3-4: SystemInformationBlockType7 exceptions

| Derivation Path: Clause 4.4.3.3, Table 4.4.3.3-6 SystemInformationBlockType7 | | | |
|--|--------------|---------|--|
| Information Element | Value/remark | Comment | Condition |
| commonInfo SEQUENCE { | | | |
| p-MaxGERAN | 33 (33 dBm) | | GSM 400 & GSM 900 & GSM 850 & GSM 700 |
| | 30 (30 dBm) | | DCS 1800 & PCS 1900 |
| } | | | |

7.2.2 Common parameters for simulated GERAN cells

7.2.2.1 Mapping of GERAN cells

Unless otherwise stated, GERAN cells take the default values defined in Table 7.2.2.1-1.

Table 7.2.2.1-1: Mapping of GERAN cells with TS 51.010-1 [25]

| GERAN cell | Frequency | GERAN cell in TS 51.010-1, clause 40 |
|------------|-----------|--------------------------------------|
| Cell 24 | f11 | Cell A |
| Cell 25 | f12 | Cell D |
| Cell 26 | f13 | Cell B |

7.2A Generic RRM procedures

7.2A.1 UE RRM test states

Table 7.2A.1-1: The E-UTRAN UE states

| | | RRC | ECM | EMM | ESM | UE Test Mode |
|-----------------|--|---|---------------------------|---------------------------|-------------------------------------|---------------------------|
| State 2A-RF | Registered, Idle Mode, UE Test Mode Activated | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 |
| State 2A-RF-CE | Registered, Idle Mode, Cell supporting BL/CE UE, UE Test Mode Activated | Refer to Table 5.2A.1-1AA | Refer to Table 5.2A.1-1AA | Refer to Table 5.2A.1-1AA | Refer to Table 5.2A.1-1AA | Refer to Table 5.2A.1-1AA |
| State 3A-RF | Generic Default RB Established, UE Test Mode Activated | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 |
| State 3A-RF-CE | Generic Default RB Established, Cell supporting BL/CE UE, UE Test Mode Activated | Refer to Table 5.2A.2AA | Refer to Table 5.2A.2AA | Refer to Table 5.2A.2AA | Refer to Table 5.2A.2AA | Refer to Table 5.2A.2AA |
| State 3A-RF-DC1 | DC MCG/SCG Dedicated RB established, UE Test Mode Activated | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 |
| State 3A-RF-DC2 | DC Split Default RB established, UE Test Mode Activated | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 | Refer to Table 5.2A.1-1 |
| State 3B-RF | Generic Default RB Established, UE Test Mode Activated, pre-registered on HRPD | RRC_CONNECTED 1 data radio bearer configured | ECM-CONNECTED | EMM-REGISTERED | 1 default EPS bearer context active | Active |

7.2A.2 UE Registration, UE Test Mode Activated (State 2A-RF)

As described in clause 5.2A.1A.

7.2A.2A UE Registration, UE Test Mode Activated in cell supporting BL/CE UE (State 2A-RF-CE)

As described in clause 5.2A.1AA.

7.2A.3 Generic Default Radio Bearer Establishment, UE Test Mode Activated (State 3A-RF)

As described in clause 5.2A.2.

7.2A.3A DC MCG/SCG Dedicated RB established, UE Test Mode Activated (State 3A-RF-DC1)

As described in clause 5.2A.2A.

7.2A.3AA Generic Default Radio Bearer Establishment, UE Test Mode Activated in cell supporting BL/CE UE (State 3A-RF-CE)

As described in clause 5.2A.2AA.

7.2A.3B DC Split Default RB established, UE Test Mode Activated (State 3A-RF-DC2)

As described in clause 5.2A.2B.

7.2A.3C Generic Default Radio Bearer Establishment, UE Test Mode Activated, V2X Setup (State 3A-RF-V2X)

As described in clause 5.2A.2C.

7.2A.4 Generic Default Radio Bearer Establishment, UE Test Mode Activated, pre-registration on HRPD (State 3B-RF)

Editor's note: This section is incomplete. The following aspects are either missing or not yet determined: Other than UATI Request message and UATI Assignment message are FFS

7.2A.4.1 Initial conditions

System Simulator:

- Cell 1
- Cell 1 is transmitting SystemInformationBlockType8

User Equipment:

- The Test USIM shall be inserted.

7.2A.4.2 Definition of system information messages

As described in clause 4.5.2B.2.

7.2A.4.3 Procedure

Table 7.2A.4.3-1: UE registration with default EPS bearer establishment, test mode activation and HRPD pre-registration procedures (state 1 to state 3B-RF)

| Step | Procedure | Message Sequence | |
|----------|--|------------------|---------|
| | | U - S | Message |
| 1 to 18 | Steps 1 to 18 as specified in the procedure in clause 5.2A.1A.3 take place. | - | - |
| 19 to 36 | Same procedure for steps 17 to 30D as specified in the procedure in clause 4.5.2B.3. | | |

7.2A.4.4 Specific message contents

As described in clauses 4.5.2B.4 and 7.2A.2.

7.2A.5 Procedure to configure SCC

As described in clause 5.2A.4.

7.2A.6 Exceptions for feICIC tests

As described in clause 5.2A.5.

7.2B Other generic RRM procedures

7.2B.1 Tracking area updating procedure

The procedure is defined in table 7.2B.1-1.

Table 7.2B.1-1: Tracking area updating procedure

| Step | Procedure | Message Sequence | |
|---|--|------------------|---|
| | | U - S | Message |
| 1 | The SS transmits system information on the cell specified in the test case. | <-- | RRC: SYSTEM INFORMATION (BCCH, BCCH-BR) Note 5. |
| - | EXCEPTION: If all EPS bearer contexts are inactive in UE, for Rel-8 and Rel-9, steps 2 to 8a are optional and depend on UE implementation. If all EPS bearer contexts are inactive in UE, a Rel-10 or higher UE directly starts attach procedure from step 9a. | - | - |
| 2 | The UE transmits an <i>RRCConnectionRequest</i> message on the cell specified in the test case. | --> | RRC: <i>RRCConnectionRequest</i> |
| 3 | The SS transmits an <i>RRCConnectionSetup</i> message. | <-- | RRC: <i>RRCConnectionSetup</i> |
| 4 | The UE transmits an <i>RRCConnectionSetupComplete</i> message to confirm the successful completion of the connection establishment and a TRACKING AREA UPDATE REQUEST message is sent to update the registration of the actual tracking area. | --> | RRC: <i>RRCConnectionSetupComplete</i> NAS: TRACKING AREA UPDATE REQUEST |
| - | EXCEPTION: If all EPS bearer contexts are marked as inactive in the EPS bearer context status IE included in the TRACKING AREA UPDATE REQUEST message then, events described in steps 5a to 26a. Otherwise, events described in steps 5 to 7. | - | - |
| 5 | The SS responds with TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE ACCEPT |
| 6 | The UE transmits a TRACKING AREA UPDATE COMPLETE | --> | RRC: <i>ULInformationTransfer</i> NAS: TRACKING AREA UPDATE COMPLETE |
| 7 | The SS transmits an <i>RRCConnectionRelease</i> message to release RRC connection and move to RRC_IDLE. | <-- | RRC: <i>RRCConnectionRelease</i> |
| 5a | The SS responds with TRACKING AREA UPDATE REJECT message with cause #40 (No EPS bearer context activated) to force attach the UE. | <-- | RRC: <i>DLInformationTransfer</i> NAS: TRACKING AREA UPDATE REJECT |
| 6a | EXCEPTION: Step 7a describes the behaviour that depends on UE behaviour (Note 3). | - | - |
| 7a | The SS transmits an <i>RRCConnectionRelease</i> message to release RRC connection and move to RRC_IDLE. | <-- | RRC: <i>RRCConnectionRelease</i> |
| - | EXCEPTION: Step 8a describes a behaviour which depends on the UE capability | - | - |
| 8a | IF NOT <i>pc_Auto_PDN_Connectivity</i> , the user initiates an attach by MMI or by AT command (NOTE 4). | - | - |
| 9a to 27a | Steps 2 to 20 of the generic UE Registration procedure (5.2A.1A.3) take place to complete the Attach procedure | - | - |
| <p>NOTE 1: The periodic tracking area updating timer T3412 is deactivated by default during the attach procedure (TS 36.508 clause 4.7.2).</p> <p>NOTE 2: The SS does not initiate authentication and NAS SECURITY MODE COMMAND are not performed (reuse of keys allocated during the attach procedure).</p> <p>NOTE 3: The SS waits for 1.5 second to receive the Attach Request on the existing RRC Connection. In case Attach Request is not received within 1.5 second, existing RRC Connection is released.</p> <p>NOTE 4: The request is assumed to be triggered by AT command AT+CGDCONT=1,"IP" followed by AT+CGACT=1.</p> <p>NOTE 5: For BL UE testing and for non-BL UE enhanced coverage testing the SS shall broadcast SystemInformation-BR-r13, SystemInformationBlockType1-BR-r13 and other relevant system information blocks as required by the specified combinations of system information blocks</p> | | | |

specified for the test case on BCCH-BR. For non-BL UE normal coverage testing the SS may exclude broadcasting of system information on BCCH-BR.

Specific message contents

Table 7.2B.1-1a: MasterInformationBlock (Step 1 and following steps)

Derivation Path: 36.508 Table 4.4.3.2-1 using condition CEmodeB if the test case specifically tests CE mode B else use condition CEmodeA.

Table 7.2B.1-1a1: SystemInformation-BR-r13 (Step 1 and following steps)

Derivation Path: 36.508 Table 4.4.3.2-2A.

Table 7.2B.1-1a2: SystemInformationBlockType1-BR-r13 (Step 1 and following steps)

Derivation Path: 36.508 Table 4.4.3.2-3A.

Table 7.2B.1-2: TRACKING AREA UPDATE ACCEPT (Step 5)

| Derivation Path: 36.508 Table 4.7.2-24 | | | |
|--|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| EPS network feature support | '0000 0000'B | IMS voice over PS session in S1 mode not supported | |
| Additional update result | Not present | | |

7.3 Default RRC message and information elements contents

7.3.1 Contents of RRC messages

FFS.

7.3.2 Radio resource control information elements

Editor's note: Unless otherwise stated in the test parameters or messages exceptions in the respective test cases in TS 36.521-3 [34], PRACH configuration index and exceptional message as specified in Table 7.3.2-1 is used.

As defined in clause 4.6.3 with the following exceptions:

Table 7.3.2-1: PRACH-Config-DEFAULT

| Derivation Path: Clause 4.6.3 Table 4.6.3-7 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PRACH-Config-DEFAULT ::= SEQUENCE { prach-ConfigIndex | 3 | | TDD |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| TDD | TDD cell environment |

Table 7.3.2-2: RadioResourceConfigCommonSCell-r10-DEFAULT

| Derivation Path: Clause 4.6.3 Table 4.6.3-13A | | | |
|--|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigCommonSCell-r10 ::= SEQUENCE { | | | |
| mbsfn-SubframeConfigList-r10 SEQUENCE (SIZE (1..maxMBSFN-Allocations)) OF SEQUENCE { | | | FDD |
| radioframeAllocationPeriod | n1 | Every radio frame is with MBSFN subframe | |
| radioframeAllocationOffset | 0 | | |
| subframeAllocation CHOICE { | | | |
| oneFrame | '111111'B | Subframe 1, 2, 3, 6, 7, 8 is used for MBSFN | |
| } | | | |
| } | | | |
| ul-Configuration-r10 | Not Present | | |
| } | | | |

| Condition | Explanation |
|-----------|----------------------|
| FDD | FDD cell environment |

Table 7.3.2-3: PhysicalConfigDedicatedSCell-r10-DEFAULT

| Derivation Path: Clause 4.6.3 Table 4.6.3-6A | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PhysicalConfigDedicatedSCell-r10 ::= SEQUENCE { | | | |
| ul-Configuration-r10 | Not Present | | |
| } | | | |

7.3.3 Measurement information elements

As defined in clause 4.6.6 with the following exceptions:

Table 7.3.3-0: MeasDS-Config-DEFAULT

| Derivation Path: clause 4.6.6 Table 4.6.6-1B | | | |
|--|--------------|---------|---------------|
| Information Element | Value/remark | Comment | Condition |
| MeasDS-Config-DEFAULT ::= CHOICE { | | | |
| release | NULL | | |
| setup SEQUENCE { | | | |
| dmtc-PeriodOffset-r12 CHOICE { | | | |
| ms40-r12 | 10 | | LAA_Meas Proc |
| ms40-r12 | 0 | | LAA_Meas Perf |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|--------------|---|
| LAA_MeasProc | Used for LAA measurements procedures test cases |
| LAA_MeasPerf | Used for LAA measurement performance test cases |

Table 7.3.3-1: MeasObjectEUTRA-GENERIC (Freq)

| Derivation Path: Clause 4.6.6, Table 4.6.6-2 | | | |
|--|--|---------|--|
| Information Element | Value/remark | Comment | Condition |
| neighCellConfig | 10'B (The MBSFN subframe allocations of all neighbour cells are identical to or subsets of that in the serving cell) | | FDD with E-UTRA FDD neighbour cell |
| | '11'B (Different UL/DL allocation in neighbouring cells for TDD compared to the serving cell) | | FDD with E-UTRA TDD neighbour cell, TDD with E-UTRA FDD neighbour cell |
| | '01'B (No MBSFN sub frames are present in all neighbor cells) | | CEmodeA, CEmodeB |

| Condition | Explanation |
|------------------------------------|---|
| FDD with E-UTRA FDD neighbour cell | FDD cell environment with a E-UTRA FDD neighbour cell |
| FDD with E-UTRA TDD neighbour cell | FDD cell environment with a E-UTRA TDD neighbour cell |
| TDD with E-UTRA FDD neighbour cell | TDD cell environment with a E-UTRA FDD neighbour cell |
| CEmodeA | CE mode A test environment |
| CEmodeB | CE mode B test environment |

7.3A Default UTRA message and information element contents

7.3A.1 UTRA RRC messages

As defined in 4.7B with the following exceptions:

Contents of RRC CONNECTION SETUP message: UM

| Information Element | Condition | Value/remark | Version | Index |
|--|-----------|------------------------|---------|-----------|
| - System specific capability update requirement list | | 1 entry | | RCSU-019 |
| - System specific capability update requirement | | GSM | | RCSU-019a |
| CHOICE <i>specification mode</i> | | Complete specification | Rel-5 | RCSU-020 |
| - Complete specification | | | Rel-5 | RCSU-021 |

7.4 Default NAS message and information elements contents

7.5 Reference radio bearer configurations

7.5.1 SRB and DRB parameters

7.5.1.1 MAC configurations

As defined in clause 4.8.2.1.5 with the following exceptions:

Table 7.5.1.1-1: MAC-MainConfig-RBC

| Derivation Path: Clause 4.8.2.1.5 Table 4.8.2.1.5-1 | | | |
|---|--------------|---------|--------------|
| Information Element | Value/remark | Comment | Condition |
| MAC-MainConfig-RBC ::= SEQUENCE { | | | |
| mac-MainConfig-v1020SEQUENCE { | | | SCell_AddMod |
| sCellDeactivationTimer-r10 | Not present | | |
| extendedBSR-Sizes-r10 | Not Present | | |
| extendedPHR-r10 | Not Present | | |
| } | Setup | | UL CA |
| } | | | |

| Condition | Explanation |
|--------------|-----------------------------------|
| SCell_AddMod | Addition or modification of SCell |
| UL CA | This condition is used for UL CA. |

8 NB-IoT test environment

8.1 NB-IoT Common test environment

8.1.1 NB-IoT Environmental conditions

Same environmental conditions as the ones described in section 4.1 apply to NB-IoT UEs.

8.1.2 NB-IoT Common requirements of test equipment

Same common requirements of test equipment as the ones described in section 4.2 apply to NB-IoT with the following exceptions:

- Only FDD Mode is required for Rel-13 NB-IoT
- Supported physical channels for NB-IoT are:

| Physical channel | Minimum number | Comments |
|------------------|----------------|---|
| NPBCH | 1 | Narrowband Physical Broadcast Channel |
| NPDCCH | 1 | The Narrowband Physical Downlink Control channel carries control information. |
| NPDSCH | 1 | Narrowband Physical Downlink Shared Channel |
| NPUSCH | 1 | Narrowband Physical Uplink Shared Channel |
| NPRACH | 1 | Narrowband Physical Random Access Channel |

- Supported physical signals for NB-IoT are:

| Physical signal | Minimum number | Comments |
|---|----------------|----------|
| Narrowband Reference Signal | NA | DL |
| Narrowband Primary Synchronization Signal | NA | DL |
| Narrowband Secondary Synchronization Signal | NA | DL |
| Demodulation Reference Signal | NA | UL |

8.1.3 NB-IoT Reference test conditions

This clause contains the reference test conditions, which apply to all NB-IoT test cases unless otherwise specified.

8.1.3.1 NB-IoT Test frequencies

NB-IoT is designed to operate in the E-UTRA operating bands 1, 2, 3, 4, 5, 8, 11, 12, 13, 14, 17, 18, 19, 20, 21, 25, 26, 28, 31, 66, 70, 71, 72, 73, 74 and 85 which are defined in Table 5.5-1 in [21]. NB-IoT system operates in HD-FDD duplex mode.

The test frequencies are based on the E-UTRA frequency bands defined in the core specifications.

The raster spacing is 100 KHz.

E-UTRA/FDD is designed to operate in paired bands of 3GPP TS 36.101 [27]. The reference test frequencies for the RF and Signalling test environment for each of the operating bands are defined in sub clause 8.1.3.1.1.

8.1.3.1.1 NB-IoT FDD Mode Test frequencies

8.1.3.1.1.1 NB-IoT FDD reference test frequencies for operating band 1

Table 8.1.3.1.1.1-1: NB-IoT standalone Test frequencies for operating band 1

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 18001 | 0 | 1920.1 | 1 | -0.5 | 2110.1 |
| Mid Range | 18300 | 0 | 1950.0 | 300 | -0.5 | 2140.0 |
| High Range | 18599 | 0 | 1979.9 | 599 | -0.5 | 2169.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.1-2: NB-IoT in-band Test frequencies for operating band 1

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 18007 | 0 | 1920.7000 | 7 | -2 | 2110.6925 |
| Low Range ² | 18060 | -2 | 1925.9900 | 60 | -1 | 2115.9975 |
| Low Range ³ | 18069 | -2 | 1926.8900 | 69 | -1 | 2116.8975 |
| Mid Range ¹ | 18291 | 0 | 1949.1000 | 291 | -2 | 2139.0925 |
| Mid Range ² | 18310 | -2 | 1950.9900 | 310 | -1 | 2140.9975 |
| Mid Range ³ | 18319 | -2 | 1951.8900 | 319 | -1 | 2141.8975 |
| High Range ¹ | 18593 | 0 | 1979.3000 | 593 | 1 | 2169.3075 |
| High Range ² | 18560 | -2 | 1975.9900 | 560 | -1 | 2165.9975 |
| High Range ³ | 18569 | -2 | 1976.8900 | 569 | -1 | 2166.8975 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

Table 8.1.3.1.1.1-3: NB-IoT guard-band Test frequencies for operating band 1

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 18001 | 0 | 1920.1000 | 1 | 1 | 2110.1075 |
| Mid Range | 5 | 18276 | 0 | 1947.6000 | 276 | 1 | 2137.6075 |
| | 10 | 18346 | 0 | 1954.6000 | 346 | 1 | 2144.6075 |
| High Range | Any | 18599 | 0 | 1979.9000 | 599 | -2 | 2169.8925 |

NOTE 1: Void
NOTE 2: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

8.1.3.1.1.2 NB-IoT FDD reference test frequencies for operating band 2

Table 8.1.3.1.1.2-1: NB-IoT standalone Test frequencies for operating band 2

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 18601 | 0 | 1850.1 | 601 | -0.5 | 1930.1 |
| Mid Range | 18900 | 0 | 1880.0 | 900 | -0.5 | 1960.0 |
| High Range | 19199 | 0 | 1909.9 | 1199 | -0.5 | 1989.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.2-2: NB-IoT in-band Test frequencies for operating band 2

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 18606 | 0 | 1850.6000 | 606 | -2 | 1930.5925 |
| Low Range ² | 18660 | -2 | 1855.9900 | 660 | -1 | 1935.9975 |
| Low Range ³ | 18669 | -2 | 1856.8900 | 669 | -1 | 1936.8975 |
| Mid Range ¹ | 18891 | 0 | 1879.1000 | 891 | -2 | 1959.0925 |
| Mid Range ² | 18910 | -2 | 1880.9900 | 910 | -1 | 1960.9975 |
| Mid Range ³ | 18919 | -2 | 1881.8900 | 919 | -1 | 1961.8975 |
| High Range ¹ | 19194 | 0 | 1909.4000 | 1194 | 1 | 1989.4075 |
| High Range ² | 19160 | -2 | 1905.9900 | 1160 | -1 | 1985.9975 |
| High Range ³ | 19169 | -2 | 1906.8900 | 1169 | -1 | 1986.8975 |

NOTE 1: Related to LTE channel BW 3 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

Table 8.1.3.1.1.2-3: NB-IoT guard-band Test frequencies for operating band 2

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 18601 | 0 | 1850.1000 | 601 | 1 | 1930.1075 |
| Mid Range | 5 | 18876 | 0 | 1877.6000 | 876 | 1 | 1957.6075 |
| | 10 | 18946 | 0 | 1884.6000 | 946 | 1 | 1964.6075 |
| High Range | Any | 19199 | 0 | 1909.9000 | 1199 | -2 | 1989.8925 |

NOTE 1: Void
NOTE 2: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

8.1.3.1.1.3 NB-IoT FDD reference test frequencies for operating band 3

Table 8.1.3.1.1.3-1: NB-IoT standalone Test frequencies for operating band 3

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 19201 | 0 | 1710.1 | 1201 | -0.5 | 1805.1 |
| Mid Range | 19575 | 0 | 1747.5 | 1575 | -0.5 | 1842.5 |
| High Range | 19949 | 0 | 1784.9 | 1949 | -0.5 | 1879.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.3-2: NB-IoT in-band Test frequencies for operating band 3

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 19206 | 0 | 1710.6000 | 1206 | -2 | 1805.5925 |
| Low Range ² | 19260 | -2 | 1715.9900 | 1260 | -1 | 1810.9975 |
| Low Range ³ | 19269 | -2 | 1716.8900 | 1269 | -1 | 1811.8975 |
| Mid Range ¹ | 19566 | 0 | 1746.6000 | 1566 | -2 | 1841.5925 |
| Mid Range ² | 19585 | -2 | 1748.4900 | 1585 | -1 | 1843.4975 |
| Mid Range ³ | 19594 | -2 | 1749.3900 | 1594 | -1 | 1844.3975 |
| High Range ¹ | 19944 | 0 | 1784.4000 | 1944 | 1 | 1879.4075 |
| High Range ² | 19910 | -2 | 1780.9900 | 1910 | -1 | 1875.9975 |
| High Range ³ | 19919 | -2 | 1781.8900 | 1919 | -1 | 1876.8975 |

NOTE 1: Related to LTE channel BW 3 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

Table 8.1.3.1.1.3-3: NB-IoT guard-band Test frequencies for operating band 3

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 19201 | 0 | 1710.1000 | 1201 | 1 | 1805.1075 |
| Mid Range | 5 | 19551 | 0 | 1745.1000 | 1551 | 1 | 1840.1075 |
| | 10 | 19621 | 0 | 1752.1000 | 1621 | 1 | 1847.1075 |
| High Range | Any | 19949 | 0 | 1784.9000 | 1949 | -2 | 1879.8925 |

NOTE 1: Void
NOTE 2: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

8.1.3.1.1.4 NB-IoT FDD reference test frequencies for operating band 4

Table 8.1.3.1.1.4-1: NB-IoT standalone Test frequencies for operating band 4

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 19951 | 0 | 1710.1 | 1951 | -0.5 | 2110.1 |
| Mid Range | 20175 | 0 | 1732.5 | 2175 | -0.5 | 2132.5 |
| High Range | 20399 | 0 | 1754.9 | 2399 | -0.5 | 2154.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.4-2: NB-IoT in-band Test frequencies for operating band 4

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 19957 | 0 | 1710.7000 | 1957 | -2 | 2110.6925 |
| Low Range ² | 20010 | -2 | 1715.9900 | 2010 | -1 | 2115.9975 |
| Low Range ³ | 20019 | -2 | 1716.8900 | 2019 | -1 | 2116.8975 |
| Mid Range ¹ | 20166 | 0 | 1731.6000 | 2166 | -2 | 2131.5925 |
| Mid Range ² | 20185 | -2 | 1733.4900 | 2185 | -1 | 2133.4975 |
| Mid Range ³ | 20194 | -2 | 1734.3900 | 2194 | -1 | 2134.3975 |
| High Range ¹ | 20393 | 0 | 1754.3000 | 2393 | 1 | 2154.3075 |
| High Range ² | 20360 | -2 | 1750.9900 | 2360 | -1 | 2150.9975 |
| High Range ³ | 20369 | -2 | 1751.8900 | 2369 | -1 | 2151.8975 |

NOTE 1: Related to LTE channel BW 3 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

Table 8.1.3.1.1.4-3: NB-IoT guard-band Test frequencies for operating band 4

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 19951 | 0 | 1710.1000 | 1951 | 1 | 2110.1075 |
| Mid Range | 5 | 20151 | 0 | 1730.1000 | 2151 | 1 | 2130.1075 |
| | 10 | 20221 | 0 | 1737.1000 | 2221 | 1 | 2137.1075 |
| High Range | Any | 20399 | 0 | 1754.9000 | 2399 | -2 | 2154.8925 |

NOTE 1: Void
NOTE 2: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

8.1.3.1.1.5 NB-IoT FDD reference test frequencies for operating band 5

Table 8.1.3.1.1.5-1: NB-IoT standalone Test frequencies for operating band 5

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 20401 | 0 | 824.1 | 2401 | -0.5 | 869.1 |
| Mid Range | 20525 | 0 | 836.5 | 2525 | -0.5 | 881.5 |
| High Range | 20649 | 0 | 848.9 | 2649 | -0.5 | 893.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.5-2: NB-IoT in-band Test frequencies for operating band 5

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 20406 | 0 | 824.6000 | 2406 | -2 | 869.5925 |
| Low Range ² | 20460 | -2 | 829.9900 | 2460 | -1 | 874.9975 |
| Low Range ³ | 20469 | -2 | 830.8900 | 2469 | -1 | 875.8975 |
| Mid Range ¹ | 20516 | 0 | 835.6000 | 2516 | -2 | 880.5925 |
| Mid Range ² | 20535 | -2 | 837.4900 | 2535 | -1 | 882.4975 |
| Mid Range ³ | 20544 | -2 | 838.3900 | 2544 | -1 | 883.3975 |
| High Range ¹ | 20644 | 0 | 848.4000 | 2644 | 1 | 893.4075 |
| High Range ² | 20610 | -2 | 844.9900 | 2610 | -1 | 889.9975 |
| High Range ³ | 20619 | -2 | 845.8900 | 2619 | -1 | 890.8975 |

NOTE 1: Related to LTE channel BW 3 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.5-3: NB-IoT guard-band Test frequencies for operating band 5

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 20401 | 0 | 824.1000 | 2401 | 1 | 869.1075 |
| Mid Range | 5 | 20501 | 0 | 834.1000 | 2501 | 1 | 879.1075 |
| | 10 | 20571 | 0 | 841.1000 | 2571 | 1 | 886.1075 |
| High Range | Any | 20649 | 0 | 848.9000 | 2649 | -2 | 893.8925 |

NOTE 1: Void
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.6 to 8.1.3.1.1.7 Void

8.1.3.1.1.8 NB-IoT FDD reference test frequencies for operating band 8

Table 8.1.3.1.1.8-1: NB-IoT standalone Test frequencies for operating band 8

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 21451 | 0 | 880.1 | 3451 | -0.5 | 925.1 |
| Mid Range | 21625 | 0 | 897.5 | 3625 | -0.5 | 942.5 |
| High Range | 21799 | 0 | 914.9 | 3799 | -0.5 | 959.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.8-2: NB-IoT in-band Test frequencies for operating band 8

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 21456 | 0 | 880.6000 | 3456 | -2 | 925.5925 |
| Low Range ² | 21510 | -2 | 885.9900 | 3510 | -1 | 930.9975 |
| Low Range ³ | 21519 | -2 | 886.8900 | 3519 | -1 | 931.8975 |
| Mid Range | 21616 | 0 | 896.6000 | 3616 | -2 | 941.5925 |
| Mid Range ² | 21635 | -2 | 898.4900 | 3635 | -1 | 943.4975 |
| Mid Range ³ | 21644 | -2 | 899.3900 | 3644 | -1 | 944.3975 |
| High Range | 21794 | 0 | 914.4000 | 3794 | 1 | 959.4075 |
| High Range ² | 21760 | -2 | 910.9900 | 3760 | -1 | 955.9975 |
| High Range ³ | 21769 | -2 | 911.8900 | 3769 | -1 | 956.8975 |

NOTE 1: Related to LTE channel BW 3 MHz

NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30

NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35

NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.8-3: NB-IoT guard-band Test frequencies for operating band 8

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 21451 | 0 | 880.1000 | 3451 | 1 | 925.1075 |
| Mid Range | 5 | 21601 | 0 | 895.1000 | 3601 | 1 | 940.1075 |
| | 10 | 21671 | 0 | 902.1000 | 3671 | 1 | 947.1075 |
| High Range | Any | 21799 | 0 | 914.9000 | 3799 | -2 | 959.8925 |

NOTE 1: Void

NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.9 to 8.1.3.1.1.10 Void

8.1.3.1.1.11 NB-IoT FDD reference test frequencies for operating band 11

Table 8.1.3.1.1.11-1: NB-IoT standalone Test frequencies for operating band 11

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 22751 | 0 | 1428.0 | 4751 | -0.5 | 1476.0 |
| Mid Range | 22850 | 0 | 1437.9 | 4850 | -0.5 | 1485.9 |
| High Range | 22949 | 0 | 1447.8 | 4949 | -0.5 | 1495.8 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.11-2: NB-IoT in-band Test frequencies for operating band 11

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 22757 | 0 | 1428.6000 | 4757 | -2 | 1476.5925 |
| Low Range ² | 22810 | -2 | 1433.8900 | 4810 | -1 | 1481.8975 |
| Low Range ³ | 22819 | -2 | 1434.7900 | 4819 | -1 | 1482.7975 |
| Mid Range ¹ | 22841 | 0 | 1437.0000 | 4841 | -2 | 1484.9925 |
| Mid Range ² | 22860 | -2 | 1438.8900 | 4860 | -1 | 1486.8975 |
| Mid Range ³ | 22869 | -2 | 1439.7900 | 4869 | -1 | 1487.7975 |
| High Range ¹ | 22943 | 0 | 1447.2000 | 4943 | 1 | 1495.2075 |
| High Range ² | 22910 | -2 | 1443.8900 | 4910 | -1 | 1491.8975 |
| High Range ³ | 22919 | -2 | 1444.7900 | 4919 | -1 | 1492.7975 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.11-3: NB-IoT guard-band Test frequencies for operating band 11

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 22751 | 0 | 1428.0000 | 4751 | 1 | 1476.0075 |
| Mid Range | 22826 | 0 | 1435.5000 | 4826 | 1 | 1483.5075 |
| High Range | 22949 | 0 | 1447.8000 | 4949 | -2 | 1495.7925 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.12 NB-IoT FDD reference test frequencies for operating band 12

Table 8.1.3.1.1.12-1: NB-IoT standalone Test frequencies for operating band 12

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 23011 | 0 | 699.1 | 5011 | -0.5 | 729.1 |
| Mid Range | 23095 | 0 | 707.5 | 5095 | -0.5 | 737.5 |
| High Range | 23179 | 0 | 715.9 | 5179 | -0.5 | 745.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.12-2: NB-IoT in-band Test frequencies for operating band 12

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 23016 | 0 | 699.6000 | 5016 | -2 | 729.5925 |
| Low Range ² | 23070 | -2 | 704.9900 | 5070 | -1 | 734.9975 |
| Low Range ³ | 23079 | -2 | 705.8900 | 5079 | -1 | 735.8975 |
| Mid Range ¹ | 23086 | 0 | 706.6000 | 5086 | -2 | 736.5925 |
| Mid Range ² | 23105 | -2 | 708.4900 | 5105 | -1 | 738.4975 |
| Mid Range ³ | 23114 | -2 | 709.3900 | 5114 | -1 | 739.3975 |
| High Range ¹ | 23174 | 0 | 715.4000 | 5174 | 1 | 745.4075 |
| High Range ² | 23140 | -2 | 711.9900 | 5140 | -1 | 741.9975 |
| High Range ³ | 23149 | -2 | 712.8900 | 5149 | -1 | 742.8975 |

NOTE 1: Related to LTE channel BW 3 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.12-3: NB-IoT guard-band Test frequencies for operating band 12

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 23011 | 0 | 699.1000 | 5011 | 1 | 729.1075 |
| Mid Range | 5 | 23071 | 0 | 705.1000 | 5071 | 1 | 735.1075 |
| | 10 | 23141 | 0 | 712.1000 | 5141 | 1 | 742.1075 |
| High Range | Any | 23179 | 0 | 715.9000 | 5179 | -2 | 745.8925 |

NOTE 1: Void
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.13 NB-IoT FDD reference test frequencies for operating band 13

Table 8.1.3.1.1.13-1: NB-IoT standalone Test frequencies for operating band 13

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 23181 | 0 | 777.1 | 5181 | -0.5 | 746.1 |
| Mid Range | 23230 | 0 | 782.0 | 5230 | -0.5 | 751.0 |
| High Range | 23279 | 0 | 786.9 | 5279 | -0.5 | 755.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.13-2: NB-IoT in-band Test frequencies for operating band 13

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 23187 | 0 | 777.7000 | 5187 | -2 | 746.6925 |
| Low Range ² | 23240 | -2 | 782.9900 | 5240 | -1 | 751.9975 |
| Low Range ³ | 23249 | -2 | 783.8900 | 5249 | -1 | 752.8975 |
| Mid Range ¹ | 23221 | 0 | 781.1000 | 5221 | -2 | 750.0925 |
| Mid Range ² | 23240 | -2 | 782.9900 | 5240 | -1 | 751.9975 |
| Mid Range ³ | 23249 | -2 | 783.8900 | 5249 | -1 | 752.8975 |
| High Range ¹ | 23273 | 0 | 786.3000 | 5273 | 1 | 755.3075 |
| High Range ² | 23240 | -2 | 782.9900 | 5240 | -1 | 751.9975 |
| High Range ³ | 23249 | -2 | 783.8900 | 5249 | -1 | 752.8975 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.13-3: NB-IoT guard-band Test frequencies for operating band 13

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 23181 | 3 | 777.1150 | 5181 | 1 | 746.1075 |
| Mid Range | 5 | 23206 | 3 | 779.6150 | 5206 | 1 | 748.6075 |
| | 10 | 23276 | 3 | 786.6150 | 5276 | 1 | 755.6075 |
| High Range | Any | 23279 | -3 | 786.8850 | 5279 | -2 | 755.8925 |

NOTE 1: Void
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.14 NB-IoT FDD reference test frequencies for operating band 14

Table 8.1.3.1.1.14-1: NB-IoT standalone Test frequencies for operating band 14

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 23281 | 0 | 788.1 | 5281 | -0.5 | 758.1 |
| Mid Range | 23330 | 0 | 793.0 | 5330 | -0.5 | 763.0 |
| High Range | 23379 | 0 | 797.9 | 5379 | -0.5 | 767.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.14-2: NB-IoT in-band Test frequencies for operating band 14

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 23287 | 0 | 788.7000 | 5287 | -2 | 758.6925 |
| Low Range ² | 23340 | -2 | 793.9900 | 5340 | -1 | 763.9975 |
| Low Range ³ | 23349 | -2 | 794.8900 | 5349 | -1 | 764.8975 |
| Mid Range ¹ | 23321 | 0 | 792.1000 | 5321 | -2 | 762.0925 |
| Mid Range ² | 23340 | -2 | 793.9900 | 5340 | -1 | 763.9975 |
| Mid Range ³ | 23349 | -2 | 794.8900 | 5349 | -1 | 764.8975 |
| High Range ¹ | 23373 | 0 | 797.3000 | 5373 | 1 | 767.3075 |
| High Range ² | 23340 | -2 | 793.9900 | 5340 | -1 | 763.9975 |
| High Range ³ | 23349 | -2 | 794.8900 | 5349 | -1 | 764.8975 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.14-3: NB-IoT guard-band Test frequencies for operating band 14

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 23281 | 3 | 788.1150 | 5281 | 1 | 758.1075 |
| Mid Range | 5 | 23306 | 3 | 790.6150 | 5306 | 1 | 760.6075 |
| | 10 | 23376 | 3 | 797.6150 | 5376 | 1 | 767.6075 |
| High Range | Any | 23379 | -3 | 797.8850 | 5379 | -2 | 767.8925 |

NOTE 1: Void
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.15 to 8.1.3.1.1.16 Void

8.1.3.1.1.17 NB-IoT FDD reference test frequencies for operating band 17

Table 8.1.3.1.1.17-1: NB-IoT standalone Test frequencies for operating band 17

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 23731 | 0 | 704.1 | 5731 | -0.5 | 734.1 |
| Mid Range | 23790 | 0 | 710.0 | 5790 | -0.5 | 740.0 |
| High Range | 23849 | 0 | 715.9 | 5849 | -0.5 | 745.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.17-2: NB-IoT in-band Test frequencies for operating band 17

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 23737 | 0 | 704.7000 | 5737 | -2 | 734.6925 |
| Low Range ² | 23790 | -2 | 709.9900 | 5790 | -1 | 739.9975 |
| Low Range ³ | 23799 | -2 | 710.8900 | 5799 | -1 | 740.8975 |
| Mid Range ¹ | 23781 | 0 | 709.1000 | 5781 | -2 | 739.0925 |
| Mid Range ² | 23800 | -2 | 710.9900 | 5800 | -1 | 740.9975 |
| Mid Range ³ | 23809 | -2 | 711.8900 | 5809 | -1 | 741.8975 |
| High Range ¹ | 23843 | 0 | 715.3000 | 5843 | 1 | 745.3075 |
| High Range ² | 23810 | -2 | 711.9900 | 5810 | -1 | 741.9975 |
| High Range ³ | 23819 | -2 | 712.8900 | 5819 | -1 | 742.8975 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.17-3: NB-IoT guard-band Test frequencies for operating band 17

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 23731 | 0 | 704.1000 | 5731 | 1 | 734.1075 |
| Mid Range | 23766 | 0 | 707.6000 | 5766 | 1 | 737.6075 |
| High Range | 23849 | 0 | 715.9000 | 5849 | -2 | 745.8925 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.18 NB-IoT FDD reference test frequencies for operating band 18

Table 8.1.3.1.1.18-1: NB-IoT standalone Test frequencies for operating band 18

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 23851 | 0 | 815.1 | 5851 | -0.5 | 860.1 |
| Mid Range | 23925 | 0 | 822.5 | 5925 | -0.5 | 867.5 |
| High Range | 23999 | 0 | 829.9 | 5999 | -0.5 | 874.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.18-2: NB-IoT in-band Test frequencies for operating band 18

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 23857 | 0 | 815.7000 | 5857 | -2 | 860.6925 |
| Low Range ² | 23910 | -2 | 820.9900 | 5910 | -1 | 865.9975 |
| Low Range ³ | 23919 | -2 | 821.8900 | 5919 | -1 | 866.8975 |
| Mid Range ¹ | 23916 | 0 | 821.6000 | 5916 | -2 | 866.5925 |
| Mid Range ² | 23935 | -2 | 823.4900 | 5935 | -1 | 868.4975 |
| Mid Range ³ | 23944 | -2 | 824.3900 | 5944 | -1 | 869.3975 |
| High Range ¹ | 23993 | 0 | 829.3000 | 5993 | 1 | 874.3075 |
| High Range ² | 23960 | -2 | 825.9900 | 5960 | -1 | 870.9975 |
| High Range ³ | 23969 | -2 | 826.8900 | 5969 | -1 | 871.8975 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.18-3: NB-IoT guard-band Test frequencies for operating band 18

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 23851 | 0 | 815.1000 | 5851 | 1 | 860.1075 |
| Mid Range | 23901 | 0 | 820.1000 | 5901 | 1 | 865.1075 |
| High Range | 23999 | 0 | 829.9000 | 5999 | -2 | 874.8925 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.19 NB-IoT FDD reference test frequencies for operating band 19

Table 8.1.3.1.1.19-1: NB-IoT standalone Test frequencies for operating band 19

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 24001 | 0 | 830.1 | 6001 | -0.5 | 875.1 |
| Mid Range | 24075 | 0 | 837.5 | 6075 | -0.5 | 882.5 |
| High Range | 24149 | 0 | 844.9 | 6149 | -0.5 | 889.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.19-2: NB-IoT in-band Test frequencies for operating band 19

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 24007 | 0 | 830.7000 | 6007 | -2 | 875.6925 |
| Low Range ² | 24060 | -2 | 835.9900 | 6060 | -1 | 880.9975 |
| Low Range ³ | 24069 | -2 | 836.8900 | 6069 | -1 | 881.8975 |
| Mid Range ¹ | 24066 | 0 | 836.6000 | 6066 | -2 | 881.5925 |
| Mid Range ² | 24085 | -2 | 838.4900 | 6085 | -1 | 883.4975 |
| Mid Range ³ | 24094 | -2 | 839.3900 | 6094 | -1 | 884.3975 |
| High Range ¹ | 24143 | 0 | 844.3000 | 6143 | 1 | 889.3075 |
| High Range ² | 24110 | -2 | 840.9900 | 6110 | -1 | 885.9975 |
| High Range ³ | 24119 | -2 | 841.8900 | 6119 | -1 | 886.8975 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.19-3: NB-IoT guard-band Test frequencies for operating band 19

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 24001 | 0 | 830.1000 | 6001 | 1 | 875.1075 |
| Mid Range | 24051 | 0 | 835.1000 | 6051 | 1 | 880.1075 |
| High Range | 24149 | 0 | 844.9000 | 6149 | -2 | 889.8925 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.20 NB-IoT FDD reference test frequencies for operating band 20

Table 8.1.3.1.1.20-1: NB-IoT standalone Test frequencies for operating band 20

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 24151 | 0 | 832.1 | 6151 | -0.5 | 791.1 |
| Mid Range | 24300 | 0 | 847.0 | 6300 | -0.5 | 806.0 |
| High Range | 24449 | 0 | 861.9 | 6449 | -0.5 | 820.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.20-2: NB-IoT in-band Test frequencies for operating band 20

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 24157 | 0 | 832.7000 | 6157 | -2 | 791.6925 |
| Low Range ² | 24210 | -2 | 837.9900 | 6210 | -1 | 796.9975 |
| Low Range ³ | 24219 | -2 | 838.8900 | 6219 | -1 | 797.8975 |
| Mid Range ¹ | 24291 | 0 | 846.1000 | 6291 | -2 | 805.0925 |
| Mid Range ² | 24310 | -2 | 847.9900 | 6310 | -1 | 806.9975 |
| Mid Range ³ | 24319 | -2 | 848.8900 | 6319 | -1 | 807.8975 |
| High Range ¹ | 24443 | 0 | 861.3000 | 6443 | 1 | 820.3075 |
| High Range ² | 24410 | -2 | 857.9900 | 6410 | -1 | 816.9975 |
| High Range ³ | 24419 | -2 | 858.8900 | 6419 | -1 | 817.8975 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.20-3: NB-IoT guard-band Test frequencies for operating band 20

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 24151 | 3 | 832.1150 | 6151 | 1 | 791.1075 |
| Mid Range | 5 | 24276 | 3 | 844.6150 | 6276 | 1 | 803.6075 |
| | 10 | 24346 | 3 | 851.6150 | 6346 | 1 | 810.6075 |
| High Range | Any | 24449 | -3 | 861.8850 | 6449 | -2 | 820.8925 |

NOTE 1: Void
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.21 NB-IoT FDD reference test frequencies for operating band 21

Table 8.1.3.1.1.21-1: NB-IoT standalone Test frequencies for operating band 21

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 24451 | 0 | 1448.00 | 6451 | -0.5 | 1496.00 |
| Mid Range | 24525 | 0 | 1455.40 | 6525 | -0.5 | 1503.40 |
| High Range | 24599 | 0 | 1462.80 | 6599 | -0.5 | 1510.80 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.21-2: NB-IoT in-band Test frequencies for operating band 21

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 24457 | -3 | 1448.5850 | 6457 | -2 | 1496.5925 |
| Low Range ² | 24510 | -2 | 1453.8900 | 6510 | -1 | 1501.8975 |
| Low Range ³ | 24519 | -2 | 1454.7900 | 6519 | -1 | 1502.7975 |
| Mid Range | 24516 | -3 | 1454.4850 | 6516 | -2 | 1502.4925 |
| Mid Range ² | 24535 | -2 | 1456.3900 | 6535 | -1 | 1504.3975 |
| Mid Range ³ | 24544 | -2 | 1457.2900 | 6544 | -1 | 1505.2975 |
| High Range | 24593 | 3 | 1462.2150 | 6593 | 1 | 1510.2075 |
| High Range ² | 24560 | -2 | 1458.8900 | 6560 | -1 | 1506.8975 |
| High Range ³ | 24569 | -2 | 1459.7900 | 6569 | -1 | 1507.7975 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.21-3: NB-IoT guard-band Test frequencies for operating band 21

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 24451 | 0 | 1448.0000 | 6451 | 1 | 1496.0075 |
| Mid Range | 5 | 24501 | 0 | 1453.0000 | 6501 | 1 | 1501.0075 |
| | 10 | 24571 | 0 | 1460.0000 | 6571 | 1 | 1508.0075 |
| High Range | Any | 24599 | 0 | 1462.8000 | 6599 | -2 | 1510.7925 |

NOTE 1: Void
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.22 to 8.1.3.1.1.24 Void

8.1.3.1.1.25 NB-IoT FDD reference test frequencies for operating band 25

Table 8.1.3.1.1.25-1: NB-IoT standalone Test frequencies for operating band 25

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 26041 | 0 | 1850.10 | 8041 | -0.5 | 1930.1 |
| Mid Range | 26365 | 0 | 1882.50 | 8365 | -0.5 | 1962.5 |
| High Range | 26689 | 0 | 1914.90 | 8689 | -0.5 | 1994.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.25-2: NB-IoT in-band Test frequencies for operating band 25

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 26046 | 0 | 1850.6000 | 8046 | -2 | 1930.5925 |
| Low Range ² | 26100 | -2 | 1855.9900 | 8100 | -1 | 1935.9975 |
| Low Range ³ | 26109 | -2 | 1856.8900 | 8109 | -1 | 1936.8975 |
| Mid Range ¹ | 26356 | 0 | 1881.6000 | 8356 | -2 | 1961.5925 |
| Mid Range ² | 26375 | -2 | 1883.4900 | 8375 | -1 | 1963.4975 |
| Mid Range ³ | 26384 | -2 | 1884.3900 | 8384 | -1 | 1964.3975 |
| High Range ¹ | 26684 | 0 | 1914.4000 | 8684 | 1 | 1994.4075 |
| High Range ² | 26650 | -2 | 1910.99 | 8650 | -1 | 1990.9975 |
| High Range ³ | 26659 | -2 | 1911.89 | 8659 | -1 | 1991.8975 |

NOTE 1: Related to LTE channel BW 3 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.25-3: NB-IoT guard-band Test frequencies for operating band 25

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 26041 | 0 | 1850.1000 | 8041 | 1 | 1930.1075 |
| Mid Range | 26341 | 0 | 1880.1000 | 8341 | 1 | 1960.1075 |
| High Range | 26689 | 0 | 1914.9000 | 8689 | -2 | 1994.8925 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.26 NB-IoT FDD reference test frequencies for operating band 26

Table 8.1.3.1.1.26-1: NB-IoT standalone Test frequencies for operating band 26

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 26691 | 0 | 814.1 | 8691 | -0.5 | 859.1 |
| Mid Range | 26865 | 0 | 831.5 | 8865 | -0.5 | 876.5 |
| High Range | 27039 | 0 | 848.9 | 9039 | -0.5 | 893.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.26-2: NB-IoT in-band Test frequencies for operating band 26

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 26696 | 0 | 814.6000 | 8696 | -2 | 859.5925 |
| Low Range ² | 26750 | -2 | 819.9900 | 8750 | -1 | 864.9975 |
| Low Range ³ | 26759 | -2 | 820.8900 | 8759 | -1 | 865.8975 |
| Mid Range ¹ | 26856 | 0 | 830.6000 | 8856 | -2 | 875.5925 |
| Mid Range ² | 26875 | -2 | 832.4900 | 8875 | -1 | 877.4975 |
| Mid Range ³ | 26884 | -2 | 833.3900 | 8884 | -1 | 878.3975 |
| High Range ¹ | 27034 | 0 | 848.4000 | 9034 | 1 | 893.4075 |
| High Range ² | 27000 | -2 | 844.9900 | 9000 | -1 | 889.9975 |
| High Range ³ | 27009 | -2 | 845.8900 | 9009 | -1 | 890.8975 |

NOTE 1: Related to LTE channel BW 3 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.26-3: NB-IoT guard-band Test frequencies for operating band 26

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 26691 | 0 | 814.1000 | 8691 | 1 | 859.1075 |
| Mid Range | 26841 | 0 | 829.1000 | 8841 | 1 | 874.1075 |
| High Range | 27039 | 0 | 848.9000 | 9039 | -2 | 893.8925 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.27 Void

8.1.3.1.1.28 NB-IoT FDD reference test frequencies for operating band 28

Table 8.1.3.1.1.28-1: NB-IoT standalone Test frequencies for operating band 28

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 27211 | 0 | 703.1 | 9211 | -0.5 | 758.1 |
| Mid Range | 27435 | 0 | 725.5 | 9435 | -0.5 | 780.5 |
| High Range | 27659 | 0 | 747.9 | 9659 | -0.5 | 802.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.28-2: NB-IoT in-band Test frequencies for operating band 28

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 27216 | 0 | 703.6000 | 9216 | -2 | 758.5925 |
| Low Range ² | 27270 | -2 | 708.9900 | 9270 | -1 | 763.9975 |
| Low Range ³ | 27279 | -2 | 709.8900 | 9279 | -1 | 764.8975 |
| Mid Range ¹ | 27426 | 0 | 724.6000 | 9426 | -2 | 779.5925 |
| Mid Range ² | 27420 | -2 | 723.9900 | 9420 | -1 | 778.9975 |
| Mid Range ³ | 27429 | -2 | 724.8900 | 9429 | -1 | 779.8975 |
| High Range ¹ | 27654 | 0 | 747.4000 | 9654 | 1 | 802.4075 |
| High Range ² | 27620 | -2 | 743.9900 | 9620 | -1 | 798.9975 |
| High Range ³ | 27629 | -2 | 744.8900 | 9629 | -1 | 799.8975 |

NOTE 1: Related to LTE channel BW 3 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.28-3: NB-IoT guard-band Test frequencies for operating band 28

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 27211 | 0 | 703.1000 | 9211 | 1 | 758.1075 |
| Mid Range | 5 | 27411 | 0 | 723.1000 | 9411 | 1 | 778.1075 |
| | 10 | 27456 | 0 | 727.6000 | 9456 | 1 | 782.6075 |
| High Range | Any | 27659 | 0 | 747.9000 | 9659 | -2 | 802.8925 |

NOTE 1: Void
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.29 to 8.1.3.1.1.30 Void

8.1.3.1.1.31 NB-IoT FDD reference test frequencies for operating band 31

Table 8.1.3.1.1.31-1: NB-IoT standalone Test frequencies for operating band 31

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 27761 | 0 | 452.60 | 9871 | -0.5 | 462.6 |
| Mid Range | 27785 | 0 | 455.00 | 9895 | -0.5 | 465 |
| High Range | 27809 | 0 | 457.40 | 9919 | -0.5 | 467.4 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.31-2: NB-IoT in-band Test frequencies for operating band 31

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 27766 | -3 | 453.0850 | 9876 | -2 | 463.0925 |
| Low Range ² | 27794 | 0 | 455.9000 | 9904 | 1 | 465.9075 |
| Low Range ³ | 27803 | 0 | 456.8000 | 9913 | 1 | 466.8075 |
| Mid Range ¹ | 27776 | -3 | 454.0850 | 9886 | -2 | 464.0925 |
| Mid Range ² | 27794 | 0 | 455.9000 | 9904 | 1 | 465.9075 |
| Mid Range ³ | 27803 | 0 | 456.8000 | 9913 | 1 | 466.8075 |
| High Range ¹ | 27804 | 3 | 456.9150 | 9914 | 1 | 466.9075 |
| High Range ² | 27794 | 0 | 455.9000 | 9904 | 1 | 465.9075 |
| High Range ³ | 27803 | 0 | 456.8000 | 9913 | 1 | 466.8075 |

NOTE 1: Related to LTE channel BW 3 MHz
NOTE 2: Related to LTE channel BW 5 MHz and NB-IoT PRB 17
NOTE 3: Related to LTE channel BW 5 MHz and NB-IoT PRB 22
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.31-3: NB-IoT guard-band Test frequencies for operating band 31

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 27761 | 0 | 452.6000 | 9871 | 1 | 462.6075 |
| Mid Range | 27761 | 0 | 452.6000 | 9871 | 1 | 462.6075 |
| High Range | 27809 | 0 | 457.4000 | 9919 | -2 | 467.3925 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

8.1.3.1.1.32 to 8.1.3.1.1.65 Void

8.1.3.1.1.66 NB-IoT FDD reference test frequencies for operating band 66

Table 8.1.3.1.1.66-1: NB-IoT standalone Test frequencies for operating band 66

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 131973 | 0 | 1710.1 | 66437 | -0.5 | 2110.1 |
| Mid Range | 132322 | 0 | 1745.0 | 66786 | -0.5 | 2145.0 |
| High Range | 132671 | 0 | 1779.9 | 67135 | -0.5 | 2179.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing
NOTE 2: Only paired part of the band considered for NB-IoT

Table 8.1.3.1.1.66-2: NB-IoT in-band Test frequencies for operating band 66

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 131978 | 0 | 1710.6000 | 66442 | -2 | 2110.5925 |
| Low Range ² | 132032 | -2 | 1715.9900 | 66496 | -1 | 2115.9975 |
| Low Range ³ | 132041 | -2 | 1716.8900 | 66505 | -1 | 2116.8975 |
| Mid Range ¹ | 132313 | 0 | 1744.1000 | 66777 | -2 | 2144.0925 |
| Mid Range ² | 132432 | -2 | 1755.9900 | 66896 | -1 | 2155.9975 |
| Mid Range ³ | 132441 | -2 | 1756.8900 | 66905 | -1 | 2156.8975 |
| High Range ¹ | 132666 | 0 | 1779.4000 | 67130 | 1 | 2179.4075 |
| High Range ² | 132632 | -2 | 1775.9900 | 67096 | -1 | 2175.9975 |
| High Range ³ | 132641 | -2 | 1776.8900 | 67105 | -1 | 2176.8975 |

NOTE 1: Related to LTE channel BW 3 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing
NOTE 3: Only paired part of the band considered for NB-IoT

Table 8.1.3.1.1.66-3: NB-IoT guard-band Test frequencies for operating band 66

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 131973 | 0 | 1710.1000 | 66437 | 1 | 2110.1075 |
| Mid Range | 5 | 132298 | 0 | 1742.6000 | 66762 | 1 | 2142.6075 |
| | 10 | 132468 | 0 | 1759.6000 | 66932 | 1 | 2159.6075 |
| High Range | Any | 132671 | 0 | 1779.9000 | 67135 | -2 | 2179.8925 |

NOTE 1: Void
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing
NOTE 3: Only paired part of the band considered for NB-IoT

8.1.3.1.1.67 to 8.1.3.1.1.69 Void

8.1.3.1.1.70 NB-IoT FDD reference test frequencies for operating band 70

Table 8.1.3.1.1.70-1: NB-IoT standalone Test frequencies for operating band 70

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 132973 | 0 | 1695.1 | 68337 | -0.5 | 1995.1 |
| Mid Range | 133047 | 0 | 1702.5 | 68411 | -0.5 | 2002.5 |
| High Range | 133121 | 0 | 1709.9 | 68485 | -0.5 | 2009.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.70-2: NB-IoT in-band Test frequencies for operating band 70

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 132979 | -3 | 1695.6850 | 68343 | -2 | 1995.6925 |
| Mid Range | 3 | 133038 | -3 | 1701.5850 | 68402 | -2 | 2001.5925 |
| | 10 PRB 30 | 133057 | -2 | 1703.4900 | 68421 | -1 | 2003.4975 |
| | 10 PRB 35 | 133066 | -2 | 1704.3900 | 68430 | -1 | 2004.3975 |
| High Range | Any | 133115 | 3 | 1709.3150 | 68479 | 1 | 2009.3075 |

NOTE 1: Void
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing

Table 8.1.3.1.1.70-3: NB-IoT guard-band Test frequencies for operating band 70

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 132973 | 0 | 1695.1000 | 68337 | 1 | 1995.1075 |
| Mid Range | 5 | 133023 | 0 | 1700.1000 | 68387 | 1 | 2000.1075 |
| | 10 | 133093 | 0 | 1707.1000 | 68457 | 1 | 2007.1075 |
| High Range | Any | 133121 | 0 | 1709.9000 | 68485 | -2 | 2009.8925 |

NOTE 1: Void
NOTE 2: Applicable to either 3.75 kHz or 15 kHz UL sub-carrier spacing
NOTE 3: Only paired part of the band considered for NB-IoT

8.1.3.1.1.71 NB-IoT FDD reference test frequencies for operating band 71

Table 8.1.3.1.1.71-1: NB-IoT standalone Test frequencies for operating band 71

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 133123 | 0 | 663.1000 | 68587 | -0.5 | 617.1000 |
| Mid Range | 133297 | 0 | 680.5000 | 68761 | -0.5 | 634.5000 |
| High Range | 133471 | 0 | 697.9000 | 68935 | -0.5 | 651.9000 |

NOTE 1: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

Table 8.1.3.1.1.71-2: NB-IoT in-band Test frequencies for operating band 71

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 133129 | 0 | 663.7000 | 68593 | -2 | 617.6925 |
| Low Range ² | 133182 | -2 | 668.9900 | 68646 | -1 | 622.9975 |
| Low Range ³ | 133191 | -2 | 669.8900 | 68655 | -1 | 623.8975 |
| Mid Range ¹ | 133288 | 0 | 679.6000 | 68752 | -2 | 633.5925 |
| Mid Range ² | 133307 | -2 | 681.4900 | 68771 | -1 | 635.4975 |
| Mid Range ³ | 133316 | -2 | 682.3900 | 68780 | -1 | 636.3975 |
| High Range ¹ | 133465 | 0 | 697.3000 | 68929 | 1 | 651.3075 |
| High Range ² | 133432 | -2 | 693.9900 | 68896 | -1 | 647.9975 |
| High Range ³ | 133441 | -2 | 694.8900 | 68905 | -1 | 648.8975 |

NOTE 1: Related to LTE channel BW 3 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

Table 8.1.3.1.1.71-3: NB-IoT guard-band Test frequencies for operating band 71

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 133123 | 0 | 663.1000 | 68587 | 1 | 617.1075 |
| Mid Range | 5 | 133273 | 0 | 678.1000 | 68737 | 1 | 632.1075 |
| | 10 | 133343 | 0 | 685.1000 | 68807 | 1 | 639.1075 |
| High Range | Any | 133471 | 0 | 697.9000 | 68935 | -2 | 651.8925 |

NOTE 1: Void.
NOTE 2: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

8.1.3.1.1.72 Void

8.1.3.1.1.73 NB-IoT FDD reference test frequencies for operating band 73

Table 8.1.3.1.1.73-1: NB-IoT standalone Test frequencies for operating band 73

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 133523 | 0 | 450.1000 | 68997 | -0.5 | 461.1000 |
| Mid Range | 133547 | 0 | 452.5000 | 69011 | -0.5 | 462.5000 |
| High Range | 133571 | 0 | 454.9000 | 69035 | -0.5 | 464.9000 |

NOTE 1: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

Table 8.1.3.1.1.73-2: NB-IoT in-band Test frequencies for operating band 73

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 133556 | 0 | 453.4000 | 69020 | 1 | 463.4000 |
| Mid Range | 133556 | 0 | 453.4000 | 69020 | 1 | 463.4000 |
| High Range | 133556 | 0 | 453.4000 | 69020 | 1 | 463.4000 |

NOTE 1: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing
NOTE 2: Defined for 5 MHz LTE Cell Bandwidth.

Table 8.1.3.1.1.73-3: NB-IoT guard-band Test frequencies for operating band 73

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 133523 | 0 | 450.1000 | 68997 | 1 | 461.1000 |
| Mid Range | 5 | 133523 | 0 | 450.1000 | 68997 | 1 | 461.1000 |
| High Range | Any | 133571 | 0 | 454.9000 | 69035 | 1 | 464.9000 |

NOTE 1: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

8.1.3.1.1.74 to 8.1.3.1.1.84 Void

8.1.3.1.1.85 NB-IoT FDD reference test frequencies for operating band 85

Table 8.1.3.1.1.85-1: NB-IoT standalone Test frequencies for operating band 85

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 134003 | 0 | 698,1000 | 70367 | -0.5 | 728,1000 |
| Mid Range | 134082 | 0 | 706,0000 | 70446 | -0.5 | 736,0000 |
| High Range | 134181 | 0 | 715,9000 | 70545 | -0.5 | 745,9000 |

NOTE 1: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

Table 8.1.3.1.1.85-2: NB-IoT in-band Test frequencies for operating band 85

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 134062 | -2 | 703,9900 | 70426 | -1 | 733,9975 |
| Low Range ² | 134071 | -2 | 704,8900 | 70435 | -1 | 734,8975 |
| Mid Range ¹ | 134102 | -2 | 707,9900 | 70466 | -1 | 737,9975 |
| Mid Range ² | 134111 | -2 | 708,8900 | 70475 | -1 | 738,8975 |
| High Range ¹ | 134142 | -2 | 711,9900 | 70506 | -1 | 741,9975 |
| High Range ² | 134151 | -2 | 712,8900 | 70515 | -1 | 742,8975 |

NOTE 1: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 3: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

Table 8.1.3.1.1.85-3: NB-IoT guard-band Test frequencies for operating band 85

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 134098 | 0 | 707,6000 | 70462 | 1 | 737,6075 |
| Mid Range | 10 | 134138 | 0 | 711,6000 | 70502 | 1 | 741,6075 |
| High Range | Any | 134178 | 0 | 715,6000 | 70542 | -2 | 745,6075 |

NOTE 1: Void.
NOTE 2: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

8.1.3.1.2 NB-IoT TDD Mode Test frequencies

8.1.3.1.2.1 to 8.1.3.1.2.40 Void

8.1.3.1.2.41 NB-IoT TDD reference test frequencies for operating band 41

Table 8.1.3.1.1.41-1: NB-IoT standalone Test frequencies for operating band 41

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | 39651 | 0 | 2496.1 | 39651 | -0.5 | 2496.1 |
| Mid Range | 40620 | 0 | 2593.0 | 40620 | -0.5 | 2593.0 |
| High Range | 41589 | 0 | 2689.9 | 41589 | -0.5 | 2689.9 |

NOTE 1: Applicable to either 3.75 kHz or 15 kHz NB-IoT UL subcarrier spacing

Table 8.1.3.1.1.41-2: NB-IoT in-band Test frequencies for operating band 41

| Test Frequency ID | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range ¹ | 39657 | 0 | 2496.7000 | 39657 | -2 | 2496.6925 |
| Low Range ² | 39710 | -2 | 2501.9900 | 39710 | -1 | 2501.9975 |
| Low Range ³ | 39719 | -2 | 2502.8900 | 39719 | -1 | 2502.8975 |
| Mid Range ¹ | 40611 | 0 | 2592.1000 | 40611 | -2 | 2592.0925 |
| Mid Range ² | 40630 | -2 | 2593.9900 | 40630 | -1 | 2593.9975 |
| Mid Range ³ | 40639 | -2 | 2594.8900 | 40639 | -1 | 2594.8975 |
| High Range ¹ | 41583 | 0 | 2689.3000 | 41583 | 1 | 2689.3075 |
| High Range ² | 41550 | -2 | 2685.9900 | 41550 | -1 | 2685.9975 |
| High Range ³ | 41559 | -2 | 2686.8900 | 41559 | -1 | 2686.8975 |

NOTE 1: Related to LTE channel BW 5 MHz
NOTE 2: Related to LTE channel BW 10 MHz and NB-IoT PRB 30
NOTE 3: Related to LTE channel BW 10 MHz and NB-IoT PRB 35
NOTE 4: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

Table 8.1.3.1.1.41-3: NB-IoT guard-band Test frequencies for operating band 41

| Test Frequency ID | LTE Cell Bandwidth [MHz] | N _{UL} | M _{UL} | Frequency of Uplink [MHz] | N _{DL} | M _{DL} | Frequency of Downlink [MHz] |
|-------------------|--------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------------------|
| Low Range | Any | 39651 | 3 | 2496.1150 | 39651 | 1 | 2496.1075 |
| Mid Range | 5 | 40596 | 3 | 2590.6150 | 40596 | 1 | 2590.6075 |
| | 10 | 40666 | 3 | 2597.6150 | 40666 | 1 | 2597.6075 |
| High Range | Any | 41589 | -3 | 2689.8850 | 41589 | -2 | 2689.8925 |

NOTE 1: Void
NOTE 2: Defined for NB-IoT UL subcarrier spacing 15 kHz. Also applicable for 3.75 kHz UL sub-carrier spacing

8.1.3.2 NB-IoT Radio conditions

8.1.3.2.1 NB-IoT Normal propagation condition

Same normal propagation condition as defined in clause 4.3.2.1 apply.

8.1.3.3 NB-IoT Physical channel allocations

8.1.3.3.1 NB-IoT Antennas

As the UE has one Rx antenna, the downlink signal is applied to it.

8.1.3.3.2 NB-IoT Downlink physical channels and physical signals

The Downlink Physical channels and Physical signals used and their relative powers are specified for either single or two SS Tx antenna in table 8.1.3.3.2-1. According to this table, no boosting needs to be signalled (as power ratios are fixed between NRS EPRE and all DL channels for a given number of DL antenna ports).

According to TS 36.213 [29] clause 16.2.2, if higher layer parameter *operationModeInfo* indicates '00' for a cell, the ratio of NRS EPRE to CRS EPRE is given by the parameter *nrs-CRS-PowerOffset* if the parameter *nrs-CRS-EPRE-Ratio* is provided by higher layers, and the ratio of NRS EPRE to CRS EPRE may be assumed to be 0 dB if the parameter *nrs-CRS-EPRE-Ratio* is not provided by higher layers.

Table 8.1.3.3.2-1: NB-IoT Power allocation for OFDM symbols and reference signals (1 or 2 SS Tx antenna)

| Physical Channel | EPRE Ratio |
|------------------|--|
| NPBCH | According to TS 36.213 [29] clause 16.2.2, a UE may assume the ratio of NPBCH EPRE to NRS EPRE among NPBCH REs (not applicable to NPBCH REs with zero EPRE) is 0 dB for an NB-IoT cell with one NRS antenna port and -3 dB for an NB-IoT cell with two NRS antenna ports. |
| NPSS | Power allocation for NPSS is defined as equal to NRS EPRE = -85 dBm/15 kHz in order to have a constant EPRE (an absolute value is used as there is no NRS transmission when NPSS is transmitted). |
| NSSS | Power allocation for NSSS is defined as equal to NRS EPRE = -85 dBm/15 kHz in order to have a constant EPRE (an absolute value is used as there is no NRS transmission when NPSS is transmitted). |
| NPDCCH | According to TS 36.213 [29] clause 16.2.2, a UE may assume the ratio of NPDCCH EPRE to NRS EPRE among NPDCCH REs (not applicable to NPDCCH REs with zero EPRE) is 0 dB for an NB-IoT cell with one NRS antenna port and -3 dB for an NB-IoT cell with two NRS antenna ports. |
| NPDSCH | According to TS 36.213 [29] clause 16.2.2, a UE may assume the ratio of NPDSCH EPRE to NRS EPRE among NPDSCH REs (not applicable to NPDSCH REs with zero EPRE) is 0 dB for an NB-IoT cell with one NRS antenna port and -3 dB for an NB-IoT cell with two NRS antenna ports. |
| NRS | <ul style="list-style-type: none"> - If the number of NRS antenna ports is one, the EPRE of NRS and the EPRE of all NB-IoT DL channels is the same - If the number of NRS antenna ports is two, the EPRE per antenna port of NRS port is 3dB larger compared to the EPRE per antenna port of all NB-IoT DL channels - This means no signalling support of power offsets - The set of values for power offset between NRS and LTE CRS is {-6, -4.77, -3, -1.77, 0, 1, 1.23, 2, 3, 4, 4.23, 5, 6, 7, 8, 9} dB. |

8.1.3.3.3 NB-IoT Mapping of downlink physical channels and signals to physical resources

Parameters for mapping of NB-IoT downlink physical channels and signals are specified as follows:

Normal Cyclic Prefix

N_{ID}^{cell} , Physical layer cell identity = 0 is used as the default physical layer cell identity

For RF testing, the mapping of DL physical channels to resource element is defined TS 36.521-1 [21] Annex C.1.

Table 8.1.3.3-1: NB-IoT Mapping of DL Physical Channels to Resource Elements (FDD)

| Physical channel | Time Domain Location | Frequency Domain Location | Note |
|------------------|--|--|--|
| NPBCH | <ul style="list-style-type: none"> - NPBCH is transmitted in subframe 0 in every radio frame - NPBCH consists of 8 independently decodable blocks of 80 ms duration - The time interval where MIB remains unchanged is 640 ms - NPBCH does not use the first 3 symbols in a subframe in in-band operation. - For stand-alone and guard-band, the first 3 symbols (of the subframe transmitting NPBCH) contain no NPBCH. | Occupies any of the 12 subcarriers not reserved for transmission of reference signals | Mapping rule is specified in TS36.211 [35] sub clause 10.2.4.4 |
| NPSS | <ul style="list-style-type: none"> - NPSS is transmitted in subframe 5 - NPSS uses the last 11 OFDM symbols of subframes in which NB-PSS occurs for normal CP - NB-IoT PSS/SSS do not use: <ul style="list-style-type: none"> - the LTE PDCCH control region - REs used by LTE CRS - The periodicity of NPSS transmission is 10ms. | NPSS is mapped to subcarriers #0-10 of the NB-IoT carrier | Mapping rule is specified in TS36.211 [35] sub clause 10.2.7.1.2 |
| NSSS | <ul style="list-style-type: none"> - NSSS is transmitted in subframe 9 - NSSS uses the last 11 OFDM symbols of subframes in which NB-SSS occurs for normal CP - NB-IoT PSS/SSS do not use: <ul style="list-style-type: none"> - the LTE PDCCH control region - REs used by LTE CRS - NSSS periodicity is 20ms | The number of subcarriers for NSSS is 12 | Mapping rule is specified in TS36.211 [35] sub clause 10.2.7.2.2 |
| NPDCCH | <ul style="list-style-type: none"> - NPDCCH on a given NB-IoT carrier are not mapped to the subframes containing NPSS/NSSS/PBCH on that carrier - NPDCCH are not be mapped onto resources elements used for NRS - NPDCCH are not overlapped with PBCH, PSS, SSS, or CRS - One or two NPDCCHs can be transmitted in a subframe. - In in-band, first three OFDM symbols are not used for NPDCCH - In stand-alone and guard-band, all OFDM symbols are available for NPDCCH - NPDCCH and NPDSCH are multiplexed only based on TDM at subframe level - It means that only cross subframe scheduling is supported - The start of an NPDCCH search space is ≥ 4ms after the end of the last NPDCCH search space | <ul style="list-style-type: none"> - NPDCCH is transmitted on an aggregation of one or two consecutive narrowband control channel elements (NCCEs), where a narrowband control channel element corresponds to 6 consecutive subcarriers in a subframe where NCCE 0 occupies subcarriers 0 through 5 and NCCE 1 occupies subcarriers 6 through 11. - <i>REG is not defined for NPDCCH</i> | Mapping rule is specified in TS36.211 [35] sub clause 10.2.5.5 |
| NPDSCH | <ul style="list-style-type: none"> - The start of NB-PDSCH transmission is ≥ 4ms later than the end of its associated DL assignment - NPDSCH on a given NB-IoT carrier are not mapped to the subframes containing NPSS/NSSS/PBCH on that carrier - NPDSCH resources elements should be different from the ones used for NRS - NPDSCH resources elements should be different from the ones used for CRS | Occupies any of the 12 subcarriers not reserved for transmission of reference signals | Mapping rule is specified in TS36.211 [35] sub clause 10.2.3.4 |
| NRS | <ul style="list-style-type: none"> - Narrowband reference signals are transmitted in all NB-IoT downlink subframes in a cell supporting NPDSCH transmission. - NRS is not transmitted in subframes that are not NB-IoT downlink subframes, except if these subframes contain NPBCH or NPDSCH carrying SystemInformationBlockType1-NB | 2 subcarriers per antenna port in any OFDM symbols where NRS is transmitted | |

| | | | |
|--|--|--|--|
| | where NRS shall be transmitted. - Narrowband reference signals are transmitted in subframes #0 and #4 and in subframes #9 not containing NSSS [when no NB-IoT downlink subframes configuration has not been established]. - The narrowband reference signals shall not be mapped to subframes containing NPSS or NSSS. - NRS are transmitted on one or two antenna ports 0 to 1 (refer to Figure 10.2.6.2-1 in TS 36.211 [35]). | | |
|--|--|--|--|

8.1.3.3.4 NB-IoT Uplink physical channels and physical signals

The NB-IoT uplink setting in table 8.1.3.3.4-1 is used unless otherwise specified in a test case.

Table 8.1.3.3.4-1: NB-IoT Default Uplink setting

| | Unit | Channel bandwidth |
|---------------------|------|-------------------|
| | | 200 kHz |
| Number of Tones | | 1 |
| Sub-carrier spacing | kHz | 15 |

8.1.3.3.5 NB-IoT Mapping of uplink physical channels and signals to physical resources [FFS]

8.1.3.4 NB-IoT Signal levels

8.1.3.4.1 NB-IoT Downlink signal levels

The downlink power settings in table 8.1.3.4.1-1 are used unless otherwise specified in a test case.

Table 8.1.3.4.1-1: NB-IoT Default Downlink power levels

| | Unit | Channel bandwidth |
|--|-----------|-------------------|
| | | 200 kHz |
| Number of Tones | | 12 |
| Channel BW Power | dBm | -74 |
| NRS EPRE | dBm/15kHz | -85 |
| Note 1: The channel bandwidth powers are informative, based on -85dBm/15kHz NRS_EPRES, then scaled according to the number of tones in DL and rounded to the nearest integer dBm value. Note 2: The power level is specified at the UE Rx antenna | | |

It is [FFS] whether there is a requirement to specify constant power throughout all OFDM symbols, and if so how unallocated Resource elements should be treated.

The default signal level uncertainty is +/-3dB at each test port, for any level specified. If the uncertainty value is critical for the test purpose a tighter uncertainty is specified for the related test case in TS 36.521-1 [21] Annex F or in TS 36.521-3 [34] Annex F

8.1.3.4.2 NB-IoT Uplink signal levels

[FFS]

8.1.3.5 NB-IoT Standard test signals

8.1.3.5.1 NB-IoT Downlink test signals

[FFS]

8.1.3.5.2 NB-IoT Uplink test signals

[FFS]

8.1.3.6 NB-IoT Physical layer parameters

8.1.3.6.1 NB-IoT Downlink physical layer parameters

8.1.3.6.1.1 NB-IoT Physical layer parameters for DCI format N0

Default NB-IoT physical layer parameters for DCI format N0 are specified in table 8.1.3.6.1.1-1.

Table 8.1.3.6.1.1-1: NB-IoT Physical layer parameters for DCI format N0

| Parameter | Value | Value in binary |
|--|--|-----------------|
| Flag for format N0/format N1 differentiation | format N0 | "0" |
| Subcarrier indication | 0 if not specified otherwise depending on test case (6 bits as defined in section 16.5.1.1 of 36.213 [29]) | - |
| Resource assignment | Depending on test parameters (3 bits as defined in section 16.5.1.1 of 36.213 [29]) | - |
| Scheduling delay | 0 (2 bits as defined in section 16.5.1 of 36.213 [29]) | "00" |
| Modulation and coding scheme | Depending on test parameters (4 bits as defined in section 16.5.1.2 of 36.213 [29]) | - |
| Redundancy version | 0 (1 bit as defined in clause 16.5.1.2 of 36.213 [29]) | "0" |
| Repetition number | NRep = 1 (3 bits as defined in clause 16.5.1.2 of 36.213 [29]) | "000" |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 [14] (1 bit) | - |
| DCI subframe repetition number | R = 2 (according to NPDCCH configuration of Table 8.1.6.3-3) (2 bits as defined in section 16.6 in 36.213 [29]) | "00" |
| HARQ process number | Mandatory present if 2 HARQ processes are configured in the UE, default value (HARQ process) "0". Otherwise not present (1 bit as defined in section 16.5.1.2 of 36.213 [29]) | - |

8.1.3.6.1.2 NB-IoT Physical layer parameters for DCI format N1

Default NB-IoT physical layer parameters for DCI format N1 are specified in table 8.1.3.6.1.2-1 for random access procedure initiated by a NPDCCH order, in table 8.1.3.6.1.2-2 for the scheduling of one NPDSCH codeword in one cell scrambled by RA-RNTI/C-RNTI and in table 8.1.3.6.1.2-2 for the scheduling of one NPDSCH codeword in one cell scrambled by G-RNTI.

Table 8.1.3.6.1.2-1: NB-IoT Physical layer parameters for DCI format N1 (for random access procedure initiated by a NPDCCH order)

| Parameter | Value | Value in binary |
|--|---|-----------------|
| Flag for format N0/format N1 differentiation | format N1 | "1" |
| NPDCCH order indicator | 1 | "1" |
| Starting number of NPRACH repetitions | n1 <i>2 bits as defined in section 16.3.1 of 36.213 [29]</i> | "00" |
| Subcarrier indication of NPRACH | 12 <i>(6 bits as defined in section 16.3.1 of 36.213 [29])</i> | "001100" |
| NOTE 1: All the remaining bits in format N1 are set to one | | |

Table 8.1.3.6.1.2-2: NB-IoT Physical layer parameters for DCI format N1 (for the scheduling of one NPDSCH codeword in one cell scrambled by RA-RNTI/C-RNTI)

| Parameter | Value | Value in binary |
|--|---|-----------------|
| Flag for format N0/format N1 differentiation | format N1 | "1" |
| NPDCCH order indicator | 0 | "0" |
| Scheduling delay | 0 <i>(3 bits as defined in clause 16.4.1 of 36.213 [29])</i> | "000" |
| Resource assignment | Depending on test parameters <i>(3 bits as defined in section 16.4.1.3 of 36.213 [29])</i> | - |
| Modulation and coding scheme | Depending on test parameters <i>(4 bits as defined in section 16.4.1.5 of 36.213 [29])</i> | - |
| Repetition number | NRep = 1 <i>(4 bits as defined in section 16.4.1.3 of 36.213 [29])</i> | "0000" |
| New data indicator | Set for every data transmission/retransmission according to the rules specified in TS 36.321 [14] <i>(1 bit)</i> | - |
| HARQ-ACK resource | 0 if not specified otherwise depending on test case <i>(4 bits as defined in section 16.4.2 of 36.213 [29])</i> | - |
| DCI subframe repetition number | R = 2 (according to NPRACH configuration of Table 8.1.6.3-5) <i>(2 bits as defined in section 16.6 in 36.213 [29])</i> | "00" |
| HARQ process number | Mandatory present if 2 HARQ processes are configured in the UE, default value (HARQ process) "0". Otherwise not present <i>(1 bit as defined in section 16.4.1.5 of 36.213 [29])</i> | - |

Table 8.1.3.6.1.2-3: NB-IoT Physical layer parameters for DCI format N1 (for the scheduling of one NPDSCH codeword in one cell scrambled by G-RNTI)

| Parameter | Value | Value in binary |
|---|--|-----------------|
| Information for SC-MCCH change notification | 0 (2 bit as defined in section 5.8a of 36.331 [17]) | "00" |
| Scheduling delay | 0 (3 bits as defined in clause 16.4.1 of 36.213 [29]) | "000" |
| Resource assignment | Depending on test parameters (3 bits as defined in section 16.4.1.3 of 36.213 [29]) | - |
| Modulation and coding scheme | Depending on test parameters (4 bits as defined in section 16.4.1.5 of 36.213 [29]) | - |
| Repetition number | NRep = 1 (4 bits as defined in section 16.4.1.3 of 36.213 [29]) | "0000" |
| DCI subframe repetition number | R = 2 (according to SC-MTCH configuration of Table 8.1.6.1-15a) (2 bits as defined in section 16.6 in 36.213 [29]) | "00" |
| HARQ process number | Mandatory present if 2 HARQ processes are configured in the UE, default value (HARQ process) "0". Otherwise not present (1 bit as defined in section 16.4.1.5 of 36.213 [29]) | - |

8.1.3.6.1.3 (Void)

8.1.3.6.1.4 (Void)

8.1.3.6.1.5 NB-IoT Physical layer parameters for DCI format N2

Default NB-IoT physical layer parameters for DCI format N2 are specified in table 8.1.3.6.1.5-1 for paging, in table 8.1.3.6.1.5-2 for direct indication and in table 8.1.3.6.1.5-3 for scheduling of one NPDSCH codeword carrying SC-MCCH in one cell.

Table 8.1.3.6.1.5-1: NB-IoT Physical layer parameters for DCI format N2 (for paging)

| Parameter | Value | Value in binary |
|---|--|-----------------|
| Flag for paging/direct indication differentiation | 1 | "1" |
| Resource assignment | Depending on test parameters (3 bits as defined in section 16.4.1.3 of 36.213 [29]) | - |
| Modulation and coding scheme (transport block 1) | Depending on test parameters (4 bits as defined in section 16.4.1.5 of 36.213 [29]) | - |
| Repetition number | NRep = 1 (4 bits as defined in section 16.4.1.3 of 36.213 [29]) | "0000" |
| DCI subframe repetition number | R = 1 (according to PCCH configuration of Table 8.1.6.3-2) (3 bits as defined in section 16.6 of 36.213 [29]) | "000" |

Table 8.1.3.6.1.5-2: NB-IoT Physical layer parameters for DCI format N2 (for direct indication)

| Parameter | Value | Value in binary |
|--|---|-----------------|
| Flag for paging/direct indication differentiation | 0 | "0" |
| Direct Indication information | 1 <i>(8 bits provide direct indication of system information update and other fields, as defined in 36.331 [17])</i> | "00000001" |
| NOTE 1: Reserved information bits are added until the size is equal to that of format N2 with Flag=1 | | |

Table 8.1.3.6.1.5-3: NB-IoT Physical layer parameters for DCI format N2 (for one NPDSCH codeword carrying SC-MCCH in one cell)

| Parameter | Value | Value in binary |
|--|--|-----------------|
| Information for SC-MCCH change notification | 0 <i>(1 bit as defined in section 5.8a of 36.331 [17])</i> | "0" |
| Resource assignment | Depending on test parameters <i>(3 bits as defined in section 16.4.1.3 of 36.213 [29])</i> | - |
| Modulation and coding scheme (transport block 1) | Depending on test parameters <i>(4 bits as defined in section 16.4.1.5 of 36.213 [29])</i> | - |
| Repetition number | NRep = 1 <i>(4 bits as defined in section 16.4.1.3 of 36.213 [29])</i> | "0000" |
| DCI subframe repetition number | R = 1 (according to SC-MCCH configuration of Table 8.1.4.3.3-7) <i>(3 bits as defined in section 16.6 of 36.213 [29])</i> | "000" |

8.1.4 NB-IoT Reference system configurations

The reference system configurations specified in this sub clause apply to all NB-IoT test cases unless otherwise specified.

8.1.4.1 NB-IoT Simulated network scenarios

Simulated network scenarios to be tested are listed in this sub clause.

NOTE 1: The number of cells specified does not necessarily correspond to the maximum number of resources to be configured simultaneously in test equipment. Please refer to clause 8.3.1 for such information.

NOTE 2: Void.

8.1.4.1.1 NB-IoT Single cell network scenarios

For NB-IoT basic single cell environment, Ncell 1 is used.

8.1.4.1.2 NB-IoT single mode multi cell network scenarios

For NB-IoT basic intra-frequency multi cell environment, Ncell 1, Ncell 2 and Ncell 4 are used.

For NB-IoT basic inter-frequency multi cell environment, Ncell 1 Ncell 3 and Ncell 6 are used.

For NB-IoT basic inter-band cell environment, Ncell 1 and Ncell 10 are used.

For NB-IoT multi tracking area intra-frequency multi cell environment, Ncell 1 and Ncell 11 are used.

For NB-IoT multi tracking area inter-frequency multi cell environment, Ncell 1 and Ncell 23 are used.

For NB-IoT multi PLMN inter-frequency multi cell environment, Ncell 1, Ncell 12, Ncell 13 and Ncell 14 are used.

8.1.4.2 NB-IoT Simulated cells

NOTE 1: Void

NOTE 2: Test frequency and range defined in table 8.1.4.2-1 do not apply to 36.521-1 test cases.

Test frequencies and simulated cells are defined in table 8.1.4.2-1. For NB-IoT cells, f1 is the default test frequency.

Default parameters for simulated cells are specified in table 8.1.4.2-1A and table 8.1.4.2-2.

Common parameters for simulated cells are specified in subclauses 8.1.4.3.

Table 8.1.4.2-1: Definition of test frequencies and simulated NB-IoT cells – Batch1

| Test frequency | RAT | Operating band | Range | Simulated cells |
|----------------|--------|-------------------------------------|------------------|---|
| f1 | NB-IoT | Operating band under test | Mid (Note 1) | Ncell 1, Ncell 1a, Ncell 2, Ncell 4, Ncell5, Ncell 6a, Ncell 11 (Note 2), Ncell 18 |
| f2 | NB-IoT | Operating band under test | High (Note 1) | Ncell 3, Ncell 12, Ncell 23 |
| f3 | NB-IoT | Operating band under test | Low (Note 1) | Ncell 6, Ncell 13 |
| f4 | NB-IoT | Operating band under test | (Note 1) | Ncell 14 |
| f5 | NB-IoT | Operating band for inter-band cells | Mid (Note 1) | Ncell 10 |

Note 1: For signalling test, see clause 8.3.2.3 (note that f4 is not defined for signalling tests).
Note 2: For signalling test, simultaneous co-existence of Ncell 2 with Ncell 11 is not allowed.

Table 8.1.4.2-1A: Default NB-IoT parameters for simulated NB-IoT cells – Batch1

| cell ID | NB-IoT Cell Identifier | | Physical layer cell identity |
|----------|--------------------------------|---------------|------------------------------|
| | eNB Identifier | Cell Identity | |
| Ncell 1 | '0000 0000 0000 0000 0001'B | '0000 0000'B | 0 |
| Ncell 1a | '0000 0000 0000 0000 0001'B | '0000 0001'B | 1 |
| Ncell 2 | '0000 0000 0000 0000 0001'B | '0000 0010'B | 2 |
| Ncell 3 | '0000 0000 0000 0000 0010'B | '0000 0011'B | 3 |
| Ncell 4 | '0000 0000 0000 0000 0011'B | '0000 0100'B | 4 |
| Ncell 5 | '0000 0000 0000 0000 0011'B | '0000 0101'B | 5 |
| Ncell 6 | '0000 0000 0000 0000 0100'B | '0000 0110'B | 6 |
| Ncell 6a | '0000 0000 0000 0000 0100'B | '0000 0110'B | 6 |
| Ncell 10 | '0000 0000 0000 0000 0101'B | '0000 1010'B | 10 |
| Ncell 11 | '0000 0000 0000 0000 0110'B | '0000 1011'B | 11 |
| Ncell 12 | '0000 0000 0000 0000 0010'B | '0000 1100'B | 12 |
| Ncell 13 | '0000 0000 0000 0000 0100'B | '0000 1101'B | 13 |
| Ncell 14 | '0000 0000 0000 0000 0111'B | '0000 1110'B | 14 |
| Ncell 18 | '0000 0000 0000 0000 0100'B | '0001 0010'B | 18 |
| Ncell 23 | '0000 0000 0000 0000 0110'B | '0001 0111'B | 23 |

Table 8.1.4.2-2: Default NAS parameters for simulated NB-IoT cells – Batch1

| cell ID | Tracking Area | | | TA# list (Note 1) | GUTI (Note 2) | | M-TMSI | |
|----------|--|----------|-----|----------------------|---------------|----------------|--------|--|
| | TA# | PLMN | | | TAC | MME Identifier | | |
| | | MCC | MNC | | | MME Group ID | | MME Code |
| Ncell 1 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | Arbitrarily selected according to TS 23.003 subclause 2.8 [2]. |
| Ncell 1a | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Ncell 2 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Ncell 3 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Ncell 4 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Ncell 5 | TAI-2 | (Note 3) | | 2 | TAI-2 | 32769 | 1 | |
| Ncell 6 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Ncell 6a | TAI-2 | (Note 3) | | 2 | TAI-2 | 32769 | 1 | |
| Ncell 10 | TAI-10 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Ncell 11 | TAI-2 | (Note 3) | | 2 | TAI-2 | 32769 | 1 | |
| Ncell 12 | TAI-3 | 002 | 11 | 1 | TAI-3 | 32769 | 1 | |
| Ncell 13 | TAI-4 | 003 | 21 | 1 | TAI-4 | 32769 | 1 | |
| Ncell 14 | TAI-5 | 004 | 31 | 1 | TAI-5 | 32769 | 1 | |
| Ncell 18 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Ncell 23 | TAI-2 | (Note 3) | | 2 | TAI-2 | 32769 | 1 | |
| Note 1: | The value(s) in the column TA# list indicates TAI(s) included in the response messages of the registration procedure (ATTACH ACCEPT or TRACKING AREA UPDATE ACCEPT) when the UE performs the registration procedure on a corresponding cell. | | | | | | | |
| Note 2: | The value in the column GUTI indicates GUTI included in the response messages of the registration procedure (ATTACH ACCEPT or TRACKING AREA UPDATE ACCEPT) when the UE performs the registration procedure on a corresponding cell. | | | | | | | |
| Note 3: | Set to the same Mobile Country Code and Mobile Network Code stored in EF _{IMSI} on the test USIM card (subclause 4.9.3). | | | | | | | |

Table 8.1.4.2-3: Default NAS parameters for simulated NB-IoT cells – Batch2

| NAS cell ID | Tracking Area | | | TA# list (Note 1) | GUTI (Note 2) | | M-TMSI | |
|-------------|--|----------|-----|----------------------|---------------|----------------|--------|--|
| | TA# | PLMN | | | TAC | MME Identifier | | |
| | | MCC | MNC | | | MME Group ID | | MME Code |
| Ncell 50 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | Arbitrarily selected according to TS 23.003 subclause 2.8 [2]. |
| Ncell 51 | TAI-2 | (Note 3) | | 2 | TAI-2 | 32770 | 1 | |
| Ncell 52 | TAI-3 | (Note 3) | | 3 | TAI-3 | 32771 | 1 | |
| Ncell 53 | TAI-4 | (Note 3) | | 4 | TAI-4 | 32772 | 1 | |
| Ncell 54 | TAI-12 | 002 | 101 | 3 | TAI-12 | 32777 | 1 | |
| Ncell 55 | TAI-7 | (Note 4) | 02 | 1 | TAI-7 | 32775 | 1 | |
| Ncell 56 | TAI-8 | (Note 4) | 02 | 2 | TAI-8 | 32776 | 1 | |
| Ncell 57 | TAI-9 | 002 | 101 | 1 | TAI-9 | 32777 | 1 | |
| Ncell 58 | TAI-10 | 003 | 101 | 1 | TAI-10 | 32778 | 1 | |
| Ncell 59 | TAI-9 | 002 | 101 | 1 | TAI-9 | 32777 | 1 | |
| Ncell 60 | TAI-11 | 002 | 101 | 2 | TAI-11 | 32779 | 1 | |
| Ncell 61 | TAI-1 | (Note 3) | | 1 | TAI-1 | 32769 | 1 | |
| Ncell 62 | TAI-7 | (Note 4) | 02 | 1 | TAI-7 | 32775 | 1 | |
| Ncell 63 | TAI-13 | (Note 4) | 03 | 1 | TAI-13 | 32770 | 1 | |
| Note 1: | The value(s) in the column TA# list indicates TAI(s) included in the response messages of the registration procedure (ATTACH ACCEPT or TRACKING AREA UPDATE ACCEPT) when the UE performs the registration procedure on a corresponding cell. | | | | | | | |
| Note 2: | The value in the column GUTI indicates GUTI included in the response messages of the registration procedure (ATTACH ACCEPT or TRACKING AREA UPDATE ACCEPT) when the UE performs the registration procedure on a corresponding cell. | | | | | | | |
| Note 3: | Set to the same Mobile Country Code and Mobile Network Code stored in EF _{IMSI} on the test USIM card (subclause 4.9.3). | | | | | | | |
| Note 4: | Set to the same Mobile Country Code stored in EF _{IMSI} on the test USIM card (subclause 4.9.3). | | | | | | | |
| Note 5: | Ncell 50 is a serving cell and the other cells are suitable neighbour cells. The definitions are specified in subclause 8.3.2.2.1. | | | | | | | |

Table 8.1.4.2-4: Default cell identifiers for simulated NB-IoT cells – Batch2 when cells are in same PLMN

| cell ID | Frequency | NB-IoT Cell Identifier | | Physical layer cell identity |
|----------|-----------|--------------------------------|-----------------|------------------------------|
| | | eNB Identifier | Cell Identity | |
| Ncell 50 | f1 | '0000 0000 0000 0001 0001'B | '0000 0001'B | 1 |
| Ncell 51 | f1 | '0000 0000 0000 0001 0001'B | '0000 0010'B | 2 |
| Ncell 52 | f2 | '0000 0000 0000 0001 0010'B | '0000 0011'B | 3 |
| Ncell 53 | f1 | '0000 0000 0000 0001 0001'B | '0000 0100'B | 4 |
| Ncell 54 | NA | NA | NA | NA |
| Ncell 55 | NA | NA | NA | NA |
| Ncell 56 | NA | NA | NA | NA |
| Ncell 57 | NA | NA | NA | NA |
| Ncell 58 | NA | NA | NA | NA |
| Ncell 61 | f2 | '0000 0000 0000 0010 0001'B | '0001 0001'B | 17 |

Table 8.1.4.2-5: Default cell identifiers for simulated NB-IoT cells – Batch2 when cells are in different PLMNs

| NAS cell ID | PLMN | Frequency | NB-IoT Cell Identifier | | Physical layer cell identity |
|-------------|-----------------------------|-------------|--------------------------------|-----------------|------------------------------|
| | | | eNB Identifier | Cell Identity | |
| Ncell 50 | MCC/MNC= MCC/MNC in USIM | f1 | '0000 0000 0000 0010 0001'B | '0000 0001'B | 1 |
| Ncell 51 | MCC/MNC= MCC/MNC in USIM | f1 | '0000 0000 0000 0010 0001'B | '0000 0010'B | 2 |
| Ncell 52 | MCC/MNC= MCC/MNC in USIM | f1 | '0000 0000 0000 0010 0001'B | '0000 0011'B | 3 |
| Ncell 53 | MCC/MNC= MCC/MNC in USIM | f1 | '0000 0000 0000 0010 0001'B | '0000 0100'B | 4 |
| Ncell 54 | MCC=002 MNC=101 | f2 | '0000 0000 0000 0011 0101'B | '0001 0111'B | 23 |
| Ncell 55 | MCC = MCC in USIM MNC=02 | f2 | '0000 0000 0000 0010 0010'B | '0000 1011'B | 11 |
| Ncell 56 | MCC= MCC in USIM MNC=02 | f2 | '0000 0000 0000 0010 0010'B | '0000 1100'B | 12 |
| Ncell 57 | MCC=002 MNC=101 | f3 (Note 1) | '0000 0000 0000 0010 0011'B | '0000 1101'B | 13 |
| Ncell 58 | MCC=003 MNC=101 | f4 (Note 1) | '0000 0000 0000 0010 0100'B | '0000 1110'B | 14 |
| Ncell 59 | MCC=002 MNC=101 | f3 (Note 1) | '0000 0000 0000 0010 0011'B | '0000 1111'B | 15 |
| Ncell 60 | MCC=002 MNC=101 | f3 (Note 1) | '0000 0000 0000 0010 0011'B | '0001 0000'B | 16 |
| Ncell 61 | MCC/MNC= MCC/MNC in USIM | f1 | '0000 0000 0000 0010 0001'B | '0001 0001'B | 17 |
| Ncell 62 | MCC = MCC in USIM MNC=02 | f1 | '0000 0000 0000 0010 0010'B | '0001 0010'B | 18 |
| Ncell 63 | MCC = MCC in USIM MNC=03 | f1 | '0000 0000 0000 0010 0010'B | '0001 0011'B | 19 |

Note 1: The test frequency f3 or f4 is allocated to the cell if f1 and f2 are already allocated to the cells in the test. Otherwise, f1 or f2 is allocated instead. Note that f4 is not defined for signalling tests (see clause 8.3.2.3).

Table 8.1.4.2-6 defines TAC values only for Idle Mode Test Cases defined in TS 36.523-1 section 22.2.

Table 8.1.4.2-6: Tracking Area Code (TAC) for NB-IoT cells – Batch1 for Idle Mode test cases

| cell ID | TAC |
|----------|-----|
| Ncell 1 | 1 |
| Ncell 2 | 2 |
| Ncell 3 | 3 |
| Ncell 4 | 4 |
| Ncell 6 | 6 |
| Ncell 11 | 11 |
| Ncell 12 | 12 |
| Ncell 13 | 13 |
| Ncell 14 | 14 |
| Ncell 23 | 23 |

8.1.4.3 NB-IoT Common parameters for simulated cells

The parameters specified in this sub clause apply to all simulated cells unless otherwise specified.

8.1.4.3.1 NB-IoT Common configurations of system information blocks

8.1.4.3.1.1 NB-IoT Combinations of system information blocks

The combination of system information blocks required by a test case depends on the test case scenario. In this clause, the following combinations of system information blocks are defined.

Combination 1 is the default combination which applies to the following test case scenarios:

- single cell scenario

Combination 2 applies to the following test case scenarios:

- intra-frequency multi cell scenario
- intra-frequency multi cell scenario with neighbouring cell related information

Combination 3 applies to the following test case scenarios:

- inter-frequency multi cell scenario

Combination 4 applies to the following test case scenarios:

- access barring single cell scenario

Combination 5 applies to the following test case scenarios:

- SC-PTM single cell scenario (SC-PTM cell broadcasting SIB20-NB)

Combination 6 applies to the following test case scenarios:

- single cell on multi carriers scenario

Table 8.1.4.3.1.1-1: Combinations of system information blocks

| Combination No. | System information block type | | | | | | | |
|-----------------|-------------------------------|---------|---------|---------|-----------|-----------|-----------|-----------|
| | SIB2-NB | SIB3-NB | SIB4-NB | SIB5-NB | SIB 14-NB | SIB 16-NB | SIB 20-NB | SIB 22-NB |
| 1 | X | | | | | | | |
| 2 | X | X | X | | | | | |
| 3 | X | X | | X | | | | |
| 4 | X | X | | | X | | | |
| 5 | X | | | | | | X | |
| 6 | X | | | | | | | X |

8.1.4.3.1.2 NB-IoT Scheduling of system information blocks

The scheduling configurations for combinations of system information blocks are defined in the following tables.

Table 8.1.4.3.1.2-1: Scheduling for combination 1

| Scheduling Information No. | Periodicity [radio frames] | Repetition pattern [radio frames] | TB size [bits] | Mapping of system information blocks |
|----------------------------|----------------------------|-----------------------------------|----------------|--------------------------------------|
| 1 | 64 | every8thRF | 552 | SIB2-NB |

Table 8.1.4.3.1.2-2: Scheduling for combination 2

| Scheduling Information No. | Periodicity [radio frames] | Repetition pattern [radio frames] | TB size [bits] | Mapping of system information blocks |
|----------------------------|----------------------------|-----------------------------------|----------------|--------------------------------------|
| 1 | 64 | every8thRF | 552 | SIB2-NB |
| 2 | 64 | every16thRF | 256 | SIB3-NB |
| 3 | 64 | every16thRF | 256 | SIB4-NB |

Table 8.1.4.3.1.2-3: Scheduling for combination 3

| Scheduling Information No. | Periodicity [radio frames] | Repetition pattern [radio frames] | TB size [bits] | Mapping of system information blocks |
|----------------------------|----------------------------|-----------------------------------|----------------|--------------------------------------|
| 1 | 64 | every8thRF | 552 | SIB2-NB |
| 2 | 64 | every16thRF | 256 | SIB3-NB |
| 3 | 64 | every16thRF | 256 | SIB5-NB |

Table 8.1.4.3.1.2-4: Scheduling for combination 4

| Scheduling Information No. | Periodicity [radio frames] | Repetition pattern [radio frames] | TB size [bits] | Mapping of system information blocks |
|----------------------------|----------------------------|-----------------------------------|----------------|--------------------------------------|
| 1 | 64 | every8thRF | 552 | SIB2-NB |
| 2 | 64 | every16thRF | 256 | SIB3-NB |
| 3 | 64 | every16thRF | 256 | SIB14-NB |

Table 8.1.4.3.1.2-5: Scheduling for combination 5

| Scheduling Information No. | Periodicity [radio frames] | Repetition pattern [radio frames] | TB size [bits] | Mapping of system information blocks |
|----------------------------|----------------------------|-----------------------------------|----------------|--------------------------------------|
| 1 | 64 | every8thRF | 552 | SIB2-NB |
| 2 | 64 | every16thRF | 256 | SIB20-NB |

Table 8.1.4.3.1.2-6: Scheduling for combination 6

| Scheduling Information No. | Periodicity [radio frames] | Repetition pattern [radio frames] | TB size [bits] | Mapping of system information blocks |
|----------------------------|----------------------------|-----------------------------------|----------------|--------------------------------------|
| 1 | 64 | every8thRF | 552 | SIB2-NB |
| 2 | 64 | every16thRF | 256 | SIB22-NB |

8.1.4.3.2 NB-IoT Common contents of system information messages

- MasterInformationBlock-NB

The *MasterInformationBlock-NB* includes the system information transmitted on BCH.

Table 8.1.4.3.2-1: *MasterInformationBlock-NB*

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|--|--|------------------|
| Information Element | Value/remark | Comment | Condition |
| MasterInformationBlock-NB ::= SEQUENCE { | | | |
| systemFrameNumber-MSB-r13 | A valid value as defined in TS 36.331 [17] | | |
| hyperSFN-LSB-r13 | A valid value as defined in TS 36.331 [17] | | |
| schedulingInfoSIB1-r13 | 2 | TBS = 208 bits, 16 repetitions | |
| systemInfoValueTag-r13 | 0 | | |
| ab-Enabled-r13 | FALSE | | |
| operationModeInfo-r13 CHOICE { | | | |
| inband-SamePCI-r13 SEQUENCE { | | | Inband-Same |
| eutra-CRS-SequenceInfo-r13 | 23 | As specified in TS 36.213 [29] Clause 16.8 | PRB30 |
| | 24 | As specified in TS 36.213 [29] Clause 16.8 | PRB35 |
| | 7 | As specified in TS 36.213 [29] Clause 16.8 | PRB17 |
| | 8 | As specified in TS 36.213 [29] Clause 16.8 | PRB22 |
| } | | | |
| inband-DifferentPCI-r13 SEQUENCE { | | | Inband_Different |
| eutra-NumCRS-Ports-r13 | same | same number of ports as NRS | |
| rasterOffset-r13 | $2.5 \cdot (2M_{DL} + 1)$ kHz | M _{DL} See subclause 8.1.3.1 | |
| spare | '00'B | | |
| } | | | |
| guardband-r13 SEQUENCE { | | | Guardband |
| rasterOffset-r13 | $2.5 \cdot (2M_{DL} + 1)$ kHz | M _{DL} See subclause 8.1.3.1 | |
| spare | '000'B | | |
| } | | | |
| standalone-r13 SEQUENCE { | | | Standalone |
| spare | '0000 0'B | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|------------------|---|
| Inband-Same | In-band with same PCI test environment |
| Inband-Different | In-band with different PCI test environment |
| PRB30 | For 10 MHz LTE Cell with In-Band NB-IoT in PRB 30 |
| PRB35 | For 10 MHz LTE Cell with In-Band NB-IoT in PRB 35 |
| PRB17 | For 5 MHz LTE Cell with In-Band NB-IoT in PRB 17 |
| PRB22 | For 5 MHz LTE Cell with In-Band NB-IoT in PRB 22 |
| Standalone | Standalone test environment |
| Guardband | Guard-band test environment |

- SystemInformation-NB

The *SystemInformation-NB* message is used to convey one or more System Information Blocks. All the SIBs included are transmitted with the same periodicity.

Table 8.1.4.3.2-2: SystemInformation-NB

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|-------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformation-NB ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| systemInformation-r13 SEQUENCE { | | | |
| sib-TypeAndInfo-r13 SEQUENCE (SIZE (1..maxSIB)) OF CHOICE {} | See subclause 8.1.4.3.1 | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |

- SystemInformationBlockType1-NB

SystemInformationBlockType1-NB contains information relevant when evaluating if a UE is allowed to access a cell and defines the scheduling of other system information.

Table 8.1.4.3.2-3: SystemInformationBlockType1-NB

| Derivation Path: 36.331 clause 6.7.2 | | | |
|---|--|---------------------------|---|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1-NB ::= SEQUENCE { | | | |
| hyperSFN-MSB-r13 | A valid value as defined in TS 36.331 [17] | | |
| cellAccessRelatedInfo-r13 SEQUENCE { | | | |
| plmn-IdentityList-r13 SEQUENCE (SIZE (1.. maxPLMN-r11)) OF SEQUENCE { | 1 entry | | |
| plmn-Identity-r13[1] SEQUENCE { | | | |
| mcc | See table 8.1.4.2-2 | | |
| mnc | See table 8.1.4.2-2 | | |
| } | | | |
| cellReservedForOperatorUse-r13[1] | notReserved | | |
| attachWithoutPDN-Connectivity-r13[1] | true | | ATTACH_WITHOUT_PDN |
| | Not present | | ATTACH_WITH_PDN |
| } | | | |
| trackingAreaCode-r13 | See table 8.1.4.2-2 | | |
| cellIdentity-r13 | Cell ID for the simulated cell | | |
| cellBarred-r13 | notBarred | | |
| intraFreqReselection-r13 | notAllowed | | |
| } | | | |
| cellSelectionInfo-r13 SEQUENCE { | | | |
| q-RxLevMin-r13 | -70 (-140 dBm) | For RF/RRM test cases | RF |
| | -106 dBm | For signalling test cases | Signaling |
| q-QualMin-r13 | -20 (-20dB) | | |
| } | | | |
| p-Max-r13 | Not Present | | |
| freqBandIndicator-r13 | Operating band under test. | | |
| freqBandInfo-r13 | Not Present | | |
| multiBandInfoList-r13 | Not Present | | |
| downlinkBitmap-r13 | Not Present | | |
| eutraControlRegionSize-r13 | n2 | | Inband-Same, Inband- Different |
| | Not Present | | Standalone, Guard |
| nrs-CRS-PowerOffset-r13 | dB0 | | Inband- Same |
| | Not Present | | Inband-Different, Standalone, Guardband |
| schedulingInfoList-r13 | See subclause 8.1.4.3.1 | | |
| si-WindowLength-r13 | ms160 | | |
| si-RadioFrameOffset-r13 | Not Present | | |
| systemInfoValueTagList-r13 | Not Present | | |
| lateNonCriticalExtension | Not Present | | |
| nonCriticalExtension SEQUENCE { | Not Present | | |
| } | | | |

| Condition | Explanation |
|-----------|-------------|
|-----------|-------------|

| | |
|--------------------|--|
| ATTACH_WITH_PDN | If the UE shall perform ATTACH with PDN connectivity procedure. |
| ATTACH_WITHOUT_PDN | If the UE may perform ATTACH without PDN connectivity procedure. |
| Inband_Same | In-band with same PCI test environment |
| Inband_Different | In-band with different PCI test environment |
| Standalone | Standalone test environment |
| Guardband | Guard-band test environment |
| RF | For RF/RRM test cases |
| Signaling | For Signaling test cases |

8.1.4.3.3 NB-IoT Common contents of system information blocks

- SystemInformationBlockType2-NB

The IE *SystemInformationBlockType2-NB* contains radio resource configuration information that is common for all UEs.

Table 8.1.4.3.3-1: SystemInformationBlockType2-NB

| Derivation Path: 36.331 clause 6.7.3.1 | | | |
|---|---|--|--|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2-NB-r13 ::= SEQUENCE { | | | |
| radioResourceConfigCommon-r13 SEQUENCE {} | RadioResourceConfigCommonSIB-NB-DEFAULT | See subclause 8.1.6 | |
| ue-TimersAndConstants-r13 SEQUENCE { | | | |
| t300-r13 | ms10000 | | |
| t301-r13 | ms10000 | | |
| t310-r13 | ms1000 | | |
| n310-r13 | n2 | | |
| t311-r13 | ms1000 | | |
| n311-r13 | n1 | | |
| } | | | |
| freqInfo-r13 SEQUENCE { | | | |
| ul-CarrierFreq-r13 | Not present | Default UL EARFCN applies | Standalone |
| ul-CarrierFreq-r13 | See subclause 8.1.3.1 | | Inband_Same, Inband_Different, Guardband |
| additionalSpectrumEmission-r13 | 1 (NS_01) | A-MPR doesn't apply by default. See TS 36.101 table 6.2.4-1. | |
| } | | | |
| timeAlignmentTimerCommon-r13 | infinity | | |
| multiBandInfoList-r13 SEQUENCE {} | Not present | | |
| lateNonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |

| Condition | Explanation |
|------------------|---|
| Inband_Same | In-band with same PCI test environment |
| Inband_Different | In-band with different PCI test environment |
| Standalone | Standalone test environment |
| Guardband | Guard-band test environment |

- SystemInformationBlockType3-NB

The IE *SystemInformationBlockType3-NB* contains cell re-selection information common for intra-frequency, inter-frequency as well as intra-frequency cell re-selection information other than neighbouring cell related.

Table 8.1.4.3.3-2: SystemInformationBlockType3-NB

| Derivation Path: 36.331 clause 6.7.3.1 | | | |
|---|----------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType3-NB-r13 ::= SEQUENCE { | | | |
| cellReselectionInfoCommon-r13 SEQUENCE { | | | |
| q-Hyst-r13 | dB0 | To reduce interference between intra-frequency multiple cells | |
| } | | | |
| cellReselectionServingFreqInfo SEQUENCE-r13 { | | | |
| s-NonIntraSearch-r13 | 31 (62dB) | | |
| } | | | |
| intraFreqCellReselectionInfo-r13 SEQUENCE { | | | |
| q-RxLevMin-r13 | -70 (-140 dBm) | For RF/RRM test cases | |
| | -106 dBm | For signalling test cases | |
| q-QualMin-r13 | Not present | | |
| p-Max-r13 | Not present | | |
| s-IntraSearchP-r13 | 31 (62dB) | | |
| t-Reselection-r13 | 0 | | |
| } | | | |
| freqBandInfo-r13 | Not present | | |
| multiBandInfoList-r1 | Not present | | |
| lateNonCriticalExtension | Not present | | |
| } | | | |

- SystemInformationBlockType4-NB

The IE *SystemInformationBlockType4-NB* contains neighbouring cell related information relevant only for intra-frequency cell re-selection. The IE includes cells with specific re-selection parameters.

Table 8.1.4.3.3-3: SystemInformationBlockType4-NB

| Derivation Path: 36.331 clause 6.7.3.1 | | | |
|---|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType4-NB-r13 ::= SEQUENCE { | | | |
| intraFreqNeighCellList-r13 SEQUENCE (SIZE (1..maxCellIntra)) OF SEQUENCE {} | Not present | Not required unless Qoffset configuration is tested. When Qoffset configuration is tested, see table 8.3.3.1.1-1 | |
| intraFreqBlackCellList SEQUENCE-r13 (SIZE (1..maxCellBlack)) OF SEQUENCE {} | Not present | Not required unless Blacklisted cell list configuration is tested. When Blacklisted cell list configuration is tested, see table FFS. | |
| lateNonCriticalExtension | Not present | | |
| } | | | |

- SystemInformationBlockType5-NB

The IE *SystemInformationBlockType5-NB* contains information relevant only for inter-frequency cell re-selection i.e. information about other NB-IOT frequencies and inter-frequency neighbouring cells relevant for cell re-selection. The IE includes cell re-selection parameters common for a frequency.

Table 8.1.4.3.3-4: *SystemInformationBlockType5-NB*

| Derivation Path: 36.331 clause 6.7.3.1 | | | |
|---|---|---|---------------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType5-NB-r13 ::= SEQUENCE { | | | |
| interFreqCarrierFreqList-r13 SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE { | The same number of entries as the configured inter-freq carriers. For Signalling test cases see clause 8.3.2.3 | n denotes the index of the entry | |
| dl-CarrierFreq-r13[n] SEQUENCE { | Downlink EARFCN under test. For Signalling test cases see clause 8.3.2.3 | | |
| carrierFreq-r13[n] | Downlink EARFCN under test. For Signalling test cases see clause 8.3.2.3 | | |
| carrierFreqOffset-r13 [n] | Not present | | |
| carrierFreqOffset-r13 [n] | Offset of the NB-IOT channel number under test to the EARFCN under test | | RRM-InterFreq |
| } | | | |
| q-RxLevMin-r13[n] | -65 (-130 dBm) | For RF/RRM test cases | |
| | -106 dBm | For signalling test cases | |
| q-QualMin-r13[n] | Not present | | |
| p-Max-r13[n] | Not present | | |
| q-OffsetFreq-r13[n] | dB0 | Q_{offset} doesn't apply by default. | |
| interFreqNeighCellList-r13[n] SEQUENCE (SIZE (1..maxCellInter)) OF SEQUENCE { | Not present | Not required unless Q_{offset} configuration is tested | |
| interFreqBlackCellList-r13[n] SEQUENCE (SIZE (1..maxCellBlack)) OF SEQUENCE { | Not present | Not required unless Blacklisted cell list configuration is tested | |
| multiBandInfoList-r13 | Not present | | |
| } | | | |
| t-Reselection-r13 | s0 | | |
| lateNonCriticalExtension | Not present | | |
| } | | | |

| Condition | Explanation |
|---------------|--|
| RRM-InterFreq | Used for RRM NB-IOT inter-frequency mobility scenarios |

- SystemInformationBlockType14-NB

The IE *SystemInformationBlockType14-NB* contains the AB parameters.

Table 8.1.4.3.3-5: SystemInformationBlockType14-NB

| Derivation Path: 36.331 clause 6.7.3.1 | | | |
|--|---------------|-----------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { | | | |
| ab-Param-r13 CHOICE { | | | |
| ab-Common-r13 SEQUENCE { | | | |
| ab-Category-r13 | a | AB applies to all UEs | |
| ab-BarringBitmap-r13 | '1111111111'B | All UE classes 0-9 | |
| ab-BarringExceptionData-r13 | Not present | | |
| ab-BarringForSpecialAC-r13 | '11111'B | All UE classes 11-15 | |
| } | | | |
| } | | | |
| lateNonCriticalExtension | Not present | | |
| } | | | |

- SystemInformationBlockType15-NB

The IE *SystemInformationBlockType15-NB* contains the MBMS Service Area Identities (SAI) of the current and/ or neighbouring carrier frequencies.

Table 8.1.4.3.3-5A: SystemInformationBlockType15-NB

FFS

- SystemInformationBlockType16-NB

The IE *SystemInformationBlockType16-NB* contains information related to GPS time and Coordinated Universal Time (UTC). The UE may use the parameters provided in this system information block to obtain the UTC, the GPS and the local time.

Table 8.1.4.3.3-6: SystemInformationBlockType16-NB

FFS

- SystemInformationBlockType20-NB

The IE *SystemInformationBlockType20-NB* contains the information required to acquire the control information associated with transmission of MBMS using SC-PTM.

Table 8.1.4.3.3-7: SystemInformationBlockType20-NB

| Derivation Path: 36.331 clause 6.7.3.1 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType20-NB-r14 ::= SEQUENCE { | | | |
| npdcch-SC-MCCH-Config-r14 SEQUENCE { | | | |
| npdcch-NumRepetitions-SC-MCCH-r14 | r8 | | |
| npdcch-StartSF-SC-MCCH-r14 | v1dot5 | | |
| npdcch-Offset-SC-MCCH-r14 | zero | | |
| } | | | |
| sc-mcch-CarrierConfig-r14 CHOICE { | | | |
| dl-CarrierIndex-r14 | 0 | | |
| } | | | |
| sc-mcch-RepetitionPeriod-r14 | rf32 | | |
| sc-mcch-Offset-r14 | 1 | | |
| sc-mcch-ModificationPeriod-r14 | rf512 | | |
| sc-mcch-SchedulingInfo-r14 | Not present | | |
| lateNonCriticalExtension | | | |
| } | | | |

- SystemInformationBlockType22-NB

The IE *SystemInformationBlockType22-NB* contains radio resource configuration for paging and random access procedure on non-anchor carriers.

Table 8.1.4.3.3-8: SystemInformationBlockType22-NB

| Derivation Path: 36.331 clause 6.7.3.1 | | | |
|--|-----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType22-NB-r14 ::= SEQUENCE { | | | |
| dl-ConfigList-r14 SEQUENCE (SIZE (1.. maxNonAnchorCarriers-NB-r14)) OF DL-ConfigCommon-NB-r14 SEQUENCE { | | | |
| DL-ConfigCommon-NB-r14[1] SEQUENCE { | | | |
| dl-CarrierConfig-r14 | DL-CarrierConfigCommon-NB-DEFAULT | | |
| pcch-Config-r14 | Not present | | |
| } | | | |
| } | | | |
| ul-ConfigList-r14 SEQUENCE (SIZE (1.. maxNonAnchorCarriers-NB-r14)) OF UL-ConfigCommon-NB-r14 SEQUENCE { | | | |
| UL-ConfigCommon-NB-r14[1] SEQUENCE { | | | |
| ul-CarrierFreq-r14 | See subclause 8.1.3.1 | | |
| nprach-ParametersList-r14 | Not present | | |
| } | | | |
| } | | | |
| pagingWeightAnchor-r14 | Not present | | |
| nprach-ProbabilityAnchorList-r14 | Not present | | |
| lateNonCriticalExtension | Not present | | |
| } | | | |

8.1.5 NB-IoT Generic procedures

8.1.5.0 General

This clause describes NB-IoT UE test states which can be used in the initial condition of many test cases defined in TS 36.521-1 [21], TS 36.523-1 [18] and TS 36.521-3 [34] or other procedures defined in this specification. This section also defines a set of procedures to bring the UE into these states.

8.1.5.1 NB-IoT UE test states

NB-IoT UE test states defined in this section support Control Plane CIoT EPS Optimization (CP) and User Plane CIoT EPS Optimization (UP).

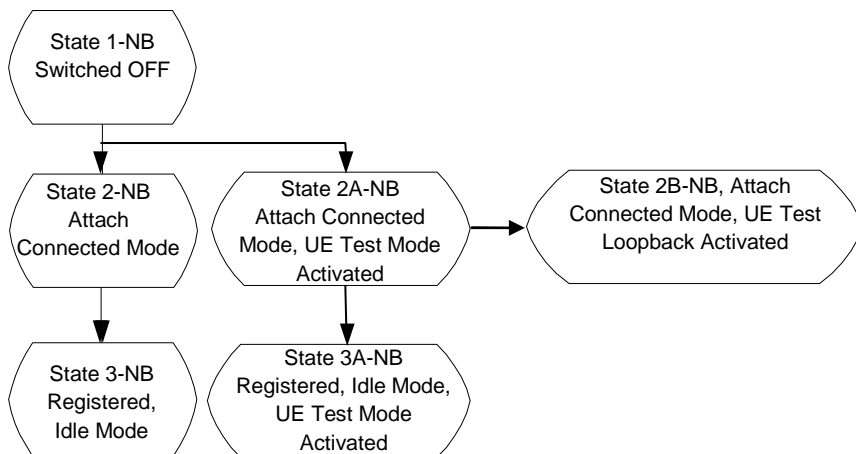


Figure 8.1.5.1-1: NB-IoT UE Test States for Basic Generic Procedures

Table 8.1.5.1-1: The NB-IoT UE states

| | | RRC | ECM | EMM | ESM | UE Test Mode |
|-------------|---|---|---------------|----------------|--|-------------------|
| State 1-NB | Switched OFF | ----- | ----- | ----- | ----- | ----- |
| State 2-NB | Attach, Connected Mode | RRC_CONNECTED 0, 1 or 2 data radio bearers configured as specified in the test cases | ECM-CONNECTED | EMM-REGISTERED | 0 or 1 default EPS bearer context active and N (0 ≤ N ≤ 1) dedicated EPS bearer active as specified in the test cases. | Not active |
| State 2A-NB | Attach, Connected Mode, UE Test Mode Activated | RRC_CONNECTED 0, 1 or 2 data radio bearers configured as specified in the test cases | ECM-CONNECTED | EMM-REGISTERED | 0 or 1 default EPS bearer context active and N (0 ≤ N ≤ 1) dedicated EPS bearer active as specified in the test cases. | Active |
| State 2B-NB | Attach, Connected Mode, UE Loopback Activated UL User data transmission pending | RRC_CONNECTED 0,1 or 2 data radio bearers configured as specified in the test cases | ECM-CONNECTED | EMM-REGISTERED | 0 or 1 default EPS bearer context active and N (0 ≤ N ≤ 1) dedicated EPS bearer active as specified in the test cases. | Active and Closed |
| State 3-NB | Registered, Idle Mode | RRC_IDLE | ECM-IDLE | EMM-REGISTERED | 0 or 1 default EPS bearer context active as specified in the test cases. | Not active |
| State 3A-NB | Registered, Idle Mode, UE Test Mode Activated | RRC_IDLE | ECM-IDLE | EMM-REGISTERED | 0 or 1 default EPS bearer context active as specified in the test cases. | Active |

NOTE 1: Refer to TS 24.301 [28] subclause 5.5.1.1 for more details on the ESM state.

NOTE 2: Refer to TS 36.509 [38] for details regarding UE test mode and UE Loopback.

8.1.5.2 NB-IoT UE Attach, Connected mode (State 2-NB)

8.1.5.2.0 General

UE registration depends on the specific configuration of a UE, which is expressed by PICS according to TS 36.523-2 [19], and specific test case conditions.

The following UE configurations and test case conditions are used in this procedure.

| Configuration | Condition | Explanation | Default |
|-------------------|--|--|---|
| S1_U_DataTransfer | UE_S1_U_CIoT_Optimisation AND TC_Require_S1_U_DataTransfer | User Plane ClIoT Optimisation or S1_U is supported by UE (UE capability), pc_User_Plane_CIoT_Optimisation or pc_S1_U_DataTransfer, and both the Network and test case require Attach with S1_U Data Transfer | UE_S1_U_DataTr= pc_User_Plane_ n or pc_S1_U_Da TC_Require_S1_U =FALSE |

8.1.5.2.1 Initial conditions

System Simulator:

- 1 NB-IoT cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 8.2

User Equipment:

- The Test UICC shall be inserted. This shall contain a USIM application on UICC.
- UE is in State 1-NB switched off.

8.1.5.2.2 Definition of system information messages

The default system information messages are used with the exception(s) below.

Table 8.1.5.2.2-1: SystemInformationBlockType1-NB

| |
|---|
| Derivation Path: Table 8.1.4.3.2-3, condition ATTACH_WITHOUT_PDN for NOT S1_U_DataTransfer and ATTACH_WITH_PDN for S1_U_DataTransfer. |
|---|

8.1.5.2.3 Procedure

Table 8.1.5.2.3-1: NB-IoT UE connected mode procedure (state 1-NB to state 2-NB)

| Step | Procedure | Message Sequence | |
|------|--|------------------|---|
| | | U - S | Message |
| 1 | SS transmits system information. | <-- | RRC: SYSTEM INFORMATION-NB (BCCH) |
| 1A | Switch-on the UE | - | - |
| 2 | UE transmits an <i>RRCConnectionRequest-NB</i> message. | --> | RRC: <i>RRCConnectionRequest-NB</i> |
| 3 | SS transmits an <i>RRCConnectionSetup-NB</i> message. | <-- | RRC: <i>RRCConnectionSetup-NB</i> |
| - | EXCEPTION: Steps 4a1 and 4b1 describe behaviour that depends on UE capabilities; the "lower case letter" identifies a step sequence that take place depending on whether the UE is configured to do Attach Without PDN or not. | - | - |
| 4a1 | IF (NOT S1_U_DataTransfer AND px_Do AttachWithoutPDN) THEN The UE transmits an <i>RRCConnectionSetupComplete-NB</i> message to confirm the successful completion of the connection establishment and to initiate the Attach procedure by including the ATTACH REQUEST message. An ESM DUMMY MESSAGE is piggybacked in ATTACH REQUEST. | --> | RRC: <i>RRCConnectionSetupComplete-NB</i> NAS: ATTACH REQUEST NAS: ESM DUMMY MESSAGE |
| 4b1 | ELSE The UE transmits an <i>RRCConnectionSetupComplete-NB</i> message to confirm the successful completion of the connection establishment and to initiate the Attach procedure by including the ATTACH REQUEST message. A PDN CONNECTIVITY REQUEST message is piggybacked in ATTACH REQUEST. | --> | RRC: <i>RRCConnectionSetupComplete-NB</i> NAS: ATTACH REQUEST NAS: PDN CONNECTIVITY REQUEST |
| 5 | The SS transmits an AUTHENTICATION REQUEST message to initiate the EPS authentication and AKA procedure. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: AUTHENTICATION REQUEST |
| 6 | The UE transmits an AUTHENTICATION RESPONSE message and establishes mutual authentication. | --> | RRC: <i>ULInformationTransfer-NB</i> NAS: AUTHENTICATION RESPONSE |
| 7 | The SS transmits a NAS SECURITY MODE COMMAND message to activate NAS security. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: SECURITY MODE COMMAND |
| 8 | The UE transmits a NAS SECURITY MODE COMPLETE message and establishes the initial security configuration. | --> | RRC: <i>ULInformationTransfer-NB</i> NAS: SECURITY MODE COMPLETE |
| - | EXCEPTION: Steps 9a1 to 9a2 describe behaviour that depends on UE configuration; the "lower case letter" identifies a step sequence that take place if the UE has ESM information which needs to be transferred. | - | - |
| 9a1 | IF the UE sets the ESM information transfer flag in the PDN CONNECTIVITY REQUEST message sent in step 4b1 THEN the SS transmits an ESM INFORMATION REQUEST message to initiate exchange of protocol configuration options and/or APN. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: ESM INFORMATION REQUEST |
| 9a2 | The UE transmits an ESM INFORMATION RESPONSE message to transfer protocol configuration options and/or APN. | --> | RRC: <i>ULInformationTransfer-NB</i> NAS: ESM INFORMATION RESPONSE |
| - | EXCEPTION: Steps 10a1 to 10a2 describe behaviour that depends on UE configuration and test case condition; the "lower case letter" | - | - |

| | | | |
|------|--|-----|---|
| | identifies a step sequence that take place if S1_U_DataTransfer condition is evaluated as true. | | |
| 10a1 | IF S1_U_DataTransfer THEN the SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 10a2 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 11 | The SS transmits a <i>UECapabilityEnquiry-NB</i> message to initiate the UE radio access capability transfer procedure. | <-- | RRC: <i>UECapabilityEnquiry-NB</i> |
| 12 | The UE transmits a <i>UECapabilityInformation-NB</i> message to transfer UE radio access capability. | --> | RRC: <i>UECapabilityInformation-NB</i> |
| - | EXCEPTION: Steps 13a1 to 13c1 describe behaviour that depends on UE capabilities; the "lower case letter" identifies a step sequence that take place depending on whether the UE is configured for S1_U_DataTransfer and if not then if it is configured to do Attach Without PDN or not. | - | - |
| 13a1 | IF S1_U_DataTransfer THEN the SS transmits a <i>RRCConnectionReconfiguration-NB</i> message to establish the default bearer with condition DRB(1) according to [8.1.8]. This message includes the ATTACH ACCEPT message and the ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message is piggybacked in the ATTACH ACCEPT | <-- | RRC: <i>RRCConnectionReconfiguration-NB</i> : ATTACH ACCEPT NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST |
| 13a2 | The UE transmits an <i>RRCConnectionReconfigurationComplete-NB</i> message to confirm the establishment of default bearer, | --> | RRC: <i>RRCConnectionReconfigurationComplete-NB</i> |
| 13b1 | ELSE IF px_DoAttachWithoutPDN THEN SS transmits an ATTACH ACCEPT message and an ESM DUMMY MESSAGE is piggybacked in the ATTACH ACCEPT. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: ATTACH ACCEPT NAS: ESM DUMMY MESSAGE |
| 13c1 | ELSE SS transmits an ATTACH ACCEPT message and an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message is piggybacked in the ATTACH ACCEPT If PDN type "IP" was included in the PDN CONNECTIVITY REQUEST step 4b1 then the network shall include the PDN type and the PDN address information within the PDN address IE in the ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message sent to the UE | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: ATTACH ACCEPT NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST |
| - | EXCEPTION: Steps 14a1 to 14b1 describe behaviour which depends on UE capabilities; the "lower case letter" identifies a step sequence that take place depending on whether the UE is configured to do Attach Without PDN or not. | - | - |
| 14a1 | IF px_DoAttachWithoutPDN THEN The UE transmit an ATTACH COMPLETE message and an ESM DUMMY MESSAGE is piggybacked in the ATTACH COMPLETE. | --> | RRC: <i>ULInformationTransfer-NB</i> NAS: ATTACH COMPLETE NAS: ESM DUMMY MESSAGE |
| - | EXCEPTION: IF not all IP address information was allocated in the ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST | - | - |

| | | | |
|-------|--|-----|--|
| | <p>message sent in steps 13a1 or 13c1 THEN</p> <p>IF pc_User_Plane_CIoT_Optimisation or pc_S1_U_DataTransfer THEN In parallel to the event described in step 14b1 below the generic procedure for IP address allocation in the U-plane specified in TS 36.508 [18] subclause 4.5A.1 takes place performing IP address allocation in the U-plane.</p> <p>ELSE In parallel to the events described in step 14b1 below the Generic 'Procedure for IP address allocation in the CP Clot' described in TS 36.508 [18], clause 8.1.5A.1 takes place.</p> | | |
| 14 b1 | <p>ELSE</p> <p>UE transmits and ATTACH COMPLETE message and an ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message is piggybacked in the ATTACH COMPLETE.</p> | --> | <p>RRC: <i>ULInformationTransfer-NBNAS</i>: ATTACH COMPLETE</p> <p>NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT</p> |

8.1.5.2.4 Specific message contents

All specific message contents shall be referred to clause 8.1.6 and 8.1.7 with the exceptions below.

Table 8.1.5.2.4-1: RRCConnectionRequest-NB (step 2, Table 8.1.5.2.3-1)

| Derivation Path: Table 8.1.6.1-10 | | | |
|--|-------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionRequest-NB ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionRequest-r13 SEQUENCE { | | | |
| ue-Identity-r13 | Any allowed value | | |
| } | | | |
| } | | | |
| } | | | |

8.1.5.2A NB-IoT UE Attach, Connected mode, UE Test Mode Activated (State 2A-NB)

8.1.5.2A.0 General

UE registration depends on the specific configuration of a UE, which is expressed by PICS according to TS 36.523-2 [19], and specific test case conditions.

The UE configurations and test case conditions described in clause 8.1.5.2 are used in this procedure.

8.1.5.2A.1 Initial conditions

System Simulator:

- 1 NB-IoT cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 8.2

User Equipment:

- The Test UICC shall be inserted. This shall contain a USIM application on UICC.
- UE is in State 1-NB switched off.

8.1.5.2A.2 Definition of system information messages

The same default system information messages are used as in clause 8.1.5.2.2.

NOTE: Loopback mode A/B is applicable only IF S1_U_DataTransfer; loopback mode G/H/I is applicable only IF NOT S1_U_DataTransfer.

8.1.5.2A.3 Procedure

Table 8.1.5.2A.3-1: NB-IoT UE Attach, connected mode and test mode activated procedure (state 2-NB to state 2A-NB)

| Step | Procedure | U - S | Message Sequence Message |
|-----------|---|-------|---|
| 0 | Switch-on the UE | - | - |
| 1-9a2 | Same procedure for steps 0 to 9a2 as specified in the procedure in clause 8.1.5.2.3 | - | - |
| 10 | The SS transmits an ACTIVATE TEST MODE message to activate test mode procedure. | <-- | RRC: <i>DLInformationTransfer-NB</i> TC: ACTIVATE TEST MODE |
| 11 | The UE transmits an ACTIVATE TEST MODE COMPLETE message. | --> | RRC: <i>ULInformationTransfer-NB</i> TC: ACTIVATE TEST MODE COMPLETE |
| 12a1-16b1 | Same procedure for steps 10a1 to 14b1 as specified in the procedure in clause 8.1.5.2.3 | - | - |

8.1.5.2A.4 Specific message contents

All specific message contents shall be referred to clause 8.1.6 and 8.1.7 with the exceptions below.

Table 8.1.5.2A.4-1: ACTIVATE TEST MODE (step 10, Table 8.1.5.2A.3-1)

| Derivation Path: Table 4.7A-1 | | | |
|--|--------------|---------|------------------------------|
| Information Element | Value/remark | Comment | Condition |
| UE test loop mode | '00000110'B | | UE TEST LOOP MODE G (NOTE 1) |
| | '00000111'B | | UE TEST LOOP MODE H (NOTE 1) |
| | '00001000'B | | UE TEST LOOP MODE I (NOTE 1) |
| | '00000000'B | | UE TEST LOOP MODE A (NOTE 2) |
| | '00000001'B | | UE TEST LOOP MODE B (NOTE 2) |
| | '00000101'B | | UE TEST LOOP MODE F |
| NOTE 1: UE TEST LOOP MODE G/H/I is applicable only IF NOT S1_U_DataTransfer. | | | |
| NOTE 2: UE TEST LOOP MODE A/B is applicable only IF S1_U_DataTransfer. | | | |

8.1.5.2B NB-IoT UE Attach, Connected Mode, UE Test Loopback Activated (State 2B-NB)

8.1.5.2B.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 8.1.4.4, unless otherwise specified in the test case.
- The procedure shall be performed under ideal radio conditions as defined in clause 8.2

User Equipment:

- The NB-IoT UE shall be in NB-IoT UE Connected mode, NB-IoT UE Test Mode Activated (State 2A-NB).

8.1.5.2B.2 Definition of system information messages

The same default system information messages are used as in clause 8.1.5.2.2.

NOTE: Loopback mode A/B is applicable only IF S1_U_DataTransfer; loopback mode G/H/I is applicable only IF NOT S1_U_DataTransfer.

8.1.5.2B.3 Procedure

Table 8.1.5.2B.3-1: NB-IoT UE Attach, Connected Mode, UE Test Loopback Activated procedure (state 2A-NB to state 2B-NB)

| Step | Procedure | Direction | Message Sequence |
|------|---|-----------|---|
| | | UE - SS | Message |
| 1 | The SS transmits a CLOSE UE TEST LOOP message to enter the UE test loop mode. | <-- | RRC: <i>DLInformationTransfer-NB</i> TC: CLOSE UE TEST LOOP |
| 2 | The UE transmits a CLOSE UE TEST LOOP COMPLETE message. | --> | RRC: <i>ULInformationTransfer-NB</i> TC: CLOSE UE TEST LOOP COMPLETE |

8.1.5.2B.4 Specific message contents

All specific message contents shall be referred to clause 8.1.6 and 8.1.7 and 4.7 with the exceptions below for Test loop mode G/H/I/F (for test loop A/B the default message content according to clause 4.7A shall be applied).

Table 8.1.5.2B.4-1: CLOSE UE TEST LOOP (step 1, Table 8.1.5.2B.3-1) for test loop mode G/H/I/F

| Derivation path: Table 4.7A-3 | | | |
|--------------------------------|--------------|---|-------------------------|
| Information Element | Value/Remark | Comment | Condition |
| UE test loop mode | '00000110'B | UE test loop mode G setup | TL_MODE_G |
| | '00000111'B | UE test loop mode H setup | TL_MODE_H |
| | '00001000'B | UE test loop mode I setup | TL_MODE_I |
| | '00000101'B | UE test loop mode F setup | TL_MODE_F |
| Operation mode and repetitions | | | TL_MODE_G, TL_MODE_H |
| M0 | 0 | | return_via_EMM_SMC |
| | 1 | | NBIOT_return_via_RLC |
| R6..R0 | '0000001'B | 1 The received DL message in uplink shall be looped back 1 time (once) | |
| Uplink data delay | '00000000'B | T_delay_modeG timer=0 sec | |
| SC-MTCH ID | '0100'H | same value as g-RNTI indicated in the default SCPTMConfiguration-NB message | TL_MODE_F |

| Condition | Explanation |
|----------------------|---|
| TL_MODE_G | Test loop mode G is applied |
| TL_MODE_H | Test loop mode H is applied |
| TL_MODE_I | Test loop mode I is applied |
| TL_MODE_F | Test loop mode F is applied |
| return_via_EMM_SMC | data is returned in uplink at the EMM entity for UE test loop mode G or the SMC SAP for UE test loop mode H |
| NBIOT_return_via_RLC | data is returned in uplink at the RLC AM-SAP of SRB1bis for NB-IoT UE used in MAC and RLC test cases |

8.1.5.3 NB-IoT UE Registered, Idle Mode (State 3-NB)

8.1.5.3.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 8.1.4.4, unless otherwise specified in the test case.
- The procedure shall be performed under ideal radio conditions as defined in clause 8.2

User Equipment:

- The NB-IoT UE shall be in NB-IoT UE Attach, Connected mode (State 2-NB).

8.1.5.3.2 Definition of system information messages

The same default system information messages are used as in clause 8.1.5.2.2.

8.1.5.3.3 Procedure

Table 8.1.5.3.3-1: NB-IoT Registered Idle Mode procedure (state 2-NB to state 3-NB)

| Step | Procedure | Direction | Message Sequence |
|------|--|-----------|-------------------------------------|
| | | UE - SS | Message |
| 1 | The SS transmits an <i>RRCConnectionRelease-NB</i> message to release RRC connection and move to RRC_IDLE. | <-- | RRC: <i>RRCConnectionRelease-NB</i> |

8.1.5.3.4 Specific message contents

None.

8.1.5.3A NB-IoT UE Registered, Idle Mode, UE Test Mode Activated (State 3A-NB)

8.1.5.3A.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the basic single cell environment, as defined in subclause 8.1.4.4, unless otherwise specified in the test case.
- The procedure shall be performed under ideal radio conditions as defined in clause 8.2

User Equipment:

- The NB-IoT UE shall be in NB-IoT UE Attach, Connected mode (State 2A-NB).

8.1.5.3A.2 Definition of system information messages

The same default system information messages are used as in clause 8.1.5.2.2.

8.1.5.3A.3 Procedure

Table 8.1.5.3A.3-1: NB-IoT Registered, Idle Mode, NB-IoT UE Test Mode Activated (state 2A-NB to state 3A-NB)

| Step | Procedure | Direction | Message Sequence |
|------|--|-----------|-------------------------------------|
| | | UE - SS | Message |
| 1 | The SS transmits an <i>RRCConnectionRelease-NB</i> message to release RRC connection and move to RRC_IDLE. | <-- | RRC: <i>RRCConnectionRelease-NB</i> |

8.1.5.3A.4 Specific message contents

None.

8.1.5.4 Void

8.1.5A Other generic procedures

8.1.5A.1 Procedure for IP address allocation in the CP CIoT

The purpose of this procedure is to allow the successful completion of IP address allocation if it is initiated by the UE therefore the result from the execution of the Procedure for IP address allocation in the CP CIoT shall not lead to assignment of a verdict.

Depending on the UE configuration there may be unpredictable delay in the start of the procedure. A guarding time of 1.2 sec is suggested within which the procedure is expected to start. If the timer expires then the test procedure, from which the Procedure for IP address allocation in the CP CIoT is called, shall advance to the next specified step.

The procedure only applies for IP data. The procedure is not applicable for Non IP type data and SMS.

Table 8.1.5A.1-1: Procedure for IP address allocation in the CP CIoT

| Step | Procedure | Message Sequence | |
|------|---|------------------|---|
| | | U - S | Message |
| - | EXCEPTION: Steps 1 to 2 below describe behaviour that depends on the contents of the latest PDN CONNECTIVITY REQUEST message sent by the UE prior to this procedure. | - | - |
| 1 | If the "PDN type" in the latest PDN CONNECTIVITY REQUEST message prior to this procedure was 'IPv6' or 'IPv4v6' then stateless address auto configuration may occur over SRB1bis, UE may send an ICMPv6 Router Solicitation | --> | RRC: <i>ULInformationTransfer-NB</i> NAS: ESM DATA TRANSPORT |
| 2 | The SS sends an ICMPv6 Router Advertisement containing the IPv6 prefix. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: ESM DATA TRANSPORT |

8.1.5A.2 Test procedure to check UE response to Paging for Control Plane CIoT MT access

8.1.5A.2.1 Initial conditions

System Simulator:

- 1 NB-IoT cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 8.2.

User Equipment:

- The UE is in RRC-IDLE.

8.1.5A.2.2 Definition of system information messages

The default system information messages are used with the exception(s) below.

Table 8.1.5A.2.2-1: SystemInformationBlockType1-NB

| |
|---|
| Derivation Path: Table 8.1.4.3.2-3, Condition ATTACH_WITHOUT_PDN. |
|---|

8.1.5A.2.3 Procedure

Table 8.1.5A.2.3-1: UE response to Paging for Control Plane Clot MT access

| St | Procedure | Message Sequence | | TP | Verdict |
|-------------|--|------------------|---|----|---------|
| | | U - S | Message/PDU/SDU | | |
| 1 | SS sends a <i>Paging</i> message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE <i>pagingRecordLists</i> . | <-- | RRC: <i>Paging-NB</i> | - | - |
| 2 | Check: Does the UE transmit an <i>RRCConnectionRequest-NB</i> message "mt-access"? | --> | RRC: <i>RRCConnectionRequest-NB</i> | - | P |
| 3 | SS transmits an <i>RRCConnectionSetup-NB</i> message. | <-- | RRC: <i>RRCConnectionSetup-NB</i> | - | - |
| - | EXCEPTION: Steps 4a1a1 to 4a1b3b1 describe behaviour which depends on UE implementation; the "lower case letter" identifies a step sequence which takes place depending on whether the UE is configured or not to establish PDN upon establishing RRC connection and whether UE has pending data to transmit. | - | - | - | - |
| 4a1a 1 | IF UE is configured to establish PDN upon establishing RRC connection and UE has pending data to transmit THEN Check: Does the UE transmit an <i>RRCConnectionSetupComplete-NB</i> message and a CONTROL PLANE SERVICE REQUEST message containing a ESM DATA TRANSPORT message in the ESM message container IE? | --> | RRC: <i>RRCConnectionSetupComplete-NB</i> NAS: CONTROL PLANE SERVICE REQUEST NAS: ESM DATA TRANSPORT | - | P |
| 4a1b 1 | ELSE Check: Does the UE transmit an <i>RRCConnectionSetupComplete-NB</i> message and a CONTROL PLANE SERVICE REQUEST message not containing user data (there is not yet a PDN) not containing a PDN CONNECTIVITY REQUEST message? | --> | RRC: <i>RRCConnectionSetupComplete-NB</i> NAS: CONTROL PLANE SERVICE REQUEST | - | P |
| 4a1b 2 | SS starts wait timer 2 sec. Note: The Service request procedure success is guarded in the UE by timer T3417 = 5 sec after which expiry without any DL action the UE will consider the procedure as failed. | - | - | - | - |
| - | EXCEPTION: Steps 4a1b3a1 to 4a1b3a4 describe behaviour which depends on UE implementation; the "lower case letter" identifies a step sequence which takes place depending on whether the UE is configured or not to establish PDN in RRC-CONNECTED after it sends the CONTROL PLANE SERVICE REQUEST message. | - | - | - | - |
| 4a1b 3a1 | The UE transmits a PDN CONNECTIVITY REQUEST message. | --> | RRC: <i>ULInformationTransfer-NB</i> NAS: PDN CONNECTIVITY REQUEST | - | - |
| 4a1b 3a2 | Stop timer wait timer 2 sec. | - | - | - | - |
| 4a1b 3a3 | The SS transmits an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST | - | - |
| - | EXCEPTION: IF <i>pc_IP_PDN</i> AND not all IP address information was allocated in the ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message sent in step 4a1b3a3 TNEN | - | - | - | - |

| | | | | | |
|---------|---|-----|--|---|---|
| | In parallel to the events described in steps 4a1b3a4 the Generic 'Procedure for IP address allocation in the CP CIoT' described in TS 36.508 [18], clause 8.1.5A.1 takes place. | | | | |
| 4a1b3a4 | The UE transmits an ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULInformationTransfer-NB</i> NAS:ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT | - | - |
| 4a1b3b1 | Timer 2 sec expires | - | - | - | - |
| 5 | The SS transmits a SERVICE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: SERVICE ACCEPT | - | - |

8.1.5A.2.4 Specific message contents

All specific message contents shall be referred to clause 8.1.6 and 4.7 with the exceptions below.

Table 8.1.5A.2.4-1: Message *RRCConnectionRequest-NB* (step 2, Table 8.1.5A.2.3-1)

| Derivation path: Table 8.1.6.1-10 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| <i>RRCConnectionRequest-NB</i> ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| <i>rrcConnectionRequest-r13</i> SEQUENCE { | | | |
| establishmentCause-r13 | mt-Access | | |
| } | | | |
| } | | | |
| } | | | |

Table 8.1.5A.2.4-2: Message *RRCConnectionSetupComplete-NB* (steps 4a1a1, 4a1b1, Table 8.1.5A.2.3-1)

| Derivation path: Table 8.1.6.1-15 | | | |
|---|---|---------|---------------------------|
| Information Element | Value/Remark | Comment | Condition |
| <i>RRCConnectionSetupComplete-NB</i> ::= SEQUENCE { | | | |
| <i>rrc-TransactionIdentifier</i> | the same value as included in the <i>RRCConnectionSetup-NB</i> message received from SS | | |
| criticalExtensions CHOICE { | | | |
| <i>rrcConnectionSetupComplete-r13</i> SEQUENCE { | | | |
| attachWithoutPDN-Connectivity-r13 | True | | px_DoAttachWithoutPDN |
| | Not Present | | NOT px_DoAttachWithoutPDN |
| } | | | |
| } | | | |
| } | | | |

Table 8.1.5A.2.4-3: PDN CONNECTIVITY REQUEST (steps 4a1a1, 4a1b3a1, Table 8.1.5A.2.3-1)

| Derivation path: Table 4.7.3-20 | | | |
|---|----------------------------------|----------------|--------------------------------------|
| Information Element | Value/Remark | Comment | Condition |
| Access point name | Not Present or Any allowed value | | |
| Protocol configuration options | Not Present | | |
| Header compression configuration | Any allowed value | | pc_HCCP Clot AND pc_IP_PD N |
| Extended protocol configuration options | Not Present or Any allowed value | | |

Table 8.1.5A.2.4-4: Message ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (step 4a1b3a3, Table 8.1.5A.2.3-1)

| Derivation path: Table 4.7.3-6 | | | |
|---|----------------------|---|--------------------------------------|
| Information Element | Value/Remark | Comment | Condition |
| Protocol configuration options | Not present | | |
| Header compression configuration | 0000H | No Compression profile NOTE: For the purposes of CloT (NAS) testing regardless of the Compression files supported by the UE and indicated in the PDN CONNECTIVITY REQUEST, the SS does not agree header compression to be applied. | pc_HCCP CloT AND pc_IP_PD N |
| Control plane only indication | '0001'B | PDN connection can be used for control plane CloT EPS optimization only | |
| Extended protocol configuration options | | The content of the IE below uses the same fields and Conditions (and their meaning) as those defined in TS 36.508 [18] for the IE 'Protocol configuration options' | |
| Container ID n | '0003'H | n assigned to next available number | DNS IPv6 |
| Length of container ID n contents | | Length value determined by the TTCN implementation | |
| Container ID n contents | IPv6 address | DNS IPv6 Address | |
| Container ID n+1 | '000D'H | n assigned to next available number | DNS IPv4 |
| Length of container ID n+1 contents | | Length value determined by the TTCN implementation | |
| Container ID n+1 contents | IPv4 address | DNS IPv4 Address | |
| Serving PLMN rate control | '11111111 11111111'B | Unrestricted Max number of uplink ESM DATA TRANSPORT messages including User data container IEs the UE is allowed to send via a PDN connection per 6 minute interval | |

Table 8.1.5A.2.4-5: Message ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT (step 4a1b3a4, Table 8.1.5A.2.3-1)

| Derivation path: Table 4.7.3-4 | | | |
|---|----------------------------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Protocol configuration options | Not present | | |
| Extended protocol configuration options | Not present or any allowed value | | |

8.1.5A.3 Test procedure to check UE initiation of Control Plane Clot MO user data transfer non-SMS transport

8.1.5A.3.1 Initial conditions

System Simulator:

- 1 NB-IoT cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 8.2.

User Equipment:

- The UE is in RRC-IDLE.

8.1.5A.3.2 Definition of system information messages

The default system information messages are used with the exception(s) below.

Table 8.1.5A.3.2-1: SystemInformationBlockType1-NB

| |
|---|
| Derivation Path: Table 8.1.4.3.2-3, condition ATTACH_WITHOUT_PDN. |
|---|

8.1.5A.3.3 Procedure

Table 8.1.5A.3.3-1: Control Plane Clot MO user data transfer non-SMS transport

| St | Procedure | Message Sequence | | TP | Verdict |
|-----------|---|------------------|---|----|---------|
| | | U - S | Message/PDU/SDU | | |
| 1 | Check: Does the UE transmit an <i>RRCConnectionRequest-NB</i> message? | --> | RRC: <i>RRCConnectionRequest-NB</i> | - | P |
| 2 | SS transmits an <i>RRCConnectionSetup-NB</i> message. | <-- | RRC: <i>RRCConnectionSetup-NB</i> | - | - |
| - | EXCEPTION: Steps 3a1 to 3b1 describe behaviour that depends on UE capabilities; the "lower case letter" identifies a step sequence that take place depending on whether the UE is configured to do Attach Without PDN or not. | - | - | - | - |
| 3a1a 1 | Void. | - | - | - | - |
| 3a1b 1 | IF <i>px_DoAttachWithoutPDN</i> THEN Check: Does the UE transmit an <i>RRCConnectionSetupComplete-NB</i> message and a CONTROL PLANE SERVICE REQUEST message? | --> | RRC: <i>RRCConnectionSetupComplete-NB</i> NAS: CONTROL PLANE SERVICE REQUEST | - | P |
| 3a1b 2 | Check: Does the UE transmit a PDN CONNECTIVITY REQUEST message? | --> | RRC: <i>ULInformationTransfer-NB</i> NAS: PDN CONNECTIVITY REQUEST | - | P |
| 3a2 | The SS transmits an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST | - | - |
| - | EXCEPTION: IF <i>pc_IP_PDN</i> AND not all IP address information was allocated in the ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message sent in step 3a2 THEN In parallel to the events described in steps 3a3 the Generic 'Procedure for IP address allocation in the CP Clot' described in TS 36.508 [18], clause 8.1.5A.1 takes place. | - | - | - | - |
| 3a3 | Check: Does the UE transmit an ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message? | --> | RRC: <i>ULInformationTransfer-NB</i> NAS:ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT | - | P |
| 3a4 | Check: Does the UE send an ESM DATA TRANSPORT message containing user data? | --> | RRC: <i>ULInformationTransfer-NB</i> NAS: ESM DATA TRANSPORT | - | P |
| 3b1 | ELSE (NOT <i>px_DoAttachWithoutPDN</i>) Check: Does the UE transmit an <i>RRCConnectionSetupComplete-NB</i> message and a CONTROL PLANE SERVICE REQUEST message containing user data encapsulated in an ESM DATA TRANSPORT message included in the ESM message container IE? | --> | RRC: <i>RRCConnectionSetupComplete-NB</i> NAS: CONTROL PLANE SERVICE REQUEST NAS: ESM DATA TRANSPORT | - | P |
| 4 | The SS transmits a SERVICE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: SERVICE ACCEPT | - | - |

8.1.5A.3.4 Specific message contents

All specific message contents shall be referred to clause 8.1.6 and 4.7 with the exceptions below.

Table 8.1.5A.3.4-1: Message *RRCConnectionRequest-NB* (step 1, Table 8.1.5A.3.3-1)

| Derivation path: Table 8.1.6.1-10 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| RRCConnectionRequest-NB ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionRequest-r13 SEQUENCE { | | | |
| establishmentCause-r13 | mo-data | | |
| } | | | |
| } | | | |
| } | | | |

Table 8.1.5A.3.4-2: Message *RRCConnectionSetupComplete-NB* (steps 3a1a1, 3a1b1, Table 8.1.5A.3.3-1)

| Derivation path: Table 8.1.6.1-15 | | | |
|--|---|---------|---------------------------|
| Information Element | Value/Remark | Comment | Condition |
| RRCConnectionSetupComplete-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | the same value as included in the <i>RRCConnectionSetup-NB</i> message received from SS | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionSetupComplete-r13 SEQUENCE { | | | |
| attachWithoutPDN-Connectivity-r13 | True | | px_DoAttachWithoutPDN |
| | Not Present | | NOT px_DoAttachWithoutPDN |
| } | | | |
| } | | | |
| } | | | |

Table 8.1.5A.3.4-3: Message CONTROL PLANE SERVICE REQUEST (step 3b1, Table 8.1.5A.3.3-1)

| Derivation path: Table 4.7.2-28. | | | |
|----------------------------------|---|--|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Data service type | | | |
| ..Data service type value | mobile originating request | | |
| ESM message container | ESM DATA TRANSPORT message, User data container not checked | If the ESM DATA TRANSPORT message 'User data container' IE needs to be checked and then its content shall be specified in TC | |

Table 8.1.5A.3.4-4: PDN CONNECTIVITY REQUEST (steps 3a1a1, 3a1b2, Table 8.1.5A.3.3-1)

| Derivation path: Table 4.7.3-20 | | | |
|---|----------------------------------|----------------|--------------------------------------|
| Information Element | Value/Remark | Comment | Condition |
| Access point name | Not Present or Any allowed value | | |
| Protocol configuration options | Not Present | | |
| Header compression configuration | Any allowed value | | pc_HCCP Clot AND pc_IP_PD N |
| Extended protocol configuration options | Not Present or Any allowed value | | |

Table 8.1.5A.3.4-5: Message ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (step 3a2, Table 8.1.5A.3.3-1)

| Derivation path: Table 4.7.3-6 | | | |
|---|----------------------|---|--------------------------------------|
| Information Element | Value/Remark | Comment | Condition |
| Protocol configuration options | Not present | | |
| Header compression configuration | 0000H | No Compression profile NOTE: For the purposes of CloT (NAS) testing regardless of the Compression files supported by the UE and indicated in the PDN CONNECTIVITY REQUEST, the SS does not agree header compression to be applied. | pc_HCCP CloT AND pc_IP_PD N |
| Control plane only indication | '0001'B | PDN connection can be used for control plane CloT EPS optimization only | |
| Extended protocol configuration options | | The content of the IE below uses the same fields and Conditions (and their meaning) as those defined in TS 36.508 [18] for the IE 'Protocol configuration options' | |
| Container ID n | '0003'H | n assigned to next available number | DNS IPv6 |
| Length of container ID n contents | | Length value determined by the TTCN implementation | |
| Container ID n contents | IPv6 address | DNS IPv6 Address | |
| Container ID n+1 | '000D'H | n assigned to next available number | DNS IPv4 |
| Length of container ID n+1 contents | | Length value determined by the TTCN implementation | |
| Container ID n+1 contents | IPv4 address | DNS IPv4 Address | |
| Serving PLMN rate control | '11111111 11111111'B | Unrestricted Max number of uplink ESM DATA TRANSPORT messages including User data container IEs the UE is allowed to send via a PDN connection per 6 minute interval | |

Table 8.1.5A.3.4-6: Message ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT (step 3a3, Table 8.1.5A.3.3-1)

| Derivation path: Table 4.7.3-4 | | | |
|---|----------------------------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Protocol configuration options | Not present | | |
| Extended protocol configuration options | Not present or any allowed value | | |

8.1.5A.3A Test procedure to check UE initiation of Control Plane Clot MO user data transfer SMS transport

8.1.5A.3A.1 Initial conditions

System Simulator:

- 1 NB-IoT cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 8.2.

User Equipment:

- The UE is in RRC-IDLE.

8.1.5A.3A.2 Definition of system information messages

The default system information messages are used with the exception(s) below.

Table 8.1.5A.3A.2-1: SystemInformationBlockType1-NB

| |
|---|
| Derivation Path: Table 8.1.4.3.2-3, condition ATTACH_WITHOUT_PDN. |
|---|

8.1.5A.3A.3 Procedure

Table 8.1.5A.3A.3-1: Control Plane Clot MO user data transfer SMS transport

| St | Procedure | Message Sequence | | TP | Verdict |
|-----------|---|------------------|--|----|---------|
| | | U - S | Message/PDU/SDU | | |
| 1 | Check: Does the UE transmit an <i>RRCConnectionRequest-NB</i> message? | --> | RRC: <i>RRCConnectionRequest-NB</i> | - | P |
| 2 | SS transmits an <i>RRCConnectionSetup-NB</i> message. | <-- | RRC: <i>RRCConnectionSetup-NB</i> | - | - |
| 3a1 | Void. | - | - | - | - |
| 3a2 | Void. | - | - | - | - |
| 3a3 | Void. | - | - | - | - |
| 3b1 | Check: Does the UE transmit an <i>RRCConnectionSetupComplete-NB</i> message and a CONTROL PLANE SERVICE REQUEST message, data service type="mobile originating request", integrity protected and partially ciphered and including the SMS in the NAS message container IE, and, not containing a PDN CONNECTIVITY REQUEST message? | --> | RRC: <i>RRCConnectionSetupComplete-NB</i> NAS: CONTROL PLANE SERVICE REQUEST | - | P |
| 3b2 | SS starts wait timer 2 sec. Note: The Service request procedure success is guarded in the UE by timer T3417 = 5 sec after which expiry without any DL action the UE will consider the procedure as failed. | - | - | - | - |
| - | EXCEPTION: Steps 3b3a1 to 3b3b1 describe behaviour which depends on UE implementation; the "lower case letter" identifies a step sequence which takes place depending on whether the UE is configured or not to establish PDN in RRC-CONNECTED after it sends the CONTROL PLANE SERVICE REQUEST message. | - | - | - | - |
| 3b3a 1 | IF <i>px_nonSMSTransport_CP_Clot</i> AND <i>px_DoAttachWithoutPDN</i> THEN The UE transmits a PDN CONNECTIVITY REQUEST message. | --> | RRC: <i>ULInformationTransfer-NB</i> NAS: PDN CONNECTIVITY REQUEST | - | - |
| 3b3a 2 | Stop timer wait timer 2 sec. | - | - | - | - |
| 3b3a 3 | The SS transmits an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST | - | - |
| - | EXCEPTION: IF <i>pc_IP_PDN</i> AND not all IP address information was allocated in the ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message sent in step 3b3a3 THEN In parallel to the events described in steps 3b3a4 the Generic 'Procedure for IP address allocation in the CP Clot' described in TS 36.508 [18], clause 8.1.5A.1 takes place. | - | - | - | - |
| 3b3a 4 | The UE transmits an ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT message. | --> | RRC: <i>ULInformationTransfer-NB</i> NAS:ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT | - | - |
| 3b3b 1 | Timer 2 sec expires | - | - | - | - |
| 4 | The SS transmits a SERVICE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: SERVICE ACCEPT | - | - |

8.1.5A.3A.4 Specific message contents

All specific message contents shall be referred to clause 8.1.6 and 4.7 with the exceptions below.

Table 8.1.5A.3A.4-1: Message *RRConnectionRequest-NB* (step 1, Table 8.1.5A.3A.3-1)

| Derivation path: Table 8.1.6.1-10 | | | |
|---------------------------------------|--------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| RRConnectionRequest-NB ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionRequest-r13 SEQUENCE { | | | |
| establishmentCause-r13 | mo-data | | |
| } | | | |
| } | | | |
| } | | | |

Table 8.1.5A.3A.4-2: Message *RRConnectionSetupComplete-NB* (steps 3a1, 3b1, Table 8.1.5A.3A.3-1)

| Derivation path: Table 8.1.6.1-15 | | | |
|---|--|---------|---------------------------|
| Information Element | Value/Remark | Comment | Condition |
| RRConnectionSetupComplete-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | the same value as included in the <i>RRConnectionSetup-NB</i> message received from SS | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionSetupComplete-r13 SEQUENCE { | | | |
| attachWithoutPDN-Connectivity-r13 | True | | px_DoAttachWithoutPDN |
| | Not Present | | NOT px_DoAttachWithoutPDN |
| } | | | |
| } | | | |
| } | | | |

Table 8.1.5A.3A.4-3: Message CONTROL PLANE SERVICE REQUEST (steps 3a1, 3b1, Table 8.1.5A.3A.3-1)

| Derivation path: Table 4.7.2-28. | | | |
|----------------------------------|----------------------------|--|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Data service type | | | |
| ..Data service type value | mobile originating request | | |
| NAS message container | SMS - content not checked | If the SMS needs to be checked and then its content shall be specified in TC | |

Table 8.1.5A.3A.4-4: PDN CONNECTIVITY REQUEST (steps 3a1, 3b3a1, Table 8.1.5A.3A.3-1)

| Derivation path: Table 4.7.3-20 | | | |
|---|----------------------------------|----------------|--------------------------------------|
| Information Element | Value/Remark | Comment | Condition |
| Access point name | Not Present or Any allowed value | | |
| Protocol configuration options | Not Present | | |
| Header compression configuration | Any allowed value | | pc_HCCP Clot AND pc_IP_PD N |
| Extended protocol configuration options | Not Present or Any allowed value | | |

Table 8.1.5A.3A.4-5: Message ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST (steps 3a2, 3b3a3, Table 8.1.5A.3A.3-1)

| Derivation path: Table 4.7.3-6 | | | |
|---|----------------------|---|--------------------------------------|
| Information Element | Value/Remark | Comment | Condition |
| Protocol configuration options | Not present | | |
| Header compression configuration | 0000H | No Compression profile NOTE: For the purposes of Clot (NAS) testing regardless of the Compression files supported by the UE and indicated in the PDN CONNECTIVITY REQUEST, the SS does not agree header compression to be applied. | pc_HCCP Clot AND pc_IP_PD N |
| Control plane only indication | '0001'B | PDN connection can be used for control plane Clot EPS optimization only | |
| Extended protocol configuration options | | The content of the IE below uses the same fields and Conditions (and their meaning) as those defined in TS 36.508 [18] for the IE 'Protocol configuration options' | |
| Container ID n | '0003'H | n assigned to next available number | DNS IPv6 |
| Length of container ID n contents | | Length value determined by the TTCN implementation | |
| Container ID n contents | IPv6 address | DNS IPv6 Address | |
| Container ID n+1 | '000D'H | n assigned to next available number | DNS IPv4 |
| Length of container ID n+1 contents | | Length value determined by the TTCN implementation | |
| Container ID n+1 contents | IPv4 address | DNS IPv4 Address | |
| Serving PLMN rate control | '11111111 11111111'B | Unrestricted Max number of uplink ESM DATA TRANSPORT messages including User data container IEs the UE is allowed to send via a PDN connection per 6 minute interval | |

Table 8.1.5A.3A.4-6: Message ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT (steps 3a3, 3b3a4, Table 8.1.5A.3A.3-1)

| Derivation path: Table 4.7.3-4 | | | |
|---|----------------------------------|---------|-----------|
| Information Element | Value/Remark | Comment | Condition |
| Protocol configuration options | Not present | | |
| Extended protocol configuration options | Not present or any allowed value | | |

8.1.5A.4 Test procedure to check release of PDN connectivity before leaving RRC-CONNECTED for attach without PDN

8.1.5A.4.1 Initial conditions

- 1 NB-IoT cell, default parameters.
- The procedure shall be performed under ideal radio conditions as defined in clause 8.2.

User Equipment:

- The UE is in RRC-CONNECTED.
- px_DoAttachWithoutPDN=TRUE

8.1.5A.4.2 Definition of system information messages

The default system information messages are used with the exception(s) below.

Table 8.1.5A.4.2-1: SystemInformationBlockType1-NB

| |
|---|
| Derivation Path: Table 8.1.4.3.2-3, condition ATTACH_WITHOUT_PDN. |
|---|

8.1.5A.4.3 Procedure

Table 8.1.5A.4.3-1: Release of PDN connectivity before leaving RRC-CONNECTED for attach without PDN

| St | Procedure | Message Sequence | | TP | Verdict |
|-----|---|------------------|--|----|---------|
| | | U - S | Message/PDU/SDU | | |
| - | EXCEPTION: Steps 1a1 and 1b2 describe behaviour that depends on UE implementation; the "lower case letter" identifies a step sequence which may take place depending on whether the UE is configured to do Attach Without PDN or not. | - | - | - | - |
| 1 | SS starts timer 60 sec | - | - | - | - |
| - | EXCEPTION: Steps 2a1-2b3 describe behaviour that depends on UE implementation; the "lower case letter" identifies a step sequence which may take place depending on whether the UE will initiate PDN deactivation. | - | - | - | - |
| 2a1 | Check: Does the UE transmit a PDN DISCONNECT REQUEST message? | --> | RRC: <i>ULInformationTransfer</i> NAS: PDN DISCONNECT REQUEST | - | P |
| 2a2 | The SS transmits a DEACTIVATE EPS BEARER CONTEXT REQUEST message. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: DEACTIVATE EPS BEARER CONTEXT REQUEST | - | - |
| 2a3 | Check: Does the UE transmit a DEACTIVATE EPS BEARER CONTEXT ACCEPT message? | --> | RRC: <i>ULInformationTransfer</i> NAS: DEACTIVATE EPS BEARER CONTEXT ACCEPT | - | P |
| 2a4 | SS stops 60 sec timer. | - | - | - | - |
| 2b1 | 60 sec timer expires. | - | - | - | - |
| 2b2 | SS releases the PDN connectivity by transmitting a DEACTIVATE EPS BEARER CONTEXT REQUEST message. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: DEACTIVATE EPS BEARER CONTEXT REQUEST | - | - |
| 2b3 | Check: Does the UE transmit a DEACTIVATE EPS BEARER CONTEXT ACCEPT message? | --> | RRC: <i>ULInformationTransfer-NB</i> NAS: DEACTIVATE EPS BEARER CONTEXT ACCEPT | - | P |

8.1.5A.4.4 Specific message contents

All specific message contents shall be referred to clause 8.1.6 and 4.7 with the exceptions below.

Table 8.1.5A.4.4-1: DEACTIVATE EPS BEARER CONTEXT REQUEST (step 2a2, Table 8.1.5A.4.3-1)

| Derivation Path: Table 4.7.3-12, Condition UE-INITIATED | | | |
|---|--------------|----------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ESM cause | 00100100 | regular deactivation | |

Table 8.1.5A.4.4-2: DEACTIVATE EPS BEARER CONTEXT REQUEST (step 2b2, Table 8.1.5A.4.3-1)

| Derivation Path: Table 4.7.3-12, Condition NETWORK-INITIATED | | | |
|--|--------------|----------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ESM cause | 00100100 | regular deactivation | |

8.1.5A.5 Test procedure to check that NB-IoT UE is camped on a new NB-IOT cell

This procedure verifies whether the UE has camped on a new NB-IoT cell with different TAI.

The procedure is defined in table 8.1.5A.5-1.

Table 8.1.5A.5-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|----|--|------------------|--|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits an <i>RRCConnectionRequest-NB</i> message on the cell specified in the test case. | --> | RRC: <i>RRCConnectionRequest-NB</i> | - | - |
| 2 | SS transmit an <i>RRCConnectionSetup-NB</i> message. | <-- | RRC: <i>RRCConnectionSetup-NB</i> | - | - |
| 3 | The UE transmits an <i>RRCConnectionSetupComplete-NB</i> message to confirm the successful completion of the connection establishment and a TRACKING AREA UPDATE REQUEST message is sent to update the registration of the actual tracking area. | --> | RRC: <i>RRCConnectionSetupComplete-NB</i> NAS: TRACKING AREA UPDATE REQUEST | - | - |
| 4 | SS responds with TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: TRACKING AREA UPDATE ACCEPT | - | - |
| 5 | Check: Does the UE send a TRACKING AREA UPDATE COMPLETE on the cell specified in the test case? | --> | RRC: <i>ULInformationTransfer-NB</i> NAS: TRACKING AREA UPDATE COMPLETE | - | P |
| 6 | The SS transmits an <i>RRCConnectionRelease-NB</i> message to release RRC connection and move to RRC_IDLE. | <-- | RRC: <i>RRCConnectionRelease-NB</i> | - | - |

8.1.5A.6 Test procedure to check that NB-IoT UE resume RRC connection on a new NB-IOT cell

This procedure verifies whether the UE resumes RRC connection on a new NB-IoT cell with different TAI.

The procedure is defined in table 8.1.5A.6-1.

Table 8.1.5A.6-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|----|---|------------------|---|----|---------|
| | | U - S | Message | | |
| 1 | The UE transmits an <i>RRCConnectionResumeRequest-NB</i> message on the cell specified in the test case. | --> | RRC: <i>RRCConnectionResumeRequest-NB</i> | - | - |
| 2 | SS transmits an <i>RRCConnectionResume-NB</i> message. | <-- | RRC: <i>RRCConnectionResume-NB</i> | - | - |
| 3 | The UE transmits an <i>RRCConnectionResumeComplete-NB</i> message to confirm the successful completion of the connection establishment and a TRACKING AREA UPDATE REQUEST message is sent to update the registration of the actual tracking area. | --> | RRC: <i>RRCConnectionResumeComplete-NB</i> NAS: TRACKING AREA UPDATE REQUEST | - | - |
| 4 | SS responds with TRACKING AREA UPDATE ACCEPT message. | <-- | RRC: <i>DLInformationTransfer-NB</i> NAS: TRACKING AREA UPDATE ACCEPT | - | - |
| 5 | Check: Does the UE send a TRACKING AREA UPDATE COMPLETE on the cell specified in the test case? | --> | RRC: <i>ULInformationTransfer-NB</i> NAS: TRACKING AREA UPDATE COMPLETE | - | P |
| 6 | The SS transmits an <i>RRCConnectionRelease-NB</i> message to release RRC connection and move to RRC_IDLE. | <-- | RRC: <i>RRCConnectionRelease-NB</i> | - | - |

8.1.5A.7

8.1.5A.8 Test procedure to check RRC_CONNECTED state for NB-IoT

Table 8.1.5A.8-1: Test procedure sequence

| St | Procedure | Message Sequence | | TP | Verdict |
|----|--|------------------|-----------------------------------|----|---------|
| | | U - S | Message/PDU/SDU | | |
| 1 | The SS sends <i>UECapabilityEnquiry-NB</i> message to the UE. | <-- | <i>UECapabilityEnquiry-NB</i> | - | - |
| 2 | Check: Does the UE send a <i>UECapabilityInformation-NB</i> message? | --> | <i>UECapabilityInformation-NB</i> | - | P |

8.1.5A.9 Test Procedure to establish radio bearers in User Plane

8.1.5A.9.1 Initial conditions

System Simulator:

- Parameters are set to the default parameters for the NB-IoT single cell environment, as defined in subclause 8.1.4.1.1, unless otherwise specified in the test case.
- The procedure shall be performed under ideal radio conditions as defined in clause 8.2

User Equipment:

- The NB-IoT UE shall be in NB-IoT Registered, Idle mode (State 3-NB) for condition S1_U_DataTransfer.

8.1.5A.9.2 Definition of system information messages

The default system information messages are used with the exception(s) below.

Table 8.1.5A.9.2-1: SystemInformationBlockType1-NB

| |
|--|
| Derivation Path: Table 8.1.4.3.2-3, condition ATTACH_WITH_PDN. |
|--|

8.1.5A.9.3 Procedure

The establishment of generic radio bearer connection is assumed to always be mobile terminated.

Table 8.1.5A.9.3-1: Generic Radio Bearer establishment procedure

| Step | Procedure | U - S | Message Sequence Message |
|------|--|-------|---|
| 1 | SS sends a <i>Paging</i> message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE <i>pagingRecordLists</i> . | <-- | RRC: <i>Paging-NB</i> |
| 2 | UE transmits an <i>RRCCONNECTIONREQUEST-NB</i> message. | --> | RRC: <i>RRCCONNECTIONREQUEST-NB</i> |
| 3 | SS transmit an <i>RRCCONNECTIONSETUP-NB</i> message. | <-- | RRC: <i>RRCCONNECTIONSETUP-NB</i> |
| 4 | The UE transmits an <i>RRCCONNECTIONSETUPCOMPLETE-NB</i> message to confirm the successful completion of the connection establishment and to initiate the session management procedure by including the CONTROL PLANE SERVICE REQUEST message. | --> | RRC: <i>RRCCONNECTIONSETUPCOMPLETE-NB</i> NAS: CONTROL PLANE SERVICE REQUEST |
| 5 | The SS transmits a <i>SecurityModeCommand</i> message to activate AS security. | <-- | RRC: <i>SecurityModeCommand</i> |
| 6 | The UE transmits a <i>SecurityModeComplete</i> message and establishes the initial security configuration. | --> | RRC: <i>SecurityModeComplete</i> |
| 7 | The SS configures a new data radio bearer, associated with the default EPS bearer context. The <i>RRCCONNECTIONRECONFIGURATION-NB</i> message is using condition DRB(1). | <-- | RRC: <i>RRCCONNECTIONRECONFIGURATION-NB</i> |
| 8 | The UE transmits an <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE-NB</i> message to confirm the establishment of the new data radio bearer, associated with the default EPS bearer context. | --> | RRC: <i>RRCCONNECTIONRECONFIGURATIONCOMPLETE-NB</i> |

8.1.5A.9.4 Specific message contents

All specific message contents shall be referred to clause 4.6, 4.7 and 8.1.6.

8.1.6 NB-IoT Default RRC message and information elements contents

This clause contains the default values of common RRC messages and information elements, which unless indicated otherwise in specific clauses of TS 36.521-1 [21], TS 36.521-3 [34], TS 36.523-1 [18] and other clauses in this specification. All the messages and information elements are listed in alphabetical order.

8.1.6.1 NB-IoT Contents of RRC messages

– *DLInformationTransfer-NB***Table 8.1.6.1-1: *DLInformationTransfer-NB***

| Derivation Path: 36.331 clause 6.7.2 | | | |
|---|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| DLInformationTransfer-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| dlInformationTransfer-r13 SEQUENCE { | | | |
| dedicatedInfoNAS-r13 | Set according to specific message content | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

– *Paging-NB***Table 8.1.6.1-2: *Paging-NB***

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|--|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| Paging-NB ::= SEQUENCE { | | | |
| pagingRecordList-r13 SEQUENCE (SIZE (1..maxPageRec)) OF SEQUENCE { | 1 entry | | |
| ue-Identity-r13[1] CHOICE { | | | |
| s-TMSI | Set to the value of the S-TMSI of the UE | | |
| } | | | |
| } | | | |
| systemInfoModification-r13 | Not present | | |
| systemInfoModification-eDRX-r13 | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |

RRCCONNECTIONRECONFIGURATION-NB

Table 8.1.6.1-3: RRCCONNECTIONRECONFIGURATION-NB

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONRECONFIGURATION-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE{ | | | |
| rrcConnectionReconfiguration-r13 SEQUENCE { | | | |
| dedicatedInfoNASList-r13 | Not present | | |
| | Set according to specific message content | | NB-DRB(n) |
| radioResourceConfigDedicated-r13 | Not present | | |
| | RadioResourceConfigDedicated-NB-DRB(n) | | NB-DRB(n) |
| fullConfig-r13 | Not present | | |
| | Present | | Reestab |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

| Condition | Explanation |
|-----------|--|
| NB-DRB | Establishment of additional n x AM DRB:s (maximum number of AM DRBs: 2) |
| Reestab | This field is optionally present, need ON upon the first reconfiguration after RRC connection re-establishment; otherwise the field is not present |

RRCCONNECTIONRECONFIGURATIONCOMPLETE-NB

Table 8.1.6.1-4: RRCCONNECTIONRECONFIGURATIONCOMPLETE-NB

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONRECONFIGURATIONCOMPLETE-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionReconfigurationComplete-r13 SEQUENCE { | | | |
| lateNonCriticalExtension | Not checked | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCONNECTIONREESTABLISHMENT-NB***Table 8.1.6.1-5: *RRCCONNECTIONREESTABLISHMENT-NB***

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|-------------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONREESTABLISHMENT-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcConnectionReestablishment-r13 SEQUENCE { | | | |
| radioResourceConfigDedicated-r13 | RadioResourceConfigDedicated-NB-SRB | | |
| nextHopChainingCount | 0 | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCONNECTIONREESTABLISHMENTCOMPLETE-NB***Table 8.1.6.1-6: *RRCCONNECTIONREESTABLISHMENTCOMPLETE-NB***

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONREESTABLISHMENTCOMPLETE-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionReestablishmentComplete-r13 SEQUENCE { | | | |
| lateNonCriticalExtension | Not checked | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCONNECTIONREESTABLISHMENTREQUEST-NB***Table 8.1.6.1-7: RRCCONNECTIONREESTABLISHMENTREQUEST-NB**

| Derivation Path: 36.331 clause 6.7.2 | | | |
|---|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONREESTABLISHMENTREQUEST-NB ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionReestablishmentRequest-r13 SEQUENCE { | | | |
| ue-Identity-r13 | Set according to specific message content | | |
| reestablishmentCause-r13 | Set according to specific message content | | |
| spare | Present but contents not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCONNECTIONREJECT-NB***Table 8.1.6.1-8: RRCCONNECTIONREJECT-NB**

| Derivation Path: 36.331 clause 6.7.2 | | | |
|---------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONREJECT-NB ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcConnectionReject-r13 SEQUENCE { | | | |
| extendedWaitTime | 3(seconds) | | |
| rrc-SuspendIndication-r13 | Not present | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCConnectionRelease-NB***Table 8.1.6.1-9: RRCConnectionRelease-NB**

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionRelease-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcConnectionRelease-r13 SEQUENCE { | | | |
| releaseCause-r13 | other | | |
| resumIdentity-r13 | Not present | | |
| extendedWaitTime-r13 | Not present | | |
| redirectedCarrierInfo | Not present | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCConnectionRequest-NB***Table 8.1.6.1-10: RRCConnectionRequest-NB**

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionRequest-NB ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionRequest-r13 SEQUENCE { | | | |
| ue-Identity-r13 CHOICE { | | | |
| s-TMSI | Any allowed value | | |
| } | | | |
| establishmentCause-r13 | Present but contents not checked | | |
| multiToneSupport-r13 | Not checked | | |
| multiCarrierSupport-r13 | Not checked | | |
| spare | Present but contents not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCConnectionResume-NB***Table 8.1.6.1-11: RRCConnectionResume-NB**

| Derivation Path: 36.331 clause 6.7.2 | | | |
|---|--|----------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionResume-NB ::= SEQUENCE { | | (Note 1) | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcConnectionResume-r13 SEQUENCE { | | | |
| radioResourceConfigDedicated-r13 | RadioResourceConfigDedicated-NB-DRB(n) | | |
| nextHopChainingCount-r13 | 0 | | |
| drb-ContinueROHC-r13 | Not present | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |
| Note 1: The RRCConnectionResume-NB (SRB-1 DCCH message) is sent on the same MAC PDU as Contention Resolution (RA Msg4). | | | |

– *RRCConnectionResumeComplete-NB***Table 8.1.6.1-12: RRCConnectionResumeComplete-NB**

| Derivation Path: 36.331 clause 6.7.2 | | | |
|---|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionResumeComplete-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionResumeComplete-r13 SEQUENCE { | | | |
| selectedPLMN-Identity-r13 | Not checked | | |
| dedicatedInfoNAS-r13 | Not checked | | |
| lateNonCriticalExtension | Not checked | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCONNECTIONRESUMEREQUEST-NB***Table 8.1.6.1-13: RRCCONNECTIONRESUMEREQUEST-NB**

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONRESUMEREQUEST-NB ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionResumeRequest-r13 SEQUENCE { | | | |
| resumeID-r13 | Present but contents not checked | | |
| resumeMAC-I-r13 | Present but contents not checked | | |
| resumeCause-r13 | Present but contents not checked | | |
| spare | Present but contents not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCCONNECTIONSETUP-NB***Table 8.1.6.1-14: RRCCONNECTIONSETUP-NB**

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--------------------------------------|-------------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCCONNECTIONSETUP-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| rrcConnectionSetup-r13 SEQUENCE { | | | |
| radioResourceConfigDedicated-r13 | RadioResourceConfigDedicated-NB-SRB | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE { | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

– *RRCConnectionSetupComplete-NB***Table 8.1.6.1-15: RRCConnectionSetupComplete-NB**

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRCConnectionSetupComplete-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| rrcConnectionSetupComplete-r13 SEQUENCE { | | | |
| selectedPLMN-Identity | 1 | | |
| s-TMSI-r13 | Not checked | | |
| registeredMME | Not checked | | |
| dedicatedInfoNAS | Present but contents not checked | | |
| attachWithoutPDN-Connectivity-r13 | Not checked | | |
| up-CIoT-EPS-Optimisation-r13 | Not checked | | |
| lateNonCriticalExtension | Not checked | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *SCPTMConfiguration-NB***Table 8.1.6.1-15a: SCPTMConfiguration-NB**

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|--------------|---|-----------|
| Information Element | Value/remark | Comment | Condition |
| SCPTMConfiguration-NB-r14 ::= SEQUENCE { | | | |
| sc-mtch-InfoList-r14 SEQUENCE (SIZE (0.. maxSC-MTCH-NB-r14)) OF SEQUENCE { | 1 entry | | |
| sc-mtch-CarrierConfig-r14 CHOICE { | | | |
| dl-CarrierIndex-r14 | 0 | INTEGER (0.. maxNonAnchorCarriers-NB-r14) | |
| } | | | |
| mbmsSessionInfo-r14 SEQUENCE { | | | |
| tmgi-r13 SEQUENCE { | | | |
| plmn-Id-r9 CHOICE { | | | |
| plmn-Index-r9 | 1 | | |
| } | | | |
| } | | | |
| serviceld-r9 | '000001'H | OCTET STRING (SIZE (3)) | |
| } | | | |
| sessionId-r13 | Not present | | |
| } | | | |
| g-RNTI-r14 | '0100'H | | |
| sc-mtch-SchedulingInfo-r14 | Not present | | |
| sc-mtch-neighbourCell-r14 | Not present | | |
| npdcch-NPDSCH-MaxTBS-SC-MTCH-r14 | n680 | | |
| npdcch-NumRepetitions-SC-MTCH-r14 | r16 | | |
| npdcch-StartSF-SC-MTCH-r14 | v4 | | |
| npdcch-Offset-SC-MTCH-r14 | zero | | |
| } | | | |
| scptm-NeighbourCellList-r14 | Not present | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |

– *UECapabilityEnquiry-NB***Table 8.1.6.1-16: UECapabilityEnquiry-NB**

| Derivation Path: 36.331 clause 6.7.2 | | | |
|---------------------------------------|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UECapabilityEnquiry-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-DL | | |
| criticalExtensions CHOICE { | | | |
| c1 CHOICE { | | | |
| ueCapabilityEnquiry-r13 SEQUENCE { | | | |
| lateNonCriticalExtension | Not present | | |
| nonCriticalExtension SEQUENCE {} | Not present | | |
| } | | | |
| } | | | |
| } | | | |
| } | | | |

– *UECapabilityInformation-NB***Table 8.1.6.1-17: UECapabilityInformation-NB**

| Derivation Path: 36.331 clause 6.7.2 | | | |
|---|---|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UECapabilityInformation-NB ::= SEQUENCE { | | | |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL | | |
| criticalExtensions CHOICE { | | | |
| ueCapabilityInformation-r13 SEQUENCE { | | | |
| ue-Capability-Container-r13 SEQUENCE { | | | |
| accessStratumRelease-r13 | Same as indicated in TC applicability in TS 36.523-2 [19] | | |
| ue-Category-NB-r13 | Not checked | | |
| multipleDRB-r13 | Not checked | | |
| pdcP-Parameters-r13 | Not checked | | |
| phyLayerParameters-r13 SEQUENCE { | | | |
| multiTone-r13 | Not checked | | |
| multiCarrier-r13 | Not checked | | |
| } | | | |
| rf-Parameters-r13 | Not checked | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| ue-RadioPagingInfo-r13 SEQUENCE { | | | |
| ue-Category-NB-r13 | Not checked | | |
| } | | | |
| lateNonCriticalExtension | Not checked | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

– *ULInformationTransfer-NB***Table 8.1.6.1-18: *ULInformationTransfer-NB***

| Derivation Path: 36.331 clause 6.7.2 | | | |
|---|----------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| ULInformationTransfer-NB ::= SEQUENCE { | | | |
| criticalExtensions CHOICE { | | | |
| ulInformationTransfer-r13 SEQUENCE { | | | |
| dedicatedInfoNAS-r13 | Present but contents not checked | | |
| lateNonCriticalExtension | Not checked | | |
| nonCriticalExtension SEQUENCE {} | Not checked | | |
| } | | | |
| } | | | |
| } | | | |

8.1.6.2 NB-IoT System information blocks

See subclause 8.1.4.3.3 in this document.

8.1.6.3 NB-IoT Radio resource control information elements

– BCCH-Config-NB-DEFAULT

Table 8.1.6.3-1: BCCH-Config-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|---------------------------------------|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| BCCH-Config-NB-DEFAULT ::= SEQUENCE { | | | |
| modificationPeriodCoeff-r13 | n32 | To provide reliable delivery of SI change notifications. | |
| } | | | |

– DL-CarrierConfigCommon-NB-DEFAULT

Table 8.1.6.3-1A: DL-CarrierConfigCommon-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3.2 | | | |
|--|-----------------------|---------|-------------------|
| Information Element | Value/remark | Comment | Condition |
| DL-CarrierConfigCommon-NB-DEFAULT ::= SEQUENCE { | | | |
| dl-CarrierFreq-r14 | See subclause 8.1.3.1 | | |
| downlinkBitmapNonAnchor-r14 CHOICE { | | | |
| useNoBitmap | NULL | | |
| } | | | |
| dl-GapNonAnchor-r14 CHOICE { | | | |
| useNoGap-r14 | NULL | | |
| } | | | |
| inbandCarrierInfo-r14 SEQUENCE { | | | NON-ANCHOR-INBAND |
| samePCI-Indicator-r14 | Not present | | |
| eutraControlRegionSize-r14 | n2 | | |
| } | | | |
| nrs-PowerOffsetNonAnchor-r14 | dB0 | | |
| } | | | |

| Condition | Explanation |
|-------------------|---|
| NON-ANCHOR-INBAND | The non-anchor carrier is an inband carrier |

– PCCH-Config-NB-DEFAULT

Table 8.1.6.3-2: PCCH-Config-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|---------------------------------------|--------------|--------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PCCH-Config-NB-DEFAULT ::= SEQUENCE { | | | |
| defaultPagingCycle-r13 | r128 | Typical value in real network. | |
| nB-r13 | oneT | | |
| npdcch-NumRepetitionPaging-r13 | r8 | | |
| } | | | |

– NPDCCH-ConfigDedicated-NB-DEFAULT

Table 8.1.6.3-3: NPDCCH-ConfigDedicated-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| NPDCCH-ConfigDedicated-NB-DEFAULT ::= SEQUENCE { | | | |
| npdcch-NumRepetitions-r13 | r16 | | |
| npdcch-StartSF-USS-r13 | v4 | | |
| npdcch-Offset-USS-r13 | zero | | |
| } | | | |

– NPDSCH-ConfigCommon-NB-DEFAULT

Table 8.1.6.3-4: NPDSCH-ConfigCommon-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| NPDSCH-ConfigCommon-NB-DEFAULT ::= SEQUENCE { | | | |
| nrs-Power-r13 | 44 (dBm) | | |
| } | | | |

– NPRACH-ConfigSIB-NB-DEFAULT

Table 8.1.6.3-5: NPRACH-ConfigSIB-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--|--------------|-------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| NPRACH-ConfigSIB-NB-DEFAULT ::= SEQUENCE { | | | |
| nprach-CP-Length-r13 | us66dot7 | | |
| rsrp-ThresholdsPrachInfoList-r13 | Not present | Only one resource | |
| nprach-ParametersList-r13 SEQUENCE (SIZE (1.. maxNPRACH-Resources-NB-r13)) OF SEQUENCE { | 1 entry | | |
| nprach-Periodicity-r13 | ms80 | | |
| nprach-StartTime-r13 | ms32 | | |
| nprach-SubcarrierOffset-r13 | n12 | | |
| nprach-NumSubcarriers-r13 | n12 | | |
| nprach-SubcarrierMSG3-RangeStart-r13 | oneThird | | |
| maxNumPreambleAttemptCE-r13 | n6 | | |
| numRepetitionsPerPreambleAttempt-r13 | n1 | | |
| npdcch-NumRepetitions-RA-r13 | r16 | | |
| npdcch-StartSF-CSS-RA-r13 | v4 | | |
| npdcch-Offset-RA-r13 | zero | | |
| } | | | |
| } | | | |

– NPUSCH-ConfigCommon-NB-DEFAULT

Table 8.1.6.3-6: NPUSCH-ConfigCommon-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| NPUSCH-ConfigCommon-NB-DEFAULT ::= SEQUENCE { | | | |
| ack-NACK-NumRepetitions-Msg4-r13 SEQUENCE (SIZE (1.. maxNPRACH-Resources-NB-r13)) OF { ACK-NACK-NumRepetitions-NB-r13 } | r8 | 1 entry | |
| srs-SubframeConfig-r13 | Not present | | |
| dmrs-Config-r13 SEQUENCE { | | | |
| threeTone-BaseSequence-r13 | Not present | | |
| threeTone-CyclicShift-r13 | 0 | | |
| sixTone-BaseSequence-r13 | Not present | | |
| sixTone-CyclicShift-r13 | 0 | | |
| twelveTone-BaseSequence-r13 | Not present | | |
| } | | | |
| ul-ReferenceSignalsNPUSCH-r13 SEQUENCE { | | | |
| groupHoppingEnabled-r13 | FALSE | | |
| groupAssignmentPUSCH-13 | 0 | | |
| } | | | |
| } | | | |

– NPUSCH-ConfigDedicated-NB-DEFAULT

Table 8.1.6.3-7: NPUSCH-ConfigDedicated-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| NPUSCH-ConfigDedicated-NB-DEFAULT ::= SEQUENCE { | | | |
| ack-NACK-NumRepetitions-r13 | r8 | Default | |
| npusch-AllSymbols-r13 | TRUE | Default | |
| groupHoppingDisabled-r13 | Not present | Default | |
| } | | | |

– RACH-ConfigCommon-NB-DEFAULT

Table 8.1.6.3-8: RACH-ConfigCommon-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RACH-ConfigCommon-NB-DEFAULT ::= SEQUENCE { | | | |
| preambleTransMax-CE-r13 | n6 | | |
| powerRampingParameters-r13 SEQUENCE { | | | |
| powerRampingStep | dB2 | | |
| preambleInitialReceivedTargetPower | dBm-104 | | |
| } | | | |
| rach-InfoList-r13 (SIZE (1.. maxNPRACH-Resources-NB-r13)) OF SEQUENCE { | 1 entry | | |
| ra-ResponseWindowSize-r13 | pp10 | | |
| mac-ContentionResolutionTimer-r13 | pp8 | | |
| } | | | |
| connEstFailOffset-r13 | Not present | | |
| } | | | |

– RadioResourceConfigCommonSIB-NB-DEFAULT

Table 8.1.6.3-9: RadioResourceConfigCommonSIB-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--|-------------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigCommonSIB-NB-DEFAULT ::= SEQUENCE { | | | |
| rach-ConfigCommon-r13 | RACH-ConfigCommon-NB-DEFAULT | | |
| bcch-Config-r13 | BCCH-Config-NB-DEFAULT | | |
| pcch-Config-r13 | PCCH-Config-NB-DEFAULT | | |
| nprach-Config-r13 | NPRACH-ConfigSIB-NB-DEFAULT | | |
| npdsch-ConfigCommon-r13 | NPDSCH-ConfigCommon-NB-DEFAULT | | |
| npusch-ConfigCommon-r13 | NPUSCH-ConfigCommon-NB-DEFAULT | | |
| dl-Gap-r13 | Not present | | |
| uplinkPowerControlCommon-r13 | UplinkPowerControlCommon-NB-DEFAULT | | |
| nprach-Config-v1330 | Not present | | |
| } | | | |

– RadioResourceConfigDedicated-NB-SRB

Table 8.1.6.3-10: RadioResourceConfigDedicated-NB-SRB

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--|---|-----------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-NB-SRB ::= SEQUENCE { | | | |
| srb-ToAddModList-r13 SEQUENCE (SIZE (1)) OF SEQUENCE { | 1 entry, with value SRB-ToAddMod-NB-DEFAULT | See subclause 8.1.8.2 | |
| drb-ToAddModList-r13 | Not present | | |
| drb-ToReleaseList-r13 | Not present | | |
| mac-MainConfig CHOICE { | | | |
| explicitValue-r13 | MAC-MainConfig-NB-SRB | See subclause 8.1.8.2 | |
| } | | | |
| physicalConfigDedicated-r13 | PhysicalConfigDedicated-NB-DEFAULT | See subclause 8.1.8.2 | |
| rlf-TimersAndConstants-r13 | Not present | | |
| } | | | |

– RadioResourceConfigDedicated-NB-DRB(n)

Table 8.1.6.3-11: RadioResourceConfigDedicated-NB-DRB(n)

| Derivation Path: 36.331 clause 6.7.3 | | | |
|---|-----------------------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-NB-DRB(n) ::= SEQUENCE { | | n is the number of AM RLC DRBs (0..2) | |
| srb-ToAddModList-r13 | Not present | | |
| drb-ToAddModList-r13 SEQUENCE (SIZE (1..maxDRB-NB-r13)) OF SEQUENCE { | n | | |
| drb-ToAddMod[n]-r13 | DRB-ToAddMod-NB-DEFAULT (n) | n AM RLC DRBs See subclause 8.1.8.2 | n>0 |
| } | | | |
| drb-ToReleaseList-r13 | Not present | | |
| mac-MainConfig-r13 | Not present | | |
| physicalConfigDedicated-r13 | Not present | | |
| rlf-TimersAndConstants-r13 | Not present | | |
| } | | | |

- RadioResourceConfigDedicated-NB-DRB-ADD(bid)

Table 8.1.6.3-11A: RadioResourceConfigDedicated-NB-DRB-ADD(bid)

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--|-------------------------------|----------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-NB-DRB-ADD(bid) ::= SEQUENCE { | | bid is the bearer identity | |
| srb-ToAddModList-r13 | Not present | | |
| drb-ToAddModList-r13 SEQUENCE (SIZE (1.. maxDRB-NB-r13)) OF SEQUENCE { | one entry | | |
| drb-ToAddMod-r13[1] | DRB-ToAddMod-NB-DEFAULT (bid) | See subclause 8.1.8.2 | |
| } | | | |
| drb-ToReleaseList-r13 | Not present | | |
| mac-MainConfig-r13 | Not present | | |
| physicalConfigDedicated-r13 | Not present | | |
| rlf-TimersAndConstants-r13 | Not present | | |
| } | | | |

- RadioResourceConfigDedicated-NB-DRB-REL(bid)

Table 8.1.6.3-11B: RadioResourceConfigDedicated-NB-DRB-REL(bid)

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--|--------------|----------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-NB-DRB-REL(bid) ::= SEQUENCE { | | bid is the bearer identity | |
| srb-ToAddModList-r13 | Not present | | |
| drb-ToAddModList-r13 | Not present | | |
| drb-ToReleaseList-r13 SEQUENCE (SIZE (1.. maxDRB-NB-r13)) OF | one entry | | |
| drb-Identity[1] | bid | | |
| mac-MainConfig-r13 | Not present | | |
| physicalConfigDedicated-r13 | Not present | | |
| rlf-TimersAndConstants-r13 | Not present | | |
| } | | | |

- RLC-Config-NB-SRB-RECONFIG

Table 8.1.6.3-12: RLC-Config-NB-SRB-RECONFIG

| Derivation Path: 36.331 clause 6.7.3, 9.2.1.1 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RLC-Config-NB-SRB-RECONFIG ::= CHOICE { | | | |
| am SEQUENCE { | | | |
| ul-AM-RLC-r13 SEQUENCE { | | | |
| t-PollRetransmit-r13 | ms15000 | | |
| maxRetxThreshold-r13 | t6 | | |
| } | | | |
| dl-AM-RLC-r13 SEQUENCE { | | | |
| enableStatusReportSN-Gap-r13 | Not present | Default | |
| } | | | |
| } | | | |
| } | | | |

– SRB-ToAddModList-NB-RECONFIG

Table 8.1.6.3-13: SRB-ToAddModList-NB-RECONFIG

| Derivation Path: 36.331 clause 6.7.3 | | | |
|---|----------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| SRB-ToAddModList-NB ::= SEQUENCE (SIZE (1)) OF SEQUENCE { | 1 Entries | | |
| rlc-Config-r13 CHOICE { | | | |
| explicitValue-r13 | RLC-Config-NB-SRB-RECONFIG | | |
| logicalChannelConfig-r13 CHOICE { | | | |
| defaultValue | NULL | | |
| } | | | |
| } | | | |

– UplinkPowerControlCommon-NB-DEFAULT

Table 8.1.6.3-14: UplinkPowerControlCommon-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--|---------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlCommon-NB-DEFAULT ::= SEQUENCE { | | | |
| p0-NominalNPUSCH-r13 | -85 (-85 dBm) | | |
| alpha-r13 | al1 (1) | | |
| deltaPreambleMsg3-r13 | 4 | | |
| } | | | |

– UplinkPowerControlDedicated-NB-DEFAULT

Table 8.1.6.3-15: UplinkPowerControlDedicated-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|---|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| UplinkPowerControlDedicated-NB-DEFAULT ::= SEQUENCE { | | | |
| p0-UE-NPUSCH-r13 | 0 | Default | |
| } | | | |

- RadioResourceConfigDedicated-NB-DRB-Mod

Table 8.1.6.3-16: RadioResourceConfigDedicated-NB-DRB-Mod

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--|------------------------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RadioResourceConfigDedicated-NB-DRB ::= SEQUENCE { | | | |
| srb-ToAddModList-r13 | Not present | | |
| drb-ToAddModList-r13 | DRB-ToAddModList-NB-RECONFIG | | |
| } | | | |
| drb-ToReleaseList-r13 | Not present | | |
| mac-MainConfig-r13 | Not present | | |
| physicalConfigDedicated-r13 | Not present | | |
| rlf-TimersAndConstants-r13 | Not present | | |
| } | | | |

8.1.6.4 NB-IoT Security control information elements

See subclause 4.6.4 in this document.

8.1.6.5 NB-IoT Other information elements

– RRC-TransactionIdentifier-DL

Table 8.1.6.5-1: RRC-TransactionIdentifier-DL

| Derivation Path: 36.331 clause 6.3.6 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRC-TransactionIdentifier-DL ::= | 0..3 | | |

– RRC-TransactionIdentifier-UL

Table 8.1.6.5-2: RRC-TransactionIdentifier-UL

| Derivation Path: 36.331 clause 6.3.6 | | | |
|--------------------------------------|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| RRC-TransactionIdentifier-UL ::= | 0..3 | The same value as the value of RRC-TransactionIdentifier-DL in the downlink message initiating the procedure | |

8.1.7 NB-IoT Default NAS message and information element contents

Default values and common NAS messages and information elements are defined in section 4.7 of this document.

8.1.7A NB-IoT Default TC message and information element contents

Default values of common TC (Test Control, see [38]) messages and information elements are defined in section 4.7A of this document.

8.1.8 NB-IoT Reference radio bearer configurations

8.1.8.1 General

8.1.8.2 NB-IoT SRB and DRB parameters and combinations

8.1.8.2.1 NB-IoT SRB and DRB parameters

8.1.8.2.1.1 NB-IoT SRB configurations

Table 8.1.8.2.1.1-1: SRB-ToAddMod-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--|--------------|--|-----------|
| Information Element | Value/remark | Comment | Condition |
| SRB-ToAddMod-NB-DEFAULT ::= SEQUENCE { | | | |
| rlc-Config-r13 CHOICE { | | | |
| defaultValue | | Default values defined in subclause 9.2.1.1 of TS 36.331 | |
| } | | | |
| logicalChannelConfig CHOICE { | | | |
| defaultValue | | Default values defined in subclause 9.2.1.1 of TS 36.331 | |
| } | | | |
| } | | | |

8.1.8.2.1.2 NB-IoT DRB PDCP configurations

8.1.8.2.1.2.1 DRB PDCP configurations for AM RLC

Table 8.1.8.2.1.2.1-1: PDCP-Config-NB-DRB

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PDCP-Config-NB-DRB ::= SEQUENCE { | | | |
| discardTimer-r13 | Infinity | | |
| headerCompression-r13 CHOICE { | | | |
| notUsed | NULL | | |
| } | | | |
| } | | | |

8.1.8.2.1.3 NB-IoT DRB RLC configurations

8.1.8.2.1.3.1 NB-IoT DRB AM RLC configurations

Table 8.1.8.2.1.3.1-1: RLC-Config-NB-DRB

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| RLC-Config-NB-DRB ::= CHOICE { | | | |
| am SEQUENCE { | | | |
| ul-AM-RLC-r13 SEQUENCE { | | | |
| t-PollRetransmit-r13 | ms25000 | | |
| maxRetxThreshold-r13 | t8 | | |
| } | | | |
| dl-AM-RLC-r13 SEQUENCE { | | | |
| enableStatusReportSN-Gap-r13 | Not present | | |
| } | | | |
| } | | | |
| } | | | |

8.1.8.2.1.4 NB-IoT DRB Logical Channel configurations

Table 8.1.8.2.1.4-1: LogicalChannelConfig-NB-DRB

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--|--------------|------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| LogicalChannelConfig-NB-DRB ::= SEQUENCE { | | | |
| priority-r13 | 13 | low logical channel priority | |
| logicalChannelSR-Prohibit-r13 | TRUE | | |
| } | | | |

8.1.8.2.1.5 NB-IoT MAC configurations

Table 8.1.8.2.1.5-1: MAC-MainConfig-NB-SRB

| Derivation Path: 36.331 clause 6.7.3 | | | |
|--------------------------------------|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| MAC-MainConfig-NB-SRB ::= SEQUENCE { | | | |
| ul-SCH-Config-r13 SEQUENCE { | | | |
| periodicBSR-Timer-r13 | pp8 | Default | |
| retxBSR-Timer-r13 | infinity | Default | |
| } | | | |
| drx-Config-r13 CHOICE { | | | |
| release | NULL | | |
| } | | | |
| timeAlignmentTimerDedicated-r13 | infinity | | |
| logicalChannelSR-Config-r13 CHOICE { | | | |
| logicalChannelSR-ProhibitTimer-r13 | pp2048 | | |
| } | | | |
| } | | | |

8.1.8.2.1.6 NB-IoT Physical Layer configurations

Table 8.1.8.2.1.6-1: PhysicalConfigDedicated-NB-DEFAULT

| Derivation Path: 36.331 clause 6.7.3 | | | |
|---|--|-----------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| PhysicalConfigDedicated-NB-DEFAULT ::= SEQUENCE { | | | |
| carrierConfigDedicated-r13 | Not present | Anchor carrier | |
| npdcch-ConfigDedicated-r13 | NPDCCH-ConfigDedicated-NB-DEFAULT | See subclause 8.1.6.3 | |
| npusch-ConfigDedicated-r13 | NPUSCH-ConfigDedicated-NB-DEFAULT | See subclause 8.1.6.3 | |
| uplinkPowerControlDedicated-r13 | UplinkPowerControlDedicated-NB-DEFAULT | See subclause 8.1.6.3 | |
| } | | | |

8.1.8.2.1.7 NB-IoT DRB configurations

Table 8.1.8.2.1.7-1: DRB-ToAddMod-NB-DEFAULT(bid)

| Derivation Path: 36.331 clause 6.7.3 | | | |
|---|-----------------------------|-----------------------------------|-----------|
| Information Element | Value/remark | Comment | Condition |
| DRB-ToAddMod-NB-DEFAULT(bid) ::= SEQUENCE { | | bid is the bearer identity (1..2) | |
| eps-BearerIdentity-r13 | bid+4 | | |
| drb-Identity-r13 | Bid | | |
| pdcp-Config-r13 | PDCP-Config-NB-DRB | | |
| rlc-Config-r13 | RLC-Config-NB-DRB | | |
| logicalChannelIdentity-r13 | bid+3 | | |
| logicalChannelConfig-r13 | LogicalChannelConfig-NB-DRB | | |
| } | | | |

8.1.9 NB-IoT Common test USIM parameters

8.1.9.1 General

As defined in clause 4.9; i.e. there are no specific NB-IoT requirements in addition to the default test USIM parameters, unless specified otherwise in a test case defined in TS 36.523-1 [18].

For PLMN (re-)selection, the UE will decide on the PLMN to select based on 'E-UTRA' as Access Technology in the PLMN selector of USIM Elementary Files PLMNwAcT, OPLMNwAcT and HPLMNwAcT and then use its device category (= NB-IoT) to properly access the NB-IoT network.

8.2 NB-IoT Test environment for RF test

This section contains all the exceptions of the NB-IoT common test parameters specified in clause 8.1 for specific needs of test cases defined in TS 36.521-1 [21]. Exceptions specified in clause 8.2 overwrite the parameter settings of clause 8.1; exceptions defined within the test cases overwrite parameter settings of clause 8.1 and 8.2.

8.2.1 NB-IoT Requirements of test equipment

No NB-IoT common RF test environment requirements are specified in addition to the NB-IoT common requirements described in clause 8.1.2. Specific RF requirements are indicated within the test cases defined in TS 36.521-1 [21].

8.2.2 NB-IoT RF Reference system configurations

8.2.2.1 NB-IoT Common parameters for simulated E-UTRA cells

8.2.2.1.1 NB-IoT Combinations of system information blocks

The NB-IoT combination of system information blocks required by a test case depends on the test case scenario. In clause 8.1.4 of this document, the NB-IoT combinations of system information blocks are defined.

Combination 1, defined in clause 8.1.4, is used by default in test cases defined in TS 36.521-1 [21].

8.2.2.1.2 NB-IoT Scheduling of system information blocks

Same NB-IoT scheduling of system information blocks as defined in clause 8.1.4.3.1.2.

8.2.2.1.3 NB-IoT Common contents of system information messages

MasterInformationBlock-NB

As defined in Table 8.1.4.3.2-1.

SystemInformation-NB

As defined in Table 8.1.4.3.2-2 without exceptions.

SystemInformationBlockType1-NB

As defined in Table 8.1.4.3.2-3 without exceptions.

SystemInformationBlockType2-NB

As defined in Table 8.1.4.3.3-1 without exceptions.

8.2.2A NB-IoT Generic RF procedures

The NB-IoT UE test state used for testing is specified in the individual test cases in the corresponding test specification TS 36.521-1 [21] or TS 36.521-3 [34].

RF NB-IoT UE test states are covered by common NB-IoT UE test states defined in clause 8.1.5 of this document.

8.2.3 NB-IoT Default RRC message and information elements contents

8.2.3.1 NB-IoT Radio resource control information elements

As defined in clause 8.1.6.3 with the following exceptions.

Table 8.2.3.1-1: NPDCCH-ConfigDedicated-NB-DEFAULT

| Derivation Path: Clause 8.1.6.3 Table 8.1.6.3-3 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| NPDCCH-ConfigDedicated-NB-DEFAULT ::= SEQUENCE { | | | |
| npdcch-NumRepetitions-r13 | r1 | | |
| npdcch-StartSF-USS-r13 | v8 | | |
| npdcch-Offset-USS-r13 | oneFourth | | |
| } | | | |

Table 8.2.3.1-2: NPUSCH-ConfigDedicated-NB-DEFAULT

| Derivation Path: Clause 8.1.6.3 Table 8.1.6.3-7 | | | |
|--|--------------|---------|-----------|
| Information Element | Value/remark | Comment | Condition |
| NPUSCH-ConfigDedicated-NB-DEFAULT ::= SEQUENCE { | | | |
| ack-NACK-NumRepetitions-r13 | r1 | | |
| npusch-AllSymbols-r13 | TRUE | Default | |
| groupHoppingDisabled-r13 | Not present | Default | |
| } | | | |

8.2.4 NB-IoT Default NAS message and information elements contents

As defined in clause 8.1.7 without exceptions.

8.2.5 NB-IoT Reference radio bearer configurations

8.2.5.1 NB-IoT SRB and DRB parameters

As defined in clause 8.1.8.2.1 without exception.

8.3 NB-IoT Test environment for Signalling test

8.3.1 NB-IoT Requirements of test equipment

The requirements of test equipment specified in this subclause apply to NB-IoT Signalling test cases defined in TS 36.523-1 [18], in addition to the common NB-IoT requirements of test equipment specified in clause 8.1.2 and 8.1.3 of this specification. Test equipment shall be able to simulate NB-IoT cells, based on the E-UTRA platform as Radio Access Technology (RAT), in the following deployment scenarios:

- In-band operation with E-UTRA
- Guard-band operation with E-UTRA
- Standalone operation

Depending on the respective deployment scenario, the overall number and configuration of cells to be simulated simultaneously by test equipment shall not exceed the resources specified in the following Table 8.3.1-1:

Table 8.3.1-1: Maximum resources in terms of number / configuration of Ncells to be simulated simultaneously in a test setup

| Simulation of | Max. number / configuration of cells (SISO) |
|--|---|
| NB-IoT network in standalone operation | 4x cells |
| NB-IoT network in E-UTRA guard-band operation (Note 1) | 4x cells |
| NB-IoT network in E-UTRA in-band operation (Note 1) | 4x cells |
| Note 1: E-UTRA cells are <u>not</u> configured. | |

Exceptions to the requirements outlined above are possible but need special evidence to be provided explicitly in the test case prose and should be allowed only if the test case purpose cannot be met otherwise.

8.3.2 NB-IoT Reference test conditions

8.3.2.1 NB-IoT Physical channel allocations

As defined in clause 8.1.3.3.

8.3.2.2 NB-IoT Signal levels

8.3.2.2.1 NB-IoT Downlink signal levels

The default settings of suitable cells and non-suitable cells for NB-IoT are specified in table 8.3.2.2.1-1. Cells which are expected to be undetectable for UE under test shall fulfil the condition of non-suitable "Off" cell.

Table 8.3.2.2.1-1: Default settings of suitable / non-suitable cells

| Power level type | NB-IoT (Note 1-3) | |
|---|----------------------|---------------|
| | Unit | Power level |
| Serving cell | dBm/15kHz | -85 |
| Suitable neighbour intra-frequency cell | dBm/15kHz | -91 |
| Suitable neighbour inter-frequency cell | dBm/15kHz | -97 |
| Non-suitable cell | dBm/15kHz | -120 (Note 4) |
| Non-suitable "Off" cell | dBm/15kHz | ≤ -150 |
| Note 1: The power level is specified in terms of cell-specific NRS EPRE. | | |
| Note 2: Power levels are specified based on the precondition that q-Hyst, a3-Offset and hysteresis are 0 dB. | | |
| Note 3: The power level is specified at the UE Rx antenna (assumption = single UE Rx antenna). | | |
| Note 4: Calculation of non-suitable cell power level is based on the reference sensitivity (without repetitions) for UE category NB1 as per the minimum requirements specified in TS 36.101 [27] clause 7.3.1F.1. | | |

The default signal level uncertainty is specified in table 8.3.2.2.1-2 for any level specified, unless a tighter uncertainty is specified by a test case in TS 36.523-1 [18].

Table 8.3.2.2.1-2: SS signal level uncertainty

| | Absolute signal level uncertainty for each cell | Relative signal level uncertainty between multiple cells |
|---|--|--|
| Intra-frequency | +/-3 dB at each test port | +/-3 dB |
| Inter-frequency | +/-3 dB at each test port | See Note 1 |
| Note 1: For Inter-frequency cells the relative signal level uncertainty between multiple cells is determined by the absolute uncertainty of each cell, and does not have any additional constraint. | | |

8.3.2.3 NB-IoT Default test frequencies

The default channel bandwidth of 200 kHz is applied to the signalling test. The test frequencies are defined so that no frequency overlapping takes place, in order to avoid unnecessary inter-frequency interference.

All operating bands can accommodate at least three test frequencies f_1 , f_2 and f_3 ($f_3 < f_1 < f_2$).

For NB-IoT in-band and guard-band signalling testing, the NB-IoT frequency to be tested are low/mid/high range and are associated to the LTE frequency low/mid/high range as specified in tables 4.3.1.1.x. The E-UTRA channel bandwidth to be tested is 10MHz and NB-IoT PRB 30 for in-band and 5 MHz for guard-band for all operating bands for all test cases; unless the specific channel bandwidth is specified for the operating band below:

For Band 31 in-band testing, the E-UTRA channel bandwidth to be tested is 5 MHz.

8.3.2.3.1 NB-IoT Test frequencies for signalling test

Test frequencies for signalling test are specified in table 8.3.2.3.1-1 in terms of Low, Mid and High which are referred to the Low Range, Mid Range and High Range in clause 8.1.3.1.

Table 8.3.2.3.1-1: Test frequencies for NB-IoT FDD (200 kHz)

| NB-IoT Operating Band | Bandwidth [MHz] | f1, f5 | | f2 | | f3 | |
|-----------------------------|--------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} |
| | | | | | | | |

| | | | | | | | |
|-----|--------------------|-----|-----|------|------|-----|-----|
| 1 | 60 | Mid | Mid | High | High | Low | Low |
| 2 | 60 | Mid | Mid | High | High | Low | Low |
| 3 | 75 | Mid | Mid | High | High | Low | Low |
| 4 | 45 | Mid | Mid | High | High | Low | Low |
| 5 | 25 | Mid | Mid | High | High | Low | Low |
| ... | | | | | | | |
| 8 | 35 | Mid | Mid | High | High | Low | Low |
| ... | | | | | | | |
| 11 | 20 | Mid | Mid | High | High | Low | Low |
| 12 | 17 | Mid | Mid | High | High | Low | Low |
| 13 | 10 | Mid | Mid | High | High | Low | Low |
| 14 | 10 | Mid | Mid | High | High | Low | Low |
| ... | | | | | | | |
| 17 | 12 | Mid | Mid | High | High | Low | Low |
| 18 | 15 | Mid | Mid | High | High | Low | Low |
| 19 | 15 | Mid | Mid | High | High | Low | Low |
| 20 | 30 | Mid | Mid | High | High | Low | Low |
| 21 | 15 | Mid | Mid | High | High | Low | Low |
| ... | | | | | | | |
| 25 | 65 | Mid | Mid | High | High | Low | Low |
| 26 | 35 | Mid | Mid | High | High | Low | Low |
| ... | | | | | | | |
| 28 | 45 | Mid | Mid | High | High | Low | Low |
| ... | | | | | | | |
| 31 | 5 | Mid | Mid | High | High | Low | Low |
| ... | | | | | | | |
| 66 | 70+90 ¹ | Mid | Mid | High | High | Low | Low |
| 70 | 15 | Mid | Mid | High | High | Low | Low |
| 71 | 35 | Mid | Mid | High | High | Low | Low |
| ... | | | | | | | |
| 73 | 5 | Mid | Mid | High | High | Low | Low |
| ... | | | | | | | |
| 85 | 18 | Mid | Mid | High | High | Low | Low |

NOTE 1: Asymmetric operating band (UL + DL).

Test frequencies for signalling test of MFBI are specified in Table 8.3.2.3.1-1a for FDD in terms of Low, Mid and High which are referred to as Low Range, Mid Range and High range in clause 8.1.3.1.

Table 8.3.2.3.1-1a: Test frequencies for NB-IoT FDD MFBI (200 kHz)

| NB-IoT Operating Band | MFBI Overlapping Band | Bandwidth [MHz] | f1, f5 | | f2 | | f3 | |
|-----------------------|-----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | N _{UL} | N _{DL} | N _{UL} | N _{DL} | N _{UL} | N _{DL} |
| 2 | 25 | 60 | Mid | Mid | High | High | Low | Low |
| 5 | 18 | 15 | Mid | Mid | High23999 | High5999 | Low | Low |
| 5 | 19 | 15 | Mid | Mid | High20609 | High2609 | Low | Low |
| 5 | 26 | 25 | Mid | Mid | High | High | Low | Low |
| 12 | 17 | 12 | Mid | Mid | High | High | Low | Low |
| 17 | 12 | 12 | Mid | Mid | High | High | Low | Low |
| 19 | 5 | 15 | Mid | Mid | High | High | Low | Low |
| 19 | 26 | 15 | Mid | Mid | High | High | Low | Low |
| 25 | 2 | 60 | Mid | Mid | High | High | Low | Low |
| 26 | 5 | 25 | Mid | Mid | High | High | Low | Low |
| 26 | 18 | 15 | Mid | Mid | High | High | Low | Low |
| 26 | 19 | 15 | Mid | Mid | High | High | Low | Low |

8.3.3 NB-IoT Reference system configurations

The reference system configurations specified in this subclause apply to all Signalling test cases defined in TS 36.523-1 [18] unless otherwise specified, in addition to the common reference system configurations specified in subclause 8.1.4 of this specification.

Only one SS Tx antenna is used.

One UE antenna is used for all signalling test cases.

8.3.3.1 NB-IoT Default parameters specific for simulated cells

Default parameters specific for simulated cells are specified in this subclause.

8.3.3.1.1 Intra-frequency neighbouring cell list in SIB4-NB for NB-IoT cells

Intra-frequency neighbouring cell list for signalling test cases is defined in table 8.3.3.1.1-1. This table is referred to in the default contents of IE *intraFreqNeighbouringCellList* in *SystemInformationBlockType4-NB* defined in table 8.1.4.3.3-3.

Table 8.3.3.1.1-1: Intra-frequency neighbouring cell lists for NB-IoT cells

| cell ID | Test Frequency | intra-frequency neighbouring cell list | | | | | | |
|----------|----------------|--|---------------|---------|----------|-----------------|-----|-----|
| | | number of entries | physCellId[n] | | | q-OffsetCell[n] | | |
| | | | 1 | 2 | 3 | 1 | 2 | 3 |
| Ncell 1 | f1 | 3 | Ncell 2 | Ncell 4 | Ncell 11 | dB0 | dB0 | dB0 |
| Ncell 2 | f1 | 3 | Ncell 1 | Ncell 4 | Ncell 11 | dB0 | dB0 | dB0 |
| Ncell 4 | f1 | 3 | Ncell 1 | Ncell 2 | Ncell 11 | dB0 | dB0 | dB0 |
| Ncell 11 | f1 | 3 | Ncell 1 | Ncell 2 | Ncell 4 | dB0 | dB0 | dB0 |
| Ncell 3 | f2 | 1 | Ncell 23 | - | - | dB0 | - | - |
| Ncell 23 | f2 | 1 | Ncell 3 | - | - | dB0 | - | - |

Intra-frequency neighbouring cell list of the same PLMN for the NAS signalling test is defined in table 8.3.3.1.1-2 when SIB4-NB is broadcast.

Table 8.3.3.1.1-2: Intra-freq. lists in SIB4 for NAS test cases (same PLMN)

| NAS cell ID | Test Frequency | Intra-frequency neighbouring cell list | | |
|-------------|----------------|--|---------------|----------|
| | | number of entries | physCellId[n] | |
| | | | 1 | 2 |
| Ncell 50 | f1 | 2 | Ncell 51 | Ncell 53 |
| Ncell 51 | f1 | 2 | Ncell 50 | Ncell 53 |
| Ncell 53 | f1 | 2 | Ncell 50 | Ncell 51 |
| Ncell 52 | f2 | 1 | Ncell 61 | N/A |
| Ncell 61 | f2 | 1 | Ncell 52 | N/A |

8.3.3.1.2 Inter-frequency carrier frequency list in SIB5-NB for NB-IoT cells

Inter-frequency E-UTRA carrier frequency list for signalling test cases is defined in table 8.3.3.1.2-1. This table is referred to in the default contents of IE *interFreqCarrierFreqList* in *SystemInformationBlockType5-NB* defined in table 8.1.4.3.3-4.

Table 8.3.3.1.2-1: Inter-frequency carrier frequency lists for NB-IoT cells

| cell ID | Test Frequency | interFreqCarrierFreqList | | | |
|---|--|--------------------------|-------------------|----|----|
| | | number of entries | dl-CarrierFreq[n] | | |
| | | | 1 | 2 | 3 |
| Ncell 1 Ncell 2 Ncell 4 Ncell 11 | f1 | 3 | f2 | f3 | f5 |
| Ncell 3 Ncell 23 | f2 | 3 | f1 | f3 | f5 |
| Ncell 6 | f3 | 3 | f1 | f2 | f5 |
| Ncell 10 | f5 | 3 | f1 | f2 | f3 |
| Note 1: | The inter-frequency carrier frequency list for signalling NAS test cases when cells are on same PLMN is defined in table 8.3.3.1.2-2. | | | | |
| Note 2: | In case of Test frequency f1, f2 and f3, dl-CarrierFreq f5 as part of inter-frequency list is applicable only in case of multi-band scenarios. | | | | |
| Note 3: | In case of Test frequency f5, dl-CarrierFreq f1 as part of inter-frequency list is applicable only in case of multi-band scenarios. | | | | |

Inter-frequency neighbouring carrier and cell lists for NAS signalling test cases are defined in table 8.3.3.1.2-2 for same PLMN and table 8.3.3.1.2-3 for different PLMN.

Table 8.3.3.1.2-2: Inter-freq. lists in SIB5-NB for NAS test cases (same PLMN)

| NAS cell ID | Test Frequency | interFreqCarrierFreqList | | |
|----------------------------------|----------------|--------------------------|-------------------|----|
| | | number of entries | dl-CarrierFreq[n] | |
| | | | 1 | 2 |
| Ncell 50 Ncell 51 Ncell 53 | f1 | 1 | f2 | NA |
| Ncell 52 Ncell 61 | f2 | 1 | f1 | NA |

Table 8.3.3.1.2-3: Inter-freq. lists in SIB5-NB for NAS test cases (different PLMN)

| NAS cell ID | Test Frequency | interFreqCarrierFreqList | | | Condition |
|--|----------------|--------------------------|-------------------|----|-------------|
| | | number of entries | dl-CarrierFreq[n] | | |
| | | | 1 | 2 | |
| Ncell 50 Ncell 51 Ncell 52 Ncell 53 Ncell 62 | f1 | 0 | NA | NA | |
| Ncell 55 Ncell 56 | f2 | 0 | NA | NA | |
| Ncell 57 Ncell 59 Ncell 60 | f3 | 0 | NA | NA | 54-NOT-CONF |
| | | 1 | f2 | | 54-CONF |
| Ncell 54 | f2 | 1 | f3 | NA | |

| Condition | Explanation |
|-------------|--|
| 54-NOT-CONF | Ncell 54 is not configured in the test |
| 54-CONF | Ncell 54 is configured in the test |

8.3.3.2 NB-IoT Default configurations for NAS test cases

As defined in clause 8.1.4.

8.3.3.3 NB-IoT Cell configurations

All Ncells are assumed to be full cells unless specified otherwise in a test case defined in TS 36.523-1 [18].

8.3.4 NB-IoT Generic signalling procedures

8.3.4.1 NB-IoT Initial UE states and setup procedures

As defined in clause 8.1.5.

8.3.4.2 NB-IoT Reference procedures and test procedures for TTCN development

As defined in clause 8.1.5A.

8.3.4.3 NB-IoT Test case postambles for TTCN development

As defined in clause 10.5 of TS 36.523-3 [20].

8.3.5 NB-IoT Default RRC message and information element contents

As defined in clause 8.1.6.

8.3.6 NB-IoT Default NAS message and information element contents

As defined in clause 8.1.7.

8.3.7 NB-IoT Timer tolerances

The timer tolerances specified for the test environment in this subclause apply to all Signalling test cases defined in TS 36.523-1 [18] unless otherwise specified.

All the timers used during testing are within a tolerance margin given in Table 8.3.7-1 below. For NB-IoT and its typically longer timer values across all protocol layers, common timer tolerances are applicable independently from protocol layer resp. test case group. If for a specific test a different tolerance value is required then this should be specified in the relevant test document (i.e. the document where the test is described).

Table 8.3.7-1: Timer tolerances for protocol timers

| | | |
|------------|------------------------|-------------------------|
| | timer value < 500 ms | not applicable |
| 500 ms ≤ | timer value < 10000 ms | timer tolerance = 10 % |
| 10000 ms ≤ | timer value < 40000 ms | timer tolerance = 5 % |
| 40000 ms ≤ | timer value | timer tolerance = 2.5 % |

8.4 NB-IOT Test environment for RRM tests

This section contains all the exceptions of the common test parameters specified in clause 8.1 for specific needs of NB-IoT test cases defined in TS 36.521-3 [34]. Exceptions specified in clause 8.4 overwrite the parameter settings of clause 8.1; exceptions defined within the test cases overwrite parameter settings of clause 8.1 and 8.4.

8.4.1 NB-IoT Requirements of test equipment

No NB-IoT common RRM test environment requirements are specified in addition to the NB-IoT common requirements described in clause 8.1.2. Specific RRM requirements are indicated within the test cases defined in TS 36.521-3 [34].

8.4.2 NB-IoT RRM Reference system configurations

8.4.2.1 NB-IoT Common parameters for simulated NB-IoT cells

8.4.2.1.1 NB-IoT Combinations of system information blocks

The NB-IoT combination of system information blocks required by a test case depends on the test case scenario. In clause 8.1.4 of this document, the NB-IoT combinations of system information blocks are defined.

8.4.2.1.2 NB-IoT Scheduling of system information blocks

Same NB-IoT scheduling of system information blocks as defined in clause 8.1.4.3.1.2.

8.4.2.1.3 NB-IoT Common contents of system information messages

- MasterInformationBlock-NB

As defined in Table 8.1.4.3.2-1 with the following exceptions.

Table 8.4.2.1.3-1: MasterInformationBlock-NB

| Derivation Path: 36.331 clause 6.7.2 | | | |
|--|--------------|---------|-------------|
| Information Element | Value/remark | Comment | Condition |
| MasterInformationBlock-NB ::= SEQUENCE { | | | |
| operationModeInfo-r13 CHOICE { | | | |
| inband-SamePCI-r13 SEQUENCE { | | | Inband-Same |
| eutra-CRS-SequenceInfo-r13 | 0 | | |
| } | | | |
| } | | | |
| } | | | |

- SystemInformation-NB

As defined in Table 8.1.4.3.2-2 without exceptions.

- SystemInformationBlockType1-NB

As defined in Table 8.1.4.3.2-3 without exceptions.

- SystemInformationBlockType2-NB

As defined in Table 8.1.4.3.3-1 without exceptions.

8.4.2A NB-IoT Generic RRM procedures

The NB-IoT UE test state used for testing is specified in the individual test cases in the corresponding test specification TS 36.521-3 [34].

RRM NB-IoT UE test states are covered by common NB-IoT UE test states defined in clause 8.1.5 of this document.

8.4.3 NB-IoT Default RRC message and information elements contents

8.4.3.1 NB-IoT Radio resource control information elements

As defined in clause 8.1.6.3 without exceptions.

8.4.4 NB-IoT Default NAS message and information elements contents

As defined in clause 8.1.7 without exceptions.

8.4.5 NB-IoT Reference radio bearer configurations

8.4.5.1 NB-IoT SRB and DRB parameters

As defined in clause 8.1.8.2.1 without exception.

Annex A (informative): Connection Diagrams

Definition of Terms

System Simulator or SS – A device or system, that is capable of generating simulated Node B signalling and analysing UE signalling responses on one or more RF channels, in order to create the required test environment for the UE under test. It will also include the following capabilities:

1. Measurement and control of the UE Tx output power through TPC commands
2. Measurement of Throughput
3. Measurement of signalling timing and delays
4. Ability to simulate UTRAN and/or E-UTRAN and/or GERAN signalling

GNSS System Simulator or GSS: A device or system, that is capable of generating simulated GNSS satellite transmissions in order to create the required test environment for the UE under test. It will also include the following capabilities:

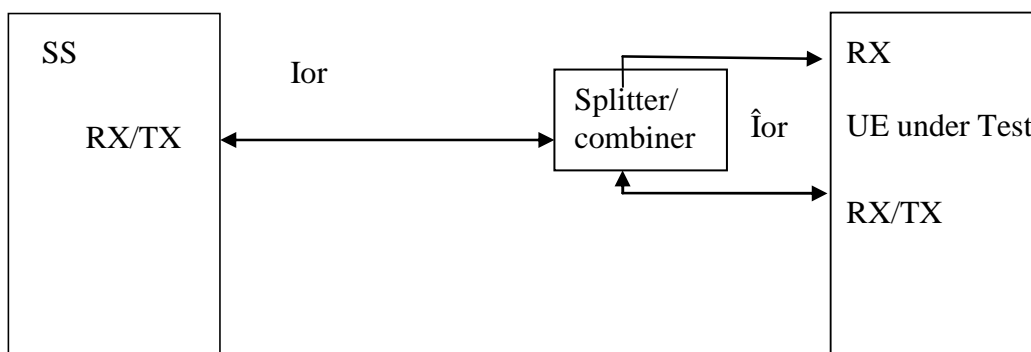
1. Control of the output power of individual satellites and the simulation of atmospheric delays.
2. Ability to synchronize with E-UTRAN timing in the SS.

Test System – A combination of devices brought together into a system for the purpose of making one or more measurements on a UE in accordance with the test case requirements. A test system may include one or more System Simulators if additional signalling is required for the test case. The following diagrams are all examples of Test Systems.

NOTE 1: The above terms are logical definitions to be used to describe the test methods used in the documents TS36.521-1, TS 36.523-1 and TS36.521-3 in practice, real devices called 'System Simulators' may also include additional measurement capabilities or may only support those features required for the test cases they are designed to perform.

NOTE 2: Components in the connection diagrams:

The components in the connection diagrams represent ideal components. They are intended to display the wanted signal flow. They don't mandate real implementations. An alternative to Figure A3 is shown below as an example: It is nearer to real implementations. The signal levels are the same as in Figure A3. The signal flow cannot be displayed as detailed as in Figure A.3.



Alternative to Figure A.3

Connection: Each connection is displayed as a one or two sided arrow, showing the intended signal flow. In some cases, for some tests, some connections shown may not be necessary (for example UL RX connection for a second cell).

Circulator: The signal, entering one port, is conducted to the adjacent port, indicated by the arrow. The attenuation among the above mentioned ports is ideally 0 and the isolation among the other ports is ideally ∞ .

Splitter: a splitter has one input and 2 or more outputs. The signal at the input is equally divided to the outputs. The attenuation from input to the outputs is ideally 0 and the isolation between the outputs is ideally ∞ .

Combiner: a combiner has one output and 2 or more inputs. The signals at the inputs are conducted to the output, all with the same, ideally 0 attenuation. The isolation between the inputs is ideally ∞ .

Switch: contacts a sink (or source) alternatively to two or more sources (or sinks).

Fader: The fader has one input and one output. The MIMO fading channel is represented by several single faders (e.g. 8 in case of a MIMO antenna configuration 4x2) The correlation among the faders is described in TS 36.521-1 clause B.2.2. In some cases, for some tests, diagrams with fader(s) are referenced when no fading is required; in this case the fader(s) is omitted.

Attenuator: TBD

General considerations on connections for CA testing

Figures A.32<x> to A.37<x> and A.41<x> to A.46<x> contain connection diagrams for CA testing with 2 CCs. Different options (<x> = a, b, c) have been defined for each connection, to consider different UE employments with respect to UE antenna connectors and signal mapping:

- a: Separate antenna connectors for each CC. An optional *Combiner* may be used in case the UE employs one common wide band antenna only for the receive diversity for both CC-s.
- b: Common antenna connectors for both CC-s with same UL transmit antenna connector.
- c: Common antenna connectors for both CC-s with different UL transmit antenna connectors.

The connections are referred in tests as *Figure group* which imply figures with the same Arabic numeral in the number, but different Latin letter extension (e.g. Figure A.32a, A.32b etc.). The selection of the connection option for testing is done according to the UE employment as appropriate.

Connection diagrams for CA testing with ≥ 3 CCs have been defined in other figures.

- The connections represent the case of a DUT with separate antenna connectors per CC. For other DUT antenna connector configurations, the necessary signal combining is done accordingly.
- The number of secondary CC is n with $n = 2, 3, \dots$ as applicable to the individual test case for $n+1$ CCs testing.

Following symbolic is used in the connection diagrams to distinguish CC-s and paths:

- p : primary CC
- s : secondary CC (in case of CA with 2CCs)
- $s1$: first secondary CC (in case of CA with >2CCs)
- sn : n -th secondary CC with $n = 2, 3, \dots$ (in case of CA with >2CCs)
- $\langle j \rangle$: (integer) defines the receive antenna and the path to it $\langle j \rangle$ for a given CC
- $\langle i \rangle \langle j \rangle$: (integer) defines the path between transmit antenna $\langle i \rangle$ and receive antenna $\langle j \rangle$ for a given CC

The connections are general and support CA both in DL and UL. According to the test conditions, if the UL CA is not used, the "secondary CCs of UL" in the connections may be ignored.

For contiguous CA, single AWGN _{k} sources with $k = \{p, s, s1, s2, \dots\}$ affecting the same UE antenna connector can be unified to AWGN sources with higher bandwidth.

Connections for UE category 0 and category M1 testing

For UE category 0 and category M1, if the connection is referred with the additional clarification “using only main UE Tx/Rx antenna”, then all the links and blocks in the connection serving to supply other UE Rx antennas with signal, are not used.

The example below in Figure A.0 shows the resulting connection to be used, after removing the unnecessary parts (red coloured) to connection of Figure A.10, assuming it is referred in a UE category 0 or a category M1 test as mentioned above.

Connections for ProSe testing

TBD

Connections for 4 Rx antenna ports in transmitter tests

For UE supporting 4 Rx antenna ports on at least one of the bands under test, in transmitter tests the connection is referred to connection diagrams showing only 2 UE Rx antenna ports. For such cases, the SS fed only two of the four antennas from the UE, which are connected depending on UE capability. The remaining two antenna ports of the UE are not connected to the SS.

Considerations for CA testing on 4Rx capable UEs

Figures A.80, A.82, A.85 to A.87, A.90, A.91, A.94 and A.95 contain connection diagrams that shall be used to enable CA testing on 4Rx capable UEs. Such connection diagrams are only applicable to UEs that support 4Rx on at least one of the bands under test. In such cases, the following rules apply to the connection diagram:

- 1 For nDL CA with x CCs on a 4Rx supported band and $(n-x)$ CCs on a 2Rx supported band, the 4Rx Module shall be replicated x times and 2Rx Module shall be replicated $(n-x)$ times. These modules are specified on the connection diagrams.
- 2 UE is assumed to support 2Rx in {Rx1, Rx3} and 4Rx in {Rx1, Rx2, Rx3, Rx4}. Depending on UE capability these ports can be interchanged.
- 3 For all 2Rx supported band the 2-Rx CCs are fed only on two ports and the remaining two ports have zero-input in this band.
- 4 SS shall configure Rx1, Rx2, Rx3, Rx4 based on UE capability.
- 5 UE Tx will be placed in one of the 4 UE antenna ports and shall feed either SS_4Rx or SS_2Rx depending on UE capability. SS_4Rx and SS_2Rx are specified on the connection diagrams.

The connections represent the case of a DUT with common antenna connectors for both CC-s with same UL transmit antenna connector. For other DUT antenna connector configurations, the necessary signal combining is done accordingly.

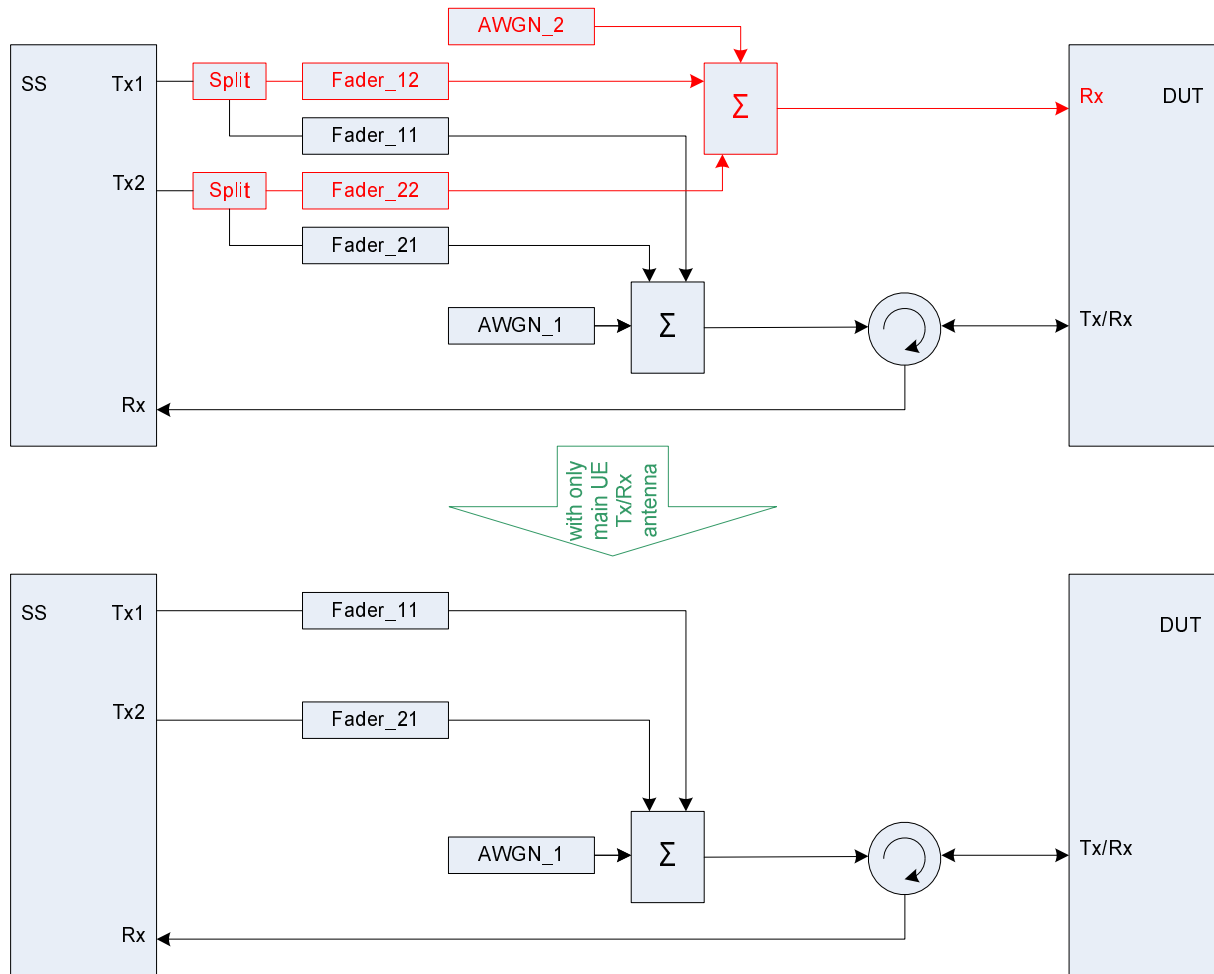


Figure A.0: Reduced implementation of connections for UE category 0 and category M1 testing (example of Figure A.10)

Figure A.1: Void

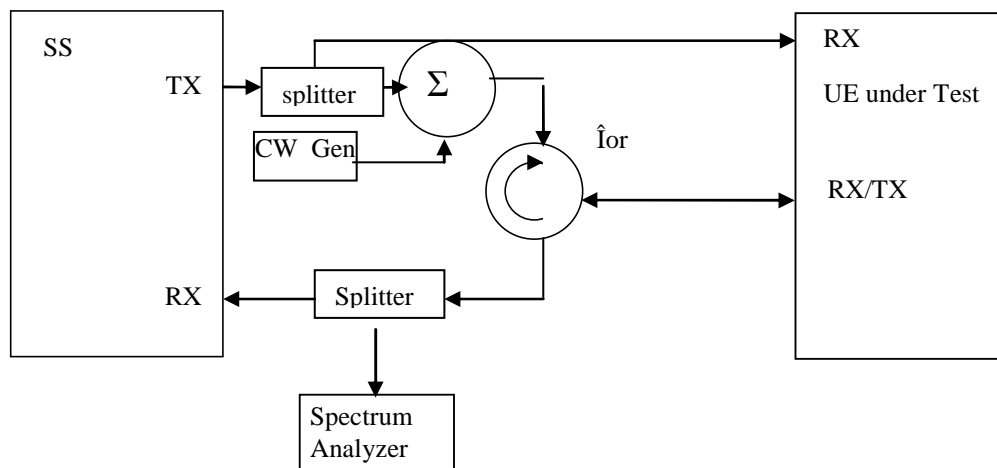


Figure A.2: Connection for Transmitter Intermodulation tests

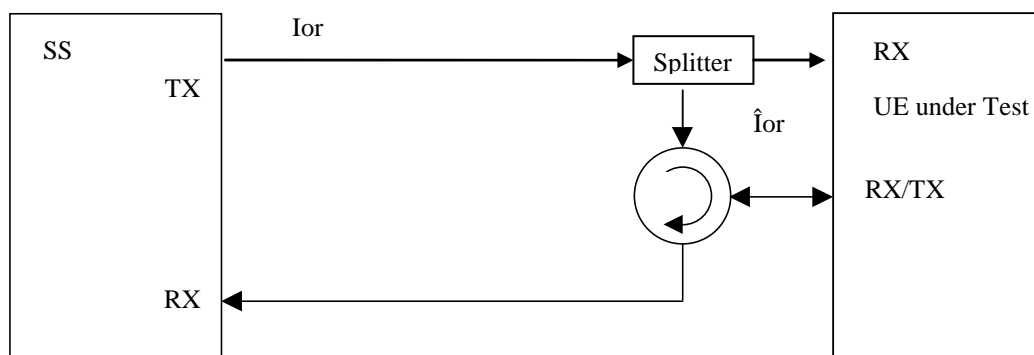


Figure A.3: Connection for basic single cell, RX and TX tests

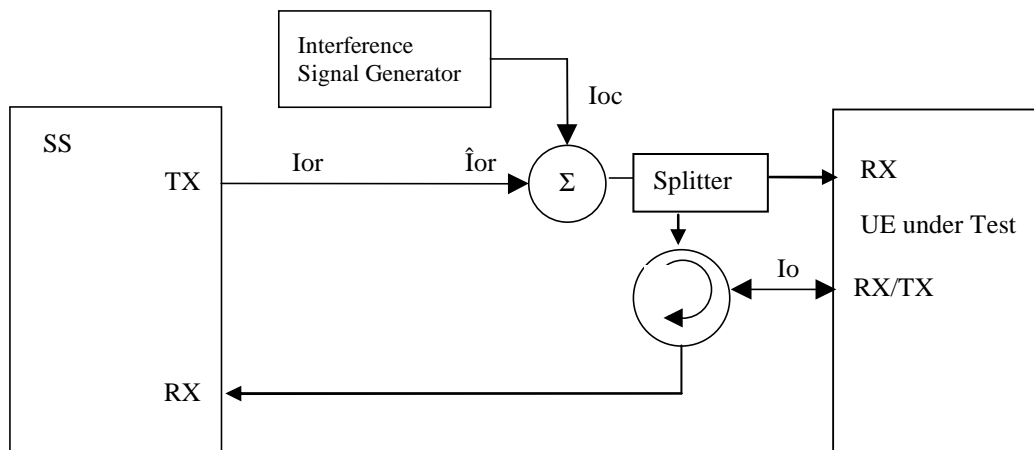


Figure A.4: Connection for Receiver tests with E-UTRA-Interference

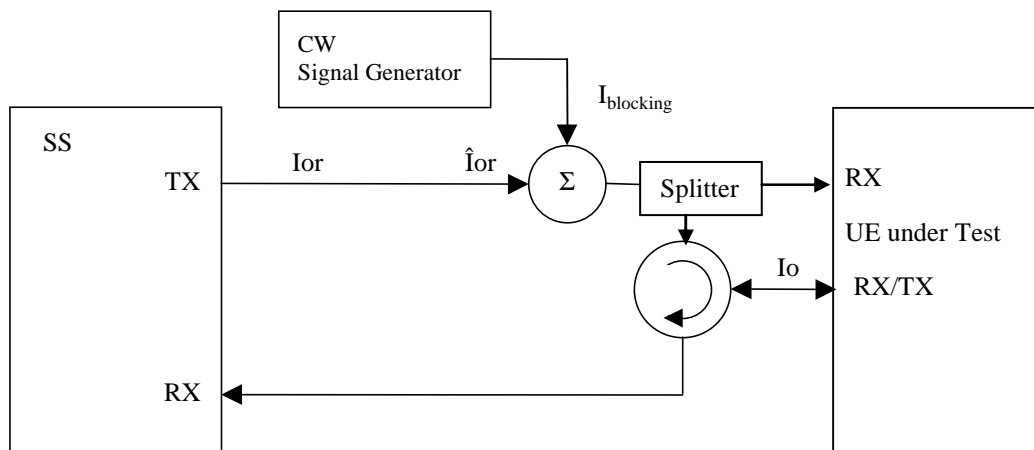


Figure A.5: Connection for Receiver tests with CW interferer

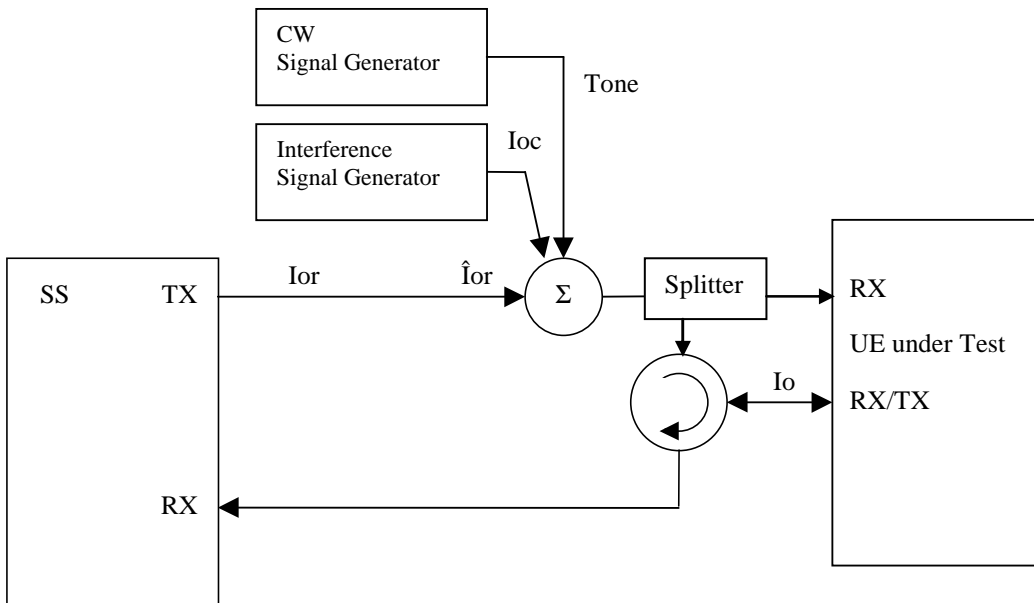


Figure A.6: Connection for Receiver tests with both E-UTRA Interference and additional CW signal

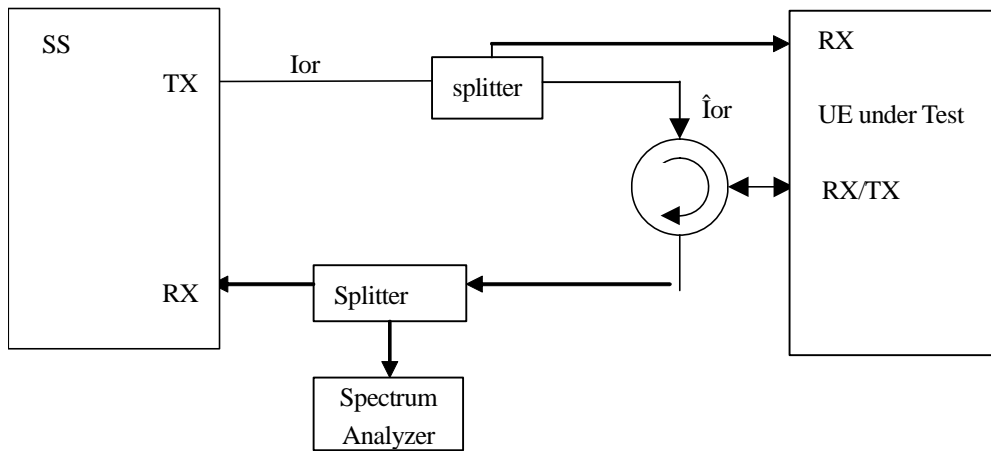


Figure A.7: Connection for TX-tests with additional Spectrum Analyzer

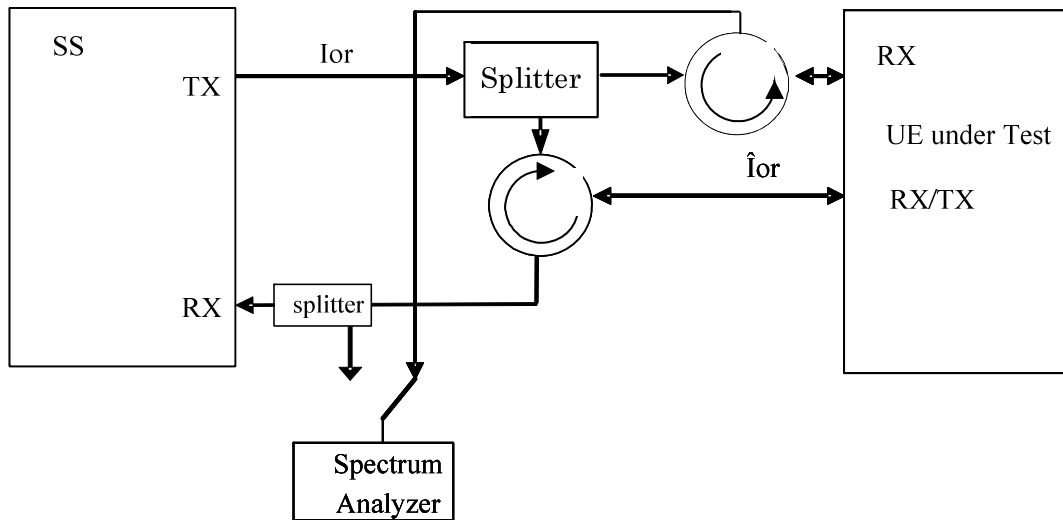


Figure A.8: Connection for RX-tests with additional Spectrum Analyzer

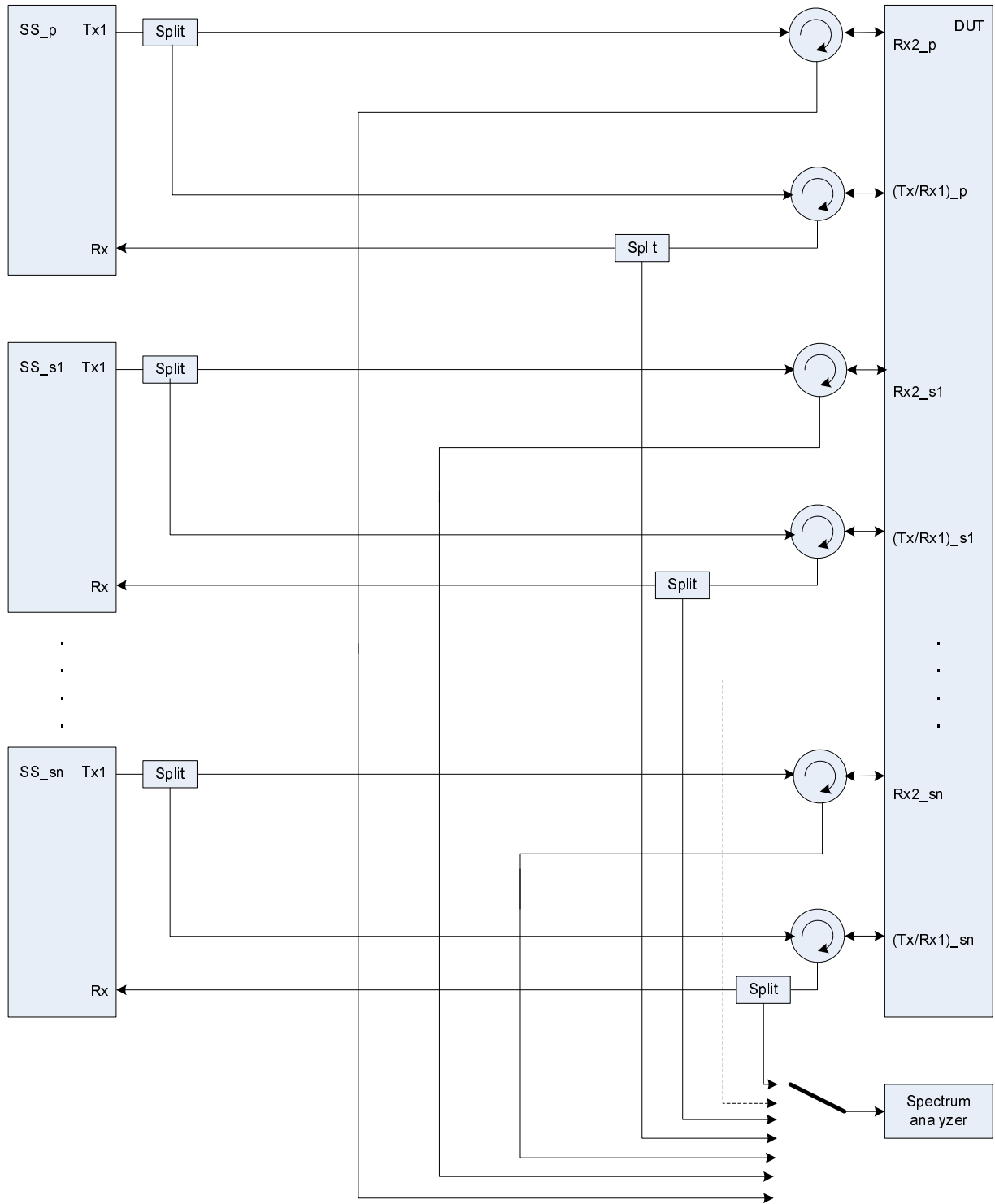


Figure A.8a: Connection for RX tests for CA (≥ 2CCs) with additional Spectrum Analyzer

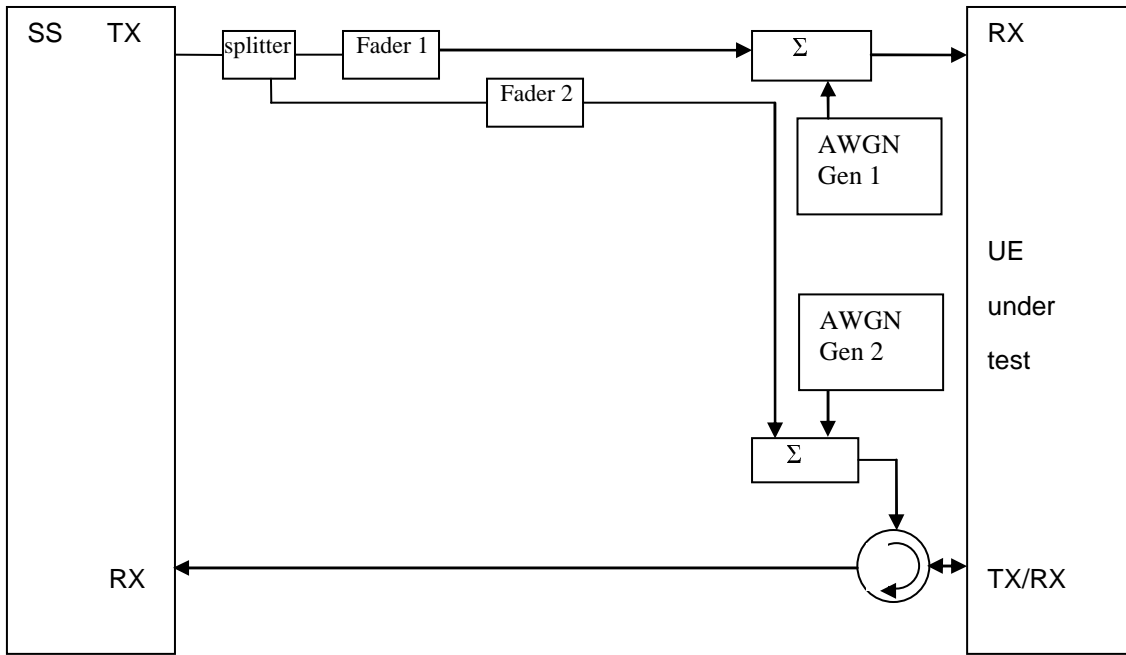


Figure A.9: Connection for RX performance tests with antenna configuration 1x2 (single antenna port)

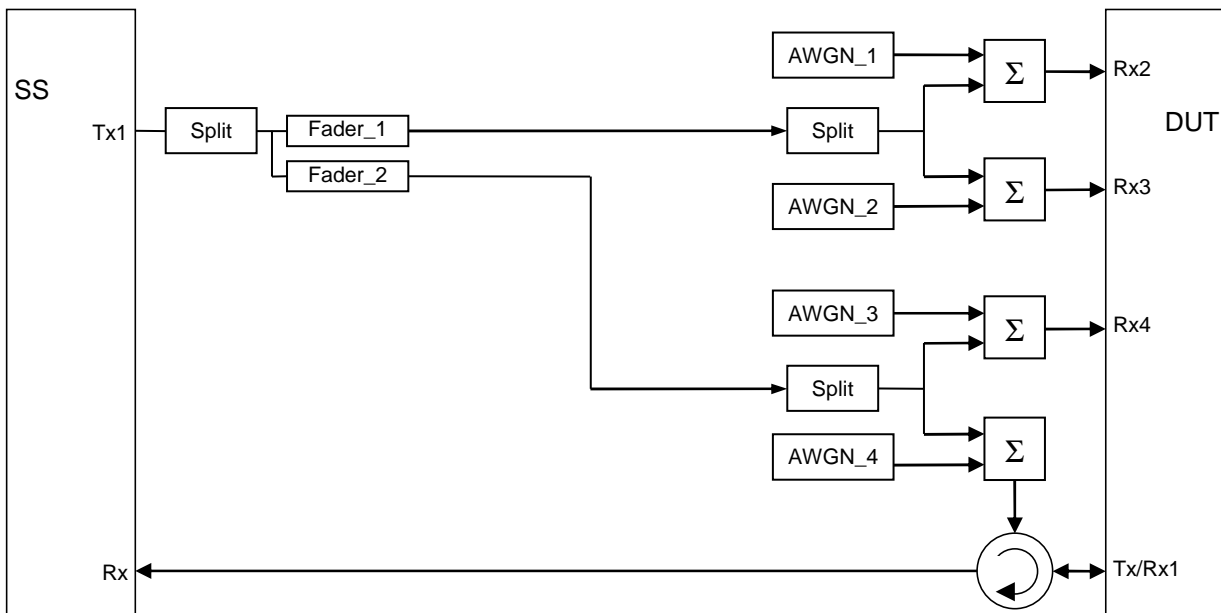


Figure A.9a: Connection for RX performance tests with antenna configuration 1x2 (single antenna port) for 4Rx capable UEs without any 2Rx RF bands

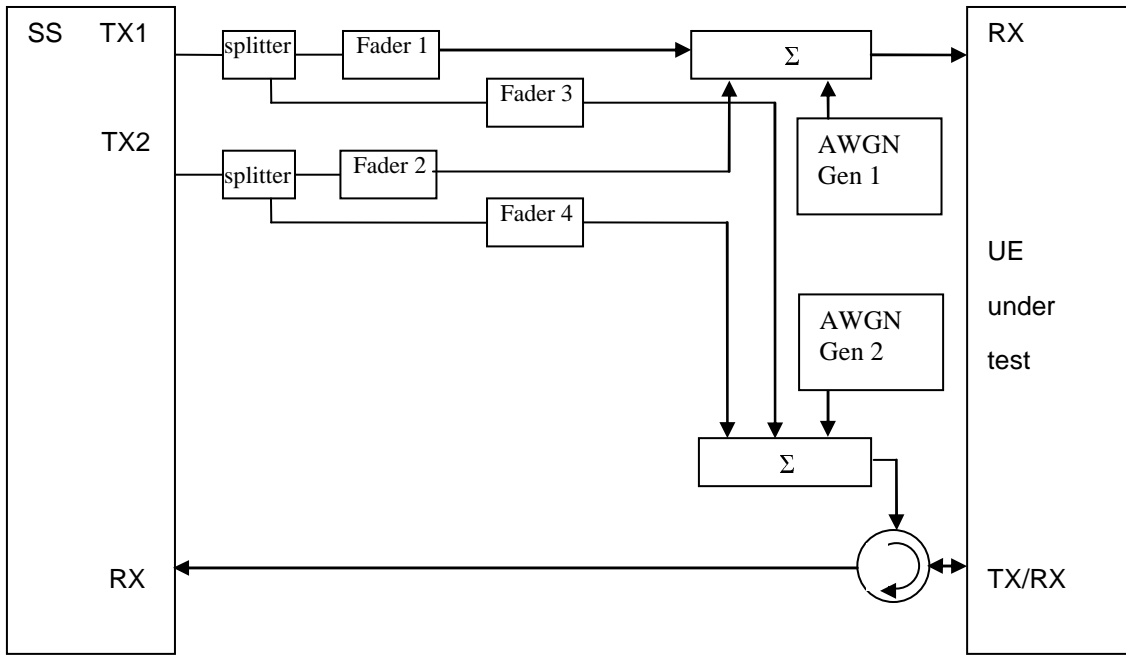


Figure A.10: Connection for RX performance tests with antenna configuration 2x2

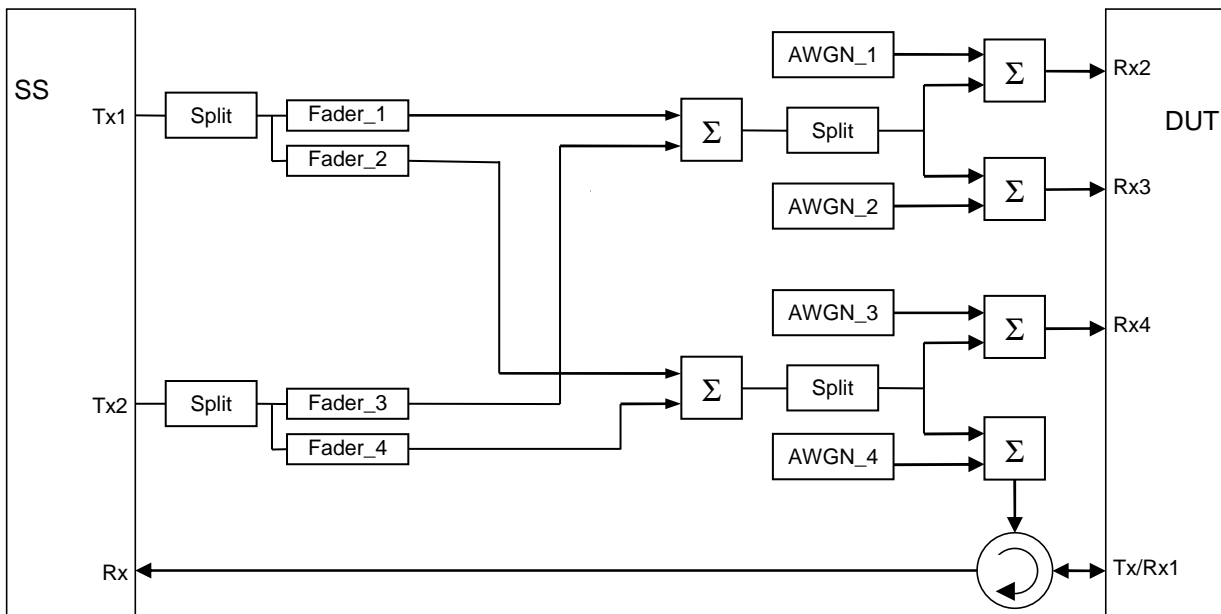


Figure A.10a: Connection for RX performance tests with antenna configuration 2x2 for 4Rx capable UEs without any 2Rx RF bands

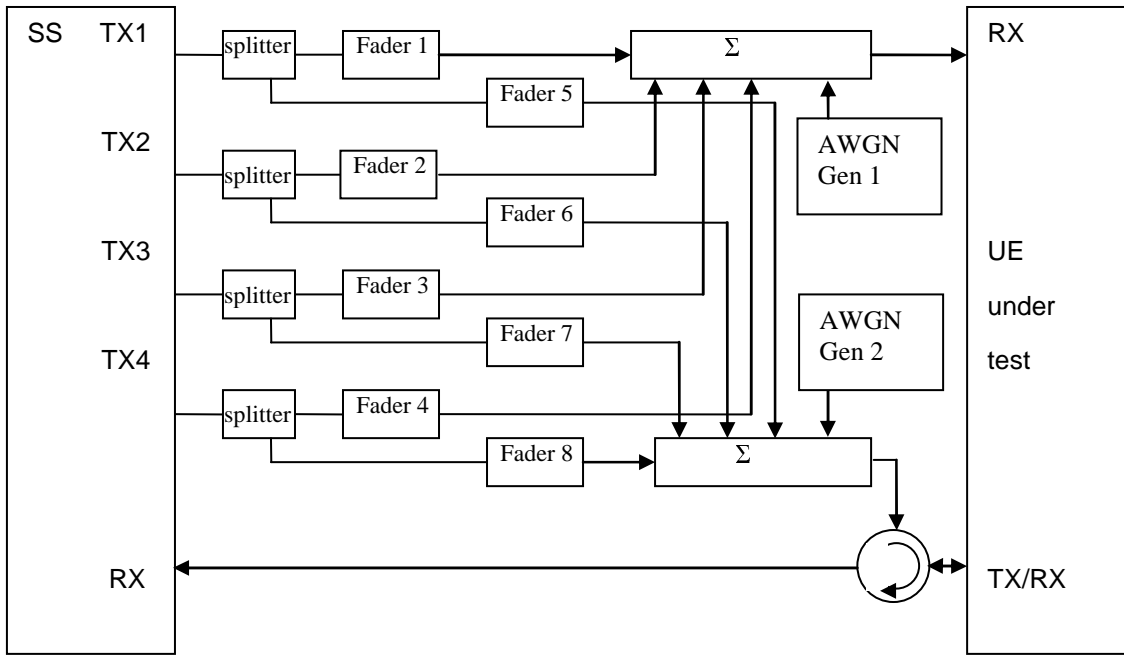


Figure A.11: Connection for RX performance tests with antenna configuration 4x2

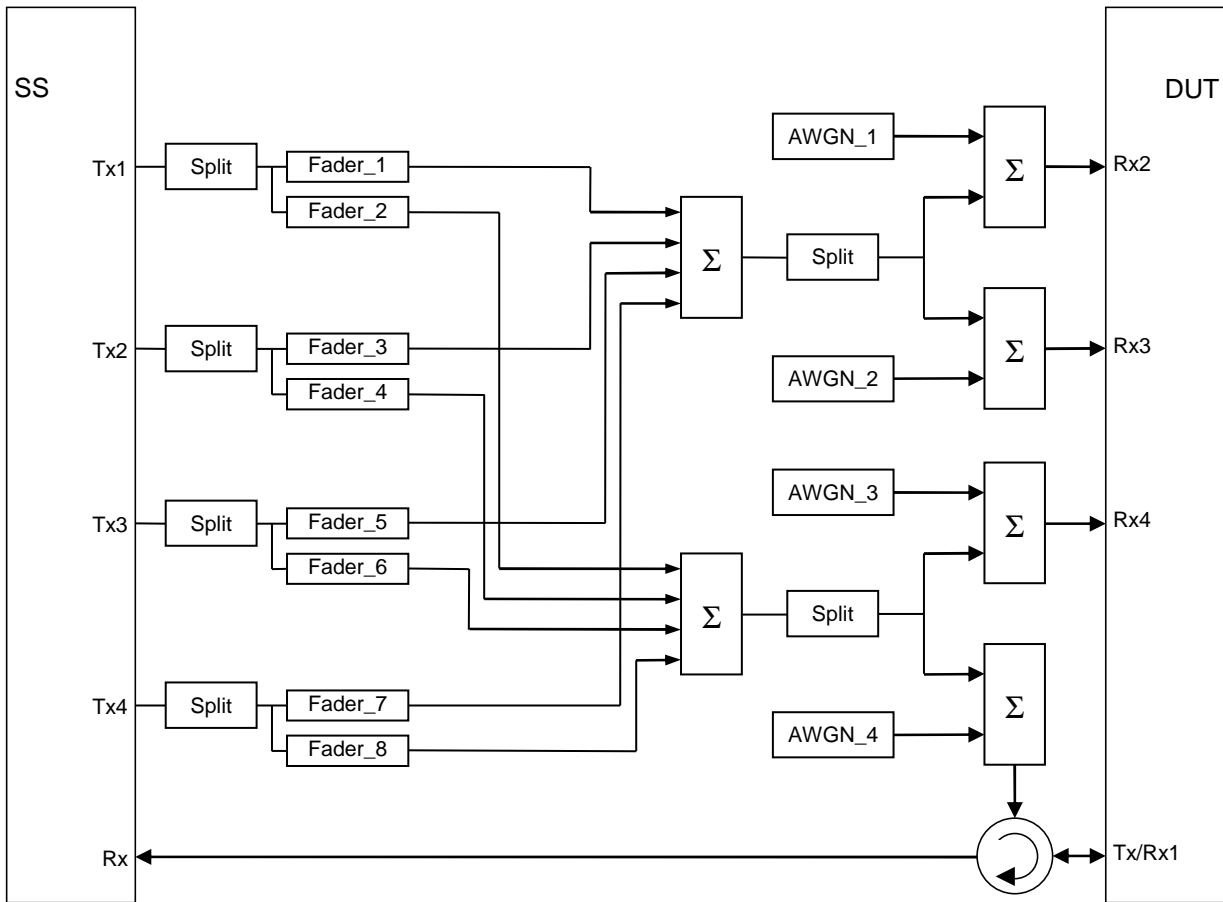


Figure A.11a: Connection for RX performance tests with antenna configuration 4x2 for 4Rx capable UEs without any 2Rx RF bands

Figure A.12: Void

Figure A.13: Void

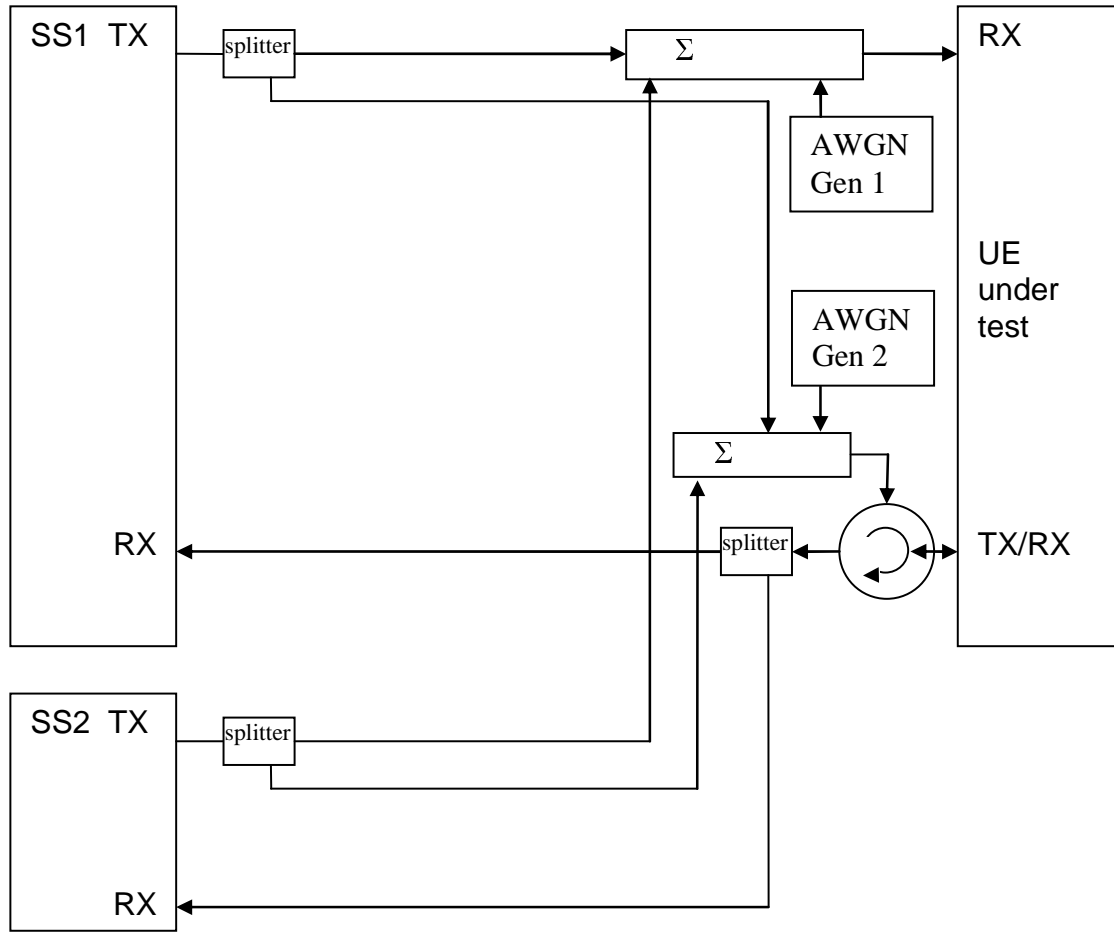


Figure A.14: Connection for 2 cells with static propagation and receive diversity

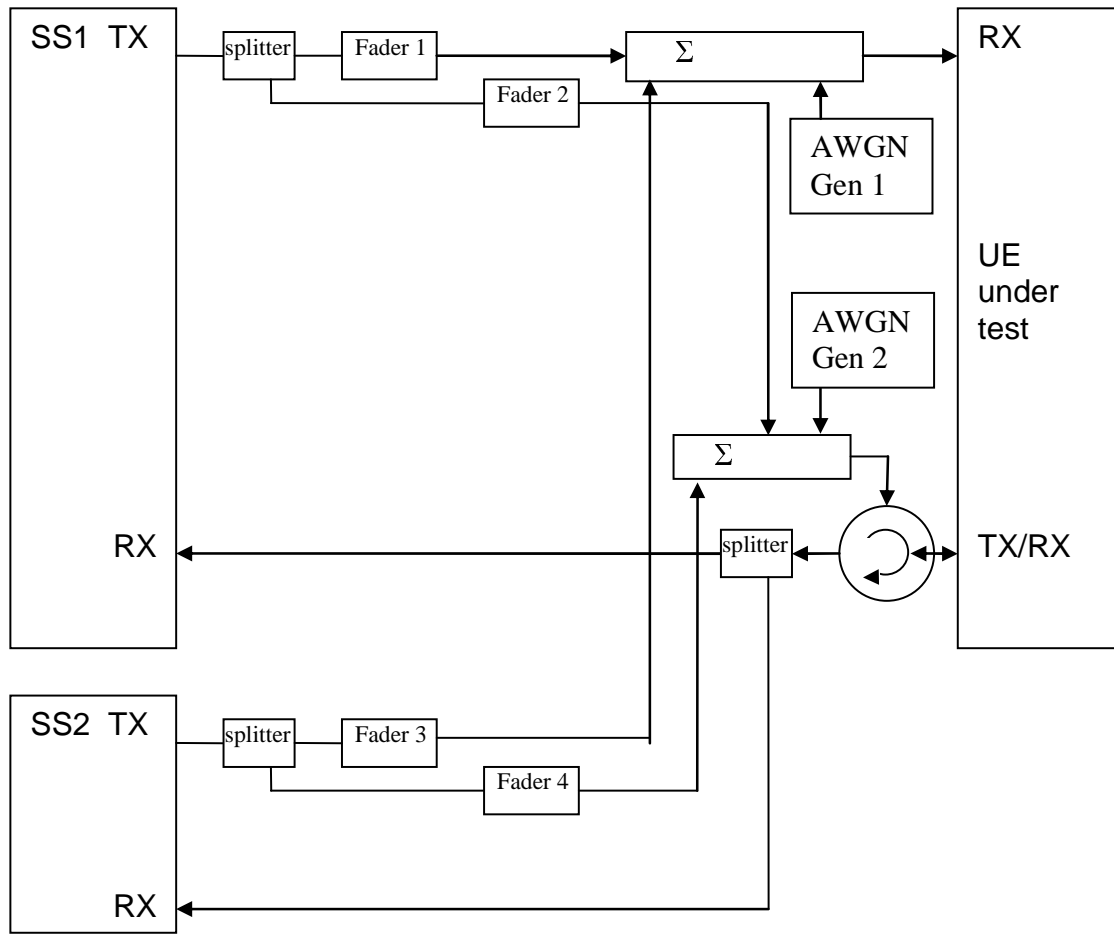


Figure A.15: Connection for 2 cells with multipath fading propagation and receive diversity

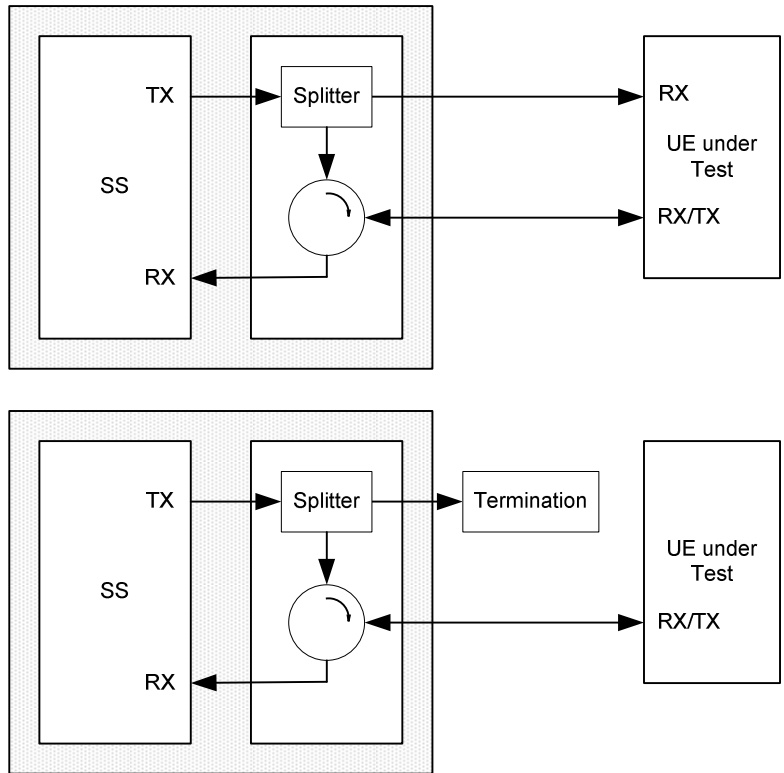


Figure A.16: Connection for single cell Signalling tests
 (Note: only one Rx/Tx antenna port in case of NB-IoT UE)

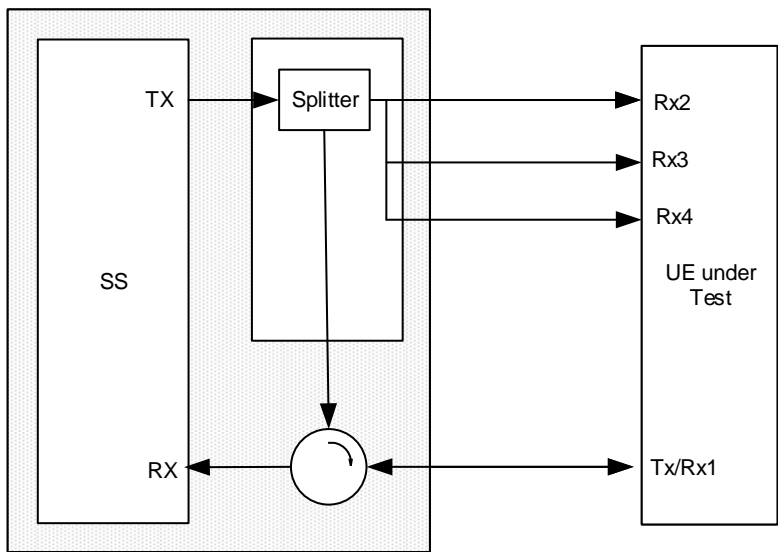
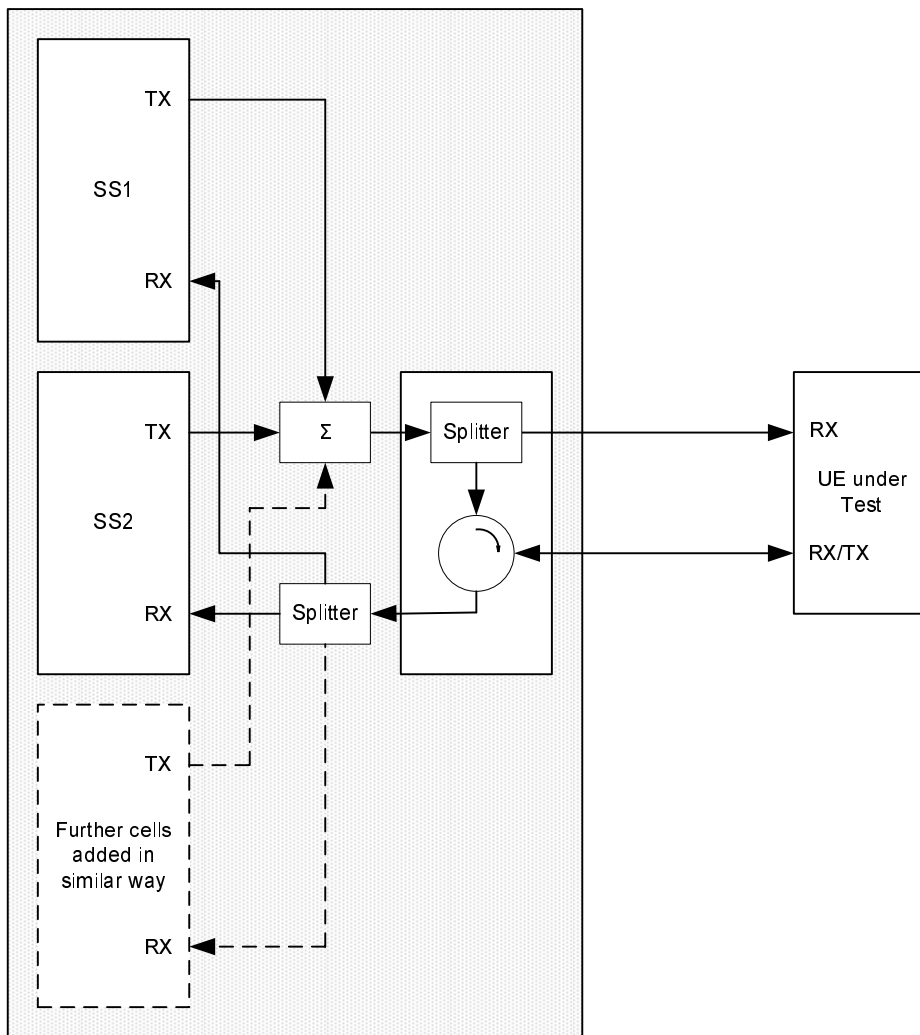


Figure A.16a: Connection for single cell Signalling tests for 4Rx Capable UE



**Figure A.17: Connection for multiple cells Signalling tests
(Note: only one Rx/Tx antenna port in case of NB-IoT UE)**

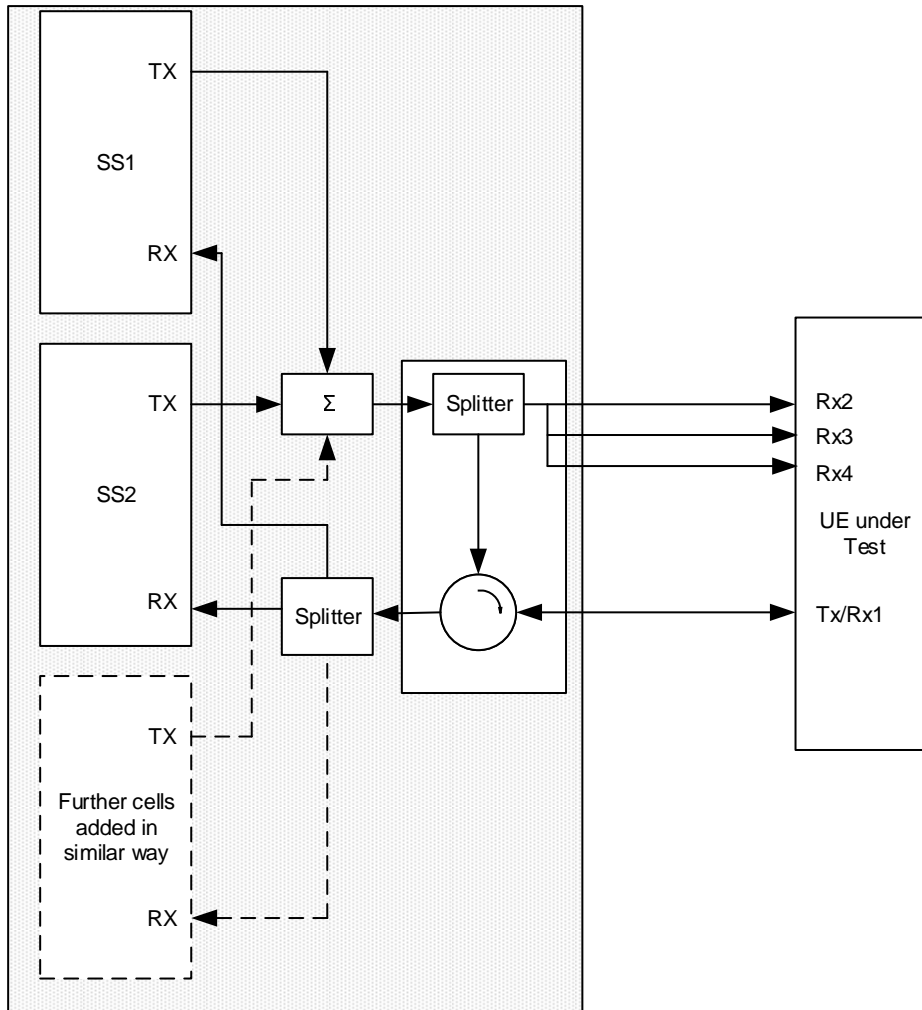


Figure A.17a: Connection for multiple cells Signalling tests for 4Rx capable UE

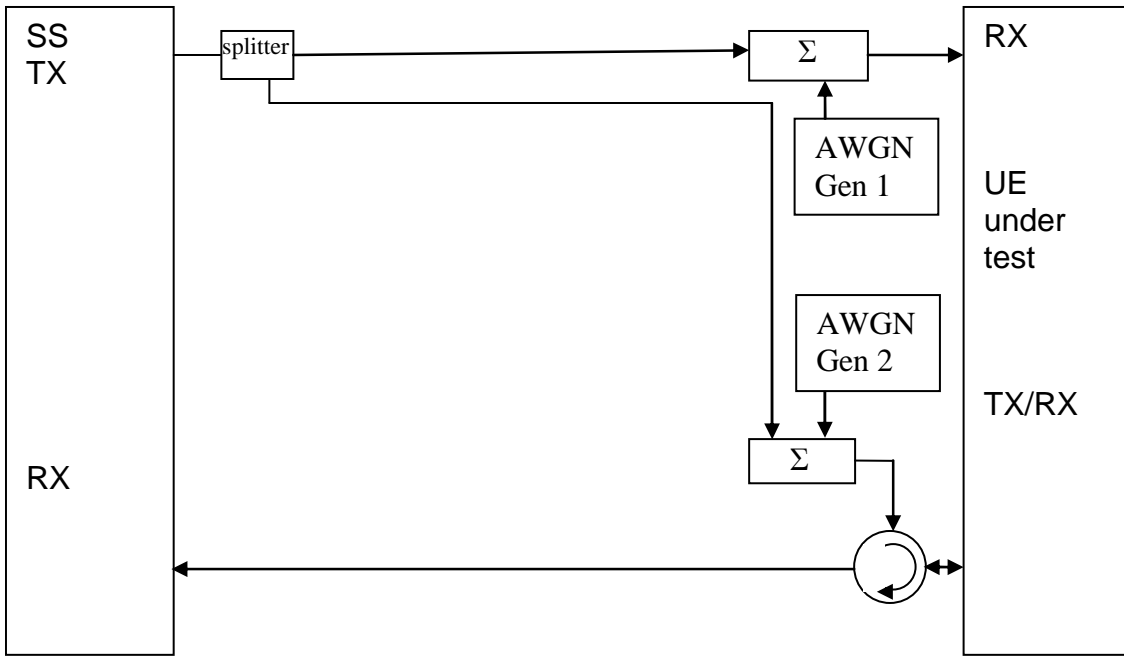


Figure A.18: Connection for 1 cell with antenna configuration 1x2 in static propagation conditions

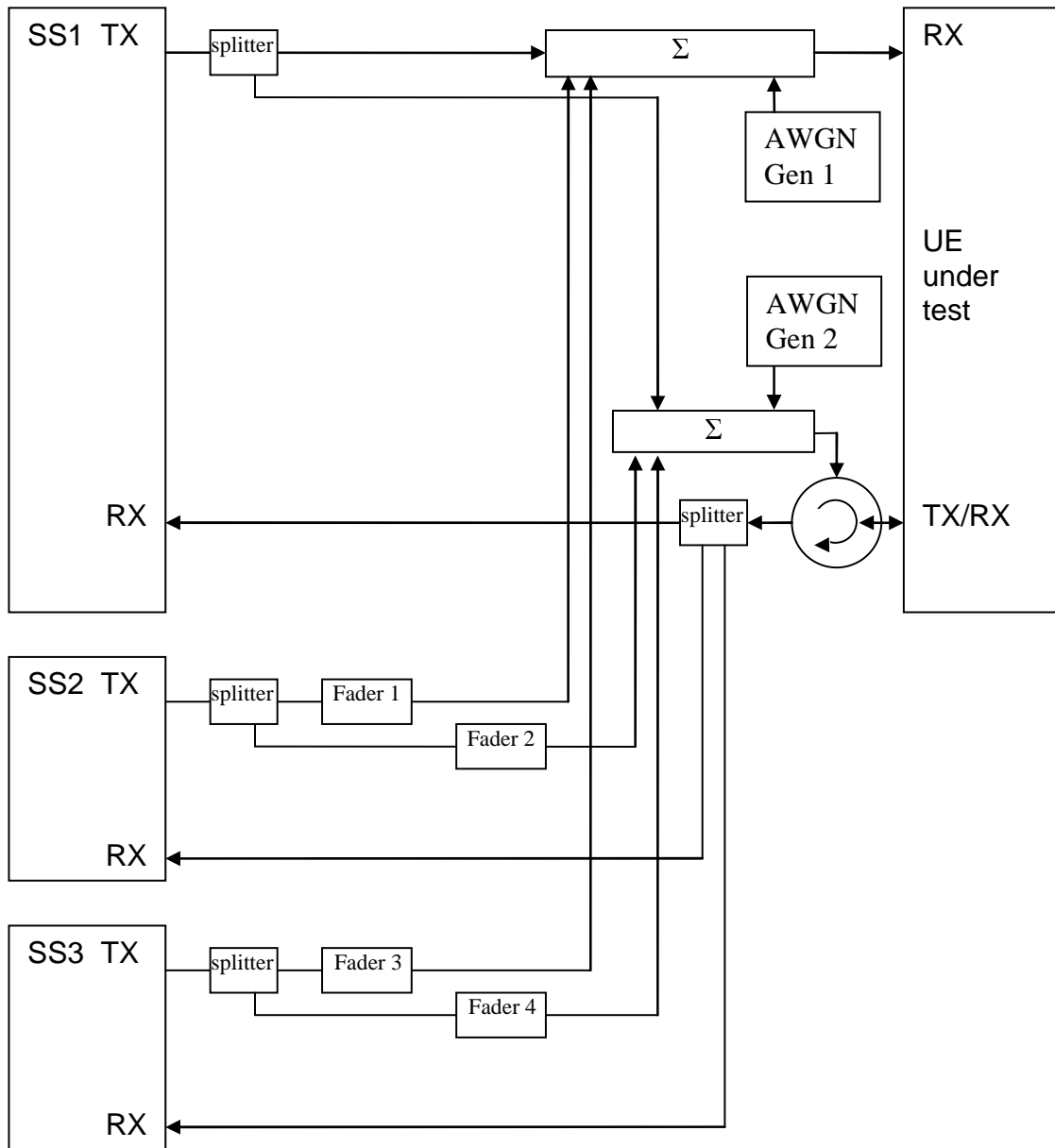


Figure A.19: Connection for 3 cells with antenna configuration 1x2 in static (cell 1) and multipath fading (cell 2 and 3) propagation conditions and receive diversity

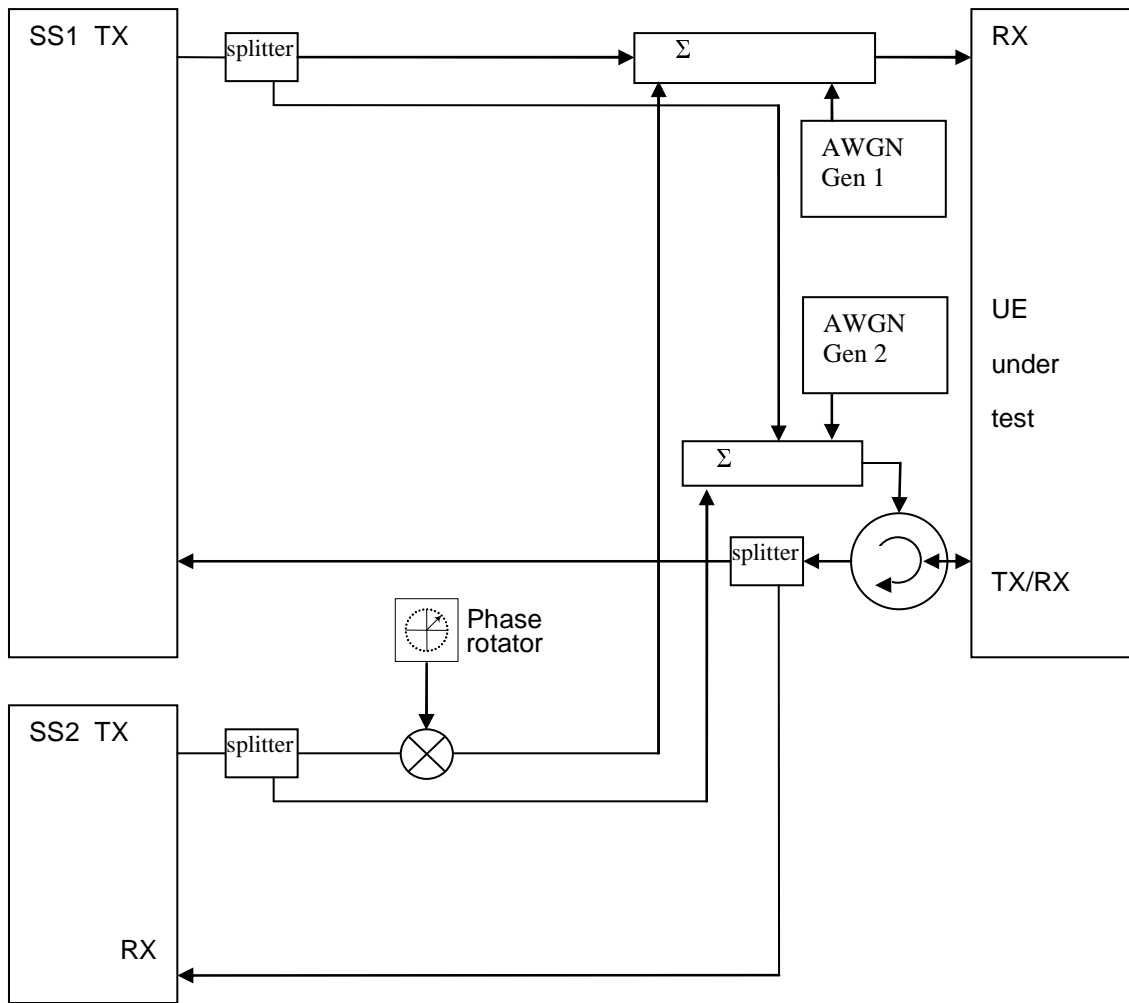


Figure A.20: Connection for 2 cells with static propagation and receive diversity with phase rotator (The frequency offset used in phase rotator is 5 Hz)

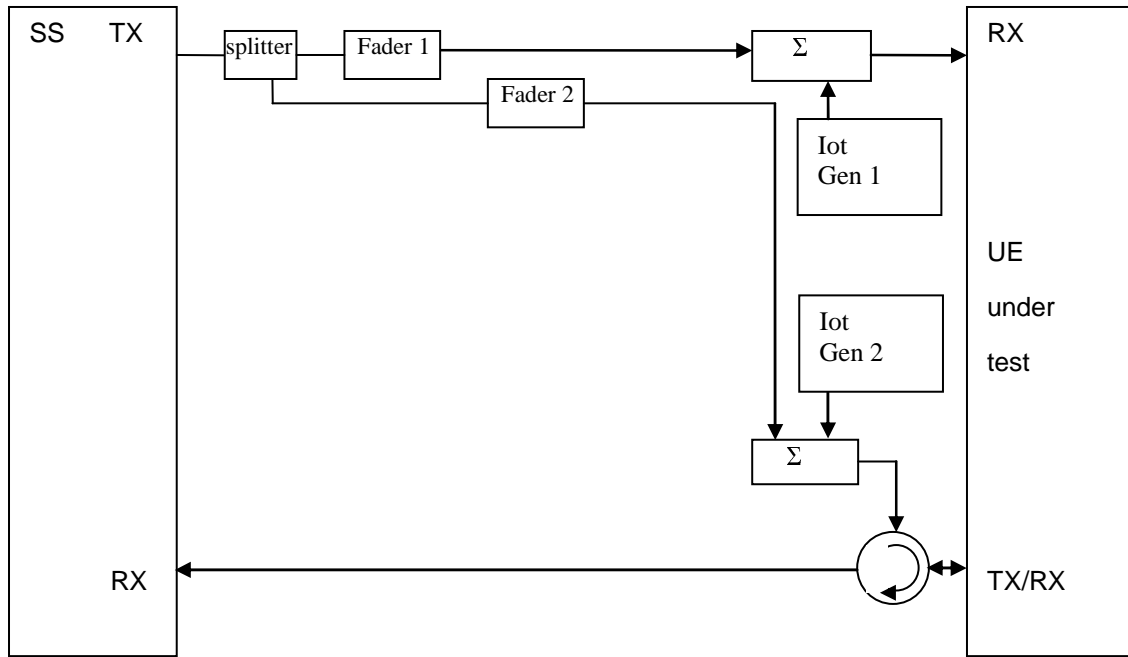


Figure A.21: Connection for frequency-selective interference with multipath fading propagation and receive diversity

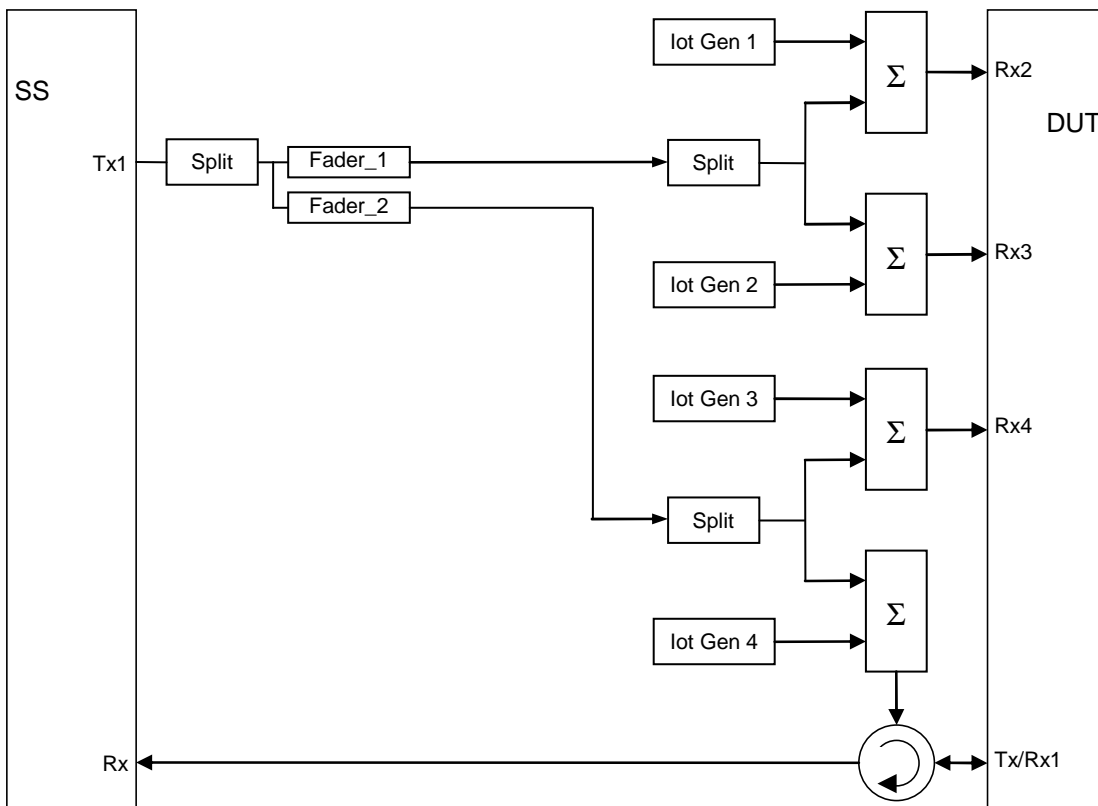


Figure A.21a: Connection for frequency-selective interference with multipath fading propagation and receive diversity for 4Rx capable UEs without any 2Rx RF bands

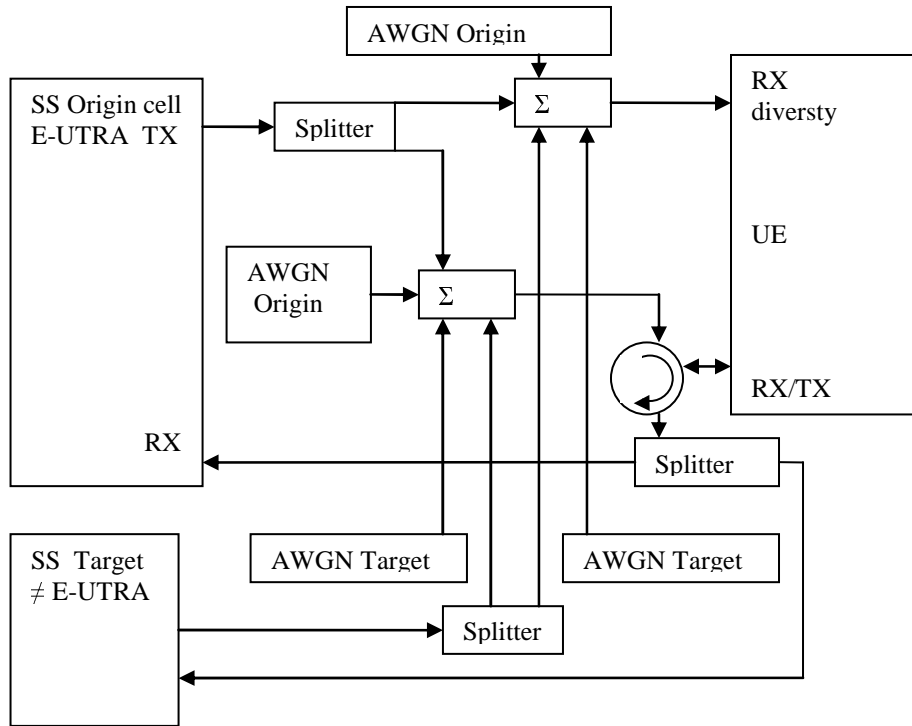


Figure A.22: Connection for 2 cells with static propagation condition. Origin (E-UTRAN) and target cell (\neq E-UTRAN) received with RX diversity

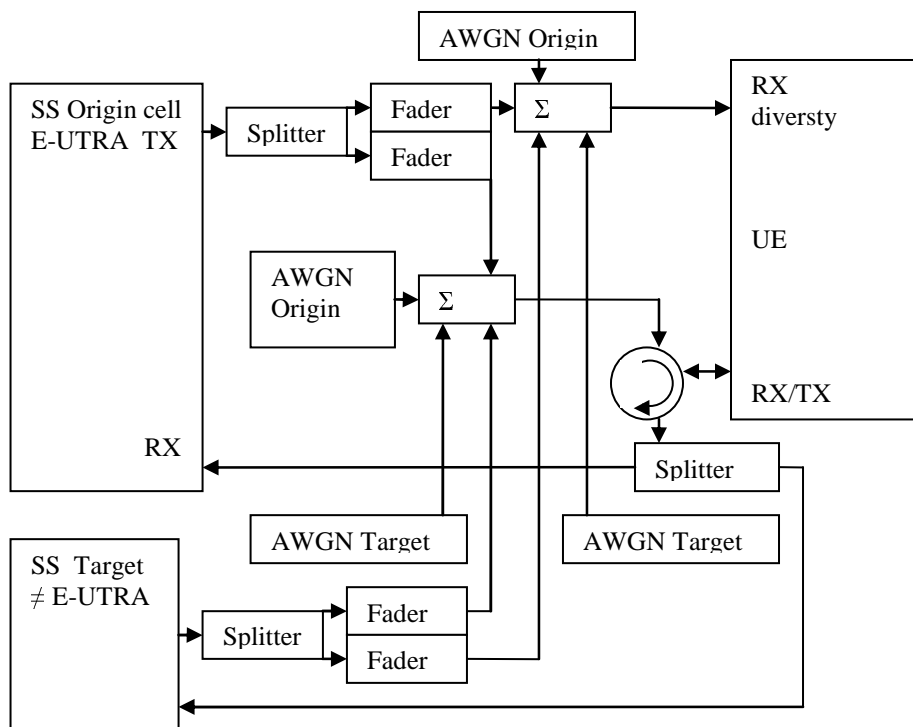


Figure A.23: Connection for 2 cells with multipath fading propagation condition. Origin (E-UTRAN) and target cell (\neq E-UTRAN) received with RX diversity

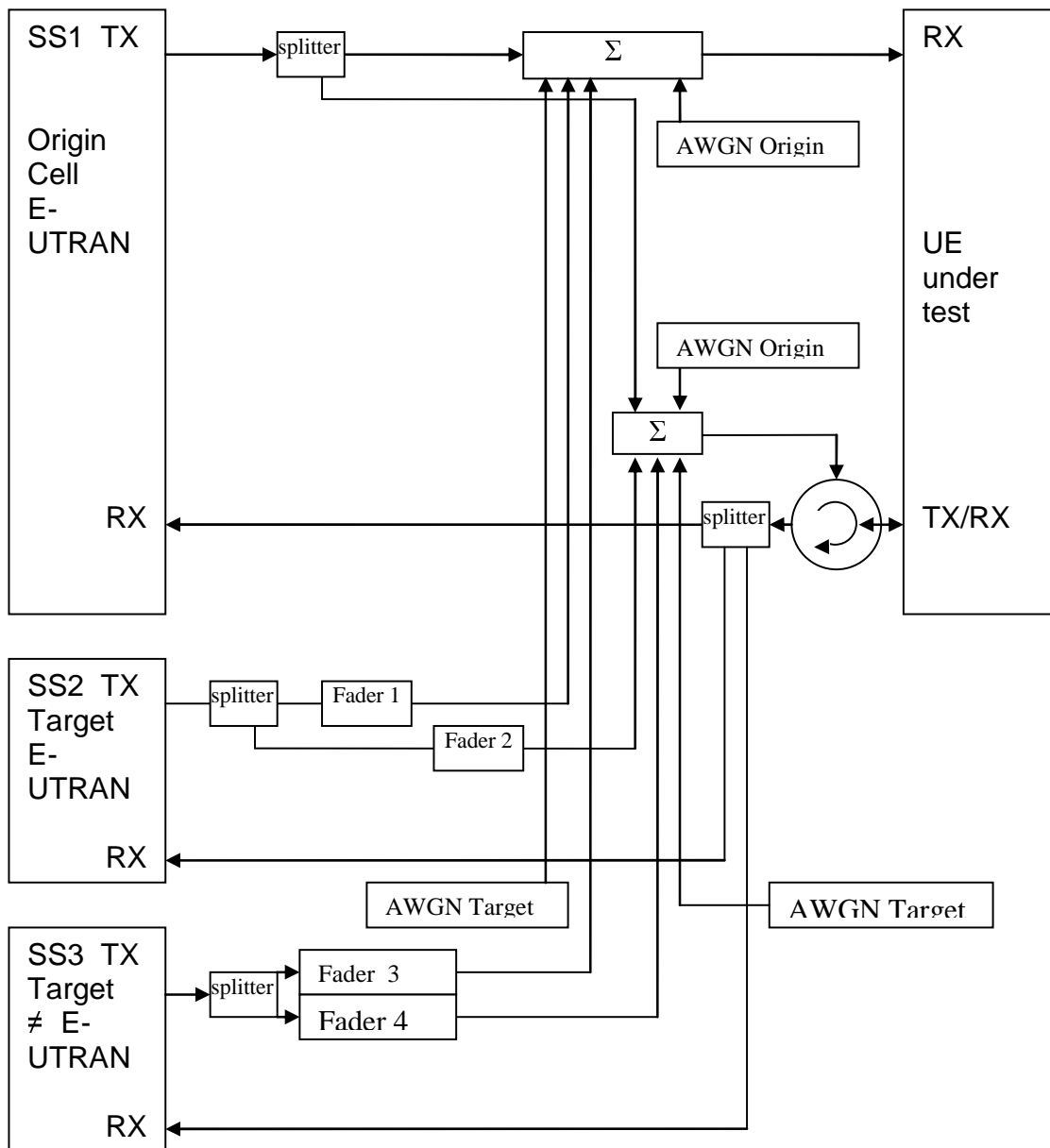


Figure A.24: Connection for 3 cells with antenna configuration 1x2 in static (cell 1) and multipath fading conditions (cell 2 and 3) and multiple RAT and receive diversity

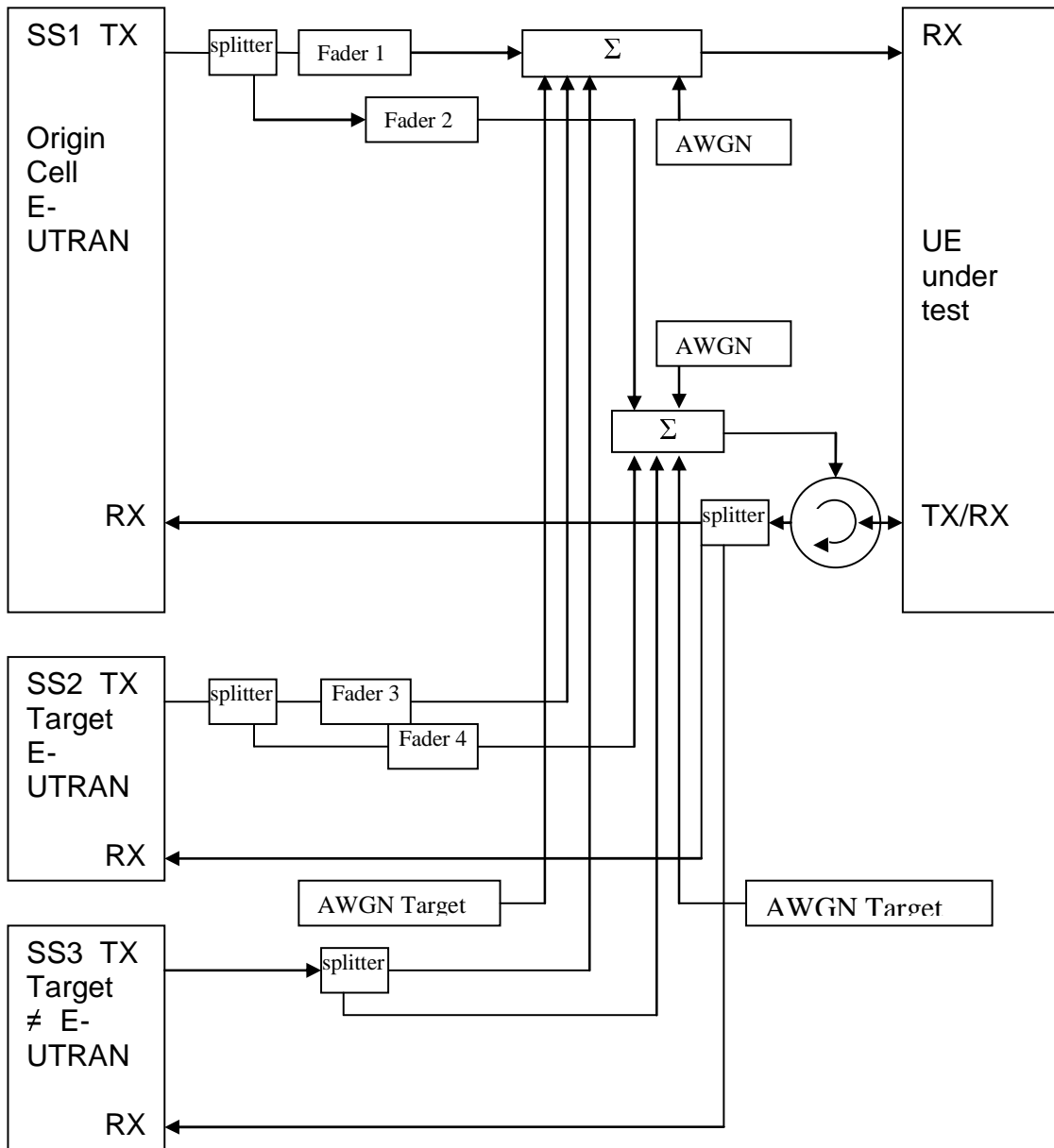


Figure A.25: Connection for 3 cells with antenna configuration 1x2 in multipath fading (cell 1 and 2) and multiple RAT (cell 3 static) and receive diversity

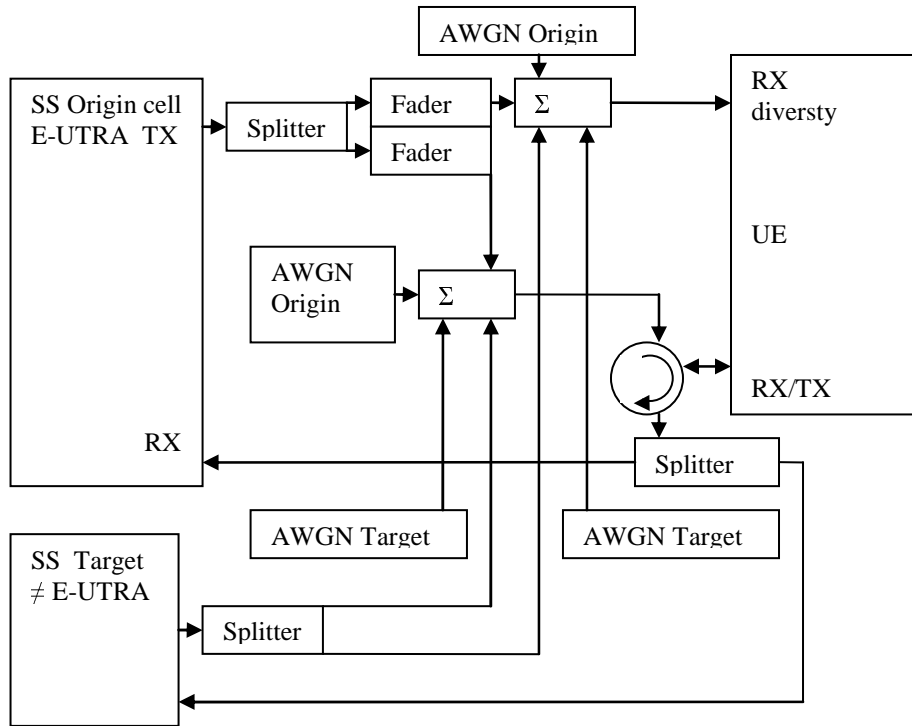


Figure A.26: Connection for 2 cells. Origin (E-UTRAN, multipath fading) and target cell (\neq E-UTRAN, static) received with RX diversity

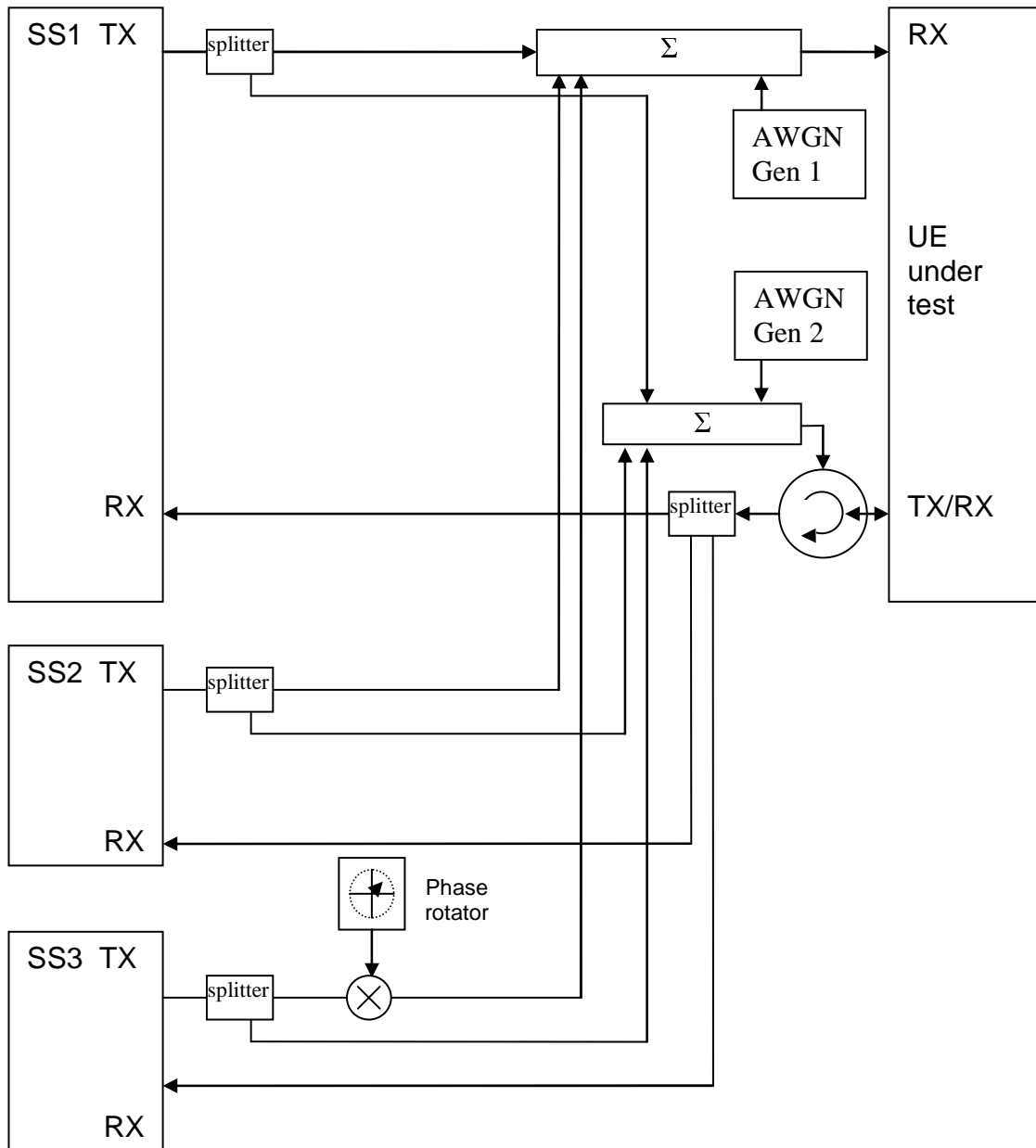


Figure A.27: Connection for 3 cells with static propagation and receive diversity

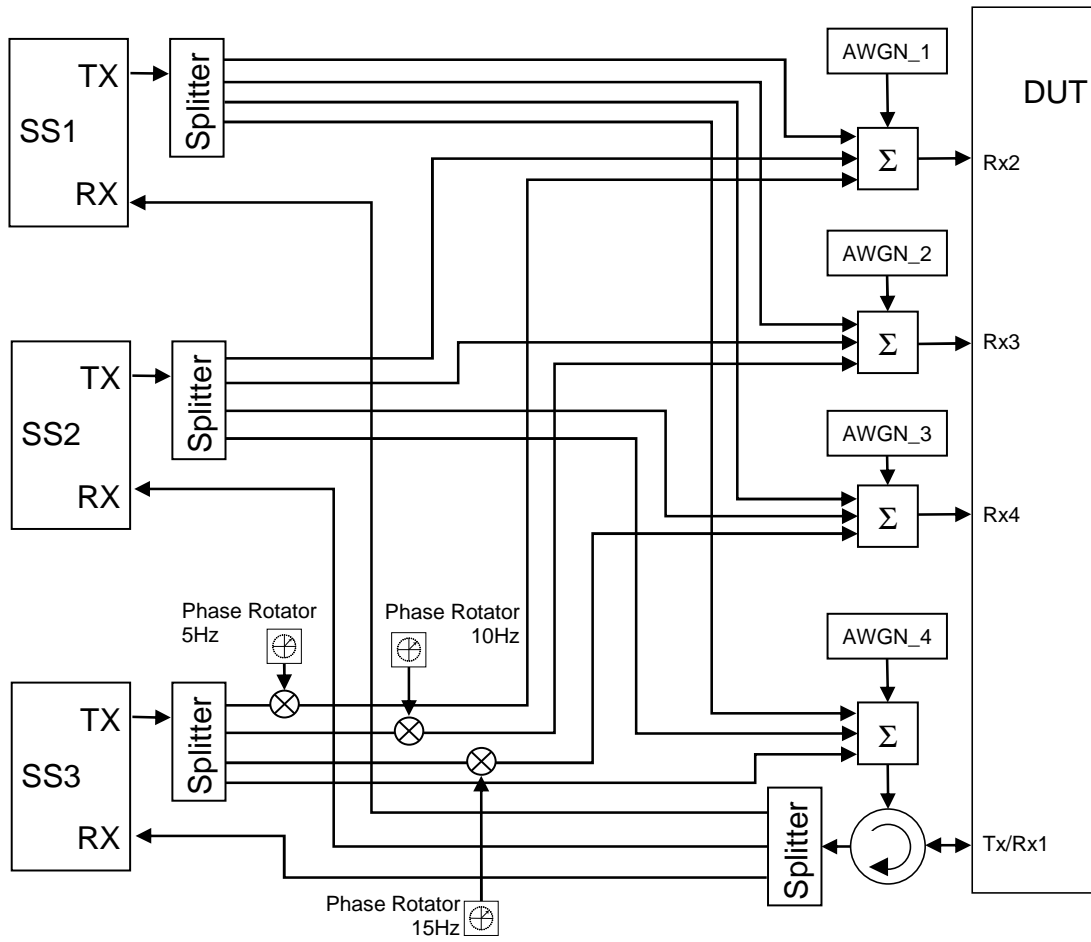


Figure A.27a: Connection for 3 cells with static propagation and 1x4 receive diversity

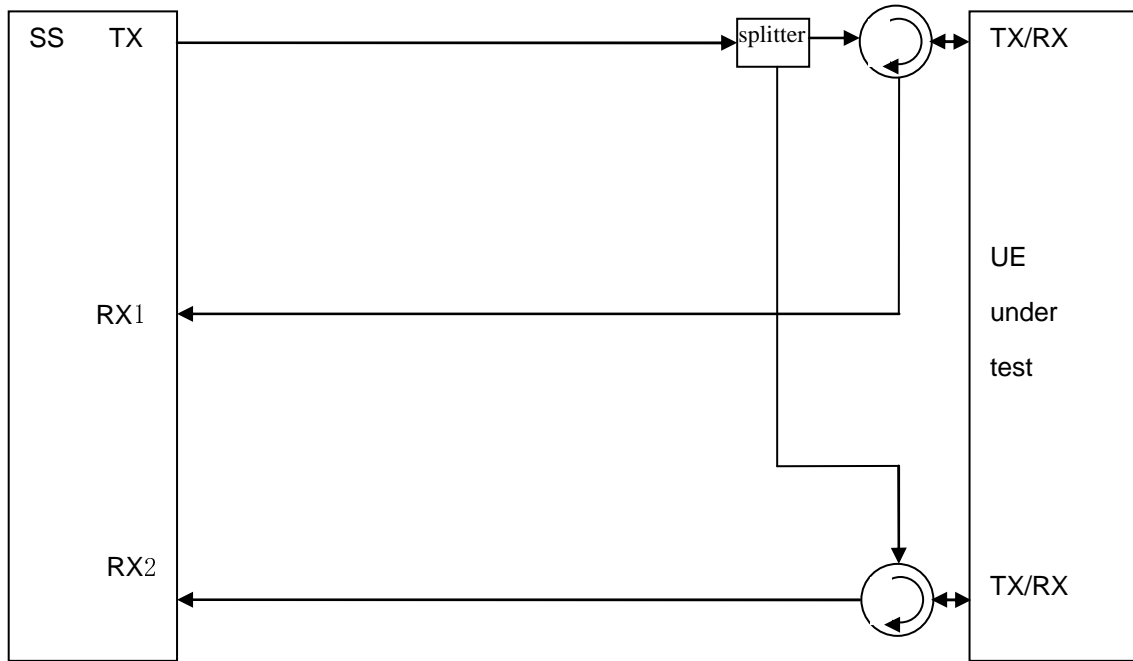


Figure A.28: Connection for basic UL MIMO with receive diversity

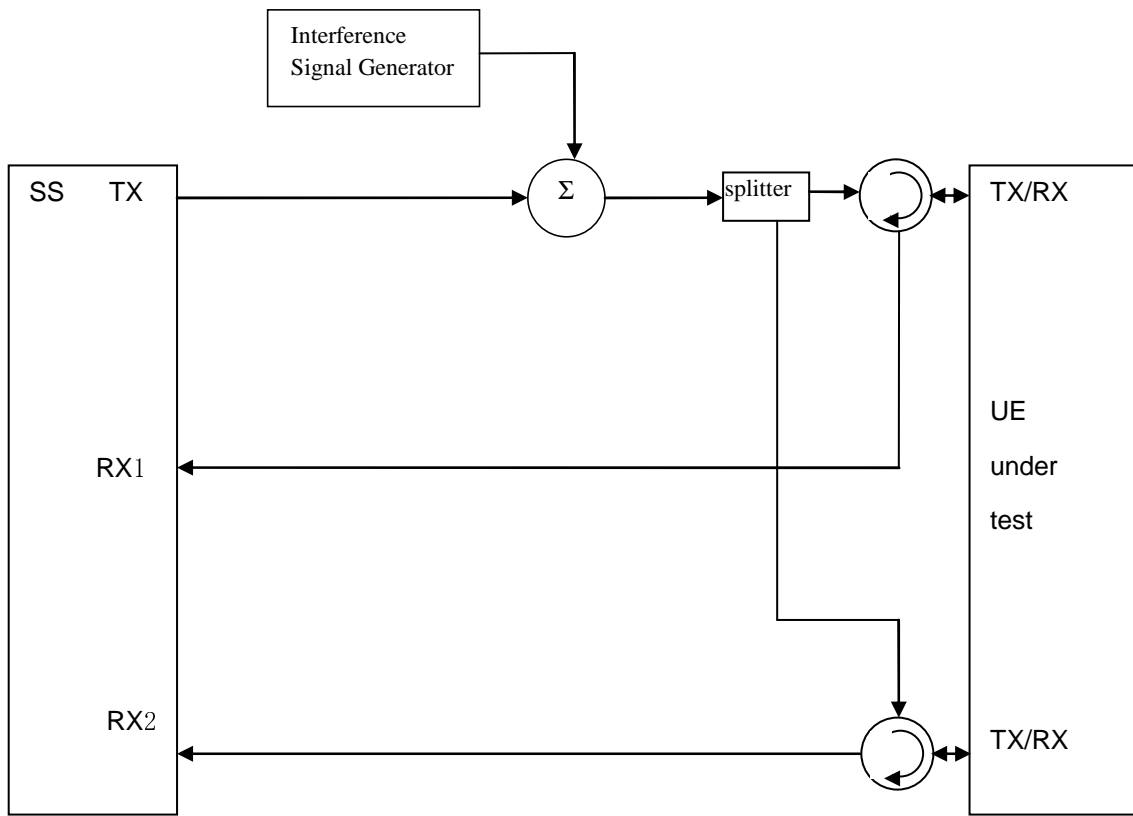


Figure A.29: Connection for UL MIMO Receiver tests with E-UTRA-Interference

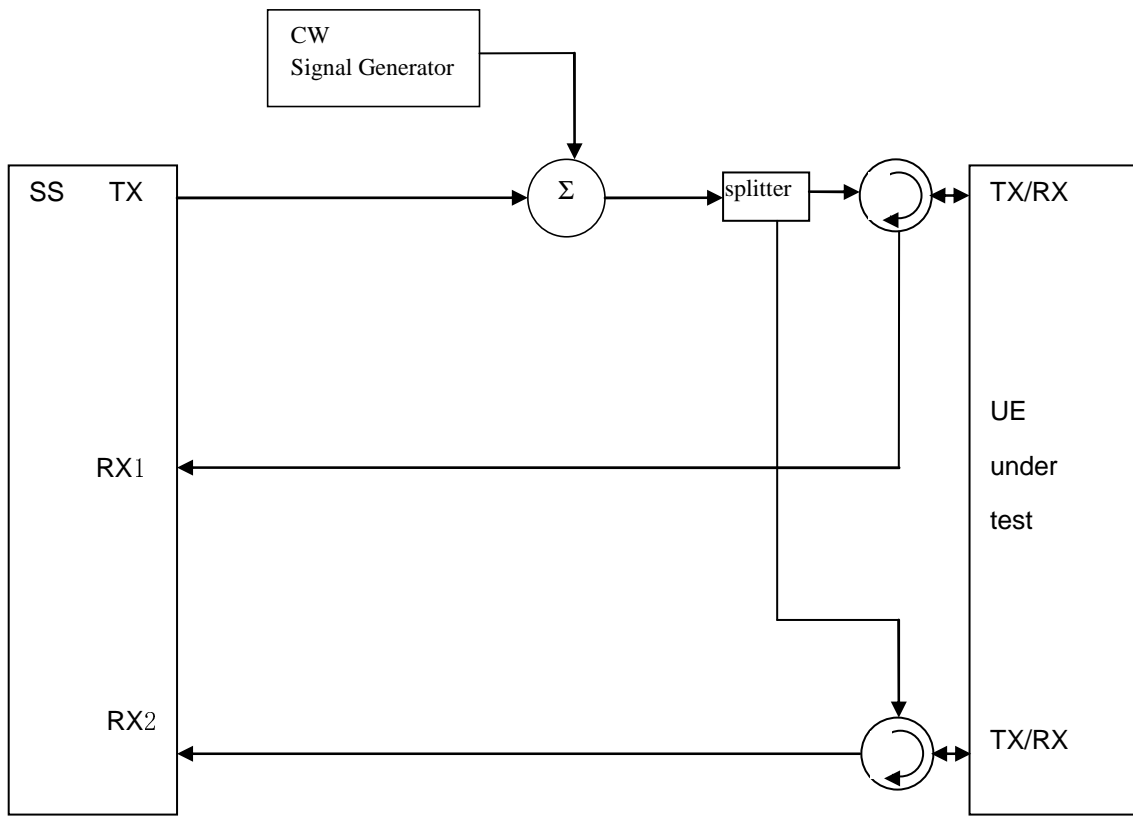


Figure A.30: Connection for UL MIMO Receiver tests with CW Interference

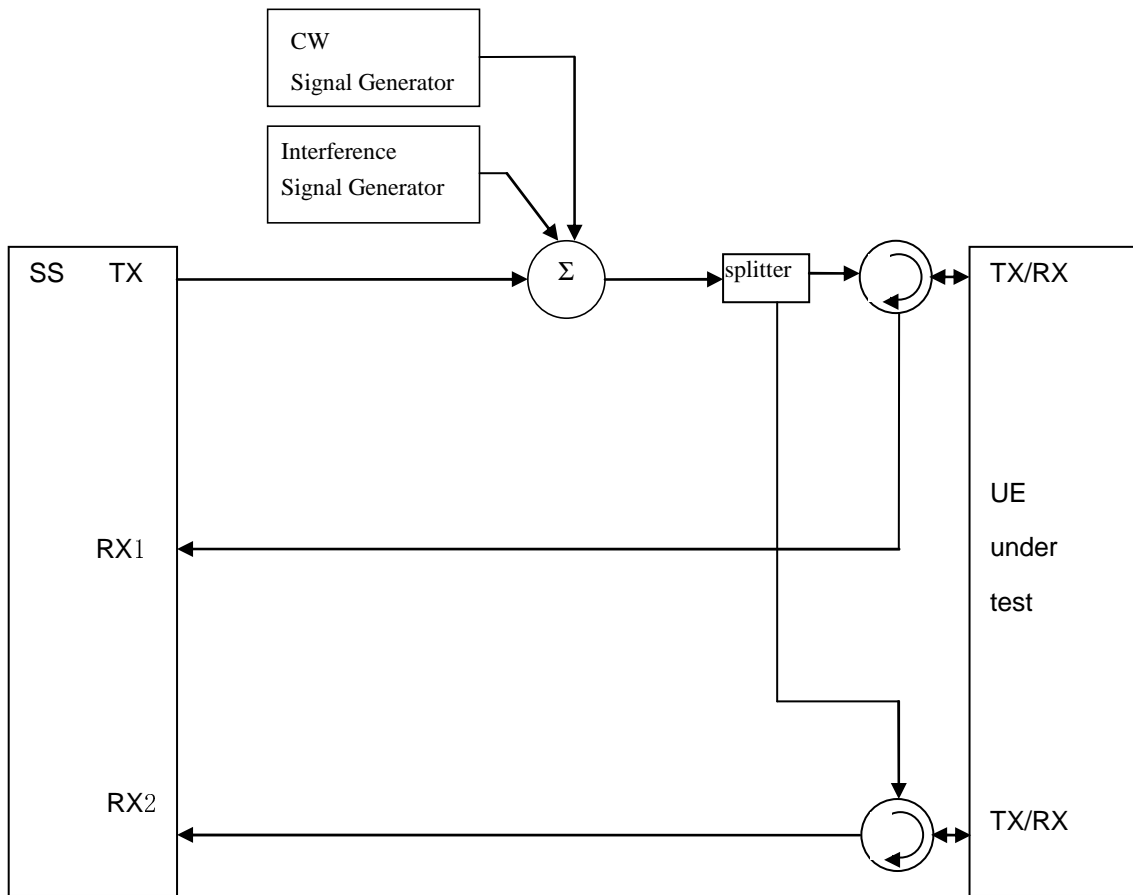


Figure A.31: Connection for UL MIMO Receiver tests with both E-UTRA-Interference and additional CW signal

Figure group A.32: Connections for basic Tx and Rx tests for CA

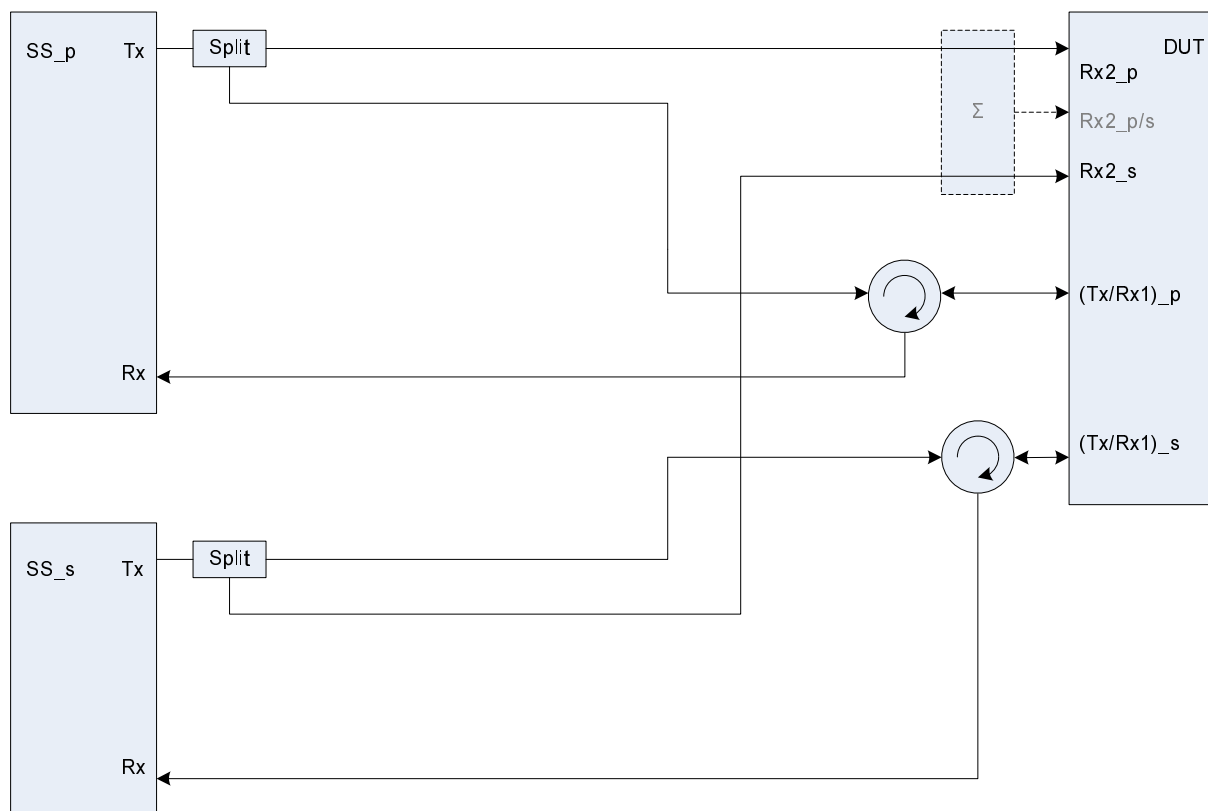


Figure A.32a: Connection for basic Tx and Rx tests for CA (separate connectors)

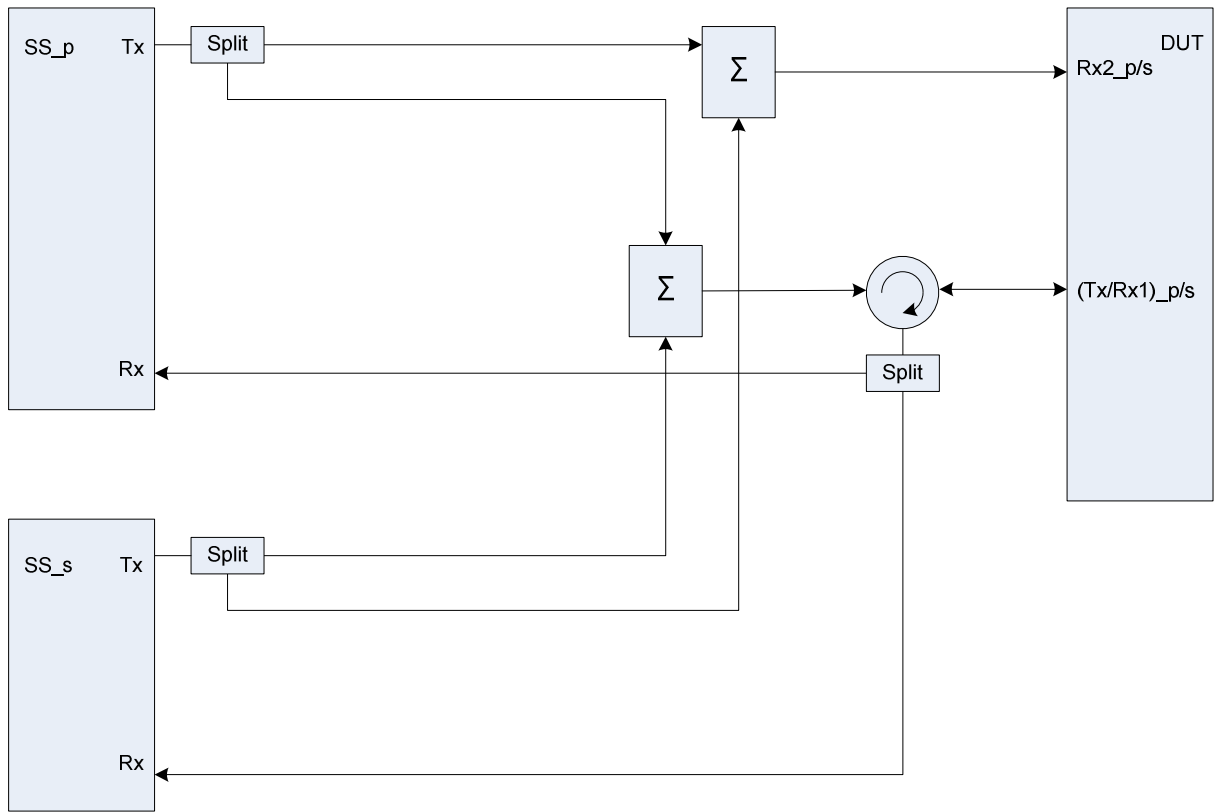


Figure A.32b: Connection for basic Tx and Rx tests for CA (common connectors, same UL antenna)

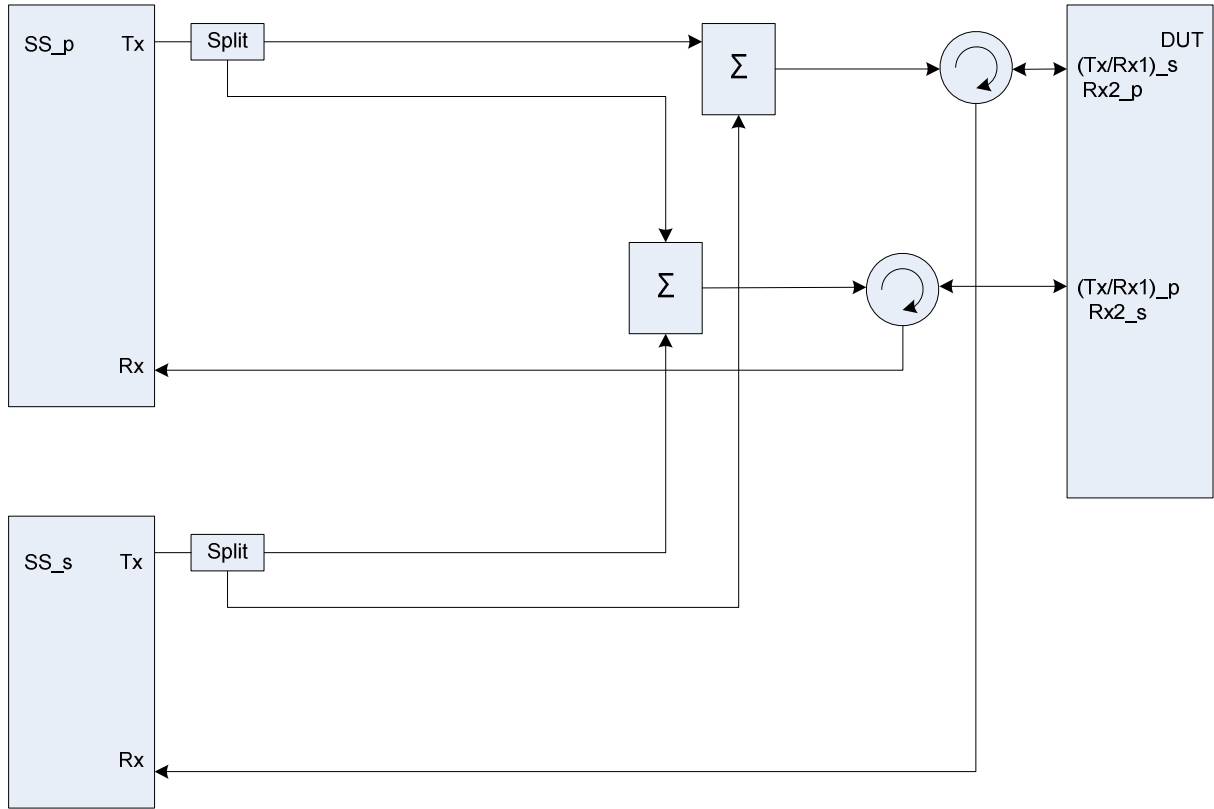


Figure A.32c: Connection for basic Tx and Rx tests for CA (common connectors, different UL antennas)

Figure group A.33: Connection for Tx tests for CA with additional Spectrum Analyzer

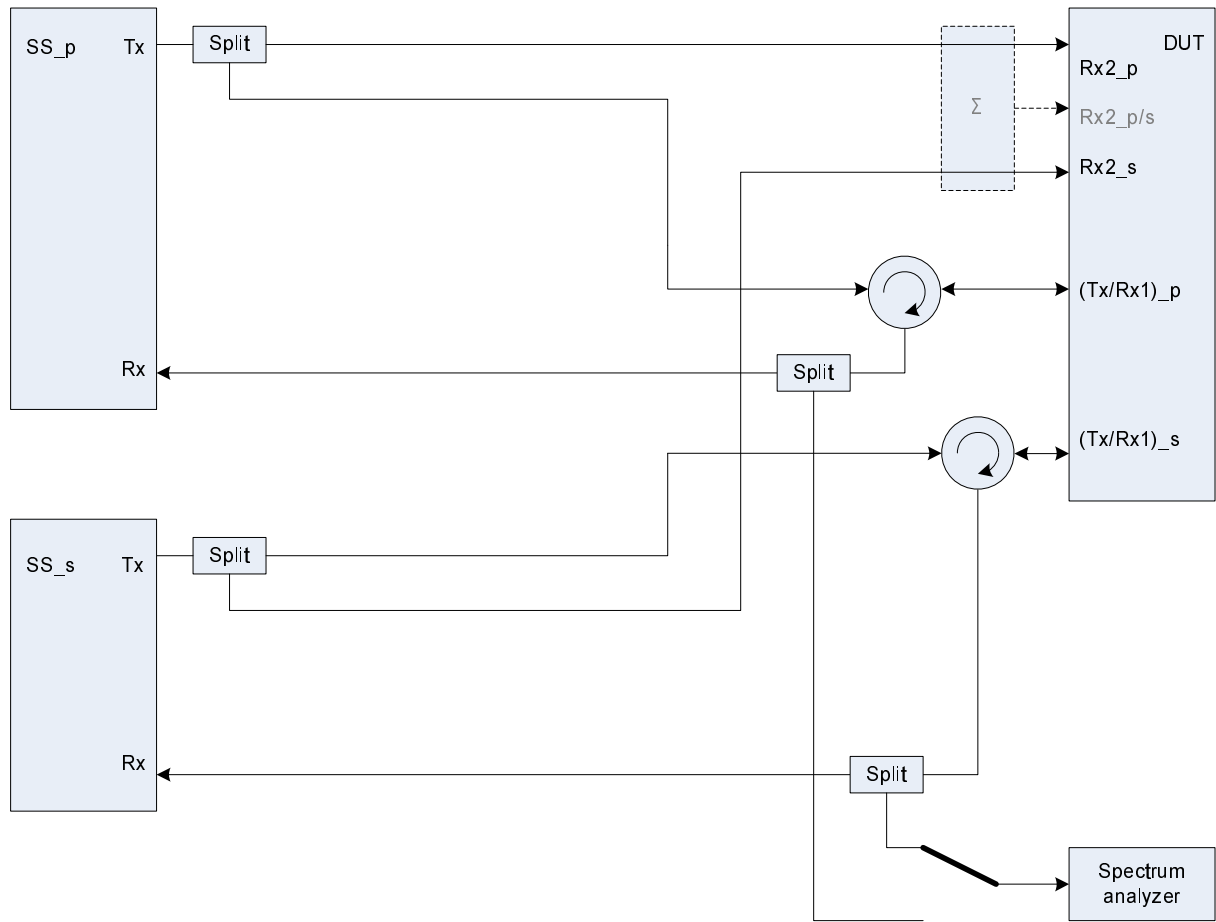


Figure A.33a: Connection for Tx tests for CA with additional Spectrum Analyzer (separate connectors)

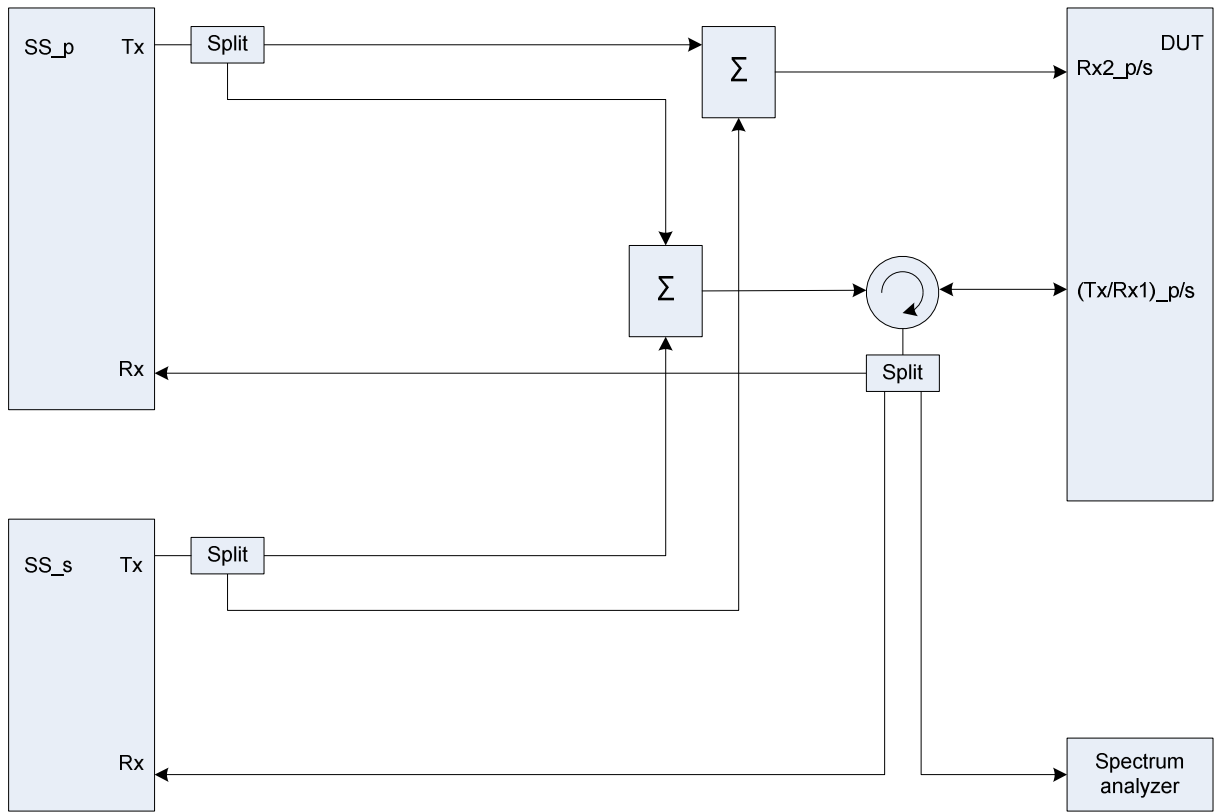


Figure A.33b: Connection for Tx tests for CA with additional Spectrum Analyzer (common connectors, same UL antenna)

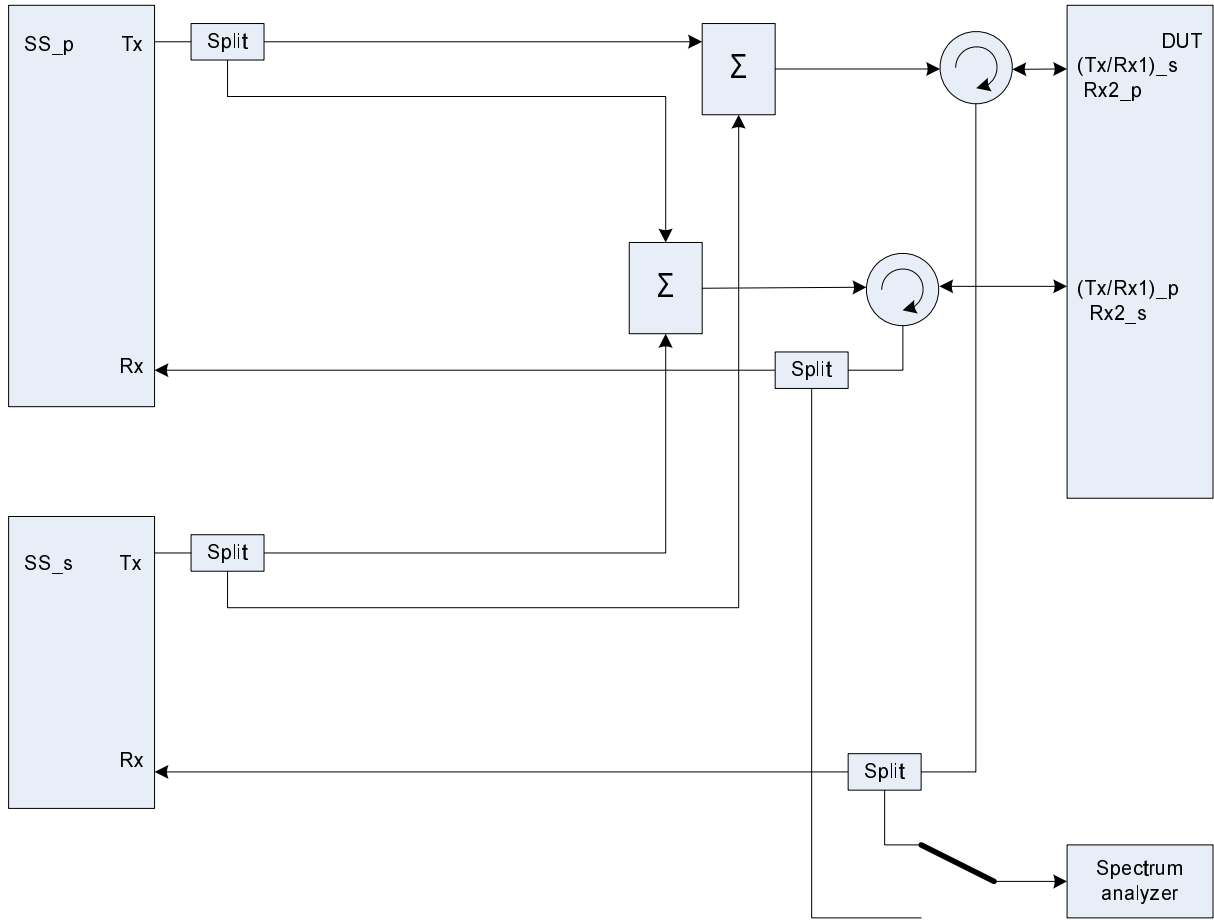


Figure A.33c: Connection for Tx tests for CA with additional Spectrum Analyzer (common connectors, different UL antennas)

Figure group A.34: Connection for Rx tests for CA with additional Interferer / CW

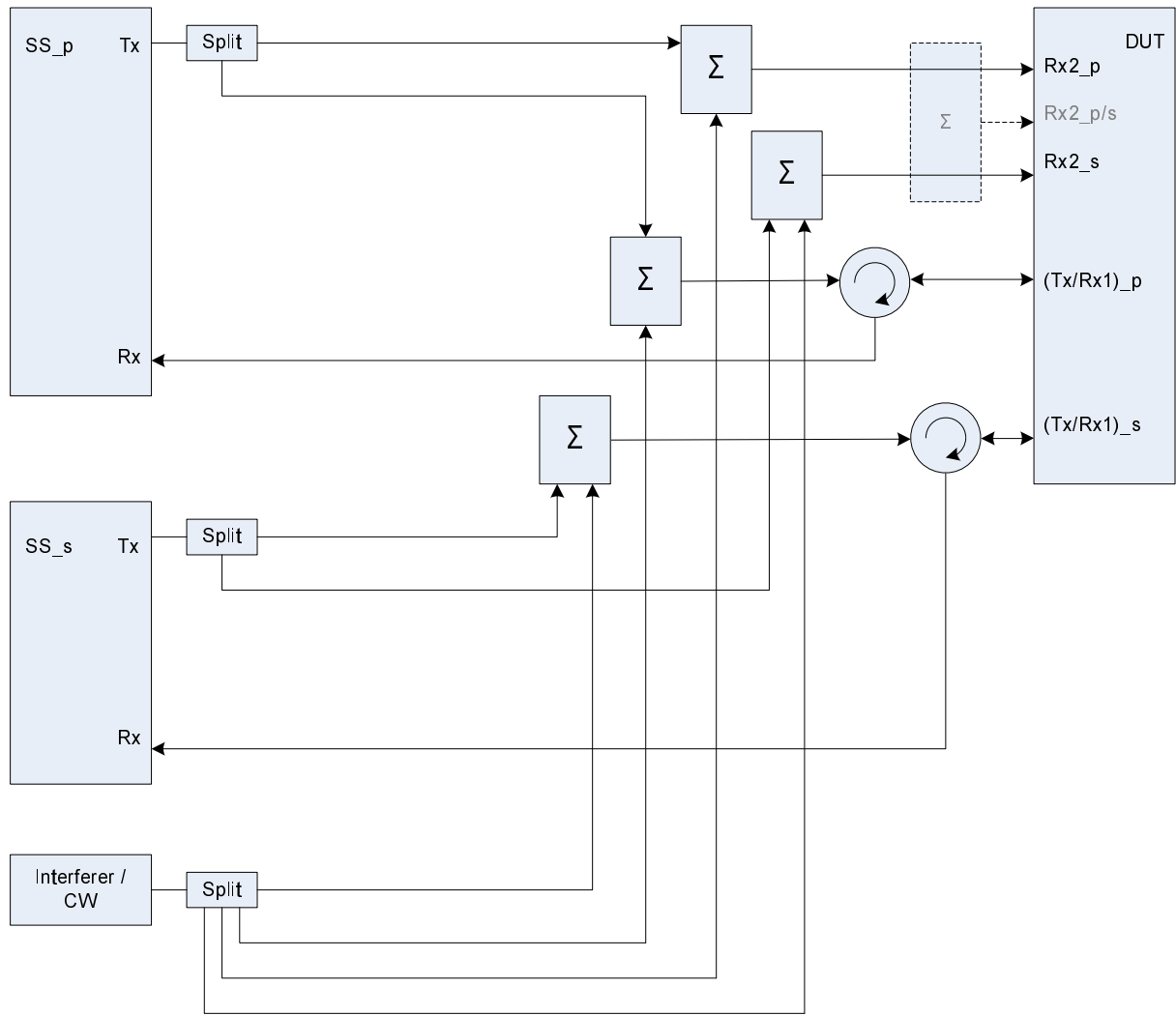


Figure A.34a: Connection for Rx tests for CA with additional Interferer / CW (separate connectors)

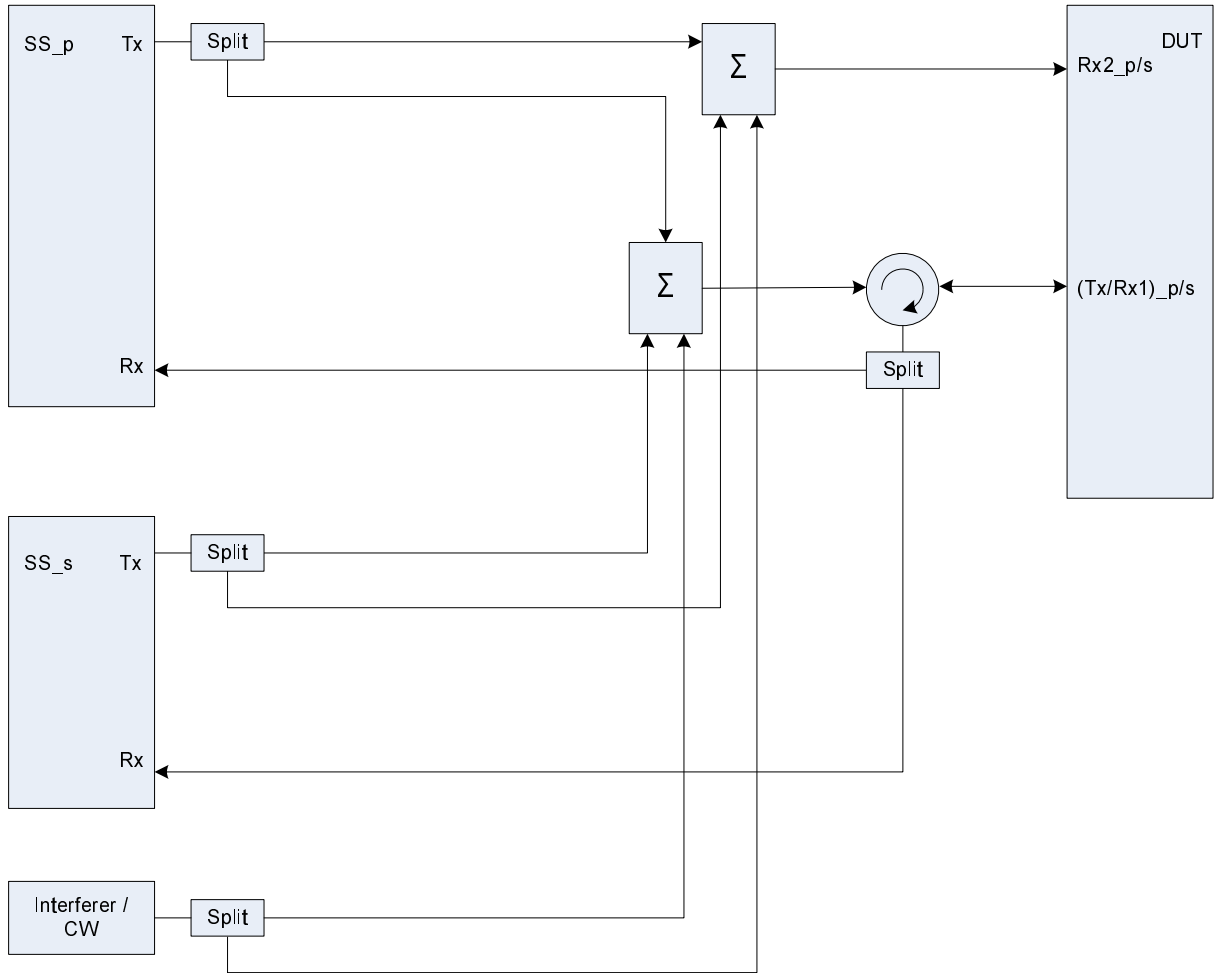


Figure A.34b: Connection for Rx tests for CA with additional Interferer / CW (common connectors, same UL antenna)

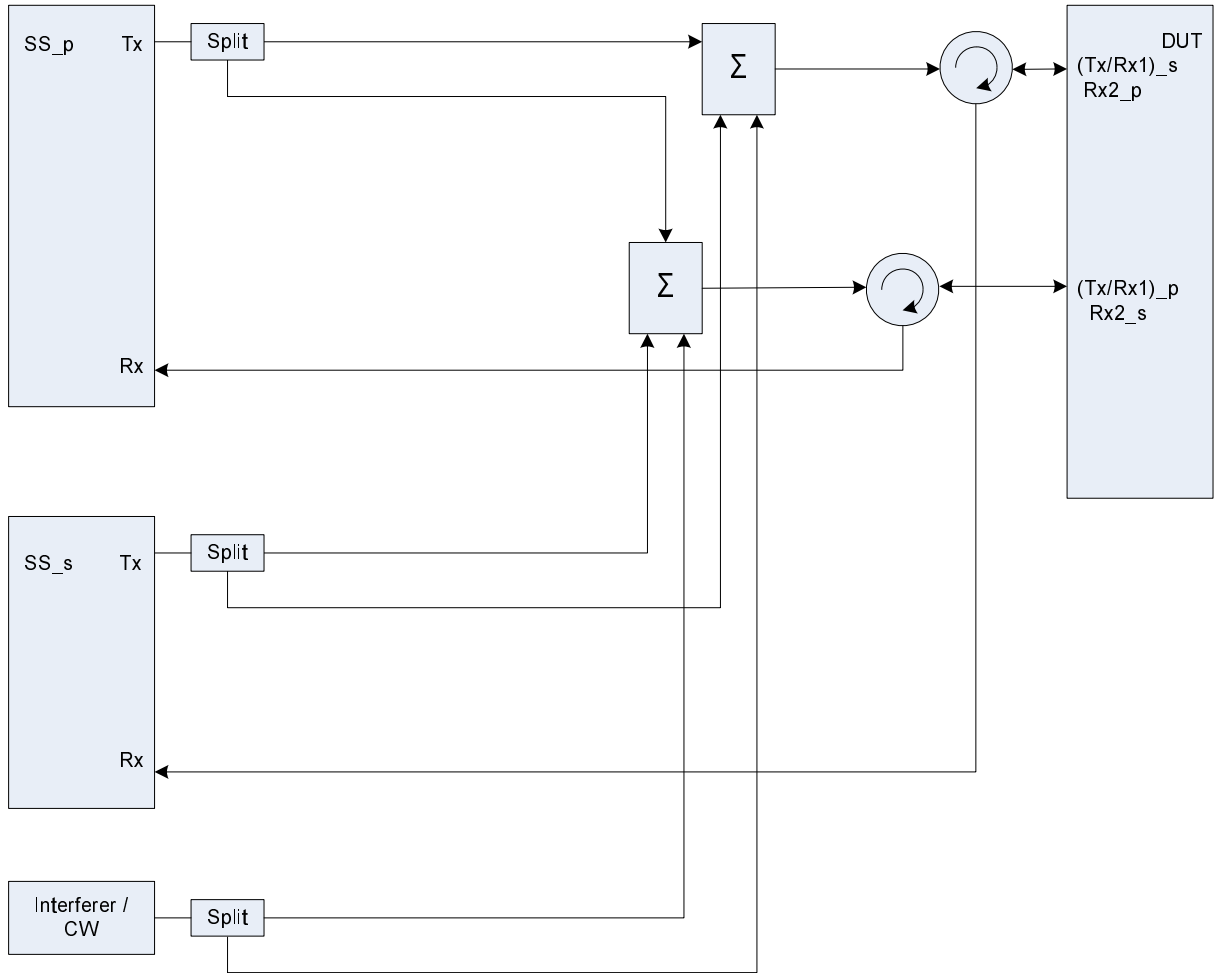


Figure A.34c: Connection for Rx tests for CA with additional Interferer / CW (common connectors, different UL antennas)

Figure group A.35: Connection for Rx performance tests for CA with antenna configuration 1x2

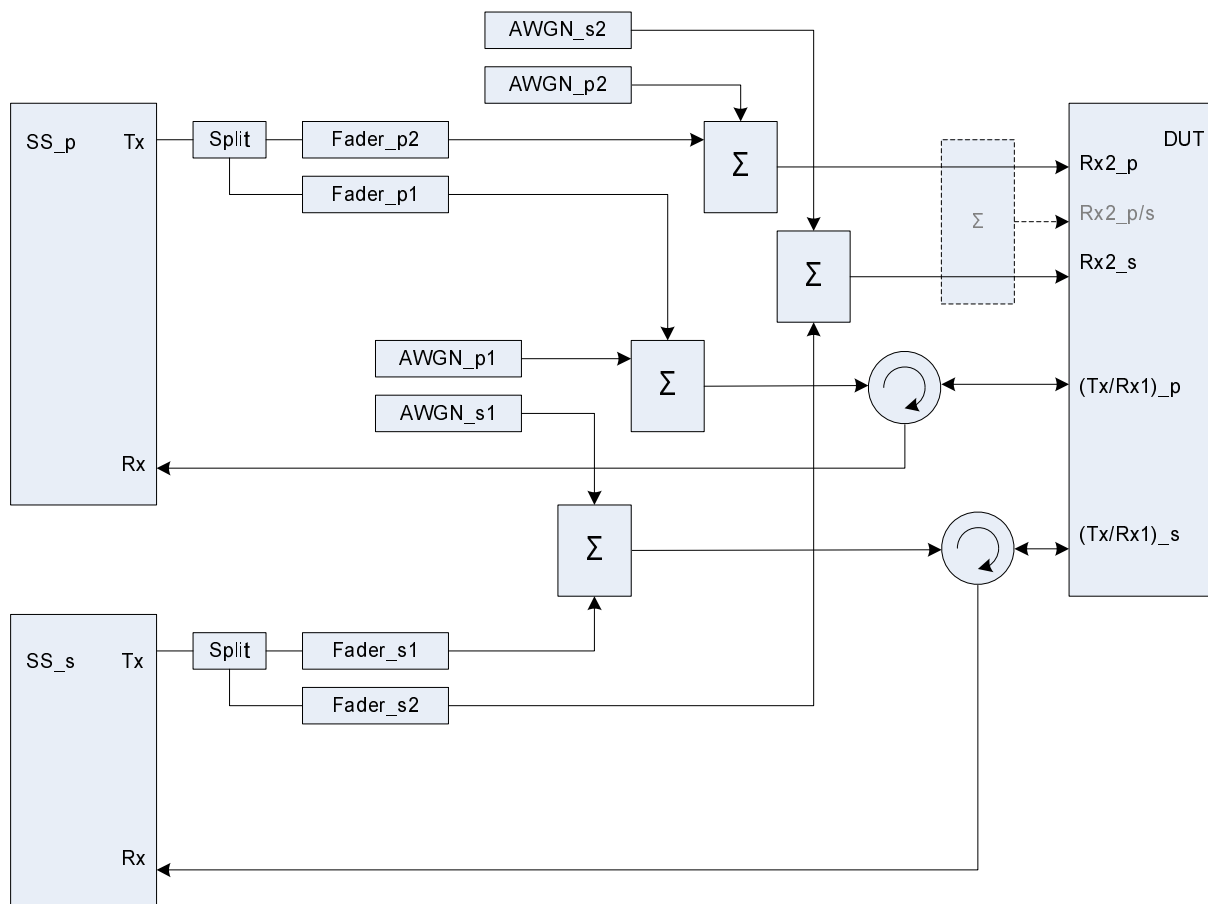


Figure A.35a: Connection for Rx performance tests for CA with antenna configuration 1x2 (separate connectors)

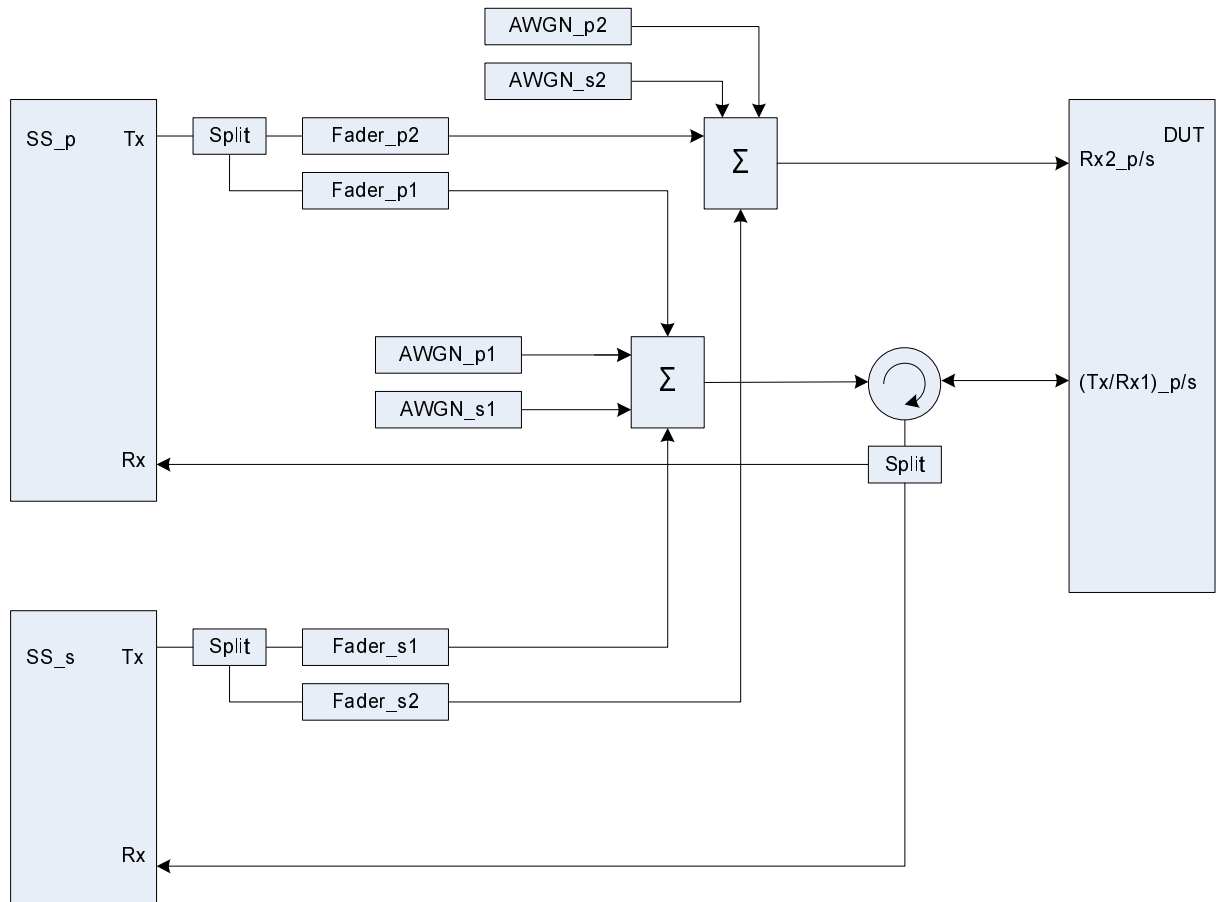


Figure A.35b: Connection for Rx performance tests for CA with antenna configuration 1x2 (common connectors, same UL antenna)

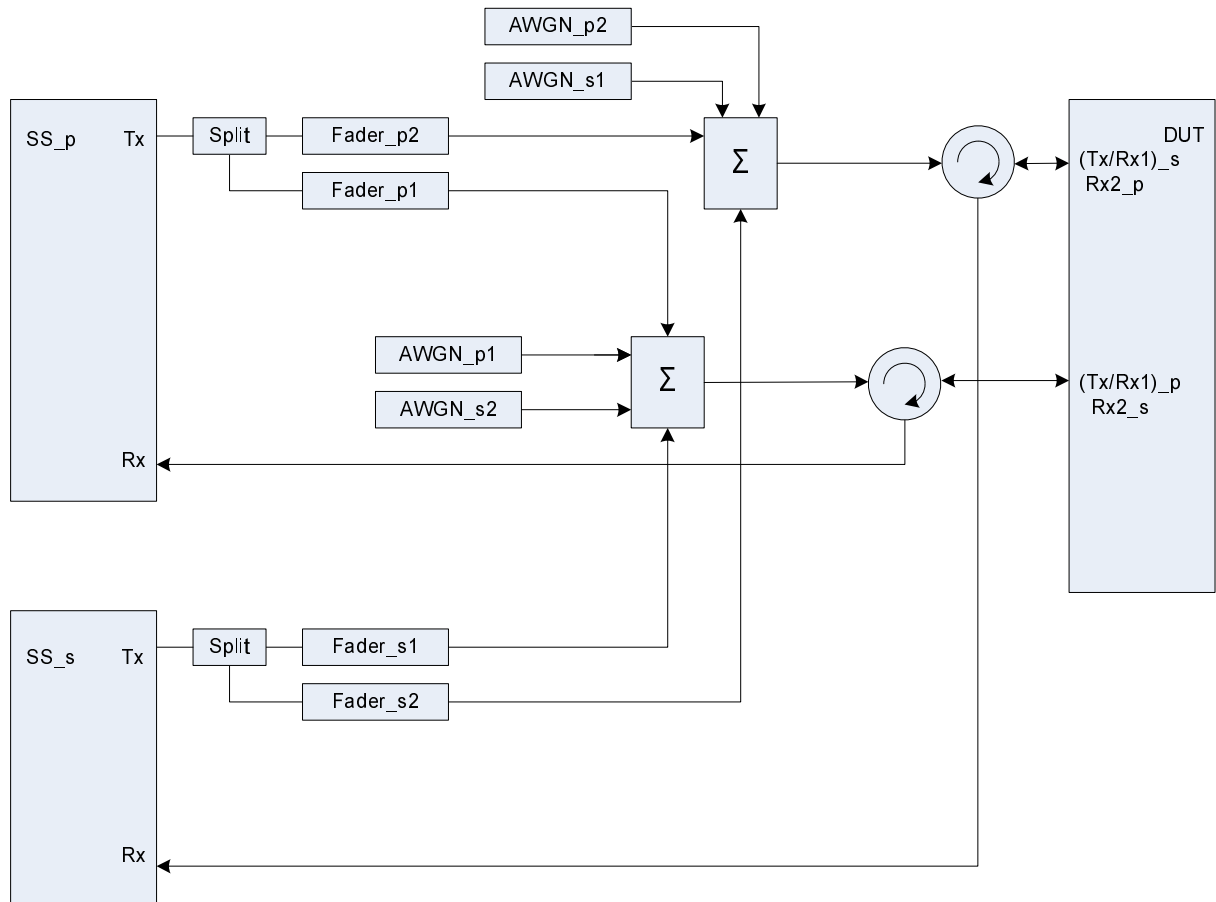


Figure A.35c: Connection for Rx performance tests for CA with antenna configuration 1x2 (common connectors, different UL antennas)

Figure group A.36: Connection for Rx performance tests for CA with antenna configuration 2x2

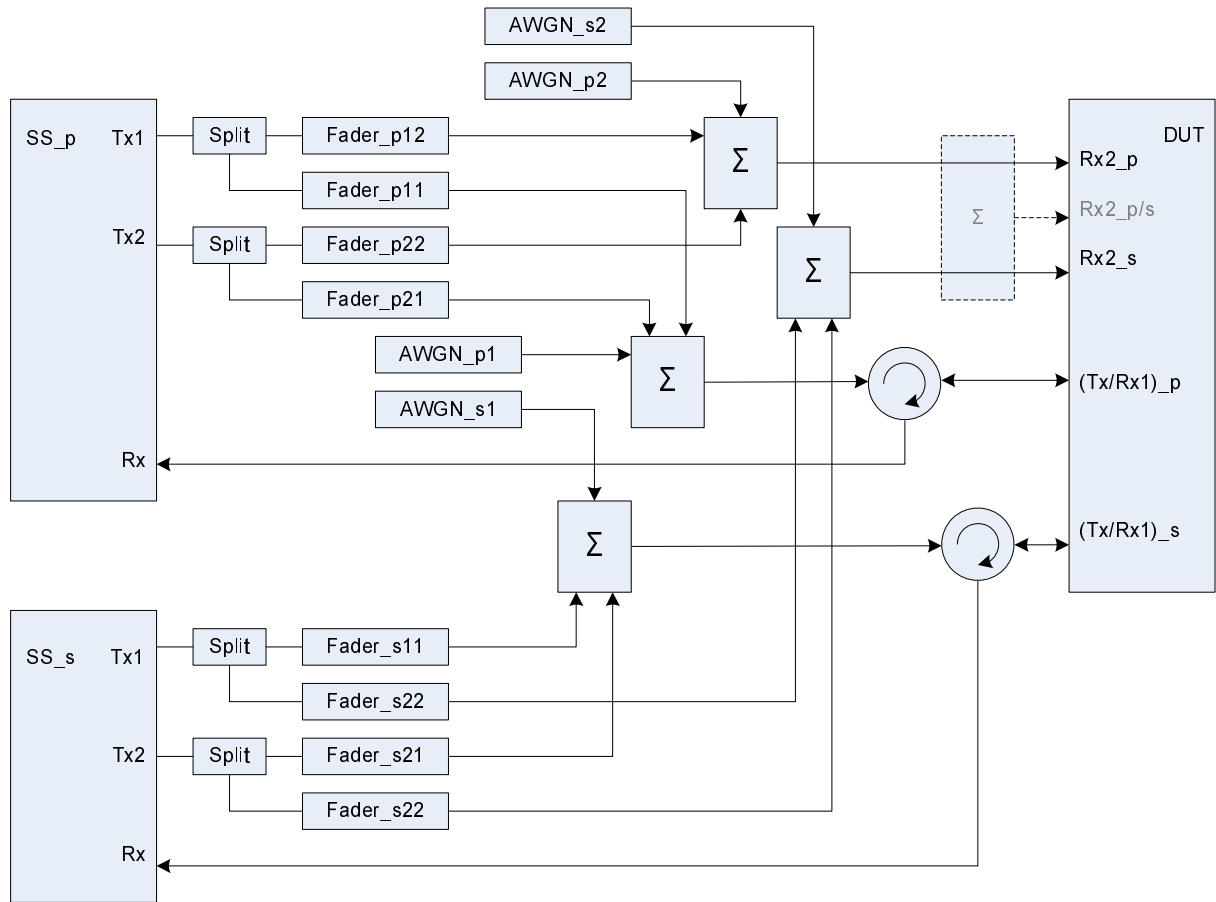


Figure A.36a: Connection for Rx performance tests for CA with antenna configuration 2x2 (separate connectors)

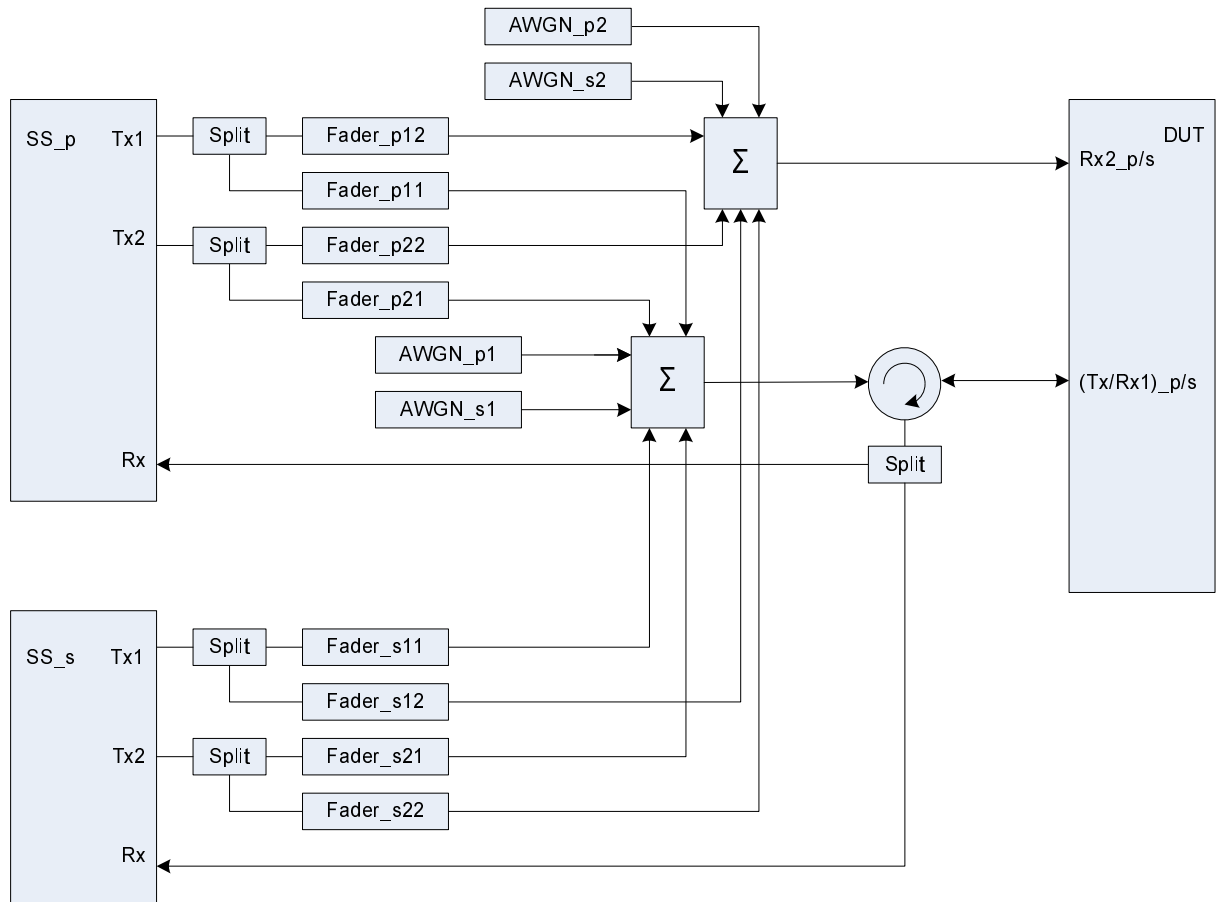


Figure A.36b: Connection for Rx performance tests for CA with antenna configuration 2x2 (common connectors, same UL antenna)

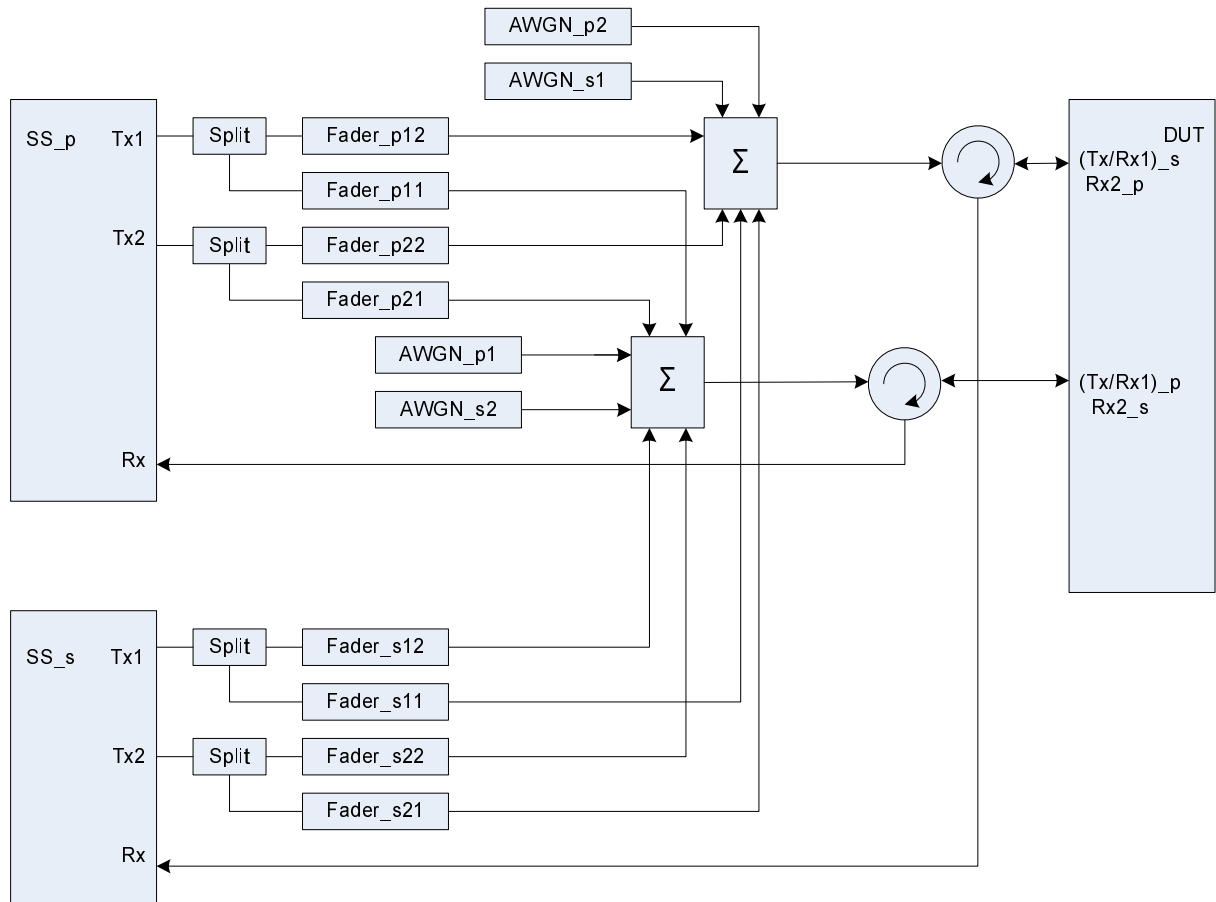


Figure A.36c: Connection for Rx performance tests for CA with antenna configuration 2x2 (common connectors, different UL antennas)

Figure group A.37: Connection for Tx tests for CA with additional CW and Spectrum Analyzer

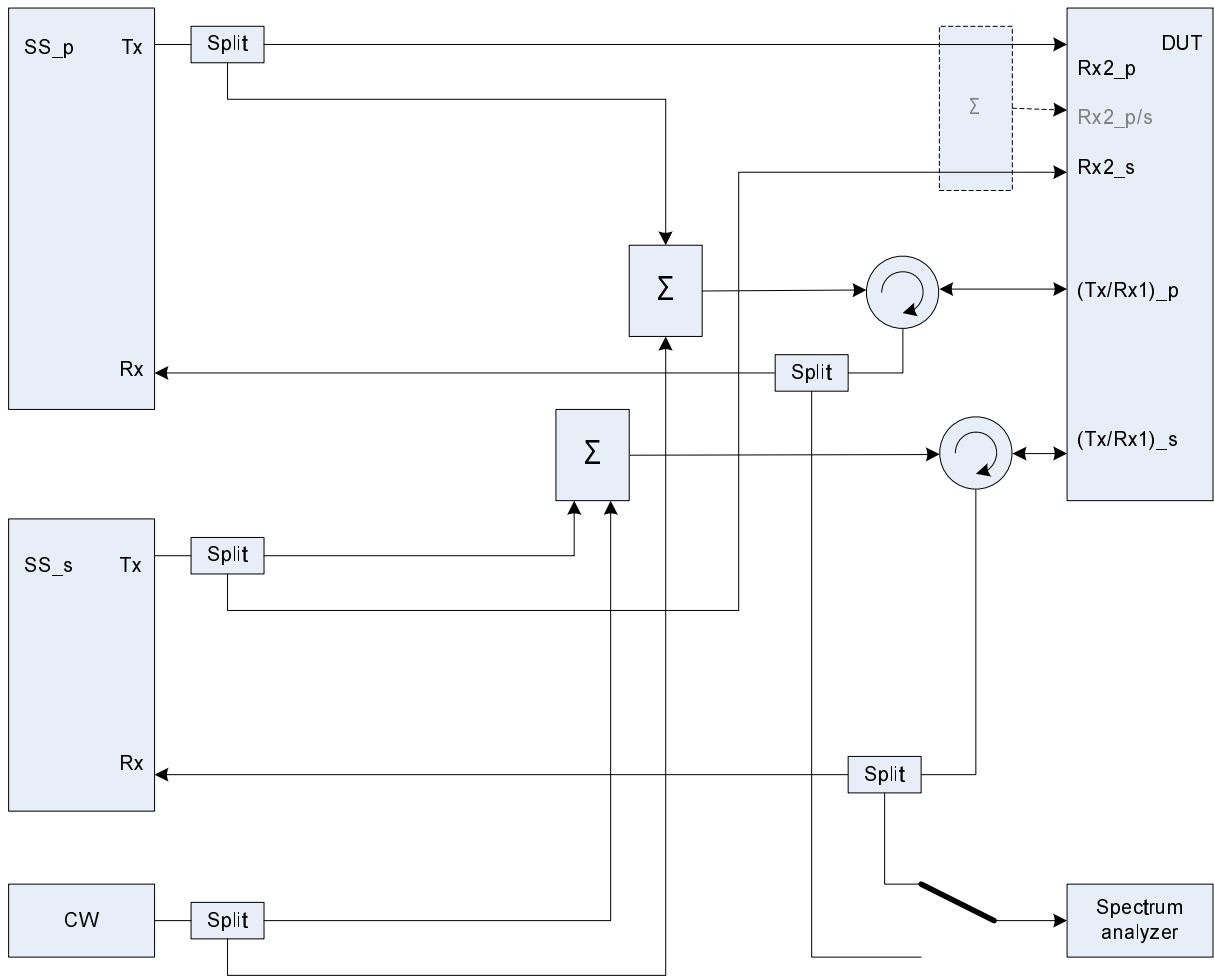


Figure A.37a: Connection for Tx tests for CA with additional CW and Spectrum Analyzer (separate connectors)

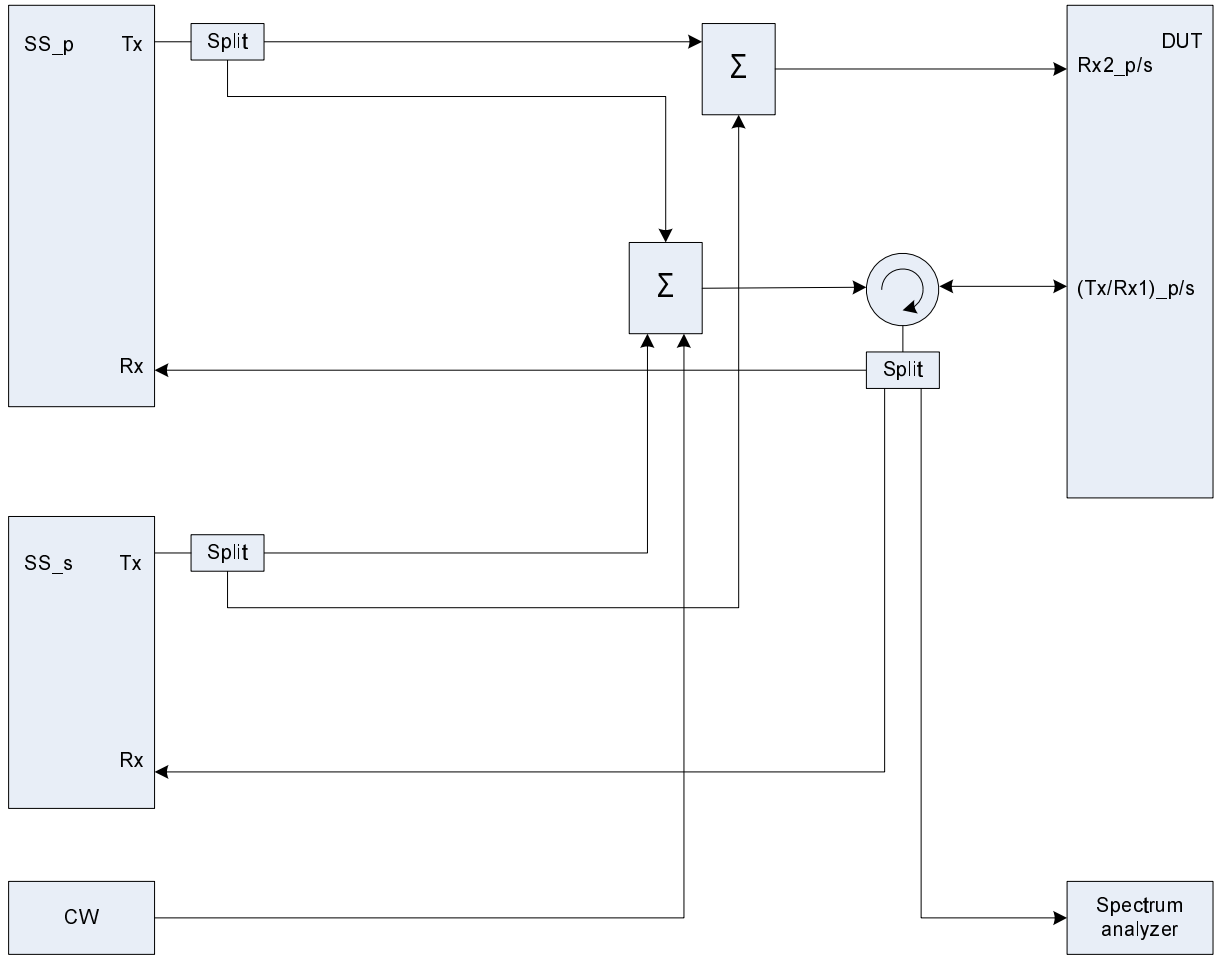


Figure A.37b: Connection for Tx tests for CA with additional CW and Spectrum Analyzer (common connectors, same UL antenna)

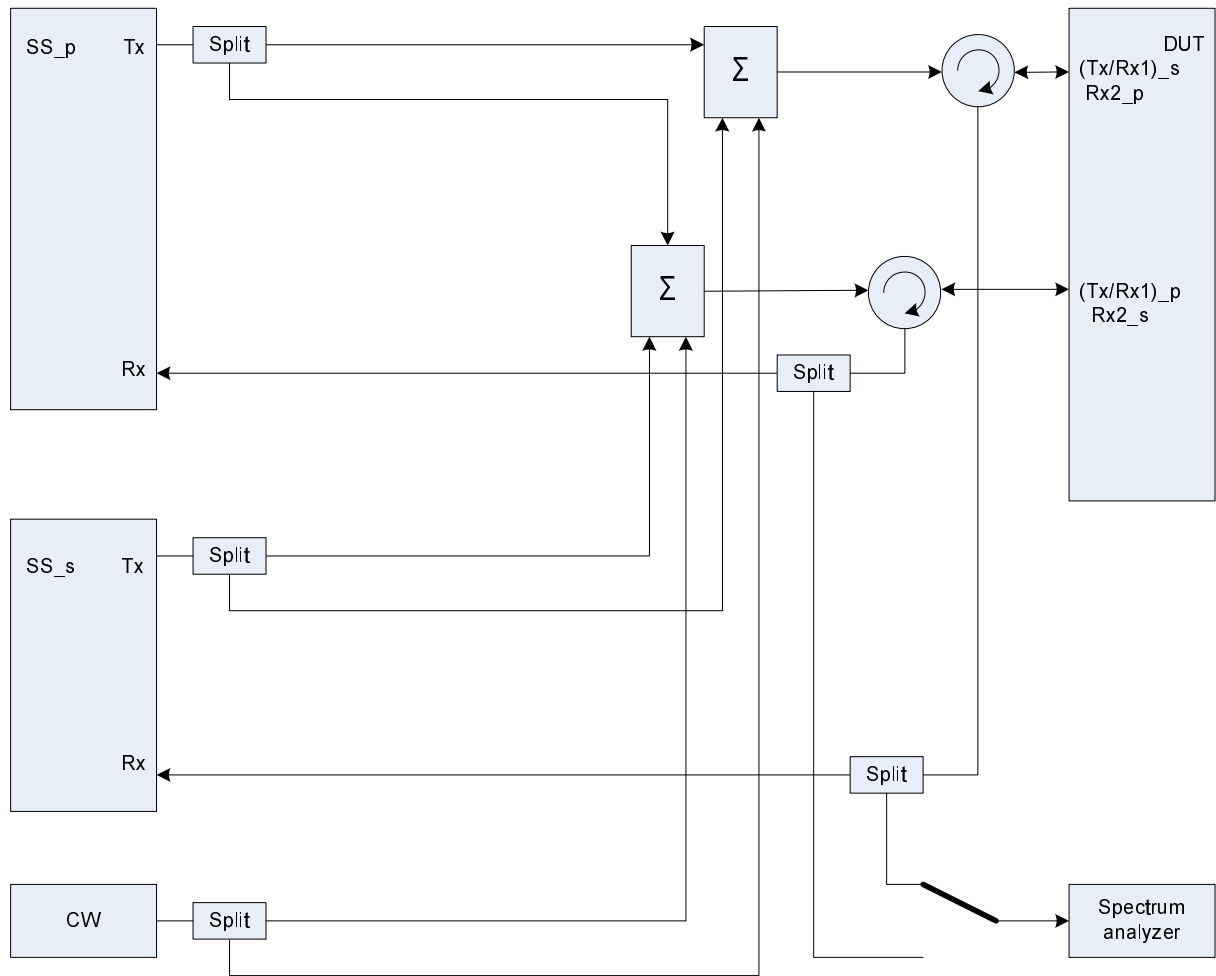


Figure A.37c: Connection for Tx tests for CA with additional CW and Spectrum Analyzer (common connectors, different UL antennas)

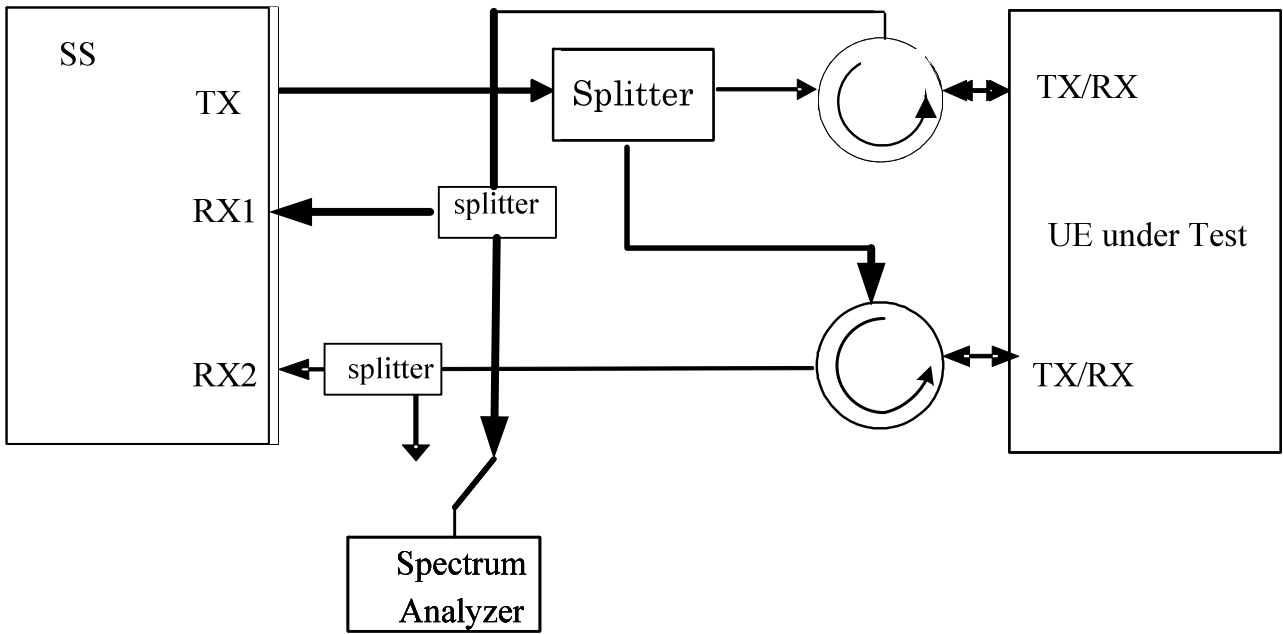


Figure A.38: Connection for UL MIMO tests with additional Spectrum Analyzer

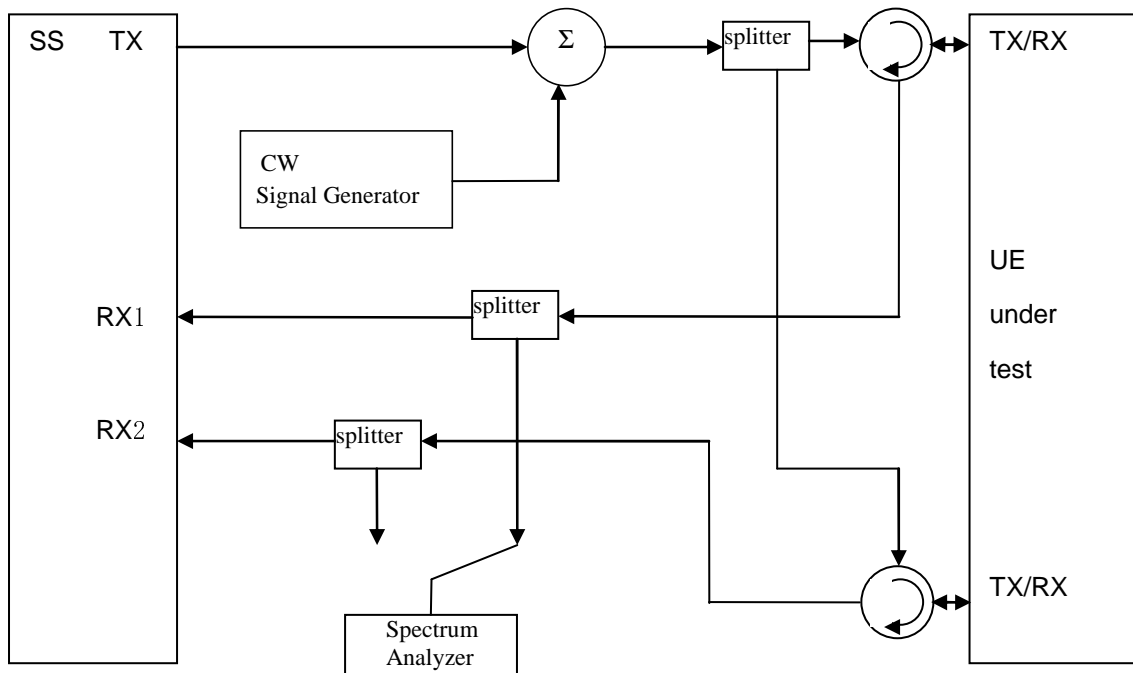


Figure A.39: Connection for Transmitter Intermodulation tests for UL-MIMO

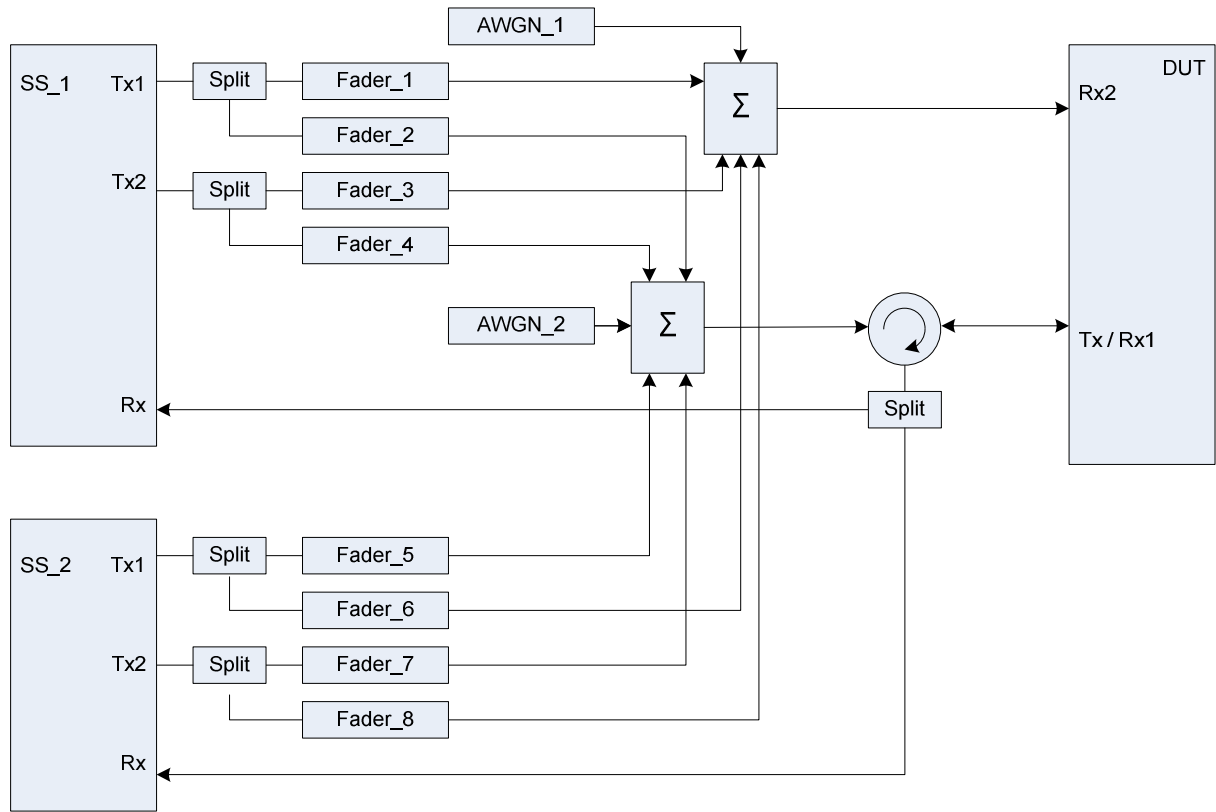


Figure A.40: Connection for 2 cells, antenna configuration 2x2, multipath fading and receive diversity

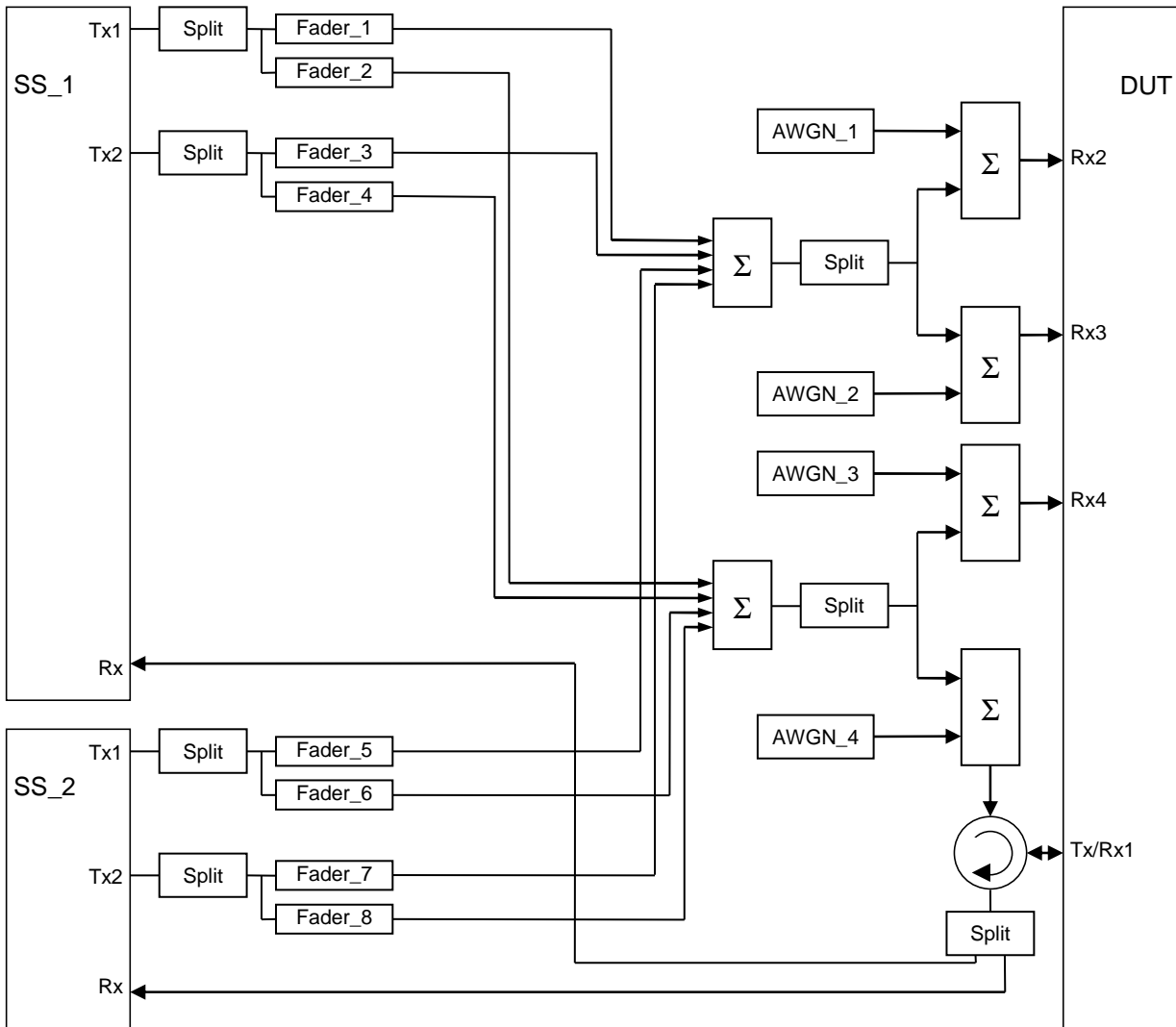


Figure A.40a: Connection for 2 cells, antenna configuration 2x2, multipath fading and receive diversity for 4Rx capable UEs without any 2Rx RF bands

Figure group A.41: Connection for CA with additional intra-frequency cell and static propagation channel

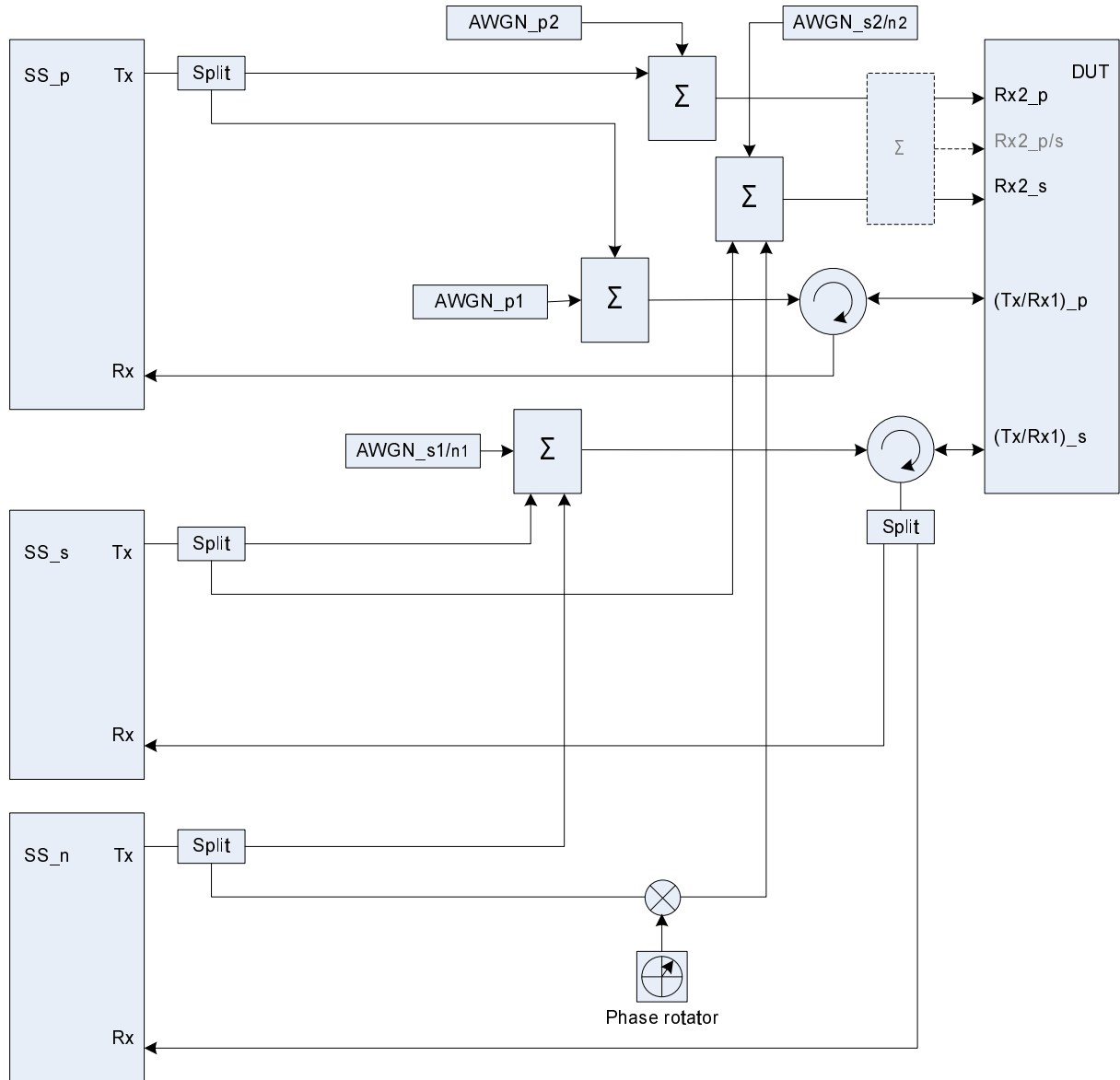


Figure A.41a: Connection for CA with additional intra-frequency cell and static propagation channel (separate connectors) (The frequency offset used in phase rotator is 5 Hz)

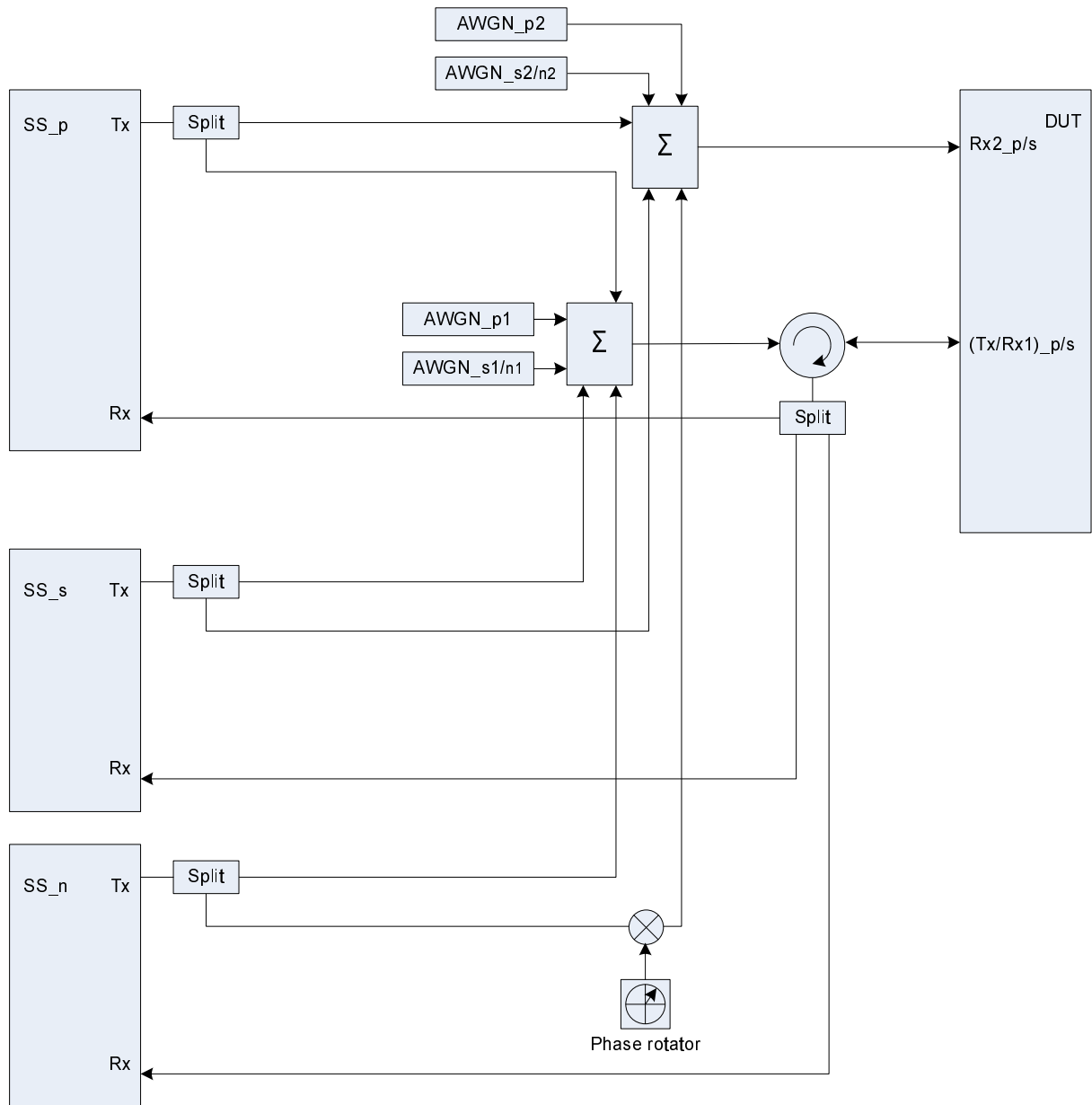


Figure A.41b: Connection for CA with additional intra-frequency cell and static propagation channel (common connectors, same UL antenna) (The frequency offset used in phase rotator is 5 Hz)

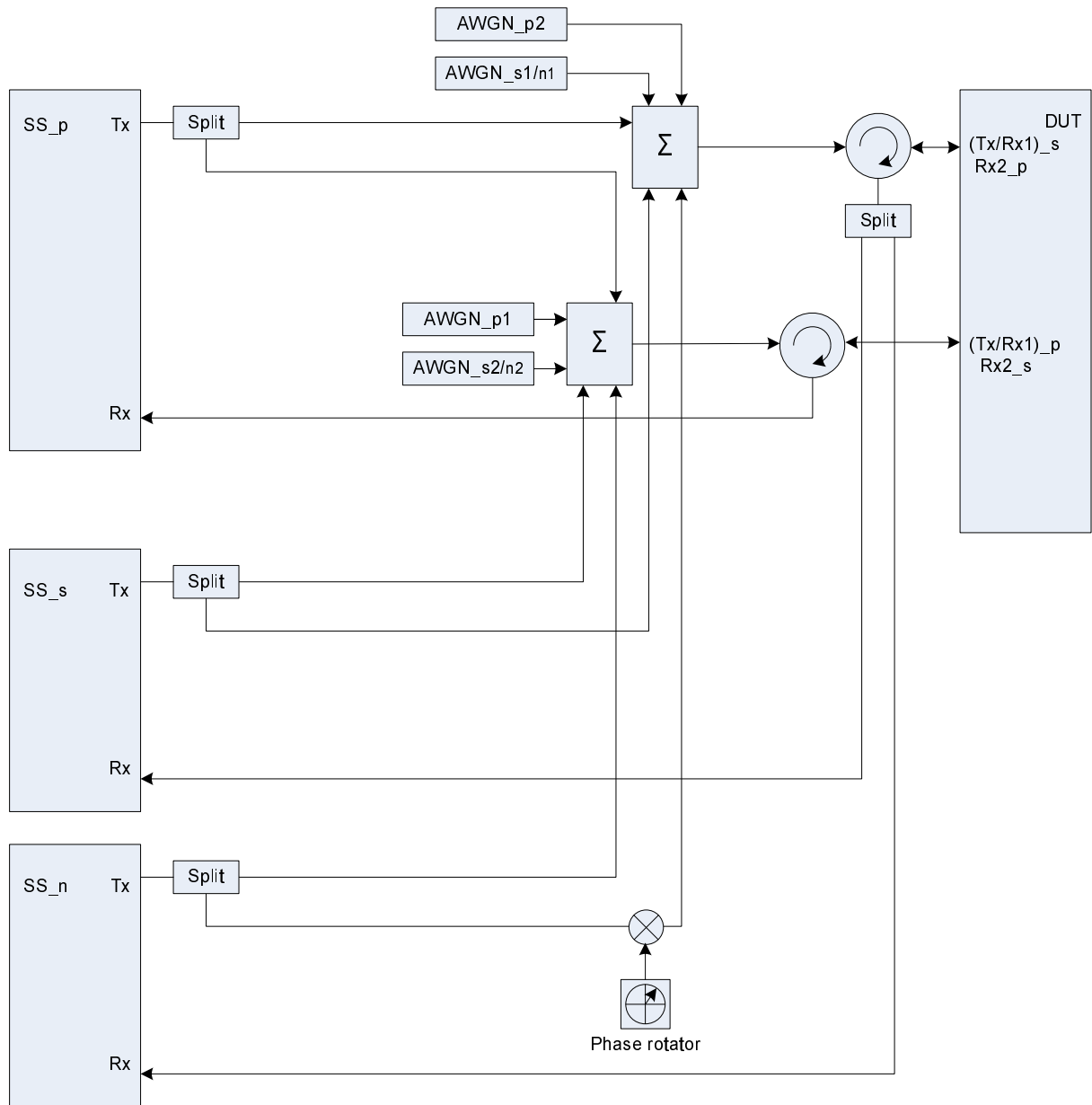


Figure A.41c: Connection for CA with additional intra-frequency cell and static propagation channel (common connectors, different UL antennas) (The frequency offset used in phase rotator is 5 Hz)

Figure group A.42: Connection for CA with additional intra-frequency cell and multipath fading propagation

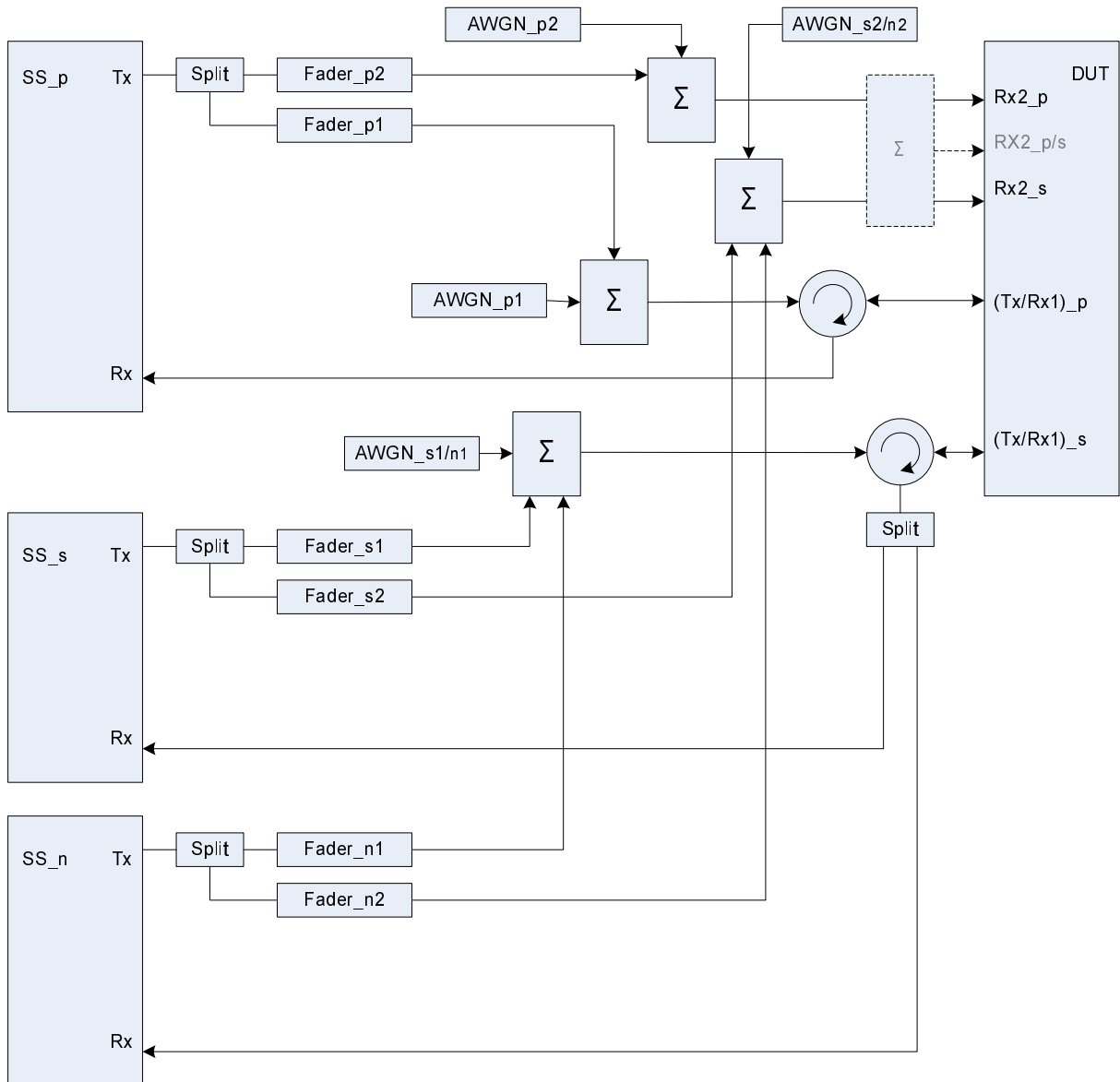


Figure A.42a: Connection for CA with additional intra-frequency cell and multipath fading propagation (separate connectors)

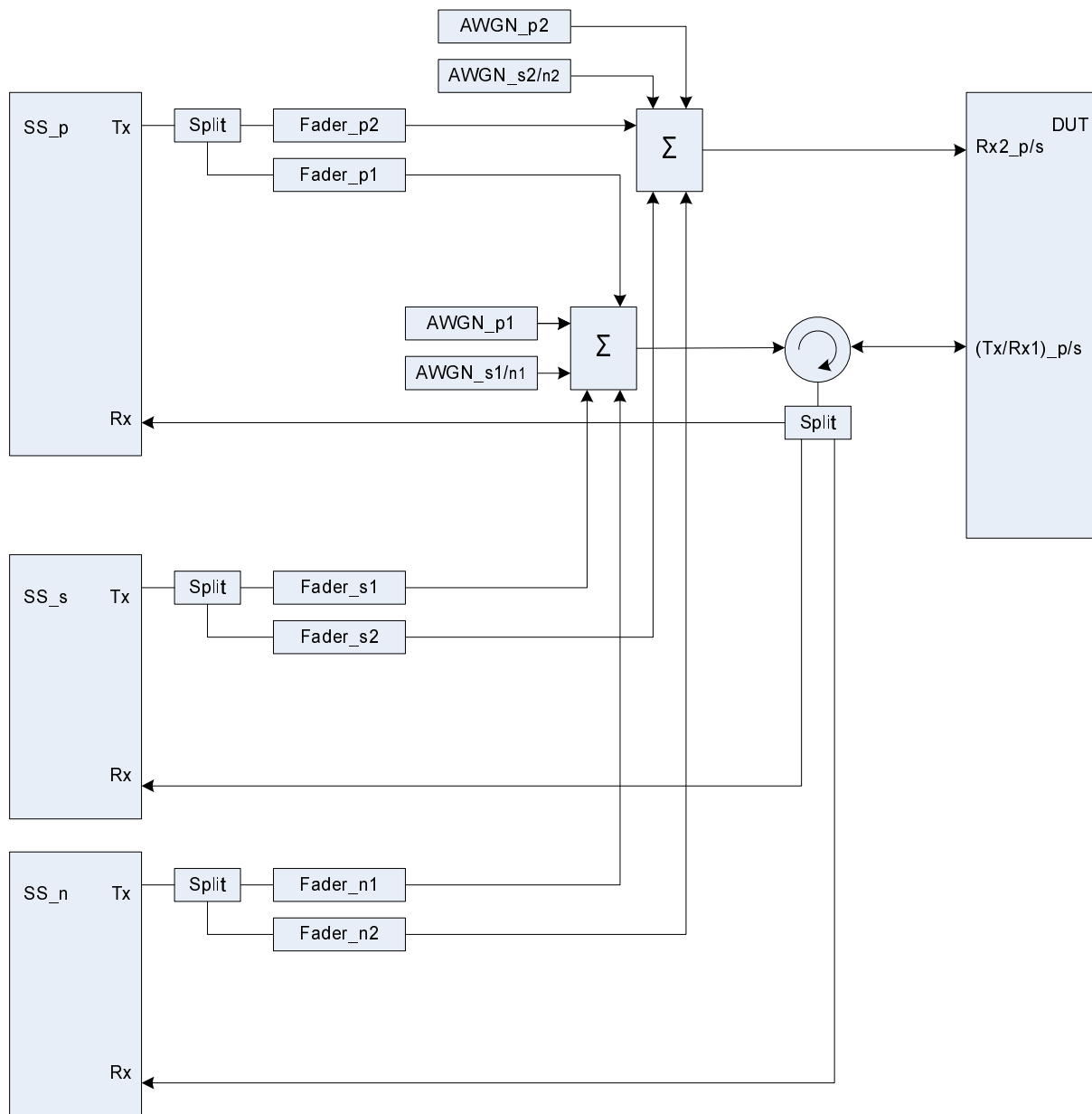


Figure A.42b: Connection for CA with additional intra-frequency cell and multipath fading propagation (common connectors, same UL antenna)

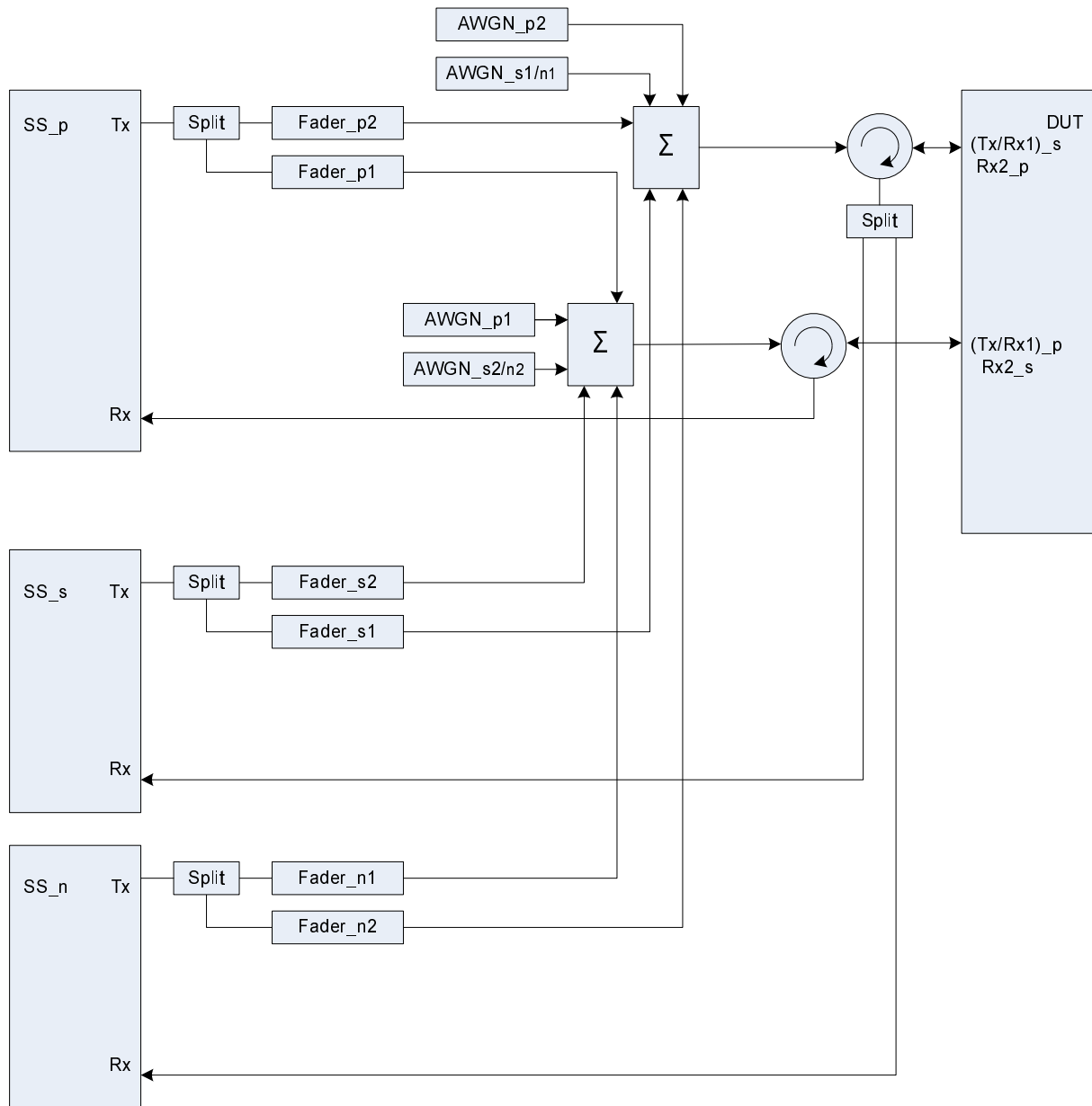


Figure A.42c: Connection for CA with additional intra-frequency cell and multipath fading propagation (common connectors, different UL antennas)

Figure group A.43: Connection for CA with additional inter-frequency cell and multipath fading propagation

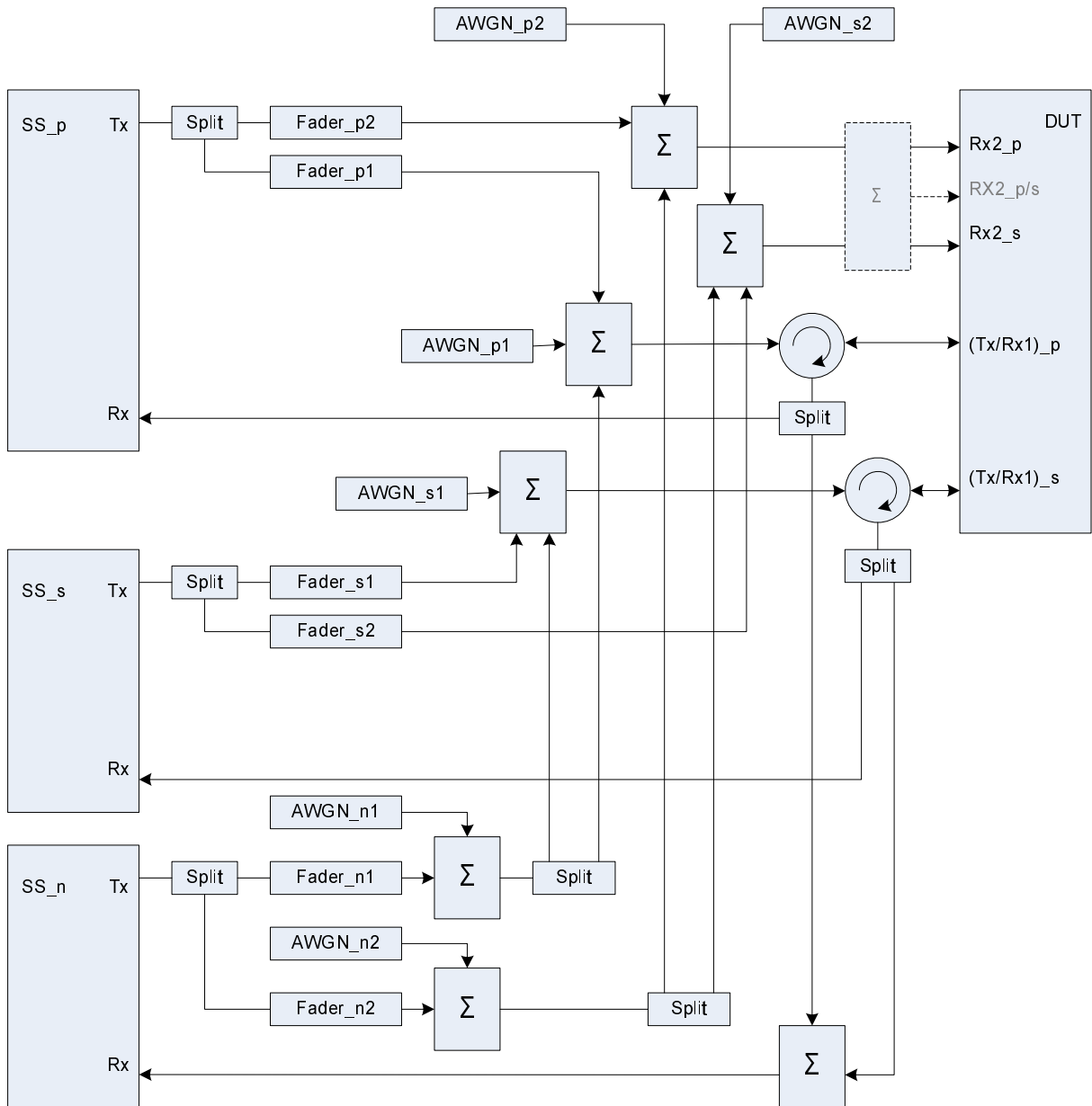


Figure A.43a: Connection for CA with additional inter-frequency cell and multipath fading propagation (separate connectors)

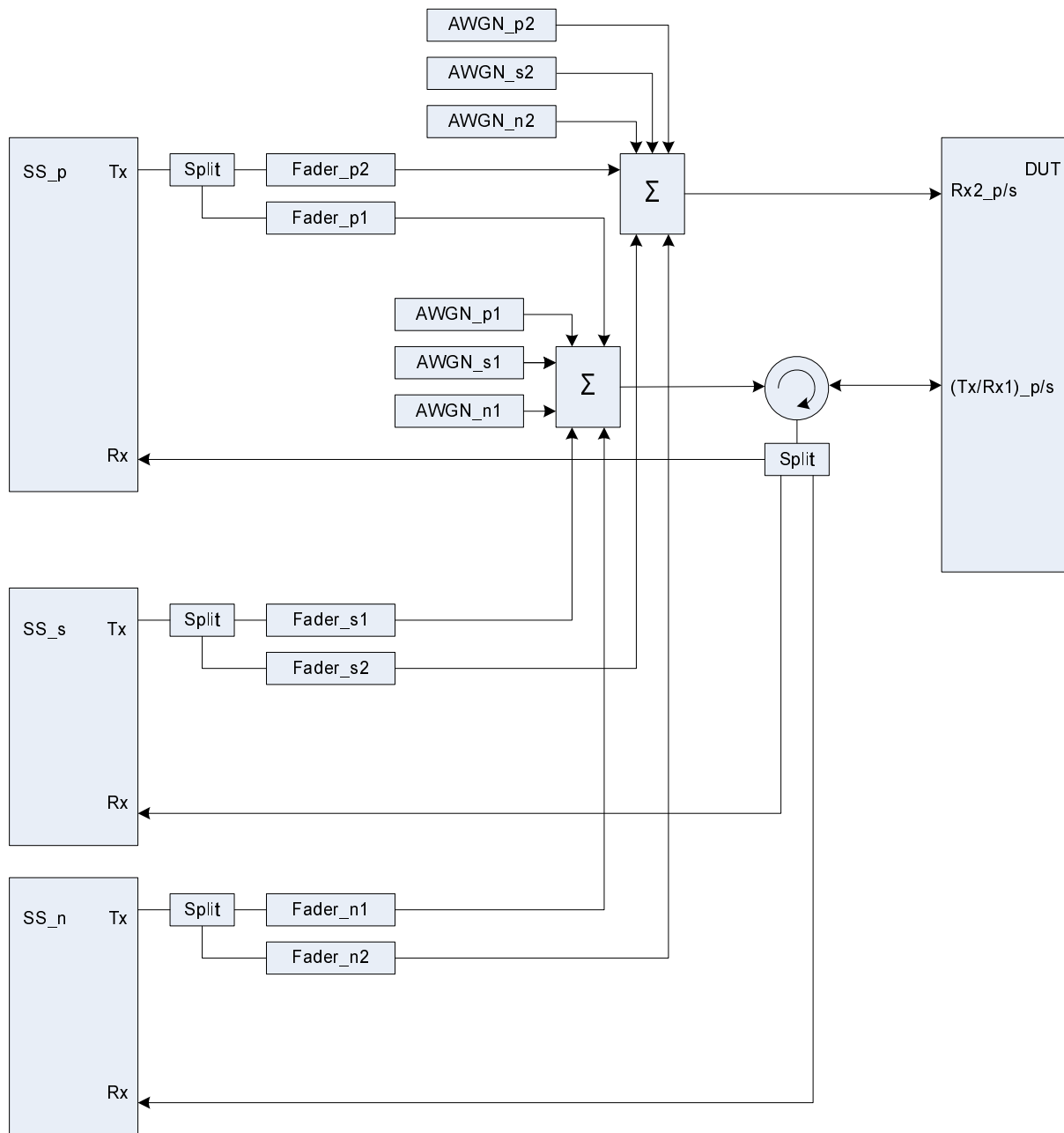


Figure A.43b: Connection for CA with additional inter-frequency cell and multipath fading propagation (common connectors, same UL antenna)

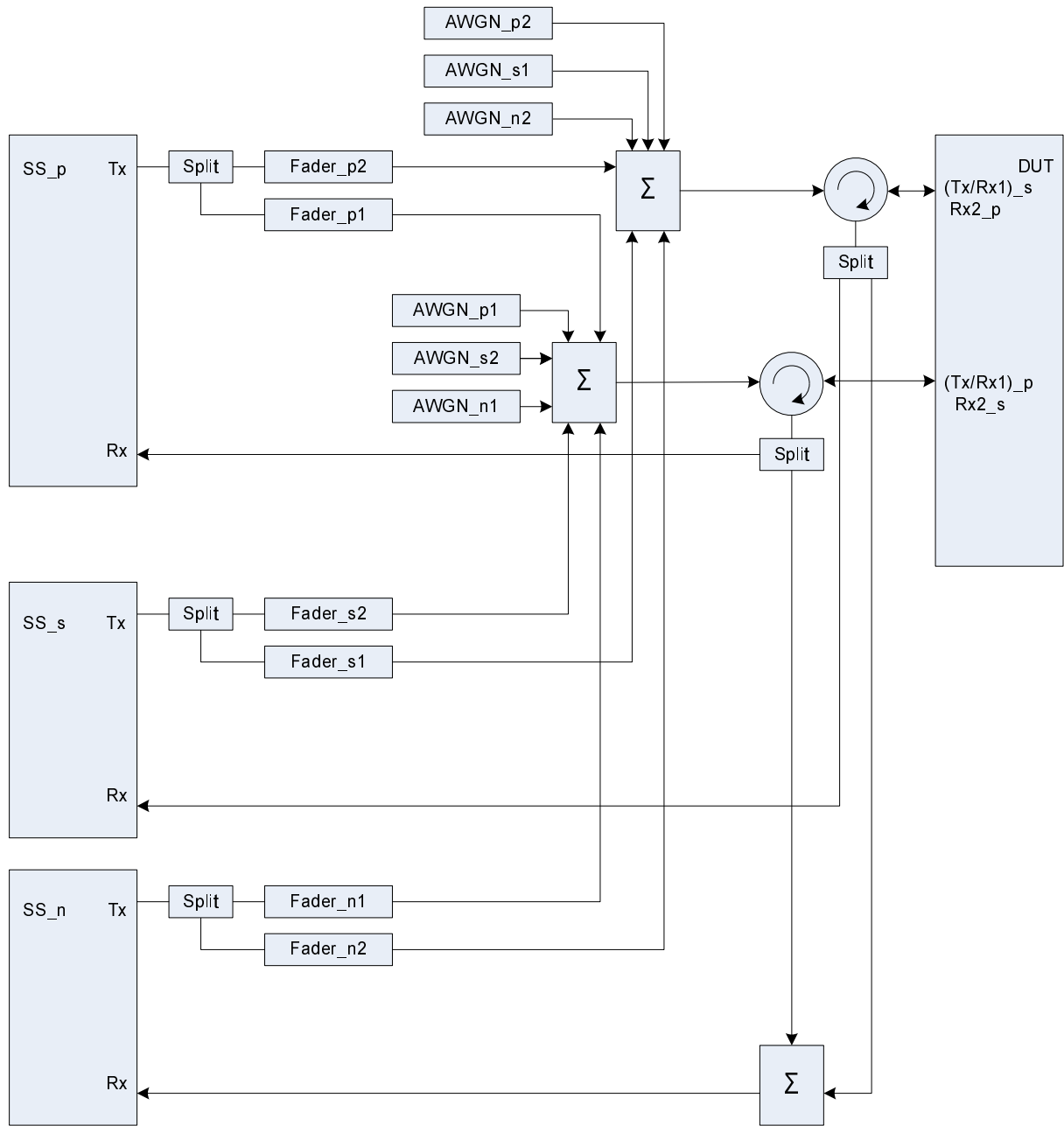


Figure A.43c: Connection for CA with additional inter-frequency cell and multipath fading propagation (common connectors, different UL antennas)

Figure group A.44: Connection for CA with additional inter-RAT cell and multipath fading propagation

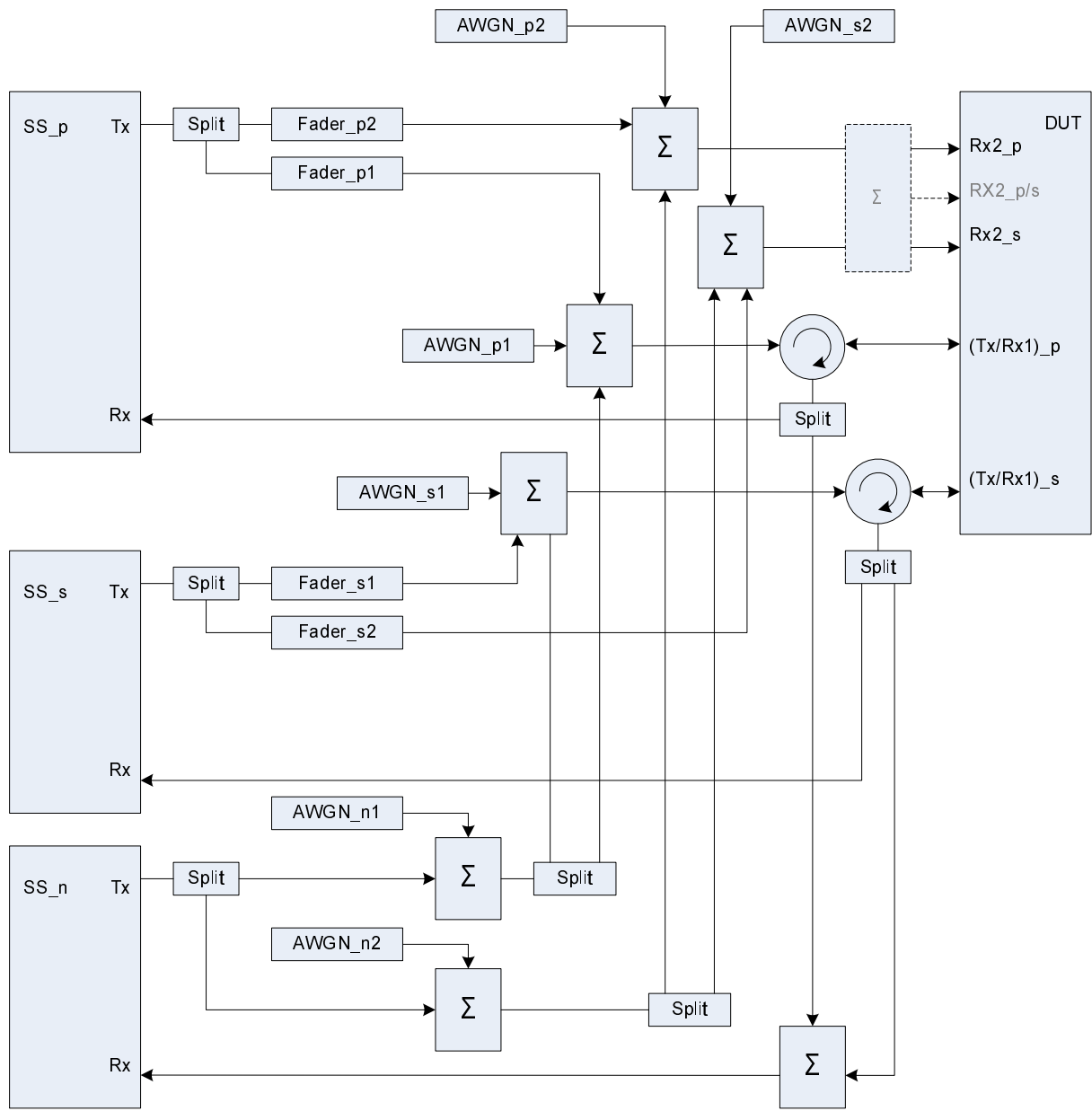


Figure A.44a: Connection for CA with additional inter-RAT cell and multipath fading propagation (separate connectors)

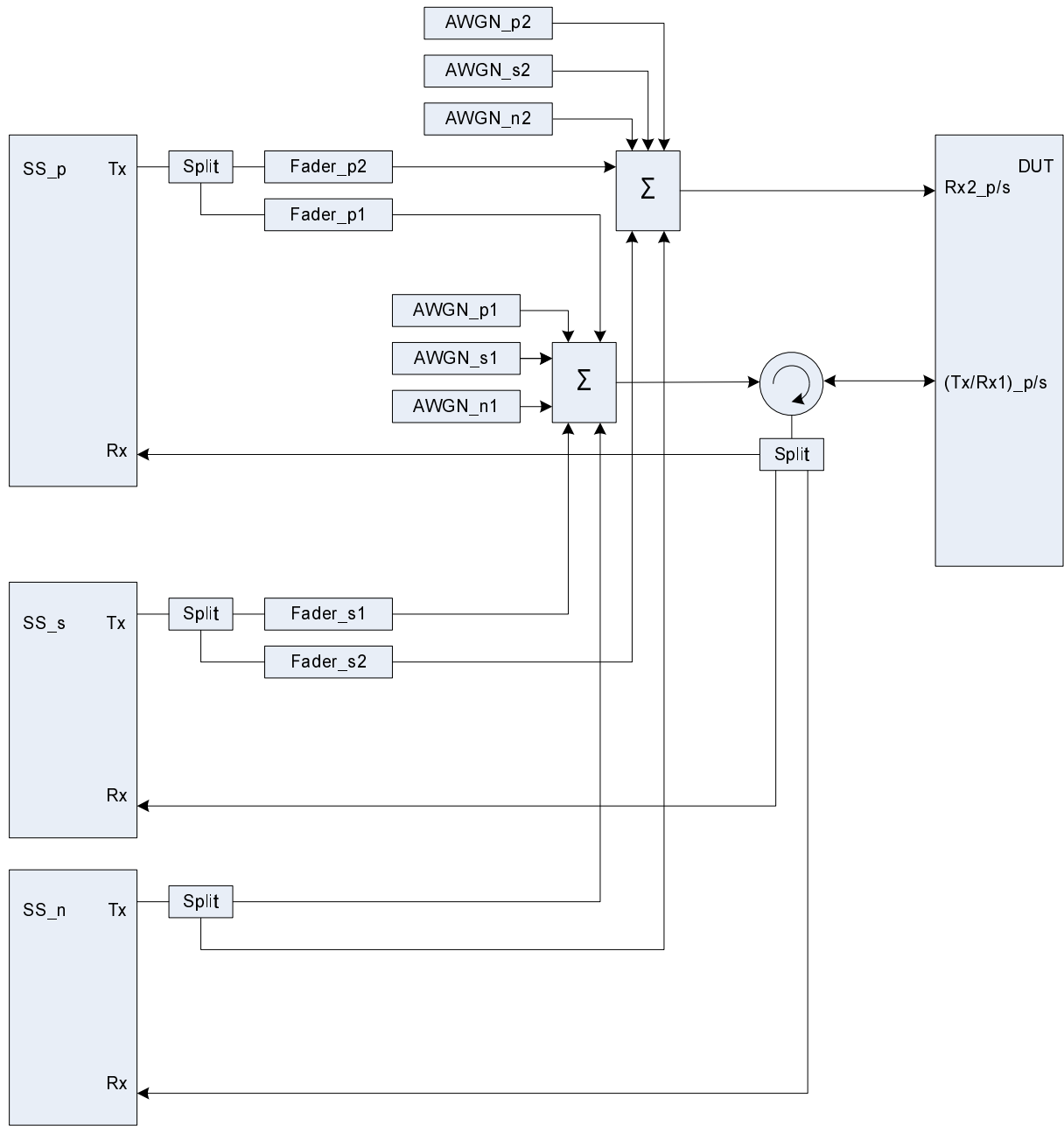


Figure A.44b: Connection for CA with additional inter-RAT cell and multipath fading propagation (common connectors, same UL antenna)

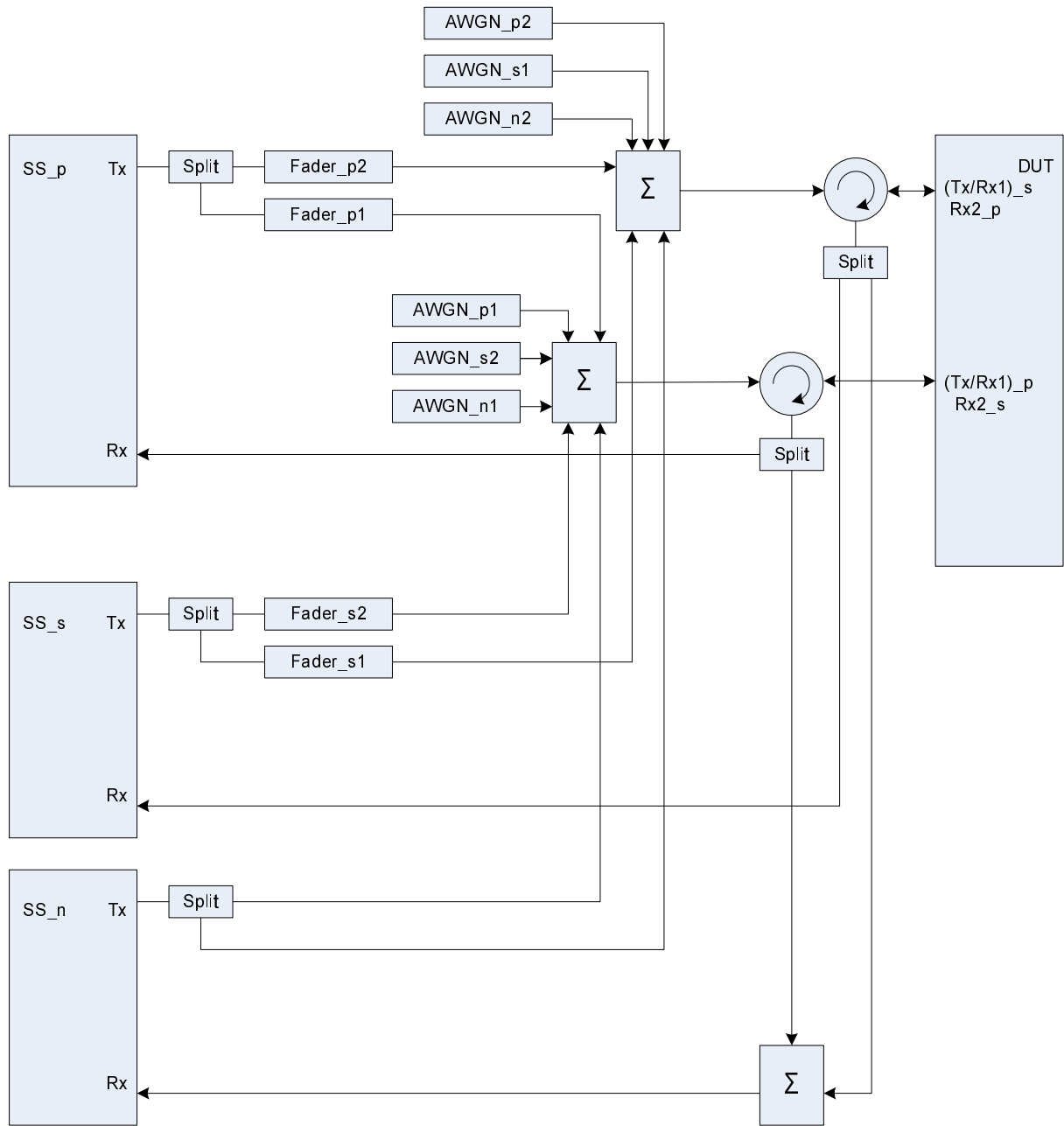


Figure A.44c: Connection for CA with additional inter-RAT cell and multipath fading propagation (common connectors, different UL antennas)

Figure group A.45: Connection for 2 cells with antenna configuration 1x2 and static propagation

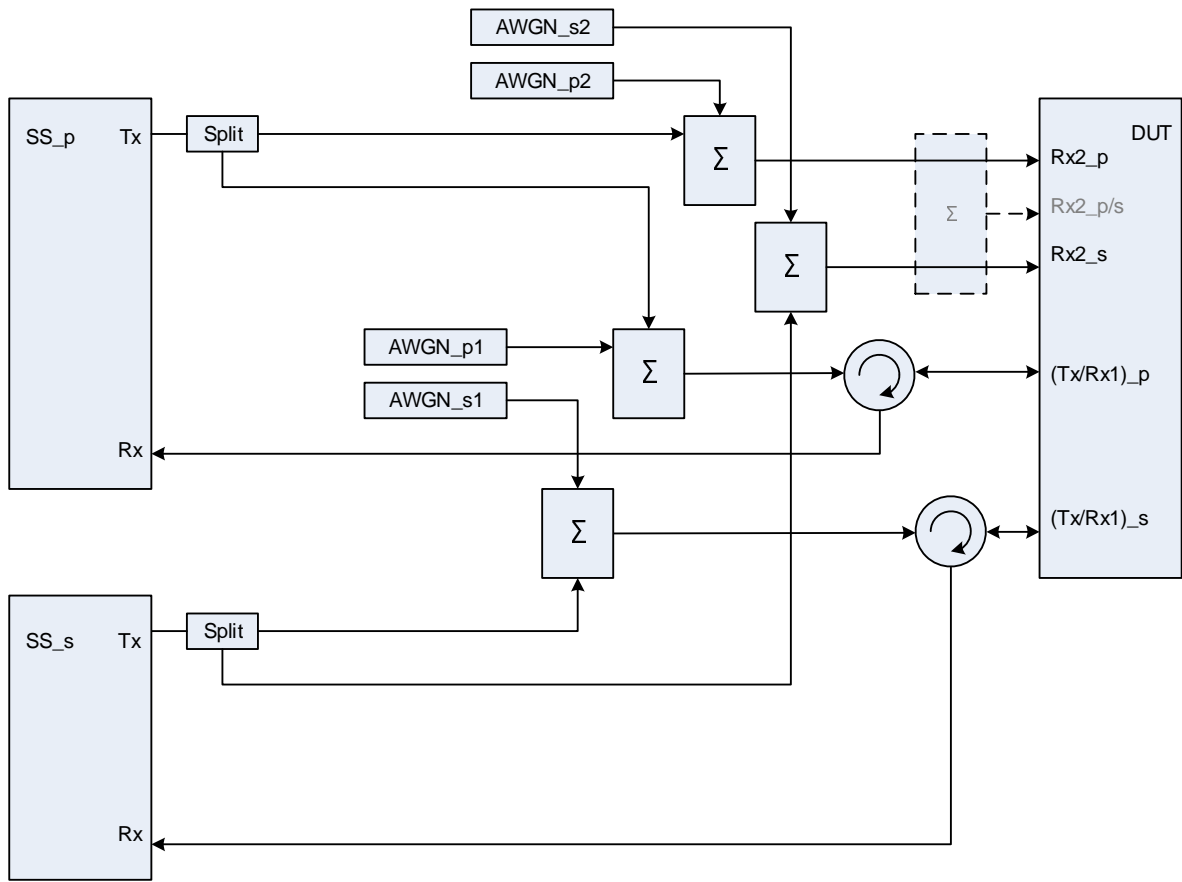


Figure A.45a: Connection for 2 cells with antenna configuration 1x2 and static propagation (separate connectors)

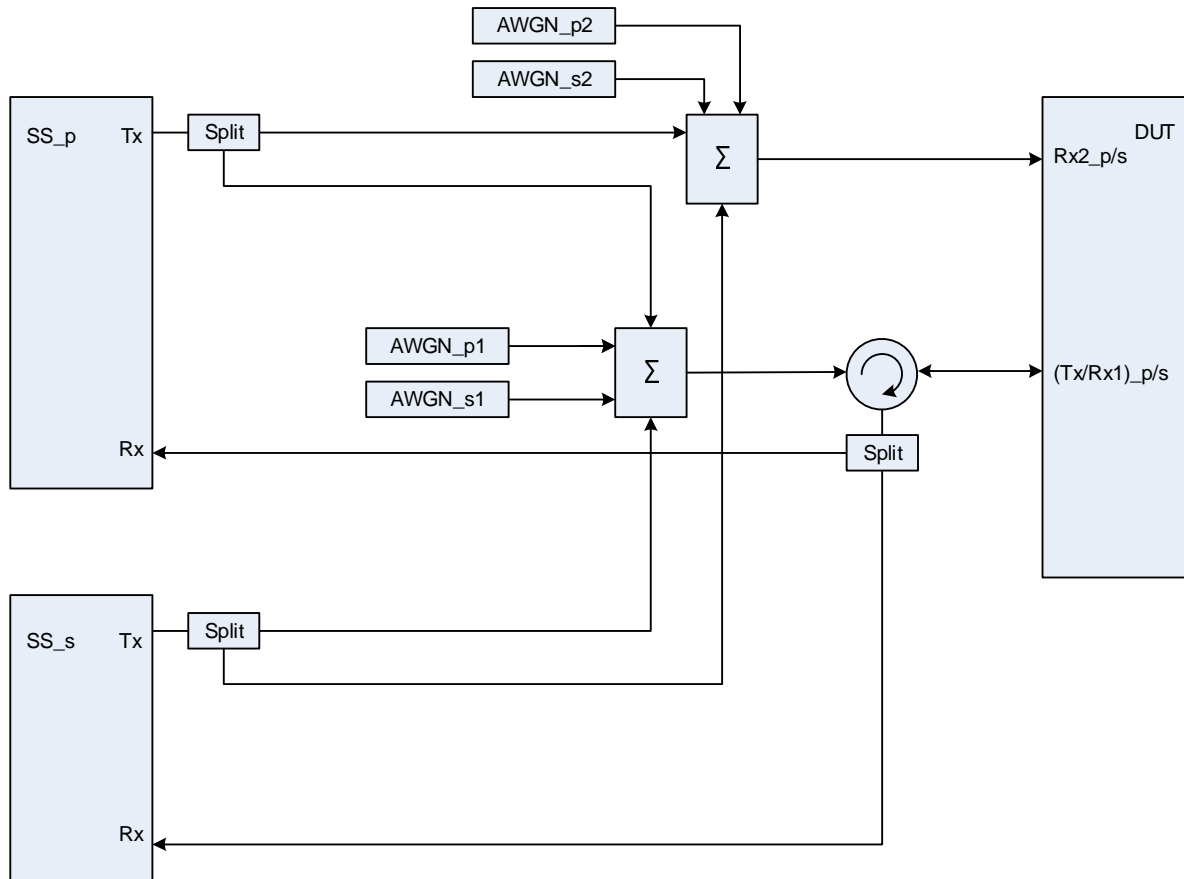


Figure A.45b: Connection for 2 cells with antenna configuration 1x2 and static propagation (common connectors, same UL antenna)

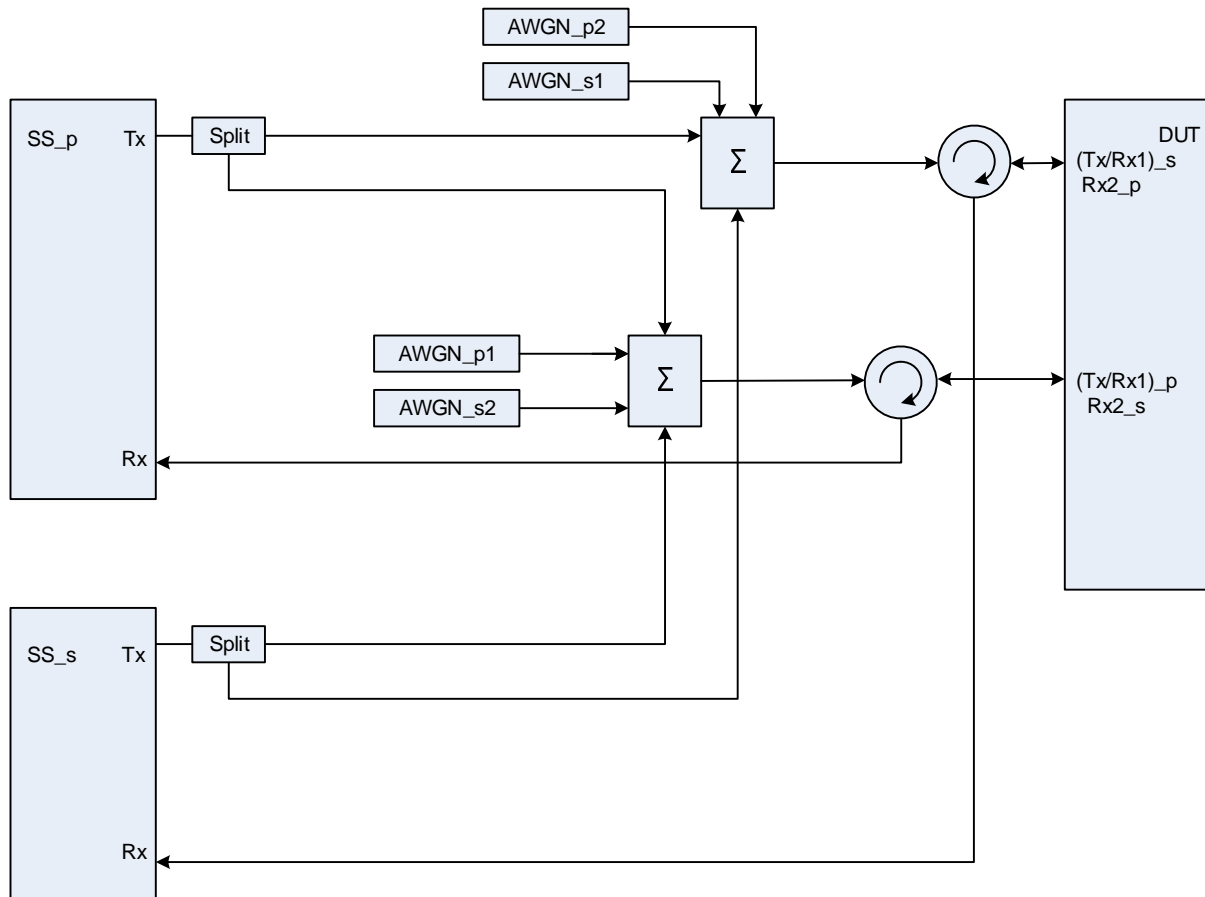


Figure A.45c: Connection for 2 cells with antenna configuration 1x2 and static propagation (common connectors, different UL antennas)

Figure group A.46: Connection for Rx performance tests for CA with antenna configuration 4x2

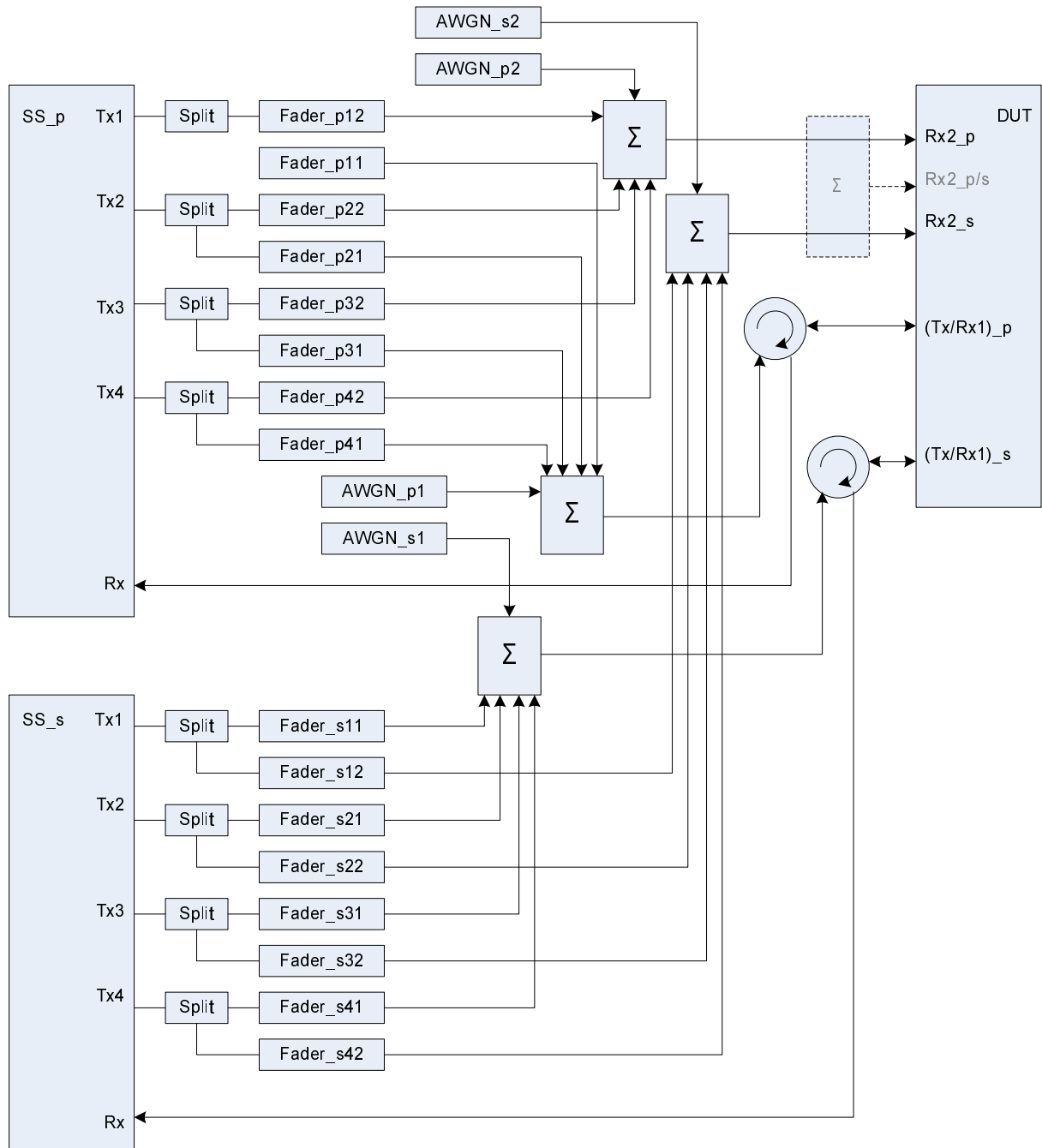


Figure A.46a: Connection for Rx performance tests for CA with antenna configuration 4x2 (separate connectors)

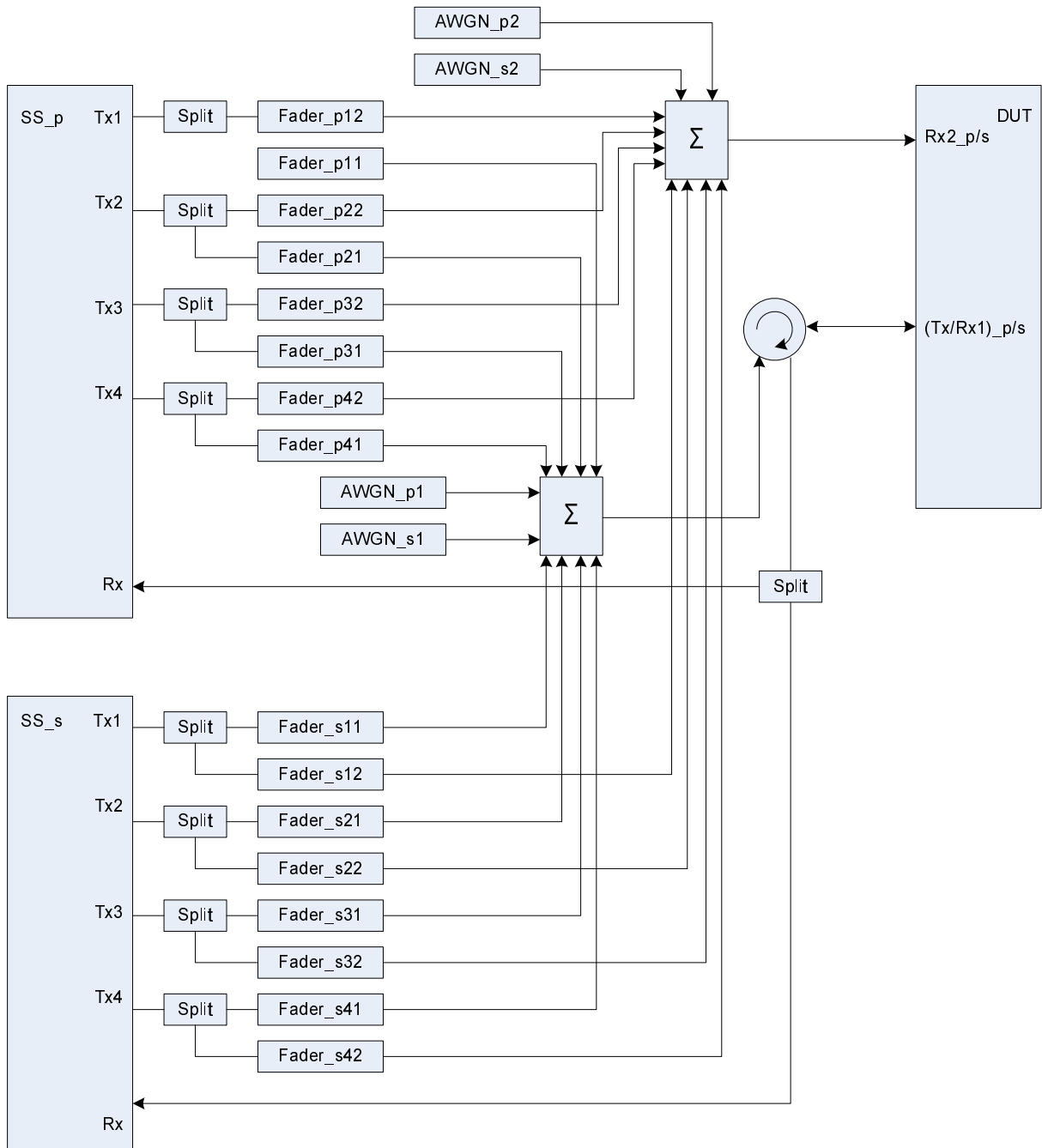


Figure A.46b: Connection for Rx performance tests for CA with antenna configuration 4x2 (common connectors, same UL antenna)

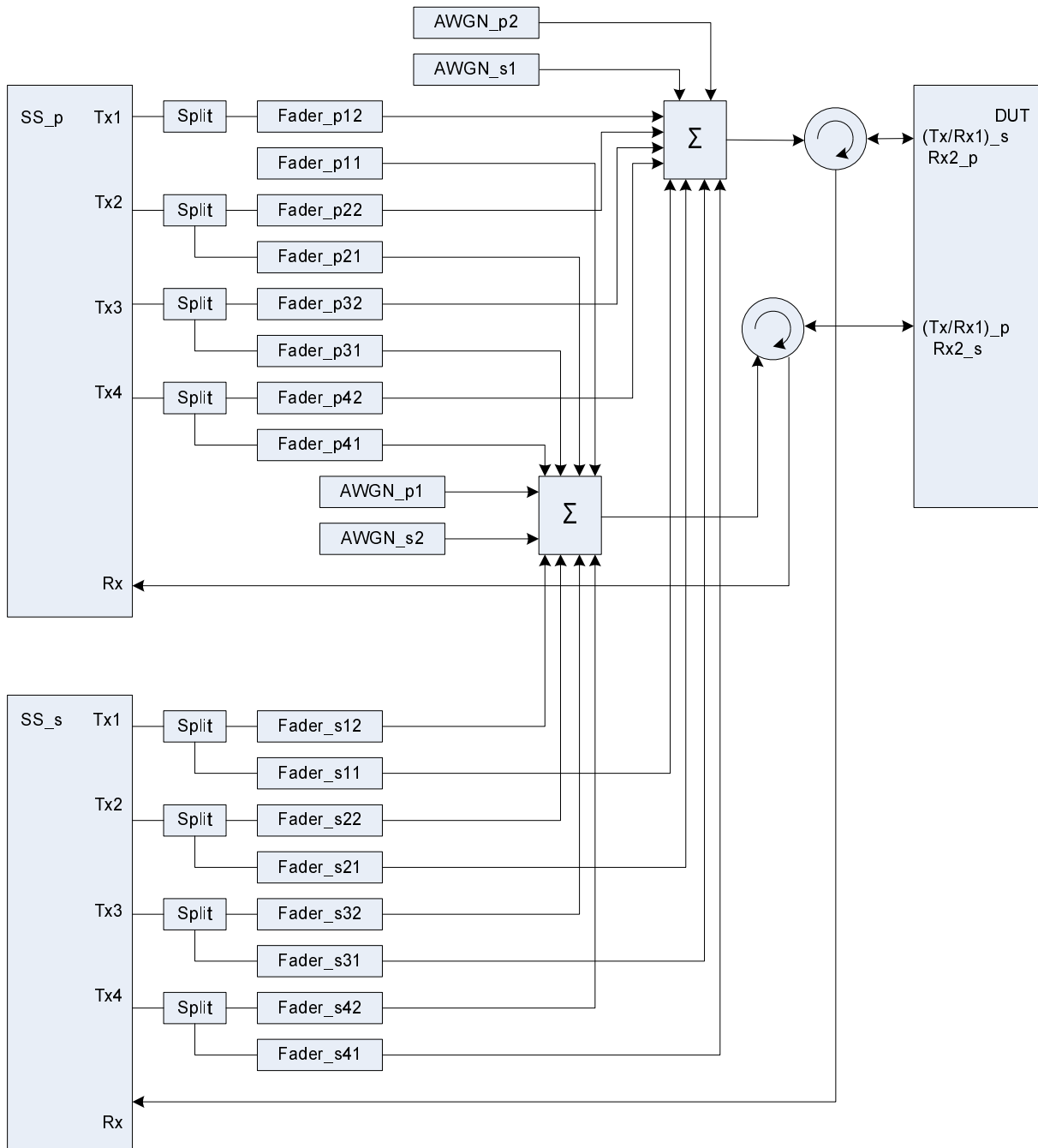


Figure A.46c: Connection for Rx performance tests for CA with antenna configuration 4x2 (common connectors, different UL antennas)

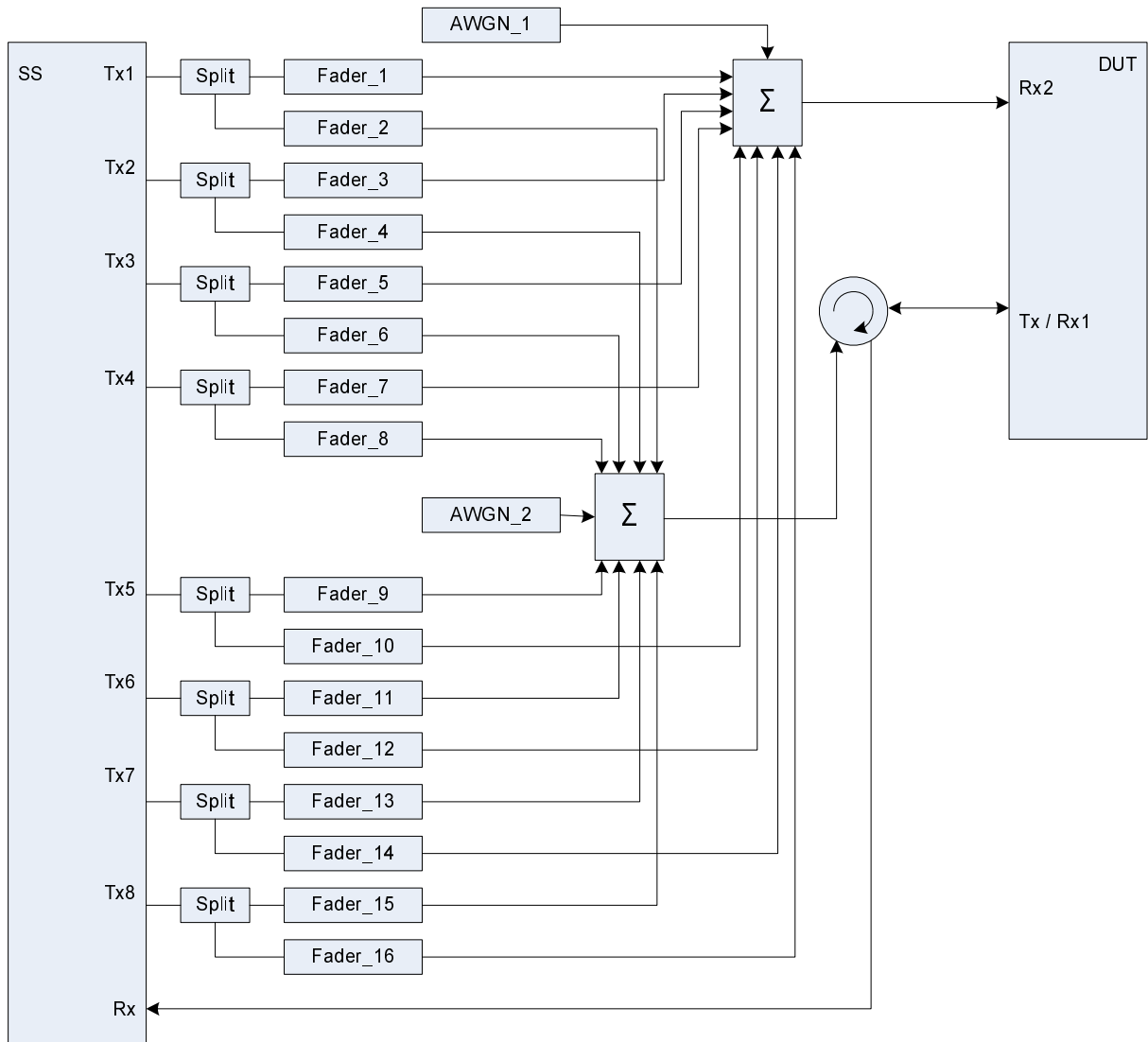


Figure A.47: Connection for RX performance tests with antenna configuration 8x2

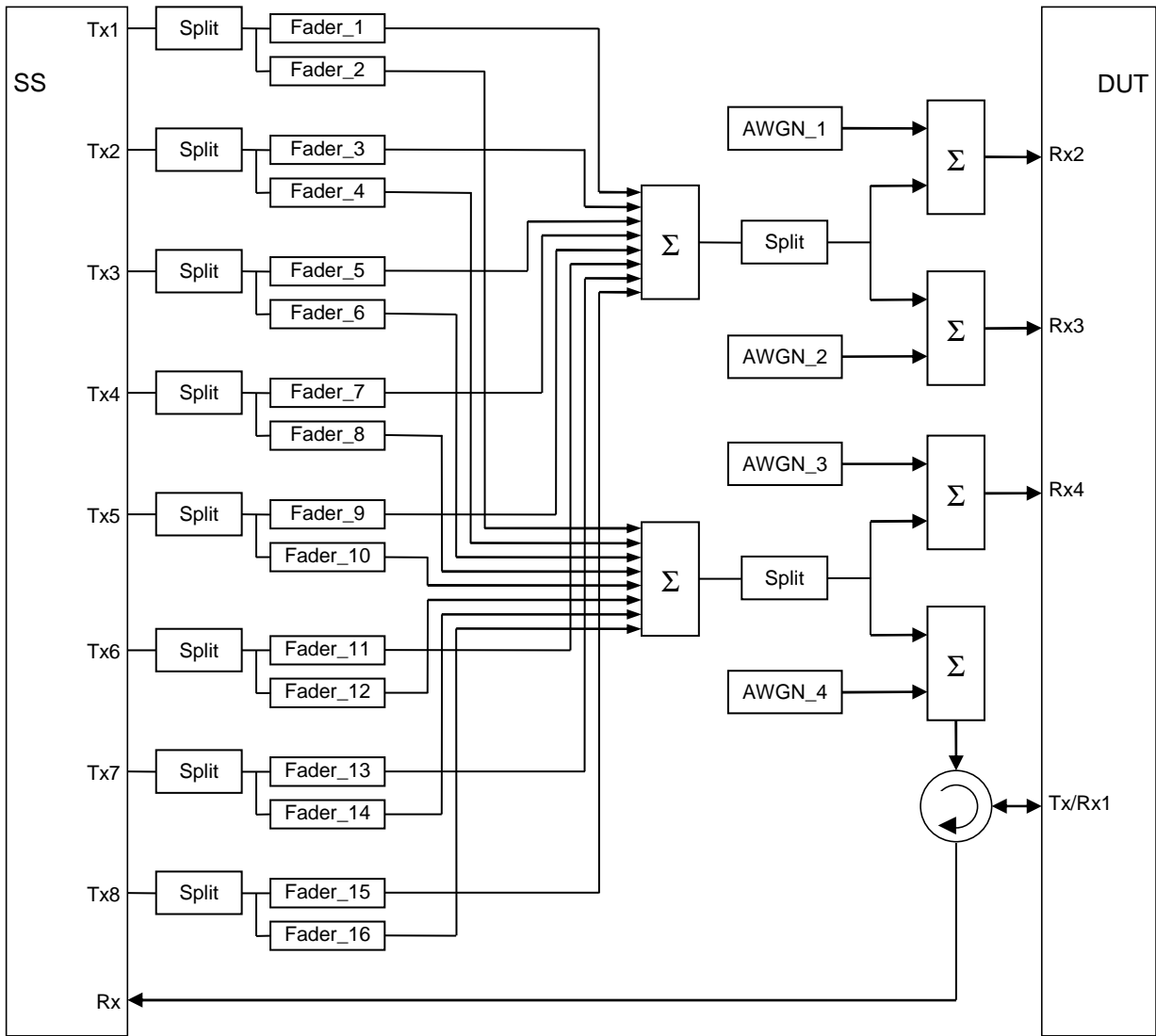


Figure A.47a: Connection for RX performance tests with antenna configuration 8x2 for 4Rx capable UEs without any 2Rx RF bands

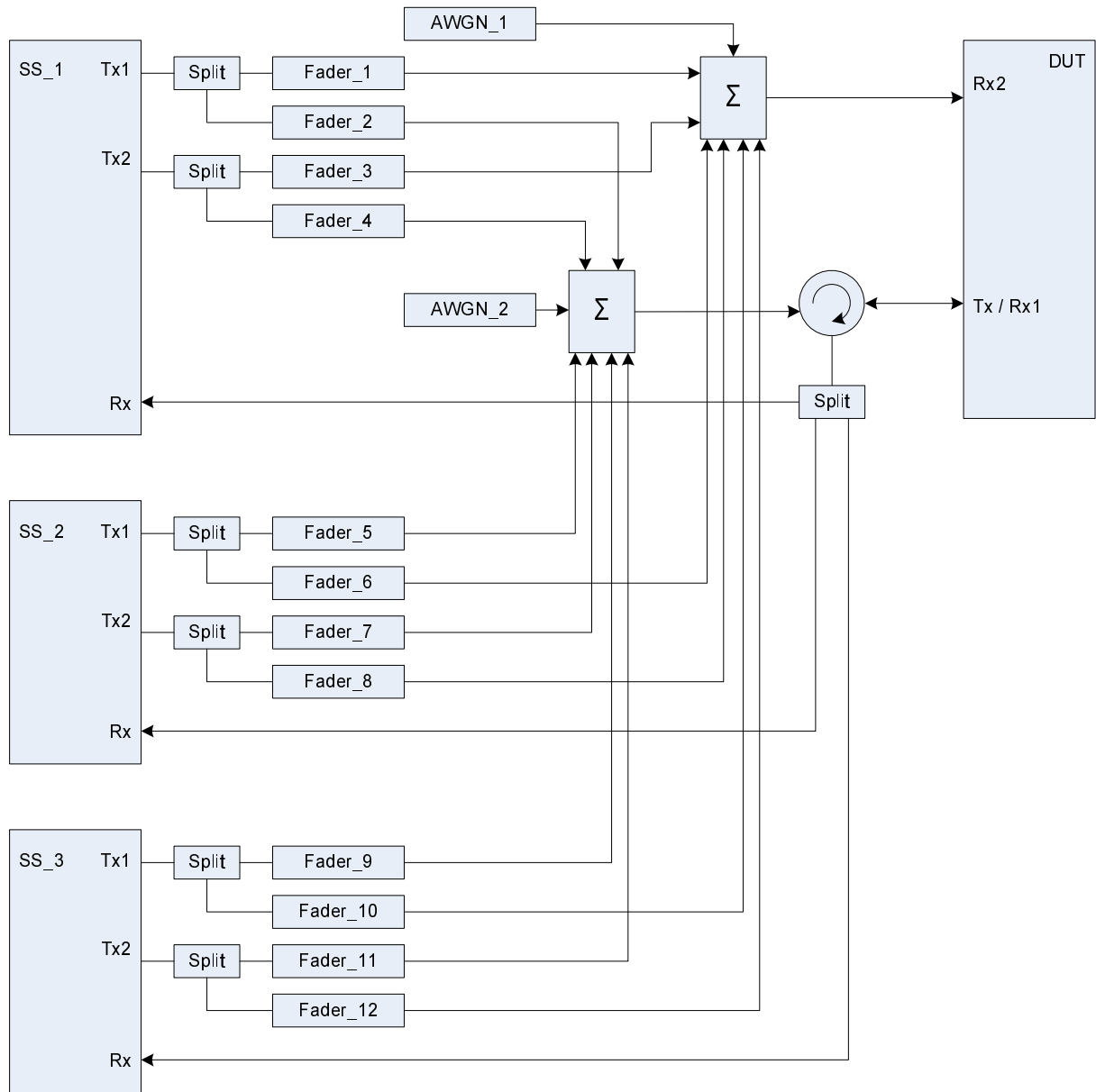


Figure A.48: Connection for 3 Cells (TPs) with antenna configuration 2x2 and fading

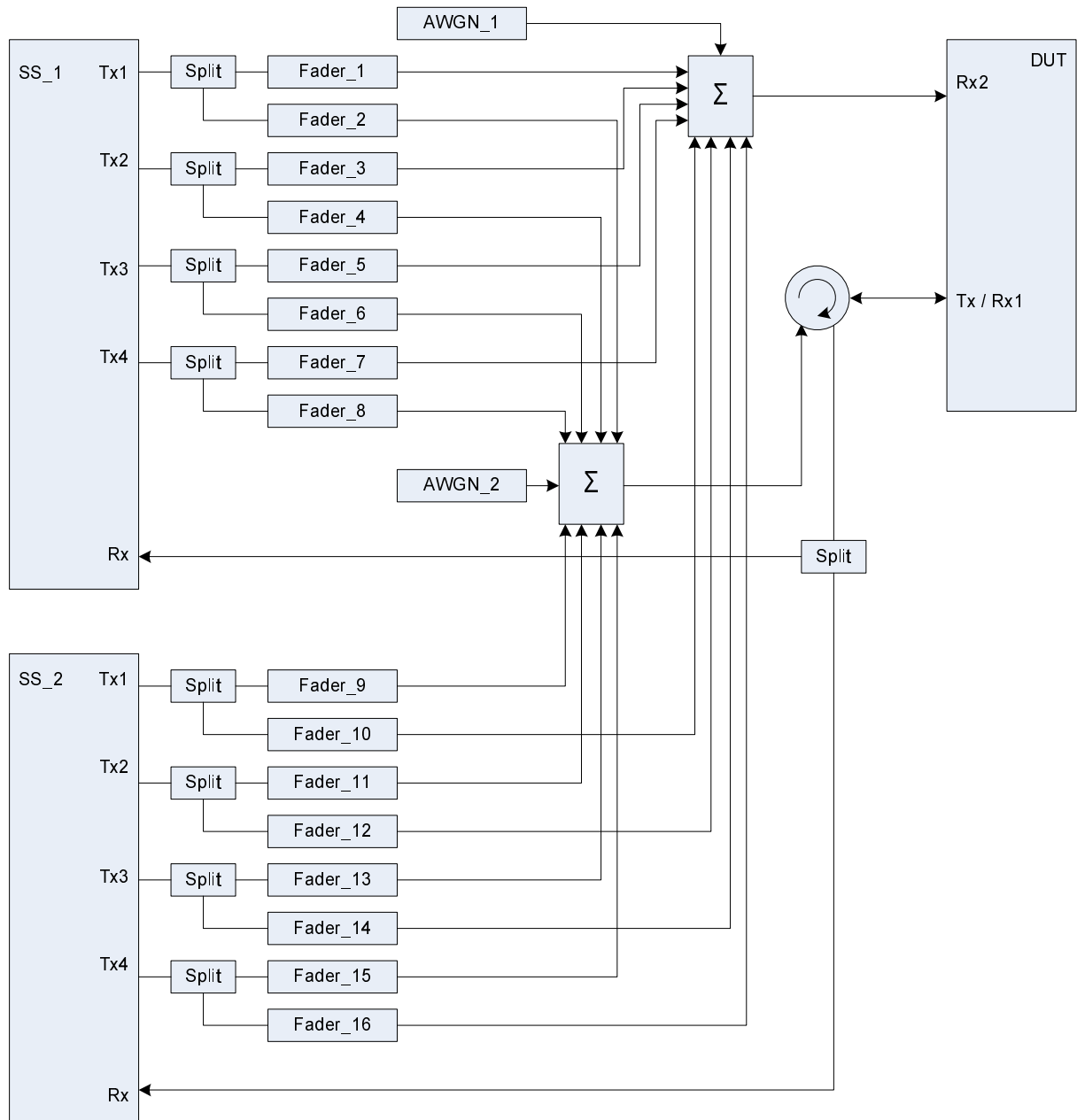


Figure A.49: Connection for 2 Cells (TPs) with antenna configuration 4x2 and fading

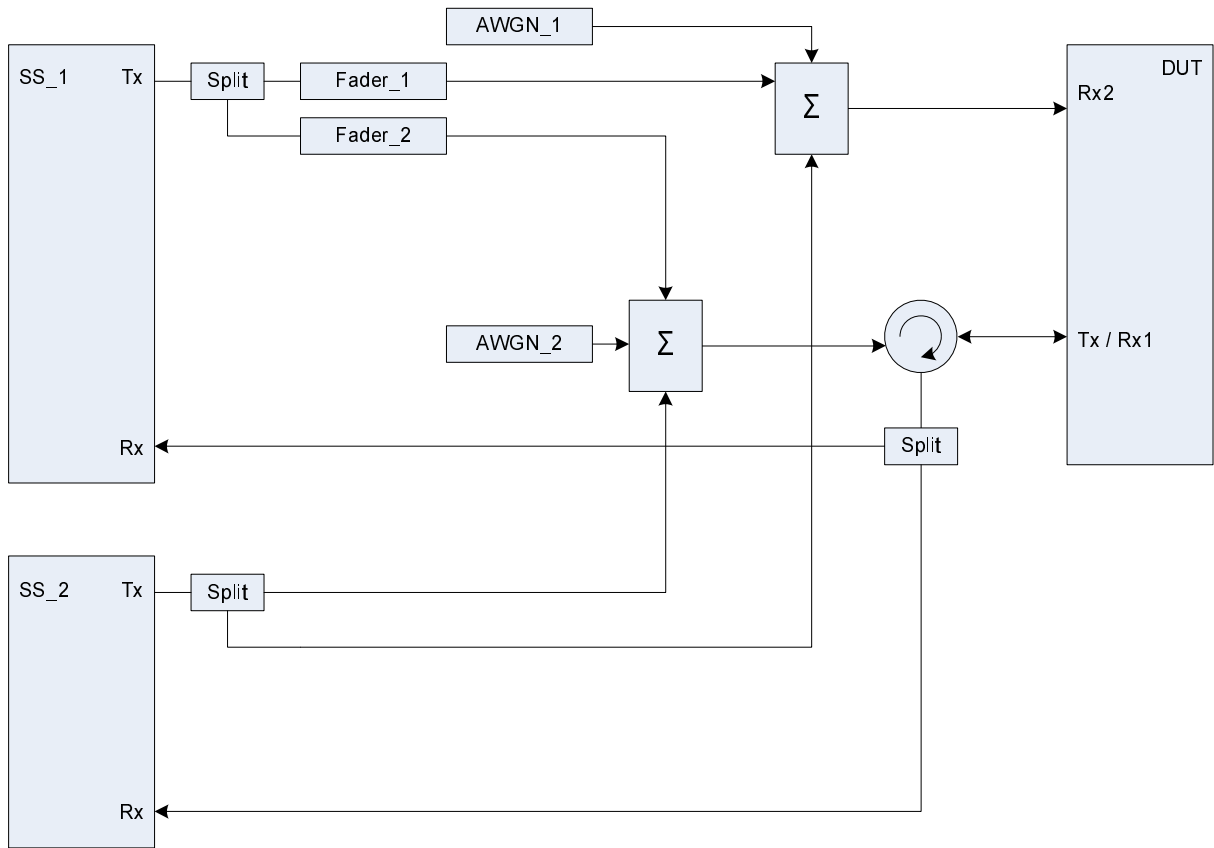


Figure A.50: Connection for 2 Cells (TPs) with antenna configuration 1x2 and fading for one Cell (TP)

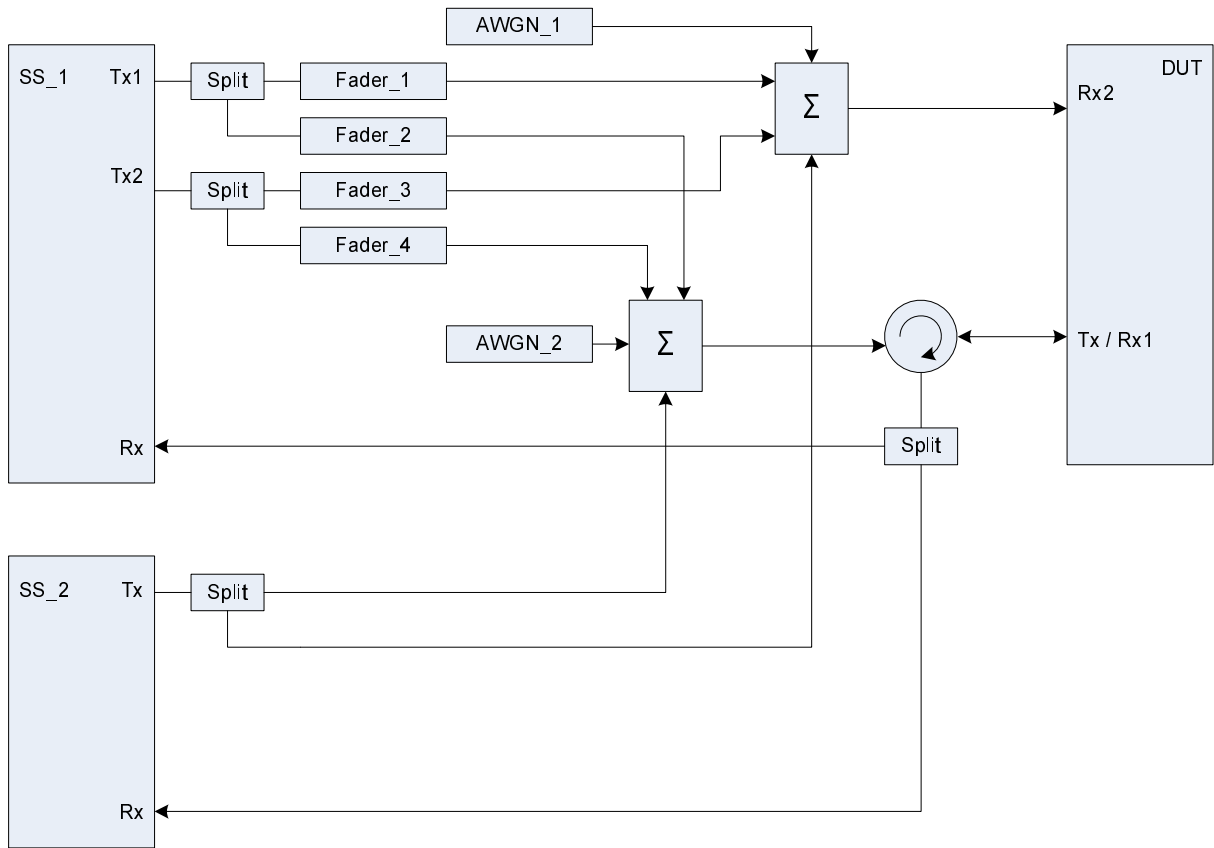


Figure A.51: Connection for 2 Cells (TPs) with antenna configuration 2x2 / 1x2 and fading for the 2x2 Cell (TP)

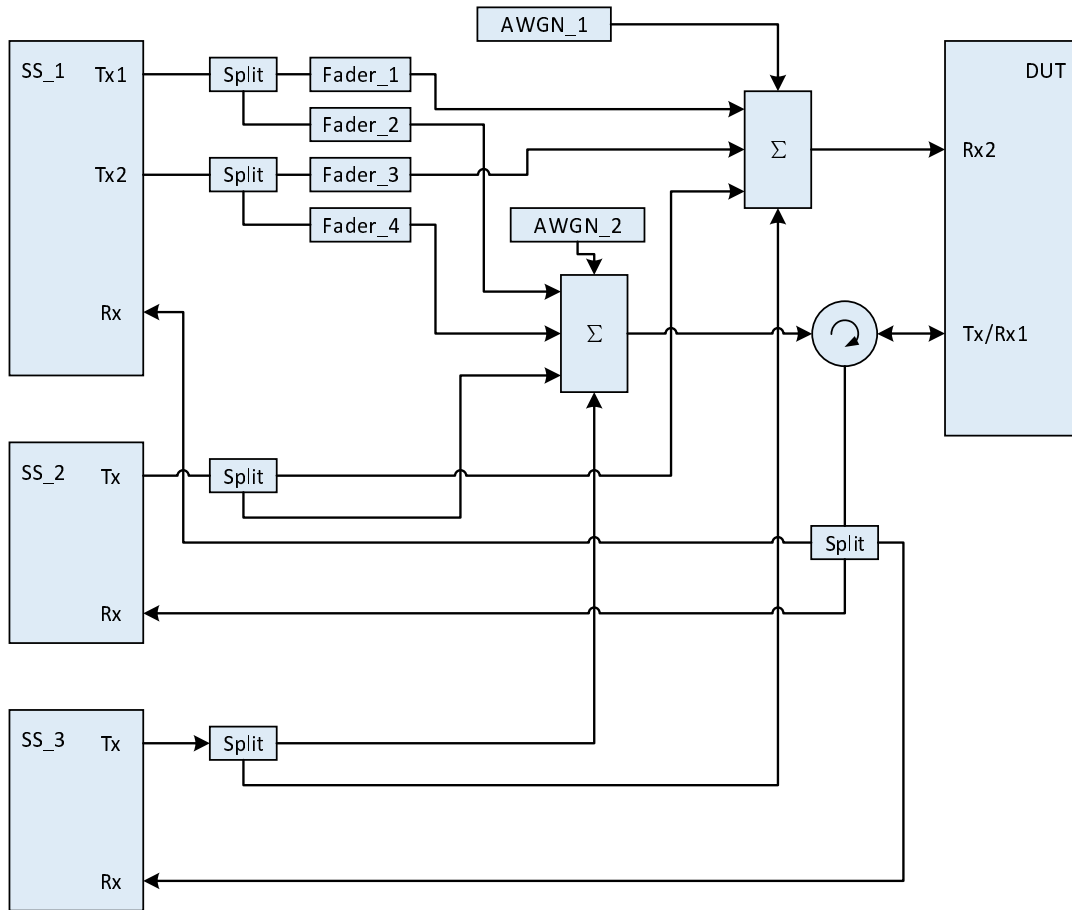


Figure A.51a: Connection for 3 Cells (TPs) with antenna configuration 2x2 / 1x2 / 1x2 and fading for the 2x2 Cell (TP)

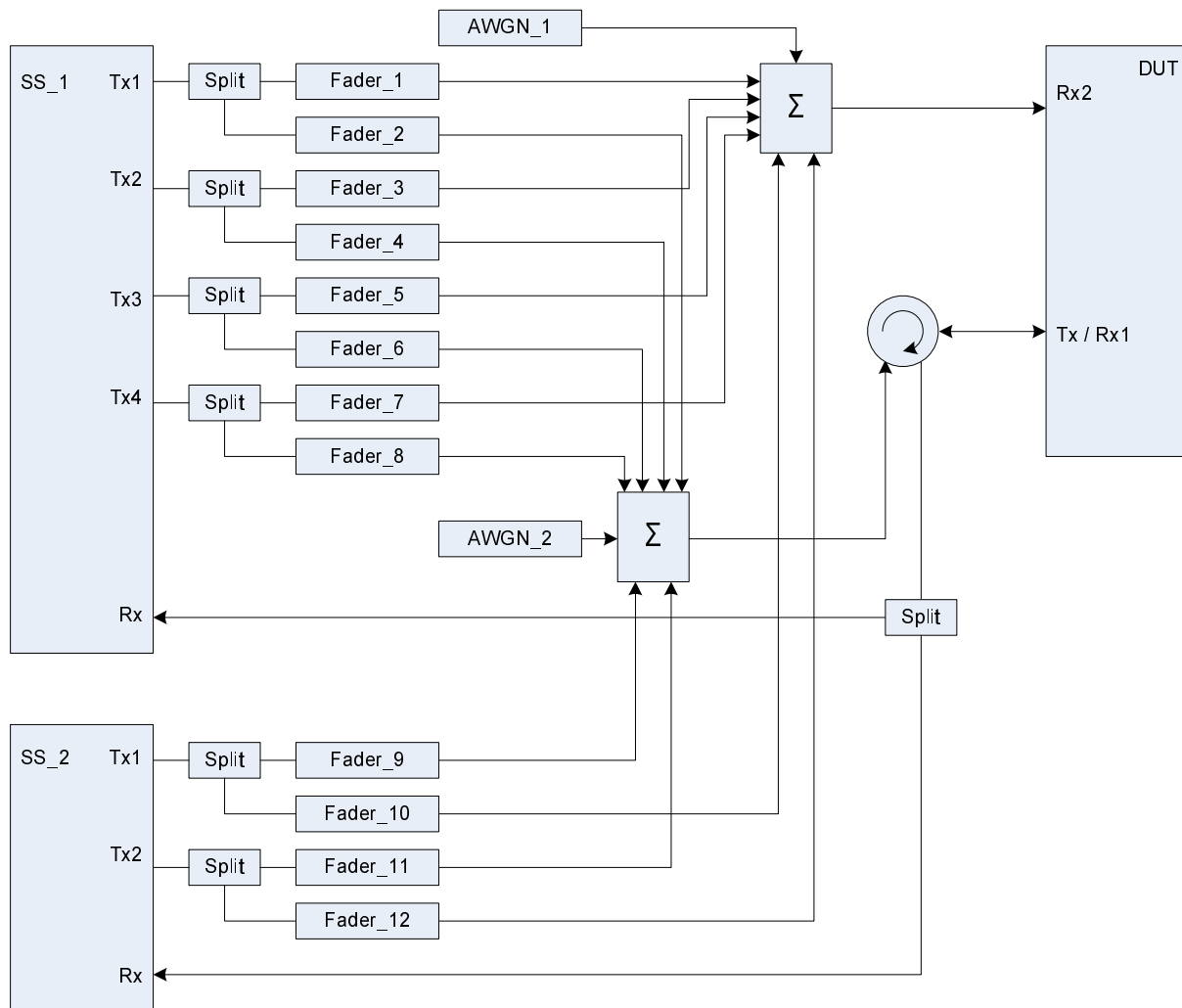


Figure A.52: Connection for 2 Cells (TPs) with antenna configuration 4x2 / 2x2 and fading

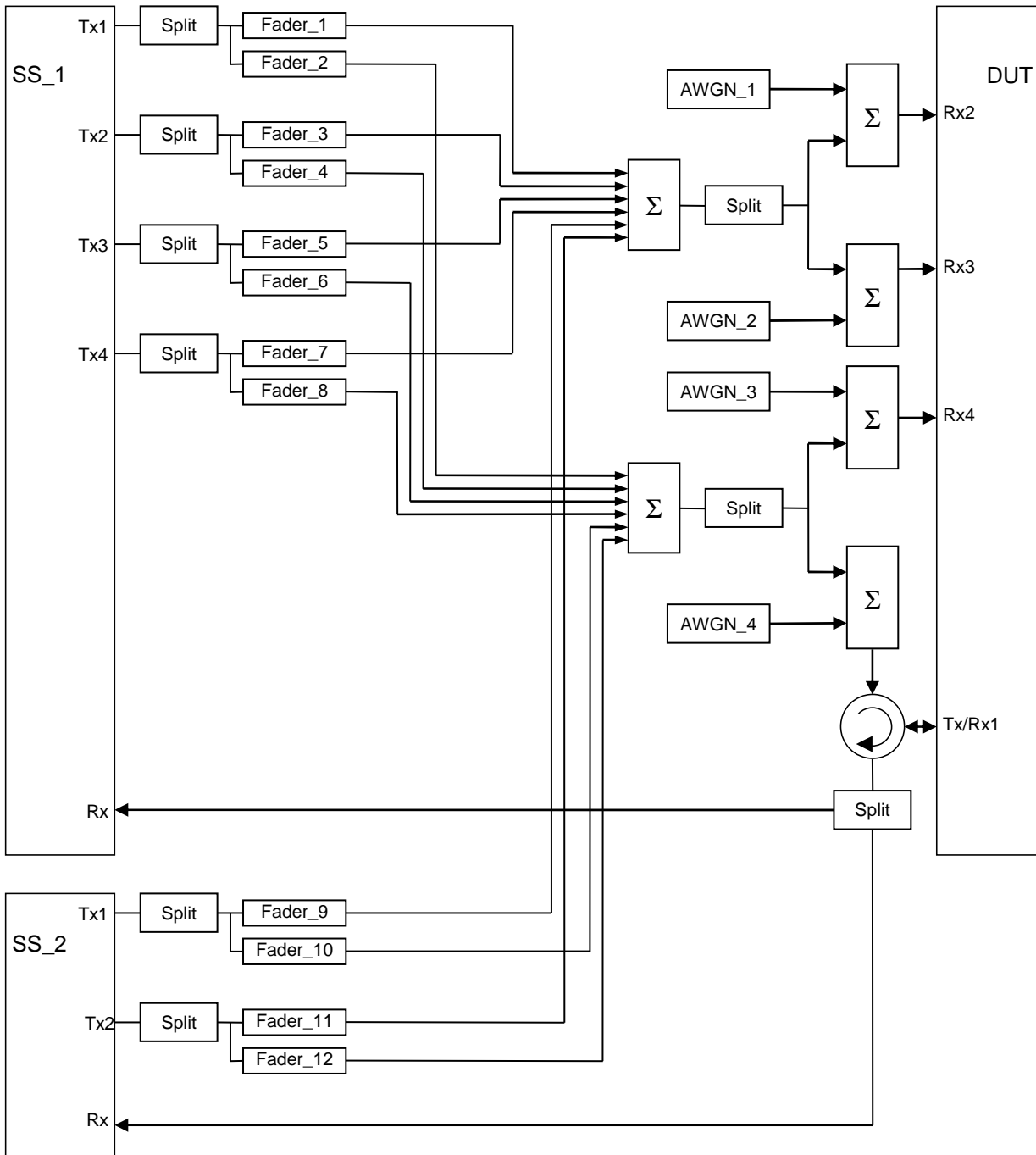


Figure A.52a: Connection for 2 Cells (TPs) with antenna configuration 4x2 / 2x2 and fading for 4Rx capable UEs without any 2Rx RF bands

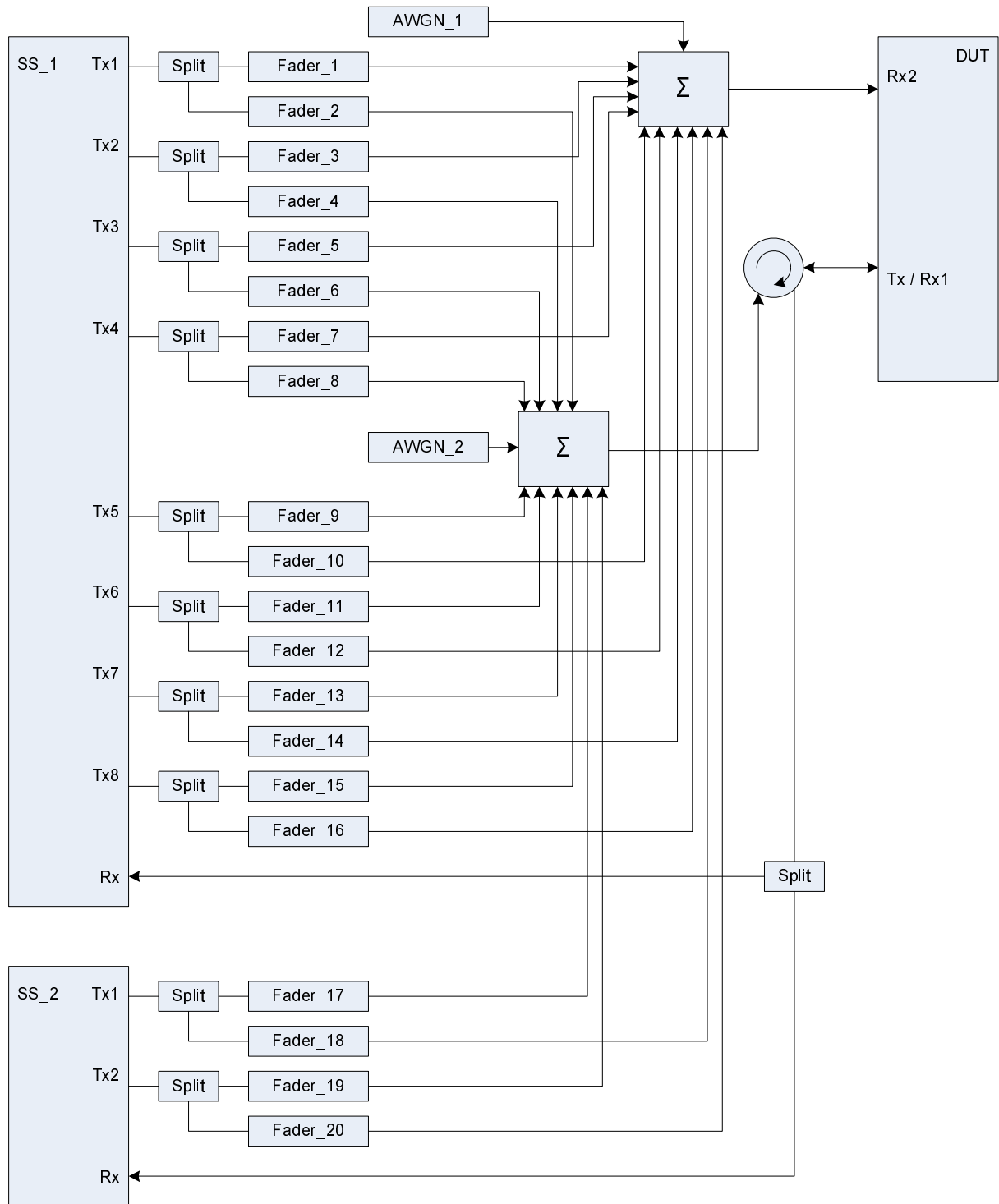


Figure A.53: Connection for 2 Cells (TPs) with antenna configuration 8x2 / 2x2 and fading

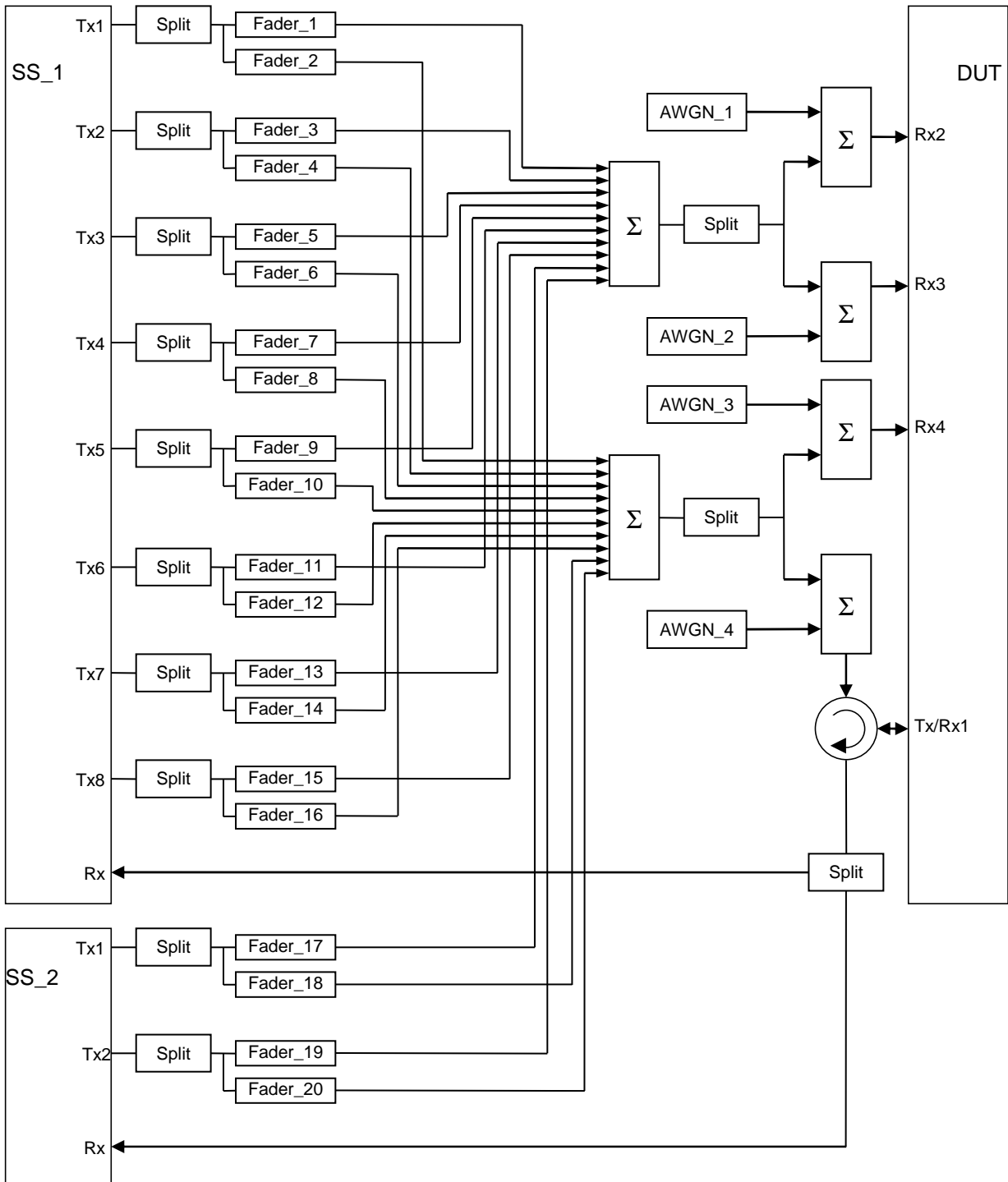


Figure A.53a: Connection for 2 Cells (TPs) with antenna configuration 8x2 / 2x2 and fading for 4Rx capable UEs without any 2Rx RF bands

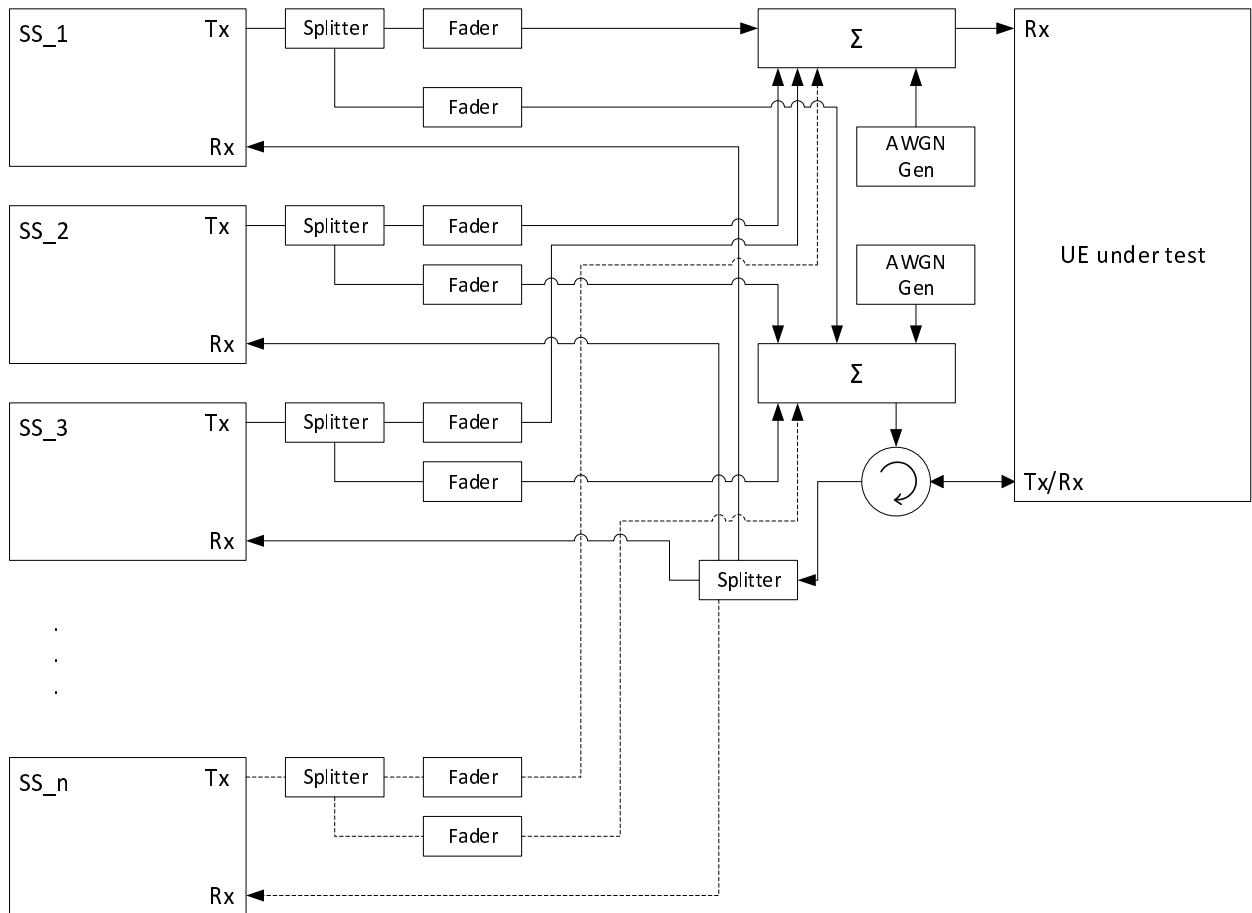


Figure A.54: Connection for 3 or more Cells (TPs) with antenna configuration 1x2 and fading

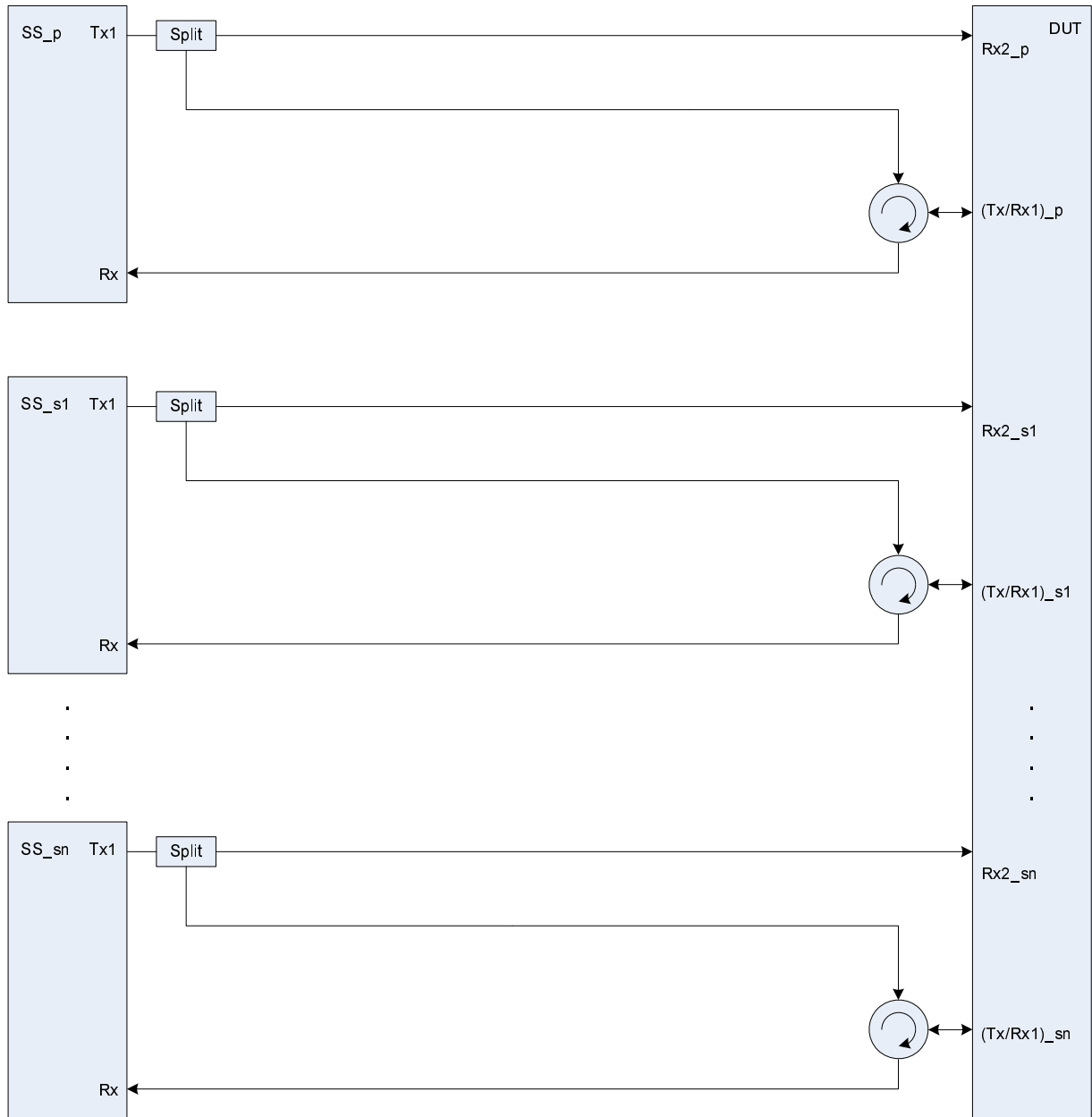


Figure A.55: Connection for basic Tx and Rx tests for CA (≥ 3 CCs)

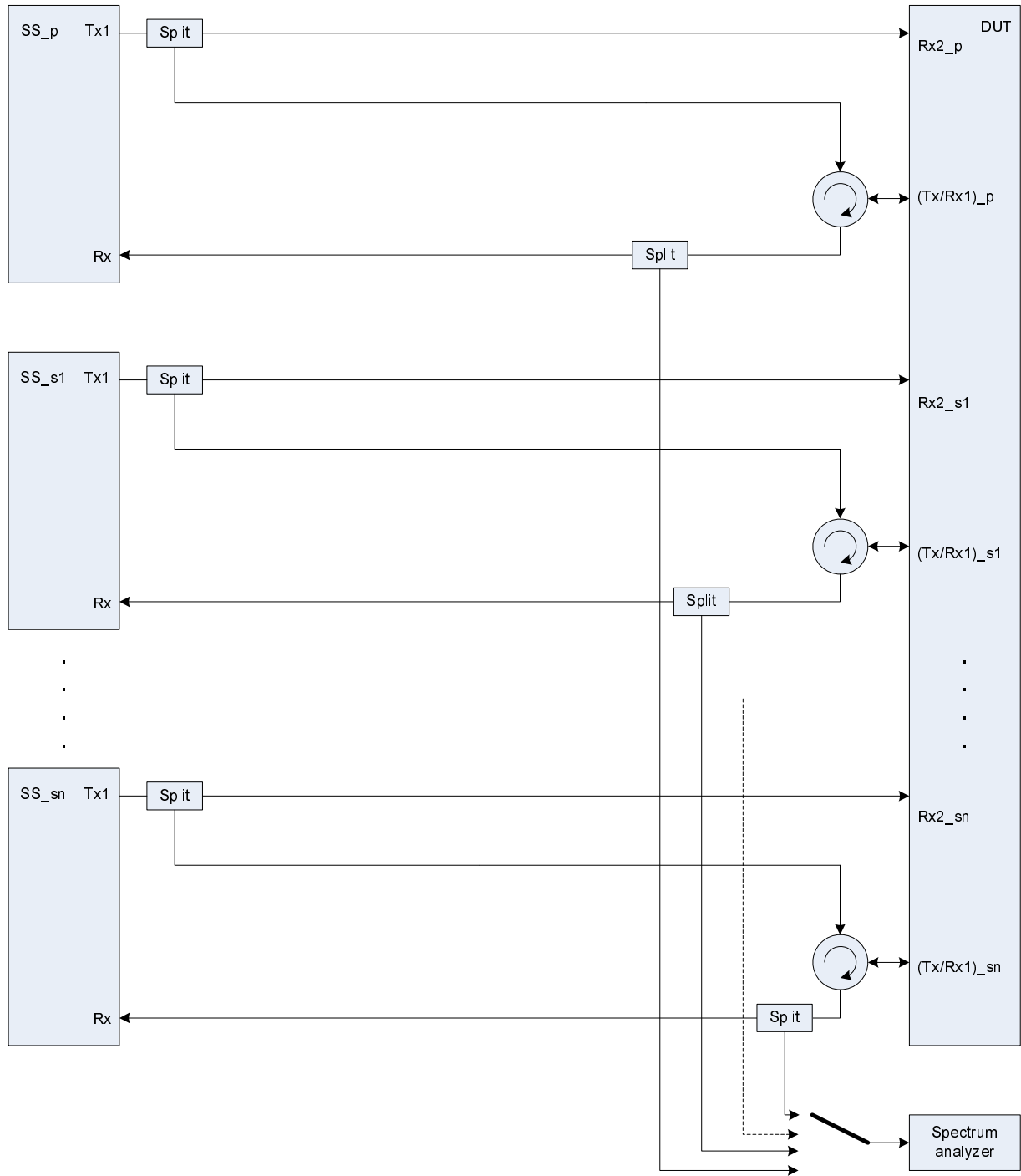


Figure A.56: Connection for Tx tests for CA (≥ 3 CCs) with additional Spectrum Analyzer

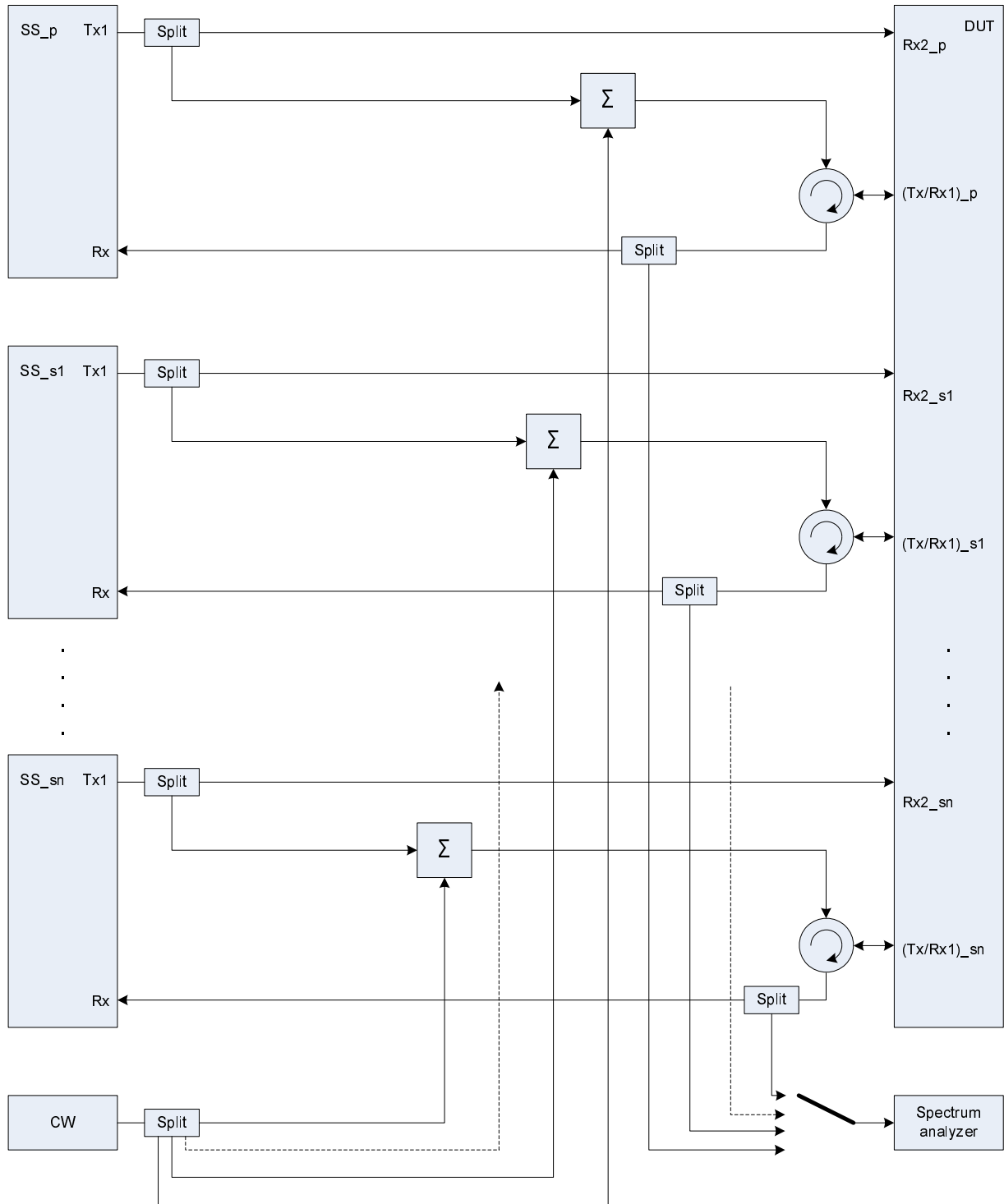


Figure A.57: Connection for Tx tests for CA (≥ 3CCs) with additional CW and Spectrum Analyzer

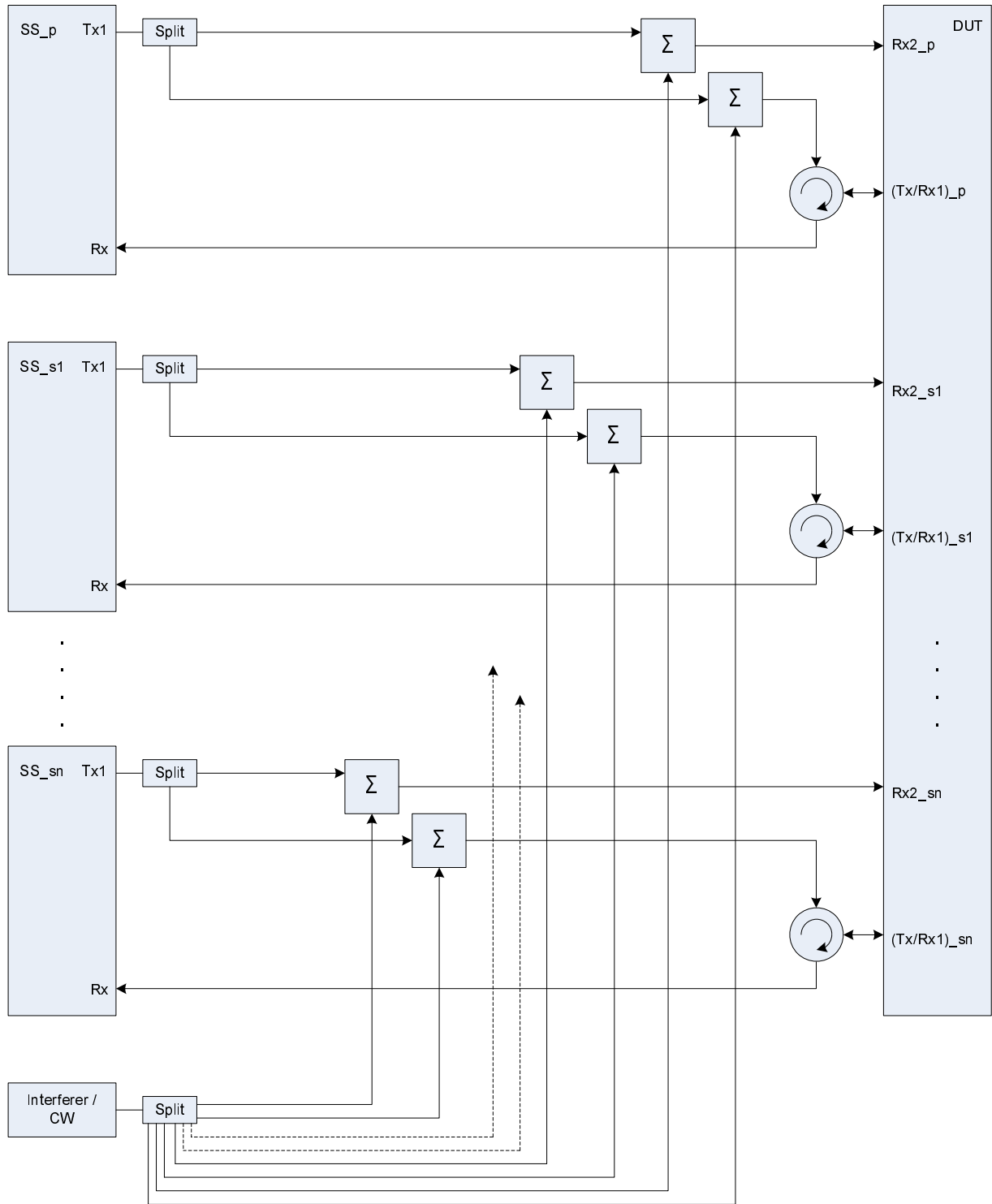


Figure A.58: Connection for Rx tests for CA (≥ 3CCs) with additional Interferer / CW

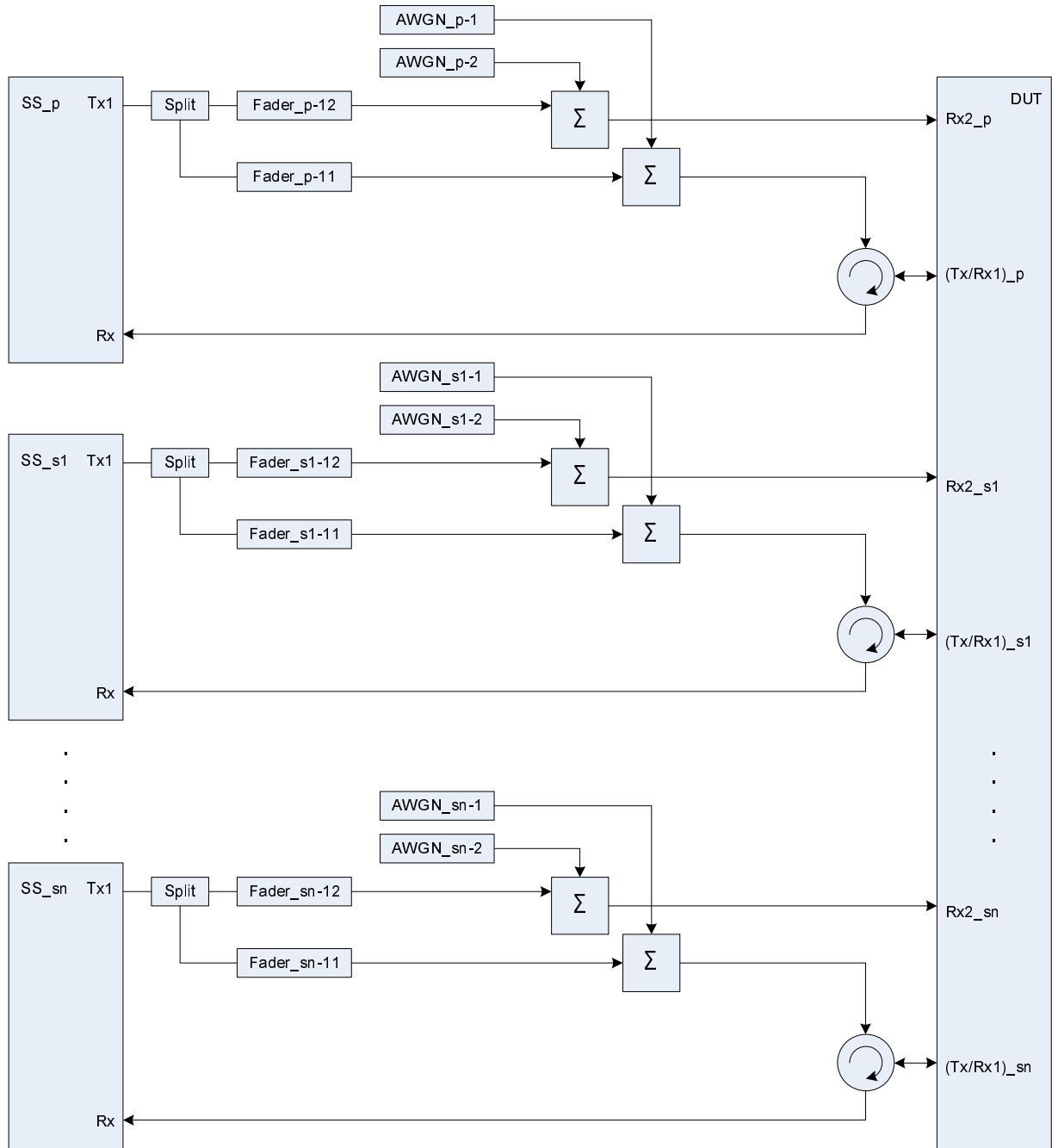


Figure A.59: Connection for Rx performance tests for CA (≥ 3CCs) with antenna configuration 1x2

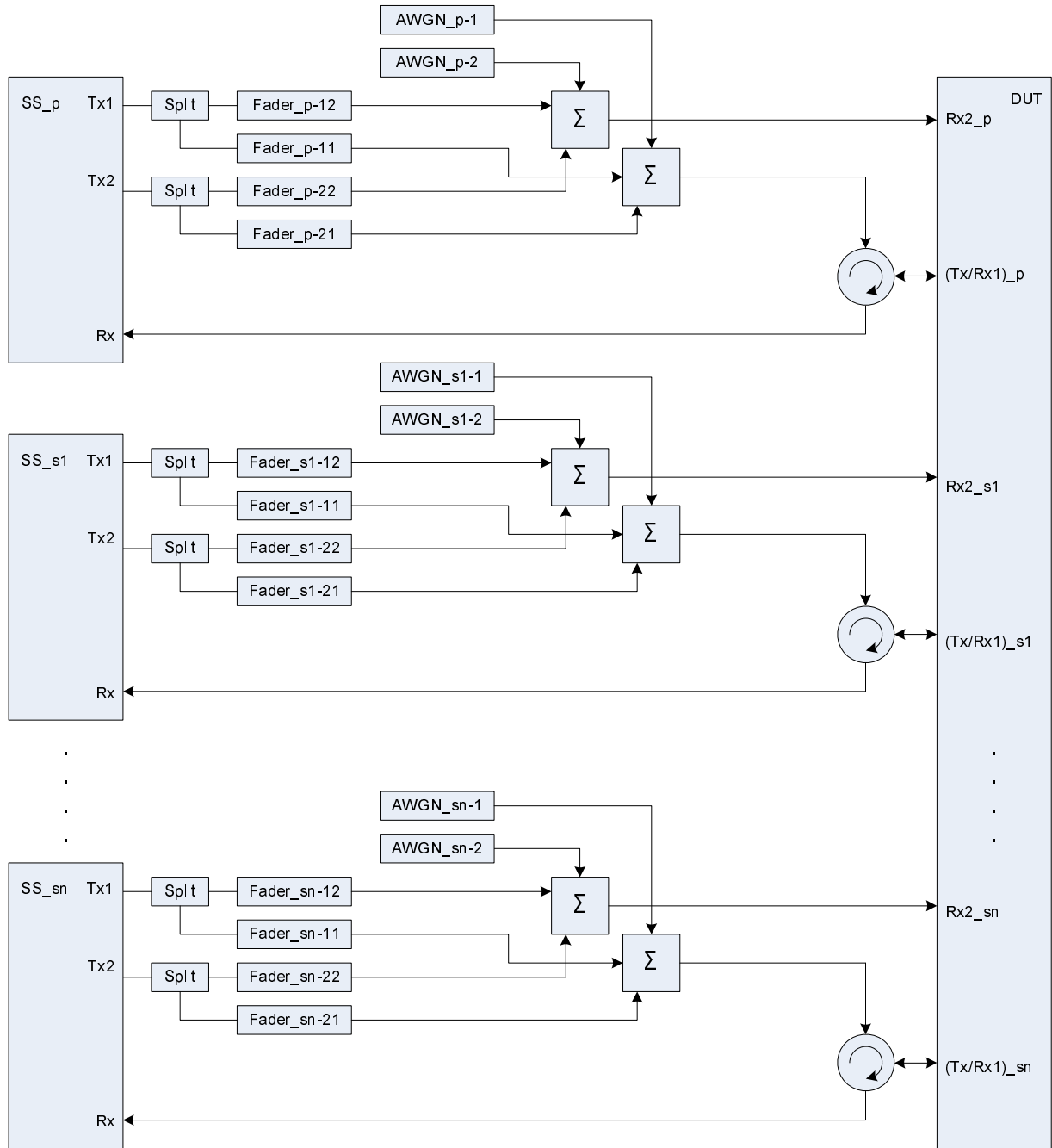


Figure A.60: Connection for Rx performance tests for CA (≥ 3 CCs) with antenna configuration 2x2

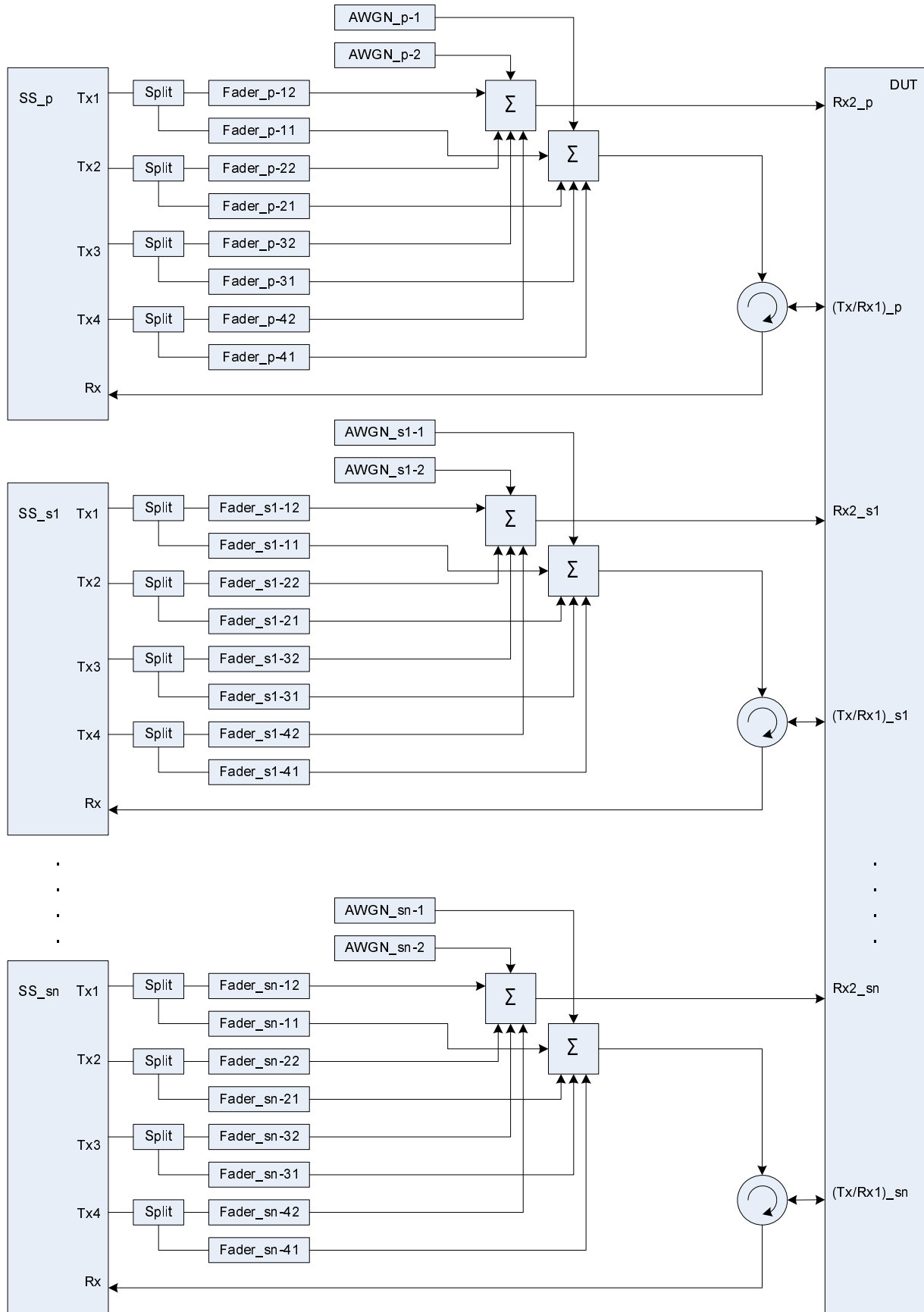


Figure A.61: Connection for Rx performance tests for CA (≥ 3CCs) with antenna configuration 4x2

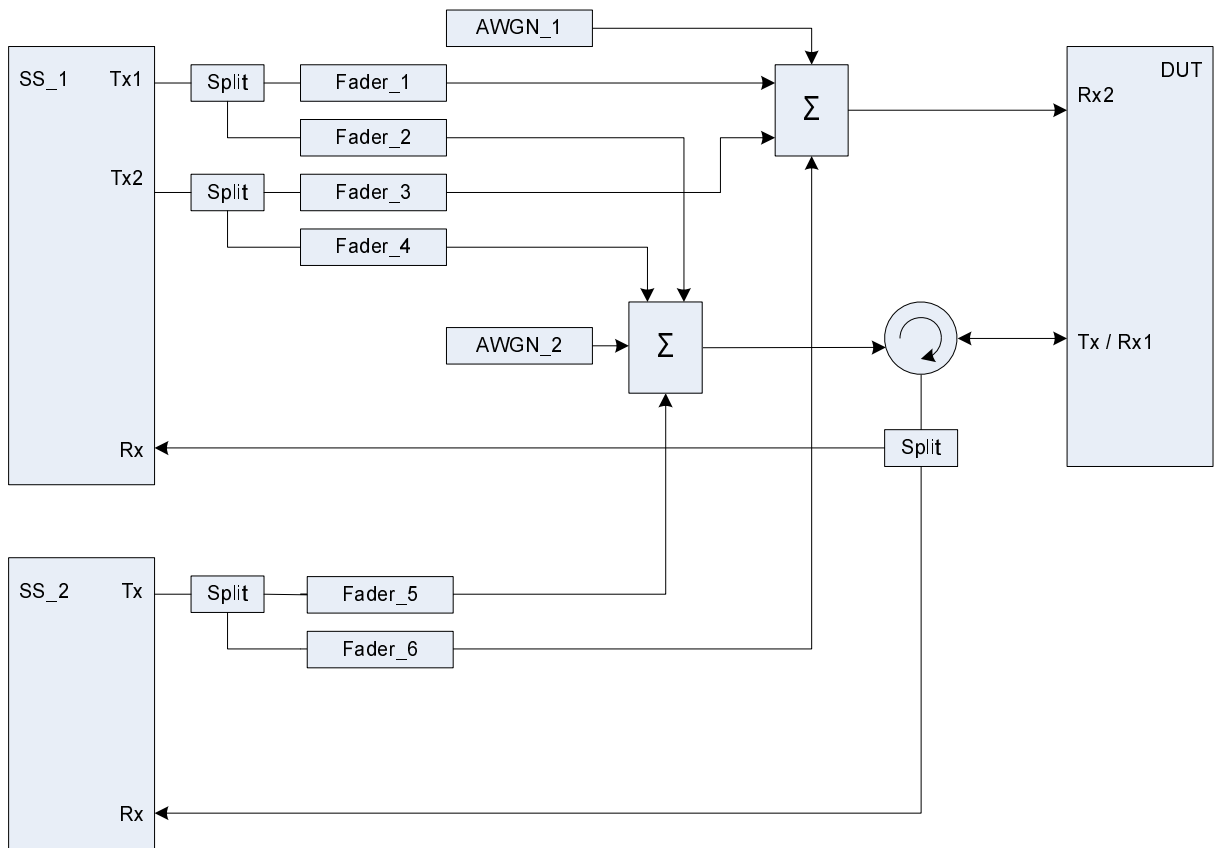


Figure A.62: Connection for 2 Cells with antenna configuration 2x2 / 1x2 and fading

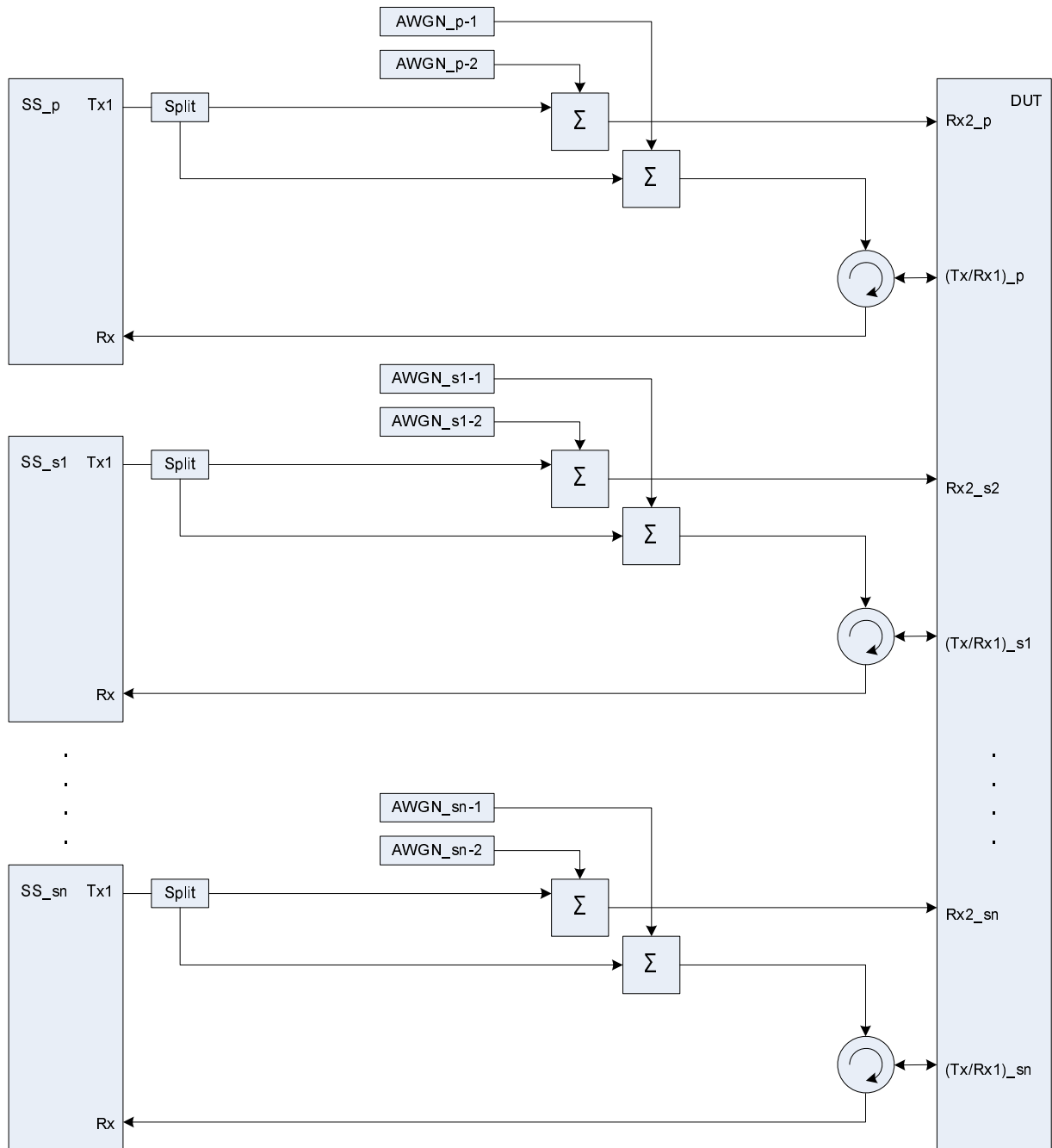


Figure A.63: Connection for CA testing (≥ 3 CCs) with antenna configuration 1x2 and static propagation conditions

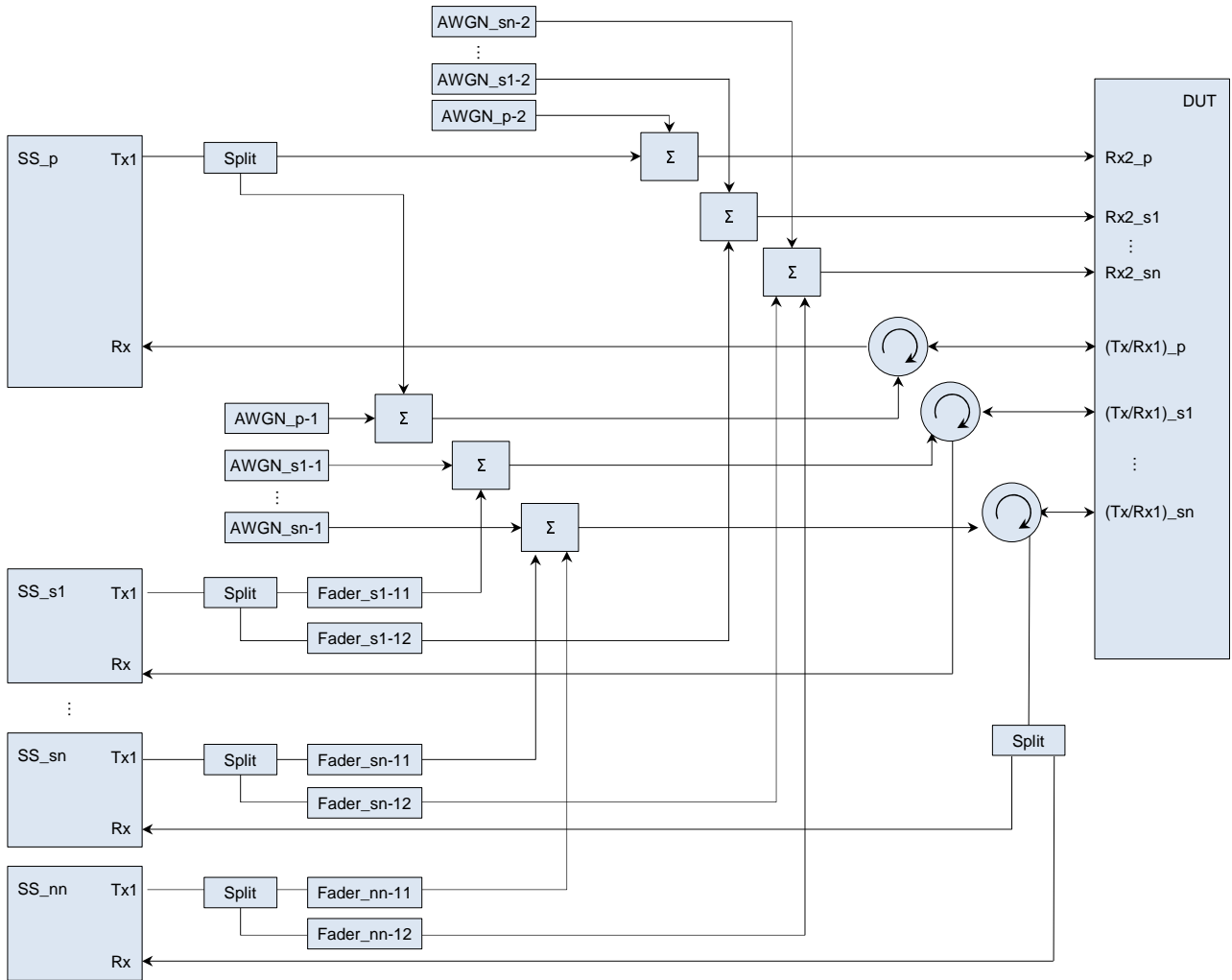


Figure A.64: Connection for CA(≥ 3CCs) with static PCC propagation channel, SCCs multipath fading propagation channels and additional intra-frequency cell on one SCC

Figure A.64a: Void

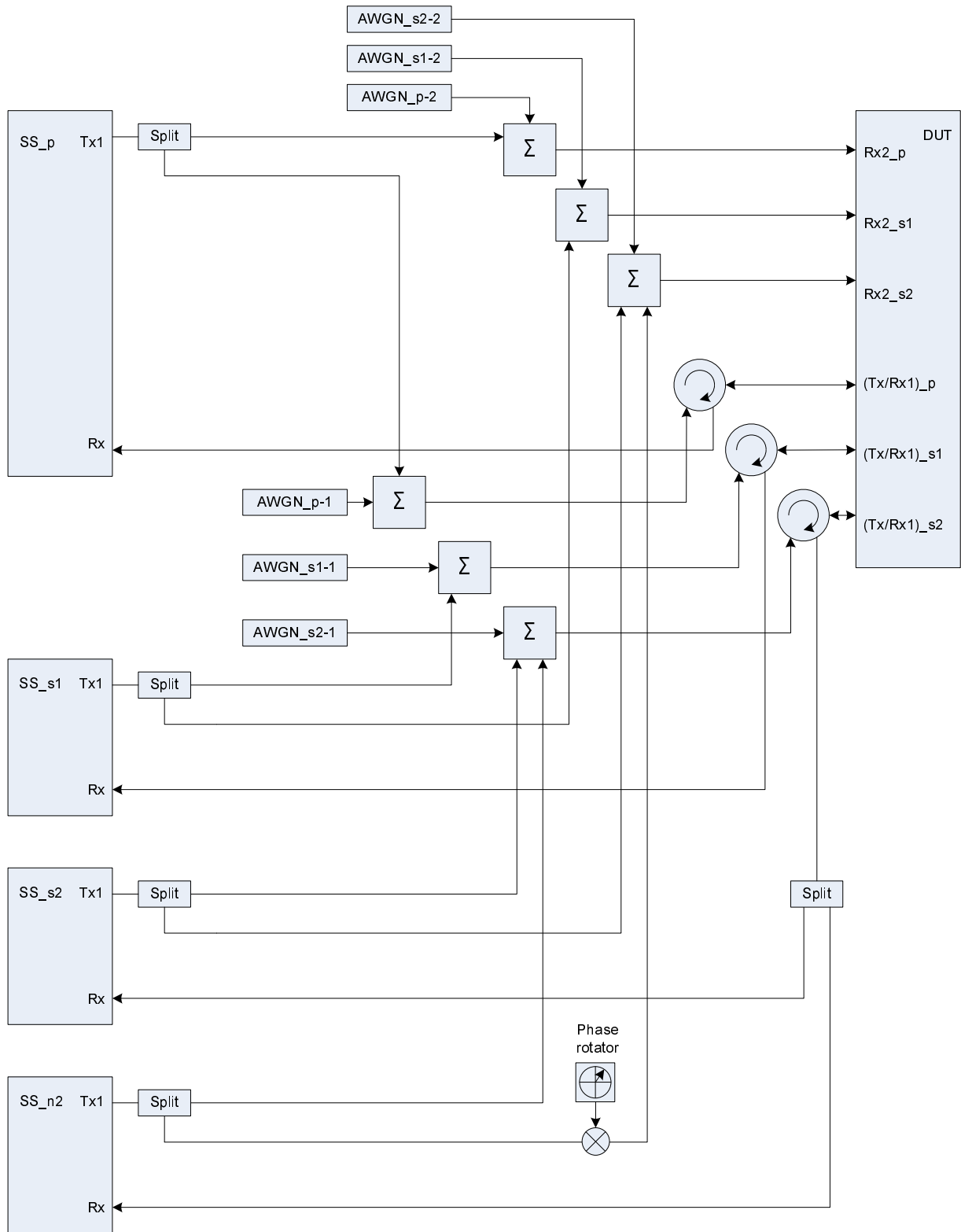


Figure A.65: Connection for 3DL CA with static propagation channels and additional intra-frequency cell on one SCC (the frequency offset used in phase rotator is 5 Hz)

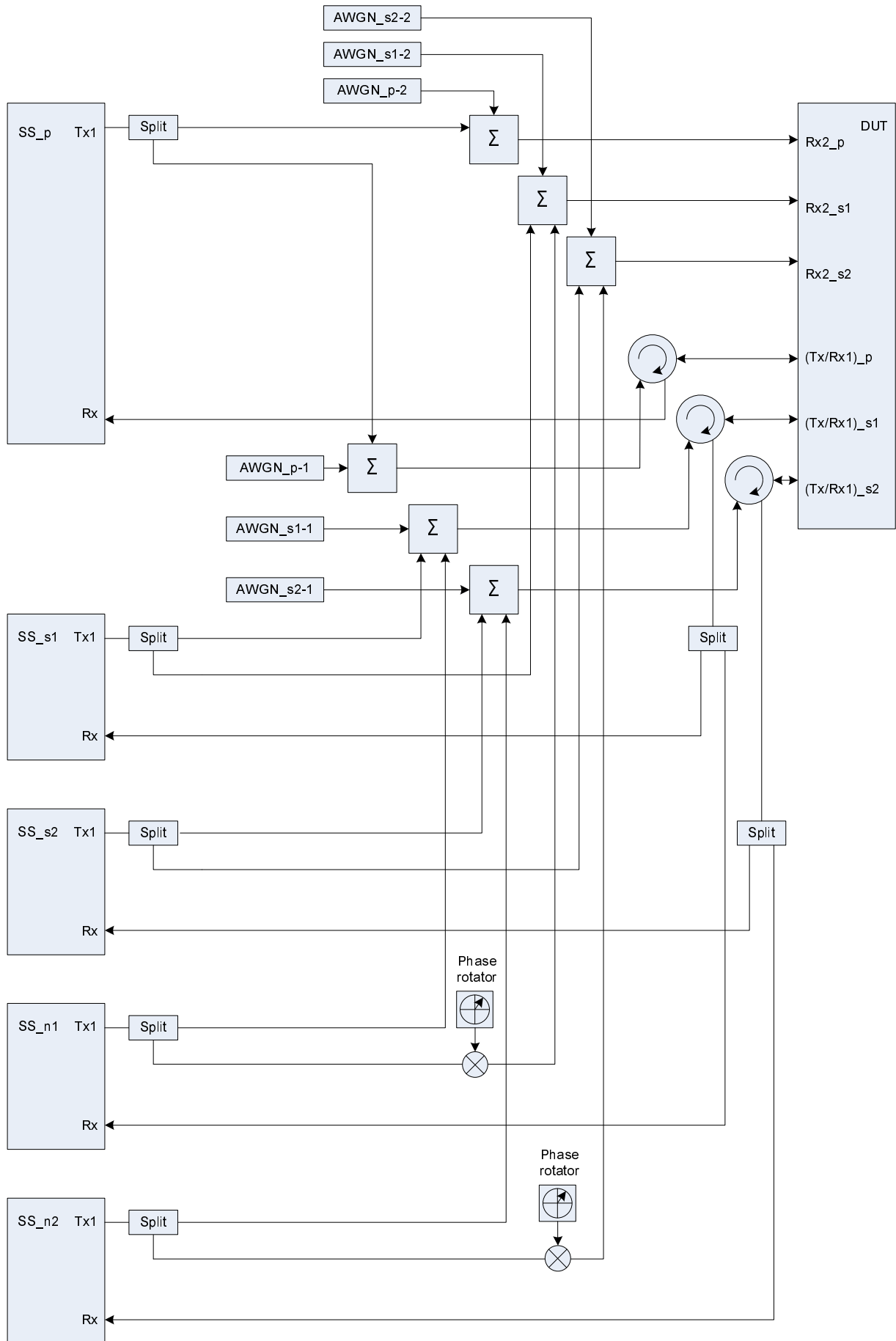


Figure A.66: Connection for 3DL CA with static propagation channels and additional intra-frequency cell(s) on both SCCs (the frequency offset used in phase rotators is 5 Hz)

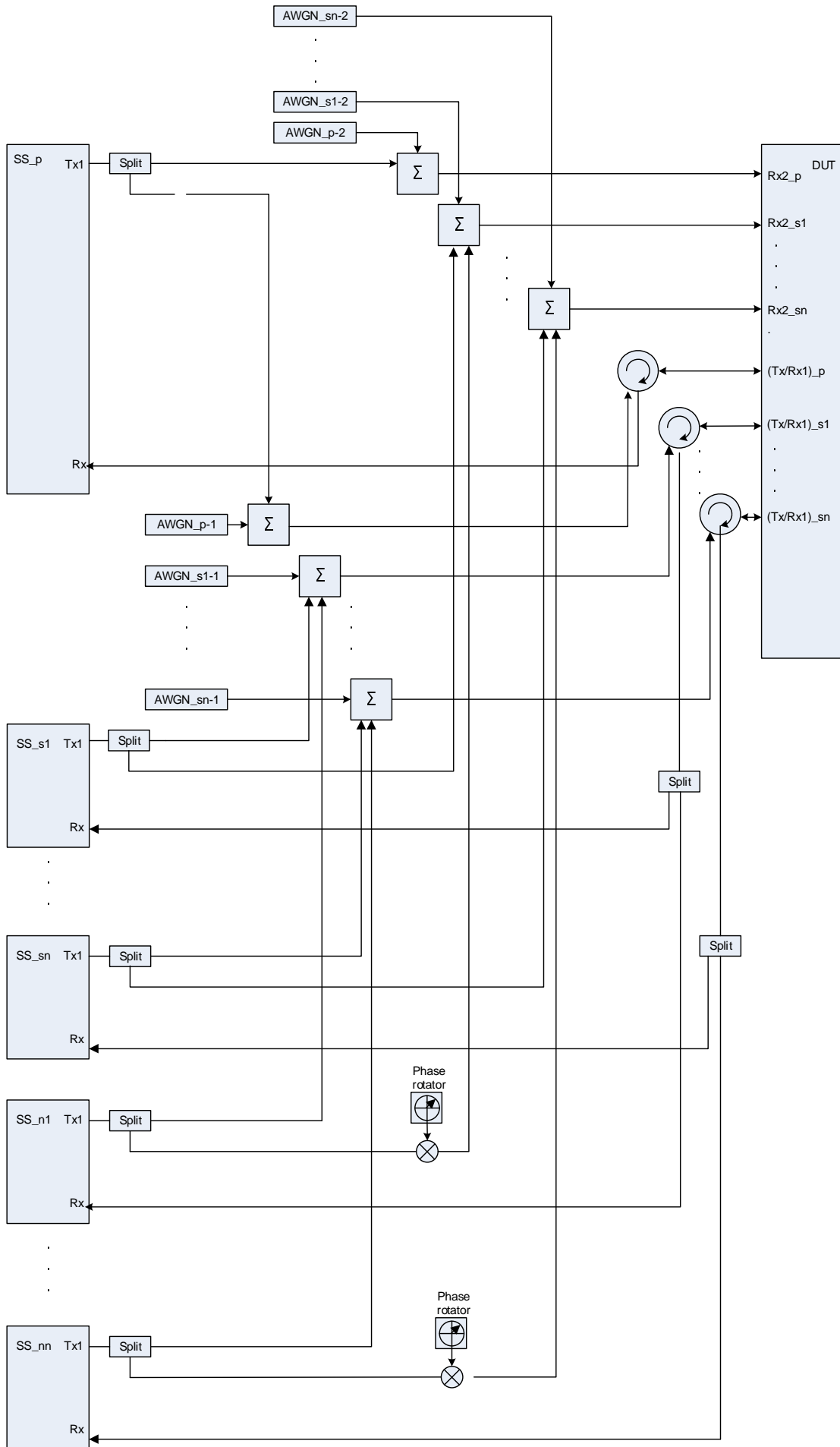


Figure A.66a: Connection for more than 3DL CA with static propagation channels and additional intra-frequency cell(s) on each SCC (the frequency offset used in phase rotators is 5 Hz)

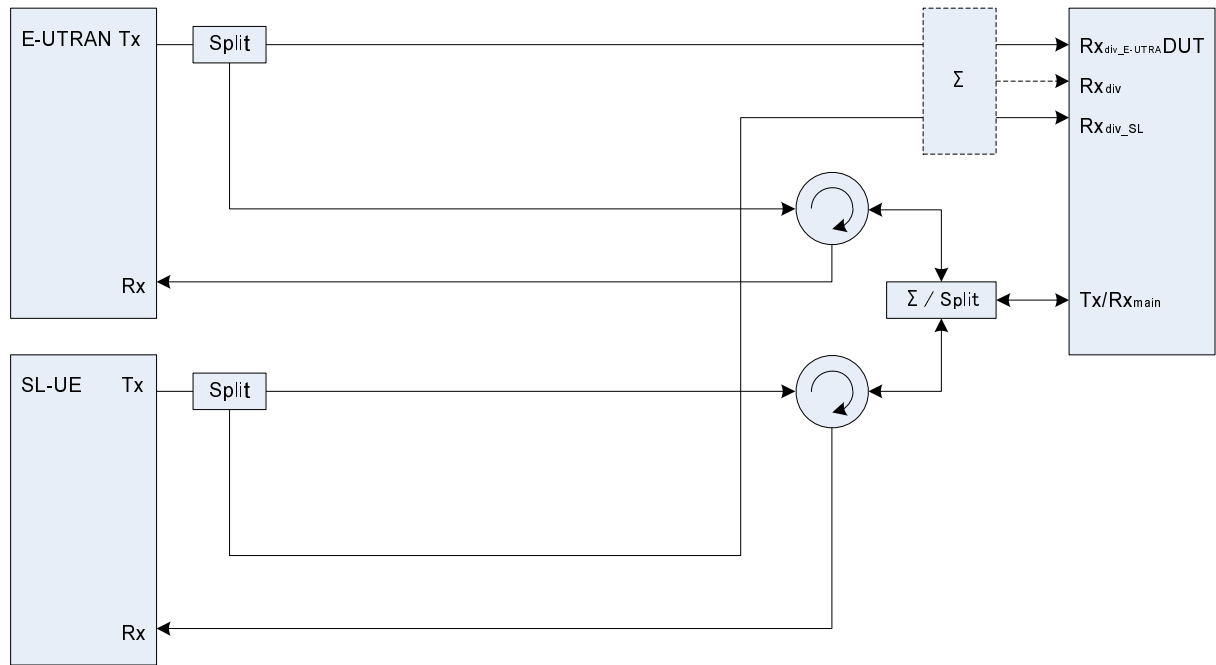


Figure A.67: Connection for Sidelink basic Tx/Rx testing

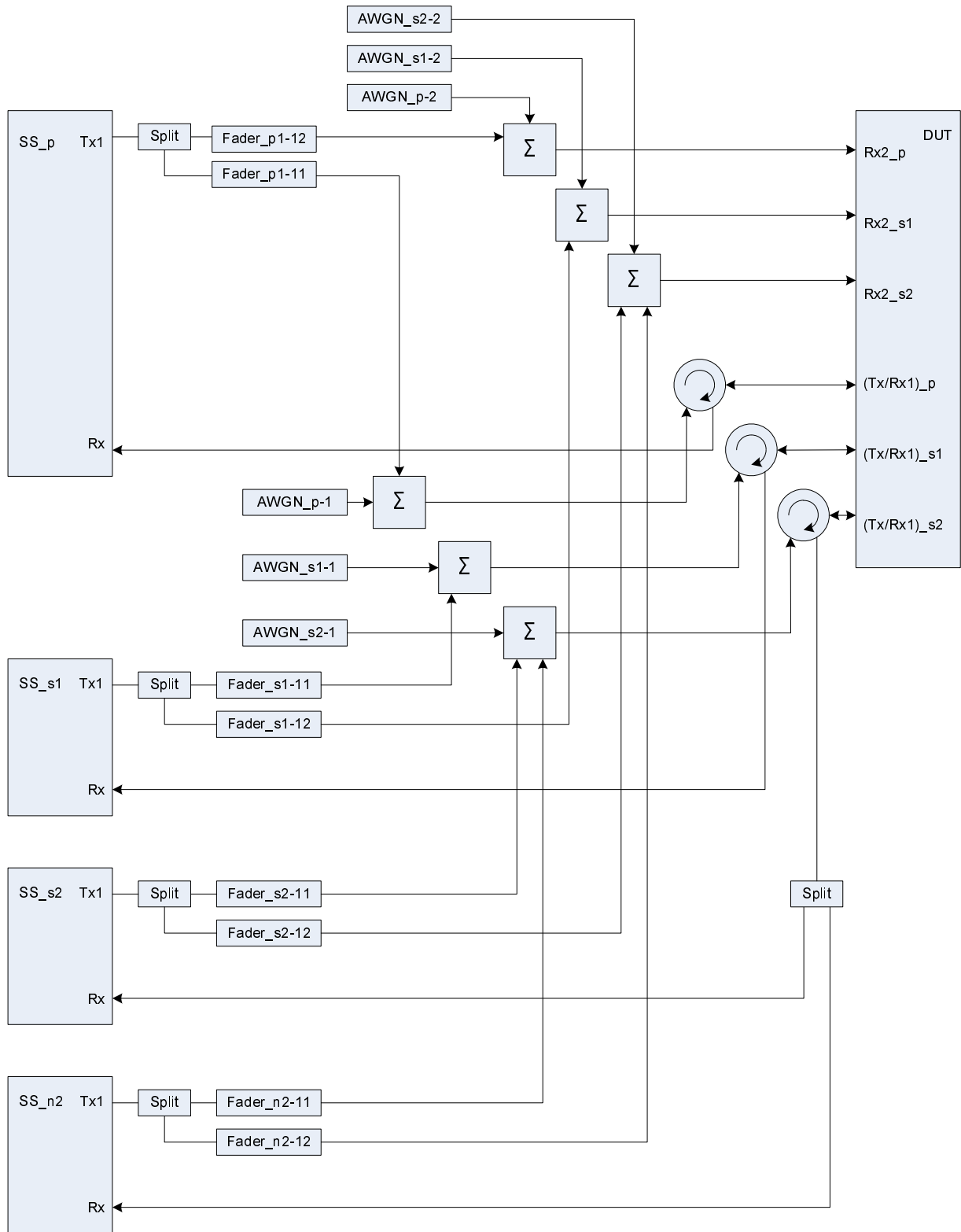


Figure A.68: Connection for 3DL CA with PCC and SCCs multipath fading propagation channels and additional intra-frequency cell on one SCC

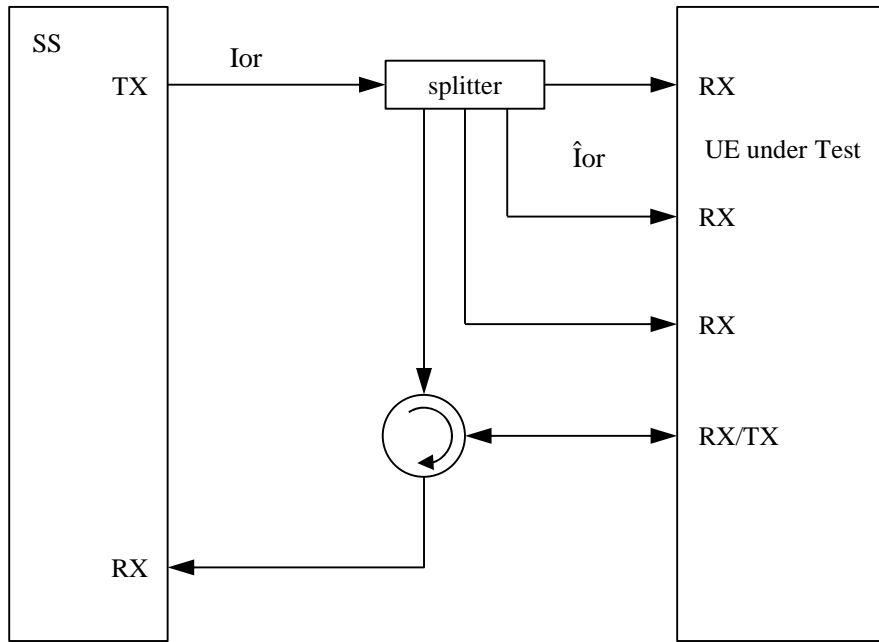


Figure A.69: Connection for Receiver test with 4 Rx antenna ports

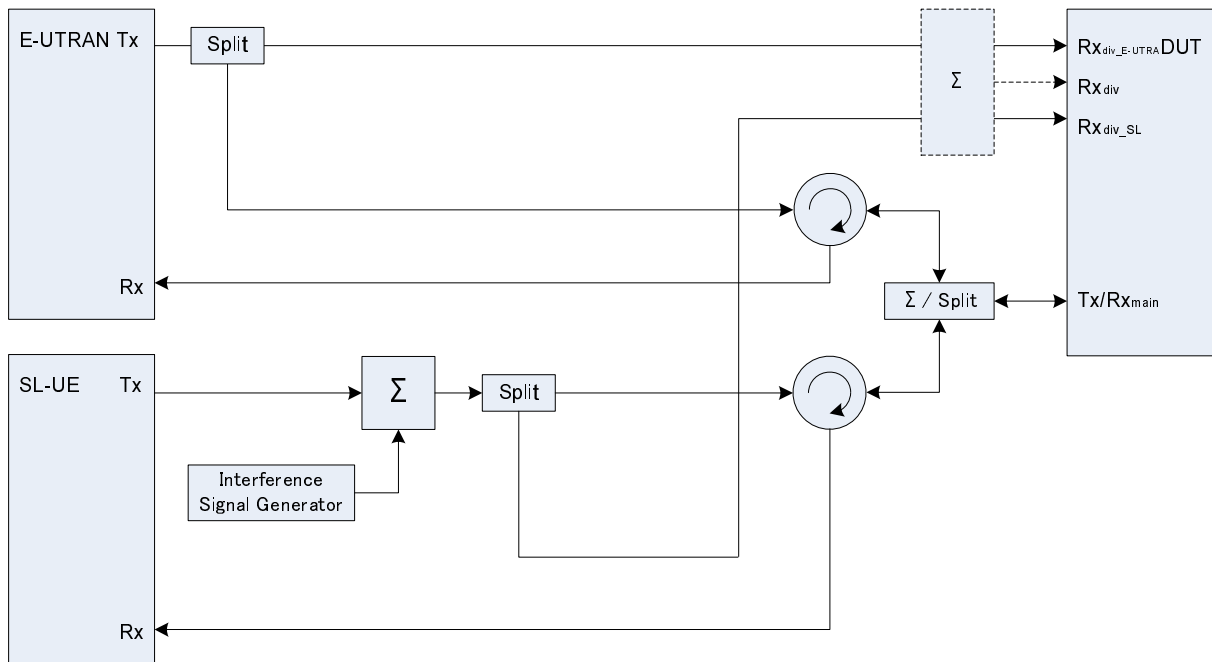


Figure A.70: Connection for Sidelink Receiver tests with E-UTRA-Interference

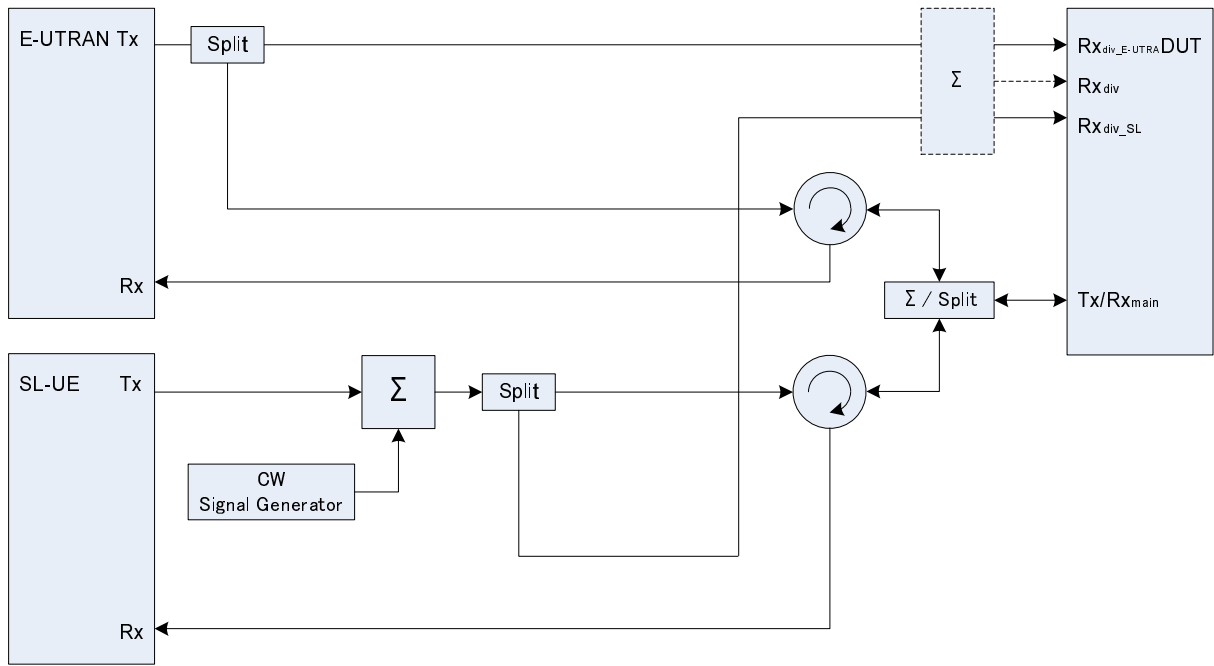


Figure A.71: Connection for Sidelink Receiver tests with CW interferer

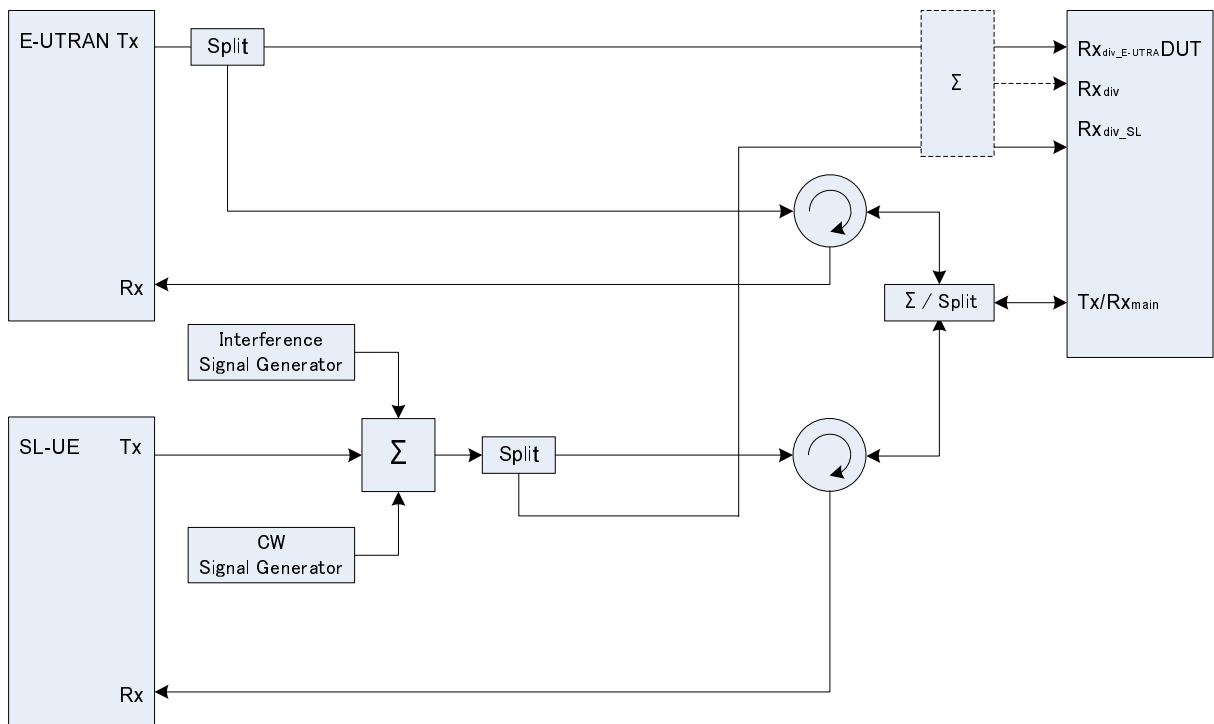


Figure A.72: Connection for Sidelink Receiver tests with both E-UTRA Interference and additional CW interferer

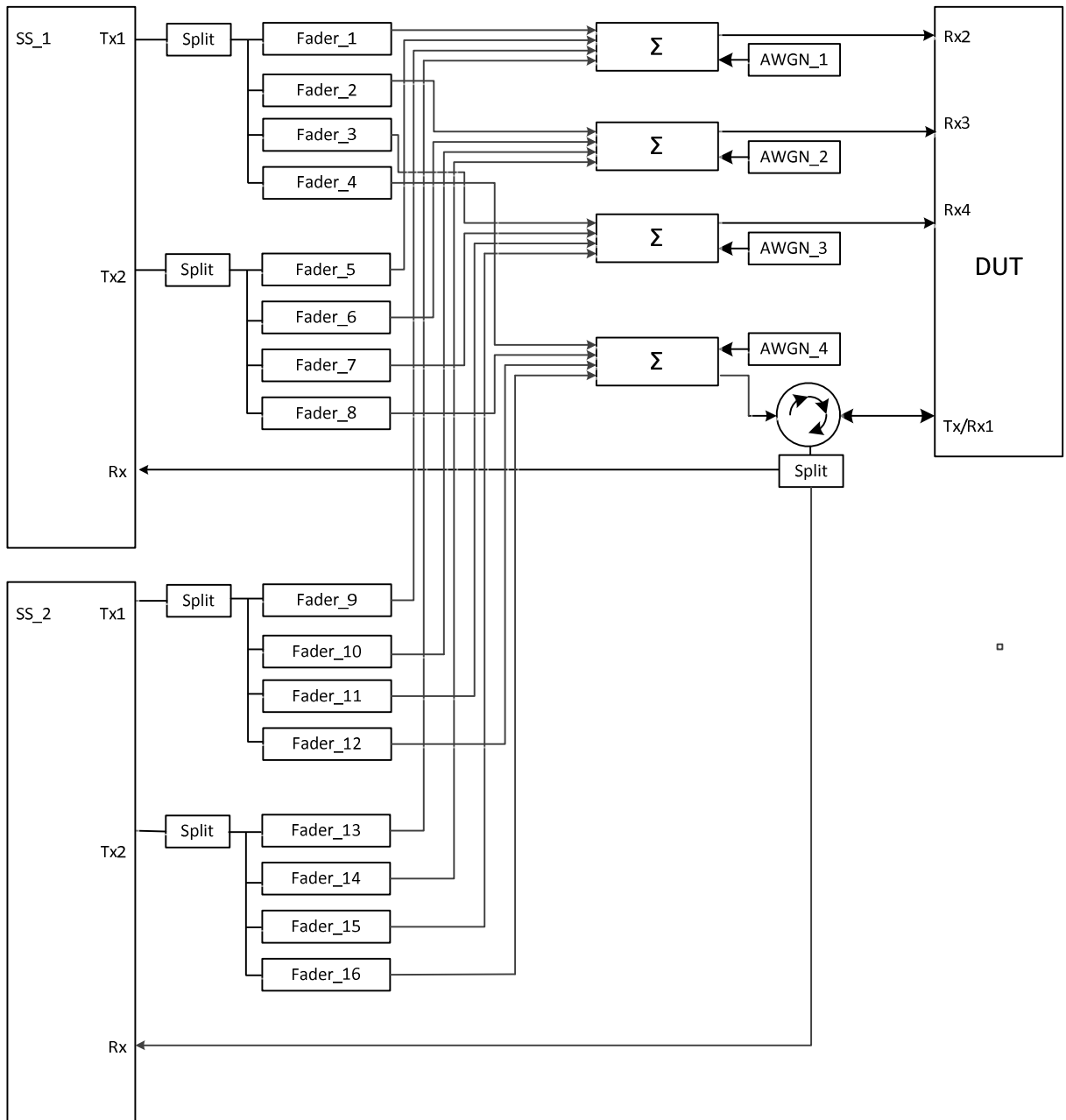


Figure A.73: Connection for 2 Cells (TPs) with antenna configuration 2x4 and fading

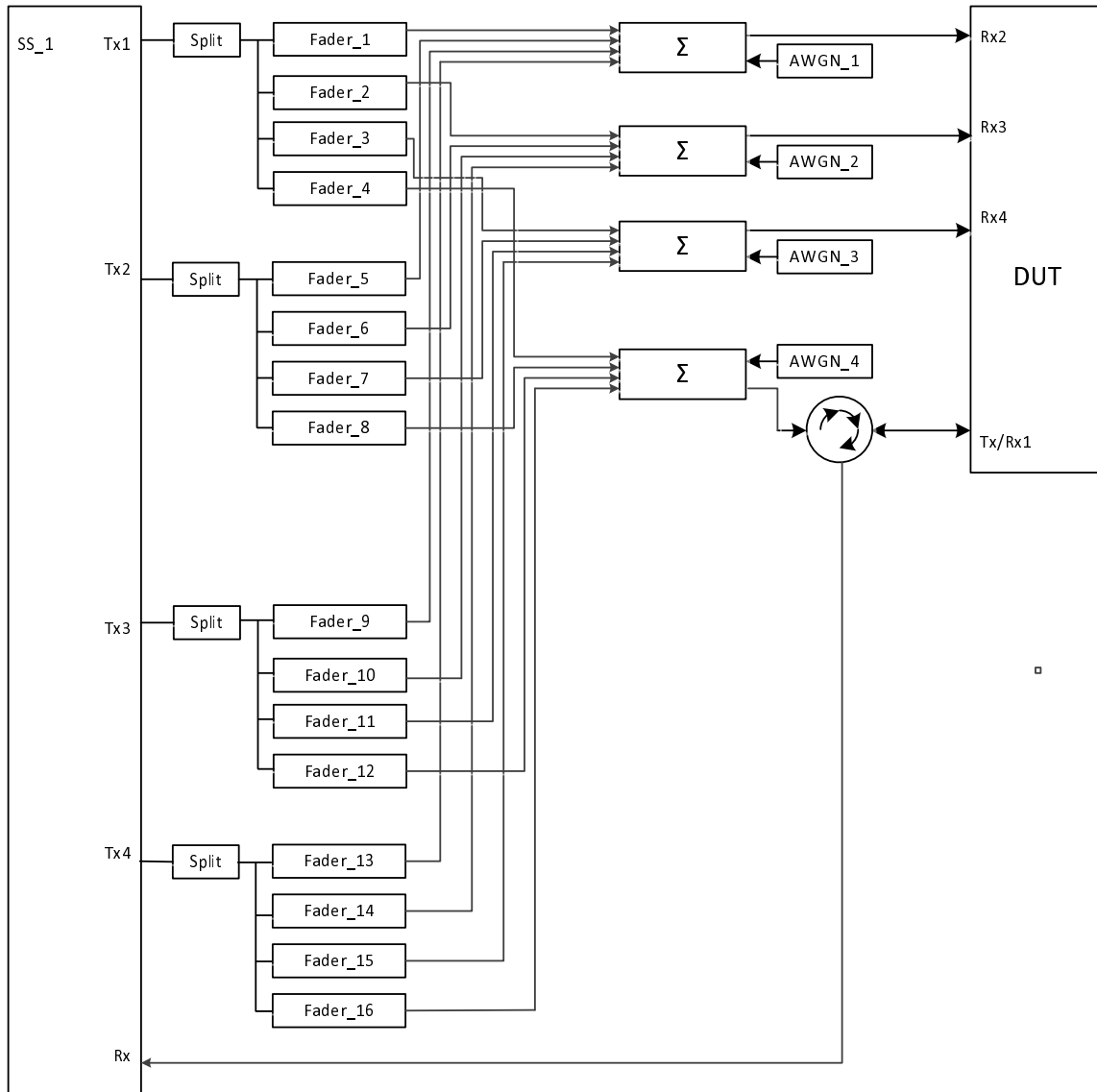


Figure A.74: Connection for RX performance tests with antenna configuration 4x4

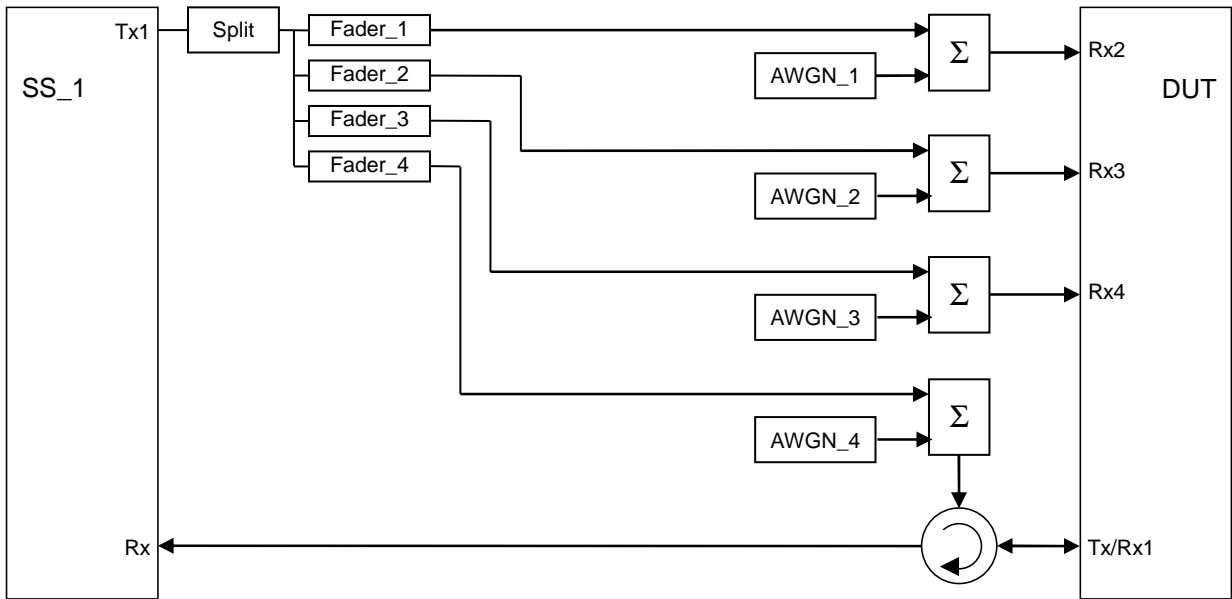


Figure A.75: Connection for RX performance tests with antenna configuration 1x4

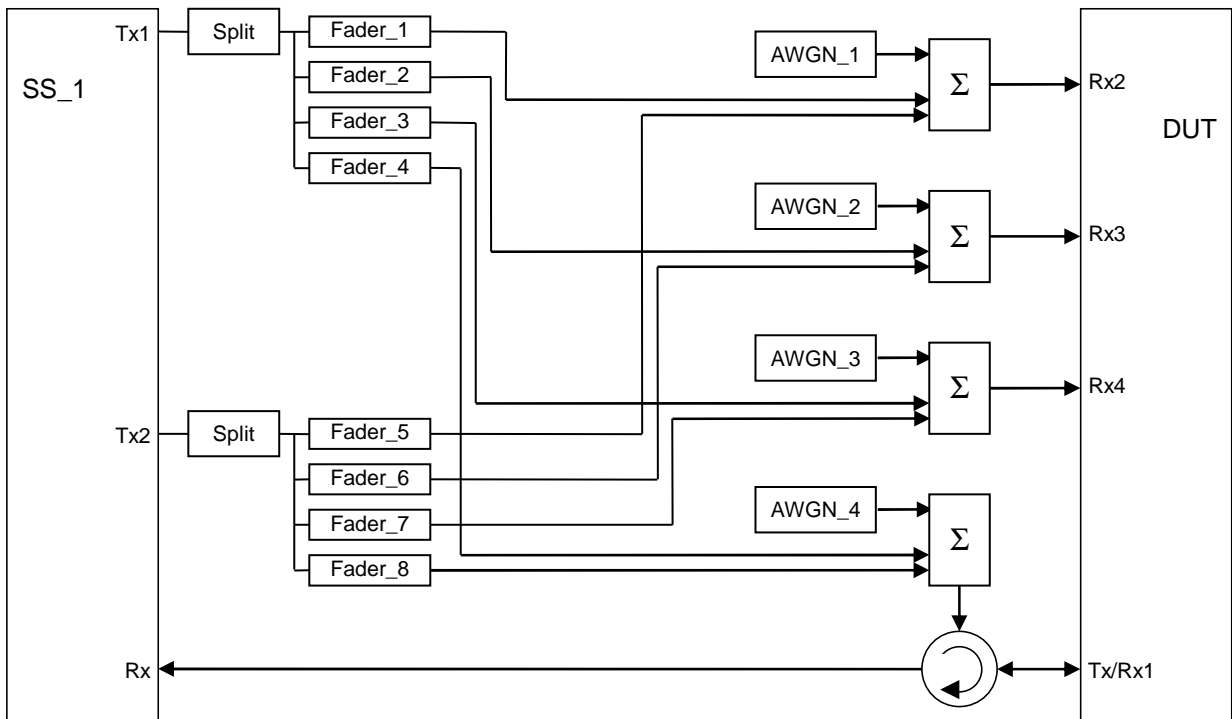


Figure A.76: Connection for RX performance tests with antenna configuration 2x4

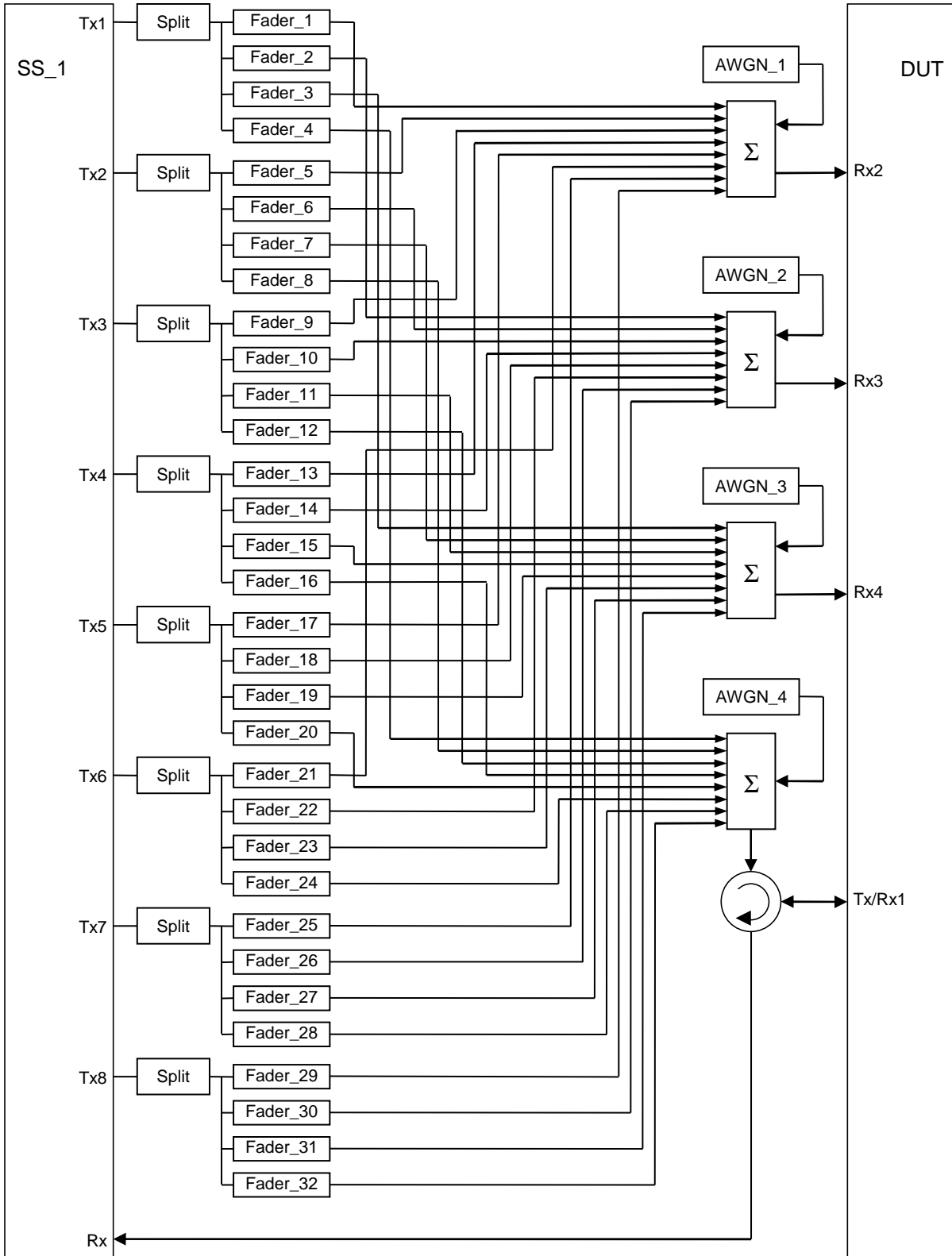


Figure A.77: Connection for RX performance tests with antenna configuration 8x4

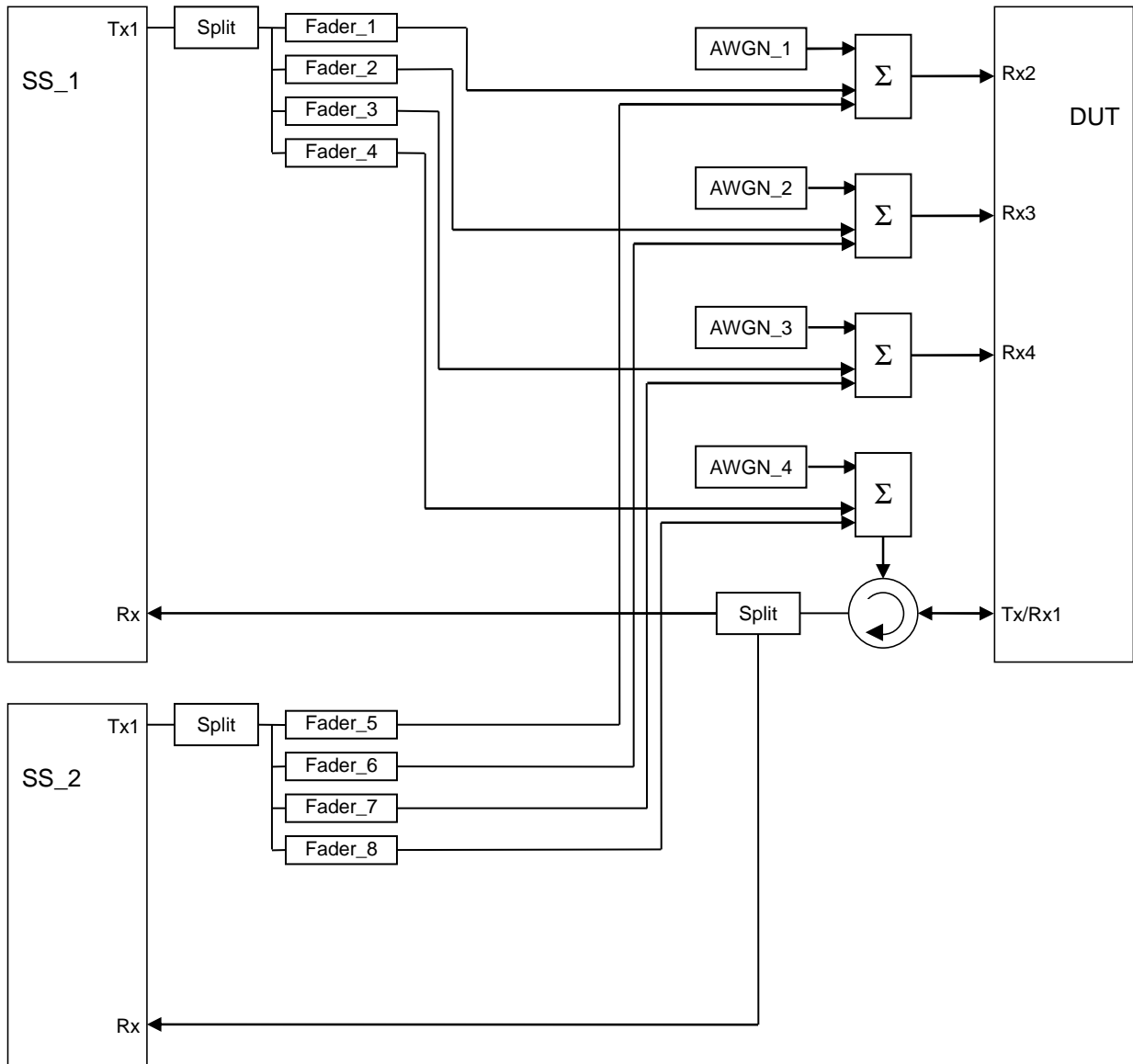


Figure A.78: Connection for 2 Cells (TPs) with antenna configuration 1x4 and fading

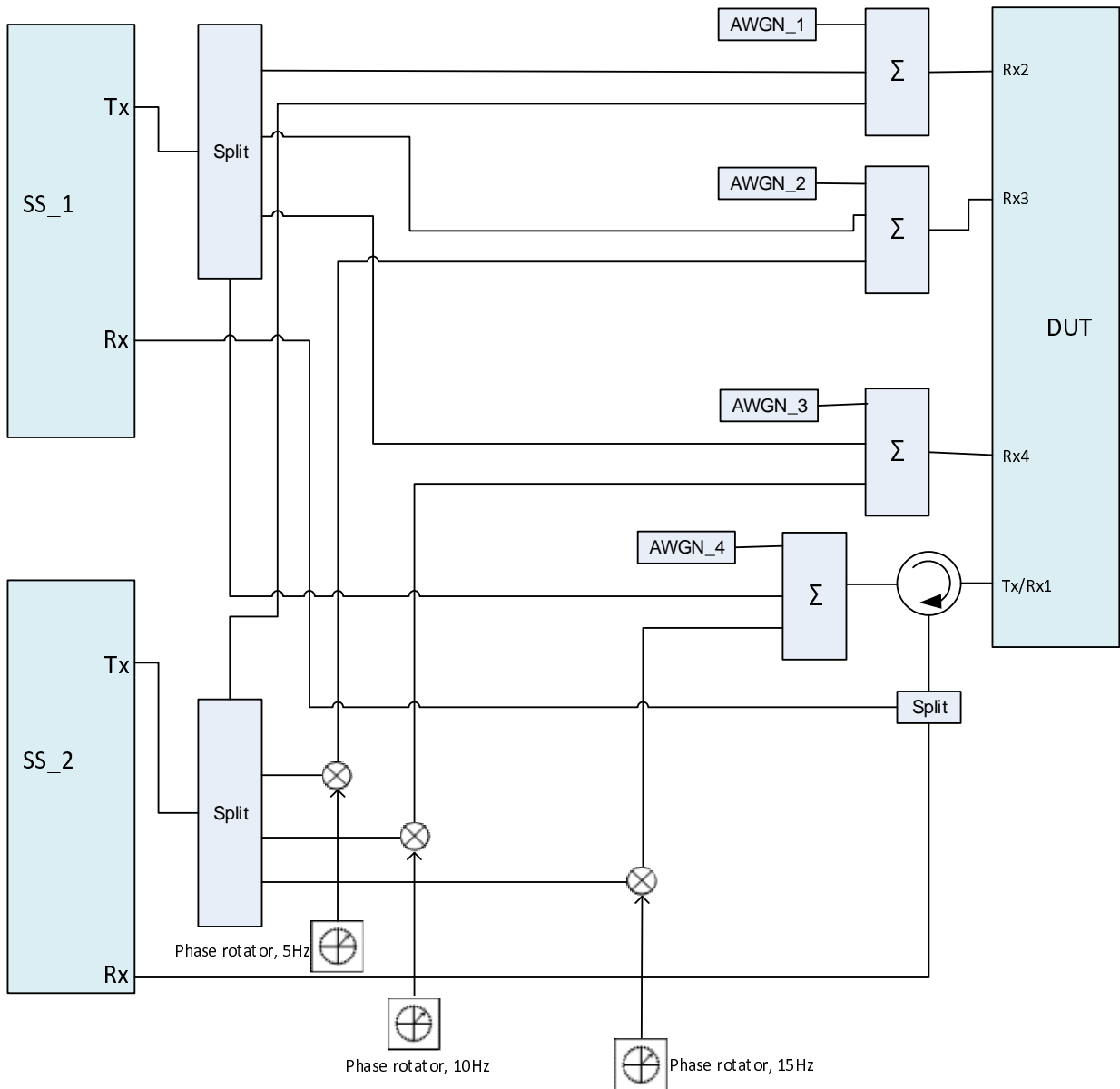


Figure A.78a: Connection for 2 Cells (TPs) with antenna configuration 1x4 and phase rotators (The frequency offset used in the phase rotators is 5, 10 and 15 Hz respectively)

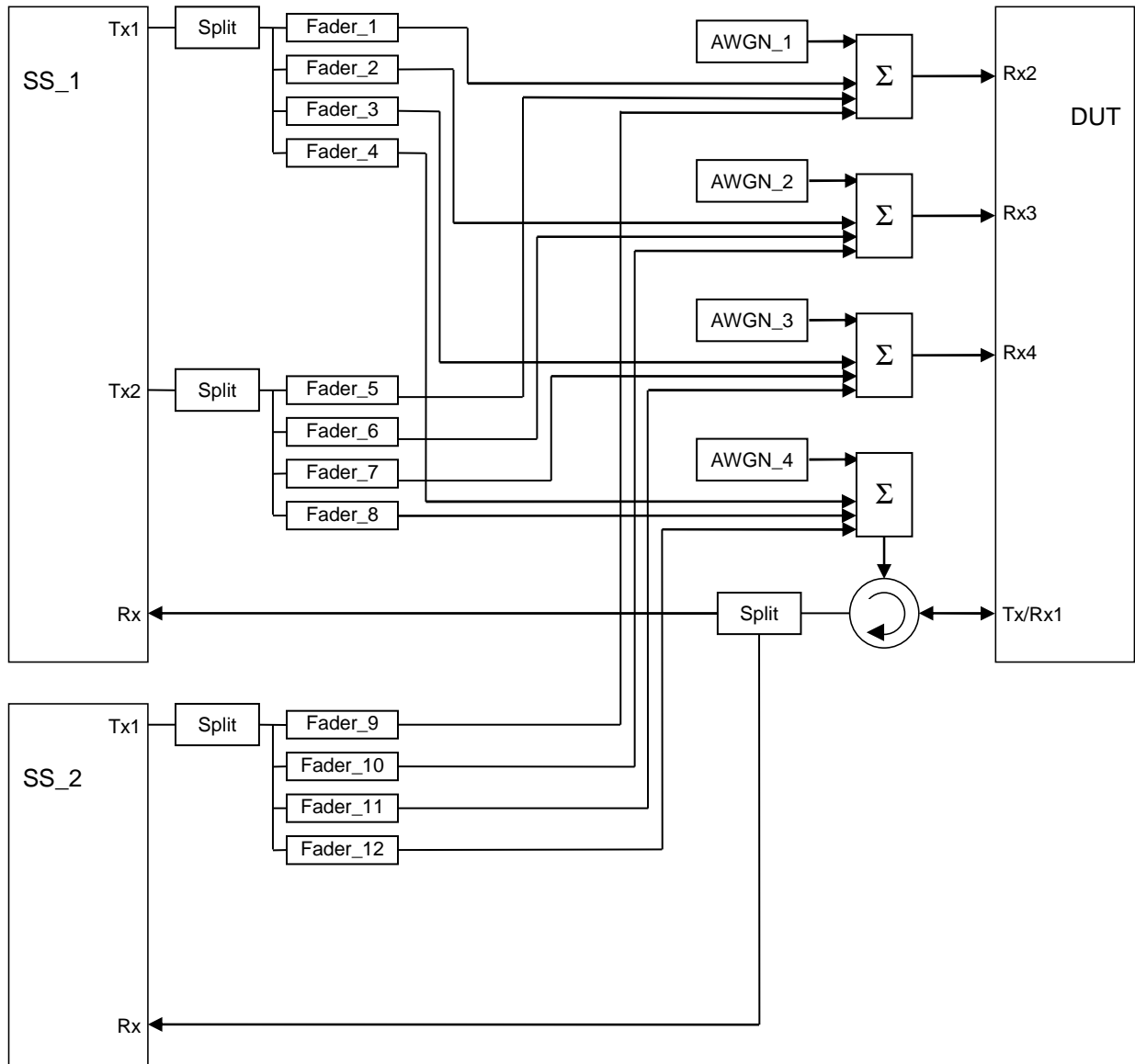


Figure A.79: Connection for 2 Cells (TPs) with antenna configuration 2x4 / 1x4 and fading

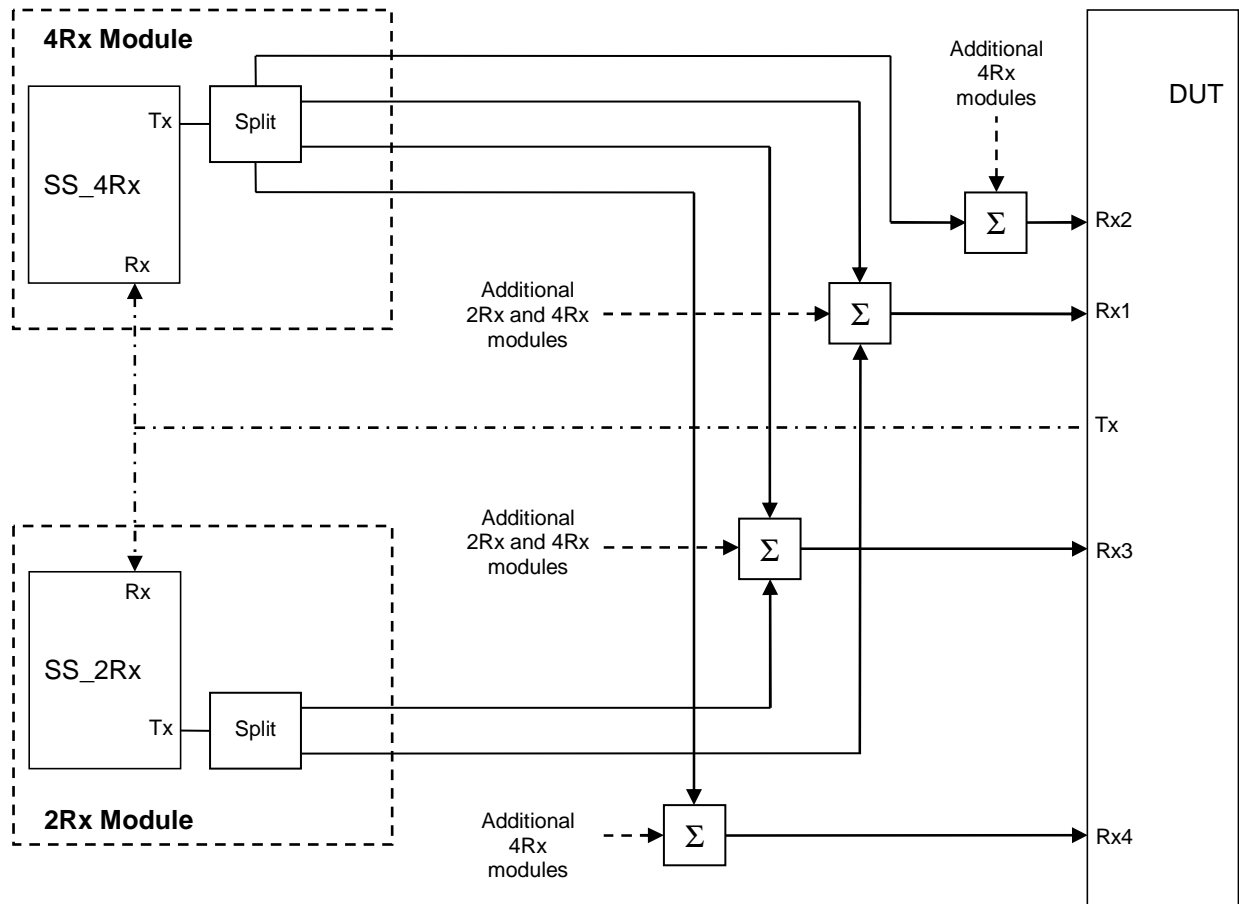


Figure A.80: Connection to enable Receiver tests for CA on a 4Rx-capable UE with CCs on both 4Rx-supported RF bands and 2Rx-supported RF bands

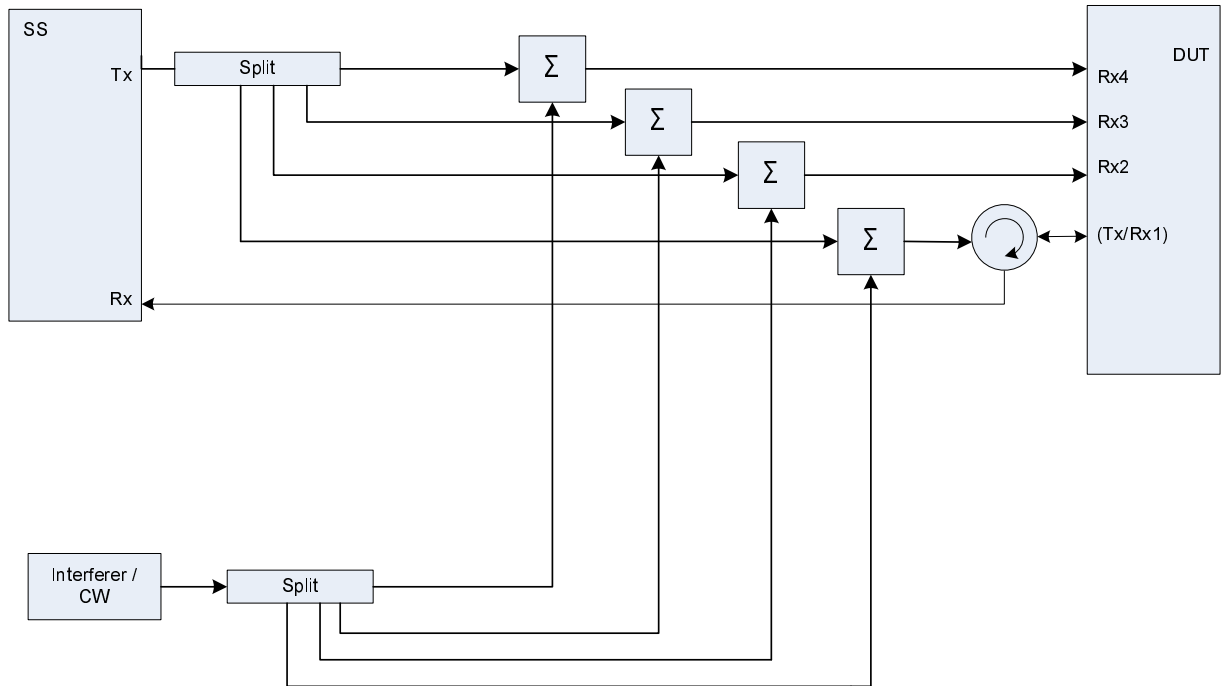


Figure A.81: Connection for Receiver tests with interferer(s) and 4 Rx antenna ports

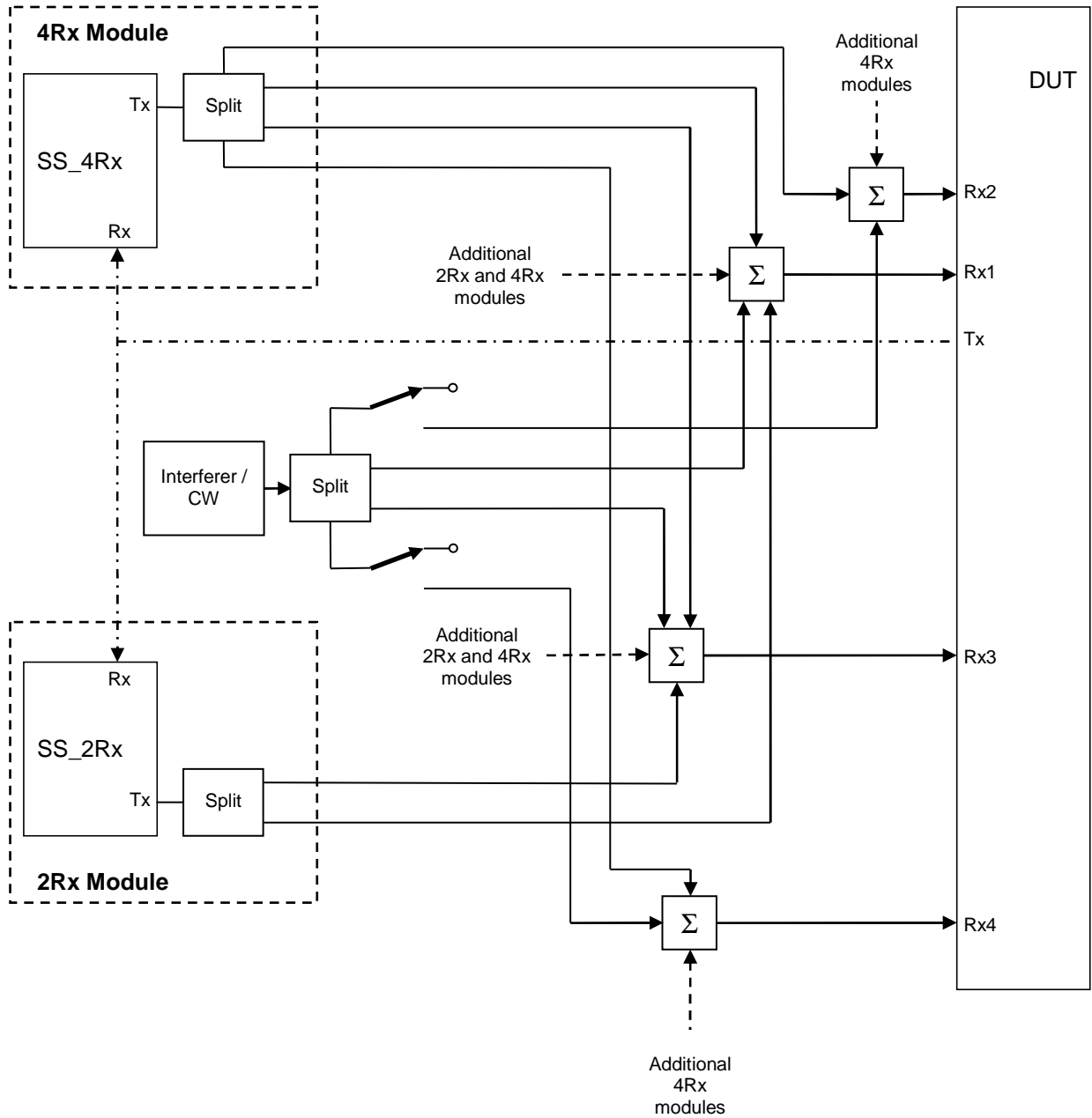


Figure A.82: Connection to enable Receiver tests for CA with additional Interferer on a 4Rx-capable UE with CCs on both 4Rx-supported RF bands and 2Rx-supported RF bands

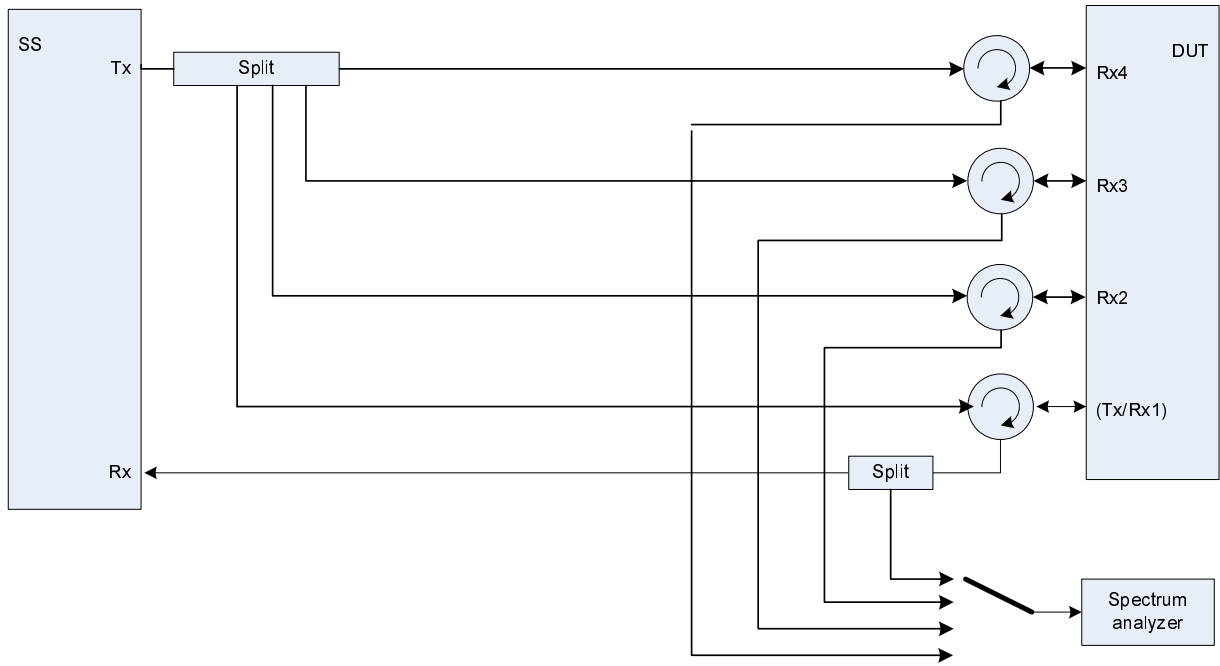


Figure A.83: Connection for Receiver tests with 4 Rx antenna ports and additional spectrum analyzer

Figure A.84: Void

Figure A.84a: Void

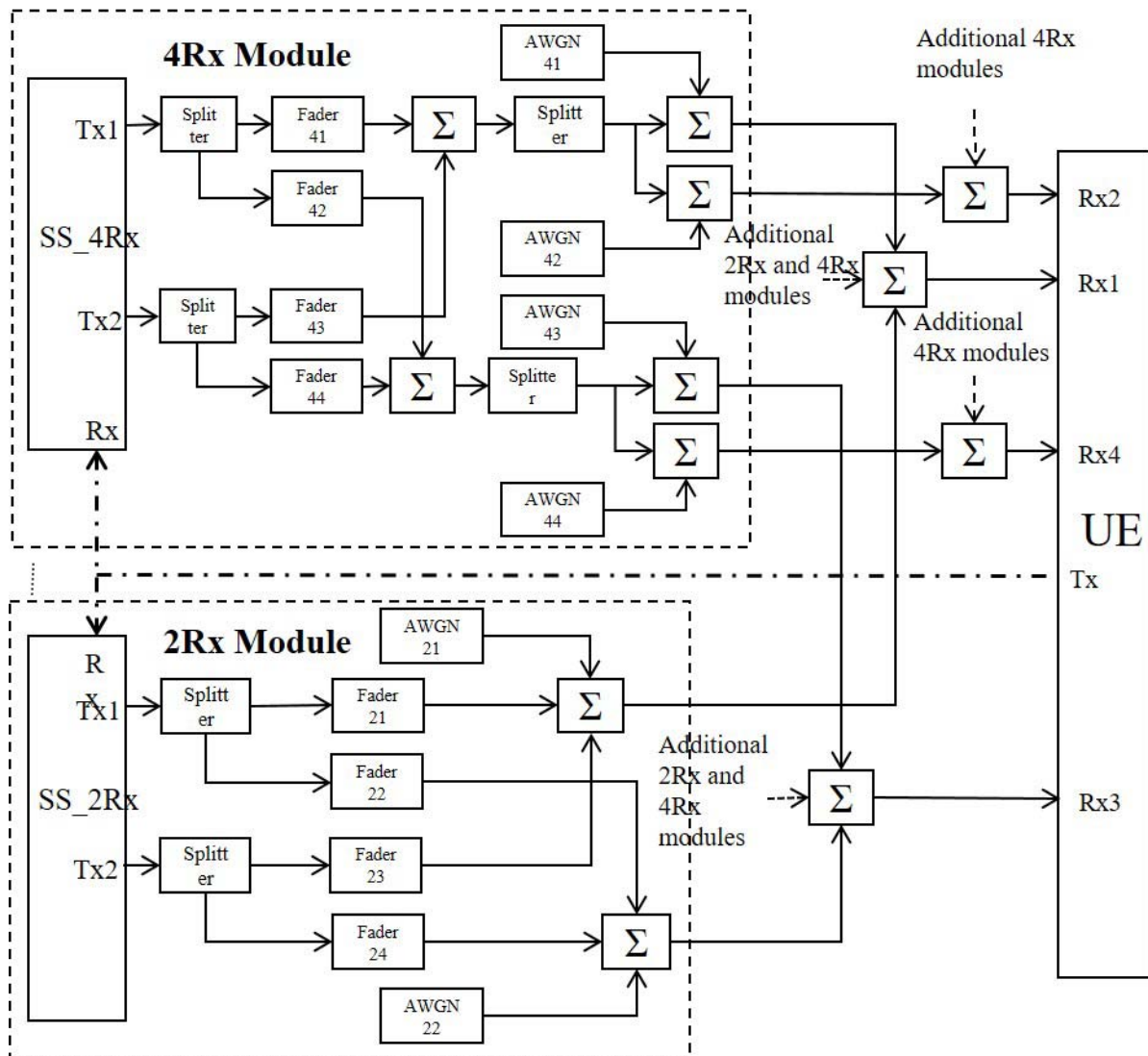


Figure A.85: Connection Diagram to enable Carrier Aggregation tests (with 2x2 channel) on a 4Rx-capable UE with CCs on both 4Rx-supported RF bands and 2Rx-supported bands

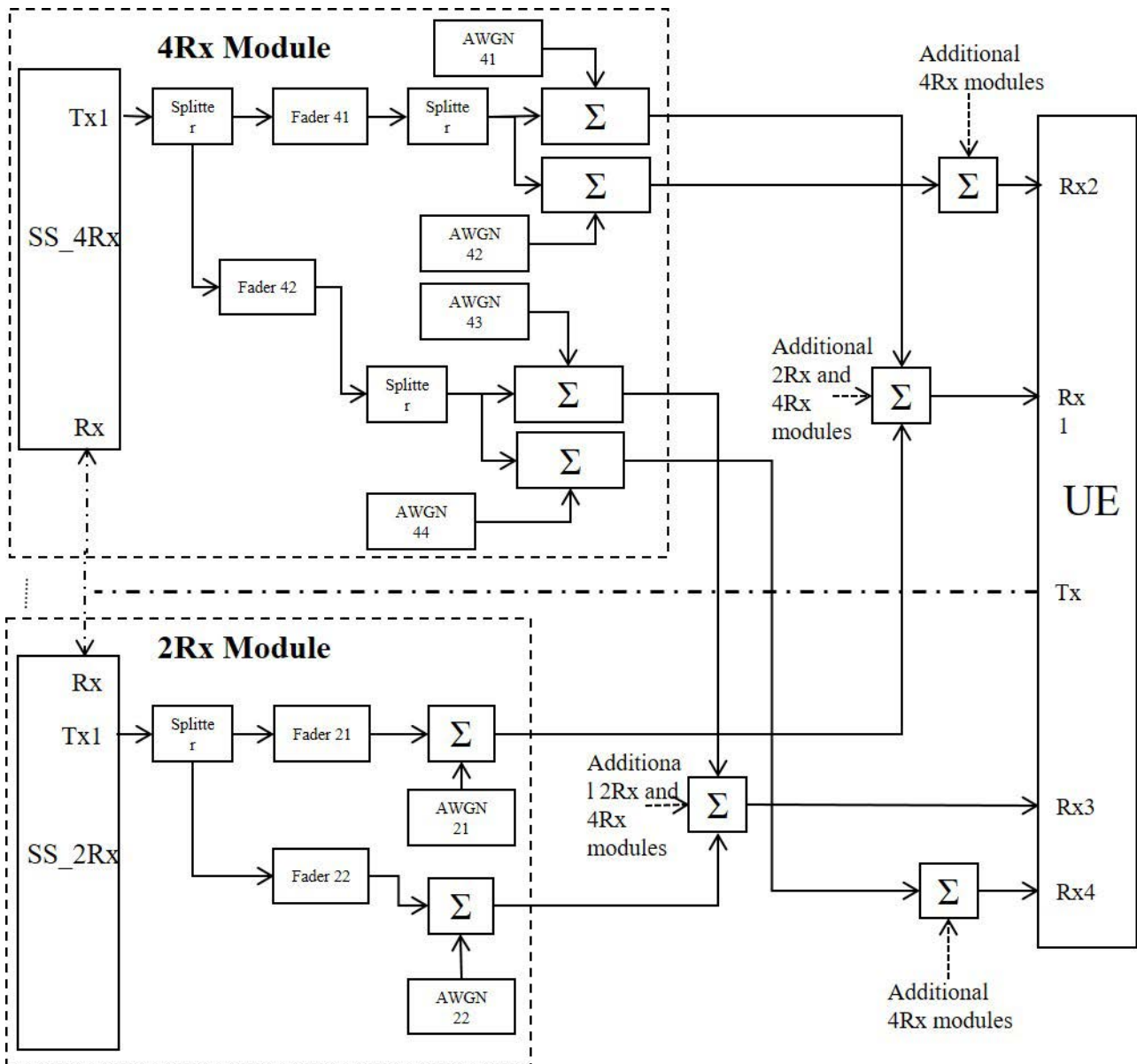


Figure A.86: Connection Diagram to enable Carrier Aggregation tests (with 1x2 channel) on a 4Rx-capable UE with CCs on both 4Rx-supported RF bands and 2Rx-supported bands

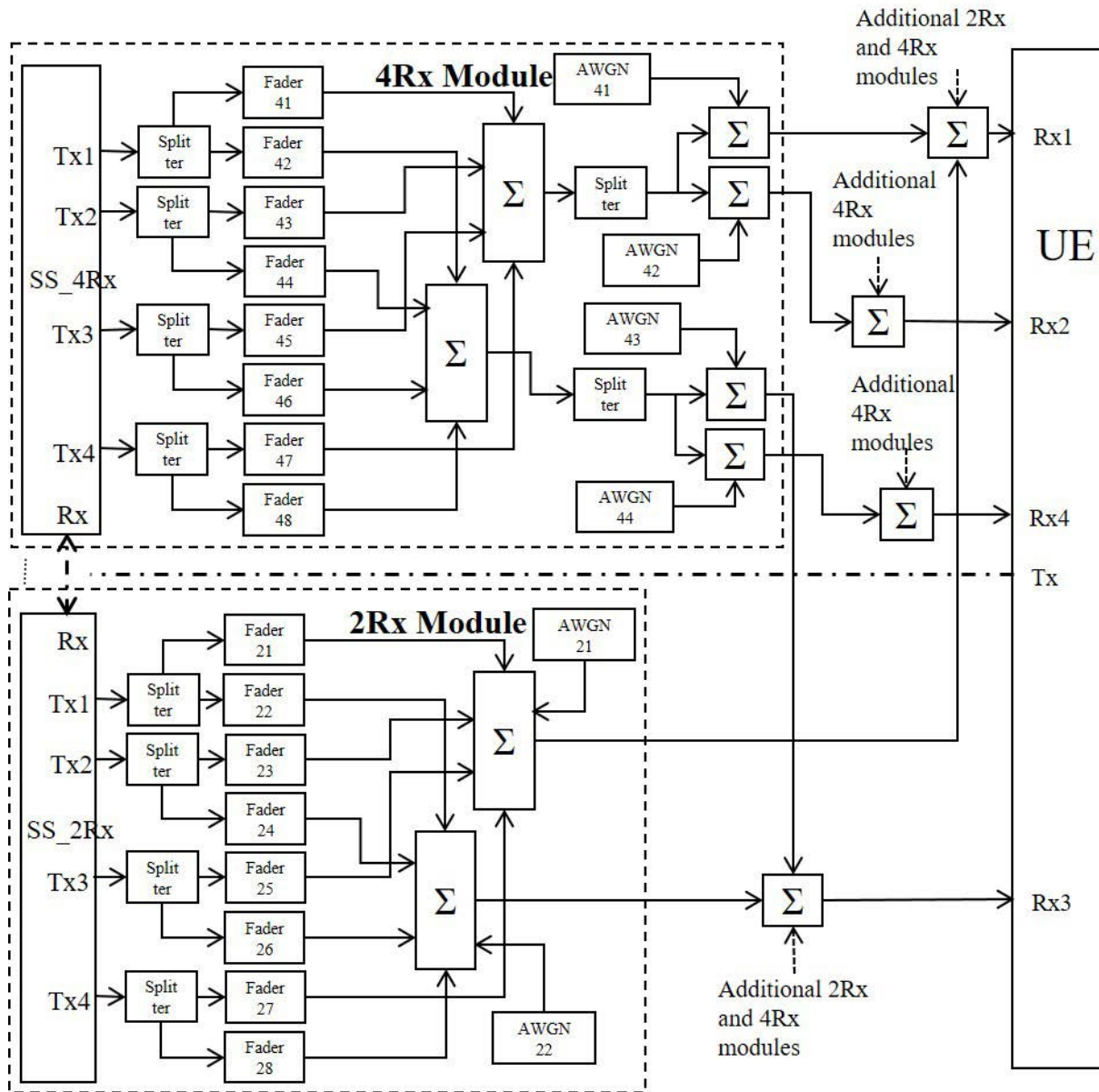


Figure A.87: Connection Diagram to enable Carrier Aggregation tests (with 4x2 channel) on a 4Rx-capable UE with CCs on both 4Rx-supported RF bands and 2Rx-supported bands

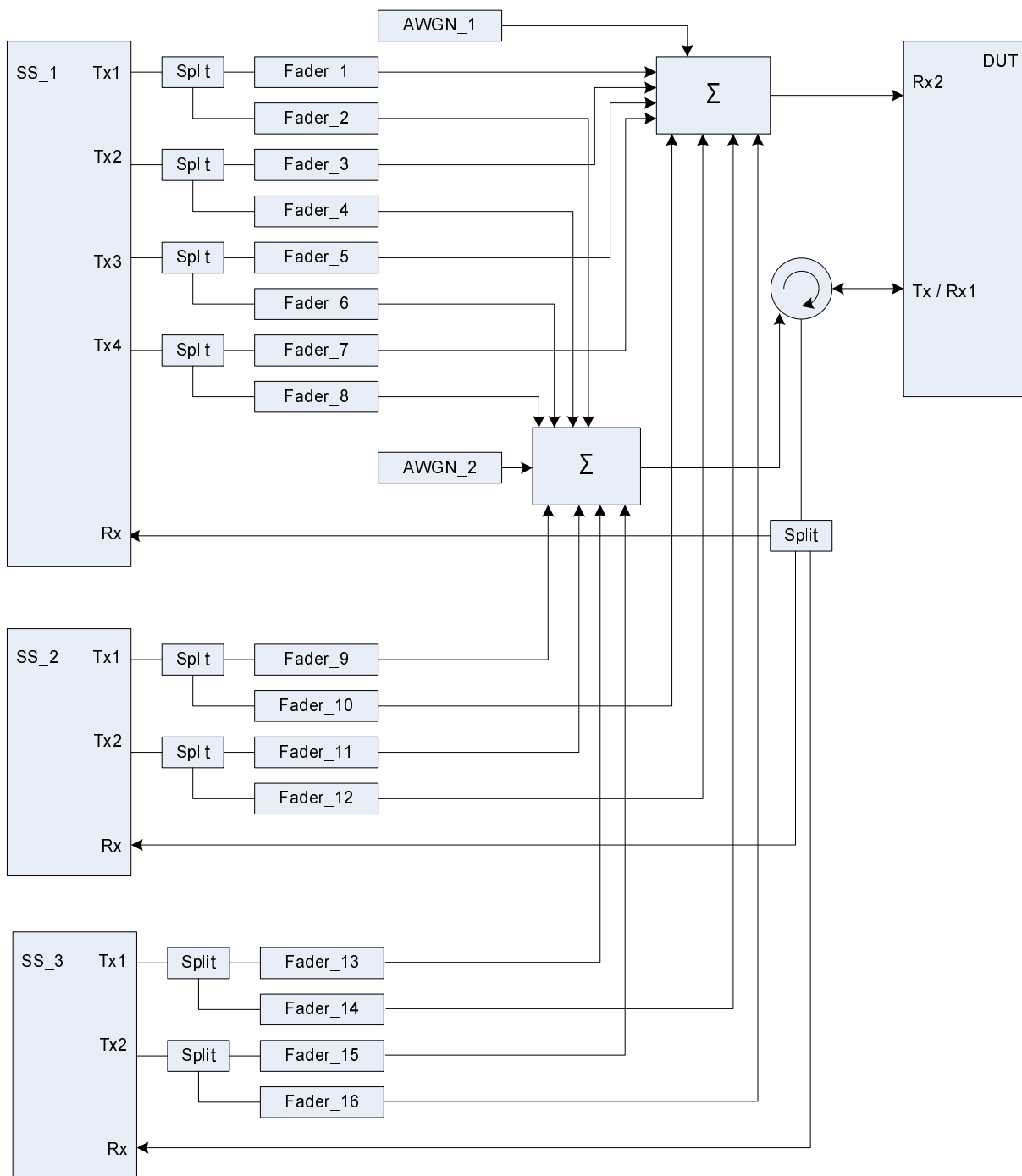


Figure A.88: Connection for 3 Cells (TPs) with antenna configuration 4x2 / 2x2 / 2x2 and fading

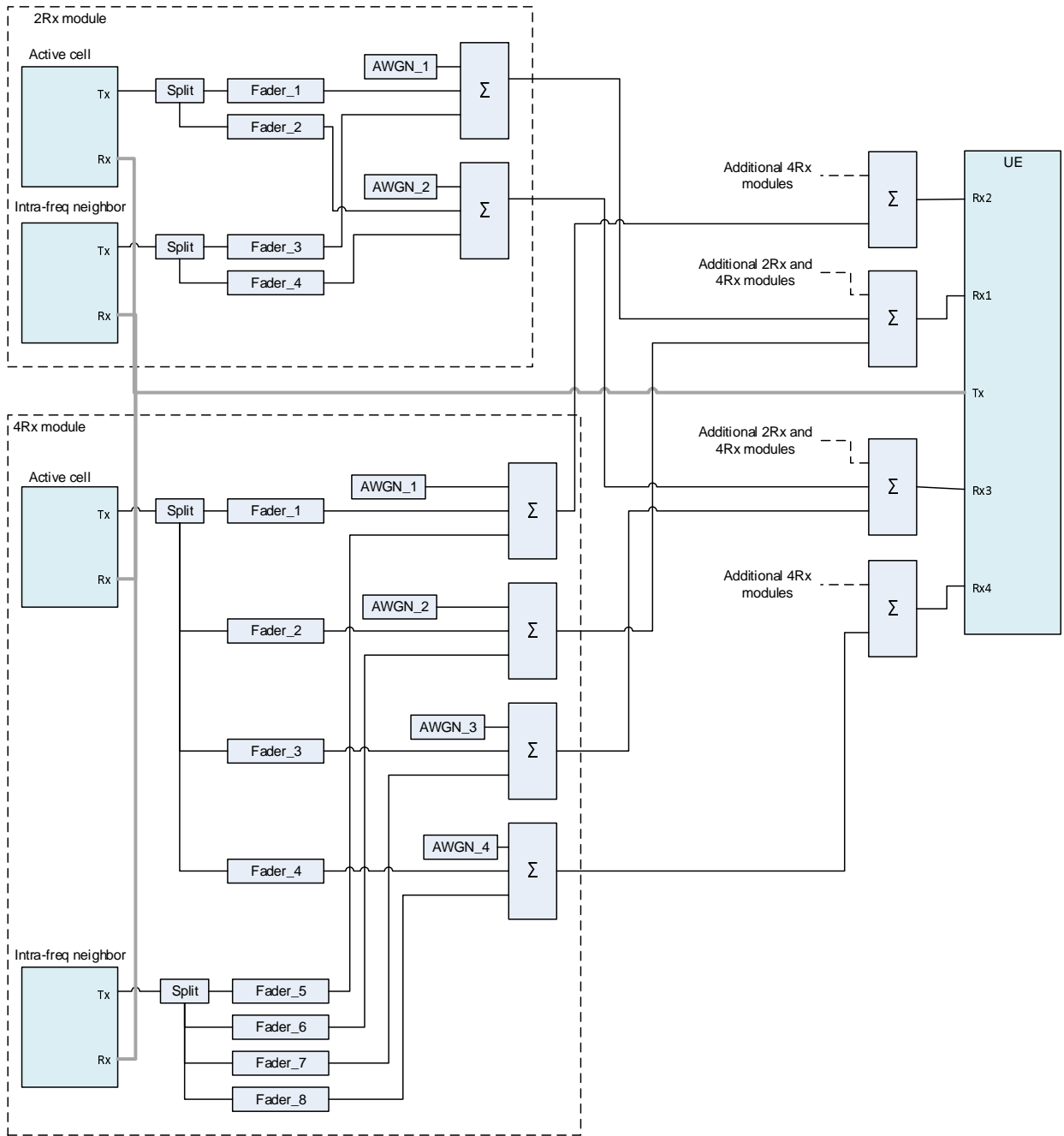


Figure A.89: Connection for CA with Fading and additional intra-frequency cell for 4Rx antenna ports

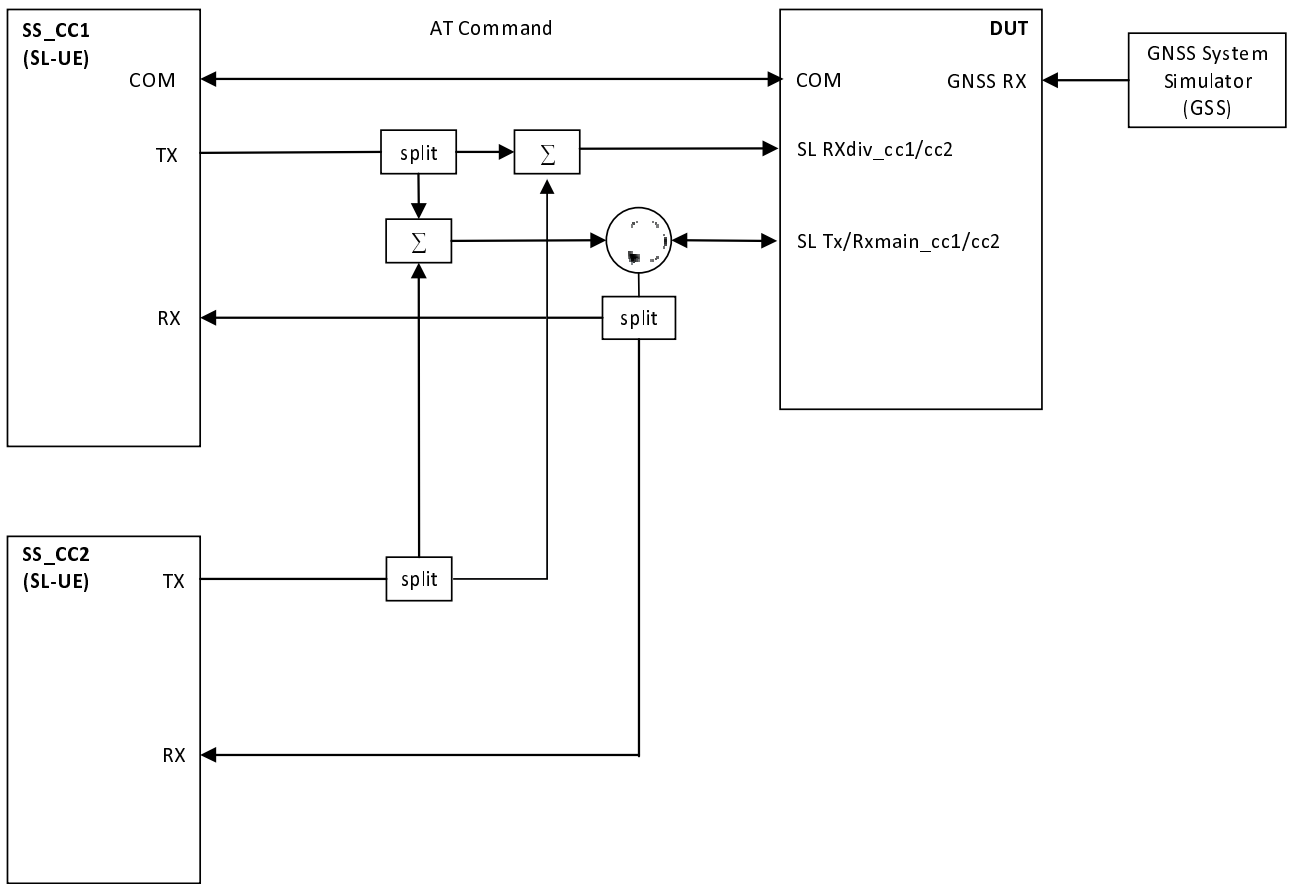


Figure A.89a: Connection for V2X Communication / Intra-band contiguous multi-carrier operation (common connectors, same UL antenna)

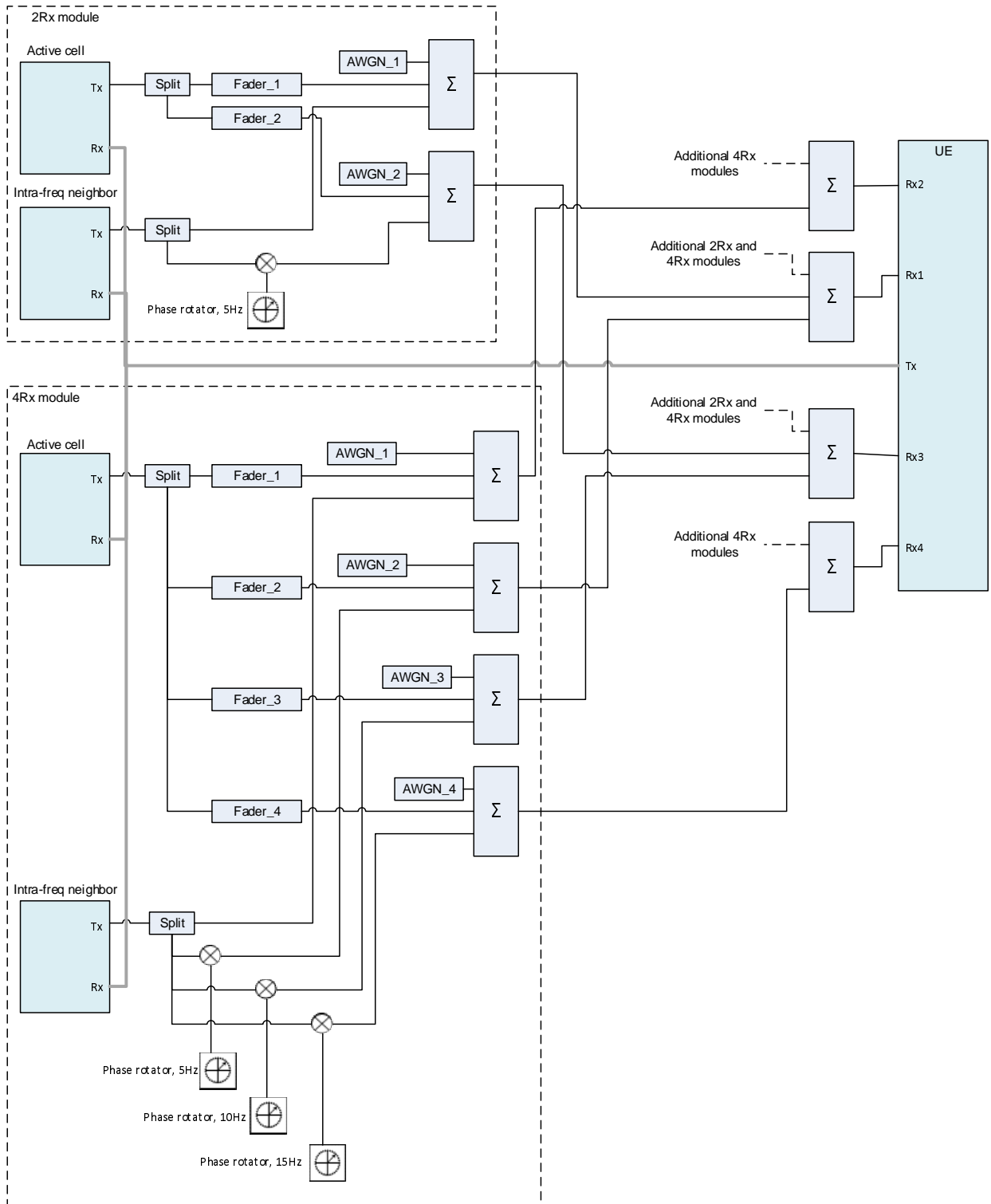


Figure A.90: Connection for CA with Fading and additional Static intra-frequency cell with phase rotators for 4Rx antenna ports

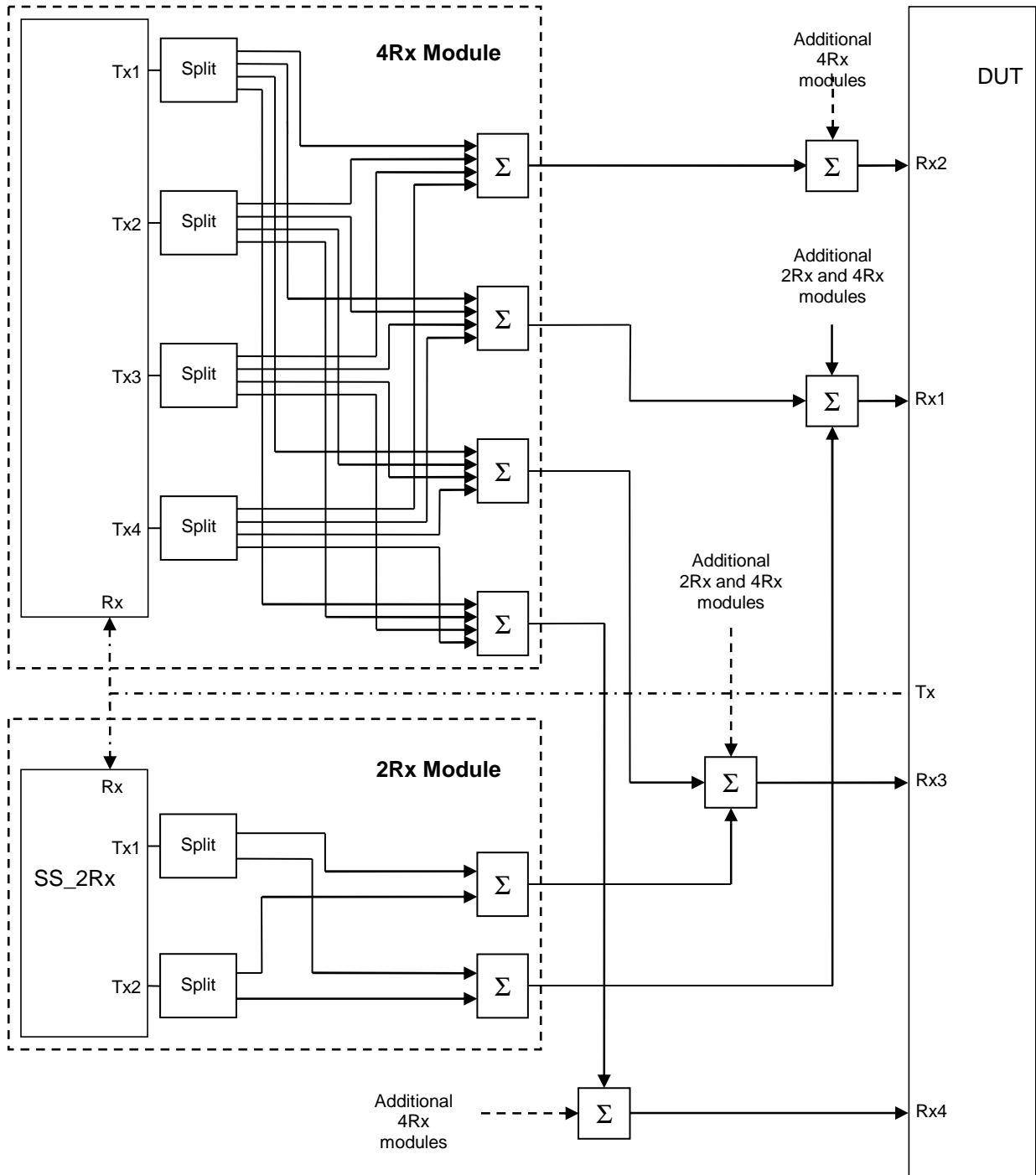


Figure A.91: Connection for CA SDR tests on a 4Rx-capable UE with CCs on both 4Rx-supported RF bands and 2Rx-supported RF bands

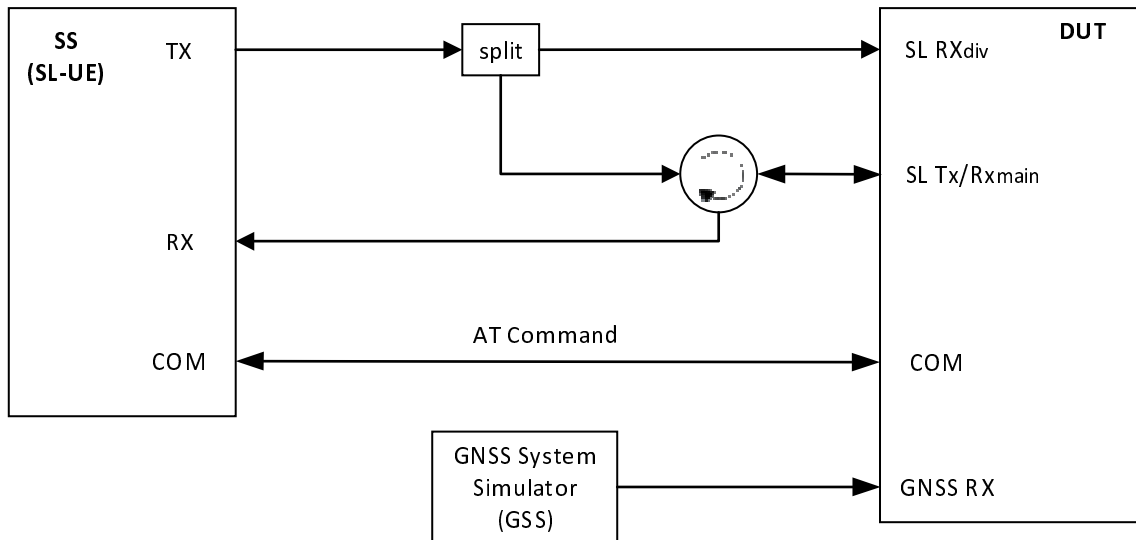


Figure A.92: Connection for basic Tx/Rx testing of V2X sidelink transmissions non-concurrent with E-UTRAN uplink transmissions

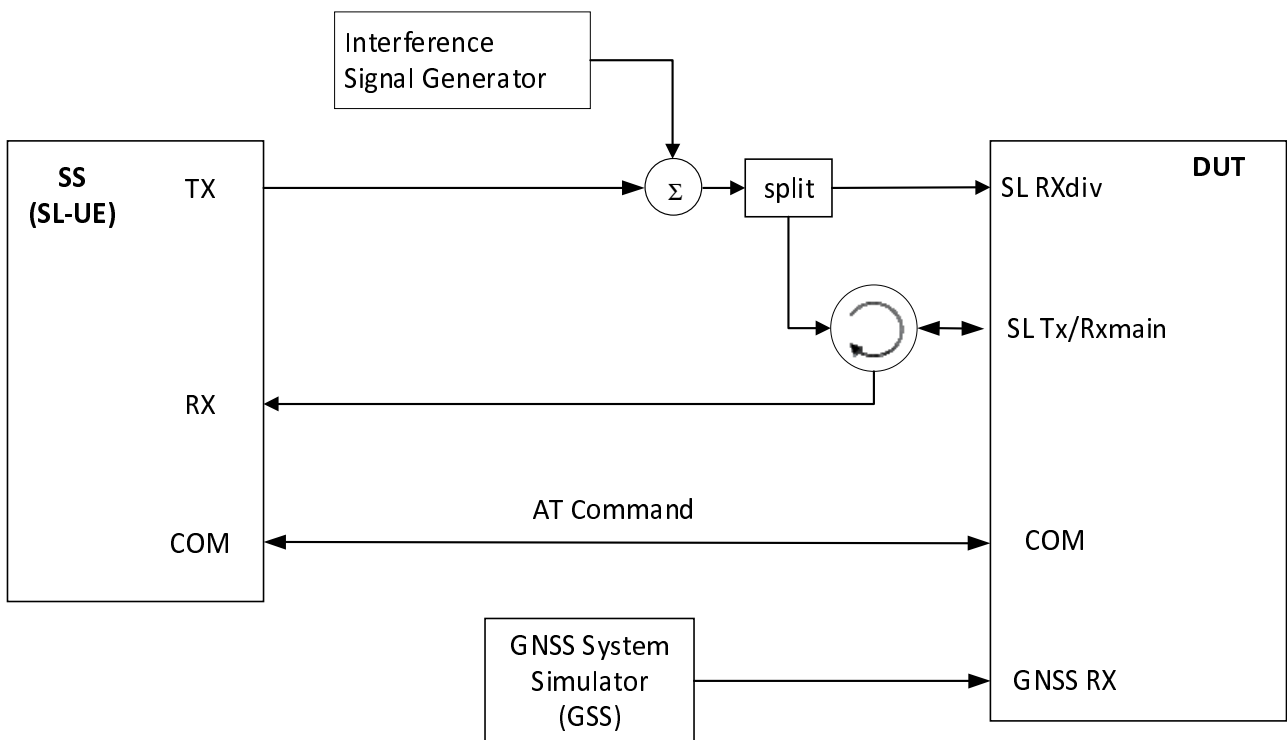


Figure A.92a: Connection for basic Tx/Rx testing of V2X sidelink transmissions non-concurrent with E-UTRAN uplink transmission with E-UTRA-Interference

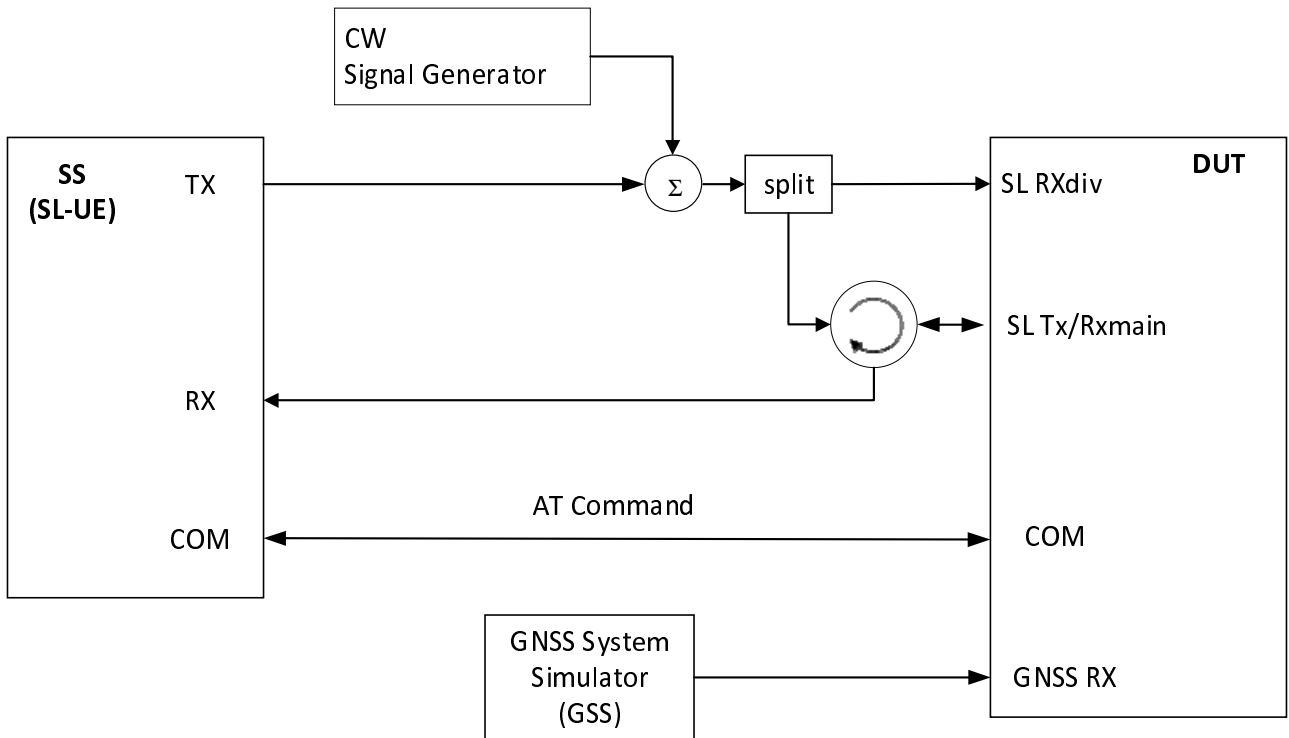


Figure A.92b: Connection for basic Tx/Rx testing of V2X sidelink transmissions non-concurrent with E-UTRAN uplink transmission with CW Interference

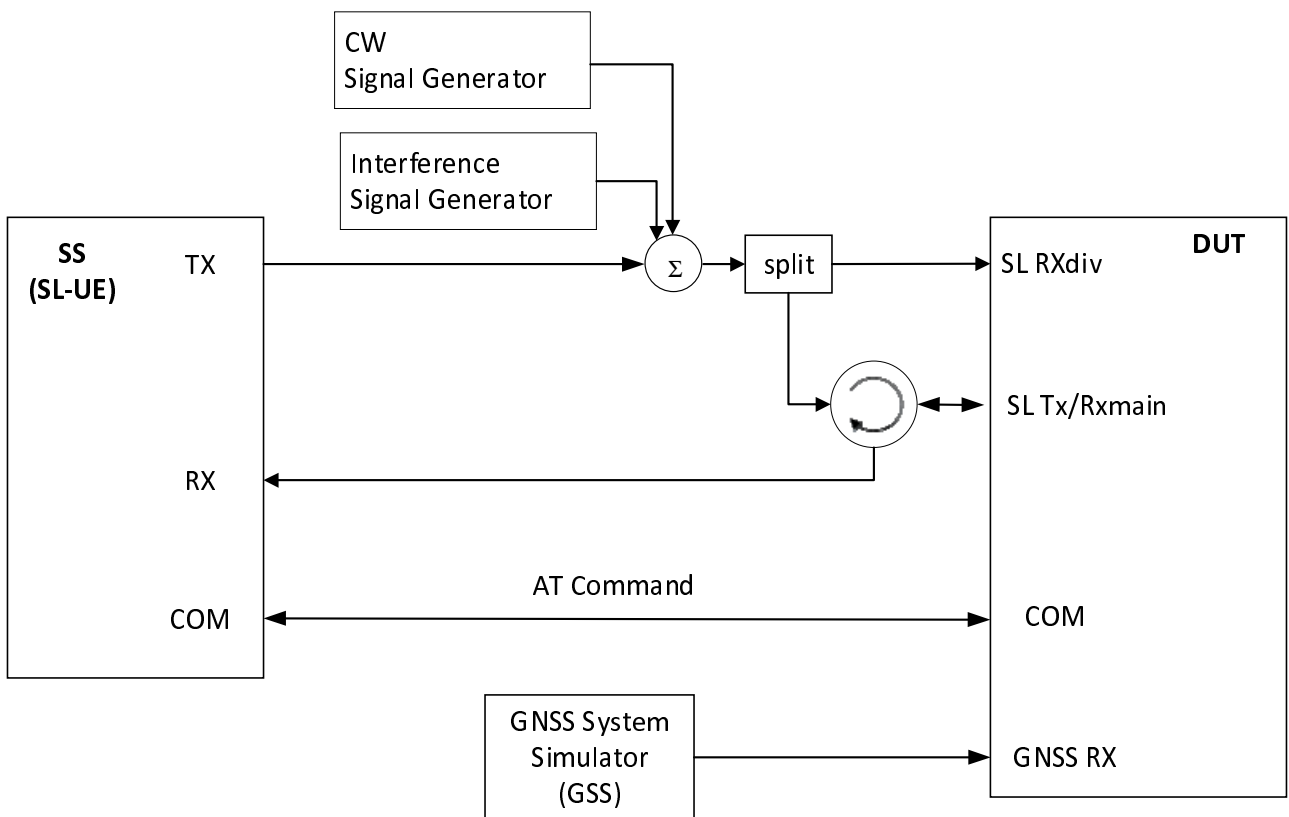


Figure A.92c: Connection for basic Tx/Rx testing of V2X sidelink transmissions non-concurrent with E-UTRAN uplink transmission with both E-UTRA Interference and additional CW signal

Figure A.93: Void

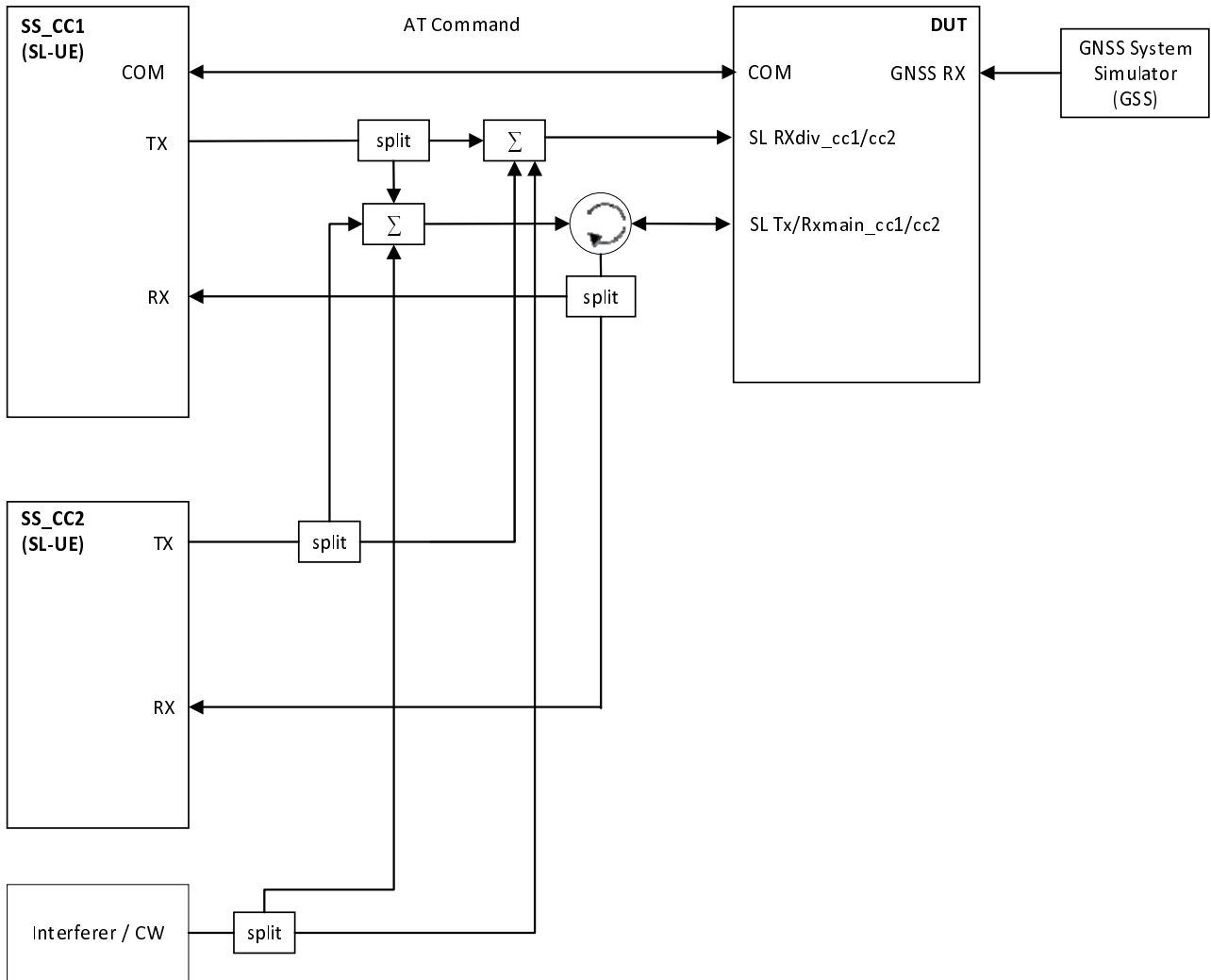


Figure A.92d: Connection for V2X Communication / Intra-band contiguous multi-carrier operation with additional Interferer / CW (common connectors, same UL antenna)

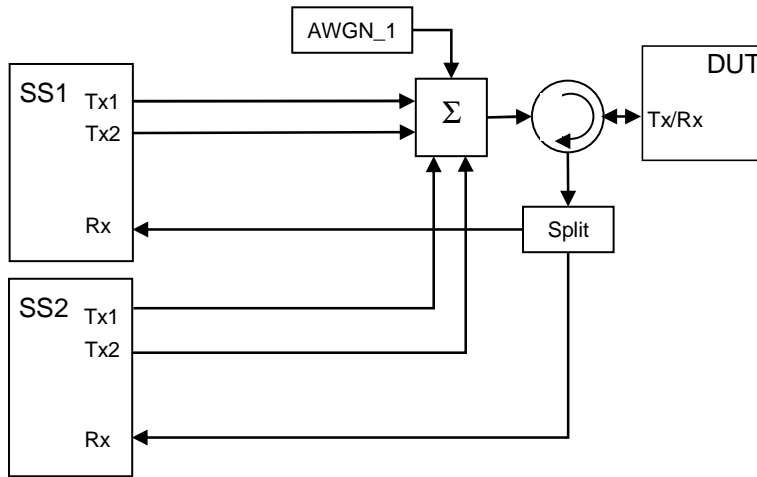


Figure A.93: Connection for RRM tests with antenna configuration 2x1 and 2 Cells

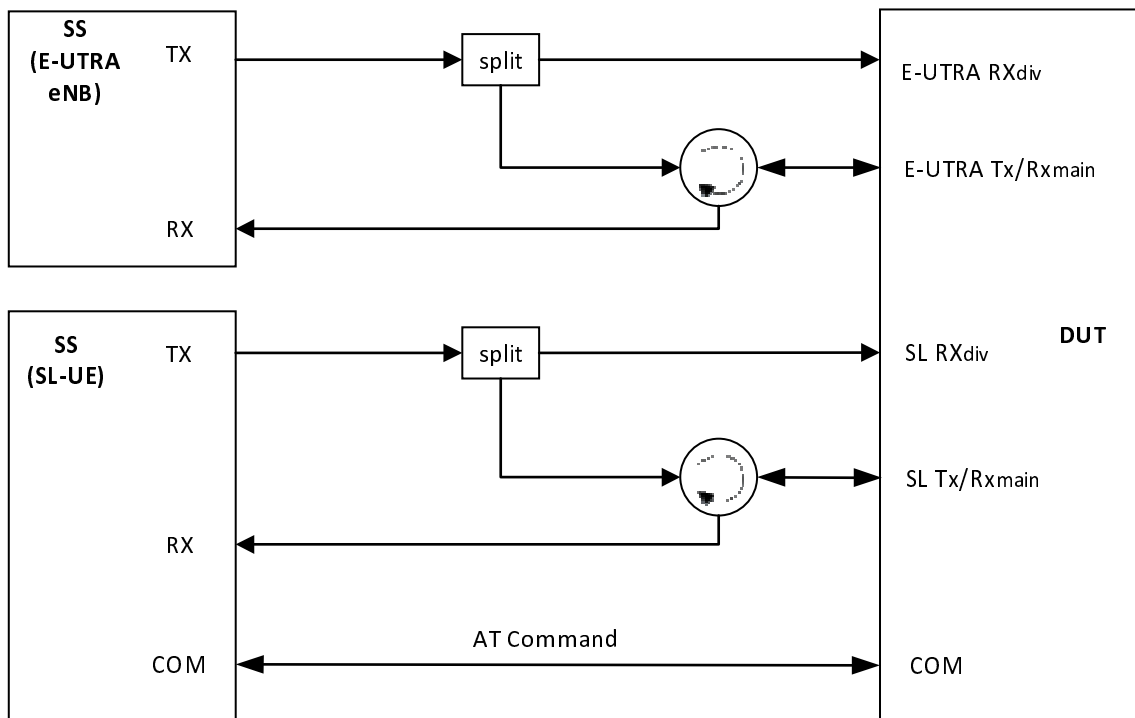


Figure A.93a: Connection for basic Tx/Rx testing of simultaneous E-UTRA V2X sidelink and E-UTRA uplink transmission

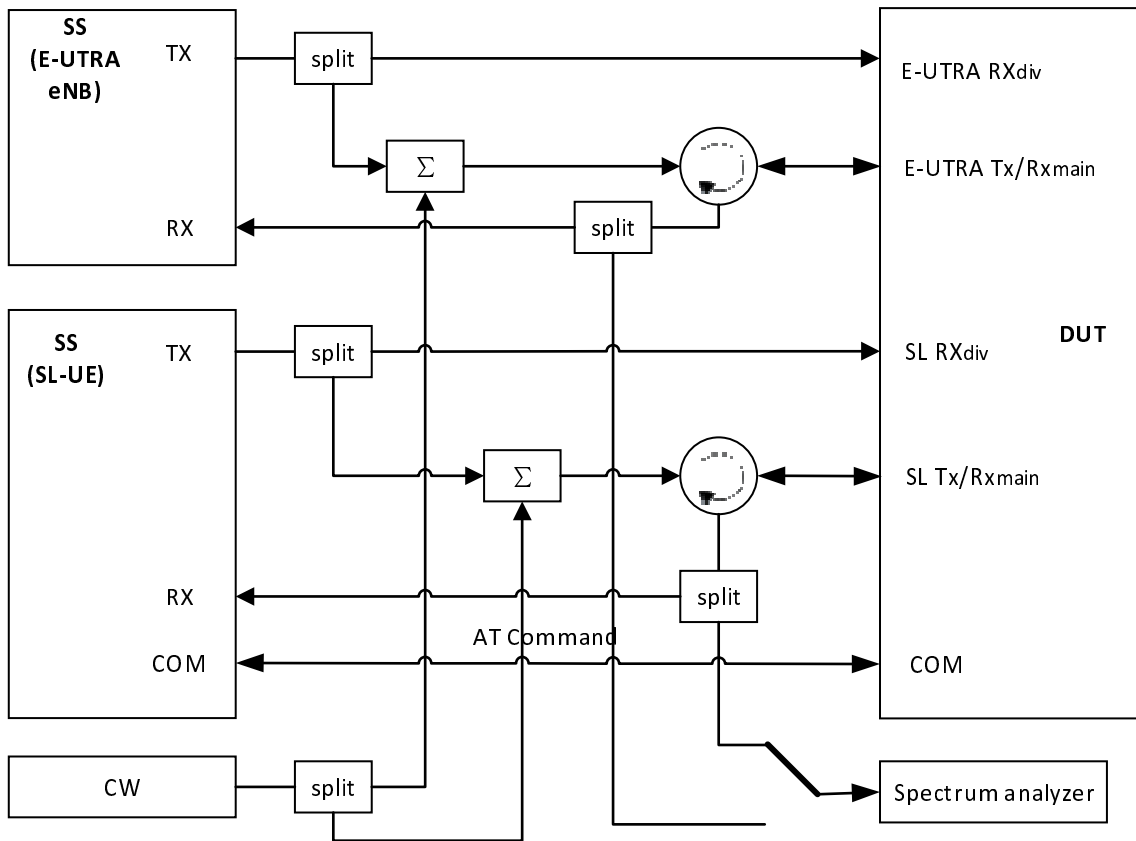


Figure A.93b: Connection for V2X testing of simultaneous E-UTRA V2X sidelink and E-UTRA uplink transmission with additional CW and Spectrum Analyzer

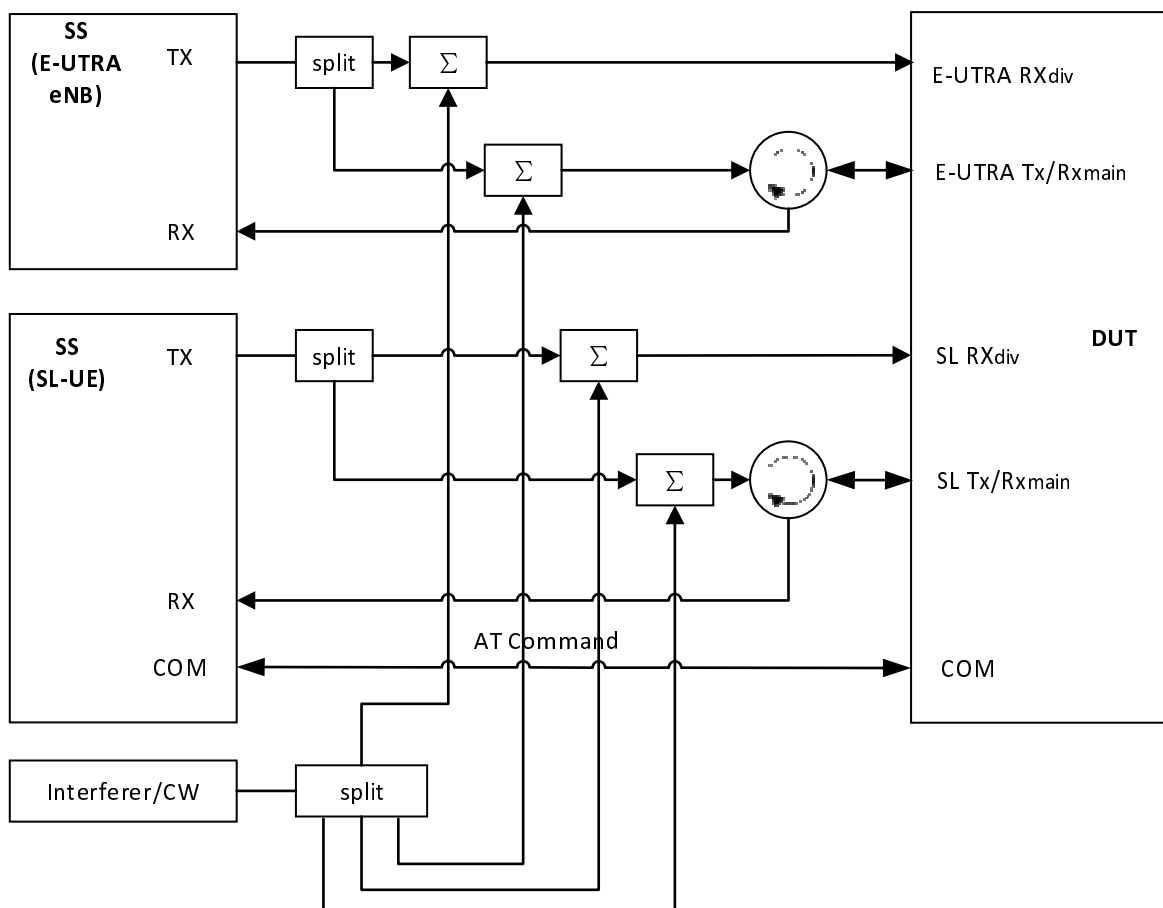


Figure A.93c: Connection for V2X testing of simultaneous E-UTRA V2X sidelink and E-UTRA uplink transmission with additional Interferer / CW

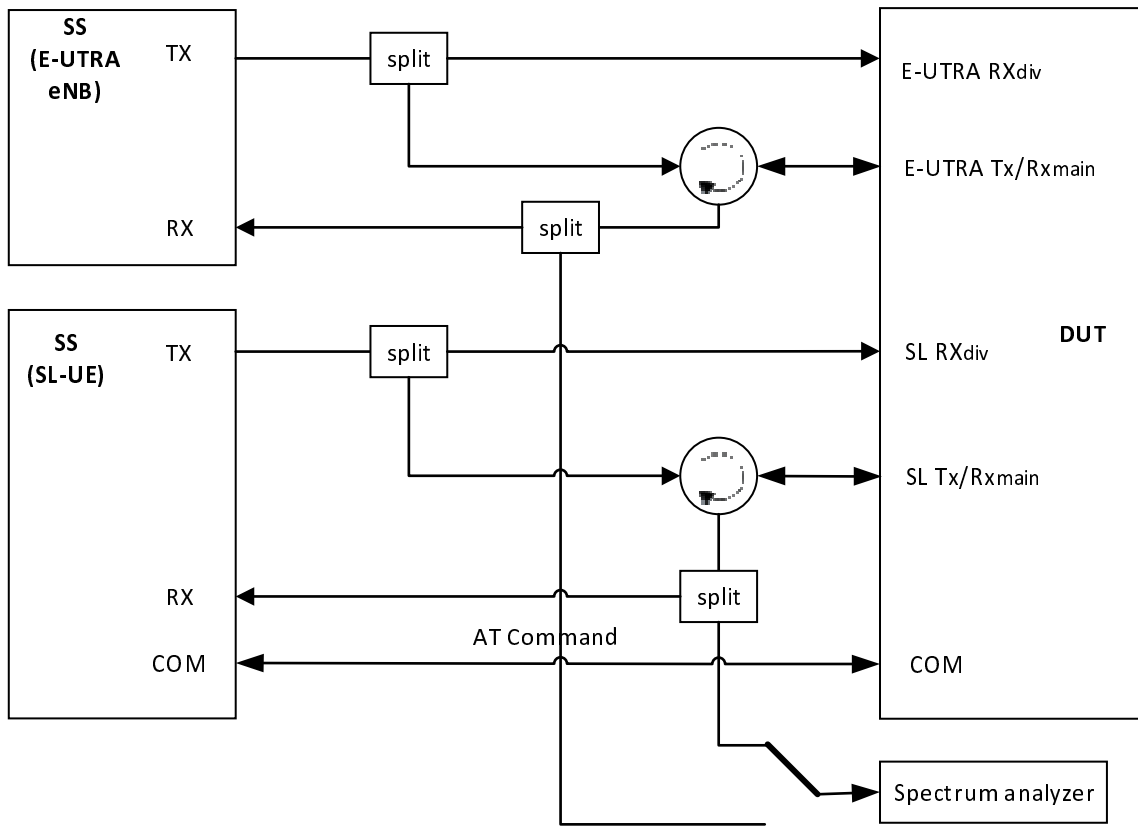


Figure A.93d: Connection for V2X Tx testing of simultaneous E-UTRA V2X sidelink and E-UTRA uplink transmission with additional Spectrum Analyzer

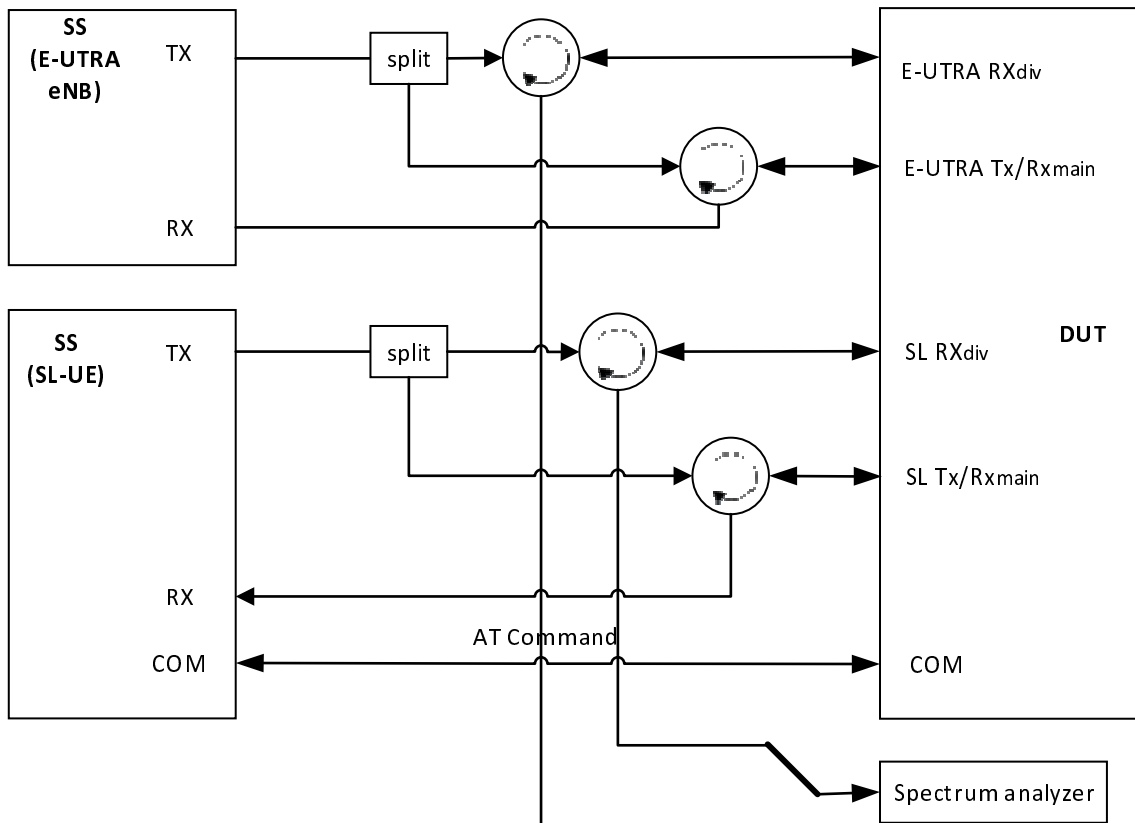


Figure A.93e: Connection for V2X Rx testing of simultaneous E-UTRA V2X sidelink and E-UTRA uplink transmission with additional Spectrum Analyzer

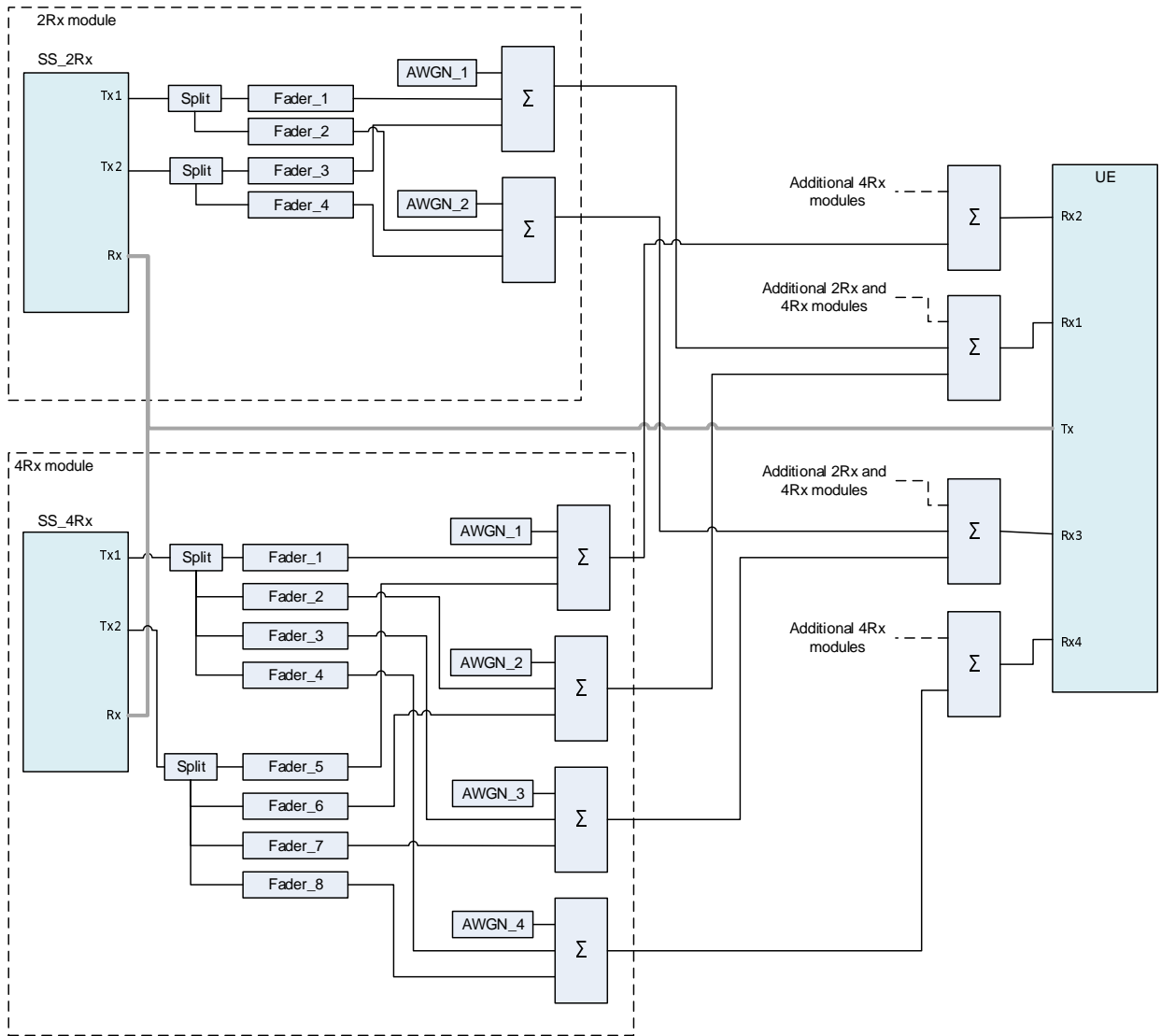


Figure A.94: Connection Diagram to enable Carrier Aggregation tests (with 2x4 channel) on a 4Rx-capable UE with CCs on both 4Rx-supported RF bands and 2Rx-supported bands

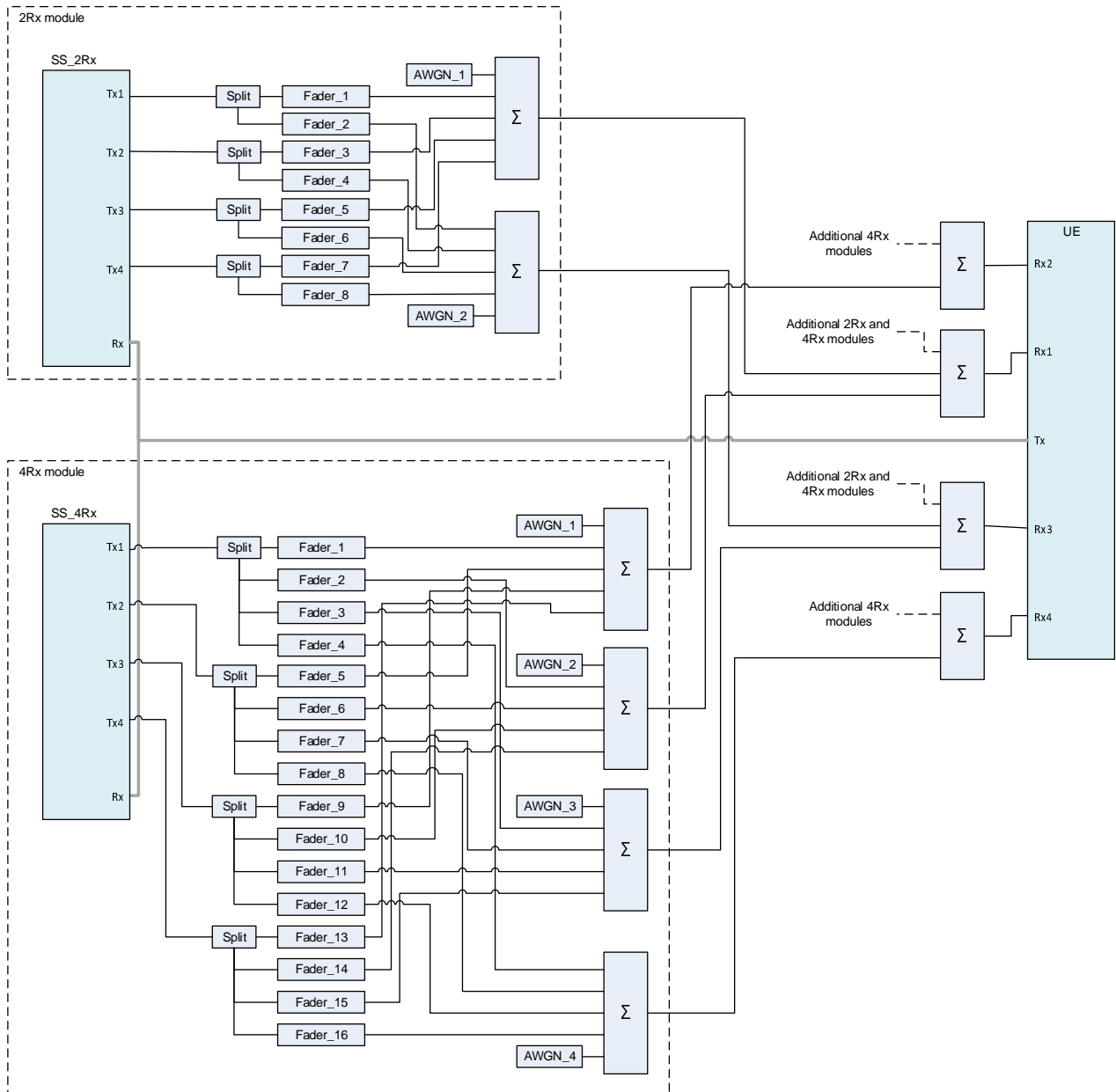


Figure A.95: Connection Diagram to enable Carrier Aggregation tests (with 4x4 channel) on a 4Rx-capable UE with CCs on both 4Rx-supported RF bands and 2Rx-supported bands

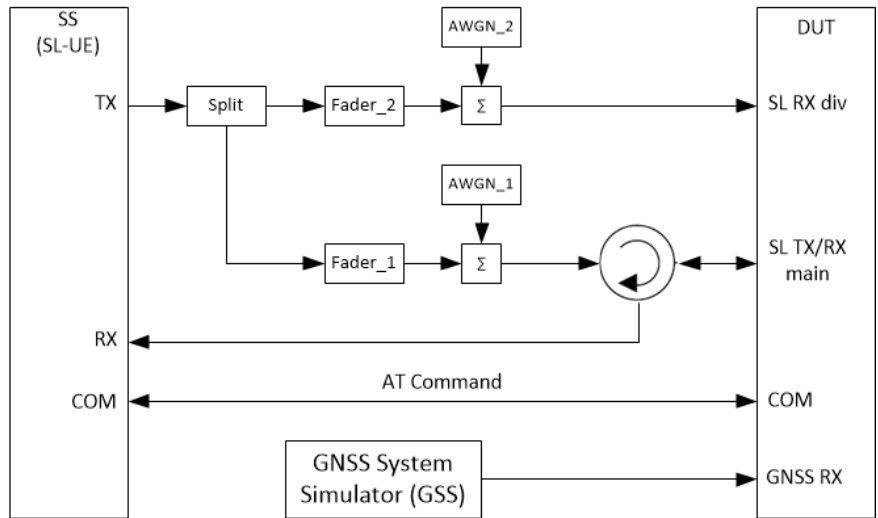


Figure A.96: Connection for performance testing of V2V/V2X sidelink communications in 1x2 faded channel and non-concurrent with E-UTRAN uplink transmission

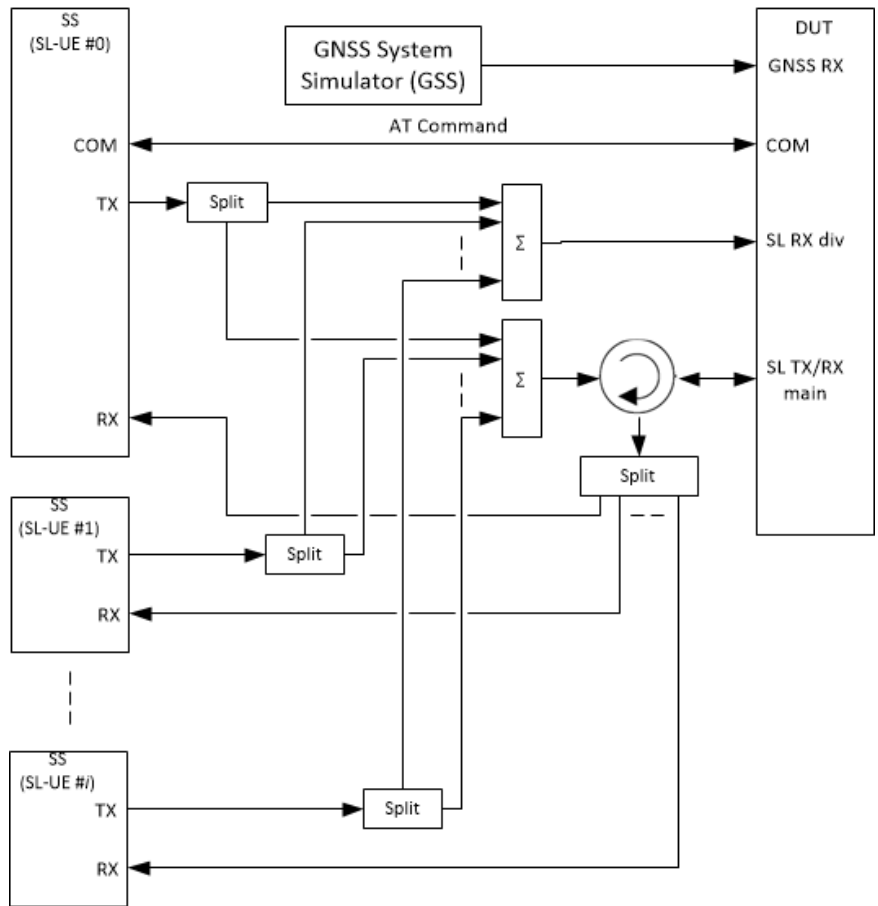


Figure A.97: Connection for performance decoding capability testing of V2V/V2X sidelink communications in 1x2 static channel and non-concurrent with E-UTRAN uplink transmission

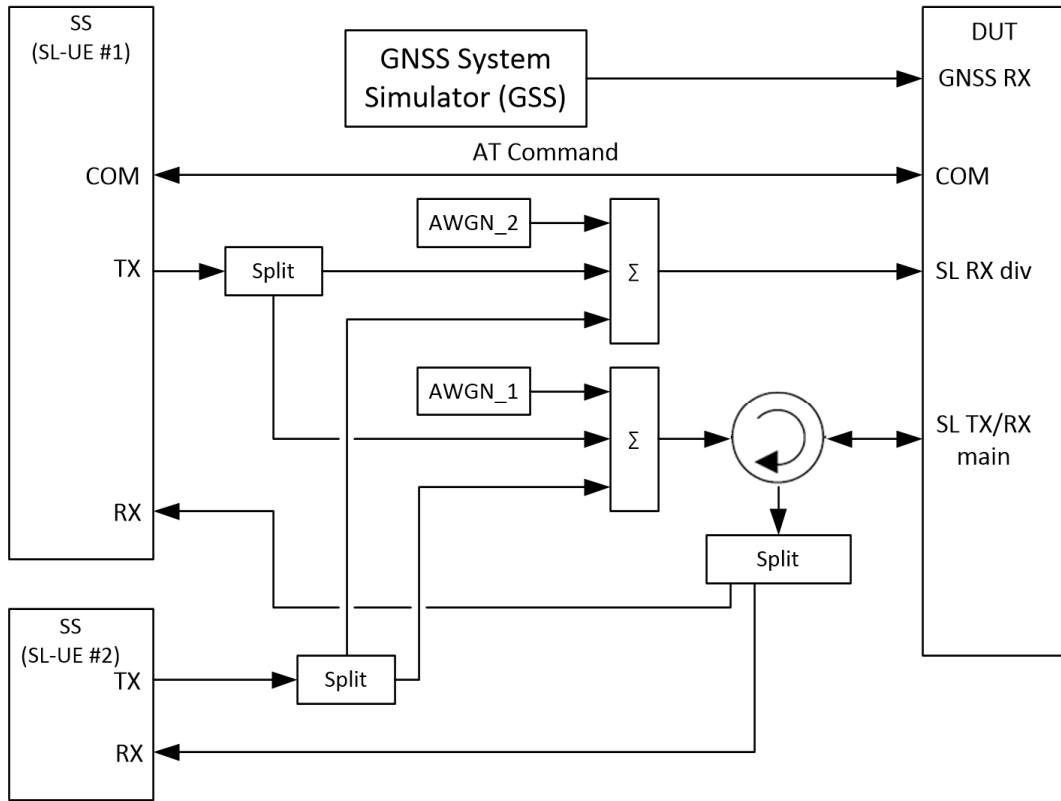


Figure A.98: Connection for power imbalance performance testing of V2V sidelink communications with two links in 1x2 AWGN channel and non-concurrent with E-UTRAN uplink transmission

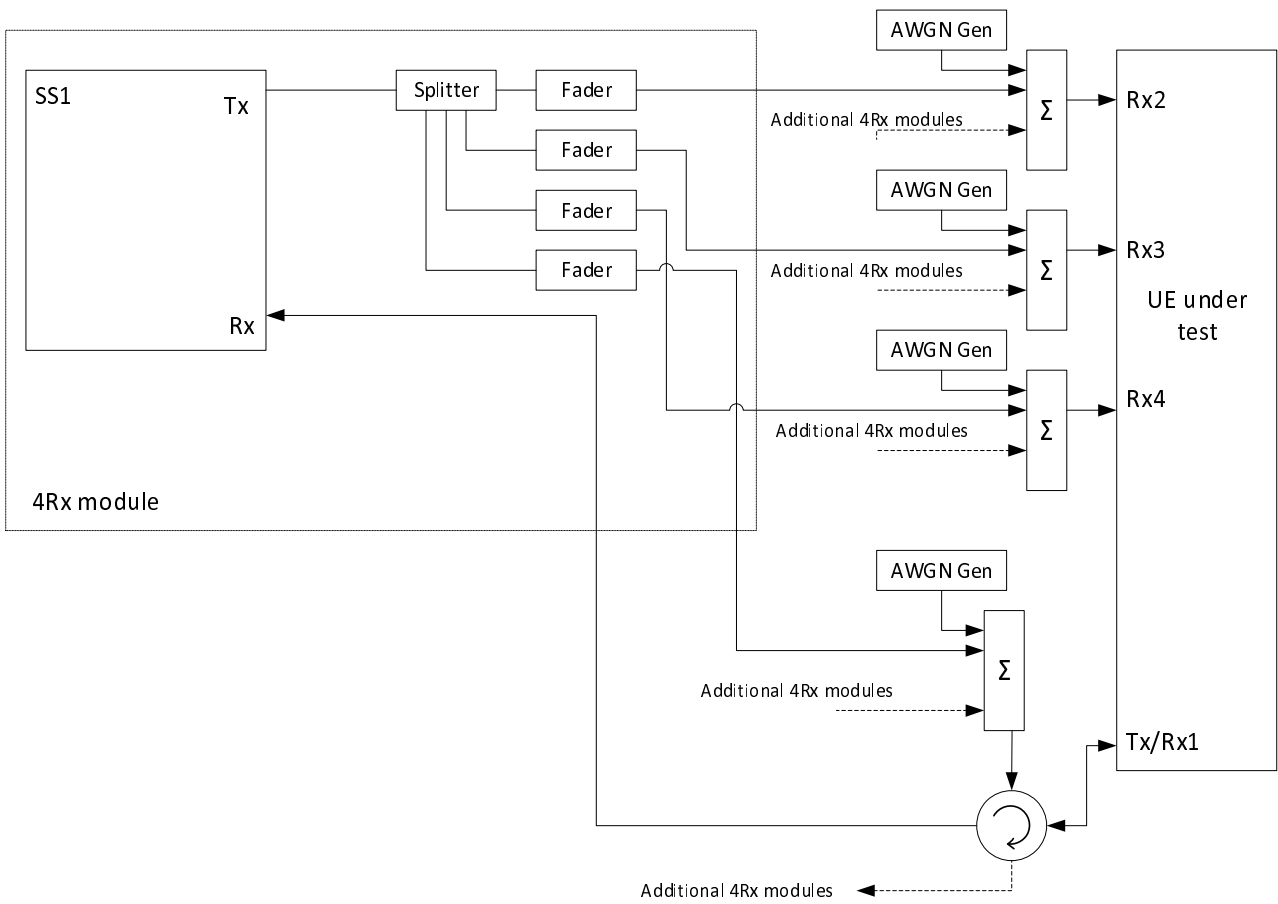


Figure A.99: Connection for more than 1 Cell with multipath fading propagation for 4Rx Capable UE

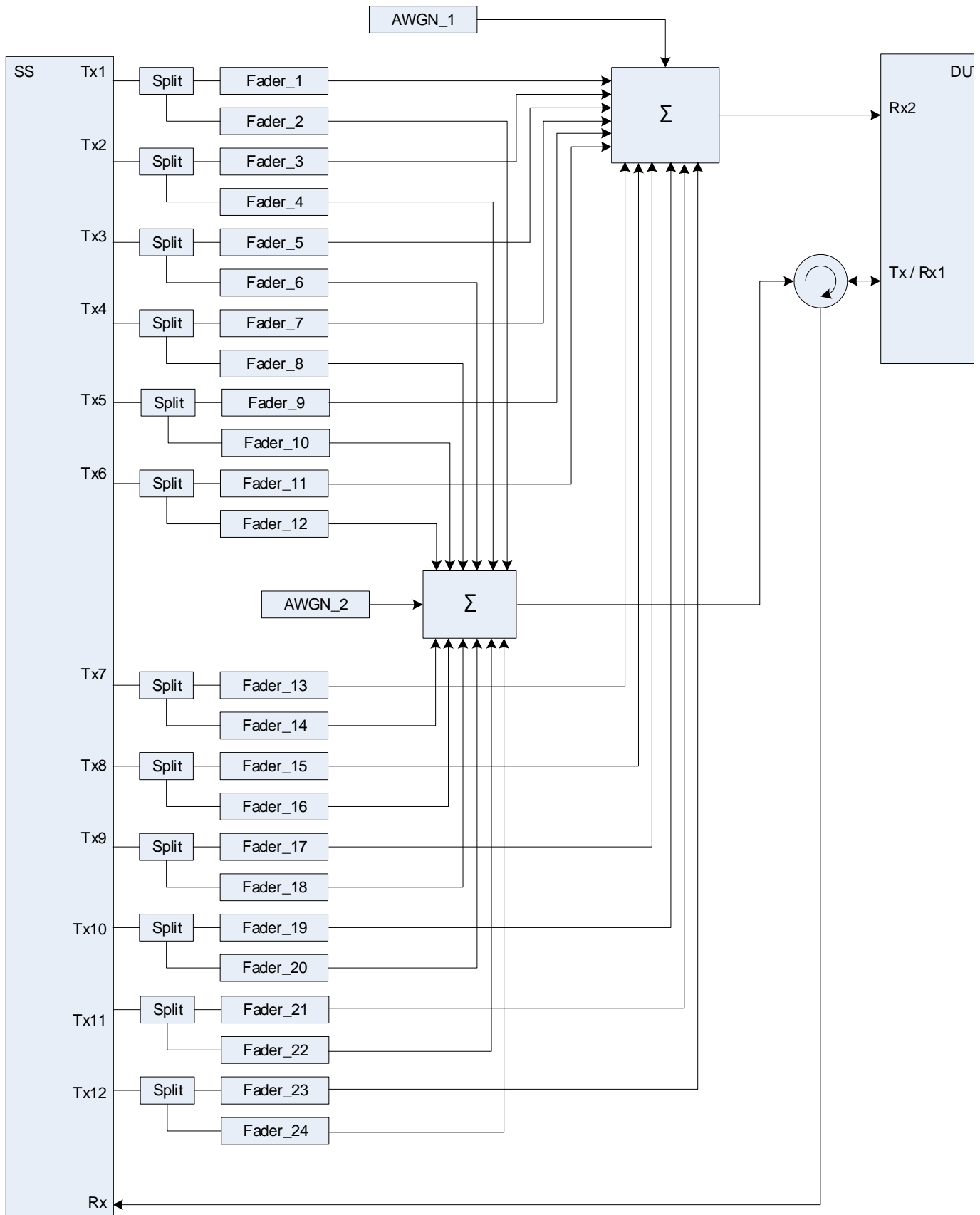


Figure A.100: Connection for RX performance tests with antenna configuration 12x2

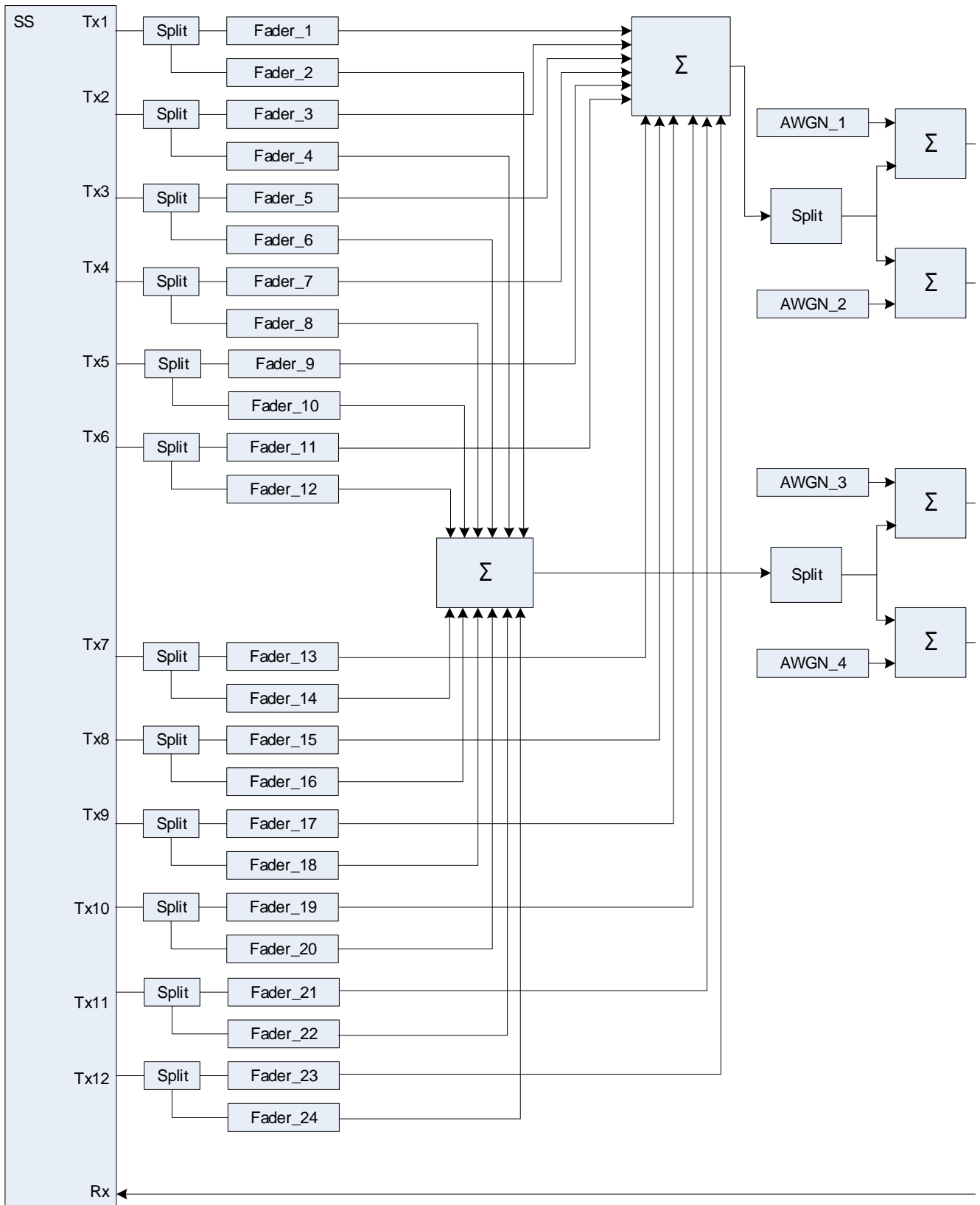


Figure A.101: Connection for RX performance tests with antenna configuration 12x2 for 4Rx capable UEs without any 2Rx RF bands

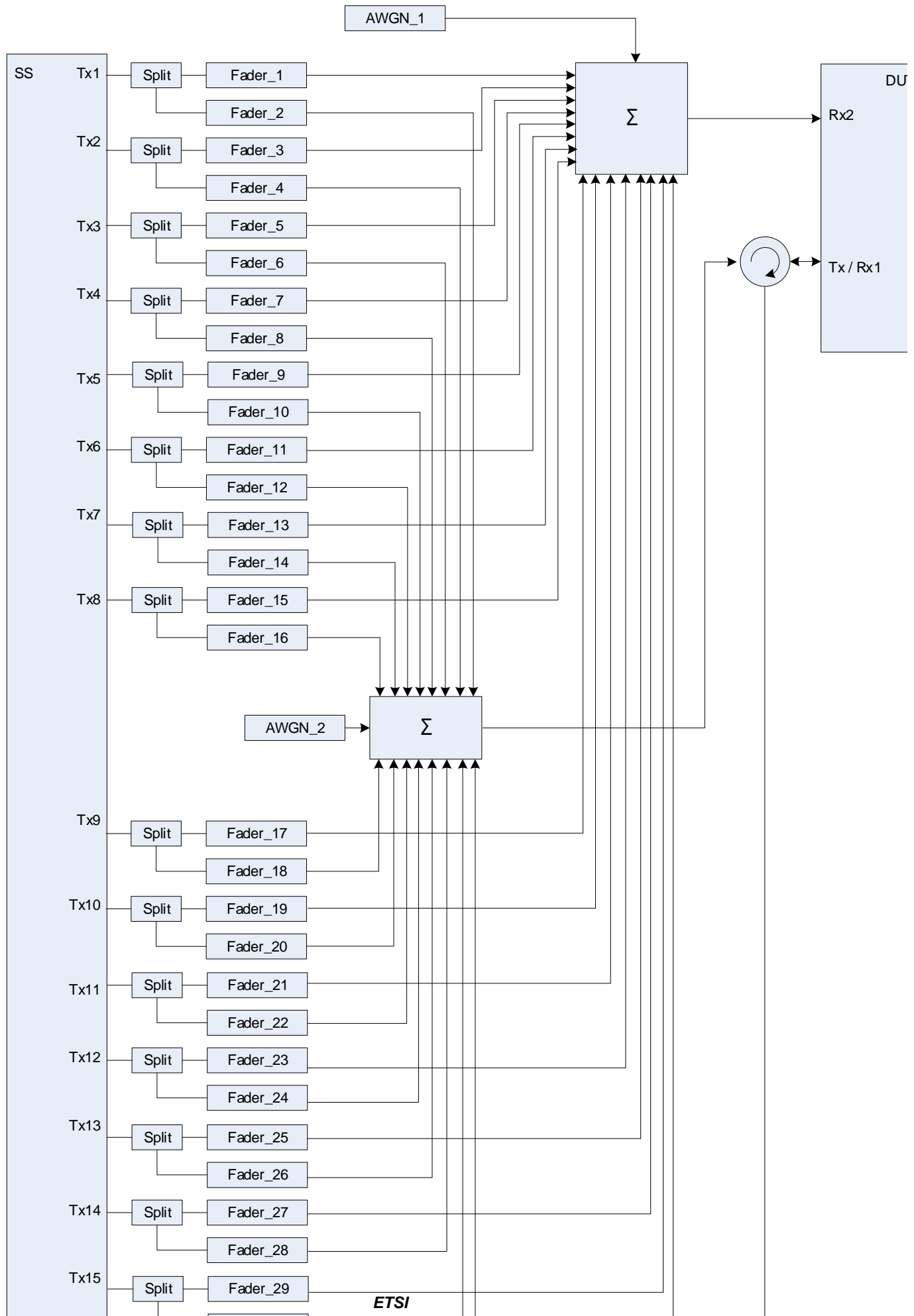


Figure A.102: Connection for RX performance tests with antenna configuration 16x2

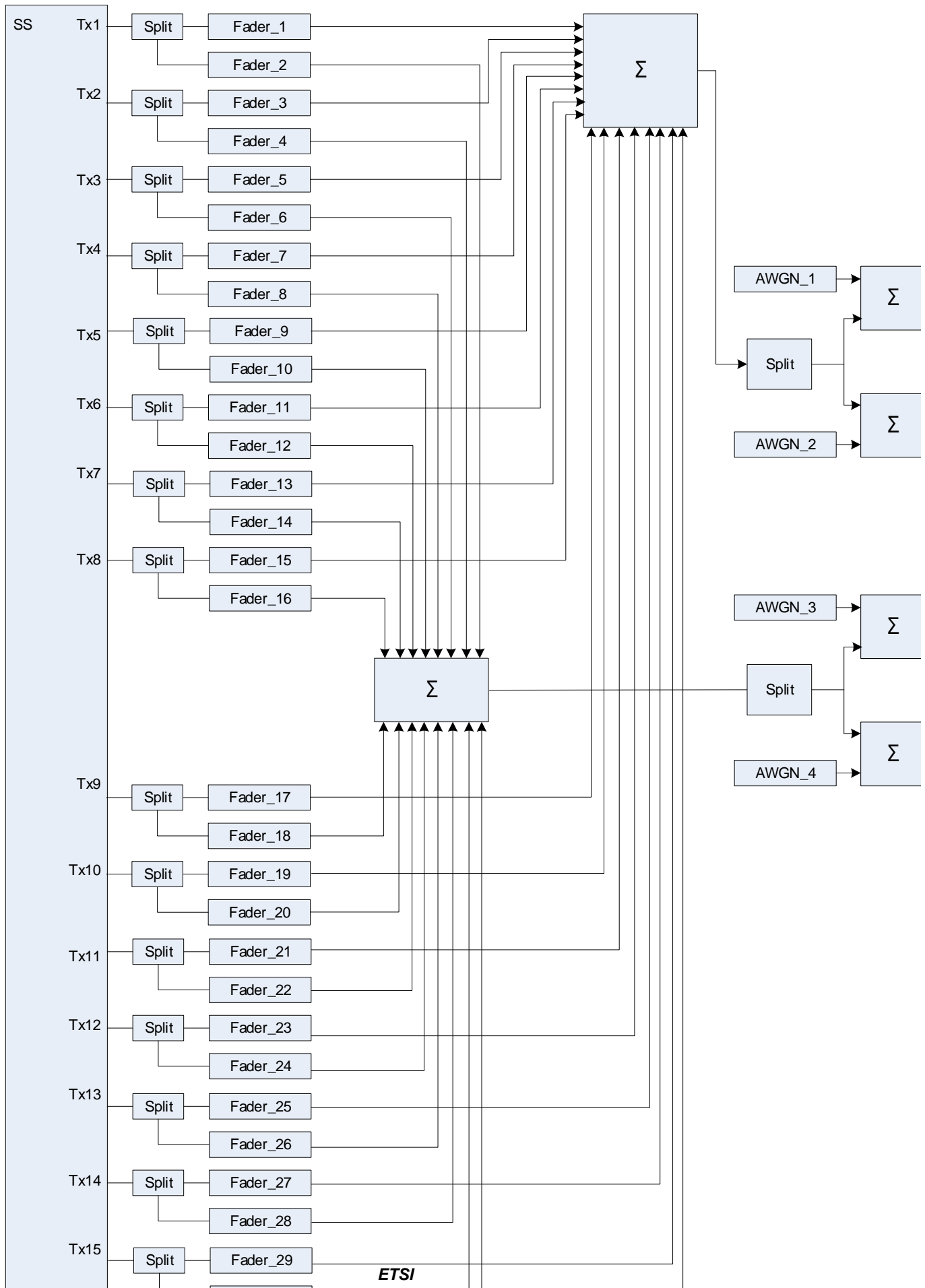


Figure A.103: Connection for RX performance tests with antenna configuration 16x2 for 4Rx capable UEs without any 2Rx RF bands

Annex B (informative): Change history

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|----|-----|--|-----|-----------------|-------------|---------------|
| RAN5 #37 | R5-073107 | | | Skeleton proposed for RAN5#37 Jeju | | | 0.0.1 | |
| RAN5 LTE workshop | R5w080007 | | | Proposed for RAN5 LTE workshop, Sophia Antipolis | | 0.0.1 | 0.0.2 | |
| RAN5 #39 | R5-081167 | | | Following proposals have been incorporated: R5w080046 R5w080026 R5w080036 | | 0.0.2 | 0.0.3 | |
| RAN5 #39 | R5-081615 | | | Following proposals and many editorial corrections have been incorporated: R5-081564, R5-081561, R5-081248, R5-081530, R5-081126, R5-081443, R5-081382, R5-081200 | | 0.0.3 | 0.1.0 | |
| RAN5 #39bis | R5-082141 | | | Following proposals and many editorial corrections have been incorporated: R5-082149, "Updates of reference test conditions for TS 36.508" R5-082148, "Addition of E-UTRA TDD Test frequencies for TS36.508" R5-082150, "Default downlink signal channel powers for LTE UE test" R5-082146, "Addition of Cell Environment for multi Cell Configuration" R5-082140, "Proposal of LTE reference system configurations for TS 36.508" R5-082204, "Addition of Cell and UE configuration for TS 36.508" R5-082090, "Update of default RRC message contents" R5-082100, "Proposal on Structure of Default Message Contents for TS 36.508" R5-082091, "Addition of SRB and DRB radio bearer combinations to 36.508" R5-082173, "Connection Diagrams for TX and RX tests" | | 0.1.0 | 0.2.0 | |
| RAN5 #40 | R5-083399 | | | Following proposals have been incorporated: R5-083800, "Mapping of DL physical channels to physical resources for TS 36.508", NEC R5-083403, "Addition of New Cell Environment for multi Cell Configuration", NTT DOCOMO R5-083529, "Proposal on default system information contents for TS 36.508", NTT DOCOMO R5-083395, "Corrections to generic procedures in TS 36.508", NTT DOCOMO R5-083623, "Update of RRC default message contents and RB combination parameters", Ericsson R5-083622, "Radio Resource Configuration specification for TS 36.508", NEC R5-083397, "Addition of Default NAS message contents in TS 36.508", NTT DOCOMO | | 0.2.0 | 1.0.0 | |
| RAN5 #40bis | R5-084102 | | | Following proposals have been incorporated: R5-084101, "Missing corrections to TS 36.508" R5-084110, "Updates of Test frequencies for TS 36.508" R5-084144, "The mapping of DL physical channels to physical resources for TS 36.508" R5-084198, "Update of RA and RB power ratios definition in TS 36.508" R5-084199, "Update of Reference System Configuration in 36.508" R5-084109, "Addition of default RRC message contents to TS 36.508" R5-084202, "Update of RRC Message Contents and RB Configurations in 36.508" R5-084265, "Addition of default RRC message contents for handover" R5-084162, "Connection Diagrams for performance | | 1.0.0 | 1.1.0 | |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| | | | | tests" | | | | |
| RAN5 #41 | R5-085145 | | | Following proposals have been incorporated: R5-085087, "Updates of Test frequencies for TS 36.508" R5-085701, "Cleaning up section 5 in TS 36.508" R5-085252, "Correction to Section 4.3.3.2 of TS 36.508" R5-085315, "Connection Diagrams: delete the editorial note" R5-085454, "Addition of timer tolerances" R5-085566, "Addition of default settings of suitable / non-suitable cells in TS 36.508" R5-085541, "Update to default configurations of simulated cells in TS 36.508" R5-085514, "Update to default configurations of system information blocks in TS 36.508" R5-085472, "Addition of default settings of suitable / non-suitable cells in TS 36.508" R5-085394, "Update of Reference system configurations in 36.508" R5-085457, "Update to generic procedure in TS 36.508" R5-085458, "Addition of new generic procedure to check the UE does not answer to paging" R5-085523, "Update of default RRC message contents" R5-085381, "Addition to default RRC IE contents for measurement configuration" R5-085469, "Update to default NAS message contents in TS 36.508" R5-085451, "Parameter settings for reference RB configurations" R5-085556, "Common test USIM parameters for EPS testing" | | 1.1.0 | 2.0.0 | |
| RAN#42 | RP-085145 | | | Approval of version 2.0.0 at RAN#42, then updated to v 8.0.0. | | 2.0.0 | 8.0.0 | |
| | | | | Editorial corrections. | | 8.0.0 | 8.0.1 | |
| RAN5 #41bis | R5-086021 | 0001 | - | Introduction of half cell configurations in eUTRA SS | | 8.0.1 | 8.1.0 | |
| RAN5 #41bis | R5-086166 | 0002 | - | Removal of Redundant Environmental Conditions | | 8.0.1 | 8.1.0 | |
| RAN5 #41bis | R5-086221 | 0003 | - | CR to 36.508: correction of EARFCN | | 8.0.1 | 8.1.0 | |
| RAN5 #41bis | R5-086226 | 0004 | - | Correction to the default system informations in TS 36.508 | | 8.0.1 | 8.1.0 | |
| RAN5 #41bis | R5-086236 | 0005 | - | Connection diagrams for RRM | | 8.0.1 | 8.1.0 | |
| RAN5 #41bis | R5-086346 | 0006 | - | Update of the default message AUTHENTICATION FAILURE | | 8.0.1 | 8.1.0 | |
| RAN5 #41bis | R5-086362 | 0007 | - | update of reference configuration systems for CDMA2000 in 36.508 | | 8.0.1 | 8.1.0 | |
| RAN5 #41bis | R5-086363 | 0008 | - | Updated of common and default parameters for CDMA2000 cells | | 8.0.1 | 8.1.0 | |
| RAN5 #41bis | R5-086364 | 0009 | - | Update of SystemInformationBlockType8 in 36.508 | | 8.0.1 | 8.1.0 | |
| RAN5 #41bis | R5-086369 | 0010 | - | Addition of reference EPS bearer contexts | | 8.0.1 | 8.1.0 | |
| RAN5 #41bis | R5-086370 | 0011 | - | Mapping of default DL Physical Channels for TDD in 36.508 | | 8.0.1 | 8.1.0 | |
| RAN5 #41bis | R5-086400 | 0012 | - | Addition of RS_EPRES powers to default DL signal levels | | 8.0.1 | 8.1.0 | |
| RAN5 #42 | R5-090084 | 0013 | - | Test procedure to verify that an EPS bearer context is active | | 8.0.1 | 8.1.0 | |
| RAN5 #42 | R5-090362 | 0014 | - | Correction to the definition of simulated NAS cells in TS 36.508 | | 8.0.1 | 8.1.0 | |
| RAN5 #42 | R5-090464 | 0015 | - | Clean up the test algorithm for authentication | | 8.0.1 | 8.1.0 | |
| RAN5 #42 | R5-090586 | 0016 | - | Add specific information elements for RRC reconfiguration | | 8.0.1 | 8.1.0 | |
| RAN5 #42 | R5-090630 | 0017 | - | Introduction of alternative DRX configurations | | 8.0.1 | 8.1.0 | |
| RAN5 #42 | R5-090681 | 0018 | - | Correction to the default NAS message contents in TS 36.508 | | 8.0.1 | 8.1.0 | |
| RAN5 #42 | R5-090682 | 0019 | - | Correction to the definition of simulated cells in TS 36.508 | | 8.0.1 | 8.1.0 | |
| RAN5 | R5-090698 | 0020 | - | Update of 4.5 generic procedures in 36.508 | | 8.0.1 | 8.1.0 | |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| #42 | | | | | | | | |
| RAN5 #42 | R5-090699 | 0021 | - | TDD RTT correction for timer tolerance | | 8.0.1 | 8.1.0 | |
| RAN5 #42 | R5-090759 | 0022 | - | Correction to the default RRC message contents in TS 36.508 | | 8.0.1 | 8.1.0 | |
| RAN5 #42 | R5-091000 | 0023 | - | Correction to clause 4.3.3.3 | | 8.0.1 | 8.1.0 | |
| RAN5 #42 | R5-091001 | 0024 | - | LTE-RF: Clarification to 36.508 Simulated Cells for RF tests | | 8.0.1 | 8.1.0 | |
| RAN5 #43 | RP-090447 | 0025 | - | Correction to Cell off power | | 8.1.0 | 8.2.0 | R5-092086 |
| RAN5 #43 | RP-090447 | 0026 | - | LTE Signalling Tests: UE Rx antenna connection | | 8.1.0 | 8.2.0 | R5-092087 |
| RAN5 #43 | RP-090448 | 0027 | - | CR to 36.508 for subclause 4.3.1 channel bandwidth clarification for RF tests (re-submit no changes) | | 8.1.0 | 8.2.0 | R5-092124 |
| RAN5 #43 | RP-090448 | 0028 | - | Text for 4.2.2: Minimum functional requirements | | 8.1.0 | 8.2.0 | R5-092128 |
| RAN5 #43 | RP-090448 | 0029 | - | Annex A: transition from 1 to 2 RX antenna | | 8.1.0 | 8.2.0 | R5-092132 |
| RAN5 #43 | RP-090447 | 0030 | - | Update of SN length in UM RLC default configuration | | 8.1.0 | 8.2.0 | R5-092202 |
| RAN5 #43 | RP-090448 | 0031 | - | TP for simulated UTRA TDD cell parameter | | 8.1.0 | 8.2.0 | R5-092275 |
| RAN5 #43 | RP-090447 | 0032 | - | Correction to specific message contents in setup procedure in TS 36.508 | | 8.1.0 | 8.2.0 | R5-092349 |
| RAN5 #43 | RP-090447 | 0033 | - | Correction to the definition of simulated NAS cells in TS 36.508 | | 8.1.0 | 8.2.0 | R5-092352 |
| RAN5 #43 | RP-090447 | 0034 | - | CR on 6.7 TDD Timer Tolerance in 36.508 | | 8.1.0 | 8.2.0 | R5-092363 |
| RAN5 #43 | RP-090448 | 0044 | - | Update of 4.5.2A in 36.508 (Re-submit not change) | | 8.1.0 | 8.2.0 | R5-092457 |
| RAN5 #43 | RP-090448 | 0035 | - | Default value of q-RxLevMin for RF TCs | | 8.1.0 | 8.2.0 | R5-092458 |
| RAN5 #43 | RP-090598 | 0045 | - | CR to 36.508 Addition of test frequencies for band 18 and band 19 | | 8.1.0 | 8.2.0 | R5-092535 |
| RAN5 #43 | RP-090447 | 0036 | - | Update of the default NAS message contents in TS 36.508 | | 8.1.0 | 8.2.0 | R5-092708 |
| RAN5 #43 | RP-090447 | 0037 | - | Correction to reference radio bearer configurations | | 8.1.0 | 8.2.0 | R5-092721 |
| RAN5 #43 | RP-090447 | 0038 | - | Definition of default Test Control (TC) messages | | 8.1.0 | 8.2.0 | R5-092734 |
| RAN5 #43 | RP-090448 | 0039 | - | Modification of procedures in section 4.5.2.3 /4.5.2A | | 8.1.0 | 8.2.0 | R5-092735 |
| RAN5 #43 | RP-090447 | 0040 | - | Addition of default physical layer parameters | | 8.1.0 | 8.2.0 | R5-092736 |
| RAN5 #43 | RP-090447 | 0041 | - | Correction to default RRC message contents | | 8.1.0 | 8.2.0 | R5-092738 |
| RAN5 #43 | RP-090447 | 0042 | - | Introduction in 36.508 of a common tracking/routing area update procedure for Idle mode and RRC connection release test cases | | 8.1.0 | 8.2.0 | R5-092765 |
| RAN5 #43 | RP-090447 | 0043 | - | Corrections to default system configurations in TS 36.508 | | 8.1.0 | 8.2.0 | R5-092773 |
| RAN5 #43 | RP-090447 | 0046 | - | Max. resources for signalling test cases | | 8.1.0 | 8.2.0 | R5-092723 |
| - | - | - | - | Editorial corrections and merging of all sections together | | 8.2.0 | 8.2.1 | - |
| RAN5 #44 | RP-090802 | 0047 | - | Correction to the default value of ul-Bandwidth in TS 36.508 | F | 8.2.1 | 8.3.0 | R5-094059 |
| RAN5 #44 | RP-090802 | 0048 | - | UTRAN SIB scheduling for LTE interRAT test | F | 8.2.1 | 8.3.0 | R5-094072 |
| RAN5 #44 | RP-090802 | 0049 | - | Correction to the default NAS message contents | F | 8.2.1 | 8.3.0 | R5-094141 |
| RAN5 #44 | RP-090802 | 0050 | - | TDD fields in default physical layer parameters | F | 8.2.1 | 8.3.0 | R5-094279 |
| RAN5 #44 | RP-090802 | 0051 | - | Addition of UTRA reference radio bearer parameters and GERAN reference PDP context parameters for E-UTRA Inter-RAT testing | F | 8.2.1 | 8.3.0 | R5-094304 |
| RAN5 #44 | RP-090801 | 0052 | - | System information scheduling for RF testing | F | 8.2.1 | 8.3.0 | R5-094311 |
| RAN5 #44 | RP-090801 | 0053 | - | Connection for 1 cell with antenna configuration 1x2 in static propagation conditions | F | 8.2.1 | 8.3.0 | R5-094364 |
| RAN5 #44 | RP-090801 | 0054 | - | Correction to 4.3.1.2.5 TDD reference test frequencies for Operating Band 37 | F | 8.2.1 | 8.3.0 | R5-094373 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| RAN5 #44 | RP-090801 | 0055 | - | LTE RF: Physical Layer configurations for RF/RRM testing | F | 8.2.1 | 8.3.0 | R5-094421 |
| RAN5 #44 | RP-090802 | 0056 | - | Update of SN length in PDCP default configuration | F | 8.2.1 | 8.3.0 | R5-094533 |
| RAN5 #44 | RP-090802 | 0057 | - | Corrections to default RRC message and IE contents | F | 8.2.1 | 8.3.0 | R5-094639 |
| RAN5 #44 | RP-090801 | 0058 | - | Update of TDD reference test frequencies for operating band 40 | F | 8.2.1 | 8.3.0 | R5-094786 |
| RAN5 #44 | RP-090810 | 0059 | - | TDD special subframe pattern update | F | 8.2.1 | 8.3.0 | R5-094901 |
| RAN5 #44 | RP-090802 | 0060 | - | corrections to reference RB configurations | F | 8.2.1 | 8.3.0 | R5-095064 |
| RAN5 #44 | RP-090802 | 0061 | - | Correction of test procedure 6.4.2.7 in TS 36.508 | F | 8.2.1 | 8.3.0 | R5-095093 |
| RAN5 #44 | RP-090802 | 0062 | - | Adding new elementary files to the default USIM settings | F | 8.2.1 | 8.3.0 | R5-095100 |
| RAN5 #44 | RP-090802 | 0063 | - | Correction to the Test procedure to check RRC_IDLE state | F | 8.2.1 | 8.3.0 | R5-095102 |
| RAN5 #44 | RP-090802 | 0064 | - | Introduction of UE mode of operation into NAS default message contents | F | 8.2.1 | 8.3.0 | R5-095138 |
| RAN5 #44 | RP-090802 | 0065 | - | TDD ACK/NACK feedback mode update | F | 8.2.1 | 8.3.0 | R5-095152 |
| RAN5 #44 | RP-090802 | 0066 | - | Corrections to default signal levels | F | 8.2.1 | 8.3.0 | R5-095206 |
| RAN5 #44 | RP-090802 | 0067 | - | Update to default messages in regard to IP address allocation | F | 8.2.1 | 8.3.0 | R5-095218 |
| RAN5 #45 | RP-091121 | 0068 | - | Correction to 4.3.1.2.6 TDD reference test frequencies for Operating Band 38 | F | 8.3.0 | 8.4.0 | R5-095486 |
| RAN5 #45 | RP-091121 | 0069 | - | Correction CR to 36.508: Set the default parameter for offsetFreq in MeasObjectGERAN Information Element | F | 8.3.0 | 8.4.0 | R5-095514 |
| RAN5 #45 | RP-091470 | 0070 | - | Addition of HSPA UTRA reference radio bearer parameters for E-UTRA Inter-RAT testing | F | 8.3.0 | 8.4.0 | R5-095555 |
| RAN5 #45 | RP-091122 | 0071 | - | Introduction of RS power boosting to reduce interference | F | 8.3.0 | 8.4.0 | R5-095594 |
| RAN5 #45 | RP-091122 | 0072 | - | Corrections to default RRC message contents | F | 8.3.0 | 8.4.0 | R5-095651 |
| RAN5 #45 | RP-091122 | 0073 | - | Clarification for Cell Configuration Identifiers in 36.508 | F | 8.3.0 | 8.4.0 | R5-096005 |
| RAN5 #45 | RP-091122 | 0074 | - | Correction to the generic procedure for IP allocation and more | F | 8.3.0 | 8.4.0 | R5-096114 |
| RAN5 #45 | RP-091122 | 0075 | - | Addition of new generic procedure for TAU after inter-RAT HO from UTRA | F | 8.3.0 | 8.4.0 | R5-096115 |
| RAN5 #45 | RP-091122 | 0076 | - | Update of header chapter 5.2 in 36.508 | F | 8.3.0 | 8.4.0 | R5-096202 |
| RAN5 #45 | RP-091122 | 0077 | - | Correction to the default NAS message contents | F | 8.3.0 | 8.4.0 | R5-096403 |
| RAN5 #45 | RP-091122 | 0078 | - | cell frequency allocation | F | 8.3.0 | 8.4.0 | R5-096440 |
| RAN5 #45 | RP-091122 | 0079 | - | Correction for IP address allocation | F | 8.3.0 | 8.4.0 | R5-096447 |
| RAN5 #45 | RP-091122 | 0080 | - | LAI and TMSI in ATTACH ACCEPT and TAU ACCEPT messages | F | 8.3.0 | 8.4.0 | R5-096449 |
| RAN5 #45 | RP-091122 | 0081 | - | Addition of generic procedure for IP address allocation / configuration in U-plane | F | 8.3.0 | 8.4.0 | R5-096455 |
| RAN5 #45 | RP-091122 | 0082 | - | Correction of test procedures in TS 36.508 | F | 8.3.0 | 8.4.0 | R5-096456 |
| RAN5 #45 | RP-091122 | 0083 | - | Update of MAC configuration for disabling PHR and BSR for L2 test cases | F | 8.3.0 | 8.4.0 | R5-096458 |
| RAN5 #45 | RP-091122 | 0084 | - | Addition of default UTRA message contents to TS 36.508 | F | 8.3.0 | 8.4.0 | R5-096461 |
| RAN5 #45 | RP-091122 | 0085 | - | Clarification to the mapping of GERAN cells and the default parameter values | F | 8.3.0 | 8.4.0 | R5-096462 |
| RAN5 #45 | RP-091122 | 0086 | - | Correction of TFTs for reference dedicated EPS bearer contexts | F | 8.3.0 | 8.4.0 | R5-096464 |
| RAN5 #45 | RP-091122 | 0087 | - | Cleanup of default NAS message contents | F | 8.3.0 | 8.4.0 | R5-096465 |
| RAN5 #45 | RP-091122 | 0088 | - | LTE-Sig: Assignment of different rootSequenceIndex for cells at the same frequency | F | 8.3.0 | 8.4.0 | R5-096641 |
| RAN5 #46 | RP-100143 | 0089 | - | Correction of SIB19 scheduling position in the neighbouring UTRA cell | F | 8.4.0 | 8.5.0 | R5-100086 |
| RAN5 #46 | RP-100143 | 0091 | - | Correction of Quantity Configuration for EUTRA | F | 8.4.0 | 8.5.0 | R5-100110 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| RAN5 #46 | RP-100143 | 0092 | - | Correction for the offset value of RSRP in EUTRA | F | 8.4.0 | 8.5.0 | R5-100111 |
| RAN5 #46 | RP-100143 | 0093 | - | SIB10 and SIB11 periodicity | F | 8.4.0 | 8.5.0 | R5-100112 |
| RAN5 #46 | RP-100143 | 0094 | - | Assignment of rootSequenceIndex for simulated NAS cells in different PLMNs | F | 8.4.0 | 8.5.0 | R5-100260 |
| RAN5 #46 | RP-100143 | 0095 | - | Editorial correction to the default value of 'p-a' | F | 8.4.0 | 8.5.0 | R5-100261 |
| RAN5 #46 | RP-100142 | 0096 | - | New chapter: Test environment for RRM tests | F | 8.4.0 | 8.5.0 | R5-100396 |
| RAN5 #46 | RP-100143 | 0097 | - | Remove UM in DRB reconfiguration | F | 8.4.0 | 8.5.0 | R5-100487 |
| RAN5 #46 | RP-100143 | 0098 | - | Addition of default power allocation for two TX antennas | F | 8.4.0 | 8.5.0 | R5-100518 |
| RAN5 #46 | RP-100143 | 0099 | - | Correction to TFT parameters used in ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST message | F | 8.4.0 | 8.5.0 | R5-100771 |
| RAN5 #46 | RP-100143 | 0100 | - | Update to RRC common messages for support of test cases for MIMO | F | 8.4.0 | 8.5.0 | R5-100786 |
| RAN5 #46 | RP-100152 | 0101 | - | Adding band 20 in 36.508 | F | 8.4.0 | 8.5.0 | R5-100846 |
| RAN5 #46 | RP-100154 | 0102 | - | CR to 36.508: Update test frequencies with extended LTE1500 operating bands | F | 8.4.0 | 8.5.0 | R5-100847 |
| RAN5 #46 | RP-100143 | 0103 | - | Defining default message contents for ATTACH/TAU REQUEST/ACCEPT messages according to UE capability | F | 8.4.0 | 8.5.0 | R5-101021 |
| RAN5 #46 | RP-100143 | 0104 | - | Limitation of simultaneous co-existence of intra-freq cells to reduce interference | F | 8.4.0 | 8.5.0 | R5-101029 |
| RAN5 #46 | RP-100143 | 0105 | - | An additional option for IP address allocation in test cases using UE test mode | F | 8.4.0 | 8.5.0 | R5-101045 |
| RAN5 #46 | RP-100143 | 0106 | - | Specify default UL NAS check | F | 8.4.0 | 8.5.0 | R5-101051 |
| RAN5 #46 | RP-100143 | 0107 | - | Correct default requirement for some mandatory information elements | F | 8.4.0 | 8.5.0 | R5-101052 |
| RAN5 #46 | RP-100142 | 0108 | - | Addition of Tracking area updating procedure | F | 8.4.0 | 8.5.0 | R5-101136 |
| RAN5 #46 | RP-100143 | 0109 | - | Clarification of Security Protection for NAS Messages | F | 8.4.0 | 8.5.0 | R5-101147 |
| RAN5 #46 | RP-100143 | 0110 | - | Update to layer 2 UM test cases to increase the drx-Inactivity Timer to psf200 | F | 8.4.0 | 8.5.0 | R5-101178 |
| RAN5 #46 | RP-100143 | 0111 | - | Addition of new generic procedure for bearer establishment for MO call. | F | 8.4.0 | 8.5.0 | R5-101187 |
| RAN5 #46 | RP-100143 | 0112 | - | update of default bandwidth configuration for signalling | F | 8.4.0 | 8.5.0 | R5-101207 |
| RP#47 | - | - | - | Moved to v9.0.0 with no change | - | 8.5.0 | 9.0.0 | - |
| RP#48 | RP-100510 | 0143 | - | Clarification of security protection when NAS security mode procedure has taken place outside of a TC sequence | F | 9.0.0 | 9.1.0 | R5-103085 |
| RP#48 | RP-100523 | 0113 | - | CR to 36.508: Update of EARFCN for band 21 | F | 9.0.0 | 9.1.0 | R5-103101 |
| RP#48 | RP-100510 | 0114 | - | Correction to the default message contents of EXTENDED SERVICE REQUEST | F | 9.0.0 | 9.1.0 | R5-103128 |
| RP#48 | RP-100510 | 0115 | - | Removal of unrealistic network behaviour from generic procedures | F | 9.0.0 | 9.1.0 | R5-103223 |
| RP#48 | RP-100510 | 0116 | - | Correction of table numbers in clause 6.2.3.1 | F | 9.0.0 | 9.1.0 | R5-103232 |
| RP#48 | RP-100510 | 0117 | - | Correction to default values for PhysicalConfigDedicated and MIMO | F | 9.0.0 | 9.1.0 | R5-103287 |
| RP#48 | RP-100510 | 0118 | - | Correction to SR-ConfigIndex for LTE TDD signalling test cases | F | 9.0.0 | 9.1.0 | R5-103290 |
| RP#48 | RP-100510 | 0119 | - | Correction to MME Group ID to set MSB to 1 | F | 9.0.0 | 9.1.0 | R5-103298 |
| RP#48 | RP-100500 | 0144 | - | Connection diagram for test 8.11.2 (3 cells) | F | 9.0.0 | 9.1.0 | R5-103311 |
| RP#48 | RP-100510 | 0120 | - | New combination of system information blocks for CSG Cell in TS 36.508 | F | 9.0.0 | 9.1.0 | R5-103363 |
| RP#48 | RP-100510 | 0121 | - | Clarification of security protection for detach request message | F | 9.0.0 | 9.1.0 | R5-103368 |
| RP#48 | RP-100510 | 0122 | - | Corrections to cell numbers for 3GPP2 Inter-RAT network scenarios | F | 9.0.0 | 9.1.0 | R5-103374 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| RP#48 | RP-100510 | 0140 | - | Clarification to default message content for Modify EPS Bearer Context Request message | F | 9.0.0 | 9.1.0 | R5-103625 |
| RP#48 | RP-100510 | 0141 | - | Clarification to default message content for RRC Connection Reconfiguration message | F | 9.0.0 | 9.1.0 | R5-103626 |
| RP#48 | RP-100524 | 0123 | - | Addition of WLAN test cell | F | 9.0.0 | 9.1.0 | R5-103647 |
| RP#48 | RP-100524 | 0124 | - | Addition of default message contents for mobility management based on DSMIPv6 testing | F | 9.0.0 | 9.1.0 | R5-103648 |
| RP#48 | RP-100510 | 0125 | - | Update default message contents for EPS attach conditions | F | 9.0.0 | 9.1.0 | R5-103673 |
| RP#48 | RP-100510 | 0126 | - | Update default message with network support for IMS voice | F | 9.0.0 | 9.1.0 | R5-103674 |
| RP#48 | RP-100510 | 0127 | - | Correction to Generic Test Procedure in TS 36.508 | F | 9.0.0 | 9.1.0 | R5-103675 |
| RP#48 | RP-100510 | 0128 | - | Default settings of suitable - non-suitable cells for UTRAN/GERAN | F | 9.0.0 | 9.1.0 | R5-103677 |
| RP#48 | RP-100510 | 0129 | - | Correction to IE schedulingRequestConfig during Handover | F | 9.0.0 | 9.1.0 | R5-103678 |
| RP#48 | RP-100510 | 0130 | - | Update generic procedures for IMS | F | 9.0.0 | 9.1.0 | R5-103679 |
| RP#48 | RP-100510 | 0131 | - | Aligning E-UTRAN USIM parameters for multi-RAT devices | F | 9.0.0 | 9.1.0 | R5-103680 |
| RP#48 | RP-100510 | 0132 | - | Adding Additional Update Result handling to the default messages | F | 9.0.0 | 9.1.0 | R5-103681 |
| RP#48 | RP-100509 | 0133 | - | Connection diagram update for intra-freq measurement with phase rotator | F | 9.0.0 | 9.1.0 | R5-103770 |
| RP#48 | RP-100509 | 0134 | - | Update of default bandwidth configuration for Signalling for Band 38 | F | 9.0.0 | 9.1.0 | R5-103813 |
| RP#48 | RP-100524 | 0135 | - | Addition of generic procedures for mobility management based on DSMIPv6 testing | F | 9.0.0 | 9.1.0 | R5-103858 |
| RP#48 | RP-100510 | 0136 | - | Addition of new generic procedure for MO SMS over SGs and clarifications | F | 9.0.0 | 9.1.0 | R5-103869 |
| RP#48 | RP-100510 | 0137 | - | Addition of generic procedures for HRPD and 1xRTT pre-registration | F | 9.0.0 | 9.1.0 | R5-103870 |
| RP#48 | RP-100510 | 0138 | - | Introduction of reference information for test case postambles | F | 9.0.0 | 9.1.0 | R5-103875 |
| RP#48 | RP-100509 | 0139 | - | Physical layer parameter correction to DCI formats used in RF tests | F | 9.0.0 | 9.1.0 | R5-103885 |
| RP#49 | RP-100812 | 0145 | - | Update of tested channel bandwidths for Bands 13, 14 and 17 | F | 9.1.0 | 9.2.0 | R5-104089 |
| RP#49 | RP-100816 | 0146 | - | Correction to remove special configurations for UM Bearer test cases | F | 9.1.0 | 9.2.0 | R5-104106 |
| RP#49 | RP-100816 | 0147 | - | Clarification to the procedure: UE triggered establishment of a default EPS bearer context associated with an additional PDN | F | 9.1.0 | 9.2.0 | R5-104128 |
| RP#49 | RP-100816 | 0148 | - | Correction to Inter-frequency carrier frequency list in SIB5 and E-UTRA carrier frequency list in SIB19 | F | 9.1.0 | 9.2.0 | R5-104169 |
| RP#49 | RP-100816 | 0149 | - | Update of 6.2.3 of 36.508 - description of default frequency for the single cell signalling test | F | 9.1.0 | 9.2.0 | R5-104220 |
| RP#49 | RP-100831 | 0150 | - | Update of default message contents for DSMIPv6 testing | F | 9.1.0 | 9.2.0 | R5-104392 |
| RP#49 | RP-100837 | 0151 | - | Addition of UE test state model for HRPD | F | 9.1.0 | 9.2.0 | R5-104454 |
| RP#49 | RP-100812 | 0152 | - | Correction to Qrxlevmin in SIB 1 for RF and RRM | F | 9.1.0 | 9.2.0 | R5-104503 |
| RP#49 | RP-100816 | 0153 | - | Specification of HRPD specific values in SIB8 | F | 9.1.0 | 9.2.0 | R5-104547 |
| RP#49 | RP-100816 | 0154 | - | Update of default bandwidth configuration for signalling | F | 9.1.0 | 9.2.0 | R5-104685 |
| RP#49 | RP-100816 | 0155 | - | Clarification to packet filter identifier and precedence in TFT | F | 9.1.0 | 9.2.0 | R5-104702 |
| RP#49 | RP-100816 | 0156 | - | Add P-CSCF method II for IMS | F | 9.1.0 | 9.2.0 | R5-104703 |
| RP#49 | RP-100816 | 0157 | - | Update generic procedures for IMS | F | 9.1.0 | 9.2.0 | R5-104704 |
| RP#49 | RP-100816 | 0158 | - | Correction of clause 4.3.3.4 | F | 9.1.0 | 9.2.0 | R5-104705 |
| RP#49 | RP-100816 | 0159 | - | Correction to Downlink Frequency for N_DL 4850 | F | 9.1.0 | 9.2.0 | R5-104706 |
| RP#49 | RP-100816 | 0160 | - | Default message contents for UTRAN and GERAN | F | 9.1.0 | 9.2.0 | R5-104707 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| RP#49 | RP-100812 | 0161 | - | Addition of the new connection diagram for the CSI test case | F | 9.1.0 | 9.2.0 | R5-104884 |
| RP#49 | RP-100816 | 0162 | - | Correction to reference end states | F | 9.1.0 | 9.2.0 | R5-105003 |
| RP#49 | RP-100837 | 0163 | - | Correction for Timer Tolerances | F | 9.1.0 | 9.2.0 | R5-105050 |
| RP#49 | RP-100885 | 0165 | - | Introduction of default message contents for HRPD overhead messages | F | 9.1.0 | 9.2.0 | - |
| GP#49 | GP-101743 | 0166 | - | Update of Common parameters for simulated GERAN cells for supporting GERAN-EUTRAN Inter-RAT cell reselection | F | 9.2.0 | 9.3.0 | GP-101743 |
| RP#50 | RP-101138 | 0167 | - | MBSFN configuration for RRM tests using E-UTRA FDD cells | F | 9.2.0 | 9.3.0 | R5-106070 |
| RP#50 | RP-101155 | 0169 | - | CR to 36.508: Update test frequencies for EUTRA TDD LTE band 41. | F | 9.2.0 | 9.3.0 | R5-106105 |
| RP#50 | RP-101142 | 0168 | - | CR to 36.508: Correction to HRPD Overhead messages (subclause 4.4.7.1) | F | 9.2.0 | 9.3.0 | R5-106116 |
| RP#50 | RP-101142 | 0170 | - | Addition of test frequencies for LTE-C2k interworking test cases | F | 9.2.0 | 9.3.0 | R5-106298 |
| RP#50 | RP-101142 | 0172 | - | Addition of UTRA reference radio parameters and combination for PS RB and Speech | F | 9.2.0 | 9.3.0 | R5-106383 |
| RP#50 | RP-101142 | 0175 | - | Correction to EUTRA carrier frequency list in SIB19 | F | 9.2.0 | 9.3.0 | R5-106421 |
| RP#50 | RP-101142 | 0171 | - | Correction to the IDENTITY RESPONSE (with IMSI) message | F | 9.2.0 | 9.3.0 | R5-106551 |
| RP#50 | RP-101142 | 0178 | - | Correction for DRX offset start time | F | 9.2.0 | 9.3.0 | R5-106552 |
| RP#50 | RP-101142 | 0177 | - | Correction of specific message content for generic procedures (state 2 and state 2A) | F | 9.2.0 | 9.3.0 | R5-106596 |
| RP#50 | RP-101138 | 0180 | - | LTE-RF state 3A | F | 9.2.0 | 9.3.0 | R5-106597 |
| RP#50 | RP-101142 | 0176 | - | Correction to security protection header for Identity Request message | F | 9.2.0 | 9.3.0 | R5-106611 |
| RP#50 | RP-101142 | 0173 | - | Addition of new system information combinations | F | 9.2.0 | 9.3.0 | R5-106616 |
| RP#50 | RP-101142 | 0174 | - | Remove SS requirement for IMS in UTRA | F | 9.2.0 | 9.3.0 | R5-106690 |
| RP#50 | RP-101159 | 0179 | - | Corrections to default settings for Elementary Files (EFs) on Test USIM | F | 9.2.0 | 9.3.0 | R5-106819 |
| RP#50 | RP-101138 | 0181 | - | Update of the RF exceptional RRC message | F | 9.2.0 | 9.3.0 | R5-106820 |
| RP#51 | RP-110161 | 0182 | - | Update of HRPD overhead message parameters AccessSignature, SectorSignature | F | 9.3.0 | 9.4.0 | R5-110069 |
| RP#51 | RP-110161 | 0183 | - | Add a new eUTRA sub-end state E2_T3440 | F | 9.3.0 | 9.4.0 | R5-110105 |
| RP#51 | RP-110161 | 0184 | - | Correction for NAS message NOTE | F | 9.3.0 | 9.4.0 | R5-110229 |
| RP#51 | RP-110161 | 0185 | - | Addition of CSIM default contents | F | 9.3.0 | 9.4.0 | R5-110331 |
| RP#51 | RP-110161 | 0186 | - | Update of Table 4.4.2-1 with HRPD/1xRTT frequency range info | F | 9.3.0 | 9.4.0 | R5-110332 |
| RP#51 | RP-110157 | 0187 | - | Update of the RF exceptional RRC message | F | 9.3.0 | 9.4.0 | R5-110410 |
| RP#51 | RP-110161 | 0188 | - | Editorial correction for IMS signalling | F | 9.3.0 | 9.4.0 | R5-110433 |
| RP#51 | RP-110161 | 0189 | - | Correction to SIB combinations related to HeNB Cells | F | 9.3.0 | 9.4.0 | R5-110471 |
| RP#51 | RP-110161 | 0190 | - | Correction to default message content for Detach Request message | F | 9.3.0 | 9.4.0 | R5-110472 |
| RP#51 | RP-110157 | 0191 | - | Removal of Lower Humidity Limit in Normal Conditions | F | 9.3.0 | 9.4.0 | R5-110534 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
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| RP#51 | RP-110157 | 0192 | - | Correction of EARFCN numbers for band 41 | F | 9.3.0 | 9.4.0 | R5-110542 |
| RP#51 | RP-110161 | 0193 | - | Removal of "Modified contents of the EFs at the ISIM ADF (application DF) level" | F | 9.3.0 | 9.4.0 | R5-110593 |
| RP#51 | RP-110161 | 0194 | - | Correction of the IEs for compressed mode in table 4.7B.1-5 | F | 9.3.0 | 9.4.0 | R5-110601 |
| RP#51 | RP-110161 | 0195 | - | Update to default message content for TRACKING AREA UPDATE REQUEST message | F | 9.3.0 | 9.4.0 | R5-110703 |
| RP#51 | RP-110161 | 0196 | - | Add default APN for IMS | F | 9.3.0 | 9.4.0 | R5-110708 |
| RP#51 | RP-110161 | 0197 | - | Introduction of over head messages for CDMA2000 1XRTT | F | 9.3.0 | 9.4.0 | R5-110710 |
| RP#51 | RP-110161 | 0198 | - | Addition of default SMS over SGs message contents | F | 9.3.0 | 9.4.0 | R5-110875 |
| RP#51 | RP-110161 | 0199 | - | Correction to 'Test procedure to check that UE is camped on E-UTRAN cell upon mobility from another RAT' | F | 9.3.0 | 9.4.0 | R5-110746 |
| RP#51 | RP-110161 | 0200 | - | Correction of frequency allocations | F | 9.3.0 | 9.4.0 | R5-110788 |
| RP#51 | RP-110161 | 0201 | - | Update of Reference packet filters contents | F | 9.3.0 | 9.4.0 | R5-110789 |
| RP#51 | RP-110157 | 0202 | - | Correction to FDD Reference Test Frequencies for Operating Band 12 | F | 9.3.0 | 9.4.0 | R5-110846 |
| RP#51 | RP-110157 | 0203 | - | LTE RF: state 3A-RF update | F | 9.3.0 | 9.4.0 | R5-110937 |
| RP#51 | RP-110172 | 0204 | - | Add test frequencies for bands 42, 43 (3500MHz) | F | 9.3.0 | 9.4.0 | R5-110968 |
| RP#52 | RP-110647 | 0205 | - | Correction to default message content of LOCATION UPDATING REQUEST message | F | 9.4.0 | 9.5.0 | R5-112114 |
| RP#52 | RP-110647 | 0206 | - | Correction to default message content of TRACKING AREA UPDATE REQUEST message | F | 9.4.0 | 9.5.0 | R5-112120 |
| RP#52 | RP-110643 | 0207 | - | PRACH-Config-DEFAULT for RF-tests TDD: Correction to derivation path | F | 9.4.0 | 9.5.0 | R5-112146 |
| RP#52 | RP-110643 | 0208 | - | Correction to connection diagram for CQI with uneven interference test (A.21) | F | 9.4.0 | 9.5.0 | R5-112147 |
| RP#52 | RP-110647 | 0209 | - | Update to Common contents of system information blocks | F | 9.4.0 | 9.5.0 | R5-112161 |
| RP#52 | RP-110647 | 0210 | - | Addition of missing labels in Figure 4.5.1-1 | F | 9.4.0 | 9.5.0 | R5-112278 |
| RP#52 | RP-110647 | 0211 | - | Corrections to Table 4.3.7-6 | F | 9.4.0 | 9.5.0 | R5-112279 |
| RP#52 | RP-110647 | 0212 | - | Update of CSIM default contents | F | 9.4.0 | 9.5.0 | R5-112285 |
| RP#52 | RP-110660 | 0213 | - | Add emergency bearer support | F | 9.4.0 | 9.5.0 | R5-112289 |
| RP#52 | RP-110667 | 0214 | - | Band 24 Addition to TS 36.508 | F | 9.4.0 | 9.5.0 | R5-112381 |
| RP#52 | RP-110643 | 0215 | - | New connection diagrams to Annex A | F | 9.4.0 | 9.5.0 | R5-112458 |
| RP#52 | RP-110647 | 0216 | - | Correction to Derivation Path for RB Setup on UTRA side (condition UTRA PS RB) | F | 9.4.0 | 9.5.0 | R5-112571 |
| RP#52 | RP-110647 | 0217 | - | Update APN check at attach | F | 9.4.0 | 9.5.0 | R5-112598 |
| RP#52 | RP-110647 | 0218 | - | Update of SIB7 default message contents | F | 9.4.0 | 9.5.0 | R5-112599 |
| RP#52 | RP-110647 | 0219 | - | Clarification to conditions for IP address configuration over user plane | F | 9.4.0 | 9.5.0 | R5-112600 |
| RP#52 | RP-110666 | 0220 | - | Introduction of UE Test Loop Mode C for LTE MBMS testing | F | 9.4.0 | 9.5.0 | R5-112675 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| RP#52 | RP-110647 | 0222 | - | Update 36.508 QoS definition for InterRat test cases | F | 9.4.0 | 9.5.0 | R5-112698 |
| RP#52 | RP-110666 | 0221 | - | Addition of some MBMS related message definitions in TS36.508 | F | 9.4.0 | 9.5.0 | R5-112748 |
| RP#52 | RP-110647 | 0223 | - | Introduction of generic CS fall back procedures for UTRAN and GERAN | F | 9.4.0 | 9.5.0 | R5-112751 |
| RP#52 | RP-110643 | 0224 | - | Default Bandwidth Configuration for RF Testing | F | 9.4.0 | 9.5.0 | R5-112760 |
| RP#52 | RP-110643 | 0225 | - | Update for PRACH-Config-DEFAULT for the default TDD RRM message | F | 9.4.0 | 9.5.0 | R5-112872 |
| RP#52 | RP-110647 | 0205 | - | Correction to default message content of LOCATION UPDATING REQUEST message | F | 9.4.0 | 9.5.0 | R5-112114 |
| RP#52 | RP-110647 | 0206 | - | Correction to default message content of TRACKING AREA UPDATE REQUEST message | F | 9.4.0 | 9.5.0 | R5-112120 |
| RP#52 | RP-110643 | 0207 | - | PRACH-Config-DEFAULT for RF-tests TDD: Correction to derivation path | F | 9.4.0 | 9.5.0 | R5-112146 |
| RP#52 | RP-110643 | 0208 | - | Correction to connection diagram for CQI with uneven interference test (A.21) | F | 9.4.0 | 9.5.0 | R5-112147 |
| RP#52 | RP-110647 | 0209 | - | Update to Common contents of system information blocks | F | 9.4.0 | 9.5.0 | R5-112161 |
| RP#52 | RP-110647 | 0210 | - | Addition of missing labels in Figure 4.5.1-1 | F | 9.4.0 | 9.5.0 | R5-112278 |
| RP#52 | RP-110647 | 0211 | - | Corrections to Table 4.3.7-6 | F | 9.4.0 | 9.5.0 | R5-112279 |
| RP#52 | RP-110647 | 0212 | - | Update of CSIM default contents | F | 9.4.0 | 9.5.0 | R5-112285 |
| RP#52 | RP-110660 | 0213 | - | Add emergency bearer support | F | 9.4.0 | 9.5.0 | R5-112289 |
| RP#52 | RP-110667 | 0214 | - | Band 24 Addition to TS 36.508 | F | 9.4.0 | 9.5.0 | R5-112381 |
| RP#52 | RP-110643 | 0215 | - | New connection diagrams to Annex A | F | 9.4.0 | 9.5.0 | R5-112458 |
| RP#52 | RP-110647 | 0216 | - | Correction to Derivation Path for RB Setup on UTRA side (condition UTRA PS RB) | F | 9.4.0 | 9.5.0 | R5-112571 |
| RP#52 | RP-110647 | 0217 | - | Update APN check at attach | F | 9.4.0 | 9.5.0 | R5-112598 |
| RP#52 | RP-110647 | 0218 | - | Update of SIB7 default message contents | F | 9.4.0 | 9.5.0 | R5-112599 |
| RP#52 | RP-110647 | 0219 | - | Clarification to conditions for IP address configuration over user plane | F | 9.4.0 | 9.5.0 | R5-112600 |
| RP#52 | RP-110647 | 0222 | - | Update 36.508 QoS definition for InterRat test cases | F | 9.4.0 | 9.5.0 | R5-112698 |
| RP#52 | RP-110666 | 0221 | - | Addition of some MBMS related message definitions in TS36.508 | F | 9.4.0 | 9.5.0 | R5-112748 |
| RP#52 | RP-110647 | 0223 | - | Introduction of generic CS fall back procedures for UTRAN and GERAN | F | 9.4.0 | 9.5.0 | R5-112751 |
| RP#52 | RP-110643 | 0224 | - | Default Bandwidth Configuration for RF Testing | F | 9.4.0 | 9.5.0 | R5-112760 |
| RP#52 | RP-110643 | 0225 | - | Update for PRACH-Config-DEFAULT for the default TDD RRM message | F | 9.4.0 | 9.5.0 | R5-112872 |
| RP#53 | RP-111138 | 0226 | - | Correction for generic CS fallback procedures for UTRAN | F | 9.5.0 | 9.6.0 | R5-113033 |
| RP#53 | RP-111138 | 0227 | - | Correction to paging test procedure | F | 9.5.0 | 9.6.0 | R5-113163 |
| RP#53 | RP-111138 | 0228 | - | Deletion of 'EPSONlyAttachForced' in common part | F | 9.5.0 | 9.6.0 | R5-113195 |
| RP#53 | RP-111135 | 0229 | - | Deletion of 'EPSONlyAttachForced' in RF part | F | 9.5.0 | 9.6.0 | R5-113213 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| RP#53 | RP-111135 | 0230 | - | Correction to PhysicalConfigDedicated-DEFAULT for HO case | F | 9.5.0 | 9.6.0 | R5-113450 |
| RP#53 | RP-111138 | 0231 | - | Addition of the 'Expanded 1900 MHz band' as operating band 25 to TS 36.508 | F | 9.5.0 | 9.6.0 | R5-113500 |
| RP#53 | RP-111153 | 0232 | - | Band 24 Details for Signalling part of 36.508 | F | 9.5.0 | 9.6.0 | R5-113521 |
| RP#53 | RP-111138 | 0233 | - | Add new SI combination | F | 9.5.0 | 9.6.0 | R5-113658 |
| RP#53 | RP-111138 | 0234 | - | Update of HRPD/1xRTT test frequencies, pre-registration procedures and message contents | F | 9.5.0 | 9.6.0 | R5-113659 |
| RP#53 | RP-111138 | 0235 | - | Correction to test procedures specific message contents | F | 9.5.0 | 9.6.0 | R5-113660 |
| RP#53 | RP-111138 | 0236 | - | Correction to 'Test procedure to check that UE is camped on E-UTRAN cell upon mobility from another RAT' | F | 9.5.0 | 9.6.0 | R5-113661 |
| RP#53 | RP-111138 | 0237 | - | Correction for the default NAS message contents | F | 9.5.0 | 9.6.0 | R5-113662 |
| RP#53 | RP-111138 | 0238 | - | Update UTRA RRC messages | F | 9.5.0 | 9.6.0 | R5-113663 |
| RP#53 | RP-111138 | 0239 | - | Update UTRA NAS messages | F | 9.5.0 | 9.6.0 | R5-113664 |
| RP#53 | RP-111138 | 0240 | - | Addition of default GERAN message PS HANDOVER COMMAND | F | 9.5.0 | 9.6.0 | R5-113665 |
| RP#53 | RP-111138 | 0241 | - | Update test procedure 6.4.3.7.6 | F | 9.5.0 | 9.6.0 | R5-113666 |
| RP#53 | RP-111138 | 0242 | - | Update test procedure 6.4.3.7.5 | F | 9.5.0 | 9.6.0 | R5-113667 |
| RP#53 | RP-111155 | 0243 | - | Update test frequencies for FDD LTE Band 23 in 36.508 | F | 9.5.0 | 9.6.0 | R5-113749 |
| RP#53 | RP-111138 | 0244 | - | Correction on the IE ReportConfigEUTRA-PERIODICAL definition | F | 9.5.0 | 9.6.0 | R5-113751 |
| RP#53 | RP-111148 | 0245 | - | Correction to TS36.508 subclause 4.6.1 | F | 9.5.0 | 9.6.0 | R5-113761 |
| RP#53 | RP-111145 | 0246 | - | Combined parallel procedures between EUTRA/EPC and IMS emergency call | F | 9.5.0 | 9.6.0 | R5-113801 |
| RP#53 | RP-111135 | 0247 | - | RF/RRM State 3A-RF: Editors note | F | 9.5.0 | 9.6.0 | R5-114037 |
| RP#54 | RP-111579 | 0248 | - | Correction of the default message contents of Transaction Identifiers in Activate Default EPS Bearer Context and Activate Dedicated EPS Bearer Context messages | F | 9.6.0 | 9.7.0 | R5-115091 |
| RP#54 | RP-111596 | 0250 | - | Adding band 22 (3500MHz FDD) to 36.508 | F | 9.6.0 | 9.7.0 | R5-115185 |
| RP#54 | RP-111579 | 0251 | - | Update of UE Registration pre-registration on 1xRTT registrationPeriod | F | 9.6.0 | 9.7.0 | R5-115264 |
| RP#54 | RP-111579 | 0252 | - | Update UTRA RRC message for handover to UTRAN | F | 9.6.0 | 9.7.0 | R5-115533 |
| RP#54 | RP-111579 | 0253 | - | Add reference default EPS bearer context for QCI 5 | F | 9.6.0 | 9.7.0 | R5-115537 |
| RP#54 | RP-111579 | 0254 | - | Correction of EPS Bearer Contexts | F | 9.6.0 | 9.7.0 | R5-115585 |
| RP#54 | RP-111579 | 0255 | - | Correction to ESM default messages | F | 9.6.0 | 9.7.0 | R5-115618 |
| RP#54 | RP-111579 | 0256 | - | Introduction of Combined Generic test procedure for IMS Speech call | F | 9.6.0 | 9.7.0 | R5-115619 |
| RP#54 | RP-111576 | 0257 | - | default band configuration for RF testing in band 25 | F | 9.6.0 | 9.7.0 | R5-115633 |
| RP#54 | RP-111579 | 0258 | - | Complete the system configuration for dual mode network scenario | F | 9.6.0 | 9.7.0 | R5-115694 |
| RP#54 | RP-111579 | 0259 | - | Correction to IE PhysicalConfigDedicated-DEFAULT definition in Table 4.8.2.1.6-1 | F | 9.6.0 | 9.7.0 | R5-115696 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| RP#54 | RP-111579 | 0260 | - | Updates for 1xRTT pre-registration scenario | F | 9.6.0 | 9.7.0 | R5-115708 |
| RP#54 | RP-111579 | 0261 | - | Update of UE 1xRTT registrationPeriod in SystemInformationBlock type8 | F | 9.6.0 | 9.7.0 | R5-115750 |
| RP#54 | RP-111579 | 0262 | - | Correction to 1xRTT Overhead Message contents | F | 9.6.0 | 9.7.0 | R5-115791 |
| RP#55 | RP-120176 | 0263 | - | Correction to measurement control and report in default UTRA message | F | 9.7.0 | 9.8.0 | R5-120311 |
| RP#55 | RP-120176 | 0264 | - | Update of E-UTRAN_QRXLEVMIN in SIB19 and SI2 Quarter | F | 9.7.0 | 9.8.0 | R5-120312 |
| RP#55 | RP-120176 | 0265 | - | Update of RF Reference system configurations | F | 9.7.0 | 9.8.0 | R5-120313 |
| RP#55 | RP-120179 | 0266 | - | Correction of Physical Layer configurations | F | 9.7.0 | 9.8.0 | R5-120497 |
| RP#55 | RP-120179 | 0267 | - | Correction of E2_T3440 state definition | F | 9.7.0 | 9.8.0 | R5-120566 |
| RP#55 | RP-120179 | 0268 | - | Correction of default PCO value in some ESM messages | F | 9.7.0 | 9.8.0 | R5-120572 |
| RP#55 | RP-120179 | 0269 | - | Correction to the default message content of GERAN carrier frequency group list for E-UTRA cells | F | 9.7.0 | 9.8.0 | R5-120604 |
| RP#55 | RP-120179 | 0270 | - | Update of SystemInformationBlockType1 | F | 9.7.0 | 9.8.0 | R5-120616 |
| RP#55 | RP-120179 | 0271 | - | Update the default configuration of channel bandwidth for Band 39 for signalling testing | F | 9.7.0 | 9.8.0 | R5-120617 |
| RP#55 | RP-120179 | 0272 | - | Correction for UE pre-registration on CDMA2000 system | F | 9.7.0 | 9.8.0 | R5-120618 |
| RP#55 | RP-120179 | 0273 | - | Update to Reference default EPS bearer context #2 | F | 9.7.0 | 9.8.0 | R5-120619 |
| RP#55 | RP-120179 | 0274 | - | Correction to the default (UTRA) Physical Channel Reconfiguration message | F | 9.7.0 | 9.8.0 | R5-120620 |
| RP#55 | RP-120179 | 0275 | - | Correction of default measurement gap offset | F | 9.7.0 | 9.8.0 | R5-120621 |
| RP#55 | RP-120179 | 0276 | - | Correction to carrier bandwidth | F | 9.7.0 | 9.8.0 | R5-120677 |
| RP#55 | RP-120192 | 0277 | - | Update generic procedure 4.5A.4 | F | 9.7.0 | 9.8.0 | R5-120693 |
| RP#55 | RP-120192 | 0278 | - | Update generic procedure 4.5A.5 | F | 9.7.0 | 9.8.0 | R5-120694 |
| RP#55 | RP-120200 | 0280 | - | Addition of the default value of Carrier Aggregation parameters | F | 9.7.0 | 9.8.0 | R5-120726 |
| RP#55 | RP-120179 | 0282 | - | Correction of UE Release in UE capability | F | 9.7.0 | 9.8.0 | R5-120752 |
| RP#55 | RP-120179 | 0283 | - | Introduction of generic test procedure for SRVCC call handover to UTRA | F | 9.7.0 | 9.8.0 | R5-120753 |
| RP#55 | RP-120179 | 0284 | - | Correction to test procedure sequence 6.4.2.7A for check that UE is camped on E-UTRAN cell upon mobility from another RAT | F | 9.7.0 | 9.8.0 | R5-120754 |
| RP#55 | RP-120179 | 0285 | - | Addition of Default UTRA RRC Connection Request message | F | 9.7.0 | 9.8.0 | R5-120756 |
| RP#55 | RP-120176 | 0286 | - | TS 36.508: Band 23 test frequencies correction | F | 9.7.0 | 9.8.0 | R5-120800 |
| RP#55 | RP-120179 | 0287 | - | Remove IPv4viaNAS_TestMode | F | 9.7.0 | 9.8.0 | R5-120908 |
| RP#55 | GP-120009 | 0288 | - | Section 4.4.5 Common parameters for simulated GERAN cells – Correction to SI2 Quarter | F | 9.7.0 | 9.8.0 | GP-120009 |
| RP#55 | RP-120203 | 0279 | - | Addition of two MBMS counting related messages in TS 36.508 | F | 9.8.0 | 10.0.0 | R5-120723 |
| RP#55 | RP-120199 | 0281 | - | Introduction of new RRC default messages for Rel-10 | F | 9.8.0 | 10.0.0 | R5-120737 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| | | | | and MDT | | | | |
| RP#56 | RP-120644 | 0290 | - | Correction of power ratio allocation on PDSCH for common logical channels | F | 10.0.0 | 10.1.0 | R5-121089 |
| RP#56 | RP-120644 | 0291 | - | Correction to default mobilityParameters message contents | F | 10.0.0 | 10.1.0 | R5-121121 |
| RP#56 | RP-120644 | 0292 | - | Corrections to default overhead messages for HRPD | F | 10.0.0 | 10.1.0 | R5-121122 |
| RP#56 | RP-120644 | 0293 | - | Corrections to default overhead messages for 1xRTT | F | 10.0.0 | 10.1.0 | R5-121123 |
| RP#56 | RP-120644 | 0294 | - | Update of CSFBParametersRequest/ResponseCDMA2000 process in Registration | F | 10.0.0 | 10.1.0 | R5-121276 |
| RP#56 | RP-120641 | 0295 | - | RRM: Definition of parameters for simulated GSM cells | F | 10.0.0 | 10.1.0 | R5-121357 |
| RP#56 | RP-120662 | 0296 | - | SIB Combination for CA test scenarios | F | 10.0.0 | 10.1.0 | R5-121383 |
| RP#56 | RP-120644 | 0297 | - | Addition of default value of RSRQ Cell Reselection parameters | F | 10.0.0 | 10.1.0 | R5-121384 |
| RP#56 | RP-120641 | 0298 | - | Test frequencies for inter-band cells in RRM tests | F | 10.0.0 | 10.1.0 | R5-121407 |
| RP#56 | RP-120644 | 0299 | - | Update generic procedure 4.5A.6 | F | 10.0.0 | 10.1.0 | R5-121413 |
| RP#56 | RP-120644 | 0300 | - | Update generic procedure 4.5A.7 | F | 10.0.0 | 10.1.0 | R5-121414 |
| RP#56 | RP-120644 | 0301 | - | Update generic procedure 4.5A.3 | F | 10.0.0 | 10.1.0 | R5-121439 |
| RP#56 | RP-120644 | 0302 | - | Correction to RadioResourceConfigCommon-DEFAULT | F | 10.0.0 | 10.1.0 | R5-121447 |
| RP#56 | RP-120641 | 0304 | - | Removing 5.2A.3 for State 2A | F | 10.0.0 | 10.1.0 | R5-121521 |
| RP#56 | RP-120641 | 0305 | - | Addition of A-GNSS testing to Test frequencies clause 4.3.1 | F | 10.0.0 | 10.1.0 | R5-121543 |
| RP#56 | RP-120641 | 0306 | - | Ensuring all SS TX antennas are in use for whole test sequence | F | 10.0.0 | 10.1.0 | R5-121544 |
| RP#56 | RP-120641 | 0307 | - | Connection diagram for RRM 3 cell TCs with static propagation | F | 10.0.0 | 10.1.0 | R5-121556 |
| RP#56 | RP-120644 | 0308 | - | Correction of Physical Layer configurations tables | F | 10.0.0 | 10.1.0 | R5-121665 |
| RP#56 | RP-120644 | 0309 | - | Update of default bandwidth configuration for E-UTRA FDD band 11 and 18 | F | 10.0.0 | 10.1.0 | R5-121712 |
| RP#56 | RP-120644 | 0310 | - | Correction to default SIB4 contents for CSG cells | F | 10.0.0 | 10.1.0 | R5-121733 |
| RP#56 | RP-120644 | 0311 | - | Update of CDMA2000 Band Class data and addition of CDMA2000 Band Class 10 | F | 10.0.0 | 10.1.0 | R5-121734 |
| RP#56 | RP-120644 | 0312 | - | Update to Reference dedicated EPS bearer context #3 | F | 10.0.0 | 10.1.0 | R5-121735 |
| RP#56 | RP-120644 | 0313 | - | Add generic procedure MO video call | F | 10.0.0 | 10.1.0 | R5-121736 |
| RP#56 | RP-120644 | 0314 | - | Add generic procedure MT video call | F | 10.0.0 | 10.1.0 | R5-121737 |
| RP#56 | RP-120644 | 0315 | - | Clarifications to UICC requirements for LTE-C2K testing | F | 10.0.0 | 10.1.0 | R5-121809 |
| RP#56 | RP-120644 | 0316 | - | Update UE capability information | F | 10.0.0 | 10.1.0 | R5-121847 |
| RP#56 | RP-120658 | 0317 | - | Introduction of System information for PWS | F | 10.0.0 | 10.1.0 | R5-121854 |
| RP#56 | RP-120662 | 0318 | - | Update of the default value of Carrier Aggregation parameters | F | 10.0.0 | 10.1.0 | R5-121856 |
| RP#56 | RP-120644 | 0319 | - | Correction to reference system configurations for dual mode scenarios | F | 10.0.0 | 10.1.0 | R5-121888 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| RP#56 | RP-120667 | 0320 | - | Adding operating band 26 to TS 36.508 | F | 10.0.0 | 10.1.0 | R5-121905 |
| RP#56 | RP-120641 | 0321 | - | Addition of State 3B-RF in 36.508 | F | 10.0.0 | 10.1.0 | R5-121919 |
| RP#56 | RP-120641 | 0322 | - | Correction to Tracking area updating procedure in 36.508 | F | 10.0.0 | 10.1.0 | R5-121936 |
| RP#56 | RP-120662 | 0323 | - | Addition of Test mode call procedure for CA test cases | F | 10.0.0 | 10.1.0 | R5-121982 |
| RP#56 | RP-120641 | 0303 | - | Correction to Handover to UTRAN commands for UTRA RRC messages in 36.508 | F | 10.0.0 | 10.1.0 | R5-122018 |
| RP#56 | RP-120662 | 0324 | - | 36.508 - Test frequencies for CA_1C and CA_40C | F | 10.0.0 | 10.1.0 | R5-122134 |
| RP#56 | RP-120649 | 0289 | - | Removal of technical content in 36.508 v9.8.0 and substitution with pointer to the next Release | F | 10.0.0 | 10.1.0 | R5-121078 |
| RP#56 | RP-120644 | 0290 | - | Correction of power ratio allocation on PDSCH for common logical channels | F | 10.0.0 | 10.1.0 | R5-121089 |
| RP#56 | RP-120644 | 0291 | - | Correction to default mobilityParameters message contents | F | 10.0.0 | 10.1.0 | R5-121121 |
| RP#56 | RP-120644 | 0292 | - | Corrections to default overhead messages for HRPD | F | 10.0.0 | 10.1.0 | R5-121122 |
| RP#56 | RP-120644 | 0293 | - | Corrections to default overhead messages for 1xRTT | F | 10.0.0 | 10.1.0 | R5-121123 |
| RP#56 | RP-120644 | 0294 | - | Update of CSFBParametersRequest/ResponseCDMA2000 process in Registration | F | 10.0.0 | 10.1.0 | R5-121276 |
| RP#56 | RP-120641 | 0295 | - | RRM: Definition of parameters for simulated GSM cells | F | 10.0.0 | 10.1.0 | R5-121357 |
| RP#56 | RP-120662 | 0296 | - | SIB Combination for CA test scenarios | F | 10.0.0 | 10.1.0 | R5-121383 |
| RP#56 | RP-120644 | 0297 | - | Addition of default value of RSRQ Cell Reselection parameters | F | 10.0.0 | 10.1.0 | R5-121384 |
| RP#56 | RP-120641 | 0298 | - | Test frequencies for inter-band cells in RRM tests | F | 10.0.0 | 10.1.0 | R5-121407 |
| RP#56 | RP-120644 | 0299 | - | Update generic procedure 4.5A.6 | F | 10.0.0 | 10.1.0 | R5-121413 |
| RP#56 | RP-120644 | 0300 | - | Update generic procedure 4.5A.7 | F | 10.0.0 | 10.1.0 | R5-121414 |
| RP#56 | RP-120644 | 0301 | - | Update generic procedure 4.5A.3 | F | 10.0.0 | 10.1.0 | R5-121439 |
| RP#56 | RP-120644 | 0302 | - | Correction to RadioResourceConfigCommon-DEFAULT | F | 10.0.0 | 10.1.0 | R5-121447 |
| RP#56 | RP-120641 | 0304 | - | Removing 5.2A.3 for State 2A | F | 10.0.0 | 10.1.0 | R5-121521 |
| RP#56 | RP-120641 | 0305 | - | Addition of A-GNSS testing to Test frequencies clause 4.3.1 | F | 10.0.0 | 10.1.0 | R5-121543 |
| RP#56 | RP-120641 | 0306 | - | Ensuring all SS TX antennas are in use for whole test sequence | F | 10.0.0 | 10.1.0 | R5-121544 |
| RP#56 | RP-120641 | 0307 | - | Connection diagram for RRM 3 cell TCs with static propagation | F | 10.0.0 | 10.1.0 | R5-121556 |
| RP#56 | RP-120644 | 0308 | - | Correction of Physical Layer configurations tables | F | 10.0.0 | 10.1.0 | R5-121665 |
| RP#56 | RP-120644 | 0309 | - | Update of default bandwidth configuration for E-UTRA FDD band 11 and 18 | F | 10.0.0 | 10.1.0 | R5-121712 |
| RP#56 | RP-120644 | 0310 | - | Correction to default SIB4 contents for CSG cells | F | 10.0.0 | 10.1.0 | R5-121733 |
| RP#56 | RP-120644 | 0311 | - | Update of CDMA2000 Band Class data and addition of CDMA2000 Band Class 10 | F | 10.0.0 | 10.1.0 | R5-121734 |
| RP#56 | RP-120644 | 0312 | - | Update to Reference dedicated EPS bearer context #3 | F | 10.0.0 | 10.1.0 | R5-121735 |
| RP#56 | RP-120644 | 0313 | - | Add generic procedure MO video call | F | 10.0.0 | 10.1.0 | R5-121736 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| RP#56 | RP-120644 | 0314 | - | Add generic procedure MT video call | F | 10.0.0 | 10.1.0 | R5-121737 |
| RP#56 | RP-120644 | 0315 | - | Clarifications to UICC requirements for LTE-C2K testing | F | 10.0.0 | 10.1.0 | R5-121809 |
| RP#56 | RP-120644 | 0316 | - | Update UE capability information | F | 10.0.0 | 10.1.0 | R5-121847 |
| RP#56 | RP-120658 | 0317 | - | Introduction of System information for PWS | F | 10.0.0 | 10.1.0 | R5-121854 |
| RP#56 | RP-120662 | 0318 | - | Update of the default value of Carrier Aggregation parameters | F | 10.0.0 | 10.1.0 | R5-121856 |
| RP#56 | RP-120644 | 0319 | - | Correction to reference system configurations for dual mode scenarios | F | 10.0.0 | 10.1.0 | R5-121888 |
| RP#56 | RP-120667 | 0320 | - | Adding operating band 26 to TS 36.508 | F | 10.0.0 | 10.1.0 | R5-121905 |
| RP#56 | RP-120641 | 0321 | - | Addition of State 3B-RF in 36.508 | F | 10.0.0 | 10.1.0 | R5-121919 |
| RP#56 | RP-120641 | 0322 | - | Correction to Tracking area updating procedure in 36.508 | F | 10.0.0 | 10.1.0 | R5-121936 |
| RP#56 | RP-120662 | 0323 | - | Addition of Test mode call procedure for CA test cases | F | 10.0.0 | 10.1.0 | R5-121982 |
| RP#56 | RP-120641 | 0303 | - | Correction to Handover to UTRAN commands for UTRA RRC messages in 36.508 | F | 10.0.0 | 10.1.0 | R5-122018 |
| RP#56 | RP-120662 | 0324 | - | 36.508 - Test frequencies for CA_1C and CA_40C | F | 10.0.0 | 10.1.0 | R5-122134 |
| RP#57 | RP-121098 | 0325 | - | Correction to default message content of UTRA NAS attach accept message | F | 10.1.0 | 10.2.0 | R5-123114 |
| RP#57 | RP-121098 | 0326 | - | Correction default message content for Tracking Area Update Request message | F | 10.1.0 | 10.2.0 | R5-123117 |
| RP#57 | RP-121095 | 0327 | - | RF: Addition of messages and SIB combination informations for RF MBMS tests | F | 10.1.0 | 10.2.0 | R5-123211 |
| RP#57 | RP-121098 | 0328 | - | Clarify requirements for ROHC | F | 10.1.0 | 10.2.0 | R5-123259 |
| RP#57 | RP-121098 | 0329 | - | Updates to cl 6.x regarding use of MIMO | F | 10.1.0 | 10.2.0 | R5-123304 |
| RP#57 | RP-121113 | 0330 | - | Update of default parameters for Carrier Aggregation | F | 10.1.0 | 10.2.0 | R5-123305 |
| RP#57 | RP-121098 | 0331 | - | Addition of default value of Additional update parameters | F | 10.1.0 | 10.2.0 | R5-123306 |
| RP#57 | RP-121098 | 0332 | - | Addition of default value of Explicit Signalling Indication parameters | F | 10.1.0 | 10.2.0 | R5-123307 |
| RP#57 | RP-121095 | 0333 | - | Update of NeighCellConfig for RRM tests | F | 10.1.0 | 10.2.0 | R5-123328 |
| RP#57 | RP-121095 | 0334 | - | Correction to HO commands for UTRAN TDD | F | 10.1.0 | 10.2.0 | R5-123329 |
| RP#57 | RP-121116 | 0335 | - | Addition of new connection diagrams for UL-MIMO Testing | F | 10.1.0 | 10.2.0 | R5-123390 |
| RP#57 | RP-121098 | 0336 | - | Correction to generic test procedure CS fallback to GERAN with redirection or CCO / MT call(DTM not supported) | F | 10.1.0 | 10.2.0 | R5-123629 |
| RP#57 | RP-121098 | 0337 | - | Correction to RRC Connection Reconfiguration message during Handover from UTRA to EUTRA | F | 10.1.0 | 10.2.0 | R5-123630 |
| RP#57 | RP-121098 | 0338 | - | Update to Reference dedicated EPS bearer context #3 | F | 10.1.0 | 10.2.0 | R5-123632 |
| RP#57 | RP-121098 | 0339 | - | Update generic procedure 4.5A.6 | F | 10.1.0 | 10.2.0 | R5-123633 |
| RP#57 | RP-121098 | 0340 | - | Update generic procedure 4.5A.7 | F | 10.1.0 | 10.2.0 | R5-123634 |
| RP#57 | RP-121098 | 0341 | - | Update generic procedure 4.5A.8 | F | 10.1.0 | 10.2.0 | R5-123635 |
| RP#57 | RP-121098 | 0342 | - | Update generic procedure 4.5A.9 | F | 10.1.0 | 10.2.0 | R5-123636 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| RP#57 | RP-121098 | 0343 | - | Update the default value of IE RadioResourceConfigCommon and IE additionalSpectrumEmission | F | 10.1.0 | 10.2.0 | R5-123712 |
| RP#57 | RP-121098 | 0344 | - | Correction to test procedure 6.4.2.10 | F | 10.1.0 | 10.2.0 | R5-123720 |
| RP#57 | RP-121098 | 0345 | - | Corrections to CDMA2000 message sequences | F | 10.1.0 | 10.2.0 | R5-123728 |
| RP#57 | RP-121098 | 0346 | - | Update of UE Capability Information | F | 10.1.0 | 10.2.0 | R5-123729 |
| RP#57 | RP-121098 | 0347 | - | Update of Paging test procedure (for NAS test cases) | F | 10.1.0 | 10.2.0 | R5-123730 |
| RP#57 | RP-121098 | 0348 | - | Addition of guard timer to the procedure for IMS signalling | F | 10.1.0 | 10.2.0 | R5-123731 |
| RP#57 | RP-121098 | 0349 | - | Update to cl. 6.4.2.7A and 7.2B.1 | F | 10.1.0 | 10.2.0 | R5-123734 |
| RP#57 | RP-121113 | 0351 | - | Extension of cell configurations for Carrier Aggregation | F | 10.1.0 | 10.2.0 | R5-123751 |
| RP#57 | RP-121113 | 0352 | - | Maximum number of cells simultaneously used in Carrier Aggregation test cases | F | 10.1.0 | 10.2.0 | R5-123752 |
| RP#57 | RP-121098 | 0353 | - | Update of default MSPL and MLPL contents in Test UICC | F | 10.1.0 | 10.2.0 | R5-123767 |
| RP#57 | RP-121113 | 0354 | - | Correction to the CA test state references | F | 10.1.0 | 10.2.0 | R5-123949 |
| RP#58 | RP-121681 | 0356 | - | Addition of new connection diagram for UL-MIMO testing | F | 10.2.0 | 10.3.0 | R5-125107 |
| RP#58 | RP-121659 | 0357 | - | Update to test procedure sequence 6.4.2.7A for check that UE is camped on E-UTRAN cell upon mobility from another RAT | F | 10.2.0 | 10.3.0 | R5-125116 |
| RP#58 | RP-121677 | 0358 | - | Introduction of connection diagrams for CA tests | F | 10.2.0 | 10.3.0 | R5-125187 |
| RP#58 | RP-121685 | 0359 | - | Addition of default message contents for ESM NOTIFICATION message | F | 10.2.0 | 10.3.0 | R5-125219 |
| RP#58 | RP-121659 | 0360 | - | Modification of measurement configuration for UTRAN FDD SIG | F | 10.2.0 | 10.3.0 | R5-125283 |
| RP#58 | RP-121659 | 0361 | - | Clarification of table 6.6.2-1 | F | 10.2.0 | 10.3.0 | R5-125287 |
| RP#58 | RP-121656 | 0362 | - | Addition of channel bandwidth tested for E-UTRA FDD band 19 | F | 10.2.0 | 10.3.0 | R5-125303 |
| RP#58 | RP-121656 | 0363 | - | Correction of circulator in connection diagrams | F | 10.2.0 | 10.3.0 | R5-125370 |
| RP#58 | RP-121656 | 0364 | - | Correction to test channel numbers for Band 26 | F | 10.2.0 | 10.3.0 | R5-125372 |
| RP#58 | RP-121656 | 0365 | - | Update of Chw Bw Parameters for 1.4MHz and 3MHz | F | 10.2.0 | 10.3.0 | R5-125373 |
| RP#58 | RP-121659 | 0366 | - | Update generic procedure 4.5A.7 | F | 10.2.0 | 10.3.0 | R5-125530 |
| RP#58 | RP-121659 | 0367 | - | Update of default ROUTING AREA UPDATE REQUEST message | F | 10.2.0 | 10.3.0 | R5-125545 |
| RP#58 | RP-121690 | 0368 | - | CA_38: Addition of new test frequency for CA band 38 | F | 10.2.0 | 10.3.0 | R5-125573 |
| RP#58 | RP-121689 | 0369 | - | Addition of Band 28 definition | F | 10.2.0 | 10.3.0 | R5-125778 |
| RP#58 | RP-121685 | 0370 | - | Add generic procedure for IMS MO speech and aSRVCC | F | 10.2.0 | 10.3.0 | R5-125792 |
| RP#58 | RP-121677 | 0371 | - | Modification to state 3A-RF-CA initial conditions of clause 5.2A.4 | F | 10.2.0 | 10.3.0 | R5-125800 |
| RP#58 | RP-121688 | 0372 | - | Introduction of Band 27 to TS 36.508 | F | 10.2.0 | 10.3.0 | R5-125832 |
| RP#58 | RP-121677 | 0373 | - | Update of RF Reference system configurations in 36.508 | F | 10.2.0 | 10.3.0 | R5-125933 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| RP#58 | RP-121659 | 0374 | - | Using not null integrity protection and ciphering algorithms by default | F | 10.2.0 | 10.3.0 | R5-126020 |
| RP#58 | RP-121677 | 0375 | - | Introducing default channel bandwidth for CA signalling testing | F | 10.2.0 | 10.3.0 | R5-126053 |
| RP#59 | RP-130156 | 0377 | - | Addition of new connection diagram for UL-MIMO testing | F | 10.3.0 | 10.4.0 | R5-130136 |
| RP#59 | RP-130145 | 0378 | - | AWGN Level uncertainty for Signalling test cases | F | 10.3.0 | 10.4.0 | R5-130201 |
| RP#59 | RP-130144 | 0379 | - | Correction to CDMA2000Parameters message contents | F | 10.3.0 | 10.4.0 | R5-130202 |
| RP#59 | RP-130167 | 0380 | - | Addition of SCell configuration type | F | 10.3.0 | 10.4.0 | R5-130311 |
| RP#59 | RP-130145 | 0382 | - | Addition of default message contents of measurement information elements for event A4 and A5 measurement test cases | F | 10.3.0 | 10.4.0 | R5-130363 |
| RP#59 | RP-130144 | 0383 | - | Correction to ncc-Permitted value to TS 36.508 | F | 10.3.0 | 10.4.0 | R5-130453 |
| RP#59 | RP-130167 | 0384 | - | Correction to EARFCN definition for CA_40C | F | 10.3.0 | 10.4.0 | R5-130477 |
| RP#59 | RP-130144 | 0385 | - | Addition of combination A2+A11 and condition "UTRA Speech + Packet RAB Setup after Speech RAB Setup in CELL_DCH in Table 4.7B.1-1: HANDOVER TO UTRAN COMMAND | F | 10.3.0 | 10.4.0 | R5-130561 |
| RP#59 | RP-130144 | 0386 | - | Update of Band 18 configuration | F | 10.3.0 | 10.4.0 | R5-130619 |
| RP#59 | RP-130144 | 0387 | - | Update generic procedure 4.5.2 | F | 10.3.0 | 10.4.0 | R5-130620 |
| RP#59 | RP-130144 | 0388 | - | Update generic procedure 4.5.2A | F | 10.3.0 | 10.4.0 | R5-130621 |
| RP#59 | RP-130144 | 0389 | - | Add generic procedure MO add video | F | 10.3.0 | 10.4.0 | R5-130622 |
| RP#59 | RP-130144 | 0390 | - | Add generic procedure MT add video | F | 10.3.0 | 10.4.0 | R5-130623 |
| RP#59 | RP-130167 | 0391 | - | Correction of test frequencies for CA signalling tests | F | 10.3.0 | 10.4.0 | R5-130692 |
| RP#59 | RP-130146 | 0395 | - | Addition of simulated cell for E-UTRA dual mode multi cell network scenarios | F | 10.3.0 | 10.4.0 | R5-130709 |
| RP#59 | RP-130167 | 0397 | - | Corrections to Annex A general considerations on connections for CA testing | F | 10.3.0 | 10.4.0 | R5-130900 |
| RP#59 | RP-130165 | 0376 | - | Addition of test frequencies of CA_1A-19A and CA_1A-21A for CA signalling testing | F | 10.4.0 | 11.0.0 | R5-130087 |
| RP#59 | RP-130165 | 0381 | - | Addition of test frequencies for CA_7C and CA_41C signalling test | F | 10.4.0 | 11.0.0 | R5-130343 |
| RP#59 | RP-130165 | 0392 | - | Addition of test frequencies of CA_38, CA_3-7 and CA_7-20 for CA signalling test | F | 10.4.0 | 11.0.0 | R5-130694 |
| RP#59 | RP-130165 | 0393 | - | Addition of test frequencies of CA_4A-5A and CA_4A-13A for CA signalling testing | F | 10.4.0 | 11.0.0 | R5-130695 |
| RP#59 | RP-130165 | 0394 | - | Updates of 6.2.3.2 Test frequency for CA_1A-18A and 11A-18A | F | 10.4.0 | 11.0.0 | R5-130696 |
| RP#59 | RP-130164 | 0396 | - | Adding operating band 44 to TS36.508 | F | 10.4.0 | 11.0.0 | R5-130710 |
| RP#59 | RP-130165 | 0398 | - | Addition of new test frequencies for CA band 7 and band 41 | F | 10.4.0 | 11.0.0 | R5-130955 |
| RP#60 | RP-130609 | 0399 | - | Update of CDMA2000 specification references: TS 36.508 | F | 10.4.0 | 11.1.0 | R5-131067 |
| RP#60 | RP-130609 | 0401 | - | Editorial Fix Hysteris values for event B1&B2 ReportConfigInterRAT for GERAN | F | 10.4.0 | 11.1.0 | R5-131090 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| RP#60 | RP-130622 | 0402 | - | eICIC: Connection diagram for 2x2 antenna configuration scenarios | F | 10.4.0 | 11.1.0 | R5-131116 |
| RP#60 | RP-130636 | 0403 | - | CA: Connection diagrams for RRM tests | F | 10.4.0 | 11.1.0 | R5-131117 |
| RP#60 | RP-130609 | 0404 | - | Clarification to ncc-Permitted value interpretation in TS 36.508 | F | 10.4.0 | 11.1.0 | R5-131322 |
| RP#60 | RP-130626 | 0405 | - | Maintenance of Band 23 Requirements in TS 36.508 | F | 10.4.0 | 11.1.0 | R5-131462 |
| RP#60 | RP-130626 | 0406 | - | Adding IE T3412 extended value | F | 10.4.0 | 11.1.0 | R5-131474 |
| RP#60 | RP-130611 | 0408 | - | Addition of exception for p-MaxGERAN of SIB7 | F | 10.4.0 | 11.1.0 | R5-131583 |
| RP#60 | RP-130627 | 0409 | - | Correction of test bandwidth for band 44 | F | 10.4.0 | 11.1.0 | R5-131611 |
| RP#60 | RP-130631 | 0410 | - | Addition of default parameters for ePDCCH | F | 10.4.0 | 11.1.0 | R5-131638 |
| RP#60 | RP-130630 | 0411 | - | Addition of default parameters for CoMP | F | 10.4.0 | 11.1.0 | R5-131667 |
| RP#60 | RP-130628 | 0412 | - | Addition of test frequencies for CA_2A-17A and CA_4A-17A for signalling testing | F | 10.4.0 | 11.1.0 | R5-131704 |
| RP#60 | RP-130611 | 0413 | - | Editorial update of generic procedure 4.5.2 | F | 10.4.0 | 11.1.0 | R5-131804 |
| RP#60 | RP-130611 | 0414 | - | Editorial update of generic procedure 4.5.2A | F | 10.4.0 | 11.1.0 | R5-131805 |
| RP#60 | RP-130609 | 0415 | - | Correction of DRB Logical Channel configuration | F | 10.4.0 | 11.1.0 | R5-131806 |
| RP#60 | RP-130611 | 0416 | - | Add generic procedure for XCAP establishment | F | 10.4.0 | 11.1.0 | R5-131807 |
| RP#60 | RP-130611 | 0417 | - | Corrections to default messages for eMBMS testing | F | 10.4.0 | 11.1.0 | R5-131809 |
| RP#60 | RP-130611 | 0418 | - | Complete the default MEASUREMENT CONTROL MESSAGE for LCR_TDD_UTRAN | F | 10.4.0 | 11.1.0 | R5-131872 |
| RP#60 | RP-130636 | 0419 | - | Carrier Aggregation: PCC and SCC Configuration Update | F | 10.4.0 | 11.1.0 | R5-131885 |
| RP#60 | RP-130609 | 0420 | - | Update of UE Capability Information for Rel-11 UEs | F | 10.4.0 | 11.1.0 | R5-131888 |
| RP#60 | RP-130636 | 0421 | - | Modifications to Common Section CA settings | F | 10.4.0 | 11.1.0 | R5-132002 |
| RP#60 | RP-130636 | 0422 | - | Correction to test frequencies for CA signalling test | F | 10.4.0 | 11.1.0 | R5-132027 |
| RP#60 | RP-130629 | 0423 | - | Modification of default contents for UE Information Request message | F | 10.4.0 | 11.1.0 | R5-132029 |
| RP#60 | RP-130628 | 0424 | - | Addition of test frequencies of CA_4-12, CA_5-12 for CA signalling test | F | 10.4.0 | 11.1.0 | R5-132041 |
| RP#60 | RP-130611 | 0426 | - | Addition of generic procedure for IMS call release | F | 10.4.0 | 11.1.0 | R5-132066 |
| RP#60 | RP-130609 | 0425 | - | Update of CSIM and USIM EFs | F | 10.4.0 | 11.1.0 | R5-132082 |
| RP#60 | RP-130609 | 0427 | - | Corrections to setup of dedicated EPS bearer contexts in IMS generic procedures | F | 10.4.0 | 11.1.0 | R5-132085 |
| RP#60 | RP-130636 | 0428 | - | Modifications to RF Section CA settings | F | 10.4.0 | 11.1.0 | R5-132106 |
| RP#60 | RP-130610 | 0429 | - | Correction to generic MO CSFB procedures | F | 10.4.0 | 11.1.0 | R5-131496 |
| RP#60 | - | - | - | Correction in history table from v11.0.0 to v11.1.0 | F | 11.0.0 | 11.1.1 | |
| RP#61 | RP-131115 | 0460 | - | Addition of frequency f2 to band combinations CA_2A-17A and CA_4A-17A | F | 11.1.1 | 11.2.0 | R5-133094 |
| RP#61 | RP-131115 | 0430 | - | Addition of test frequencies of CA_3-8 for CA signaling test | F | 11.1.1 | 11.2.0 | R5-133113 |
| RP#61 | RP-131103 | 0431 | - | Addition of option to use IP addresses from PCO IE in ESM INFORMATION RESPONSE | F | 11.1.1 | 11.2.0 | R5-133116 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| RP#61 | RP-131101 | 0432 | - | Update of CSIM Elementary File for EPRL | F | 11.1.1 | 11.2.0 | R5-133118 |
| RP#61 | RP-131103 | 0433 | - | Correction to SystemInformationBlockType13 message (eMBMS testing) | F | 11.1.1 | 11.2.0 | R5-133159 |
| RP#61 | RP-131114 | 0434 | - | Correction to default MBMS Counting messages | F | 11.1.1 | 11.2.0 | R5-133160 |
| RP#61 | RP-131111 | 0435 | - | CA RRM: Phase rotator for intra-frequency static scenarios | F | 11.1.1 | 11.2.0 | R5-133224 |
| RP#61 | RP-131125 | 0436 | - | Addition of Band 31 to 36.508 | F | 11.1.1 | 11.2.0 | R5-133246 |
| RP#61 | RP-131111 | 0437 | - | Test frequencies for RF intra-band contiguous CA tests | F | 11.1.1 | 11.2.0 | R5-133270 |
| RP#61 | RP-131115 | 0438 | - | Update of PUCCH-ConfigDedicated-v1020-DEFAULT for TDD | F | 11.1.1 | 11.2.0 | R5-133275 |
| RP#61 | RP-131101 | 0439 | - | Default Bandwidth Configuration for E-UTRA Band 2 RF Testing | F | 11.1.1 | 11.2.0 | R5-133306 |
| RP#61 | RP-131116 | 0440 | - | Modification of default contents for UEInformationRequest message | F | 11.1.1 | 11.2.0 | R5-133321 |
| RP#61 | RP-131115 | 0441 | - | Correction of reference to cell frequencies for CA signalling test cases | F | 11.1.1 | 11.2.0 | R5-133348 |
| RP#61 | RP-131101 | 0442 | - | Correction to SID value | F | 11.1.1 | 11.2.0 | R5-133365 |
| RP#61 | RP-131101 | 0443 | - | Update of generic procedure 4.5A.7 | F | 11.1.1 | 11.2.0 | R5-133366 |
| RP#61 | RP-131101 | 0444 | - | Update of generic procedure 4.5A.14 | F | 11.1.1 | 11.2.0 | R5-133367 |
| RP#61 | RP-131111 | 0445 | - | Update of Generic RRM procedures for CA | F | 11.1.1 | 11.2.0 | R5-133451 |
| RP#61 | RP-131113 | 0446 | - | Default Message Contents for eCIC PCell Pattern | F | 11.1.1 | 11.2.0 | R5-133453 |
| RP#61 | RP-131103 | 0447 | - | Corrections to the reference dedicated EPS bearer contexts | F | 11.1.1 | 11.2.0 | R5-133509 |
| RP#61 | RP-131101 | 0448 | - | Extension of default contents of ACTIVATE DEFAULT EPS BEARER CONTEXT REQUESTS message | F | 11.1.1 | 11.2.0 | R5-133554 |
| RP#61 | RP-131101 | 0449 | - | Corrections to allow ISIM or USIM to be used in test cases using IMS | F | 11.1.1 | 11.2.0 | R5-133582 |
| RP#61 | RP-131101 | 0450 | - | Correction of Feature Group Indicators in Table 4.6.1-23 | F | 11.1.1 | 11.2.0 | R5-133583 |
| RP#61 | RP-131101 | 0451 | - | Correction to ROUTING AREA UPDATE ACCEPT default message contents | F | 11.1.1 | 11.2.0 | R5-133584 |
| RP#61 | RP-131115 | 0452 | - | Addition of test frequencies of CA_3A-5A for CA signalling test | F | 11.1.1 | 11.2.0 | R5-133614 |
| RP#61 | RP-131115 | 0453 | - | Extension of EUTRA CA test frequency configurations | F | 11.1.1 | 11.2.0 | R5-133615 |
| RP#61 | RP-131113 | 0454 | - | Update of Measurement information element | F | 11.1.1 | 11.2.0 | R5-133645 |
| RP#61 | RP-131117 | 0455 | - | Introduction of new default messages for eMBMS service continuity testing | F | 11.1.1 | 11.2.0 | R5-133661 |
| RP#61 | RP-131117 | 0456 | - | Introduction of system information combinations for eMBMS service continuity testing | F | 11.1.1 | 11.2.0 | R5-133662 |
| RP#61 | RP-131118 | 0457 | - | Addition of specific message formats for eDDA test cases. | F | 11.1.1 | 11.2.0 | R5-133674 |
| RP#61 | RP-131101 | 0458 | - | Missing agreed change in 36.508 | F | 11.1.1 | 11.2.0 | R5-133704 |
| RP#61 | RP-131101 | 0459 | - | Clean up of 36.508 | F | 11.1.1 | 11.2.0 | R5-133714 |
| RP#62 | RP-131864 | 0461 | - | Correction of MBSFNAreaConfiguration and SIB combination 15 | F | 11.2.0 | 11.3.0 | R5-134152 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| RP#62 | RP-131874 | 0465 | - | Correction to MeasConfig-DEFAULT | F | 11.2.0 | 11.3.0 | R5-134459 |
| RP#62 | RP-131876 | 0466 | - | General clarification to CA test frequency tables for signalling | F | 11.2.0 | 11.3.0 | R5-134642 |
| RP#62 | RP-131861 | 0467 | - | Update to MeasConfig-DEFAULT | F | 11.2.0 | 11.3.0 | R5-134645 |
| RP#62 | RP-131861 | 0469 | - | Editorial correction to generic MO CSFB procedures | F | 11.2.0 | 11.3.0 | R5-134726 |
| RP#62 | RP-131864 | 0470 | - | Corrections to default message contents of MBMSCountingRequest | F | 11.2.0 | 11.3.0 | R5-134727 |
| RP#62 | RP-131876 | 0471 | - | Extension of default settings for the Elementary Files on Test UICC | F | 11.2.0 | 11.3.0 | R5-134730 |
| RP#62 | RP-131877 | 0472 | - | Addition of CA band combinations CA_2A_29A, CA_4A_29A and CA_5A_17A | F | 11.2.0 | 11.3.0 | R5-134786 |
| RP#62 | RP-131873 | 0475 | - | Addition of connection diagrams for CA CSI tests | F | 11.2.0 | 11.3.0 | R5-134803 |
| RP#62 | RP-131873 | 0477 | - | Correction to PhysicalConfigDedicated-DEFAULT for SCell_AddMod | F | 11.2.0 | 11.3.0 | R5-134903 |
| RP#62 | RP-131873 | 0478 | - | Clarification of multi antenna ports for all neighboring cells | F | 11.2.0 | 11.3.0 | R5-134904 |
| RP#62 | RP-131877 | 0480 | - | Addition of B29 test frequencies to 36.508 | F | 11.2.0 | 11.3.0 | R5-134986 |
| RP#62 | RP-131861 | 0481 | - | Corrections to procedures for State 3A-RF | F | 11.2.0 | 11.3.0 | R5-135013 |
| RP#62 | RP-131864 | 0468 | - | Correction to Generic Test Procedure for IMS Emergency call establishment in EUTRA: Limited Service | F | 11.2.0 | 11.3.0 | R5-135069 |
| RP#62 | RP-131864 | 0479 | - | Correction of generic test procedure for IMS Emergency Call establishment in EUTRA limited service | F | 11.2.0 | 11.3.0 | R5-135070 |
| RP#62 | RP-131890 | 0462 | - | Addition of test frequencies for CA_3C | F | 11.3.0 | 12.0.0 | R5-134336 |
| RP#62 | RP-131890 | 0463 | - | Updates of 6.2.3.2 Test frequencies for CA_1A-26A | F | 11.3.0 | 12.0.0 | R5-134368 |
| RP#62 | RP-131890 | 0464 | - | Addition of CA band combination CA_2A_5A | F | 11.3.0 | 12.0.0 | R5-134426 |
| RP#62 | RP-131873 | 0473 | - | Addition of test frequencies of CA_3A-19A and CA_19A-21A for CA signalling testing | F | 11.3.0 | 12.0.0 | R5-134790 |
| RP#62 | RP-131890 | 0474 | - | Addition of test frequencies for CA_3C signalling test | F | 11.3.0 | 12.0.0 | R5-134791 |
| RP#63 | RP-140329 | 0482 | - | Adding default message content for SystemInformationBlockType14 | F | 12.0.0 | 12.1.0 | R5-140075 |
| RP#63 | RP-140307 | 0484 | - | Correction of UTRA cell carrier frequency in Table 6.3.1.3-2 | F | 12.0.0 | 12.1.0 | R5-140136 |
| RP#63 | R5-140319 | 0485 | - | CA RF: Adding connection diagram for CA 4x2 MIMO with fading scenarios | F | 12.0.0 | 12.1.0 | R5-140242 |
| RP#63 | R5-140319 | 0486 | - | eDL-MIMO RF: Adding connection diagram for 8x2 MIMO scenarios | F | 12.0.0 | 12.1.0 | R5-140243 |
| RP#63 | RP-140307 | 0487 | - | Correction to Table 6.4.2.7A.1-1 for TAU Request | F | 12.0.0 | 12.1.0 | R5-140325 |
| RP#63 | RP-140308 | 0488 | - | Update of MBMS configurations | F | 12.0.0 | 12.1.0 | R5-140394 |
| RP#63 | RP-140332 | 0489 | - | Addition of test frequencies for CA_1A-8A | F | 12.0.0 | 12.1.0 | R5-140406 |
| RP#63 | R5-140319 | 0490 | - | Correction to UL CA message exceptions | F | 12.0.0 | 12.1.0 | R5-140503 |
| RP#63 | RP-140308 | 0492 | - | Correction to Generic Test Procedure for IMS Emergency call establishment in EUTRA: Limited Service | F | 12.0.0 | 12.1.0 | R5-140536 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| RP#63 | R5-140319 | 0493 | - | Update to QuantityConfig in MeasConfig DEFAULT | F | 12.0.0 | 12.1.0 | R5-140743 |
| RP#63 | RP-140331 | 0494 | - | Correction of CA band combinations CA_1A_18A and CA_11A_18A | F | 12.0.0 | 12.1.0 | R5-140744 |
| RP#63 | R5-140319 | 0495 | - | Adding test frequencies for CA reverse inter band combination for bands 4 and 13 | F | 12.0.0 | 12.1.0 | R5-140745 |
| RP#63 | RP-140307 | 0496 | - | Update to Generic test procedure in TS 36.508 Table 6.4.2.7A-2 | F | 12.0.0 | 12.1.0 | R5-140746 |
| RP#63 | RP-140307 | 0497 | - | Addition of procedure for EPS Bearer Deactivation and deletion of procedure for MT release of IMS call | F | 12.0.0 | 12.1.0 | R5-140747 |
| RP#63 | RP-140332 | 0498 | - | Addition of Rel12 reverse band combination CA_2A-5A | F | 12.0.0 | 12.1.0 | R5-140789 |
| RP#63 | RP-140325 | 0499 | - | Addition of neighbour cell CRS and dedicated SIB-1 IE for fEICIC test cases | F | 12.0.0 | 12.1.0 | R5-140830 |
| RP#63 | R5-140319 | 0500 | - | Addition of transmissionMode-r10 for SCC | F | 12.0.0 | 12.1.0 | R5-140928 |
| RP#63 | RP-140331 | 0501 | - | Addition of Rel11 reverse band combinations CA_2A-29A, CA_4A-5A, CA_4A-29A, CA_5A-17A | F | 12.0.0 | 12.1.0 | R5-140998 |
| RP#63 | RP-140302 | 0502 | - | Change of test frequencies for Band 28 | F | 12.0.0 | 12.1.0 | R5-141039 |
| RP#64 | RP-140838 | 0503 | - | Addition of CA 3A-28A to 36.508 | F | 12.1.0 | 12.2.0 | R5-142114 |
| RP#64 | RP-140812 | 0504 | - | Update to MEASUREMENT CONTROL | F | 12.1.0 | 12.2.0 | R5-142126 |
| RP#64 | RP-140815 | 0505 | - | Update to default non-MBSFNregionLength in SystemInformationBlockType13 | F | 12.1.0 | 12.2.0 | R5-142127 |
| RP#64 | RP-140815 | 0506 | - | Editorial Update to Table 4.6.1-4A: MBSFNAreaConfiguration | F | 12.1.0 | 12.2.0 | R5-142128 |
| RP#64 | RP-140837 | 0507 | - | Correction to default SystemInformationBlockType15 message for eMBMS testing | F | 12.1.0 | 12.2.0 | R5-142254 |
| RP#64 | RP-140838 | 0508 | - | Updates of 6.2.3.2 Test frequency for CA_3A-26A and CA_3A-27A | F | 12.1.0 | 12.2.0 | R5-142299 |
| RP#64 | RP-140832 | 0509 | - | Adding connection diagrams for RF/RRM Rel-11 WI-s tests | F | 12.1.0 | 12.2.0 | R5-142318 |
| RP#64 | RP-140832 | 0510 | - | Addition of exceptions for fEICIC RRM test cases | F | 12.1.0 | 12.2.0 | R5-142336 |
| RP#64 | RP-140812 | 0511 | - | Correction to NAS UTRA Routing Area Update Accept message | F | 12.1.0 | 12.2.0 | R5-142397 |
| RP#64 | RP-140812 | 0512 | - | Correction to the exception of SIB2 | F | 12.1.0 | 12.2.0 | R5-142602 |
| RP#64 | RP-140812 | 0513 | - | Addition of 4Tx for RF demodulation test cases | F | 12.1.0 | 12.2.0 | R5-142603 |
| RP#64 | RP-140838 | 0514 | - | Addition of test frequencies for CA_2A-4A and CA_5A-7A | F | 12.1.0 | 12.2.0 | R5-142768 |
| RP#64 | RP-140837 | 0515 | - | Correction to system information combination 16 and 19 for eMBMS testing | F | 12.1.0 | 12.2.0 | R5-142844 |
| RP#64 | RP-140817 | 0516 | - | Update to ri-ConfigIndex in Table 4.6.3-2AC CQI-ReportPeriodic-r10-DEFAULT | F | 12.1.0 | 12.2.0 | R5-142845 |
| RP#64 | RP-140815 | 0517 | - | Correction to MFBI Frequencies in 36.508 | F | 12.1.0 | 12.2.0 | R5-142846 |
| RP#64 | RP-140838 | 0518 | - | Addition of test frequencies of CA_39A-41A for CA signalling testing in TS 36.508 | F | 12.1.0 | 12.2.0 | R5-142928 |
| RP#64 | RP-140838 | 0519 | - | Updates to TS 36.508 for CA_27B signalling test frequencies defined in section 6.2.3.2 | F | 12.1.0 | 12.2.0 | R5-142930 |
| RP#64 | RP-140817 | 0520 | - | Clarification of RRC message definitions | F | 12.1.0 | 12.2.0 | R5-143001 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| RP#64 | RP-140817 | 0521 | - | Corrections to MBMS information elements in SIB2 and SIB13 | F | 12.1.0 | 12.2.0 | R5-143002 |
| RP#64 | RP-140838 | 0522 | - | Addition of new test frequency for CA_39C | F | 12.1.0 | 12.2.0 | R5-143132 |
| RP#64 | RP-140838 | 0523 | - | Updates to TS 36.508 for CA_27B test frequencies defined in section 4.3.1.1 | F | 12.1.0 | 12.2.0 | R5-143171 |
| RP#65 | RP-141573 | 0524 | - | Correction to notificationSF-Index-r9 in Sib13 | F | 12.2.0 | 12.3.0 | R5-144185 |
| RP#65 | RP-141571 | 0525 | - | IMS APN pre-configured IR.92 devices | F | 12.2.0 | 12.3.0 | R5-144370 |
| RP#65 | RP-141571 | 0526 | - | Removal of transition period for Band 28 test frequency definition in 36.508 | F | 12.2.0 | 12.3.0 | R5-144459 |
| RP#65 | RP-141593 | 0527 | - | Addition of Rel11 reverse band combinations CA_1A-18A, CA_11A-18A | F | 12.2.0 | 12.3.0 | R5-144543 |
| RP#65 | RP-141594 | 0528 | - | Addition of Rel12 reverse band combination CA_1A-26A | F | 12.2.0 | 12.3.0 | R5-144544 |
| RP#65 | RP-141593 | 0529 | - | Editorial correction to Table 6.2.3.2-2 | F | 12.2.0 | 12.3.0 | R5-144644 |
| RP#65 | RP-141594 | 0530 | - | Addition of reverse band combinations, CA_1A-19A, CA_1A-21A, CA_3A-19A and CA_19A-21A | F | 12.2.0 | 12.3.0 | R5-144685 |
| RP#65 | RP-141587 | 0531 | - | Addition of default parameters for Enhanced downlink control channel(s) for LTE Advanced | F | 12.2.0 | 12.3.0 | R5-144711 |
| RP#65 | RP-141593 | 0532 | - | Removal of FFS from IEs triggered by CoMP related TCs specification | F | 12.2.0 | 12.3.0 | R5-144712 |
| RP#65 | RP-141571 | 0533 | - | Clarification on the default setting of Security header type in SECURITY PROTECTED NAS MESSAGE | F | 12.2.0 | 12.3.0 | R5-144750 |
| RP#65 | RP-141571 | 0534 | - | Support of 2nd PDN connectivity at UE registration | F | 12.2.0 | 12.3.0 | R5-144797 |
| RP#65 | RP-141575 | 0535 | - | CA: New structure for test frequencies for intra-band contiguous CA | F | 12.2.0 | 12.3.0 | R5-144890 |
| RP#65 | RP-141575 | 0536 | - | Correction to 7.2B.1 Tracking Area Updating procedure | F | 12.2.0 | 12.3.0 | R5-144929 |
| RP#65 | - | - | - | Correction concerning R5-144797 to resolve the 4.5A.X, 4.5A.Y, 4.5A.Z reference in Table 4.5.2.3-1 | - | 12.3.0 | 12.3.1 | - |
| RP#66 | RP-142075 | 0538 | - | New CA band combination CA_1A-3A - Updates of 6.2.3.2 Test Frequency | | 12.3.1 | 12.4.0 | R5-145181 |
| RP#66 | RP-142076 | 0539 | - | Addition of E-UTRA FDD Band 30 to TS 36.508, subclause 6.2.3.1. | | 12.3.1 | 12.4.0 | R5-145606 |
| RP#66 | RP-142054 | 0540 | - | Correction to SIB8 Default Message Contents for LTE<>1XRTT | | 12.3.1 | 12.4.0 | R5-145657 |
| RP#66 | RP-142057 | 0541 | - | Correction to Test frequencies for E-UTRA FDD(5MHz) for MFBI | | 12.3.1 | 12.4.0 | R5-145658 |
| RP#66 | RP-142057 | 0542 | - | Updating dataCodingScheme of CMAS TC in 36.508 | | 12.3.1 | 12.4.0 | R5-145659 |
| RP#66 | RP-142074 | 0543 | - | Correction of default parameters for Enhanced downlink control channel(s) for LTE Advanced | | 12.3.1 | 12.4.0 | R5-145661 |
| RP#66 | RP-142074 | 0544 | - | Correction to eMBMS multiband test cases | | 12.3.1 | 12.4.0 | R5-145662 |
| RP#66 | RP-142059 | 0545 | - | Harmonization of CA terminology (36.508) | | 12.3.1 | 12.4.0 | R5-145663 |
| RP#66 | RP-142054 | 0546 | - | Correction to Test Frequencies for FDD Band 12->17 for 5MHZ | | 12.3.1 | 12.4.0 | R5-145686 |
| RP#66 | RP-142075 | 0547 | - | Addition of CA_1A-28A in 36.508 | | 12.3.1 | 12.4.0 | R5-145715 |
| RP#66 | RP-142075 | 0548 | - | Introduction of 1+11 and 8+11 in 36.508 | | 12.3.1 | 12.4.0 | R5-145716 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| RP#66 | RP-142075 | 0549 | - | Addition of Intra-Band Non-Contiguous Default Frequencies to 36.508 Chapter 6 | | 12.3.1 | 12.4.0 | R5-145717 |
| RP#66 | RP-142078 | 0550 | - | Addition of CA_18A-28A in 36.508 | | 12.3.1 | 12.4.0 | R5-145718 |
| RP#66 | RP-142075 | 0551 | - | Existing CA band combination CA_39C: update test frequencies for CA_39C signalling test | | 12.3.1 | 12.4.0 | R5-145739 |
| RP#66 | RP-142054 | 0552 | - | Correction to generic procedure for EPS Bearer Deactivation | | 12.3.1 | 12.4.0 | R5-145774 |
| RP#66 | RP-142054 | 0553 | - | Corrections for Generic Test Procedure for IMS MO/MT add video establishment in E-UTRA (clause 4.5A.11 and 4.5A.12) | | 12.3.1 | 12.4.0 | R5-145779 |
| RP#66 | RP-142054 | 0554 | - | Support of 2nd PDN connectivity at UE registration - XCAP | | 12.3.1 | 12.4.0 | R5-145787 |
| RP#66 | RP-142054 | 0555 | - | Correction of CSIM Elementary File for EPRL | | 12.3.1 | 12.4.0 | R5-145792 |
| RP#66 | RP-142059 | 0556 | - | Correction of SCell_AddMod condition in MAC Configurations | | 12.3.1 | 12.4.0 | R5-145793 |
| RP#66 | RP-142059 | 0557 | - | Addition of CA_4A-7A and CA_3A-20A Test Frequencies | | 12.3.1 | 12.4.0 | R5-145799 |
| RP#66 | RP-142076 | 0558 | - | Addition of operating band 30 to TS 36.508, subclause 4.3.1.1.30 | | 12.3.1 | 12.4.0 | R5-145850 |
| RP#66 | RP-142059 | 0559 | - | Addition of editor's note for MFBI Test frequencies | | 12.3.1 | 12.4.0 | R5-145879 |
| RP#66 | RP-142079 | 0560 | - | Clarifications to connection diagrams | | 12.3.1 | 12.4.0 | R5-145897 |
| RP#66 | RP-142059 | 0562 | - | Correction to message exceptions for felCIC tests | | 12.3.1 | 12.4.0 | R5-145916 |
| RP#66 | RP-142075 | 0563 | - | CA: Test frequencies for intra-band non-contiguous | | 12.3.1 | 12.4.0 | R5-145923 |
| RP#66 | RP-142075 | 0564 | - | Introduction of CA_42C for TS36.508 | | 12.3.1 | 12.4.0 | R5-145959 |
| RP#66 | RP-142059 | 0565 | - | TS 36.508: Correction to CA intra-band contiguous test frequencies | | 12.3.1 | 12.4.0 | R5-145962 |
| RP#66 | RP-142054 | 0566 | - | Correction to generic procedure for UE Registration, pre-registration on 1xRTT (State 2C) | | 12.3.1 | 12.4.0 | R5-145971 |
| RP#66 | RP-142054 | 0561 | - | UE registration for RF and RRM testing | | 12.3.1 | 12.4.0 | R5-145979 |
| - | - | - | - | correction of closing bracket in Table 5.2A.5.1.1-2 of R5-145916 | | 12.4.0 | 12.4.1 | - |
| - | - | - | - | correction of missing changes of R5-145787 | | 12.4.0 | 12.4.1 | - |
| RP#67 | RP-150342 | 0567 | - | Correction to CA_19A-21A, CA_39A-41A | F | 12.4.1 | 12.5.0 | R5-150103 |
| RP#67 | RP-150323 | 0568 | - | Support of 2nd PDN connectivity at UE registration - Corrections for C2K | F | 12.4.1 | 12.5.0 | R5-150127 |
| RP#67 | RP-150326 | 0570 | - | Correction of MFBI Test Frequencies for Band 38->41 | F | 12.4.1 | 12.5.0 | R5-150273 |
| RP#67 | RP-150341 | 0571 | - | Addition of CA_8A-20A to Clause 6.2.3.2 of TS 36.508 | F | 12.4.1 | 12.5.0 | R5-150367 |
| RP#67 | RP-150343 | 0572 | - | Addition of CA_1A-20A to Clause 6.2.3.2 of TS 36.508 | F | 12.4.1 | 12.5.0 | R5-150480 |
| RP#67 | RP-150342 | 0575 | - | Correction to TDD CA contiguous Intra-band setting for signalling test | F | 12.4.1 | 12.5.0 | R5-150679 |
| RP#67 | RP-150342 | 0576 | - | Addition of Signalling test frequencies to 36.508 for CA_1A-7A | F | 12.4.1 | 12.5.0 | R5-150680 |
| RP#67 | RP-150343 | 0577 | - | Addition of CA_2A-30A to Clause 6.2.3.2 of TS 36.508. | F | 12.4.1 | 12.5.0 | R5-150682 |
| RP#67 | RP-150343 | 0578 | - | Addition of CA_4A-30A to Clause 6.2.3.2 of TS 36.508. | F | 12.4.1 | 12.5.0 | R5-150683 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| RP#67 | RP-150343 | 0579 | - | Addition of CA_5A-30A to Clause 6.2.3.2 of TS 36.508. | F | 12.4.1 | 12.5.0 | R5-150684 |
| RP#67 | RP-150342 | 0580 | - | Addition of Signalling test frequencies to 36.508 for CA_5A-25A and CA_12A-25A | F | 12.4.1 | 12.5.0 | R5-150722 |
| RP#67 | RP-150343 | 0581 | - | Correction to CA_18A-28A SIG test frequency in 36.508 | F | 12.4.1 | 12.5.0 | R5-150743 |
| RP#67 | RP-150342 | 0582 | - | Addition of test frequency table for Band 23B to 36.508 | F | 12.4.1 | 12.5.0 | R5-150859 |
| RP#67 | RP-150343 | 0583 | - | Addition of test frequencies for CA_18A-28A in 36.508 | F | 12.4.1 | 12.5.0 | R5-150864 |
| RP#67 | RP-150343 | 0584 | - | Addition of 3DL Intra-band Contiguous and Non-contiguous Test Frequencies | F | 12.4.1 | 12.5.0 | R5-150895 |
| RP#67 | RP-150342 | 0585 | - | Addition of further test frequencies for Intra-band Non-contiguous 2DL CA | F | 12.4.1 | 12.5.0 | R5-150896 |
| RP#67 | RP-150343 | 0586 | - | Update of SCC configuration for 3DL CA RF/RRM tests | F | 12.4.1 | 12.5.0 | R5-150912 |
| RP#67 | RP-150345 | 0569 | - | Addition of UE Positioning testing to State 3A | F | 12.4.1 | 12.5.0 | R5-150933 |
| RP#67 | RP-150342 | 0573 | - | Addition of Signalling test frequencies to 36.508 for CA_23B | F | 12.4.1 | 12.5.0 | R5-150936 |
| RP#67 | RP-150342 | 0574 | - | Addition of Signalling test frequencies to 36.508 for CA_23A-29A | F | 12.4.1 | 12.5.0 | R5-150937 |
| RP#68 | RP-150886 | 0587 | - | APN IE requirements for IMS emergency PDN | F | 12.5.0 | 12.6.0 | R5-151104 |
| RP#68 | RP-150900 | 0588 | - | CA RF: Connection diagrams for 3DL CA (RF) testing | F | 12.5.0 | 12.6.0 | R5-151113 |
| RP#68 | RP-150905 | 0592 | - | Addition of band 32 to 36.508 | F | 12.5.0 | 12.6.0 | R5-151327 |
| RP#68 | RP-150912 | 0594 | - | Updates to 36.508 for CA_7C, CA_40C, CA_41C, CA_41D | F | 12.5.0 | 12.6.0 | R5-151365 |
| RP#68 | RP-150888 | 0595 | - | Change of default Network Signalling Value for Uplink Carrier aggregation test cases | F | 12.5.0 | 12.6.0 | R5-151423 |
| RP#68 | RP-150900 | 0602 | - | Addition of test frequencies for CA_1A-18A-28A in 36.508 | F | 12.5.0 | 12.6.0 | R5-151582 |
| RP#68 | RP-150900 | 0604 | - | Correction to test frequencies for CA_18A-28A in 36.508 | F | 12.5.0 | 12.6.0 | R5-151626 |
| RP#68 | RP-150900 | 0607 | - | 36.508: Test frequencies definition for CA_12B | F | 12.5.0 | 12.6.0 | R5-151658 |
| RP#68 | RP-150900 | 0608 | - | 36.508: Signalling test frequencies definition for CA_12B | F | 12.5.0 | 12.6.0 | R5-151660 |
| RP#68 | RP-150888 | 0601 | 1 | Addition of Carrier Aggregation band combination 2 to 13 | F | 12.5.0 | 12.6.0 | R5-151737 |
| RP#68 | RP-150912 | 0603 | 1 | Removal of SIB1 transmission in 5.2A.5 Exceptions for feICIC tests | F | 12.5.0 | 12.6.0 | R5-151801 |
| RP#68 | RP-150888 | 0600 | 1 | Addition of exception of RRC Connection Setup(UTRA) | F | 12.5.0 | 12.6.0 | R5-151804 |
| RP#68 | RP-150900 | 0591 | 1 | Addition of 2DL CA and 3DL CA Frequencies to 36.508 Chapter 6 | F | 12.5.0 | 12.6.0 | R5-151967 |
| RP#68 | RP-150909 | 0590 | 1 | Update of default SIB1 for Low Cost MTC testing | F | 12.5.0 | 12.6.0 | R5-151975 |
| RP#68 | RP-150906 | 0596 | 2 | Add generic procedure for IMS MO speech for EVS | F | 12.5.0 | 12.6.0 | R5-151976 |
| RP#68 | RP-150903 | 0598 | 1 | Introduction of EUTRA-WLAN interworking test environment parameters and message contents | F | 12.5.0 | 12.6.0 | R5-151995 |
| RP#68 | RP-150908 | 0589 | 1 | Addition of Device to Device Proximity Services Test Environment | F | 12.5.0 | 12.6.0 | R5-152058 |
| RP#68 | RP-150903 | 0599 | 1 | Introduction of generic procedures for EUTRA-WLAN | F | 12.5.0 | 12.6.0 | R5-152117 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| | | | | interworking | | | | |
| RP#68 | RP-150888 | 0609 | 1 | Correction to default E-UTRA channel bandwidth combination for CA_39C | F | 12.5.0 | 12.6.0 | R5-152140 |
| RP#68 | RP-150903 | 0610 | 1 | Update to registration procedure to support multi PDN for RAN assisted WLAN interworking | F | 12.5.0 | 12.6.0 | R5-152141 |
| RP#69 | RP-151409 | 0612 | - | Prevent unnecessary IMS signalling over GERAN for non-IMS related test cases | F | 12.6.0 | 12.7.0 | R5-153114 |
| RP#69 | RP-151409 | 0613 | - | Correct the IMS APN format | F | 12.6.0 | 12.7.0 | R5-153149 |
| RP#69 | RP-151429 | 0614 | - | Introduction of new RRC default message - SidelinkUEInformation | F | 12.6.0 | 12.7.0 | R5-153188 |
| RP#69 | RP-151412 | 0623 | - | Correction to Table 4.4.2-1A to change root sequence index for Cell 30 | F | 12.6.0 | 12.7.0 | R5-153408 |
| RP#69 | RP-151427 | 0631 | - | Add generic procedure for IMS MT speech for EVS | F | 12.6.0 | 12.7.0 | R5-153539 |
| RP#69 | RP-151412 | 0625 | 1 | Update the default configuration of channel bandwidth for Band 42 for signalling testing | F | 12.6.0 | 12.7.0 | R5-153715 |
| RP#69 | RP-151409 | 0628 | 1 | New generic procedure 4.5A.21 Generic Test Procedure for IMS MO Customized Alerting Tones and speech establishment in E-UTRA | F | 12.6.0 | 12.7.0 | R5-153716 |
| RP#69 | RP-151412 | 0630 | 1 | Correction to PhysicalConfigDedicated-DEFAULT | F | 12.6.0 | 12.7.0 | R5-153717 |
| RP#69 | RP-151423 | 0624 | 1 | Addition and modification of 2DL CA Frequencies and CA Channel Bandwidth combination | F | 12.6.0 | 12.7.0 | R5-153749 |
| RP#69 | RP-151423 | 0640 | - | Introduction of test environment information for intra-band Carrier Aggregation combinations CA_2C | F | 12.6.0 | 12.7.0 | R5-153751 |
| RP#69 | RP-151423 | 0636 | 1 | Introduction of Default E-UTRA channel bandwidth combinations for CA Signalling testing with three component carriers | F | 12.6.0 | 12.7.0 | R5-153752 |
| RP#69 | RP-151423 | 0638 | 1 | Introduction of test environment and test frequency information for several new 3DL inter-band Carrier Aggregation combinations with two different bands to 36.508. | F | 12.6.0 | 12.7.0 | R5-153753 |
| RP#69 | RP-151423 | 0627 | 1 | Addition of CA_2C to Chapter 4 | F | 12.6.0 | 12.7.0 | R5-153820 |
| RP#69 | RP-151433 | 0629 | 1 | Introduce connection diagram for multi-cell Enhanced requirements Type C tests | F | 12.6.0 | 12.7.0 | R5-153835 |
| RP#69 | RP-151430 | 0616 | 1 | UE Cat 0: Connection diagrams for RF/RRM testing | F | 12.6.0 | 12.7.0 | R5-153850 |
| RP#69 | RP-151423 | 0611 | 1 | CA RF: Update of connection diagrams for 3CCs (RF) testing for more than 3CCs | F | 12.6.0 | 12.7.0 | R5-153875 |
| RP#69 | RP-151423 | 0621 | 1 | Update of 4.4.2 Simulated cells for CA RRM test cases | F | 12.6.0 | 12.7.0 | R5-153876 |
| RP#69 | RP-151409 | 0618 | 1 | Update to Loopback activation procedure for IMS enabled UE | F | 12.6.0 | 12.7.0 | R5-153971 |
| RP#69 | RP-151429 | 0615 | 2 | Update to Device to Device Proximity Services Test Environment | F | 12.6.0 | 12.7.0 | R5-153998 |
| RP#69 | - | - | - | update of the "non-specific references" in section 2 according to the approved R5-153582 and an action point on ETSI MCC | - | 12.6.0 | 12.7.0 | - |
| RP#70 | RP-151703 | 0641 | - | Update generic procedures 4.5A.19 and 4.5A.20 | F | 12.7.0 | 12.8.0 | R5-155083 |
| RP#70 | RP-151685 | 0642 | - | Editor notes correction in clause 5.2A.1A | F | 12.7.0 | 12.8.0 | R5-155111 |
| RP#70 | RP-151705 | 0643 | - | Editorial correction to Device to Device Proximity | F | 12.7.0 | 12.8.0 | R5-155130 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| | | | | Services Test Environment | | | | |
| RP#70 | RP-151710 | 0644 | - | Introduction of combinations of system information blocks for Dual Connectivity | F | 12.7.0 | 12.8.0 | R5-155234 |
| RP#70 | RP-151710 | 0651 | - | Introduction of generic test procedures for Dual Connectivity for signalling testing | F | 12.7.0 | 12.8.0 | R5-155419 |
| RP#70 | RP-151710 | 0652 | - | Introduction of default messages for Dual Connectivity | F | 12.7.0 | 12.8.0 | R5-155434 |
| RP#70 | RP-151685 | 0655 | - | Correction to procedure for UE triggered establishment of a default EPS bearer context associated with an additional PDN | F | 12.7.0 | 12.8.0 | R5-155490 |
| RP#70 | RP-151705 | 0659 | - | Addition of default Test UICC contents for DF_ProSe | F | 12.7.0 | 12.8.0 | R5-155647 |
| RP#70 | RP-151713 | 0662 | 1 | Removal of incorrect test frequencies for CA_12B | F | 12.7.0 | 12.8.0 | R5-155800 |
| RP#70 | RP-151700 | 0654 | 1 | Connections for 3DL CA RRM test cases | F | 12.7.0 | 12.8.0 | R5-155865 |
| RP#70 | RP-151700 | 0658 | 1 | 3DL carrier aggregation combination corrections to Table 6.2.3.2-2 "Test frequencies for E-UTRA PCell and SCell for CA Inter-band operation (two bands)" | F | 12.7.0 | 12.8.0 | R5-155910 |
| RP#70 | RP-151705 | 0663 | 1 | Clarification of SIB18/19 Table | F | 12.7.0 | 12.8.0 | R5-155922 |
| RP#70 | RP-151699 | 0661 | 1 | Add generic procedures for IMS over WLAN | F | 12.7.0 | 12.8.0 | R5-155958 |
| RP#70 | RP-151701 | 0650 | 1 | Addition of new generic procedures to check UE does not offload | F | 12.7.0 | 12.8.0 | R5-155961 |
| RP#70 | RP-151701 | 0657 | 1 | Update of WLAN Offload procedures to and from EUTRA | F | 12.7.0 | 12.8.0 | R5-155962 |
| RP#70 | RP-151705 | 0648 | 1 | ProSe: Connection diagram for basic Tx/Rx testing | F | 12.7.0 | 12.8.0 | R5-156012 |
| RP#70 | RP-151712 | 0645 | 1 | Adding default message contents for NAICS test cases | F | 12.7.0 | 12.8.0 | R5-156088 |
| RP#70 | RP-151685 | 0653 | 1 | Correction to UE test states for RF/RRM testing | F | 12.7.0 | 12.8.0 | R5-156094 |
| RP#70 | RP-151705 | 0647 | 1 | Add generic procedures for ProSe UE registration | F | 12.7.0 | 12.8.0 | R5-156159 |
| RP#71 | RP-160107 | 0675 | - | Correction of generic setup procedures for Dual Connectivity protocol testing | F | 12.8.0 | 12.9.0 | R5-160406 |
| RP#71 | RP-160107 | 0676 | - | Introduction of generic RF procedures for Dual Connectivity | F | 12.8.0 | 12.9.0 | R5-160407 |
| RP#71 | RP-160111 | 0678 | - | CA_20A-67A: Add test frequencies to sub-clause 6.2.3.2 | F | 12.8.0 | 12.9.0 | R5-160413 |
| RP#71 | RP-160099 | 0679 | - | Addition of default power level for WLAN AP beacon RSSI | F | 12.8.0 | 12.9.0 | R5-160471 |
| RP#71 | RP-160110 | 0680 | - | Addition of reference message definitions for eIMTA | F | 12.8.0 | 12.9.0 | R5-160476 |
| RP#71 | RP-160103 | 0682 | - | Addition of ProSe Test Frequencies and update to Band and Bandwidth capabilities | F | 12.8.0 | 12.9.0 | R5-160503 |
| RP#71 | RP-160117 | 0683 | - | Addition of missing E-UTRA manual selection (E5) -end state | F | 12.8.0 | 12.9.0 | R5-160562 |
| RP#71 | RP-160105 | 0686 | - | Correction of PhysicalConfigDedicated-DEFAULT | F | 12.8.0 | 12.9.0 | R5-160646 |
| RP#71 | RP-160128 | 0687 | - | Correction of test frequencies for CA_3C and CA_7C | F | 12.8.0 | 12.9.0 | R5-160647 |
| RP#71 | RP-160103 | 0689 | - | Addition of default Test UICC contents for DF_ProSe | F | 12.8.0 | 12.9.0 | R5-160699 |
| RP#71 | RP-160117 | 0673 | 1 | UTRAN Registration procedure for LTE-IRAT test cases | F | 12.8.0 | 12.9.0 | R5-160730 |
| RP#71 | RP-160117 | 0684 | 1 | Correction to CDMA Frequency range for E25-CDMA BC1 band combination | F | 12.8.0 | 12.9.0 | R5-160731 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| RP#71 | RP-160103 | 0670 | 1 | Update generic procedures 4.5A.22 | F | 12.8.0 | 12.9.0 | R5-160765 |
| RP#71 | RP-160103 | 0685 | 1 | Update for SIB18 and SIB19 | F | 12.8.0 | 12.9.0 | R5-160767 |
| RP#71 | RP-160117 | 0690 | - | Correction to UE registration procedure State 2 | F | 12.8.0 | 12.9.0 | R5-160784 |
| RP#71 | RP-160098 | 0691 | - | Add new antenna diagram for 3DL CA RSTD test cases | F | 12.8.0 | 12.9.0 | R5-160789 |
| RP#71 | RP-160111 | 0672 | 1 | Addition of Test frequency for CA_19A-28A and CA_1A-19A-28A | F | 12.8.0 | 12.9.0 | R5-160809 |
| RP#71 | RP-160111 | 0677 | 1 | CA_20A-67A: Add test frequencies to sub-clause 4.3.1 | F | 12.8.0 | 12.9.0 | R5-160810 |
| RP#71 | RP-160109 | 0664 | 1 | Adding new specific message content to release NAICS configuration | F | 12.8.0 | 12.9.0 | R5-160848 |
| RP#71 | RP-160112 | 0667 | 1 | Connection diagram for Receiver test with 4 Rx antenna ports | F | 12.8.0 | 12.9.0 | R5-160895 |
| RP#71 | RP-160107 | 0674 | 1 | Corrections to default RRC messages for Dual Connectivity | F | 12.8.0 | 12.9.0 | R5-160950 |
| RP#71 | RP-160117 | 0671 | 1 | Corrections to bit rates for video calls | F | 12.8.0 | 12.9.0 | R5-160980 |
| RP#71 | RP-160128 | 0681 | 1 | Correction to extendedPHR-r10 for UL CA | F | 12.8.0 | 12.9.0 | R5-161003 |
| RP#71 | RP-160106 | 0669 | 1 | Addition of the default messages in 36.508 for the small cell enhancements for physical layer test | F | 12.8.0 | 12.9.0 | R5-161057 |
| RP#72 | RP-160858 | 0717 | 1 | Defining SIB combination for TDD-FDD CA | F | 12.9.0 | 12.10.0 | R5-163012 |
| RP#72 | RP-160843 | 0708 | 2 | Addition of test frequencies for band 66 | F | 12.9.0 | 12.10.0 | R5-163193 |
| RP#72 | RP-160835 | 0734 | - | Addition of test frequencies for intra-band non-contiguous Low WGap test points | F | 12.9.0 | 12.10.0 | R5-162889 |
| RP#72 | RP-160837 | 0695 | 1 | Correction to generic RF procedures for Dual Connectivity | F | 12.9.0 | 12.10.0 | R5-162883 |
| RP#72 | RP-160833 | 0692 | - | Clarifications to the D2D ProSe test environment for signalling tests | F | 12.9.0 | 12.10.0 | R5-162028 |
| RP#72 | RP-160833 | 0698 | - | Update generic procedures 4.5A.22 | F | 12.9.0 | 12.10.0 | R5-162133 |
| RP#72 | RP-160833 | 0723 | - | Update of 36508 USIM for D2D | F | 12.9.0 | 12.10.0 | R5-162611 |
| RP#72 | RP-160833 | 0699 | 1 | Add TLS default messages | F | 12.9.0 | 12.10.0 | R5-162902 |
| RP#72 | RP-160833 | 0719 | 1 | Update of 36508 adding Default ProSe messages D2D | F | 12.9.0 | 12.10.0 | R5-162903 |
| RP#72 | RP-160833 | 0720 | 1 | Update of 36508 References for D2D | F | 12.9.0 | 12.10.0 | R5-162904 |
| RP#72 | RP-160833 | 0721 | 1 | Update of 36508 SIB19 D2D | F | 12.9.0 | 12.10.0 | R5-162906 |
| RP#72 | RP-160833 | 0722 | 1 | Update of 36508 SIB18 D2D | F | 12.9.0 | 12.10.0 | R5-162907 |
| RP#72 | RP-160837 | 0694 | - | Correction to generic default messages for Dual Connectivity | F | 12.9.0 | 12.10.0 | R5-162073 |
| RP#72 | RP-160837 | 0710 | - | Introduction of test frequencies for protocol testing of Dual Connectivity | F | 12.9.0 | 12.10.0 | R5-162394 |
| RP#72 | RP-160837 | 0704 | 1 | Correction to generic procedures for protocol testing of Dual Connectivity | F | 12.9.0 | 12.10.0 | R5-163025 |
| RP#72 | RP-160831 | 0700 | 1 | Add IKEv2 default messages | F | 12.9.0 | 12.10.0 | R5-163077 |
| RP#72 | RP-160839 | 0724 | 1 | Modification of reference message definitions for eIMTA | F | 12.9.0 | 12.10.0 | R5-163081 |
| RP#72 | RP-160846 | 0693 | - | Removing outdated Editor's Notes | F | 12.9.0 | 12.10.0 | R5-162042 |
| RP#72 | RP-160858 | 0718 | - | New CA band combination CA_8A-40A – Updates of | F | 12.9.0 | 12.10.0 | R5-162558 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| | | | | 6.2.3.2 Test Frequency | | | | |
| RP#72 | RP-160858 | 0705 | 1 | Correction to Tracking area update request message (mobility from another RAT) | F | 12.9.0 | 12.10.0 | R5-162764 |
| RP#72 | RP-160846 | 0730 | 1 | Updates to bitrate values for the dedicated EPS video bearer | F | 12.9.0 | 12.10.0 | R5-162766 |
| RP#72 | RP-160858 | 0732 | - | Editorial correction to the test procedure of 6.4.3.10 | F | 12.9.0 | 12.10.0 | R5-162767 |
| RP#72 | RP-160858 | 0709 | 2 | Updates to handle IMS registration in WLAN offloading procedures | F | 12.9.0 | 12.10.0 | R5-163053 |
| RP#72 | RP-160847 | 0729 | 1 | Introduction of Generic Test Procedure for optional UE initiated detaching | F | 12.9.0 | 12.10.0 | R5-163079 |
| RP#72 | RP-160858 | 0703 | 1 | [Common] Updates to WLAN offloading procedures to allow IMS PDN | F | 12.9.0 | 12.10.0 | R5-163080 |
| RP#72 | RP-160841 | 0716 | - | Add test frequencies for CA_42D in 36.508 | F | 12.10.0 | 13.0.0 | R5-162541 |
| RP#72 | RP-160841 | 0711 | 1 | Addition of RF test frequencies for CA_5B, CA_5A-5A & CA_3C-5A to Section 4.3.1 | F | 12.10.0 | 13.0.0 | R5-163117 |
| RP#72 | RP-160863 | 0727 | 1 | Band 65 test frequencies for 36.508 clause 4.3 | F | 12.10.0 | 13.0.0 | R5-162972 |
| RP#72 | RP-160841 | 0701 | - | Updates of 6.2.3.2 Test Frequency for CA_3A-41A for CA signalling test | F | 12.10.0 | 13.0.0 | R5-162170 |
| RP#72 | RP-160841 | 0702 | - | Updates of CA Channel Bandwidth combination for CA signalling test in sub-clause 4.3.1 | F | 12.10.0 | 13.0.0 | R5-162171 |
| RP#72 | RP-160841 | 0712 | 1 | Addition of signalling test frequencies for CA_5B, CA_5A-5A & CA_3C-5A to Section 6.2.3.2 | F | 12.10.0 | 13.0.0 | R5-162795 |
| RP#72 | RP-160841 | 0733 | - | Update of Rel-13 CA test frequency CA_19A-28A and CA_21A-42C | F | 12.10.0 | 13.0.0 | R5-163052 |
| RP#72 | RP-160863 | 0728 | 1 | Band 65 signalling test frequencies for 36.508 clause 6.2.3 | F | 12.10.0 | 13.0.0 | R5-162796 |
| RP#72 | RP-160861 | 0726 | 2 | Introduction of default messages for testing of CAT-M1 UE and UE in enhanced coverage | F | 12.10.0 | 13.0.0 | R5-163156 |
| RP#72 | RP-160864 | 0714 | 1 | Addition of some SC-PTM related message definitions in TS36.508 | F | 12.10.0 | 13.0.0 | R5-163038 |
| RP#72 | RP-160862 | 0697 | 1 | Updates to Common parameter in EUTRA (SIB1) and NAS Default Messages and informational elements contents to include Extended DRX parameters | F | 12.10.0 | 13.0.0 | R5-162797 |
| RP#72 | RP-160866 | 0713 | 1 | Addition of LAA related message definitions in TS36.508 | F | 12.10.0 | 13.0.0 | R5-163001 |
| RP#72 | - | - | - | restoring deleted Table 4.3.1.1.66A-3 of R5-163193 | F | 13.0.0 | 13.0.1 | - |
| RP#73 | RP-161427 | 0749 | - | Correction to DRB configuration | F | 13.0.1 | 13.1.0 | R5-165110 |
| RP#73 | RP-161407 | 0754 | - | Introduction of test frequencies for CA_8A-42A and editorial corrections to clause 6.2.3.2 | F | 13.0.1 | 13.1.0 | R5-165242 |
| RP#73 | RP-161427 | 0755 | - | Prevent unnecessary IMS signalling over GERAN for non-IMS test cases | F | 13.0.1 | 13.1.0 | R5-165266 |
| RP#73 | RP-161399 | 0756 | - | Update to generic test procedure 4.5A.22 | F | 13.0.1 | 13.1.0 | R5-165267 |
| RP#73 | RP-161407 | 0761 | - | TS36.508_Addition of signalling test frequencies for CA_8B and CA_8A-41C | F | 13.0.1 | 13.1.0 | R5-165448 |
| RP#73 | RP-161399 | 0762 | - | Update of 36508 adding Default ProSe messages D2D | F | 13.0.1 | 13.1.0 | R5-165457 |
| RP#73 | RP-161399 | 0763 | - | Update of 36508 SIB19 D2D | F | 13.0.1 | 13.1.0 | R5-165458 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| RP#73 | RP-161399 | 0764 | - | Update of 36508 SIB18 D2D | F | 13.0.1 | 13.1.0 | R5-165459 |
| RP#73 | RP-161400 | 0765 | - | Correction to PhysicalConfigDedicated-DEFAULT IE for HalfDuplex Type B mode operation | F | 13.0.1 | 13.1.0 | R5-165478 |
| RP#73 | RP-161410 | 0771 | - | Addition of LAA CA band 46 combination test frequencies for signalling test cases | F | 13.0.1 | 13.1.0 | R5-165519 |
| RP#73 | RP-161410 | 0772 | - | Addition of LAA band 46 test frequencies | F | 13.0.1 | 13.1.0 | R5-165521 |
| RP#73 | RP-161407 | 0773 | - | Update of Rel-13 CA test frequency and CA Channel Bandwidth combination | F | 13.0.1 | 13.1.0 | R5-165609 |
| RP#73 | RP-161428 | 0758 | 1 | Update SystemInformationBlockType1 for band 65 and higher | F | 13.0.1 | 13.1.0 | R5-165892 |
| RP#73 | RP-161439 | 0759 | 1 | Introduction of test frequencies for MFBI enhancement | F | 13.0.1 | 13.1.0 | R5-165893 |
| RP#73 | RP-161437 | 0769 | 1 | Correction of test frequencies for CA intra band combinations CA_2C, CA_3C, CA_7C and CA_12B | F | 13.0.1 | 13.1.0 | R5-165894 |
| RP#73 | RP-161407 | 0746 | 1 | Updates of 6.2.3.2 Test Frequency for CA_2A-28A for CA signalling test | F | 13.0.1 | 13.1.0 | R5-165921 |
| RP#73 | RP-161407 | 0752 | 1 | New CA band combination CA_1A-40A and CA_3A-40A - Updates of 6.2.3.2 Test Frequency | F | 13.0.1 | 13.1.0 | R5-165922 |
| RP#73 | RP-161407 | 0783 | 1 | Updates of 6.2.3.2 Test Frequency for CA_4A-28A and CA_20A-31A for CA signalling test | F | 13.0.1 | 13.1.0 | R5-165923 |
| RP#73 | RP-161413 | 0747 | 1 | Correction of default messages for testing of CAT-M1 UE and UE in enhanced coverage | F | 13.0.1 | 13.1.0 | R5-165932 |
| RP#73 | RP-161399 | 0753 | 1 | Addition of default content for KEY_REQUEST, KEY_RESPONSE and MIKEY messages | F | 13.0.1 | 13.1.0 | R5-165960 |
| RP#73 | RP-161421 | 0777 | 1 | NB-IoT test frequencies definition | F | 13.0.1 | 13.1.0 | R5-165985 |
| RP#73 | RP-161421 | 0779 | 1 | Addition basic NB-IoT UE test states to TS 36.508 | F | 13.0.1 | 13.1.0 | R5-165986 |
| RP#73 | RP-161421 | 0780 | 1 | Introduction default NAS messages and Reference bearer configurations for NB-IoT | F | 13.0.1 | 13.1.0 | R5-165987 |
| RP#73 | RP-161421 | 0781 | 1 | Introduction default RRC messages for NB-IoT | F | 13.0.1 | 13.1.0 | R5-165988 |
| RP#73 | RP-161421 | 0784 | 1 | Definition of NB-IoT environmental conditions and NB-IoT common test requirements of test equipment | F | 13.0.1 | 13.1.0 | R5-165989 |
| RP#73 | RP-161421 | 0785 | 1 | Definition of NB-IoT physical layer parameters | F | 13.0.1 | 13.1.0 | R5-165990 |
| RP#73 | RP-161421 | 0786 | 1 | Definition of NB-IoT signal levels and standard test signals | F | 13.0.1 | 13.1.0 | R5-165991 |
| RP#73 | RP-161421 | 0787 | 1 | Definition of NB-IoT radio conditions and physical channel allocation | F | 13.0.1 | 13.1.0 | R5-165992 |
| RP#73 | RP-161437 | 0796 | - | 36.508: Addition of test frequencies for band CA_7B | F | 13.0.1 | 13.1.0 | R5-166015 |
| RP#73 | RP-161402 | 0775 | 1 | Addition of message exceptions for DL 256QAM | F | 13.0.1 | 13.1.0 | R5-166021 |
| RP#73 | RP-161407 | 0760 | 1 | TS36.508_Additional new Test Frequency for CA_8B | F | 13.0.1 | 13.1.0 | R5-166026 |
| RP#73 | RP-161409 | 0795 | 1 | Addition of connection diagram for 4Rx test cases | F | 13.0.1 | 13.1.0 | R5-166095 |
| RP#73 | RP-161421 | 0782 | 1 | Introduction Test environment for RF test for NB-IoT | F | 13.0.1 | 13.1.0 | R5-166124 |
| RP#73 | RP-161419 | 0770 | 1 | Introduction of Band 45 into 36.508 | F | 13.0.1 | 13.1.0 | R5-166128 |
| RP#73 | RP-161411 | 0766 | 1 | Correction to test frequencies for Band 66 | F | 13.0.1 | 13.1.0 | R5-166131 |
| RP#73 | RP-161411 | 0776 | 1 | Correction to Band 66 test frequencies | F | 13.0.1 | 13.1.0 | R5-166132 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|--|-----|-----------------|-------------|---------------|
| RP#73 | RP-161399 | 0767 | 1 | Addition of connection diagrams for ProSe | F | 13.0.1 | 13.1.0 | R5-166140 |
| RP#73 | RP-161437 | 0791 | 1 | 36.508 UL CA correction for RF test cases | F | 13.0.1 | 13.1.0 | R5-166142 |
| RP#73 | RP-161423 | 0789 | 2 | Introduction of Indoor Positioning Enhancements (MBS) | F | 13.0.1 | 13.1.0 | R5-166184 |
| RP#73 | RP-161397 | 0778 | 1 | Correction to Default IKEv2 message definitions. | F | 13.0.1 | 13.1.0 | R5-166260 |
| RP#73 | RP-161413 | 0748 | 1 | Introduction of test environment for testing of CAT-M1 UE and UE in enhanced coverage | F | 13.0.1 | 13.1.0 | R5-166261 |
| RP#73 | RP-161421 | 0790 | 1 | Addition of definition of simulated network cells for NB-IoT | F | 13.0.1 | 13.1.0 | R5-166285 |
| RP#73 | RP-161421 | 0797 | 1 | Add default NAS messages for NB-IoT and Rel-13 updates | F | 13.0.1 | 13.1.0 | R5-166331 |
| RP#74 | RP-162076 | 0798 | - | Update of default message contents for ProSe Direct Communication | F | 13.1.0 | 13.2.0 | R5-168072 |
| RP#74 | RP-162075 | 0801 | - | Update IKEv2 default messages | F | 13.1.0 | 13.2.0 | R5-168094 |
| RP#74 | RP-162085 | 0802 | - | Addition of connection diagrams for new SC demod and CSI Test Cases for 4Rx | F | 13.1.0 | 13.2.0 | R5-168120 |
| RP#74 | RP-162083 | 0805 | - | Editorial correction to aggregated number of resource blocks for CA Inter-band combination CA_8A-42A | F | 13.1.0 | 13.2.0 | R5-168319 |
| RP#74 | RP-162083 | 0811 | - | Addition of new test frequencies for intra-band non-contiguous CA | F | 13.1.0 | 13.2.0 | R5-168367 |
| RP#74 | RP-162097 | 0812 | - | Common test frequencies for Band 70 | F | 13.1.0 | 13.2.0 | R5-168398 |
| RP#74 | RP-162104 | 0815 | - | Update SCellToAddMod for band 65 and higher | F | 13.1.0 | 13.2.0 | R5-168447 |
| RP#74 | RP-162104 | 0816 | - | Update MobilityControlInfo for band 65 and higher | F | 13.1.0 | 13.2.0 | R5-168454 |
| RP#74 | RP-162091 | 0819 | - | Addition of Procedure for IP address allocation in the CP CIoT | F | 13.1.0 | 13.2.0 | R5-168472 |
| RP#74 | RP-162079 | 0820 | - | Correction of ReportConfigEUTRA-C2 | F | 13.1.0 | 13.2.0 | R5-168567 |
| RP#74 | RP-162096 | 0824 | - | CA_20A-28A: Add test frequencies to sub-clause 6.2.3.2 | F | 13.1.0 | 13.2.0 | R5-168618 |
| RP#74 | RP-162103 | 0834 | - | Correction to EUTRA band 2 and band 25 <> CDMA BC 1 for LTE<>HRPD/1xRTT | F | 13.1.0 | 13.2.0 | R5-168775 |
| RP#74 | RP-162113 | 0835 | - | Addition of test frequencies for CA_7C | F | 13.1.0 | 13.2.0 | R5-168778 |
| RP#74 | RP-162091 | 0837 | - | Addition NB-IoT test environment for RRM test | F | 13.1.0 | 13.2.0 | R5-168833 |
| RP#74 | RP-162097 | 0840 | - | Signalling Test environment for CA_70C | F | 13.1.0 | 13.2.0 | R5-168843 |
| RP#74 | RP-162087 | 0845 | - | Add generic procedure for control plane CIoT connection request | F | 13.1.0 | 13.2.0 | R5-168885 |
| RP#74 | RP-162087 | 0846 | - | Add generic procedure for user plane CIoT connection request | F | 13.1.0 | 13.2.0 | R5-168886 |
| RP#74 | RP-162080 | 0847 | - | Correction to Table 6.2.3.2-2 for DC_7A-20A | F | 13.1.0 | 13.2.0 | R5-168890 |
| RP#74 | RP-162080 | 0848 | - | Editorial correction to clause 5.2A.2A.1 | F | 13.1.0 | 13.2.0 | R5-168891 |
| RP#74 | RP-162083 | 0851 | - | Add test frequencies to sub-clause 6.2.3.2 for CA_7A-22A, CA_7B and CA_20A-40A | F | 13.1.0 | 13.2.0 | R5-168922 |
| RP#74 | RP-162091 | 0806 | 1 | Addition of various CIoT generic procedures for PDN establishment-release | F | 13.1.0 | 13.2.0 | R5-169009 |
| RP#74 | RP-162087 | 0844 | 1 | Update UE test states | F | 13.1.0 | 13.2.0 | R5-169032 |

| Meeting-1st-Level | Doc-1st-Level | CR | Rev | Subject | Cat | Version-Current | Version-New | Doc-2nd-Level |
|-------------------|---------------|------|-----|---|-----|-----------------|-------------|---------------|
| RP#74 | RP-162104 | 0814 | 1 | Update SystemInformationBlockType5 for band 65 and higher | F | 13.1.0 | 13.2.0 | R5-169034 |
| RP#74 | RP-162103 | 0843 | 1 | EPS bearer mapping updates | F | 13.1.0 | 13.2.0 | R5-169035 |
| RP#74 | RP-162097 | 0813 | 1 | Signalling Test environment for Band 70 | F | 13.1.0 | 13.2.0 | R5-169047 |
| RP#74 | RP-162075 | 0800 | 1 | Update generic procedure 4.5A.23 | F | 13.1.0 | 13.2.0 | R5-169074 |
| RP#74 | RP-162087 | 0825 | 1 | Correction of default DCI formats and messages for testing of CAT-M1 UE and UE in enhanced coverage | F | 13.1.0 | 13.2.0 | R5-169087 |
| RP#74 | RP-162091 | 0838 | 1 | Addition default values in NB-IoT RRC messages and IEs | F | 13.1.0 | 13.2.0 | R5-169088 |
| RP#74 | RP-162104 | 0817 | 1 | Update measurement information for band 65 and higher | F | 13.1.0 | 13.2.0 | R5-169116 |
| RP#74 | RP-162083 | 0832 | 1 | Introduction of test frequencies for CA_5A-29A | F | 13.1.0 | 13.2.0 | R5-169125 |
| RP#74 | RP-162091 | 0799 | 1 | Update to default NAS messages for NB-IoT | F | 13.1.0 | 13.2.0 | R5-169126 |
| RP#74 | RP-162091 | 0807 | 1 | Update of NB-IoT Generic procedures | F | 13.1.0 | 13.2.0 | R5-169127 |
| RP#74 | RP-162091 | 0818 | 1 | TAU Procedure for NB-IoT UE's | F | 13.1.0 | 13.2.0 | R5-169128 |
| RP#74 | RP-162091 | 0833 | 1 | Addition of Default configurations for NB-IoT NAS and Idle Mode test cases | F | 13.1.0 | 13.2.0 | R5-169129 |
| RP#74 | RP-162091 | 0808 | 1 | Correction to NB-IOT System configuration IE | F | 13.1.0 | 13.2.0 | R5-169144 |
| RP#74 | RP-162103 | 0827 | 1 | Correction to Procedure for IMS signalling | F | 13.1.0 | 13.2.0 | R5-169150 |
| RP#74 | RP-162091 | 0852 | 1 | Default NB-IoT uplink configuration | F | 13.1.0 | 13.2.0 | R5-169164 |
| RP#74 | RP-162091 | 0841 | 1 | Update of common test environment sections and Annex for NB-IoT UEs | F | 13.1.0 | 13.2.0 | R5-169169 |
| RP#74 | RP-162113 | 0830 | 1 | Correction to test frequencies for CA_66C | F | 13.1.0 | 13.2.0 | R5-169500 |
| RP#74 | RP-162115 | 0831 | 1 | Correction to default messages for TDD FDD CA | F | 13.1.0 | 13.2.0 | R5-169501 |
| RP#74 | RP-162113 | 0810 | 1 | New connection diagram for TC7.9A | F | 13.1.0 | 13.2.0 | R5-169503 |
| RP#74 | RP-162113 | 0829 | 1 | Correction to test frequencies for CA_12B | F | 13.1.0 | 13.2.0 | R5-169504 |
| RP#74 | RP-162101 | 0836 | 1 | Correction of lower test frequencies for Band 26 | F | 13.1.0 | 13.2.0 | R5-169505 |
| RP#74 | RP-162085 | 0809 | 1 | New connection diagrams for 4Rx Receiver TCs | F | 13.1.0 | 13.2.0 | R5-169618 |
| RP#74 | RP-162085 | 0826 | 1 | Addition of 4-Rx connection diagrams | F | 13.2.0 | 14.0.0 | R5-169619 |
| RP#74 | RP-162098 | 0821 | 1 | Addition of V2X Sidelink Communication Test Environment | F | 13.2.0 | 14.0.0 | R5-169647 |
| RP#74 | RP-162097 | 0839 | 1 | Common test frequencies for CA_70C | F | 13.2.0 | 14.0.0 | R5-169649 |
| RP#74 | RP-162114 | 0822 | 1 | Addition of UE Capability Enquiry message for RF tests | F | 13.2.0 | 14.0.0 | R5-169661 |
| RP#74 | RP-162085 | 0803 | 1 | Addition of connection diagram for new CA SDR Test Case for 4Rx | F | 13.2.0 | 14.0.0 | R5-169673 |
| RP#74 | RP-162085 | 0804 | 1 | Addition of connection diagrams for 2Rx Test Cases with 4Rx capable UEs | F | 13.2.0 | 14.0.0 | R5-169674 |

| Change history | | | | | | | |
|----------------|---------|-----------|------|-----|-----|---|-------------|
| Date | Meeting | TDoc | CR | Rev | Cat | Subject/Comment | New version |
| 2017-03 | RAN#75 | RP-170082 | 0856 | - | F | Update to default NAS messages for NB-IoT | 14.1.0 |
| 2017-03 | RAN#75 | RP-170072 | 0857 | - | F | To add Figure A.64a for 4DL CA connection with static PCC propagation channel, SCCs multipath fading propagation channels and additional intra-frequency cell on one SCC. | 14.1.0 |
| 2017-03 | RAN#75 | RP-170077 | 0858 | - | F | Update generic procedure control plane Clot connection request | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0859 | - | F | Corrections for TA and ul-carrierFreq-r13 in SIB2 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0862 | - | F | Add generic procedure to check RRC Connected state for NB-IoT | 14.1.0 |
| 2017-03 | RAN#75 | RP-170097 | 0872 | - | F | Update SystemInformationBlockType5 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170070 | 0875 | - | F | NAICS: Addition of new connction diagram | 14.1.0 |
| 2017-03 | RAN#75 | RP-170107 | 0876 | - | F | New generic procedure for IMS emergency call in EPC / WLAN | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0879 | - | F | NPDCCH config dedicated update for RF test cases | 14.1.0 |
| 2017-03 | RAN#75 | RP-170106 | 0880 | - | F | Addition of test frequencies for 10+15MHz and 15+10MHz in CA_41C | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0882 | - | F | Correction to default values of NB-IoT RRC UECapabilityInformation-NB message | 14.1.0 |
| 2017-03 | RAN#75 | RP-170076 | 0883 | - | F | Update of Rel-13 LAA related IE content in MeasObjectEURA | 14.1.0 |
| 2017-03 | RAN#75 | RP-170091 | 0884 | - | F | Update of V2X Sidelink Communication Test Environment | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0886 | - | F | Update of various Clot generic procedures | 14.1.0 |
| 2017-03 | RAN#75 | RP-170072 | 0888 | - | F | Correction to test frequencies for CA_5A-5A | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0889 | - | F | NPRACH-ConfigSIB-NB-DEFAULT updated | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0895 | - | F | Correction to NB-IoT Physical layer parameters for DCI | 14.1.0 |
| 2017-03 | RAN#75 | RP-170095 | 0896 | - | F | Correction to Generic Test Procedure for network initiated release of additional PDN connectivity | 14.1.0 |
| 2017-03 | RAN#75 | RP-170095 | 0897 | - | F | Correction to generic procedure for preventing IMS signalling over GERAN | 14.1.0 |
| 2017-03 | RAN#75 | RP-170108 | 0900 | - | F | Add missing condition description in Table 4.6.3-9A | 14.1.0 |
| 2017-03 | RAN#75 | RP-170095 | 0902 | 1 | F | Update MobilityControlInfo | 14.1.0 |
| 2017-03 | RAN#75 | RP-170097 | 0903 | 1 | F | Update MeasConfig-DEFAULT | 14.1.0 |
| 2017-03 | RAN#75 | RP-170089 | 0864 | 1 | F | Introduction of test frequencies for CA_3A-11A to section 6 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170089 | 0865 | 1 | F | Introduction of test frequencies for CA_8A-28A to section 6 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170089 | 0866 | 1 | F | Introduction of test frequencies for CA_11A-28A to section 6 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170089 | 0893 | 1 | F | CA_29A-66A, CA_29A-66A-66A, CA_29A-66C, CA_46A-66A test frequencies for signalling test | 14.1.0 |
| 2017-03 | RAN#75 | RP-170108 | 0869 | 1 | F | Introduction of new combination of SIBs for OTDOA 3DL CA test cases | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0854 | 1 | F | [Common] Correction to default parameters for Ncells and SIB-NB | 14.1.0 |
| 2017-03 | RAN#75 | RP-170077 | 0905 | - | F | Correction to eMTC generic procedures | 14.1.0 |
| 2017-03 | RAN#75 | RP-170077 | 0885 | 1 | F | Correction of default messages for testing of CAT-M1 UE and UE in enhanced coverage | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0899 | 1 | F | TAU Procedure for NB-IoT UEs performing Suspend-Resume | 14.1.0 |

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| 2017-03 | RAN#75 | RP-170076 | 0898 | 1 | F | Correction to test frequencies for Band 46 and Test frequencies for CA signalling test | 14.1.0 |
| 2017-03 | RAN#75 | RP-170089 | 0874 | 1 | F | Updates to Band 66 test frequencies | 14.1.0 |
| 2017-03 | RAN#75 | RP-170076 | 0894 | 1 | F | Update of Rel-13 LAA related IE content in the test environment for RF and RRM test | 14.1.0 |
| 2017-03 | RAN#75 | RP-170076 | 0873 | 1 | F | LAA: Test frequencies for Band 46 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170077 | 0863 | 1 | F | Correction of PRACH configuration for RF tests | 14.1.0 |
| 2017-03 | RAN#75 | RP-170072 | 0887 | 1 | F | Addition of Low Wgap frequencies for CA_4A-4A | 14.1.0 |
| 2017-03 | RAN#75 | RP-170093 | 0853 | 1 | F | Update TS 36.508 with Addition of LTE Band 48 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170077 | 0871 | 1 | F | MBSFN information in SIB2 should not be mandatory for eMTC RRM test cases | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0877 | 2 | F | Correction to NB-IoT test environment for SIG | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0904 | 1 | F | Updates to NB-IoT generic procedures to add User-Plane mode support | 14.1.0 |
| 2017-03 | RAN#75 | RP-170077 | 0878 | 3 | F | Correction to default message contents for eMTC testing | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0856 | - | F | Update to default NAS messages for NB-IoT | 14.1.0 |
| 2017-03 | RAN#75 | RP-170072 | 0857 | - | F | To add Figure A.64a for 4DL CA connection with static PCC propagation channel, SCCs multipath fading propagation channels and additional intra-frequency cell on one SCC. | 14.1.0 |
| 2017-03 | RAN#75 | RP-170077 | 0858 | - | F | Update generic procedure control plane CIoT connection request | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0859 | - | F | Corrections for TA and ul-carrierFreq-r13 in SIB2 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0862 | - | F | Add generic procedure to check RRC Connected state for NB-IoT | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0880 | - | F | Update SystemInformationBlockType5 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170070 | 0875 | - | F | NAICS: Addition of new connction diagram | 14.1.0 |
| 2017-03 | RAN#75 | RP-170107 | 0876 | - | F | New generic procedure for IMS emergency call in EPC / WLAN | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0879 | - | F | NPDCCH config dedicated update for RF test cases | 14.1.0 |
| 2017-03 | RAN#75 | RP-170106 | 0880 | - | F | Addition of test frequencies for 10+15MHz and 15+10MHz in CA_41C | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0882 | - | F | Correction to default values of NB-IoT RRC UECapabilityInformation-NB message | 14.1.0 |
| 2017-03 | RAN#75 | RP-170076 | 0883 | - | F | Cor Update of Rel-13 LAA related IE content in MeasObjectEURA | 14.1.0 |
| 2017-03 | RAN#75 | RP-170091 | 0884 | - | F | Update of V2X Sidelink Communication Test Environment | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0886 | - | F | Update of various CIoT generic procedures | 14.1.0 |
| 2017-03 | RAN#75 | RP-170072 | 0888 | - | F | Correction to test frequencies for CA_5A-5A | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0889 | - | F | NPRACH-ConfigSIB-NB-DEFAULT updated | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0895 | - | F | Correction to NB-IoT Physical layer parameters for DCI Renumbering of clauses 8.1.3.6.1.5 (and associated tables) not implemented: clause renumbering is strongly deprecated; instead, empty padding clauses 8.1.3.6.1.3 & 8.1.3.6.1.4 added. | 14.1.0 |
| 2017-03 | RAN#75 | RP-170095 | 0896 | - | F | Correction to Generic Test Procedure for network initiated release of additional PDN connectivity | 14.1.0 |
| 2017-03 | RAN#75 | RP-170095 | 0897 | - | F | Correction to generic procedure for preventing IMS signalling over GERAN | 14.1.0 |
| 2017-03 | RAN#75 | RP-170108 | 0900 | - | F | Add missing condition description in Table 4.6.3-9A | 14.1.0 |
| 2017-03 | RAN#75 | RP-170095 | 0902 | - | F | Update MobilityControllInfo | 14.1.0 |
| 2017-03 | RAN#75 | RP-170097 | 0903 | - | F | Update MeasConfig-DEFAULT | 14.1.0 |
| 2017-03 | RAN#75 | RP-170089 | 0864 | - | F | Introduction of test frequencies for CA_3A-11A to section 6 | 14.1.0 |

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| 2017-03 | RAN#75 | RP-170089 | 0865 | - | F | Introduction of test frequencies for CA_8A-28A to section 6 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170089 | 0866 | - | F | Introduction of test frequencies for CA_11A-28A to section 6 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170089 | 0893 | - | F | CA_29A-66A, CA_29A-66A-66A, CA_29A-66C, CA_46A-66A test frequencies for signalling test | 14.1.0 |
| 2017-03 | RAN#75 | RP-170108 | 0869 | 1 | F | Introduction of new combination of SIBs for OTDOA 3DL CA test cases | 14.1.0 |
| 2017-03 | RAN#75 | RP-170108 | 0854 | 1 | F | [Common] Correction to default parameters for Ncells and SIB-NB | 14.1.0 |
| 2017-03 | RAN#75 | RP-170077 | 0905 | 1 | F | Correction to eMTC generic procedures | 14.1.0 |
| 2017-03 | RAN#75 | RP-170077 | 0885 | 1 | F | Correction of default messages for testing of CAT-M1 UE and UE in enhanced coverage | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0899 | 1 | F | TAU Procedure for NB-IoT UEs performing Suspend-Resume | 14.1.0 |
| 2017-03 | RAN#75 | RP-170076 | 0898 | 1 | F | Correction to test frequencies for Band 46 and Test frequencies for CA signalling test | 14.1.0 |
| 2017-03 | RAN#75 | RP-170089 | 0874 | 1 | F | Updates to Band 66 test frequencies | 14.1.0 |
| 2017-03 | RAN#75 | RP-170076 | 0894 | 1 | F | Update of Rel-13 LAA related IE content in the test environment for RF and RRM test | 14.1.0 |
| 2017-03 | RAN#75 | RP-170076 | 0873 | 1 | F | LAA: Test frequencies for Band 46 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170077 | 0863 | 1 | F | Correction of PRACH configuration for RF tests | 14.1.0 |
| 2017-03 | RAN#75 | RP-170072 | 0887 | - | F | Addition of Low Wgap frequencies for CA_4A-4A | 14.1.0 |
| 2017-03 | RAN#75 | RP-170093 | 0853 | 1 | F | Update TS 36.508 with Addition of LTE Band 48 | 14.1.0 |
| 2017-03 | RAN#75 | RP-170093 | 0871 | 1 | F | MBSFN information in SIB2 should not be mandatory for eMTC RRM test cases | 14.1.0 |
| 2017-03 | RAN#75 | RP-170093 | 0872 | 2 | F | Correction to NB-IoT test environment for SIG | 14.1.0 |
| 2017-03 | RAN#75 | RP-170077 | 0878 | 3 | F | Correction to default message contents for eMTC testing | 14.1.0 |
| 2017-03 | RAN#75 | RP-170082 | 0904 | 1 | F | Updates to NB-IoT generic procedures to add User-Plane mode support | 14.1.0 |
| 2017-06 | RAN#76 | R5-172049 | 0908 | | F | Updates to D2D ProSe default message contents | 14.2.0 |
| 2017-06 | RAN#76 | R5-172061 | 0910 | | F | Editorial update to references to PhysicalConfigDedicated-DEFAULT for SIG | 14.2.0 |
| 2017-06 | RAN#76 | R5-172115 | 0915 | | F | NB-IoT test frequencies for Band 70 | 14.2.0 |
| 2017-06 | RAN#76 | R5-172227 | 0925 | | F | CA_46C-66A test frequencies for signalling test and correction to CA_46A-66A | 14.2.0 |
| 2017-06 | RAN#76 | R5-172324 | 0933 | | F | MobilityControlInfo-HO correction for bands > 64 (Editorial) | 14.2.0 |
| 2017-06 | RAN#76 | R5-172427 | 0938 | | F | Update to e-MTC SIB-2 Signalling | 14.2.0 |
| 2017-06 | RAN#76 | R5-172507 | 0944 | | F | Correction to PhysicalConfigdedicated Parameters for LAA | 14.2.0 |
| 2017-06 | RAN#76 | R5-172561 | 0947 | | F | Update of test frequencies for 2DL/1UL of CA_3A-3A and CA_7A-7A due to new REFSENS test points addition. | 14.2.0 |
| 2017-06 | RAN#76 | R5-172567 | 0948 | | F | Addition of SRS switching common test environment | 14.2.0 |
| 2017-06 | RAN#76 | R5-172582 | 0950 | | F | Addition of test frequencies with Low Wgap for CA_66A-66A | 14.2.0 |
| 2017-06 | RAN#76 | R5-172636 | 0952 | | F | Correction to scheduling request parameters for CatM1 using HD-FDD | 14.2.0 |
| 2017-06 | RAN#76 | R5-172672 | 0953 | | F | Introduction of test frequencies for Band 48 for protocol testing | 14.2.0 |
| 2017-06 | RAN#76 | R5-172756 | 0955 | | F | Addition of Rel-14 NB-IoT operating bands | 14.2.0 |
| 2017-06 | RAN#76 | R5-172776 | 0957 | | F | NB-IoT test frequencies update for inband operation mode | 14.2.0 |
| 2017-06 | RAN#76 | R5-172786 | 0959 | | F | Editorial correction to Clause and Table numbers in generic procedure 4.5A.3B | 14.2.0 |
| 2017-06 | RAN#76 | R5-172850 | 0906 | 1 | F | Update SRB reconfiguration for NB-IoT | 14.2.0 |
| 2017-06 | RAN#76 | R5-172851 | 0909 | 1 | F | NB-IoT: Add new generic procedure for generic RB establishment for UP | 14.2.0 |
| 2017-06 | RAN#76 | R5-172853 | 0963 | | F | Correction to EPS network feature support for ATTACH ACCEPT and TRACKING AREA UPDATE ACCEPT | 14.2.0 |

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| 2017-06 | RAN#76 | R5-172875 | 0911 | 1 | F | Update SystemInformationBlockType2 | 14.2.0 |
| 2017-06 | RAN#76 | R5-172876 | 0916 | 1 | F | Update generic procedure control plane CIoT connection request | 14.2.0 |
| 2017-06 | RAN#76 | R5-172877 | 0917 | 1 | F | Add generic procedure control plane CIoT with test mode | 14.2.0 |
| 2017-06 | RAN#76 | R5-172878 | 0964 | | F | Update SystemInformationBlockType3-NB | 14.2.0 |
| 2017-06 | RAN#76 | R5-172879 | 0919 | 1 | F | Update generic procedure user plane CIoT connection request | 14.2.0 |
| 2017-06 | RAN#76 | R5-172880 | 0922 | 1 | F | Add messages for resuming an RRC connection | 14.2.0 |
| 2017-06 | RAN#76 | R5-172895 | 0926 | 1 | F | Addition of Band 66 Frequencies | 14.2.0 |
| 2017-06 | RAN#76 | R5-172896 | 0927 | 1 | F | Update System Information Block type 19 for Band > 64 | 14.2.0 |
| 2017-06 | RAN#76 | R5-172941 | 0934 | 1 | F | Addition of CA_2A-66A, CA_5A-66A and CA_13A-66A test frequencies for signalling test | 14.2.0 |
| 2017-06 | RAN#76 | R5-172944 | 0940 | 1 | F | Correction of test frequency selection of band 20 in Table 6.2.3.2-2 | 14.2.0 |
| 2017-06 | RAN#76 | R5-172946 | 0965 | | F | Introduction of test frequencies for 2UL/2DL of DC_41A-42A to section 6 | 14.2.0 |
| 2017-06 | RAN#76 | R5-172961 | 0961 | 1 | F | Update for Antenna configuration for 4 Rx UE antenna | 14.2.0 |
| 2017-06 | RAN#76 | R5-172962 | 0966 | | F | Correction to RACH-ConfigCommon-DEFAULT | 14.2.0 |
| 2017-06 | RAN#76 | R5-172981 | 0949 | 1 | F | Update of V2X related message contents in 36.508 | 14.2.0 |
| 2017-06 | RAN#76 | R5-172999 | 0913 | 1 | F | Update RRCConnectionSetupComplete | 14.2.0 |
| 2017-06 | RAN#76 | R5-173000 | 0912 | 1 | F | Update ATTACH ACCEPT | 14.2.0 |
| 2017-06 | RAN#76 | R5-173001 | 0918 | 1 | F | Update RRCConnectionRelease | 14.2.0 |
| 2017-06 | RAN#76 | R5-173002 | 0920 | 1 | F | Add generic procedure user plane CIoT with test mode | 14.2.0 |
| 2017-06 | RAN#76 | R5-173003 | 0921 | 1 | F | Update UE test state | 14.2.0 |
| 2017-06 | RAN#76 | R5-173006 | 0960 | 1 | F | Correction to DRB logical channel configurations | 14.2.0 |
| 2017-06 | RAN#76 | R5-173028 | 0943 | 1 | F | LAA band 46 clarification on DL only operation | 14.2.0 |
| 2017-06 | RAN#76 | R5-173035 | 0929 | 1 | F | Correction to SIB21 | 14.2.0 |
| 2017-06 | RAN#76 | R5-173227 | 0942 | 1 | F | Addition of Figure Connection for more than 3DL CA with static propagation channels and additional intra-frequency cell(s) on each SCC | 14.2.0 |
| 2017-06 | RAN#76 | R5-173315 | 0932 | 1 | F | RadioResourceConfigCommon-DEFAULT correction for eMTC (Editorial) | 14.2.0 |
| 2017-06 | RAN#76 | R5-173352 | 0931 | 1 | F | Introduction of the generic procedures for V2X Communication | 14.2.0 |
| 2017-06 | RAN#76 | R5-173353 | 0956 | 1 | F | Addition of reference test frequencies for V2X 47B | 14.2.0 |
| 2017-06 | RAN#76 | R5-173406 | 0923 | 1 | F | Update to NB-IOT RRM cell configuration | 14.2.0 |
| 2017-06 | RAN#76 | R5-173408 | 0936 | 1 | F | Separation of Narrowband Index for SI message and Data (PDSCH/MPDCCH/PUSCH) for eMTC test cases | 14.2.0 |
| 2017-06 | RAN#76 | R5-173416 | 0924 | 1 | F | New connection diagrams for RX tests with 2Rx and 4Rx and clarification for TX tests | 14.2.0 |
| 2017-09 | RAN#77 | R5-173636 | 0974 | - | F | Remove editor's note for ATTACH ACCEPT | 14.3.0 |
| 2017-09 | RAN#77 | R5-173669 | 0976 | - | F | Update to SI2Quater for LTE Bands>64 | 14.3.0 |
| 2017-09 | RAN#77 | R5-173670 | 0977 | - | F | Updates to UTRAN MEASUREMENT CONTROL & REPORT for LTE Bands>64 | 14.3.0 |
| 2017-09 | RAN#77 | R5-173686 | 0978 | - | F | Clarify the use of system information in generic procedures | 14.3.0 |
| 2017-09 | RAN#77 | R5-173765 | 0983 | - | F | Add new Ncells for RRM Test Cases | 14.3.0 |
| 2017-09 | RAN#77 | R5-173783 | 0984 | - | F | Correction to 4Rx connection diagram for CSI 9.3.3 | 14.3.0 |
| 2017-09 | RAN#77 | R5-173794 | 0985 | - | F | Correction to default messages for Cat M1 | 14.3.0 |
| 2017-09 | RAN#77 | R5-173805 | 0986 | - | F | Correction to System Information Block Type 19 for Band > 64 | 14.3.0 |

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| 2017-09 | RAN#77 | R5-173839 | 0987 | - | F | Remove editor's note for RRC Connection Release | 14.3.0 |
| 2017-09 | RAN#77 | R5-173842 | 0988 | - | F | Add generic procedure to check that UE is camped on a new E-UTRAN cell / UP Clot | 14.3.0 |
| 2017-09 | RAN#77 | R5-173859 | 0991 | - | F | Addition of Test Frequencies for NB-IoT FDD MFBI (180 kHz) | 14.3.0 |
| 2017-09 | RAN#77 | R5-173914 | 0996 | - | F | Introduction of default message configurations for eHST | 14.3.0 |
| 2017-09 | RAN#77 | R5-173927 | 0999 | - | F | Editorial: Update of NB-IOT RadioResourceConfigCommonSIB-NB message in 36.508 | 14.3.0 |
| 2017-09 | RAN#77 | R5-173973 | 1004 | - | F | Introduction of test frequencies for CA configuration CA_2A-7A | 14.3.0 |
| 2017-09 | RAN#77 | R5-174071 | 1008 | - | F | Addition of Physical layer parameters for DCI format 0C | 14.3.0 |
| 2017-09 | RAN#77 | R5-174151 | 1010 | - | F | Addition of 1.4 and 3 MHz test frequencies for Band 65 | 14.3.0 |
| 2017-09 | RAN#77 | R5-174173 | 1014 | - | F | Introduction of test frequencies for CA_3A-32A to section 6.2.3.2 | 14.3.0 |
| 2017-09 | RAN#77 | R5-174266 | 1016 | - | F | Addition of FDD reference test frequencies for band 69 | 14.3.0 |
| 2017-09 | RAN#77 | R5-174291 | 1017 | - | F | Update to UECapabilityInformation-NB message | 14.3.0 |
| 2017-09 | RAN#77 | R5-174299 | 1018 | - | F | Update to V2X message contents | 14.3.0 |
| 2017-09 | RAN#77 | R5-174403 | 1027 | - | F | Correction to generic procedures for Rel-12 DC | 14.3.0 |
| 2017-09 | RAN#77 | R5-174456 | 1019 | 1 | F | Correction to Generic Test Procedure for NB-IoT Control Plane Clot | 14.3.0 |
| 2017-09 | RAN#77 | R5-174457 | 1028 | 1 | F | Addition of test loop mode I | 14.3.0 |
| 2017-09 | RAN#77 | R5-174498 | 0969 | 1 | F | New generic test procedure for XCAP establishment in EPC / WLAN | 14.3.0 |
| 2017-09 | RAN#77 | R5-174499 | 0973 | 1 | F | WLAN power level | 14.3.0 |
| 2017-09 | RAN#77 | R5-174500 | 0975 | 1 | F | Corrections to UTRAN SIB19 for LTE Bands>64 | 14.3.0 |
| 2017-09 | RAN#77 | R5-174501 | 1024 | 1 | F | Update REJECT message security header | 14.3.0 |
| 2017-09 | RAN#77 | R5-174502 | 0980 | 1 | F | Update of Default ProSe messages 36508 | 14.3.0 |
| 2017-09 | RAN#77 | R5-174565 | 1011 | 1 | F | CA_29A-70A, CA_46A-66C, CA_46A-70A signalling test frequencies | 14.3.0 |
| 2017-09 | RAN#77 | R5-174580 | 1006 | 2 | F | Correction to RadioResourceConfigCommonSIB-DEFAULT IE | 14.3.0 |
| 2017-09 | RAN#77 | R5-174593 | 0979 | 1 | F | New default ProSe messages Rel-13 36508 | 14.3.0 |
| 2017-09 | RAN#77 | R5-174594 | 0994 | 1 | F | 36.508 Section 6.6.1 - Update for QCI 69 | 14.3.0 |
| 2017-09 | RAN#77 | R5-174595 | 0995 | 1 | F | 36.508 Section 6.6.2 - Update for QCI 65 | 14.3.0 |
| 2017-09 | RAN#77 | R5-174640 | 0990 | 1 | F | Update UP Clot for ATTACH ACCEPT | 14.3.0 |
| 2017-09 | RAN#77 | R5-174649 | 0968 | 1 | F | Update IMS speech procedures for UE category M1 | 14.3.0 |
| 2017-09 | RAN#77 | R5-174660 | 0971 | 2 | F | Addition of the SIB1 eCall over IMS Release 14 related IEs and condition | 14.3.0 |
| 2017-09 | RAN#77 | R5-174666 | 0997 | 1 | F | Addition of PUCCH SCell common test environment | 14.3.0 |
| 2017-09 | RAN#77 | R5-174667 | 1009 | 1 | F | Update of Clot conditions in NAS messages | 14.3.0 |
| 2017-09 | RAN#77 | R5-174681 | 0972 | 1 | F | Addition of Generic Test Procedure for eCall over IMS establishment in EUTRA: Normal Service | 14.3.0 |
| 2017-09 | RAN#77 | R5-175016 | 1003 | 1 | F | Updates to test frequencies for CA combinations | 14.3.0 |
| 2017-09 | RAN#77 | R5-175050 | 1007 | 1 | F | Sending of MaxLayersMimo-r10 IE for 4Rx TCs with more than 2 Layers | 14.3.0 |
| 2017-09 | RAN#77 | R5-175051 | 1023 | 1 | F | Addition of connection diagrams for 4Rx test cases | 14.3.0 |
| 2017-09 | RAN#77 | R5-175074 | 1005 | 1 | F | New connection diagram for SDR tests with 2Rx and 4Rx | 14.3.0 |
| 2017-09 | RAN#77 | R5-175083 | 1000 | 1 | F | Update of V2V related connection diagram | 14.3.0 |
| 2017-09 | RAN#77 | R5-175099 | 0970 | 1 | F | Addition of SL-V2X-Preconfiguration for V2X MCC case in 4.6.3 and 6.8.2.1 | 14.3.0 |

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| 2017-09 | RAN#77 | R5-175100 | 1002 | 1 | F | Update of V2X related message contents in 36.508 | 14.3.0 |
| 2017-09 | RAN#77 | R5-175101 | 1020 | 1 | F | Addition of connection diagram for V2X Communication / Intra-band contiguous MCC operation | 14.3.0 |
| 2017-09 | RAN#77 | R5-175110 | 1012 | 1 | F | Correction of NB-IOT MasterInformationBlock | 14.3.0 |
| 2017-09 | RAN#77 | R5-175112 | 0967 | 2 | F | Correct srs-Bandwidth comment for Frequency Hopping tests (Editorial Change) | 14.3.0 |
| 2017-09 | RAN#77 | R5-175124 | 1025 | 1 | F | Addition of rel-14 NB-IoT test frequencies | 14.3.0 |
| 2017-09 | RAN#77 | R5-175159 | 1013 | 1 | F | Correction to PRACH-Config-v1310-DEFAULT for eMTC TC | 14.3.0 |
| 2017-09 | RAN#77 | R5-175218 | 1001 | 2 | F | Addition of new generic test procedures State 5-V2X and State 5A-V2X | 14.3.0 |
| 2017-12 | RAN#78 | R5-176083 | 1033 | - | F | Addition of MFBI Test Frequencies for operation Bands 4 and 10 overlapping with Band 66 | 14.4.0 |
| 2017-12 | RAN#78 | R5-176104 | 1034 | - | F | New Connection diagram for RRM eMTC MISO tests | 14.4.0 |
| 2017-12 | RAN#78 | R5-176106 | 1036 | - | F | Correction of SIB2-NB (complete implementation of CR0859) | 14.4.0 |
| 2017-12 | RAN#78 | R5-176132 | 1037 | - | F | Correction to eCalloverIMS condition in SysinfoType1 | 14.4.0 |
| 2017-12 | RAN#78 | R5-176136 | 1038 | - | F | Correction to support of User Plane Clot Optimisation and S1-U Data Transfer | 14.4.0 |
| 2017-12 | RAN#78 | R5-176137 | 1039 | - | F | Corrections to NB-IoT generic test procedure to establish RB(s) in UP | 14.4.0 |
| 2017-12 | RAN#78 | R5-176145 | 1040 | - | F | Correction to RRC Connection Release message | 14.4.0 |
| 2017-12 | RAN#78 | R5-176146 | 1041 | - | F | Update to Tracking Area Update procedure for UP Clot | 14.4.0 |
| 2017-12 | RAN#78 | R5-176421 | 1058 | - | F | Addition of test frequencies for CA signalling test | 14.4.0 |
| 2017-12 | RAN#78 | R5-176450 | 1060 | - | F | Update of PUCCH SCell common test environment | 14.4.0 |
| 2017-12 | RAN#78 | R5-176487 | 1064 | - | F | Correction to test frequencies for CA_41D-41A | 14.4.0 |
| 2017-12 | RAN#78 | R5-176491 | 1065 | - | F | Correction to NB-IoT Test frequencies for in-band mode | 14.4.0 |
| 2017-12 | RAN#78 | R5-176575 | 1071 | - | F | Update to SECURITY REJECT message security header | 14.4.0 |
| 2017-12 | RAN#78 | R5-176607 | 1074 | - | F | Editorial correction to the FDD reference test frequencies for operating band 30 | 14.4.0 |
| 2017-12 | RAN#78 | R5-176680 | 1076 | - | F | Correction to startSymbolBR-r13 IE in SystemInformationBlockType1-BR-r13 | 14.4.0 |
| 2017-12 | RAN#78 | R5-176683 | 1078 | - | F | Correction to PRACH-ConfigSIB-v1310-DEFAULT IE | 14.4.0 |
| 2017-12 | RAN#78 | R5-176703 | 1079 | - | F | New Connection diagram for RRM 4Rx | 14.4.0 |
| 2017-12 | RAN#78 | R5-176758 | 1080 | - | F | Allow retransmissions in IMS registration procedure over UTRA | 14.4.0 |
| 2017-12 | RAN#78 | R5-176802 | 1085 | - | F | Correction of Generic Test Procedure for eCall over IMS establishment in EUTRA: Normal Service | 14.4.0 |
| 2017-12 | RAN#78 | R5-176872 | 1044 | 1 | F | Updates to ATTACH REQUEST and TRACKING AREA REQUEST for Clot Optimisation | 14.4.0 |
| 2017-12 | RAN#78 | R5-176887 | 1042 | 1 | F | Corrections to IMS over WLAN procedures and default messages | 14.4.0 |
| 2017-12 | RAN#78 | R5-176888 | 1061 | 1 | F | Addition of 4 antenna ports default message contents | 14.4.0 |
| 2017-12 | RAN#78 | R5-176892 | 1083 | 1 | F | Addition of default IE contents for MeasGapConfig-CE | 14.4.0 |
| 2017-12 | RAN#78 | R5-176950 | 1032 | 1 | F | Addition of Generic Test Procedure for eCall over IMS establishment in EUTRA: eCall Only Support | 14.4.0 |
| 2017-12 | RAN#78 | R5-176958 | 1043 | 1 | F | Introduction of default message configuration for LTE_VoLTE_ViLTE_enhancement | 14.4.0 |
| 2017-12 | RAN#78 | R5-176961 | 1030 | 1 | F | Correction to 4.5.9.4 and 4.71 | 14.4.0 |
| 2017-12 | RAN#78 | R5-176962 | 1054 | 1 | F | Correct the order of Table 4.6.3-20J and Table 4.6.3-20K | 14.4.0 |
| 2017-12 | RAN#78 | R5-176965 | 1059 | 1 | F | Update to V2V and V2X default message definitions. | 14.4.0 |
| 2017-12 | RAN#78 | R5-176991 | 1082 | 1 | F | Corrections for NPRACH-ConfigSIB-NB-DEFAULT | 14.4.0 |
| 2017-12 | RAN#78 | R5-176998 | 1031 | 1 | F | Correction to raster offset in MIB | 14.4.0 |

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| 2017-12 | RAN#78 | R5-177040 | 1051 | 1 | F | Update of default ProSe discovery messages | 14.4.0 |
| 2017-12 | RAN#78 | R5-177041 | 1052 | 1 | F | Update of USIM for ProSe discovery | 14.4.0 |
| 2017-12 | RAN#78 | R5-177053 | 1089 | - | F | Addition of new generic procedure for User or Network Initiated EPS Bearer Deactivation | 14.4.0 |
| 2017-12 | RAN#78 | R5-177058 | 1077 | 1 | F | Corrections to Generic Test Procedure for user initiated release of additional PDN connectivity | 14.4.0 |
| 2017-12 | RAN#78 | R5-177062 | 1090 | - | F | Correction to RadioResourceConfigCommon-DEFAULT IE | 14.4.0 |
| 2017-12 | RAN#78 | R5-177084 | 1050 | 1 | F | Adding generic procedures for Converged IP Communications | 14.4.0 |
| 2017-12 | RAN#78 | R5-177090 | 1068 | 1 | F | Correction to MeasConfig-DEFAULT for Band > 64 | 14.4.0 |
| 2017-12 | RAN#78 | R5-177128 | 1073 | 2 | F | Correction to UE registration procedure for an IMS enabled multi-PDN UE when Network does not support IMS VoPS | 14.4.0 |
| 2017-12 | RAN#78 | R5-177334 | 1088 | 1 | F | Sending of MaxLayersMimo-r10 IE on SCC for 4Rx TCs with more than 2 Layers | 14.4.0 |
| 2017-12 | RAN#78 | R5-177351 | 1056 | 1 | F | Addition of connection diagrams for V2V RX test cases | 14.4.0 |
| 2017-12 | RAN#78 | R5-177361 | 1057 | 1 | F | Addition of connection diagrams for V2V RX Intra-band contiguous MCC operation | 14.4.0 |
| 2017-12 | RAN#78 | R5-177378 | 1035 | 1 | F | Correction of MIB for NB-IOT InBand | 14.4.0 |
| 2017-12 | RAN#78 | R5-176210 | 1046 | - | F | Signaling Test environment for Band 72 | 15.0.0 |
| 2017-12 | RAN#78 | R5-176216 | 1047 | - | F | Common test frequencies for Band 68 | 15.0.0 |
| 2017-12 | RAN#78 | R5-176220 | 1048 | - | F | Signaling Test environment for Band 68 | 15.0.0 |
| 2017-12 | RAN#78 | R5-176557 | 1069 | - | F | Addition of test frequencies for Band 71 | 15.0.0 |
| 2017-12 | RAN#78 | R5-176817 | 1087 | - | F | Band 71 Signaling Test environment | 15.0.0 |
| 2017-12 | RAN#78 | R5-176919 | 1072 | 2 | F | Update RRCConnectionReconfiguration for 5GS | 15.0.0 |
| 2017-12 | RAN#78 | R5-177316 | 1045 | 1 | F | Common test frequencies for Band 72 | 15.0.0 |
| 2017-12 | RAN#78 | R5-177375 | 1075 | 1 | F | Correction to SystemInformationBlockType2 for NS value > 32 | 15.0.0 |
| 2018-03 | RAN#79 | R5-180317 | 1093 | - | F | New Cells for NB-IOT OTDOA tests - LTE Cell | 15.1.0 |
| 2018-03 | RAN#79 | R5-180377 | 1095 | - | F | Correction to DRX onDurationTimer for FDD-HD operation in MAC configuration | 15.1.0 |
| 2018-03 | RAN#79 | R5-180395 | 1097 | - | F | Addition of default configuration of DCI 3B to TS 36.508 | 15.1.0 |
| 2018-03 | RAN#79 | R5-180396 | 1098 | - | F | Update of SRS switching test environment | 15.1.0 |
| 2018-03 | RAN#79 | R5-180407 | 1101 | - | F | Addition of connection diagram of simultaneous E-UTRA V2X sidelink and E-UTRA uplink transmission | 15.1.0 |
| 2018-03 | RAN#79 | R5-180715 | 1111 | - | F | Addition of new Enhanced LAA IE in PhysicalConfigDedicatedSCell-r10-DEFAULT message | 15.1.0 |
| 2018-03 | RAN#79 | R5-180749 | 1116 | - | F | Added R14 CA combination to Test frequencies for CA signalling test | 15.1.0 |
| 2018-03 | RAN#79 | R5-180753 | 1117 | - | F | Added R15 CA combination to Test frequencies for CA signalling test | 15.1.0 |
| 2018-03 | RAN#79 | R5-180780 | 1118 | - | F | Addition of CA_29A-70C, CA_66A-70A, CA_66A-70C, CA_66C-70A, CA_66C-70C to 36.508 | 15.1.0 |
| 2018-03 | RAN#79 | R5-180918 | 1120 | - | F | Addition of Band 74 Signaling Test environment | 15.1.0 |
| 2018-03 | RAN#79 | R5-180934 | 1121 | - | F | Correction to test frequencies for CA_7A-7A | 15.1.0 |
| 2018-03 | RAN#79 | R5-180939 | 1122 | - | F | Correction to interval-ULHoppingConfigCommonModeA/B-r13 | 15.1.0 |
| 2018-03 | RAN#79 | R5-180940 | 1123 | - | F | Correction to sr-ConfigIndex for CatM1 with 3MHz BW | 15.1.0 |
| 2018-03 | RAN#79 | R5-181054 | 1126 | - | F | Addition of the Band 74 information into TS 36.508 | 15.1.0 |
| 2018-03 | RAN#79 | R5-181066 | 1127 | - | F | Correction to test frequency f4 for E-UTRA FDD bands 25 and 26 | 15.1.0 |
| 2018-03 | RAN#79 | R5-181101 | 1130 | - | F | Connection diagrams for new 4Rx CA demodulation test cases | 15.1.0 |
| 2018-03 | RAN#79 | R5-181141 | 1096 | 1 | F | Corrections to the generic test procedures for IMS MT calls in E-UTRA | 15.1.0 |

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| 2018-03 | RAN#79 | R5-181142 | 1128 | 1 | F | Correction to MeasConfig-DEFAULT | 15.1.0 |
| 2018-03 | RAN#79 | R5-181143 | 1129 | 1 | F | Correction to UE registration with test mode activation procedure 4.5.2A.3 | 15.1.0 |
| 2018-03 | RAN#79 | R5-181196 | 1103 | 1 | F | Addition of default USIM settings for IMS eCall test cases | 15.1.0 |
| 2018-03 | RAN#79 | R5-181197 | 1113 | 1 | F | Update to generic procedure 36.508 4.5A.27 for eCall Only Supporting UE | 15.1.0 |
| 2018-03 | RAN#79 | R5-181216 | 1099 | 1 | F | Update the USIM EFs configuration for V2X. | 15.1.0 |
| 2018-03 | RAN#79 | R5-181217 | 1100 | 1 | F | Editorial, clean up of V2X default message definitions. | 15.1.0 |
| 2018-03 | RAN#79 | R5-181218 | 1119 | 1 | F | Changes and additions to GNSS requirements for V2X testing | 15.1.0 |
| 2018-03 | RAN#79 | R5-181293 | 1104 | 1 | F | Addition of new Generic Test Procedure for IPsec Tunnel Disconnection in EPC / WLAN | 15.1.0 |
| 2018-03 | RAN#79 | R5-181295 | 1106 | 1 | F | Updates to default NB-IoT messages to support the in-band operation mode in protocol test cases | 15.1.0 |
| 2018-03 | RAN#79 | R5-181309 | 1131 | - | F | Correction to RRCConnectionResume-NB specific message contents. | 15.1.0 |
| 2018-03 | RAN#79 | R5-181601 | 1094 | 1 | F | New Cells for NB-IOT OTDOA tests - NB-IOT Cell | 15.1.0 |
| 2018-03 | RAN#79 | R5-181607 | 1102 | 1 | F | Include AdditionalSpectrumEmission for V2X as per RAN2 spec | 15.1.0 |
| 2018-03 | RAN#79 | R5-181616 | 1114 | 1 | F | Test frequencies for Rel-13 LTE CA configurations | 15.1.0 |
| 2018-03 | RAN#79 | R5-181357 | 1115 | 1 | F | Test frequencies for Rel-14 LTE CA configurations | 15.1.0 |
| 2018-03 | RAN#79 | R5-181666 | 1112 | 1 | F | Addition of Connection Diagrams for V2X and V2V Sidelink Communication Performance Test Cases | 15.1.0 |
| 2018-06 | RAN#80 | R5-182376 | 1142 | - | F | Removal of square brackets for GNSS for V2X setups | 15.2.0 |
| 2018-06 | RAN#80 | R5-182415 | 1144 | - | F | Addition of GNSS information for MCS tests | 15.2.0 |
| 2018-06 | RAN#80 | R5-182425 | 1145 | - | F | Update of default NAS messages to add ENDC IEs | 15.2.0 |
| 2018-06 | RAN#80 | R5-182460 | 1146 | - | F | Correction to Attach request and Tracking Area Update request message | 15.2.0 |
| 2018-06 | RAN#80 | R5-182608 | 1154 | - | F | Addition of connection diagrams for power imbalance performance V2V test | 15.2.0 |
| 2018-06 | RAN#80 | R5-182636 | 1155 | - | F | Update SIB2 message for NR | 15.2.0 |
| 2018-06 | RAN#80 | R5-182654 | 1156 | - | F | Addition of SIB22-NB definition | 15.2.0 |
| 2018-06 | RAN#80 | R5-182660 | 1157 | - | F | Update of V2X USIM configuration to add service ID | 15.2.0 |
| 2018-06 | RAN#80 | R5-182666 | 1158 | - | F | Addition of test frequency of CA_40E | 15.2.0 |
| 2018-06 | RAN#80 | R5-182668 | 1159 | - | F | Addition of test frequency of CA_41F | 15.2.0 |
| 2018-06 | RAN#80 | R5-182811 | 1163 | - | F | Addition of test frequencies for CA signalling test | 15.2.0 |
| 2018-06 | RAN#80 | R5-182878 | 1167 | - | F | Exceptions for DL Control Channel Interference Mitigation (Type A and Type B) Tests | 15.2.0 |
| 2018-06 | RAN#80 | R5-183038 | 1173 | - | F | Addition of test frequency of CA_66A-66A-66A | 15.2.0 |
| 2018-06 | RAN#80 | R5-183055 | 1174 | - | F | Corrections to 4.5A.24 | 15.2.0 |
| 2018-06 | RAN#80 | R5-183056 | 1139 | 1 | F | Update to UECapabilityInformation-NB message | 15.2.0 |
| 2018-06 | RAN#80 | R5-183057 | 1150 | 1 | F | Correction to t-PollRetransmit value in Table 4.6.3-19A | 15.2.0 |
| 2018-06 | RAN#80 | R5-183058 | 1170 | 1 | F | Correction to PRACH Config for CAT-M1 UEs | 15.2.0 |
| 2018-06 | RAN#80 | R5-183076 | 1172 | 1 | F | Correction to Band 66 CA band combinations | 15.2.0 |
| 2018-06 | RAN#80 | R5-183091 | 1166 | 1 | F | Addition of NR and MRDC details for UECapabilityEnquiry RRC message | 15.2.0 |
| 2018-06 | RAN#80 | R5-183092 | 1169 | 1 | F | Add ULInformationTransferMRDC message contents | 15.2.0 |
| 2018-06 | RAN#80 | R5-183125 | 1136 | 1 | F | Addition of MeasObject and MeasReport for NR | 15.2.0 |
| 2018-06 | RAN#80 | R5-183170 | 1161 | 1 | F | Introduction of DCI0A/0B for eLAA | 15.2.0 |

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| 2018-06 | RAN#80 | R5-183171 | 1162 | 1 | F | Introduction of DCI4A/4B for eLAA | 15.2.0 |
| 2018-06 | RAN#80 | R5-183182 | 1149 | 1 | F | Addition of V2XoverLTEUu in V2X management data object configuration | 15.2.0 |
| 2018-06 | RAN#80 | R5-183238 | 1138 | 1 | F | Update RRCConnectionReconfiguration message for EN-DC | 15.2.0 |
| 2018-06 | RAN#80 | R5-183239 | 1147 | 1 | F | Update TFT configuration in Dedicated Bearer to Allow IP Ping Operation | 15.2.0 |
| 2018-06 | RAN#80 | R5-183247 | 1140 | 1 | F | Update to the generic registration procedure for Multi-PDNs UEs | 15.2.0 |
| 2018-06 | RAN#80 | R5-183786 | 1153 | 1 | F | Update on AT commands for V2V/X Sidelink communications | 15.2.0 |
| 2018-06 | RAN#80 | R5-183864 | 1151 | 1 | F | Definition of additional simulated cells for IncMon RRM Test Cases | 15.2.0 |
| 2018-06 | RAN#80 | R5-183867 | 1141 | 1 | F | Addition of Rel-15 NB-IoT test frequencies | 15.2.0 |
| 2018-06 | RAN#80 | R5-183894 | 1143 | 1 | F | Addition of WLAN and BLE to test frequencies | 15.2.0 |
| 2018-09 | RAN#81 | R5-184054 | 1177 | - | F | Add SRB with NR PDCP | 15.3.0 |
| 2018-09 | RAN#81 | R5-184075 | 1178 | - | F | NB-IoT timer tolerances: extension of timer value range | 15.3.0 |
| 2018-09 | RAN#81 | R5-184110 | 1180 | - | F | Correction to NB-IOT In-Band Test Frequencies | 15.3.0 |
| 2018-09 | RAN#81 | R5-184234 | 1182 | - | F | Correction to message contents for UL64QAM | 15.3.0 |
| 2018-09 | RAN#81 | R5-184235 | 1183 | - | F | Correction to default message for UL CA tests | 15.3.0 |
| 2018-09 | RAN#81 | R5-184236 | 1184 | - | F | Editorial correction to FDD Mode test frequencies | 15.3.0 |
| 2018-09 | RAN#81 | R5-184268 | 1186 | - | F | Cleaning up the default message contents and test states of V2X | 15.3.0 |
| 2018-09 | RAN#81 | R5-184282 | 1187 | - | F | Update of test frequencies for CA_42A-42A | 15.3.0 |
| 2018-09 | RAN#81 | R5-184569 | 1193 | - | F | Add Band 31 Test Frequencies for NB-IoT Inter-frequency Test cases | 15.3.0 |
| 2018-09 | RAN#81 | R5-184668 | 1195 | - | F | Editorial correction of reference document | 15.3.0 |
| 2018-09 | RAN#81 | R5-184771 | 1197 | - | F | Addition of test frequencies for CA_66A-71A, CA_66C-71A, CA_70A-71A, CA_70C-71A to 36.508 | 15.3.0 |
| 2018-09 | RAN#81 | R5-184820 | 1199 | - | F | Addition of default laa-SCellConfiguration setting for eLAA | 15.3.0 |
| 2018-09 | RAN#81 | R5-184884 | 1200 | - | F | Update to NB-IoT test conditions for in-band / guard band | 15.3.0 |
| 2018-09 | RAN#81 | R5-185002 | 1179 | 1 | F | Correction to ATTACH ACCEPT message for SMS only | 15.3.0 |
| 2018-09 | RAN#81 | R5-185003 | 1190 | 1 | F | Correction of 6.2.3.2 Test Frequency for CA_3A-27A | 15.3.0 |
| 2018-09 | RAN#81 | R5-185023 | 1189 | 1 | F | Updates of 6.2.3.2 Test Frequency for CA_8A-27A | 15.3.0 |
| 2018-09 | RAN#81 | R5-185103 | 1196 | 1 | F | Specifying content for SCGFailureInformationNR | 15.3.0 |
| 2018-09 | RAN#81 | R5-185104 | 1201 | 1 | F | Addition of reference dedicated EPS bearer context #7 for V2X testing | 15.3.0 |
| 2018-09 | RAN#81 | R5-185113 | 1198 | 1 | F | Addition of NB_IOTenh-UEConTest test case scenarios and default SIB content | 15.3.0 |
| 2018-09 | RAN#81 | R5-185158 | 1176 | 1 | F | Update Reference Table 6.6.2-1A dedicated EPS bearer contexts | 15.3.0 |
| 2018-09 | RAN#81 | R5-185164 | 1175 | 1 | F | Update RRCConnectionReconfiguration message for EN-DC | 15.3.0 |
| 2018-09 | RAN#81 | R5-185166 | 1188 | 1 | F | Modification of EPS & Data Radio Bearer ID mapping for EN-DC Test cases | 15.3.0 |
| 2018-09 | RAN#81 | R5-185409 | 1181 | 1 | F | Addition of NB-IOT Guardband Test Frequencies for 10 MHz | 15.3.0 |
| 2018-09 | RAN#81 | R5-185449 | 1185 | 1 | F | Correction to Figure A.64 to cater for CC >= 3 | 15.3.0 |
| 2018-09 | RAN#81 | R5-185454 | 1191 | 1 | F | Addition of antenna diagrams for IncMon RRM test cases | 15.3.0 |
| 2018-09 | RAN#81 | R5-185455 | 1192 | 1 | F | Addition of message content for RRM IncMon test cases | 15.3.0 |
| 2018-12 | RAN#82 | R5-186472 | 1203 | - | F | NB-IoT Band70 In-band frequency for 10Mhz Mid range | 15.4.0 |
| 2018-12 | RAN#82 | R5-186473 | 1204 | - | F | New NCell for NB-IOT RRM Intra-Freq Cell reselection | 15.4.0 |

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| 2018-12 | RAN#82 | R5-186631 | 1207 | - | F | Correction to GNSS scenario #3 for V2X test cases | 15.4.0 |
| 2018-12 | RAN#82 | R5-186768 | 1212 | - | F | Modify the values of IEs in sps-AssistanceInformation-r14 | 15.4.0 |
| 2018-12 | RAN#82 | R5-187002 | 1214 | - | F | Correction to Table 8.1.6.1-15a SCPTMConfiguration-NB | 15.4.0 |
| 2018-12 | RAN#82 | R5-187005 | 1215 | - | F | Adding connection diagram for eNB-IoT RRM test case 6.2.18 | 15.4.0 |
| 2018-12 | RAN#82 | R5-187058 | 1216 | - | F | Addition of test frequency for CA_48C and CA_48A-48A | 15.4.0 |
| 2018-12 | RAN#82 | R5-187059 | 1217 | - | F | Addition of test frequency for CA_40A-40A and CA_40A-40C | 15.4.0 |
| 2018-12 | RAN#82 | R5-187114 | 1218 | - | F | Correction to RRCConnectionReconfiguration | 15.4.0 |
| 2018-12 | RAN#82 | R5-187447 | 1222 | - | F | Addition of Rel-13 CA configurations | 15.4.0 |
| 2018-12 | RAN#82 | R5-187612 | 1225 | - | F | Addition of the message content of PDCP-config for UDC | 15.4.0 |
| 2018-12 | RAN#82 | R5-187639 | 1213 | 1 | F | Update NB-IoT Rel-14 DCI format N0/N1 with HARQ process number | 15.4.0 |
| 2018-12 | RAN#82 | R5-187640 | 1226 | - | F | Clarification to inband testing for signalling test cases | 15.4.0 |
| 2018-12 | RAN#82 | R5-187643 | 1219 | 1 | F | New feMTC IEs | 15.4.0 |
| 2018-12 | RAN#82 | R5-187646 | 1220 | 1 | F | Addition of support for LWA/LWIP Test Cases in generic procedures | 15.4.0 |
| 2018-12 | RAN#82 | R5-187719 | 1224 | 1 | F | Correction to Table 6.6.2-1 in 36.508 | 15.4.0 |
| 2018-12 | RAN#82 | R5-187729 | 1221 | 1 | F | Addition of ReportConfigInterRAT for NR | 15.4.0 |
| 2018-12 | RAN#82 | R5-187730 | 1227 | 1 | F | Updating UE registration procedure to handle UE capability in 2 steps | 15.4.0 |
| 2018-12 | RAN#82 | R5-187739 | 1210 | 1 | F | Addition of SRB4 configuration to RRC connection | 15.4.0 |
| 2018-12 | RAN#82 | R5-187740 | 1211 | 1 | F | Addition of Condition QMC for LTE QMC test | 15.4.0 |
| 2018-12 | RAN#82 | R5-187923 | 1205 | 1 | F | Definition of additional cells for IncMon RRM Test Cases | 15.4.0 |
| 2018-12 | RAN#82 | R5-187924 | 1206 | 1 | F | Message content for IncMon RRM Test Cases | 15.4.0 |
| 2018-12 | RAN#82 | R5-187976 | 1208 | 1 | F | Introduction of the support of ProSe for B72 | 15.4.0 |
| 2018-12 | RAN#82 | R5-187978 | 1209 | 1 | F | Introduction of B68 in ProSe test frequencies table | 15.4.0 |
| 2019-03 | RAN#83 | R5-191522 | 1232 | - | F | Update RRCConnectionReconfiguration message with table references | 15.5.0 |
| 2019-03 | RAN#83 | R5-191553 | 1234 | - | F | Correction to 36.508 Table 8.3.2.3.1-1a | 15.5.0 |
| 2019-03 | RAN#83 | R5-191645 | 1235 | - | F | Updating p-MaxEUTRA-r15 IE part of RRCConnectionReconfiguration | 15.5.0 |
| 2019-03 | RAN#83 | R5-191735 | 1236 | - | F | Addition of CA_21A_42A | 15.5.0 |
| 2019-03 | RAN#83 | R5-191768 | 1241 | - | F | Correction to CA_42E channel definition | 15.5.0 |
| 2019-03 | RAN#83 | R5-191769 | 1242 | - | F | Addition of test frequency for CA_40C-40C | 15.5.0 |
| 2019-03 | RAN#83 | R5-191770 | 1243 | - | F | Addition of test frequency for CA_48D | 15.5.0 |
| 2019-03 | RAN#83 | R5-192268 | 1247 | - | F | Addition of NB-IoT DCI Physical layer parameters for SC-PTM | 15.5.0 |
| 2019-03 | RAN#83 | R5-192344 | 1231 | 1 | F | Addition of support for LWA/LWIP Test Cases in generic procedures | 15.5.0 |
| 2019-03 | RAN#83 | R5-192713 | 1244 | 1 | F | Correction to SIB2 | 15.5.0 |
| 2019-03 | RAN#83 | R5-192859 | 1248 | 1 | F | Addition of SystemInformationBlockType24 message | 15.5.0 |
| 2019-03 | RAN#83 | R5-192860 | 1249 | 2 | F | Addition of Combination 31 of system information blocks | 15.5.0 |
| 2019-03 | RAN#83 | R5-192336 | 1233 | 1 | F | Band 53 introduction in TS 36.508 | 16.0.0 |
| 2019-03 | RAN#83 | - | - | - | - | Editorial updates of table numbering | 16.0.0 |
| 2019-06 | RAN#84 | R5-193579 | 1250 | - | F | Introduction of default message content for ReportConfigEUTRA-H1 and ReportConfigEUTRA-H2 | 16.1.0 |

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| 2019-06 | RAN#84 | R5-193851 | 1255 | - | F | Update of Aerial vehicle specific IE in the ReportConfigEUTRA default message | 16.1.0 |
| 2019-06 | RAN#84 | R5-193961 | 1258 | - | F | Addition of test frequencies for signalling testing of CA_3A-38A | 16.1.0 |
| 2019-06 | RAN#84 | R5-193982 | 1259 | - | F | Corrections to dedicated EPS bearer context #6 | 16.1.0 |
| 2019-06 | RAN#84 | R5-194641 | 1268 | - | F | Addition of test frequencies for signalling testing of CA_5A-40A and CA_5A-40C | 16.1.0 |
| 2019-06 | RAN#84 | R5-194736 | 1269 | - | F | Resubmission of Addition of default IE contents for MeasGapConfig-CE | 16.1.0 |
| 2019-06 | RAN#84 | R5-194770 | 1260 | 1 | F | Introduction of GNSS requirements for aerial testing | 16.1.0 |
| 2019-06 | RAN#84 | R5-194820 | 1272 | - | F | Introducing conditions for EN-DC PSCell handover in RRCConnectionReconfiguration | 16.1.0 |
| 2019-06 | RAN#84 | R5-194875 | 1252 | 1 | F | Update LTE MeasObjectNR | 16.1.0 |
| 2019-06 | RAN#84 | R5-194876 | 1266 | 1 | F | Correction to SMTC periodicity | 16.1.0 |
| 2019-06 | RAN#84 | R5-194877 | 1267 | 1 | F | Update of EMM messages for NR | 16.1.0 |
| 2019-06 | RAN#84 | R5-194880 | 1251 | 1 | F | Introduction of test frequencies for LTE Band 85 | 16.1.0 |
| 2019-06 | RAN#84 | R5-194960 | 1271 | 1 | F | Common test frequencies for Band 73 | 16.1.0 |
| 2019-06 | RAN#84 | R5-195069 | 1270 | 1 | F | Addition of connection diagrams for FD-MIMO | 16.1.0 |
| 2019-06 | RAN#84 | R5-195308 | 1257 | 1 | F | Correction to 4.5A.16.3 procedure for UEs supporting Multi-PDN and Internet configured as secondary PDN | 16.1.0 |
| 2019-06 | RAN#84 | R5-195321 | 1263 | 2 | F | Update of Aerial vehicle specific default message | 16.1.0 |
| 2019-09 | RAN#85 | R5-195800 | 1273 | - | F | Addition of test frequencies for signalling testing of CA_11A_41A, CA_11A_41C, CA_11A_42A and CA_11A_42C | 16.2.0 |
| 2019-09 | RAN#85 | R5-196004 | 1276 | - | F | Update to 4.5A.16 generic procedure for UEs supporting Multi-PDN and Internet configured as secondary PDN with MobileData off | 16.2.0 |
| 2019-09 | RAN#85 | R5-196599 | 1284 | - | F | Correction SIB5-NB for RRM inter-frequency tests | 16.2.0 |
| 2019-09 | RAN#85 | R5-196647 | 1285 | - | F | Update of default messages in regard to NR relevant content | 16.2.0 |
| 2019-09 | RAN#85 | R5-196697 | 1287 | - | F | Update of RRC message SCGFailureInformationNR | 16.2.0 |
| 2019-09 | RAN#85 | R5-196725 | 1288 | - | F | Signalling Test environment for Band 73 | 16.2.0 |
| 2019-09 | RAN#85 | R5-196760 | 1289 | - | F | Addition of TDD reference test frequencies for CA in operating band 41 | 16.2.0 |
| 2019-09 | RAN#85 | R5-196777 | 1290 | - | F | Correction to NOTE on MCC/MNC setting for operation in EUTRA band 6 | 16.2.0 |
| 2019-09 | RAN#85 | R5-196838 | 1291 | - | F | Typo corrections on NB-IoT test frequencies | 16.2.0 |
| 2019-09 | RAN#85 | R5-196971 | 1274 | 1 | F | Update to dataCodingScheme in SystemInformationBlockType11, required for ETWS test case | 16.2.0 |
| 2019-09 | RAN#85 | R5-196977 | 1280 | 1 | F | Correction of USIM file format for V2X | 16.2.0 |
| 2019-09 | RAN#85 | R5-197178 | 1277 | 1 | F | Update of ReportConfigEUTRA default message | 16.2.0 |
| 2019-09 | RAN#85 | R5-197251 | 1278 | 1 | F | Update to Bluetooth and WLAN cells configuration | 16.2.0 |
| 2019-09 | RAN#85 | R5-197257 | 1293 | 1 | F | Title: Update EN-DC PSCell handover condition in RRCConnectionReconfiguration | 16.2.0 |
| 2019-09 | RAN#85 | R5-197453 | 1283 | 1 | F | Addition of test freq for CA_1A-1A to 36.508 | 16.2.0 |
| 2019-09 | RAN#85 | R5-197474 | 1281 | 1 | F | Addition of NB-IOT test frequencies for band FDD85 | 16.2.0 |
| 2019-09 | RAN#85 | R5-197488 | 1292 | 1 | F | Removing duplicate Table 4.3.1.2.9A-10: Test frequencies for CA_41F | 16.2.0 |
| 2019-12 | RAN#86 | R5-198034 | 1294 | - | F | Modification of GNSS Scenarios for aerial testing | 16.3.0 |
| 2019-12 | RAN#86 | R5-198066 | 1296 | - | F | Correction to GNSS Scenario for aerial testing | 16.3.0 |
| 2019-12 | RAN#86 | R5-198514 | 1302 | - | F | Update uplinkPowerControlDedicatedSCell-v1530 | 16.3.0 |
| 2019-12 | RAN#86 | R5-198995 | 1298 | 1 | F | Update upperLayerIndication-r15 in SystemInformationBlockType2 | 16.3.0 |
| 2019-12 | RAN#86 | R5-198996 | 1301 | 1 | F | Addition of N1 interworking to ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST messages | 16.3.0 |

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| 2019-12 | RAN#86 | R5-199411 | 1300 | 1 | F | Addition of new SIB combination for RRM EN-DC tests | 16.3.0 |
| 2019-12 | RAN#86 | R5-199469 | 1297 | 1 | F | Addition of TDD reference test frequencies for CA_48C | 16.3.0 |
| 2020-03 | RAN#87 | R5-200648 | 1308 | | F | Updates to PDN Connectivity Request message | 16.4.0 |
| 2020-03 | RAN#87 | R5-200649 | 1309 | | F | Updates to ESM Information Response message | 16.4.0 |
| 2020-03 | RAN#87 | R5-200704 | 1310 | | F | Correction to QuantityConfig-DEFAULT | 16.4.0 |
| 2020-03 | RAN#87 | R5-200917 | 1306 | 1 | F | Adding missing R15 IEs into RRCConnectionReconfiguration | 16.4.0 |
| 2020-03 | RAN#87 | R5-200989 | 1305 | 1 | F | Configuring dualConnectivityPHR IE for EN-DC scenarios | 16.4.0 |
| 2020-03 | RAN#87 | R5-201008 | 1304 | 1 | F | Updates to condition for UEs indicating support of N1 | 16.4.0 |
| 2020-03 | RAN#87 | R5-201110 | 1307 | 1 | F | Addition of new Generic Test Procedure for IMS Re-registration in E-UTRAN and updates to clause 4.5A.3 | 16.4.0 |
| 2020-06 | RAN#88 | R5-201426 | 1311 | - | F | Correction to Table 4.4.3.3-20-SIB24 of LTE | 16.5.0 |
| 2020-06 | RAN#88 | R5-201485 | 1312 | - | F | Update table 4.6.6-8A | 16.5.0 |
| 2020-06 | RAN#88 | R5-201497 | 1313 | - | F | Updates to RRCConnectionReconfiguration for NR SCell addition, modification and release | 16.5.0 |
| 2020-06 | RAN#88 | R5-202441 | 1321 | - | F | Correction of Test Frequencies for Band 73 | 16.5.0 |
| 2020-06 | RAN#88 | R5-202694 | 1317 | 1 | F | Correction to mobility control information elements | 16.5.0 |
| 2020-06 | RAN#88 | R5-202695 | 1320 | 1 | F | Addition of Default configuration of IE ReportConfigInterRAT for SFTD measurement | 16.5.0 |
| 2020-06 | RAN#88 | R5-202784 | 1319 | 1 | F | Addition of NB-IoT test frequencies of TDD band 41 | 16.5.0 |
| 2020-06 | RAN#88 | R5-202792 | 1314 | 1 | F | Addition of NB-IOT test frequencies for band 73 | 16.5.0 |
| 2020-06 | RAN#88 | R5-203049 | 1318 | 1 | F | Addition of Common Test Environment for short TTI and short processing time | 16.5.0 |

History

| Document history | | |
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