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Part 1: Common test environment
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Contents

Foreword

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

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The present document is part 1 of a multi-part deliverable covering the 5G System (5GS) User Equipment (UE) conformance specification, as identified below:

- **3GPP TS 38.508-1: "5GS; User Equipment (UE) conformance specification; Part 1: Common test environment"** (the present document).
- 3GPP TS 38.508-2 [10]: "5GS; User Equipment (UE) conformance specification; Part 2: Common Implementation Conformance Statement (ICS) proforma".

1 Scope

The present document defines the test environment for the 5G System.

This specification covers all aspects, including NG-RAN, 5GC and interworking between 5GS and EPS used for conformance tests of 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*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 36.508: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification".

[3] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRAN); Overall description; Stage 2".

[4] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC) protocol specification".

[5] 3GPP TS 38.300: "NR; Overall description; Stage 2".

[6] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol specification".

[7] 3GPP TS 38.101-1: “NR; User Equipment (UE) radio transmission and reception; Part 1: Range 1 Standalone”.

[8] 3GPP TS 38.101-2: “NR; User Equipment (UE) radio transmission and reception; Part 2: Range 2 Standalone”.

[9] 3GPP TS 38.101-3: “NR; User Equipment (UE) radio transmission and reception; Part 3: Range 1 and Range 2 Interworking operation with other radios”.

[10] 3GPP TS 38.508-2: "5GS; User Equipment (UE) conformance specification; Part 2: Common Implementation Conformance Statement (ICS) proforma".

[11] 3GPP TS 38.509: "5GS; Special conformance testing functions for User Equipment (UE)".

[12] 3GPP TS 38.523-1: "5GS; User Equipment (UE) conformance specification; Part 1: Protocol".

[13] 3GPP TS 38.133: “NR; Requirements for support of radio resource management”.

[14] 3GPP TS 38.521-1: "NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Range 1 Standalone".

[15] 3GPP TS 38.521-2: “NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Range 1 Standalone”.

[16] 3GPP TS 38.521-3: “NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 3: Range 1 and Range 2 Interworking operation with other radios”.

[17] 3GPP TS 38.521-4: “NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 4: Performance”.

[18] 3GPP TS 38.533: “NR; User Equipment (UE) conformance specification; Radio resource management”.

[19] 3GPP TS 38.523-2: “5GS; User Equipment (UE) conformance specification; Part 2: Applicability of protocol test cases”.

[20] 3GPP TS 38.321: “NR; Medium Access Control (MAC) protocol specification”.

[21] 3GPP TS 38.214: “NR; Physical layer procedures for data”.

[22] 3GPP TS 38.213: “NR; Physical layer procedures for control”.

[23] 3GPP TS 38.523-3: "5GS; UE conformance specification; Part 3: Test Suites".

[24] 3GPP TR 38.810: “Study on test methods for New Radio”

[25] 3GPP TS 23.041: “Technical realization of Cell Broadcast Service (CBS)”

[26] 3GPP TS 23.003: “Numbering, addressing and identification”

[27] 3GPP TS 38.212: "NR; Multiplexing and channel coding"

[28] 3GPP TS 24.501: “Non-Access-Stratum (NAS) protocol for 5G System (5GS);Stage 3”

[29] 3GPP TS 38.211: "NR; Physical channels and modulation".

[30] IETF RFC 4187: " Extensible Authentication Protocol Method for 3rd Generation Authentication and Key Agreement (EAP-AKA) ".

[31] IETF RFC 5448: "Improved Extensible Authentication Protocol Method for 3rd Generation Authentication and Key Agreement (EAP-AKA)".

[32] IETF RFC 3748: "Extensible Authentication Protocol (EAP)".

[33] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[34] IETF RFC 7296: "Internet Key Exchange Protocol Version 2 (IKEv2)".

[35] 3GPP TS 24.502: “Access to the 3GPP 5G Core Network (5GCN) via Non-3GPP Access Networks (N3AN); Stage 3”

[36] 3GPP TS 34.123-2: "User Equipment (UE) conformance specification; Part 2: Implementation Conformance Statement (ICS) proforma specification ".

[37] 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".

[38] 3GPP TR 38.903: “NR; Derivation of test tolerances and measurement uncertainty for User Equipment (UE) conformance test cases”[39] 3GPP TS 37. 571-1: "Universal Terrestrial Radio Access (UTRA) and Evolved UTRA (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification for UE positioning; Part 1: Conformance test specification".

[40] 3GPP TS 37. 571-2: "Universal Terrestrial Radio Access (UTRA) and Evolved UTRA (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification for UE positioning; Part 2: Protocol conformance".

[41] 3GPP TS 36.523-3: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 3: Test Suites".

[42] 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".

[43] 3GPP TS 33.501: "Security architecture and procedures for 5G system".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

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:

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

5GC	5G Core Network
5GMM	5GS Mobility Management
5GS	5G System
5GSM	5GS Session Management
EN-DC	E-UTRA-NR Dual Connectivity
MCG	Master Cell Group
MR-DC	Multi-RAT Dual Connectivity
NE-DC	NR-E-UTRA Dual Connectivity
NGC	NG Core Network. Synonym of 5GC.
NGEN-DC	NG-RAN E-UTRA-NR Dual Connectivity
NG-RAN	NG Radio Access Network
NR	NR Radio Access
RRC	Radio Resource Control
SCG	Secondary Cell Group
SS	System Simulator

4 Common test environments

4.1 Environmental conditions

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

4.1.1 Temperature

Regarding FR1 the UE shall fulfil all the requirements in the full temperature range of:

Table 4.1.1-1: Temperature conditions for FR1

+15°C to +35°C	For normal conditions (with relative humidity of 25 % 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 38.101-1 [7] clause 6.2 for extreme operation.

The normative reference for this requirement is TS 38.101-1 [7] Annex E.2.

All RF requirements for UEs operating in FR2 are defined over the air and can only be tested in an OTA chamber.

Regarding FR2 the UE shall fulfil all requirements in the temperature range defined in Table 4.1.1-2.

Table 4.1.1-2: Temperature conditions for FR2

+ 25 °C ±10 °C	For normal (room temperature) conditions with relative humidity of 25% to 75%
-10°C to +55°C	For extreme conditions

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 38.101-2[8] clause 6.2 for extreme operation.

The normative reference for this requirement is TS 38.101-2 [8] Annex E.2.

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

Editor's Note: This clause is incomplete. The following items are missing or are incomplete:

- Methodology to control the voltage in a case which a power cable is not connected to DUT is FFS since it is not agreed whether we can connect the power cable to DUT at the OTA measurement situation yet.

Regarding both FR1 and FR2 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 conditions

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 Lithium Mercury/nickel & cadmium	 0,85 * nominal 0,95 * nominal 0,90 * nominal	 Nominal 1,1 * Nominal	 Nominal 1,1 * 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 38.101-1[7] and TS 38.101-2[8] clause 6.2 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 38.101-1 [7] Annex E.2 and TS 38.101-2 [8] 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 consisting of:
    - Transmission and Reception Conformance Testing.
    - Performance Conformance Testing.
- RRM 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 other than E-UTRA and NR dual connectivity (EN-DC). However, these would not form a common test equipment requirement for the three test areas and are not considered in the present document.

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 for frequency range 1 on a UE shall provide the following minimum functionality:

- Conducted test method

All test equipment used to perform conformance testing for frequency range 2 on a UE shall provide the following minimum functionality:

- OTA test method

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

- non-standalone(NSA) mode; or
- standalone(SA) mode.

All test equipment used to perform conformance testing on a UE shall provide a platform suitable for testing UE's that are either of following duplex mode for NR and E-UTRA (NSA only) respectively.

a) FDD Mode; or

b) TDD Mode; or

c) both FDD/TDD Modes.

All test equipment shall provide the following minimum functionality.

- The capability of emulating a single NR cell and a single E-UTRA (for NSA mode only) 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 up and support the appropriate radio bearer for the uplink;

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 whose number and capabilities are governed by the test cases that need to be performed (test cases are defined in TS 38.523-1 [12] (Signalling), TS 38.521-1 [14], TS 38.521-2 [15], TS 38.521-3 [16] (TRx), TS 38.521-4 [17] (Performance), TS 38.533 [18] (RRM), TS 37. 571-1 [39] and TS 37. 571-2 [40] (Positioning)).

To perform test cases requiring multiple cell(s), the system simulator shall provide multiple cells offering the capabilities as required by the test case.

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 TS 38.321 [20]. Similarly, the mapping between Transport channels and Physical channels is as described in TS 38.211, TS 38.302 and TS 38.212. The reference measurement channels (mapping between Transport channels and Physical channels for PDSCH/PDCCH) are defined in TS 38.521-1 [14] annex A

4.2.2.1.1 Supported Channels for an E-UTRA cell (NSA mode only)

Requirement for supported channels for E-UTRA cell is described in TS 36.508[2].

4.2.2.1.2 Supported Channels for a NR cell

4.2.2.1.2.1 Logical channels

Logical channel	Minimum number	Comments
BCCH	0 for EN-DC, 1 for SA	
CCCH	0 for EN-DC, 1 for SA	
DCCH	0 for EN-DC, 2 for SA	Split SRB or SRB3 is optional in EN-DC
PCCH	0 for EN-DC, 1 for SA	
DTCH	n	Depending on SS's support for RB service testing

4.2.2.1.2.2 Transport channels

Transport channel	Minimum number	Comments
BCH	1	
PCH	N/A for EN-DC, 1 for SA	
RACH	1	
DL-SCH	1	
UL-SCH	1	

4.2.2.1.2.3 Physical channels

Physical channel	Minimum number	Comments
PBCH	1	Physical Broadcast Channel
PDCCH	1	The physical downlink control channel carries scheduling assignments and other control information.
PDSCH	1	Physical Downlink Shared Channel
PUCCH	1	The physical uplink control channel carries uplink control information
PUSCH	1	Physical Uplink Shared Channel
PRACH	1	Physical Random Access Channel

4.2.2.1.2.4 Physical signals

Physical signal	Minimum number	Comments
Demodulation reference signal	NA	UL
Sounding Reference signal	NA	UL, if applicable
Phase Tracking Reference Signal	NA	UL, if applicable
Demodulation reference signal(PDSCH)	NA	DL
Demodulation reference signal(PDCCH)	NA	DL
Demodulation reference signal(PBCH)	NA	DL
Phase Tracking Reference Signal	NA	DL, if applicable
CSI reference signal	NA	DL
Primary synchronisation signal	NA	DL
Secondary synchronisation signal	NA	DL

4.3 Reference test conditions

4.3.1 Test frequencies

4.3.1.0 General

The test frequencies are based on operating bands defined in TS 38.101-1 [7], TS 38.101-2 [8] and TS 38.101-3 [9].

4.3.1.0A Mid test channel bandwidth

Editor's Note: The note in table 4.3.1-1 and 4.3.1-2 to be updated based on RAN plenary updates.

The Mid test channel bandwidth definition for RF is given in Table 4.3.1-1 and Table 4.3.1-2 for FR1 and FR2 respectively.

Table 4.3.1-1: Mid Test Channel bandwidths for each NR band, FR1

NR band / UE Mid Test Channel bandwidth	
NR Band	**Mid [MHz]**
n1	15
n2	15
n3	15
n5	15
n7	15
n8	15
n12	10
n20	15
n25	15
n28	15
n34	10
n38	15
n39	20
n40	30
n41	50
n51	5
n66	20
n70	15
n71	10
n75	15
n76	5
n77	50
n78	50
n79	60
n80	20
n81	15
n82	15
n83	15
n84	15
n86	20
Note 1:	For UEs where IOT bit declaration is required due to lack of channel BW support in the network, if mid channel BW is not supported by the UE, select the closest lower channel BW supported by the UE in both UL and DL. This shall apply until further updates from RAN plenary and only for Rel 15 UEs.

Table 4.3.1-2: Mid Test Channel bandwidths for each NR band, FR2

NR band / UE Mid Test Channel bandwidth	
NR Band	**Mid [MHz]**
n257	100
n258	[200]
n260	[200]
NOTE 1: For UEs where IOT bit declaration is required due to lack of channel BW support in the network, if mid channel BW is not supported by the UE, select the closest lower channel BW supported by the UE in both UL and DL. This shall apply until further updates from RAN plenary and only for Rel 15 UEs.	

4.3.1.0B Low test channel bandwidth

Editor's Note: The note in table 4.3.1.0B-1 and 4.3.1.0B-2 to be updated based on RAN plenary updates.

The low test channel bandwidth definition for RF is given in Table 4.3.1.0B-1 and Table 4.3.1.0B-2 for FR1 and FR2 respectively.

Table 4.3.1.0B-1: Low Test Channel bandwidths for each NR band, FR1

NR band / UE Low Test Channel bandwidth	
NR Band	**Low [MHz]**
n1	5
n2	5
n3	5
n5	5
n7	5
n8	5
n12	5
n20	5
n25	5
n28	5
n34	5
n38	5
n39	5
n40	5
n41	10
n51	5
n66	5
n70	5
n71	5
n75	5
n76	5
n77	10
n78	10
n79	40
n80	5
n81	5
n82	5
n83	5
n84	5
n86	5
NOTE 1: For UEs where IOT bit declaration is required due to lack of channel BW support in the network, if the above defined low channel bandwidth is not supported by the UE, select the closest channel bandwidth in both DL and UL. This shall apply only for Rel.15 UEs and until further updates are provided from RAN plenary	

Table 4.3.1.0B-2: Low Test Channel bandwidths for each NR band, FR2

NR band / UE Low Test Channel bandwidth	
NR Band	**Low [MHz]**
n257	50
n258	50
n260	50
n261	50
NOTE 1: For UEs where IOT bit declaration is required due to lack of channel BW support in the network, if the above defined low channel bandwidth is not supported by the UE, select the closest channel bandwidth in both DL and UL. This shall apply only for Rel.15 UEs and until further updates are provided from RAN plenary	

4.3.1.0C High test channel bandwidth

The high test channel bandwidth definition for RF is given in Table 4.3.1.0C-1 and Table 4.3.1.0C-2 for FR1 and FR2 respectively.

Table 4.3.1.0C-1: High Test Channel bandwidths for each NR band, FR1

NR band / UE High Test Channel bandwidth	
NR Band	**High [MHz]**
n1	20
n2	20
n3	30
n5	20
n7	20
n8	20
n12	15
n20	20
n25	20
n28	20
n34	15
n38	20
n39	40
n40	80
n41	100
n51	5
n66	40
n70	15[1]/25[2]
n71	20
n75	20
n76	5
n77	100
n78	100
n79	100
n80	30
n81	20
n82	20
n83	20
n84	20
n86	40
NOTE 1: This UE channel bandwidth is applicable only to uplink. NOTE 2: This UE channel bandwidth is applicable only to downlink.	

Table 4.3.1.0C-2: High Test Channel bandwidths for each NR band, FR2

NR band / UE High Test Channel bandwidth	
NR Band	**High [MHz]**
n257	400
n258	400
n260	400
n261	400

4.3.1.0B Bandwidth part

The value of *locationAndBandwidth* in *BWP* for FR1 is given in Table 4.3.1.0B-1. The value of *locationAndBandwidth* in *BWP* for FR2 is given in Table 4.3.1.0B-2.

Table 4.3.1.0B-1: *locationAndBandwidth in BWP for FR1*

BW [MHz]	SCS [kHz]	L_RBs (MAX N_{RB})	locationAndBandwidth (Note 1)
5	15	25	6600
5	30	11	2750
5	60	N/A	N/A
10	15	52	14025
10	30	24	6325
10	60	11	2750
15	15	79	21450
15	30	38	10175
15	60	18	4675
20	15	106	28875
20	30	51	13750
20	60	24	6325
25	15	133	36300
25	30	65	17600
25	60	31	8250
30	15	160	32174
30	30	78	21175
30	60	38	10175
40	15	216	16774
40	30	106	28875
40	60	51	13750
50	15	270	1924
50	30	133	36300
50	60	65	17600
60	15	N/A	N/A
60	30	162	31624
60	60	79	21450
80	15	N/A	N/A
80	30	217	16499
80	60	107	29150
90	15	N/A	N/A
90	30	245	8799
90	60	121	33000
100	15	N/A	N/A
100	30	273	1099
100	60	135	36850
Note 1: The value for *locationAndBandwidth* parameter is calculated as the RIV value in accordance to [21] TS 38.214 with N_{BWP}^{size} = 275, RB_{start} =0 and L_{RBs} = Max N_{RB} for each bandwidth and subcarrier spacing.			

Table 4.3.1.0B-2: *locationAndBandwidth in BWP for FR2*

BW [MHz]	SCS [kHz]	L_RBs (MAX N_{RB})	locationAndBandwidth (Note 1)
50	60	66	17875
50	120	32	8525
100	60	132	36025
100	120	66	17875
200	60	264	3574
200	120	132	36025
400	60	N/A	N/A
400	120	264	3574
Note 1: The value for *locationAndBandwidth* parameter is calculated as the RIV value in accordance to [21] TS 38.214 with N_{BWP}^{size} = 275, RB_{start} =0 and L_{RBs} = Max N_{RB} for each bandwidth and subcarrier spacing.			

4.3.1.1 Test frequencies for NR operating bands in FR1

4.3.1.1.1 NR operating bands in FR1

4.3.1.1.1.1 Reference test frequencies for NR operating band n1

Table 4.3.1.1.1.1-1: Test frequencies for NR operating band n1 and SCS 15 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
5	25	Downlink	Low	2112.5	422500	2110.25	422050	0	15	5279	422410	0	0	0	0
			Mid	2140	428000	2119.39	423878	102		5350	427970	20	0	0	102
			High	2167.5	433500	2074.53	414906	504		5418	433470	20	0	0	504
		Uplink	Low	1922.5	384500	1920.25	384050	0	-	-	-	-	-	-	-
			Mid	1950	390000	1857.03	371406	504		-	-	-	-	-	-
			High	1977.5	395500	1974.17	394834	6		-	-	-	-	-	-
10	52	Downlink	Low	2115	423000	2110.32	422064	0	15	5280	422430	2	0	0	0
			Mid	2140	428000	2116.96	423392	102		5344	427490	22	0	0	102
			High	2165	433000	2069.6	413920	504		5405	432490	22	0	0	504
		Uplink	Low	1925	385000	1920.32	384064	0	-	-	-	-	-	-	-
			Mid	1950	390000	1854.6	370920	504		-	-	-	-	-	-
			High	1975	395000	1969.24	393848	6		-	-	-	-	-	-
15	79	Downlink	Low	2117.5	423500	2110.39	422078	0	15	5281	422450	4	0	0	0
			Mid	2140	428000	2114.53	422906	102		5338	427010	0	2	1	104
			High	2162.5	432500	2064.67	412934	504		5395	431570	20	2	1	506
		Uplink	Low	1927.5	385500	1920.39	384078	0	-	-	-	-	-	-	-
			Mid	1950	390000	1852.17	370434	504		-	-	-	-	-	-
			High	1972.5	394500	1964.31	392862	6		-	-	-	-	-	-
20	106	Downlink	Low	2120	424000	2110.46	422092	0	15	5282	422650	18	4	2	4
			Mid	2140	428000	2112.1	422420	102		5332	426530	2	2	1	104
			High	2160	432000	2059.74	411948	504		5382	430590	22	2	1	506
		Uplink	Low	1930	386000	1920.46	384092	0	-	-	-	-	-	-	-
			Mid	1950	390000	1849.74	369948	504		-	-	-	-	-	-
			High	1970	394000	1959.38	391876	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.1-2: Test frequencies for NR operating band n1 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	2115	423000	2110.68	422136	0	15	5286	422910	18	5	0	10
			Mid	2140	428000	2098.96	419792	102		5350	427970	14	6	1	216
			High	2165	433000	1979.24	395848	504		5411	432970	14	6	1	1020
		Uplink	Low	1925	385000	1920.68	384136	0	-	-	-	-	-	-	-
			Mid	1950	390000	1764.24	352848	504		-	-	-	-	-	-
			High	1975	395000	1968.52	393704	6		-	-	-	-	-	-
15	38	Downlink	Low	2117.5	423500	2110.66	422132	0	15	5287	422930	2	6	1	12
			Mid	2140	428000	2096.44	419288	102		5344	427490	22	6	1	216
			High	2162.5	432500	1974.22	394844	504		5401	432050	18	7	2	1022
		Uplink	Low	1927.5	385500	1920.66	384132	0	-	-	-	-	-	-	-
			Mid	1950	390000	1761.72	352344	504		-	-	-	-	-	-
			High	1972.5	394500	1963.5	392700	6		-	-	-	-	-	-
20	51	Downlink	Low	2120	424000	2110.82	422164	0	15	5285	422890	2	5	0	10
			Mid	2140	428000	2094.1	418820	102		5338	427010	18	6	1	216
			High	2160	432000	1969.38	393876	504		5388	431070	14	7	2	1022
		Uplink	Low	1930	386000	1920.82	384164	0	-	-	-	-	-	-	-
			Mid	1950	390000	1759.38	351876	504		-	-	-	-	-	-
			High	1970	394000	1958.66	391732	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.1-3: Test frequencies for NR operating band n1 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink	Low	2115	423000	2111.04	422208	0	15	5282	422650
			Mid	2140	428000	2062.6	412520	102		5345	427690
			High	2165	433000	1798.16	359632	504		5408	432730
		Uplink	Low	1925	385000	1921.04	384208	0	-	-	-
			Mid	1950	390000	1583.16	316632	504		-	-
			High	1975	395000	1966.72	393344	6		-	-
15	18	Downlink	Low	2117.5	423500	2111.02	422204	0	15	5282	422650
			Mid	2140	428000	2060.08	412016	102		5339	427210
			High	2162.5	432500	1793.14	358628	504		5395	431570
		Uplink	Low	1927.5	385500	1921.02	384204	0	-	-	-
			Mid	1950	390000	1580.64	316128	504		-	-
			High	1972.5	394500	1961.7	392340	6		-	-
20	24	Downlink	Low	2120	424000	2111.36	422272	0	15	5282	422650
			Mid	2140	428000	2057.92	411584	102		5333	426730
			High	2160	432000	1788.48	357696	504		5384	430810
		Uplink	Low	1930	386000	1921.36	384272	0	-	-	-
			Mid	1950	390000	1578.48	315696	504		-	-
			High	1970	394000	1957.04	391408	6		-	-

4.3.1.1.1.2 Reference test frequencies for NR operating band n2

Table 4.3.1.1.1.2-1: Test frequencies for NR operating band n2 and SCS 15 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
5	25	Downlink	Low	1932.5	386500	1930.25	386050	0	15	4829	386410	0	0	0	0
			Mid	1960	392000	1939.39	387878	102		4900	391970	20	0	0	102
			High	1987.5	397500	1894.53	378906	504		4968	397470	20	0	0	504
		Uplink	Low	1852.5	370500	1850.25	370050	0	-	-	-	-	-	-	-
			Mid	1880	376000	1787.03	357406	504		-	-	-	-	-	-
			High	1907.5	381500	1904.17	380834	6		-	-	-	-	-	-
10	52	Downlink	Low	1935	387000	1930.32	386064	0	15	4830	386430	2	0	0	0
			Mid	1960	392000	1936.96	387392	102		4894	391490	22	0	0	102
			High	1985	397000	1889.6	377920	504		4955	396490	22	0	0	504
		Uplink	Low	1855	371000	1850.32	370064	0	-	-	-	-	-	-	-
			Mid	1880	376000	1784.6	356920	504		-	-	-	-	-	-
			High	1905	381000	1899.24	379848	6		-	-	-	-	-	-
15	79	Downlink	Low	1937.5	387500	1930.39	386078	0	15	4831	386450	4	0	0	0
			Mid	1960	392000	1934.53	386906	102		4888	391010	0	2	1	104
			High	1982.5	396500	1884.67	376934	504		4945	395570	20	2	1	506
		Uplink	Low	1857.5	371500	1850.39	370078	0	-	-	-	-	-	-	-
			Mid	1880	376000	1782.17	356434	504		-	-	-	-	-	-
			High	1902.5	380500	1894.31	378862	6		-	-	-	-	-	-
20	106	Downlink	Low	1940	388000	1930.46	386092	0	15	4832	386650	18	4	2	4
			Mid	1960	392000	1932.1	386420	102		4882	390530	2	2	1	104
			High	1980	396000	1879.74	375948	504		4932	394590	22	2	1	506
		Uplink	Low	1860	372000	1850.46	370092	0	-	-	-	-	-	-	-
			Mid	1880	376000	1779.74	355948	504		-	-	-	-	-	-
			High	1900	380000	1889.38	377876	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.2-2: Test frequencies for NR operating band n2 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	1935	387000	1930.68	386136	0	15	4836	386910	18	5	0	10
			Mid	1960	392000	1918.96	383792	102		4900	391970	14	6	1	216
			High	1985	397000	1799.24	359848	504		4961	396970	14	6	1	1020
		Uplink	Low	1855	371000	1850.68	370136	0	-	-	-	-	-	-	-
			Mid	1880	376000	1694.24	338848	504		-	-	-	-	-	-
			High	1905	381000	1898.52	379704	6		-	-	-	-	-	-
15	38	Downlink	Low	1937.5	387500	1930.66	386132	0	15	4837	386930	2	6	1	12
			Mid	1960	392000	1916.44	383288	102		4894	391490	22	6	1	216
			High	1982.5	396500	1794.22	358844	504		4951	396050	18	7	2	1022
		Uplink	Low	1857.5	371500	1850.66	370132	0	-	-	-	-	-	-	-
			Mid	1880	376000	1691.72	338344	504		-	-	-	-	-	-
			High	1902.5	380500	1893.5	378700	6		-	-	-	-	-	-
20	51	Downlink	Low	1940	388000	1930.82	386164	0	15	4835	386890	2	5	0	10
			Mid	1960	392000	1914.1	382820	102		4888	391010	18	6	1	216
			High	1980	396000	1789.38	357876	504		4938	395070	14	7	2	1022
		Uplink	Low	1860	372000	1850.82	370164	0	-	-	-	-	-	-	-
			Mid	1880	376000	1689.38	337876	504		-	-	-	-	-	-
			High	1900	380000	1888.66	377732	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.2-3: Test frequencies for NR operating band n2 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink	Low	1935	387000	1931.04	386208	0	15	4832	386650
			Mid	1960	392000	1882.6	376520	102		4895	391690
			High	1985	397000	1618.16	323632	504		4958	396730
		Uplink	Low	1855	371000	1851.04	370208	0	-	-	-
			Mid	1880	376000	1513.16	302632	504		-	-
			High	1905	381000	1896.72	379344	6		-	-
15	18	Downlink	Low	1937.5	387500	1931.02	386204	0	15	4832	386650
			Mid	1960	392000	1880.08	376016	102		4889	391210
			High	1982.5	396500	1613.14	322628	504		4945	395570
		Uplink	Low	1857.5	371500	1851.02	370204	0	-	-	-
			Mid	1880	376000	1510.64	302128	504		-	-
			High	1902.5	380500	1891.7	378340	6		-	-
20	24	Downlink	Low	1940	388000	1931.36	386272	0	15	4832	386650
			Mid	1960	392000	1877.92	375584	102		4883	390730
			High	1980	396000	1608.48	321696	504		4934	394810
		Uplink	Low	1860	372000	1851.36	370272	0	-	-	-
			Mid	1880	376000	1508.48	301696	504		-	-
			High	1900	380000	1887.04	377408	6		-	-

4.3.1.1.1.3 Reference test frequencies for NR operating band n3

Table 4.3.1.1.1.3-1: Test frequencies for NR operating band n3 and SCS 15 kHz

Band width [MHz]	***carrier Bandwidth* [PRBs]**	**Range**		**Carrier centre [MHz]**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPointA* [ARFCN]**	***offsetToCarrier* [Carrier PRBs]**	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB* [ARFCN]**	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
5	25	Downlink	Low	1807.5	361500	1805.25	361050	0	15	4518	361470	20	0	0	0
			Mid	1842.5	368500	1821.89	364378	102		4604	368410	0	0	0	102
			High	1877.5	375500	1784.53	356906	504		4693	375410	0	0	0	504
		Uplink	Low	1712.5	342500	1710.25	342050	0	-	-	-	-	-	-	-
			Mid	1747.5	349500	1654.53	330906	504		-	-	-	-	-	-
			High	1782.5	356500	1779.17	355834	6		-	-	-	-	-	-
10	52	Downlink	Low	1810	362000	1805.32	361064	0	15	4519	361490	22	0	0	0
			Mid	1842.5	368500	1819.46	363892	102		4598	367930	2	0	0	102
			High	1875	375000	1779.6	355920	504		4680	374430	2	0	0	504
		Uplink	Low	1715	343000	1710.32	342064	0	-	-	-	-	-	-	-
			Mid	1747.5	349500	1652.1	330420	504		-	-	-	-	-	-
			High	1780	356000	1774.24	354848	6		-	-	-	-	-	-
15	79	Downlink	Low	1812.5	362500	1805.39	361078	0	15	4517	361450	4	0	0	0
			Mid	1842.5	368500	1817.03	363406	102		4592	367450	4	0	0	102
			High	1872.5	374500	1774.67	354934	504		4667	373450	4	0	0	504
		Uplink	Low	1717.5	343500	1710.39	342078	0	-	-	-	-	-	-	-
			Mid	1747.5	349500	1649.67	329934	504		-	-	-	-	-	-
			High	1777.5	355500	1769.31	353862	6		-	-	-	-	-	-
20	106	Downlink	Low	1815	363000	1805.46	361092	0	15	4518	361470	6	0	0	0
			Mid	1842.5	368500	1814.6	362920	102		4586	366970	6	0	0	102
			High	1870	374000	1769.74	353948	504		4657	372530	2	2	1	506
		Uplink	Low	1720	344000	1710.46	342092	0	-	-	-	-	-	-	-
			Mid	1747.5	349500	1647.24	329448	504		-	-	-	-	-	-
			High	1775	355000	1764.38	352876	6		-	-	-	-	-	-
25	133	Downlink	Low	1817.5	363500	1805.53	361106	0	15	4519	361490	8	0	0	0
			Mid	1842.5	368500	1812.17	362434	102		4580	366490	8	0	0	102
			High	1867.5	373500	1764.81	352962	504		4644	371550	4	2	1	506
		Uplink	Low	1722.5	344500	1710.53	342106	0	-	-	-	-	-	-	-
			Mid	1747.5	349500	1644.81	328962	504		-	-	-	-	-	-
			High	1772.5	354500	1759.45	351890	6		-	-	-	-	-	-
30	160	Downlink	Low	1820	364000	1805.6	361120	0	15	4520	361690	22	4	2	4
			Mid	1842.5	368500	1809.74	361948	102		4574	366010	10	0	0	102
			High	1865	373000	1759.88	351976	504		4631	370570	6	2	1	506
		Uplink	Low	1725	345000	1710.6	342120	0	-	-	-	-	-	-	-
			Mid	1747.5	349500	1642.38	328476	504		-	-	-	-	-	-
			High	1770	354000	1754.52	350904	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.3-2: Test frequencies for NR operating band n3 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORE SET#0 Offset [RBs] Note 1	CORE SET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	1810	362000	1805.68	361136	0	15	4525	361970	14	6	1	12
			Mid	1842.5	368500	1801.46	360292	102		4604	368410	18	5	0	214
			High	1875	375000	1689.24	337848	504		4686	374910	18	5	0	1018
		Uplink	Low	1715	343000	1710.68	342136	0	-	-	-	-	-	-	-
			Mid	1747.5	349500	1561.74	312348	504		-	-	-	-	-	-
			High	1780	356000	1773.52	354704	6		-	-	-	-	-	-
15	38	Downlink	Low	1812.5	362500	1805.66	361132	0	15	4523	361930	2	6	1	12
			Mid	1842.5	368500	1798.94	359788	102		4598	367930	2	6	1	216
			High	1872.5	374500	1684.22	336844	504		4673	373930	2	6	1	1020
		Uplink	Low	1717.5	343500	1710.66	342132	0	-	-	-	-	-	-	-
			Mid	1747.5	349500	1559.22	311844	504		-	-	-	-	-	-
			High	1777.5	355500	1768.5	353700	6		-	-	-	-	-	-
20	51	Downlink	Low	1815	363000	1805.82	361164	0	15	4524	361950	22	5	0	10
			Mid	1842.5	368500	1796.6	359320	102		4592	367450	22	5	0	214
			High	1870	374000	1679.38	335876	504		4663	373010	18	6	1	1020
		Uplink	Low	1720	344000	1710.82	342164	0	-	-	-	-	-	-	-
			Mid	1747.5	349500	1556.88	311376	504		-	-	-	-	-	-
			High	1775	355000	1763.66	352732	6		-	-	-	-	-	-
25	65	Downlink	Low	1817.5	363500	1805.8	361160	0	15	4525	361970	6	6	1	12
			Mid	1842.5	368500	1794.08	358816	102		4586	366970	6	6	1	216
			High	1867.5	373500	1674.36	334872	504		4650	372030	2	7	2	1022
		Uplink	Low	1722.5	344500	1710.8	342160	0	-	-	-	-	-	-	-
			Mid	1747.5	349500	1554.36	310872	504		-	-	-	-	-	-
			High	1772.5	354500	1758.64	351728	6		-	-	-	-	-	-
30	78	Downlink	Low	1820	364000	1805.96	361192	0	15	4523	361930	6	5	0	10
			Mid	1842.5	368500	1791.74	358348	102		4580	366490	2	6	1	216
			High	1865	373000	1669.52	333904	504		4637	371050	22	6	1	1020
		Uplink	Low	1725	345000	1710.96	342192	0	-	-	-	-	-	-	-
			Mid	1747.5	349500	1552.02	310404	504		-	-	-	-	-	-
			High	1770	354000	1753.8	350760	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.3-3: Test frequencies for NR operating band n3 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink	Low	1810	362000	1806.04	361208	0	15	4520	361690
			Mid	1842.5	368500	1765.1	353020	102		4601	368170
			High	1875	375000	1508.16	301632	504		4682	374650
		Uplink	Low	1715	343000	1711.04	342208	0	-	-	-
			Mid	1747.5	349500	1380.66	276132	504		-	-
			High	1780	356000	1771.72	354344	6		-	-
15	18	Downlink	Low	1812.5	362500	1806.02	361204	0	15	4520	361690
			Mid	1842.5	368500	1762.58	352516	102		4595	367690
			High	1872.5	374500	1503.14	300628	504		4670	373690
		Uplink	Low	1717.5	343500	1711.02	342204	0	-	-	-
			Mid	1747.5	349500	1378.14	275628	504		-	-
			High	1777.5	355500	1766.7	353340	6		-	-
20	24	Downlink	Low	1815	363000	1806.36	361272	0	15	4520	361690
			Mid	1842.5	368500	1760.42	352084	102		4589	367210
			High	1870	374000	1498.48	299696	504		4658	372730
		Uplink	Low	1720	344000	1711.36	342272	0	-	-	-
			Mid	1747.5	349500	1375.98	275196	504		-	-
			High	1775	355000	1762.04	352408	6		-	-
25	31	Downlink	Low	1817.5	363500	1806.34	361268	0	15	4520	361690
			Mid	1842.5	368500	1757.9	351580	102		4583	366730
			High	1867.5	373500	1493.46	298692	504		4646	371770
		Uplink	Low	1722.5	344500	1711.34	342268	0	-	-	-
			Mid	1747.5	349500	1373.46	274692	504		-	-
			High	1772.5	354500	1757.02	351404	6		-	-
30	38	Downlink	Low	1820	364000	1806.32	361264	0	15	4520	361690
			Mid	1842.5	368500	1755.38	351076	102		4577	366250
			High	1865	373000	1488.44	297688	504		4634	370810
		Uplink	Low	1725	345000	1711.32	342264	0	-	-	-
			Mid	1747.5	349500	1370.94	274188	504		-	-
			High	1770	354000	1752	350400	6		-	-

4.3.1.1.1.4 FFS

4.3.1.1.1.5 Reference test frequencies for NR operating band n5

Table 4.3.1.1.1.5-1: Test frequencies for NR operating band n5 and SCS 15 kHz

Band width [MHz]	***carrier Bandwidth* [PRBs]**	**Range**		**Carrier centre [MHz]**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPointA* [ARFCN]**	***offsetToCarrier* [Carrier PRBs]**	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB* [ARFCN]**	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
5	25	Downlink	Low	871.5	174300	869.25	173850	0	15	2178	174270	20	0	0	0
			Mid	881.5	176300	860.89	172178	102		2203	176210	0	0	0	102
			High	891.5	178300	798.53	159706	504		2228	178330	16	2	1	506
		Uplink	Low	826.5	165300	824.25	164850	0	-	-	-	-	-	-	-
			Mid	836.5	167300	743.53	148706	504		-	-	-	-	-	-
			High	846.5	169300	843.17	168634	6		-	-	-	-	-	-
10	52	Downlink	Low	874	174800	869.32	173864	0	15	2179	174290	22	0	0	0
			Mid	881.5	176300	858.46	171692	102		2197	175730	2	0	0	102
			High	889	177800	793.6	158720	504		2218	177410	14	4	2	508
		Uplink	Low	829	165800	824.32	164864	0	-	-	-	-	-	-	-
			Mid	836.5	167300	741.1	148220	504		-	-	-	-	-	-
			High	844	168800	838.24	167648	6		-	-	-	-	-	-
15	79	Downlink	Low	876.5	175300	869.39	173878	0	15	2177	174250	4	0	0	0
			Mid	881.5	176300	856.03	171206	102		2191	175250	4	0	0	102
			High	886.5	177300	788.67	157734	504		2205	176430	16	4	2	508
		Uplink	Low	831.5	166300	824.39	164878	0	-	-	-	-	-	-	-
			Mid	836.5	167300	738.67	147734	504		-	-	-	-	-	-
			High	841.5	168300	833.31	166662	6		-	-	-	-	-	-
20	106	Downlink	Low	879	175800	869.46	173892	0	15	2178	174270	6	0	0	0
			Mid	881.5	176300	853.6	170720	102		2185	174770	6	0	0	102
			High	884	176800	783.74	156748	504		2192	175450	18	4	2	508
		Uplink	Low	834	166800	824.46	164892	0	-	-	-	-	-	-	-
			Mid	836.5	167300	736.24	147248	504		-	-	-	-	-	-
			High	839	167800	828.38	165676	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.5-2: Test frequencies for NR operating band n5 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	874	174800	869.68	173936	0	30	2185	174770	14	1	1	2
			Mid	881.5	176300	840.46	168092	102		2203	176210	18	0	0	204
			High	889	177800	703.24	140648	504		2224	177890	6	3	3	1014
		Uplink	Low	829	165800	824.68	164936	0	-	-	-	-	-	-	-
			Mid	836.5	167300	650.74	130148	504		-	-	-	-	-	-
			High	844	168800	837.52	167504	6		-	-	-	-	-	-
15	38	Downlink	Low	876.5	175300	869.66	173932	0	30	2183	174730	2	1	1	2
			Mid	881.5	176300	837.94	167588	102		2197	175730	2	1	1	206
			High	886.5	177300	698.22	139644	504		2208	176670	6	0	0	1008
		Uplink	Low	831.5	166300	824.66	164932	0	-	-	-	-	-	-	-
			Mid	836.5	167300	648.22	129644	504		-	-	-	-	-	-
			High	841.5	168300	832.5	166500	6		-	-	-	-	-	-
20	51	Downlink	Low	879	175800	869.82	173964	0	30	2184	174750	22	0	0	0
			Mid	881.5	176300	835.6	167120	102		2191	175250	22	0	0	204
			High	884	176800	693.38	138676	504		2195	175690	2	0	0	1008
		Uplink	Low	834	166800	824.82	164964	0	-	-	-	-	-	-	-
			Mid	836.5	167300	645.88	129176	504		-	-	-	-	-	-
			High	839	167800	827.66	165532	6		-	-	-	-	-	-
"Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2."															

4.3.1.1.1.6 FFS

4.3.1.1.1.7 Reference test frequencies for NR operating band n7

Table 4.3.1.1.1.7-1: Test frequencies for NR operating band n7 and SCS 15 kHz

Band width [MHz]	*carrier Bandwidth [PRBs]*	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
5	25	Downlink	Low	2622.5	524500	2620.25	524050	0	15	6554	524410	0	0	0	0
			Mid	2655	531000	2634.39	526878	102		6636	530910	0	0	0	102
			High	2687.5	537500	2594.53	518906	504		6718	537410	0	0	0	504
		Uplink	Low	2502.5	500500	2500.25	500050	0	-	-	-	-	-	-	-
			Mid	2535	507000	2442.03	488406	504		-	-	-	-	-	-
			High	2567.5	513500	2564.17	512834	6		-	-	-	-	-	-
10	52	Downlink	Low	2625	525000	2620.32	524064	0	15	6555	524430	2	0	0	0
			Mid	2655	531000	2631.96	526392	102		6630	530430	2	0	0	102
			High	2685	537000	2589.6	517920	504		6705	536430	2	0	0	504
		Uplink	Low	2505	501000	2500.32	500064	0	-	-	-	-	-	-	-
			Mid	2535	507000	2439.6	487920	504		-	-	-	-	-	-
			High	2565	513000	2559.24	511848	6		-	-	-	-	-	-
15	79	Downlink	Low	2627.5	525500	2620.39	524078	0	15	6556	524450	4	0	0	0
			Mid	2655	531000	2629.53	525906	102		6624	529950	4	0	0	102
			High	2682.5	536500	2584.67	516934	504		6692	535450	4	0	0	504
		Uplink	Low	2507.5	501500	2500.39	500078	0	-	-	-	-	-	-	-
			Mid	2535	507000	2437.17	487434	504		-	-	-	-	-	-
			High	2562.5	512500	2554.31	510862	6		-	-	-	-	-	-
20	106	Downlink	Low	2630	526000	2620.46	524092	0	15	6557	524650	18	4	2	4
			Mid	2655	531000	2627.1	525420	102		6618	529470	6	0	0	102
			High	2680	536000	2579.74	515948	504		6682	534530	2	2	1	506
		Uplink	Low	2510	502000	2500.46	500092	0	-	-	-	-	-	-	-
			Mid	2535	507000	2434.74	486948	504		-	-	-	-	-	-
			High	2560	512000	2549.38	509876	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.7-2: Test frequencies for NR operating band n7 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	2625	525000	2620.68	524136	0	15	6561	524910	18	5	0	10
			Mid	2655	531000	2613.96	522792	102		6636	530910	18	5	0	214
			High	2685	537000	2499.24	499848	504		6711	536910	18	5	0	1018
		Uplink	Low	2505	501000	2500.68	500136	0	-	-	-	-	-	-	-
			Mid	2535	507000	2349.24	469848	504		-	-	-	-	-	-
			High	2565	513000	2558.52	511704	6		-	-	-	-	-	-
15	38	Downlink	Low	2627.5	525500	2620.66	524132	0	15	6562	524930	2	6	1	12
			Mid	2655	531000	2611.44	522288	102		6630	530430	2	6	1	216
			High	2682.5	536500	2494.22	498844	504		6698	535930	2	6	1	1020
		Uplink	Low	2507.5	501500	2500.66	500132	0	-	-	-	-	-	-	-
			Mid	2535	507000	2346.72	469344	504		-	-	-	-	-	-
			High	2562.5	512500	2553.5	510700	6		-	-	-	-	-	-
20	51	Downlink	Low	2630	526000	2620.82	524164	0	15	6560	524890	2	5	0	10
			Mid	2655	531000	2609.1	521820	102		6624	529950	22	5	0	214
			High	2680	536000	2489.38	497876	504		6688	535010	18	6	1	1020
		Uplink	Low	2510	502000	2500.82	500164	0	-	-	-	-	-	-	-
			Mid	2535	507000	2344.38	468876	504		-	-	-	-	-	-
			High	2560	512000	2548.66	509732	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.7-3: Test frequencies for NR operating band n7 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink	Low	2625	525000	2621.04	524208	0	15	6557	524650
			Mid	2655	531000	2577.6	515520	102		6632	530650
			High	2685	537000	2318.16	463632	504		6707	536650
		Uplink	Low	2505	501000	2501.04	500208	0	-	-	-
			Mid	2535	507000	2168.16	433632	504		-	-
			High	2565	513000	2556.72	511344	6		-	-
15	18	Downlink	Low	2627.5	525500	2621.02	524204	0	15	6557	524650
			Mid	2655	531000	2575.08	515016	102		6626	530170
			High	2682.5	536500	2313.14	462628	504		6695	535690
		Uplink	Low	2507.5	501500	2501.02	500204	0	-	-	-
			Mid	2535	507000	2165.64	433128	504		-	-
			High	2562.5	512500	2551.7	510340	6		-	-
20	24	Downlink	Low	2630	526000	2621.36	524272	0	15	6557	524650
			Mid	2655	531000	2572.92	514584	102		6620	529690
			High	2680	536000	2308.48	461696	504		6683	534730
		Uplink	Low	2510	502000	2501.36	500272	0	-	-	-
			Mid	2535	507000	2163.48	432696	504		-	-
			High	2560	512000	2547.04	509408	6		-	-

4.3.1.1.1.8 Reference test frequencies for NR operating band n8

Table 4.3.1.1.1.8-1: Test frequencies for NR operating band n8 and SCS 15 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
5	25	Downlink	Low	927.5	185500	925.25	185050	0	15	2318	185530	16	2	1	2
			Mid	942.5	188500	921.89	184378	102		2354	188410	0	0	0	102
			High	957.5	191500	864.53	172906	504		2393	191530	16	2	1	506
		Uplink	Low	882.5	176500	880.25	176050	0	-	-	-	-	-	-	-
			Mid	897.5	179500	804.53	160906	504		-	-	-	-	-	-
			High	912.5	182500	909.17	181834	6		-	-	-	-	-	-
10	52	Downlink	Low	930	186000	925.32	185064	0	15	2319	185550	18	2	1	2
			Mid	942.5	188500	919.46	183892	102		2348	187930	2	0	0	102
			High	955	191000	859.6	171920	504		2383	190610	14	4	2	508
		Uplink	Low	885	177000	880.32	176064	0	-	-	-	-	-	-	-
			Mid	897.5	179500	802.1	160420	504		-	-	-	-	-	-
			High	910	182000	904.24	180848	6		-	-	-	-	-	-
15	79	Downlink	Low	932.5	186500	925.39	185078	0	15	2320	185570	20	2	1	2
			Mid	942.5	188500	917.03	183406	102		2342	187450	4	0	0	102
			High	952.5	190500	854.67	170934	504		2370	189630	16	4	2	508
		Uplink	Low	887.5	177500	880.39	176078	0	-	-	-	-	-	-	-
			Mid	897.5	179500	799.67	159934	504		-	-	-	-	-	-
			High	907.5	181500	899.31	179862	6		-	-	-	-	-	-
20	106	Downlink	Low	935	187000	925.46	185092	0	15	2318	185530	2	2	1	2
			Mid	942.5	188500	914.6	182920	102		2336	186970	6	0	0	102
			High	950	190000	849.74	169948	504		2357	188650	18	4	2	508
		Uplink	Low	890	178000	880.46	176092	0	-	-	-	-	-	-	-
			Mid	897.5	179500	797.24	159448	504		-	-	-	-	-	-
			High	905	181000	894.38	178876	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.8-2: Test frequencies for NR operating band n8 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	930	186000	925.68	185136	0	15	2325	186030	10	7	2	14
			Mid	942.5	188500	901.46	180292	102		2354	188410	18	5	0	214
			High	955	191000	769.24	153848	504		2389	191090	6	8	3	1024
		Uplink	Low	885	177000	880.68	176136	0	-	-	-	-	-	-	-
			Mid	897.5	179500	711.74	142348	504		-	-	-	-	-	-
			High	910	182000	903.52	180704	6		-	-	-	-	-	-
15	38	Downlink	Low	932.5	186500	925.66	185132	0	15	2326	186050	18	7	2	14
			Mid	942.5	188500	898.94	179788	102		2348	187930	2	6	1	216
			High	952.5	190500	764.22	152844	504		2373	189870	6	5	0	1018
		Uplink	Low	887.5	177500	880.66	176132	0	-	-	-	-	-	-	-
			Mid	897.5	179500	709.22	141844	504		-	-	-	-	-	-
			High	907.5	181500	898.5	179700	6		-	-	-	-	-	-
20	51	Downlink	Low	935	187000	925.82	185164	0	15	2324	186010	18	6	1	12
			Mid	942.5	188500	896.6	179320	102		2342	187450	22	5	0	214
			High	950	190000	759.38	151876	504		2360	188890	2	5	0	1018
		Uplink	Low	890	178000	880.82	176164	0	-	-	-	-	-	-	-
			Mid	897.5	179500	706.88	141376	504		-	-	-	-	-	-
			High	905	181000	893.66	178732	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

4.3.1.1.1.9 to 4.3.1.1.1.11 FFS

4.3.1.1.1.12 Reference test frequencies for NR operating band n12

Table 4.3.1.1.1.12-1: Test frequencies for NR operating band n12 and SCS 15 kHz

Band width [MHz]	***carrier Bandwidth* [PRBs]**	**Range**		**Carrier centre [MHz]**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPointA* [ARFCN]**	***offsetToCarrier* [Carrier PRBs]**	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB* [ARFCN]**	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
5	25	Downlink	Low	731.5	146300	729.25	145850	0	15	1828	146210	0	0	0	0
			Mid	737.5	147500	716.89	143378	102		1843	147410	0	0	0	102
			High	743.5	148700	650.53	130106	504		1858	148610	0	0	0	504
		Uplink	Low	701.5	140300	699.25	139850	0	-	-	-	-	-	-	-
			Mid	707.5	141500	614.53	122906	504		-	-	-	-	-	-
			High	713.5	142700	710.17	142034	6		-	-	-	-	-	-
10	52	Downlink	Low	734	146800	729.32	145864	0	15	1829	146410	14	4	2	4
			Mid	737.5	147500	714.46	142892	102		1837	146930	2	0	0	102
			High	741	148200	645.6	129120	504		1845	147630	2	0	0	504
		Uplink	Low	704	140800	699.32	139864	0	-	-	-	-	-	-	-
			Mid	707.5	141500	612.1	122420	504		-	-	-	-	-	-
			High	711	142200	705.24	141048	6		-	-	-	-	-	-
15	79	Downlink	Low	736.5	147300	729.39	145878	0	15	1830	146430	16	4	2	4
			Mid	737.5	147500	712.03	142406	102		1831	146450	4	0	0	102
			High	738.5	147700	640.67	128134	504		1832	146650	4	0	0	504
		Uplink	Low	706.5	141300	699.39	139878	0	-	-	-	-	-	-	-
			Mid	707.5	141500	609.67	121934	504		-	-	-	-	-	-
			High	708.5	141700	700.31	140062	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.12-2: Test frequencies for NR operating band n12 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	734	146800	729.68	145936	0	15	1835	146890	6	8	3	16
			Mid	737.5	147500	696.46	139292	102		1843	147410	18	5	0	214
			High	741	148200	555.24	111048	504		1851	148110	18	5	0	1018
		Uplink	Low	704	140800	699.68	139936	0	-	-	-	-	-	-	-
			Mid	707.5	141500	521.74	104348	504		-	-	-	-	-	-
			High	711	142200	704.52	140904	6		-	-	-	-	-	-
15	38	Downlink	Low	736.5	147300	729.66	145932	0	15	1833	146670	6	5	0	10
			Mid	737.5	147500	693.94	138788	102		1837	146930	2	6	1	216
			High	738.5	147700	550.22	110044	504		1838	147130	2	6	1	1020
		Uplink	Low	706.5	141300	699.66	139932	0	-	-	-	-	-	-	-
			Mid	707.5	141500	519.22	103844	504		-	-	-	-	-	-
			High	708.5	141700	699.5	139900	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

ss4.3.1.1.1.13 to 4.3.1.1.1.19 FFS

4.3.1.1.1.20 Reference test frequencies for NR operating band n20

Table 4.3.1.1.1.20-1: Test frequencies for NR operating band n20 and SCS 15 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
5	25	Downlink	Low	793.5	158700	791.25	158250	0	15	1983	158670	20	0	0	0
			Mid	806	161200	785.39	157078	102		2015	161290	12	4	2	106
			High	818.5	163700	725.53	145106	504		2047	163730	16	2	1	506
		Uplink	Low	834.5	166900	832.25	166450	0	-	-	-	-	-	-	-
			Mid	847	169400	754.03	150806	504		-	-	-	-	-	-
			High	859.5	171900	856.17	171234	6		-	-	-	-	-	-
10	52	Downlink	Low	796	159200	791.32	158264	0	15	1984	158690	22	0	0	0
			Mid	806	161200	782.96	156592	102		2009	160810	14	4	2	106
			High	816	163200	720.6	144120	504		2034	162750	18	2	1	506
		Uplink	Low	837	167400	832.32	166464	0	-	-	-	-	-	-	-
			Mid	847	169400	751.6	150320	504		-	-	-	-	-	-
			High	857	171400	851.24	170248	6		-	-	-	-	-	-
15	79	Downlink	Low	798.5	159700	791.39	158278	0	15	1982	158650	4	0	0	0
			Mid	806	161200	780.53	156106	102		2003	160330	16	4	2	106
			High	813.5	162700	715.67	143134	504		2021	161770	20	2	1	506
		Uplink	Low	839.5	167900	832.39	166478	0	-	-	-	-	-	-	-
			Mid	847	169400	749.17	149834	504		-	-	-	-	-	-
			High	854.5	170900	846.31	169262	6		-	-	-	-	-	-
20	106	Downlink	Low	801	160200	791.46	158292	0	15	1983	158670	6	0	0	0
			Mid	806	161200	778.1	155620	102		1997	159850	18	4	2	106
			High	811	162200	710.74	142148	504		2011	160850	18	4	2	508
		Uplink	Low	842	168400	832.46	166492	0	-	-	-	-	-	-	-
			Mid	847	169400	746.74	149348	504		-	-	-	-	-	-
			High	852	170400	841.38	168276	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.20-2: Test frequencies for NR operating band n20 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	796	159200	791.68	158336	0	15	1990	159170	14	6	1	12
			Mid	806	161200	764.96	152992	102		2015	161290	6	8	3	220
			High	816	163200	630.24	126048	504		2040	163230	10	7	2	1022
		Uplink	Low	837	167400	832.68	166536	0	-	-	-	-	-	-	-
			Mid	847	169400	661.24	132248	504		-	-	-	-	-	-
			High	857	171400	850.52	170104	6		-	-	-	-	-	-
15	38	Downlink	Low	798.5	159700	791.66	158332	0	15	1988	159130	2	6	1	12
			Mid	806	161200	762.44	152488	102		2006	160570	6	5	0	214
			High	813.5	162700	625.22	125044	504		2027	162250	18	7	2	1022
		Uplink	Low	839.5	167900	832.66	166532	0	-	-	-	-	-	-	-
			Mid	847	169400	658.72	131744	504		-	-	-	-	-	-
			High	854.5	170900	845.5	169100	6		-	-	-	-	-	-
20	51	Downlink	Low	801	160200	791.82	158364	0	15	1989	159150	22	5	0	10
			Mid	806	161200	760.1	152020	102		2000	160090	2	5	0	214
			High	811	162200	620.38	124076	504		2014	161090	2	5	0	1018
		Uplink	Low	842	168400	832.82	166564	0	-	-	-	-	-	-	-
			Mid	847	169400	656.38	131276	504		-	-	-	-	-	-
			High	852	170400	840.66	168132	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

4.3.1.1.1.21 to 4.3.1.1.1.24 FFS

4.3.1.1.1.25 Reference test frequencies for NR operating band n25

Table 4.3.1.1.1.25-1: Test frequencies for NR operating band n25 and SCS 15 kHz

Band width [MHz]	***carrier Bandwidth* [PRBs]**	**Range**		**Carrier centre [MHz]**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPointA* [ARFCN]**	***offsetToCarrier* [Carrier PRBs]**	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB* [ARFCN]**	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
5	25	Downlink	Low	1932.5	386500	1930.25	386050	0	15	4829	386410	0	0	0	0
			Mid	1962.5	392500	1941.89	388378	102		4904	392410	0	0	0	102
			High	1992.5	398500	1899.53	379906	504		4979	398410	0	0	0	504
		Uplink	Low	1852.5	370500	1850.25	370050	0	-	-	-	-	-	-	-
			Mid	1882.5	376500	1789.53	357906	504		-	-	-	-	-	-
			High	1912.5	382500	1909.17	381834	6		-	-	-	-	-	-
10	52	Downlink	Low	1935	387000	1930.32	386064	0	15	4830	386430	2	0	0	0
			Mid	1962.5	392500	1939.46	387892	102		4898	391930	2	0	0	102
			High	1990	398000	1894.6	378920	504		4969	397490	22	0	0	504
		Uplink	Low	1855	371000	1850.32	370064	0	-	-	-	-	-	-	-
			Mid	1882.5	376500	1787.1	357420	504		-	-	-	-	-	-
			High	1910	382000	1904.24	380848	6		-	-	-	-	-	-
15	79	Downlink	Low	1937.5	387500	1930.39	386078	0	15	4831	386450	4	0	0	0
			Mid	1962.5	392500	1937.03	387406	102		4892	391450	4	0	0	102
			High	1987.5	397500	1889.67	377934	504		4956	396510	0	2	1	506
		Uplink	Low	1857.5	371500	1850.39	370078	0	-	-	-	-	-	-	-
			Mid	1882.5	376500	1784.67	356934	504		-	-	-	-	-	-
			High	1907.5	381500	1899.31	379862	6		-	-	-	-	-	-
20	106	Downlink	Low	1940	388000	1930.46	386092	0	15	4832	386650	18	4	2	4
			Mid	1962.5	392500	1934.6	386920	102		4886	390970	6	0	0	102
			High	1985	397000	1884.74	376948	504		4943	395530	2	2	1	506
		Uplink	Low	1860	372000	1850.46	370092	0	-	-	-	-	-	-	-
			Mid	1882.5	376500	1782.24	356448	504		-	-	-	-	-	-
			High	1905	381000	1894.38	378876	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.25-2: Test frequencies for NR operating band n25 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	1935	387000	1930.68	386136	0	15	4836	386910	18	5	0	10
			Mid	1962.5	392500	1921.46	384292	102		4904	392410	18	5	0	214
			High	1990	398000	1804.24	360848	504		4975	397970	14	6	1	1020
		Uplink	Low	1855	371000	1850.68	370136	0	-	-	-	-	-	-	-
			Mid	1882.5	376500	1696.74	339348	504		-	-	-	-	-	-
			High	1910	382000	1903.52	380704	6		-	-	-	-	-	-
15	38	Downlink	Low	1937.5	387500	1930.66	386132	0	15	4837	386930	2	6	1	12
			Mid	1962.5	392500	1918.94	383788	102		4898	391930	2	6	1	216
			High	1987.5	397500	1799.22	359844	504		4962	396990	22	6	1	1020
		Uplink	Low	1857.5	371500	1850.66	370132	0	-	-	-	-	-	-	-
			Mid	1882.5	376500	1694.22	338844	504		-	-	-	-	-	-
			High	1907.5	381500	1898.5	379700	6		-	-	-	-	-	-
20	51	Downlink	Low	1940	388000	1930.82	386164	0	15	4835	386890	2	5	0	10
			Mid	1962.5	392500	1916.6	383320	102		4892	391450	22	5	0	214
			High	1985	397000	1794.38	358876	504		4949	396010	18	6	1	1020
		Uplink	Low	1860	372000	1850.82	370164	0	-	-	-	-	-	-	-
			Mid	1882.5	376500	1691.88	338376	504		-	-	-	-	-	-
			High	1905	381000	1893.66	378732	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.25-3: Test frequencies for NR operating band n25 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink	Low	1935	387000	1931.04	386208	0	15	4832	386650
			Mid	1962.5	392500	1885.1	377020	102		4901	392170
			High	1990	398000	1623.16	324632	504		4970	397690
		Uplink	Low	1855	371000	1851.04	370208	0	-	-	-
			Mid	1882.5	376500	1515.66	303132	504		-	-
			High	1910	382000	1901.72	380344	6		-	-
15	18	Downlink	Low	1937.5	387500	1931.02	386204	0	15	4832	386650
			Mid	1962.5	392500	1882.58	376516	102		4895	391690
			High	1987.5	397500	1618.14	323628	504		4958	396730
		Uplink	Low	1857.5	371500	1851.02	370204	0	-	-	-
			Mid	1882.5	376500	1513.14	302628	504		-	-
			High	1907.5	381500	1896.7	379340	6		-	-
20	24	Downlink	Low	1940	388000	1931.36	386272	0	15	4832	386650
			Mid	1962.5	392500	1880.42	376084	102		4889	391210
			High	1985	397000	1613.48	322696	504		4946	395770
		Uplink	Low	1860	372000	1851.36	370272	0	-	-	-
			Mid	1882.5	376500	1510.98	302196	504		-	-
			High	1905	381000	1892.04	378408	6		-	-

4.3.1.1.1.26 to 4.3.1.1.1.27 FFS

4.3.1.1.1.28 Reference test frequencies for NR operating band n28

Table 4.3.1.1.1.28-1: Test frequencies for NR operating band n28 and SCS 15 kHz

Band width [MHz]	***carrier Bandwidth [PRBs]***	**Range**		**Carrier centre [MHz]**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPointA* [ARFCN]**	***offsetToCarrier* [Carrier PRBs]**	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB* [ARFCN]**	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
5	25	Downlink	Low	760.5	152100	758.25	151650	0	15	1902	152190	12	4	2	4
			Mid	780.5	156100	759.89	151978	102		1949	156010	0	0	0	102
			High	800.5	160100	707.53	141506	504		2002	160130	16	2	1	506
		Uplink	Low	705.5	141100	703.25	140650	0	-	-	-	-	-	-	-
			Mid	725.5	145100	632.53	126506	504		-	-	-	-	-	-
			High	745.5	149100	742.17	148434	6		-	-	-	-	-	-
10	52	Downlink	Low	763	152600	758.32	151664	0	15	1903	152210	14	4	2	4
			Mid	780.5	156100	757.46	151492	102		1943	155530	2	0	0	102
			High	798	159600	702.6	140520	504		1989	159150	18	2	1	506
		Uplink	Low	708	141600	703.32	140664	0	-	-	-	-	-	-	-
			Mid	725.5	145100	630.1	126020	504		-	-	-	-	-	-
			High	743	148600	737.24	147448	6		-	-	-	-	-	-
15	79	Downlink	Low	765.5	153100	758.39	151678	0	15	1901	152170	20	2	1	2
			Mid	780.5	156100	755.03	151006	102		1937	155050	4	0	0	102
			High	795.5	159100	697.67	139534	504		1976	158170	20	2	1	506
		Uplink	Low	710.5	142100	703.39	140678	0	-	-	-	-	-	-	-
			Mid	725.5	145100	627.67	125534	504		-	-	-	-	-	-
			High	740.5	148100	732.31	146462	6		-	-	-	-	-	-
20	106	Downlink	Low	768	153600	758.46	151692	0	15	1902	152190	22	2	1	2
			Mid	780.5	156100	752.6	150520	102		1931	154570	6	0	0	102
			High	793	158600	692.74	138548	504		1966	157250	18	4	2	508
		Uplink	Low	713	142600	703.46	140692	0	-	-	-	-	-	-	-
			Mid	725.5	145100	625.24	125048	504		-	-	-	-	-	-
			High	738	147600	727.38	145476	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.28-2: Test frequencies for NR operating band n28 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	763	152600	758.68	151736	0	15	1909	152690	6	8	3	16
			Mid	780.5	156100	739.46	147892	102		1949	156010	18	5	0	214
			High	798	159600	612.24	122448	504		1995	159630	10	7	2	1022
		Uplink	Low	708	141600	703.68	140736	0	-	-	-	-	-	-	-
			Mid	725.5	145100	539.74	107948	504		-	-	-	-	-	-
			High	743	148600	736.52	147304	6		-	-	-	-	-	-
15	38	Downlink	Low	765.5	153100	758.66	151732	0	15	1907	152650	18	7	2	14
			Mid	780.5	156100	736.94	147388	102		1943	155530	2	6	1	216
			High	795.5	159100	607.22	121444	504		1982	158650	18	7	2	1022
		Uplink	Low	710.5	142100	703.66	140732	0	-	-	-	-	-	-	-
			Mid	725.5	145100	537.22	107444	504		-	-	-	-	-	-
			High	740.5	148100	731.5	146300	6		-	-	-	-	-	-
20	51	Downlink	Low	768	153600	758.82	151764	0	15	1908	152670	14	7	2	14
			Mid	780.5	156100	734.6	146920	102		1937	155050	22	5	0	214
			High	793	158600	602.38	120476	504		1969	157490	2	5	0	1018
		Uplink	Low	713	142600	703.82	140764	0	-	-	-	-	-	-	-
			Mid	725.5	145100	534.88	106976	504		-	-	-	-	-	-
			High	738	147600	726.66	145332	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

4.3.1.1.1.29 to 4.3.1.1.1.33 FFS

4.3.1.1.1.34 Reference test frequencies for NR operating band n34

Table 4.3.1.1.1.34-1: Test frequencies for NR operating band n34 and SCS 15 kHz

Band width [MHz]	***carrier Bandwidth* [PRBs]**	**Range**		**Carrier centre [MHz]**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPointA* [ARFCN]**	***offsetToCarrier* [Carrier PRBs]**	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB* [ARFCN]**	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
5	25	Downlink & Uplink	Low	2012.5	402500	2010.25	402050	0	15	5032	402530	16	2	1	2
			Mid	2017.5	403500	1996.89	399378	102		5043	403470	20	0	0	102
			High	2022.5	404500	1929.53	385906	504		5054	404410	0	0	0	504
10	52	Downlink & Uplink	Low	2015	403000	2010.32	402064	0	15	5030	402490	22	0	0	0
			Mid	2017.5	403500	1994.46	398892	102		5037	402990	22	0	0	102
			High	2020	404000	1924.6	384920	504		5044	403490	22	0	0	504
15	79	Downlink & Uplink	Low	2017.5	403500	2010.39	402078	0	15	5031	402510	0	2	1	2
			Mid	2017.5	403500	1992.03	398406	102		5031	402510	0	2	1	104
			High	2017.5	403500	1919.67	383934	504		5031	402510	0	2	1	506
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.34-2: Test frequencies for NR operating band n34 and SCS 30 kHz

Band width [MHz]	***carrier Bandwidth* [PRBs]**	**Range**		**Carrier centre [MHz]**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPointA* [ARFCN]**	***offsetToCarrier* [Carrier PRBs]**	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB* [ARFCN]**	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
10	24	Downlink & Uplink	Low	2015	403000	2010.68	402136	0	15	5036	402970	14	6	1	12
			Mid	2017.5	403500	1976.46	395292	102		5043	403470	14	6	1	216
			High	2020	404000	1834.24	366848	504		5050	403970	14	6	1	1020
15	38	Downlink & Uplink	Low	2017.5	403500	2010.66	402132	0	15	5037	402990	22	6	1	12
			Mid	2017.5	403500	1973.94	394788	102		5037	402990	22	6	1	216
			High	2017.5	403500	1829.22	365844	504		5037	402990	22	6	1	1020
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.34-3: Test frequencies for NR operating band n34 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink & Uplink	Low	2015	403000	2011.04	402208	0	15	5033	402730
			Mid	2017.5	403500	1940.1	388020	102		5039	403210
			High	2020	404000	1653.16	330632	504		5045	403690
15	18	Downlink & Uplink	Low	2017.5	403500	2011.02	402204	0	15	5033	402730
			Mid	2017.5	403500	1937.58	387516	102		5033	402730
			High	2017.5	403500	1648.14	329628	504		5033	402730

4.3.1.1.1.35 to 4.3.1.1.1.37 FFS

4.3.1.1.1.38 Reference test frequencies for NR operating band n38

Table 4.3.1.1.1.38-1: Test frequencies for NR operating band n38 and SCS 15 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
5	25	Downlink & Uplink	Low	2572.5	514500	2570.25	514050	0	15	6432	514590	12	4	2	4
			Mid	2595	519000	2574.39	514878	102		6486	518910	0	0	0	102
			High	2617.5	523500	2524.53	504906	504		6543	523470	20	0	0	504
10	52	Downlink & Uplink	Low	2575	515000	2570.32	514064	0	15	6433	514610	14	4	2	4
			Mid	2595	519000	2571.96	514392	102		6480	518430	2	0	0	102
			High	2615	523000	2519.6	503920	504		6530	522490	22	0	0	504
15	79	Downlink & Uplink	Low	2577.5	515500	2570.39	514078	0	15	6431	514570	20	2	1	2
			Mid	2595	519000	2569.53	513906	102		6474	517950	4	0	0	102
			High	2612.5	522500	2514.67	502934	504		6520	521570	20	2	1	506
20	106	Downlink & Uplink	Low	2580	516000	2570.46	514092	0	15	6432	514590	22	2	1	2
			Mid	2595	519000	2567.1	513420	102		6468	517470	6	0	0	102
			High	2610	522000	2509.74	501948	504		6507	520590	22	2	1	506
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.38-2: Test frequencies for NR operating band n38 and SCS 30 kHz

Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink & Uplink	Low	2575	515000	2570.68	514136	0	15	6439	515090	6	8	3	16
			Mid	2595	519000	2553.96	510792	102		6486	518910	18	5	0	214
			High	2615	523000	2429.24	485848	504		6536	522970	14	6	1	1020
15	38	Downlink & Uplink	Low	2577.5	515500	2570.66	514132	0	15	6437	515050	18	7	2	14
			Mid	2595	519000	2551.44	510288	102		6480	518430	2	6	1	216
			High	2612.5	522500	2424.22	484844	504		6526	522050	18	7	2	1022
20	51	Downlink & Uplink	Low	2580	516000	2570.82	514164	0	15	6438	515070	14	7	2	14
			Mid	2595	519000	2549.1	509820	102		6474	517950	22	5	0	214
			High	2610	522000	2419.38	483876	504		6513	521070	14	7	2	1022
"Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2."															

Table 4.3.1.1.1.38-3: Test frequencies for NR operating band n38 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink & Uplink	Low	2575	515000	2571.04	514208	0	15	6431	514570
			Mid	2595	519000	2517.6	503520	102		6482	518650
			High	2615	523000	2248.16	449632	504		6533	522730
15	18	Downlink & Uplink	Low	2577.5	515500	2571.02	514204	0	15	6431	514570
			Mid	2595	519000	2515.08	503016	102		6476	518170
			High	2612.5	522500	2243.14	448628	504		6520	521570
20	24	Downlink & Uplink	Low	2580	516000	2571.36	514272	0	15	6434	514810
			Mid	2595	519000	2512.92	502584	102		6470	517690
			High	2610	522000	2238.48	447696	504		6509	520810

4.3.1.1.1.39 Reference test frequencies for NR operating band n39

Table 4.3.1.1.1.39-1: Test frequencies for NR operating band n39 and SCS 15 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
5	25	Downlink & Uplink	Low	1882.5	376500	1880.25	376050	0	15	4707	376590	12	4	2	4
			Mid	1900	380000	1879.39	375878	102		4750	379970	20	0	0	102
			High	1917.5	383500	1824.53	364906	504		4793	383530	16	2	1	506
10	52	Downlink & Uplink	Low	1885	377000	1880.32	376064	0	15	4708	376610	14	4	2	4
			Mid	1900	380000	1876.96	375392	102		4744	379490	22	0	0	102
			High	1915	383000	1819.6	363920	504		4783	382610	14	4	2	508
15	79	Downlink & Uplink	Low	1887.5	377500	1880.39	376078	0	15	4706	376570	20	2	1	2
			Mid	1900	380000	1874.53	374906	102		4738	379010	0	2	1	104
			High	1912.5	382500	1814.67	362934	504		4770	381630	16	4	2	508
20	106	Downlink & Uplink	Low	1890	378000	1880.46	376092	0	15	4707	376590	22	2	1	2
			Mid	1900	380000	1872.1	374420	102		4732	378530	2	2	1	104
			High	1910	382000	1809.74	361948	504		4757	380650	18	4	2	508
25	133	Downlink & Uplink	Low	1892.5	378500	1880.53	376106	0	15	4708	376610	0	4	2	4
			Mid	1900	380000	1869.67	373934	102		4726	378050	4	2	1	104
			High	1907.5	381500	1804.81	360962	504		4744	379490	8	0	0	504
30	160	Downlink & Uplink	Low	1895	379000	1880.6	376120	0	15	4706	376570	6	2	1	2
			Mid	1900	380000	1867.24	373448	102		4720	377570	6	2	1	104
			High	1905	381000	1799.88	359976	504		4731	378510	10	0	0	504
40	216	Downlink & Uplink	Low	1900	380000	1880.56	376112	0	15	4708	376610	22	2	1	2
			Mid	1900	380000	1862.2	372440	102		4708	376610	22	2	1	104
			High	1900	380000	1789.84	357968	504		4708	376610	22	2	1	506

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.39-2: Test frequencies for NR operating band n39 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink & Uplink	Low	1885	377000	1880.68	376136	0	15	4714	377090	6	8	3	16
			Mid	1900	380000	1858.96	371792	102		4750	379970	14	6	1	216
			High	1915	383000	1729.24	345848	504		4789	383090	6	8	3	1024
15	38	Downlink & Uplink	Low	1887.5	377500	1880.66	376132	0	15	4712	377050	18	7	2	14
			Mid	1900	380000	1856.44	371288	102		4744	379490	22	6	1	216
			High	1912.5	382500	1724.22	344844	504		4773	381870	6	5	0	1018
20	51	Downlink & Uplink	Low	1890	378000	1880.82	376164	0	15	4713	377070	14	7	2	14
			Mid	1900	380000	1854.1	370820	102		4738	379010	18	6	1	216
			High	1910	382000	1719.38	343876	504		4760	380890	2	5	0	1018
25	65	Downlink & Uplink	Low	1892.5	378500	1880.8	376160	0	15	4714	377090	22	7	2	14
			Mid	1900	380000	1851.58	370316	102		4732	378530	2	7	2	218
			High	1907.5	381500	1714.36	342872	504		4750	379970	6	6	1	1020
30	78	Downlink & Uplink	Low	1895	379000	1880.96	376192	0	15	4712	377050	22	6	1	12
			Mid	1900	380000	1849.24	369848	102		4726	378050	22	6	1	216
			High	1905	381000	1709.52	341904	504		4737	378990	2	6	1	1020
40	106	Downlink & Uplink	Low	1900	380000	1880.92	376184	0	15	4714	377090	14	7	2	14
			Mid	1900	380000	1844.2	368840	102		4714	377090	14	7	2	218
			High	1900	380000	1699.48	339896	504		4714	377090	14	7	2	1022
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.39-3: Test frequencies for NR operating band n39 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink & Uplink	Low	1885	377000	1881.04	376208	0	15	4706	376570
			Mid	1900	380000	1822.6	364520	102		4745	379690
			High	1915	383000	1548.16	309632	504		4781	382570
15	18	Downlink & Uplink	Low	1887.5	377500	1881.02	376204	0	15	4706	376570
			Mid	1900	380000	1820.08	364016	102		4739	379210
			High	1912.5	382500	1543.14	308628	504		4769	381610
20	24	Downlink & Uplink	Low	1890	378000	1881.36	376272	0	15	4709	376810
			Mid	1900	380000	1817.92	363584	102		4733	378730
			High	1910	382000	1538.48	307696	504		4757	380650
25	31	Downlink & Uplink	Low	1892.5	378500	1881.34	376268	0	15	4709	376810
			Mid	1900	380000	1815.4	363080	102		4727	378250
			High	1907.5	381500	1533.46	306692	504		4745	379690
30	38	Downlink & Uplink	Low	1895	379000	1881.32	376264	0	15	4709	376810
			Mid	1900	380000	1812.88	362576	102		4721	377770
			High	1905	381000	1528.44	305688	504		4733	378730
40	51	Downlink & Uplink	Low	1900	380000	1881.64	376328	0	15	4709	376810
			Mid	1900	380000	1808.2	361640	102		4709	376810
			High	1900	380000	1518.76	303752	504		4709	376810

4.3.1.1.1.40 Reference test frequencies for NR operating band n40

Table 4.3.1.1.1.40-1: Test frequencies for NR operating band n40 and SCS 15 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
5	25	Downlink & Uplink	Low	2302.5	460500	2300.25	460050	0	15	5757	460590	12	4	2	4
			Mid	2350	470000	2329.39	465878	102		5875	469970	20	0	0	102
			High	2397.5	479500	2304.53	460906	504		5993	479530	16	2	1	506
10	52	Downlink & Uplink	Low	2305	461000	2300.32	460064	0	15	5758	460610	14	4	2	4
			Mid	2350	470000	2326.96	465392	102		5869	469490	22	0	0	102
			High	2395	479000	2299.6	459920	504		5983	478610	14	4	2	508
15	79	Downlink & Uplink	Low	2307.5	461500	2300.39	460078	0	15	5756	460570	20	2	1	2
			Mid	2350	470000	2324.53	464906	102		5863	469010	0	2	1	104
			High	2392.5	478500	2294.67	458934	504		5970	477630	16	4	2	508
20	106	Downlink & Uplink	Low	2310	462000	2300.46	460092	0	15	5757	460590	22	2	1	2
			Mid	2350	470000	2322.1	464420	102		5857	468530	2	2	1	104
			High	2390	478000	2289.74	457948	504		5957	476650	18	4	2	508
25	133	Downlink & Uplink	Low	2312.5	462500	2300.53	460106	0	15	5758	460610	0	4	2	4
			Mid	2350	470000	2319.67	463934	102		5851	468050	4	2	1	104
			High	2387.5	477500	2284.81	456962	504		5944	475490	8	0	0	504
30	160	Downlink & Uplink	Low	2315	463000	2300.6	460120	0	15	5756	460570	6	2	1	2
			Mid	2350	470000	2317.24	463448	102		5845	467570	6	2	1	104
			High	2385	477000	2279.88	455976	504		5931	474510	10	0	0	504
40	216	Downlink & Uplink	Low	2320	464000	2300.56	460112	0	15	5758	460610	22	2	1	2
			Mid	2350	470000	2312.2	462440	102		5833	466610	22	2	1	104
			High	2380	476000	2269.84	453968	504		5908	472610	22	2	1	506
50	270	Downlink & Uplink	Low	2325	465000	2300.7	460140	0	15	5757	460590	6	2	1	2
			Mid	2350	470000	2307.34	461468	102		5821	465650	2	4	2	106
			High	2375	475000	2259.98	451996	504		5882	470650	2	4	2	508
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.40-2: Test frequencies for NR operating band n40 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink & Uplink	Low	2305	461000	2300.68	460136	0	15	5764	461090	6	8	3	16
			Mid	2350	470000	2308.96	461792	102		5875	469970	14	6	1	216
			High	2395	479000	2209.24	441848	504		5989	479090	6	8	3	1024
15	38	Downlink & Uplink	Low	2307.5	461500	2300.66	460132	0	15	5762	461050	18	7	2	14
			Mid	2350	470000	2306.44	461288	102		5869	469490	22	6	1	216
			High	2392.5	478500	2204.22	440844	504		5973	477870	6	5	0	1018
20	51	Downlink & Uplink	Low	2310	462000	2300.82	460164	0	15	5763	461070	14	7	2	14
			Mid	2350	470000	2304.1	460820	102		5863	469010	18	6	1	216
			High	2390	478000	2199.38	439876	504		5960	476890	2	5	0	1018
25	65	Downlink & Uplink	Low	2312.5	462500	2300.8	460160	0	15	5764	461090	22	7	2	14
			Mid	2350	470000	2301.58	460316	102		5857	468530	2	7	2	218
			High	2387.5	477500	2194.36	438872	504		5950	475970	6	6	1	1020
30	78	Downlink & Uplink	Low	2315	463000	2300.96	460192	0	15	5762	461050	22	6	1	12
			Mid	2350	470000	2299.24	459848	102		5851	468050	22	6	1	216
			High	2385	477000	2189.52	437904	504		5937	474990	2	6	1	1020
40	106	Downlink & Uplink	Low	2320	464000	2300.92	460184	0	15	5764	461090	14	7	2	14
			Mid	2350	470000	2294.2	458840	102		5839	467090	14	7	2	218
			High	2380	476000	2179.48	435896	504		5914	473090	14	7	2	1022
50	133	Downlink & Uplink	Low	2325	465000	2301.06	460212	0	15	5763	461070	22	6	1	12
			Mid	2350	470000	2289.34	457868	102		5827	466130	18	7	2	218
			High	2375	475000	2169.62	433924	504		5888	471130	18	7	2	1022
60	162	Downlink & Uplink	Low	2330	466000	2300.84	460168	0	15	5762	461050	6	7	2	14
			Mid	2350	470000	2284.12	456824	102		5812	464930	14	5	0	214
			High	2370	474000	2159.4	431880	504		5862	468990	10	6	1	1020
80	217	Downlink & Uplink	Low	2340	468000	2300.94	460188	0	15	5763	461070	6	7	2	14
			Mid	2350	470000	2274.22	454844	102		5788	463010	10	6	1	216
			High	2360	472000	2139.5	427900	504		5813	465130	2	8	3	1024

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.40-3: Test frequencies for NR operating band n40 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink & Uplink	Low	2305	461000	2301.04	460208	0	15	5756	460570
			Mid	2350	470000	2272.6	454520	102		5870	469690
			High	2395	479000	2028.16	405632	504		5981	478570
15	18	Downlink & Uplink	Low	2307.5	461500	2301.02	460204	0	15	5756	460570
			Mid	2350	470000	2270.08	454016	102		5864	469210
			High	2392.5	478500	2023.14	404628	504		5969	477610
20	24	Downlink & Uplink	Low	2310	462000	2301.36	460272	0	15	5759	460810
			Mid	2350	470000	2267.92	453584	102		5858	468730
			High	2390	478000	2018.48	403696	504		5957	476650
25	31	Downlink & Uplink	Low	2312.5	462500	2301.34	460268	0	15	5759	460810
			Mid	2350	470000	2265.4	453080	102		5852	468250
			High	2387.5	477500	2013.46	402692	504		5945	475690
30	38	Downlink & Uplink	Low	2315	463000	2301.32	460264	0	15	5759	460810
			Mid	2350	470000	2262.88	452576	102		5846	467770
			High	2385	477000	2008.44	401688	504		5933	474730
40	51	Downlink & Uplink	Low	2320	464000	2301.64	460328	0	15	5759	460810
			Mid	2350	470000	2258.2	451640	102		5834	466810
			High	2380	476000	1998.76	399752	504		5909	472810
50	65	Downlink & Uplink	Low	2325	465000	2301.6	460320	0	15	5759	460810
			Mid	2350	470000	2253.16	450632	102		5822	465850
			High	2375	475000	1988.72	397744	504		5884	470690
60	79	Downlink & Uplink	Low	2330	466000	2301.56	460312	0	15	5759	460810
			Mid	2350	470000	2248.12	449624	102		5809	464690
			High	2370	474000	1978.68	395736	504		5858	468730
80	107	Downlink & Uplink	Low	2340	468000	2301.48	460296	0	15	5759	460810
			Mid	2350	470000	2238.04	447608	102		5783	462730
			High	2360	472000	1958.6	391720	504		5808	464670

4.3.1.1.1.41 Reference test frequencies for NR operating band n41

Table 4.3.1.1.1.41-1: Test frequencies for NR operating band n41 and SCS 15 kHz

Band width [MHz]	***carrier Bandwidth* [PRBs]**	**Range**		**Carrier centre [MHz]**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPointA* [ARFCN]**	***offsetToCarrier* [Carrier PRBs]**	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB* [ARFCN]**	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
10	52	Downlink & Uplink	Low	2501.01	500202	2496.33	499266	0	15	6246	499710	4	2	1	2
			Mid	2593.005	518601	2569.965	513993	102		6477	518190	7	4	2	106
			High	2685	537000	2589.6	517920	504		6705	536430	2	0	0	504
15	79	Downlink & Uplink	Low	2503.5	500700	2496.39	499278	0	15	6246	499710	0	2	1	2
			Mid	2593.005	518601	2567.535	513507	102		6471	517710	9	4	2	106
			High	2682.495	536499	2584.665	516933	504		6693	535470	11	0	0	504
20	106	Downlink & Uplink	Low	2506.005	501201	2496.465	499293	0	15	6246	499710	19	0	0	0
			Mid	2593.005	518601	2565.105	513021	102		6465	517230	11	4	2	106
			High	2679.99	535998	2579.73	515946	504		6681	534510	20	0	0	504
40	216	Downlink & Uplink	Low	2516.01	503202	2496.57	499314	0	15	6246	499710	12	0	0	0
			Mid	2592.99	518598	2555.19	511038	102		6438	515070	0	0	0	102
			High	2670	534000	2559.84	511968	504		6633	530670	18	4	2	508
50	270	Downlink & Uplink	Low	2521.005	504201	2496.705	499341	0	15	6246	499710	3	0	0	0
			Mid	2593.005	518601	2550.345	510069	102		6426	514110	3	0	0	102
			High	2664.99	532998	2549.97	509994	504		6606	528510	4	0	0	504

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.41-2: Test frequencies for NR operating band n41 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink & Uplink	Low	2501.01	500202	2496.69	499338	0	30	6252	500190	20	1	1	2
			Mid	2592.99	518598	2551.95	510390	102		6483	518670	0	3	3	210
			High	2685	537000	2499.24	499848	504		6711	536910	18	0	0	1008
15	38	Downlink & Uplink	Low	2503.5	500700	2496.66	499332	0	30	6252	500190	22	1	1	2
			Mid	2592.99	518598	2549.43	509886	102		6474	517950	0	0	0	204
			High	2682.48	536496	2494.2	498840	504		6699	535950	10	1	1	1010
20	51	Downlink & Uplink	Low	2506.02	501204	2496.84	499368	0	30	6252	500190	10	1	1	2
			Mid	2592.99	518598	2547.09	509418	102		6471	517710	4	3	3	210
			High	2679.99	535998	2489.37	497874	504		6687	534990	12	1	1	1010
40	106	Downlink & Uplink	Low	2516.01	503202	2496.93	499386	0	30	6252	500190	4	1	1	2
			Mid	2592.99	518598	2537.19	507438	102		6444	515550	16	0	0	204
			High	2670	534000	2469.48	493896	504		6636	530910	2	0	0	1008
50	133	Downlink & Uplink	Low	2521.02	504204	2497.08	499416	0	30	6252	500190	18	0	0	0
			Mid	2592.99	518598	2532.33	506466	102		6432	514590	20	0	0	204
			High	2664.99	532998	2459.61	491922	504		6612	528990	20	0	0	1008
60	162	Downlink & Uplink	Low	2526	505200	2496.84	499368	0	30	6252	500190	10	1	1	2
			Mid	2592.99	518598	2527.11	505422	102		6420	513630	0	2	2	208
			High	2659.98	531996	2449.38	489876	504		6588	527070	14	2	2	1012
80	217	Downlink & Uplink	Low	2536.02	507204	2496.96	499392	0	30	6252	500190	2	1	1	2
			Mid	2592.99	518598	2517.21	503442	102		6396	511710	20	2	2	208
			High	2649.99	529998	2429.49	485898	504		6537	522990	4	1	1	1010
90	245	Downlink & Uplink	Low	2541	508200	2496.9	499380	0	30	6252	500190	6	1	1	2
			Mid	2592.99	518598	2512.17	502434	102		6381	510510	4	0	0	204
			High	2644.98	528996	2419.44	483888	504		6513	521070	10	2	2	1012
100	273	Downlink & Uplink	Low	2546.01	509202	2496.87	499374	0	30	6252	500190	8	1	1	2
			Mid	2592.99	518598	2507.13	501426	102		6369	509550	20	0	0	204
			High	2640	528000	2409.42	481884	504		6486	518910	6	0	0	1008

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.41-3: Test frequencies for NR operating band n41 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink & Uplink	Low	2501.01	500202	2497.05	499410	0	15	6249	499950
			Mid	2593.005	518601	2515.605	503121	102		6477	518190
			High	2685	537000	2318.16	463632	504		6708	536670
15	18	Downlink & Uplink	Low	2503.5	500700	2497.02	499404	0	15	6249	499950
			Mid	2593.005	518601	2513.085	502617	102		6471	517710
			High	2682.495	536499	2313.135	462627	504		6696	535710
20	24	Downlink & Uplink	Low	2506.005	501201	2497.365	499473	0	15	6249	499950
			Mid	2593.005	518601	2510.925	502185	102		6468	517470
			High	2679.99	535998	2308.47	461694	504		6684	534750
40	51	Downlink & Uplink	Low	2516.01	503202	2497.65	499530	0	15	6249	499950
			Mid	2593.005	518601	2501.205	500241	102		6441	515310
			High	2670	534000	2288.76	457752	504		6636	530910
50	65	Downlink & Uplink	Low	2521.005	504201	2497.605	499521	0	15	6249	499950
			Mid	2593.005	518601	2496.165	499233	102		6429	514350
			High	2664.99	532998	2278.71	455742	504		6609	528750
60	79	Downlink & Uplink	Low	2526	505200	2497.56	499512	0	15	6249	499950
			Mid	2593.005	518601	2491.125	498225	102		6417	513390
			High	2659.995	531999	2268.675	453735	504		6585	526830
80	107	Downlink & Uplink	Low	2536.005	507201	2497.485	499497	0	15	6249	499950
			Mid	2593.005	518601	2481.045	496209	102		6393	511470
			High	2649.99	529998	2248.59	449718	504		6534	522750
90	121	Downlink & Uplink	Low	2541	508200	2497.44	499488	0	15	6249	499950
			Mid	2593.005	518601	2476.005	495201	102		6378	510270
			High	2644.995	528999	2238.555	447711	504		6510	520830
100	135	Downlink & Uplink	Low	2546.01	509202	2497.41	499482	0	15	6249	499950
			Mid	2593.005	518601	2470.965	494193	102		6366	509310
			High	2640	528000	2228.52	445704	504		6483	518670

4.3.1.1.1.42 to 4.3.1.1.1.49 FFS

4.3.1.1.1.50 Reference test frequencies for NR operating band n50

Table 4.3.1.1.1.50-1: Test frequencies for NR operating band n50 and SCS 15 kHz

Band width [MHz]	***carrier Bandwidth* [PRBs]**	**Range**		**Carrier centre [MHz]**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPointA* [ARFCN]**	***offsetToCarrier* [Carrier PRBs]**	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB* [ARFCN]**	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
5	25	Downlink & Uplink	Low	1434.5	286900	1432.25	286450	0	15	3584	286810	0	0	0	0
			Mid	1474.5	294900	1453.89	290778	102		3687	294990	12	4	2	106
			High	1514.5	302900	1421.53	284306	504		3787	302930	16	2	1	506
10	52	Downlink & Uplink	Low	1437	287400	1432.32	286464	0	15	3585	286830	2	0	0	0
			Mid	1474.5	294900	1451.46	290292	102		3681	294510	14	4	2	106
			High	1512	302400	1416.6	283320	504		3774	301950	18	2	1	506
15	79	Downlink & Uplink	Low	1439.5	287900	1432.39	286478	0	15	3586	286850	4	0	0	0
			Mid	1474.5	294900	1449.03	289806	102		3675	294030	16	4	2	106
			High	1509.5	301900	1411.67	282334	504		3761	300970	20	2	1	506
20	106	Downlink & Uplink	Low	1442	288400	1432.46	286492	0	15	3587	287050	18	4	2	4
			Mid	1474.5	294900	1446.6	289320	102		3669	293550	18	4	2	106
			High	1507	301400	1406.74	281348	504		3751	300050	18	4	2	508
40	216	Downlink & Uplink	Low	1452	290400	1432.56	286512	0	15	3588	287070	18	4	2	4
			Mid	1474.5	294900	1436.7	287340	102		3642	291390	6	0	0	102
			High	1497	299400	1386.84	277368	504		3699	295950	2	2	1	506
50	270	Downlink & Uplink	Low	1457	291400	1432.7	286540	0	15	3587	287050	2	4	2	4
			Mid	1474.5	294900	1431.84	286368	102		3630	290430	10	0	0	102
			High	1492	298400	1376.98	275396	504		3676	294050	2	4	2	508

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.50-2: Test frequencies for NR operating band n50 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink & Uplink	Low	1437	287400	1432.68	286536	0	15	3591	287310	18	5	0	10
			Mid	1474.5	294900	1433.46	286692	102		3687	294990	6	8	3	220
			High	1512	302400	1326.24	265248	504		3780	302430	10	7	2	1022
15	38	Downlink & Uplink	Low	1439.5	287900	1432.66	286532	0	15	3592	287330	2	6	1	12
			Mid	1474.5	294900	1430.94	286188	102		3678	294270	6	5	0	214
			High	1509.5	301900	1321.22	264244	504		3767	301450	18	7	2	1022
20	51	Downlink & Uplink	Low	1442	288400	1432.82	286564	0	15	3590	287290	2	5	0	10
			Mid	1474.5	294900	1428.6	285720	102		3672	293790	2	5	0	214
			High	1507	301400	1316.38	263276	504		3754	300290	2	5	0	1018
40	106	Downlink & Uplink	Low	1452	290400	1432.92	286584	0	15	3591	287310	2	5	0	10
			Mid	1474.5	294900	1418.7	283740	102		3648	291870	22	5	0	214
			High	1497	299400	1296.48	259296	504		3705	296430	18	6	1	1020
50	133	Downlink & Uplink	Low	1457	291400	1433.06	286612	0	15	3593	287530	18	7	2	14
			Mid	1474.5	294900	1413.84	282768	102		3636	290910	2	6	1	216
			High	1492	298400	1286.62	257324	504		3682	294530	18	7	2	1022
60	162	Downlink & Uplink	Low	1462	292400	1432.84	286568	0	15	3592	287330	14	5	0	10
			Mid	1474.5	294900	1408.62	281724	102		3624	289950	6	7	2	218
			High	1487	297400	1276.4	255280	504		3653	292330	14	5	0	1018
80	217	Downlink & Uplink	Low	1472	294400	1432.94	286588	0	15	3593	287530	2	8	3	16
			Mid	1474.5	294900	1398.72	279744	102		3600	288030	2	8	3	220
			High	1477	295400	1256.5	251300	504		3607	288530	2	8	3	1024

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.50-3: Test frequencies for NR operating band n50 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink & Uplink	Low	1437	287400	1433.04	286608	0	15	3587	287050
			Mid	1474.5	294900	1397.1	279420	102		3680	294490
			High	1512	302400	1145.16	229032	504		3775	301970
15	18	Downlink & Uplink	Low	1439.5	287900	1433.02	286604	0	15	3587	287050
			Mid	1474.5	294900	1394.58	278916	102		3674	294010
			High	1509.5	301900	1140.14	228028	504		3761	300970
20	24	Downlink & Uplink	Low	1442	288400	1433.36	286672	0	15	3587	287050
			Mid	1474.5	294900	1392.42	278484	102		3669	293550
			High	1507	301400	1135.48	227096	504		3751	300050
40	51	Downlink & Uplink	Low	1452	290400	1433.64	286728	0	15	3589	287090
			Mid	1474.5	294900	1382.7	276540	102		3644	291610
			High	1497	299400	1115.76	223152	504		3701	296170
50	65	Downlink & Uplink	Low	1457	291400	1433.6	286720	0	15	3589	287090
			Mid	1474.5	294900	1377.66	275532	102		3632	290650
			High	1492	298400	1105.72	221144	504		3677	294250
60	79	Downlink & Uplink	Low	1462	292400	1433.56	286712	0	15	3589	287090
			Mid	1474.5	294900	1372.62	274524	102		3620	289690
			High	1487	297400	1095.68	219136	504		3650	292090
80	107	Downlink & Uplink	Low	1472	294400	1433.48	286696	0	15	3588	287070
			Mid	1474.5	294900	1362.54	272508	102		3595	287570
			High	1477	295400	1075.6	215120	504		3602	288250

4.3.1.1.1.51 Reference test frequencies for NR operating band n51

Table 4.3.1.1.1.51-1: Test frequencies for NR operating band n51 and SCS 15 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
5	25	Downlink & Uplink	Low	1429.5	285900	1336.53	267306	504	15	3573	285870	20	0	0	504
			Mid												
			High												
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

4.3.1.1.1.52 to 4.3.1.1.1.65 FFS

4.3.1.1.1.66 Reference test frequencies for NR operating band n66

Table 4.3.1.1.1.66-1: Test frequencies for NR operating band n66, uplink and downlink channel bandwidth combinations and SCS 15 kHz

UL/DL Band width combi nation	Bandw idth [MHz]	*carrier Bandw idth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute Frequen cyPoint A* [ARFCN]	*offsetTo Carrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absolute Frequen cySSB* [ARFCN]	k_{SSB}	CORE SET#0 Offset [RBs] Note 1	CORE SET#0 Index Note 1	offsetTo PointA (SIB1) [PRBs] Note 1
5/5	5	25	Downlink	Low	2112.5	422500	2110.25	422050	0	15	5279	422410	0	0	0	0
				Mid	2145	429000	2124.39	424878	102		5361	428910	0	0	0	102
				High	2177.5	435500	2084.53	416906	504		5443	435410	0	0	0	504
	5	25	Uplink	Low	1712.5	342500	1710.25	342050	0	-	-	-	-	-	-	-
				Mid	1745	349000	1652.03	330406	504		-	-	-	-	-	-
				High	1777.5	355500	1774.17	354834	6		-	-	-	-	-	-
5/20	20	106	Downlink	Low	2120	424000	2110.46	422092	0	15	5282	422650	18	4	2	4
				Mid	2152.5	430500	2124.6	424920	102		5364	429150	18	4	2	106
				High	2185	437000	2084.74	416948	504		5446	435650	18	4	2	508
	5	25	Uplink	Low	1712.5	342500	1710.25	342050	0	-	-	-	-	-	-	-
				Mid	1745	349000	1652.03	330406	504		-	-	-	-	-	-
				High	1777.5	355500	1774.17	354834	6		-	-	-	-	-	-
5/40	40	216	Downlink	Low	2130	426000	2110.56	422112	0	15	5283	422670	18	4	2	4
				Mid	2155	431000	2117.2	423440	102		5344	427490	6	0	0	102
				High	2180	436000	2069.84	413968	504		5405	432490	6	0	0	504
	5	25	Uplink	Low	1712.5	342500	1710.25	342050	0	-	-	-	-	-	-	-
				Mid	1737.5	347500	1644.53	328906	504		-	-	-	-	-	-
				High	1762.5	352500	1759.17	351834	6		-	-	-	-	-	-
10/10	10	52	Downlink	Low	2115	423000	2110.32	422064	0	15	5280	422430	2	0	0	0
				Mid	2145	429000	2121.96	424392	102		5355	428430	2	0	0	102
				High	2175	435000	2079.6	415920	504		5430	434430	2	0	0	504
	10	52	Uplink	Low	1715	343000	1710.32	342064	0	-	-	-	-	-	-	-
				Mid	1745	349000	1649.6	329920	504		-	-	-	-	-	-
				High	1775	355000	1769.24	353848	6		-	-	-	-	-	-
10/20	20	106	Downlink	Low	2120	424000	2110.46	422092	0	15	5282	422650	18	4	2	4
				Mid	2150	430000	2122.1	424420	102		5357	428650	18	4	2	106
				High	2180	436000	2079.74	415948	504		5432	434650	18	4	2	508
	10	52	Uplink	Low	1715	343000	1710.32	342064	0	-	-	-	-	-	-	-
				Mid	1745	349000	1649.6	329920	504		-	-	-	-	-	-
				High	1775	355000	1769.24	353848	6		-	-	-	-	-	-
10/40	40	216	Downlink	Low	2130	426000	2110.56	422112	0	15	5283	422670	18	4	2	4
				Mid	2155	431000	2117.2	423440	102		5344	427490	6	0	0	102
				High	2180	436000	2069.84	413968	504		5405	432490	6	0	0	504
	10	52	Uplink	Low	1715	343000	1710.32	342064	0	-	-	-	-	-	-	-
				Mid	1740	348000	1644.6	328920	504		-	-	-	-	-	-
				High	1765	353000	1759.24	351848	6		-	-	-	-	-	-
15/15	15	79	Downlink	Low	2117.5	423500	2110.39	422078	0	15	5281	422450	4	0	0	0
				Mid	2145	429000	2119.53	423906	102		5349	427950	4	0	0	102
				High	2172.5	434500	2074.67	414934	504		5417	433450	4	0	0	504
	15	79	Uplink	Low	1717.5	343500	1710.39	342078	0	-	-	-	-	-	-	-

				Mid	1745	349000	1647.17	329434	504		-	-	-	-	-	-
				High	1772.5	354500	1764.31	352862	6		-	-	-	-	-	-
20/20	20	106	Downlink	Low	2120	424000	2110.46	422092	0	15	5282	422650	18	4	2	4
				Mid	2145	429000	2117.1	423420	102		5343	427470	6	0	0	102
				High	2170	434000	2069.74	413948	504		5407	432530	2	2	1	506
	20	106	Uplink	Low	1720	344000	1710.46	342092	0	-	-	-	-	-	-	-
				Mid	1745	349000	1644.74	328948	504		-	-	-	-	-	-
				High	1770	354000	1759.38	351876	6		-	-	-	-	-	-
20/40	40	216	Downlink	Low	2130	426000	2110.56	422112	0	15	5283	422670	18	4	2	4
				Mid	2155	431000	2117.2	423440	102		5344	427490	6	0	0	102
				High	2180	436000	2069.84	413968	504		5405	432490	6	0	0	504
	20	106	Uplink	Low	1720	344000	1710.46	342092	0	-	-	-	-	-	-	-
				Mid	1745	349000	1644.74	328948	504		-	-	-	-	-	-
				High	1770	354000	1759.38	351876	6		-	-	-	-	-	-
40/40	40	216	Downlink	Low	2130	426000	2110.56	422112	0	15	5283	422670	18	4	2	4
				Mid	2145	429000	2107.2	421440	102		5319	425550	2	2	1	104
				High	2160	432000	2049.84	409968	504		5358	428670	18	4	2	508
	40	216	Uplink	Low	1730	346000	1710.56	342112	0	-	-	-	-	-	-	-
				Mid	1745	349000	1634.84	326968	504		-	-	-	-	-	-
				High	1760	352000	1739.48	347896	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.																

Table 4.3.1.1.1.66-2: Test frequencies for NR operating band n66, uplink and downlink channel bandwidth combinations and SCS 30 kHz

UL/DL Band width combi nation	Bandw idth [MHz]	*carrier Bandw idth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute Frequen cyPoint A* [ARFCN]	*offsetTo Carrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absolute Frequen cySSB* [ARFCN]	k_{SSB}	CORE SET#0 Offset [RBs] Note 1	CORE SET#0 Index Note 1	offsetTo PointA (SIB1) [PRBs] Note 1
10/10	10	24	Downlink	Low	2115	423000	2110.68	422136	0	15	5286	422910	18	5	0	10
				Mid	2145	429000	2103.96	420792	102		5361	428910	18	5	0	214
				High	2175	435000	1989.24	397848	504		5436	434910	18	5	0	1018
	10	24	Uplink	Low	1715	343000	1710.68	342136	0	-	-	-	-	-	-	-
				Mid	1745	349000	1559.24	311848	504		-	-	-	-	-	-
				High	1775	355000	1768.52	353704	6		-	-	-	-	-	-
10/20	20	51	Downlink	Low	2120	424000	2110.82	422164	0	15	5285	422890	2	5	0	10
				Mid	2150	430000	2104.1	420820	102		5360	428890	2	5	0	214
				High	2180	436000	1989.38	397876	504		5435	434890	2	5	0	1018
	10	24	Uplink	Low	1715	343000	1710.68	342136	0	-	-	-	-	-	-	-
				Mid	1745	349000	1559.24	311848	504		-	-	-	-	-	-
				High	1775	355000	1768.52	353704	6		-	-	-	-	-	-
10/40	40	106	Downlink	Low	2130	426000	2110.92	422184	0	15	5286	422910	2	5	0	10
				Mid	2155	431000	2099.2	419840	102		5350	427970	22	5	0	214
				High	2180	436000	1979.48	395896	504		5411	432970	22	5	0	1018
	10	24	Uplink	Low	1715	343000	1710.68	342136	0	-	-	-	-	-	-	-
				Mid	1740	348000	1554.24	310848	504		-	-	-	-	-	-
				High	1765	353000	1758.52	351704	6		-	-	-	-	-	-
15/15	15	38	Downlink	Low	2117.5	423500	2110.66	422132	0	15	5287	422930	2	6	1	12
				Mid	2145	429000	2101.44	420288	102		5355	428430	2	6	1	216
				High	2172.5	434500	1984.22	396844	504		5423	433930	2	6	1	1020
	15	38	Uplink	Low	1717.5	343500	1710.66	342132	0	-	-	-	-	-	-	-
				Mid	1745	349000	1556.72	311344	504		-	-	-	-	-	-
				High	1772.5	354500	1763.5	352700	6		-	-	-	-	-	-
20/20	20	51	Downlink	Low	2120	424000	2110.82	422164	0	15	5285	422890	2	5	0	10
				Mid	2145	429000	2099.1	419820	102		5349	427950	22	5	0	214
				High	2170	434000	1979.38	395876	504		5413	433010	18	6	1	1020
	20	51	Uplink	Low	1720	344000	1710.82	342164	0	-	-	-	-	-	-	-
				Mid	1745	349000	1554.38	310876	504		-	-	-	-	-	-
				High	1770	354000	1758.66	351732	6		-	-	-	-	-	-
20/40	40	106	Downlink	Low	2130	426000	2110.92	422184	0	15	5286	422910	2	5	0	10
				Mid	2155	431000	2099.2	419840	102		5350	427970	22	5	0	214
				High	2180	436000	1979.48	395896	504		5411	432970	22	5	0	1018
	20	51	Uplink	Low	1720	344000	1710.82	342164	0	-	-	-	-	-	-	-
				Mid	1745	349000	1554.38	310876	504		-	-	-	-	-	-
				High	1770	354000	1758.66	351732	6		-	-	-	-	-	-
40/40	40	106	Downlink	Low	2130	426000	2110.92	422184	0	15	5286	422910	2	5	0	10
				Mid	2145	429000	2089.2	417840	102		5325	426030	18	6	1	216
				High	2160	432000	1959.48	391896	504		5361	428910	2	5	0	1018
	40	106	Uplink	Low	1730	346000	1710.92	342184	0	-	-	-	-	-	-	-

				Mid	1745	349000	1544.48	308896	504		-	-	-	-	-	-
				High	1760	352000	1738.76	347752	6		-	-	-	-	-	-
Note 1:	The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.66-3: Test frequencies for NR operating band n66, uplink and downlink channel bandwidth combinations and SCS 60 kHz

UL/DL Bandwidth combination	Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10/10	10	11	Downlink	Low	2115	423000	2111.04	422208	0	15	5282	422650
				Mid	2145	429000	2067.6	413520	102		5357	428650
				High	2175	435000	1808.16	361632	504		5432	434650
	10	11	Uplink	Low	1715	343000	1711.04	342208	0	-	-	-
				Mid	1745	349000	1378.16	275632	504		-	-
				High	1775	355000	1766.72	353344	6		-	-
10/20	20	24	Downlink	Low	2120	424000	2111.36	422272	0	15	5282	422650
				Mid	2150	430000	2067.92	413584	102		5357	428650
				High	2180	436000	1808.48	361696	504		5432	434650
	10	11	Uplink	Low	1715	343000	1711.04	342208	0	-	-	-
				Mid	1745	349000	1378.16	275632	504		-	-
				High	1775	355000	1766.72	353344	6		-	-
10/40	40	51	Downlink	Low	2130	426000	2111.64	422328	0	15	5284	422690
				Mid	2155	431000	2063.2	412640	102		5345	427690
				High	2180	436000	1798.76	359752	504		5408	432730
	10	11	Uplink	Low	1715	343000	1711.04	342208	0	-	-	-
				Mid	1740	348000	1373.16	274632	504		-	-
				High	1765	353000	1756.72	351344	6		-	-
15/15	15	18	Downlink	Low	2117.5	423500	2111.02	422204	0	15	5282	422650
				Mid	2145	429000	2065.08	413016	102		5351	428170
				High	2172.5	434500	1803.14	360628	504		5420	433690
	15	18	Uplink	Low	1717.5	343500	1711.02	342204	0	-	-	-
				Mid	1745	349000	1375.64	275128	504		-	-
				High	1772.5	354500	1761.7	352340	6		-	-
20/20	20	24	Downlink	Low	2120	424000	2111.36	422272	0	15	5282	422650
				Mid	2145	429000	2062.92	412584	102		5345	427690
				High	2170	434000	1798.48	359696	504		5408	432730
	20	24	Uplink	Low	1720	344000	1711.36	342272	0	-	-	-
				Mid	1745	349000	1373.48	274696	504		-	-
				High	1770	354000	1757.04	351408	6		-	-
20/40	40	51	Downlink	Low	2130	426000	2111.64	422328	0	15	5284	422690
				Mid	2155	431000	2063.2	412640	102		5345	427690
				High	2180	436000	1798.76	359752	504		5408	432730
	20	24	Uplink	Low	1720	344000	1711.36	342272	0	-	-	-
				Mid	1745	349000	1373.48	274696	504		-	-
				High	1770	354000	1757.04	351408	6		-	-
40/40	40	51	Downlink	Low	2130	426000	2111.64	422328	0	15	5284	422690
				Mid	2145	429000	2053.2	410640	102		5321	425770
				High	2160	432000	1778.76	355752	504		5359	428690
	40	51	Uplink	Low	1730	346000	1711.64	342328	0	-	-	-

				Mid	1745	349000	1363.76	272752	504		-	-
				High	1760	352000	1737.32	347464	6		-	-

4.3.1.1.1.67 – 4.3.1.1.1.69 FFS

4.3.1.1.1.70 Reference test frequencies for NR operating band n70

Editor's note: Test frequencies for the Tx-RX frequency separation of 295 Mhz option as specified in TS 38.101-1, Table 5.4.4-1 is FFS.

Table 4.3.1.1.1.70-1: Test frequencies for NR operating band n70, default Tx-RX frequency separation 300MHz, uplink and downlink channel bandwidth combinations and SCS 15 kHz

UL/DL Bandwidth combination	Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
5/5	5	25	Downlink	Low	1997.5	399500	1995.25	399050	0	15	4993	399410	0	0	0	0
				Mid	2002.5	400500	1981.89	396378	102		5007	400590	12	4	2	106
				High	2007.5	401500	1914.53	382906	504		5018	401530	16	2	1	506
	5	25	Uplink	Low	1697.5	339500	1695.25	339050	0	-	-	-	-	-	-	-
				Mid	1702.5	340500	1609.53	321906	504		-	-	-	-	-	-
				High	1707.5	341500	1704.17	340834	6		-	-	-	-	-	-
5/10	10	52	Downlink	Low	2000	400000	1995.32	399064	0	15	4994	399610	14	4	2	4
				Mid	2005	401000	1981.96	396392	102		5008	400610	14	4	2	106
				High	2010	402000	1914.6	382920	504		5019	401550	18	2	1	506
	5	25	Uplink	Low	1697.5	339500	1695.25	339050	0	-	-	-	-	-	-	-
				Mid	1702.5	340500	1609.53	321906	504		-	-	-	-	-	-
				High	1707.5	341500	1704.17	340834	6		-	-	-	-	-	-
5/15	15	79	Downlink	Low	2002.5	400500	1995.39	399078	0	15	4995	399630	16	4	2	4
				Mid	2007.5	401500	1982.03	396406	102		5006	400570	20	2	1	104
				High	2012.5	402500	1914.67	382934	504		5020	401570	20	2	1	506
	5	25	Uplink	Low	1697.5	339500	1695.25	339050	0	-	-	-	-	-	-	-
				Mid	1702.5	340500	1609.53	321906	504		-	-	-	-	-	-
				High	1707.5	341500	1704.17	340834	6		-	-	-	-	-	-
5/20	20	106	Downlink	Low	2005	401000	1995.46	399092	0	15	4996	399650	18	4	2	4
				Mid	2007.5	401500	1979.6	395920	102		5000	400090	22	2	1	104
				High	2010	402000	1909.74	381948	504		5007	400590	22	2	1	506
	5	25	Uplink	Low	1697.5	339500	1695.25	339050	0	-	-	-	-	-	-	-
				Mid	1700	340000	1607.03	321406	504		-	-	-	-	-	-
				High	1702.5	340500	1699.17	339834	6		-	-	-	-	-	-
5/25	25	133	Downlink	Low	2007.5	401500	1977.17	395434	102	15	4994	399610	0	4	2	106
				Mid												
				High												
	5	25	Uplink	Low	2007.5	401500	1904.81	380962	504	-	-	-	-	-	-	-
				Mid												
				High												
10/10	10	52	Downlink	Low	2000	400000	1995.32	399064	0	15	4994	399610	14	4	2	4
				Mid	2002.5	400500	1979.46	395892	102		5001	400110	14	4	2	106
				High	2005	401000	1909.6	381920	504		5008	400610	14	4	2	508
	10	52	Uplink	Low	1700	340000	1695.32	339064	0	-	-	-	-	-	-	-
				Mid	1702.5	340500	1607.1	321420	504		-	-	-	-	-	-
				High	1705	341000	1699.24	339848	6		-	-	-	-	-	-
10/20	20	106	Downlink	Low	2005	401000	1995.46	399092	0	15	4996	399650	18	4	2	4
				Mid	2007.5	401500	1979.6	395920	102		5000	400090	22	2	1	104
				High	2010	402000	1909.74	381948	504		5007	400590	22	2	1	506
	10	52	Uplink	Low	1700	340000	1695.32	339064	0	-	-	-	-	-	-	-

				Mid	1702.5	340500	1607.1	321420	504		-	-	-	-	-	-
				High	1705	341000	1699.24	339848	6		-	-	-	-	-	-
10/25	25	133	Downlink	Low	2007.5	401500	1977.17	395434	102	15	4994	399610	0	4	2	106
				Mid												
				High												
	10	52	Uplink	Low	1700	340000	1604.6	320920	504	-	-	-	-	-	-	-
				Mid												
				High												
15/15	15	79	Downlink	Low	2002.5	400500	1977.03	395406	102	15	4995	399630	16	4	2	106
				Mid												
				High												
	15	79	Uplink	Low	1702.5	340500	1604.67	320934	504	-	-	-	-	-	-	-
				Mid												
				High												
15/20	20	106	Downlink	Low	2005	401000	1977.1	395420	102	15	4996	399650	18	4	2	106
				Mid												
				High												
	15	79	Uplink	Low	1702.5	340500	1604.67	320934	504	-	-	-	-	-	-	-
				Mid												
				High												
15/25	25	133	Downlink	Low	2007.5	401500	1977.17	395434	102	15	4994	399610	0	4	2	106
				Mid												
				High												
	15	79	Uplink	Low	1702.5	340500	1604.67	320934	504	-	-	-	-	-	-	-
				Mid												
				High												
Note 1:	The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.70-2: Test frequencies for NR operating band n70, default Tx-RX frequency separation 300MHz, uplink and downlink channel bandwidth combinations and SCS 30 kHz

UL/DL Bandwidth combination	**Bandwidth [MHz]**	***carrierBandwidth* [PRBs]**	**Range**		**Carrier centre [MHz]**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPointA* [ARFCN]**	***offsetToCarrier* [Carrier PRBs]**	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB* [ARFCN]**	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
10/10	10	24	Downlink	Low	2000	400000	1995.68	399136	0	15	5000	400090	6	8	3	16
				Mid	2002.5	400500	1961.46	392292	102		5007	400590	6	8	3	220
				High	2005	401000	1819.24	363848	504		5014	401090	6	8	3	1024
	10	24	Uplink	Low	1700	340000	1695.68	339136	0	-	-	-	-	-	-	-
				Mid	1702.5	340500	1516.74	303348	504		-	-	-	-	-	-
				High	1705	341000	1698.52	339704	6		-	-	-	-	-	-
10/20	20	51	Downlink	Low	2005	401000	1995.82	399164	0	15	4999	399890	2	5	0	10
				Mid	2007.5	401500	1961.6	392320	102		5006	400570	14	7	2	218
				High	2010	402000	1819.38	363876	504		5013	401070	14	7	2	1022
	10	24	Uplink	Low	1700	340000	1695.68	339136	0	-	-	-	-	-	-	-
				Mid	1702.5	340500	1516.74	303348	504		-	-	-	-	-	-
				High	1705	341000	1698.52	339704	6		-	-	-	-	-	-
10/25	25	65	Downlink	Low	2007.5	401500	1959.08	391816	102	15	5000	400090	22	7	2	218
				Mid												
				High												
	10	24	Uplink	Low	1700	340000	1514.24	302848	504	-	-	-	-	-	-	-
				Mid												
				High												
15/15	15	38	Downlink	Low	2002.5	400500	1958.94	391788	102	15	4998	399870	6	5	0	214
				Mid												
				High												
	15	38	Uplink	Low	1702.5	340500	1514.22	302844	504	-	-	-	-	-	-	-
				Mid												
				High												
15/20	20	51	Downlink	Low	2005	401000	1959.1	391820	102	15	4999	399890	2	5	0	214
				Mid												
				High												
	15	38	Uplink	Low	1702.5	340500	1514.22	302844	504	-	-	-	-	-	-	-
				Mid												
				High												
15/25	25	65	Downlink	Low	2007.5	401500	1959.08	391816	102	15	5000	400090	22	7	2	218
				Mid												
				High												
	15	38	Uplink	Low	1702.5	340500	1514.22	302844	504	-	-	-	-	-	-	-
				Mid												
				High												
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.																

Table 4.3.1.1.1.70-3: Test frequencies for NR operating band n70, default Tx-RX frequency separation 300MHz, uplink and downlink channel bandwidth combinations and SCS 60 kHz

UL/DL Bandwidth combination	Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10/10	10	11	Downlink	Low	2000	400000	1996.04	399208	0	15	4994	399610
				Mid	2002.5	400500	1925.1	385020	102		5000	400090
				High	2005	401000	1638.16	327632	504		5006	400570
	10	11	Uplink	Low	1700	340000	1696.04	339208	0	-	-	-
				Mid	1702.5	340500	1335.66	267132	504		-	-
				High	1705	341000	1696.72	339344	6		-	-
10/20	20	24	Downlink	Low	2005	401000	1996.36	399272	0	15	4996	399650
				Mid	2007.5	401500	1925.42	385084	102		5003	400330
				High	2010	402000	1638.48	327696	504		5009	400810
	10	11	Uplink	Low	1700	340000	1696.04	339208	0	-	-	-
				Mid	1702.5	340500	1335.66	267132	504		-	-
				High	1705	341000	1696.72	339344	6		-	-
10/25	25	31	Downlink	Low	2007.5	401500	1922.9	384580	102	15	4995	399630
				Mid								
				High								
	10	11	Uplink	Low	1700	340000	1333.16	266632	504	-	-	-
				Mid								
				High								
15/15	15	18	Downlink	Low	2002.5	400500	1922.58	384516	102	15	4994	399610
				Mid								
				High								
	15	18	Uplink	Low	1702.5	340500	1333.14	266628	504	-	-	-
				Mid								
				High								
15/20	20	24	Downlink	Low	2005	401000	1922.92	384584	102	15	4996	399650
				Mid								
				High								
	15	18	Uplink	Low	4996	399650	4996	399650	4996	-	-	-
				Mid								
				High								
15/25	25	31	Downlink	Low	2007.5	401500	1922.9	384580	102	15	4995	399630
				Mid								
				High								
	15	18	Uplink	Low	1702.5	340500	1333.14	266628	504	-	-	-
				Mid								
				High								

4.3.1.1.1.71 Reference test frequencies for NR operating band n71

Table 4.3.1.1.1.71-1: Test frequencies for NR operating band n71 and SCS 15 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
5	25	Downlink	Low	619.5	123900	617.25	123450	0	15	1548	123870	20	0	0	0
			Mid	634.5	126900	613.89	122778	102		1587	126990	12	4	2	106
			High	649.5	129900	556.53	111306	504		1623	129870	20	0	0	504
		Uplink	Low	665.5	133100	663.25	132650	0	-	-	-	-	-	-	-
			Mid	680.5	136100	587.53	117506	504		-	-	-	-	-	-
			High	695.5	139100	692.17	138434	6		-	-	-	-	-	-
10	52	Downlink	Low	622	124400	617.32	123464	0	15	1549	123890	22	0	0	0
			Mid	634.5	126900	611.46	122292	102		1581	126510	14	4	2	106
			High	647	129400	551.6	110320	504		1610	128890	22	0	0	504
		Uplink	Low	668	133600	663.32	132664	0	-	-	-	-	-	-	-
			Mid	680.5	136100	585.1	117020	504		-	-	-	-	-	-
			High	693	138600	687.24	137448	6		-	-	-	-	-	-
15	79	Downlink	Low	624.5	124900	617.39	123478	0	15	1547	123850	4	0	0	0
			Mid	634.5	126900	609.03	121806	102		1575	126030	16	4	2	106
			High	644.5	128900	546.67	109334	504		1600	127970	20	2	1	506
		Uplink	Low	670.5	134100	663.39	132678	0	-	-	-	-	-	-	-
			Mid	680.5	136100	582.67	116534	504		-	-	-	-	-	-
			High	690.5	138100	682.31	136462	6		-	-	-	-	-	-
20	106	Downlink	Low	627	125400	617.46	123492	0	15	1548	123870	6	0	0	0
			Mid	634.5	126900	606.6	121320	102		1569	125550	18	4	2	106
			High	642	128400	541.74	108348	504		1587	126990	22	2	1	506
		Uplink	Low	673	134600	663.46	132692	0	-	-	-	-	-	-	-
			Mid	680.5	136100	580.24	116048	504		-	-	-	-	-	-
			High	688	137600	677.38	135476	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.71-2: Test frequencies for NR operating band n71 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	622	124400	617.68	123536	0	15	1555	124370	14	6	1	12
			Mid	634.5	126900	593.46	118692	102		1587	126990	6	8	3	220
			High	647	129400	461.24	92248	504		1616	129370	14	6	1	1020
		Uplink	Low	668	133600	663.68	132736	0	-	-	-	-	-	-	-
			Mid	680.5	136100	494.74	98948	504		-	-	-	-	-	-
			High	693	138600	686.52	137304	6		-	-	-	-	-	-
15	38	Downlink	Low	624.5	124900	617.66	123532	0	15	1553	124330	2	6	1	12
			Mid	634.5	126900	590.94	118188	102		1578	126270	6	5	0	214
			High	644.5	128900	456.22	91244	504		1606	128450	18	7	2	1022
		Uplink	Low	670.5	134100	663.66	132732	0	-	-	-	-	-	-	-
			Mid	680.5	136100	492.22	98444	504		-	-	-	-	-	-
			High	690.5	138100	681.5	136300	6		-	-	-	-	-	-
20	51	Downlink	Low	627	125400	617.82	123564	0	15	1554	124350	22	5	0	10
			Mid	634.5	126900	588.6	117720	102		1572	125790	2	5	0	214
			High	642	128400	451.38	90276	504		1593	127470	14	7	2	1022
		Uplink	Low	673	134600	663.82	132764	0	-	-	-	-	-	-	-
			Mid	680.5	136100	489.88	97976	504		-	-	-	-	-	-
			High	688	137600	676.66	135332	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

4.3.1.1.1.72 – 4.3.1.1.1.73

4.3.1.1.1.74 Reference test frequencies for NR operating band n74

Table 4.3.1.1.1.74-1: Test frequencies for NR operating band n74 and SCS 15 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
5	25	Downlink	Low	1477.5	295500	1475.25	295050	0	15	3693	295470	20	0	0	0
			Mid	1496.5	299300	1475.89	295178	102		3742	299330	16	2	1	104
			High	1515.5	303100	1422.53	284506	504		3788	303130	16	2	1	506
		Uplink	Low	1429.5	285900	1427.25	285450	0	-	-	-	-	-	-	-
			Mid	1448.5	289700	1355.53	271106	504		-	-	-	-	-	-
			High	1467.5	293500	1464.17	292834	6		-	-	-	-	-	-
10	52	Downlink	Low	1480	296000	1475.32	295064	0	15	3694	295490	22	0	0	0
			Mid	1496.5	299300	1473.46	294692	102		3736	298850	18	2	1	104
			High	1513	302600	1417.6	283520	504		3778	302210	14	4	2	508
		Uplink	Low	1432	286400	1427.32	285464	0	-	-	-	-	-	-	-
			Mid	1448.5	289700	1353.1	270620	504		-	-	-	-	-	-
			High	1465	293000	1459.24	291848	6		-	-	-	-	-	-
15	79	Downlink	Low	1482.5	296500	1475.39	295078	0	15	3692	295450	4	0	0	0
			Mid	1496.5	299300	1471.03	294206	102		3730	298370	20	2	1	104
			High	1510.5	302100	1412.67	282534	504		3765	301230	16	4	2	508
		Uplink	Low	1434.5	286900	1427.39	285478	0	-	-	-	-	-	-	-
			Mid	1448.5	289700	1350.67	270134	504		-	-	-	-	-	-
			High	1462.5	292500	1454.31	290862	6		-	-	-	-	-	-
20	106	Downlink	Low	1485	297000	1475.46	295092	0	15	3693	295470	6	0	0	0
			Mid	1496.5	299300	1468.6	293720	102		3724	297890	22	2	1	104
			High	1508	301600	1407.74	281548	504		3752	300250	18	4	2	508
		Uplink	Low	1437	287400	1427.46	285492	0	-	-	-	-	-	-	-
			Mid	1448.5	289700	1348.24	269648	504		-	-	-	-	-	-
			High	1460	292000	1449.38	289876	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.74-2: Test frequencies for NR operating band n74 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORE SET#0 Offset [RBs] Note 1	CORE SET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	1480	296000	1475.68	295136	0	15	3700	295970	14	6	1	12
			Mid	1496.5	299300	1455.46	291092	102		3742	299330	10	7	2	218
			High	1513	302600	1327.24	265448	504		3784	302690	6	8	3	1024
		Uplink	Low	1432	286400	1427.68	285536	0	-	-	-	-	-	-	-
			Mid	1448.5	289700	1262.74	252548	504		-	-	-	-	-	-
			High	1465	293000	1458.52	291704	6		-	-	-	-	-	-
15	38	Downlink	Low	1482.5	296500	1475.66	295132	0	15	3698	295930	2	6	1	12
			Mid	1496.5	299300	1452.94	290588	102		3736	298850	18	7	2	218
			High	1510.5	302100	1322.22	264444	504		3768	301470	6	5	0	1018
		Uplink	Low	1434.5	286900	1427.66	285532	0	-	-	-	-	-	-	-
			Mid	1448.5	289700	1260.22	252044	504		-	-	-	-	-	-
			High	1462.5	292500	1453.5	290700	6		-	-	-	-	-	-
20	51	Downlink	Low	1485	297000	1475.82	295164	0	15	3699	295950	22	5	0	10
			Mid	1496.5	299300	1450.6	290120	102		3730	298370	14	7	2	218
			High	1508	301600	1317.38	263476	504		3755	300490	2	5	0	1018
		Uplink	Low	1437	287400	1427.82	285564	0	-	-	-	-	-	-	-
			Mid	1448.5	289700	1257.88	251576	504		-	-	-	-	-	-
			High	1460	292000	1448.66	289732	6		-	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.1.1.74-3: Test frequencies for NR operating band n74 and SCS 60 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink	Low	1480	296000	1476.04	295208	0	15	3695	295690
			Mid	1496.5	299300	1419.1	283820	102		3737	299050
			High	1513	302600	1146.16	229232	504		3776	302170
		Uplink	Low	1432	286400	1428.04	285608	0	-	-	-
			Mid	1448.5	289700	1081.66	216332	504		-	-
			High	1465	293000	1456.72	291344	6		-	-
15	18	Downlink	Low	1482.5	296500	1476.02	295204	0	15	3695	295690
			Mid	1496.5	299300	1416.58	283316	102		3730	298370
			High	1510.5	302100	1141.14	228228	504		3764	301210
		Uplink	Low	1434.5	286900	1428.02	285604	0	-	-	-
			Mid	1448.5	289700	1079.14	215828	504		-	-
			High	1462.5	292500	1451.7	290340	6		-	-
20	24	Downlink	Low	1485	297000	1476.36	295272	0	15	3695	295690
			Mid	1496.5	299300	1414.42	282884	102		3725	298090
			High	1508	301600	1136.48	227296	504		3752	300250
		Uplink	Low	1437	287400	1428.36	285672	0	-	-	-
			Mid	1448.5	289700	1076.98	215396	504		-	-
			High	1460	292000	1447.04	289408	6		-	-

4.3.1.1.1.75 Reference test frequencies for NR operating band n75 (SDL)

Table 4.3.1.1.1.75-1: Test frequencies for NR operating band n75 and SCS 15 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
5	25	Downlink	Low	1434.5	286900	1432.25	286450	0	5	25	Downlink
			Mid	1474.5	294900	1453.89	290778	102			
			High	1514.5	302900	1421.53	284306	504			
10	52	Downlink	Low	1437	287400	1432.32	286464	0	10	52	Downlink
			Mid	1474.5	294900	1451.46	290292	102			
			High	1512	302400	1416.6	283320	504			
15	79	Downlink	Low	1439.5	287900	1432.39	286478	0	15	79	Downlink
			Mid	1474.5	294900	1449.03	289806	102			
			High	1509.5	301900	1411.67	282334	504			
20	106	Downlink	Low	1442	288400	1432.46	286492	0	20	106	Downlink
			Mid	1474.5	294900	1446.6	289320	102			
			High	1507	301400	1406.74	281348	504			

Table 4.3.1.1.1.75-2: Test frequencies for NR operating band n75 and SCS 30 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	24	Downlink	Low	1437	287400	1432.68	286536	0	15	3591	287310
			Mid	1474.5	294900	1433.46	286692	102		3687	294990
			High	1512	302400	1326.24	265248	504		3780	302430
15	38	Downlink	Low	1439.5	287900	1432.66	286532	0	15	3592	287330
			Mid	1474.5	294900	1430.94	286188	102		3678	294270
			High	1509.5	301900	1321.22	264244	504		3767	301450
20	51	Downlink	Low	1442	288400	1432.82	286564	0	15	3590	287290
			Mid	1474.5	294900	1428.6	285720	102		3672	293790
			High	1507	301400	1316.38	263276	504		3754	300290

Table 4.3.1.1.1.75-3: Test frequencies for NR operating band n75 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink	Low	1437	287400	1433.04	286608	0	15	3587	287050
			Mid	1474.5	294900	1397.1	279420	102		3680	294490
			High	1512	302400	1145.16	229032	504		3775	301970
15	18	Downlink	Low	1439.5	287900	1433.02	286604	0	15	3587	287050
			Mid	1474.5	294900	1394.58	278916	102		3674	294010
			High	1509.5	301900	1140.14	228028	504		3761	300970
20	24	Downlink	Low	1442	288400	1433.36	286672	0	15	3587	287050
			Mid	1474.5	294900	1392.42	278484	102		3669	293550
			High	1507	301400	1135.48	227096	504		3751	300050

4.3.1.1.1.76 Reference test frequencies for NR operating band n76 (SDL)

Table 4.3.1.1.1.76-1: Test frequencies for NR operating band n76 and SCS 15 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
5	25	Downlink	Low, Mid, High	1429.5	285900	1427.25	285450	0	15	3573	285870

4.3.1.1.1.77 Reference test frequencies for NR operating band n77

Table 4.3.1.1.1.77-1: Test frequencies for NR operating band n77 and SCS 15 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	52	Downlink & Uplink	Low	3305.01	620334	3300.33	620022	0	30	7711	620352	18	6	1	6
			Mid	3750	650000	3726.96	648464	102		8020	650016	16	6	1	108
			High	4194.99	679666	4099.59	673306	504		8329	679680	14	6	1	510
15	79	Downlink & Uplink	Low	3307.5	620500	3300.39	620026	0	30	7711	620352	14	6	1	6
			Mid	3750.165	650011	3724.695	648313	102		8018	649824	23	2	0	104
			High	4192.5	679500	4094.67	672978	504		8325	679296	6	2	0	506
20	106	Downlink & Uplink	Low	3310.005	620667	3300.465	620031	0	30	7711	620352	9	6	1	6
			Mid	3750	650000	3722.1	648140	102		8016	649632	4	2	0	104
			High	4189.98	679332	4089.72	672648	504		8322	679008	0	6	1	510
40	216	Downlink & Uplink	Low	3320.01	621334	3300.57	620038	0	30	7711	620352	2	6	1	6
			Mid	3749.88	649992	3712.08	647472	102		8009	648960	0	2	0	104
			High	4179.72	678648	4069.56	671304	504		8308	677664	0	6	1	510
50	270	Downlink & Uplink	Low	3325.275	621685	3300.975	620065	0	30	7711	620352	23	2	0	2
			Mid	3750.075	650005	3707.415	647161	102		8006	648672	23	2	0	104
			High	4174.995	678333	4059.975	670665	504		8301	676992	15	2	0	506

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-3 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.77-2: Test frequencies for NR operating band n77 and SCS 30 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	3305.01	620334	3300.69	620046	0	30	7711	620352	18	2	2	4
		&	Mid	3750	650000	3708.96	647264	102		8020	650016	16	2	2	208
		Uplink	High	4194.99	679666	4009.23	667282	504		8329	679680	14	2	2	1012
15	38	Downlink	Low	3307.5	620500	3300.66	620044	0	30	7711	620352	20	2	2	4
		&	Mid	3750	650000	3706.44	647096	102		8018	649824	16	1	1	206
		Uplink	High	4192.5	679500	4004.22	666948	504		8325	679296	12	0	0	1008
20	51	Downlink	Low	3310.02	620668	3300.84	620056	0	30	7711	620352	8	2	2	4
		&	Mid	3750	650000	3704.1	646940	102		8016	649632	4	0	0	204
		Uplink	High	4189.98	679332	3999.36	666624	504		8322	679008	0	2	2	1012
40	106	Downlink	Low	3320.01	621334	3300.93	620062	0	30	7711	620352	2	2	2	4
		&	Mid	3750	650000	3694.2	646280	102		8010	649056	16	3	3	210
		Uplink	High	4179.99	678666	3979.47	665298	504		8308	677664	6	1	1	1010
50	133	Downlink	Low	3325.02	621668	3301.08	620072	0	30	7711	620352	16	1	1	2
		&	Mid	3750	650000	3689.34	645956	102		8006	648672	4	1	1	206
		Uplink	High	4174.98	678332	3969.6	664640	504		8301	676992	16	0	0	1008
60	162	Downlink	Low	3330	622000	3300.84	620056	0	30	7711	620352	8	2	2	4
		&	Mid	3750	650000	3684.12	645608	102		8003	648384	16	3	3	210
		Uplink	High	4170	678000	3959.4	663960	504		8294	676320	0	1	1	1010
80	217	Downlink	Low	3340.02	622668	3300.96	620064	0	30	7711	620352	0	2	2	4
		&	Mid	3750	650000	3674.22	644948	102		7996	647712	4	3	3	210
		Uplink	High	4159.98	677332	3939.48	662632	504		8280	674976	8	0	0	1008
90	245	Downlink	Low	3345	623000	3300.9	620060	0	30	7711	620352	4	2	2	4
		&	Mid	3750	650000	3669.18	644612	102		7992	647328	4	1	1	206
		Uplink	High	4155	677000	3929.46	661964	504		8273	674304	4	0	0	1008
100	273	Downlink	Low	3350.01	623334	3300.87	620058	0	30	7711	620352	6	2	2	4
		&	Mid	3750	650000	3664.14	644276	102		7989	647040	4	3	3	210
		Uplink	High	4149.99	676666	3919.41	661294	504		8266	673632	2	0	0	1008

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.77-3: Test frequencies for NR operating band n77 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink & Uplink	Low	3305.01	620334	3301.05	620070	0	30	7711	620352
			Mid	3750	650000	3672.6	644840	102		8020	650016
			High	4194.99	679666	3828.15	655210	504		8329	679680
15	18	Downlink & Uplink	Low	3307.5	620500	3301.02	620068	0	30	7711	620352
			Mid	3750	650000	3670.08	644672	102		8018	649824
			High	4192.5	679500	3823.14	654876	504		8326	679392
20	24	Downlink & Uplink	Low	3310.005	620667	3301.365	620091	0	30	7711	620352
			Mid	3750	650000	3667.92	644528	102		8017	649728
			High	4189.995	679333	3818.475	654565	504		8322	679008
40	51	Downlink & Uplink	Low	3320.01	621334	3301.65	620110	0	30	7711	620352
			Mid	3750	650000	3658.2	643880	102		8010	649056
			High	4179.99	678666	3798.75	653250	504		8309	677760
50	65	Downlink & Uplink	Low	3325.005	621667	3301.605	620107	0	30	7711	620352
			Mid	3750	650000	3653.16	643544	102		8007	648768
			High	4174.995	678333	3788.715	652581	504		8302	677088
60	79	Downlink & Uplink	Low	3330	622000	3301.56	620104	0	30	7711	620352
			Mid	3750	650000	3648.12	643208	102		8003	648384
			High	4170	678000	3778.68	651912	504		8295	676416
80	107	Downlink & Uplink	Low	3340.005	622667	3301.485	620099	0	30	7711	620352
			Mid	3750	650000	3638.04	642536	102		7996	647712
			High	4159.995	677333	3758.595	650573	504		8281	675072
90	121	Downlink & Uplink	Low	3345	623000	3301.44	620096	0	30	7711	620352
			Mid	3750	650000	3633	642200	102		7993	647424
			High	4155	677000	3748.56	649904	504		8274	674400
100	135	Downlink & Uplink	Low	3350.01	623334	3301.41	620094	0	30	7711	620352
			Mid	3750	650000	3627.96	641864	102		7989	647040
			High	4149.99	676666	3738.51	649234	504		8267	673728

4.3.1.1.1.78 Reference test frequencies for NR operating band n78

Table 4.3.1.1.1.78-1: Test frequencies for NR operating band n78 and SCS 15 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute FrequencyPoint A* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absolute FrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	52	Downlink & Uplink	Low	3305.01	620334	3300.33	620022	0	30	7711	620352	18	6	1	6
			Mid	3550.005	636667	3526.965	635131	102		7881	636672	5	6	1	108
			High	3794.88	652992	3699.48	646632	504		8051	652992	0	6	1	510
15	79	Downlink & Uplink	Low	3307.5	620500	3300.39	620026	0	30	7711	620352	14	6	1	6
			Mid	3550.005	636667	3524.535	634969	102		7879	636480	23	2	0	104
			High	3792.27	652818	3694.44	646296	504		8047	652608	0	2	0	506
20	106	Downlink & Uplink	Low	3310.005	620667	3300.465	620031	0	30	7711	620352	9	6	1	6
			Mid	3549.9	636660	3522	634800	102		7877	636288	0	2	0	104
			High	3789.66	652644	3689.4	645960	504		8044	652320	0	6	1	510
40	216	Downlink & Uplink	Low	3320.01	621334	3300.57	620038	0	30	7711	620352	2	6	1	6
			Mid	3550.095	636673	3512.295	634153	102		7871	635712	23	6	1	108
			High	3780	652000	3669.84	644656	504		8030	650976	8	2	0	506
50	270	Downlink & Uplink	Low	3325.275	621685	3300.975	620065	0	30	7711	620352	23	2	0	2
			Mid	3550.005	636667	3507.345	633823	102		7867	635328	17	2	0	104
			High	3774.9	651660	3659.88	643992	504		8023	650304	0	2	0	506

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-3 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.78-2: Test frequencies for NR operating band n78 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
10	24	Downlink	Low	3305.01	620334	3300.69	620046	0	30	7711	620352	18	2	2	4
		&	Mid	3549.99	636666	3508.95	633930	102		7881	636672	6	2	2	208
		Uplink	High	3795	653000	3609.24	640616	504		8051	652992	16	1	1	1010
15	38	Downlink	Low	3307.5	620500	3300.66	620044	0	30	7711	620352	20	2	2	4
		&	Mid	3549.99	636666	3506.43	633762	102		7879	636480	6	1	1	206
		Uplink	High	3792.48	652832	3604.2	640280	504		8048	652704	16	3	3	1014
20	51	Downlink	Low	3310.02	620668	3300.84	620056	0	30	7711	620352	8	2	2	4
		&	Mid	3549.99	636666	3504.09	633606	102		7878	636384	18	3	3	210
		Uplink	High	3789.99	652666	3599.37	639958	504		8044	652320	2	1	1	1010
40	106	Downlink	Low	3320.01	621334	3300.93	620062	0	30	7711	620352	2	2	2	4
		&	Mid	3549.99	636666	3494.19	632946	102		7871	635712	6	3	3	210
		Uplink	High	3780	652000	3579.48	638632	504		8030	650976	8	0	0	1008
50	133	Downlink	Low	3325.02	621668	3301.08	620072	0	30	7711	620352	16	1	1	2
		&	Mid	3549.99	636666	3489.33	632622	102		7867	635328	18	0	0	204
		Uplink	High	3774.99	651666	3569.61	637974	504		8024	650400	18	3	3	1014
60	162	Downlink	Low	3330	622000	3300.84	620056	0	30	7711	620352	8	2	2	4
		&	Mid	3549.99	636666	3484.11	632274	102		7864	635040	6	3	3	210
		Uplink	High	3769.98	651332	3559.38	637292	504		8016	649632	4	0	0	1008
80	217	Downlink	Low	3340.02	622668	3300.96	620064	0	30	7711	620352	0	2	2	4
		&	Mid	3549.99	636666	3474.21	631614	102		7857	634368	18	2	2	208
		Uplink	High	3759.99	650666	3539.49	635966	504		8003	648384	10	3	3	1014
90	245	Downlink	Low	3345	623000	3300.9	620060	0	30	7711	620352	4	2	2	4
		&	Mid	3549.99	636666	3469.17	631278	102		7853	633984	18	0	0	204
		Uplink	High	3754.98	650332	3529.44	635296	504		7996	647712	8	3	3	1014
100	273	Downlink	Low	3350.01	623334	3300.87	620058	0	30	7711	620352	6	2	2	4
		&	Mid	3549.99	636666	3464.13	630942	102		7850	633696	18	2	2	208
		Uplink	High	3750	650000	3519.42	634628	504		7989	647040	4	3	3	1014

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.78-3: Test frequencies for NR operating band n78 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
10	11	Downlink & Uplink	Low	3305.01	620334	3301.05	620070	0	30	7711	620352
			Mid	3550.005	636667	3472.605	631507	102		7881	636672
			High	3795	653000	3428.16	628544	504		8051	652992
15	18	Downlink & Uplink	Low	3307.5	620500	3301.02	620068	0	30	7711	620352
			Mid	3550.005	636667	3470.085	631339	102		7879	636480
			High	3792.495	652833	3423.135	628209	504		8048	652704
20	24	Downlink & Uplink	Low	3310.005	620667	3301.365	620091	0	30	7711	620352
			Mid	3550.005	636667	3467.925	631195	102		7878	636384
			High	3789.99	652666	3418.47	627898	504		8045	652416
40	51	Downlink & Uplink	Low	3320.01	621334	3301.65	620110	0	30	7711	620352
			Mid	3550.005	636667	3458.205	630547	102		7871	635712
			High	3780	652000	3398.76	626584	504		8031	651072
50	65	Downlink & Uplink	Low	3325.005	621667	3301.605	620107	0	30	7711	620352
			Mid	3550.005	636667	3453.165	630211	102		7868	635424
			High	3774.99	651666	3388.71	625914	504		8024	650400
60	79	Downlink & Uplink	Low	3330	622000	3301.56	620104	0	30	7711	620352
			Mid	3550.005	636667	3448.125	629875	102		7864	635040
			High	3769.995	651333	3378.675	625245	504		8017	649728
80	107	Downlink & Uplink	Low	3340.005	622667	3301.485	620099	0	30	7711	620352
			Mid	3550.005	636667	3438.045	629203	102		7857	634368
			High	3759.99	650666	3358.59	623906	504		8003	648384
90	121	Downlink & Uplink	Low	3345	623000	3301.44	620096	0	30	7711	620352
			Mid	3550.005	636667	3433.005	628867	102		7854	634080
			High	3754.995	650333	3348.555	623237	504		7996	647712
100	135	Downlink & Uplink	Low	3350.01	623334	3301.41	620094	0	30	7711	620352
			Mid	3550.005	636667	3427.965	628531	102		7850	633696
			High	3750	650000	3338.52	622568	504		7989	647040

4.3.1.1.1.79 Reference test frequencies for NR operating band n79

Table 4.3.1.1.1.79-1: Test frequencies for NR operating band n79 and SCS 15 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
40	216	Downlink & Uplink	Low	4427.415	695161	4407.975	693865	0	30	8480	694176	23	4	0	4
			Mid	4703.895	713593	4666.095	711073	102		8672	712608	23	4	0	106
			High	4957.68	730512	4847.52	723168	504		8848	729504	0	4	0	508
50	270	Downlink & Uplink	Low	4432.275	695485	4407.975	693865	0	30	8480	694176	23	4	0	4
			Mid	4708.755	713917	4666.095	711073	102		8672	712608	23	4	0	106
			High	4962.54	730836	4847.52	723168	504		8848	729504	0	4	0	508

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-5 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.79-2: Test frequencies for NR operating band n79 and SCS 30 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
40	106	Downlink & Uplink	Low	4426.35	695090	4407.27	693818	0	30	8480	694176	22	4	1	8
			Mid	4702.83	713522	4647.03	709802	102		8672	712608	22	4	1	212
			High	4979.64	731976	4779.12	718608	504		8864	731040	0	4	1	1016
50	133	Downlink & Uplink	Low	4431.21	695414	4407.27	693818	0	30	8480	694176	22	4	1	8
			Mid	4707.69	713846	4647.03	709802	102		8672	712608	22	4	1	212
			High	4962.9	730860	4757.52	717168	504		8848	729504	0	0	0	1008
60	162	Downlink & Uplink	Low	4436.43	695762	4407.27	693818	0	30	8480	694176	22	4	1	8
			Mid	4691.64	712776	4625.76	708384	102		8656	711072	0	0	0	204
			High	4968.12	731208	4757.52	717168	504		8848	729504	0	0	0	1008
80	217	Downlink & Uplink	Low	4446.33	696422	4407.27	693818	0	30	8480	694176	22	4	1	8
			Mid	4700.01	713334	4624.23	708282	102		8656	711072	6	4	1	212
			High	4954.98	730332	4734.48	715632	504		8832	727968	0	0	0	1008
100	273	Downlink & Uplink	Low	4456.41	697094	4407.27	693818	0	30	8480	694176	22	4	1	8
			Mid	4709.85	713990	4623.99	708266	102		8656	711072	22	4	1	212
			High	4942.02	729468	4711.44	714096	504		8816	726432	0	0	0	1008

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-6 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.1.1.79-3: Test frequencies for NR operating band n79 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
40	51	Downlink & Uplink	Low	4420.005	694667	4401.645	693443	0	30	8480	694176
			Mid	4699.995	713333	4608.195	707213	102		8672	712608
			High	4980	732000	4598.76	706584	504		8864	731040
50	65	Downlink & Uplink	Low	4425	695000	4401.6	693440	0	30	8480	694176
			Mid	4699.995	713333	4603.155	706877	102		8672	712608
			High	4974.99	731666	4588.71	705914	504		8864	731040
60	79	Downlink & Uplink	Low	4430.01	695334	4401.57	693438	0	30	8480	694176
			Mid	4699.995	713333	4598.115	706541	102		8672	712608
			High	4969.995	731333	4578.675	705245	504		8864	731040
80	107	Downlink & Uplink	Low	4440	696000	4401.48	693432	0	30	8480	694176
			Mid	4699.995	713333	4588.035	705869	102		8656	711072
			High	4959.99	730666	4558.59	703906	504		8848	729504
100	135	Downlink & Uplink	Low	4450.005	696667	4401.405	693427	0	30	8480	694176
			Mid	4699.995	713333	4577.955	705197	102		8656	711072
			High	4950	730000	4538.52	702568	504		8832	727968

4.3.1.1.1.80 Reference test frequencies for NR operating band n80 (SUL)

Table 4.3.1.1.1.80-1: Test frequencies for NR operating band n80 and SCS 15 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
5	25	Uplink	Low	1712.5	342500	1710.25	342050	0
			Mid	1747.5	349500	1349.61	269922	2198
			High	1782.5	356500	1780.07	356014	1
10	52	Uplink	Low	1715	343000	1710.32	342064	0
			Mid	1747.5	349500	1347.18	269436	2198
			High	1780	356000	1775.14	355028	1
15	79	Uplink	Low	1717.5	343500	1710.39	342078	0
			Mid	1747.5	349500	1344.75	268950	2198
			High	1777.5	355500	1770.21	354042	1
20	106	Uplink	Low	1720	344000	1710.46	342092	0
			Mid	1747.5	349500	1342.32	268464	2198
			High	1775	355000	1765.28	353056	1
25	133	Uplink	Low	1722.5	344500	1710.53	342106	0
			Mid	1747.5	349500	1339.89	267978	2198
			High	1772.5	354500	1760.35	352070	1
30	160	Uplink	Low	1725	345000	1710.6	342120	0
			Mid	1747.5	349500	1337.46	267492	2198
			High	1770	354000	1755.42	351084	1

Table 4.3.1.1.1.80-2: Test frequencies for NR operating band n80 and SCS 30 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
10	24	Uplink	Low	1715	343000	1710.68	342136	0
			Mid	1747.5	349500	951.9	190380	2198
			High	1780	356000	1775.32	355064	1
15	38	Uplink	Low	1717.5	343500	1710.66	342132	0
			Mid	1747.5	349500	949.38	189876	2198
			High	1777.5	355500	1770.3	354060	1
20	51	Uplink	Low	1720	344000	1710.82	342164	0
			Mid	1747.5	349500	947.04	189408	2198
			High	1775	355000	1765.46	353092	1
25	65	Uplink	Low	1722.5	344500	1710.8	342160	0
			Mid	1747.5	349500	944.52	188904	2198
			High	1772.5	354500	1760.44	352088	1
30	78	Uplink	Low	1725	345000	1710.96	342192	0
			Mid	1747.5	349500	942.18	188436	2198
			High	1770	354000	1755.6	351120	1

Table 4.3.1.1.1.80-3: Test frequencies for NR operating band n80 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
10	11	Uplink	Low	1715	343000	1711.04	342208	0
			Mid	1747.5	349500	160.98	32196	2198
			High	1780	356000	1775.32	355064	1
15	18	Uplink	Low	1717.5	343500	1711.02	342204	0
			Mid	1747.5	349500	158.46	31692	2198
			High	1777.5	355500	1770.3	354060	1
20	24	Uplink	Low	1720	344000	1711.36	342272	0
			Mid	1747.5	349500	156.3	31260	2198
			High	1775	355000	1765.64	353128	1
25	31	Uplink	Low	1722.5	344500	1711.34	342268	0
			Mid	1747.5	349500	153.78	30756	2198
			High	1772.5	354500	1760.62	352124	1
30	38	Uplink	Low	1725	345000	1711.32	342264	0
			Mid	1747.5	349500	151.26	30252	2198
			High	1770	354000	1755.6	351120	1

4.3.1.1.1.81 Reference test frequencies for NR operating band n81 (SUL)

Table 4.3.1.1.1.81-1: Test frequencies for NR operating band n81 and SCS 15 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
5	25	Uplink	Low	882.5	176500	880.25	176050	0
			Mid	897.5	179500	499.61	99922	2198
			High	912.5	182500	910.07	182014	1
10	52	Uplink	Low	885	177000	880.32	176064	0
			Mid	897.5	179500	497.18	99436	2198
			High	910	182000	905.14	181028	1
15	79	Uplink	Low	887.5	177500	880.39	176078	0
			Mid	897.5	179500	494.75	98950	2198
			High	907.5	181500	900.21	180042	1
20	106	Uplink	Low	890	178000	880.46	176092	0
			Mid	897.5	179500	492.32	98464	2198
			High	905	181000	895.28	179056	1

Table 4.3.1.1.1.81-2: Test frequencies for NR operating band n81 and SCS 30 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
10	24	Uplink	Low	885	177000	880.68	176136	0
			Mid	897.5	179500	101.9	20380	2198
			High	910	182000	905.32	181064	1
15	38	Uplink	Low	887.5	177500	880.66	176132	0
			Mid	897.5	179500	99.38	19876	2198
			High	907.5	181500	900.3	180060	1
20	51	Uplink	Low	890	178000	880.82	176164	0
			Mid	897.5	179500	97.04	19408	2198
			High	905	181000	895.46	179092	1

4.3.1.1.1.82 Reference test frequencies for NR operating band n82 (SUL)

Table 4.3.1.1.1.82-1: Test frequencies for NR operating band n82 and SCS 15 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
5	25	Uplink	Low	834.5	166900	832.25	166450	0
			Mid	847	169400	449.11	89822	2198
			High	859.5	171900	857.07	171414	1
10	52	Uplink	Low	837	167400	832.32	166464	0
			Mid	847	169400	446.68	89336	2198
			High	857	171400	852.14	170428	1
15	79	Uplink	Low	839.5	167900	832.39	166478	0
			Mid	847	169400	444.25	88850	2198
			High	854.5	170900	847.21	169442	1
20	106	Uplink	Low	842	168400	832.46	166492	0
			Mid	847	169400	441.82	88364	2198
			High	852	170400	842.28	168456	1

Table 4.3.1.1.1.82-2: Test frequencies for NR operating band n82 and SCS 30 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
10	24	Uplink	Low	837	167400	832.68	166536	0
			Mid	847	169400	51.4	10280	2198
			High	857	171400	852.32	170464	1
15	38	Uplink	Low	839.5	167900	832.66	166532	0
			Mid	847	169400	48.88	9776	2198
			High	854.5	170900	847.3	169460	1
20	51	Uplink	Low	842	168400	832.82	166564	0
			Mid	847	169400	46.54	9308	2198
			High	852	170400	842.46	168492	1

4.3.1.1.1.83 Reference test frequencies for NR operating band n83 (SUL)

Table 4.3.1.1.1.83-1: Test frequencies for NR operating band n83 and SCS 15 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
5	25	Uplink	Low	705.5	141100	703.25	140650	0
			Mid	725.5	145100	327.61	65522	2198
			High	745.5	149100	743.07	148614	1
10	52	Uplink	Low	708	141600	703.32	140664	0
			Mid	725.5	145100	325.18	65036	2198
			High	743	148600	738.14	147628	1
15	79	Uplink	Low	710.5	142100	703.39	140678	0
			Mid	725.5	145100	322.75	64550	2198
			High	740.5	148100	733.21	146642	1
20	106	Uplink	Low	713	142600	703.46	140692	0
			Mid	725.5	145100	320.32	64064	2198
			High	738	147600	728.28	145656	1

Table 4.3.1.1.1.83-2: Test frequencies for NR operating band n83 and SCS 30 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
10	24	Uplink	Low	708	141600	703.68	140736	0
			Mid	725.5	145100	642.34	128468	219
			High	743	148600	738.32	147664	1
15	38	Uplink	Low	710.5	142100	703.66	140732	0
			Mid	725.5	145100	639.82	127964	219
			High	740.5	148100	733.3	146660	1
20	51	Uplink	Low	713	142600	703.82	140764	0
			Mid	725.5	145100	637.48	127496	219
			High	738	147600	728.46	145692	1

4.3.1.1.1.84 Reference test frequencies for NR operating band n84 (SUL)

Table 4.3.1.1.1.84-1: Test frequencies for NR operating band n84 and SCS 15 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
5	25	Uplink	Low	1922.5	384500	1920.25	384050	0
			Mid	1950	390000	1552.11	310422	2198
			High	1977.5	395500	1975.07	395014	1
10	52	Uplink	Low	1925	385000	1920.32	384064	0
			Mid	1950	390000	1549.68	309936	2198
			High	1975	395000	1970.14	394028	1
15	79	Uplink	Low	1927.5	385500	1920.39	384078	0
			Mid	1950	390000	1547.25	309450	2198
			High	1972.5	394500	1965.21	393042	1
20	106	Uplink	Low	1930	386000	1920.46	384092	0
			Mid	1950	390000	1544.82	308964	2198
			High	1970	394000	1960.28	392056	1

Table 4.3.1.1.1.84-2: Test frequencies for NR operating band n84 and SCS 30 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
10	24	Uplink	Low	1925	385000	1920.68	384136	0
			Mid	1950	390000	1154.4	230880	2198
			High	1975	395000	1970.32	394064	1
15	38	Uplink	Low	1927.5	385500	1920.66	384132	0
			Mid	1950	390000	1151.88	230376	2198
			High	1972.5	394500	1965.3	393060	1
20	51	Uplink	Low	1930	386000	1920.82	384164	0
			Mid	1950	390000	1149.54	229908	2198
			High	1970	394000	1960.46	392092	1

Table 4.3.1.1.1.84-3: Test frequencies for NR operating band n84 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
10	11	Uplink	Low	1925	385000	1921.04	384208	0
			Mid	1950	390000	363.48	72696	2198
			High	1975	395000	1970.32	394064	1
15	18	Uplink	Low	1927.5	385500	1921.02	384204	0
			Mid	1950	390000	360.96	72192	2198
			High	1972.5	394500	1965.3	393060	1
20	24	Uplink	Low	1930	386000	1921.36	384272	0
			Mid	1950	390000	358.8	71760	2198
			High	1970	394000	1960.64	392128	1

4.3.1.1.1.85 FFS

4.3.1.1.1.86 Reference test frequencies for NR operating band n86 (SUL)

Table 4.3.1.1.1.86-1: Test frequencies for NR operating band n86 and SCS 15 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
5	25	Uplink	Low	1712.5	342500	1710.25	342050	0
			Mid	1745	349000	1347.11	269422	2198
			High	1777.5	355500	1775.07	355014	1
10	52	Uplink	Low	1715	343000	1710.32	342064	0
			Mid	1745	349000	1344.68	268936	2198
			High	1775	355000	1770.14	354028	1
15	79	Uplink	Low	1717.5	343500	1710.39	342078	0
			Mid	1745	349000	1342.25	368450	2198
			High	1772.5	354500	1765.21	353042	1
20	106	Uplink	Low	1720	344000	1710.46	342092	0
			Mid	1745	349000	1339.82	267964	2198
			High	1770	354000	1760.28	352056	1
40	216	Uplink	Low	1730	346000	1710.56	342112	0
			Mid	1745	349000	1329.92	265984	2198
			High	1760	352000	1740.38	348076	1

Table 4.3.1.1.1.86-2: Test frequencies for NR operating band n86 and SCS 30 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
10	24	Uplink	Low	1715	343000	1710.68	342136	0
			Mid	1745	349000	949.4	189880	2198
			High	1775	355000	1770.32	354064	1
15	38	Uplink	Low	1717.5	343500	1710.66	342132	0
			Mid	1745	349000	946.88	189376	2198
			High	1772.5	354500	1765.3	353060	1
20	51	Uplink	Low	1720	344000	1710.82	342164	0
			Mid	1745	349000	944.54	188908	2198
			High	1770	354000	1760.46	352092	1
40	106	Uplink	Low	1730	346000	1710.92	342184	0
			Mid	1745	349000	934.64	186928	2198
			High	1760	352000	1740.56	348112	1

Table 4.3.1.1.1.86-3: Test frequencies for NR operating band n86 and SCS 60 kHz

Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [PRBs]
10	11	Uplink	Low	1715	343000	1711.04	342208	0
			Mid	1745	349000	158.48	31696	2198
			High	1775	355000	1770.32	354064	1
15	18	Uplink	Low	1717.5	343500	1711.02	342204	0
			Mid	1745	349000	155.96	31192	2198
			High	1772.5	354500	1765.3	353060	1
20	24	Uplink	Low	1720	344000	1711.36	342272	0
			Mid	1745	349000	153.8	30760	2198
			High	1770	354000	1760.64	352128	1
40	51	Uplink	Low	1730	346000	1711.64	342328	0
			Mid	1745	349000	144.08	28816	2198
			High	1760	352000	1740.92	348184	1

4.3.1.1.2 NR inter-band CA configurations in FR1

4.3.1.1.3 NR intra-band contiguous CA in FR1

4.3.1.1.4 NR intra-band non-contiguous CA configurations in FR1

4.3.1.1.5 NR DC configurations in FR1

4.3.1.1.5 NR Operating SUL band combinations in FR1

4.3.1.2 Test frequencies for NR operating bands in FR2

4.3.1.2.1 NR operating bands in FR2

4.3.1.2.1.1 Reference test frequencies for NR operating band n257

Table 4.3.1.2.1.1-1: Test frequencies for NR operating band n257 and SCS 60 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
50	66	Downlink & Uplink	Low	26533.98	2054732	26510.22	2054336	0	120	22388	2054683	11	8	1	8
			Mid	28002.78	2079212	27905.58	2077592	102		22473	2079163	11	8	1	110
			High	29472.24	2103703	29085.6	2097259	504		22558	2103643	0	8	1	512
100	132	Downlink & Uplink	Low	26557.74	2055128	26510.22	2054336	0	120	22388	2054683	11	8	1	8
			Mid	27998.4	2079139	27877.44	2077123	102		22471	2078587	0	0	0	102
			High	29449.92	2103331	29039.52	2096491	504		22555	2102779	0	0	0	504
200	264	Downlink & Uplink	Low	26605.26	2055920	26510.22	2054336	0	120	22388	2054683	11	8	1	8
			Mid	28004.94	2079248	27836.46	2076440	102		22469	2078011	11	8	1	110
			High	29393.76	2102395	28935.84	2094763	504		22549	2101051	0	0	0	504

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-7 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.2.1.1-2: Test frequencies for NR operating band n257 and SCS 120kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
50	32	Downlink & Uplink	Low	26532.6	2054709	26509.56	2054325	0	120	22388	2054683	11	4	1	8
			Mid	28001.4	2079189	27831.48	2076357	102		22473	2079163	11	4	1	212
			High	29471.52	2103691	28722.72	2091211	504		22558	2103643	0	4	1	1016
100	66	Downlink & Uplink	Low	26557.08	2055117	26509.56	2054325	0	120	22388	2054683	11	4	1	8
			Mid	27998.4	2079139	27804	2075899	102		22471	2078587	0	0	0	204
			High	29449.92	2103331	28676.64	2090443	504		22555	2102779	0	0	0	1008
200	132	Downlink & Uplink	Low	26604.6	2055909	26509.56	2054325	0	120	22388	2054683	11	4	1	8
			Mid	28004.28	2079237	27762.36	2075205	102		22469	2078011	11	4	1	212
			High	29393.76	2102395	28572.96	2088715	504		22549	2101051	0	0	0	1008
400	264	Downlink & Uplink	Low	26700	2057499	26509.92	2054331	0	120	22388	2054683	8	4	1	8
			Mid	28001.4	2079189	27664.44	2073573	102		22463	2076283	11	0	0	204
			High	29298.72	2100811	28382.88	2085547	504		22538	2097883	0	0	0	1008
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

4.3.1.2.1.2 Reference test frequencies for NR operating band n258

Table 4.3.1.2.1.2-1: Test frequencies for NR operating band n258 and SCS 60 kHz

Band width [MHz]	***carrier Bandwidth* [PRBs]**	**Range**		**Carrier centre [MHz]**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPointA* [ARFCN]**	***offsetToCarrier* [Carrier PRBs]**	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB* [ARFCN]**	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
50	66	Downlink & Uplink	Low	24276.06	2017100	24252.3	2016704	0	120	22257	2016955	11	0	0	0
			Mid	25877.34	2043788	25780.14	2042168	102		22350	2043739	11	8	1	110
			High	27473.52	2070391	27086.88	2063947	504		22442	2070235	0	0	0	504
100	132	Downlink & Uplink	Low	24300	2017499	24252.48	2016707	0	120	22257	2016955	8	0	0	0
			Mid	25872.96	2043715	25752	2041699	102		22348	2043163	0	0	0	102
			High	27445.44	2069923	27035.04	2063083	504		22439	2069371	0	0	0	504
200	264	Downlink & Uplink	Low	24358.86	2018480	24263.82	2016896	0	120	22258	2017243	11	8	1	8
			Mid	25879.5	2043824	25711.02	2041016	102		22346	2042587	11	8	1	110
			High	27389.28	2068987	26931.36	2061355	504		22433	2067643	0	0	0	504

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-7 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.2.1.2: Test frequencies for NR operating band n258 and SCS 120kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
50	32	Downlink & Uplink	Low	24275.04	2017083	24252	2016699	0	120	22257	2016955	8	0	0	0
			Mid	25875.96	2043765	25706.04	2040933	102		22350	2043739	11	4	1	212
			High	27472.8	2070379	26724	2057899	504		22442	2070235	0	0	0	1008
100	66	Downlink & Uplink	Low	24300	2017499	24252.48	2016707	0	120	22257	2016955	4	0	0	0
			Mid	25872.96	2043715	25678.56	2040475	102		22348	2043163	0	0	0	204
			High	27445.44	2069923	26672.16	2057035	504		22439	2069371	0	0	0	1008
200	132	Downlink & Uplink	Low	24358.2	2018469	24263.16	2016885	0	120	22258	2017243	11	4	1	8
			Mid	25878.84	2043813	25636.92	2039781	102		22346	2042587	11	4	1	212
			High	27399.96	2069165	26579.16	2055485	504		22434	2067931	7	4	1	1016
400	264	Downlink & Uplink	Low	24453.24	2020053	24263.16	2016885	0	120	22258	2017243	11	4	1	8
			Mid	25875.96	2043765	25539	2038149	102		22340	2040859	11	0	0	204
			High	27294.24	2067403	26378.4	2052139	504		22422	2064475	0	0	0	1008

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

4.3.1.2.1.3 FFS

4.3.1.2.1.4 Reference test frequencies for NR operating band n260

Table 4.3.1.2.1.4-1: Test frequencies for NR operating band n260 and SCS 60 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
50	66	Downlink & Uplink	Low	37028.7	2229644	37004.94	2229248	0	120	22995	2229499	11	0	0	0
			Mid	38498.16	2254135	38400.96	2252515	102		23080	2253979	0	0	0	102
			High	39966.96	2278615	39580.32	2272171	504		23165	2278459	0	0	0	504
100	132	Downlink & Uplink	Low	37052.46	2230040	37004.94	2229248	0	120	22995	2229499	11	0	0	0
			Mid	38498.88	2254147	38377.92	2252131	102		23079	2253691	0	8	1	110
			High	39949.98	2278332	39539.58	2271492	504		23163	2277883	7	8	1	512
200	264	Downlink & Uplink	Low	37100.04	2230833	37005	2229249	0	120	22995	2229499	10	0	0	0
			Mid	38500.02	2254166	38331.54	2251358	102		23076	2252827	5	0	0	102
			High	39900	2277499	39442.08	2269867	504		23157	2276155	0	0	0	504
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-7 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.															

Table 4.3.1.2.1.4-2: Test frequencies for NR operating band n260 and SCS 120kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
50	32	Downlink & Uplink	Low	37027.32	2229621	37004.28	2229237	0	120	22995	2229499	11	0	0	0
			Mid	38497.44	2254123	38327.52	2251291	102		23080	2253979	0	0	0	204
			High	39966.24	2278603	39217.44	2266123	504		23165	2278459	0	0	0	1008
100	66	Downlink & Uplink	Low	37051.8	2230029	37004.28	2229237	0	120	22995	2229499	11	0	0	0
			Mid	38498.88	2254147	38304.48	2250907	102		23079	2253691	0	4	1	212
			High	39949.92	2278331	39176.64	2265443	504		23163	2277883	4	4	1	1016
200	132	Downlink & Uplink	Low	37100.04	2230833	37005	2229249	0	120	22995	2229499	5	0	0	0
			Mid	38499.96	2254165	38258.04	2250133	102		23076	2252827	3	0	0	204
			High	39900	2277499	39079.2	2263819	504		23157	2276155	0	0	0	1008
400	264	Downlink & Uplink	Low	37205.88	2232597	37015.8	2229429	0	120	22996	2229787	11	4	1	8
			Mid	38501.88	2254197	38164.92	2248581	102		23071	2251387	11	4	1	212
			High	39799.2	2275819	38883.36	2260555	504		23146	2272987	0	4	1	1016

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

4.3.1.2.1.5 Reference test frequencies for NR operating band n261

Table 4.3.1.2.1.5-1: Test frequencies for NR operating band n261 and SCS 60 kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
50	66	Downlink & Uplink	Low	27536.22	2071436	27512.46	2071040	0	120	22446	2071387	11	8	1	8
			Mid	27922.8	2077879	27825.6	2076259	102		22468	2077723	0	0	0	102
			High	28320.24	2084503	27933.6	2078059	504		22491	2084347	0	0	0	504
100	132	Downlink & Uplink	Low	27559.98	2071832	27512.46	2071040	0	120	22446	2071387	11	8	1	8
			Mid	27923.52	2077891	27802.56	2075875	102		22467	2077435	0	8	1	110
			High	28292.16	2084035	27881.76	2077195	504		22488	2083483	0	0	0	504
200	264	Downlink & Uplink	Low	27607.5	2072624	27512.46	2071040	0	120	22446	2071387	11	8	1	8
			Mid	27924.96	2077915	27756.48	2075107	102		22464	2076571	0	0	0	102
			High	28247.52	2083291	27789.6	2075659	504		22483	2082043	0	8	1	512

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-7 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 4.3.1.2.1.5-2: Test frequencies for NR operating band n261 and SCS 120kHz

Band width [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
50	32	Downlink & Uplink	Low	27534.84	2071413	27511.8	2071029	0	120	22446	2071387	11	4	1	8
			Mid	27922.08	2077867	27752.16	2075035	102		22468	2077723	0	0	0	204
			High	28319.52	2084491	27570.72	2072011	504		22491	2084347	0	0	0	1008
100	66	Downlink & Uplink	Low	27559.32	2071821	27511.8	2071029	0	120	22446	2071387	11	4	1	8
			Mid	27923.52	2077891	27729.12	2074651	102		22467	2077435	0	4	1	212
			High	28292.16	2084035	27518.88	2071147	504		22488	2083483	0	0	0	1008
200	132	Downlink & Uplink	Low	27606.84	2072613	27511.8	2071029	0	120	22446	2071387	11	4	1	8
			Mid	27924.96	2077915	27683.04	2073883	102		22464	2076571	0	0	0	204
			High	28247.52	2083291	27426.72	2069611	504		22483	2082043	0	4	1	1016
400	264	Downlink & Uplink	Low	27701.88	2074197	27511.8	2071029	0	120	22446	2071387	11	4	1	8
			Mid	27926.52	2077941	27589.56	2072325	102		22459	2075131	11	4	1	212
			High	28140.96	2081515	27225.12	2066251	504		22471	2078587	0	0	0	1008

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

4.3.1.2.2 NR inter-band CA configurations in FR2

4.3.1.2.3 NR intra-band contiguous CA configurations in FR2

4.3.1.2.3.1 NR Intra-band contiguous CA configurations for CA_n257

4.3.1.2.3.1.1 CA_n257B

Table 4.3.1.2.3.1.1-1: NR Intra-Band contiguous CA configuration CA_n257B (PCC=CC1 and SCC=CC2), SCS=120 kHz.

CA channel bandwidth combination	**CC**	**Band width [MHz]**	***carrier Bandwidth [PRBs]***	**Range**		**Carrier centre [MHz] Note 2**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPoint A [ARFCN]***	***offsetToCarrier [Carrier PRBs]***	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB [ARFCN]***	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
50+400	Channel spacing CC1-CC2=FFS																
	CC1	50	32	Downlink & Uplink	Low Mid High	Same test frequencies as n257 for Low range and channel bandwidth=50 MHz in Table 4.3.1.2.1.1-2											
	CC2	400	264	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
100+400	Channel spacing CC1-CC2=FFS																
	CC1	100	66	Downlink & Uplink	Low Mid High	Same test frequencies as n257 for Low range and channel bandwidth=100 MHz in Table 4.3.1.2.1.1-2											
	CC2	400	264	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
200+400	Channel spacing CC1-CC2=FFS																
	CC1	200	132	Downlink & Uplink	Low Mid High	Same test frequencies as n257 for Low range and channel bandwidth=100 MHz in Table 4.3.1.2.1.1-2											
	CC2	400	264	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				

400+400	Channel spacing CC1-CC2=FFS																
	CC1	400	132	Downlink & Uplink	Low Mid High	Same test frequencies as n257 for Low range and channel bandwidth=100 MHz in Table 4.3.1.2.1.1-2											
	CC2	400	264	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				

4.3.1.2.3.2 NR Intra-band contiguous CA configurations for CA_n258

FFS

4.3.1.2.3.3 FFS

4.3.1.2.3.4 NR Intra-band contiguous CA configurations for CA_n260

4.3.1.2.3.4.1 CA_n260B

Table 4.3.1.2.3.4.1-1: NR Intra-Band contiguous CA configuration CA_n260B (PCC=CC1 and SCC=CC2), SCS=120 kHz.

CA channel bandwidth combination	CC	Band width [MHz]	*carrier Bandwidth [PRBs]*	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA [ARFCN]*	*offsetToCarrier [Carrier PRBs]*	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB [ARFCN]*	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
50+400	Channel spacing CC1-CC2=FFS																
	CC1	50	32	Downlink & Uplink	Low Mid High	Same test frequencies as n260 for Low range and channel bandwidth=50 MHz in Table 4.3.1.2.1.4-2											
	CC2	400	264	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
100+400	Channel spacing CC1-CC2=FFS																
	CC1	100	66	Downlink & Uplink	Low Mid High	Same test frequencies as n260 for Low range and channel bandwidth=50 MHz in Table 4.3.1.2.1.4-2											
	CC2	400	264	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				

200+400	Channel spacing CC1-CC2=FFS																
	CC1	200	132	Downlink & Uplink	Low Mid High	Same test frequencies as n260 for Low range and channel bandwidth=50 MHz in Table 4.3.1.2.1.4-2											
	CC2	400	264	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
400+400	Channel spacing CC1-CC2=FFS																
	CC1	400	264	Downlink & Uplink	Low Mid High	Same test frequencies as n260 for Low range and channel bandwidth=50 MHz in Table 4.3.1.2.1.4-2											
	CC2	400	264	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				

4.3.1.2.3.4.2 CA_n260C

FFS

4.3.1.2.3.4.3 CA_n260D

FFS

4.3.1.2.3.4.4 CA_n260E

FFS

4.3.1.2.3.4.5 CA_n260F

FFS

4.3.1.2.3.4.6 CA_n260G

FFS

4.3.1.2.3.4.7 CA_n260H

FFS

4.3.1.2.3.4.8 CA_n260I

Table 4.3.1.2.3.4.8-1: NR Intra-Band contiguous CA configuration CA_n260I (PCC=CC1, SCC=CC2-CC4), SCS=120 kHz.

CA channel bandwidth combination	CC	Bandwidth [MHz]	*carrierBandwidth [PRBs]*	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA [ARFCN]*	*offsetToCarrier [Carrier PRBs]*	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB [ARFCN]*	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
50+100+100+100	Channel spacing CC1-CC2=FFS MHz, CC2-CC3, CC3-CC4=FFS MHz																
	CC1	50	32	Downlink & Uplink	Low Mid High	Same test frequencies as n260 for Low range and channel bandwidth=50 MHz in Table 4.3.1.2.1.4-2											
	CC2	100	66	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
	CC3	100	66	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
	CC4	100	66	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
100+100+100+50	Channel spacing CC1-CC2, CC2-CC3=FFS MHz, CC3-CC4=FFS MHz																
	CC1	100	66	Downlink & Uplink	Low Mid High	Same test frequencies as n260 for Low range and channel bandwidth=50 MHz in Table 4.3.1.2.1.4-2											
	CC2	100	66	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
	CC3	100	66	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
	CC4	50	32	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
100+100+100+100	Channel spacing CC1-CC2, CC2-CC3, CC3-CC4=FFS MHz																
	CC1	100	66	Downlink & Uplink	Low Mid High	Same test frequencies as n260 for Low range and channel bandwidth=50 MHz in Table 4.3.1.2.1.4-2											
	CC2	100	66	Downlink & Uplink	Low Mid High	Same test frequencies as for CC2 in CC combination 100+100+100+100											

	CC3	100	66	Downlink & Uplink	Low Mid High	Same test frequencies as for CC3 in CC combination 100+100+100+100											
	CC4	100	66	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				

4.3.1.2.3.5 NR Intra-band contiguous CA configurations for CA_n261

4.3.1.2.3.5.1 CA_n261B

Table 4.3.1.2.3.5.1-1: NR Intra-Band contiguous CA configuration CA_n261B (PCC=CC1 and SCC=CC2), SCS=120 kHz.

CA channel bandwidth combination	CC	Band width [MHz]	*carrier Bandwidth [PRBs]*	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA [ARFCN]*	*offsetToCarrier [Carrier PRBs]*	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB [ARFCN]*	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
50+400	Channel spacing CC1-CC2=FFS																
	CC1	50	32	Downlink & Uplink	Low Mid High	Same test frequencies as n261 for Low range and channel bandwidth=50 MHz in Table 4.3.1.2.1.5-2											
	CC2	400	264	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
100+400	Channel spacing CC1-CC2=FFS																
	CC1	100	66	Downlink & Uplink	Low Mid High	Same test frequencies as n261 for Low range and channel bandwidth=100 MHz in Table 4.3.1.2.1.5-2											
	CC2	400	264	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
200+400	Channel spacing CC1-CC2=FFS																
	CC1	200	132	Downlink & Uplink	Low Mid High	Same test frequencies as n261 for Low range and channel bandwidth=200 MHz in Table 4.3.1.2.1.5-2											
	CC2	400	264	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				

400+400	Channel spacing CC1-CC2=FFS																
	CC1	400	264	Downlink & Uplink	Low Mid High	Same test frequencies as n261 for Low range and channel bandwidth=400 MHz in Table 4.3.1.2.1.5-2											
	CC2	400	264	Downlink & Uplink	Low	FFS	FFS	FFS	FFS	FFS	120	FFS	FFS				
					Mid	FFS	FFS	FFS	FFS	FFS		FFS	FFS				
					High	FFS	FFS	FFS	FFS	FFS		FFS	FFS				

4.3.1.2.4 NR intra-band non-contiguous CA configurations in FR2

4.3.1.2.4.1 NR Intra-band non-contiguous CA configurations for CA_n257

4.3.1.2.4.2 NR Intra-band non-contiguous CA configurations for CA_n258

4.3.1.2.4.3 FFS

4.3.1.2.4.4 NR Intra-band non-contiguous CA configurations for CA_n260

4.3.1.2.4.4.1 CA_n260(XA)

Editor's note: This clause is reserved for test frequencies for CA_n260(XA) configurations where x is >= 2, e.g. CA_n260(2A), CA_n260(3A) and CA_n260(4A)

4.3.1.2.4.4.2: CA_n260(A-I)Table 4.3.1.2.4.4.2-1: NR Intra-Band non-contiguous CA configuration CA_n260(A-I), SCS=120 kHz, Max Wgap.

CA channel bandwidth combination	**CC**	**Bandwidth [MHz]**	***carrierBandwidth [PRBs]***	**Range**		**Carrier centre [MHz] Note 2**	**Carrier centre [ARFCN]**	**point A [MHz]**	***absoluteFrequencyPointA [ARFCN]***	***offsetToCarrier [Carrier PRBs]***	**SS block SCS [kHz]**	**GSCN**	***absoluteFrequencySSB [ARFCN]***	k_{SSB}	**CORESET#0 Offset [RBs] Note 1**	**CORESET#0 Index Note 1**	**offsetToPointA (SIB1) [PRBs] Note 1**
CA_n260(A-I); A (400MHz) - I (350-400MHz)																	
400, 50+100+ 100+100	CC1	400	264	Downlink & Uplink	Max Wgap	Same test frequencies as n260 for Low range and channel bandwidth=400 MHz in Table 4.3.1.2.1.4-2.											
	CC2	50	32			Same test frequencies as for CA_n260I for High range and channel bandwidth combination 50+100+100+100 in Table 4.3.1.2.3.4.8-1.											
	CC3	100	66														
	CC4	100	66														
	CC5	100	66														
	CC1	400	264	Downlink &	Max Wgap	Same test frequencies as n260 for Low range and channel bandwidth=400 MHz in Table 4.3.1.2.1.4-2.											
	CC2	100	66														

400, 100+100+ 100+50	CC3	100	66	Uplink		Same test frequencies as for CA_n260I for High range and channel bandwidth combination 100+100+100+50 in Table 4.3.1.2.3.4.8-1.
	CC4	100	66			
	CC5	50	32			
400, 100+100+ 100+100	CC1	400	264	Downlink & Uplink	Max Wgap	Same test frequencies as n260 for Low range and channel bandwidth=400 MHz in Table 4.3.1.2.1.4-2.
	CC2	100	66			Same test frequencies as for CA_n260I for High range and channel bandwidth combination 100+100+100+100 in Table 4.3.1.2.3.4.8-1.
	CC3	100	66			
	CC4	100	66			
	CC5	100	66			
CA_n260(A-I); I (350-400MHz) – A (400MHz)						
50+100+ 100+100, 400	CC1	50	32	Downlink & Uplink	Max Wgap	Same test frequencies as CA_n260I for Low range and channel bandwidth combination 50+100+100+100 in Table 4.3.1.2.3.4.8-1.
	CC2	100	66			
	CC3	100	66			
	CC4	100	66			
	CC5	400	264			Same test frequencies as for n260 for High range and channel bandwidth=400 MHz in Table 4.3.1.2.1.4-2.
100+100+ 100+50, 400	CC1	100	66	Downlink & Uplink	Max Wgap	Same test frequencies as for CA_n260I for Low range and channel bandwidth combination 100+100+100+50 in Table 4.3.1.2.3.4.8-1.
	CC2	100	66			
	CC3	100	66			
	CC4	50	32			
	CC5	400	264			Same test frequencies as for n260 for High range and channel bandwidth=400 MHz in Table 4.3.1.2.1.4-2.
100+100+ 100+100, 400	CC1	100	66	Downlink & Uplink	Max Wgap	Same test frequencies as for CA_n260I for Low range and channel bandwidth combination 100+100+100+100 in Table 4.3.1.2.3.4.8-1.
	CC2	100	66			
	CC3	100	66			
	CC4	100	66			
	CC5	400	264			Same test frequencies as for n260 for High range and channel bandwidth=400 MHz in Table 4.3.1.2.1.4-2.

4.3.1.3 Test frequencies for NR band combinations between FR1 and FR2

4.3.1.3.1 NR inter-band CA configurations between FR1 and FR2

4.3.1.3.2 NR DC configurations between FR1 and FR2

4.3.1.4 Test frequencies for EN-DC band combinations with NR FR1

4.3.1.4.1 Inter-band EN-DC configurations with NR FR1

4.3.1.4.1.1 General

For inter-band EN-DC configurations as listed in this sub-clause and Table 4.3.1.3.2.0-7, the following apply:

For the E-UTRA band and E-UTRA CA configurations, test frequencies as specified in TS 36.508 [2], clause 4.3.1 are used.

For the NR band and NR CA configurations, test frequencies as specified in clause 4.3.1 are used.

For the secondary NR band in inter-band signalling test cases, the band selected is based on the subset of NR bands supported within the EN-DC configuration specified in Table 4.3.1.3.2.0-1(FR1) and Table 4.3.1.3.2.0-7 (FR2).

4.3.1.4.1.2 Inter-band EN-DC configurations with NR FR1 (two bands)

Table 4.3.1.4.1.2-1: Inter-band EN-DC configurations (FR1, two bands)

EN-DC configuration	Uplink EN-DC configuration	E-UTRA configuration	NR configuration
DC_1A_n28A	DC_1A_n28A	1A	n28A
DC_1A_n77A	DC_1A_n77A	1A	n77A
DC_1A_n78A	DC_1A_n78A	1A	n78A
DC_1A_n79A	DC_1A_n79A	1A	n79A
DC_3A_n77A	DC_3A_n77A	3A	n77A
DC_3A_n78A	DC_3A_n78A	3A	n78A
DC_3A_n79A	DC_3A_n79A	3A	n79A
DC_19A_n77A	DC_19A_n77A	19A	n77A
DC_19A_n78A	DC_19A_n78A	19A	n78A
DC_19A_n79A	DC_19A_n79A	19A	n79A
DC_20A_n78A	DC_20A_n78A	20A	n78A
DC_21A_n77A	DC_21A_n77A	21A	n77A
DC_21A_n78A	DC_21A_n78A	21A	n78A
DC_21A_n79A	DC_21A_n79A	21A	n79A
DC_25A_n41A	DC_25A_n41A	25A	n41A
DC_28A_n77A	DC_28A_n77A	28A	n77A
DC_28A_n78A	DC_28A_n78A	28A	n78A
DC_28A_n79A	DC_28A_n79A	28A	n79A
DC_39A_n79A	DC_39A_n79A	39A	n79A
DC_41A_n79A	DC_41A_n79A	41A	n79A

4.3.1.4.1.3 Inter-band EN-DC configurations with NR FR1 (three bands)

Table 4.3.1.4.1.3-1: Inter-band EN-DC configurations (FR1, three bands)

EN-DC configuration	Uplink EN-DC configuration	E-UTRA configuration	NR configuration
FFS	FFS	FFS	FFS

4.3.1.4.1.4 Inter-band EN-DC configurations with NR FR1 (four bands)

Table 4.3.1.4.1.4-1: Inter-band EN-DC configurations (FR1, four bands)

EN-DC configuration	Uplink EN-DC configuration	E-UTRA configuration	NR configuration
FFS	FFS	FFS	FFS

4.3.1.4.1.5 Inter-band EN-DC configurations with NR FR1 (five bands)

Table 4.3.1.4.1.5-1: Inter-band EN-DC configurations (FR1, five bands)

EN-DC configuration	Uplink EN-DC configuration	E-UTRA configuration	NR configuration
FFS	FFS	FFS	FFS

4.3.1.4.1.6 Inter-band EN-DC configurations with NR FR1 (six bands)

Table 4.3.1.4.1.6-1: Inter-band EN-DC configurations (FR1, six bands)

EN-DC configuration	Uplink EN-DC configuration	E-UTRA configuration	NR configuration
FFS	FFS	FFS	FFS

4.3.1.4.2 Intra-band contiguous EN-DC configurations with NR FR1

4.3.1.4.2.1 – 4.3.1.4.2.40 FFS

4.3.1.4.2.41 Intra-band contiguous EN-DC configurations DC_(n)41

4.3.1.4.2.41.1 DC_(n)41AA

Table 4.3.1.4.2.41.1-1: EN-DC combination DC_(n)41AA, intra-band contiguous, SCS 15 kHz, 15 kHz NR raster, NR CC at the band edges

EN-DC channel bandwidth combination	CC	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
E-UTRA: 5MHz + NR: 10MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2508.600	39776	-	-	-	-	-	-	-	-	-	-
					Mid	2598.000	40670	-	-	-	-	-	-	-	-	-	-
					High	2677.500	41465	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	52	Downlink & Uplink	Low	2501.100	500220	2496.42	499284	0	15	6246	500220	22	0	0	0
					Mid	2590.500	518100	2567.46	513492	102		6471	518100	14	4	2	106
					High	2685.000	537000	2589.6	517920	504		6705	537000	2	0	0	504
E-UTRA: 5MHz + NR: 15MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2513.700	39827	-	-	-	-	-	-	-	-	-	-
					Mid	2600.400	40694	-	-	-	-	-	-	-	-	-	-
					High	2672.400	41414	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	79	Downlink & Uplink	Low	2503.695	500739	2496.585	499317	0	15	6246	500739	11	0	0	0
					Mid	2590.395	518079	2564.925	512985	102		6465	518079	23	4	2	106
					High	2682.405	536481	2584.575	516915	504		6693	536481	17	0	0	504
E-UTRA: 5MHz + NR: 20MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2518.500	39875	-	-	-	-	-	-	-	-	-	-
					Mid	2603.100	40721	-	-	-	-	-	-	-	-	-	-
					High	2667.300	41363	-	-	-	-	-	-	-	-	-	-
	NR CC1	20	106	Downlink & Uplink	Low	2506.005	501201	2496.465	499293	0	15	6246	501201	19	0	0	0
					Mid	2590.605	518121	2562.705	512541	102		6459	518121	11	4	2	106
					High	2679.795	535959	2579.535	515907	504		6681	535959	9	2	1	506
E-UTRA: 5MHz + NR: 40MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2538.600	40076	-	-	-	-	-	-	-	-	-	-
					Mid	2613.000	40820	-	-	-	-	-	-	-	-	-	-
					High	2647.500	41165	-	-	-	-	-	-	-	-	-	-
	NR CC1	40	216	Downlink & Uplink	Low	2516.100	503220	2496.66	499332	0	15	6246	503220	6	0	0	0
					Mid	2590.500	518100	2552.7	510540	102		6432	518100	6	0	0	102
					High	2670.000	534000	2559.84	511968	504		6633	534000	18	4	2	508
E-UTRA: 5MHz + NR: 50MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2548.500	40175	-	-	-	-	-	-	-	-	-	-
					Mid	2618.100	40871	-	-	-	-	-	-	-	-	-	-
					High	2637.300	41063	-	-	-	-	-	-	-	-	-	-
	NR CC1	50	270	Downlink & Uplink	Low	2521.005	504201	2496.705	499341	0	15	6246	504201	3	0	0	0
					Mid	2590.605	518121	2547.945	509589	102		6420	518121	3	0	0	102
					High	2664.795	532959	2549.775	509955	504		6606	532959	17	0	0	504
E-UTRA: 10MHz + NR: 10MHz	E-UTRA CC1	10	50	Downlink & Uplink	Low	2511.300	39803	-	-	-	-	-	-	-	-	-	-
					Mid	2598.000	40670	-	-	-	-	-	-	-	-	-	-
					High	2674.800	41438	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	52	Downlink & Uplink	Low	2501.295	500259	2496.615	499323	0	15	6246	500259	9	0	0	0
					Mid	2587.995	517599	2564.955	512991	102		6465	517599	21	4	2	106
					High	2684.805	536961	2589.405	517881	504		6705	536961	15	0	0	504
E-UTRA: 10MHz + NR: 15MHz	E-UTRA CC1	10	50	Downlink & Uplink	Low	2516.100	39851	-	-	-	-	-	-	-	-	-	-
					Mid	2600.700	40697	-	-	-	-	-	-	-	-	-	-
					High	2670.000	41390	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	79	Downlink & Uplink	Low	2503.605	500721	2496.495	499299	0	15	6246	500721	17	0	0	0
					Mid	2588.205	517641	2562.735	512547	102		6459	517641	9	4	2	106
					High	2682.495	536499	2584.665	516933	504		6693	536499	11	0	0	504

E-UTRA:	E-UTRA	10	50	Downlink	Low	2521.200	39902	-	-	-	-	-	-	-	-	-	-
10MHz + NR:	CC1			&	Mid	2603.100	40721	-	-	-	-	-	-	-	-	-	-
20MHz				Uplink	High	2664.900	41339	-	-	-	-	-	-	-	-	-	-
	NR	20	106	Downlink	Low	2506.200	501240	2496.66	499332	0	15	6246	501240	6	0	0	0
	CC1			&	Mid	2588.100	517620	2560.2	512040	102		6453	517620	18	4	2	106
				Uplink	High	2679.900	535980	2579.64	515928	504		6681	535980	2	2	1	506
E-UTRA:	E-UTRA	10	50	Downlink	Low	2541.600	40106	-	-	-	-	-	-	-	-	-	-
10MHz + NR:	CC1			&	Mid	2613.000	40820	-	-	-	-	-	-	-	-	-	-
40MHz				Uplink	High	2644.500	41135	-	-	-	-	-	-	-	-	-	-
	NR	40	216	Downlink	Low	2516.595	503319	2497.155	499431	0	15	6249	503319	5	4	2	4
	CC1			&	Mid	2587.995	517599	2550.195	510039	102		6426	517599	13	0	0	102
				Uplink	High	2669.505	533901	2559.345	511869	504		6630	533901	19	0	0	504
E-UTRA:	E-UTRA	10	50	Downlink	Low	2551.200	40202	-	-	-	-	-	-	-	-	-	-
10MHz + NR:	CC1			&	Mid	2618.100	40871	-	-	-	-	-	-	-	-	-	-
50MHz				Uplink	High	2634.900	41039	-	-	-	-	-	-	-	-	-	-
	NR	50	270	Downlink	Low	2521.200	504240	2496.9	499380	0	15	6249	504240	22	4	2	4
	CC1			&	Mid	2588.100	517620	2545.44	509088	102		6414	517620	10	0	0	102
				Uplink	High	2664.900	532980	2549.88	509976	504		6606	532980	10	0	0	504
E-UTRA:	E-UTRA	15	75	Downlink	Low	2513.700	39827	-	-	-	-	-	-	-	-	-	-
15MHz + NR:	CC1			&	Mid	2598.300	40673	-	-	-	-	-	-	-	-	-	-
10MHz				Uplink	High	2672.400	41414	-	-	-	-	-	-	-	-	-	-
	NR	10	52	Downlink	Low	2501.205	500241	2496.525	499305	0	15	6246	500241	15	0	0	0
	CC1			&	Mid	2585.805	517161	2562.765	512553	102		6459	517161	7	4	2	106
				Uplink	High	2684.895	536979	2589.495	517899	504		6705	536979	9	0	0	504
E-UTRA:	E-UTRA	15	75	Downlink	Low	2518.500	39875	-	-	-	-	-	-	-	-	-	-
15MHz + NR:	CC1			&	Mid	2600.400	40694	-	-	-	-	-	-	-	-	-	-
15MHz				Uplink	High	2667.300	41363	-	-	-	-	-	-	-	-	-	-
	NR	15	79	Downlink	Low	2503.500	500700	2496.39	499278	0	15	6246	500700	0	2	1	2
	CC1			&	Mid	2585.400	517080	2559.93	511986	102		6450	517080	4	0	0	102
				Uplink	High	2682.300	536460	2584.47	516894	504		6693	536460	0	2	1	506
E-UTRA:	E-UTRA	15	75	Downlink	Low	2523.600	39926	-	-	-	-	-	-	-	-	-	-
15MHz + NR:	CC1			&	Mid	2603.400	40724	-	-	-	-	-	-	-	-	-	-
20MHz				Uplink	High	2662.200	41312	-	-	-	-	-	-	-	-	-	-
	NR	20	106	Downlink	Low	2506.095	501219	2496.555	499311	0	15	6246	501219	13	0	0	0
	CC1			&	Mid	2585.895	517179	2557.995	511599	102		6447	517179	5	4	2	106
				Uplink	High	2679.705	535941	2579.445	515889	504		6681	535941	15	2	1	506
E-UTRA:	E-UTRA	15	75	Downlink	Low	2544.000	40130	-	-	-	-	-	-	-	-	-	-
15MHz + NR:	CC1			&	Mid	2613.000	40820	-	-	-	-	-	-	-	-	-	-
40MHz				Uplink	High	2642.100	41111	-	-	-	-	-	-	-	-	-	-
	NR	40	216	Downlink	Low	2516.505	503301	2497.065	499413	0	15	6249	503301	11	4	2	4
	CC1			&	Mid	2585.505	517101	2547.705	509541	102		6420	517101	19	0	0	102
				Uplink	High	2669.595	533919	2559.435	511887	504		6630	533919	13	0	0	504
E-UTRA:	E-UTRA	15	75	Downlink	Low	2553.900	40229	-	-	-	-	-	-	-	-	-	-
15MHz + NR:	CC1			&	Mid	2618.100	40871	-	-	-	-	-	-	-	-	-	-
50MHz				Uplink	High	2632.200	41012	-	-	-	-	-	-	-	-	-	-
	NR	50	270	Downlink	Low	2521.395	504279	2497.095	499419	0	15	6249	504279	9	4	2	4
	CC1			&	Mid	2585.595	517119	2542.935	508587	102		6408	517119	17	0	0	102
				Uplink	High	2664.705	532941	2549.685	509937	504		6606	532941	23	0	0	504
E-UTRA:	E-UTRA	20	100	Downlink	Low	2516.100	39851	-	-	-	-	-	-	-	-	-	-
20MHz + NR:	CC1			&	Mid	2598.000	40670	-	-	-	-	-	-	-	-	-	-
10MHz				Uplink	High	2670.000	41390	-	-	-	-	-	-	-	-	-	-
	NR	10	52	Downlink	Low	2501.100	500220	2496.42	499284	0	15	6246	500220	22	0	0	0
	CC1			&	Mid	2583.000	516600	2559.96	511992	102		6450	516600	2	0	0	102
				Uplink	High	2685.000	537000	2589.6	517920	504		6705	537000	2	0	0	504
	E-UTRA	20	100	Downlink	Low	2521.200	39902	-	-	-	-	-	-	-	-	-	-
	CC1			&	Mid	2600.400	40694	-	-	-	-	-	-	-	-	-	-

				Uplink	High	2664.900	41339	-	-	-	-	-	-	-	-	-	-
E-UTRA: 20MHz + NR: 15MHz	NR CC1	15	79	Downlink & Uplink	Low	2503.695	500739	2496.585	499317	0	15	6246	500739	11	0	0	0
					Mid	2582.895	516579	2557.425	511485	102		6444	516579	11	0	0	102
					High	2682.405	536481	2584.575	516915	504		6693	536481	17	0	0	504
E-UTRA: 20MHz + NR: 20MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2526.000	39950	-	-	-	-	-	-	-	-	-	-
					Mid	2603.400	40724	-	-	-	-	-	-	-	-	-	-
					High	2659.800	41288	-	-	-	-	-	-	-	-	-	-
	NR CC1	20	106	Downlink & Uplink	Low	2506.005	501201	2496.465	499293	0	15	6246	501201	19	0	0	0
					Mid	2583.405	516681	2555.505	511101	102		6441	516681	11	4	2	106
					High	2679.795	535959	2579.535	515907	504		6681	535959	9	2	1	506
E-UTRA: 20MHz + NR: 40MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2546.100	40151	-	-	-	-	-	-	-	-	-	-
					Mid	2613.000	40820	-	-	-	-	-	-	-	-	-	-
					High	2640.000	41090	-	-	-	-	-	-	-	-	-	-
	NR CC1	40	216	Downlink & Uplink	Low	2516.100	503220	2496.66	499332	0	15	6246	503220	6	0	0	0
					Mid	2583.000	516600	2545.2	509040	102		6414	516600	2	2	1	104
					High	2670.000	534000	2559.84	511968	504		6633	534000	18	4	2	508
E-UTRA: 20MHz + NR: 50MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2556.000	40250	-	-	-	-	-	-	-	-	-	-
					Mid	2618.100	40871	-	-	-	-	-	-	-	-	-	-
					High	2629.800	40988	-	-	-	-	-	-	-	-	-	-
	NR CC1	50	270	Downlink & Uplink	Low	2521.005	504201	2496.705	499341	0	15	6246	504201	3	0	0	0
					Mid	2583.105	516621	2540.445	508089	102		6402	516621	23	0	0	102
					High	2664.795	532959	2549.775	509955	504		6606	532959	17	0	0	504

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch. ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The nominal carrier spacing between the E-UTRA and the NR carriers is set in accordance to TS 38.101-3 [9], clause 5.4B1.

Table 4.3.1.4.2.41.1-1A: EN-DC combination DC_(n)41AA, intra-band contiguous, SCS 15 kHz, 15 kHz NR raster, E-UTRA CC at the band edges.

EN-DC channel bandwidth combination	CC	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
E-UTRA: 20MHz + NR: 40MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2506.200	39752	-	-	-	-	-	-	-	-	-	-
					Mid	2613.000	40820	-	-	-	-	-	-	-	-	-	-
					High	2679.900	41489	-	-	-	-	-	-	-	-	-	-
	NR CC1	40	216	Downlink & Uplink	Low	2536.200	507240	2516.76	503352	0	15	6297	507240	2	2	1	2
					Mid	2583.000	516600	2545.2	509040	102		6414	516600	2	2	1	104
					High	2649.900	529980	2539.74	507948	504		6582	529980	22	2	1	506

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch. ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The nominal carrier spacing between the E-UTRA and the NR carriers is set in accordance to TS 38.101-3 [9], clause 5.4B1.

Table 4.3.1.4.2.41.1-2: EN-DC combination DC_(n)41AA, intra-band contiguous, SCS 30 kHz, 30 kHz NR raster, NR CC at the band edges

EN-DC channel bandwidth combination	CC	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
E-UTRA: 5MHz + NR: 10MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2508.600	39776	-	-	-	-	-	-	-	-	-	-
					Mid	2598.000	40670	-	-	-	-	-	-	-	-	-	-
					High	2677.500	41465	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	24	Downlink & Uplink	Low	2501.100	500220	2496.78	499356	0	30	6252	500220	14	1	1	2
					Mid	2590.500	518100	2549.46	509892	102		6477	518100	6	3	3	210
					High	2685.000	537000	2499.24	499848	504		6711	537000	18	0	0	1008
E-UTRA: 5MHz + NR: 15MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2513.700	39827	-	-	-	-	-	-	-	-	-	-
					Mid	2600.400	40694	-	-	-	-	-	-	-	-	-	-
					High	2672.400	41414	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	38	Downlink & Uplink	Low	2503.710	500742	2496.87	499374	0	30	6252	500742	8	1	1	2
					Mid	2590.410	518082	2546.85	509370	102		6468	518082	12	0	0	204
					High	2682.390	536478	2494.11	498822	504		6699	536478	16	1	1	1010
E-UTRA: 5MHz + NR: 20MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2518.800	39878	-	-	-	-	-	-	-	-	-	-
					Mid	2603.100	40721	-	-	-	-	-	-	-	-	-	-
					High	2667.300	41363	-	-	-	-	-	-	-	-	-	-
	NR CC1	20	51	Downlink & Uplink	Low	2506.290	501258	2497.11	499422	0	30	6252	501258	16	0	0	0
					Mid	2590.590	518118	2544.69	508938	102		6465	518118	4	3	3	210
					High	2679.810	535962	2489.19	497838	504		6687	535962	0	2	2	1012
E-UTRA: 5MHz + NR: 40MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2538.600	40076	-	-	-	-	-	-	-	-	-	-
					Mid	2613.000	40820	-	-	-	-	-	-	-	-	-	-
					High	2647.500	41165	-	-	-	-	-	-	-	-	-	-
	NR CC1	40	106	Downlink & Uplink	Low	2516.100	503220	2497.02	499404	0	30	6252	503220	22	0	0	0
					Mid	2590.500	518100	2534.7	506940	102		6438	518100	22	0	0	204
					High	2670.000	534000	2469.48	493896	504		6636	534000	2	0	0	1008
E-UTRA: 5MHz + NR: 50MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2548.800	40178	-	-	-	-	-	-	-	-	-	-
					Mid	2618.100	40871	-	-	-	-	-	-	-	-	-	-
					High	2637.300	41063	-	-	-	-	-	-	-	-	-	-
	NR CC1	50	133	Downlink & Uplink	Low	2521.290	504258	2497.35	499470	0	30	6252	504258	0	0	0	0
					Mid	2590.590	518118	2529.93	505986	102		6426	518118	20	0	0	204
					High	2664.810	532962	2459.43	491886	504		6612	532962	8	1	1	1010
E-UTRA: 5MHz + NR: 60MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2558.700	40277	-	-	-	-	-	-	-	-	-	-
					Mid	2622.900	40919	-	-	-	-	-	-	-	-	-	-
					High	2627.400	40964	-	-	-	-	-	-	-	-	-	-

	NR	60	162	Downlink	Low	2526.210	505242	2497.05	499410	0	30	6252	505242	20	0	0	0
	CC1			&	Mid	2590.410	518082	2524.53	504906	102		6414	518082	12	2	2	208
				Uplink	High	2659.890	531978	2449.29	489858	504		6588	531978	20	2	2	1012
E-UTRA: 5MHz + NR: 80MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2578.800	40478	-	-	-	-	-	-	-	-	-	-
					Mid	2633.100	41021	-	-	-	-	-	-	-	-	-	-
					High	2607.300	40763	-	-	-	-	-	-	-	-	-	-
	NR	80	217	Downlink	Low	2536.290	507258	2497.23	499446	0	30	6252	507258	8	0	0	0
	CC1			&	Mid	2590.590	518118	2514.81	502962	102		6390	518118	20	2	2	208
				Uplink	High	2649.810	529962	2429.31	485862	504		6537	529962	16	1	1	1010
E-UTRA: 5MHz + NR: 90MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2588.700	40577	-	-	-	-	-	-	-	-	-	-
					Mid	2637.900	41069	-	-	-	-	-	-	-	-	-	-
					High	2597.400	40664	-	-	-	-	-	-	-	-	-	-
	NR	90	245	Downlink	Low	2541.210	508242	2497.11	499422	0	30	6252	508242	16	0	0	0
	CC1			&	Mid	2590.410	518082	2509.59	501918	102		6375	518082	16	0	0	204
				Uplink	High	2644.890	528978	2419.35	483870	504		6513	528978	16	2	2	1012
E-UTRA: 5MHz + NR: 100MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2598.600	40676	-	-	-	-	-	-	-	-	-	-
					Mid	2643.000	41120	-	-	-	-	-	-	-	-	-	-
					High	2587.500	40565	-	-	-	-	-	-	-	-	-	-
	NR	100	273	Downlink	Low	2546.100	509220	2496.96	499392	0	30	6252	509220	2	1	1	2
	CC1			&	Mid	2590.500	518100	2504.64	500928	102		6363	518100	2	1	1	206
				Uplink	High	2640.000	528000	2409.42	481884	504		6486	528000	6	0	0	1008
E-UTRA: 10MHz + NR: 10MHz	E-UTRA CC1	10	50	Downlink & Uplink	Low	2511.000	39800	-	-	-	-	-	-	-	-	-	-
					Mid	2598.000	40670	-	-	-	-	-	-	-	-	-	-
					High	2674.800	41438	-	-	-	-	-	-	-	-	-	-
	NR	10	24	Downlink	Low	2501.010	500202	2496.69	499338	0	30	6252	500202	20	1	1	2
	CC1			&	Mid	2588.010	517602	2546.97	509394	102		6468	517602	4	0	0	204
				Uplink	High	2684.790	536958	2499.03	499806	504		6711	536958	8	1	1	1010
E-UTRA: 10MHz + NR: 15MHz	E-UTRA CC1	10	50	Downlink & Uplink	Low	2516.100	39851	-	-	-	-	-	-	-	-	-	-
					Mid	2600.400	40694	-	-	-	-	-	-	-	-	-	-
					High	2669.700	41387	-	-	-	-	-	-	-	-	-	-
	NR	15	38	Downlink	Low	2503.590	500718	2496.75	499350	0	30	6252	500718	16	1	1	2
	CC1			&	Mid	2587.890	517578	2544.33	508866	102		6462	517578	20	0	0	204
				Uplink	High	2682.210	536442	2493.93	498786	504		6699	536442	4	2	2	1012
E-UTRA: 10MHz + NR: 20MHz	E-UTRA CC1	10	50	Downlink & Uplink	Low	2521.200	39902	-	-	-	-	-	-	-	-	-	-
					Mid	2603.100	40721	-	-	-	-	-	-	-	-	-	-
					High	2664.900	41339	-	-	-	-	-	-	-	-	-	-
	NR	20	51	Downlink	Low	2506.200	501240	2497.02	499404	0	30	6252	501240	22	0	0	0

	CC1			&	Mid	2588.100	517620	2542.2	508440	102		6456	517620	2	0	0	204
				Uplink	High	2679.900	535980	2489.28	497856	504		6687	535980	18	1	1	1010
E-UTRA: 10MHz + NR: 40MHz	E-UTRA CC1	10	50	Downlink	Low	2541.000	40100	-	-	-	-	-	-	-	-	-	-
				&	Mid	2613.000	40820	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2644.800	41138	-	-	-	-	-	-	-	-	-	-
	NR	40	106	Downlink	Low	2516.010	503202	2496.93	499386	0	30	6252	503202	4	1	1	2
	CC1			&	Mid	2588.010	517602	2532.21	506442	102		6432	517602	4	1	1	206
				Uplink	High	2669.790	533958	2469.27	493854	504		6636	533958	16	0	0	1008
E-UTRA: 10MHz + NR: 50MHz	E-UTRA CC1	10	50	Downlink	Low	2551.200	40202	-	-	-	-	-	-	-	-	-	-
				&	Mid	2618.100	40871	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2634.900	41039	-	-	-	-	-	-	-	-	-	-
	NR	50	133	Downlink	Low	2521.200	504240	2497.26	499452	0	30	6252	504240	6	0	0	0
	CC1			&	Mid	2588.100	517620	2527.44	505488	102		6420	517620	2	1	1	206
				Uplink	High	2664.900	532980	2459.52	491904	504		6612	532980	2	1	1	1010
E-UTRA: 10MHz + NR: 60MHz	E-UTRA CC1	10	50	Downlink	Low	2561.100	40301	-	-	-	-	-	-	-	-	-	-
				&	Mid	2622.900	40919	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2624.700	40937	-	-	-	-	-	-	-	-	-	-
	NR	60	162	Downlink	Low	2526.090	505218	2496.93	499386	0	30	6252	505218	4	1	1	2
	CC1			&	Mid	2587.890	517578	2522.01	504402	102		6408	517578	20	2	2	208
				Uplink	High	2659.710	531942	2449.11	489822	504		6585	531942	0	0	0	1008
E-UTRA: 10MHz + NR: 80MHz	E-UTRA CC1	10	50	Downlink	Low	2581.200	40502	-	-	-	-	-	-	-	-	-	-
				&	Mid	2633.100	41021	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2604.900	40739	-	-	-	-	-	-	-	-	-	-
	NR	80	217	Downlink	Low	2536.200	507240	2497.14	499428	0	30	6252	507240	14	0	0	0
	CC1			&	Mid	2588.100	517620	2512.32	502464	102		6384	517620	2	3	3	210
				Uplink	High	2649.900	529980	2429.4	485880	504		6537	529980	10	1	1	1010
E-UTRA: 10MHz + NR: 90MHz	E-UTRA CC1	10	50	Downlink	Low	2591.100	40601	-	-	-	-	-	-	-	-	-	-
				&	Mid	2637.900	41069	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2594.700	40637	-	-	-	-	-	-	-	-	-	-
	NR	90	245	Downlink	Low	2541.090	508218	2496.99	499398	0	30	6252	508218	0	1	1	2
	CC1			&	Mid	2587.890	517578	2507.07	501414	102		6369	517578	0	1	1	206
				Uplink	High	2644.710	528942	2419.17	483834	504		6513	528942	4	3	3	1014
E-UTRA: 10MHz + NR: 100MHz	E-UTRA CC1	10	50	Downlink	Low	2601.000	40700	-	-	-	-	-	-	-	-	-	-
				&	Mid	2643.000	41120	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2584.800	40538	-	-	-	-	-	-	-	-	-	-
	NR	100	273	Downlink	Low	2546.010	509202	2496.87	499374	0	30	6252	509202	8	1	1	2
	CC1			&	Mid	2588.010	517602	2502.15	500430	102		6357	517602	8	1	1	206

				Uplink	High	2639.790	527958	2409.21	481842	504		6486	527958	20	0	0	1008
E-UTRA: 15MHz + NR: 10MHz	E-UTRA CC1	15	75	Downlink	Low	2513.700	39827	-	-	-	-	-	-	-	-	-	-
				&	Mid	2598.000	40670	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2672.400	41414	-	-	-	-	-	-	-	-	-	-
	NR	10	24	Downlink	Low	2501.190	500238	2496.87	499374	0	30	6252	500238	8	1	1	2
	CC1			&	Mid	2585.490	517098	2544.45	508890	102		6462	517098	12	0	0	204
				Uplink	High	2684.910	536982	2499.15	499830	504		6711	536982	0	1	1	1010
E-UTRA: 15MHz + NR: 15MHz	E-UTRA CC1	15	75	Downlink	Low	2518.500	39875	-	-	-	-	-	-	-	-	-	-
				&	Mid	2600.400	40694	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2667.300	41363	-	-	-	-	-	-	-	-	-	-
	NR	15	38	Downlink	Low	2503.500	500700	2496.66	499332	0	30	6252	500700	22	1	1	2
	CC1			&	Mid	2585.400	517080	2541.84	508368	102		6456	517080	2	1	1	206
				Uplink	High	2682.300	536460	2494.02	498804	504		6699	536460	22	1	1	1010
E-UTRA: 15MHz + NR: 20MHz	E-UTRA CC1	15	75	Downlink	Low	2523.600	39926	-	-	-	-	-	-	-	-	-	-
				&	Mid	2603.100	40721	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2662.500	41315	-	-	-	-	-	-	-	-	-	-
	NR	20	51	Downlink	Low	2506.110	501222	2496.93	499386	0	30	6252	501222	4	1	1	2
	CC1			&	Mid	2585.610	517122	2539.71	507942	102		6450	517122	8	0	0	204
				Uplink	High	2679.990	535998	2489.37	497874	504		6687	535998	12	1	1	1010
E-UTRA: 15MHz + NR: 40MHz	E-UTRA CC1	15	75	Downlink	Low	2543.700	40127	-	-	-	-	-	-	-	-	-	-
				&	Mid	2613.000	40820	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2642.400	41114	-	-	-	-	-	-	-	-	-	-
	NR	40	106	Downlink	Low	2516.190	503238	2497.11	499422	0	30	6252	503238	16	0	0	0
	CC1			&	Mid	2585.490	517098	2529.69	505938	102		6426	517098	12	1	1	206
				Uplink	High	2669.910	533982	2469.39	493878	504		6636	533982	8	0	0	1008
E-UTRA: 15MHz + NR: 50MHz	E-UTRA CC1	15	75	Downlink	Low	2553.600	40226	-	-	-	-	-	-	-	-	-	-
				&	Mid	2618.100	40871	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2632.500	41015	-	-	-	-	-	-	-	-	-	-
	NR	50	133	Downlink	Low	2521.110	504222	2497.17	499434	0	30	6252	504222	12	0	0	0
	CC1			&	Mid	2585.610	517122	2524.95	504990	102		6414	517122	8	1	1	206
				Uplink	High	2664.990	532998	2459.61	491922	504		6612	532998	20	0	0	1008
E-UTRA: 15MHz + NR: 60MHz	E-UTRA CC1	15	75	Downlink	Low	2563.500	40325	-	-	-	-	-	-	-	-	-	-
				&	Mid	2622.900	40919	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2622.300	40913	-	-	-	-	-	-	-	-	-	-
	NR	60	162	Downlink	Low	2526.000	505200	2496.84	499368	0	30	6252	505200	10	1	1	2
	CC1			&	Mid	2585.400	517080	2519.52	503904	102		6402	517080	2	3	3	210
				Uplink	High	2659.800	531960	2449.2	489840	504		6588	531960	2	3	3	1014

E-UTRA: 15MHz + NR: 80MHz	E-UTRA CC1	15	75	Downlink & Uplink	Low	2583.600	40526	-	-	-	-	-	-	-	-	-	-
					Mid	2633.100	41021	-	-	-	-	-	-	-	-	-	-
					High	2602.500	40715	-	-	-	-	-	-	-	-	-	-
	NR CC1	80	217	Downlink & Uplink	Low	2536.110	507222	2497.05	499410	0	30	6252	507222	20	0	0	0
					Mid	2585.610	517122	2509.83	501966	102		6375	517122	0	0	0	204
					High	2649.990	529998	2429.49	485898	504		6537	529998	4	1	1	1010
E-UTRA: 15MHz + NR: 90MHz	E-UTRA CC1	15	75	Downlink & Uplink	Low	2593.500	40625	-	-	-	-	-	-	-	-	-	-
					Mid	2637.900	41069	-	-	-	-	-	-	-	-	-	-
					High	2592.300	40613	-	-	-	-	-	-	-	-	-	-
	NR CC1	90	245	Downlink & Uplink	Low	2541.000	508200	2496.9	499380	0	30	6252	508200	6	1	1	2
					Mid	2585.400	517080	2504.58	500916	102		6363	517080	6	1	1	206
					High	2644.800	528960	2419.26	483852	504		6513	528960	22	2	2	1012
E-UTRA: 15MHz + NR: 100MHz	E-UTRA CC1	15	75	Downlink & Uplink	Low	2603.700	40727	-	-	-	-	-	-	-	-	-	-
					Mid	2643.000	41120	-	-	-	-	-	-	-	-	-	-
					High	2582.400	40514	-	-	-	-	-	-	-	-	-	-
	NR CC1	100	273	Downlink & Uplink	Low	2546.190	509238	2497.05	499410	0	30	6252	509238	20	0	0	0
					Mid	2585.490	517098	2499.63	499926	102		6351	517098	16	1	1	206
					High	2639.910	527982	2409.33	481866	504		6486	527982	12	0	0	1008
E-UTRA: 20MHz + NR: 10MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2516.100	39851	-	-	-	-	-	-	-	-	-	-
					Mid	2598.000	40670	-	-	-	-	-	-	-	-	-	-
					High	2670.000	41390	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	24	Downlink & Uplink	Low	2501.100	500220	2496.78	499356	0	30	6252	500220	14	1	1	2
					Mid	2583.000	516600	2541.96	508392	102		6456	516600	18	0	0	204
					High	2685.000	537000	2499.24	499848	504		6711	537000	18	0	0	1008
E-UTRA: 20MHz + NR: 15MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2521.200	39902	-	-	-	-	-	-	-	-	-	-
					Mid	2600.400	40694	-	-	-	-	-	-	-	-	-	-
					High	2664.900	41339	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	38	Downlink & Uplink	Low	2503.710	500742	2496.87	499374	0	30	6252	500742	8	1	1	2
					Mid	2582.910	516582	2539.35	507870	102		6450	516582	8	1	1	206
					High	2682.390	536478	2494.11	498822	504		6699	536478	16	1	1	1010
E-UTRA: 20MHz + NR: 20MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2526.300	39953	-	-	-	-	-	-	-	-	-	-
					Mid	2603.100	40721	-	-	-	-	-	-	-	-	-	-
					High	2659.800	41288	-	-	-	-	-	-	-	-	-	-
	NR CC1	20	51	Downlink & Uplink	Low	2506.290	501258	2497.11	499422	0	30	6252	501258	16	0	0	0
					Mid	2583.090	516618	2537.19	507438	102		6444	516618	16	0	0	204
					High	2679.810	535962	2489.19	497838	504		6687	535962	0	2	2	1012
E-UTRA: 20MHz + NR: 40MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2546.100	40151	-	-	-	-	-	-	-	-	-	-
					Mid	2613.000	40820	-	-	-	-	-	-	-	-	-	-
					High	2640.000	41090	-	-	-	-	-	-	-	-	-	-

	NR	40	106	Downlink	Low	2516.100	503220	2497.02	499404	0	30	6252	503220	22	0	0	0
	CC1			&	Mid	2583.000	516600	2527.2	505440	102		6420	516600	18	1	1	206
				Uplink	High	2670.000	534000	2469.48	493896	504		6636	534000	2	0	0	1008
E-UTRA: 20MHz + NR: 50MHz	E-UTRA CC1	20	100	Downlink	Low	2556.300	40253	-	-	-	-	-	-	-	-	-	-
				&	Mid	2618.100	40871	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2629.800	40988	-	-	-	-	-	-	-	-	-	-
	NR	50	133	Downlink	Low	2521.290	504258	2497.35	499470	0	30	6252	504258	0	0	0	0
	CC1			&	Mid	2583.090	516618	2522.43	504486	102		6408	516618	16	1	1	206
				Uplink	High	2664.810	532962	2459.43	491886	504		6612	532962	8	1	1	1010
E-UTRA: 20MHz + NR: 60MHz	E-UTRA CC1	20	100	Downlink	Low	2566.200	40352	-	-	-	-	-	-	-	-	-	-
				&	Mid	2622.900	40919	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2619.900	40889	-	-	-	-	-	-	-	-	-	-
	NR	60	162	Downlink	Low	2526.210	505242	2497.05	499410	0	30	6252	505242	20	0	0	0
	CC1			&	Mid	2582.910	516582	2517.03	503406	102		6393	516582	0	0	0	204
				Uplink	High	2659.890	531978	2449.29	489858	504		6588	531978	20	2	2	1012
E-UTRA: 20MHz + NR: 80MHz	E-UTRA CC1	20	100	Downlink	Low	2586.300	40553	-	-	-	-	-	-	-	-	-	-
				&	Mid	2633.100	41021	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2599.800	40688	-	-	-	-	-	-	-	-	-	-
	NR	80	217	Downlink	Low	2536.290	507258	2497.23	499446	0	30	6252	507258	8	0	0	0
	CC1			&	Mid	2583.090	516618	2507.31	501462	102		6369	516618	8	0	0	204
				Uplink	High	2649.810	529962	2429.31	485862	504		6537	529962	16	1	1	1010
E-UTRA: 20MHz + NR: 90MHz	E-UTRA CC1	20	100	Downlink	Low	2596.200	40652	-	-	-	-	-	-	-	-	-	-
				&	Mid	2637.900	41069	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2589.900	40589	-	-	-	-	-	-	-	-	-	-
	NR	90	245	Downlink	Low	2541.210	508242	2497.11	499422	0	30	6252	508242	16	0	0	0
	CC1			&	Mid	2582.910	516582	2502.09	500418	102		6357	516582	12	1	1	206
				Uplink	High	2644.890	528978	2419.35	483870	504		6513	528978	16	2	2	1012
E-UTRA: 20MHz + NR: 100MHz	E-UTRA CC1	20	100	Downlink	Low	2606.100	40751	-	-	-	-	-	-	-	-	-	-
				&	Mid	2643.000	41120	-	-	-	-	-	-	-	-	-	-
				Uplink	High	2580.000	40490	-	-	-	-	-	-	-	-	-	-
	NR	100	273	Downlink	Low	2546.100	509220	2496.96	499392	0	30	6252	509220	2	1	1	2
	CC1			&	Mid	2583.000	516600	2497.14	499428	102		6345	516600	22	1	1	206
				Uplink	High	2640.000	528000	2409.42	481884	504		6486	528000	6	0	0	1008

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch. ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The nominal carrier spacing between the E-UTRA and the NR carriers is set in accordance to TS 38.101-3 [9], clause 5.4B1.

Table 4.3.1.4.2.41.1-2A: EN-DC combination DC_(n)41AA, intra-band contiguous, SCS 30 kHz, 30 kHz NR raster, E-UTRA CC at the band edges.

EN-DC channel bandwidth combination	CC	Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
E-UTRA: 20MHz + NR: 40MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2506.200	39752	-	-	-	-	-	-	-	-	-	-
					Mid	2613.000	40820	-	-	-	-	-	-	-	-	-	-
					High	2679.900	41489	-	-	-	-	-	-	-	-	-	-
	NR CC1	40	106	Downlink & Uplink	Low	2536.200	507240	2517.12	503424	0	30	6303	507240	18	1	1	2
					Mid	2583.000	516600	2527.2	505440	102		6420	516600	18	1	1	206
					High	2649.900	529980	2449.38	489876	504		6588	529980	14	2	2	1012
E-UTRA: 20MHz + NR: 60MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2506.200	39752	-	-	-	-	-	-	-	-	-	-
					Mid	2622.900	40919	-	-	-	-	-	-	-	-	-	-
					High	2679.900	41489	-	-	-	-	-	-	-	-	-	-
	NR CC1	60	162	Downlink & Uplink	Low	2546.190	509238	2517.03	503406	0	30	6303	509238	0	2	2	4
					Mid	2582.910	516582	2517.03	503406	102		6393	516582	0	0	0	204
					High	2639.910	527982	2429.31	485862	504		6537	527982	16	1	1	1010
E-UTRA: 20MHz + NR: 80MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2506.200	39752	-	-	-	-	-	-	-	-	-	-
					Mid	2633.100	41021	-	-	-	-	-	-	-	-	-	-
					High	2679.900	41489	-	-	-	-	-	-	-	-	-	-
	NR CC1	80	217	Downlink & Uplink	Low	2556.210	511242	2517.15	503430	0	30	6303	511242	16	1	1	2
					Mid	2583.090	516618	2507.31	501462	102		6369	516618	8	0	0	204
					High	2629.890	525978	2409.39	481878	504		6486	525978	8	0	0	1008
E-UTRA: 20MHz + NR: 100MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2506.200	39752	-	-	-	-	-	-	-	-	-	-
					Mid	2643.000	41120	-	-	-	-	-	-	-	-	-	-
					High	2679.900	41489	-	-	-	-	-	-	-	-	-	-
	NR CC1	100	273	Downlink & Uplink	Low	2566.200	513240	2517.06	503412	0	30	6303	513240	22	1	1	2
					Mid	2583.000	516600	2497.14	499428	102		6345	516600	22	1	1	206
					High	2619.900	523980	2389.32	477864	504		6438	523980	18	2	2	1012

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch. ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The nominal carrier spacing between the E-UTRA and the NR carriers is set in accordance to TS 38.101-3 [9], clause 5.4B1.

Table 4.3.1.4.2.41.1-3: EN-DC combination DC_(n)41AA, intra-band contiguous, SCS 60 kHz, 15 kHz NR raster, NR CC at the band edges

EN-DC channel bandwidth combination	CC	Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 1	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
E-UTRA: 5MHz + NR: 10MHz	E-UTRA CC1	5	25	Downlink & Uplink	Low	2508.600	39776	-	-	-	-	-	-
					Mid	2598.000	40670	-	-	-	-	-	-
					High	2677.500	41465	-	-	-	-	-	-
	NR CC1	10	11	Downlink &	Low	2501.100	500220	2497.14	499428	0	15	6249	500220
					Mid	2590.500	518100	2513.1	502620	102		6471	518100

				Uplink	High	2685.000	537000	2318.16	463632	504		6708	537000
E-UTRA:	E-UTRA	5	25	Downlink	Low	2513.700	39827	-	-	-	-	-	-
5MHz +	CC1			&	Mid	2600.400	40694	-	-	-	-	-	-
NR:				Uplink	High	2672.400	41414	-	-	-	-	-	-
15MHz	NR	15	18	Downlink	Low	2503.695	500739	2497.215	499443	0	15	6249	500739
	CC1			&	Mid	2590.395	518079	2510.475	502095	102		6465	518079
				Uplink	High	2682.405	536481	2313.045	462609	504		6696	536481
E-UTRA:	E-UTRA	5	25	Downlink	Low	2518.500	39875	-	-	-	-	-	-
5MHz +	CC1			&	Mid	2603.100	40721	-	-	-	-	-	-
NR:				Uplink	High	2667.300	41363	-	-	-	-	-	-
20MHz	NR	20	24	Downlink	Low	2506.005	501201	2497.365	499473	0	15	6249	501201
	CC1			&	Mid	2590.605	518121	2508.525	501705	102		6462	518121
				Uplink	High	2679.795	535959	2308.275	461655	504		6684	535959
E-UTRA:	E-UTRA	5	25	Downlink	Low	2538.600	40076	-	-	-	-	-	-
5MHz +	CC1			&	Mid	2613.000	40820	-	-	-	-	-	-
NR:				Uplink	High	2647.500	41165	-	-	-	-	-	-
40MHz	NR	40	51	Downlink	Low	2516.100	503220	2497.74	499548	0	15	6249	503220
	CC1			&	Mid	2590.500	518100	2498.7	499740	102		6435	518100
				Uplink	High	2670.000	534000	2288.76	457752	504		6636	534000
E-UTRA:	E-UTRA	5	25	Downlink	Low	2548.500	40175	-	-	-	-	-	-
5MHz +	CC1			&	Mid	2618.100	40871	-	-	-	-	-	-
NR:				Uplink	High	2637.300	41063	-	-	-	-	-	-
50MHz	NR	50	65	Downlink	Low	2521.005	504201	2497.605	499521	0	15	6249	504201
	CC1			&	Mid	2590.605	518121	2493.765	498753	102		6423	518121
				Uplink	High	2664.795	532959	2278.515	455703	504		6609	532959
E-UTRA:	E-UTRA	5	25	Downlink	Low	2558.700	40277	-	-	-	-	-	-
5MHz +	CC1			&	Mid	2622.900	40919	-	-	-	-	-	-
NR:				Uplink	High	2627.400	40964	-	-	-	-	-	-
60MHz	NR	60	79	Downlink	Low	2526.195	505239	2497.755	499551	0	15	6249	505239
	CC1			&	Mid	2590.395	518079	2488.515	497703	102		6411	518079
				Uplink	High	2659.905	531981	2268.585	453717	504		6585	531981
E-UTRA:	E-UTRA	5	25	Downlink	Low	2578.500	40475	-	-	-	-	-	-
5MHz +	CC1			&	Mid	2633.100	41021	-	-	-	-	-	-
NR:				Uplink	High	2607.300	40763	-	-	-	-	-	-
80MHz	NR	80	107	Downlink	Low	2536.005	507201	2497.485	499497	0	15	6249	507201
	CC1			&	Mid	2590.605	518121	2478.645	495729	102		6387	518121
				Uplink	High	2649.795	529959	2248.395	449679	504		6534	529959
E-UTRA:	E-UTRA	5	25	Downlink	Low	2588.700	40577	-	-	-	-	-	-
5MHz +	CC1			&	Mid	2637.900	41069	-	-	-	-	-	-
NR:				Uplink	High	2597.400	40664	-	-	-	-	-	-
90MHz	NR	90	121	Downlink	Low	2541.195	508239	2497.635	499527	0	15	6249	508239
	CC1			&	Mid	2590.395	518079	2473.395	494679	102		6372	518079
				Uplink	High	2644.905	528981	2238.465	447693	504		6510	528981

E-UTRA:	E-UTRA	5	25	Downlink	Low	2598.600	40676	-	-	-	-	-	-
5MHz +	CC1			&	Mid	2643.000	41120	-	-	-	-	-	-
NR:				Uplink	High	2587.500	40565	-	-	-	-	-	-
100MHz	NR	100	135	Downlink	Low	2546.100	509220	2497.5	499500	0	15	6249	509220
	CC1			&	Mid	2590.500	518100	2468.46	493692	102		6360	518100
				Uplink	High	2640.000	528000	2228.52	445704	504		6483	528000
E-UTRA:	E-UTRA	10	50	Downlink	Low	2511.300	39803	-	-	-	-	-	-
10MHz +	CC1			&	Mid	2598.000	40670	-	-	-	-	-	-
NR:				Uplink	High	2674.800	41438	-	-	-	-	-	-
10MHz	NR	10	11	Downlink	Low	2501.295	500259	2497.335	499467	0	15	6249	500259
	CC1			&	Mid	2587.995	517599	2510.595	502119	102		6465	517599
				Uplink	High	2684.805	536961	2317.965	463593	504		6708	536961
E-UTRA:	E-UTRA	10	50	Downlink	Low	2516.100	39851	-	-	-	-	-	-
10MHz +	CC1			&	Mid	2600.400	40694	-	-	-	-	-	-
NR:				Uplink	High	2670.000	41390	-	-	-	-	-	-
15MHz	NR	15	18	Downlink	Low	2503.605	500721	2497.125	499425	0	15	6249	500721
	CC1			&	Mid	2587.905	517581	2507.985	501597	102		6459	517581
				Uplink	High	2682.495	536499	2313.135	462627	504		6696	536499
E-UTRA:	E-UTRA	10	50	Downlink	Low	2521.200	39902	-	-	-	-	-	-
10MHz +	CC1			&	Mid	2603.100	40721	-	-	-	-	-	-
NR:				Uplink	High	2664.900	41339	-	-	-	-	-	-
20MHz	NR	20	24	Downlink	Low	2506.200	501240	2497.56	499512	0	15	6249	501240
	CC1			&	Mid	2588.100	517620	2506.02	501204	102		6453	517620
				Uplink	High	2679.900	535980	2308.38	461676	504		6684	535980
E-UTRA:	E-UTRA	10	50	Downlink	Low	2541.300	40103	-	-	-	-	-	-
10MHz +	CC1			&	Mid	2613.000	40820	-	-	-	-	-	-
NR:				Uplink	High	2644.800	41138	-	-	-	-	-	-
40MHz	NR	40	51	Downlink	Low	2516.295	503259	2497.935	499587	0	15	6249	503259
	CC1			&	Mid	2587.995	517599	2496.195	499239	102		6429	517599
				Uplink	High	2669.805	533961	2288.565	457713	504		6633	533961
E-UTRA:	E-UTRA	10	50	Downlink	Low	2551.200	40202	-	-	-	-	-	-
10MHz +	CC1			&	Mid	2618.100	40871	-	-	-	-	-	-
NR:				Uplink	High	2634.900	41039	-	-	-	-	-	-
50MHz	NR	50	65	Downlink	Low	2521.200	504240	2497.8	499560	0	15	6249	504240
	CC1			&	Mid	2588.100	517620	2491.26	498252	102		6417	517620
				Uplink	High	2664.900	532980	2278.62	455724	504		6609	532980
E-UTRA:	E-UTRA	10	50	Downlink	Low	2561.100	40301	-	-	-	-	-	-
10MHz +	CC1			&	Mid	2622.900	40919	-	-	-	-	-	-
NR:				Uplink	High	2625.000	40940	-	-	-	-	-	-
60MHz	NR	60	79	Downlink	Low	2526.105	505221	2497.665	499533	0	15	6249	505221
	CC1			&	Mid	2587.905	517581	2486.025	497205	102		6405	517581
				Uplink	High	2659.995	531999	2268.675	453735	504		6585	531999
	E-UTRA	10	50	Downlink	Low	2581.200	40502	-	-	-	-	-	-
	CC1			&	Mid	2633.100	41021	-	-	-	-	-	-

E-UTRA:				Uplink	High	2604.900	40739	-	-	-	-	-	-
10MHz +	NR	80	107	Downlink	Low	2536.200	507240	2497.68	499536	0	15	6249	507240
NR:	CC1			&	Mid	2588.100	517620	2476.14	495228	102		6381	517620
80MHz				Uplink	High	2649.900	529980	2248.5	449700	504		6534	529980
E-UTRA:	E-UTRA	10	50	Downlink	Low	2591.100	40601	-	-	-	-	-	-
10MHz +	CC1			&	Mid	2637.900	41069	-	-	-	-	-	-
NR:				Uplink	High	2595.000	40640	-	-	-	-	-	-
90MHz	NR	90	121	Downlink	Low	2541.105	508221	2497.545	499509	0	15	6249	508221
	CC1			&	Mid	2587.905	517581	2470.905	494181	102		6366	517581
				Uplink	High	2644.995	528999	2238.555	447711	504		6510	528999
E-UTRA:	E-UTRA	10	50	Downlink	Low	2601.300	40703	-	-	-	-	-	-
10MHz +	CC1			&	Mid	2643.000	41120	-	-	-	-	-	-
NR:				Uplink	High	2584.800	40538	-	-	-	-	-	-
100MHz	NR	100	135	Downlink	Low	2546.295	509259	2497.695	499539	0	15	6249	509259
	CC1			&	Mid	2587.995	517599	2465.955	493191	102		6354	517599
				Uplink	High	2639.805	527961	2228.325	445665	504		6483	527961
E-UTRA:	E-UTRA	15	75	Downlink	Low	2513.700	39827	-	-	-	-	-	-
15MHz +	CC1			&	Mid	2598.000	40670	-	-	-	-	-	-
NR:				Uplink	High	2672.400	41414	-	-	-	-	-	-
10MHz	NR	10	11	Downlink	Low	2501.205	500241	2497.245	499449	0	15	6249	500241
	CC1			&	Mid	2585.505	517101	2508.105	501621	102		6459	517101
				Uplink	High	2684.895	536979	2318.055	463611	504		6708	536979
E-UTRA:	E-UTRA	15	75	Downlink	Low	2518.500	39875	-	-	-	-	-	-
15MHz +	CC1			&	Mid	2600.400	40694	-	-	-	-	-	-
NR:				Uplink	High	2667.300	41363	-	-	-	-	-	-
15MHz	NR	15	18	Downlink	Low	2503.500	500700	2497.02	499404	0	15	6249	500700
	CC1			&	Mid	2585.400	517080	2505.48	501096	102		6453	517080
				Uplink	High	2682.300	536460	2312.94	462588	504		6696	536460
E-UTRA:	E-UTRA	15	75	Downlink	Low	2523.600	39926	-	-	-	-	-	-
15MHz +	CC1			&	Mid	2603.100	40721	-	-	-	-	-	-
NR:				Uplink	High	2662.200	41312	-	-	-	-	-	-
20MHz	NR	20	24	Downlink	Low	2506.095	501219	2497.455	499491	0	15	6249	501219
	CC1			&	Mid	2585.595	517119	2503.515	500703	102		6447	517119
				Uplink	High	2679.705	535941	2308.185	461637	504		6684	535941
E-UTRA:	E-UTRA	15	75	Downlink	Low	2543.700	40127	-	-	-	-	-	-
15MHz +	CC1			&	Mid	2613.000	40820	-	-	-	-	-	-
NR:				Uplink	High	2642.400	41114	-	-	-	-	-	-
40MHz	NR	40	51	Downlink	Low	2516.205	503241	2497.845	499569	0	15	6249	503241
	CC1			&	Mid	2585.505	517101	2493.705	498741	102		6423	517101
				Uplink	High	2669.895	533979	2288.655	457731	504		6633	533979
E-UTRA:	E-UTRA	15	75	Downlink	Low	2553.600	40226	-	-	-	-	-	-
15MHz +	CC1			&	Mid	2618.100	40871	-	-	-	-	-	-
NR:				Uplink	High	2632.200	41012	-	-	-	-	-	-
50MHz	NR	50	65	Downlink	Low	2521.095	504219	2497.695	499539	0	15	6249	504219

	CC1			&	Mid	2585.595	517119	2488.755	497751	102		6411	517119
				Uplink	High	2664.705	532941	2278.425	455685	504		6609	532941
E-UTRA:	E-UTRA	15	75	Downlink	Low	2563.500	40325	-	-	-	-	-	-
15MHz +	CC1			&	Mid	2622.900	40919	-	-	-	-	-	-
NR:				Uplink	High	2622.300	40913	-	-	-	-	-	-
60MHz	NR	60	79	Downlink	Low	2526.000	505200	2497.56	499512	0	15	6249	505200
	CC1			&	Mid	2585.400	517080	2483.52	496704	102		6399	517080
				Uplink	High	2659.800	531960	2268.48	453696	504		6585	531960
E-UTRA:	E-UTRA	15	75	Downlink	Low	2583.600	40526	-	-	-	-	-	-
15MHz +	CC1			&	Mid	2633.100	41021	-	-	-	-	-	-
NR:				Uplink	High	2602.200	40712	-	-	-	-	-	-
80MHz	NR	80	107	Downlink	Low	2536.095	507219	2497.575	499515	0	15	6249	507219
	CC1			&	Mid	2585.595	517119	2473.635	494727	102		6372	517119
				Uplink	High	2649.705	529941	2248.305	449661	504		6534	529941
E-UTRA:	E-UTRA	15	75	Downlink	Low	2593.500	40625	-	-	-	-	-	-
15MHz +	CC1			&	Mid	2637.900	41069	-	-	-	-	-	-
NR:				Uplink	High	2592.300	40613	-	-	-	-	-	-
90MHz	NR	90	121	Downlink	Low	2541.000	508200	2497.44	499488	0	15	6249	508200
	CC1			&	Mid	2585.400	517080	2468.4	493680	102		6360	517080
				Uplink	High	2644.800	528960	2238.36	447672	504		6510	528960
E-UTRA:	E-UTRA	15	75	Downlink	Low	2603.700	40727	-	-	-	-	-	-
15MHz +	CC1			&	Mid	2643.000	41120	-	-	-	-	-	-
NR:				Uplink	High	2582.400	40514	-	-	-	-	-	-
100MHz	NR	100	135	Downlink	Low	2546.205	509241	2497.605	499521	0	15	6249	509241
	CC1			&	Mid	2585.505	517101	2463.465	492693	102		6348	517101
				Uplink	High	2639.895	527979	2228.415	445683	504		6483	527979
E-UTRA:	E-UTRA	20	100	Downlink	Low	2516.100	39851	-	-	-	-	-	-
20MHz +	CC1			&	Mid	2598.000	40670	-	-	-	-	-	-
NR:				Uplink	High	2670.000	41390	-	-	-	-	-	-
10MHz	NR	10	11	Downlink	Low	2501.100	500220	2497.14	499428	0	15	6249	500220
	CC1			&	Mid	2583.000	516600	2505.6	501120	102		6453	516600
				Uplink	High	2685.000	537000	2318.16	463632	504		6708	537000
E-UTRA:	E-UTRA	20	100	Downlink	Low	2521.200	39902	-	-	-	-	-	-
20MHz +	CC1			&	Mid	2600.400	40694	-	-	-	-	-	-
NR:				Uplink	High	2664.900	41339	-	-	-	-	-	-
15MHz	NR	15	18	Downlink	Low	2503.695	500739	2497.215	499443	0	15	6249	500739
	CC1			&	Mid	2582.895	516579	2502.975	500595	102		6447	516579
				Uplink	High	2682.405	536481	2313.045	462609	504		6696	536481
E-UTRA:	E-UTRA	20	100	Downlink	Low	2526.000	39950	-	-	-	-	-	-
20MHz +	CC1			&	Mid	2603.100	40721	-	-	-	-	-	-
NR:				Uplink	High	2659.800	41288	-	-	-	-	-	-
20MHz	NR	20	24	Downlink	Low	2506.005	501201	2497.365	499473	0	15	6249	501201
	CC1			&	Mid	2583.105	516621	2501.025	500205	102		6441	516621
				Uplink	High	2679.795	535959	2308.275	461655	504		6684	535959

E-UTRA: 20MHz + NR: 40MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2546.100	40151	-	-	-	-	-	-
					Mid	2613.000	40820	-	-	-	-	-	-
					High	2640.000	41090	-	-	-	-	-	-
	NR CC1	40	51	Downlink & Uplink	Low	2516.100	503220	2497.74	499548	0	15	6249	503220
					Mid	2583.000	516600	2491.2	498240	102		6417	516600
					High	2670.000	534000	2288.76	457752	504		6636	534000
E-UTRA: 20MHz + NR: 50MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2556.000	40250	-	-	-	-	-	-
					Mid	2618.100	40871	-	-	-	-	-	-
					High	2629.800	40988	-	-	-	-	-	-
	NR CC1	50	65	Downlink & Uplink	Low	2521.005	504201	2497.605	499521	0	15	6249	504201
					Mid	2583.105	516621	2486.265	497253	102		6405	516621
					High	2664.795	532959	2278.515	455703	504		6609	532959
E-UTRA: 20MHz + NR: 60MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2566.200	40352	-	-	-	-	-	-
					Mid	2622.900	40919	-	-	-	-	-	-
					High	2619.900	40889	-	-	-	-	-	-
	NR CC1	60	79	Downlink & Uplink	Low	2526.195	505239	2497.755	499551	0	15	6249	505239
					Mid	2582.895	516579	2481.015	496203	102		6393	516579
					High	2659.905	531981	2268.585	453717	504		6585	531981
E-UTRA: 20MHz + NR: 80MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2586.000	40550	-	-	-	-	-	-
					Mid	2633.100	41021	-	-	-	-	-	-
					High	2599.800	40688	-	-	-	-	-	-
	NR CC1	80	107	Downlink & Uplink	Low	2536.005	507201	2497.485	499497	0	15	6249	507201
					Mid	2583.105	516621	2471.145	494229	102		6366	516621
					High	2649.795	529959	2248.395	449679	504		6534	529959
E-UTRA: 20MHz + NR: 90MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2596.200	40652	-	-	-	-	-	-
					Mid	2637.900	41069	-	-	-	-	-	-
					High	2589.900	40589	-	-	-	-	-	-
	NR CC1	90	121	Downlink & Uplink	Low	2541.195	508239	2497.635	499527	0	15	6249	508239
					Mid	2582.895	516579	2465.895	493179	102		6354	516579
					High	2644.905	528981	2238.465	447693	504		6510	528981
E-UTRA: 20MHz + NR: 100MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2606.100	40751	-	-	-	-	-	-
					Mid	2643.000	41120	-	-	-	-	-	-
					High	2580.000	40490	-	-	-	-	-	-
	NR CC1	100	135	Downlink & Uplink	Low	2546.100	509220	2497.5	499500	0	15	6249	509220
					Mid	2583.000	516600	2460.96	492192	102		6342	516600
					High	2640.000	528000	2228.52	445704	504		6483	528000
Note 1: The nominal carrier spacing between the E-UTRA and the NR carriers is set in accordance to TS 38.101-3 [9], clause 5.4B1.													

Table 4.3.1.4.2.41.1-3A: EN-DC combination DC_(n)41AA, intra-band contiguous, SCS 60 kHz, 15 kHz NR raster, E-UTRA CC at the band edges.

EN-DC channel bandwidth combination	CC	Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 1	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]
E-UTRA: 20MHz + NR: 40MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2506.200	39752	-	-	-	-	-	-
					Mid	2613.000	40820	-	-	-	-	-	-
					High	2679.900	41489	-	-	-	-	-	-
	NR CC1	40	51	Downlink & Uplink	Low	2536.200	507240	2517.84	503568	0	15	6300	507240
					Mid	2583.000	516600	2491.2	498240	102		6417	516600
					High	2649.900	529980	2268.66	453732	504		6585	529980
E-UTRA: 20MHz + NR: 60MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2506.200	39752	-	-	-	-	-	-
					Mid	2622.900	40919	-	-	-	-	-	-
					High	2679.900	41489	-	-	-	-	-	-
	NR CC1	60	79	Downlink & Uplink	Low	2546.205	509241	2517.765	503553	0	15	6300	509241
					Mid	2582.895	516579	2481.015	496203	102		6393	516579
					High	2639.895	527979	2248.575	449715	504		6534	527979
E-UTRA: 20MHz + NR: 80MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2506.200	39752	-	-	-	-	-	-
					Mid	2633.100	41021	-	-	-	-	-	-
					High	2679.900	41489	-	-	-	-	-	-
	NR CC1	80	107	Downlink & Uplink	Low	2556.195	511239	2517.675	503535	0	15	6300	511239
					Mid	2583.105	516621	2471.145	494229	102		6366	516621
					High	2629.905	525981	2228.505	445701	504		6483	525981
E-UTRA: 20MHz + NR: 100MHz	E-UTRA CC1	20	100	Downlink & Uplink	Low	2506.200	39752	-	-	-	-	-	-
					Mid	2643.000	41120	-	-	-	-	-	-
					High	2679.900	41489	-	-	-	-	-	-
	NR CC1	100	135	Downlink & Uplink	Low	2566.200	513240	2517.6	503520	0	15	6300	513240
					Mid	2583.000	516600	2460.96	492192	102		6342	516600
					High	2619.900	523980	2208.42	441684	504		6435	523980
Note 1: The nominal carrier spacing between the E-UTRA and the NR carriers is set in accordance to TS 38.101-3 [9], clause 5.4B1.													

4.3.1.4.2.42.to 4.3.1.4.2.70 FFS

4.3.1.4.2.71 Intra-band contiguous EN-DC configurations DC_(n)71

4.3.1.4.2.71.1 DC_(n)71AA

4.3.1.4.2.71 Intra-band contiguous EN-DC configurations DC_(n)71

Table 4.3.1.4.2.71.1-1: EN-DC combination DC_(n)71AA, intra-band contiguous, SCS 15 kHz, 100 kHz NR raster, NR CC at the band edges

EN-DC channel bandwidth combination	CC	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPoint A (SIB1) [PRBs] Note 1
E-UTRA: 5MHz + NR: 5MHz	E-UTRA CC1	5	25	Downlink	Low	624.500	68661	-	-	-	-	-	-	-	-	-	-
					Mid	637.000	68786	-	-	-	-	-	-	-	-	-	-
					High	644.500	68861	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	670.500	133197	-	-	-	-	-	-	-	-	-	-
					Mid	683.000	133322	-	-	-	-	-	-	-	-	-	-
					High	690.500	133397	-	-	-	-	-	-	-	-	-	-
	NR CC1	5	25	Downlink	Low	619.500	123900	617.25	123450	0	15	1548	123900	20	0	0	0
					Mid	632.000	126400	611.39	122278	102		1580	126400	12	4	2	106
					High	649.500	129900	556.53	111306	504		1623	129900	20	0	0	504
				Uplink	Low	665.500	133100	663.25	132650	0	-	-	-	-	-	-	-
					Mid	678.000	135600	585.03	117006	504		-	-	-	-	-	-
					High	695.500	139100	692.17	138434	6		-	-	-	-	-	-
E-UTRA: 5MHz + NR: 10MHz	E-UTRA CC1	5	25	Downlink	Low	629.500	68711	-	-	-	-	-	-	-	-	-	-
					Mid	639.500	68811	-	-	-	-	-	-	-	-	-	-
					High	639.500	68811	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	675.500	133247	-	-	-	-	-	-	-	-	-	-
					Mid	685.500	133347	-	-	-	-	-	-	-	-	-	-
					High	685.500	133347	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	52	Downlink	Low	622.000	124400	617.32	123464	0	15	1549	124400	22	0	0	0
					Mid	632.000	126400	608.96	121792	102		1574	126400	14	4	2	106
					High	647.000	129400	551.6	110320	504		1610	129400	22	0	0	504
				Uplink	Low	668.000	133600	663.32	132664	0	-	-	-	-	-	-	-
					Mid	678.000	135600	582.6	116520	504		-	-	-	-	-	-
					High	693.000	138600	687.24	137448	6		-	-	-	-	-	-
E-UTRA: 5MHz + NR: 15MHz	E-UTRA CC1	5	25	Downlink	Low	634.500	68761	-	-	-	-	-	-	-	-	-	-
					Mid	642.000	68836	-	-	-	-	-	-	-	-	-	-
					High	634.500	68761	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	680.500	133297	-	-	-	-	-	-	-	-	-	-
					Mid	688.000	133372	-	-	-	-	-	-	-	-	-	-
					High	680.500	133297	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	79	Downlink	Low	624.500	124900	617.39	123478	0	15	1547	124900	4	0	0	0
					Mid	632.000	126400	606.53	121306	102		1568	126400	16	4	2	106

					High	644.500	128900	546.67	109334	504		1600	128900	20	2	1	506
				Uplink	Low	670.500	134100	663.39	132678	0	-	-	-	-	-	-	-
					Mid	678.000	135600	580.17	116034	504		-	-	-	-	-	-
					High	690.500	138100	682.31	136462	6		-	-	-	-	-	-
E-UTRA: 5MHz + NR: 20MHz	E-UTRA CC1	5	25	Downlink	Low	639.500	68811	-	-	-	-	-	-	-	-	-	-
					Mid	644.500	68861	-	-	-	-	-	-	-	-	-	-
					High	629.500	68711	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	685.500	133347	-	-	-	-	-	-	-	-	-	-
					Mid	690.500	133397	-	-	-	-	-	-	-	-	-	-
					High	675.500	133247	-	-	-	-	-	-	-	-	-	-
	NR CC1	20	106	Downlink	Low	627.000	125400	617.46	123492	0	15	1548	125400	6	0	0	0
					Mid	632.000	126400	604.1	120820	102		1562	126400	18	4	2	106
					High	642.000	128400	541.74	108348	504		1587	128400	22	2	1	506
				Uplink	Low	673.000	134600	663.46	132692	0	-	-	-	-	-	-	-
					Mid	678.000	135600	577.74	115548	504		-	-	-	-	-	-
					High	688.000	137600	677.38	135476	6		-	-	-	-	-	-
E-UTRA: 10MHz + NR: 5MHz	E-UTRA CC1	10	50	Downlink	Low	627.000	68686	-	-	-	-	-	-	-	-	-	-
					Mid	637.000	68786	-	-	-	-	-	-	-	-	-	-
					High	642.000	68836	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	673.000	133222	-	-	-	-	-	-	-	-	-	-
					Mid	683.000	133322	-	-	-	-	-	-	-	-	-	-
					High	688.000	133372	-	-	-	-	-	-	-	-	-	-
	NR CC1	5	25	Downlink	Low	619.500	123900	617.25	123450	0	15	1548	123900	20	0	0	0
					Mid	629.500	125900	608.89	121778	102		1573	125900	0	0	0	102
					High	649.500	129900	556.53	111306	504		1623	129900	20	0	0	504
				Uplink	Low	665.500	133100	663.25	132650	0	-	-	-	-	-	-	-
					Mid	675.500	135100	582.53	116506	504		-	-	-	-	-	-
					High	695.500	139100	692.17	138434	6		-	-	-	-	-	-
E-UTRA: 10MHz + NR: 10MHz	E-UTRA CC1	10	50	Downlink	Low	632.000	68736	-	-	-	-	-	-	-	-	-	-
					Mid	639.500	68811	-	-	-	-	-	-	-	-	-	-
					High	637.000	68786	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	678.000	133272	-	-	-	-	-	-	-	-	-	-
					Mid	685.500	133347	-	-	-	-	-	-	-	-	-	-
					High	683.000	133322	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	52	Downlink	Low	622.000	124400	617.32	123464	0	15	1549	124400	22	0	0	0
					Mid	629.500	125900	606.46	121292	102		1567	125900	2	0	0	102

					High	647.000	129400	551.6	110320	504		1610	129400	22	0	0	504
				Uplink	Low	668.000	133600	663.32	132664	0	-	-	-	-	-	-	-
					Mid	675.500	135100	580.1	116020	504		-	-	-	-	-	-
					High	693.000	138600	687.24	137448	6		-	-	-	-	-	-
E-UTRA: 10MHz + NR: 15MHz	E-UTRA CC1	10	50	Downlink	Low	637.000	68786	-	-	-	-	-	-	-	-	-	-
					Mid	642.000	68836	-	-	-	-	-	-	-	-	-	-
					High	632.000	68736	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	683.000	133322	-	-	-	-	-	-	-	-	-	-
					Mid	688.000	133372	-	-	-	-	-	-	-	-	-	-
					High	678.000	133272	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	79	Downlink	Low	624.500	124900	617.39	123478	0	15	1547	124900	4	0	0	0
					Mid	629.500	125900	604.03	120806	102		1561	125900	4	0	0	102
					High	644.500	128900	546.67	109334	504		1600	128900	20	2	1	506
				Uplink	Low	670.500	134100	663.39	132678	0	-	-	-	-	-	-	-
					Mid	675.500	135100	577.67	115534	504		-	-	-	-	-	-
					High	690.500	138100	682.31	136462	6		-	-	-	-	-	-
E-UTRA: 10MHz + NR: 20MHz	E-UTRA CC1	10	50	Downlink	Low	642.000	68836	-	-	-	-	-	-	-	-	-	-
					Mid	644.500	68861	-	-	-	-	-	-	-	-	-	-
					High	627.000	68686	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	688.000	133372	-	-	-	-	-	-	-	-	-	-
					Mid	690.500	133397	-	-	-	-	-	-	-	-	-	-
					High	673.000	133222	-	-	-	-	-	-	-	-	-	-
	NR CC1	20	106	Downlink	Low	627.000	125400	617.46	123492	0	15	1548	125400	6	0	0	0
					Mid	629.500	125900	601.6	120320	102		1555	125900	6	0	0	102
					High	642.000	128400	541.74	108348	504		1587	128400	22	2	1	506
				Uplink	Low	673.000	134600	663.46	132692	0	-	-	-	-	-	-	-
					Mid	675.500	135100	575.24	115048	504		-	-	-	-	-	-
					High	688.000	137600	677.38	135476	6		-	-	-	-	-	-
E-UTRA: 15MHz + NR: 5MHz	E-UTRA CC1	15	75	Downlink	Low	629.500	68711	-	-	-	-	-	-	-	-	-	-
					Mid	637.000	68786	-	-	-	-	-	-	-	-	-	-
					High	639.500	68811	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	675.500	133247	-	-	-	-	-	-	-	-	-	-
					Mid	683.000	133322	-	-	-	-	-	-	-	-	-	-
					High	685.500	133347	-	-	-	-	-	-	-	-	-	-
	NR CC1	5	25	Downlink	Low	619.500	123900	617.25	123450	0	15	1548	123900	20	0	0	0
					Mid	627.000	125400	606.39	121278	102		1566	125400	0	0	0	102

					High	649.500	129900	556.53	111306	504		1623	129900	20	0	0	504
				Uplink	Low	665.500	133100	663.25	132650	0	-	-	-	-	-	-	-
					Mid	673.000	134600	580.03	116006	504		-	-	-	-	-	-
					High	695.500	139100	692.17	138434	6		-	-	-	-	-	-
E-UTRA: 15MHz + NR: 10MHz	E-UTRA CC1	15	75	Downlink	Low	634.500	68761	-	-	-	-	-	-	-	-	-	-
					Mid	639.500	68811	-	-	-	-	-	-	-	-	-	-
					High	634.500	68761	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	680.500	133297	-	-	-	-	-	-	-	-	-	-
					Mid	685.500	133347	-	-	-	-	-	-	-	-	-	-
					High	680.500	133297	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	52	Downlink	Low	622.000	124400	617.32	123464	0	15	1549	124400	22	0	0	0
					Mid	627.000	125400	603.96	120792	102		1560	125400	2	0	0	102
					High	647.000	129400	551.6	110320	504		1610	129400	22	0	0	504
				Uplink	Low	668.000	133600	663.32	132664	0	-	-	-	-	-	-	-
					Mid	673.000	134600	577.6	115520	504		-	-	-	-	-	-
					High	693.000	138600	687.24	137448	6		-	-	-	-	-	-
E-UTRA: 15MHz + NR: 15MHz	E-UTRA CC1	15	75	Downlink	Low	639.500	68811	-	-	-	-	-	-	-	-	-	-
					Mid	642.000	68836	-	-	-	-	-	-	-	-	-	-
					High	629.500	68711	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	685.500	133347	-	-	-	-	-	-	-	-	-	-
					Mid	688.000	133372	-	-	-	-	-	-	-	-	-	-
					High	675.500	133247	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	79	Downlink	Low	624.500	124900	617.39	123478	0	15	1547	124900	4	0	0	0
					Mid	627.000	125400	601.53	120306	102		1554	125400	4	0	0	102
					High	644.500	128900	546.67	109334	504		1600	128900	20	2	1	506
				Uplink	Low	670.500	134100	663.39	132678	0	-	-	-	-	-	-	-
					Mid	673.000	134600	575.17	115034	504		-	-	-	-	-	-
					High	690.500	138100	682.31	136462	6		-	-	-	-	-	-
E-UTRA: 15MHz + NR: 20MHz	E-UTRA CC1	15	75	Downlink	Low	644.500	68861	-	-	-	-	-	-	-	-	-	-
					Mid	644.500	68861	-	-	-	-	-	-	-	-	-	-
					High	624.500	68661	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	690.500	133397	-	-	-	-	-	-	-	-	-	-
					Mid	690.500	133397	-	-	-	-	-	-	-	-	-	-
					High	670.500	133197	-	-	-	-	-	-	-	-	-	-
	NR CC1	20	106	Downlink	Low	627.000	125400	617.46	123492	0	15	1548	125400	6	0	0	0
					Mid	627.000	125400	599.1	119820	102		1548	125400	6	0	0	102

					High	642.000	128400	541.74	108348	504		1587	128400	22	2	1	506
				Uplink	Low	673.000	134600	663.46	132692	0	-	-	-	-	-	-	-
					Mid	673.000	134600	572.74	114548	504		-	-	-	-	-	-
					High	688.000	137600	677.38	135476	6		-	-	-	-	-	-
E-UTRA: 20MHz + NR: 5MHz	E-UTRA CC1	20	100	Downlink	Low	632.000	68736	-	-	-	-	-	-	-	-	-	-
					Mid	637.000	68786	-	-	-	-	-	-	-	-	-	-
					High	637.000	68786	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	678.000	133272	-	-	-	-	-	-	-	-	-	-
					Mid	683.000	133322	-	-	-	-	-	-	-	-	-	-
					High	683.000	133322	-	-	-	-	-	-	-	-	-	-
	NR CC1	5	25	Downlink	Low	619.500	123900	617.25	123450	0	15	1548	123900	20	0	0	0
					Mid	624.500	124900	603.89	120778	102		1559	124900	0	0	0	102
					High	649.500	129900	556.53	111306	504		1623	129900	20	0	0	504
				Uplink	Low	665.500	133100	663.25	132650	0	-	-	-	-	-	-	-
					Mid	670.500	134100	577.53	115506	504		-	-	-	-	-	-
					High	695.500	139100	692.17	138434	6		-	-	-	-	-	-
E-UTRA: 20MHz + NR: 10MHz	E-UTRA CC1	20	100	Downlink	Low	637.000	68786	-	-	-	-	-	-	-	-	-	-
					Mid	639.500	68811	-	-	-	-	-	-	-	-	-	-
					High	632.000	68736	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	683.000	133322	-	-	-	-	-	-	-	-	-	-
					Mid	685.500	133347	-	-	-	-	-	-	-	-	-	-
					High	678.000	133272	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	52	Downlink	Low	622.000	124400	617.32	123464	0	15	1549	124400	22	0	0	0
					Mid	624.500	124900	601.46	120292	102		1553	124900	2	0	0	102
					High	647.000	129400	551.6	110320	504		1610	129400	22	0	0	504
				Uplink	Low	668.000	133600	663.32	132664	0	-	-	-	-	-	-	-
					Mid	670.000	134100	575.1	115020	504		-	-	-	-	-	-
					High	693.000	138600	687.24	137448	6		-	-	-	-	-	-
E-UTRA: 20MHz + NR: 15MHz	E-UTRA CC1	20	100	Downlink	Low	642.000	68836	-	-	-	-	-	-	-	-	-	-
					Mid	642.000	68836	-	-	-	-	-	-	-	-	-	-
					High	627.000	68686	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	688.000	133372	-	-	-	-	-	-	-	-	-	-
					Mid	688.000	133372	-	-	-	-	-	-	-	-	-	-
					High	673.000	133222	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	79	Downlink	Low	624.500	124900	617.39	123478	0	15	1547	124900	4	0	0	0
					Mid	624.500	124900	599.03	119806	102		1547	124900	4	0	0	102

					High	644.500	128900	546.67	109334	504		1600	128900	20	2	1	506
				Uplink	Low	670.500	134100	663.39	132678	0	-	-	-	-	-	-	-
					Mid	670.500	134100	572.67	114534	504		-	-	-	-	-	-
					High	690.500	138100	682.31	136462	6		-	-	-	-	-	-
E-UTRA: 20MHz + NR: 20MHz	E-UTRA CC1	20	100	Downlink	Low	647.000	68886	-	-	-	-	-	-	-	-	-	-
					Mid	646.000	68876	-	-	-	-	-	-	-	-	-	-
					High	622.000	68636	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	693.000	133422	-	-	-	-	-	-	-	-	-	-
					Mid	692.000	133412	-	-	-	-	-	-	-	-	-	-
					High	668.000	133172	-	-	-	-	-	-	-	-	-	-
	NR CC1	20	106	Downlink	Low	627.000	125400	617.46	123492	0	15	1548	125400	6	0	0	0
					Mid	626.000	125200	598.1	119620	102		1547	125200	18	4	2	106
					High	642.000	128400	541.74	108348	504		1587	128400	22	2	1	506
				Uplink	Low	673.000	134600	663.46	132692	0	-	-	-	-	-	-	-
					Mid	672.000	134400	571.74	114348	504		-	-	-	-	-	-
					High	688.000	137600	677.38	135476	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch. ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.
Note 2: The nominal carrier spacing between the E-UTRA and the NR carriers is set in accordance to TS 38.101-3 [9], clause 5.4B1.

Table 4.3.1.4.2.71.1-1A: EN-DC combination DC_(n)71AA, intra-band contiguous, SCS 15 kHz, 100 kHz NR raster, E-UTRA CC at the band edges

EN-DC channel bandwidth combination	CC	Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
E-UTRA: 5MHz + NR: 5MHz	E-UTRA CC1	5	25	Downlink	Low	619.500	68611	-	-	-	-	-	-	-	-	-	-
					Mid	637.000	68786	-	-	-	-	-	-	-	-	-	-
					High	649.500	68911	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	665.500	133147	-	-	-	-	-	-	-	-	-	-
					Mid	683.000	133322	-	-	-	-	-	-	-	-	-	-
					High	695.500	133447	-	-	-	-	-	-	-	-	-	-
	NR CC1	5	25	Downlink	Low	624.500	124900	622.25	124450	0	15	1559	124900	0	0	0	0
					Mid	632.000	126400	611.39	122278	102		1580	126400	12	4	2	106
					High	644.500	128900	551.53	110306	504		1612	128900	16	2	1	506
				Uplink	Low	670.500	134100	668.25	133650	0	-	-	-	-	-	-	-
					Mid	678.000	135600	585.03	117006	504		-	-	-	-	-	-
					High	690.500	138100	687.17	137434	6		-	-	-	-	-	-
E-UTRA: 5MHz + NR: 15MHz	E-UTRA CC1	5	25	Downlink	Low	619.500	68611	-	-	-	-	-	-	-	-	-	-
					Mid	642.000	68836	-	-	-	-	-	-	-	-	-	-
					High	649.500	68911	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	665.500	133147	-	-	-	-	-	-	-	-	-	-
					Mid	688.000	133372	-	-	-	-	-	-	-	-	-	-
					High	695.500	133447	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	79	Downlink	Low	629.500	125900	622.39	124478	0	15	1561	125900	4	0	0	0
					Mid	632.000	126400	606.53	121306	102		1568	126400	16	4	2	106
					High	639.500	127900	541.67	108334	504		1586	127900	20	2	1	506
				Uplink	Low	675.500	135100	668.39	133678	0	-	-	-	-	-	-	-
					Mid	678.000	135600	580.17	116034	504		-	-	-	-	-	-
					High	685.000	137100	677.31	135462	6		-	-	-	-	-	-

E-UTRA: 10MHz + NR: 10MHz	E-UTRA CC1	10	50	Downlink	Low	622.000	68636	-	-	-	-	-	-	-	-	-	-
					Mid	639.500	68811	-	-	-	-	-	-	-	-	-	-
					High	647.000	68886	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	668.000	133172	-	-	-	-	-	-	-	-	-	-
					Mid	685.500	133347	-	-	-	-	-	-	-	-	-	-
					High	693.000	133422	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	52	Downlink	Low	632.000	126400	627.32	125464	0	15	1574	126400	14	4	2	4
					Mid	629.500	125900	606.46	121292	102		1567	125900	2	0	0	102
					High	637.000	127400	541.6	108320	504		1588	127400	14	4	2	508
				Uplink	Low	678.000	135600	673.32	134664	0	-	-	-	-	-	-	-
					Mid	675.500	135100	580.1	116020	504		-	-	-	-	-	-
					High	683.000	136600	677.24	135448	6		-	-	-	-	-	-
E-UTRA: 15MHz + NR: 5MHz	E-UTRA CC1	15	75	Downlink	Low	624.500	68661	-	-	-	-	-	-	-	-	-	-
					Mid	637.000	68786	-	-	-	-	-	-	-	-	-	-
					High	644.500	68861	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	670.500	133197	-	-	-	-	-	-	-	-	-	-
					Mid	683.000	133322	-	-	-	-	-	-	-	-	-	-
					High	690.500	133397	-	-	-	-	-	-	-	-	-	-
	NR CC1	5	25	Downlink	Low	634.500	126900	632.25	126450	0	15	1587	126900	12	4	2	4
					Mid	627.000	125400	606.39	121278	102		1566	125400	0	0	0	102
					High	634.500	126900	541.53	108306	504		1587	126900	12	4	2	508
				Uplink	Low	680.500	136100	678.25	135650	0	-	-	-	-	-	-	-
					Mid	673.000	134600	580.03	116006	504		-	-	-	-	-	-
					High	680.500	136100	677.17	135434	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch. ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The nominal carrier spacing between the E-UTRA and the NR carriers is set in accordance to TS 38.101-3 [9], clause 5.4B1.

Table 4.3.1.4.2.71.1-2: EN-DC combination DC_(n)71AA, intra-band contiguous, SCS 30 kHz, 100 kHz NR raster, NR CC at the band edge

EN-DC channel bandwidth combination	CC	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
E-UTRA: 5MHz + NR: 10MHz	E-UTRA CC1	5	25	Downlink	Low	629.500	68711	-	-	-	-	-	-	-	-	-	-
					Mid	639.500	68811	-	-	-	-	-	-	-	-	-	-
					High	639.500	68811	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	675.500	133247	-	-	-	-	-	-	-	-	-	-
					Mid	685.500	133347	-	-	-	-	-	-	-	-	-	-
					High	685.500	133347	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	24	Downlink	Low	622.000	124400	617.68	123536	0	15	1555	124400	14	6	1	12
					Mid	632.000	126400	590.96	118192	102		1580	126400	6	8	3	220
					High	647.000	129400	461.24	92248	504		1616	129400	14	6	1	1020
				Uplink	Low	668.000	133600	663.68	132736	0	-	-	-	-	-	-	-
					Mid	678.000	135600	492.24	98448	504		-	-	-	-	-	-
					High	693.000	138600	686.52	137304	6		-	-	-	-	-	-
E-UTRA: 5MHz + NR: 15MHz	E-UTRA CC1	5	25	Downlink	Low	634.500	68761	-	-	-	-	-	-	-	-	-	-
					Mid	642.000	68836	-	-	-	-	-	-	-	-	-	-
					High	634.500	68761	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	680.500	133297	-	-	-	-	-	-	-	-	-	-
					Mid	688.000	133372	-	-	-	-	-	-	-	-	-	-
					High	680.500	133297	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	38	Downlink	Low	624.500	124900	617.66	123532	0	15	1553	124900	2	6	1	12
					Mid	632.000	126400	588.44	117688	102		1571	126400	6	5	0	214
					High	644.500	128900	456.22	91244	504		1606	128900	18	7	2	1022
				Uplink	Low	670.500	134100	663.66	132732	0	-	-	-	-	-	-	-
					Mid	678.000	135600	489.72	97944	504		-	-	-	-	-	-
					High	690.500	138100	681.5	136300	6		-	-	-	-	-	-

E-UTRA: 5MHz + NR: 20MHz	E-UTRA CC1	5	25	Downlink	Low	639.500	68811	-	-	-	-	-	-	-	-	-	-
					Mid	644.500	68861	-	-	-	-	-	-	-	-	-	-
					High	629.500	68711	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	685.500	133347	-	-	-	-	-	-	-	-	-	-
					Mid	690.500	133397	-	-	-	-	-	-	-	-	-	-
					High	675.500	133247	-	-	-	-	-	-	-	-	-	-
	NR CC1	20	51	Downlink	Low	627.000	125400	617.82	123564	0	15	1554	125400	22	5	0	10
					Mid	632.000	126400	586.1	117220	102		1565	126400	2	5	0	214
					High	642.000	128400	451.38	90276	504		1593	128400	14	7	2	1022
				Uplink	Low	673.000	134600	663.82	132764	0	-	-	-	-	-	-	-
					Mid	678.000	135600	487.38	97476	504		-	-	-	-	-	-
					High	688.000	137600	676.66	135332	6		-	-	-	-	-	-
E-UTRA: 10MHz + NR: 10MHz	E-UTRA CC1	10	50	Downlink	Low	632.000	68736	-	-	-	-	-	-	-	-	-	-
					Mid	639.500	68811	-	-	-	-	-	-	-	-	-	-
					High	637.000	68786	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	678.000	133272	-	-	-	-	-	-	-	-	-	-
					Mid	685.500	133347	-	-	-	-	-	-	-	-	-	-
					High	683.000	133322	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	24	Downlink	Low	622.000	124400	617.68	123536	0	15	1555	124400	14	6	1	12
					Mid	629.500	125900	588.46	117692	102		1573	125900	18	5	0	214
					High	647.000	129400	461.24	92248	504		1616	129400	14	6	1	1020
				Uplink	Low	668.000	133600	663.68	132736	0	-	-	-	-	-	-	-
					Mid	675.500	135100	489.74	97948	504		-	-	-	-	-	-
					High	693.000	138600	686.52	137304	6		-	-	-	-	-	-
E-UTRA: 10MHz + NR: 15MHz	E-UTRA CC1	10	50	Downlink	Low	637.000	68786	-	-	-	-	-	-	-	-	-	-
					Mid	642.000	68836	-	-	-	-	-	-	-	-	-	-
					High	632.000	68736	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	683.000	133322	-	-	-	-	-	-	-	-	-	-
					Mid	688.000	133372	-	-	-	-	-	-	-	-	-	-

					High	678.000	133272	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	38	Downlink	Low	624.500	124900	617.66	123532	0	15	1553	124900	2	6	1	12
					Mid	629.500	125900	585.94	117188	102		1567	125900	2	6	1	216
					High	644.500	128900	456.22	91244	504		1606	128900	18	7	2	1022
				Uplink	Low	670.500	134100	663.66	132732	0	-	-	-	-	-	-	-
					Mid	675.500	135100	487.22	97444	504		-	-	-	-	-	-
					High	690.500	138100	681.5	136300	6		-	-	-	-	-	-
E-UTRA: 10MHz + NR: 20MHz	E-UTRA CC1	10	50	Downlink	Low	642.000	68836	-	-	-	-	-	-	-	-	-	-
					Mid	644.500	68861	-	-	-	-	-	-	-	-	-	-
					High	627.000	68686	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	688.000	133372	-	-	-	-	-	-	-	-	-	-
					Mid	690.500	133397	-	-	-	-	-	-	-	-	-	-
					High	673.000	133222	-	-	-	-	-	-	-	-	-	-
	NR CC1	20	51	Downlink	Low	627.000	125400	617.82	123564	0	15	1554	125400	22	5	0	10
					Mid	629.500	125900	583.6	116720	102		1561	125900	22	5	0	214
					High	642.000	128400	451.38	90276	504		1593	128400	14	7	2	1022
				Uplink	Low	673.000	134600	663.82	132764	0	-	-	-	-	-	-	-
					Mid	675.500	135100	484.88	96976	504		-	-	-	-	-	-
					High	688.000	137600	676.66	135332	6		-	-	-	-	-	-
E-UTRA: 15MHz + NR: 10MHz	E-UTRA CC1	15	75	Downlink	Low	634.500	68761	-	-	-	-	-	-	-	-	-	-
					Mid	639.500	68811	-	-	-	-	-	-	-	-	-	-
					High	634.500	68761	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	680.500	133297	-	-	-	-	-	-	-	-	-	-
					Mid	685.500	133347	-	-	-	-	-	-	-	-	-	-
					High	680.500	133297	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	24	Downlink	Low	622.000	124400	617.68	123536	0	15	1555	124400	14	6	1	12
					Mid	627.000	125400	585.96	117192	102		1566	125400	18	5	0	214
					High	647.000	129400	461.24	92248	504		1616	129400	14	6	1	1020
				Uplink	Low	668.000	133600	663.68	132736	0	-	-	-	-	-	-	-

					Mid	673.000	134600	487.24	97448	504		-	-	-	-	-	-
					High	693.000	138600	686.52	137304	6		-	-	-	-	-	-
E-UTRA: 15MHz + NR: 15MHz	E-UTRA CC1	15	75	Downlink	Low	639.500	68811	-	-	-	-	-	-	-	-	-	-
					Mid	642.000	68836	-	-	-	-	-	-	-	-	-	-
					High	629.500	68711	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	685.500	133347	-	-	-	-	-	-	-	-	-	-
					Mid	688.000	133372	-	-	-	-	-	-	-	-	-	-
					High	675.500	133247	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	38	Downlink	Low	624.500	124900	617.66	123532	0	15	1553	124900	2	6	1	12
					Mid	627.000	125400	583.44	116688	102		1560	125400	2	6	1	216
					High	644.500	128900	456.22	91244	504		1606	128900	18	7	2	1022
				Uplink	Low	670.500	134100	663.66	132732	0	-	-	-	-	-	-	-
					Mid	673.000	134600	484.72	96944	504		-	-	-	-	-	-
					High	690.500	138100	681.5	136300	6		-	-	-	-	-	-
E-UTRA: 15MHz + NR: 20MHz	E-UTRA CC1	15	75	Downlink	Low	644.500	68861	-	-	-	-	-	-	-	-	-	-
					Mid	644.500	68861	-	-	-	-	-	-	-	-	-	-
					High	624.500	68661	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	690.500	133397	-	-	-	-	-	-	-	-	-	-
					Mid	690.500	133397	-	-	-	-	-	-	-	-	-	-
					High	670.500	133197	-	-	-	-	-	-	-	-	-	-
	NR CC1	20	51	Downlink	Low	627.000	125400	617.82	123564	0	15	1554	125400	22	5	0	10
					Mid	627.000	125400	581.1	116220	102		1554	125400	22	5	0	214
					High	642.000	128400	451.38	90276	504		1593	128400	14	7	2	1022
				Uplink	Low	673.000	134600	663.82	132764	0	-	-	-	-	-	-	-
					Mid	673.000	134600	482.38	96476	504		-	-	-	-	-	-
					High	688.000	137600	676.66	135332	6		-	-	-	-	-	-
E-UTRA: 20MHz + NR: 10MHz	E-UTRA CC1	20	100	Downlink	Low	637.000	68786	-	-	-	-	-	-	-	-	-	-
					Mid	639.500	68811	-	-	-	-	-	-	-	-	-	-
					High	632.000	68736	-	-	-	-	-	-	-	-	-	-

				Uplink	Low	683.000	133322	-	-	-	-	-	-	-	-	-	-
					Mid	685.500	133347	-	-	-	-	-	-	-	-	-	-
					High	678.000	133272	-	-	-	-	-	-	-	-	-	-
	NR CC1	10	24	Downlink	Low	622.000	124400	617.68	123536	0	15	1555	124400	14	6	1	12
					Mid	624.500	124900	583.46	116692	102		1559	124900	18	5	0	214
					High	647.000	129400	461.24	92248	504		1616	129400	14	6	1	1020
				Uplink	Low	668.000	133600	663.68	132736	0	-	-	-	-	-	-	-
					Mid	670.500	134100	484.74	96948	504		-	-	-	-	-	-
					High	693.000	138600	686.52	137304	6		-	-	-	-	-	-
E-UTRA: 20MHz + NR: 15MHz	E-UTRA CC1	20	100	Downlink	Low	642.000	68836	-	-	-	-	-	-	-	-	-	-
					Mid	642.000	68836	-	-	-	-	-	-	-	-	-	-
					High	627.000	68686	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	688.000	133372	-	-	-	-	-	-	-	-	-	-
					Mid	688.000	133372	-	-	-	-	-	-	-	-	-	-
					High	673.000	133222	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	38	Downlink	Low	624.500	124900	617.66	123532	0	15	1553	124900	2	6	1	12
					Mid	624.500	124900	580.94	116188	102		1553	124900	2	6	1	216
					High	644.500	128900	456.22	91244	504		1606	128900	18	7	2	1022
				Uplink	Low	670.500	134100	663.66	132732	0	-	-	-	-	-	-	-
					Mid	670.500	134100	482.22	96444	504		-	-	-	-	-	-
					High	690.500	138100	681.5	136300	6		-	-	-	-	-	-
E-UTRA: 20MHz + NR: 20MHz	E-UTRA CC1	20	100	Downlink	Low	647.000	68886	-	-	-	-	-	-	-	-	-	-
					Mid	644.500	68861	-	-	-	-	-	-	-	-	-	-
					High	622.000	68636	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	693.000	133422	-	-	-	-	-	-	-	-	-	-
					Mid	690.500	133397	-	-	-	-	-	-	-	-	-	-
					High	668.000	133172	-	-	-	-	-	-	-	-	-	-
	NR CC1	20	51	Downlink	Low	627.000	125400	617.82	123564	0	15	1554	125400	22	5	0	10
					Mid	624.500	124900	578.6	115720	102		1547	124900	22	5	0	214

					High	642.000	128400	451.38	90276	504		1593	128400	14	7	2	1022
				Uplink	Low	673.000	134600	663.82	132764	0	-	-	-	-	-	-	-
					Mid	670.500	134100	479.88	95976	504		-	-	-	-	-	-
					High	688.000	137600	676.66	135332	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch. ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The nominal carrier spacing between the E-UTRA and the NR carriers is set in accordance to TS 38.101-3 [9], clause 5.4B1.

Table 4.3.1.4.2.71.1-2A: EN-DC combination DC_(n)71AA, intra-band contiguous, SCS 30 kHz, 100 kHz NR raster, E-UTRA CC at the band edge

EN-DC channel bandwidth combination	CC	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
E-UTRA: 5MHz + NR: 15MHz	E-UTRA CC1	5	25	Downlink	Low	619.500	68611	-	-	-	-	-	-	-	-	-	-
					Mid	642.000	68836	-	-	-	-	-	-	-	-	-	-
					High	649.500	68911	-	-	-	-	-	-	-	-	-	-
				Uplink	Low	665.500	133147	-	-	-	-	-	-	-	-	-	-
					Mid	688.000	133372	-	-	-	-	-	-	-	-	-	-
					High	695.500	133447	-	-	-	-	-	-	-	-	-	-
	NR CC1	15	38	Downlink	Low	629.500	125900	622.66	124532	0	15	1567	125900	2	6	1	12
					Mid	632.000	126400	588.44	117688	102		1571	126400	6	5	0	214
					High	639.500	127900	451.22	90244	504		1592	127900	18	7	2	1022
				Uplink	Low	675.500	135100	668.66	133732	0	-	-	-	-	-	-	-
					Mid	678.000	135600	489.72	97944	504		-	-	-	-	-	-
					High	685.500	137100	676.5	135300	6		-	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch. ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The nominal carrier spacing between the E-UTRA and the NR carriers is set in accordance to TS 38.101-3 [9], clause 5.4B1.

4.3.1.4.3 Intra-band non-contiguous EN-DC configurations and NR FR1

4.3.1.4.3.1 – 4.3.1.4.3.40 FFS

4.3.1.4.3.41 Intra-band non-contiguous EN-DC configurations DC_41_n41

4.3.1.4.3.41.1 DC_41A_n41A

Editor's note: Additional test frequencies for intra-band non-contiguous CA configuration DC_41A_41A may be added to this clause as required by the RF test cases.

Table 4.3.1.4.41.1-1: Test frequencies for EN-DC combination DC_41A_n41A, SCS=30kHz, Max Wgap.

Test Frequency ID	NR channel bandwidth [MHz]	NR scs [kHz]	NR test frequency range (Note 1)	E-UTRA channel bandwidth [MHz]	E-UTRA frequency range (Note 2)
Low with maxWgap (NR – E-UTRA)	40	30	Low	20	High
	60				
	80				
	100				
High with maxWgap (E-UTRA - NR)	40		High	20	Low
	60				
	80				
	100				
Note 1: The NR test frequencies are specified in clause 4.3.1.1.1.41 for the NR Channel Bandwidth, NR scs and NR test frequency range as given in the table.					
Note 2: The E-UTRA test frequencies are specified in TS 36.508 [2], clause 4.3.1.2.9 for the E-UTRA channel bandwidth and E-UTRA test frequency range as given in the table.					

4.3.1.4 Test frequencies for Non-3GPP Access

4.3.1.4.1 WLAN Test frequencies

The same WLAN test frequencies as in TS 36.508 [2] clause 4.3.1.6 applies.

4.3.1.5 Test frequencies for EN-DC band combinations with NR FR2

4.3.1.5.1 Inter-band EN-DC configurations with NR FR2

4.3.1.5.1.1 General

For inter-band EN-DC configurations as listed in this sub-clause, the following apply:

For the E-UTRA band and E-UTRA CA configurations, test frequencies as specified in TS 36.508 [2], clause 4.3.1 are used.

For the NR band and NR CA configurations, test frequencies as specified in clause 4.3.2 are used.

4.3.1.5.1.2 Inter-band EN-DC configurations with NR FR2 (two bands)

Table 4.3.1.5.1.2-1: Inter-band EN-DC configurations (FR2, two bands)

EN-DC Configuration	Uplink EN-DC configuration	E-UTRA configuration	NR configuration
DC_1A_n257A	DC_1A_n257A	1A	n257A
DC_3A_n257A	DC_3A_n257A	3A	n257A
DC_5A-n260A	DC_5A_n260A	5A	n260A
DC_5A_n261A	DC_5A_n261A	5A	n261A
DC_13A_n257A	DC_13A_n257A	13A	n257A
DC_19A_n257A	DC_19A_n257A	19A	n257A
DC_30A_n260(A-I)	DC_30A_n260A	30A	CA_n260(A-I)
DC_21A_n257A	DC_21A_n257A	21A	n257A
DC_66A_n260A	DC_66A_n260A	66A	n260A
DC_66A-n261A	DC_66A_n261A	66A	n261A

4.3.1.5.1.3 Inter-band EN-DC configurations with NR FR2 (three bands)

Table 4.3.1.5.1.3-1: Inter-band EN-DC configurations (FR2, three bands)

EN-DC configuration	Uplink EN-DC configuration	E-UTRA configuration	NR configuration
FFS	FFS	FFS	FFS

4.3.1.5.1.4 Inter-band EN-DC configurations with NR FR2 (four bands)

Table 4.3.1.5.1.4-1: Inter-band EN-DC configurations (FR2, four bands)

EN-DC configuration	Uplink EN-DC configuration	E-UTRA configuration	NR configuration
FFS	FFS	FFS	FFS

4.3.1.5.1.5 Inter-band EN-DC configurations with NR FR2 (five bands)

Table 4.3.1.5.1.5-1: Inter-band EN-DC configurations (FR2, five bands)

EN-DC configuration	Uplink EN-DC configuration	E-UTRA configuration	NR configuration
FFS	FFS	FFS	FFS

4.3.1.5.1.6 Inter-band EN-DC configurations with NR FR2 (six bands)

Table 4.3.1.5.1.6-1: Inter-band EN-DC configurations (FR2, six bands)

EN-DC configuration	Uplink EN-DC configuration	E-UTRA configuration	NR configuration
FFS	FFS	FFS	FFS

4.3.1.6 Test frequencies for EN-DC band combinations with NR FR1 and FR2

4.3.1.6.1 Inter-band EN-DC configurations with NR FR1 and FR2

4.3.1.6.1.1 General

For inter-band EN-DC configurations as listed in this sub-clause, the following apply:

For the E-UTRA band and E-UTRA CA configurations, test frequencies as specified in TS 36.508 [2], clause 4.3.1 are used.

For the NR band and NR CA configurations, test frequencies as specified in clause 4.3.1 for FR1 and 4.3.2 for FR2 are used.

4.3.1.6.1.2 Inter-band EN-DC configurations with NR FR1 and FR2 (three bands)

4.3.1.6.1.3 Inter-band EN-DC configurations with NR FR1 and FR2 (four bands)

4.3.1.6.1.4 Inter-band EN-DC configurations with NR FR1 and FR2 (five bands)

4.3.1.6.1.5 Inter-band EN-DC configurations with NR FR1 and FR2 (six bands)

4.3.2 Radio conditions

4.3.2.1 FR1, normal propagation condition for connected

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.

4.3.2.2 FR2, condition for OTA

FFS

4.3.3 Physical channel allocations

4.3.3.1 E-UTRA

The same physical channel allocations as in TS 36.508 [2] clause 4.3.3 applies.

4.3.3.2 NR

4.3.3.2.1 Antennas

For FR1 testing, if the UE has two or four Rx antennas, the same downlink signal is applied to each antenna. All UE Rx antennas shall be connected unless otherwise stated in the test case.

4.3.3.2.2 Downlink physical channels and physical signals

Table 4.3.3.2.2-1: Power allocation for OFDM symbols and reference signals

Parameter	Unit	Value
SSS transmit power	W	Test specific (Note 1)
EPRE ratio of PSS to SSS	dB	0
EPRE ratio of PBCH DMRS to SSS	dB	0
EPRE ratio of PBCH to PBCH DMRS	dB	0
EPRE ratio of PDCCH DMRS to SSS	dB	0
EPRE ratio of PDCCH to PDCCH DMRS	dB	0
EPRE ratio of PDSCH DMRS to SSS	dB	0
EPRE ratio of PDSCH to PDSCH DMRS	dB	0
EPRE ratio of PTRS to PDSCH	dB	0
EPRE ratio of CSI-RS to SSS	dB	0
Note 1: For signalling test cases the power allocation according to clause 6.2.1.2 applies.		

4.3.3.2.3 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

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

For Signalling testing, the same subcarrier spacing (SCS) is used for carrier and SS blocks; the tables in clause 6.2.3.1 specify which SCS to use for a particular NR band. In general, SCS=15kHz is used for FR1 FDD, SCS=15kHz or SCS=30kHz is used for FR1 TDD and SCS=120kHz is used for FR2.

For Signalling testing, the default channel bandwidth is specified in clause 6.2.3.1 for each NR band.

For Signalling testing, single SS Tx antenna is used, in FR1, unless specified otherwise in the test case.

For RF testing, the mapping of DL physical channels to resource element is defined in Annex C of TS 38.101-1 [7] and TS 38.101-2 [8] and TS 38.101-3 [9].

4.3.4 Signal levels

4.3.4.1 Signal levels for conducted testing

4.3.4.1.1 Downlink signal levels

For E-UTRA cell in EN-DC with FR1 NR, the downlink power setting specified in Table 4.3.4.1-1 of TS 36.508[2] are used unless otherwise specified in a test case.

4.3.4.2 Signal levels for OTA testing

As defined in clause 5.2.1.2 for RF tests.

As defined in clause 6.2.1.2 for Signalling tests.

As defined in clause 7.2.1.2 for RRM tests.

4.3.5 Standard test signals

4.3.6 Physical layer parameters

4.3.6.1 Downlink physical layer parameters

4.3.6.1.1 Physical layer parameters for scheduling of PUSCH

4.3.6.1.1.1 Physical layer parameters for DCI format 0_0

DCI format 0_0 is used for the scheduling of PUSCH in one cell.

Default physical layer parameters for DCI format 0_0 are specified in table 4.3.6.1.1.1-1.

Table 4.3.6.1.1.1-1: Physical layer parameters for DCI format 0_0

Parameter	Value	Value in binary
Identifier for DCI formats	Indicating an UL DCI format	“0”
Frequency domain resource assignment	Dependent on test parameters	-
Time domain resource assignment	Indicating the first entry of PDSCH-TimeDomainResourceAllocationList to be used	“0000”
Frequency hopping flag	w/o hopping	“0”
Modulation and coding scheme	Dependent on test parameters	
New data indicator	Set for every data transmission/retransmission according to the rules specified in TS 38.321	-
Redundancy version	Dependent on test parameters	-
HARQ process number	Depending on test parameters	-
TPC command for scheduled PUSCH	0 dB (accumulated TPC) as per Table 7.1.1-1 in TS 38.213	“01”
UL/SUL indicator	Not present (0 bit for UEs not configured with SUL in the cell	-

4.3.6.1.1.2 Physical layer parameters for DCI format 0_1

DCI format 0_1 is used for the scheduling of PUSCH in one cell.

Default physical layer parameters for DCI format 0_1 are specified in table 4.3.6.1.1.2-1.

Table 4.3.6.1.1.2-1: Physical layer parameters for DCI format 0_1

<table>
<tr><th>Parameter</th><th>Value</th><th>Value in binary</th><th>Condition</th></tr>
<tr><td>Carrier indicator</td><td>Not present</td><td>-</td><td></td></tr>
<tr><td>UL/SUL indicator</td><td>Not present (0 bit for UEs not configured with SUL in the cell)</td><td>-</td><td></td></tr>
<tr><td>Identifier for DCI formats</td><td>Indicating an UL DCI format</td><td>“0”</td><td></td></tr>
<tr><td>Bandwidth part indicator</td><td>Not present (indicating active BWP, not present in case of only one BWP-Id as per Table 4.6.3-8)</td><td>-</td><td></td></tr>
<tr><td>Frequency domain resource assignment</td><td>Dependent on test parameters</td><td>-</td><td></td></tr>
<tr><td>Time domain resource assignment</td><td>Indicating the first entry of PDSCH-TimeDomainResourceAllocationList to be used</td><td>“0000”</td><td></td></tr>
<tr><td>Frequency hopping flag</td><td>Not present</td><td>-</td><td></td></tr>
<tr><td>Modulation and coding scheme</td><td>Dependent on test parameters</td><td>-</td><td></td></tr>
<tr><td>New data indicator</td><td>Set for every data transmission / retransmission according to the rules specified in TS 38.321 [20]</td><td>-</td><td></td></tr>
<tr><td>Redundancy version</td><td>Dependent on test parameters</td><td>-</td><td></td></tr>
<tr><td>HARQ process number</td><td>Depending on test parameters</td><td>-</td><td></td></tr>
<tr><td>1st downlink assignment index</td><td>$V_{\mathrm{T-DAI}}^{\mathrm{UL}}$ = 1 as per Table 9.1.3-2 in TS 38.213 [22]</td><td>“00”</td><td></td></tr>
<tr><td>2nd downlink assignment index</td><td>Not present (0 bit if one HARQ-ACK sub-codebook)</td><td>-</td><td></td></tr>
<tr><td>TPC command for scheduled PUSCH</td><td>0 dB (accumulated TPC) as per Table 7.1.1-1 in TS 38.213 [22]</td><td>“01”</td><td></td></tr>
<tr><td>SRS resource indicator</td><td>Not present</td><td>-</td><td></td></tr>
<tr><td rowspan="2">Precoding information and number of layers</td><td>Depending on test parameters

Number of bits determined by determined by antenna ports , txConfig, and higher layer parameters transformPrecoder, maxRank, and codebookSubset in Table 4.6.3-118: PUSCH-Config (NOTE 1)

Value is determined by number of layer and the selected TPMI as per clause 7.3.1.1.2 TS 38.212 [27]</td><td>-</td><td></td></tr>
<tr><td>2</td><td>“10”</td><td>2TX_UL_MIMO</td></tr>
<tr><td rowspan="2">Antenna ports</td><td rowspan="2">Port 0 (NOTE 2)</td><td>“000”</td><td></td></tr>
<tr><td>“00”</td><td>TRANSFORM _PRECODER _ENABLED</td></tr>
</table>

SRS request	No aperiodic SRS resource set triggered as per Table 7.3.1.1.2-24 in TS 38.212 (no SUL configured)	"00"	
CSI request	Not present	-	
CBG transmission information	Not present	-	
PTRS-DMRS association	DMRS port 0	"00"	PTRS_UL_CONFIG
	Not present	-	
beta_offset indicator	Not present (0 bit if the higher layer parameter dynamic in uci-on-PUSCH is not configured)	-	
DMRS sequence initialization	n_{SCID} = 0 (ScramblingID0 is not present as per Table 4.6.3-50)	"0"	
	Not present	-	TRANSFORM_PRECODER_ENABLED
UL-SCH indicator	Dependent on test parameters 1 bit. A value of "1" indicates UL-SCH shall be transmitted on the PUSCH and a value of "0" indicates UL-SCH shall not be transmitted on the PUSCH.	-	
NOTE 1: codebookSubset = nonCoherent, 2 layers,TPMI = 0 as specified in TS 38.212 [27] Table 7.3.1.1.2-4 NOTE 2: Bitsize depends on transform precoder being enabled/disabled (PUSCH_Config, Table 4.6.3-118) and on dmrs-Type and maxLength (DMRS-UplinkConfig, Table 4.6.3-51); 3 bits (transform precoder disabled) or 2 bits (transform precoder enabled) for DMRS type 1 and len1			

Condition	Explanation
2TX_UL_MIMO	For the purpose of 2TX Uplink MIMO test.
PTRS_UL_CONFIG	When PTRS Uplink is configured
TRANSFORM_PRECODER_ENABLED	Transform precoding is enabled (PUSCH_Config, Table 4.6.3-118)

4.3.6.1.2 Physical layer parameters for scheduling of PDSCH

4.3.6.1.2.1 Physical layer parameters for DCI format 1_0

DCI format 1_0 is used for the scheduling of PDSCH in one cell.

Default physical layer parameters for DCI format 1_0 are specified in table 4.3.6.1.2.1-1 to 4.3.6.1.2.1-4.

Table 4.3.6.1.2.1-1: Physical layer parameters for DCI format 1_0

Parameter	Value	Value in binary
Identifier for DCI formats	Indicating a DL DCI format	"01"
Frequency domain resource assignment	Dependent on test parameters	-
Time domain resource assignment	Indicating the first entry of PDSCH-TimeDomainResourceAllocationList to be used	"0000"
VRB-to-PRB mapping	Non-interleaved	"0"
Modulation and coding scheme	Dependent on test parameters	-
New data indicator	Set for every data transmission/retransmission according to the rules specified in TS 38.321	-
Redundancy version	Dependent on test parameters	-
HARQ process number	Depending on test parameters	-
Downlink assignment index	$V_{\mathrm{C-DAI}}^{\mathrm{DL}} / V_{\mathrm{T-DAI}}^{\mathrm{DL}}$ = 1 as per Table 9.1.3-1 in TS 38.213	"00"
TPC command for scheduled PUCCH	0 dB (accumulated TPC) as per Table 7.2.1-1 in TS 38.213	"01"
PUCCH resource indicator	*PUCCH-ResourceId[1]* = [0] as defined in Table 4.6.3-112 (Mapping as per Table 9.2.3-2 in TS 38.213)	"000"
PDSCH-to-HARQ_feedback timing indicator	2 slots as specified in 9.2.3 in TS 38.213	"001"

Table 4.3.6.1.2.1-2: Physical layer parameters for DCI format 1_0 for paging

Parameter	Value	Value in binary
Short Messages Indicator	Only scheduling information for Paging is present in the DCI	"01"
Short Messages	Reserved	-
Frequency domain resource assignment	Dependent on test parameters	-
Time domain resource assignment	Indicating the first entry of PDSCH-TimeDomainResourceAllocationList to be used	"0000"
VRB-to-PRB mapping	Non-interleaved	"0"
Modulation and coding scheme	Dependent on test parameters	-
TB scaling	Scaling factor S=1 as defined in Table 5.1.3.2-2 in TS 38.214)	"00"
Reserved bits	Reserved 6 bits	-

Table 4.3.6.1.2.1-3: Physical layer parameters for DCI format 1_0 for SI

Parameter	Value	Value in binary	Condition
Frequency domain resource assignment	Dependent on test parameters	-	-
Time domain resource assignment	Indicating the first entry of Table 5.1.2.1.1-2 in TS 38.214 [21] to be used	"0000"	SIB1
	Indicating the first entry of PDSCH-TimeDomainResourceAllocationList to be used	"0000"	SI
VRB-to-PRB mapping	Non-interleaved	"0"	-
Modulation and coding scheme	Dependent on test parameters	-	-
Redundancy version	Dependent on test parameters	-	-
System information indicator	SIB1	"0"	SIB1
	SI message	"1"	SI
Reserved bits	Reserved 15 bits	-	-

Condition	Explanation
SIB1	Used for DCI format 1_0 for SIB1
SI	Used for DCI format 1_0 for SI

Table 4.3.6.1.2.1-4: Physical layer parameters for DCI format 1_0 for random access

Parameter	Value	Value in binary
Frequency domain resource assignment	Dependent on test parameters	-
Time domain resource assignment	Indicating the first entry of PDSCH-TimeDomainResourceAllocationList to be used	“0000”
VRB-to-PRB mapping	Non-interleaved	“0”
Modulation and coding scheme	Dependent on test parameters	-
Redundancy version	Dependent on test parameters	-
TB scaling	Scaling factor S=[1] as defined in Table 5.1.3.2-2 in TS 38.214)	“00”
Reserved bits	Reserved 16 bits	-

4.3.6.1.2.2 Physical layer parameters for DCI format 1_1

DCI format 1_1 is used for the scheduling of PDSCH in one cell.

Default physical layer parameters for DCI format 1_1 are specified in table 4.3.6.1.2.2-1.

Table 4.3.6.1.2.2-1: Physical layer parameters for DCI format 1_1

Parameter	Value	Value in binary
Carrier indicator	Not present	-
Identifier for DCI formats	Indicating a DL DCI format	"1"
Bandwidth part indicator	Not present	-
Frequency domain resource assignment	Dependent on test parameters	-
Time domain resource assignment	Indicating the first entry of PDSCH-TimeDomainResourceAllocationList to be used	"0000"
VRB-to-PRB mapping	Non-interleaved	"0"
PRB bundling size indicator	Not present (semi-static PRB_bundling)	-
Rate matching indicator	Not present	-
ZP CSI-RS trigger	Not present	-
Modulation and coding scheme (TB1)	Dependent on test parameters	-
New data indicator (TB1)	Set for every data transmission/retransmission according to the rules specified in TS 38.321 [20]	-
Redundancy version (TB1)	Dependent on test parameters	-
Modulation and coding scheme (TB2)	Dependent on test parameters	-
New data indicator (TB2)	Set for every data transmission/retransmission according to the rules specified in TS 38.321 [20]	-
Redundancy version (TB2)	Dependent on test parameters	-
HARQ process number	Depending on test parameters	-
Downlink assignment index	$V_{\mathrm{C-DAI}}^{\mathrm{DL}} / V_{\mathrm{T-DAI}}^{\mathrm{DL}}$ = 1 as per Table 9.1.3-1 in TS 38.213 [22]	"00"
TPC command for scheduled PUCCH	0 dB (accumulated TPC) as per Table 7.2.1-1 in TS 38.213 [22]	"01"
PUCCH resource indicator	*PUCCH-ResourceId[1]* = [0] as defined in Table 4.6.3-112 (Mapping as per Table 9.2.3-2 in TS 38.213 [22])	"000"
PDSCH-to-HARQ_feedback timing indicator	corresponding to 2 slots as per Table 9.2.3-1 in TS 38.213 [22] and *dl-DataToUL-ACK* in Table 4.6.3-112	"000"
Antenna port(s)	DMRS port 0 as per Table 7.3.1.2.2-1 in TS 38.212 [27] (*dmrs-Type* = DMRS type 1 and *maxLength* = len1 as per Table 4.6.3-50)	"0000"

Transmission configuration indication	Not present (0 bits, *tci-PresentInDCI* = Not present as per Table 4.6.3-28)	-
SRS request	No aperiodic SRS resource set triggered as per Table 7.3.1.1.2-24 in TS 38.212 [27] (no SUL configured)	“00”
CBG transmission information	Not present	-
CBG flushing out information	Not present	-
DMRS sequence initialization	fix length of 1 bit; '0'B for DMRS-DownlinkConfig.scramblingID0 (or physCellId if scramblingID0 is not present); see Table 4.6.3-50	“0”

4.3.6.1.3 Void

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 simulated network scenarios will simulate UE operation in either standalone NR, standalone E-UTRA or in non-standalone NR and E-UTRA networks. For non-standalone case either the NR or the E-UTRA radio access acts as the master anchor node. For both standalone and non-standalone cases, the simulated networks may be single mode networks (FDD or TDD) or dual mode networks (FDD+TDD). For the standalone NR case the simulated networks may also be inter-RAT networks ((FDD or TDD) + (E-UTRA FDD or E-UTRA TDD).

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 sub-clause 6.1 for such information.

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

4.4.1.1 Standalone cell network scenarios

4.4.1.1.1 Standalone E-UTRA single cell and multi cell network scenarios

For standalone E-UTRA FDD or TDD single cell environment see TS 36.508 [2], clause 4.4.1.1.

For standalone E-UTRA FDD or TDD multi cell network scenarios see TS 36.508 [2], clause 4.4.1.2.

4.4.1.1.2 Standalone NR single cell network scenarios

For standalone NR FDD or TDD single cell environment, NR Cell 1 is used.

4.4.1.1.3 Standalone NR single mode multi cell network scenarios

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

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

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

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

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

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

4.4.1.1.4 Standalone NR dual mode multi cell network scenarios

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

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

In addition, standalone NR single mode multi cell network scenarios defined in clause 4.4.1.1.3 are combined with the dual mode scenarios defined in this clause when additional intra or inter-frequency cells are used.

4.4.1.1.5 Standalone NR 3GPP Inter-RAT network scenarios

For standalone NR FDD or TDD single cell with E-UTRA FDD or E-UTRA TDD single cell inter-RAT environment:

- NR Cell 1 is used for the NR cell; and
- Cell 1, as specified in TS 36.508 [2] clause 4.4.1.1, is used for the E-UTRA cell.

For standalone NR FDD or TDD single cell with E-UTRA FDD or E-UTRA TDD multi cell inter-RAT environment:

- NR Cell 1 is used for the NR cell; and
- Cell 1, Cell 2 and Cell 4, as specified in TS 36.508 [2] clause 4.4.1.2, is used for the E-UTRA cell; and

4.4.1.2 Non-standalone cell network scenarios

4.4.1.2.1 Non-standalone E-UTRA single cell and NR single cell network scenarios

For non-standalone NR FDD or TDD single cell and E-UTRA FDD or TDD single cell environment:

- Cell 1, as specified in TS 36.508 [2] clause 4.4.1.1, is used for the E-UTRA cell; and
- NR Cell 1 is used for the NR cell.

4.4.1.2.2 Non-standalone E-UTRA single cell and NR single mode multi cell network scenarios

For non-standalone E-UTRA single cell and FDD or TDD NR intra-frequency single mode multi cell environment:

- Cell 1, as specified in TS 36.508 [2] clause 4.4.1.1, is used for the E-UTRA cell; and
- NR Cell 1, NR Cell 2 and NR Cell 4 are used for NR cells.

For non-standalone E-UTRA single cell and FDD or TDD NR inter-frequency single mode multi cell environment:

- Cell 1, as specified in TS 36.508 [2] clause 4.4.1.1, is used for the E-UTRA cell; and
- NR Cell 1, NR Cell 3 and NR Cell 6 are used for the NR cells.

For non-standalone E-UTRA single cell and FDD or TDD NR inter-band single mode multi cell environment:

- Cell 1, as specified in TS 36.508 [2] clause 4.4.1.1, is used for the E-UTRA cell; and
- NR Cell 1 and NR Cell 10 are used for the NR cells.

4.4.1.2.3 Non-standalone E-UTRA single mode multi cell and NR single mode multi cell network scenarios

For non-standalone E-UTRA intra-frequency single mode multi cell and FDD or TDD NR intra-frequency single mode multi cell environment:

- E-UTRA Cell 1, Cell 2 and Cell 4, as specified in TS 36.508 [2] clause 4.4.1.2, is used for the E-UTRA cell; and
- NR Cell 1, NR Cell 2 and NR Cell 4 are used for NR cells.

For non-standalone FDD or TDD E-UTRA intra-frequency single mode multi cell and FDD or TDD NR inter-frequency single mode multi cell environment:

- E-UTRA Cell 1, Cell 2 and Cell 4, as specified in TS 36.508 [2] clause 4.4.1.2, is used for the E-UTRA cell; and
- NR Cell 1, NR Cell 3 and NR Cell 6 are used for the NR cells.

For non-standalone FDD or TDD E-UTRA inter-frequency single mode multi cell and FDD or TDD NR inter-frequency single mode multi cell environment:

- E-UTRA Cell 1, Cell 3 and Cell 6, as specified in TS 36.508 [2] clause 4.4.1.2, is used for the E-UTRA cell; and
- NR Cell 1, NR Cell 3 and NR Cell 6 are used for the NR cells.

For non-standalone single E-UTRA cell and FDD or TDD NR inter-band single mode multi cell environment:

- E-UTRA Cell 1, Cell 2 and Cell 4, as specified in TS 36.508 [2] clause 4.4.1.2, is used for the E-UTRA cell; and
- NR Cell 1 and NR Cell 10 are used for the NR cells.

4.4.1.2.4 Non-standalone E-UTRA single cell and NR dual mode multi cell network scenarios

Editor's note: It is FFS if the NR dual mode multi cell environment needs to include multiple E-UTRA cells in addition to the multiple NR cells.

For non-standalone single E-UTRA cell and FDD and TDD NR dual mode multi cell environment:

- Cell 1, as specified in TS 36.508 [2] clause 4.4.1.1, is used for the E-UTRA cell; and
- NR Cell 1, NR Cell 10 and NR Cell 31 are used for the NR cells.

In addition, standalone NR single mode multi cell network scenarios defined in clause 4.4.1.2.2 are combined with the dual mode scenarios defined in this clause when additional intra or inter-frequency NR cells are used.

4.4.1.3 Non-3GPP Accesss network scenarios

4.4.1.3.1 WLAN network scenario

For non-3GPP access over WLAN single cell environment Cell 27, as specified in TS 36.508 [2] clauses 4.4.2 and 4.4.8 with condition 'IMSoWLAN' is used.

4.4.2 Simulated cells

NOTE 1: For NAS test cases see subclause 6.3.2.

NOTE 2: Test frequency and range defined in table 4.4.2-1 do not apply to TS 38.521-1, TS 38.521-2 and TS 38.521-3 test cases.

Test frequencies and simulated NR cells are defined in table 4.4.2-1. Test frequencies and simulated E-UTRA cells are defined in TS 36.508 [2] table 4.4.2-1.

For NR cells, NRf1 is the default test frequency. For E-UTRA cells, f1 as specified in TS 36.508 [2] table 4.2.2-1 is the default test frequency.

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

Default parameters for simulated E-UTRA cells are specified in TS 36.508 [2] table 4.4.2-1A and table 4.4.2-2.

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

Common parameters for E-UTRA simulated cells are specified in TS 36.508 [2] clauses 4.4.3 to 4.4.6A.

Other cell specific parameters are specified in clause 4.4.7.

Editor's note: Notes 2 to 6 in Table 4.4.2-1 for NR cells have been inherited from TS 36.508 [2] Table 4.4.2-1 for E-UTRA cells assuming that similar notes will be needed for NR cells. The notes and the references in the table to the notes are marked by []-brackets pending the confirmation if the notes are needed or not.

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

Test frequency	RAT	Operating band	Range	Simulated NR cells
NRf1	NR	Operating band under test	Mid (Note 1, [Note 3], [Note 6])	NR Cell 1, NR Cell 2, NR Cell 4, NR Cell 11 ([Note 2])
NRf2	NR	Operating band under test	High (Note 1, [Note 4], [Note 6])	NR Cell 3, NR Cell 12, NR Cell 23
NRf3	NR	Operating band under test	Low (Note 1, [Note 5], [Note 6])	NR Cell 6, NR Cell 13
NRf4	NR	Operating band under test	(Note 1)	NR Cell 14
NRf5	NR	Operating band for inter-band cells	Mid (Note 1)	NR Cell 10, NR Cell 30, NR Cell 31
NRf6	NR	Operating band for inter-band cells	High (Note 1)	NR Cell 28, NR Cell 29
NRf7	NR	Operating band for inter-band cells	Low (Note 1)	
NRf8	NR	Operating band for SDL cell	Mid (note 1)	NR Cell 32
NRf9	NR	Operating band for SUL cell	Mid (note 1)	NR Cell 33

Note 1: For signalling test, see clause [6.2.3].
[Note 2: For signalling test, simultaneous co-existence of NR Cell 2 with NR Cell 11 is not allowed.]
[Note 3: 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 4: 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 5: 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 6: 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.]

Table 4.4.2-2: Default NR parameters for simulated NR cells

cell ID	NR Cell Identifier		Physical layer cell identity	PRACH-rootSequenceIndex FDD	PRACH-rootSequenceIndex TDD
	gNB Identifier	Cell Identity		$L_{RA} = 139$ Note 1	$L_{RA} = 139$ Note 1
NR Cell 1	'00 0000 0000 0000 0000 0000 0001'B	'00 0000 0000'B	0	0	0
NR Cell 2	'00 0000 0000 0000 0000 0000 0001'B	'00 0000 0010'B	2	32	32
NR Cell 3	'00 0000 0000 0000 0000 0000 0010'B	'00 0000 0011'B	3	0	0
NR Cell 4	'00 0000 0000 0000 0000 0000 0011'B	'00 0000 0100'B	4	64	64
NR Cell 6	'00 0000 0000 0000 0000 0000 0100'B	'00 0000 0110'B	6	0	0
NR Cell 10	'00 0000 0000 0000 0000 0000 0101'B	'00 0000 1010'B	10	0	0
NR Cell 11	'00 0000 0000 0000 0000 0000 0110'B	'00 0000 1011'B	11	96	96
NR Cell 12	'00 0000 0000 0000 0000 0000 0010'B	'00 0000 1100'B	12	32	32
NR Cell 13	'00 0000 0000 0000 0000 0000 0100'B	'00 0000 1101'B	13	32	32
NR Cell 14	'00 0000 0000 0000 0000 0000 0111'B	'00 0000 1110'B	14	0	0

NR Cell 23	'00 0000 0000 0000 0000 0000 0110'B	'00 0001 0111'B	23	64	64
NR Cell 28	'00 0000 0000 0000 0000 0000 0010'B	'00 0001 1100'B	28	0	0
NR Cell 29	'00 0000 0000 0000 0000 0000 0100'B	'00 0001 1101'B	29	32	32
NR Cell 30	'00 0000 0000 0000 0000 0000 0111'B	'00 0001 1110'B	30	32	32
NR Cell 31	'00 0000 0000 0000 0000 0000 0110'B	'00 0001 1111'B	31	64	64
NR Cell 32	'00 0000 0000 0000 0000 0001'B	'00 0010 0000'B	32	-	-
NR Cell 33	'00 0000 0000 0000 0000 0001'B	'00 0010 0001'B	33	-	-
Note 1: To avoid collision of the preambles between intra-frequency cells, with the default *zeroCorrelationZoneConfig* value set to 15, the *PRACH-rootSequenceIndex* values have been separated by 32 root sequences per intra-frequency cell.					

Table 4.4.2-3: Default NAS parameters for simulated NR cells

cell ID	Tracking Area				TA# list (Note 1)	5G-GUTI (Note 2)			
	TA#	PLMN		TAC		AMF Identifier			5G-TMSI
		MCC	MNC			AMF region ID	AMF Set ID	AMF Pointer	
NR Cell 1	TAI-1	(Note 3)		1	TAI-1	254	1	1	Arbitrarily selected according to TS 23.003 subclause 2.10 [26].
NR Cell 2	TAI-1	(Note 3)		1	TAI-1	254	1	1	
NR Cell 3	TAI-1	(Note 3)		1	TAI-1	254	1	1	
NR Cell 4	TAI-1	(Note 3)		1	TAI-1	254	1	1	
NR Cell 6	TAI-1	(Note 3)		1	TAI-1	254	1	1	
NR Cell 10	TAI-1	(Note 3)		1	TAI-1	254	1	1	
NR Cell 11	TAI-2	(Note 3)		2	TAI-2	254	1	1	
NR Cell 23	TAI-2	(Note 3)		2	TAI-2	254	1	1	
NR Cell 12, NR Cell 28	TAI-3	002	11	1	TAI-3	253	1	1	
NR Cell 13, NR Cell 29	TAI-4	003	21	1	TAI-4	252	1	1	
NR Cell 14, NR Cell 30	TAI-5	004	31	1	TAI-5	251	1	1	
NR Cell 31	TAI-2	(Note 3)		2	TAI-2	254	1	1	

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

Note 2: The value in the column 5G-GUTI indicates 5G-GUTI included in the response messages of the registration procedure (REGISTRATION 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).

4.4.3 Common parameters for simulated NR cells

The parameters specified in this sub clause apply to the simulated NR cells in standalone NR and non-standalone network scenarios unless otherwise specified.

The common parameters for the simulated E-UTRA cells for standalone E-UTRA and non-standalone network scenarios are specified in TS 36.508 [2] clause 4.4.3 unless otherwise specified.

4.4.3.1 Common configurations of system information blocks

4.4.3.1.1 Combinations of system information blocks for E-UTRA standalone, EN-DC and NGEN-DC

The combination of system information blocks for standalone E-UTRA, EN-DC and NGEN-DC network scenarios are specified in TS 36.508 [2] clause 4.4.3.1.

For EN-DC and NGEN-DC network scenarios the SS shall in addition to broadcasting the E-UTRA system information blocks also broadcast the NR MIB on the NR cell(s).

4.4.3.1.2 Combinations of system information blocks for NR standalone and NE-DC

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

- NR FDD single cell scenario
- NR TDD single cell scenario

Combination NR-2 applies to the following test case scenarios:

- NR FDD intra-frequency multi cell scenario
- NR TDD intra-frequency multi cell scenario
- NR FDD and NR TDD dual mode multi cell roaming scenario

Combination NR-3 applies to the following test case scenarios:

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

Combination NR-4 applies to the following test case scenarios:

- NR FDD inter-frequency multi cell scenario
- NR TDD inter-frequency multi cell scenario
- NR FDD inter-band multi cell scenario
- NR TDD inter-band multi cell scenario
- NR FDD and NR TDD dual mode multi cell non-roaming scenario

- NR FDD intra-band carrier aggregation component carriers cell scenario
- NR FDD inter-band carrier aggregation component carriers cell scenario
- NR TDD intra-band carrier aggregation component carriers cell scenario
- NR FDD and NR TDD inter-band carrier aggregation component carriers cell scenario

Combination NR-5 applies to the following test case scenarios:

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

Combination NR-6 applies to the following test case scenarios:

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

Combination NR-7 applies to the following test case scenarios:

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

Combination NR-8 applies to the following test case scenarios:

- NR FDD ETWS single cell scenario
- NR TDD ETWS single cell scenario

Combination NR-9 applies to the following test case scenarios:

- 3GPP NR FDD + CMAS single cell scenario
- 3GPP NR TDD + CMAS single cell scenario

Combination NR-10 applies to the following test case scenarios:

- 3GPP NR FDD + ETWS primary notification single cell scenario
- 3GPP NR TDD + ETWS primary notification single cell scenario

Combination NR-11 applies to the following test case scenarios:

- 3GPP NR FDD + ETWS secondary notification single cell scenario
- 3GPP NR TDD + ETWS secondary notification single cell scenario

Table 4.4.3.1.2-1: Combinations of system information blocks

	System information block type							
Combination No.	**SIB1**	**SIB2**	**SIB3**	**SIB4**	**SIB5**	**SIB6**	**SIB7**	**SIB8**
NR-1	X							
NR-2	X	X						
NR-3	X	X	X					
NR-4	X	X		X				
NR-5	X	X	X	X				
NR-6	X	X			X			
NR-7	X	X		X	X			
NR-8	X	X				X	X	
NR-9	X	X						X
NR-10	X	X				X		
NR-11	X	X					X	

4.4.3.1.3 Scheduling of system information blocks

The scheduling configurations for combinations of system information blocks are defined in the following tables. There is no scheduling information for combination NR-1.

Table 4.4.3.1.3-1: Scheduling for combination NR-2

Scheduling Information No.	Periodicity [radio frames]	Mapping of system information blocks
1	32	SIB2

Table 4.4.3.1.3-2: Scheduling for combination NR-3

Scheduling Information No.	Periodicity [radio frames]	Mapping of system information blocks
1	32	SIB2
2	64	SIB3

Table 4.4.3.1.3-3: Scheduling for combination NR-4

Scheduling Information No.	Periodicity [radio frames]	Mapping of system information blocks
1	32	SIB2
2	64	SIB4

Table 4.4.3.1.3-4: Scheduling for combination NR-5

Scheduling Information No.	Periodicity [radio frames]	Mapping of system information blocks
1	32	SIB2
2	64	SIB3
3	64	SIB4

Table 4.4.3.1.3-5: Scheduling for combination NR-6

Scheduling Information No.	Periodicity [radio frames]	Mapping of system information blocks
1	32	SIB2
2	64	SIB5

Table 4.4.3.1.3-6: Scheduling for combination NR-7

Scheduling Information No.	Periodicity [radio frames]	Mapping of system information blocks
1	32	SIB2
2	64	SIB4, SIB5

Table 4.4.3.1.3-7: Scheduling for combination NR-8

Scheduling Information No.	Periodicity [radio frames]	Mapping of system information blocks
1	32	SIB2
2	32	SIB6
3	32	SIB7

Table 4.4.3.1.3-8: Scheduling for combination NR-9

Scheduling Information No.	Periodicity [radio frames]	Mapping of system information blocks
1	32	SIB2
2	32	SIB8

Table 4.4.3.1.3-9: Scheduling for combination NR-10

Scheduling Information No.	Periodicity [radio frames]	Mapping of system information blocks
1	32	SIB2
2	32	SIB6

Table 4.4.3.1.3-10: Scheduling for combination NR-11

Scheduling Information No.	Periodicity [radio frames]	Mapping of system information blocks
1	32	SIB2
2	32	SIB7

4.4A Test states

4.4A.1 General

The purpose of the test states is to get the UE into specific 5GC and RRC protocol states in the initial condition of test cases. Each test state is identified by a test state ID. The syntax used for test state IDs is described in sub-clause 4.4A.4. The list of defined test states and the associated UE 5GC and RRC/ N3AN protocol states are specified in sub-clause 4.4A.2.

A test case may request that one or more test functions and/or configurations are activated/configured by the SS as part of the procedure used for the requested test state. The test case requests the additional test functions and/or configurations by specifying one or more test state parameters. The list of defined test state parameters is specified in sub-clause 4.4A.3.

4.4A.2 Test states and associated 5GC and RRC protocol states

Table 4.4A.2-0: 5GC and RRC/N3AN protocol states for UE Switched Off

5GS state ID	Connectivity	RRC/N3AN state	5GMM modes	5GMM sublayer	5GSM sublayer	Comments
0-A	-	-	-	-	-	UE switched off. No change to PLMN stored in the USIM
0N-B	NR	-	-	-	-	UE switched off with the PLMN under test stored in the USIM
0E-B	E-UTRA	-	-	-	-	
0W-B	WLAN	-	-	-	-	

Table 4.4A.2-1: 5GC and RRC/N3AN protocol states for IDLE

5GS state ID	Connectivity	RRC/N3AN state	5GMM modes	5GMM sublayer	5GSM sublayer
1N-A	NR	NR RRC_IDLE	5GMM-IDLE	5GMM-REGISTERED	PDU SESSION INACTIVE
					PDU SESSION ACTIVE
1E-A	E-UTRA	EUTRA RRC_IDLE	5GMM-IDLE	5GMM-REGISTERED	PDU SESSION INACTIVE
					PDU SESSION ACTIVE
1W-A	WLAN	Ipsec_SA_Released	5GMM-IDLE	5GMM-REGISTERED	PDU SESSION INACTIVE
					PDU SESSION ACTIVE

Table 4.4A.2-2: 5GC and RRC protocol states for INACTIVE

5GS state ID	Connectivity	RRC state	5GMM modes	5GMM sublayer	5GSM sublayer
2N-A	NR	NR RRC_INACTIVE	5GMM-CONNECTED	5GMM-REGISTERED	PDU SESSION INACTIVE
					PDU SESSION ACTIVE
2E-A	E-UTRA	EUTRA RRC_ INACTIVE	5GMM-CONNECTED	5GMM-REGISTERED	PDU SESSION INACTIVE
					PDU SESSION ACTIVE

Table 4.4A.2-3: 5GC and RRC/N3AN protocol states for CONNECTED

5GS state ID	Connectivity	RRC/N3AN state	5GMM modes	5GMM sublayer	5GSM sublayer
3N-A	NR	NR RRC_ CONNECTED	5GMM-CONNECTED	5GMM-REGISTERED	PDU SESSION INACTIVE
					PDU SESSION ACTIVE
3E-A	E-UTRA	EUTRA RRC_ CONNECTED	5GMM-CONNECTED	5GMM-REGISTERED	PDU SESSION INACTIVE
					PDU SESSION ACTIVE
3W-A	WLAN	Ipsec_SA_Established	5GMM-CONNECTED	5GMM-REGISTERED	PDU SESSION INACTIVE
					PDU SESSION ACTIVE

4.4A.3 Test state parameters

Table 4.4A.3-1 lists the test functions and configurations that a test case can request to be activated/configured. A test case requests a test function or configuration to be used in the preamble by including the test state parameter text in the preamble statement of the test case in *italics*.

Editor's Note: The test state parameters are currently limited to test functions required by standalone NR. Additional test state parameters will be added in future as needed. E.g. for EN-DC, NE-DC and NGEN-DC there will be a need for parameters for bearer type (MCG and SCG, MCG and split or MCG only).

Table 4.4A.3-1: Test state parameters

Test state parameter	Description
UE test loop mode <X> prepared	If included the UE test mode is activated in the preamble indicating that UE test loop mode <X> will be activated in the test case test procedure, where <X> is A or B. (Note 1, Note 2, Note 3)
UE test loop mode <X> active	If included the UE Test Mode and UE test loop mode <X> will be activated in the preamble, where <X> is A or B. (Note 1, Note 2, Note 3)
Note 1: See TS 38.509 [11], clause 5.2.2 for details of UE test mode. Note 2: See TS 38.509 [11], clause 5.3.4.1 for details of UE test loop mode A. Note 3: See TS 38.509 [11], clause 5.3.4.2.2 for details of UE test loop mode B.	

4.4A.4 Test state ID syntax

A test state ID is defined as:

<RRC state><Connectivity>-<Variant>

, where <RRC state>, <Connectivity> and <Variant> are defined in Table 4.4A.2-1.

Table 4.4A.4-1: Test state fields

Test state field	Value	Description
<RRC state>	0	Indicates that the requested test state will end up in SWITCHED_OFF state.
	1	Indicates that the requested test state will end up in RRC_IDLE/Ipsec_SA_Released state.
	2	Indicates that the requested test state will end up in RRC_INACTIVE state.
	3	Indicates that the requested test state will end up in RRC_CONNECTED/Ipsec_SA_Released state.
<Connectivity>	E	E-UTRA is used as the initial access.
	N	NR is used as the initial access.
	W	Un trusted non 3GPP Access over WLAN is used as the initial access
<Variant>	A	A, B, C etc. used to represent different variants within a <RRC state><Connectivity> group of test states.

4.4A.5 Mapping of test state IDs and test parameters to generic procedures, generic procedure parameters and specific message conditions

Depending on the test case preamble requested test state ID and test parameters the SS shall:

1> use the applicable generic procedure as specified in Table 4.4A.5-1 using the:

2> applicable generic procedure parameters as specified in Table 4.4A.5-1 and Table 4.4A.5-2; and

2> applicable message conditions as specified in Table 4.4A.5-2.

Table 4.4A.5-1: Test state ID mapping to generic procedures and Connectivity generic procedure parameter

Test state ID			Generic Procedure		
RRC state field	**Connectivity field**	**Variant field**	**Name**	**Generic procedure parameter (Note 1)**	**Clause**
0	-	A	SWITCHED_OFF		4.5.5
0	N	B	SWITCHED_OFF	Connectivity=*NR*	4.5.5
0	E	B	SWITCHED_OFF	Connectivity=*E-UTRA*	4.5.5
0	W	B	SWITCHED_OFF	Connectivity=*WLAN*	4.5.5
1	N	A	RRC_IDLE	Connectivity=*NR*	4.5.2
1	E	A	RRC_IDLE	Connectivity=*E-UTRA*	4.5.2
1	W	A	Ipsec_SA_Released	Connectivity=*WLAN*	4.5.2
2	N	A	RRC_INACTIVE	Connectivity=*NR*	4.5.3
2	E	A	RRC_INACTIVE	Connectivity=*E-UTRA*	4.5.3
3	N	A	RRC_CONNECTED	Connectivity=*NR*	4.5.4
3	E	A	RRC_CONNECTED	Connectivity=*E-UTRA*	4.5.4
3	W	A	Ipsec_SA_Established	Connectivity=*WLAN*	4.5.4
Note 1: In addition to the Connectivity parameter specified in this table the applicable additional generic procedure parameters and conditions as stated in Table 4.4A.5-2 shall be used					

Table 4.4A.5-2: Additional generic procedure parameters and message conditions

Test state parameter	Additional generic procedure parameter(s)	Specific message conditions	
		Message	Condition
UE test loop mode A prepared	Test Mode=*On*	Note 1	Note 1
UE test loop mode B prepared	Test Mode=*On*	ACTIVATE UE TEST MODE (Table FFS)	UE test loop mode B
UE test loop mode A active	Test Loop Function=*On*	Note 1	Note 1
UE test loop mode B active	Test Loop Function=*On*	ACTIVATE UE TEST MODE (Table FFS)	UE test loop mode B
		CLOSE UE TEST LOOP (Table FFS)	UE test loop mode B
Note 1: For test state parameters *UE test loop mode A prepared* and *UE test loop mode A active* there is no specific message conditions needed as the default UE test loop mode in the messages ACTIVATE UE TEST MODE and CLOSE UE TEST LOOP is UE test loop mode A.			

4.5 Generic procedures

4.5.1 General

The generic procedures are used by test cases to get UE under test into SWITCHED_OFF, RRC_IDLE/Ipsec SA not established, RRC_INACTIVE or RRC_CONNECTED/Ipsec SA established state.

A test case controls the SS by specifying the required RRC state and a set of generic procedure parameters applicable for the intended testing.

The connectivity *EN-DC* is MR-DC via E-UTRA-NR Dual Connectivity. This is a UE connected to the EPC. The connectivity *E-UTRA/5GC, NR, NGEN-DC, NE-DC* are all a UE connected to the 5GC.

The connectivity E-UTRA/EPC is E-UTRA connected to the EPC.MULTI_PDN configuration is defined in TS 36.508 [2], clause 4.5.2.

Table 4.5.1-1: Generic procedure parameters

Parameter	Values	Description	Parameter condition
Connectivity	*E-UTRA/5GC*	NG-RAN E-UTRA Radio Access	Mandatory
	NR	NG-RAN NR Radio Access	
	EN-DC	E-UTRA-NR Dual	

		Connectivity	
	NGEN-DC	NG-RAN E-UTRA-NR Dual Connectivity	
	NE-DC	NR-E-UTRA Dual Connectivity	
	WLAN	Un trusted non 3GPP access over WLAN	
	E-UTRA/EPC	RAN E-UTRA Radio Access	
Bearers	*MCG(s) and SCG*	MCG and SCG	Mandatory when Connectivity is set to *EN-DC*, *NGEN-DC* or *NE-DC* and when the generic procedures are used by test cases to get UE under test into RRC_CONNECTED state.s=1 if MULTI_PDN= FALSE and s=2 if MULTI_PDN=TRUE. Optional otherwise.
	MCG(s) and split	MCG and split	
	MCG(s) only	MCG only	
Test Mode	*On*	UE test mode active as specified in TS 38.509 [11], clause5.2.2.	Optional
Test Loop Function	*On*	UE test mode active with one of the UE test loop modes activated as specified in TS 38.509 [11], clauses 5.2.2 and 5.3.2.	Optional
Connected without release	*On*	Enter RRC_Connected with/ Ipsec_SA_Established out any release.	Optional

Editor's Note: The following values are not available to use in the current version of this specification because details are still FFS: Connectivity (E-UTRA/5GC, NGEN-DC, NE-DC).

4.5.2 RRC_IDLE

4.5.2.1 Initiation

The SS shall:

1> if connectivity is *EN-DC*

2> use 1 E-UTRA cell and 1 NR cell, default parameters;

2> if connected without release is not present:

3> perform according to the table 4.5.2.2-1: E-UTRA RRC_IDLE;

1> if connectivity is *E-UTRA/EPC*

2> use 1 E-UTRA cell, default parameters;

2> perform according to the table 4.5.2.2-1: E-UTRA RRC_IDLE;

1> if connectivity is *NR*

2> use 1 NR cell, default parameters;

2> perform according to the table 4.5.2.2-2: NR RRC_IDLE;

1> if connectivity is *WLAN*

2> use 1 WLAN cell, default parameters;

2> if connected without release is not present:

3> perform according to the table 4.5.2.2-3: WLAN Ipsec_SA_Released;

2> else:

3> Not Defined

4.5.2.2 Procedures

Table 4.5.2.2-1: E-UTRA RRC_IDLE

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1-9a2	Same as TS 36.508 [2] table 4.5.2.3-1, steps 1-9a2.	-	-	-	-
-	EXCEPTION: Steps 10a1 to 10b8 describe behaviour which depends on procedure parameters; the "lower case letter" identifies a step sequence that take place if a procedure parameter has a particular value.	-	-	-	-
10a1 - 10a10	IF Test Mode = On OR Test Loop Function = On THEN steps 10-19 as defined in TS 36.508 [2] table 4.5.2A.3-1, are performed. The ACTIVATE TEST MODE is using the associated condition for the test loop.	-	-	-	-
10b1 - 10b8	ELSE steps 10-17 as defined in TS 36.508 [2], table 4.5.2.3-1 are performed.	-	-	-	-

Table 4.5.2.2-2: NR RRC_IDLE

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1		<--	NR RRC: SYSTEM INFORMATION (BCCH)	-	-
2	The UE transmits an *RRCSetupRequest* message.	-->	NR RRC: *RRCSetupRequest*	-	-
3	The SS transmits an *RRCSetup* message.	<--	NR RRC: *RRCSetup*	-	-
4	The UE transmits an *RRCSetupComplete* message and a REGISTRATION REQUEST message.	-->	NR RRC: *RRCSetupComplete* 5GMM: REGISTRATION REQUEST	-	-
5	The SS transmits a *DLInformationTransfer* message and an AUTHENTICATION REQUEST message.	<--	NR RRC: *DLInformationTransfer* 5GMM: AUTHENTICATION REQUEST	-	-
6	The UE transmits an *ULInformationTransfer* message and an AUTHENTICATION RESPONSE message.	-->	NR RRC: *ULInformationTransfer* 5GMM: AUTHENTICATION RESPONSE	-	-
7	Void	-	-	-	-
8	The SS transmits a *DLInformationTransfer* message and a SECURITY MODE COMMAND message.	<--	NR RRC: *DLInformationTransfer* 5GMM: SECURITY MODE COMMAND	-	-
9	The UE transmits an *ULInformationTransfer* message and a SECURITY MODE COMPLETE message.	-->	NR RRC: *ULInformationTransfer* 5GMM: SECURITY MODE COMPLETE	-	-
-	EXCEPTION: Steps 9a1 to 9a2 describe the SS sequence depending on procedure parameters; the "lower case letter" identifies a step sequence that take place if a procedure parameter has a particular value	-	-	-	-
9a1	IF Test Mode = *On* OR Test Loop Function = *On*, the SS transmits an ACTIVATE TEST MODE message to activate UE radio bearer test mode procedure. The ACTIVATE TEST MODE message is using the associated condition for the test loop.	<--	RRC: *DLInformationTransfer* TC: ACTIVATE TEST MODE	-	-
9a2	The UE transmits an ACTIVATE TEST MODE COMPLETE message.	-->	RRC: *ULInformationTransfer* TC: ACTIVATE TEST MODE COMPLETE	-	-
10	The SS transmits a *SecurityModeCommand* message.	<--	NR RRC: *SecurityModeCommand*	-	-
11	The UE transmits a *SecurityModeComplete* message.	-->	NR RRC: *SecurityModeComplete*	-	-
12	The SS transmits a *UECapabilityEnquiry* message.	<--	NR RRC: *UECapabilityEnquiry*	-	-
13	The UE transmits a *UECapabilityInformation* message.	-->	NR RRC: *UECapabilityInformation*	-	-

14	The SS transmits a *DLInformationTransfer* message and a REGISTRATION ACCEPT message.	<--	NR RRC: *DLInformationTransfer* 5GMM: REGISTRATION ACCEPT	-	-
15	The UE transmits an *ULInformationTransfer* message and a REGISTRATION COMPLETE message.	-->	NR RRC: *ULInformationTransfer* 5GMM: REGISTRATION COMPLETE	-	-
16	Void	-	-	-	-
17	Void	-	-	-	-
18	Void	-	-	-	-
-	EXCEPTION: Step 19a1 describes behaviour depending UE implementation; the "lower case letter" identifies a step sequence that take place if the UE performs a specific action.	-	-	-	-
19a1	IF pc_noOf_PDUs > 0 THEN the generic procedure for UE-requested PDU session establishment, specified in subclause 4.5A.2, takes place performing establishment of UE-requested PDU session(s) with ExpectedNumberOfNewPDUSessions = pc_noOf_PDUs.	-	-	-	-
-	EXCEPTION: Steps 19Aa1 to 19Aa2 describe behaviour which depends on the SS sequence depending on procedure parameters; the "lower case letter" identifies a step sequence that take place if a procedure parameter has a particular value.	-	-	-	-
19Aa1	IF connected without release is *On* AND Test Loop Function=*On* THEN the SS transmits a CLOSE UE TEST LOOP message to enter the UE test loop mode. The CLOSE UE TEST LOOP is using the associated condition for the test loop.	<--	NR RRC: *DLInformationTransfer* TC: CLOSE UE TEST LOOP	-	-
19Aa2	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.	-->	NR RRC: *ULInformationTransfer* TC: CLOSE UE TEST LOOP COMPLETE	-	-
-	EXCEPTION: Step 20a1 depends on the SS sequence depending on procedure parameters; the "lower case letter" identifies a step sequence that take place if a procedure parameter has a particular value.	-	-	-	-
20a1	IF connected without release is not present THEN, the SS transmits an *RRCRelease* message.	<--	NR RRC: *RRCRelease*	-	-

Table 4.5.2.2-3: WLAN Ipsec_SA_Released

St	Procedure	Message Sequence			
		U – S	Message		
1	The UE associates with the WLAN AP and obtains the local IP address	-	-		
2	The UE performs a dynamic selection of N3IWF using DNS query	-	-		
-	Exception: The UE establishes an IPsec tunnel in parallel to 5GC registration steps 3 to 7 as per the IKEv2 protocol as defined in 3GPP TS 23.502 [33] clause 4.12.2.2 figure 4.12.2.2-1.	-	-		
3	The UE transmits an REGISTRATION REQUEST message.	-->	5GMM: REGISTRATION REQUEST		
4	The SS transmits an AUTHENTICATION REQUEST message including EAP-Request/AKA'-Challenge or 5G AKA Challenge.	<--	5GMM: AUTHENTICATION REQUEST		
5	The UE transmits an AUTHENTICATION RESPONSE message including EAP-Response/AKA'-Challenge or 5G AKA Response.	-->	5GMM: AUTHENTICATION RESPONSE		
6	The SS transmits a SECURITY MODE COMMAND message including EAP-Success if EAP-AKA' used..	<--	5GMM: SECURITY MODE COMMAND		
7	The UE transmits a SECURITY MODE COMPLETE message.	-->	5GMM: SECURITY MODE COMPLETE		
8	The SS transmits a REGISTRATION ACCEPT message.	<--	5GMM: REGISTRATION ACCEPT		
9	The UE transmits a REGISTRATION COMPLETE message.	-->	5GMM: REGISTRATION COMPLETE		
10	The generic procedure for UE-requested PDU session establishment, specified in subclause 4.5A.2A, takes place performing establishment of UE-requested PDU session.	-	-		
-	EXCEPTION: Step 11a1 depends on the SS sequence depending on procedure parameters; the "lower case letter" identifies a step sequence that take place if a procedure parameter has a particular value.				
11a1	IF connected without release is not present THEN generic procedure for SS-requested IPsec Secure tunnel disconnection, specified in subclause 4.5A.5, takes place performing disconnection of security association.	-	-		
Note: The current procedure assumes UE establishes a single PDU session over Non 3GPP Access					

4.5.2.3 Specific message contents

All specific message contents shall be according clause 4.6 and 4.7 and TS 36.508 [2] clause 4.6 and 4.7.

4.5.3 RRC_INACTIVE

4.5.3.1 Initiation

The SS shall:

1> if connectivity is *NR*

2> use 1 NR cell, default parameters;

2> perform according to the table 4.5.3.2-1: NR RRC_INACTIVE;

4.5.3.2 Procedures

Table 4.5.3.2-1: NR RRC_INACTIVE

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1-19a1	Same as table 4.5.2.2-2, steps 1-19a1.	-	-	-	-
20	The SS transmits an RRCRelease message with suspend.	<--	NR RRC: *RRCRelease*	-	-

4.5.4 RRC_CONNECTED

4.5.4.1 Initiation

The SS shall:

1> perform according to clause 4.5.2 RRC_IDLE;

1> if connectivity is *EN-DC*:

2> use 1 E-UTRA cell and 1 NR cell, default parameters;

2> if connected without release is *On*:

3> perform according to the table 4.5.4.2-2: RF E-UTRA RRC_CONNECTED;

2> else:

3> perform according to the table 4.5.4.2-1: E-UTRA RRC_CONNECTED;

1> if connectivity is *NR*

2> use 1 NR cell, default parameters;

2> if connected without release is not present:

3> perform according to the table 4.5.4.2-3: NR RRC_CONNECTED;

1> if connectivity is *WLAN*

2> use 1 WLAN cell, default parameters;

2> if connected without release is not present:

3> perform according to the table 4.5.4.2-4: WLAN IPsec_SA_Established;

2> else:

3> Not Defined

4.5.4.2 Procedures

Table 4.5.4.2-1: E-UTRA RRC_CONNECTED

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1-6	Same as TS 36.508 [2] table 4.5.3.3-1, steps 2-7.	-	-	-	-
7	Same as TS 36.508 [2] table 4.5.3.3-1, step 8. The *RRCConnectionReconfiguration* is using condition EN-DC_SRB2-DRB for bearers *MCG(s) and SCG* or *MCG(s) only*. The *RRCConnectionReconfiguration* is using an associated condition MCG_and_SCG for bearers *MCG(s) and SCG or* condition MCG_and_split for bearers *MCG(s) and split.* For bearers *MCG(s) only* there's no associated condition.	<--	*RRC: RRCConnectionReconfiguration* NAS: ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST	-	-
-	EXCEPTION: In parallel to steps 8-9 the UE performs a C-RNTI based Contention Based Random Access (CBRA) procedure on the NR cell.	-	-	-	-
8-9	Same as TS 36.508 [2] table 4.5.3.3-1, steps 9-10a1	-	-	-	-
10a1 - 10a2	IF Test Loop Function=*On,* same as TS 36.508 [2] table 4.5.4.3-1, steps 1-2. The CLOSE UE TEST LOOP is using the associated condition for the test loop.	-	-	-	-

Table 4.5.4.2-2: RF E-UTRA RRC_CONNECTED

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1-9	Same as table 4.5.2.2-1, steps 1-9.	-	-	-	-
10a1 - 10a2	IF Test Mode = *On* OR Test Loop Function = *On* THEN same as TS 36.508 [2] table 4.5.2A.3-1, steps 10-11. The ACTIVATE TEST MODE is using the associated condition for the test loop.	-	-	-	-
-	EXCEPTION: Steps 11a1 to 11b8 describe the SS sequence depending on procedure parameters; the "lower case letter" identifies a step sequence that take place if a procedure parameter has a particular value.	-	-	-	-
11a1 - 11a8	IF Test Mode = *On* OR Test Loop Function = *On* THEN same as TS 36.508 [2] table 4.5.2A.3-1, steps 12-18.	-	-	-	-
11b1 - 11b8	ELSE, same as TS 36.508 [2] table 4.5.2.3-1, steps 10-16.	-	-	-	-
12-15	Same as table 4.5.4.2-1, steps 7-10.	-	-	-	-

Table 4.5.4.2-3: NR RRC_CONNECTED

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits a *Paging* message.	<--	NR RRC: *Paging*	-	-
2	The UE transmits an *RRCSetupRequest* message.	-->	NR RRC: *RRCSetupRequest*	-	-
3	The SS transmits an *RRCSetup* message.	<--	NR RRC: *RRCSetup*	-	-
4	The UE transmits an *RRCSetupComplete* message and a SERVICE REQUEST message.	-->	NR RRC: *RRCSetupComplete* 5GMM: SERVICE REQUEST	-	-
5	The SS transmits a *SecurityModeCommand* message.	<--	NR RRC: *SecurityModeCommand*	-	-
6	The UE transmits a *SecurityModeComplete* message.	-->	NR RRC: *SecurityModeComplete*	-	-
7	The SS transmits an *RRCReconfiguration* message and a SERVICE ACCEPT message to establish SRB2 and DRB.	<--	NR RRC: *RRCReconfiguration* 5GMM: SERVICE ACCEPT	-	-
8	The UE transmits an *RRCReconfigurationComplete* message.	-->	NR RRC: *RRCReconfigurationComplete*	-	-
-	EXCEPTION: Steps 9a1 to 9a2 describe behaviour which depends on the SS sequence depending on procedure parameters; the "lower case letter" identifies a step sequence that take place if a procedure parameter has a particular value.	-	-	-	-
9a1	IF Test Loop Function=*On,* the SS transmits a CLOSE UE TEST LOOP message to enter the UE test loop mode. The CLOSE UE TEST LOOP is using the associated condition for the test loop.	<--	NR RRC: *DLInformationTransfer* TC: CLOSE UE TEST LOOP	-	-
9a2	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.	-->	NR RRC: *ULInformationTransfer* TC: CLOSE UE TEST LOOP COMPLETE	-	-

Table 4.5.4.2-4: WLAN IPsec_SA_Established

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Trigger UE to initiate IPSec SA.	-	-	-	-
2	The generic procedure for UE-requested IPsec Secure tunnel establishment, specified in subclause 4.5A.4, takes place performing establishment of security association and one child security association.	-	-	-	-

4.5.4.3 Specific message contents

All specific message contents shall be according clause 4.6 and 4.7 and TS 36.508 [2] clause 4.6 and 4.7 with the exceptions below.

Table 4.5.4.3-0: *RRCConnectionReconfiguration* (step 7, Table 4.5.4.2-1)

Derivation Path: 36.508 table 4.6.1-8			
Information Element	Value/remark	Comment	Condition
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionReconfiguration-r8 SEQUENCE {			
dedicatedInfoNASList	Not present	no NAS message	MCG(s) only
dedicatedInfoNASList SEQUENCE (SIZE(1..maxDRB)) OF	1 entry		MCG_and_SCG OR MCG_and_split
dedicatedInfoNAS [1]	OCTET STRING including ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST	according to table 4.5.4.3-1	
}			
}			
}			
}			

Table 4.5.4.3-1: Message ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST (step 7, Table 4.5.4.2-1)

Derivation path: TS 36.508 [2] Table 4.7.3-3			
Information Element	**Value/Remark**	**Comment**	**Condition**
Linked EPS bearer identity	12		
EPS QoS	According to reference dedicated EPS bearer context #6 - in TS 36.508 [2] table 6.6.2-1A		
TFT	According to reference dedicated EPS bearer context #6 - in TS 36.508 [2] table 6.6.2-1A		
Negotiated QoS	According to reference dedicated EPS bearer context #6 - in TS 36.508 [2] table 6.6.2-1A		
Negotiated LLC SAPI	According to reference dedicated EPS bearer context #6 - in TS 36.508 [2] table 6.6.2-1A		
Radio priority	According to reference dedicated EPS bearer context #6 - in TS 36.508 [2] table 6.6.2-1A		
Protocol configuration options	According to reference dedicated EPS bearer context #6 - in TS 36.508 [2] table 6.6.2-1A		
Extended protocol configuration options	According to reference dedicated EPS bearer context #6 - in TS 36.508 [2] table 6.6.2-1A		

4.5.5 SWITCHED_OFF

4.5.5.1 Initiation

The SS shall:

1> if Test State ID=0-A:

2> Do nothing;

1> else if Test State ID=0N-B:

2> use 1 NR cell, default parameters;

2> perform the procedure according to the table 4.5.5.2-1: NR SWITCHED_OFF_0_B;

1> else if Test State ID=0E-B:

2> FFS

NOTE: The procedure for State 0N-B is used as default.

4.5.5.2 Procedures

Table 4.5.5.2-1: NR SWITCHED_OFF_0N_B

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1-20	Same as table 4.5.2.2-2, steps 1-20.	-	-	-	-
21-26	Same as table 4.9.6.1-1, steps 1a1-1b1	-	-	-	-

4.5.5.3 Specific message contents

All specific message contents shall be according clause 4.6 and 4.7.

NOTE: The procedure refers to default messages content. If a test case requires specific parameters to be set during the procedure e.g. list with ePLMNs or/and TAIs is stored, new or not 5G-GUTI, etc. then, this needs to be specified in the test case, which uses the procedure.

4.5.6 Void

4.5A Auxiliary procedures

4.5A.1 General

4.5A.2 UE-requested PDU session establishment procedure

4.5A.2.1 Scope

The purpose of this procedure is to establish UE-requested PDU session(s).

4.5A.2.2 Procedure description

4.5A.2.2.1 Initial conditions

The UE is in RRC_CONNECTED state.

4.5A.2.2.2 Procedure sequence

Table 4.5A.2.2.2-1: PDU session establishment procedure

St	Procedure	Message Sequence	
		U – S	Message
0	Set K = 0, L = 0 (Note 1), N = ExpectedNumberOfNewPDUSessions (Note 2)	-	-
1	Wait until the UE transmits a PDU SESSION ESTABLISHMENT REQUEST according to step 1 of table 4.5A.2.2.2-2 and perform all subsequent steps of table 4.5A.2.2.2-2	-	-
2	Set K = K +1	-	-
-	EXCEPTION: In parallel to the events described in steps 3-6a1 below the events specified in Table 4.5A.2.2.2-2 may take place.	-	-
3	The SS transmits an *RRCReconfiguration* message and an PDU SESSION ESTABLISHMENT ACCEPT	<--	NR RRC: *RRCReconfiguration* 5GMM: DL NAS TRANSPORT 5GSM: PDU SESSION ESTABLISHMENT ACCEPT
4	The UE transmits an *RRCReconfigurationComplete* message.	-->	NR RRC: *RRCReconfigurationComplete*
-	EXCEPTION: Step 5a1 describes behaviour depending UE implementation; the "lower case letter" identifies a step sequence that take place if the UE performs a specific action.	-	-
5a1	If initiated by the UE, the generic procedure for IP address allocation in the user plane, specified in subclause 4.5A.3, takes place performing IP address allocation in the user plane.	-	-
-	EXCEPTION: Step 6a1 describes behaviour depending UE implementation; the "lower case letter" identifies a step sequence that take place if the UE performs a specific action.	-	-
6a1	IF the UL NAS TRANSPORT message transporting the PDU SESSION ESTABLISHMENT REQUEST message included an IMS DNN in the DNN IE THEN the generic procedure for IMS signalling in the U-plane specified in subclause 4.5A.4 takes place.	-	-
-	EXCEPTION: Steps 7a1 to 7b2 describe behaviour depending UE implementation; the "lower case letter" identifies a step sequence that take place if the UE performs a specific action.	-	-
7a1	IF L > K (Note 3) THEN repeat from step 2	-	-
7b1	ELSE IF K < N (Note 4) THEN wait until the UE transmits another PDU SESSION ESTABLISHMENT REQUEST according to step 1 of Table 4.5A.2.2.2-2 and perform all subsequent steps of table 4.5A.2.2.2-2	-	-
7b2	Repeat from step 2	-	-

Note 1: K is the number of PDU SESSION ESTABLISHMENT REQUEST messages already processed including the one that is currently being processed. L is the number of PDU SESSION ESTABLISHMENT REQUEST messages being received so far; L is incremented for each PDU SESSION ESTABLISHMENT REQUEST in the behaviour of Table 4.5A.2.2.2-2. Note 2: ExpectedNumberOfNewPDUSessions is the number of PDU sessions to be established by the procedure. It depends on the UE configuration and/or the context in which the procedure is used. ExpectedNumberOfNewPDUSessions shall be > 0. Note 3: One (or more) further PDU SESSION ESTABLISHMENT REQUEST message has been received in parallel. Note 4: Less PDU SESSION ESTABLISHMENT REQUEST messages than expected have been received and processed so far ⇒ Further request are expected from the UE.

Table 4.5A.2.2.2-2: Reception of PDU SESSION ESTABLISHMENT REQUEST message

St	Procedure	Message Sequence	
		U – S	Message
1	The UE transmits an *ULInformationTransfer* message and a PDU SESSION ESTABLISHMENT REQUEST	-->	NR RRC: *ULInformationTransfer* 5GMM: UL NAS TRANSPORT 5GSM: PDU SESSION ESTABLISHMENT REQUEST
2	Set L = L +1 (Note 1, 2)	-	-
Note 1: The SS shall raise a fail/inconclusive verdict when there are more PDU SESSION ESTABLISHMENT REQUEST messages than expected (L > N; Note 2). Note 2: L and N are as defined for Table 4.5A.2.2.2-1			

4.5A.2.2.3 Specific message contents

All specific message contents shall be according clause 4.6 and 4.7 with the exceptions below.

Table 4.5A.2.2.3-1: *RRCReconfiguration* (step 3, Table 4.5A.2.2.2-1)

Derivation Path: TS 38.508-1, table 4.6.1-13 and condition NR if SRB2 is not yet established

Table 4.5A.2.2.3-2: *RRCReconfiguration* (step 3, Table 4.5A.2.2.2-1)

Derivation Path: TS 38.508-1, table 4.6.1-13 and condition NR if SRB2 is already established			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcReconfiguration ::= SEQUENCE {			
radioBearerConfig	RadioBearerConfig with condition DRBn	n is chosen by the SS according to internal DRB mapping depending on the kind of PDU session	
}			
}			
}			

4.5A.2A UE-requested PDU session establishment procedure over Non 3GPP Access

4.5A.2A.1 Scope

The purpose of this procedure is to establish UE-requested PDU session.

4.5A.2A.2 Procedure description

4.5A.2A.2.1 Initial conditions

The UE has established an IPsec security association

4.5A.2A.2.2 Procedure sequence

Table 4.5A.2A.2.2-1: PDU session establishment procedure over Non 3GPP Access

St	Procedure	Message Sequence	
		U – S	Message
1	The UE transmits a PDU SESSION ESTABLISHMENT REQUEST	-->	5GMM: UL NAS TRANSPORT 5GSM: PDU SESSION ESTABLISHMENT REQUEST
2	The SS establishes an IPSec child security association according to the IKEv2 specification in RFC 7296 [34]		
3	The SS transmits an PDU SESSION ESTABLISHMENT ACCEPT	<--	5GMM: DL NAS TRANSPORT 5GSM: PDU SESSION ESTABLISHMENT ACCEPT
Note 1: The current procedure assumes UE establishes a single PDU session over Non 3GPP Access.			

4.5A.2A.3 Specific message contents

None

4.5A.3 Procedure for IP address allocation in the user plane

4.5A.3.1 Scope

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 user 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 user plane is called, shall advance to the next specified step.

4.5A.3.2 Procedure description

4.5A.3.2.1 Initial conditions

N/A

4.5A.3.2.2 Procedure sequence

Table 4.5A.3.2.2-1: Procedure for IP address allocation in the user plane

Step	Procedure	Message Sequence	
		U - S	Message
-	EXCEPTION: Step 1 below and Step 1 in Table 4.5A.3.2.2-2 describe behaviour that depends on the contents of the latest PDU SESSION ESTABLISHMENT 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.3.2.2-2 may take place.	-	-
1	If the "PDU session type" in the latest PDU SESSION ESTABLISHMENT 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 QoS flow of the default QoS rule.	-	-

Table 4.5A.3.2.2-2: Procedure for IP address allocation in the user plane, parallel behaviour

Step	Procedure	Message Sequence	
		U - S	Message
1	If the "PDU session type" in the latest PDU SESSION ESTABLISHMENT REQUEST message prior to this procedure was 'IPv6' or 'IPv4v6' then stateless address auto configuration occurs on the user plane bearer established for the QoS flow of the default QoS rule.	-	-

4.5A.3.2.3 Specific message contents

None

4.5A.4 Procedure for IMS signalling

4.5A.4.1 Scope

The purpose of this procedure is to allow the successful completion of IMS signalling.

The procedure is applicable for UEs with IMS support (TS 38.508-2 A.4.4-1/n).

4.5A.4.2 Procedure description

4.5A.4.2.1 Initial conditions

N/A

4.5A.4.2.2 Procedure sequence

Table 4.5A.4.2.2-1: Procedure for IMS signalling

Step	Procedure	Message Sequence	
		U - S	Message
-	EXCEPTION: Steps 1a1 to 1a2b1 describe a transaction that depends on the UE capability	-	-
1a1	IF pc_IMS_5GS 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	-	-
1a2a1-1a2a9	Registration procedure according TS 34.229-1 [43] subclause C.2 (steps 3-11). Note: SS cancels timer Timer_1 at step 1a2a1	-	-
1a2b1	Timer_1 expires	-	-
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.4.2.3 Specific message contents

None

4.5A.5 IPsec Tunnel Disconnection in 5GC / WLAN

4.5A.5.1 Scope

The purpose of this procedure is to disconnect an Ipsec tunnel.

4.5A.5.2 Procedure description

4.5A.5.2.1 Initial conditions

The UE has established an IPsec security association

4.5A.5.2.2 Procedure sequence

Table 4.5A.5.2.2-1: IPsec Tunnel Disconnection in 5GC / WLAN

St	Procedure	Message Sequence	
		U – S	Message
1	The SS initiated disconnection from the existing IPsec tunnel as defined in TS 24.502 [35] clause 7.4.2	-	-
NOTE: It is assumed that the WLAN AP association remains throughout the procedure.			

4.5A.5.3 Specific message contents

None

4.5A.6 IPsec Tunnel Establishment in 5GC / WLAN

4.5A.6.1 Scope

The purpose of this procedure is to establish an Ipsec tunnel and NAS signalling connection.

4.5A.6.2 Procedure description

4.5A.6.2.1 Initial conditions

The UE has Registered to 5GC with a PDU session established and IPsec security association is released

4.5A.6.2.2 Procedure sequence

Table 4.5A.6.2.2-1: IPsec Tunnel Establishment in 5GC / WLAN

St	Procedure	Message Sequence	
		U – S	Message
-	Exception: In parallel to steps 1 to 2, the UE initiates an IPsec security association and one child security association as defined in TS 24.502 [35] clause 7.3.2	-	-
1	The UE transmits a SERVICE REQUEST message.	-->	5GMM: SERVICE REQUEST
2	The SS transmits a SERVICE Accept message.	<--	5GMM: SERVICE ACCEPT
Note 1: The current procedure assumes UE establishes a single PDU session over Non 3GPP Access.			

4.5A.6.3 Specific message contents

None

4.6 Default NG-RAN RRC message and information elements contents

4.6.1 Contents of RRC messages

– *CounterCheck*

Table 4.6.1-1: *CounterCheck*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CounterCheck ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
counterCheck SEQUENCE {			
drb-CountMSB-InfoList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE {			
drb-Identity	DRB-Identity		
countMSB-Uplink	FFS		
countMSB-Downlink	FFS		
}			
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			

Condition	Explanation
FFS	

– *CounterCheckResponse*

Table 4.6.1-2: *CounterCheckResponse*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CounterCheckResponse ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
counterCheckResponse SEQUENCE {			
drb-CountInfoList SEQUENCE (SIZE (0..maxDRB)) OF SEQUENCE {			
drb-Identity	DRB-Identity		
count-Uplink	Not checked		
count-Downlink	Not checked		
}			
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {}	Not checked		
}			
}			
}			

– *DLInformationTransfer*

Table 4.6.1-3: *DLInformationTransfer*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
DLInformationTransfer ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
dlInformationTransfer SEQUENCE {			
dedicatedNAS-Message	DedicatedNAS-Message		
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			

– *FailureInformation*

Table 4.6.1-4: *FailureInformation*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
FailureInformation ::= SEQUENCE {			
criticalExtensions CHOICE {			
failureInformation SEQUENCE {			
failureInfoRLC-Bearer SEQUENCE {			
cellGroupId	Not checked		
logicalChannelIdentity	Not checked		
failureType	Not checked		
}			
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {}	Not checked		
}			
}			
}			

– *LocationMeasurementIndication*

Table 4.6.1-5: *LocationMeasurementIndication*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
LocationMeasurementIndication ::= SEQUENCE {			
criticalExtensions CHOICE {			
locationMeasurementIndication SEQUENCE {			
measurementIndication CHOICE {			
setup	LocationMeasurementInfo		
}			
lateNonCriticalExtension	Not checked		
nonCriticalExtension	Not checked		
}			
}			
}			

– *MIB*

Table 4.6.1-6: *MIB*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MIB ::= SEQUENCE {			
systemFrameNumber	A valid value as defined in TS 38.331 [6]		
subCarrierSpacingCommon	scs15or60		SCS_15kHz OR SCS_60kHz
	scs30or120		SCS_30kHz OR SCS_120kHz
ssb-subcarrierOffset	Set to the integer value of the 4 LSB of kSSB defined for the frequency of the cell	For signalling test cases see subclause 6.2.3. Otherwise, see subclause 4.3.1.	
dmrs-TypeA-Position	pos2		
pdcch-ConfigSIB1	PDCCH-ConfigSIB1		
cellBarred	notBarred		
intraFreqReselection	allowed		
spare	0		
}			

Condition	Explanation
SCS_15kHz	SCS=15kHz for frequency of the cell according to 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 clause 6.2.3 for signalling test cases and clause 4.3.1 otherwise
SCS_60kHz	SCS=60kHz for frequency of the cell according to 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 clause 6.2.3 for signalling test cases and clause 4.3.1 otherwise

– *MeasurementReport*

Table 4.6.1-7: *MeasurementReport*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
measurementReport SEQUENCE {			
measResults	MeasResults		
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {}	Not checked		
}			
}			
}			

– *MobilityFromNRCommand*

Table 4.6.1-8: *MobilityFromNRCommand*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityFromNRCommand::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
mobilityFromNRCommand SEQUENCE {			
targetRAT-Type	eutra		
targetRAT-MessageContainer	OCTET STRING including the RRCConnectionReconfiguration message according TS 36.508 [2], table 4.6.1-8 with condition HO-TO-EUTRA		
nas-SecurityParamFromNR	The 4 LSB of the downlink NAS COUNT		
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			

– *Paging*

Table 4.6.1-9: *Paging*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
Paging ::= SEQUENCE {			
pagingRecordList SEQUENCE (SIZE(1..maxNrofPageRec)) OF SEQUENCE {	1 entry		
ue-Identity CHOICE {			
ng-5G-S-TMSI	NG-5G-S-TMSI		
fullI-RNTI	I-RNTI-Value		NR_RRC_RESUME
}			
accessType	Not present		
}			
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			

Condition	Explanation
NR_RRC_RESUME	To page a UE in RRC_INACTIVE state to request RRC connection resumption

– *RRCReestablishment*

Table 4.6.1-10: *RRCReestablishment*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCReestablishment ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
rrcReestablishment SEQUENCE {			
nextHopChainingCount	NextHopChainingCount		
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			

– *RRCReestablishmentComplete*

Table 4.6.1-11: *RRCReestablishmentComplete*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCReestablishmentComplete ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
rrcReestablishmentComplete SEQUENCE {			
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {}	Not checked		
}			
}			
}			

– *RRCReestablishmentRequest*

Table 4.6.1-12: *RRCReestablishmentRequest*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCReestablishmentRequest ::= SEQUENCE {			
ue-Identity SEQUENCE {			
c-RNTI	RNTI-Value		
physCellId	PhysCellId		
shortMAC-I	ShortMAC-I		
}			
reestablishmentCause	Not checked		
spare	Present but contents not checked		
}			

– *RRCReconfiguration*

Table 4.6.1-13: RRCReconfiguration

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier	Table 4.6.5-1.	
criticalExtensions CHOICE {			
rrcReconfiguration ::= SEQUENCE {			
radioBearerConfig	Not present		
	RadioBearerConfig with conditions SRB2 and DRB1		NR
secondaryCellGroup	CellGroupConfig	OCTET STRING (CONTAINING CellGroupConfig)	EN-DC
	CellGroupConfig with condition EN-DC and HO	OCTET STRING (CONTAINING CellGroupConfig)	EN-DC_HO
	Not present		
measConfig	Not present		
	MeasConfig	Measurements configuration	MEAS
lateNonCriticalExtension	Not present		
nonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {			NR
masterCellGroup	CellGroupConfig with condition SRB2_DRB1	OCTET STRING (CONTAINING CellGroupConfig)	
fullConfig	Not present		
dedicatedNAS-MessageList SEQUENCE (SIZE(1..maxDRB)) OF DedicatedNAS-Message {}	DedicatedNAS-Message	A sequence of OCTET STRING (s) containing one or more DedicatedNAS-Message(s)	
masterKeyUpdate	Not present		
dedicatedSIB1-Delivery	Not present		
dedicatedSystemInformationDelivery	Not present		
otherConfig	Not present		
nonCriticalExtension	Not present		
}			
}			
}			
}			

Condition	Explanation
EN-DC	E-UTRA-NR Dual Connectivity
MEAS	A NR measurement is configured
NR	NG-RAN NR Radio Access
EN-DC_HO	EN-DC PSCell handover (SCG change)

– *RRCReconfigurationComplete*

Table 4.6.1-14: RRCReconfigurationComplete

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCReconfigurationComplete ::= SEQUENCE {			
rrc-TransactionIdentifier	Not checked		
criticalExtensions CHOICE {			
rrcReconfigurationComplete ::= SEQUENCE {			
lateNonCriticalExtension	Not checked		
nonCriticalExtension	Not checked		
}			
}			
}			

– *RRCReject*

Table 4.6.1-15: RRCReject

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCReject ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcReject SEQUENCE {			
waitTime	1		
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			

– *RRCRelease*

Table 4.6.1-16: RRCRelease

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCRelease ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
rrcRelease SEQUENCE {			
redirectedCarrierInfo	Not present		
cellReselectionPriorities	Not present		
suspendConfig	Not present		
suspendConfig SEQUENCE {			NR_RRC_INACTIVE
fullI-RNTI	I-RNTI-Value		
shortI-RNTI	ShortI-RNTI-Value		
ran-PagingCycle	rf32		
ran-NotificationAreaInfo CHOICE {			
cellList SEQUENCE (SIZE (1.. maxPLMNIdentities)) OF SEQUENCE {	1 entry		
plmn-Identity	Not present		
ran-AreaCells SEQUENCE (SIZE (1..32)) OF {	1 entry		
CellIdentity[1]	CellIdentity	Cellidentity for the used cell.	
}			
}			
}			
t380	Not present		
nextHopChainingCount	NextHopChainingCount		
}			
deprioritisationReq	Not present		
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			

Condition	Explanation
NR_RRC_INACTIVE	NR RRC state RRC_INACTIVE

– *RRCResume*

Table 4.6.1-17: RRCResume

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCResume ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
rrcResume SEQUENCE {			
radioBearerConfig	Not present		
masterCellGroup	Not present		
measConfig	Not present		
fullConfig	Not present		
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			

– *RRCResumeComplete*

Table 4.6.1-18: *RRCResumeComplete*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCResumeComplete ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
rrcResumeComplete SEQUENCE {			
dedicatedNAS-Message	Not checked		
selectedPLMN-Identity	Not checked		
uplinkTxDirectCurrentList	Not checked		
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {}	Not checked		
}			
}			
}			

– *RRCResumeRequest*

Table 4.6.1-19: RRCResumeRequest

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCResumeRequest ::= SEQUENCE {			
rrcResumeRequest SEQUENCE {			
resumeIdentity	ShortI-RNTI-Value		
resumeMAC-I	Not checked		
resumeCause	ResumeCause		
spare	Not checked		
}			
}			

– *RRCResumeRequest1*

Table 4.6.1-20: RRCResumeRequest1

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCResumeRequest1 ::= SEQUENCE {			
rrcResumeRequest1 SEQUENCE {			
resumeIdentity	I-RNTI-Value		
resumeMAC-I	Not checked		
resumeCause	ResumeCause		
spare	Not checked		
}			
}			

– *RRCSetup*

Table 4.6.1-21: *RRCSetup*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCSetup ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
rrcSetup SEQUENCE {			
radioBearerConfig	RadioBearerConfig with condition SRB1		
masterCellGroup	CellGroupConfig with condition SRB1	OCTET STRING (CONTAINING CellGroupConfig)	
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			

– *RRCSetupComplete*

Table 4.6.1-22: *RRCSetupComplete*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCSetupComplete::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
rrcSetupComplete SEQUENCE {			
selectedPLMN-Identity	Not checked		
registeredAMF	Not checked		
guami-Type	Not checked		
s-nssai-List	Not checked		
dedicatedNAS-Message	DedicatedNAS-Message		
ng-5G-S-TMSI-Value	Not checked		
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {}	Not checked		
}			
}			
}			

– *RRCSetupRequest*

Table 4.6.1-23: *RRCSetupRequest*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCSetupRequest ::= SEQUENCE {			
rrcSetupRequest SEQUENCE {			
ue-Identity CHOICE {			
randomValue	Not checked		
}			
establishmentCause	Not checked		
spare	Not checked		
}			
}			

– *RRCSystemInfoRequest*

Table 4.6.1-24: *RRCSystemInfoRequest*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCSystemInfoRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcSystemInfoRequest-r15 SEQUENCE {			
requested-SI-List	Not checked		
spare	Not checked		
}			
}			
}			

– *SecurityModeCommand*

Table 4.6.1-25: *SecurityModeCommand*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SecurityModeCommand ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
securityModeCommand SEQUENCE {			
securityConfigSMC SEQUENCE {			
securityAlgorithmConfig	SecurityAlgorithmConfig		
}			
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			

– *SecurityModeComplete*

Table 4.6.1-26: *SecurityModeComplete*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SecurityModeComplete ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
securityModeComplete SEQUENCE {			
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {}	Not checked		
}			
}			
}			

– *SecurityModeFailure*

Table 4.6.1-27: *SecurityModeFailure*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SecurityModeFailure ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
securityModeFailure SEQUENCE {			
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {}	Not checked		
}			
}			
}			

– *SIB1*

Table 4.6.1-28: *SIB1*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SIB1 ::= SEQUENCE {			
cellSelectionInfo SEQUENCE {			
q-RxLevMin	-70	-140 dBm	RF
	-55	-110 dBm	SIG
q-RxLevMinOffset	Not present		
q-RxLevMinSUL	-70	-140 dBm	RF
	-55	-110 dBm	SIG
q-QualMin	-20	-20dB	QBASED
	Not present		
q-QualMinOffset	Not present		
}			
cellAccessRelatedInfo	CellAccessRelatedInfo		
connEstFailureControl	ConnEstFailureControl		
si-SchedulingInfo	Not present		NR_1
	SI-SchedulingInfo		
servingCellConfigCommon	ServingCellConfigCommonSIB		
ims-EmergencySupport	Not present		
eCallOverIMS-Support	Not present		
ue-TimersAndConstants	UE-TimersAndConstants		
uac-BarringInfo SEQUENCE {}	Not present		
useFullResumeID	Not present		
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			

Condition	Explanation
RF	For RF, performance and RRM testing
SIG	For protocol testing
QBASED	This condition applies to Quality based signalling test cases.
NR_1	System information combination NR_1 is applied

– *SystemInformation*

Table 4.6.1-29: *SystemInformation*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformation ::= SEQUENCE {			
criticalExtensions CHOICE {			
systemInformation-r15 SEQUENCE {			
sib-TypeAndInfo SEQUENCE (SIZE (1..maxSIB)) OF CHOICE {}	See subclause 4.4.3.1.3		
}			
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			

– *UEAssistanceInformation*

Table 4.6.1-30: *UEAssistanceInformation*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
UEAssistanceInformation ::= SEQUENCE {			
criticalExtensions CHOICE {			
ueAssistanceInformation SEQUENCE {			
delayBudgetReport CHOICE {			
type1	Not checked		
}			
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {}	Not checked		
}			
}			
}			

– *UECapabilityEnquiry*

Table 4.6.1-31: UECapabilityEnquiry

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
UECapabilityEnquiry ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
ueCapabilityEnquiry SEQUENCE {			
ue-CapabilityRAT-RequestList	UE-CapabilityRAT-RequestList		
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			

– *UECapabilityInformation*

Table 4.6.1-32: UECapabilityInformation

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
UECapabilityInformation ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier		
criticalExtensions CHOICE {			
ueCapabilityInformation SEQUENCE {			
ue-CapabilityRAT-ContainerList	UE-CapabilityRAT-ContainerList		
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {}	Not checked		
}			
}			
}			

– *ULInformationTransfer*

Table 4.6.1-33: *ULInformationTransfer*

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ULInformationTransfer ::= SEQUENCE {			
criticalExtensions CHOICE {			
ulInformationTransfer SEQUENCE {			
dedicatedNAS-Message	DedicatedNAS-Message		
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {}	Not checked		
}			
}			
}			

4.6.2 System information blocks

– *SIB2*

SIB2 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 4.6.2-1: *SIB2*

Derivation Path: TS 38.331 [6], clause 6.3.1			
Information Element	**Value/remark**	**Comment**	**Condition**
SIB2 ::= SEQUENCE {			
cellReselectionInfoCommon SEQUENCE {			
nrofSS-BlocksToAverage	[2]		
absThreshSS-BlocksConsolidation SEQUENCE{			
thresholdRSRP	RSRP-Range	Table 4.6.3-152	
thresholdRSRQ	Not present		
thresholdSINR	Not present		
}			
rangeToBestCell	dB0		
q-Hyst	dB0	To reduce interference between intra-frequency multiple cells	
speedStateReselectionPars	Not present		
}			
cellReselectionServingFreqInfo SEQUENCE {			
s-NonIntraSearchP	Not present		
s-NonIntraSearchQ	Not present		
threshServingLowP	0	Actual value of threshold = field value * 2 [dB]	
threshServingLowQ	Not present		
	3 (3dB)		QBASED
cellReselectionPriority	4	A middle value in the range has been selected	
cellReselectionSubPriority	Not present		
}			
intraFreqCellReselectionInfo SEQUENCE {			
q-RxLevMin	[-70 (-140 dBm)]	For RF/RRM test cases	
	[-53 (-106 dBm)]	For signalling test cases	
q-RxLevMinSUL	[-70 (-140 dBm)]	For RF/RRM test cases	SUL
	[-53 (-106 dBm)]	For signalling test cases	
q-QualMin	Not present		
	[-20 (-20dB)]		QBASED

s-IntraSearchP	0	Actual value of threshold = field value * 2 [dB]	
s-IntraSearchQ	Not present		
t-ReselectionNR	0		
frequencyBandList	Not present		
frequencyBandListSUL	Not present		
p-Max	Not present		
smtc	SSB-MTC	Table 4.6.3-185	
ss-RSSI-Measurement	Not present		
ssb-ToMeasure CHOICE {			
shortBitmap	'0100'B		(FREQ <= 3GHz AND (FR1_FDD OR NOT CASE C)) OR (FREQ <= 2.4GHz AND FR1_TDD)
mediumBitmap	'01000000'B		(FREQ > 3GHz AND FR1) OR (FREQ > 2.4GHz AND FR1_TDD AND CASE C)
longBitmap	'01000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000'B		FR2
}			
deriveSSB-IndexFromCell	FALSE		
}			
}			

Condition	Explanation
SUL	If the UE supports SUL frequency for the serving cell, Qrxlevmin is obtained from *q-RxLevMin-sul.*
QBASED	This condition applies to Quality based cell (re)selection signalling test cases.
FREQ<=2.4GHz	Frequency range <= 2.4GHz
FREQ>2.4GHz	Frequency range > 2.4GHz
FREQ<=3GHz	Frequency range <= 3GHz
FREQ>3GHz	Frequency range > 3GHz
FR1_TDD	TDD frequency range < 6GHz
FR2_TDD	TDD frequency range > 6GHz
FR1_FDD	FDD frequency range < 6GHz
CASE_C	SS Block pattern “Case C” to be applied for the given band and subcarrier spacing according to TS 38.101-1 [7] Table 5.4.3.3-1

– *SIB3*

SIB3 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 4.6.2-2: *SIB3*

Derivation Path: TS 38.331 [6], clause 6.3.1			
Information Element	**Value/remark**	**Comment**	**Condition**
SIB3 ::= 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	
lateNonCriticalExtension	Not present		
}			

– *SIB4*

SIB4 contains information relevant only for inter-frequency cell re-selection i.e. information about other NR 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 4.6.2-3: *SIB4*

Derivation Path: TS 38.331 [6], clause 6.3.1			
Information Element	**Value/remark**	**Comment**	**Condition**
SIB4 ::= SEQUENCE {			
interFreqCarrierFreqList SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {	The same number of entries as the configured inter-freq carriers defined in table 6.3.1.2-1	*n* denotes the index of the entry	
dl-CarrierFreq[n]	Downlink NR SSB ARFCN. See table 6.3.1.2-1		
frequencyBandList[n]	Not present		
frequencyBandListSUL[n]	Not present		
nrofSS-BlocksToAverage[n]	[2]		
absThreshSS-BlocksConsolidation[n] SEQUENCE{			
thresholdRSRP	RSRP-Range	Table 4.6.3-152	
thresholdRSRQ	Not present		
thresholdSINR	Not present		
}			
smtc[*n*]	SSB-MTC	Table 4.6.3-185	
ssbSubcarrierSpacing[*n*]	SubcarrierSpacing	Table 4.6.3-188	
ssb-ToMeasure[*n*] CHOICE {			
shortBitmap	'0100'B		(FREQ <= 3GHz AND (FR1_FDD OR NOT CASE C)) OR (FREQ <= 2.4GHz AND FR1_TDD)
mediumBitmap	'01000000'B		(FREQ > 3GHz AND FR1) OR (FREQ > 2.4GHz AND FR1_TDD AND CASE C)
longBitmap	'01000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000'B		FR2
}			

deriveSSB-IndexFromCell[*n*]	FALSE		
ss-RSSI-Measurement[*n*] SEQUENCE {	Not present		
q-RxLevMin[*n*]	[-70 (-140 dBm)]	For RF/RRM test cases	
	[-53 (-106 dBm)]	For signalling test cases	
q-RxLevMinSUL[*n*]	[-70 (-140 dBm)]	For RF/RRM test cases	SUL
	[-53 (-106 dBm)]	For signalling test cases	
q-QualMin[*n*]	Not present		
	[-20 (-20dB)]		QBASED
p-Max[*n*]	Not present		
t-ReselectionNR[*n*]	0		
t-ReselectionNR-SF[*n*]	Not present	Not required unless speed-dependent cell re-selection is tested.	
threshX-HighP[*n*]	2 (4 dB)	This value should be higher than threshServingLow of the serving cell to avoid ping-pong with lower priority cells.	
threshX-LowP[*n*]	1 (2 dB)		
threshX-Q[*n*] SEQUENCE {}	Not present		
threshX-Q[*n*] SEQUENCE {			QBASED
threshX-HighQ	5 (5dB)		
threshX-LowQ	5 (5dB)		
}			
cellReselectionPriority[*n*]	4	The same priority as the one used for serving cell in SIB 2.	
cellReselectionSubPriority[*n*]	Not present	The same subpriority as the one used for serving cell in SIB 2.	
q-OffsetFreq[*n*]	dB0	Qoffset doesn't apply by default.	

interFreqNeighCellList[*n*] SEQUENCE (SIZE (1..maxCellInter)) OF SEQUENCE {}	Not present	Not required unless Qoffset configuration is tested.	
interFreqBlackCellList[*n*] SEQUENCE (SIZE (1..maxCellBlack)) OF SEQUENCE {}	Not present	Not required unless Blacklisted cell list configuration is tested.	
}			
lateNonCriticalExtension	Not present		
}			

Condition	Explanation
SUL	If the UE supports SUL frequency for inter-frequency NR cells, Qrxlevmin is obtained from *q-RxLevMin-sul.*
QBASED	This condition applies to Quality based cell (re)selection signalling test cases.
FREQ<=2.4GHz	Frequency range <= 2.4GHz
FREQ>2.4GHz	Frequency range > 2.4GHz
FREQ<=3GHz	Frequency range <= 3GHz
FREQ>3GHz	Frequency range > 3GHz
FR1_TDD	TDD frequency range < 6GHz
FR2_TDD	TDD frequency range > 6GHz
FR1_FDD	FDD frequency range < 6GHz
CASE_C	SS Block pattern “Case C” to be applied for the given band and subcarrier spacing according to TS 38.101-1 [7] Table 5.4.3.3-1

– *SIB5*

SIB5 contains information relevant only for inter-RAT cell re-selection i.e. information about E-UTRA frequencies and E-UTRAs neighbouring cells relevant for cell re-selection. The IE includes cell re-selection parameters common for a frequency.

Table 4.6.2-4: *SIB5*

Derivation Path: TS 38.331 [6], clause 6.3.1			
Information Element	**Value/remark**	**Comment**	**Condition**
SIB5 ::= SEQUENCE {			
carrierFreqListEUTRA SEQUENCE (SIZE (1..maxEUTRA-Carrier)) OF SEQUENCE {	The same number of entries as the configured E-UTRA carriers. For Signalling test cases, see table 6.3.1.3-1..	*n* denotes the index of the entry	
carrierFreq[*n*]	Downlink E-UTRA ARFCN under test. For Signalling test cases, see table 6.3.1.3-1.		
eutra-multiBandInfoList[*n*] SEQUENCE (SIZE (1..maxMultiBands)) OF SEQUENCE {}	Not present		
eutra-FreqNeighCellList[*n*] SEQUENCE (SIZE (1..maxCellEUTRA)) OF SEQUENCE {}	Not present	Not required unless EUTRA Qoffset configuration is tested.	
eutra-BlackCellList[*n*] SEQUENCE (SIZE (1..maxEUTRA-CellBlack)) OF SEQUENCE {}	Not present	Not required unless Blacklisted cell list configuration is tested.	
allowedMeasBandwidth[*n*]	*EUTRA-*AllowedMeasBandwidth	The value of *EUTRA-*AllowedMeasBandwidth in Table 4.6.5-1.	
presenceAntennaPort1[*n*]	FALSE		
	TRUE	At least two cell-specific antenna ports are used in all neighbouring cells.	All neighCells with port1
cellReselectionPriority[*n*]	3		
threshX-High	2 (4 dB)		
threshX-Low	1 (2 dB)		
q-RxLevMin	-70 (-140 dBm)	For RF/RRM test cases	
	-53 (-106 dBm)	For signalling test cases	
q-QualMin	Not present		
	-20 (-20dB)		QBASED

p-MaxEUTRA	23		
threshX-Q SEQUENCE {}	Not present		
threshX-Q SEQUENCE {			QBASED
threshX-HighQ	9 (9dB)		
threshX-LowQ	9 (9dB)		
}			
}			
t-ReselectionEUTRA	0		
t-ReselectionEUTRA-SF	Not present	Not required unless speed-dependent cell re-selection is tested.	
lateNonCriticalExtension	Not present		
}			

Condition	Explanation
QBASED	This condition applies to Quality based cell (re)selection signalling test cases.
All neighCells with port1	Used for all neighbouring cells with at least two cell-specific antenna ports

– *SIB6*

SIB6 contains an ETWS primary notification.

Table 4.6.2-5: *SIB6*

Derivation Path: TS 38.331 [6], clause 6.3.1			
Information Element	**Value/remark**	**Comment**	**Condition**
SIB6 ::= SEQUENCE {			
messageIdentifier	'0001 0001 0000 0010'B	ETWS message identifier for earthquake and tsunami message (see TS 23.041 [25])	
serialNumber	'0011 0000 0000 0000'B	Note 1.	
warningType	'0000 0101 1000 0000'B	Note 2.	
lateNonCriticalExtension	Not present		
}			
Note 1: Geographical Scope (Octet 1 bit 7 ~ 6) set to 'Cell wide', Emergency User Alert (Octet 1 bit 5) set to 'Activate emergency user alert', Popup (Octet 1 bit 4) set to 'Activate popup', Update Number (Octet 2 bits 3~0) for each update, incremented by one, See TS 23.041 [25]. Note 2: Warning Type Value (Octet 1 bit 7 ~ 1) set to 'Earthquake and Tsunami', Emergency User Alert (Octet 1 bit 0) set to 'Activate emergency user alert', Popup (Octet 2 bit 7) set to 'Activate Popup', see TS 23.041 [25], Padding (Octet 2 bit 6 ~ 0) set to '000 0000'B.			

– *SIB7*

SIB7 contains an ETWS secondary notification.

Table 4.6.2-6: *SIB7* (1st Segment)

Derivation Path: TS 38.331 [6], clause 6.3.1			
Information Element	**Value/remark**	**Comment**	**Condition**
SIB7 ::= SEQUENCE {			
messageIdentifier	'0001 0001 0000 0010'B	ETWS message identifier for earthquake and tsunami message (see TS 23.041 [25])	
serialNumber	'0011 0000 0000 0000'B	Note 1.	
warningMessageSegmentType	notLastSegment		
warningMessageSegmentNumber	0		
warningMessageSegment	Octetstring of N	Where N ≥ 1 and less than 1246. (see TS 23.041 [25])	
dataCodingScheme	Bitstring (8) ID of the alphabet/coding and the applied language	see TS 23.041 [25].	Segment 1
lateNonCriticalExtension	Not present		
}			
Note 1: Geographical Scope (Octet 1 bit 7 ~ 6) set to 'Cell wide', Emergency User Alert (Octet 1 bit 5) set to 'Activate emergency user alert', Popup (Octet 1 bit 4) set to 'Activate popup', Update Number (Octet 2 bits 3~0) for each update, incremented by one, See TS 23.041 [25].			

Condition	Explanation
Segment1	The field is mandatory present in the first segment of SIB7, otherwise it is not present.

Table 4.6.2-7: *SIB7* (2nd Segment)

Derivation Path: TS 38.331 [6], clause 6.3.1			
Information Element	**Value/remark**	**Comment**	**Condition**
SIB7 ::= SEQUENCE {			
messageIdentifier	'0001 0001 0000 0010'B	ETWS message identifier for earthquake and tsunami message (see TS 23.041 [25])	
serialNumber	'0011 0000 0000 0000'B	Note 1	
warningMessageSegmentType	notLastSegment		
warningMessageSegmentNumber	1		
warningMessageSegment	Octetstring of N	Where N ≥ 1 and less than 1246. (see TS 23.041 [25])	
dataCodingScheme	Not present		
lateNonCriticalExtension	Not present		
}			
Note 1: Geographical Scope (Octet 1 bit 7 ~ 6) set to 'Cell wide', Emergency User Alert (Octet 1 bit 5) set to 'Activate emergency user alert', Popup (Octet 1 bit 4) set to 'Activate popup', Update Number (Octet 2 bits 3~0) for each update, incremented by one, See TS 23.041 [25].			

Table 4.6.2-8: *SIB7* (3rd Segment)

Derivation Path: TS 38.331 [6], clause 6.3.1			
Information Element	**Value/remark**	**Comment**	**Condition**
SIB7 ::= SEQUENCE {			
messageIdentifier	'0001 0001 0000 0010'B	ETWS message identifier for earthquake and tsunami message (see TS 23.041 [25])	
serialNumber	'0011 0000 0000 0000'B	Note 1	
warningMessageSegmentType	LastSegment		
warningMessageSegmentNumber	2		
warningMessageSegment	Octetstring of N	Where N ≥ 1 and less than 1246. (see TS 23.041 [25])	
dataCodingScheme	Not present		
lateNonCriticalExtension	Not present		
}			
Note 1: Geographical Scope (Octet 1 bit 7 ~ 6) set to 'Cell wide', Emergency User Alert (Octet 1 bit 5) set to 'Activate emergency user alert', Popup (Octet 1 bit 4) set to 'Activate popup', Update Number (Octet 2 bits 3~0) for each update, incremented by one, See TS 23.041 [25].			

– *SIB8*

SIB8 contains a CMAS notification.

Table 4.6.2-9: *SIB8* (1st Segment)

Derivation Path: TS 38.331 [6], clause 6.3.1			
Information Element	**Value/remark**	**Comment**	**Condition**
SIB8 ::= SEQUENCE {			
messageIdentifier	'0001 0001 0001 0010'B	CMAS CBS Message Identifier for CMAS Presidential Level Alerts (see TS 23.041 [25])	
serialNumber	'0011 0000 0000 0000'B	Note 1	
warningMessageSegmentType	notLastSegment		
warningMessageSegmentNumber	0		
warningMessageSegment	Octetstring of N	Where N ≥ 1 and less than 1246. (see TS 23.041 [25])	
dataCodingScheme	Bitstring (8) ID of the alphabet/coding and the applied language	see TS 23.041 [25]	Segment 1
warningAreaCoordinatesSegment	Not present		
lateNonCriticalExtension	Not present		
}			
Note 1: Geographical Scope (Octet 1 bit 7 ~ 6) set to 'Cell wide', Emergency User Alert (Octet 1 bit 5) set to 'Activate emergency user alert', Popup (Octet 1 bit 4) set to 'Activate popup', Update Number (Octet 2 bits 3~0) for each update, incremented by one, See TS 23.041 [25].			

Condition	Explanation
Segment1	The field is mandatory present in the first segment of SIB8, otherwise it is not present.

Table 4.6.2-10: *SIB8* (2nd Segment)

Derivation Path: TS 38.331 [6], clause 6.3.1			
Information Element	**Value/remark**	**Comment**	**Condition**
SIB8 ::= SEQUENCE {			
messageIdentifier	'0001 0001 0001 0010'B	CMAS CBS Message Identifier for CMAS Presidential Level Alerts (see TS 23.041 [25])	
serialNumber	'0011 0000 0000 0000'B	Note 1	
warningMessageSegmentType	notLastSegment		
warningMessageSegmentNumber	1		
warningMessageSegment	Octetstring of N	Where N ≥ 1 and less than 1246. (see TS 23.041 [25])	
dataCodingScheme	Not present		
warningAreaCoordinatesSegment	Not present		
lateNonCriticalExtension	Not present		
}			
Note 1: Geographical Scope (Octet 1 bit 7 ~ 6) set to 'Cell wide', Emergency User Alert (Octet 1 bit 5) set to 'Activate emergency user alert', Popup (Octet 1 bit 4) set to 'Activate popup', Update Number (Octet 2 bits 3~0) for each update, incremented by one, See TS 23.041 [25].			

Table 4.6.2-11: *SIB8* (3rd Segment)

Derivation Path: TS 38.331 [6], clause 6.3.1			
Information Element	**Value/remark**	**Comment**	**Condition**
SIB8 ::= SEQUENCE {			
messageIdentifier	'0001 0001 0001 0010'B	CMAS CBS Message Identifier for CMAS Presidential Level Alerts (see TS 23.041 [25])	
serialNumber	'0011 0000 0000 0000'B	Note 1	
warningMessageSegmentType	LastSegment		
warningMessageSegmentNumber	2		
warningMessageSegment	Octetstring of N	Where N ≥ 1 and less than 1246. (see TS 23.041 [25])	
dataCodingScheme	Not present		
warningAreaCoordinatesSegment	Not present		
lateNonCriticalExtension	Not present		
}			
Note 1: Geographical Scope (Octet 1 bit 7 ~ 6) set to 'Cell wide', Emergency User Alert (Octet 1 bit 5) set to 'Activate emergency user alert', Popup (Octet 1 bit 4) set to 'Activate popup', Update Number (Octet 2 bits 3~0) for each update, incremented by one, See TS 23.041 [25].			

– *SIB9*

SIB9 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.

NOTE 1: The UE may use the time information for numerous purposes, possibly involving upper layers e.g. to assist GPS initialisation, to synchronise the UE clock.

NOTE 2: SIB9 is not defined in the common test environment as test requirements have not been identified.

4.6.3 Radio resource control information elements

– *AdditionalSpectrumEmission*

Table 4.6.3-1: *AdditionalSpectrumEmission*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
AdditionalSpectrumEmission	0		

– *Alpha*

Table 4.6.3-2: *Alpha*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
Alpha	alpha0		

– *AMF-Identifier*

Table 4.6.3-3: *AMF-Identifier*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
AMF-Identifier	FFS		

– *ARFCN-ValueEUTRA*

Table 4.6.3-4: *ARFCN-ValueEUTRA*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ARFCN-ValueEUTRA	FFS		

– *ARFCN-ValueNR*

Table 4.6.3-5: *ARFCN-ValueNR*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ARFCN-ValueNR			
	absoluteFrequencySSB as defined for the frequency of the cell	For signalling test cases see subclause 6.2.3. Otherwise, see subclause 4.3.1.	DL_SSB
	absoluteFrequencyPointA as defined for the DL frequency of the cell	For signalling test cases see subclause 6.2.3. Otherwise, see subclause 4.3.1.	DL_PointA
	absoluteFrequencyPointA as defined for the UL frequency of the cell	For signalling test cases see subclause 6.2.3. Otherwise, see subclause 4.3.1.	UL_PointA

Condition	Explanation
DL_SSB	IE absoluteFrequencySSB for downlink
DL_PointA	IE absoluteFrequencyPointA for downlink
UL_PointA	IE absoluteFrequencyPointA for uplink

– *BeamFailureRecoveryConfig*

Table 4.6.3-6: *BeamFailureRecoveryConfig*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
BeamFailureRecoveryConfig	FFS		

– *BSR-Config*

Table 4.6.3-7: *BSR-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
BSR-Config ::= SEQUENCE {			
periodicBSR-Timer	sf1		
retxBSR-Timer	sf80		
logicalChannelSR-DelayTimer	Not present		
}			

– *BWP*

Table 4.6.3-8: *BWP*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
BWP ::= SEQUENCE {			
locationAndBandwidth	Set to value of locationAndBandwidth in Table 4.3.1.0b-1 for the bandwidth and subcarrier spacing under test.		FR1
	Set to value of locationAndBandwidth in Table 4.3.1.0b-2 for the bandwidth and subcarrier spacing under test.		FR2
subcarrierSpacing	SubcarrierSpacing		
cyclicPrefix	Not present		
}			

– *BWP-Downlink*

Table 4.6.3-9: *BWP-Downlink*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
BWP-Downlink ::= SEQUENCE {			
bwp-Id	BWP-Id with condition BWP-Id1		
bwp-Common	BWP-DownlinkCommon		
bwp-Dedicated	BWP-DownlinkDedicated		
}			

– *BWP-DownlinkCommon*

Table 4.6.3-10: *BWP-DownlinkCommon*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
BWP-DownlinkCommon ::= SEQUENCE {			
genericParameters	BWP		
pdcch-ConfigCommon CHOICE {			
setup	PDCCH-ConfigCommon		
}			
pdsch-ConfigCommon CHOICE {			
setup	PDSCH-ConfigCommon		
}			
}			

– *BWP-DownlinkDedicated*

Table 4.6.3-11: *BWP-DownlinkDedicated*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
BWP-DownlinkDedicated ::= SEQUENCE {			
pdcch-Config CHOICE {			
setup	PDCCH-Config		
}			
pdsch-Config CHOICE {			
setup	PDSCH-Config		
}			
sps-Config	Not present		
radioLinkMonitoringConfig	Not present		
}			

– BWP-Id

Table 4.6.3-12: *BWP-Id*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
BWP-Id	0	Initial BWP	
	1		BWP-Id1
	1		BWP-Id1

Condition	Explanation
BWP-Id1	Additional BWP 1

– *BWP-Uplink*

Table 4.6.3-13: *BWP-Uplink*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
BWP-Uplink ::= SEQUENCE {			
bwp-Id	BWP-Id with condition BWP-Id1		
bwp-Common	BWP-UplinkCommon		
bwp-Dedicated	BWP-UplinkDedicated		
}			

– *BWP-UplinkCommon*

Table 4.6.3-14: *BWP-UplinkCommon*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
BWP-UplinkCommon ::= SEQUENCE {			
genericParameters	BWP		
rach-ConfigCommon CHOICE {			
setup	RACH-ConfigCommon		
}			
pusch-ConfigCommon CHOICE {			
setup	PUSCH-ConfigCommon		
}			
pucch-ConfigCommon CHOICE {			
setup	PUCCH-ConfigCommon		
}			
}			

– *BWP-UplinkDedicated*

Table 4.6.3-15: *BWP-UplinkDedicated*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
BWP-UplinkDedicated ::= SEQUENCE {			
pucch-Config CHOICE {			
setup	PUCCH-Config		
}			
pusch-Config CHOICE {			
setup	PUSCH-Config		
}			
configuredGrantConfig	Not present		
srs-Config	Not present		
	SRS-Config		DCI_0_1
beamFailureRecoveryConfig	Not present		
}			

Condition	Explanation
DCI_0_1	DCI_0_1 is used

– *CellAccessRelatedInfo*

Table 4.6.3-16: *CellAccessRelatedInfo*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CellAccessRelatedInfo ::= SEQUENCE {			
plmn-IdentityList	PLMN-IdentityInfoList		
cellReservedForOtherUse	Not present		
}			

– *CellAccessRelatedInfo-EUTRA-5GC*

Table 4.6.3-17: *CellAccessRelatedInfo-EUTRA-5GC*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CellAccessRelatedInfo-EUTRA-5GC::= SEQUENCE {			
FFS			
}			

– *CellAccessRelatedInfo-EUTRA-EPC*

Table 4.6.3-18: *CellAccessRelatedInfo-EUTRA-EPC*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CellAccessRelatedInfo-EUTRA-EPC::= SEQUENCE {			
FFS			
}			

– *CellGroupConfig*

Table 4.6.3-19: CellGroupConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CellGroupConfig ::= SEQUENCE {			
cellGroupId	CellGroupId		
rlc-BearerToAddModList SEQUENCE (SIZE(1..maxLCH)) OF SEQUENCE {	1 entry		EN-DC
RLC-Bearer-Config[1]	RLC-Bearer-Config with conditions AM and DRB2		
	RLC-BearerConfig with conditions AM and DRB2 and Re-establish_RLC		HO
}			
rlc-BearerToAddModList SEQUENCE (SIZE(1..maxLCH)) OF SEQUENCE {	1 entry		SRB1
RLC-Bearer-Config[1]	RLC-Bearer-Config with condition SRB1		
	RLC-Bearer-Config with condition SRB1 and Re-establish_RLC		HO
}			
rlc-BearerToAddModList SEQUENCE (SIZE(1..maxLCH)) OF SEQUENCE {	2 entries		SRB2_DRB1
RLC-Bearer-Config[1]	RLC-Bearer-Config with condition SRB2		
RLC-Bearer-Config[2]	RLC-Bearer-Config with conditions AM and DRB1		
}			
rlc-BearerToAddModList SEQUENCE (SIZE(1..maxLCH)) OF SEQUENCE {	1 entry		SRB2
RLC-Bearer-Config[1]	RLC-Bearer-Config with condition SRB2		
	RLC-Bearer-Config with condition SRB2 and Re-establish_RLC		HO
}			
rlc-BearerToAddModList SEQUENCE (SIZE(1..maxLCH)) OF SEQUENCE {	1 entry		DRB1
RLC-Bearer-Config[1]	RLC-Bearer-Config with condition DRB1		
	RLC-Bearer-Config with condition DRB1 and Re-establish_RLC		HO
}			
rlc-BearerToReleaseList	Not present		
mac-CellGroupConfig	MAC-CellGroupConfig		

	Not present		SRB2_DRB 1
physicalCellGroupConfig	PhysicalCellGroupConfig		
	Not present		SRB2_DRB 1
spCellConfig SEQUENCE {}	Not present		SRB2_DRB 1
spCellConfig SEQUENCE {			
servCellIndex	Not present		
	ServCellIndex		EN-DC
reconfigurationWithSync	Not present		
reconfigurationWithSync SEQUENCE {			EN-DC, HO
spCellConfigCommon	ServingCellConfigCommon		
newUE-Identity	RNTI-Value		
t304	ms1000		
rach-ConfigDedicated	Not present		
rach-ConfigDedicated CHOICE {			CFRA
uplink	RACH-ConfigDedicated		
supplementaryUplink	RACH-ConfigDedicated		SUL
}			
}			
rlf-TimersAndConstants CHOICE {			
setup	RLF-TimersAndConstants		
}			
rlmInSyncOutOfSyncThreshold	Not present		
spCellConfigDedicated	ServingCellConfig		
}			
sCellToAddModList	Not present		
sCellToReleaseList	Not present		
}			

Condition	Explanation
EN-DC	E-UTRA-NR Dual Connectivity
CFRA	This condition applies when CFRA is configured
SUL	Supplementary Uplink
SRB1	Establishment of SRB1
SRB2_DRB1	Establishment of SRB2 and DRB1
SRB2	Establishment of SRB2
DRB1	Establishment of DRB1
HO	Inter-cell handover or EN-DC inter PScell change or reconfiguration withSync with key change

– *CellGroupId*

Table 4.6.3-20: *CellGroupId*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CellGroupId	0		
	1		EN-DC

Condition	Explanation
EN-DC	E-UTRA-NR Dual Connectivity

– *CellIdentity*

Table 4.6.3-21: *CellIdentity*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CellIdentity	Set to NR Cell Identifier defined in table 4.4.2-2	BIT STRING (SIZE (36))	

– *CellReselectionPriority*

Table 4.6.3-22: *CellReselectionPriority*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CellReselectionPriority	FFS		

– *CellReselectionSubPriority*

Table 4.6.3-23: *CellReselectionSubPriority*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CellReselectionSubPriority	FFS		

– *CGI-Info*

Table 4.6.3-24: *CGI-Info*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CGI-Info	FFS		

– *CodebookConfig*

Table 4.6.3-25: *CodebookConfig*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CodebookConfig ::= SEQUENCE {			
codebookType CHOICE {			
type1 SEQUENCE {			
subType CHOICE {			
typeI-SinglePanel SEQUENCE {			
nrOfAntennaPorts CHOICE {			
moreThanTwo SEQUENCE {			
n1-n2 CHOICE {			
two-one-TypeI-SinglePanel-Restriction	11111111		FR2
four-one-TypeI-SinglePanel-Restriction	11111111 11111111		FR1
},			
typeI-SinglePanel-codebookSubsetRestriction-i2	Not present		
}			
},			
typeI-SinglePanel-ri-Restriction	11111111		
},			
},			
codebookMode	1		
},			
}			
}			

– *ConfiguredGrantConfig*

Table 4.6.3-26: ConfiguredGrantConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ConfiguredGrantConfig ::= SEQUENCE {			
FFS			
}			

– *ConnEstFailureControl*

Table 4.6.3-27: *ConnEstFailureControl*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ConnEstFailureControl ::= SEQUENCE {			
connEstFailCount	n1		
connEstFailOffsetValidity	s30		
connEstFailOffset	1		
}			

– *ControlResourceSet*

Table 4.6.3-28: ControlResourceSet

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ControlResourceSet ::= SEQUENCE {			
controlResourceSetId	ControlResourceSetId		
frequencyDomainResources	11110000 00000000 00000000 00000000 00000000 00000	CORESET to use the least significant 24 RBs of the BWP	
duration	2	SearchSpace duration of 2 symbols	
cce-REG-MappingType CHOICE {			
nonInterleaved	null		
}			
precoderGranularity	sameAsREG-bundle		
tci-StatesPDCCH-ToAddList	Not present		
tci-StatesPDCCH-ToReleaseList	Not present		
tci-PresentInDCI	Not present		
pdcch-DMRS-ScramblingID	Not present		
}			

– *ControlResourceSetId*

Table 4.6.3-29: ControlResourceSetId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ControlResourceSetId	1		

– *ControlResourceSetZero*

Table 4.6.3-30: *ControlResourceSetZero*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ControlResourceSetZero	Set to CORESET#0 Index as defined for the frequency of the cell	For signalling test cases see subclause 6.2.3. Otherwise, see subclause 4.3.1.	

– *CrossCarrierSchedulingConfig*

Table 4.6.3-31: CrossCarrierSchedulingConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CrossCarrierSchedulingConfig::= SEQUENCE {			
FFS			
}			

– *CSI-AperiodicTriggerStateList*

Table 4.6.3-32: CSI-AperiodicTriggerStateList

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-AperiodicTriggerStateList ::= SEQUENCE (SIZE (1..maxNrOfCSI-AperiodicTriggers)) OF {	1 entry		
CSI-AperiodicTriggerState[1] SEQUENCE (SIZE(1..maxNrofReportConfigPerAperiodicTrigger)) OF {	[1 entry]		
reportConfigId[1]	CSI-ReportConfigId		
resourcesForChannel[1] CHOICE {			
nzp-CSI-RS SEQUENCE {			
resourceSet	8		FR1
	16		FR2
qcl-info SEQUENCE (SIZE(1..maxNrofAP-CSI-RS-ResourcesPerSet)) OF {	1 entry		
TCI-StateId[1]	TCI-StateId		
}			
}			
}			
csi-IM-ResourcesforInteference[1]	8		FR1
	16		FR2
nzp-CSI-RS-ResourcesforInterference[1]	8		FR1
	16		FR2
}			
}			

– *CSI-FrequencyOccupation*

Table 4.6.3-33: CSI-FrequencyOccupation

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			
startingRB	0		
nrofRBs	160		FR1_60MHz
	216		FR1_80MHz
	272		FR1_100MHz
	64		FR2_100MHz
	52		TRS
}			

Condition	Explanation
FR1_60MHz	FR1 is used under the test. CBW is set to 60MHz.
FR1_80MHz	FR1 is used under the test. CBW is set to 80MHz.
FR1_100MHz	FR1 is used under the test. CBW is set to 100MHz.
FR2_100MHz	FR2 is used under the test. CBW is set to 100MHz.
TRS	Tracking-Reference Signal

– *CSI-IM-Resource*

Table 4.6.3-34: CSI-IM-Resource

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-Resource ::= SEQUENCE {			
csi-IM-ResourceId	CSI-IM-ResourceId		
csi-IM-ResourceElementPattern CHOICE {			
pattern1 SEQUENCE {			
subcarrierLocation-p1	s4		
symbolLocation-p1	3		FR1
	4		FR2
}			
}			
freqBand	CSI-FrequencyOccupation		
periodicityAndOffset	Not present		
}			

– *CSI-IM-ResourceId*

Table 4.6.3-35: CSI-IM-ResourceId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceId	7		FR1
	31		FR2

– *CSI-IM-ResourceSet*

Table 4.6.3-36: CSI-IM-ResourceSet

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceSet ::= SEQUENCE {			
csi-IM-ResourceSetId	CSI-IM-ResourceSetId		
csi-IM-Resources SEQUENCE (SIZE(1..maxNrofCSI-IM-ResourcesPerSet)) {	1 entry		
CSI-IM-ResourceId[1]	CSI-IM-ResourceId		
}			
}			

– *CSI-IM-ResourceSetId*

Table 4.6.3-37: CSI-IM-ResourceSetId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceSetId	0		

– *CSI-MeasConfig*

Table 4.6.3-38: *CSI-MeasConfig*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-MeasConfig::= SEQUENCE {			
nzp-CSI-RS-ResourceToAddModList SEQUENCE {	1 entry		
NZP-CSI-RS-Resource[1]	NZP-CSI-RS-Resource		
}			
nzp-CSI-RS-ResourceToReleaseList	Not present		
nzp-CSI-RS-ResourceSetToAddModList SEQUENCE {	1 entry		
NZP-CSI-RS-ResourceSet[1]	NZP-CSI-RS-ResourceSet		
}			
nzp-CSI-RS-ResourceSetToReleaseList	Not present		
csi-IM-ResourceToAddModList SEQUENCE {	1 entry		
CSI-IM-Resource[1]	CSI-IM-Resource		
}			
csi-IM-ResourceToReleaseList	Not present		
csi-IM-ResourceSetToAddModList SEQUENCE {	1 entry		
CSI-IM-ResourceSet[1]	CSI-IM-ResourceSet		
}			
csi-IM-ResourceSetToReleaseList	Not present		
csi-SSB-ResourceSetToAddModList SEQUENCE {	1 entry		
CSI-SSB-ResourceSet[1]	CSI-SSB-ResourceSet		
}			
csi-SSB-ResourceSetToAddReleaseList	Not present		
csi-ResourceConfigToAddModList SEQUENCE {	1 entry		
CSI-ResourceConfig[1]	CSI-ResourceConfig		
}			
csi-ResourceConfigToReleaseList	Not present		
csi-ReportConfigToAddModList	1 entry		
CSI-ReportConfig[1]	CSI-ReportConfig		
}			
csi-ReportConfigToReleaseList	Not present		
reportTriggerSize	0		
aperiodicTriggerStateList SetupRelease {			
setup	CSI-AperiodicTriggerStateList		
}			
semiPersistentOnPUSCH-TriggerStateList	Not present		
}			

– *CSI-ReportConfig*

Table 4.6.3-39: CSI-ReportConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ReportConfig ::= SEQUENCE {			
reportConfigId	CSI-ReportConfigId		
carrier	ServCellIndex		
resourcesForChannelMeasurement	CSI-ResourceConfigId		
csi-IM-ResourcesForInterference	CSI-ResourceConfigId		
nzp-CSI-RS-ResourcesForInterference	CSI-ResourceConfigId		
reportConfigType CHOICE {			
aperiodic SEQUENCE {			
reportSlotOffsetList	14		
}			
}			
reportQuantity CHOICE {			
cri-RI-PMI-CQI	NULL,		FR1
cri-RI-LI-PMI-CQI	NULL		FR2
}			
reportFreqConfiguration SEQUENCE {			
cqi-FormatIndicator	widebandCQI		
pmi-FormatIndicator	widebandPMI		
csi-ReportingBand	Not present		
}			
timeRestrictionForChannelMeasurements	notConfigured		
timeRestrictionForInterferenceMeasurements	notConfigured		
codebookConfig	CodebookConfig		
dummy	Not present		
groupBasedBeamReporting CHOICE {			
disabled SEQUENCE {			
nrofReportedRS	n1		
}			
}			
cqi-Table	table2		FR1
	table1		FR2
subbandSize	value2		
non-PMI-PortIndication	Not present		
}			

– *CSI-ReportConfigId*

Table 4.6.3-40: CCSI-ReportConfigId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ReportConfigID	0		

– *CSI-ResourceConfig*

Table 4.6.3-41: CSI-ResourceConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	CSI-ResourceConfigId		
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF {	2 entries		
NZP-CSI-RS-ResourceSetId[0]	0		
NZP-CSI-RS-ResourceSetId[1]	1		
}			
csi-SSB-ResourceSetList	Not present		
}			
}			
bwp-Id	BWP-Id		
resourceType	periodic		
}			

– *CSI-ResourceConfigId*

Table 4.6.3-42: CSI-ResourceConfigId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfigId	0		

– *CSI-ResourcePeriodicityAndOffset*

Table 4.6.3-43: CSI-ResourcePeriodicityAndOffset

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
slots80	10		FR1
slots320	40		FR2
}			

– *CSI-RS-ResourceConfigMobility*

Table 4.6.3-44: CSI-RS-ResourceConfigMobility

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceConfigMobility ::= SEQUENCE {			
subcarrierSpacing	SubcarrierSpacing		
csi-RS-CellList-Mobility	FFS		
}			

– *CSI-RS-ResourceMapping*

Table 4.6.3-45: CSI-RS-ResourceMapping

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	1000		TRS
row4	010		FR2
other	011110		FR1
}			
nrofPorts	p8		FR1
	p4		FR2
	p1		TRS
firstOFDMSymbolInTimeDomain	3		FR1
	13		FR2
	4		TRS
firstOFDMSymbolInTimeDomain2	Not present		
cdm-Type	fd-CDM2		
	noCDM		TRS
density CHOICE {			
one	NULL		
three	NULL		TRS
}			
freqBand	CSI-FrequencyOccupation		
}			

Condition	Explanation
TRS	Tracking-Reference Signal

– *CSI-SemiPersistentOnPUSCH-TriggerStateList*

Table 4.6.3-46: CSI-SemiPersistentOnPUSCH-TriggerStateList

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-SemiPersistentOnPUSCH-TriggerStateList ::= SEQUENCE {			
FFS			
}			

– *CSI-SSB-ResourceSet*

Table 4.6.3-47: CSI-SSB-ResourceSet

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-SSB-ResourceSet ::= SEQUENCE {			
FFS			
}			

– *CSI-SSB-ResourceSetId*

Table 4.6.3-48: CSI-SSB-ResourceId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-SSB-ResourceSetId	FFS		

– *DedicatedNAS-Message*

Table 4.6.3-49: *DedicatedNAS-Message*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
DedicatedNAS-Message	Set according to specific message content		

– *DMRS-DownlinkConfig*

Table 4.6.3-50: DMRS-DownlinkConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
DMRS-DownlinkConfig ::= SEQUENCE {			
dmrs-Type	Not present	DMRS type 1	
dmrs-AdditionalPosition	pos1		FR1_FDD, FR1_TDD
	pos0		FR2_TDD
maxLength	Not present	len1	
scramblingID0	Not present		
scramblingID1	Not present		
phaseTrackingRS	Not present		FR1
phaseTrackingRS CHOICE {			FR2
setup	PTRS-DownlinkConfig		
}			
}			

Condition	Explanation
FR1_FDD	FDD frequency range < 6GHz
FR1_TDD	TDD frequency range < 6GHz
FR2_TDD	TDD frequency range > 6GHz

– *DMRS-UplinkConfig*

Table 4.6.3-51: DMRS-UplinkConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
DMRS-UplinkConfig ::= SEQUENCE {			
dmrs-Type	Not present	DMRS type 1	
dmrs-AdditionalPosition	pos1		FR1_FDD, FR1_TDD
	pos0		FR2_TDD
phaseTrackingRS	Not present		
phaseTrackingRS CHOICE {			PTRS_UL_CONFIG
setup	PTRS-UplinkConfig		
}			
maxLength	Not present	len1	
transformPrecodingDisabled SEQUENCE {			
scramblingID0	Not present		
scramblingID1	Not present		
}			
transformPrecodingEnabled	Not present		
}			

Condition	Explanation
FR1_FDD	FDD frequency range < 6GHz
FR1_TDD	TDD frequency range < 6GHz
FR2_TDD	TDD frequency range > 6GHz
PTRS_UL_CONFIG	When PTRS Uplink is configured

– *DownlinkConfigCommon*

Table 4.6.3-52: DownlinkConfigCommon

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
DownlinkConfigCommon ::= SEQUENCE {			
frequencyInfoDL	FrequencyInfoDL		
initialDownlinkBWP	BWP-DownlinkCommon		
}			

– *DownlinkConfigCommonSIB*

Table 4.6.3-53: *DownlinkConfigCommonSIB*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
DownlinkConfigCommonSIB ::= SEQUENCE {			
frequencyInfoDL	FrequencyInfoDL-SIB		
initialDownlinkBWP	BWP-DownlinkCommon		
bcch-Config SEQUENCE {			
modificationPeriodCoeff	n4		
}			
pcch-Config SEQUENCE {			
defaultPagingCycle	rf128		
nAndPagingFrameOffset CHOICE {			
halfT	1		
}			
ns	one		
firstPDCCH-MonitoringOccasionOfPO CHOICE {}	Not present		
}			
}			

– *DownlinkPreemption*

Table 4.6.3-54: DownlinkPreemption

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
DownlinkPreemption ::= SEQUENCE {			
FFS			
}			

– *DRB-Identity*

Table 4.6.3-55: *DRB-Identity*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
DRB-Identity	n		DRBn

Condition	Explanation
DRBn	DRB-Identity n

– *DRX-Config*

Table 4.6.3-56: *DRX-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
DRX-Config ::= SEQUENCE {			
drx-onDurationTimer CHOICE {			
milliSeconds	ms6		
}			
drx-InactivityTimer	ms1280		
drx-HARQ-RTT-TimerDL	56		
drx-HARQ-RTT-TimerUL	56		
drx-RetransmissionTimerDL	sl16		FR1
	sl64		FR2
drx-RetransmissionTimerUL	sl16		FR1
	sl64		FR2
drx-LongCycleStartOffset CHOICE {			
ms10240	0		
}			
shortDRX	not present		
drx-SlotOffset	0		
}			

– *FilterCoefficient*

Table 4.6.3-57: FilterCoefficient

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
FilterCoefficient	fc4		

– *FreqBandIndicatorNR*

Table 4.6.3-58: FreqBandIndicatorNR

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
FreqBandIndicatorNR	Operating band under test		

– *FrequencyInfoDL*

Table 4.6.3-59: FrequencyInfoDL

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
FrequencyInfoDL::= SEQUENCE {			
absoluteFrequencySSB	ARFCN-ValueNR with condition DL_SSB		
frequencyBandList	MultiFrequencyBandList NR		
absoluteFrequencyPointA	ARFCN-ValueNR with condition DL_PointA		
scs-SpecificCarrierList SEQUENCE (SIZE (1..maxSCSs)) OF	1 entry		
SCS-SpecificCarrier[1]	SCS-SpecificCarrier with condition DL_PointA		
}			
}			

– *FrequencyInfoDL-SIB*

Table 4.6.3-60: *FrequencyInfoDL-SIB*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
FrequencyInfoDL-SIB ::= SEQUENCE {			
frequencyBandList	MultiFrequencyBandList NR-SIB		
offsetToPointA	For signalling test cases see subclause 6.2.3. Otherwise, see subclause 4.3.1.		
scs-SpecificCarrierList SEQUENCE (SIZE (1..maxSCSs)) OF SEQUENCE {	1 entry		
SCS-SpecificCarrier[1]	SCS-SpecificCarrier with condition DL_PointA		
}			
}			

– *FrequencyInfoUL*

Table 4.6.3-61: FrequencyInfoUL

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
FrequencyInfoUL::= SEQUENCE {			
frequencyBandList	MultiFrequencyBandList NR		
	Not present		FR1_TDD, FR2_TDD
absoluteFrequencyPointA	ARFCN-ValueNR with condition UL_PointA		
	Not present		FR1_TDD, FR2_TDD
scs-SpecificCarriers SEQUENCE (SIZE (1..maxSCSs)) OF {	1 entry		
SCS-SpecificCarrier1	SCS-SpecificCarrier with condition UL_PointA		
}			
additionalSpectrumEmission	AdditionalSpectrumEmission		
p-Max	P-Max		
frequencyShift7p5khz	Not present		
}			

Condition	Explanation
FR1_TDD	TDD frequency range < 6GHz
FR2_TDD	TDD frequency range > 6GHz

– *FrequencyInfoUL-SIB*

Table 4.6.3-62: *FrequencyInfoUL-SIB*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
FrequencyInfoUL-SIB SEQUENCE {			
frequencyBandList	MultiFrequencyBandList NR-SIB		
	Not present		FR1_TDD, FR2_TDD
absoluteFrequencyPointA	ARFCN-ValueNR with condition UL_PointA		
	Not present		FR1_TDD, FR2_TDD
scs-SpecificCarrierList SEQUENCE (SIZE (1..maxSCSs)) OF SEQUENCE {	1 entry		
SCS-SpecificCarrier[1]	SCS-SpecificCarrier with condition UL_PointA		
}			
p-Max	P-Max		
frequencyShift7p5khz	Not present		
}			

Condition	Explanation
FR1_TDD	TDD frequency range < 6GHz
FR2_TDD	TDD frequency range > 6GHz

– *Hysteresis*

Table 4.6.3-63: *Hysteresis*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
Hysteresis	4		

– *I-RNTI-Value*

Table 4.6.3-64: *I-RNTI-Value*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
I-RNTI-Value	SS arbitrarily selects a value between ’00 0000 0001’H and ‘FF FFFF FFFF’H.	BIT STRING (SIZE(40))	

– *LocationMeasurementInfo*

Table 4.6.3-65: *LocationMeasurementInfo*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
LocationMeasurementInfo ::= CHOICE {			
eutra-RSTD SEQUENCE (SIZE (1..maxInterRAT-RSTD-Freq)) OF SEQUENCE {			
carrierFreq	ARFCN-ValueEUTRA		
measPRS-Offset	FFS		
}			
}			

– *LogicalChannelConfig*

Table 4.6.3-66: LogicalChannelConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
LogicalChannelConfig ::= SEQUENCE {			
ul-SpecificParameters SEQUENCE {			
priority	1		
	3		SRB2
prioritisedBitRate	infinity		
bucketSizeDuration	ms50		
allowedServingCells	Not present		
allowedSCS-List	Not present		
maxPUSCH-Duration	Not present		
configuredGrantType1Allowed	Not present		
logicalChannelGroup	1		HI
	2		LO
	0		SRB1, SRB2, SRB3
schedulingRequestID	SchedulingRequestId		
logicalChannelSR-Mask	false		
logicalChannelSR-DelayTimerApplied	false		
bitRateQueryProhibitTimer	Not present		
}			
}			

Condition	Explanation
HI	Used for DRBs with high logical channel priority
LO	Used for DRBs with low logical channel priority
SRB1	Establishment of SRB1
SRB2	Establishment of SRB2
SRB3	Establishment of SRB3

– *LogicalChannelIdentity*

Table 4.6.3-67: LogicalChannelIdentity

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
LogicalChannelIdentity	1		SRB1
LogicalChannelIdentity	2		SRB2
LogicalChannelIdentity	3		SRB3
LogicalChannelIdentity	n+3		DRBn

Condition	Explanation
SRB1	Establishment of SRB1
SRB2	Establishment of SRB2
SRB3	Establishment of SRB3
DRBn	Establishment of DRBn; n=1..29

– *MAC-CellGroupConfig*

Table 4.6.3-68: MAC-CellGroupConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MAC-CellGroupConfig ::= SEQUENCE {			
drx-Config	Not present		
drx-Config CHOICE {			DRX
setup	DRX-Config		
}			
schedulingRequestConfig	SchedulingRequest-Config		
bsr-Config	BSR-Config		
tag-Config	TAG-Config		
phr-Config CHOICE {			
setup	PHR-Config		
}			
skipUplinkTxDynamic	false		
}			

Condition	Explanation
DRX	This condition applies when DRX is configured

– *MeasConfig*

Table 4.6.3-69: *MeasConfig*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig::= SEQUENCE {			
measObjectToRemoveList	Not present		
measObjectToAddModList	MeasObjectToAddModList		
reportConfigToRemoveList	Not present		
reportConfigToAddModList	ReportConfigToAddModList		
measIdToRemoveList	Not present		
measIdToAddModList	MeasIdToAddModList		
s-MeasureConfig	Not present		
quantityConfig	QuantityConfig		
measGapConfig	Not present		
measGapSharingConfig	Not present		
}			

– *MeasGapConfig*

Table 4.6.3-70: *MeasGapConfig*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasGapConfig ::= SEQUENCE {			
gapFR2	Not present		
gapFR2 CHOICE {			GAP_FR2
setup SEQUENCE {			
gapOffset	159		
mgl	ms3dot5		
mgrp	ms160		
mgta	ms0		
}			
}			
gapFR1	Not present		
gapFR1 CHOICE {			GAP_FR1
setup SEQUENCE {			
gapOffset	39		
mgl	ms6		
mgrp	ms40		
mgta	ms0		
}			
gapUE	Not present		GAP_FR1 OR GAP_FR2
gapUE CHOICE {			
setup SEQUENCE {			
gapOffset	39		
mgl	ms6		
mgrp	ms40		
mgta	ms0		
}			
}			
}			

Condition	Explanation
GAP_FR1	Configuration for FR1 per-FR gaps
GAP_FR2	Configuration for FR2 per-FR gaps

– *MeasGapSharingConfig*

Table 4.6.3-71: MeasGapSharingConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasGapSharingConfig ::= SEQUENCE {			
gapSharingFR2	Not present		
}			

– *MeasId*

Table 4.6.3-72: *MeasId*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasId	1		

– *MeasIdToAddModList*

Table 4.6.3-73: MeasIdToAddModList

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasIdToAddModList::= SEQUENCE (SIZE (1..maxNrofMeasId)) OF SEQUENCE {	1 entry		
measId[1]	MeasId		
measObjectId[1]	MeasObjectId		
reportConfigId[1]	ReportConfigId		
}			

– *MeasObjectEUTRA*

Table 4.6.3-74: MeasObjectEUTRA

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA ::= SEQUENCE {			
carrierFreq	Downlink EARFCN for Freq		
allowedmeasBandwidth	The number of the resource blocks for Freq		
cellsToRemoveListEUTRAN	Not present		
cellsToAddModListEUTRAN	Not present		
blackCellsToRemoveListEUTRAN	Not present		
blackCellsToAddModListEUTRAN	Not present		
eutra-PresenceAntennaPort1	true	[at least two cell-specific antenna ports are used in all neighbouring cells]	
eutra-Q-OffsetRange	Not present		
widebandRSRQ-Meas	false		
}			

– *MeasObjectId*

Table 4.6.3-75: *MeasObjectId*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectId	1		

– *MeasObjectNR*

Table 4.6.3-76: *MeasObjectNR*(Thres)

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectNR::= SEQUENCE {			
ssbFrequency	ARFCN-ValueNR with condition DL_SSB		
ssbSubcarrierSpacing	SubcarrierSpacing		
smtc1	SSB-MTC		
smtc2	Not present		
refFreqCSI-RS	Not present		
referenceSignalConfig SEQUENCE {			
ssb-ConfigMobility SEQUENCE {			
ssb-ToMeasure CHOICE {			
setup	SSB-ToMeasure		
}			
deriveSSB-IndexFromCell	true		
ss-RSSI-Measurement	Not present		
}			
csi-rs-ResourceConfigMobility	Not present		
}			
absThreshSS-BlocksConsolidation SEQUENCE {			
thresholdRSRP	Thres	Thres is an entry value into a mapping table in TS 38.133 [13].	
thresholdRSRQ	Not present		
thresholdSINR	Not present		
}			
absThreshCSI-RS-Consolidation	Not present		
nrofSS-BlocksToAverage	2		
nrofCSI-RS-ResourcesToAverage	Not present		
quantityConfigIndex	1		
offsetMO SEQUENCE {			
rsrpOffsetSSB	dB0		
rsrqOffsetSSB	dB0		
sinrOffsetSSB	dB0		
rsrpOffsetCSI-RS	dB0		
rsrqOffsetCSI-RS	dB0		
sinrOffsetCSI-RS	dB0		
}			
cellsToRemoveList	Not present		
cellsToAddModList	Not present		
blackCellsToRemoveList	Not present		
blackCellsToAddModList	Not present		
whiteCellsToRemoveList	Not present		

whiteCellsToAddModList	Not present		
freqBandIndicatorNR-v1530	FreqBandIndicatorNR		
}			

– *MeasObjectToAddModList*

Table 4.6.3-77: MeasObjectToAddModList

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectToAddModList::= SEQUENCE (SIZE (1..maxNrofMeasId)) OF SEQUENCE {	1 entry		
measObjectId[1]	MeasObjectId		
measObject CHOICE {			
measObjectNR	MeasObjectNR		
}			
}			

– *MeasResultCellListSFTD*

Table 4.6.3-78: MeasResultCellListSFTD

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultCellListSFTD ::= SEQUENCE {			
FFS			
}			

– *MeasResults*

Table 4.6.3-79: *MeasResults*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults::= SEQUENCE {			
measId	MeasId		
measResultServingMOList::= SEQUENCE (SIZE (1.. maxNrofServingCells)) OF SEQUENCE {	1 entry		
servCellId	ServCellIndex		
measResultServingCell SEQUENCE {			
physCellId	PhysCellId		
measResult SEQUENCE {			
cellResults SEQUENCE {			
resultsSSB-Cell SEQUENCE {			
rsrp	Not checked		
rsrq	Not checked		
sinr	Not checked		
}			
resultsCSI-RS-Cell	Not present		
}			
rsIndexResults	Not present		
}			
cgi-Info	Not present		
}			
measResultBestNeighCell	Not present		
}			
measResultNeighCells	Not present		A1, A2
	Set according to specific message content		A3, A4, A5, A6
}			

Condition	Explanation
A1	If event trigger Id in corresponding Measurement Configuration was Event A1
A2	If event trigger Id in corresponding Measurement Configuration was Event A2
A3	If event trigger Id in corresponding Measurement Configuration was Event A3
A4	If event trigger Id in corresponding Measurement Configuration was Event A4
A5	If event trigger Id in corresponding Measurement Configuration was Event A5
A6	If event trigger Id in corresponding Measurement Configuration was Event A6

– *MeasResultSCG-Failure*

Table 4.6.3-80: MeasResultSCG-Failure

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultSCG-Failure ::= SEQUENCE {		*measResultPerMOList* for each *MeasOjectNR* for which a *measId* is configured (by the NR *RRCConfiguration message*) and measurement results are available include an entry	
measResultPerMOList SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {	*n* entries of MeasResult2NR	MOList [1] *n* denotes the number of non-serving frequencies being measured	
MeasResult2NR SEQUENCE {	entry [1]		
ssbFrequency	ARFCN-ValueNR with condition DL_SSB	the ARFCN if there is a *measId* configured with the *MeasObjectNR* and a *reportConfig* which has *rsType* set to *sbb*	
refFreqCSI-RS	INTEGER (0..3279165)	the ARFCN if there is a *measId* configured with the *MeasObjectNR* and a *reportConfig* which has *rsType* set to *csi-rs*	
measResultServingCell SEQUENCE {		if a serving cell is associated with the *MeasObjectNR*	

physCellId	INTEGER (0..1007)	the *physCellId* configured for this serving cell	
measResult SEQUENCE {			
cellResults SEQUENCE {			
resultsSSB-Cell SEQUENCE {			
rsrp	as specified in Table 4.6.3-152	Integer value for RSRP measurements	
rsrq	as specified in Table 4.6.3-153	Integer value for RSRQ measurements	
sinr	as specified in Table 4.6.3-172	Integer value for SINR measurements	
}			
resultsCSI-RS-Cell SEQUENCE {			
rsrp	as specified in Table 4.6.3-152	Integer value for RSRP measurements	
rsrq	as specified in Table 4.6.3-153	Integer value for RSRQ measurements	
sinr	as specified in Table 4.6.3-172	Integer value for SINR measurements	
}			
}			
rsIndexResults SEQUENCE {			
resultsSSB-Indexes SEQUENCE (SIZE (1..maxNrofSSBs)) OF SEQUENCE {	*n* entires of ResultsPerSSB-Index	*ResultsPerSSB-IndexList*	
ResultsPerSSB-Index SEQUENCE {	entry [1]		
ssb-Index	SSB-Index	an SS-Block within an SS-Burst	
ssb-Results SEQUENCE {		*MeasQuantityResults*	
rsrp	as specified in Table 4.6.3-152	Integer value for RSRP measurements	
rsrq	as specified in Table 4.6.3-153	Integer value for RSRQ measurements	
sinr	as specified in Table 4.6.3-172	Integer value for SINR measurements	

}			
}			
...		*ResultsPerSSB-Index* entry [x] if any	
}			
resultsCSI-RS-Indexes SEQUENCE (SIZE (1..maxNrofCSI-RS)) OF SEQUENCE {	*n* entires of ResultsPerCSI-RS-Index	*ResultsPerCSI-RS-IndexList*	
ResultsPerCSI-RS-Index SEQUENCE {	entry [1]		
csi-RS-Index	INTEGER (0..maxNrofCSI-RS-ResourcesRRM-1)	CSI-RS resource index associated to the measurement information to be reported	
csi-RS-Results SEQUENCE {		*MeasQuantityResults*	
rsrp	as specified in Table 4.6.3-152	Integer value for RSRP measurements	
rsrq	as specified in Table 4.6.3-153	Integer value for RSRQ measurements	
sinr	as specified in Table 4.6.3-172	Integer value for SINR measurements	
}			
}			
...		*ResultsPerCSI-RS-Index* entry [x] if any	
}			
}			
}			
}			

measResultNeighCellListNR SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	*n* entires of MeasResultNR	include the best measured cells, ordered such that the best cell is listed first, and based on measurements collected up to the moment the UE detected the failure	
MeasResultNR SEQUENCE {	entry [1]		
physCellId	INTEGER (0..1007)	the *physCellId* configured for the measured cell	
measResult SEQUENCE {			
cellResults SEQUENCE {			
resultsSSB-Cell SEQUENCE {			
rsrp	as specified in Table 4.6.3-152	Integer value for RSRP measurements	
rsrq	as specified in Table 4.6.3-153	Integer value for RSRQ measurements	
sinr	as specified in Table 4.6.3-172	Integer value for SINR measurements	
}			
resultsCSI-RS-Cell SEQUENCE {			
rsrp	as specified in Table 4.6.3-152	Integer value for RSRP measurements	
rsrq	as specified in Table 4.6.3-153	Integer value for RSRQ measurements	
sinr	as specified in Table 4.6.3-172	Integer value for SINR measurements	
}			
}			
}			
}			
...		*MeasResultNR* entry [x] if any	
}			

...		*MeasResult2NR* entry [x] if any	
}			
..		MOList [x] if any	
}			
}			

– *MobilityStateParameters*

Table 4.6.3-81: *MobilityStateParameters*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityStateParameters ::= SEQUENCE{			
FFS			
}			

– *MultiFrequencyBandListNR*

Table 4.6.3-82: MultiFrequencyBandListNR

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MultiFrequencyBandListNR ::= SEQUENCE (SIZE (1..maxNrofMultiBands)) OF {	1 entry		
FreqBandIndicatorNR[1]	FreqBandIndicatorNR		
}			

– *MultiFrequencyBandListNR-SIB*

Table 4.6.3-82A: *MultiFrequencyBandListNR-SIB*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
MultiFrequencyBandListNR-SIB ::= SEQUENCE (SIZE (1.. maxNrofMultiBands)) OF SEQUENCE {			
freqBandIndicatorNR[1]	FreqBandIndicatorNR		
nr-NS-PmaxList[1]	NR-NS-PmaxList		
}			

– *NextHopChainingCount*

Table 4.6.3-83: *NextHopChainingCount*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
NextHopChainingCount	0		

– *NG-5G-S-TMSI*

Table 4.6.3-84: *NG-5G-S-TMSI*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
NG-5G-S-TMSI	Set to the value of the NG-5G-S-TMSI of the UE	BIT STRING (SIZE(40))	

– *NR-NS-PmaxList*

Table 4.6.3-84A: *NR-NS-PmaxList*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
NR-NS-PmaxList ::= SEQUENCE (SIZE (1.. maxNrofMultiBands)) OF SEQUENCE {			
additionalPmax [1]	P-Max		
additionalSpectrumEmission[1]	AdditionalSpectrumEmission		
}			

– *NZP-CSI-RS-Resource*

Table 4.6.3-85: NZP-CSI-RS-Resource

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			
nzp-CSI-RS-ResourceId	NZP-CSI-RS-ResourceId		
resourceMapping	CSI-RS-ResourceMapping		
powerControlOffset	-3		
powerControlOffsetSS	Not present		
scramblingID	ScramblingId		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset		
qcl-InfoPeriodicCSI-RS	TCI-StateId		
}			

– *NZP-CSI-RS-ResourceId*

Table 4.6.3-86: NZP-CSI-RS-ResourceId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceId	0		

– *NZP-CSI-RS-ResourceSet*

Table 4.6.3-87: NZP-CSI-RS-ResourceSet

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceSet ::= SEQUENCE {			
nzp-CSI-ResourceSetId	NZP-CSI-RS-ResourceSetId		
nzp-CSI-RS-Resources SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourcesPerSet)) OF {	[1 entry]		
NZP-CSI-RS-ResourceId[1]	NZP-CSI-RS-ResourceId		
}			
repetition	off		
aperiodicTriggeringOffset	Not present		
trs-Info	Not present		
	true		TRS
}			

Condition	Explanation
TRS	Tracking-Reference Signal

– *NZP-CSI-RS-ResourceSetId*

Table 4.6.3-88: NZP-CSI-RS-ResourceSetId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceSetId	0		

– *P-Max*

Table 4.6.3-89: *P-Max*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
P-Max	23		FR1 AND pc_dynamicPowerSharing
	23		FR1_RF_PC2_Testing_PC3
	Not present		FR1_RF_PC3
	Not present		FR1_RF_PC2
	26		FR2 AND pc_dynamicPowerSharing
	20	P-Max value when pc_dynamicPowerSharing is set to FALSE	NOT pc_dynamicPowerSharing

Condition	Explanation
FR1_RF_PC3	Power Class 3 UE testing Power Class 3 requirements
FR1_RF_PC2	Power Class 2 UE testing Power Class 2 requirements
FR1_RF_PC2_Testing_PC3	Power Class 2 UE testing Power Class 3 requirements.

– *PCI-List*

Table 4.6.3-90: *PCI-List*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PCI-List ::= SEQUENCE {			
FFS			
}			

– *PCI-Range*

Table 4.6.3-91: *PCI-Range*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PCI-Range ::= SEQUENCE {			
start	PhysCellId		
range	FFS		
}			

– *PCI-RangeElement*

Table 4.6.3-92: PCI-RangeElement

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PCI-RangeElement ::= SEQUENCE {			
FFS			
}			

– *PCI-RangeIndex*

Table 4.6.3-93: *PCI-RangeIndex*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PCI-RangeIndex	0		

– *PCI-RangeIndexList*

Table 4.6.3-94: PCI-RangeIndexList

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PCI-RangeIndexList ::= SEQUENCE {			
FFS			
}			

– *PDCCH-Config*

Table 4.6.3-95: *PDCCH-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PDCCH-Config::= SEQUENCE {			
controlResourceSetToAddModList	Not present		
controlResourceSetToReleaseList	Not present		
searchSpacesToAddModList SEQUENCE(SIZE (1..10)) OF SEQUENCE {	1 entry		
SearchSpace[1]	SearchSpace with condition USS		
}			
searchSpacesToReleaseList	Not present		
downlinkPreemption	Not present		
tpc-PUSCH	Not present		
tpc-PUCCH	Not present		
tpc-SRS	Not present		
}			

– *PDCCH-ConfigCommon*

Table 4.6.3-96: PDCCH-ConfigCommon

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PDCCH-ConfigCommon::= SEQUENCE {			
controlResourceSetZero	ControlResourceSetZero		
commonControlResourceSet	ControlResourceSet		
searchSpaceZero	SearchSpaceZero		
commonSearchSpaceList SEQUENCE(SIZE (1..4)) OF {	2 entries		
SearchSpace[1]	SearchSpace with condition CSS		
SearchSpace[2]	SearchSpace with condition SISS		
}			
commonSearchSpaceList SEQUENCE(SIZE (1..4)) OF {	1entry		EN-DC
SearchSpace[1]	SearchSpace with condition CSS		
}			
searchSpaceSIB1	0		
	Not present		EN-DC
searchSpaceOtherSystemInformation	SearchSpaceId with condition SISS		
pagingSearchSpace	0		
	Not present		EN-DC
ra-SearchSpace	SearchSpaceId with condition CSS		
}			

Condition	Explanation
EN-DC	E-UTRA-NR Dual Connectivity

– *PDCCH-ConfigSIB1*

Table 4.6.3-97: *PDCCH-ConfigSIB1*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PDCCH-ConfigSIB1 ::= SEQUENCE {			
controlResourceSetZero	ControlResourceSetZero		
searchSpaceZero	SearchSpaceZero		
}			

– *PDCCH-ServingCellConfig*

Table 4.6.3-98: *PDCCH-ServingCellConfig*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PDCCH-ServingCellConfig ::= SEQUENCE {			
slotFormatIndicator	Not present		
}			

– *PDCP-Config*

Table 4.6.3-99: *PDCP-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PDCP-Config ::= SEQUENCE {			
drb SEQUENCE {			
discardTimer	infinity		
pdcp-SN-Size-UL	len18bits		
pdcp-SN-Size-DL	len18bits		
headerCompression CHOICE {			
notUsed	Null		
}			
integrityProtection	Not present		
statusReportRequired	true		
outOfOrderDelivery	Not present		
}			
drb SEQUENCE {}	Not present		SRB
moreThanOneRLC	Not present		
moreThanOneRLC SEQUENCE {			Split
primaryPath SEQUENCE {			
cellGroup	CellGroupId		
logicalChannel	LogicalChannelIdentity		
}			
ul-DataSplitThreshold	infinity		
pdcp-Duplication	false		
}			
t-Reordering	Not present		
}			

Condition	Explanation
Split	More than one RLC.
SRB	SRB

– *PDSCH-Config*

Table 4.6.3-100: *PDSCH-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-Config ::= SEQUENCE {			
dataScramblingIdentityPDSCH	0		
dmrs-DownlinkForPDSCH-MappingTypeA CHOICE {			
setup	DMRS-DownlinkConfig		
}			
dmrs-DownlinkForPDSCH-MappingTypeB	Not present		
tci-StatesToAddModList SEQUENCE(SIZE (1.. maxNrofTCI-States)) OF {			
TCI-State[1]	TCI-State		
}			
tci-StatesToReleaseList	Not present		
vrb-ToPRB-Interleaver	Not present		
resourceAllocation	resourceAllocationType1		
	resourceAllocationType0		Used_for_Type0
pdsch-TimeDomainAllocationList	Not present		
pdsch-AggregationFactor	Not present		
rateMatchPatternToAddModList	Not present		
rateMatchPatternToReleaseList	Not present		
rateMatchPatternGroup1	Not present		
rateMatchPatternGroup2	Not present		
rbg-Size	config1		
mcs-Table	Not present	qam64 per default	
	Not present	qam64 per default	
maxNrofCodeWordsScheduledByDCI	Not present		
prb-BundlingType CHOICE {			
staticBundling SEQUENCE {			
bundleSize	wideband		
}			
}			
zp-CSI-RS-ResourceToAddModList	Not present		
zp-CSI-RS-ResourceToReleaseList	Not present		
aperiodic-ZP-CSI-RS-ResourceSetsToAddModList	Not present		
aperiodic-ZP-CSI-RS-ResourceSetsToReleaseList	Not present		
sp-ZP-CSI-RS-ResourceSetsToAddModList	Not present		
sp-ZP-CSI-RS-ResourceSetsToReleaseList	Not present		
p-ZP-CSI-RS-ResourceSet	Not present		
}			

Condition	Explanation
Used_for_Type0	Used for RF performance test cases

– *PDSCH-ConfigCommon*

Table 4.6.3-101: PDSCH-ConfigCommon

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-ConfigCommon ::= SEQUENCE {			
pdsch-TimeDomainAllocationList	PDSCH-TimeDomainResourceAllocationList		
}			

– *PDSCH-ServingCellConfig*

Table 4.6.3-102: PDSCH-ServingCellConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-ServingCellConfig ::= SEQUENCE {			
codeBlockGroupTransmission	Not present		
xOverhead	Not present		
nrofHARQ-ProcessesForPDSCH	n16		
pucch-Cell	Not present		
}			

– *PDSCH-TimeDomainResourceAllocationList*

Table 4.6.3-103: PDSCH-TimeDomainResourceAllocationList

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-TimeDomainResourceAllocationList::= SEQUENCE(SIZE(1..maxNrofDL-Allocations)) OF {	2 entries		FR1
PDSCH-TimeDomainResourceAllocation[1] SEQUENCE {			
k0	Not present		
mappingType	typeA		
startSymbolAndLength	53	Start symbol(S)=2, Length(L)=12	
}			
PDSCH-TimeDomainResourceAllocation2 SEQUENCE {			
k0	Not present		
mappingType	typeA		
startSymbolAndLength	72	S=2, L=6	
}			
}			
PDSCH-TimeDomainResourceAllocationList ::= SEQUENCE (SIZE(1..maxNrofDL-Allocations)) OF {	1 entry		FR2
PDSCH-TimeDomainResourceAllocation1 SEQUENCE {			
k0	Not present		
mappingType	typeA		
startSymbolAndLength	53	S=2, L=12	
}			
}			

– *PHR-Config*

Table 4.6.3-104: *PHR-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PHR-Config ::= CHOICE {			
setup SEQUENCE {			
phr-PeriodicTimer	sf10		
phr-ProhibitTimer	sf0		
phr-Tx-PowerFactorChange	dB1		
multiplePHR	true		
dummy	false		
phr-Type2OtherCell	false		
phr-ModeOtherCG	real		
}			
}			

– *PhysCellId*

Table 4.6.3-105: *PhysCellId*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PhysCellId	Set according to table 4.4.2-2 for the NR Cell.		

– *PhysicalCellGroupConfig*

Table 4.6.3-106: PhysicalCellGroupConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PhysicalCellGroupConfig ::= SEQUENCE {			
harq-ACK-SpatialBundlingPUCCH	Not present		
harq-ACK-SpatialBundlingPUSCH	Not present		
p-NR-FR1	P-Max		
pdsch-HARQ-ACK-Codebook	dynamic		
tpc-SRS-RNTI	Not present		
tpc-PUCCH-RNTI	Not present		
tpc-PUSCH-RNTI	Not present		
sp-CSI-RNTI	Not present		
cs-RNTI	Not present		
}			

– *PLMN-Identity*

Table 4.6.3-107: *PLMN-Identity*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PLMN-Identity ::= SEQUENCE {			
mcc	See table 4.4.2-3	SEQUENCE (SIZE (3)) OF INTEGER	
mnc	See table 4.4.2-3	SEQUENCE (SIZE (2..3)) OF INTEGER	
}			

– *PLMN-IdentityInfoList*

Table 4.6.3-108: *PLMN-IdentityInfoList*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PLMN-IdentityInfoList ::= SEQUENCE (SIZE (1..maxPLMN)) OF SEQUENCE {	1 entry		
plmn-IdentityList SEQUENCE (SIZE (1..maxPLMN)) OF PLMN-Identity {}	PLMN-Identity		
trackingAreaCode	TrackingAreaCode		
ranac	RAN-AreaCode		
cellIdentity	CellIdentity		
cellReservedForOperatorUse	notReserved		
}			

– *PRB-Id*

Table 4.6.3-109: *PRB-Id*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PRB-Id	0		
	Set to value of the number of RBs - 1 corresponding to 10 MHz channel bandwidth in clause 4.3.1 for the carrier and subcarrier under test.		secondHop PRB

Condition	Explanation
secondHopPRB	The IE secondHopPRB in PUCCH-Resource is now set.

– *PTRS-DownlinkConfig*

Table 4.6.3-110: PTRS-DownlinkConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PTRS-DownlinkConfig ::= SEQUENCE {			
frequencyDensity	Not present		
timeDensity	Not present		
epre-Ratio	0		
resourceElementOffset	Not present		
}			

– *PTRS-UplinkConfig*

Table 4.6.3-111: PTRS-UplinkConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PTRS-UplinkConfig ::= SEQUENCE {			
transformPrecoderDisabled SEQUENCE {			
frequencyDensity	Not present		
timeDensity	Not present		
maxNrofPorts	n1		
resourceElementOffset	Not present		
ptrs-Power	p00		
}			
transformPrecoderEnabled SEQUENCE {			
sampleDensity SEQUENCE (SIZE (5)) OF INTEGER {			
INTEGER[1]	1		
INTEGER[2]	8		
INTEGER[3]	32		
INTEGER[4]	32		
INTEGER[5]	108		
}			
timeDensityTransformPrecoding	Not present		
}			
}			

– *PUCCH-Config*

Table 4.6.3-112: *PUCCH-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUCCH-Config ::= SEQUENCE {			
resourceSetToAddModList SEQUENCE (SIZE (1..maxNrofPUCCH-ResourceSets)) OF SEQUENCE {	4 entries		
{			
pucch-ResourceSetId[1]	0		
resourceList[[1] SEQUENCE (SIZE (0..maxNrofPUCCH-ResourcesPerSet)) OF {	8 enties		
PUCCH-ResourceId[1]	0		
PUCCH-ResourceId[2]	1		
PUCCH-ResourceId[3]	2		
PUCCH-ResourceId[4]	3		
PUCCH-ResourceId[5]	4		
PUCCH-ResourceId[6]	5		
PUCCH-ResourceId[7]	6		
PUCCH-ResourceId[8]	7		
}			
maxPayloadMinus1[1]	Not present		
}			
{			
pucch-ResourceSetId[2]	1		
resourceList[2] SEQUENCE (SIZE (8..maxNrofPUCCH-ResourcesPerSet)) OF {	8 entries		
PUCCH-ResourceId[1]	8		
PUCCH-ResourceId[2]	9		
PUCCH-ResourceId[3]	10		
PUCCH-ResourceId[4]	11		
PUCCH-ResourceId[5]	12		
PUCCH-ResourceId[6]	13		
PUCCH-ResourceId[7]	14		
PUCCH-ResourceId[8]	15		
}			
maxPayloadMinus1[2]	256		
}			
{			
pucch-ResourceSetId[3]	2		
resourceList[3] SEQUENCE (SIZE (8..maxNrofPUCCH-ResourcesPerSet)) OF {	8 entries		
PUCCH-ResourceId[1]	8		
PUCCH-ResourceId[2]	9		
PUCCH-ResourceId[3]	10		
PUCCH-ResourceId[4]	11		

PUCCH-ResourceId[5]	12		
PUCCH-ResourceId[6]	13		
PUCCH-ResourceId[7]	14		
PUCCH-ResourceId[8]	15		
}			
maxPayloadMinus1[3]	256		
}			
{			
pucch-ResourceSetId[4]	3		
resourceList[4] SEQUENCE (SIZE (8..maxNrofPUCCH-ResourcesPerSet)) OF {	8 entries		
PUCCH-ResourceId[1]	8		
PUCCH-ResourceId[2]	9		
PUCCH-ResourceId[3]	10		
PUCCH-ResourceId[4]	11		
PUCCH-ResourceId[5]	12		
PUCCH-ResourceId[6]	13		
PUCCH-ResourceId[7]	14		
PUCCH-ResourceId[8]	15		
}			
maxPayloadMinus1[4]	Not present		
}			
}			
resourceSetToReleaseList	Not present		
resourceToAddModList SEQUENCE (SIZE (1..maxNrofPUCCH-Resources)) OF SEQUENCE {	16 entries		
{			
pucch-ResourceId[1]	0		
startingPRB[1]	PRB-Id		
intraSlotFrequencyHopping[[1]	enabled		
secondHopPRB[1]	PRB-Id with condition secondHopPRB		
format[1] CHOICE {			
format0 SEQUENCE {			
initialCyclicShift	0		
nrofSymbols	2		
startingSymbolIndex	0		
}			
}			
}			
{			
pucch-ResourceId[2]	1		
startingPRB[2]	PRB-Id		
intraSlotFrequencyHopping[[2]	enabled		

secondHopPRB[2]	PRB-Id with condition secondHopPRB		
format[2] CHOICE {			
format0 SEQUENCE {			
initialCyclicShift	0		
nrofSymbols	2		
startingSymbolIndex	2		
}			
}			
}			
{			
pucch-ResourceId[3]	2		
startingPRB[3]	PRB-Id		
intraSlotFrequencyHopping[[3]	enabled		
secondHopPRB[3]	PRB-Id with condition secondHopPRB		
format[3] CHOICE {			
format0 SEQUENCE {			
initialCyclicShift	0		
nrofSymbols	2		
startingSymbolIndex	4		
}			
}			
}			
{			
pucch-ResourceId[4]	3		
startingPRB[4]	PRB-Id		
intraSlotFrequencyHopping[[4]	enabled		
secondHopPRB[4]	PRB-Id with condition secondHopPRB		
format[4] CHOICE {			
format0 SEQUENCE {			
initialCyclicShift	0		
nrofSymbols	2		
startingSymbolIndex	6		
}			
}			
}			
{			
pucch-ResourceId[5]	4		
startingPRB[5]	PRB-Id		
intraSlotFrequencyHopping[[5]	enabled		
secondHopPRB[5]	PRB-Id with condition secondHopPRB		

format[5] CHOICE {			
format0 SEQUENCE {			
initialCyclicShift	0		
nrofSymbols	2		
startingSymbolIndex	8		
}			
}			
}			
{			
pucch-ResourceId[6]	5		
startingPRB[6]	PRB-Id		
intraSlotFrequencyHopping[[6]	enabled		
secondHopPRB[6]	PRB-Id with condition secondHopPRB		
format[6] CHOICE {			
format0 SEQUENCE {			
initialCyclicShift	0		
nrofSymbols	2		
startingSymbolIndex	10		
}			
}			
}			
{			
pucch-ResourceId[7]	6		
startingPRB[7]	PRB-Id		
intraSlotFrequencyHopping[[7]	enabled		
secondHopPRB[7]	PRB-Id with condition secondHopPRB		
format[7] CHOICE {			
format0 SEQUENCE {			
initialCyclicShift	0		
nrofSymbols	2		
startingSymbolIndex	12		
}			
}			
}			
{			
pucch-ResourceId[8]	7		
startingPRB[8]	PRB-Id		
intraSlotFrequencyHopping[[8]	enabled		
secondHopPRB[8]	PRB-Id with condition secondHopPRB		
format[8] CHOICE {			
format1 SEQUENCE {			

initialCyclicShift	0		
nrofSymbols	14		
startingSymbolIndex	0		
timeDomainOCC	0		
}			
}			
}			
{			
pucch-ResourceId[9]	8		
startingPRB[9]	PRB-Id		
intraSlotFrequencyHopping[[9]	enabled		
secondHopPRB[9]	PRB-Id with condition secondHopPRB		
format[9] CHOICE {			
format2 SEQUENCE {			
nrofPRBs	6		
nrofSymbols	2		
startingSymbolIndex	0		
}			
}			
}			
{			
pucch-ResourceId[10]	9		
startingPRB[10]	PRB-Id		
intraSlotFrequencyHopping[[10]	enabled		
secondHopPRB[10]	PRB-Id with condition secondHopPRB		
format[10] CHOICE {			
format2 SEQUENCE {			
nrofPRBs	6		
nrofSymbols	2		
startingSymbolIndex	2		
}			
}			
}			
{			
pucch-ResourceId[11]	10		
startingPRB[11]	PRB-Id		
intraSlotFrequencyHopping[[11]	enabled		
secondHopPRB[11]	PRB-Id with condition secondHopPRB		
format[11] CHOICE {			
format2 SEQUENCE {			
nrofPRBs	6		

nrofSymbols	2		
startingSymbolIndex	4		
}			
}			
}			
{			
pucch-ResourceId[12]	11		
startingPRB[12]	PRB-Id		
intraSlotFrequencyHopping[[12]	enabled		
secondHopPRB[12]	PRB-Id with condition secondHopPRB		
format[12] CHOICE {			
format2 SEQUENCE {			
nrofPRBs	6		
nrofSymbols	2		
startingSymbolIndex	6		
}			
}			
}			
{			
pucch-ResourceId[13]	12		
startingPRB[13]	PRB-Id		
intraSlotFrequencyHopping[[13]	enabled		
secondHopPRB[13]	PRB-Id with condition secondHopPRB		
format[13] CHOICE {			
format2 SEQUENCE {			
nrofPRB	6		
nrofSymbols	2		
startingSymbolIndex	8		
}			
}			
}			
{			
pucch-ResourceId[14]	13		
startingPRB[14]	PRB-Id		
intraSlotFrequencyHopping[[14]	enabled		
secondHopPRB[14]	PRB-Id with condition secondHopPRB		
format[14] CHOICE {			
format2 SEQUENCE {			
nrofPRBsinitial	6		
nrofSymbols	2		
startingSymbolIndex	10		

}			
}			
}			
{			
pucch-ResourceId[15]	14		
startingPRB[15]	PRB-Id		
intraSlotFrequencyHopping[[15]	enabled		
secondHopPRB[15]	PRB-Id with condition secondHopPRB		
format[15] CHOICE {			
format2 SEQUENCE {			
nrofPRB	6		
nrofSymbols	2		
startingSymbolIndex	12		
}			
}			
}			
{			
pucch-ResourceId[16]	15		
startingPRB[16]	PRB-Id		
intraSlotFrequencyHopping[[16]	enabled		
secondHopPRB[16]	PRB-Id with condition secondHopPRB		
format[16] CHOICE {			
format3 SEQUENCE {			
nrofPRBs	1		
nrofSymbols	14		
startingSymbolIndex	0		
}			
}			
}			
}			
resourceToReleaseList	Not present		
format1CHOICE {			
setup SEQUENCE {			
interslotFrequencyHopping	enabled		
additionalDMRS	true		
maxCodeRate	zeroDot25		
nrofSlots	Not present		
pi2BPSK	Not present		
simultaneousHARQ-ACK-CSI	true		
}			
}			
format2 CHOICE {			

setup SEQUENCE {			
interslotFrequencyHopping	enabled		
additionalDMRS	true		
maxCodeRate	zeroDot25		
nrofSlots	Not present		
pi2BPSK	Not present		
simultaneousHARQ-ACK-CSI	true		
}			
}			
format3 CHOICE {			
setup SEQUENCE {			
interslotFrequencyHopping	enabled		
additionalDMRS	True		
maxCodeRate	zeroDot25		
nrofSlots	Not present		
pi2BPSK	Not present		
simultaneousHARQ-ACK-CSI	true		
}			
}			
format4	Not present		
schedulingRequestResourceToAddModList SEQUENCE (SIZE (1..maxNrofSR-Resources)) OF SEQUENCE {	1 entry		
SchedulingRequestResourceConfig[1]	SchedulingRequestResourceConfig		
}			
schedulingRequestResourceToReleaseList	Not present		
multi-CSI-PUCCH-ResourceList	Not present		
dl-DataToUL-ACK SEQUENCE (SIZE (1..8)) OF {			
INTEGER[1]	2		
INTEGER[2]	3		
INTEGER[3]	4		
INTEGER[4]	5		
INTEGER[5]	6		
INTEGER[6]	7		
INTEGER[7]	8		
INTEGER[8]	9		
}			
spatialRelationInfoToAddModList	Not present		
spatialRelationInfoToReleaseList	Not present		
pucch-PowerControl	PUCCH-PowerControl		
}			

– *PUCCH-ConfigCommon*

Table 4.6.3-113: PUCCH-ConfigCommon

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUCCH-ConfigCommon ::= SEQUENCE {			
pucch-ResourceCommon	0		
pucch-GroupHopping	enable		
hoppingId	Not present		
p0-nominal	-90		
}			

– *PUCCH-PathlossReferenceRS-Id*

Table 4.6.3-114: PUCCH-PathlossReferenceRS-Id

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUCCH-PathlossReferenceRS-Id	0		

– *PUCCH-PowerControl*

Table 4.6.3-115: PUCCH-PowerControl

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUCCH-PowerControl ::= SEQUENCE {			
deltaF-PUCCH-f0	0		
deltaF-PUCCH-f1	0		
deltaF-PUCCH-f2	0		
deltaF-PUCCH-f3	0		
deltaF-PUCCH-f4	0		
p0-Set	Not present		
pathlossReferenceRSs SEQUENCE (SIZE (1..maxNrofPUCCH-PathlossReferenceRSs)) OF SEQUENCE {	1 entry		
pucch-PathlossReferenceRS-Id[1]	PUCCH-PathlossReferenceRS-Id		
referenceSignal CHOICE {			
ssb-Index	SSB-Index		
}			
}			
twoPUCCH-PC-AdjustmentStates	Not present		
}			

– *PUCCH-SpatialRelationInfo*

Table 4.6.3-116: *PUCCH-SpatialRelationInfo*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUCCH-SpatialRelationInfo ::= SEQUENCE {			
pucch-SpatialRelationInfoId	1		
servingCellId	ServCellIndex		
referenceSignal CHOICE {			
ssb-Index	SSB-Index		
}			
pucch-PathlossReferenceRS-Id	PUCCH-PathlossReferenceRS-Id		
p0-PUCCH-Id	1		
closedLoopIndex	i0		
}			

– *PUCCH-TPC-CommandConfig*

Table 4.6.3-117: PUCCH-TPC-CommandConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUCCH-TPC-CommandConfig ::= SEQUENCE {			
FFS			
}			

– *PUSCH-Config*

Table 4.6.3-118: *PUSCH-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUSCH-Config ::= SEQUENCE {			
dataScramblingIdentityPUSCH	Not present		
txConfig	Not Present		
	codebook		DCI_0_1
dmrs-UplinkForPUSCH-MappingTypeA CHOICE {			
setup	DMRS-UplinkConfig		
}			
dmrs-UplinkForPUSCH-MappingTypeB	Not present		
pusch-PowerControl	PUSCH-PowerControl		
frequencyHopping	Not present		
frequencyHoppingOffsetLists	Not present		
resourceAllocation	resourceAllocationType1		
pusch-TimeDomainAllocationList	Not present		
pusch-AggregationFactor	Not present		
mcs-Table			
	Not present		
mcs-TableTransformPrecoder			
	Not present		
transformPrecoder	enabled		TRANSFORM_PRECODER_ENABLED
	Not present	TRANSFORM_PRECODER_DISABLED	
codebookSubset	Not present		
	nonCoherent		DCI_0_1
maxRank	Not present		
	1		DCI_0_1 AND Non_UL_MIMO
	2		2TX_UL_MIMO
rbg-Size	Not present		
uci-OnPUSCH CHOICE {			
setup SEQUENCE {			
betaOffsets CHOICE {			
semiStatic SEQUENCE {			
betaOffsetACK-Index1	9		
betaOffsetACK-Index2	9		
betaOffsetACK-Index3	9		

betaOffsetCSI-Part1-Index1	6		
betaOffsetCSI-Part1-Index2	6		
betaOffsetCSI-Part2-Index1	6		
betaOffsetCSI-Part2-Index2	6		
}			
}			
scaling	f1		
}			
}			
tp-pi2BPSK	Not present		
}			

Condition	Explanation
TRANSFORM_PRECODER_ENABLED	Transform precoding is enabled (DFT-s-OFDM UL waveform is configured)
DCI_0_1	DCI_0_1 is used
Non_UL_MIMO	Non UL-MIMO test cases
2TX_UL_MIMO	UL-MIMO test cases with 2 Tx antenna ports

– *PUSCH-ConfigCommon*

Table 4.6.3-119: PUSCH-ConfigCommon

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUSCH-ConfigCommon ::= SEQUENCE {			
groupHoppingEnabledTransformPrecoding	Not present		
pusch-TimeDomainAllocationList	PUSCH-TimeDomainResourceAllocationList		
msg3-DeltaPreamble	1		
p0-NominalWithGrant	-90		
}			

– *PUSCH-PowerControl*

Table 4.6.3-120: PUSCH-PowerControl

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUSCH-PowerControl ::= SEQUENCE {			
tpc-Accumulation	Not present		
msg3-Alpha	alpha08		
p0-NominalWithoutGrant	-90		
p0-AlphaSets SEQUENCE (SIZE (1..maxNrofP0-PUSCH-AlphaSets)) OF SEQUENCE {	1 entry		
p0-PUSCH-AlphaSetId	0		
p0	0		
alpha	alpha08		
}			
pathlossReferenceRSToAddModList SEQUENCE (SIZE (1..maxNrofPUSCH-PathlossReferenceRSs)) OF SEQUENCE {	1 entry		
pusch-PathlossReferenceRS-Id	0		
referenceSignal CHOICE{			
ssb-Index	SSB-Index		
}			
}			
pathlossReferenceRSToReleaseList	Not present		
twoPUSCH-PC-AdjustmentStates	Not present		
deltaMCS	Not present		
sri-PUSCH-MappingToAddModList SEQUENCE (SIZE (1..maxNrofSRI-PUSCH-Mappings)) OF SEQUENCE {	1 entry		
sri-PUSCH-PowerControlId	0		
sri-PUSCH-PathlossReferenceRS-Id	0		
sri-P0-PUSCH-AlphaSetId	0		
sri-PUSCH-ClosedLoopIndex	i0		
}			
sri-PUSCH-MappingToReleaseList	Not present		
}			

– *PUSCH-ServingCellConfig*

Table 4.6.3-121: PUSCH-ServingCellConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUSCH-ServingCellConfig ::= SEQUENCE {			
codeBlockGroupTransmission	Not present		
rateMatching	Not present		
xOverhead	Not present		
}			

– *PUSCH-TimeDomainResourceAllocationList*

Table 4.6.3-122: PUSCH-TimeDomainResourceAllocationList

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUSCH-TimeDomainResourceAllocationList ::= SEQUENCE (SIZE(1..maxNrofUL-Allocations)) OF {	2 entries		
PUSCH-TimeDomainResourceAllocation[1] SEQUENCE {			
k2	4		
	2		RF_FR1_15 kHz OR RF_FR1_30 kHz OR RF_FR2_DL
	6		RF_FR1_60 kHz
	4		RF_FR2_60 kHz_UL
	8		RF_FR2_12 0kHz_UL
mappingType	typeA		
startSymbolAndLength	27	Start symbol(S)=0, Length(L)=14	
}			
PUSCH-TimeDomainResourceAllocation[2] SEQUENCE {		addressed by Msg3 PUSCH time resource allocation field of the Random Access Response acc. to TS 38.213 [22] Table 8.2-1.	
k2	2	K_2+ Δ=4 acc. to TS 38.214 [21] Table 6.1.2.1.1-5 (NOTE 1)	FR1_15kHz
	6	K_2+ Δ=9 acc. to TS 38.214 [21] Table 6.1.2.1.1-5 (NOTE 1)	FR1_30kHz
	3	K_2+ Δ=9 acc. to TS 38.214 [21] Table 6.1.2.1.1-5 (NOTE 1)	FR2
mappingType	typeA		

startSymbolAndLength	27	Start symbol(S)=0, Length(L)=14	
}			
}			
NOTE 1: Values are chosen so that first slot of a TDD-UL-DL slot configuration period can be used for the Random Access Response and the last slot (of the same or another period) for the corresponding Msg3.			

Condition	Explanation
FR1_15kHz	FR1 is used under the test. SCS is set to 15kHz.
FR1_30kHz	FR1 is used under the test. SCS is set to 30kHz.
RF_FR1_15kHz	RF testing in FR1. SCS is set to 15kHz.
RF_FR1_30kHz	RF testing in FR1. SCS is set to 30kHz.
RF_FR1_60kHz	RF testing in FR1. SCS is set to 60kHz.
RF_FR2_DL	RF testing in FR2. SCS is set to 60kHz or 120kHz for Rx measurements.
RF_FR2_60kHz_UL	RF testing in FR2. SCS is set to 60kHz for test cases with 1 ms measurement period for UL measurement.
RF_FR2_120kHz_UL	RF testing in FR2. SCS is set to 120kHz for test cases with 1 ms measurement period for UL measurement.

– *PUSCH-TPC-CommandConfig*

Table 4.6.3-123: PUSCH-TPC-CommandConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUSCH-TPC-CommandConfig ::= SEQUENCE {			
tpc-Index	Not present		
tpc-IndexSUL	Not present		
targetCell	Not present		
}			

– *Q-OffsetRange*

Table 4.6.3-124: *Q-OffsetRange*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
Q-OffsetRange	dB0		

– *Q-QualMin*

Table 4.6.3-125: *Q-QualMin*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
Q-QualMin	FFS		

– *Q-RxLevMin*

Table 4.6.3-126: *Q-RxLevMin*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
Q-RxLevMin	FFS		

– *QuantityConfig*

Table 4.6.3-127: *QuantityConfig*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
QuantityConfig::= SEQUENCE {			
quantityConfigNR-List SEQUENCE (SIZE (1..maxNrofQuantityConfig)) OF SEQUENCE {	2 entries		
quantityConfigCell[1] SEQUENCE {			
ssb-FilterConfig SEQUENCE {			
filterCoefficientRSRP	FilterCoefficient		
filterCoefficientRSRQ	FilterCoefficient		
filterCoefficientRS-SINR	FilterCoefficient		
}			
csi-RS-FilterConfig SEQUENCE {			
filterCoefficientRSRP	FilterCoefficient		
filterCoefficientRSRQ	FilterCoefficient		
filterCoefficientRS-SINR	FilterCoefficient		
}			
}			
quantityConfigRS-Index[1] SEQUENCE {			
ssb-FilterConfig SEQUENCE {			
filterCoefficientRSRP	FilterCoefficient		
filterCoefficientRSRQ	FilterCoefficient		
filterCoefficientRS-SINR	FilterCoefficient		
}			
csi-RS-FilterConfig SEQUENCE {			
filterCoefficientRSRP	FilterCoefficient		
filterCoefficientRSRQ	FilterCoefficient		
filterCoefficientRS-SINR	FilterCoefficient		
}			
}			
quantityConfigCell[2] SEQUENCE {			
ssb-FilterConfig SEQUENCE {			
filterCoefficientRSRP	FilterCoefficient		
filterCoefficientRSRQ	FilterCoefficient		
filterCoefficientRS-SINR	FilterCoefficient		
}			
csi-RS-FilterConfig SEQUENCE {			
filterCoefficientRSRP	FilterCoefficient		
filterCoefficientRSRQ	FilterCoefficient		
filterCoefficientRS-SINR	FilterCoefficient		
}			
}			
quantityConfigRS-Index[2] SEQUENCE {			
ssb-FilterConfig SEQUENCE {			
filterCoefficientRSRP	FilterCoefficient		

filterCoefficientRSRQ	FilterCoefficient		
filterCoefficientRS-SINR	FilterCoefficient		
}			
csi-RS-FilterConfig SEQUENCE {			
filterCoefficientRSRP	FilterCoefficient		
filterCoefficientRSRQ	FilterCoefficient		
filterCoefficientRS-SINR	FilterCoefficient		
}			
}			
quantityConfigEUTRA SEQUENCE {			INTER-RAT
filterCoefficientRSRP	FilterCoefficient		
filterCoefficientRSRQ	FilterCoefficient		
filterCoefficientRS-SINR	FilterCoefficient		
}			
}			

Condition	Explanation
INTER-RAT	Configuration for EUTRA inter-RAT measurements

– *RACH-ConfigCommon*

Table 4.6.3-128: RACH-ConfigCommon

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RACH-ConfigCommon::= SEQUENCE {			
rach-ConfigGeneric	RACH-ConfigGeneric		
totalNumberOfRA-Preambles	Not present		
ssb-perRACH-OccasionAndCB-PreamblesPerSSB CHOICE {			
one	n8		FR1
	n4		FR2
}			
groupBconfigured	Not present		
ra-ContentionResolutionTimer	sf64		
rsrp-ThresholdSSB	RSRP-Range		
rsrp-ThresholdSSB-SUL	Not present		
	RSRP-Range		SUL
prach-RootSequenceIndex CHOICE {			
l139	Set according to table 4.4.2-2 for the NR Cell.		
}			
msg1-SubcarrierSpacing	SubcarrierSpacing		
restrictedSetConfig	unrestrictedSet		
msg3-transformPrecoder	Not present	transform precoding is disabled for Msg3 PUSCH transmission and any PUSCH transmission scheduled with DCI format 0_0	
}			

Condition	Explanation
SUL	Supplementary uplink

– *RACH-ConfigDedicated*

Table 4.6.3-129: RACH-ConfigDedicated

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RACH-ConfigDedicated::= SEQUENCE {			
cfra SEQUENCE {			
occasions SEQUENCE {			
rach-ConfigGeneric	RACH-ConfigGeneric		
ssb-perRACH-Occasion	one		
}			
resources CHOICE {			
ssb SEQUENCE {			
ssb-ResourceList SEQUENCE (SIZE(1..maxRA-SSB-Resources)) OF {	1 entry		
ssb[1]	SSB-Index		
ra-PreambleIndex[1]	8		
}			
ra-ssb-OccasionMaskIndex	0		
}			
}			
}			
ra-Prioritization	Not present		
}			

– *RACH-ConfigGeneric*

Table 4.6.3-130: RACH-ConfigGeneric

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RACH-ConfigGeneric ::= SEQUENCE {			
prach-ConfigurationIndex	160		FR1
	149		FR2
msg1-FDM	four		FR1
	one		FR2
msg1-FrequencyStart	0		
zeroCorrelationZoneConfig	15		
preambleReceivedTargetPower	-118		
preambleTransMax	n7		
powerRampingStep	dB4		
ra-ResponseWindow	sl20		
}			

– *RA-Prioritization*

Table 4.6.3-131: *RA-Prioritization*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RA-Prioritization	0		

– *RadioBearerConfig*

Table 4.6.3-132: RadioBearerConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioBearerConfig ::= SEQUENCE {			
srb-ToAddModList	Not present		
srb-ToAddModList SEQUENCE (SIZE (1..2)) OF SEQUENCE {	1 entry		SRB1
SRB-Identity	SRB-Identity with condition SRB1		
reestablishPDCP	Not present		
discardOnPDCP	Not present		
pdcp-Config	Not present	Default	
}			
srb-ToAddModList SEQUENCE (SIZE (1..2)) OF SEQUENCE {	1 entry		SRB2
SRB-Identity	SRB-Identity with condition SRB2		
reestablishPDCP	Not present		
discardOnPDCP	Not present		
pdcp-Config	Not present	Default	
}			
srb-ToAddModList SEQUENCE (SIZE (1..2)) OF SEQUENCE {	1 entry		SRB3
srb-Identity	SRB-Identity with condition SRB3		
reestablishPDCP	Not present		
discardOnPDCP	Not present		
pdcp-Config	Not present	Default	
}			
srb-ToAddModList SEQUENCE (SIZE (1..2)) OF SEQUENCE {	2 entries		SRB_NR_PDCP
SRB-Identity[1]	SRB-Identity with condition SRB1		
reestablishPDCP[1]	Not present		
discardOnPDCP[1]	Not present		
pdcp-Config[1]	Not present	Default	
SRB-Identity[2]	SRB-Identity with condition SRB2		
reestablishPDCP[2]	Not present		
discardOnPDCP[2]	Not present		
pdcp-Config[2]	Not present	Default	
}			
srb3-ToRelease	Not present		
drb-ToAddModList	Not present		

drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE {	1 entry		EN-DC_DRB
cnAssociation CHOICE {			
eps-BearerIdentity	6		
}			
drb-Identity	DRB-Identity using condition DRB2		
reestablishPDCP	Not present		
	true		EN-DC_DRB AND Re-establish_PDCP
recoverPDCP	Not present		
	true		EN-DC_DRB AND Recover_PDCP
pdcp-Config	PDCP-Config		
}			
drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE {	1 entry		MCG_NR_PDCP
cnAssociation CHOICE {			
eps-BearerIdentity	12	EPS Bearer Id of default MCG DRB	
}			
drb-Identity	8	DRB Id of default MCG DRB	
reestablishPDCP	Not present		
recoverPDCP	Not present		
pdcp-Config	PDCP-Config		
}			
drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE {	1 entry		DRB1
cnAssociation CHOICE {			
sdap-Config	SDAP-Config		
}			
drb-Identity	DRB-Identity using condition DRB1		
reestablishPDCP	Not present		
	true		DRB1 AND Re-establish_PDCP

recoverPDCP	Not present		
	true		DRB1 AND Recover_PDCP
pdcp-Config	PDCP-Config		
}			
drb-ToAddModList SEQUENCE (SIZE (1..maxDRB)) OF SEQUENCE {	1 entry		DRB2
cnAssociation CHOICE {			
sdap-Config	SDAP-Config		
}			
drb-Identity	DRB-Identity using condition DRB2		
reestablishPDCP	Not present		
	true		DRB2 AND Re-establish_PDCP
recoverPDCP	Not present		
	true		DRB2 AND Recover_PDCP
pdcp-Config	PDCP-Config		
}			
drb-ToReleaseList	Not present		
securityConfig	Not present		SRB1
securityConfig SEQUENCE {			
securityAlgorithmConfig	SecurityAlgorithmConfig		
keyToUse	master		
	secondary		SRB3, EN-DC_DRB
}			
}			

Condition	Explanation
SRB3	Establishment of SRB3
MCG_NR_PDCP	EN-DC MCG DRB configured or reconfigured with NR PDCP
SRB_NR_PDCP	EN-DC SRB1 and SRB2 configured with NR PDCP
SRB1	Establishment of SRB1
SRB2	Establishment of SRB2
DRB1	Establishment of DRB1
DRB2	Establishment of DRB2
EN-DC_DRB	EN-DC DRB configured on SCG
Re-establish_PDCP	Re-establishment of PDCP
Recover_PDCP	Recovery of PDCP

– *RadioLinkMonitoringConfig*

Table 4.6.3-133: RadioLinkMonitoringConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioLinkMonitoringConfig ::= SEQUENCE {			
failureDetectionResourcesToAddModList SEQUENCE (SIZE(1..maxNrofFailureDetectionResources)) OF SEQUENCE {	1 entry		
radioLinkMonitoringRS-Id	RadioLinkMonitoringRS-Id		
purpose	rlf		
detectionResource CHOICE {			
ssb-Index	SSB-Index		
}			
}			
failureDetectionResourcesToReleaseList	Not present		
beamFailureInstanceMaxCount	Not present		
beamFailureDetectionTimer	Not present		
}			

– *RadioLinkMonitoringRSId*

Table 4.6.3-134: RadioLinkMonitoringRSId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioLinkMonitoringRSId	0		

– *RAN-AreaCode*

Table 4.6.3-135: *RAN-AreaCode*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RAN-AreaCode	1		

– *RateMatchPattern*

Table 4.6.3-136: RateMatchPattern

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RateMatchPattern ::= SEQUENCE {			
rateMatchPatternId	RateMatchPatternId		
patternType CHOICE {			
controlResourceSet	ControlResourceSetId		
},			
subcarrierSpacing	SubcarrierSpacing		
dummy	semiStatic	Dummy IE value	
}			

– *RateMatchPatternId*

Table 4.6.3-137: RateMatchPatternId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RateMatchPatternId	0		

– *RateMatchPatternLTE-CRS*

Table 4.6.3-138: RateMatchPatternLTE-CRS

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RateMatchPatternLTE-CRS ::= SEQUENCE {			
FFS			
}			

– *RejectWaitTime*

Table 4.6.3-139: RejectWaitTime

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RejectWaitTime	1		

– *ReportConfigId*

Table 4.6.3-140: *ReportConfigId*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigId	1		

– *ReportConfigInterRAT*

Table 4.6.3-141: *ReportConfigInterRAT (EUTRA-Thres, NR-Thres)*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT ::= SEQUENCE {			
reportType CHOICE {			
eventTriggered SEQUENCE {			
eventId CHOICE {			
eventB1 SEQUENCE {			EVENT_B1
b1-ThresholdEUTRA CHOICE {			
rsrp	*EUTRA-Thres*	INTEGER (0..97)	
}			
reportOnLeave	FALSE		
Hysteresis	0 (0 dB)	The actual value is field value * 0.5 dB	
timeToTrigger	ms0		
}			
eventB2 SEQUENCE {			EVENT_B2
b2-Threshold1 CHOICE {			
rsrp	*NR-Thres*	INTEGER(0..127)	
}			
b2-Threshold2EUTRA CHOICE {			
rsrp	*EUTRA-Thres*	INTEGER (0..97)	
}			
reportOnLeave	FALSE		
Hysteresis	3 (1.5dB)	The actual value is field value * 0.5 dB	
timeToTrigger	ms1024		
}			
}			
rsType	ssb		
reportInterval	ms120		
reportAmount	r2		
reportQuantity SEQUENCE {			
rsrp	TRUE		
}			
maxReportCells	8		
}			
}			
}			

Condition	Explanation
EVENT_B1	Configuration of Event B1
EVENT_B2	Configuration of Event B2

– *ReportConfigNR*

Table 4.6.3-142: *ReportConfigNR*(Thres)

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigNR::= SEQUENCE {			
reportType CHOICE {			
periodical SEQUENCE {			PERIODICAL
rsType	ssb		
reportInterval	ReportInterval		
reportAmount	infinity		
reportQuantityCell SEQUENCE {			
rsrp	true		
rsrq	true		
sinr	false		
	true		pc_ss_SINR_Meas
}			
maxReportCells	8		
reportQuantityRS-Indexes	Not present		
maxNrofRS-IndexesToReport	Not present		
includeBeamMeasurements	false		
useWhiteCellList	false		
}			
eventTriggered SEQUENCE {			
eventId CHOICE {			
eventA1 SEQUENCE {			EVENT_A1
a1-Threshold CHOICE {			
rsrp	Thres	Thres is an entry value into a mapping table in TS 38.133 [13].	
}			
reportOnLeave	false		
hysteresis	Hysteresis		
timeToTrigger	TimeToTrigger		
}			
eventA2 SEQUENCE {			EVENT_A2
a2-Threshold CHOICE {			
rsrp	Thres	Thres is an entry value into a mapping table in TS 38.133 [13].	
}			
reportOnLeave	false		
hysteresis	Hysteresis		

timeToTrigger	TimeToTrigger		
}			
eventA3 SEQUENCE {			EVENT_A3
a3-Offset CHOICE {			
rsrp	Thres	Thres is an entry value into a mapping table in TS 38.133 [13].	
}			
reportOnLeave	false		
hysteresis	Hysteresis		
timeToTrigger	TimeToTrigger		
useWhiteCellList	false		
}			
eventA4 SEQUENCE {			EVENT_A4
a4-Threshold CHOICE {			
rsrp	Thres	Thres is an entry value into a mapping table in TS 38.133 [13].	
}			
reportOnLeave	false		
hysteresis	Hysteresis		
timeToTrigger	TimeToTrigger		
useWhiteCellList	false		
}			
eventA5 SEQUENCE {			EVENT_A5
a5-Threshold1 CHOICE {			
rsrp	Thres	Thres is an entry value into a mapping table in TS 38.133 [13].	
}			
a5-Threshold2 CHOICE {			
rsrp	Thres	Thres is an entry value into a mapping table in TS 38.133 [13].	
}			
reportOnLeave	false		
hysteresis	Hysteresis		
timeToTrigger	TimeToTrigger		
useWhiteCellList	false		
}			

eventA6 SEQUENCE {			EVENT_A6
a6-Offset CHOICE {			
rsrp	Thres	Thres is an entry value into a mapping table in TS 38.133 [13].	
}			
reportOnLeave	false		
hysteresis	Hysteresis		
timeToTrigger	TimeToTrigger		
useWhiteCellList	false		
}			
}			
rsType	ssb		
reportInterval	ReportInterval		
reportAmount	r2		
reportQuantityCell SEQUENCE {			
rsrp	true		
rsrq	true		
sinr	false		
	true		pc_ss_SINR_Meas
}			
maxReportCells	8		
reportQuantityRS-Indexes	Not present		
maxNrofRS-IndexesToReport	Not present		
includeBeamMeasurements	false		
reportAddNeighMeas	Not present		
}			
}			
}			

Condition	Explanation
EVENT_A1	Configuration of Event A1
EVENT_A2	Configuration of Event A2
EVENT_A3	Configuration of Event A3
EVENT_A4	Configuration of Event A4
EVENT_A5	Configuration of Event A5
EVENT_A6	Configuration of Event A6
PERIODICAL	Configuration of periodical reporting

– *ReportConfigToAddModList*

Table 4.6.3-143: ReportConfigToAddModList

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigToAddModList::= SEQUENCE(SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	ReportConfigId		
reportConfig[1] CHOICE {			
reportConfigNR	ReportConfigNR		
}			
}			

– *ReportInterval*

Table 4.6.3-144: *ReportInterval*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportInterval	ms480		

– *ReselectionThreshold*

Table 4.6.3-145: *ReselectionThreshold*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ReselectionThreshold	FFS		

– *ReselectionThresholdQ*

Table 4.6.3-146: *ReselectionThresholdQ*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ReselectionThresholdQ	FFS		

– *ResumeCause*

Table 4.6.3-147: *ResumeCause*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ResumeCause	mt-Access		

– *RLC-BearerConfig*

Table 4.6.3-148: RLC-BearerConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RLC-BearerConfig ::= SEQUENCE {			
logicalChannelIdentity	LogicalChannelIdentity with condition DRBn		DRBn
logicalChannelIdentity	LogicalChannelIdentity with condition SRB1		SRB1
logicalChannelIdentity	LogicalChannelIdentity with condition SRB2		SRB2
logicalChannelIdentity	LogicalChannelIdentity with condition SRB3		SRB3
servedRadioBearer CHOICE {			
srb-Identity	SRB-Identity with condition SRB1		SRB1
srb-Identity	SRB-Identity with condition SRB2		SRB2
srb-Identity	SRB-Identity with condition SRB3		SRB3
drb-Identity	DRB-Identity with condition DRBn		
}			
reestablishRLC	Not present		
	true		Re-establish_RLC
RLC-Config	RLC-Config using condition AM		AM
	RLC-Config using condition UM.		UM
	Not present	Use default parameters as per TS 38.331 [6] clause 9.2.1	SRB1, SRB2, SRB3
mac-LogicalChannelConfig}	LogicalChannelConfig using condition HI		AM
	LogicalChannelConfig using condition LO		UM
	LogicalChannelConfig using condition SRBn	n= 1, 2, 3 for SRB1, SRB2, SRB3 resp.	SRB1, SRB2, SRB3

Condition	Explanation
AM	RLC AM DRB
UM	RLC UM DRB
SRB1	Establishment of SRB1
SRB2	Establishment of SRB2
SRB3	Establishment of SRB3
DRBn	Establishment of DRBn
Re-establish_RLC	Re-establishment of RLC

– *RLC-Config*

Table 4.6.3-149: *RLC-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RLC-Config ::= CHOICE {			
am SEQUENCE {			AM
ul-AM-RLC SEQUENCE {			
sn-FieldLength	size18		
t-PollRetransmit	ms80		FR1
	ms30		FR2
pollPDU	p32768		
pollByte	kB750		
maxRetxThreshold	t8		
}			
dl-AM-RLC SEQUENCE {			
sn-FieldLength	size18		
t-Reassembly	ms80		FR1
	ms30		FR2
t-StatusProhibit	ms30		
}			
}			
um-Bi-Directional SEQUENCE {			UM
ul-UM-RLC SEQUENCE {			
sn-FieldLength	size12		pc_um_WIth LongSN
	size6		NOT pc_um_WIth LongSN AND pc_um_With ShortSN
}			
dl-UM-RLC SEQUENCE {			
sn-FieldLength	size12		pc_um_WIth LongSN
	size6		NOT pc_um_WIth LongSN AND pc_um_With ShortSN
t-Reassembly	ms80		FR1
	ms30		FR2
}			
}			
}			

Condition	Explanation
AM	RLC AM
UM	RLC UM

– *RLF-TimersAndConstants*

Table 4.6.3-150: RLF-TimersAndConstants

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RLF-TimersAndConstants ::= SEQUENCE {			
t310	ms1000		
n310	n1		
n311	n1		
t311-v1530	ms1000		
}			

– *RNTI-Value*

Table 4.6.3-151: *RNTI-Value*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RNTI-Value	SS arbitrarily selects a value between ‘0001’H and ‘FFEF’H		

– *RSRP-Range*

Table 4.6.3-152: *RSRP-Range*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RSRP-Range	[0]	Mapping table is not yet specified in 38.133. This value is temporarily set in RAN5#79.	

– *RSRQ-Range*

Table 4.6.3-153: *RSRQ-Range*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RSRQ-Range	[0]	Mapping table is not yet specified in 38.133. This value is temporarily set in RAN5#79.	

– *SCellIndex*

Table 4.6.3-154: *SCellIndex*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SCellIndex	1		

– *SchedulingRequestConfig*

Table 4.6.3-155: SchedulingRequestConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequestConfig ::= SEQUENCE { schedulingRequestToAddModList (SIZE(1..maxNrofSR-ConfigPerCellGroup)) OF SEQUENCE {	1 entry		
schedulingRequestId	SchedulingRequestId		
sr-ProhibitTimer	Not present		
sr-TransMax	n16		
}			
schedulingRequestToReleaseList	Not present		
}			

– *SchedulingRequestId*

Table 4.6.3-156: SchedulingRequestId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequestId	0		

– *SchedulingRequestResourceConfig*

Table 4.6.3-157: SchedulingRequestResourceConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequestResourceConfig ::= SEQUENCE {			
schedulingRequestResourceId	SchedulingRequestResourceId		
schedulingRequestID	SchedulingRequestId		
periodicityAndOffset CHOICE {			
sl10	9	With SCS = kHz15 results in repetition every 10 ms	SCS_15kHz
sl20	9	With SCS = kHz30 results in repetition every 10 ms	SCS_30kHz
sl40	19	With SCS = kHz60 results in repetition every 10 ms	FR1_60kHz
	9		FR2_60kHz
sl80	9	With SCS = kHz120 results in repetition every 10 ms	SCS_120kHz
}			
resource	0	ID of the PUCCH resource as configured by PUCCH-Config (Table 4.6.3-84)	
}			

Condition	Explanation
SCS_15kHz	SCS=15kHz for frequency of the cell according to 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 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 clause 6.2.3 for signalling test cases and clause 4.3.1 otherwise
FR1_60kHz	FR1 is used under the test. SCS is set to 60kHz.
FR2_60kHz	FR2 is used under the test. SCS is set to 60kHz.

– *SchedulingRequestResourceId*

Table 4.6.3-158: SchedulingRequestResourceId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequestResourceId	1		

– *ScramblingId*

Table 4.6.3-159: *ScramblingId*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ScramblingId	0		

– *SCS-SpecificCarrier*

Table 4.6.3-160: SCS-SpecificCarrier

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SCS-SpecificCarrier ::= SEQUENCE {			
offsetToCarrier	offsetToCarrier as defined for the DL frequency of the cell	For signalling test cases see subclause 6.2.3. Otherwise, see subclause 4.3.1.	DL_PointA
	offsetToCarrier as defined for the UL frequency of the cell	For signalling test cases see subclause 6.2.3. Otherwise, see subclause 4.3.1.	UL_PointA
subcarrierSpacing	SubcarrierSpacing		
carrierBandwidth	carrierBandwidth as defined for the frequency of the cell	For signalling test cases see subclause 6.2.3. Otherwise, see subclause 4.3.1.	
txDirectCurrentLocation-v1530	Not present		
}			

Condition	Explanation
DL_PointA	IE absoluteFrequencyPointA for downlink
UL_PointA	IE absoluteFrequencyPointA for uplink

– *SDAP-Config*

Table 4.6.3-161: *SDAP-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SDAP-Config ::= SEQUENCE {			
pdu-Session	The same value as the PDU session ID IE of the contained message		
sdap-HeaderDL	absent		
sdap-HeaderUL	present		
defaultDRB	true		
mappedQoS-FlowsToAdd SEQUENCE (SIZE (1..maxNrofQFIs)) OF {	n entries		
INTEGER	The list of QFIs of the Authorized QoS flow descriptions IE of the contained 5GSM message		
}			
mappedQoS-FlowsToRelease SEQUENCE (SIZE (1..maxNrofQFIs)) OF {}	Not present		
}			

– *SearchSpace*

Table 4.6.3-162: *SearchSpace*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SearchSpace ::= SEQUENCE {			
searchSpaceId	SearchSpaceId with condition CSS		CSS
	SearchSpaceId with condition USS		USS
	SearchSpaceId with condition SISS		SISS
controlResourceSetId	ControlResourceSetId		
monitoringSlotPeriodicityAndOffset CHOICE {			
sl1	NULL		
sl10	5		SISS
}			
duration	Not present	1 slot per default	
	2		SISS
monitoringSymbolsWithinSlot	10000000000000		
nrofCandidates SEQUENCE {			
aggregationLevel1	n0		
aggregationLevel2	n4		
	n2		FR1_5MHz OR FR1_10MHz
aggregationLevel4	n2		
	n1		FR1_5MHz OR FR1_10MHz
aggregationLevel8	n1		
	n2		FR1_60MHz
	n0		FR1_5MHz OR FR1_10MHz
aggregationLevel16	n0		
}			
searchSpaceType CHOICE {			
common SEQUENCE {			CSS, SISS
dci-Format0-0-AndFormat1-0 SEQUENCE {			
}			
dci-Format2-0	Not present		
dci-Format2-1	Not present		
dci-Format2-2	Not present		
dci-Format2-3	Not present		
}			
ue-Specific SEQUENCE {			USS

dci-Formats	formats0-0-And-1-0		
dci-Formats	formats0-1-And-1-1		Long_DCI
}			
}			
}			

Condition	Explanation
FR1_5MHz	FR1 is used under the test. CBW is set to 5MHz.
FR1_10MHz	FR1 is used under the test. CBW is set to 10MHz.
FR1_60MHz	FR1 is used under the test. CBW is set to 60MHz.
CSS	Common SearchSpace
USS	UE-Specific SearchSpace
Long_DCI	Used in test scenarios requiring DCI formats0-1-And-1-1.
SISS	SearchSpace for SI

– *SearchSpaceId*

Table 4.6.3-163: *SearchSpaceId*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SearchSpaceID	1		CSS
	2		USS
	3		SISS

Condition	Explanation
CSS	Common SearchSpace
USS	UE-Specific SearchSpace
SISS	SearchSpace for SI

– *SearchSpaceZero*

Table 4.6.3-164: *SearchSpaceZero*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SearchSpaceZero	0	Index addressing SearchSpace#0 parameter set in Tables 13.11 .. 13.15 of TS 38.213 [22]	

– *SecurityAlgorithmConfig*

Table 4.6.3-165: SecurityAlgorithmConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SecurityAlgorithmConfig ::= SEQUENCE {			
cipheringAlgorithm	nea0		RF
	Set according to PIXIT px_NR_CipheringAlgorithm	see TS 38.523-3 [23]	SIG
integrityProtAlgorithm	nia2		
	Set according to PIXIT px_NR_IntegrityProtAlgorithm	see TS 38.523-3 [23]	SIG
}			

Condition	Explanation
SIG	Used for signalling test cases
RF	Used for RF/RRM test cases

– *ServCellIndex*

Table 4.6.3-166: *ServCellIndex*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ServCellIndex	0		
	1		EN-DC

Condition	Explanation
EN-DC	E-UTRA-NR Dual Connectivity

– *ServingCellConfig*

Table 4.6.3-167: ServingCellConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ServingCellConfig ::= SEQUENCE {			
tdd-UL-DL-ConfigurationDedicated	Not present		
initialDownlinkBWP	BWP-DownlinkDedicated		
downlinkBWP-ToReleaseList	Not present		
downlinkBWP-ToAddModList	Not present		
firstActiveDownlinkBWP-Id	BWP-Id		
bwp-InactivityTimer	Not present		
defaultDownlinkBWP-Id	BWP-Id		
uplinkConfig	Not present		PUSCH_PUCCH_ON_SUL
uplinkConfig SEQUENCE {			
initialUplinkBWP	BWP-UplinkDedicated		
uplinkBWP-ToReleaseList	Not present		
uplinkBWP-ToAddModList	Not present		
firstActiveUplinkBWP-Id	BWP-Id		
pusch-ServingCellConfig CHOICE {			
setup	PUSCH-ServingCellConfig		
}			
carrierSwitching	Not present		
}			
supplementaryUplink	Not present		
supplementaryUplink SEQUENCE {			PUSCH_PUCCH_ON_SUL
initialUplinkBWP	BWP-UplinkDedicated		
uplinkBWP-ToReleaseList	Not present		
uplinkBWP-ToAddModList	Not present		
firstActiveUplinkBWP-Id	BWP-Id		
pusch-ServingCellConfig CHOICE {			
setup	PUSCH-ServingCellConfig		
}			
}			
pdcch-ServingCellConfig CHOICE {			
setup	PDCCH-ServingCellConfig		
}			
pdsch-ServingCellConfig CHOICE {			
setup	PDSCH-ServingCellConfig		

}			
csi-MeasConfig	Not present		
sCellDeactivationTimer	Not present		
crossCarrierSchedulingConfig	Not present		
tag-Id	0		
dummy	Not present		
pathlossReferenceLinking	Not present		
servingCellMO	Not present		
}			

Condition	Explanation
PUSCH_PUCCH_ON_SUL	For the purpose of SUL test under condition that supplementary uplink is configured with both PUSCH and PUCCH on SUL carrier.

– *ServingCellConfigCommon*

Table 4.6.3-168: ServingCellConfigCommon

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ServingCellConfigCommon ::= SEQUENCE {			
physCellId	PhysCellId		
downlinkConfigCommon	DownlinkConfigCommon		
uplinkConfigCommon	UplinkConfigCommon		
supplementaryUplinkConfig	Not present		
n-TimingAdvanceOffset	Not present		
ssb-PositionsInBurst CHOICE {			
shortBitmap	0100		(FREQ<=3GHz AND (FR1_FDD OR NOT CASE_C)) OR (FREQ<=2.4GHz AND FR1_TDD)
mediumBitmap	01000000		(FREQ>3GHz AND FR1) OR (FREQ>2.4GHz AND FR1_TDD AND CASE_C)
longBitmap	0100000000000000000000000000000000000000000000000000000000000000		FR2
}			
ssb-periodicityServingCell	ms20		
dmrs-TypeA-Position	pos2		
lte-CRS-ToMatchAround	Not present		
rateMatchPatternToAddModList	Not present		
rateMatchPatternToReleaseList	Not present		
ssbSubcarrierSpacing	SubcarrierSpacing		
tdd-UL-DL-ConfigurationCommon	TDD-UL-DL-ConfigCommon		FR1_TDD, FR2_TDD
ss-PBCH-BlockPower	0		
}			

Condition	Explanation
FREQ<=2.4GHz	Frequency range <= 2.4GHz
FREQ>2.4GHz	Frequency range > 2.4GHz
FREQ<=3GHz	Frequency range <= 3GHz
FREQ>3GHz	Frequency range > 3GHz
FR1_TDD	TDD frequency range < 6GHz
FR2_TDD	TDD frequency range > 6GHz
FR1_FDD	FDD frequency range < 6GHz
CASE_C	SS Block pattern “Case C” to be applied for the given band and subcarrier spacing according to TS 38.101-1 [7] Table 5.4.3.3-1

– *ServingCellConfigCommonSIB*

Table 4.6.3-169: *ServingCellConfigCommonSIB*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ServingCellConfigCommonSIB ::= SEQUENCE {			
downlinkConfigCommon	DownlinkConfigCommon SIB		
uplinkConfigCommon	UplinkConfigCommonSIB		
supplementaryUplink	Not present		
	UplinkConfigCommonSIB		SUL
n-TimingAdvanceOffset	Not present		
ssb-PositionsInBurst SEQUENCE {			
inOneGroup	’0100 0000’B	When carrier frequency is smaller than or equal to 3 GHz, only the 4 leftmost bits are valid;	
groupPresence	Not present		
	’1000 0000’B		FR2
}			
ssb-PeriodicityServingCell	ms20		
tdd-UL-DL-ConfigurationCommon	TDD-UL-DL-ConfigCommon		FR1_TDD, FR2_TDD
ss-PBCH-BlockPower	0		
}			

Condition	Explanation
FR1_TDD	TDD frequency range < 6GHz
FR2_TDD	TDD frequency range > 6GHz
SUL	Supplementary uplink

– *ShortI-RNTI-Value*

Table 4.6.3-170: *ShortI-RNTI-Value*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ShortI-RNTI-Value	SS arbitrarily selects a value between ’00 0001’H and ‘FF FFFF’H.	BIT STRING (SIZE(24))	

– *ShortMAC-I*

Table 4.6.3-171: *ShortMAC-I*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ShortMAC-I	The 16 least significant bits of the MAC-I calculated using the security configuration of the source PCell.		

– *SINR-Range*

Table 4.6.3-172: *SINR-Range*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SINR-Range	[0]	Mapping table is not yet specified in 38.133. This value is temporarily set in RAN5#79.	

– *SI-SchedulingInfo*

Table 4.6.3-173: *SI-SchedulingInfo*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SI-SchedulingInfo ::= SEQUENCE {			
schedulingInfoList SEQUENCE (SIZE (1..maxSI-Message)) OF SEQUENCE {	See subclause 4.4.3.1		
si-BroadcastStatus	broadcasting		
si-Periodicity	See subclause 4.4.3.1		
sib-MappingInfo SEQUENCE (SIZE (1..maxSIB)) OF SEQUENCE {			
type	See subclause 4.4.3.1		
valueTag	0		
areaScope	Not present		
}			
}			
si-WindowLength	s80		FR1
	s160		FR2
si-RequestConfig SEQUENCE {}	Not present		
si-RequestConfigSUL SEQUENCE {}	Not present		
systemInformationAreaID	’0000 0000 0000 0000 0000 0001’B		
}			

– *SlotFormatCombinationsPerCell*

Table 4.6.3-174: SlotFormatCombinationsPerCell

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SlotFormatCombinationsPerCell ::= SEQUENCE {			
FFS			
}			

– *SlotFormatIndicator*

Table 4.6.3-175: SlotFormatIndicator

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SlotFormatIndicator ::= SEQUENCE {			
FFS			
}			

– *S-NSSAI*

Editor’s Note: Based on ongoing RAN2 work on CR 100 for TS 38.331, R2-1812411 (CR 100r3).

Table 4.6.3-176: *S-NSSAI*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
S-NSSAI ::= CHOICE {			
FFS			
}			

– *SpeedStateScaleFactors*

Table 4.6.3-177: *SpeedStateScaleFactors*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SpeedStateScaleFactors ::= SEQUENCE {			
FFS			
}			

– *SS-RSSI-Measurement*

Table 4.6.3-178: *SS-RSSI-Measurement*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SS-RSSI-Measurement ::= SEQUENCE {			
FFS			
}			

– *SPS-Config*

Table 4.6.3-179: *SPS-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SPS-Config ::= SEQUENCE {			
FFS			
}			

– *SRB-Identity*

Table 4.6.3-180: *SRB-Identity*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SRB-Identity	1		SRB1
	2		SRB2
	3		SRB3

Condition	Explanation
SRB1	SRB1
SRB2	SRB2
SRB3	SRB3

– *SRS-CarrierSwitching*

Table 4.6.3-181: SRS-CarrierSwitching

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SRS-CarrierSwitching ::= SEQUENCE {			
FFS			
}			

– *SRS-Config*

Table 4.6.3-182: *SRS-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SRS-Config ::= SEQUENCE {			
srs-ResourceSetToReleaseList	Not present		
srs-ResourceSetToAddModList SEQUENCE (SIZE(0..maxNrofSRS-ResourceSets)) OF SEQUENCE {	[1 entry]		
srs-ResourceSetId	0		
srs-ResourceIdList SEQUENCE (SIZE(1..maxNrofSRS-ResourcesPerSet)) OF {	1 entry		
SRS-ResourceId[1]	0		
}			
resourceType CHOICE {			
aperiodic SEQUENCE {			
aperiodicSRS-ResourceTrigger	1		
csi-RS	Not present		
slotOffset	7		FR1
	4		FR2
}			
}			
usage	codebook		
alpha	Alpha		
p0	0		
pathlossReferenceRS CHOICE {			
ssb-Index	SSB-Index		
}			
srs-PowerControlAdjustmentStates	Not present		
}			
srs-ResourceToReleaseList	Not present		
srs-ResourceToAddModList SEQUENCE (SIZE(1..maxNrofSRS-Resources)) OF SEQUENCE {	1 entry		
srs-ResourceId	0		
nrofSRS-Ports	ports2		2TX_UL_MIMO
	port1		
ptrs-PortIndex	Not present		
transmissionComb CHOICE {			
n2 SEQUENCE {			
combOffset-n2	0		
cyclicShift-n2	0		
}			
}			
resourceMapping SEQUENCE {			
startPosition	0		

nrofSymbols	n1		
repetitionFactor	n1		
}			
freqDomainPosition	0		
freqDomainShift	0		
freqHopping SEQUENCE {			
c-SRS	63		FR1_100MHz
	17		FR2_100MHz
b-SRS	0		
b-hop	0		
}			
groupOrSequenceHopping	groupHopping		
resourceType CHOICE {			
aperiodic SEQUENCE {			
}			
}			
sequenceId	0		
spatialRelationInfo SEQUENCE {	SRS-SpatialRelationInfo		
servingCellId	Not present		
referenceSignal CHOICE {			
ssb-Index	SSB-Index		
}			
}			
}			
tpc-Accumulation	Not present		
}			

Condition	Explanation
2TX_UL_MIMO	For the purpose of 2TX Uplink MIMO test.

– *SRS-TPC-CommandConfig*

Table 4.6.3-183: SRS-TPC-CommandConfig

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SRS-TPC-CommandConfig ::= SEQUENCE {			
FFS			
}			

– *SSB-Index*

Table 4.6.3-184: *SSB-Index*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SSB-Index	1		

– *SSB-MTC*

Table 4.6.3-185: *SSB-MTC*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SSB-MTC ::= SEQUENCE {			
periodicityAndOffset CHOICE {			
sf20	0		FR1
sf160	0		FR2
}			
duration	sf2		FR1
	sf3		FR2
}			

Table 4.6.3-186: *SSB-MTC2*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SSB-MTC2 ::= SEQUENCE {			
FFS			
}			

– *SSB-ToMeasure*

Table 4.6.3-187: *SSB-ToMeasure*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SSB-ToMeasure ::= CHOICE {			
shortBitmap	0100		(FREQ<=3GHz AND (FR1_FDD OR NOT CASE_C)) OR (FREQ<=2.4GHz AND FR1_TDD)
mediumBitmap	01000000		(FREQ>3GHz AND FR1) OR (FREQ>2.4GHz AND FR1_TDD AND CASE_C)
longBitmap	01000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000		FR2
}			

Condition	Explanation
FREQ<=2.4GHz	Frequency range <= 2.4GHz
FREQ>2.4GHz	Frequency range > 2.4GHz
FREQ<=3GHz	Frequency range <= 3GHz
FREQ>3GHz	Frequency range > 3GHz
FR1_TDD	TDD frequency range < 6GHz
FR2_TDD	TDD frequency range > 6GHz
FR1_FDD	FDD frequency range < 6GHz
CASE_C	SS Block pattern “Case C” to be applied for the given band and subcarrier spacing according to TS 38.101-1 [7] Table 5.4.3.3-1

– *SubcarrierSpacing*

Table 4.6.3-188: SubcarrierSpacing

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SubcarrierSpacing	kHz15		SCS_15kHz
	kHz30		SCS_30kHz
	kHz60		SCS_60kHz
	kHz120		SCS_120kHz

Condition	Explanation
SCS_15kHz	SCS=15kHz for frequency of the cell according to 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 clause 6.2.3 for signalling test cases and clause 4.3.1 otherwise
SCS_60kHz	SCS=60kHz for frequency of the cell according to 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 clause 6.2.3 for signalling test cases and clause 4.3.1 otherwise

– *TAG-Config*

Table 4.6.3-189: *TAG-Config*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
TAG-Config ::= SEQUENCE {			
tag-ToReleaseList	Not present		
tag-ToAddModList SEQUENCE (SIZE (1..maxNrofTAGs)) OF SEQUENCE {	1 entry		
tag-Id	0		
timeAlignmentTimer	infinity		
}			
}			

– *TCI-State*

Table 4.6.3-190: *TCI-State*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
TCI-State ::= SEQUENCE {			
tci-StateId	TCI-StateId		
qcl-Type1 SEQUENCE {			
cell	Not present		
bwp-Id	Not present		
referenceSignal CHOICE {			
ssb	SSB-Index		
}			
qcl-Type	typeD		
}			
qcl-Type2	Not present		
}			

– *TCI-StateId*

Table 4.6.3-191: *TCI-StateId*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
TCI-StateId	0		

– *TDD-UL-DL-Config*

Table 4.6.3-192: TDD-UL-DL-Config

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
TDD-UL-DL-ConfigCommon ::= SEQUENCE {			
referenceSubcarrierSpacing	SubcarrierSpacing		
pattern1 SEQUENCE {			
dl-UL-TransmissionPeriodicity	ms5		FR1
	ms0p625		FR2
nrofDownlinkSlots	7		FR1_30kHz
	3		FR1_15kHz, FR2
	14		FR1_60kHz
nrofDownlinkSymbols	6		FR1_30kHz
	10		FR1_15kHz
	12		FR1_60kHz
	10		FR2
nrofUplinkSlots	2		FR1_30kHz
	1		FR1_15kHz, FR2
	4		FR1_60kHz
nrofUplinkSymbols	4		FR1_30kHz
	2		FR1_15kHz, FR2
	8		FR1_60kHz
}			
pattern2	Not present		
}			

Condition	Explanation
FR1_15kHz	FR1 is used under the test. SCS is set to 15kHz.
FR1_30kHz	FR1 is used under the test. SCS is set to 30kHz.
FR1_60kHz	FR1 is used under the test. SCS is set to 60kHz.

– *TrackingAreaCode*

Table 4.6.3-193: *TrackingAreaCode*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
TrackingAreaCode	See table 4.4.2-3	BIT STRING (SIZE (24))	

– *T-Reselection*

Table 4.6.3-194: *T-Reselection*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
T-Reselection	FFS		

– *TimeToTrigger*

Table 4.6.3-195: *TimeToTrigger*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
TimeToTrigger	ms320		

– *UAC-BarringInfoSetIndex*

Table 4.6.3-196: *UAC-BarringInfoSetIndex*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
UAC-BarringInfoSetIndex	FFS		

– *UAC-BarringInfoSetList*

Table 4.6.3-197: *UAC-BarringInfoSetList*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
UAC-BarringInfoSetList	FFS		

– *UAC-BarringPerCatList*

Table 4.6.3-198: *UAC-BarringPerCatList*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
UAC-BarringPerCatList	FFS		

– *UAC-BarringPerPLMN-List*

Table 4.6.3-199: *UAC-BarringPerPLMN-List*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
UAC-BarringPerPLMN-List	FFS		

– *UE-TimersAndConstants*

Table 4.6.3-200: *UE-TimersAndConstants*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
UE-TimersAndConstants ::= SEQUENCE {			
t300	ms1000		
t301	ms1000		
t310	ms1000		
n310	n1		
t311	ms30000		
n311	n1		
t319	ms1000		
}			

– *UplinkConfigCommon*

Table 4.6.3-201: *UplinkConfigCommon*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
UplinkConfigCommon ::= SEQUENCE {			
frequencyInfoUL	FrequencyInfoUL		
initialUplinkBWP	BWP-UplinkCommon		
timeAlignmentTimerCommon	infinity		
}			

– *UplinkConfigCommonSIB*

Table 4.6.3-202: *UplinkConfigCommonSIB*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
UplinkConfigCommonSIB SEQUENCE {			
frequencyInfoUL	FrequencyInfoUL-SIB		
initialUplinkBWP	BWP-UplinkCommon		
timeAlignmentTimerCommon	infinity		
}			

– *UplinkTxDirectCurrentList*

Table 4.6.3-203: *UplinkTxDirectCurrentList*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
UplinkTxDirectCurrentList ::= SEQUENCE (SIZE (1..maxNrofServingCells)) OF SEQUENCE {			
FFS			
}			

– *ZP-CSI-RS-Resource*

Table 4.6.3-204: ZP-CSI-RS-Resource

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ZP-CSI-RS-Resource ::= SEQUENCE {			
zp-CSI-RS-ResourceId	ZP-CSI-RS-ResourceId		
resourceMapping	CSI-RS-ResourceMapping		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset		
}			

– *ZP-CSI-RS-ResourceSet*

Table 4.6.3-205: ZP-CSI-RS-ResourceSet

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ZP-CSI-RS-ResourceSet ::= SEQUENCE {			
zp-CSI-RS-ResourceSetId	ZP-CSI-RS-ResourceSetId		
zp-CSI-RS-ResourceIdList SEQUENCE (SIZE(1..maxNrofZP-CSI-RS-ResourcesPerSet)) OF {	1 entry		
ZP-CSI-RS-ResourceId[1]	FFS		
}			
}			

– *ZP-CSI-RS-ResourceSetId*

Table 4.6.3-206: ZP-CSI-RS-ResourceSetId

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ZP-CSI-RS-ResourceSetId	FFS		

4.6.4 UE capability information elements

– *AccessStratumRelease*

Table 4.6.4-1: AccessStratumRelease

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
AccessStratumRelease	Same as indicated in TC applicability in TS 38.523-2 [19]		

– *BandCombinationList*

Table 4.6.4-2: BandCombinationList

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
BandCombinationList::= SEQUENCE (SIZE (1..maxBandComb)) OF SEQUENCE {	At least 1 entry		
bandList[1] SEQUENCE (SIZE (1..maxSimultaneousBands)) OF CHOiCE {			
eutra SEQUENCE {			
bandEUTRA	FreqBandIndicatorEUTRA		
ca-BandwidthClassDL-EUTRA	Not checked		
ca-BandwidthClassUL-EUTRA	Not checked		
}			
nr SEQUENCE {			
bandNR	FreqBandIndicatorNR		
ca-BandwidthClassDL-NR	Not checked		
ca-BandwidthClassUL-NR	Not checked		
}			
}			
featureSetCombination	Not checked		
ca-ParametersEUTRA	Not checked		
ca-ParametersNR	Not checked		
mrdc-Parameters	Not checked		
supportedBandwidthCombinationSet	BIT STRING (SIZE (1..32))		
powerClass-v1530	Not Checked		

– *CA-BandwidthClassEUTRA*

Table 4.6.4-3: CA-BandwidthClassEUTRA

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
CA-BandwidthClassEUTRA	Not checked		

– *CA-BandwidthClassNR*

Table 4.6.4-4: CA-BandwidthClassNR

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
CA-BandwidthClassNR	Not checked		

– *CA-ParametersEUTRA*

Table 4.6.4-5: CA- ParametersEUTRA

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
CA-ParametersEUTRA ::= SEQUENCE {			
multipleTimingAdvance	Not checked		
simultaneousRx-Tx	Not checked		
supportedNAICS-2CRS-AP	Not checked		
additionalRx-Tx-PerformanceReq	Not checked		
ue-CA-PowerClass-N	Not checked		
supportedBandwidthCombinationSetEUTRA-v1530	Not checked		
}			

– *CA-ParametersNR*

Table 4.6.4-6: CA- ParametersNR

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
CA-ParametersNR ::= SEQUENCE {			
multipleTimingAdvances	Not checked		
parallelTxSRS-PUCCH-PUSCH	Not checked		
parallelTxPRACH-SRS-PUCCH-PUSCH	Not checked		
simultaneousRxTxInterBandCA	Not checked		
simultaneousRxTxSUL	Not checked		
diffNumerologyAcrossPUCCH-Group	Not checked		
diffNumerologyWithinPUCCH-Group	Not checked		
supportedNumberTAG	Not checked		
}			

– *CodebookParameters*

Table 4.6.4-6A: CodebookParameters

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
CodebookParameters ::= SEQUENCE {			
type1 SEQUENCE {			
singlePanel SEQUENCE {			
supportedCSI-RS-ResourceList SEQUENCE (SIZE (1.. maxNrofCSI-RS-Resources)) OF SEQUENCE {			
maxNumberTxPortsPerResource[1]	Not checked		
maxNumberResourcesPerBand[1]	Not checked		
totalNumberTxPortsPerBand[1]	Not checked		
}			
modes	Not checked		
maxNumberCSI-RS-PerResourceSet	Not checked		
}			
multiPanel SEQUENCE {			
supportedCSI-RS-ResourceList SEQUENCE (SIZE (1.. maxNrofCSI-RS-Resources)) OF SEQUENCE {			
maxNumberTxPortsPerResource[1]	Not checked		
maxNumberResourcesPerBand[1]	Not checked		
totalNumberTxPortsPerBand[1]	Not checked		
}			
modes	Not checked		
nrofPanels	Not checked		
maxNumberCSI-RS-PerResourceSet	Not checked		
}			
}			
type2 SEQUENCE {			
supportedCSI-RS-ResourceList SEQUENCE (SIZE (1.. maxNrofCSI-RS-Resources)) OF SEQUENCE {			
maxNumberTxPortsPerResource[1]	Not checked		
maxNumberResourcesPerBand[1]	Not checked		
totalNumberTxPortsPerBand[1]	Not checked		
}			
parameterLx	Not checked		
amplitudeScalingType	Not checked		
amplitudeSubsetRestriction	Not checked		
}			
type2-PortSelection SEQUENCE {			
supportedCSI-RS-ResourceList SEQUENCE (SIZE (1.. maxNrofCSI-RS-Resources)) OF SEQUENCE {			
maxNumberTxPortsPerResource[1]	Not checked		
maxNumberResourcesPerBand[1]	Not checked		

totalNumberTxPortsPerBand[1]	Not checked		
}			
parameterLx	Not checked		
amplitudeScalingType	Not checked		
}			
}			

– *FeatureSetCombination*

Table 4.6.4-7: FeatureSetCombination

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSetCombination ::= SEQUENCE (SIZE (1..maxSimultaneousBands)) OF SEQUENCE (SIZE (1..maxFeatureSetsPerBand) CHOICE {			
eutra SEQUENCE {			
downlinkSetEUTRA	Not checked		
uplinkSetEUTRA	Not checked		
}			
nr SEQUENCE {			
downlinkSetNR	Not checked		
uplinkSetNR	Not checked		
}			
}			

– *FeatureSetCombinationId*

Table 4.6.4-8: FeatureSetCombinationId

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSetCombinationId	Not checked		

– *FeatureSetDownlink*

Table 4.6.4-9: FeatureSetDownlink

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSetDownlink ::= SEQUENCE {			
featureSetListPerDownlinkCC SEQUENCE (SIZE (1..maxNrofServingCells)) OF			
FeatureSetDownlinkPerCC-Id[1]	Not checked		
intraBandFreqSeparationDL	FreqSeparationClass		
scalingFactor	Not checked		
crossCarrierSchedulingDL-OtherSCS	Not checked		
scellWithoutSSB	Not checked		
csi-RS-MeasSCellWithoutSSB	Not checked		
dummy1	Not checked		
type1-3-CSS	Not checked		
pdcchMonitoringAnyOccasions	Not checked		
dummy2	Not checked		
ue-SpecificUL-DL-Assignment	Not checked		
searchSpaceSharingCA-DL	Not checked		
timeDurationForQCL SEQUENCE {			
scs-60kHz	Not checked		
scsh-120kHz	Not checked		
}			
pdsch- ProcessingType1-DifferentTB-PerSlot SEQUENCE {			
scs-15kHz	Not checked		
scs-30kHz	Not checked		
scs-60kHz	Not checked		
scs-120kHz	Not checked		
}			
dummy3	Not checked		
dummy4	Not checked		
dummy5	Not checked		
dummy6	Not checked		
dummy7	Not checked		
}			

– *FeatureSetDownlinkId*

Table 4.6.4-10: FeatureSetDownlinkId

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSetDownlinkId	Not checked		

– *FeatureSetDownlinkPerCC*

Table 4.6.4-11: FeatureSetDownlinkPerCC

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSetDownlinkPerCC ::= SEQUENCE {			
supportedSubcarrierSpacingDL	Not checked		
supportedBandwidthDL	SupportedBandwidth		
channelBW-90mhz	Not checked		
maxNumberMIMO-LayersPDSCH	MIMO-LayersDL		
supportedModulationOrderDL	ModulationOrder		
}			

– *FeatureSetDownlinkPerCC-Id*

Table 4.6.4-12: FeatureSetDownlinkPerCC-Id

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSetDownlinkPerCC-Id	Not checked		

– *FeatureSetEUTRA-DownlinkId*

Table 4.6.4-13: FeatureSetEUTRA-DownlinkId

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSetEUTRA-DownlinkId	Not checked		

– *FeatureSetEUTRA-UplinkId*

Table 4.6.4-14: FeatureSetEUTRA-UplinkId

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSetEUTRA-UplinkId	Not checked		

– *FeatureSets*

Table 4.6.4-15: *FeatureSets*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSets ::= SEQUENCE {			
featureSetsDownlink SEQUENCE (SIZE (1..maxDownlinkFeatureSets)) OF FeatureSetDownlink			
FeatureSetDownlink[1]	FeatureSetDownlink		
featureSetsDownlinkPerCC SEQUENCE (SIZE (1..maxPerCC-FeatureSets)) OF FeatureSetDownlinkPerCC			
FeatureSetDownlinkPerCC[1]	FeatureSetDownlinkPerCC		
featureSetsUplink SEQUENCE (SIZE (1..maxUplinkFeatureSets)) OF FeatureSetUplink			
FeatureSetUplink[1]	FeatureSetUplink		
featureSetsUplinkPerCC SEQUENCE (SIZE (1..maxPerCC-FeatureSets)) OF FeatureSetUplinkPerCC			
FeatureSetUplinkPerCC[1]	FeatureSetUplinkPerCC		
}			

– *FeatureSetUplink*

Table 4.6.4-16: FeatureSetUplink

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSetUplink ::= SEQUENCE {			
featureSetListPerUplinkCC SEQUENCE (SIZE (1.. maxNrofServingCells)) OF FeatureSetUplinkPerCC-Id			
FeatureSetUplinkPerCC-Id[1]	Not checked		
scalingFactor	Not checked		
crossCarrierSchedulingUL-OtherSCS	Not checked		
intraBandFreqSeparationUL	FreqSeparationClass		
searchSpaceSharingCA-UL	Not checked		
dummy1	Not checked		
supportedSRS-Resources SEQUENCE {			
maxNumberAperiodicSRS-PerBWP	Not Checked		
maxNumberAperiodicSRS-PerBWP-PerSlot	Not Checked		
maxNumberPeriodicSRS-PerBWP	Not Checked		
maxNumberPeriodicSRS-PerBWP-PerSlot	Not Checked		
maxNumberSemiPersitentSRS-PerBWP	Not Checked		
maxNumberSP-SRS-PerBWP-PerSlot	Not Checked		
maxNumberSRS-Ports-PerResource	Not Checked		
}			
twoPUCCH-Group	Not checked		
dynamicSwitchSUL	Not checked		
pusch- ProcessingType1-DifferentTB-PerSlot SEQUENCE {			
scs-15kHz	Not checked		
scs-30kHz	Not checked		
scs-60kHz	Not checked		
scs-120kHz	Not checked		
}			
dummy2	Not checked		
}			

– *FeatureSetUplinkId*

Table 4.6.4-17: FeatureSetUplinkId

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSetUplinkId	Not checked		

– *FeatureSetUplinkPerCC*

Table 4.6.4-18: FeatureSetUplinkPerCC

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSetUplinkPerCC ::= SEQUENCE {			
supportedSubcarrierSpacingUL	Not checked		
supportedBandwidthUL	SupportedBandwidth		
channelBW-90mhz	Not checked		
mimo-CB-PUSCH SEQUENCE {			
maxNumberMIMO-LayersCB-PUSCH	MIMO-LayersUL		
maxNumberSRS-ResourcePerSet	Not checke		
}			
maxNumberMIMO-LayersNonCB-PUSCH	MIMO-LayersUL		
supportedModulationOrderUL	ModulationOrder		
}			

– *FeatureSetUplinkPerCC-Id*

Table 4.6.4-19: FeatureSetUplinkPerCC-Id

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FeatureSetUplinkPerCC-Id	Not checked		

– *FreqBandIndicatorEUTRA*

Table 4.6.4-20: FreqBandIndicatorEUTRA

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FreqBandIndicatorEUTRA	EUTRA Operating band under test		

– *FreqBandList*

Table 4.6.4-21: *FreqBandList*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FreqBandList::= SEQUENCE (SIZE (1..maxBandsMRDC)) OF CHOICE {			
bandInformationEUTRA SEQUENCE {			EN-DC
bandEUTRA	FreqBandIndicatorEUTRA		
ca-BandwidthClassDL-EUTRA	Not checked		
ca-BandwidthClassUL-EUTRA	Not checked		
}			
bandInformationNR SEQUENCE {			
bandNR	FreqBandIndicatorNR		
maxBandwidthRequestedDL	Not checked		
maxBandwidthRequestedUL	Not checked		
maxCarriersRequestedDL	Not checked		
maxCarriersRequestedUL	Not checked		
}			
}			

Condition	Explanation
EN-DC	E-UTRA-NR Dual Connectivity

– *FreqSeparationClass*

Table 4.6.4-22: *FreqSeparationClass*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
FreqSeparationClass	Not checked		

– *IMS-Parameters*

Table 4.6.4-23: *IMS-Parameters*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
IMS-Parameters ::= SEQUENCE {			
ims-ParametersCommon SEQUENCE {			
voiceOverEUTRA-5GC	Not Checked		
}			
ims-ParametersFRX-Diff SEQUENCE {			
voiceOverNR	Not Checked		
}			
}			

– *InterRAT-Parameters*

Table 4.6.4-24: *InterRAT-Parameters*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
InterRAT-Parameters ::= SEQUENCE {			
eutra SEQUENCE {			
supportedBandListEUTRA SEQUENCE (SIZE (1..maxBandsEUTRA)) OF FreqBandIndicatorEUTRA	FreqBandIndicatorEUTRA		
eutra-ParametersCommon SEQUENCE {			
mfbi-EUTRA	Not Checked		
modifiedMPR-BehaviorEUTRA	Not Checked		
multiNS-Pmax-EUTRA	Not Checked		
rs-SINR-MeasEUTRA	Not Checked		
}			
eutra-ParametersXDD-Diff SEQUENCE {			
rsrqMeasWidebandEUTRA	Not Checked		
}			
}			
}			

– *MAC-Parameters*

Table 4.6.4-25: *MAC-Parameters*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
MAC-Parameters ::= SEQUENCE {			
mac-ParametersCommon SEQUENCE {			
lcp-Restriction	Not checked		
dummy	Not checked		
lch-ToSCellRestriction	Not checked		
}			
mac-ParametersXDD-Diff SEQUENCE {			
skipUplinkTxDynamic	Not checked		
logicalChannelSR-DelayTimer	Not checked		
longDRX-Cycle	Not checked		
shortDRX-Cycle	Not checked		
multipleSR-Configurations	Not checked		
multipleConfiguredGrants	Not checked		
}			
}			

– *MeasAndMobParameters*

Table 4.6.4-26: *MeasAndMobParameters*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasAndMobParameters::= SEQUENCE {			
measAndMobParametersCommon SEQUENCE {			
supportedGapPattern	Not checked		
ssb-RLM	Not checked		
ssb-AndCSI-RS-RLM	Not checked		
}			
measAndMobParametersXDD-Diff SEQUENCE {			
intraAndInterF-MeasAndReport	Not checked		
eventA-MeasAndReport	Not checked		
}			
MeasAndMobParametersFRX-Diff SEQUENCE {			
ss-SINR-Meas	Not checked		
csi-RSRP-AndRSRQ-MeasWithSSB	Not checked		
csi-RSRP-AndRSRQ-MeasWithoutSSB	Not checked		
csi-SINR-Meas	Not checked		
csi-RS-RLM	Not checked		
}			
}			

– *MeasAndMobParametersMRDC*

Table 4.6.4-27: *MeasAndMobParametersMRDC*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasAndMobParametersMRDC::= SEQUENCE {			
measAndMobParametersMRDC -Common SEQUENCE {			
independentGapConfig	Not checked		
}			
measAndMobParametersMRDC -XDD-Diff SEQUENCE {			
sftd-MeasPSCell	Not checked		
sftd-MeasNR-Cell	Not checked		
}			
measAndMobParametersMRDC -FRX-Diff SEQUENCE {			
simultaneousRxDataSSB-DiffNumerology	Not checked		
}			
}			

– *MIMO-Layers*

Table 4.6.4-28: *MIMO-Layers*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
MIMO-LayersDL	Not checked		
MIMO-LayersUL	Not checked		

– *MIMO-ParametersPerBand*

Table 4.6.4-29: *MIMO-ParametersPerBand*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
MIMO-ParametersPerBand ::= SEQUENCE {			
tci-StatePDSCH SEQUENCE {			
maxNumberConfiguredTCIstatesPerCC	Not checked		
maxNumberActiveTCI-PerBWP	Not checked		
}			
additionalActiveTCI-StatePDCCH	Not checked		
pusch-TransCoherence	Not checked		
beamCorrespondenceWithoutUL-BeamSweeping	Not checked		
periodicBeamReport	Not checked		
aperiodicBeamReport	Not checked		
sp-BeamReportPUCCH	Not checked		
sp-BeamReportPUSCH	Not checked		
dummy1	Not checked		
maxNumberRxBeam	Not checked		
maxNumberRxTxBeamSwitchDL SEQUENCE {			
scs-15kHz	Not checked		
scs-30kHz	Not checked		
scs-60kHz	Not checked		
scs-120kHz	Not checked		
scs-240kHz	Not checked		
}			
maxNumberNonGroupBeamReporting	Not checked		
groupBeamReporting	Not checked		
uplinkBeamManagement SEQUENCE {			
maxNumberSRS-ResourcePerSet	Not checked		
maxNumberSRS-ResourceSet	Not checked		
}			
maxNumberCSI-RS-BFD	Not checked		
maxNumbeSSB-BFD	Not checked		
maxNumberCSI-RS-SSB-CBD	Not checked		
dummy2	Not checked		
twoPortsPTRS-UL	Not checked		
dummy5	Not checked		
dummy3	Not checked		
beamReportTiming SEQUENCE {			
scs-15kHz	Not checked		
scs-30kHz	Not checked		
scs-60kHz	Not checked		
scs-120kHz	Not checked		
}			
ptrs-DensityRecommendationSetDL SEQUENCE {			
scs-15kHz			

frequencyDensity1	Not checked		
frequencyDensity2	Not checked		
timeDensity1	Not checked		
timeDensity2	Not checked		
timeDensity3	Not checked		
}			
scs-30kHz			
frequencyDensity1	Not checked		
frequencyDensity2	Not checked		
timeDensity1	Not checked		
timeDensity2	Not checked		
timeDensity3	Not checked		
}			
scs-60kHz			
frequencyDensity1	Not checked		
frequencyDensity2	Not checked		
timeDensity1	Not checked		
timeDensity2	Not checked		
timeDensity3	Not checked		
}			
scs-120kHz			
frequencyDensity1	Not checked		
frequencyDensity2	Not checked		
timeDensity1	Not checked		
timeDensity2	Not checked		
timeDensity3	Not checked		
}			
}			
ptrs-DensityRecommendationSetUL SEQUENCE {			
scs-15kHz SEQUENCE {			
frequencyDensity1	Not checked		
frequencyDensity2	Not checked		
timeDensity1	Not checked		
timeDensity2	Not checked		
timeDensity3	Not checked		
sampleDensity1	Not checked		
sampleDensity2	Not checked		
sampleDensity3	Not checked		
sampleDensity4	Not checked		
sampleDensity5	Not checked		
}			
scs-30kHz SEQUENCE {			
frequencyDensity1	Not checked		
frequencyDensity2	Not checked		

timeDensity1	Not checked		
timeDensity2	Not checked		
timeDensity3	Not checked		
sampleDensity1	Not checked		
sampleDensity2	Not checked		
sampleDensity3	Not checked		
sampleDensity4	Not checked		
sampleDensity5	Not checked		
scs-60kHz SEQUENCE {			
frequencyDensity1	Not checked		
frequencyDensity2	Not checked		
timeDensity1	Not checked		
timeDensity2	Not checked		
timeDensity3	Not checked		
sampleDensity1	Not checked		
sampleDensity2	Not checked		
sampleDensity3	Not checked		
sampleDensity4	Not checked		
sampleDensity5	Not checked		
scs-120kHz SEQUENCE {			
frequencyDensity1	Not checked		
frequencyDensity2	Not checked		
timeDensity1	Not checked		
timeDensity2	Not checked		
timeDensity3	Not checked		
sampleDensity1	Not checked		
sampleDensity2	Not checked		
sampleDensity3	Not checked		
sampleDensity4	Not checked		
sampleDensity5	Not checked		
}			
dummy4	Not checked		
aperiodicTRS	Not checked		
}			

– *ModulationOrder*

Table 4.6.4-30: *ModulationOrder*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
ModulationOrder	Not checked		

– *MRDC-Parameters*

Table 4.6.4-31: *MRDC-Parameters*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
MRDC-Parameters ::= SEQUENCE {			
singleUL-Transmission	Not checked		
dynamicPowerSharing	Not checked		
tdm-Pattern	Not checke		
ul-SharingEUTRA-NR	Not checked		
ul-SwitchingTimeEUTRA-NR	Not checked		
simultaneousRxTxInterBandENDC	Not checked		
asyncIntraBandENDC	Not checked		
}			

– *PDCP-Parameters*

Table 4.6.4-32: *PDCP-Parameters*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
PDCP-Parameters ::= SEQUENCE {			
supportedROHC-Profiles SEQUENCE {			
profile0x0000	Not checked		
profile0x0001	Not checked		
profile0x0002	Not checked		
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		
uplinkOnlyROHC-Profiles	Not checked		
continueROHC-Context	Not checked		
outOfOrderDelivery	Not checked		
shortSN	Not checked		
pdcp-DuplicationSRB	Not checked		
pdcp-DuplicationMCG-OrSCG-DRB	Not checked		
}			

– *PDCP-ParametersMRDC*

Table 4.6.4-33: *PDCP-ParametersMRDC*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
PDCP-ParametersMRDC ::= SEQUENCE {			
pdcp-DuplicationSplitSRB	Not checked		
pdcp-DuplicationSplitDRB	Not checked		
}			

– *Phy-Parameters*

Table 4.6.4-34: *Phy-Parameters*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
Phy-Parameters ::= SEQUENCE {			
phy-ParametersCommon SEQUENCE {			
csi-RS-CFRA-ForHO	Not checked		
dynamicPRB-BundlingDL	Not checked		
sp-CSI-ReportPUCCH	Not checked		
sp-CSI-ReportPUSCH	Not checked		
nzp-CSI-RS-IntefMgmt	Not checked		
type2-SP-CSI-Feedback-LongPUCCH	Not checked		
precoderGranularityCORESET	Not checked		
dynamicHARQ-ACK-Codebook	Not checked		
semiStaticHARQ-ACK-Codebook	Not checked		
spatialBundlingHARQ-ACK	Not checked		
dynamicBetaOffsetInd-HARQ-ACK-CSI	Not checked		
pucch-Repetition-F1-3-4	Not checked		
ra-Type0-PUSCH	Not checked		
dynamicSwitchRA-Type0-1-PDSCH	Not checked		
dynamicSwitchRA-Type0-1-PUSCH	Not checked		
pdsch-MappingTypeA	Not checked		
pdsch-MappingTypeB	Not checked		
interleavingVRB-ToPRB-PDSCH	Not checked		
interSlotFreqHopping-PUSCH	Not checked		
type1-PUSCH-RepetitionMultiSlots	Not checked		
type2-PUSCH-RepetitionMultiSlots	Not checked		
pusch-RepetitionMultiSlots	Not checked		
pdsch-RepetitionMultiSlots	Not checked		
downlinkSPS	Not checked		
configuredUL-GrantType1	Not checked		
configuredUL-GrantType2	Not checked		
pre-EmptIndication-DL	Not checked		
cbg-TransIndication-DL	Not checked		
cbg-TransIndication-UL	Not checked		
cbg-FlushIndication-DL	Not checked		
dynamicHARQ-ACK-CodeB-CBG-Retx-DL	Not checked		
rateMatchingResrcSetSemi-Static	Not checked		
rateMatchingResrcSetDynamic	Not checked		
bwp-SwitchingDelay	Not checked		
}			
phy-ParametersXDD-Diff SEQUENCE {			
dynamicSFI	Not checked		
twoPUCCH-F0-2-ConsecSymbols	Not checked		
twoDifferentTPC-Loop-PUSCH	Not checked		
twoDifferentTPC-Loop-PUCCH	Not checked		

}			
phy-ParametersFRX-Diff SEQUENCE {			
dynamicSFI	Not checked		
dummy1	Not checked		
twoFL-DMRS	Not checked		
dummy2	Not checked		
dummy3	Not checked		
supportedDMRS-TypeDL	Not checked		
supportedDMRS-TypeUL	Not checked		
semiOpenLoopCSI	Not checked		
csi-ReportWithoutPMI	Not checked		
csi-ReportWithoutCQI	Not checked		
onePortsPTRS	Not checked		
twoPUCCH-F0-2-ConsecSymbols	Not checked		
pucch-F2-WithFH	Not checked		
pucch-F3-WithFH	Not checked		
pucch-F4-WithFH	Not checked		
freqHoppingPUCCH-F0-2	Not checked		
freqHoppingPUCCH-F1-3-4	Not checked		
mux-SR-HARQ-ACK-CSI-PUCCH- MultiPerSlot	Not checked		
uci-CodeBlockSegmentation	Not checked		
onePUCCH-LongAndShortFormat	Not checked		
twoPUCCH-AnyOthersInSlot	Not checked		
intraSlotFreqHopping-PUSCH	Not checked		
pusch-LBRM	Not checked		
pdcch-BlindDetectionCA	Not checked		
tpc-PUSCH-RNTI	Not checked		
tpc-PUCCH-RNTI	Not checked		
tpc-SRS-RNTI	Not checked		
absoluteTPC-Command	Not checked		
twoDifferentTPC-Loop-PUSCH	Not checked		
twoDifferentTPC-Loop-PUCCH	Not checked		
pusch-HalfPi-BPSK	Not checked		
pucch-F3-4-HalfPi-BPSK	Not checked		
almostContiguousCP-OFDM-UL	Not checked		
sp-CSI-RS	Not checked		
sp-CSI-IM	Not checked		
tdd-MultiDL-UL-SwitchPerSlot	Not checked		
multipleCORESET	Not checked		
}			
phy-ParametersFR1 SEQUENCE {			
pdcchMonitoringSingleOccasion	Not checked		
scs-60kHz	Not checked		
pdsch-256QAM-FR1	Not checked		

pdsch-RE-MappingFR1- PerSymbol	Not checked		
}			
phy-ParametersFR2 SEQUENCE {			
dummy	Not checked		
pdsch-RE-MappingFR2- PerSymbol	Not checked		
}			
}			

– *Phy-ParametersMRDC*

Table 4.6.4-35: *Phy-ParametersMRDC*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
Phy-ParametersMRDC ::= SEQUENCE {			
naics-Capability-List SEQUENCE (SIZE (1..maxNrofNAICS-Entries)) OF SEQUENCE {			
numberOfNAICS-CapableCC[1]	Not checked		
numberOfAggregatedPRB[1]	Not checked		
}			

– *ProcessingParameters*

Table 4.6.4-36: *ProcessingParameters*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
ProcessingParameters ::= SEQUENCE {			
fallback	Not checked		
differentTB-PerSlot SEQUENCE {			
upto1	Not checked		
upto2	Not checked		
upto4	Not checked		
upto7	Not checked		
}			
}			

– *RAT-Type*

Table 4.6.4-37: *RAT-Type*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
RAT-Type	nr		
	eutra-nr		EN-DC

Condition	Explanation
EN-DC	E-UTRA-NR Dual Connectivity

– *RF-Parameters*

Table 4.6.4-38: *RF-Parameters*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
RF-Parameters ::= SEQUENCE {			
supportedBandListNR SEQUENCE (SIZE (1..maxBands)) OF SEQUENCE {	At least 1 entry		
bandNR[1]	FreqBandIndicatorNR		
modifiedMPR-Behaviour[n]	Not checked		
mimo-ParametersPerBand[n]	Not checked		
extendedCP[n]	Not checked		
multipleTCI[n]	Not checked		
bwp-WithoutRestriction [n]	Not checked		
bwp-SameNumerology[n]	Not checked		
bwp-DiffNumerology[n]	Not checked		
crossCarrierScheduling-SameSCS [n]	Not checked		
pdsch-256QAM-FR2[n]	Not checked		
pusch-256QAM[n]	Not checked		
ue-PowerClass[n]	Not checked		
rateMatchingLTE-CRS[n]	Not checked		
channelBWs-DL-v1530[n] CHOICE {			
fr1 SEQUENCE {			
scs-15kHz	Not checked		
scs-30kHz	Not checked		
scs-60kHz	Not checked		
}			
fr2 SEQUENCE {			
scs-60kHz	Not checked		
scs-120kHz	Not checked		
}			
}			
channelBWs-UL-v1530[n] CHOICE {			
fr1 SEQUENCE {			
scs-15kHz	Not checked		
scs-30kHz	Not checked		
scs-60kHz	Not checked		
}			
fr2 SEQUENCE {			
scs-60kHz	Not checked		
scs-120kHz	Not checked		
}			
}			
}			
supportedBandCombinationList	Not checked		
appliedFreqBandListFilter	Not present		

	FreqBandList		FILTER_REQUESTED
}			

Condition	Explanation
FILTER_REQUESTED	This condition shall be set to true when UE is requested to filter the information via ‘capabilityRequestFilter’ IE in the NR5GC UECapabilityEnquiry message or via ‘requestedFreqBandsNR-MRDC’ IE in the EN-DC UECapabilityEnquiry message

– *RF-ParametersMRDC*

Table 4.6.4-39: RF-ParametersMRDC

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
RF-ParametersMRDC ::= SEQUENCE {			
supportedBandCombinationList	BandCombinationList		
appliedFreqBandListFilter	FreqBandList		
}			

– *RLC-Parameters*

Table 4.6.4-40: *RLC-Parameters*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
RLC-Parameters ::= SEQUENCE {			
am-WithShortSN	Not checked		
um-WithShortSN	Not checked		
um-WIthLongSN	Not checked		
}			

– *SDAP-Parameters*

Table 4.6.4-41: *SDAP-Parameters*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
SDAP-Parameters::= SEQUENCE {			
as-ReflectiveQoS	Not checked		
}			

– *SRS-SwitchingTimeNR*

Table 4.6.4-42: *SRS-SwitchingTimeNR*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
SRS-SwitchingTimeNR::= SEQUENCE {			
switchingTimeDL	Not checked		
switchingTimeUL	Not checked		
}			

– *SRS-SwitchingTimeEUTRA*

Table 4.6.4-43: *SRS-SwitchingTimeEUTRA*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
SRS-SwitchingTimeEUTRA::= SEQUENCE {			
switchingTimeDL	Not checked		
switchingTimeUL	Not checked		
}			

– *SupportedBandwidth*

Table 4.6.4-44: SupportedBandwidth

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
SupportedBandwidth ::= CHOICE {			
fr1	Not checked		
fr2	Not checked		
}			

– *UE-CapabilityRAT-ContainerList*

Table 4.6.4-45: UE-CapabilityRAT-ContainerList

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
UE-CapabilityRAT-ContainerList::= SEQUENCE (SIZE (0.. maxRAT-CapabilityContainers)) OF SEQUENCE {	1 entry		
rat-Type[1]	RAT-Type		
ue-CapabilityRAT-Container[1]	UE-NR-Capability		
ue-CapabilityRAT-Container[1]	UE-MRDC-Capability		EN-DC
}			
}			

– *UE-CapabilityRAT-RequestList*

Table 4.6.4-46: *UE-CapabilityRAT-RequestList*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
UE-CapabilityRAT-RequestList::= SEQUENCE (SIZE (0.. maxRAT-CapabilityContainers)) OF SEQUENCE {	1 entry		
rat-Type[1]	RAT-Type		
capabilityRequestFilter	Not present		
}			
}			

– *UE-CapabilityRequestFilterNR*

Table 4.6.4-47: *UE-CapabilityRequestFilterNR*

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
UE-CapabilityRequestFilterNR::= SEQUENCE {			
frequencyBandListFilter	Not present		
nonCriticalExtension SEQUENCE {	Not present		
srs-SwitchingTimeRequest	Not present		
nonCriticalExtension SEQUENCE {			
srs-SwitchingTimeRequest	Not present		
nonCriticalExtension	Not present		
}			
}			
}			

– *UE-MRDC-Capability*

Table 4.6.4-48: UE-MRDC-Capability

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
UE-MRDC-Capability::= SEQUENCE {			
measAndMobParametersMRDC	Not checked		
phy-ParametersMRDC-v1530	Not checked		
rf-ParametersMRDC	RF-ParametersMRDC		
generalParametersMRDC SEQUENCE {			
splitSRB-WithOneUL-Path	Not checked		
splitDRB-withUL-Both-MCG-SCG	Not checked		
srb3	Not checked		
v2x-EUTRA-v1530	Not checked		
}			
fdd-Add-UE-MRDC-Capabilities SEQUENCE {			
measAndMobParametersMRDC-XDD-Diff SEQUENCE {			
sftd-MeasPSCell	Not checked		
sftd-MeasNR-Cell	Not checked		
}			
generalParametersMRDC SEQUENCE {			
splitSRB-WithOneUL-Path	Not checked		
splitDRB-withUL-Both-MCG-SCG	Not checked		
srb3	Not checked		
v2x-EUTRA-v1530	Not checked		
}			
}			
tdd-Add-UE-MRDC-Capabilities SEQUENCE {			
measAndMobParametersMRDC-XDD-Diff SEQUENCE {			
sftd-MeasPSCell	Not checked		
sftd-MeasNR-Cell	Not checked		
}			
generalParametersMRDC SEQUENCE {			
splitSRB-WithOneUL-Path	Not checked		
splitDRB-withUL-Both-MCG-SCG	Not checked		
srb3	Not checked		
v2x-EUTRA-v1530	Not checked		
}			
}			
fr1-Add-UE-MRDC-Capabilities SEQUENCE {			
measAndMobParametersMRDC-FRX-Diff SEQUENCE {			
simultaneousRxDataSSB-DiffNumerology	Not checked		
}			
}			

fr2-Add-UE-MRDC-Capabilities			
measAndMobParametersMRDC-FRX-Diff SEQUENCE {			
simultaneousRxDataSSB-DiffNumerology	Not checked		
}			
}			
featureSetCombinations SEQUENCE (SIZE (1..maxFeatureSetCombinations)) OF FeatureSetCombination	Not checked		
pdcp-ParametersMRDC-v1530	Not checked		
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {	Not checked		
}			
}			

– *UE-NR-Capability*

Table 4.6.4-49: UE-NR-Capability

Derivation Path: TS 38.331 [6], clause 6.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
UE-NR-Capability::= SEQUENCE {			
accessStratumRelease	AccessStratumRelease		
pdcp-Parameters	Not checked		
rlc-Parameters	Not checked		
mac-Parameters	Not checked		
phy-Parameters	Not checked		
rf-Parameters	RF-Parameters		
measAndMobParameters	Not checked		
fdd-Add-UE-NR-Capabilities SEQUENCE {			
phy-ParametersXDD-Diff SEQUENCE {			
dynamicSFI	Not checked		
twoPUCCH-F0-2-ConsecSymbols	Not checked		
twoDifferentTPC-Loop-PUSCH	Not checked		
twoDifferentTPC-Loop-PUCCH	Not checked		
}			
mac-ParametersXDD-Diff SEQUENCE {			
skipUplinkTxDynamic	Not checked		
logicalChannelSR-DelayTimer	Not checked		
longDRX-Cycle	Not checked		
shortDRX-Cycle	Not checked		
multipleSR-Configurations	Not checked		
multipleConfiguredGrants	Not checked		
}			
measAndMobParametersXDD-Diff SEQUENCE {			
intraAndInterF-MeasAndReport	Not checked		
eventA-MeasAndReport	Not checked		
}			
}			
tdd-Add-UE-NR-Capabilities SEQUENCE {			
phy-ParametersXDD-Diff SEQUENCE {			
dynamicSFI	Not checked		
twoPUCCH-F0-2-ConsecSymbols	Not checked		
twoDifferentTPC-Loop-PUSCH	Not checked		
twoDifferentTPC-Loop-PUCCH	Not checked		
}			
mac-ParametersXDD-Diff SEQUENCE {			
skipUplinkTxDynamic	Not checked		
logicalChannelSR-DelayTimer	Not checked		
longDRX-Cycle	Not checked		
shortDRX-Cycle	Not checked		
multipleSR-Configurations	Not checked		

multipleConfiguredGrants	Not checked		
}			
measAndMobParametersXDD-Diff SEQUENCE {			
intraAndInterF-MeasAndReport	Not checked		
eventA-MeasAndReport	Not checked		
}			
fr1-Add-UE-NR-Capabilities SEQUENCE {			
phy-ParametersFRX-Diff SEQUENCE {			
dynamicSFI	Not checked		
oneFL-DMRS-TwoAdditionalDMRS	Not checked		
twoFL-DMRS	Not checked		
twoFL-DMRS-TwoAdditionalDMRS	Not checked		
oneFL-DMRS-ThreeAdditionalDMRS	Not checked		
supportedDMRS-TypeDL	Not checked		
supportedDMRS-TypeUL	Not checked		
semiOpenLoopCSI	Not checked		
csi-ReportWithoutPMI	Not checked		
csi-ReportWithoutCQI	Not checked		
onePortsPTRS	Not checked		
twoPUCCH-F0-2-ConsecSymbols	Not checked		
pucch-F2-WithFH	Not checked		
pucch-F3-WithFH	Not checked		
pucch-F4-WithFH	Not checked		
freqHoppingPUCCH-F0-2	Not checked		
freqHoppingPUCCH-F1-3-4	Not checked		
mux-SR-HARQ-ACK-CSI-PUCCH	Not checked		
uci-CodeBlockSegmentation	Not checked		
onePUCCH-LongAndShortFormat	Not checked		
twoPUCCH-AnyOthersInSlot	Not checked		
intraSlotFreqHopping-PUSCH	Not checked		
pusch-LBRM	Not checked		
pdcch-BlindDetectionCA	Not checked		
tpc-PUSCH-RNTI	Not checked		
tpc-PUCCH-RNTI	Not checked		
tpc-SRS-RNTI	Not checked		
absoluteTPC-Command	Not checked		
twoDifferentTPC-Loop-PUSCH	Not checked		
twoDifferentTPC-Loop-PUCCH	Not checked		
pusch-HalfPi-BPSK	Not checked		
pucch-F3-4-HalfPi-BPSK	Not checked		
almostContiguousCP-OFDM-UL	Not checked		
sp-CSI-RS	Not checked		
sp-CSI-IM	Not checked		
tdd-MultiDL-UL-SwitchPerSlot	Not checked		

multipleCORESET	Not checked		
}			
measAndMobParametersFRX-Diff SEQUENCE {			
ss-SINR-Meas	Not checked		
csi-RSRP-AndRSRQ-MeasWithSSB	Not checked		
csi-RSRP-AndRSRQ-MeasWithoutSSB	Not checked		
csi-SINR-Meas	Not checked		
csi-RS-RLM	Not checked		
}			
}			
fr2-Add-UE-NR-Capabilities SEQUENCE {			
phy-ParametersFRX-Diff SEQUENCE {	Not checked		
dynamicSFI	Not checked		
oneFL-DMRS-TwoAdditionalDMRS	Not checked		
twoFL-DMRS	Not checked		
twoFL-DMRS-TwoAdditionalDMRS	Not checked		
oneFL-DMRS-ThreeAdditionalDMRS	Not checked		
supportedDMRS-TypeDL	Not checked		
supportedDMRS-TypeUL	Not checked		
semiOpenLoopCSI	Not checked		
csi-ReportWithoutPMI	Not checked		
csi-ReportWithoutCQI	Not checked		
onePortsPTRS	Not checked		
twoPUCCH-F0-2-ConsecSymbols	Not checked		
pucch-F2-WithFH	Not checked		
pucch-F3-WithFH	Not checked		
pucch-F4-WithFH	Not checked		
freqHoppingPUCCH-F0-2	Not checked		
freqHoppingPUCCH-F1-3-4	Not checked		
mux-SR-HARQ-ACK-CSI-PUCCH	Not checked		
uci-CodeBlockSegmentation	Not checked		
onePUCCH-LongAndShortFormat	Not checked		
twoPUCCH-AnyOthersInSlot	Not checked		
intraSlotFreqHopping-PUSCH	Not checked		
pusch-LBRM	Not checked		
pdcch-BlindDetectionCA	Not checked		
tpc-PUSCH-RNTI	Not checked		
tpc-PUCCH-RNTI	Not checked		
tpc-SRS-RNTI	Not checked		
absoluteTPC-Command	Not checked		
twoDifferentTPC-Loop-PUSCH	Not checked		
twoDifferentTPC-Loop-PUCCH	Not checked		
pusch-HalfPi-BPSK	Not checked		
pucch-F3-4-HalfPi-BPSK	Not checked		

almostContiguousCP-OFDM-UL	Not checked		
sp-CSI-RS	Not checked		
sp-CSI-IM	Not checked		
tdd-MultiDL-UL-SwitchPerSlot	Not checked		
multipleCORESET	Not checked		
}			
measAndMobParametersFRX-Diff SEQUENCE {			
ss-SINR-Meas	Not checked		
csi-RSRP-AndRSRQ-MeasWithSSB	Not checked		
csi-RSRP-AndRSRQ-MeasWithoutSSB	Not checked		
csi-SINR-Meas	Not checked		
csi-RS-RLM	Not checked		
}			
}			
featureSets	Not checked		
featureSetCombinations SEQUENCE (SIZE (1..maxFeatureSetCombinations)) OF FeatureSetCombination	Not checked		
lateNonCriticalExtension	Not checked		
nonCriticalExtension SEQUENCE {			
fdd-Add-UE-NR-Capabilities-1530 SEQUENCE {			
eutra-ParametersXDD-Diff SEQUENCE {			
rsrqMeasWidebandEUTRA	Not checked		
}			
}			
tdd-Add-UE-NR-Capabilities-v1530 SEQUENCE {			
eutra-ParametersXDD-Diff SEQUENCE {			
rsrqMeasWidebandEUTRA Not Checked			
}			
}			
dummy	Not checked		
interRAT-Parameters	Not checked		
inactiveState	Not checked		
delayBudgetReporting	Not checked		
nonCriticalExtension SEQUENCE {			
sdap-Parameters	Not checked		
overheatingInd	Not checked		
ims-Parameters	Not checked		
fr1-Add-UE-NR-Capabilities-v1540 SEQUENCE {			
ims-ParametersFRX-Diff SEQUENCE {			
voiceOverNR	Not checked		
}			
}			
fr2-Add-UE-NR-Capabilities-v1540 SEQUENCE {			

ims-ParametersFRX-Diff SEQUENCE {			
voiceOverNR	Not checked		
}			
}			
fr1-fr2-Add-UE-NR-Capabilities SEQUENCE {			
phy-ParametersFRX-Diff SEQUENCE {			
dynamicSFI	Not checked		
dummy1	Not checked		
twoFL-DMRS	Not checked		
dummy2	Not checked		
dummy3	Not checked		
supportedDMRS-TypeDL	Not checked		
supportedDMRS-TypeUL	Not checked		
semiOpenLoopCSI	Not checked		
csi-ReportWithoutPMI	Not checked		
csi-ReportWithoutCQI	Not checked		
onePortsPTRS	Not checked		
twoPUCCH-F0-2-ConsecSymbols	Not checked		
pucch-F2-WithFH	Not checked		
pucch-F3-WithFH	Not checked		
pucch-F4-WithFH	Not checked		
freqHoppingPUCCH-F0-2	Not checked		
freqHoppingPUCCH-F1-3-4	Not checked		
mux-SR-HARQ-ACK-CSI-PUCCH- MultiPerSlot	Not checked		
uci-CodeBlockSegmentation	Not checked		
onePUCCH-LongAndShortFormat	Not checked		
twoPUCCH-AnyOthersInSlot	Not checked		
intraSlotFreqHopping-PUSCH	Not checked		
pusch-LBRM	Not checked		
pdcch-BlindDetectionCA	Not checked		
tpc-PUSCH-RNTI	Not checked		
tpc-PUCCH-RNTI	Not checked		
tpc-SRS-RNTI	Not checked		
absoluteTPC-Command	Not checked		
twoDifferentTPC-Loop-PUSCH	Not checked		
twoDifferentTPC-Loop-PUCCH	Not checked		
pusch-HalfPi-BPSK	Not checked		
pucch-F3-4-HalfPi-BPSK	Not checked		
almostContiguousCP-OFDM-UL	Not checked		
sp-CSI-RS	Not checked		
sp-CSI-IM	Not checked		
tdd-MultiDL-UL-SwitchPerSlot	Not checked		
multipleCORESET	Not checked		
}			

measAndMobParametersFRX-Diff SEQUENCE {			
ss-SINR-Meas	Not checked		
csi-RSRP-AndRSRQ-MeasWithSSB	Not checked		
csi-RSRP-AndRSRQ-MeasWithoutSSB	Not checked		
csi-SINR-Meas	Not checked		
csi-RS-RLM	Not checked		
}			
}			
nonCriticalExtension	Not checked		
}			
}			
}			

4.6.5 Other information elements

– *EUTRA-AllowedMeasBandwidth*

Table 4.6.5-1: *EUTRA-AllowedMeasBandwidth*

Derivation Path: TS 38.331 [6], clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
EUTRA-AllowedMeasBandwidth	FFS		

– *EUTRA-MBSFN-SubframeConfigList*

Table 4.6.5-2: *EUTRA-MBSFN-SubframeConfigList*

Derivation Path: TS 38.331 [6], clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
EUTRA-MBSFN-SubframeConfigList ::=			
radioframeAllocationPeriod[1]	FFS		
radioframeAllocationOffset[1]	FFS		
subframeAllocation1[1] CHOICE {			
oneFrame	FFS		
fourFrames	FFS		
}			
subframeAllocation2[1] CHOICE {			
oneFrame	FFS		
fourFrames	FFS		
}			
}			

– *EUTRA-MultiBandInfoList*

Table 4.6.5-3: *EUTRA-MultiBandInfoList*

Derivation Path: TS 38.331 [6], clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
EUTRA-MultiBandInfoList ::= SEQUENCE (SIZE (1..maxMultiBands)) OF SEQUENCE {			
eutra-FreqBandIndicator[1]	FreqBandIndicatorEUTRA		
eutra-NS-PmaxList[1]	EUTRA-NS-PmaxList		
}			

– *EUTRA-NS-PmaxList*

Table 4.6.5-4: *EUTRA-NS-PmaxList*

Derivation Path: TS 38.331 [6], clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
EUTRA-NS-PmaxList ::= SEQUENCE (SIZE (1..maxEUTRA-NS-Pmax)) OF SEQUENCE {			
additionalPmax[1]	FFS		
additionalSpectrumEmission[1]	FFS		
}			

– *EUTRA-PhysCellId*

Table 4.6.5-5: *EUTRA-PhysCellId*

Derivation Path: TS 38.331 [6], clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
EUTRA-PhysCellId	FFS		

– *EUTRA-PhysCellIdRange*

Table 4.6.5-6: *EUTRA-PhysCellIdRange*

Derivation Path: TS 38.331 [6], clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
EUTRA-PhysCellIdRange ::= SEQUENCE {			
start	EUTRA-PhysCellId		
Range	FFS		
}			

– *EUTRA-PresenceAntennaPort1*

Table 4.6.5-7: *EUTRA-PresenceAntennaPort1*

Derivation Path: TS 38.331 [6], clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
EUTRA-PresenceAntennaPort1	FFS		

– *EUTRA-Q-OffsetRange*

Table 4.6.5-8: *EUTRA-Q-OffsetRange*

Derivation Path: TS 38.331 [6], clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
EUTRA-Q-OffsetRange	FFS		

Table 4.6.5-9: *Void*

Table 4.6.5-10: *Void*

– *OtherConfig*

Table 4.6.5-11: *OtherConfig*

Derivation Path: TS 38.331 [6], clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
OtherConfig ::=SEQUENCE {			
delayBudgetReportingConfig CHOICE{			
release	FFS		
setup SEQUENCE {			
delayBudgetReportingProhibitTimer	FFS		
}			
}			
}			

– *RRC-TransactionIdentifier*

Table 4.6.5-12: *RRC-TransactionIdentifier*

Derivation Path: TS 38.331 [6], clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
RRC-TransactionIdentifier	0		

4.7 Default 5GC NAS message and information elements contents

4.7.0 General

4.7.0.2 Security protected 5GS NAS messages

In subclause 4.7.1, all 5GS NAS messages are described in the plain 5GS NAS message format.

When a 5GS NAS message is security protected, the message shall be contained by SECURITY PROTECTED 5GS NAS MESSAGE unless contained by another NAS message.

The default contents of SECURITY PROTECTED 5GS NAS MESSAGE message is defined in table 4.7.1-28.

4.7.0.1 Interpretation of IE presence and values

For Uplink NAS messages, the following terms and their meanings shall be used to determine how to test specific IEs:

- "Not present": test cases fail if IE is present.
- "Present but contents not checked": test cases fail if IE is not present. No requirements regarding contents of the IE.
- "If present: contents not checked": IE may or may not be present. No requirements regarding contents of the IE.
- "If present: <specific values>": IE may or may not be present. If present, its contents shall be as specified.
- "<specific values>": test cases fail if IE is not present. Its contents shall be as specified.
- "Present if <condition>: contents not checked: test cases fail if condition is fulfilled and IE is not present. Contents of IE are not checked, even if present.
- "Present if <condition>: <specific values>": test cases fail if condition is fulfilled and IE is not present. When IE shall be present, its contents shall be as specified.

4.7.1 Contents of 5GMM messages

– *Authentication request*

Table 4.7.1-1: AUTHENTICATION REQUEST

Derivation Path: 24.501 clause 8.2.1			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Authentication request message identity	‘0101 0110’B		
ngKSI			
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_{AMF})	
Spare half octet	'0000'B		
ABBA	‘0000 0000 0000 0000’B		
Authentication parameter RAND (5G authentication challenge)	Not Present		EAP-AKA
	An arbitrarily selected 128 bits value		5G-AKA
Authentication parameter AUTN (5G authentication challenge)	Not Present		EAP-AKA
	128 bits value generated according to TS 24.501 [28] subclause 9.11.3.15		5G-AKA
EAP message	Not Present		5G-AKA
EAP message	EAP-request/AKA'-challenge	See Table 4.7.3.2-01	EAP-AKA

Condition	Explanation
EAP_AKA	EAP based primary authentication and key agreement procedure
5G-AKA	5G AKA based primary authentication and key agreement procedure

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 5GS NAS MESSAGE message after 5GS NAS security mode control procedure has been successfully completed. SS does not maintain information for 5GS NAS security mode control procedure after a TC is completed.

– *Authentication response*

Table 4.7.1-2: AUTHENTICATION RESPONSE

Derivation Path: 24.501 clause 8.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	5GMM		
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Authentication response message identity	‘0101 0111’B		
Authentication response parameter	16 octets RES* value calculated according to TS 24.501 [28] subclause 9.11.3.17		5G-AKA
	Not Present		EAP-AKA
EAP message	EAP-response/AKA'-challenge	See Table 4.7.3.2-02	EAP-AKA

Condition	Explanation
EAP-AKA	EAP based primary authentication and key agreement procedure
5G-AKA	5G AKA based primary authentication and key agreement procedure

NOTE: When sent in response to an AUTHENTICATION REQUEST message which is not integrity protected and not ciphered, the AUTHENTICATION RESPONSE message is sent integrity protected and ciphered when a valid security context exists and without integrity protection and ciphering otherwise.

– *Authentication result*

Table 4.7.1-3: AUTHENTICATION RESULT

Derivation Path: 24.501 clause 8.2.3			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	5GMM		
Security header type	'0000'B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Authentication result message identity	'0101 1010'B		
ngKSI	The same value as the last AUTHENTICATION REQUEST message		
Spare half octet	'0000'B		
EAP message	EAP-Success	See Table 4.7.3.2-03	
ABBA	'0000 0000 0000 0000'B		

NOTE: The security protection of this message is the same as the previous AUTHENTICATION REQUEST message.

– *Authentication failure*

Table 4.7.1-4: AUTHENTICATION FAILURE

Derivation Path: 24.501 clause 8.2.4			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	5GMM		
Security header type	'0000'B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Authentication failure message identity	'0101 1001'B		
5GMM cause	Present but contents not checked		
Authentication failure parameter	If present: contents not checked		

NOTE: The security protection of this message is the same as the previous AUTHENTICATION REQUEST message.

– *Authentication reject*

Table 4.7.1-5: AUTHENTICATION REJECT

Derivation Path: 24.501 clause 8.2.5			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	5GMM		
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Authentication reject message identity	‘0101 1000’B		
EAP message	Not present		
EAP message	EAP-Response/AKA-Authentication-Reject	See Table 4.7.3.2-04	EAP-AKA

Condition	Explanation
EAP-AKA	EAP based primary authentication and key agreement procedure

NOTE: This message is sent without integrity protection.

– *Registration request*

Table 4.7.1-6: REGISTRATION REQUEST

Derivation Path: 24.501 clause 8.2.6			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Registration request message identity	‘0100 0001’B		
5GS registration type			
5GS registration type value	‘001’B	Initial registration	
	‘010’B		MOBILITY
	‘011’B		PERIODIC
	‘100’B		EMERGENCY
FOR	Present but contents not checked		
ngKSI	Present but contents not checked		
5GS mobile identity	Present but contents not checked		
Non-current native NAS key set identifier	If present: contents not checked		NON_CLEAR TEXT_IE
5GMM capability	If present: contents not checked		NON_CLEAR TEXT_IE
UE security capability	If present: contents not checked		
Requested NSSAI	If present: contents not checked		NON_CLEAR TEXT_IE
Last visited registered TAI	If present: contents not checked		NON_CLEAR TEXT_IE
S1 UE network capability	If present: contents not checked		NON_CLEAR TEXT_IE
Uplink data status	If present: contents not checked		NON_CLEAR TEXT_IE
PDU session status	If present: contents not checked		NON_CLEAR TEXT_IE
MICO indication	If present: contents not checked		NON_CLEAR TEXT_IE
UE status	If present: contents not checked		
Additional GUTI	If present: contents not checked		

Allowed PDU session status	If present: contents not checked		NON_CLEARTEXT_IE
UE's usage setting	If present: contents not checked		NOT pc_IMS AND NON_CLEARTEXT_IE
UE's usage setting	Present but contents not checked		NON_CLEARTEXT_IE
Requested DRX parameters	If present: contents not checked		NON_CLEARTEXT_IE
EPS NAS message container	If present: contents not checked		
LADN indication	If present: contents not checked		NON_CLEARTEXT_IE
Payload container type	If present: contents not checked		NON_CLEARTEXT_IE
Payload container	If present: contents not checked		NON_CLEARTEXT_IE
Network slicing indication	If present: contents not checked		NON_CLEARTEXT_IE
5GS update type	If present: contents not checked		NON_CLEARTEXT_IE
NAS message container	The complete, ciphered, REGISTRATION REQUEST message including all IEs.		CIPHERED_MESSAGE

Condition	Explanation
INITIAL	Initial registration
MOBILITY	Mobility registration updating
PERIODIC	Periodic registration updating
EMERGENCY	Emergency registration
NON_CLEARTEXT_IE	An information element that is not allowed to be sent in cleartext and shall only be included in the complete REGISTRATION REQUEST message in the NAS message container IE.
CIPHERED_MESSAGE	If any of the IEs marked with the condition NON_CLEARTEXT_IE is present, and the UE has a valid 5G NAS security context, this condition applies.

NOTE: This message is sent without integrity protection, including only cleartext IEs, before NAS security mode control procedure has been successfully completed and sent within SECURITY PROTECTED 5GS NAS MESSAGE message after NAS security mode control procedure has been successfully completed.

– *Registration accept*

Table 4.7.1-7: REGISTRATION ACCEPT

Derivation Path: 24.501 clause 8.2.7			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	'0111 1110'B	5GS mobility management messages	
Security header type	'0000'B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Registration accept message identity	'0100 0010'B		
5GS registration result			
5GS registration result value	'001'B	3GPP access	
SMS allowed	'0'B	SMS over NAS not allowed	
5G-GUTI	See Table 4.4.2-3	For 5GC NAS test cases see Table 6.3.2.2-1	
Equivalent PLMNs	Not Present		
TAI list			
Length of tracking area identity list contents	'0000 0111'B	7 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 4.4.2-3	For 5GC NAS test cases see Table 6.3.2.2-1	
MNC	See Table 4.4.2-3	For 5GC NAS test cases see Table 6.3.2.2-1	
TAC 1	See Table 4.4.2-3	For 5GC NAS test cases see Table 6.3.2.2-1	
Allowed NSSAI			
S-NSSAI			
Length of S-NSSAI contents	'0000 0001'B	SST	
SST	'0000 0001'B	SST value 1 (eMBB)	
Rejected NSSAI	Not Present		
Configured NSSAI	Not Present		

5GS network feature support	‘0000 0001 0000 0000’B	IMS voice over PS session supported over 3GPP access All other features set to "not supported" including the 'Interworking without N26 interface not supported'.	
PDU session status	Not Present		
PDU session reactivation result	Not Present		
PDU session reactivation result error cause	Not Present		
LADN information	Not Present		
MICO indication	Not Present		
Network slicing indication	Not Present		
Service area list	Not Present		
T3512 value			INITIAL
Timer value	'0 0000'B		
Unit	'111'B	value indicates that the timer is deactivated	
T3512 value	Not Present		
Non-3GPP de-registration timer value	Not Present		
T3502 value	Not Present		
Emergency number list	Not Present		
Extended emergency number list	Not Present		
SOR Transparent container	Not Present		
EAP message	Not Present		
NSSAI inclusion mode	Not Present		
Operator-defined access category definitions	Not Present		
Negotiated DRX parameters	Not Present		
Non-3GPP NW policies	Not Present		

Condition	Explanation
INITIAL	Initial registration

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message.

– *Registration complete*

Table 4.7.1-8: REGISTRATION COMPLETE

Derivation Path: 24.501 clause 8.2.8			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Registration complete message identity	‘0100 0011’B		
SOR transparent container	If present: contents not checked		

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message.

– *Registration reject*

Table 4.7.1-9: REGISTRATION REJECT

Derivation Path: 24.501 clause 8.2.9			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Registration reject message identity	‘0100 0100’B		
5GMM cause	Set according to specific message content		
T3346 value	Not Present		
T3502 value	Not Present		
EAP message	Not Present		

NOTE: The security protection of this message is the same as the previous REGISTRATION REQUEST message.

– *UL NAS transport*

Table 4.7.1-10: UL NAS TRANSPORT

Derivation Path: 24.501 clause 8.2.10			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
UL NAS TRANSPORT message identity	‘0110 0111’B		
Payload container type	Set according to specific message content		
Payload container type	‘0001’B	N1 SM information	INITIAL_PDU_REQUEST
Spare half octet	'0000'B		
Payload container	Set according to specific message content		
Payload container	PDU SESSION ESTABLISHMENT REQUEST message		INITIAL_PDU_REQUEST
PDU session ID	If present: contents not checked		
PDU session ID	Same PDU session ID as defined in the PDU SESSION ESTABLISHMENT REQUEST message in the Payload container		INITIAL_PDU_REQUEST
Old PDU session ID	If present: contents not checked		
Request type	If present: contents not checked		
Request type	‘001’B	initial request	INITIAL_PDU_REQUEST
S-NSSAI	If present: contents not checked		
DNN	If present: contents not checked		
Additional information	If present: contents not checked		

Condition	Explanation
INITIAL_PDU_REQUEST	The UL NAS TRANSPORT message is used to transport a PDU SESSION ESTABLISHMENT REQUEST message to establish a new PDU session.

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message.

– *DL NAS transport*

Table 4.7.1-11: DL NAS TRANSPORT

Derivation Path: 24.501 clause 8.2.11			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
DL NAS TRANSPORT message identity	‘0110 1000’B		
Payload container type	Set according to specific message content		
Payload container type	‘0001’B	N1 SM information	5GSM_MESSAGE
Spare half octet	'0000'B		
Payload container	Set according to specific message content		
Payload container	5GSM message		5GSM_MESSAGE
PDU session ID	Not Present		
PDU session ID	Set to the same value as the PDU session ID of the 5GSM message in the Payload container.		5GSM_MESSAGE
Additional information	Not Present		
5GMM cause	Not Present		
Back-off timer value	Not Present		

Condition	Explanation
5GSM_MESSAGE	The DL NAS TRANSPORT message is used to transport a 5GSM message

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message.

– *De-registration request (UE originating de-registration)*

Table 4.7.1-12: DEREGISTRATION REQUEST_1

Derivation Path: 24.501 clause 8.2.12			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
De-registration request message identity	‘0100 0101’B		
De-registration type			
Switch off	‘0’B		NORMAL
	‘1’B		SWITCH_OFF
Re-registration required	‘0’B		
Access type	‘01’B	3GPP access	
ngKSI	Present but contents not checked		
5GS mobile identity	Present but contents not checked		

Condition	Explanation
NORMAL	Normal de-registration
SWITCH_OFF	Switch off

NOTE: If this message is sent as an initial NAS message, it is sent with integrity protection but without ciphering. Otherwise it is sent without integrity protection and ciphering before SS has started the ciphering and integrity and ciphered protected after SS has started the ciphering.

– *De-registration accept (UE originating de-registration)*

Table 4.7.1-13: DEREGISTRATION ACCEPT_1

Derivation Path: 24.501 clause 8.2.13			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
De-registration accept message identity	‘0100 0110’B		

NOTE: This message is sent using the same security protection as in the previous DETACH REQUEST message received from the UE.

– *De-registration request (UE terminated de-registration)*

Table 4.7.1-14: DEREGISTRATION REQUEST_2

Derivation Path: 24.501 clause 8.2.14			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
De-registration request message identity	‘0100 0111’B		
De-registration type	Set according to specific message content		
Spare half octet	'0000'B		
5GMM cause	Not Present		
T3346 value	Not Present		

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message.

– *De-registration accept (UE terminated de-registration)*

Table 4.7.1-15: DEREGISTRATION ACCEPT_2

Derivation Path: 24.501 clause 8.2.15			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
De-registration accept message identity	‘0100 1000’B		

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message.

– *Service request*

Table 4.7.1-16: SERVICE REQUEST

Derivation Path: 24.501 clause 8.2.16			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Service request message identity	‘0100 1100’B		
ngKSI			
NAS key set identifier	The valid NAS key set identifier of the UE		
TSC	'0'B	native security context (for KSI_{AMF})	
Service type	‘0010’B	mobile terminated services	
5G-S-TMSI	The valid 5G-S-TMSI of the UE		
Uplink data status	If present: contents not checked		NON_CLEARTEXT_IE
PDU session status	If present: contents not checked		NON_CLEARTEXT_IE
Allowed PDU session status	If present: contents not checked		NON_CLEARTEXT_IE
NAS message container	If present, the complete, ciphered, SERVICE REQUEST message including all IEs.		CIPHERED_MESSAGE

Condition	Explanation
NON_CLEARTEXT_IE	An information element that is not allowed to be sent in cleartext and shall only be included in the complete SERIVICE REQUEST message in the NAS message container IE. NOTE: This condition is only applicable if the SERVICE REQUEST message is sent as an initial NAS message.
CIPHERED_MESSAGE	If any of the IEs marked with the condition NON_CLEARTEXT_IE is present, this condition applies. NOTE: This condition is only applicable if the SERVICE REQUEST message is sent as an initial NAS message.

NOTE: This message is sent without integrity protection, including only cleartext IEs, before NAS security mode control procedure has been successfully completed and sent within SECURITY PROTECTED 5GS NAS MESSAGE message after NAS security mode control procedure has been successfully completed

– *Service accept*

Table 4.7.1-17: SERVICE ACCEPT

Derivation Path: 24.501 clause 8.2.17			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Service accept message identity	‘0100 1110’B		
PDU session status	Not Present		
PDU session reactivation result	Not Present		
PDU session reactivation result error cause	Not Present		
EAP message	Not Present		

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message.

– *Service reject*

Table 4.7.1-18: SERVICE REJECT

Derivation Path: 24.501 clause 8.2.18			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Service reject message identity	’0100 1101’B		
5GMM cause	The value is set according to specific message content		
PDU session status	Not Present		
T3346 value	Not Present		
EAP message	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 5GS NAS MESSAGE message after NAS security mode control procedure has been successfully completed

– *Configuration update command*

Table 4.7.1-19: CONFIGURATION UPDATE COMMAND

Derivation Path: 24.501 clause 8.2.19			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Configuration update command message identity	‘0101 0100’B		
Configuration update indication	Not Present		
5G-GUTI	Not Present		
TAI list	Not Present		
Allowed NSSAI	Not Present		
Service area list	Not Present		
Full name for network	Not Present		
Short name for network	Not Present		
Local time zone	Not Present		
Universal time and local time zone	Not Present		
Network daylight saving time	Not Present		
LADN information	Not Present		
MICO indication	Not Present		
Network slicing indication	Not Present		
Configured NSSAI	Not Present		
Rejected NSSAI	Not Present		
Operator-defined access category definitions	Not Present		
SMS indication	Not Present		

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message.

– *Configuration update complete*

Table 4.7.1-20: CONFIGURATION UPDATE COMPLETE

Derivation Path: 24.501 clause 8.2.20			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Configuration update complete message identity	‘0101 0101’B		

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message.

– *Identity request*

Table 4.7.1-21: IDENTITY REQUEST

Derivation Path: 24.501 clause 8.2.21			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Identity request message identity	‘0101 1011’B		
Identity type	Set according to specific message contents		
Spare half octet	'0000'B		

NOTE: This message is sent without integrity protection before 5GS NAS security mode control procedure has been successfully completed and sent within SECURITY PROTECTED 5GS NAS MESSAGE message after 5GS NAS security mode control procedure has been successfully completed.

– *Identity response*

Table 4.7.1-22: IDENTITY RESPONSE

Derivation Path: 24.501 clause 8.2.22			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Identity response message identity	0101 1100’B		
Mobile identity	Present but contents not checked		

NOTE: This message is sent without integrity protection before 5GS NAS security mode control procedure has been successfully completed and sent within SECURITY PROTECTED 5GS NAS MESSAGE message after 5GS NAS security mode control procedure has been successfully completed.

– *Notification*

Table 4.7.1-23: NOTIFICATION

Derivation Path: 24.501 clause 8.2.23			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Notification message identity	‘0110 0101’B		
Access type	‘01’B	3GPP access	
Spare half octet	'0000'B		

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message.

– *Notification response*

Table 4.7.1-24: NOTIFICATION RESPONSE

Derivation Path: 24.501 clause 8.2.24			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Notification response message identity	‘0110 0110’B		
PDU session status	If present: contents not checked		

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message.

– *Security mode command*

Table 4.7.1-25: SECURITY MODE COMMAND

Derivation Path: 24.501 clause 8.2.25			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Security mode command message identity	‘0101 1101’B		
Selected NAS security algorithms			
Type of ciphering algorithm	Set according to PIXIT px_NAS_5GC_CipheringAlgorithm for default ciphering algorithm		
Type of ciphering algorithm	‘0000’B	5G encryption algorithm 5G EA0 (null ciphering algorithm)	For RF
Type of integrity protection algorithm	Set according to PIXIT px_NAS_5GC_IntegrityProtAlgorithm for default integrity protection algorithm	This value should not be equal to the null integrity algorithm.	
ngKSI			
NAS key set identifier	The valid NAS key set identifier		
TSC	'0'B	native security context (for KSI_{AMF})	
Spare half octet	'0000'B		
Replayed UE security capabilities	Set according to the received UE security capabilities		
IMEISV request	Not Present		
Selected EPS NAS security algorithms	Not Present		
Selected EPS NAS security algorithms			S1_SUPPORTED
Type of ciphering algorithm	Set according to PIXIT px_NAS_CipheringAlgorithm for default ciphering algorithm	The px_NAS_CipheringAlgorithm PIXIT is defined in TS 36.523-3 [x]	

Type of integrity protection algorithm	Set according to PIXIT px_NAS_IntegrityProtAlgorithmfor default integrity protection algorithm	The px_NAS_IntegrityProtAlgorithm is defined in TS 36.523-3 [x]	
Additional 5G security information	Not Present		
Additional 5G security information			NO_VALID_SS_SECURITY_CONTEXT
RINMR	‘1’B	Retransmission of the initial NAS message requested	
HDP	‘0’B	K_{AMF} derivation is not required	
EAP message	Not Present		
EAP message	EAP-Success	See Table 4.7.3.2-03	EAP-AKA
ABBA	‘0000 0000 0000 0000’B		EAP-AKA
Replayed S1 UE security capabilities	Not Present		
Replayed S1 UE security capabilities	Set according to the received UE security capabilities in the last REGISTRATION REQUEST message		S1_SUPPORTED

Condition	Explanation
NO_VALID_SS_SECURITY_CONTEXT	If the SS doesn’t have a valid security context
EAP_AKA	EAP based primary authentication and key agreement procedure
For RF	Used for RF/RRM test cases
S1_SUPPORTED	The UE indicated support of S1 in the last REGISTRATION REQUEST message

NOTE: This message is always sent integrity protected with new 5GS NAS security context.

– *Security mode complete*

Table 4.7.1-26: SECURITY MODE COMPLETE

Derivation Path: 24.501 clause 8.2.26			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Security mode complete message identity	‘0101 1110’B		
IMEISV	Not present		
NAS message container	Not present		
	Complete initial NAS message		RINMR_INDICATED

Condition	Explanation
RINMR_INDICATED	The SS requested retransmission of the initial NAS message in the last SECURITY MODE COMMAND

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message with new 5GS NAS security context.

– *Security mode reject*

Table 4.7.1-27: SECURITY MODE REJECT

Derivation Path: 24.501 clause 8.2.27			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0111 1110’B	5GS mobility management messages	
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
Security mode reject message identity	‘0101 1111’B		
5GMM cause	The value is set according to specific message content		

NOTE: This message is sent without integrity protection before 5GS NAS security mode control procedure has been successfully completed and sent within SECURITY PROTECTED 5GS NAS MESSAGE message after 5GS NAS security mode control procedure has been successfully completed.

– *Security protected 5GS NAS message*

Table 4.7.1-28: SECURITY PROTECTED 5GS NAS MESSAGE

Derivation Path: 24.501 clause 8.2.28			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	5GMM		
Security header type	'0001'B	Integrity protected	UNCIPHERED
	'0010'B	Integrity protected and ciphered	CIPHERED
	'0011'B	Integrity protected with new 5G NAS security context	UNCIPHERED-NEW
	'0100'B	Integrity protected and ciphered with new 5G NAS security context	CIPHERED-NEW
Spare half octet	'0000'B		
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
Plain 5GS 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 5G NAS security context
CIPHERED-NEW	This condition applies to ciphered NAS message exchange with new 5G NAS security context
SENT-BY-SS	Use for the message sent from SS to UE
SENT-BY-UE	Use for the message sent from UE to SS

– *5GMM status*

Table 4.7.1-29: 5GMM STATUS

Derivation Path: 24.501 clause 8.2.29			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	5GMM		
Security header type	’0000’B	Plain 5GS NAS message, not security protected	
Spare half octet	'0000'B		
5GMM STATUS message identity	‘0110 0100’B		
5GMM cause	‘0110 1111’B	Protocol error, unspecified	SENT-BY-SS
	Present but contents not checked		SENT-BY-UE

Condition	Explanation
SENT-BY-SS	Use for the message sent from SS to UE
SENT-BY-UE	Use for the message sent from UE to SS

NOTE: This message is always sent within SECURITY PROTECTED 5GS NAS MESSAGE message.

4.7.2 Contents of 5GSM messages

– *PDU session establishment request*

Table 4.7.2-1: PDU SESSION ESTABLISHMENT REQUEST

Derivation Path: 24.501 clause 8.3.1			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	Any value according to TS 24.501 [25] subclause 9.4		
PTI	Any value from 1 to 254		
PDU SESSION ESTABLISHMENT REQUEST message identity	‘1100 0001’B		
Integrity protection maximum data rate	Present but contents not checked		
PDU session type	Any value between '001'B, '010'B and '011'B	The allowed values are respectively IPv4, IPv6 and IPv4v6	
SSC mode	If present: contents not checked		
5GSM capability	If present: contents not checked		
Maximum number of supported packet filters	If present: contents not checked		
Always-on PDU session requested	If present: contents not checked		
SM PDU DN request container	If present: contents not checked		
Extended protocol configuration options	If present: contents not checked	The SS shall remember if this IE is present and its contents because this affects subsequent SS behaviour, e.g. coding of PDU SESSION ESTABLISHMENT ACCEPT.	

– *PDU session establishment accept*

Table 4.7.2-2: PDU SESSION ESTABLISHMENT ACCEPT

Derivation Path: 24.501 clause 8.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	The same value as the value set in PDU SESSION ESTABLISHMENT REQUEST message		
PTI	The same value as the value set in PDU SESSION ESTABLISHMENT REQUEST message		
PDU SESSION ESTABLISHMENT ACCEPT message identity	‘1100 0010’B		
Selected PDU session type	'001'B		IPv4
	'010'B		IPv6
	'011'B		IPv4v6
Selected SSC mode	‘001’B	SSC mode 1	
Authorized QoS rules	Reference QoS rule #1 as defined in Table 4.8.2.1-1.		
Authorized QoS rules	Reference QoS rule #2 as defined in Table 4.8.2.1-2.		IMS_DNN_ Requested
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	
5GSM cause	Not Present		
PDU address			IPv4
Length of PDU address contents	5 octets		
PDU type value	‘001’B	IPv4	
PDU 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
PDU address			IPv6
Length of PDU address contents	9 octets		
PDU type value	‘010’B	IPv6	
PDU address information	IPv6 interface identifier	The SS provides a valid IPv6 interface identifier	
PDU address			IPv4v6
Length of PDU address contents	13 octets		
PDU type value	‘011’B	IPv4v6	
PDU address information (Octets 4 to 11)	IPv6 interface identifier	The SS provides a valid IPv6 interface identifier	
PDU 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
RQ timer value	Not Present		
S-NSSAI			
Length of S-NSSAI contents	‘0000 0001’B	SST	
SST	‘0000 0001’B	SST value 1 (eMBB)	
Always-on PDU session indication	Not Present		
Always-on PDU session indication			
APSI	‘0’B	Always-on PDU session not allowed	Always_On_Requested
Mapped EPS bearer contexts	Not Present		
Mapped EPS bearer contexts			Interworking_with_EPS
Mapped EPS bearer context			
EPS bearer identity	‘0000 1100 ’B	EBI 12	
EPS bearer identity	‘0000 0101 ’B	EBI 5	IMS_DNN_Requested
Operation code	‘001’B	Create new EPS bearer	
E bit	'1'B	Parameters list is included	
Number of EPS parameters	’0001’B	1 parameter	

Mapped EPS QoS parameters	See Reference default EPS bearer context #1 in TS 36.508 [7] Table 6.6.1-1	QCI 9	
Mapped EPS QoS parameters	See Reference default EPS bearer context #2 in TS 36.508 [7] Table 6.6.1-1	QCI 5	IMS_DNN_ Requested
EAP message	Not Present		
Authorized QoS flow descriptions	Reference QoS flow #1 as defined in Table 4.8.2.3-1.		
Authorized QoS flow descriptions	Reference QoS flow #2 as defined in Table 4.8.2.3-2.		IMS_DNN_ Requested
Extended protocol configuration options	Not Present		
Extended protocol configuration options			P-CSCF_IPv6 OR P-CSCF_IPv4
Container ID 1	‘0001’H		P-CSCF_IPv6
Length of container ID 1 contents		Length value determined by testimplementation	
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 test implementation	
Container ID 2 contents	IPv4 address	P-CSCF IPv4 Address	
DNN	The SS defines a Default DNN		
DNN	DNN as provided in the UL NAS TRANSPORT message transporting the last PDU SESSION ESTABLISHMENT REQUEST message		DNN_Provided and NOT IMS_DNN_ Requested

DNN	Use DNN Network Identifier as provided in the DNN IE of the UL NAS TRANSPORT message transporting the last PDU SESSION ESTABLISHMENT REQUEST message and the DNN Operator Identifier mnc<MNC>.mcc<MCC>. gprs. The <MNC> and <MCC> are set to the same values as in IMSI.		IMS_DNN_ Requested

Condition	Explanation
IPv4	If in the last PDU SESSION ESTABLISHMENT REQUEST sent prior to this message, the PDU session type = '001'B
IPv6	If in the last PDU SESSION ESTABLISHMENT REQUEST sent prior to this message, the PDU session type = '010'B
IPv4v6	If in the last PDU SESSION ESTABLISHMENT REQUEST sent prior to this message, the PDU session type = '011'B
IPv4-DHCP	If in the last PDU SESSION ESTABLISHMENT REQUEST sent prior to this message, the IE Extended protocol configuration options contains a configuration protocol option = '000BH' ("IPv4 address allocation via DHCPv4", length of contents = 0). Note: This condition is used in conjunction with IPv4 or IPv4v6 as indicated in the "PDU address information" just above.
DNN_Provided	If the UL NAS TRANSPORT message transporting the last PDU SESSION ESTABLISHMENT REQUEST message included the DNN IE
Always_On_Requested	If the last PDU SESSION ESTABLISHMENT REQUEST message included the Always-on PDU session requested IE
IMS_DNN_Requested	If the UL NAS TRANSPORT message transporting the last PDU SESSION ESTABLISHMENT REQUEST message included an IMS DNN in the DNN IE
P-CSCF_IPv6	If in the last PDU SESSION ESTABLISHMENT REQUEST sent prior to this message the IE Extended protocol configuration options contains a configuration protocol option = '0001H' (“P-CSCF IPv6 Address Request", length of contents = 0)
P-CSCF_IPv4	If in the last PDU SESSION ESTABLISHMENT REQUEST sent prior to this message the IE Extended protocol configuration options contains a configuration protocol option = '000CH' (“P-CSCF IPv4 Address Request", length of contents = 0)
Interworking_with_EPS	If the UE has indicated support of S1, then the SS shall include this IE to provide details for the interworking with EPS being supported for a PDU session. This requirement is set up for the purpose of facilitating the test description. It is not mandatory for the Network to support Mapped EPS bearer contexts.

– *PDU session establishment reject*

Table 4.7.2-3: PDU SESSION ESTABLISHMENT REJECT

Derivation Path: 24.501 clause 8.3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	The same value as the value set in PDU SESSION ESTABLISHMENT REQUEST message		
PTI	The same value as the value set in PDU SESSION ESTABLISHMENT REQUEST message		
PDU SESSION ESTABLISHMENT REJECT message identity	‘1100 0011’B		
5GSM cause	The value is set according to specific message content		
Back-off timer value	Not Present		
Allowed SSC mode	Not Present		
EAP message	Not Present		
Extended protocol configuration options	Not Present		

– *PDU session authentication command*

Table 4.7.2-4: PDU SESSION AUTHENTICATION COMMAND

Derivation Path: 24.501 clause 8.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	Set according to specific message content		
PTI	'0000 0000'B	No procedure transaction identity assigned	
PDU SESSION AUTHENTICATION COMMAND message identity	‘1100 0101’B		
EAP message	FFS	See TS 24.501 [25] subclause 9.11.2.2	
Extended protocol configuration options	Not Present		

– *PDU session authentication complete*

Table 4.7.2-5: PDU SESSION AUTHENTICATION COMPLETE

Derivation Path: 24.501 clause 8.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	The value indicated in PDU SESSION AUTHENTICATION COMMAND message		
PTI	'0000 0000'B	No procedure transaction identity assigned	
PDU SESSION AUTHENTICATION COMPLETE message identity	‘1100 0110’B		
EAP message	FFS	See TS 24.501 [25] subclause 9.11.2.2	
Extended protocol configuration options	If present: contents not checked		

– *PDU session authentication result*

Table 4.7.2-6: PDU SESSION AUTHENTICATION RESULT

Derivation Path: 24.501 clause 8.3.6			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	The value indicated in PDU SESSION AUTHENTICATION COMMAND message		
PTI	'0000 0000'B	No procedure transaction identity assigned	
PDU SESSION AUTHENTICATION RESULT message identity	‘1100 0111’B		
EAP message	FFS	See TS 24.501 [25] subclause 9.11.2.2	
Extended protocol configuration options	Not Present		

– *PDU session modification request*

Table 4.7.2-7: PDU SESSION MODIFICATION REQUEST

Derivation Path: 24.501 clause 8.3.7			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	The value indicated in PDU SESSION ESTABLISHMENT REQUEST message		
PTI	Any value from 1 to 254		
PDU SESSION MODIFICATION REQUEST message identity	‘1100 1001’B		
5GSM capability	If present: contents not checked		
5GSM cause	If present: contents not checked		
Maximum number of supported packet filters	If present: contents not checked		
Always-on PDU session requested	If present: contents not checked		
Integrity protection maximum data rate	If present: contents not checked		
Requested QoS rules	If present: contents not checked		
Requested QoS flow descriptions	If present: contents not checked		
Mapped EPS bearer contexts	If present: contents not checked		
Extended protocol configuration options	If present: contents not checked		

– *PDU session modification reject*

Table 4.7.2-8: PDU SESSION MODIFICATION REJECT

Derivation Path: 24.501 clause 8.3.8			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	The value indicated in PDU SESSION MODIFICATION REQUEST message.		
PTI	The value indicated in PDU SESSION MODIFICATION REQUEST message.		
PDU SESSION MODIFICATION REJECT message identity	‘1100 1010’B		
5GSM cause	Set according to specific message content.		
Back-off timer value	Not Present		
Extended protocol configuration options	Not Present		

– *PDU session modification command*

Table 4.7.2-9: PDU SESSION MODIFICATION COMMAND

Derivation Path: 24.501 clause 8.3.9			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	Set according to specific message content.		
PDU session ID	The value indicated in PDU SESSION MODIFICATION REQUEST message.		UE_Initiated_Modification
PTI	'0000 0000'B	No procedure transaction identity assigned	
PTI	The value indicated in PDU SESSION MODIFICATION REQUEST message.		UE_Initiated_Modification
PDU SESSION MODIFICATION COMMAND message identity	‘1100 1011’B		
5GSM cause	Not Present		
Session AMBR	Not Present		
RQ timer value	Not Present		
Always-on PDU session indication	Not Present		
Always-on PDU session indication			
APSI	‘0’B	Always-on PDU session not allowed	Always_On_Requested
Authorized QoS rules	Not Present		
Mapped EPS bearer contexts	Not Present		
Authorized QoS flow descriptions	Not Present		
Extended protocol configuration options	Not Present		

Condition	Explanation
Always_On_Requested	If the last PDU SESSION MODIFICATION REQUEST message included the Always-on PDU session requested IE
UE_Initiated_Modification	If this message was triggered by a PDU SESSION MODIFICATION REQUEST message sent by the UE

– *PDU session modification complete*

Table 4.7.2-10: PDU SESSION MODIFICATION COMPLETE

Derivation Path: 24.501 clause 8.3.10			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	The value indicated in PDU SESSION MODIFICATION COMMAND message		
PTI	'0000 0000'B	No procedure transaction identity assigned	
PDU SESSION MODIFICATION COMPLETE message identity	‘1100 1100’B		
Extended protocol configuration options	If present: contents not checked		

– *PDU session modification command reject*

Table 4.7.2-11: PDU SESSION MODIFICATION COMMAND REJECT

Derivation Path: 24.501 clause 8.3.11			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	The value indicated in PDU SESSION MODIFICATION COMMAND message		
PTI	'0000 0000'B	No procedure transaction identity assigned	
PDU SESSION MODIFICATION COMMAND REJECT message identity	‘1100 1101’B		
5GSM cause	If present: contents not checked		
Extended protocol configuration options	If present: contents not checked		

– *PDU session release request*

Table 4.7.2-12: PDU SESSION RELEASE REQUEST

Derivation Path: 24.501 clause 8.3.12			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	The value indicated in PDU SESSION ESTABLISHMENT REQUEST message		
PTI	Any value from 1 to 254		
PDU SESSION RELEASE REQUEST message identity	‘1101 0001’B		
5GSM cause	If present: contents not checked		
Extended protocol configuration options	If present: contents not checked		

– *PDU session release reject*

Table 4.7.2-13: PDU SESSION RELEASE REJECT

Derivation Path: 24.501 clause 8.3.13			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	The value indicated in PDU SESSION RELEASE REQUEST message.		
PTI	The value indicated in PDU SESSION RELEASE REQUEST message.		
PDU SESSION RELEASE REJECT message identity	‘1101 0010’B		
5GSM cause	Set according to specific message content.		
Extended protocol configuration options	Not Present		

– *PDU session release command*

Table 4.7.2-14: PDU SESSION RELEASE COMMAND

Derivation Path: 24.501 clause 8.3.14			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	Set according to specific message content.		
PTI	'0000 0000'B	No procedure transaction identity assigned	
PDU SESSION RELEASE COMMAND message identity	‘1101 0011’B		
5GSM cause	‘0001 1010’B	Insufficient resources	
Back-off timer value	Not Present		
EAP message	Not Present		
Extended protocol configuration options	Not Present		

– *PDU session release complete*

Table 4.7.2-15: PDU SESSION RELEASE COMPLETE

Derivation Path: 24.501 clause 8.3.15			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	The value indicated in PDU SESSION RELEASE COMMAND message.		
PTI	'0000 0000'B	No procedure transaction identity assigned	
PDU SESSION RELEASE COMPLETE message identity	‘1101 0100’B		
5GSM cause	If present: contents not checked		
Extended protocol configuration options	If present: contents not checked		

– *5GSM status*

Table 4.7.2-16: 5GSM STATUS

Derivation Path: 24.501 clause 8.3.16			
Information Element	**Value/remark**	**Comment**	**Condition**
Extended protocol discriminator	‘0010 1110’B	5GS session management messages	
PDU session ID	Set according to specific message content.		
PTI	Set according to specific message content.		
5GSM STATUS message identity	‘1101 0110’B		
5GSM cause	Set according to specific message content.		

4.7.3 Contents of EAP-AKA' messages

For all the message definitions below, the acceptable order and syntax of attributes and fields within these attributes must be according to IETF RFCs where those attributes have been defined. Typically the order of attributes is not significant, but there could be well defined exceptions where the order is important.

The contents of the messages described in the present Annex is not complete - only the attributes required to be checked or generated by SS are listed here. The messages sent by the UE may contain additional attributes which are not checked and must thus be ignored by SS.

4.7.3.1 EAP-AKA' message attributes

Table 4.7.3.1-1: AT_RAND_Def

Derivation Path: IETF RFC 4187 [30] clause 10.6			
Information Element	**Value/remark**	**Comment**	**Condition**
AT_RAND	'0000 0001'B	1	
Length	'0000 0101'B	5	
Reserved	'0000 0000 0000 0000'B		
RAND	An arbitrarily selected 128 bits value		

Table 4.7.3.1-2: AT_AUTN_Def

Derivation Path: IETF RFC 4187 [30] clause 10.7			
Information Element	**Value/remark**	**Comment**	**Condition**
AT_AUTN	'0000 0010'B	2	
Length	'0000 0101'B	5	
Reserved	'0000 0000 0000 0000'B		
AUTN	128 bits value generated according to TS 24.501 [28] subclause 9.11.3.15		

Table 4.7.3.1-3: AT_KDF_Def

Derivation Path: IETF RFC 5448 [31] clause 3.3			
Information Element	**Value/remark**	**Comment**	**Condition**
AT_KDF	'0001 1000'B	24	
Length	'0000 0001'B	1	
KDF	'0000 0000 0000 0001'	1: EAP_AKA'	

Table 4.7.3.1-4: AT_KDF_INPUT_Def

Derivation Path: IETF RFC 5448 [31] clause 3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
AT_KDF_INPUT	'0001 0111'B	23	
Length	Set to the Length of attribute AT_KDF_INPUT in 4 bytes		
Actual Network Name Length	Set to the actual length of 'Network Name' in bytes excluding any appended all zero bytes at end		
Network Name	Value generated according to TS 24.501 [28] clause 9.12.1 and shall be a multiple of 4 bytes (appended with 1,2 or 3 bytes of all zero bits when necessary)		

Table 4.7.3.1-5: AT_MAC_Def

Derivation Path: IETF RFC 4187 [30] clause 10.15			
Information Element	**Value/remark**	**Comment**	**Condition**
AT_MAC	'0000 1011'B	11	
Length	'0000 0101'B	5	
Reserved	'0000 0000 0000 0000'B		
MAC	128 bits value generated according to RFC 4187 [30] subclause 10.15		

Table 4.7.3.1-6: AT_RES_Def

Derivation Path: IETF RFC 4187 [30] clause 10.08			
Information Element	**Value/remark**	**Comment**	**Condition**
AT_RES	'0000 0011'B	3	
Length	Set to Length of AT_RES attribute in 4 bytes.	1 byte	
RES_LENGTH	Set to the actual length of 'RES' in bytes excluding any appended all zero bytes at end		
RES	RES* value calculated according to TS 24.501 [28] clause 9.11.3.17, possibly appended with 1,2 or 3 bytes of all zero bits to make lenght multiple of 4 bytes.		

Table 4.7.3.1-7: AT_AUTS_Def

Derivation Path: IETF RFC 4187 [30] clause 10.08			
Information Element	**Value/remark**	**Comment**	**Condition**
AT_AUTS	'0000 0100'B	4	
Length	'0000 0100'B	4	
AUTS	14 octets RES* value not checked		

4.7.3.2 EAP-AKA' messages

Table 4.7.3.2-1: EAP-Request/AKA'-Challenge

Derivation Path: IETF RFC 4187 [30] clause 9.3, RFC 3748 [32] clause 4			
Information Element	**Value/remark**	**Comment**	**Condition**
Code	1	Request	
Length	Set to length of EAP packet		
Data			
AT_RAND	AT_RAND_Def		
AT_AUTN	AT_AUTN_Def		
AT_KDF	AT_KDF_Def		
AT_KDF_INPUT	AT_KDF_INPUT_Def		
AT_MAC	AT_MAC_Def		

Table 4.7.3.2-2: EAP-Response/AKA'-Challenge

Derivation Path: IETF RFC 4187 [30] clause 9.4, RFC 3748 [32] clause 4			
Information Element	**Value/remark**	**Comment**	**Condition**
Code	2	Response	
Length	Set to length of EAP packet		
Data			
AT_Res	AT_Res_Def		
AT_MAC	AT_MAC_Def		

Table 4.7.3.2-3: EAP-Succes

Derivation Path: IETF RFC 4187 [30] clause 6.3.4, RFC 3748 [32] clause 4			
Information Element	**Value/remark**	**Comment**	**Condition**
Code	3	Success	
Length	Set to length of EAP packet		
Data	Not present	Specific attributes not present	

Table 4.7.3.2-4: EAP-Response/AKA-Authentication-Reject

Derivation Path: IETF RFC 4187 [30] clause 9.5, RFC 3748 [32] clause 4			
Information Element	**Value/remark**	**Comment**	**Condition**
Code	4	Failure	
Length	Set to length of EAP packet		
Data	Not checked		

Table 4.7.3.2-5: EAP-Response/AKA-Synchronization-Failure

Derivation Path: IETF RFC 4187 [30] clause 9.6, RFC 3748 [32] clause 4			
Information Element	**Value/remark**	**Comment**	**Condition**
Code	4	Failure	
Length	Set to length of EAP packet		
Data			
AT_AUTS	AT_AUTS_Def		

Table 4.7.3.2-6: EAP-Failure

Derivation Path: IETF RFC 4187 [30] clause 6.3.3, RFC 3748 [32] clause 4			
Information Element	**Value/remark**	**Comment**	**Condition**
Code	4	Failure	
Length	Set to length of EAP packet		
Data	Not present	Specific attributes not present	

4.8 Reference configurations

4.8.1 Radio configurations

– *RRCReconfiguration-DRB(n, m)*

Table 4.8.1-1: RRCReconfiguration-DRB (n, m)

Derivation Path: TS 38.508-1, table 4.6.1-13			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCReconfiguration::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcReconfiguration ::= SEQUENCE {			
radioBearerConfig	RadioBearerConfig-DRB(n,m)		
secondaryCellGroup	CellGroupConfig-DRB(n.m)		
}			
}			
}			

– *RRCReconfiguration-HO*

Table 4.8.1-1A: RRCReconfiguration-HO

Derivation Path: TS 38.508-1, table 4.6.1-13			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCReconfiguration::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcReconfiguration ::= SEQUENCE {			
radioBearerConfig	RadioBearerConfig with conditions SRB1 and SRB2 and DRBn and Re-establish_PDCP		RBConfig_KeyChange
	RadioBearerConfig with conditions DRBn and Recover_PDCP		RBConfig_NoKeyChange
secondaryCellGroup	Not present		
nonCriticalExtension SEQUENCE {			
masterCellGroup	CellGroupConfig with conditions SRB1 and SRB2 and DRBn and HO	OCTET STRING (CONTAINING CellGroupConfig)	
}			
}			
}			
}			
}			

Condition	Explanation
RBConfig_KeyChange	RadioBearerConfig to perform Intra-NR handover with security key change
RBConfig _NoKeyChange	RadioBearerConfig to perform Intra-NR handover without security key change

– *CellGroupConfig-DRB(n, m)*

Table 4.8.1-2: CellGroupConfig-DRB(n, m)

Derivation Path: TS 38.508-1, table 4.6.3-19: CellGroupConfig (the same conditions are applicable as for table 4.6.3-19)			
Information Element	**Value/remark**	**Comment**	**Condition**
CellGroupConfig::= SEQUENCE {			
rlc-BearerToAddModList SEQUENCE (SIZE(1..maxLCH)) OF {	n+m entries	BID is the total number of established DRBs in the UE, before applying the contents of this IE	
RLC-BearerConfig[k, k=1..n]	RLC-BearerConfig with conditions AM and DRBj (with j=BID+k)		n>0
RLC-BearerConfig[k, k=n+1..n+m]	RLC-BearerConfig with conditions UM and DRBj (with j=BID+k)		m>0
}			
}			

Condition	Explanation
n>0	n is greater than zero
m>0	m is greater than zero

– *CellGroupConfig-SRB3*

Table 4.8.1-2A: CellGroupConfig-SRB3

Derivation Path: TS 38.508-1, table 4.6.3-19: CellGroupConfig with condition EN-DC			
Information Element	**Value/remark**	**Comment**	**Condition**
CellGroupConfig ::= SEQUENCE {			
rlc-BearerToAddModList SEQUENCE (SIZE(1..maxLCH)) OF SEQUENCE {	2 entry		
RLC-BearerConfig[1]	RLC-BearerConfig with conditions AM and DRB2		
RLC-BearerConfig[2]	RLC-BearerConfig with condition SRB3		
}			
}			

– *RadioBearerConfig-DRB (n, m)*

Table 4.8.1-3: RadioBearerConfig-DRB (n, m)

Derivation Path: TS 38.508-1, table 4.6.3-132 and condition EN-DC			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioBearerConfig ::= SEQUENCE {			
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	
cnAssociation[k] CHOICE {			
eps-BearerIdentity	k, k=BID+5..BID+4+n+m		
sdap-Config	Not present		
}			
drb-Identity[k]	k, k=BID+1..BID+n+m		
reestablishPDCP[k]	Not present		
recoverPDCP[k]	Not present		
pdcp-Config[k]	PDCP-Config		
}			
}			
}			

4.8.2 5GC configurations

4.8.2.1 Reference QoS rules

Table 4.8.2.1-1: Reference QoS rule #1

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
QoS rules			
QoS rule			
QoS rule identifier	‘0000 0001’B	1 (unique per PDU session)	
Rule operation code	‘001’B	Create new QoS rule	
DQR bit	‘1’B	The QoS rule is the default QoS rule.	
Number of packet filters	‘0001’B	1 packet filters	
Packet filter list	See table 4.8.2.2-1	Packet filter list #1	
QoS rule precedence	‘0000 0000’B	0 (unique per PDU session)	
Spare bit	‘0’B		
Segregation	‘0’B	Spare	
QoS flow identifier (QFI)	’00 0001’B	QFI 1 (Table 4.8.2.3-1)	

Table 4.8.2.1-2: Reference QoS rule #2

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
QoS rules			
QoS rule			
QoS rule identifier	‘0000 0010’B	2 (unique per PDU session)	
Rule operation code	‘001’B	Create new QoS rule	
DQR bit	‘1’B	The QoS rule is the default QoS rule.	
Number of packet filters	‘0001’B	1 packet filter	
Packet filter list	See table 4.8.2.2-1	Packet filter list #1	
QoS rule precedence	‘0000 0010’B	2 (unique per PDU session)	
Spare bit	‘0’B		
Segregation	‘0’B	Spare	
QoS flow identifier (QFI)	’00 0010’B	QFI 2 (Table 4.8.2.3-2)	

Table 4.8.2.1-3: Reference QoS rule #3

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
QoS rules			
QoS rule			
QoS rule identifier	‘0000 0011’B	3 (unique per PDU session)	
Rule operation code	‘001’B	Create new QoS rule	
DQR bit	‘0’B	The QoS rule is the non-default QoS rule.	
Number of packet filters	‘0001’B	1 packet filter	
Packet filter list	See table 4.8.2.2-2	Packet filter list #2	
QoS rule precedence	‘0000 0011’B	3 (unique per PDU session)	
Spare bit	‘0’B		
Segregation	‘0’B	Spare	
QoS flow identifier (QFI)	’00 0001’B	QFI 1 (Table 4.8.2.3-1)	

Table 4.8.2.1-4: Reference QoS rule #4

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
QoS rules			
QoS rule			
QoS rule identifier	‘0000 0100’B	4 (unique per PDU session)	
Rule operation code	‘001’B	Create new QoS rule	
DQR bit	‘1’B	The QoS rule is the default QoS rule.	
Number of packet filters	‘0001’B	1 packet filter	
Packet filter list	See table 4.8.2.2-3	Packet filter list #3	
QoS rule precedence	‘0000 00100’B	4 (unique per PDU session)	
Spare bit	‘0’B		
Segregation	‘0’B	Spare	
QoS flow identifier (QFI)	’00 0010’B	QFI 2 (Table 4.8.2.3-2)	

Table 4.8.2.1-4a: Reference QoS rule #4a

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
QoS rules			
QoS rule			
QoS rule identifier	'0000 1111'B	15 (unique per PDU session)	
Rule operation code	'001'B	Create new QoS rule	
DQR bit	'0'B	The QoS rule is the non-default QoS rule.	
Number of packet filters	'0001'B	1 packet filter	
Packet filter list	See table 4.8.2.2-3a	Packet filter list #3a	
QoS rule precedence	'0000 1111'B	15 (unique per PDU session)	
Spare bit	'0'B		
Segregation	'0'B	Spare	
QoS flow identifier (QFI)	'00 0100'B	QFI 4 (Table 4.8.2.3-2a)	

Table 4.8.2.1-5: Reference QoS rule #5

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
QoS rules			
QoS rule			
QoS rule identifier	'0000 0101'B	5 (unique per PDU session)	
Rule operation code	'001'B	Create new QoS rule	
DQR bit	'0'B	The QoS rule is the non-default QoS rule.	
Number of packet filters	'0001'B	1 packet filter	
Packet filter list	See table 4.8.2.2-4	Packet filter list #4	
QoS rule precedence	'0000 0101'B	5 (unique per PDU session)	
Spare bit	'0'B		
Segregation	'0'B	Spare	
QoS flow identifier (QFI)	'00 0101'B	QFI 5 (Table 4.8.2.3-3)	

Table 4.8.2.1-6: Reference QoS rule #6

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
QoS rules			
QoS rule			
QoS rule identifier	‘0000 0110’B	6 (unique per PDU session)	
Rule operation code	‘001’B	Create new QoS rule	
DQR bit	‘0’B	The QoS rule is the non-default QoS rule.	
Number of packet filters	‘0001’B	1 packet filter	
Packet filter list	See table 4.8.2.2-5	Packet filter list #5	
QoS rule precedence	‘0000 0110’B	6 (unique per PDU session)	
Spare bit	‘0’B		
Segregation	‘0’B	Spare	
QoS flow identifier (QFI)	’00 0110’B	QFI 6 (Table 4.8.2.3-4)	

4.8.2.2 Reference packet filters

Table 4.8.2.2-1: Packet filter list #1

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
Packet filter list			
Packet filter direction	‘11’B	bidirectional	
Packet filter identifier	‘0000’B	Id 0	
Component type 1 ID	‘0000 0001’B	Match-all type	

Table 4.8.2.2-2: Packet filter list #2

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
Packet filter list			
Packet filter direction	‘11’B	bidirectional	
Packet filter identifier	‘0010’B	Id 2	
Component type 1 ID	0 0 0 1 0 0 0 0	IPv4 remote address type	remoteIPv4
	0 0 1 0 0 0 0 1	IPv6 remote address type/prefix lenght type	remoteIPv6
Component type 1 Value	10.10.10.2 255.255.255.255	See Note 1	remoteIPv4
	C0C0:C0C0:C0C0:C002 C0C0:C0C0:C0C0:C0C0/ 64	See Note 1	remoteIPv6
Note 1: This IP address is also the address of an IP server able to send a flow of downlink IP packets to the UE. 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 4.8.2.2-3: Packet filter list #3

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
Packet filter list			
Packet filter direction	'11'B	bidirectional	
Packet filter identifier	'0011'B	Id 3	
Component type 1 ID	0 0 0 1 0 0 0 0	IPv4 remote address type	remoteIPv4
	0 0 1 0 0 0 0 1	IPv6 remote address type/prefix lenght type	remoteIPv6
Component type 1 Value	10.10.10.3 255.255.255.255	See Note 1	remoteIPv4
	C0C0:C0C0:C0C0:C003 C0C0:C0C0:C0C0:C0C0/ 64	See Note 1	remoteIPv6
Note 1: This IP address is also the address of an IP server able to send a flow of downlink IP packets to the UE. 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 4.8.2.2-3a: Packet filter list #3a

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
Packet filter list			
Packet filter direction	'11'B	bidirectional	
Packet filter identifier	'1111'B	Id 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 1	IPv6 remote address type/prefix lenght type	remoteIPv6
Component type 1 Value	10.10.10.30 255.255.255.255	See Note 1	remoteIPv4
	C0C0:C0C0:C0C0:C030 C0C0:C0C0:C0C0:C0C0/ 64	See Note 1	remoteIPv6
Note 1: This IP address is also the address of an IP server able to send a flow of downlink IP packets to the UE. 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 4.8.2.2-4: Packet filter list #4

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
Packet filter list			
Packet filter direction	'11'B	bidirectional	
Packet filter identifier	'0100'B	Id 4	
Component type 1 ID	0 0 0 1 0 0 0 0	IPv4 remote address type	remoteIPv4
	0 0 1 0 0 0 0 1	IPv6 remote address type/prefix lenght type	remoteIPv6
Component type 1 Value	10.10.10.4 255.255.255.255	See Note 1	remoteIPv4
	C0C0:C0C0:C0C0:C004 C0C0:C0C0:C0C0:C0C0/ 64	See Note 1	remoteIPv6
Note 1: This IP address is also the address of an IP server able to send a flow of downlink IP packets to the UE. 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 4.8.2.2-5: Packet filter list #5

Derivation Path: TS 24.501, table 9.11.4.13			
Information Element	**Value/remark**	**Comment**	**Condition**
Packet filter list			
Packet filter direction	‘11’B	bidirectional	
Packet filter identifier	‘0101’B	Id 5	
Component type 1 ID	0 0 0 1 0 0 0 0	IPv4 remote address type	remoteIPv4
	0 0 1 0 0 0 0 1	IPv6 remote address type/prefix lenght type	remoteIPv6
Component type 1 Value	10.10.10.5 255.255.255.255	See Note 1	remoteIPv4
	C0C0:C0C0:C0C0:C005 C0C0:C0C0:C0C0:C0C0/ 64	See Note 1	remoteIPv6
Note 1: This IP address is also the address of an IP server able to send a flow of downlink IP packets to the UE. 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.			

4.8.2.3 Reference QoS flow descriptions

Table 4.8.2.3-1: Reference QoS flow #1

Derivation Path: TS 24.501, table 9.11.4.12			
Information Element	**Value/remark**	**Comment**	**Condition**
QoS flow descriptions			
QoS flow description			
QFI	‘00 0001’B	QFI 1	
Operation code	‘001’B	Create new QoS flow description	
E bit	‘1’B	Parameters list is included	
Number of parameters	’00 0001’B	1 parameter	
Number of parameters	’00 0010’B	2 parameters	Interworking _with_EPS
5QI	‘0000 1001’B	5QI 9	
EPS bearer identity	‘0000 1100 ’B	EBI 12	Interworking _with_EPS

Condition	Explanation
Interworking_with_EPS	If this flow is used in the Authorized QoS flow descriptions IE of a PDU SESSION ESTABLISHMENT ACCEPT message also including the Mapped EPS bearer context IE.

Table 4.8.2.3-2: Reference QoS flow #2

Derivation Path: TS 24.501, table 9.11.4.12			
Information Element	**Value/remark**	**Comment**	**Condition**
QoS flow descriptions			
QoS flow description			
QFI	‘00 0010’B	QFI 2	
Operation code	‘001’B	Create new QoS flow description	
E bit	‘1’B	Parameters list is included	
Number of parameters	’00 0001’B	1 parameter	
Number of parameters	’00 0010’B	2 parameters	Interworking_with_EPS
5QI	‘0000 0101’B	5QI 5	
EPS bearer identity	‘0000 0101 ’B	EBI 5	Interworking_with_EPS

Condition	Explanation
Interworking_with_EPS	If this flow is used in the Authorized QoS flow descriptions IE of a PDU SESSION ESTABLISHMENT ACCEPT message also including the Mapped EPS bearer context IE.

Table 4.8.2.3-2a: Reference QoS flow #2a

Derivation Path: TS 24.501, table 9.11.4.12			
Information Element	**Value/remark**	**Comment**	**Condition**
QoS flow descriptions			
QoS flow description			
QFI	‘00 0100’B	QFI 4	
Operation code	‘001’B	Create new QoS flow description	
E bit	‘1’B	Parameters list is included	
Number of parameters	’00 0001’B	1 parameter	
5QI	‘0000 0101’B	5QI 5	

Table 4.8.2.3-3: Reference QoS flow #3

Derivation Path: TS 24.501, table 9.11.4.12			
Information Element	**Value/remark**	**Comment**	**Condition**
QoS flow descriptions			
QoS flow description			
QFI	‘00 0101’B	QFI 5	
Operation code	‘001’B	Create new QoS flow description	
E bit	‘1’B	Parameters list is included	
Number of parameters	’00 0001’B	1 parameter	
5QI	‘0000 0101’B	5QI 5	

Table 4.8.2.3-4: Reference QoS flow #4

Derivation Path: TS 24.501, table 9.11.4.12			
Information Element	**Value/remark**	**Comment**	**Condition**
QoS flow descriptions			
QoS flow description			
QFI	‘00 0110’B	QFI 6	
Operation code	‘001’B	Create new QoS flow description	
E bit	‘1’B	Parameters list is included	
Number of parameters	’00 0001’B	1 parameter	
5QI	‘0000 0101’B	5QI 5	

4.8.3 Common test USIM parameters

This clause defines default parameters for programming the elementary files of the test UICC when running conformance test cases defined in 3GPP TS 38.523-1[12].

4.8.3.1 General

See clause 4.9.1 in 3GPP TS 36.508 [2] for the definition of test algorithm for

- authentication via EPC;
- authentication via 5GC using 5G AKA based primary authentication and key agreement procedure.
- authentication via 5GC using EAP-AKA' based primary authentication and key agreement procedure, further the Derivation of MSK, EMSK and other keys shaall be as derived as clause 3.3 of IETF RFC 5448 [31], using Key derivation function HMAC-SHA-256 algorithm.

4.8.3.2 Default parameters for the test USIM and ISIM

Same as clause 4.9.2 in 3GPP TS 36.508 [2] for

- authentication via EPC;
- authentication via 5GC using 5G AKA based primary authentication and key agreement procedure.
- authentication via 5GC using EAP-AKA' based primary authentication and key agreement procedure.

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4.8.3.3 Default settings for the Elementary Files (EFs)

Same as clause 4.9.3 in 3GPP TS 36.508 [2] for

- authentication via EPC;
- authentication via 5GC using 5G AKA based primary authentication and key agreement procedure
- authentication via 5GC using EAP-AKA' based primary authentication and key agreement procedure..

4.8.3.3.1 Modified contents of the USIM Elementary Files

EF_{UST} (USIM Service Table):

Services		Activated	Version	Condition
Service n°122	5GS Mobility Management Information	Optional		5GC
Service n°123	5GS Security Parameters	Optional		5GC
Service n°124	Subscription identifier privacy support	Optional		5GC
Service n°125	SUCI calculation by the USIM	Optional		5GC
Service n°126	UAC Access Identities Configuration	Optional		5GC
Service n°127	Control plane-based steering of UE in VPLMN	Optional		5GC
Service n°128	Call control on PDU Session by USIM	Optional		
Service n°129	5GS Operator PLMN List	Optional		
Note: Only 5GS related services indicated				

Condition	Explanation
5GC	Authentication via 5GC

4.8.3.3.2 Contents of Elementary Files at the DF_{5GS} level

This clause defines the default contents of Elementary Files (EF) that are specific for 5GS and which are grouped in Data File (DF) structure 5GS.

$EF_{5GS3GPPLOCI}$ (5GS 3GPP location information)

File size: 20 Bytes

Default values: Bytes 1 to 13 (HEX): FF FF FF FF FF FF FF FF FF FF FF FF FF (5G-GUTI)

Bytes 14 to 19 (HEX): 42 F6 18 FF FF FE (Last visited registered TAI in 5GS for 3GPP access)

Byte 20 (BIN): 00000001 (5GS update status for 3GPP access = "5U2 not updated")

Bytes 14 to 19: TAI-MCC = 246 (bytes 14 to 15) and TAI-MNC = 81 (byte 16) are frequently used. The TAC (bytes 17 to 19) is set to "FF FF FE" since this, in conjunction with byte 20 setting of "01", is used to ensure that the UE performs registration at the beginning of a test.

Bytes in this file (e.g. GUTI in bytes 1 to 13) may be updated as a result of a registration attempt by the UE.

$EF_{5GSN3GPPLOCI}$ (5GS non-3GPP location information)

File size: 20 Bytes

Default values: Bytes 1 to 13 (HEX): FF FF FF FF FF FF FF FF FF FF FF FF FF (5G-GUTI)

Bytes 14 to 19 (HEX): 42 F6 18 FF FF FE (Last visited registered TAI in 5GS for 3GPP access)

Byte 20 (BIN): 00000001 (5GS update status for 3GPP access = "5U2 not updated")

Bytes 14 to 19: TAI-MCC = 246 (bytes 14 to 15) and TAI-MNC = 81 (byte 16) are frequently used. The TAC (bytes 17 to 19) is set to "FF FF FE" since this, in conjunction with byte 20 setting of "01", is used to ensure that the UE performs registration at the beginning of a test.

Bytes in this file (e.g. GUTI in bytes 1 to 13) may be updated as a result of a registration attempt by the UE.

$EF_{5GS3GPPNSC}$ (5GS 3GPP Access NAS Security Context)

The programming of this EF follows default parameter written in 3GPP TS 31.102 [33], annex E.

$EF_{5GSN3GPPNSC}$ (5GS non-3GPP Access NAS Security Context)

The programming of this EF follows default parameter written in 3GPP TS 31.102 [33], annex E.

$EF_{5GAUTHKEYS}$ (5G authentication keys)

The programming of this EF follows default parameter written in 3GPP TS 31.102 [33], annex E.

EF_{UAC_AIC} (UAC Access Identities Configuration)

The programming of this EF is a test house option.

$EF_{SUCI\_Calc\_Info}$ (Subscription Concealed Identifier Calculation Information EF)

The programming of this EF is a test house option.

EF_{OPL5G} (5GS Operator PLMN List)

The programming of this EF follows default parameter written in 3GPP TS 31.102 [33], annex E

Editor's Note: FFS

CR 0818 (C6-180692 for TS 33.102 has suggested values in Annex E, but not included in final version of the spec

4.9 Test procedures

4.9.1 Test procedure to check user plane connectivity on DRB#n

This procedure aims at checking whether the UE User Plane Access Stratum is capable of exchanging data on DRB#n (#n is the DRB Id specified in the test case when the present procedure is called). In case the UE supports IP, it is also checked that the UE IP stack is connected to the UE User Plane Access Stratum.

Table 4.9.1-1: Test procedure sequence

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message/PDU/SDU		
-	EXCEPTION: Steps 1a1 to 1c2 describe behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place depending on the UE implementation.	-	-	-	-
1a1	IF (pc_IP_Ping = TRUE AND pc_IPv4 = TRUE) THEN, the SS sends an ICMP Echo request to the IPv4 address assigned to the UE on DRB#n.	<--	*ICMP ECHO REQUEST (NOTE 3)*	-	-
1a2	Check: Does the UE send an ICMP Echo reply on DRB#n?	-->	*ICMP ECHO REPLY*	-	P
1b1	ELSE IF (pc_IP_Ping = TRUE AND (pc_IPv4 = FALSE AND pc_IPv6 = TRUE)) THEN, the SS sends an ICMPv6 Echo request to the IPv6 address assigned to the UE on DRB#n.	<--	*ICMPv6 ECHO REQUEST (NOTE 3)*	-	-
1b2	Check: Does the UE send an ICMPv6 Echo reply on DRB#n?	-->	*ICMPv6 ECHO REPLY*	-	P
1c1	ELSE, the SS transmits one IP Packet to verify data path on DRB#n. See NOTE 1, 2.	-	-	-	-
1c2	Check: Does UE send the IP Packet on DRB#n in the uplink?	-	-	-	P

NOTE 1: A Test Loop is assumed to already have been closed.
NOTE 2: When DRB#n is a dedicated bearer, the IP Packet shall match the packet filters as configured for DRB#n. When DRB#n is a default bearer, the IP Packet shall match none of the dedicated bearers associated to DRB#n (if any). (NOTE 4)
NOTE 3: When DRB#n is a dedicated bearer, the source address of the ICMP/ICMPv6 ECHO REQUEST shall be the same as the remote address of the DL/UL packet filters.
When DRB#n is a default bearer, the source address of the ICMP/ICMPv6 ECHO REQUEST shall be different than the remote address of the DL/UL packet filters for an associated dedicated bearer (if any). (NOTE 4)
NOTE 4: For 5GC QoS rules and the associated packet filters are specified in clause 4.8.2.
For EPC the TFTs and associated packet filters are specified in clause 6.6.2 of TS 36.508 [2] and the IP packet shall be as according to clause 7.14.2 of TS 36.523-3 [41].

4.9.2 Test procedure to activate UE Beamlock Test Function (UBF)

4.9.2.1 Initiation

UE is operating in FR2 in RRC_CONNECTED state.

4.9.2.2 Procedure

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message/PDU/SDU		
1	SS request UE to activate UE beamlock function.	<--	*ACTIVATE BEAMLOCK*	-	-
2	UE confirms that UE beamlock function is activated	-->	*ACTIVATE BEAMLOCK COMPLETE*	-	-

4.9.2.3 Specific Message contents

Table 4.9.2.3-1: ACTIVATE BEAMLOCK

Derivation Path: 38.509 clause 6.4.1			
Information Element	**Value/remark**	**Comment**	**Condition**
Protocol discriminator	1 1 1 1		
Skip indicator	0 0 0 0		
Message type	1 0 1 0 0 0 0 0		
UE Beamlock test Function	0 0 0 0 0 0 0 1		Tx Only
UE Beamlock test Function	0 0 0 0 0 0 1 0		Rx Only
UE Beamlock test Function	0 0 0 0 0 0 1 1		Tx and Rx

Condition	Explanation
Tx Only	Activation UE beamlock function for Tx only
Rx Only	Activation UE beamlock function for Rx only
Tx and Rx	Activation UE beamlock function for both Tx and Rx

Table 4.9.2.3-2: ACTIVATE BEAMLOCK COMPLETE

Derivation Path: 38.509 clause 6.4.2			
Information Element	**Value/remark**	**Comment**	**Condition**
Protocol discriminator	1 1 1 1		
Skip indicator	0 0 0 0		
Message type	1 0 1 0 0 0 0 1		

4.9.3 Test procedure to deactivate UE Beamlock Test Function (UBF)

4.9.3.1 Initiation

UE is operating in FR2 in RRC_CONNECTED state with UE beamlock test function activated.

4.9.3.2 Procedure

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message/PDU/SDU		
1	SS request UE to deactivate UE beamlock function.	<--	*DEACTIVATE BEAMLOCK*	-	-
2	UE confirms that UE beamlock function is activated	-->	*DEACTIVATE BEAMLOCK COMPLETE*	-	-

4.9.3.3 Specific Message contents

Table 4.9.3.3-1: DEACTIVATE BEAMLOCK

Derivation Path: 38.509 clause 6.4.3			
Information Element	**Value/remark**	**Comment**	**Condition**
Protocol discriminator	1 1 1 1		
Skip indicator	0 0 0 0		
Message type	1 0 1 0 0 0 1 0		

Table 4.9.3.3-2: DEACTIVATE BEAMLOCK COMPLETE

Derivation Path: 38.509 clause 6.4.4			
Information Element	**Value/remark**	**Comment**	**Condition**
Protocol discriminator	1 1 1 1		
Skip indicator	0 0 0 0		
Message type	1 0 1 0 0 0 1 1		

4.9.4 Test procedure to check that UE is in state 5GC RRC_IDLE on a certain NR/NGC cell

4.9.4.1 Scope

This procedure aims at checking whether the UE is in state 5GC RRC_IDLE on a certain cell (as specified in the test case).

4.9.4.2 Procedure description

4.9.4.2.1 Initial conditions

As specified in the TC which calls the procedure in its entirety or refers to parts of it.

4.9.4.2.2 Procedure

Table 4.9.4.2.2-1: Test procedure sequence

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message/PDU/SDU		
1	Step 1 of Generic procedure for bringing the UE in RRC_CONNECTED state with connectivity *NR* as specified in Table 4.5.4.2-3 is performed.	-	-	-	-
2	Check: Does the UE transmit an *RRCSetupRequest* message on the cell specified in the test case?	-->	NR RRC: *RRCSetupRequest*	-	P
3-8	Steps 3-8 of Generic procedure for bringing the UE in RRC_CONNECTED state with connectivity *NR* as specified in Table 4.5.4.2-3 are performed.	-	-	-	-
-	EXCEPTION: Step 9a1 describes a step sequence depending on procedure parameters; the "lower case letter" identifies a step sequence that take place if a procedure parameter has a particular value	-	-	-	-
9a1	IF '*connected without release*' is not present THEN the SS transmits an *RRCRelease* message to release RRC connection and move the UE to RRC_IDLE..	<--	NR RRC: *RRCRelease*	-	-

4.9.4.2.3 Specific Message content

As specified in the TC which calls the procedure in its entirety or refers to parts of it.

4.9.5 Test procedure to check that UE is camped on a new NR/NGC cell belonging to a new TA

4.9.5.1 Scope

This procedure aims at checking whether the UE performs a mobility registration updating (Tracking Area (TA) update) procedure when it camps on a new cell (as specified in the test case) belonging to a new TA.

4.9.5.2 Procedure description

4.9.5.2.1 Initial conditions

As specified in the TC which calls the procedure in its entirety or refers to parts of it.

4.9.5.2.2 Procedure sequence

Table 4.9.5.2.2-1: Test procedure sequence mobility registration updating (TA update)

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message/PDU/SDU		
-	EXCEPTION: Unless otherwise stated all the messages below are transmitted on the cell specified in the test case.	-	-	-	-
1	The UE transmits an *RRCConnectionRequest* message.	-->	NR RRC: *RRCSetupRequest*	-	-
2	SS transmit an *RRCConnectionSetup* message.	<--	NR RRC: *RRCSetup*	-	-
3	The UE transmits an *RRCConnectionSetupComplete* message to confirm the successful completion of the connection establishment and a REGISTRATION REQUEST message indicating "mobility registration updating" is sent to update the registration of the actual tracking area.	-->	NR RRC: *RRCSetupComplete* 5GMM: REGISTRATION REQUEST	-	-
4	SS sends a REGISTRATION ACCEPT message containing a 5G-GUTI. (NOTE 1, NOTE 2)	<--	NR RRC: *DLInformationTransfer* 5GMM: REGISTRATION ACCEPT	-	-
5	Check: Does the UE send a REGISTRATION COMPLETE?	-->	NR RRC: *ULInformationTransfer* 5GMM: REGISTRATION COMPLETE	-	P
-	EXCEPTION: Step 6a1 describes a step sequence depending on procedure parameters; the "lower case letter" identifies a step sequence that take place if a procedure parameter has a particular value	-	-	-	-
6a1	IF '*connected without release*' is not present THEN the SS transmits an *RRCConnectionRelease* message to release RRC connection and move the UE to RRC_IDLE.	<--	NR RRC: *RRCRelease*	-	-
NOTE 1 If a PDU session status IE was included in the REGISTRATION REQUEST message then the SS includes a PDU session status IE in the REGISTRATION ACCEPT message indicating that all the PDU sessions are active. NOTE 2: If the UE has indicated S1 mode supported then the SS shall indicate in the 5GS network feature support IE in the REGISTRATION ACCEPT message the IWK N26 bit set to "interworking without N26 not supported". The setting of the "interworking without N26 not supported" has been chosen to ensure that the UE is operating in the single-registration mode allowing for a clearly pre-determined UE behaviour.					

4.9.5.2.3 Specific Message content

As specified in the TC which calls the procedure in its entirety or refers to parts of it.

4.9.6 Test procedures for Switch off / Power off UE

4.9.6.1 Switch off / Power off procedure in RRC_IDLE

Table 4.9.6.1-1: Switch off procedure in RRC_IDLE

Step	Procedure	Message Sequence	
		U - S	Message
-	EXCEPTION: Steps 1a1 to 1b1 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that take place if [36] pc_SwitchOnOff or [37] pc_USIM_Removal is supported	-	-
1a1	IF pc_SwitchOnOff THEN switch off UE, IF pc_USIM_Removal THEN remove the USIM (Note 1)	-	-
1a2	UE transmits an *RRCRequest* message.	-->	RRC: *RRCRequest*
1a3	SS transmit an *RRCSetup* message.	<--	RRC: *RRCSetup*
1a4	The UE transmits an *RRCSetupComplete* message including the DEREGISTRATION REQUEST message.	-->	RRC: *RRCSetupComplete* 5GMM: DEREGISTRATION REQUEST
1a5	The SS transmits an *RRCRelease* message	<--	RRC: *RRCRelease*
1b1	ELSE power off UE (Note 2)	-	-
Note 1: USIM removal is a feasible alternative to switch off UE. Note 2: Power off is used when UE don't support switch off or USIM removal, in which case no UE originated deregistration procedure is expected.			

4.9.6.2 Switch off / Power off procedure in RRC_INACTIVE

4.9.6.2.1 Procedure

Table 4.9.6.2.1-1: Switch off procedure in RRC_INACTIVE

Step	Procedure	Message Sequence	
		U - S	Message
-	EXCEPTION: Steps 1a1 to 1b1 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that take place if [36] pc_SwitchOnOff or [37] pc_USIM_Removal is supported	-	-
1a1	IF pc_SwitchOnOff THEN switch off UE, IF pc_USIM_Removal THEN remove the USIM (Note 1)	-	-
1a2	UE transmits an *RRCResumeRequest* message.	-->	NR RRC: *RRCResumeRequest*
1a3	SS transmit an *RRCResume* message.	<--	NR RRC: *RRCResume*
1a4	The UE transmits an *RRCResumeComplete* message including the DEREGISTRATION REQUEST message.	-->	NR RRC: *RRCResumeComplete* 5GMM: DEREGISTRATION REQUEST
1a5	The SS transmits an *RRCRelease* message	<--	NR RRC: *RRCRelease*
1b1	ELSE power off UE (Note 2)	-	-
Note 1: USIM removal is a feasible alternative to switch off UE. Note 2: Power off is used when UE don't support switch off or USIM removal, in which case no UE originated deregistration procedure is expected.			

4.9.6.2.2 Specific Message contents

Table 4.9.6.2.1-1: RRCResumeRequest

Derivation Path: TS 38.331 [6], clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCResumeRequest ::= SEQUENCE {			
rrcResumeRequest SEQUENCE {			
resumeIdentity	Not checked		
resumeMAC-I	Not checked		
resumeCause	Not checked		
spare	Not checked		
}			
}			

4.9.6.3 Switch off / Power off procedure in RRC_CONNECTED

Table 4.9.6.3-1: Switch off procedure in RRC_CONNECTED

Step	Procedure	Message Sequence	
		U - S	Message
-	EXCEPTION: Steps 1a1 to 1b1 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that take place if [30] pc_SwitchOnOff or [31] pc_USIM_Removal is supported	-	-
1a1	IF pc_SwitchOnOff THEN switch off UE (Note 1, Note 3)	-	-
1a2	Start timer = 10 sec (T3540).	-	-
1a2a1	The UE transmits a DEREGISTRATION REQUEST message.	-->	5GMM: DEREGISTRATION REQUEST
1a2a2	Stop timer = 10 sec (T3540).		
1a2b1	Timer = 10 sec (T3540) expires. NOTE: On expiry of T3540 the UE may locally release the connection.	-	-
1a2b2-1a2b4	Steps 1a2-1a4 as described in Table 4.9.6.1-1: Switch off procedure in RRC_IDLE take place.	-	-
1a3	The SS transmits an *RRCRelease* message	<--	RRC: *RRCRelease*
1b1	ELSE power off UE (Note 2)	-	-
Note 1: USIM removal is a feasible alternative to switch off UE. Note 2: Power off is used when UE don't support switch off or USIM removal, in which case no UE originated deregistration procedure is expected. Note 3: Depending on the time which the physical switching off the UE may require, the timer T3540 started in the UE may expire which may lead the UE to locally release the NAS signalling connection (see TS 24.501 [28], Table 10.2.1).			

4.9.6.4 Switch off / Power off procedure in State DEREGISTERED

Table 4.9.6.4-1: Switch off procedure in State DEREGISTERED

Step	Procedure	Message Sequence	
		U - S	Message
-	EXCEPTION: Steps 1a1 to 1b1 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that take place if [36] pc_SwitchOnOff or [37] pc_USIM_Removal is supported	-	-
1a1	IF pc_SwitchOnOff THEN switch off UE (Note 1)	-	-
1b1	ELSE power off UE (Note 2)	-	-
Note 1: USIM removal is a feasible alternative to switch off UE. Note 2: Power off is used when UE don't support switch off or USIM removal.			

4.9.7 Test procedure for UE for Tracking area updating / Inter-system change from N1 mode to S1 mode in 5GMM/EMM-IDLE mode

4.9.7.1 Scope

This procedure aims at verifying that the UE performs a Tracking Area Update (TAU) procedure when it performs inter-system change from N1 mode to S1 mode in 5GMM/EMM-IDLE.

NOTE: At present the procedure handles only the scenario with N26 interface supported on netwrok side and single registration on the UE side.

The procedure provides different security context handling options based on the condition parameters defined in Table 4.9.7.1-1.

Table 4.9.7.1-1: Condition parameters

Condition	Explanation
new security context	When this parameter is present the SS will establish and take into account a new security context.
existing EPS security context	When this parameter is present the SS will take into account an existing EPS security context. A prerequisite for using this condition is the existence of an EPS security context
NOTE 1: If none of the defined condition parameters is present when the procedure is referred to then the SS will apply mapped 5G security context. A prerequisite for using this condition is the existence of 5G security context.	

4.9.7.2 Procedure description

4.9.7.2.1 Initial conditions

System Simulator:

- 1 E-UTRA cell connected to EPC, default parameters.

NOTE: Details about the NGC cell from which the UE will move to the E-UTRA cell are to be specified in the test.

User Equipment:

- The Test UICC shall be inserted. It shall provide relevant details on the EPC and 5GC.

All details required shall be explicitly specified in the TC which calls the procedure in its entirety or refers to parts of it.

4.9.7.2.2 Procedure sequence

Table 4.9.7.2.2-1: Test procedure sequence UE Tracking area updating / inter-system change from N1 mode to S1 mode in EMM-IDLE mode

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message/PDU/SDU		
-	EXCEPTION: Unless otherwise stated all the messages below are transmitted on the cell specified in the test case.	-	-	-	-
1	The UE transmits an *RRCConnectionRequest* message on the cell specified in the test case.	-->	RRC: *RRCConnectionRequest*	-	-
2	SS transmits an *RRCConnectionSetup* message.	<--	RRC: *RRCConnectionSetup*	-	-
3	The UE transmits an *RRCConnectionSetupComplete* 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: *RRCConnectionSetupComplete* NAS: TRACKING AREA UPDATE REQUEST	-	-
-	EXCEPTION: Steps 4a1-4b2 describe a step sequence depending on procedure parameters; the "lower case letter" identifies a step sequence that take place if a procedure parameter has a particular value	-	-	-	-
4a1	IF *'new security context'* THEN the SS transmits an AUTHENTICATION REQUEST message to initiate the EPS authentication and AKA procedure. NOTE: [?]	<--	RRC: *DLInformationTransfer* NAS: AUTHENTICATION REQUEST	-	-
4a2	The UE transmits an AUTHENTICATION RESPONSE message and establishes mutual authentication.	-->	RRC: *ULInformationTransfer* NAS: AUTHENTICATION RESPONSE	-	-
4a3	The SS transmits a NAS SECURITY MODE COMMAND message to activate NAS security.	<--	RRC: *DLInformationTransfer* NAS: SECURITY MODE COMMAND	-	-
4a4	The UE transmits a NAS SECURITY MODE COMPLETE message and establishes the initial security configuration.	-->	RRC: *ULInformationTransfer* NAS: SECURITY MODE COMPLETE	-	-
4b1	IF *'existing EPS security context'* THEN the SS transmits a NAS SECURITY MODE COMMAND message to activate NAS security.	<--	RRC: *DLInformationTransfer* NAS: SECURITY MODE COMMAND	-	-
4b2	The UE transmits a NAS SECURITY MODE COMPLETE message and establishes the initial security configuration.	-->	RRC: *ULInformationTransfer* NAS: SECURITY MODE COMPLETE	-	-

-	EXCEPTION: If none of the branches 4a or 4b takes place then the SS shall apply mapped 5G security context, otherwise the SS shall apply the security context depending on the branch.	-	-	-	-
5	SS responds with TRACKING AREA UPDATE ACCEPT message.	<--	RRC: *DLInformationTransfer* NAS: TRACKING AREA UPDATE ACCEPT	-	-
6	Check: Does the UE transmit TRACKING AREA UPDATE COMPLETE?	-->	RRC: *ULInformationTransfer* NAS: TRACKING AREA UPDATE COMPLETE	-	P
-	EXCEPTION: Step 7a1 describes a step sequence depending on procedure parameters; the "lower case letter" identifies a step sequence that take place if a procedure parameter has a particular value	-	-	-	-
7a1	IF '*connected without release*' is not present THEN the SS transmits an *RRCConnectionRelease* message to release RRC connection and move the UE to RRC_IDLE.	<--	RRC: *RRCConnectionRelease*	-	-

4.9.7.2.3 Specific Message content

Default message contents as specified in TS 36.508 [2] with the following exceptions.

Table 4.9.7.2.3-1: TRACKING AREA UPDATE REQUEST (Step 3, Table 4.9.7.2.2-1)

Derivation Path: TS 36.508 [2], Table 4.7.2-27, condition NR.			
Information Element	**Value/remark**	**Comment**	**Condition**
EPS update type			
EPS update type Value	'000'B	TA updating	
"Active" flag	'0'B	No bearer establishment requested	
NAS key set identifier	the eKSI indicating the 5G NAS security context value assigned at the initial registration when the UE entered N1		
Old GUTI	GUTI, mapped from the 5G-GUTI assigned at the initial registration when the UE entered N1		
Last visited registered TAI	The TAI to which the NGC cell belonged to (the cell in which the UE was when in N1 before moving to S1).		
UE radio capability information update needed	'1'B	UE radio capability information update needed	
EPS bearer context status	Present, Content not checked	EBI corresponding to active PDU Sessions need to be set to 1	
Old GUTI type	"Native GUTI"		
UE status	"UE is in 5GMM-REGISTERED state"		
NOTE: The message shall be integrity protected using the 5GS security context available in the UE.			

Table 4.9.7.2.3-2: AUTHENTICATION REQUEST (Step 4a1, Table 4.9.7.2.2-1)

Derivation Path: TS 36.508 [2], Table 4.7.2-7.			
Information Element	**Value/remark**	**Comment**	**Condition**
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.	Value shall be different to the 5G NAS security context value if there is one assigned	

Table 4.9.7.2.3-3: SECURITY MODE COMMAND (Step 4a3, Table 4.9.7.2.2-1)

Derivation Path: TS 36.508 [2], Table 4.7.2-19.			
Information Element	**Value/remark**	**Comment**	**Condition**
NAS key set identifier$_{ASME}$			
NAS key set identifier	The 4G NAS key set identifier assigned in step 4a1.		

Table 4.9.7.2.3-4: SECURITY MODE COMMAND (Step 4b1, Table 4.9.7.2.2-1)

Derivation Path: TS 36.508 [2], Table 4.7.2-19.			
Information Element	**Value/remark**	**Comment**	**Condition**
NAS key set identifier$_{ASME}$			
NAS key set identifier	The 4G NAS key set identifier assigned in the latest Authentication procedure.		

Table 4.9.7.2.3-5: TRACKING AREA UPDATE ACCEPT (Step 5, Table 4.9.7.2.2-1)

Derivation Path: TS 36.508 [2], Table 4.7.2-24, condition NR.

4.9.8 Procedure for Registration Reject

4.9.8.1 Scope

The purpose of this procedure is to reject the registration request, with a specific cause value, which may allow fields to be cleared in the USIM.

4.9.8.2 Procedure description

4.9.8.2.1 Initial conditions

As specified in the TC which calls the procedure in its entirety or refers to parts of it.

4.9.8.2.2 Procedure sequence

Table 4.9.8.2.2-1: Procedure for Registration Reject

St	Procedure	Message Sequence	
		U – S	Message
1	The UE transmits an *RRCSetupRequest* message.	-->	NR RRC: *RRCSetupRequest*
2	The SS transmits an *RRCSetup* message.	<--	NR RRC: *RRCSetup*
3	The UE transmits an *RRCSetupComplete* message and a REGISTRATION REQUEST message.	-->	NR RRC: *RRCSetupComplete* 5GMM: REGISTRATION REQUEST
4	The SS transmits an AUTHENTICATION REQUEST message including EAP-Request/AKA'-Challenge or 5G AKA Challenge.	<--	5GMM: AUTHENTICATION REQUEST
5	The UE transmits an AUTHENTICATION RESPONSE message including EAP-Response/AKA'-Challenge or 5G AKA Response.	-->	5GMM: AUTHENTICATION RESPONSE
6	The SS transmits a SECURITY MODE COMMAND message including EAP-Success if EAP-AKA' used.	<--	5GMM: SECURITY MODE COMMAND
7	The UE transmits a SECURITY MODE COMPLETE message.	-->	5GMM: SECURITY MODE COMPLETE
8	The SS transmits a REGISTRATION REJECT message with the cause value set to *Reject Cause*.	<--	5GMM: REGISTRATION REJECT
9	The SS transmits an *RRCRelease* message	<--	RRC: *RRCRelease*
10	Test procedure for Switch off / Power off in State DEREGISTERED as specified in subclause 4.9.6.4		

4.9.8.2.3 Specific message contents

Table 4.9.8.2.3-1: REGISTRATION REJECT

Derivation Path: table 4.7.1-9			
Information Element	**Value/remark**	**Comment**	**Condition**
5GMM cause	Set according to *Reject Cause*	*Reject Cause* set to #6 Illegal ME as default	

4.9.9 Test procedure for UE for Tracking area updating / Inter-system change from S1 mode to N1 mode in 5GMM/EMM-IDLE mode

4.9.9.1 Scope

This procedure aims at verifying that the UE performs a Mobility and periodic registration update procedure when it performs inter-system change from S1 mode to N1 mode in 5GMM/EMM-IDLE.

NOTE: At present the procedure handles only the scenario with N26 interface supported on netwrok side and single registration on the UE side.

4.9.9.2 Procedure description

4.9.9.2.1 Initial conditions

System Simulator:

- 1 NGC Cell connected to 5GC, default parameters.

NOTE: Details about the E-UTRA cell from which the UE will move to the NGC cell are to be specified in the test.

User Equipment:

- The Test UICC shall be inserted. It shall provide relevant details on the EPC and 5GC.

All details required shall be explicitly specified in the TC which calls the procedure in its entirety or refers to parts of it.

4.9.9.2.2 Procedure sequence

Table 4.9.9.2.2-1: Test procedure sequence UE Tracking area updating / inter-system change from S1 mode to N1 mode in 5GMM/EMM-IDLE mode

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message/PDU/SDU		
-	EXCEPTION: Unless otherwise stated all the messages below are transmitted on the cell specified in the test case.	-	-	-	-
1	Check: Does the UE perform on the NGC Cell the mobility and periodic registration update procedure as described in Table 4.9.5.2.2-1, '*connected without release*'?	-	-	-	P

4.9.9.2.3 Specific Message content

Table 4.9.9.2.3-1: REGISTRATION REQUEST (step 1, Table 4.9.9.2.2-1; step 3, TS 38.508-1 [4] Table 4.9.5.2.2-1)

Derivation Path: TS 38.508-1 [4], Table 4.7.1-6.			
Information Element	**Value/remark**	**Comment**	**Condition**
5GS registration type	'00xxx010'	mobility registration updating x - not checked	
ngKSI			
NAS key set identifier	KSI_{ASME} that was created in the Preamble when the UE registered to EPC E-UTRA		
TSC	'1'B	mapped security context (for KSI_{ASME})	
5GS mobile identity	5G-GUTI mapped from the 4G-GUTI assigned in the Preamble		
Non-current native NAS key set identifier	5G NAS security context that was created in the Preamble when the UE registered to 5GC NR		
5GMM capability	'0000 0xx1'	S1 mode supported x - not checked	
Last visited registered TAI	The TAI of the E-UTRA Cell A, see 38.508 [7] Table 6.3.2.2-1		
S1 UE network capability			
All octets with the exception of octet 9, bit 6	Not checked		
N1 mode supported (N1mode) (octet 9, bit 6)	'1'	N1 mode supported	
PDU session status	the state of each PDU session mapped during the Inter-system change from S1 mode to N1 mode from the PDN connection(s) for which the EPS indicated that interworking to 5GS is supported identified by a PDU session identity		
UE status	"UE is in EMM-REGISTERED state"		

Additional GUTI	5G-GUTI assigned in the Preamble		
EPS NAS message container	TRACKING AREA UPDATE REQUEST message	See Table 4.9.9.2.3-2	

Table 4.9.9.2.3-2: TRACKING AREA UPDATE REQUEST (Table 4.9.9.2.3-1)

Derivation Path: TS 36.508 [2], Table 4.7.2-27.			
Information Element	**Value/remark**	**Comment**	**Condition**
EPS update type			
EPS update type Value	'000'B	TA updating	
"Active" flag	'1'B	Bearer Establishment requested	
NAS key set identifier	the eKSI for the current EPS security context		
Old GUTI	4G-GUTI assigned in the Preamble		
UE network capability	Not present		
Last visited registered TAI	Not present		
DRX parameter	Not present		
UE radio capability information update needed	Not present		
EPS bearer context status	Not present		
MS network capability	Not present		
Old location area identification	Not present		
TMSI status	Not present		
Mobile station classmark 2	Not present		
Mobile station classmark 3	Not present		
Supported Codecs	Not present		
Additional update type	Not present		
Voice domain preference and UE's usage setting	Not present		
Old GUTI type	Not present		
Device properties	Not present		
MS network feature support	Not present		
TMSI based NRI container	Not present		
T3324 value	Not present		
T3412 extended value	Not present		
Extended DRX parameters	Not present		
UE additional security capability	Not present		
UE status	Not present		
Additional information requested	Not present		
NOTE: The message shall be integrity protected using the current EPS security context.			

4.9.10 Test procedure to check that the UE is in RRC_CONNECTED state

4.9.10.1 Scope

This procedure aims at checking whether the UE is in the RRC_CONNECTED state.

4.9.10.2 Procedure description

4.9.10.2.1 Initial conditions

As specified in the TC which calls the procedure in its entirety or refers to parts of it.

4.9.10.2.2 Procedure

Table 4.9.10.2.2-1: Test procedure sequence

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message/PDU/SDU		
1	The SS sends *UECapabilityEnquiry* message to the UE.	<--	NR RRC: *UECapabilityEnquiry*	-	-
2	Check: Does the UE send a *UECapabilityInformation* message?	-->	NR RRC: *UECapabilityInformation*		P

4.9.10.2.3 Specific Message content

None.

5 Test environments for RF test

5.0 General

5.0.1 Single PDU configuration for RF testing

For RF and performance test case execution on 5G SA UE's defined in TS38.521-1 [14], TS 38.521-2 [15], TS 38.521-4 [17], IMS shall not be considered and UE's shall be able use RRC (IDLE, CONNECTED) preambles defined in TS38.508-1 Section 4.5. Before entering RRC_CONNECTED or RRC_IDLE state during initial conditions or test procedure, it is recommended that UE is pre-configured with only 1 PDU (non-IMS) along with appropriate settings to ensure UE operates and stays on NR cell.

5.1 Requirements of test equipment

5.1.1 Requirements for transmission and reception tests

5.1.1.1 Requirements common for conducted and OTA tests

No common RF test environment requirements are specified in addition to the common requirements described in clause 4.2.

5.1.1.2 Requirements for conducted tests

No common RF test environment requirements are specified in addition to the common requirements described in clause 4.2.

5.1.1.3 Requirements for OTA tests

Editor's Note:

The UE pre-configuration mentioned below to disable UL Tx diversity schemes shall be voided once a test methodology solution to minimize spectral flatness artefacts between TE and UE over all test points is defined.

The permitted test methods for transmission and reception test are DFF, DFF with simplification for centre of beam measurements, IFF and NFTF and are described in TR 38.810[24]. The minimum requirements for each test setup are described in the following clauses.

For conformance testing using the OTA test environment, the UE under test shall be pre-configured with UL Tx diversity schemes disabled.

5.1.1.3.1 DFF and DFF with simplification for centre of beam measurements

- Far-field measurement system in an anechoic chamber.
  - The minimum far-field distance R for a traditional far field anechoic chamber can be calculated based on the following equation: $R > \frac{2D^2}{\lambda}$, where D is the diameter of the smallest sphere that encloses the radiating parts of the DUT.
- A positioning system such that the angle between the dual-polarized measurement antenna and the DUT has at least two axes of freedom and maintains a polarization reference.
- For DFF(without simplification), a positioning system such that the angle between the link antenna and the DUT has at least two axes of freedom and maintains a polarization reference; this positioning system for the link antenna is in addition to the positioning system for the measurement antenna and provides for an angular relationship independently controllable from the measurement antenna.

- For setups intended for measurements of UE RF characteristics in non-standalone (NSA) mode with 1 UL configuration, an LTE link antenna is used to provide the LTE link to the DUT. The LTE link antenna provides a stable LTE signal without precise path loss or polarization control.
- For setups intended for measurements in NR CA mode with FR1 and FR2 inter-band NR CA, test setup provides NR FR1 link to the DUT. The NR FR1 link has a stable and noise-free signal without precise path loss or polarization control.
- Maximum permitted test system uncertainty is specified in Annex F in 38.521-2[15].

5.1.1.3.2 IFF

- Indirect Far field of Compact Antenna Test Range(CATR) with quiet zone diameter at least D.
- The CATR system does not require a measurement distance of $R > \frac{2D^2}{\lambda}$ to achieve a plane wave as in a standard far field range.
- A positioning system such that the angle between the dual-polarized measurement antenna and the DUT has at least two axes of freedom and maintains a polarization reference.
- For setups intended for measurements of UE RF characteristics in non-standalone (NSA) mode with 1UL configuration, an LTE link antenna is used to provide the LTE link to the DUT. The LTE link antenna provides a stable LTE signal without precise path loss or polarization control.
- For setups intended for measurements in NR CA mode with FR1 and FR2 inter-band NR CA, test setup provides NR FR1 link to the DUT. The NR FR1 link has a stable and noise-free signal without precise path loss or polarization control.
- Maximum permitted test system uncertainty is specified in Annex F in 38.521-2[15].

5.1.1.3.3 NFTF

- Radiated Near Field UE beam pattern are measured and based on the NFTF mathematical transform, the final metric such as EIRP is the same as the metric for the DFF setup
- A positioning system such as the angle between the dual-polarized measurement/link antenna and the DUT has at least two axes of freedom and maintains a polarization reference
- For setups intended for measurements of UE RF characteristics in non-standalone (NSA) mode with 1UL configuration, an LTE link antenna is used to provide the LTE link to the DUT. The LTE link antenna provides a stable LTE signal without precise path loss or polarization control.
- For setups intended for measurements in NR CA mode with FR1 and FR2 inter-band NR CA, test setup provides NR FR1 link to the DUT. The NR FR1 link has a stable and noise-free signal without precise path loss or polarization control.
- Maximum permitted test system uncertainty is specified in Annex F in 38.521-2[15].

5.1.2 Requirements for performance tests

5.1.2.1 Requirements common for conducted and OTA tests

Editor's Note: This subclause is intended to describe the test equipment requirements which are specific to performance tests and common for conducted and OTA tests.

5.1.2.2 Requirements for conducted test method

Editor's Note: This subclause is intended to describe the test equipment requirements which are specific to conducted test environment for performance tests.

5.1.2.3 Requirements for OTA test method

Editor's Note: This subclause is intended to describe the test equipment requirements which are specific to OTA test environment for performance tests.

The UE pre-configuration mentioned below to disable UL Tx diversity schemes shall be voided once a test methodology solution to minimize spectral flatness artefacts between TE and UE over all test points is defined.

- For conformance testing using the OTA test environment, the UE under test shall be pre-configured with UL Tx diversity schemes disabled.

5.2 Reference test conditions

5.2.1 Signal levels

5.2.1.1 Signal Levels for conducted testing

For NR FR1 cell, the downlink power settings are specified in TS 38.521-1[14] and TS 38.521-3[16].

The uncertainty value is specified in TS 38.521-1 [14] Annex F or in TS 38.521-2 [15] Annex F.

5.2.1.2 Signal Levels for OTA testing

5.2.1.2.1 Downlink Signal Levels

For E-UTRA cell in EN-DC with FR2 NR, the downlink power settings are specified in clause 4.7 of TS 38.521-3[16].

For FR2 NR cell, the downlink power settings are specified in Annex C.0 of TS 38.521-2[15] and Annex C.0 of TS 38.521-3[16].

5.3 Void

Editor‘s Note: Reserved for future use.

5.4 Default NG-RAN RRC message and information elements contents

5.4.1 Radio resource control information elements

As defined in clause 4.6.3 with the following exceptions:

For Tx test cases in which Power Class 3 UEs verifying Power Class 3 requirements, refer to Table 5.4.1-1; For Tx test cases in which Power Class 2 UEs verifying Power Class 2 requirements, refer to Table 5.4.1-2; And for Tx test cases in which Power Class 2 UEs verifying Power Class 3 requirements, refer to Table 5.4.1-3.

Table 5.4.1-1: *P-Max-PC3*

Derivation Path: Table 4.6.3-89 with condition FR1_RF_PC3

Table 5.4.1-2: *P-Max-PC2*

Derivation Path: Table 4.6.3-89 with condition FR1_RF_PC2

Table 5.4.1-3: *P-Max-PC2_Testing_PC3*

Derivation Path: Table 4.6.3-89 with condition FR1_RF_PC2_Testing_PC3

5.4.2 Radio resource control information elements for Demodulation Performance and CSI reporting tests

As defined in clause 4.6.3 with the following exceptions:

Common Serving Parameters

ServingCellConfigCommon

Table 5.4.2-1: ServingCellConfigCommon

Derivation Path: Table 4.6.3-168			
Information Element	**Value/remark**	**Comment**	**Condition**
ServingCellConfigCommon ::= SEQUENCE {			
physCellId	PhysCellId		
downlinkConfigCommon	DownlinkConfigCommon		
ssb-PositionsInBurst CHOICE {			
shortBitmap	1000		
}			
ssb-periodicityServingCell	ms20		
dmrs-TypeA-Position	pos2		
subcarrierSpacing	SubcarrierSpacing according to test case id		
tdd-UL-DL-ConfigurationCommon	TDD-UL-DL-ConfigCommon		
ss-PBCH-BlockPower	0		
}			

TDD-UL-DL-Config

Table 5.4.2-2: TDD-UL-DL-Config

Derivation Path: Table 4.6.3-192			
Information Element	**Value/remark**	**Comment**	**Condition**
TDD-UL-DL-ConfigCommon ::= SEQUENCE {			
referenceSubcarrierSpacing	SubcarrierSpacing		
pattern1 SEQUENCE {			
dl-UL-TransmissionPeriodicity	ms5		FR1.15-1, FR1.30-1 FR1.30-1A
	ms2p5		FR1.30-2, FR1.30-3
nrofDownlinkSlots	7		FR1.30-1
	3		FR1.15-1 FR1.30-1A FR1.30-2 FR1.30-3
nrofDownlinkSymbols	6		FR1.30-1 FR1.30-1A
	10		FR1.15-1 FR1.30-2 FR1.30-3
nrofUplinkSlots	2		FR1.30-1 FR1.30-1A
	1		FR1.15-1 FR1.30-2 FR1.30-3
nrofUplinkSymbols	4		FR1.30-1 FR1.30-1A
	2		FR1.15-1 FR1.30-2 FR1.30-3
}			
pattern2	Not present		
}			

Condition	Explanation
FR1.15-1	FR1 is used under the test. SCS is set to 15kHz. Ref Annex A.1.2 of TS 38.521-4
FR1.30-1	FR1 is used under the test. SCS is set to 30kHz. Ref Annex A.1.2 of TS 38.521-4
FR1.30-1A	FR1 is used under the test. SCS is set to 30kHz. Ref Annex A.1.2 of TS 38.521-4
FR1.30-2	FR1 is used under the test. SCS is set to 30kHz. Ref Annex A.1.2 of TS 38.521-4
FR1.30-3	FR1 is used under the test. SCS is set to 30kHz. Ref Annex A.1.2 of TS 38.521-4

PDCCH Configuration

PDCCH-config

Table 5.4.2-3: PDCCH-ControlResourceSet

Derivation Path: Table 4.6.3-28			
Information Element	**Value/remark**	**Comment**	**Condition**
ControlResourceSet ::= SEQUENCE {			
controlResourceSetId	ControlResourceSetId		
frequencyDomainResources	Table 5.2-2 for tested channel bandwidth and subcarrier spacing		
Duration	2	SearchSpace duration of 2 symbols	
cce-REG-MappingType CHOICE {			
nonInterleaved	Null		
}			
precoderGranularity	sameAsREG-bundle		
tci-StatesPDCCH-ToAddList {			
	0	TCI State #0	
	1	TCI State #1	
}			
}			

Table 5.4.2-4: PDCCH *Search Space*

Derivation Path: Table 4.6.3-162			
Information Element	**Value/remark**	**Comment**	**Condition**
SearchSpace ::= SEQUENCE {			
monitoringSlotPeriodicityAndOffset CHOICE {			
sl1	NULL		
}			
monitoringSymbolsWithinSlot	11000000000000	Symbols 0 and 1	
nrofCandidates SEQUENCE {			
aggregationLevel1	n0		
aggregationLevel2	n0		
aggregationLevel4	n0		
aggregationLevel8	n1	AL8	
aggregationLevel16	n0		
}			
searchSpaceType CHOICE {			
common SEQUENCE {			
ue-Specific SEQUENCE {			
dci-Formats	formats0-1-And-1-1	DCI Format 1_1	
}			
}			
}			

CSI-RS for Tracking

CSI-RS-ResourceMapping

Table 5.4.2-5: CSI-RS-ResourceMapping for TRS

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	0001	k_0=0 for CSI-RS resource 1,2,3,4	TRS
}			
firstOFDMSymbolInTimeDomain	6	l_0 = 6 for CSI-RS resource 1 and 3	TRS
	10	l_0 = 10 for CSI-RS resource 2 and 4	TRS
nrofPorts	p1	1 for CSI-RS resource 1,2,3,4	TRS
Cdm-Type	noCDM		TRS
Density CHOICE{			
Three	Null		TRS
}			
freqBand	CSI-FrequencyOccupation		TRS
}			

Table 5.4.2-6: CSI-ResourcePeriodicityAndOffset for TRS

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
slots20	10	Periodicity 20 slots and offset 10 for CSI-RS resource 1 and 2	
slots20	11	Periodicity 20 slots and offset 11 for CSI-RS resource 3 and 4	
}			

Table 5.4.2-7: CSI-FrequencyOccupation for TRS

Derivation Path: Table 4.6.3-33			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			
nrofRBs	52	BW 10 MHz SCS 15kHz	TRS
	51	BW 20 MHz SCS 30kHz	TRS
	106	BW 40 MHz SCS 30KHz	TRS
}			

NZP CSI-RS for CSI Acquisition

NZP-CSI-RS-Resource

Table 5.4.2-8: NZP-CSI-RS-Resource

Derivation Path: Table 4.6.3-85			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			
nzp-CSI-RS-ResourceId	NZP-CSI-RS-ResourceId		
resourceMapping	CSI-RS-ResourceMapping		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset		
qcl-InfoPeriodicCSI-RS	TCI-State #1		
}			

CSI-RS-ResourceMapping

Table 5.4.2-9: CSI-RS-ResourceMapping

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	0001	K0 = 0	
}			
nrofPorts	P2	2Tx test cases	
	P4	4Tx test cases	
firstOFDMSymbolInTimeDomain	12	I0 = 12	
cdm-Type	fd-CDM2		
density CHOICE {			
one	NULL		
}			
freqBand	CSI-FrequencyOccupation		
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2-10: CSI-ResourcePeriodicityAndOffset

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
Slots20	0		SCS 15kHz
Slots40	0		SCS 30kHz
}			

CSI-FrequencyOccupation

Table 5.4.2-11: CSI-FrequencyOccupation for CSI Acquisition

Derivation Path: Table 4.6.3-33			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			
nrofRBs	52	BW 10 MHz SCS 15kHz	
	51	BW 20 MHz SCS 30kHz	
	106	BW 40 MHz SCS 30KHz	
}			

ZP CSI-RS for CSI Acquisition

ZP-CSI-RS-Resource

Table 5.4.2-12: ZP-CSI-RS-Resource

Derivation Path: Table 4.6.3-204			
Information Element	**Value/remark**	**Comment**	**Condition**
ZP-CSI-RS-Resource ::= SEQUENCE {			
zp-CSI-RS-ResourceId	ZP-CSI-RS-ResourceId		
resourceMapping	CSI-RS-ResourceMapping		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset		
qcl-InfoPeriodicCSI-RS	TCI-State #1		
}			

CSI-RS-ResourceMapping

Table 5.4.2-13: CSI-RS-ResourceMapping

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	0100	K0 = 4	
}			
nrofPorts	P4		
firstOFDMSymbolInTimeDomain	12	l0 = 12	
cdm-Type	fd-CDM2		
density CHOICE {			
one	NULL		
}			
freqBand	CSI-FrequencyOccupation		
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2-14: CSI-ResourcePeriodicityAndOffset

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
Slots20	0		SCS 15kHz
Slots40	0		SCS 30kHz
}			

CSI-FrequencyOccupation

Table 5.4.2-15: CSI-FrequencyOccupation for CSI Acquisition

Derivation Path: Table 4.6.3-33			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			
nrofRBs	52	BW 10 MHz SCS 15kHz	
	51	BW 20 MHz SCS 30kHz	
	106	BW 40 MHz SCS 30KHz	
}			

PDSCH DMRS Configuration

DMRS-DownlinkConfig

Table 5.4.2-16: DMRS-DownlinkConfig

Derivation Path: Table 4.6.3-50			
Information Element	**Value/remark**	**Comment**	**Condition**
DMRS-DownlinkConfig ::= SEQUENCE {			
dmrs-Type	Type 1		
dmrs-AdditionalPosition	pos1		
maxLength	len1		
phaseTrackingRS	Not present		
}			

PDSCH Configuration

PDSCH-ServingCellConfig

Table 5.4.2-17: PDSCH-ServingCellConfig

Derivation Path: Table 4.6.3-102			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-ServingCellConfig ::= SEQUENCE {			
codeBlockGroupTransmission	Not present		
xOverhead	Not present		
nrofHARQ-ProcessesForPDSCH	Set according to the test id	Typically n4 for FDD, n8 for TDD	
pucch-Cell	Not present		
}			

PDSCH-Config

Table 5.4.2-18: *PDSCH-Config*

Derivation Path: Table 4.6.3-100			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-Config ::= SEQUENCE {			
dataScramblingIdentityPDSCH	0		
dmrs-DownlinkForPDSCH-MappingTypeA CHOICE {			
Setup	DMRS-DownlinkConfig		
}			
tci-StatesToAddModList SEQUENCE(SIZE (1.. maxNrofTCI-States)) OF {			
TCI-State[1]	TCI-StateId 0		
qcl-type1 {	QCL Type is Type1		
Cell	0	Cell ID	
Bwp-id	0	BWP ID	
referenceSignal	Ssb : 0	SSB # 0	
Qcl-Type	Type C		
}			
TCI-State[2]	TCI-StateId 1		
qcl-type1 {	QCL Type is Type1		
Cell	0	Cell ID	
Bwp-id	0	BWP ID	
referenceSignal	csi-rs : 0	SSB # 0	
Qcl-Type	Type A		
}			
}			
resourceAllocation	resourceAllocationType0		
prb-BundlingType CHOICE {			
staticBundling SEQUENCE {			
bundleSize	n2	PRB Bundling size of 2	
}			
}			
vrb-ToPRB-Interleaver	NotPresent		
Pdsch-AggregationFactor	NotPresent		
}			

PDSCH-TimeDomainResourceAllocationList

Table 5.4.2-19: PDSCH-TimeDomainResourceAllocationList

Derivation Path: Table 4.6.3-103			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-TimeDomainResourceAllocationList::= SEQUENCE(SIZE(1..maxNrofDL-Allocations)) OF {	1 entry		
PDSCH-TimeDomainResourceAllocation[1] SEQUENCE {			
K0	0		
mappingType	typeA		
startSymbolAndLength	44	Start symbol(S)=2, Length(L)=4	For Slot i, if mod(i, 10) = 7 for i from {0,…,39}
	53	Start symbol(S)=2, Length(L)=12	For Slot i, if mod(i, 10) = {0,1,2,3,4,5,}) for i from {1,…,39}
}			
}			

CRS for Rate Matching

RateMatchPatternLTE-CRS

Table 5.4.2-20: RateMatchPatternLTE-CRS

Derivation Path: Table 4.6.3-138			
Information Element	**Value/remark**	**Comment**	**Condition**
RateMatchPatternLTE-CRS ::= SEQUENCE {			TC 5.2.2.1.4-2 and TC 5.2.3.1.4-2 of TS 38.521-4
carrierFreqDL	LTE EARFCN		
carrierBandwidthDL	n50	10MHz	
nrofCRS-Ports	n4		
v-Shift	n0		
}			

5.5 Common procedures for RF testing

5.5.1 Procedure to configure SCC(s) for NR RF CA testing

5.5.1.1 Scope

The purpose of this procedure is to establish one or more SCC(s) for NR CA testing.

5.5.1.2 Procedure description

5.5.1.2.1 Initial conditions

UE is operating in NR RRC_CONNECTED state on NR Cell 1 without any SCell configured.

System Simulator:

- SS configures the number of SCells used by the test case using NR parameters for NR Cell 2 for SCC1, NR Cell 3 for SCC2, NR Cell 4 for SCC3 etc. as specified in Table 4.4.2-2.
- System information combination NR-2 as defined in clause 4.4.3.1.2 is used in all NR cells.

5.5.1.2.2 Procedure sequence

Table 5.5.1.2.2-1: Procedure to configure SCC

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message/PDU/SDU		
1	The SS transmits an RRCReconfiguration message including sCellToAddModList with SCell addition for the SCC(s) under test.	<--	NR RRC: RRCReconfiguration	-	-
2	The UE transmits an RRCReconfigurationComplete message.	-->	NR RRC: RRCReconfigurationComplete	-	-

5.5.1.2.3 Specific message contents

Table 5.5.1.2.3-1: CellGroupConfig (Table 5.5.1.2.2-1)

Derivation Path: 38.508-1 [4] Table 4.6.3-13 with condition [FFS]			
Information Element	**Value/remark**	**Comment**	**Condition**
CellGroupConfig ::= SEQUENCE {			
rlc-BearerToAddModList	Not present		
sCellToAddModList SEQUENCE (SIZE (1..maxNrofSCells)) OF SEQUENCE {	n entries (m=1 to n)	n is equal to the number of SCCs to be added	
sCellIndex[m]	m		
sCellConfigCommon[m]	ServingCellConfigCommon(m)		
sCellConfigDedicated[m]	ServingCellConfig		
}			
}			

5.5.2 Procedure to configure SCC(s) for EN-DC RF CA testing

5.5.2.1 Scope

The purpose of this procedure is to establish one or more SCC(s) for EN-DC CA testing.

5.5.2.2 Procedure description

5.5.2.2.1 Initial conditions

FFS

5.5.2.2.2 Procedure sequence

FFS

5.5.2.2.3 Specific message contents

FFS

6 Test environments for Signalling test

6.1 Requirements of test equipment

6.1.1 Requirements common for conducted and OTA tests

The requirements of test equipment specified in this subclause apply to Signalling test cases defined in TS 38.523-1 [12], 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 Technologies NR and E-UTRA, The number of cells to be simulated simultaneously by the test equipment shall not exceed the resources specified in 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 of cells (NR)		Max. number of cells (E-UTRA)
	Conducted	OTA	
NR single-mode networks (FDD or TDD)	4 cells	FFS	n/a
NR dual-mode networks (FDD and TDD)	4 cells	FFS	n/a
NR networks involving Carrier Aggregation	4 cells	FFS	n/a
NR dual connectivity (NR-DC)	4 cells	FFS	n/a
NR dual connectivity (EN-DC)	4 cells	FFS	2 cells
NR dual connectivity (EN-DC) involving Carrier Aggregation	4 cells	FFS	2 cells
Mixed E-UTRA / NR networks	4 cells	FFS	2 cells
Note 1: No differentiation between cell configuration types (as defined in clause 6.3.1) here, because these types are only relevant to specific test cases and their TTCN-3 implementation. Note 2: Only network scenarios specified in clauses 4.4.1 and 6.3.2.1 have been covered. Note 3: In case of Carrier Aggregation, each cell can act as a SpCell, an SCell, or a standalone cell (not used as a CA component carrier). Note 4: In order to support test case requirements for conducted and OTA test methods, the number of active cells at any given time should be minimised in order to ensure maximum re use of SS Tx/Rx resources.			

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.

Due to limited power level range for FR2 OTA test methods, when defining test cases requirements, care shall be taken to ensure that the number of active cells is minimised as this has an impact to have distinguishable power level difference. Cells that are used in initial parts of test cases and are no longer required for the rest of the procedure shall be clearly defined as Non-suitable "Off" cell to facilitate re use of SS Tx/Rx resources

6.1.2 Requirements for conducted test method

Editor's Note: This subclause is intended to describe the test equipment requirements which are specific to conducted test environment for signalling tests.

6.1.3 Requirements for OTA test method

6.1.3.1 General

Editor's Note:

- The UE pre-configuration mentioned below to disable UL Tx diversity schemes shall be voided once a test methodology solution to minimize spectral flatness artefacts between TE and UE over all test points is defined.

The DFF or IFF based OTA test methodologies, defined in Annex B.1 should be used for Signalling test.

Note: For single cell test cases, usage of NF test methodology is not precluded.

The section 6.1.3.2 describes a sample OTA measurement test setup and section 6.1.3.3 describes approaches to select a UE orientation.

For conformance testing using the OTA test environment, the UE under test shall be pre-configured with UL Tx diversity schemes disabled.and for calibration.

6.1.3.2 Sample OTA Measurement Test Setup

Please refer to Figure 6.1.3.2-1 for a sample OTA measurement test setup.

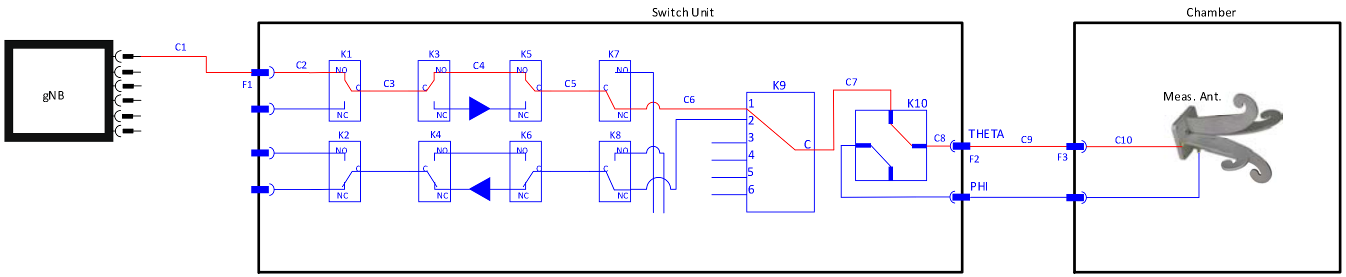

Figure 6.1.3.2-1: Sample OTA measurement setup

NOTE: Figure 6.1.3.2-1 is for illustrative purposes only.

For 5G NR signalling test cases, depending on the dynamic range of measurements the system complexity can be reduced. In the switch unit, as shown in Figure 6.1.3.2-1, the switches K7, K8, K9, K10 can be removed. The amplifier (PA/LNA) is optional. For the "single cell" and "multiple cell" test cases, the gNB emulator can be directly connected to the feed horn.

6.1.3.3 Procedure for selecting UE Orientation and for calibration

Set calibrated power level at the centre of the QZ for each polarization individually [FFS].

Before starting the test, the UE orientation with which the test system can provide a wide enough dynamic range to perform the test scenarios needs to be identified in order to obtain sufficient link budget.

The UE orientation can be determined by either of the approaches below:

- Approach 1: UE vendor declares the direction in which the measurement has to be made. In this case, the declaration confirms that the Rx Beam peak conditions in FR2 specified in TS 38.133 [13] Annex B are met
- Approach 2: Perform an Rx-beam peak search

For Approach 2 an Rx beam peak search needs to be performed as per the procedure in TS 38.521-2 [15] Annex K, which finds the direction in which Rx Beam peak conditions in FR2 specified in TS 38.133 [13] Annex B are met.

RSRP measurements can be configured by SS in X2NR meas configurations using FFS preambles in NSA (Ex - RRC_Connected with connectivity parameter E-UTRA with MCG Only bearer established and meas config enabled for event B1 (Ex-per TC 8.2.3.1.1 of TS 38.523-1)) and FFS preambles in SA modes.

When signal level calibrated with a reference antenna (only applicable to single-cell test cases without thresholds):

- The RSRP reported from the DUT is within [±FFSdB] of expected RSRP mentioned in Table 6.2.2.2-1.

When signal level calibrated with the RSRP-based calibration:

- Before starting the tests, Rx-beam peak directions need to be determined using Approach 1 or Approach 2 above. Rx beam peak direction may depend on the operating band under test. If Rx-beam peak directions for all the operating bands required for test scenarios are identical, three different levels in Table 6.2.2.2-2 can be used in the test scenarios.
- Rx-beam peak directions are decided to be ‘identical’, if the detected beam peak positions are direct neighbours on the measurement grid.

If Rx-beam peak directions are identical:

1. Position the UE so that the Rx beam peak direction is aligned towards the measurement antenna.
2. Make the DUT report SS-RSRP at each frequency used in the test scenarios, while setting the downlink SS power at the centre of the quiet zone to -82dBm/SCS. Here, the SS-RSRP reported levels are denoted as $P_{RSRP}(f)$.
3. Calculate ‘Δ’ for each carrier frequency used in the test case, using the equation: $\Delta(f) = P_{RSRP}(f) + 82$.

6.1.3.4 Handling of Thresholds

Where a threshold value is specified in the test case (value identified as $TH_{test\ case}$) it is signalled to the UE with a value TH_{sig} according to table 6.1.3.4-1.

Table 6.1.3.4-1: Handling of signalled threshold values

Type of Threshold	Signalled value	Comment
Absolute	$TH_{sig}(f) = TH_{test\ case} + \Delta(f)$	$\Delta(f)$ value according to the frequency of the cell being compared to the threshold
Relative, intra-frequency	$TH_{sig}(f) = TH_{test\ case}$	
Relative, inter-frequency	[FFS]	[FFS]

6.1.4 Requirements for timer tolerances

The timer tolerances specified for the test environment in this subclause apply to all Signalling test cases defined in TS 38.523-1 [12] 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%.

6.2 Reference test conditions

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

In general for signalling test cases the power allocation for downlink physical channels and signals is specified in relation to a reference cell power.

Unless specifically specified otherwise in a signalling test case prose, all cells use only one beam.

In case of only one beam per cell this reference cell power is the EPRE of the secondary synchronization signal (SSS) and referred to as "SS/PBCH SSS EPRE".

In case of more than one beam per cell the power levels of the different SS/PBCH blocks may be different what makes it difficult to specify the EPREs of other physical channels and signals relative to the EPRE of any SSS. Therefore for multiple beams test cases the power levels are specified relative to the reference cell power.

For single beam per cell test cases the power allocation of downlink physical channels for signalling test cases is specified in table 6.2.1.2-1, for multiple beams per cell test cases the power allocation is specified in table 6.2.1.2-2.

Table 6.2.1.2-1: Power allocation for OFDM symbols and reference signals for signalling test cases (single beam)

Parameter	Unit	Value	Comment
SSS transmit power	dBm/SCS	Test specific (Note 1)	referred to as "SS/PBCH SSS EPRE"
EPRE ratio of PSS to SSS	dB	0	
EPRE ratio of PBCH DMRS to SSS	dB	0	
EPRE ratio of PBCH to PBCH DMRS	dB	0	
EPRE ratio of PDCCH DMRS to SSS	dB	0	
EPRE ratio of PDCCH to PDCCH DMRS	dB	0	
EPRE ratio of PDSCH DMRS to SSS	dB	0	
EPRE ratio of PDSCH to PDSCH DMRS	dB	-3	To reduce interference from PDSCH of intra-frequency neighbour cells.
EPRE ratio of PTRS to PDSCH	dB	3	i.e. the EPRE ratio of PTRS to SSS is 0dB
Note 1: Power level chosen to align with cell power level as specified in clause 6.2.2.			

Table 6.2.1.2-2: Power allocation for OFDM symbols and reference signals for signalling test cases (multiple beam)

Parameter	Unit	Value	Comment
Reference cell power $EPRE_{CellRef}$	dBm/SCS	Test specific (Note 1)	
EPRE ratio of $SSS_{SSB\#N}$ to $EPRE_{CellRef}$	dB	Test specific (Note 2)	power of SSS within SSB with index N
EPRE ratio of $PSS_{SSB\#N}$ to $SSS_{SSB\#N}$	dB	0	power of PSS within SSB with index N
EPRE ratio of PBCH $DMRS_{SSB\#N}$ to $SSS_{SSB\#N}$	dB	0	power of PBCH DMRS within SSB with index N
EPRE ratio of $PBCH_{SSB\#N}$ to PBCH $DMRS_{SSB\#N}$	dB	0	power of PBCH within SSB with index N
EPRE ratio of PDCCH DMRS to $EPRE_{CellRef}$	dB	0	(Note 3)
EPRE ratio of PDCCH to PDCCH DMRS	dB	0	
EPRE ratio of PDSCH DMRS to $EPRE_{CellRef}$	dB	0	(Note 3)
EPRE ratio of PDSCH to PDSCH DMRS	dB	-3	To reduce interference from PDSCH of intra-frequency neighbour cells.
EPRE ratio of PTRS to PDSCH	dB	3	i.e. the EPRE ratio of PTRS to $EPRE_{CellRef}$ is 0dB
EPRE ratio of $CSI\text{-}RS_N$ to $EPRE_{CellRef}$	dB	Test specific (Note 2)	power of CSI-RS with index N; CSI-RS configured if required by a test case in TS 38.523-1 [12]
Note 1: Power level chosen to align with cell power level as specified in clause 6.2.2. Note 2: Test cases may specify “OFF” in which case the attenuation shall result in an absolute EPRE value being equal or less than the power level specified for a non-suitable "Off" cell in clause 6.2.2. Note 3: In general the UE cannot distinguish from which beam DL data is sent ⇒ PDCCH and PDSCH are considered as cell specific rather than beam specific.			

6.2.2 Signal levels

6.2.2.1 Signal Levels for conducted testing

For NR FR1 cell, the downlink power settings in Table 6.2.2.1-1 and 6.2.2.1-2 are used unless otherwise specified in a test case.

Table 6.2.2.1-1: Default Downlink power levels for FR1 NR cell (5MHz – 25MHz)

	SCS(kHz)	Unit	Channel bandwidth				
			5MHz	10MHz	15MHz	20MHz	25MHz
Channel BW Power	15	dBm	-63	-60	-58	-57	-56
	30	dBm	-67	-63	-61	-60	-59
	60	dBm	N/A	-67	-65	-63	-62
SS/PBCH SSS EPRE	All	dBm/SCS (Note 3)	-88	-88	-88	-88	-88

Note 1: The channel bandwidth powers are informative, based on -88 dBm/ SCS(SubCarrier Spacing) SS/PBCH SSS EPRE, 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.
Note 3: DL level is applied for any of the Subcarrier Spacing configuration (μ) with the same power spectrum density of -88 dBm/SCS(SubCarrier Spacing).

Table 6.2.2.1-2: Default Downlink power levels for FR1 NR cell (30MHz – 100MHz)

	SCS(kHz)	Unit	Channel bandwidth						
			30MHz	40MHz	50MHz	60MHz	80MHz	90MHz	100MHz
Channel BW Power	15	dBm	-55	-54	-53	N/A	N/A	N/A	N/A
	30	dBm	-58	-57	-56	-55	-54	-53	-53
	60	dBm	-61	-60	-59	-58	-57	-56	-56
SS/PBCH SSS EPRE	All	dBm/SCS (Note 3)	-88	-88	-88	-88	-88	-88	-88

Note 1: The channel bandwidth powers are informative, based on -88dBm/SCS(SubCarrier Spacing) SS/PBCH SSS EPRE, 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.
Note 3: DL level is applied for any of the Subcarrier Spacing configuration (μ) with a power spectrum density of -88dBm/SCS(SubCarrier Spacing).

The default settings of suitable cells and non-suitable cells for NR are specified in table 6.2.2.1-3.

Cells which are expected to be undetectable for UE under test shall fulfil the condition of non-suitable "Off" cell in table 6.2.2.1-3.

Table 6.2.2.1-3: Default settings of suitable / non-suitable cells

Power level type	NR (Note 1-3)		E-UTRAN
	Unit	Power level	
Serving cell	dBm/SCS	-88	Table 6.2.2.1-1 [2]
Suitable neighbour intra-frequency cell	dBm/SCS	-94	Table 6.2.2.1-1 [2]
Suitable neighbour inter-frequency cell	dBm/SCS	-99	Table 6.2.2.1-1 [2]
Non-suitable cell	dBm/SCS	-115	Table 6.2.2.1-1 [2]
Non-suitable "Off" cell	dBm/SCS	≤ -145	Table 6.2.2.1-1 [2]
Note 1: The power level is specified in terms of SS/PBCH SSS EPRE instead of RSRP as RSRP is a measured value and cannot be directly controlled by the Full RE allocation with no boost or deboost is assumed. SS. Note 2: The power level is specified at each UE Rx antenna. Note 3: DL level is applied for any of the Subcarrier Spacing configuration (μ) with the same power spectrum density of -88dBm/SCS. Note 4: The default settings assume that the UE is making relative measurements of neighbour cells compared to the serving cell.			

The default signal level uncertainty is specified in table 6.2.2.1-4 for any level specified, unless a tighter uncertainty is specified by a test case in TS 38.523-1 [12].

Table 6.2.2.1-4: 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.		

SS/PBCH SSS 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 38.133 [13], taking into account the SS default absolute signal level uncertainty.

NOTE: (The power spectral density of a white noise source; specified in TS 38.133 [13]) can be assumed to be -Infinity [dBm/SCS] for all intra and inter frequency test cases. It is applicable to both idle mode and connected mode in TS 38.523-1 [12], unless otherwise specified in specific test cases.

6.2.2.1.1 Measurement accuracy and side conditions

RSRP measurement accuracy in RRC_CONNECTED state is specified in table 6.2.2.1.1-1, derived from TS 38.133 [13] clauses 10.1.2 and 10.1.4 selecting Normal condition with maximum Io less than -50 dBm/$BW_{Channel}$. The ranges and side conditions in TS 38.133 [13] clauses 10.1.2 and 10.1.4 apply. This measurement accuracy is applicable to connected mode test cases specified in TS 38.523-1 [12]. For the serving cell and suitable neighbour cells, the following side conditions shall be satisfied including the effect of signal level uncertainty.

- RSRP ≥ [-124] dBm
- RSRP Ês/Iot >[-6] dB
- Io : 117.5 dBm/SCS for 15kHz SCS and -114.5 dBm/SCS for 15kHz SCS dBm/SCS … -50 dBm/BWChannel (for absolute and relative RSRP measurement accuracy)

RSRP measurement accuracy in RRC_CONNECTED state is specified in table 6.2.2.1.1-1, derived from TS 38.133 [13] clauses 10.1.2 and 10.1.4 selecting Normal condition.

Table 6.2.2.1.1-1: RSRP measurement accuracy in RRC_CONNECTED state

	Absolute RSRP measurement accuracy	Relative RSRP measurement accuracy
Intra-frequency	+/-8 dB	+/-3 dB
Inter-frequency	+/-8 dB	+/-4.5 dB

6.2.2.2 Signal Levels for OTA testing

The power levels defined in this section are based on the following assumptions:

- For EN-DC, no more than one E-UTRA cell is configured in the test case
- AWGN is not configured in the test case

For NR FR2 cell, the downlink power settings in Table 6.2.2.2-1 are used unless otherwise specified in a test case.

Table 6.2.2.2-1: Default Downlink power levels for FR2 NR cell (50MHz - 400MHz)

	SCS(kHz)	Unit	Channel bandwidth			
			50MHz	100MHz	200MHz	400MHz
Channel BW Power	60	dBm	FFS	FFS	FFS	FFS
	120	dBm	-57	-57	-57	-57
SS/PBCH SSS EPRE	All	dBm/SCS	-82	-82	-82	-82
Note 1: The channel bandwidth powers are informative, based on -82 dBm/SCS SS/PBCH SSS EPRE, then scaled according to the number of RBs and rounded to the nearest integer dBm value. A maximumRE allocation of 24 simultaneously transmitted RBs with no boost or deboost is assumed. Note 2: The power level is specified at the centre of quiet zone.						

The default settings of suitable cells and non-suitable cells for NR are specified in table 6.2.2.2-2.

Cells which are expected to be undetectable for UE under test shall fulfil the condition of non-suitable "Off" cell in table 6.2.2.2-2.

Table 6.2.2.2-2: Default settings of suitable / non-suitable FR2 NR cells

Power level type	NR (Note 1-3)	
	Unit	Power level
Serving cell	dBm/SCS	-82
Suitable neighbour intra-frequency cell	dBm/SCS	-91
Suitable neighbour inter-frequency cell	dBm/SCS	-91
Non-suitable cell	dBm/SCS	-100
Non-suitable "Off" cell	dBm/SCS	≤-139
Note 1: The power level is specified in terms of SS/PBCH SSS EPRE instead of RSRP as RSRP is a measured value and cannot be directly controlled by the SS. Note 2: The power level is specified at the centre of quiet zone. Note 3: DL level is applied for any of the Subcarrier Spacing configuration (μ) with the same power spectrum density in dBm/SCS (SubCarrier Spacing).		

For E-UTRA cell in EN-DC with FR2 NR, since the LTE OTA link is uncalibrated in the signalling test setup, the table 6.2.2.2-3 provides only suggestive value. It is left to the TE vendor to ensure that LTE cell power level fulfils the cell selection criteria.

Table 6.2.2.2-3: Default Downlink power levels for E-UTRA cells with NR FR2

	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	-77	-73	-71	-68	-66	-65
RS EPRE	dBm/15kHz	-96	-96	-96	-96	-96	-96
Note 1: The channel bandwidth powers are informative, based on -96 dBm/15kHz RS_EPRE, 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 the centre of quiet zone.							

The default settings of suitable cells and non-suitable cells for E-UTRA in EN-DC with FR2 NR are specified in table 6.2.2.2-4.

E-UTRA Cells in EN-DC with FR2 NR which are expected to be undetectable for UE under test shall fulfil the condition of non-suitable "Off" cell in table 6.2.2.2-4.

Table 6.2.2.2-4: Default settings of suitable / non-suitable E-UTRA cells in EN-DC with NR FR2

Power level type	E-UTRAN (Note 1-2)	
	Unit	Power level
Serving cell	dBm/15KHz	-96
Suitable neighbour intra-frequency cell	dBm/15KHz	TBD
Suitable neighbour inter-frequency cell	dBm/15KHz	TBD
Non-suitable cell	dBm/15KHz	TBD
Non-suitable "Off" cell	dBm/15KHz	TBD
Note 1: The power level is specified in terms of SS/PBCH SSS EPRE instead of RSRP as RSRP is a measured value and cannot be directly controlled by the SS. Note 2: The power level is specified at the centre of quiet zone.		

The Test system default signal level uncertainty is specified in tables 6.2.2.2-5 and 6.2.2.2-6 for any level specified, unless a tighter uncertainty is specified by a test case in TS 38.523-1 [12].

Table 6.2.2.2-5: SS Absolute FR2 NR signal level uncertainty

	Absolute signal level uncertainty
At each frequency	+/-6 dB at centre of the quiet zone

Table 6.2.2.2-6: SS Relative FR2 NR signal level uncertainty

	Relative signal level uncertainty between any two SS EPRE levels at the same frequency
At each frequency	+/-2.0 dB

6.2.3 Default test frequencies

Editor's note: For FR2 test frequencies using 100 MHz default channel bandwidth it is FFS if 100MHz channel bandwidth can be used for FR2 multicell protocol testing.

6.2.3.1 Test frequencies for NR standalone signalling testing

The default channel bandwidth for signalling test is specified per NR band. The test frequencies are defined so that no frequency overlapping takes place, in order to avoid unnecessary inter-frequency interference.

For some NR bands (e.g. n51 or n76), only one test frequency NRf1 is defined. All other operating bands can accommodate at least three test frequencies NRf1, NRf2 and NRf3 (NRf3<NRf1<NRf2). The fourth test frequency NRf4 (NRf3<NRf1<NRf4<NRf2) is applicable to the operating bands which have at least quadruple of the default bandwidth.

The signalling test frequencies NRf1, NRf2, NRf3, and NRf4 and associated signalling parameters for bands with up to three frequencies are mapped as follows: Mid Range (NRf2), Low Range (NRf1) and High Range (NRf3). For bands with up to four frequencies, the frequencies are mapped as follows: Mid-Low Range (NRf3), High Range (NRf4), Low Range (NRf1) and Mid-High Range (NRf2). For bands with up to two frequencies, the frequencies are mapped as follows: Low Range (NRf1), High Range (NRf2). For bands with only one test frequency, the frequency is mapped as follows: Low Range (NRf1).

The signalling test frequencies NRf5, NRf6, NRf7 are mapped respectively as NRf1, NRf2, NRf3 on the operating band for inter-band.

The test frequencies, subcarrier spacing, default channel bandwidth, SS/PBCH block and CORESET#0 parameters for signalling is specified in Table 6.2.3.1-1 (FDD FR1 BW 5MHz), Table 6.2.3.1-2 (FDD FR1 BW 10MHz), Table 6.2.3.1-3 (TDD FR1 BW 5MHz), Table 6.2.3.1-4 (TDD FR1 BW 10MHz), Table 6.2.3.1-4A (TDD FR1 BW 60MHz),Table 6.2.3.1-5 (TDD FR1 BW 100MHz) and Table 6.2.3.1-6 (TDD FR2 BW 100MHz).

Table 6.2.3.1-1: Test frequencies for NR FDD FR1 bands using 5 MHz channel bandwidth

NR Band	SCS [kHz]	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n5	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1..1.15 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	878.2	175640	873.79	174758	12	15	2197	175730	12	4	2	16
					Mid-High	884.8	176960	878.23	175646	24		2212	176930	20	0	0	24
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.5 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	833.2	166640	824.47	164894	36	-	-	-	-	-	-	-
					Mid-High	839.8	167960	817.03	163406	114	-	-	-	-	-	-	-
n8	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.8 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	937.5	187500	933.09	186618	12	15	2343	187470	20	0	0	12
					Mid-High	947.5	189500	40.93	188186	24		2368	189410	0	0	0	24
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.8 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	892.5	178500	884.49	176898	32	-	-	-	-	-	-	-
					Mid-High	902.5	180500	879.91	175982	113	-	-	-	-	-	-	-
n12	15	5	25	Downlink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.12 for bandwidth=5 MHz and SCS=15 kHz.											
				Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.12 for bandwidth=5 MHz and SCS=15 kHz.											
n20	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.20 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	801.8	160360	797.39	159478	12	15	2003	160330	20	0	0	12
					Mid-High	810.2	162040	803.63	160726	24		2024	162010	20	0	0	24
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.20 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	842.8	168560	834.07	166814	36	-	-	-	-	-	-	-
					Mid-High	851.2	170240	828.43	165686	114	-	-	-	-	-	-	-
n70	15	5	25	Downlink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.70 for DL bandwidth=5 MHz, UL bandwidth=5 MHz and SCS=15 kHz.											
				Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.70 for DL bandwidth=5 MHz, UL bandwidth=5 MHz and SCS=15 kHz.											
n71	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.71 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	629.5	125900	625.09	125018	12	15	1573	125810	0	0	0	12
					Mid-High	639.5	127900	632.93	126586	24		1598	127930	16	2	1	26
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.71 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	675.5	135100	666.77	133354	36	-	-	-	-	-	-	-
					Mid-High	685.5	137100	662.73	132546	114	-	-	-	-	-	-	-

n74	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.74 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	1491	298200	1484.16	296832	12	15	3720	297630	2	0	0	12
					Mid-High	1502	300400	1493	298600	24		3749	300010	14	4	2	28
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.74 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	1443	288600	1431.84	286368	36	-	-	-	-	-	-	-
					Mid-High	1454	290800	1428.8	285760	114	-	-	-	-	-	-	-
n76	15	5	25	Downlink (SDL)	Mid	Same values as for Mid range in clause 4.3.1.76 for bandwidth=5 MHz and SCS=15 kHz.											
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.																	

Table 6.2.3.1-2: Test frequencies for NR FDD FR1 bands using 10 MHz channel bandwidth

NR Band	SCS [kHz]	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n1	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.1 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	2131.7	426340	2124.86	424972	12	15	5321	425770	2	0	0	12
					Mid-High	2148.3	429660	2139.3	427860	24		5364	429150	22	0	0	24
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.1 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1941.7	388340	1930.54	386108	36	-	-	-	-	-	-	-
					Mid-High	1958.3	391660	1933.1	386620	114	-	-	-	-	-	-	-
n2	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.2 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1951.7	390340	1944.86	388972	12	15	4871	389770	2	0	0	12
					Mid-High	1968.3	393660	1959.3	391860	24		4914	393150	22	0	0	24
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.2 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1871.7	374340	1860.54	372108	36	-	-	-	-	-	-	-
					Mid-High	1888.3	377660	1863.1	372620	114	-	-	-	-	-	-	-
n3	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.3 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1831.7	366340	1824.86	364972	12	15	4571	365770	2	0	0	10
					Mid-High	1853.3	370660	1844.3	368860	24		4625	370090	2	0	0	22
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.3 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1736.7	347340	1725.54	345108	36	-	-	-	-	-	-	-
					Mid-High	1758.3	351660	1733.1	346620	114	-	-	-	-	-	-	-
n7	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.7 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	2645	529000	2638.16	527632	12	15	6605	528490	22	0	0	12
					Mid-High	2665	533000	2656	531200	24		6658	532610	14	4	2	28
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.7 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	2525	505000	2513.84	502768	36	-	-	-	-	-	-	-
					Mid-High	2545	509000	2519.8	503960	114	-	-	-	-	-	-	-
n25	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.25 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1953.3	390660	1946.46	389292	12	15	4878	390270	14	4	2	14
					Mid-High	1971.7	394340	1962.7	392540	24		4924	393890	18	2	1	24
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.25 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1873.3	374660	1862.14	372428	36	-	-	-	-	-	-	-
					Mid-High	1891.7	378340	1866.5	373300	114	-	-	-	-	-	-	-

n28	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.28 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	774.7	154940	767.86	153572	12	15	1930	154370	2	0	0	10
					Mid-High	786.3	157260	777.3	155460	24		1959	156750	22	0	0	22
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.28 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	719.7	143940	708.54	141708	36	-	-	-	-	-	-	-
					Mid-High	731.3	146260	706.1	141220	114	-	-	-	-	-	-	-
n66	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.66 for DL bandwidth=10 MHz, UL bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	2141.7	428340	2134.86	426972	12	15	5349	427950	14	4	2	14
					Mid-High	2168.3	433660	2159.3	431860	24		5414	433210	18	2	1	24
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.66 for DL bandwidth=10 MHz, UL bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1741.7	348340	1730.54	346108	36	-	-	-	-	-	-	-
					Mid-High	1768.3	353660	1743.1	348620	114	-	-	-	-	-	-	-
n75	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.75 for bandwidth=10 MHz and SCS=15 kHz.											
				(SDL)	Mid-Low	1462	292400	1455.16	291032	12	15	3649	291890	-	-	-	-
					Mid-High	1487	297400	1478	295600	24		3710	296890	-	-	-	-
Note 1:	The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.																

Table 6.2.3.1-3: Test frequencies for NR TDD FR1 bands using 5 MHz channel bandwidth

NR Band	SCS [kHz]	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n34	15	5	25	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.12 for bandwidth=5 MHz and SCS=15 kHz.											
n51	15	5	25	Downlink & Uplink	Low	Same values as for Mid range in clause 4.3.1.1.1.51 for bandwidth=5 MHz and SCS=15 kHz.											

Table 6.2.3.1-4: Test frequencies for NR TDD FR1 bands using 10 MHz channel bandwidth

NR Band	SCS [kHz]	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n38	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.38 for bandwidth=10 MHz and SCS=15 kHz.											
				&	Mid-Low	2588.3	517660	2581.46	516292	12	15	6464	517210	18	2	1	14
				Uplink	Mid-High	2601.7	520340	2592.7	518540	24		6499	519890	18	2	1	26
n39	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.39 for bandwidth=10 MHz and SCS=15 kHz.											
				&	Mid-Low	1895	379000	1888.16	377632	12	15	4730	378490	22	0	0	12
				Uplink	Mid-High	1905	381000	1896	379200	24		4755	380430	2	0	0	24
n40	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.40 for bandwidth=10 MHz and SCS=15 kHz.											
				&	Mid-Low	2335	467000	2328.16	465632	12	15	5833	466610	14	4	2	16
				Uplink	Mid-High	2365	473000	2356	471200	24		5908	472610	14	4	2	28
n50	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.50 for bandwidth=10 MHz and SCS=15 kHz.											
				&	Mid-Low	1462					&	Mid-Low	1462				
				Uplink	Mid-High	1487					Uplink	Mid-High	1487				
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22] for all bands in the table. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.																	

Table 6.2.3.1-4A: Test frequencies for NR TDD FR1 bands using 60 MHz channel bandwidth

NR Band	SCS [kHz]	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n41	30	60	162	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.41 for bandwidth=60 MHz and SCS=30 kHz.											

Table 6.2.3.1-5: Test frequencies for NR TDD FR1 bands using 100 MHz channel bandwidth

NR Band	SCS [kHz]	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n77	30	100	273	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.77 for bandwidth=100 MHz and SCS=30 kHz.											
				&	Mid-Low	3616.68	641112	3563.22	637548	12	30	7896	638112	12	1	1	26
				Uplink	Mid-High	3883.32	658888	3825.54	655036	24		8081	655872	20	0	0	48
n78	30	100	273	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.78 for bandwidth=100 MHz and SCS=30 kHz.											
				&	Mid-Low	3483.33	632222	3429.87	628658	12	30	7804	629280	22	3	3	30
				Uplink	Mid-High	3616.68	641112	3558.9	637260	24		7896	638112	12	1	1	50
n79	30	100	273	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.79 for bandwidth=100 MHz and SCS=30 kHz.											
				&	Mid-Low	4617.69	707846	4564.23	704282	12	30	8592	704928	22	4	1	32
				Uplink	Mid-High	4780.74	718716	4722.96	714864	24		8704	715680	0	0	0	48

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22] for all bands in the table except for band n79 where Table 13-6 apply. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 6.2.3.1-6: Test frequencies for NR TDD FR2 bands using 100 MHz channel bandwidth

NR Band	SCS [kHz]	Band width [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA*[ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n257	120	100	66	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.2.1.1 for bandwidth=100 MHz and SCS=120 kHz.											
				&	Mid-Low	27514.56	2071075	27449.76	2069995	12	120	22443	2070523	0	0	0	24
				Uplink	Mid-High	28482.24	2087203	28400.16	2085835	24		22499	2086651	0	0	0	48
n258	120	100	66	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.2.1.2 for bandwidth=100 MHz and SCS=120 kHz.											
				&	Mid-Low	25348.8	2034979	25284	2033899	12	120	22318	2034523	0	4	1	32
				Uplink	Mid-High	26401.56	2052525	26319.48	2051157	24		22379	2052091	11	4	1	56
n260	120	100	66	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.2.1.4 for bandwidth=100 MHz and SCS=120 kHz.											
				&	Mid-Low	38015.04	2246083	37950.24	2245003	12	120	23051	2245627	0	4	1	32
				Uplink	Mid-High	38982.72	2262211	38900.64	2260843	24		23107	2261755	0	4	1	56
n261	120	100	66	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.2.1.5 for bandwidth=100 MHz and SCS=120 kHz.											
				&	Mid-Low	27801.24	2075853	27736.44	2074773	12	120	22460	2075419	11	4	1	32
				Uplink	Mid-High	28050	2079999	27967.92	2078631	24		22474	2079451	2	0	0	48
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in the four most significant bits of the IE pdcch-ConfigSIB1 in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.																	

6.2.3.2 Test frequencies for EN-DC band combinations for signalling testing

The default channel bandwidths for EN-DC signalling test are specified per NR and E-UTRA band. The test frequencies are defined so that no frequency overlapping takes place, in order to avoid unnecessary inter-frequency interference.

For EN-DC Inter-band case (2 bands) the EN-DC configurations are specified in clause 4.3.1.3.2.0 and the E-UTRA and NR test frequencies are specified in TS 36.508 [2], clause 6.2.3.1 for the E-UTRA band (E-UTRA f1, f2, f3 and f4); and in clause 6.2.3.1 for the NR band (NRf1, NRf2, NRf3, NRf4) and for the secondary NR band (NRf5, NRf6, NRf7) of the secondary EN-DC inter-band combination.

For EN-DC Intra-band Contiguous case (2 bands) the EN-DC configurations and the test frequencies are specified in Table 6.2.3.2-1. For EN-DC Intra-band Non-Contiguous (2 bands) case the EN-DC configurations and test frequencies are specified in Table 6.2.3.2-2.

For EN-DC Intra-Band Contiguous case (2 bands) and EN-DC Intra-Band Non-Contiguous case (2 bands) the mapping of frequency ranges to NR test frequencies NRf1, NRf2, NRf3, and NRf4; and to E-UTRA test frequencies f1, f2, f3, and f4 are as follows:

- for band combinations with only one test frequency: Low Range (NRf1, f1);- for band combinations with up to two frequencies: Low Range (NRf1, f1), High Range (NRf2, f2);
- for band combinations with up to three frequencies: Mid Range (NRf3, f3), Low Range (NRf1, f1) and High Range (NRf2, f2).
- for band combinations with up to four frequencies: Mid-Low Range (NRf3, f3), High Range (NRf2, f2), Low Range (NRf1, f1) and Mid-High Range (NRf4, f4);

Table 6.2.3.2-1: Test frequencies for EN-DC Intra-band Contiguous combinations (2 bands)

EN-DC channel bandwidth combination	CC	Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	CORESET#0 Offset [RBs] Note 1	CORESET#0 Index Note 1	offs Po (S [PI Nc
DC_(n)41AA	E-UTRA CC1	20	100	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range values in Table 4.3.1.4.2.41.1-2 (SCS 30 kHz, 30 kHz NR raster and NR CC a band edges) and EN-DC channel bandwidth combination “E-UTRA: 20MHz + NR: 60MHz”.											
	NR CC1	60	162	Downlink & Uplink	Low, Mid, High												
DC_(n)71AA	E-UTRA	5	25	Downlink	Low, Mid, High	Same values as for Low, Mid and High range values in Table 4.3.1.4.2.71.1-1 (SCS 15 kHz, 100 kHz NR raster and NR CC the band edges) and EN-DC channel bandwidth combination “E-UTRA: 5MHz + NR: 5MHz”.											
	CC1			Uplink	Low, Mid, High												
	NR	5	25	Downlink	Low, Mid, High												
	CC1			Uplink	Low, Mid, High												

Table 6.2.3.2-2: Test frequencies for EN-DC Intra-Band Non-Contiguous combinations (2 bands)

FFS

6.2.3.3 Test frequencies for NR and E-UTRA Inter-RAT signalling testing

Editor's note: The current definition of test frequencies for NR and E-UTRA Inter-RAT signalling testing assumes that maximum 2 NR and 1 E-UTRA cell are used by the test cases.

For NR and E-UTRA Inter-RAT testing the test frequencies are defined so that no frequency overlapping takes place between the NR and E-UTRA carriers, in order to avoid unnecessary inter-frequency interference.

For NR bands, the frequencies NRf1 and NRf2 are mapped as per clause 6.2.3.1.

For E-UTRA bands, the signalling test frequencies E-UTRA f1 is mapped to frequency High (f2) in 36.508 [2] clause 6.2.3.1.

6.3 Reference system configurations

6.3.1 Cell configurations

Editor's Note: To define different types of SS cell configurations. It may be similar as defined in 3GPP TS 36.508 [2], clause 6.3.3 and 6.3.4 i.e. full, minimum uplink, broadcast only and virtual cell configuration. But details are FFS and depending on different connectivity options (MR-DC and SA).

6.3.1.1 Intra-frequency neighbouring cell list in SIB3 for NR 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 *intraFreqNeighCellList* in *SIB3* defined in table 4.6.2-2.

Table 6.3.1.1-1: Intra-frequency neighbouring cell lists for NR cells

cell ID	Test Frequency	intra-frequency neighbouring cell list			
		number of entries	physCellId[*n*]		
			1	1	3
NR Cell 1	NRf1	3	NR Cell 2	NR Cell 4	NR Cell 11
NR Cell 2	NRf1	3	NR Cell 1	NR Cell 4	NR Cell 11
NR Cell 4	NRf1	3	NR Cell 1	NR Cell 2	NR Cell 11
NR Cell 11	NRf1	3	NR Cell 1	NR Cell 2	NR Cell 4
NR Cell 3	NRf2	1	NR Cell 23	-	-
NR Cell 23	NRf2	1	NR Cell 3	-	-

Editor's Note: The intra-frequency NR neighbouring cell list for signalling NAS test cases when cells are on same PLMN is FFS.

6.3.1.2 Inter-frequency carrier frequency list in SIB4 for NR cells

Inter-frequency NR 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 *SIB4* defined in table 4.6.2-3.

Table 6.3.1.2-1: Inter-frequency carrier frequency lists for NR cells

cell ID	Test Frequency	interFreqCarrierFreqList			
		number of entries	dl-CarrierFreq[*n*]		
			1	2	3
NR Cell 1 NR Cell 2 NR Cell 4 NR Cell 11	NRf1 (Note 2)	3	NRf2	NRf3	NRf5
NR Cell 3 NR Cell 23	NRf2 (Note 2)	3	NRf1	NRf3	NRf5
NR Cell 6	NRf3 (Note 2)	3	NRf1	NRf2	NRf5
NR Cell 10	NRf5 (Note 3)	3	NRf1	NRf2	NRf3
Note 1: Depending on the Band under test, NRf3 may not be applicable. Note 2: In case of Test frequency NRf1, NRf2 and NRf3, dl-CarrierFreq NRf5 as part of inter-frequency list is applicable only in case of multi-band scenarios. Note 3: Test frequency NRf5 is applicable only in case of multi-band scenarios.					

Editor's Note: The inter-frequency NR carrier frequency list for signalling NAS test cases when cells are on same PLMN is FFS.

6.3.1.3 E-UTRA carrier frequency list in SIB5 for NR cells

E-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 *carrierFreqListEUTRA* in *SIB5* defined in table 4.6.2-4.

Table 6.3.1.3-1: E-UTRA carrier frequency lists for NR cells

interFreqCarrierFreqList	
number of entries	carrierFreq[*n*]
	1
1	E-UTRA f1
Note 1: E-UTRAf1 according to clause 6.2.3.3	

Table 6.3.1.3-2: Mapping of E-UTRA cell with TS 36.508 [2]

E-UTRA cell	Frequency	E-UTRA cell in TS 36.508, clause 6.2.3
Cell 1	E-UTRA f1	Cell 1
Note 1: E-UTRA Cell 1 is in high frequency range of the test band.		

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 [FFS] for such information.

Any combination is allowed with the following restrictions:

- NGC Cell B shall not be used if Cell NGC Cell D is used

- a maximum 3 cells on the same frequency can be used, i.e. only 3 cells out of NGC Cell A, NGC Cell B, NGC Cell C and NGC Cell D 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 4.4.2 will also apply to all NAS cells.

Table 6.3.2.2-1: Default NAS parameters for simulated NAS cells

<table>
<tr><th rowspan="3">NAS cell ID</th><th colspan="4">Tracking Area</th><th rowspan="3">TA# list (Note 1)</th><th colspan="4">5G-GUTI (Note 2)</th></tr>
<tr><th rowspan="2">TA#</th><th colspan="2">PLMN</th><th rowspan="2">TAC</th><th colspan="3">AMF Identifier</th><th rowspan="2">5G-TMSI</th></tr>
<tr><th>MCC</th><th>MNC</th><th>AMF Region ID</th><th>AMF Set ID</th><th>AMF Pointer</th></tr>
<tr><td>NGC Cell A</td><td>TAI-1</td><td colspan="2">(Note 3)</td><td>1</td><td>TAI-1</td><td>254</td><td>1</td><td>1</td><td rowspan="10">Arbitrarily selected according to TS 23.003 subclause 2.10.1 [26].</td></tr>
<tr><td>NGC Cell B</td><td>TAI-2</td><td colspan="2">(Note 3)</td><td>2</td><td>TAI-2</td><td>254</td><td>1</td><td>1</td></tr>
<tr><td>NGC Cell C</td><td>TAI-3</td><td colspan="2">(Note 3)</td><td>3</td><td>TAI-3</td><td>252</td><td>1</td><td>1</td></tr>
<tr><td>NGC Cell D</td><td>TAI-4</td><td colspan="2">(Note 3)</td><td>4</td><td>TAI-4</td><td>252</td><td>1</td><td>1</td></tr>
<tr><td>NGC Cell E</td><td>TAI-12</td><td>002</td><td>101</td><td>3</td><td>TAI-12</td><td>244</td><td>1</td><td>1</td></tr>
<tr><td>NGC Cell F</td><td>TAI-11</td><td>003</td><td>101</td><td>2</td><td>TAI-11</td><td>239</td><td>1</td><td>1</td></tr>
<tr><td>NGC Cell G</td><td>TAI-7</td><td>(Note 4)</td><td>02</td><td>1</td><td>TAI-7</td><td>238</td><td>1</td><td>1</td></tr>
<tr><td>NGC Cell H</td><td>TAI-8</td><td>(Note 4)</td><td>02</td><td>2</td><td>TAI-8</td><td>237</td><td>1</td><td>1</td></tr>
<tr><td>NGC Cell I</td><td>TAI-9</td><td>002</td><td>101</td><td>1</td><td>TAI-9</td><td>244</td><td>1</td><td>1</td></tr>
<tr><td>NGC Cell J</td><td>TAI-10</td><td>003</td><td>101</td><td>1</td><td>TAI-10</td><td>236</td><td>1</td><td>1</td></tr>
<tr><td colspan="10">Note 1: The value(s) in the column TA# list indicates TAI(s) included in the response messages of the registration procedure for initial access or mobility (REGISTRATION ACCEPT) when the UE performs the registration procedure on a corresponding cell.
Note 2: The value in the column 5G-GUTI indicates GUTI included in the response messages of the registration procedure (REGISTRATION 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 FFS).
Note 4: Set to the same Mobile Country Code stored in EF_{IMSI} on the test USIM card (subclause FFS).</td></tr>
</table>

Table 6.3.2.2-2: Default radio parameters for simulated NAS cells when cells are in same PLMN and access stratum is NR

<table>
<tr><th>NAS cell ID</th><th>Frequency</th><th>NR Cell ID (Note 1)</th></tr>
<tr><td>NGC Cell A</td><td>f1</td><td>NR Cell 1</td></tr>
<tr><td>NGC Cell B</td><td>f1</td><td>NR Cell 2</td></tr>
<tr><td>NGC Cell C</td><td>f1</td><td>NR Cell 4</td></tr>
<tr><td>NGC Cell D</td><td>f1</td><td>NR Cell 11</td></tr>
<tr><td>NGC Cell E</td><td>NA</td><td>NA</td></tr>
<tr><td>NGC Cell F</td><td>f2</td><td>NR Cell 3</td></tr>
<tr><td>NGC Cell G</td><td>NA</td><td>NA</td></tr>
<tr><td>NGC Cell H</td><td>NA</td><td>NA</td></tr>
<tr><td>NGC Cell I</td><td>NA</td><td>NA</td></tr>
<tr><td>NGC Cell J</td><td>f2</td><td>NR Cell 12</td></tr>
<tr><td colspan="3">Note 1: Default NR parameters for simulated NR cells are as specified in Table 4.4.2-2
Note 2: for signalling tests, simultaneous co-existence of NGC Cells B and D is not allowed (In line with Table 4.4.2-1)</td></tr>
</table>

Table 6.3.2.2-3: Default PLMN and radio parameters for simulated NAS cells when cells are in different PLMN and access stratum is NR

NAS cell ID	PLMN	Frequency	NR Cell ID (Note 1)
NGC Cell A	MCC/MNC=MCC/MNC in USIM	f1	NR Cell 1
NGC Cell B	MCC/MNC=MCC/MNC in USIM	f1	NR Cell 2
NGC Cell C	MCC/MNC=MCC/MNC in USIM	f1	NR Cell 4
NGC Cell D	MCC/MNC=MCC/MNC in USIM	f1	NR Cell 11
NGC Cell E	MCC=002 MNC=101	f2	NR Cell 3
NGC Cell F	MCC=003 MNC=101	f4	NR Cell 14
NGC Cell G	MCC = MCC in USIM MNC=02	f2	NR Cell 12
NGC Cell H	MCC = MCC in USIM MNC=02	f2	NR Cell 23
NGC Cell I	MCC=002 MNC=101	f3	NR Cell 6
NGC Cell J	MCC=002 MNC=101	f3	NR Cell 13
Note 1: Default NR parameters for simulated NR cells are as specified in Table 4.4.2-2 Note 2: for signalling tests, simultaneous co-existence of NGC Cells B and D is not allowed (In line with Table 4.4.2-1)			

6.4 Signaling Test Case specific USIM Configurations

6.4.1 General

The default USIM fields are specified in section 4.8.3. Specific USIM fields are set according to the USIM configuration specified in the tables below. PLMN settings are defined in TS 36.523-1 [42] Table 6.0.1-1.

Note: Changes to any existing USIM configuration can be done only if the change WILL NOT HAVE IMPACT on any of the tests which are referring to the configuration! To establish whether this might be the case, the test case author needs to review all tests in all RAN5 test specifications, which refer to the particular USIM configuration e.g. all test cases in TS 38.523-1 [12].

Table 6.4.1-1 : USIM Configuration 1

USIM field	Priority	Value	Access Technology Identifier
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN4.	
$EF_{PLMNwAcT}$	1 2 3	Default PLMN3 PLMN2 Remaining mandatory entries use default values	Default All specified NG-RAN
$EF_{OPLMNwACT}$	1	PLMN1 Remaining defined entries use default values	All specified
$EF_{HPLMNwAcT}$	1	PLMN4	NG-RAN
EF_{UST}		Services 20, 42, 43 and 74 are supported. Service 71 is not supported (there is no EHPLMN list).	
EF_{HPPLMN}		1 (6 minutes)	

Table 6.4.1-2: USIM Configuration 2

USIM field	Priority	Value	Access Technology Identifier
$EF_{5GS3GPPLOCI}$		PLMN4	
$EF_{PLMNwAcT}$		Empty	
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1.	
EF_{UST}		Service n°71 and n°74 are "available"	
EF_{EHPLMN}	1 2	PLMN15 PLMN1	
$EF_{LRPLMNSI}$		01	

Table 6.4.1-3: USIM Configuration 3

USIM field	Priority	Value	Access Technology Identifier
$EF_{5GS3GPPLOCI}$		PLMN4	
$EF_{PLMNwAcT}$		Empty	
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1.	
EF_{UST}		Service n°74 is "available"	
EF_{EHPLMN}		Empty	
$EF_{LRPLMNSI}$		01	

Table 6.4.1-4: USIM configuration 4

USIM field	Priority	Value	Access Technology Identifier
EF_{EHPLMN}	1	PLMN1 Remaining mandatory entries use default values	
$EF_{PLMNwAcT}$	1	PLMN2 Remaining mandatory entries use default values	NG-RAN
$EF_{OPLMNwACT}$	1	PLMN3 Remaining mandatory entries use default values	NG-RAN
EF_{UST}		Services 20, 42 and 71 are supported.	

Table 6.4.1-5: USIM configuration 5

USIM field	Priority	Value	Access Technology Identifier
$EF_{5GS3GPPLOCI}$		PLMN4 (See preamble)	
$EF_{PLMNwAcT}$		Empty	
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1.	
EF_{UST}		Service 71 is not supported Service 74 is supported.	
$EF_{LRPLMNSI}$		00	
EF_{EHPLMN}		0xFF..FF	

Table 6.4.1-6: USIM configuration 6

USIM field	Priority	Value	Access Technology Identifier
$EF_{5GS3GPPLOCI}$		PLMN1 (See preamble)	
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN3.	
$EF_{PLMNwAcT}$	1	PLMN1 Remaining mandatory entries use default values	NG-RAN
$EF_{OPLMNwACT}$	1 2	PLMN2 PLMN4 Remaining defined entries use default values	NG-RAN NG-RAN
EF_{UST}		Service 71 is not supported	

Table 6.4.1-7: USIM configuration 7

USIM field	Priority	Value	Access technology	Comment
$EF_{PLMNwAcT}$	1 2	PLMN13 PLMN14	NG-RAN E-UTRAN	
$EF_{OPLMNwAcT}$	1 2 4	PLMN2 PLMN14 PLMN13	All E-UTRAN NG-RAN	

Table 6.4.1-8: USIM configuration 8

USIM field	Priority	Value	Access technology	Comment
$EF_{OPLMNwAcT}$	1 2 3 4	PLMN15 PLMN15 PLMN17 PLMN16	NG-RAN E-UTRAN E-UTRAN NG-RAN	

Table 6.4.1-9: USIM configuration 9

USIM field	Priority	Value	Access technology	Comment
$EF_{PLMNwAcT}$	1 2	PLMN1 PLMN15	NG-RAN E-UTRAN	
EF_{HPPLMN}		1(=6 min)		The HPLMN Search Period on the USIM shall be set to 6 minutes.

Table 6.4.1-10: USIM configuration 10

USIM field	Priority	Value	Access Technology Identifier
$EF_{OPLMNwACT}$	1 2 3	PLMN4 PLMN3 PLMN2 Remaining defined entries use default values	NG-RAN NG-RAN NG-RAN
EF_{UST}		Service n°127 is "available"	
EF_{HPPLMN}		1(=6 min)	

Table 6.4.1-11: USIM configuration 11

USIM field	Priority	Value	Access Technology Identifier
$EF_{5GS3GPPLOCI}$		PLMN1 (See preamble)	
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN4.	
$EF_{PLMNwAcT}$	1 2	Default PLMN2	NG-RAN NG-RAN
$EF_{OPLMNwACT}$	1	PLMN1	
		Remaining defined entries use default values	
$EF_{HPLMNwAcT}$	1	PLMN4	NG-RAN
EF_{UST}		Services 20, 42, 43, 74 and 96 are supported. Service 71 is not supported (there is no EHPLMN list).	
EF_{HPPLMN}		1 (6 minutes)	NG-RAN
$EF_{NASCONFIG}$		MinimumPeriodicSearchTimer set to 7 minutes	

Table 6.4.1-12: USIM configuration 12

USIM field	Priority	Value	Access technology	Comment
$EF_{PLMNwAcT}$		3GPP TS 31.102, Annex E		The EF is empty.
$EF_{OPLMNwAcT}$	1 2 3	PLMN2 PLMN13 PLMN13	NG-RAN E-UTRAN NG-RAN	

Table 6.4.1-13: USIM configuration 13

USIM field	Priority	Value	Access technology	Comment
$EF_{OPLMNwAcT}$	1 3 4	PLMN2 PLMN2 PLMN13	NG-RAN E-UTRAN NG-RAN	

Table 6.4.1-14: USIM configuration 14

USIM field	Priority	Value	Access Technology Identifier
$EF_{5GS3GPPLOCI}$		PLMN1 (See pre-amble)	

7 Test environments for RRM tests

7.0 General

7.0.1 Single PDU configuration for RRM testing

For RRM test case execution on 5G SA UEs defined in TS 38.533 [18]7.1 Requirements, IMS shall not be considered and UE's shall be able use RRC (IDLE, CONNECTED) preambles defined in TS38.508-1 Section 4.5. Before entering RRC_CONNECTED or RRC_IDLE state during initial conditions or test procedure, it is recommended that UE is pre-configured with only 1 PDU (non-IMS) along with appropriate settings to ensure UE operates and stays on NR cell.

of test equipment

7.1.1 Requirements common for conducted and OTA tests

Editor's Note: This subclause is intended to describe the test equipment requirements which are specific to RRM tests and common for conducted and OTA tests.

7.1.2 Requirements for conducted test method

Editor's Note: This subclause is intended to describe the test equipment requirements which are specific to conducted test environment for RRM tests.

7.1.3 Requirements for OTA test method

Editor's Note: This subclause is intended to describe the test equipment requirements which are specific to OTA test environment for RRM tests.

7.1.3.1 General

Editor's Note:

- The UE pre-configuration mentioned below to disable UL Tx diversity schemes shall be voided once a test methodology solution to minimize spectral flatness artefacts between TE and UE over all test points is defined.

For conformance testing using the OTA test environment, the UE under test shall be pre-configured with UL Tx diversity schemes disabled.

7.2 Reference test conditions

7.2.1 Signal levels

7.2.1.1 Signal Levels for conducted testing

TBD

7.2.1.2 Signal Levels for OTA testing

TBD

7.3 – 7.4 FFS

7.5 Common procedures for RRM testing

7.5.1 Procedure to configure SCC(s) for NR RRM CA testing

Same procedure as described in clause 5.5.1.

7.5.2 Procedure to configure SCC(s) for EN-DC RRM CA testing

Same procedure as described in clause 5.5.1.

Annex A (informative): Connection Diagrams

A.1 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

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 TS38.521-1, TS38.521-2, TS38.521-3, TS 38.523-1 and TS38.533 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.

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

Test Equipment Part (TE): is the section of the connection diagram focused including a combination of devices to perform one or several measurements on a UE depending on the test requirements specified in 3GPP TS 38.101-1 [7], 3GPP TS 38.101-2 [8] and 3GPP TS 38.101-3 [9]. The basic TE is the system simulator to enable the connection between the gNB (and the eNB, if NSA mode) and the DUT. The number of cells, the number of streams per cell and how to combine them, channel and propagations conditions, etc. are also part of the TE. Other instruments as external spectrum analyser, interferer generators, external faders or external AWGN generators can be also considered part of the TE, as these instruments allow to measure a test requirement or to set the UE under certain conditions.

DUT Part (UE): for conducted measurement this section is focused on the number of physical antenna connectors and how to combine in the DUT. For radiated measurement this section shows the connections needed to translate the UL/DL streams to the radiated part.

A.2 General considerations on Connections Diagram

In order to improve the maintainability and the readability of this section and to make easy to identify the whole connection diagram to use per each test case, several considerations have been used for this section:

- The whole connection diagram to use for a specific test has been split in Test Equipment (TE) and User Equipment (UE) parts.

- The same connection diagram will be used for SA and NSA, where the LTE link is specified in each connection diagram (TE and UE) with a dashed line (and this part will be only used for NSA).

- To obtain the whole connection diagram required per each test case is necessary to specify the TE part required for each measurement and the UE part will depend on the UE antenna implementation.

A.3 Setup Diagrams

A.3.1 Test Equipment Parts for Conducted Measurements

A.3.1.1 Basic Transmitter/Receiver tests

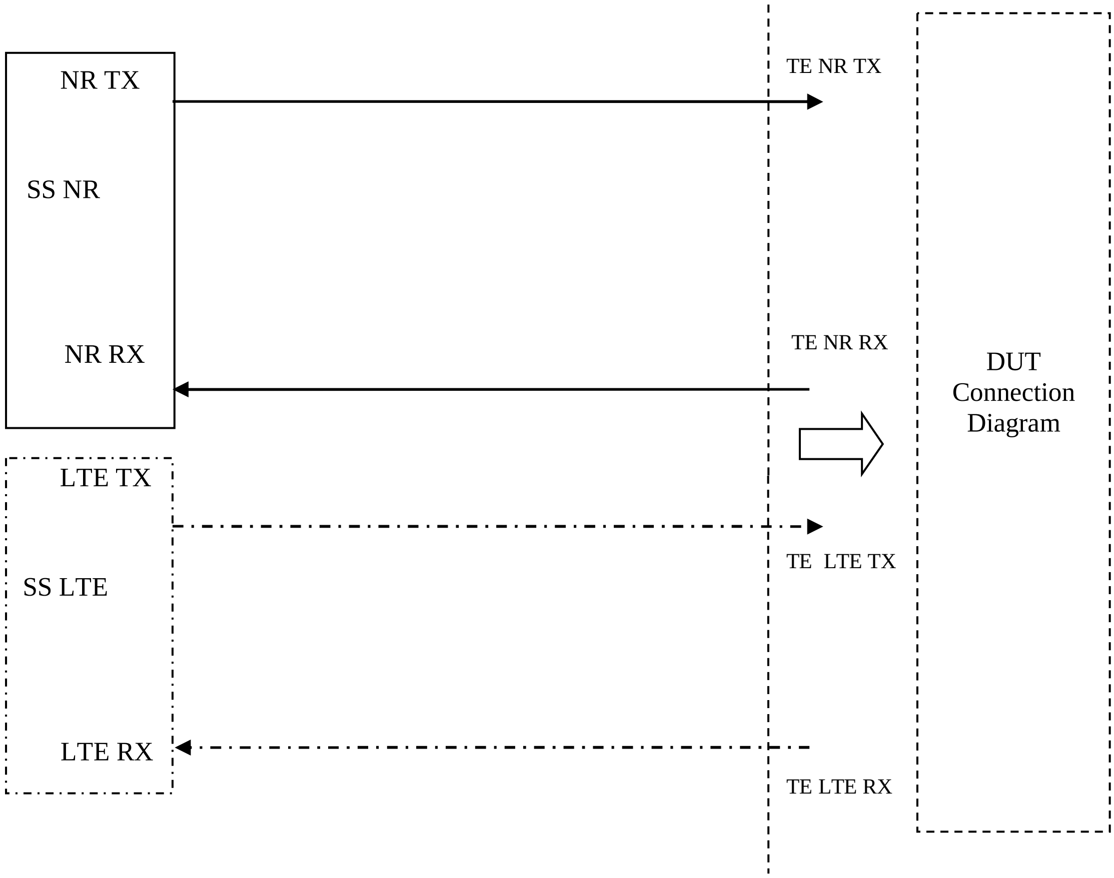

Figure A.3.1.1.1: Test Equipment connection for basic single cell, RX and TX tests

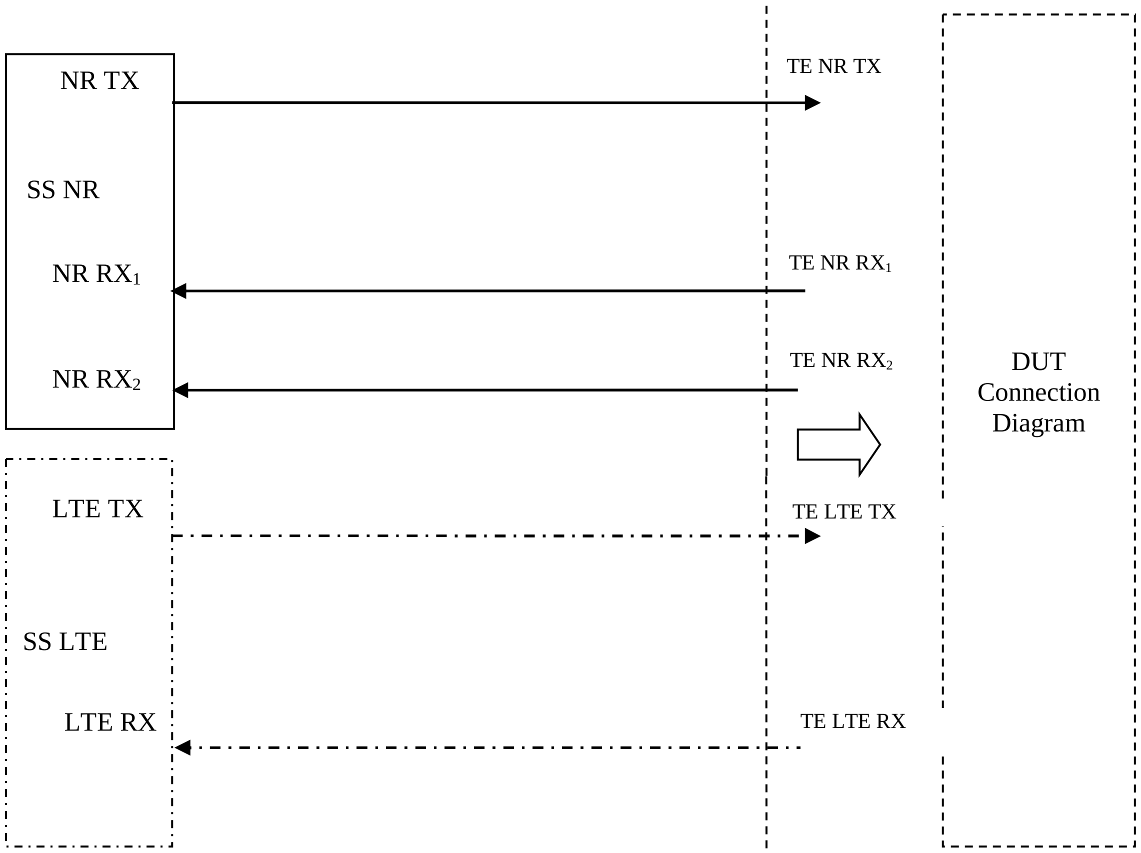

Figure A.3.1.1.2: Test Equipment connection for single cell, RX and TX tests for NR UL MIMO

A.3.1.2 Transmitter tests using Spectrum Analyser

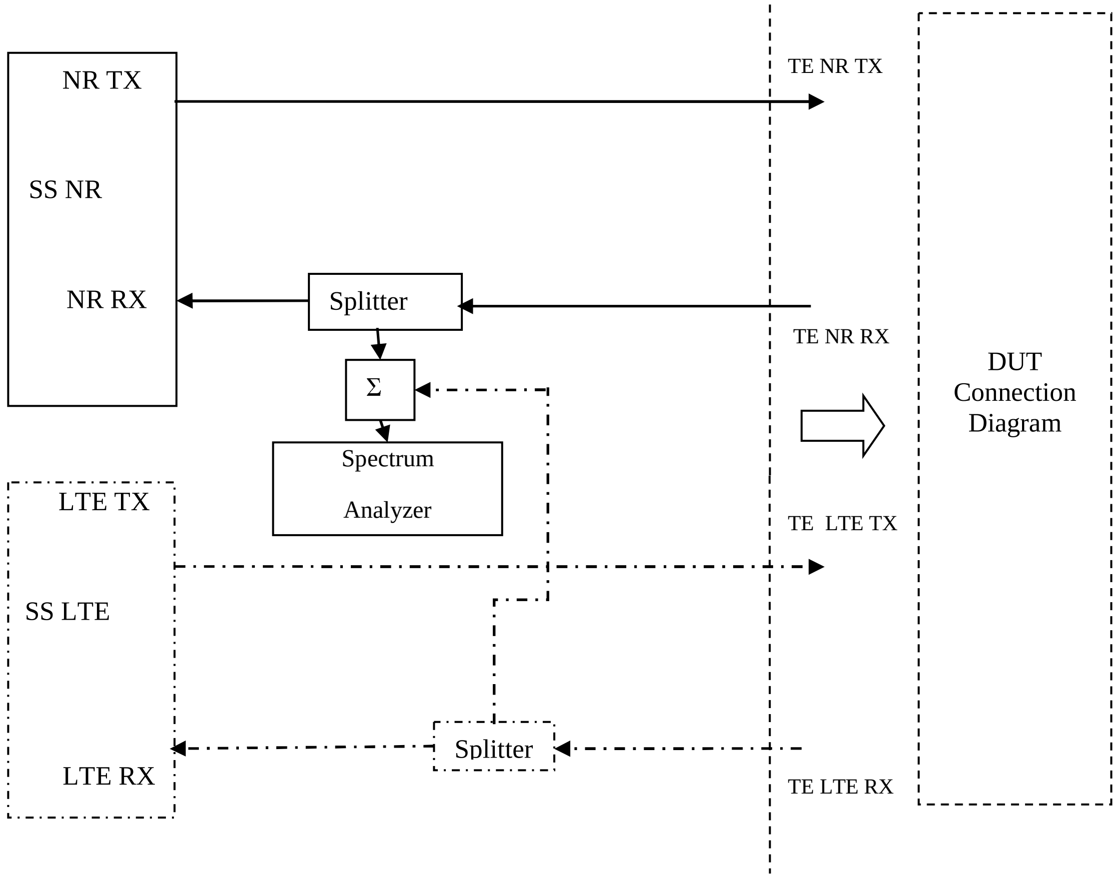

Figure A.3.1.2.1: Test Equipment connection for TX-tests with additional Spectrum Analyzer

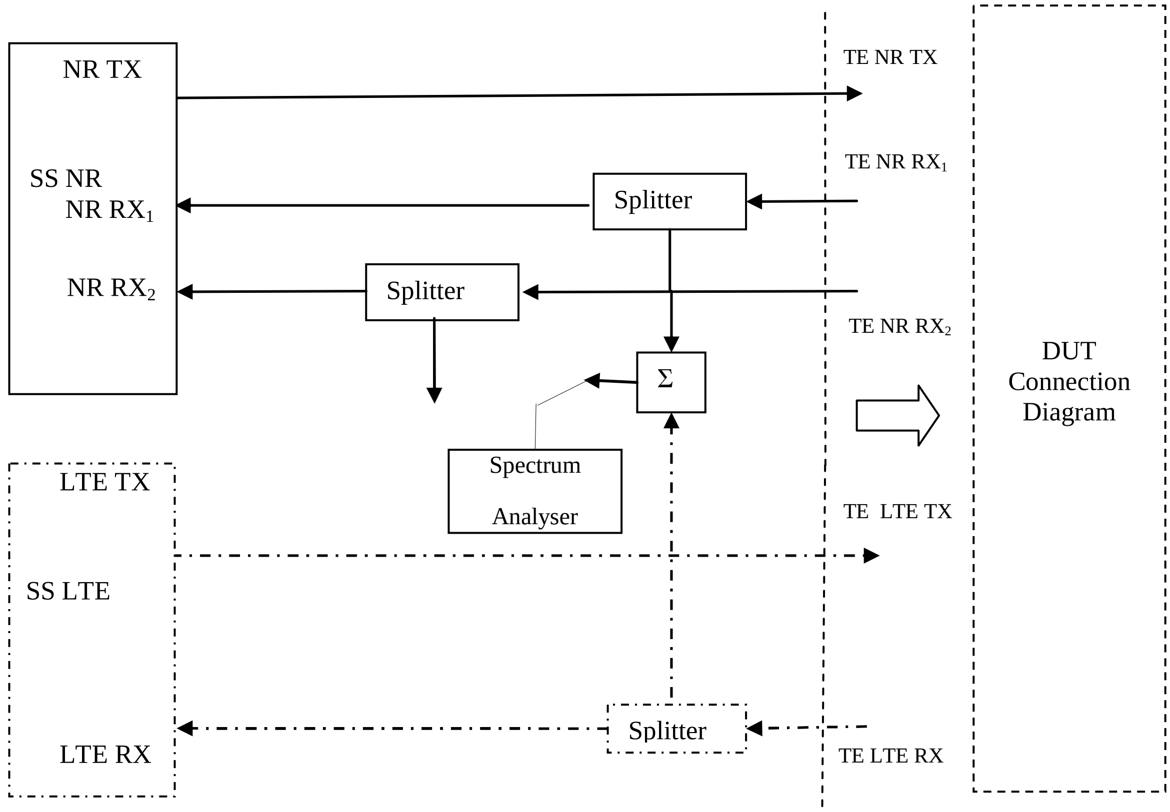

Figure A.3.1.2.2: Test Equipment connection for TX-tests for UL MIMO with additional Spectrum Analyser

A.3.1.3 Transmitter tests using Spectrum Analyser and Signal Generator

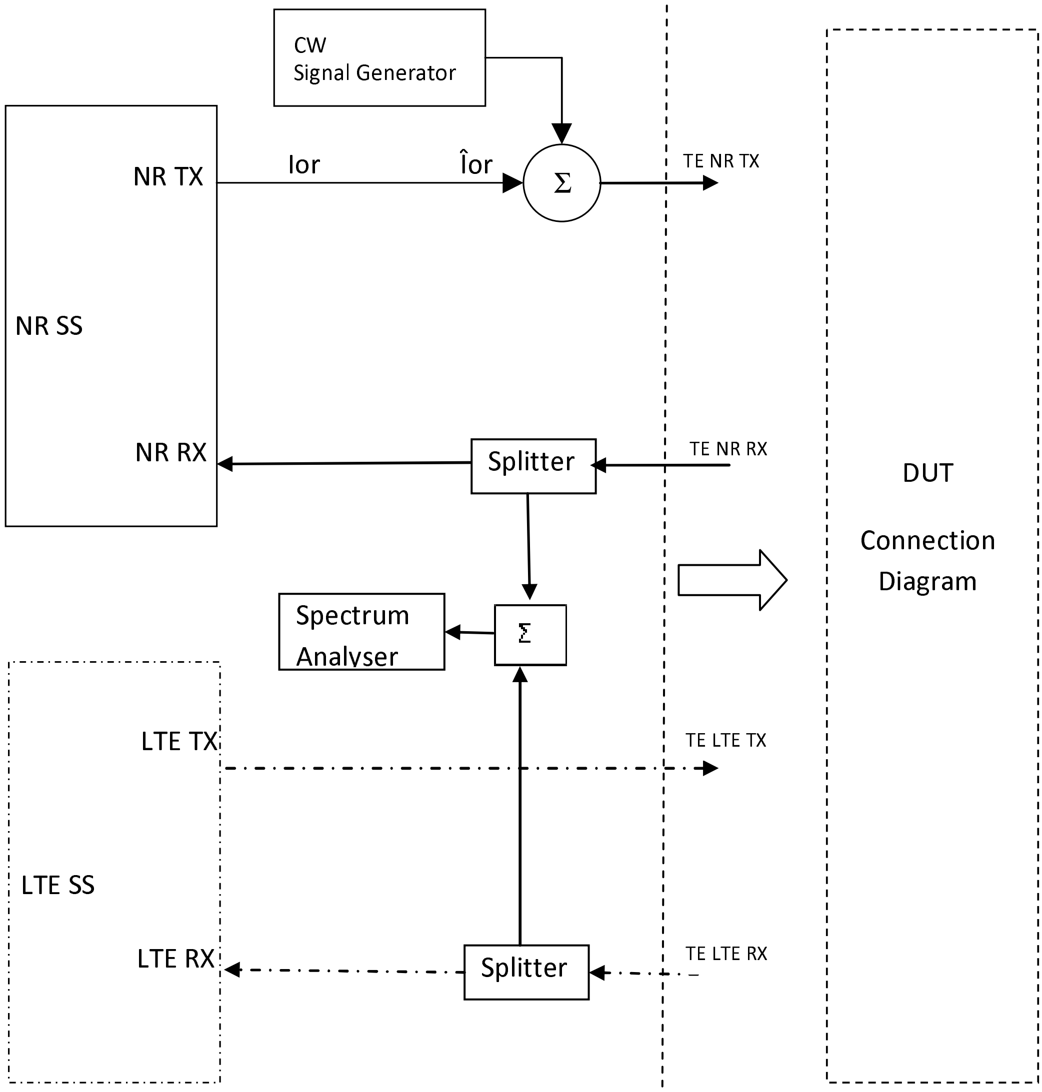

Figure A.3.1.3.1: Test Equipment connection for Transmitter tests with CW Interference and spectrum analyser

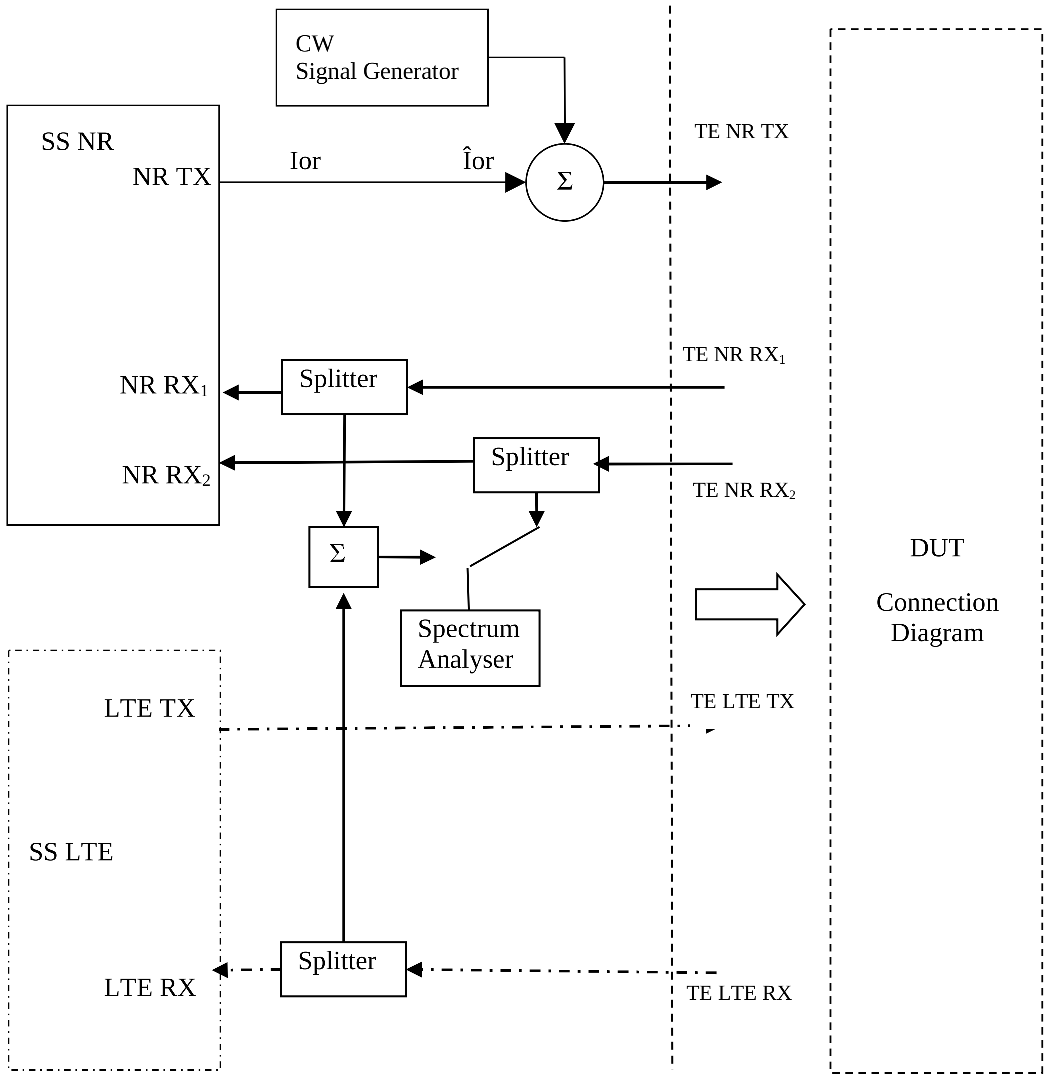

Figure A.3.1.3.2: Test Equipment connection for Transmitter tests for UL MIMO with CW Interference and spectrum analyser

A.3.1.4 Receiver tests using Signal Generator

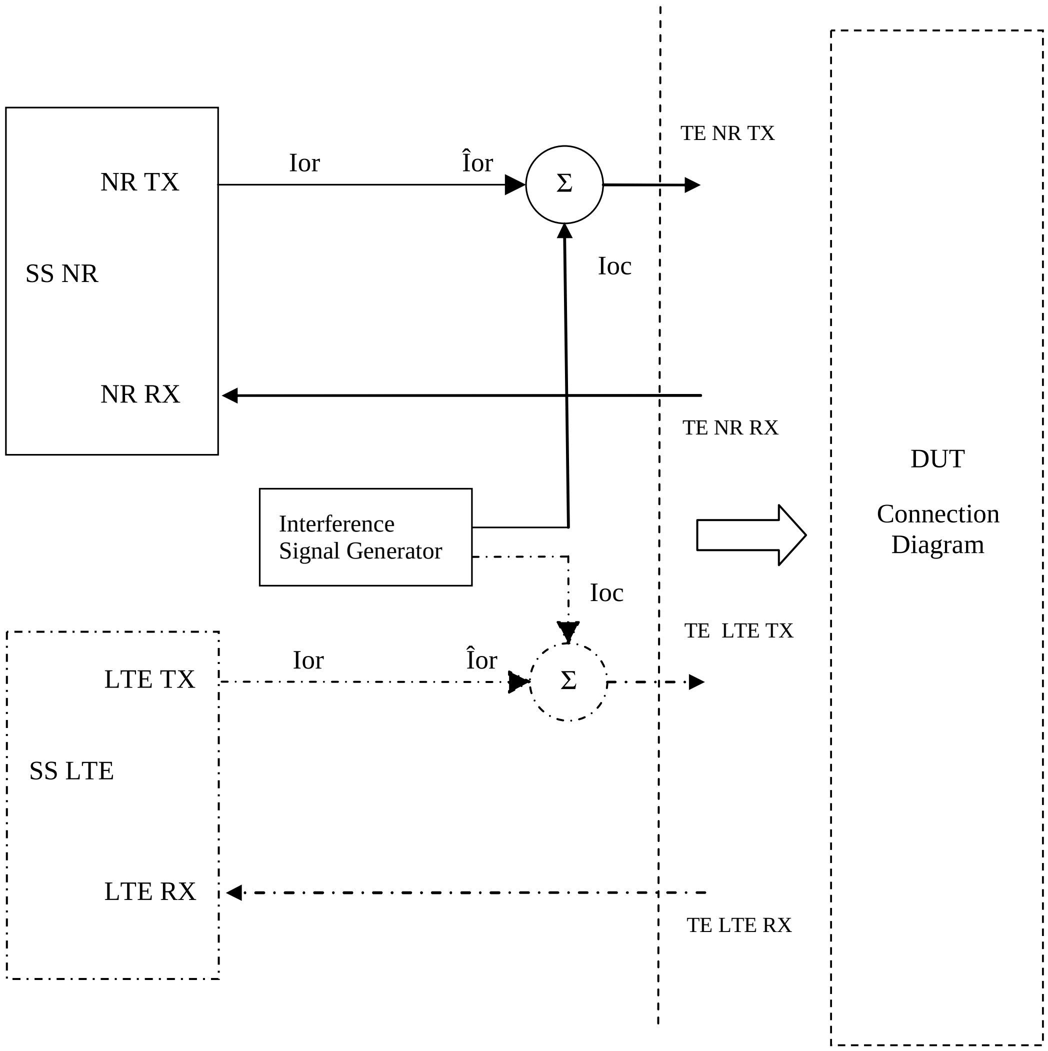

Figure A.3.1.4.1: Test Equipment connection for Receiver tests with Modulated Interference

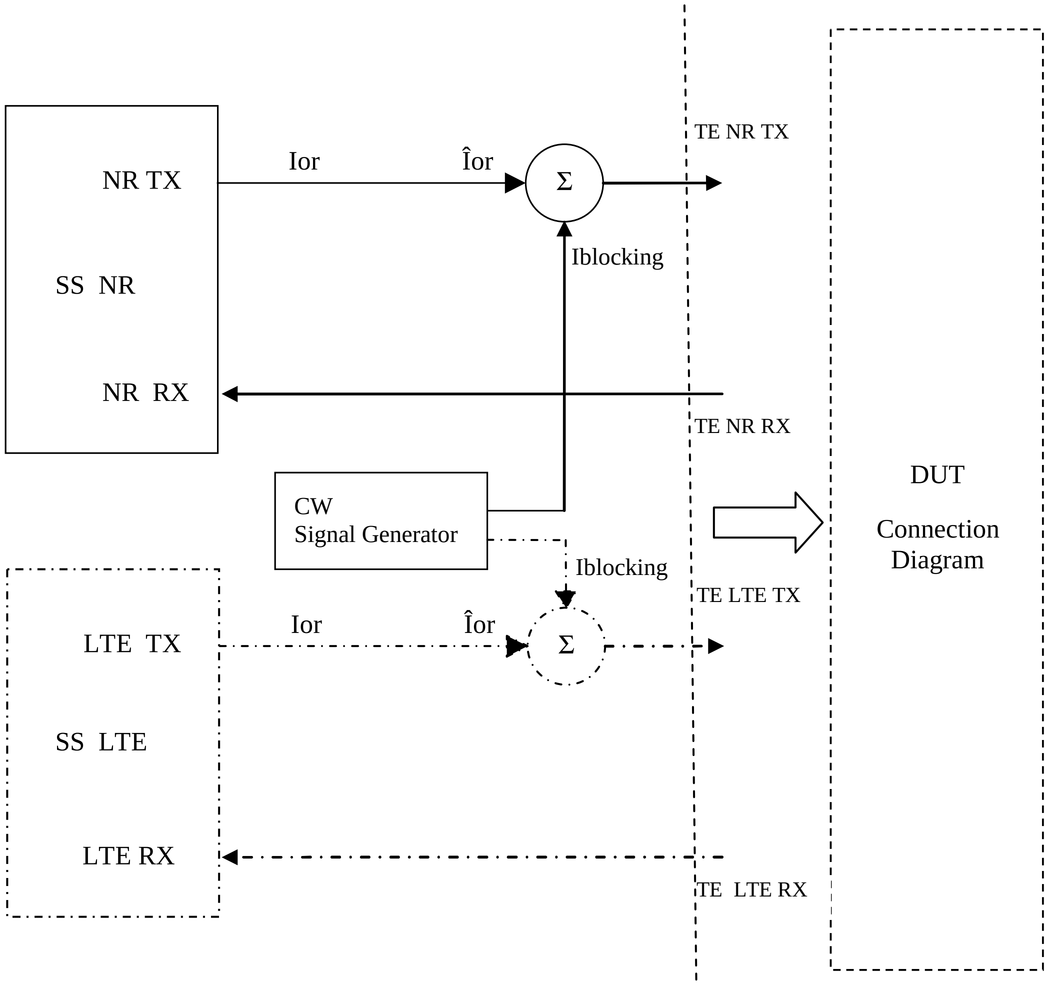

Figure A.3.1.4.2: Test Equipment connection for Receiver tests with CW Interference

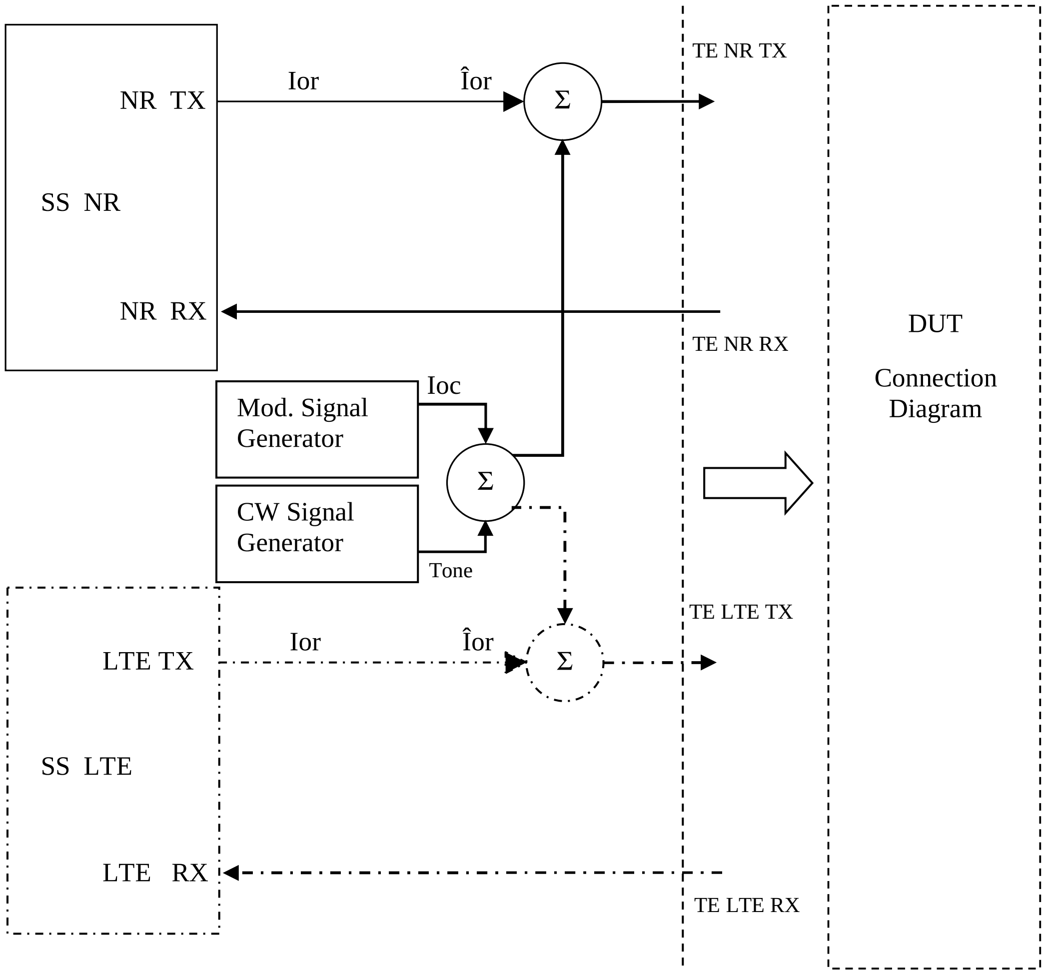

Figure A.3.1.4.3: Test Equipment connection for Receiver tests both Modulated and additional CW Interference signal

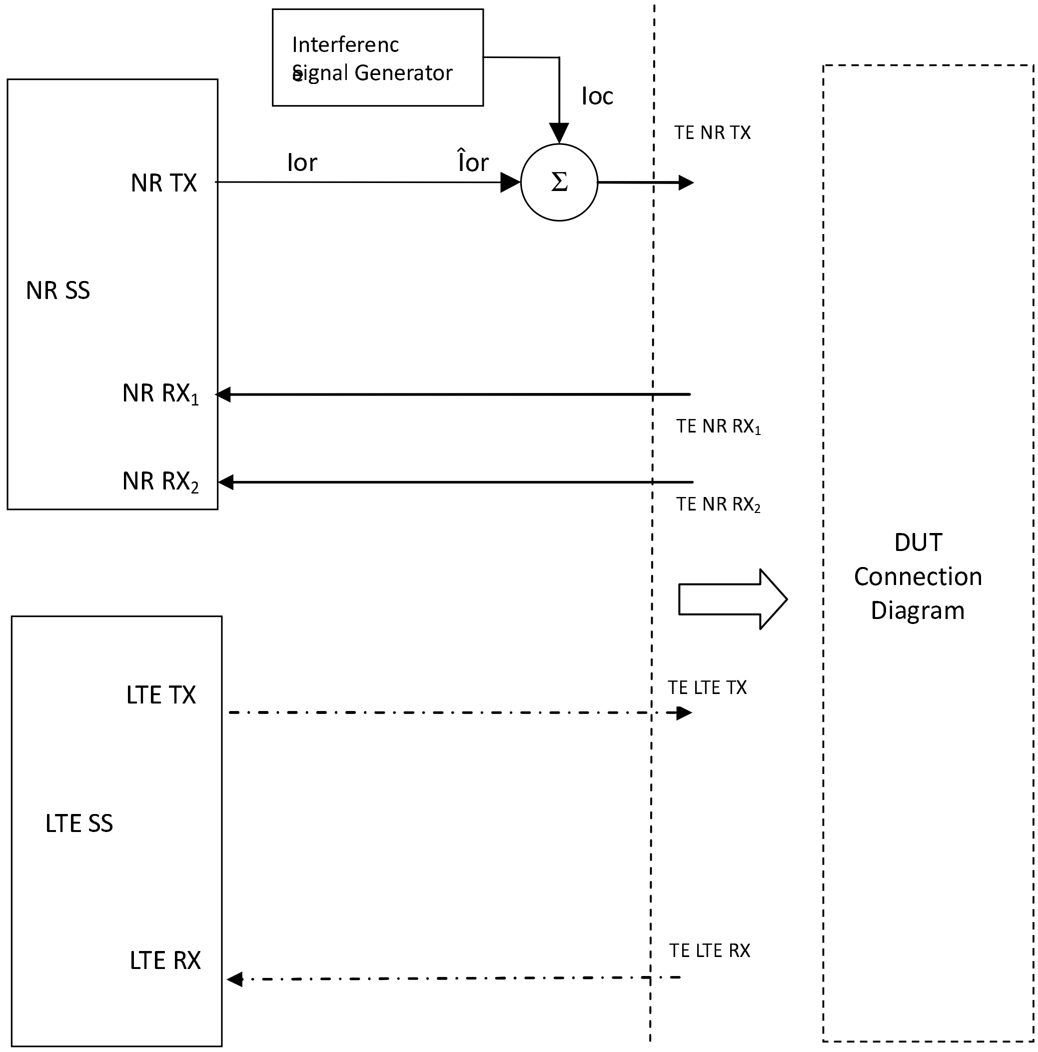

Figure A.3.1.4.4: Test Equipment connection for Receiver tests for UL MIMO with Modulated Interference

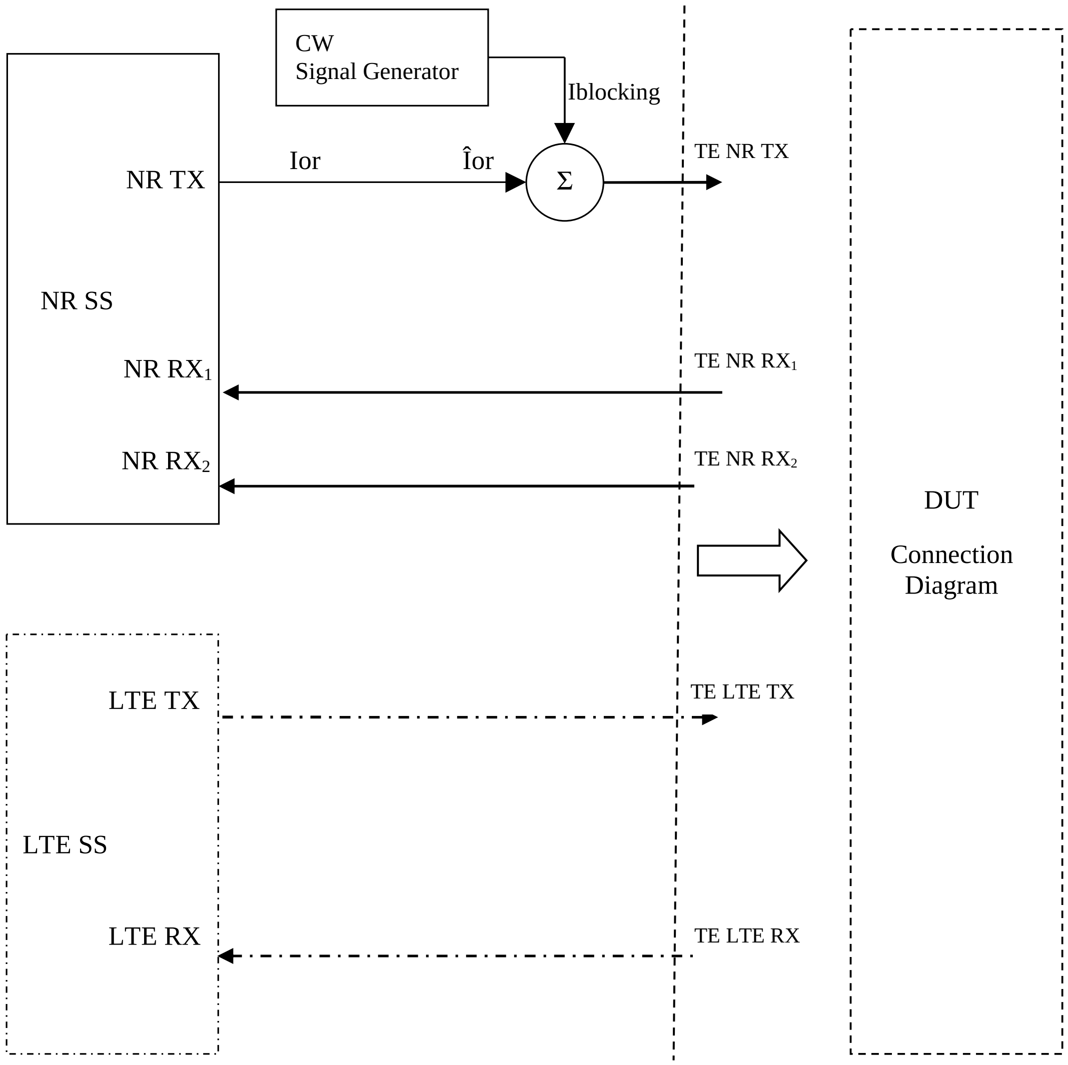

Figure A.3.1.4.5: Test Equipment connection for Receiver tests for UL MIMO with CW Interference

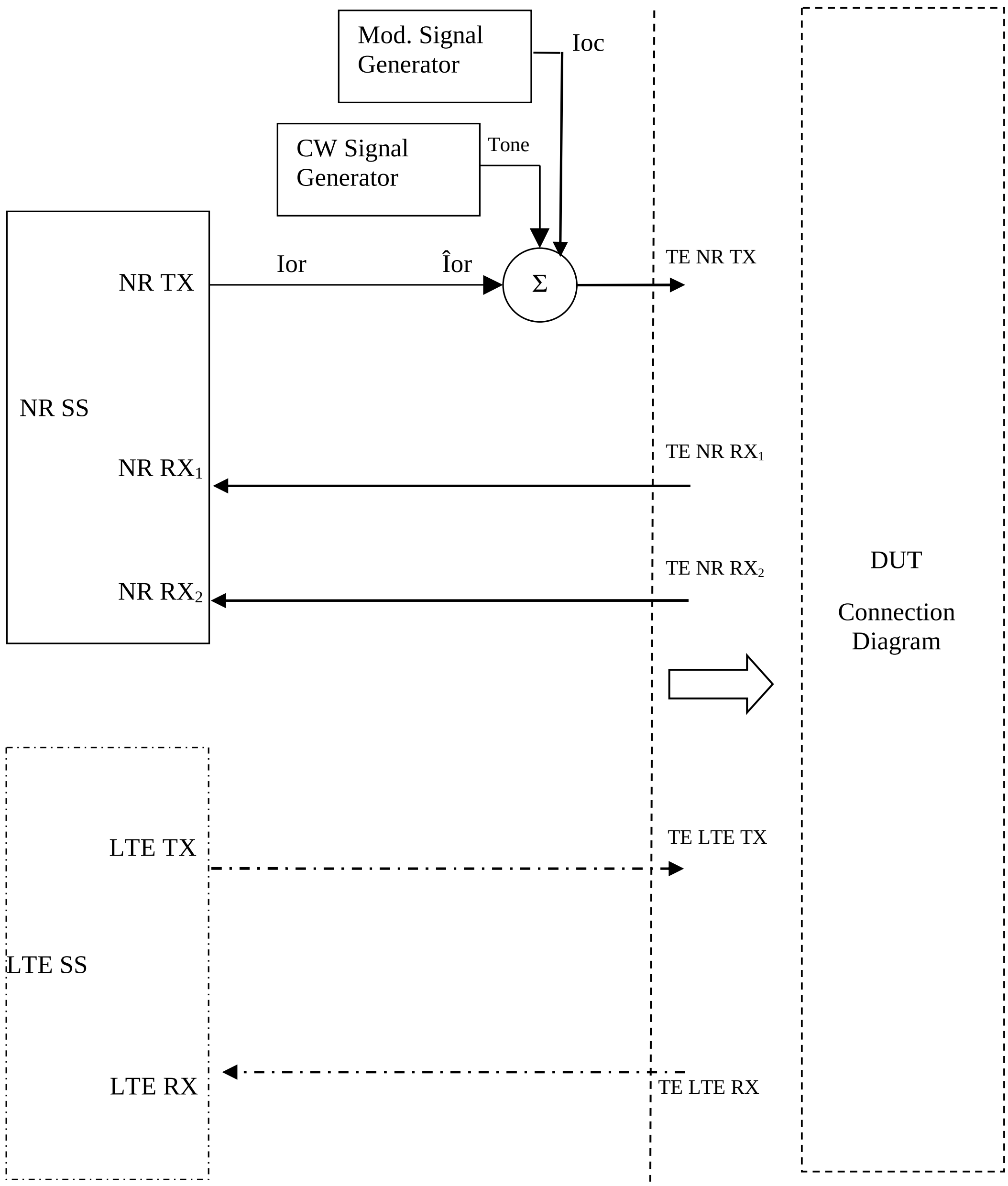

Figure A.3.1.4.6: Test Equipment connection for Receiver tests for UL MIMO with both Modulated and additional CW Interference signal

A.3.1.5 Receiver tests using Spectrum Analyser

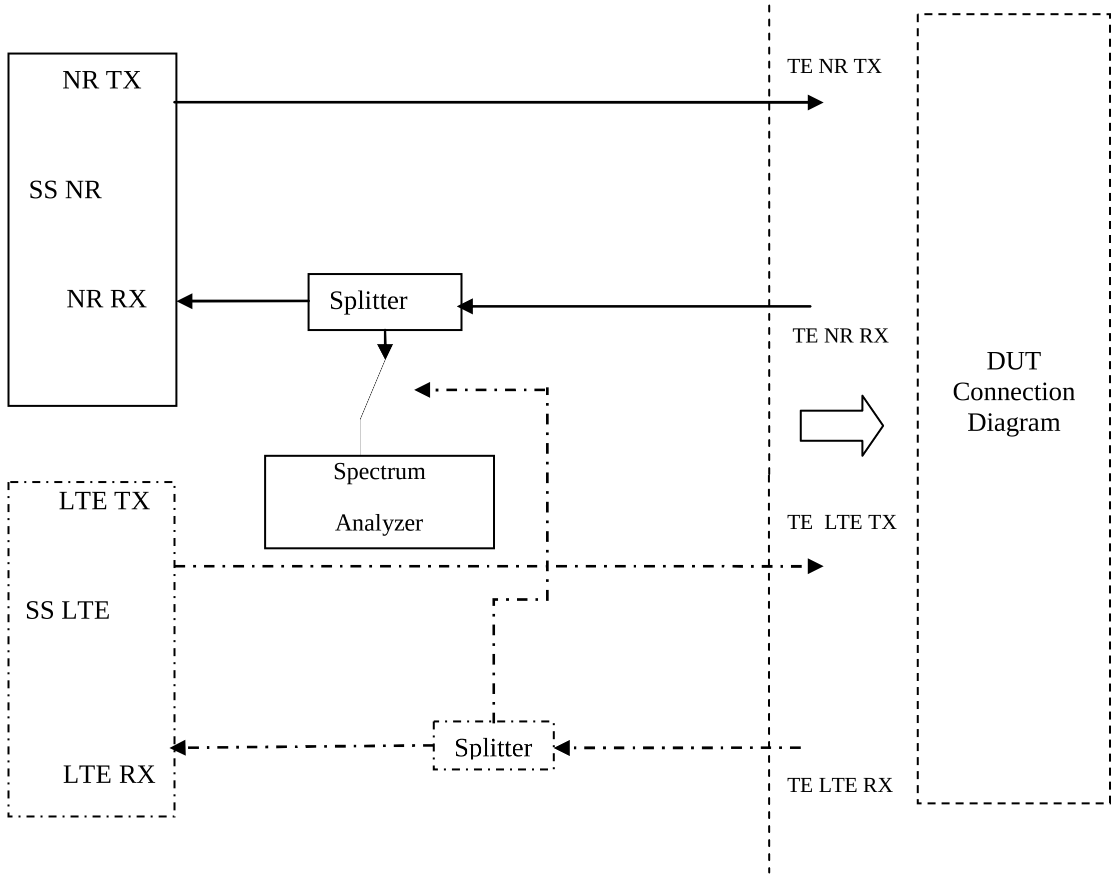

Figure A.3.1.5.1: Test Equipment connection for RX-tests with additional Spectrum Analyzer

A.3.1.6 Receiver Performance tests

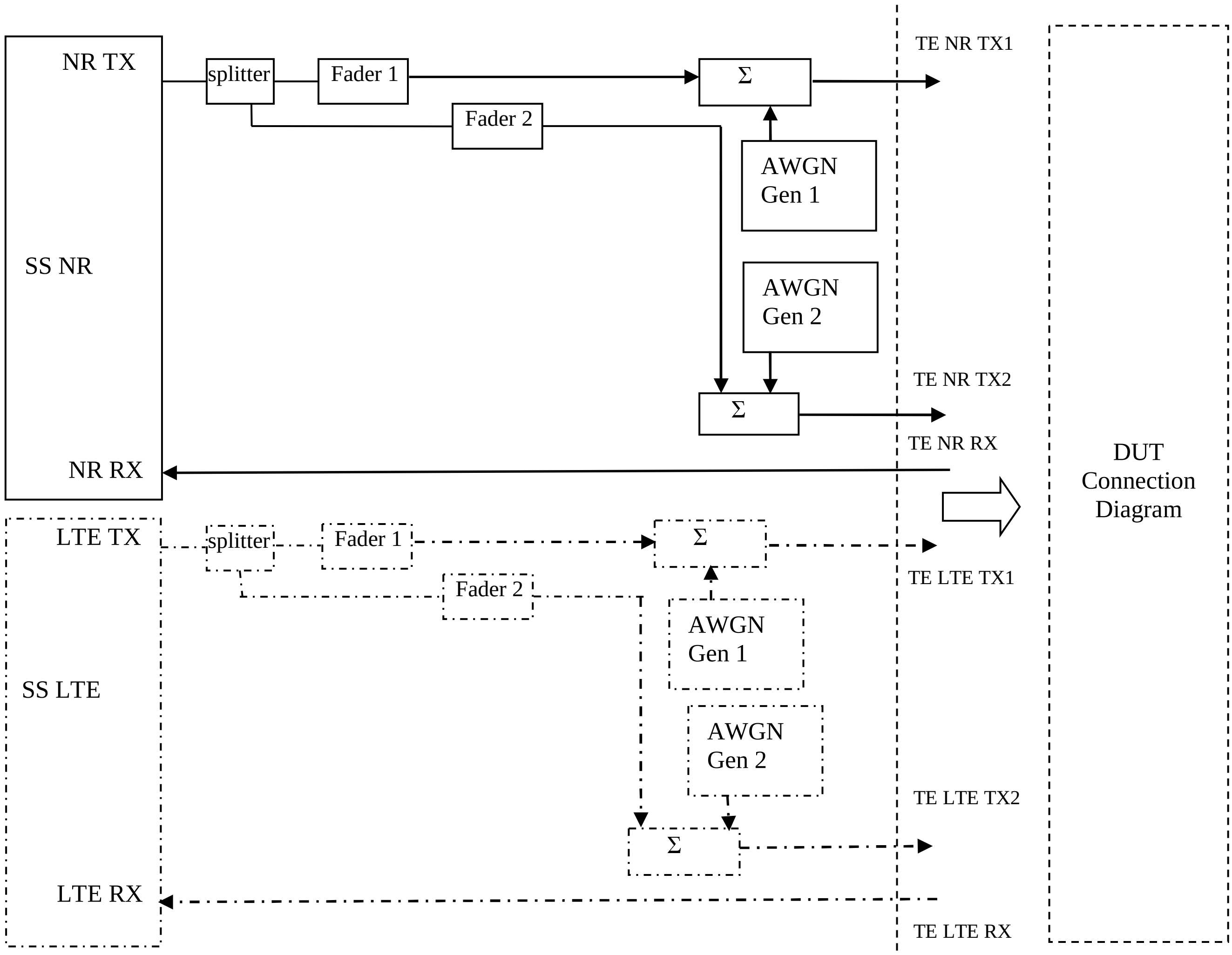

Figure A.3.1.6.1: Test Equipment connection for Receiver Performance tests with antenna configuration 1x2

A.3.1.7 Demodulation Performance and CSI reporting tests

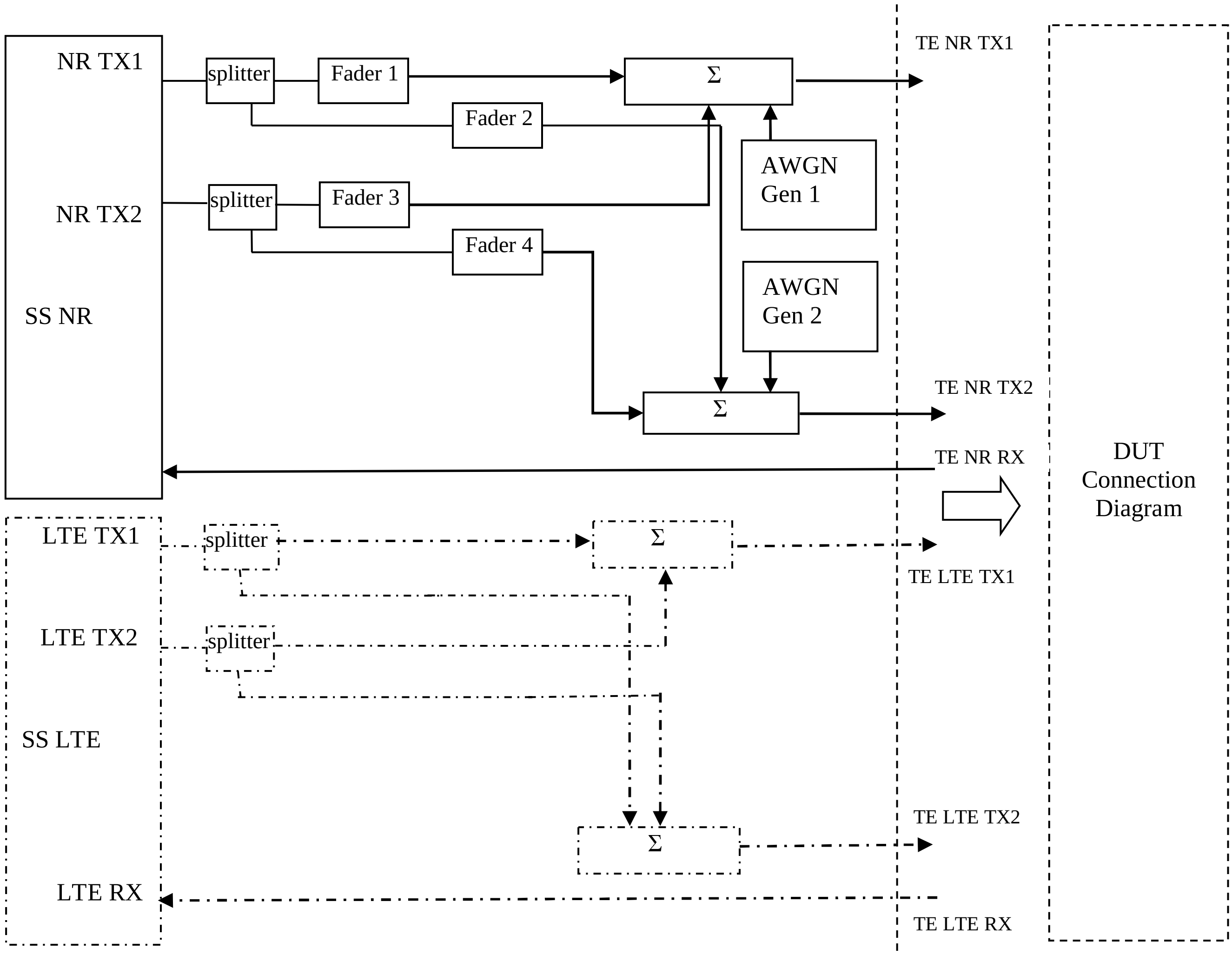

Figure A.3.1.7.1: Test Equipment connection for Demodulation Performance and CSI reporting tests with antenna configuration 2x2

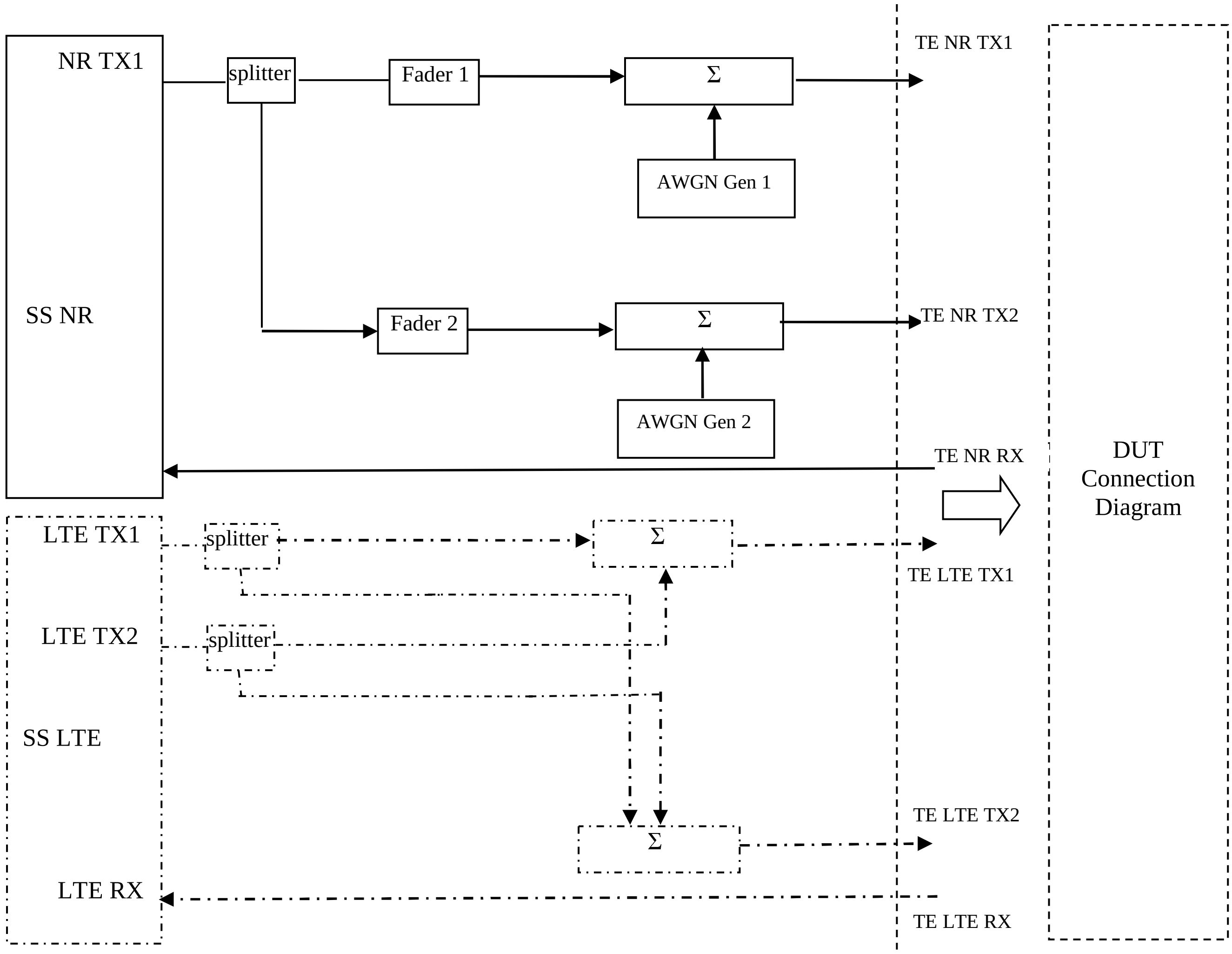

Figure A.3.1.7.2: Test Equipment connection for Demodulation Performance and CSI reporting tests with antenna configuration 1x2

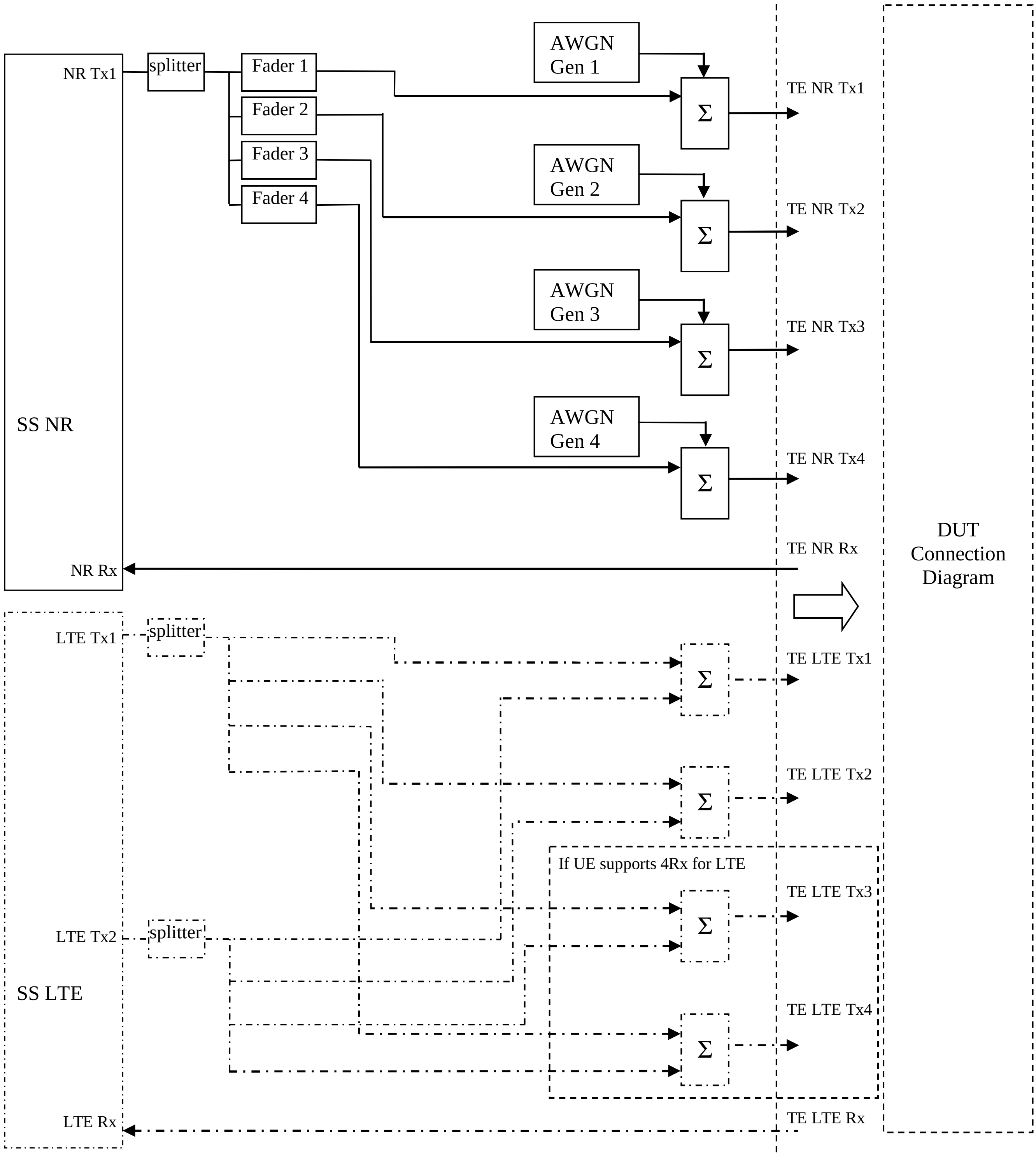

Figure A.3.1.7.3: Test Equipment connection for Demodulation Performance and CSI reporting tests with antenna configuration 1x4
(Note: LTE can be 2Rx or 4Rx and not dependent on NR #Rx)

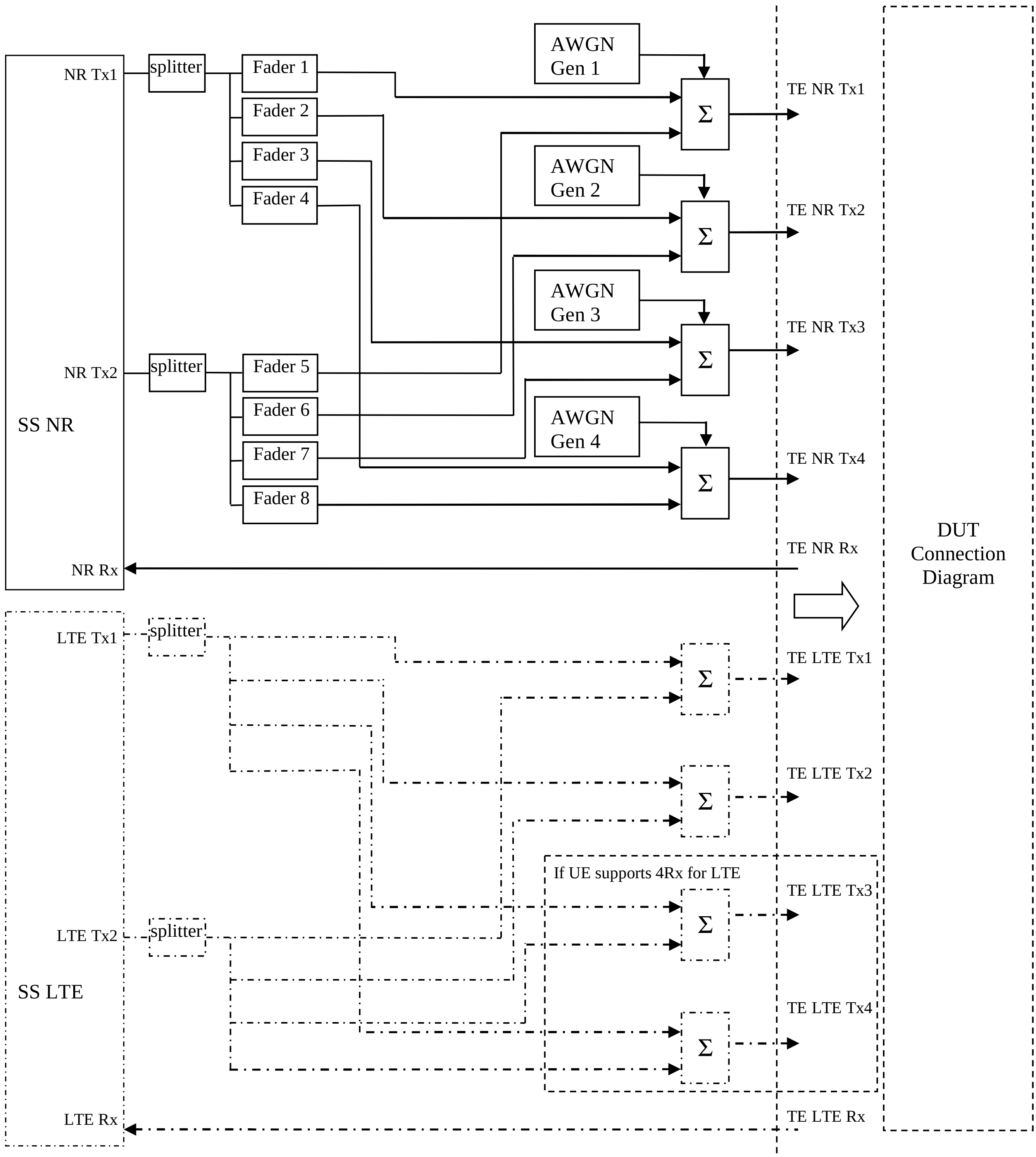

Figure A.3.1.7.4: Test Equipment connection for Demodulation Performance and CSI reporting tests with antenna configuration 2x4
(Note: LTE can be 2Rx or 4Rx and not dependent on NR #Rx)

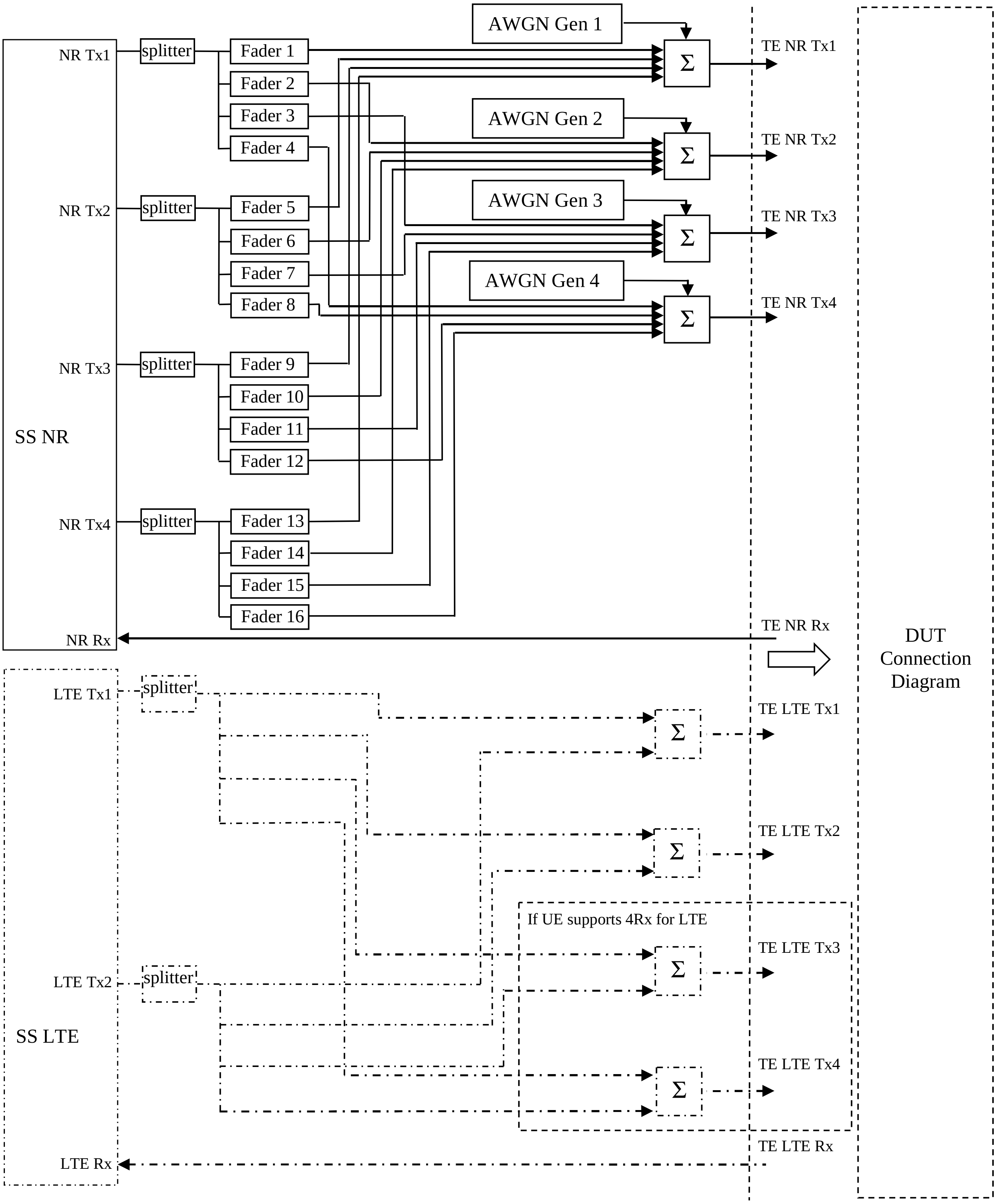

Figure A.3.1.7.5: Test Equipment connection for Demodulation Performance and CSI reporting tests with antenna configuration 4x4
(Note: LTE can be 2Rx or 4Rx and not dependent on NR #Rx)

A.3.1.8 RRM tests with more than one NR cell

The figures in this section represent connection diagrams for test cases with more than one NR cell. The parameters in the connection diagram, e.g. the number of cells *n* or the value of the phase rotator φ_i shall be defined by the test cases.

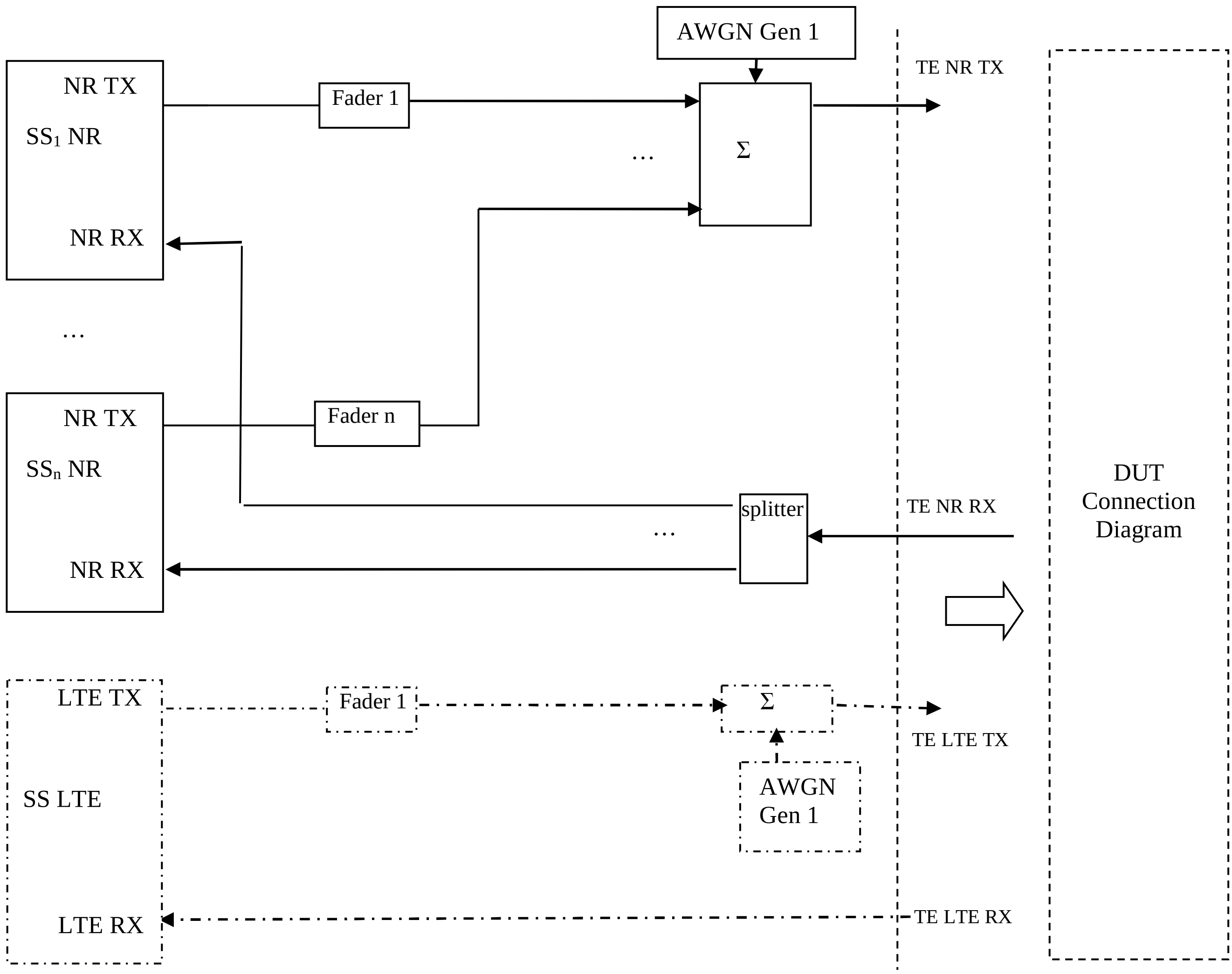

Figure A.3.1.8.1: Test Equipment connection for tests with more than one NR cell and antenna configuration 1x1

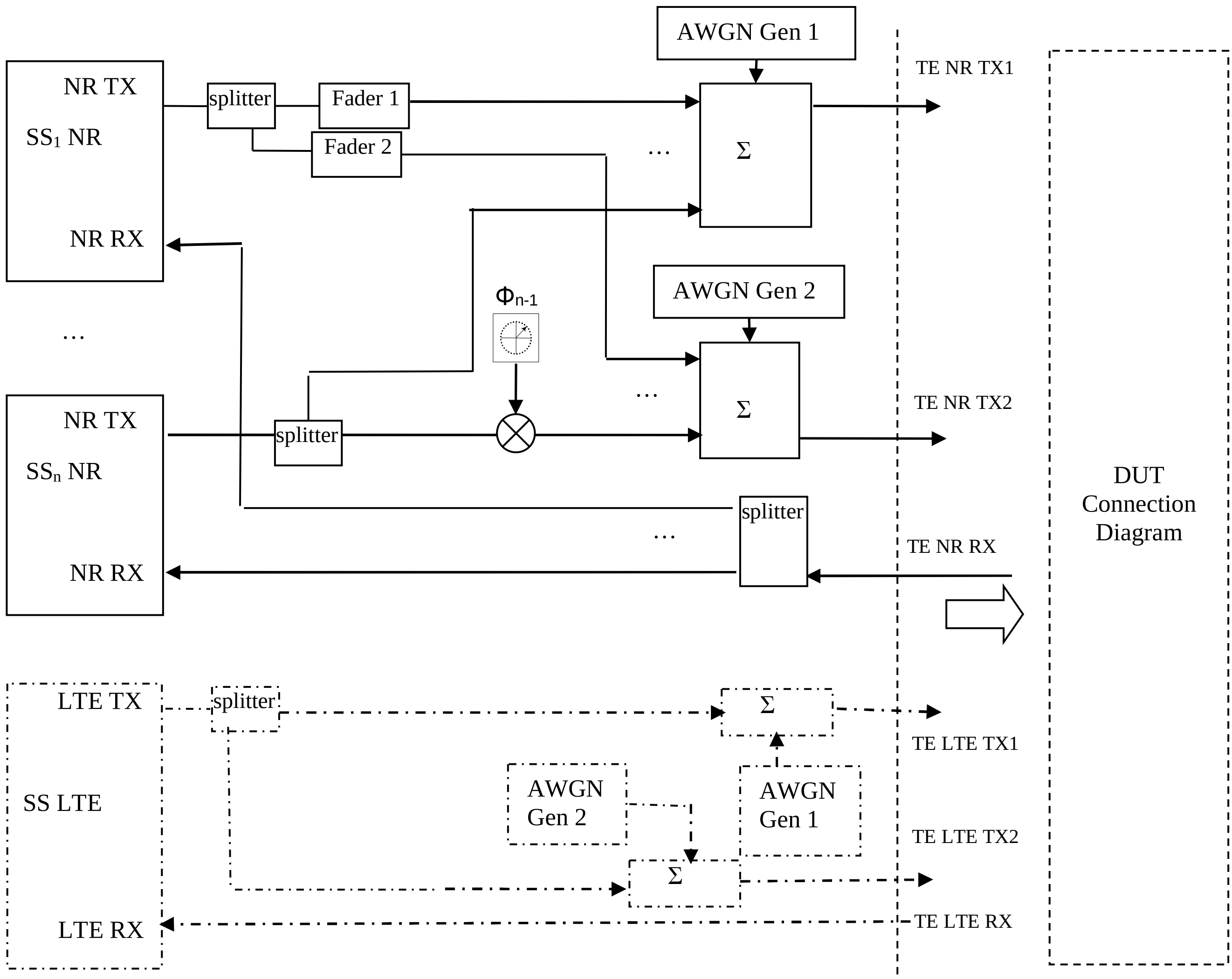

Figure A.3.1.8.2: Test Equipment connection for tests with more than one NR cell and antenna configuration 1x2

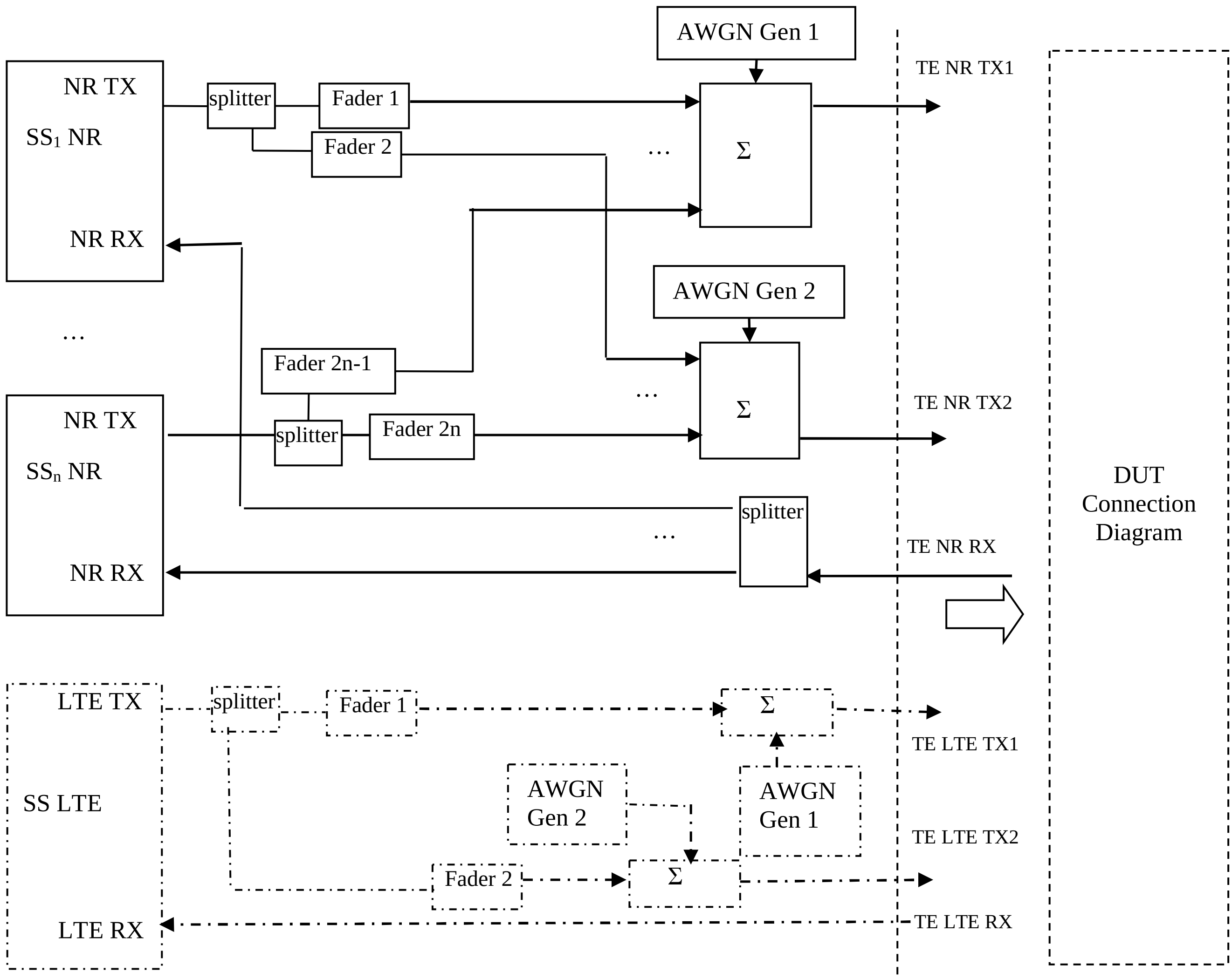

Figure A.3.1.8.3: Test Equipment connection for tests with more than one NR cell and antenna configuration 1x2 and fading

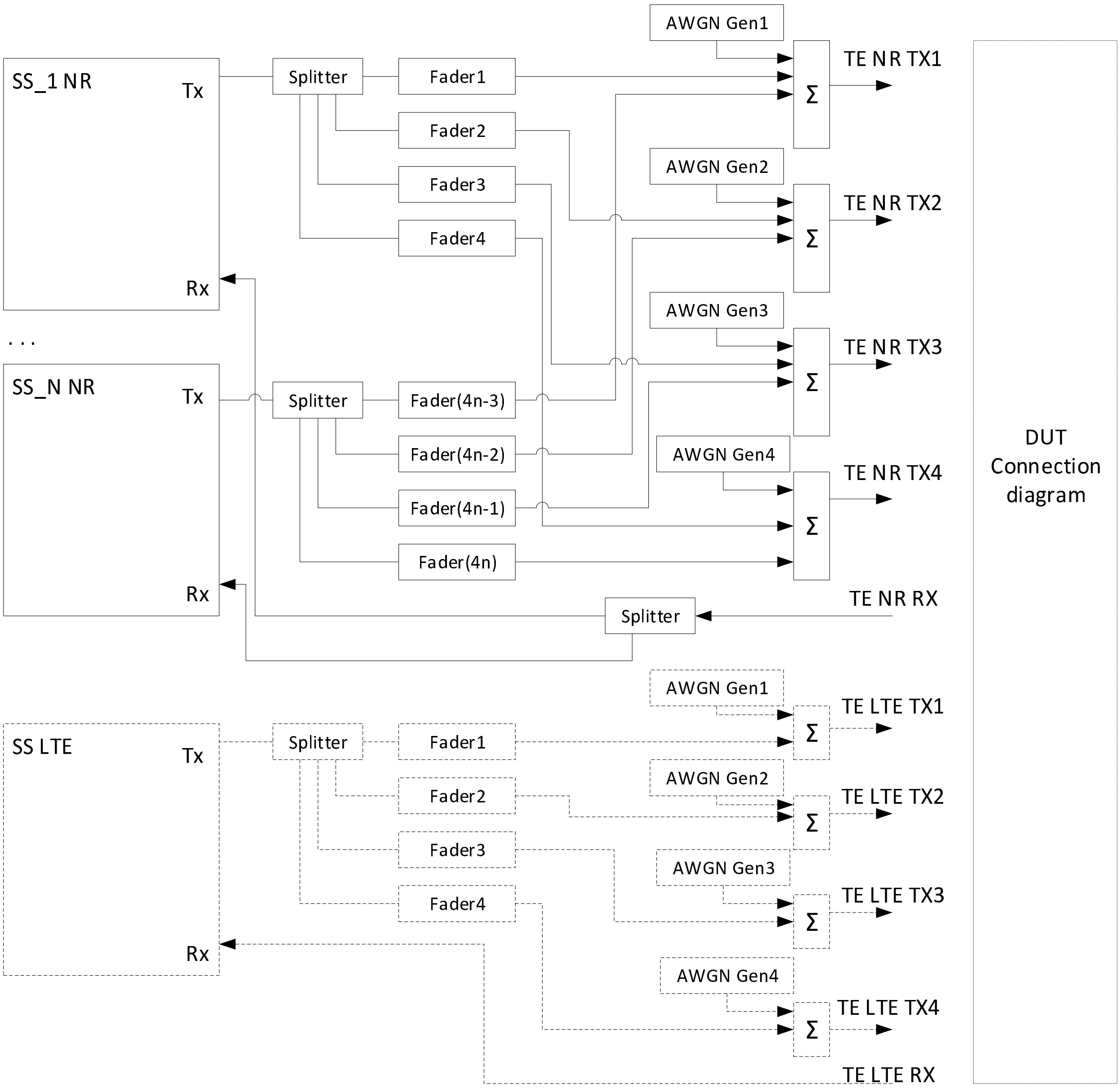

Figure A.3.1.8.4: Test Equipment connection for tests with more than one NR cell for 4Rx capable UEs with fading

A.3.2 User Equipment Parts for Conducted Measurements

A.3.2.1 General

The User Equipment part is focused on the number of physical antenna connectors and how to combine in the DUT. Depending on the DUT implementation only one of the following connection diagrams applies. These connection diagrams are examples of User equipment parts.

A.3.2.2 One Antenna Connector

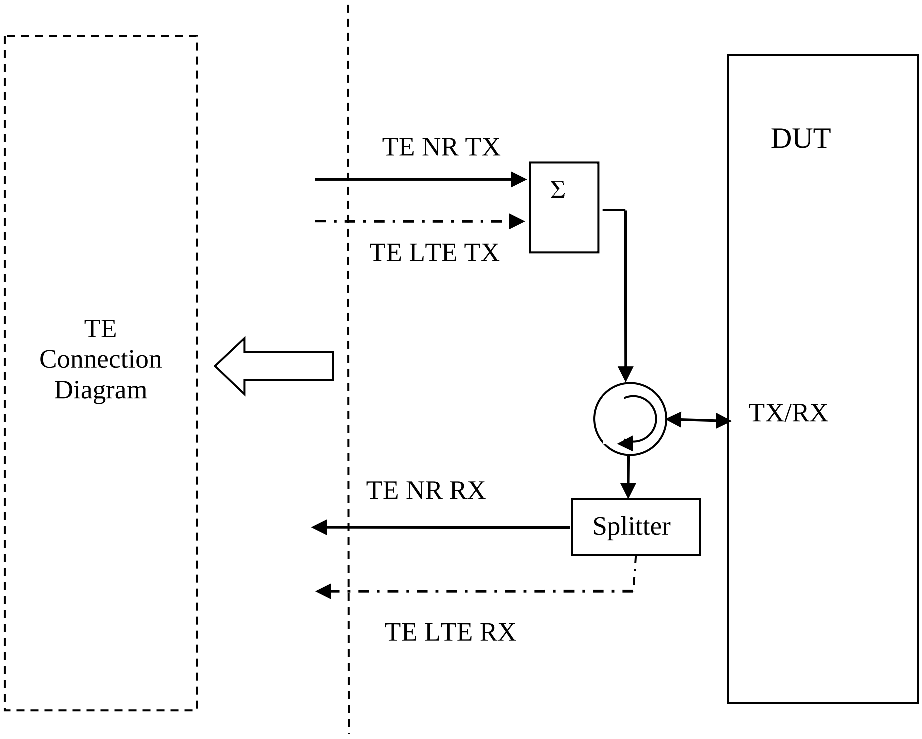

Figure A.3.2.2.1: User Equipment connection for single basic cell

A.3.2.3 Two Antenna Connectors

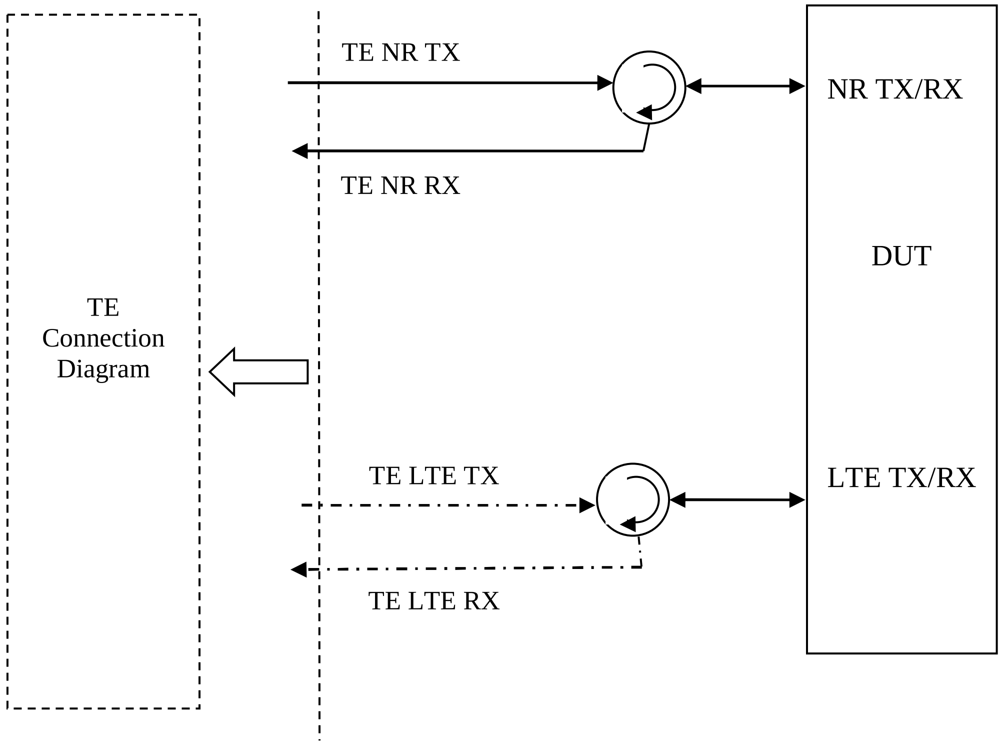

Figure A.3.2.3.1: User Equipment connection for single basic cell with NR and LTE cells at different separated connectors

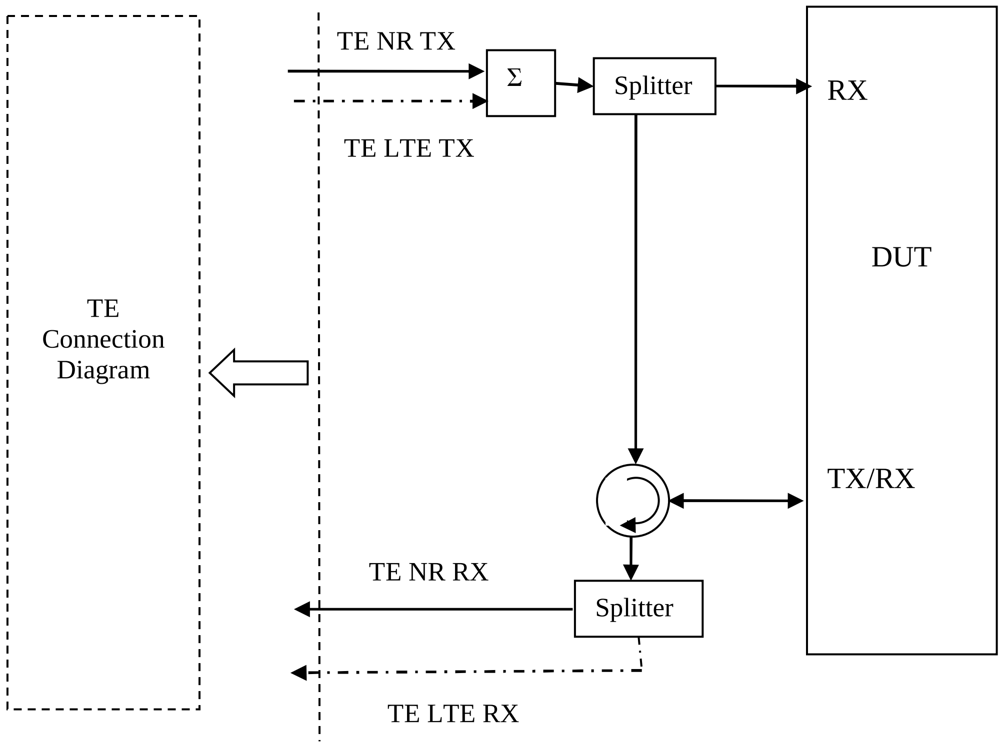

Figure A.3.2.3.2: User Equipment connection for single basic cell with NR and LTE cells at the same connectors for both cells

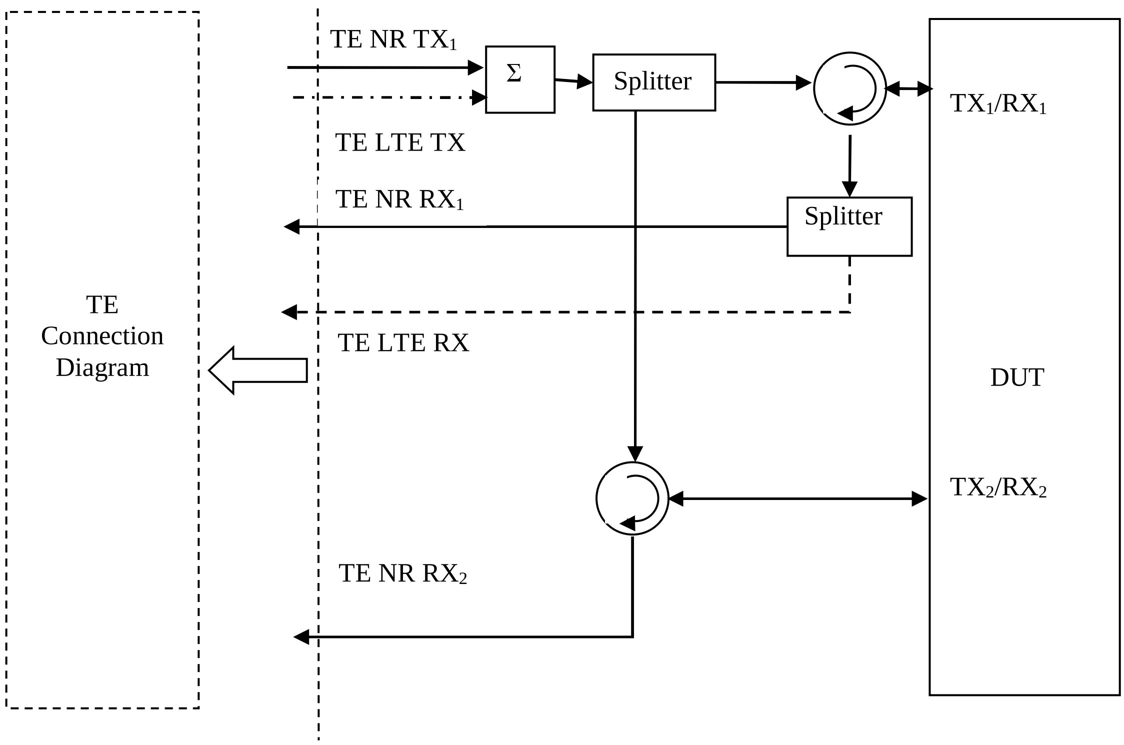

Figure A.3.2.3.3: 2 Tx User Equipment connection for single basic cell with NR and LTE cells at the same connectors for both cells and 2TX UL MIMO supported

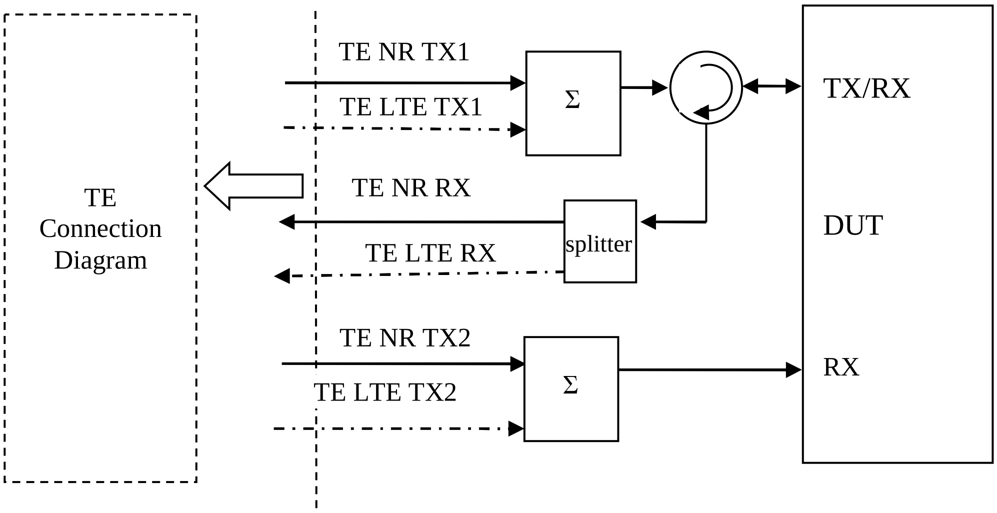

Figure A.3.2.3.4: User Equipment connection for UEs with NR and LTE RxTx and Rx antenna at same connectors

A.3.2.4 Three Antenna Connectors

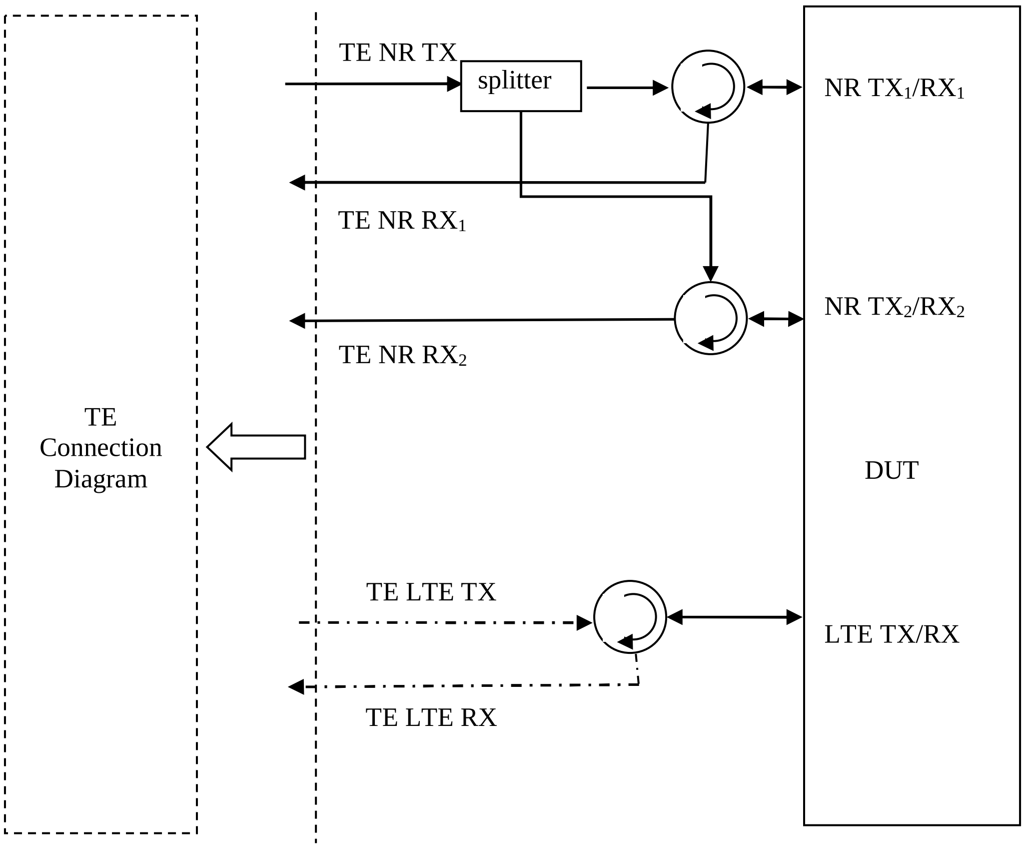

Figure A.3.2.4.1: 2Tx User Equipment connection for single basic cell with NR and LTE cells at different separated connectors and 2TX UL MIMO supported

A.3.2.5 Four Antenna Connectors

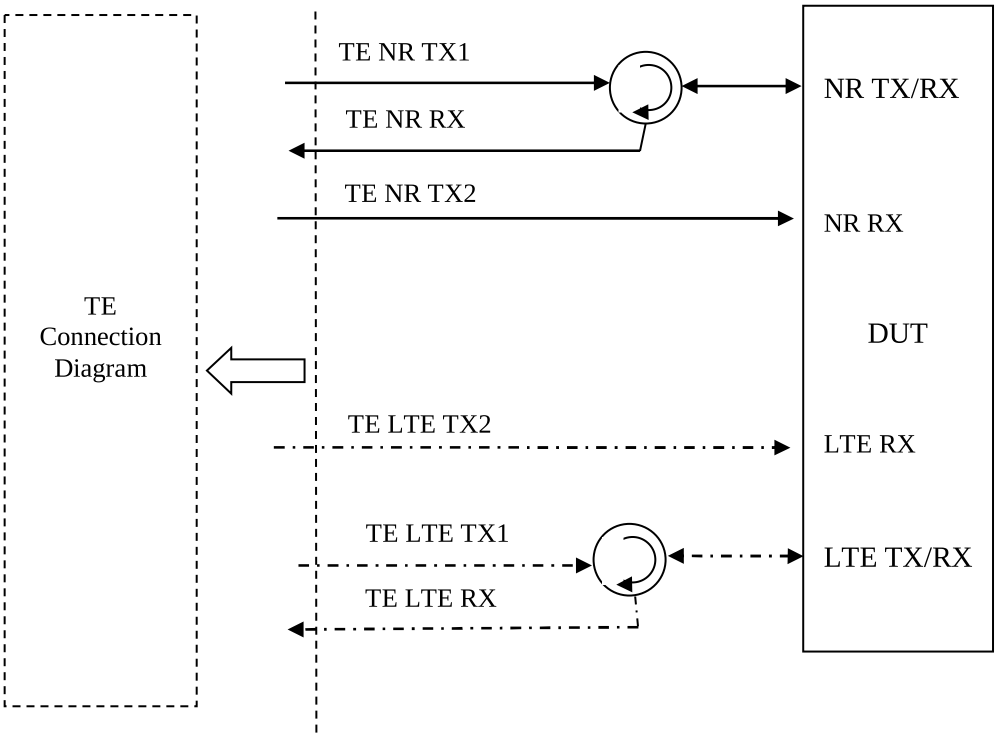

Figure A.3.2.5.1: User Equipment connection for UEs with NR and LTE RxTx and Rx antenna at different separated connectors

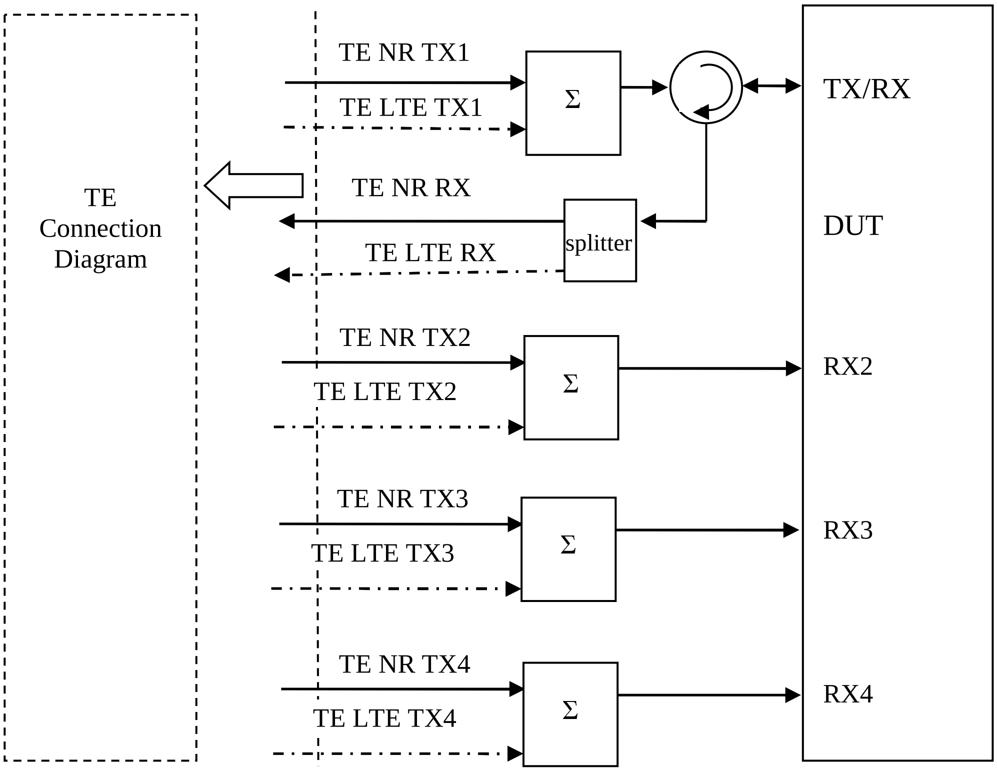

Figure A.3.2.5.2: User Equipment connection for 4Rx capable UEs without any 2Rx RF bands (NR and LTE at same connectors)

A.3.3 Test Equipment Parts for Radiated Measurements

A.3.3.1 Basic Transmitter/Receiver tests

The Test Equipment part is focused on logical representation of TE measurement and link antenna(s) and positioner controller. The Test Equipment connection diagram below is applicable for NR radiated RX and TX tests.

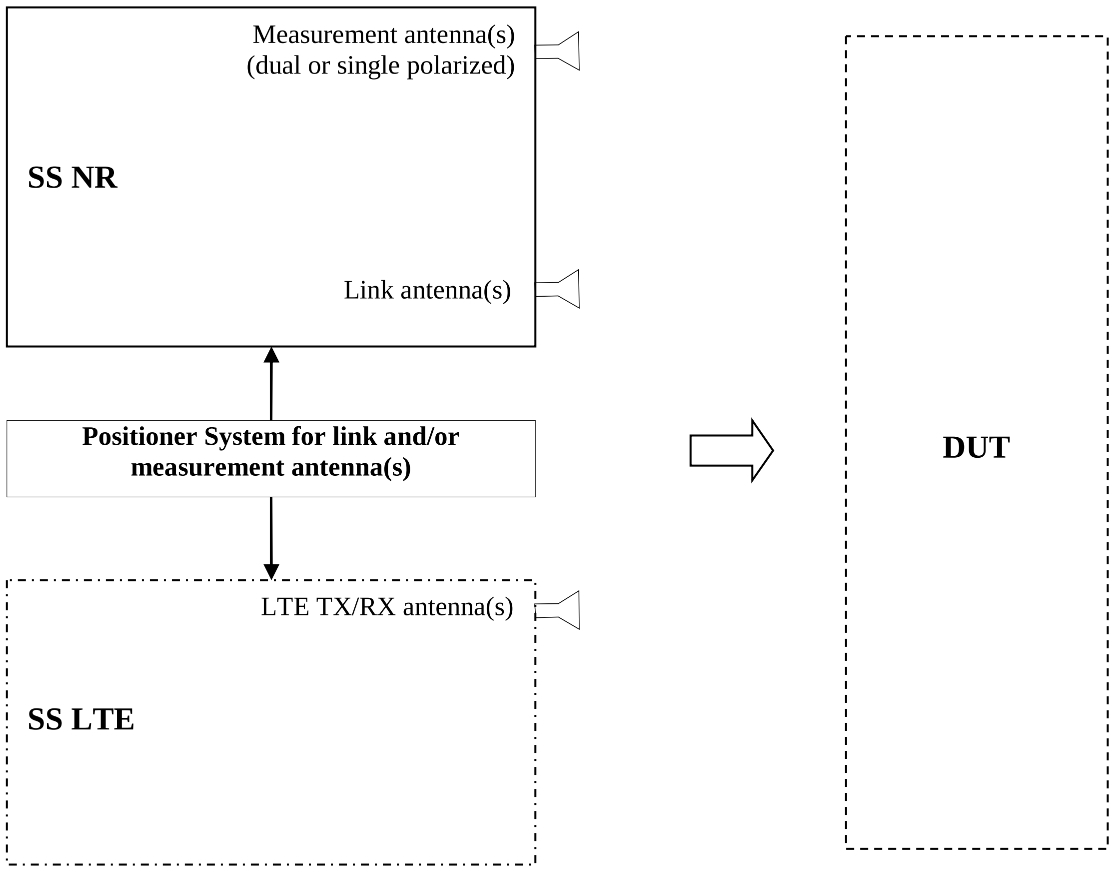

Figure A.3.3.1.1: TE diagram for radiated RX and TX tests

A.3.4 User Equipment Parts for Radiated Measurements

A.3.4.1 Basic Transmitter/Receiver tests

The User Equipment part is focused on logical representation of UE antenna(s), DUT positioner and positioner controller. The UE connection diagram below is applicable for NR radiated RX and TX tests.

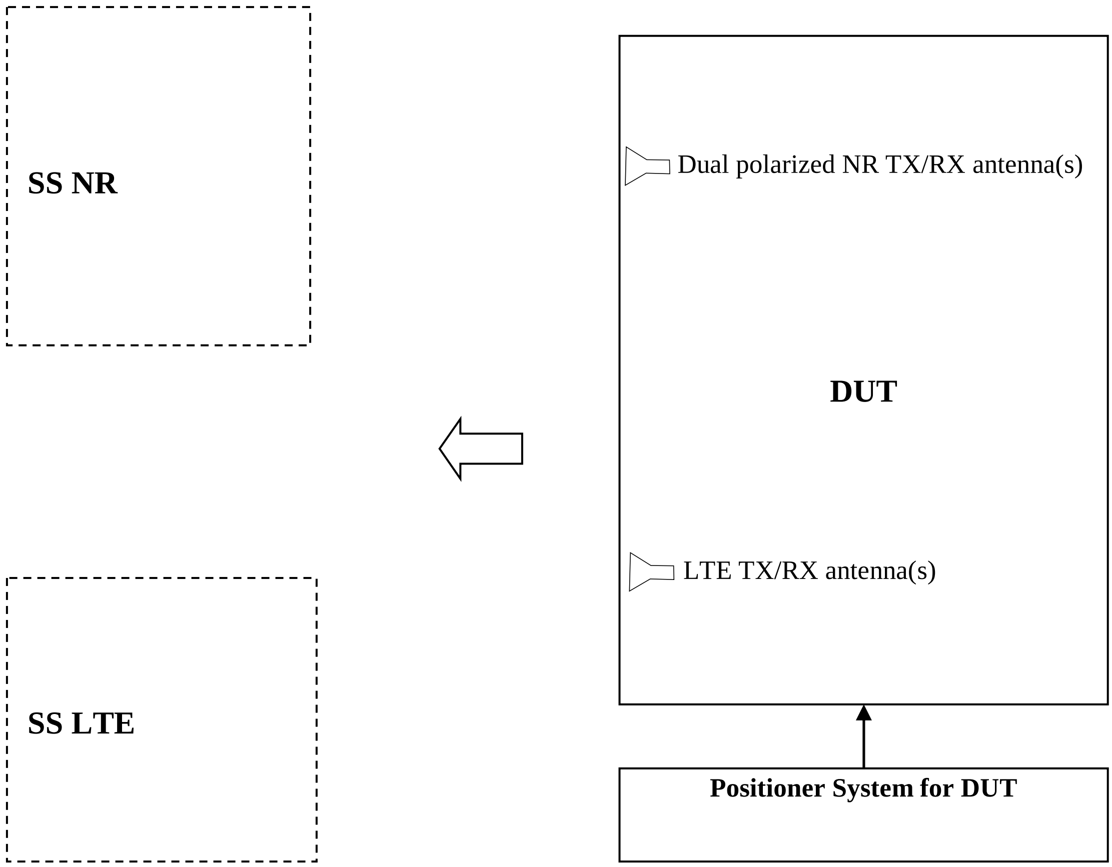

Figure A.3.4.1.1: UE diagram for radiated RX and TX tests

Annex B (normative): Permitted test methods For OTA Testing

B.1 General

Editor's Note: The working assumption is that the DFF or IFF: CATR based OTA test methodologies defined in Annexes B.2.2 and B.2.4 respectively should be used for Signalling test.

The applicability of the permitted test methods herein is defined by the appropriate references within clauses 5, 6, and 7. A summary of the applicability is shown in Table B.1-1.

Table B.1-1: Permitted Test Methods Applicability Summary

FFS

B.2 Permitted Test Methods

B.2.1 General

The main objective of this annex is to specify basic parameters of permitted OTA test methods suitable for RF Tx and Rx, Performance, and RRM measurements and Signalling Conformance tests performed at high frequency in the FR2 operating bands defined in clause 4.3.1.2. The applicability of each OTA test method is summarized in Table B.1-1.

B.2.2 Direct far field (DFF)

B.2.2.1 Description

The DFF measurement setup for FR2 is capable of centre and off-centre of beam measurements and is shown in Figure B.2.2.1-1 below.

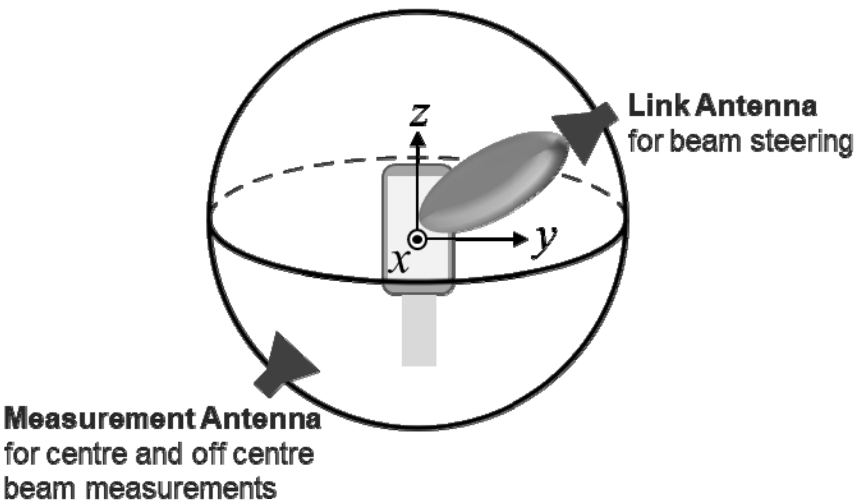

Figure B.2.2.1-1: DFF measurement setup

The key aspects of the DFF setup are:

- Far-field measurement system in an anechoic chamber
    - The criterion for determining the far-field distance is described in B.2.2.4.
- A positioning system such that the angle between the dual-polarized measurement antenna and the DUT has at least two axes of freedom and maintains a polarization reference.
- A positioning system such that the angle between the link antenna and the DUT has at least two axes of freedom and maintains a polarization reference; this positioning system for the link antenna is in addition to the positioning system for the measurement antenna and provides for an angular relationship independently controllable from the measurement antenna.
- For setups intended for measurements of UE RF characteristics in non-standalone (NSA) mode with 1 UL configuration, an LTE link antenna is used to provide the LTE link to the DUT. The LTE link antenna provides a stable LTE signal without precise path loss or polarization control.
- For setups intended for measurements in NR CA mode with FR1 and FR2 inter-band NR CA, test setup provides NR FR1 link to the DUT. The NR FR1 link has a stable and noise-free signal without precise path loss or polarization control.

The applicability criteria of the DFF setup are:

- The DUT radiating aperture is $D \leq 5$ cm
    - Either a single radiating aperture, multiple non-coherent apertures, or multiple coherent apertures DUTs can be tested
    - If multiple antenna panels that are phase coherent are defined as a single array, the criterion on DUT radiating aperture applies to this single array
    - D is based on the MU assessment in Annex B.1.1.3 of TR 38.810 [24]
    - A measurement distance larger than the far-field criteria defined in B.2.2.4 is not precluded
    - If the uncertainties can be further optimized, the MU may be reduced or D may be increased
- A manufacturer declaration on the following elements is needed unless the entire DUT size is contained in a sphere of diameter of ≤ 5 cm:

- Manufacturer declares antenna array size

B.2.2.2 Quiet zone dimension

The quiet zone shall be large enough to fully contain the DUT. In order to allow testing of DUTs of various size and to allow for flexibility in test chamber implementations, there will be two defined quiet zone dimensions. The smaller quiet zone shall have a minimum radius of 75mm to accommodate DUTs such as smartphones. The larger quiet zone shall have a minimum radius of 150mm to accommodate larger DUTs such as tablets. The device types are listed as examples and other device types are not precluded. In either case, the DUT shall be fully contained in one of the quiet zone sizes defined herein.

B.2.2.3 Quality of the quiet zone

The quality of the quiet zone shall be measured for the frequencies defined in FFS. The measured quality of the quiet zone performance is used in uncertainty calculations for the appropriate quality of the quiet zone dimension utilized for the DUT.

B.2.2.4 Measurement Distance

For far-field measurements, the distance *R* between the DUT and the measurement antenna shall be calculated by the following equation.

$$R > \frac{2D^2}{\lambda}$$

where λ is the largest wavelength within the frequency band of interest and D is the diameter of the smallest sphere that encloses the radiating parts of the DUT.

For DFF, free space path loss is calculated by applying the Free Space Loss formula with R equal to the far field distance: $\left(\frac{4\pi R}{\lambda}\right)^2$.

A summary of the far-field measurement distance for different antenna sizes and frequencies can be found in clause 5.2.1.2 of TR 38.810 [24]. The influence of measurement distance on measurement uncertainty is discussed in Annex B.2.1 of TR 38.903 [XX].

B.2.3 Direct far field (DFF) setup simplification for centre of beam measurements

B.2.3.1 Description

The DFF setup in Annex B.2.2 can be simplified in the following way to perform centre of the beam measurements:

- The measurement and the link antenna can be combined so that the single antenna is used to steer the beam and to perform UE measurements.

The measurement setup for FR2 capable of centre of beam measurements is shown in Figure B.2.3.1-1 below.

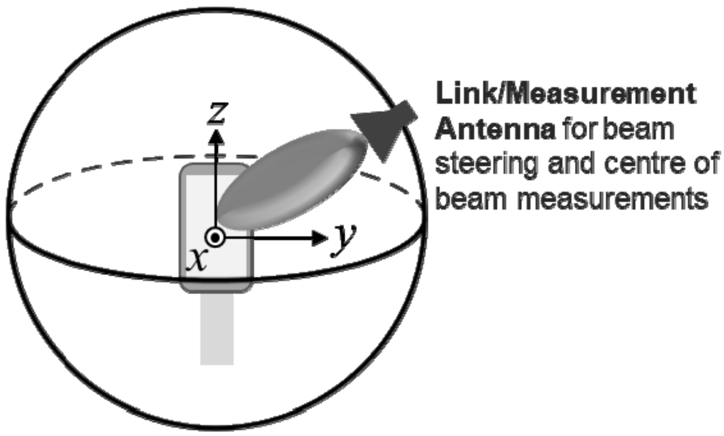

Figure B.2.3.1-1: DFF simplification for centre of beam measurement setup

The applicability criteria of the simplified DFF setup for centre of beam measurements are defined in B.2.2.1.

B.2.3.2 Quiet zone dimension

Same as Annex B.2.2.2.

B.2.3.3 Quality of the quiet zone

Same as Annex B.2.2.3.

B.2.3.4 Measurement Distance

Same as Annex B.2.2.4.

B.2.4 Indirect far field (IFF): Compact Antenna Test Range (CATR)

B.2.4.1 Description

The IFF method utilizing a compact antenna test range (CATR) creates the far field environment using a transformation with a parabolic reflector.

The IFF CATR measurement setup for FR2 is capable of centre and off-centre of beam measurements and an example setup is shown in Figure B.2.4.1-1 below. The relative orientation of the coordinate system with respect to the reflector and the axes of rotation apply to any CATR measurement setup.

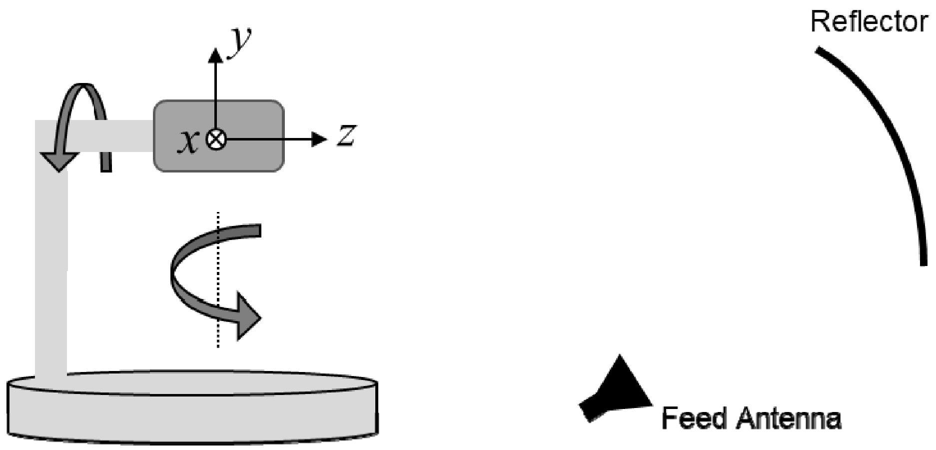

Figure B.2.4.1-1: Example of IFF: CATR measurement setup

The key aspects of this test method setup are:

- Indirect Far Field using Compact Antenna Test Range as described in TR 38.810 [24] with quiet zone diameter that meets the requirements of B.2.4.2.
- A positioning system such that the angle between the dual-polarized measurement antenna and the DUT has at least two axes of freedom and maintains a polarization reference.
- Before performing the UE Beamlock Test Function as defined in clause 4.9.2, the measurement probe acts as a link antenna maintaining polarization reference with respect to the DUT. Once the beam is locked then the link is to be passed to the link antenna which maintains reliable signal level with respect to the DUT.
- For setups intended for measurements of UE RF characteristics in non-standalone (NSA) mode with 1UL configuration, an LTE link antenna is used to provide the LTE link to the DUT. The LTE link antenna provides a stable LTE signal without precise path loss or polarization control.
- For setups intended for measurements in NR CA mode with FR1 and FR2 inter-band NR CA, test setup provides NR FR1 link to the DUT. The NR FR1 link has a stable and noise-free signal without precise path loss or polarization control.

The applicability criteria of this test method are:

- The total test volume is a cylinder with diameter d and height h.
- DUT must fit within the total test volume for the entire duration of the test.
- Either a single radiating aperture, multiple non-coherent apertures or multiple coherent apertures DUTs can be tested.
- No manufacturer declaration of the antenna array size is needed.

B.2.4.2 Quiet zone dimension

Same as Annex B.2.2.2.

B.2.4.3 Quality of the quiet zone

Same as Annex B.2.2.3.

B.2.4.4 Measurement Distance

The CATR system does not require a measurement distance of $R > \frac{2D^2}{\lambda}$ to achieve a plane wave as in a standard far field range.

For the CATR system, the far-field distance is seen as the focal length. The focal length is the distance between the feed and the reflector of the CATR. Further information on the focal length of a CATR system can be found in clause 5.2.3.2 of TR 38.810 [24].

The measurement distance for any CATR system implementation shall be adequate to meet the quiet zone dimensions defined in B.2.4.2.

In a CATR, from the reflector to the quiet zone, there is a plane wave with no free space path loss.

For CATR, free space path loss is calculated by applying the Free Space Loss formula with *R* equal to the far field distance based on the focal length: $\left(\frac{4\pi R}{\lambda}\right)^2$.

A summary of the comparison of path losses which can be expected for the CATR compared to a Fraunhofer limit distance ($R > \frac{2D^2}{\lambda}$) for different antenna sizes and frequencies can be found in clause 5.2.3.2 of TR 38.810 [24].

The influence of measurement distance on measurement uncertainty can be considered as zero as defined in Annex B.2.2 of TR 38.903 [XX].

B.2.5 Near field to far field transform (NFTF)

B.2.5.1 Description

The NFTF method computes the metrics defined in Far Field by using the Near Field to Far Field transformation.

The NFTF measurement setup of UE RF characteristics for FR2 is capable of centre and off centre of beam measurements and an example setup is shown in Figure B.2.5.1-1:

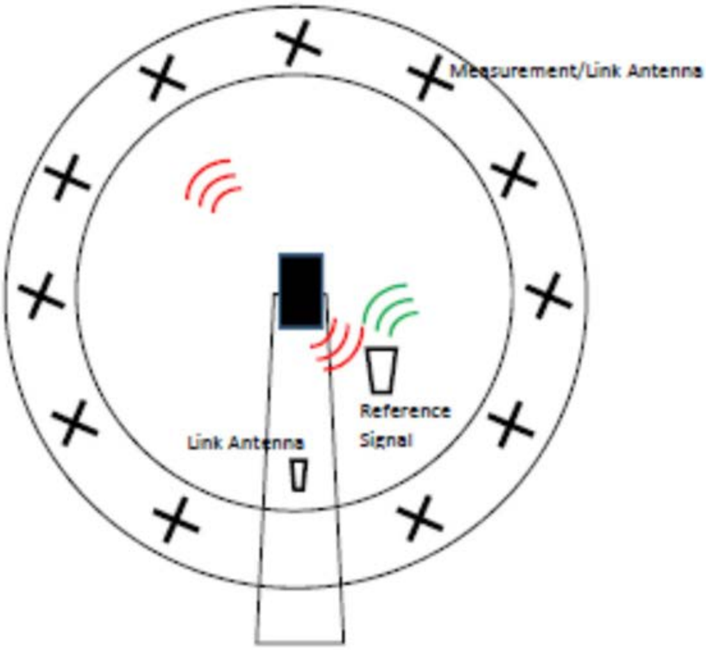

Figure B.2.5.1-1: Example of NFTF measurement setup

The key aspects of the Near Field test range are:

- Radiated Near Field UE beam pattern is measured and based on the NFTF mathematical transform, the final metric such as EIRP is the same as the metric for the baseline setup
- A positioning system such as the angle between the dual-polarized measurement/link antenna and the DUT has at least two axes of freedom and maintains a polarization reference
- For setups intended for measurements of UE RF characteristics in non-standalone (NSA) mode with 1UL configuration, an LTE link antenna is used to provide the LTE link to the DUT. The LTE link antenna provides a stable LTE signal without precise path loss or polarization control.
- For setups intended for measurements in NR CA mode with FR1 and FR2 inter-band NR CA, test setup provides NR FR1 link to the DUT. The NR FR1 link has a stable and noise-free signal without precise path loss or polarization control.

The applicability criteria of the NFTF setup are:

- The DUT radiating aperture is D ≤ 5 cm
  - Either a single radiating aperture, multiple non-coherent apertures or multiple coherent apertures DUTs can be tested
  - If multiple antenna panels that are phase coherent are defined as a single array, the criterion on DUT radiating aperture applies to this single array
  - D is based on the MU assessment in Annex B.1.4.3 of TR 38.810 [24]
  - If the uncertainties can be further optimized, the MU may be reduced or D may be increased
- A manufacturer declaration on the following elements is needed unless the entire DUT size is contained in a sphere of diameter of ≤ 5 cm:
  - Manufacturer declares antenna array size

- EIRP, TRP, and spurious emissions metrics can be tested.

B.2.5.2 Quiet zone dimension

Same as Annex B.2.2.2.

B.2.5.3 Quality of the quiet zone

Same as Annex B.2.2.3.

B.2.5.4 Measurement Distance

The NFTF system does not require a measurement distance of $R > \frac{2D^2}{\lambda}$ as in a standard far field range due to the use of the Near Field to Far Field transformation.

The measurement distance for any NFTF system implementation shall ensure that the DUT is not measured in the reactive near-field region and is adequate to meet the quiet zone dimensions defined in B.2.5.2.

Annex C (informative): Calculation of test frequencies

Editor's note: Description of frequency determination for CA and DC configuration need to be added.

Test frequencies are defined in clause 4.3.1 with extensions for signalling test cases in clause 6.2.3. This annex gives a guideline to determine these test frequencies and the associated signalling parameters for a given band, CA or DC band combination.

C.1 Definitions and Parameters

Figure C.1-1 shows SSB and CORESET#0 and related parameters.

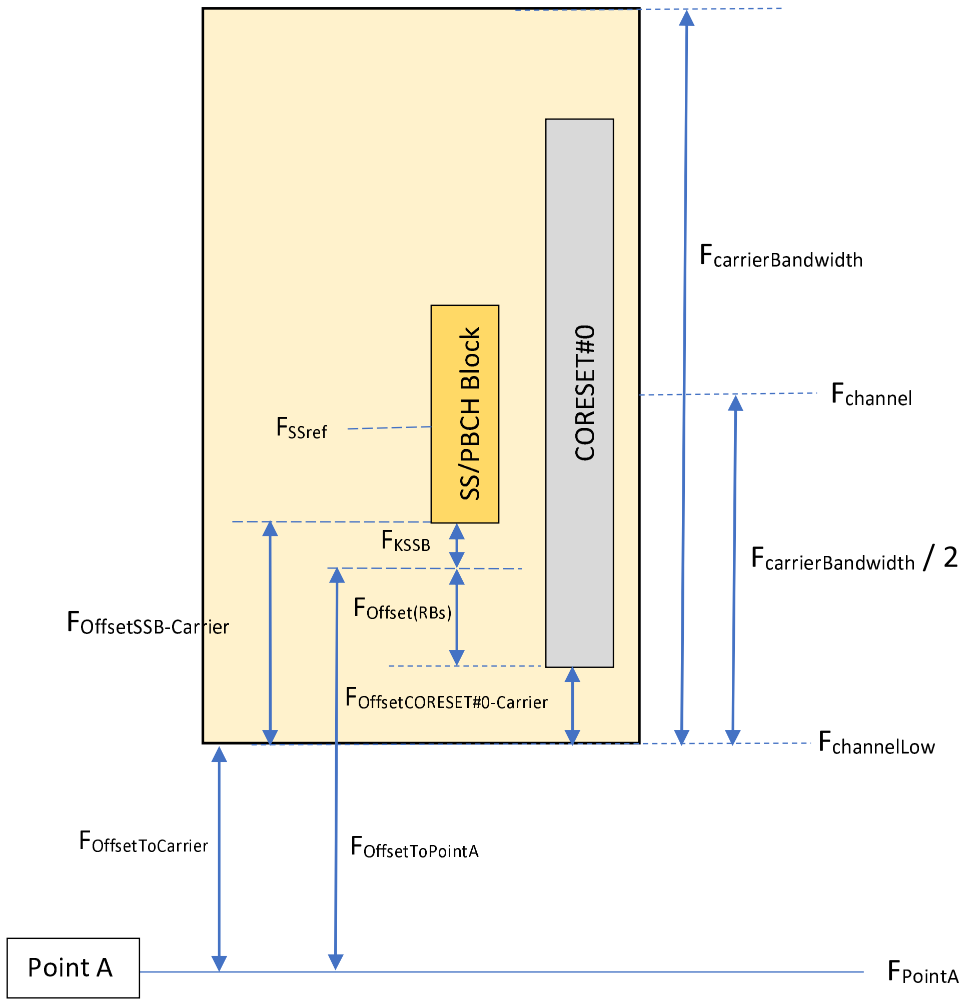

Figure C.1-1: location of SSB and CORESET#0 within a channel

The following definitions are used in figure C.1-1:

$ARFCN_{Channel}$	ARFCN of the centre frequency of the carrier ($F_{channel}$) according to the channel raster of the band (TS 38.101-1 [7] clause 5.4.2.3)
$ARFCN_{SSB}$	ARFCN of the SSB centre frequency (F_{SSref}) according to the synchronisation raster of the carrier. $ARFCN_{SSB}$ is in signalling provided as absoluteFrequencySSB to the UE (FrequencyInfoDL); corresponds to the GSCN of the SSB (i.e. the GSCN corresponds to the same frequency as *absoluteFrequencySSB*)
$ARFCN_{PointA}$	ARFCN of the reference Point A frequency (F_{PointA}) according to the global channel raster as provided as *absoluteFrequencyPointA* to the UE (*FrequencyInfoDL*)
$F_{carrierBandwidth}$	$F_{carrierBandwidth}$ is the carrier's channel bandwidth as provided in *carrierBandwidth* to the UE (*SCS-SpecificCarrier*)
$F_{offsetToCarrier}$	$F_{offsetToCarrier}$ is the frequency offset between Point A and the lower edge of the carrier. $F_{offsetToCarrier}$ = *offsetToCarrier* * PRB size, where PRB size according to the subcarrier spacing of the carrier. *offsetToCarrier* is signalled to the UE (*SCS-SpecificCarrier*)
$F_{OffsetSSB-CORESET0}$	Frequency offset between the lowest subcarrier of the SSB and the lowest subcarrier of CORESET#0; the offset consists of $F_{Offset(RBs)}$ + F_{KSSB} . $F_{Offset(RBs)}$ equals 12* Offset(RBs) * *subCarrierSpacingCommon*, where Offset(RBs) is given in tables 13-X of TS 38.213 [22], and F_{KSSB} is k_{SSB} * SCS_{SSB}.
$F_{OffsetCORESET0-Carrier}$	Frequency offset, $F_{OffsetCORESET\#0-Carrier}$, between the lowest subcarrier of CORESET#0 and the lowest subcarrier of the carrier expressed in multiple of PRB size of the carrier.
$F_{OffsetSSB-Carrier}$	Frequency offset between the lowest subcarrier of the SSB and the lowest subcarrier of the carrier
F_{SSref}	Centre frequency of SSB corresponding to a valid GSCN value according to clause 5.4.3.1 of TS 38.101-1 [7] and TS 38.101-2 [8].

Further definitions used in this annex:

k_{SSB}	as defined in TS 38.211 [29] clause 7.4.3.1
$SCS_{Carrier}$	subcarrier spacing for the carrier: FR1: 15kHz, 30kHz or 60kHz according to TS 38.101-1 [7] Table 5.3.5-1 FR2: 60kHz or 120kHz according to TS 38.101-2 [8] Table 5.3.5-1
SCS_{SSB}	SS/PBCH block subcarrier spacing FR1: 15kHz or 30kHz according to TS 38.101-1 [7] Table 5.4.3.3-1 FR2: 120kHz or 240kHz according to TS 38.101-2 [8] Table 5.4.3.3-1 NOTE: According to the tables in clause 13 of TS 38.213 [22] not all combinations of SCS_{SSB} and $SCS_{Carrier}$ are applicable
SCS_{kSSB}	Step size for k_{SSB} (see TS 38.211 [29] clause 7.4.3.1): 15kHz for $SCS_{SSB} \in$ {15kHz, 30kHz} $SCS_{Carrier}$ otherwise
subCarrierSpacingCommon	Subcarrier spacing for SIB1, Msg.2/4 for initial access, paging and broadcast SI-messages. Provided to the UE in the MIB.
F_{DL_Low}, F_{UL_Low}	Lowest frequency of the downlink and uplink frequency range of the band as defined in clause 5.2 of TS 38.101-1 [7] and TS 38.101-2 [8].
F_{DL_High}, F_{UL_High}	Highest frequency of the downlink and uplink frequency range of the band as defined in clause 5.2 of TS 38.101-1 [7] and TS 38.101-2 [8].
ΔF_{Raster}	Frequency raster of the band as defined in clause 5.4.2.3 of TS 38.101-1 [7] and TS 38.101-2 [8]
$F_{Channel}$	Centre frequency of a channel corresponding to its NR-ARFCN value
BW_{DL}	Bandwidth of downlink frequency range of the band.
BW_{UL}	Bandwidth of uplink frequency range of the band.
CBW_{DL}	Downlink channel bandwidth. $CBW_{DL} = 12 * SCS_{Carrier} * N_{RB\_DL}$ with N_{RB} according to Table 5.3.2-1 of TS 38.101-1 [7] and TS 38.101-2 [8]
CBW_{UL}	Uplink channel bandwidth. $CBW_{UL} = 12 * SCS_{Carrier} * N_{RB\_UL}$ with N_{RB} according to Table 5.3.2-1 of TS 38.101-1 [7] and TS 38.101-2 [8]
$F_{Tx\text{-}Rx\_separation}$	Tx – Rx carrier centre frequency separation of the band as defined in clause 5.4.4 of TS 38.101-1 [7] and TS 38.101-2 [8].
$\Delta F_{Tx\text{-}Rx\_separation}$	$\Delta F_{Tx\text{-}Rx\_separation} = \| (BW_{DL} – BW_{UL})/2 \|$ Tx – Rx carrier centre frequency separation of the band as defined in clause 5.4.4 of TS 38.101-1 [7] and TS 38.101-2 [8].
BW_{SSB}	$\mathbf{BW_{SSB}} = 12 * SCS_{SSB} * 20$
$\Delta GSCN$, $GSCN_{MIN}$, $GSCN_{MAX}$	GSCN step size, GSCN minimum and GSCN maximum values for the NR band according to table 5.4.3.3-1 of TS 38.101-1 [7] and TS 38.101-2 [8]
$Offset_{RBs}$	Offset (RBs) according to tables of clause 13 in TS 38.213 [22]
$Offset_{RBs,max}$	Maximum value for Offset (RBs) according to table 13.X in TS 38.213 [22] for a given band and {SCS_{SSB}, $SCS_{Carrier}$} combination
$Offset_{RBs,min}$	Minimum value for Offset (RBs) according to table 13.X in TS 38.213 [22] for a given band and {SCS_{SSB}, $SCS_{Carrier}$} combination

C.2 Frequency determination for symmetric bands

Test frequencies are determined in two major steps: Firstly, the test frequencies are determined without consideration of any SSB and CORESET#0 alignment. Then, if the cell corresponds to a frequency channel that is selectable as PCell (i.e. has SSB scheduling), the lowest GSCN value is determined so that the SSB is fully within the channel (see figure C.1-1); k_{SSB} and $Offset_{RBs}$ are determined depending on the subcarrier spacing ($SCS_{Carrier}$, SCS_{SSB}). If no valid values for k_{SSB} and $Offset_{RBs}$ can be found for a given channel, the channel frequency is shifted to the nearest frequency allowing valid values.

C.2.1 Frequency determination independent from GSCN raster

Channel frequencies are determined taking into account the channel raster according to clause 5.4.2.3 in TS 38.101-1 [7] for FR1 and in TS 38.101-2 [8] for FR2.

C.2.1.1 Determination of Low-, Mid- and High-Range

Downlink:

$F_{DL\_LowRange}$ = **Ceil**((F_{DL_Low} + CBW_{DL}/2) / ΔF_{Raster}) * ΔF_{Raster}	C.2.1.1-Eq1
$F_{DL\_MidRange}$ = **Round**((F_{DL_Low} + BW_{DL}/2) / ΔF_{Raster}) * ΔF_{Raster}	C.2.1.1-Eq2
$F_{DL\_HighRange}$ = **Floor**(F_{DL_High} - CBW_{DL}/2) / ΔF_{Raster}) * ΔF_{Raster}	C.2.1.1-Eq3

$F_{DL\_LowRange}$ is rounded up and $F_{DL\_HighRange}$ is rounded down to obey to the minimum guard band according to clause 5.3.3 of TS 38.101-1 [7] and TS 38.101-2 [8].

Uplink:

$F_{UL\_LowRange}$ = $F_{DL\_LowRange}$ + $F_{Tx\text{-}Rx\_separation}$	C.2.1.1-Eq4
$F_{UL\_MidRange}$ = $F_{DL\_MidRange}$ + $F_{Tx\text{-}Rx\_separation}$	C.2.1.1-Eq5
$F_{UL\_HighRange}$ = $F_{DL\_HighRange}$ + $F_{Tx\text{-}Rx\_separation}$	C.2.1.1-Eq6

C.2.1.2 Determination of Mid-Low and Mid-High-Range for signalling tests

$F_{Mid\text{-}LowRange}$ = **Round**(($F_{LowRange}$+ ($F_{HighRange}$ - $F_{LowRange}$)/3) / ΔF_{Raster}) * ΔF_{Raster}	C.2.1.2-Eq1
$F_{Mid\text{-}HighRange}$ = **Round**(($F_{LowRange}$ + 2*($F_{HighRange}$ - $F_{LowRange}$)/3) / ΔF_{Raster}) * ΔF_{Raster}	C.2.1.2-Eq2

C.2.2 GSCN determination

C.2.2.1 Calculation of lower bound for SS_{REF} and $Offset_{SSB\text{-}Carrier}$

$F_{OffsetSSB\text{-}Carrier}$ = F_{SSREF} - BW_{SSB} / 2 – ($F_{Channel}$ – CBW_{DL} / 2)	C.2.2.1-Eq1
$F_{ssb,min}$ **=** $F_{Channel}$ - CBW_{DL} / 2 + BW_{SSB} /2 + $Offset_{RBs,min}$ * 12 * $SCS_{Carrier}$	C.2.2.1-Eq2

C.2.2.2 Calculation of GSCN

Calculation of GSCN according to clause 5.4.3.1 of TS 38.101-1 [7] and TS 38.101-2 [8] so that the GSCN has the minimum value for the corresponding SSB being fully above the lower edge of the channel. This means $F_{ssb,min}$ is rounded up to the next valid SS_{REF}

IF FR1 **AND** $F_{Channel}$ < 3GHz **THEN**	
N = **Ceil**(($F_{ssb,min}$ – M * 50) / 1.2MHz) with M ∈ {1, 3, 5} for ΔF_{Raster} = 100kHz M = 3 otherwise	C.2.2.2-Eq1a
GSCN' = 3 * N + (M - 3) / 2 for ΔF_{Raster} = 100kHz M is selected out of {1, 3, 5} so that $F_{OffsetSSB\text{-}Carrier}$ (according to equation C.2.2.1-Eq1) is a multiple of 15kHz (SCS_{kSSB} for bands with 100kHz raster)	C.2.2.2-Eq2a
ELSE IF FR1 **AND** $F_{Channel}$ >= 3GHz **THEN**	
N = **Ceil**(($F_{ssb,min}$ – 3000MHz) / 1.44MHz)	C.2.2.2-Eq1b
GSCN' = 7499 + N	C.2.2.2-Eq2b
ELSE IF FR2 **THEN**	
N = **Ceil**(($F_{ssb,min}$ – 24250.08MHz) / 17.28MHz)	C.2.2.2-Eq1c
GSCN' = 22256 + N	C.2.2.2-Eq2c
END	
GSCN = **Ceil**(GSCN' / ΔGSCN) * ΔGSCN	C.2.2.2-Eq3

C.2.2.3 Calculation of $Offset_{RBs}$ and k_{SSB}

$F_{OffsetRBs}$ and k_{SSB} are calculated based on the assumption that CORESET#0 is at the lower edge of the channel i.e. $F_{OffsetCORESET0\text{-}Carrier}$ = 0 and therefore $F_{OffsetSSB\text{-}Carrier}$ = $F_{OffsetSSB\text{-}CORESET0}$ as according to equation C.2.2.1-Eq1.

$Offset_{RBs}$' = Floor($F_{OffsetSSB-Carrier}$ / (12 * $SCS_{Carrier}$))	C.2.2.3-Eq1
k_{SSB}' = **Floor**(($F_{OffsetSSB-Carrier}$ - 12 * $SCS_{Carrier}$ * $Offset_{RBs}$') / SCS_{kSSB})	C.2.2.3-Eq2
IF $SCS_{Carrier}$ == 15kHz **AND** ($Offset_{RBs}$ **MODULO** 2) > 0 **THEN**	
$Offset_{RBs}$ = $Offset_{RBs}$' – 1	C.2.2.3-Eq3a
k_{SSB} = k_{SSB}' + 12	C.2.2.3-Eq4a
ELSE	
$Offset_{RBs}$ = $Offset_{RBs}$'	C.2.2.3-Eq3b
k_{SSB} = k_{SSB}'	C.2.2.3-Eq4b
END	

If the calculated value of $Offset_{RBs}$ is valid according to TS 38.213 [22] clause 13, CORESET#0 is at the bottom of the channel and no channel shifting is required. Otherwise to achieve a valid $Offset_{RBs}$ and $Offset_{CORESET0-Carrier}$ to be 0 the channel frequency can be aligned as per C.2.3.

C.2.3 Channel alignment to GSCN raster

If the value of $Offset_{RBs}$ is not valid according to TS 38.213 [22] clause 13, $F_{Channel}$ may be shifted up or down to $F_{Channel,shifted}$:
The shifting is done so that the following requirements are fulfilled:

$Offset_{RBs,shifted}$ and $k_{SSB,shifted}$ are valid according TS 38.213 [22] clause 13	(C.2.3-R1)
$F_{OffsetCORESET0-Carrier,shifted}$ = 0, i.e. CORESET#0 is at the bottom of the channel	(C.2.3-R2)
ΔF_{Shift} = Abs($F_{Channel}$ – $F_{Channel,shifted}$) has a minimum value	(C.2.3-R3)

C.2.3.1 Further definitions

ΔF_{Shift}	Absolute value of the difference between the channel frequency as calculated according to C.2.1.1 or C.2.1.2 and the shifted value as according to this clause.
$\Delta F_{Shift,down}$	Distance between $F_{Channel}$ and the next frequency below $F_{Channel}$ fulfilling the requirements
$\Delta F_{Shift,up}$	Distance between $F_{Channel}$ and the next frequency above $F_{Channel}$ fulfilling the requirements
$Offset_{RBs,below}$	Maximum value for offset (RBs) in the applicable table of TS 38.213 [22] clause 13 below $Offset_{RBs}$ as calculated in C.2.2.3
$Offset_{RBs,above}$	Minimum value for offset (RBs) in the applicable table of TS 38.213 [22] clause 13 above $Offset_{RBs}$ as calculated in C.2.2.3; NOTE: for $Offset_{RBs}$ > $Offset_{RBs,max}$ there is no $Offset_{RBs,above}$
$k_{SSB,max}$	Maximum value for k_{SSB} depending on $SCS_{Carrier}$: $k_{SSB,max}$ = 23 for $SCS_{Carrier}$ = 15kHz $k_{SSB,max}$ = 22 for $SCS_{Carrier}$ = 30kHz (NOTE) $k_{SSB,max}$ = 11 otherwise NOTE: In accordance to C.2.2.1-Eq1 $Offset_{SSB-Carrier}$ needs to be a multiple of 30kHz for SCS spaced channel raster with SCS=30kHz and therefore k_{SSB} needs to be even. The case of 100kHz channel raster does not need to be considered as there is no band which requires channel shifting.
$GSCN_{prev}$	$GSCN_{prev}$ = GSCN - ΔGSCN
$SS_{REF,prev}$	SSB centre frequency corresponding to $GSCN_{prev}$

C.2.3.2 Calculation of shifted channel frequency

$\Delta F_{Shift,up}$ = $Offset_{SSB-Carrier}$ – ($Offset_{RBs,below}$ * $SCS_{Carrier}$ * 12 + $k_{SSB,max}$ * SCS_{kSSB})	C.2.3.2-Eq1
IF $Offset_{RBs}$ < $Offset_{RBs,max}$ **THEN**	
$\Delta F_{Shift,down}$ = $Offset_{RBs,above}$ * $SCS_{Carrier}$ * 12 - $F_{OffsetSSB-Carrier}$	C.2.3.2-Eq2a

ELSE	
$\mathbf{\Delta F_{Shift,down}} = SS_{REF} - SS_{REF,prev} - F_{OffsetSSB\text{-}Carrier} + Offset_{RBs,min} * SCS_{Carrier} * 12$	C.2.3.2-Eq2b NOTE 1
END	
IF $F_{Channel} == F_{LowRange}$ **OR** ($\Delta F_{Shift,up} < \Delta F_{Shift,down}$ **AND** $F_{Channel} \neq F_{HighRange}$) **THEN**	
$\mathbf{F_{Channel,shifted}} = F_{Channel} + \Delta F_{Shift,up}$	C.2.3.2-Eq3a
ELSE	
$\mathbf{F_{Channel,shifted}} = F_{Channel} - \Delta F_{Shift,down}$	C.2.3.2-Eq3b
IF $Offset_{RBs} > Offset_{RBs,max}$ **THEN**	
$\mathbf{GSCN_{shifted}} = GSCN - \Delta GSCN$	C.2.3.2-Eq4
END	
END	
NOTE 1: when $Offset_{RBs} > Offset_{RBs,max}$ then $\Delta F_{Shift,down}$ is calculated using $GSCN_{prev}$	

C.2.4 Selecting values for offsetToCarrier and offsetToPointA IEs

The default value for *offsetToCarrier* and *offsetToPointA* signalling parameters for a PCell need to be calculated dependent on the specific carrier.

To enable configuration of an additional coreset in SIB1 the bandwidth of the additional coreset shall be within the bandwidth of CORESET#0 as specified in IE field description for *commonControlResourceSet* in *PDCCH-ConfigCommon* in TS 38.331 [6], clause 6.3.2. As the default bandwidth for both CORESET#0 and CORESET#1 (specified in *frequencyDomainResources* set to '111100…' in *commonControlResourceSet*) is 24 RBs there is a need to align the lower edge of CORESET#0 with the lower edge of the additional coreset. As the lower edge of an additional coreset is specified as multiple of 6 RBs (TS 38.213 [22], clause 10.1) there is a need to specify the default value of *offsetToCarrier* to be a multiple of 6 RBs.

The relationship between *offsetToCarrier* and *offsetToPointA* is (see figure C.1-1 and clause C.1 for definition of parameters):

$F_{offsetToPointA} = (F_{OffsetToCarrier} + F_{OffsetCORESET\#0\text{-}Carrier} + F_{Offset(RBs)})$ / (12*{15kHz for FR1; 60kHz for FR2), where $F_{OffsetToCarrier}$ = *offsetToCarrier* * 12 * SCSCarrier	C.4.1-Eq1

For the test frequency tables in TS 38.508-1 the value of $F_{OffsetCORESET\#0\text{-}Carrier}$ has been chosen as 0 (see C.2.2.3).

This gives:

$F_{offsetToPointA} = (F_{OffsetToCarrier} + F_{Offset(RBs)})$ / (12*{15kHz for FR1; 60kHz for FR2), where $F_{OffsetToCarrier}$ = *offsetToCarrier* * 12 * *SCSCarrier,* *offsetToCarrier* = {0..2199} (TS 38.331 [6], clause 6.3.2, SCS-SpecificCarrier), and $F_{Offset(RBs)}$ = Offset(RBs) *12 * *subCarrierSpacingCommon (TS 38.213 [22], clause 13)*	C.4.1-Eq2

The value range for the IEs *offsetToCarrier* and *offsetToPointA* is the same {0..2199}. Equation C.4.1-Eq2 shows that *offsetToPointA* will have a bigger value than *offsetToCarrier* if f_Offset(RBs) > 0 and/or the subcarrier spacing is > 15kHz for FR1 or >60 kHz for FR2. The value of *offsetToCarrier* need to be chosen such that *offsetToPointA* is equal or less than 2199.

The test frequencies in clause 4.3.1 use different values for *offsetToCarrier* for Low, Mid and High range. This to achieve enhanced test coverage of the *offsetToCarrier* value range.

C.3 Frequency determination for asymmetric bands

The following principle and formulas are used to calculate test frequencies for NR bands with different UL and DL bandwidths as described below, where CBW_{UL} and CBW_{DL} refer to the carrier's UL and DL channel bandwidths; and BW_{UL} and BW_{DL} refer to the band's total UL and DL bandwidths.

To meet the Tx-Rx frequency separation requirement it may not be possible to cover the full DL frequency range for all uplink and downlink channel bandwidth combinations. For CA when the band is only used for downlink CC the full range can be used for all downlink channel bandwidths.

To maximize the tested frequency range for the non-CA case the uplink frequency range, as being smaller than the downlink frequency range, need to be used as the starting point to calculate the uplink and downlink test frequencies.

Clause C.3.1 describe the determination of the Low-, Mid- and High-Range for asymmetric bands for the symmetric uplink and downlink bandwidth combination case, while clause C.3.2 describes it for the asymmetric uplink and downlink bandwidth combination case.

C.3.1 Determination of Low-, Mid- and High-Range for asymmetric bands for symmetric uplink and downlink bandwidth combinations

Step 1: Calculate uplink carrier frequencies:

$\mathbf{F_{UL\_LowRange}} = \mathbf{Ceil}((F_{UL\_Low} + CBW_{UL}/2) / \Delta F_{Raster}) * \Delta F_{Raster}$	C.3.1-Eq1
$\mathbf{F_{UL\_MidRange}} = \mathbf{Round}((F_{UL\_Low} + BW_{UL\_Band}/2) / \Delta F_{Raster}) * \Delta F_{Raster}$	C.3.1-Eq2
$\mathbf{F_{UL\_HighRange}} = \mathbf{Floor}(F_{DL\_Low} + BW_{UL\_Band} – CBW_{UL}/2) / \Delta F_{Raster}) * \Delta F_{Raster}$	C.3.1-Eq3

Step 2: Calculate the downlink frequencies:

Calculate the downlink carrier centre frequencies from the uplink frequencies in step 1 and the Tx-Rx centre frequency separation for the band.

$\mathbf{F_{DL\_LowRange}} = F_{UL\_LowRange} + F_{Tx-Rx\_separation}$	C.3.1-Eq4
$\mathbf{F_{DL\_MidRange}} = F_{UL\_MidRange} + F_{Tx-Rx\_separation}$	C.3.1-Eq5
$\mathbf{F_{DL\_HighRange}} = F_{UL\_HighRange} + F_{Tx-Rx\_separation}$	C.3.1-Eq6

Step 3: GSCN determination for the Low, Mid and High downlink carriers.

Based on the calculated $F_{DL\_LowRange}$, $F_{DL\_MidRange}$ and $F_{DL\_HighRange}$ values perform the GSCN determination for each range as described in clause C.2.2. The GSCN determination may cause shifting of the downlink test frequencies to get the carrier aligned to the synchronisation raster. The shifted downlink carrier's centre frequencies are referred to as $F_{DL\_LowRangeModified}$, $F_{DL\_MidRangeModified}$ and $F_{DL\_HighRangeModified}$.

Step 4: If Low, Mid and High downlink carrier's frequencies have been shifted then recalculate downlink and uplink.

If the DL test frequencies have been shifted, then modify the downlink and uplink test frequencies.

Downlink:

$\mathbf{F_{DL\_LowRange}} = F_{DL\_LowRangeModified}$	C.3.1-Eq7
$\mathbf{F_{DL\_MidRange}} = F_{DL\_MidRangeModified}$	C.3.1-Eq8
$\mathbf{F_{DL\_HighRange}} = F_{DL\_HighRangeModified}$	C.3.1-Eq9

Uplink:

$\mathbf{F_{UL\_LowRange}} = F_{DL\_LowRangeModified} - F_{Tx-Rx\_separation}$	C.3.1-Eq10
$\mathbf{F_{UL\_MidRange}} = F_{DL\_MidRangeModified} - F_{Tx-Rx\_separation}$	C.3.1-Eq11
$\mathbf{F_{UL\_HighRange}} = F_{DL\_HighRangeModified} - F_{Tx-Rx\_separation}$	C.3.1-Eq12

Step 5: The *offsetToCarrier* and *offsetToPointA* values are selected as described in C.2.4.

C.3.2 Determination of Low-, Mid- and High-Range for asymmetric bands for asymmetric uplink and downlink bandwidth combinations

Step 1:Calculate the uplink Low, Mid and High range test frequencies.

$F_{UL\_LowRange}$, $F_{UL\_MidRange}$ and $F_{UL\_HighRange}$ calculated as by equations C.3.1-Eq1, C.3.1-Eq2 and C.3.1-Eq3 in sub-clause C.3.1.

Step 2:Calculate the downlink Low, Mid and High range test frequencies.

$F_{DL\_LowRange}$, $F_{DL\_MidRange}$ and $F_{DL\_HighRange}$ calculated as by equations C.3.1-Eq3, C.3.1-Eq4 and C.3.1-Eq5 in sub-clause C.3.1.

Step 3: Check that the calculated centre test frequencies in step 2 for the BW_{DL} fits in the bands DL frequency range. If not recalculate the $F_{DL\_LowRange}$ and/or $F_{DL\_HighRange}$ as:

$F_{DL\_LowRange} = Ceil((F_{DL\_Low} + CBW_{DL}/2) / \Delta F_{Raster}) * \Delta F_{Raster}$	C.3.2-Eq1
$F_{DL\_HighRange} = Floor((F_{DL\_Low} + BW_{UL} - CBW_{DL}/2) / \Delta F_{Raster}) * \Delta F_{Raster}$	C.3.2-Eq2

Step 4: GSCN determination for the Low, Mid and High downlink carriers.

Based on the calculated $F_{DL\_LowRange}$, $F_{DL\_MidRange}$ and $F_{DL\_HighRange}$ values perform the GSCN determination for each range as described in clause C.2.2. The GSCN determination may cause shifting of the downlink test frequencies to get the carrier aligned to the synchronisation raster. The shifted downlink carrier's centre frequencies are referred to as $F_{DL\_LowRangeModified}$, $F_{DL\_MidRangeModified}$ and $F_{DL\_HighRangeModified}$.

Step 5: If Low, Mid and High downlink carrier's frequencies have been shifted then recalculate downlink and uplink as described in step 4 in sub-clause C.3.1.

Step 6: The *offsetToCarrier* and *offsetToPointA* values are selected as described in C.2.4.

Annex D (informative): Change history

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2017-12	RAN5#77	R5-176995	-	-	-	TP on clauses of test equipment requirement in 38.508-1	0.1.0
2017-12	RAN5#77	R5-176779	-	-	-	Add references	0.1.0
2017-12	RAN5#77	R5-176917	-	-	-	Introduce general chapter for generic procedures	0.1.0
2017-12	RAN5#77	R5-176918	-	-	-	Add generic procedures RRC_IDLE and RRC_CONNECTED	0.1.0
2017-12	RAN5#77	R5-176920	-	-	-	Introduce RRC chapters	0.1.0
2018-01	RAN5#1-5G-NR Adhoc	R5-180066	-	-	-	Definition of downlink physical layer parameters for NR	0.2.0
2018-03	RAN5#78	R5-181697	-	-	-	Addition of the environmental information into TS 38.508-1	0.3.0
2018-03	RAN5#78	R5-180265	-	-	-	Introduce chapter for reference configurations	0.3.0
2018-03	RAN5#78	R5-181311	-	-	-	Update the general chapter	0.3.0
2018-03	RAN5#78	R5-180382	-	-	-	Update RRCReconfiguration	0.3.0
2018-03	RAN5#78	R5-180383	-	-	-	Add draft RRC messages	0.3.0
2018-03	RAN5#78	R5-180577	-	-	-	Update chapter for test frequencies	0.3.0
2018-03	RAN5#78	R5-180709	-	-	-	Add CellGroupConfig	0.3.0
2018-03	RAN5#78	R5-180773	-	-	-	Add radioBearerConfig	0.3.0
2018-03	RAN5#78	R5-180775	-	-	-	Add draft Radio resource control information elements	0.3.0
2018-03	RAN5#78	R5-180966	-	-	-	Update RRC Connected state	0.3.0
2018-03	RAN5#78	R5-181035	-	-	-	Update RRC IDLE state	0.3.0
2018-03	RAN5#78	R5-180253	-	-	-	Revised WID on: UE Conformance Test Aspects - 5G system with NR and LTE	0.3.0
2018-04	RAN5#1-5G-NR Adhoc	R5-181812	-	-	-	Update Radio resource control information elements	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-182109	-	-	-	Update CellGroupConfig	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-182064	-	-	-	Update radioBearerConfig	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-182062	-	-	-	Update MIB	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-182063	-	-	-	Introduce radio conditions	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-181786	-	-	-	Update RRCReconfiguration	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-181971	-	-	-	Add Other information elements	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-182065	-	-	-	Update chapter 4.5.1 General	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-181813	-	-	-	Update RRC IDLE state	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-182066	-	-	-	Update RRC CONNECTED state	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-182110	-	-	-	Text proposal to add clause 4.4 reference system configurations to TS 38.508-1	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-182067	-	-	-	TP for definition of physical channel allocations in 38.508-1	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-182091	-	-	-	TP for clauses of signal level	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-181972	-	-	-	TP for updating of Downlink physical layer parameters	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-181893	-	-	-	Addition of UE capability information elements	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-181973	-	-	-	TP for adding Mid channel BW definition in TS 38.508-1	0.4.0

2018-04	RAN5#1-5G-NR Adhoc	R5-181974	-	-	-	Addition of SRB3	0.4.0
2018-04	RAN5#1-5G-NR Adhoc	R5-182068	-	-	-	Update MeasConfig information elements	0.4.0
2018-05	RAN5#79	R5-183082	-	-	-	Update radio resource control information elements	1.0.0
2018-05	RAN5#79	R5-182288	-	-	-	TP for updating of downlink physical layer parameters in 38.508-1	1.0.0
2018-05	RAN5#79	R5-182349	-	-	-	Corrections to clause 4.4 reference system configurations	1.0.0
2018-05	RAN5#79	R5-182792	-	-	-	TP for clauses of Supported Channels for a NR cell	1.0.0
2018-05	RAN5#79	R5-183218	-	-	-	pCR update chapter for test frequencies - EN-DC	1.0.0
2018-05	RAN5#79	R5-183234	-	-	-	TP for updating of physical channel allocation part in 38.508-1	1.0.0
2018-05	RAN5#79	R5-183256	-	-	-	pCR update chapter for test frequencies - FR1	1.0.0
2018-05	RAN5#79	R5-183916	-	-	-	TP for Annex A in TS 38.508-1 and adding a set of Connection Diagrams	1.0.0
2018-05	RAN5#79	R5-183920	-	-	-	Introduction of Environmental conditions for FR1	1.0.0
2018-05	RAN5#79	R5-182249	-	-	-	Add reference to NR cell table	1.0.0
2018-05	RAN5#79	R5-183210	-	-	-	Update PDCCH	1.0.0
2018-05	RAN5#79	R5-182312	-	-	-	Update chapter 4.5.1 General	1.0.0
2018-05	RAN5#79	R5-182313	-	-	-	Update RRC CONNECTED state	1.0.0
2018-05	RAN5#79	R5-183087	-	-	-	Addition of new RRCReconfiguration definition for AM/UM bearers	1.0.0
2018-05	RAN5#79	R5-183088	-	-	-	Updates to UE capability information elements	1.0.0
2018-05	RAN5#79	R5-183250	-	-	-	Updates to UE capability information elements	1.0.0
2018-05	RAN5#79	R5-183083	-	-	-	Update RACH	1.0.0
2018-05	RAN5#79	R5-183084	-	-	-	Update ARFCN	1.0.0
2018-05	RAN5#79	R5-183211	-	-	-	Update BWP-UplinkDedicated	1.0.0
2018-05	RAN5#79	R5-183212	-	-	-	Update serving cell	1.0.0
2018-05	RAN5#79	R5-183214	-	-	-	Update RadioBearerConfig	1.0.0
2018-05	RAN5#79	R5-183215	-	-	-	Update RRCReconfiguration	1.0.0
2018-05	RAN5#79	R5-182381	-	-	-	Update MIB	1.0.0
2018-05	RAN5#79	R5-183090	-	-	-	Update RRCReconfiguration for measurements	1.0.0
2018-05	RAN5#79	R5-183264	-	-	-	Corrections to clause 4.5	1.0.0
2018-05	RAN5#79	R5-183249	-	-	-	Correction to the Table CellGroupConfig	1.0.0
2018-05	RAN5#79	R5-183255	-	-	-	Update of FR1 signal levels	1.0.0
2018-05	RAN5#79	R5-183216	-	-	-	Update CellGroupConfig and some related information elements	1.0.0
2018-05	RAN5#79	R5-183086	-	-	-	Update CSI-MeasConfig	1.0.0
2018-05	RAN5#79	R5-183260	-	-	-	Update some information elements related to MeasConfig	1.0.0
2018-06	RAN#80	RP-181207	-	-	-	put under revision control as v15.0.0 with small editorial changes	15.0.0
2018-09	RAN#81	R5-184087	0004	-	F	Update chapter 3	15.1.0
2018-09	RAN#81	R5-184297	0012	-	F	Addition of Mid channel bandwidth definition for several missing bands	15.1.0
2018-09	RAN#81	R5-184327	0014	-	F	Adding condition for CP-OFDM waveform	15.1.0
2018-09	RAN#81	R5-184347	0019	-	F	Modified RRC_IDLE procedure to allow multi PDN configuration throughout the test case	15.1.0
2018-09	RAN#81	R5-184471	0044	-	F	Introduction of test frequencies for NR band n77	15.1.0
2018-09	RAN#81	R5-184472	0045	-	F	Introduction of test frequencies for NR band n78	15.1.0
2018-09	RAN#81	R5-184473	0046	-	F	Introduction of test frequencies for NR band n79	15.1.0
2018-09	RAN#81	R5-184474	0047	-	F	Introduction of test frequencies for NR band n257	15.1.0
2018-09	RAN#81	R5-184475	0048	-	F	Introduction of test frequencies for NR band n258	15.1.0
2018-09	RAN#81	R5-184476	0049	-	F	Introduction of test frequencies for NR band n260	15.1.0
2018-09	RAN#81	R5-184477	0050	-	F	Introduction of test frequencies for NR band n261	15.1.0
2018-09	RAN#81	R5-184599	0056	-	F	Add IE SS-RSSI-Measurement	15.1.0
2018-09	RAN#81	R5-184617	0059	-	F	Update MIB	15.1.0
2018-09	RAN#81	R5-184630	0072	-	F	Editorial Update in clause 4.6.3	15.1.0
2018-09	RAN#81	R5-184783	0079	-	F	Introduce 5GMM messages	15.1.0
2018-09	RAN#81	R5-184785	0080	-	F	Introduce 5GSM messages	15.1.0
2018-09	RAN#81	R5-184806	0081	-	F	Mid test CH BW for n71	15.1.0
2018-09	RAN#81	R5-185028	0002	1	F	Add SRB1 and SRB2 with NR PDCP	15.1.0
2018-09	RAN#81	R5-185029	0003	1	F	Update serving cell	15.1.0
2018-09	RAN#81	R5-185030	0005	1	F	Introduce SA RRC messages	15.1.0
2018-09	RAN#81	R5-185031	0006	1	F	Correct IE FrequencyInfoDL	15.1.0
2018-09	RAN#81	R5-185032	0007	1	F	Introduce SA system information blocks	15.1.0
2018-09	RAN#81	R5-185033	0008	1	F	Introduce SA other information elements	15.1.0
2018-09	RAN#81	R5-185035	0013	1	F	Correct IE GSCN-ValueNR	15.1.0
2018-09	RAN#81	R5-185036	0017	1	F	Update of FR1 signal levels	15.1.0
2018-09	RAN#81	R5-185037	0022	1	F	Addition of IP Connectivity check procedure	15.1.0
2018-09	RAN#81	R5-185038	0053	1	F	Introduce SA radio resource control information elements	15.1.0
2018-09	RAN#81	R5-185039	0054	1	F	Update IE PhysicalCellGroupConfig	15.1.0
2018-09	RAN#81	R5-185040	0055	1	F	Introduce cell configurations and timer tolerances chapter headers	15.1.0
2018-09	RAN#81	R5-185041	0057	1	F	Add IE SSB-MTC	15.1.0
2018-09	RAN#81	R5-185042	0058	1	F	Update BWP	15.1.0
2018-09	RAN#81	R5-185043	0060	1	F	Update PDSCH-Config	15.1.0

2018-09	RAN#81	R5-185044	0062	1	F	Update PUCCH and PUSCH configuration	15.1.0
2018-09	RAN#81	R5-185045	0063	1	F	Update RACH configuration	15.1.0
2018-09	RAN#81	R5-185046	0065	1	F	Update CellGroupConfig	15.1.0
2018-09	RAN#81	R5-185047	0066	1	F	Update CSI-MeasConfig	15.1.0
2018-09	RAN#81	R5-185048	0067	1	F	Update MeasConfig	15.1.0
2018-09	RAN#81	R5-185049	0068	1	F	Update other information elements	15.1.0
2018-09	RAN#81	R5-185050	0070	1	F	Update RadioBearerConfig	15.1.0
2018-09	RAN#81	R5-185051	0073	1	F	Specifying content for MeasResultSCG-Failure	15.1.0
2018-09	RAN#81	R5-185052	0075	1	F	Editorial correction to band representation of non-contiguous EN-DC band combination	15.1.0
2018-09	RAN#81	R5-185053	0076	1	F	Correction to RLC-Config IE	15.1.0
2018-09	RAN#81	R5-185054	0077	1	F	Correction to RadioBearerConfig-DRB	15.1.0
2018-09	RAN#81	R5-185055	0078	1	F	Corrections and updates to BandCombinationList and Feature Set IEs	15.1.0
2018-09	RAN#81	R5-185056	0084	1	F	Corrections and updates to UE Capability IEs	15.1.0
2018-09	RAN#81	R5-185085	0087	-	F	Addition of UM condition to RLC-Bearer-Config IE	15.1.0
2018-09	RAN#81	R5-185133	0086	1	F	Correction of clause 4.3.3.2.3	15.1.0
2018-09	RAN#81	R5-185163	0018	1	F	Modified RRC_Connected procedure for Multi PDN throughout the test case.	15.1.0
2018-09	RAN#81	R5-185165	0020	1	F	Update EN-DC Generic Procedure Parameter for Multi-PDN addition throughout Test Case	15.1.0
2018-09	RAN#81	R5-185168	0082	1	F	Introduction of OTA signalling test environment	15.1.0
2018-09	RAN#81	R5-185171	0009	2	F	Updates to PDCCH and SearchSpace configurations	15.1.0
2018-09	RAN#81	R5-185173	0016	1	F	Test Frequencies	15.1.0
2018-09	RAN#81	R5-185177	0051	1	F	Introduction of test frequencies for signalling testing in clause 6	15.1.0
2018-09	RAN#81	R5-185250	0023	1	F	Introduction of test frequencies for NR band n1	15.1.0
2018-09	RAN#81	R5-185251	0024	1	F	Introduction of test frequencies for NR band n2	15.1.0
2018-09	RAN#81	R5-185252	0025	1	F	Introduction of test frequencies for NR band n3	15.1.0
2018-09	RAN#81	R5-185253	0026	1	F	Introduction of test frequencies for NR band n5	15.1.0
2018-09	RAN#81	R5-185254	0027	1	F	Introduction of test frequencies for NR band n7	15.1.0
2018-09	RAN#81	R5-185255	0028	1	F	Introduction of test frequencies for NR band n8	15.1.0
2018-09	RAN#81	R5-185256	0029	1	F	Introduction of test frequencies for NR band n12	15.1.0
2018-09	RAN#81	R5-185257	0030	1	F	Introduction of test frequencies for NR band n20	15.1.0
2018-09	RAN#81	R5-185258	0031	1	F	Introduction of test frequencies for NR band n25	15.1.0
2018-09	RAN#81	R5-185259	0032	1	F	Introduction of test frequencies for NR band n28	15.1.0
2018-09	RAN#81	R5-185260	0033	1	F	Introduction of test frequencies for NR band n34	15.1.0
2018-09	RAN#81	R5-185261	0034	1	F	Introduction of test frequencies for NR band n38	15.1.0
2018-09	RAN#81	R5-185262	0035	1	F	Introduction of test frequencies for NR band n39	15.1.0
2018-09	RAN#81	R5-185263	0036	1	F	Introduction of test frequencies for NR band n40	15.1.0
2018-09	RAN#81	R5-185264	0037	1	F	Update of test frequencies for NR band n41	15.1.0
2018-09	RAN#81	R5-185265	0038	1	F	Introduction of test frequencies for NR band n51	15.1.0
2018-09	RAN#81	R5-185266	0039	1	F	Introduction of test frequencies for NR band n66	15.1.0
2018-09	RAN#81	R5-185267	0040	1	F	Introduction of test frequencies for NR band n70	15.1.0
2018-09	RAN#81	R5-185268	0041	1	F	Update of test frequencies for NR band n71	15.1.0
2018-09	RAN#81	R5-185269	0042	1	F	Introduction of test frequencies for NR band n75	15.1.0
2018-09	RAN#81	R5-185270	0043	1	F	Introduction of test frequencies for NR band n76	15.1.0
2018-09	RAN#81	R5-185443	0052	1	F	Correction to power level for FR1 RF tests	15.1.0
2018-09	RAN#81	R5-185557	0085	1	F	FR2_UE_BeamlockProcedure_38.508-1	15.1.0
2018-12	RAN#82	R5-186453	0239	-	F	Updates to clause 4.3.3, physical channel allocations	15.2.0
2018-12	RAN#82	R5-186457	0240	-	F	Correction to E-UTRA test frequency for intra-band contiguous configuration for band 41	15.2.0
2018-12	RAN#82	R5-186468	0241	-	F	E-UTRA test frequencies for EN-DC intra-band contiguous configurations for band 71	15.2.0
2018-12	RAN#82	R5-186491	0245	-	F	Update chapter 4.5 for RF connected procedure	15.2.0
2018-12	RAN#82	R5-186508	0249	-	F	FR2 UE and TE radiated connection diagram	15.2.0
2018-12	RAN#82	R5-186575	0251	-	F	Update IE ServingCellConfig	15.2.0
2018-12	RAN#82	R5-186612	0252	-	F	Add CounterCheck	15.2.0
2018-12	RAN#82	R5-186613	0253	-	F	Update DLInformationTransfer	15.2.0
2018-12	RAN#82	R5-186641	0255	-	F	Update IE SchedulingRequestResourceConfig	15.2.0
2018-12	RAN#82	R5-186665	0258	-	F	Update LocationMeasurementIndication	15.2.0
2018-12	RAN#82	R5-186666	0259	-	F	Update MeasurementReport	15.2.0
2018-12	RAN#82	R5-186677	0261	-	F	Resubmission of update to 38.508 for mid channel bandwidth	15.2.0
2018-12	RAN#82	R5-186682	0262	-	F	Update MobilityFromNRCommand	15.2.0
2018-12	RAN#82	R5-186691	0264	-	F	Update Paging	15.2.0
2018-12	RAN#82	R5-186692	0265	-	F	Update RRCReestablishment	15.2.0
2018-12	RAN#82	R5-186714	0267	-	F	Update RRCReject	15.2.0
2018-12	RAN#82	R5-186719	0268	-	F	Updates related to introduction of test frequencies	15.2.0
2018-12	RAN#82	R5-186722	0271	-	F	Update SecurityAlgorithmConfig	15.2.0
2018-12	RAN#82	R5-186723	0272	-	F	Updates to MeasResults	15.2.0
2018-12	RAN#82	R5-186734	0273	-	F	Update RRCRelease	15.2.0
2018-12	RAN#82	R5-186744	0274	-	F	Update RRCResume	15.2.0
2018-12	RAN#82	R5-186825	0279	-	F	Correction of test frequencies for NR band n1	15.2.0

2018-12	RAN#82	R5-186826	0280	-	F	Correction of test frequencies for NR band n2	15.2.0
2018-12	RAN#82	R5-186827	0281	-	F	Correction of test frequencies for NR band n3	15.2.0
2018-12	RAN#82	R5-186828	0282	-	F	Correction of test frequencies for NR band n5	15.2.0
2018-12	RAN#82	R5-186829	0283	-	F	Correction of test frequencies for NR band n7	15.2.0
2018-12	RAN#82	R5-186830	0284	-	F	Correction of test frequencies for NR band n8	15.2.0
2018-12	RAN#82	R5-186831	0285	-	F	Correction of test frequencies for NR band n12	15.2.0
2018-12	RAN#82	R5-186832	0286	-	F	Correction of test frequencies for NR band n20	15.2.0
2018-12	RAN#82	R5-186833	0287	-	F	Correction of test frequencies for NR band n25	15.2.0
2018-12	RAN#82	R5-186834	0288	-	F	Correction of test frequencies for NR band n28	15.2.0
2018-12	RAN#82	R5-186835	0289	-	F	Correction of test frequencies for NR band n34	15.2.0
2018-12	RAN#82	R5-186836	0290	-	F	Correction of test frequencies for NR band n38	15.2.0
2018-12	RAN#82	R5-186837	0291	-	F	Correction of test frequencies for NR band n39	15.2.0
2018-12	RAN#82	R5-186838	0292	-	F	Correction of test frequencies for NR band n40	15.2.0
2018-12	RAN#82	R5-186839	0293	-	F	Correction of test frequencies for NR band n41	15.2.0
2018-12	RAN#82	R5-186840	0294	-	F	Correction of test frequencies for NR band n51	15.2.0
2018-12	RAN#82	R5-186841	0295	-	F	Introduction of test frequencies for NR band n66	15.2.0
2018-12	RAN#82	R5-186842	0296	-	F	Introduction of test frequencies for NR band n70	15.2.0
2018-12	RAN#82	R5-186844	0298	-	F	Correction of test frequencies for NR band n75	15.2.0
2018-12	RAN#82	R5-186845	0299	-	F	Correction of test frequencies for NR band n76	15.2.0
2018-12	RAN#82	R5-186846	0300	-	F	Correction of test frequencies for NR band n77	15.2.0
2018-12	RAN#82	R5-186847	0301	-	F	Correction of test frequencies for NR band n78	15.2.0
2018-12	RAN#82	R5-186848	0302	-	F	Correction of test frequencies for NR band n79	15.2.0
2018-12	RAN#82	R5-186850	0304	-	F	Correction of test frequencies for NR band n258	15.2.0
2018-12	RAN#82	R5-186851	0305	-	F	Correction of test frequencies for NR band n260	15.2.0
2018-12	RAN#82	R5-186852	0306	-	F	Correction of test frequencies for NR band n261	15.2.0
2018-12	RAN#82	R5-186855	0309	-	F	Introduction of preamble test states	15.2.0
2018-12	RAN#82	R5-186857	0311	-	F	Introduction DCI format 1_0 for paging, SI and random access	15.2.0
2018-12	RAN#82	R5-186858	0312	-	F	Correction to DCI format 1_1	15.2.0
2018-12	RAN#82	R5-186859	0313	-	F	Update IE RateMatchPattern	15.2.0
2018-12	RAN#82	R5-186861	0315	-	F	Correction of generic procedure parameter naming for test loop function	15.2.0
2018-12	RAN#82	R5-186862	0316	-	F	Correction of test procedures to activate and deactivate UE Beamlock Function	15.2.0
2018-12	RAN#82	R5-186893	0318	-	F	Corrections to the notes in the OTA signal level tables	15.2.0
2018-12	RAN#82	R5-186911	0320	-	F	Add RRCSetupComplete	15.2.0
2018-12	RAN#82	R5-186912	0321	-	F	Add RRCSetupRequest	15.2.0
2018-12	RAN#82	R5-186913	0322	-	F	Add RRCSystemInfoRequest	15.2.0
2018-12	RAN#82	R5-186916	0323	-	F	Add SecurityModeCommand	15.2.0
2018-12	RAN#82	R5-186918	0324	-	F	Update SystemInformation	15.2.0
2018-12	RAN#82	R5-186920	0325	-	F	Add UEAssistanceInformation	15.2.0
2018-12	RAN#82	R5-186921	0326	-	F	Update UECapabilityEnquiry	15.2.0
2018-12	RAN#82	R5-186922	0327	-	F	Update ULInformationTransfer	15.2.0
2018-12	RAN#82	R5-186923	0328	-	F	Update IE PTRS-UplinkConfig	15.2.0
2018-12	RAN#82	R5-186925	0330	-	F	Update RRCResumeRequest	15.2.0
2018-12	RAN#82	R5-186929	0331	-	F	Update PTRS-DownlinkConfig	15.2.0
2018-12	RAN#82	R5-186936	0335	-	F	Update PUCCH-SpatialRelationInfo	15.2.0
2018-12	RAN#82	R5-186987	0342	-	F	Addition of SIB3 message_Resubmission of 185792	15.2.0
2018-12	RAN#82	R5-186988	0343	-	F	Addition of SIB5 message_Resubmission of 186054	15.2.0
2018-12	RAN#82	R5-186989	0344	-	F	Addition of SIB6 - SIB8 message_Resubmission of 186055	15.2.0
2018-12	RAN#82	R5-186990	0345	-	F	Addition of SIB9 message_Resubmission of 186056	15.2.0
2018-12	RAN#82	R5-187026	0348	-	F	Addition of P-Max in Test environment for RF test	15.2.0
2018-12	RAN#82	R5-187028	0350	-	F	Addition of test frequencies for SUL band n80	15.2.0
2018-12	RAN#82	R5-187030	0352	-	F	Addition of test frequencies for SUL band n82	15.2.0
2018-12	RAN#82	R5-187031	0353	-	F	Addition of test frequencies for SUL band n83	15.2.0
2018-12	RAN#82	R5-187032	0354	-	F	Addition of test frequencies for SUL band n84	15.2.0
2018-12	RAN#82	R5-187033	0355	-	F	Addition of test frequencies for SUL band n86	15.2.0
2018-12	RAN#82	R5-187110	0358	-	F	Correction to default message contents for SRB3 configuration	15.2.0
2018-12	RAN#82	R5-187159	0361	-	F	Updates to Configuration Update 5GMM messages	15.2.0
2018-12	RAN#82	R5-187160	0362	-	F	Updates to De-registration 5GMM messages	15.2.0
2018-12	RAN#82	R5-187161	0363	-	F	Updates to Identity 5GMM messages	15.2.0
2018-12	RAN#82	R5-187162	0364	-	F	Updates to NAS Transport 5GMM messages	15.2.0
2018-12	RAN#82	R5-187163	0365	-	F	Updates to Notification 5GMM messages	15.2.0
2018-12	RAN#82	R5-187164	0366	-	F	Updates to PDU session authentication 5GSM messages	15.2.0
2018-12	RAN#82	R5-187166	0368	-	F	Updates to PDU session modification 5GSM messages	15.2.0
2018-12	RAN#82	R5-187172	0374	-	F	Removal of Editor's Notes in section 4.6.3	15.2.0
2018-12	RAN#82	R5-187175	0377	-	F	Addition and updates to Information Elements in section 4.6.5	15.2.0
2018-12	RAN#82	R5-187270	0381	-	F	Updating 4.2.1 General functional requirements	15.2.0
2018-12	RAN#82	R5-187271	0382	-	F	Update the section for test equipment requirements for TRx	15.2.0
2018-12	RAN#82	R5-187272	0383	-	F	FR2 downlink signal level(38.508-1)	15.2.0
2018-12	RAN#82	R5-187413	0389	-	F	Uplink RNTI to valid value in TS 38.508-1	15.2.0
2018-12	RAN#82	R5-187415	0390	-	F	Update maxPayloadMinus1 in PUCCH config in TS 38.508-1	15.2.0

2018-12	RAN#82	R5-187420	0393	-	F	Addition of connection diagram for 2 TX UL MIMO	15.2.0
2018-12	RAN#82	R5-187557	0396	-	F	Addition of low and high test channel bandwidth in 38.508	15.2.0
2018-12	RAN#82	R5-188205	0397	1	F	Updates to Annex B to add Permitted OTA Test Methods	15.2.0
2018-12	RAN#82	R5-187610	0398	-	F	Corrections to IEs part of PDSCH-ServingCellConfig, ServingCellConfig and ServingCellConfigCommon	15.2.0
2018-12	RAN#82	R5-187659	0243	1	F	Wordings for Uplink NAS messages	15.2.0
2018-12	RAN#82	R5-187660	0247	1	F	Default cell configurations for NAS	15.2.0
2018-12	RAN#82	R5-187661	0248	1	F	Update IE SI-SchedulingInfo	15.2.0
2018-12	RAN#82	R5-187662	0349	1	F	Addition of Combinations of system information blocks in 4.4.3.1.2	15.2.0
2018-12	RAN#82	R5-187664	0263	1	F	Correction to various Radio resource control IEs	15.2.0
2018-12	RAN#82	R5-187665	0308	1	F	Correction to DCI formats 0_0 and 0_1	15.2.0
2018-12	RAN#82	R5-187666	0310	1	F	Introduction of SDL and SUL cells in simulated cells in clause 4.4.2	15.2.0
2018-12	RAN#82	R5-187667	0314	1	F	Correction to RRC_IDLE procedure	15.2.0
2018-12	RAN#82	R5-187668	0332	1	F	Update CSI related information elements	15.2.0
2018-12	RAN#82	R5-187669	0333	1	F	Update ServingCellConfigCommon and TDD-UL-DL-Config	15.2.0
2018-12	RAN#82	R5-187670	0334	1	F	Update SRS-Config	15.2.0
2018-12	RAN#82	R5-187671	0336	1	F	Update some information elements for measurements	15.2.0
2018-12	RAN#82	R5-187672	0337	1	F	Update CellGroupConfig and related information elements	15.2.0
2018-12	RAN#82	R5-187673	0338	1	F	CR of NR 508-1 clause 4.6.2_SIB2, SIB4	15.2.0
2018-12	RAN#82	R5-187674	0339	1	F	CR of NR 508-1 Table 4.4.2-2_Default NR Cells parameters	15.2.0
2018-12	RAN#82	R5-187675	0341	1	F	Update RLC-Config	15.2.0
2018-12	RAN#82	R5-187676	0357	1	F	Specifying Test procedure to check that UE is camped on a new NR cell belonging to a new TA	15.2.0
2018-12	RAN#82	R5-187677	0360	1	F	Updates to Authentication 5GMM messages	15.2.0
2018-12	RAN#82	R5-187678	0369	1	F	Updates to PDU session release 5GSM messages	15.2.0
2018-12	RAN#82	R5-187679	0371	1	F	Updates to Security mode 5GMM messages	15.2.0
2018-12	RAN#82	R5-187680	0375	1	F	Addition of new Information Elements in section 4.6.3	15.2.0
2018-12	RAN#82	R5-187681	0379	1	F	Updates to SIG OTA Calibration for FR2	15.2.0
2018-12	RAN#82	R5-187682	0394	1	F	Addition of default QoS configurations	15.2.0
2018-12	RAN#82	R5-187720	0319	2	F	Uplink PTRS disable for RF testing	15.2.0
2018-12	RAN#82	R5-188238	0242	2	F	Addition to E-UTRA test frequencies for intra-band contiguous configuration for band 41	15.2.0
2018-12	RAN#82	R5-187723	0303	1	F	Correction of test frequencies for NR band n257	15.2.0
2018-12	RAN#82	R5-187724	0269	1	F	New annex for NR test frequency calculations	15.2.0
2018-12	RAN#82	R5-187725	0297	1	F	Correction of test frequencies for NR band n71	15.2.0
2018-12	RAN#82	R5-187745	0238	1	F	Update SIB1	15.2.0
2018-12	RAN#82	R5-187747	0257	1	F	Correction to Signal levels for conducted testing	15.2.0
2018-12	RAN#82	R5-187748	0270	1	F	Updates to E-UTRA RRC_CONNECTED generic procedure	15.2.0
2018-12	RAN#82	R5-187750	0275	1	F	Add RRCResumeComplete	15.2.0
2018-12	RAN#82	R5-187751	0278	1	F	Update chapter 4.5.3 RRC_INACTIVE	15.2.0
2018-12	RAN#82	R5-187752	0307	1	F	Correction of test frequencies for signalling testing in clause 6	15.2.0
2018-12	RAN#82	R5-187753	0317	1	F	Specifying Test procedure to check that UE is in RRC_IDLE state on a certain NR cell	15.2.0
2018-12	RAN#82	R5-187754	0329	1	F	Update IE RLF-TimersAndConstants	15.2.0
2018-12	RAN#82	R5-187755	0346	1	F	Add RRCSetup	15.2.0
2018-12	RAN#82	R5-187756	0347	1	F	Update RRCReconfiguration	15.2.0
2018-12	RAN#82	R5-187757	0356	1	F	Update IE RadioBearerConfig	15.2.0
2018-12	RAN#82	R5-187759	0370	1	F	Updates to Registration 5GMM messages	15.2.0
2018-12	RAN#82	R5-187760	0372	1	F	Updates to Security protected 5GS NAS and 5GMM status messages	15.2.0
2018-12	RAN#82	R5-187761	0373	1	F	Updates to Service Request 5GMM messages	15.2.0
2018-12	RAN#82	R5-187762	0376	1	F	Addition and updates to Information Elements in section 4.6.4	15.2.0
2018-12	RAN#82	R5-187763	0388	1	F	Addition of 5GS related new EFs to Test UICC definition	15.2.0
2018-12	RAN#82	R5-187764	0395	1	F	Update IE CellGroupConfig	15.2.0
2018-12	RAN#82	R5-187802	0384	1	F	Updating power levels for LTE Anchor Link	15.2.0
2018-12	RAN#82	R5-187887	0351	1	F	Addition of test frequencies for SUL band n81	15.2.0
2018-12	RAN#82	R5-188031	0391	1	F	Addition of 2TX_UL_MIMO condition	15.2.0
2018-12	RAN#82	R5-188107	0367	2	F	Updates to PDU session establishment 5GSM messages	15.2.0
2018-12	RAN#82	R5-188122	0260	2	F	Update chapter 4.5.2 RRC_IDLE	15.2.0
2018-12	RAN#82	R5-188123	0250	1	F	Update chapter 4.5.4 RRC_CONNECTED	15.2.0
2019-03	RAN#83	R5-191047	0526	-	F	Update IE PDCCH-ConfigCommon	15.3.0
2019-03	RAN#83	R5-191048	0527	-	F	Update IE RadioBearerConfig	15.3.0
2019-03	RAN#83	R5-191094	0529	-	F	Updates of test channel bandwidth in TS 38.508-1	15.3.0
2019-03	RAN#83	R5-191129	0530	-	F	Update IE SDAP-Config	15.3.0
2019-03	RAN#83	R5-191145	0531	-	F	Update IE CellGroupId	15.3.0
2019-03	RAN#83	R5-191155	0532	-	F	Correction to temperature and voltage of Common test environments	15.3.0
2019-03	RAN#83	R5-191187	0534	-	F	Updates for Other SI support	15.3.0
2019-03	RAN#83	R5-191189	0536	-	F	Correction to RadioBearerConfig	15.3.0
2019-03	RAN#83	R5-191191	0538	-	F	Correction to SystemInformation	15.3.0
2019-03	RAN#83	R5-191192	0539	-	F	Correction to PUCCH-Config	15.3.0
2019-03	RAN#83	R5-191193	0540	-	F	Correction to SIB3 and SIB4	15.3.0
2019-03	RAN#83	R5-191194	0541	-	F	Correction of PUSCH-TimeDomainResourceAllocationList	15.3.0

2019-03	RAN#83	R5-191195	0542	-	F	Corrections and clarifications regarding DCI formats 0_1 and 1_1	15.3.0
2019-03	RAN#83	R5-191219	0545	-	F	Updates to Authentication 5GMM messages	15.3.0
2019-03	RAN#83	R5-191220	0546	-	F	Updates to Configuration Update 5GMM messages	15.3.0
2019-03	RAN#83	R5-191221	0547	-	F	Updates to De-registration 5GMM messages	15.3.0
2019-03	RAN#83	R5-191222	0548	-	F	Updates to NAS transport 5GMM messages	15.3.0
2019-03	RAN#83	R5-191223	0549	-	F	Updates to PDU session establishment 5GSM messages	15.3.0
2019-03	RAN#83	R5-191224	0550	-	F	Updates to PDU session modification 5GSM messages	15.3.0
2019-03	RAN#83	R5-191225	0551	-	F	Updates to PDU session release 5GSM messages	15.3.0
2019-03	RAN#83	R5-191226	0552	-	F	Updates to Registration 5GMM messages	15.3.0
2019-03	RAN#83	R5-191227	0553	-	F	Updates to Security Mode 5GMM messages	15.3.0
2019-03	RAN#83	R5-191228	0554	-	F	Updates to Security Protected 5GS NAS message	15.3.0
2019-03	RAN#83	R5-191229	0555	-	F	Updates to Service Request 5GMM messages	15.3.0
2019-03	RAN#83	R5-191233	0556	-	F	Update IE BWP-Id	15.3.0
2019-03	RAN#83	R5-191234	0557	-	F	Add IE RejectWaitTime	15.3.0
2019-03	RAN#83	R5-191235	0558	-	F	Update IE ShortMAC-I	15.3.0
2019-03	RAN#83	R5-191236	0559	-	F	Update IE UE-TimersAndConstants	15.3.0
2019-03	RAN#83	R5-191237	0560	-	F	Update IE PUCCH-ConfigCommon	15.3.0
2019-03	RAN#83	R5-191242	0561	-	F	Addition of Positioning specifications	15.3.0
2019-03	RAN#83	R5-191243	0562	-	F	Update AS security Algorithm for RF testing	15.3.0
2019-03	RAN#83	R5-191274	0563	-	F	Update of structure of test frequency clauses	15.3.0
2019-03	RAN#83	R5-191280	0564	-	F	Correction to UL configuration	15.3.0
2019-03	RAN#83	R5-191281	0565	-	F	Correction to default value of IE's in PDSCH-Config in Table 4.6.3-75	15.3.0
2019-03	RAN#83	R5-191301	0568	-	F	Correction of test frequencies for signalling testing in clause 6	15.3.0
2019-03	RAN#83	R5-191302	0569	-	F	Correction of test frequencies for EN-DC configuration DC_(n)41	15.3.0
2019-03	RAN#83	R5-191304	0571	-	F	Correction of test frequencies for NR band n1	15.3.0
2019-03	RAN#83	R5-191305	0572	-	F	Correction of test frequencies for NR band n2	15.3.0
2019-03	RAN#83	R5-191306	0573	-	F	Correction of test frequencies for NR band n3	15.3.0
2019-03	RAN#83	R5-191307	0574	-	F	Correction of test frequencies for NR band n5	15.3.0
2019-03	RAN#83	R5-191308	0575	-	F	Correction of test frequencies for NR band n7	15.3.0
2019-03	RAN#83	R5-191309	0576	-	F	Correction of test frequencies for NR band n8	15.3.0
2019-03	RAN#83	R5-191310	0577	-	F	Correction of test frequencies for NR band n12	15.3.0
2019-03	RAN#83	R5-191311	0578	-	F	Correction of test frequencies for NR band n20	15.3.0
2019-03	RAN#83	R5-191312	0579	-	F	Correction of test frequencies for NR band n25	15.3.0
2019-03	RAN#83	R5-191313	0580	-	F	Correction of test frequencies for NR band n28	15.3.0
2019-03	RAN#83	R5-191314	0581	-	F	Correction of test frequencies for NR band n34	15.3.0
2019-03	RAN#83	R5-191315	0582	-	F	Correction of test frequencies for NR band n38	15.3.0
2019-03	RAN#83	R5-191316	0583	-	F	Correction of test frequencies for NR band n39	15.3.0
2019-03	RAN#83	R5-191317	0584	-	F	Correction of test frequencies for NR band n40	15.3.0
2019-03	RAN#83	R5-191318	0585	-	F	Correction of test frequencies for NR band n41	15.3.0
2019-03	RAN#83	R5-191319	0586	-	F	Introduction of test frequencies for NR band n50	15.3.0
2019-03	RAN#83	R5-191320	0587	-	F	Correction of test frequencies for NR band n51	15.3.0
2019-03	RAN#83	R5-191321	0588	-	F	Correction of test frequencies for NR band n66	15.3.0
2019-03	RAN#83	R5-191322	0589	-	F	Correction of test frequencies for NR band n70	15.3.0
2019-03	RAN#83	R5-191323	0590	-	F	Correction of test frequencies for NR band n71	15.3.0
2019-03	RAN#83	R5-191324	0591	-	F	Introduction of test frequencies for NR band n74	15.3.0
2019-03	RAN#83	R5-191325	0592	-	F	Correction of test frequencies for NR band n75	15.3.0
2019-03	RAN#83	R5-191326	0593	-	F	Correction of test frequencies for NR band n76	15.3.0
2019-03	RAN#83	R5-191327	0594	-	F	Correction of test frequencies for NR band n77	15.3.0
2019-03	RAN#83	R5-191328	0595	-	F	Correction of test frequencies for NR band n78	15.3.0
2019-03	RAN#83	R5-191329	0596	-	F	Correction of test frequencies for NR band n79	15.3.0
2019-03	RAN#83	R5-191330	0597	-	F	Correction of test frequencies for NR band n257	15.3.0
2019-03	RAN#83	R5-191331	0598	-	F	Correction of test frequencies for NR band n258	15.3.0
2019-03	RAN#83	R5-191332	0599	-	F	Correction of test frequencies for NR band n260	15.3.0
2019-03	RAN#83	R5-191333	0600	-	F	Correction of test frequencies for NR band n261	15.3.0
2019-03	RAN#83	R5-191334	0601	-	F	Correction of DCI format 1_0	15.3.0
2019-03	RAN#83	R5-191352	0603	-	F	Update CounterCheckResponse	15.3.0
2019-03	RAN#83	R5-191354	0604	-	F	Add FailureInformation	15.3.0
2019-03	RAN#83	R5-191355	0605	-	F	Update LocationMeasurementIndication	15.3.0
2019-03	RAN#83	R5-191356	0606	-	F	Updates to section 4.8.3 (test USIM parameters)	15.3.0
2019-03	RAN#83	R5-191360	0607	-	F	Update MeasurementReport	15.3.0
2019-03	RAN#83	R5-191361	0608	-	F	Update MobilityFromNRCommand	15.3.0
2019-03	RAN#83	R5-191364	0609	-	F	Update Paging	15.3.0
2019-03	RAN#83	R5-191366	0610	-	F	Update RRCSetupComplete	15.3.0
2019-03	RAN#83	R5-191368	0611	-	F	Update SecurityModeComplete	15.3.0
2019-03	RAN#83	R5-191370	0612	-	F	Update SecurityModeFailure	15.3.0
2019-03	RAN#83	R5-191371	0613	-	F	Update UEAssistanceInformation	15.3.0
2019-03	RAN#83	R5-191372	0614	-	F	Update UECapabilityInformation	15.3.0
2019-03	RAN#83	R5-191384	0616	-	F	Correction to SecurityConfig of RadioBearerConfig	15.3.0
2019-03	RAN#83	R5-191385	0617	-	F	Correction to SIB9	15.3.0
2019-03	RAN#83	R5-191386	0618	-	F	Correction to SRS-Config of BWP-UplinkDedicated	15.3.0

2019-03	RAN#83	R5-191446	0620	-	F	Correction of default configuration of RRC IEs in 38.508-1	15.3.0
2019-03	RAN#83	R5-191450	0621	-	F	Addition of NR system information combination SIB6, SIB7	15.3.0
2019-03	RAN#83	R5-191538	0624	-	F	Update ULInformationTransfer	15.3.0
2019-03	RAN#83	R5-191539	0625	-	F	Update IE QuantityConfig and CSI-ReportConfig	15.3.0
2019-03	RAN#83	R5-191620	0629	-	F	Clarification for NR inter-band measurement test case configuration	15.3.0
2019-03	RAN#83	R5-191762	0637	-	F	Editorial update in MeasObjectNR and ReportConfigNR	15.3.0
2019-03	RAN#83	R5-191763	0638	-	F	Update ReportConfigNR and TimeToTrigger	15.3.0
2019-03	RAN#83	R5-192271	0570	1	F	Correction of test frequencies for EN-DC configuration DC_(n)71	15.3.0
2019-03	RAN#83	R5-192272	0602	1	F	Update chapter 4.5 RRC Connected initiation	15.3.0
2019-03	RAN#83	R5-192273	0626	1	F	Update RRCRelease	15.3.0
2019-03	RAN#83	R5-192274	0615	1	F	Correction to NR SchedulingRequestResourceConfig	15.3.0
2019-03	RAN#83	R5-192275	0627	1	F	Update IE I-RNTI-Value	15.3.0
2019-03	RAN#83	R5-192276	0628	1	F	Update IE ShortI-RNTI-Value	15.3.0
2019-03	RAN#83	R5-192277	0630	1	F	Updates to test environments for Signalling test	15.3.0
2019-03	RAN#83	R5-192278	0633	1	F	Addition of USIM Profiles for Signaling TC	15.3.0
2019-03	RAN#83	R5-192279	0636	1	F	Update QoS Configuration	15.3.0
2019-03	RAN#83	R5-192280	0643	1	F	Update to of Generic procedure E-UTRA RRC_IDLE	15.3.0
2019-03	RAN#83	R5-192281	0644	1	F	Introduction of EAP AKA	15.3.0
2019-03	RAN#83	R5-192290	0655	-	F	Update chapter 4.5 RRC_INACTIVE	15.3.0
2019-03	RAN#83	R5-192363	0631	1	F	Updating P-Max IE	15.3.0
2019-03	RAN#83	R5-192364	0632	2	F	Updating IEs part of SearchSpace	15.3.0
2019-03	RAN#83	R5-192400	0528	1	F	Setup diagram for receiver test using spectrum analyzer	15.3.0
2019-03	RAN#83	R5-192541	0622	1	F	Connection diagrams for RRM tests	15.3.0
2019-03	RAN#83	R5-192542	0646	1	F	Antenna Connection diagram for UE part for RRM	15.3.0
2019-03	RAN#83	R5-192543	0649	1	F	Connection diagram for FR1 demod test cases	15.3.0
2019-03	RAN#83	R5-192705	0645	1	F	Introduction of Non 3GPP Access over WLAN	15.3.0
2019-03	RAN#83	R5-192735	0533	1	F	Correction to PUSCH-Config	15.3.0
2019-03	RAN#83	R5-192736	0535	1	F	Addition of details on Test State 0	15.3.0
2019-03	RAN#83	R5-192737	0537	1	F	Correction of CellGroupConfig tables and logical channel identities	15.3.0
2019-03	RAN#83	R5-192738	0543	1	F	Additions and updates to UE capability Information Elements	15.3.0
2019-03	RAN#83	R5-192739	0544	1	F	Updates and additions of default QoS configurations	15.3.0
2019-03	RAN#83	R5-192740	0566	1	F	Update chapter 4.5 General for PDUs	15.3.0
2019-03	RAN#83	R5-192741	0567	1	F	Update of Annex C on calculation of test frequencies	15.3.0
2019-03	RAN#83	R5-192742	0619	1	F	Correction to schedulingRequestID Configuration	15.3.0
2019-03	RAN#83	R5-192743	0639	1	F	Addition of Switch/Power UE procedures	15.3.0
2019-03	RAN#83	R5-192744	0640	1	F	Update to Test procedure to check that UE is camped on a new cell belonging to a new TA	15.3.0
2019-03	RAN#83	R5-192745	0641	1	F	Update to Test procedure to check that UE is in state 5GC RRC_IDLE on a certain cell	15.3.0
2019-03	RAN#83	R5-192846	0648	1	F	Updates to Annex B to add Permitted OTA Test Methods	15.3.0
2019-03	RAN#83	-	-	-	-	Editorial updates of table numbering	15.3.0
2019-06	RAN#84	R5-193537	0680	-	F	Remove unused DCI formats from 38.508-1	15.4.0
2019-06	RAN#84	R5-193540	0681	-	F	Adding setup diagram for Receiver performance tests 2x2	15.4.0
2019-06	RAN#84	R5-193542	0682	-	F	Remove brackets from parameters for DCI formats for scheduling	15.4.0
2019-06	RAN#84	R5-193613	0691	-	F	Update default configuration of QuantityConfig	15.4.0
2019-06	RAN#84	R5-193681	0693	-	F	Update chapter 4.5.3 RRC_INACTIVE procedures	15.4.0
2019-06	RAN#84	R5-193682	0694	-	F	Update chapter 4.5.4 RRC_CONNECTED procedures	15.4.0
2019-06	RAN#84	R5-193683	0695	-	F	Update chapter 4.5.5 SWITCHED_OFF procedures	15.4.0
2019-06	RAN#84	R5-193690	0696	-	F	Resubmission: Connection diagram for 1x2 Demod test cases	15.4.0
2019-06	RAN#84	R5-193734	0701	-	F	Update IE I-RNTI-Value	15.4.0
2019-06	RAN#84	R5-193735	0702	-	F	Update IE ShortI-RNTI-Value	15.4.0
2019-06	RAN#84	R5-193746	0710	-	F	Update IE SubcarrierSpacing	15.4.0
2019-06	RAN#84	R5-193813	0711	-	F	Update of USIM EF5GS3GPPLOCI & EF5GSN3GPPLOCI	15.4.0
2019-06	RAN#84	R5-193828	0713	-	F	Add IE MultiFrequencyBandListNR-SIB	15.4.0
2019-06	RAN#84	R5-193829	0714	-	F	Add IE NR-NS-PmaxList	15.4.0
2019-06	RAN#84	R5-193843	0716	-	F	Update IE ServingCellConfig	15.4.0
2019-06	RAN#84	R5-193862	0717	-	F	Corrections to References	15.4.0
2019-06	RAN#84	R5-193980	0725	-	F	New test procedure for Registration Reject	15.4.0
2019-06	RAN#84	R5-193981	0726	-	F	Updates to test procedure 4.9.1	15.4.0
2019-06	RAN#84	R5-194038	0728	-	F	Editorial Correction - USIM Profiles for Signaling TC	15.4.0
2019-06	RAN#84	R5-194040	0729	-	F	Correction to QoS Configuration	15.4.0
2019-06	RAN#84	R5-194086	0733	-	F	Update K2 value to align with RF DL RMC	15.4.0
2019-06	RAN#84	R5-194087	0734	-	F	Update aggregationlevel2 in SearchSpace IE	15.4.0
2019-06	RAN#84	R5-194303	0740	-	F	TDD-UL-DL-Config for FR1 SCS 60kHz	15.4.0
2019-06	RAN#84	R5-194359	0742	-	F	Removal of column for Number of PDU sessions established from tables for Test States	15.4.0
2019-06	RAN#84	R5-194362	0743	-	F	Editorial correction to test frequency clauses	15.4.0
2019-06	RAN#84	R5-194364	0744	-	F	Update of test frequencies for EN-DC combination DC_41A_n41A	15.4.0
2019-06	RAN#84	R5-194367	0745	-	F	Common procedure to configure SCC for CA RF testing	15.4.0
2019-06	RAN#84	R5-194369	0746	-	F	Introduction of test frequencies for inter-band Rel-15 EN-DC two bands configurations	15.4.0

2019-06	RAN#84	R5-194420	0751	-	F	Update IE BWP-Downlink	15.4.0
2019-06	RAN#84	R5-194435	0752	-	F	Update IE BWP-Id	15.4.0
2019-06	RAN#84	R5-194438	0755	-	F	Updates to UE 4.6.5 Other Information Elements	15.4.0
2019-06	RAN#84	R5-194441	0757	-	F	Update IE BWP-Uplink	15.4.0
2019-06	RAN#84	R5-194479	0758	-	F	Editorial updates to 4.7.1 Contents of 5GMM messages	15.4.0
2019-06	RAN#84	R5-194480	0759	-	F	Editorial updates to 4.7.2 Contents of 5GSM messages	15.4.0
2019-06	RAN#84	R5-194510	0762	-	F	Update of Switch off - Power off procedure in RRC_CONNECTED	15.4.0
2019-06	RAN#84	R5-194539	0767	-	F	Introduction of test frequencies for EN-DC CA configuration DC_30A_n260(A-I)	15.4.0
2019-06	RAN#84	R5-194541	0768	-	F	Antenna Connection diagram for TE part for RRM	15.4.0
2019-06	RAN#84	R5-194709	0785	-	F	Update 38.508 RF and RRM clauses with agreed recommendation to configure UE as non-IMS	15.4.0
2019-06	RAN#84	R5-194783	0774	-	F	Introduction of test frequencies for NR band n50 and signalling testing	15.4.0
2019-06	RAN#84	R5-194784	0775	-	F	Introduction of test frequencies for NR band n74 and signalling testing	15.4.0
2019-06	RAN#84	R5-194790	0778	-	F	Updates to power allocations	15.4.0
2019-06	RAN#84	R5-194791	0779	-	F	Update of DownlinkConfigCommonSIB	15.4.0
2019-06	RAN#84	R5-194794	0684	1	F	Update IE PDSCH-Config	15.4.0
2019-06	RAN#84	R5-194795	0687	1	F	Update NR MeasObjectNR	15.4.0
2019-06	RAN#84	R5-194796	0690	1	F	Update default configuration of ReportConfigNR	15.4.0
2019-06	RAN#84	R5-194797	0692	1	F	Update chapter 4.5.2 RRC_IDLE procedures	15.4.0
2019-06	RAN#84	R5-194798	0704	1	F	Correction to the note associated to the Table 4.7.1-2	15.4.0
2019-06	RAN#84	R5-194800	0708	1	F	Update IE MIB	15.4.0
2019-06	RAN#84	R5-194801	0709	1	F	Update IE SchedulingRequestResourceConfig	15.4.0
2019-06	RAN#84	R5-194802	0712	1	F	Correct clause numbers in 4.5A	15.4.0
2019-06	RAN#84	R5-194803	0718	1	F	Update IE ServingCellConfigCommon	15.4.0
2019-06	RAN#84	R5-194804	0721	1	F	Update IE FrequencyInfoUL	15.4.0
2019-06	RAN#84	R5-194805	0722	1	F	Update IE FrequencyInfoUL-SIB	15.4.0
2019-06	RAN#84	R5-194806	0723	1	F	Update generic procedures chapter general	15.4.0
2019-06	RAN#84	R5-194807	0724	1	F	Update chapter 4.5.2 RRC_IDLE Initiation	15.4.0
2019-06	RAN#84	R5-194808	0730	1	F	Updates to RadioBearerConfig	15.4.0
2019-06	RAN#84	R5-194809	0732	1	F	Updates to PhysicalCellGroupConfig	15.4.0
2019-06	RAN#84	R5-194810	0739	1	F	New test procedure for RRC_CONNECTED	15.4.0
2019-06	RAN#84	R5-194811	0741	1	F	Updated IE MeasObjectEUTRA and ReportConfigInterRAT	15.4.0
2019-06	RAN#84	R5-194812	0753	1	F	Updates to Registration 5GMM messages	15.4.0
2019-06	RAN#84	R5-194813	0754	1	F	Updates to UE 4.6.4 UE Capability Information Elements	15.4.0
2019-06	RAN#84	R5-194814	0760	1	F	New Test procedure for UE for Tracking area updating / inter-system change from N1 mode to S1 mode in 5GMM/EMM-IDLE mode	15.4.0
2019-06	RAN#84	R5-194817	0777	1	F	New Test procedure for UE for Tracking area updating / inter-system change from S1 mode to N1 mode in 5GMM/EMM-IDLE mode	15.4.0
2019-06	RAN#84	R5-194821	0780	-	F	Introducing conditions for Handover in RRCReconfiguration and RadioBearerConfig	15.4.0
2019-06	RAN#84	R5-194824	0781	-	F	Updates to Service Request 5GMM message	15.4.0
2019-06	RAN#84	R5-194879	0735	1	F	Updates to Multi-Cell SIG OTA testing for FR2	15.4.0
2019-06	RAN#84	R5-194881	0763	1	F	Introduction of test frequencies for NR CA configuration CA_n257B	15.4.0
2019-06	RAN#84	R5-194882	0764	1	F	Introduction of test frequencies for NR CA configuration CA_n260B	15.4.0
2019-06	RAN#84	R5-194883	0765	1	F	Introduction of test frequencies for NR CA configuration CA_n260I	15.4.0
2019-06	RAN#84	R5-194884	0766	1	F	Introduction of test frequencies for NR CA configuration CA_n261B	15.4.0
2019-06	RAN#84	R5-194885	0782	1	F	Introduction of test frequencies for NR CA configuration CA_n260(A-I)	15.4.0
2019-06	RAN#84	R5-194889	0737	1	F	corrections to Non 3GPP Access over WLAN procedures	15.4.0
2019-06	RAN#84	R5-194894	0783	-	F	Update FFS in ResumeCause	15.4.0
2019-06	RAN#84	R5-194896	0784	-	F	Updates to reference QoS configurations for EPS interworking	15.4.0
2019-06	RAN#84	R5-194902	0685	1	F	Correction of Setup Diagrams for Receiver tests using Signal Generator in 38.508-1	15.4.0
2019-06	RAN#84	R5-195095	0750	1	F	Introduction of Connection diagram for 2x4 and 4x4 Demod test cases	15.4.0
2019-06	RAN#84	R5-195322	0686	1	F	Update NR SIB1	15.4.0
2019-06	RAN#84	R5-195323	0703	1	F	Update IE CommonCellGroupConfig	15.4.0
2019-06	RAN#84	R5-195324	0715	1	F	Update default configuration of MeasGapConfig	15.4.0
2019-06	RAN#84	R5-195325	0719	1	F	Addition of Switch off / Power off procedure in RRC_INACTIVE	15.4.0
2019-06	RAN#84	R5-195326	0720	1	F	Update of SIB5	15.4.0
2019-06	RAN#84	R5-195327	0731	1	F	Updates to RLC-BearerConfig	15.4.0
2019-06	RAN#84	R5-195328	0756	1	F	Updates to PDU session establishment 5GSM messages	15.4.0
2019-06	RAN#84	R5-195329	0773	1	F	Introduction of test frequencies for inter-RAT signalling testing	15.4.0
2019-06	RAN#84	R5-195330	0776	1	F	Correction to PUSCH-Config	15.4.0
2019-06	RAN#84	R5-195426	0727	2	F	38.508-1 implementation of FR2 UL demod OTA tests using single pol Rx TE	15.4.0
2019-06	RAN#84	R5-195427	0772	2	F	Addition of message contents needed for DEMOD test cases	15.4.0

History

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