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Contents

Foreword

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

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- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document identifies the parameters of the access stratum part of the UE radio access capabilities. Furthermore, some reference configurations of these values are defined. The intention is that these configurations will be used for test specifications.

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 TS 25.323: "Packet Data Convergence Protocol (PDCP) specification".

[2] 3GPP TS 34.108: "Common Test Environments for User Equipment (UE) Conformance Testing".

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

[4] 3GPP TS 25.101 "UE Radio Transmission and Reception (FDD)".

[5] 3GPP TS 25.102 "UTRA (UE) TDD; Radio transmission and reception".

[6] 3GPP TS 25.215 "Physical layer; Measurements (FDD)".

[7] RFC 2507: "IP Header Compression".

[8] RFC 3095: "RObust Header Compression (ROHC): Framework and four profiles".

[9] 3GPP TS 25.321 "Medium Access Control (MAC) protocol specification".

[10] 3GPP TS 25.322 "Radio Link Control (RLC) protocol specification".

[11] 3GPP TS 25.211 "Physical channels and mapping of transport channels onto physical channels (FDD)".

[12] 3GPP TS 25.331 "Radio Resource Control (RRC); Protocol Specification".

[13] 3GPP TS 25.308 "High Speed Downlink Packet Access (HSDPA); Overall description; Stage 2".

[14] 3GPP TS 25.221 "Physical channels and mapping of transport channels onto physical channels (TDD)".

[15] RFC 4815: "RObust Header Compression (ROHC): Corrections and Clarifications to RFC 3095".

[16] 3GPP TS 25.307: " Requirement on User Equipments (UEs) supporting a release-independent frequency band".

[17] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol Specification".

[18] 3GPP TS 36.101: "User Equipment (UE) radio transmission and reception".

[19] 3GPP TS 25.300: "Universal Terrestrial Radio Access Network (UTRAN); General description; Stage 2".

[20] 3GPP TS 25.133: "Requirements for support of radio resource management (FDD)".

[21] 3GPP TS 25.225: "Physical layer – Measurements (TDD)".

[22] 3GPP TS 25.304: "User Equipment (UE) procedures in idle mode and procedures for cell reselection in connected mode".

[23] 3GPP TS 24.312: "Access Network Discovery and Selection Function (ANDSF) Management Object (MO)".

[24] 3GPP TS 36.133: "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for support of radio resource management".

[25] 3GPP TS 25.214 "Physical layer procedures (FDD)".

3 Definitions, symbols and abbreviations

3.1 Definitions

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

<defined term>: <definition>

3.2 Symbols

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

<symbol> <Explanation>

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 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 TR 21.905 [1].

AMD	Acknowledged Mode Data
ANDSF	Access Network Discovery and Selection Function
ANR	Automatic Neighbour Relation
BDS	BeiDou Navigation Satellite System
EGNOS	European Geostationary Navigation Overlay Service
GAN	Generic Access Network
GANSS	Galileo and Additional Navigation Satellite Systems
IPDL	Idle Period DownLink
MBS	Metropolitan Beacon System
MSAS	Multi-functional Satellite Augmentation System
QoE	Quality of Experience
QZSS	Quasi-Zenith Satellite System
rSRVCC	reverse Single Radio Voice Call Continuity
SPS	Semi-Persistent Scheduling
SRVCC	Single Radio Voice Call Continuity
WLAN	Wireless Local Area Network

4 UE radio access capability parameters

In the following the UE radio capability parameters are defined. When using the RRC configuration parameters, UTRAN needs to respect the UE capabilities. Only parameters for which there is a need to set different values for different UEs are considered as UE capability parameters. Therefore, the capabilities that are the same for all UEs, including baseline capabilities, are not listed here.

UTRAN needs to respect the UE capabilities when configuring the RBs. Actions in the UE when capabilities are in conflict with a UTRAN request are specified in RRC.

4.1 PDCP parameters

Support for RFC 2507

This parameter defines whether the UE supports header compression according to RFC 2507 as defined in [1] or not.

Support for RFC 3095

This parameter defines whether the UE supports robust header compression according to [8] and [15], as defined in [1] or not. 'IMS capable UEs supporting voice' shall support ROHC profiles 0x0000, 0x0001, 0x0002 and be able to compress and decompress headers of PDCP SDUs at a PDCP SDU rate corresponding to supported IMS voice codecs.

Support for RFC 3095 context relocation

This parameter defines whether the UE supports ROHC, [8] and [15], context relocation as defined in [1] or not.

Support for loss-less SRNS relocation

Defines whether the UE supports loss-less SRNS relocation as defined in [1] or not.

Support for lossless DL RLC PDU size change

Defines whether the UE supports lossless DL RLC PDU size change as defined in [1] or not.

Maximum header compression context space

This parameter is only applicable if the UE supports header compression according to RFC 2507. It is defined as the maximum header compression context size supported by the UE for all RFC 2507 protocol entities for all RBs. UTRAN controls that the UE capability can be fulfilled through the following parameters:

1. MAX_HEADER;
2. TCP_SPACE;
3. NON_TCP_SPACE;

The context space for a single RFC 2507 protocol entity calculates from:

(2 * (TCP_SPACE + 1 + NON_ TCP_SPACE + 1) * MAX_HEADER).

The following criterion must be fulfilled in the configuration:

Maximum header compression context space ≥ sum of context spaces for all RFC 2507 protocol entities for all RBs.

Maximum number of ROHC context sessions

This parameter is only applicable if the UE supports header compression according to [8] and [15]. It is defined as the maximum number of header compression context sessions supported by the UE.

Support for Reverse Decompression

This parameter determines whether reverse decompression is supported or not and the maximum number of packets that can be reverse decompressed by the decompressor in the UE.

Support for CS voice over HSPA

Defines whether the UE is able to route CS voice (AMR and AMR WB) data over HS-DSCH and E-DCH transport channels. If the UE supports CS voice over HS-DSCH and E-DCH, then the UE shall also support HS-PDSCH and E-DPDCH in CELL_DCH and DPCCH Discontinuous Transmission and MAC-ehs.

4.2 Void

4.3 RLC, MAC-hs, MAC-ehs and MAC-i/is parameters

Total RLC AM and MAC-hs buffer size

When HS-DSCH is not configured this is defined as the maximum total buffer size across all RLC AM entities supported by the UE. When HS-DSCH is configured this is defined as the maximum total buffer size across all MAC-hs reordering entities and all RLC AM entities supported by the UE. The memory signalled in this capability is dynamically shared by RLC AM entities and MAC-hs reordering entities at any time.

In order to evaluate memory consumption in the UE, it shall be assumed that:

- a stored AMD PDU of N octets requires a memory equal to N octets;
- a stored MAC-hs PDU of N bits requires a memory equal to (N – 10) bits.

The UE shall only consider itself in a memory shortage situation as defined in [9] [10] when the amount of stored AM RLC PDUs and MAC-hs PDUs exceeds its capability.

Maximum number of AM entities

This is defined as the maximum number of RLC AM entities supported by the UE.

Maximum RLC AM Window Size

This is defined as the maximum transmission and receiving window size of RLC AM entities supported by the UE.

Support of MAC-ehs

Defines whether the UE supports reception of MAC-ehs operation. If the UE supports MAC-ehs operation then the UE shall also support HS-PDSCH in CELL_DCH, flexible RLC AM PDU size in downlink, octet aligned transport block table, using special value of HE field to indicate end of an SDU for RLC AM and the possibility that different HS-SCCHs can be used in contiguous TTIs.

Support of Two Logical Channels

Defines whether the UE supports an AM RLC entity configurationed with two logical channels.

Support of MAC-i/is

Defines whether the UE supports MAC-i/is operation. If the UE supports MAC-i/is operation then the UE shall also support MAC-ehs operation, E-DPDCH in CELL_DCH and flexible RLC AM PDU size in uplink.

Support of MAC-ehs window size extension

For 1.28Mcps TDD only, this capability defines whether the UE supports MAC-ehs window size extension.

Support of UM RLC re-establishment via reconfiguration

Defines whether the UE supports UM RLC re-establishment procedure triggered by an RRC reconfiguration message.

4.4 Void

4.5 PHY parameters

4.5.1 Transport channel parameters in downlink

Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant

NOTE 1: "Being received" refers to all bits in the active TFC within the TFCS over all simultaneous transport channels received by the UE. "Arbitrary time instant" means that the time instant corresponding to the highest sum of number of bits is relevant. This note also applies to similar parameter definitions below.

This parameter is defined as:

$$\Sigma_i(N_i)$$

where N_i is defined as the number of bits in transport block #i, and the sum is over all transport blocks being received at an arbitrary time instant. All transport blocks that are to be simultaneously received by the UE on DCH, FACH, PCH and DSCH transport channels are included in the parameter.

NOTE 2: A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* * *Transport Block size* over all simultaneous transport channels is larger than what the UE capability indicates.

This UE capability also limits the maximum number of bits before de-rate-matching as follows: The maximum number of bits before de-rate matching being received at an arbitrary time instant (DPCH, PDSCH, S-CCPCH) shall be less or equal to 6.6 times the Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant.

Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant.

This parameter is defined similar to the parameter above, but the sum includes only transport blocks that are to be convolutionally coded.

Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant.

This parameter is defined similar to the parameter above, but the sum includes only transport blocks that are to be turbo coded.

Maximum number of simultaneous transport channels

This is defined as the maximum number of downlink Transport Channels that the UE is capable to process simultaneously, not taking into account the rate of each Transport Channel.

NOTE: The number of simultaneous transport channels affects how the total memory space and processing capacity can be shared among the transport channels. A UE does not need to support more simultaneous transport channels than the UE capability allows for.

Maximum number of simultaneous CCTrCH

This is defined as the maximum number of downlink CCTrCH that the UE is capable to process simultaneously. CCTrCH should be interpreted as consisting of DCH, FACH or DSCH.

Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval

All transport blocks that are to be simultaneously received by the UE on DCH, FACH, PCH and DSCH transport channels are included in the parameter.

NOTE: Relates to processing requirements for CRC in downlink. A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* is larger than what the UE capability

indicates. In the case of several CCTrCHs, the combination of the TFCs within the respective TFCSs for simultaneous TTIs at an arbitrary time instant shall not exceed this parameter.

Maximum number of TFC

Defines the maximum number of transport format combinations the UE can store, where all transport format combinations for all downlink transport format combination sets are counted. Different channelisation code mapping shall be counted as separate TFC in case of DSCH.

Maximum number of TF

The maximum total number of downlink transport formats the UE can store, where all transport formats for all downlink transport channels are counted.

Support for turbo decoding

Defines whether turbo decoding is supported or not.

Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI

Defines the maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI the UE is capable of receiving within a HS-DSCH TTI.

4.5.2 Transport channel parameters in uplink

Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant

NOTE 1: "Being transmitted" refers to all bits in the active TFC within the TFCS over all simultaneous transport channels transmitted by the UE. "Arbitrary time instant" means that the time instant corresponding to the highest sum of number of bits is relevant. This note also applies to similar parameter definitions below.

This parameter is defined as:

$$\sum_i(N_i)$$

where N_i is defined as the number of bits in transport block #i, and the sum is over all transport blocks being transmitted at an arbitrary time instant.

NOTE 2: This parameter is related to memory requirements for uplink data received from MAC before it can be transmitted over the radio interface. As shown in Figure 4.1 the worst case occurs for the maximum TTI. A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* * *Transport Block size* over all simultaneous transport channels is larger than what the UE capability indicates.

Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant

This parameter is defined similar to the parameter above, but the sum includes only transport blocks that are to be convolutionally coded.

Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant

This parameter is defined similar to the parameter above, but the sum includes only transport blocks that are to be turbo coded.

Maximum number of simultaneous transport channels

This is defined as the maximum number of uplink transport channels that the UE is capable to process simultaneously, not taking into account the rate of each transport channel.

NOTE: A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* * *Transport Block size* over all simultaneous transport channels is larger than what the UE capability indicates.

Maximum number of simultaneous CCTrCH

This parameter is applicable for TDD only. For FDD there is always only one CCTrCH at a time. The parameter is defined as the maximum number of uplink CCTrCH that the UE is capable to process simultaneously.

Maximum total number of transport blocks transmitted within TTIs that start at the same time

Defines the maximum number of transport blocks that the UE is capable to transmit within TTIs that start at the same time. An example is shown in figure 4.1.

NOTE: Relates to processing requirements for CRC in uplink.

Maximum number of TFC

Defines the maximum number of transport format combinations the UE can store, where all transport format combinations for all uplink transport format combination sets are counted.

Maximum number of TF

The maximum total number of uplink transport formats the UE can store, where all transport formats for all uplink transport channels are counted.

Support for turbo encoding

Defines whether turbo encoding is supported or not.

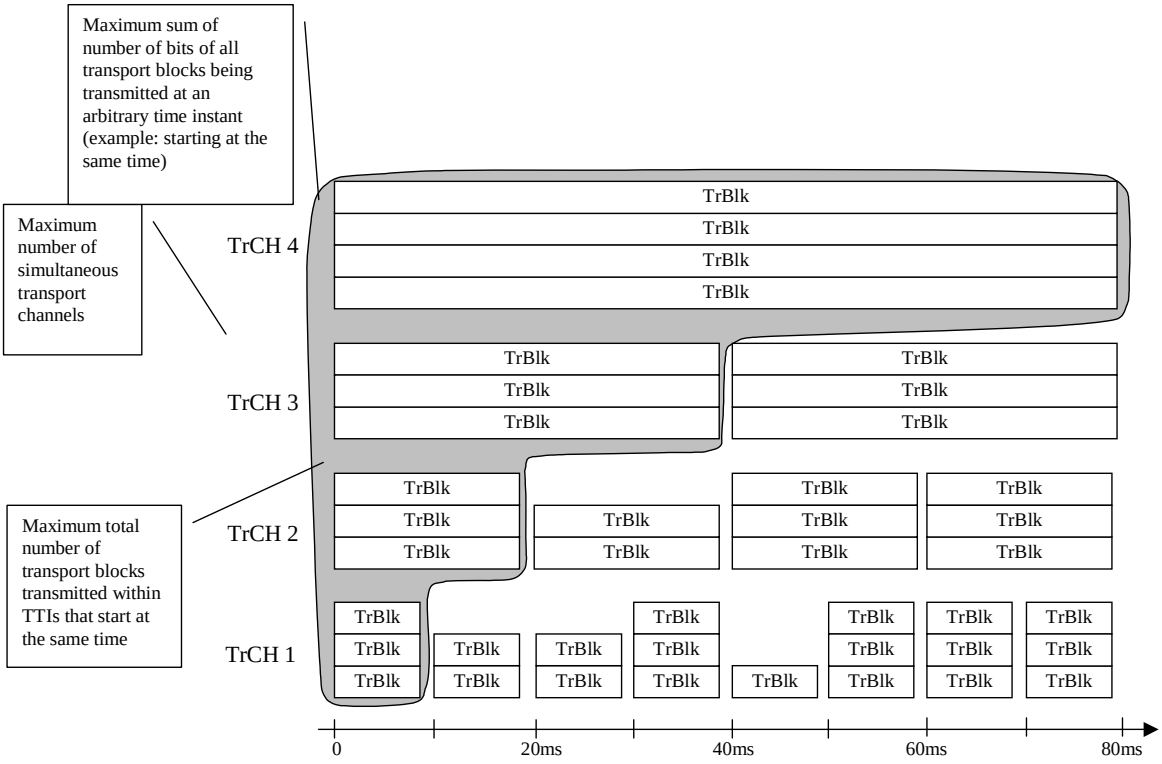

Figure 4.1: UE transport channel processing limitations in uplink

4.5.3 FDD Physical channel parameters in downlink

Maximum number of DPCH codes to be simultaneously received

Defines the number of codes the UE is capable of receiving in parallel. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability. The capability does not include codes used for S-CCPCH.

Maximum number of physical channel bits received in any 10 ms interval (DPCH, S-CCPCH)

Defines the number of physical channel bits the UE is capable of receiving. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability.

The number of DPCH channel bits indicates the capability of the UE when operating in non-compressed mode.

The parameter also indicates the capability of the UE to support compressed mode by spreading factor reduction as follows. The UE shall:

- for parameter values up to and including 9600 bits:
  - support compressed mode by spreading factor reduction when operating at any value up to the reported capability.
- for parameter values greater than 9600 bits:
  - support compressed mode by spreading factor reduction when operating at any value up to the greater of:
    - half the reported capability; or
    - 9600bits.

NOTE: Compressed mode by spreading factor reduction is not applicable when operating at spreading factor 4.

Support for SF 512 and 80 ms TTI for DPCH

Defines whether the UE supports spreading factor 512 and 80 ms TTI in downlink DPCH or not.

Support of HS-PDSCH

Defines whether the UE supports HS-PDSCH in CELL_DCH state or not. If the UE supports HS-PDSCH in CELL_DCH state then the UE shall support also F-DPCH.

Support of HS-SCCHless HS-DSCH

Defines whether the UE supports HS-PDSCH reception in CELL_DCH without prior reception of HS-SCCH. If the UE supports HS-SCCHless HS-DSCH then the UE shall support HS-PDSCH in CELL_DCH and E-DPDCH.

Support of HS-PDSCH in CELL_FACH

Defines whether the UE supports HS-PDSCH in CELL_FACH state or not. If the UE supports HS-PDSCH in CELL_FACH then the UE shall support also HS-PDSCH in CELL_DCH and MAC-ehs.

Support of HS-PDSCH in CELL_PCH and URA_PCH

Defines whether the UE supports HS-PDSCH in CELL_PCH and URA_PCH states or not. If the UE supports HS-PDSCH in CELL_PCH then the UE shall support also HS-PDSCH in CELL_FACH.

Support of Enhanced F-DPCH

Defines whether the UE supports enhanced F-DPCH operation. If the UE supports Enhanced F-DPCH then the UE shall also support HS-PDSCH in CELL_DCH and E-DPDCH.

Maximum number of HS-DSCH codes received

Defines the maximum number of HS-DSCH codes the UE is capable of receiving. When the UE supports either MIMO or dual cell operation, this parameter defines the maximum number of HS-DSCH codes that the UE is capable of receiving per transport block.

Total number of soft channel bits in HS-DSCH

Defines the maximum number of soft channel bits over all HARQ processes. When explicit signalling is used, UTRAN configures Process Memory Size for each HARQ process so that the following criterion must be fulfilled in the configuration:

Total number of soft channel bits in HS-DSCH ≥ sum of Process Memory Size of all the HARQ processes.

Minimum inter-TTI interval in HS-DSCH

Defines the distance from the beginning of a TTI to the beginning of the next TTI that can be assigned to the UE.

Support of Target Cell Pre-Configuration

Defines if the UE supports simultaneous HS-DSCH reception from serving cell and decoding of an HS-SCCH sent from another cell in the active set. If the UE supports Target Cell Pre-Configuration then the UE shall also support Enhanced F-DPCH.

Support of Enhanced Serving Cell Change for Event 1C

Defines if the UE supports simultaneous HS-DSCH reception from serving cell and decoding of an HS-SCCH sent from another cell in the active set when an Event 1C measurement report requesting serving HS-DSCH cell change is triggered. If the UE supports Enhanced Serving Cell Change for Event 1C then the UE shall also support Target Cell Pre-Configuration.

Support of HS-DSCH DRX operation

Defines whether the UE supports HS-DSCH DRX operation in CELL_FACH state as defined in [13]. If the UE supports HS-DSCH DRX operation in CELL_FACH state then the UE shall also support HS-PDSCH in CELL_FACH.

Support for Two DRX schemes in URA_PCH and CELL_PCH

Defines whether UE supports Two DRX schemes in URA_PCH and CELL_PCH.

Support of TX Diversity on DL Control Channels by MIMO Capable UE when MIMO operation is active

Defines whether the UE supports TX diversity on DL Control Channels (HS-SCCH, F-DPCH, E-AGCH, E-HICH, E-RGCH) when MIMO is active, P-CPICH is configured on antenna 1, and S-CPICH on antenna 2.

Support for cell-specific Tx diversity configuration for dual-cell operation

Defines whether the UE supports cell specific Tx diversity configuration when configured for dual-cell operation.

Support of MIMO only with single-stream restriction

Defines whether the UE supports MIMO only with restriction to single stream operation. UE supporting this capability shall belong to any HS-DSCH physical layer category not supporting MIMO or the UE shall belong to category 17 or 18. If the UE supports MIMO only with single-stream restriction, the UE shall also support MAC-ehs.

Support of MIMO mode with four transmit antennas per band capability

Defines whether the UE supports MIMO mode with four transmit antennas in CELL_DCH. The capability is defined per frequency band.

Support of MIMO mode with four transmit antennas operation only with dual-stream restriction

Defines whether the UE supports MIMO mode with four transmit antennas only with restriction to dual stream operation. UE supporting this capability shall belong to category 28, 30, 32, 34 or 36. If a UE supporting this capability belongs to category 34 or 36, then only up to 4 carriers can be configured with this capability. The dual-stream restriction capability shall not be signalled when UE supports either category 37 or 38. If the UE supports MIMO mode with four transmit antennas only with dual-stream restriction, the UE shall also support MAC-ehs.

Support of dual band operation

Defines whether the UE supports dual cell operation in the band combinations indicated in the Radio Access Capability Band Combination List [12]. If the UE supports dual band operation, the UE shall also support dual cell operation on adjacent frequencies.

Support for dual cell with MIMO operation in different bands

Defines whether the UE supports dual cell with MIMO operation in different bands. If the UE supports dual cell with MIMO operation in different bands, the UE shall also support dual band operation.

Support for Multiflow operation

A UE capability to receive simultaneously two HS-DSCH transport channels per carrier frequency, where the HS-DSCH transport channels may belong to the same or different Node Bs. If a UE supports Multiflow operation, it shall also support Dual Cell HSDPA operation on adjacent frequencies and the HS-DPCCH power offset extension.

Support of NodeB triggered HS-DPCCH transmission

Defines whether the UE supports NodeB triggered HS-DPCCH transmission in CELL_FACH state. If the UE supports both HS-PDSCH in CELL_PCH and URA_PCH states and NodeB triggered HS-DPCCH transmission, then the UE shall also support NodeB triggered HS-DPCCH transmission in CELL_PCH state. If the UE supports NodeB triggered HS-DPCCH transmission, then the UE shall also support Common E-DCH.

Support of HS-DSCH DRX operation with second DRX cycle

Defines whether the UE supports HS-DSCH DRX operation with second DRX cycle in CELL_FACH state as defined in [13]. If the UE supports HS-DSCH DRX operation with second DRX cycle in CELL_FACH state then the UE shall also support HS-PDSCH in CELL_FACH, HS-DSCH DRX operation, and common E-DCH. If the UE supports UTRAN ANR and HS-DSCH DRX operation with second DRX cycle, then the UE shall also support measurement and logging in CELL_FACH state when second DRX cycle is used for Automatic Neighbour Relation (ANR) in UTRAN. If the UE supports logged measurements in Idle mode and PCH States and HS-DSCH DRX operation with second DRX cycle, then the UE shall also support logged measurements in CELL_FACH state when second DRX cycle is used in UTRAN.

Non-contiguous multi-cell

Defines whether the UE supports non-contiguous multi-cell operation on two, three or four cells with single gap in one band. If the UE supports non-contiguous multi-cell operation in a certain band, it shall also support dual cell operation on adjacent frequencies in that band.

Support of HS-DPCCH power offset extension

Defines whether the UE supports the values 9 and 10 of deltaACK, deltaNACK and deltaCQI power offset as specified in [12].

Support of STTD on DL Control Channels when Multiflow operation is active

Defines whether a Multiflow capable UE supports STTD on DL Control Channels (HS-SCCH, F-DPCH, E-AGCH, E-HICH, E-RGCH, F-TPICH) when Multiflow operation is active, as specified in [12].

Non-contiguous multi-cell with MIMO

Defines whether the UE supports non-contiguous multi-cell operation on two, three or four cells with single gap in one band with MIMO. If the UE supports non-contiguous multi-cell with MIMO, it shall also support non-contiguous multi-cell.

Support of multi-cell configuration in inter-RAT handover

Defines whether the UE supports multi-cell configuration at inter-RAT handover to UTRAN. The UE shall support it for all multi-cell capabilities supported by the UE (i.e. multi-cell operation on two or more than two cells, multi-cell operation in the band combinations indicated in the Radio Access Capability Band Combination List [12], non-contiguous multi-cell operation on two, three or four cells with single gap in one band, dual cell E-DCH), except for multi-cell operation on more than four cells.

Support of DPCCH2

Defines whether the UE supports DPCCH2 transmission in CELL_DCH state. If the UE supports DPCCH2, it shall also support HS-PDSCH in CELL_DCH.

Support for DCH Enhancements

Defines whether the UE supports DCH Enhancements.

Basic capability indicates that the UE supports the following sub-features in DCH enhancements ([19]):

- Basic mode of DL FET (Mode 0)
- Pilot-free DL DPCH slot formats #17 and #18
- Pseudo flexible rate matching
- Uplink DPCCH slot format #5
- Uplink DPDCH dynamic 10ms transmission

Full capability indicates that the UE supports the following sub-features in DCH enhancements ([19]):

- Basic mode of DL FET (Mode 0)
- Full mode of DL FET (Mode 1)
- Pilot-free DL DPCH slot formats #17 and #18
- Pseudo flexible rate matching and transport channel concatenation in L1
- Uplink DPCCH slot format #5 with DL FET ACK/NACK indication
- Uplink DPDCH dynamic 10ms transmission

Simultaneous support for DCH Enhancements and Compressed Mode operation

Defines whether the UE supports simultaneous operation of DCH Enhancements and Compressed Mode. If the UE supports simultaneous operation of DCH Enhancements with Full capability and Compressed Mode, then the UE shall support simultaneous operation of DCH Enhancements with Basic capability and Compressed Mode.

Simultaneous support for DCH Enhancements and DPCCH Discontinuous Transmission

Defines whether the UE supports simultaneous operation of DCH Enhancements and DPCCH Discontinuous Transmission. If the UE supports simultaneous operation of DCH Enhancements with Full capability and DPCCH Discontinuous Transmission, then the UE shall support simultaneous operation of DCH Enhancements with Basic capability and DPCCH Discontinuous Transmission.

DRX enhancements

Defines whether the UE supports DRX enhancements, as defined in subclause 6C.3 in [25], or not.

HS-DPCCH overhead reduction

Defines whether the UE supports HS-DPCCH overhead reduction for multi-RAB with DCH or not.

Support of F-TPICH feedback from the Multiflow assisting cell

Defines whether the UE supports reception of the F-TPICH feedback from the Multiflow assisting serving HS-DSCH cell. If the UE supports this feature, it shall also support uplink closed loop transmit diversity and Multiflow operation.

Support of power control algorithm 3

Defines whether the UE supports power control algorithm 3.

Support of blind HARQ retransmissions for HSDPA

Defines whether the UE supports blind HARQ retransmissions for HSDPA.

Support of HS-SCCH DRX operation

Defines whether the UE supports HS-SCCH DRX operation in CELL_FACH state.

Support of simplified HS-SCCH type 1 operation

Defines whether the UE supports simplified HS-SCCH type 1 operation.

4.5.4 FDD physical channel parameters in uplink

Maximum number of DPDCH bits per 10 ms

Defines the maximum number of the DPDCH bits the UE is capable to transmit per 10 ms.

If the reported capability is lower than 9600, the number of DPDCH channel bits indicates the capability of the UE when operating in non-compressed mode; if the reported capability is equal to or greater than 9600 it indicates the maximum capability of the UE considering both compressed and non compressed mode operation.

NOTE 1: This capability combines the 'Max number of DPDCH' and 'Minimum SF' capabilities into one capability. Note that no flexibility is lost due to this, as multiple DPDCH is only used for SF = 4, i.e. when the number of DPDCH bits exceed a certain value.

NOTE 2: Compressed mode by spreading factor reduction is not applicable when operating at spreading factor 4.

Support of E-DPDCH

Defines whether the UE supports E-DPDCH in CELL_DCH or not.

Maximum number of E-DCH codes transmitted per transport block

Defines the maximum number of E-DCH codes and spreading factors the UE is capable of transmitting per transport block. The UE can support 1, 2 or 4 E-DPDCHs using either SF=2 or/and SF=4.

Support of 2ms TTI for E-DCH

Defines whether the UE supports 2ms TTI or not.

Support of DPCCH Discontinuous Transmission

Defines whether the UE supports DPCCH Discontinuous Transmission in CELL_DCH. If the UE supports DPCCH Discontinuous Transmission then the UE shall also support

- HS-PDSCH in CELL_DCH

- E-DPDCH in CELL-DCH
- Uplink DRX with E-DCH start time restriction in CELL-DCH as definied in [13]
- The configuration of the Downlink DRX as definied in [13].

Support of Slot Format #4

Defines whether the UE supports slot format #4.

Support for E-DPDCH power interpolation formula

Defines whether the UE supports E-DPDCH power interpolation formula when 16QAM is not configured.

Support for E-DPCCH power boosting

Defines whether the UE supports E-DPCCH power boosting.

Support of common E-DCH

Defines whether the UE supports E-DCH enhanced random access in CELL_FACH state and Idle mode. If the UE supports common E-DCH then the UE shall also support

- MAC-i/is
- FDD E-DCH physical layer category 2, 4, 6 or 7
- Enhanced F-DPCH
- HS-PDSCH in CELL_FACH

Support of uplink open loop transmit diversity

Defines whether the UE supports uplink open loop transmit diversity in CELL_DCH.

Support of uplink closed loop transmit diversity

Defines whether the UE supports uplink closed loop transmit diversity in CELL_DCH.

Support of Common E-RGCH based interference control

Defines whether the UE supports Common E-RGCH based interference control in CELL_FACH state. If the UE supports Common E-RGCH based interference control, then the UE shall also support Common E-DCH.

Support of Fallback to R99 PRACH

Defines whether the UE supports Fallback to R99 PRACH in CELL_FACH state and IDLE mode. If the UE supports Fallback to R99 PRACH, then the UE shall also support Common E-DCH.

Support of Concurrent deployment

Defines whether the UE supports Concurrent deployment of 2ms and 10ms TTI in a cell in CELL_FACH state and IDLE mode. If the UE supports Concurrent deployment of 2ms and 10ms TTI in a cell, then the UE shall also support Common E-DCH.

Support of TTI alignment and Per HARQ process

Defines whether the UE supports TTI alignment and Per HARQ process activation and de-activation in CELL_FACH state and IDLE mode. If the UE supports TTI alignment and Per HARQ process activation and de-activation, then the UE shall also support Common E-DCH and Concurrent deployment of 2ms and 10ms TTI in a cell.

Support of Uplink MIMO

Defines whether the UE supports Uplink MIMO in CELL_DCH. If the UE supports Uplink MIMO, it shall also support Uplink Closed Loop Transmit Diversity.

Support of Cell Reselection Indication Reporting

Defines whether the UE supports Cell Reselection Indication Reporting in CELL_FACH state when common E-DCH resource is allocated. If the UE supports Cell Reselection Indication Reporting, then the UE shall also support Common E-RGCH based interference control or NodeB triggered HS-DPCCH transmission, or both.

Support of Serving E-DCH cell decoupling

Defines whether the UE supports a configuration in which the Serving HS-DSCH and Serving E-DCH cell are different.

Support of Radio Links without DPCH/F-DPCH

Defines whether the UE supports to not receive both DPCH and F-DPCH downlink channels from the indicated Non-serving E-DCH cell(s).

Access Groups based access control

Defines whether the UE supports network control of DTCH transmissions in CELL_FACH and DCCH/CCCH due to uplink DTCH data transmissions in CELL_PCH state and URA_PCH state.

Enhanced TTI switching

Defines whether the UE supports Enhanced EUL TTI switching or not. If the UE supports Enhanced TTI switching, then the UE shall also support Enhanced UPH reporting.

Implicit Grant handling

Defines whether the UE supports handling of Implicit Grants on the Secondary Uplink frequency or not. If the UE supports Implicit Grant handling, then the UE shall also support Dual cell E-DCH operation.

DTX enhancements

Defines whether the UE supports DTX enhancements or not. If the UE supports DTX enhancements, then the UE shall also support Implicit Grant handling.

Support of Dual Cell E-DCH transmission with DPDCH

Defines whether the UE supports Dual Cell E-DCH transmission with DPDCH. If a UE supports Dual Cell E-DCH transmission with DPDCH, then the UE shall also support Dual cell E-DCH operation.

Support for Dual Band Dual Cell E-DCH operation

Defines whether the UE supports Dual Band Dual Cell E-DCH operation in the band combinations indicated in the Radio Access Capability Band Combination List [12]. If the UE supports Dual Band Dual Cell E-DCH operation, the UE shall also support dual band operation in downlink. If the UE supports Dual Band Dual Cell E-DCH operation, the UE shall also support Dual Cell E-DCH transmission.

Support of Dual Cell E-DCH operation enhancements

Defines whether the UE supports 10ms TTI on both Primary and Secondary Uplink Frequency or a combination of 2ms TTI and 10ms TTI. If the UE supports Dual Cell E-DCH operation enhancements, the UE shall also support Dual Cell E-DCH operation.

4.5.5 TDD physical channel parameters in downlink

4.5.5.1 3.84 Mcps TDD and 7.68 Mcps TDD physical channel parameters in downlink

Maximum number of timeslots per frame

Defines the maximum number of timeslots per frame that the UE can receive.

Maximum number of physical channels per frame

This parameter defines how many physical channels can be received during one frame. The distribution of the received physical channels on the received timeslots can be arbitrary.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PDSCH

Defines whether PDSCH is supported or not.

Support of HS-PDSCH

Defines whether the UE supports HS-PDSCH or not.

Maximum number of physical channels per timeslot

This parameter defines how many physical channels can be received within one timeslot.

Maximum number of HS-DSCH codes per timeslot

This is the maximum number of channelisation codes that can be used for the HS-DSCH in a given downlink timeslot. Where the parameter "Maximum number of physical channels per timeslot" is larger than "Maximum number of HS-DSCH codes per timeslot", this indicates that the UE is able to receive HS-SCCH or associated DPCH transmissions in the same timeslot as HS-PDSCHs, even if the maximum HS-DSCH code allocation for that slot is being used.

Maximum number of HS-DSCH timeslots per TTI

This is the maximum number of timeslots in a given 10 ms frame that can be used for HS-DSCH transmissions.

Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI

Defines maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI the UE is capable of receiving within an HS-DSCH TTI.

Total number of soft channel bits

Defines the maximum number of soft channel bits over all HARQ processes.

4.5.5.2 1.28 Mcps TDD physical channel parameters in downlink

Maximum number of timeslots per subframe

Defines the maximum number of timeslots per subframe that the UE can receive.

Maximum number of physical channels per subframe

This parameter defines how many physical channels can be received during one subframe. The distribution of the received physical channels on the received timeslots can be arbitrary.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PDSCH

Defines whether PDSCH is supported or not.

Support of HS-PDSCH

Defines whether the UE supports HS-PDSCH or not.

Support of HS-PDSCH in CELL_FACH

Defines whether the UE supports HS-PDSCH in CELL_FACH, CELL_PCH and URA_PCH state or not. If the UE supports HS-PDSCH in CELL_FACH, CELL_PCH and URA_PCH state then the UE shall also support:

- MAC-ehs,
- HS-PDSCH in CELL_DCH,
- HS-PDSCH physical layer category at least 9,
- HS-DSCH DRX operation in CELL_FACH,
- E-DCH in CELL_FACH.

Maximum number of physical channels per timeslot

This parameter defines how many physical channels can be received within one timeslot.

Support of 8PSK

Defines whether 8PSK modulation is supported or not.

Maximum number of HS-DSCH codes per timeslot

This is the maximum number of channelisation codes that can be used for the HS-DSCH in a given downlink timeslot. Where the parameter "Maximum number of physical channels per timeslot" is larger than "Maximum number of HS-DSCH codes per timeslot", this indicates that the UE is able to receive HS-SCCH or associated DPCH transmissions in the same timeslot as HS-PDSCHs, even if the maximum HS-DSCH code allocation for that slot is being used.

Maximum number of HS-DSCH timeslots per TTI

This is the maximum number of timeslots in a given 5 ms subframe that can be used for HS-DSCH transmissions.

Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI

Defines maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI the UE is capable of receiving within an HS-DSCH TTI.

Total number of soft channel bits

Defines the maximum number of soft channel bits over all HARQ processes.

Maximum number of the total HS-DSCH timeslots on the all assigned carriers per TTI (Multi-frequency HS-DSCH operation mode only)

This is the maximum number of the total timeslots of all the carriers in a given 5 ms subframe that can be used for HS-DSCH transmissions. This is used by the UE which has the multi-carrier capability.

NOTE: If it is not specified explicitly, these parameters in this section are defined for single frequency operation mode.

UE specific capability Information LCR TDD

Defines the maximum number of frequencies supported in the multi-carrier HS-DSCH transmission.

Support of SPS

Defines whether semi-persistent scheduling is supported or not on downlink and uplink.

Support of HS-SCCH/E-AGCH Discontinuous Reception

Defines whether the UE supports HS-SCCH and E-AGCH Discontinuous Reception in CELL_DCH and CELL_FACH state.

Support of SF Mode For HS-PDSCH dual stream

Defines which SF is supported in dual HS-PDSCH stream operation for a 1.28Mcps TDD MIMO capable UE.

Support of Enhanced TS0

Defines whether the UE supports DPCH, HS-PDSCH, HS-SCCH, E-AGCH and E-HICH reception in timeslot 0 on the secondary carriers.

Support of Non-rectangular Resource Allocation

Defines whether the UE supports non-rectangular resource allocation in CELL_DCH on downlink and uplink.

4.5.6 TDD physical channel parameters in uplink

4.5.6.1 3.84 Mcps TDD and 7.68 Mcps TDD physical channel parameters in uplink

Maximum Number of timeslots per frame

Defines the maximum number of timeslots per frame that the UE can transmit.

Maximum number of physical channels per timeslot

Defines the maximum number physical channels transmitted in parallel during one timeslot.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PUSCH

Defines whether PUSCH is supported or not.

Support of E-PUCH

Defines whether the UE supports E-PUCH or not.

Maximum number of physical channel bits on E-PUCH that can be transmitted in a 10ms TTI

Defines the maximum number of physical channel bits, N_{data}, that the UE is capable of transmitting on E-PUCH in a 10ms TTI.

Maximum number of bits of an E-DCH transport block that can be transmitted within a 10ms E-DCH TTI

Defines the maximum number of bits of an E-DCH transport block that the UE is capable of transmitting within a 10ms E-DCH TTI.

4.5.6.2 1.28 Mcps TDD physical channel parameters in uplink

Maximum Number of timeslots per subframe

Defines the maximum number of timeslots per subframe that the UE can transmit.

Maximum number of physical channels per timeslot

Defines the maximum number of physical channels transmitted in parallel during one timeslot.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PUSCH

Defines whether PUSCH is supported or not.

Support of 8PSK

Defines whether 8PSK modulation is supported or not.

Support of E-PUCH

Defines whether the UE supports E-PUCH or not.

Support of E-DCH in CELL_FACH

Defines whether the UE supports E-DCH transmission in CELL_FACH state and Idle mode. If the UE supports E-DCH in CELL_FACH then the UE shall also support:

- MAC-i/is,
- E-DCH in CELL_DCH,
- E-DCH physical layer category 3, 4, 5, or 6,
- HS-PDSCH in CELL_FACH.

Maximum number of physical channel bits on E-PUCH that can be transmitted in a 5ms TTI

Defines the maximum number of physical channel bits, N_{data}, that the UE is capable of transmitting on E-PUCH in a 5ms TTI.

Maximum number of bits of an E-DCH transport block that can be transmitted within a 5ms E-DCH TTI

Defines the maximum number of bits of an E-DCH transport block that the UE is capable of transmitting within a 5ms E-DCH TTI.

4.5.7 RF parameters

UE power class

Indicates the UE power class as defined in [4] for FDD and [5] for TDD.

Radio frequency bands

Defines the uplink and downlink frequency bands supported by the UE as defined in [4] for FDD and [5] for TDD.

UEs that support band XIX shall also support band VI.

Tx/Rx frequency separation

This parameter is only applicable for FDD. It defines the uplink/downlink frequency separations supported by the UE. The value range depends on the radio frequency band the UE supports, as defined in [4].

Support of Multiple Frequency Band Indicators

This parameter is only applicable for FDD. It indicates if the UE supports the signalling requirements of multiple radio frequency bands in a cell, as defined in [16], and if the UE understands the UARFCN signalling for all bands, that overlap with the band(s) supported by the UE, and that are defined in the earliest version of [4] that includes all UE supported bands.

4.6 Multi-mode related parameters

Support of UTRA FDD

Defines whether UTRA FDD is supported.

There is no explicit configuration parameter.

Support of UTRA TDD 3.84 Mcps

Defines whether UTRA TDD 3.84 Mcps is supported.

There is no explicit configuration parameter.

Support of UTRA TDD 7.68 Mcps

Defines whether UTRA TDD 7.68 Mcps is supported.

There is no explicit configuration parameter.

Support of UTRA TDD 1.28 Mcps

Defines whether UTRA TDD 1.28 Mcps is supported.

There is no explicit configuration parameter.

4.7 Multi-RAT related parameters

Support of GSM

Defines whether GSM is supported or not. There is a separate parameter for each GSM frequency band.

Support of multi-carrier

Defines whether multi-carrier is supported or not.

Support of UTRAN to GERAN NACC

Defines whether UTRAN to GERAN NACC is supported or not.

Support of Handover to GAN

Defines whether CS Handover to GAN is supported or not.

Support of Inter-RAT PS Handover

Defines whether Inter-RAT PS Handover to GERAN is supported or not.

Support of PS Handover to GAN

Defines whether PS Handover to GAN is supported or not.

Support of E-UTRA FDD

Defines whether E-UTRA FDD is supported or not. There is a separate parameter for each E-UTRA frequency band. If the UE supports E-UTRA FDD, it shall also support absolute priority based cell re-selection to GERAN if GERAN is supported by the UE.

Support of Inter-RAT PS Handover to E-UTRA FDD

Defines whether Inter-RAT PS Handover to E-UTRA FDD is supported or not.

Support of E-UTRA FDD measurements and reporting in CELL_FACH

Defines whether E-UTRA measurement for CELL_FACH for E-UTRA FDD is supported or not.

Support of E-UTRA TDD

Defines whether E-UTRA TDD is supported or not. There is a separate parameter for each E-UTRA frequency band. If the UE supports E-UTRA TDD, it shall also support absolute priority based cell re-selection to GERAN if GERAN is supported by the UE.

Support of Inter-RAT PS Handover to E-UTRA TDD

Defines whether Inter-RAT PS Handover to E-UTRA TDD is supported or not.

Support of E-UTRA TDD measurements and reporting in CELL_FACH

Defines whether E-UTRA measurement for CELL_FACH for E-UTRA TDD is supported or not.

Support of E-UTRA Multiple Frequency Band Indicators

This parameter is only applicable for a UE supporting E-UTRA. It indicates if the UE supports the signalling requirements of multiple radio frequency bands in a cell, as defined in [17],and if the UE understands the EARFCN signalling for all bands, that overlap with the band(s) supported by the UE, and that are defined in the earliest version of [18] that includes all UE supported bands.

Support of RAN-assisted WLAN interworking based on RAN rules

This parameter defines whether the UE supports RAN-assisted WLAN interworking based on access network selection and traffic steering rules specified in TS 25.304 [22]. A UE which supports RAN-assisted WLAN interworking based on access network selection and traffic steering rules specified in TS 25.304 [22] shall support to receive, via system information and dedicated signalling, the RAN assistance parameters relevant for those rules.

Support of RAN-assisted WLAN interworking based on ANDSF policies

This parameter defines whether the UE supports RAN-assisted WLAN interworking based on ANDSF policies specified in TS 24.312 [23]. A UE which supports RAN-assisted WLAN interworking based on ANDSF policies specified in TS 24.312 [23] shall support to receive, via system information and dedicated signalling, the RAN assistance parameters relevant for those policies.

Support of extended E-UTRA frequency priority

This parameter defines whether the UE supports extended E-UTRA frequency priority. If the UE supports extended E-UTRA frequency priority, it shall also support E-UTRA.

4.7a Security parameters

Ciphering algorithm capability

This capability defines the ciphering algorithms supported by the UE. In this version of the protocol, the UE shall support UEA0, UEA1 and UEA2.

Integrity protection algorithm capability

This capability defines the integrity protection algorithms supported by the UE. In this version of the protocol, the UE shall support UIA1 and UIA2.

4.8 UE positioning related parameters

Standalone location method(s) supported

Defines if a UE can measure its location by some means unrelated to UTRAN (e.g. if the UE has access to a standalone GPS receiver).

UE based OTDOA supported

Defines if a UE supports the OTDOA UE based schemes.

Network Assisted GPS support

Defines if a UE supports either of the two types of assisted GPS schemes, namely "Network based", "UE based", "Both", or "none".

Network Assisted GANSS support List

Defines if a UE supports assisted GANSS schemes. The GANSS gathers Galileo and Additional Navigation Satellite Systems. It defines which GANSS(s) is/are supported, and for each supported GANSS it further defines:

- the GANSS mode supported (namely "Network based", "UE based", "Both", or "none");
- the GANSS signals supported;
- the capability to perform GANSS timing of cell frames measurement;
- the capability to perform GANSS carrier phase measurement;
- the capability to support non-native assistance data choices.

Support for GPS timing of cell frames measurement

Defines if a UE has the capability to measure GPS reference time as defined in [6].

Support for IPDL

Defines if a UE has the capability to use IPDL to enhance its "SFN-SFN observed time difference –type 2" measurement.

Support for Rx-Tx time difference type 2 measurement

Defines if a UE has the capability to perform the Rx-Tx time difference type 2 measurement.

Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states

Defines if UE Positioning measurements using the assisted GPS method are valid in CELL_PCH and URA_PCH RRC states.

Support for SFN-SFN observed time difference type 2 measurement

Defines if the UE has the capability to perform the SFN-SFN observed time difference type 2 measurement.

Additional Positioning method support List

Defines if a UE supports Additional Positioning methods. It defines which Additional Positioning method(s) is/are supported, and for each supported method it further defines:

- the positioning mode supported (namely "Standalone", "UE assisted", "Both").

4.9 Measurement related capabilities (FDD only)

Need for downlink compressed mode

Defines whether the UE needs compressed mode in the downlink in order to perform inter-frequency or inter-RAT measurements. There are separate parameters for measurements on each UTRA mode, on each RAT, and in each frequency band.

Need for uplink compressed mode

Defines whether the UE needs compressed mode in the uplink in order to perform inter-frequency or inter-RAT measurements. There are separate parameters for measurements on each UTRA mode, on each RAT, and in each frequency band.

Support for absolute priority based cell re-selection in UTRAN

Defines whether absolute priority based cell re-selection in UTRAN is supported or not. If the UE supports absolute priority based cell re-selection in UTRAN, it shall also support absolute priority based cell re-selection to GERAN if GERAN is supported by the UE.

Adjacent Frequency measurements without compressed mode

Defines whether the UE needs compressed mode to perform measurements on an adjacent frequency, i.e. a frequency whose center is within 5MHz of the center of the currently used frequency and belongs to the same frequency band as that of the currently used frequency.

Inter-band Frequency measurements without compressed mode

Defines whether the UE needs compressed mode to perform measurements on an inter-band frequency, i.e. a frequency belonging to a frequency band in the band combinations as reported in the IE "Radio Access Capability Band Combination List" but not belonging to the same frequency band as that of the currently used frequency.

Support for System Information Block type 11bis

Defines whether the UE supports System Information Block type 11bis.

Enhanced inter-frequency measurements without compressed mode

Defines whether the UE needs compressed mode to perform measurements on two additional frequencies other than the frequency associated with the serving HS-DSCH cell, where each frequency belongs either to the frequency band of the currently used frequency or to a frequency band in the band combinations as reported in the IE "Radio Access Capability Band Combination List". The two additional frequencies to be measured without compressed mode together with currently used frequency cannot belong to more than two frequency bands.

Frequency specific compressed mode

For the dual band operation, defines whether the UE can apply compressed mode only to the frequencies associated with the secondary serving HS-DSCH cells, which are in the frequency band other than the serving HS-DSCH cell.

Frequency specific compressed mode for non-contiguous operation

For the intra-band non-contiguous operation, defines whether the UE can apply compressed mode only to the frequencies associated with the secondary serving HS-DSCH cells, which are in the block of configured carriers other than the serving HS-DSCH cell.

Extended measurements ID support

Defines whether the UE supports extended measurement identity range 17 to 32. In this release of the specification the UE shall support Extended measurements ID.

Inter-frequency detected set measurements

Defines whether the UE supports measurements of inter-frequency detected set cells. If the UE supports Inter-frequency detected set measurements then the UE shall also support Cells excluded from detected set measurements.

Inter-frequency measurements on configured carriers without compressed mode

Defines whether the UE requires compressed mode to perform measurements on the frequencies which are configured for HS-DSCH operation and associated with the secondary serving HS-DSCH cells.

Cells excluded from detected set measurements

Defines whether the UE supports exclusion of cells from intra-frequency detected set measurements. If the UE supports Inter-frequency detected set measurements, then this capability also defines whether the UE supports exclusion of cells from inter-frequency detected set measurements.

Wideband RSRQ FDD measurements

Defines whether the UE is able to perform wideband RSRQ FDD measurements.

Wideband RSRQ TDD measurements

Defines whether the UE is able to perform wideband RSRQ TDD measurements.

Event 2g reporting on a configured secondary downlink frequency

Defines whether the UE supports reporting event 2g on a configured secondary downlink frequency. If a UE supports event 2g reporting on a configured secondary downlink frequency, it shall also support Inter-frequency measurements on configured carriers without compressed mode.

Enhanced UPH reporting

Defines whether the UE supports reporting of filtered UPH measurement or not.

RRC measurement events for UPH reporting

Defines whether the UE supports RRC measurement events 6h and 6i for UPH reporting or not.

Increased UE carrier monitoring UTRA

Defines whether the UE supports increased number of UTRA carrier monitoring in connected and idle mode as defined in [20].

Increased UE carrier monitoring E-UTRA

Defines whether the UE supports increased number of E-UTRA carrier monitoring in connected and idle mode as defined in [20]. In this release of the specification, if the UE supports E-UTRA and if it is not category 0, the UE shall support Increased UE carrier monitoring E-UTRA.

Extended RSRQ lower value range

Defines whether the UE supports the extended RSRQ lower value range from -34dB to-19.5 dB in measurement configuration and reporting as specified in [24].

RSRQ measurement on all symbols

Defines whether the UE supports the RSRQ measurement on all OFDM symbols as specified in [6] and [21] and the extended RSRQ upper value range from -3dB to 2.5dB in measurement configuration and reporting as specified in [24]. If the UE supports RSRQ measurement on all OFDM symbols and Wideband RSRQ FDD or TDD measurements it shall also support the RSRQ measurement on all OFDM symbols with wider bandwidth for FDD or TDD respectively.

QoE Measurement Collection for streaming services

Defines whether the UE supports QoE Measurement Collection for streaming services.

QoE Measurement Collection for MTSI services

Defines whether the UE supports QoE Measurement Collection for MTSI services.

4.9a Measurement related capabilities (TDD only)

Need for idle interval

Defines whether the UE needs idle interval in order to perform E-UTRAN measurements. There are separate parameters for measurements in each frequency band.

4.10 General capabilities

Access stratum release indicator

This is defined as the release of the UTRA layer 1, 2, and 3 specifications that is applicable for the UE e.g. R'99, Rel-4.

Device type

Defines whether UE benefits from NW-based battery consumption optimisation or not.

Support of DSAC and PPAC update in CELL_DCH

Defines whether the UE supports DSAC and PPAC update in CELL_DCH or not.

Support of retrievable configurations

Defines whether the UE supports retrievable configurations.

Support of URA_PCH with seamless transition

Defines whether the UE supports seamless transition from URA_PCH to CELL_FACH. If the UE supports URA_PCH with seamless transition then the UE shall also support common E-DCH.

Support of improved synchronized RRC procedures

Defines whether the UE supports improved synchronized RRC procedures.

Support of enhanced state transition

Defines whether the UE supports enhanced state transition.

Support of simultaneous setup and release of RABs and RBs

Defines whether the UE supports simultaneous setup and release of RABs and RBs.

4.11 DL capabilities with simultaneous HS-DSCH

DL capability with simultaneous HS-DSCH configuration

Defines the modification of reception capabilities in downlink in terms of DPCH in case an HS-DSCH is configured simultaneously. The parameter values in table 4.11-1 replace the signalled values in case an HS-DSCH is configured simultaneously depending on the setting of the parameter DL DPCH capability with simultaneous HS-DSCH configuration. Other parameters are valid irrespective whether HS-DSCH is configured simultaneously or not.

Table 4.11-1: DL capabilities with simultaneous HS-DSCH

DL DPCH capability with simultaneous HS-DSCH configuration	32 kbps	64 kbps	128 kbps	384 kbps
Transport channel parameters				
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640	3840	3840	6400
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	NA	3840	3840	6400
Maximum number of simultaneous transport channels	8	8	8	8
Maximum number of simultaneous CCTrCH (FDD)	1	1	1	1
Maximum number of simultaneous CCTrCH (TDD)	2	3	3	3
Maximum total number of transport blocks received within TTIs that end at the same time	8	8	16	32
Maximum number of TFC	32	48	96	128
Maximum number of TF	32	64	64	64
Support for turbo decoding	No	Yes	Yes	Yes
Physical channel parameters (FDD)				
Maximum number of DPCH codes to be simultaneously received	1	1	1	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH, S-CCPCH).	1200	2400	4800	19200
Physical channel parameters (TDD 3.84 Mcps)				
Maximum number of timeslots per frame	1	2	4	5
Maximum number of physical channels per frame	8	9	14	28
Support of PDSCH	No	No	No	No
Maximum number of physical channels per timeslot	8	9	9	9
Physical channel parameters (TDD 7.68 Mcps)				
Maximum number of timeslots per frame	1	2	4	5
Maximum number of physical channels per frame	8	9	14	28
Support of PDSCH	No	No	No	No
Maximum number of physical channels per timeslot	8	9	9	9
Physical channel parameters (TDD 1.28 Mcps)				
Maximum number of timeslots per subframe	1	2	3	4
Maximum number of physical channels per subframe	8	12	18	43
Support of PDSCH	No	No	No	No
Maximum number of physical channels per timeslot	8	11	14	14

4.12 UL capabilities with simultaneous E-DCH

UL capability with simultaneous E-DCH configuration

Defines the modification of transmission capabilities in uplink in terms of DPCH in case an E-DCH is configured simultaneously. The parameter values in table 4.12-1 replace the signalled values in case an E-DCH is configured simultaneously depending on the setting of the parameter UL DPCH capability with simultaneous E-DCH configuration. Other parameters are valid irrespective whether E-DCH is configured simultaneously or not.

Table 4.12-1: UL capabilities with simultaneous E-DCH

UL DPCH capability with simultaneous E-DCH configuration	64 kbps
Transport channel parameters	
Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant	3840
Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	3840
Maximum number of simultaneous transport channels	8
Maximum total number of transport blocks transmitted within TTIs that end at the same time	8
Maximum number of TFC	32
Maximum number of TF	32
Support for turbo encoding	Yes
Physical channel parameters (FDD)	
Maximum number of DPDCH bits transmitted per 10 ms	2400
Physical channel parameters (3.84Mcps TDD)	
Maximum number of timeslots per frame	2
Maximum number of physical channels per timeslot	1
Minimum SF	2
Physical channel parameters (7.68Mcps TDD)	
Maximum number of timeslots per frame	2
Maximum number of physical channels per timeslot	1
Minimum SF	4
Physical channel parameters (1.28Mcps TDD)	
Maximum number of timeslots per frame	2
Maximum number of physical channels per timeslot	1
Minimum SF	2

4.13 UE minimum capabilities for reception of MBMS not provided in MBSFN mode

For FDD, the minimum UE capability for MBMS reception for MBMS services that are not provided in MBSFN mode consists of two separate and independent parts ("MBMS capability part A" and "MBMS capability part B").

MBMS capability part A parameters defined in Table 4.13-1 are the same as the 64kbps UE reference class for DL described in subclause 5.2 and provides capability to enable reception of logical channels other than MTCHs and MSCH when MBMS PTM is received simultaneously.

Table 4.13-1: MBMS capability part A (FDD)

Capability for reception of DL DPCH or S-CCPCH carrying logical channels other than MTCH during MTCH reception	64 kbps Class
Transport channel parameters	**Value**
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	3840
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	3840
Maximum number of simultaneous transport channels	8
Maximum number of simultaneous CCTrCH (FDD)	1
Maximum total number of transport blocks received within TTIs that end at the same time	8

Maximum number of TFC	48
Maximum number of TF	64
Support for turbo decoding	Yes
Physical channel parameters (FDD)	
Number of DPCH or S-CCPCH codes (Note 1)	1
Maximum number of physical channel bits received in any 10 ms interval (DPCH or S-CCPCH).	2400

NOTE: Capability for reception of DPCH is applicable only if UE supports MBMS PTM reception in CELL_DCH state for reception of MBMS services that are not provided in MBSFN mode.

MBMS capability part B for reception of MBMS services that are not provided in MBSFN mode is defined in the following Table 4.13-2. MBMS capability part B enables reception of the S-CCPCHs onto which at least MTCH is multiplexed. MBMS capability part B supports selection combining and soft combining of S-CCPCHs on different cells. The UE is not required to support simultaneous selection combining and soft combining.

The exhaustive lists of supported configurations (slot formats, TTI and combining parameters) for capability part B is given in Table 4.13-3. Only FACH can be mapped on the S-CCPCHs listed in table 4.13-3. In addition to MTCH, the MSCH, BCCH, CCCH, DCCH and DTCH can be multiplexed onto the S-CCPCHs listed in table 4.13-3. The FACH TTI restrictions in table 4.13-3 only apply to FACHs carrying MTCH or MSCH.

Table 4.13-2: MBMS capability part B (FDD)

Combination of UE Radio Access capability parameters in DL for all S-CCPCHs that carry at least MTCH	
Transport channel parameters	**Value**
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	21504
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	21504
Maximum number of transport channels for the configuration	12
Maximum total number of transport blocks received within TTIs that end at the same time	32
Maximum number of TFC per S-CCPCH	32
Maximum number of TF	64
Support for turbo decoding	Yes
Number of CRC bits	16
Support for slot formats that do not contain TFCI	No
Supported slot formats and TTI combinations	See table 4.13-3
Physical channel parameters	
Maximum number of S-CCPCHs simultaneously received per cell for S-CCPCH Selection Combining or Soft Combining	1
Maximum number of cells for S-CCPCH Selection Combining or Soft Combining	See table 4.13-3

Table 4.13-3: Supported slot formats and FACH TTI combinations for MBMS capability part B (FDD)

S-CCPCH slot format (see [11])	**FACH TTI (ms) for FACHs carrying MTCH or MSCH**	**Maximum Number of cells for S-CCPCH Selection Combining (Note 1)**	**Maximum Number of cells for S-CCPCH Soft Combining (Note 1)**	**Maximum Number of Simultaneous Transport Channels per S-CCPCH**
14 (SF=8)	40	2	None	1
14 (SF=8)	40	None	3	1
12 (SF=16)	40	3	None	1
12 (SF=16)	80	2	None	1
12 (SF=16)	80	None	3	1
10 (SF=32)	80	3	None	4
10(SF=32)	80	None	3	1
8 (SF=64)	80	3	None	4

8 (SF=64)	80	None	3	1
6 (SF=128)	80	3	None	4
6 (SF=128)	80	None	3	1
2 (SF=256)	80	3	None	4
2 (SF=256)	80	None	3	1

NOTE: 'None' indicates that either selection combining or soft combining is not required for the respective combination.

Since MBMS capability part A and B are independent, the maximum total number of S-CCPCHs, including the S-CCPCH that the UE is required to monitor by subclause 8.5.19 of [12], that the UE is required to receive is 4.

MBMS Capability part B may be used to receive MCCH in the following cases:

- When the UE is in CELL_FACH state, and the MCCH is on a different S-CCPCH than the S-CCPCH that the UE is required to monitor by subclause 8.5.19 of [12].
- When the UE is in CELL_DCH, if the UE supports MBMS PTM reception in CELL_DCH.

Furthermore, in case MBMS PTM reception is ongoing, the UE may soft or selectively combine one less cell than shown in table 4.13-3 while receiving the S-CCPCH carrying the MCCH.

Further restrictions on the supported configurations of the S-CCPCH carrying the MCCH apply. The exhaustive lists of supported slot formats, TTI size, and maximum number of configured transport channels that can be received, depend on the capability of the UE to support MBMS PTM reception in CELL_DCH. Table 4.13-3a applies when UE does support MBMS PTM reception in CELL_DCH, while Table 4.13-3b applies when UE does not support MBMS PTM reception in CELL_DCH. In addition to MCCH, the BCCH, PCCH, CCCH, DCCH and DTCH can be multiplexed onto the S-CCPCHs listed in tables 4.13-3a and 4.13-3b. The FACH TTI restrictions in tables 4.13-3a and 4.13-3b only apply to FACH carrying MCCH.

Table 4.13-3a: Alternate supported slot formats and FACH TTI for MBMS capability part B (FDD)

S-CCPCH slot format (see [11])	FACH TTI (ms) for FACH carrying MCCH	Maximum Number of Configured Transport Channels
10 (SF=32)	20,10	4
8 (SF=64)	20,10	4
6 (SF=128)	20,10	4
2 (SF=256)	20,10	4

NOTE: One of the transport channels could be PCH.

Table 4.13-3b: Alternate supported slot formats and FACH TTI for MBMS capability part B (FDD)

S-CCPCH slot format (see [11])	FACH TTI (ms) for FACH carrying MCCH	Maximum Number of Configured Transport Channels
8 (SF=64)	10	1
6 (SF=128)	10	1
2 (SF=256)	20, 10	1

For FDD, the UE only supports reception of the MCCH, MTCH and MSCH on S-CCPCHs configured with flexible position.

For 3.84 Mcps TDD, a UE which supports the minimum capabilities defined in Table 4.13-4 should be capable of supporting transport channel combining of up to three radio links.

Table 4.13-4: MBMS Capabilities (3.84 Mcps TDD)

Combination of UE Radio Access capability parameters in DL for MBMS	
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant for S-CCPCH carrying MTCH (and MCCH/MSCH)	10752
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant for S-CCPCH carrying MTCH (and MCCH/MSCH)	640
Maximum number of bits of all turbo coded transport blocks being received at an arbitrary time instant for S-CCPCH carrying MTCH (and MCCH/MSCH)	10752
Maximum number of bits before de-rate matching being received at an arbitrary time instant for S-CCPCH which carries MTCH (and MCCH/MSCH)	31856
Maximum number of physical channel bits received in any 10ms interval	13248
Maximum number of simultaneous transport channels per S-CCPCH carrying MTCH (and MCCH/MSCH)	16
Maximum number of physical channels per timeslot	16
Maximum number of synchronised radio links per frame which carry MTCH (and MCCH/MSCH)	3
Support for turbo decoding	Yes

NOTE: In the above table, the S-CCPCH refers to the CCTrCH carrying FACH

For 7.68 Mcps TDD, a UE which supports the minimum capabilities defined in Table 4.13-4a should be capable of supporting transport channel combining of up to three radio links.

Table 4.13-4a: MBMS Capabilities (7.68 Mcps TDD)

Combination of UE Radio Access capability parameters in DL for MBMS	
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant for S-CCPCH carrying MTCH (and MCCH/MSCH)	21504
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant for S-CCPCH carrying MTCH (and MCCH/MSCH)	1280
Maximum number of bits of all turbo coded transport blocks being received at an arbitrary time instant for S-CCPCH carrying MTCH (and MCCH/MSCH)	21504
Maximum number of bits before de-rate matching being received at an arbitrary time instant for S-CCPCH which carries MTCH (and MCCH/MSCH)	63712
Maximum number of physical channel bits received in any 10ms interval	26496
Maximum number of simultaneous transport channels per S-CCPCH carrying MTCH (and MCCH/MSCH)	16
Maximum number of physical channels per timeslot	16
Maximum number of synchronised radio links per frame which carriy MTCH (and MCCH/MSCH)	3
Support for turbo decoding	Yes

NOTE: In the above table, the S-CCPCH refers to the CCTrCH carrying FACH.

For 1.28 Mcps TDD, a UE which supports the minimum capabilities defined in Table 4.13-5 should be capable of supporting transport channel combining of up to three radio links.

Table 4.13-5: DL Capabilities with simultaneous MBMS (1.28Mcps TDD)

Combination of UE Radio Access capability parameters in DL for MBMS	
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant for S-CCPCH carrying MTCH (and MCCH/MSCH)	10752
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant for S-CCPCH carrying MTCH (and MCCH/MSCH)	640

Maximum number of bits of all turbo coded transport blocks being received at an arbitrary time instant for S-CCPCH carrying MTCH (and MCCH/MSCH)	10752
Maximum number of bits before de-rate matching being received at an arbitrary time instant for S-CCPCH which carries MTCH (and MCCH/MSCH)	23920
Maximum number of physical channel bits received in any 5ms interval	4224
Maximum number of simultaneous transport channels per S-CCPCH carrying MTCH (and MCCH/MSCH)	16
Maximum number of physical channels per timeslot	16
Maximum number of synchronised radio links received per frame which carry MTCH (and MCCH/MSCH)	3
Support for turbo decoding	Yes

NOTE: In the above table, the S-CCPCH refers to the CCTrCH carrying FACH

4.13a UE minimum capabilities for reception of MBMS provided in MBSFN mode

For FDD, the minimum UE capability for reception of MBMS on cells that are operating in MBSFN mode consists of two separate and independent parts ("MBMS capability part C" and "MBMS capability part D").

For FDD MBSFN capability part C parameters defined in Table 4.13a-1 are the same as the 64kbps UE reference class for DL described in subclause 5.2 and provides capability to enable reception of MCCH when MBMS PTM is received simultaneously, and is applicable when a cell is operating in MBSFN mode.

Table 4.13a-1: MBSFN capability part C (FDD)

Capability for reception of S-CCPCH carrying logical channels other than MTCH during MTCH reception in MBSFN Mode	
Transport channel parameters	**Value**
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	1280
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	1280
Maximum number of simultaneous transport channels	1
Maximum number of simultaneous CCTrCH (FDD)	1
Maximum total number of transport blocks received within TTIs that end at the same time	8
Maximum number of TFC	32
Maximum number of TF	32
Support for turbo decoding	Yes
Physical channel parameters (FDD)	
Number of S-CCPCH codes	1
Maximum number of physical channel bits received in any 10 ms interval (S-CCPCH).	1200

For FDD, MBSFNcapability part D for cells that do operate in MBSFN mode is defined in Table 4.13a-2 for the reception of MTCH and MSCH on a S-CCPCH. This allows the UE to receive at least one service sent on a S-CCPCH of a cell operating in MBSFN mode.

The exhaustive lists of supported configurations (slot formats and TTI) for capability part D is given in Table 4.13a-3. Only FACH can be mapped on the S-CCPCHs listed in table 4.13a-2.

Table 4.13a-2: MBSFN capability part D (FDD)

Combination of UE Radio Access capability parameters in DL for MBMS reception in MBSFN Mode	
Maximum number of bits of all transport blocks being received at an arbitrary time instant for S-CCPCHs carrying MTCH (and MSCH)	81920 / 40960 Note 1
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	81920 / 40960 Note 1
Maximum number of transport channels for the configuration	8
Maximum total number of transport blocks received within TTIs that end at the same time	128
Maximum number of TFC per S-CCPCH	128
Maximum number of TF	64
Support for turbo decoding	Yes
Number of CRC bits	16
Support for slot formats that do not contain TFCI	No
Supported slot formats and TTI combinations	See table 4.13-3
Maximum Number of Simultaneous Transport Channels per S-CCPCH	2 (Note 2)

NOTE 1: 81920 is only applicable for combinations in table 4.13a-3 where scheduling is restriced by a value bigger than 1 of MBMS minimum inter-TTI interval.

NOTE 2: Only one MTCH at a time and in addition possibly MSCH.

Table 4.13a-3: Supported slot formats and FACH TTI combinations for MBSFN capability part D (FDD)

S-CCPCH slot format (see [11])	FACH TTI (ms)	MBMS minimum inter-TTI interval
23 (SF=8, 16QAM)	80	2
23 (SF=8, 16QAM)	40	1
22 (SF=16, 16QAM)	80	1
21 (SF=32, 16QAM)	80	1
20 (SF=64, 16QAM)	80	1
19 (SF=128, 16QAM)	80	1
18 (SF=256, 16QAM)	80	1
16 (SF=4, QPSK)	80	2
14 (SF=8, QPSK)	80	1
12 (SF=16, QPSK)	80	1
10 (SF=32, QPSK)	80	1
8 (SF=64, QPSK)	80	1
6 (SF=128, QPSK)	80	1
4 (SF=128, QPSK)	80	1
2 (SF=256, QPSK)	80	1
0 (SF=256, QPSK)	80	1

The MBMS minimum inter-TTI interval for MBSFN reception defines the minimum distance from the beginning of a TTI in which a given transport channel is scheduled to the beginning of the next TTI which corresponds to the earliest TTI in which which the same transport channel is allowed to be scheduled according to table 4.13a-3.

For 3.84 Mcps TDD, a MBSFN (MBMS over a Single Frequency Network) capable UE should support the minimum capabilities defined in Table 4.13a-4

Table 4.13a-4: MBSFN Capabilities (3.84 Mcps TDD)

Combination of UE Radio Access capability parameters in DL for MBMS reception in MBSFN Mode	
Maximum number of bits of all transport blocks being received at an arbitrary time instant for S-CCPCHs carrying MTCH (and MCCH/MSCH)	43603
Maximum number of bits before de-rate matching being received at an arbitrary time instant for S-CCPCHs which carry MTCH (and MCCH/MSCH)	69696
Maximum number of physical channel bits received in any 10ms interval	8712
Maximum number of simultaneous transport channels per S-CCPCH carrying MTCH (and MCCH/MSCH)	4
Maximum total number of transport blocks received within TTIs that end at the same time	130
Maximum number of TFC per S-CCPCH carrying MTCH (and MCCH / MSCH)	32
Maximum number of physical channels per timeslot	16
Maximum number of physical channels per frame	33
Maximum number of timeslots per frame	3

NOTE 3: In the above table, the S-CCPCH refers to the CCTrCH carrying FACH. Only turbo coding is supported.

For 7.68 Mcps TDD, a MBSFN (MBMS over a Single Frequency Network) capable UE should support the minimum capabilities defined in Table 4.13a-5.

Table 4.13a-5: MBSFN Capabilities (7.68 Mcps TDD)

Combination of UE Radio Access capability parameters in DL for MBMS reception in MBSFN Mode	
Maximum number of bits of all transport blocks being received at an arbitrary time instant for S-CCPCHs carrying MTCH (and MCCH/MSCH)	84572
Maximum number of bits before de-rate matching being received at an arbitrary time instant for S-CCPCHs which carry MTCH (and MCCH/MSCH)	137280
Maximum number of physical channel bits received in any 10ms interval	17160
Maximum number of simultaneous transport channels per S-CCPCH carrying MTCH (and MCCH/MSCH)	4
Maximum total number of transport blocks received within TTIs that end at the same time	130
Maximum number of TFC per S-CCPCH carrying MTCH (and MCCH / MSCH)	32
Maximum number of physical channels per timeslot	32
Maximum number of physical channels per frame	65
Maximum number of timeslots per frame	3

NOTE 4: In the above table, the S-CCPCH refers to the CCTrCH carrying FACH. Only turbo coding is supported.

For 1.28 Mcps TDD, a MBSFN (MBMS over a Single Frequency Network) capable for mixed-carrier UE should support the minimum capabilities defined in Table 4.13a-6

Table 4.13a-6: MBSFN Capabilities for Mixed-carrier (1.28 Mcps TDD)

Combination of UE Radio Access capability parameters in DL for MBMS reception in MBSFN Mode	
Maximum number of bits of all transport blocks being received at an arbitrary time instant for S-CCPCH carrying MTCH (and MCCH/MSCH)	16448
Maximum number of bits before de-rate matching being received at an arbitrary time instant for S-CCPCH which carries MTCH (and MCCH/MSCH)	23232
Maximum number of physical channel bits received in any 10ms interval	5808
Maximum number of simultaneous transport channels per S-CCPCH carrying MTCH (and MCCH/MSCH)	1
Maximum total number of transport blocks received within TTIs that end at the same time	49
Maximum number of TFC per S-CCPCH carrying MTCH (and MCCH / MSCH)	32
Maximum number of physical channels per timeslot	16
Maximum number of physical channels per frame	17
Maximum number of timeslots per frame	2

NOTE: In the above table, the S-CCPCH refers to the CCTrCH carrying FACH.

For 1.28 Mcps TDD, a MBSFN (MBMS over a Single Frequency Network) capable for dedicated-carrier UE should support the minimum capabilities defined in Table 4.13a-7

Table 4.13a-7: MBSFN Capabilities for Dedicated-carrier (1.28 Mcps TDD)

Combination of UE Radio Access capability parameters in DL for MBMS reception in MBSFN Mode	
Maximum number of bits of all transport blocks being received at an arbitrary time instant for S-CCPCH carrying MTCH (and MCCH/MSCH)	16448
Maximum number of bits before de-rate matching being received at an arbitrary time instant for S-CCPCH which carries MTCH (and MCCH/MSCH)	25224
Maximum number of physical channel bits received in any 10ms interval	6306
Maximum number of simultaneous transport channels per S-CCPCH carrying MTCH (and MCCH/MSCH)	1
Maximum total number of transport blocks received within TTIs that end at the same time	49
Maximum number of TFC per S-CCPCH carrying MTCH (and MCCH / MSCH)	32
Maximum number of physical channels per timeslot	16
Maximum number of physical channels per frame	35
Maximum number of timeslots per frame	3

NOTE: In the above table, the S-CCPCH refers to the CCTrCH carrying FACH.

For MBSFN Integrated Mobile Broadcast (3.84 Mcps TDD IMB), the minimum UE capability for reception of MBMS on cells that are operating in MBSFN mode consists of two separate and independent parts ("MBMS capability part E" and "MBMS capability part F").

For 3.84 Mcps TDD MBSFN IMB, capability part E parameters defined in Table 4.13a-8 enable reception of MCCH on S-CCPCH frame type 1 when MBMS PTM is received simultaneously, and is applicable when a cell is operating in MBSFN mode.

Table 4.13a-8: MBSFN capability part E (3.84 Mcps TDD MBSFN IMB)

Capability for reception of S-CCPCH frame type 1 carrying logical channels other than MTCH during MTCH reception in MBSFN Mode	
Transport channel parameters	**Value**

Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	1280
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	1280
Maximum number of simultaneous transport channels	1
Maximum number of simultaneous CCTrCH	1
Maximum total number of transport blocks received within TTIs that end at the same time	8
Maximum number of TFC	32
Maximum number of TF	32
Support for turbo decoding	No
Physical channel parameters	
Number of S-CCPCH frame type 1 codes	1
Maximum number of physical channel bits received in any 10 ms interval (S-CCPCH frame type 1).	270

For 3.84 Mcps TDD MBSFN IMB, capability part F for cells that do operate in MBSFN mode is defined in Table 4.13a-9 for the reception of an MTCH (and MSCH) on S-CCPCH frame type 2. This allows the UE to receive at least one service sent on S-CCPCHs frame type 2 of a cell operating in MBSFN mode.

Table 4.13a-9: MBSFN capability part F (3.84 Mcps TDD MBSFN IMB)

Combination of UE Radio Access capability parameters in DL for MBMS reception in MBSFN Mode	
Maximum number of bits of all transport blocks being received at an arbitrary time instant for S-CCPCHs frame type 2 carrying MTCH (and MSCH)	40960
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	0
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	40960
Maximum number of transport channels for the configuration	8
Maximum total number of transport blocks received within TTIs that end at the same time	128
Maximum number of TFC per S-CCPCH frame type 2	32
Maximum number of TF	32
Support for turbo decoding	Yes
Number of CRC bits	16
Support for CCTrCH that do not contain TFCI	No
Maximum Number of Simultaneous Transport Channels per S-CCPCH type 2	2 (Note 5)
Physical channel parameters	
Maximum number of S-CCPCH frame type 2 codes using QPSK modulation	10
Maximum number of S-CCPCH frame type 2 codes using 16-QAM modulation	5
Maximum number of physical channel bits received in any 10 ms interval (S-CCPCH frame type 2).	8640

NOTE 5: Only one MTCH at a time and in addition possibly MSCH

For 3.84 Mcps TDD MBSFN IMB, the permitted FACH TTI values for the supported configurations of the S-CCPCH carrying the MCCH are given by capability part G. For 3.84 Mcps TDD MBSFN IMB, capability part G is defined in Table 4.13a-10 for the reception of an MCCH on S-CCPCH frame type 1.

Table 4.13a-10: Slot formats and FACH TTI for MBSFN capability part G (3.84 Mcps TDD MBSFN IMB)

S-CCPCH slot format (see [14])	**FACH TTI (ms) for FACH carrying MCCH**	**Maximum Number of Configured Transport Channels**
0 (SF=256, QPSK)	80,40,20,10	1
1 (SF=256, QPSK)	80,40,20,10	1

4.14 Home Node B Inbound Mobility Related Parameters

4.14.1 CSG Proximity Indication Parameters

Support of intra-frequency proximity indication

Defines whether the UE supports proximity indication for intra-frequency cells whose CSG Identities are in the UE's Permitted CSG list.

Support of inter-frequency proximity indication

Defines whether the UE supports proximity indication for inter-frequency cells whose CSG Identities are in the UE's Permitted CSG list.

Support of E-UTRA proximity indication

Defines whether the UE supports proximity indication for E-UTRAN cells whose CSG IDs are in the UE's Permitted CSG list.

4.14.2 Neighbour Cell SI Acquisition Parameters

Support of intra-frequency SI acquisition for HO

Defines whether the UE supports, upon configuration of "Intra-frequency SI Acquisition", acquisition of relevant information from a neighbouring intra-frequency cell by reading the SI of the neighbouring cell and reporting the acquired information to the network.

Support of inter-frequency SI acquisition for HO

Defines whether the UE supports, upon configuration of "Inter-frequency SI Acquisition", acquisition of relevant information from a neighbouring inter-frequency cell by reading the SI of the neighbouring cell using autonomous gaps and reporting the acquired information to the network.

Support of E-UTRA SI acquisition for HO

Defines whether the UE supports, upon configuration of "E-UTRA SI Acquisition", acquisition of relevant information from a neighbouring E-UTRA cell by reading the SI of the neighbouring cell using autonomous gaps and reporting the acquired information to the network.

4.14a IMS Voice Parameters

Voice over UTRA PS HS Support

Defines whether the UE supports IMS Voice in UTRA according to GSMA IR 58 profile. If UE supports E-UTRA and IMS voice in UTRA, UE also supports IMS voice in E-UTRA. If the UE supports IMS Voice in UTRA PS HS, then the UE shall also support the UM RLC re-establishment via reconfiguration.

SRVCC Support from UTRA to UTRA

Defines whether the UE supports SRVCC handover from UTRA PS HS to UTRA CS.

SRVCC Support from UTRA to GERAN

Defines whether the UE supports SRVCC handover from UTRA PS HS to GERAN CS.

rSRVCC support from UTRA CS to E-UTRAN FDD

Defines whether the UE supports rSRVCC handover from UTRA CS to E-UTRAN FDD.

rSRVCC support from UTRA CS to E-UTRAN TDD

Defines whether the UE supports rSRVCC handover from UTRA CS to E-UTRAN TDD.

4.15 UE based network performance measurements parameters

Support of logged measurements in Idle mode and PCH States

Defines whether the UE supports logged measurements upon request from the network in Idle mode, URA_PCH and CELL_PCH states. A UE that supports logged measurements in Idle mode, Cell_PCH and URA_PCH states shall also support a minimum of 64 kB of memory for log storage. If the UE supports logged measurements in Idle mode and PCH States and HS-DSCH DRX operation with second DRX cycle, then the UE shall also support logged measurements in CELL_FACH state when second DRX cycle is used in UTRAN.

Support of UTRAN ANR

Defines whether the UE supports measurement and logging in Idle mode, CELL_PCH and URA_PCH states for Automatic Neighbour Relation (ANR) in UTRAN. If the UE supports UTRAN ANR and HS-DSCH DRX operation with second DRX cycle, then the UE shall also support measurement and logging in CELL_FACH state when second DRX cycle is used for Automatic Neighbour Relation (ANR) in UTRAN.

5 Possible UE radio access capability parameter settings

5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

	UE radio access capability parameter	Value range
PDCP parameters	Support for RFC 2507	Yes/No
	Support for RFC 3095	Yes/No
	Support for RFC 3095 context relocation	Yes/No
	Support for loss-less SRNS relocation	Yes/No
	Support for loss-less DL RLC PDU size change	Yes/No
	Maximum header compression context space	1024, 2048, 4096, 8192, 16384, 32768, 65536, 131072 bytes
	Maximum number of ROHC context sessions	2, 4, 8, 12, 16, 24, 32, 48, 64, 128, 256, 512, 1024, 16384
	Support for Reverse Decompression	Not supported, 1..65535
	Support for CS voice over HSPA	Yes/No

		UE radio access capability parameter	Value range
RLC, MAC-hs, MAC-ehs and MAC-i/is parameters		Total RLC AM, MAC-hs and MAC-ehs buffer size	2, 10, 50, 100, 150, 200, 300, 400, 500, 750, 1000, 1150, 1250, 1800, 2000, 2300, 2550, 3400, 3500, 4400, 4500, 5000 kBytes
		Maximum number of AM entities	3, 4, 5, 6, 8, 16, 30
		Maximum RLC AM window size	2047, 4095
		Support for MAC-ehs	Yes/No
		Support for two logical channels	Yes/No
		Support of MAC-i/is	Yes/No
		Support of MAC-ehs window size extension	Yes/No
		Support of UM RLC re-establishment via reconfiguration	Yes/No
PHY parameters	Transport channel parameters in downlink	Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840, 204640
		Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840, 204640
		Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840, 204640
		Maximum number of simultaneous transport channels	4, 8, 16, 32
		Maximum number of simultaneous CCTrCH	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval	4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC	16, 32, 48, 64, 96, 128, 256, 512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo decoding	Yes/No
	Transport channel parameters in uplink	Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	2, 4, 8, 16, 32
		Maximum number of simultaneous CCTrCH of DCH type (TDD only)	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks transmitted within TTIs that start at the same time	2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC	4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo encoding	Yes/No
	FDD Physical channel parameters in downlink	Maximum number of DPCHcodes to be simultaneously received	1, 2, 3, 4, 5, 6, 7, 8
		Maximum number of physical channel bits received in any 10 ms interval (DPCH, S-CCPCH)	600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800
		Support for SF 512 and 80 ms TTI for DPCH	Yes/No
		Support of HS-PDSCH in CELL_DCH	Yes/No
		Support of HS-SCCHless HS-DSCH	Yes/No

		UE radio access capability parameter	Value range
		Support of HS-PDSCH in CELL_FACH	Yes/No
		Support of HS-PDSCH in CELL_PCH and URA_PCH	Yes/No
		Support of Enhanced F-DPCH	Yes/No
		Support of Target Cell Pre-Configuration	Yes/No
		Support of Enhanced Serving Cell Change for Event 1C	Yes/No
		Support of HS-DSCH DRX operation	Yes/No
		Support of Node B triggered HS-DPCCH transmission	Yes/No
		Support of HS-DSCH DRX operation with second DRX cycle	Yes/No
		Support for Two DRX schemes in URA_PCH and CELL_PCH	Yes/No
		Support of TX Diversity on DL Control Channels by MIMO Capable UE when MIMO operation is active	Yes/No
		Support for cell-specific Tx diversity configuration for dual-cell operation	Yes/No
		Support of MIMO only with single-stream restriction	Yes/No
		Support for dual cell with MIMO operation in different bands	Yes/No
		Support of MIMO mode with four transmit antennas operation only with dual-stream restriction	Yes/No
		Support of dual band operation (Radio Access Capability Band Combination List)	1..16
		>Band Combination	1..256
		>Supported Carrier Combination List	
		>>Carrier Combination (1,2)	Yes/No
		>>Carrier Combination (2,1)	Yes/No
		>>Carrier Combination (1,3)	Yes/No
		>>Carrier Combination (3,1)	Yes/No
		>>Carrier Combination (2,2)	Yes/No
		>>Carrier Combination (1,4)	Yes/No
		>>Carrier Combination (4,1)	Yes/No
		>>Carrier Combination (1,5)	Yes/No
		>>Carrier Combination (5,1)	Yes/No
		>>Carrier Combination (1,6)	Yes/No
		>>Carrier Combination (6,1)	Yes/No
		>>Carrier Combination (1,7)	Yes/No
		>>Carrier Combination (7,1)	Yes/No
		>>Carrier Combination (2,3)	Yes/No
		>>Carrier Combination (3,2)	Yes/No
		>>Carrier Combination (2,4)	Yes/No
		>>Carrier Combination (4,2)	Yes/No
		>>Carrier Combination (2,5)	Yes/No
		>>Carrier Combination (5,2)	Yes/No
		>>Carrier Combination (2,6)	Yes/No
		>>Carrier Combination (6,2)	Yes/No
		>>Carrier Combination (3,3)	Yes/No
		>>Carrier Combination (3,4)	Yes/No
		>>Carrier Combination (4,3)	Yes/No
		>>Carrier Combination (4,4)	Yes/No
		>>Carrier Combination (3,5)	Yes/No
		>>Carrier Combination (5,3)	Yes/No
		Support for Multiflow	Yes/No (per frequency band)

		UE radio access capability parameter	Value range
		>Support for Multiflow and MIMO	No/Single stream/Dual stream NOTE: If a UE supports single-stream MIMO transmission with Multiflow, then single-stream MIMO is supported in all the frequency bands where Multiflow operation is supported. The dual-stream MIMO transmission with Multiflow support is per frequency band.
		>Support for Multiflow with non-contiguous carrier allocation	5, 10, any gap size (per frequency band)
		Support for Multiflow in different bands	Yes/No (per frequency band combination)
		Support for Multiflow with MIMO operation in different bands	No/Single stream/Dual stream NOTE1: If a UE does not support "Multiflow with MIMO operation in different bands", then no MIMO is supported in any of the band combinations where Multiflow is supported. NOTE2: If a UE supports single-stream "Multiflow with MIMO operation in different bands", then single-stream MIMO is supported in all the band combinations where Multiflow is supported. NOTE3: If a UE supports dual-stream "Multiflow with MIMO operation in different bands", then dual-stream MIMO transmission is supported in all the band combinations, in which the UE supports Multiflow and dual-stream MIMO in both bands of the corresponding band combination. Otherwise the UE supports single-stream MIMO in that band combination.
		Support of MIMO mode with four transmit antennas operation	Yes/No (per frequency band)
		Non-contiguous multi-cell	1..3
		>Aggregated cells	2, 3, 4
		>Gap size	5, 10, any gap size
		>Non-contiguous multi-cell Combination (2,2)	Yes/No
		>Non-contiguous multi-cell Combination (3,1) (1,3)	Yes/No
		Support of HS-DPCCH power offset extension	Yes/No
		Support of STTD on DL Control Channels when Multiflow operation is active	Yes/No
		Non-contiguous multi-cell with MIMO	Yes/No
		Support of multi-cell configuration in inter-RAT handover	Yes/No
		Support of DPCCH2	Yes/No

		UE radio access capability parameter	Value range
		Support for DCH Enhancements	Basic/Full
		Simultaneous support for DCH Enhancements and Compressed Mode operation	Yes/No
		Simultaneous support for DCH Enhancements and DPCCH Discontinuous Transmission	Yes/No
		DRX enhancements	Yes/No
		HS-DPCCH overhead reduction	Yes/No
		Support of F-TPICH feedback from the Multiflow assisting cell	Yes/No
		Support of power control algorithm 3	Yes/No
		Support of blind HARQ retransmissions for HSDPA	Yes/No
		Support of HS-SCCH DRX operation	Yes/No
		Support of simplified HS-SCCH type 1 operation	Yes/No
	FDD Physical channel parameters in uplink	Maximum number of DPDCH bits transmitted per 10 ms	600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600
		Support of E-DPDCH	Yes/No
		Support of Discontinuous Transmission in CELL_DCH	Yes/No
		Support of Slot Format #4	Yes/No
		Support for E-DPCCH power interpolation formula	Yes/No
		Support for E-DPCCH power boosting	Yes/No
		Support of common E-DCH	Yes/No
		Support of Common E-RGCH based interference control	Yes/No
		Support of Fallback to R99 PRACH	Yes/No
		Support of Concurrent deployment	Yes/No
		Support of TTI alignment and Per HARQ process	Yes/No
		Support of uplink open loop transmit diversity	Yes/No (per frequency band)
		Support of uplink closed loop transmit diversity	Yes/No (per frequency band)
		Support of Uplink MIMO	Yes/No (per frequency band)
		Support of Serving E-DCH cell decoupling	Yes/No
		Support of Radio Links without DPCH/F-DPCH	Yes/No
		Support of Cell Reselection Indication Reporting	Yes/No
		Access Groups based access control	Yes/No
		Enhanced TTI switching	Yes/No
		Implicit Grant handling	Yes/No
		DTX enhancements	Yes/No
		Support of Dual Cell E-DCH transmission with DPDCH	Yes/No
		Support for Dual Band Dual Cell E-DCH operation	Yes/No
		Support of Dual Cell E-DCH operation enhancements	Yes/No
	TDD 3.84 Mcps physical channel parameters in downlink	Maximum number of timeslots per frame	1..14
		Maximum number of physical channels per frame	1, 2, 3..224
		Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Support of HS-PDSCH	Yes/No
		Maximum number of physical channels per timeslot	1..16

		UE radio access capability parameter	Value range
	TDD 3.84 Mcps physical channel parameters in uplink	Maximum Number of timeslots per frame	1..14
		Maximum number of physical channels per timeslot	1, 2
		Minimum SF	16, 8, 4, 2, 1
		Support of PUSCH	Yes/No
		Support of E-PUCH	Yes/No
	TDD 7.68 Mcps physical channel parameters in downlink	Maximum number of timeslots per frame	1..14
		Maximum number of physical channels per frame	1, 2, 3..448
	TDD 7.68 Mcps physical channel parameters in downlink	Minimum SF	32, 1
		Support of PDSCH	Yes/No
		Support of HS-PDSCH	Yes/No
		Maximum number of physical channels per timeslot	1..32
	TDD 7.68 Mcps physical channel parameters in uplink	Maximum Number of timeslots per frame	1..14
		Maximum number of physical channels per timeslot	1, 2
		Minimum SF	32, 16, 8, 4, 2, 1
		Support of PUSCH	Yes/No
		Support of E-PUCH	Yes/No
	TDD 1.28 Mcps physical channel parameters in downlink	Maximum number of timeslots per subframe	1..6
		Maximum number of physical channels per subframe	1, 2, 3, …, 96
		Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Support of HS-PDSCH	Yes/No
		Maximum number of physical channels per timeslot	1..16
		Support 8PSK	Yes/No
		UE specific capability Information LCR TDD	Enumerated (NF, TriRxUniTx, TriRxTriTx, HexRxUniTx, HexRxTriTx, HexRxHexTx, TwoRxUniTxDiscontiguous, TwoRxTwoTxDiscontiguous, TwoRxUniTxContiguous, TwoRxTwoTxContiguous) NOTE: If three frequencies are supported, the three frequencies shall be configured within 5 MHz; if six frequencies are supported, the six frequencies shall be configured within 10MHz; TwoRxUniTxDiscontiguous and TwoRxTwoTxDiscontiguous mean that the UE is capable of supporting two non-adjacent carriers; TwoRxUniTxContiguous and TwoRxTwoTxContiguous mean that the UE is only capable of supporting two adjacent carriers; if two non-adjacent carriers are supported, the two carriers can be in the same band or in two different bands.

		UE radio access capability parameter	Value range
		Support of HS-PDSCH in CELL_FACH	Yes/No
		Support of SPS	Yes/No
		Support of HS-SCCH/E-AGCH Discontinuous Reception	Yes/No
		Support of SF Mode For HS-PDSCH dual stream	Yes/No
		Support of Enhanced TS0	Yes/No
		Support of Non-rectangular Resource Allocation	Yes/No
	TDD 1.28 Mcps physical channel parameters in uplink	Maximum number of timeslots per subframe	1..6
		Maximum number of physical channels per timeslot	1, 2
		Minimum SF	16, 8, 4, 2, 1
		Support of 8PSK	Yes/No
		Support of PUSCH	Yes/No
		Support of E-PUCH	Yes/No
		Support of E-DCH in CELL_FACH	Yes/No
RF parameters	FDD RF parameters	UE power class	3, 4 NOTE: Only power classes 3 and 4 are part of this release of the specification
		Radio frequency bands	The radio frequency bands defined in [4]. UEs that support band XIX shall also support band VI
		Tx/Rx frequency separation	Defined in [4] for the respective supported radio frequency band
		Support of Multiple Frequency Band Indicators	Yes/No
RF parameters	TDD 3.84 Mcps RF parameters	UE power class	2, 3 NOTE: Only power classes 2 and 3 are part of this release of the specification
		Radio frequency bands	The radio frequency bands defined in [5]
	TDD 1.28 Mcps RF parameters	UE power class	2, 3
		Radio frequency bands	The radio frequency bands defined in [5]
Multi-mode related parameters		Support of UTRA FDD	Yes/No
		Support of UTRA TDD 3.84 Mcps	Yes/No
		Support of UTRA TDD 1.28 Mcps	Yes/No
Multi-RAT related parameters		Support of GSM	Yes/No (per GSM frequency band)
		Support of multi-carrier	Yes/No
		Support of UTRAN to GERAN Network Assisted Cell Change	Yes/No
		Support of Handover to GAN	Yes/No
		Support of Inter-RAT PS Handover	Yes/No
		Support of PS Handover to GAN	Yes/No
		Support of E-UTRA FDD	Yes/No (per E-UTRA frequency band)
		Support of Inter-RAT PS Handover to E-UTRA FDD	Yes/No
		Support of E-UTRA FDD measurements and reporting in CELL_FACH	Yes/No
		Support of E-UTRA TDD	Yes/No (per E-UTRA frequency band)
		Support of Inter-RAT PS Handover to E-UTRA TDD	Yes/No
		Support of E-UTRA Multiple Frequency Band Indicators	Yes/No
		Support of E-UTRA TDD measurements and reporting in CELL_FACH	Yes/No

	UE radio access capability parameter	Value range
	Support of RAN-assisted WLAN interworking based on RAN rules	Yes/No
	Support of RAN-assisted WLAN interworking based on ANDSF policies	Yes/No
	Support of extended E-UTRA frequency priority	Yes/No
Security parameters	Support of ciphering algorithm UEA0	Yes
	Support of ciphering algorithm UEA1	Yes
	Support of ciphering algorithm UEA2	Yes
	Support of integrity protection algorithm UIA1	Yes
	Support of integrity protection algorithm UIA2	Yes
UE positioning related parameters	Standalone location method(s) supported	Yes/No
	UE based OTDOA supported	Yes/No
	Network assisted GPS support	Network based / UE based / Both/ None
	Network Assisted GANSS support List:	per GANSS
	>GANSS ID	Galileo / SBAS / Modernized GPS / QZSS / GLONASS/ BDS
	>SBAS IDs	WAAS / EGNOS / MSAS / GAGAN
	>GANSS mode	Network based / UE based / Both/ None
	>GANSS Signal ID	0..7
	>GANSS Signal IDs	Yes/No (per GANSS signal)
	>Support for GANSS timing of cell frames measurement	Yes/No
	>Support for GANSS Carrier-Phase Measurement	Yes/No
	>Support for non-native assistance choices	Yes/No
	Support for GPS timing of cell frames measurement	Yes/No
	Support for IPDL	Yes/No
	Support for Rx-Tx time difference type 2 measurement	Yes/No
	Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states	Yes
	Support for SFN-SFN observed time difference type 2 measurement	Yes/No
	Additional Positioning method support List	Per Additional Positioning method
	>AddPos ID	Barometric Pressure, WLAN, Bluetooth, MBS
	>AddPos mode	Standalone / UE assisted / Both
Measurement related capabilities	Need for downlink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
	Need for uplink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
	Support for absolute priority based cell re-selection in UTRAN	Yes/No
	Support for System Information Block type 11bis	Yes
	Adjacent Frequency measurements without compressed mode	Yes/No
	Inter-band Frequency measurements without compressed mode	Yes/No

	UE radio access capability parameter	Value range
	Enhanced inter-frequency measurements without compressed mode	Yes/No
	Extended measurements ID support	Yes
	Frequency specific compressed mode	Yes/No
	Frequency specific compressed mode for non-contiguous operation	Yes/No
	Inter-frequency detected set measurements	Yes/No
	Inter-frequency measurements on configured carriers without compressed mode	Yes/No
	Cells excluded from detected set measurements	Yes/No
	Wideband RSRQ FDD measurements	Yes/No
	Wideband RSRQ TDD measurements	Yes/No
	Event 2g reporting on a configured secondary downlink frequency	Yes/No
	Enhanced UPH reporting	Yes/No
	RRC measurement events 6h and 6i for UPH reporting	Yes/No
	Increased UE carrier monitoring UTRA	Yes/No
	Increased UE carrier monitoring E-UTRA	Yes/No
	Extended RSRQ lower value range	Yes/No
	RSRQ measurement on all symbols	Yes/No
	QoE Measurement Collection for streaming services	Yes/No
	QoE Measurement Collection for MTSI services	Yes/No
General capabilities	Access Stratum release indicator	R99, REL-4, REL-5, REL-6, REL-7, REL-8, REL-9, REL-10, REL-11, REL-12, REL-13, REL-14, REL-15, REL-16
	Device type	Benefits from NW-based battery consumption optimisation / Does not benefit from NW-based battery consumption optimisation
	Support of DSAC and PPAC update in CELL_DCH	Yes/No
	Support of retrievable configurations	Yes/No
	Support of URA_PCH with seamless transition	Yes/No
	Support of improved synchronized RRC procedures	Yes/No
	Support of enhanced state transition	Yes/No
	Support of simultaneous setup and release of RABs and RBs	Yes/No
DL capabilities with simultaneous HS-DSCH	DL capability with simultaneous HS-DSCH configuration	32 kbps, 64 kbps, 128 kbps, 384 kbps
UL capabilities with simultaneous E-DCH	UL capabilities with simultaneous E-DCH	64 kbps
UE based network performance measurements parameters	Support of logged measurements in Idle mode and PCH States	Yes/No
	Support of UTRAN ANR	Yes/No

		UE radio access capability parameter	Value range
Home Node B Inbound Mobility Related Parameters	CSG Proximity Indication capabilities	Support of intra-frequency proximity indication	Yes/No
		Support of inter-frequency proximity indication	Yes/No
		Support of E-UTRA proximity indication	Yes/No
	Neighbour Cell SI Acquisition capabilities	Support of intra-frequency SI acquisition for HO	Yes/No
		Support of inter-frequency SI acquisition for HO	Yes/No
		Support of E-UTRA SI acquisition for HO	Yes/No
IMS Voice Parameters		Voice over UTRA PS HS Support	Yes/No
		SRVCC Support from UTRA to UTRA	Yes/No
		SRVCC Support from UTRA to GERAN	Yes/No
		rSRVCC support from UTRA CS to E-UTRAN FDD	Yes/No
		rSRVCC support from UTRA CS to E-UTRAN TDD	Yes/No

Table 5.1a: FDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of HS-DSCH codes received	Minimum inter-TTI interval	Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI NOTE 1	Total number of soft channel bits	Total Number of serving/secondary serving HS-DSCH cells	Total Number of serving/secondary serving HS-DSCH cells in which MIMO mode with two transmit antennas can be configured	Total Number of serving/secondary serving HS-DSCH cells in which MIMO mode with four transmit antennas can be configured	Supported modulations without MIMO operation or aggregated cell operation	Supported modulations with MIMO operation and without aggregated cell operation	Supported modulations without MIMO operation with aggregated cell operation	Supported modulations with MIMO operation and aggregated cell operation
Category 1	5	3	7298	19200	1	0	-	QPSK, 16QAM	Not applicable (MIMO not supported)	Not applicable (aggregated carriers operation not supported)	Not applicable (simultaneous aggregated carriers and MIMO operation not supported)
Category 2	5	3	7298	28800	1	0	-				
Category 3	5	2	7298	28800	1	0	-				
Category 4	5	2	7298	38400	1	0	-				
Category 5	5	1	7298	57600	1	0	-				
Category 6	5	1	7298	67200	1	0	-				
Category 7	10	1	14411	115200	1	0	-				
Category 8	10	1	14411	134400	1	0	-				
Category 9	15	1	20251	172800	1	0	-				
Category 10	15	1	27952	172800	1	0	-				
Category 11	5	2	3630	14400	1	0	-	QPSK			
Category 12	5	1	3630	28800	1	0	-				
Category 13	15	1	35280	259200	1	0	-	QPSK, 16QAM, 64QAM			
Category 14	15	1	42192	259200	1	0	-				
Category 15	15	1	23370	345600	1	1	-	QPSK, 16QAM			
Category 16	15	1	27952	345600	1	1	-				
Category 17 NOTE 2	15	1	35280	259200	1	0	-	QPSK, 16QAM, 64QAM	–		

HS-DSCH category	Maximum number of HS-DSCH codes received	Minimum inter-TTI interval	Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI NOTE 1	Total number of soft channel bits	Total Number of serving/secondary serving HS-DSCH cells	Total Number of serving/secondary serving HS-DSCH cells in which MIMO mode with two transmit antennas can be configured	Total Number of serving/secondary serving HS-DSCH cells in which MIMO mode with four transmit antennas can be configured	Supported modulations without MIMO operation or aggregated cell operation	Supported modulations with MIMO operation and without aggregated cell operation	Supported modulations without MIMO operation with aggregated cell operation	Supported modulations with MIMO operation and aggregated cell operation
			23370	345600	1	1	-	–	QPSK, 16QAM		
Category 18 NOTE 3	15	1	42192	259200	1	0	-	QPSK, 16QAM, 64QAM	–		
			27952	345600	1	1	-	–	QPSK, 16QAM		
Category 19	15	1	35280	518400	1	1	-	QPSK, 16QAM, 64QAM			
Category 20	15	1	42192	518400	1	1	-				
Category 21	15	1	23370	345600	2	0	-	-	-	QPSK, 16QAM	
Category 22	15	1	27952	345600	2	0	-				
Category 23	15	1	35280	518400	2	0	-			QPSK, 16QAM, 64QAM	
Category 24	15	1	42192	518400	2	0	-				
Category 25	15	1	23370	691200	2	2	-	-	-	-	QPSK, 16QAM
Category 26	15	1	27952	691200	2	2	-				
Category 27	15	1	35280	1036800	2	2	-	-	-	-	QPSK, 16QAM, 64QAM
Category 28	15	1	42192	1036800	2	2	-				
Category 29	15	1	42192	777600	3	0	-	-	-	QPSK, 16QAM, 64QAM	-
Category 30	15	1	42192	1555200	3	3	-	-	-	QPSK, 16QAM, 64QAM	QPSK, 16QAM, 64QAM
Category 31	15	1	42192	1036800	4	0	-	-	-	QPSK, 16QAM, 64QAM	-
Category 32	15	1	42192	2073600	4	4	-	-	-	QPSK, 16QAM, 64QAM	QPSK, 16QAM, 64QAM
Category 33	15	1	42192	1555200	6	0	-	-	-	QPSK, 16QAM, 64QAM	-
Category 34	15	1	42192	3110400	6	6	-	-	-	QPSK, 16QAM, 64QAM	QPSK, 16QAM, 64QAM
Category 35	15	1	42192	2073600	8	0	-	-	-	QPSK, 16QAM, 64QAM	-
Category 36	15	1	42192	4147200	8	8	-	-	-	QPSK, 16QAM, 64QAM	QPSK, 16QAM, 64QAM
Category 37	15	1	42192	2073600	2	2	2	-	-	QPSK, 16QAM, 64QAM	QPSK, 16QAM, 64QAM
Category 38	15	1	42192	4147200	4	4	4	-	-	QPSK, 16QAM, 64QAM	QPSK, 16QAM, 64QAM

For any category, in addition to the requirements in Table 5.1a, an HS-SCCH less capable UE shall allocate 24960 raw channel bits for HS-SCCH less operation in order to buffer the last 13 subframes and 13599 soft channel bits to receive 3 parallel HARQ processes.

UE Categories 1 to 4 and Category 11 do not support HS-DSCH reception in CELL_FACH, CELL_PCH or URA_PCH states.

UEs of Category 13 are only required to support code rates up to 0.823 when 64QAM is used, which is represented by a limitation in the maximum value of K_i. in the transport block calculation in [9]. For other modulation formats, this restriction does not apply.

UEs of Category 15 are only required to support code rates up to 0.823 for 16QAM when two transport blocks are received in the same TTI, which is represented by a limitation in the maximum value of K_i in the transport block calculation in [9]. For other modulation formats or when a single transport block is received, this restriction does not apply.

UEs of Category 19 are only required to support code rates up to 0.823 when 64QAM is used when two transport blocks are received in the same TTI, which is represented by a limitation in the maximum value of K_i. in the transport block calculation in [9]. For other modulation formats or when a single transport block is received, this restriction does not apply.

UEs of Category 21 are only required to support code rates up to 0.823 when 16QAM is used, which is represented by a limitation in the maximum value of K_i. in the transport block calculation in [9]. For other modulation formats, this restriction does not apply.

UEs of Category 23 are only required to support code rates up to 0.823 when 64QAM is used, which is represented by a limitation in the maximum value of K_i. in the transport block calculation in [9]. For other modulation formats, this restriction does not apply.

UEs of category 25 are only required to support code rates up to 0.823 for 16QAM for one cell when two transport blocks are received in the same TTI on that cell, which is represented by a limitation in the maximum value of Ki in the transport block calculation. For other modulation formats or when a single transport block is received in a cell, this restriction does not apply on that cell.

UEs of category 27 are only required to support code rates up to 0.823 for 64QAM for one cell when two transport blocks are received in the same TTI on that cell, which is represented by a limitation in the maximum value of Ki in the transport block calculation. For other modulation formats or when a single transport block is received in a cell, this restriction does not apply on that cell.

A UE that supports categories greater or equal to category 13, also supports E-DPDCH.

A UE that supports categories greater or equal to category 13, also supports MAC-ehs.

NOTE 1: Depending on the HS-DSCH configuration, the indicated maximum number of bits of an HS-DSCH transport block does not have to correspond exactly to an entry in the transport block size table to be applied [9].

NOTE 2: A UE of category 17 supports the physical capabilities of categories 13 and 15, but not simultaneously. The first row of category 17 in table 5.1a specifies the capabilities when MIMO is not configured and the capabilities of category 13 apply, the second row specifies the capabilities when MIMO is configured and the capabilities of category 15 apply.

NOTE 3: A UE of category 18 supports the physical capabilities of categories 14 and 16, but not simultaneously. The first row of category 18 in table 5.1a specifies the capabilities when MIMO is not configured and the capabilities of category 14 apply, the second row specifies the capabilities when MIMO is configured and the capabilities of category 16 apply.

Table 5.1b: RLC and MAC-hs/MAC-ehs parameters for FDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs/MAC-ehs buffer size [kBytes]
Category 1	6	50
Category 2	6	50
Category 3	6	50

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs/MAC-ehs buffer size [kBytes]
Category 4	6	50
Category 5	6	50
Category 6	6	50
Category 7	8	100
Category 8	8	100
Category 9	8	150
Category 10	8	150
Category 11	6	50
Category 12	6	50
Category 13	8	300
Category 14	8	300
Category 15	8	400
Category 16	8	400
Category 17	8	400
Category 18	8	400
Category 19	8	600
Category 20	8	600
Category 21	8	400
Category 22	8	400
Category 23	8	600
Category 24	8	600
Category 25	8	1200
Category 26	8	1200
Category 27	8	1700
Category 28	8	1700
Category 29	8	1000
Category 30	8	1800
Category 31	8	1250
Category 32	8	2300
Category 33	8	1800
Category 34	8	3400
Category 35	8	2300
Category 36	8	4400
Category 37	8	2300
Category 38	8	4400

Table 5.1c: 1.28 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of HS-DSCH codes per timeslot	Maximum number of HS-DSCH timeslots per TTI	Maximum number of HS-DSCH transport channel bits that can be received within an HS-DSCH TTI	Total number of soft channel bits	Supported modulations without MIMO operation	Supported modulations simultaneous with MIMO operation
Category 1	16	2	2788	11264	QPSK	Not applicable (MIMO not supported)
Category 2	16	2	2788	22528		
Category 3	16	2	2788	33792		
Category 4	16	2	5600	22528	QPSK,16QAM	
Category 5	16	2	5600	45056		
Category 6	16	2	5600	67584		
Category 7	16	3	8416	33792		
Category 8	16	3	8416	67584		
Category 9	16	3	8416	101376		
Category 10	16	4	11226	45056		
Category 11	16	4	11226	90112		
Category 12	16	4	11226	135168		
Category 13	16	5	14043	56320		
Category 14	16	5	14043	112640		

HS-DSCH category	Maximum number of HS-DSCH codes per timeslot	Maximum number of HS-DSCH timeslots per TTI	Maximum number of HS-DSCH transport channel bits that can be received within an HS-DSCH TTI	Total number of soft channel bits	Supported modulations without MIMO operation	Supported modulations simultaneous with MIMO operation
Category 15	16	5	14043	168960		
Category 16	16	3	12636	50688	QPSK,16QAM, 64QAM	Not applicable (MIMO not supported)
Category 17	16	3	12636	101376		
Category 18	16	3	12636	152064		
Category 19	16	4	16856	67584		
Category 20	16	4	16856	135168		
Category 21	16	4	16856	202752		
Category 22	16	5	21076	84480		
Category 23	16	5	21076	168960		
Category 24	16	5	21076	253440		
Category 25 NOTE 1	16	3	12636	152064	QPSK,16QAM, 64QAM	--
			8416	202752	--	QPSK,16QAM
Category 26 NOTE 2	16	4	16856	202752	QPSK,16QAM, 64QAM	--
			11226	270336	--	QPSK,16QAM
Category 27 NOTE 3	16	5	21076	253440	QPSK,16QAM, 64QAM	--
			14043	337920	--	QPSK,16QAM
Category 28	16	3	12636	304128	QPSK,16QAM, 64QAM	QPSK,16QAM, 64QAM
Category 29	16	4	16856	405504		
Category 30	16	5	21076	506880		

A UE in CELL_FACH, CELL_PCH or URA_PCH state with HS-DSCH reception shall support the HS-DSCH physical layer category 9 and may support the total number of soft channel bits larger than that of the category 9 in table 5.1c. When HS-DSCH reception in CELL_FACH, CELL_PCH or URA_PCH state is configured, the octet aligned table of transport block size for the HS-DSCH physical layer category 9 shall be used (see [9]).

NOTE 1: A UE of category 25 supports the physical capabilities of categories 18. The first row of category 25 in table 5.1c specifies the capabilities when MIMO is not configured and the capabilities of category 18 apply .The second row of category 25 in table 5.1c specifies the capabilities when MIMO is configured.

NOTE 2: A UE of category 26 supports the physical capabilities of categories 21. The first row of category 26 in table 5.1c specifies the capabilities when MIMO is not configured and the capabilities of category 21 apply .The second row of category 26 in table 5.1c specifies the capabilities when MIMO is configured.

NOTE 3: A UE of category 27 supports the physical capabilities of categories 24. The first row of category 27 in table 5.1c specifies the capabilities when MIMO is not configured and the capabilities of category 24 apply .The second row of category 27 in table 5.1c specifies the capabilities when MIMO is configured.

Table 5.1d: RLC and MAC-hs parameters for 1.28 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
Category 1	6	50
Category 2	6	50
Category 3	6	50
Category 4	6	50

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
Category 5	6	50
Category 6	6	50
Category 7	6	50
Category 8	6	50
Category 9	6	50
Category 10	6	50
Category 11	6	50
Category 12	6	50
Category 13	6	100
Category 14	6	100
Category 15	6	100
Category 16	6	100
Category 17	6	100
Category 18	6	100
Category 19	6	100
Category 20	6	100
Category 21	6	100
Category 22	6	100
Category 23	6	100
Category 24	6	100
Category 25	6	150
Category 26	6	200
Category 27	6	300
Category 28	6	300
Category 29	6	300
Category 30	6	300

Table 5.1d-a: 1.28 Mcps TDD HS-DSCH physical layer categories (Multi-frequency HS-DSCH operation mode only)

HS-DSCH category	Maximum number of the total HS-DSCH timeslots on the all assigned carriers per TTI	Maximum number of HS-DSCH transport channel bits that can be received within an HS-DSCH TTI	Total number of soft channel bits
Category 1	30	84258	1013760
Category 2	30	84258	675840
Category 3	30	84258	337920
Category 4	24	67356	811008
Category 5	24	67356	540672
Category 6	24	67356	270336
Category 7	18	50496	608256
Category 8	18	50496	405504
Category 9	18	50496	202752
Category 10	15	42129	506880
Category 11	15	42129	337920
Category 12	15	42129	168960
Category 13	12	33678	405504
Category 14	12	33678	270336
Category 15	12	33678	135168
Category 16	9	25248	304128
Category 17	9	25248	202752
Category 18	9	25248	101376
Category 19	30	126456	1520640
Category 20	30	126456	1013760
Category 21	30	126456	506880
Category 22	24	101136	1216512

HS-DSCH category	Maximum number of the total HS-DSCH timeslots on the all assigned carriers per TTI	Maximum number of HS-DSCH transport channel bits that can be received within an HS-DSCH TTI	Total number of soft channel bits
Category 23	24	101136	811008
Category 24	24	101136	405504
Category 25	18	75816	912384
Category 26	18	75816	608256
Category 27	18	75816	304128
Category 28	15	63228	760320
Category 29	15	63228	506880
Category 30	15	63228	253440
Category 31	12	50568	608256
Category 32	12	50568	405504
Category 33	12	50568	202752
Category 34	9	37908	456192
Category 35	9	37908	304128
Category 36	9	37908	152064
Category 37	8	33712	405504
Category 38	8	33712	270336
Category 39	8	22452	270336
Category 40	8	22452	180224
Category 41	6	25272	304128
Category 42	6	25272	202752
Category 43	6	16832	202752
Category 44	6	16832	135168

NOTE: UEs of Categories 1 to 18, 39, 40, 43 and 44 support QPSK and 16QAM. UEs of Categories 19 to 38, 41, and 42 support QPSK, 16QAM and 64QAM.

Table 5.1d-b: RLC and MAC-hs parameters for 1.28 Mcps TDD HS-DSCH physical layer categories (Multi-frequency HS-DSCH operation mode only)

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
Category 1	6	500
Category 2	6	500
Category 3	6	500
Category 4	6	400
Category 5	6	400
Category 6	6	400
Category 7	6	300
Category 8	6	300
Category 9	6	250
Category 10	6	250
Category 11	6	250
Category 12	6	200
Category 13	6	200
Category 14	6	200
Category 15	6	200
Category 16	6	150
Category 17	6	150
Category 18	6	150
Category 19	6	1000
Category 20	6	1000
Category 21	6	1000
Category 22	6	900
Category 23	6	900
Category 24	6	900

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
Category 25	6	800
Category 26	6	800
Category 27	6	800
Category 28	6	700
Category 29	6	700
Category 30	6	700
Category 31	6	600
Category 32	6	600
Category 33	6	600
Category 34	6	550
Category 35	6	550
Category 36	6	550
Category 37	6	250
Category 38	6	250
Category 39	6	200
Category 40	6	200
Category 41	6	200
Category 42	6	200
Category 43	6	150
Category 44	6	150

Table 5.1e: 3.84 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of HS-DSCH codes per timeslot	Maximum number of HS-DSCH timeslots per TTI	Maximum number of HS-DSCH transport channel bits that can be received within an HS-DSCH TTI	Total number of soft channel bits
Category 1	16	2	12000	52992
Category 2	16	12	12000	52992
Category 3	16	4	24000	105984
Category 4	16	12	24000	105984
Category 5	16	6	36000	158976
Category 6	16	12	36000	158976
Category 7	16	12	53000	211968
Category 8	16	12	73000	264960
Category 9	16	12	102000	317952

Table 5.1f: RLC and MAC-hs parameters for 3.84 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
Category 1	6	50
Category 2	6	50
Category 3	6	50
Category 4	6	50
Category 5	6	100
Category 6	6	100
Category 7	6	150
Category 8	8	150
Category 9	8	200

Table 5.1f-a: 7.68 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of HS-DSCH codes per timeslot	Maximum number of HS-DSCH timeslots per TTI	Maximum number of HS-DSCH transport channel bits that can be received within an HS-DSCH TTI	Total number of soft channel bits
Category 1	32	1	12000	52992
Category 2	32	12	12000	52992
Category 3	32	2	24000	105984
Category 4	32	12	24000	105984
Category 5	32	3	36000	158976
Category 6	32	12	36000	158976
Category 7	32	4	53000	211968
Category 8	32	12	53000	211968
Category 9	32	5	73000	264960
Category 10	32	12	73000	264960
Category 11	32	8	106000	423936
Category 12	32	12	106000	423936
Category 13	32	12	204000	635904

Table 5.1f-b: RLC and MAC-hs parameters for 7.68 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
Category 1	6	50
Category 2	6	50
Category 3	6	50
Category 4	6	50
Category 5	6	100
Category 6	6	100
Category 7	6	150
Category 8	6	150
Category 9	8	150
Category 10	8	150
Category 11	8	200
Category 12	8	200
Category 13	8	400

Table 5.1g: FDD E-DCH physical layer categories

E-DCH category	Maximum number of E-DCH codes transmittedper transport block	Minimum spreading factor	Support for 10 and 2 ms TTI EDCH	Maximum number of bits of an E-DCH transport block transmitted within a 10 ms E-DCH TTI	Maximum number of bits of an E-DCH transport block transmitted within a 2 ms E-DCH TTI
Category 1	1	SF4	10 ms TTI only	7110	-
Category 2	2	SF4	10 ms and 2 ms TTI	14484	2798
Category 3	2	SF4	10 ms TTI only	14484	-
Category 4	2	SF2	10 ms and 2 ms TTI	20000	5772
Category 5	2	SF2	10 ms TTI only	20000	-
Category 6	4	SF2	10 ms and 2 ms TTI	20000	11484
Category 7	4	SF2	10ms and 2 ms TTI	20000	22996
Category 8	4	SF2	2 ms TTI	-	11484
Category 9	4	SF2	2 ms TTI	-	22996
Category 10	4	SF2	2 ms TTI	-	34507
Category 11	4	SF2	2 ms TTI	-	22996

E-DCH category	Maximum number of E-DCH codes transmittedper transport block	Minimum spreading factor	Support for 10 and 2 ms TTI EDCH	Maximum number of bits of an E-DCH transport block transmitted within a 10 ms E-DCH TTI	Maximum number of bits of an E-DCH transport block transmitted within a 2 ms E-DCH TTI
Category 12	4	SF2	2 ms TTI	-	34507
NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4					

UEs of Categories 1 to 6 support QPSK only.

UEs of Category 7 supports QPSK (2 ms TTI, 10 ms TTI) and 16QAM (2 ms TTI).

UEs of Category 8 support only QPSK in Dual Cell E-DCH operation.

UEs of Category 9 support QPSK and 16QAM in Dual Cell E-DCH operation.

UEs of Category 10 support QPSK, 16QAM and 64QAM.

UEs of Category 11 support Uplink MIMO with QPSK and 16QAM.

UEs of Category 12 support Uplink MIMO with QPSK, 16QAM and 64QAM.

UEs of Category 8, 9, 10, 11 and 12 support MAC-i/is.

The values in the following Table 5.1h reflect the total buffer sizes of HS-DSCH and E-DCH categories for simultaneous HS-DSCH/E-DCH operation.

Table 5.1h: Total RLC and MAC-hs parameters for FDD HS-DSCH and E-DCH physical layer categories

HS-DSCH category E-DCH category	Cat. 1 to 4 [kBytes]	Cat. 5 and 6 [kBytes]	Cat. 7 and 8 [kBytes]	Category 9 [kBytes]	Cat. 10 [kBytes]	Cat. 11 [kBytes]	Cat. 12 [kBytes]
Category 1	100	100	200	300	300	50	50
Categories 2 and 3	100	150	200	300	300	50	100
Category 5	100	150	200	300	300	100	100
Category 4	-	150	300	300	400	100	100
Category 6	-	200	300	400	400	150	150
Category 7	-	300	300	400	500	200	200
Category 8	-	-	-	-	-	-	-
Category 9	-	-	-	-	-	-	-
Category 10	-	-	-	-	-	-	-
Category 11	-	-	-	-	-	-	-
Category 12	-	-	-	-	-	-	-

HS-DSCH category E-DCH category	Categories 13 and 14 [kBytes]	Categories 15 and 16 [kBytes]	Categories 17 and 18 [kBytes]	Categories 19 and 20 [kBytes]	Categories 21 and 22 [kBytes]	Categories 23 and 24 [kBytes]
Category 1	-	-	-	-	-	-
Categories 2 and 3	-	-	-	-	-	-
Category 5	400	-	-	-	-	-
Category 4	400	400	400	-	400	-
Category 6	400	500	500	750	500	750
Category 7	500	500	500	750	500	750
Category 8	-	-	-	-	500	750
Category 9	-	-	-	-	750	750
Category 10	-	-	-	750	500	750
Category 11	-	-	-	750	750	750
Category 12	-	-	-	1000	750	1000

HS-DSCH category E-DCH category	Categories 25 and 26 [kBytes]	Categories 27 and 28 [kBytes]
Category 1	-	-
Categories 2 and 3	-	-
Category 5	-	-
Category 4	750	-
Category 6	750	1150
Category 7	1000	1150
Category 8	1000	1150
Category 9	1000	1250
Category 10	1000	1250
Category 11	1000	1250
Category 12	1000	1800

HS-DSCH category E-DCH category	Cat. 29 [kBytes]	Cat. 30 [kBytes]	Cat. 31 [kBytes]	Cat. 32 [kBytes]	Cat. 33 [kBytes]	Cat. 34 [kBytes]	Cat. 35 [kBytes]	Cat. 36 [kBytes]
Category 6	1000	1800	1150	2300	1800	3400	2300	4400
Category 7	1000	1800	1150	2300	1800	3400	2300	4400
Category 8	1000	1800	1150	2300	1800	3400	2300	4400
Category 9	1000	1800	1250	2300	1800	3400	2300	4400
Category 10	1000	1800	1250	2300	1800	3400	2300	4400
Category 11	1000	1800	1250	2300	1800	3400	2300	4400
Category 12	1150	2000	1800	2550	2000	3500	2550	4500

HS-DSCH category E-DCH category	Category 37 [kBytes]	Category 38 [kBytes]
Category 6	2300	4400
Category 7	2300	4400
Category 8	2300	4400
Category 9	2300	4400
Category 10	2300	4400
Category 11	2300	4400
Category 12	2550	4500

NOTE: Maximum number of AM RLC entities for simultaneous HS-DSCH/E-DCH operation is defined in Table 5.1b.

Table 5.1i: 3.84Mcps TDD E-DCH physical layer categories

E-DCH category	maximum number of physical channel bits on E-UCH that can be transmitted in a 10ms TTI	Maximum number of bits of an E-DCH transport block that can be transmitted within a 10ms E-DCH TTI
Category 1	17360	12146
Category 2	34752	24161
Category 3	52416	36782
Category 4	69536	53896
Category 5	104864	92014

NOTE: A UE of any 3.84Mcps TDD category can transmit E-DCH on up to (and including) 12 timeslots at spreading factors between 1 and 16 subject to the capabilities in table 5.1i.

The values in the following Table 5.1j reflect the total buffer sizes of HS-DSCH and E-DCH categories for simultaneous HS-DSCH/E-DCH operation.

Table 5.1j - Total RLC and MAC-hs parameters for 3.84Mcps TDD HS-DSCH and E-DCH physical layer categories

HS-DSCH category E-DCH category	Categories 1 / 2 [Kbytes]	Categories 3 / 4 [Kbytes]	Categories 5 / 6 [Kbytes]	Category 7 [Kbytes]	Category 8 [Kbytes]	Category 9 [Kbytes]
Category 1	100	100	150	200	300	400
Category 2	100	150	200	300	300	400
Category 3	150	150	200	300	300	400
Category 4	150	200	300	300	300	400
Category 5	300	300	300	300	300	400

NOTE: Maximum number of AM RLC entities for simultaneous HS-DSCH/E-DCH operation is defined in Table 5.1f.

Table 5.1k: 7.68Mcps TDD E-DCH physical layer categories

E-DCH category	maximum number of physical channel bits on E-UCH that can be transmitted in a 10ms TTI	Maximum number of bits of an E-DCH transport block that can be transmitted within a 10ms E-DCH TTI
Category 1	17360	12347
Category 2	34752	24830
Category 3	52416	36782
Category 4	69536	54488
Category 5	87200	73967
Category 6	139104	104891
Category 7	209760	177130

NOTE: A UE of any 7.68Mcps TDD category can transmit E-DCH on up to (and including) 12 timeslots at spreading factors between 1 and 32 subject to the capabilities in table 5.1k.

The values in the following Table 5.1l reflect the total buffer sizes of HS-DSCH and E-DCH categories for simultaneous HS-DSCH/E-DCH operation.

Table 5.1l: Total RLC and MAC-hs parameters for 7.68Mcps TDD HS-DSCH and E-DCH physical layer categories

HS-DSCH category E-DCH category	Categories 1 / 2 [Kbytes]	Categories 3 / 4 [Kbytes]	Categories 5 / 6 [Kbytes]	Categories 7 / 8 [Kbytes]	Categories 9 / 10 [Kbytes]	Categories 11 / 12 [Kbytes]	Category 13 [Kbytes]
Category 1	100	100	150	200	300	400	700
Category 2	100	150	200	300	300	400	700
Category 3	150	150	200	300	300	400	700
Category 4	150	200	300	300	400	500	700
Category 5	200	300	300	300	400	500	700
Category 6	300	300	400	400	500	700	700
Category 7	400	400	500	500	500	700	700

NOTE: Maximum number of AM RLC entities for simultaneous HS-DSCH/E-DCH operation is defined in Table 5.1f-b.

Table 5.1m: 1.28 Mcps TDD E-DCH physical layer categories

E-DCH category	Maximum number of E – DCH timeslots per TTI	Maximum number of E – DCH transport channel bits that can be received within an E-DCH TTI
Category 1	2 (Note 1, 3)	2754
Category 2	3 (Note 1, 3)	4162
Category 3	2 (Note 2, 3)	5532
Category 4	3 (Note 2, 3)	8348
Category 5	4 (Note 2, 3)	11160
Category 6	5 (Note 2, 3)	11160

A UE in CELL_FACH state with E-DCH transmission shall support the E-DCH physical layer category 3 in table 5.1m. When E-DCH transmission in CELL_FACH state is configured, the formula to calculate the Transport Block Size shall be used according to the E-DCH physical layer category 3 (see [9]).

NOTE 1: Category 1 and category 2 UEs support QPSK only.

NOTE 2: Category 3, 4, 5 and 6 UEs support QPSK and 16QAM.

NOTE 3: All category UEs support up to 2 physical channels per timeslot unless 16QAM is adopted.

Table 5.1m-a: 1.28 Mcps TDD multi-carrier E-DCH physical layer categories

E-DCH category	Maximum number of E – DCH timeslots per TTI
Category 1	4
Category 2	6
Category 3	9
Category 4	12
Category 5	15
Category 6	18
Category 7	24
Category 8	30

The maximum number of E-DCH transport channel bits for multi-carrier E-DCH transmission equals to the sum of maximum number of E-DCH transport channel bits on each carrier which is determined by the UE's single carrier categories as specified in Table 5.1m. For instance, if the UE reports multi-carrier category 2 and single carrier category 4 with 2 uplink carriers, the maximum number of E-DCH transport channel bits is 8348*2=16696.

NOTE: All categorys UEs support QPSK and 16QAM.

The values in the following Table 5.1n reflect the total buffer sizes of HS-DSCH and E-DCH categories for simultaneous HS-DSCH/E-DCH operation.

Table 5.1n: Total RLC and MAC-hs parameters for 1.28 Mcps TDD HS-DSCH and E-DCH physical layer categories

HS-DSCH category E-DCH category	Categories 1/2/3 [Kbytes]	Categories 4/5/6 [Kbytes]	Categories 7/8/9 [Kbytes]	Category 10/11/12 [Kbytes]	Category 13/14/15 [Kbytes]
Category 1	100	100	150	200	300
Category 2	100	150	200	300	300
Category 3	150	150	200	300	300
Category 4	150	150	200	300	300
Category 5	150	200	300	300	400
Category 6	200	300	300	300	400

HS-DSCH category E-DCH category	Categories 16/17/18 [Kbytes]	Categories 19/20/21 [Kbytes]	Categories 22/23/24 [Kbytes]	Category 25[Kbytes]	Category 26 [Kbytes]
Category 1	150	150	200	200	200
Category 2	150	200	200	200	200
Category 3	150	200	300	200	200
Category 4	200	200	300	200	300
Category 5	200	200	300	200	300
Category 6	200	200	300	200	300

HS-DSCH category E-DCH category	Categories 27/28/29 [Kbytes]	Category 30 [Kbytes]
Category 1	300	300
Category 2	300	300
Category 3	300	400
Category 4	300	400
Category 5	300	400
Category 6	300	400

The values in the following Table 5.1n-a reflect the total buffer sizes of HS-DSCH and E-DCH categories for simultaneous HS-DSCH/E-DCH operation.

Table 5.1n-a: Total RLC and MAC-hs parameters for 1.28 Mcps TDD HS-DSCH and E-DCH physical layer categories (Multi-frequency HS-DSCH operation mode only)

HS-DSCH category E-DCH category	Categories 1/2/3 [Kbytes]	Categories 4/5/6 [Kbytes]	Categories 7/8/9 [Kbytes]	Category 10/11/12 [Kbytes]	Category 13/14/15 [Kbytes]	Category 16/17/18 [Kbytes]
Category 1	500	400	300	250	200	150
Category 2	500	400	300	250	200	150
Category 3	500	400	300	250	200	150
Category 4	500	400	300	300	200	150
Category 5	600	400	300	300	250	200
Category 6	600	500	400	300	250	200

HS-DSCH category E-DCH category	Categories 19/20/21 [Kbytes]	Categories 22/23/24 [Kbytes]	Categories 25/26/27 [Kbytes]	Category 28/29/30 [Kbytes]	Category 31/32/33 [Kbytes]	Category 34/35/36 [Kbytes]

Category 1	750	600	500	400	300	300
Category 2	750	600	500	400	300	300
Category 3	750	600	500	400	400	300
Category 4	750	600	500	400	400	300
Category 5	750	600	500	400	400	300
Category 6	750	600	500	400	400	300

HS-DSCH category E-DCH category	Category 37/38 [Kbytes]	Category 39/40/43/44 [Kbytes]	Category 41/42 [Kbytes]
Category 1	300	200	200
Category 2	300	200	200
Category 3	300	300	200
Category 4	300	300	200

The values in the following Table 5.1n-b reflect the total buffer sizes of HS-DSCH and E-DCH categories for simultaneous multi-frequency HS-DSCH/E-DCH operation.

Table 5.1n-b: Total RLC and MAC-hs/MAC-ehs parameters for 1.28 Mcps TDD HS-DSCH and E-DCH physical layer categories (Multi-frequency E-DCH and HS-DSCH operation mode only)

HS-DSCH category E-DCH category	Categories 1/2/3 [Kbytes]	Categories 4/5/6 [Kbytes]	Categories 7/8/9 [Kbytes]	Category 10/11/12 [Kbytes]	Category 13/14/15 [Kbytes]	Category 16/17/18 [Kbytes]
Category 1	1500	1150	1000	500	400	300
Category 2	1500	1150	1000	500	400	300
Category 3	1500	1150	1000	500 (Note)	400 (Note)	300 (Note)
Category 4	1500	1150	1000	500 (Note)	400 (Note)	400 (Note)
Category 5	1500	1150	1000	500 (Note)	400 (Note)	400 (Note)
Category 6	1500	1150	1000	-	-	-
Category 7	1500	1150	1000	-	-	-
Category 8	1500	1150	1000	-	-	-

HS-DSCH category E-DCH category	Categories 19/20/21 [Kbytes]	Categories 22/23/24 [Kbytes]	Categories 25/26/27 [Kbytes]	Category 28/29/30 [Kbytes]	Category 31/32/33 [Kbytes]	Category 34/35/36 [Kbytes]
Category 1	2300	1800	1150	750	500	400
Category 2	2300	1800	1150	750	500	400
Category 3	2300	1800	1250	750 (Note)	750 (Note)	400 (Note)
Category 4	2300	1800	1250	750 (Note)	750 (Note)	500 (Note)
Category 5	2300	1800	1250	750 (Note)	750 (Note)	500 (Note)
Category 6	2300	1800	1250	-	-	-
Category 7	2300	1800	1500	-	-	-
Category 8	2300	1800	1500	-	-	-

HS-DSCH category E-DCH category	Categories 37/38/ [Kbytes]	Categories 39/40/43/44 [Kbytes]	Categories 41/42 [Kbytes]
Category 1	400	300	250
Category 2	400	300	250

NOTE: Total RLC and MAC-hs/MAC-ehs parameters for E-DCH category 3, 4, 5 and HS-DSCH category form 10 to 18, 28 to 36 apply only for the UEs support smaller or equal to 3 carrier reception and transmission.

5.2 Reference UE radio access capability combinations

Based on required UE radio access capabilities to support reference RABs as defined in [2], this clause lists reference UE Radio Access capability combinations. Subclause 5.2.1 defines reference combinations of UE radio access capability parameters common for UL and DL. Subclauses 5.2.2 and 5.2.3 define reference combinations of UE radio access capability parameters that are separate for DL and UL respectively. A reference combination for common UL and DL parameters, one combination for UL parameters and one combination for DL parameters together relate to a UE with a certain implementation complexity, that allows support for one or several combined reference RABs. Combinations for UL and DL can be chosen independently. The bit rate supported by the selected combination of common UL and DL parameters needs to be at least as high as the maximum out of the supported bit rates of the selected combination of DL parameters and the selected combination of UL parameters. Different combinations have different levels of implementation complexity.

For defined reference RABs, it is possible to require a UE to meet a certain reference UE radio access capability combination. Each UE needs to have capabilities complying with a given reference radio access capability combination. Each individual radio access capability parameter as defined in subclause 5.1 shall be signalled.

The reference combination numbers shall not be used in the signalling of UE radio access capabilities between the UE and UTRAN. Reference UE radio access capability combinations provide default configurations that should be used as a basis for conformance testing against reference RABs.

The UE shall support at least the UE radio access capability parameter values as specified for the 12kbps UE reference class for both UL and DL.

Allowed values of UE capability parameters are limited by the defined range and granularity of values in subclause 5.1. Values might change depending on further definition of reference RABs for testing.

5.2.1 Combinations of common UE Radio Access Parameters for UL and DL

NOTE: Measurement-related capabilities are not included in the combinations. These capabilities are independent from the supported RABs.

Table 5.2.1.1: UE radio access capability parameter combinations, parameters common for UL and DL

Reference combination of UE Radio Access capability parameters common for UL and DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
PDCP parameters							
Support for RFC 2507	No	No	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1
Support for RFC 3095	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1
Support for RFC 3095 context relocation	No/Yes NOTE 1						
Support for loss-less SRNS relocation	No/Yes NOTE 1						
Maximum header compression context space	Not applicable for conformance testing						

Reference combination of UE Radio Access capability parameters common for UL and DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Maximum number of ROHC context sessions	Not applicable for conformance testing						
Support for Reverse decompression	No/Yes NOTE 1						
RLC parameters							
Total RLC AM buffer size (kbytes)	10	10	10	50	50	100	500
Maximum number of AM entities	4	4	4	5	6	8	8
Maximum RLC AM window size	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1
Multi-mode related parameters							
Support of UTRA FDD	Yes/No NOTE 1						
Support of UTRA TDD 3.84 Mcps	Yes/No NOTE 1						
Support of UTRA TDD 1.28 Mcps	Yes/No NOTE 1						
Multi-RAT related parameters							
Support of GSM	Yes/No NOTE 1						
Support of multi-carrier	Yes/No NOTE 1						
Support of UTRAN to GERAN Network Assisted Cell Change	Yes/No						
Support of E-UTRA FDD	Yes/No NOTE 1						
Support of E-UTRA TDD	Yes/No NOTE 1						
Security parameters							
Support of ciphering algorithm UEA0	Yes						
Support of ciphering algorithm UEA1	Yes						
Support of ciphering algorithm UEA2	Yes						
Support of integrity protection algorithm UIA1	Yes						
Support of integrity protection algorithm UIA2	Yes						
UE positioning related parameters							
Standalone location method(s) supported	Yes/No NOTE 1						
UE based OTDOA supported	Yes/No NOTE 1						
Network assisted GPS support	Network based / UE based / Both/ None NOTE 1						
Network Assisted GANSS support List	Per supported GANSS NOTE 1						
>GANSS ID	Galileo / SBAS / Modernized GPS / QZSS / GLONASS/ BDS NOTE 1						
>SBAS IDs	WAAS / EGNOS / MSAS / GAGAN NOTE 1						
>GANSS mode	Network based / UE based / Both/ None NOTE 1						
>GANSS Signal ID	0..7 NOTE 1						
>GANSS Signal IDs	Yes/No (per GANSS signal) NOTE 1						
>Support for GANSS timing of cell frames measurement	Yes/No NOTE 1						
>Support for GANSS Carrier-Phase Measurement	Yes/No NOTE 1						
>Support for non-native assistance choices	Yes/No NOTE 1						

Reference combination of UE Radio Access capability parameters common for UL and DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Support for GPS timing of cell frames measurement	Yes/No NOTE 1						
Support for IPDL	Yes/No NOTE 1						
Support for Rx-Tx time difference type 2 measurement	Yes/No NOTE 1						
Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states	Yes						
Support for SFN-SFN observed time difference type 2 measurement	Yes/No NOTE 1						
Additional Positioning method support List	Per Additional Positioning method NOTE 1						
>AddPos ID	Barometric Pressure, WLAN, Bluetooth, MBS NOTE 1						
>AddPos mode	Standalone / UE assisted / Both NOTE 1						
RF parameters for FDD							
Radio frequency bands	The radio frequency bands defined in [4]						
UE power class	3 / 4 NOTE 1						
Tx/Rx frequency separation	Defined in [4] for the respective supported radio frequency band						
RF parameters for TDD 3.84 Mcps							
Radio frequency bands	A / b / c / a+b / a+c / b+c / a+b+c NOTE 1						
UE power class	2 / 3 NOTE 1						
RF parameters for TDD 7.68 Mcps							
Radio frequency bands	A / b / c / a+b / a+c / b+c / a+b+c NOTE 1						
UE power class	2 / 3 NOTE 1						
RF parameters for TDD 1.28 Mcps							
Radio frequency bands	A / b / c / a+b / a+c / b+c/ a+b+c NOTE 1						
UE power class	2 / 3 NOTE 1						

NOTE 1: Options represent different combinations that should be supported with Conformance Tests.

5.2.2 Combinations of UE Radio Access Parameters for DL

Table 5.2.2.1: UE radio access capability parameter combinations, DL parameters

Reference combination of UE Radio Access capability parameters in DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Transport channel parameters							
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640 (FDD) 1280(TDD)	1280	3840	3840	6400	10240	20480
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640	640	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	NA (FDD) 1280(TDD)	1280	3840	3840	6400	10240	20480(1) 10240(2) NOTE 5

Reference combination of UE Radio Access capability parameters in DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Maximum number of simultaneous transport channels	4	8 NOTE 4	8 NOTE 4	8 NOTE 4	8 NOTE 4	8 NOTE 4	16 NOTE 4
Maximum number of simultaneous CCTrCH (FDD)	1	1 NOTE 3	1 NOTE 3	1 NOTE 3	1 NOTE 3	1 NOTE 3	1 NOTE 3
Maximum number of simultaneous CCTrCH (TDD)	1 NOTE 3	2 NOTE 3	3 NOTE 3	3 NOTE 3	3 NOTE 3	4 NOTE 3	4 NOTE 3
Maximum total number of transport blocks received within TTIs that end at the same time	4	8	8	16	32	64	96
Maximum number of TFC	16	32	48	96	128	256	1024
Maximum number of TF	32	32	64	64	64	128	256
Support for turbo decoding	No (FDD) Yes (TDD)	Yes	Yes	Yes	Yes	Yes	Yes
Support for loss-less DL RLC PDU size change	No	No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Physical channel parameters (FDD)							
Maximum number of DPCH codes to be simultaneously received	1	1	1	1	3	3	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH, S-CCPCH).	1200	1200	2400	4800	19200	28800	57600
Support for SF 512 and 80 ms TTI for DPCH	No	No	No	No	No	No	No
Support of HS-PDSCH	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Physical channel parameters (TDD 3.84 Mcps)							
Maximum number of timeslots per frame	1	1	2	4	5	10	12
Maximum number of physical channels per frame	5	8	9	14	28	64	136
Minimum SF	16	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1/16 NOTE 1
Support of PDSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Support of HS-PDSCH	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Maximum number of physical channels per timeslot	5	8	9	9	9	9	13
Physical channel parameters (TDD 7.68 Mcps)							
Maximum number of timeslots per frame	1	1	2	4	5	10	12
Maximum number of physical channels per frame	5	8	9	14	28	64	136
Minimum SF	32	32	32	32	1/32 NOTE 1	1/32 NOTE 1	1/32 NOTE 1
Support of PDSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Support of HS-PDSCH	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Maximum number of physical channels per timeslot	5	8	9	9	9	9	13
Physical channel parameters (TDD 1.28 Mcps)							
Maximum number of timeslots per subframe	1	1	2	3	4	6	6
Maximum number of physical channels per subframe	5	8	12	18	43	77	77
Minimum SF	16	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1

Reference combination of UE Radio Access capability parameters in DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Support of PDSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Support of HS-PDSCH	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Maximum number of physical channels per timeslot	5	8	11	14	14	14	14
Support of 8PSK	No	No	No	No	No	No	Yes

NOTE 1: Options represent different combinations that should be supported with conformance tests.

NOTE 3: The given number does not contain the BCH CCTrCH of the current cell nor of the neighbour cells.

NOTE 4: The given number does not contain the BCH of the neighbour cell.

NOTE 5: (1) For FDD and 3.84/7.68 Mcps TDD (2) For 1.28 Mcps TDD.

The reference combinations for HS-DSCH capabilities are shown in tables 5.2.2.2, 5.2.2.3 and 5.2.2.4.

Table 5.2.2.2: FDD UE radio access capability parameter combinations, DL HS-DSCH parameters

Reference combination	1.2 Mbps class	3.6 Mbps class	7 Mbps class	10 Mbps class
FDD HS-DSCH category	Category 1	Category 5	Category 7	Category 9

Table 5.2.2.3: 1.28 Mcps TDD UE radio access capability parameter combinations, DL HS-DSCH parameters

Reference combination	0.5 Mbps class	1.1 Mbps class	1.6 Mbps class	2.2 Mbps class	2.8 Mbps class
1.28 Mcps TDD HS-DSCH Category	Category 1	Category 4	Category 7	Category 10	Category 13

Table 5.2.2.3-a: 1.28 Mcps TDD UE radio access capability parameter combinations, DL HS-DSCH parameters (Multi-frequency HS-DSCH operation mode only)

Reference combination	14 Mbps class	11.2 Mbps class	8.4 Mbps class	7.0 Mbps class	5.6 Mbps class	4.2 Mbps class
1.28 Mcps TDD HS-DSCH Category	Category 1	Category 4	Category 7	Category 10	Category 13	Category 10

Table 5.2.2.4: 3.84 Mcps TDD UE radio access capability parameter combinations, DL HS-DSCH parameters

Reference combination	1.2 Mbps class	2.4 Mbps class	3.6 Mbps class	7.3 Mbps class	10.2 Mbps class
3.84Mcps TDD HS-DSCH category	Category 1	Category 3	Category 5	Category 8	Category 9

Table 5.2.2.4a: 7.68 Mcps TDD UE radio access capability parameter combinations, DL HS-DSCH parameters

Reference combination	1.2 Mbps class	2.4 Mbps class	3.6 Mbps class	7.3 Mbps class	10.6 Mbps class
7.68Mcps TDD HS-DSCH category	Category 1	Category 3	Category 5	Category 9	Category 11

The reference combinations for E-DCH capabilities are shown in tables 5.2.2.5, 5.2.2.6 and 5.2.2.7.

Table 5.2.2.5: FDD UE radio access capability parameter combinations, UL E-DCH parameters

Reference combination	0.7296 Mbps class	1.4592 Mbps class	2 Mbps class	2.9185 Mbps class	5.76 Mbps class
FDD E-DCH category	Category 1	Categories 2 and 3	Category 5	Category 4	Category 6

Table 5.2.2.6: 3.84Mcps TDD UE radio access capability parameter combinations, UL E-DCH parameters

Reference combination	1.2 Mbps class	2.4 Mbps class	3.6 Mbps class	5.3 Mbps class	9.2 Mbps class
3.84Mcps TDD E-DCH category	Category 1	Category 2	Category 3	Category 4	Category 6

Table 5.2.2.7: 7.68Mcps TDD UE radio access capability parameter combinations, UL E-DCH parameters

Reference combination	1.2 Mbps class	2.4 Mbps class	3.6 Mbps class	5.3 Mbps class	10.6 Mbps class
7.68Mcps TDD E-DCH category	Category 1	Category 2	Category 3	Category 4	Category 6

Table 5.2.2.8: 1.28Mcps TDD UE radio access capability parameter combinations, UL E-DCH parameters

Reference combination	0.5 Mbps class	0.8 Mbps class	1.1 Mbps class	1.6 Mbps class	2.2 Mbps class
1.28Mcps TDD E-DCH category	Category 1	Category 2	Category 3	Category 4	Category 5 and 6

5.2.3 Combinations of UE Radio Access Parameters for UL

Table 5.2.3.1: UE radio access capability parameter combinations, UL parameters

Reference combination of UE Radio Access capability parameters in UL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class
Transport channel parameters						
Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant	640	640(FDD) 1280 (TDD)	3840	3840	6400	10240
Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	NA	NA(FDD) 1280 (TDD)	3840	3840	6400	10240
Maximum number of simultaneous transport channels	4	4	8	8	8	8
Maximum number of simultaneous CCTrCH(TDD only)	1 NOTE 3	1 NOTE 3	2 NOTE 3	2 NOTE 3	2 NOTE 3	2 NOTE 3
Maximum total number of transport blocks transmitted within TTIs that start at the same time	4	4	8	8	16	32
Maximum number of TFC	16	16	32	48	64	128
Maximum number of TF	32	32	32	32	32	64
Support for turbo encoding	No	No (FDD) Yes (TDD)	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)						
Maximum number of DPDCH bits transmitted per 10 ms	600	1200	2400	4800	9600	19200
Support of E-DPDCH	No	No	Yes/No	Yes/No	Yes/No	Yes/No
Physical channel parameters (TDD 3.84 Mcps)						

Reference combination of UE Radio Access capability parameters in UL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class
Maximum Number of timeslots per frame	1	1	2	3	7	9
Maximum number of physical channels per timeslot	1	1	1	1	1	2
Minimum SF	8	4	2	2	2	2
Support of PUSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes
Support of E-PUCH	No	Yes/No	Yes	Yes	Yes	Yes
Physical channel parameters (TDD 7.68 Mcps)						
Maximum Number of timeslots per frame	1	1	2	3	7	9
Maximum number of physical channels per timeslot	1	1	1	1	1	2
Minimum SF	16	8	4	4	4	4
Support of PUSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes
Support of E-PUCH	No	Yes/No	Yes	Yes	Yes	Yes
Physical channel parameters (TDD 1.28 Mcps)						
Maximum Number of timeslots per subframe	1	1	2	3	5	5
Maximum number of physical channels per timeslot	1	2/1 NOTE 1	2	2	2	2
Minimum SF	8	4	2	2	2	2
Support of PUSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes
Support of 8PSK	No	No	No	No	No	No
Support of E-PUCH	No	Yes/No	Yes	Yes	Yes	Yes

NOTE 1: Options represent different combinations that should be supported with conformance tests.

NOTE 3: This number does not contain the RACH CCTrCH.

Annex A (informative): Change history

Change history TR 25.926							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
03/2000	RP-07	RP-000052	-	-	Approved at TSG-RAN #7 and placed under Change Control	-	3.0.0
06/2000	RP-08	RP-000229	003	4	Updated Ad Hoc changes	3.0.0	3.1.0
	RP-08	RP-000229	008		CPCH note to the parameter definitions	3.0.0	3.1.0
09/2000	RP-09	RP-000368	010	1	TDD DL Physical Channel Capability per Timeslot	3.1.0	3.2.0
	RP-09	RP-000368	012		Change to UE Capability definition	3.1.0	3.2.0
	RP-09	RP-000368	013		Physical parameter changes	3.1.0	3.2.0
12/2000	RP-10	RP-000578	014		Removal of example RABs	3.2.0	25.306 3.0.0
	RP-10	RP-000578	015	2	Correction on parameter "Maximum total number of transport blocks…"	3.2.0	25.306 3.0.0
	RP-10	RP-000578	016		Change to UE multi-RAT capability	3.2.0	25.306 3.0.0
	RP-10	RP-000578	017		Change from TR 25.926 to TS 25.306	3.2.0	25.306 3.0.0

Change history TS 25.306							
Date	TSG #	TSG Doc.	CR	Rev	Cat	Subject/Comment	New
03/2001	RP-11	RP-010024	001			Downlink rate matching limitation	3.1.0
	RP-11	RP-010024	005			Miscellaneous corrections and editorial clean-up	3.1.0
	RP-11	RP-010024	007			Maximum number of AM entity	3.1.0
	RP-11	RP-010024	008	1		Clarification of maximum number of TF	3.1.0
	RP-11	RP-010024	010	1		Removal of the RLC PU concept	3.1.0
	RP-11	RP-010039	003	1		1.28 Mcps TDD	4.0.0
	RP-11	RP-010043	006	1		DSCH related updates for UE capabilities for the UE Radio Access Capability parameter combinations	4.0.0
	RP-11	RP-010039	011	1		Addition of ROHC	4.0.0
06/2001	RP-12	RP-010307	013			Clarification on the number of CCTrCHs to be received simultaneously by the UE	4.1.0
	RP-12	RP-010321	009	6		Modified UE Capability for CPCH	4.1.0
09/2001	RP-13	RP-010540	017			Maximum number of simultaneous transport channels	4.2.0
	RP-13	RP-010540	019			Clarification of FDD physical channel parameters	4.2.0
	RP-13	RP-010540	021			Support of dedicated pilots for channel estimation	4.2.0
	RP-13	RP-010540	023			Correction of UE capabilities regarding Rx-Tx time difference type 2 measurements	4.2.0
12/2001	RP-14	RP-010758	026			Correction on UL parameter "Maximum number of DPDCH bits per 10 ms"	4.3.0
03/2002	RP-15	RP-020228	035			Clarification on ICS version within UE radio access capabilities	4.4.0
	RP-15	RP-020242	037	1		Clarification of Maximum number of TFC in the TFCS	4.4.0
	RP-15	RP-020237	039			Support of UP measurement reporting in CELL_PCH/URA_PCH	4.4.0
	RP-15	RP-020094	029	2		HSDPA UE capabilities	5.0.0
06/2002	RP-16	RP-020325	044			Security Capabilities	5.1.0
	RP-16	RP-020439	040	1		Corrections in HSDPA UE capabilities	5.1.0
	RP-16	RP-020341	041			HSDPA TDD UE capabilities	5.1.0
	RP-16	RP-020341	045			DPCH capabilities with simultaneous HSDPA configuration	5.1.0
	RP-16	RP-020345	046			RFC 3095 context relocation	5.1.0
	RP-17	RP-020555	047			Introduction of HS-PDSCH capability definition and QPSK-only UE categories	5.2.0
	RP-17	RP-020555	048			Mandatory Support of dedicated pilots for channel estimation	5.2.0
12/2002	RP-18	RP-020717	054	1		UE capability for RLC window size	5.3.0
	RP-18	RP-020857	051			UE capability for RFC3095 operation	5.3.0
	RP-18	RP-020733	049	3		HSDPA L2 buffer sizes	5.3.0
	RP-18	RP-020733	056			Correction to Access Stratum release indicator	5.3.0
	RP-18	RP-020733	057			Dedicated pilot bits for HS-DSCH	5.3.0
03/2003	RP-19	RP-030113	061			Network Assisted Cell Change from UTRAN to GERAN	5.4.0
	RP-19	RP-030113	062			Modification to the number of soft channel bits required for HS-DSCH (TDD)	5.4.0
06/2003	RP-20	RP-030291	067			Extension of 32 kbps UE capability class	5.5.0
	RP-20	RP-030301	068			Correction of maximum transport block sizes for UE categories	5.5.0
	RP-20	RP-030301	069			SF1 corrections for TDD	5.5.0
09/2003	RP-21	RP-030493	072			Addition of memory unit in UE Radio Access Capabilities tables	5.6.0
	RP-21	RP-030482	075			Correction of Maximum hc context space capability	5.6.0

Change history TS 25.306							
	RP-21	RP-030482	078			UE positioning support in the UE	5.6.0
12/2003	RP-22	RP-030623	082			Removal of reference combinations for HS-DSCH capabilities	5.7.0
	RP-22	RP-030614	085			Definition of minimum UE capability class	5.7.0
	RP-22	RP-030614	088			TDD Radio Access Parameters for UL 32kbs class UE's	5.7.0
	RP-22	RP-030623	089			Correction to HSDPA capability	5.7.0
	RP-22	-	-			Upgrade to Release 6 - no technical change	6.0.0
03/2004	RP-23	RP-040102	093			Simultaneous Reception of S-CCPCH and HS-DSCH	6.1.0
	RP-23	RP-040102	095			Correction to memory check in the UE	6.1.0
06/2004	RP-24	RP-040223	096			Correction to memory handling in the UE	6.2.0
12/2004	RP-26	RP-040479	098			Alignment of MaxHcContextSpace	6.3.0
03/2005	RP-27	RP-050065	101			Support of DSCH	6.4.0
	RP-27	RP-050067	103			Lossless DL RLC PDU size change	6.4.0
	RP-27	RP-050154	104	2		Inclusion of UE capabilities for Enhanced Uplink	6.4.0
	RP-27	RP-050083	105			Support of ROHC mandatory	6.4.0
04/2005						Inclusion of RP-27 change history in this table.	6.4.1
06/2005	RP-28	RP-050314	0107			Introduction of MBMS capability Part A and B	6.5.0
	RP-28	RP-050305	0109			Feature Clean Up: Removal of 80 ms TTI for DCH for all other cases but when the UE supports SF512	6.5.0
	RP-28	RP-050308	0111			Feature Clean-up: Removal of DSCH (FDD)	6.5.0
	RP-28	RP-050309	0113			Feature Clean Up: Removal of CPCH	6.5.0
	RP-28	RP-050310	0115			Feature Clean Up: Removal of dedicated pilot as sole phase reference	6.5.0
	RP-28	RP-050311	0117			Feature Clean Up: Removal of DRAC	6.5.0
	RP-28	RP-050327	0118			E-DCH L2 Buffer sizes	6.5.0
	RP-28	RP-050317	0119			RLC LI Optimization for VoiP	6.5.0
09/2005	RP-29	RP-050480	0120			Removal RLC-SDU alignment capability	6.6.0
	RP-29	RP-050480	0121			Feature Clean Up: Removal of DRAC	6.6.0
	RP-29	RP-050480	0122			Adding the UE capability for FDD Radio frequency bands	6.6.0
	RP-29	RP-050475	0123			F-DPCH support for HS-DSCH supporting Ues	6.6.0
	RP-29	RP-050468	0124			Introduction of MBMS capability for TDD	6.6.0
	RP-29	RP-050468	0125			Correction of UE capability for MBMS	6.6.0
	RP-29	RP-050470	0126			Correction on table 5.1g (FDD E-DCH physical layer categories)	6.6.0
	RP-29	RP-050470	0127			E-DCH L2 Buffer sizes	6.6.0
	RP-29	RP-050469	0128			Removal of fixed position for S-CCPCHs carrying MBMS channels	6.6.0
	RP-29	RP-50461	0130			Correction of TB size and soft channel bits number for 1.28 Mcps TDD	6.6.0
	RP-29	RP-050484	0131			Introduction of battery-limited device indication in UE capability	6.6.0
	RP-29	RP-050480	0132			Introduction of REL-6 Access Stratum release indicator	6.6.0
12/2005	RP-30	RP-050796	0133			Tx/Rx frequency separation capability (FDD)	6.7.0
	RP-30	RP-050784	0134			Feature cleanup and other leftovers	6.7.0
	RP-30	RP-050790	0135	1		E-DCH L2 Buffer sizes	6.7.0
	RP-30	RP-050861	0136	1		Introduction of Support of Handover to GAN	6.7.0
03/2006	RP-31	RP-060090	0138			Correction to number of RLC AM instances for HS	6.8.0
	RP-31	RP-060093	0141	1		Inter-RAT PS Handover capability	6.8.0
	RP-31	RP-060098	0139			7.68 Mpcs TDD Option (Release 7)	7.0.0
	RP-31	RP-060099	0140			Introduction of REL-7 access stratum release indicator	7.0.0
09/2006	RP-33	RP-060614	0144			Introduction of SIB 11bis	7.1.0
	RP-33	RP-060586	0145			Introduction of 3.84 Mcps and 7.68 McpsTDD E-DCH	7.1.0
12/2006	RP-34	RP-060713	0146	1		Introduction of the new security algorithms UEA2 and UIA2	7.2.0
03/2007	RP-35	RP-070151	0147			TTI values for MCCH RB configuration	7.3.0
	RP-35	RP-070150	0150			Correction of the HS-DSCH physical layger categories of 1.28Mcps TDD	7.3.0
	RP-35	RP-070157	0152			Introduction of 1.28 Mcps TDD E-DCH	7.3.0
	RP-35	RP-070161	0153	2		Introducing MIMO in UE Capability specification	7.3.0
	RP-35	RP-070163	0155			Introduction of 64QAM downlink in 25.306	7.3.0
06/2007	RP-36	RP-070402	0151	2		Introducing 16QAM uplink support	7.4.0
	RP-36	RP-070395	0156			Introduction of GAN PS handover	7.4.0
	RP-36	RP-070406	0158			Support of RFC 3095 (ROHC) Compression	7.4.0
	RP-36	RP-070400	0159			MBMS FDD and TDD Physical Layer Improvements	7.4.0
	RP-36	RP-070398	0160			GANSS support to UE capabilities	7.4.0
	RP-36	RP-070403	0161			UE capabilities for HS-DSCH reception in CELL_PCH, URA_PCH and CELL_FACH states	7.4.0
09/2007	RP-37	RP-070670	0163	1		Introduction of HS-DSCH category for combined MIMO and DL64QAM	7.5.0
	RP-37	RP-070670	0164			Code rate limitation for UE HSDPA Categories 13 and 15	7.5.0
	RP-37	RP-070625	0166			MBMS UE Capability for mapping MTCH/MSCH to legacy S-CCPCH	7.5.0
	RP-37	RP-070670	0167			HSPA+ L2 Buffering	7.5.0
	RP-37	RP-070634	0168	1		UE capabilities for Rel-7, with 'improved L2' optional	7.5.0
	RP-37	RP-070627	0171	2		Specification of HS-SCCH less memory requirement	7.5.0
	RP-37	RP-070650	0173			Introduction of the Multi-Carrier HS-DSCH physical layer categories for 1.28Mcps TDD	7.5.0
	RP-37	RP-070764	0174			For the creation of RRC Rel-8	8.0.0
12/2007	RP-38	RP-070900	0176	1		Correction to memory requirement for HS-SCCH less operation	8.1.0
	RP-38	RP-070903	0178			Introduction of an additional UE category for 1.28Mcps TDD E-DCH	8.1.0
	RP-38	RP-070901	0180			Clarification on MIMO and 64QAM UE categories	8.1.0

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	RP-38	RP-070902	0182			More improvement on dedicated carrier for 1.28 Mcps TDD MBMS	8.1.0
	RP-38	RP-070900	0184			UE capability for E-DCH transmission time restriction and UE DRX in CPC	8.1.0
	RP-38	RP-070905	0186			Correction to Control Information transmission with two logical channels	8.1.0
	RP-38	RP-070910	0187			Introduction of CS voice over HSPA	8.1.0
	RP-38	RP-070907	0188			Introduction of HS-DSCH category for combined MIMO and DL64QAM	8.1.0
03/2008	RP-39	RP-080185	0190	-		Clarification of uplink multicode capability for 1.28Mcps TDD	8.2.0
	RP-39	RP-080188	0192	-		Code rate limitations for HS-DSCH UE cat 13 and 15	8.2.0
05/2008	RP-40	RP-080417	0193	1		Introduction of 64QAM in UE capability specification for LCR TDD	8.3.0
09/2008	RP-41	RP-080682	0195	-		Ki restriction for UE HS-DSCH categories 13 and 15	8.4.0
	RP-41	RP-080694	0196	1		Introduction of E-UTRA support	8.4.0
12/2008	RP-42	RP-081024	0200	-		Introduction of additional UE categories for 1.28Mcps TDD 64QAM DL	8.5.0
	RP-42	RP-081022	0201	2		Introduction of support of “Enhanced Uplink for CELL_FACH State in FDD” and “Improved L2 for uplink”	8.5.0
	RP-42	RP-081030	0202	2		Addition of UE categories for dual cell HSDPA	8.5.0
	RP-42	RP-081029	0203	-		UE positioning capabilities for support of additional navigation satellite systems	8.5.0
	RP-42	RP-081102	0206	1		25.306 CR Introduction of UE Measurement Capability on frequency adjacent to intra-frequency	8.5.0
	RP-42	RP-081033	0207	-		Introduction of optional features in Release 8	8.5.0
	RP-42	RP-081127	0208	2		Support for 3.84 Mcps MBSFN IMB operation	8.5.0
03/2009	RP-43	RP-090114	0213	-		Correction of RF parameters in 25.306	8.6.0
	RP-43	RP-090147	0214	-		25.306 CR on Introduction of CPC for 1.28Mcps TDD	8.6.0
	RP-43	RP-090151	0216	-		Value range for UE Measurement Capability on a frequency adjacent to intra-frequency	8.6.0
	RP-43	RP-090144	0218	-		Update to UE capability for IMB MCCH reception	8.6.0
	RP-43	RP-090149	0219	-		Introduction of MIMO for 1.28Mcps TDD	8.6.0
06/2009	RP-44	RP-090506	0220	1		Add description about the parameter of Need for Idle Interval	8.7.0
	RP-44	RP-090519	0223	-		Clarification for the code rate restriction for Cat19	8.7.0
09/2009	RP-45	RP-090908	0228	1		E-DCH TTI restriction for 16QAM	8.8.0
	RP-45	RP-090902	0232	-		Making features “Using special value of HE field to indicate end of an SDU for RLC AM” optional, “Removing the constraint that the same HS-SCCH should be used in contiguous TTIs” and octet aligned HS-DSCH transport block table optional for non-64QAM UEs	8.8.0
	RP-45	RP-090910	0233	1		Clarification on UE category of enhanced CELL_FACH for 1.28Mcps TDD	8.8.0
	RP-45	RP-090901	0246	-		Enhancing the Category Handling in UMTS	8.8.0
09/2009	RP-45	RP-090921	0224	1		Introduction of Band XIX	9.0.0
	RP-45	RP-090925	0230	-		Introduction of TxAA extension for non-MIMO UEs	9.0.0
	RP-45	RP-090924	0231	-		Introduction of Dual Cell operation with MIMO	9.0.0
12/2009	RP-46	RP-091315	0248	1		Making features “Absolute priority reselection to GERAN”, “Absolute priority reselection to UTRA inter-frequency” optional (Option1)	9.1.0
	RP-46	RP-091338	0249	1		L2 buffer sizes for DC-MIMO and E-DCH category combinations	9.1.0
	RP-46	RP-091336	0250	-		Email discussion outcome for [67b#17] UMTS: DC-HSUPA in 25.306	9.1.0
	RP-46	RP-091339	0252	-		RAN1 RAN2 alignment on TxAA	9.1.0
	RP-46	RP-091347	0253	2		Introduction of TS0 capability for 1.28Mcps TDD	9.1.0
	RP-46	RP-091259	0255	-		Support for carrier-specific STTD configuration for DC-HSDPA	9.1.0
03/2010	RP-47	RP-100298	0256	-		Clarification of code rates limitation for category 25/27	9.2.0
	RP-47	RP-100306	0258	-		Release 9 UE Capability: UTRA Home Node B Inbound Mobility related features	9.2.0
	RP-47	RP-100299	0264	-		UE cat17/18 and signalling of Single Stream MiMo capability	9.2.0
	RP-47	RP-100297	0265	1		dual band capability	9.2.0
	RP-47	RP-100282	0266	-		Bounds to RoHC requirements for UEs supporting IMS	9.2.0
06/2010	RP-48	RP-100547	0267	1		Corrections to Inter-band measurement capability	9.3.0
	RP-48	RP-100549	0268	-		Support MAC-ehs in Single Stream MIMO case	9.3.0
09/2010	RP-49	RP-100846	0272	-		Clarification on the code rate restriction in HS-DSCH UE Categories 19	9.4.0
	RP-49	RP-100857	0273	-		Clarification on the code rate restriction in HS-DSCH UE Categories 25 and 27	9.4.0
	RP-49	-	-	-		v10.0.0 created based on v9.4.0	10.0.0
	RP-49	RP-100863	0275	1		Introduction of 4C-HSDPA categories	10.0.0
12/2010	RP-50	RP-101366	0278	1		Correction for value range of total RLC AM, MAC-hs and MAC-ehs buffer size	10.1.0
	RP-50	RP-101211	0279	-		Correction for value range of total RLC AM, MAC-hs and MAC-ehs buffer size	10.1.0
	RP-50	RP-101213	0280	1		Introduction of REL-10 access stratum release indicator	10.1.0
	RP-50	RP-101212	0282	1		Introduction of REL-9 access stratum release indicator	10.1.0
	RP-50	RP-101366	0283	-		Corrections on 25.306 for 4C-HSDPA	10.1.0
	RP-50	RP-101365	0284	-		introduction of MC-HSUPA for 1.28Mcps TDD	10.1.0
03/2011	RP-51	RP-110268	0287	-		Correction of buffer sizes for 64QAM+MIMO, DC-HSDPA categories	10.2.0
	RP-51	RP-110279	0289	-		Extend the carrier capability for Multi-Carrier HSDPA for 1.28Mcps TDD	10.2.0

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	RP-51	RP-110264	0293	-		Clarification to the carrier capability in Multi-Carrier HSDPA for 1.28Mcps TDD	10.2.0
	RP-51	RP-110282	0295	-		Counter proposal to R2-110749 on UE capabilities for MDT	10.2.0
	RP-51	RP-110332	0297	1		Combination of DB-HSDPA and MIMO	10.2.0
06/2011	RP-52	RP-110825	0298	1		Removing RoHC discrepancy	10.3.0
	RP-52	RP-110829	0301	2		Addition of the missing Total RLC and MAC-hs parameters in UE HS-DSCH categories for 1.28Mcps TDD	10.3.0
	RP-52	RP-110838	0302	1		Addition of the missing Total RLC and MAC-hs parameters in UE dual-carrier HS-DSCH categories for 1.28Mcps TDD	10.3.0
	RP-52	RP-110838	0303	-		Correction to UE capability Support of MIMO with dual cell dual band operation	10.3.0
	RP-52	RP-110829	0306	1		Correction to HS-DSCH physical layer categories for 1.28 Mcps TDD	10.3.0
	RP-52	RP-110672	0317	-		Introduction of measurement ID extension	10.3.0
09/2011	RP-53	RP-111285	0321	2		Introduction of optional Rel-10 features	10.4.0
	RP-53	RP-111282	0329	-		Clarification on DCHSUPA dependence on MAC-i/is	10.4.0
	RP-53	RP-111278	0331	1		Correction to UE capability parameters for handover to CSG cell	10.4.0
12/2011	RP-54	RP-111715	0332	-		Correction of capability table	10.5.0
	RP-54	RP-111715	0333	2		Addition of the missing value ranges for 1.28Mbps TDD capabilities	10.5.0
	RP-54	RP-111715	0336	-		Introduction of the frequency specific compressed mode	10.5.0
12/2011	RP-54	-	-	-		TS 25.306 v11.0.0 was created based on v10.5.0	11.0.0
	RP-54	RP-111717	0334	-		Introduction of 8C-HSDPA in 25.306	11.0.0
	RP-54	RP-111718	0337	-		Introduction of uplink CLTD in 25.306	11.0.0
	RP-54	RP-111719	0338	-		Introduction of uplink OLTD in 25.306	11.0.0
03/2012	RP-55	RP-120327	0343	-		Add up several missing optional capabilities	11.1.0
	RP-55	RP-120327	0352	1		Additional value for Total RLC AM Buffer Size value range	11.1.0
06/2012	RP-56	RP-120812	0357	-		Correction to definition of enhanced inter-frequency measurements without CM	11.2.0
	RP-56	RP-120815	0359	2		Extend the carrier capability for two-carrier HSDPA for 1.28Mcps TDD	11.2.0
09/2012	RP-57	RP-121369	0371	1		Introduction of Multiflow in TS 25.306	11.3.0
	RP-57	RP-121363	0373	-		Correction on the carrier capability for two-carrier HSDPA for 1.28Mcps TDD	11.3.0
	RP-57	RP-121359	0378	-		Voice support Capabilities	11.3.0
12/2012	RP-58	RP-121923	0389	-		Adding the capability of supporting MAC-ehs window size extension	11.4.0
	RP-58	RP-121818	0390	1		CR on rSRVCC capability indicator to 25.306	11.4.0
	RP-58	RP-121942	0391	1		Introduction of 4Tx-HSDPA in 25.306	11.4.0
	RP-58	RP-121941	0392	1		Introduction of Further Enhancements to CELL_FACH in 25.306	11.4.0
	RP-58	RP-121943	0393	1		Introduction of further Multiflow agreements in TS 25.306.	11.4.0
	RP-58	RP-121945	0394	1		Introduction of MIMO with 64QAM HSUPA in 25.306	11.4.0
	RP-58	RP-121937	0396	-		Introduction of UM RLC re-establishment via reconfiguration	11.4.0
	RP-58	RP-121942	0399	-		L2 buffer sizes for 4Tx-HSDPA and UL MIMO with 64QAM combinations	11.4.0
	RP-58	RP-121938	0400	-		Introduction of non-contiguous multi-cell operation	11.4.0
	RP-58	RP-121958	0401	-		Introduction of Inter-frequency measurements on configured carriers without compressed mode	11.4.0
	RP-58	RP-121922	0403	-		Introduction of Multiple Frequency Band Indicators capability	11.4.0
03/2013	RP-59	RP-130248	0404	-		Introduction of definitions, symbols and abbreviations	11.5.0
	RP-59	RP-130249	0405	-		Additional value for Total RLC AM Buffer Size value range	11.5.0
	RP-59	RP-130248	0407	1		Introduction of Cells excluded from detected set measurements	11.5.0
	RP-59	RP-130239	0411	-		Introducing an indication for support of the extended range of HS-DPCCH power offset	11.5.0
	RP-59	RP-130236	0413	-		Extend 3G ANR Applicable RRC State	11.5.0
	RP-59	RP-130249	0414	-		Introduction of the frequency specific compressed mode for the intra-band non-contiguous operation	11.5.0
	RP-59	RP-130239	0415	1		Simultaneous operation of Multiflow HSDPA and STTD	11.5.0
06/2013	RP-60	RP-130806	0417	1		Cleanups for FE_FACH related capabilities	11.6.0
	RP-60	RP-130806	0418	-		Adding up the capability dependency for non-contiguous multi_cell	11.6.0
	RP-60	RP-130809	0419	-		Addition of abbreviations in 25.306	11.6.0
	RP-60	RP-130806	0425	1		Clarification of support for Multiflow with MIMO operation in different bands	11.6.0
09/2013	RP-61	RP-131311	0433	-		Introduction of UE capability signalling for wideband RSRQ measurements	11.7.0
12/2013	RP-62	RP-131981	0439	-		Introduction of capability bit for E-UTRA Multiple Frequency Band Indicators	11.8.0
	RP-62	RP-131995	0440	-		Cleanup of wideband RSRQ measurement capability	11.8.0
	RP-62	RP-132004	0444	-		Introduction of non-contiguous multi-cell with MIMO	11.8.0
	RP-62	RP-131995	0445	-		Editorial correction	11.8.0
	RP-62	RP-131997	0441	1		Introduction of BDS in UTRAN	12.0.0
	RP-62	RP-131996	0442	1		Introduction of HSPA signalling enhancements for more efficient resource usage for LCR TDD	12.0.0
03/2014	RP-63	RP-140347	0446	-		Introduction of Cell_FACH with Second DRX to 3G Logged MDT	12.1.0
06/2014	RP-64	RP-140880	0449	-		Introduction of Hetnet mobility enhancements	12.2.0
	RP-64	RP-140875	0450	-		Introduction of cell reselection indication during uplink transmission with common E-DCH	12.2.0

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09/2014	RP-65	RP-141503	0464	-		Introduction of DSAC and PPAC update in CELL_DCH	12.3.0
	RP-65	RP-141501	0469	-		Introduction of E-DCH decoupling operation	12.3.0
	RP-65	RP-141511	0473	-		Extended measurements ID support mandatory	12.3.0
	RP-65	RP-141500	0474	1		Introduction of DCH Enhancements	12.3.0
	RP-65	RP-141501	0470	1		CR to 25.306 on introduction of Radio Links without DPCH/F-DPCH	12.3.0
	RP-65	RP-141501	0471	-		CR to 25.306 on introduction of the DPCCH2	12.3.0
12/2014	RP-66	RP-142127	0477	-		Introduction of the UE capabilities for Further EUL enhancements subfeatures	12.4.0
	RP-66	RP-142113	0479	-		Multi-carrier configuration support at inter-RAT handover	12.4.0
	RP-66	RP-142116	0480	-		CR to 25.306 on correction of Cell Reselection Indication Reporting	12.4.0
	RP-66	RP-142228	0481	1		Introduction of the UL CLTD feedback from the Multiflow assisting cell	12.4.0
	RP-66	RP-142128	0482	-		Introduction of increased UE carrier monitoring	12.4.0
	RP-66	RP-142140	0483	1		Introduction of extended RSRQ value range and new RSRQ definition	12.4.0
	RP-66	RP-141984	0484	-		UE capability signaling for WLAN/3GPP radio interworking	12.4.0
03/2015	RP-67	RP-150372	0486	-		Clarification for DRX enhancements	12.5.0
	RP-67	RP-150376	0485	-		Editorial corrections	12.5.0
09/2015	RP-69	RP-151440	0488	1		Increased UE carrier monitoring E-UTRA support mandatory	12.6.0
12/2015	RP-70	RP-152060	0495	1		CR to 25.306 on the introduction of Downlink TPC enhancements for UMTS	13.0.0
	RP-70	RP-152065	0490	1		Introduction of Dual Carrier HSUPA enhancements for UTRAN CS in TS 25.306	13.0.0
	RP-70	RP-152058	0496	1		Introduction of DB-DC-HSUPA	13.0.0
	RP-70	RP-152110	0497	-		RAT-Independent positioning enhancements	13.0.0
03/2016	RP-71	RP-160461	0498	2		Introduction of capability for extended E-UTRA frequency priorities	13.1.0
	RP-71	RP-160466	0499	2		Correction on signalling transmission control due to access group blocking of DTCH	13.1.0
	RP-71	RP-160470	0501	2		Missing parameter values for access stratum release indication	13.1.0
	RP-71	RP-160461	0503	1		Introduction of the UE capabilities for L2 and L3 Downlink enhancements subfeatures	13.1.0
	RP-71	RP-160470	0504	1		CR to to 25.306 on updating the capability name for supporting power control algorithm 3	13.1.0
09/2016	RP-73	RP-161748	0508	1		Introduction of RRC events for UPH reporting	14.0.0
	RP-73	RP-167148	0509	1		Introduction of simultaneous setup and release of RABs and RBs	14.0.0
12/2016	RP-74	RP-162319	0511	-		Correction on dual band dual cell E-DCH capability	14.1.0
	RP-74	RP-162330	0512	3		Introduction of HS-SCCH DRX operation in CELL_FACH state	14.1.0
	RP-74	RP-162331	0513	2		Introduction of Dual Cell E-DCH operation enhancements	14.1.0
	RP-74	RP-162327	0516	-		Addition of REL-14 parameter value for Access Stratum release indicator	14.1.0
03/2017	RP-75	RP-170648	0520	1	B	Introduction of QoE Measurement Collection for streaming services	14.2.0
06/2017	RP-76	RP-171242	0517	6	A	Unclear naming of feature “Dual cell E-DCH operation”	14.3.0
09/2017	RP-77	RP-171592	0522	1	B	Introduction of Simplified HS-SCCH type 1 operation for UMTS	15.0.0
03/2018	RP-79	RP-180067	0523	-	C	Introduction of QoE Measurement Collection for MTSI services	15.1.0
06/2018	RP-80	RP-180820	0524	2	F	Addition of REL-15 parameter value for Access Stratum release indicator	15.2.0
2020-07	RP-88e	-	-	-	-	Upgrade to Rel-16 version without technical change	16.0.0
2020-09	RP-89e	RP-202081	0525	2	F	Addition of REL-16 parameter value for Access Stratum release indicator	16.1.0
2022-03	RP-95e	-	-	-	-	Upgrade to Rel-17 version without technical change	17.0.0
2022-06	RP-96	RP-221077	0527	-	D	Inclusive language review	17.1.0
2024-03	RP-103	-	-	-	-	Upgrade to Rel-18 version without technical change	18.0.0

History

Document history		
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