# ETSI TS 125 306 V11.8.0 (2014-01)



Universal Mobile Telecommunications System (UMTS); UE Radio Access capabilities (3GPP TS 25.306 version 11.8.0 Release 11)



Reference
RTS/TSGR-0225306vb80

Keywords
UMTS

#### **ETSI**

650 Route des Lucioles F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C Association à but non lucratif enregistrée à la Sous-Préfecture de Grasse (06) N° 7803/88

#### Important notice

Individual copies of the present document can be downloaded from: <u>http://www.etsi.org</u>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<a href="http://portal.etsi.org/tb/status/status.asp">http://portal.etsi.org/tb/status/status.asp</a>

If you find errors in the present document, please send your comment to one of the following services: <u>http://portal.etsi.org/chaircor/ETSI\_support.asp</u>

### **Copyright Notification**

No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2014. All rights reserved.

**DECT**<sup>TM</sup>, **PLUGTESTS**<sup>TM</sup>, **UMTS**<sup>TM</sup> and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members. **3GPP**<sup>TM</sup> and **LTE**<sup>TM</sup> are Trade Marks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

**GSM**® and the GSM logo are Trade Marks registered and owned by the GSM Association.

# Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (http://ipr.etsi.org).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

## **Foreword**

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

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under <a href="http://webapp.etsi.org/key/queryform.asp">http://webapp.etsi.org/key/queryform.asp</a>.

# Contents

Intell	ectual Property Rights	2
Forev	word	2
Forev	word	4
1	Scope	5
2	References	5
3	Definitions, symbols and abbreviations	
3.1	Definitions	
3.2	Symbols	
3.3	Abbreviations	
4	UE radio access capability parameters	
4.1	PDCP parameters	
4.2	Void	
4.3	RLC, MAC-hs, MAC-ehs and MAC-i/is parameters	
4.4	Void	
4.5	PHY parameters	
4.5.1	Transport channel parameters in downlink	
4.5.2	Transport channel parameters in uplink	
4.5.3	FDD Physical channel parameters in downlink	
4.5.4	FDD physical channel parameters in uplink	
4.5.5	TDD physical channel parameters in downlink	
4.5.5.	The state of the s	
4.5.5.	1 1 7 1	
4.5.6	TDD physical channel parameters in uplink	
4.5.6.		
4.5.6.2		
4.5.7	RF parameters	
4.6	Multi-mode related parameters	
4.7	Multi-RAT related parameters	
4.7a	Security parameters	
4.8	UE positioning related parameters	
4.9	Measurement related capabilities (FDD only)	
4.9a	Measurement related capabilities (TDD only)	
4.10	General capabilities	
4.11	DL capabilities with simultaneous HS-DSCH	
4.12	UL capabilities with simultaneous E-DCH	25
4.13	UE minimum capabilities for reception of MBMS not provided in MBSFN mode	
4.13a		
4.14	Home Node B Inbound Mobility Related Parameters	
4.14.1		
4.14.2		
4.14a		
4.15	UE based network performance measurements parameters	
5	Possible UE radio access capability parameter settings	
5.1	Value ranges	
5.2	Reference UE radio access capability combinations	
5.2.1	Combinations of common UE Radio Access Parameters for UL and DL	
5.2.2	Combinations of UE Radio Access Parameters for DL	
5.2.3	Combinations of UE Radio Access Parameters for UL	65
Anne	ex A (informative): Change history	67
Histo	ntv	72

# Foreword

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

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

Version x.y.z

#### where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

# 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*.
- 3GPP TS 25.323: "Packet Data Convergence Protocol (PDCP) specification". [1] [2] 3GPP TS 34.108: "Common Test Environments for User Equipment (UE) Conformance Testing". 3GPP TS 34.123-2: "User Equipment (UE) conformance specification; Part 2: Implementation [3] 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)". RFC 4815: "RObust Header Compression (ROHC): Corrections and Clarifications to RFC 3095". [15] 3GPP TS 25.307: "Requirement on User Equipments (UEs) supporting a release-independent [16] frequency band". 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource [17] Control (RRC); Protocol Specification". 3GPP TS 36.101: "User Equipment (UE) radio transmission and reception". [18]

# 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
ANR Automatic Neighbour Relation

EGNOS European Geostationary Navigation Overlay Service

GAN Generic Access Network

GANSS Galileo and Additional Navigation Satellite Systems

IPDL Idle Period DownLink

MSAS Multi-functional Satellite Augmentation System

QZSS Quasi-Zenith Satellite System

rSRVCC reverse Single Radio Voice Call Continuity

SPS Semi-Persistent Scheduling
SRVCC Single Radio Voice Call Continuity

# 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:

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.

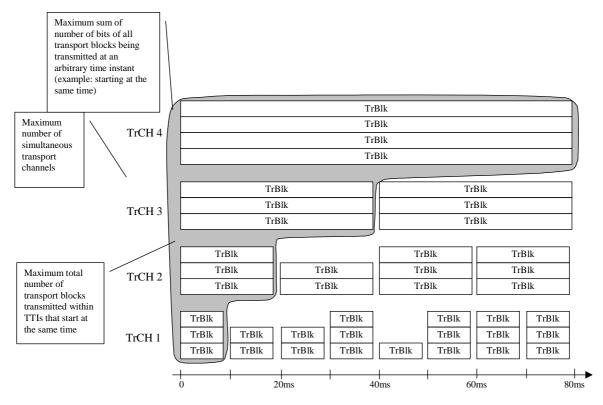


Figure 4.1: UE transport channel processing limitations in uplink

## 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 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.

#### 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.

# 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

- o HS-PDSCH in CELL\_DCH
- o E-DPDCH in CELL-DCH
- o Uplink DRX with E-DCH start time restriction in CELL-DCH as definied in [13]
- o 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

- o MAC-i/is
- o FDD E-DCH physical layer category 2, 4, 6 or 7
- o Enhanced F-DPCH
- o 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.

## 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:

- o MAC-ehs,
- o HS-PDSCH in CELL\_DCH,
- o HS-PDSCH physical layer category at least 9,
- o HS-DSCH DRX operation in CELL\_FACH,
- o 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.

### 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:

- o MAC-i/is,
- o E-DCH in CELL\_DCH,
- o E-DCH physical layer category 3, 4, 5, or 6,
- o 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.

# 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.

# 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.

#### 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.

# 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.

# 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	32 kbps	64 kbps	128 kbps	384 kbps
configuration			•	-

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	640	3840	3840	6400
being received at an arbitrary time instant				
Maximum sum of number of bits of all convolutionally	640	640	640	640
coded transport blocks being received at an arbitrary time				
instant				
Maximum sum of number of bits of all turbo coded	NA	3840	3840	6400
transport blocks being received at an arbitrary time				
instant				
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	8	8	16	32
within TTIs that end at the same time				
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	1	1	1	3
received				
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	64 kbps
configuration	
Transport channel parameters	
Maximum sum of number of bits of all transport blocks	3840
being transmitted at an arbitrary time instant	
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	8

UL DPCH capability with simultaneous E-DCH	64 kbps
configuration	
within TTIs that end at the same time	
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	21504
time instant	
Maximum sum of number of bits of all convolutionally coded transport blocks being	640
received at an arbitrary time instant	
Maximum sum of number of bits of all turbo coded transport blocks being received at an	21504
arbitrary time instant	
Maximum number of transport channels for the configuration	12
Maximum total number of transport blocks received within TTIs that end at the same	32
time	
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	1
Selection Combining or Soft Combining	
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	81920 /
time instant for S-CCPCHs carrying MTCH (and MSCH)	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	81920 /
received at an arbitrary time instant	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	128
same time	
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	V/-1
Transport channel parameters	Value
Maximum sum of number of bits of all transport blocks	1280
being received at an arbitrary time instant	
Maximum sum of number of bits of all convolutionally	1280
coded transport blocks being received at an arbitrary time	
instant	
Maximum number of simultaneous transport channels	1
Maximum number of simultaneous CCTrCH	1
Maximum total number of transport blocks received	8
within TTIs that end at the same time	
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	270
any 10 ms interval (S-CCPCH frame type 1).	

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 CSG Whitelist.

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 CSG Whitelist.

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 CSG Whitelist.

#### 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.

#### 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	Yes/No
	relocation	
	Support for loss-less SRNS relocation	Yes/No
	Support for loss-less DL RLC PDU size change	Yes/No
	Maximum header compression	1024, 2048, 4096, 8192, 16384,
	context space	32768, 65536, 131072 bytes
	Maximum number of ROHC context	2, 4, 8, 12, 16, 24, 32, 48, 64, 128,
	sessions	256, 512, 1024, 16384
	Support for Reverse Decompression	Not supported, 165535
	Support for CS voice over HSPA	Yes/No

		UE radio access capability parameter	Value range
RLC, MAC-hs, MA parameters	C-ehs and MAC-i/is	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	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
	downlink	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	4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		within the same 10 ms interval	
		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	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
	uplink	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 Support for turbo encoding	32, 64, 128, 256, 512, 1024 Yes/No
	FDD Physical	Maximum number of DPCHcodes to	1, 2, 3, 4, 5, 6, 7, 8
	channel	be simultaneously received	600 4200 2400 2000 4000 7000
	parameters in downlink	Maximum number of physical channel bits received in any 10 ms interval	600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400,
		(DPCH, S-CCPCH) Support for SF 512 and 80 ms TTI for	48000, 57600, 67200, 76800 Yes/No
		DPCH 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 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	Yes/No
Channels by MIMO Capable UE when MIMO operation is active	
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	Yes/No
transmit antennas operation only with dual-stream restriction	
Support of dual band operation	116
(Radio Access Capability Band Combination List)	
>Band Combination	1256
>Supported Carrier Combination List	
>>Carrier Combination (1,2)	Yes/No
>>Carrier Combination (2,1)	Yes/No
>>Carrier Combination (1,3) >>Carrier Combination (3,1)	Yes/No Yes/No
>>Carrier Combination (3,1) >>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) >>Carrier Combination (2,3)	Yes/No Yes/No
>>Carrier Combination (2,3) >>Carrier Combination (3,2)	Yes/No Yes/No
>>Carrier Combination (3,2)	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) >>Carrier Combination (4,3)	Yes/No Yes/No
>>Carrier Combination (4,3) >>Carrier Combination (4,4)	Yes/No
>>Carrier Combination (4,4)	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	Yes/No (per frequency band
Support for Multiflow with MIMO	combination)  No/Single stream/Dual stream
operation in different bands	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 dualstream "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	13
>Aggregated cells	2, 3, 4
>Gap size >Non-contiguous multi-cell	5, 10, any gap size Yes/No
Combination (2,2)	
>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

	UE radio access capability parameter	Value range
FDD Physical channel	Maximum number of DPDCH bits transmitted per 10 ms	600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600
parameters in	Support of E-DPDCH	Yes/No
uplink	Support of Discontinuous	Yes/No
	Transmission in CELL_DCH	100/110
ļ	Support of Slot Format #4	Yes/No
ļ	Support for E-DPCCH power	Yes/No
ļ	interpolation formula	
ļ	Support for E-DPCCH power boosting	Yes/No
ļ	Support of common E-DCH	Yes/No
	Support of Common E-RGCH based interference control	Yes/No
ļ	Support of Fallback to R99 PRACH	Yes/No
ļ	Support of Concurrent deployment	Yes/No
ļ	Support of TTI alignment and Per	Yes/No
ļ	HARQ process	
	Support of uplink open loop transmit diversity	Yes/No (per frequency band)
	Support of uplink closed loop transmit diversity	Yes/No (per frequency band)
ļ	Support of Uplink MIMO	Yes/No (per frequency band)
TDD 3.84 Mcps	Maximum number of timeslots per	114
physical channel	frame	114
parameters in	Maximum number of physical	1, 2, 3224
downlink	channels per frame	1, 2, 0224
	Minimum SF	16, 1
ļ	Support of PDSCH	Yes/No
ļ	Support of HS-PDSCH	Yes/No
ļ	Maximum number of physical	116
ļ	channels per timeslot	
TDD 3.84 Mcps physical channel	Maximum Number of timeslots per frame	114
parameters in	Maximum number of physical	1, 2
uplink	channels per timeslot	1, 2
иршк	Minimum SF	16, 8, 4, 2, 1
ļ	Support of PUSCH	Yes/No
ļ	Support of E-PUCH	Yes/No
TDD 7.68 Mcps	Maximum number of timeslots per	114
physical channel	frame	
parameters in	Maximum number of physical	1, 2, 3448
downlink	channels per frame	., _,
TDD 7.68 Mcps	Minimum SF	32, 1
physical channel	Support of PDSCH	Yes/No
parameters in	Support of HS-PDSCH	Yes/No
downlink	Maximum number of physical	132
	channels per timeslot	
TDD 7.68 Mcps	Maximum Number of timeslots per	114
physical channel	frame	4.0
parameters in uplink	Maximum number of physical	1, 2
иршик	channels per timeslot Minimum SF	22.46.9.4.2.4
ļ		32, 16, 8, 4, 2, 1
	Support of PUSCH Support of E-PUCH	Yes/No Yes/No
TDD 1.28 Mcps	Maximum number of timeslots per	16
physical channel	subframe	10
parameters in downlink	Maximum number of physical	1, 2, 3,, 96
UUWIIIIIK	channels per subframe	16 1
	Minimum SF	16, 1
	Support of PDSCH	Yes/No
	Support of HS-PDSCH	Yes/No
	Maximum number of physical channels per timeslot	116
	Support 8PSK	Yes/No

		UE radio access capability parameter	Value range
		UE specific capability Information LCR TDD	Enumerated (NF, TriRxUniTx, TriRxTriTx, HexRxUniTx, HexRxTriTx, HexRxHexTx, TwoRxUniTxDiscontiguous, TwoRxTwoTxDiscontiguous, 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 and TwoRxTwoTxDiscontiguous and TwoRxTwoTxDiscontiguous and TwoRxTwoTxContiguous and TwoRxTwoTxContiguous and TwoRxTwoTxContiguous and TwoRxTwoTxContiguous 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.
		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
	TDD 1.28 Mcps physical channel	Maximum number of timeslots per subframe	16
	parameters in uplink	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

		UE radio access capability parameter	Value range
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	UE power class	2, 3
	RF parameters	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 բ	parameters	Support of GSM	Yes/No (per GSM frequency band)
		Support of multi-carrier	Yes/No
		Support of UTRAN to GERAN	Yes/No
		Network Assisted Cell Change	24 (2)
		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 Support of Inter-RAT PS Handover to E-UTRA FDD	Yes/No (per E-UTRA frequency band) 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
Security parameter	rs	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 rela	nted parameters	Standalone location method(s) supported	Yes/No
		UE based OTDOA supported  Network assisted GPS support	Yes/No Network based / UE based / Both/
		Network assisted GFS support	None
		Network Assisted GANSS support List:	per GANSS
		>GANSS ID	Galileo / SBAS / Modernized GPS / QZSS / GLONASS
		>SBAS IDs	WAAS / EGNOS / MSAS / GAGAN
		>GANSS mode	Network based / UE based / Both/ None
		>GANSS Signal ID	07
		>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

		UE radio access capability parameter	Value range
		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
Measurement relat	ed 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
		Enhanced inter-frequency measurements without compressed mode	Yes/No
		Extended measurements ID support	Yes/No
		Frequency specific compressed mode	Yes/No
		Frequency specific compressed mode	Yes/No
		for non-contiguous operation Inter-frequency detected set	Yes/No
		measurements Inter-frequency measurements on	Yes/No
		configured carriers without compressed mode	165/110
		Cells excluded from detected set measurements	Yes/No
		Wideband RSRQ FDD measurements	Yes/No
		Wideband RSRQ TDD measurements	Yes/No
General capabilitie	S	Access Stratum release indicator	R99, REL-4, REL-5, REL-6, REL-7, REL-8, REL-9, REL-10, REL-11
		Device type	Benefits from NW-based battery consumption optimisation / Does not benefit from NW-based battery consumption optimisation
DSCH	n simultaneous HS-	DL capability with simultaneous HS- DSCH configuration	32 kbps, 64 kbps, 128 kbps, 384 kbps
UL capabilities with DCH		UL capabilities with simultaneous E- DCH	64 kbps
UE based network measurements par		Support of logged measurements in Idle mode and PCH States	Yes/No
	1 000 D	Support of UTRAN ANR	Yes/No
Home Node B Inbound Mobility	CSG Proximity Indication	Support of intra-frequency proximity indication	Yes/No
Related Parameters	capabilities	Support of inter-frequency proximity indication	Yes/No
		Support of E-UTRA proximity indication	Yes/No
	Neighbour Cell SI Acquisition	Support of intra-frequency SI acquisition for HO	Yes/No
	capabilities	Support of inter-frequency SI acquisition for HO	Yes/No
IMOV	4	Support of E-UTRA SI acquisition for HO	Yes/No
IMS Voice Parame	ters	Voice over UTRA PS HS Support	Yes/No
		SRVCC Support from UTRA to UTRA SRVCC Support from UTRA to	Yes/No Yes/No
		GERAN	I GO/INO

UE radio access capability parameter	Value range
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	Maxi mum numb er of HS- DSCH codes receiv ed	Minim um inter- TTI interv al	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 Numb- er of servin g/seco ndary servin g HS- DSCH cells	Total Numb er of servin g/seco ndary servin g HS- DSCH cells in which MIMO mode with two trans mit antenn as can be config ured	Total Numb er of servin g/seco ndary servin g HS- DSCH cells in which MIMO mode with four trans mit antenn as can be config ured	Supporte d modula- tions without MIMO operation or aggregat ed cell operation	modula- tions with MIMO operation and without aggregated cell operation	Supported modula- tions without MIMO operation with aggregate d cell operation	Supported modula- tions with MIMO operation and aggregated cell operation	
Category 1	5	3	7298	19200	1	0	-					
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	-	QPSK,				
Category 6	5	1	7298	67200	1	0	-	(MiMO n	Not			
Category 7	10	1	14411	115200	1	0	-		applicable			
Category 8	10	1	14411	134400	1	0	-			(MIMO not		
Category 9	15	1	20251	172800	1	0	-		supported)	supported)		
Category 10	15	1	27952	172800	1	0	-					
Category 11	5	2	3630	14400	1	0	-	QPSK		Not		
Category 12	5	1	3630	28800	1	0	-	ODOK			applicable	
Category 13	15	1	35280	259200	1	0	-	QPSK, 16QAM,		(aggregate	Not	
Category 14	15	1	42192	259200	1	0	-	64QAM		d carriers	applicable	
Category 15	15	1	23370	345600	1	1	_		I	operation	(simultaneou	
Category 16	15	1	27952	345600	1	1	_	QPSK	., 16QAM	not	s aggregated	
Category 17 NOTE 2	15	1	35280	259200	1	0	-	QPSK, 16QAM, 64QAM	-	supported)	carriers and MIMO operation not supported)	
			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, 160	QAM, 64QAM			
Category 20	15	1	42192	518400	1	1	-	· ·		050::	-	
Category 21	15	1	23370	345600	2	0	-	-		QPSK, 16QAM		
Category 22	15 15	1	27952	345600	2	0	-	<u> </u>	_		-	
Category 23		1	35280	518400	2	0	-	1 -	_	QPSK, 16QAM,		
Category 24 Category 25	15 15	1	42192 23370	518400 691200		_	-			64QAM	QPSK,	
					2	2	-	-	-	-	16QAM	
Category 26	15 15	1	27952 35280	691200 1036800	2		-				QPSK,	
Category 27 Category 28	15	1	35280 42192	1036800	2	2	-	-	-	-	16QAM, 64QAM	
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	

HS-DSCH category	Maxi mum numb er of HS- DSCH codes receiv ed	Minim um inter- TTI interv al	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 Numb- er of servin g/seco ndary servin g HS- DSCH cells	Total Numb er of servin g/seco ndary servin g HS- DSCH cells in which MIMO mode with two trans mit antenn as can be config ured	Total Numb er of servin g/seco ndary servin g HS- DSCH cells in which MIMO mode with four trans mit antenn as can be config ured	Supporte d modula- tions without MIMO operation or aggregat ed cell operation	Supported modula- tions with MIMO operation and without aggregated cell operation	Supported modula- tions without MIMO operation with aggregate d cell operation	Supported modula- tions with MIMO operation and aggregated cell operation
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	Maximum number	Minimum total RLC AM
category	of AM RLC entities	and MAC-hs/MAC-ehs
		buffer size [kBytes]
Category 1	6	50
Category 2	6	50
Category 3	6	50
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

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs/MAC-ehs buffer size [kBytes]
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 modulation s without MIMO operation	Supported modulation s simultaneo us with MIMO operation
Category 1	16	2	2788	11264		
Category 2	16	2	2788	22528	QPSK	
Category 3	16	2	2788	33792		
Category 4	16	2	5600	22528		
Category 5	16	2	5600	45056		
Category 6	16	2	5600	67584		
Category 7	16	3	8416	33792		Not
Category 8	16	3	8416	67584		applicable
Category 9	16	3	8416	101376	QPSK,16QA	(MIMO not supported)
Category 10	16	4	11226	45056	M	
Category 11	16	4	11226	90112		
Category 12	16	4	11226	135168		
Category 13	16	5	14043	56320		
Category 14	16	5	14043	112640		
Category 15	16	5	14043	168960		
Category 16	16	3	12636	50688		
Category 17	16	3	12636	101376		
Category 18	16	3	12636	152064		
Category 19	16	4	16856	67584	QPSK,16QA	Not
Category 20	16	4	16856	135168	M,	applicable (MIMO not
Category 21	16	4	16856	202752	64QAM	supported)
Category 22	16	5	21076	84480		Supported)
Category 23	16	5	21076	168960		
Category 24	16	5	21076	253440		
Category 25 NOTE 1	16	3	12636	152064	QPSK,16QA M, 64QAM	
			8416	202752		QPSK,16QA M
Category 26 NOTE 2	16	4	16856	202752	QPSK,16QA M, 64QAM	
			11226	270336		QPSK,16QA

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 modulation s without MIMO operation	Supported modulation s simultaneo us with MIMO operation
						M
Category 27 NOTE 3	16	5	21076	253440	QPSK,16QA M, 64QAM	
			14043	337920		QPSK,16QA M
Category 28	16	3	12636	304128	QPSK,16QA	QPSK,16QA
Category 29	16	4	16856	405504	Μ,	М,
Category 30	16	5	21076	506880	64QAM	64QAM

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	Maximum number of	Minimum total RLC
category	AM RLC entities	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	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

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
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	Maximum	Maximum	Total number of
category	number of the	number of HS-	soft channel bits
	total HS-DSCH	DSCH transport	
	timeslots on the all assigned	channel bits that can be received	
	carriers per TTI	within an HS-	
	Carriers per i ii	DSCH TTI	
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
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

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 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	Minimum total RLC AM and MAC-hs buffer size
, <b>g</b> ,	RLC entities	[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
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 transmittedp er 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
Category 12	4	SF2	2 ms TTI	-	34507
NOTE: When 4	4 codes are trans	smitted in para	ıllel, two codes sha	all be transmitted with SF2 a	nd 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.

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

These values reflect the total buffer sizes of HS-DSCH and E-DCH categories for simultaneous HS-DSCH/E-DCH operation.

HS-DSCH category	Categories 1 to 4 [kBytes]	Categories 5 and 6 [kBytes]	Categories 7 and 8 [kBytes]	Category 9 [kBytes]	Category 10 [kBytes]	Category 11 [kBytes]	Category 12 [kBytes]
E-DCH category							
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	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]
E-DCH category						
Category 1	-	-	-	-	-	-
Categories 2 and 3	ı	-	ı	-	ı	•
Category 5	400	-	ı	-	ı	•
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	Categories 25 and 26 [kBytes]	Categories 27 and 28 [kBytes]
E-DCH category		
Category 1	-	-
Categories 2 and 3	1	-
Category 5	1	-
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	Category 29 [kBytes]	Category 30 [kBytes]	Category 31 [kBytes]	Category 32 [kBytes]	Category 33 [kBytes]	Category 34 [kBytes]	Category 35 [kBytes]	Category 36 [kBytes]
E-DCH category	. , .		. , .	. , .	. , .	. , .		. , .
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

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

HS-DSCH category	Category 37 [kBytes]	Category 38 [kBytes]
E-DCH category		
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.

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

These values reflect the total buffer sizes of HS-DSCH and E-DCH categories for simultaneous HS-DSCH/E-DCH operation.

HS-DSCH category	Categories 1 / 2	Categories 3 / 4	Categories 5 / 6	Category 7 [Kbytes]	Category 8 [Kbytes]	Category 9 [Kbytes]
E-DCH category	[Kbytes]	[Kbytes]	[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.

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

These values reflect the total buffer sizes of HS-DSCH and E-DCH categories for simultaneous HS-DSCH/E-DCH operation.

HS-DSCH 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]
E-DCH	[,]	[,]	[,]	[,]	[,]	[,]	[a saysaa]
category							
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.

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

These values reflect the total buffer sizes of HS-DSCH and E-DCH categories for simultaneous HS-DSCH/E-DCH operation.

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

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)

These values reflect the total buffer sizes of HS-DSCH and E-DCH categories for simultaneous HS-DSCH/E-DCH operation.

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

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)

These values reflect the total buffer sizes of HS-DSCH and E-DCH categories for simultaneous multi-frequency HS-DSCH/E-DCH operation.

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	400	300
				(Note)	(Note)	(Note)

Category 4	1500	1150	1000	500	400	400
				(Note)	(Note)	(Note)
Category 5	1500	1150	1000	500	400	400
				(Note)	(Note)	(Note)
Category 6	1500	1150	1000	-	-	-
Category 7	1500	1150	1000	-	-	-
Category 8	1500	1150	1000	-	-	-

HS-DSCH category	Categories 19/20/21	Categories 22/23/24	Categories 25/26/27	Category 28/29/30	Category 31/32/33	Category 34/35/36
E-DCH category	[Kbytes]	[Kbytes]	[Kbytes]	[Kbytes]	[Kbytes]	[Kbytes]
Category 1	2300	1800	1150	750	500	400
Category 2	2300	1800	1150	750	500	400
Category 3	2300	1800	1250	750	750	400
				(Note)	(Note)	(Note)
Category 4	2300	1800	1250	750	750	500
				(Note)	(Note)	(Note)
Category 5	2300	1800	1250	750	750	500
				(Note)	(Note)	(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					
Maximum number of ROHC context sessions		<u> </u>	Not applicab	le for conforr	nance testin	g	
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
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				Yes			
algorithm UIA1							
Support of integrity protection algorithm UIA2				Yes			
UE positioning related parameters							

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			
Standalone location method(s)				Yes/No						
supported				NOTE 1						
UE based OTDOA supported				Yes/No NOTE 1						
Network assisted GPS support		N	etwork base	d / UE based NOTE 1	d / Both/ Nor	ne				
Network Assisted GANSS support List			Per s	upported GA NOTE 1	NSS					
>GANSS ID		Galileo /	SBAS / Mod	ernized GPS NOTE 1	/ QZSS / G	LONASS				
>SBAS IDs		WAAS / EGNOS / MSAS / GAGAN NOTE 1								
>GANSS mode		N	etwork base	d / UE based NOTE 1	d / Both/ Nor	ne				
>GANSS Signal ID				07 NOTE 1						
>GANSS Signal IDs			Yes/No	(per GANSS NOTE 1	signal)					
>Support for GANSS timing of cell frames measurement				Yes/No NOTE 1						
Support for GANSS Carrier-Phase				Yes/No						
Measurement				NOTE 1						
>Support for non-native assistance				Yes/No						
choices		NOTE 1								
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						
RF parameters for FDD										
Radio frequency bands		TI	ne radio freq	uency bands	defined in [	[4]				
UE power class				3 / 4 NOTE 1						
Tx/Rx frequency separation	D	efined in [4]	for the resp	ective suppo	rted radio fre	equency band	<u> </u>			
RF parameters for TDD 3.84 Mcps										
Radio frequency bands			A/b/c/a	a+b / a+c / b· NOTE 1	+c / a+b+c					
UE power class				2 / 3 NOTE 1						
RF parameters for TDD 7.68 Mcps										
Radio frequency bands			A/b/c/a	a+b / a+c / b· NOTE 1	+c / a+b+c					
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 NOTE 1	+c/ a+b+c					
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
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	5	8	9	14	28	64	136

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
channels per frame							
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
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	1.1 Mbps	1.6 Mbps	2.2 Mbps	2.8 Mbps
	class	class	class	class	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	11.2 Mbps	8.4 Mbps	7.0 Mbps	5.6 Mbps	4.2 Mbps
	class	class	class	class	class	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	2.4 Mbps	3.6 Mbps	7.3 Mbps	10.2 Mbps
	class	class	class	class	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	2.4 Mbps	3.6 Mbps	7.3 Mbps	10.6 Mbps
	class	class	class	class	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	NA	NA(FDD)	3840	3840	6400	10240

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
turbo coded transport blocks being transmitted at an arbitrary time instant		1280 (TDD)				
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)						
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	800		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			

Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
03/2001	RP-11	RP-010024	_	1.00	Downlink rate matching limitation	3.0.0	3.1.0
30/2001	RP-11	RP-010024			Miscellaneous corrections and editorial clean-up	3.0.0	3.1.0
	RP-11	RP-010024			Maximum number of AM entity	3.0.0	3.1.0
	RP-11	RP-010024		1	Clarification of maximum number of TF	3.0.0	3.1.0
	RP-11	RP-010024		1	Removal of the RLC PU concept	3.0.0	3.1.0
	RP-11	RP-010039		1	1.28 Mcps TDD	3.1.0	4.0.0
	RP-11	RP-010043		1	DSCH related updates for UE capabilities for the UE Radio Access Capability parameter combinations	3.1.0	4.0.0
	RP-11	RP-010039	011	1	Addition of ROHC	3.1.0	4.0.0
06/2001	RP-12	RP-010307	013		Clarification on the number of CCTrCHs to be received simultaneously by the UE	4.0.0	4.1.0
	RP-12	RP-010321	009	6	Modified UE Capability for CPCH	4.0.0	4.1.0
09/2001	RP-13	RP-010540			Maximum number of simultaneous transport channels	4.1.0	4.2.0
	RP-13	RP-010540	019		Clarification of FDD physical channel parameters	4.1.0	4.2.0
	RP-13	RP-010540	021		Support of dedicated pilots for channel estimation	4.1.0	4.2.0
	RP-13	RP-010540	023		Correction of UE capabilities regarding Rx-Tx time difference type 2 measurements	4.1.0	4.2.0
12/2001	RP-14	RP-010758	026		Correction on UL parameter "Maximum number of DPDCH bits per 10 ms"	4.2.0	4.3.0
03/2002	RP-15	RP-020228	035		Clarification on ICS version within UE radio access capabilities	4.3.0	4.4.0
	RP-15	RP-020242		1	Clarification of Maximum number of TFC in the TFCS	4.3.0	4.4.0
	RP-15	RP-020237	039		Support of UP measurement reporting in CELL_PCH/URA_PCH	4.3.0	4.4.0
	RP-15	RP-020094	029	2	HSDPA UE capabilities	4.4.0	5.0.0
06/2002	RP-16	RP-020325			Security Capabilities	5.0.0	5.1.0
	RP-16	RP-020439	040	1	Corrections in HSDPA UE capabilities	5.0.0	5.1.0
	RP-16	RP-020341	041		HSDPA TDD UE capabilities	5.0.0	5.1.0
	RP-16	RP-020341	045		DPCH capabilities with simultaneous HSDPA configuration	5.0.0	5.1.0
	RP-16	RP-020345	046		RFC 3095 context relocation	5.0.0	5.1.0
	RP-17	RP-020555	047		Introduction of HS-PDSCH capability definition and QPSK-only UE categories	5.1.0	5.2.0
	RP-17	RP-020555			Mandatory Support of dedicated pilots for channel estimation	5.1.0	5.2.0
12/2002	RP-18	RP-020717		1	UE capability for RLC window size	5.2.0	5.3.0
	RP-18	RP-020857			UE capability for RFC3095 operation	5.2.0	5.3.0
	RP-18	RP-020733		3	HSDPA L2 buffer sizes	5.2.0	5.3.0
	RP-18	RP-020733	056		Correction to Access Stratum release indicator	5.2.0	5.3.0
	RP-18	RP-020733	057		Dedicated pilot bits for HS-DSCH	5.2.0	5.3.0
03/2003	RP-19	RP-030113			Network Assisted Cell Change from UTRAN to GERAN	5.3.0	5.4.0
	RP-19	RP-030113	062		Modification to the number of soft channel bits required for HS- DSCH (TDD)	5.3.0	5.4.0
06/2003	RP-20		067		Extension of 32 kbps UE capability class	5.4.0	5.5.0
	RP-20	RP-030301	068		Correction of maximum transport block sizes for UE categories	5.4.0	5.5.0
	RP-20		069	1	SF1 corrections for TDD	5.4.0	5.5.0

09/2003	RP-21	RP-030493	072	1	Change history TS 25.306	550	5.6.0
09/2003					Addition of memory unit in UE Radio Access Capabilities tables	5.5.0	
	RP-21 RP-21	RP-030482 RP-030482			Correction of Maximum hc context space capability UE positioning support in the UE	5.5.0	5.6.0 5.6.0
12/2003	RP-22	RP-030462		<b>-</b>	Removal of reference combinations for HS-DSCH capabilities	5.5.0 5.6.0	5.7.0
12/2003	RP-22	RP-030614		<del>                                     </del>	Definition of minimum UE capability class	5.6.0	5.7.0
	RP-22	RP-030614			TDD Radio Access Parameters for UL 32kbs class UE's	5.6.0	5.7.0
	RP-22	RP-030623			Correction to HSDPA capability	5.6.0	5.7.0
	RP-22	-	-		Upgrade to Release 6 - no technical change	5.7.0	6.0.0
03/2004	RP-23	RP-040102	093		Simultaneous Reception of S-CCPCH and HS-DSCH	6.0.0	6.1.0
	RP-23	RP-040102			Correction to memory check in the UE	6.0.0	6.1.0
06/2004	RP-24	RP-040223			Correction to memory handling in the UE	6.1.0	6.2.0
12/2004	RP-26	RP-040479			Alignment of MaxHcContextSpace	6.2.0	6.3.0
03/2005	RP-27	RP-050065			Support of DSCH	6.3.0	6.4.0
	RP-27	RP-050067			Lossless DL RLC PDU size change	6.3.0	6.4.0
	RP-27	RP-050154		2	Inclusion of UE capabilities for Enhanced Uplink	6.3.0	6.4.0
	RP-27	RP-050083	105		Support of ROHC mandatory	6.3.0	6.4.0
04/2005					Inclusion of RP-27 change history in this table.	6.4.0	6.4.1
06/2005	RP-28	RP-050314			Introduction of MBMS capability Part A and B	6.4.1	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	6.4.1	6.5.0
	RP-28	RP-050308			Feature Clean-up: Removal of DSCH (FDD)	6.4.1	6.5.0
	RP-28	RP-050309	0113		Feature Clean Up: Removal of CPCH	6.4.1	6.5.0
	RP-28	RP-050310			Feature Clean Up: Removal of dedicated pilot as sole phase reference	6.4.1	6.5.0
	RP-28	RP-050311	0117	1	Feature Clean Up: Removal of DRAC	6.4.1	6.5.0
	RP-28	RP-050327		i –	E-DCH L2 Buffer sizes	6.4.1	6.5.0
	RP-28	RP-050317		i –	RLC LI Optimization for VoiP	6.4.1	6.5.0
09/2005	RP-29	RP-050480	0120		Removal RLC-SDU alignment capability	6.5.0	6.6.0
	RP-29	RP-050480	0121		Feature Clean Up: Removal of DRAC	6.5.0	6.6.0
	RP-29	RP-050480	0122		Adding the UE capability for FDD Radio frequency bands	6.5.0	6.6.0
	RP-29	RP-050475			F-DPCH support for HS-DSCH supporting Ues	6.5.0	6.6.0
	RP-29	RP-050468			Introduction of MBMS capability for TDD	6.5.0	6.6.0
	RP-29	RP-050468			Correction of UE capability for MBMS	6.5.0	6.6.0
	RP-29	RP-050470			Correction on table 5.1g (FDD E-DCH physical layer categories)	6.5.0	6.6.0
	RP-29	RP-050470			E-DCH L2 Buffer sizes	6.5.0	6.6.0
	RP-29	RP-050469			Removal of fixed position for S-CCPCHs carrying MBMS channels	6.5.0	6.6.0
	RP-29	RP-50461	0130		Correction of TB size and soft channel bits number for 1.28 Mcps TDD	6.5.0	6.6.0
	RP-29	RP-050484	0131		Introduction of battery-limited device indication in UE capability	6.5.0	6.6.0
	RP-29	RP-050480			Introduction of REL-6 Access Stratum release indicator	6.5.0	6.6.0
12/2005	RP-30	RP-050796	0133		Tx/Rx frequency separation capability (FDD)	6.6.0	6.7.0
	RP-30	RP-050784			Feature cleanup and other leftovers	6.6.0	6.7.0
	RP-30	RP-050790	0135	1	E-DCH L2 Buffer sizes	6.6.0	6.7.0
	RP-30	RP-050861	0136	1	Introduction of Support of Handover to GAN	6.6.0	6.7.0
03/2006	RP-31	RP-060090	0138		Correction to number of RLC AM instances for HS	6.7.0	6.8.0
	RP-31	RP-060093		1	Inter-RAT PS Handover capability	6.7.0	6.8.0
	RP-31	RP-060098			7.68 Mpcs TDD Option (Release 7)	6.8.0	7.0.0
	RP-31	RP-060099			Introduction of REL-7 access stratum release indicator	6.8.0	7.0.0
09/2006	RP-33	RP-060614			Introduction of SIB 11bis	7.0.0	7.1.0
	RP-33	RP-060586			Introduction of 3.84 Mcps and 7.68 McpsTDD E-DCH	7.0.0	7.1.0
12/2006	RP-34	RP-060713	0146	1	Introduction of the new security algorithms UEA2 and UIA2	7.1.0	7.2.0
03/2007	RP-35	RP-070151			TTI values for MCCH RB configuration	7.2.0	7.3.0
<del></del>	RP-35	RP-070150	0150		Correction of the HS-DSCH physical layger categories of 1.28Mcps TDD	7.2.0	7.3.0
	RP-35	RP-070157	0152	İ	Introduction of 1.28 Mcps TDD E-DCH	7.2.0	7.3.0
	RP-35	RP-070161		2	Introducing MIMO in UE Capability specification	7.2.0	7.3.0
	RP-35	RP-070163		l	Introduction of 64QAM downlink in 25.306	7.2.0	7.3.0
06/2007	RP-36	RP-070402		2	Introducing 16QAM uplink support	7.3.0	7.4.0
	RP-36	RP-070395			Introduction of GAN PS handover	7.3.0	7.4.0
	RP-36	RP-070406			Support of RFC 3095 (ROHC) Compression	7.3.0	7.4.0
	RP-36	RP-070400			MBMS FDD and TDD Physical Layer Improvements	7.3.0	7.4.0
	RP-36	RP-070398			GANSS support to UE capabilities	7.3.0	7.4.0
	RP-36	RP-070403			UE capabilities for HS-DSCH reception in CELL_PCH, URA_PCH and CELL_FACH states	7.3.0	7.4.0
09/2007	RP-37			1	Introduction of HS-DSCH category for combined MIMO and	7.4.0	7.5.0
	DD 27	RP-070670		1	DL64QAM	7.4.0	750
	RP-37	RP-070670	0164	I	Code rate limitation for UE HSDPA Categories 13 and 15	7.4.0	7.5.0
					MDMC LIE Conchility for manufact MTCLI/MCCLL to the second	7 4 ^	7
	RP-37	RP-070625	0166		MBMS UE Capability for mapping MTCH/MSCH to legacy S-CCPCH	7.4.0	7.5.0

	1	1			Change history TS 25.306		1
	RP-37	RP-070634		1	UE capabilities for Rel-7, with 'improved L2' optional	7.4.0	7.5.0
	RP-37	RP-070627	0171	2	Specification of HS-SCCH less memory requirement	7.4.0	7.5.0
	RP-37	DD 070050	0470			7.4.0	7.5.0
	RP-37	RP-070650 RP-070764			for 1.28Mcps TDD For the creation of RRC Rel-8	7.4.0	0.00
12/2007	RP-38	RP-070764		1	Correction to memory requirement for HS-SCCH less operation	8.0.0	8.0.0 8.1.0
12/2007	RP-38	RP-070900		<u> </u>		8.0.0	8.1.0
	RP-38	RP-070903		<u> </u>	Clarification on MIMO and 64QAM UE categories	8.0.0	8.1.0
	RP-38	RP-070901			More improvement on dedicated carrier for 1.28 Mcps TDD MBMS	8.0.0	8.1.0
	RP-38	RP-070900			UE capability for E-DCH transmission time restriction and UE DRX	8.0.0	8.1.0
					in CPC		
	RP-38	RP-070905			Correction to Control Information transmission with two logical channels	8.0.0	8.1.0
	RP-38	RP-070910			Introduction of CS voice over HSPA	8.0.0	8.1.0
	RP-38	RP-070907	0188		Introduction of HS-DSCH category for combined MIMO and DL64QAM	8.0.0	8.1.0
03/2008	RP-39	RP-080185	0190	-	Clarification of uplink multicode capability for 1.28Mcps TDD	8.1.0	8.2.0
	RP-39	RP-080188	0192	-	Code rate limitations for HS-DSCH UE cat 13 and 15	8.1.0	8.2.0
05/2008	RP-40	RP-080417	0193	1	Introduction of 64QAM in UE capability specification for LCR TDD	8.2.0	8.3.0
09/2008	RP-41	RP-080682		-	Ki restriction for UE HS-DSCH categories 13 and 15	8.3.0	8.4.0
	RP-41	RP-080694		1	Introduction of E-UTRA support	8.3.0	8.4.0
12/2008	RP-42	RP-081024	0200	-	Introduction of additional UE categories for 1.28Mcps TDD 64QAM DL	8.4.0	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"	8.4.0	8.5.0
	RP-42	RP-081030	0202	2	Addition of UE categories for dual cell HSDPA	8.4.0	8.5.0
	RP-42	RP-081029		-	UE positioning capabilities for support of additional navigation satellite systems	8.4.0	8.5.0
	RP-42	RP-081102	0206	1	25.306 CR Introduction of UE Measurement Capability on	8.4.0	8.5.0
					frequency adjacent to intra-frequency		
	RP-42	RP-081033		-	Introduction of optional features in Release 8	8.4.0	8.5.0
	RP-42	RP-081127		2	Support for 3.84 Mcps MBSFN IMB operation	8.4.0	8.5.0
03/2009	RP-43	RP-090114		-	Correction of RF parameters in 25.306	8.5.0	8.6.0
	RP-43	RP-090147		-	25.306 CR on Introduction of CPC for 1.28Mcps TDD	8.5.0	8.6.0
	RP-43	RP-090151	0216	-	Value range for UE Measurement Capability on a frequency adjacent to intra-frequency	8.5.0	8.6.0
	RP-43	RP-090144	0218	-	Update to UE capability for IMB MCCH reception	8.5.0	8.6.0
	RP-43	RP-090149		-	Introduction of MIMO for 1.28Mcps TDD	8.5.0	8.6.0
06/2009	RP-44	RP-090506		1	Add description about the parameter of Need for Idle Interval	8.6.0	8.7.0
	RP-44	RP-090519		-	Clarification for the code rate restriction for Cat19	8.6.0	8.7.0
09/2009	RP-45	RP-090908		1	E-DCH TTI restriction for 16QAM	8.7.0	8.8.0
	RP-45	RP-090902		-	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	8.7.0	8.8.0
	RP-45	RP-090910	0233	1	Clarification on UE category of enhanced CELL_FACH for 1.28Mcps TDD	8.7.0	8.8.0
	RP-45	RP-090901		-	Enhancing the Category Handling in UMTS	8.7.0	8.8.0
09/2009	RP-45	RP-090921		1	Introduction of Band XIX	8.8.0	9.0.0
	RP-45	RP-090925		<u> -</u>	Introduction of TxAA extension for non-MIMO UEs	8.8.0	9.0.0
	RP-45	RP-090924		<u> -</u>	Introduction of Dual Cell operation with MIMO	8.8.0	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)	9.0.0	9.1.0
	RP-46	RP-091338	0249	1	L2 buffer sizes for DC-MIMO and E-DCH category combinations	9.0.0	9.1.0
	RP-46	RP-091336	0250	-	Email discussion outcome for [67b#17] UMTS: DC-HSUPA in 25.306	9.0.0	9.1.0
	RP-46	RP-091339	0252	<b>1</b> -	RAN1 RAN2 alignment on TxAA	9.0.0	9.1.0
	RP-46	RP-091347		2	Introduction of TS0 capability for 1.28Mcps TDD	9.0.0	9.1.0
	RP-46	RP-091259		1-	Support for carrier-specific STTD configuration for DC-HSDPA	9.0.0	9.1.0
03/2010	RP-47	RP-100298		1-	Clarification of code rates limitation for category 25/27	9.1.0	9.2.0
	RP-47	RP-100306		-	Release 9 UE Capability: UTRA Home Node B Inbound Mobility related features	9.1.0	9.2.0
	RP-47	RP-100299	0264	t <u>-</u>	UE cat17/18 and signalling of Single Stream MiMo capability	9.1.0	9.2.0
	RP-47	RP-100297		1	dual band capability	9.1.0	9.2.0
	RP-47	RP-100282		t <del>.</del>	Bounds to RoHC requirements for UEs supporting IMS	9.1.0	9.2.0
20/2012	RP-48	RP-100547		1	Corrections to Inter-band measurement capability	9.2.0	9.3.0
106/2010	0	1000T/	J_01	· —			
06/2010		RP-100549	0268	l -	Support MAC-ehs in Single Stream MIMO case	9.20	9.3 0
06/2010	RP-48 RP-49	RP-100549 RP-100846		-	Support MAC-ehs in Single Stream MIMO case Clarification on the code rate restriction in HS-DSCH UE	9.2.0 9.3.0	9.3.0 9.4.0

			-		Change history TS 25.306		
	RP-49	RP-100857	0273	-	Clarification on the code rate restriction in HS-DSCH UE Categories 25 and 27	9.3.0	9.4.0
	RP-49	1_	_	_	v10.0.0 created based on v9.4.0	9.4.0	10.0.0
	RP-49	RP-100863	0275	1	Introduction of 4C-HSDPA categories	9.3.0	10.0.0
12/2010	RP-50	RP-101366		1	Correction for value range of total RLC AM, MAC-hs and MAC-ehs buffer size	10.0.0	
	RP-50	RP-101211	0279	-	Correction for value range of total RLC AM, MAC-hs and MAC-ehs buffer size	10.0.0	10.1.0
	RP-50	RP-101213	0280	1	Introduction of REL-10 access stratum release indicator	10.0.0	10.1.0
	RP-50	RP-101212	0282	1	Introduction of REL-9 access stratum release indicator	10.0.0	
	RP-50	RP-101366	0283	-	Corrections on 25.306 for 4C-HSDPA	10.0.0	10.1.0
	RP-50	RP-101365		-	introduction of MC-HSUPA for 1.28Mcps TDD	10.0.0	
03/2011	RP-51	RP-110268		-	Correction of buffer sizes for 64QAM+MIMO, DC-HSDPA categories	10.1.0	
	RP-51	RP-110279		-	Extend the carrier capability for Multi-Carrier HSDPA for 1.28Mcps TDD	10.1.0	
	RP-51	RP-110264	0293	-	Clarification to the carrier capability in Multi-Carrier HSDPA for 1.28Mcps TDD	10.1.0	
	RP-51	RP-110282		-	Counter proposal to R2-110749 on UE capabilities for MDT	10.1.0	
	RP-51	RP-110332		1	Combination of DB-HSDPA and MIMO	10.1.0	
06/2011	RP-52	RP-110825		1	Removing RoHC discrepancy	10.2.0	
	RP-52	RP-110829		2	Addition of the missing Total RLC and MAC-hs parameters in UE HS-DSCH categories for 1.28Mcps TDD	10.2.0	
	RP-52	RP-110838		1	Addition of the missing Total RLC and MAC-hs parameters in UE dual-carrier HS-DSCH categories for 1.28Mcps TDD	10.2.0	
	RP-52	RP-110838	0303	-	Correction to UE capability Support of MIMO with dual cell dual band operation	10.2.0	10.3.0
	RP-52	RP-110829		1	Correction to HS-DSCH physical layer categories for 1.28 Mcps TDD	10.2.0	10.3.0
	RP-52	RP-110672		-	Introduction of measurement ID extension	10.2.0	
09/2011	RP-53	RP-111285		2	Introduction of optional Rel-10 features	10.3.0	
	RP-53	RP-111282		-	Clarification on DCHSUPA dependence on MAC-i/is	10.3.0	
10/0011	RP-53	RP-111278		1	Correction to UE capability parameters for handover to CSG cell	10.3.0	
12/2011	RP-54	RP-111715		-	Correction of capability table	10.4.0	
	RP-54 RP-54	RP-111715 RP-111715		2	Addition of the missing value ranges for 1.28Mbps TDD capabilities Introduction of the frequency specific compressed mode	10.4.0	
12/2011	RP-54	- KF-111713	-		TS 25.306 v11.0.0 was created based on v10.5.0	10.5.0	
12/2011	RP-54	RP-111717	0334	_	Introduction of 8C-HSDPA in 25.306	10.4.0	
	RP-54	RP-111718		-	Introduction of uplink CLTD in 25.306	10.4.0	
	RP-54	RP-111719		-	Introduction of uplink OLTD in 25.306	10.4.0	
03/2012	RP-55	RP-120327	0343	-	Add up several missing optional capabilities	11.0.0	11.1.0
	RP-55	RP-120327		1	Additional value for Total RLC AM Buffer Size value range	11.0.0	11.1.0
06/2012	RP-56	RP-120812		-	Correction to definition of enhanced inter-frequency measurements without CM	11.1.0	
	RP-56	RP-120815		2	Extend the carrier capability for two-carrier HSDPA for 1.28Mcps TDD	11.1.0	
09/2012	RP-57	RP-121369		1	Introduction of Multiflow in TS 25.306	11.2.0	
	RP-57	RP-121363		-	Correction on the carrier capability for two-carrier HSDPA for 1.28Mcps TDD	11.2.0	
40/00:-	RP-57	RP-121359		-	Voice support Capabilities	11.2.0	
12/2012	RP-58	RP-121923		-	Adding the capability of supporting MAC-ehs window size extension	11.3.0	
	RP-58	RP-121818		1	CR on rSRVCC capability indicator to 25.306	11.3.0	
	RP-58	RP-121942		1	Introduction of 4Tx-HSDPA in 25.306	11.3.0	
	RP-58 RP-58	RP-121941 RP-121943		1	Introduction of Further Enhancements to CELL_FACH in 25.306	11.3.0	
	RP-58 RP-58	RP-121943 RP-121945		1	Introduction of further Multiflow agreements in TS 25.306. Introduction of MIMO with 64QAM HSUPA in 25.306	11.3.0 11.3.0	
	RP-58	RP-121945		<u>                                     </u>	Introduction of MINIO with 64QAM ASOPA in 25.306  Introduction of UM RLC re-establishment via reconfiguration	11.3.0	
	RP-58	RP-121937		<del> </del> -	L2 buffer sizes for 4Tx-HSDPA and UL MIMO with 64QAM	11.3.0	
					combinations		
	RP-58	RP-121938	0400		Introduction of non-contiguous multi-cell operation	11.3.0	11.4.0
-	RP-58	RP-121958		-	Introduction of Inter-frequency measurements on configured carriers without compressed mode	11.3.0	
	RP-58	RP-121922	0403	ļ-	Introduction of Multiple Frequency Band Indicators capability	11.3.0	11.4.0
03/2013	RP-59	RP-130248		<b>I</b> -	Introduction of definitions, symbols and abbreviations	11.4.0	
	RP-59	RP-130249	0405	-	Additional value for Total RLC AM Buffer Size value range	11.4.0	
	RP-59	RP-130248		1	Introduction of Cells excluded from detected set measurements	11.4.0	
	RP-59	RP-130239		-	Introducing an indication for support of the extended range of HS- DPCCH power offset	11.4.0	
I	RP-59	RP-130236	0413	J	Extend 3G ANR Applicable RRC State	11.4.0	11.5.0

	Change history TS 25.306									
	RP-59	RP-130249	0414	-	Introduction of the frequency specific compressed mode for the intra-band non-contiguous operation	11.4.0	11.5.0			
	RP-59	RP-130239	0415	1	Simultaneous operation of Multiflow HSDPA and STTD	11.4.0	11.5.0			
06/2013	RP-60	RP-130806	0417	1	Cleanups for FE_FACH related capabilities	11.5.0	11.6.0			
	RP-60	RP-130806	0418	-	Adding up the capability dependency for non-contiguous multi_cell	11.5.0	11.6.0			
	RP-60	RP-130809	0419	-	Addition of abbreviations in 25.306	11.5.0	11.6.0			
	RP-60	RP-130806	0425	1	Clarification of support for Multiflow with MIMO operation in different bands	11.5.0	11.6.0			
09/2013	RP-61	RP-131311	0433	-	Introduction of UE capability signalling for wideband RSRQ measurements	11.6.0	11.7.0			
12/2013	RP-62	RP-131981	0439	-	Introduction of capability bit for E-UTRA Multiple Frequency Band Indicators	11.7.0	11.8.0			
	RP-62	RP-131995	0440	-	Cleanup of wideband RSRQ measurement capability	11.7.0	11.8.0			
	RP-62	RP-132004	0444	-	Introduction of non-contiguous multi-cell with MIMO	11.7.0	11.8.0			
	RP-62	RP-131995	0445	-	Editorial correction	11.7.0	11.8.0			

### History

	Document history							
V11.3.0	October 2012	Publication						
V11.4.0	January 2013	Publication						
V11.5.0	April 2013	Publication						
V11.6.0	July 2013	Publication						
V11.7.0	September 2013	Publication						
V11.8.0	January 2014	Publication						