TSG-RAN Meeting #22 Maui, USA, 9-12 December 2003

RP-030722

Title:Proposed update of agreed CRs 2150-2152 to TS 25.331 on Minimum UE capability class

Source: Ericsson

Agenda item: 7.3.3

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem
25.331	2150	3	R99	Minimum UE capability class	F	3.16.0	3.17.0		TEI
25.331	2151	3	Rel-4	Minimum UE capability class	A	4.11.0	4.12.0		TEI
25.331	2152	3	Rel-5	Minimum UE capability class	A	5.6.0	5.7.0		TEI

		EQUEST	CR-Form-v7
	CHANGE R	EQUESI	
^ж 25	.331 CR 2150 #r	ev 3 ^{# C}	Current version: 3.16.0 [#]
For <u>HELP</u> on using	this form, see bottom of this pag	ge or look at the p	pop-up text over the X symbols.
Proposed change affec	<i>ts:</i> UICC apps೫ №	1E 🗶 Radio Acc	cess Network Core Network
Title: X Mir	nimum UE capability class		
Source: % Eric	csson		
Work item code: # TE	I		Date: # Nov 2003
Category: # F Use Deta be fo	one of the following categories: F (correction) A (corresponds to a correction in a B (addition of feature), C (functional modification of feature) D (editorial modification) iiled explanations of the above cate bund in 3GPP <u>TR 21.900</u> .	F an earlier release) re) gories can	Release: #R99Use one of the following releases:2(GSM Phase 2)R96R97(Release 1996)R97R98(Release 1997)R98R99Release 1999)Rel-4Release 4)Rel-5Release 5)Rel-6(Release 6)
Reason for change: ೫	A minimum radio access capal	oility parameter c	combination is not defined.
Summary of change: ₩	 The radio access parameter of 12kbps class UE are added for minimum UE. 1. The capability values that exbps class UE will never be used. 2. A sentence is added to mal capability still should perform bitrate common channel confir For 12 kbps class Ues it is a select the support of the capabilities lower that the e.g. on common channels, like to read the FACH. For these to supported. The CR has no impact on UT 	ralues for a new r or FDD. It is define exist in signalling sed and are removed in a predictable r guration. shall in R'99 and an for 32kbps UE e CR may be una e SCCPCH combut Jes there are examples RAN.	reference combination called hed that this 12kbps class UE is the but is below the capabilty of the 12 oved from the signalling. E with the lowest possible UE manner in NWs utilising a high onwards. E class are affected. able to support RAB combinations binations. Specifically they can fail amples in 34.108 that will not be
Consequences if	There is no definition of the m network. Operators may use I UEs with insufficient UE capa access the system.	inimum UE capa RAB combination bilities. In consec	ibilities that can be expected by the is that can not be supported by quence UEs may be unable to

Clauses affected:	₭ 8.1.1.6.5, 8.1.1.6.6, 8.5.19, 10.3.3.25, 10.3.3.34, 10.3.3.40, 11.3							
	YN							
Other specs affected:	# X Other core specifications # 25.306 X Test specifications # 25.306 X O&M Specifications # 25.306							
Other comments:	 In revision 2 of this CR the last paragraph changed in section 8.1.1.6.5 and 8.1.1.6.6 are rephrased to be normative text instead of a NOTE. 							

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.1.1.6.5 System Information Block type 5

The UE should store all relevant IEs included in this system information block. The UE shall:

1> if in connected mode, and System Information Block type 6 is indicated as used in the cell:

2> read and act on information sent in System Information Block type 6.

- 1> replace the TFS of the RACH with the one stored in the UE if any;
- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink for the PRACH if UE is in CELL_FACH state;
- 1> use the first instance of the list of transport formats as in the IE "RACH TFS" for the used RACH received in the IE "PRACH system information list" when using the CCCH;
- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" (FDD only) when given allocated PRACH is used;
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if UE is in Idle mode or in CELL_PCH or URA_PCH state;
- 1> start to monitor its paging occasions on the selected PICH if UE is in Idle mode or in CELL_PCH or URA_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if UE is in CELL_FACH state;
- 1> in TDD:
 - 2> use the IE "TDD open loop power control" as defined in subclause 8.5.7 when allocated PRACH is used;
 - 2> if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included:
 - 3> store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

8.1.1.6.6 System Information Block type 6

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> replace the TFS of the RACH with the one stored in the UE if any;
- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink if UE is in CELL_FACH state. If the IE "PRACH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information to configure the PRACH;

- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" when associated PRACH is used. If the IE "AICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information (FDD only);
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if the UE is in CELL_PCH or URA_PCH state. If the IE "PICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information;
- 1> start to monitor its paging occasions on the selected PICH if the UE is in CELL_PCH or URA_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if the UE is in CELL_FACH state. If the IE "Secondary CCPCH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information;
- 1> in TDD: use the IE "TDD open loop power control" as defined in subclause 8.5.7;
- 1> in TDD: if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

8.5.19 Secondary CCPCH selection

In UTRAN Connected mode, the UE shall select the Secondary CCPCH according to the following rules:

- 1> in Cell_DCH state:
 - 2> select Secondary CCPCH according to subclause 8.6.6.4.
- 1> in Cell_FACH state:
 - 2> if System Information Block type 6 is defined and includes one or more SCCPCH that carry a FACH, compile a list of candidate SCCPCH that consists of these SCCPCH, in the order of appearance in System Information Block type 6.
- NOTE 1: An SCCPCH carries a FACH if the size of the "FACH/PCH information" list within the IE "Secondary CCPCH system information" exceeds 1 or if the size of this list equals 1 while IE "Secondary CCPCH system information" does not contain an IE "PICH info".
 - 2> otherwise:
 - 3> compile a list of candidate SCCPCH that consists of the SCCPCH(s) included in System Information Block type 5 that carry a FACH, in the order of appearance in System Information Block type 5.
 - 2> select an SCCPCH from the list of candidate SCCPCHs based on U-RNTI as follows:

"Index of selected SCCPCH" = U-RNTI mod K,

where K is equal to the number of candidate SCCPCHs.

- 1> in Cell_PCH and URA_PCH states:
 - 2> if System Information Block type 6 is defined and includes one or more SCCPCH that carry a PCH, compile a list of candidate SCCPCH that consists of these SCCPCH, in the order of appearance in System Information Block type 6
- NOTE 2: An SCCPCH carries a PCH if the IE "Secondary CCPCH system information" contains IE "PICH info"
 - 2> otherwise compile a list of candidate SCCPCH that consists of the SCCPCH(s) included in System Information Block type 5 that that carry a PCH, in the order of appearance in System Information Block type 5
 - 2> select an SCCPCH from the list of candidate SCCPCHs based on U-RNTI as follows:

"Index of selected SCCPCH" = U-RNTI mod K,

where K is equal to the number of candidate SCCPCHs.

The UE shall set the CFN in relation to the SFN of the current cell according to subclause 8.5.15.

The UE shall support reception decode of all transport formats on all FACHs multiplexed on the selected S-CCPCH according to its UE capability, as defined in section 8.1.1.6.5 and 8.1.1.6.6, to find blocks adressed to the UE.

10.3.3.25 Physical channel capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Downlink physical channel capability information elements				
FDD downlink physical channel capability	CH- fdd_req_su p			
>Max no DPCH/PDSCH codes	MP		Integer (18)	Maximum number of DPCH/PDSCH codes to be simultaneously received
>Max no physical channel bits received	MP		Integer (600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800)	Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)
>Support for SF 512	MP		Boolean	TRUE means supported
>Support of PDSCH	MP		Boolean	TRUE means supported
>Simultaneous reception of SCCPCH and DPCH	MP		Boolean	TRUE means supported
>Simultaneous reception of SCCPCH, DPCH and PDSCH	CV- if_sim_rec _pdsch _sup		Boolean	TRUE means supported
>Max no of S-CCPCH RL	CV- if_sim_rec		Integer(1)	Maximum number of simultaneous S-CCPCH radio links
>Support of dedicated pilots for channel estimation	MD		Enumerated (true)	Presence of this element means supported and absence not supported. Note 1.
TDD downlink physical channel capability	CH- tdd_req_su			

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Information Element/Group name	Need	Multi	Type and Reference	Semantics description
	р			
>Maximum number of timeslots per frame	MP		Integer (114)	
>Maximum number of physical channels per frame	MP		Integer (45.,224)	
>Minimum SF	MP		Integer (1, 16)	
>Support of PDSCH	MP		Boolean	TRUE means supported
>Maximum number of physical channels per timeslot	MP		Integer (4 <u>5</u> 16)	
Uplink physical channel capability information elements				
FDD uplink physical channel capability	CH- fdd_req_su p			
>Maximum number of DPDCH bits transmitted per 10 ms	MP		Integer (600, 1200, 2400, 4800. 9600, 19200. 28800, 38400, 48000, 57600)	
>Support of PCPCH	MP		Boolean	TRUE means supported
TDD uplink physical channel capability	CH- tdd_req_su p			
>Maximum Number of timeslots per frame	MP		Integer (114)	
>Maximum number of physical channels per timeslot	MP		Integer (1, 2)	
>Minimum SF	MP		Integer (1, 2, 4, 8 , 16)	
>Support of PUSCH	MP		Boolean	TRUE means supported

Condition	Explanation
if_sim_rec_pdsch_sup	The IE is mandatory present if the IE "Simultaneous reception of SCCPCH and DPCH" = True and IE Support of PDSCH = True. Otherwise this field is not needed in the message.
if_sim_rec	The IE is mandatory present if the IE "capability Simultaneous reception of SCCPCH and DPCH" = True. Otherwise this field is not needed in the message.
tdd_req_sup	The IE is mandatory present if the IE "Multi-mode capability" has the value "TDD" or "FDD/TDD" and a TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
fdd_req_sup	The IE is mandatory present if the IE "Multi-mode capability" has the value "FDD" or "FDD/TDD" and a FDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.

NOTE 1: These performance requirements are defined in Release 5.

10.3.3.34 RLC capability

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Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Total RLC AM buffer size	MP		Integer (2, 10,50,100 ,150,500,100 0)	Total receiving and transmitting RLC AM buffer capability in kBytes. One spare value is needed.
Maximum RLC AM Window Size	MP		Integer(2047 ,4095)	Maximum supported RLC TX and RX window in UE
Maximum number of AM entities	MP		Integer (3, 4,5,6,8,16 ,30)	

10.3.3.40 Transport channel capability

Information Element/Group	Need	Multi	Type and	Semantics description	
name			Reference		
Downlink transport channel capability information elements					
Max no of bits received	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all transport blocks received at an arbitrary time instant	
Max convolutionally coded bits received	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all convolutionally coded transport blocks received at an arbitrary time instant	
Max turbo coded bits received	CV- turbo_dec_ sup		Integer(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 received at an arbitrary time instant	
Maximum number of simultaneous transport channels	MP		Integer(4, 8, 16, 32)		
Maximum number of simultaneous CCTrCH	MP		Integer (18)		
Max no of received transport blocks	MP		Integer(4, 8, 16, 32, 48, 64, 96, 128, 256, 512)	Maximum total number of transport blocks received within TTIs that end at within the same 10ms interval	
Maximum number of TFC	MP		Integer(16, 32, 48, 64, 96, 128, 256, 512, 1024)		
Maximum number of TF	MP		Integer(32, 64, 128, 256, 512, 1024)		
Support for turbo decoding	MP		Boolean	TRUE means supported	
Uplink transport channel capability information					

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Information Element/Group name	Need	Multi	Type and Reference	Semantics description
elements				
Max no of bits transmitted	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all transport blocks transmitted at an arbitrary time instant
Max convolutionally coded bits transmitted	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all convolutionally coded transport blocks transmitted at an arbitrary time instant
Max turbo coded bits transmitted	CV- turbo_enc_ sup		Integer(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 transmitted at an arbitrary time instant
Maximum number of simultaneous transport channels	MP		Integer($\frac{2}{4}$, 4, 8, 16, 32)	
Maximum number of simultaneous CCTrCH of DCH type	CH- tdd_req_su p		Integer (18)	
Max no of transmitted transport blocks	MP		Integer(2, 4 , 8, 16, 32, 48, 64, 96, 128, 256, 512)	Maximum total number of transport blocks transmitted within TTIs that start at the same time
Maximum number of TFC	MP		Integer(4 , 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024)	
Maximum number of TF	MP		Integer(32, 64, 128, 256, 512, 1024)	
Support for turbo encoding	MP		Boolean	TRUE means supported

Condition	Explanation
turbo_dec_sup	The IE is mandatory present if the IE "Support of turbo decoding" = True. Otherwise this field is not needed in the message.
turbo_enc_sup	The IE is mandatory present if the IE "Support of turbo encoding" = True. Otherwise this field is not needed in the message.
tdd_req_sup	The IE is mandatory present if the IE "Multi-mode capability" has the value "TDD" or "FDD/TDD" and a TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.

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11.3 Information element definitions

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[...]
                                      SEQUENCE {
RLC-Capability ::=
                                          TotalRLC-AM-BufferSize,
    totalRLC-AM-BufferSize
    maximumRLC-WindowSize
                                          MaximumRLC-WindowSize,
    maximumAM-EntityNumber
                                          MaximumAM-EntityNumberRLC-Cap
[...]
TotalRLC-AM-BufferSize ::=
                                     ENUMERATED {
                                          kb2<u>dummy</u>, kb10, kb50, kb100,
                                          kb150, kb500, kb1000, spare }
[...]
MaximumAM-EntityNumberRLC-Cap ::=
                                     ENUMERATED {
                                          am3dummy, am4, am5, am6,
                                          am8, am16, am30 \}
[...]
DL-TransChCapability ::=
                                      SEQUENCE {
    maxNoBitsReceived
                                          MaxNoBits,
    maxConvCodeBitsReceived
                                          MaxNoBits.
    turboDecodingSupport
                                          TurboSupport,
    maxSimultaneousTransChs
                                          MaxSimultaneousTransChsDL,
    maxSimultaneousCCTrCH-Count
                                          MaxSimultaneousCCTrCH-Count,
    maxReceivedTransportBlocks
                                          MaxTransportBlocksDL,
    maxNumberOfTFC
                                         MaxNumberOfTFC-DL,
    maxNumberOfTF
                                          MaxNumberOfTF
[...]
                                     ENUMERATED {
MaxNoBits ::=
                                          b640, b1280, b2560, b3840, b5120,
                                          b6400, b7680, b8960, b10240,
                                          b20480, b40960, b81920, b163840 }
[...]
                                     ENUMERATED {
MaxSimultaneousTransChsDL ::=
                                          e4, e8, e16, e32 }
[...]
MaxTransportBlocksDL ::=
                                      ENUMERATED {
                                          tb4, tb8, tb16, tb32, tb48,
                                          tb64, tb96, tb128, tb256, tb512 }
[...]
MaxNumberOfTFC-DL ::=
                                      ENUMERATED {
                                          tfc16, tfc32, tfc48, tfc64, tfc96,
                                          tfc128, tfc256, tfc512, tfc1024 }
[...]
                                      CHOICE {
TurboSupport ::=
                                          NULL,
    notSupported
                                          MaxNoBits
    supported
[...]
UL-TransChCapability ::=
                                     SEQUENCE {
    maxNoBitsTransmitted
                                          MaxNoBits,
    maxConvCodeBitsTransmitted
                                          MaxNoBits,
    turboEncodingSupport
                                          TurboSupport,
    maxSimultaneousTransChs
                                          MaxSimultaneousTransChsUL,
    modeSpecificInfo
                                          CHOICE {
        fdd
                                              NULL,
        tdd
                                              SEQUENCE {
            maxSimultaneousCCTrCH-Count
                                                  MaxSimultaneousCCTrCH-Count
        }
    },
    maxTransmittedBlocks
                                          MaxTransportBlocksUL,
    maxNumberOfTFC
                                          MaxNumberOfTFC-UL,
    maxNumberOfTF
                                          MaxNumberOfTF
[...]
                                     ENUMERATED {
MaxSimultaneousTransChsUL ::=
                                          e2dummy, e4, e8, e16, e32 }
[...]
MaxTransportBlocksUL ::=
                                     ENUMERATED {
                                          tb2dummy, tb4, tb8, tb16, tb32, tb48,
                                          tb64, tb96, tb128, tb256, tb512 }
[...]
MaxNumberOfTFC-UL ::=
                                      ENUMERATED {
                                          tfc4dummy1, tfc8dummy2, tfc16, tfc32, tfc48, tfc64,
tfc96, tfc128, tfc256, tfc512, tfc1024 }
```

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[...]
 Implementation
 Implementation

 DL-PhysChCapabilityFDD
 ::=
 SEQUENCE {

 maxNoDPCH-PDSCH-Codes
 INTEGEH

 maxNoPhysChBitsReceived
 MaxNoPh

 supportForSF-512
 BOOLEAN

 supportOfPDSCH
 BOOLEAN
 INTEGER (1..8), MaxNoPhysChBitsReceived, BOOLEAN, supportOfPDSCH BOOLEAN, simultaneousSCCPCH-DPCH-Reception SimultaneousSCCPCH-DPCH-Reception } [...] DL-PhysChCapabilityFDD-v380ext ::= SEQUENCE { supportOfDedicatedPilotsForChEstimation SupportOfDedicatedPilotsForChEstimation OPTIONAL } SupportOfDedicatedPilotsForChEstimation ::= ENUMERATED { true } [...] MaxNoPhysChBitsReceived ::= ENUMERATED { b600dummy, b1200, b2400, b3600, b4800, b7200, b9600, b14400, b19200, b28800, b38400, b48000, b57600, b67200, b76800 } [...] DL-PhysChCapabilityTDD ::= SEQUENCE { maxTS-PerFrame MaxTS-PerFrame, maxPhysChPerFrame MaxPhysChPerFrame, minimumSF MinimumSF-DL, supportOfPDSCH BOOLEAN, maxPhysChPerTS MaxPhysChPerTS [...] -- the values 1 ...4 for MaxPhysChPerFrame are not used in this version of the protocol MaxPhysChPerFrame ::= INTEGER (1..224) [...] -- the values 1 ...4 for MaxPhysChPerTS are not used in this version of the protocol MaxPhysChPerTS ::= INTEGER (1..16) [...] UL-PhysChCapabilityFDD ::= SEQUENCE { MaxNoDPDCH-BitsTransmitted, maxNoDPDCH-BitsTransmitted supportOfPCPCH BOOLEAN } [...] MaxNoDPDCH-BitsTransmitted ::= ENUMERATED { b600, bì200, b2400, b4800, b9600, b19200, b28800, b38400, b48000, b57600 } [...] SEQUENCE { UL-PhysChCapabilityTDD ::= MaxTS-PerFrame, maxTS-PerFrame maxPhysChPerTimeslot MaxPhysChPerTimeslot, minimumSF MinimumSF-UL, supportOfPUSCH BOOLEAN [...] MinimumSF-UL ::= ENUMERATED { sf1, sf2, sf4, sf8, sf16 dummy }

Maul, USA, 9-12 Dec			CR-Form-v7
	CHANGE	REQUES	Г
^ж 25	.331 CR 2151	[≭] rev 2 [≭]	Current version: 4.11.0 [#]
For <u>HELP</u> on using	this form, see bottom of this	page or look at t	he pop-up text over the % symbols.
Proposed change affec	t s: UICC apps೫	ME X Radio	Access Network Core Network
Title: % Min	nimum UE capability class		
Source: % Eri	csson		
Work item code: # TE	1		Date:
Category: X A Use Deta be fo	one of the following categories. F (correction) A (corresponds to a correction B (addition of feature), C (functional modification of fe D (editorial modification) ailed explanations of the above bund in 3GPP <u>TR 21.900</u> .	: n in an earlier relea eature) categories can	Release: #Rel-4Use one 2(GSM Phase 2)2(GSM Phase 2)se)R96(Release 1996)R97(Release 1997)R98(Release 1998)R99(Release 1999)Rel-4(Release 4)Rel-5(Release 5)Rel-6(Release 6)
Reason for change: ೫	A minimum radio access ca	apability paramete	er combination is not defined.
Summary of change: ℜ	The radio access paramet 12kbps class UE are adde minimum UE. 1. The capability values th kbps class UE will never b 2. A sentence is added to capability still should perfor bitrate common channel c For 12 kbps class Ues it is Impact analysis: UEs with capabilities lowe UEs that do not implemen e.g. on common channels to read the FACH. For the supported. The CR has no impact on	er values for a ne d for FDD. It is d at exist in signall be used and are r make sure that a orm in a predictate onfiguration. a shall in R'99 a r than for 32kbps t the CR may be , like SCCPCH co se Ues there are UTRAN.	ew reference combination called efined that this 12kbps class UE is the ing but is below the capability of the 12 emoved from the signalling. UE with the lowest possible UE ble manner in NWs utilising a high and onwards. UE class are affected. unable to support RAB combinations ombinations. Specifically they can fail examples in 34.108 that will not be
Consequences if अ not approved:	There is no definition of th network. Operators may u UEs with insufficient UE c access the system.	e minimum UE ca se RAB combina apabilities. In cor	apabilities that can be expected by the tions that can not be supported by sequence UEs may be unable to

Clauses affected:	₭ 8.1.1.6.5, 8.1.1.6.6, 8.5.19, 10.3.3.25, 10.3.3.34, 10.3.3.40, 11.3							
	YN							
Other specs affected:	# X Other core specifications # 25.306 X Test specifications # 25.306 X O&M Specifications # 25.306							
Other comments:	 In revision 2 of this CR the last paragraph changed in section 8.1.1.6.5 and 8.1.1.6.6 are rephrased to be normative text instead of a NOTE. 							

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.1.1.6.5 System Information Block type 5

The UE should store all relevant IEs included in this system information block. The UE shall:

1> if in connected mode, and System Information Block type 6 is indicated as used in the cell:

2> read and act on information sent in System Information Block type 6.

- 1> replace the TFS of the RACH with the one stored in the UE if any;
- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink for the PRACH if UE is in CELL_FACH state;
- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" (FDD only) when given allocated PRACH is used;
- 1> use the first instance of the list of transport formats as in the IE "RACH TFS" for the used RACH received in the IE "PRACH system information list" when using the CCCH;
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if UE is in Idle mode or in CELL_PCH or URA_PCH state;
- 1> start to monitor its paging occasions on the selected PICH if UE is in Idle mode or in CELL_PCH or URA_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if UE is in CELL_FACH state;
- 1> in 3.84 Mcps TDD:

2> use the IE "TDD open loop power control" as defined in subclause 8.5.7 when allocated PRACH is used.

- 1> in TDD:
 - 2> if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included:
 - 3> store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

8.1.1.6.6 System Information Block type 6

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> replace the TFS of the RACH with the one stored in the UE if any;
- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink if UE is in CELL_FACH state. If the IE "PRACH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information to configure the PRACH;

- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" when associated PRACH is used. If the IE "AICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information (FDD only);
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if the UE is in CELL_PCH or URA_PCH state. If the IE "PICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information;
- 1> start to monitor its paging occasions on the selected PICH if the UE is in CELL_PCH or URA_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if the UE is in CELL_FACH state. If the IE "Secondary CCPCH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information;
- 1> in 3.84 Mcps TDD: use the IE "TDD open loop power control" as defined in subclause 8.5.7;
- 1> in TDD: if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

8.5.19 Secondary CCPCH selection

In UTRAN Connected mode, the UE shall select the Secondary CCPCH according to the following rules:

- 1> in Cell_DCH state:
 - 2> select Secondary CCPCH according to subclause 8.6.6.4.
- 1> in Cell_FACH state:
 - 2> if System Information Block type 6 is defined and includes one or more SCCPCH that carry a FACH, compile a list of candidate SCCPCH that consists of these SCCPCH, in the order of appearance in System Information Block type 6.
- NOTE 1: An SCCPCH carries a FACH if the size of the "FACH/PCH information" list within the IE "Secondary CCPCH system information" exceeds 1 or if the size of this list equals 1 while IE "Secondary CCPCH system information" does not contain an IE "PICH info".
 - 2> otherwise:
 - 3> compile a list of candidate SCCPCH that consists of the SCCPCH(s) included in System Information Block type 5 that carry a FACH, in the order of appearance in System Information Block type 5.
 - 2> select an SCCPCH from the list of candidate SCCPCHs based on U-RNTI as follows:

"Index of selected SCCPCH" = U-RNTI mod K,

where K is equal to the number of candidate SCCPCHs.

- 1> in Cell_PCH and URA_PCH states:
 - 2> if System Information Block type 6 is defined and includes one or more SCCPCH that carry a PCH, compile a list of candidate SCCPCH that consists of these SCCPCH, in the order of appearance in System Information Block type 6
- NOTE 2: An SCCPCH carries a PCH if the IE "Secondary CCPCH system information" contains IE "PICH info"
 - 2> otherwise compile a list of candidate SCCPCH that consists of the SCCPCH(s) included in System Information Block type 5 that that carry a PCH, in the order of appearance in System Information Block type 5
 - 2> select an SCCPCH from the list of candidate SCCPCHs based on U-RNTI as follows:

"Index of selected SCCPCH" = U-RNTI mod K,

where K is equal to the number of candidate SCCPCHs.

The UE shall set the CFN in relation to the SFN of the current cell according to subclause 8.5.15.

The UE shall support reception of decode all transport formats on all FACHs multiplexed on the selected S-CCPCH according to its UE capability, as defined in section 8.1.1.6.5 and 8.1.1.6.6, to find blocks adressed to the UE.

10.3.3.25 Physical channel capability

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Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
Downlink physical channel capability information elements					
FDD downlink physical channel	CH-				
capability	fdd_req_su p				
>Max no DPCH/PDSCH codes	MP		Integer (18)	Maximum number of DPCH/PDSCH codes to be simultaneously received	
>Max no physical channel bits received	MP		Integer (600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800)	Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)	
>Support for SF 512	MP		Boolean	TRUE means supported	
>Support of PDSCH	MP		Boolean	TRUE means supported	
>Simultaneous reception of SCCPCH and DPCH	MP		Boolean	TRUE means supported	
>Simultaneous reception of SCCPCH, DPCH and PDSCH	CV- if_sim_rec _pdsch _sup		Boolean	TRUE means supported	
>Max no of S-CCPCH RL	CV- if_sim_rec		Integer(1)	Maximum number of simultaneous S-CCPCH radio links	
>Support of dedicated pilots for channel estimation	MD		Enumerated (true)	Presence of this element means	

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Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
				supported and	
				supported.	
				If the UE notifies	
				support of this	
				should comply	
				with the	
				corresponding	
				requirements. Note 1.	
3.84 Mcps TDD downlink	CH-				Name
physical channel capability	3.84_Mcps _tdd_req_s				changed in REL-4
>Maximum number of timeslots	up MP		Integer		
per frame	MD		(114)		
channels per frame	MP		Integer (<u>5</u> 4224)		
>Minimum SF	MP		Integer (1, 16)		
>Support of PDSCH	MP		Boolean	TRUE means	
>Maximum number of physical	MP		Integer	Supported	
channels per timeslot			(<u>5</u> 416)		
physical channel capability	1.28_Mcps				REL-4
	up				
>Maximum number of timeslots per subframe	ŃР		Integer (16)		REL-4
>Maximum number of physical channels per subframe	MP		Integer (196)		REL-4
>Minimum SF	MP		Integer (1, 16)		REL-4
>Support of PDSCH	MP		Boolean	TRUE means	REL-4
>Maximum number of physical	MP		Integer	Supported	REL-4
channels per timeslot			(116)	70.15	
>Support of 8PSK	МР		Boolean	IRUE means supported	REL-4
Uplink physical channel capability information elements					
FDD uplink physical channel	CH-				
capability	fdd_req_su p				
>Maximum number of DPDCH	MP		Integer (600,		
bits transmitted per 10 ms			1200, 2400, 4800, 9600		
			19200.		
			28800,		
			38400,		
			57600)		
>Support of PCPCH	MP		Boolean	TRUE means	
3.84 Mcps TDD uplink physical	CH-				Name
channel capability	3.84_Mcps				changed
	_taa_req_s				IN KEL-4
>Maximum Number of timeslots	MP		Integer		
per frame	MD		(114)		
>iviaximum number of physical	IVIP		integer		

Information Element/Group	Need	Multi	Type and	Semantics	Version
name			Reference	description	
channels per timeslot			(1, 2)		
>Minimum SF	MP		Integer		
			(1, 2, 4, 8 ,		
			16)		
>Support of PUSCH	MP		Boolean	TRUE means	
				supported	
1.28 Mcps TDD uplink physical	CH-				REL-4
channel capability	1.28_Mcps				
	_tdd_req_s				
	ир				
>Maximum Number of timeslots	MP		Integer		REL-4
per subframe			(16)		
>Maximum number of physical	MP		Integer		REL-4
channels per timeslot			(1, 2)		
>Minimum SF	MP		Integer		REL-4
			(1, 2, 4, 8,		
			16)		
>Support of PUSCH	MP		Boolean	TRUE means	REL-4
				supported	
>Support of 8PSK	MP		Boolean	TRUE means	REL-4
				supported	

Condition	Explanation
if_sim_rec_pdsch_sup	The IE is mandatory present if the IE "Simultaneous reception of SCCPCH and DPCH" = True and IE Support of PDSCH = True. Otherwise this field is not needed in the message.
if_sim_rec	The IE is mandatory present if the IE "capability Simultaneous reception of SCCPCH and DPCH" = True. Otherwise this field is not needed in the message.
3.84_Mcps_tdd_req_sup	The IE is mandatory present if the IE "TDD RF capability" is present with the IE "Chip rate capability" set to "3.84 Mcps" and a 3.84 Mcps TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
1.28_Mcps_tdd_req_sup	The IE is mandatory present if the IE "TDD RF capability" is present with the IE "Chip rate capability" set to "1.28 Mcps" and a 1.28 Mcps TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
fdd_req_sup	The IE is mandatory present if the IE "Multi-mode capability" has the value "FDD" or "FDD/TDD" and a FDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.

NOTE 1: These performance requirements are defined in Release 5.

10.3.3.34 RLC capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Total RLC AM buffer size	MP		Integer (2, 10,50,100 ,150,500,100 0)	Total receiving and transmitting RLC AM buffer capability in kBytes. One spare value is needed.
Maximum RLC AM Window Size	MP		Integer(2047 ,4095)	Maximum supported RLC TX and RX window in UE
Maximum number of AM entities	MP		Integer (3, 4,5,6,8,16 ,30)	

10.3.3.40 Transport channel capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Downlink transport channel capability information elements				
Max no of bits received	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all transport blocks received at an arbitrary time instant
Max convolutionally coded bits received	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all convolutionally coded transport blocks received at an arbitrary time instant
Max turbo coded bits received	CV- turbo_dec_ sup		Integer(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 received at an arbitrary time instant
Maximum number of	MP		Integer(4, 8,	
Maximum number of simultaneous CCTrCH	MP		Integer (18)	
Max no of received transport blocks	MP		Integer(4, 8, 16, 32, 48, 64, 96, 128, 256, 512)	Maximum total number of transport blocks received within TTIs that end at within the same 10ms interval
Maximum number of TFC	MP		Integer(16, 32, 48, 64, 96, 128, 256, 512, 1024)	
Maximum number of TF	MP		Integer(32, 64, 128, 256, 512, 1024)	
Support for turbo decoding	MP		Boolean	TRUE means supported
Uplink transport channel capability information elements				
Max no of bits transmitted	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all transport blocks transmitted at an arbitrary time instant

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Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Max convolutionally coded bits transmitted	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all convolutionally coded transport blocks transmitted at an arbitrary time instant
Max turbo coded bits transmitted	CV- turbo_enc_ sup		Integer(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 transmitted at an arbitrary time instant
Maximum number of simultaneous transport channels	MP		Integer(2, 4 , 8, 16, 32)	
Maximum number of simultaneous CCTrCH of DCH type	CH- tdd_req_su p		Integer (18)	
Max no of transmitted transport blocks	MP		Integer(2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512)	Maximum total number of transport blocks transmitted within TTIs that start at the same time
Maximum number of TFC	MP		Integer(4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024)	
Maximum number of TF	MP		Integer(32, 64, 128, 256, 512, 1024)	
Support for turbo encoding	MP		Boolean	TRUE means supported

Condition	Explanation
turbo_dec_sup	The IE is mandatory present if the IE "Support of turbo decoding" = True. Otherwise this field is not
	needed in the message.
turbo_enc_sup	The IE is mandatory present if the IE "Support of turbo encoding" = True. Otherwise this field is not
	needed in the message.
tdd_req_sup	The IE is mandatory present if the IE "Multi-mode capability" has the value "TDD" or "FDD/TDD" and a TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.

11.3 Information element definitions

```
[...]
TotalRLC-AM-BufferSize ::=
TotalRLC-AM-BufferSize ::=
ENUMERATED {
    kb2dummy, kb10, kb50, kb100,
    kb150, kb500, kb1000, spare }
[...]
MaximumAM-EntityNumberRLC-Cap ::=
MaximumAM-EntityNumberRLC-Cap ::=
MaximumAM-EntityNumberRLC-Cap ::=
MaximumAM-EntityNumberRLC-Cap ::=
ENUMERATED {
    am3dummy, am4, am5, am6,
    am8, am16, am30 }
[...]
ENUMERATED {
    e2dummy, e4, e8, e16, e32 }
[...]
```

	MaxTransportBlocksUL ::=	ENUMERATED {
		tb2dummy, tb4, tb8, tb16, tb32, tb48,
		tb64, tb96, tb128, tb256, tb512 }
	[]	
	MaxNumberOfTFC-UL ::=	ENUMERATED {
L		$\pm fc4$ dummv1, $\pm fc8$ dummv2, $\pm fc16$, $\pm fc32$, $\pm fc48$, $\pm fc64$.
		$t_{fc96} + t_{fc128} + t_{fc256} + t_{fc512} + t_{fc1024}$
	[]	
	MayNoDbygChBitgBegeived :-	ריזיייגסיזאזוויז ∫
I.	MaxioritySciibieSicectivea	$b \in 0.0 d_{\text{immer}}$ b 1200 b 2400 b 2600
I		b000 a a a a b c c c c c b 1 4 4 0 0 b c c c c b 1 4 4 0 0 b c c c c c b 1 4 4 0 0 b c c c c c c b 1 4 4 0 0 b c c c c c c c c c c c c c c c c c
		D4800, D7200, D9600, D14400,
		D19200, D28800, D38400, D48000,
		b57600, b67200, b76800 }
	[]	
L	the values 14 for MaxPhysChPerH	Frame are not used in this version of the protocol
	MaxPhysChPerFrame ::=	INTEGER (1224)
	[]	
	the values 14 for MaxPhysChPerT	IS are not used in this version of the protocol
	MaxPhysChPerTS ::=	INTEGER (116)
	[]	
	MinimumSF-UL ::=	ENUMERATED {
		sf1, sf2, sf4, sf8, sf16 _dummy}
		,

Maul, USA, 9-12 Dec	Vaul, USA, 9-12 December 2003						
	CHANG		ST				
^ж 25	.331 CR 2152	жrev 3	жС	Current version	5.6.0	ж	
For <u>HELP</u> on using	this form, see bottom of t	his page or look	at the	pop-up text ove	er the X syn	nbols.	
Proposed change affec	: ts: UICC apps⊯	ME X Ra	idio Acc	cess Network	Core Ne	twork	
Title: % Min	nimum UE capability clas	S					
Source: % Eri	csson						
Work item code: # TE	.1			Date: ೫ N	lov 2003		
Category: % A Use Deta be fo	one of the following categor F (correction) A (corresponds to a correct B (addition of feature), C (functional modification) a iled explanations of the abo bound in 3GPP <u>TR 21.900</u> .	ties: tion in an earlier r of feature) ve categories car	release)	Release: % R Use <u>one</u> of the 2 (G R96 (Re R97 (Re R98 (Re R98 (Re R99 (Re Rel-4 (Re Rel-5 (Re Rel-6 (Re	Rel-5 following rele SM Phase 2) elease 1996) elease 1997) elease 1998) elease 1999) elease 4) elease 5) elease 6)	ases:	
Reason for change: ೫	A minimum radio access	s capability para	meter c	combination is I	not defined.		
Summary of change: ₩	The radio access parar 12kbps class UE are ac minimum UE. 1. The capability values kbps class UE will neve 2. A sentence is added capability still should pe bitrate common channe For 12 kbps class Ues Impact analysis: UEs with capabilities lo UEs that do not implem e.g. on common channe to read the FACH. For supported. The CR has no impact	neter values for dded for FDD. It is that exist in sig or be used and a to make sure the eform in a pred of configuration. it is a shall in R' wer than for 324 nent the CR may els, like SCCPC these Ues there on UTRAN.	a new is defir gnalling are rem nat a UE ictable i 99 and 99 and XH com CH com are exa	reference com hed that this 12 but is below th oved from the s with the lowe manner in NWs onwards. E class are affe able to support binations. Spec amples in 34.1	bination call kbps class t ne capabilty signalling. st possible t s utilising a h ected. RAB combi cifically they 08 that will r	ed JE is the of the 12 JE high nations can fail not be	
Consequences if अ not approved:	There is no definition o network. Operators ma UEs with insufficient UI access the system.	f the minimum L y use RAB com Ξ capabilities. In	JE capa binatior consec	abilities that car ns that can not quence UEs m	n be expecte be supporte ay be unable	ed by the d by e to	

Clauses affected:	ж 8.1.1.6.5, 8.1.1.6.6, 8.5.19, 10.3.3.25, 10.3.3.34, 10.3.3.40, 11.3
	YN
Other specs affected:	# X Other core specifications # 25.306 X Test specifications # 25.306 X O&M Specifications # 25.306
Other comments:	 In revision 2 of this CR the last paragraph changed in section 8.1.1.6.5 and 8.1.1.6.6 are rephrased to be normative text instead of a NOTE.

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1> if in connected mode, and System Information Block type 6 is indicated as used in the cell:

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- 1> replace the TFS of the RACH with the one stored in the UE if any;
- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink for the PRACH if UE is in CELL_FACH state;
- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" (FDD only) when given allocated PRACH is used;
- 1> use the first instance of the list of transport formats as in the IE "RACH TFS" for the used RACH received in the IE "PRACH system information list" when using the CCCH;
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if UE is in Idle mode or in CELL_PCH or URA_PCH state;
- 1> start to monitor its paging occasions on the selected PICH if UE is in Idle mode or in CELL_PCH or URA_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if UE is in CELL_FACH state;
- 1> in 3.84 Mcps TDD:

2> use the IE "TDD open loop power control" as defined in subclause 8.5.7 when allocated PRACH is used.

- 1> in TDD:
 - 2> if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included:
 - 3> store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

8.1.1.6.6 System Information Block type 6

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> replace the TFS of the RACH with the one stored in the UE if any;
- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink if UE is in CELL_FACH state. If the IE "PRACH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information to configure the PRACH;

- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" when associated PRACH is used. If the IE "AICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information (FDD only);
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if the UE is in CELL_PCH or URA_PCH state. If the IE "PICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information;
- 1> start to monitor its paging occasions on the selected PICH if the UE is in CELL_PCH or URA_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if the UE is in CELL_FACH state. If the IE "Secondary CCPCH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information;
- 1> in 3.84 Mcps TDD: use the IE "TDD open loop power control" as defined in subclause 8.5.7;
- 1> in TDD: if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

8.5.19 Secondary CCPCH selection

In UTRAN Connected mode, the UE shall select the Secondary CCPCH according to the following rules:

- 1> in Cell_DCH state:
 - 2> select Secondary CCPCH according to subclause 8.6.6.4.
- 1> in Cell_FACH state:
 - 2> if System Information Block type 6 is defined and includes one or more SCCPCH that carry a FACH, compile a list of candidate SCCPCH that consists of these SCCPCH, in the order of appearance in System Information Block type 6.
- NOTE 1: An SCCPCH carries a FACH if the size of the "FACH/PCH information" list within the IE "Secondary CCPCH system information" exceeds 1 or if the size of this list equals 1 while IE "Secondary CCPCH system information" does not contain an IE "PICH info".
 - 2> otherwise:
 - 3> compile a list of candidate SCCPCH that consists of the SCCPCH(s) included in System Information Block type 5 that carry a FACH, in the order of appearance in System Information Block type 5.
 - 2> select an SCCPCH from the list of candidate SCCPCHs based on U-RNTI as follows:

"Index of selected SCCPCH" = U-RNTI mod K,

where K is equal to the number of candidate SCCPCHs.

- 1> in Cell_PCH and URA_PCH states:
 - 2> if System Information Block type 6 is defined and includes one or more SCCPCH that carry a PCH, compile a list of candidate SCCPCH that consists of these SCCPCH, in the order of appearance in System Information Block type 6
- NOTE 2: An SCCPCH carries a PCH if the IE "Secondary CCPCH system information" contains IE "PICH info"
 - 2> otherwise compile a list of candidate SCCPCH that consists of the SCCPCH(s) included in System Information Block type 5 that that carry a PCH, in the order of appearance in System Information Block type 5
 - 2> select an SCCPCH from the list of candidate SCCPCHs based on U-RNTI as follows:

"Index of selected SCCPCH" = U-RNTI mod K,

where K is equal to the number of candidate SCCPCHs.

The UE shall set the CFN in relation to the SFN of the current cell according to subclause 8.5.15.

The UE shall support reception of <u>decode</u> all transport formats on all FACHs multiplexed on the selected S-CCPCH according to its UE capability, as defined in section 8.1.1.6.5 and 8.1.1.6.6, to find blocks adressed to the UE.

10.3.3.25 Physical channel capability

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Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
Downlink physical channel capability information elements					
FDD downlink physical channel capability	CH- fdd_req_su				
>Max no DPCH/PDSCH codes	MP		Integer (18)	Maximum number of DPCH/PDSCH codes to be simultaneously received	
>Max no physical channel bits received	MP		Integer (600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800)	Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)	
>Support for SF 512	MP		Boolean	TRUE means supported	
>Support of PDSCH	MP		Boolean	TRUE means supported	
>CHOICE Support of HS- PDSCH	MP				REL-5
>>Supported					REL-5
>>>HS-DSCH physical layer category	MP		Integer (164)		REL-5
>>>Support of dedicated pilots for channel estimation of HS- DSCH	MP		Boolean	TRUE means supported	REL-5
>>Unsupported				(no data)	REL-5
 Simultaneous reception of SCCPCH and DPCH 	MP		Boolean	TRUE means supported	
>Simultaneous reception of	CV-		Boolean	TRUE means	

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Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
SCCPCH, DPCH and PDSCH	if_sim_rec			supported	
	_pdsch _sup				
>Max no of S-CCPCH RL	CV- if_sim_rec		Integer(1)	Maximum number of simultaneous S-CCPCH radio links	
>Support of dedicated pilots for channel estimation	MD		Enumerated (true)	Presence of this element means supported and absence not supported. This IE shall be set to TRUE in this version of the protocol.	
3.84 Mcps TDD downlink	CH-				Name
physical channel capability	3.84_Mcps _tdd_req_s up				changed in REL-4
>Maximum number of timeslots per frame	MP		Integer (114)		
>Maximum number of physical channels per frame	MP		Integer (45224)		
>Minimum SF	MP		Integer (1, 16)		
>Support of PDSCH	MP		Boolean	TRUE means supported	
>CHOICE Support of HS- PDSCH	MP				REL-5
>>Supported					REL-5
>>>HS-DSCH physical layer category	MP		Integer (164)		REL-5
>>Unsupported				(no data)	REL-5
>Maximum number of physical channels per timeslot	MP		Integer (4 <u>5</u> 16)		
1.28 Mcps TDD downlink physical channel capability	CH- 1.28_Mcps _tdd_req_s up				REL-4
>Maximum number of timeslots per subframe	MP		Integer (16)		REL-4
>Maximum number of physical channels per subframe	MP		Integer (196)		REL-4
>Minimum SF	MP		Integer (1, 16)		REL-4
>Support of PDSCH	MP		Boolean	TRUE means supported	REL-4
>CHOICE Support of HS- PDSCH	MP				REL-5
>>Supported					REL-5
>>>HS-DSCH physical layer category	MP		Integer (164)		REL-5
>>Unsupported				(no data)	REL-5
>Maximum number of physical channels per timeslot	MP		Integer (116)		REL-4
>Support of 8PSK	MP		Boolean	TRUE means supported	REL-4
Uplink physical channel capability information elements					
FDD uplink physical channel capability	CH- fdd_req_su p				

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
>Maximum number of DPDCH bits transmitted per 10 ms	MP		Integer (600, 1200, 2400, 4800. 9600, 19200. 28800, 38400, 48000, 57600)		
>Support of PCPCH	MP		Boolean	TRUE means supported	
3.84 Mcps TDD uplink physical channel capability	CH- 3.84_Mcps _tdd_req_s up				Name changed in REL-4
>Maximum Number of timeslots per frame	MP		Integer (114)		
 Maximum number of physical channels per timeslot 	MP		Integer (1, 2)		
>Minimum SF	MP		Integer (1, 2, 4, 8 , 46)		
>Support of PUSCH	MP		Boolean	TRUE means supported	
1.28 Mcps TDD uplink physical channel capability	CH- 1.28_Mcps _tdd_req_s up				REL-4
>Maximum Number of timeslots per subframe	MP		Integer (16)		REL-4
>Maximum number of physical channels per timeslot	MP		Integer (1, 2)		REL-4
>Minimum SF	MP		Integer (1, 2, 4, 8, 16)		REL-4
>Support of PUSCH	MP		Boolean	TRUE means supported	REL-4
>Support of 8PSK	MP		Boolean	TRUE means supported	REL-4

Condition	Explanation
if_sim_rec_pdsch_sup	The IE is mandatory present if the IE "Simultaneous reception of SCCPCH and DPCH" = True and IE Support of PDSCH = True. Otherwise this field is not needed in the message.
if_sim_rec	The IE is mandatory present if the IE "capability Simultaneous reception of SCCPCH and DPCH" = True. Otherwise this field is not needed in the message.
3.84_Mcps_tdd_req_sup	The IE is mandatory present if the IE "TDD RF capability" is present with the IE "Chip rate capability" set to "3.84 Mcps" and a 3.84 Mcps TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
1.28_Mcps_tdd_req_sup	The IE is mandatory present if the IE "TDD RF capability" is present with the IE "Chip rate capability" set to "1.28 Mcps" and a 1.28 Mcps TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
fdd_req_sup	The IE is mandatory present if the IE "Multi-mode capability" has the value "FDD" or "FDD/TDD" and a FDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.

10.3.3.34 RLC capability

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Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Total RLC AM buffer size	MP		Integer (2,10,50,100 ,150,200,300 ,400,500,750 ,1000)	Total receiving and transmitting RLC AM buffer and MAC-hs reordering buffer capability in kBytes.
Maximum RLC AM Window Size	MP		Integer(2047 ,4095)	Maximum supported RLC TX and RX window in UE
Maximum number of AM entities	MP		Integer (3, 4,5,6,8,16 ,30)	

10.3.3.40 Transport channel capability

Information Element/Group	Need	Multi	Type and	Semantics description
name			Reference	
capability information				
elements				
Max no of bits received	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all transport blocks received at an arbitrary time instant
Max convolutionally coded bits received	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all convolutionally coded transport blocks received at an arbitrary time instant
Max turbo coded bits received	CV- turbo_dec_ sup		Integer(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 received at an arbitrary time instant
Maximum number of simultaneous transport channels	MP		Integer(4, 8, 16, 32)	
Maximum number of simultaneous CCTrCH	MP		Integer (18)	
Max no of received transport blocks	MP		Integer(4, 8, 16, 32, 48, 64, 96, 128, 256, 512)	Maximum total number of transport blocks received within TTIs that end at within the same 10ms interval
Maximum number of TFC	MP		Integer(16, 32, 48, 64, 96, 128, 256, 512, 1024)	
Maximum number of TF	MP		Integer(32, 64, 128, 256, 512, 1024)	
Support for turbo decoding	MP		Boolean	TRUE means supported
Uplink transport channel				

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Information Element/Group name	Need	Multi	Type and Reference	Semantics description
capability information elements				
Max no of bits transmitted	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all transport blocks transmitted at an arbitrary time instant
Max convolutionally coded bits transmitted	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all convolutionally coded transport blocks transmitted at an arbitrary time instant
Max turbo coded bits transmitted	CV- turbo_enc_ sup		Integer(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 transmitted at an arbitrary time instant
Maximum number of simultaneous transport channels	MP		Integer(2, 4 , 8, 16, 32)	
Maximum number of simultaneous CCTrCH of DCH type	CH- tdd_req_su p		Integer (18)	
Max no of transmitted transport blocks	MP		Integer(2, 4 , 8, 16, 32, 48, 64, 96, 128, 256, 512)	Maximum total number of transport blocks transmitted within TTIs that start at the same time
Maximum number of TFC	MP		Integer(4 , 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024)	
Maximum number of TF	MP		Integer(32, 64, 128, 256, 512, 1024)	
Support for turbo encoding	MP		Boolean	TRUE means supported

Condition	Explanation
turbo_dec_sup	The IE is mandatory present if the IE "Support of turbo decoding" = True. Otherwise this field is not needed in the message.
turbo_enc_sup	The IE is mandatory present if the IE "Support of turbo encoding" = True. Otherwise this field is not needed in the message.
tdd_req_sup	The IE is mandatory present if the IE "Multi-mode capability" has the value "TDD" or "FDD/TDD" and a TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.

11.3 Information element definitions

[...] TotalRLC-AM-BufferSize ::= ENUMERATED { 1 kb2dummy, kb10, kb50, kb100, kb150, kb500, kb1000, spare } [...] MaximumAM-EntityNumberRLC-Cap ::= ENUMERATED { 1 am3dummy, am4, am5, am6, am8, am16, am30 } [...] ENUMERATED { MaxSimultaneousTransChsUL ::= e2dummy, e4, e8, e16, e32 } [...] MaxTransportBlocksUL ::= ENUMERATED { tb2dummy, tb4, tb8, tb16, tb32, tb48, tb64, tb96, tb128, tb256, tb512 } [...] MaxNumberOfTFC-UL ::= ENUMERATED { tfc4dummy1, tfc8dummy2, tfc16, tfc32, tfc48, tfc64, tfc96, tfc128, tfc256, tfc512, tfc1024 } [...] MaxNoPhysChBitsReceived ::= ENUMERATED { b600dummy, b1200, b2400, b3600, b4800, b7200, b9600, b14400, b19200, b28800, b38400, b48000, b57600, b67200, b76800 } [...] -- the values 1 ...4 for MaxPhysChPerFrame are not used in this version of the protocol MaxPhysChPerFrame ::= INTEGER (1..224) [...] -- the values 1 ...4 for MaxPhysChPerTS are not used in this version of the protocol MaxPhysChPerTS ::= INTEGER (1..16) [...] MinimumSF-UL ::= ENUMERATED { sf1, sf2, sf4, sf8, sf16 dummy }