## TSG-RAN Meeting #22 Maui, USA, 09-12 December 2003

Title: CRs (R'99 and linked Rel-4/Rel-5) to TS 25.306.

Source: TSG-RAN WG2

Agenda item: 7.3.3

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem
25.306	083	-	R99	Definition of minimum UE capability class		3.9.0	3.10.0	R2-032540	TEI
25.306	084	-	Rel-4	Definition of minimum UE capability class	А	4.8.0	4.9.0	R2-032541	TEI
25.306	085	-	Rel-4	Definition of minimum UE capability class	A	5.6.0	5.7.0	R2-032542	TEI
25.306	086	-	R99	TDD Radio Access Parameters for UL 32kbs class UE's	F	3.9.0	3.10.0	R2-032599	TEI
25.306	087	-	Rel-4	TDD Radio Access Parameters for UL 32kbs class UE's	А	4.8.0	4.9.0	R2-032600	TEI
25.306	088	-	Rel-5	TDD Radio Access Parameters for UL 32kbs class UE's	А	5.6.0	5.7.0	R2-032601	TEI

## 3GPP TSG-RAN2 Meeting #39 San Diego, USA, November 17 - 21, 2003

## R2-032540

		CHAN		UEST			CR-Form-v7
*	25 206	CR 083			Current versi	ion: <b>200</b>	ж
	25.500		жrev	- 00		<sup>ion:</sup> <b>3.9.0</b>	
For <u>HELP</u> on us	ing this fo	rm, see bottom	of this page of	look at the	e pop-up text	over the <b>X</b> syr	nbols.
Proposed change a	ffects:	UICC apps <b>%</b>	ME	Radio A	ccess Networ	k Core Ne	etwork
Title: ೫	Definition	<mark>n of minimum U</mark>	E capability cla	ISS			
Source: ೫	RAN WG	2					
Work item code: %	TEI				Date: ೫	17/11/2003	
Category: ೫	F				Release: ೫	R99	
	<b>F</b> (cor <b>A</b> (cor <b>B</b> (ad	the following cat rection) rresponds to a co dition of feature), nctional modificat	orrection in an ea	rlier release	2 e) R96 R97	the following rele (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998)	eases:
	Detailed ex	itorial modification planations of the 3GPP <u>TR 21.90</u>	above categorie	es can	Rel-4 Rel-5	(Release 1999) (Release 4) (Release 5) (Release 6)	
Reason for change:	sectio	esent six UE rac on 5.2, however efined.					
Summary of change	12kb	radio access pa ops class UE ar s the minimum	e added for FI				
Impact analysis: UEs with capabilities lower than for 32kbps UE class are affected. UEs that do not implement the CR may be unable to support RAB combinate.g. on common channels, like SCCPCH combinations. Specifically they can to read the FACH. The CR has no impact on UTRAN.							
Consequences if not approved:	netw UEs	re is no definitio ork. Operators with insufficien ess the system.	may use RAB It UE capabiliti	combinatio	ons that can r	not be supporte	ed by

Clauses affected:	ж	5.	2			
Other specs affected:	ж	Y X	N X X	Other core specifications Test specifications O&M Specifications	ж	25.993

#### Other comments: #

#### 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.

## 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 combination 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.

	Reference combination of UE Radio Access capability parameters common for UL and DL	<u>12kbps</u> <u>class</u>	32kbps class	64kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
	PDCP parameters							
	Support for RFC 2507	<u>No</u>	No	No/Yes NOTE 1				
	Support for loss-less SRNS relocation				No/Yes NOTE 1			
	Maximum header compression context space			Not applicab	le for conform	nance testing	]	
	RLC parameters							
	Total RLC AM buffer size (kbytes)	<u>10</u>	10	10	50	50	100	500
	Maximum number of AM entities	<u>4</u>	4	4	5	6	8	8
	Maximum RLC AM window size	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1
	Multi-mode related parameters							
	Support of UTRA FDD/TDD	FDD / FDD+TDD / TDD NOTE 1						
	Multi-RAT related parameters							
	Support of GSM				Yes/No NOTE 1			

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

#### 4

Reference combination of UE	12kbps	32kbps	64kbps	128 kbps	384 kbps		2048 kbps					
Radio Access capability	<u>class</u>	class	class	class	class	class	class					
parameters common for UL												
and DL												
Support of multi-carrier				Yes/No								
		NOTE 1										
Security parameters												
Support of ciphering algorithm UEA0				Yes								
Support of ciphering algorithm UEA1				Yes								
Support of integrity protection		Yes										
algorithm UIA1												
UE positioning related												
parameters												
Standalone location method(s)				Yes/No								
supported				NOTE 1								
Network assisted GPS support		1	Network base	ed / UE based	/ Both/ Non	е						
				NOTE 1								
GPS reference time capable				Yes/No								
·				NOTE 1								
Support for IPDL				Yes/No								
••				NOTE 1								
Support for OTDOA UE based		Yes/No										
method				NOTE 1								
Support for Rx-Tx time				Yes/No								
difference type 2 measurement				NOTE 1								
Support for UE Positioning				Yes/No								
assisted GPS measurement				NOTE 1								
validity in CELL_PCH and												
URA_PCH RRC states												
Support for SFN-SFN observed				Yes/No								
time difference type 2				NOTE 1								
measurement												
RF parameters for FDD												
UE power class				3/4								
				NOTE 1								
Tx/Rx frequency separation				190 MHz								
RF parameters for TDD												
Radio frequency bands	A / b / c / a+b / a+c / b+c / a+b+c NOTE 1											
Chip rate capability			1.2	28 / 3.84 Mchi	p/s							
UE power class				<u>NOTE 1</u> 2 / 3								

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	<u>12 kbps</u> <u>class</u>	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	640 (FDD)	1280	3840	3840	6400	10240	20480
transport blocks being received at an	<u>1280</u>						
arbitrary time instant	<u>(TDD)</u>						
Maximum sum of number of bits of all	<u>640</u>	640	640	640	640	640	640
convolutionally coded transport blocks							
being received at an arbitrary time							
instant							
Maximum sum of number of bits of all	NA (FDD)	1280	3840	3840	6400	10240	20480
turbo coded transport blocks being	1280(TDD)						

Reference combination of UE Radio Access capability parameters in DL	<u>12 kbps</u> <u>class</u>	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
received at an arbitrary time instant							
Maximum number of simultaneous	<u>4</u>	8	8	8	8	8	16
transport channels	<u>NOTE 4</u>	NOTE 4	NOTE 4	NOTE 4	NOTE 4	NOTE 4	NOTE 4
Maximum number of simultaneous	<u>1</u>	1	2/1	2/1	2/1	2	2
CCTrCH (FDD)			NOTE 2	NOTE 2	NOTE 2		
	NOTE 3	NOTE 3	NOTE 3	NOTE 3	NOTE 3	NOTE 3	NOTE 3
Maximum number of simultaneous	$\frac{1}{2}$	2	3	3	3	4	4
CCTrCH (TDD)	NOTE 3	NOTE 3	NOTE 3	NOTE 3	NOTE 3	NOTE 3	NOTE 3
Maximum total number of transport	<u>4</u>	8	8	16	32	64	96
blocks received within TTIs that end at							
the same time Maximum number of TFC	10	32	48	96	128	256	1024
Maximum number of TFC	<u>16</u>	32	48	90	128	200	1024
Maximum number of TF	<u>32</u>	32	64	64	64	128	256
Support for turbo decoding	No (FDD)	Yes	Yes	Yes	Yes	Yes	Yes
	Yes (TDD)						
Physical channel parameters (FDD)							
Maximum number of DPCH/PDSCH	1	1	2/1	2/1	3	3	3
codes to be simultaneously received			NOTE 2	NOTE 2			
Maximum number of physical channel	<u>1200</u>	1200		7200/4800	19200	28800	57600
bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH).			NOTE2	NOTE2			
Support for SF 512	No	No	No	No	No	No	No
Support of PDSCH	No	No	Yes/No	Yes/No	No/Yes	Yes	Yes
			NOTE 1	NOTE 1	NOTE 1		
Maximum number of simultaneous S- CCPCH radio links	<u>1</u>	1	1	1	1	1	1
Support of dedicated pilots for channel	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
estimation	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1
Physical channel parameters (TDD)							
Maximum number of timeslots per frame	1	1	2	4	5	10	12
Maximum number of physical channels	<u>5</u>	8	9	14	28	64	136
per frame							
Minimum SF	<u>16</u>	16	16	16	1/16	1/16	1/16
					NOTE 1	NOTE 1	NOTE 1
Support of PDSCH	<u>No</u>	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Maximum number of physical channels per timeslot	<u>5</u>	8	9	9	9	9	13

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

NOTE 2: Options depend on the support of PDSCH. The highest value is required if PDSCH is supported.

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.

## 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	<u>640</u>	640	3840	3840	6400	10240

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#### 6

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
instant						
Aximum sum of number of bits of all convolutionally coded transport blocks being	<u>640</u>	640	640	640	640	640
transmitted at an arbitrary time						
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	<u>NA</u>	NA	3840	3840	6400	10240
Maximum number of simultaneous transport channels	<u>4</u>	4	8	8	8	8
Maximum number of simultaneous CCTrCH(TDD only)	<u>1</u> <u>NOTE 3</u>	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	<u>4</u>	4	8	8	16	32
Maximum number of TFC	<u>16</u>	16	32	48	64	128
Maximum number of TF	<u>32</u>	32	32	32	32	64
Support for turbo encoding	No	No	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)						
Maximum number of DPDCH bits transmitted per 10 ms	<u>600</u>	1200	2400	4800	9600	19200
Simultaneous reception of SCCPCH and DPCH NOTE 2	<u>No</u>	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Simultaneous reception of SCCPCH, DPCH and PDSCH NOTE 2	<u>No</u>	No	No	No	No	No
Support of PCPCH	No	No	No	No	No	No
Physical channel parameters (TDD)						
Maximum Number of timeslots per frame	<u>1</u>	1	2	3	7	9
Maximum number of physical channels per timeslot	<u>1</u>	1	1	1	1	2
Minimum SF	<u>8</u>	8	2	2	2	2
Support of PUSCH	<u>No</u>	Yes/No NOTE 1	Yes	Yes	Yes	Yes

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

NOTE 2: The downlink parameters 'Simultaneous reception of SCCPCH and DPCH' and 'Simultaneous reception of SCCPCH, DPCH and PDSCH' are included in the combinations for uplink as their requirements relate to the uplink data rate. Simultaneous reception of SCCPCH and DPCH is required for the DRAC procedure that is intended for controlling uplink transmissions. In this release of the specification, this is limited to 1 SCCPCH.

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

## R2-032541

		(	CHANGE		UE	ST	I				CR-Form-v7
¥	25.3	<mark>06</mark> CR		жrev	-	ж	Current	versi	on:	<b>4.8.0</b>	ж
For <mark>HELP</mark> on u	ising this	s form, see	bottom of this	s page or	look	at th	e pop-up	text	over	the <b>೫</b> syr	nbols.
Proposed change	affects:	UICC a	pps <b>೫</b>	ME	Rad	dio A	ccess Ne	etworl	<	Core Ne	etwork
Title: ೫	Defini	tion of min	<mark>imum UE cap</mark> a	ability cla	ISS						
Source: ೫	RAN	NG2									
Work item code: %	TEI						Dat	e: ೫	17/1	1/2003	
Category: ೫	F A B C D Detailed	(correction) (correspond (addition of (functional i (editorial m	modification of f odification) ns of the above	on in an ea feature)		elease	2	ne of t 6 ( 7 ( 8 ( 9 ( -4 ( -5 (	he fol (GSM (Relea (Relea (Relea (Relea (Relea	-4 lowing rele Phase 2) ase 1996) ase 1997) ase 1998) ase 1999) ase 4) ase 5) ase 6)	pases:
Reason for change	se		x UE radio ac however a mir								
Summary of chand	ae: # T	he radio a	ccess parame	eter value	s for	a nev	v referen	ce co	mbin	ation call	ed

ummary of change: ж	The radio access parameter values for a new reference combination called 12kbps class UE are added for FDD and TDD. It is defined that this 12kbps class UE is the minimum UE.	1
	Impact analysis: UEs with capabilities lower than for 32kbps UE class are affected. UEs that do not implement the CR may be unable to support RAB combinations e.g. on common channels, like SCCPCH combinations. Specifically they can fail to read the FACH.	

Consequences if	Here is no definition of the minimum UE capabilities that can be expected by the
not approved:	network. Operators may use RAB combinations that can not be supported by
	UEs with insufficient UE capabilities. In consequence UEs may be unable to
	access the system.

The CR has no impact on UTRAN.

Clauses affected:	<mark>೫ 5.2</mark>			
Other specs affected:	¥ N ¥ X X X	Other core specifications Test specifications O&M Specifications	ж	25.993

#### Other comments: #

#### How to create CRs using this form:

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## 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.

	Reference combination of UE Radio Access capability parameters common for UL and DL	<u>12 kbps</u> <u>class</u>	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class				
	PDCP parameters											
	Support for RFC 2507	<u>No</u>	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	<u>No/Yes</u> <u>NOTE 1</u>	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 loss-less SRNS relocation		No/Yes NOTE 1									
	Maximum header		Not applicable for conformance testing									
	compression context space											
	Maximum number of ROHC			Not applicab	le for conform	ance testing						
	context sessions											
	Support for Reverse				No/Yes							
	Decompression				NOTE 1			-				
_	RLC parameters											
	Total RLC AM buffer size	<u>10</u>	10	10	50	50	100	500				
_	(kbytes)											
ļ	Maximum number of AM entities	<u>4</u>	4	4	5	6	8	8				
1	Maximum RLC AM window	2047/4095	2047/4095	2047/4095	2047/4095	2047/4095	2047/4095	2047/4095				
	size	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1				
•	Multi-mode related parameters											

# 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	<u>12 kbps</u> <u>class</u>	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
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			
Security parameters							
Support of ciphering algorithm UEA0				Yes			
Support of ciphering algorithm UEA1				Yes			
Support of integrity protection algorithm UIA1				Yes			
UE positioning related parameters							
Standalone location				Yes/No			
method(s) supported				NOTE 1			
Network assisted GPS			Network base	ed / UE based	d / Both/ None	9	
support				NOTE 1			
GPS reference time capable				Yes/No NOTE 1			
Support for IPDL				Yes/No NOTE 1			
Support for OTDOA UE				Yes/No			
based method				NOTE 1			
Support for Rx-Tx time				Yes/No			
difference type 2				NOTE 1			
measurement							
Support for UE Positioning				Yes/No			
assisted GPS measurement				NOTE 1			
validity in CELL_PCH and							
URA_PCH RRC states							
Support for SFN-SFN				Yes/No			
observed time difference				NOTE 1			
type 2 measurement							
RF parameters for FDD							
UE power class				3/4			
				NOTE 1			
Tx/Rx frequency separation				190 MHz			
RF parameters for TDD							
3.84 Mcps							
Radio frequency bands			A/h/c/	a+b/a+c/b-	+c / a+b+c		
				NOTE 1			
UE power class				2/3			
				NOTE 1			
RF parameters for TDD							
1.28 Mcps							
Radio frequency bands			A/b/c/	a+b/a+c/b 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

Reference combination of UE Radio Access capability parameters in DL	<u>12 kbps</u> <u>class</u>	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	<u>640 (FDD)</u> <u>1280(TDD)</u>	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	<u>640</u>	640	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time nstant	<u>NA (FDD)</u> <u>1280(TDD)</u>	1280	3840	3840	6400	10240	20480(1) 10240(2) NOTE 5
Maximum number of simultaneous transport channels	<u>4</u>	8 NOTE 4	8 NOTE 4	8 NOTE 4	8 NOTE 4	8 NOTE 4	16 NOTE 4
Maximum number of simultaneous CCTrCH (FDD)	<u>1</u>	1 NOTE 3	2/1 NOTE 2 NOTE 3	2/1 NOTE 2 NOTE 3	2 NOTE 3	2 NOTE 3	2 NOTE 3
Maximum number of simultaneous CCTrCH (TDD)	<u>1</u> <u>NOTE 3</u>	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	<u>4</u>	8	8	16	32	64	96
Maximum number of TFC	<u>16</u>	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
Physical channel parameters (FDD)							
Maximum number of DPCH/PDSCH codes to be simultaneously received	1	1	2/1 NOTE 2	2/1 NOTE 2	3	3	3
Maximum number of ohysical channel bits received in any 10 ms nterval (DPCH, PDSCH, S- CCPCH).	<u>1200</u>	1200	3600/2400 NOTE2	7200/4800 NOTE2	19200	28800	57600
Support for SF 512 for DPCH NOTE 6	<u>No</u>	No	No	No	No	No	No
Support of PDSCH	<u>No</u>	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes	Yes	Yes
Maximum number of simultaneous S-CCPCH radio links	<u>1</u>	1	1	1	1	1	1
Support of dedicated pilots for channel estimation Physical channel parameters (TDD 3.84	<u>Yes/No</u> <u>NOTE 1</u>	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Mcps) Maximum number of	1	1	2	4	5	10	12

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

	Reference combination of UE Radio Access capability parameters in DL	<u>12 kbps</u> <u>class</u>	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
	Maximum number of physical channels per frame	<u>5</u>	8	9	14	28	64	136
	Minimum SF	<u>16</u>	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1/16 NOTE 1
	Support of PDSCH	<u>No</u>	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
ļ	Maximum number of physical channels per timeslot	<u>5</u>	8	9	9	9	9	13
	Physical channel parameters (TDD 1.28 Mcps)							
	Maximum number of timeslots per subframe	<u>1</u>	1	2	3	4	6	6
	Maximum number of physical channels per subframe	<u>5</u>	8	12	18	43	77	77
	Minimum SF	<u>16</u>	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1
	Support of PDSCH	<u>No</u>	Yes/no NOTE 1	Yes	Yes	Yes	Yes	Yes
	Maximum number of physical channels per timeslot	<u>5</u>	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 2: Options depend on the support of PDSCH. The highest value is required if PDSCH is supported.

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 Mcps TDD (2) For 1.28 Mcps TDD.

NOTE 6: This UE capability does not relate to the support of CPCH in the uplink for which SF 512 is needed.

### 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	12 kbps class	32 kbps class	64 kbps class	128 kbps	384 kbps	768 kbps
Radio Access capability				class	class	class
parameters in UL						
Transport channel						
parameters						
Maximum sum of number of	<u>640</u>	640	3840	3840	6400	10240
bits of all transport blocks being						
transmitted at an arbitrary time						
instant						
Maximum sum of number of	<u>640</u>	640	640	640	640	640
bits of all convolutionally coded						
transport blocks being						
transmitted at an arbitrary time						
instant						
Maximum sum of number of	<u>NA</u>	NA	3840	3840	6400	10240
bits of all turbo coded transport						
blocks being transmitted at an						
arbitrary time instant						
Maximum number of	4	4	8	8	8	8

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
simultaneous transport channels						
Maximum number of simultaneous CCTrCH(TDD only)	<u>1</u> 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	<u>4</u>	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	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)						
Maximum number of DPDCH bits transmitted per 10 ms	<u>600</u>	1200	2400	4800	9600	19200
Simultaneous reception of SCCPCH and DPCH NOTE 2	<u>No</u>	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Simultaneous reception of SCCPCH, DPCH and PDSCH NOTE 2	<u>No</u>	No	No	No	No	No
Support of PCPCH NOTE 4	<u>Yes/No</u> NOTE 1	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	<u>1</u>	1	2	3	7	9
Maximum number of physical channels per timeslot	<u>1</u>	1	1	1	1	2
Minimum SF	<u>8</u>	8	2	2	2	2
Support of PUSCH	<u>No</u>	Yes/No NOTE 1	Yes	Yes	Yes	Yes
Physical channel parameters (TDD 1.28 Mcps)						
Maximum Number of timeslots per subframe	<u>1</u>	1	2	3	5	5
Maximum number of physical channels per timeslot	<u>1</u>	1	1	1	1	2
Minimum SF	<u>8</u>	4	2	2	2	2
Support of PUSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes
Support of 8PSK	<u>No</u>	No	No	No	No	No

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

NOTE 2: The downlink parameters 'Simultaneous reception of SCCPCH and DPCH' and 'Simultaneous reception of SCCPCH, DPCH and PDSCH' are included in the combinations for uplink as their requirements relate to the uplink data rate. Simultaneous reception of SCCPCH and DPCH is required for the DRAC procedure that is intended for controlling uplink transmissions. In this release of the specification, this is limited to 1 SCCPCH.

- NOTE 3: This number does not contain the RACH CCTrCH.
- NOTE 4: Support of PCPCH means that the UE supports PCPCH access for both the CA not active case and for the CA active case.

## R2-032542

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ог cnange: ж	The radio access parameter values for a new reference combination called	
	12kbps class UE are added for FDD and TDD. It is defined that this 12kbps class	
	UE is the minimum UE.	

Impact analysis: UEs with capabilities lower than for 32kbps UE class are affected. UEs that do not implement the CR may be unable to support RAB combinations e.g. on common channels, like SCCPCH combinations. Specifically they can fail to read the FACH. The CR has no impact on UTRAN.

Consequences if	There is no definition of the minimum UE capabilities that can be expected by the
not approved:	network. Operators may use RAB combinations that can not be supported by
	UEs with insufficient UE capabilities. In consequence UEs may be unable to
	access the system.

Clauses affected:	<b>%</b> 5.2	
Other specs affected:	YNXOther core specifications%XTest specificationsXO&M Specifications	

#### Other comments: #

#### 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.

## 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.

Reference combination of UE Radio Access capability parameters common for UL and DL	<u>12 kbps</u> <u>class</u>	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class				
PDCP parameters											
Support for RFC 2507	<u>No</u>	No	No/Yes NOTE 1								
Support for RFC 3095	<u>No/Yes</u> 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			Not applicat	le for conforn	nance testing						
Support for Reverse decompression				No/Yes NOTE 1							
RLC parameters											
Total RLC AM buffer size (kbytes)	<u>10</u>	10	10	50	50	100	500				
Maximum number of AM entities	<u>4</u>	4	4	5	6	8	8				
Maximum RLC AM window size	<u>2047/4095</u> <u>NOTE 1</u>	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1				

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

#### 4

UE Radio Access capability parameters         class	Reference combination of	<u>12 kbps</u>	32 kbps	64 kbps	128 kbps	384 kbps	768 kbps	2048 kbps
common for UL and DL         Multi-mode related         parameters         Support of UTRA TDD 3.84         NoTE 1       Yes/No         Megs       NOTE 1         Support of UTRA TDD 1.28       Yes/No         Muti-RAT related       Yes/No         parameters       Yes/No         Support of UTRA TD 1.28       Yes/No         Support of Mult-carrier       Yes/No         Support of Mult-carrier       Yes/No         Support of UTRA to GERAN Network Assisted       Yes/No         Gell Change       Support of UTRA to GERAN Network Assisted         Support of othering       Yes         algorithm UEA1       Yes         Support of othering       Yes         algorithm UEA1       Yes         UE positioning related       Prestioning related         parameters       Standalone Location         NoTE 1       NOTE 1         Network assisted GPS       Network bassed / UE bassed / Both' None         support of UPDL       Yes/No         Support of UPDL       Yes/No         Support of UPDL       Yes/No         Support of UPDL       Yes/No         Support for UPDL       Yes/No		<u>class</u>	class	class	-	-	-	-
Multi-mode related parameters         Image: Constraint of the second secon								
parameters           Support of UTRA FDD         Yes/No           MOTE 1         Yes/No           Mops         NOTE 1           Support of UTRA TDD 3.84         NOTE 1           Support of UTRA TDD 1.28         Yes/No           Mutit-RAT related         Yes/No           parameters         NOTE 1           Support of mult-carrier         Yes/No           Support of mult-carrier         Yes/No           Support of mult-carrier         Yes/No           Support of inpering         Yes           algorithm UEA0         Yes           Support of inpering         Yes           algorithm UEA1         Yes           Support of inpering         Yes           algorithm UEA1         Yes           Support of inpering         Yes           algorithm UEA1         Yes/No           UE positioning related         Pestioning related           parameters         Standalone location           Stradalone location         Yes/No           Metwork assisted GPS         Network based / UE based / Both/ None           Support of IPDL         Yes/No           Support of IPDL         Yes/No           Support of VEAX tinne         Yes/No								
Support of UTRA FDD Yes/No NOTE 1 Support of UTRA TDD 3.84 Megs NOTE 1 Support of UTRA TDD 1.28 Megs NOTE 1 Support of UTRA TDD 1.28 Megs NOTE 1 Support of GSM Yes/No Support of GSM Yes/No Support of multi-carrier Yes/No Cell Change Yes/No Security parameters Support of cliphering algorithm UEA1 Support of cliphering algorithm UEA1 Support of cliphering algorithm UEA1 Support of cliphering algorithm UEA1 Support of integrity Yes Standards Cell Change Yes Support of cliphering algorithm UEA1 Support of cliphering algorithm UEA1 Support of integrity Yes Standards Cellon NOTE 1 Support of NOTE 1 Support of NOTE 1 Support of NOTE 1 Support of NOTE 1 NOTE 1 Support of NOTE 1 Support of NOTO UE NOTE 1 Support for NDA UE Support for NDA UE Support for NDA UE Support for NEX'x time Yes Support for SK-X'x time Yes Support for SK-X'x time Yes Support for SK-X's the Yes/No Support for SK-X's time Yes Support for SK-X's the Yes/No Support for SK-X's time Yes Support for SK-X's time Yes/No Support for SK-X's time Yes Support for SK-X's the Yes/No Support for SK-X's time Yes Support for SK-X's the Yes/No Support f								
NOTE 1           Support of UTRA TDD 3.84         NOTE 1           Support of UTRA TDD 1.28         Yes/No           Mutir-RAT related         NOTE 1           Support of GSM         NOTE 1           Support of multi-carrier         NOTE 1           Support of multi-carrier         NOTE 1           Support of multi-carrier         NOTE 1           Support of UTRA N to GERAN Network Assisted Cell Charge         Yes/No           Security parameters         Yes           Support of ciphering algorithm UEA0         Yes           Support of ciphering algorithm UEA0         Yes           Support of integrity protection algorithm UEA1         Yes           Support of integrity protection algorithm UEA1         Yes           Support of integrity protection algorithm UEA1         Yes           Standalone location         Yes/No           method(s) supported         NOTE 1           GPS reference time capable         NOTE 1           Support for DTDOA UE         Yes/No           Support for DTDOA UE         Yes/No           Support for DTDOA UE         Yes/No           Support for Charbers         Yes/No           Midiference type 2         NOTE 1           Support for Charbers         Yes					Vec/No			
Mcps         NOTE 1           Multi-RAT Tol 1.28         Yes/No           Multi-RAT related         NOTE 1           Support of GSM         NOTE 1           Support of multi-carrier         NOTE 1           Support of multi-carrier         NOTE 1           Support of utTRAN to GERAN Network Assisted         Yes/No           Security parameters         Security parameters           Support of utreating and the security parameters         Yes           Support of ciphering algorithm UEA0         Yes           Support of integrity protection algorithm UEA1         Yes           Support of integrity protection algorithm UEA1         Yes           Support of ToPD1         Yes           StandBlone location         NOTE 1           GPS reference time capable         NOTE 1           Support for OTDOA UE         Yes/No           Support for TOTOA UE         Yes/No           Support for TOTDOA UE         Yes/No           Support for NFN-SFN         Yes/No           Midiference type 2         NOTE 1           Support for TOTDOA UE         Yes/No           Support for TOTDOA UE         NOTE 1           Support for FN-SFN         Yes/No           Midiference type 2         NOTE 1 <tr< td=""><td></td><td></td><td></td><td></td><td>NOTE 1</td><td></td><td></td><td></td></tr<>					NOTE 1			
Support of UTRA TDD 1.28 NOTE 1 Yes/No Morps NOTE 1 Support of GSM Yes/No NOTE 1 Support of multi-carrier Yes/No GERAN Network Assisted GERAN Network Assisted GERAN Network Assisted GERAN Network Assisted Uspport of ophering algorithm UEA UE positioning related parameters UE positioning related NOTE 1 Support of rule rule rule rule rule rule rule rule								
Multi-RAT related parameters           Support of GSM         NOTE 1           Support of multi-carrier         Yes/No           Support of UTRAN to GERAN Network Assisted Call Change         Yes/No           Support of Johening algorithm UEA0         Yes           Support of Integrity protection algorithm UEA1         Yes           Support of Integrity protection algorithm UEA1         Yes           Support of Integrity protection algorithm UEA1         Yes           Standalone location method(s) support of NoTE 1         NoTE 1           We positioning related parameters         NoTE 1           Standalone location method(s) support of NoTE 1         NoTE 1           Support of OTDOA UE         NOTE 1           Support of OTDOA UE         Yes/No           Support for OTDOA UE         Yes/No           Support for OTDOA UE         Yes/No           Support for VED A UE         Yes/No           Support for SFN-SFN         Yes           Support for FR-X trime         Yes/No           MUR.PCH RC states         Suport for SFN-SFN           Support for SFN-SFN         Yes/No           Support for SFN-SFN         Yes/No           OBServed time difference         NOTE 1           VEP ower dass         3/4	Support of UTRA TDD 1.28							
parameters           Support of GSM         Yes/No           Support of multi-carrier         NOTE 1           Support of multi-carrier         NOTE 1           Support of UTRAN to EERAN Network Assisted         Yes/No           Security parameters         Support of ciphering algorithm UEA0           Support of ciphering algorithm UEA1         Yes algorithm UEA1           Ves positioning related parameters         Yes/No           Standatione location         Yes/No           NoTE 1         Network based / UE based / Both/ None           Network assisted GPS         Network based / UE based / Both/ None           Support for IPDL         Yes/No           Support for IDP AUE         Yes/No           Support for IDP AUE         Yes/No           Support for IDP AUE         Yes/No           Support for IDP					NOTET			
Support of GSM     Yes/No       Support of multi-carrier     NOTE 1       Support of UTRAN to GERAN Network Assisted     Yes/No       Gell Change     Yes/No       Support of ciphering     Yes       algorithm UEA0     Yes       Support of integrity     Yes       positioning related     Yes/No       method(s) support of ciphering     Yes       algorithm UEA1     Yes       Support of integrity     Yes       parameters     Yes/No       Balgorithm UEA1     Yes/No       Support of ciphering     Yes       parameters     Yes/No       Balgorithm UEA1     Yes/No       Balgorithm UEA1     Yes/No       Support of integrity     Yes       protection algorithm UIA1     Yes/No       method(s) supported     NOTE 1       Support for IPDL     NOTE 1       Support for OTDOA UE     Yes/No       Support for OTDOA UE     Yes/No       Support for VE Positioning assisted GPS measurement     NOTE 1       Support for UE Positioning assisted GPS measurement     NOTE 1       Weath, PCH RRC states     Support for VE Positioning observed time difference       NOTE 1     Yes/No       UE power class     3/4       TVRx frequency separation     190 MHz    <								
Support of multi-carrier         Yes/No           Support of UTRAN to GERAN Network Assisted         Yes/No           Call Change         Yes/No           Security parameters         Yes/No           Support of ciphering         Yes           algorithm UEA0         Yes           Support of ciphering         Yes           algorithm UEA1         Yes           positioning related         Yes/No           parameters         Yes/No           Standalone location         NOTE 1           method(s) support of Integrity         Yes/No           method(s) support of         NOTE 1           Support for IPDL         NOTE 1           Support for OTDOA UE         NOTE 1           Support for OTDA UE         NOTE 1           Support for OTDA UE         NOTE 1           Support for OTDA UE         NOTE 1           Support for UE Postioning assisted GPS measurement         NOTE 1           Support for UE Postioning assisted GPS measurement         Yes/No           ValkA, PCH RRC states         Support for SPN-SPN           Support for SPN-SPN         Yes/No           Observed time difference         NOTE 1           Vief power class         3/4           RF parameters for TDD	Support of GSM							
Support of UTRAN to GERAN Network Assisted       Yes/No         Gell Change       Security parameters         Support of ciphering algorithm UEA0       Yes         Support of ciphering algorithm UEA1       Yes         Support of integrity protection algorithm UIA1       Yes         Depositioning related parameters       Yes/No         method(s) supported       NOTE 1         Network assisted GPS       Network based / UE based / Both/ None support         Support for IPDL       Yes/No         Support for OTDOA UE       Yes/No         Support for RAT: Trime difference type 2       NOTE 1         Support for READ       Yes/No         Support for SR-SFN       Yes/No         Observed time difference       NOTE 1         Support for SR-SFN       Yes/No         Observed time difference       NOTE 1         YPA       Yes/No         Support for SR-SFN       Yes/No         Observed time difference       NOTE 1	Support of multi-carrier				Yes/No			
Cell Change           Security parameters           Support of ciphering algorithm UEA1           Support of ciphering algorithm UEA1           UE positioning related parameters           Standalone location method(s) supported           NOTE 1           Network assisted GPS support of ribering           Support of ribering           Support of ribering           Support of ribering           Support of rol CDOA UE           NOTE 1           Support for OTDOA UE           Support for OTD COA           We are the addition ing assisted GPS measurement           Support for Str	Support of UTRAN to							
Security parameters           Support of ciphering algorithm UEA0           Support of ciphering algorithm UEA1           Support of integrity protection algorithm UIA1           UE positioning related parameters           Standalone location           Network assisted GPS           Network assisted GPS           Network assisted GPS           Support for IPDL           Yes/No           Support for OTDOA UE           Support for OTDOA UE           Support for OTDOA UE           Support for CTDOA UE           Support for QTDOA UE           Support for QTDOA UE           Support for QTDOA UE           Support for Rx-Tx time           Massited GPS           Support for QTDOA UE           Support for QTDOA UE           Support for Rx-Tx time           Yes/No           difference type 2           MoTE 1           Support for UE Positioning assisted GPS measurement           Vipe 2 measurement           Vipe 2 measurement           RF parameters for FDD           UE power dass           MCTE 1           Support for SH-SFN           Yes/No           Observed time difference           NOTE 1 <td></td> <td></td> <td></td> <td></td> <td>Yes/No</td> <td></td> <td></td> <td></td>					Yes/No			
Support of ciphering       Yes         algorithm UEA0       Yes         algorithm UEA1       Yes         Support of interrity       Yes         protection algorithm UIA1       Yes/No         UE positioning related       Yes/No         method(s) supported       NOTE 1         Network assisted GPS       Network based / UE based / Both/ None         support       NOTE 1         Support for IPDL       Yes/No         BS reference time capable       NOTE 1         Support for OTDOA UE       Yes/No         based method       NOTE 1         Support for OTDOA UE       Yes/No         based method       NOTE 1         Support for CDDA UE       Yes/No         based method       NOTE 1         Support for VEPDL       Yes/No         based method       NOTE 1         Support for SFN-SFN       Yes/No         basesisted GPS measurement       NOTE 1         WaR, PCH RRC states       Support for SFN-SFN         Ves/No       NOTE 1         Support for SFN-SFN       Yes/No         observed time difference       NOTE 1         type 2 measurement       NOTE 1         RF parameters for FDD       3.4 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
algorithm UEA0 Support of integrity protection algorithm UIA1 UE positioning related parameters Standalone location method(s) supported NoTe 1 Network assisted GPS Network based / UE based / Both/ None Support for IPDL Support for IPDL Support for OTDOA UE based method Support for OTDOA UE based method Support for OTDOA UE Support for OTDOA UE Support for OTDOA UE Support for VTDC 1 Support for VTDCA UE Support for VTDCA UE Support for VTDCA UE Support for VTDCA UE Support for STN-STN Other 1 Support for SFN-SFN Support for SFN-SFN Observed time difference NOTE 1 Support for SFN-SFN Observed time difference NOTE 1 Support for SFN-SFN Observed time difference NOTE 1 Support for SFN-SFN Support for SFN-SFN Observed time difference NOTE 1 Support for SFN-SFN Support for SFN-SFN					Yes			
algorithm UEA1 Support of integrity Protection algorithm UIA1 UE positioning related parameters Standalone location NOTE 1 Network assisted GPS Network based / UE based / Both/ None support NOTE 1 GPS reference time capable Yes/No NOTE 1 Support for IPDL Yes/No NOTE 1 Support for OTDOA UE Yes/No NOTE 1 Support for OTDOA UE Yes/No MOTE 1 Support for OTDOA UE Yes/No MOTE 1 Support for VE Positioning assisted GPS measurement URA_PCH RRC states Support for FDD UE power class 3 / 4 MOTE 1 Tx/Rx frequency separation RF parameters for TDD 3.84 Mlcps Radio frequency bands A / b / c / a+b / a+c / b+c / a+b+c NOTE 1 RF parameters for TDD 1.28 Mcps Radio frequency bands A / b / c / a+b / a+c / b+c / a+b+c NOTE 1 UE power class A / b / c / a+b / a+c / b+c / a+b+c NOTE 1 U	algorithm UEA0							
protection algorithm UIA1 UE positioning related parameters Standatone location Wethod(s) supported NOTE 1 Network assisted GPS Network assisted GPS Network assisted GPS Network assisted GPS NoTE 1 NOTE 1 Support for IPDL Yes/No NOTE 1 Support for OTDOA UE based method NOTE 1 Support for OTDOA UE based method NOTE 1 Support for Rx-Tx time Yes/No NOTE 1 Support for SPN-SFN Support for SFN-SFN Support for SFN-SFN Support for SFN-SFN Ves/No Support for SFN-SFN Ves/No Support for SFN-SFN Ves/No Support for SFN-SFN Ves/No NOTE 1 Support for SFN-SFN Support for FDD UE power class NOTE 1 Tx/Rx frequency separation RF parameters for TDD 1.28 Mcps Radio frequency bands A / b / c / a+b / a+c / b+c / a+b+c NOTE 1 UE power class 2 / 3	Support of ciphering algorithm UEA1				Yes			
UE positioning related parameters           Standalone location         Yes/No           Network assisted GPS         Network based / UE based / Both/ None           Support         NOTE 1           GPS reference time capable         Yes/No           NOTE 1         NOTE 1           Support for IPDL         Yes/No           Support for OTDOA UE         Yes/No           based method         NOTE 1           Support for OTDOA UE         Yes/No           based method         NOTE 1           Support for OTDOA UE         Yes/No           based method         NOTE 1           Support for OTDOA UE         Yes/No           difference type 2         NOTE 1           Support for UE Positioning assisted GPS measurement         Yes           assisted GPS measurement         Yes           Valify in CELL_PCH and         Yes/No           URA_PCH RRC states         NOTE 1           type 2 measurement         Yes/No           UE power class         3 / 4           NOTE 1         NOTE 1           type 2 measurement         NOTE 1           UE power class         NOTE 1           TX/Rx frequency separation         190 MHz           RF parameters for TDD	Support of integrity				Yes			
parameters           Standalone location         Yes/No           Method(s) supported         NOTE 1           Network assisted GPS         Network based / UE based / Both/ None           support         NOTE 1           GPS reference time capable         Yes/No           Support for IPDL         Yes/No           Support for OTDOA UE         Yes/No           Support for OTDOA UE         Yes/No           Support for CTDOA UE         Yes/No           Support for OTDOA UE         Yes/No           Based method         NOTE 1           Support for Rx-Tx time         Yes/No           difference type 2         NOTE 1           measurement         Yes           Support for SFN-SFN         Yes           Support for SFN-SFN         Yes/No           observed time difference         NOTE 1           type 2 measurement         NOTE 1           RF parameters for FDD         UE power class           Rf parameters for TDD         3 / 4           A/b / c / a + b / a + c / b + c / a + b - a + c / b + c / a + b + c NOTE 1           Type 2 measurement         NOTE 1           UE power class         A / b / c / a + b / a + c / b + c / a + b + c NOTE 1           UE power class         A / b / c	protection algorithm UIA1							
method(s) supported     NOTE 1       Network assisted GPS     Network based / UE based / Both/ None       Support     NOTE 1       GPS reference time capable     Yes/No       Support for IPDL     Yes/No       Support for OTDOA UE     Yes/No       based method     NOTE 1       Support for OTDOA UE     Yes/No       based method     NOTE 1       Support for Rx-Tx time     Yes/No       difference type 2     NOTE 1       measurement     Yes/No       Support for UE Positioning     Yes       assisted GPS measurement     Yes/No       validity in CELL_PCH and     Yes/No       URA_PCH RRC states     Support for SFN-SFN       Support for SFN-SFN     Yes/No       observed time difference     NOTE 1       type 2 measurement     Yes/No       Vep 2 measurement     NOTE 1       UE power class     3/4       RF parameters for FDD     Iter and the state of	parameters							
Network assisted GPS     Network based / UE based / Both/ None       support     NOTE 1       GPS reference time capable     Yes/No       Support for IPDL     Yes/No       Support for OTDOA UE     Yes/No       based method     NOTE 1       Support for OTDOA UE     Yes/No       based method     NOTE 1       Support for Rx-Tx time     Yes/No       difference type 2     NOTE 1       measurement     Yes       Support for UE Positioning     Yes       assisted GPS measurement     Yes       validity in CELL_PCH and     URA_PCH RRC states       Support for SFN-SFN     Yes/No       observed time difference     NOTE 1       type 2 measurement     NOTE 1       UE power class     3/4       UE power class     3/4       NOTE 1     190 MHz       RF parameters for TDD     3.84 Mcps       Radio frequency bands     A / b / c / a+b / a+c / b+c / a+b+c       NOTE 1     RF parameters for TDD       128 Mcps     2/3       Radio frequency bands     A / b / c / a+b / a+c / b+c/ a+b+c       NOTE 1     UE power class       UE power class     2/3								
support         NOTE 1           GPS reference time capable         Yes/No           Support for IPDL         Yes/No           Support for OTDOA UE         Yes/No           based method         NOTE 1           Support for Rx-Tx time         Yes/No           difference type 2         NOTE 1           measurement         Yes           Support for UE Positioning assisted GPS measurement         Yes           subjort for SFN-SFN         Yes/No           Observed time difference         NOTE 1           type 2 measurement         NOTE 1           UE power class         3/4           UE power class         3/4           RF parameters for FDD         UE           UE power class         2/3           Radio frequency bands         A / b / c / a + b / a + c / b + c / a + b + c NOTE 1           UE power class         2/3           Radio frequency bands         A / b / c / a + b / a + c / b + c / a + b + c NOTE 1           UE power class         2/3	method(s) supported							
GPS reference time capable       Yes/No         Support for IPDL       Yes/No         Support for OTDOA UE       Yes/No         based method       NOTE 1         Support for Rx-Tx time       NOTE 1         difference type 2       NOTE 1         measurement       Yes/No         Support for UE Positioning       Yes         assisted GPS measurement       Yes         Support for SFN-SFN       Yes/No         observed time difference       NOTE 1         type 2 measurement       Yes/No         Support for SFN-SFN       Yes/No         observed time difference       NOTE 1         type 2 measurement       RF parameters for FDD         UE power class       3 / 4         NOTE 1       190 MHz         RF parameters for TDD       3.84 Mcps         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b - c         NOTE 1       NOTE 1         UE power class       2 / 3         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b - c         NOTE 1       UE power class       2 / 3				Network bas		d / Both/ None	Э	
Support for IPDL       Yes/No         Support for OTDOA UE       Yes/No         based method       NOTE 1         Support for Rx-Tx time       Yes/No         difference type 2       NOTE 1         measurement       Yes         subject for UE Positioning       Yes         assisted GPS measurement       Yes/No         validity in CELL_PCH and       Yes/No         URA_PCH RRC states       Yes/No         Support for SFN-SFN       Yes/No         observed time difference       NOTE 1         type 2 measurement       NOTE 1         Vep 2 measurement       NOTE 1         type 2 measurement       NOTE 1         Tx/Rx frequency separation       190 MHz         RF parameters for TDD       3.4 Mcps         Radio frequency bands       A / b / c / a+b / a+c / b+c / a+b+c         NOTE 1       NOTE 1         UE power class       2 / 3         Radio frequency bands       A / b / c / a+b / a+c / b+c / a+b+c         NOTE 1       UE power class       2 / 3 </td <td>GPS reference time capable</td> <td></td> <td></td> <td></td> <td>Yes/No</td> <td></td> <td></td> <td></td>	GPS reference time capable				Yes/No			
NOTE 1         Support for OTDOA UE       Yes/No         based method       NOTE 1         Support for Rx-Tx time       Yes/No         difference type 2       NOTE 1         measurement       Yes         Support for UE Positioning       assisted GPS measurement         validity in CELL_PCH and       Yes/No         URA_PCH RRC states       Ves/No         Support for SFN-SFN       Yes/No         observed time difference       NOTE 1         type 2 measurement       NOTE 1         Tx/Rx frequency separation       190 MHz <b>RF parameters for FDD</b> NOTE 1         UE power class       3 / 4         NOTE 1       NOTE 1         UE power class       2 / 3         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2 / 3         Readio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2 / 3         NOTE 1       NOTE 1         UE power class       2 / 3	Support for IPDL							
based method NOTE 1 Support for Rx-Tx time Yes/No difference type 2 measurement Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states Support for SFN-SFN Yes/No observed time difference type 2 measurement <b>RF parameters for FDD</b> UE power class 3/4 NOTE 1 Tx/Rx frequency separation 190 MHz <b>RF parameters for TDD</b> 3.84 Mcps Radio frequency bands A / b / c / a+b / a+c / b+c / a+b+c NOTE 1 UE power class 2/3 Radio frequency bands A / b / c / a+b / a+c / b+c / a+b+c NOTE 1 UE power class 2/3 Radio frequency bands A / b / c / a+b / a+c / b+c / a+b+c NOTE 1 UE power class 2/3 NOTE 1 UE power class 2/3 Radio frequency bands A / b / c / a+b / a+c / b+c / a+b+c NOTE 1 UE power class 2/3 NOTE 1 UE power class 2/3 NOTE 1 UE power class 2/3 Radio frequency bands A / b / c / a+b / a+c / b+c / a+b+c NOTE 1 UE power class 2/3					NOTE 1			
Support for Rx-Tx time       Yes/No         difference type 2       NOTE 1         measurement       Yes         Support for UE Positioning       Yes         assisted GPS measurement       Yes         validity in CELL_PCH and       Yes/No         URA_PCH RRC states       Yes/No         Support for SFN-SFN       Yes/No         observed time difference       NOTE 1         type 2 measurement       NOTE 1         Tx/Rx frequency separation       190 MHz         RF parameters for TDD       3.84 Mcps         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c         NOTE 1       NOTE 1         UE power class       2 / 3         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c         NOTE 1       UE power class								
difference type 2       NOTE 1         measurement       Yes         Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states       Yes/No         Support for SFN-SFN observed time difference type 2 measurement       Yes/No         RF parameters for FDD       NOTE 1         UE power class       3/4         NOTE 1       190 MHz         RF parameters for TDD       190 MHz         RF parameters for TDD       2/3         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2/3         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2/3         Ref parameters for TDD       2/3         UE power class       2/3         UE power class       2/3								
measurement         Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states         Support for SFN-SFN observed time difference type 2 measurement         RF parameters for FDD         UE power class         3/4         NOTE 1         Tx/Rx frequency separation         190 MHz         RF parameters for TDD 3.84 Mcps         Radio frequency bands         A / b / c / a+b / a+c / b+c / a+b+c NOTE 1         VE power class         2 / 3 NOTE 1         UE power class         2 / 3         Radio frequency bands         A / b / c / a+b / a+c / b+c / a+b+c NOTE 1         UE power class       2 / 3								
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         RF parameters for FDD       NOTE 1         UE power class       3/4 NOTE 1         Tx/Rx frequency separation       190 MHz         RF parameters for TDD 3.84 Mcps       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         Radio frequency bands       2 / 3 NOTE 1         UE power class       2 / 3         RF parameters for TDD 1.28 Mcps       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2 / 3         UE power class       2 / 3					NOTE 1			
assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states Support for SFN-SFN observed time difference type 2 measurement <b>RF parameters for FDD</b> UE power class Tx/Rx frequency separation <b>RF parameters for TDD</b> <b>3.84 Mcps</b> Radio frequency bands A / b / c / a+b / a+c / b+c / a+b+c NOTE 1 UE power class 2 / 3 NOTE 1 UE power class 2 / 3 NOTE 1 <b>RF parameters for TDD</b> <b>1.28 Mcps</b> Radio frequency bands A / b / c / a+b / a+c / b+c / a+b+c NOTE 1 UE power class 2 / 3 NOTE 1					Vaa			
URA_PCH RRC states         Support for SFN-SFN         observed time difference         type 2 measurement         RF parameters for FDD         UE power class         3/4         NOTE 1         Tx/Rx frequency separation         RF parameters for TDD         3.84 Mcps         Radio frequency bands         A / b / c / a+b / a+c / b+c / a+b+c         NOTE 1         UE power class         2/3         Radio frequency bands         A / b / c / a+b / a+c / b+c / a+b+c         NOTE 1         UE power class         2/3         NOTE 1         UE power class         A / b / c / a+b / a+c / b+c / a+b+c         NOTE 1         UE power class         A / b / c / a+b / a+c / b+c / a+b+c         NOTE 1         UE power class         A / b / c / a+b / a+c / b+c / a+b+c         NOTE 1         UE power class         A / b / c / a+b / a+c / b+c / a+b+c         NOTE 1         UE power class         2/3	assisted GPS measurement				res			
Support for SFN-SFN       Yes/No         observed time difference       NOTE 1         type 2 measurement       3/4         RF parameters for FDD       NOTE 1         UE power class       3/4         NOTE 1       NOTE 1         Tx/Rx frequency separation       190 MHz         RF parameters for TDD       3.84 Mcps         Radio frequency bands       A / b / c / a+b / a+c / b+c / a+b+c         NOTE 1       VE power class         2/3       NOTE 1         RF parameters for TDD       2/3         Radio frequency bands       A / b / c / a+b / a+c / b+c / a+b+c         NOTE 1       NOTE 1         RF parameters for TDD       NOTE 1         RF parameters for TDD       NOTE 1         UE power class       A / b / c / a+b / a+c / b+c/ a+b+c         NOTE 1       NOTE 1         UE power class       A / b / c / a+b / a+c / b+c/ a+b+c         NOTE 1       NOTE 1         UE power class       2/3								
observed time difference       NOTE 1         type 2 measurement       3 / 4         RF parameters for FDD       3 / 4         UE power class       3 / 4         NOTE 1       100 MHz         Tx/Rx frequency separation       190 MHz         RF parameters for TDD       3.84 Mcps         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2 / 3         NOTE 1       NOTE 1         UE power class       2 / 3         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         RF parameters for TDD       1.28 Mcps         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2 / 3					Yes/No			
type 2 measurement         RF parameters for FDD         UE power class       3/4         NOTE 1         Tx/Rx frequency separation       190 MHz         RF parameters for TDD         3.84 Mcps         Radio frequency bands       A/b/c/a+b/a+c/b+c/a+b+c         NOTE 1         UE power class       2/3         NOTE 1         RF parameters for TDD         1.28 Mcps         Radio frequency bands         A/b/c/a+b/a+c/b+c/a+b+c         NOTE 1         UE power class         2/3         NOTE 1         UE power class         2/3         Radio frequency bands         A/b/c/a+b/a+c/b+c/a+b+c         NOTE 1         UE power class         2/3								
UE power class       3 / 4 NOTE 1         Tx/Rx frequency separation       190 MHz <b>RF parameters for TDD</b> 3.84 Mcps       190 MHz         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2 / 3 NOTE 1 <b>RF parameters for TDD</b> 1.28 Mcps       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1	type 2 measurement							
UE power class       3 / 4 NOTE 1         Tx/Rx frequency separation       190 MHz <b>RF parameters for TDD</b> 3.84 Mcps       190 MHz         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2 / 3 NOTE 1 <b>RF parameters for TDD</b> 1.28 Mcps       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1								
Tx/Rx frequency separation       190 MHz         RF parameters for TDD       3.84 Mcps         Radio frequency bands       A / b / c / a+b / a+c / b+c / a+b+c         NOTE 1       NOTE 1         UE power class       2 / 3         NOTE 1       NOTE 1         RF parameters for TDD       1.28 Mcps         Radio frequency bands       A / b / c / a+b / a+c / b+c/ a+b+c         NOTE 1       NOTE 1         UE power class       A / b / c / a+b / a+c / b+c/ a+b+c         NOTE 1       NOTE 1         UE power class       A / b / c / a+b / a+c / b+c/ a+b+c         NOTE 1       2 / 3	UE power class							
RF parameters for TDD 3.84 Mcps         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2 / 3 NOTE 1         RF parameters for TDD 1.28 Mcps       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2 / 3	Tx/Rx frequency separation							
3.84 Mcps         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2 / 3 NOTE 1         RF parameters for TDD 1.28 Mcps       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         Radio frequency bands       A / b / c / a + b / a + c / b + c / a + b + c NOTE 1         UE power class       2 / 3								
Radio frequency bands       A / b / c / a+b / a+c / b+c / a+b+c         NOTE 1         UE power class       2 / 3         NOTE 1 <b>RF parameters for TDD</b> 1.28 Mcps         Radio frequency bands         A / b / c / a+b / a+c / b+c/ a+b+c         NOTE 1         UE power class         A / b / c / a+b / a+c / b+c/ a+b+c         NOTE 1         UE power class         2 / 3								
UE power class 2 / 3 NOTE 1 RF parameters for TDD 1.28 Mcps Radio frequency bands A / b / c / a+b / a+c / b+c/ a+b+c NOTE 1 UE power class 2 / 3	Radio frequency bands			A/b/c/		+c/a+b+c		
RF parameters for TDD       A/b/c/a+b/a+c/b+c/a+b+c         1.28 Mcps       A/b/c/a+b/a+c/b+c/a+b+c         Radio frequency bands       A/b/c/a+b/a+c/b+c/a+b+c         NOTE 1       UE power class       2/3	UE power class				2/3			
1.28 Mcps       Radio frequency bands     A / b / c / a+b / a+c / b+c/ a+b+c       NOTE 1       UE power class     2 / 3	RF parameters for TDD				NOTE 1			
Radio frequency bands     A / b / c / a+b / a+c / b+c/ a+b+c       NOTE 1       UE power class     2 / 3	1.28 Mcps							
UE power class 2 / 3	Radio frequency bands			A/b/c/		+c/ a+b+c		
	UE power class							
					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	<u>12 kbps</u> <u>class</u>	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	<u>640 (FDD)</u> 1280(TDD)	1280	3840	3840	6400	10240	20480
I	being received at an	1200(100)						
	arbitrary time instant							
	Maximum sum of number of	640	640	640	640	640	640	640
	bits of all convolutionally							
	coded transport blocks							
	being received at an							
ī	arbitrary time instant		4000	2040	20.40	C 400	10040	20400(4)
	Maximum sum of number of bits of all turbo coded	<u>NA (FDD)</u> 1280(TDD)	1280	3840	3840	6400	10240	20480(1) 10240(2)
I	transport blocks being	<u>1200(1DD)</u>						NOTE 5
	received at an arbitrary time							110120
	instant							
	Maximum number of	<u>4</u>	8	8	8	8	8	16
	simultaneous transport		NOTE 4	NOTE 4	NOTE 4	NOTE 4	NOTE 4	NOTE 4
ı	channels			0/4	0/4	<u>^</u>		
	Maximum number of	<u>1</u>	1	2/1 NOTE 2	2/1 NOTE 2	2	2	2
	simultaneous CCTrCH (FDD)		NOTE 3	NOTE 2 NOTE 3	NOTE 2 NOTE 3	NOTE 3	NOTE 3	NOTE 3
1	Maximum number of	1	2	3	3	3	4	4
	simultaneous CCTrCH	<u>NOTE 3</u>	NOTE 3	NOTE 3	NOTE 3	NOTE 3	NOTE 3	NOTE 3
•	(TDD)							
	Maximum total number of	<u>4</u>	8	8	16	32	64	96
	transport blocks received							
	within TTIs that end at the same time							
T	Maximum number of TFC	<u>16</u>	32	48	96	128	256	1024
•							200	
ļ	Maximum number of TF	<u>32</u>	32	64	64	64	128	256
	Support for turbo decoding	No (FDD)	Yes	Yes	Yes	Yes	Yes	Yes
I	Physical channel	Yes (TDD)						
	parameters (FDD)							
	Maximum number of	<u>1</u>	1	2/1	2/1	3	3	3
•	DPCH/PDSCH codes to be	-		NOTE 2	NOTE 2			
	simultaneously received							
	Maximum number of	<u>1200</u>	1200	3600/2400	7200/4800	19200	28800	57600
	physical channel bits			NOTE2	NOTE2			
	received in any 10 ms interval (DPCH, PDSCH, S-							
	CCPCH).							
	Support for SF 512 for	No	No	No	No	No	No	No
-	DPCH							
	NOTE 6							
	Support of PDSCH	<u>No</u>	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes	Yes	Yes
	Support of HS-PDSCH	<u>No</u>	No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
ı				NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1
I	Maximum number of simultaneous S-CCPCH	<u>1</u>	1	1	1	1	1	1
	radio links							
I	Support of dedicated pilots	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	for channel estimation	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1

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	Reference combination of UE Radio Access capability parameters in DL	<u>12 kbps</u> <u>class</u>	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
		<u>NOTE 7</u>	NOTE 7	NOTE 7	NOTE 7	NOTE 7	NOTE 7	NOTE 7
	Support of dedicated pilots for channel estimation of HS-DSCH	<u>Yes/No</u> NOTE 1	Yes/No NOTE 1	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)							
I	Maximum number of timeslots per frame	<u>1</u>	1	2	4	5	10	12
l	Maximum number of physical channels per frame	<u>5</u>	8	9	14	28	64	136
	Minimum SF	<u>16</u>	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1/16 NOTE 1
	Support of PDSCH	<u>No</u>	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
	Support of HS-PDSCH	<u>No</u>	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	<u>5</u>	8	9	9	9	9	13
	Physical channel parameters (TDD 1.28 Mcps)							
	Maximum number of timeslots per subframe	<u>1</u>	1	2	3	4	6	6
	Maximum number of physical channels per subframe	<u>5</u>	8	12	18	43	77	77
	Minimum SF	<u>16</u>	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1
I	Support of PDSCH	<u>No</u>	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
	Support of HS-PDSCH	<u>No</u>	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	<u>5</u>	8	11	14	14	14	14
	Support of 8PSK	<u>No</u>	No	No	No	No	No	Yes

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

NOTE 2: Options depend on the support of PDSCH. The highest value is required if PDSCH is supported.

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 Mcps TDD (2) For 1.28 Mcps TDD.

NOTE 6: This UE capability does not relate to the support of CPCH in the uplink for which SF 512 is needed

NOTE 7: A UE conforming to this release of the specification shall set the support of channel estimation based on dedicated pilot bits to TRUE.

[...]

## 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	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class
parameters in UL						
Transport channel parameters						
Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant	<u>640</u>	640	3840	3840	6400	10240
Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	<u>640</u>	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	<u>NA</u>	NA	3840	3840	6400	10240
Maximum number of simultaneous transport channels	<u>4</u>	4	8	8	8	8
Maximum number of simultaneous CCTrCH(TDD only)	<u>1</u> 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	<u>4</u>	4	8	8	16	32
Maximum number of TFC	<u>16</u>	16	32	48	64	128
Maximum number of TF	<u>32</u>	32	32	32	32	64
Support for turbo encoding	No	No	Yes	Yes	Yes	Yes
Physical channel parameters (FDD) Maximum number of DPDCH		1200	2400	4000	0000	10000
bits transmitted per 10 ms	<u>600</u>	1200	2400	4800	9600	19200
Simultaneous reception of SCCPCH and DPCH NOTE 2	<u>No</u>	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Simultaneous reception of SCCPCH, DPCH and PDSCH NOTE 2	<u>No</u>	No	No	No	No	No
Support of PCPCH	<u>Yes/No</u>	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
NOTE 4	<u>NOTE 1</u>	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1
Physical channel parameters (TDD 3.84 Mcps)						
Maximum Number of timeslots per frame	<u>1</u>	1	2	3	7	9
Maximum number of physical channels per timeslot	<u>1</u>	1	1	1	1	2
Minimum SF	<u>8</u>	8	2	2	2	2
Support of PUSCH	<u>No</u>	Yes/No NOTE 1	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	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 8PSK	<u>No</u>	No	No	No	No	No

- NOTE 1: Options represent different combinations that should be supported with conformance tests.
- NOTE 2: The downlink parameters 'Simultaneous reception of SCCPCH and DPCH' and 'Simultaneous reception of SCCPCH, DPCH and PDSCH' are included in the combinations for uplink as their requirements relate to the uplink data rate. Simultaneous reception of SCCPCH and DPCH is required for the DRAC procedure that is intended for controlling uplink transmissions. In this release of the specification, this is limited to 1 SCCPCH.
- NOTE 3: This number does not contain the RACH CCTrCH.
- NOTE 4: Support of PCPCH means that the UE supports PCPCH access for both the CA not active case and for the CA active case.

### 3GPP TSG-RAN2 Meeting #39 San Diego, CA, USA, 17<sup>th</sup> - 21<sup>st</sup> November 2003

### R2-032599

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Source:	<mark>፝ቘ R</mark> A	N WG2	2								
Work item code	e:# <mark>TE</mark>	1						Date: ೫	17/	1/2003	
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Reason for cha		of all to 12 This dedic incor capa recep TDD RAB	transp 80bits chang cated I sister bilities otion a 32kbp 's.	e additional RAB's and E acies still exits Since UE and not trans os class in o y to further r proposed to	eing receiv of reference by removed of 22kbps of st between requirement mission sin rder to elim reduce HCF reduce UL	ved at sever class of low ra its for milar of inate	an a CPC apata ate U turbo hang UL in	nd "Maximum rbitrary time i CH RAB's. consistencies pilities. At pre L RAB's and o coding are p ges are now p noonsistencies nsistencies a SF8 to SF4 fo	betw sent s the U orimar ropos s with	t" was inc een low r similar L 32kbps ily associ ied for the low rate align with	creased ate DL class ated with e UL UL
		_		D 32kbps cl							

1. "Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant" is updated from 640 to the next possible 1280 bits.

2. "Support for turbo decoding" in UL has been set to "Yes"

3. "Maximum sum of number of bits of all turbo coded transport blocks being

		transmitted at an arbitrary time instant" has been set to 1280 bits.
		4. For HCR TDD "Minimum SF" is reduced from SF8 to SF4.
		Impact analysis:
		Impact only on TDD UL 32kbps class UEs.
Consequences if not approved:	Ж	A 32K class UE cannot support many RABs with data rate less than 32K.
		Inconsistencies with low rate reference RAB's will cause UE capability class definitions not to be respected.
Clauses affected:	Ж	5.2.3
	[	YN

Other specs affected:	ж	Y	N X X X	Other core specifications Test specifications O&M Specifications	Ħ	
Other comments:	ж					

#### 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.

### 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	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	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
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	1280	3840	3840	6400	10240	20480
Maximum number of simultaneous transport channels	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 NOTE 3	2/1 NOTE 2 NOTE 3	2/1 NOTE 2 NOTE 3	2/1 NOTE 2 NOTE 3	2 NOTE 3	2 NOTE 3
Maximum number of simultaneous CCTrCH (TDD)	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	8	8	16	32	64	96
Maximum number of TFC	32	48	96	128	256	1024
Maximum number of TF	32	64	64	64	128	256
Support for turbo decoding	Yes	Yes	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)						
Maximum number of DPCH/PDSCH codes to be simultaneously received	1	2/1 NOTE 2	2/1 NOTE 2	3	3	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH).	1200	3600/2400 NOTE2	7200/4800 NOTE2	19200	28800	57600
Support for SF 512	No	No	No	No	No	No
Support of PDSCH	No	Yes/No NOTE 1	Yes/No NOTE 1	No/Yes NOTE 1	Yes	Yes
Maximum number of simultaneous S- CCPCH radio links	1	1	1	1	1	1
Support of dedicated pilots for channel estimation	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Physical channel parameters (TDD)						
Maximum number of timeslots per frame	1	2	4	5	10	12
Maximum number of physical channels per frame	8	9	14	28	64	136
Minimum SF	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1/16 NOTE 1
Support of PDSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Maximum number of physical channels per timeslot		9	9	9	9	13

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

NOTE 2: Options depend on the support of PDSCH. The highest value is required if PDSCH is supported.

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.

### 5.2.3 Combinations of UE Radio Access Parameters for UL

Reference combination of UE Radio Access capability parameters in UL	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 <u>(FDD)</u> <u>1280 (TDD)</u>	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
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	NA <u>(FDD)</u> <u>1280 (TDD)</u>	3840	3840	6400	10240
Maximum number of simultaneous transport channels	4	8	8	8	8
Maximum number of simultaneous CCTrCH(TDD only)	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	8	8	16	32
Maximum number of TFC	16	32	48	64	128
Maximum number of TF	32	32	32	32	64
Support for turbo encoding	No <u>(FDD)</u> <u>Yes (TDD)</u>	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)					
Maximum number of DPDCH bits transmitted per 10 ms	1200	2400	4800	9600	19200
Simultaneous reception of SCCPCH and DPCH NOTE 2	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Simultaneous reception of SCCPCH, DPCH and PDSCH NOTE 2	No	No	No	No	No
Support of PCPCH	No	No	No	No	No
Physical channel parameters (TDD)					
Maximum Number of timeslots per frame	1	2	3	7	9
Maximum number of physical channels per timeslot	1	1	1	1	2
Minimum SF	<del>8<u>4</u></del>	2	2	2	2
Support of PUSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes

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

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

NOTE 2: The downlink parameters 'Simultaneous reception of SCCPCH and DPCH' and 'Simultaneous reception of SCCPCH, DPCH and PDSCH' are included in the combinations for uplink as their requirements relate to the uplink data rate. Simultaneous reception of SCCPCH and DPCH is required for the DRAC procedure that is intended for controlling uplink transmissions. In this release of the specification, this is limited to 1 SCCPCH.

### 3GPP TS aa.bbb vX.Y.Z (YYYY-MM)

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

### 3GPP TSG-RAN2 Meeting #39 San Diego, CA, USA, 17<sup>th</sup> - 21<sup>st</sup> November 2003

### R2-032600

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Summary of char		the TDD 32kbp	s class UE:				
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		Aaximum sum c rary time instan					

2. "Support for turbo decoding" in UL has been set to "Yes"

3. "Maximum sum of number of bits of all turbo coded transport blocks being

		transmitted at an arbitrary time instant" has been set to 1280 bits.
		4. For HCR TDD "Minimum SF" is reduced from SF8 to SF4.
		Impact analysis:
		Impact only on TDD UL 32kbps class UEs.
Consequences if not approved:	Ж	A 32K class UE cannot support many RABs with data rate less than 32K.
		Inconsistencies with low rate reference RAB's will cause UE capability class definitions not to be respected.
		· · · · · · · · · · · · · · · · · · ·
Clauses affected:	Ж	5.2.3
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Other specs affected:	ж	Y	N X X X	Other core specifications Test specifications O&M Specifications	Ħ	
Other comments:	ж					

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- 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.

## 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	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
parameters in DL Transport channel parameters						
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	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
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	1280	3840	3840	6400	10240	20480(1) 10240(2) NOTE 5
Maximum number of simultaneous transport channels	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 NOTE 3	2/1 NOTE 2 NOTE 3	2/1 NOTE 2 NOTE 3	2 NOTE 3	2 NOTE 3	2 NOTE 3
Maximum number of simultaneous CCTrCH (TDD)	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	8	8	16	32	64	96
Maximum number of TFC	32	48	96	128	256	1024
Maximum number of TF	32	64	64	64	128	256
Support for turbo decoding	Yes	Yes	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)						
Maximum number of DPCH/PDSCH codes to be simultaneously received	1	2/1 NOTE 2	2/1 NOTE 2	3	3	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH).	1200	3600/2400 NOTE2	7200/4800 NOTE2	19200	28800	57600
Support for SF 512 for DPCH NOTE 6	No	No	No	No	No	No
Support of PDSCH	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes	Yes	Yes
Maximum number of simultaneous S- CCPCH radio links	1	1	1	1	1	1
Support of dedicated pilots for channel estimation	Yes/No NOTE 1	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	2	4	5	10	12
Maximum number of physical channels per frame	8	9	14	28	64	136
Minimum SF	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1/16 NOTE 1
Support of PDSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Maximum number of physical channels per timeslot	8	9	9	9	9	13
Physical channel parameters (TDD 1.28 Mcps)						
Maximum number of timeslots per	1	2	3	4	6	6

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Reference combination of UE Radio Access capability parameters in DL	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
subframe						
Maximum number of physical channels per subframe	8	12	18	43	77	77
Minimum SF	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1
Support of PDSCH	Yes/no NOTE 1	Yes	Yes	Yes	Yes	Yes
Maximum number of physical channels per timeslot	8	11	14	14	14	14
Support of 8PSK	No	No	No	No	No	Yes

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

NOTE 2: Options depend on the support of PDSCH. The highest value is required if PDSCH is supported.

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 Mcps TDD (2) For 1.28 Mcps TDD.

NOTE 6: This UE capability does not relate to the support of CPCH in the uplink for which SF 512 is needed.

### 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	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	640 <u>(FDD)</u>	3840	3840	6400	10240
transport blocks being transmitted at an	1280 (TDD)				
arbitrary time instant					
Maximum sum of number of bits of all	640	640	640	640	640
convolutionally coded transport blocks					
being transmitted at an arbitrary time					
instant					
Maximum sum of number of bits of all	NA <u>(FDD)</u>	3840	3840	6400	10240
turbo coded transport blocks being	<u>1280 (TDD)</u>				
transmitted at an arbitrary time instant					
Maximum number of simultaneous	4	8	8	8	8
transport channels					
Maximum number of simultaneous	1	2	2	2	2
CCTrCH(TDD only)	NOTE 3	NOTE 3	NOTE 3	NOTE 3	NOTE 3
Maximum total number of transport blocks	4	8	8	16	32
transmitted within TTIs that start at the					
same time					
Maximum number of TFC	16	32	48	64	128
Maximum number of TF	32	32	32	32	64
Support for turbo encoding	No <u>(FDD)</u>	Yes	Yes	Yes	Yes
	<u>Yes (TDD)</u>				
Physical channel parameters (FDD)					
Maximum number of DPDCH bits	1200	2400	4800	9600	19200
transmitted per 10 ms					
Simultaneous reception of SCCPCH and	No	No	Yes/No	Yes/No	Yes/No
DPCH			NOTE 1	NOTE 1	NOTE 1
NOTE 2					

#### 3GPP TS aa.bbb vX.Y.Z (YYYY-MM)

Reference combination of UE Radio Access capability parameters in UL	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class
Simultaneous reception of SCCPCH, DPCH and PDSCH	No	No	No	No	No
NOTE 2					
Support of PCPCH	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
NOTE 4	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1
Physical channel parameters (TDD 3.84 Mcps)					
Maximum Number of timeslots per frame	1	2	3	7	9
Maximum number of physical channels per timeslot	1	1	1	1	2
Minimum SF	8 <u>4</u>	2	2	2	2
Support of PUSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes
Physical channel parameters (TDD 1.28 Mcps)					
Maximum Number of timeslots per subframe	1	2	3	5	5
Maximum number of physical channels	1	1	1	1	2
per timeslot					
Minimum SF	4	2	2	2	2
Support of PUSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes
Support of 8PSK	No	No	No	No	No

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

- NOTE 2: The downlink parameters 'Simultaneous reception of SCCPCH and DPCH' and 'Simultaneous reception of SCCPCH, DPCH and PDSCH' are included in the combinations for uplink as their requirements relate to the uplink data rate. Simultaneous reception of SCCPCH and DPCH is required for the DRAC procedure that is intended for controlling uplink transmissions. In this release of the specification, this is limited to 1 SCCPCH.
- NOTE 3: This number does not contain the RACH CCTrCH.
- NOTE 4: Support of PCPCH means that the UE supports PCPCH access for both the CA not active case and for the CA active case.

### 3GPP TSG-RAN2 Meeting #39 San Diego, CA, USA, 17<sup>th</sup> - 21<sup>st</sup> November 2003

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For <u><b>HELP</b></u> on using this form, see bottom of this page or look at the pop-up text over the $#$ symbols.										
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		m sum of num ne instant" is u								
	2. "Support	for turbo deco	oding" in l	UL ha	as b	een set to "Ye	es"			
	3. "Maximu	m sum of num	ber of bits	s of a	all tu	rbo coded tra	nspor	t blocks b	eing	

		transmitted at an arbitrary time instant" has been set to 1280 bits.
		4. For HCR TDD "Minimum SF" is reduced from SF8 to SF4.
		Impact analysis:
		Impact only on TDD UL 32kbps class UEs.
Consequences if not approved:	Ж	A 32K class UE cannot support many RABs with data rate less than 32K.
		Inconsistencies with low rate reference RAB's will cause UE capability class definitions not to be respected.
		· · · · · · · · · · · · · · · · · · ·
Clauses affected:	Ж	5.2.3
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Other specs affected:	ж	Y	N X X X	Other core specifications Test specifications O&M Specifications	Ħ	
Other comments:	ж					

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- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
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- 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.

## 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	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
parameters in DL						
Transport channel parameters Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	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
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	1280	3840	3840	6400	10240	20480(1) 10240(2) NOTE 5
Maximum number of simultaneous transport channels	8 NOTE 4	16 NOTE 4				
Maximum number of simultaneous CCTrCH (FDD)	1 NOTE 3	2/1 NOTE 2 NOTE 3	2/1 NOTE 2 NOTE 3	2 NOTE 3	2 NOTE 3	2 NOTE 3
Maximum number of simultaneous CCTrCH (TDD)	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	8	8	16	32	64	96
Maximum number of TFC	32	48	96	128	256	1024
Maximum number of TF	32	64	64	64	128	256
Support for turbo decoding	Yes	Yes	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)						
Maximum number of DPCH/PDSCH codes to be simultaneously received	1	2/1 NOTE 2	2/1 NOTE 2	3	3	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH).	1200	3600/2400 NOTE2	7200/4800 NOTE2	19200	28800	57600
Support for SF 512 for DPCH NOTE 6	No	No	No	No	No	No
Support of PDSCH	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes	Yes	Yes
Support of HS-PDSCH	No	Yes/No NOTE 1				
Maximum number of simultaneous S- CCPCH radio links	1	1	1	1	1	1
Support of dedicated pilots for channel estimation	Yes NOTE 1 NOTE 7					
Support of dedicated pilots for	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
channel estimation of HS-DSCH Physical channel parameters (TDD 3.84 Mcps)	NOTE 1					
Maximum number of timeslots per frame	1	2	4	5	10	12
Maximum number of physical channels per frame	8	9	14	28	64	136
Minimum SF	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1/16 NOTE 1
Support of PDSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes

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Reference combination of UE Radio Access capability parameters in DL	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Support of HS-PDSCH	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	8	9	9	9	9	13
Physical channel parameters (TDD 1.28 Mcps)						
Maximum number of timeslots per subframe	1	2	3	4	6	6
Maximum number of physical channels per subframe	8	12	18	43	77	77
Minimum SF	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1
Support of PDSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Support of HS-PDSCH	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	8	11	14	14	14	14
Support of 8PSK	No	No	No	No	No	Yes

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

NOTE 2: Options depend on the support of PDSCH. The highest value is required if PDSCH is supported.

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 Mcps TDD (2) For 1.28 Mcps TDD.
- NOTE 6: This UE capability does not relate to the support of CPCH in the uplink for which SF 512 is needed
- NOTE 7: A UE conforming to this release of the specification shall set the support of channel estimation based on dedicated pilot bits to TRUE.

The reference combinations for HS-DSCH capabilities are shown in tables 5.2.2.2, 5.2.2.3 and 5.2.2.4. These tables are subject to further discussions in TSG-RAN WG1 and TSG-RAN WG2.

Table 5.2.2.2: FDD UE ra	dio access capability	parameter combinations,	DL HS-DSCH parameters
		p	

Reference combination	1.2 Mbps class	3.6 Mbps class	7 Mbps class	10 Mbps class
RLC and MAC-hs parameters				
Minimum total RLC AM and MAC-hs buffer size (kbytes)	50	50	100	150
Maximum number of AM RLC entities	6	6	8	8
PHY parameters				
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	1.4 Mbps class	2.0 Mbps class	2.8 Mbps class
RLC and MAC-HS parameters			
Total RLC AM and MAC-hs buffer size (kbytes)	50	50	100

Reference combination	1.4 Mbps class	2.0 Mbps class	2.8 Mbps class
Maximum number of AM RLC entities	6	6	6
PHY parameters			
1.28 Mcps TDD HS-DSCH Category	Category 1	Category 7	Category 13

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

Reference combination	1.2 Mbps class	2.4 Mbps class	3.6 Mbps class	7.3 Mbps class	10.2 Mbps class
RLC and MAC-hs parameters					
Minimal total RLC AM and MAC-hs buffer size (kbytes)	50	50	100	150	200
Maximum number of AM RLC entities	6	6	6	8	8
PHY parameters					
3.84Mcps TDD HS-DSCH category	Category 1	Category 3	Category 5	Category 8	Category 9

## 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	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 <u>(FDD)</u> <u>1280 (TDD)</u>	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
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	NA <u>(FDD)</u> <u>1280 (TDD)</u>	3840	3840	6400	10240
Maximum number of simultaneous transport channels	4	8	8	8	8
Maximum number of simultaneous CCTrCH(TDD only)	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	8	8	16	32
Maximum number of TFC	16	32	48	64	128
Maximum number of TF	32	32	32	32	64
Support for turbo encoding	No <u>(FDD)</u> <u>Yes (TDD)</u>	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)					
Maximum number of DPDCH bits transmitted per 10 ms	1200	2400	4800	9600	19200
Simultaneous reception of SCCPCH and DPCH NOTE 2	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Simultaneous reception of SCCPCH, DPCH and PDSCH NOTE 2	No	No	No	No	No
Support of PCPCH NOTE 4	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)					

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

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

- NOTE 2: The downlink parameters 'Simultaneous reception of SCCPCH and DPCH' and 'Simultaneous reception of SCCPCH, DPCH and PDSCH' are included in the combinations for uplink as their requirements relate to the uplink data rate. Simultaneous reception of SCCPCH and DPCH is required for the DRAC procedure that is intended for controlling uplink transmissions. In this release of the specification, this is limited to 1 SCCPCH.
- NOTE 3: This number does not contain the RACH CCTrCH.
- NOTE 4: Support of PCPCH means that the UE supports PCPCH access for both the CA not active case and for the CA active case.