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	073	-	R99	Correction of Maximum hc context space capability	F	3.8.0	3.9.0	R2-031957	TEI
25.306	074	-	Rel-4	Correction of Maximum hc context space capability	Α	4.7.0	4.8.0	R2-031958	TEI
25.306	075	-	Rel-5	Correction of Maximum hc context space capability	Α	5.5.0	5.6.0	R2-031959	TEI
25.306	076	-	R99	UE positioning support in the UE	F	3.8.0	3.9.0	R2-031983	TEI
25.306	077	-	Rel-4	UE positioning support in the UE	Α	4.7.0	4.8.0	R2-031984	TEI
25.306	078	-	Rel-5	UE positioning support in the UE	F	5.5.0	5.6.0	R2-031985	TEI
25.306	079	-	R99	Definition of minimum UE capability class	F	3.8.0	3.9.0	R2-031992	TEI
25.306	080	-	Rel-4	Definition of minimum UE capability class	Α	4.7.0	4.8.0	R2-031993	TEI
25.306	081	-	Rel-5	Definition of minimum UE capability class	Α	5.5.0	5.6.0	R2-031994	TEI

## 3GPP TSG-RAN WG2 #37 Budapest, Hungary, 25<sup>th</sup> – 29<sup>th</sup> August 2003

	CHANGE REQUEST	CR-Form-v7
*	25.306 CR 073	Current version: 3.8.0 **
For <u>HELP</u> on us	sing this form, see bottom of this page or look at th	he pop-up text over the <b>%</b> symbols.
Proposed change a	n <b>ffects:</b> UICC apps <b>米</b> ME X Radio /	Access Network X Core Network
Title: #	Correction of Maximum hc context space capab	ility
Source: #	RAN WG2	
Work item code: <b>第</b>	TEI	<i>Date</i> :
Category: #	Use one of the following categories:  F (correction)  A (corresponds to a correction in an earlier release  B (addition of feature),  C (functional modification of feature)  D (editorial modification)  Detailed explanations of the above categories can be found in 3GPP TR 21.900.	R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)
Reason for change	The meaning of the UE capability "Max HC UE behaviour in case the configuration of F is not sufficiently specified.	
Summary of chang	It is clarified how UTRAN controls that the Ucompression context space" is not exceeded  Isolated Impact Analysis Functionality corrected: PDCP Configuration  Isolated impact statement: Correction to a ficapabilities were not in line. No UE impact. configuration for RFC 2507 may exceed UE	ed. on for RFC 2507 function where configuration and UE If not implemented by UTRAN,
Consequences if not approved:	# PDCP configuration may fail without notice	in UTRAN.
Clauses affected:	<b>%</b> 4.1	
Other specs affected:	Y N  X Other core specifications Test specifications O&M Specifications	
Other comments:	<b>x</b>	

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

- 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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.

## 4 UE radio access capability parameters

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

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

### 4.1 PDCP parameters

Support for RFC 2507

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

Support for loss-less SRNS relocation

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

Maximum header compression context space

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

- 1. MAX HEADER;
- 2. TCP\_SPACE;
- 3. NON\_TCP\_SPACE;

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

(2 \* (TCP SPACE + 1 + NON TCP SPACE + 1) \* MAX HEADER).

The following criterion must be fulfilled in the configuration:

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

#### 4.2 Void

## 3GPP TSG-RAN WG2 #37 Budapest, Hungary, 25<sup>th</sup> – 29<sup>th</sup> August 2003

Tdoc #R2-031958

			CHANG	E REQ	UE	ST			CR-Form-V/
*	25.	.306 CF	074	<b>≋rev</b>	-	¥	Current vers	ion: <b>4.7.0</b>	æ
For <u>HELP</u> on u	ısing t	this form, so	ee bottom of t	this page or	look a	at the	e pop-up text	over the <b>ૠ</b> sy	mbols.
Proposed change	affec	ts: UICC	apps <b>Ж</b>	ME X	Rad	dio Ad	ccess Networ	·k <mark>X</mark> Core N	etwork
Title: ж	Cor	rection of N	Maximum hc o	context space	e cap	oabili	ty		
Source: #	RA	N WG2							
Work item code: ※	TEI						Date: ₩	25/08/2003	
Reason for change	Detai be fo	F (correction A (corresponding A) (corresponding B) (addition C) (functional D) (editorial illed explanation and in 3GPF)  The mean UE behave	inds to a correct of feature), all modification of modification of the above TR 21.900.	ction in an ear	s can	HC c	Use <u>one</u> of 2 2 9) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	Rel-4 the following rel (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6)  " is not clear a reds the UE care	nd the
Summary of chang	ge: Ж	Isolated In Functional Isolated in capabilities	ion context spansion context spansion context shall in the corrected in the context shall in	pace" is not	exceeding figure in the second	eded ation a ful	for RFC 250 nction where not impleme	Maximum head  7  configuration ented by UTRA	and UE
Consequences if not approved:	¥	PDCP co	nfiguration ma	ay fail withou	ut not	ice ir	UTRAN.		
Clauses affected:	ж	4.1							
Other specs affected:	<b>*</b>	X Tes	er core specil t specification M Specificatio	าร	*				
Other comments:	₩								

How to create CRs using this form:

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

### 4.1 PDCP parameters

Support for RFC 2507

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

Support for RFC 3095

This parameter defines whether the UE supports header compression according to RFC 3095 as defined in [1] or not.

Support for loss-less SRNS relocation

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

Maximum header compression context space

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

- MAX\_HEADER;
- 2. TCP SPACE;
- 3. NON\_TCP\_SPACE;

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

 $(2 * (TCP\_SPACE + 1 + NON\_TCP\_SPACE + 1) * MAX\_HEADER).$ 

The following criterion must be fulfilled in the configuration:

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

#### Maximum number of ROHC context sessions

This parameter is only applicable if the UE supports header compression according to RFC3095. It is defined as the maximum number of header compression context sessions supported by the UE.

#### Support for Reverse Decompression

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

#### 4.2 Void

## 3GPP TSG-RAN WG2 #37 Budapest, Hungary, 25<sup>th</sup> – 29<sup>th</sup> August 2003

Tdoc #R2-031959

			CHANG	E REQ	UES	Γ		CR-Form-v7
*	25	.306 CR	075	жrev	<b>-</b> #	Current vers	5.5.0	*
For HELP on u			e bottom of th	_	_		rk X Core No	
Proposed change	arrec	<b>15.</b> 0100 a	appsæ	IVIE	Kaulo /	Access Networ	IK A COIE N	etwork
Title: #	Coi	rection of M	aximum hc c	ontext spac	e capab	ility		
Source: #	RA	N WG2						
Work item code: ₩	TE					Date: #	25/08/2003	
Reason for change Summary of change	Deta be fo	F (correction, A (correspon B (addition of C (functional D (editorial milled explanation and in 3GPP)  The meani UE behavior is not suffice It is clarified compression Isolated In Functionali Isolated im capabilities	ds to a correct f feature), modification o nodification) ons of the above TR 21.900.  Ing of the UE our in case the ciently specified how UTRA on context specified ty corrected: pact stateme	feature)  ve categories  capability " ne configura ed.  N controls to cace" is not sis PDCP Core ent: Correcti	Max HC ation of Final the Lexceede on to a final timpact.	se) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6  context space RFC 2507 exce  JE capability "d.  In for RFC 250  unction where If not implement	the following relation (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6) Tis not clear at each the UE car	nd the pabilities
Consequences if not approved:	ж	Ü	figuration ma	ĺ		. ,		
Clauses affected:	æ	4.1						
Other specs affected:	*	X Test	r core specifi specification Specification	S	*			
Other comments:	*							

How to create CRs using this form:

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

### 4.1 PDCP parameters

#### Support for RFC 2507

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

#### Support for RFC 3095

This parameter defines whether the UE supports header compression according to RFC 3095 as defined in [1] or not.

#### Support for RFC 3095 context relocation

This parameter defines whether the UE supports RFC 3095 context relocation as defined in [1] or not.

#### Support for loss-less SRNS relocation

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

#### Maximum header compression context space

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

- 1. MAX\_HEADER;
- 2. TCP\_SPACE;
- 3. NON\_TCP\_SPACE;

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

(2 \* (TCP SPACE + 1 + NON TCP SPACE + 1) \* MAX HEADER).

The following criterion must be fulfilled in the configuration:

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

#### Maximum number of ROHC context sessions

This parameter is only applicable if the UE supports header compression according to RFC3095. It is defined as the maximum number of header compression context sessions supported by the UE.

#### Support for Reverse Decompression

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

## 4.2 Void

#### 3GPP TSG-RAN WG2 Meeting #37 Hungary, Budapest, 25th -29th August 2003

	(	CHANGI	E REQ	UE	ST			CR-Form-v7
æ	25.306 CR	076	жrev	-	æ	Current version:	3.8.0	ж

For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the **%** symbols.

Proposed change affects: UICC apps# ME X Radio Access Network X Core Network

Title: # UE positioning support in the UE

Source: # RAN WG2

Work item code: # TEI Date: # 27/08/2003

Category: # F Release: # R99

Use one of the following categories:

F (correction)

A (corresponds to a correction in an earlier release)

B (addition of feature),

C (functional modification of feature)

Use one of the following releases:

2 (GSM Phase 2)

R96 (Release 1996)

R97 (Release 1997)

R98 (Release 1998)

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

C (functional modification of teature)
R98 (Release 1998)
R99 (Release 1999)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change: 

At RAN#20, RAN2 was requested to revisit UE capabilities for UE positioning following proposals to make the SFN-SFN observed time difference type 2 measurement an optional capability.

Summary of change: \* The following changes are made:

A new UE capability is introduced so that the UE can indicate support for the SFN-SFN observed time difference type 2 measurement. When this measurement is supported by the UE is must be supported in all RRC states.

The definition of the existing UE capability "Support for UE Positioning measurement validity in CELL\_PCH and URA\_PCH RRC states" is changed so that it only applies to assisted GPS methods.

#### **Isolated Impact Analysis**

Functionality corrected: UE positioning SFN-SFN observed time difference type 2 measurement.

The change is isolated to this functionality - their is no impact on the UE positioning assisted GPS functionality.

If a UE supporting the corrected functionality does not implement this CR and the UTRAN does implement this CR then the UTRAN will consider that the UE does not have support and it will not be able to use the functionality

If a UE supporting the corrected functionality implements this CR and the UTRAN does not implement this CR then the UTRAN will anyway correctly assume that UE supports the functionality at least in the CELL\_DCH/CELL\_FACH states. The UTRAN may not be aware that the UE

supports the functionality in CELL\_PCH/URA\_PCH states.

If a UE not supporting the corrected functionality does not implement this CR and the UTRAN does implement this CR then the UTRAN will correctly consider that the UE does not have support.

If a UE not supporting the corrected functionality implements this CR and the UTRAN does not implement this CR then the UTRAN could incorrectly consider that the UE does have support and UP measurement control procedures could fail.

Consequences if not approved:

If the CR is not approved the SFN-SFN observed time difference type 2 measurement will be mandatory for all mobiles to support when in CELL\_DCH and CELL\_FACH state, but it will be optional to support when in CELL\_PCH/URA\_PCH states.

Clauses affected:	<b>%</b> 4.8, 5.1, 5.2.1
Other specs affected:	Y N X Other core specifications Test specifications O&M Specifications
Other comments:	*

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

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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.

### 4.8 UE positioning related parameters

#### Standalone location method(s) supported

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

#### OTDOA UE based method supported

Defines if a UE supports the OTDOA UE based schemes.

#### Network Assisted GPS support

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

#### GPS reference time capable

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

#### Support for IPDL

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

#### Support for Rx-Tx time difference type 2

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

Support for UE Positioning assisted GPS measurement validity in CELL PCH and URA PCH RRC states

Defines if the UE Positioning measurements using the assisted GPS method are valid in CELL\_PCH and URA\_PCH RRC states.

#### Support for SFN-SFN observed time difference type 2 measurement

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

## 5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

		UE radio access capability parameter	Value range
PDCP parameters		Support for RFC 2507	Yes/No
1 DC1 parameters		Support for loss-less SRNS relocation	Yes/No
		Maximum header compression	512, 1024, 2048, 4096, 8192 bytes
		context space	012, 1024, 2040, 4030, 0132 bytes
RLC parameters		Total RLC AM buffer size	2, 10, 50, 100, 150, 500, 1000 kBytes
1120 paramotoro		Maximum number of AM entities	3, 4, 5, 6, 8, 16, 30
		Maximum RLC AM window size	2047, 4095
PHY parameters	Transport	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
The second second	channel	transport blocks being received at an	7680, 8960, 10240, 20480, 40960,
	parameters in	arbitrary time instant	81920, 163840
	downlink	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		convolutionally coded transport blocks	7680, 8960, 10240, 20480, 40960,
		being received at an arbitrary time	81920, 163840
		instant	,
		Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		turbo coded transport blocks being	7680, 8960, 10240, 20480, 40960,
		received at an arbitrary time instant	81920, 163840
		Maximum number of simultaneous	4, 8, 16, 32
		transport channels	
		Maximum number of simultaneous CCTrCH	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport	4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		blocks received within TTIs that end	
		within the same 10 ms interval	
		Maximum number of TFC	16, 32, 48, 64, 96, 128, 256, 512,
			1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo decoding	Yes/No
	Transport	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
	channel	transport blocks being transmitted at	7680, 8960, 10240, 20480, 40960,
	parameters in	an arbitrary time instant	81920, 163840
	uplink	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		convolutionally coded transport blocks	7680, 8960, 10240, 20480, 40960, 81920, 163840
		being transmitted at an arbitrary time instant	61920, 163640
		Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		turbo coded transport blocks being	7680, 8960, 10240, 20480, 40960,
		transmitted at an arbitrary time instant	81920, 163840
		Maximum number of simultaneous	2, 4, 8, 16, 32
		transport channels	, , , ,
		Maximum number of simultaneous	1, 2, 3, 4, 5, 6, 7, 8
		CCTrCH of DCH type (TDD only)	
		Maximum total number of transport	2, 4, 8, 16, 32, 48, 64, 96, 128, 256,
		blocks transmitted within TTIs that	512
		start at the same time	4 0 40 00 40 04 05 400 050
		Maximum number of TFC	4, 8, 16, 32, 48, 64, 96, 128, 256,
		Maximum number of TE	512, 1024 32, 64, 128, 256, 512, 1024
		Maximum number of TF Support for turbo encoding	32, 64, 128, 256, 512, 1024 Yes/No
	FDD Physical	Maximum number of DPCH/PDSCH	1, 2, 3, 4, 5, 6, 7, 8
	channel	codes to be simultaneously received	1, 4, 0, <del>1</del> , 0, 0, 1, 0
	parameters in	Maximum number of physical channel	600, 1200, 2400, 3600, 4800, 7200,
	downlink	bits received in any 10 ms interval	9600, 14400, 19200, 28800, 38400,
		(DPCH, PDSCH, S-CCPCH)	48000, 57600, 67200, 76800
		Support for SF 512	Yes/No
		Support of PDSCH	Yes/No
		Simultaneous reception of SCCPCH	Yes/No
		and DPCH	

		UE radio access capability parameter	Value range
		Simultaneous reception of SCCPCH, DPCH and PDSCH	Yes/No
		Maximum number of simultaneous S-	1
		CCPCH radio links	NOTE: Only the value 1 is part of this release of the specification
		Support of dedicated pilots for channel estimation	Yes/No
	FDD Physical	Maximum number of DPDCH bits	600, 1200, 2400, 4800, 9600, 19200,
	channel	transmitted per 10 ms	28800, 38400, 48000, 57600
	parameters in uplink	Support of PCPCH	Yes/No
	TDD physical channel	Maximum number of timeslots per frame	114
	parameters in downlink	Maximum number of physical	1, 2, 3224
	downlink	channels per frame Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Maximum number of physical channels per timeslot	116
	TDD physical channel	Maximum Number of timeslots per frame	114
	parameters in	Maximum number of physical	1, 2
	uplink	channels per timeslot Minimum SF	16, 8, 4, 2, 1
		Support of PUSCH	Yes/No
RF parameters	FDD RF	UE power class	3, 4
	parameters	·	NOTE: Only power classes 3 and 4 are part of this release of the specification
		Tx/Rx frequency separation	190 MHz 174.8 MHz to 205.2 MHz 134.8 MHz to 245.2 MHz
RF parameters	TDD RF parameters	UE power class	2, 3 NOTE: Only power classes 2 and 3 are part of this release of the specification
		Radio frequency bands	a), b), c), a+b), a+c), a+b+c)
		Chip rate capability	3.84, 1.28
Multi-mode related		Support of UTRA FDD/TDD	FDD, TDD, FDD+TDD
Multi-RAT related	parameters	Support of GSM	Yes/No (per GSM frequency band) Yes/No
Security parameter	rs	Support of multi-carrier Support of ciphering algorithm UEA0	Yes
Jooding parameter		Support of ciphering algorithm UEA1	Yes
		Support of integrity protection algorithm UIA1	Yes
UE positioning rela	ated parameters	Standalone location method(s) supported	Yes/No
		Network assisted GPS support	Network based / UE based / Both/ None
		GPS reference time capable	Yes/No
		Support for IPDL	Yes/No
		Support for OTDOA UE based method	Yes/No
		Support for Rx-Tx time difference type 2 measurement	Yes/No
		Support for UE Positioning assisted  GPS measurement validity in  CELL_PCH and URA_PCH RRC  states	Yes/No
		Support for SFN-SFN observed time difference type 2 measurement	Yes/No
Measurement relat	ted capabilities	Need for downlink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)

	UE radio access capability parameter	Value range
	Need for uplink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
General capabilities	Access Stratum release indicator	R99

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

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

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

Radio Access capability parameters common for UL and DL	32kbps class	64kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class			
PDCP parameters									
Support for RFC 2507	No	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 compression context space		Not applicable for conformance testing							
RLC parameters									
Total RLC AM buffer size (kbytes)	10	10	50	50	100	500			
Maximum number of AM entities	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			
Multi-mode related parameters									
Support of UTRA FDD/TDD			FDD / FDD- NO	+TDD / TDD ΓΕ 1					
Multi-RAT related parameters									
Support of GSM			Yes NO	s/No ΓΕ 1					
Support of multi-carrier			Yes NO	s/No ΓΕ 1					
Security parameters									
Support of ciphering algorithm UEA0			Y	es					
Support of ciphering algorithm UEA1			Y	es					
Support of integrity protection algorithm UIA1			Y	es					
UE positioning related parameters									
Standalone location method(s) supported			Yes NO	·/No ΓΕ 1					
Network assisted GPS support		Network based / UE based / Both/ None NOTE 1							
GPS reference time capable				/No					
Support for IPDL			Yes	i/No ΓΕ 1					
Support for OTDOA UE based method				/No					
Support for Rx-Tx time difference type 2 measurement				/No					
Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states			Yes	/Nο ΓΕ 1					
Support for SFN-SFN observed time difference type 2 measurement  RF parameters for FDD				<del>δ/No</del> ΓΕ 1					
UE power class				/ 4 ГЕ 1					

Reference combination of UE Radio Access capability parameters common for UL and DL	32kbps class64kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Tx/Rx frequency separation		190	MHz		
RF parameters for TDD					
Radio frequency bands	A	/b/c/a+b/a NO	n+c / b+c / a+b TE 1	+C	
Chip rate capability		1.28 / 3.84 Mchip/s NOTE 1			
UE power class		_	/ 3 ГЕ 1		

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

ME X Radio Access Network X Core Network

Rel-5

Rel-6

(Release 5)

(Release 6)

#### 3GPP TSG-RAN WG2 Meeting #37 Hungary, Budapest, 25th -29th August 2003

Proposed change affects:

# 25.306 CR 077 # rev - # Current version: 4.	7.0	*

For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the **%** symbols.

UICC apps#

Title: ₩ UE positioning support in the UE Source: ₩ RAN WG2 Date: 第 27/08/2003 Release: % Rel-4 Category: Α Use one of the following releases: Use <u>one</u> of the following categories: (GSM Phase 2) F (correction) 2 **A** (corresponds to a correction in an earlier release) R96 (Release 1996) **B** (addition of feature), R97 (Release 1997) **C** (functional modification of feature) R98 (Release 1998) **D** (editorial modification) R99 (Release 1999) Rel-4 Detailed explanations of the above categories can (Release 4)

Reason for change: 

At RAN#20, RAN2 was requested to revisit UE capabilities for UE positioning following proposals to make the SFN-SFN observed time difference type 2 measurement an optional capability.

Summary of change: \* The following changes are made:

be found in 3GPP TR 21.900.

A new UE capability is introduced so that the UE can indicate support for the SFN-SFN observed time difference type 2 measurement. When this measurement is supported by the UE is must be supported in all RRC states.

The definition of the existing UE capability "Support for UE Positioning measurement validity in CELL\_PCH and URA\_PCH RRC states" is changed so that it only applies to assisted GPS methods.

#### **Isolated Impact Analysis**

Functionality corrected: UE positioning SFN-SFN observed time difference type 2 measurement

The change is isolated to this functionality - their is no impact on the UE positioning assisted GPS functionality.

If a UE supporting the corrected functionality does not implement this CR and the UTRAN does implement this CR then the UTRAN will consider that the UE does not have support and it will not be able to use the functionality

If a UE supporting the corrected functionality implements this CR and the UTRAN does not implement this CR then the UTRAN will anyway correctly assume that UE supports the functionality at least in the CELL\_DCH/CELL\_FACH states. The UTRAN may not be aware that the UE

supports the functionality in CELL\_PCH/URA\_PCH states.

If a UE not supporting the corrected functionality does not implement this CR and the UTRAN does implement this CR then the UTRAN will correctly consider that the UE does not have support.

If a UE not supporting the corrected functionality implements this CR and the UTRAN does not implement this CR then the UTRAN could incorrectly consider that the UE does have support and UP measurement control procedures could fail.

Consequences if not approved:

If the CR is not approved the SFN-SFN observed time difference type 2 measurement will be mandatory for all mobiles to support when in CELL\_DCH and CELL\_FACH state, but it will be optional to support when in CELL PCH/URA PCH states.

Clauses affected:	<b>%</b> 4.8, 5.1, 5.2.1						
Other specs affected:	Y N X Other core specifications Test specifications O&M Specifications						
Other comments:	$oldsymbol{lpha}^{-}$						

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

- 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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.

### 4.8 UE positioning related parameters

#### Standalone location method(s) supported

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

#### OTDOA UE based method supported

Defines if a UE supports the OTDOA UE based schemes.

#### Network Assisted GPS support

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

#### GPS reference time capable

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

#### Support for IPDL

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

#### Support for Rx-Tx time difference type 2

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

Support for UE Positioning assisted GPS measurement validity in CELL PCH and URA PCH RRC states

Defines if the UE Positioning measurements using the assisted GPS method are valid in CELL\_PCH and URA\_PCH RRC states.

#### Support for SFN-SFN observed time difference type 2 measurement

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

## 5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

		UE radio access capability parameter	Value range
PDCP parameters		Support for RFC 2507	Yes/No
1 DC1 parameters		Support for loss-less SRNS relocation	Yes/No
		Maximum header compression	512, 1024, 2048, 4096, 8192 bytes
		context space	012, 1024, 2040, 4030, 0132 bytes
RLC parameters		Total RLC AM buffer size	2, 10, 50, 100, 150, 500, 1000 kBytes
1120 paramotoro		Maximum number of AM entities	3, 4, 5, 6, 8, 16, 30
		Maximum RLC AM window size	2047, 4095
PHY parameters	Transport	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
The second second	channel	transport blocks being received at an	7680, 8960, 10240, 20480, 40960,
	parameters in	arbitrary time instant	81920, 163840
	downlink	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		convolutionally coded transport blocks	7680, 8960, 10240, 20480, 40960,
		being received at an arbitrary time	81920, 163840
		instant	,
		Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		turbo coded transport blocks being	7680, 8960, 10240, 20480, 40960,
		received at an arbitrary time instant	81920, 163840
		Maximum number of simultaneous	4, 8, 16, 32
		transport channels	
		Maximum number of simultaneous CCTrCH	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport	4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		blocks received within TTIs that end	
		within the same 10 ms interval	
		Maximum number of TFC	16, 32, 48, 64, 96, 128, 256, 512,
			1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo decoding	Yes/No
	Transport	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
	channel	transport blocks being transmitted at	7680, 8960, 10240, 20480, 40960,
	parameters in	an arbitrary time instant	81920, 163840
	uplink	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		convolutionally coded transport blocks	7680, 8960, 10240, 20480, 40960, 81920, 163840
		being transmitted at an arbitrary time instant	61920, 163640
		Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		turbo coded transport blocks being	7680, 8960, 10240, 20480, 40960,
		transmitted at an arbitrary time instant	81920, 163840
		Maximum number of simultaneous	2, 4, 8, 16, 32
		transport channels	, , , ,
		Maximum number of simultaneous	1, 2, 3, 4, 5, 6, 7, 8
		CCTrCH of DCH type (TDD only)	
		Maximum total number of transport	2, 4, 8, 16, 32, 48, 64, 96, 128, 256,
		blocks transmitted within TTIs that	512
		start at the same time	4 0 40 00 40 04 05 400 050
		Maximum number of TFC	4, 8, 16, 32, 48, 64, 96, 128, 256,
		Maximum number of TE	512, 1024 32, 64, 128, 256, 512, 1024
		Maximum number of TF Support for turbo encoding	32, 64, 128, 256, 512, 1024 Yes/No
	FDD Physical	Maximum number of DPCH/PDSCH	1, 2, 3, 4, 5, 6, 7, 8
	channel	codes to be simultaneously received	1, 4, 0, <del>1</del> , 0, 0, 1, 0
	parameters in	Maximum number of physical channel	600, 1200, 2400, 3600, 4800, 7200,
	downlink	bits received in any 10 ms interval	9600, 14400, 19200, 28800, 38400,
		(DPCH, PDSCH, S-CCPCH)	48000, 57600, 67200, 76800
		Support for SF 512	Yes/No
		Support of PDSCH	Yes/No
		Simultaneous reception of SCCPCH	Yes/No
		and DPCH	

		UE radio access capability parameter	Value range
		Simultaneous reception of SCCPCH, DPCH and PDSCH	Yes/No
		Maximum number of simultaneous S-	1
		CCPCH radio links	NOTE: Only the value 1 is part of this release of the specification
		Support of dedicated pilots for channel estimation	Yes/No
	FDD Physical	Maximum number of DPDCH bits	600, 1200, 2400, 4800, 9600, 19200,
	channel	transmitted per 10 ms	28800, 38400, 48000, 57600
	parameters in uplink	Support of PCPCH	Yes/No
	TDD physical channel	Maximum number of timeslots per frame	114
	parameters in downlink	Maximum number of physical	1, 2, 3224
	downlink	channels per frame Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Maximum number of physical channels per timeslot	116
	TDD physical channel	Maximum Number of timeslots per frame	114
	parameters in	Maximum number of physical	1, 2
	uplink	channels per timeslot Minimum SF	16, 8, 4, 2, 1
		Support of PUSCH	Yes/No
RF parameters	FDD RF	UE power class	3, 4
	parameters	·	NOTE: Only power classes 3 and 4 are part of this release of the specification
		Tx/Rx frequency separation	190 MHz 174.8 MHz to 205.2 MHz 134.8 MHz to 245.2 MHz
RF parameters	TDD RF parameters	UE power class	2, 3 NOTE: Only power classes 2 and 3 are part of this release of the specification
		Radio frequency bands	a), b), c), a+b), a+c), a+b+c)
		Chip rate capability	3.84, 1.28
Multi-mode related		Support of UTRA FDD/TDD	FDD, TDD, FDD+TDD
Multi-RAT related	parameters	Support of GSM	Yes/No (per GSM frequency band) Yes/No
Security parameter	rs	Support of multi-carrier Support of ciphering algorithm UEA0	Yes
Jooding parameter		Support of ciphering algorithm UEA1	Yes
		Support of integrity protection algorithm UIA1	Yes
UE positioning rela	ated parameters	Standalone location method(s) supported	Yes/No
		Network assisted GPS support	Network based / UE based / Both/ None
		GPS reference time capable	Yes/No
		Support for IPDL	Yes/No
		Support for OTDOA UE based method	Yes/No
		Support for Rx-Tx time difference type 2 measurement	Yes/No
		Support for UE Positioning assisted  GPS measurement validity in  CELL_PCH and URA_PCH RRC  states	Yes/No
		Support for SFN-SFN observed time difference type 2 measurement	Yes/No
Measurement relat	ted capabilities	Need for downlink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)

	UE radio access capability parameter	Value range
	Need for uplink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
General capabilities	Access Stratum release indicator	R99

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

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

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

Radio Access capability parameters common for UL and DL	32kbps class	64kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
PDCP parameters						
Support for RFC 2507	No	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/ NO			
Maximum header compression context space		Not a	pplicable for c	onformance te	esting	
RLC parameters						
Total RLC AM buffer size (kbytes)	10	10	50	50	100	500
Maximum number of AM entities	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
Multi-mode related parameters						
Support of UTRA FDD/TDD			FDD / FDD- NO	+TDD / TDD ΓΕ 1		
Multi-RAT related parameters	s					
Support of GSM	Yes/No NOTE 1					
Support of multi-carrier	Yes/No NOTE 1					
Security parameters						
Support of ciphering algorithm UEA0			Y	es		
Support of ciphering algorithm UEA1			Y	es		
Support of integrity protection algorithm UIA1			Y	es		
UE positioning related parameters						
Standalone location method(s) supported			Yes NO	·/No ΓΕ 1		
Network assisted GPS support		Netwo	ork based / UE NO	based / Both/ TE 1	None	
GPS reference time capable				/No		
Support for IPDL			Yes	i/No ΓΕ 1		
Support for OTDOA UE based method				/No		
Support for Rx-Tx time difference type 2 measurement			Yes	/No		
Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states	NOTE 1  Yes/No NOTE 1					
Support for SFN-SFN observed time difference type 2 measurement  RF parameters for FDD				<del>δ/No</del> ΓΕ 1		
UE power class				/ 4 ГЕ 1		

Reference combination of UE Radio Access capability parameters common for UL and DL	32kbps class64kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
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	1.28 / 3.84 Mchip/s NOTE 1				
UE power class		_	/ 3 ГЕ 1		

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

(Release 4)

(Release 5)

(Release 6)

Rel-5

Rel-6

#### 3GPP TSG-RAN WG2 Meeting #37 Hungary, Budapest, 25th -29th August 2003

CHANGE REQUEST							CR-Form-v7	
×	25.306 CR	078	<b>≋rev</b>	-	¥	Current version:	5.5.0	æ

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the **%** symbols.

UICC apps# ME X Radio Access Network X Core Network Proposed change affects: Title: UE positioning support in the UE Source: ₩ RAN WG2 Date: 第 27/08/2003 F Release: % Rel-5 Category: Use one of the following releases: Use <u>one</u> of the following categories: (GSM Phase 2) F (correction) 2 **A** (corresponds to a correction in an earlier release) R96 (Release 1996) **B** (addition of feature), R97 (Release 1997) **C** (functional modification of feature) R98 (Release 1998) **D** (editorial modification) R99 (Release 1999) Rel-4 Detailed explanations of the above categories can

Reason for change: 第 At RAN#20, RAN2 was requested to revisit UE capabilities for UE positioning following proposals to make the SFN-SFN observed time difference type 2 measurement an optional capability.

Summary of change: # The following changes are made:

be found in 3GPP TR 21.900.

A new UE capability is introduced so that the UE can indicate support for the SFN-SFN observed time difference type 2 measurement. When this measurement is supported by the UE is must be supported in all RRC states.

The definition of the existing UE capability "Support for UE Positioning measurement validity in CELL\_PCH and URA\_PCH RRC states" is changed so that it only applies to assisted GPS methods.

Difference compared to CR on rel 99/4: In this release of the specification this capability is mandatory (whereas it was optional in rel 99/4)

#### **Isolated Impact Analysis**

Functionality corrected: UE positioning SFN-SFN observed time difference type 2 measurement.

The change is isolated to this functionality - their is no impact on the UE positioning assisted GPS functionality.

If a UE supporting the corrected functionality does not implement this CR and the UTRAN does implement this CR then the UTRAN will consider that the UE does not have support and it will not be able to use the functionality

If a UE supporting the corrected functionality implements this CR and the

UTRAN does not implement this CR then the UTRAN will anyway correctly assume that UE supports the functionality at least in the CELL\_DCH/CELL\_FACH states. The UTRAN may not be aware that the UE supports the functionality in CELL\_PCH/URA\_PCH states.

If a UE not supporting the corrected functionality does not implement this CR and the UTRAN does implement this CR then the UTRAN will correctly consider that the UE does not have support.

If a UE not supporting the corrected functionality implements this CR and the UTRAN does not implement this CR then the UTRAN could incorrectly consider that the UE does have support and UP measurement control procedures could fail.

## Consequences if not approved:

If the CR is not approved the SFN-SFN observed time difference type 2 measurement will be mandatory for all mobiles to support when in CELL\_DCH and CELL\_FACH state, but it will be optional to support when in CELL\_PCH/URA\_PCH states.

Clauses affected:	<b>%</b> 4.8, 5.1, 5.2.1						
Other specs affected:	Y N  W Other core specifications Test specifications O&M Specifications						
Other comments:	lpha						

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

- 1) Fill out the above form. The symbols above marked \( \mathbb{H} \) 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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.

### 4.8 UE positioning related parameters

#### Standalone location method(s) supported

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

#### OTDOA UE based method supported

Defines if a UE supports the OTDOA UE based schemes.

#### Network Assisted GPS support

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

#### GPS reference time capable

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

#### Support for IPDL

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

#### Support for Rx-Tx time difference type 2

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

Support for UE Positioning assisted GPS measurement validity in CELL PCH and URA PCH RRC states

Defines if the UE Positioning measurements using the assisted GPS method are valid in CELL\_PCH and URA\_PCH RRC states.

#### Support for SFN-SFN observed time difference type 2 measurement

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

## 5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

		UE radio access capability parameter	Value range
PDCP parameters		Support for RFC 2507	Yes/No
1 DC1 parameters		Support for loss-less SRNS relocation	Yes/No
		Maximum header compression	512, 1024, 2048, 4096, 8192 bytes
		context space	012, 1024, 2040, 4030, 0132 bytes
RLC parameters		Total RLC AM buffer size	2, 10, 50, 100, 150, 500, 1000 kBytes
1120 paramotoro		Maximum number of AM entities	3, 4, 5, 6, 8, 16, 30
		Maximum RLC AM window size	2047, 4095
PHY parameters	Transport	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
The second second	channel	transport blocks being received at an	7680, 8960, 10240, 20480, 40960,
	parameters in	arbitrary time instant	81920, 163840
	downlink	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		convolutionally coded transport blocks	7680, 8960, 10240, 20480, 40960,
		being received at an arbitrary time	81920, 163840
		instant	,
		Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		turbo coded transport blocks being	7680, 8960, 10240, 20480, 40960,
		received at an arbitrary time instant	81920, 163840
		Maximum number of simultaneous	4, 8, 16, 32
		transport channels	
		Maximum number of simultaneous CCTrCH	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport	4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		blocks received within TTIs that end	
		within the same 10 ms interval	
		Maximum number of TFC	16, 32, 48, 64, 96, 128, 256, 512,
			1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo decoding	Yes/No
	Transport	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
	channel	transport blocks being transmitted at	7680, 8960, 10240, 20480, 40960,
	parameters in	an arbitrary time instant	81920, 163840
	uplink	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		convolutionally coded transport blocks	7680, 8960, 10240, 20480, 40960, 81920, 163840
		being transmitted at an arbitrary time instant	61920, 163640
		Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		turbo coded transport blocks being	7680, 8960, 10240, 20480, 40960,
		transmitted at an arbitrary time instant	81920, 163840
		Maximum number of simultaneous	2, 4, 8, 16, 32
		transport channels	, , , ,
		Maximum number of simultaneous	1, 2, 3, 4, 5, 6, 7, 8
		CCTrCH of DCH type (TDD only)	
		Maximum total number of transport	2, 4, 8, 16, 32, 48, 64, 96, 128, 256,
		blocks transmitted within TTIs that	512
		start at the same time	4 0 40 00 40 04 05 400 050
		Maximum number of TFC	4, 8, 16, 32, 48, 64, 96, 128, 256,
		Maximum number of TE	512, 1024 32, 64, 128, 256, 512, 1024
		Maximum number of TF Support for turbo encoding	32, 64, 128, 256, 512, 1024 Yes/No
	FDD Physical	Maximum number of DPCH/PDSCH	1, 2, 3, 4, 5, 6, 7, 8
	channel	codes to be simultaneously received	1, 4, 0, <del>1</del> , 0, 0, 1, 0
	parameters in	Maximum number of physical channel	600, 1200, 2400, 3600, 4800, 7200,
	downlink	bits received in any 10 ms interval	9600, 14400, 19200, 28800, 38400,
		(DPCH, PDSCH, S-CCPCH)	48000, 57600, 67200, 76800
		Support for SF 512	Yes/No
		Support of PDSCH	Yes/No
		Simultaneous reception of SCCPCH	Yes/No
		and DPCH	

		UE radio access capability parameter	Value range
		Simultaneous reception of SCCPCH, DPCH and PDSCH	Yes/No
		Maximum number of simultaneous S-	1
		CCPCH radio links	NOTE: Only the value 1 is part of this release of the specification
		Support of dedicated pilots for channel estimation	Yes/No
	FDD Physical	Maximum number of DPDCH bits	600, 1200, 2400, 4800, 9600, 19200,
	channel parameters in uplink	transmitted per 10 ms Support of PCPCH	28800, 38400, 48000, 57600 Yes/No
	TDD physical channel	Maximum number of timeslots per frame	114
	parameters in downlink	Maximum number of physical	1, 2, 3224
	downlink	channels per frame Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Maximum number of physical channels per timeslot	116
	TDD physical channel	Maximum Number of timeslots per frame	114
	parameters in uplink	Maximum number of physical channels per timeslot	1, 2
		Minimum SF	16, 8, 4, 2, 1
DE sesses et ess	FDD RF	Support of PUSCH	Yes/No
RF parameters	parameters	UE power class	3, 4 NOTE: Only power classes 3 and 4 are part of this release of the specification
		Tx/Rx frequency separation	190 MHz 174.8 MHz to 205.2 MHz 134.8 MHz to 245.2 MHz
RF parameters	TDD RF parameters	UE power class	2, 3 NOTE: Only power classes 2 and 3 are part of this release of the specification
		Radio frequency bands	a), b), c), a+b), a+c), a+b+c)
<b>NA</b> 161		Chip rate capability	3.84, 1.28
Multi-mode related Multi-RAT related		Support of UTRA FDD/TDD Support of GSM	FDD, TDD, FDD+TDD  Yes/No (per GSM frequency band)
Wulli-NAT Telaleu	parameters	Support of Multi-carrier	Yes/No
Security paramete	rs	Support of ciphering algorithm UEA0	Yes
		Support of ciphering algorithm UEA1	Yes
HE		Support of integrity protection algorithm UIA1	Yes
UE positioning rela	ated parameters	Standalone location method(s) supported	Yes/No
		Network assisted GPS support	Network based / UE based / Both/ None
		GPS reference time capable Support for IPDL	Yes/No Yes/No
		Support for OTDOA UE based	Yes/No
		method	
		Support for Rx-Tx time difference type 2 measurement	Yes/No
		Support for UE Positioning assisted  GPS measurement validity in  CELL_PCH and URA_PCH RRC	Yes/ <del>No</del>
		states Support for SFN-SFN observed time difference type 2 measurement	Yes/No
Measurement relat	ted capabilities	Need for downlink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)

	UE radio access capability parameter	Value range
	Need for uplink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
General capabilities	Access Stratum release indicator	R99

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

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

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

Radio Access capability parameters common for UL and DL	32kbps class	64kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
PDCP parameters						
Support for RFC 2507	No	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/ NO			
Maximum header compression context space		Not a	pplicable for c	onformance te	esting	
RLC parameters						
Total RLC AM buffer size (kbytes)	10	10	50	50	100	500
Maximum number of AM entities	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
Multi-mode related parameters						
Support of UTRA FDD/TDD			FDD / FDD- NO	+TDD / TDD FE 1		
Multi-RAT related parameters						
Support of GSM			Yes NO	s/No ΓΕ 1		
Support of multi-carrier	Yes/No NOTE 1					
Security parameters						
Support of ciphering algorithm UEA0			Y	es		
Support of ciphering algorithm UEA1			Y	es		
Support of integrity protection algorithm UIA1			Y	es		
UE positioning related parameters						
Standalone location method(s) supported			Yes NO	·/No ΓΕ 1		
Network assisted GPS support		Netwo	ork based / UE NO	based / Both/ FE 1	None	
GPS reference time capable				/No		
Support for IPDL				i/No ΓΕ 1		
Support for OTDOA UE based method				/No		
Support for Rx-Tx time difference type 2 measurement				/No		
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				i/No ΓΕ 1		
UE power class				/ 4 ГЕ 1		

Reference combination of UE Radio Access capability parameters common for UL and DL	32kbps class64kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
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	1.28 / 3.84 Mchip/s NOTE 1				
UE power class	2 / 3 NOTE 1				

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

#### 3GPP TSG-RAN2 Meeting #37 Budapest, Hungary, August 25 - 29, 2003

• '	,					
CHANGE REQUEST						
*	25.306 CR 079	* Current version: 3.8.0	}			
For <u>HELP</u> on	using this form, see bottom of this page of	or look at the pop-up text over the 🕊 symbo	ols.			
Proposed change	e affects: UICC apps <b>%</b> ME	X Radio Access Network Core Netwo	ork			
Title:	B Definition of minimum UE capability cla	ass				
Source:	RAN WG2					
Work item code:	₩ TEI	Date: 第 25/08/2003				
Category:	光 <mark>F</mark> Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an ea	<b>Release:</b> 第 <mark>R99</mark> Use <u>one</u> of the following release 2 (GSM Phase 2) earlier release) R96 (Release 1996)	es <i>:</i>			
	<ul> <li>B (addition of feature),</li> <li>C (functional modification of feature)</li> <li>D (editorial modification)</li> <li>Detailed explanations of the above categories</li> <li>be found in 3GPP TR 21.900.</li> </ul>	R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) ies can Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)				

Reason for change: \* At present six UE radio access capability parameter combinations are specified in section 5.2, however a minimum radio access capability parameter combination is not defined. Since current RAB combinations on common channels, e.g. SCCPCH combinations, must be supported by every UE it is necessary to specify the minimum UE capability.

> The current specification of the UE capability classes guarantees that all RAB combinations on common channels are supported also by the lowest class, which is the 32kbps class. For this reason the parameters of the 32kbps UE class can already be seen as the minimum and the specified 32kbps UE class is defined as the minimum UE class.

#### Summary of change: %

- The definition is added that the 32kbps UE class is the minimum UE class.
- The UE parameters that can be signalled for lower capabilities are removed from the "UE radio access capability parameter value ranges" table.

#### Impact analysis:

UEs with capabilities lower than defined for the 32kbps UE class are affected. UEs that do not implement the CR may be unable to support RAB combinations on common channels, e.g. SCCPCH combinations. Specifically they can fail to read the FACH.

The CR has no impact on UTRAN.

#### Consequences if not approved:

# There is no definition of the minimum UE capabilities that can be expected by the 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:	ж	<b>%</b> 5.1, 5.2						
		Υ	N					
Other specs	Ж	X		Other core specifications	æ	25.331		
affected:		X		Test specifications		34.123-2		
			X	O&M Specifications				
				•				
Other comments:	æ							

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

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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.
- 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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 Possible UE radio access capability parameter settings

## 5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

		UE radio access capability	Value range
		parameter	
PDCP parameters		Support for RFC 2507	Yes/No
		Support for loss-less SRNS relocation	Yes/No
		Maximum header compression	512, 1024, 2048, 4096, 8192 bytes
		context space	•
RLC parameters		Total RLC AM buffer size	<del>2,</del> 10, 50, 100, 150, 500, 1000 kBytes
<u>'</u>		Maximum number of AM entities	<del>3, 4</del> , 5, 6, 8, 16, 30
		Maximum RLC AM window size	2047, 4095
PHY parameters	Transport	Maximum sum of number of bits of all	<del>640,</del> 1280, 2560, 3840, 5120, 6400,
	channel	transport blocks being received at an	7680, 8960, 10240, 20480, 40960,
	parameters in	arbitrary time instant	81920, 163840
	downlink	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		convolutionally coded transport blocks	7680, 8960, 10240, 20480, 40960,
		being received at an arbitrary time	81920, 163840
		instant  Maximum sum of number of bits of all	C40 4200 2500 2040 5420 C400
			<del>640,</del> 1280, 2560, 3840, 5120, 6400,
		turbo coded transport blocks being	7680, 8960, 10240, 20480, 40960,
		received at an arbitrary time instant	81920, 163840
		Maximum number of simultaneous	<del>4,</del> 8, 16, 32
		transport channels	4 0 0 4 5 0 7 0
		Maximum number of simultaneous CCTrCH	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport	<del>4,</del> 8, 16, 32, 48, 64, 96, 128, 256, 512
1		blocks received within TTIs that end	., 6, 16, 62, 16, 61, 66, 126, 266, 612
		within the same 10 ms interval	
		Maximum number of TFC	<del>16,</del> 32, 48, 64, 96, 128, 256, 512,
!		Waxiindiii iidiibol ol ii o	1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo decoding	Yes <del>/No</del>
`	Transport	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
	channel	transport blocks being transmitted at	7680, 8960, 10240, 20480, 40960,
	parameters in	an arbitrary time instant	81920, 163840
	uplink	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		convolutionally coded transport blocks	7680, 8960, 10240, 20480, 40960,
		being transmitted at an arbitrary time	81920, 163840
		instant	
		Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		turbo coded transport blocks being	7680, 8960, 10240, 20480, 40960,
		transmitted at an arbitrary time instant	81920, 163840
		Maximum number of simultaneous	<del>2, 4</del> , 8, 16, 32
		transport channels	
		Maximum number of simultaneous	1, 2, 3, 4, 5, 6, 7, 8
		CCTrCH of DCH type (TDD only)	
		Maximum total number of transport	<del>2, 4</del> , 8, 16, 32, 48, 64, 96, 128, 256,
`		blocks transmitted within TTIs that	512
		start at the same time	
		Maximum number of TFC	<del>4, 8,</del> 16, 32, 48, 64, 96, 128, 256,
			512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo encoding	Yes/No
	FDD Physical	Maximum number of DPCH/PDSCH	1, 2, 3, 4, 5, 6, 7, 8
	channel	codes to be simultaneously received	

		UE radio access capability parameter		Value range	
	arameters in	Maximum number of physical channel	<del>600,</del> 1200	0, 2400, 3600, 4800, 7200,	
	ownlink	bits received in any 10 ms interval		400, 19200, 28800, 38400,	
		(DPCH, PDSCH, S-CCPCH)		7600, 67200, 76800	
		Support for SF 512	Yes/No	1000, 01200, 10000	
		Support of PDSCH	Yes/No		
		Simultaneous reception of SCCPCH and DPCH	Yes/No		
		Simultaneous reception of SCCPCH, DPCH and PDSCH	Yes/No		
		Maximum number of simultaneous S-	1		
		CCPCH radio links	NOTE:	Only the value 1 is part of this release of the specification	
		Support of dedicated pilots for channel estimation	Yes/No		
FE	OD Physical	Maximum number of DPDCH bits	<del>600,</del> 1200	0, 2400, 4800, 9600, 19200,	
• 1	nannel	transmitted per 10 ms		3400, 48000, 57600	
	arameters in blink	Support of PCPCH	Yes/No		
	DD physical	Maximum number of timeslots per	114		
ch	nannel	frame			
	arameters in ownlink	Maximum number of physical channels per frame	<del>1, 2, 3</del> 82	224	
		Minimum SF	16, 1		
		Support of PDSCH	Yes/No		
		Maximum number of physical channels per timeslot	4 <u>8</u> 16		
	OD physical	Maximum Number of timeslots per	114		
ch	nannel	frame			
l -	arameters in olink	Maximum number of physical channels per timeslot	1, 2		
1 .		Minimum SF	<del>16,</del> 8, 4, 2	2 1	
'		Support of PUSCH	Yes/No	-, •	
RF parameters FD	DD RF	UE power class	3, 4		
	arameters	OL power class	NOTE:	Only power classes 3 and 4 are part of this release of the specification	
		Tx/Rx frequency separation	_	tz to 205.2 MHz	
				Iz to 245.2 MHz	
•	DD RF arameters	UE power class	2, 3 NOTE:	Only power classes 2 and 3 are part of this release of the specification	
		Radio frequency bands	a), b) c)	a+b), a+c), a+b+c)	
		Chip rate capability	3.84, 1.28		
Multi-mode related par	ameters	Support of UTRA FDD/TDD		D, FDD+TDD	
		Support of GSM			
Multi-RAT related para	iiiieleis			per GSM frequency band)	
		Support of multi-carrier	Yes/No		
0 1		Support of ciphering algorithm UEA0	Yes		
Security parameters		Support of ciphering algorithm UEA1	Yes		
Security parameters		Cupport of intogrity protection	Yes		
Security parameters		Support of integrity protection algorithm UIA1	100		
Security parameters  UE positioning related	parameters	algorithm UIA1 Standalone location method(s)	Yes/No		
	parameters	algorithm UIA1	Yes/No Network I	based / UE based / Both/	
	parameters	algorithm UIA1 Standalone location method(s) supported Network assisted GPS support	Yes/No Network I	based / UE based / Both/	
	parameters	algorithm UIA1 Standalone location method(s) supported Network assisted GPS support  GPS reference time capable	Yes/No  Network I None Yes/No	based / UE based / Both/	
	parameters	algorithm UIA1 Standalone location method(s) supported Network assisted GPS support  GPS reference time capable Support for IPDL Support for OTDOA UE based	Yes/No Network I	based / UE based / Both/	
	parameters	algorithm UIA1 Standalone location method(s) supported Network assisted GPS support  GPS reference time capable Support for IPDL	Yes/No  Network I None Yes/No Yes/No	based / UE based / Both/	

	UE radio access capability parameter	Value range
	Support for UE Positioning measurement validity in CELL_PCH and URA_PCH RRC states	Yes/No
Measurement related capabilities	Need for downlink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
	Need for uplink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
General capabilities	Access Stratum release indicator	R99

## 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.

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.

The UE shall support at least the UE radio access capability parameter values as specified for the 32kbps UE reference class for both UL and DL.

[...]

## 3GPP TSG-RAN2 Meeting #37 Budapest, Hungary, August 25 - 29, 2003

CHANGE REQUEST										CR-Form-v7	
*		25.306	CR <mark>080</mark>	9	∉ rev	-	æ	Current ve	ersion:	4.7.0	*
For <u>HELP</u>	on us	sing this for	m, see botton	n of this p	page or lo	ook a	at the	e pop-up te	ext over	the <b>%</b> syr	mbols.
Proposed cha	nge a	affects: \	JICC apps <b></b>		ME X	Rad	lio A	ccess Netv	work	Core Ne	etwork
Title:	Ж	Definition	of minimum (	JE capab	ility clas	S					
Source:	ж	RAN WG	2								
Work item cod	de: ₩	TEI						Date:	<b>35</b>	/08/2003	
Category:	*	F (corr A (corr B (add C (fundament) D (edit Detailed exp	the following carection) responds to a colition of feature, ctional modificational modificationa	correction ( ), ation of fea on) e above ca	ature)		lease	2	of the fo (GSI (Rele (Rele (Rele (Rele (Rele	ollowing release 1996) ease 1997) ease 1998) ease 1999) ease 4) ease 5) ease 6)	eases:

Reason for change: \* At present six UE radio access capability parameter combinations are specified in section 5.2, however a minimum radio access capability parameter combination is not defined. Since current RAB combinations on common channels, e.g. SCCPCH combinations, must be supported by every UE it is necessary to specify the minimum UE capability.

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access the system.

Clauses affected:	ж	<b>%</b> 5.1, 5.2						
		Υ	N					
Other specs	Ж	X		Other core specifications	æ	25.331		
affected:		X		Test specifications		34.123-2		
			X	O&M Specifications				
				•				
Other comments:	æ							

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# 5 Possible UE radio access capability parameter settings

## 5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

PDCP parameters			UE radio access capability	Value range
Support for RFC 3095			parameter	
Support for loss-less SRNS relocation   Yes/No	PDCP parameters			
Maximum header compression				
Context space				
Maximum number of ROHC context   2, 4, 8, 12, 16, 24, 32, 48, 64, 128, 256, 512, 1024, 16384			Maximum header compression	512, 1024, 2048, 4096, 8192 bytes
Sessions   Support for Reverse Decompression   Not supported, 1,65835				
RLC parameters			Maximum number of ROHC context	2, 4, 8, 12, 16, 24, 32, 48, 64, 128,
PHY parameters			sessions	256, 512, 1024, 16384
Maximum number of AM entities   3-4, 5, 6, 8, 16, 30   Maximum RLC AM window size   2047, 4095   2047, 4095   2047, 4095   2047, 4095   2047, 4095   2047, 4095   2049, 20480, 40960,			Support for Reverse Decompression	
PHY parameters   Transport channel parameters in downlink   Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant   Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant   Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant   Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant   Maximum number of simultaneous transport channels   Maximum number of simultaneous transport blocks being transmitted at an arbitrary time instant   Maximum number of simultaneous transport blocks received within TIs that end within the same 10 ms interval   Maximum number of bits of all transport blocks being transmitted at an arbitrary time instant   Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant   Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum number of simultaneous transport blocks being transmitted at an arbitrary time instant   Maximum number of simultaneous transport blocks being transmitted at an arbitrary time instant   Maximum number of simultaneous transport blocks being transmitted at an arbitrary time instant   Maximum number of simultaneous transport blocks being transmitted at an arbitrary time instant   Maximum number of simultaneous transport blocks being transmitted within TTIs that start at the same time   Maximum number of TFC   4.8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   4.8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   4.8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   4.8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   4.8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   4.8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   4.8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   4.8, 16, 32, 48, 64, 96, 128, 256, 512, 1024	RLC parameters		Total RLC AM buffer size	<del>2,</del> 10, 50, 100, 150, 500, 1000 kBytes
PHY parameters   Transport channel parameters in downlink			Maximum number of AM entities	<del>3, 4</del> , 5, 6, 8, 16, 30
transport blocks being received at an arbitrary time instant  Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant  Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant  Maximum number of simultaneous transport channels  Maximum number of simultaneous CCTrCH  Maximum number of transport blocks received within TTIs that and within the same 10 ms interval  Maximum number of bits of all transport blocks received within TTIs that sits at at the same flum of under of bits of all transport blocks being transmitted at an arbitrary time instant  Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant  Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant  Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant  Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous transport blocks			Maximum RLC AM window size	2047, 4095
Parameters in downlink	PHY parameters	Transport	Maximum sum of number of bits of all	<del>640,</del> 1280, 2560, 3840, 5120, 6400,
Arbitrary time instant		channel	transport blocks being received at an	7680, 8960, 10240, 20480, 40960,
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant   Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant   Maximum number of simultaneous transport channels   Maximum number of simultaneous   Maximum number of simultaneous   Maximum number of simultaneous   Maximum number of simultaneous   Maximum number of transport blocks received within TTIs that end within the same 10 ms interval   Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant   Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum number of transport blocks being transmitted at an arbitrary time instant   Maximum number of transport blocks transmitted at an arbitrary time instant   Maximum number of transport blocks transmitted		parameters in		81920, 163840
Convolutionally coded transport blocks being received at an arbitrary time instant		downlink		640, 1280, 2560, 3840, 5120, 6400,
being received at an arbitrary time instant				
Instant				
turbo coded transport blocks being received at an arbitrary time instant Maximum number of simultaneous transport channels  Maximum number of simultaneous CCTrCH Maximum total number of transport blocks received within TTIs that start at the same time  Maximum sum of TF  Support for turbo decoding Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant Maximum number of simultaneous CCTrCH of DCH type (TDD only) Maximum number of TF  1, 2, 3, 4, 5, 6, 7, 8  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024				
received at an arbitrary time instant   Maximum number of simultaneous transport channels   Maximum total number of simultaneous   1, 2, 3, 4, 5, 6, 7, 8   CCTrCH   Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval   Maximum number of TFC   10,24   Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant   Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant   Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant   Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum number of simultaneous transport channels   Maximum number of simultaneous correct channels   Maximum number of simultaneous transport channels   Maximum number of transport blocks transmitted within TTIs that start at the same time   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024			Maximum sum of number of bits of all	<del>640,</del> 1280, 2560, 3840, 5120, 6400,
Maximum number of simultaneous transport channels			turbo coded transport blocks being	7680, 8960, 10240, 20480, 40960,
transport channels  Maximum number of simultaneous CCTrCH  Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval  Maximum number of TFC  Maximum number of TFC  Maximum number of TFC  Maximum number of TFC  Maximum number of trubs of transport channel parameters in uplink  Transport channel parameters in uplink  Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant  Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant  Maximum number of bits of all transport blocks being transmitted at an arbitrary time instant  Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous transport channels  Maximum number of simultaneous CCTrCH of DCH type (TDD only)  Maximum number of TFC  Maximum number of TFC  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  Maximum number of bits of all transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous CCTrCH of DCH type (TDD only)  Maximum total number of transport blocks transmitted within TTIs that start at the same time  Maximum number of TFC  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024			received at an arbitrary time instant	81920, 163840
Maximum number of simultaneous			Maximum number of simultaneous	<del>4,</del> 8, 16, 32
CCTrCH   Maximum total number of transport blocks received within TTls that end within the same 10 ms interval   Maximum number of TFC   16-, 32, 48, 64, 96, 128, 256, 512, 1024   1024   32, 64, 128, 256, 512, 1024				
Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval			Maximum number of simultaneous	1, 2, 3, 4, 5, 6, 7, 8
blocks received within TTIs that end within the same 10 ms interval				
within the same 10 ms interval				<del>4, 8</del> , 16, 32, 48, 64, 96, 128, 256, 512
Maximum number of TFC				
Maximum number of TF   32, 64, 128, 256, 512, 1024				
Support for turbo decoding			Maximum number of TFC	
Transport channel parameters in uplink  Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant  Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant  Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant  Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous transport channels  Maximum number of simultaneous CCTrCH of DCH type (TDD only)  Maximum number of transport blocks transmitted within TTIs that start at the same time  Maximum number of TFC  Maximum number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840  640, 1280, 2560, 3840, 5120, 6400, 7680			Maximum number of TF	32, 64, 128, 256, 512, 1024
transport blocks being transmitted at an arbitrary time instant  Waximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant  Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant  Maximum number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous transport channels  Maximum number of simultaneous CCTrCH of DCH type (TDD only)  Maximum total number of transport blocks transmitted within TTIs that start at the same time  Maximum number of TFC  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024				Yes <mark>/No</mark>
Degrameters in uplink   An arbitrary time instant uplink   Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant   Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant   Maximum number of simultaneous transport channels   Maximum number of simultaneous   CCTrCH of DCH type (TDD only)   Maximum total number of transport blocks transmitted within TTls that start at the same time   Maximum number of TFC   4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024   Maximum number of TF   32, 64, 128, 128, 128, 128, 128, 128, 128, 128		Transport	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
Uplink			transport blocks being transmitted at	7680, 8960, 10240, 20480, 40960,
convolutionally coded transport blocks being transmitted at an arbitrary time instant  Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous transport channels  Maximum number of simultaneous CCTrCH of DCH type (TDD only)  Maximum total number of transport blocks transmitted within TTls that start at the same time  Maximum number of TFC  Maximum number of TF  7680, 8960, 10240, 20480, 40960, 7680, 8960, 10240, 20480, 40960, 81920, 163840  2, 4, 8, 16, 32  2, 4, 8, 16, 32  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  Maximum number of TFC  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024				
being transmitted at an arbitrary time instant  Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous transport channels  Maximum number of simultaneous CCTrCH of DCH type (TDD only)  Maximum total number of transport blocks transmitted within TTIs that start at the same time  Maximum number of TFC  Maximum number of TF		uplink		
instant  Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous transport channels  Maximum number of simultaneous cCTrCH of DCH type (TDD only)  Maximum total number of transport blocks transmitted within TTIs that start at the same time  Maximum number of TFC  Maximum number of TFC  Maximum number of TF				
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant       640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840         Maximum number of simultaneous transport channels       2, 4, 8, 16, 32         Maximum number of simultaneous CCTrCH of DCH type (TDD only)       1, 2, 3, 4, 5, 6, 7, 8         Maximum total number of transport blocks transmitted within TTIs that start at the same time       2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024         Maximum number of TF       32, 64, 128, 256, 512, 1024			I	81920, 163840
turbo coded transport blocks being transmitted at an arbitrary time instant  Maximum number of simultaneous transport channels  Maximum number of simultaneous transport channels  Maximum number of simultaneous CCTrCH of DCH type (TDD only)  Maximum total number of transport blocks transmitted within TTIs that start at the same time  Maximum number of TFC  Maximum number of TFC  Maximum number of TF  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  Maximum number of TF  32, 64, 128, 256, 512, 1024				040 4000 0500 0640 5400 6400
transmitted at an arbitrary time instant  Maximum number of simultaneous transport channels  Maximum number of simultaneous CCTrCH of DCH type (TDD only)  Maximum total number of transport blocks transmitted within TTIs that start at the same time  Maximum number of TF				
Maximum number of simultaneous transport channels       2, 4, 8, 16, 32         Maximum number of simultaneous CCTrCH of DCH type (TDD only)       1, 2, 3, 4, 5, 6, 7, 8         Maximum total number of transport blocks transmitted within TTIs that start at the same time       2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512         Maximum number of TFC       4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024         Maximum number of TF       32, 64, 128, 256, 512, 1024				
transport channels  Maximum number of simultaneous CCTrCH of DCH type (TDD only)  Maximum total number of transport blocks transmitted within TTIs that start at the same time  Maximum number of TFC  Maximum number of TF  4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  Maximum number of TF  32, 64, 128, 256, 512, 1024	Î			
CCTrCH of DCH type (TDD only)  Maximum total number of transport blocks transmitted within TTIs that start at the same time  Maximum number of TFC  Maximum number of TF  CCTrCH of DCH type (TDD only)  2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024  Maximum number of TF  32, 64, 128, 256, 512, 1024			transport channels	
blocks transmitted within TTIs that start at the same time  Maximum number of TFC  Maximum number of TF  Maximum number of TF  Maximum number of TF  32, 64, 128, 256, 512, 1024				1, 2, 3, 4, 5, 6, 7, 8
start at the same time         Maximum number of TFC       4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024         Maximum number of TF       32, 64, 128, 256, 512, 1024			Maximum total number of transport	<del>2,</del> 4, 8, 16, 32, 48, 64, 96, 128, 256,
Maximum number of TFC       4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024         Maximum number of TF       32, 64, 128, 256, 512, 1024				
512, 1024  Maximum number of TF 32, 64, 128, 256, 512, 1024			start at the same time	
	Ц		Maximum number of TFC	
			Maximum number of TF	

		UE radio access capability parameter	Value range
	FDD Physical channel	Maximum number of DPCH/PDSCH codes to be simultaneously received	1, 2, 3, 4, 5, 6, 7, 8
	parameters in downlink	Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)	600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800
		Support for SF 512	Yes/No
		Support of PDSCH	Yes/No
		Simultaneous reception of SCCPCH and DPCH	Yes/No
		Simultaneous reception of SCCPCH, DPCH and PDSCH	Yes/No
		Maximum number of simultaneous S- CCPCH radio links	1 NOTE: Only the value 1 is part of this release of the specification
		Support of dedicated pilots for channel estimation	Yes/No
	FDD Physical channel parameters in	Maximum number of DPDCH bits transmitted per 10 ms Support of PCPCH	600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600 Yes/No
	uplink	Support of PCPCH	res/No
	TDD 3.84 Mcps physical channel	Maximum number of timeslots per frame	114
	parameters in downlink	Maximum number of physical channels per frame	<del>1, 2, 3</del> 8224
		Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Maximum number of physical channels per timeslot	<u>48</u> 16
	TDD 3.84 Mcps physical channel	Maximum Number of timeslots per frame	114
	parameters in uplink	Maximum number of physical channels per timeslot	1, 2
		Minimum SF	<del>16,</del> 8, 4, 2, 1
		Support of PUSCH	Yes/No
	TDD 1.28 Mcps physical channel	Maximum number of timeslots per subframe	16
	parameters in downlink	Maximum number of physical channels per subframe	<del>1, 2, 3</del> <u>8</u> ,, 96
		Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Maximum number of physical channels per timeslot	<u>48</u> 16
	TDD 4 00 M	Support 8PSK	Yes/No
	TDD 1.28 Mcps physical channel	Maximum number of timeslots per subframe	16
	parameters in uplink	Maximum number of physical channels per timeslot	1, 2
		Minimum SF	<del>16, 8,</del> 4, 2, 1
		Support of 8PSK	Yes/No
DE nonceretario	EDD DE	Support of PUSCH	Yes/No
RF parameters	FDD RF parameters	UE power class	3, 4 NOTE: Only power classes 3 and 4 are part of this release of the specification
		Tx/Rx frequency separation	190 MHz 174.8 MHz to 205.2 MHz 134.8 MHz to 245.2 MHz

		UE radio access capability parameter	Value range
RF parameters	TDD 3.84 Mcps RF parameters	UE power class	2, 3 NOTE: Only power classes 2 and 3 are part of this release of the specification
		Radio frequency bands	a), b), c), a+b), a+c), b+c), a+b+c)
	TDD 1.28 Mcps	UE power class	2, 3
	RF parameters	Radio frequency bands	a), b), c), a+b), a+c), b+c), a+b+c)
Multi-mode related	d parameters	Support of UTRA FDD	Yes/No
		Support of UTRA TDD 3.84 Mcps	Yes/No
		Support of UTRA TDD 1.28 Mcps	Yes/No
Multi-RAT related	parameters	Support of GSM	Yes/No (per GSM frequency band)
	•	Support of multi-carrier	Yes/No
Security paramete	ers	Support of ciphering algorithm UEA0	Yes
, ,		Support of ciphering algorithm UEA1	Yes
		Support of integrity protection algorithm UIA1	Yes
UE positioning rela	ated parameters	Standalone location method(s) supported	Yes/No
		Network assisted GPS support	Network based / UE based / Both/ None
		GPS reference time capable	Yes/No
		Support for IPDL	Yes/No
		Support for OTDOA UE based method	Yes/No
		Support for Rx-Tx time difference type 2 measurement	Yes/No
		Support for UE Positioning measurement validity in CELL_PCH and URA_PCH RRC states	Yes/No
Measurement rela	ted capabilities	Need for downlink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
		Need for uplink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
General capabilitie	es	Access Stratum release indicator	R99, REL-4

## 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.

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.

The UE shall support at least the UE radio access capability parameter values as specified for the 32kbps UE reference class for both UL and DL.

[...]

## 3GPP TSG-RAN2 Meeting #37 Budapest, Hungary, August 25 - 29, 2003

CHANGE REQUEST										
*	25.306 CR 081 #r	ev - % Current version: 5.5.0 %								
For <u>HELP</u> on	n using this form, see bottom of this pag	ge or look at the pop-up text over the <b>%</b> symbols.								
Proposed chang	<b>e affects:</b> UICC apps <b>Ж</b>	IE X Radio Access Network Core Network								
Title:	★ Definition of minimum UE capabilit	y class								
Source:	₩ RAN WG2									
Work item code:	₩ TEI	Date: 第 25/08/2003								
Category:	# A Use one of the following categories:     F (correction)     A (corresponds to a correction in a B (addition of feature),     C (functional modification of feature)     D (editorial modification) Detailed explanations of the above categories	R97 (Release 1997) re) R98 (Release 1998) R99 (Release 1999)								

Reason for change: \* At present six UE radio access capability parameter combinations are specified in section 5.2, however a minimum radio access capability parameter combination is not defined. Since current RAB combinations on common channels, e.g. SCCPCH combinations, must be supported by every UE it is necessary to specify the minimum UE capability.

> The current specification of the UE capability classes guarantees that all RAB combinations on common channels are supported also by the lowest class, which is the 32kbps class. For this reason the parameters of the 32kbps UE class can already be seen as the minimum and the specified 32kbps UE class is defined as the minimum UE class.

## Summary of change: %

- The definition is added that the 32kbps UE class is the minimum UE class.
- The UE parameters that can be signalled for lower capabilities are removed from the "UE radio access capability parameter value ranges" table.

## Impact analysis:

UEs with capabilities lower than defined for the 32kbps UE class are affected. UEs that do not implement the CR may be unable to support RAB combinations on common channels, e.g. SCCPCH combinations. Specifically they can fail to read the FACH.

The CR has no impact on UTRAN.

## Consequences if not approved:

# There is no definition of the minimum UE capabilities that can be expected by the 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:	ж	4.	11,	5.1, 5.2		
		Υ	N			
Other specs	Ж	X		Other core specifications	æ	25.331
affected:		X		Test specifications		34.123-2
			X	O&M Specifications		
				•		
Other comments:	ж					

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

Comprehensive information and tips about how to create CRs can be found at <a href="http://www.3gpp.org/specs/CR.htm">http://www.3gpp.org/specs/CR.htm</a>. 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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.

# 4.11 DL capabilities with simultaneous HS-DSCH

DL capability with simultaneous HS-DSCH configuration

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

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

DL DPCH capability with simultaneous HS-DSCH	32 kbps	64 kbps	128 kbps	384 kbps
configuration				
Transport channel parameters	0.404000	00.40	0040	0.400
Maximum sum of number of bits of all transport blocks	<del>640</del> 1280	3840	3840	6400
being received at an arbitrary time instant	0.10	0.10	0.40	0.40
Maximum sum of number of bits of all convolutionally	640	640	640	640
coded transport blocks being received at an arbitrary time				
instant		00.10	0040	0.400
Maximum sum of number of bits of all turbo coded	NA	3840	3840	6400
transport blocks being received at an arbitrary time				
instant	_		_	_
Maximum number of simultaneous transport channels	8	8	8	8
Maximum number of simultaneous CCTrCH (FDD)	1	1	1	1
Maximum number of simultaneous CCTrCH (TDD)	2	3	3	3
Maximum total number of transport blocks received	8	8	16	32
within TTIs that end at the same time				
Maximum number of TFC	32	48	96	128
Maximum number of TF	32	64	64	64
Support for turbo decoding	<del>No</del> Yes	Yes	Yes	Yes
Physical channel parameters (FDD)				
Maximum number of DPCH/PDSCH codes to be	1	1	1	3
simultaneously received				
Maximum number of physical channel bits received in	1200	2400	4800	19200
any 10 ms interval (DPCH, PDSCH, S-CCPCH).				
Support of PDSCH	No	No	No	No
Physical channel parameters (TDD 3.84 Mcps)				
Maximum number of timeslots per frame	1	2	4	5
Maximum number of physical channels per frame	8	9	14	28
Support of PDSCH	No	No	No	No
Maximum number of physical channels per timeslot	8	9	9	9
Physical channel parameters (TDD 1.28 Mcps)				
Maximum number of timeslots per subframe	1	2	3	4
Maximum number of physical channels per subframe	8	12	18	43
Support of PDSCH	No	No	No	No
Maximum number of physical channels per timeslot	8	11	14	14

# 5 Possible UE radio access capability parameter settings

# 5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

		UE radio access capability	Value range
DDOD	_	parameter	\\\-\-\\\\-\\\\\\\\\\\\\\\\\\\\\\\\\\\
PDCP parameters	3	Support for RFC 2507	Yes/No
		Support for RFC 3095	Yes/No
		Support for RFC 3095 context	Yes/No
		relocation	
		Support for loss-less SRNS relocation	Yes/No
		Maximum header compression	512, 1024, 2048, 4096, 8192 bytes
		context space	
		Maximum number of ROHC context	2, 4, 8, 12, 16, 24, 32, 48, 64, 128,
		sessions	256, 512, 1024, 16384
		Support for Reverse Decompression	Not supported, 165535
RLC and MAC-hs parameters		Total RLC AM and MAC-hs buffer	<del>2,</del> 10, 50, 100, 150, 200, 300, 400,
		size	500, 750, 1000 kBytes
		Maximum number of AM entities	<del>3,</del> 4, 5, 6, 8, 16, 30
		Maximum RLC AM window size	2047, 4095
PHY parameters	Transport	Maximum sum of number of bits of all	<del>640,</del> 1280, 2560, 3840, 5120, 6400,
	channel	transport blocks being received at an	7680, 8960, 10240, 20480, 40960,
	parameters in	arbitrary time instant	81920, 163840
	downlink	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		convolutionally coded transport blocks	7680, 8960, 10240, 20480, 40960,
		being received at an arbitrary time	81920, 163840
		instant	0.020, .000.0
1		Maximum sum of number of bits of all	<del>640,</del> 1280, 2560, 3840, 5120, 6400,
1		turbo coded transport blocks being	7680, 8960, 10240, 20480, 40960,
		received at an arbitrary time instant	81920, 163840
1		Maximum number of simultaneous	<del>4,</del> 8, 16, 32
•		transport channels	., 0, 10, 02
		Maximum number of simultaneous	1, 2, 3, 4, 5, 6, 7, 8
		CCTrCH	
		Maximum total number of transport	<del>4,</del> 8, 16, 32, 48, 64, 96, 128, 256, 512
		blocks received within TTIs that end	
		within the same 10 ms interval	
		Maximum number of TFC	16, 32, 48, 64, 96, 128, 256, 512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo decoding	Yes <del>/No</del>
	Transport	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
	channel	transport blocks being transmitted at	7680, 8960, 10240, 20480, 40960,
	parameters in	an arbitrary time instant	81920, 163840
	uplink	Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		convolutionally coded transport blocks	7680, 8960, 10240, 20480, 40960,
		being transmitted at an arbitrary time	81920, 163840
		instant	
		Maximum sum of number of bits of all	640, 1280, 2560, 3840, 5120, 6400,
		turbo coded transport blocks being	7680, 8960, 10240, 20480, 40960,
		transmitted at an arbitrary time instant	81920, 163840
		Maximum number of simultaneous	<del>2, 4</del> , 8, 16, 32
•		transport channels	
		Maximum number of simultaneous	1, 2, 3, 4, 5, 6, 7, 8
		CCTrCH of DCH type (TDD only)	
		Maximum total number of transport	<del>2, 4</del> , 8, 16, 32, 48, 64, 96, 128, 256,
•		blocks transmitted within TTIs that	512
		start at the same time	
		Maximum number of TFC	<del>4, 8,</del> 16, 32, 48, 64, 96, 128, 256,
			512, 1024
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		UE radio access capability parameter	Value range
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo encoding	Yes/No
	FDD Physical channel	Maximum number of DPCH/PDSCH codes to be simultaneously received	1, 2, 3, 4, 5, 6, 7, 8
	parameters in downlink	Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)	600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800
		Support for SF 512	Yes/No
		Support of PDSCH	Yes/No
		Support of HS-PDSCH	Yes/No
		Simultaneous reception of SCCPCH and DPCH	Yes/No
		Simultaneous reception of SCCPCH, DPCH and PDSCH	Yes/No
		Maximum number of simultaneous S-CCPCH radio links	NOTE: Only the value 1 is part of this release of the specification
		Support of dedicated pilots for channel estimation	Yes
	EDD DI : :	Support of dedicated pilots for channel estimation of HS-DSCH	Yes/No
	FDD Physical channel	Maximum number of DPDCH bits	<del>600,</del> 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600
	parameters in uplink	transmitted per 10 ms Support of PCPCH	Yes/No
	TDD 3.84 Mcps physical channel	Maximum number of timeslots per frame	114
	parameters in	Maximum number of physical	<del>1, 2, 3</del> <u>8</u> 224
	downlink	channels per frame	
		Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Support of HS-PDSCH	Yes/No
	TDD 0.04 M	Maximum number of physical channels per timeslot	<del>4</del> 816
	TDD 3.84 Mcps physical channel parameters in	Maximum Number of timeslots per frame	114
	uplink	Maximum number of physical channels per timeslot Minimum SF	1, 2 16, 8, 4, 2, 1
		Support of PUSCH	Yes/No
	TDD 1.28 Mcps physical channel	Maximum number of timeslots per subframe	16
	parameters in downlink	Maximum number of physical channels per subframe	<del>1, 2, 3</del> <u>8</u> ,, 96
		Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Support of HS-PDSCH	Yes/No
		Maximum number of physical channels per timeslot	<u>48</u> 16
		Support 8PSK	Yes/No
	TDD 1.28 Mcps physical channel	Maximum number of timeslots per subframe	16
	parameters in uplink	Maximum number of physical channels per timeslot	1, 2
		Minimum SF	<del>16, 8,</del> 4, 2, 1
		Support of 8PSK	Yes/No
DE	EDD DE	Support of PUSCH	Yes/No
RF parameters	FDD RF parameters	UE power class	3, 4 NOTE: Only power classes 3 and 4 are part of this release of the specification
		Tx/Rx frequency separation	190 Mhz 174.8 MHz to 205.2 MHz
			134.8 MHz to 245.2 MHz

		UE radio access capability	Value range
		parameter	
RF parameters	TDD 3.84 Mcps RF parameters	UE power class	2, 3 NOTE: Only power classes 2 and 3 are part of this release of the specification
		Radio frequency bands	a), b), c), a+b), a+c), b+c), a+b+c)
	TDD 1.28 Mcps	UE power class	2, 3
	RF parameters	Radio frequency bands	a), b), c), a+b), a+c), b+c), a+b+c)
Multi-mode related	parameters	Support of UTRA FDD	Yes/No
		Support of UTRA TDD 3.84 Mcps	Yes/No
		Support of UTRA TDD 1.28 Mcps	Yes/No
Multi-RAT related parameters		Support of GSM	Yes/No (per GSM frequency band)
		Support of multi-carrier	Yes/No
		Support of UTRAN to GERAN Network Assisted Cell Change	Yes/No
Security paramete	rs	Support of ciphering algorithm UEA0	Yes
		Support of ciphering algorithm UEA1	Yes
		Support of integrity protection algorithm UIA1	Yes
UE positioning rela	ated parameters	Standalone location method(s) supported	Yes/No
		Network assisted GPS support	Network based / UE based / Both/ None
		GPS reference time capable	Yes/No
		Support for IPDL	Yes/No
		Support for OTDOA UE based method	Yes/No
		Support for Rx-Tx time difference type 2 measurement	Yes/No
		Support for UE Positioning measurement validity in CELL_PCH and URA_PCH RRC states	Yes/No
Measurement relat	ted capabilities	Need for downlink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
		Need for uplink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
General capabilitie		Access Stratum release indicator	R99, REL-4, REL-5
DL capabilities with DSCH	h simultaneous HS-	DL capability with simultaneous HS- DSCH configuration	32 kbps, 64 kbps, 128 kbps, 384 kbps

[...]

## 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.

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.

The UE shall support at least the UE radio access capability parameter values as specified for the 32kbps UE reference class for both UL and DL.

[...]