

TSG-RAN Working Group 1 meeting No. 13
May 22– 25, Tokyo, Japan

TSGR1-00-0622

TSG-RAN Working Group 2 (Radio L2 and Radio L3)
Seoul, Korea, 10-13 April 2000

R2-000931

Source: TSG-RAN WG2

To: TSG-T WG1

Cc: TSG-RAN WG1

Title: LS on Changes to TR-25.926 UE radio access capabilities

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TSG-R2 would like to inform TSG-T1 on the latest changes made in TR 25.926, based on an ad-hoc meeting held between R2 and R1 10 April in Seoul. The main purpose of the ad-hoc was to align TR 25.926 with the GSMA ISG document “Typical Radio Parameter sets”, and to capture both TSG-R1 views and TSG-R2 views when doing changes. In TSG-RAN#7 it was agreed to align the TR25.926 with the ISG RABs, as the ISG RABs should be used as the basis for conformance testing. Version 1.1 of the ISG document was used as a basis in the ad-hoc discussion. Attached to this LS is the CR to TR 25.926 that was created based on the ad-hoc discussion, and some further changes agreed at TSG-R2 meeting #12. The CR includes all relevant changed or unchanged sections in order to provide a good overview for TSG-T1.

TSG-R2 would like to draw TSG-T1’s attention to the fact that some parameter values in the reference UE radio access capability combinations (UE classes) defined in Section 5.2 were proposed to be reduced in order not to demand higher complexity than would be required to cover the ISG RAB combinations. However, these reductions were not agreed as the following concerns were raised:

- ISG document is not necessary covering all test cases
- It was felt by several companies that UE classes in 25.926 may contain values that are higher than the values to be tested in TSG T test cases.
- Support of variable rate AMR speech (affecting e.g. the maximum number of TFC in the TFCS), was felt necessary in some comments, even though it is not covered by the ISG RABs
- It was felt by several companies that for the 384 kbps DL class, test cases more demanding than in the ISG document would be needed and thus the alignment of the class 4 according to the ISG single code test case was felt to be too restrictive.
- It was noted that in some cases, like number of TFC in TFCS, TSG-T1 will not likely define tests for the maximum values for each class.
- The option to support PDSCH (to be conformance tested) was in TSG-R2 not agreed to be removed from the 64kbps and 128kbps DL classes, even though there are no ISG RABs that correspond to these cases. An opinion was raised that conformance tests for PDSCH support would be useful for these classes.

On the following page a table is provided, showing the mapping between the ISG RAB combinations and the UE classes in TR 25.926. The table was used in the ad-hoc discussions, and it was felt that the table could be useful to TSG-T1.

It should be noted that further changes to TR 25.926 are expected in the future. TSG-R2 will inform TSG-T1 if changes are made.

Based on: ISG Typical parameter set v1.1 **Mapping of UE Radio Access Capability combinations to supported RABs**
 TR25.926 v3.0.0 UE Radio Access Capabilities

RAB Comb (5.2)	UE class Data rate (kbps)	DL						UL				
		1 32	2 64	3 128	4 384	5 768	6 2048	1 32	2 64	3 128	4 384	5 768
DPCH	1 DCCH 1.7	X	X	X	X	X	X	X	X	X	X	X
	2 DCCH 3.4	X	X	X	X	X	X	X	X	X	X	X
	3 DCCH 13.6	X	X	X	X	X	X	X	X	X	X	X
	4 CV voice 12.2	X	X	X	X	X	X	X	X	X	X	X
	5 CV voice 10.2	X	X	X	X	X	X	X	X	X	X	X
	6 CV voice 7.95	X	X	X	X	X	X	X	X	X	X	X
	7 CV voice 7.4	X	X	X	X	X	X	X	X	X	X	X
	8 CV voice 6.7	X	X	X	X	X	X	X	X	X	X	X
	9 CV voice 5.9	X	X	X	X	X	X	X	X	X	X	X
	10 CV voice 5.15	X	X	X	X	X	X	X	X	X	X	X
	11 CV voice 4.75	X	X	X	X	X	X	X	X	X	X	X
	12 CV 64/64		X	X	X	X	X		X	X	X	X
	13 CV 32/32		X	X	X	X	X		X	X	X	X
	14 ST 28.8/28.8		X	X	X	X	X		X	X	X	X
	15 ST 57.6/57.6		X	X	X	X	X		X	X	X	X
	16 ST 64/0		X	X	X	X	X	X	X	X	X	X
	17 ST 0/64	X	X	X	X	X	X	X	X	X	X	X
	18 ST 128/0		X	X	X	X	X	X	X	X	X	X
	19 ST 0/128	X	X	X	X	X	X		X	X	X	X
	20 ST 384/0							X	X	X	X	X
21 IB 8/32 (CC,10msTTI)	X	X	X	X	X	X	X	X	X	X	X	
22 IB 8/64	X	X	X	X	X	X	X	X	X	X	X	
23 IB 64/32 (CC,10msTTI)		X	X	X	X	X	X	X	X	X	X	
24 IB 64/64		X	X	X	X	X	X	X	X	X	X	
25 IB 128/64		X	X	X	X	X	X	X	X	X	X	
26 IB 128/128		X	X	X	X	X	X	X	X	X	X	
27 IB 144/64		X	X	X	X	X	X	X	X	X	X	
28 IB 144/144		X	X	X	X	X	X	X	X	X	X	
29 IB 384 (10ms TTI)/64				X	X	X	X	X	X	X	X	
30 IB 384 (10ms TTI)/128				X	X	X	X	X	X	X	X	
31 IB 384/384 (10ms TTI)				X	X	X	X	X	X	X	X	
29 IB 384 (20ms TTI)/64					X	X	X	X	X	X	X	
30 IB 384 (20ms TTI)/128					X	X	X	X	X	X	X	
31 IB 384/384 (20ms TTI)					X	X	X	X	X	X	X	
32 IB 2048/64						X	X	X	X	X	X	
33 IB 2048/128						X	X	X	X	X	X	
34 IB 2048/384 (10ms TTI)						X	X	X	X	X	X	
34 IB 2048/384 (20ms TTI)						X	X	X	X	X	X	
35 CVV + IB 8/32		X	X	X	X	X	X	X	X	X	X	
36 CVV + IB 64/32		X	X	X	X	X	X	X	X	X	X	
37 CVV + IB 64/64		X	X	X	X	X	X	X	X	X	X	
38 CVV + IB 128/64		X	X	X	X	X	X	X	X	X	X	
39 CVV + IB 384(10ms TTI)/64				X	X	X	X	X	X	X	X	
39 CVV + IB 384(20ms TTI)/64					X	X	X	X	X	X	X	
40 CVV + IB 2048/128						X	X	X	X	X	X	
41 CVV + ST 57.6/57.6		X	X	X	X	X	X	X	X	X	X	
42 CVV + ST 64/0		X	X	X	X	X	X	X	X	X	X	
43 CVV + ST 128/0			X	X	X	X	X	X	X	X	X	
44 CVV + ST 384/0						X	X	X	X	X	X	
45 CVV + CV 64/64		X	X	X	X	X	X	X	X	X	X	
46 CV 64/64 + CV 64/64				X	X	X	X	X	X	X	X	
47 CV 64/64 + IB 64/64				X	X	X	X	X	X	X	X	
48 CV 64/64 + IB 128/64				X	X	X	X	X	X	X	X	
49 CV 64/64 + IB 128/128				X	X	X	X	X	X	X	X	
50 IB 128/64 + ST 64/0				X	X	X	X	X	X	X	X	
51 IB 128/64 + ST 128/0				X	X	X	X	X	X	X	X	
DSCH & DPCH	52 IB 384/64				O	X	X	X	X	X	X	X
	53 CVV + IB 384/64				O	X	X	X	X	X	X	X
	54 CVV + IB 2048/64						X	X	X	X	X	X
SCCPCH	55 PCCH	X	X	X	X	X	X	NA	NA	NA	NA	NA
	56 IB 32 +	X	X	X	X	X	X	NA	NA	NA	NA	NA
	57 IB 32 + PCCH	X	X	X	X	X	X	NA	NA	NA	NA	NA
PRACH	58 UL											
	58 IB 32	NA	NA	NA	NA	NA	NA	X	X	X	X	X

3GPP TSG RAN WG2
Seoul, Korea, 10 - 13 April 2000

Document R2-000856

e.g. for 3GPP use the format TP-99xxx
 or for SMG, use the format P-99-xxx

CHANGE REQUEST		<small>Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.</small>	
25.926	CR 003	Current Version: 3.0.0	
<small>GSM (AA.BB) or 3G (AA.BBB) specification number ↑</small>		<small>↑ CR number as allocated by MCC support team</small>	
For submission to: TSG-RAN #8 <small>list expected approval meeting # here</small>	for approval for information <input checked="" type="checkbox"/>	strategic <input type="checkbox"/>	<small>(for SMG use only)</small>
↑	<input type="checkbox"/>	non-strategic <input type="checkbox"/>	

Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: ftp://ftp.3gpp.org/information/CR-Form-v2.doc

Proposed change affects: (U)SIM ME UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 12 April 2000

Subject: Ad Hoc changes

Work item:

Category:	F Correction	<input checked="" type="checkbox"/>	Release:	Phase 2	<input type="checkbox"/>
<small>(only one category shall be marked with an X)</small>	A Corresponds to a correction in an earlier release	<input type="checkbox"/>		Release 96	<input type="checkbox"/>
	B Addition of feature	<input type="checkbox"/>		Release 97	<input type="checkbox"/>
	C Functional modification of feature	<input type="checkbox"/>		Release 98	<input type="checkbox"/>
	D Editorial modification	<input type="checkbox"/>		Release 99	<input checked="" type="checkbox"/>
				Release 00	<input type="checkbox"/>

Reason for change: Proposal:

- Include compressed mode capabilities for inter-RAT measurements in order to align the report with the RRC protocol. (Section 4.9)
- Use table format instead of Word pictures to illustrate UE radio access capability combinations because of unmanageable file size (Sections 5.2.1, 5.2.2, 5.2.3). A separate revision mark colour has been used for the changes that are only conversions from pictures into tables.
- Adjust value range and values for "Maximum number of RLC AM entities" in order to always support 3 signalling RBs. (Sections 5.1 and 5.2.1)
- Include LCS capabilities in the reference UE radio access capability combinations (Section 5.2.1)
- Adjust requirements for support of PDSCH to the ISG RAB combinations (Section 5.2.2)
- Removal of multi-code from some TDD UE classes (Section 5.2.3)
- Mandate USCH for the 32kbps UL class
- Align example reference RABs with ISG RAB combinations (Section 6.1)
- Align example reference RAB combinations with ISG RAB combinations (Section 6.2)

Clauses affected: 4.9, 5.1, 5.2.1, 5.2.2, 5.2.3, 6.1, 6.2

Other specs affected:	Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:	
	Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
	MS test specifications	<input type="checkbox"/>	→ List of CRs:	
	BSS test specifications	<input type="checkbox"/>	→ List of CRs:	

O&M specifications



→ List of CRs:

**Other
comments:**

help.doc

<----- double-click here for help and instructions on how to create a CR.

4.9 Measurement related capabilities

Need for downlink compressed mode

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

Need for uplink compressed mode

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

5 Possible UE radio access capability parameter settings

5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

		UE radio access capability parameter	Value range
PDCP parameters		Header compression algorithm supported	Yes/No
RLC parameters		Total RLC AM buffer size	2,10,50,100,150,500,1000 kBytes
		Maximum number of AM entities	2,3,4,5,6,8,16,32
PHY parameters	Transport channel parameters in downlink	Maximum sum of number of bits of all transport blocks received in TTIs that end within the same arbitrary interval of length T<10 ms	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all convolutionally coded transport blocks received in TTIs that end within the same arbitrary interval of length T<10 ms	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks received in TTIs that end within the same arbitrary interval of length T<10 ms	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	4, 8, 16, 32
		Maximum number of simultaneous CCTrCH	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval	4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC in the TFCS	16, 32, 48, 64, 96, 128, 256, 512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo decoding	Yes/No
	Transport channel parameters in uplink	Maximum sum of number of bits of all transport blocks transmitted in TTIs that start at the same time	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all convolutionally coded transport blocks transmitted in TTIs that start at the same time	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks transmitted in TTIs that start at the same time	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	2, 4, 8, 16, 32
		Maximum number of simultaneous CCTrCH of DCH type (TDD only)	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks transmitted within TTIs that start at the same time	2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC in the TFCS	4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo encoding	Yes/No

		UE radio access capability parameter	Value range
	FDD Physical channel parameters in downlink	Maximum number of DPCH/PDSCH codes to be simultaneously received	1, 2, 3, 4, 5, 6, 7, 8
		Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)	300 , 600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600, 67200, <u>76800</u>
		Support for SF 512	Yes/No
		Support of PDSCH	Yes/No
		Simultaneous reception of SCCPCH and DPCH	Yes/No
	Maximum number of simultaneous S-CCPCH radio links	1 NOTE: Only the value 1 is part of R99	
	FDD Physical channel parameters in uplink	Maximum number of DPDCH bits transmitted per 10 ms	150, 300 , 600, 1200, 2400, 4800, 960, 19200, 28800, 38400, 48000, 57600
		Support of PCPCH	Yes/No
	TDD physical channel parameters in downlink	Maximum number of timeslots per frame	1..14
		Maximum number of physical channels per frame	1,2,3,..,224
		Minimum SF	16, 1
		Support of PDSCH	Yes/No
	TDD physical channel parameters in uplink	Maximum Number of timeslots per frame	1..14
		Maximum number of physical channels per timeslot	1, 2
		Minimum SF	16,8,4,2,1
Support of PUSCH		Yes/No	
RF parameters	FDD RF parameters	UE power class (25.101 subclause 6.2.1)	3, 4 NOTE: Only power classes 3 and 4 are part of R99
		Tx/Rx frequency separation (25.101 subclause 5.3) . NOTE: Not applicable if UE is not operating in frequency band a	190 MHz 174.8-205.2 MHz 134.8-245.2 MHz
RF parameters	TDD RF parameters	UE power class (25.102)	2,3 NOTE: Only power classes 2 and 3 are part of R99
		Radio frequency bands (25.102)	a), b), c), a+b), a+c), a+b+c)
		Chip rate capability (25.102)	3.84,1.28
Multi-mode related parameters		Support of UTRA FDD/TDD	FDD, TDD, FDD+TDD
Multi-RAT related parameters		Support of GSM	Yes/No
		Support of multi-carrier	Yes/No
LCS related 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
Measurement related 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)

5.2 Reference UE radio access capability combinations

Based on required UE radio access capabilities to support reference RABs as defined in clause 6, 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. Subclause 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 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.

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

NOTE: It is FFS whether ~~LCS capabilities and~~ measurement related capabilities need to be included in the combinations. These capabilities are independent from the supported RABs.

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

<u>Reference combination of UE Radio Access capability parameters common for UL and DL</u>	<u>32kbps class</u>	<u>64kbps class</u>	<u>128kbps class</u>	<u>384kbps class</u>	<u>768kbps class</u>	<u>2048kbps class</u>
<u>PDCP parameters</u>						
Header compression algorithm supported	No	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1
<u>RLC parameters</u>						
Total RLC AM buffer size (kbytes)	10	10	50	50	100	500
Maximum number of AM entities	3-4	34	45	46	8	8
<u>Multi-mode related parameters</u>						
Support of UTRA FDD/TDD	FDD / FDD+TDD / TDD NOTE 1					
<u>Multi-RAT related parameters</u>						
Support of GSM	Yes/No NOTE 1					
Support of multi-carrier	Yes/No NOTE 1					
<u>LCS related parameters</u>						
Standalone location method(s) supported	Yes/No NOTE 1					
Network assisted GPS support	Network based / UE based / Both/ None NOTE 1					
GPS reference time capable	Yes/No NOTE 1					
Support for IPDL	Yes/No NOTE 1					
Support for OTDOA UE based method	Yes/No NOTE 1					
<u>RF parameters for FDD</u>						
UE power class	3 / 4 NOTE 1					
Tx/Rx frequency separation	190 MHz					
<u>RF parameters for TDD</u>						
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/sec NOTE 1					
UE power class	2 / 3 NOTE 1					

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

~~Common UE Radio Access Capability Parameters for UL and DL for 32 kbps class~~

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~~Common UE Radio Access Capability Parameters for UL and DL for 64 kbps class~~

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~~Common UE Radio Access Capability Parameters for UL and DL for 128 kbps class~~

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~~Common UE Radio Access Capability Parameters for UL and DL for 384 kbps class~~

***** The figure at this location is proposed to be removed *****

~~Common UE Radio Access Capability Parameters for UL and DL for 768 kbps class~~

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~~Common UE Radio Access Capability Parameters for UL and DL for 2048 kbps class~~

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5.2.2 Combinations of UE Radio Access Parameters for DL

Table 5.2.2.1 UE radio access capability parameter combinations for FDD, DL parameters

Reference combination of UE Radio Access capability parameters in DL	32kbps class	64kbps class	128kbps class	384kbps class	768kbps class	2048kbps class
Transport channel parameters						
Maximum sum of number of bits of all transport blocks received in TTIs that end within the same arbitrary interval of length $T < 10$ ms	640	3840	3840	6400	10240	20480
Maximum sum of number of bits of all convolutionally coded transport blocks received in TTIs that end within the same arbitrary interval of length $T < 10$ ms	640	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks received in TTIs that end within the same arbitrary interval of length $T < 10$ ms	NA	3840	3840	6400	10240	20480
Maximum number of simultaneous transport channels	8	8	8	8	8	16
Maximum number of simultaneous CCTrCH (FDD)	1	1	1	1	1	1
Maximum number of simultaneous CCTrCH (TDD)	2	3	3	3	4	4
Maximum total number of transport blocks received within TTIs that end at the same time	8	8	16	32	64	96
Maximum number of TFC in the TFCS	32	48	96	128	256	1024
Maximum number of TF	32	64	64	64	128	256
Support for turbo decoding	No	Yes	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)						
Maximum number of DPCH/PDSCH codes to be simultaneously received	1	1	1	3	3	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH).	1200	2400	4800	19200	28800	57600
Support for SF 512	No	No	No	No	No	No
Support of PDSCH	No	Yes/No	Yes/No	No/Yes NOTE 1	Yes	Yes
Maximum number of simultaneous S-CCPCH radio links	1	1	1	1	1	1
Physical channel parameters (TDD)						
Maximum number of timeslots per frame	2	3	4	5	10	12
Maximum number of physical channels per frame	8	9	14	28	64	136
Minimum SF	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1/16 NOTE 1
Support of PDSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes

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

UE Radio Access Capability Parameters for DL 32 kbit class

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UE Radio Access Capability Parameters for DL 64 kbit class

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UE Radio Access Capability Parameters for DL 128 kbit class

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UE Radio Access Capability Parameters for DL 384 kbit class

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UE Radio Access Capability Parameters for DL 768 kbit class

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UE Radio Access Capability Parameters for DL 2048 kbit class

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5.2.3 Combinations of UE Radio Access Parameters for UL

Table 5.2.3.1 UE radio access capability parameter combinations for FDD, UL parameters

<u>Reference combination of UE Radio Access capability parameters in UL</u>	<u>32kbps class</u>	<u>64kbps class</u>	<u>128kbps class</u>	<u>384kbps class</u>	<u>768kbps class</u>
Transport channel parameters					
Maximum sum of number of bits of all transport blocks transmitted in TTIs that start at the same time	640	3840	3840	6400	10240
Maximum sum of number of bits of all convolutionally coded transport blocks transmitted in TTIs that start at the same time	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks transmitted in TTIs that start at the same time	NA	3840	3840	6400	10240
Maximum number of simultaneous transport channels	4	8	8	8	8
Maximum number of simultaneous CCTrCH (TDD only)	42	1	2	2	2
Maximum total number of transport blocks transmitted within TTIs that start at the same time	4	8	8	16	32
Maximum number of TFC in the TFCS	16	32	48	64	128
Maximum number of TF	32	32	32	32	64
Support for turbo encoding	No	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)					
Maximum number of DPDCH bits transmitted per 10 ms	1200	2400	4800	9600	19200
Simultaneous reception of SCCPCH and DPCH	No	No	No	No	No
NOTE 2					
Support of PCPCH	No	No	No	No	No
Physical channel parameters (TDD)					
Maximum Number of timeslots per frame	1	42	3	7	9
Maximum number of physical channels per timeslot	1	21	21	21	2
Minimum SF	8	42	2	2	2
Support of PUSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes

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

NOTE 2 The downlink parameter 'Simultaneous reception of SCCPCH and DPCH is included in the combinations for uplink as its requirements relate to the uplink data rate. Simultaneous reception of SCCPCH and DPCH is required for the DRAC procedure that is intended for controlling uplink transmissions.

UE Radio Access Capability Parameters for UL 32 kbit class

*** The figure at this location is proposed to be removed ***

UE Radio Access Capability Parameters for UL 64 kbit class

*** The figure at this location is proposed to be removed ***

UE Radio Access Capability Parameters for UL 128 kbit class

*** The figure at this location is proposed to be removed ***

UE Radio Access Capability Parameters for UL 384 kbit class

*** The figure at this location is proposed to be removed ***

UE Radio Access Capability Parameters for UL 768 kbit class

*** The figure at this location is proposed to be removed ***

6 Usage of UE radio access capabilities

NOTE: The rationale for the parameter combination settings will be explained here.

6.1 Examples of reference radio access bearers

In Table 6.1 reference RAB A-F-G are defined with ~~their main~~ some characteristics that impact the required UE Radio Access capabilities. These reference RABs shall be seen as example RABs covered by the reference UE radio access capability combinations defined in Subclause 5.2. Reference RABs for conformance testing are specified in TS 34.108.

Table 6.1: Reference RABs

Reference RAB	A	B	C	D	E	F	G
RAB characteristics and mapping to DCH Coding (CC/TC)	Conversational speech 4.75-12.2 kbps (20 ms TTI) <u>CC, Only one rate per RAB</u> <u>All AMR modes + rate ctrl, but max. 4 at a time</u>	Conversational 64 kbps (40 ms TTI) <u>TC</u>	Streaming max. 57.6 kbps (40 ms TTI) <u>TC</u>	Interactive/Background max. 32 kbps (10 ms TTI) <u>CC</u>	Interactive/Background max. 64 kbps (10 / <u>20</u> ms TTI) <u>TC</u>	Interactive/Background max. 384 kbps (10 / <u>20</u> ms TTI) <u>TC</u>	<u>Interactive/Background max. 2048 kbps (10 ms TTI)</u> <u>TC</u>
DCH carrying DCCH (rate, TTI)	3.2 kbps <u>3.4 kbps</u> , 40ms	<u>3.4 kbps</u> , 40ms/ 6.4 kbps, 20ms	<u>3.4 kbps</u> , 40ms/ 6.4 kbps, 20ms	<u>3.4 kbps</u> , 40ms/ 12.8 kbps, 10ms	<u>3.4 kbps</u> , 40ms/ 12.8 kbps, 10ms	<u>3.4 kbps</u> , 40ms/ 12.8 kbps, 10ms	<u>3.4 kbps</u> , 40ms/ <u>12.8 kbps</u> , 10ms

6.2 Example mappings between reference RABs and capability combinations

The following examples show how the reference RABs of Table 6.1 can be mapped to the reference UE radio access capability combinations that are listed in Clause 5.

Table 6.2: Example mappings between capability combinations and RAB combinations

Reference UE radio access capability combinations	Examples of supported reference RAB combination
32kbps class	One at the time of the following: - A - GD
64kbps class	One at the time of the following: - B - C - E - A and D simultaneously - A and E simultaneously - A and B simultaneously - A and C simultaneously - The RAB combination supported by 32kbps class
128kbps class	One at the time of the following: - 2 times E - A and E simultaneously - A and B simultaneously - A and C simultaneously - The RAB combination supported by 64kbps class
384kbps class	One at the time of the following: - E + B - 2 times B - F (TTI 10 ms) - A and F (TTI 10 ms) simultaneously - The RAB combination supported by 128kbps class
762kbps-768kbps class	One at the time of the following: - F (TTI 20 ms) - A and F (TTI 20 ms) simultaneously - 2 times F (TTI 10 ms) -in DL- 4 times F in UL - 2 times B and F simultaneously - The RAB combination supported by 384kbps class
2048kbps class	One at the time of the following: - 6 times FG in DL only - A and G simultaneously - The RAB combination supported by 762kbps-768kbps class