

**TSG-RAN Meeting #11  
Palm Springs, CA, USA, 13 - 16 March 2001**

**RP-010038**

**Title: Agreed CRs (Release 4) for WI "Low Chip Rate TDD UE radio access Capability"**

**Source: TSG-RAN WG2**

**Agenda item: 6.7.3**

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio	Workitem
R2-010509	agreed	25.843	001		Rel-4	Update of TR 25.843	B	4.0.0	4.1.0	LCRTDD-UErac

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio	Workitem
R2-010510	agreed	25.306	003	1	Rel-4	1.28Mcps TDD	B	3.0.0	4.0.0	LCRTDD-UErac

## CHANGE REQUEST

⌘ **25.306** **CR** **003** ⌘ rev **r1** ⌘ Current version: **3.0.0** ⌘

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**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ 1.28Mcps TDD		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ LCRTDD-UErac	<b>Date:</b>	⌘ 19 February 2001
<b>Category:</b>	⌘ <b>B</b>	<b>Release:</b>	⌘ REL-4
<p>Use <u>one</u> of the following categories:</p> <p><b>F</b> (essential correction)</p> <p><b>A</b> (corresponds to a correction in an earlier release)</p> <p><b>B</b> (Addition of feature),</p> <p><b>C</b> (Functional modification of feature)</p> <p><b>D</b> (Editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>		<p>Use <u>one</u> of the following releases:</p> <p><b>2</b> (GSM Phase 2)</p> <p><b>R96</b> (Release 1996)</p> <p><b>R97</b> (Release 1997)</p> <p><b>R98</b> (Release 1998)</p> <p><b>R99</b> (Release 1999)</p> <p><b>REL-4</b> (Release 4)</p> <p><b>REL-5</b> (Release 5)</p>	

<b>Reason for change:</b>	⌘ This CR collects the changes necessary for introducing 1.28Mcps TDD in TS25.306.
<b>Summary of change:</b>	<ul style="list-style-type: none"> <li>- 1.28 Mcps TDD physical channel parameters in downlink and uplink, multi-mode related parameters and RF parameters are updated to reflect the support of 1.28 Mcps TDD.</li> <li>- 1.28 Mcps TDD is introduced in tables in sections 5.1 and 5.2.</li> <li>- revision 1 of the CR includes the support of 8psk as uplink physical channel parameter for 1.28 Mcps TDD and the support of shared channels</li> </ul>
<b>Consequences if not approved:</b>	⌘

<b>Clauses affected:</b>	⌘ 4.5.5, 4.5.5.2 (new), 4.5.6, 4.5.6.2 (new), 4.5.7, 4.6, 5.1, 5.2.1, 5.2.2, 5.2.3		
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

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## 4.5.5 TDD physical channel parameters in downlink

### 4.5.5.1 3.84 Mcps TDD physical channel parameters in downlink

Maximum number of timeslots per frame

Defines the maximum number of timeslots per frame that the UE can receive.

Maximum number of physical channels per frame

This parameter defines how many physical channels can be received during one frame. The distribution of the received physical channels on the received timeslots can be arbitrary.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PDSCH

Defines whether PDSCH is supported or not.

Maximum number of physical channels per timeslot

This parameter defines how many physical channels can be received within one timeslot.

### 4.5.5.2 1.28 Mcps TDD physical channel parameters in downlink

Maximum number of timeslots per subframe

Defines the maximum number of timeslots per subframe that the UE can receive.

Maximum number of physical channels per subframe

This parameter defines how many physical channels can be received during one subframe. The distribution of the received physical channels on the received timeslots can be arbitrary.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PDSCH

Defines whether PDSCH is supported or not.

Maximum number of physical channels per timeslot

This parameter defines how many physical channels can be received within one timeslot.

Support of 8PSK

Defines whether 8PSK modulation is supported or not.

## 4.5.6 TDD physical channel parameters in uplink

### [4.5.6.1 3.84 Mcps TDD physical channel parameters in uplink](#)

#### Maximum Number of timeslots per frame

Defines the maximum number of timeslots per frame that the UE can transmit.

#### Maximum number of physical channels per timeslot

Defines the maximum number physical channels transmitted in parallel during one timeslot.

#### Minimum SF

Defines the minimum SF supported by the UE.

#### Support of PUSCH

Defines whether PUSCH is supported or not.

### [4.5.6.2 1.28 Mcps TDD physical channel parameters in uplink](#)

#### [Maximum Number of timeslots per subframe](#)

[Defines the maximum number of timeslots per subframe that the UE can transmit.](#)

#### [Maximum number of physical channels per timeslot](#)

[Defines the maximum number of physical channels transmitted in parallel during one timeslot.](#)

#### [Minimum SF](#)

[Defines the minimum SF supported by the UE.](#)

#### [Support of PUSCH](#)

[Defines whether PUSCH is supported or not.](#)

#### [Support of 8PSK](#)

[Defines whether 8PSK modulation is supported or not.](#)

## 4.5.7 RF parameters

#### UE power class

The value is fixed per UE and is not related to any configuration parameter.

#### Radio frequency bands

Defines the uplink and downlink frequency bands supported by the UE.

Configuration parameters are *UTRA RF Channel numbers* for uplink and downlink, which are part of *Frequency info*.

#### Tx/Rx frequency separation

Defines the uplink/downlink frequency separations supported by the UE.

Configuration parameters are *UTRA RF Channel numbers* for uplink and downlink, which are part of *Frequency info*.

~~Chip rate capability~~

~~Chip rates supported by the UE.~~

~~Corresponding configuration parameter is *chip rate*, which is part of *Frequency info*.~~

## 4.6 Multi-mode related parameters

~~Support of UTRA FDD/TDD~~

~~Defines whether UTRA FDD and/or TDD are supported.~~

~~There is no explicit configuration parameter.~~

~~Support of UTRA FDD~~

~~Defines whether UTRA FDD is supported.~~

~~There is no explicit configuration parameter.~~

~~Support of UTRA TDD 3.84 Mcps~~

~~Defines whether UTRA TDD 3.84 Mcps is supported.~~

~~There is no explicit configuration parameter.~~

~~Support of UTRA TDD 1.28 Mcps~~

~~Defines whether UTRA TDD 1.28 Mcps is supported.~~

~~There is no explicit configuration parameter.~~

## 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	3,4,5,6,8,16,32
PHY parameters	Transport channel parameters in downlink	Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		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 being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	2, 4, 8, 16, 32
		Maximum number of simultaneous CCTrCH of DCH type (TDD only)	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks transmitted within TTIs that start at the same time	2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC 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
	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)	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	

		UE radio access capability parameter	Value range
		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 R99
	FDD Physical channel parameters in uplink	Maximum number of DPDCH bits transmitted per 10 ms	600, 1200, 2400, 4800, 960, 19200, 28800, 38400, 48000, 57600
		Support of PCPCH	Yes/No
	TDD <a href="#">3.84Mcps</a> 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
		Maximum number of physical channels per timeslot	1..16
	TDD <a href="#">3.84Mcps</a> 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
	TDD <a href="#">1.28 Mcps</a> physical channel parameters in downlink	Maximum number of timeslots per subframe	<a href="#">1..6</a>
		Maximum number of physical channels per subframe	<a href="#">1,2,3,...,96</a>
		Minimum SF	<a href="#">16, 1</a>
		Support of PDSCH	<a href="#">Yes/No</a>
		Maximum number of physical channels per timeslot	<a href="#">1..16</a>
	TDD <a href="#">1.28 Mcps</a> physical channel parameters in uplink	Maximum number of timeslots per subframe	<a href="#">1..6</a>
		Maximum number of physical channels per timeslot	<a href="#">1,2</a>
		Minimum SF	<a href="#">16,8,4,2,1</a>
		Support of 8PSK	<a href="#">Yes/No</a>
Support of PUSCH	Support of PUSCH	<a href="#">Yes/No</a>	
	Support of PUSCH	<a href="#">Yes/No</a>	
	Support of PUSCH	<a href="#">Yes/No</a>	
	Support of PUSCH	<a href="#">Yes/No</a>	
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 <a href="#">3.84Mcps</a> 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 href="#">b+c</a> ), a+b+c)
		Chip rate capability (25.102)	<a href="#">3.84,1.28</a>
	TDD <a href="#">1.28Mcps</a> RF parameters	UE power class (25.102)	<a href="#">2,3</a>
		Radio frequency bands (25.102)	<a href="#">a), b), c), a+b), a+c), b+c), a+b+c)</a>



	<b>UE radio access capability parameter</b>	<b>Value range</b>
Multi-mode related parameters	<a href="#">Support of UTRA FDD/TDD</a>	<a href="#">FDD, TDD, FDD+TDD</a> <u>Yes/No</u>
	<a href="#">Support of UTRA FDD</a>	<u>Yes/No</u>
	<a href="#">Support of UTRA TDD 3.84Mcps</a>	<u>Yes/No</u>
Multi-RAT related parameters	<a href="#">Support of UTRA TDD 1.28Mcps</a>	<u>Yes/No</u>
	Support of GSM	Yes/No (per GSM frequency band)
LCS related parameters	Support of multi-carrier	Yes/No
	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
Measurement related capabilities	Support for OTDOA UE based method	Yes/No
	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)

## 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. 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 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.

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

NOTE: It is FFS whether 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, parameters common for UL and DL**

Reference combination of UE Radio Access capability parameters common for UL and DL	32kbps class	64kbps class	128kbps class	384kbps class	768kbps class	2048kbps class
<b>PDCP parameters</b>						
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
<b>RLC parameters</b>						
Total RLC AM buffer size (kbytes)	10	10	50	50	100	500
Maximum number of AM entities	4	4	5	6	8	8
<b>Multi-mode related parameters</b>						
Support of UTRA FDD/TDD	<u>FDD / FDD+TDD / TDD</u> Yes/No NOTE 1					
Support of UTRA TDD 3.84Mcps	<u>Yes/No</u> NOTE 1					
Support of UTRA TDD 1.28Mcps	<u>Yes/No</u> NOTE 1					
<b>Multi-RAT related parameters</b>						
Support of GSM	Yes/No NOTE 1					
Support of multi-carrier	Yes/No NOTE 1					
<b>LCS related parameters</b>						
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					
<b>RF parameters for FDD</b>						
UE power class	3 / 4 NOTE 1					
Tx/Rx frequency separation	190 MHz					
<b>RF parameters for TDD 3.84Mcps</b>						
Radio frequency bands	A / b / c / a+b / a+c / b+c / a+b+c NOTE 1					
Chip rate capability	<u>1.28 / 3.84 Mchip/sec</u> NOTE 1					
UE power class	2 / 3 NOTE 1					
<b>RF parameters for TDD 1.28 Mcps</b>						
Radio frequency bands	<u>A / b / c / a+b / a+c / b+c / a+b+c</u> NOTE 1					
UE power class	<u>2 / 3</u> NOTE 1					

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

## 5.2.2 Combinations of UE Radio Access Parameters for DL

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

Reference combination of UE Radio Access capability parameters in DL	32kbps class	64kbps class	128kbps class	384kbps class	768kbps class	2048kbps class
<b>Transport channel parameters</b>						
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640	3840	3840	6400	10240	20480
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	NA	3840	3840	6400	10240	20480(1) 10240(2) NOTE 3
Maximum number of simultaneous transport channels	8	8	8	8	8	16
Maximum number of simultaneous CCTrCH (FDD)	1	2/1 NOTE 2	2/1 NOTE 2	2/1 NOTE 2	2	2
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
<b>Physical channel parameters (FDD)</b>						
Maximum number of DPCH/PDSCH codes to be simultaneously received	1	2/1 NOTE 2	2/1 NOTE 2	3	3	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH).	1200	3600/2400 NOTE2	7200/4800 NOTE2	19200	28800	57600
Support for SF 512	No	No	No	No	No	No
Support of PDSCH	No	Yes/No NOTE 1	Yes/No NOTE 1	No/Yes NOTE 1	Yes	Yes
Maximum number of simultaneous S-CCPCH radio links	1	1	1	1	1	1
<b>Physical channel parameters (TDD_3.84Mcps)</b>						
Maximum number of timeslots per frame	1	2	4	5	10	12
Maximum number of physical channels per frame	8	9	14	28	64	136
Minimum SF	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1/16 NOTE 1
Support of PDSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Maximum number of physical channels per timeslot	8	9	9	9	9	13
<b>Physical channel parameters (TDD_1.28Mcps)</b>						
Maximum number of timeslots per subframe	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>6</u>	<u>6</u>
Maximum number of physical channels per subframe	<u>8</u>	<u>12</u>	<u>18</u>	<u>43</u>	<u>77</u>	<u>77</u>
Minimum SF	<u>16</u>	<u>16</u>	<u>16</u>	<u>1/16</u> NOTE 1	<u>1/16</u> NOTE 1	<u>1</u>
Support of PDSCH	<u>Yes/no</u> NOTE 1	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
Maximum number of physical channels per timeslot	<u>8</u>	<u>11</u>	<u>14</u>	<u>14</u>	<u>14</u>	<u>14</u>
Support of 8PSK	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>Yes</u>

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

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

NOTE3: (1) For FDD and 3.84Mcps TDD (2) For 1.28Mcps TDD

## 5.2.3 Combinations of UE Radio Access Parameters for UL

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

Reference combination of UE Radio Access capability parameters in UL	32kbps class	64kbps class	128kbps class	384kbps class	768kbps class
<b>Transport channel parameters</b>					
Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant	640	3840	3840	6400	10240
Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	NA	3840	3840	6400	10240
Maximum number of simultaneous transport channels	4	8	8	8	8
Maximum number of simultaneous CCTrCH(TDD only)	1	2	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
<b>Physical channel parameters (FDD)</b>					
Maximum number of DPDCH bits transmitted per 10 ms	1200	2400	4800	9600	19200
Simultaneous reception of SCCPCH and DPCH NOTE 2	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Simultaneous reception of SCCPCH, DPCH and PDSCH NOTE 2	No	No	No	No	No
Support of PCPCH	No	No	No	No	No
<b>Physical channel parameters (TDD_3.84Mcps)</b>					
Maximum Number of timeslots per frame	1	2	3	7	9
Maximum number of physical channels per timeslot	1	1	1	1	2
Minimum SF	8	2	2	2	2
Support of PUSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes
<b>Physical channel parameters (TDD_1.28Mcps)</b>					
Maximum Number of timeslots per subframe	<u>1</u>	<u>2</u>	<u>3</u>	<u>5</u>	<u>5</u>
Maximum number of physical channels per timeslot	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>2</u>
Minimum SF	<u>4</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Support of PUSCH	<u>Yes/No NOTE 1</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
Support of 8PSK	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>

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

NOTE 2: The downlink parameters 'Simultaneous reception of SCCPCH and DPCH' and 'Simultaneous reception of SCCPCH, DPCH and PDSCH' are included in the combinations for uplink as their requirements relate to the uplink data rate. Simultaneous reception of SCCPCH and DPCH is required for the DRAC procedure that is intended for controlling uplink transmissions. In release 99, this is limited to 1 SCCPCH.



## CHANGE REQUEST

⌘ **25.843** **CR** **001** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Update of TR 25.843		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ LCRTDD-UErac	<b>Date:</b>	⌘ 19 <sup>th</sup> Feb, 2001
<b>Category:</b>	⌘ <b>B</b>	<b>Release:</b>	⌘ REL-4
<p>Use <u>one</u> of the following categories:</p> <p><b>F</b> (essential correction)  <b>A</b> (corresponds to a correction in an earlier release)  <b>B</b> (Addition of feature),  <b>C</b> (Functional modification of feature)  <b>D</b> (Editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>		<p>Use <u>one</u> of the following releases:</p> <p><b>2</b> (GSM Phase 2)  <b>R96</b> (Release 1996)  <b>R97</b> (Release 1997)  <b>R98</b> (Release 1998)  <b>R99</b> (Release 1999)  <b>REL-4</b> (Release 4)  <b>REL-5</b> (Release 5)</p>	

<b>Reason for change:</b>	⌘ Support of 8psk has been added as uplink physical channel parameter. Shared channel support for 1.28 Mcps TDD has been introduced.  TR 25.843 has been aligned with the latest changes in TS 25.306.
<b>Summary of change:</b>	⌘ Adding support for 8PSK in uplink, replacing ffs in tables, rationalising tables.
<b>Consequences if not approved:</b>	⌘

<b>Clauses affected:</b>	⌘ 5.5.4, 6.1, 6.2.1, 6.2.2, 6.2.3		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). 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 <ftp://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

## 5.5.4 Physical channel parameters in uplink

An additional parameter Support of 8PSK is needed:

Support of 8PSK

Defines whether 8PSK modulation is supported or not.

[Explanation of difference:]

The modulation scheme for FDD and 3.84 Mcps TDD is QPSK. For 1.28 Mcps TDD 8PSK modulation is additionally needed to provide high data rate services.

The parameter Maximum number of timeslots per frame for 3.84 Mcps TDD is replaced by Maximum number of timeslots per subframe for 1.28 Mcps TDD.

[Explanation of difference:]

1.28 Mcps TDD has a different frame structure than 3.84 Mcps TDD. Each 10ms radio frame consists of two 5ms subframes.

No further modifications for 1.28 Mcps TDD are required compared to 3.84 Mcps TDD.

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## 6 Possible UE radio access capability parameter settings

NOTE: This section needs to be reviewed by WG1 and WG2.

### 6.1 Value ranges

Compared to [1], table 6.1 contains additional rows for TDD 1.28Mcps physical channel parameters in uplink, TDD physical channel parameters in downlink and TDD 1.28Mcps RF parameters. Furthermore, some restructuring of the multi-mode related parameters was required. The parameter Support of UTRA FDD/TDD was replaced by three separate parameters Support of UTRA FDD, Support of UTRA TDD 3.84Mcps and Support of UTRA TDD 1.28Mcps. Therefore, the parameter Chip rate capability of the RF parameters is no longer needed.

**Table 6.1: 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	3,4,5,6,8,16,32
<b>PHY parameters</b>	<b>Transport channel parameters in downlink</b>	<del>Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant</del> 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
		<del>Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant</del> 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
		<del>Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant</del> 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
	<b>Transport channel parameters in uplink</b>	<del>Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant</del> 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
		<del>Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant</del> 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
		<del>Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant</del> 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

		<b>UE radio access capability parameter</b>	<b>Value range</b>
		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
	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)	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 R99
	FDD Physical channel parameters in uplink	Maximum number of DPDCH bits transmitted per 10 ms	600, 1200, 2400, 4800, 960, 19200, 28800, 38400, 48000, 57600
		Support of PCPCH	Yes/No
	TDD 3.84 Mcps 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
		Maximum number of physical channels per timeslot	1..16
	TDD 3.84 Mcps 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
	TDD 1.28 Mcps physical channel parameters in downlink	Maximum number of timeslots per subframe	1..6
		Maximum number of physical channels per subframe	1,2,3,..,96
		Minimum SF	16,1
		Support of PDSCH	Yes/No
		Maximum number of physical channels per timeslot	1..16
	TDD 1.28 Mcps physical channel parameters in uplink	Maximum number of timeslots per subframe	1..6
		Maximum number of physical channels per timeslot	1,2
Minimum SF		16,8,4,2,1	
Support of PUSCH		Yes/No	
Support of 8PSK		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

		UE radio access capability parameter	Value range	
		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	
		TDD 3.84 Mcps 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), <b>b+c)</b> , a+b+c)
		TDD 1.28 Mcps RF parameters	UE power class (25.102)	2,3
			Radio frequency bands (25.102)	a), b), c), a+b), a+c), <b>b+c)</b> , 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 <u>(per GSM frequency band)</u>	
		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)	
		Need for uplink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)	

## 6.2 Reference UE radio access capability combinations

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

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

**Table 6.2.1.1: UE radio access capability parameter combinations, parameters common for UL and DL**

Reference combination of UE Radio Access capability parameters common for UL and DL	32kbps class	64kbps class	128kbps class	384kbps class	768kbps class	2048kbps class
<b>PDCP parameters</b>						
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
<b>RLC parameters</b>						
Total RLC AM buffer size (kbytes)	10	10	50	50	100	500
Maximum number of AM entities	4	4	5	6	8	8
<b>Multi-mode related parameters</b>						
Support of UTRA FDD	Yes/No NOTE 1					
Support of UTRA TDD 3.84 Mcps	Yes/No NOTE 1					
Support of UTRA TDD 1.28 Mcps	Yes/No NOTE 1					
<b>Multi-RAT related parameters</b>						
Support of GSM	Yes/No NOTE 1					
Support of multi-carrier	Yes/No NOTE 1					
<b>LCS related parameters</b>						
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					
<b>RF parameters for FDD</b>						
UE power class	3 / 4 NOTE 1					
Tx/Rx frequency separation	190 MHz					
<b>RF parameters for TDD 3.84 Mcps</b>						
UE power class	2 / 3 NOTE 1					
Radio frequency bands	A / b / c / a+b / a+c / <u>b+c</u> / a+b+c NOTE 1					
<b>RF parameters for TDD 1.28 Mcps</b>						
UE power class	2 / 3 NOTE 1					
Radio frequency bands	A / b / c / a+b / a+c / <u>b+c</u> / a+b+c NOTE 1					

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

## 6.2.2 Combinations of UE Radio Access Parameters for DL

**Table 6.2.2.1: UE radio access capability parameter combinations, DL parameters**

Reference combination of UE Radio Access capability parameters in DL	32kbps class	64kbps class	128kbps class	384kbps class	768kbps class	2048kbps class
<b>Transport channel parameters</b>						
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640	3840	3840	6400	10240	20480
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	NA	3840	3840	6400	10240	20480 <sup>(1)</sup> 10240 <sup>(2)</sup> NOTE 3
Maximum number of simultaneous transport channels	8	8	8	8	8	16
Maximum number of simultaneous CCTrCH (FDD)	1	2/1 NOTE 2	2/1 NOTE 2	2/1 NOTE 2	2	2
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
<b>Physical channel parameters (FDD)</b>						
Maximum number of DPCH/PDSCH codes to be simultaneously received	1	2/1 NOTE 2	2/1 NOTE 2	3	3	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH).	1200	3600/2400 NOTE2	7200/4800 NOTE2	19200	28800	57600
Support for SF 512	No	No	No	No	No	No
Support of PDSCH	No	Yes/No NOTE 1	Yes/No NOTE 1	No/Yes NOTE 1	Yes	Yes
Maximum number of simultaneous S-CCPCH radio links	1	1	1	1	1	1
<b>Physical channel parameters (TDD 3.84 Mcps)</b>						
Maximum number of timeslots per frame	1	2	4	5	10	12
Maximum number of physical channels per frame	8	9	14	28	64	136
Minimum SF	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1/16 NOTE 1
Support of PDSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Maximum number of physical channels per timeslot	8	9	9	9	9	13
<b>Physical channel parameters (TDD 1.28 Mcps)</b>						
Maximum number of timeslots per subframe	1	2	3	4	6	6
Maximum number of physical channels per subframe	8	12	18	43	77	77
Minimum SF	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1
Support of PDSCH	Yes/No Note 1f.f.s	Yesf.f.s	Yesf.f.s	Yesf.f.s	Yesf.f.s	Yesf.f.s
Maximum number of physical channels per timeslot	8	11	14	14	14	14
Support of 8PSK	No	No	No	No	No	Yes

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

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

NOTE3: (1) For FDD and 3.84Mcps TDD (2) For 1.28Mcps TDD

NOTE4: The parameters in table 6.2.2.1 need to be verified by RAN1 in more detail.

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

**Table 6.2.3.1: UE radio access capability parameter combinations, UL parameters**

Reference combination of UE Radio Access capability parameters in UL	32kbps class	64kbps class	128kbps class	384kbps class	768kbps class
<b>Transport channel parameters</b>					
Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant	640	3840	3840	6400	10240
Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	NA	3840	3840	6400	10240
Maximum number of simultaneous transport channels	4	8	8	8	8
Maximum number of simultaneous CCTrCH(TDD only)	1	2	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
<b>Physical channel parameters (FDD)</b>					
Maximum number of DPDCH bits transmitted per 10 ms	1200	2400	4800	9600	19200
Simultaneous reception of SCCPCH and DPCH NOTE 2	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Simultaneous reception of SCCPCH, DPCH and PDSCH NOTE 2	No	No	No	No	No
Support of PCPCH	No	No	No	No	No
<b>Physical channel parameters (TDD 3.84 Mcps)</b>					
Maximum number of timeslots per frame	1	2	3	7	9
Maximum number of physical channels per timeslot	1	1	1	1	2
Minimum SF	8	2	2	2	2
Support of PUSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes
<b>Physical channel parameters (TDD 1.28 Mcps)</b>					
Maximum number of timeslots per subframe	1	2	3	5	5
Maximum number of physical channels per timeslot	1	1	1	1	2
Minimum SF	4	2	2	2	2
Support of PUSCH	Yes/No Note 1 f.f.s	Yes f.f.s	Yes f.f.s	Yes f.f.s	Yes f.f.s
Support of 8PSK	No	No	No	No	No

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



NOTE 2: The downlink parameters 'Simultaneous reception of SCCPCH and DPCH' and 'Simultaneous reception of SCCPCH, DPCH and PDSCH' are included in the combinations for uplink as their requirements relate to the uplink data rate. Simultaneous reception of SCCPCH and DPCH is required for the DRAC procedure that is intended for controlling uplink transmissions. In release 99, this is limited to 1 SCCPCH.

NOTE3: The parameters in table 6.2.3.1 need to be verified by RAN1 in more detail.