

**TSG-RAN Meeting #13  
Beijing, China, 18 - 21 September 2001**

**RP-010540**

**Title:** Agreed CRs (Release '99 and Rel-4 category A) to TS 25.306

**Source:** TSG-RAN WG2

**Agenda item:** 8.2.3

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio
R2-012030	agreed	25.306	016	1	R99	Maximum number of simultaneous transport channels	F	3.2.0	3.3.0
R2-012031	agreed	25.306	017		Rel-4	Maximum number of simultaneous transport channels	A	4.1.0	4.2.0
R2-011903	agreed	25.306	018		R99	Clarification of FDD physical channel parameters	F	3.2.0	3.3.0
R2-012016	agreed	25.306	019		Rel-4	Clarification of FDD physical channel parameters	A	4.1.0	4.2.0
R2-011972	agreed	25.306	020		R99	Support of dedicated pilots for channel estimation	F	3.2.0	3.3.0
R2-012017	agreed	25.306	021		Rel-4	Support of dedicated pilots for channel estimation	A	4.1.0	4.2.0
R2-012117	agreed	25.306	022	1	R99	Correction of UE capabilities regarding Rx-Tx time difference type 2 measurements	F	3.2.0	3.3.0
R2-012153	agreed	25.306	023		Rel-4	Correction of UE capabilities regarding Rx-Tx time difference type 2 measurements	A	4.1.0	4.2.0

## CHANGE REQUEST

⌘ **25.306 CR 016** ⌘ ev **r1** ⌘ Current version: **3.2.0** ⌘

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>	⌘ Maximum number of simultaneous transport channels		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 01-07-03
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)	<b>R96</b> (Release 1996)	<b>2</b> (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)	<b>R97</b> (Release 1997)	
	<b>B</b> (addition of feature),	<b>R98</b> (Release 1998)	
	<b>C</b> (functional modification of feature)	<b>R99</b> (Release 1999)	
	<b>D</b> (editorial modification)	<b>REL-4</b> (Release 4)	
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	<b>REL-5</b> (Release 5)	

<b>Reason for change:</b>	⌘ Simultaneous reception of BCH (neighbour cell) is contained in 25.302, but figures in table 5.2.2.1 refer to the time, when this transport channel combination was not yet mentioned in 25.302. <a href="#">The CCTrCH definition was changed for RACH, CPCH and BCH in order to align with RAN1 terminology.</a>  New definition of CCTrCH concerning RACH also affects UL figures for TDD.
<b>Summary of change:</b>	⌘ In table 5.2.2.1 the Note 3 is corrected in a way that <a href="#">only both BCH of the current cell and the</a> BCH of the neighbour cells are not contained in the number of the table. <a href="#">The same A Note 4 is also</a> added for the row "Maximum number of simultaneous transport channels" so that it is clarified that the given number does not contain the BCH of the neighbour cells. <a href="#">(This table entry is not affected by the change of the CCTrCH definition, but only by the introduction of the simultaneous reception of BCH (neighbour cell) and one or more DCHs and zero or more DSCHs in 25.302 at RAN2#18, and this change was forgotten in previous corrections.</a>  <a href="#">A note is added in Table 5.2.3.1 for maximum number of simultaneous CCTrCHs (TDD only), that the RACH CCTrCH is not contained in the stated number of CCTrCHs.</a>  <u>Isolated impact analysis:</u> The proposed changes align the numbers in the tables in such a way that they fit with the new definition of CCTrCH for BCH, RACH, and CPCH, so that the same is expressed as before the new definition was applied. Hence the changes are backward compatible.
<b>Consequences if not approved:</b>	⌘ Unclear specification

<b>Clauses affected:</b>	⌘ <a href="#">5.2.2</a> , <a href="#">5.2.3</a>		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘ <input type="checkbox"/> 25.306 v4.1.0, CR 017	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		

**Other comments:** ☹

**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://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 5.2.2 Combinations of UE Radio Access Parameters for DL

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

Reference combination of UE Radio Access capability parameters in DL	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
Maximum number of simultaneous transport channels	8 <a href="#">NOTE 34</a>	8 <a href="#">NOTE 34</a>	8 <a href="#">NOTE 34</a>	8 <a href="#">NOTE 34</a>	8 <a href="#">NOTE 34</a>	16 <a href="#">NOTE 34</a>
Maximum number of simultaneous CCTrCH (FDD)	1 <a href="#">NOTE 3</a>	2/1 <a href="#">NOTE 2</a> <a href="#">NOTE 3</a>	2/1 <a href="#">NOTE 2</a> <a href="#">NOTE 3</a>	2/1 <a href="#">NOTE 2</a> <a href="#">NOTE 3</a>	2 <a href="#">NOTE 3</a>	2 <a href="#">NOTE 3</a>
Maximum number of simultaneous CCTrCH (TDD)	2 <a href="#">NOTE 3</a>	3 <a href="#">NOTE 3</a>	3 <a href="#">NOTE 3</a>	3 <a href="#">NOTE 3</a>	4 <a href="#">NOTE 3</a>	4 <a href="#">NOTE 3</a>
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 <a href="#">NOTE 2</a>	2/1 <a href="#">NOTE 2</a>	3	3	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH).	1200	3600/2400 <a href="#">NOTE 2</a>	7200/4800 <a href="#">NOTE 2</a>	19200	28800	57600
Support for SF 512	No	No	No	No	No	No
Support of PDSCH	No	Yes/No <a href="#">NOTE 1</a>	Yes/No <a href="#">NOTE 1</a>	No/Yes <a href="#">NOTE 1</a>	Yes	Yes
Maximum number of simultaneous S-CCPCH radio links	1	1	1	1	1	1
<b>Physical channel parameters (TDD)</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 <a href="#">NOTE 1</a>	1/16 <a href="#">NOTE 1</a>	1/16 <a href="#">NOTE 1</a>
Support of PDSCH	Yes/No <a href="#">NOTE 1</a>	Yes	Yes	Yes	Yes	Yes
Maximum number of physical channels per timeslot	8	9	9	9	9	13

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

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

NOTE 3: The given number does not contain the BCH [CCTrCH of the current cell nor of the neighbour cells](#).

[NOTE 4: The given number does not contain the BCH of the neighbour cell.](#)

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

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

Reference combination of UE Radio Access capability parameters in UL	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 <a href="#">NOTE 3</a>	2 <a href="#">NOTE 3</a>	2 <a href="#">NOTE 3</a>	2 <a href="#">NOTE 3</a>	2 <a href="#">NOTE 3</a>
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)</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

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

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

[NOTE 3: This number does not contain the RACH CCTrCH.](#)

## CHANGE REQUEST

⌘ **25.306 CR 017** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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>	⌘ Maximum number of simultaneous transport channels		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 01-07-03
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)	<b>2</b> (GSM Phase 2)	
	<b>A</b> (corresponds to a correction in an earlier release)	<b>R96</b> (Release 1996)	
	<b>B</b> (addition of feature),	<b>R97</b> (Release 1997)	
	<b>C</b> (functional modification of feature)	<b>R98</b> (Release 1998)	
	<b>D</b> (editorial modification)	<b>R99</b> (Release 1999)	
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	<b>REL-4</b> (Release 4)	
		<b>REL-5</b> (Release 5)	

<b>Reason for change:</b>	⌘ Simultaneous reception of BCH (neighbour cell) is contained in 25.302, but figures in table 5.2.2.1 refer to the time, when this transport channel combination was not yet mentioned in 25.302. <a href="#">The CCTrCH definition was changed for RACH, CPCH and BCH in order to align with RAN1 terminology.</a>  New definition of CCTrCH concerning RACH also affects UL figures for TDD.
<b>Summary of change:</b>	⌘ In table 5.2.2.1 the Note 3 is corrected in a way that <a href="#">only both BCH of the current cell and the</a> BCH of the neighbour cells are not contained in the number of the table. <a href="#">The same A Note 4 is also</a> added for the row "Maximum number of simultaneous transport channels" so that it is clarified that the given number does not contain the BCH of the neighbour cells. <a href="#">(This table entry is not affected by the change of the CCTrCH definition, but only by the introduction of the simultaneous reception of BCH (neighbour cell) and one or more DCHs and zero or more DSCHs in 25.302 at RAN2#18, and this change was forgotten in previous corrections.</a>  <a href="#">A note is added in Table 5.2.3.1 for maximum number of simultaneous CCTrCHs (TDD only), that the RACH CCTrCH is not contained in the stated number of CCTrCHs.</a>  <u>Isolated impact analysis:</u> The proposed changes align the numbers in the tables in such a way that they fit with the new definition of CCTrCH for BCH, RACH, and CPCH, so that the same is expressed as before the new definition was applied. Hence the changes are backward compatible.
<b>Consequences if not approved:</b>	⌘ Unclear specification

<b>Clauses affected:</b>	⌘ <a href="#">5.2.2</a> , <a href="#">5.2.3</a>		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘	25.306 v3.2.0, CR 016r1
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		

**Other comments:** ☹

**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://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 5.2.2 Combinations of UE Radio Access Parameters for DL

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

Reference combination of UE Radio Access capability parameters in DL	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
Maximum number of simultaneous transport channels	8 <a href="#">NOTE 34</a>	8 <a href="#">NOTE 34</a>	8 <a href="#">NOTE 34</a>	8 <a href="#">NOTE 34</a>	8 <a href="#">NOTE 34</a>	16 <a href="#">NOTE 34</a>
Maximum number of simultaneous CCTrCH (FDD)	1 <a href="#">NOTE 3</a>	2/1 <a href="#">NOTE 2</a> <a href="#">NOTE 3</a>	2/1 <a href="#">NOTE 2</a> <a href="#">NOTE 3</a>	2/1 <a href="#">NOTE 2</a> <a href="#">NOTE 3</a>	2 <a href="#">NOTE 3</a>	2 <a href="#">NOTE 3</a>
Maximum number of simultaneous CCTrCH (TDD)	2 <a href="#">NOTE 3</a>	3 <a href="#">NOTE 3</a>	3 <a href="#">NOTE 3</a>	3 <a href="#">NOTE 3</a>	4 <a href="#">NOTE 3</a>	4 <a href="#">NOTE 3</a>
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 <a href="#">NOTE 2</a>	2/1 <a href="#">NOTE 2</a>	3	3	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH).	1200	3600/2400 <a href="#">NOTE 2</a>	7200/4800 <a href="#">NOTE 2</a>	19200	28800	57600
Support for SF 512	No	No	No	No	No	No
Support of PDSCH	No	Yes/No <a href="#">NOTE 1</a>	Yes/No <a href="#">NOTE 1</a>	No/Yes <a href="#">NOTE 1</a>	Yes	Yes
Maximum number of simultaneous S-CCPCH radio links	1	1	1	1	1	1
<b>Physical channel parameters (TDD)</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 <a href="#">NOTE 1</a>	1/16 <a href="#">NOTE 1</a>	1/16 <a href="#">NOTE 1</a>
Support of PDSCH	Yes/No <a href="#">NOTE 1</a>	Yes	Yes	Yes	Yes	Yes
Maximum number of physical channels per timeslot	8	9	9	9	9	13

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

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

NOTE 3: The given number does not contain the BCH [CCTrCH of the current cell nor of the neighbour cells](#).

[NOTE 4: The given number does not contain the BCH of the neighbour cell.](#)

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

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

Reference combination of UE Radio Access capability parameters in UL	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 <a href="#">NOTE 3</a>	2 <a href="#">NOTE 3</a>	2 <a href="#">NOTE 3</a>	2 <a href="#">NOTE 3</a>	2 <a href="#">NOTE 3</a>
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)</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

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

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

[NOTE 3: This number does not contain the RACH CCTrCH.](#)

## CHANGE REQUEST

⌘ **25.306 CR 018** ⌘ ev **-** ⌘ Current version: **3.2.0** ⌘

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>	⌘ Clarification of FDD physical channel parameters		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 06/08/2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	<i>Use <u>one</u> of the following categories:</i> <b>F</b> (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) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		<i>Use <u>one</u> of the following releases:</i> <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)

<b>Reason for change:</b>	⌘ During discussion of r1-011160 during RAN2#22, it was highlighted that the definitions of the FDD downlink physical channel parameter 'Maximum number of physical channel bits received in any 10ms interval (DPCH, PDSCH, S-CCPCH)' and the FDD uplink physical channel parameter 'Maximum number of DPCH bits per 10ms' are unclear with regard to the compressed mode by spreading factor reduction.
<b>Summary of change:</b>	⌘ The definition of the parameters is reworded to clarify the meaning. A note is added to indicate that compressed mode by spreading factor reduction is not applicable at spreading factor 4.
	<b>Isolated impact analysis:</b>  Corrected functionality: UE capabilities for FDD physical channels and support for compressed mode by spreading factor reduction.  Correction to a function where the specification was not sufficiently explicit. Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.
<b>Consequences if not approved:</b>	⌘ The definition of these parameters will remain insufficiently explicit. This could lead to UE and network implementations that assume different interpretations of the parameter.

<b>Clauses affected:</b>	⌘ 4.5.3, 4.5.4	
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications ⌘ <input type="checkbox"/> O&M Specifications	⌘ 25.306 v4.1.0, CR 019

**Other comments:** ☹

**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://ftp.3gpp.org/specs/> 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. ☹

### 4.5.3 FDD Physical channel parameters in downlink

#### Maximum number of DPCH/PDSCH codes to be simultaneously received

Defines the number of codes the UE is capable of receiving in parallel. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability. The capability does not include codes used for S-CCPCH.

#### Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)

Defines the number of physical channel bits the UE is capable of receiving. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability.

The number of DPCH channel bits indicates the capability of the UE when operating in non-compressed mode for normal, un-compressed mode.

The parameter also indicates the capability of the UE to support compressed mode by spreading factor reduction as follows:—

- For parameter values up to and including 9600 bits:—
  - the UE shall also be able to support compressed mode by SF spreading factor reduction when operating in normal mode, at any value up to the reported capability.—
- For parameter values greater than 9600 bits:—
  - the UE shall be able to support compressed mode by spreading factor reduction when operating, in normal mode, at any value up to the greater of:—
    - half the reported capability; or
    - 9600bits, whichever is greater.

NOTE: Compressed mode by spreading factor reduction is not applicable when operating at spreading factor 4.

#### Support for SF 512

Defines whether the UE supports spreading factor 512 in downlink or not.

#### Support of PDSCH

Defines whether the UE supports PDSCH or not.

#### Simultaneous reception of SCCPCH and DPCH

Defines whether the UE supports simultaneous reception of SCCPCH and DPCH or not.

NOTE: Simultaneous reception of SCCPCH and DPCH, i.e. simultaneous reception of FACH and DCH is required for e.g. DRAC procedure

#### Simultaneous reception of SCCPCH, DPCH and PDSCH

Defines whether the UE supports simultaneous reception of SCCPCH, DPCH and PDSCH or not. The PDSCH part of this capability is only relevant if the UE supports PDSCH, as covered by the capability "Support of PDSCH".

NOTE: Simultaneous reception of SCCPCH, DPCH and PDSCH, i.e. simultaneous reception of FACH, DCH and DSCH is required for e.g. simultaneous use of DSCH and the DRAC procedure.

#### Maximum number of simultaneous S-CCPCH radio links

Defines the maximum number of radio links on which the UE is capable of receiving S-CCPCH simultaneously.

## 4.5.4 FDD physical channel parameters in uplink

Maximum number of DPDCH bits per 10 ms

Defines the maximum number of the DPDCH bits the UE is capable to transmit per 10 ms.

The number of DPDCH channel bits indicates the capability of the UE when operating in non-compressed mode for normal, un-compressed mode. The UE shall also be able to support compressed mode by SF-spreading factor reduction when operating at this value.

**NOTE:** This capability combines the 'Max number of DPDCH' and 'Minimum SF' capabilities into one capability. Note that no flexibility is lost due to this, as multiple DPDCH is only used for SF=4, i.e. when the number of DPDCH bits exceed a certain value.

**NOTE:** Compressed mode by spreading factor reduction is not applicable when operating at spreading factor 4.

Support of PCPCH

Defines whether the UE supports PCPCH or not.

**NOTE:** When CPCH is supported, then simultaneous DPCCH & SCCPCH reception is needed.

## CHANGE REQUEST

⌘ **25.306 CR 019** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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>	⌘ Clarification of FDD physical channel parameters		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 06/08/2001
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
	<p>Use <u>one</u> of the following categories:</p> <p><b>F</b> (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 <a href="#">TR 21.900</a>.</p>		<p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>REL-4 (Release 4)</p> <p>REL-5 (Release 5)</p>

<b>Reason for change:</b>	⌘ During discussion of r1-011160 during RAN2#22, it was highlighted that the definitions of the FDD downlink physical channel parameter 'Maximum number of physical channel bits received in any 10ms interval (DPCH, PDSCH, S-CCPCH)' and the FDD uplink physical channel parameter 'Maximum number of DPCH bits per 10ms' are unclear with regard to the compressed mode by spreading factor reduction.
<b>Summary of change:</b>	⌘ The definition of the parameters is reworded to clarify the meaning. A note is added to indicate that compressed mode by spreading factor reduction is not applicable at spreading factor 4.
	<p><b>Isolated impact analysis:</b></p> <p>Corrected functionality: UE capabilities for FDD physical channels and support for compressed mode by spreading factor reduction.</p> <p>Correction to a function where the specification was not sufficiently explicit. Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.</p>
<b>Consequences if not approved:</b>	⌘ The definition of these parameters will remain insufficiently explicit. This could lead to UE and network implementations that assume different interpretations of the parameter.

<b>Clauses affected:</b>	⌘ 4.5.3, 4.5.4		
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	25.306 v3.2.0, CR 018

**Other comments:** ☹

**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://ftp.3gpp.org/specs/> 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. ☹

### 4.5.3 FDD Physical channel parameters in downlink

#### Maximum number of DPCH/PDSCH codes to be simultaneously received

Defines the number of codes the UE is capable of receiving in parallel. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability. The capability does not include codes used for S-CCPCH.

#### Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)

Defines the number of physical channel bits the UE is capable of receiving. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability.

The number of DPCH channel bits indicates the capability of the UE when operating in non-compressed mode for normal, un-compressed mode.

The parameter also indicates the capability of the UE to support compressed mode by spreading factor reduction as follows:—

- For parameter values up to and including 9600 bits:—
  - the UE shall also be able to support compressed mode by SF spreading factor reduction when operating in normal mode, at any value up to the reported capability.—
- For parameter values greater than 9600 bits:—
  - the UE shall be able to support compressed mode by spreading factor reduction when operating, in normal mode, at any value up to the greater of:—
    - half the reported capability; or
    - 9600bits, whichever is greater.

NOTE: Compressed mode by spreading factor reduction is not applicable when operating at spreading factor 4.

#### Support for SF 512

Defines whether the UE supports spreading factor 512 in downlink or not.

#### Support of PDSCH

Defines whether the UE supports PDSCH or not.

#### Simultaneous reception of SCCPCH and DPCH

Defines whether the UE supports simultaneous reception of SCCPCH and DPCH or not.

NOTE: Simultaneous reception of SCCPCH and DPCH, i.e. simultaneous reception of FACH and DCH is required for e.g. DRAC procedure

#### Simultaneous reception of SCCPCH, DPCH and PDSCH

Defines whether the UE supports simultaneous reception of SCCPCH, DPCH and PDSCH or not. The PDSCH part of this capability is only relevant if the UE supports PDSCH, as covered by the capability "Support of PDSCH".

NOTE: Simultaneous reception of SCCPCH, DPCH and PDSCH, i.e. simultaneous reception of FACH, DCH and DSCH is required for e.g. simultaneous use of DSCH and the DRAC procedure.

#### Maximum number of simultaneous S-CCPCH radio links

Defines the maximum number of radio links on which the UE is capable of receiving S-CCPCH simultaneously.

## 4.5.4 FDD physical channel parameters in uplink

Maximum number of DPDCH bits per 10 ms

Defines the maximum number of the DPDCH bits the UE is capable to transmit per 10 ms.

The number of DPDCH channel bits indicates the capability of the UE when operating in non-compressed mode for normal, un-compressed mode. The UE shall also be able to support compressed mode by SF-spreading factor reduction when operating at this value.

**NOTE:** This capability combines the 'Max number of DPDCH' and 'Minimum SF' capabilities into one capability. Note that no flexibility is lost due to this, as multiple DPDCH is only used for SF=4, i.e. when the number of DPDCH bits exceed a certain value.

**NOTE:** Compressed mode by spreading factor reduction is not applicable when operating at spreading factor 4.

Support of PCPCH

Defines whether the UE supports PCPCH or not.

**NOTE:** When CPCH is supported, then simultaneous DPCCH & SCCPCH reception is needed.

## CHANGE REQUEST

⌘ **25.306 CR 020** ⌘ ev **-** ⌘ Current version: **3.2.0** ⌘

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>	⌘ Support of dedicated pilots for channel estimation		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 21.08.2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	<i>Use one of the following categories:</i> <b>F</b> (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) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> <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)

<b>Reason for change:</b>	⌘ The correction is fulfilling the decision agreed in TSG-RAN #12 [1] and joint R2/R4 meeting agreements in Berlin July 2001.
<b>Summary of change:</b>	⌘ There has been added a new physical channel capability parameter "Support of dedicated pilots for channel estimation".  Isolated impact analysis:  The corrected functionality is channel estimation with dedicated pilots. This correction allows possibility to implement it in R'99 or Rel-4 UEs, but it would not affect implementations not supporting it.
<b>Consequences if not approved:</b>	⌘ The corrected functionality would not be complete.

<b>Clauses affected:</b>	⌘ 4.5.3, 5.1, 5.2.2		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘ 25.306 v4.1.0, CR 021	
<b>Other comments:</b>	⌘ [1] RP-010497, Draft Report of the 12th TSG-RAN meeting		

### 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://ftp.3gpp.org/specs/>. 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.

### 4.5.3 FDD Physical channel parameters in downlink

#### Maximum number of DPCH/PDSCH codes to be simultaneously received

Defines the number of codes the UE is capable of receiving in parallel. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability. The capability does not include codes used for S-CCPCH.

#### Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)

Defines the number of physical channel bits the UE is capable of receiving. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability.

The number of DPCH channel bits indicates the capability for normal, un-compressed mode.

The parameter also indicates the capability of the UE to support compressed mode by spreading factor reduction. For parameter values up to and including 9600 bits, the UE shall also be able to support compressed mode by SF reduction when operating in normal mode, at any value up to the reported capability. For parameter values greater than 9600 bits, the UE shall be able to support compressed mode by spreading factor reduction when operating, in normal mode, at any value up to half the reported capability or 9600bits, whichever is greater.

#### Support for SF 512

Defines whether the UE supports spreading factor 512 in downlink or not.

#### Support of PDSCH

Defines whether the UE supports PDSCH or not.

#### Simultaneous reception of SCCPCH and DPCH

Defines whether the UE supports simultaneous reception of SCCPCH and DPCH or not.

NOTE: Simultaneous reception of SCCPCH and DPCH, i.e. simultaneous reception of FACH and DCH is required for e.g. DRAC procedure

#### Simultaneous reception of SCCPCH, DPCH and PDSCH

Defines whether the UE supports simultaneous reception of SCCPCH, DPCH and PDSCH or not. The PDSCH part of this capability is only relevant if the UE supports PDSCH, as covered by the capability "Support of PDSCH".

NOTE: Simultaneous reception of SCCPCH, DPCH and PDSCH, i.e. simultaneous reception of FACH, DCH and DSCH is required for e.g. simultaneous use of DSCH and the DRAC procedure.

#### Maximum number of simultaneous S-CCPCH radio links

Defines the maximum number of radio links on which the UE is capable of receiving S-CCPCH simultaneously.

#### Support of dedicated pilots for channel estimation

Defines whether the UE supports dedicated pilots for channel estimation or not.

## 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
		Support for loss-less SRNS relocation	Yes/No
		Maximum header compression context space	512, 1024, 2048, 4096, 8192 bytes
RLC parameters		Total RLC AM buffer size	2,10,50,100,150,500,1000 kBytes
		Maximum number of AM entities	3,4,5,6,8,16,30
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
		Simultaneous reception of SCCPCH and DPCH	Yes/No
		Simultaneous reception of SCCPCH, DPCH and PDSCH	Yes/No

		UE radio access capability parameter	Value range
		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 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 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 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
Tx/Rx frequency separation			190 MHz 174.8-205.2 MHz 134.8-245.2 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 parameters		Support of UTRA FDD/TDD	FDD, TDD, FDD+TDD
Multi-RAT related parameters		Support of GSM	Yes/No (per GSM frequency band)
		Support of multi-carrier	Yes/No
UE positioning 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)
General capabilities		ICS version	R99

## 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
Maximum number of simultaneous transport channels	8	8	8	8	8	16
Maximum number of simultaneous CCTrCH (FDD)	1 NOTE 3	2/1 NOTE 2 NOTE 3	2/1 NOTE 2 NOTE 3	2/1 NOTE 2 NOTE 3	2 NOTE 3	2 NOTE 3
Maximum number of simultaneous CCTrCH (TDD)	2 NOTE 3	3 NOTE 3	3 NOTE 3	3 NOTE 3	4 NOTE 3	4 NOTE 3
Maximum total number of transport blocks received within TTIs that end at the same time	8	8	16	32	64	96
Maximum number of TFC 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
Support of dedicated pilots for channel estimation	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
<b>Physical channel parameters (TDD)</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

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

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

NOTE 3: The given number does not contain the BCH.

## CHANGE REQUEST

⌘ **25.306 CR 021** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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>	⌘ Support of dedicated pilots for channel estimation		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 28.08.2001
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		REL-4 (Release 4)
			REL-5 (Release 5)

<b>Reason for change:</b>	⌘ The correction is fulfilling the decision agreed in TSG-RAN #12 [1] and joint R2/R4 meeting agreements in Berlin July 2001.
<b>Summary of change:</b>	⌘ There has been added a new physical channel capability parameter "Support of dedicated pilots for channel estimation".
<b>Consequences if not approved:</b>	⌘ The corrected functionality would not be complete.

<b>Clauses affected:</b>	⌘ 4.5.3, 5.1, 5.2.2		
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘ 25.306 v3.2.0, CR 020	
<b>Other comments:</b>	⌘ [1] RP-010497, Draft Report of the 12th TSG-RAN meeting		

### 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://ftp.3gpp.org/specs/>. 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.

### 4.5.3 FDD Physical channel parameters in downlink

#### Maximum number of DPCH/PDSCH codes to be simultaneously received

Defines the number of codes the UE is capable of receiving in parallel. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability. The capability does not include codes used for S-CCPCH.

#### Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)

Defines the number of physical channel bits the UE is capable of receiving. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability.

The number of DPCH channel bits indicates the capability for normal, un-compressed mode.

The parameter also indicates the capability of the UE to support compressed mode by spreading factor reduction. For parameter values up to and including 9600 bits, the UE shall also be able to support compressed mode by SF reduction when operating in normal mode, at any value up to the reported capability. For parameter values greater than 9600 bits, the UE shall be able to support compressed mode by spreading factor reduction when operating, in normal mode, at any value up to half the reported capability or 9600bits, whichever is greater.

#### Support for SF 512

Defines whether the UE supports spreading factor 512 in downlink or not.

#### Support of PDSCH

Defines whether the UE supports PDSCH or not.

#### Simultaneous reception of SCCPCH and DPCH

Defines whether the UE supports simultaneous reception of SCCPCH and DPCH or not.

NOTE: Simultaneous reception of SCCPCH and DPCH, i.e. simultaneous reception of FACH and DCH is required for e.g. DRAC procedure

#### Simultaneous reception of SCCPCH, DPCH and PDSCH

Defines whether the UE supports simultaneous reception of SCCPCH, DPCH and PDSCH or not. The PDSCH part of this capability is only relevant if the UE supports PDSCH, as covered by the capability "Support of PDSCH".

NOTE: Simultaneous reception of SCCPCH, DPCH and PDSCH, i.e. simultaneous reception of FACH, DCH and DSCH is required for e.g. simultaneous use of DSCH and the DRAC procedure.

#### Maximum number of simultaneous S-CCPCH radio links

Defines the maximum number of radio links on which the UE is capable of receiving S-CCPCH simultaneously.

#### Support of dedicated pilots for channel estimation

Defines whether the UE supports dedicated pilots for channel estimation or not.

## 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
		Support for RFC 3095	Yes/No
		Support for loss-less SRNS relocation	Yes/No
		Maximum header compression context space	512, 1024, 2048, 4096, 8192 bytes
RLC parameters		Total RLC AM buffer size	2,10,50,100,150,500,1000 kBytes
		Maximum number of AM entities	3,4,5,6,8,16,30
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
	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
		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

		UE radio access capability parameter	Value range
		Support for RFC 2507	Yes/No
		Maximum number of simultaneous S-CCPCH radio links	1 NOTE: Only the value 1 is part of this release of the specification
		<u>Support of dedicated pilots for channel estimation</u>	<u>Yes/No</u>
	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
		Support 8PSK	Yes/No
	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 8PSK	Yes/No
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 174.8-205.2 MHz 134.8-245.2 MHz
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 1.28Mcps RF parameters	UE power class	2,3
		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 3.84Mcps	Yes/No
		Support of UTRA TDD 1.28Mcps	Yes/No
Multi-RAT related parameters		Support of GSM	Yes/No (per GSM frequency band)
		Support of multi-carrier	Yes/No
UE positioning related parameters		Standalone location method(s) supported	Yes/No
		Network assisted GPS support	Network based / UE based / Both/ None

	<b>UE radio access capability parameter</b>	<b>Value range</b>
	Support for RFC 2507	Yes/No
	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)
General capabilities	ICS version	R99

## 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 4
Maximum number of simultaneous transport channels	8	8	8	8	8	16
Maximum number of simultaneous CCTrCH (FDD)	1 NOTE 3	2/1 NOTE 2 NOTE 3	2/1 NOTE 2 NOTE 3	2 NOTE 3	2 NOTE 3	2 NOTE 3
Maximum number of simultaneous CCTrCH (TDD)	2 NOTE 3	3 NOTE 3	3 NOTE 3	3 NOTE 3	4 NOTE 3	4 NOTE 3
Maximum total number of transport blocks received within TTIs that end at the same time	8	8	16	32	64	96
Maximum number of TFC 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 for DPCH NOTE 5	No	No	No	No	No	No
Support of PDSCH	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes	Yes	Yes
Maximum number of simultaneous S-CCPCH radio links	1	1	1	1	1	1
<u>Support of dedicated pilots for channel estimation</u>	<u>Yes/No NOTE 1</u>	<u>Yes/No NOTE 1</u>	<u>Yes/No NOTE 1</u>	<u>Yes/No NOTE 1</u>	<u>Yes/No NOTE 1</u>	<u>Yes/No NOTE 1</u>
<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	1	2	3	4	6	6
Maximum number of physical channels per subframe	8	12	18	43	77	77
Minimum SF	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1
Support of PDSCH	Yes/no NOTE 1	Yes	Yes	Yes	Yes	Yes

Reference combination of UE Radio Access capability parameters in DL	32kbps class	64kbps class	128kbps class	384kbps class	768kbps class	2048kbps class
Maximum number of physical channels per timeslot	8	11	14	14	14	14
Support of 8PSK	No	No	No	No	No	Yes

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

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

NOTE 3: The given number does not contain the BCH.

NOTE 4: (1) For FDD and 3.84Mcps TDD (2) For 1.28Mcps TDD.

NOTE 5: This UE capability does not relate to the support of CPCH in the uplink for which SF 512 is needed

## CHANGE REQUEST

⌘ **25.306 CR 022** ⌘ ev **r1** ⌘ Current version: **3.2.0** ⌘

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>	⌘ Correction of UE capabilities regarding Rx-Tx time difference type 2 measurement		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 25.06.01
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)	<b>R96</b> (Release 1996)	<b>2</b> (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)	<b>R97</b> (Release 1997)	
	<b>B</b> (addition of feature),	<b>R98</b> (Release 1998)	
	<b>C</b> (functional modification of feature)	<b>R99</b> (Release 1999)	
	<b>D</b> (editorial modification)	<b>REL-4</b> (Release 4)	
	Detailed explanations of the above categories can be found in 3GPP <a href="http://www.3gpp.org/Specs/CRs.htm">TR 21.900</a> .	<b>REL-5</b> (Release 5)	

<b>Reason for change:</b>	⌘ During RAN WG2/WG4 joint meeting in July, it was decided to keep the Rx-Tx time difference type 2 measurement optional according to RAN WG4s understanding.  Therefore, in order to enable a UE to indicate its capability to perform this measurement, an additional IE is added to the UE positioning capability.  Isolated impact:  Only UE positioning is impacted. The additional IE is added in an extension container, so that implementations of earlier releases are not impacted.		
<b>Summary of change:</b>	⌘ Capability to perform Rx-Tx time difference type2 measurement is added to the UE Positioning related capabilities.		
<b>Consequences if not approved:</b>	⌘ UE positioning feature may be implemented in different ways, resulting in unpredictable UE behaviour		

<b>Clauses affected:</b>	⌘ <a href="#">4.8</a> ; <a href="#">5.1</a> ; <a href="#">5.2.1</a>		
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	25.306 v4.1.0, CR 023
<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://ftp.3gpp.org/specs/>. 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.](#)

## 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		Support for RFC 2507	Yes/No
		Support for loss-less SRNS relocation	Yes/No
		Maximum header compression context space	512, 1024, 2048, 4096, 8192 bytes
RLC parameters		Total RLC AM buffer size	2,10,50,100,150,500,1000 kBytes
		Maximum number of AM entities	3,4,5,6,8,16,30
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
	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
		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 this release of the specification
	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 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 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	3, 4 NOTE: Only power classes 3 and 4 are part of this release of the specification
		Tx/Rx frequency separation	190 MHz 174.8-205.2 MHz 134.8-245.2 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 parameters		Support of UTRA FDD/TDD	FDD, TDD, FDD+TDD
Multi-RAT related parameters		Support of GSM	Yes/No (per GSM frequency band)
		Support of multi-carrier	Yes/No
UE positioning 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
		<a href="#">Support for Rx-Tx time difference type 2 measurement</a>	<a href="#">Yes/No</a>
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		ICS version	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. 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:** 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**

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>						
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					
<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	FDD / FDD+TDD / TDD NOTE 1					
<b>Multi-RAT related parameters</b>						
Support of GSM	Yes/No NOTE 1					
Support of multi-carrier	Yes/No NOTE 1					
<b>UE positioning 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					
<a href="#">Support for Rx-Tx time difference type 2 measurement</a>	<a href="#">Yes/No</a> <a href="#">NOTE 1</a>					
<b>RF parameters for FDD</b>						
UE power class	3 / 4 NOTE 1					
Tx/Rx frequency separation	190 MHz					
<b>RF parameters for TDD</b>						
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.

## CHANGE REQUEST

⌘ **25.306 CR 023** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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

**Title:** ⌘ Correction of UE capabilities regarding Rx-Tx time difference type 2 measurement

**Source:** ⌘ TSG-RAN WG2

**Work item code:** ⌘ TEI

**Date:** ⌘ 27.08.01

**Category:** ⌘ **A**

**Release:** ⌘ REL-4

Use one of the following categories:

Use one of the following releases:

**F** (correction)

**2** (GSM Phase 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)

Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/Specs/CRs.htm).

**REL-4** (Release 4)

**REL-5** (Release 5)

**Reason for change:** ⌘ During RAN WG2/WG4 joint meeting in July, it was decided to keep the Rx-Tx time difference type 2 measurement optional according to RAN WG4s understanding.

Therefore, in order to enable a UE to indicate its capability to perform this measurement, an additional IE is added to the UE positioning capability.

Isolated impact:

Only UE positioning is impacted. The additional IE is added in an extension container, so that implementations of earlier releases are not impacted.

**Summary of change:** ⌘ Capability to perform Rx-Tx time difference type2 measurement is added to the UE Positioning related capabilities.

**Consequences if not approved:** ⌘ UE positioning feature may be implemented in different ways, resulting in unpredictable UE behaviour

**Clauses affected:** ⌘ [4.8](#); [5.1](#); [5.2.1](#)

**Other specs affected:** ⌘  Other core specifications ⌘ 25.306 v3.2.0, CR 022r1  
 Test specifications  
 O&M Specifications

**Other comments:** ⌘

### 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://ftp.3gpp.org/specs/>. 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.](#)

## 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		Support for RFC 2507	Yes/No
		Support for loss-less SRNS relocation	Yes/No
		Maximum header compression context space	512, 1024, 2048, 4096, 8192 bytes
RLC parameters		Total RLC AM buffer size	2,10,50,100,150,500,1000 kBytes
		Maximum number of AM entities	3,4,5,6,8,16,30
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
	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
		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 this release of the specification
	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 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 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	3, 4 NOTE: Only power classes 3 and 4 are part of this release of the specification
		Tx/Rx frequency separation	190 MHz 174.8-205.2 MHz 134.8-245.2 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 parameters		Support of UTRA FDD/TDD	FDD, TDD, FDD+TDD
Multi-RAT related parameters		Support of GSM	Yes/No (per GSM frequency band)
		Support of multi-carrier	Yes/No
UE positioning 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
		<a href="#">Support for Rx-Tx time difference type 2 measurement</a>	<a href="#">Yes/No</a>
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		ICS version	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. 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:** 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**

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>						
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					
<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	FDD / FDD+TDD / TDD NOTE 1					
<b>Multi-RAT related parameters</b>						
Support of GSM	Yes/No NOTE 1					
Support of multi-carrier	Yes/No NOTE 1					
<b>UE positioning 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					
<a href="#">Support for Rx-Tx time difference type 2 measurement</a>	<a href="#">Yes/No</a> <a href="#">NOTE 1</a>					
<b>RF parameters for FDD</b>						
UE power class	3 / 4 NOTE 1					
Tx/Rx frequency separation	190 MHz					
<b>RF parameters for TDD</b>						
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.