

TSG-RAN Working Group 1 meeting #11  
 San Diego, CA, USA  
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**TSGR1#11(00)0349**

**To:** RAN WG2  
**Source:** RAN WG1  
**Title:** Liaison on Proposed updates to TR 25.926

WG1 has made further considerations on the proposed UE capabilities defined in TR 25.926. WG1 would like to propose the following updates to the UE capabilities:

### Transport channel parameters in the downlink.

The current capability “*Maximum sum of number of bits of all transport blocks received in TTIs that end at the same time*” does not take into account that downlink common and dedicated transport channels may not be frame aligned. Therefore it is proposed that this capability should be changed to “*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*”

It is also proposed that this parameter is extended with two related capabilities covering only convolutional coded and turbo coded transport channels respectively, i.e. “*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*” and “*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*”

A UE can only be required to receive transport-channel combinations that are within the range of all three capabilities above. The possible values for these three capabilities is proposed to be the same as the possible values for the current capability “*Maximum sum of number of bits of all transport blocks received in TTIs that end at the same time*”.

At WG1 #10, some problems with the capability “*Maximum sum of number of sustainably processable bits of all transport blocks received in TTIs that end at the same time, normalized with the respective TTI length in number of radio frames*” were discovered. WG1 therefore proposed that this capability is removed.

The capability “*Maximum number of simultaneous CCTrCh*” is, for FDD, currently restricted to DCH-type CCTrCh only. It is proposed that this restriction is removed.

A new capability “*Maximum number of TF*” is proposed. This parameter limits the total number of downlink Transport Formats the UE can store. The proposed range of values is 32, 64, 128, 256, 512, 1024.

The capability for blind transport format detection is proposed to be removed, as the limits for BTFD are now part of Layer 1 specification.

The capability for 24 bit CRC is proposed to be removed as all CRC lengths should be baseline capabilities.

### Transport channel parameters in the uplink

It is proposed that the capability “*Maximum sum of number of all transport blocks transmitted in TTIs that start at the same time*” is extended with two related capabilities covering only convolutional coded and turbo coded transport channels respectively, i.e. “*Maximum sum of number of all convolutionally coded transport blocks transmitted in TTIs that start at the same time*” and “*Maximum sum of number of all turbo coded transport blocks transmitted in TTIs that start at the same time*”

A UE can only be required to transport transport-channel combinations that are within the range of all three capabilities above. The possible values for the two later capabilities is proposed to be the same as the possible values for the current capability *“Maximum sum of number of bits of all transport blocks transmitted in TTIs that start at the same time”*.

Also, similar to the downlink, it is proposed that the capability *“Maximum sum of number of sustainedly processable bits of all transport blocks received in TTIs that end at the same time, normalized with the respective TTI length in number of radio frames”* is removed.

Similar to downlink, a new capability *“Maximum number of TF”* is proposed. This parameter limits the total number of uplink Transport Formats the UE can store. The proposed range of values is 32, 64, 128, 256, 512, 1024.

Also, similar to the downlink, the capabilities on 24 bits CRC is proposed to be removed.

## FDD Physical channel parameters in downlink

It is proposed that

- the capability *“Maximum number of DPDCH per RL”* is replaced by *“Maximum number of DPCH/PDSCH codes to be simultaneously received”*
- the capability *“Maximum number of DPCH bits received per 10 ms”* is proposed to be replaced by *“Maximum number of physical-channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)”*
- the capability *“Maximum number of simultaneous S-CCPCH”* is removed, as more than one S-CCPCH should never be needed to be received.
- The capability *“Simultaneous reception of S-CCPCH and DPCH”* is replaced by *“Simultaneous reception of S-CCPCH and DPCH/PDSCH”*

The proposed updates are illustrated in more detail below.

WG1 also wants to inform WG2 that WG1 is still studying LCS capabilities and will provide WG2 with the result of these studies.

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## 4 UE radio access capability parameters

**NOTE:** In this chapter all UE radio access capability parameters will be defined. The selection of parameters will be based on UE implementation constraints and not on RAB constraints. For each parameter the relation to configuration parameters (from the RRC specification) will be shown.

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

UTRAN is responsible for the respect of the UE capabilities when configuring the RBs. Actions in the UE when capabilities are in conflict with a UTRAN request are specified in RRC.

### 4.1 PDCP parameters

#### **Header compression algorithm supported**

Defines whether header compression algorithms will be supported by the UE. If it will be supported it will be the RFC 2507 as specified in TS 25.323.

### 4.2 BMC parameters

No UE radio access capability parameters identified

### 4.3 RLC parameters

**NOTE:** It is FFS whether some of the RLC functions should be considered as UE capabilities.

#### **Total RLC AM buffer size**

The total buffer size across all RLC AM entities puts requirements on memory.

UTRAN controls that the UE capability can be fulfilled through the following parameters:

1. The number of RLC AM entities configured (no explicit RRC parameter)
2. UL PU size
3. Transmission window size (#PUs)
4. Receiving window size (FFS whether this is configurable)

The following criterion must be fulfilled in the configuration:

$$\sum_{i=1}^{\#RLC\_AM\_entities} Transmission\_window\_size_i \cdot UL\_PU\_size_i + \sum_{i=1}^{\#RLC\_AM\_entities} Receiving\_window\_size_i \cdot DL\_PU\_size_i \leq Total\_RLC\_buffer\_size$$

where  $i$  is the RLC "entity number"

#### **Maximum number of AM entities**

The number of AM entities affect the main part of the total processing and memory capacity to be shared between different RLC machines.

### 4.4 MAC parameters

No capability parameters identified.

## 4.5 PHY parameters

NOTE: It is FFS whether some of the parameters need to be separate for different physical channel types. Furthermore, some of the parameters that are currently separated between uplink and downlink will be merged if it shows that the appropriate values are the same in uplink and downlink.

### 4.5.1 Transport channel parameters in downlink

**Maximum sum of number of bits of all transport blocks received in TTIs that end within the same arbitrary interval of length T<10 ms.**

This parameter is defined as

$$\Sigma_i(N_i)$$

where  $N_i$  is defined as the number of bits in transport block #i, and the sum is over all transport blocks received in TTIs that end within the same 10 ms interval. All transport blocks that are to be simultaneously received by the UE on DCH, FACH, PCH and DSCH transport channels are included in the parameter.

~~This parameter is related to memory requirements for received downlink data before it is delivered to MAC. As shown in Figure 1 the worst case occurs for the maximum TTI.~~

A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks \* Transport Block size* over all simultaneous transport channels is larger than what the UE capability indicates.

~~NOTE: It has been noted that the current definition does not cover the case where TTIs on simultaneous DCH and DSCH are not aligned.~~

**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.**

This parameter is defined similar to the parameter above, but the sum includes only convolutionally coded transport blocks.

**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.**

This parameter is defined similar to the parameter above, but the sum includes only turbo coded transport blocks.

~~Maximum sum of number of sustainably processable bits of all transport blocks received in TTIs that end at the same time, normalized with the respective TTI lengths in number of radio frames~~

~~This parameter is defined as~~

~~$$\Sigma_i(N_i * 8 / T_i)$$~~

~~where the sum is over all transport blocks received in TTIs that end at the same time and  $T_i \in \{1, 2, 4, 8\}$  is the TTI length (in number of radio frames) of the transport channel to which transport block #i belongs. It should be noted that the factor 8 is just a scaling constant that ensures that the defined parameter is always an integer.~~

### Maximum number of simultaneous transport channels

This is defined as the maximum number of Transport Channels that should be possible to process simultaneously, not taking into account the rate of each Transport Channel.

The number of simultaneous transport channels affects how the total memory space and processing capacity can be shared among the transport channels.

A UE does not need to support more simultaneous transport channels than the UE capability allows for.

NOTE: It is FFS whether the maximum number of TrChs per CCTrCH should be included.

### Maximum number of simultaneous CCTrCH

~~For FDD CcTtRCH should be interpreted as CcTtRCH of DCH type, i.e. a CcTtRCH consisting of one or several DCH. Simultaneous reception of CcTtRCH of DCH type with CcTtRCH of not-DCH type (DSCH, FACH, and/or PCH) is covered by other capabilities (PDSCH support and support for simultaneous reception of DPCH and S-CCPCH).~~

~~For TDD the CcTtRCH should be interpreted as CcTtRCH of any type, i.e. consisting of DCH, FACH or DSCH.~~

**Maximum total number of transport blocks received within TTIs that end atwithin the same 10 ms interval**

~~All transport blocks that are to be simultaneously received by the UE on DCH, FACH, PCH and DSCH transport channels are included in the parameter.~~

Relates to processing requirements for CRC in downlink.

A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* is larger than what the UE capability indicates.

#### **Maximum number of TFC in the TFCS**

The maximum number of TFC in a TFCS sets the size of the TFCI to TFCS mapping table to be handled by the UE.

#### **Maximum number of TF**

~~The maximum total number of downlink transport formats the UE can store.~~

#### **Support for turbo decoding**

Defines whether turbo decoding is supported or not

The UTRAN configuration parameter is *Type of channel coding* which is part of the Transport format set (TFS) of each transport channel.

#### **~~Support of 24 bits CRC~~**

~~Defines whether 24 bits CRC is supported or not. CRC lengths of 0, 8, 12 and 16 bits shall be mandatory for all UEs.~~

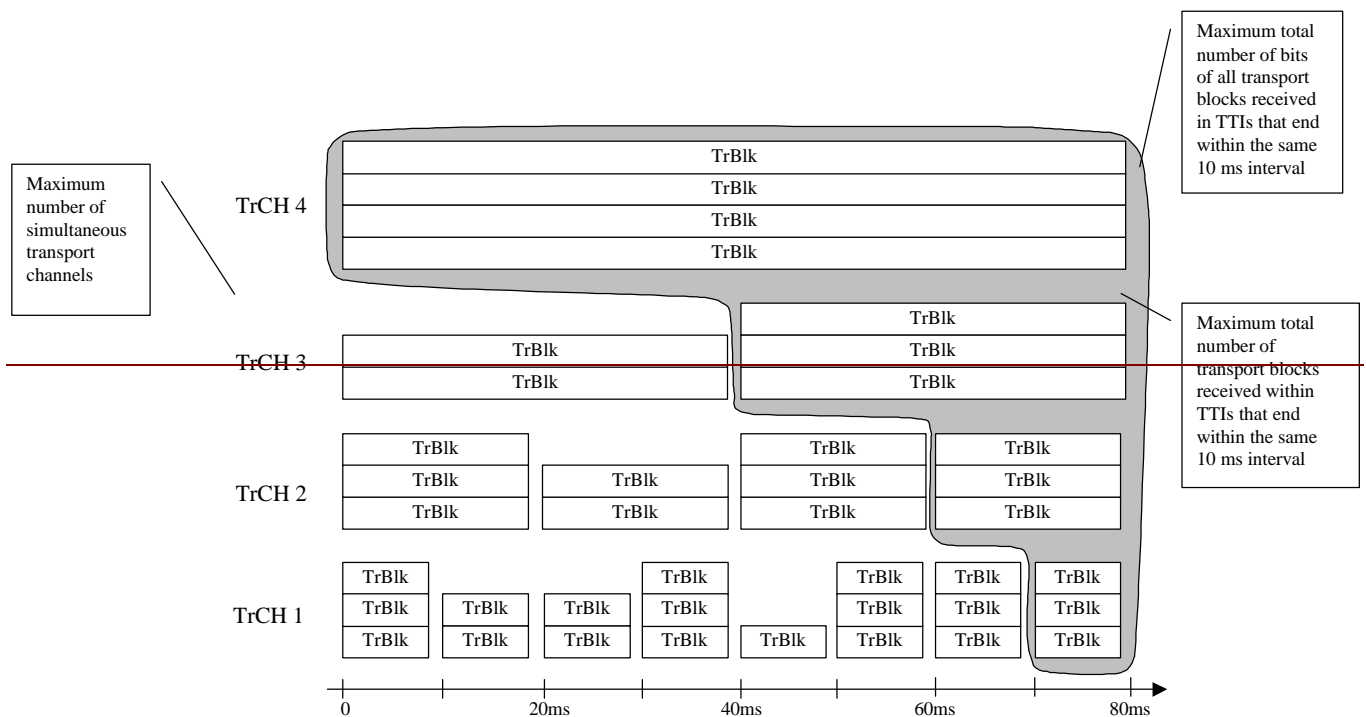
~~UTRAN configures the CRC size through the parameter *CRC size*, which is part of the *Transport format set*.~~

~~NOTE: — It is unclear whether 24 bits CRC is needed for PCH. In that case it will be mandatory for all UEs, and the capability parameter will be removed.~~

#### **~~Support of blind transport format detection (FFS)~~**

~~Defines whether the UE supports blind transport format detection or not.~~

~~NOTE: — The criteria for blind rate detection (combined with 12.2k data rate) is recommended to be defined (in WG1 specification or TR 25.926 report) that well that no extra signalling (additional parameters) is needed, thereby enabling efficient and reliable RAB allocation from the UTRAN.~~



**Figure 1: UE transport channel processing limitations in downlink TO BE UPDATED**

#### 4.5.2 Transport channel parameters in uplink

##### **Maximum sum of number of bits of all transport blocks transmitted in TTIs that start at the same time**

This parameter is defined as

$$\sum_i(N_i)$$

where  $N_i$  is defined as the number of bits in transport block # $i$ , and the sum is over all transport blocks received in TTIs that end at the same time

This parameter is related to memory requirements for uplink data received from MAC before it can be transmitted over the radio interface. As shown in Figure 2 the worst case occurs for the maximum TTI.

A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks \* Transport Block size* over all simultaneous transport channels is larger than what the UE capability indicates.

##### **Maximum sum of number of bits of all convolutionally coded transport blocks transmitted in TTIs that start at the same time**

This parameter is defined similar to the parameter above, but the sum includes only convolutionally coded transport blocks.

##### **Maximum sum of number of bits of all turbo coded transport blocks transmitted in TTIs that start at the same time**

This parameter is defined similar to the parameter above, but the sum includes only turbo coded transport blocks.

##### **Maximum sum of number of sustainably processable bits of all transport blocks received in TTIs that end at the same time, normalized with the respective TTI lengths in number of radio frames**

This parameter is defined as

$$\sum_i(N_i * 8/T_i)$$

~~where the sum is over all transport blocks received in TTIs that end at the same time and  $T_i \in \{1, 2, 4, 8\}$  is the TTI length (in number of radio frames) of the transport channel to which transport block #i belongs. It should be noted that the factor 8 is just a scaling constant that ensures that the defined parameter is always an integer.~~

#### **Maximum number of simultaneous transport channels**

The number of simultaneous transport channels affects how the total memory space and processing capacity can be shared among the transport channels.

UTRAN shall not set up more simultaneous transport channels than the UE capability allows for.

#### **Maximum number of simultaneous CCTrCH**

TDD only. For FDD there is always only one CCTrCH at a time.

#### **Maximum total number of transport blocks transmitted within TTIs that start at the same time**

Relates to processing requirements for CRC in uplink.

A UE does not need to support the TFC within the TFCS for which the sum of *Number of Transport Blocks* is larger than what the UE capability allows for.

#### **Maximum number of TFC in the TFCS**

The maximum number of TFC in a TFCS sets the size of the TFCI to TFCS mapping table to be handled by the UE.

#### **Maximum number of TF**

The maximum total number of uplink transport formats the UE can store.

#### **Support for turbo encoding**

Defines whether turbo encoding is supported or not

The UTRAN configuration parameter is *Type of channel coding* which is part of the Transport format set (TFS) of each transport channel.

#### **~~Support of 24 bits CRC~~**

~~Defines whether 24 bits CRC is supported or not. CRC lengths of 0, 8, 12 and 16 bits shall be mandatory for all UEs.~~

~~UTRAN configures the CRC size through the parameter *CRC size*, which is part of the *Transport format set*.~~

~~NOTE: It is unclear whether 24 bits CRC is needed for PCH. In that case it will be mandatory for all UEs, and the capability parameter will be removed.~~

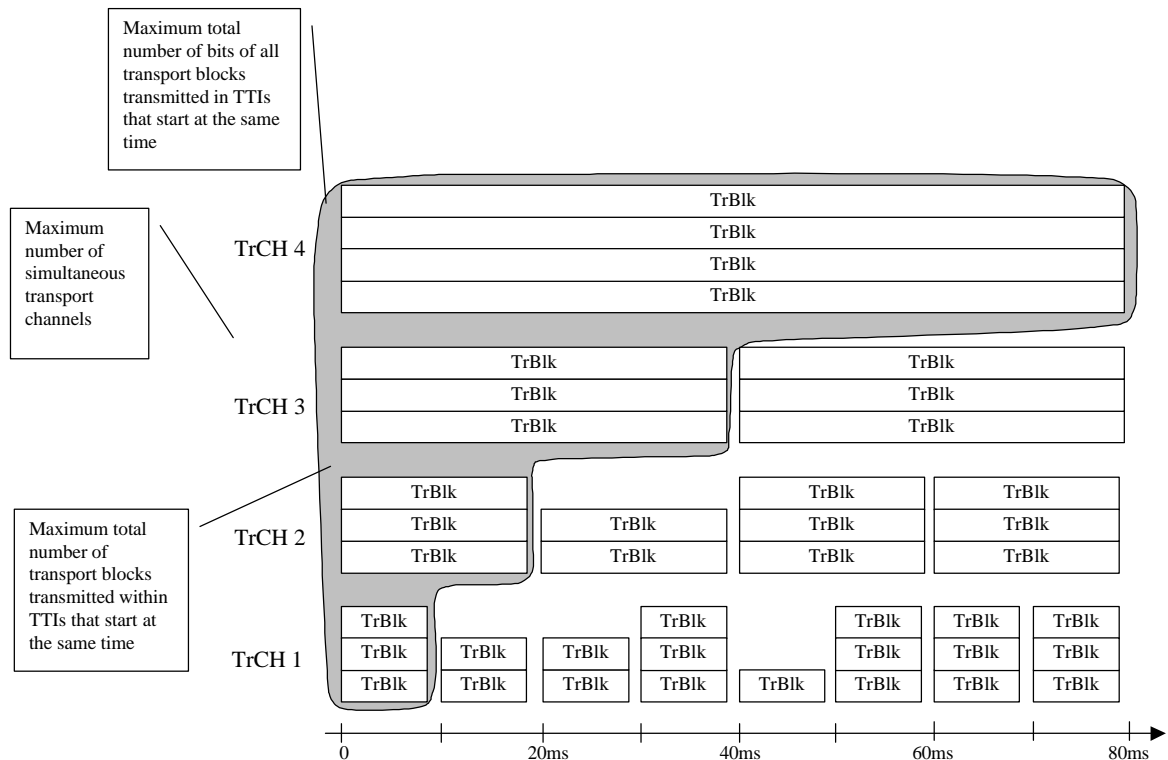


Figure 2: UE transport channel processing limitations in uplink

#### 4.5.3 FDD Physical channel parameters in downlink

##### Maximum number of DPCH/PDSCH codes to be simultaneously received ~~Maximum number of DPDCH per RL~~

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, multi-code within one RL reception capability of the UE. Each DPCH may be in soft handover.

The corresponding configuration parameter is the range bound *MaxChancount* for the parameter *DL channelization code* which is part of *Downlink DPCH info*.

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

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.

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

Defines the S-CCPCH multi-code reception capability of the UE.

##### **Support for SF 512**

Spreading factor 512 should not be mandatory for all UEs.

The corresponding configuration parameter is *Spreading factor* which is part of *Downlink DPCH info*.

##### **Support of PDSCH**

Support of PDSCH is only required for some RAB realisations, and is therefore a UE capability.

The corresponding configuration parameter is *Downlink transport channel type* which is part of *RB mapping info*.

##### **Simultaneous reception of SCCPCH and DPCH/PDSCH**



Simultaneous reception of SCCPCH and DPCH/PDSCH, i.e. simultaneous reception of FACH and DCH/DSCH is required for e.g. DRAC procedure, but it should not be mandatory for all UEs (e.g. speech only UEs). The PDSCH part of this capability is only relevant if the UE supports PDSCH, as covered by the capability "Support of PDSCH".

NOTE: It is FFS how this parameter is related to Maximum number of DPCH per RL.

There is no specific configuration parameter.

#### 4.5.4 FDD physical channel parameters in uplink

Maximum number of DPDCH bits per 10 ms

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.

##### **Support of PCPCH**

Support of PCPCH is only required for some RAB realisations, and is therefore a UE capability.

There is no specific configuration parameter.

#### 4.5.5 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.

#### 4.5.6 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.

#### 4.5.7 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.

### 4.7 Multi-RAT related parameters

#### **Support of GSM**

Defines whether GSM is supported or not.

There is no explicit configuration parameter.

#### **Support of multi-carrier**

Defines whether multi-carrier is supported or not.

There is no explicit configuration parameter.

### 4.8 LCS related parameters

#### **LCS support**

Defines the positioning methods supported..

NOTE: This necessity of this parameter and the value range depends on the decision on which (and how many) positioning methods will be mandatory or optional for the UE.

There is no explicit configuration parameter.

### 4.9 Measurement related capabilities

#### **Uplink compressed mode**

Defines whether the UE supports an independent use of compressed mode in uplink and downlink.

## 5 Possible UE radio access capability parameter settings

### 5.1 Value ranges

The value ranges are, depending on the particular parameter, specified according to either on of the following alternatives.

1. Value range: Yes/No (support or not support)

2. Value range: MIN, GRANULARITY, MAX

**minimum value** for providing the baseline capability

**granularity**

**maximum value** should be defined so that a wide variety of UE's (with different capabilities) can exist in the future.

3. Some distinctive values between **minimum value** and **maximum value**, not necessarily with a linear granularity.

NOTE: It has been suggested to leave the maximum value open whenever possible (number of bits in the information element of UE Radio Access Capability message could set the upper bound)

Table 1: UE radio access capability parameter value ranges

|                 |   | UE radio access capability parameter   | Value range  |
|-----------------|---|--|--|
| PDCP parameters |   | Header compression algorithm supported   | Yes/No   |
| RLC parameters  |   | Total RLC AM buffer size   | 2,10,50,100,150,500,1000 kBytes  |
|                 |   | Maximum number of AM entities  | 2,3,4,8,16,32  |
| PHY parameters  | Transport channel parameters in downlink  | Maximum sum of number of bits of all transport blocks received in TTIs that end <u>within</u> at the same <u>arbitrary interval of length <math>T &lt; 10</math> ms</u> <del>time</del>                    | 640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840            |
|                 |   | <u>Maximum sum of number of bits of all convolutionally coded transport blocks received in TTIs that end within the same arbitrary interval of length <math>T &lt; 10</math> ms</u>                        | <u>640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840</u>     |
|                 |   | <u>Maximum sum of number of bits of all turbo coded transport blocks received in TTIs that end within the same arbitrary interval of length <math>T &lt; 10</math> ms</u>                                  | <u>640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840</u>     |
|                 |   | <del>Maximum sum of number of sustainedly processable bits of all transport blocks received in TTIs that end at the same time, normalized with the respective TTI lengths in number of radio frames.</del> | <del>640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840</del> |
|                 |   | Maximum number of simultaneous transport channels  | 4, 8, 16, 32   |
|                 |   | Maximum number of simultaneous CCTrCH <del>(of DCH type)</del>   | 1, 2, 3, 4, 5, 6, 7, 8   |
|                 |   | Maximum total number of transport blocks received within TTIs that end <u>within</u> at the same <u>10 ms interval</u> <del>time</del>   | 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  |
|                 |   | <u>Maximum number of TF</u>  | <u>32, 64, 128, 256, 512, 1024</u>   |
|                 |   | Support for turbo decoding   | Yes/No   |
|                 | <u>Support of 24 bits CRC</u>   | <u>Yes/No</u>  |  |
|                 | <u>Support of blind transport format detection (FFS)</u><br><u>This should be first specified fully. Then a LS should be sent by WG1 to WG2 about what needs to be the UE capability.</u> | <u>Yes/No</u>  |  |
|                 | Transport channel parameters in uplink  | Maximum sum of number of bits of all transport blocks transmitted in TTIs that start at the same time  | –, 640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840         |
|                 |   | <u>Maximum sum of number of bits of all convolutionally coded transport blocks transmitted in TTIs that start at the same time</u>   | <u>640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840</u>     |
|                 |   | <u>Maximum sum of number of bits of all turbo coded transport blocks transmitted in TTIs that start at the same time</u>   | <u>640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840</u>     |

|   |                   |  |  |
|---|-------------------|--|--|
|   |                   | <del>Maximum sum of number of sustainedly processable bits of all transport blocks received in TTIs that end at the same time, normalized with the respective TTI lengths in number of radio frames.</del> | <del>640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840</del> |
|   |                   | 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  |
|   |                   | <del>Maximum number of TF</del>  | <del>32, 64, 128, 256, 512, 1024</del>   |
|   |                   | Support for turbo encoding   | Yes/No   |
|   |                   | <del>Support of 24 bits CRC</del>  | <del>Yes/No</del>  |
| FDD Physical channel parameters in downlink |                   | <del>Maximum number of DPCH/PDSCH codes to be simultaneously received</del><br><del>Maximum number of DPCH per RL</del>  | 1, 2, 3, 4, 5, 6, 7, 8   |
|   |                   | <del>Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)</del><br><del>Maximum number of DPCH bits received per 10 ms</del>                                      | -300, 600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600, 67200                  |
|   |                   | Support for SF 512   | Yes/No   |
|   |                   | Support of PDSCH   | Yes/No   |
|   |                   | <del>Maximum number of simultaneous S-CCPCH</del>  | <del>FFS</del>   |
|   |                   | -Simultaneous reception of SCCPCH and DPCH   | -Yes/No  |
| FDD Physical channel parameters in uplink   |                   | Maximum number of DPDCH bits transmitted per 10 ms   | 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600                     |
|   |                   | Support of PCPCH   | FFS  |
| TDD physical channel parameters in downlink |                   | Maximum number of timeslots per frame  | 1..14  |
|   |                   | Maximum number of physical channels per frame  | 1,2,3...,224   |
|   |                   | Minimum SF   | 16, 1  |
|   |                   | Support of PDSCH   | Yes/No   |
| TDD physical channel parameters in uplink   |                   | Maximum Number of timeslots per frame  | 1..14  |
|   |                   | Maximum number of physical channels per timeslot   | 1, 2   |
|   |                   | Minimum SF   | 16,8,4,2,1   |
|   |                   | Support of PUSCH   | Yes/No   |
| RF parameters                               | FDD RF parameters | UE power class (25.101 section 6.2.1)  | 1, 2, 3, 4   |

|   |                      |  |   |
|---|----------------------|--|---|
|   |                      | Radio frequency bands<br>(25.101 section 5.2)                                  | a), b), a+b)                                  |
|   |                      | Tx/Rx frequency separation<br>FFS for frequency band b<br>(25.101 section 5.3) | 190 MHz<br>174.8-205.2 MHz<br>134.8-245.2 MHz |
|   |                      | Chip rate capability   | N/A for FDD                                   |
| RF parameters                             | TDD RF<br>parameters | UE power class<br>(25.102)   | 1,2,3,4,                                      |
|   |                      | Radio frequency bands<br>(25.102)  | a), b), c), a+b), a+c), a+b+c)                |
|   |                      | Tx/Rx frequency separation   | N/A for TDD                                   |
|   |                      | Chip rate capability<br>(25.102)   | 3.84,1.28                                     |
| Multi-mode related parameters             |                      | Support of UTRA FDD/TDD  | FDD, TDD, FDD+TDD                             |
| Multi-RAT related parameters              |                      | Support of GSM   | Yes/No  |
|   |                      | Support of multi-carrier   | Yes/No  |
| LCS related parameters                    |                      | LCS support  | FFS   |
| Measurement related capabilities<br>(FFS) |                      |  | Yes/No  |
|   |                      | Need for compressed mode   |   |
|   |                      |  |   |