

**TSG-RAN Working Group 1**  
**Dresden, Germany, 29<sup>th</sup> November-3<sup>rd</sup> December, 1999**

*TSGR1#9(99)j93*

**Source:** Nokia

**Title:** Proposal for TR 25.926 parameter combination table

**Document for:** Discussion

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**Summary:**

The scope of the technical report, TR 25.926, is to identify the parameters of the access stratum part of the UE radio access capabilities and to define possible combinations of the values. Earlier, both to RAN WG1 and WG2 reflectors, two draft contributions both by Nokia and Ericsson have been submitted proposing values for UE radio access capability table. Additionally, in Nokia contribution the possible combinations of the access parameter values were listed.

In this contribution an updated version of the parameter combination table is presented. An effort has been made to combine some of the proposed parameters both from Nokia and Ericsson contributions. As the parameter value table is not yet stable yet, further updates to the combination table may be needed.

## 5.2 Possible combinations of parameter values

< Possible combinations of parameter values will be listed here as exemplified in the table below. Each combination defines the UE radio capabilities for a given UE implementation. The selected combinations should not be too close to each other from an implementation perspective. At the same time the combinations should allow for enough freedom from a RAB realisation perspective.>

Table 2. UE radio access capability parameter combinations

UE radio access capability parameter	Combination 1	Combination 2	Combination 3	...
Parameter 1	Yes	No	Yes	
Parameter 2	1	10	5	
Parameter 3	100	100	5000	
...				

Table 1 Table 2 defines in system performance point of view a reasonable set of ~~paramaters~~ parameters, which a UE with a certain capability shall support. E.g. combination 2 defines minimum parameter values for a UE capable of supporting 64 kbps level of services. However, the UE shall not send the combination number to the network but it still transmits the individual parameters defined in Table 1 ~~Error! Reference source not found.~~ In the combination table, the motivation of the parameters is given in ~~parenthesis~~ parenthesis.

Table 5.2 The combinations resemble closely to the service capability definitions but the main differences are that the parameters are only the configurable parameters and the combinations are downwards compatible, e.g. a mobile having a capability combination 2 of supporting 64 kbps automatically has the capability combination 1 of supporting speech level services. Also, the capabilities are defined so that a 64 kbps level mobile can flexibly support packet services and a few multiple simultaneous services in the given parameter limits. These parameter combinations concern only the capability of the "radio access engine" of a UE. They do not require that e.g. a UE supporting combination 1 shall have the AMR speech codec application.

Because the mobile sends to the network the individual parameters instead of the supported combination, it can exceed the minimum required values of some parameters (with reasonable step sizes) on purpose. This concept does not prevent a configuration of a speech terminal (combination 1) with extended browsing capability, but a terminal can not be a 64 kbps terminal unless it fulfills all the parameter requirements of combination 2. These combinations define, to some extend, that the parameters are ~~conconsistent~~ consistent in different manufacturer's mobiles and that the manufacturers do not optimize their equipment too much at the expense of ~~in the system performance~~ expense. E.g. a 64 kbps mobile has to support more than 10 ms interleaving, although a mobile manufacturer would like to optimize the "max number of bits parameter" so that only 10 ms interleaving is possible.

The role of Table 1 Table 2-is to give means to manage the network configurations, overall testing and to maintain the system performance.

Table 1 Table 2. UE radio access capability parameter combinations

<u>UE radio access capability parameter</u>	<u>Combination 1</u>	<u>Combination 2</u>	<u>Combination 3</u>	<u>Combination 4</u>
<u>Downlink</u>				
<u>Maximum total</u>	<u>640</u>	<del>3000</del> <u>3840</u>	<del>6000</del> <u>6400</u>	<del>16000</del> <u>20480</u>

<u>UE radio access capability parameter</u>	<u>Combination 1</u>	<u>Combination 2</u>	<u>Combination 3</u>	<u>Combination 4</u>
<u>number of bits of all transport blocks received in TTIs that end at the same time</u>	<i>(16 kbps for user data and 16 kbps for signaling with 20 ms TTI)</i>	<i>(64 kbps for CS data with 40 ms TTI or 128 kbps PS data with 10 ms TTI and 16 kbps for signaling with 10 ms TTI)</i>	<i>(256 kbps PS data with 20 ms TTI and 16 kbps for signaling with 10 ms TTI)</i>	<i>(384 kbps CS data with 40 ms TTI and 16 kbps for signaling with 10 ms TTI)</i>
<u>Maximum total number of bits of all simultaneous transport channels processed in a 10 ms period</u>	<i>640 (in a delay sensitive speech service all transport blocks shall be decoded within 10 ms)</i>	<del>1500</del> <i>2560 (64 kbps data with 40 ms TTI shall be decoded within 20 ms)</i>	<del>3000</del> <i>3840 (256 kbps data with 20 ms TTI shall be decoded within 20 ms)</i>	<del>8000</del> <i>10240 (384 kbps data with 40 ms TTI shall be decoded within 20 ms)</i>
<u>Maximum number of simultaneous transport channels</u>	<del>58 (AMR with UEP + signaling)</del>	<del>1016 (a couple of services with UEP)</del>	<del>1016</del>	<del>2032 (video/audio codecs with UEP)</del>
<u>Maximum number of simultaneous CCTrCH</u>	<i>1 (same as Maximum number of DPCH per RL)</i>	<i>2 (same as Maximum number of DPCH per RL)</i>	<i>2 (same as Maximum number of DPCH per RL)</i>	<i>4 (same as Maximum number of DPCH per RL)</i>
<u>Maximum total number of transport blocks received within TTIs that end at the same time</u>	<del>58 (one TB for each TrCH)</del>	<del>1516 (allows appr. 300 bits TBs)</del>	<del>3032 (allows appr. 300 bits TBs)</del>	<del>6064 (allows appr. 300 bits TBs)</del>
<u>Maximum number of TFC in the TFCS</u>	<i>32 (this needs to be verified when the AMR Mode C concept has been specified)</i>	<i>1024</i>	<i>1024</i>	<i>1024</i>
<u>Support of turbo decoding</u>	<i>No</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<u>Support of 24 bits CRC</u>	<i>No</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<u>Support of blind transport format detection</u>	<i>Yes (Mandatory)</i>	<i>No (Yes, if capability of combination 1 required)</i>	<i>No (Yes, if capability of combination 1 required)</i>	<i>No (Yes, if capability of combination 1 required)</i>
<u>Maximum number of DPCH per RL</u>	<i>1</i>	<i>2 (2 code channels are needed for DSCH)</i>	<i>2 (2 code channels are needed for DSCH)</i>	<i>4 (network can allocate several code channels with SF greater than 4)</i>
<u>Minimum SF</u>	<del>64</del> <i>32 (same as baseline capability with compressed mode)</i>	<del>32 (16 with compressed mode)</del>	<del>8 (4 with compressed mode)</del>	<del>4</del>

<u>UE radio access capability parameter</u>	<u>Combination 1</u>	<u>Combination 2</u>	<u>Combination 3</u>	<u>Combination 4</u>
Maximum number of DPCH bits received per 10 ms	<u>1200</u> (TBA in compressed mode)	<u>2400</u> (TBA in compressed mode)	<u>9600</u> (TBA in compressed mode)	<u>19200</u> (TBA in compressed mode)
Support for SF 512	<u>No</u>	<u>Yes</u> (with PDSCH)	<u>Yes</u> (with PDSCH)	<u>Yes</u> (with PDSCH)
Support of PDSCH	<u>No</u>	<u>Yes</u> (for 128 kbps NRT services it would be more optimum to use DSCH instead of DCH)	<u>Yes</u>	<u>Yes</u>
<u>Uplink</u>				
Maximum total number of bits of all transport blocks transmitted in TTIs that start at the same time	<u>640</u> (16 kbps for user data and 16 kbps for signaling with 20 ms TTI)	<del>3000</del> <u>3840</u> (64 kbps for CS or PS data with 40 ms TTI and 16 kbps for signaling with 10 ms TTI)	<del>3000</del> <u>3840</u> (128 kbps PS data with 20 ms TTI and 16 kbps for signaling with 10 ms TTI)	<del>16000</del> <u>20480</u> (384 kbps CS data with 40 ms TTI and 16 kbps for signaling with 10 ms TTI)
Maximum total number of bits of all simultaneous transport channels processed in a 10 ms frame period	<u>640</u> (in a delay sensitive speech service all transport blocks shall be encoded within 10 ms)	<del>1500</del> <u>2560</u> (64 kbps data with 40 ms TTI shall be encoded within 20 ms)	<del>1500</del> <u>2560</u> (128 kbps data with 20 ms TTI shall be decoded within 20 ms)	<del>8000</del> <u>10240</u> (384 kbps data with 40 ms TTI shall be decoded within 20 ms)
Maximum number of simultaneous transport channels	<u>4</u> (AMR with UEP + signaling )	<del>108</del> (a couple of services with UEP)	<del>1016</del>	<del>2032</del> (video/audio codecs with UEP)
Maximum total number of transport blocks transmitted within TTIs that start at the same time	<u>4</u> (one TB for each TrCH)	<del>1516</del> (allows appr. 300 bits TBs)	<del>3032</del> (allows appr. 300 bits TBs)	<del>6064</del> (allows appr. 300 bits TBs)
Maximum number of TFC in the TFCS	<u>32</u> (this needs to be verified when the AMR ModeC concept has been specified)	<u>1024</u>	<u>1024</u>	<u>1024</u>
Support of turbo encoding	<u>No</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
Support of 24 bits CRC	<u>No</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
Maximum number of DPDCH bits	<u>600</u> (1120 in compressed mode)	<u>4800</u> (8960 in compressed mode)	<u>4800</u> (8960 in compressed mode)	<u>28800</u>

<u>UE radio access capability parameter</u>	<u>Combination 1</u>	<u>Combination 2</u>	<u>Combination 3</u>	<u>Combination 4</u>
<u>Maximum number of DPDCH</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>3</u>
<u>Minimum SE</u>	<u>64 (32 with compressed mode)</u>	<u>8 (4 with compressed mode)</u>	<u>8 (4 with compressed mode)</u>	<u>4</u>