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<b>To:</b>	TSG-R WG2
<b>Source:</b>	Nokia
<b>Title:</b>	Draft liaison to TSG-R WG2 on proposed changes to TR25.926 regarding the need to support downlink and uplink compressed modes
<b>Document for:</b>	Approval

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In Technical Report, TR25.926, v.1.0.0, the UE radio access capability parameters and their possible values are described in the Table 1. Related to measurement capabilities, there is one parameter called “Need for compressed mode” which can take values Yes/No. In TSG-R WG1 opinion this capability should be described separately for uplink and downlink. The reason for this is that having single parameter puts unnecessary restrictions on the implementation possibilities of various multimode terminals.

In downlink case, the proposal is to have parameter called “Need for compressed mode in DL” which can take two values, Yes/No, regardless of the supported multimode or multi-RAT. This single parameter will allow for efficient implementations of the supported multi-mode and multi-RAT UEs.

The uplink case requires a bit more detailed descriptions of the UE capabilities related to compressed mode. As such, the Table 1 already has got other parameters that can be used to define the compressed mode capability of the UE in uplink for certain multi-mode or multi-RAT cases. Therefore it is proposed:

- For FDD interfrequency measurements, the need for uplink compressed mode is defined by the parameter “Tx/Rx frequency separation” as follows:
  - ★ In case of fixed duplex spacing the uplink compressed mode is needed
  - ★ In case of variable (flexible) duplex spacing the uplink compressed mode is not needed

Additionally, it is proposed that in case of TDD, DCS1800 and GSM1900 measurements, the uplink compressed mode is always needed. However, for GSM900 measurements, whether uplink can be in compressed mode or not, has got big impact on UE implementation. Therefore, it should be possible define if there is a need for uplink compressed mode or not. Consequently, the following parameter, “Need for UL compressed mode” having two values, Yes/No, is proposed to be added.

The needed modifications to TR 25.926 v1.0.0 are shown in the subsequent pages.

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**Table 1: UE radio access capability parameter value ranges**

		<b>UE radio access capability parameter</b>	<b>Value range</b>
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 at the same time	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		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.	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 ( of DCH type	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks received within TTIs that end at the same time	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
		Support for turbo decoding	Yes/No
		Support of 24 bits CRC	Yes/No
		Support of blind transport format detection (FFS) This should be first specified fully. Then a LS should be sent by WG1 to WG2 about what needs to be the UE capability.	Yes/No
	Transport channel parameters in uplink	Maximum sum of number of bits of all transport blocks transmitted in TTIs that start at the same time	, 640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of 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.	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
		Support for turbo encoding	Yes/No
		Support of 24 bits CRC	Yes/No
	FDD Physical channel parameters in downlink	Maximum number of DPCH per RL	1, 2, 3, 4, 5, 6, 7, 8

		Maximum number of DPCH bits received per 10 ms	300, 600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600, 67200
		Support for SF 512	Yes/No
		Support of PDSCH	Yes/No
		Maximum number of simultaneous S-CCPCH	FFS
		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 (25.101 section 5.2)	a), b), a+b)
		Tx/Rx frequency separation (25.101 section 5.3)	190 MHz 174.8-205.2 MHz 134.8-245.2 MHz
		Chip rate capability	N/A for FDD
RF parameters	TDD RF parameters	UE power class (25.102)	1,2,3,4,
		Radio frequency bands (25.102)	a), b), c), a+b), a+c), a+b+c)
		Tx/Rx frequency separation	N/A for TDD
		Chip rate capability (25.102)	3.84,1.28
Multi-mode related parameters		Support of UTRA FDD/TDD	FDD, TDD, FDD+TDD
Multi-RAT related parameters		Support of GSM	Yes/No
		Support of multi-carrier	Yes/No
LCS related parameters		LCS support	FFS
Measurement related capabilities (FFS)		Need for DL compressed mode	Yes/No
		Need for UL compressed mode (see note 1)	Yes/No

Note 1: In case of WCDMA FDD interfrequency measurements the UL compressed mode need is determined by the parameter “Tx/Rx frequency separation” as follows:

- ★ In case of fixed duplex spacing the uplink compressed mode is needed

- In case of variable (flexible) duplex spacing the uplink compressed mode is not needed

In case of WCDMA TDD, DCS1800 and GSM1900 measurements, the uplink compressed mode is always needed

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