3GPP TSG RAN WG1#16 **Tdoc R1-00-1231**

Pusan, Korea

October 10th – 13th , 2000 **Meeting No. 16**

Agenda item: Release 2000 (Release 4) UE Capability

Source: Nokia

Title: Modifications to UE capability for 25.926 for Release 4..

Document for: Decision

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1. Introduction

This contribution contains discussions as well as the CR which adds additional capabilities and modifies slightly the reference radio access bearer combinations for Release 4 (Former Release 2000) of TR 25.926.

The following points are addressed:

?? DSCH capabilities

?? CPCH capabilities

Additionally it is to be noted that there will be impacts from the potential introduction of DPCCH gating to the UE capability for Release 4. That should be addressed separately once exact details of the gating solution are available and thus are not covered in this contribution.

2. DSCH capability

The DSCH related capability, support of PDSCH, is modified for the 384 kbits/s class by changing the indication Yes/No to Yes. This was the possibility that was discussed already during the Release –99 UE capability discussions and does not require additional UE processing requirements in terms of number of codes to be received etc. when compared to the existing 384 kbits/s class definition. The work on T1 has also proceeded and covers now (functional) tests for DCH+DSCH case as well.

3. CPCH capability

The CPCH capability was discussed for Release –99 and due to the late finalisation of the feature it was made completely optional. The T1 specifications do not cover test cases for CPCH operation either. It is proposed to change for the other classes (uplink) besides 32 kbits/s the status of CPCH from No to Yes/No capability and to encourage T1 to prepare functional tests for CPCH operation for the terminals that declare PCPCH support as they UE capability parameter. The support of CPCH requires at least the following from UE in addition to the class parameters (for single code UEs)

?? Support of spreading factor 512 in the downlink

?? Simultaneous reception of FACH and DCH (with SF 512 and DPCCH only).

Further changes on CPCH status could be addressed once the test cases have been done for ensuring proper (at least functional) behaviour of CPCH operation. Currently once issue is also that there does not exists any example service that could be tested using CPCH, neither in the 3GPP documentation or outside documents such as ISG documents.

Considering the above mentioned issues the CPCH is thus recommended to be marked as Yes/No for Release 2000 (Release 4).

Suggested action

If the proposed approach is considered acceptable, the following CR is proposed to be provided to TSG RAN2 attached to a LS explaining the reasons for the changes as indicated in this paper.

3GPP TSG RAN WG2 Meeting #xxx
xxx, xxxxx xxxx 2000

Document R2-00-xxx
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.926	CR	xxx	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ? *? CR number as allocated by MCC support team*

For submission to: *list expected approval meeting # here ?*

for approval		strategic		*(for SMG use only)*
for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Formv2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: Nokia **Date:** July 4th 2000

Subject: DSCH and CPCH related updates for UE capabilities for the UE Radio Access Capability parameter combinations

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	X
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	
Release 00	X

Reason for change: The DSCH and CPCH status in the UE capability combination table are to be modified. For DSCH the combination is included to cover DSCH which does not need anything extra physical capabilities to do so.

Clauses affected:

Other specs affected:

Other 3G core specifications		?	List of CRs:
Other GSM core specifications		?	List of CRs:
MS test specifications		?	List of CRs:
BSS test specifications		?	List of CRs:
O&M specifications		?	List of CRs:

Other comments:


help.doc

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5.2 Reference UE radio access capability combinations

Based on required UE radio access capabilities to support reference RABs as defined in clause 6, this clause lists reference UE Radio Access capability combinations. Subclause 5.2.1 defines reference combinations of UE radio access capability parameters common for UL and DL. Subclause 5.2.2 and 5.2.3 define reference combinations of UE radio access capability parameters that are separate for DL and UL respectively. A reference combination for common UL and DL parameters, one combination for UL parameters and one combination for DL parameters together relate to a UE with a certain implementation complexity, that allows support for one or several combined reference RABs. Combinations for UL and DL can be chosen independently. The bit rate supported by the selected combination of common UL and DL parameters needs to be at least as high as the maximum out of the supported bit rates of the selected combination of DL parameters and the selected combination of UL parameters. Different combinations have different levels of implementation complexity.

For defined reference RABs, it is possible to require a UE to meet a certain reference UE radio access capability combination. Each UE needs to have capabilities complying with a given reference radio access capability combination. Each individual radio access capability parameter as defined in Subclause 5.1 shall be signalled.

The reference combination numbers shall not be used in the signalling of UE radio access capabilities between the UE and UTRAN. Reference UE radio access capability combinations provide default configurations that should be used as a basis for conformance testing against reference RABs.

Allowed values of UE capability parameters are limited by the defined range and granularity of values in Subclause 5.1. Values might change depending on further definition of reference RABs for testing.

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

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

Table 5.2.1.1: UE radio access capability parameter combinations, parameters common for UL and DL

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

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
Transport channel parameters						
Maximum sum of number of bits of all transport blocks received in TTIs that end within the same arbitrary interval of length T<10 ms	640	3840	3840	6400	10240	20480
Maximum sum of number of bits of all convolutionally coded transport blocks received in TTIs that end within the same arbitrary interval of length T<10 ms	640	640	640	640	640	640
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	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	2/1 NOTE 2	2/1 NOTE 2	2/1 NOTE 2	2	2
Maximum number of simultaneous CCTrCH (TDD)	2	3	3	3	4	4
Maximum total number of transport blocks received within TTIs that end at the same time	8	8	16	32	64	96
Maximum number of TFC in the TFCS	32	48	96	128	256	1024
Maximum number of TF	32	64	64	64	128	256
Support for turbo decoding	No	Yes	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)						
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	Yes/No NOTE 3	Yes/No NOTE 3	Yes/No NOTE 3	Yes/No NOTE 3	Yes/No NOTE 3
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
Physical channel parameters (TDD)						
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

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: Support of SF 512 is required if PCPCH is supported.

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
Transport channel parameters					
Maximum sum of number of bits of all transport blocks transmitted in TTIs that start at the same time	640	3840	3840	6400	10240
Maximum sum of number of bits of all convolutionally coded transport blocks transmitted in TTIs that start at the same time	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks transmitted in TTIs that start at the same time	NA	3840	3840	6400	10240
Maximum number of simultaneous transport channels	4	8	8	8	8
Maximum number of simultaneous CCTrCH(TDD only)	1	2	2	2	2
Maximum total number of transport blocks transmitted within TTIs that start at the same time	4	8	8	16	32
Maximum number of TFC in the TFCS	16	32	48	64	128
Maximum number of TF	32	32	32	32	64
Support for turbo encoding	No	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)					
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	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Physical channel parameters (TDD)					
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 release 99, this is limited to 1 SCCPCH.