TSG-RAN Working Group 1 ***TSGR1#7(99)e46***
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Source: TSG RAN WG1

To: TSG RAN WG2

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Title: Liaison on transport channel multiplexing

RAN WG1 has identified some issues in transport channel multiplexing which need further clarifications. New text proposals for transport channel multiplexing were intensively discussed in last WG1 meeting. WG1 would appreciate to receive RAN WG2's opinion about issues below before the next WG1 meeting (12.-15.10).

For WG2 information, a copy of the "Updated text proposals for restrictions on common channels" (R1-99d75, approved by WG1) and of "Inclusion of a Clause for Detailed Channel Coding – REVISED" (R1-99d28) are attached.

1) What should the UE capabilities include to limit the flexibility of the multiplexing?

Currently the RAN WG1 understanding is that the maximum value of the number of TrCHs in a CCTrCH, the maximum value of the number of transport blocks on each transport channel, and the maximum value of the number of DPDCHs are given from the UE capabilities.

2) What are the needed predefined values for all transport format attributes of BCH?

RAN WG1 would especially be interested of RAN WG2's view for the TTI of BCH. WG1 would also like to inform WG2 that their current assumption is that there only is one transport block in the TTI of the BCH TrCH.

For convenience the RAN WG1 scheme for coding and multiplexing of BCH to PCCPCH in case of TDD mode, repetition period 1 and 20ms interleaving is exemplary shown in figure 1. Depending on the rate matching value, this scheme can support from 11.4kbps (0% puncturing, i.e. N_{RM}=0) up to 12.6kbps (10% puncturing, i.e. N_{RM}=24). Higher data rates are not recommended by RAN WG1 due to expected degradation when significantly more puncturing is applied. Lower data rate can be accommodated by means of repetition. The effective data rate of one such PCCPCH carrying a BCH is 100 * N_{BCH} bits per second, thus rate matching value N_{RM} determines the PCCPCH data rate. According to RAN WG1 assumptions the UE requires knowledge about a system wide fixed rate matching value in order to efficiently decode the BCH content.

3) Is it possible to limit the number of applicable Transport Format Combinations for FACH, RACH, PCH?

3.1) For FACH, PCH and in particular RACH the RAN WG1 feels the general need to broadcast the applied or applicable Transport Format Combinations. As this may require significant amount of signaling, RAN WG1 would like to ask whether it is possible to specify a limited set of Transport Format Combinations for application to FACH, RACH and PCH.

3.2) It may also be advantageous from a RAN WG1 point of view, to use only one transport block and limited set of transport block sizes for RACH. RAN WG1 would like to ask whether such scheme matches with higher layer requirements.

3.3) However, in case a specific negotiation takes place before receiving FACH or PCH or before transmitting RACH (e.g. RACH for Packet data) an extended set of TFCs may be used. RAN WG1 would appreciate the RAN WG2 opinion on the requirement of such negotiated FACH, PCH and RACH Transport Format Combination Sets.

4) What is WG2's motive why there is no 2^{nd} multiplexing for DSCH (FDD)?

WG1’s opinion is that several transport channels could be allowed for DSCH, so that several packet bearers could be multiplexed together. WG1 would like to ask WG2 if they see a need for multiplexing several DSCH TrCHs. WG1’s understanding is that WG2’s opinion is that only one transport channel should be allowed for DSCH. In 25.302 v3.0.0 there is no detailed description about DSCH.

5) Are other TTI's than 10 ms possible for DSCH?

Figure 1: Layer 1 scheme for Coding and Physical Channel segmentation for BCH, shown here for TDD mode

Parameter	
Information data rate with repetition rate 1: 0% puncturing rate at CR=1/2 10% puncturing rate at CR=1/2 $N_{BCH} = \frac{244 + N_{RM} - 16}{2}$	11.4 kbps 12.6 kbps
RU´s allocated	1 RU
Midamble	512 chips
Interleaving	20 ms
Power control	N.A.
TFCI	N.A.

N_{BCH} = number of bits per TB