

Source: Ad hoc #4 chair

Title: Ad hoc #4 report

1 Introduction

This is the report of the RAN WG1 ad hoc #4, "Multiplexing", meeting on the evening of Wednesday, September 1, 1999. The ad hoc made good progress on several important topics.

2 Contributions discussed

(99)c40 Liaison on length of SFN (TSG RAN WG2)

In this LS WG2 explain their view on how the SFN should be coded. WG2 prefer to have SFN as a higher layer parameter unless it is coded separately from the BCH transport block. Hence, the current assumption in WG1 is not in line with WG2's view.

Coding the SFN separately with extra CRC was viewed as being inefficient due to the large overhead. The view that the SFN should be visible at L1 to ensure efficient idle mode operation was expressed. In idle mode higher layers would not be involved. Consequently, SFN should be a L1 parameter. A liaison will be drafted asking WG2 if they have considered the idle mode issue.

(99)c41 LS answering WG1's comments on 25.302 (TSG RAN WG2)

Item 2, dealing with the need for 1st multiplexing, was identified to be the only issue not already treated by other ad hocs. There is a text proposal proposing to bring WG1 in line with WG2's view, that no 1st multiplexing is needed since the same functionality is provided with MAC multiplexing. The LS was noted.

(99)b31 Comments on first multiplexing (Ericsson)

The contribution proposes to remove the 1st multiplexing since no real need for this function in L1 has been identified and removing the function would simplify the multiplexing scheme.

The contribution and the text proposal was endorsed by the ad hoc and recommended for approval by the plenary.

(99)b32 Transport block concatenation and code block segmentation (Ericsson)

The contribution proposes to introduce the possibility to concatenate all the transport blocks before segmenting them into code blocks. The contribution was presented for information in ad hoc 4, since the issue was already treated in ad hoc 5.

(99)a80 Text proposal for DL rate matching signalling (Mitsubishi)

The contribution addresses the problems with the rate matching in downlink identified at the last WG1 meeting, and proposes a modified algorithm to determine rate matching parameters.

Ericsson stated that there is no need to enable both fixed and flexible positions of the TrCHs in the same CCTrCH, and if this limitation is accepted the text proposal would become simpler. The proposal to not have flexible and fixed positions simultaneously was agreed by the ad hoc.

It was further clarified that the proposal removes the need for filler bits.

The contribution was endorsed by the ad hoc. Mitsubishi will provide a new text proposal where the possibility to mix fix and flexible positions removed.

(99)b99 Compressed mode function in multiplexing chain (Mitsubishi)

Discusses how the compressed mode function affects the multiplexing scheme. The contribution was presented only for information, since it had already been treated in ad hoc 8.

(99)b05 Simplified transport block equalization and segmentation (Qualcomm)

The contribution propose that the filler bits are inserted before the 1st interleaving, to simplify the transport block equalization and segmentation. The processing can then be decreased. It was clarified that the value of the filler bits is not specified, to reduce processing (the old contents of the interleaver is read out).

Further, the text proposal in the contribution makes the 1st interleaving description more specification-like.

The proposal addresses both uplink and downlink, but it was clarified that it would only be applicable to uplink if (99)a80 is approved by WG1.

The contribution was endorsed by the ad hoc. However, the proposal should only be applied to uplink to not interfere with (99)a80. It should also be extended to included TDD.

A new text proposal will be provided by Qualcomm. This new text proposal will only address uplink. Other companies are invited to write alternative text proposals describing the exact same function.

(99)b30 DTX insertion in case of multicode (Ericsson)

The contribution proposes to move the DTX-insertion block to before physical channel segmentation, to simplify the radio frame segmentation and minimise fast power changes in the base station transmitter when few multi-code users are active.

The contribution and the text proposal was endorsed by the ad hoc and recommended for approval by the plenary.

(99)a83 CCTrCH definition and multiplexing (Nokia)

The contribution proposes that the restrictions on common channels are described with figures in 25.212. Also, it identifies the need of a liaison statement to WG2.

It was clarified that Nokia no longer proposes to use the uplink multiplexing chain for the DSCH. Rather, the same chain as all other downlink channel should be used.

(99)d03 Restrictions on common channels (Ericsson)

The contribution is similar to (99)a83 but describes the same thing with words rather than figures.

It was agreed that the description method in (99)d03 was preferred over the one in (99)a83. Hence, a discussion followed to try to merge the technical contents in the two contributions.

The discussion resulted in that the text proposal in (99)d03 is recommended to WG1 for agreement with the following changes:

- Section 4.2.12.6 first bullet: "each" should be replaced by "the"
- Section 4.2.12.6 bullet four: this bullet should be deleted
- Section 4.2.12.7: clarify that only one secondary CCPCH is used per CCTrCH
- The definition of CCTrCH from (99)a83 should be added
- The deletion of "code multiplexing" in (99)a83 should be included

A new text proposal will be generated to cover the above points.

It was further decided that an LS should be sent to WG2 addressing the following the issues:

- What the UE capability class should include to limit the flexibility of the multiplexing

- Predefined values for all transport format attributes of BCH needed, especially we ask for the TTI of BCH
- Ask WG2 for motive why there is no 2nd multiplexing for DSCH
- Clarify if other TTI than 10 ms are possible for DSCH

(99)b29 Proposal for new notation in 25.212 (Ericsson)

This text proposal introduces a new notation in 25.212, aiming at non-ambiguously describing all functions in the multiplexing chain.

It was clarified that three errors had been identified, so a new text proposal fixing those problems should be created. It was further clarified that this text proposal includes the text proposals in (99)b30, (99)b31, and (99)b32.

The text proposal was endorsed by the ad hoc with the following modifications:

- Index i should be added in section 4.2.6.3
- Comments on DPCCCH should be removed from section 4.2.11.1 and 4.2.11.2
- A comment should be added to section 4.2.11.1 so that it is clear that the PhCH can be turned off.
- The sections that are treated in the text proposals of (99)a80 and (99)b05 should be deleted.

A new text proposal should be provided to the plenary.

(99)d23 Text proposal for new notation in 25.222 (Siemens)

This text proposal introduces a new notation in 25.222, similar to what (99)b29 proposes for 25.212.

The contribution and the text proposal was endorsed by the ad hoc and recommended for approval by the plenary.

(99)b47 Proposal to add 24 bit CRC polynomial (Nokia)

Proposes to add a 24-bit CRC to better cope with very low FER. This would also align the WG1 and WG2 specifications.

The contribution and the text proposal was endorsed by the ad hoc and recommended for approval by the plenary. This applies both for FDD and TDD.

(99)b11 Clarifying text proposal for TFCI repetition encoding (Nokia)

Clarifies exactly how the TFCI repetition should be done. It is proposed to use simple repetition.

(99)c82 TFCI repetition and interleaving (ETRI)

Proposes a slightly more sophisticated repetition scheme, that could potentially lead to better performance.

Views were expressed that the performance gain would be so small (if any), that the additional complexity compared to (99)b11 was not motivated.

Following a short discussion on the two proposals, the ad hoc agreed that (99)b11 should be adopted as a working assumption. If not challenged at next meeting it should become an agreement.

(99)b60 New optimal coding for extended TFCI with almost no complexity increase, rev 2 (Samsung)

The contribution provides further elaboration on the new TFCI coding scheme proposal, previous described in (99)913 and (99)913. More simulation results are presented, showing clear performance benefits with the new scheme.

It was clarified that the split mode would be applicable also for TDD.

Text proposals were provided in documents (99)b61 and (99)b62. It was agreed that the text proposals could be agreed if they were updated to reflect:

- Split mode also used in TDD

- Soft handover should not be mentioned, instead in WG1 we should only define the normal and split mode, not how to use them
- "Interleaving of TFCI word" should be replaced with "mapping of TFCI word"

New text proposals will be generated and presented to the plenary.

(99)d38 Text proposal for blind rate detection with flexible positions (NTT DoCoMo, Nortel, Nokia)

Proposes that blind transport format detection also should be allowed for flexible positions when the number of TFCs are limited.

Support for the proposal was expressed from several parties, and it was noted that the proposal is needed for efficient support of EVRC speech coder. It was clarified that the proposal only addressed the downlink. How the "limited number of cases" should be defined is an open issue that needs to be addressed.

After some discussion, the proposal was accepted and the text proposal is recommended to be approved by the plenary.

(99)b33 TFCI mapping (Ericsson)

The contribution discusses the problem on how to assign TFCI values to TFCs. It is stated that only allowed TFCs should be allocated TFCI values, to make sure that the TFCI detection performance is as good as possible. This general idea received support from several parties.

However, the exact method for defining the mapping was concluded to be outside WG1's responsibility.

It was agreed to adopt the first paragraph of text proposal, and that the old text should be removed. An LS should be sent to WG2 informing them that WG1 expect them to specify the TFCI mapping, and that the mapping must be efficient from implementation point of view. Contribution (99)b33 should be attached to this LS to inform WG2 about the made proposal.

(99)b49 Text proposals for detailed channel coding (NTT DoCoMo)

The contribution proposes to include some examples of service mappings into an annex in 25.212. Concerns were raised that such examples could lead to some default mapping of a service, which would not be inline with the flexibility UTRAN offers, where the RNC can setup the physical layer in different ways o transmit the same amount of data. It was further commented that UTRAN has no knowledge about services, but only provides transport of data over the air interface. Support for the proposal was also heard.

Following a long discussion, it was agreed that the examples will be put into a WG1 technical report. It should be further clarified at TSG RAN if the examples should be documented by WG1 or WG2.

(99)d28 Inclusion of clause for detailed channel coding for TDD (Siemens)

This is a similar contribution as (99)b49 but addressing TDD. The same conclusion holds for this contribution, i.e. the examples should be put into a technical report.

Finally, it was agreed that only one technical report should be created, including both the FDD and TDD coding/multiplexing examples.

3 Conclusion

Ad hoc #4 recommends the R1 plenary to accept the text proposals endorsed by the ad hoc. The text proposals are found in:

- (99)d23,
- (99)b47,
- (99)b11,
- (99)d38,
- and (99)b33.

Further, the updated text proposals should be treated:

- (99)d67 (update of (99)a80),

- **(99)d58** (update of (99)b05),
- **(99)d75** (update of (99)d03),
- **(99)d76** (update of (99)b29, includes also the agreed text proposals (99)b31 and (99)b30),
- **(99)d69** (update of (99)b61),
- and **(99)d70** (update of (99)b62).

Further, ad hoc #4 recommends R1 to agree to create a technical report with coding/multiplexing examples. The new report should be based on the documents **(99)b49** and **(99)d28**.

Unfortunately, although finishing very late (01.00), that ad hoc could not treat all identified contributions. On the agenda point AMR speech transmission, the following contributions were left untreated:

- **(99)b85**, Effect of EEP and UEP on channel coding for AMR (Nokia),
- **(99)b86**, Transmitting AMR and signaling on SF=256 in downlink (Nokia),
- **(99)c46**, Comparison between UEP and EEP for AMR channel coding (Nortel),
- **(99)d33**, L1 Transmission Method fit for AMR Speech (NTT DoCoMo, Ericsson),
- **(99)c54**, Blind rate detection for AMR speech transmission (NTT DoCoMo),
- **(99)c30**, Towards the support of UEP for speech in UTRA (Nortel),
- **(99)a59**, Draft liaison statement on support of speech service in RAN (Nortel).

Also, contribution **(99)c03**, "Additional open issues to be discussed in R1", could not be treated.

The ad hoc views the documents not treated as important for the WG1 work, and would like to ask for additional time to discuss these documents.