**Source:**          **AdHoc 8 Vice-chair**

**Title:**            **AdHoc 4 + 8 Report**

**Document for:**    **Approval**

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# Abstract

This is the report of the AdHoc 4+8 meeting which took place on March 1$^{st}$ from 14.00h to 18.00h. In the following, summary and conclusion about the presented input papers are given.

# 1. Clarifications on Compressed Mode usage

**R1-00-0342 CR25.215-036rev4 "Clarification of Compressed Mode parameters" (Nokia)**

This CR proposes a renaming and clarification of the definition of the parameters which are used to describe CM patterns and a rewriting of section 6.1.1.2 in TS25.215 in order to make the description of CM more clearer. Furthermore, the TGD parameter is proposed to be expressed in number of slots rather than number of frames for allowing especially half-frames offsets in case of IFHO FDD-FDD. It's also proposed that 2 transmission gaps contained in one transmission gap pattern can be of different length.

Conclusion: CR agreed. It was decided to send a LS to WG2, WG4 and WG3 in order to inform the other WG's about the changes in the new CM parameter names.

**R1-00-0218 CR 25.212-046 "SF/2 method, DTX insertion after second interleaver" (Nokia)**

This CR proposes to add 0.5 to 6.5 slots of DTX-insertion during Physical Channel Mapping when CM by SF-reduction is used, depending on the transmission gap length and location. Inserting DTX during the Physical Channel Mapping rather than the 2$^{nd}$ DTX insertion seems to better in terms of the necessary buffer size for the 2$^{nd}$ interleaver at the UE receiver.

There was a question on the performance of the proposed method by Qualcomm.

Conclusion: CR agreed.

# 2. Compressed Mode by Higher Layer Scheduling

**R1-00-0242 CR 25.212-041rev2 "Correction of UL CM by Higher Layer scheduling" (Ericsson)**

The problem addressed by this CR is that the current expression for the number of bits in a radio frame in CM by Higher Layer scheduling only holds when all TFC's use the same SF. A change of the notation in section 4.2.7.1.1 of TS25.212 is proposed.

There was no question or comment on this document.

Conclusion: CR agreed.

**R1-00-0364 CR25.212-061 "Removal of DL CM by Higher Layer Scheduling with fixed positions" (Ericsson)**

There are currently 3 different implementations of CM by Higher Layer Scheduling, (1) UL case, (2) DL with flexible positions of TrCh's and (3) DL with fixed positions of TrCh's in a radio frame.
With (3), it is generally not possible for the UE to derive which TFC's are used in the compressed frame from the knowledge of the employed transmission gap, e.g. the UE is explicitly signalled this information. This signalling is seen as relatively extensive. Fixed positions of TrCh's are needed when BTFD is used. BTFD is intended for low bit rate services and CM by Higher Layer Scheduling is only possible if UTRAN is allowed to schedule or control the bitstream(s) on the TrCh(s). Low bitrate TrCh's under the control of UTRAN are not expected to be so common that they justify special and extensive signalling. This document so proposes that CM by Higher Layer Scheduling should only be allowed with flexible positions of the TrCh's in the radio frame in the DL.

There was a comment that the case of low bitrate TrCh's under the control of UTRAN effectively occurs not that often. There was a question by Siemens if the possibility to perform BTFD is compromised. But as CM by Higher Layer Scheduling is anyway targeted on packet-oriented services, no direct relationship between BTFD and the removal of DL CM by Higher Layer Scheduling with fixed positions of TrCh's could be seen.

Conclusion: CR agreed.

# 3. Compressed Mode by Puncturing

**R1-00-0357 "DL CM by puncturing – discussion on the removal of the p-bits" (Nortel)**

At WG1#10, it could no be agreed where to describe the removal of the pruned bits for CM by Puncturing in the multiplexing chain. The original proposal made by Nortel was to remove the pruned bits in the Physical Channel Mapping block. This proposal was decided to be not suitable due to an eventual modification of the implementation of the 2nd IL. 2 other proposals were made to remove the p-bits either in the Physical Channel Segmentation block or to remove them just after the 1st IL, e.g. before Radio Frame Segmentation. These proposals are equivalent from a functional point of view with no constraint on the implementation. It was thus decided at RAN1#10 that the description of the pruned bits removal should be selected based on the smallest modifications of the specification.
This document comes to the conclusion that a description of the removal of the pruned bits in the Physical Segmentation block leads to fewer modifications than the proposal to remove the pruned bits p after the 1st IL.

Conclusion: There is slightly more support for pruned bit removal in the Physical Channel Segmentation block than for a description of pruned bit removal after the 1st IL, so this document is accepted.

**R1-00-0358 CR25.212-042rev4 "DL CM by puncturing (update)" (Nortel)**

This CR is the outcome of the discussions on the description of CM by puncturing during WG1#10 and comments which were given afterwards.

**R1-00-0343 (Mitsubishi)**

This document presents a method to determine the RM parameters in the context of CM by Puncturing. The new point of the presented method is the use of so-called segmentation coefficients. This document claims to solve the problem of Nortel's proposal in the case of flexible positions. Also, this document claims to make more efficient compression by using also shorter TTI's not directly overlapping with a gap, but contained in longer TTI overlapping with the gap, so the compression is shared by more blocks.

Discussion on above 2 documents: There was a consensus that the main difference between both approaches in R1-00-0358 and R1-00-0343 is the determination of the rate matching parameters itself, but not the functional description within the multiplexing chain. It was acknowledged that the special case of flexible positions is not clear with the proposal by Nortel. Some participants felt that the calculation of the segmentation coefficients in the Mitsubishi proposal should be given in an example in order to better understand this proposal. Also, Nokia had concerns that the Mitsubishi proposal in some situations might make the Outer-Loop Power-Control more complex, and that the claimed advantage of using also the TTI not directly overlapping with transmission gap might be not so big.

Conclusion on above 2 documents: It is agreed that a new CR is drafted, based CR25.212-042rev4 by Nortel with hooks that will enable a further elaboration of CM by Puncturing with the methods described in the Mitsubishi proposal for the case of flexible positions.

# 4. Outer-Loop Power-Control in Compressed Mode

### R1-00-0262 "Outer-Loop Power-Control in Compressed Mode" (Alcatel)

The Target SIR in case of CM by SF-reduction is changed during compressed and recovery frames by signalling 2 parameters, deltaSIR and deltaSIRafter. In case of CM by Puncturing which is applied on a TTI by TTI basis, some modifications need to be done for the Outer-Loop Power-Control algorithm. A first method was proposed during WG1#10 by signalling a SIR target offset for each TTI length. The proposal in this document is to use the same deltaSIR and deltaSIR_after parameters, whatever the CM method is. The assumption is that the degradation due to excessive puncturing is only significant for TTI of 10 or 20 ms and is negligible otherwise so that therefore only the SIR target increase during compressed and recovery frames needs to be signalled. A reference algorithm is proposed in this document. Another advantage of the proposed method is that it is less restrictive regarding the setting of TGD and TGP parameters. It is proposed to send a LS to WG2, such that WG2 can specify a reference algorithm.

### R1-00-0331 CR25.215-045 "Outer-loop power control in compressed mode" (Alcatel)

It is proposed that when several parallel CM patterns are used, the patterns which use CM by Puncturing occur in such a way that within the same maximum TTI interval in the CCTrCH, there are transmission gaps from only one of the patterns. Otherwise, the setting of deltaSIR and deltaSIRafter values for outer-loop power control could become too complicated.

Conclusion on above 2 documents: The idea to use the same set of parameters deltaSIR and deltaSIRafter for signalling the Target SIR during compressed and recovery frames in both cases of CM by SF-reduction and CM by Puncturing was agreed. The CR in R1-00-0331 has not been accepted as it was decided to send a LS to WG2 and WG4 first in order to check if the proposed restrictions on the CM parameters are acceptable. Also, some editorial comments on CR25.215-045 were made.

# 5. Seamless Hard Handover

### R1-00-0305 "CM for seamless Hard Handover" (Siemens)

The proposal of this document is to use CM during an Hard Handover, e.g. the last frame of the source cell and the first frame in the target cell could be compressed. The argument is that this could give some benefits in terms of having an idle time period between the last UL Tx in the source cell and the first DL Tx in the target cell. This idle time could offer the possibility to compensate for the maximum possible deviation from the ideal frame alignment, give a sufficient time margin for synthesiser frequency switching time and also for handling the time offset between UL and DL.

There were some comments that this issue is mainly WG2-relevant and also the need for standardisation of such an procedure in WG1 was questioned as it was felt that all the necessary tools are already in place.

Conclusion: A LS on the use of CM for Hard Handover will be sent to WG2.

# 6. Others

**R1-00-0254 "Improved End Puncturing Scheme for Convolutional Codes" (Siemens)**

This document presents simulations results that show a performance enhancement compared to the evenly distributed rate matching approach when end puncturing is done. This performance gain is larger for very short codes (up to 0.3 dB), but declines for middle and especially long codes. The paper shows that end puncturing has very interesting properties regarding performance especially when supporting channel coding with short information blocks like the medium and low rate AMR modes. It is proposed to implement the end puncturing method after convolutional coding in UL and DL as an option.

There are concerns about the increased complexity when implementing several puncturing schemes, for Release '99.

Conclusion: It's concluded that the end puncturing scheme is not submitted for inclusion in Release '99 and that the discussion will continue for Release 2000.

The following 2 documents were also submitted for presentation, but as they are not directly related to AdHoc 4+8, it was agreed that they should be treated in the plenary session.

R1-00-0306 CR25.214-075 "UL synchronisation for seamless Hard Handover" (Siemens)
R1-00-0297 CR25.211-040 "Clarification of downlink pilot bit patterns" (NEC)

# CR list

| Tdoc | Source | Title |
|---|---|---|
| R1-00-0342 CR25.215-036rev4 | Nokia | Clarification of Compressed Mode parameters |
| R1-00-0242 CR25.212-041rev2 | Ericsson | Correction of UL CM by higher layer scheduling |
| R1-00-0364 CR25.212-061 | Ericsson | Removal of DL CM by Higher Layer Scheduling with fixed positions |
| R1-00-0418 CR25.212-042rev5 | Nortel | DL CM by puncturing (update) |
| R1-00-0218 CR25.212-046 | Nokia | SF/2 method, DTX insertion after second interleaver |

# List of outgoing LS's

| Tdoc | Source | Title |
|---|---|---|
| R1-00-0317 | Nokia | LS on CM parameters |
| R1-00-0402 | Siemens | LS on use of CM for seamless Hard Handover |
| R1-00-0394 | Alcatel | LS on Outer-Loop Power-Control in Compressed Mode |