3GPP TSG-RAN WG1 Meeting #104bis-e R1-21xxxxx

e-Meeting, 12th – 20th April 2021

Agenda Item: 6.2.1

Source: Moderator (Ericsson)

Title: FL summary for Multi-TB and PUR issues for Rel-16 LTE-MTC

Document for: Discussion, Decision

# 1 Introduction

This document provides a summary of the following RAN1 email discussion.

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| [104b-e-LTE-eMTC5-02] Multi-TB and PUR issues – Johan (Ericsson)* Issue #1: Correction of PUCCH transmit power control for multi-TB scheduling ([R1-2102848](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104b-e/Docs/R1-2102848.zip))
* Issue #2: Correction of bundling parameter for multi-TB scheduling ([R1-2102849](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104b-e/Docs/R1-2102849.zip))
* Issue #3: Clarification of PUSCH PRB resources for PUR ([R1-2103721](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104b-e/Docs/R1-2103721.zip))
* Discussion and decision by April 15, TPs by April 20
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# Issue #1: Correction of PUCCH transmit power control for multi-TB scheduling

Contribution [1] proposes to clarify that the PUCCH transmit power is the same for all PUCCH transmissions corresponding to TBs scheduled by the same DCI.

**Question 1-1: Companies are invited to comment below on the 36.213 TP in [1] for correction of PUCCH transmit power control for multi-TB scheduling.**

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| **Company** | **Comments** |
| Lenovo, MotoM | PUCCH can be configured to transmit periodically w/o DCI indication and PUCCH may not be associated with PDSCH(e.g., not ACK/NACK), so we don’t think the CR is OK. How about the following updated CRFor a BL/CE UE configured with CEModeA, if the PUCCH, or multiple PUCCHs corresponding to PDSCH scheduled by one DCI, are transmitted in more than one subframe *i0*, *i1*, …, *iN-1* where *i0*< *i1*< …< *iN-1*, the PUCCH(s) transmit power in subframe *ik* , *k*=0, 1, …, *N*-1is determined by |
| Qualcomm | We think Lenovo’s version is slightly more clear, but we don’t have a strong view. |
| Ericsson | In Lenovo’s TP above, “PDSCH” can be replaced with “PDSCHs”. |
| ZTE,Sanechips | We are OK with the modification from Lenovo and Ericsson. |
| Moderator (Ericsson) | Proposal 1-2: Agree the following 36.213 TP in principle, and draft a corresponding CR:For a BL/CE UE configured with CEModeA, if the PUCCH, or multiple PUCCHs corresponding to PDSCHs scheduling by one DCI, is/are transmitted in more than one subframe *i0*, *i1*, …, *iN-1* where *i0*< *i1*< …< *iN-1*, the PUCCH(s) transmit power in subframe *ik* , *k*=0, 1, …, *N*-1is determined by |
| Huawei, HiSilicon | We are fine the proposal from Moderator, maybe it’s better to have a bracket there as “or multiple PUCCHs corresponding to PDSCH(s) scheduling by one DCI” as it’s possible the PUCCH corresponds a single PDSCH. |
| Ericsson 2 | Regarding the comment from Huawei/HiSilicon, if there are multiple PUCCHs, there are also multiple PDSCHs, so it should probably say “PDSCHs” without parentheses. |
| Moderator (Ericsson) | Based on received comments, it seems that Proposal 1-2 above is acceptable, but it has been suggested in the email discussion to replace “is/are” with “are”, so the following updated version of the proposal can be considered.Proposal 1-3: Agree the following 36.213 TP in principle, and draft a corresponding CR:For a BL/CE UE configured with CEModeA, if the PUCCH, or multiple PUCCHs corresponding to PDSCHs scheduling by one DCI, are ~~is~~ transmitted in more than one subframe *i0*, *i1*, …, *iN-1* where *i0*< *i1*< …< *iN-1*, the PUCCH(s) transmit power in subframe *ik* , *k*=0, 1, …, *N*-1is determined by |
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# Issue #2: Correction of bundling parameter for multi-TB scheduling

Contribution [2] proposes to change the parameter name *multi-TB-DL-HARQ-bundling* to *harq-AckBundling* in one place in 36.212 in order to align with 36.331.

**Question 2-1: Companies are invited to comment below on the 36.212 TP in [2] for correction of bundling parameter for multi-TB scheduling.**

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| **Company** | **Comments** |
| Lenovo, MotoM | We are fine with the CR |
| FUTUREWEI | OK with the CR. It should be clear that this parameter is for the -r16 feature. |
| Nokia, NSB | Fine with CR |
| Qualcomm | OK with the CR |
| Ericsson | We support the proposed change. |
| ZTE,Sanechips | OK with the CR |
| Moderator (Ericsson) | Proposal 2-2: Agree the draft 36.212 CR in [R1-2102849](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104b-e/Docs/R1-2102849.zip) in principle, with a modification to make it clear that the text concerns *harq-AckBundling-r16*, and draft a corresponding CR. |
| ZTE2 | *ce-HARQ-AckBundling* is for R14 feature. *harq-AckBundling* is for R16 feature and it is used in TS36.213 subclause 7.3

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| For a BL/CE UE, if the UE is configured with CEModeA, and if the UE is configured with higher layer parameter *harq-AckBundling* in *ce-PDSCH-MultiTB-Config* and multiple TB are scheduled in the corresponding DCI format 6-1A with CRC scrambled by C-RNTI, |

Therefore, actually there is no confusion. In order to keep aligned with 36.213, we hope the *harq-AckBundling* can be kept. |
| Huawei, HiSilicon | We are fine with the CR. |
| Ericsson 2 | The ZTE2 comment seems to make sense, so perhaps there is no need for any modification to make it clearer that the text concerns the -r16 variant. |
| FUTUREWEI | To repeat our initial comment: we are OK with the CR, it should be clear that this parameter is for the -r16 feature if the specs are read carefully. (I had checked the names in 331 for both the -r14 and -r16 features to make sure there would be no confusion or need to add -r16. Though the names are similar they are not the same, same as what ZTE showed from 213.) |
| Moderator (Ericsson) | Based on received comments, the following proposal can be considered.Proposal 2-3: Agree the draft 36.212 CR in [R1-2102849](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104b-e/Docs/R1-2102849.zip) in principle, and draft a corresponding CR. |
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# Issue #3: Clarification of PUSCH PRB resources for PUR

Contribution [3] proposes to clarify how to obtain the PUSCH PRB resource configuration for PUR.

**Question 3-1: Companies are invited to comment below on the 36.211 TP in [3] for clarification of PUSCH PRB resources for PUR.**

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| **Company** | **Comments** |
| Lenovo, MotoM | We are fine with the CR |
| Nokia, NSB | Fine with CR |
| Ericsson | We support the proposed change. |
| ZTE,Sanechips | OK with the CR |
| Moderator (Ericsson) | Proposal 3-2: Agree the 36.211 TP in [R1-2103721](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104b-e/Docs/R1-2103721.zip) in principle, and draft a corresponding CR. |
| Huawei, HiSilicon | We are fine with the CR. |
| Moderator (Ericsson) | Based on received comments, it seems that Proposal 3-2 above is acceptable. |
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# References

1. [R1-2102848](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104b-e/Docs/R1-2102848.zip), “Correction on PUCCH transmit power control for LTE-M”, ZTE, Sanechips

1. [R1-2102849](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104b-e/Docs/R1-2102849.zip), “Correction on bundling parameter for multi-TB scheduling for LTE-M”, ZTE, Sanechips

1. [R1-2103721](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104b-e/Docs/R1-2103721.zip), “PUR maintenance issues for Rel-16 LTE-MTC”, Ericsson