3GPP TSG-RAN WG1 Meeting #100bis-e R1-20xxxxx

e-Meeting, April 20th – 30th, 2020

Agenda Item: 6.2.1.3

Source: Moderator (Ericsson)

Title: Feature lead summary #2 for Multi-TB scheduling for LTE-MTC

Document for: Discussion, Decision

# Introduction

In the Rel-16 work item on “Additional MTC enhancements for LTE” [1], one of the objectives is to specify support for scheduling of multiple DL/UL transport blocks.

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| The objective is to specify the following set of improvements for machine-type communications for BL/CE UEs.[...]**Scheduling enhancement:*** Specify scheduling multiple DL/UL transport blocks with single DCI for SC-PTM and unicast [RAN1, RAN2]
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RAN1 agreements made until RAN1#99 are summarized in [2] and RAN1 agreements made in RAN1#100e are listed below. RAN2 agreements are summarized in [3]. The endorsed L1 configuration parameter list can be found in [4], the initial RAN1 UE feature list in [5], and the endorsed RAN1 CRs in [6] – [16].

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| [**R1-2001056**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_100_e/Docs/R1-2001056.zip) Feature lead summary for Multi-TB scheduling for LTE-MTC Ericsson[**R1-2001185**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_100_e/Docs/R1-2001185.zip) Feature lead summary#2 for Multi-TB scheduling for LTE-MTC Ericsson[**R1-2001220**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_100_e/Docs/R1-2001220.zip) Feature lead summary#3 for Multi-TB scheduling for LTE-MTC Ericsson[100e-LTE-eMTC5-Multi-TB-01] – Johan (Ericsson)Email discussion/approval onHARQ/NDI/RV/FH encoding for both FDD and TDDby 2/27; if there is a spec impact, followed by endorsing the corresponding TP by 3/2**Conclusion**For FDD case:* For 36.212, use Futurewei’s TP in [R1-2001086](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_100_e/Docs/R1-2001086.zip) as a basis, possibly with the clarification “From MSB to LSB” in each section.
* For 36.211 and 36.213, take the provided comments and proposals into account in contributions to the next meeting.

For TDD case:* There is no consensus in RAN1#100e for optimization (or elimination) of the TDD HARQ process grouping. The 36.212 seems adequate and potential corresponding 36.213 text can be added in the next meeting.

As per email decision posted on Mar. 4th, two companies prefer not to add “From MSB to LSB”, so:Agreement: The text proposal in [R1-2001086](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_100_e/Docs/R1-2001086.zip) is endorsed for inclusion into TS36.212 editor’s CR.[100e-LTE-eMTC5-Multi-TB-02] – Johan (Ericsson)Email discussion/approval onHARQ-ACK bundling for both FDD and TDDby 2/27; if there is a spec impact, followed by endorsing the corresponding TP by 3/2As per email decision posted on Mar. 5th,:Agreement: The TP provided in [R1-2001214](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_100_e/Docs/R1-2001214.zip) for TS36.213 section 10.2 is endorsed. To be included as part of the editor’s CR for TS36.213.[100e-LTE-eMTC5-Multi-TB-03] – Johan (Ericsson)Email discussion/approval onscheduling gaps for both unicast and multicastby 2/27; if there is a spec impact, followed by endorsing the corresponding TP by 3/2**Conclusion**For the unicast case* There is no consensus in RAN1#100e for the proposal to specify explicit unicast scheduling gaps.
* Since unicast scheduling gaps are included in the draft RAN1 UE feature list, there may be a need to update the feature list, and this is something that can be brought up in the email discussion for the feature list.

For the multicast case* There is no consensus in RAN1#100e for the proposal to insert the scheduling gaps before each TB instead of after each TB.
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This document provides a prioritized list of issues and proposals based on the contributions in [17] – [23].

# Issue #3: HARQ-ACK bundling size

RAN1#100e identified a need to define the mapping between DCI field ‘Multi-TB HARQ-ACK bundling size’ in 36.212 and parameter ‘M’ in 36.213. The 36.212 editor’s interpretation of the earlier RAN1 agreements is presented in Futurewei’s contribution [23].

Huawei’s contribution [17] and ZTE’s contribution [18] propose to map 0-3 in 36.212 to 1-4 in 36.213, whereas Qualcomm’s contribution [20] proposes to use 1 instead of 2 bits in the DCI and derive the bundle size from a table in the specification (see Section 2.3 in Huawei’s contribution, Section 2.2.4 in ZTE’s contribution, Issue #1 in Qualcomm’s contribution and Issue #2 in Ericsson’s contribution for further discussion).

Proposal 3-1: Discuss and decide on a mapping between DCI field ‘Multi-TB HARQ-ACK bundling size’ in 36.212 and parameter ‘M’ in 36.213.

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| **Company** | **Comments on Proposal 3-1** |
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# References

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2. [R1-1913611](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_99/Docs/R1-1913611.zip), Addition of feature for 36.212
3. [R1-1913612](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_99/Docs/R1-1913612.zip), Addition of feature for 36.213 (s00-s05)
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6. [R1-1913684](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_99/Docs/R1-1913684.zip), Addition of feature for 36.213 (s10-s13)
7. [R1-1913615](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_99/Docs/R1-1913615.zip), Addition of feature for 36.213 (s14-sxx)

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