**3GPP TSG-RAN WG1 Meeting #106-eR1-210XXXX**

e-Meeting, August 16th – 27th, 2021

**Agenda item: 8.3**

**Source: Moderator (Nokia)**

**Title: [Post-106-e-Rel17-RRC-03] Enhanced IIoT and URLLC**

**Document for: Discussion and Decision**

# Introduction

As per chairman’s guidance, the email discussion

* [Post-106-e-Rel17-RRC-03] Enhanced IIoT and URLLC

is planned according to the following guidelines:

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| *As announced during RAN1#106-e, there will be a number of email threads on Rel-17 RRC parameters. For each Rel-17 work item, the work item rapporteur will kick off the email thread. The email discussions on RRC parameters will start from September 1 until September 10 (of course excluding the weekend). The purpose of these email discussions is to initiate our preparations to send the first LS to RAN2 on Rel-17 RRC parameters in October (e.g. tabulate agreed RRC parameters so far and identify ones that RAN1 should discuss whether or not to define).*  *Please note that RAN1 will NOT be making any decision with regards to the Rel-17 RRC parameters during the email discussions. Intention is to have the work item rapporteurs provide their initial assessment and collect company views if there are any. I am hoping that this discussion will help companies better prepare for RAN1#106bis-e. For each email thread, the rapporteur is to provide a tdoc collecting company views along with a draft list of RRC parameter at the end of the email discussion.* |

This document is there to support the RAN1 email discussion on the RRC parameter list for the Rel-17 URLLC/IIoT WI. Companies are encouraged to provide their comments on the latest version of the RRC parameter sheet in the respective AI specific drafts folder and the changes to the RRC parameter sheet will only be done by the AI moderator based on the received comments in each round or iteration of email discussions on this issue.

**This document is structured as follows:**

* Section 2 contains the email discussion for HARQ-ACK enhancements (AI 8.3.1.1)
* Section 3 contains the email discussion for CSI enhancements (AI 8.3.1.2)
* Section 4 contains the email discussion for NR-U enhancements (AI 8.3.2)
* Section 5 contains the email discussion for Intra-UE periodization enhancements (AI 8.3.3)
* Section 6 contains the email discussion for Other / Propagation delay compensation (AI 8.3.4)

# HARQ-ACK enhancements (AI 8.3.1.1)

VOID

# CSI enhancements (AI 8.3.1.2)

VOID

1. NR-U Enhancements (AI 8.3.2)

VOID

1. Intra-UE multiplexing & priorization enh. (AI 8.3.3)
   1. Multiplexing UCIs of different priorities in a PUCCH

### 1st Round

The following need for RRC parameters has been identified by the moderator:

1. Enable the feature (explicit agreement is not yet available, but it seems the common sense of the group)
2. Configure an additional *maxCodeRate* for LP HARQ-ACK in the second PUCCH-Config per PUCCH format.

* *maxCodeRateList-R17* is added in PUCCH-FormatConfig with size=2. And the field is absent for the 1st entry of PUCCH-ConfigurationList-r16.

On these and in case of having missed some aspect, please comment below as well:

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| *Company* | *Comments* |
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* 1. Multiplexing UCIs of different priorities in a PUSCH

### 1st Round

The following need for RRC parameters has been identified by the moderator:

1. Enable the feature (explicit agreement is not yet available, but it seems the common sense of the group)
2. Configure 2 new set of beta offset values for the following cases:

* Multiplexing LP HARQ-ACK on HP PUSCH
* Multiplexing HP HARQ-ACK on LP PUSCH

Following new parameters are suggested:

* *UCI-OnPUSCH-r17* and *UCI-OnPUSCH-DCI-0-2-r17* are added to only consist of betaOffsets, and no scaling, compared to *UCI-OnPUSCH.*
* *UCI-OnPUSCH-ListDCI-0-1-r17* and *UCI-OnPUSCH-ListDCI-0-2-r17* are added with size=2.

On these and in case of having missed some aspect, please comment below as well:

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| *Company* | *Comments* |
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* 1. Simultaneous PUCCH/PUSCH transmissions

### 1st Round

The following need for RRC parameters has been identified by the moderator:

1. Enable the feature

On these and in case of having missed some aspect, please comment below as well:

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| --- | --- |
| *Company* | *Comments* |
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1. Propagation delay compensation (AI 8.3.4)

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