**3GPP TSG RAN WG1 #101e R1-** **20xxxxx**

**May 25th – June 5th, 2020**

**Agenda item:** 7.2.5.4

**Source:** Moderator (Qualcomm)

**Title:** Summary of [101-e-NR-L1enh-URLLC-HARQ&Scheduling-02]

**Document for:** Discussion and Decision

# 1 Introduction

This document summarizes the companies’ views and captures the agreements related to the following email discussion:

**Email Discussion #2 by 5/29 and corresponding TP (if any) by 6/5 – Kianoush (Qualcomm):**

* *Cancellation timeline for the case that the high priority channel is transmitted without an associated scheduling PDCCH (e.g., CG-PUSCH, SR, etc.)*

**Companies are encouraged to share their initial feedback by 05/26.**

The summary of the companies’ proposals is available in [1].

# 2 Cancellation Handling with Configured High Priority Transmission

As part of this email discussion, RAN1 aims at determining the UE’s cancellation timeline and behaviour in case a high priority configured channel, i.e., SR or CG-PUSCH or PUCCH carrying only HARQ-ACK bits for SPS configuration(s), collides with low priority channels. **Note that CG-PUSCH+CG-PUSCH and CG-PUSCH+DG-PUSCH collision handling is not part of this discussion for now.**

Following the discussions during the RAN1 100e-b meeting, the feature lead recommendation is to start the discussions by considering the following proposals:

***Proposal 1: For handling collision between a high priority configured UL transmission and low priority channels in the following cases, it is up to UE implementation to ensure that the low priority UL transmission is cancelled no later than the start of the high priority UL transmission:***

* ***Case 1: Collision between a high priority SR PUCCH and any low priority channels***
* ***Case 2: Collision between a high priority CG-PUSCH and a low priority PUCCH***
* ***Case 3: Collision between a high priority PUCCH carrying only HARQ-ACK corresponding to PDSCH without corresponding PDCCH and any low priority configured uplink transmission.***

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| **Company**  | **Agree/Disagree + Comment** |
| ZTE | Agree.  |
| Nokia, NSB | We agree in principle that it should be left to UE implementation if earlier cancelation is done (not just the symbol before). Having said that, for cancelation of LP PUSCH (with MAC PDU delivered), if the UE could cancel even before the start of the transmission, the gNB will not know if the LP PUSCH had data mapped or not (i.e. skipping). It would be nice for the gNB to know if there had been data (i.e. a MAC PDU) for potential re-transmission decisions!**Therefore, we agree with Case 2, but for Case 1 and Case 3, in case the low priority channel is PUSCH,** **we suggest the UE to not cancel the UL-DMRS transmission for LP PUSCH not overlapping with HP PUCCH.** That is: separation of Case 1 to Case 1a and Case 1b: * Case 1a: Collision between a high priority SR and a low priority PUSCH, the UE will at least still transmit the first symbol containing DMRS (if not overlapping with HP SR).

* Case 1b: Collision between a high priority SR and a low priority channel other than PUSCH, it is up to UE implementation.

And similarly, separation of Case 3 to Case 3a and Case 3b:* Case 3a: Collision between a high priority PUCCH carrying only HARQ-ACK corresponding to PDSCH without corresponding PDCCH and a low priority PUSCH, the UE will at least still transmit the first symbol containing DMRS (if not overlapping with HP PUCCH).
* Case 3b: Collision between a high priority PUCCH carrying only HARQ-ACK corresponding to PDSCH without corresponding PDCCH and a low priority channel other than PUSCH, it is up to UE implementation.
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***Proposal 2: For handling collision between a high priority PUCCH carrying only HARQ-ACK corresponding to PDSCH without corresponding PDCCH and anydynamically scheduled low priority uplink transmission, adopt one of the following two options:***

* ***Option 1: It is up to UE implementation to ensure that the low priority UL transmission is cancelled no later than the start of the high priority UL transmission***
* ***Option 2: A UE is not expected to be scheduled with a PUCCH or PUSCH with low priority overlapping with a high priority PUCCH carrying only HARQ-ACK for PDSCH without corresponding PDCCH.***

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| **Company**  | **Option 1 or 2 + Reason for your choice**  |
| ZTE | We support Option 1. We needn’t split this issue from case 3 in proposal 1. |
|  Nokia, NSB | Option 1, but the same different handling as for Proposal 1 suggested above – i.e. if the canceled LP channel is PUSCH or not (for PUSCH, the UE should at least still transmit the first symbol containing DMRS if not overlapping) |
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# 3 References

**[1] R1-2004674, “Summary#1 on UCI enhancements for R16 URLLC,” Moderator (OPPO)**