**3GPP TSG RAN WG1 #114** **R1-230xxxx**

**Toulouse, France, August 21st – 25th, 2023**

**Agenda item:** 9.17

**Source:** Samsung

**Title:** Summary of email discussions [114-R18-38.213-NR\_XR\_enh]

**Document for:** Discussion and decision

# Introduction

The purpose of this document is to collect inputs/comments on the draft CR for TS 38.213 [draftCR\_38213 XR](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Inbox/drafts/9.17%28Other%29/%5B38.213%20draft%20CRs%5D/NR_XR_enh/R1-230xxxx%20draftCR_38213%20XR.docx) on the introduction of XR Enhancements for NR. If a comment on a particular aspect has been made by another company, please do not repeat it until, if needed, after a response.

The first checkpoint is on September 5, UTC 13:00.

# First Round Discussion

Please provide your comments on the draft CR for TS 38.213 [draftCR\_38213 XR](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Inbox/drafts/9.17%28Other%29/%5B38.213%20draft%20CRs%5D/NR_XR_enh/R1-230xxxx%20draftCR_38213%20XR.docx).

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| Company | Comments |
| Qualcomm | Comment 1: According to the following RAN1 #92bis agreement, we are not sure whether it is correct or necessary to state that “The CG-UCI has same priority value as the PUSCH”.Agreement:CG-UCI is mapped as per Rel-15 rules with CG-UCI having the highest priority (CG-UCI is mapped on the symbols starting after first DMRS symbol)

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| For a PUSCH transmission that is configured by a *ConfiguredGrantConfig* and includes CG-UCI, the UE multiplexes the CG-UCI in the PUSCH transmission using a value provided by *betaOffsetCG-UCI* with the mapping defined in Table 9.3-1. The CG-UCI has same priority value as the PUSCH. If the UE is provided *cg-UCI-Multiplexing* and multiplexes HARQ-ACK information of same priority value as the CG-UCI in the PUSCH transmission, as described in clauses 9 and 9.2.5, the UE jointly encodes the HARQ-ACK information and the CG-UCI [5, TS 38.212] and determines a number of resources for multiplexing the combined information in a PUSCH using which provides indexes and for the UE to use if the UE multiplexes up to 11, and more than 11 combined information bits, respectively.  |

Comment 2: The following CR seems to imply the UTO-UCI is only applicable to multi-PUSCH CG period. This is still under discussion without a conclusion yet. Suggest to remove the first sentence “A UE can be indicated, by *nrofSlots\_InCGperiod* in *configuredGrantConfig*, more than one TO for CG-PUSCH transmission within a period of a CG-PUSCH configuration [6, TS 38.214].”

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| 9.3.1 UE procedure for reporting UTO-UCIA UE can be indicated, by *nrofSlots\_InCGperiod* in *configuredGrantConfig*, more than one TO for CG-PUSCH transmission within a period of a CG-PUSCH configuration [6, TS 38.214]. If the UE is also provided *nrof\_UTO\_UCI* with value equal to , the UE multiplexes UTO-UCI represented by a bitmap of bits in each CG-PUSCH transmission for the CG-PUSCH configuration.  |

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| Ericsson | Thanks Editor for the great efforts to provide the draft CR. We have some comments similarly as QC with some suggestions for your consideration.**Comment 1:** Regarding the new condition of same priority for multiplexing HARQ-ACK and CG-UCI or UTO-UCI, we don’t think it is needed.In addition to the cited agreement from QC, in Rel-17 when UCI multiplexing of different priorities were introduced, the following agreement was made for CH-UCI:**Agreement (RAN1#106bis-e)*** When performing Intra-UE multiplexing procedure, if a PUCCH withHARQ-ACK overlaps with a CG-PUSCH and the cg-RetransmissionTimer is configured:
	+ If the HARQ-ACK and the CG-PUSCH have the same priority and the CG-PUSCH is selected for HARQ-ACK multiplexing:
		- * If cg-UCI-Multiplexing is enabled for that CG-PUSCH, HARQ-ACK would be multiplexed in CG-PUSCH.
			* Otherwise, CG-PUSCH would be dropped.
	+ If the HARQ-ACK and the CG-PUSCH have different priority and the CG-PUSCH is selected for HARQ-ACK multiplexing:
		- If multiplexing HARQ-ACK on the CG-PUSCH with different priority is not indicated,
			* The LP channel between PUCCH or CG-PUSCH would be dropped as in Rel-16.
		- If multiplexing HARQ-ACK on the CG-PUSCH with different priority is indicated,
			* + If cg-UCI-Multiplexing is enabled for that CG-PUSCH, HARQ-ACK would be multiplexed in CG-PUSCH.
				+ Otherwise, the LP channel would be dropped.

Hence, basically, HARQ-ACK with different priority than CG-UCI can be multiplexed in CG-PUSCH and the beta offset, would be the one of HARQ-ACK.For UTO-UCI we apply the same , assuming UTO-UCI and HARQ-ACK joint coding is always enabled (since we did not agree to introduce an RRC like cg-UCI-Multiplexing to disable the joint coding).**Comment 2**: Similarly to QC, UTO-UCI indication is a separate feature for CG PUSCH, including legacy and multi-PUSCH Rel-18. Perhaps the following modification can be considered:9.3.1       UE procedure for reporting UTO-UCI~~A UE can be indicated, by~~ *~~nrofSlots\_InCGperiod~~* ~~in~~ *~~configuredGrantConfig~~*~~, more than one TO for CG-PUSCH transmission within a period of a CG-PUSCH configuration [6, TS 38.214].~~ If the UE is ~~also~~ provided *nrof\_UTO\_UCI* with value equal to in *configuredGrantConfig* of a CG-PUSCH configuration [6, TS 38.214],  the UE multiplexes UTO-UCI represented by a bitmap of bits in each CG-PUSCH transmission for the CG-PUSCH configuration. **Comment 3: For** completeness it is good to define the order of mapping , e.g. the MSB of bit map corresponds to the next TO and the LSB bit to the last TO in the following text in 9.3.1.The UTO-UCI of bits has a one-to-one mapping to subsequent CG-PUSCH TOs. |
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