**3GPP TSG RAN WG1 Meeting # 110bis-eR1-2210640**

**E-meeting, October 10th – 19th, 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **DRAFT CHANGE REQUEST** | | | | | | | | |
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|  | **38.212** | **CR** | **-** | **rev** | **-** | **Current version:** | **17.3.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Draft CR on priority of CG-UCI | | | | | | | | | |
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| ***Source to WG:*** | Moderator (OPPO), ITRI, Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | | 2022-10-18 |
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| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | According to RAN1#109e agreement, when *cg-UCI-Multiplexing* is enabled, the CG-UCI has the same priority as the PUSCH.  **Agreement**  When *cg-UCI-Multiplexing* is enabled, for PUSCH with CG UCI multiplexing with HARQ-ACK, if any,   * CG-UCI has the same priority as the PUSCH. * Treat the CG-UCI of a certain priority as if a HARQ-ACK of the same priority. * Joint encode CG-UCI with HARQ-ACK of the same priority if it exists. * Then reuse the existing multiplexing rules.   However, according to current specification, the rate matching procedure should consider the case of CG-UCI associated with priority index 1 when the PUSCH is associated with priority index 0 which is not consistent with the agreement and would introduce unnecessary UE behavior on the rate matching procedure. | | | | | | | | |
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| ***Summary of change:*** | | To remove the condition of rate matching for CG-UCI associated with priority index 1 when the PUSCH is associated with priority index 0. | | | | | | | | |
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| ***Consequences if not approved:*** | | Unnecessary UE behavior in the rate matching procedure. | | | | | | | | |
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| ***Clauses affected:*** | | 6.3.2.4.1.6, 6.3.2.4.2.6 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
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| ***Other comments:*** | | **Isolated impact analysis:**  This CR is based on RAN1’s common understanding, which has no impact on UE behavior. | | | | | | | | |
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| ***This CR's revision history:*** | | This is the first version for this CR. | | | | | | | | |

6.3.2.4.1.6 UCI with different priority indexes

**< Unchanged parts are omitted >**

If *uci-MuxWithDiffPrio* is configured, and HARQ-ACK bits associated with priority index 0, HARQ-ACK bits associated with priority index 1 and/or CG-UCI associated with priority index 1, and CSI part 1 if any are transmitted on a PUSCH:

- Perform rate matching for HARQ-ACK with priority index 1 according to clause 6.3.2.4.1.1, by taking HARQ-ACK with priority index 1 as HARQ-ACK and replacing by , if HARQ-ACK bits associated with priority index 1 are transmitted without CG-UCI associated with priority index 1.

- Perform rate matching for CG-UCI with priority index 1 according to clause 6.3.2.4.1.4, if CG-UCI associated with priority index 1 is transmitted without HARQ-ACK bits associated with priority index 1.

- Perform rate matching for CG-UCI with priority index 1 and HARQ-ACK with priority index 1 according to clause 6.3.2.4.1.5, if both CG-UCI associated with priority index 1 and HARQ-ACK bits associated with priority index 1 are transmitted, by taking HARQ-ACK with priority index 1 as HARQ-ACK and replacing by .

- If CSI part 1 is also transmitted on the PUSCH and the PUSCH is associated with priority index 1,

- Perform rate matching for CSI part 1 according to clause 6.3.2.4.1.2, by taking HARQ-ACK with priority index 1 if any as HARQ-ACK, and taking CG-UCI associated with priority index 1 if any as CG-UCI.

- Perform rate matching for HARQ-ACK with priority index 0 according to clause 6.3.2.4.1.3, by taking HARQ-ACK with priority index 0 as CSI part 2 and replacing by , and taking HARQ-ACK with priority index 1 if any as HARQ-ACK, and taking CG-UCI associated with priority index 1 if any as CG-UCI.

- Otherwise,

- Perform rate matching for HARQ-ACK with priority index 0 according to clause 6.3.2.4.1.2, by taking HARQ-ACK with priority index 0 as CSI-part 1 and replacing by and taking HARQ-ACK with priority index 1 if any as HARQ-ACK, and taking CG-UCI associated with priority index 1 if any as CG-UCI.

- Perform rate matching for CSI part 1 according to clause 6.3.2.4.1.3, by taking CSI part 1 as CSI part 2 and replacing by , taking HARQ-ACK with priority index 0 as CSI-part 1 and taking HARQ-ACK with priority index 1 as HARQ-ACK, if CSI part 1 is also transmitted on the PUSCH and the PUSCH is associated with priority index 0.

**< Unchanged parts are omitted >**

6.3.2.4.2.6 UCI with different priority indexes

**< Unchanged parts are omitted >**

If *uci-MuxWithDiffPrio* is configured, and HARQ-ACK bits associated with priority index 0, HARQ-ACK bits associated with priority index 1 and/or CG-UCI associated with priority index 1, and CSI part 1 if any are transmitted on a PUSCH:

- Perform rate matching for HARQ-ACK with priority index 1 according to clause 6.3.2.4.2.1, by taking HARQ-ACK with priority index 1 as HARQ-ACK and replacing by , if HARQ-ACK bits associated with priority index 1 are transmitted without CG-UCI associated with priority index 1.

- Perform rate matching for CG-UCI with priority index 1 according to clause 6.3.2.4.2.4, if CG-UCI associated with priority index 1 is transmitted without HARQ-ACK bits associated with priority index 1.

- Perform rate matching for CG-UCI with priority index 1 and HARQ-ACK with priority index 1 according to clause 6.3.2.4.2.5, if both CG-UCI associated with priority index 1 and HARQ-ACK bits associated with priority index 1 are transmitted, by taking HARQ-ACK with priority index 1 as HARQ-ACK and replacing by .

- If CSI part 1 is also transmitted on the PUSCH and the PUSCH is associated with priority index 1,

- Perform rate matching for CSI part 1 according to clause 6.3.2.4.2.2, by taking HARQ-ACK with priority index 1 if any as HARQ-ACK, and taking CG-UCI associated with priority index 1 if any as CG-UCI.

- Perform rate matching for HARQ-ACK with priority index 0 according to clause 6.3.2.4.2.3, by taking HARQ-ACK with priority index 0 as CSI part 2 and replacing by , and taking HARQ-ACK with priority index 1 if any as HARQ-ACK, and taking CG-UCI associated with priority index 1 if any as CG-UCI.

- Otherwise,

- Perform rate matching for HARQ-ACK with priority index 0 according to clause 6.3.2.4.2.2, by taking HARQ-ACK with priority index 0 as CSI-part 1 and replacing by and taking HARQ-ACK with priority index 1 if any as HARQ-ACK, and taking CG-UCI associated with priority index 1 if any as CG-UCI.

- Perform rate matching for CSI part 1 according to clause 6.3.2.4.2.3, by taking CSI part 1 as CSI part 2 and replacing by , taking HARQ-ACK with priority index 0 as CSI-part 1 and taking HARQ-ACK with priority index 1 as HARQ-ACK, if CSI part 1 is also transmitted on the PUSCH and the PUSCH is associated with priority index 0.

**< Unchanged parts are omitted >**