**3GPP TSG-RAN WG1 Meeting #110bis-e *R1-221xxxx***

**e-Meeting, October 10-19, 2022**

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| *CR-Form-v12.2* |
| **[DRAFT] CHANGE REQUEST** |
|  |
|  | **38.213** | **CR** | **xxxx** | **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 codebook type for NACK-only HARQ-ACK feedback |
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| ***Source to WG:*** | Moderator (Huawei) |
| ***Source to TSG:*** | R1 |
|  |  |
| ***Work item code:*** | NR\_MBS-Core |  | ***Date:*** | 2022-10-14 |
|  |  |  |  |  |
| ***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 canbe 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:*** | To reflect the following agreement:***Agreement****For UE provided NACK-only HARQ-ACK feedback for G-RNTI(s)/G-CS-RNTI(s), UE does not expect to be provided Type-1 HARQ-ACK codebook for multicast.*   |
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| ***Summary of change:*** | For a UE that is indicated the second HARQ-ACK reporting mode, the UE does not expect to be configured with *pdsch-HARQ-ACK-Codebook = semi-static* for multicast HARQ-ACK information. |
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| ***Consequences if not approved:*** | When UE is provided Type-1 codebook for multicast and when UE would multiplex NACK-only HARQ-ACK for multicast with HARQ-ACK for unicast or with PUSCH, UE may not be able to provide the valid multiplexing in time.  |
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| ***Clauses affected:*** | 18  |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***affected:*** |  | **X** |  Test specifications |  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

18 Multicast Broadcast Services

This clause is applicable only for PDCCH receptions, PDSCH receptions, and PUCCH transmissions for MBS on a serving cell. DCI formats with CRC scrambled by G-RNTI or G-CS-RNTI scheduling PDSCH receptions are referred to as multicast DCI formats and the PDSCH receptions are referred to as multicast PDSCH receptions. DCI formats with CRC scrambled by MCCH-RNTI or G-RNTI for MTCH scheduling PDSCH receptions are referred to as broadcast DCI formats and the PDSCH receptions are referred to as broadcast PDSCH receptions. HARQ-ACK information associated with multicast DCI formats or multicast PDSCH receptions is referred to as multicast HARQ-ACK information.

< Unchanged parts are omitted >

A UE can be configured by *harq-FeedbackOptionMulticast,* for a G-RNTI or for a G-CS-RNTI, to provide HARQ-ACK information for a transport block reception associated with the G-RNTI or with the G-CS-RNTI, according to the first HARQ-ACK reporting mode or according to the second HARQ-ACK reporting mode. The UE determines a priority for a PUCCH transmission with multicast HARQ-ACK information according to any HARQ-ACK reporting mode as described in clause 9 for a PUCCH transmission with unicast HARQ-ACK information.

For the first HARQ-ACK reporting mode, the UE generates HARQ-ACK information with ACK value when a UE correctly decodes a transport block or detects a DCI format indicating an SPS PDSCH release; otherwise, the UE generates HARQ-ACK information with NACK value, as described in clauses 9 and 9.1 through 9.3. The UE determines a PUCCH or a PUSCH to provide the HARQ-ACK information as described in clause 9.2.

For the second HARQ-ACK reporting mode, the UE does not transmit a PUCCH that would include only HARQ-ACK information with ACK values. The second HARQ-ACK reporting mode is not applicable for the first SPS PDSCH reception after activation of SPS PDSCH receptions for a SPS configuration, or for DCI formats having associated HARQ-ACK information without scheduling a PDSCH reception.

For the second HARQ-ACK reporting mode, when a number of HARQ-ACK information bits is one, a UE transmits a PUCCH only when the HARQ-ACK information bit has NACK value. For a PUCCH resource associated with PUCCH format 0, the UE transmits the PUCCH as described in [4, TS 38.211] by obtaining $m\_{0}$ as described for HARQ-ACK information in clause 9.2.3 and by setting $m\_{cs}=0$. For a PUCCH resource associated with PUCCH format 1, the UE transmits the PUCCH as described in [4, TS 38.211] by setting $b\left(0\right)=0$.

A UE that is indicated the second HARQ-ACK reporting mode for only one G-RNTI can be indicated by *moreThanOneNackOnlyMode* to provide associated HARQ-ACK information bits in a PUCCH either according to the first HARQ-ACK reporting mode or by selecting a PUCCH resource from a set of PUCCH resources for the PUCCH transmission based on the values of the HARQ-ACK information bits as described in Table 18-1. The UE generates HARQ-ACK information bits for the second HARQ-ACK reporting mode according to a Type-2 HARQ-ACK codebook as described in clause 9.1.3.1. For a PUCCH resource associated with PUCCH format 0, the UE transmits the PUCCH as described in [4, TS 38.211] by obtaining $m\_{0}$ as described for HARQ-ACK information in clause 9.2.3 and by setting $m\_{cs}=0$. For a PUCCH resource associated with PUCCH format 1, the UE transmits the PUCCH as described in [4, TS 38.211] by setting $b\left(0\right)=0$.

For a UE that is indicated the second HARQ-ACK reporting mode, the UE does not expect to be configured with *pdsch-HARQ-ACK-Codebook = semi-static* for multicast HARQ-ACK information.

For a UE that is indicated the second HARQ-ACK reporting mode and *moreThanOneNackOnlyMode*, all PUCCH resources associated with the second HARQ-ACK reporting mode have same starting symbol and same number of symbols.

< Unchanged parts are omitted >