**3GPP TSG RAN WG1 #117** **R1-240xxxx**

**Fukuoka City, Fukuoka, Japan, May 20th – 24th, 2024**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.213** | **CR** |  | **rev** |  | **Current version:** | **18.2.0** |  |
|  | | | | | | | | |
| *For* [***HELP***](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:*** | Correction on Type-2 HARQ-ACK codebook and DL BWP change | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Samsung, ZTE | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_newRAT-Core, TEI18 | | | | |  | ***Date:*** | | | 2024-05-27 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Existing specifications for Type-2 HARQ-ACK codebook in case of DL/UL BWP change do not properly capture associated agreements from RAN1#91, RAN1#92, and RAN1#92bis regarding the PUCCH transmission being after a DL/UL BWP change. Also, the condition refers to “an active DL BWP change” which can be ambigious and may be interpreted to imply a different DL BWP. Detailed discussion can be found at R1-2404070. | | | | | | | | |
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| ***Summary of change:*** | | Capture the agreements from RAN1#91 and RAN1#92bis to clarify HARQ-ACK report in case of a DL/UL BWP change for Type-2 HARQ-ACK codebook   * Add the condition that PUCCH transmission starts at or after a slot of the DL/UL BWP change * Clarify that the condition is for the same DL BWP change | | | | | | | | |
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| ***Consequences if not approved:*** | | Incorrect/ambiguous specifications for Type-2 HARQ-ACK codebook construction in case of DL/UL BWP change. | | | | | | | | |
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| ***Clauses affected:*** | | 9.1.3.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

#### 9.1.3.1 Type-2 HARQ-ACK codebook in physical uplink control channel

\*\*\* Unchanged parts are omitted \*\*\*

Denote by the number of bits for the counter DAI and set . Denote by the value of the counter DAI in a DCI format scheduling PDSCH reception, or having associated HARQ-ACK information without scheduling PDSCH reception, on serving cell in PDCCH monitoring occasion according to Table 9.1.3-1 or Table 9.1.3-1A. Denote by the value of the total DAI in a DCI format in PDCCH monitoring occasion according to Table 9.1.3-1. The UE assumes a same value of total DAI in all DCI formats that include a total DAI field in PDCCH monitoring occasion . A UE does not expect to multiplex, in a same Type-2 HARQ-ACK codebook, HARQ-ACK information that is in response to detection of DCI formats with different number of bits for the counter DAI field.

If the UE transmits HARQ-ACK information in a PUCCH in slot and for any PUCCH format, the UE determines the , for a total number of HARQ-ACK information bits, according to the following pseudo-code:

Set – PDCCH, with DCI format scheduling PDSCH reception, or having associated HARQ-ACK information without scheduling a PDSCH reception, monitoring occasion index: lower index corresponds to earlier PDCCH monitoring occasion

Set

Set

Set

Set

Set to the number of serving cells configured by higher layers for the UE

- if, for an active DL BWP of a serving cell, the UE is not provided *coresetPoolIndex* or is provided *coresetPoolIndex* with value 0 for one or more first CORESETs and is provided *coresetPoolIndex* with value 1 for one or more second CORESETs, and is provided *ackNackFeedbackMode = joint,* the serving cell is counted two times where the first time corresponds to the first CORESETs and the second time corresponds to the second CORESETs

- if the UE indicates *type2-HARQ-ACK-Codebook* and receives a number of PDSCHs on a serving cell *c* that are scheduled by DCI formats in PDCCH receptions at a same PDCCH monitoring occasion *m*, the serving cell *c* is counted times for PDCCH monitoring occasion *m* in increasing order of the PDSCH reception starting time

Set to the number of PDCCH monitoring occasion(s)

while

Set – serving cell index: lower indexes correspond to lower RRC indexes of corresponding cell

while

if PDCCH monitoring occasion is before an active DL BWP change on serving cell or an active UL BWP change on the serving cell of PUCCH transmission if the UE is provided *pucch-sSCellDyn* or *pucch-sSCellDynDCI-1-2*, or an active UL BWP change on the PCell if the UE is not provided *pucch-sSCellDyn* and *pucch-sSCellDynDCI-1-2,* and the active DL BWP change is not triggered in PDCCH monitoring occasion , and the PUCCH transmission starts at or after a slot for the active DL BWP change or the active UL BWP change

;

else

if there is a PDSCH providing a transport block for a HARQ process with enabled HARQ-ACK information on serving cell associated with PDCCH in PDCCH monitoring occasion , or there is a PDCCH providing a DCI format associated with HARQ-ACK information without scheduling PDSCH reception on serving cell

\*\*\* Unchanged parts are omitted \*\*\*