**3GPP TSG-RAN WG2 Meeting #121bis-eR2-2304263**

 ***Revised of R2-2303820***

**Online, 17th – 26th April, 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **38.321** | **CR** | **1597** | **rev** | **1** | **Current version:** | **17.4.0** |  |
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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 |  | Core Network |  |

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| ***Title:***  | Corrections to NR NTN for 38.321 |
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| ***Source to WG:*** | CATT, Turkcell, Huawei, HiSilicon, Quectel, CAICT, Ericsson |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_NTN\_solutions-Core |  | ***Date:*** | 2023-4-04 |
|  |  |  |  |  |
| ***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)s*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:*** | For the HARQ feedback of the first SPS PDSCH after the activation, there is the following description for *harq-FeedbackEnablingforSPSactive* in 38.331:

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| **harq-FeedbackEnablingforSPSactive**If enabled, UE reports ACK/NACK for the first SPS PDSCH after activation, regardless of if HARQ feedback is enabled or disabled corresponding to the first SPS PDSCH after activation. Otherwise, UE follows configuration of HARQ feedback enabled/disabled corresponding to the first SPS PDSCH after activation. |

That is, if the *harq-FeedbackEnablingforSPSactive* is enabled, the UE only ignores the HARQ feedback state corresponding to the first SPS PDSCH after activation, and reports ACK/NACK for the first SPS PDSCH after the activation of the SPS. And based on the CR R2-2301983 Corrections to NR NTN for 38.321 in RAN2#121 meeting, section of 5.3.2.2 of 38.321 was updated like:

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| ……1> if the HARQ process is configured with disabled HARQ feedback:2> if *harq-FeedbackEnablingforSPSactive* is configured with enabled and the transmission is the first transmission after activation of the configured downlink assignment:3> instruct the physical layer to generate acknowledgement(s) of the data in this TB.2> else:3> not instruct the physical layer to generate acknowledgement(s) of the data in this TB.1> else:2> instruct the physical layer to generate acknowledgement(s) of the data in this TB.…… |

The green part is not aligned with the description of *harq-FeedbackEnablingforSPSactive* in 38.331, which will result in some mistake. For example, if *harq-FeedbackEnablingforSPSactive* (which is BWP specific, not HARQ process specific or SPS specific) is configured with enabled, but the HARQ process (as in blue above) is a dynamic scheduling HARQ process, then for the first transmission of this HARQ process after the SPS activation, the UE should follow the configuration for the corresponding HARQ process, regardless the configuration of *harq-FeedbackEnablingforSPSactive*. However, according the description of 38.321 in green, the UE will feedback ACK/NACK. And the definition of *harq-FeedbackEnablingforSPSactive* in 38.331 is:harq-FeedbackEnablingforSPSactive-r17 BOOLEANSo the “with enabled” with red background in 38.321 as shown above does not match with the definition of the IE in 38.331.  |
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| ***Summary of change:*** | 1. In 5.3.2.2, adding a description that the first transmission after activation of the configured downlink assignment is the first transmission on the configured downlink assignment after activation of the configured downlink assignment.
2. In 5.3.2.2, change “if *harq-FeedbackEnablingforSPSactive* is configured with enabled” to “if *harq-FeedbackEnablingforSPSactive* is configured with value *TRUE*”.

**Impact analysis:**Impacted 5G architecture options:StandaloneImpacted functionality:HARQ feedbackInter-operability: |
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| ***Consequences if not approved:*** | The UE may feed back ACK/NACK unnecessary for a dynamic HARQ process, which is not alignment with network configuration. On the other hand, if the first transmission after the activation of the configured downlink assignment is not the first SPS PDSCH, then the UE will not send ACK for the first SPS PDSCH when it does eventually come (since the HARQ process is configured as disabled and it is not the first transmission after activation of the configured downlink assignment). This is contrary to the agreement/intention.And the MAC text related with *harq-FeedbackEnablingforSPSactive* is not well formulated.   |
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| ***Clauses affected:*** | 5.3.2.2 |
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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:*** |  |
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| ***This CR's revision history:*** |  |

*Start of change*

#### 5.3.2.2 HARQ process

When a transmission takes place for the HARQ process, one or two (in case of downlink spatial multiplexing) TBs and the associated HARQ information are received from the HARQ entity.

For each received TB and associated HARQ information, the HARQ process shall:

1> if the NDI, when provided, has been toggled compared to the value of the previous received transmission corresponding to this TB; or

1> if the HARQ process is equal to the broadcast process, and this is the first received transmission for the TB according to the system information schedule indicated by RRC; or

1> if the HARQ process is associated with a transmission indicated with a MCCH-RNTI for MBS broadcast, and this is the first received transmission for the TB according to the MCCH schedule indicated by RRC; or

1> if the HARQ process is associated with a transmission indicated with a G-RNTI for MBS broadcast, and this is the first received transmission for the TB according to the MTCH schedule indicated by RRC or according to the scheduling indicated by DCI as specified in TS 38.214 [7]; or

1> if this is the very first received transmission for this TB (i.e. there is no previous NDI for this TB):

2> consider this transmission to be a new transmission.

1> else:

2> consider this transmission to be a retransmission.

The MAC entity then shall:

1> if this is a new transmission:

2> attempt to decode the received data.

1> else if this is a retransmission:

2> if the data for this TB has not yet been successfully decoded:

3> instruct the physical layer to combine the received data with the data currently in the soft buffer for this TB and attempt to decode the combined data.

1> if the data which the MAC entity attempted to decode was successfully decoded for this TB; or

1> if the data for this TB was successfully decoded before:

2> if the HARQ process is equal to the broadcast process:

3> deliver the decoded MAC PDU to upper layers.

2> else if this is the first successful decoding of the data for this TB:

3> deliver the decoded MAC PDU to the disassembly and demultiplexing entity.

1> else:

2> instruct the physical layer to replace the data in the soft buffer for this TB with the data which the MAC entity attempted to decode.

1> if the HARQ process is associated with a transmission indicated with a Temporary C-RNTI and the Contention Resolution is not yet successful (see clause 5.1.5); or

1> if the HARQ process is associated with a transmission indicated with a MSGB-RNTI and the Random Access procedure is not yet successfully completed (see clause 5.1.4a); or

1> if the HARQ process is equal to the broadcast process; or

1> if the HARQ process is associated with a transmission indicated with a MCCH-RNTI or a G-RNTI for MBS broadcast; or

1> if the HARQ process is associated with a transmission indicated with a G-RNTI or a G-CS-RNTI or a configured downlink assignment for MBS multicast and HARQ feedback is disabled for this G-RNTI or G-CS-RNTI, as specified in clause 18 of TS 38.213 [6]; or

1> if the HARQ process is associated with a transmission indicated with a G-RNTI or a G-CS-RNTI or a configured downlink assignment for MBS multicast and NACK only HARQ feedback is configured for this G-RNTI or G-CS-RNTI and the data for this TB is successfully decoded and the transmission is not the first transmission of PDSCH where the configured downlink assignment was (re-)initialised; or

1> if the *timeAlignmentTimer*, associated with the TAG containing the Serving Cell on which the HARQ feedback is to be transmitted, is stopped or expired and if the *cg-SDT-TimeAlignmentTimer*, if configured, is not running; or

1> if the HARQ process is configured with disabled HARQ feedback:

2> if *harq-FeedbackEnablingforSPSactive* is configured with value *TRUE* and the transmission is the first transmission on the configured downlink assignment after activation of the configured downlink assignment:

3> instruct the physical layer to generate acknowledgement(s) of the data in this TB.

2> else:

3> not instruct the physical layer to generate acknowledgement(s) of the data in this TB.

1> else:

2> instruct the physical layer to generate acknowledgement(s) of the data in this TB.

The MAC entity shall ignore NDI received in all downlink assignments on PDCCH for its Temporary C-RNTI when determining if NDI on PDCCH for its C-RNTI has been toggled compared to the value in the previous transmission.

NOTE: If the MAC entity receives a retransmission with a TB size different from the last TB size signalled for this TB, the UE behavior is left up to UE implementation..

*End of change*