**3GPP TSG-RAN WG1 Meeting #114 *R1-23xxxxx***

**Toulouse, France, August 21-25, 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **Draft CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.212** | **CR** |  | **rev** | **-** | **Current version:** | **17.5.0** |  |
|  | | | | | | | | |
| *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:*** | Introduction of Rel-18 NR NTN enhancements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_NTN\_enh-Core | | | | |  | ***Date:*** | | | 2023-09-01 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***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:*** | | Introduction of Rel-18 NR NTN enhancements | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Support of Rel-18 NR NTN enhancements:   1. Update DCI format 1\_0 with CRC scrambled by TC-RNTI to indicate repetition factor of PUCCH for Msg4 HARQ-ACK if more than one repetition factors are configured by *numberOfPUCCHforMsg4HARQACK-RepetitionsList.* | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Rel-18 NR NTN enhancements will be incomplete. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 7.3.1.2.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 38.213 | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

7.3.1.2 DCI formats for scheduling of PDSCH

7.3.1.2.1 Format 1\_0

DCI format 1\_0 is used for the scheduling of PDSCH in one DL cell.

< Unchanged parts are omitted >

The following information is transmitted by means of the DCI format 1\_0 with CRC scrambled by TC-RNTI:

- Identifier for DCI formats – 1 bit

- The value of this bit field is always set to 1, indicating a DL DCI format

- Frequency domain resource assignment – bits

-  is the size of CORESET 0

- Time domain resource assignment – 4 bits as defined in Clause 5.1.2.1 of [6, TS38.214]

- VRB-to-PRB mapping – 1 bit according to Table 7.3.1.2.2-5

- Modulation and coding scheme – 5 bits as defined in Clause 5.1.3 of [6, TS38.214], using Table 5.1.3.1-1

- New data indicator – 1 bit

- Redundancy version – 2 bits as defined in Table 7.3.1.1.1-2

- HARQ process number – 4 bits

- Downlink assignment index – 2 bits

- 2 bits indicating the number of repetitions for PUCCH as defined in clause 9.2.6 of [5, TS38.213], if the higher layer parameter *numberOfPUCCHforMsg4HARQACK-RepetitionsList* is configured with at least two values;

- otherwise, reserved.

- TPC command for scheduled PUCCH – 2 bits as defined in Clause 7.2.1 of [5, TS38.213]

- PUCCH resource indicator – 3 bits as defined in Clause 9.2.3 of [5, TS38.213]

- PDSCH-to-HARQ\_feedback timing indicator – 3 bits as defined in Clause 9.2.3 of [5, TS38.213]

- ChannelAccess-CPext – 2 bits indicating combinations of channel access type and CP extension as defined in Table 7.3.1.1.1-4, or Table 7.3.1.1.1-4A if *channelAccessMode-r16* = "*semiStatic*" is provided, for operation in a cell with shared spectrum channel access in frequency range 1; 2 bits indicating channel access type as defined in Table 7.3.1.1.1-4B if *ChannelAccessMode2-r17* is provided for operation in a cell in frequency range 2-2; otherwise 0 bit

- Reserved bits – 2 bits when the DCI format is monitored in common search space for operation in a cell in frequency range 2-2 and the number of bits for the field of 'ChannelAccess-CPext' is 0; 0 bits otherwise

**Table 7.3.1.2.1-1: Short Message indicator**

|  |  |
| --- | --- |
| **Bit field** | **Short Message indicator** |
| 00 | Reserved |
| 01 | Only scheduling information for Paging, and TRS availability indication if *trs-ResourceSetConfig* is configured, are present in the DCI |
| 10 | Only short message, and TRS availability indication if *trs-ResourceSetConfig* is configured, are present in the DCI |
| 11 | Both scheduling information for Paging, TRS availability indication if *trs-ResourceSetConfig* is configured and short message are present in the DCI |

**Table 7.3.1.2.1-2: System information indicator**

|  |  |
| --- | --- |
| **Bit field** | **System information indicator** |
| 0 | SIB1 [9, TS38.331, Clause 5.2.1] |
| 1 | SI message [9, TS38.331, Clause 5.2.1] |

< Unchanged parts are omitted >