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

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

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.214** | **CR** | **DRAFT** | **rev** | **-** | **Current version:** | **17.9.0** |  |
|  |
| *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)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

|  |
| --- |
|  |
| ***Title:***  | Correction on timing of Msg3 retransmission in NTN |
|  |  |
| ***Source to WG:*** | ZTE |
| ***Source to TSG:*** | R1 |
|  |  |
| ***Work item code:*** | NR\_NTN\_solutions-Core |  | ***Date:*** | 2024-05-22 |
|  |  |  |  |  |
| ***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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | In RAN1#105-e meeting, the cell specific Koffset was agreed to be always used for the Msg3 retransmission scheduled by DCI.

|  |
| --- |
| Agreement:The K\_offset value signaled in system information is always used for* The transmission timing of RAR / fallbackRAR grant scheduled PUSCH
* The transmission timing of Msg3 retransmission scheduled by DCI format 0\_0 with CRC scrambled by TC-RNTI
* The transmission timing of HARQ-ACK on PUCCH to contention resolution PDSCH scheduled by DCI format 1\_0 with CRC scrambled by TC-RNTI
	+ FFS: The transmission timing of HARQ-ACK on PUCCH to contention resolution PDSCH scheduled by DCI format 1\_0 with CRC scrambled by C-RNTI
* The transmission timing of HARQ-ACK on PUCCH to MsgB scheduled by DCI format 1\_0 with CRC scrambled by MsgB-RNTI
	+ FFS: The transmission timing of HARQ-ACK on PUCCH to MsgB scheduled by DCI format 1\_0 with CRC scrambled by C-RNTI

FFS: how to treat additional transmission timings related to fallback DCI formats FFS: how to update this formulation with beam-specific K\_offset if beam-specific K\_offset is agreed to be supportedNote: The mapping ordering and steps may be revisited if multiple CG PUSCH occasions in one CG period is supported |

However, in current spec, the above timing of Msg3 retransmission scheduled by DCI format 0\_0 with CRC scrambled by TC-RNTI is not reflected. |
|  |  |
| ***Summary of change:*** | For the timing specification of PUSCH scheduled by DCI, add the case of PUSCH scheduled by DCI format 0\_0 with CRC scrambled by TC-RNTI and specify that Kcell,offset is used in this case. |
|  |  |
| ***Consequences if not approved:*** | Timing of msg3 retransmission is not defined in NTN case. |
|  |  |
| ***Clauses affected:*** | 6.1.2.1 |
|  |  |
|  | **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:*** | This is the first version of the CR |

#### 6.1.2.1 Resource allocation in time domain

**< Unchanged text omitted >**

When the UE is scheduled to transmit a transport block and no CSI report by a DCI or by a RAR UL grant or fallbackRAR UL grant, or the UE is scheduled to transmit a transport block and a CSI report(s) on PUSCH by a DCI, the '*Time domain resource assignment'* field value *m* of the DCI or the *PUSCH time resource allocation* field value *m* of the RAR UL grant or of the fallbackRAR UL grant provides a row index *m* + 1to an allocated table. The determination of the used resource allocation table is defined in Clause 6.1.2.1.1. The indexed row defines the slot offset *K2*, the start and length indicator *SLIV*, or directly the start symbol *S* and the allocation length *L*, the PUSCH mapping type, the number of slots used for TBS determination (if *numberOfSlotsTBoMS* is present in the resource allocation table), and the number of repetitions (if *numberOfRepetitions* is present in the resource allocation table) to be applied in the PUSCH transmission.

When the UE is scheduled to transmit a PUSCH with no transport block and with a CSI report(s) by a '*CSI request'* field on a DCI, the '*Time domain resource assignment'* field value *m* of the DCI provides a row index *m* + 1to the allocated table as defined in Clause 6.1.2.1.1. The indexed row defines the start and length indicator SLIV, or directly the start symbol *S* and the allocation length *L*, and the PUSCH mapping type to be applied in the PUSCH transmission and the *K2* value is determined as , where  are the corresponding list entries of the higher layer parameter

- reportSlotOffsetListDCI-0-2or *reportSlotOffsetListDCI-0-2-r17*, if PUSCH is scheduled by DCI format 0\_2 and reportSlotOffsetListDCI-0-2 or *reportSlotOffsetListDCI-0-2-r17* is configured;

- *reportSlotOffsetListDCI-0-1* or *reportSlotOffsetListDCI-0-1-r17*, if PUSCH is scheduled by DCI format 0\_1 and *reportSlotOffsetListDCI-0-1* or *reportSlotOffsetListDCI-0-1-r17* is configured;

- *reportSlotOffsetList* or *reportSlotOffsetList-r17*, otherwise;

in *CSI-ReportConfig* for the  triggered CSI Reporting Settings and  is the *(m+1)*th entry of  including the omitted CSI Reporting Settings triggered for non-active DL BWPs, where the UE does not expect that *(m+1)* is larger than 16.

- The slot *Ks* where the UE shall transmit the PUSCH is determined by *K2* as *Ks* =, if UE is configured with ca-SlotOffset for at least one of the scheduled and scheduling cell, $K\_{s}=\left⌊n⋅\frac{2^{μ\_{PUSCH}}}{2^{μ\_{PDCCH}}}\right⌋+K\_{2}+K\_{cell,offset}⋅\frac{2^{μ\_{PUSCH}}}{2^{μ\_{K\_{cell,offset}}}}$, if the scheduling DCI is DCI format 0\_0 with CRC scrambled by TC-RNTI, $K\_{s}=\left⌊n⋅\frac{2^{μ\_{PUSCH}}}{2^{μ\_{PDCCH}}}\right⌋+K\_{2}+K\_{offset}⋅\frac{2^{μ\_{PUSCH}}}{2^{μ\_{K\_{offset}}}}$, otherwise, where $K\_{cell,offset}$ and $K\_{offset}$ are parameters configured by higher layer as specified in clause 4.2 of [6 TS 38.213], and where $μ\_{K\_{cell,offset}}$ and $μ\_{K\_{offset}}$are the subcarrier spacing configurations for $K\_{cell,offset}$ and $K\_{offset}$, respectively, with a value of 0 for frequency range 1, *n* is the slot with the scheduling DCI, K*2* is based on the numerology of PUSCH,  and  are the subcarrier spacing configurations for PUSCH and PDCCH, respectively.

- $N\_{slot, offset, PDCCH}^{CA}$ and $μ\_{offset,PDCCH} $are the$ N\_{slot, offset}^{CA}$ and the, respectively, which are determined by higher-layer configured ca-SlotOffsetfor the cell receiving the PDCCH,$ N\_{slot, offset, PUSCH}^{CA}$ and$ μ\_{offset,PUSCH}$ are the $N\_{slot, offset}^{CA}$ and the,respectively, which are determined by higher-layer configured ca-SlotOffset for the cell transmitting the PUSCH, as defined in clause 4.5 of [4, TS 38.211], and

- for PUSCH scheduled by DCI format 0\_1, if *pusch-RepTypeIndicatorDCI-0-1* is set to 'pusch-RepTypeB', the UE applies PUSCH repetition Type B procedure when determining the time domain resource allocation. For PUSCH scheduled by DCI format 0\_2, if *pusch-RepTypeIndicatorDCI-0-2* is set to 'pusch-RepTypeB', the UE applies PUSCH repetition Type B procedure when determining the time domain resource allocation. Otherwise, the UE applies PUSCH repetition Type A procedure when determining the time domain resource allocation for PUSCH scheduled by PDCCH, by RAR UL grant, or by fallbackRAR UL grant.

- for PUSCH scheduled by DCI format 0\_1 or DCI format 0\_2, if *numberOfSlotsTBoMS* is present and larger than 1, the UE applies TB processing over multiple slots procedure when determining the time domain resource allocation.

- For PUSCH repetition Type A and TB processing over multiple slots, the starting symbol *S* relative to the start of the slot, and the number of consecutive symbols *L* counting from the symbol *S* allocated for the PUSCH are determined from the start and length indicator *SLIV* of the indexed row:

if  then



else



where, and

- For PUSCH repetition Type B, the starting symbol *S* relative to the start of the slot, and the number of consecutive symbols *L* counting from the symbol *S* allocated for the PUSCH are provided by *startSymbol* and *length* of the indexed row of the resource allocation table, respectively.

- For PUSCH repetition Type A and TB processing over multiple slots, the PUSCH mapping type is set to Type A or Type B as defined in Clause 6.4.1.1.3 of [4, TS 38.211] as given by the indexed row.

- For PUSCH repetition Type B, the PUSCH mapping type is set to Type B.

**< Unchanged text omitted >**