**3GPP TSG-RAN WG2 Meeting #121bis-eR2-2304557**

**Online, April 17th – April 26th, 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.331** | **CR** | **3948** | **rev** | **2** | **Current version:** | **17.4.0** |  |
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| *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 to PDSCH Aggregation of MBS SPS | | | | | | | | | |
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| ***Source to WG:*** | vivo | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_MBS-Core | | | | |  | ***Date:*** | | | 2023-04-26 |
|  |  | | | |  | |  | | |  |
| ***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 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)* | |
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| ***Reason for change:*** | | In the current 38.214, it is stated that,  **When receiving PDSCH scheduled by DCI format 4\_1 or 4\_2 for multicast reception in PDCCH with CRC scrambled by G-CS-RNTI, or PDSCH without corresponding PDCCH transmission using associated *SPS-Config* and activated by the DCI format 4\_1 or 4\_2 in PDCCH with CRC scrambled by G-CS-RNTI, the same symbol allocation is applied across the *pdsch-AggregationFactor*, in associated *SPS-Config* if configured, or 1 otherwise, consecutive slots.**  In another words, when *pdsch-AggregationFactor* is not configured in *SPS-Config*, then only 1 slot is scheduled for multicast SPS PTM transmission, regardless of *pdsch-AggregationFactor* configured in *pdsch-Config*. However, the current field description of *pdsch-AggregationFactor* in *SPS-Config* mentioned that when the field is absent, the UE applies PDSCH aggregation factor of *pdsch-Config*. The misalignment between PHY and RRC should be fixed. | | | | | | | | |
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| ***Summary of change:*** | | When *pdsch-AggregationFactor* is absent in *SPS-Config*, the UE applies the value 1 for MBS multicast data and the *pdsch-AggregationFactor* in *pdsch-config* for other data.  **Impact analysis**  Impacted 5G architecture options:  NR standalone, NR-DC, NE-DC  Impacted functionality:  NR MBS multicast SPS  Inter-operability:  If the UE is implemented according to this CR but the network is not, the number of consecutive slots for multicast SPS configured by the network may be misunderstood by the UE.  If the network is implemented according to this CR but the UE is not, the UE may unnecessarily detect PDSCH of multicast SPS over more than one consecutive slots. | | | | | | | | |
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| ***Consequences if not approved:*** | | There is a misalignment between PHY and RRC in the case that *pdsch-AggregationFactor* is not configured in *SPS-Config.* | | | | | | | | |
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| ***Clauses affected:*** | | 6.3.2 | | | | | | | | |
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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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Revision of R2-2304447 | | | | | | | | |

**START OF THE CHANGE**

#### *SPS-Config*

The IE *SPS-Config* is used to configure downlink semi-persistent transmission. Multiple Downlink SPS configurations may be configured in one BWP of a serving cell.

*SPS-Config* information element

-- ASN1START

-- TAG-SPS-CONFIG-START

SPS-Config ::= SEQUENCE {

periodicity ENUMERATED {ms10, ms20, ms32, ms40, ms64, ms80, ms128, ms160, ms320, ms640,

spare6, spare5, spare4, spare3, spare2, spare1},

nrofHARQ-Processes INTEGER (1..8),

n1PUCCH-AN PUCCH-ResourceId OPTIONAL, -- Need M

mcs-Table ENUMERATED {qam64LowSE} OPTIONAL, -- Need S

...,

[[

sps-ConfigIndex-r16 SPS-ConfigIndex-r16 OPTIONAL, -- Cond SPS-List

harq-ProcID-Offset-r16 INTEGER (0..15) OPTIONAL, -- Need R

periodicityExt-r16 INTEGER (1..5120) OPTIONAL, -- Need R

harq-CodebookID-r16 INTEGER (1..2) OPTIONAL, -- Need R

pdsch-AggregationFactor-r16 ENUMERATED {n1, n2, n4, n8 } OPTIONAL -- Need S

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[[

sps-HARQ-Deferral-r17 INTEGER (1..32) OPTIONAL, -- Need R

n1PUCCH-AN-PUCCHsSCell-r17 PUCCH-ResourceId OPTIONAL, -- Need R

periodicityExt-r17 INTEGER (1..40960) OPTIONAL, -- Need R

nrofHARQ-Processes-v1710 INTEGER(9..32) OPTIONAL, -- Need R

harq-ProcID-Offset-v1700 INTEGER (16..31) OPTIONAL -- Need R

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}

-- TAG-SPS-CONFIG-STOP

-- ASN1STOP

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| *SPS-Config* field descriptions |
| ***harq-CodebookID***  Indicates the HARQ-ACK codebook index for the corresponding HARQ-ACK codebook for SPS PDSCH and ACK for SPS PDSCH release. |
| ***harq-ProcID-Offset***  Indicates the offset used in deriving the HARQ process IDs, see TS 38.321 [3], clause 5.3.1. |
| ***mcs-Table***  Indicates the MCS table the UE shall use for DL SPS (see TS 38.214 [19],clause 5.1.3.1. If present, the UE shall use the MCS table of low-SE 64QAM table indicated in Table 5.1.3.1-3 of TS 38.214 [19]. If this field is absent and field mcs-table in PDSCH-Config is set to 'qam256' and the activating DCI is of format 1\_1, the UE applies the 256QAM table indicated in Table 5.1.3.1-2 of TS 38.214 [19]. If this field is absent and the field *mcs-Table-r17* in *PDSCH-Config* is set to 'qam1024' and the activating DCI is format 1\_1, the UE applies the 1024QAM table indicated in Table 5.1.3.1-4 of TS 38.214 [19]. Otherwise, the UE applies the non-low-SE 64QAM table indicated in Table 5.1.3.1-1 of TS 38.214 [19]. |
| ***n1PUCCH-AN***  HARQ resource for PUCCH for DL SPS. The network configures the resource either as format0 or format1. The actual *PUCCH-Resource* is configured in *PUCCH-Config* and referred to by its ID. See TS 38.213 [13], clause 9.2.3. |
| ***n1PUCCH-AN-PUCCHsSCell***  HARQ resource for PUCCH on PUCCH switching SCell (sSCell) for DL SPS. The network configures the resource either as format 0 or format 1. The actual PUCCH-Resource is configured in PUCCH-Config of the PUCCH sSCell and referred to by its ID. See TS 38.213 [13], clause 9.2.3. |
| ***nrofHARQ-Processes***  Number of configured HARQ processes for SPS DL (see TS 38.321 [3], clause 5.8.1). If UE is configured with *nrofHARQ-Processes-v1710* UE shall ignore *nrofHARQ-Processes (without suffix)*. |
| ***pdsch-AggregationFactor***  Number of repetitions for SPS PDSCH (see TS 38.214 [19], clause 5.1.2.1). When the field is absent, the UE applies the value 1 for MBS multicast data and the *pdsch-AggregationFactor* in *pdsch-config* for other data. |
| ***periodicity***  Periodicity for DL SPS (see TS 38.214 [19] and TS 38.321 [3], clause 5.8.1). |
| ***periodicityExt***  This field is used to calculate the periodicity for DL SPS (see TS 38.214 [19] and see TS 38.321 [3], clause 5.8.1). If this field is present, the field *periodicity* is ignored.  The following periodicities are supported depending on the configured subcarrier spacing [ms]:  15 kHz: *periodicityExt*, where *periodicityExt* has a value between 1 and 640.  30 kHz: 0.5 x *periodicityExt*, where *periodicityExt* has a value between 1 and 1280.  60 kHz with normal CP. 0.25 x *periodicityExt*, where *periodicityExt* has a value between 1 and 2560.  60 kHz with ECP: 0.25 x *periodicityExt*, where *periodicityExt* has a value between 1 and 2560.  120 kHz: 0.125 x *periodicityExt*, where *periodicityExt* has a value between 1 and 5120.  480 kHz: 0.03125 x periodicityExt, where periodicityExt has a value between 1 and 20480.  960 kHz: 0.015625 x periodicityExt, where periodicityExt has a value between 1 and 40960.  *periodicityExt-r17* is only applicable for SCS 480 kHz and 960 kHz. |
| ***sps-ConfigIndex***  Indicates the index of one of multiple SPS configurations. |
| ***sps-HARQ-Deferral***  Indicates the maximum number of slots or subslots the transmission of DL SPS HARQ-ACK in a slot or subslot can be deferred (see TS 38.213 [13], clause 9.2.5.4). |

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| Conditional Presence | Explanation |
| *SPS-List* | The field is mandatory present when included in *sps-ConfigToAddModList-r16*or *sps-ConfigMulticastToAddModList-r17*, otherwise the field is absent. |

**END OF THE CHANGE**