**3GPP TSG-RAN WG1 Meeting #107-e *R1-2xxxxx***

**e-Meeting, November 11th – 19th, 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **DRAFT CHANGE REQUEST** | | | | | | | | |
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|  | **38.214** | **CR** | **xxxx** | **rev** | **-** | **Current version:** | **15.14.0** |  |
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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 | **x** | Core Network |  |

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| ***Title:*** | CR to 38.214 correction on semi-persistent CSI reporting on PUSCH | | | | | | | | | |
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| ***Source to WG:*** | Moderator (Ericsson) | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_newRAT-Core | | | | |  | ***Date:*** | | | 2021-11-16 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-15 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | Section 5.2.1.5.2 in 38.214 describes the procedure for semi-persistent CSI reporting on PUSCH. In the change we correct the description of validation procedure by replacing “DL semi-persistent assignment PDCCH” with “semi-persistent CSI reporting on PUSCH PDCCH”. The prior PDCCH is used for validating DL seme-persistent assignment, not for validating semi-persistent CSI reporting on PUSCH. | | | | | | | | |
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| ***Summary of change:*** | | Correct the description on validation PDCCH to be used for semi-persistent CSI reporting on PUSCH by deleting “DL semi-persistent assignment”. | | | | | | | | |
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| ***Consequences if not approved:*** | | The current discription in the spec is incorrect and inconsistent. It may not even possible for UE to implement according to the description. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.1.5.2 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **N** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **N** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **N** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | **Isolated impact analysis:**  This CR has isolated impact on implementation of semi-persistent CSI reporting on PUSCH and the change is aligned with common RAN1 understanding.  If the gNB implements the CR but the UE does not, or if the UE implements the CR but the gNB does not, the gNB may not understand the UE behavior. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

##### 5.2.1.5.2 Semi-persistent CSI/Semi-persistent CSI-RS

For semi-persistent reporting on PUSCH, a set of trigger states are higher layer configured by *CSI-SemiPersistentOnPUSCH-TriggerStateList,* where the CSI request field in DCI scrambled with SP-CSI-RNTI activates one of the trigger states. A UE is not expected to receive a DCI scrambled with SP-CSI-RNTI activating one semi-persistent CSI report with the same CSI-ReportConfigId as in a semi-persistent CSI report which is activated by a previously received DCI scrambled with SP-CSI-RNTI.

For semi-persistent reporting on PUCCH, the PUCCH resource used for transmitting the CSI report are configured by *reportConfigType*. Semi-persistent reporting on PUCCH is activated by an activation command as described in clause 6.1.3.16 of [10, TS 38.321], which selects one of the semi-persistent Reporting Settings for use by the UE on the PUCCH. When the UE would transmit a PUCCH with HARQ-ACK information in slot *n* corresponding to the PDSCH carrying the activation command, the indicated semi-persistent Reporting Setting should be applied starting from the first slot that is after slot where ** is the SCS configuration for the PUCCH.

For a UE configured with CSI resource setting(s) where the higher layer parameter *resourceType* set to 'semiPersistent'.

- when a UE receives an activation command, as described in clause 6.1.3.12 of [10, TS 38.321], for CSI-RS resource set(s) for channel measurement and CSI-IM/NZP CSI-RS resource set(s) for interference measurement associated with configured CSI resource setting(s), and when the UE would transmit a PUCCH with HARQ-ACK information in slot *n* corresponding to the PDSCH carrying the selection command, the corresponding actions in [10, TS 38.321] and the UE assumptions (including QCL assumptions provided by a list of reference to *TCI-State's,* one per activated resource) on CSI-RS/CSI-IM transmission corresponding to the configured CSI-RS/CSI-IM resource configuration(s) shall be applied starting from the first slot that is after slot where ** is the SCS configuration for the PUCCH. If a *TCI-State* referred to in the list is configured with a reference to an RS associated with 'QCL-TypeD', that RS can be an SS/PBCH block, periodic or semi-persistent CSI-RS located in same or different CC/DL BWP.

- when a UE receives a deactivation command, as described in clause 6.1.3.12 of [10, TS 38.321], for activated CSI-RS/CSI-IM resource set(s) associated with configured CSI resource setting(s), and when the UE would transmit a PUCCH with HARQ-ACK information in slot *n* corresponding to the PDSCH carrying the deactivation command, the corresponding actions in [10, TS 38.321] and UE assumption on cessation of CSI-RS/CSI-IM transmission corresponding to the deactivated CSI-RS/CSI-IM resource set(s) shall apply starting from the first slot that is after slot where ** is the SCS configuration for the PUCCH.

A codepoint of the CSI request field in the DCI is mapped to a SP-CSI triggering state according to the order of the positions of the configured trigger states in *CSI-SemiPersistentOnPUSCH-TriggerStateList*, with codepoint '0' mapped to the triggering state in the first position. A UE validates, for semi-persistent CSI activation or release, a PDCCH on a DCI only if the following conditions are met:

- the CRC parity bits of the DCI format are scrambled with a SP-CSI-RNTI provided by higher layer parameter *sp-CSI-RNTI*

- Special fields for the DCI format are set according to Table 5.2.1.5.2-1 or Table 5.2.1.5.2-2.

If validation is achieved, the UE considers the information in the DCI format as a valid activation or valid release of semi-persistent CSI transmission on PUSCH, and the UE activates or deactivates a CSI Reporting Setting indicated by CSI request field in the DCI. If validation is not achieved, the UE considers the DCI format as having been detected with a non-matching CRC.

Table 5.2.1.5.2-1: Special fields for semi-persistent CSI activation PDCCH validation

|  |  |
| --- | --- |
|  | DCI format 0\_1 |
| HARQ process number | set to all '0's |
| Redundancy version | set to '00' |

Table 5.2.1.5.2-2: Special fields for semi-persistent CSI deactivation PDCCH validation

|  |  |
| --- | --- |
|  | DCI format 0\_1 |
| HARQ process number | set to all '0's |
| Modulation and coding scheme | set to all '1's |
| Resource block assignment | If higher layer configures RA type 0 only, set to all '0's;  If higher layer configures RA type 1 only, set to all '1's;  If higher layer configures dynamic switch between RA type 0 and 1, then if MSB is'0', set to all '0's; else, set to all '1's |
| Redundancy version | set to '00' |

If the UE has an active semi-persistent CSI-RS/CSI-IM resource configuration, or an active semi-persistent ZP CSI-RS resource set configuration, and has not received a deactivation command, the activated semi-persistent CSI-RS/CSI-IM resource set or the activated semi-persistent ZP CSI-RS resource set configurations are considered to be active when the corresponding DL BWP is active, otherwise they are considered suspended.

If the UE is configured with carrier deactivation, the following configurations in the carrier in activated state would also be deactivated and need re-activation configuration(s): semi-persistent CSI-RS/CSI- IM resource, semi-persistent CSI reporting on PUCCH, semi-persistent SRS, semi-persistent ZP CSI-RS resource set.