**3GPP TSG-RAN2 Meeting #116 electronic *Draft R2-2111626***

**Online, November 01 – November 12, 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.331** | **CR** | **2858** | **rev** | **2** | **Current version:** | **16.6.0** |  |
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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:*** | Correction on pucch-SpatialRelationInfoId-v1610 | | | | | | | | | |
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| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | RAN2 | | | | | | | | | |
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| ***Work item code:*** | NR\_eMIMO-Core | | | | |  | ***Date:*** | | | 2021-10-22 |
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| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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:*** | | According to the presence condition of *pucch-SpatialRelationInfoId-v1610* in *PUCCH-SpatialRelationInfoExt-r16*, it must be:  a) present upon creation of *PUCCH-SpatialRelationInfo*  b) absent otherwise, Need M  Both a) and b) are have severe consequences:  Problem 1 Due to b) , it is impossible to modify any spatial relation info with ID >=9  Problem 2 In order to create a PUCCH spatial relation info with ID >= 9 or set *pucch-PathlossReferenceRS-Id* >=4 for a PUCCH spatial relation, it is necessary to include *spatialRelationInfoToAddModListExt-v1610* in *pucch-Config* of the corresponding UL BWP.  According to the field description of *PUCCH-SpatialRelationInfoExt-r16*, there must be entries in this list for all PUCCH spatial relation infos in the same *pucch-Config*.  Then, for any creation of a PUCCH spatial relation info in the same message in the same UL BWP, according to a) there must be an ID >=9, i.e. it is impossible to create any spatial relation info with ID <=8 in this UL BWP in this message. | | | | | | | | |
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| ***Summary of change:*** | | Replace the presence condition by Need S (as in the example in A.4.3.6) and indicate behaviour upon absence.  **Impact Analysis**  Impacted 5G architecture options:  SA, (NG)EN-DC, NE-DC, NR-DC  Impacted functionality:  PUCCH power control  **The CR is considered mandatory to support more than 4 PUCCH pathloss RSs and/or more than 9 spatial relation info configured in an UL BWP (when maxNumberPathlossRS-Update-r16 is greater than 4).**  Inter-operability:   1. If the UE is implemented according to the CR and the NW is not, it is impossible to modify any spatial relation info with ID >=9 or to create any spatial relation info with ID from 1 to 8 in a message that creates a spatial relation info with ID >=9 or includes a spatial relation with a pathloss reference RS with ID >=4 in the same UL BWP. 2. If the NW is implemented according to the CR and the UE is not, the UE may consider a reconfiguration to modify a spatial relation info with ID>=9 as invalid and trigger RRC re-establishment. | | | | | | | | |
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| ***Consequences if not approved:*** | | It is impossible to modify any spatial relation info with ID >=9 or to create any spatial relation info with ID from 1 to 8 in a message that creates a spatial relation info with ID >=9 or includes a spatial relation with a pathloss reference RS with ID >=4 in the same UL BWP. | | | | | | | | |
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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 ... | | |
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| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*START OF CHANGE*

### 6.3.2 Radio resource control information elements

<Omit unrelated text>

#### – *PUCCH-SpatialRelationInfo*

The IE *PUCCH-SpatialRelationInfo* is used to configure the spatial setting for PUCCH transmission and the parameters for PUCCH power control, see TS 38.213, [13], clause 9.2.2.

***PUCCH-SpatialRelationInfo* information element**

-- ASN1START

-- TAG-PUCCH-SPATIALRELATIONINFO-START

PUCCH-SpatialRelationInfo ::= SEQUENCE {

pucch-SpatialRelationInfoId PUCCH-SpatialRelationInfoId,

servingCellId ServCellIndex OPTIONAL, -- Need S

referenceSignal CHOICE {

ssb-Index SSB-Index,

csi-RS-Index NZP-CSI-RS-ResourceId,

srs PUCCH-SRS

},

pucch-PathlossReferenceRS-Id PUCCH-PathlossReferenceRS-Id,

p0-PUCCH-Id P0-PUCCH-Id,

closedLoopIndex ENUMERATED { i0, i1 }

}

PUCCH-SpatialRelationInfoExt-r16 ::= SEQUENCE {

pucch-SpatialRelationInfoId-v1610 PUCCH-SpatialRelationInfoId-v1610 OPTIONAL, -- Need S

pucch-PathlossReferenceRS-Id-v1610 PUCCH-PathlossReferenceRS-Id-v1610 OPTIONAL, --Need R

...

}

PUCCH-SRS ::= SEQUENCE {

resource SRS-ResourceId,

uplinkBWP BWP-Id

}

-- TAG-PUCCH-SPATIALRELATIONINFO-STOP

-- ASN1STOP

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| ***PUCCH-SpatialRelationInfo* field descriptions** |
| ***pucch-PathLossReferenceRS-Id***  When *pucch-PathLossReferenceRS-Id-v1610* is configured, the UE shall ignore *pucch-PathLossReferenceRS-Id* (without suffix). |
| ***pucch-SpatialRelationInfoId***  When *pucch-SpatialRelationInfoId-v1610* is configured, the UE shall ignore *pucch-SpatialRelationInfoId* (without suffix). If *pucch-SpatialRelationInfo-v1610 is* absent, the UE shall use the *pucch-SpatialRelationInfoId* (without suffix). |
| ***servingCellId***  If the field is absent, the UE applies the *ServCellId* of the serving cell in which this *PUCCH-SpatialRelationInfo* is configured |

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<End of modification>