**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 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-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 MBoth a) and b) are have severe consequences:Problem 1Due to b) , it is impossible to modify any spatial relation info with ID >=9Problem 2In 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-DCImpacted 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:*** |  |
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| ***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>