**3GPP TSG-RAN WG2 Meeting #117 electronic R2-2203715**

**Online, February, 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.331** | **CR** | **2465** | **rev** | **2** | **Current version:** | **16.7.0** |  |
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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:*** | Remove the maximum number of MIMO layers restrictions for SUL | | | | | | | | | |
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| ***Source to WG:*** | CMCC, Huawei, HiSilicon, CATT | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
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| ***Category:*** |  |  | | | | | ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In RAN4#97e meeting, RAN4 discussed and agreed that UL MIMO configuration is applied to SUL bands, and to remove the restrictions on configuring UL MIMO for SUL bands and configurations in TS 38.331. Descriptions to UL MIMO capabilities for SUL also need to be updated altogether in TS 38.306  R4-2016909 LS on removing restriction on configuring UL MIMO for SUL band was approved and sent to RAN2.  CR R2-2102453 was agreed in principle in RAN2#113e. The revision is to apply the same changes to 38.331 16.7.0. | | | | | | | | |
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| ***Summary of change:*** | | Remove the restrictions on configured maximum number of MIMO layers for SUL in “*PUSCH-ServingCellConfig*” field descriptions to align with RAN4 spec.   * “For SUL, the maximum number of MIMO layers is always 1, and network does not configure this field.” | | | | | | | | |
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| ***Consequences if not approved:*** | | There is misalignment between RAN4 and RAN2 specs on the maximum number of MIMO layers for SUL. | | | | | | | | |
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| ***Clauses affected:*** | | 6.3.2 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS38.306 CR0532 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

## << Start of changes >>

***Unchanged parts are omitted***

*PUSCH-ServingCellConfig*

The IE *PUSCH-ServingCellConfig* is used to configure UE specific PUSCH parameters that are common across the UE's BWPs of one serving cell.

***PUSCH-ServingCellConfig* information element**

-- ASN1START

-- TAG-PUSCH-SERVINGCELLCONFIG-START

PUSCH-ServingCellConfig ::= SEQUENCE {

codeBlockGroupTransmission SetupRelease { PUSCH-CodeBlockGroupTransmission } OPTIONAL, -- Need M

rateMatching ENUMERATED {limitedBufferRM} OPTIONAL, -- Need S

xOverhead ENUMERATED {xoh6, xoh12, xoh18} OPTIONAL, -- Need S

...,

[[

maxMIMO-Layers INTEGER (1..4) OPTIONAL, -- Need M

processingType2Enabled BOOLEAN OPTIONAL -- Need M

]],

[[

maxMIMO-LayersDCI-0-2-r16 SetupRelease { MaxMIMO-LayersDCI-0-2-r16} OPTIONAL -- Need M

]]

}

PUSCH-CodeBlockGroupTransmission ::= SEQUENCE {

maxCodeBlockGroupsPerTransportBlock ENUMERATED {n2, n4, n6, n8},

...

}

MaxMIMO-LayersDCI-0-2-r16 ::= INTEGER (1..4)

-- TAG-PUSCH-SERVINGCELLCONFIG-STOP

-- ASN1STOP

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| ***PUSCH-CodeBlockGroupTransmission* field descriptions** |
| ***maxCodeBlockGroupsPerTransportBlock***  Maximum number of code-block-groups (CBGs) per TB (see TS 38.213 [13], clause 9.1). |

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| ***PUSCH-ServingCellConfig* field descriptions** |
| ***codeBlockGroupTransmission***  Enables and configures code-block-group (CBG) based transmission (see TS 38.214 [19], clause 5.1.5). |
| ***maxMIMO-Layers***  Indicates the maximum MIMO layer to be used for PUSCH in all BWPs of the corresponding UL of this serving cell (see TS 38.212 [17], clause 5.4.2.1). If present, the network sets *maxRank* to the same value. The field *maxMIMO-Layers* refers to DCI format 0\_1. |
| ***processingType2Enabled***  Enables configuration of advanced processing time capability 2 for PUSCH (see 38.214 [19], clause 6.4). |
| ***rateMatching***  Enables LBRM (Limited buffer rate-matching). When the field is absent the UE applies FBRM (Full buffer rate-matchingLBRM) (see TS 38.212 [17], clause 5.4.2). |
| ***xOverhead***  If the field is absent, the UE applies the value 'xoh0' (see TS 38.214 [19], clause 5.1.3.2). |
| ***maxMIMO-LayersDCI-0-2***  Indicates the maximum MIMO layer to be used for PUSCH for DCI format 0\_2 in all BWPs of the corresponding UL of this serving cell (see TS 38.212 [17], clause 5.4.2.1). If present, the network sets *maxRankDCI-0-2* to the same value. |

## << End of changes >>