**3GPP T****SG-RAN WG2 Meeting #121bis-e R2-2304450**

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

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **38.306** | **CR** | **0896** | **rev** | **1** | **Current version:** | **16.12.0** |  |
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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:***  | Miscellaneous Correction on UE capability-R16 |
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| ***Source to WG:*** | ZTE Corporation, Sanechips |
| ***Source to TSG:*** | R2 |
|  |  |
| **Work item code:** | NR\_newRAT-Core |  | ***Date:*** | 2023-4-23 |
|  |  |  |  |  |
| ***Category:*** | **A** |  | ***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:*** | The *mimo-CB-PUSCH* defined as below for the codebook based PUSCH MIMO Transmission was missed in TS 38.306. In reference to the existing definition in TS 38.331, only two sub-elements *(maxNumberMIMO-LayersCB-PUSCH, maxNumberSRS-ResourcePerSet)* were included.mimo-CB-PUSCH SEQUENCE { maxNumberMIMO-LayersCB-PUSCH MIMO-LayersUL OPTIONAL, maxNumberSRS-ResourcePerSet INTEGER (1..2) } OPTIONAL, Besides, it’s incorrect to describe the prerequisite only for the first sub-element (i.e. maxNumberMIMO-LayersCB-PUSCH). Furthermore, the prerequisite shall be changed to *pusch-TransCoherence.*Similarly, for the non-CB based PUSCH MIMO transmission, the *mimo-NonCB-PUSCH* was also missed though it was referenced in a few places. |
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| ***Summary of change:*** | 1. Add *mimo-CB-PUSCH* to indicate whether the UE supports codebook based PUSCH MIMO Transmission, and fold two existing sub-parameters *(maxNumberMIMO-LayersCB-PUSCH, maxNumberSRS-ResourcePerSet)* into it*,* meanwhile change the prerequisite to *pusch-TransCoherence.*
2. *Add “mimo-NonCB-PUSCH” to* indicate whether the UE supports non-codebook based PUSCH MIMO Transmission, and also fold two existing sub-parameters (*maxNumberSimultaneousSRS-ResourceTx and maxNumberSRS-ResourcePerSet)* into it.

**Impact analysis**Impacted 5G architecture options:SA, MR-DC Impacted functionality:PUSCH MIMO TransmissionInter-operability: If the Network is implemented according to the CR but the UE is not, the UE may report *mimo-CB-PUSCH (e.g.* with only *maxNumberSRS-ResourcePerSet)* even it doesn’t support *pusch-TransCoherence,* which may cause the misunderstanding of the codebook based PUSCH transmission capability at network side.If the UE is implemented according to the CR but the Network is not, there is no inter-operability issue. |
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| ***Consequences if not approved:*** | The UE may report *mimo-CB-PUSCH* even it doesn’t support *pusch-TransCoherence,* which may cause the misconfiguration at network side for the codebook based PUSCH transmission. |
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| ***Clauses affected:*** | 4.2.7.8 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***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:*** | R2-2303878 |

START OF CHANGE

4.2.7.8 *FeatureSetUplinkPerCC* parameters

| **Definitions for parameters** | **Per** | **M** | **FDD-TDD****DIFF** | **FR1-FR2****DIFF** |
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| ***channelBW-90mhz***Indicates whether the UE supports the channel bandwidth of 90 MHz.For FR1, the UE shall indicate support according to TS 38.101-1 [2], Table 5.3.5-1. | FSPC | CY | N/A | FR1 only |
| ***mimo-CB-PUSCH***Indicates whether the UE supports codebook based PUSCH MIMO Transmission. If supported, it includes 2 parameters as follows:- *maxNumberMIMO-LayersCB-PUSCH* defines supported maximum number of MIMO layers at the UE for PUSCH transmission with codebook precoding. - *maxNumberSRS-ResourcePerSet* defines the maximum number of SRS resources per SRS resource set configured for codebook based transmission to the UE.A UE indicating support of this feature shall also indicate support of *pusch-TransCoherence*. | FSPC | No | N/A | N/A |
| ***maxNumberMIMO-LayersNonCB-PUSCH***Defines supported maximum number of MIMO layers at the UE for PUSCH transmission using non-codebook precoding.UE supporting non-codebook based PUSCH transmission shall indicate support of *maxNumberMIMO-LayersNonCB-PUSC*H and *mimo-NonCB-PUSCH* together. | FSPC | No | N/A | N/A |
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| ***mimo-NonCB-PUSCH***Indicates whether the UE supports non-codebook based PUSCH MIMO Transmission. If supported, it includes 2 parameters as follows:* *maxNumberSimultaneousSRS-ResourceTx* defines the maximum number of simultaneous transmitted SRS resources at one symbol for non-codebook based transmission to the UE.
* *maxNumberSRS-ResourcePerSet* defines the maximum number of SRS resources per SRS resource set configured for non-codebook based transmission to the UE.
 | FSPC | No | N/A | N/A |
| ***mTRP-PUSCH-RepetitionTypeB-r17***Indicates whether the UE supports multi-TRP PUSCH repetition for non-codebook based PUSCH repetition type B with sequential mapping for repetitions larger than 2 and cyclic mapping for 2 repetitions by indicating the supported number of SRS resources in one SRS resource set. The UE shall also support two SRS resource sets with usage set to 'nonCodebook'. The UE indicating support of this feature shall also indicate support of *mimo-NonCB-PUSCH* and *pusch-RepetitionTypeB-r16*. | FSPC | No | N/A | N/A |

END OF CHANGES