**3GPP TSG-RAN WG1 Meeting #117 R1-240xxxx**

**Fukuoka City, Fukuoka, Japan, May 20th-24th, 2024**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | | | | | | | | | | |
| **DRAFT CHANGE REQUEST** | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | |
|  |  | **CR** |  | | **rev** | |  | | | **Current version:** | | |  | | |  | |
|  | | | | | | | | | | | | | | | | | |
| *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)*.* | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | |
| ***Proposed change affects:*** | | | | UICC apps | |  | | ME | **X** | | Radio Access Network | **X** | | Core Network |  | |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Moderator (InterDigital), , ASUSTek, Samsung | | | | | | | | | |
| ***Source to TSG:*** | --- | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | * Configured grant operation for PUSCH supports at most 4 layers according to the conclusion from RAN1#113 below. However, configured grant operation can be controlled with both *maxRank* and *maxRank-n8*, which configure the UE for 1-4 and 5-8 layers, respectively, thereby allowing up to rank 8. This also conflicts with the statement in this section ‘A configured grant PUSCH can be transmitted with at most 4 layers’. The specification is therefore ambiguous at present, and may conflict with the agreed behavior from RAN1#113.   **Conclusion**  In Rel-18, there is no consensus to support CG transmission with dual CW PUSCH by an 8TX UE.   * According to the latest agreed version of 38.331 for MIMO (in R2-2404017) a new version of the parameter maxMIMO-Layers for PUSCH is used for 5-8 layers, ‘*maxMIMO-Layers-v1810’*, while ‘*maxMIMO-Layers*’ is used for 1-4 layers. Also, the parameter ‘*maxRank-n8*’ is now named ‘*maxRank-v1810’*, but still is used for 5-8 layers, while ‘maxRank’ is used for 1-4 layers. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | * Delete any reference to maxRank-n8 and maxMIMO-Layers-n8 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | * Inconsistency between specifications on parameter name and usage. * Incorrect descirption of configured grant operation for PUSCH | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.1, 6.1.1.1, 6.1.4.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

|  |
| --- |
| 6.1 UE procedure for transmitting the physical uplink shared channel  -------------------------------------------Unchanged parts are omitted-------------------------------------------  For the PUSCH transmission corresponding to a Type 1 configured grant or a Type 2 configured grant activated by DCI format 0\_0 or 0\_1, the parameters applied for the transmission are provided by *configuredGrantConfig* except for *dataScramblingIdentityPUSCH*, *txConfig*, *codebookSubset*, *maxRank*, *~~maxRank-n8,~~* *scaling* of *UCI-OnPUSCH,* which are provided by *pusch-Config*. A configured grant PUSCH can be transmitted with at most 4 layers. For the PUSCH transmission corresponding to a Type 2 configured grant activated by DCI format 0\_2, the parameters applied for the transmission are provided by *configuredGrantConfig* except for *dataScramblingIdentityPUSCH*, *txConfig*, *codebookSubsetDCI-0-2*, *maxRankDCI-0-2*, *scaling* of *UCI-OnPUSCH*, *resourceAllocationType1GranularityDCI-0-2* provided by *pusch-Config*.If the UE is provided with *transformPrecoder* in *configuredGrantConfig*, the UE applies the higher layer parameter *tp-pi2BPSK*, if provided in *pusch-Config*, according to the procedure described in clause 6.1.4 for the PUSCH transmission corresponding to a configured grant.  -------------------------------------------Unchanged parts are omitted-------------------------------------------  6.1.1.1 Codebook based UL transmission  -------------------------------------------Unchanged parts are omitted-------------------------------------------  When higher layer parameter *ul-FullPowerTransmission* is set to 'fullpowerMode2*'* and the higher layer parameter *CodebookTypeUL* is set to *'*Codebook2' or *'*Codebook3', and the *SRS-resourceSet* with *usage* set to 'codebook' includes one SRS resource with 8 ports, and at least one SRS resource with 2 ports or 4 ports, subject to UE capability,  - when *CodebookTypeUL* is set to *'*Codebook2', the *codebookSubset* associated with the 2-port SRS resource is 'nonCoherent'.  - when *CodebookTypeUL* is set to *'*Codebook2', the *codebookSubset* associated with the 4-port SRS resource can be configured as 'partialAndNonCoherent' or 'nonCoherent', subject to UE capability.  - when *CodebookTypeUL* is set to *'*Codebook3', the *codebookSubset* associated with 4 ports SRS resources is 'nonCoherent'.  The maximum transmission rank may be configured by the higher layer parameter *maxRank* *~~or maxRank-n8~~* in *pusch-Config* for PUSCH scheduled with DCI format 0\_1 or 0\_3 and *maxRankDCI-0-2* for PUSCH scheduled with DCI format 0\_2*.*  -------------------------------------------Unchanged parts are omitted-------------------------------------------  6.1.4.2 Transport block size determination  For eight antenna ports PUSCH transmission, when the number of PUSCH transmission layers is greater than 4, two codewords are transmitted.  If the higher layer parameter *maxRank~~-n8~~* is configuredor *maxMIMO-Layers* in *PUSCH-config* is greater than 4, then one of the two transport blocks is disabled by DCI format 0\_1 if *IMCS* = 26 and if *rvid* = 1 for the corresponding transport block. If both transport blocks are enabled, transport block 1 and 2 are mapped to codeword 0 and 1 respectively. If only one transport block is enabled, then the enabled transport block is always mapped to the first codeword.  -------------------------------------------Unchanged parts are omitted------------------------------------------- |