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

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

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| *CR-Form-v12.3* |
| **DRAFT CHANGE REQUEST** |
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|  | **38.214** | **CR** | **---** | **rev** | **---** | **Current version:** | **18.2.0** |  |
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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:***  | Corrections for Configured Grant Operation for 8TX UE |
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| ***Source to WG:*** | Moderator (InterDigital), Ericsson, ASUSTek |
| ***Source to TSG:*** | --- |
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| ***Work item code:*** | NR\_MIMO\_evo\_DL\_UL-Core |  | ***Date:*** | 2024-05-19 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-18 |
|  | *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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***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.
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| ***Summary of change:*** | * Delete any reference to maxRank-n8 and maxMIMO-Layers-n8
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| ***Consequences if not approved:*** | * Inconsistency between specifications on parameter name and usage.
* Incorrect descirption of configured grant operation for PUSCH
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| ***Clauses affected:*** | 6.1, 6.1.1.1, 6.1.4.2 |
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|  | **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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| 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 determinationFor 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------------------------------------------- |