**3GPP TSG- WG1 Meeting # *R1-250xxxx***

**, , 17 – 21 February 2025**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **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)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network | **x** | Core Network |  |

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| ***Title:*** | Correction on LBRM TBS determination for UE indicating 1024QAM rank restricted capability | | | | | | | | | |
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| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** | R1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***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)* | |
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| ***Reason for change:*** | | For 1024QAM, two UE capabilities were defined in Release 17:  ***pdsch-1024QAM-FR1-r17***  Indicates whether the UE supports 1024QAM modulation scheme for PDSCH for FR1 as defined in TS 38.211 [6], MCS and CQI feedback tables based on 1024QAM modulation order as defined in TS 38.214 [12].  ***pdsch-1024QAM-2MIMO-FR1-r17***  Indicates whether the UE supports 1024QAM modulation scheme for PDSCH with maximum 2 MIMO layers for FR1 as defined in TS 38.211 [6], MCS and CQI feedback tables based on 1024QAM modulation order as defined in TS 38.214 [12].  The TS38.212 calculation for LBRM TB size doesn’t take the rank restricted UE capability into account, but calculates the LBRM TB size for LDPC bit selection according to the configured maximum modulation and configured maximum number of MIMO layers, even though with the UE indicating *pdsch-1024QAM-2MIMO-FR1-r17* and being configured with maximum modulation of 1024QAM and with maximum number of MIMO layers > 2 will not use the maximum modulation and maximum rank at the same time. | | | | | | | | |
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| ***Summary of change:*** | | Clarifying that 1024QAM rank-restricted UE (indicating *pdsch-1024QAM-2MIMO-FR1-r17* capability) calculates its LBRM TB size using 1024QAM only if the maximum number of layers is not larger than 2 also for the lower modulation orders. | | | | | | | | |
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| ***Consequences if not approved:*** | | Unclear if the 1024QAM rank-restricted UE (indicating *pdsch-1024QAM-2MIMO-FR1-r17* capability) should calculate the LBRM TB size according to maximum modulation and maximum number of MIMO layers even if the maximum number of MIMO layers > 2 and thus the maximum number of MIMO layers and maximum modulation never happen together. | | | | | | | | |
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| ***Clauses affected:*** | | 5.4.2.1 | | | | | | | | |
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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:*** | | This CR only impacts the PDSCH LBRM TB size determination for a UE indicating indicating pdsch-1024QAM-2MIMO-FR1-r17 capability and when the UE is configured with 1024QAM and with more than 2-layers. | | | | | | | | |
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| ***This CR's revision history:*** | | This is the first version of the CR | | | | | | | | |