**3GPP TSG-RAN WG4 Meeting #98-e *R4-210xxxx***

**E-meeting, 25th January – 5th February 2021**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-4** | **CR** | **0141** | **rev** | **1** | **Current version:** | **16.3.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | CR on applicability rules and FRC for FR2 DL 256QAM CQI requirements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Intel Corporation | | | | | | | | | |
| ***Source to TSG:*** | RAN4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_DL256QAM\_FR2-Perf | | | | |  | ***Date:*** | | | 2021-01-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Definition of FR2 DL 256QAM CQI requirements | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Added applicability rules 2. Added FRC | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | FR2 DL 256QAM CQI requirements are not defined | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.1.1.3, A.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.521-4 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**START OF CHANGE**

#### 8.1.1.3 Applicability of requirements for optional UE features

The performance requirements in Table 8.1.1.3-1 shall apply for UEs which support optional UE features only.

Table 8.1.1.3-1: Requirements applicability for optional UE features

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| UE feature/capability [14] | Test type | | Test list | Applicability notes |
| 256QAM modulation scheme for PDSCH for FR1 (*pdsch-256QAM-FR2*) | FR2 TDD | CQI | TBA | The test coverage can be considered fulfilled without executing of Test 1 and 2 from Clause 8.2.2.2.1.1 if UE passes Test 3 and 4 from Clause 8.2.2.2.1.1 |

<SKIP UNCHANGED PART>

A.4 CSI reference measurement channels

<SKIP UNCHANGED PART>

**Table A.4-2: Mapping of CQI Index to Information Bit payload (CQI table 2)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TBS Scheme | | | | TBS.2-1 | TBS.2-2 | TBS.2-3 | TBS.2-4 | TBS.2-5 | TBS.2-6 | TBS.2-6 |
| MCS table | | | | 256QAM | | | | | | |
| Number of allocated PDSCH resource blocks | | | | 52 | 52 | 106 | 106 | 8 | 16 | 32 |
| Number of consecutive PDSCH symbols | | | | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Number of PDSCH MIMO layers | | | | 1 | 2 | 1 | 2 | 1 | 1 | 1 |
| Number of DMRS REs (Note 1) | | | | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| Overhead for TBS determination | | | | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Available RE-s for PDSCH | | | | 6240 | 6240 | 12720 | 12720 | 960 | 1920 | 3680 |
| CQI index | Spectral efficiency | MCS index | Modulation | Information Bit Payload per Slot | | | | | | |
| 0 | OOR | OOR | OOR | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 1 | 0.1523 | 0 | QPSK | 1480 | 2976 | 2976 | 5896 | 224 | 456 | 848 |
| 2 | 0.3770 | 1 | 2408 | 4744 | 4744 | 9480 | 368 | 736 | 1416 |
| 3 | 0.8770 | 3 | 5504 | 11016 | 11016 | 22536 | 848 | 1736 | 3240 |
| 4 | 1.4766 | 5 | 16QAM | 9224 | 18432 | 18960 | 37896 | 1416 | 2856 | 5376 |
| 5 | 1.9141 | 7 | 12040 | 24072 | 24576 | 49176 | 1864 | 3752 | 6912 |
| 6 | 2.4063 | 9 | 15112 | 30216 | 30728 | 61480 | 2408 | 4608 | 8712 |
| 7 | 2.7305 | 11 | 64QAM | 16896 | 33816 | 34816 | 69672 | 2600 | 5248 | 9992 |
| 8 | 3.3223 | 13 | 20496 | 40976 | 42016 | 83976 | 3240 | 6400 | 12040 |
| 9 | 3.9023 | 15 | 24576 | 49176 | 49176 | 98376 | 3752 | 7424 | 14344 |
| 10 | 4.5234 | 17 | 28168 | 56368 | 57376 | 114776 | 4352 | 8712 | 16392 |
| 11 | 5.1152 | 19 | 31752 | 63528 | 65576 | 131176 | 4864 | 9736 | 18432 |
| 12 | 5.5547 | 21 | 256QAM | 34816 | 69672 | 69672 | 139376 | 5248 | 10760 | 20496 |
| 13 | 6.2266 | 23 | 38936 | 77896 | 79896 | 159880 | 6016 | 12040 | 22536 |
| 14 | 6.9141 | 25 | 43032 | 86040 | 88064 | 176208 | 6656 | 13320 | 25104 |
| 15 | 7.4063 | 27 | 46104 | 92200 | 94248 | 188576 | 7040 | 14088 | 27144 |
| Note 1: Number of DMRS REs includes the overhead of the DM-RS CDM groups without data  Note 2: PDSCH is not scheduled on slots containing CSI-RS or slots which are not full DL  Note 3: PDSCH is not scheduled on slots containing PBCH, i.e. slot#0 per 20ms periodicity | | | | | | | | | | |

Table A.4-4: Mapping of CQI Index to Information Bit payload (CQI table 2)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TBS Scheme | | | | TBS.4-1 |  |  |  |  |  |
| MCS table | | | | 256QAM | | | | | |
| Number of allocated PDSCH resource blocks | | | | 32 |  |  |  |  |  |
| Number of consecutive PDSCH symbols | | | | 12 |  |  |  |  |  |
| Number of PDSCH MIMO layers | | | | 1 |  |  |  |  |  |
| Number of DMRS REs (Note 1) | | | | 24 |  |  |  |  |  |
| Overhead for TBS determination | | | | 6 |  |  |  |  |  |
| Available RE-s for PDSCH | | | | 3680 |  |  |  |  |  |
| CQI index | Spectral efficiency | MCS index | Modulation | Information Bit Payload per Slot | | | | | |
| 0 | OOR | OOR | OOR | N/A |  |  |  |  |  |
| 1 | 0.1523 | 0 | QPSK | 1800 |  |  |  |  |  |
| 2 | 0.3770 | 1 | 2856 |  |  |  |  |  |
| 3 | 0.8770 | 3 | 6528 |  |  |  |  |  |
| 4 | 1.4766 | 5 | 16QAM | 11016 |  |  |  |  |  |
| 5 | 1.9141 | 7 | 14344 |  |  |  |  |  |
| 6 | 2.4063 | 9 | 17928 |  |  |  |  |  |
| 7 | 2.7305 | 11 | 64QAM | 20496 |  |  |  |  |  |
| 8 | 3.3223 | 13 | 25104 |  |  |  |  |  |
| 9 | 3.9023 | 15 | 29192 |  |  |  |  |  |
| 10 | 4.5234 | 17 | 33816 |  |  |  |  |  |
| 11 | 5.1152 | 19 | 38936 |  |  |  |  |  |
| 12 | 5.5547 | 21 | 256QAM | 42016 |  |  |  |  |  |
| 13 | 6.2266 | 23 | 47112 |  |  |  |  |  |
| 14 | 6.9141 | 25 | 52224 |  |  |  |  |  |
| 15 | 7.4063 | 27 | 55304 |  |  |  |  |  |
| Note 1: Number of DMRS REs includes the overhead of the DM-RS CDM groups without data  Note 2: PDSCH is not scheduled on slots containing CSI-RS or slots which are not full DL  Note 3: PDSCH is not scheduled on slots containing PBCH, i.e. slot#0 per 20ms periodicity | | | | | | | | | |

**END OF CHANGE**