**3GPP TSG-RAN WG4 Meeting#111R4-240xxxx**

**Fukuoka, JP, May 20 – May 24, 2024**

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.101-4** | **CR** | **Draft CR** | **rev** | **1** | **Current version:** | **18.3.0** |  |
|  |
| *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 |  | Radio Access Network |  | Core Network |  |

|  |
| --- |
|  |
| ***Title:***  | [NR\_DSS\_enh-Perf] Draft CR to 38.101-4 Applicability rule for NR PDCCH demodulation requirements under DSS scenario |
|  |  |
| ***Source to WG:*** | Qualcomm Inc |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_DSS\_enh-Perf |  | ***Date:*** | 05/11/2024 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***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)* |
|  |  |
| ***Reason for change:*** | RAN4 agreed to introduce PDCCH performance requirements for DSS enhancement |
|  |  |
| ***Summary of change:*** | Add applicability rule for NR PDCCH test cases related to DSS enhancements |
|  |  |
| ***Consequences if not approved:*** | Applicability rule will remain undefined in the specfication |
|  |  |
| ***Clauses affected:*** | 5.1.1.3 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  |  |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** | **X** |  |  Test specifications | TS 38.521-4  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** | None |
|  |  |
| ***This CR's revision history:*** |  |

**--- Start of change 1 ---**

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

The performance requirements in Table 5.1.1.3-1 shall apply for UEs which support optional UE features only.

**Table 5.1.1.3-1: Requirements applicability for optional UE features**

|  |  |  |  |
| --- | --- | --- | --- |
| UE feature/capability [14] | Test type | Test list | Applicability notes |
| SU-MIMO Interference Mitigation advanced receiver | FR1 FDD | PDSCH | Clause 5.2.2.1.1 (Test 3-1)Clause 5.2.3.1.1 (Test 5-1) |  |
|  | FR1 TDD | PDSCH | Clause 5.2.2.2.1 (Test 3-1)Clause 5.2.3.2.1 (Test 5-1) |  |
| Alternative additional DMRS position for co-existence with LTE CRS *(additionalDMRS-DL-Alt)* | FR1 FDD | PDSCH | Clause 5.2.2.1.4 (Test 1-2)Clause 5.2.3.1.4 (Test 1-2) |  |
|  | FR1 TDD | PDSCH | Clause 5.2.2.2.4 (Test 1-2)Clause 5.2.3.2.4 (Test 1-2) |  |
| Basic DL NR-NR CA operation (*supportedBandCombinationList*) | NR CA | SDR | Clause 5.5A.1 | 1)Up to 16 DL carriers2)Same numerology across carrier for data/control channel at a given time |
| Enhanced demodulation processing for HST-SFN joint transmission scheme with velocity up to 500km/h | FR1 FDD | PDSCH | Clause 5.2.2.1.9 (Test 1-1)Clause 5.2.3.1.9 (Test 1-1) |  |
|  | FR1 TDD | PDSCH | Clause 5.2.2.2.9 (Test 1-1)Clause 5.2.3.2.9 (Test 1-1) |  |
| Alternative 64QAM MCS table for PDSCHNew 64QAM MCS table for PDSCH (*dl-64QAM-MCS-TableAlt*) | FR1 FDD | PDSCH | Clause 5.2.2.1.5Clause 5.2.3.1.5Clause 5.2.2.1.6Clause 5.2.3.1.6 |  |
|  | FR1 TDD | PDSCH | Clause 5.2.2.2.5Clause 5.2.3.2.5Clause 5.2.2.2.6Clause 5.2.3.2.6 |  |
| CQI table with target BLER of 10^-5New CQI table (cqi-TableAlt) | FR1 FDD | PDSCH | Clause 5.2.2.1.5Clause 5.2.3.1.5 |  |
|  | FR1 TDD | PDSCH | Clause 5.2.2.2.5Clause 5.2.3.2.5 |  |
| PDSCH repetitions over multiple slots *(pdsch-RepetitionMultiSlots)*  | FR1 FDD | PDSCH | Clause 5.2.2.1.6Clause 5.2.3.1.6 |  |
|  | FR1 TDD | PDSCH | Clause 5.2.2.2.6Clause 5.2.3.2.6 |  |
| UE PDSCH processing capability #2 *(pdsch-ProcessingType2)* | FR1 FDD | PDSCH | Clause 5.2.2.1.7Clause 5.2.3.1.7 |  |
|  | FR1 TDD | PDSCH | Clause 5.2.2.2.7Clause 5.2.3.2.7 |  |
| Pre-emption indication for DL *(pre-EmptIndication-DL)* | FR1 FDD | PDSCH | Clause 5.2.2.1.8Clause 5.2.3.1.8 |  |
|  | FR1 TDD | PDSCH | Clause 5.2.2.2.8Clause 5.2.3.2.8 |  |
| Single DCI based SDM transmission for multi-TRxP (singleDCI-SDM-scheme-r16) | FR1 FDD | PDSCH | Clause 5.2.2.1.11Clause 5.2.3.1.11 |  |
| FR1 TDD | PDSCH | Clause 5.2.2.2.11Clause 5.2.3.2.11 |  |
| Multi DCI based multi-TRxP support (multiDCI-MultiTRP-r16) | FR1 FDD | PDSCH | Clause 5.2.2.1.12Clause 5.2.3.1.12 |  |
| FR1 TDD | PDSCH | Clause 5.2.2.2.12Clause 5.2.3.2.12 |  |
| Single DCI based FDM Scheme-A for multi-TRxP(supportFDM-SchemeA-r16) | FR1 FDD | PDSCH | Clause 5.2.2.1.13Clause 5.2.3.1.13 |  |
| FR1 TDD | PDSCH | Clause 5.2.2.2.13Clause 5.2.3.2.13 |  |
| Single DCI based inter-slot TDM for multi-TRxP (supportInter-slotTDM-r16) | FR1 FDD | PDSCH | Clause 5.2.2.1.14Clause 5.2.3.1.14 |  |
| FR1 TDD | PDSCH | Clause 5.2.2.2.14Clause 5.2.3.2.14 |  |
| Maximum number of TCI states in Single-DCI based inter-slot TDM (maxNumberTCI-states-r16) | FR1 FDD | PDSCH | Clause 5.2.2.1.14Clause 5.2.3.1.14 | The requirements apply only when maxNumberTCI-states-r16 = 2. |
| FR1 TDD | PDSCH | Clause 5.2.2.2.14Clause 5.2.3.2.14 |
| DRX Adaptation (*drx-Adaptation-r16*) | FR1 FDD | PDCCH | Clause 5.3.2.1.3 | If the Test 1 in Clause 5.3.2.1.3 is passed, the test coverage can be considered fulfilled without executing Test 3 in clause 5.3.2.1.1. |
| FR1 TDD | PDCCH | Clause 5.3.2.2.3 | If the Test 1 in Clause 5.3.2.2.3 is passed, the test coverage can be considered fulfilled without executing Test 2 in clause 5.3.2.2.1. |
| FR1 FDD | PDCCH | Clause 5.3.3.1.3 | If the Test 1 in Clause 5.3.3.1.3 is passed, the test coverage can be considered fulfilled without executing Test 3 in clause 5.3.3.1.1. |
| FR1 TDD | PDCCH | Clause 5.3.3.2.3 | If the Test 1 in Clause 5.3.3.2.3 is passed, the test coverage can be considered fulfilled without executing Test 2 in clause 5.3.3.2.1. |
| Validating P/SP-CSI-RS reception (*periodicAndSemi-PersistentCSI-RS-r16*) | FR1 TDD | PDSCH | Clause 5.2.2.2.15Clause 5.2.3.2.15Clause 5.2A.2.3Clause 5.2A.3.3 | The requirements apply only in case tested UE supporting operations in shared spectrum access and validation of P/SP-CSI-RS reception based on DCI |
| Supported UL channels for dynamic channel access mode (*ul-DynamicChAccess-r16*) or UL channel access for semi-static channel access mode (ul-Semi-StaticChAccess-r16) or both | FR1 TDD | PDSCH | Clause 5.2.2.2.15Clause 5.2.3.2.15 | The requirements apply only in case tested UE supports one of UL channels for dynamic channel access mode and UL channel access for semi-static channel access mode |
| 1024QAM modulation for PDSCH for FR1 (*pdsch-1024QAM-FR1-r17* or *pdsch-1024QAM-2MIMO-FR1-r17*) | FR1 FDD | PDSCH | Clause 5.2.2.1.1 (Test 1-8)Clause 5.2.3.1.1 (Test 1-8) |  |
|  | FR1 TDD | PDSCH | Clause 5.2.2.2.1 (Test 1-12)Clause 5.2.3.2.1 (Test 1-12) |  |
|  |  | SDR | Clause 5.5.1Clause 5.5A.1 | 1024QAM MCS indexes are used only if UE supports 1024QAM for FR1 DL. |
| Support of neighboring LTE cell CRS-IM in DSS scenario with NR 15 kHz SCS ( *CRS-IM-DSS-15kHzSCS-r17*)  | FR1 FDD | PDSCH | Clause 5.2.2.1.18Clause 5.2.3.1.17 | UE can support the feature on the CC(s) in a band only if the UE indicates support of rateMatchingLTE-CRS on that band. |
| FR1 TDD | PDSCH | Clause 5.2.2.2.19Clause 5.2.3.2.18 |
| Support of neighboring LTE cell CRS-IM in non-DSS and 15 kHz NR SCS scenario, without the assistance of network signaling on LTE channel bandwidth (*CRS-IM-nonDSS-15kHzSCS-r17*) | FR1 FDD | PDSCH | Clause 5.2.2.1.19 (Test 2-1)Clause 5.2.3.1.18 (Test 2-1) | The UE can perform CRS-IM when MeasObjectEUTRA IE is configured, and the configured measurement gaps overlap with neighbour LTE cell PBCH position. |
| FR1 TDD | PDSCH | Clause 5.2.2.2.20 (Test 2-1)Clause 5.2.3.2.19 (Test 2-1) |
| Support of neighboring LTE cell CRS-IM in non-DSS and 15 kHz NR SCS scenario, with the assistance of network signaling on LTE channel bandwidth (*CRS-IM-nonDSS-NWA-15kHzSCS-r17*) | FR1 FDD | PDSCH | Clause 5.2.2.1.19 (Test 1-1)Clause 5.2.3.1.18 (Test 1-1) | If the Test 2-1 in Clause 5.2.2.1.19 is passed, the test coverage can be considered fulfilled without executing Test 1-1 in clause 5.2.2.1.19.If the Test 2-1 in Clause 5.2.3.1.18 is passed, the test coverage can be considered fulfilled without executing Test 1-1 in clause 5.2.3.1.18. |
| FR1 TDD | PDSCH | Clause 5.2.2.2.20 (Test 1-1)Clause 5.2.3.2.19 (Test 1-1) | If the Test 2-1 in Clause 5.2.2.2.20 is passed, the test coverage can be considered fulfilled without executing Test 1-1 in clause 5.2.2.2.20.If the Test 2-1 in Clause 5.2.3.2.19 is passed, the test coverage can be considered fulfilled without executing Test 1-1 in clause 5.2.3.2.19. |
| CRS-IM in non-DSS and 30 kHz NR SCS scenario, without the assistance of network signaling on LTE channel bandwidth (*crs-IM-nonDSS-30kHzSCS-r17*) | FR1 TDD | PDSCH | Clause 5.2.2.2.20 (Test 2-2)Clause 5.2.3.2.19 (Test 2-2) | The UE can perform CRS-IM when MeasObjectEUTRA IE is configured, and the configured measurement gaps overlap with neighbour LTE cell PBCH position. |
| CRS-IM in non-DSS and 30 kHz NR SCS scenario, with the assistance of network signaling on LTE channel bandwidth (crs*-IM-nonDSS-NWA-30kHzSCS-r17*) | FR1 TDD | PDSCH | Clause 5.2.2.2.20 (Test 1-2)Clause 5.2.3.2.19 (Test 1-2) | If the Test 2-2 in Clause 5.2.2.2.20 is passed, the test coverage can be considered fulfilled without executing Test 1-2 in clause 5.2.2.2.20.If the Test 2-2 in Clause 5.2.3.2.19 is passed, the test coverage can be considered fulfilled without executing Test 1-2 in clause 5.2.3.2.19. |
| Support for SFN scheme A for PDCCH scheduling SFN Scheme A PDSCH *(sfn-SchemeA-r17)* | FR1 FDD | PDSCH | Clause 5.2.2.1.20Clause 5.2.3.1.19 |  |
|  | FR1 TDD | PDSCH | Clause 5.2.2.2.21Clause 5.2.3.2.20 |  |
| Support for SFN scheme B for PDCCH scheduling SFN Scheme B PDSCH *(sfn-SchemeB-r17)* | FR1 FDD | PDSCH | Clause 5.2.2.1.21Clause 5.2.3.1.20 |  |
|  | FR1 TDD | PDSCH | Clause 5.2.2.2.22Clause 5.2.3.2.21 |  |
| Support for PDCCH with intra-slot repetition *(mTRP-PDCCH-Repetition-r17)* | FR1 FDD | PDCCH | Clause 5.3.2.1.5Clause 5.3.3.1.4 |  |
|  | FR1 TDD | PDCCH | Clause 5.3.2.2.5Clause 5.3.3.2.4 |  |
| Table 5.1.1.3-1: Requirements applicability for optional UE features | Table 5.1.1.3-1: Requirements applicability for optional UE features | Table 5.1.1.3-1: Requirements applicability for optional UE features | Table 5.1.1.3-1: Requirements applicability for optional UE features | Table 5.1.1.3-1: Requirements applicability for optional UE features |
| Reception of NR PDCCH candidates overlapping with LTE CRS REs *(*nr-PDCCH-OverlapLTE-CRS-RE-r18*)* | FR1 FDD | PDCCH | Clause 5.3.2.1.6Clause 5.3.2.2.6 |  |
| FR1 TDD | PDCCH | Clause 5.3.3.1.5Clause 5.3.3.2.5 |

**--- End of change ---**