**3GPP TSG- WG4 Meeting # 97-e *R4-2014729***

**Electronic Meeting, 2-13 Nov., 2020**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | 0093 | **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 |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | CMCC | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_perf\_enh-Perf | | | | |  | ***Date:*** | | | 2020-08-07 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Revised Rel-16 NR performance requirements enhancement WI RP-200472 is approved in RAN#87-e meeting. NR CA PDSCH normal demodulation requirements for NR CA are agreed to be defined for the following CA configs:   * FDD CA with 15kHz SCS * TDD CA   + 30kHz SCS + 30kHz SCS   + 15kHz SCS + 30kHz SCS * TDD FDD CA   + FDD 15kHz SCS + TDD 15kHz SCS   + FDD 15kHz SCS + TDD 30kHz SCS   DraftCR has been endorsed in RAN4 #96-e R4-2012693 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Added the test structure for the NR Rel-16 PDSCH normal demodulation requirements for 2Rx FR1 CA. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The WI will be incomplete. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2A (New) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS 38.521-4 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |

|  |  |
| --- | --- |
| ***This CR's revision history:*** |  |

<< Start of Changes >>

## 5.2 PDSCH demodulation requirements

The parameters specified in Table 5.2-1 are valid for all PDSCH tests unless otherwise stated.

<<Unchanged Sections Skipped>>

### 5.2A.2 2RX requirements

#### 5.2A.2.1 Minimum requirements

For CA with different numbers of DL component carriers, the requirements are defined in Table 5.2A.2.1-4 based on the single carrier requirements for different SCSs and different bandwidth specified in Table 5.2A.2.1-1 ~ Table 5.2A.2.1-3, with the parameters in Table 5.2A-1 ~ Table 5.2A-3 and the downlink physical channel setup according to Annex C.3.1. The performance requirements specified in this sub-cluase do not apply for UE single carrier test.

Table 5.2A.2.1-1: Single carrier performance for FDD 15 kHz SCS for CA configurations

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Bandwidth (MHz)** | **Reference channel** | **Modulation format and code rate** | **Propagation condition** | **Correlation matrix and antenna configuration** | **Reference value** | |
| **Fraction of maximum throughput (%)** | **SNR (dB)** |
| 5 | R.PDSCH.1-9.1 FDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.6] |
| 10 | R.PDSCH.1-2.2 FDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.6] |
| 15 | R.PDSCH.1-9.2 FDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.6] |
| 20 | R.PDSCH.1-9.3 FDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.8] |
| 25 | R.PDSCH.1-9.4 FDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [14.0] |
| 30 | R.PDSCH.1-9.5 FDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.8] |
| 40 | R.PDSCH.1-10.1 FDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [14.0] |
| 50 | R.PDSCH.1-10.2 FDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [14.4] |

Table 5.2A.2.1-2 Single carrier performance for TDD 15 kHz SCS for CA configurations

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Bandwidth (MHz)** | **Reference channel** | **Modulation format and code rate** | **Propagation condition** | **Correlation matrix and antenna configuration** | **Reference value** | |
| **Fraction of maximum throughput (%)** | **SNR (dB)** |
| 5 | R.PDSCH.1-2.1 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.6] |
| 10 | R.PDSCH.1-2.2 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.8] |
| 15 | R.PDSCH.1-2.3 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.8] |
| 20 | R.PDSCH.1-2.4 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.9] |
| 25 | R.PDSCH.1-2.5 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [14.0] |
| 30 | R.PDSCH.1-3.1 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.9] |
| 40 | R.PDSCH.1-3.2 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [14.2] |
| 50 | R.PDSCH.1-3.3 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [14.5] |

Table 5.2A.2.1-3 Single carrier performance for TDD 30 kHz SCS for CA configurations

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Bandwidth (MHz)** | **Reference channel** | **Modulation format and code rate** | **Propagation condition** | **Correlation matrix and antenna configuration** | **Reference value** | |
| **Fraction of maximum throughput (%)** | **SNR (dB)** |
| 5 | R.PDSCH.2-13.1 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.6] |
| 10 | R.PDSCH.2-13.2 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.6] |
| 15 | R.PDSCH.2-13.3 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.6] |
| 20 | R.PDSCH.2-13.4 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.7] |
| 25 | R.PDSCH.2-13.5 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.7] |
| 30 | R.PDSCH.2-14.1 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.7] |
| 40 | R.PDSCH.2-2.2 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [13.9] |
| 50 | R.PDSCH.2-14.2 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [14.1] |
| 60 | R.PDSCH.2-14.3 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [14.0] |
| 80 | R.PDSCH.2-14.4 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [14.5] |
| 90 | R.PDSCH.2-14.5 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [14.3] |
| 100 | R.PDSCH.2-15.1 TDD | 16QAM, 0.48 | TDLA30-10 | 2x2, ULA Low | 70 | [14.7] |

Table 5.2A.2.1-4: Minimum performance for multiple CA configurations

|  |  |  |
| --- | --- | --- |
| **Test number** | **CA duplex mode** | **Minimum performance requirements** |
| 1 | FDD 15 kHz + FDD 15 kHz | As defined in Table 5.2A.2.1-1 |
| 2 | TDD 30 kHz + TDD 30 kHz | As defined in Table 5.2A.2.1-3 |
| 3 | FDD 15 kHz + TDD 30 kHz | As defined in Table 5.2A.2.1-1 and Table 5.2A.2.1-3 per CC |
| 4 | FDD 15 kHz + TDD 15 kHz | As defined in Table 5.2A.2.1-1 and Table 5.2A.2.1-2 per CC |
| 5 | TDD 15 kHz + TDD 30 kHz | As defined in Table 5.2A.2.1-2 and Table 5.2A.2.1-3 per CC |
| Note 1: The applicability of requirements for different CA duplex modes, SCSs, CA configurations and bandwidth combination sets is defined in 5.1.1.5. | | |

<< End of Changes >>