**3GPP TSG-4 Meeting #116 *R4-2510010***

**Bengaluru, IN, 25th - 29th Aug, 2025**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **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)*.* | | | | | | | | |
|  | | | | | | | | |

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

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Draft CR on 8Rx PDSCH demodulation requirements under inter-cell interferecne scenario (TDD) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | MediaTek | | | | | | | | | |
| ***Source to TSG:*** | 4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_demod\_Ph5-Perf | | | | |  | ***Date:*** | | | 27 |
|  |  | | | |  | |  | | |  |
| ***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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | RAN4 agreed to introduce PDSCH requirements for 8Rx UEs considering inter-cell interference. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add PDSCH requirements for 8Rx UEs considering inter-cell interference | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The performance requirements for 8Rx UE will be incomplete | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.4.2.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS/TR 38.521-4 CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**<Start of change>**

5.2.4.2.2 Minimum requirements for PDSCH with inter-cell interference

The performance requirements are specified in Table 5.2.4.2.2-3 - Table 5.2.4.2.2-6, with the addition of test parameters in Table 5.2.4.2.2-2 and the downlink physical channel setup according to Annex C.3.1.

The test purposes are specified in Table 5.2.4.2.2-1.

**Table 5.2.4.2.2-1: Tests purpose**

|  |  |
| --- | --- |
| **Purpose** | **Test index** |
| Verify the PDSCH performance under 8 receive antenna conditions, when the PDSCH transmission from the serving cell is interfered by 1 or 2 interfering cells. | 1-1, 2-1, 3-1, 4-1 |

**Table 5.2.4.2.2-2: Test parameters**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Value** | | |
|  | |  | **Cell 1** | **Cell 2** | **Cell 3** |
|  | |  | **Enabled** | **Enabled** | **Enabled for test 1-1, 2-1**  **Disabled for test 3-1, 4-1** |
| Duplex mode | |  | TDD | | |
| TDD UL-DL pattern | |  | FR1.30-1 | | |
| Active DL BWP index | |  | 1 | | |
| Physical cell ID | |  | 0 | 1 | 2 |
| Transmission rank | |  | 2 for Test 1-1, 2-1 and  4 for Test 3-1, 4-1 | Random rank with 70% and 30% probability for rank 1 and rank 2 | Random rank with 70% and 30% probability for rank 1 and rank 2 for Test 1-1, 2-1  N/A for Test 3-1, 4-1 |
| Time offset to Cell 1 | | us | N/A | 1.5 | -0.5 |
| Frequency shift to Cell 1 | | Hz | N/A | 300 | -100 |
| Interference Model | |  | N/A | As specified in B.6.2 | |
| INR (Note 2) | | dB | N/A | 7.77 for Test 1-1, 2-1  7.58 for Test 3-1, 4-1 | 2.29 for Test 1-1, 2-1  N/A for Test 3-1, 4-1 |
| SSB configuration | SSB position in burst |  | First SSB in Slot #0 | First SSB in Slot #0 for Test 1-1, 2-1  Second SSB in Slot #0 for Test 3-1, 4-1 | First SSB in Slot #0 for Test 1-1, 2-1  N/A for Test 3-1, 4-1 |
|  | SSB periodicity | ms | 20 | 20 | 20 |
| PDSCH configuration | Mapping type |  | Type A | | |
|  | k0 |  | 0 | | |
|  | Starting symbol (S) |  | 2 | | |
|  | Length (L) |  | 12 | | |
|  | PDSCH aggregation factor |  | 1 | | |
|  | PRB bundling type |  | Static | | |
|  | PRB bundling size |  | 2 | | |
|  | Resource allocation type |  | Type 0 | | |
|  | RBG size |  | Config2 | | |
|  | VRB-to-PRB mapping type |  | Non-interleaved | | |
|  | VRB-to-PRB mapping interleaver bundle size |  | N/A | | |
| PDSCH DMRS configuration | DMRS Type |  | Type 1 | | |
|  | Number of additional DMRS |  | 1 | | |
|  | Maximum number of OFDM symbols for DL front loaded DMRS |  | 1 | | |
| Number of HARQ Processes | |  | 8 | | |
| The number of slots between PDSCH and corresponding HARQ-ACK information | |  | Specific to each TDD UL-DL pattern and as defined in Annex A.1.2 | | |
| Note 1: Cell 1 is the serving cell, Cell 2 , 3 are interference cells.  Note 2: INR is defined in Annex B.6.1 | | | | | |

**Table 5.2.4.2.2-3: Minimum performance for Rank 2 with Baseline 8Rx receiver**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test num** | **Reference channel** | **Bandwidth (MHz) / Subcarrier spacing (kHz)** | **Modulation format and code rate** | **Propagation condition** | **Correlation matrix and antenna configuration** | **Reference value** | |
| **Cell1** | **Fraction of maximum throughput (%)** | **SNR (dB)** |
| 1-1 | R.PDSCH.2-27.4 TDD | 40 / 30 | 64QAM, 0.43 | TDLA30-10 | 2x8, ULA Low | 70 | TBD |
| Note 1: The propagation conditions for Cell 1, Cell 2 and Cell 3 are statistically independent.  Note 2: Bandwidth/ Subcarrier spacing, Propagation Condition, Correlation matrix and antenna configuration parameters apply for each of Cell 1, Cell 2 and Cell 3. | | | | | | | |

**Table 5.2.4.2.2-4: Minimum performance for Rank 2 with Simplified 8Rx receiver**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test num** | **Reference channel** | **Bandwidth (MHz) / Subcarrier spacing (kHz)** | **Modulation format and code rate** | **Propagation condition** | **Correlation matrix and antenna configuration** | **Reference value** | |
| **Cell1** | **Fraction of maximum throughput (%)** | **SNR (dB)** |
| 2-1 | R.PDSCH.2-27.4 TDD | 40 / 30 | 64QAM, 0.43 | TDLA30-10 | 2x8, ULA Low | 70 | TBD |
| Note 1: The propagation conditions for Cell 1, Cell 2 and Cell 3 are statistically independent.  Note 2: Bandwidth/ Subcarrier spacing, Propagation Condition, Correlation matrix and antenna configuration parameters apply for each of Cell 1, Cell 2 and Cell 3. | | | | | | | |

**Table 5.2.4.2.2-5: Minimum performance for Rank 4 with Basline 8Rx receiver**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test num** | **Reference channel** | **Bandwidth (MHz) / Subcarrier spacing (kHz)** | **Modulation format and code rate** | **Propagation condition** | **Correlation matrix and antenna configuration** | **Reference value** | |
| **Cell1** | **Fraction of maximum throughput (%)** | **SNR (dB)** |
| 3-1 | R.PDSCH.2-27.4 TDD | 40 / 30 | 16QAM, 0.48 | TDLA30-10 | 4x8, ULA Low | 70 | TBD |
| Note 1: The propagation conditions for Cell 1 and Cell 2are statistically independent.  Note 2: Bandwidth/ Subcarrier spacing, Propagation Condition, Correlation matrix and antenna configuration parameters apply for each of Cell 1, Cell 2 and Cell 3. | | | | | | | |

**Table 5.2.4.2.2-6: Minimum performance for Rank 4 with** **Simplified 8Rx receiver**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test num** | **Reference channel** | **Bandwidth (MHz) / Subcarrier spacing (kHz)** | **Modulation format and code rate** | **Propagation condition** | **Correlation matrix and antenna configuration** | **Reference value** | |
| **Cell1** | **Fraction of maximum throughput (%)** | **SNR (dB)** |
| 4-1 | R.PDSCH.2-27.4 TDD | 40 / 30 | 16QAM, 0.48 | TDLA30-10 | 4x8, ULA Low | 70 | TBD |
| Note 1: The propagation conditions for Cell 1 and Cell 2 are statistically independent.  Note 2: Bandwidth/ Subcarrier spacing, Propagation Condition, Correlation matrix and antenna configuration parameters apply for each of Cell 1, Cell 2 and Cell 3. | | | | | | | |

**<Changed part End>**