**3GPP TSG-RAN WG4 Meeting #104-e *R4-221xxxx***

**Electronic, , 15th - 26th August 2022**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.141-2** | **CR** | **Draft** | **rev** | **-** | **Current version:** | **17.6.0** |  |
|  |
| *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)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **x** | Core Network |  |

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|  |
| ***Title:***  |  |
|  |  |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_HST\_FR2-Perf |  | ***Date:*** | 2022-08-22 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | Update FR2 HST PUSCH requirement applicabiltity rule to FR2-1 based on last agreement. There are no more updates in the simulation results based on the simulation results summary since the last meeting, the SNR with [] can be removed. |
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| ***Summary of change:*** | Remove [] for SNR requirement |
|  |  |
| ***Consequences if not approved:*** | HST FR2 BS demodulation performance requirements are not complete and cannot be used. |
|  |  |
| ***Clauses affected:*** | 8.2.4 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **N** |  Other core specifications  |  |
| ***affected:*** |  | **N** |  Test specifications |  |
| ***(show related CRs)*** |  | **N** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

## Start of Change#1

### 8.2.4 Performance requirements for PUSCH for high speed train

#### 8.2.4.1 Definition and applicability

The performance requirement of PUSCH is determined by a minimum required throughput for a given SNR. The required throughput is expressed as a fraction of maximum throughput for the FRCs listed in annex A. The performance requirements assume HARQ re-transmissions. The performance requirements for High Speed Train conditions are optional and only apply for FR2-1.

Which specific test(s) are applicable to BS is based on the test applicability rules defined in clause 8.1.2.1 and clause 8.1.2.4.

The performance requirements for PUSCH for high speed train only apply to Wide Area Base Stations and Medium Range Base Stations (subject to declaration).

## End of Change#1

## Start of Change#2

#### 8.2.4.6 Test Requirement for *BS Type 2-O*

The throughput measured according to clause 8.2.4.4.2 shall not be below the limits for the SNR levels specified in table 8.2.4.6-1 to 8.2.4.6-2. Unless stated otherwise, the MIMO correlation matrices for the gNB are defined in annex J for low correlation.

Table 8.2.4.6-1: Test requirements for PUSCH, Type B, 50 MHz channel bandwidth, 120 kHz SCS, 350km/h

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Number of TX antennas | Number of demodulation branches | Cyclic prefix | Propagation conditions (Annex J) | Fraction of maximum throughput | FRC(Annex A) | Additional DM-RS position | SNR(dB) |
| 1 | 2 | Normal | Scenario 4-BI-NR350, FR2 | 70 % | G-FR2-A10-1 | pos0 | 13.5 |
|  |  | Normal | Scenario 4-BI-NR350, FR2 | 70 % | G-FR2-A10-3, G-FR2-A10-5 | pos1, pos2 | 13.1 |

Table 8.2.4.6-2: Test requirements for PUSCH, Type B, 200 MHz channel bandwidth, 120 kHz SCS, 350km/h

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Number of TX antennas** | **Number of demodulation branches** | **Cyclic prefix** | **Propagation conditions (Annex J)** | **Fraction of maximum throughput** | **FRC(Annex A)** | **Additional DM-RS position** | **SNR****(dB)** |
| 1 | 2 | Normal | Scenario 4-BI-NR350, FR2 | 70 % | G-FR2-A10-2 | pos0 | 13.4 |
|  |  | Normal | Scenario 4-BI-NR350, FR2 | 70 % | G-FR2-A10-4, G-FR2-A10-6 | pos1, pos2 | 12.9 |

## End of Change#2