**3GPP TSG-RAN WG4 Meeting #94-e *R4-2002500***

**Electronic Meeting, Feb.24th - Mar.6th 2020**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.141** | **CR** | **1249** | **rev** | **0** | **Current version:** | **16.4.0** |  |
|  | | | | | | | | |
| *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:*** | CR to TS 36.141 Updates of PUSCH performance requirements for enhanced HST scenario | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | NTT DOCOMO, INC. | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_high\_speed\_enh2-Perf | | | | |  | ***Date:*** | | | 2020-3-6 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | This CR is to update PUSCH requirements under high speed train conditions assuming a UE velocity of up to 500km/h. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Update SNR values for PUSCH performance under high speed train conditions including HST scenario 1-LTE500a, scenario 3-LTE500a, scenario 1-LTE500b and scenario 3-LTE500b | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | TBDs are remained. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.2.4.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **x** |  | Other core specifications | | | | TS36.104 | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**--------------Start of text proposal-------------**

#### 8.2.4.5 Test Requirement

The throughput measured according to subclause 8.2.4.4.2 shall not be below the limits for the SNR levels specified in Table 8.2.4.5-1.

Table 8.2.4.5-1: Test requirements for High Speed Train conditions

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Channel Bandwidth [MHz] | FRC (Annex A) | Number of TX antennas | Number of RX antennas | Propagation conditions and correlation matrix (Annex B) | Fraction of maximum throughput | SNR  [dB] |
| 1.4 | A3-2 | 1 | 1 | HST Scenario 3 | 30% | -1.2 |
| 70% | 2.2 |
| Scenario 3-LTE500a(Note 1) | 30% | [-1.2] |
| 70% | [2.2] |
| Scenario 3-LTE500b(Note 2) | 30% | [-1.2] |
| 70% | [2.2] |
| 2 | HST Scenario 1 Low | 30% | -3.6 |
| 70% | -0.3 |
| Scenario 1-LTE500a Low(Note 1) | 30% | [-3.6] |
| 70% | [-0.3] |
| Scenario 1-LTE500b Low(Note 2) | 30% | [-3.6] |
| 70% | [-0.3] |
| 3 | A3-3 | 1 | HST Scenario 3 | 30% | -1.8 |
| 70% | 1.9 |
| Scenario 3-LTE500a(Note 1) | 30% | [-1.8] |
| 70% | [2.1] |
| Scenario 3-LTE500b(Note 2) | 30% | [-1.8] |
| 70% | [2.0] |
| 2 | HST Scenario 1 Low | 30% | -4.2 |
| 70% | -0.7 |
| Scenario 1-LTE500a Low(Note 1) | 30% | [-4.2] |
| 70% | [-0.7] |
| Scenario 1-LTE500b Low(Note 2) | 30% | [-4.2] |
| 70% | [-0.7] |
| 5 | A3-4 | 1 | HST Scenario 3 | 30% | -2.3 |
| 70% | 1.6 |
| Scenario 3-LTE500a(Note 1) | 30% | [-2.3] |
| 70% | [1.6] |
| Scenario 3-LTE500b(Note 2) | 30% | [-2.3] |
| 70% | [1.6] |
| 2 | HST Scenario 1 Low | 30% | -4.8 |
| 70% | -1.1 |
| Scenario 1-LTE500a Low(Note 1) | 30% | [-4.8] |
| 70% | [-1.1] |
| Scenario 1-LTE500b Low(Note 2) | 30% | [-4.8] |
| 70% | [-1.1] |
| 10 | A3-5 | 1 | HST Scenario 3 | 30% | -2.4 |
| 70% | 1.5 |
| Scenario 3-LTE500a(Note 1) | 30% | [-2.4] |
| 70% | [2.0] |
| Scenario 3-LTE500b(Note 2) | 30% | [-2.4] |
| 70% | [2.0] |
| 2 | HST Scenario 1 Low | 30% | -5.1 |
| 70% | -1.2 |
| Scenario 1-LTE500a Low(Note 1) | 30% | [-5.1] |
| 70% | [-1.2] |
| Scenario 1-LTE500b Low(Note 2) | 30% | [-5.1] |
| 70% | [-0.9] |
| 15 | A3-6 | 1 | HST Scenario 3 | 30% | -2.4 |
| 70% | 1.5 |
| Scenario 3-LTE500a(Note 1) | 30% | [-2.4] |
| 70% | [1.5] |
| Scenario 3-LTE500b(Note 2) | 30% | [-2.4] |
| 70% | [1.5] |
| 2 | HST Scenario 1 Low | 30% | -4.9 |
| 70% | -1.1 |
| Scenario 1-LTE500a Low(Note 1) | 30% | [-4.9] |
| 70% | [-1.1] |
| Scenario 1-LTE500b Low(Note 2) | 30% | [-4.9] |
| 70% | [-1.1] |
| 20 | A3-7 | 1 | HST Scenario 3 | 30% | -2.4 |
| 70% | 1.5 |
| Scenario 3-LTE500a(Note 1) | 30% | [-2.4] |
| 70% | [1.8] |
| Scenario 3-LTE500b(Note 2) | 30% | [-2.4] |
| 70% | [2.1] |
| 2 | HST Scenario 1 Low | 30% | -5.0 |
| 70% | -1.1 |
| Scenario 1-LTE500a Low(Note 1) | 30% | [-5.0] |
| 70% | [-1.1] |
| Scenario 1-LTE500b Low(Note 2) | 30% | [-5.0] |
| 70% | [-1.1] |
| NOTE 1: Not applicable if the BS manufacturer declares supported maximum Doppler frequency is 1750 Hz  NOTE 2: Not applicable if the BS manufacturer declares supported maximum Doppler frequency is 1944 Hz | | | | | | |

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex G.

**--------------End of text proposal-------------**