**3GPP TSG-RAN WG4 Meeting #95-e R4-2007213**

**Electronic Meeting, 25 May – 5 June , 2020**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v11.4* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.104** | **CR** | **4897** | **rev** | **1** | **Current version:** | **15.8.0** |  |
|  | | | | | | | | |
| *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 | **X** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | CR: Updates to FeNB-IoT NPRACH TDD performance requirements in TS 36.104 (Rel-15) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NB\_IOTenh2 | | | | |  | ***Date:*** | | | 2020-05-27 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-15 |
|  | *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:*** | | The FeNB-IOT NPRACH TDD performance requirements are wrong.  -The NPRACH missed detection requirements for TDD in Table 8.5.3.2.1-2 are wrong. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | According to the simulation results of each company,we update the probability of detection for FeNB-IOT NPRACH TDD shall be equal to or exceed 99% for the SNR levels listed in Table 8.5.3.2.1-2.  -Add the STD from ideal results to companies’ averaged values with impairments as the final FeNB-IoT NPRACH TDD format0 and format1 performance requirements. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | We can not verify the performance of FeNB-IOT NPRACH TDD correctly. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | Clause 8.5.3.2.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

*<Start of change>*

##### 8.5.3.2.1 Minimum requirements

The probability of detection shall be equal to or exceed 99% for the SNR levels listed in table 8.5.3.2.1-1.

Table 8.5.3.2.1-1: NPRACH missed detection requirements for FDD

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Number of TX antennas | Number of RX antennas | Repetition number | Propagation conditions and correlation matrix (Annex B) | Frequency offset | SNR[dB] | | |
| Preamble format 0 | Preamble format 1 | Preamble format 2 |
| 1 | 2 | 8 | AWGN | 0 | -2.1 | -2.1 | -1.0 |
| EPA1 Low | 200 Hz | 6.1 | 6.1 | 9.0 |
| 32 | AWGN | 0 | -6.8 | -6.8 | -5.1 |
| EPA1 Low | 200 Hz | 0.5 | 0.5 | 2.2 |

Table 8.5.3.2.1-2: NPRACH missed detection requirements for TDD

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Number of TX antennas | Number of RX antennas | Repetition number | Propagation conditions and correlation matrix (Annex B) | Frequency offset | SNR[dB] | | | |
| Preamble format 0 | Preamble format 1 | Preamble format 0-a | Preamble format 1-a |
| 1 | 2 | 8 | AWGN | 0 | 5.6 | 2.5 | 4.0 | 1.0 |
| EPA1 Low | 200 Hz | 14.7 | 10.1 | 13.7 | 9.0 |
| 32 | AWGN | 0 | 0.9 | -2.2 | -0.7 | -3.6 |
| EPA1 Low | 200 Hz | 9.8 | 4.3 | 10.0 | 2.5 |

*<End of change>*