**3GPP TSG- Meeting #1 *R4-2409863***

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | **DraftCR** | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *For* [*HELP*](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:*** | Draft CR for TS 38.108, On Performance requirements for PRACH in clause 11.4 for Ka-band NTN | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_NTN\_enh-Perf | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***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:*** | | To introduce performance requirements for PRACH for Ka-band NTN. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Adjust structure of sub-clauses in sub-clause 11.4, and sub-clause 11.4.1 is used for PRACH requirement for SAN type 1-O 2. Add performance requiremnts for PRACH for SAN type 2-O in sub-clause 11.4.2. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Performance requirement for PRACH of SAN type 2-O would be missing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 11.4.1, 11.4.1.1, 11.4.1.2, new 11.4. 2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.181 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Revised from R4-2407477 | | | | | | | | |

## **<Start of Change 1>**

## 11.4 Performance requirements for PRACH

### 11.4.1 Requirements for SAN type 1-O

#### 11.4.1.1 PRACH False alarm probability

Apply the requirements defined in clause 8.4.1.

#### 11.4.1.2 PRACH detection requirements

Apply the requirements defined in clause 8.4.2.

### 11.4.2 Requirements for SAN type 2-O

#### 11.4.2.1 PRACH False alarm probability

##### 11.4.2.1.1 General

The false alarm requirement is valid for any number of receive antennas, for any channel bandwidth.

The false alarm probability is the conditional total probability of erroneous detection of the preamble (i.e. erroneous detection from any detector) when input is only noise.

##### 11.4.2.1.2 Minimum requirement

The false alarm probability shall be less than or equal to 0.1%.

#### 11.4.2.2 PRACH detection requirements

##### 11.4.2.2.1 General

The probability of detection is the conditional probability of correct detection of the preamble when the signal is present. There are several error cases – detecting different preamble than the one that was sent, not detecting a preamble at all or correct preamble detection but with the wrong timing estimation. For NTN-TDLC5-1200, a timing estimation error occurs if the estimation error of the timing of the strongest path is larger than the time error tolerance given in Table 11.4.2.2.1-1.

Table 11.4.2.2.1-1: Time error tolerance for NTN-TDLC5-1200

|  |  |  |
| --- | --- | --- |
| PRACH  preamble | PRACH SCS  (kHz) | Time error tolerance |
| NTN-TDLC5-1200 |
| B4, C2 | 120 | 0.13 us |

The test preambles are listed in table A.4-1 and the test parameter *msg1-FrequencyStart* is set to 0.

##### 11.4.2.2.2 Minimum requirement

The probability of detection shall be equal to or exceed 99% for the SNR levels listed in Table 11.4.2.2.2-1.

Table 11.4.2.2.2-1: PRACH missed detection test requirements, 120 kHz SCS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Number of TX antennas | Number of demodulation branches | Propagation conditions and correlation matrix (annex D) | Frequency offset | SNR (dB) | |
| Burst format B4 | Burst format C2 |
| 1 | 1 | NTN-TDLC5-1200 Low | 3000 Hz | [-6.3] | [-3.3] |
| 2 | NTN-TDLC5-1200 Low | 3000 Hz | [-11.9] | [-8.6] |

## **<Endd of Change 1>**