**3GPP TSG-RAN4 Meeting # *R4-221xyz***

**Electronic Me**e**ting, 9th May – 20th May 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-2** | **CR** |  | **rev** | - | **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 | **x** | Radio Access Network |  | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | CR on RedCap FR2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_redcap-Core | | | | |  | ***Date:*** | | | 2022-5-29 |
|  |  | | | |  | |  | | |  |
| ***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 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | BigCR to capture the draftCR endorsed in RAN4#104e | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Including R4-2210795 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | missing clarification in specification | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.2.1.7, 7.3.2.7, 7.3.4.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS 38.521-2 | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

## < start of changes#1 >

#### 6.2.1.7 UE maximum output power for power class 7

The following requirements define the maximum output power radiated by the UE for any transmission bandwidth within the channel bandwidth for non-CA configuration, unless otherwise stated. The period of measurement shall be at least one sub frame (1ms). The minimum output power values for EIRP are found in Table 6.2.1.7-1. The requirement is verified with the test metric of total component of EIRP (Link=TX beam peak direction, Meas=Link angle).

Table 6.2.1.7-1: UE minimum peak EIRP for power class 7

|  |  |
| --- | --- |
| Operating band | Min peak EIRP (dBm) |
| n257 | 16.4 |
| n258 | 16.4 |
| n261 | 16.4 |
| NOTE 1: Minimum peak EIRP is defined as the lower limit without tolerance  NOTE 2: Void | |

The maximum output power values for TRP and EIRP are found on the Table 6.2.1.7-2. The max allowed EIRP is derived from regulatory requirements [8]. The requirements are verified with the test metrics of TRP (Link=TX beam peak direction, Meas=TRP grid) in beam locked mode and the total component of EIRP (Link=TX beam peak direction, Meas=Link angle.

Table 6.2.1.7-2: UE maximum output power limits for power class 7

|  |  |  |
| --- | --- | --- |
| Operating band | Max TRP (dBm) | Max EIRP (dBm) |
| n257 | 23 | 43 |
| n258 | 23 | 43 |
| n261 | 23 | 43 |

The minimum EIRP at the 50th percentile of the distribution of radiated power measured over the full sphere around the UE is defined as the spherical coverage requirement and is found in Table 6.2.1.7-3 below. The requirement is verified with the test metric of the total component of EIRP (Link=Beam peak search grids, Meas=Link angle).

Table 6.2.1.7-3: UE spherical coverage for power class 7

|  |  |
| --- | --- |
| Operating band | Min EIRP at 50%-tile CDF (dBm) |
| n257 | 5.5 |
| n258 | 5.5 |
| n261 | 5.5 |
| NOTE 1: Minimum EIRP at 50 %-tile CDF is defined as the lower limit without tolerance  NOTE 2: The requirements in this table are verified only under normal temperature conditions as defined in Annex E.2.1. | |

For power class 7 UEs that support multiple FR2 bands, minimum requirement for peak EIRP and EIRP spherical coverage in Tables 6.2.1.7-1 and 6.2.1.7-3 shall be decreased per band, respectively, by the peak EIRP relaxation parameter DMBP,n and EIRP spherical coverage relaxation parameter DMBS,n, as defined for power class 3 in Table 6.2.1.3-4.

## < start of changes#2>

#### 7.3.2.7 Reference sensitivity power level for power class 7

The throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.3.2 and A.3.3.2 (with one sided dynamic OCNG Pattern OP.1 TDD for the DL-signal as described in Annex A.5.2.1) with peak reference sensitivity specified in Table 7.3.2.7-1. The requirement is verified with the test metric of EIS (Link=RX beam peak direction, Meas=Link Angle).

Table 7.3.2.7-1: Reference sensitivity

|  |  |  |
| --- | --- | --- |
| Operating band | REFSENS (dBm) / Channel bandwidth | |
|  | 50 MHz | 100 MHz |
| n257 | -85.3 | -82.3 |
| n258 | -85.3 | -82.3 |
| n261 | -85.3 | -82.3 |
| NOTE 1: The transmitter shall be set to PUMAX as defined in clause 6.2.4 | | |

The REFSENS requirement shall be met for an uplink transmission using QPSK DFT-s-OFDM waveforms and for uplink transmission bandwidth of 50MHz and 100MHz specified in Table 7.3.2.1-2.

Unless given by Table 7.3.2.1-3, the minimum requirements for reference sensitivity shall be verified with the network signalling value NS\_200 (Table 6.2.3-1) configured.

## < start of changes#3 >

#### 7.3.4.7 EIS spherical coverage for power class 7

The reference measurement channels and throughput criterion shall be as specified in clause 7.3.2.7.

The maximum EIS at the 50th percentile of the CCDF of EIS measured over the full sphere around the UE is defined as the spherical coverage requirement and is found in Table 7.3.4.7-1 below. The requirement is verified with the test metric of EIS (Link=Spherical coverage grid, Meas=Link angle).

Table 7.3.4.7-1: EIS spherical coverage for power class 7

|  |  |  |
| --- | --- | --- |
| **Operating band** | **EIS at 50th %-tile CCDF (dBm) / Channel bandwidth** | |
|  | **50 MHz** | **100 MHz** |
| n257 | -74.4 | -71.4 |
| n258 | -74.4 | -71.4 |
| n261 | -74.4 | -71.4 |
| NOTE 1: The transmitter shall be set to PUMAX as defined in clause 6.2.4  NOTE 2: The EIS spherical coverage requirements are verified only under normal thermal conditions as defined in Annex E.2.1. | | |

The requirement shall be met for an uplink transmission using QPSK DFT-s-OFDM waveforms and for uplink transmission bandwidth of 50MHz and 100MHz specified in Table 7.3.2.1-2.

Unless given by Table 7.3.2.1-3, the minimum requirements for reference sensitivity shall be verified with the network signalling value NS\_200 (Table 6.2.3-1) configured.

## < end of changes >