**3GPP TSG-RAN WG4 Meeting #111R4-2410560**

**Fukuoka, Japan, 20 – 24 May 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-1** | **CR** |  | **rev** | **-** | **Current version:** | **18.5.0** |  |
|  | | | | | | | | |
| *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 | **X** | Radio Access Network |  | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | Draft CR to TS 38.101-1: Addition of PC2 for n13 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Inc., Huawei, Apple | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | HPUE\_NR\_FR1\_FDD\_R18-Core | | | | |  | ***Date:*** | | | 2024-05-20 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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:*** | | PC2 support for FDD band n13 has been requested by operators. Requirements have been discussed in RAN4 and this CR includes them to 38.101-1 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The relevant PC2 requirements on maximum output power, MPR, A-MPR and REFSENS degradation are added for band n13. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Relevant high-power UE requirements not supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.2.1, 6.2.3.1, 6.2.3.29, 7.3.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.521-1 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**<Start of change 1>**

### 6.2.1 UE maximum output power

The following UE Power Classes define the maximum output power for any transmission bandwidth within the channel bandwidth of NR carrier unless otherwise stated. The period of measurement shall be at least one sub frame (1ms).

Table 6.2.1-1: UE Power Class

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR  band | Class 1 (dBm) | Tolerance (dB) | Class 1.5 (dBm) | Tolerance (dB) | Class 2 (dBm) | Tolerance (dB) | Class 3 (dBm) | Tolerance (dB) |
| n1 |  |  |  |  | 26 | +2/-3 | 23 | ±2 |
| n2 |  |  |  |  | 26 | +2/-33 | 23 | ±23 |
| n3 |  |  |  |  | 26 | +2/-33 | 23 | ±23 |
| n5 |  |  |  |  |  |  | 23 | ±2 |
| n7 | 316 | +2/-3 |  |  |  |  | 23 | ±23 |
| n8 |  |  |  |  | 26 | +2/-33 | 23 | ±23 |
| n12 |  |  |  |  |  |  | 23 | ±23 |
| n13 |  |  |  |  | 26 | +2/-3 | 23 | ±2 |
| n14 | 316 | +2/-3 |  |  | 26 | +2/-3 | 23 | ±2 |
| n18 |  |  |  |  |  |  | 23 | ±2 |
| n20 |  |  |  |  |  |  | 23 | ±23 |
| n24 |  |  |  |  |  |  | 23 | +2/-33 |
| n25 |  |  |  |  | 26 | +2/-33 | 23 | ±23 |
| n26 |  |  |  |  |  |  | 23 | ±23 |
| n28 |  |  |  |  |  |  | 23 | +2/-2.5 |
| n30 |  |  |  |  |  |  | 23 | ±2 |
| n31 | 316 | +2/-3 |  |  |  |  | 23 | ±2 |
| n34 |  |  | 295 | +2/-3 | 26 | +2/-3 | 23 | ±2 |
| n38 |  |  |  |  |  |  | 23 | ±2 |
| n39 |  |  | 295 | +2/-3 | 26 | +2/-3 | 23 | ±2 |
| n40 |  |  | 295 | +2/-3 | 26 | +2/-3 | 23 | ±2 |
| n41 | 316 | +2/-3 | 295 | +2/-33 | 26 | +2/-33 | 23 | ±23 |
| n47 |  |  |  |  |  |  | 23 | ±2 |
| n48 |  |  |  |  |  |  | 23 | +2/-3 |
| n50 |  |  |  |  |  |  | 23 | ±2 |
| n51 |  |  |  |  |  |  | 23 | ±2 |
| n53 |  |  |  |  |  |  | 23 | ±2 |
| n54 |  |  |  |  |  |  | 23 | ±2 |
| n65 |  |  |  |  |  |  | 23 | ±2 |
| n66 |  |  |  |  | 26 | +2/-3 | 23 | ±2 |
| n70 |  |  |  |  | 26 | +2/-3 | 23 | ±2 |
| n71 | 316 | +2/-3 |  |  | 26 | +2/-3 | 23 | +2/-2.5 |
| n72 | 316 | +2/-3 |  |  |  |  | 23 | ±2 |
| n74 |  |  |  |  |  |  | 23 | ±2 |
| n77 | 316 | +2/-3 | 295 | +2/-3 | 26 | +2/-3 | 23 | +2/-3 |
| n78 | 316 | +2/-3 | 295 | +2/-3 | 26 | +2/-3 | 23 | +2/-3 |
| n79 |  |  | 295 | +2/-3 | 26 | +2/-3 | 23 | +2/-3 |
| n80 |  |  |  |  | 26 | +2/-33 | 23 | ±23 |
| n81 |  |  |  |  |  |  | 23 | ±2 |
| n82 |  |  |  |  |  |  | 23 | ±2 |
| n83 |  |  |  |  |  |  | 23 | +2/-2.5 |
| n84 |  |  |  |  | 26 | +2/-3 | 23 | ±2 |
| n85 | 316 | +2/-3 |  |  |  |  | 23 | ±23 |
| n86 |  |  |  |  |  |  | 23 | ±2 |
| n89 |  |  |  |  |  |  | 23 | ±2 |
| n91 |  |  |  |  |  |  | 23 | ±23, 4 |
| n92 |  |  |  |  |  |  | 23 | ±23, 4 |
| n93 |  |  |  |  |  |  | 23 | ±23, 4 |
| n94 |  |  |  |  |  |  | 23 | ±23, 4 |
| n95 |  |  |  |  | 26 | +2/-3 | 23 | ±2 |
| n97 |  |  |  |  | 26 | +2/-3 | 23 | ±2 |
| n98 |  |  |  |  | 26 | +2/-3 | 23 | ±2 |
| n99 |  |  |  |  |  |  | 23 | +2/-33 |
| n100 | 316 | +2/-3 |  |  |  |  | 23 | ±2 |
| n101 | 316 | +2/-3 |  |  |  |  | 23 | ±2 |
| n104 |  |  |  |  | 26 | +2/-3 | 23 | +2/-3 |
| n105 |  |  |  |  |  |  | 23 | +2/-2.5 |
| n106 |  |  |  |  |  |  | 23 | ±2 |
| n109 |  |  |  |  |  |  | 23 | ±23, 4 |
| NOTE 1: PPowerClass is the maximum UE power specified without taking into account the tolerance  NOTE 2: Powerclass 3 is default power class unless otherwise stated  NOTE 3: Refers to the transmission bandwidths confined within FUL\_low and FUL\_low + 4 MHz or FUL\_high – 4 MHz and FUL\_high, the maximum output power requirement is relaxed by reducing the lower tolerance limit by 1.5 dB.  NOTE 4: The maximum output power requirement is relaxed by reducing the lower tolerance limit by 0.3 dB  NOTE 5: Achieved via dual Tx  NOTE 6: Generally, PC1 UE is not targeted for smartphone form factor. The UE power class 1 requirements for Band n14 are applicable for public safety scenario only. | | | | | | | | |

If a UE supports a different power class than the default UE power class for the band and the supported power class enables the higher maximum output power than that of the default power class:

- if the field of UE capability *maxUplinkDutyCycle-PC2-FR1* is absent and the field of UE capability *maxUplinkDutyCycle-PC1dot5-MPE-FR1* is absent and the percentage of uplink symbols transmitted in a certain evaluation period is larger than 50% (The exact evaluation period is no less than one radio frame); or

- if the field of UE capability *maxUplinkDutyCycle-PC2-FR1* is not absent and the percentage of uplink symbols transmitted in a certain evaluation period is larger than *maxUplinkDutyCycle-PC2-FR1* as defined in TS 38.306 (The exact evaluation period is no less than one radio frame); or

- if the field of UE capability *maxUplinkDutyCycle-PC1dot5-MPE-FR1* is not absent and half the percentage of uplink symbols transmitted in a certain evaluation period is larger than *maxUplinkDutyCycle-PC1dot5-MPE-FR1* as defined in TS 38.306 (The exact evaluation period is no less than one radio frame); or

- if the IE P-Max as defined in TS 38.331 [7] is provided and set to the maximum output power of the default power class or lower;

- shall apply all requirements for the default power class to the supported power class and set the configured transmitted power as specified in clause 6.2.4;

- else if the UE does not support a power class with higher maximum output power than PC2; or

- if the field of UE capability *maxUplinkDutyCycle-PC2-FR1* is absent and the field of UE capability *maxUplinkDutyCycle-PC1dot5-MPE-FR1* is absent and the percentage of uplink symbols transmitted in a certain evaluation period is larger than 25% (The exact evaluation period is no less than one radio frame); or

- if the field of UE capability *maxUplinkDutyCycle-PC2-FR1* is not absent and the percentage of uplink symbols transmitted in a certain evaluation period is larger than 0.5\**maxUplinkDutyCycle-PC2-FR1* (The exact evaluation period is no less than one radio frame); or

- if the field of UE capability *maxUplinkDutyCycle-PC1dot5-MPE-FR1* is not absent and the percentage of uplink symbols transmitted in a certain evaluation period is larger than *maxUplinkDutyCycle-PC1dot5-MPE-FR1* as defined in TS 38.306 (The exact evaluation period is no less than one radio frame); or

- if the IE P-Max as defined in TS 38.331 [7] is provided and set to the maximum output power of the power class 2 or lower;

- shall apply all requirements for power class 2 to the supported power class and set the configured transmitted power as specified in clause 6.2.4;

- else shall apply all requirements for the supported power class and set the configured transmitted power as specified in clause 6.2.4.

### 6.2.1I Void

**<End of change 1>**

**<Start of change 2>**

### 6.2.3 UE additional maximum output power reduction

#### 6.2.3.1 General

Additional emission requirements can be signalled by the network. Each additional emission requirement is associated with a unique network signalling (NS) value indicated in RRC signalling by an NR frequency band number of the applicable operating band and an associated value in the field *additionalSpectrumEmission.* Throughout this specification, the notion of indication or signalling of an NS value refers to the corresponding indication of an NR frequency band number of the applicable operating band, the IE field *freqBandIndicatorNR* and an associated value of *additionalSpectrumEmission* in the relevant RRC information elements [7]*.*

To meet the additional requirements, additional maximum power reduction (A-MPR) is allowed for the maximum output power as specified in Table 6.2.1-1. Unless stated otherwise, the total reduction to UE maximum output power is max(MPR, A-MPR) where MPR is defined in clause 6.2.2. Outer and inner allocation notation used in clause 6.2.3 is defined in clause 6.2.2. Unless stated otherwise, Edge RB allocations get the same AMPR as Outer RB allocations. In absence of modulation and waveform types the A-MPR applies to all modulation and waveform types.

Table 6.2.3.1-1 specifies the additional requirements with their associated network signalling values and the allowed A-MPR and applicable operating band(s) for each NS value. In case of a power class 3 UE, when IE *powerBoostPi2BPSK* is set to 1, power class 2 A-MPR values apply. When IE [*powerBoostPi2BPSKRel18*] or [*powerBoostQPSKRel18*] is enabled, A-MPR, if larger than zero, is increased by ΔPPowerBoost. The mapping of NR frequency band numbers and values of the *additionalSpectrumEmission* to network signalling labels is specified in Table 6.2.3.1-1A.

For almost contiguous allocations in CP-OFDM waveforms in power class 1.5, 2 and 3, the allowed A-MPR defined in clause 6.2.3 is increased by CEIL{ 10 log10(1 + NRB\_gap / NRB\_alloc), 0.5 } dB, where CEIL{x, 0.5} means x rounding upwards to closest 0.5dB, NRB\_gap is the total number of unallocated RBs between allocated RBs and NRB\_alloc is the total number of allocated RBs, and the parameter LCRB is replaced by NRB\_alloc + NRB\_gap in specifying the RB allocation regions.

Unless otherwise specified, pi/2 BPSK in following A-MPR tables refers to both variants of pi/2 BPSK referenced in 6.2.2 tables 6.2.2-1.

Table 6.2.3.1-1: Additional maximum power reduction (A-MPR)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Network signalling label | Requirements (clause) | NR Band | Channel bandwidth (MHz) | Resources blocks (*N*RB) | A-MPR (dB) |
| NS\_01 |  | Table 5.2-1  (NOTE 8) | 3, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100 | Table 5.3.2-1 | N/A |
| NS\_03 | 6.5.2.3.3 | n2, n25, n66,  n70, n86 |  |  | Clause 6.2.3.7 |
| NS\_03U | 6.5.2.3.3, 6.5.2.4.2 | n2, n25, n66, n86 (NOTE 1) |  |  | Clause 6.2.3.7 |
| NS\_04 | 6.5.2.3.2, 6.5.3.3.1 | n41, n90 | 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100 |  | Clause 6.2.3.2 |
| NS\_05 | 6.5.3.3.4 | n1, n65, n84 (NOTE 1) | 5, 10, 15, 20(NOTE 2) |  | Clause 6.2.3.4 (NOTE 7) |
| NS\_05U | 6.5.3.3.4, 6.5.2.4.2 | n1, n65, n84 | 5, 10, 15, 20 |  | Clause 6.2.3.4 (NOTE 7) |
| NS\_06 | 6.5.2.3.4 | n1213, n13, n85 | 3, 5, 10, 15 |  | Clause  6.2.3.3212 |
|  |  | n14 | 5,10 |  |  |
|  |  | n14 | 5, 10 |  | Clause  6.2.3.3214 |
| NS\_07 | 6.5.2.3.4  6.5.3.3.26 | n13 | 5,10 | Table 6.2.3.29-1,  Table 6.2.3.29-3 | Table  6.2.3.29-2.  Table 6.2.3.29-4 |
| NS\_10 |  | n20, n82 | 15, 20 | Table 6.2.3.3-1 | Table  6.2.3.3-1 |
| NS\_12 | 6.5.3.3.17 | n26 | 3,5,10 | Table 6.2.3.21-1 | Table 6.2.3.21-2 |
| NS\_13 | 6.5.3.3.18 | n26 | 3, 5 | Table 6.2.3.22-1 | Table 6.2.3.22-2 |
| NS\_14 | 6.5.3.3.19 | n26 | 10,15,20 | Table 6.2.3.23-1 | Table 6.2.3.23-2 |
| NS\_15 | 6.5.3.3.20 | n26 | 3,5,10,15,20 | Table 6.2.3.24-1 | Table 6.2.3.24-2 |
| NS\_17 | 6.5.3.3.2 | n28, n8313 | 3,5,10 | Table 5.3.2-1 | N/A |
| NS\_18 | 6.5.3.3.3 | n28, n8313, n109 | 3, 5 |  | Table 6.2.3.13-1, A1 |
|  |  |  | 10, 15, 20 |  | Table 6.2.3.13-1, A2 |
|  |  |  | 25, 30 |  | Table 6.2.3.13-1, A3, A4, A5 |
| NS\_21 | 6.5.2.3.9  6.5.3.3.12 | n30 | 5, 10 |  | Clause 6.2.3.14 |
| NS\_24 | 6.5.3.3.13 | n65 (NOTE 4) | 5, 10, 15, 20 | Table 6.2.3.15-1 | Clause 6.2.3.15 |
| NS\_27 | 6.5.2.3.8  6.5.3.3.14 | n48 | 5, 10, 15, 20, 30, 40 | Table 6.2.3.16-1 | Table 6.2.3.16-2 |
| NS\_35 | 6.5.2.3.1 | n71  (NOTE 11) | 5, 10, 15, 20, 25, 30 | Table 5.3.2-1 | Clause  6.2.3.3111 |
| NS\_37 | 6.5.3.3.6 | n74  (NOTE 3) | 10, 15 | Table 6.2.3.8-1 | Table  6.2.3.8-1 |
| NS\_38 | 6.5.3.3.7 | n74 | 5, 10, 15, 20 | Table 6.2.3.9-1 | Table  6.2.3.9-1 |
| NS\_39 | 6.5.3.3.8 | n74 | 10, 15, 20 | Table 6.2.3.10-1 | Table 6.2.3.10-1 |
| NS\_40 | 6.5.3.3.9 | n51 | 5 |  | Table  6.2.3.5-1 |
| NS\_41 | 6.5.3.3.10 | n50 | 5, 10, 15, 20, 30, 40, 50, 60 |  | Table 6.2.3.11-1 |
| NS\_42 | 6.5.3.3.11 | n50 | 5, 10, 15, 20, 30, 40, 50, 60 |  | Table 6.2.3.12-1 |
| NS\_43 | 6.5.3.3.5 | n8, n81 | 5, 10, 15 |  | Clause 6.2.3.6 |
| NS\_43U | 6.5.3.3.5, 6.5.2.4.2 | n8, n81 (NOTE 1) | 5, 10, 15 |  | Clause 6.2.3.6 |
| NS\_44 | 6.5.3.3.24 | n38 | 25, 30, 40 | Table 6.2.3.20-1 | Table 6.2.3.20-1 |
| NS\_45 | 6.5.3.3.21 | n53 | 5, 10 |  | Clause 6.2.3.25 |
| NS\_46 | 6.5.3.3.25 | n7 | 25, 30, 35, 40, 50 | Table 6.2.3.17-1  Table 6.2.3.17-311 | Table 6.2.3.17-2  Table 6.2.3.17-411 |
| NS\_47 | 6.5.3.3.15 | n41 (Note 5) | 30 | Table 6.2.3.18-1  Table 6.2.3.18-3 | Table 6.2.3.18-2  Table 6.2.3.18-4 |
| NS\_48 | 6.5.3.3.22 | n1 and n84 | 10, 15, 20, 25, 30, 40, 45, 50 | Table 6.2.3.26-1,  Table 6.2.3.26-3 | Table 6.2.3.26-2,  Table 6.2.3.26-4 (NOTE 7) |
| NS\_49 | 6.5.3.3.23 | n1 and n84 | 10, 15, 20, 25, 30, 40, 45, 50 | Table 6.2.3.27-1,  Table 6.2.3.27-3 | Table 6.2.3.27-2,  Table 6.2.3.27-4 (NOTE 7) |
| NS\_50 | 6.5.3.3.16 | n39, n98 | 10, 15, 20, 25, 30, 35, 40 |  | Clause 6.2.3.19 |
| NS\_51 | 6.5.3.3.22 | n65 | 50 | Table 6.2.3.28-1 | Table 6.2.3.28-2 |
| NS\_55 | NOTE 6 | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  | N/A |
| NS\_56 | 6.5.3.3.27 | n24, n99 | 5, 10 |  | Clause 6.2.3.30 |
| NS\_57 | NOTE 10 | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  | N/A |
| NS\_62 | 6.5.3.3.28 | n54 | 5 |  | N/A |
| NS\_100 | 6.5.2.4.2 | n1, n2, n3, n5, n8, n18, n25, n26, n65, n66, n80, n81, n84, n86, n89  (NOTE 1) |  |  | Table  6.2.3.1-2 |
| NOTE 1: This NS can be signalled for NR bands that have UTRA services deployed.  NOTE 2: No A-MPR is applied for 5 MHz BWChannel where the upper channel edge is ≥ 1930 MHz,10 MHz BWChannel where the upper channel edge is ≥ 1950 MHz and 15 MHz BWChannel where the upper channel edge is ≥ 1955 MHz and 20 MHz BWChannel where the upper channel edge is ≥ 1970 MHz.  NOTE 3: Applicable when the NR carrier is within 1447.9 – 1462.9 MHz.  NOTE 4: Applicable when the upper edge of the channel bandwidth frequency is greater than 1980 MHz.  NOTE 5: Applicable when the NR carrier is within 2545 – 2575 MHz. PC1 operation is not allowed.  NOTE 6: This NS value is applicable for cells in the range 3450 – 3550 MHz for operations in the USA. This NS value does not indicate any additional spurious emission and maximum output power reduction requirements.  NOTE 7: The 1Tx architecture is assumed. For power class 2 UE indicating *txDiversity-r16* or *txDiversity2Tx-r18* [TS 38.306], the additional relaxation of [2] dB is applicable.  NOTE 8: The NS\_01 label with the field *additionalPmax* [7] absent is default for all NR bands.  NOTE 9: Void  NOTE 10: This NS value is applicable for cells below 3980 MHz that are partly or fully within the range 3650-3980 MHz for operations in Canada. This NS value does not indicate any additional spurious emission and maximum output power reduction requirements.  NOTE 11: Applicable only for power class 1 operation.  NOTE 12: Applicable only for power class 1 operation on band n85.  NOTE 13: 3 MHz channel bandwidth is not applicable.  NOTE 14: Applicable only for power class 2 operation on band n14. | | | | | |

Table 6.2.3.1-1A: Mapping of network signalling label

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR band | Value of *additionalSpectrumEmission* | | | | | | | |
|  | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| n1 | NS\_01 | NS\_100 | NS\_05 | NS\_05U | NS\_48 | NS\_49 |  | Reserved |
| n2 | NS\_01 | NS\_100 | NS\_03 | NS\_03U |  |  |  | Reserved |
| n3 | NS\_01 | NS\_100 |  |  |  |  |  | Reserved |
| n5 | NS\_01 | NS\_100 |  |  |  |  |  | Reserved |
| n7 | NS\_01 | NS\_46 |  |  |  |  |  | Reserved |
| n8 | NS\_01 | NS\_100 | NS\_43 | NS\_43U |  |  |  | Reserved |
| n12 | NS\_01 | NS\_06 |  |  |  |  |  | Reserved |
| n13 | NS\_01 | NS\_06 | NS\_07 |  |  |  |  | Reserved |
| n14 | NS\_01 | NS\_06 |  |  |  |  |  | Reserved |
| n18 | NS\_01 | NS\_100 |  |  |  |  |  | Reserved |
| n20 | NS\_01 | Void | NS\_10 |  |  |  |  | Reserved |
| n24 | NS\_01 | NS\_56 |  |  |  |  |  | Reserved |
| n25 | NS\_01 | NS\_100 | NS\_03 | NS\_03U |  |  |  | Reserved |
| n26 | NS\_01 | NS\_100 | NS\_12 | NS\_13 | NS\_14 | NS\_15 |  | Reserved |
| n28 | NS\_01 | NS\_17 | NS\_18 |  |  |  |  | Reserved |
| n30 | NS\_01 | NS\_21 |  |  |  |  |  | Reserved |
| n31 | NS\_01 |  |  |  |  |  |  | Reserved |
| n34 | NS\_01 |  |  |  |  |  |  | Reserved |
| n38 | NS\_01 | NS\_44 |  |  |  |  |  | Reserved |
| n39 | NS\_01 | NS\_50 |  |  |  |  |  | Reserved |
| n40 | NS\_01 |  |  |  |  |  |  | Reserved |
| n41 | NS\_01 | NS\_04 | NS\_47 |  |  |  |  | Reserved |
| n48 | NS\_01 | NS\_27 |  |  |  |  |  | Reserved |
| n50 | NS\_01 | NS\_41 | NS\_42 |  |  |  |  | Reserved |
| n51 | NS\_01 | NS\_40 |  |  |  |  |  | Reserved |
| n53 | NS\_01 | NS\_45 |  |  |  |  |  | Reserved |
| n54 | NS\_01 | NS\_62 |  |  |  |  |  | Reserved |
| n65 | NS\_01 | NS\_24 | NS\_100 | NS\_05 | NS\_05U | NS\_51 |  | Reserved |
| n66 | NS\_01 | NS\_100 | NS\_03 | NS\_03U |  |  |  | Reserved |
| n70 | NS\_01 | NS\_03 |  |  |  |  |  | Reserved |
| n71 | NS\_01 | NS\_35 |  |  |  |  |  | Reserved |
| n72 | NS\_01 |  |  |  |  |  |  | Reserved |
| n74 | NS\_01 | NS\_37 | NS\_38 | NS\_39 |  |  |  | Reserved |
| n77 | NS\_01 | NS\_55 | NS\_57 |  |  |  |  | Reserved |
| n78 | NS\_01 |  |  |  |  |  |  | Reserved |
| n79 | NS\_01 |  |  |  |  |  |  | Reserved |
| n80 | NS\_01 | NS\_100 |  |  |  |  |  | Reserved |
| n81 | NS\_01 | NS\_100 | NS\_43 | NS\_43U |  |  |  | Reserved |
| n82 | NS\_01 | Void | NS\_10 |  |  |  |  | Reserved |
| n83 | NS\_01 | NS\_17 | NS\_18 |  |  |  |  | Reserved |
| n84 | NS\_01 | NS\_100 | NS\_05 | NS\_05U | NS\_48 | NS\_49 |  | Reserved |
| n85 | NS\_01 | NS\_06 |  |  |  |  |  | Reserved |
| n86 | NS\_01 | NS\_100 | NS\_03 | NS\_03U |  |  |  | Reserved |
| n89 | NS\_01 | NS\_100 |  |  |  |  |  | Reserved |
| n90 | NS\_01 | NS\_04 |  |  |  |  |  | Reserved |
| n91 | NS\_01 |  |  |  |  |  |  | Reserved |
| n92 | NS\_01 |  |  |  |  |  |  | Reserved |
| n93 | NS\_01 |  |  |  |  |  |  | Reserved |
| n94 | NS\_01 |  |  |  |  |  |  | Reserved |
| n95 | NS\_01 |  |  |  |  |  |  | Reserved |
| n97 | NS\_01 |  |  |  |  |  |  | Reserved |
| n98 | NS\_01 | NS\_50 |  |  |  |  |  | Reserved |
| n99 | NS\_01 | NS\_56 |  |  |  |  |  | Reserved |
| n1042 | NS\_01 |  |  |  |  |  |  | Reserved |
| n105 | NS\_01 |  |  |  |  |  |  | Reserved |
| n106 | NS\_01 |  |  |  |  |  |  | Reserved |
| n109 | NS\_01 | NS\_18 |  |  |  |  |  | Reserved |
| NOTE 1: *additionalSpectrumEmission* corresponds to an information element of the same name defined in clause 6.3.2 of TS 38.331 [7].  NOTE 2: Additional emission requirements and associated network signalling for Band n104 are not defined in this version of the specification but may be forthcoming in the future. | | | | | | | | |

Table 6.2.3.1-2: A-MPR for NS\_100 (UTRA protection) (Power Class 3 and Power Class 2)

|  |  |  |
| --- | --- | --- |
| Modulation/Waveform | | Outer (dB) |
| DFT-s-OFDM | Pi/2 BPSK | ≤ 2 |
|  | QPSK | ≤ 2 |
|  | 16 QAM | ≤ 2.5 |
|  | 64 QAM | ≤ 3 |
|  | 256 QAM | ≤ 4.5 |
| CP-OFDM | QPSK | ≤ 4 |
|  | 16 QAM | ≤ 4 |
|  | 64 QAM | ≤ 4 |
|  | 256 QAM | ≤ 6.5 |
| NOTE 1: Void  NOTE 2: Void | | |

#### 6.2.3.2 A-MPR for NS\_04

**<End of change 2>**

**<Start of change 3>**

6.2.3.29 A-MPR for NS\_07

**Table 6.2.3.29-1: A-MPR regions for NS\_07 (Power class 3)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Channel Bandwidth, MHz** | **Carrier Frequency, MHz** | **Regions** | | **A-MPR** |
|  |  | **RBstart\*12\*SCS**  **MHz** | **LCRB\*12\*SCS**  **MHz** |  |
| 5 MHz | 782 ≤ Fc ≤ 784.5 | ≥0 | ≥ 1.8 | A3 |
| 5 MHz | 779.5 ≤ Fc < 782 | ≤ 0.9 | ≥ 0 | A1 |
|  |  | > 0.9, ≤ 1.26 | ≥1.26 | A2 |
|  |  | > 1.26, ≤ 3.42 | ≥ 1.8 | A3 |
|  |  | >3.42 | ≤ 0.36 | A4 |
| 10 MHz | Fc = 782 | ≤ 2.34 | ≥ 0 | A1 |
|  |  | >2.34, ≤ 3.24 | ≥ 1.44 | A2 |
|  |  | > 3.24, ≤ 6.48 | ≥ 3.24 | A3 |
|  |  | > 6.48 | ≤ 0.36 | A4 |

**Table 6.2.3.29-2: A-MPR for NS\_07 (Power class 3)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Modulation/Waveform** | **A1** | **A2** | **A3** | **A4** |
|  | **Outer/Inner** | **Outer/Inner** | **Outer/Inner** | **Outer/Inner** |
| DFT-s-OFDM PI/2 BPSK | 12 | 9 | 6 | 3 |
| DFT-s-OFDM QPSK | 12 | 9 | 6 | 3 |
| DFT-s-OFDM 16 QAM | 12 | 9 | 6 | 3 |
| DFT-s-OFDM 64 QAM | 12 | 9 | 6 | 3 |
| DFT-s-OFDM 256 QAM | 12 | 9 | 6 | 3 |
| CP-OFDM QPSK | 14 | 10 | 7 | 3 |
| CP-OFDM 16 QAM | 14 | 10 | 7 | 3 |
| CP-OFDM 64 QAM | 14 | 10 | 7 | 3 |
| CP-OFDM 256 QAM | 14 | 10 | 7 | 3 |

Table 6.2.3.29-3: A-MPR regions for NS\_07 (Power class 2)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Channel Bandwidth, MHz | Carrier Frequency, MHz | Regions | | A-MPR |
|  |  | RBstart\*12\*SCS  MHz | LCRB\*12\*SCS  MHz |  |
| 5 MHz | 782 ≤ Fc ≤ 784.5 | ≥0 | ≥ 1.8 | A3 |
| 5 MHz | 779.5 ≤ Fc < 782 | ≤ 0.9 | ≥ 0 | A1 |
|  |  | > 0.9, ≤ 1.26 | ≥ 1.26 | A2 |
|  |  | > 1.26, ≤ 3.42 | ≥ 1.8 | A3 |
| > 3.42 | ≤ 0.36 | A4 |
| >1.26, ≤ 2.16 | ≥ 1.26, < 1.8 | A5 |
| > 3.06 | > 0.36 | A5 |
| 10 MHz | Fc = 782 | ≤ 2.34 | ≥ 0 | A1 |
|  |  | > 2.34, ≤ 3.24 | ≥ 1.44 | A2 |
|  |  | > 3.24, ≤ 6.48 | ≥ 3.24 | A3 |
|  |  | > 6.48 | ≤ 0.36 | A4 |
|  |  | > 3.24, ≤ 6.48 | ≥ 1.8, < 3.24 | A5 |
|  |  | > 6.48 | > 0.36 | A5 |

**Table 6.2.3.29-4: A-MPR for NS\_07 (Power class 2)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Modulation/Waveform | A1 | A2 | A3 | A4 | A5 |
|  | Outer/Inner | Outer/Inner | Outer/Inner | Outer/Inner | Outer/Inner |
| DFT-s-OFDM PI/2 BPSK | 14.5 | 11 | 8.5 | 6 | 3 |
| DFT-s-OFDM QPSK | 14.5 | 11 | 8.5 | 6 | 3 |
| DFT-s-OFDM 16 QAM | 14.5 | 11 | 8.5 | 6 | 3 |
| DFT-s-OFDM 64 QAM | 14.5 | 11 | 8.5 | 6 | 3 |
| DFT-s-OFDM 256 QAM | 14.5 | 11 | 8.5 | 6 | 3 |
| CP-OFDM QPSK | 16.5 | 12 | 9.5 | 6 | 3 |
| CP-OFDM 16 QAM | 16.5 | 12 | 9.5 | 6 | 3 |
| CP-OFDM 64 QAM | 16.5 | 12 | 9.5 | 6 | 3 |
| CP-OFDM 256 QAM | 16.5 | 12 | 9.5 | 6 | 3 |

6.2.3.30 A-MPR for NS\_56

**<End of change 3>**

**<Start of change 4>**

For power class 2 UEs, certain degradation of the reference sensitivity in Table 7.3.2-1a is allowed. The maximum amount of degradation is specified in Table 7.3.2-1c, and in Table 7.3.2-1d for a UE that indicates *txDiversity-r16* [15].

**Table 7.3.2-1c Reference Sensitivity Degradation from PC3 to PC2 for FDD bands for UE not supporting Tx Diversity**

| Operating Band | 5  MHz (dB) | 10  MHz (dB) | 15  MHz (dB) | 20  MHz (dB) | 25  MHz (dB) | 30 MHz (dB) | 35 MHz (dB) | 40  MHz (dB) | 45 MHz (dB) | 50  MHz (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| n1 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 |
| n2 | 0.8 | 0.9 | 1.1 | 1.2 | 1.3 | 2.7 | 2.8 | 3.5 |  |  |
| n3 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.8 | 1.1 | 1.5 | 2.3 | 2.8 |
| n8 | 0.5 | 0.7 | 0.8 | 2.3 | 2.8 | 3.2 | 3.1 |  |  |  |
| n13 | 0.8 | 0.9 |  |  |  |  |  |  |  |  |
| n14 | 0.6 | 0.8 |  |  |  |  |  |  |  |  |
| n25 | 0.8 | 0.8 | 0.9 | 1.1 | 1.3 | 2.7 | 2.8 | 3.5 | 3.7 |  |
| n66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| n71 | 0.5 | 0.9 | 0.9 | 2.2 | 2.42  2.53 | 2.52  2.43 | 2.92  3.13 |  |  |  |
| n70 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |  |
| NOTE 1: The transmitter shall be set to PUMAX as defined in clause 6.2.4  NOTE 2: Applies to UEs that support a maximum uplink BW of 20 MHz in this band.  NOTE 3: Applies to UEs that support optional symmetric UL/DL for this BW. | | | | | | | | | | |

**Table 7.3.2-1d Reference Sensitivity Degradation from PC3 to PC2 for** **FDD bands for UE** **supporting Tx Diversity**

| Operating Band | 5  MHz (dB) | 10  MHz (dB) | 15  MHz (dB) | 20  MHz (dB) | 25  MHz (dB) | 30 MHz (dB) | 35 MHz (dB) | 40  MHz (dB) | 45 MHz (dB) | 50  MHz (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| n1 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 |
| n2 | 1.2 | 1.2 | 1.3 | 1.2 | 1.2 | 5.8 | 6.0 | 6.5 |  |  |
| n3 | 1.4 | 1.5 | 1.5 | 1.5 | 1.6 | 1.7 | 2.8 | 5 | 5.5 | 6.0 |
| n8 | 1.3 | 1.4 | 2.1 | 5.8 | 6.1 | 6.5 | 7.0 |  |  |  |
| n13 | 1.2 | 1.3 |  |  |  |  |  |  |  |  |
| n14 | 1.1 | 1.3 |  |  |  |  |  |  |  |  |
| n25 | 1.5 | 1.5 | 1.6 | 1.6 | 1.7 | 6.0 | 6.2 | 6.7 | 7.1 |  |
| n66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| n71 | 1.1 | 1.1 | 1.7 | 5.5 | 5.92  6.93 | 6.22  7.23 | 6.52  7.33 |  |  |  |
| n70 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |  |
| NOTE 1: The transmitter shall be set to PUMAX as defined in clause 6.2G.4  NOTE 2: Applies to UEs that support a maximum uplink BW of 20 MHz in this band.  NOTE 3: Applies to UEs that support optional symmetric UL/DL for this BW. | | | | | | | | | | |

**<End of change 4>**