**3GPP TSG-RAN WG4 Meeting #** **101-e R4-2120041**

**Electronic Meeting, November 1-12, 2021**

**Source:** Nokia, Nokia Shanghai Bell

**Title:** TP to 38.853 on 900MHz RMR RAN4 UE RF requirements

**Agenda Item:** 7.3.2

**Document for:** Approval

# Introduction

During RAN4#100e meeting, UE RF requirements for RMR were discussed. This document addresses the expected changes to 38.101-1 transmitter and receiver characteristics due to introduction of 900MHz RMR band.

# TP to 38.853

7.2.1 Transmitter characteristics

The following 38.101-1 transmitter characteristics changes are expected due to introduction of 900MHz RMR band:

Table 7.2.1-1: 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) |
| n100 |  |  |  |  |  |  | 23 | ±2 |

Table 7.2.1-2: Requirements for spurious emissions for UE co-existence

| NR Band | Spurious emission for UE co-existence | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Protected band | Frequency range (MHz) | | | Maximum Level (dBm) | MBW (MHz) | NOTE |
| n100 | E-UTRA Band 1, 3, 8, 20, 22, 28, 31, 32, 33, 34, 38, 40, 43, 50, 51, 52, 65, 67, 68, 69, 72, 74, 75, 76 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 7, 41, 42  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 758 | - | 788 | -50 | 1 |  |

7.2.2 Receiver characteristics

The following 38.101-1 receiver characteristics changes are expected due to introduction of 900MHz RMR band:

Table 7.2.2-1: Two antenna port reference sensitivity QPSK PREFSENS for FDD bands

| Operating band / SCS / Channel bandwidth | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Operating Band | SCS kHz | 5  MHz (dBm) | 10  MHz (dBm) | 15  MHz (dBm) | 20  MHz (dBm) | 25  MHz (dBm) | 30 MHz (dBm) | 35 MHz (dBm) | 40  MHz (dBm) | 45 MHz (dBm) | 50  MHz (dBm) |
| n100 | 15 | -100 |  |  |  |  |  |  |  |  |  |

Table 7.2.2-2: Uplink configuration for reference sensitivity

| Operating band / SCS (kHz) / Channel bandwidth (MHz) / Duplex mode | | | | | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Operating Band | SCS | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 60 | 70 | 80 | 90 | 100 | Duplex Mode |
| n100 | 15 | 25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | FDD |

Table 7.2.2-3: In-band blocking for NR bands with FDL\_high < 2700 MHz and FUL\_high < 2700 MHz

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| NR band | Parameter | Unit | Case 1 | Case 2 | Case 3 | Case 4 |
|  | Pinterferer | dBm | -56 | -44 | -15 | -38 |
|  | Finterferer (offset) | MHz | -BWChannel/2 –  FIoffset, case 1  and  BWChannel/2 +  FIoffset, case 1 | ≤ -BWChannel/2 –  FIoffset, case 2  and  ≥ BWChannel/2 +  FIoffset, case 2 |  | -BWChannel/2-11 |
| n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n24, n25, n26, n28, n34, n38, n39, n40, n41, n483, n50, n51, n53, n65, n66, n67, n70, n74, n75, n76, n85, n91, n92, n93, n94, n100 | Finterferer | MHz | NOTE 2 | FDL\_low – 15  to  FDL\_high + 15 |  |  |

Table 7.2.2-4: Out of-band blocking for NR bands with FDL\_high < 2700 MHz and FUL\_high < 2700 MHz

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NR band | Parameter | Unit | Range 1 | Range 2 | Range 3 |
| n1, n2, n3, | Pinterferer | dBm | -44 | -30 | -15 |
| n5, n7, n8, n12, n13, n14, n18, n20, n24, n25, n26, n28, n30, n34, n38, n39, n40, n41, n485, n50, n51, n536, n65, n66, n67, n70, n71, n74, n75, n76, n85, n91, n92, n93, n94, n100 | Finterferer (CW) | MHz | -60 < f – FDL\_low < -15  or  15 < f – FDL\_high < 60 | -85 < f – FDL\_low ≤ -60  or  60 ≤ f – FDL\_high < 85 | 1 ≤ f ≤ FDL\_low – 85  or  FDL\_high + 85 ≤ f  ≤ 12750 |

Table 7.2.2-5: Narrow Band Blocking

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| NR band | Parameter | Unit | Channel Bandwidth (MHz) | | | | |
|  |  |  | 5 | 10 | 15 | 20 | 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100 |
| n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n24, n25, n26, n28, n30, n34, n38, n39, n40, n41, n48, n50, n51, n53, n65, n66, n67, n70, n71, n74, n75, n76, n85, n100 | Pw | dBm |  | PREFSENS + channel-bandwidth specific value below | | | |
|  |  | 16 | 13 | 14 | 16 | 16 |
| Puw (CW) | dBm | -55 | | | | |
| Fuw (offset SCS= 15 kHz) 4 | MHz |  | | | | NA |
| Fuw (offset SCS= 30 kHz)4 | MHz | NA | | | |  |