**3GPP TSG-RAN4 Meeting #102-e *R4-2205070***

**Online, , February 21 - March 3, 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-1** | **CR** | **1015** | **rev** | **-** | **Current version:** | **17.4.0** |  |
|  | | | | | | | | |
| *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 |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Big CR to TS 38.101-1 - Adding channel BW support in existing NR bands | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_bands\_R17\_BWs | | | | |  | ***Date:*** | | | 2022-03-07 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | The endorsed draft CRs for this meeting are fixing a NBC issue for band n79 and a mistake for band n48 / NS\_27. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | A note has been added for band n79.  The A-MPR region table has been modified. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | NBC issue will remain for band n79. The A-MPR regions will not be correct for NS\_27. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2, 6.2.3.16 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This version is consolidating all endorsed draft CRs in RAN4#102-e meeting:  R4-2204548 and R4-2204731  To MCC:  Be careful, Table 6.2.3.16-1 columns and rows have been modified in that table for 30MHz channel BW. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*<Start of the change>*

## 5.2 Operating bands

NR is designed to operate in the FR1 operating bands defined in Table 5.2-1.

Table 5.2-1: NR operating bands in FR1

|  |  |  |  |
| --- | --- | --- | --- |
| NR operating band | Uplink (UL) *operating band* BS receive / UE transmit  FUL\_low  – FUL\_high | Downlink (DL) *operating band* BS transmit / UE receive  FDL\_low – FDL\_high | Duplex Mode |
| n1 | 1920 MHz – 1980 MHz | 2110 MHz – 2170 MHz | FDD |
| n2 | 1850 MHz – 1910 MHz | 1930 MHz – 1990 MHz | FDD |
| n3 | 1710 MHz – 1785 MHz | 1805 MHz – 1880 MHz | FDD |
| n5 | 824 MHz – 849 MHz | 869 MHz – 894 MHz | FDD |
| n7 | 2500 MHz – 2570 MHz | 2620 MHz – 2690 MHz | FDD |
| n8 | 880 MHz – 915 MHz | 925 MHz – 960 MHz | FDD |
| n12 | 699 MHz – 716 MHz | 729 MHz – 746 MHz | FDD |
| n13 | 777 MHz – 787 MHz | 746 MHz – 756 MHz | FDD |
| n14 | 788 MHz – 798 MHz | 758 MHz – 768 MHz | FDD |
| n18 | 815 MHz – 830 MHz | 860 MHz – 875 MHz | FDD |
| n20 | 832 MHz – 862 MHz | 791 MHz – 821 MHz | FDD |
| n2416 | 1626.5 MHz – 1660.5 MHz | 1525 MHz – 1559 MHz | FDD |
| n25 | 1850 MHz – 1915 MHz | 1930 MHz – 1995 MHz | FDD |
| n26 | 814 MHz – 849 MHz | 859 MHz – 894 MHz | FDD |
| n28 | 703 MHz – 748 MHz | 758 MHz – 803 MHz | FDD |
| n29 | N/A | 717 MHz – 728 MHz | SDL |
| n303 | 2305 MHz – 2315 MHz | 2350 MHz – 2360 MHz | FDD |
| n34 | 2010 MHz – 2025 MHz | 2010 MHz – 2025 MHz | TDD |
| n3810 | 2570 MHz – 2620 MHz | 2570 MHz – 2620 MHz | TDD |
| n39 | 1880 MHz – 1920 MHz | 1880 MHz – 1920 MHz | TDD |
| n40 | 2300 MHz – 2400 MHz | 2300 MHz – 2400 MHz | TDD |
| n41 | 2496 MHz – 2690 MHz | 2496 MHz – 2690 MHz | TDD |
| n46 | 5150 MHz – 5925 MHz | 5150 MHz – 5925 MHz | TDD13 |
| n4711 | 5855 MHz – 5925 MHz | 5855 MHz – 5925 MHz | TDD |
| n48 | 3550 MHz – 3700 MHz | 3550 MHz – 3700 MHz | TDD |
| n50 | 1432 MHz – 1517 MHz | 1432 MHz – 1517 MHz | TDD1 |
| n51 | 1427 MHz – 1432 MHz | 1427 MHz – 1432 MHz | TDD |
| n53 | 2483.5 MHz – 2495 MHz | 2483.5 MHz – 2495 MHz | TDD |
| n65 | 1920 MHz – 2010 MHz | 2110 MHz – 2200 MHz | FDD4 |
| n66 | 1710 MHz – 1780 MHz | 2110 MHz – 2200 MHz | FDD |
| n67 | N/A | 738 MHz – 758 MHz | SDL |
| n70 | 1695 MHz – 1710 MHz | 1995 MHz – 2020 MHz | FDD |
| n71 | 663 MHz – 698 MHz | 617 MHz – 652 MHz | FDD |
| n74 | 1427 MHz – 1470 MHz | 1475 MHz – 1518 MHz | FDD |
| n75 | N/A | 1432 MHz – 1517 MHz | SDL |
| n76 | N/A | 1427 MHz – 1432 MHz | SDL |
| n7712 | 3300 MHz – 4200 MHz | 3300 MHz – 4200 MHz | TDD |
| n78 | 3300 MHz – 3800 MHz | 3300 MHz – 3800 MHz | TDD |
| n7917 | 4400 MHz – 5000 MHz | 4400 MHz – 5000 MHz | TDD |
| n80 | 1710 MHz – 1785 MHz | N/A | SUL |
| n81 | 880 MHz – 915 MHz | N/A | SUL |
| n82 | 832 MHz – 862 MHz | N/A | SUL |
| n83 | 703 MHz – 748 MHz | N/A | SUL |
| n84 | 1920 MHz – 1980 MHz | N/A | SUL |
| n85 | 698 MHz – 716 MHz | 728 MHz – 746 MHz | FDD |
| n86 | 1710 MHz – 1780 MHz | N/A | SUL |
| n89 | 824 MHz – 849 MHz | N/A | SUL |
| n90 | 2496 MHz – 2690 MHz | 2496 MHz – 2690 MHz | TDD5 |
| n91 | 832 MHz – 862 MHz | 1427 MHz – 1432 MHz | FDD9 |
| n92 | 832 MHz – 862 MHz | 1432 MHz – 1517 MHz | FDD9 |
| n93 | 880 MHz – 915 MHz | 1427 MHz – 1432 MHz | FDD9 |
| n94 | 880 MHz – 915 MHz | 1432 MHz – 1517 MHz | FDD9 |
| n958 | 2010 MHz – 2025 MHz | N/A | SUL |
| n9614 | 5925 MHz – 7125 MHz | 5925 MHz – 7125 MHz | TDD13 |
| n9715 | 2300 MHz – 2400 MHz | N/A | SUL |
| n9815 | 1880 MHz – 1920 MHz | N/A | SUL |
| n9916 | 1626.5 MHz – 1660.5 MHz | N/A | SUL |
| NOTE 1: UE that complies with the NR Band n50 minimum requirements in this specification shall also comply with the NR Band n51 minimum requirements.  NOTE 2: UE that complies with the NR Band n75 minimum requirements in this specification shall also comply with the NR Band n76 minimum requirements.  NOTE 3: Uplink transmission is not allowed at this band for UE with external vehicle-mounted antennas.  NOTE 4: A UE that complies with the NR Band n65 minimum requirements in this specification shall also comply with the NR Band n1 minimum requirements.  NOTE 5: Unless otherwise stated, the applicability of requirements for Band n90 is in accordance with that for Band n41; a UE supporting Band n90 shall meet the requirements for Band n41. A UE supporting Band n90 shall also support band n41.  NOTE 6: A UE that supports NR Band n66 shall receive in the entire DL operating band.  NOTE 7: A UE that supports NR Band n66 and CA operation in any CA band shall also comply with the minimum requirements specified for the DL CA configurations CA\_n66B and CA\_n66(2A) in the current version of the specification.  NOTE 8: This band is applicable in China only.  NOTE 9: Variable duplex operation does not enable dynamic variable duplex configuration by the network, and is used such that DL and UL frequency ranges are supported independently in any valid frequency range for the band.  NOTE 10: When this band is used for V2X SL service, the band is exclusively used for NR V2X in particular regions.  NOTE 11: This band is unlicensed band used for V2X service. There is no expected network deployment in this band.  NOTE 12: In the USA this band is restricted to 3450 – 3550 MHz and 3700 – 3980 MHz  NOTE 13: This band is restricted to operation with shared spectrum channel access as defined in 37.213.  NOTE 14: This band is applicable in the USA only subject to FCC Report and Order FCC 20-51  NOTE 15: The requirements for this band are applicable only where no other NR or E-UTRA TDD operating band(s) are used within the frequency range of this band in the same geographical area. For scenarios where other NR or E-UTRA TDD operating band(s) are used within the frequency range of this band in the same geographical area, special co-existence requirements may apply that are not covered by the 3GPP specifications.  NOTE 16: DL operation in this band is restricted to 1526 – 1536 MHz and UL operation is restricted to 1627.5 – 1637.5 MHz and 1646.5 – 1656.5 MHz.  NOTE 17: For this band, CORESET#0 values from Table 13-5 or Table 13-6 in [8, TS 38.213] are applied regardless of the minimum channel bandwidth. | | | |

*<End of the change>*

*<Start of the change>*

#### 6.2.3.16 A-MPR for NS\_27

Table 6.2.3.16-1: A-MPR for NS\_27

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Channel Bandwidth, MHz | Carrier Centre Frequency, Fc, MHz | Region A | | | | Region B | |
|  |  | RBstart\*12\*SCS | RBend\*12\*SCS | LCRB\*12\*SCS | A-MPR | LCRB\*12\*SCS | A-MPR |
| 15 MHz | 3557.5 ≤ FC < 3562.5 | <1.8 MHz |  |  | A3 | ≥10.8 MHz | A3 |
|  | 3687.5 < FC ≤ 3692.5 | >11.52 MHz |  |  |  |  |  |
| 15 MHz | 3562.5 ≤ FC < 3567.5 | ≤1.08 MHz |  | <1.44 MHz | A4 | ≥11.52 MHz | 2 |
|  | 3682.5 < FC ≤ 3687.5 |  | ≥13.22 MHz |  |  |  |  |
| 20 MHz | 3560 ≤ FC < 3570 | <3.6 MHz |  |  | A5 | ≥10.8 MHz | A5 |
|  | 3680 < FC ≤ 3690 | >12.96 MHz |  |  |  |  |  |
| 20 MHz | 3570 ≤ FC < 3580 | ≤2.16 MHz |  | <1.44 MHz | A6 | ≥14.4 MHz | 2 |
|  | 3670 < FC ≤ 3680 |  | ≥16.92 |  |  |  |  |
| 30 MHz | 3565 ≤ FC < 3585 | < 7.38MHz |  |  | A7 |  |  |
|  |  | ≥ 7.38MHz  ≤24.48MHz |  | ≥ 15.3]MHz | A2 |  |  |
|  |  |  |  | ≤ 15.3 MHz | A1 |  |  |
|  |  | ≥24.48MHz |  | < 2.7 MHz | A7 |  |  |
|  |  |  | > 19.44 MHz |  | A7 |  |  |
|  | 3665 < FC ≤ 3685 |  | ≤19.44MHz  ≥3.24 MHz | ≥ 15.3 MHz | A2 |  |  |
|  |  |  |  | < 15.3 MHz | A1 |  |  |
|  |  |  | <3.24 MHz | < 2.7MHz | A7 |  |  |
|  | 3585 ≤ FC ≤ 3665 | ≤[3.96] MHz |  | < 1.44MHz | A8 | ≥19.44 MHz | 4 |
|  |  |  | ≥24.48MHz |  | A8 |  |  |
| 40 MHz | 3570 ≤ FC < 3600 | <11.34 MHz |  |  | A7 |  |  |
|  |  | ≥11.34 MH,  ≤31.0 MHz |  | ≥18 MHz | A2 |  |  |
|  |  |  |  | <18 MHz | A1 |  |  |
|  |  | >31.0 MHz |  | <3.6 MHz | A7 |  |  |
|  | 3650 < FC ≤ 3680 |  | >24.48 MHz |  | A7 |  |  |
|  |  |  | ≤24.48 MHz, ≥6.48 MHz | ≥18 MHz | A2 |  |  |
|  |  |  |  | <18 MHz | A1 |  |  |
|  |  |  | <6.48 MHz | <3.6 MHz | A7 |  |  |
| 40 MHz | 3600 ≤ FC ≤ 3650 | ≤6.12 MHz |  | <1.44 MHz | A8 | >20 MHz | 4.5 |
|  |  |  | ≥ 32.76 |  |  |  |  |
| NOTE 1: Void  NOTE 2: Void | | | | | | | |

Table 6.2.3.16-2: A-MPR for modulation and waveform type

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Modulation/Waveform | | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 |
|  | | Outer | Outer | Outer/Inner | Outer/Inner | Outer/Inner | Outer/Inner | Outer/Inner | Outer/Inner |
| DFT-s-OFDM | PI/2 BPSK | 4.5 | 6 | 4 | 4 | 4 | 4 | 10.5 | 4 |
|  | QPSK | 4.5 | 6 | 4 | 4 | 4 | 4 | 10.5 | 4 |
|  | 16 QAM | 4.5 | 6 | 5 | 4 | 5 | 4 | 11 | 4 |
|  | 64 QAM | 4.5 | 6 | 5 | 4 | 5 | 4 | 11 | 4 |
|  | 256 QAM |  | 6 |  |  |  |  | 11 |  |
| CP-OFDM | QPSK | 5.5 | 7 | 6 | 4 | 6 | 4 | 11.5 | 4 |
|  | 16 QAM | 5.5 | 7 | 6 | 4 | 6 | 4 | 11.5 | 4 |
|  | 64 QAM | 5.5 | 7 | 6 | 4 | 6 | 4 | 11.5 | 4 |
|  | 256 QAM |  | 7 |  |  |  |  | 11.5 |  |
| NOTE 1: The backoff applied is max (MPR, A-MPR) where MPR is defined in Table 6.2.2-1  NOTE 2: Outer and inner allocations are defined in clause 6.2.2 | | | | | | | | | |

*<End of the change>*