**3GPP TSG-RAN WG4 Meeting #99-e *R4-2111142***

**Electronic Meeting, 19 – 27 May, 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **37.104** | **CR** | **0947** | **rev** |  | **Current version:** | **17.1.0** |  |
|  |
| *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 |  | Radio Access Network | **X** | Core Network |  |

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|  |
| ***Title:***  | CR to 37.104: Correction of NR bands for MSR BS |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_newRAT-Core |  | ***Date:*** | 2021-05-25 |
|  |  |  |  |  |
| ***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 canbe 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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | When NR support was introduced in the MSR specs (CR 0816 in RP‑181075), the Notes 2, 3 and 4 to table 4.5-1 were updated to include NR support. The notes are however also used for a number of bands where NR is not supported, which means that the NR support is incorrectly described. |
|  |  |
| ***Summary of change:*** | Three new notes are introduced (Notes 11, 12 and 13) that can be used as replacements for Notes 2, 3 and 4, in case of bands where NR is not supported. |
|  |  |
| ***Consequences if not approved:*** | It would remain ambiguous regarding what bands that can support NR for MSR BS. |
|  |  |
| ***Clauses affected:*** | 4.5 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***affected:*** | **X** |  |  Test specifications | TS 37.141 |
| ***(show related CRs)*** |  | **X** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

## 4.5 Operating bands and Band Categories

MSR requirements are applicable for band definitions and band numbering as defined in the specifications TS 45.005 [5], TS25.104 [2], TS 25.105 [3], TS 36.104 [4] and TS 38.104 [17]. For the purpose of defining the BS requirements, the operating bands are divided into three band categories as follows:

- Band Category 1 (BC1): Bands for NR FDD, E-UTRA FDD and/or UTRA FDD operation. Bands in this category are also used for NB-IoT operation (all modes)

- Band Category 2 (BC2): Bands for NR FDD, E-UTRA FDD, UTRA FDD and/or GSM/EDGE operation. Bands in this category are also used for NB-IoT operation (all modes)

- Band Category 3 (BC3): Bands for NR TDD, E-UTRA TDD and/or UTRA TDD operation. Bands in this category are also used for NB-IoT operation (all modes)

NOTE: For UTRA TDD, requirements in the present document cover the 1.28 Mcps UTRA TDD option.

The paired and unpaired bands for the three Band Categories are shown in Table 4.5-1 and 4.5-2, together with the corresponding NR, E-UTRA, UTRA and GSM/EDGE band designations. In the present specification, the operating band of an MSR Base Stations is designated using the E-UTRA band number according to the tables.

Table 4.5-1: Paired bands in NR, E-UTRA, UTRA and GSM/EDGE.

| MSR and E‑UTRA Band number | NR Band number | UTRABand number | GSM/EDGEBand designation | Uplink (UL) BS receiveUE transmit | Downlink (DL) BS transmit UE receive | Band category |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | n1 | I | - | 1920 MHz | – | 1980 MHz | 2110 MHz | – | 2170 MHz | 1 |
| 2 | n2 | II | PCS 1900 | 1850 MHz | – | 1910 MHz | 1930 MHz | – | 1990 MHz | 2 |
| 3 | n3 | III | DCS 1800 | 1710 MHz | – | 1785 MHz | 1805 MHz | – | 1880 MHz | 2 |
| 4 |  | IV | - | 1710 MHz | – | 1755 MHz | 2110 MHz | – | 2155 MHz | 1 |
| 5 | n5 | V | GSM 850 | 824 MHz | – | 849 MHz | 869 MHz | – | 894MHz | 2 |
| 6(NOTE 1) |  | VI | - | 830 MHz | – | 840 MHz | 875 MHz | – | 885 MHz | 1(NOTE 1) |
| 7 | n7 | VII | - | 2500 MHz | – | 2570 MHz | 2620 MHz | – | 2690 MHz | 1 |
| 8 | n8 | VIII | E-GSM | 880 MHz | – | 915 MHz | 925 MHz | – | 960 MHz | 2 |
| 9 |  | IX | - | 1749.9 MHz | – | 1784.9 MHz | 1844.9 MHz | – | 1879.9 MHz | 1(NOTE 12) |
| 10 |  | X | - | 1710 MHz | – | 1770 MHz | 2110 MHz | – | 2170 MHz | 1(NOTE 12) |
| 11 |  | XI | - | 1427.9 MHz | – | 1447.9 MHz | 1475.9 MHz | – | 1495.9 MHz | 1 |
| 12 | n12 | XII | - | 699 MHz | – | 716 MHz | 729 MHz | – | 746 MHz | 1 |
| 13 | n13 | XIII | - | 777 MHz | – | 787 MHz | 746 MHz | – | 756 MHz | 1 |
| 14 | n14 | XIV | - | 788 MHz | – | 798 MHz | 758 MHz | – | 768 MHz | 1 |
| 15 |  | XV | - | Reserved |  |  | Reserved |  |  |  |
| 16 |  | XVI | - | Reserved |  |  | Reserved |  |  |  |
| 17 |  | - | - | 704 MHz | – | 716 MHz | 734 MHz | – | 746 MHz | 1(NOTE 13) |
| 18 | n18 | - | - | 815 MHz | – | 830 MHz | 860 MHz | – | 875 MHz | 1(NOTE 4) |
| 19 |  | XIX | - | 830 MHz | – | 845 MHz | 875 MHz | – | 890 MHz | 1 |
| 20 | n20 | XX | - | 832 MHz | – | 862 MHz | 791 MHz | – | 821 MHz | 1 |
| 21 |  | XXI | - | 1447.9 MHz | – | 1462.9 MHz | 1495.9 MHz | – | 1510.9 MHz | 1 |
| 22 |  | XXII | - | 3410 MHz | – | 3490 MHz | 3510 MHz | – | 3590 MHz | 1(NOTE 12) |
| 238 |  | - | - | 2000 MHz | – | 2020 MHz | 2180 MHz | – | 2200 MHz | 1(NOTE 11) |
| 24(NOTE 10) | n24 | - | - | 1626.5 MHz | – | 1660.5 MHz | 1525 MHz | – | 1559 MHz | 1(NOTE 2) |
| 25 | n25 | XXV | - | 1850 MHz | – | 1915 MHz | 1930 MHz | – | 1995 MHz | 1 |
| 26 | n26 | XXVI | - | 814 MHz | – | 849 MHz | 859 MHz | – | 894 MHz | 1 |
| 27 |  | - | - | 807 MHz | – | 824 MHz | 852 MHz | – | 869 MHz | 1(NOTE 11) |
| 28 | n28 | - | - | 703 MHz | – | 748 MHz | 758 MHz | – | 803 MHz | 1(NOTE 4) |
| 29 | n29 | - | - | N/A | 717 MHz | – | 728 MHz | 1(NOTE 2, NOTE 5) |
| 30 | n30 | - | - | 2305 MHz | – | 2315 MHz | 2350 MHz | – | 2360 MHz | 1(NOTE 2) |
| 31 |  | - | - | 452.5 MHz | – | 457.5 MHz | 462.5 MHz | – | 467.5 MHz | 1(NOTE 13) |
| 32(NOTE *5*) |  | XXXII (NOTE *6*) | - |  | N/A |  | 1452 MHz | – | 1496 MHz | 1(NOTE 12) |
| 64 |  |  |  | Reserved |  |
| 65 | n65 | - | - | 1920 MHz | – | 2010 MHz | 2110 MHz | – | 2200 MHz | 1(NOTE 4) |
| 66(NOTE *7*) | n66 | - | - | 1710 MHz | – | 1780 MHz | 2110 MHz | – | 2200 MHz | 1(NOTE 4) |
| 67(NOTE *5*) |  | - | - |  | N/A |  | 738 MHz | - | 758 MHz | 1(NOTE 11) |
| 68 |  | - | - | 698 MHz | – | 728 MHz | 753 MHz | – | 783 MHz | 1(NOTE 11) |
| 69 |  | - | - |  | N/A |  | 2570 MHz | – | 2620 MHz | 1(NOTE 2, NOTE 11) |
| 70(NOTE 9) | n70 | - | - | 1695 MHz | – | 1710 MHz | 1995 MHz | – | 2020 MHz | 1(NOTE 4) |
| 71 | n71 | - | - | 663 MHz | – | 698 MHz | 617 MHz | – | 652 MHz | 1(NOTE 4) |
| 72 |  | - | - | 451 MHz | – | 456 MHz | 461 MHz | – | 466 MHz | 1(NOTE 13) |
| 73 |  | - | - | 450 MHz | – | 455 MHz | 460 MHz | – | 465 MHz | 1(NOTE 13) |
| 74 | n74 | - | - | 1427 MHz | – | 1470 MHz | 1475 MHz | – | 1518 MHz | 1(NOTE 4) |
| 75(NOTE *5*) | n75 | - | - |  | N/A |  | 1432 MHz | – | 1517 MHz | 1(NOTE 2) |
| 76(NOTE *5*) | n76 | - | - |  | N/A |  | 1427 MHz | – | 1432 MHz | 1(NOTE 2) |
| 85 |  | - | - | 698 MHz | – | 716 MHz | 728 MHz | – | 746 MHz | 1(NOTE 13) |
| 87 |  | - | - | 410 MHz | – | 415 MHz | 420 MHz | – | 425 MHz | 1(NOTE 13) |
| 88 |  | - | - | 412 MHz | – | 417 MHz | 422 MHz | – | 427 MHz | 1(NOTE 13) |
| NOTE 1: The band is for UTRA only.NOTE 2: The band is for E-UTRA and/or NR only.NOTE 3: The band is for NR, E-UTRA and/or UTRA only.NOTE 4: The band is for NR and/or E-UTRA and/or NB-IoT only.NOTE *5*: Restricted to NR and/or E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.NOTE 6: Restricted to UTRA operation when dual band is configured (e.g., DB-DC-HSDPA or dual band 4C-HSDPA). The down link frequenc(ies) of this band are paired with the uplink frequenc(ies) of the other FDD band (external) of the dual band configuration.NOTE 7: In E-UTRA operation, the range 2180-2200 MHz of the DL operating band is restricted to operation when carrier aggregation is configured.NOTE 8: Band 23 is not applicable.NOTE 9: In E-UTRA operation, the range 2010-2020 MHz of the DL operating band is restricted to operation when carrier aggregation is configured and TX-RX separation is 300 MHz. In E-UTRA operation, the range 2005-2020 MHz of the DL operating band is restricted to operation when carrier aggregation is configured and TX-RX separation is 295 MHz.NOTE 10: DL operation is restricted to 1526-1536 MHz frequency range. UL operation is restricted to 1627.5 – 1637.5 MHz and 1646.5 – 1656.5 MHz per FCC Order DA 20-48.NOTE 11: The band is for E-UTRA only.NOTE 12: The band is for E-UTRA and/or UTRA only.NOTE 13: The band is for E-UTRA and/or NB-IoT only. |

UTRA FDD can operate with DB-DC-HSDPA for the band configurations listed in subclause 5.2 c) of TS 25.104 [2].

NOTE: For BS capable of multi-band operation, the supported operating bands may belong to different Band Categories.

Table 4.5-2: Unpaired bands in NR, E-UTRA and UTRA.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| MSR and E‑UTRA Band number | NR Band number | UTRA Band number | Uplink (UL) BS receiveUE transmit | Downlink (DL) BS transmit UE receive | Band category |
| 33 |  | a) | 1900 MHz | – | 1920 MHz | 1900 MHz | – | 1920 MHz | 3 |
| 34 | n34 | a) | 2010 MHz | – | 2025 MHz  | 2010 MHz  | – | 2025 MHz | 3 |
| 35 |  | b) | 1850 MHz  | – | 1910 MHz | 1850 MHz  | – | 1910 MHz | 3 |
| 36 |  | b) | 1930 MHz  | – | 1990 MHz | 1930 MHz  | – | 1990 MHz | 3 |
| 37 |  | c) | 1910 MHz  | – | 1930 MHz | 1910 MHz  | – | 1930 MHz | 3 |
| 38 | n38 | d) | 2570 MHz  | – | 2620 MHz | 2570 MHz  | – | 2620 MHz | 3 |
| 39 | n39 | f) | 1880 MHz  | – | 1920 MHz | 1880 MHz  | – | 1920 MHz | 3 |
| 40 | n40 | e) | 2300 MHz  | – | 2400 MHz | 2300 MHz  | – | 2400 MHz | 3 |
| 41 | n41 | - | 2496 MHz  | – | 2690 MHz | 2496 MHz  | – | 2690 MHz | 3(NOTE 1) |
| 42 |  | - | 3400 MHz  | – | 3600 MHz | 3400 MHz  | – | 3600 MHz | 3(NOTE 1) |
| 43 |  | - | 3600 MHz  | – | 3800 MHz | 3600 MHz  | – | 3800 MHz | 3(NOTE 1) |
| 44 |  | - | 703 MHz | – | 803 MHz | 703 MHz | – | 803 MHz | 3 |
| 45 |  | - | 1447 MHz | – | 1467 MHz | 1447 MHz | – | 1467 MHz | 3 |
| 48 | n48 | - | 3550 MHz  | – | 3700 MHz | 3550 MHz  | – | 3700 MHz | 3 |
| 50 | n50 | - | 1432 MHz | - | 1517 MHz | 1432 MHz | - | 1517 MHz | 3 |
| 51 | n51 | - | 1427 MHz | - | 1432 MHz | 1427 MHz | - | 1432 MHz | 3 |
| 52 |  | - | 3300 MHz  | – | 3400 MHz | 3300 MHz  | – | 3400 MHz | 3 |
| 53 | n53 | - | 2483.5 MHz  | – | 2495 MHz | 2483.5 MHz  | – | 2495 MHz | 3 |
| 77 | n77 | - | 3300 MHz | - | 4200 MHz | 3300 MHz | - | 4200 MHz | 3(NOTE 2) |
| 78 | n78 | - | 3300 MHz | - | 3800 MHz | 3300 MHz | - | 3800 MHz | 3(NOTE 2) |
| NOTE 1: The band 41 supports NB-IoT in certain regions. The band 42 and 43 support NB-IoT.NOTE 2: The band is for NR only. |

E-UTRA is designed to operate for the carrier aggregation bands defined in TS 36.101 [18]. The E-UTRA channel bandwidth BWChannel for a single carrier and the Aggregated Channel Bandwidth BWChannel\_CA for E-UTRA carrier aggregation are specified in Clause 5.6 of TS 36.104 [4].

The NB-IoT channel bandwidth BWChannel is specified in Clause 5.6 of TS 36.104 [4].

The NR BS channel bandwidth and PRB utilization is specified in Clause 5.3 of TS 38.104 [17].