## Compliance template for 3GPP 5G SRIT (Release 15 and beyond)

The compliance templates from Report ITU-R M.2411 (2017) Section 5.2.4 corresponding to the proposed draft Revision for 5G[[1]](#footnote-1)[1] developed by 3GPP are provided. It includes one compliance template for 3GPP 5G SRIT (encompassing “NR” and “LTE”), and one compliance template for 3GPP 5G NR RIT.

This document provides the compliance template for the 3GPP 5G SRIT. Given that the full context of the total terrestrial radio interface is considered to be the original submission and any previously approved updates as well as the proposed update, the tables have been updated on the basis of the 3GPP up to Release 17 specifications as per TSG Plenary #98e (Dec 2022). The proposed revision of M.2150 for the 3GPP 5G SRIT continues to meet or improve upon the characteristics presented in Report ITU-R M.2483 sect. 5.2.1.

#### 5.2.4.1 Compliance template **for** services[[2]](#footnote-2)

|  |  |  |
| --- | --- | --- |
|  | Service capability requirements | Evaluator’s comments |
| **5.2.4.1.1** | **Support for wide range of services**Is the proposal able to support a range of services across different usage scenarios (eMBB, URLLC, and mMTC)?: *YES*Specify which usage scenarios (eMBB, URLLC, and mMTC) the candidate RIT or candidate SRIT can support.(1)*.* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| (1) Refer to the process requirements in IMT-2020/2. |

#### 5.2.4.2 Compliance **template** for spectrum3

|  |  |
| --- | --- |
|  | Spectrum capability requirements |
| **5.2.4.2.1** | **Frequency bands identified for IMT**Is the proposal able to utilize at least one frequency band identified for IMT in the ITU Radio Regulations?: *YES* Specify in which band(s) the candidate RIT or candidate SRIT can be deployed.*The supported frequency bands identified for IMT by NR and LTE component RIT are provided below per NR component RIT and LTE component RIT. See the table 1 for 450 -7125 MHz for (frequency range 1, FR1) and table 2 for 24250 – 71000 MHz (frequency range 2, FR2) for NR component RIT, and the table 3 for LTE component RIT .****For NR component RIT:****The following frequency bands will be supported, in accordance with spectrum requirements defined by Report ITU-R M.2411-0. Introduction of other ITU-R IMT identified bands are not precluded in the future. 3GPP technologies are also defined as appropriate to operate in other frequency arrangements and bands.**Table 1:450 – 7125 MHz (FR1) based on table 5.2-1 in TS 38.101-1*

|  |  |  |  |
| --- | --- | --- | --- |
| NR operating band | Uplink (UL) *operating band*BS receive / UE transmitFUL\_low  – FUL\_high | Downlink (DL) *operating band*BS transmit / UE receiveFDL\_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 |
| 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 |
| 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 |
| n100 | 874.4 MHz – 880 MHz | 919.4 MHz – 925 MHz | FDD |
| n101 | 1900 MHz – 1910 MHz | 1900 MHz – 1910 MHz | TDD |
| n10417,18 | 6425 MHz – 7125 MHz | 6425 MHz – 7125 MHz | TDD |
| 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 12: In the USA this band is restricted to 3450 – 3550 MHz and 3700 – 3980 MHz. In Canada this band is restricted to 3450 – 3650 MHz and 3650 – 3980 MHz.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.NOTE 18: [This band is applicable only to RCC countries in accordance with RCC Recommendation 1/21] |

*Table 2: 24250 – 71000 MHz (FR2) based on table 5.2-1 in TS 38.101-2*

|  |  |  |
| --- | --- | --- |
| NR *operating band* | Uplink (UL) and Downlink (DL) *operating band*BS transmit/receiveUE transmit/receive FUL\_low – FUL\_highFDL\_low – FDL\_high | Duplex Mode |
| n257 | 26500 MHz – 29500 MHz | TDD |
| n258 | 24250 MHz – 27500 MHz | TDD |
| n259 | 39500 MHz – 43500 MHz | TDD |
| n260 | 37000 MHz – 40000 MHz | TDD |
| n261 | 27500 MHz – 28350 MHz | TDD |
| n262 | 47200 MHz – 48200 MHz | TDD |
|  |

*Additional frequency bands can be introduced in the future in release independent manner.* ***For LTE component RIT:****The following frequency bands are currently specified, in accordance with spectrum requirements defined by Report ITU-R M.2411-0. Introduction of other ITU-R IMT identified bands are not precluded in the future. 3GPP technologies are also defined as appropriate to operate in other frequency arrangements and bands. Detailed information on the following bands can be found in [36.101] sub-clause 5.5.**Table 3: 450 – 6000 MHz based on table 5.2-1 in 36.101*

|  |  |  |  |
| --- | --- | --- | --- |
| E‑UTRA Operating Band | Uplink (UL) operating bandBS receiveUE transmit | Downlink (DL) operating bandBS transmit UE receive | Duplex Mode |
| FUL\_low – FUL\_high | FDL\_low – FDL\_high |
| 1 | 1920 MHz | – | 1980 MHz  | 2110 MHz | – | 2170 MHz | FDD |
| 2 | 1850 MHz | – | 1910 MHz | 1930 MHz | – | 1990 MHz | FDD |
| 3 | 1710 MHz | – | 1785 MHz | 1805 MHz | – | 1880 MHz | FDD |
| 4 | 1710 MHz | – | 1755 MHz  | 2110 MHz | – | 2155 MHz | FDD |
| 5 | 824 MHz | – | 849 MHz | 869 MHz | – | 894MHz | FDD |
| 61 | 830 MHz | – | 840 MHz | 875 MHz | – | 885 MHz | FDD |
| 7 | 2500 MHz | – | 2570 MHz | 2620 MHz | – | 2690 MHz | FDD |
| 8 | 880 MHz | – | 915 MHz | 925 MHz | – | 960 MHz | FDD |
| 9 | 1749.9 MHz | – | 1784.9 MHz | 1844.9 MHz | – | 1879.9 MHz | FDD |
| 10 | 1710 MHz | – | 1770 MHz | 2110 MHz | – | 2170 MHz | FDD |
| 11 | 1427.9 MHz | – | 1447.9 MHz  | 1475.9 MHz | – | 1495.9 MHz  | FDD |
| 12 | 699 MHz | – | 716 MHz | 729 MHz | – | 746 MHz | FDD |
| 13 | 777 MHz | – | 787 MHz | 746 MHz | – | 756 MHz | FDD |
| 14 | 788 MHz | – | 798 MHz | 758 MHz | – | 768 MHz | FDD |
| 15 | Reserved | Reserved | FDD |
| 16 | Reserved | Reserved | FDD |
| 17 | 704 MHz | – | 716 MHz | 734 MHz | – | 746 MHz | FDD |
| 18 | 815 MHz | – | 830 MHz | 860 MHz | – | 875 MHz | FDD |
| 19 | 830 MHz | – | 845 MHz | 875 MHz | – | 890 MHz | FDD |
| 20 | 832 MHz | – | 862 MHz | 791 MHz | – | 821 MHz | FDD |
| 21 | 1447.9 MHz | – | 1462.9 MHz | 1495.9 MHz | – | 1510.9 MHz | FDD |
| 22 | 3410 MHz | – | 3490 MHz | 3510 MHz | – | 3590 MHz | FDD |
| 231 | 2000 MHz | – | 2020 MHz | 2180 MHz | – | 2200 MHz | FDD |
| 2417 | 1626.5 MHz | – | 1660.5 MHz | 1525 MHz | – | 1559 MHz | FDD |
| 25 | 1850 MHz | – | 1915 MHz | 1930 MHz | – | 1995 MHz | FDD |
| 26 | 814 MHz | – | 849 MHz | 859 MHz | – | 894 MHz | FDD |
| 27 | 807 MHz | – | 824 MHz | 852 MHz | – | 869 MHz | FDD |
| 28 | 703 MHz | – | 748 MHz | 758 MHz | – | 803 MHz | FDD |
| 29 | N/A | 717 MHz | – | 728 MHz | FDD2 |
| 3015 | 2305 MHz | – | 2315 MHz | 2350 MHz | – | 2360 MHz | FDD |
| 31 | 452.5 MHz | – | 457.5 MHz | 462.5 MHz | – | 467.5 MHz | FDD |
| 32 |  | N/A |  | 1452 MHz | – | 1496 MHz | FDD2 |
| 33 | 1900 MHz | – | 1920 MHz | 1900 MHz | – | 1920 MHz | TDD |
| 34 | 2010 MHz | – | 2025 MHz  | 2010 MHz | – | 2025 MHz | TDD |
| 35 | 1850 MHz | – | 1910 MHz | 1850 MHz | – | 1910 MHz | TDD |
| 36 | 1930 MHz | – | 1990 MHz | 1930 MHz | – | 1990 MHz | TDD |
| 37 | 1910 MHz | – | 1930 MHz | 1910 MHz | – | 1930 MHz | TDD |
| 38 | 2570 MHz | – | 2620 MHz | 2570 MHz | – | 2620 MHz | TDD |
| 39 | 1880 MHz | – | 1920 MHz | 1880 MHz | – | 1920 MHz | TDD |
| 40 | 2300 MHz | – | 2400 MHz | 2300 MHz | – | 2400 MHz | TDD |
| 41 | 2496 MHz |  | 2690 MHz | 2496 MHz |  | 2690 MHz | TDD |
| 42 | 3400 MHz | – | 3600 MHz | 3400 MHz | – | 3600 MHz | TDD |
| 43 | 3600 MHz | – | 3800 MHz | 3600 MHz | – | 3800 MHz | TDD |
| 44 | 703 MHz | – | 803 MHz | 703 MHz | – | 803 MHz | TDD |
| 45 | 1447 MHz | – | 1467 MHz | 1447 MHz | – | 1467 MHz | TDD |
| 48 | 3550 MHz | – | 3700 MHz | 3550 MHz | – | 3700 MHz | TDD |
| 49 | 3550 MHz | – | 3700 MHz | 3550 MHz | – | 3700 MHz | TDD16 |
| 50 | 1432 MHz | - | 1517 MHz | 1432 MHz | - | 1517 MHz | TDD13 |
| 51 | 1427 MHz | - | 1432 MHz | 1427 MHz | - | 1432 MHz | TDD13 |
| 52 | 3300 MHz | - | 3400 MHz | 3300 MHz | - | 3400 MHz | TDD |
| 53 | 2483.5 MHz | - | 2495 MHz | 2483.5 MHz | - | 2495 MHz | TDD |
| … |  |  |  |  |  |  |  |
| 64 | Reserved |  |
| 65 | 1920 MHz | – | 2010 MHz  | 2110 MHz | – | 2200 MHz | FDD |
| 66 | 1710 MHz | – | 1780 MHz  | 2110 MHz | – | 2200 MHz | FDD4 |
| 67 |  | N/A |  | 738 MHz | – | 758 MHz | FDD2 |
| 68 | 698 MHz | – | 728 MHz  | 753 MHz | – | 783 MHz  | FDD |
| 69 | N/A | 2570 MHz  | – | 2620 MHz | FDD2 |
| 70 | 1695 MHz | – | 1710 MHz  | 1995 MHz | – | 2020 MHz | FDD10 |
| 71 | 663 MHz | – | 698 MHz  | 617 MHz | – | 652 MHz | FDD |
| 72 | 451 MHz | – | 456 MHz  | 461 MHz | – | 466 MHz | FDD |
| 73 | 450 MHz | – | 455 MHz  | 460 MHz | – | 465 MHz | FDD |
| 74 | 1427 MHz | – | 1470 MHz  | 1475 MHz | – | 1518 MHz  | FDD |
| 75 |  | N/A |  | 1432 MHz | – | 1517 MHz | FDD2 |
| 76 |  | N/A |  | 1427 MHz | – | 1432 MHz | FDD2 |
| 85 | 698 MHz | – | 716 MHz | 728 MHz | – | 746 MHz | FDD |
| 87 | 410 MHz | – | 415 MHz | 420 MHz | – | 425 MHz | FDD |
| 88 | 412 MHz | – | 417 MHz | 422 MHz | – | 427 MHz | FDD |
| 10318 | 787 MHz | – | 788 MHz | 757 MHz | – | 758 MHz | FDD |
| NOTE 1: Band 6, 23 is not applicableNOTE 2: Restricted to 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 3: A UE that complies with the E-UTRA Band 65 minimum requirements in this specification shall also comply with the E-UTRA Band 1 minimum requirements.NOTE 4: The range 2180-2200 MHz of the DL operating band is restricted to E-UTRA operation when carrier aggregation is configured.NOTE 5: A UE that supports E-UTRA Band 66 shall receive in the entire DL operating bandNOTE 6: A UE that supports E-UTRA Band 66 and CA operation in any CA band shall also comply with the minimum requirements specified for the DL CA configurations CA\_66B, CA\_66C and CA\_66A-66A.NOTE 7: A UE that complies with the E-UTRA Band 66 minimum requirements in this specification shall also comply with the E-UTRA Band 4 minimum requirements.NOTE 9: In this version of the specification, restricted to E-UTRA DL operation when carrier aggregation is configured.NOTE 10: The range 2010-2020 MHz of the DL operating band is restricted to E-UTRA operation when carrier aggregation is configured and TX-RX separation is 300 MHz The range 2005-2020 MHz of the DL operating band is restricted to E-UTRA operation when carrier aggregation is configured and TX-RX separation is 295 MHz.NOTE 12: A UE that complies with the E-UTRA Band 74 minimum requirements in this specification shall also comply with the E-UTRA Band 11 and Band 21 minimum requirements.NOTE 13: UE that complies with the E-UTRA Band 50 minimum requirements in this specification shall also comply with the E-UTRA Band 51 minimum requirements.NOTE 14: A UE that complies with the E-UTRA Band 75 minimum requirements in this specification shall also comply with the E-UTRA Band 76 minimum requirements.NOTE 15: Uplink transmission is not allowed at this band for UE with external vehicle-mounted antennas.NOTE 16: This band is restricted to licensed-assisted operation using Frame Structure Type 3 NOTE 17: 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 18: This band is restricted to NB-IoT operation only  |

*For NB-IoT, Category NB1 and NB2 are designed to operate in band 1, 2, 3, 4, 5, 8, 11, 12, 13, 17, 18, 19, 20, 21, 24, 25, 26, 28, 31, 41, 42, 43, 48, 65, 66, 70, 71, 72, 73, 74, 85, 87, 88 and 103 in the above table. Category NB1 and NB2 are designed to operate in the NR operating bands n1, n2, n3, n5, n7, n8, n12, n14, n18, n20, n25, n26, n28, n41, n65, n66, n70, n71, n74, n90. See more details in [36.101] sub-clause 5.5F.**For eMTC, UE category M1 and M2 is designed to operate in band 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 18, 19, 20, 21, 24, 25, 26, 27, 28, 31, 39, 40, 41, 42, 43, 48, 66, 71, 72, 73, 74, 85, 87 and 88 in the above table. See more details in [36.101] sub-clause 5.5E.**For V2X communication, the bands can be found in [36.101] sub-clause 5.5G.**Note : For ease of comparison, table 1, table 2, table 3, NB-IoT band support and eMTC band support highlights the changes with revision marks to the technology being submitted in IMT-2020/13(rev 1) characteristics template.* |
| **5.2.4.2.2** | **Higher Frequency range/band(s)**Is the proposal able to utilize the higher frequency range/band(s) above 24.25 GHz?: *YES* Specify in which band(s) the candidate RIT or candidate SRIT can be deployed.NOTE 1 – In the case of the candidate SRIT, at least one of the component RITs need to fulfil this requirement.*The supported frequency bands above 24.25 GHz by NR component RIT are provided in item 5.2.4.2.1, table 2 (FR2).* |

#### 5.2.4.3 Compliance template for **technical** performance3

##### *For NR component RIT:*

| Minimum technical performance requirements item (5.2.4.3.x), units, and ReportITU-R M.2410-0 section reference(1) | Category | Required value | Value(2) | Requirement met? | Comments(3) |
| --- | --- | --- | --- | --- | --- |
| Usage scenario | Test environment | Downlink or uplink |
| **5.2.4.3.1**Peak data rate (Gbit/s)*(4.1)* | eMBB | Not applicable | Downlink | 20 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 10 |  | *Yes* |
| **5.2.4.3.2**Peak spectral efficiency (bit/s/Hz)*(4.2)* | eMBB | Not applicable | Downlink | 30 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 15 |  | *Yes* |
| **5.2.4.3.3**User experienced data rate (Mbit/s)*(4.3)* | eMBB | Dense Urban – eMBB | Downlink | 100 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 50 |  | *Yes* |
| **5.2.4.3.4**5th percentile user spectral efficiency (bit/s/Hz)*(4.4)* | eMBB | Indoor Hotspot – eMBB | Downlink | 0.3 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 0.21 |  | *Yes* |
| Downlink | 0.3 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 0.21 |  | *Yes* |
| eMBB | Dense Urban – eMBB | Downlink | 0.225 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 0.15 |  | *Yes* |
| eMBB | Rural – eMBB | Downlink | 0.12 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 0.045 |  | *Yes* |
| Downlink | 0.12 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 0.045 |  | *Yes* |
| **5.2.4.3.5**Average spectral efficiency (bit/s/Hz/ TRxP)*(4.5)* | eMBB | Indoor Hotspot – eMBB | Downlink | 9  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 6.75  |  | *Yes* |
| Downlink | 9  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 6.75  |  | *Yes* |
| eMBB | Dense Urban – eMBB | Downlink | 7.8  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 5.4  |  | *Yes* |
| eMBB | Rural – eMBB | Downlink | 3.3  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 1.6  |  | *Yes* |
| Downlink | 3.3  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 1.6  |  | *Yes* |
| Downlink | 3.3  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 1.6  |  | *Yes* |
| **5.2.4.3.6**Area traffic capacity (Mbit/s/m2)*(4.6)* | eMBB | Indoor-Hotspot – eMBB | Downlink | 10 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Downlink | 10 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.7**User plane latency(ms)*(4.7.1)* | eMBB | Not applicable | Downlink | 4 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 4 |  | *Yes* |
| URLLC | Not applicable | Downlink | 1 |  | *Yes* |
| Uplink | 1 |  | *Yes* |
| **5.2.4.3.8**Control plane latency (ms)*(4.7.2)* | eMBB | Not applicable | Not applicable  | 20 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| URLLC | Not applicable | Not applicable | 20 |  | *Yes* |
| **5.2.4.3.9**Connection density (devices/km2)*(4.8)* | mMTC | Urban Macro – mMTC | Uplink | 1 000 000  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 1 000 000  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.10**Energy efficiency*(4.9)* | eMBB | Not applicable | Not applicable | Capability to support a high sleep ratio and long sleep duration |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
|  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.11**Reliability*(4.10)* | URLLC | Urban Macro –URLLC | Downlink | 1-10−5 success probability of transmitting a layer 2 PDU (protocol data unit) of size 32 bytes within 1 ms in channel quality of coverage edge |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Downlink |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.12**Mobility classes*(4.11)* | eMBB | Indoor Hotspot – eMBB | Uplink | Stationary, Pedestrian |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| eMBB | Dense Urban – eMBB | Uplink | Stationary, Pedestrian,Vehicular (up to 30 km/h) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| eMBB | Rural – eMBB | Uplink | Pedestrian, Vehicular, High speed vehicular |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.13**MobilityTraffic channel link data rates (bit/s/Hz)*(4.11)* | eMBB | Indoor Hotspot – eMBB | Uplink | 1.5 (10 km/h) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| 1.5 (10 km/h) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| eMBB | Dense Urban – eMBB | Uplink | 1.12 (30 km/h) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| 1.12 (30 km/h) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| eMBB | Rural – eMBB | Uplink | 0.8 (120 km/h) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| 0.45 (500 km/h) |  | *Yes* |
| 0.8 (120 km/h) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| 0.45 (500 km/h) |  | *Yes* |
| **5.2.4.3.14**Mobility interruption time (ms) *(4.12)* | eMBB and URLLC | Not applicable | Not applicable | 0 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.15**Bandwidth and Scalability*(4.13)* | Not applicable | Not applicable | Not applicable | At least 100 MHz |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Up to 1 GHz | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Support of multiple different bandwidth values(4) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| (1) As defined in Report ITU-R M.2410-0.(2) According to the evaluation methodology specified in Report ITU-R M.2412-0.(3) Proponents should report their selected evaluation methodology of the Connection density, the channel model variant used, and evaluation configuration(s) with their exact values (e.g. antenna element number, bandwidth, etc.) per test environment, and could provide other relevant information as well. For details, refer to Report ITU-R M.2412-0, in particular, § 7.1.3 for the evaluation methodologies, § 8.4 for the evaluation configurations per each test environment, and Annex 1 on the channel model variants.(4) Refer to § 7.3.1 of Report ITU-R M.2412-0. |

##### *For LTE component RIT:*

| Minimum technical performance requirements item (5.2.4.3.x), units, and ReportITU-R M.2410-0 section reference(1) | Category | Required value | Value(2) | Requirement met? | Comments(3) |
| --- | --- | --- | --- | --- | --- |
| Usage scenario | Test environment | Downlink or uplink |
| **5.2.4.3.1**Peak data rate (Gbit/s)*(4.1)* | eMBB | Not applicable | Downlink | 20 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 10 |  | *Yes* |
| **5.2.4.3.2**Peak spectral efficiency (bit/s/Hz)*(4.2)* | eMBB | Not applicable | Downlink | 30 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 15 |  | *Yes* |
| **5.2.4.3.3**User experienced data rate (Mbit/s)*(4.3)* | eMBB | Dense Urban – eMBB | Downlink | 100 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 50 |  | *Yes* |
| **5.2.4.3.4**5th percentile user spectral efficiency (bit/s/Hz)*(4.4)* | eMBB | Indoor Hotspot – eMBB | Downlink | 0.3 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 0.21 |  | *Yes* |
| eMBB | Dense Urban – eMBB | Downlink | 0.225 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 0.15 |  | *Yes* |
| eMBB | Rural – eMBB | Downlink | 0.12 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 0.045 |  | *Yes* |
| Downlink | 0.12 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 0.045 |  | *Yes* |
| **5.2.4.3.5**Average spectral efficiency (bit/s/Hz/ TRxP)*(4.5)* | eMBB | Indoor Hotspot – eMBB | Downlink | 9  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 6.75  |  | *Yes* |
| eMBB | Dense Urban – eMBB | Downlink | 7.8  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 5.4  |  | *Yes* |
| eMBB | Rural – eMBB | Downlink | 3.3  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 1.6  |  | *Yes* |
| Downlink | 3.3  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 1.6  |  | *Yes* |
| Downlink | 3.3  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 1.6  |  | *Yes* |
| **5.2.4.3.6**Area traffic capacity (Mbit/s/m2)*(4.6)* | eMBB | Indoor-Hotspot – eMBB | Downlink | 10 |  | *Yes*  | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.7**User plane latency(ms)*(4.7.1)* | eMBB | Not applicable | Downlink | 4 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 4 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| URLLC | Not applicable | Downlink | 1 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 1 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.8**Control plane latency (ms)*(4.7.2)* | eMBB | Not applicable | Not applicable  | 20 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| URLLC | Not applicable | Not applicable | 20 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.9**Connection density (devices/km2)*(4.8)* | mMTC | Urban Macro – mMTC | Uplink | 1 000 000  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 1 000 000  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 1 000 000  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink | 1 000 000  |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.10**Energy efficiency*(4.9)* | eMBB | Not applicable | Not applicable | Capability to support a high sleep ratio and long sleep duration |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
|  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.11**Reliability*(4.10)* | URLLC | Urban Macro –URLLC | Downlink | 1-10−5 success probability of transmitting a layer 2 PDU (protocol data unit) of size 32 bytes within 1 ms in channel quality of coverage edge |  | *-* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Uplink |  | *-* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.12**Mobility classes*(4.11)* | eMBB | Indoor Hotspot – eMBB | Uplink | Stationary, Pedestrian |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| eMBB | Dense Urban – eMBB | Uplink | Stationary, Pedestrian,Vehicular (up to 30 km/h) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| eMBB | Rural – eMBB | Uplink | Pedestrian, Vehicular, High speed vehicular |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.13**MobilityTraffic channel link data rates (bit/s/Hz)*(4.11)* | eMBB | Indoor Hotspot – eMBB | Uplink | 1.5 (10 km/h) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| eMBB | Dense Urban – eMBB | Uplink | 1.12 (30 km/h) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| eMBB | Rural – eMBB | Uplink | 0.8 (120 km/h) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| 0.45 (500 km/h) |  | *Yes* |
| **5.2.4.3.14**Mobility interruption time (ms) *(4.12)* | eMBB and URLLC | Not applicable | Not applicable | 0 |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| **5.2.4.3.15**Bandwidth and Scalability*(4.13)* | Not applicable | Not applicable | Not applicable | At least 100 MHz |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| Up to 1 GHz | *N/A* |
| Support of multiple different bandwidth values(4) |  | *Yes* | *Improves on the technology originally being submitted in IMT-2020/13 and therefore the conclusions expressed in ITU-R Report M.2483 sect. 5.2.1 remains valid.* |
| (1) As defined in Report ITU-R M.2410-0.(2) According to the evaluation methodology specified in Report ITU-R M.2412-0.(3) Proponents should report their selected evaluation methodology of the Connection density, the channel model variant used, and evaluation configuration(s) with their exact values (e.g. antenna element number, bandwidth, etc.) per test environment, and could provide other relevant information as well. For details, refer to Report ITU-R M.2412-0, in particular, § 7.1.3 for the evaluation methodologies, § 8.4 for the evaluation configurations per each test environment, and Annex 1 on the channel model variants.(4) Refer to § 7.3.1 of Report ITU-R M.2412-0. |

1. [1] Developed by 3GPP as 5G, Release 15 and beyond. [↑](#footnote-ref-1)
2. If a proponent determines that a specific question does not apply, the proponent should indicate that this is the case and provide a rationale for why it does not apply. [↑](#footnote-ref-2)