

Technical Specifications for Base Station Radio Frequency Equipment of Mobile Broadband Business

National Communications Commission (NCC)

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Technical Specifications for Base Station Radio Frequency Equipment of Mobile Broadband Business

1. Legal sources

The specifications are promulgated pursuant to Item 1, Article 50 of Telecommunications Act.

2. Scope

This specifications are applicable to the certification of the frequency bands for mobile broadband services such as the frequency equipment of Base Stations, Repeaters, Micro Base Stations, Pico Cells and Femto Cells. Based on multiplexing properties, they can be classified as frequency division duplex (FDD) and time division duplex (TDD) with relevant frequency sections are identified as below:

2.1 Frequency Division Duplex (FDD): 700 MHz (uplink 703 MHz-748 MHz\ downlink 758 MHz-803 MHz), 900 MHz (uplink 885 MHz-915 MHz\downlink 930 MHz-960 MHz), 1800 MHz (uplink 1710 MHz-1785 MHz\downlink 1805 MHz-1880 MHz), 2100 MHz (uplink 1920 MHz-1980 MHz\downlink 2110 MHz-2170 MHz), 2500 MHz and 2600 MHz (uplink 2500 MHz-2570 MHz\downlink 2620 MHz-2690 MHz) bands.

2.2 Time Division Duplex(TDD): 2500 MHz and 2600 MHz bands (2500 MHz-2570 MHz, 2570 MHz-2620 MHz and 2620 MHz-2690 MHz).

3. Technical standard

The specifications are promulgated based on the Chinese National Standards CNS14336-1, CNS13438 and other international technical standards as references.

4. Testing items and eligibility criteria

4.1 Power limit:

4.1.1 Emission power limit:

4.1.1.1 The conducted emission power shall conform to regulations stated in Appendix 1 and the deviation of rated output power value shall be within ± 2.7 dB.

4.1.1.2 The effective isotropic radiated power (EIRP) shall conform to the effective isotropic radiated power (EIRP) specified in the Technical Specifications for Mobile Broadband Base Station Radio Frequency Equipment and be tested during the examination of base station.

4.1.2 Testing methods:

4.1.2.1 During the measurement of emission power, one must use devices with RMS (root mean square) equivalent voltage to measure any continuous transmission time. The measurement results shall be used to adjust the correct emission power based on the responding time, resolution bandwidth capability and sensitivity of the device.

4.1.2.2 Testing channels include three channels (low, medium and high) that test emission patterns with the maximum modulation level of different operating bandwidths.

4.2 Radiation emission limit outside the conduction band:

4.2.1 Any free radiation emission outside the operating band shall be lower than the carrier emission power (P) and the measurement is calculated in Watt. The edge attenuation outside the operating channel shall be higher than $43 + 10 \log (P)$ dB.

4.2.2 Testing methods:

4.2.2.1 Devices with an operating frequency lower than 1GHz.

4.2.2.1.1 Within a range that is outside the edge of measurement channel and within 1 GHz out-of-band, the measurement shall be conducted by using spectrum measurement apparatuses with a resolution bandwidth above 100 kHz; as for an

out-of-band range that is over 1 GHz, the measurement shall be conducted by using spectrum measurement apparatuses with a resolution bandwidth above 1 MHz.

4.2.2.1.2 Within a range of 100 kHz that is outside the channel edge, a smaller resolution bandwidth shall be used to measure the radiation outside the accurate channel. At this moment, the minimum resolution bandwidth must be higher than 30 kHz.

4.2.2.1.3 Testing channels include three channels (low, medium and high) that test emission patterns with the maximum modulation level of different operating bandwidths.

4.2.2.2 Devices with an operating frequency higher than 1 GHz.

4.2.2.2.1 Within a range that is outside the edge of measurement channel and within 1 GHz out-of-band, the measurement shall be conducted by using spectrum measurement apparatuses with a resolution bandwidth above 100 kHz; as for an out-of-band range that is over 1 GHz, the measurement shall be conducted by using spectrum measurement apparatuses with a resolution bandwidth higher than 1 MHz.

4.2.2.2.2 Within a range of 1 MHz that is outside the channel edge, a smaller resolution bandwidth shall be used to measure the radiation outside the accurate channel. At this moment, the minimum resolution bandwidth must be higher than 1% of the carrier emission bandwidth (26 dB bandwidth). However, the maximum shall not be over 100 kHz.

4.2.2.2.3 Testing channels include three channels (low, medium and high) that test emission patterns with the maximum modulation level of different operating bandwidths.

4.3 Electrical safety:

Shall comply with standard specifications stated in CNS 14336-1.

4.4 Electromagnetic compatibility (EMC):

Shall comply with standard specifications stated in CNS 13438.

5. Test Requirement

Except as otherwise provided in these technical specifications, testing methods for examining emission power and out-of-band radiation emission shall all be processed based on the inspection requirements stated in Point 5 of the Low-power Radio-frequency Devices Technical Specifications (LPRFD Technical Requirements). The inspection procedures shall be processed in accordance of the Appendix 1 "Referential Procedures of Inspecting Transmitters" of the Low-power Radio-frequency Devices Technical Specifications (LPRFD Technical Requirements).

Appendix 1: Limit of Transmission Output Power

Equipment	Limit Value
Base Station	Rated output power of equipment
Repeater	Downlink(DL): Rated output power of equipment (Emission power transfer to cellular phone) Uplink(UL): ≤ 31 dBm(Emission power transfer to base station)
Micro Base Station	≤ 39 dBm
Pico Cell	≤ 31 dBm
Femto Cell	≤ 20 dBm