Subscriber Station for Wireless Broadband Access Type Approval Technical Specification

National Communications Commission

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1. Act Basis

   This specification is stipulated pursuant to the paragraph 1 of the Telecommunications Act, Article 42

2. Application Scope

   This specification is applicable to the type approval of subscriber stations on

wireless broadband access that are assigned to be operated in the band of 2.5 to 2.69 GHz, including Portable and mobile subscriber stations.

3. Technical Standards

3.1 This specification is established in reference to the US FCC 47 CFR Part 27 subpart M and 47CFR Part 2; the ROC National Standard CNS14958-1, CNS14959, CNS13438 and CNS14336; and other international technical standards.

3.2 In consideration of consistency between this technical specification and the international technical standards, NCC will adhere to the pertinent modification as in the latest version of the technical standards in regard to test items, conformance requirement and test methods established in this specification.

4. Term Definitions

4.1 Portable Subscriber Station:

Under normal operation mode, a subscriber station that could to be used in motion and within 20 centimeters of the body of the user.

4.2 Mobile Subscriber Station:

Under normal operation mode, a subscriber station that could to be located to specific location and generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter’s radiating structure(s) and the body of the user or nearby persons.

5. Test Items and Conformance Requirement

5.1 Emission Power Limitations:

5.1.1 Emission Power Limit:

(1) Portable Subscriber Station: The radiated emission power limit is 2W Effective Isotropic Radiated Power (EIRP).

(2) Mobile Subscriber Station: The emission power limit is 2W conducted output power.

5.1.2 Test Methods:

(1) When measuring the conducted emission power, a RMS-equivalent voltage instrument shall be used to measure it during

any continuous transmission period; the setting of instrument shall be adjusted according to the instrument's response time, resolution bandwidth , and sensitivity to derive the correct conducted emission power.

(2) Testing channels are lowest, middle and highest channels; the emission models based on different operating bandwidth and the maximum modulation order shall be respectively tested.

5.2 Out-of-band radiated emission limitation:

5.2.1 Any radiated emissions outside operating band shall be lower than the main peak emission power (P), measured in Watts.

(1) The attenuation at the band edge shall be greater than 43 + 10 log (P) dB.

(2) The attenuation at frequencies that are 5.5MHz below or above away from the band edge shall be greater than 55 + 10 log (P) dB.

5.2.2 Test Method:

(1) Spectrum analyzer with the resolution bandwidth (RBW) set to above 1MHz shall be used while measuring.

(2) For the range from the band edge to 1.5 times of the main emission bandwidth (26dB bandwidth), a smaller resolution bandwidth (RBW) could be used to obtain correct measurements of radiations outside the band. At the same time, the resolution bandwidth (RBW) shall be set to at least 1% of the main emission bandwidth (26dB bandwidth).

(3) Testing channels are lowest, middle and highest channels; the emission models based on different operating bandwidth and the maximum modulation order shall be respectively tested.

5.3 Frequency Stability:

Under normal rated voltage, the frequency shall lie within the operating band under the circumstances in which the temperature varies between -20℃ and 50℃. At the temperature of 20℃, the frequency shall lie within the operating band under the circumstances in which the power supply is varied between ±15% of the normal rated voltage.

For devices operated with batteries, they shall be tested with new batteries and the result shall comply with the requirements in section 5.17 and 5.18 of the technical specification of low power radio frequency (RF) devices.

5.4 Specific Absorption Rate (SAR) of the Electromagnetic Waves:

5.4.1 This test item is applicable to portable subscriber station.

5.4.2 SAR Standard Value:

Limits: Shall comply with CNS14959: Limits for exposuring to time-varying Electric, Magnetic, and Electromagnetic Fields (up to 300GHz); Specification of the SAR limit value (the maximum value), 2.0W/kg(10g), applied to partial exposure of the head;

Test Method: adopting CNS 14958-1: Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Human models, instrumentation, and procedure-Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear. (frequency range of 300MHz to 3GHz)

5.5 EM Wave Power Density:

5.5.1 This test item is applicable to mobile subscriber station.

5.5.2 Standard EM wave power density:

Shall comply with section 5.20.2 of the technical specification of low power radio frequency (RF) devices, the rules of EM wave exposure evaluation, the maximum power density is 1.0mW/cm^2.

5.6 Electromagnetic Compatibility (EMC):

Shall comply with CNS13438: Information technology equipment. Radio disturbance characteristics. Limits and methods of measurement. Device under test (DUT) shall be tested (not applicable if none) in operation mode, standby mode (radiation emission interference), and charging mode (conducted power line emission interference, not applicable if none).

5.7 Electrical Safety:

Shall comply with CNS14336-1

5.8 Connecting Interface on Mobile Phone:

(1)Electrical requirement：complying with A4.2.3.1 of CNS15285
(2)Complying with the following provisions of (A) or (B)：
(A)Socket on mobile phone：complying with micro-B or micro-AB in Annex A of CNS15285
Plug to socket on mobile phone in connection cord set for

charge：complying with micro-B in Annex A of CNS15285, Contact 1 is VBUS and Contact 5 is GND in the connecting interface

(B)If Socket on mobile phone does not complying with Provision (A), it should adopt the specific connecting plug in connection cord set for charge or the adapter between micro-B plug and the socket on mobile phone.

(3) Complying with the following provisions of (A) or submitting the test report provided in (B)：

(A)The insulating material of connecting interface: class V-2 material at least

(B)The test report complying with the technical specifications of USB-IF(Universal Serial Bus Implementers Forum), it should include the item in (A)

5.9 Connecting Interface on Charger

(1)Socket on Charger and Plug to socket on Charger in connection cord set for charge : Complying with STD-A in Annex A of CNS15285
Electrical Requirement: complying with A4.2.3.2 of CNS15285

(2) Complying with the following provisions of (A) or submitting the test report provided in (B):

(A)Mechanism Requirement: complying with A4.2.2 of CNS15285
Insulating Resistance: complying with A4.2.3.3 of CNS15285
Insulating Voltage: complying with A4.2.3.4 of CNS15285
Low Level Contact Resistance: complying with A4.2.3.5 of CNS15285Contact Capacitance：complying with A4.2.3.6 of CNS15285
Insulating material of connecting interface: class V-2 material at least

(B) The test report complying with the technical specifications of USB-IF, it should include the items in (A)

5.10 Connection Cord for Charge

(1) Contact 1 is V_{BUS} and Contact 4 is GND in the connecting interface STD-A

(2) Complying with the following provisions of (A) or submitting the test report provided in (B):

(A) Electrical Requirement:
Voltage Drop: complying with A4.3.3.2 of CNS15285

Cable Flex: complying with A4.3.6 of CNS15285
4-Axis Continuity: complying with A4.3.7 of CNS15285
Maximum Resistance of Wire: not exceed 0.232Ω/m
Fireproofing Class of Connection Cord for Charge: class VW-1 at least

(B) The test report complying with the technical specifications of USB-IF, it should include the items in (A)

5.11 Electrical Requirements for Charger

(1)Input Electricity: complying with 4.3 and 4.4 of CNS15285
(2)Output Voltage: 5Vdc, and allowable error is ±5%. Check if it could comply with the above requirement by the experiment provided in 5.4 of CNS15285.
(3)Output Electricity: complying with the provisions from 4.6 to 4.9 of CNS15285.
(4)Inverse Current: complying with 4.10 of CNS15285
(5)Consumption Power without Load: complying with 4.11 of CNS15285
(6)Average Efficiency: complying with 4.12 of CNS15285

6. Test Methods

6.1 Unless or otherwise stated in this specification, test methods of emission power, out-of-band radiation emission, frequency stability shall comply with the specification outlined in section 5 of the technical specification of low-power RF devices; the test procedure shall be carried out in accordance with the appendix 1 (rules of the reference test procedure of emission machines) of the technical specification of low-power RF devices.

6.2 Main emission bandwidth as indicated in section 5.2.2(2) of this specification shall be defined in accordance with the emission bandwidth stated in section 1.12(3) of the technical specification on low-power RF devices.

6.3 Portable Subscriber Station (hereinafter as Handset) should be submitted both Charger and Connection Cord Set for Charge to type approval, and it should comply with the items from 5.6 to 5.11. Charger and Connection Cord Set for Charge that have been type-approved with Handset could not be inspected the items from 5.9 to 5.11 while

submitting Certificate and Test report of the Handset. Subscriber Station that is not Portable should not be inspected the items from 5.8 to 5.11.

7. Warning Sign

7.1 EM Wave Warning Sign

(1) Warning content: “To reduce the effect of EM waves, please use it appropriately”.

(2) Indication method: Warning must be indicated on the appropriate part of the device, the device cover and the user’s manual.

7.2 EM Wave Specific Absorption Rate Warning Sign

(1) Warning content: “Standard SAR limit: 2.0W/kg; the actual value of the product is: ___ W/kg”

(2) Indication method: Warning must be indicated on the appropriate part of the device, the device cover and the user’s manual.