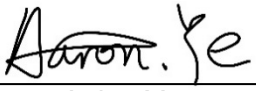
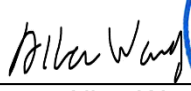


# TEST REPORT

**Product Name** : detachable Tablet  
**Brand Name** : Adreamer  
**Model** : WinsPad10Pro  
**Series Model** : N/A  
**FCC ID** : 2BC9K-WINSPAD10PRO  
**Applicant** : **Shenzhen Adreamer Elite Co., Ltd.**  
**Address** : Room 403,Building 3,Baolong Specialized and Sophisticated  
Industrial Park,Baolong Street, Longgang District,Shenzhen,  
China  
**Manufacturer** : **Shenzhen Adreamer Elite Co., Ltd.**  
**Address** : Room 403,Building 3,Baolong Specialized and Sophisticated  
Industrial Park,Baolong Street, Longgang District,Shenzhen,  
China  
**Standard(s)** : FCC CFR Title 47 Part 15 Subpart C Section 15.247  
**Date of Receipt** : Sep. 04, 2025  
**Date of Test** : Sep. 04, 2025~ Sep. 17, 2025  
**Issued Date** : Sep. 17, 2025

**Issued By:** **Guangdong Asia Hongke Test Technology Limited**  
B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street,  
Bao'an District, Shenzhen, Guangdong, China  
Tel.: +86 0755-230967639 Fax.: +86 0755-230967639

**Reviewed by:**   
Aalen.Ye

**Approved by:**   
Allen Wang



Note: This device has been tested and found to comply with the standard(s) listed, this test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory. This report shall not be reproduced except in full, without the written approval of Guangdong Asia Hongke Test Technology Limited. If there is a need to alter or revise this document, the right belongs to Guangdong Asia Hongke Test Technology Limited, and it should give a prior written notice of the revision document. This test report must not be used by the client to claim product endorsement.



**Report Revise Record**

| Report Version | Issued Date   | Notes           |
|----------------|---------------|-----------------|
| M1             | Sep. 17, 2025 | Initial Release |

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# 1 TEST SUMMARY

## 1.1 Test Standards

The tests were performed according to following standards:

[FCC Rules Part 15.247](#): Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

[ANSI C63.10: 2020](#): American National Standard for Testing Unlicensed Wireless Devices

[KDB558074 D01 15.247 Meas Guidance v05r02](#): Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating Under Section 15.247 of the FCC Rules

## 1.2 Test Summary

| Test Item                                 | Section in 47 CFR   | Result |
|-------------------------------------------|---------------------|--------|
| Antenna requirement                       | §15.203             | Pass   |
| On Time and Duty Cycle                    | /                   | /      |
| AC Power Line Conducted Emission          | § 15.207(a)         | Pass   |
| Conducted Peak Output Power               | §15.247 (b)(3)      | Pass   |
| Channel Bandwidth                         | §15.247 (a)(2)      | Pass   |
| Power Spectral Density                    | §15.247 (e)         | Pass   |
| Transmitter Radiated Spurious Emission    | §15.205/15.209      | Pass   |
| Restricted Bands                          | §15.205/15.209      | PASS   |
| Conducted Unwanted emissions and Bandedge | §15.205, §15.247(d) | Pass   |

### 1.3 Test Facility

#### Test Laboratory:

**Guangdong Asia Hongke Test Technology Limited**

B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

The test facility is recognized, certified or accredited by the following organizations:

**FCC-Registration No.: 251906 Designation Number: CN1376**

Guangdong Asia Hongke Test Technology Limited has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

**IC —Registration No.: 31737 CAB identifier: CN0165**

The 3m Semi-anechoic chamber of Guangdong Asia Hongke Test Technology Limited has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 31737

**A2LA-Lab Cert. No.: 7133.01**

Guangdong Asia Hongke Test Technology Limited has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

### 1.4 Measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Guangdong Asia Hongke Test Technology Limited's quality system according to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Asia Hongke laboratory is reported:

| Test                          | Measurement Uncertainty   | Notes |
|-------------------------------|---------------------------|-------|
| Power Line Conducted Emission | 9KHz~30MHz $\pm 1.20$ dB  | (1)   |
| Radiated Emission             | 9KHz~30MHz $\pm 3.10$ dB  | (1)   |
| Radiated Emission             | 30MHz~1GHz $\pm 3.75$ dB  | (1)   |
| Radiated Emission             | 1GHz~18GHz $\pm 3.88$ dB  | (1)   |
| Radiated Emission             | 18GHz~40GHz $\pm 3.88$ dB | (1)   |
| RF power, conducted           | 30MHz~6GHz $\pm 0.16$ dB  | (1)   |
| RF power density, conducted   | $\pm 0.24$ dB             | (1)   |
| Spurious emissions, conducted | $\pm 0.21$ dB             | (1)   |
| Temperature                   | $\pm 1^{\circ}\text{C}$   | (1)   |
| Humidity                      | $\pm 3\%$                 | (1)   |
| DC and low frequency voltages | $\pm 1.5\%$               | (1)   |
| Time                          | $\pm 2\%$                 | (1)   |
| Duty cycle                    | $\pm 2\%$                 | (1)   |

The report uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty Multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

## 2 GENERAL INFORMATION

### 2.1 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

|                     |         |
|---------------------|---------|
| Normal Temperature: | 25°C    |
| Relative Humidity:  | 55 %    |
| Air Pressure:       | 101 kPa |

### 2.2 General Description of EUT

|                                                                                                                                                                                              |                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Product Name:                                                                                                                                                                                | detachable Tablet                                                      |
| Model/Type reference:                                                                                                                                                                        | WinsPad10Pro                                                           |
| Serial Model:                                                                                                                                                                                | N/A                                                                    |
| Power Supply:                                                                                                                                                                                | Input: DC 5V<br>DC 7.7V by Rechargeable Li-ion Battery, 4500mAh        |
| Adapter Information:                                                                                                                                                                         | N/A                                                                    |
| Hardware Version:                                                                                                                                                                            | N/A                                                                    |
| Software Version:                                                                                                                                                                            | N/A                                                                    |
| Sample(s) Status:                                                                                                                                                                            | AiTSZ-250904124-1(Normal sample)<br>AiTSZ-250904124-2(Engineer sample) |
| <b>Bluetooth LE:</b>                                                                                                                                                                         |                                                                        |
| Supported type:                                                                                                                                                                              | Bluetooth LE 1M/2M                                                     |
| Modulation:                                                                                                                                                                                  | GFSK                                                                   |
| Operation frequency:                                                                                                                                                                         | 2402MHz~2480MHz                                                        |
| Channel number:                                                                                                                                                                              | 40                                                                     |
| Channel separation:                                                                                                                                                                          | 2MHz                                                                   |
| Antenna type:                                                                                                                                                                                | FPC antenna                                                            |
| Antenna gain:                                                                                                                                                                                | 1.51dBi                                                                |
| <b>Remark:</b><br>The above DUT's information was declared by manufacturer. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.. |                                                                        |

## 2.3 Description of Test Modes and Test Frequency

There are 40 channels provided to the EUT and Channel 00/19/39 were selected to test.

### Operation Frequency List:

| Channel   | Frequency (MHz) |
|-----------|-----------------|
| <b>00</b> | <b>2402</b>     |
| 02        | 2404            |
| 03        | 2406            |
| ⋮         | ⋮               |
| <b>19</b> | <b>2440</b>     |
| ⋮         | ⋮               |
| 37        | 2476            |
| 38        | 2478            |
| <b>39</b> | <b>2480</b>     |

Note: The line display in grey were the channel selected for testing

Exploratory testing was performed under each mode combination test channel; only the final measurement of the worst combination was made and recorded in this report.

| Test case                       | Exploratory measurement |                |                                                                                                                                         | Final measurement<br>Recorded<br>In Report |                |                                                                                                                                         |
|---------------------------------|-------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------|
|                                 | Mode                    | Date rate      | Channel                                                                                                                                 | Mode                                       | Date rate      | Channel                                                                                                                                 |
| Maximum output power            | GFSK                    | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Middle<br><input checked="" type="checkbox"/> Highest | GFSK                                       | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Middle<br><input checked="" type="checkbox"/> Highest |
| Power spectral density          | GFSK                    | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Middle<br><input checked="" type="checkbox"/> Highest | GFSK                                       | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Middle<br><input checked="" type="checkbox"/> Highest |
| -6dB bandwidth                  | GFSK                    | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Middle<br><input checked="" type="checkbox"/> Highest | GFSK                                       | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Middle<br><input checked="" type="checkbox"/> Highest |
| Conducted Spurious Emissions    | GFSK                    | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Middle<br><input checked="" type="checkbox"/> Highest | GFSK                                       | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Middle<br><input checked="" type="checkbox"/> Highest |
| Conducted Band edge             | GFSK                    | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Highest                                               | GFSK                                       | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Highest                                               |
| Restrict Band                   | GFSK                    | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Highest                                               | GFSK                                       | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Highest                                               |
| Radiated Emissions Above 1GHz   | GFSK                    | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Middle<br><input checked="" type="checkbox"/> Highest | GFSK                                       | LE 1M          | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Middle<br><input checked="" type="checkbox"/> Highest |
| Radiated Emissions Below 1GHz   | GFSK                    | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Middle<br><input checked="" type="checkbox"/> Highest | GFSK                                       | LE 1M          | <input checked="" type="checkbox"/> Middle                                                                                              |
| Conducted Emissions 9KHz-30 MHz | GFSK                    | LE 1M<br>LE 2M | <input checked="" type="checkbox"/> Lowest<br><input checked="" type="checkbox"/> Middle<br><input checked="" type="checkbox"/> Highest | GFSK                                       | LE 1M          | <input checked="" type="checkbox"/> Middle                                                                                              |

### Power setting during the test:

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

#### Power Parameters:

| Test Software Version | Engineering Mode |         |         |
|-----------------------|------------------|---------|---------|
| Frequency             | 2402MHz          | 2440MHz | 2480MHz |
| BLE_1M                | default          | default | default |

## 2.4 Special Accessories

Follow auxiliary equipment(s) test with EUT that provided by the manufacturer or laboratory is listed as follow:

| Description | Manufacturer | Model | Serial No. | Provided by | Other |
|-------------|--------------|-------|------------|-------------|-------|
| /           | /            | /     | /          | /           | /     |
| /           | /            | /     | /          | /           | /     |

## 2.5 Equipment List for the Test

| Conducted Emission measurement        |                   |              |           |             |            |            |
|---------------------------------------|-------------------|--------------|-----------|-------------|------------|------------|
| Item                                  | Test Equipment    | Manufacturer | Model No. | Serial No.  | Last Cal.  | Cal.Due    |
| <input checked="" type="checkbox"/> 1 | EMI Test Receiver | R&S          | ESPI      | 100771      | 2024.09.25 | 2025.09.24 |
| <input checked="" type="checkbox"/> 2 | LISN              | R&S          | NNLK 8129 | 8130179     | 2024.09.24 | 2025.09.23 |
| <input checked="" type="checkbox"/> 3 | ISN               | TESEQ        | T800      | 29429       | 2024.09.26 | 2025.09.25 |
| <input checked="" type="checkbox"/> 4 | Pulse Limiter     | R&S          | ESH3-Z2   | 102789      | 2024.09.24 | 2025.09.23 |
| <input checked="" type="checkbox"/> 5 | CE Software       | EZ           | EZ-EMC_CE | Ver.AIT-03A | N/A        | N/A        |

| Radiation Emission measurement         |                                     |              |                 |                 |            |            |
|----------------------------------------|-------------------------------------|--------------|-----------------|-----------------|------------|------------|
| Item                                   | Test Equipment                      | Manufacturer | Model No.       | Serial No.      | Last Cal.  | Cal.Due    |
| <input checked="" type="checkbox"/> 1  | EMI Measuring Receiver              | R&S          | ESR             | 101160          | 2024.09.25 | 2025.09.24 |
| <input checked="" type="checkbox"/> 2  | Low Noise Pre Amplifier             | SCHWARZBECK  | BBV 9745        | 00282           | 2024.09.25 | 2025.09.24 |
| <input checked="" type="checkbox"/> 3  | Low Noise Pre Amplifier             | CESHENG      | CSKJLNA231 016A | CSKJLNA23 1016A | 2024.09.25 | 2025.09.24 |
| <input checked="" type="checkbox"/> 4  | Spectrum Analyzer                   | R&S          | FSV40           | 101470          | 2024.09.23 | 2025.09.22 |
| <input checked="" type="checkbox"/> 5  | Passive Loop                        | ETS          | 6512            | 00165355        | 2024.08.29 | 2026.08.28 |
| <input checked="" type="checkbox"/> 6  | TRILOG Super Broadband test Antenna | SCHWARZBECK  | VULB9168        | 01434           | 2024.08.29 | 2027.08.28 |
| <input checked="" type="checkbox"/> 7  | Broadband Horn Antenna              | Schwarzbeck  | BBHA 9120D      | 452             | 2024.08.29 | 2027.08.28 |
| <input checked="" type="checkbox"/> 8  | Horn Antenna 15-40GHz               | SCHWARZBECK  | BBHA9170        | BBHA91703 67    | 2024.08.28 | 2027.08.27 |
| <input checked="" type="checkbox"/> 9  | 6dB Attenuator                      | JFW          | 50FPE-006       | 4360846-949-1   | 2024.09.24 | 2025.09.23 |
| <input checked="" type="checkbox"/> 10 | RE Software                         | EZ           | EZ-EMC_RE       | Ver.AIT-03A     | N/A        | N/A        |

| RF Conducted measurement              |                                     |              |              |                |            |            |
|---------------------------------------|-------------------------------------|--------------|--------------|----------------|------------|------------|
| Item                                  | Test Equipment                      | Manufacturer | Model No.    | Serial No.     | Last Cal.  | Cal.Due    |
| <input checked="" type="checkbox"/> 1 | Spectrum Analyzer                   | Agilent      | N9020A       | MY53421570     | 2024.09.25 | 2025.09.24 |
| <input type="checkbox"/> 2            | Power Sensor                        | Agilent      | 8481A        | MY41097697     | 2024.09.25 | 2025.09.24 |
| <input type="checkbox"/> 3            | Vector Signal Generator             | Agilent      | N5182A       | MY50143009     | 2024.09.25 | 2025.09.24 |
| <input type="checkbox"/> 4            | Analog signal generator             | Agilent      | E8257        | MY51554256     | 2024.09.25 | 2025.09.24 |
| <input type="checkbox"/> 5            | Const Temp. & Humidity Chamber      | Eastlab      | YH-HW-408L   | 23051109       | 2024.09.24 | 2025.09.23 |
| <input type="checkbox"/> 6            | Wideband Radio communication tester | R&S          | CMW500       | 1201.0002K50   | 2024.09.24 | 2025.09.23 |
| <input checked="" type="checkbox"/> 7 | DC power supply                     | ZHAOXIN      | RXN-305D-2   | 28070002559    | 2024.09.24 | 2025.09.23 |
| <input type="checkbox"/> 8            | RF Test box                         | TST          | TSTPASS      | 21033016       | 2024.09.25 | 2025.09.24 |
| <input checked="" type="checkbox"/> 9 | RF Software                         | TST          | TSTPASS      | Version 2.0    | N/A        | N/A        |
| <input type="checkbox"/> 10           | RF Software                         | Cesheng      | WCN Regulary | Ver 25.03.2901 | N/A        | N/A        |

Note: ☐ is not applicable in this Test Report. ☒ is applicable in this Test Report.

### 3 TEST CONDITIONS AND RESULTS

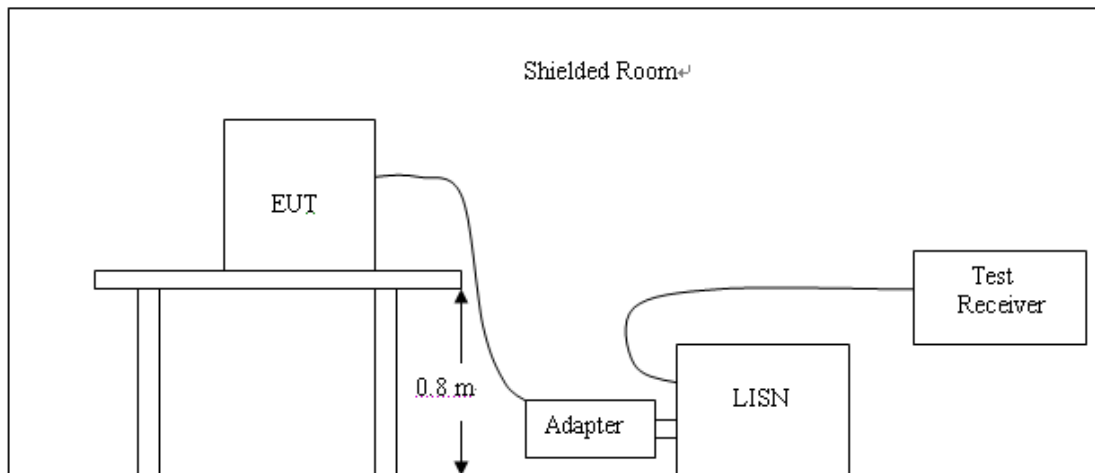
#### 3.1 Conducted Emissions Test

##### LIMIT

| Frequency range (MHz) | Limit (dBuV) |           |
|-----------------------|--------------|-----------|
|                       | Quasi-peak   | Average   |
| 0.15-0.5              | 66 to 56*    | 56 to 46* |
| 0.5-5                 | 56           | 46        |
| 5-30                  | 60           | 50        |

\* Decreases with the logarithm of the frequency.

##### TEST CONFIGURATION

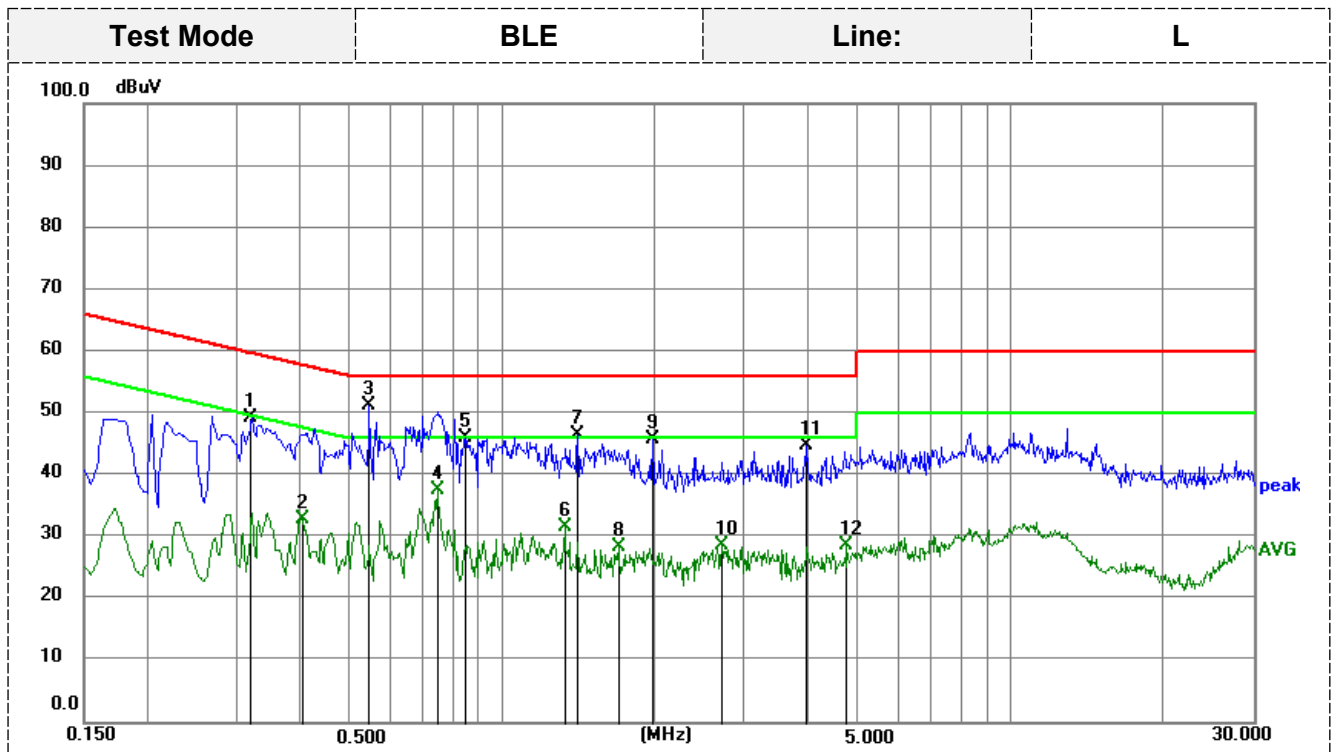


##### TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2020.
2. Support equipment, if needed, was placed as per ANSI C63.10:2020.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2020.
4. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

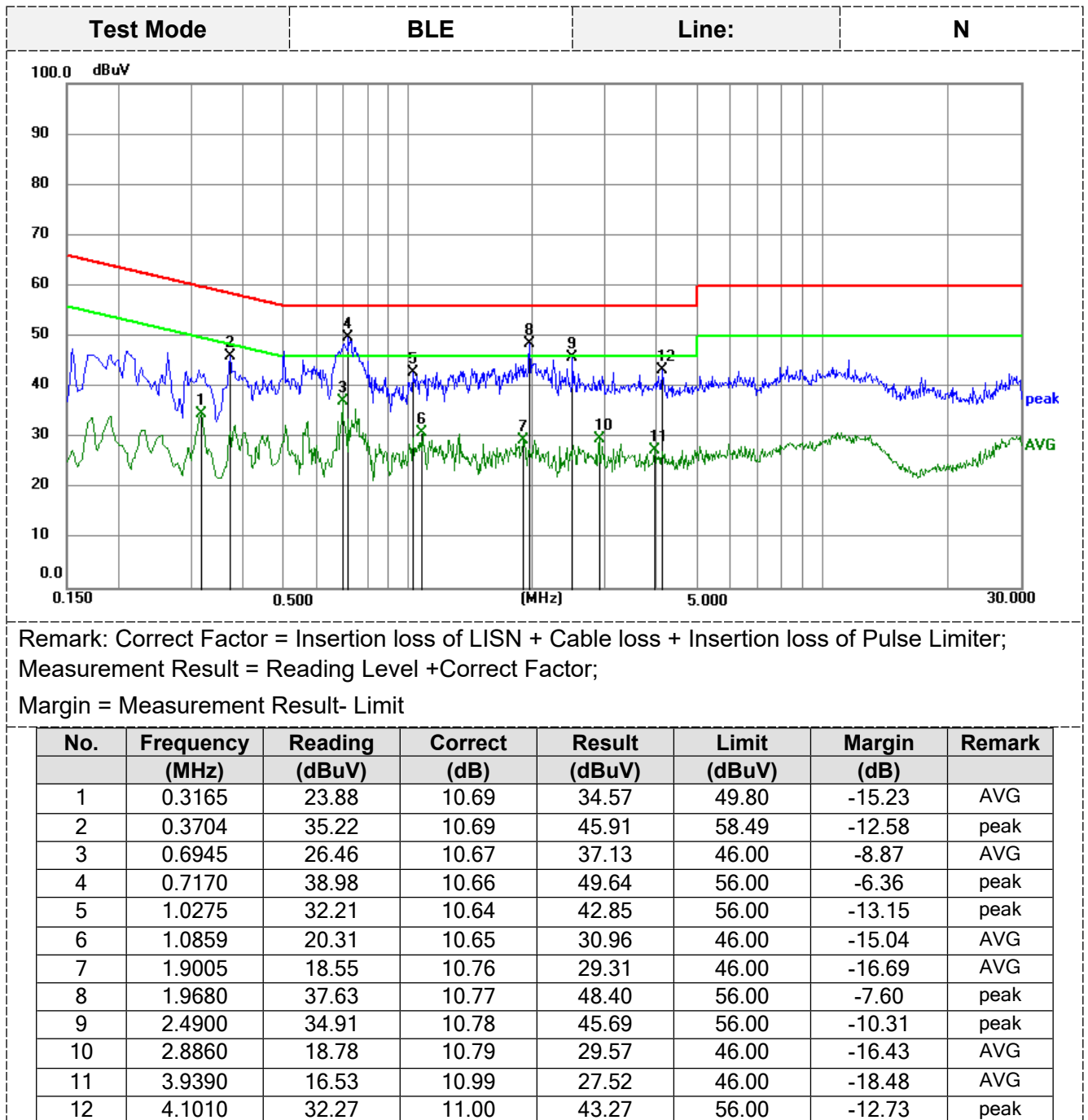
## TEST RESULTS

Remark: Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply have been tested, only the worst result of 120 VAC, 60 Hz was reported as below:



Remark: Correct Factor = Insertion loss of LISN + Cable loss + Insertion loss of Pulse Limiter;  
Measurement Result = Reading Level + Correct Factor;  
Margin = Measurement Result- Limit

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>(dB) | Result<br>(dBuV) | Limit<br>(dBuV) | Margin<br>(dB) | Remark |
|-----|--------------------|-------------------|-----------------|------------------|-----------------|----------------|--------|
| 1   | 0.3209             | 38.45             | 10.70           | 49.15            | 59.68           | -10.53         | peak   |
| 2   | 0.4020             | 22.23             | 10.69           | 32.92            | 47.81           | -14.89         | AVG    |
| 3   | 0.5460             | 40.65             | 10.68           | 51.33            | 56.00           | -4.67          | peak   |
| 4   | 0.7440             | 26.80             | 10.67           | 37.47            | 46.00           | -8.53          | AVG    |
| 5   | 0.8475             | 35.47             | 10.66           | 46.13            | 56.00           | -9.87          | peak   |
| 6   | 1.3290             | 20.93             | 10.69           | 31.62            | 46.00           | -14.38         | AVG    |
| 7   | 1.4054             | 35.90             | 10.70           | 46.60            | 56.00           | -9.40          | peak   |
| 8   | 1.6935             | 17.63             | 10.74           | 28.37            | 46.00           | -17.63         | AVG    |
| 9   | 1.9724             | 34.97             | 10.78           | 45.75            | 56.00           | -10.25         | peak   |
| 10  | 2.7014             | 17.76             | 10.81           | 28.57            | 46.00           | -17.43         | AVG    |
| 11  | 3.9840             | 33.83             | 11.00           | 44.83            | 56.00           | -11.17         | peak   |
| 12  | 4.7580             | 17.53             | 11.02           | 28.55            | 46.00           | -17.45         | AVG    |



## 3.2 Radiated Emissions

### Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

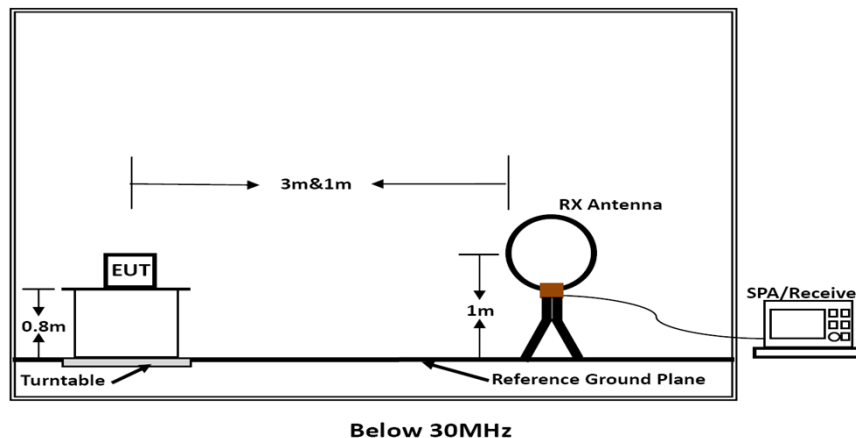
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

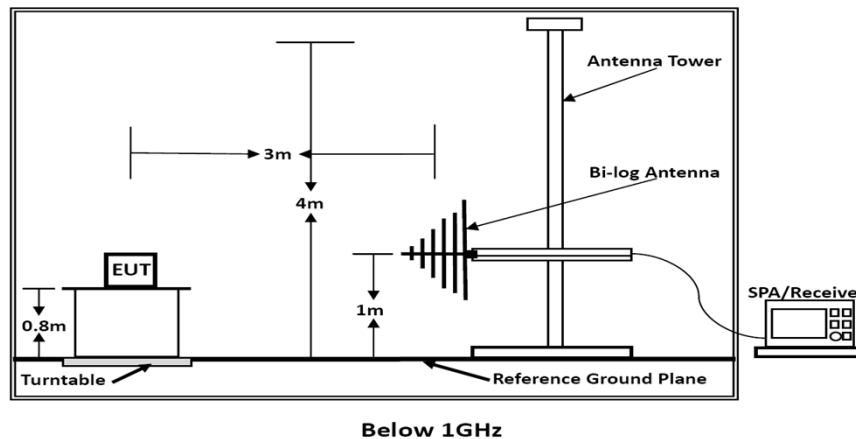
| Frequency (MHz) | Distance (Meters) | Radiated (dBμV/m)                          | Radiated (μV/m)       |
|-----------------|-------------------|--------------------------------------------|-----------------------|
| 0.009-0.49      | 3                 | $20\log(2400/F(\text{KHz}))+40\log(300/3)$ | $2400/F(\text{KHz})$  |
| 0.49-1.705      | 3                 | $20\log(24000/F(\text{KHz}))+40\log(30/3)$ | $24000/F(\text{KHz})$ |
| 1.705-30        | 3                 | $20\log(30)+40\log(30/3)$                  | 30                    |
| 30-88           | 3                 | 40.0                                       | 100                   |
| 88-216          | 3                 | 43.5                                       | 150                   |
| 216-960         | 3                 | 46.0                                       | 200                   |
| Above 960       | 3                 | 54.0                                       | 500                   |

### TEST CONFIGURATION

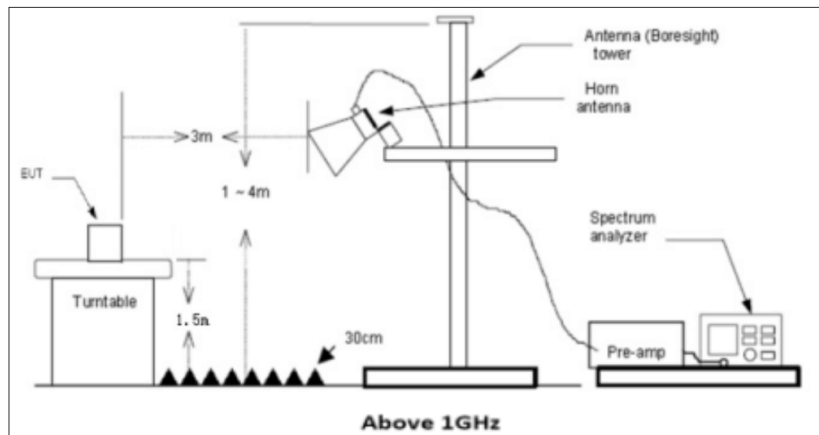
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



### (C) Radiated Emission Test Set-Up, Frequency above 1000MHz



### Test Procedure

- Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
- Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Repeat above procedures until all frequency measurements have been completed.
- Radiated emission test frequency band from 9KHz to 25GHz.
- The distance between test antenna and EUT as following table states:

| Test Frequency range | Test Antenna Type   | Test Distance |
|----------------------|---------------------|---------------|
| 9KHz-30MHz           | Active Loop Antenna | 3             |
| 30MHz-1GHz           | Bilog Antenna       | 3             |
| 1GHz-18GHz           | Horn Antenna        | 3             |
| 18GHz-25GHz          | Horn Antenna        | 1             |

- Setting test receiver/spectrum as following table states:

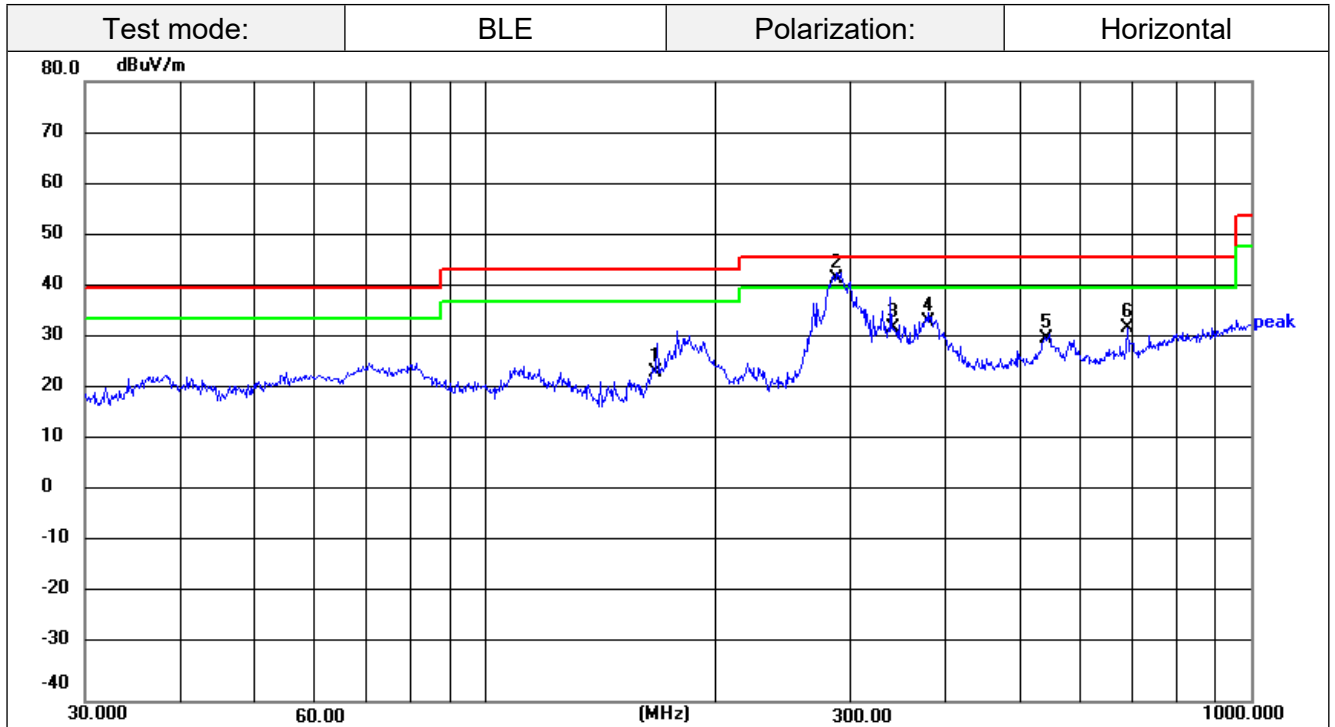
| Test Frequency range | Test Receiver/Spectrum Setting                                                                      | Detector |
|----------------------|-----------------------------------------------------------------------------------------------------|----------|
| 9KHz-150KHz          | RBW=200Hz/VBW=3KHz, Sweep time=Auto                                                                 | QP       |
| 150KHz-30MHz         | RBW=9KHz/VBW=100KHz, Sweep time=Auto                                                                | QP       |
| 30MHz-1GHz           | RBW=120KHz/VBW=1000KHz, Sweep time=Auto                                                             | QP       |
| 1GHz-40GHz           | Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto<br>Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto | Peak     |

### TEST RESULTS

Remark:

- For below 1GHz testing recorded worst at BLE 1M middle channel.
- Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and The emission levels from 9kHz to 30MHz are attenuated 20dB below the limit and not recorded in report.

### For 30MHz-1GHz



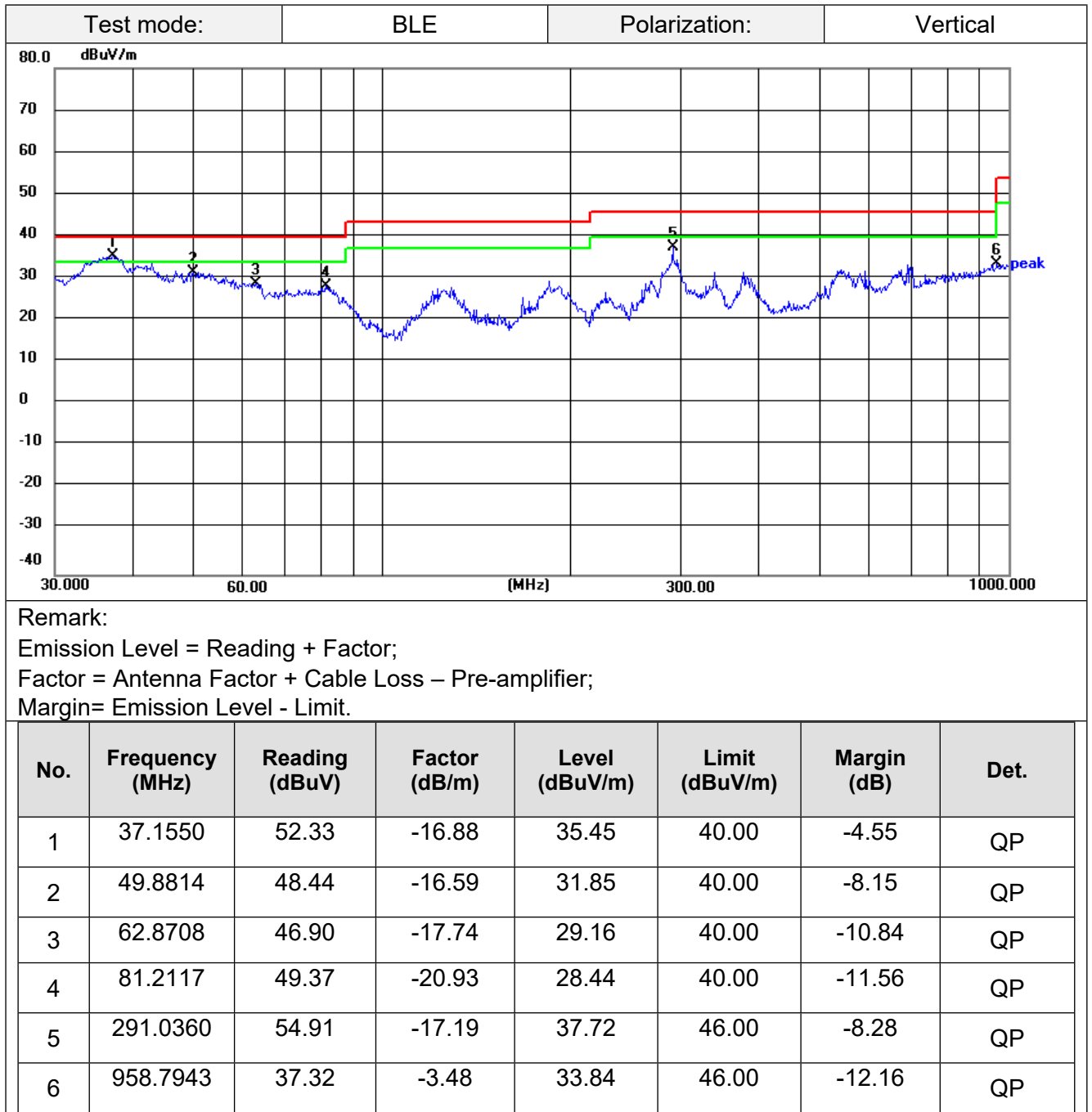
Remark:

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Emission Level - Limit.

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Det. |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|------|
| 1   | 167.2366        | 40.55          | -16.75        | 23.80          | 43.50          | -19.70      | QP   |
| 2   | 286.9823        | 59.23          | -17.31        | 41.92          | 46.00          | -4.08       | QP   |
| 3   | 340.7816        | 48.32          | -15.93        | 32.39          | 46.00          | -13.61      | QP   |
| 4   | 379.9141        | 48.46          | -15.00        | 33.46          | 46.00          | -12.54      | QP   |
| 5   | 541.3724        | 41.83          | -11.44        | 30.39          | 46.00          | -15.61      | QP   |
| 6   | 689.5643        | 40.67          | -8.39         | 32.28          | 46.00          | -13.72      | QP   |



**For 1GHz to 25GHz**
**BLE 1M GFSK (above 1GHz)**

| Frequency(MHz): |               | 2402   |                | Polarity: | Horizontal |               |
|-----------------|---------------|--------|----------------|-----------|------------|---------------|
| Frequency       | Meter Reading | Factor | Emission Level | Limits    | Margin     | Detector Type |
| (MHz)           | (dBμV)        | (dB/m) | (dBμV/m)       | (dBμV/m)  | (dB)       |               |
| 4803.65         | 52.81         | -7.56  | 45.25          | 74        | -28.75     | PEAK          |
| --              | --            | --     | --             | --        | --         | AVG           |
| 7206.75         | 46.36         | -1.63  | 44.73          | 74        | -29.27     | PEAK          |
| --              | --            | --     | --             | --        | --         | AVG           |

| Frequency(MHz): |               | 2402   |                | Polarity: | VERTICAL |               |
|-----------------|---------------|--------|----------------|-----------|----------|---------------|
| Frequency       | Meter Reading | Factor | Emission Level | Limits    | Margin   | Detector Type |
| (MHz)           | (dBμV)        | (dB/m) | (dBμV/m)       | (dBμV/m)  | (dB)     |               |
| 4803.65         | 53.95         | -7.56  | 46.39          | 74        | -27.61   | PEAK          |
| --              | --            | --     | --             | --        | --       | AVG           |
| 7206.75         | 47.52         | -1.63  | 45.89          | 74        | -28.11   | PEAK          |
| --              | --            | --     | --             | --        | --       | AVG           |

| Frequency(MHz): |               | 2440   |                | Polarity: | Horizontal |               |
|-----------------|---------------|--------|----------------|-----------|------------|---------------|
| Frequency       | Meter Reading | Factor | Emission Level | Limits    | Margin     | Detector Type |
| (MHz)           | (dBμV)        | (dB/m) | (dBμV/m)       | (dBμV/m)  | (dB)       |               |
| 4882.00         | 52.48         | -6.73  | 45.75          | 74        | -28.25     | PEAK          |
| --              | --            | --     | --             | --        | --         | AVG           |
| 7323.00         | 43.53         | -0.5   | 43.03          | 74        | -30.97     | PEAK          |
| --              | --            | --     | --             | --        | --         | AVG           |

| Frequency(MHz): |               | 2440   |                | Polarity: | VERTICAL |               |
|-----------------|---------------|--------|----------------|-----------|----------|---------------|
| Frequency       | Meter Reading | Factor | Emission Level | Limits    | Margin   | Detector Type |
| (MHz)           | (dBμV)        | (dB/m) | (dBμV/m)       | (dBμV/m)  | (dB)     |               |
| 4882.00         | 52.53         | -6.73  | 45.80          | 74        | -28.20   | PEAK          |
| --              | --            | --     | --             | --        | --       | AVG           |
| 7323.00         | 44.12         | -0.5   | 43.62          | 74        | -30.38   | PEAK          |
| --              | --            | --     | --             | --        | --       | AVG           |

| Frequency(MHz): |               | 2480   |                | Polarity: | Horizontal |               |
|-----------------|---------------|--------|----------------|-----------|------------|---------------|
| Frequency       | Meter Reading | Factor | Emission Level | Limits    | Margin     | Detector Type |
| (MHz)           | (dBμV)        | (dB/m) | (dBμV/m)       | (dBμV/m)  | (dB)       |               |
| 4960.45         | 47.02         | -5.77  | 48.53          | 74        | -25.47     | PEAK          |
| --              | --            | --     | --             | --        | --         | AVG           |
| 7440.00         | 46.47         | -0.51  | 46.75          | 74        | -27.25     | PEAK          |
| --              | --            | --     | --             | --        | --         | AVG           |

| Frequency(MHz): |               | 2480   |                | Polarity: | VERTICAL |               |
|-----------------|---------------|--------|----------------|-----------|----------|---------------|
| Frequency       | Meter Reading | Factor | Emission Level | Limits    | Margin   | Detector Type |
| (MHz)           | (dBμV)        | (dB/m) | (dBμV/m)       | (dBμV/m)  | (dB)     |               |
| 4960.45         | 45.63         | -5.77  | 48.81          | 74        | -25.19   | PEAK          |
| --              | --            | --     | --             | --        | --       | AVG           |
| 7440.00         | 45.02         | -0.51  | 47.11          | 74        | -26.89   | PEAK          |
| --              | --            | --     | --             | --        | --       | AVG           |

**REMARKS:**

1. Emission level (dBuV/m) = Reading (dBuV)+ Factor (dB/m)
2. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Emission level- Limit value.
4. -- Mean the PK detector measured value is below average limit.
5. Other emission levels are attenuated 20dB below the limit and not recorded in report.
6. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.

### 3.3 Maximum Peak Conducted Output Power

#### Limit

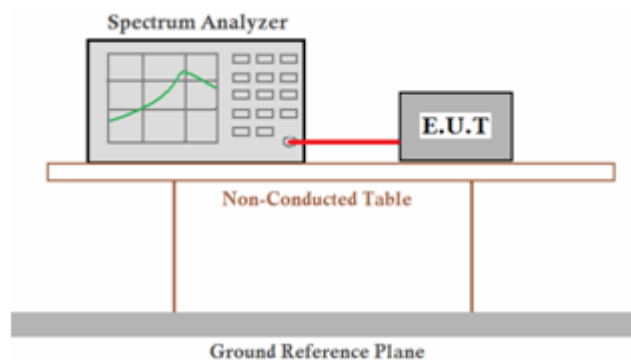
The maximum peak conducted output power shall not exceed 1.0 W.

#### Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer. The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

- Set the RBW  $\geq$  DTS bandwidth.
- Set VBW  $\geq 3 \times$  RBW
- Set span  $\geq 3 \times$  RBW
- Sweep time = auto couple.
- Detector = peak.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use peak marker function to determine the peak amplitude level.

#### Test Configuration



#### Test Results

☒ Pass ☐ Not Applicable

Note:

For test data, please refer to Appendix RF test data for BLE B.2.

### 3.4 Power Spectral Density

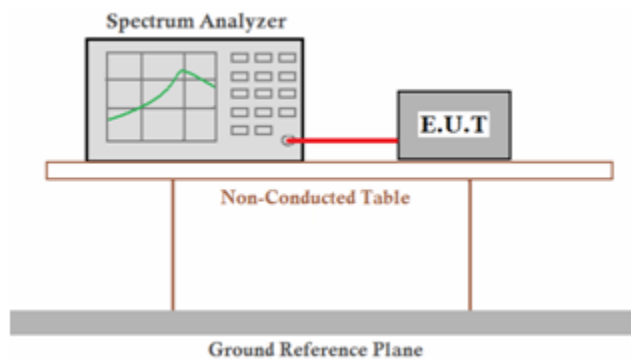
#### Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

#### Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW  $\geq 3$  kHz.
3. Set the VBW  $\geq 3 \times$  RBW.
4. Set the span to 1.5 times the DTS channel bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be 8dBm.

#### Test Configuration



#### Test Results

☒ Pass ☐ Not Applicable

Note:

For test data, please refer to Appendix RF test data for BLE B.3.

### 3.5 6dB Bandwidth

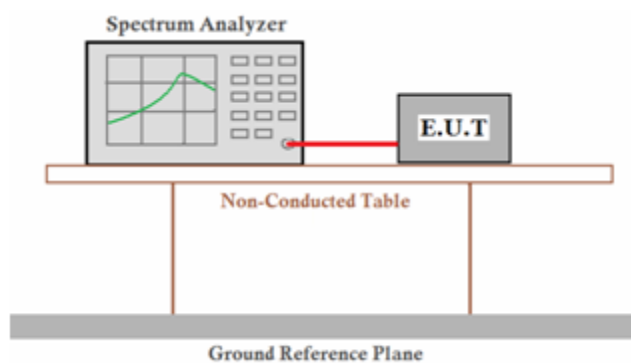
#### Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz

#### Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB. Measured the 6dB bandwidth by related function of the spectrum analyzer.

#### Test Configuration



#### Test Results

☒ Pass ☐ Not Applicable

Note:

For test data, please refer to Appendix RF test data for BLE B.1.

### 3.6 Out-of-band Emissions

#### **Limit**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

#### **Test Procedure**

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer. Place the EUT on the table and set it in transmitting mode.

##### **Step 1: Reference level measurement using the following procedure:**

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set the span to  $\geq 1.5$  times the DTS bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW  $\geq [3 \times \text{RBW}]$ .
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum PSD level.

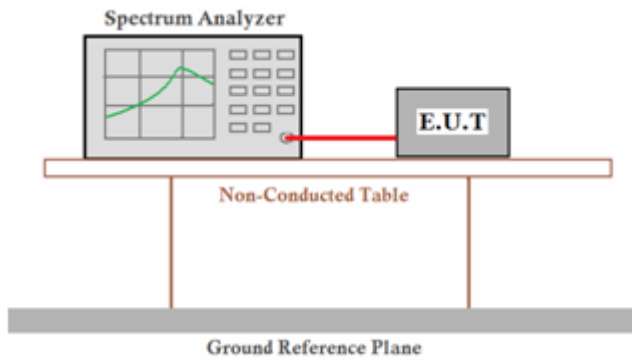
Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

##### **Step 2: Emission level measurement using the following procedure:**

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW  $\geq [3 \times \text{RBW}]$ .
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements of PSD level measured in step 1 Reference level measurement.

## Test Configuration



## Test Results

### **Passed**

☒ **Pass**
     
 ☐ **Not Applicable**

Note:

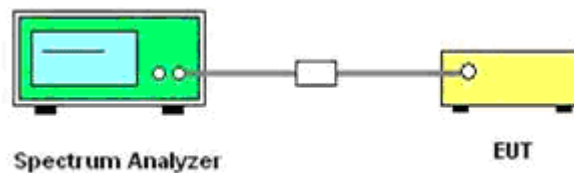
For test data, please refer to Appendix RF test data for BLE B.4.  
 please refer to Appendix RF test data for BLE B.5.

### 3.7 Emissions in Restricted Bands

#### Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

#### Test Setup Layout



#### Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of Spectrum Analyzer.

#### Test Procedures

According to KDB558074 D01 15.247 Meas Guidance v05r02 for Antenna-port conducted measurement. Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

- 1). Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2). Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to an EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
- 3). Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1MHz, VBW=3MHz for peak detector and RBW=1MHz, VBW=1/T for AV detector.
- 4). Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- 5). Repeat above procedures until all measured frequencies were complete.
- 6). Measure the conducted output power (in dBm) using the detector specified by the appropriate regulatory agency (see 12.2.2, 12.2.3, and 12.2.4 for guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
- 7). Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see 12.2.5 for guidance on determining the applicable antenna gain)
- 8). Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).
- 9). For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
- 10). Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$$E = \text{EIRP} - 20 \log D + 104.8 = \text{EIRP} + 95.26$$

Where:

E = electric field strength in dB $\mu$ V/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

11). Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

12). Compare the resultant electric field strength level to the applicable regulatory limit.

13). Perform radiated spurious emission test duress until all measured frequencies were complete.

## **Test Results**

### **Passed**

☒ **Pass**

☐ **Not Applicable**

Note:

For test data, please refer to Appendix RF test data for BLE B.7.

Remark:

1). *Test results including cable loss;*

2). *“---“means that the fundamental frequency not for 15.209 limits requirement;*

3). *The average measurement was not performed when the peak measured data under the limit of average detection.*

4). *Detector AV is setting spectrum/receiver. RBW=1MHz/VBW=1/T/Sweep time=Auto/Detector=Peak.*

5). *Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.*

### 3.8 Antenna Requirement

#### **Standard Applicable**

##### **For intentional device, according to FCC 47 CFR Section 15.203:**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited

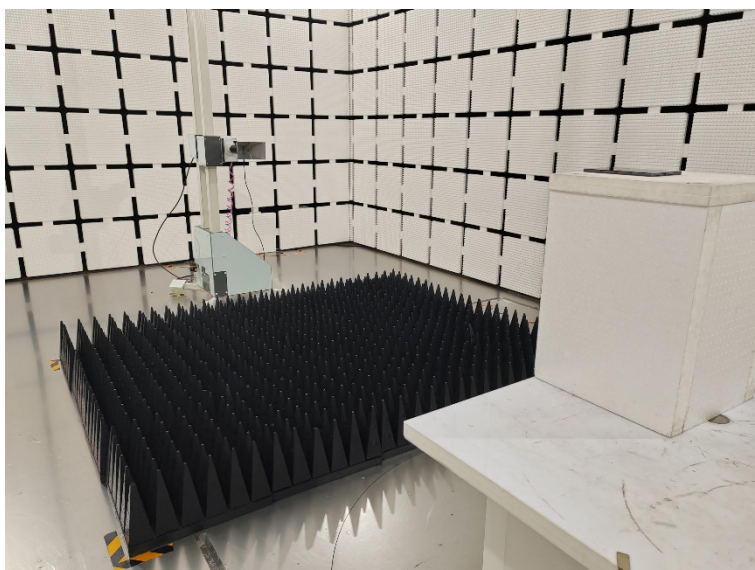
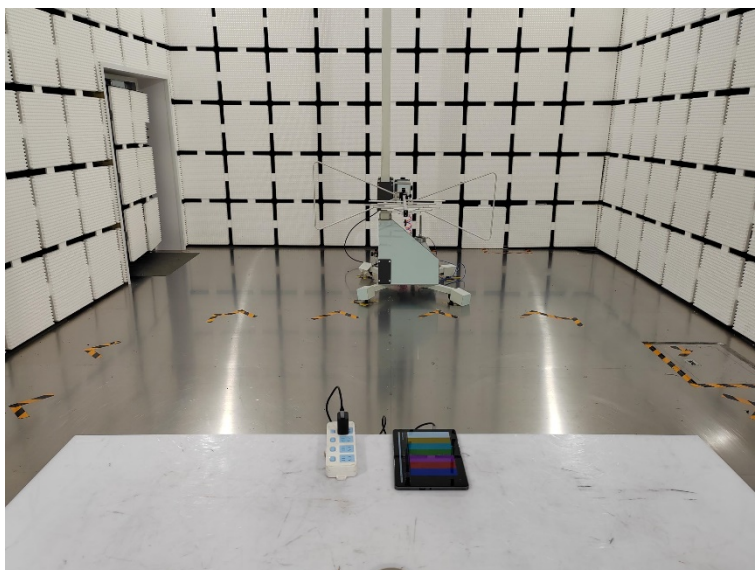
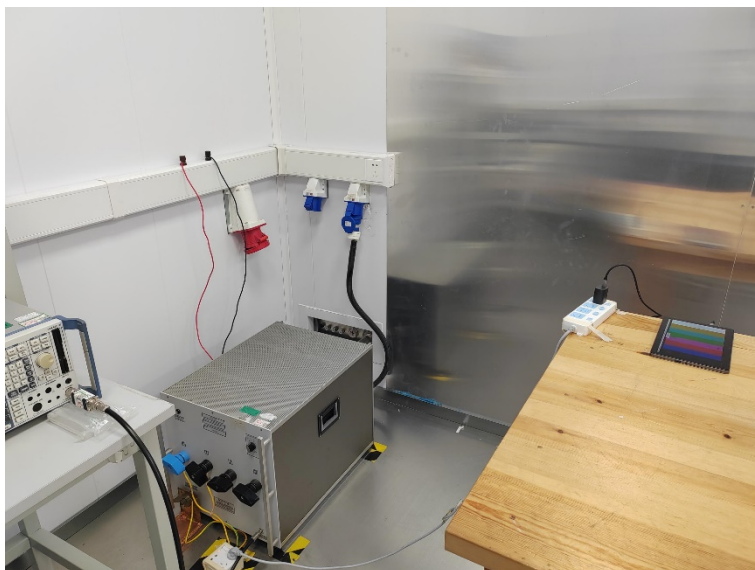
##### **FCC CFR Title 47 Part 15 Subpart C Section 15.247(b) (4):**

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### **Test Result**

The maximum gain of antenna was 1.51dBi dBi with impedance 50Ω.

## 4 Test Setup Photographs of EUT



## 5 Photos of EUT

Please refer to test Report No.: AiTSZ-250904124FW1.

\*\*\*\*\* **End of Report** \*\*\*\*\*