

| <b>RF TEST REPORT</b> |  |  |  |  |  |
|-----------------------|--|--|--|--|--|
| Report No.:           | 20240917G17987X-W4   |  |  |  |  |
| Product Name:         | Beacon   |  |  |  |  |
| Model No.:            | ZZ-H-2-001   |  |  |  |  |
| FCC ID:               | 2AIDW-ZZ-H-2-001   |  |  |  |  |
| IC:                   | 21647-ZZH2001  |  |  |  |  |
| Applicant:            | Shenzhen Zero Zero Infinity Technology Co., Ltd.   |  |  |  |  |
| Address:              | 4th Floor, Qianhai E-metro Tower, Shenzhen-Hong Kong<br>Cooperation Zone, Shenzhen, China                    |  |  |  |  |
| Dates of Testing:     | 09/11/2024 - 09/27/2024  |  |  |  |  |
| Issued by:            | CCIC Southern Testing Co., Ltd.  |  |  |  |  |
| Lab Location:         | Electronic Testing Building, No.43, Shahe Road, Xili Street,<br>Nanshan District, Shenzhen, Guangdong, China |  |  |  |  |
|                       | Tel: 86-755-26627338 E-Mail: manager@ccic-set.com  |  |  |  |  |

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# **Test Report**

| Product:              | Beacon  |                  |  |  |
|-----------------------|---|------------------|--|--|
| Trade Name:           | ZERO ZERO ROBOTICS  |                  |  |  |
| Applicant:            | Shenzhen Zero Zero Infinity Technology Co., Ltd.  |                  |  |  |
| Applicant Address:    | 4th Floor, Qianhai E-metro Tower, Shenzhen-Hong Kong<br>Cooperation Zone, Shenzhen, China |                  |  |  |
| Manufacturer:         | Shenzhen Zero Zero Infinity Techr   | nology Co., Ltd. |  |  |
| Manufacturer Address: | 4th Floor, Qianhai E-metro Tower,<br>Cooperation Zone, Shenzhen, Chi                      | • •              |  |  |
| Test Standards:       | 47 CFR Part 15 Subpart C 15.247<br>ANSI C63.10-2020<br>RSS-Gen Issue 5, Feb 2021          |                  |  |  |
| Test Desult           | RSS-247 Issue 3, Aug 2023   |                  |  |  |
| Test Result:          | Pass  |                  |  |  |
| Tested by             | kim Li  | 2024.09.27       |  |  |
|                       | Kim Li, Test Engineer   |                  |  |  |
| Reviewed by:          | Sun Jiaohui   | 2024.09.27       |  |  |
|                       | Sun Jiaohui, Senior Engineer  |                  |  |  |
| Approved by:          | Chris Jon   | 2024.09.27       |  |  |
|                       | Chris You, Manager  |                  |  |  |
|                       | China Tou, Manager  |                  |  |  |
|                       | Chins Tou, Manager  |                  |  |  |
|                       | Chins Tou, Manager  |                  |  |  |
|                       | Chins Tou, Manager  |                  |  |  |
|                       | China Tou, Manager  |                  |  |  |
|                       | China Tou, Manager  |                  |  |  |
|                       | China Tou, Manager  |                  |  |  |



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| Change History |            |                   |  |  |
|----------------|------------|-------------------|--|--|
| Issue          | Date       | Reason for change |  |  |
| 1.0            | 2024.09.27 | First edition     |  |  |
|                |            |                   |  |  |



# **1.** General Information

#### **1.1. EUT Description**

| Product Name                    | Beacon   |
|---------------------------------|--|
| Model No.                       | ZZ-H-2-001   |
| Hardware Version                | RC100 MB V20                                       |
| Software Version                | 0.0.3 20240923                                     |
| EUT supports Radios application | Bluetooth LE                                       |
| Frequency Range                 | 2402MHz~2480MHz                                    |
| Channel Number                  | 40   |
| Bit Rate of Transmitter         | 1/2Mbps  |
| Modulation Type                 | GFSK   |
| Test Control Software           | QRCT 4.0   |
| Antenna Type                    | Internal Antenna                                   |
| Antenna Gain                    | Antenna 1: 0.8dBi                                  |
| Power supply                    | Rechargeable Li-ion Polymer Battery DC3.85V/940mAh |

Note 1: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

Note 2: The information of antenna gain and cable loss is provided by the manufacturer and our lab is not responsible for the accuracy of the antenna gain and cable loss information.



### **1.2.** Test Standards and Results

The purpose of the report is to conduct testing according to the following FCC/IC certification standards:

| No. | Identity   | Document Title   |
|-----|--|--|
| 1   | 47 CFR Part 15<br>Subpart C                      | Radio Frequency Devices  |
| 2   | ANSI C63.10-2020                                 | American National Standard for Testing Unlicensed Wireless<br>Devices  |
| 3   | KDB 558074 D01<br>15.247 Meas<br>Guidance v05r02 | Cuidance for Compliance Measurement on Digital Transmission<br>Systems, Frequency Hopping Spread Spectrum Systems, and<br>Hybrid System Devices Operating under Section 15.247 of the FCC<br>Rules |
| 4   | RSS-Gen Issue 5, Feb<br>2021                     | General Requirements for Compliance of Radio Apparatus   |
| 5   | RSS-247 Issue 3, Aug<br>2023                     | Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices   |

Test detailed items/section required by FCC/IC rules and results are as below:

| No. | Section in CFR 47 | IC Rules        | Description                                  | Result |
|-----|-------------------|-----------------|--|--------|
| 1   | 15.203            | RSS-GEN, 6.8    | Antenna Requirement                          | PASS   |
| Ť   | 15.247(c)         | RSS-247, 5.4(f) | Antenna kequirement                          | FAJJ   |
| 2   | 15.247(b)(3)      | RSS-247, 5.4(d) | Peak Conducted Output Power                  | PASS   |
| 3   | 15 247(2)(2)      | RSS-GEN, 6.7    | 6dB and 99% Bandwidth                        | DACC   |
| 5   | 15.247(a)(2)      | RSS-247, 5.2(a) | oub and 99% Bandwidth                        | PASS   |
| 4   | 1F 247(d)         | RSS-GEN, 6.13   | Conducted Band Edges and Spurious            | DACC   |
| 4   | 15.247(d)         | RSS-247, 5.5    | Emission                                     | PASS   |
| 5   | 15.247(e)         | RSS-247, 5.2(b) | Power spectral density (PSD)                 | PASS   |
| 6   | 15.207            | RSS-GEN, 8.8    | AC Power Line Conducted Emission             | PASS   |
|     | 15.209            | RSS-GEN, 8.9    | Dadiated Dand Edges and Sourious             |        |
| 7   | 15.205            | RSS-GEN, 8.10   | Radiated Band Edges and Spurious<br>Emission | PASS   |
|     | 15.247(d)         | RSS-247, 5.5    | ETHISSION                                    |        |

Note 1: The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10-2020.

Note 2: These RF tests were performed according to the method of measurements prescribed in KDB 558074 D01 15.247 Meas Guidance v05r02.



| Channel    | Frequency                                   | Channel | Frequency | Channel | Frequency | Channel | Frequency |
|------------|---|---------|-----------|---------|-----------|---------|-----------|
| 0          | 2402MHz                                     | 10      | 2422MHz   | 20      | 2442MHz   | 30      | 2462MHz   |
| 1          | 2404MHz                                     | 11      | 2424MHz   | 21      | 2444MHz   | 31      | 2464MHz   |
| 2          | 2406MHz                                     | 12      | 2426MHz   | 22      | 2446MHz   | 32      | 2466MHz   |
| 3          | 2408MHz                                     | 13      | 2428MHz   | 23      | 2448MHz   | 33      | 2468MHz   |
| 4          | 2410MHz                                     | 14      | 2430MHz   | 24      | 2450MHz   | 34      | 2470MHz   |
| 5          | 2412MHz                                     | 15      | 2432MHz   | 25      | 2452MHz   | 35      | 2472MHz   |
| 6          | 2414MHz                                     | 16      | 2434MHz   | 26      | 2454MHz   | 36      | 2474MHz   |
| 7          | 2416MHz                                     | 17      | 2436MHz   | 27      | 2456MHz   | 37      | 2476MHz   |
| 8          | 2418MHz                                     | 18      | 2438MHz   | 28      | 2458MHz   | 38      | 2478MHz   |
| 9          | 2420MHz                                     | 19      | 2440MHz   | 29      | 2460MHz   | 39      | 2480MHz   |
| Note: Char | Note: Channel 0, 19 & 39 selected for GFSK. |         |           |         |           |         |           |

40 channels are provided for Bluetooth LE

| Test Items  | Modulation Type | Data Rate   | Channel |
|---|-----------------|-------------|---------|
| Peak Conducted Output Power<br>Power Spectral Density<br>6dB and 99% Bandwidth<br>Conducted Spurious Emission<br>Radiated Spurious Emission | GFSK            | 1Mbps/2Mbps | 0/19/39 |
| Band Edge   | GFSK            | 1Mbps/2Mbps | 0/39    |

# **1.3.** Table for Supporting Units

| No. | Equipment | Brand Name | Model Name | Manufacturer | Serial No. | Note    |
|-----|-----------|------------|------------|--------------|------------|---------|
| 1   | Laptop    | HP         | TPN-Q221   | HP           | 5CD14347QB | FCC DOC |

# **1.4.** EUT Operation Test Setup

For RF test items, an engineering test program was provided and enable to make EUT transmitting.

#### **1.5.** Test environment and mode

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

| Operating Environment     |   |  |  |  |
|---------------------------|---|--|--|--|
| Temperature               | 15°C - 35°C   |  |  |  |
| Humidity                  | 30% -60%  |  |  |  |
| Atmospheric Pressure      | 86kPa-106kPa  |  |  |  |
| Test mode:                |   |  |  |  |
| Continuously transmitting | Keen the EUT in continuous transmitting with modulation |  |  |  |
| mode                      | Keep the EUT in continuous transmitting with modulation |  |  |  |



## **1.6.** Laboratory Facilities

#### FCC-Registration No.: CN1283

CCIC Southern Testing Co., Ltd EMC Laboratory 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. Designation Number: CN1283, valid time is until Jun. 30th, 2025.

#### **ISED Registration: 11185A**

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A on Aug. 04, 2016, valid time is until Jun. 30th, 2025.

# CAB number: CN0064

#### A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.



# 2. Test Requirements

# 2.1. Antenna requirement

#### 2.1.1. Applicable Standard

According to FCC 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 shall be considered sufficient to comply with the provisions of this section.

And according to FCC 47 CFR Section 15.247(c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

According to RSS GEN 6.8, The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

#### 2.1.2. Antenna Information

#### Antenna Category: Internal Antenna

A internal Antenna was soldered to the antenna port of EUT via an adaptor cable, can't be removed.

#### **Antenna General Information:**

| No. | EUT    | Operating frequency range | Ant. Type | Ant. Gain         |
|-----|--------|---------------------------|-----------|-------------------|
| 1   | Beacon | 2402-2480MHz              | Internal  | Antenna 1: 0.8dBi |

#### 2.1.3. Result: comply

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.



# 2.2. Maximum Conducted Output Power

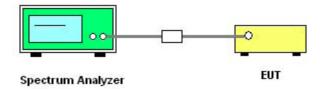
#### 2.2.1. Limit of Maximum Conducted Output Power

For DTSs employing digital modulation techniques operating in the bands 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W. The e.i.r.p. shall not exceed 4 W.

#### 2.2.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

#### 2.2.3. Test Setup



#### 2.2.4. Test Procedures

- 1. The testing follows the Measurement Procedure of ANSI C63.10-2020 Section 11.9.1.1.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Use the following spectrum analyzer settings:

```
RBW \ge DTS bandwidth / VBW \ge 3*RBW / Sweep time: Auto couple / Detector mode: Peak /
```

Trace mode: Max hold / Allow trace to fully stabilize / Use peak marker function to determine the peak amplitude level.

5. Record the measurement results in the test report.

#### 2.2.5. Test Result of Maximum Conducted Output Power



### 2.3. 6dB and 99% Bandwidth

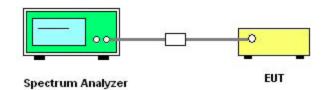
#### 2.3.1. Limit of 6dB and 99% Bandwidth

The minimum 6 dB Occupied bandwidth shall be at least 500 kHz.

#### 2.3.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

#### 2.3.3. Test Setup



#### **2.3.4.** Test Procedures

- 1. The testing follows the Measurement Procedure of ANSI C63.10-2020 Section 11.8.1.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

3. Set to the maximum power setting and enable the EUT transmit continuously.

- 4. Use the spectrum analyzer "Channel Bandwidth" function to easurement the 6dB EBW and 99% OBW.
- 5. For 6dB EBW Use the following spectrum analyzer settings:

RBW: 100kHz / VBW: 300kHz / Detector: Peak / Trace mode: Max hold / Sweep time: Auto couple / Allow trace to fully stabilize.

6. For 99% OBW Use the following spectrum analyzer settings:

Set RBW = approximately 1% EBW or 1.5 times to 5.0 times the OBW, VBW  $\ge$  3 × RBW.

7. Record the measurement results in the test report.

#### 2.3.5. Test Results of 6dB and 99% Bandwidth



# 2.4. Power spectral density (PSD)

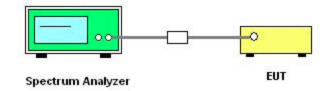
#### 2.4.1. Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

#### 2.4.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

### 2.4.3. Test Setup



### 2.4.4. Test Procedures

- 1. The testing follows the Measurement Procedure of ANSI C63.10-2020 Section 11.10.2.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Use the following spectrum analyzer settings:

Set instrument center frequency to DTS channel center frequency / Set the span to 1.5 times the DTS bandwidth / RBW: 3kHz / VBW: 10kHz / Detector: Peak / Sweep time: Auto couple / Trace mode: Max hold / Allow trace to fully stabilize / Use the peak marker function to determine the maximum power level.

5. Record the measurement results in the test report.

### 2.4.5. Test Results of Power spectral density



# 2.5. Conducted Band Edges and Spurious Emissions

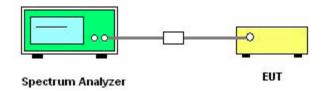
### 2.5.1. Limit of Conducted Band Edges and Spurious Emissions

In any 100 kHz bandwidth outside the frequency band in which the intentional radiator is perating, 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.

#### 2.5.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

# 2.5.3. Test Setup



### 2.5.4. Test Procedure

- 1. The testing follows the Measurement Procedure of ANSI C63.10-2020 Section 11.11 and 11.13.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Use the following spectrum analyzer settings:

Reference level measurement: Set spectrum analyzer center frequency to DTS channel center frequency / Set the span to  $\geq$ 1.5 times the DTS bandwidth / RBW: 100kHz / VBW: 300kHz / Detector: Peak / Sweep time: Auto couple / Trace mode: Max hold / Allow trace to fully stabilize / Use the peak marker function to determine the maximum PSD level and attenuate it by 20dB. Emission level measurement: Set the center frequency and span to encompass frequency range to be measured / RBW: 100kHz / VBW: 300kHz / Detector: Peak / Sweep time: Auto couple / Trace mode: Max hold / Allow trace to fully stabilize / Use the peak marker function to determine the maximum amplitude level.

5. Record the measurement results in the test report.



# 2.5.5. Test Results of Conducted Band Edges and Spurious Emissions



# 2.6. Radiated Band Edge and Spurious Emission

# 2.6.1. Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the frequency band in which the 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. If the transmitter uses an RMS average conducted power limit, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the estricted bands, as defi ned in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

§15.209(a) Radiated emission limits:

| Frequency (MHz) | Field Strength (µV/m) | Measurement Distance (m) |
|-----------------|-----------------------|--------------------------|
| 0.009 - 0.490   | 2400/F(kHz)           | 300                      |
| 0.490 - 1.705   | 24000/F(kHz)          | 30                       |
| 1.705 - 30.0    | 30                    | 30                       |
| 30 - 88         | 100                   | 3                        |
| 88 - 216        | 150                   | 3                        |
| 216 - 960       | 200                   | 3                        |
| Above 960       | 500                   | 3                        |

Restricted bands of operation refer to §15.205 (a):

| MHz                                 | MHz                          | MHz                        | GHz              |  |  |  |  |
|-------------------------------------|------------------------------|----------------------------|------------------|--|--|--|--|
| 0.090-0.110                         | 16.42-16.423                 | 399.9-410                  | 4.5-5.15         |  |  |  |  |
| <sup>1</sup> 0.495-0.505            | 16.69475-16.69525            | 608-614                    | 5.35-5.46        |  |  |  |  |
| 2.1735-2.1905                       | 16.80425-16.80475            | 960-1240                   | 7.25-7.75        |  |  |  |  |
| 4.125-4.128                         | 25.5-25.67                   | 1300-1427                  | 8.025-8.5        |  |  |  |  |
| 4.17725-4.17775                     | 37.5-38.25                   | 1435-1626.5                | 9.0-9.2          |  |  |  |  |
| 4.20725-4.20775                     | 73-74.6                      | 1645.5-1646.5              | 9.3-9.5          |  |  |  |  |
| 6.215-6.218                         | 74.8-75.2                    | 1660-1710                  | 10.6-12.7        |  |  |  |  |
| 6.26775-6.26825                     | 108-121.94                   | 1718.8-1722.2              | 13.25-13.4       |  |  |  |  |
| 6.31175-6.31225                     | 123-138                      | 2200-2300                  | 14.47-14.5       |  |  |  |  |
| 8.291-8.294                         | 149.9-150.05                 | 2310-2390                  | 15.35-16.2       |  |  |  |  |
| 8.362-8.366                         | 156.52475-156.52525          | 2483.5-2500                | 17.7-21.4        |  |  |  |  |
| 8.37625-8.38675                     | 156.7-156.9                  | 2690-2900                  | 22.01-23.12      |  |  |  |  |
| 8.41425-8.41475                     | 162.0125-167.17              | 3260-3267                  | 23.6-24.0        |  |  |  |  |
| 12.29-12.293                        | 167.72-173.2                 | 3332-3339                  | 31.2-31.8        |  |  |  |  |
| 12.51975-12.52025                   | 240-285                      | 3345.8-3358                | 36.43-36.5       |  |  |  |  |
| 12.57675-12.57725                   | 322-335.4                    | 3600-4400                  | ( <sup>2</sup> ) |  |  |  |  |
| 13.36-13.41                         | /                            | /                          | /                |  |  |  |  |
| Note: <sup>1</sup> Until February 1 | , 1999, this restricted band | d shall be 0.490-0.510 MHz | Ζ.               |  |  |  |  |
| <sup>2</sup> Above 38.6.            |                              |                            |                  |  |  |  |  |

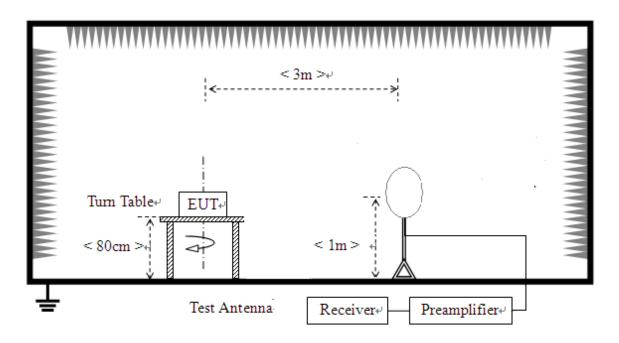


## 2.6.2. Measuring Instruments

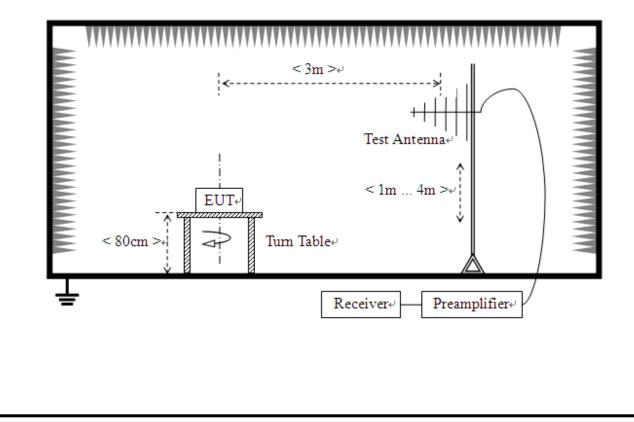
The measuring equipment is listed in the section 3 of this test report.

#### 2.6.3. Test Setup

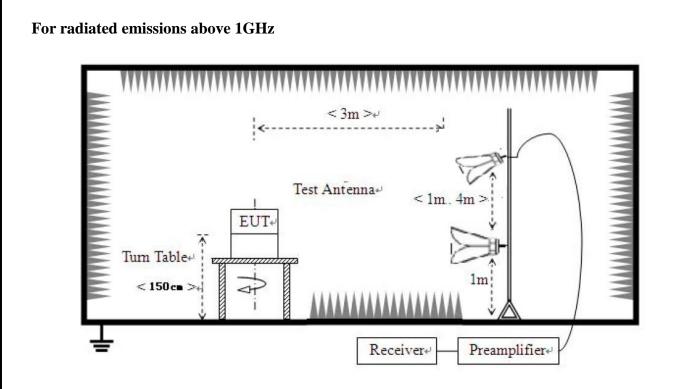
For radiated emissions from 9 kHz to 30 MHz



For radiated emissions from 30MHz to 1GHz  $% \left( {{{\rm{B}}} \right)$ 







### 2.6.4. Test Procedures

- 1. The EUT was placed on the top of a rotating table 0.8m for below 1GHz and 1.5m for above 1GHz above the ground at a 3 meters semi-anechoic chamber.
- 2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 3. Height of receiving antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 6. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then



reported in a data sheet.

7. For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
- 3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is
  ≥ 1/T(Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
- 4. All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

#### 2.6.5. Test Results of Radiated Band Edge and Spurious Emission

For 9 kHz to 30MHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For 30MHz to 1GHz, All of the EUT Configure mode were tested and found 1Mbps\_2440MHz channel is the worst mode, the worst case is recorded in this report.

For 1GHz to 25GHz, Only worst-case data is reported.



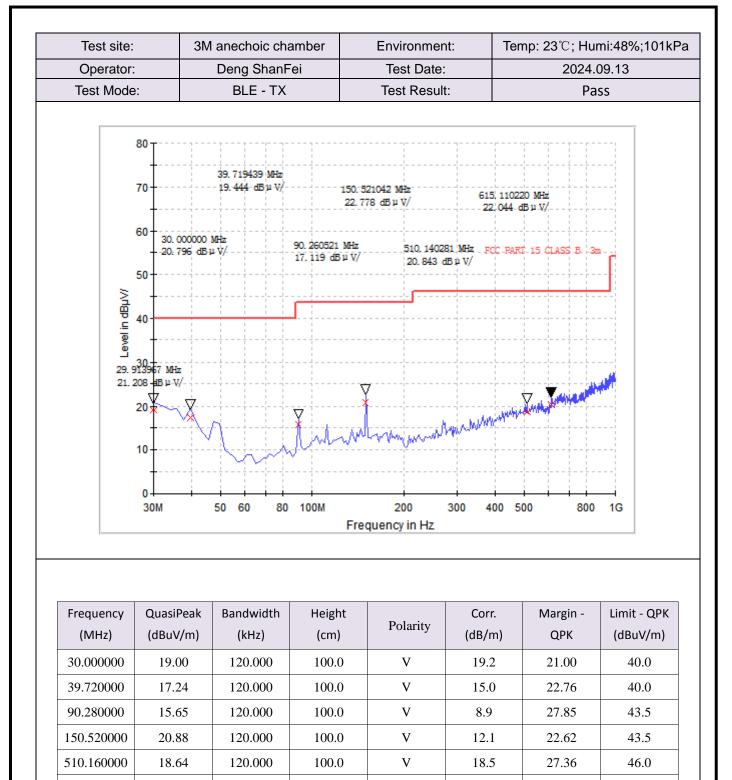
#### Test site: 3M anechoic chamber **Environment:** Temp: 23°C; Humi:48%;101kPa Operator: Deng ShanFei Test Date: 2024.09.13 Test Result: Test Mode: BLE - TX Pass 80 537.354709 MHz 22.047.dB µ-V/ 70 30. 000000 MHz 68.877756 MHz 21,662 dB µ V/ 24.090 dB µ.V/ 60 55.270541 MHz 653. 987976 MHz 22.345 dB µ V/ ASS B 197-174349-MHz 24.F806 F887 4/2 15.386 dB µ V/ 50 Level in dBµV/ 40 30 abread to many loss that the second 20 10 0 30M 50 60 80 100M 200 300 400 500 800 1G Frequency in Hz Frequency QuasiPeak Bandwidth Height Corr. Margin -Limit - QPK Polarity (dBuV/m) (MHz) (dBuV/m) (kHz) (cm) (dB/m) QPK 30.000000 19.00 120.000 100.0 Η 19.2 21.00 40.0 55.280000 20.47 120.000 100.0 Η 7.0 19.53 40.0 68.880000 22.93 120.000 100.0 Η 17.07 40.0 6.2 197.160000 11.89 120.000 100.0 Η 11.7 31.61 43.5 537.360000 20.98 120.000 100.0 Η 19.1 25.02 46.0 654.000000 21.11 120.000 100.0 Η 21.5 24.89 46.0

#### For 30MHz to 1000MHz

Remark:

- 1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
- 2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB).
- **3**. Margin value = Limit value Emission Level.
- 4. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 5. Only the antenna height (from 1m to 4m) at maximum reading are recorded.





Remark:

615.120000

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).

100.0

2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB).

120.000

**3**. Margin value = Limit value - Emission Level.

20.42

4. The emission levels of other frequencies are very lower than the limit and not show in test report.

V

19.7

25.58

5. Only the antenna height (from 1m to 4m) at maximum reading are recorded.

46.0



#### For 1GHz to 25GHz

|                    |                              |                   |                | GFSK_24                      | 02MHz - 1                  | Mbps                       |                                |            |              |
|--------------------|------------------------------|-------------------|----------------|------------------------------|----------------------------|----------------------------|--------------------------------|------------|--------------|
| Frequency<br>(MHz) | Emssion<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m)     | Table<br>Angle<br>(Degree  | Raw<br>Value<br>) (dBuV/m) | Correction<br>Factor<br>(dB/m) | Polarity   | Detector     |
| 2390.00            | 52.85                        | 74.00             | -21.15         | 1.50                         | 280                        | 55.94                      | -3.09                          | Horizontal | Peak         |
| 2390.00            | 43.27                        | 54.00             | -10.73         | 1.50                         | 280                        | 46.36                      | -3.09                          | Horizontal | Average      |
| 4804.00            | 48.37                        | 74.00             | -25.63         | 1.50                         | 280                        | 47.11                      | 1.26                           | Horizontal | Peak         |
| 4804.00            | 37.78                        | 54.00             | -16.22         | 1.50                         | 280                        | 36.52                      | 1.26                           | Horizontal | Average      |
| 7206.00            | 51.87                        | 74.00             | -22.13         | 1.50                         | 280                        | 45.70                      | 6.17                           | Horizontal | Peak         |
| 7206.00            | 41.15                        | 54.00             | -12.85         | 1.50                         | 280                        | 34.98                      | 6.17                           | Horizontal | Average      |
| 2390.00            | 53.38                        | 74.00             | -20.62         | 1.50                         | 210                        | 56.47                      | -3.09                          | Vertical   | Peak         |
| 2390.00            | 43.33                        | 54.00             | -10.67         | 1.50                         | 210                        | 46.42                      | -3.09                          | Vertical   | Average      |
| 4804.00            | 47.50                        | 74.00             | -26.50         | 1.50                         | 210                        | 46.24                      | 1.26                           | Vertical   | Peak         |
| 4804.00            | 37.59                        | 54.00             | -16.41         | 1.50                         | 210                        | 36.33                      | 1.26                           | Vertical   | Average      |
| 7206.00            | 50.90                        | 74.00             | -23.10         | 1.50                         | 210                        | 44.73                      | 6.17                           | Vertical   | Peak         |
| 7206.00            | 40.98                        | 54.00             | -13.02         | 1.50                         | 210                        | 34.81                      | 6.17                           | Vertical   | Average      |
|                    |                              |                   |                | GFSK_24                      | 40MHz - 1                  | Mbps                       | •<br>•                         |            |              |
| Frequency<br>(MHz) | Emssion<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenn<br>a<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV/m)   | Correction<br>Factor<br>(dB/m) | Polarity   | Detecto<br>r |
| 4880.00            | 48.04                        | 74.00             | -25.96         | 1.50                         | 280                        | 47.11                      | 0.93                           | Horizontal | Peak         |
| 4880.00            | 37.99                        | 54.00             | -16.01         | 1.50                         | 280                        | 37.06                      | 0.93                           | Horizontal | Average      |
| 7320.00            | 51.83                        | 74.00             | -22.17         | 1.50                         | 280                        | 46.24                      | 5.59                           | Horizontal | Peak         |
| 7320.00            | 41.61                        | 54.00             | -12.39         | 1.50                         | 280                        | 36.02                      | 5.59                           | Horizontal | Average      |
| 4880.00            | 47.15                        | 74.00             | -26.85         | 1.50                         | 210                        | 46.22                      | 0.93                           | Vertical   | Peak         |
| 4880.00            | 37.91                        | 54.00             | -16.09         | 1.50                         | 210                        | 36.98                      | 0.93                           | Vertical   | Averag       |
| 7320.00            | 50.91                        | 74.00             | -23.09         | 1.50                         | 210                        | 45.32                      | 5.59                           | Vertical   | Peak         |
| 7320.00            | 41.42                        | 54.00             | -12.58         | 1.50                         | 210                        | 35.83                      | 5.59                           | Vertical   | Averag       |

Remark:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)

2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) - Pre-Amplifier Factor(dB)

3. Margin value = Emission Level – Limit value

4. The emission levels of other frequencies are very lower than the limit and not show in test report.

5. Trily the antenna height (from 1m to 4m) and turntable angle (from 0 degrees to 360 degrees) at maximum reading are recorded.



| GFSK_2480MHz - 1Mbps |                              |                   |                |                          |                            |                          |                                |            |         |  |  |
|----------------------|------------------------------|-------------------|----------------|--------------------------|----------------------------|--------------------------|--------------------------------|------------|---------|--|--|
| Frequency<br>(MHz)   | Emssion<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV/m) | Correction<br>Factor<br>(dB/m) | Polarity   | Detecto |  |  |
| 2483.50              | 54.36                        | 74.00             | -19.64         | 1.50                     | 280                        | 59.11                    | -4.75                          | Horizontal | Peak    |  |  |
| 2483.50              | 43.84                        | 54.00             | -10.16         | 1.50                     | 280                        | 48.59                    | -4.75                          | Horizontal | Average |  |  |
| 4960.00              | 45.48                        | 74.00             | -28.52         | 1.50                     | 280                        | 45.24                    | 0.24                           | Horizontal | Peak    |  |  |
| 4960.00              | 35.93                        | 54.00             | -18.07         | 1.50                     | 280                        | 35.69                    | 0.24                           | Horizontal | Average |  |  |
| 7440.00              | 50.11                        | 74.00             | -23.89         | 1.50                     | 280                        | 44.29                    | 5.82                           | Horizontal | Peak    |  |  |
| 7440.00              | 39.42                        | 54.00             | -14.58         | 1.50                     | 280                        | 33.60                    | 5.82                           | Horizontal | Average |  |  |
| 2483.50              | 54.36                        | 74.00             | -19.64         | 1.50                     | 210                        | 59.11                    | -4.75                          | Vertical   | Peak    |  |  |
| 2483.50              | 43.94                        | 54.00             | -10.06         | 1.50                     | 210                        | 48.69                    | -4.75                          | Vertical   | Average |  |  |
| 4960.00              | 46.26                        | 74.00             | -27.74         | 1.50                     | 210                        | 46.02                    | 0.24                           | Vertical   | Peak    |  |  |
| 4960.00              | 36.52                        | 54.00             | -17.48         | 1.50                     | 210                        | 36.28                    | 0.24                           | Vertical   | Average |  |  |
| 7440.00              | 49.88                        | 74.00             | -24.12         | 1.50                     | 210                        | 44.06                    | 5.82                           | Vertical   | Peak    |  |  |
| 7440.00              | 39.94                        | 54.00             | -14.06         | 1.50                     | 210                        | 34.12                    | 5.82                           | Vertical   | Average |  |  |

Remark:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)

2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) - Pre-Amplifier Factor(dB)

3. Margin value = Emission Level – Limit value

4. The emission levels of other frequencies are very lower than the limit and not show in test report.

5. Trily the antenna height (from 1m to 4m) and turntable angle (from 0 degrees to 360 degrees) at maximum reading are recorded.



# 2.7. AC Power Line Conducted Emission

### 2.7.1. Limit of AC Power Line Conducted Emission

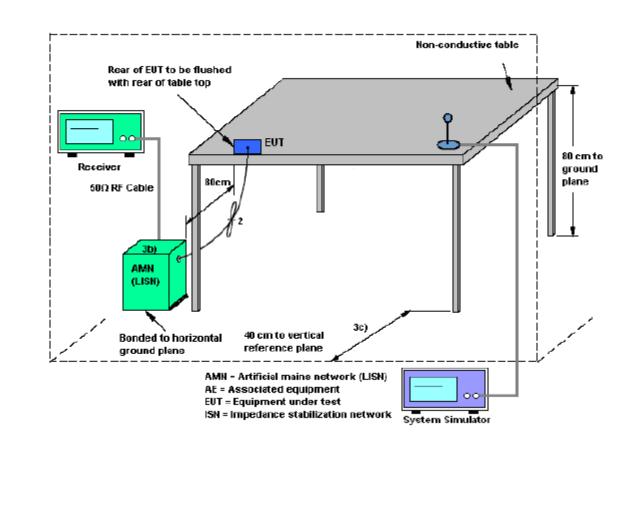
For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

|                       | Conducted Limit (dBµV) |          |  |  |  |
|-----------------------|------------------------|----------|--|--|--|
| Frequency range (MHz) | Quai-peak              | Average  |  |  |  |
| 0.15 - 0.50           | 66 to 56               | 56 to 46 |  |  |  |
| 0.50 - 5              | 56                     | 46       |  |  |  |
| 5 - 30                | 60                     | 50       |  |  |  |

#### 2.7.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

### 2.7.3. Test Setup





#### 2.7.4. Test Procedures

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 micrometry LISN should be used.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth =

9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector

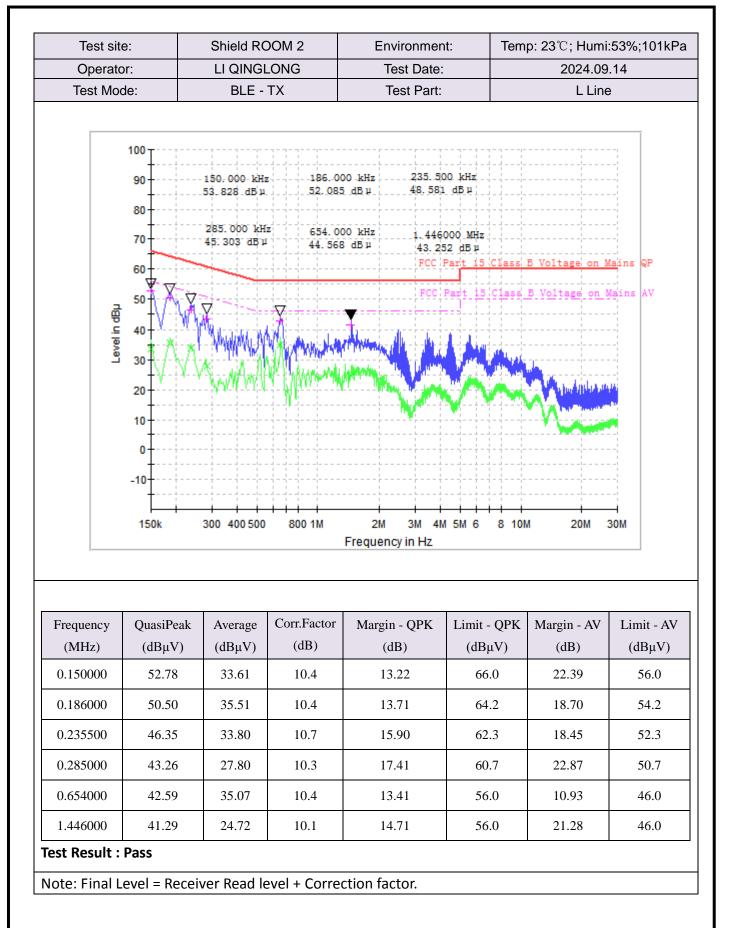
and Quasi-Peak Detector Function respectively.

#### 2.7.5. Test Results of Conducted Emission

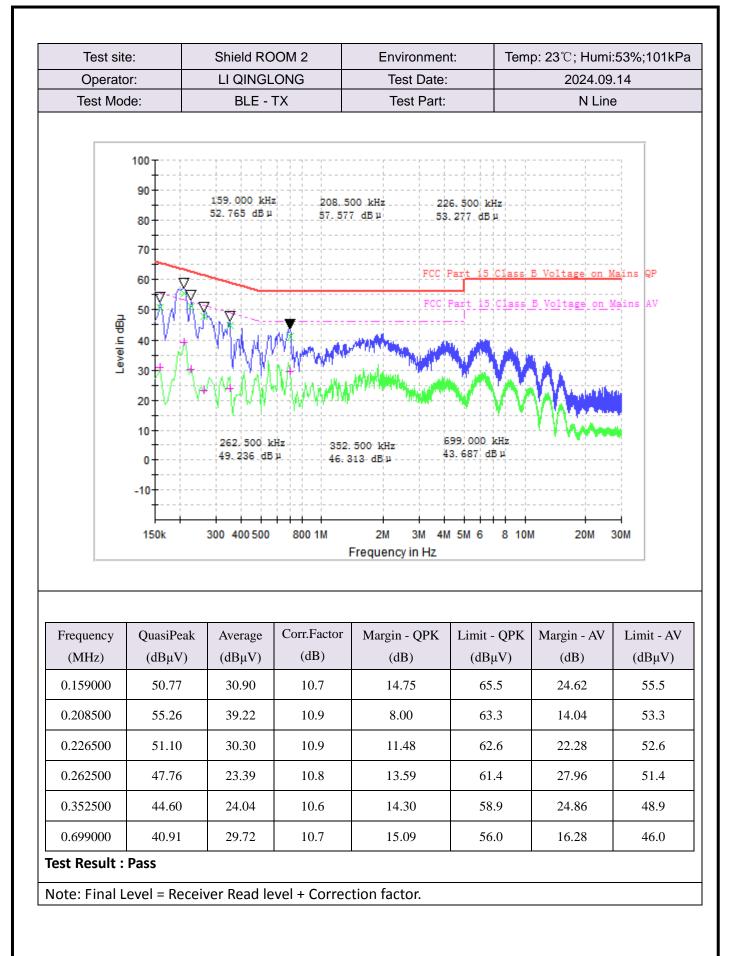
The EUT configuration of the emission tests is Bluetooth LE Link + USB Cable (Charging from Adapter).

All of the EUT Configure mode were tested and found 1Mbps\_2440MHz channel is the worst mode, the worst case is recorded in this report.











# 3. List of measuring equipment

| Item | Test Equipment                    | Manufacturer  | Model No.                 | Serial No. | Cal Date   | Due Date   |
|------|-----------------------------------|---------------|---------------------------|------------|------------|------------|
| 1    | 5M Anechoic Chamber               | Albatross     | SAC-5MAC<br>12.8x6.8x6.4m | A0304210   | 2022.06.09 | 2025.06.08 |
| 2    | EMI Test Receiver                 | ROHDE&SCHWARZ | ESW26                     | A180502935 | 2024.05.23 | 2025.05.22 |
| 3    | Loop Antenna                      | Schwarz beck  | HFH2-Z2                   | A0304220   | 2022.05.02 | 2025.05.01 |
| 4    | Broadband antenna<br>(30MHz~1GHz) | R&S           | HL562                     | A0304224   | 2023.06.08 | 2026.06.07 |
| 5    | EMI Horn Ant.<br>(1-18G)          | ETC           | MCTD-1209                 | A150402241 | 2023.05.16 | 2026.05.15 |
| 6    | Horn antenna<br>(18GHz~26.5GHz)   | AR            | AT4510                    | A0804450   | 2023.06.01 | 2026.05.31 |
| 7    | Amplifier 30M~1GHz                | MILMEGA       | 80RF1000-10004            | A140101634 | 2023.10.20 | 2024.10.19 |
| 8    | Amplifier 1G~18GHz                | MILMEGA       | AS0104R-800/400           | A160302517 | 2023.10.20 | 2024.10.19 |
| 9    | Spectrum Analyzer                 | KEYSIGHT      | N9030A                    | A160702554 | 2024.01.18 | 2025.01.17 |
| 10   | Test Receiver                     | R&S           | ESIB7                     | A0501375   | 2024.02.28 | 2025.02.27 |
| 11   | Broadband Ant.                    | ETC           | MCTD 2786                 | A150402240 | 2023.05.22 | 2026.05.21 |
| 12   | 3M Anechoic Chamber               | Albatross     | SAC-3MAC<br>9*6*6m        | A0412375   | 2024.02.27 | 2027.02.26 |
| 13   | Temperature<br>chamber            | ESPEC         | SU-642                    | A150802409 | 2024.02.22 | 2025.02.21 |
| 14   | Test Receiver                     | KEYSIGHT      | N9038A                    | A141202036 | 2024.06.05 | 2025.06.04 |
| 15   | LISN                              | ROHDE&SCHWARZ | ENV216                    | A140701847 | 2024.05.23 | 2025.05.22 |



# 4. Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2020. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of AC Power Line Conducted Emission Measurement (150kHz~30MHz)

| Measuring Uncertainty for a level of confidence of<br>95%(U=2Uc(y)) | 2.8dB      |  |  |  |  |  |  |
|---|------------|--|--|--|--|--|--|
| Incertainty of Radiated Emission Measurement (9kHz~30MHz)           |            |  |  |  |  |  |  |
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))    | 3.5dB      |  |  |  |  |  |  |
| Uncertainty of Radiated Emission Measurement (30M                   | /IHz~1GHz) |  |  |  |  |  |  |
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))    | 3.91dB     |  |  |  |  |  |  |
| Uncertainty of Radiated Emission Measurement (1GI                   | Hz~18GHz)  |  |  |  |  |  |  |
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))    | 4.5dB      |  |  |  |  |  |  |
| Uncertainty of Radiated Emission Measurement (180                   | GHz~40GHz) |  |  |  |  |  |  |
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))    | 4.9dB      |  |  |  |  |  |  |
| Uncertainty of RF Conducted Measurement (9kHz~4                     | 0GHz)      |  |  |  |  |  |  |
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))    | 1.2dB      |  |  |  |  |  |  |
| Uncertainty of Occupied Bandwidth Measurement                       |            |  |  |  |  |  |  |
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))    | 1.2%       |  |  |  |  |  |  |
|   |            |  |  |  |  |  |  |
|   |            |  |  |  |  |  |  |
|   |            |  |  |  |  |  |  |
|   |            |  |  |  |  |  |  |



# Appendix A

# **Duty Cycle**

# Test Result and Data

| Test Mode | Antenna | Frequency[MHz] | ON Time[ms] | Period[ms] | Duty Cycle[%] | DC Factor |
|-----------|---------|----------------|-------------|------------|---------------|-----------|
| BLE_1M    | Ant1    | 2402           | 0.40        | 1.25       | 32.00         | 4.95      |
| BLE_1M    | Ant2    | 2402           | 0.40        | 1.25       | 32.00         | 4.95      |
| BLE_1M    | Ant1    | 2440           | 0.40        | 1.25       | 32.00         | 4.95      |
| BLE_1M    | Ant2    | 2440           | 0.40        | 1.25       | 32.00         | 4.95      |
| BLE_1M    | Ant1    | 2480           | 0.40        | 1.25       | 32.00         | 4.95      |
| BLE_1M    | Ant2    | 2480           | 0.40        | 1.25       | 32.00         | 4.95      |
| BLE_2M    | Ant1    | 2402           | 0.21        | 0.63       | 33.33         | 4.77      |
| BLE_2M    | Ant2    | 2402           | 0.20        | 0.62       | 32.26         | 4.91      |
| BLE_2M    | Ant1    | 2440           | 0.21        | 0.63       | 33.33         | 4.77      |
| BLE_2M    | Ant2    | 2440           | 0.20        | 0.62       | 32.26         | 4.91      |
| BLE_2M    | Ant1    | 2480           | 0.20        | 0.62       | 32.26         | 4.91      |
| BLE_2M    | Ant2    | 2480           | 0.20        | 0.62       | 32.26         | 4.91      |

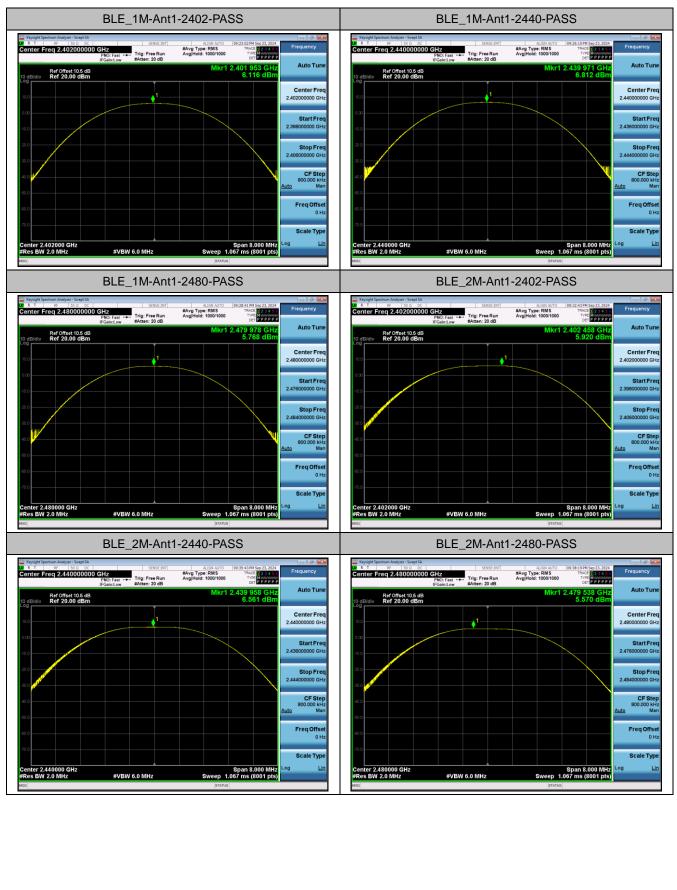


# Maximum conducted output power Test Result and Data

| Test Result and Data |         |           |             |             |           |       |            |         |  |  |
|----------------------|---------|-----------|-------------|-------------|-----------|-------|------------|---------|--|--|
| Teat Mada            | Antonno | Frequency | Peak Output | Power Limit | Ant. Gain | EIRP  | EIRP Limit | Vordiot |  |  |
| Test Mode Ante       | Antenna | [MHz]     | Power[dBm]  | [dBm]       | [dBi]     | [dBm] | [dBm]      | Verdict |  |  |
| BLE_1M               | Ant1    | 2402      | 6.12        | ≤30         | 0.8       | 6.92  | ≤36        | PASS    |  |  |
| BLE_1M               | Ant1    | 2440      | 6.81        | ≤30         | 0.8       | 7.61  | ≤36        | PASS    |  |  |
| BLE_1M               | Ant1    | 2480      | 5.77        | ≤30         | 0.8       | 6.57  | ≤36        | PASS    |  |  |
| BLE_2M               | Ant1    | 2402      | 5.92        | ≤30         | 0.8       | 6.72  | ≤36        | PASS    |  |  |
| BLE_2M               | Ant1    | 2440      | 6.56        | ≤30         | 0.8       | 7.36  | ≤36        | PASS    |  |  |
| BLE_2M               | Ant1    | 2480      | 5.57        | ≤30         | 0.8       | 6.37  | ≤36        | PASS    |  |  |



# **Test Graphs**





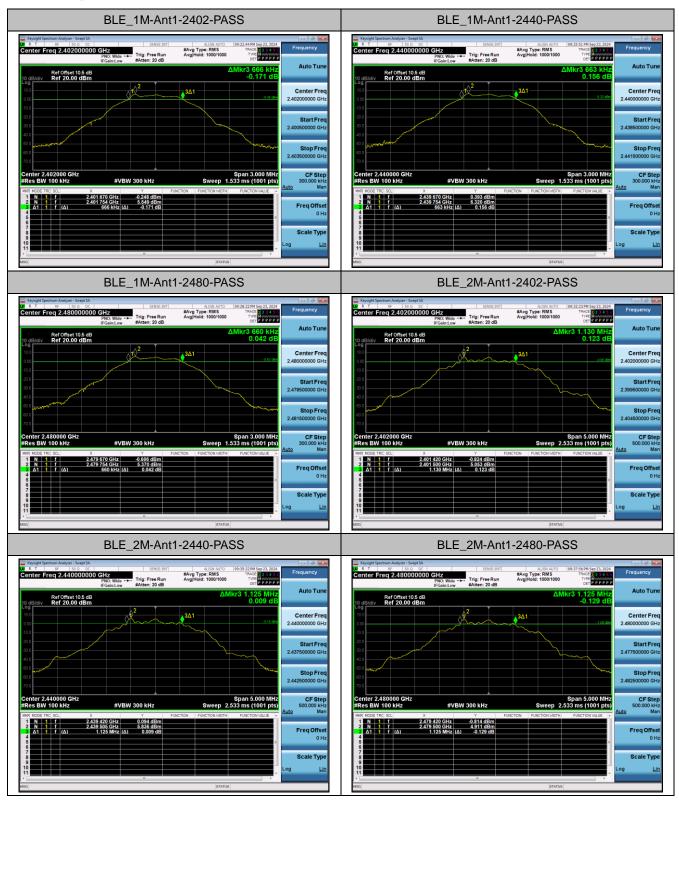
# 6dB Bandwidth

# **Test Result and Data**

| Test Mode | Antenna | Frequency[MHz] | 6dB BW [MHz] | Limit[MHz] | Verdict |
|-----------|---------|----------------|--------------|------------|---------|
| BLE_1M    | Ant1    | 2402           | 0.666        | 0.5        | PASS    |
| BLE_1M    | Ant1    | 2440           | 0.663        | 0.5        | PASS    |
| BLE_1M    | Ant1    | 2480           | 0.660        | 0.5        | PASS    |
| BLE_2M    | Ant1    | 2402           | 1.130        | 0.5        | PASS    |
| BLE_2M    | Ant1    | 2440           | 1.125        | 0.5        | PASS    |
| BLE_2M    | Ant1    | 2480           | 1.125        | 0.5        | PASS    |



# **Test Graphs**



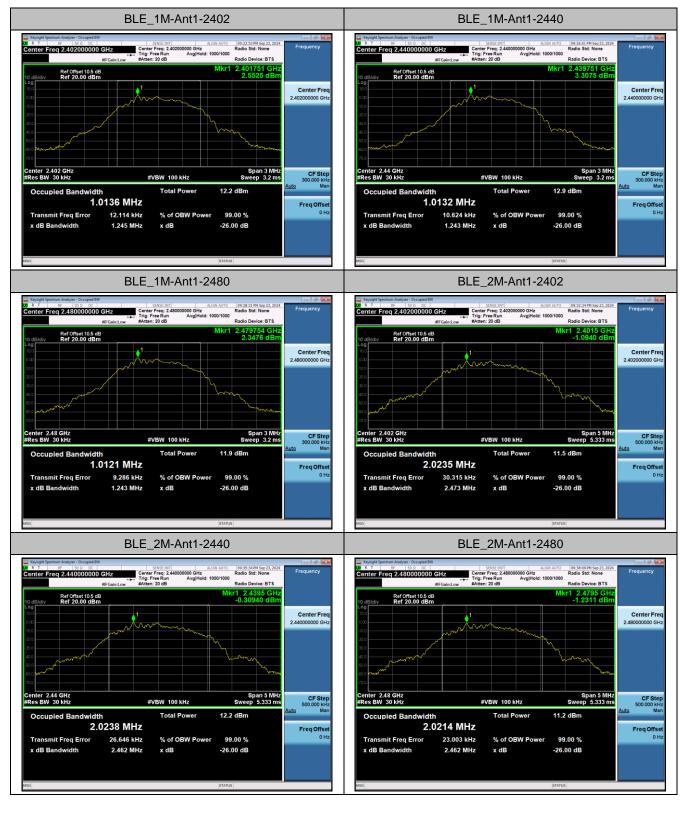


# 99% Occupied Channel Bandwidth Test Result and Data

| Test Result and Data |         |                |           |         |  |  |  |  |
|----------------------|---------|----------------|-----------|---------|--|--|--|--|
| Test Mode            | Antenna | Frequency[MHz] | OCB [MHz] | Verdict |  |  |  |  |
| BLE_1M               | Ant1    | 2402           | 1.0136    | PASS    |  |  |  |  |
| BLE_1M               | Ant1    | 2440           | 1.0132    | PASS    |  |  |  |  |
| BLE_1M               | Ant1    | 2480           | 1.0121    | PASS    |  |  |  |  |
| BLE_2M               | Ant1    | 2402           | 2.0235    | PASS    |  |  |  |  |
| BLE_2M               | Ant1    | 2440           | 2.0238    | PASS    |  |  |  |  |
| BLE_2M               | Ant1    | 2480           | 2.0214    | PASS    |  |  |  |  |



# **Test Graphs**



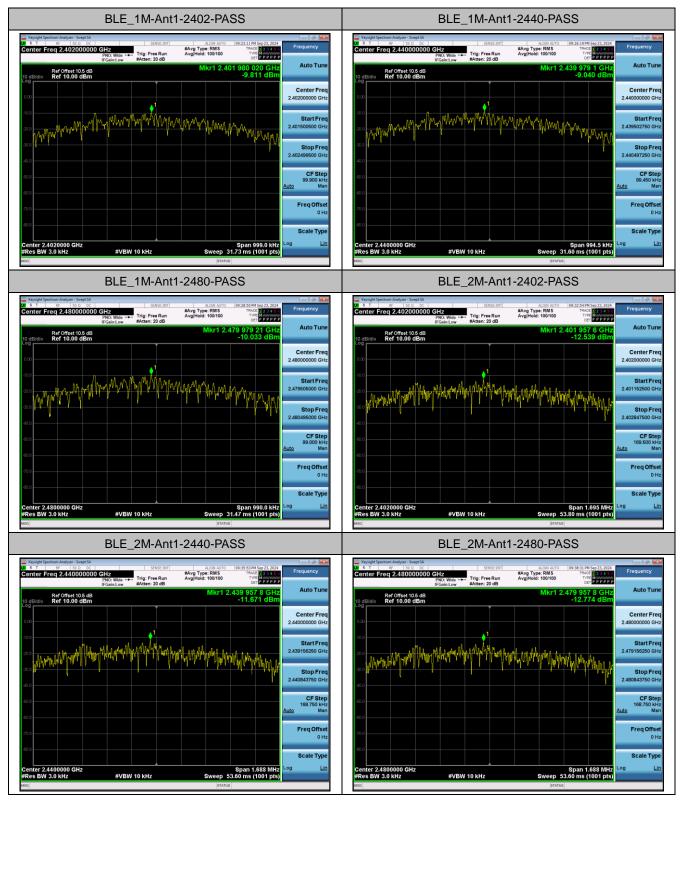


# Maximum power spectral density Test Result and Data

| Itst Kesuit | Test Result and Data |                 |                   |                  |         |  |  |  |  |
|-------------|----------------------|-----------------|-------------------|------------------|---------|--|--|--|--|
| Test Mode   | Antenna              | Frequency [MHz] | Result [dBm/3kHz] | Limit [dBm/3kHz] | Verdict |  |  |  |  |
| BLE_1M      | Ant1                 | 2402            | -9.81             | ≤8.00            | PASS    |  |  |  |  |
| BLE_1M      | Ant1                 | 2440            | -9.04             | ≤8.00            | PASS    |  |  |  |  |
| BLE_1M      | Ant1                 | 2480            | -10.03            | ≤8.00            | PASS    |  |  |  |  |
| BLE_2M      | Ant1                 | 2402            | -12.54            | ≤8.00            | PASS    |  |  |  |  |
| BLE_2M      | Ant1                 | 2440            | -11.67            | ≤8.00            | PASS    |  |  |  |  |
| BLE_2M      | Ant1                 | 2480            | -12.77            | ≤8.00            | PASS    |  |  |  |  |

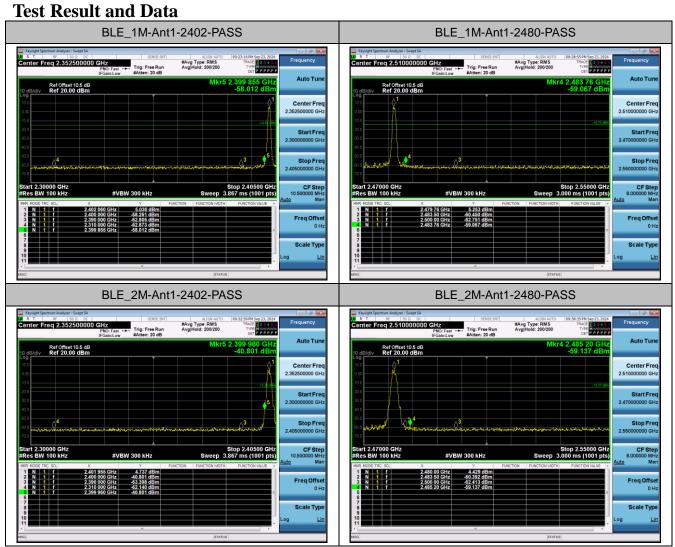


# **Test Graphs**





# Conducted Band Edges





#### **Test Result and Data** BLE\_1M-Ant1-2402-0~Reference-PASS BLE\_1M-Ant1-2402-30~25000-PASS Regardle Spectral mergers R T RF 50.0 DC Center Freq 2.402000000 GHz PNO.Wide → Trig: Free Run Atten: 30 dB #Avg Type: RMS Avg|Hold: 200/200 #Avg Type: RMS Avg Hold: 30/30 12345 MWW/WWW Auto Tun Auto Tur 01 754 GI 5.515 dB Ref Offset 10.5 dB Ref 30.00 dBm Ref Offset 10.5 dB Ref 20.00 dBm Center Fr Center Fre 12.51 Start Fr Start Fre Stop Fre topl CF Step CF Step tart 0.03 GHz Res BW 100 kHz Stop 25.00 G Sweep 920.0 ms (40001 p #VBW 300 kHz 2.401 5 GHz 24.344 5 GHz 4.754 dB -52.964 dB N 1 1 N 1 f Freq Offse Freq Offs 0 F 01 Scale Type Scale Type Lit Span 3.000 M Sweep 1.533 ms (1001 p #VBW 300 kHz BLE\_1M-Ant1-2440-0~Reference-PASS BLE\_1M-Ant1-2440-30~25000-PASS #Avg Type: RMS Avg|Hold: 30/30 nter Freq 2.4400 #Avg Type: RMS Avg|Hold: 200/200 nter Freq 12.5150000 Trig: Free Run 123456 MW//////// Trig: Free Run Auto Tur 39 760 G 6.285 dE Ref Offset 10.5 dB Ref 30.00 dBm Ref Offset 10.5 dB Ref 20.00 dBm Center Fre Center Free Start Fre Start Fre Stop Fre Stop 25.00 G Sweep 920.0 ms (40001 p CF Step itart 0.03 GHz Res BW 100 kHz CF Step 300.000 kH #VBW 300 kH 2.439 6 GHz 23.719 0 GHz 6.262 dB -52.921 dB Freq Offse Freq Offse 0 H 0 H Scale Type Scale Type Lit 2.440000 GHz 3W 100 kHz Lir Span 3.000 MHz Sweep 1.533 ms (1001 pts) #VBW 300 kHz BLE\_1M-Ant1-2480-0~Reference-PASS BLE\_1M-Ant1-2480-30~25000-PASS Regard Spectra Annyck Stage CC R. T. R<sup>C</sup> 500 DC Center Freq 2.4800000000 GHz PNO: Wide → Trig: Free Run Atten: 30 dB Center Freq 12.515000000 GHz PNO: Fast → Call and the factor of the f #Avg Type: RMS Avg[Hold: 30/30 #Avg Type: RMS Avg|Hold: 200/200 12345 MWWWW PPPPP Auto Tur Auto Tur 79 751 GI 5.331 dB Ref Offset 10.5 dB Ref 30.00 dBm Ref Offset 10.5 dB Ref 20.00 dBm Center Fr Center Fre 12.515000000 GH Start Fr Start Fre Stop Fre tart 0.03 GHz Res BW 100 kHz Stop 25.00 C eep 920.0 ms (40001 CF Step CF S #VBW 300 kH Sw 2.480 2 GHz 23.773 3 GHz 3.815 dB -52.324 dB Freq Offse Freq Offs 01 0 F Scale Type Scale Type r 2.480000 GHz BW 100 kHz Li Lit Span 3.000 MHz Sweep 1.533 ms (1001 pts) #VBW 300 kHz

### **Conducted Spurious Emission Test Result and Data**

