# RF MEASUREMENT REPORT

| | |
|---|---|
| **FCC ID:** | 2APPT-314 |
| **Applicant:** | Airthings ASA |
| **Product:** | AT-314 |
| **Model No.:** | 314 |
| **Brand Name:** | Airthings |
| **FCC Classification:** | Digital Transmission System (DTS) |
| **FCC Rule Part(s):** | Part 15 Subpart C (Section 15.247) |
| **Result:** | Complies |
| **Received Date:** | 2023-07-03 |
| **Test Date:** | 2023-07-24 ~ 2023-07-28 |

**Reviewed By:** Sunny Sun

**Approved By:** Robin Wu

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

The test results relate only to the samples tested.
This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.
The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

## Revision History

| Report No. | Version | Description | Issue Date | Note |
|---|---|---|---|---|
| 2307RSU008-U4 | V01 | Initial Report | 2023-08-09 | Valid |
| | | | | |

CONTENTS

Description Page

**1. General Information .....5**

1.1. Applicant ..... 5
1.2. Manufacturer ..... 5
1.3. Testing Facility ..... 5
1.4. Product Information ..... 6
1.5. Radio Specification under Test ..... 6
1.6. Working Frequencies ..... 7

**2. Test Configuration .....8**

2.1. Test Mode ..... 8
2.2. Test System Connection Diagram ..... 8
2.3. Test Software ..... 9
2.4. Applied Standards ..... 9
2.5. Test Environment Condition ..... 9

**2. Antenna Requirements .....10**

**3. Measuring Instrument .....11**

**4. Decision Rules and Measurement Uncertainty .....12**

4.1. Decision Rules ..... 12
4.2. Measurement Uncertainty ..... 12

**5. Test Result .....13**

5.1. Summary ..... 13
5.2. 6dB Bandwidth Measurement ..... 14
5.2.1. Test Limit ..... 14
5.2.2. Test Procedure ..... 14
5.2.3. Test Setting ..... 14
5.2.4. Test Setup ..... 14
5.2.5. Test Result ..... 14
5.3. Output Power Measurement ..... 15
5.3.1. Test Limit ..... 15
5.3.2. Test Procedure ..... 15
5.3.3. Test Setting ..... 15
5.3.4. Test Setup ..... 15
5.3.5. Test Result ..... 15
5.4. Power Spectral Density Measurement ..... 16
5.4.1. Test Limit ..... 16
5.4.2. Test Procedure ..... 16

5.4.3. Test Setting ..... 16
5.4.4. Test Setup ..... 16
5.4.5. Test Result ..... 16
5.5. Conducted Band Edge and Out-of-Band Emissions Measurement ..... 17
5.5.1. Test Limit ..... 17
5.5.2. Test Procedure ..... 17
5.5.3. Test Settitng ..... 17
5.5.4. Test Setup ..... 17
5.5.5. Test Result ..... 18
5.6. Radiated Spurious Emission Measurement ..... 19
5.6.1. Test Limit ..... 19
5.6.2. Test Procedure ..... 19
5.6.3. Test Setting ..... 19
5.6.4. Test Setup ..... 21
5.6.5. Test Result ..... 22
5.7. Radiated Restricted Band Edge Measurement ..... 23
5.7.1. Test Limit ..... 23
5.7.2. Test Procedure ..... 24
5.7.3. Test Setting ..... 24
5.7.4. Test Setup ..... 25
5.7.5. Test Result ..... 25
5.8. AC Conducted Emissions Measurement ..... 26
5.8.1. Test Limit ..... 26
5.8.2. Test Setup ..... 26
5.8.3. Test Result ..... 26

**Appendix A - Test Result ..... 27**

A.1 Duty Cycle Test Result ..... 27
A.2 6dB Bandwidth Test Result ..... 28
A.3 Output Power Test Result ..... 30
A.4 Power Spectral Density Test Result ..... 31
A.5 Conducted Band Edge and Out-of-Band Emissions Test Result ..... 33
A.6 Radiated Spurious Emission Test Result ..... 37
A.7 Radiated Restricted Band Edge Test Result ..... 41

**Appendix B - Test Setup Photograph ..... 57**

**Appendix C - EUT Photograph ..... 58**

# 1. General Information

## 1.1. Applicant

Airthings ASA

Wergelandsveien 7, 0167 Oslo, Norway

## 1.2. Manufacturer

4Mod Technology

4 rue de la Cornouaille, 44300 Nantes, France

## 1.3. Testing Facility

| | |
|---|---|
| ☒ | **Test Site – MRT Suzhou Laboratory** |
| | **Laboratory Location (Suzhou - Wuzhong)**<br>D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China<br>**Laboratory Location (Suzhou - SIP)**<br>4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China |
| | **Laboratory Accreditations** |
| | A2LA: 3628.01 CNAS: L10551<br>FCC: CN1166 ISED: CN0001<br>VCCI: ☐R-20025 ☐G-20034 ☐C-20020 ☐T-20020<br>☐R-20141 ☐G-20134 ☐C-20103 ☐T-20104 |
| ☐ | **Test Site – MRT Shenzhen Laboratory** |
| | **Laboratory Location (Shenzhen)**<br>1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China |
| | **Laboratory Accreditations** |
| | A2LA: 3628.02 CNAS: L10551<br>FCC: CN1284 ISED: CN0105 |
| ☐ | **Test Site – MRT Taiwan Laboratory** |
| | **Laboratory Location (Taiwan)**<br>No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) |
| | **Laboratory Accreditations** |
| | TAF: L3261-190725<br>FCC: 291082, TW3261 ISED: TW3261 |

### 1.4. Product Information

| | |
|---|---|
| Product | AT-314 |
| Model No. | 314 |
| EUT Identification No. | CERT_C9_13 |
| Bluetooth Specification | v5.1 Single Mode (BLE) |
| SmartLink Specification | 905.6 ~ 926MHz |
| Sidewalk Specification | 902.2 ~ 915.8MHz |
| Antenna Information | Refer to clause 1.5. |
| Operating Temp. | -30 ~ 60°C |
| Working Voltage | 2x AA batteries giving max 3.6V |
| Note: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer. | |

### 1.5. Radio Specification under Test

| | |
|---|---|
| Bluetooth Frequency | 2402 ~ 2480MHz |
| Channel Number | 40 |
| Type of modulation | GFSK |
| Data Rate | 1Mbps & 2Mbps |
| Antenna Type | Fixed Internal Antenna |
| Antenna Gain | 2.8 dBi |

### 1.6. Working Frequencies

| Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---|---|---|---|---|---|
| 00 | 2402 MHz | 01 | 2404 MHz | 02 | 2406 MHz |
| 03 | 2408 MHz | 04 | 2410 MHz | 05 | 2412 MHz |
| 06 | 2414 MHz | 07 | 2416 MHz | 08 | 2418 MHz |
| 09 | 2420 MHz | 10 | 2422 MHz | 11 | 2424 MHz |
| 12 | 2426 MHz | 13 | 2428 MHz | 14 | 2430 MHz |
| 15 | 2432 MHz | 16 | 2434 MHz | 17 | 2436 MHz |
| 18 | 2438 MHz | 19 | 2440 MHz | 20 | 2442 MHz |
| 21 | 2444 MHz | 22 | 2446 MHz | 23 | 2448 MHz |
| 24 | 2450 MHz | 25 | 2452 MHz | 26 | 2454 MHz |
| 27 | 2456 MHz | 28 | 2458 MHz | 29 | 2460 MHz |
| 30 | 2462 MHz | 31 | 2464 MHz | 32 | 2466 MHz |
| 33 | 2468 MHz | 34 | 2470 MHz | 35 | 2472 MHz |
| 36 | 2474 MHz | 37 | 2476 MHz | 38 | 2478 MHz |
| 39 | 2480 MHz | -- | -- | -- | -- |

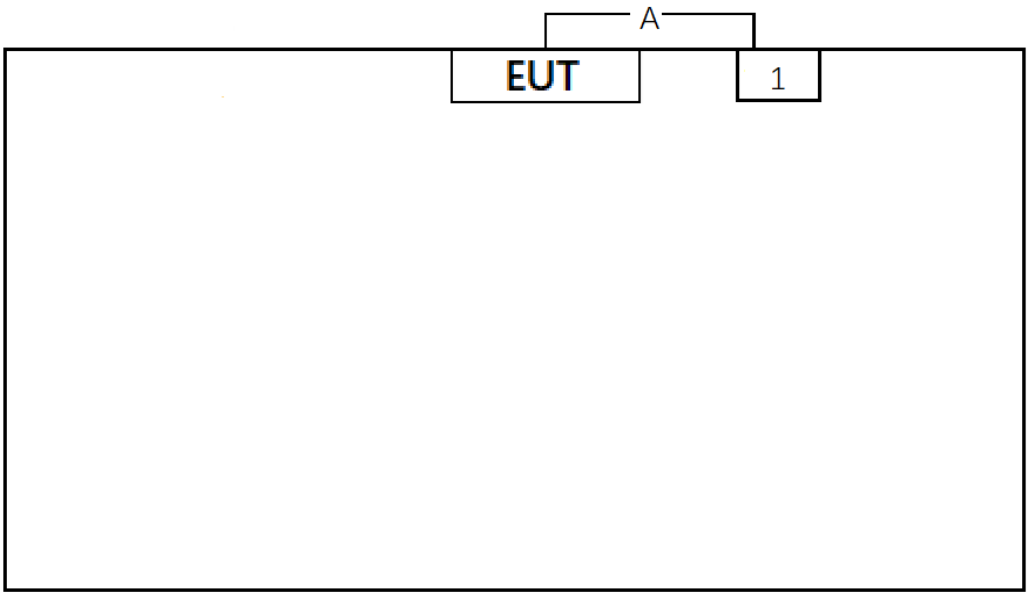
## 2. Test ConfigurationTest Mode

| |
|---|
| Mode 1: Transmit by BLE-1Mbps |
| Mode 2: Transmit by BLE-2Mbps |

### 2.2. Test System Connection Diagram

The device was tested per the guidance ANSI C63.10: 2013 was used to reference the appropriate EUT setup for radiated emissions testing.

Connection Diagram – Radiated Emission testing




| Cable Type | | Cable Spec. | Length |
|---|---|---|---|
| A | USB Cable | Shielding | 1.5m |
| Product | | Manufacturer | Model No. |
| 1 | Notebook | DELL | DELL Inspiron 5359 |

### 2.3. Test Software

The test utility software used during testing was “IPOP”, and the version was 4.1.

### 2.4. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15.247
- KDB 558074 D01v05r02
- ANSI C63.10-2013

### 2.5. Test Environment Condition

| | |
|---|---|
| Ambient Temperature | 15 ~ 35°C |
| Relative Humidity | 20 ~75%RH |

## 2. Antenna Requirements

**Excerpt from §15.203 of the FCC Rules/Regulations:**

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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."

- The antenna of the device is **permanently attached.**

**Conclusion:**

The unit complies with the requirement of §15.203.

## 3. Measuring Instrument

| Instrument | Manufacturer | Model No. | Asset No. | Cali. Interval | Cali. Due Date | Test Site |
|---|---|---|---|---|---|---|
| EMI Test Receiver | R&S | ESR7 | MRTSUE06001 | 1 year | 2023-12-28 | WZ-AC1 |
| Horn Antenna | Schwarzbeck | BBHA 9120D | MRTSUE06023 | 1 year | 2023-08-22 | WZ-AC1 |
| Preamplifier | Agilent | 83017A | MRTSUE06076 | 1 year | 2024-05-07 | WZ-AC1 |
| TRILOG Antenna | Schwarzbeck | VULB 9168 | MRTSUE06172 | 1 year | 2024-06-09 | WZ-AC1 |
| Anechoic Chamber | TDK | WZ-AC1 | MRTSUE06212 | 1 year | 2024-04-20 | WZ-AC1 |
| Thermohygrometer | testo | 608-H1 | MRTSUE06403 | 1 year | 2024-05-31 | WZ-AC1 |
| Signal Analyzer | Keysight | N9010B | MRTSUE06607 | 1 year | 2023-12-28 | WZ-AC1 |
| Thermohygrometer | testo | 608-H1 | MRTSUE11039 | 1 year | 2023-11-01 | WZ-AC1 |
| Loop Antenna | Schwarzbeck | FMZB 1519 | MRTSUE06025 | 1 year | 2023-09-29 | WZ-AC1 |
| Horn Antenna | Schwarzbeck | BBHA 9170 | MRTSUE06597 | 1 year | 2023-11-05 | WZ-AC1 |
| Preamplifier | EMCI | EMC184045SE | MRTSUE06640 | 1 year | 2024-01-12 | WZ-AC1 |
| Signal Analyzer | Keysight | N9010B | MRTSUE06457 | 1 year | 2024-05-23 | WZ-SR5 |
| Thermohygrometer | testo | 608-H1 | MRTSUE06402 | 1 year | 2024-05-31 | WZ-SR5 |
| Shielding Room | HUAMING | WZ-SR5 | MRTSUE06442 | N/A | N/A | WZ-SR5 |
| USB Power Sensor | Keysight | U2021XA | MRTSUE06446 | 1 year | 2024-05-23 | WZ-SR5 |
| Signal Analyzer | Agilent | N9020A | MRTSUE06106 | 1 year | 2024-02-29 | WZ-SR5 |
| Attenuator | MVE | MVE2213 | MRTSUE11093 | 1 year | 2024-06-08 | WZ |

| Software | Version | Function |
|---|---|---|
| EMI Software | V3.0.0 | EMI Test Software |
| Controller_MF 7802 | 2.03C | RE Antenna & Turntable |
| Agilent Power Analyzer/Agilent Power Panel | V R03.09.00 | Power |

# 4. Decision Rules and Measurement Uncertainty

## 4.1. Decision Rules

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2.

(Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

## 4.2. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

| AC Conducted Emission Measurement |
|---|
| Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):<br>9kHz~150kHz: 3.58dB<br>150kHz~30MHz: 3.20dB |
| **Radiated Disturbance** |
| The maximum measurement uncertainty is evaluated as:<br>Coaxial: 9kHz~30MHz: 2.59dB<br>Coplanar: 9kHz~30MHz: 2.60dB<br>Horizontal: 30MHz~200MHz: 3.85dB<br>200MHz~1GHz: 4.36dB<br>1GHz~40GHz: 4.98dB<br>Vertical: 30MHz~200MHz: 4.06dB<br>200MHz~1GHz: 5.28dB<br>1GHz~40GHz: 4.91dB |
| **Spurious Emissions, Conducted** |
| Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):<br>2.3dB |
| **Output Power** |
| Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):<br>1.5dB |
| **Power Spectrum Density** |
| Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):<br>2.3dB |
| **Occupied Bandwidth** |
| Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):<br>3.2% |

# 5. Test Result

## 5.1. Summary

| FCC Section(s) | Test Description | Test Condition | Verdict |
|---|---|---|---|
| 15.247(a)(2) | 6dB Bandwidth | Conducted | Pass |
| 15.247(b)(3) | Output Power | | Pass |
| 15.247(e) | Power Spectral Density | | Pass |
| 15.247(d) | Band Edge / Out-of-Band Emissions | | Pass |
| 15.205<br>15.209 | General Field Strength<br>(Restricted Bands and Radiated Emission) | Radiated | Pass |
| 15.207 | AC Conducted Emissions<br>150kHz - 30MHz | Line Conducted | N/A |

**Notes:**

1. The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.
3. “N/A” means that this item is not applicable, and the detail information refer to relevant section.

## 5.2. 6dB Bandwidth Measurement

### 5.2.1. Test Limit

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

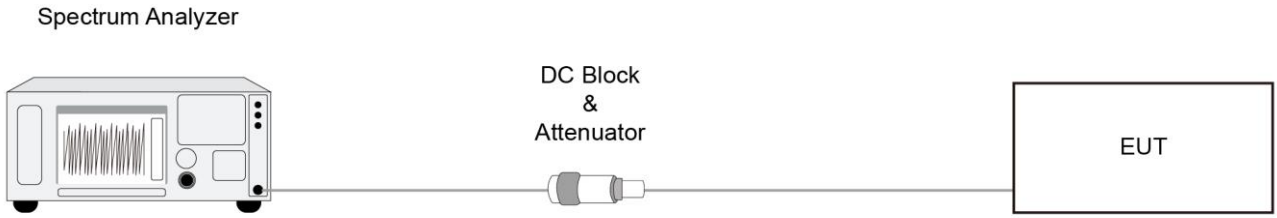
### 5.2.2. Test Procedure

ANSI C63.10 - 2013 - Section 11.8

### 5.2.3. Test Setting

1. The Spectrum's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. Set RBW = 100 kHz
3. VBW ≥ 3 × RBW
4. Detector = Peak
5. Trace mode = Max hold
6. Sweep = Auto couple
7. Allow the trace to stabilize

### 5.2.4. Test Setup




### 5.2.5. Test Result

Refer to Appendix A.2.

## 5.3. Output Power Measurement

### 5.3.1. Test Limit

The maximum output power shall be less 1 Watt (30dBm).

The conducted output power limit specified in paragraph FCC Part 15.247(b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. 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 FCC Part 15.247(b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### 5.3.2. Test Procedure

ANSI C63.10 - 2013 - Section 11.9.1.3(Peak Power)

ANSI C63.10 - 2013 - Section 11.9.2.3.2(Average Power)

### 5.3.3. Test Setting

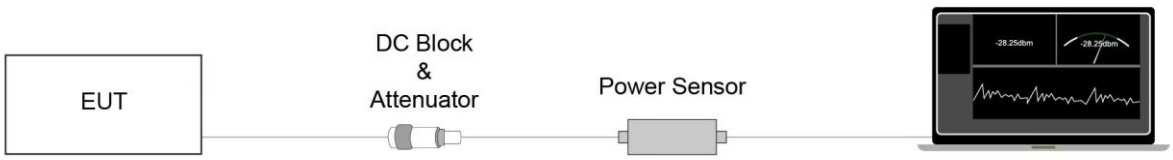
**Method PKPM1 (Peak Power Measurement of Signals with DTS BW ≤ 50MHz)**

Peak power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The pulse sensor employs a VBW = 50MHz so this method was only used for signals whose DTS bandwidth was less than or equal to 50MHz.

**Average Power Measurement**

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

### 5.3.4. Test Setup




### 5.3.5. Test Result

Refer to Appendix A.3.

## 5.4. Power Spectral Density Measurement

### 5.4.1. Test Limit

The maximum permissible power spectral density is 8dBm in any 3 kHz band.

The same method of determining the conducted output power shall be used to determine the power spectral density.

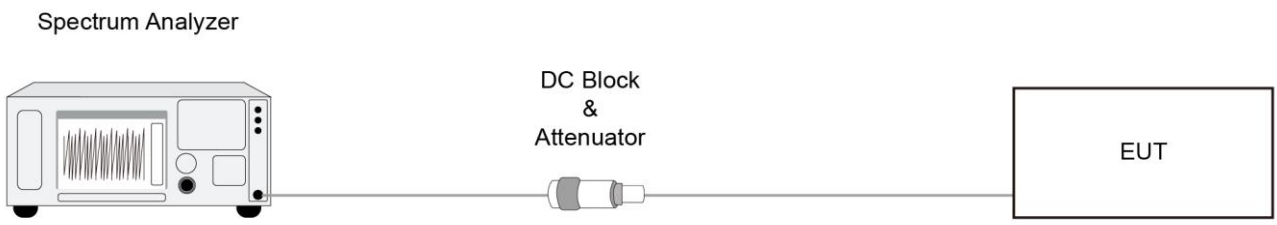
### 5.4.2. Test Procedure

ANSI C63.10-2013 Section 11.10.2

### 5.4.3. Test Setting

1. Analyzer was set to the center frequency of the DTS channel under investigation
2. Span = 1.5 times the DTS channel bandwidth
3. RBW = 3kHz
4. VBW = 10kHz
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Trace was allowed to stabilize

### 5.4.4. Test Setup




### 5.4.5. Test Result

Refer to Appendix A.4.

## 5.5. Conducted Band Edge and Out-of-Band Emissions Measurement

### 5.5.1. Test Limit

The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100 kHz bandwidth per the PSD procedure.

### 5.5.2. Test Procedure

ANSI C63.10-2013 - Section 11.11

### 5.5.3. Test Settitng

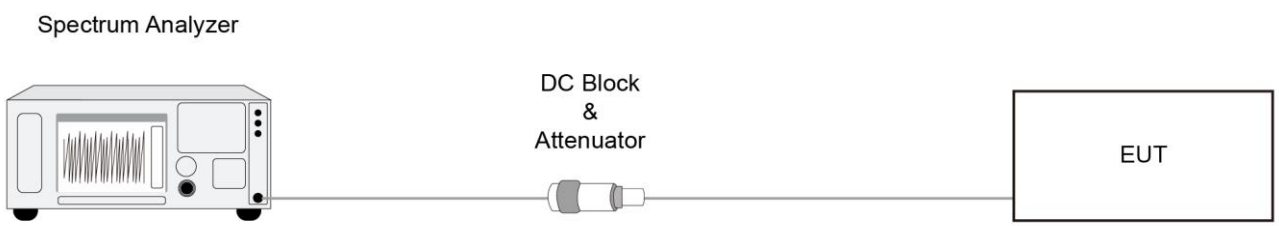
**Reference level measurement**

1. Set instrument center frequency to DTS channel center frequency
2. Set the span to ≥ 1.5 times the DTS bandwidth
3. Set the RBW = 100 kHz
4. Set the VBW ≥ 3 x RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize

**Emission level measurement**

1. Set the center frequency and span to encompass frequency range to be measured
2. RBW = 100kHz
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

### 5.5.4. Test Setup



### 5.5.5. Test Result

Refer to Appendix A.5.

## 5.6. Radiated Spurious Emission Measurement

### 5.6.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

| FCC Part 15 Subpart C Paragraph 15.209 | | |
|---|---|---|
| Frequency [MHz] | Field Strength [uV/m] | Measured Distance [Meters] |
| 0.009 - 0.490 | 2400/F (kHz) | 300 |
| 0.490 - 1.705 | 24000/F (kHz) | 30 |
| 1.705 - 30 | 30 | 30 |
| 30 - 88 | 100 | 3 |
| 88 - 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

### 5.6.2. Test Procedure

ANSI C63.10 - 2013 - Section 11.11 & 11.12

ANSI C63.10 - 2013 - Section 6.3 (General Requirements)

ANSI C63.10 - 2013 - Section 6.4 (Standard test method below 30MHz)

ANSI C63.10 - 2013 - Section 6.5 (Standard test method above 30MHz to 1GHz)

ANSI C63.10 - 2013 - Section 6.6 (Standard test method above 1GHz)

### 5.6.3. Test Setting

**Table 1 - RBW as a function of frequency**

| Frequency | RBW |
|---|---|
| 9 ~ 150 kHz | 200 ~ 300 Hz |
| 0.15 ~ 30 MHz | 9 ~ 10 kHz |
| 30 ~ 1000 MHz | 100 ~ 120 kHz |
| > 1000MHz | 1MHz |

**Quasi-Peak Measurements below 1GHz**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as specified in Table 1
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

**Peak Measurements above 1GHz**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

**Average Measurements above 1GHz (Method VB)**

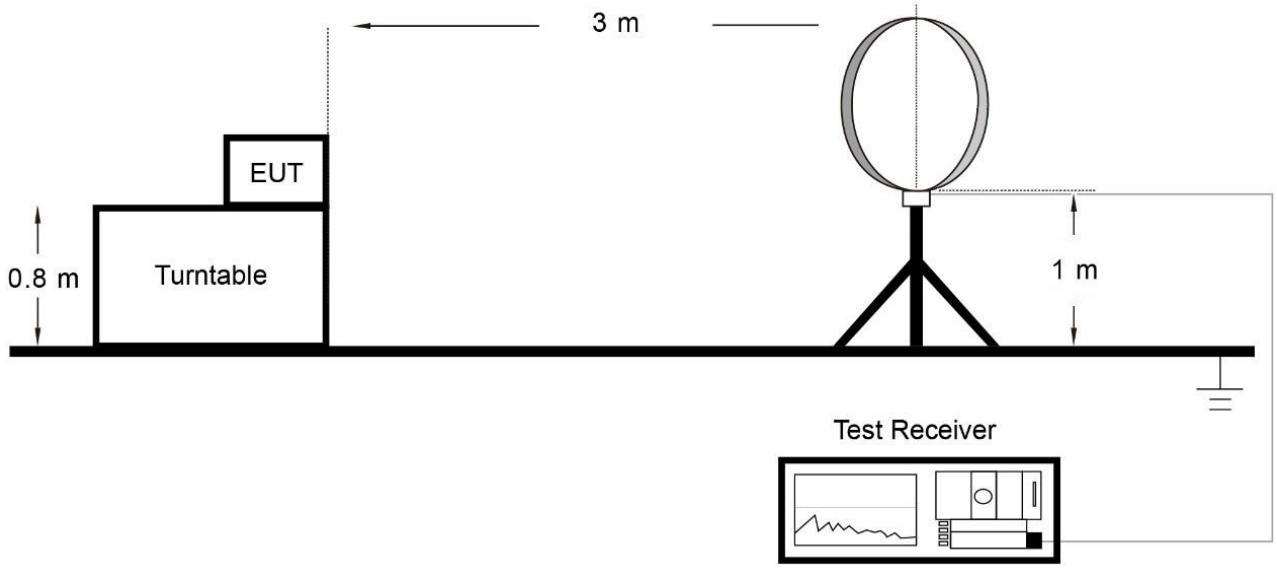
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10 Hz.

If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.

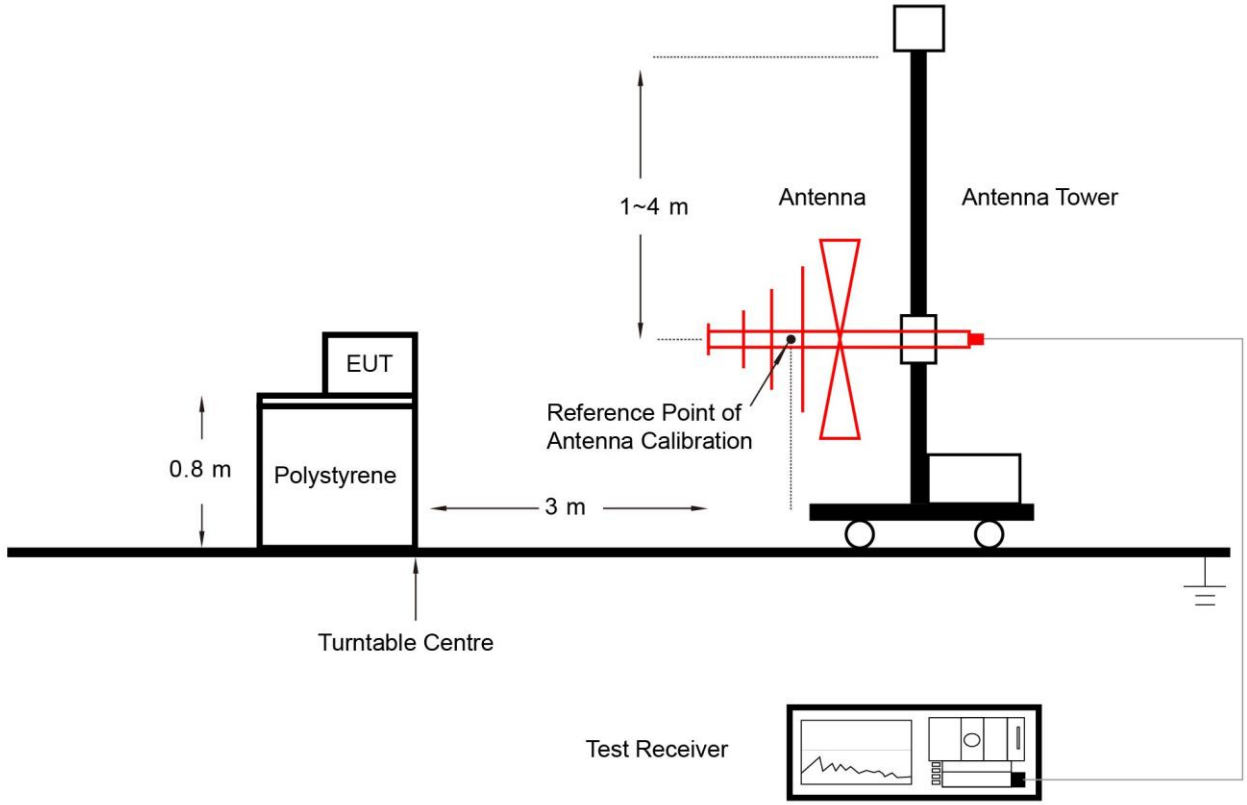
4. Detector = Peak
5. Sweep time = auto
6. Trace mode = max hold
7. Trace was allowed to stabilize

### 5.6.4. Test Setup

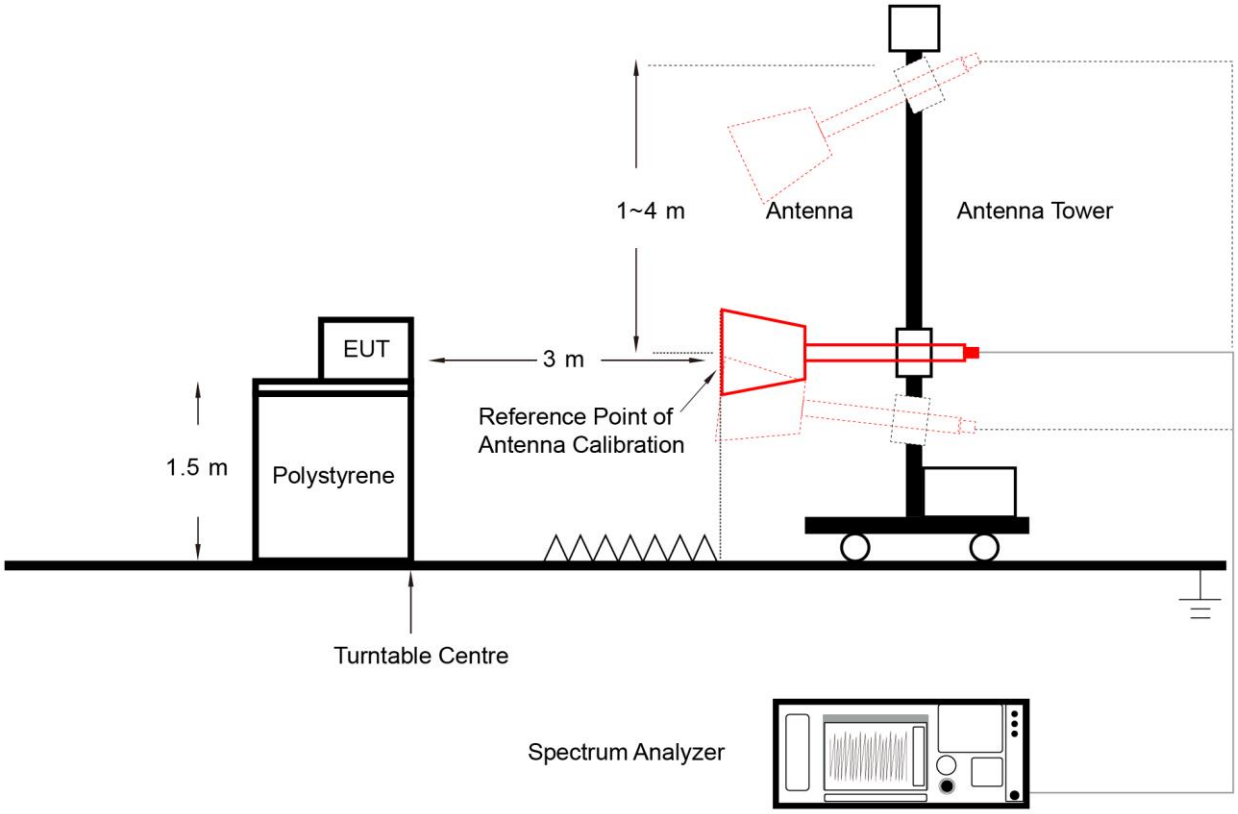
Below 30MHz Test Setup:




Below 1GHz Test Setup:



Above 1GHz Test Setup:




### 5.6.5. Test Result

Refer to Appendix A.6.

## 5.7. Radiated Restricted Band Edge Measurement

### 5.7.1. Test Limit

**For 15.205 requirement:**

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

| Frequency (MHz) | Frequency (MHz) | Frequency (MHz) | Frequency (GHz) |
|---|---|---|---|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| [1] 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 | ([2]) |
| 13.36 - 13.41 | -- | -- | -- |

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

| FCC Part 15 Subpart C Paragraph 15.209 | | |
|---|---|---|
| Frequency [MHz] | Field Strength [uV/m] | Measured Distance [Meters] |
| 0.009 - 0.490 | 2400/F (kHz) | 300 |
| 0.490 - 1.705 | 24000/F (kHz) | 30 |
| 1.705 - 30 | 30 | 30 |
| 30 - 88 | 100 | 3 |
| 88 - 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

### 5.7.2. Test Procedure

ANSI C63.10-2013 Section 6.3 & 6.6 & 11.13

### 5.7.3. Test Setting

**Peak Field Strength Measurements**

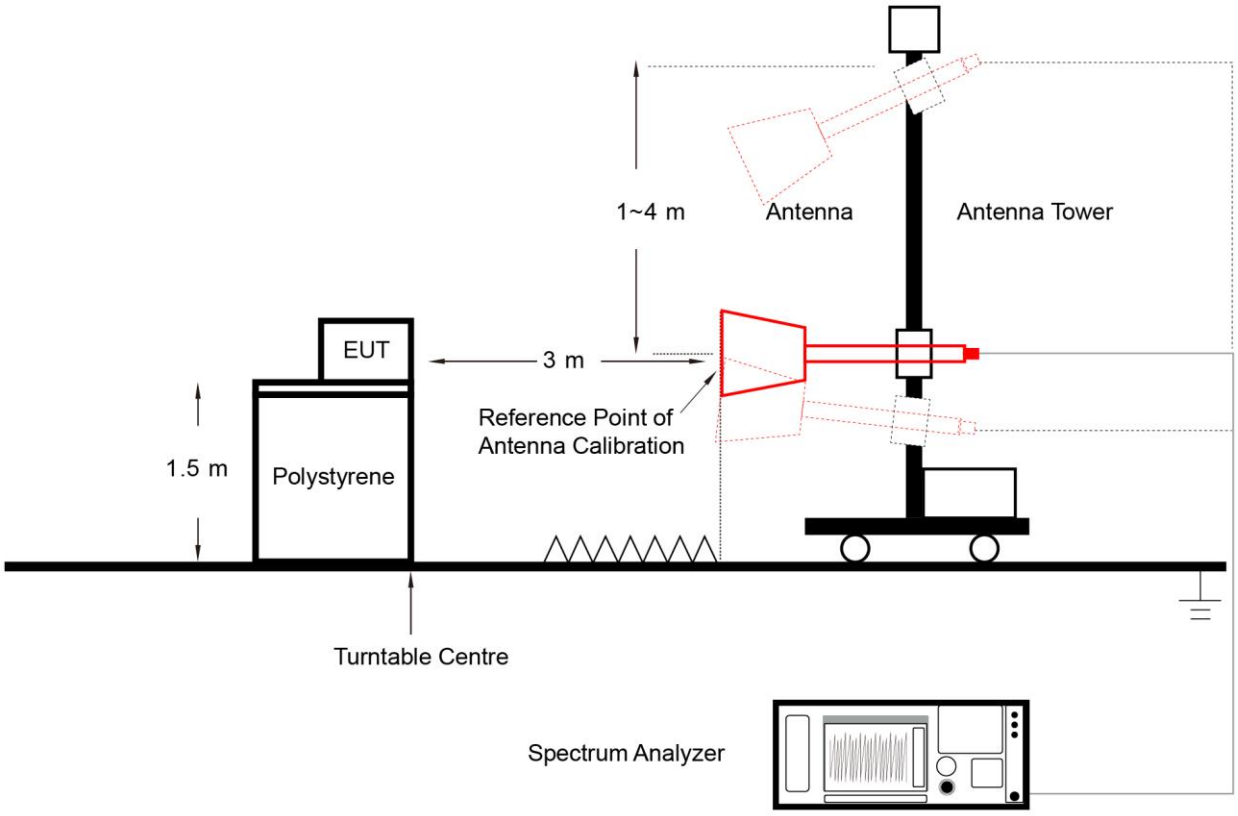
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

**Average Field Strength Measurements**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW ≥ 1/T
4. As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to “Voltage” regardless of the display mode
5. Detector = Peak

6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

### 5.7.4. Test Setup




### 5.7.5. Test Result

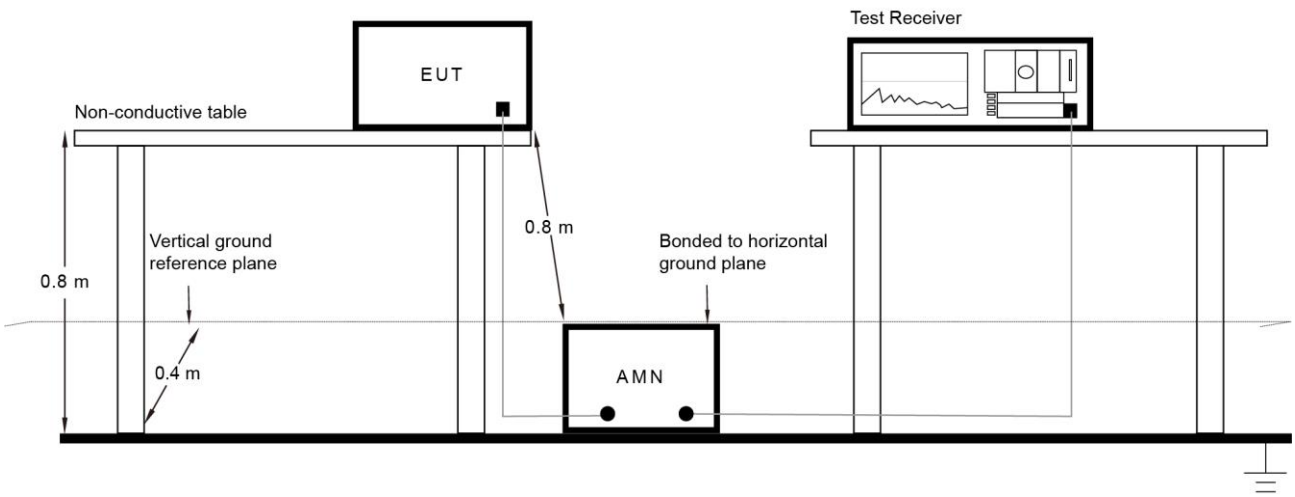
Refer to Appendix A.7.

## 5.8. AC Conducted Emissions Measurement

### 5.8.1. Test Limit

| FCC Part 15 Subpart C Paragraph 15.207 Limits | | |
|---|---|---|
| Frequency (MHz) | QP (dBuV) | AV (dBuV) |
| 0.15 - 0.50 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 56 | 46 |
| 5.0 - 30 | 60 | 50 |
| Note 1: The lower limit shall apply at the transition frequencies.<br>Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz. | | |

### 5.8.2. Test Setup



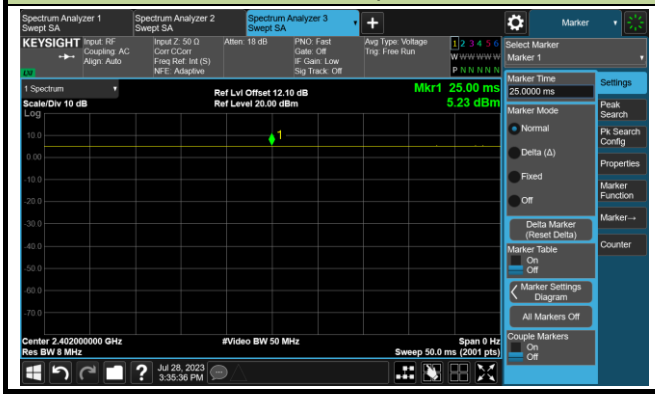

### 5.8.3. Test Result

The EUT is powered by battery, so this item is not applicable.

# Appendix A - Test Result

## A.1 Duty Cycle Test Result

| | | | |
|---|---|---|---|
| Test Site | WZ-SR5 | Test Engineer | Lynn Yang |
| Test Date | 2023-07-28 | | |

| Test Mode | Duty Cycle |
|---|---|
| BLE-1Mbps | 100.0% |
| BLE-2Mbps | 100.0% |
| Duty Cycle | |
| BLE-1Mbps | BLE-2Mbps |
|  | |

## A.2 6dB Bandwidth Test Result

| | | | |
|---|---|---|---|
| Test Site | WZ-SR5 | Test Engineer | Lynn Yang |
| Test Date | 2023-07-24 | | |

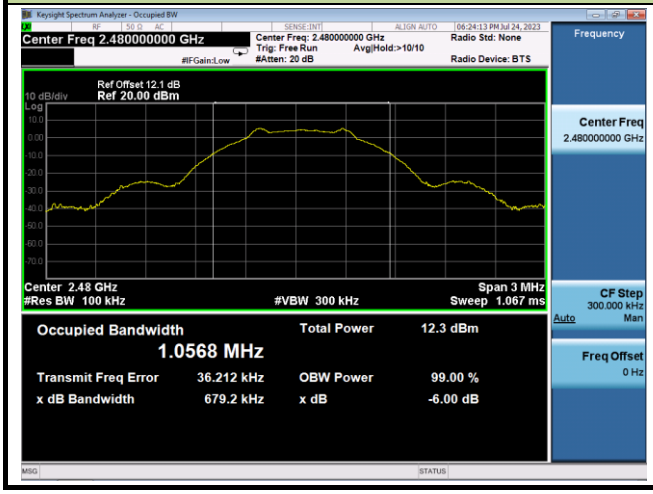
| Test Mode | Data Rate | Channel No. | Frequency (MHz) | 6dB Bandwidth (MHz) | Limit (MHz) |
|---|---|---|---|---|---|
| BLE | 1Mbps | 00 | 2402 | 0.6887 | ≥ 0.5 |
| BLE | 1Mbps | 19 | 2440 | 0.6748 | ≥ 0.5 |
| BLE | 1Mbps | 39 | 2480 | 0.6792 | ≥ 0.5 |
| BLE | 2Mbps | 00 | 2402 | 1.395 | ≥ 0.5 |
| BLE | 2Mbps | 19 | 2440 | 1.434 | ≥ 0.5 |
| BLE | 2Mbps | 39 | 2480 | 1.373 | ≥ 0.5 |

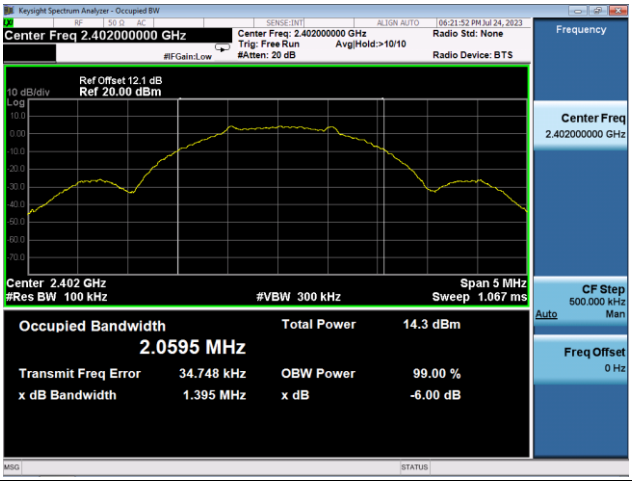
BLE-1Mbps 6dB Bandwidth

Channel 00 (2402MHz)

Channel 19 (2440MHz)

Channel 39 (2480MHz)



| BLE-2Mbps 6dB Bandwidth | |
|---|---|
| Channel 00 (2402MHz) | Channel 19 (2440MHz) |
|  | |
| Channel 39 (2480MHz) | |
| | |

### A.3 Output Power Test Result

| | | | |
|---|---|---|---|
| Test Site | WZ-SR5 | Test Engineer | Lynn Yang |
| Test Date | 2023-07-24 | | |

**Test Result of Peak Output Power**

| Test Mode | Data Rate | Channel No. | Frequency (MHz) | Peak Power (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| BLE | 1Mbps | 00 | 2402 | 5.74 | ≤ 30.00 | Pass |
| BLE | 1Mbps | 19 | 2440 | 5.64 | ≤ 30.00 | Pass |
| BLE | 1Mbps | 39 | 2480 | 5.48 | ≤ 30.00 | Pass |
| BLE | 2Mbps | 00 | 2402 | 5.84 | ≤ 30.00 | Pass |
| BLE | 2Mbps | 19 | 2440 | 5.70 | ≤ 30.00 | Pass |
| BLE | 2Mbps | 39 | 2480 | 5.50 | ≤ 30.00 | Pass |

**Test Result of Average Output Power (Reporting Only)**

| Test Mode | Data Rate | Channel No. | Frequency (MHz) | Average Power (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| BLE | 1Mbps | 00 | 2402 | 5.64 | ≤ 30.00 | Pass |
| BLE | 1Mbps | 19 | 2440 | 5.54 | ≤ 30.00 | Pass |
| BLE | 1Mbps | 39 | 2480 | 5.37 | ≤ 30.00 | Pass |
| BLE | 2Mbps | 00 | 2402 | 5.72 | ≤ 30.00 | Pass |
| BLE | 2Mbps | 19 | 2440 | 5.59 | ≤ 30.00 | Pass |
| BLE | 2Mbps | 39 | 2480 | 5.38 | ≤ 30.00 | Pass |

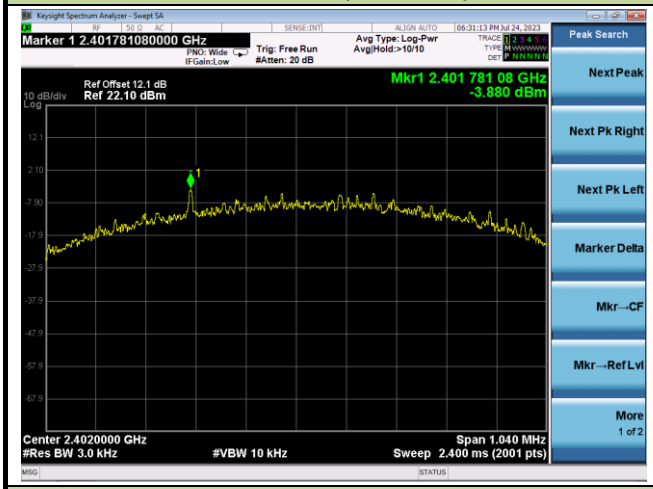
## A.4 Power Spectral Density Test Result

| | | | |
|---|---|---|---|
| Test Site | WZ-SR5 | Test Engineer | Lynn Yang |
| Test Date | 2023-07-24 | | |

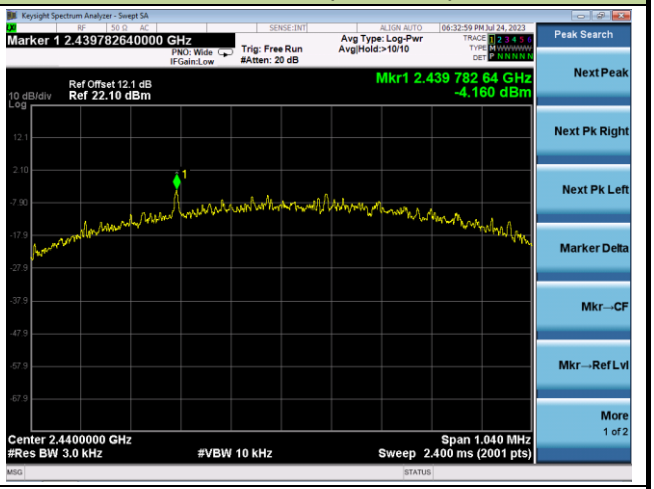
| Test Mode | Data Rate | Channel No. | Frequency (MHz) | PSD Result (dBm / 3kHz) | Limit (dBm / 3kHz) | Result |
|---|---|---|---|---|---|---|
| BLE | 1Mbps | 00 | 2402 | -3.880 | ≤ 8.00 | Pass |
| BLE | 1Mbps | 19 | 2440 | -4.160 | ≤ 8.00 | Pass |
| BLE | 1Mbps | 39 | 2480 | -4.138 | ≤ 8.00 | Pass |
| BLE | 2Mbps | 00 | 2402 | -7.642 | ≤ 8.00 | Pass |
| BLE | 2Mbps | 19 | 2440 | -7.950 | ≤ 8.00 | Pass |
| BLE | 2Mbps | 39 | 2480 | -7.574 | ≤ 8.00 | Pass |

BLE-1Mbps PSD

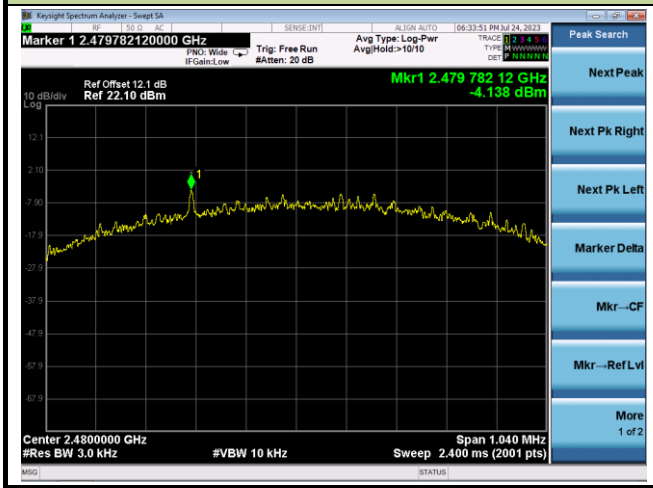
Channel 00 (2402MHz)

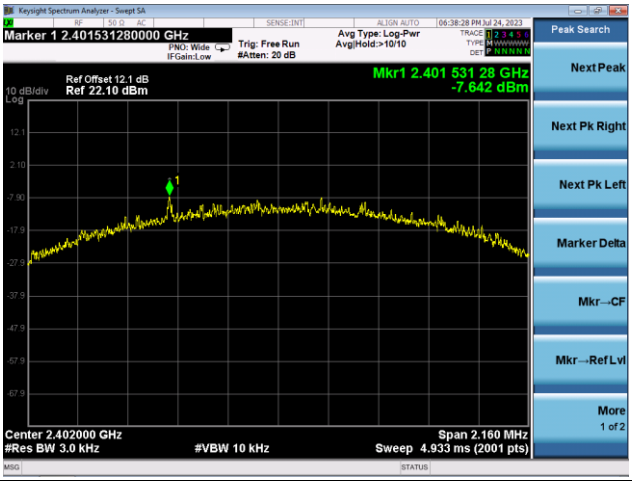
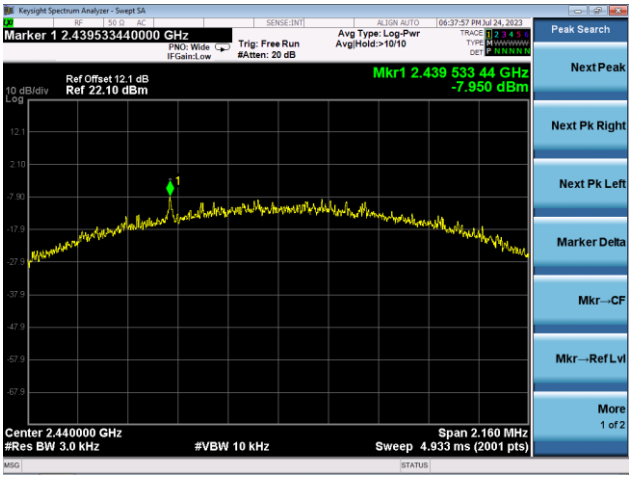
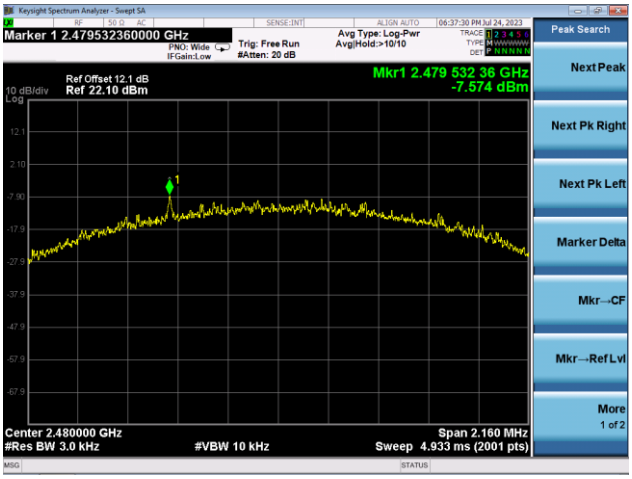



Channel 19 (2440MHz)




Channel 39 (2480MHz)



| BLE-2Mbps PSD | |
|---|---|
| Channel 00 (2402MHz) | Channel 19 (2440MHz) |
|  |  |
| Channel 39 (2480MHz) | |
|  | |

## A.5 Conducted Band Edge and Out-of-Band Emissions Test Result

| | | | |
|---|---|---|---|
| Test Site | WZ-SR5 | Test Engineer | Lynn Yang |
| Test Date | 2023-07-24 | | |

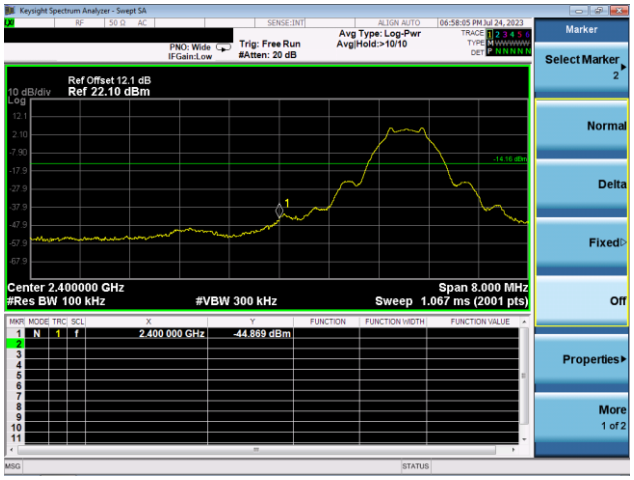
| Test Mode | Data Rate / Mbps | Channel No. | Frequency (MHz) | Limit (dBc) | Result |
|---|---|---|---|---|---|
| BLE | 1 | 00 | 2402 | 20 | Pass |
| BLE | 1 | 19 | 2440 | 20 | Pass |
| BLE | 1 | 39 | 2480 | 20 | Pass |
| BLE | 2 | 00 | 2402 | 20 | Pass |
| BLE | 2 | 19 | 2440 | 20 | Pass |
| BLE | 2 | 39 | 2480 | 20 | Pass |

BLE-1Mbps Out-of-Band Emissions

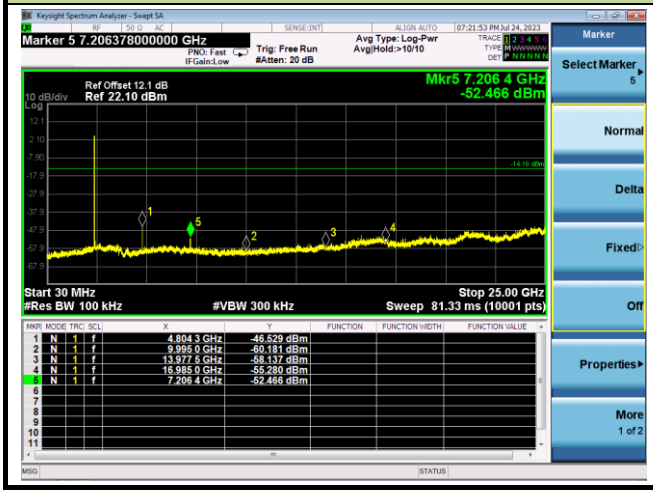
Channel 00 (2402MHz)

100kHz PSD Reference Level

Low Band Edge



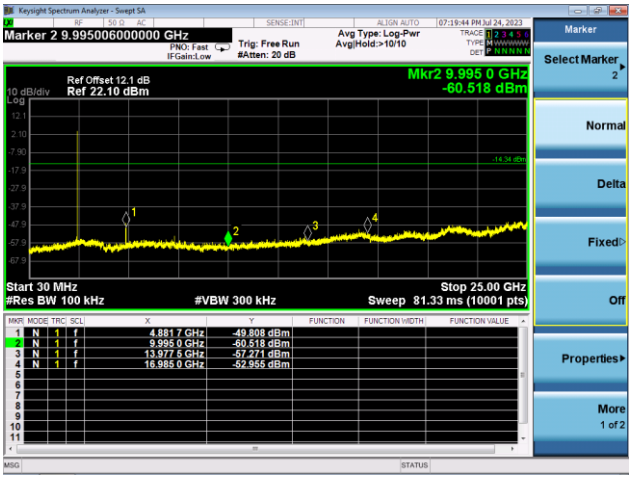

Spurious Emission 30MHz ~ 25GHz



## Channel 19 (2440MHz)

### 100kHz PSD Reference Level

### Spurious Emission 30MHz ~ 25GHz

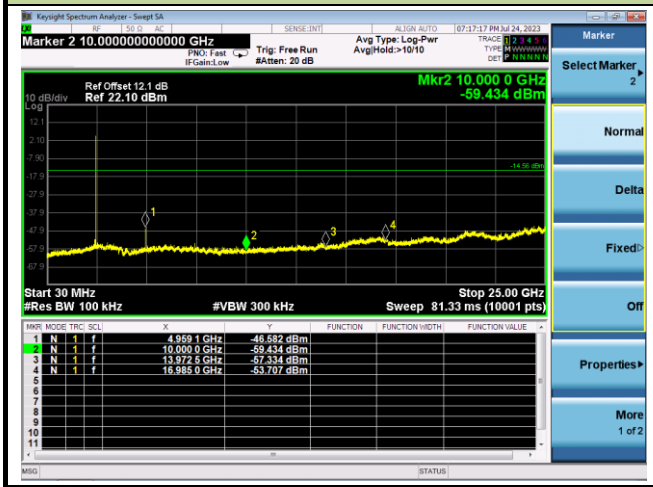


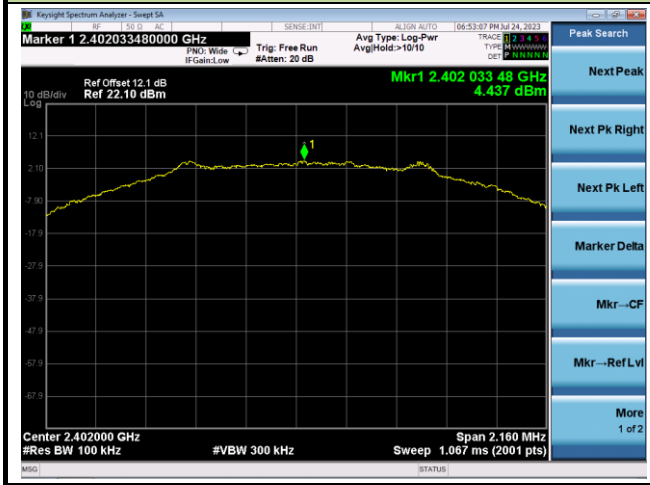
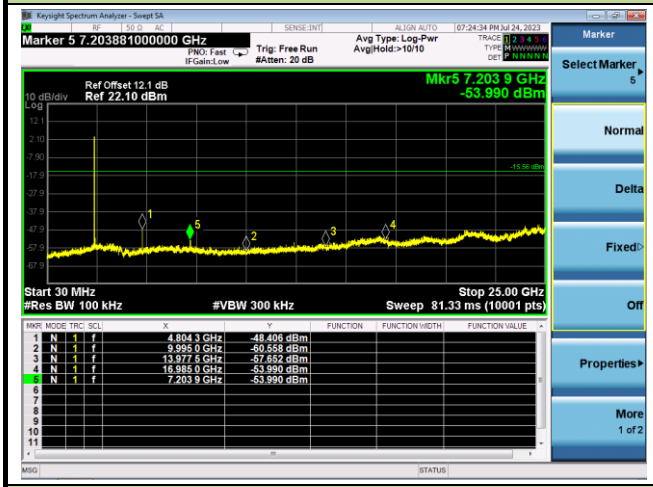
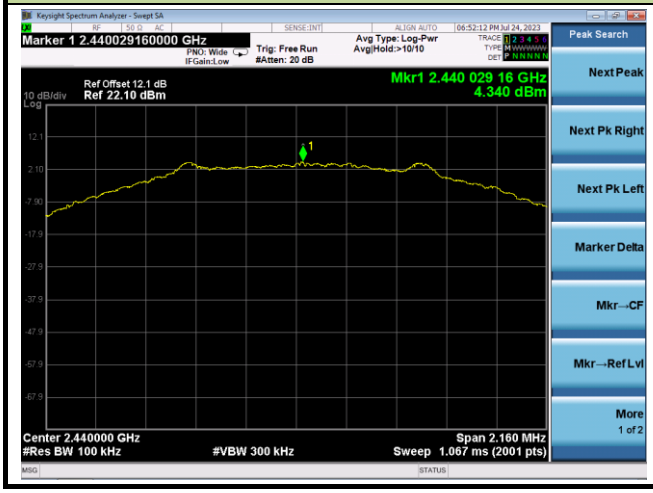

## Channel 39 (2480MHz)

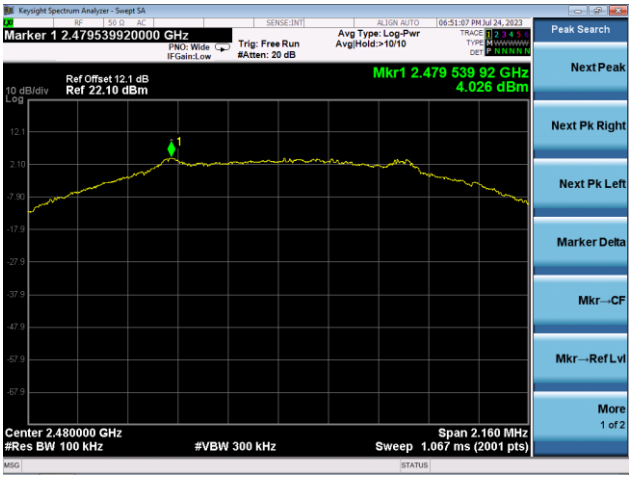
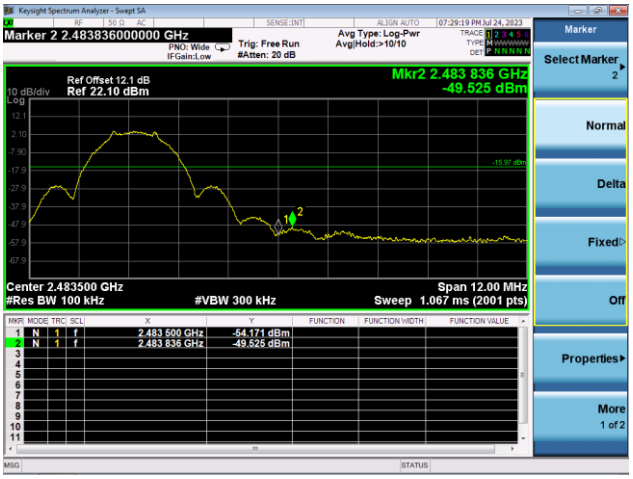
### 100kHz PSD Reference Level

### High Band Edge

### Spurious Emission 30MHz ~ 25GHz



| BLE-2Mbps Out-of-Band Emissions | |
|---|---|
| Channel 00 (2402MHz) | |
| 100kHz PSD Reference Level | Low Band Edge |
|  | |
| Spurious Emission 30MHz ~ 25GHz | |
|  | |
| Channel 19 (2440MHz) | |
| 100kHz PSD Reference Level | Spurious Emission 30MHz ~ 25GHz |
|  | |

| Channel 39 (2480MHz) | |
|---|---|
| 100kHz PSD Reference Level | High Band Edge |
|  |  |
| Spurious Emission 30MHz ~ 25GHz | |
| | |

### A.6 Radiated Spurious Emission Test Result

| | | | |
|---|---|---|---|
| Test Site | WZ-AC1 | Test Engineer | Ajin Fan |
| Test Date | 2023-07-24~2023-07-27 | Test Mode: | BLE-1Mbps |
| Remark: | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not shown in the report. | | |

| Test Channel | Frequency (MHz) | Reading Level (dBμV) | Factor (dB/m) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|---|---|---|---|---|---|---|---|---|
| 00 | 7383.5 | 36.7 | 8.4 | 45.1 | 74.0 | -28.9 | Peak | Horizontal |
| | 8437.5 | 37.6 | 8.9 | 46.5 | 74.0 | -27.5 | Peak | Horizontal |
| | 11004.5 | 36.7 | 13.8 | 50.5 | 74.0 | -23.5 | Peak | Horizontal |
| | 4799.5 | 41.8 | 3.1 | 44.9 | 74.0 | -29.1 | Peak | Vertical |
| | 8182.5 | 37.2 | 8.7 | 45.9 | 74.0 | -28.1 | Peak | Vertical |
| | 10953.5 | 36.8 | 13.6 | 50.4 | 74.0 | -23.6 | Peak | Vertical |
| 19 | 7545.0 | 37.2 | 8.5 | 45.7 | 74.0 | -28.3 | Peak | Horizontal |
| | 8259.0 | 36.9 | 8.6 | 45.5 | 74.0 | -28.5 | Peak | Horizontal |
| | 11030.0 | 37.0 | 13.5 | 50.5 | 74.0 | -23.5 | Peak | Horizontal |
| | 7324.0 | 37.7 | 8.1 | 45.8 | 74.0 | -28.2 | Peak | Vertical |
| | 8208.0 | 37.1 | 8.7 | 45.8 | 74.0 | -28.2 | Peak | Vertical |
| | 11387.0 | 37.4 | 12.9 | 50.3 | 74.0 | -23.7 | Peak | Vertical |
| 39 | 7392.0 | 36.8 | 8.4 | 45.2 | 74.0 | -28.8 | Peak | Horizontal |
| | 8386.5 | 37.1 | 8.8 | 45.9 | 74.0 | -28.1 | Peak | Horizontal |
| | 11242.5 | 37.1 | 12.8 | 49.9 | 74.0 | -24.1 | Peak | Horizontal |
| | 7664.0 | 36.3 | 7.9 | 44.2 | 74.0 | -29.8 | Peak | Vertical |
| | 8174.0 | 37.4 | 8.8 | 46.2 | 74.0 | -27.8 | Peak | Vertical |
| | 11489.0 | 37.3 | 13.2 | 50.5 | 74.0 | -23.5 | Peak | Vertical |

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

| | | | |
|---|---|---|---|
| Test Site | WZ-AC1 | Test Engineer | Ajin Fan |
| Test Date | 2023-07-24~2023-07-27 | Test Mode: | BLE-2Mbps |
| Remark: | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not shown in the report. | | |

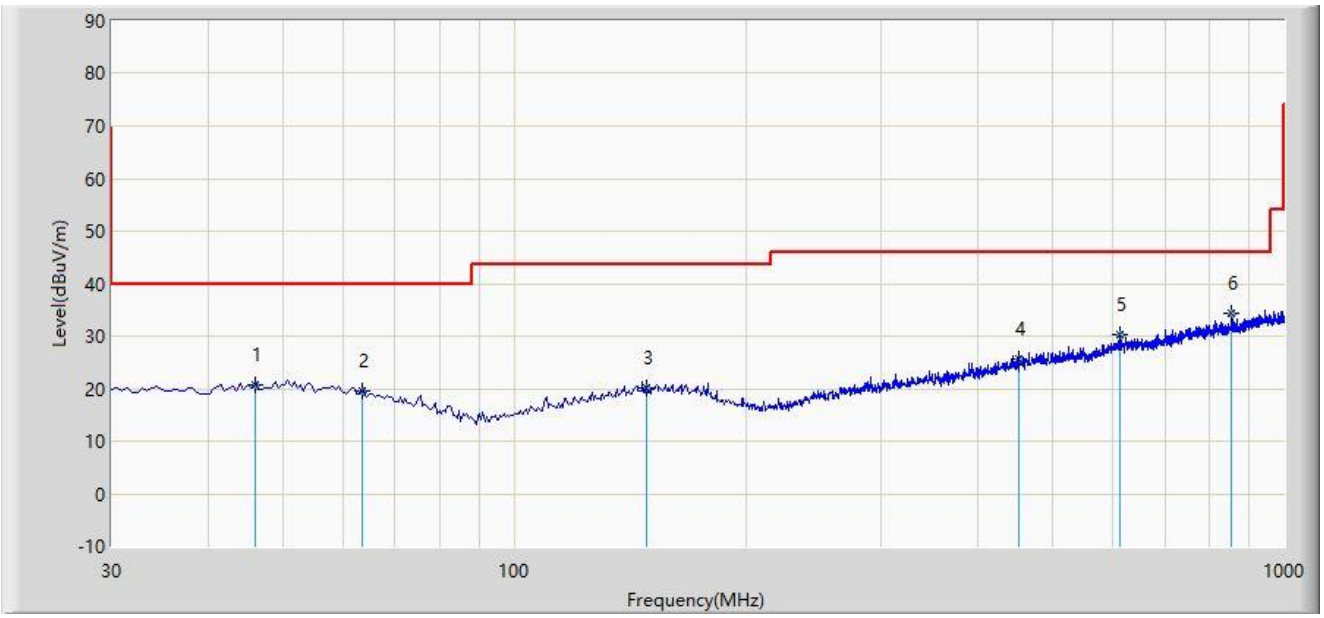
| Test Channel | Frequency (MHz) | Reading Level (dBμV) | Factor (dB/m) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|---|---|---|---|---|---|---|---|---|
| 00 | 7587.5 | 36.8 | 8.2 | 45.0 | 74.0 | -29.0 | Peak | Horizontal |
| | 8276.0 | 37.1 | 8.4 | 45.5 | 74.0 | -28.5 | Peak | Horizontal |
| | 11336.0 | 37.1 | 12.8 | 49.9 | 74.0 | -24.1 | Peak | Horizontal |
| | 7307.0 | 36.3 | 8.2 | 44.5 | 74.0 | -29.5 | Peak | Vertical |
| | 8318.5 | 37.2 | 8.6 | 45.8 | 74.0 | -28.2 | Peak | Vertical |
| | 11463.5 | 36.7 | 12.9 | 49.6 | 74.0 | -24.4 | Peak | Vertical |
| 19 | 7366.5 | 36.4 | 8.4 | 44.8 | 74.0 | -29.2 | Peak | Horizontal |
| | 8403.5 | 36.7 | 8.9 | 45.6 | 74.0 | -28.4 | Peak | Horizontal |
| | 11310.5 | 37.2 | 12.6 | 49.8 | 74.0 | -24.2 | Peak | Horizontal |
| | 7468.5 | 35.7 | 8.5 | 44.2 | 74.0 | -29.8 | Peak | Vertical |
| | 8403.5 | 36.4 | 8.9 | 45.3 | 74.0 | -28.7 | Peak | Vertical |
| | 11166.0 | 36.4 | 13.1 | 49.5 | 74.0 | -24.5 | Peak | Vertical |
| 39 | 7409.0 | 36.0 | 8.3 | 44.3 | 74.0 | -29.7 | Peak | Horizontal |
| | 8242.0 | 35.1 | 8.6 | 43.7 | 74.0 | -30.3 | Peak | Horizontal |
| | 11132.0 | 37.7 | 12.9 | 50.6 | 74.0 | -23.4 | Peak | Horizontal |
| | 7392.0 | 36.2 | 8.4 | 44.6 | 74.0 | -29.4 | Peak | Vertical |
| | 8259.0 | 36.9 | 8.6 | 45.5 | 74.0 | -28.5 | Peak | Vertical |
| | 10681.5 | 36.3 | 13.8 | 50.1 | 74.0 | -23.9 | Peak | Vertical |

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

**The Result of Radiated Emission below 1GHz:**

| | |
|---|---|
| Site: WZ-AC1 | Time: 2023-07-27 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: VULB 9168_25-2000MHz | Polarity: Horizontal |
| EUT: AT-314 | Power: By Battery |
| **Test Mode**: Transmit by BLE-1M at channel 2402MHz | |




| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 46.140 | 20.641 | 2.140 | -19.359 | 40.000 | 18.500 | QP |
| 2 | | 63.465 | 19.513 | 2.010 | -20.487 | 40.000 | 17.504 | QP |
| 3 | | 148.841 | 20.186 | 2.120 | -23.314 | 43.500 | 18.066 | QP |
| 4 | | 451.465 | 25.695 | 3.250 | -20.305 | 46.000 | 22.445 | QP |
| 5 | | 611.030 | 30.155 | 4.140 | -15.845 | 46.000 | 26.014 | QP |
| 6 | * | 853.540 | 34.316 | 5.120 | -11.684 | 46.000 | 29.196 | QP |

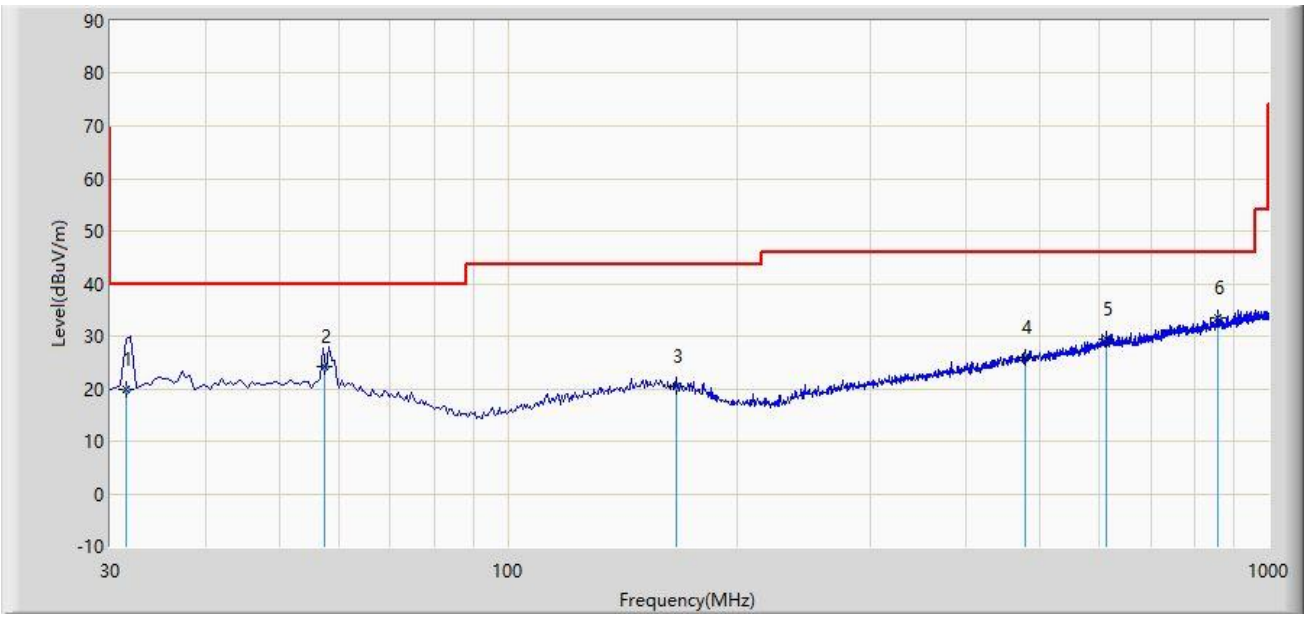
Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 4: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz and 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

| | |
|---|---|
| Site: WZ-AC1 | Time: 2023-07-27 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: VULB 9168_25-2000MHz | Polarity: Vertical |
| EUT: AT-314 | Power: By Battery |
| **Test Mode**: Transmit by BLE-1M at channel 2402MHz | |




| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 31.420 | 19.760 | 2.400 | -20.240 | 40.000 | 17.360 | QP |
| 2 | | 57.270 | 24.209 | 5.969 | -15.791 | 40.000 | 18.240 | QP |
| 3 | | 166.785 | 20.432 | 2.340 | -23.068 | 43.500 | 18.091 | QP |
| 4 | | 478.685 | 26.041 | 3.120 | -19.959 | 46.000 | 22.921 | QP |
| 5 | | 611.515 | 29.508 | 3.480 | -16.492 | 46.000 | 26.028 | QP |
| 6 | * | 855.955 | 33.378 | 4.140 | -12.622 | 46.000 | 29.238 | QP |

Note 1: " * ", means this data is the worst emission level.

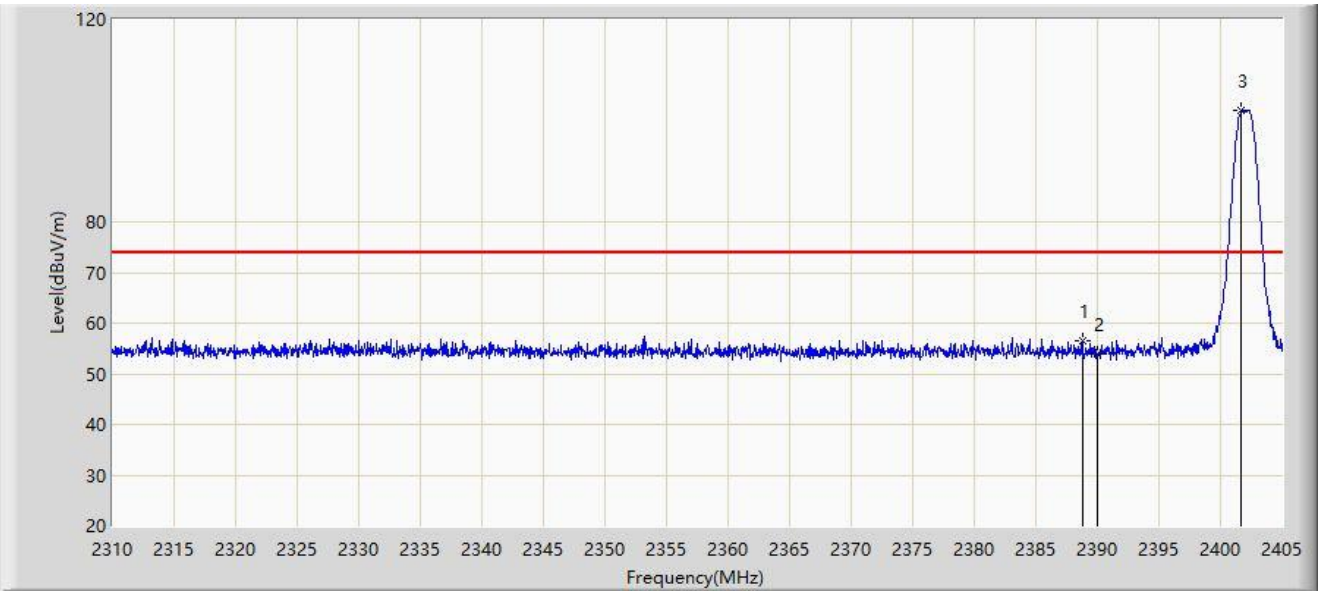
Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 4: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz and 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

### A.7 Radiated Restricted Band Edge Test Result

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Horizontal |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 1M at 2402MHz | |



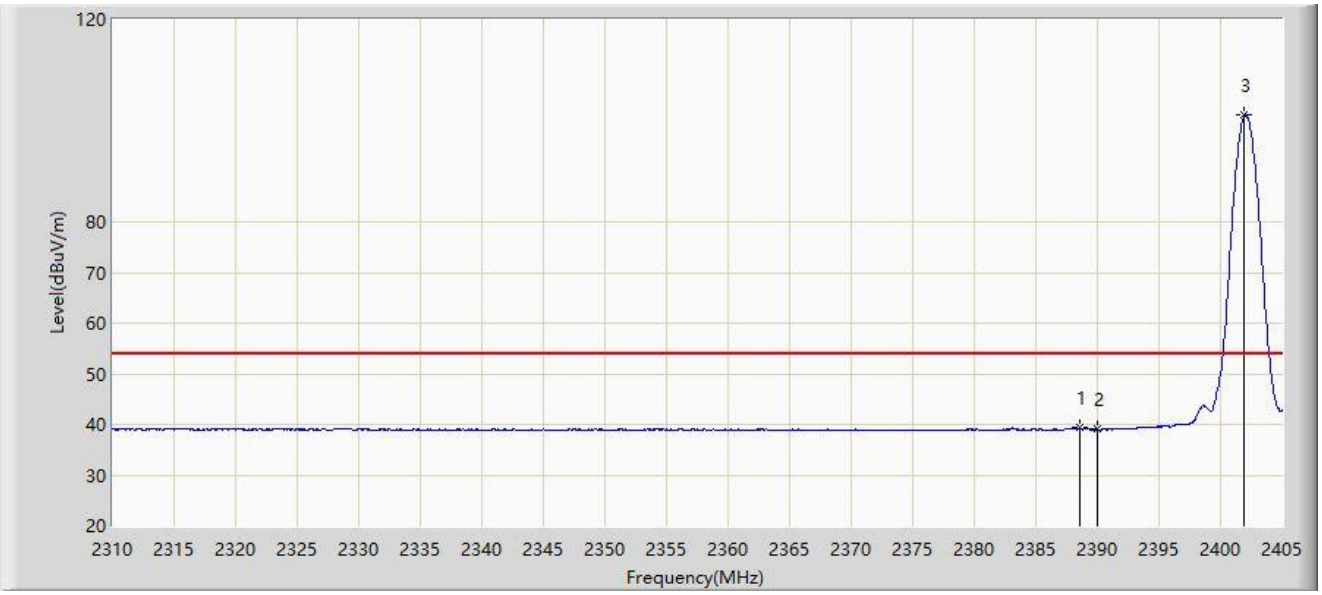

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | * | 2388.755 | 56.496 | 25.337 | -17.504 | 74.000 | 31.159 | PK |
| 2 | | 2390.000 | 53.796 | 22.638 | -20.204 | 74.000 | 31.158 | PK |
| 3 | | 2401.722 | 101.963 | 70.811 | N/A | N/A | 31.152 | PK |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Horizontal |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 1M at 2402MHz | |



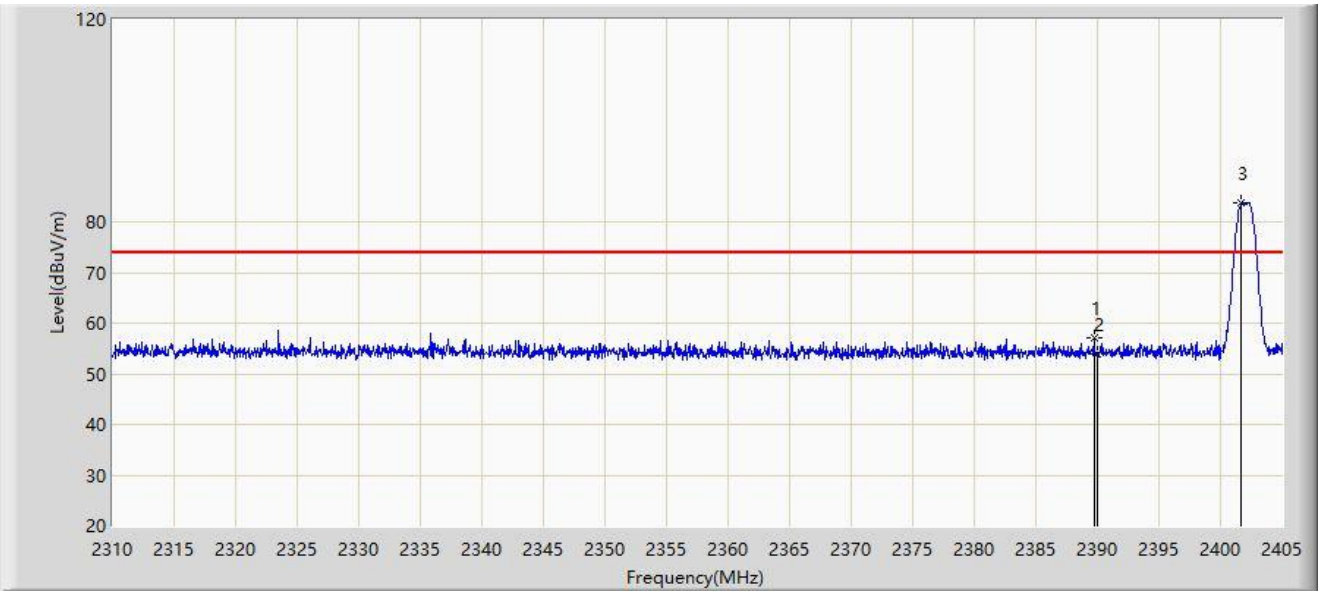

| No | Mark | Frequency (MHz) | Measure Level (dBµV/m) | Reading Level (dBµV) | Margin (dB) | Limit (dBµV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | * | 2388.565 | 39.342 | 8.183 | -14.658 | 54.000 | 31.159 | AV |
| 2 | | 2390.000 | 39.006 | 7.848 | -14.994 | 54.000 | 31.158 | AV |
| 3 | | 2401.960 | 101.050 | 69.898 | N/A | N/A | 31.152 | AV |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Vertical |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 1M at 2402MHz | |



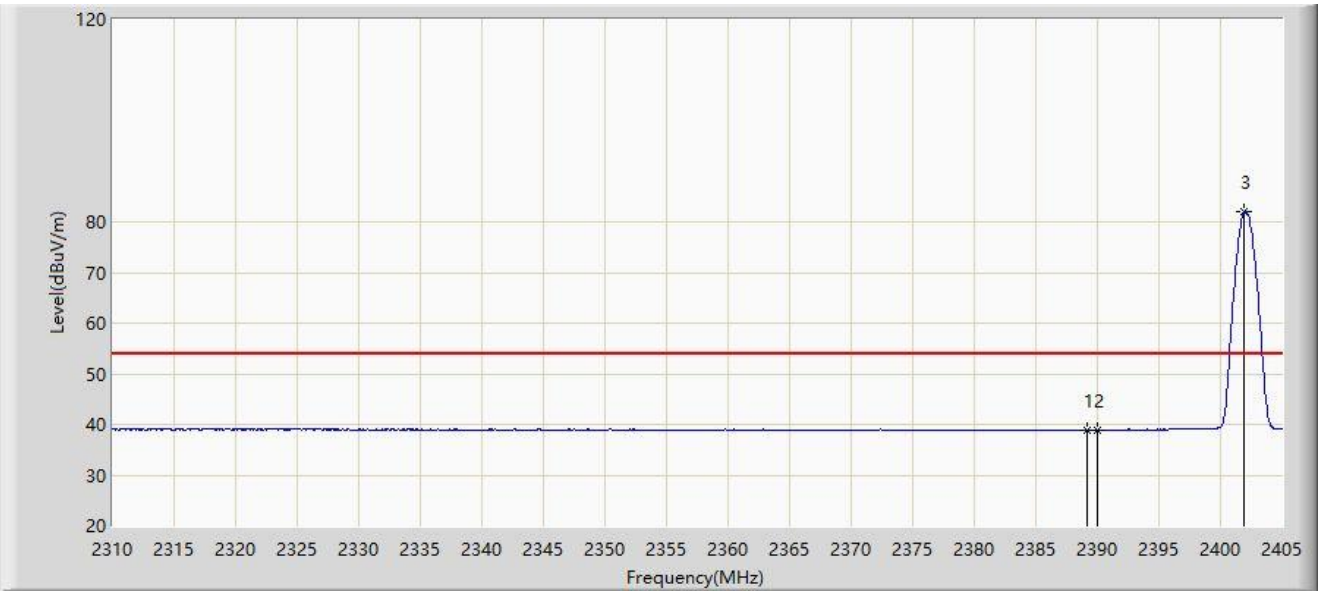

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | * | 2389.705 | 57.018 | 25.860 | -16.982 | 74.000 | 31.158 | PK |
| 2 | | 2390.000 | 53.997 | 22.839 | -20.003 | 74.000 | 31.158 | PK |
| 3 | | 2401.675 | 83.624 | 52.472 | N/A | N/A | 31.152 | PK |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Vertical |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 1M at 2402MHz | |



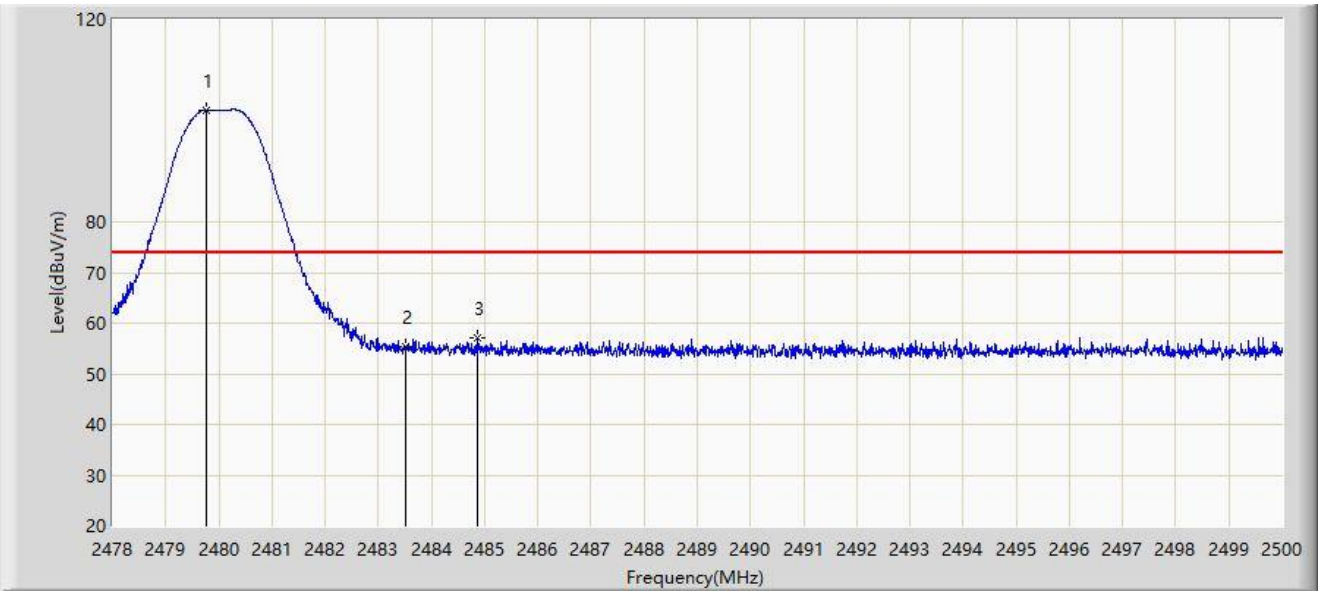

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | * | 2389.183 | 38.976 | 7.817 | -15.024 | 54.000 | 31.158 | AV |
| 2 | | 2390.000 | 38.850 | 7.692 | -15.150 | 54.000 | 31.158 | AV |
| 3 | | 2401.960 | 82.093 | 50.941 | N/A | N/A | 31.152 | AV |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Horizontal |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 1M at 2480MHz | |



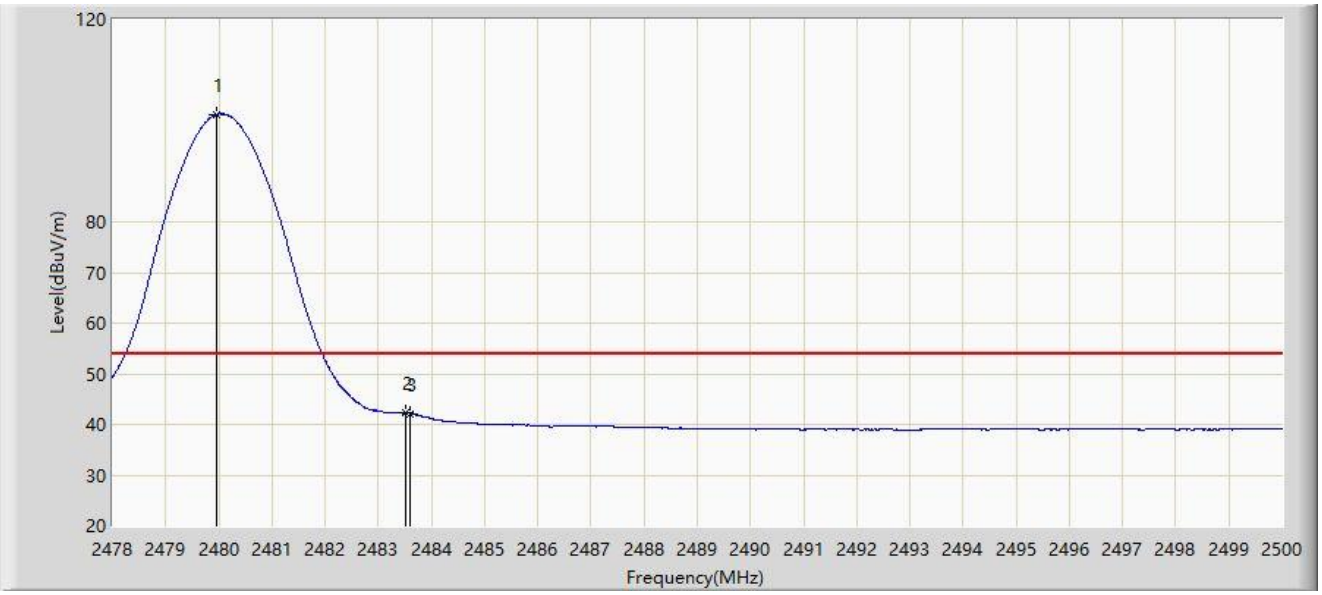

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 2479.771 | 102.144 | 71.054 | N/A | N/A | 31.089 | PK |
| 2 | | 2483.500 | 55.228 | 24.135 | -18.772 | 74.000 | 31.093 | PK |
| 3 | * | 2484.853 | 57.069 | 25.975 | -16.931 | 74.000 | 31.094 | PK |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Horizontal |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 1M at 2480MHz | |



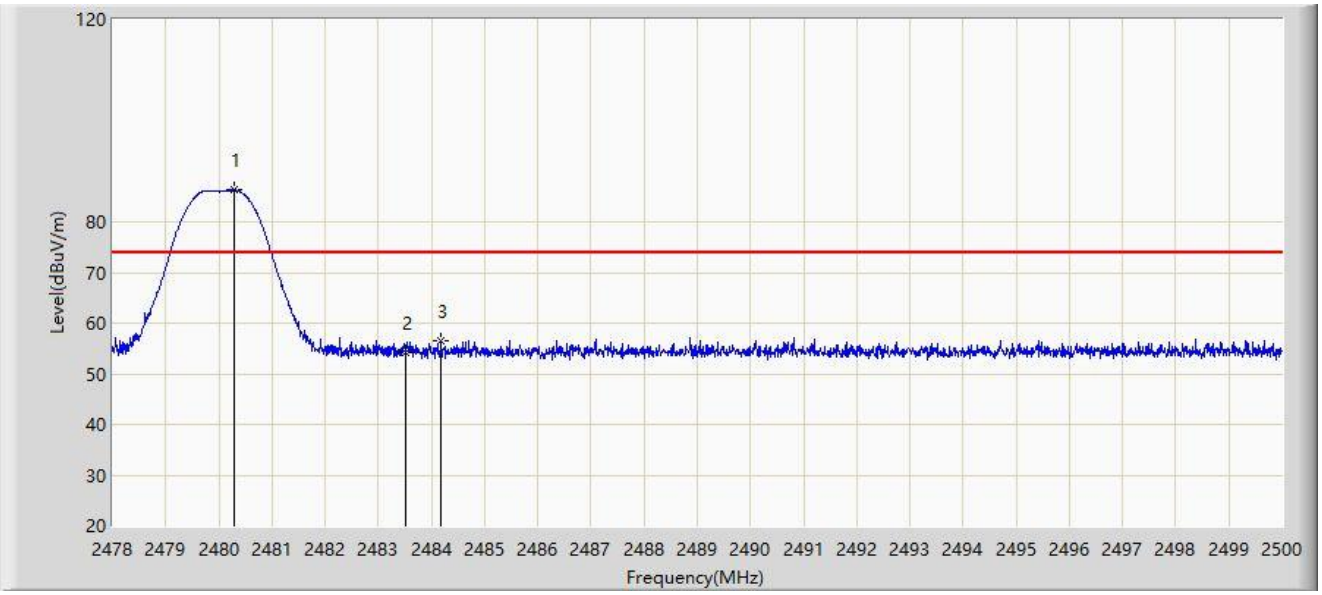

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 2479.969 | 101.233 | 70.143 | N/A | N/A | 31.090 | AV |
| 2 | * | 2483.500 | 42.230 | 11.137 | -11.770 | 54.000 | 31.093 | AV |
| 3 | | 2483.599 | 42.155 | 11.062 | -11.845 | 54.000 | 31.093 | AV |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Vertical |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 1M at 2480MHz | |



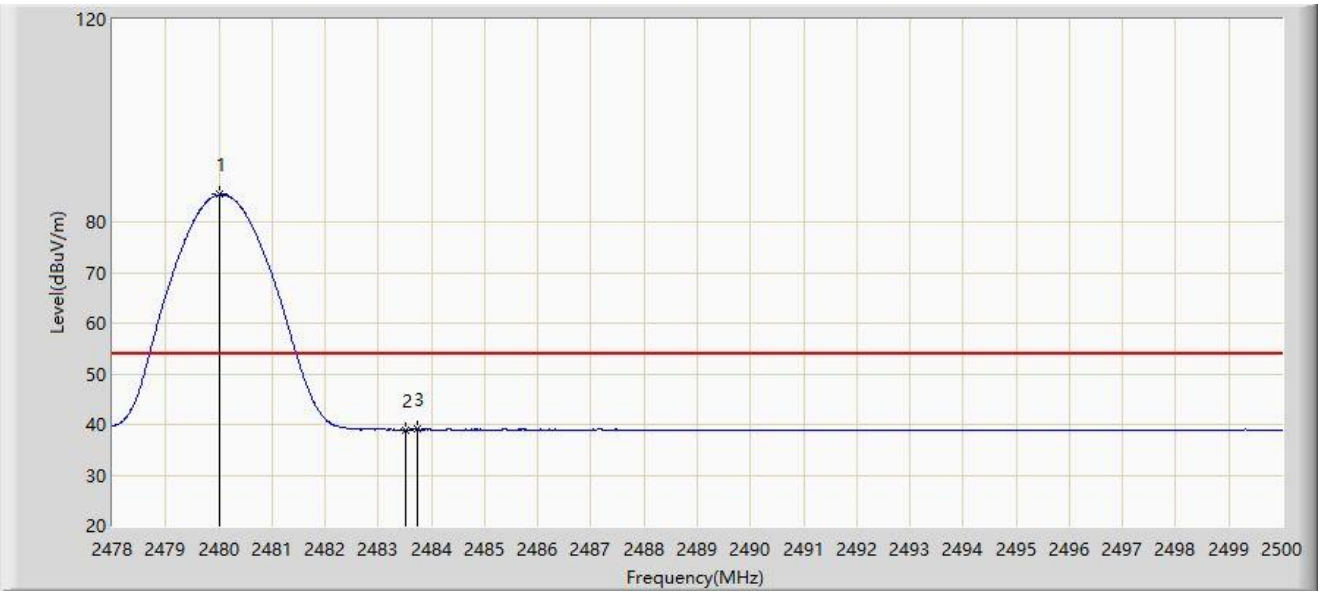

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 2480.299 | 86.358 | 55.268 | N/A | N/A | 31.090 | PK |
| 2 | | 2483.500 | 54.307 | 23.214 | -19.693 | 74.000 | 31.093 | PK |
| 3 | * | 2484.182 | 56.479 | 25.386 | -17.521 | 74.000 | 31.094 | PK |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Vertical |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 1M at 2480MHz | |



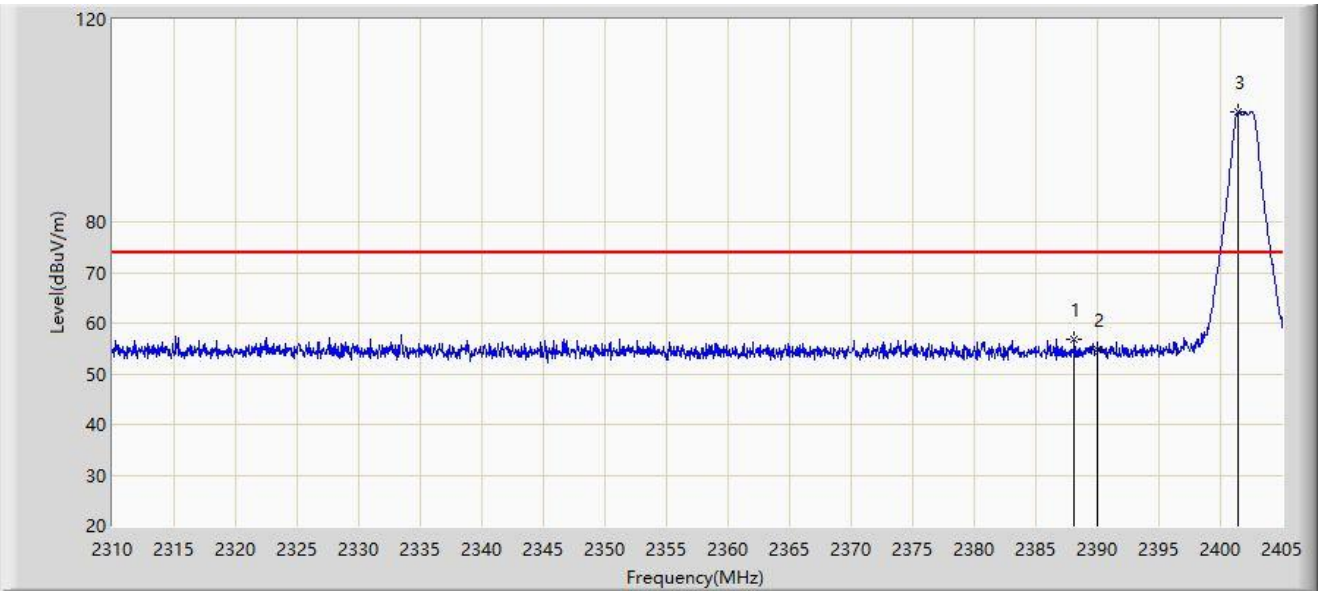

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 2480.024 | 85.383 | 54.293 | N/A | N/A | 31.090 | AV |
| 2 | | 2483.500 | 38.960 | 7.867 | -15.040 | 54.000 | 31.093 | AV |
| 3 | * | 2483.742 | 39.109 | 8.016 | -14.891 | 54.000 | 31.093 | AV |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Horizontal |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 2M at 2402MHz | |



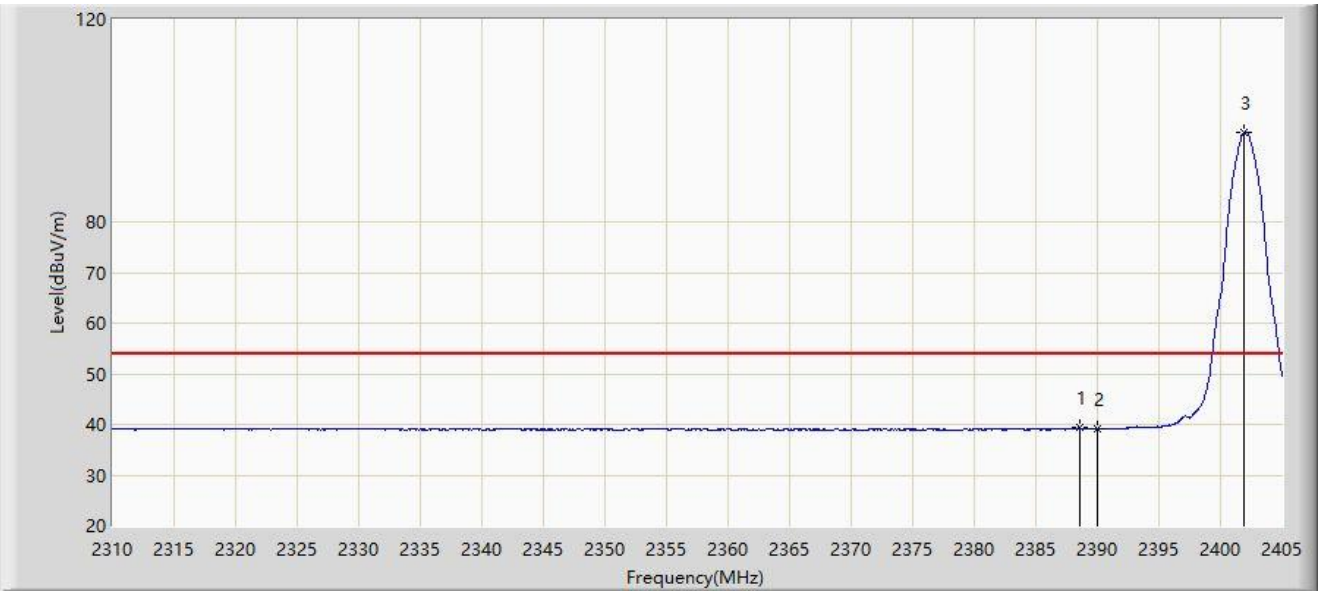

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | * | 2388.137 | 56.683 | 25.524 | -17.317 | 74.000 | 31.160 | PK |
| 2 | | 2390.000 | 54.870 | 23.712 | -19.130 | 74.000 | 31.158 | PK |
| 3 | | 2401.485 | 101.867 | 70.715 | N/A | N/A | 31.152 | PK |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Horizontal |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 2M at 2402MHz | |



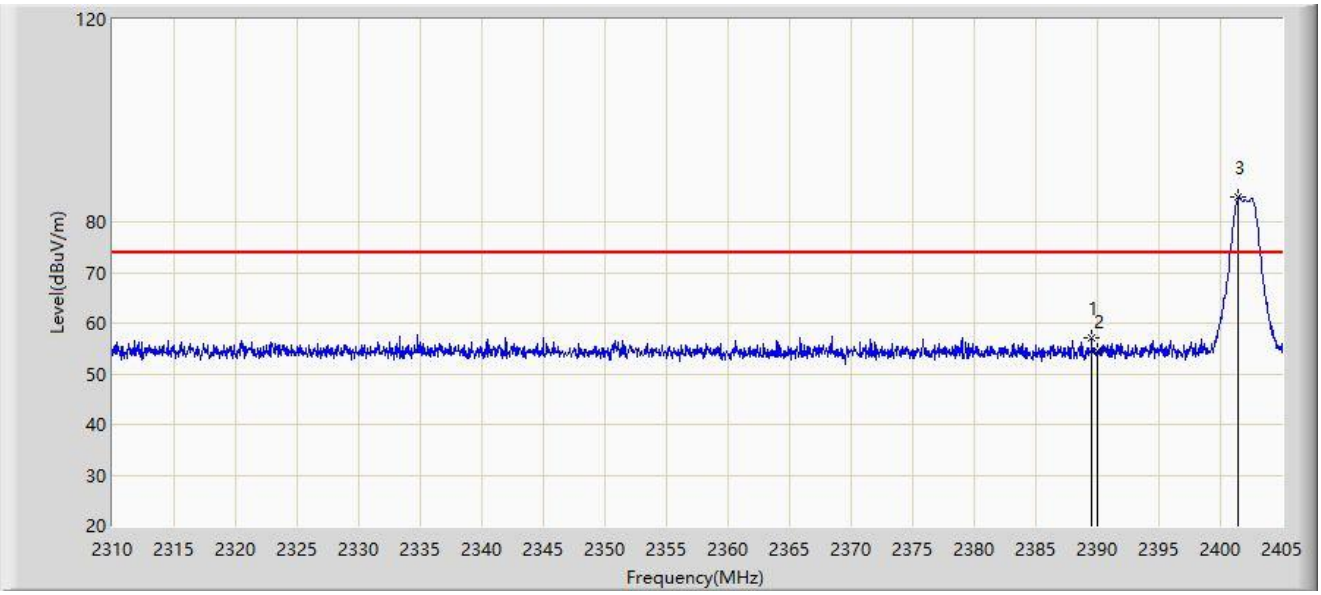

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | * | 2388.518 | 39.293 | 8.134 | -14.707 | 54.000 | 31.159 | AV |
| 2 | | 2390.000 | 38.994 | 7.836 | -15.006 | 54.000 | 31.158 | AV |
| 3 | | 2401.913 | 97.613 | 66.461 | N/A | N/A | 31.152 | AV |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Vertical |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 2M at 2402MHz | |



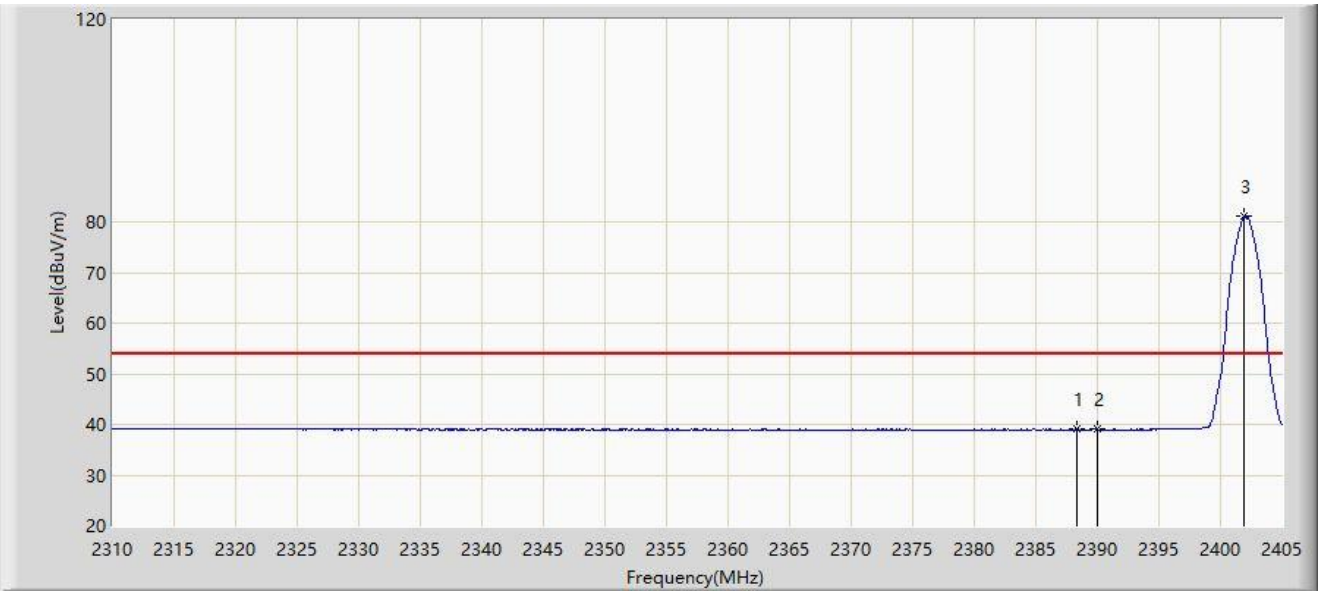

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | * | 2389.515 | 57.215 | 26.057 | -16.785 | 74.000 | 31.158 | PK |
| 2 | | 2390.000 | 54.504 | 23.346 | -19.496 | 74.000 | 31.158 | PK |
| 3 | | 2401.485 | 84.905 | 53.753 | N/A | N/A | 31.152 | PK |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Vertical |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 2M at 2402MHz | |



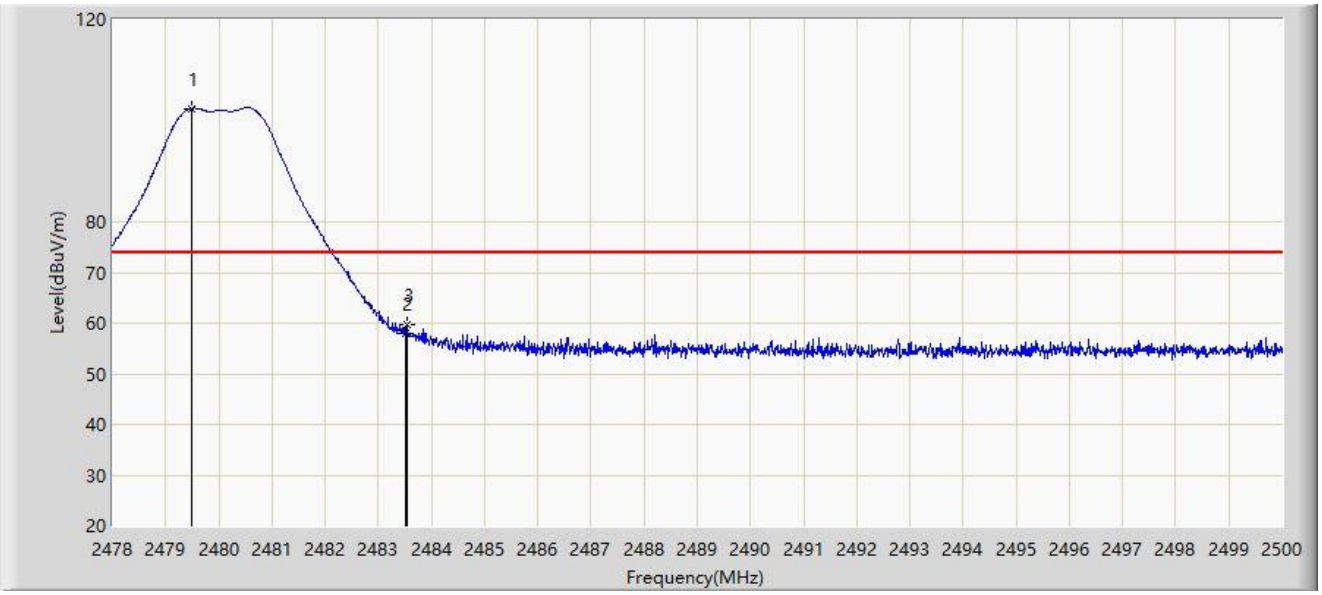

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | * | 2388.375 | 39.024 | 7.865 | -14.976 | 54.000 | 31.159 | AV |
| 2 | | 2390.000 | 39.008 | 7.850 | -14.992 | 54.000 | 31.158 | AV |
| 3 | | 2401.913 | 81.045 | 49.893 | N/A | N/A | 31.152 | AV |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Horizontal |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 2M at 2480MHz | |



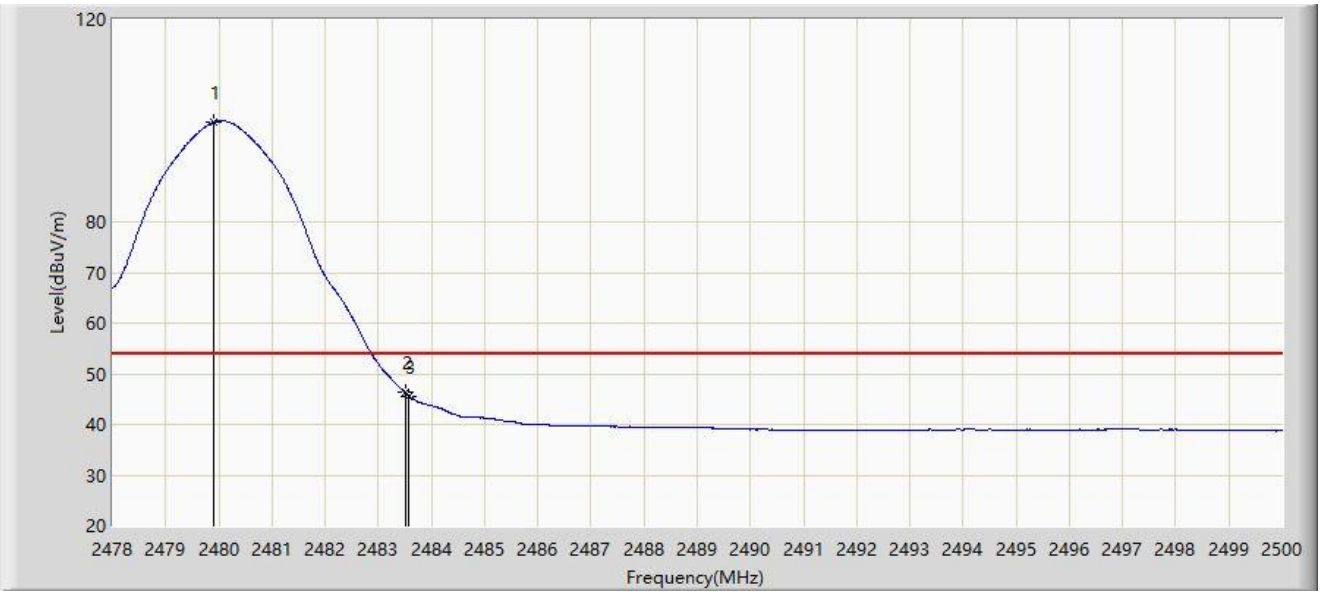

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 2479.496 | 102.459 | 71.370 | N/A | N/A | 31.089 | PK |
| 2 | | 2483.500 | 58.064 | 26.971 | -15.936 | 74.000 | 31.093 | PK |
| 3 | * | 2483.544 | 59.766 | 28.673 | -14.234 | 74.000 | 31.093 | PK |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Horizontal |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 2M at 2480MHz | |



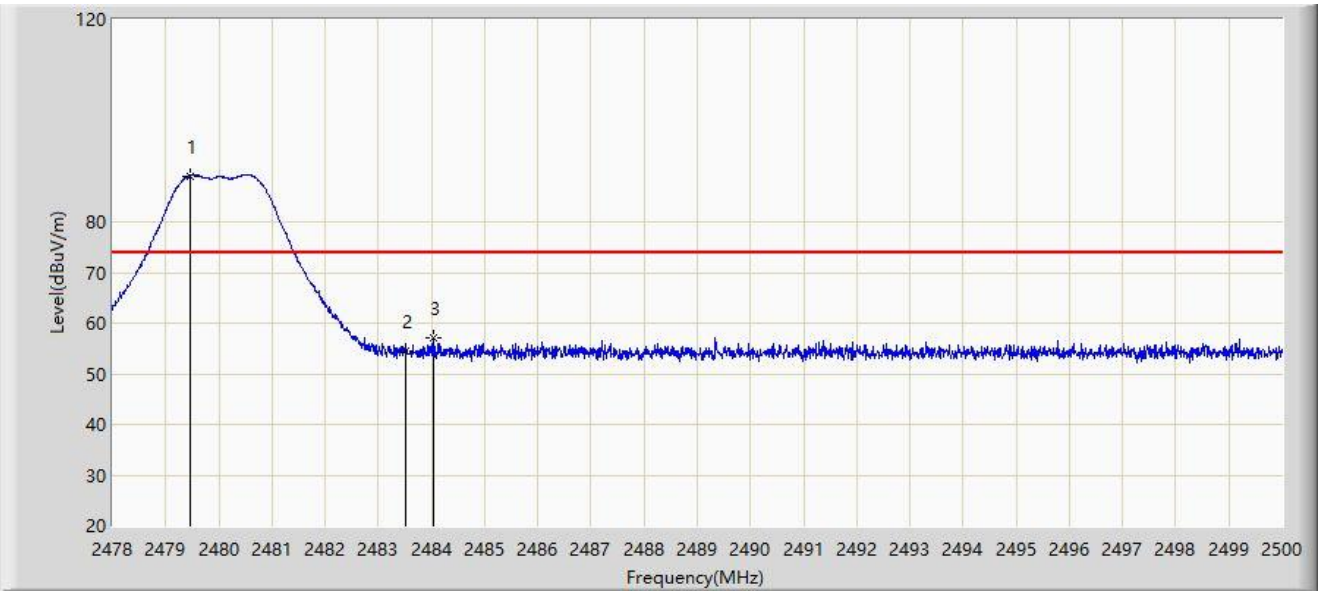

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 2479.903 | 99.674 | 68.584 | N/A | N/A | 31.090 | AV |
| 2 | * | 2483.500 | 46.347 | 15.254 | -7.653 | 54.000 | 31.093 | AV |
| 3 | | 2483.577 | 45.626 | 14.533 | -8.374 | 54.000 | 31.093 | AV |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Vertical |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 2M at 2480MHz | |



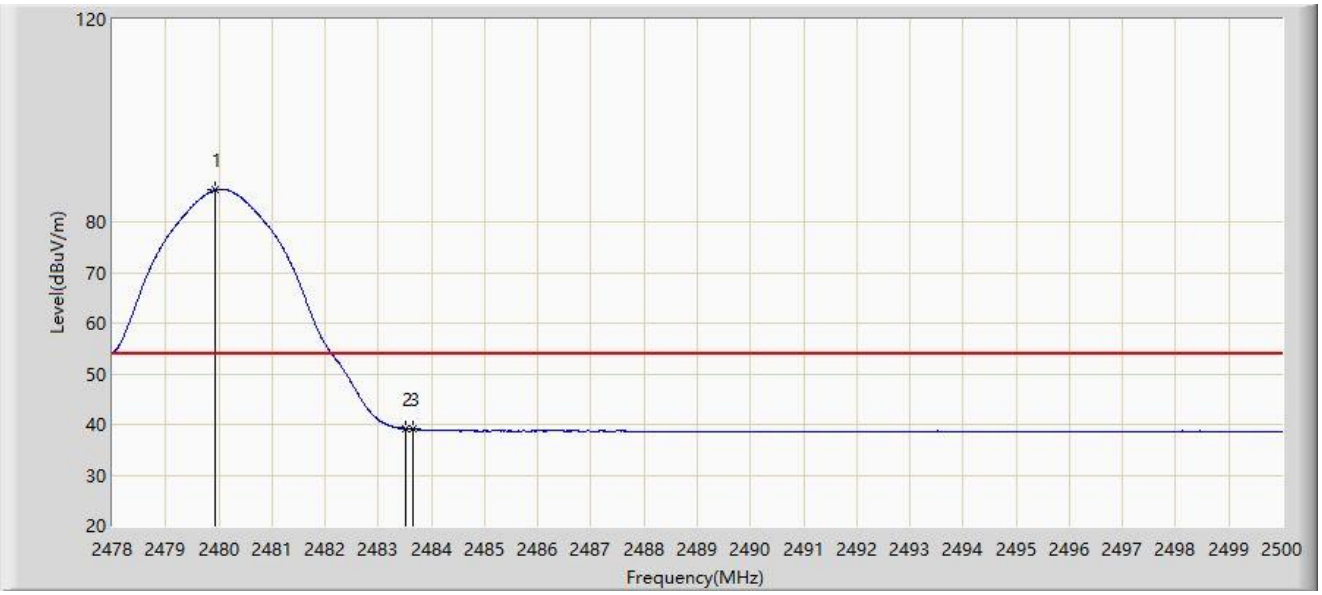

| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 2479.452 | 89.103 | 58.014 | N/A | N/A | 31.089 | PK |
| 2 | | 2483.500 | 54.461 | 23.368 | -19.539 | 74.000 | 31.093 | PK |
| 3 | * | 2484.050 | 57.072 | 25.979 | -16.928 | 74.000 | 31.094 | PK |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

| | |
|---|---|
| Site: WZ-AC1 | Test Date: 2023-07-24 |
| Limit: FCC_2.4G_RE(3m) | Engineer: Ajin Fan |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Vertical |
| EUT: AT-314 | Power: By Battery |
| Test Mode: Transmit by BLE 2M at 2480MHz | |




| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 2479.936 | 86.319 | 55.229 | N/A | N/A | 31.090 | AV |
| 2 | * | 2483.500 | 39.124 | 8.031 | -14.876 | 54.000 | 31.093 | AV |
| 3 | | 2483.643 | 39.044 | 7.951 | -14.956 | 54.000 | 31.093 | AV |

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

## Appendix B - Test Setup Photograph

Refer to “2307RSU008-UT” file.

## Appendix C - EUT Photograph

Refer to “2307RSU008-UE” file.

The End