



RF MEASUREMENT REPORT

FCC ID: 2ALJ3AP45X
Applicant: HAN Networks Co., Ltd.
Product: HAN Access Point
Model No.: AP451
Brand Name: HANNETWORKS; HAN NETWORKS
FCC Classification: Digital Transmission System (DTS)
FCC Rule Part(s): Part 15 Subpart C (Section 15.247)
Result: Complies
Test Date: 2022-04-06 ~ 2022-07-26

Reviewed By:

Approved By:



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 |
|---------------|---------|----------------|------------|-------|
| 2203RSU065-U1 | Rev. 01 | Initial Report | 2022-09-20 | Valid |
| | | | | |

Note 1: This report is a copy report of original report 2203RSU064-U1. Only applicant information and Product information (name & model No. & brand name) has changed.

Note 2: AP451 referenced test data from AP351 (FCC ID: 2ALJ3AP35X), only spot check in this report.

This application is based on the differences between the two models as follows:

1. Identical internal printed circuit board layouts, a common design and components.
2. Enable 5150 ~ 5350MHz of High band chip.
3. Enable 5945 ~ 7125MHz and disable 5150 ~ 5350MHz of Low band chip, also disable 160MHz BW of 5GHz Wi-Fi.
4. There's no change of 2.4GHz Wi-Fi, Bluetooth and Wi-Fi Scan mode.

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 | 6 |
| 1.6. Working Frequencies..... | 7 |
| 1.7. Description of Available Antennas | 8 |
| 2. Test Configuration..... | 9 |
| 2.1. Test Mode | 9 |
| 2.2. Test System Connection Diagram | 9 |
| 2.3. Test Software | 10 |
| 2.4. Applied Standards | 10 |
| 2.5. Test Environment Condition..... | 10 |
| 3. Antenna Requirements | 11 |
| 4. Measuring Instrument..... | 12 |
| 5. Decision Rules and Measurement Uncertainty | 13 |
| 5.1. Decision Rules | 13 |
| 5.2. Measurement Uncertainty | 13 |
| 6. Test Result | 14 |
| 6.1. Summary..... | 14 |
| 6.2. Output Power Measurement..... | 15 |
| 6.2.1. Test Limit..... | 15 |
| 6.2.2. Test Procedure..... | 15 |
| 6.2.3. Test Setting | 15 |
| 6.2.4. Test Setup | 15 |
| 6.2.5. Test Result | 15 |
| 6.3. Radiated Spurious Emission Measurement | 16 |
| 6.3.1. Test Limit..... | 16 |
| 6.3.2. Test Procedure..... | 16 |
| 6.3.3. Test Setting | 17 |
| 6.3.4. Test Setup | 19 |
| 6.3.5. Test Result | 19 |
| 6.4. Radiated Restricted Band Edge Measurement..... | 20 |
| 6.4.1. Test Limit..... | 20 |

| | | |
|------------------------------------------------|-------------------------------------------------|-----------|
| 6.4.2. | Test Procedure..... | 21 |
| 6.4.3. | Test Setting | 22 |
| 6.4.4. | Test Setup | 23 |
| 6.4.5. | Test Result | 23 |
| 6.5. | AC Conducted Emissions Measurement..... | 24 |
| 6.5.1. | Test Limit..... | 24 |
| 6.5.2. | Test Setup | 24 |
| 6.5.3. | Test Result | 24 |
| Appendix A - Test Result | | 25 |
| A.1 | Output Power Test Result..... | 25 |
| A.2 | Radiated Spurious Emission Test Result | 26 |
| A.3 | Radiated Restricted Band Edge Test Result | 29 |
| A.4 | AC Conducted Emissions Test Result..... | 41 |
| Appendix B - Test Setup Photograph..... | | 43 |
| Appendix C - EUT Photograph..... | | 44 |

1. General Information

1.1. Applicant

HAN Networks Co., Ltd.

101-A16, 1st Floor, Building 3, No.9 compound, Yongfeng Road, Haidian District, Beijing, P.R. China

1.2. Manufacturer

HAN Networks Co., Ltd.

101-A16, 1st Floor, Building 3, No.9 compound, Yongfeng Road, Haidian District, Beijing, P.R. China

1.3. Testing Facility

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

1.4. Product Information

| | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name | HAN Access Point |
| Model No. | AP451 |
| EUT Identification No. | 20220324Sample#09 (Radiated) 20220324Sample#10 (Conducted) |
| Wi-Fi Specification | 802.11a/b/g/n/ac/ax |
| Bluetooth Specification | V5.1 Single Mode |
| Antenna Information | Refer to Section 1.7 |
| Power Type | AC Adapter Input or PoE Input |
| Operating Environment | Indoor Use |
| Accessories | |
| AC Adapter | Model: ADP-50GR B Input: 100-240V ~ 50/60Hz, 1.3A Output: 48.0V, 1.042A, 50.1W MAX |
| PoE Injector | Model: POE60U-1BT-X Input: 100-240V ~ 1.5A, 50/60Hz Output: 56.0V, 0.535A, 30W PIN 3, 6+ PIN 1, 2 Return Output: 56.0V, 0.535A, 30W PIN 4, 5+ PIN 7, 8 Return |
| Remark: | |
| <ol style="list-style-type: none"> The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer. AC Power Adapter and PoE Injector are not sold with Product. For this report, we select AC Adapter for testing. | |

1.5. Radio Specification

| | |
|---------------------|----------------|
| Bluetooth Frequency | 2402 ~ 2480MHz |
| Channel Number | 40 |
| Type of modulation | GFSK |
| Data Rate | 1Mbps & 2Mbps |

Note: For other features of this EUT, test report will be issued separately.

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 | -- | -- | -- | -- |

1.7. Description of Available Antennas

| Antenna Type | Frequency Band (MHz) | Tx Paths | Max Antenna Gain (dBi) | Directional Gain (dBi) | | Beamforming Directional Gain (dBi) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------|------------------------|------------------------------------|---------|------------------------------------|
| | | | | For Power | For PSD | |
| Wi-Fi Antennas | | | | | | |
| PIFA | 2400 ~ 2483.5 | 4 | 3.9 | 3.9 | 9.92 | 9.92 |
| PIFA & Dipole | 5150 ~ 5850 | 8 | 3.9 | BW ≥ 40M, 3.9 BW=20M, 6.9 | 12.93 | 12.93 |
| Dipole | 5925 ~ 7125 | 4 | 3.8 | 3.8 | 9.82 | 9.82 |
| Scan Antenna | | | | | | |
| Dipole | 2400 ~ 2483.5 | 1 | 3.5 | 3.5 | 3.5 | -- |
| Dipole | 5150 ~ 5250 & 5725 ~ 5850 | 1 | 3.9 | 3.9 | 3.9 | -- |
| Bluetooth Antenna | | | | | | |
| Dipole | 2400 ~ 2483.5 | 1 | 3.5 | 3.5 | 3.5 | -- |
| Remark: <ol style="list-style-type: none"> The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated. For CDD transmissions, directional gain is calculated as follows. Directional gain = $G_{ANT\ Max} + \text{Array Gain}$, where Array Gain is as follows. <ul style="list-style-type: none"> For power spectral density (PSD) measurements on all devices, Array Gain = $10 \log (N_{ANT} / N_{SS})$ dB; For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for $N_{ANT} \leq 4$; Array Gain = 0 dB for channel widths ≥ 40 MHz for any N_{ANT}; Array Gain = $5 \log(N_{ANT} / N_{SS})$ dB or 3 dB, whichever is less, for 20MHz channel widths with $N_{ANT} \geq 5$. The EUT also supports Beam Forming mode, and the Beam Forming support 802.11n/ac/ax, not include 802.11a/b/g. Beamforming Directional gain = $G_{ANT\ Max} + 10 \log (N_{ANT} / N_{SS})$. | | | | | | |

2. Test Configuration

2.1. Test 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 and AC line conducted testing.

| Connection Diagram – Radiated Emission testing & AC Conducted Emissions | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------|---------------|
| <p>The diagram shows a central box labeled 'EUT'. A box labeled 'Adapter' is connected to the EUT by a line labeled 'B'. A box labeled '1' is connected to the EUT by a line labeled 'A'. The entire setup is enclosed in a larger rectangular frame.</p> | | | |
| Cable Type | | Cable Description | |
| A | LAN Cable | Non shielded, > 10m | |
| B | Power Cable | Non shielded, 1.25m | |
| Product | | Manufacturer | Model No. |
| 1 | Notebook | Dell | Latitude 5491 |

2.3. Test Software

The test utility software used during testing was “telnet”, and commands was provided by manufacturer.

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
- KDB 484596 D01v01

2.5. Test Environment Condition

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

3. 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**.
- There are no provisions for connection to an external antenna.

Conclusion:

The unit complies with the requirement of §15.203.

4. Measuring Instrument

| Instrument | Manufacturer | Model No. | Asset No. | Cali. Interval | Cali. Due Date | Test Site |
|---------------------|--------------|--------------|-------------|----------------|----------------|-----------|
| EMI Test Receiver | R&S | ESR7 | MRTSUE06001 | 1 year | 2022-12-29 | WZ-AC1 |
| Horn Antenna | Schwarzbeck | BBHA 9120D | MRTSUE06023 | 1 year | 2022-09-16 | WZ-AC1 |
| Preamplifier | Agilent | 83017A | MRTSUE06076 | 1 year | 2022-11-12 | WZ-AC1 |
| TRILOG Antenna | Schwarzbeck | VULB 9168 | MRTSUE06172 | 1 year | 2022-08-05 | WZ-AC1 |
| Anechoic Chamber | TDK | WZ-AC1 | MRTSUE06212 | 1 year | 2022-04-29 | WZ-AC1 |
| Anechoic Chamber | TDK | WZ-AC1 | MRTSUE06212 | 1 year | 2023-04-21 | WZ-AC1 |
| Thermohygrometer | testo | 608-H1 | MRTSUE06403 | 1 year | 2022-06-28 | WZ-AC1 |
| Thermohygrometer | testo | 608-H1 | MRTSUE06403 | 1 year | 2023-06-06 | WZ-AC1 |
| Signal Analyzer | Keysight | N9010B | MRTSUE06607 | 1 year | 2022-12-29 | WZ-AC1 |
| Thermohygrometer | testo | Testo 608-H1 | MRTSUE11039 | 1 year | 2022-11-11 | WZ-AC1 |
| Loop Antenna | Schwarzbeck | FMZB 1519 | MRTSUE06025 | 1 year | 2022-10-28 | WZ-AC1 |
| Horn Antenna | Schwarzbeck | BBHA 9170 | MRTSUE06597 | 1 year | 2022-12-01 | WZ-AC1 |
| Preamplifier | EMCI | EMC184045SE | MRTSUE06640 | 1 year | 2023-01-13 | WZ-AC1 |
| Two-Line V-Network | R&S | ENV216 | MRTSUE06002 | 1 year | 2022-06-08 | WZ-SR2 |
| Two-Line V-Network | R&S | ENV216 | MRTSUE06002 | 1 year | 2023-06-04 | WZ-SR2 |
| Shielding Room | MIX-BEP | WZ-SR2 | MRTSUE06215 | N/A | N/A | WZ-SR2 |
| Thermohygrometer | testo | 608-H1 | MRTSUE06404 | 1 year | 2022-06-28 | WZ-SR2 |
| Thermohygrometer | testo | 608-H1 | MRTSUE06404 | 1 year | 2023-06-06 | WZ-SR2 |
| Four-Line V-Network | R&S | ENV432 | MRTSUE06615 | 1 year | 2022-10-13 | WZ-SR2 |
| EMI Test Receiver | R&S | ESR3 | MRTSUE06909 | 1 year | 2022-11-01 | WZ-SR2 |
| USB Power Sensor | Keysight | U2021XA | MRTSUE06446 | 1 year | 2022-06-08 | WZ-SR5 |
| USB Power Sensor | Keysight | U2021XA | MRTSUE06446 | 1 year | 2023-06-04 | WZ-SR5 |
| Thermohygrometer | testo | 608-H1 | MRTSUE06402 | 1 year | 2022-06-28 | WZ-SR5 |
| Thermohygrometer | testo | 608-H1 | MRTSUE06402 | 1 year | 2023-06-06 | WZ-SR5 |
| Shielding Room | HUAMING | WZ-SR5 | MRTSUE06442 | N/A | N/A | WZ-SR5 |
| Attenuator | MVE | MVE2213 | MRTSUE11072 | 1 year | 2022-06-10 | WZ-SR5 |
| Attenuator | MVE | MVE2213 | MRTSUE11072 | 1 year | 2023-06-09 | WZ-SR5 |

| Software | Version | Function |
|----------------------|---------|------------------------|
| EMI Software | V3.0.0 | EMI Test Software |
| Controller_MF 7802 | 2.03C | RE Antenna & turntable |
| BenchVue Power Meter | 2021 | Power |

5. Decision Rules and Measurement Uncertainty

5.1. 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.)

5.2. 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% ($U=2Uc(y)$): 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB |
| Radiated Disturbance |
| Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB |
| Output Power |
| Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 1.13dB |

6. Test Result

6.1. Summary

| FCC Section(s) | Test Description | Test Condition | Verdict |
|------------------|--------------------------------------------------------------------|----------------|---------|
| 15.247(b)(3) | Output Power | Conducted | Pass |
| 15.205 15.209 | General Field Strength (Restricted Bands and Radiated Emission) | Radiated | Pass |
| 15.207 | AC Conducted Emissions 150kHz - 30MHz | Line Conducted | Pass |

Remark:

- 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.
- 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.

Spot check list

| Test Items | Test Mode | Test Channel | Test Frequency (MHz) |
|----------------------------|-----------|--------------|----------------------|
| Output power | BLE 1Mbps | 19 | 2440 |
| | BLE 1Mbps | 39 | 2480 |
| | BLE 2Mbps | 00 | 2402 |
| | BLE 2Mbps | 39 | 2480 |
| Radiated Spurious Emission | BLE 1Mbps | 19 | 2440 |
| Radiated Band Edge | BLE 1Mbps | 39 | 2480 |
| | BLE 2Mbps | 00 | 2402 |
| | BLE 2Mbps | 39 | 2480 |
| AC Conducted Emissions | BLE 1Mbps | 19 | 2440 |

6.2. Output Power Measurement

6.2.1. 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.

6.2.2. Test Procedure

ANSI C63.10 - 2013 - Section 11.9.1.3

ANSI C63.10 - 2013 - Section 11.9.2.3.2

6.2.3. Test Setting

Method PKPM1 (Peak Power Measurement of Signals with DTS BW \leq 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.

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.1.

6.3. Radiated Spurious Emission Measurement

6.3.1. 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 [$\mu\text{V/m}$] | 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 |

6.3.2. 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)

6.3.3. 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

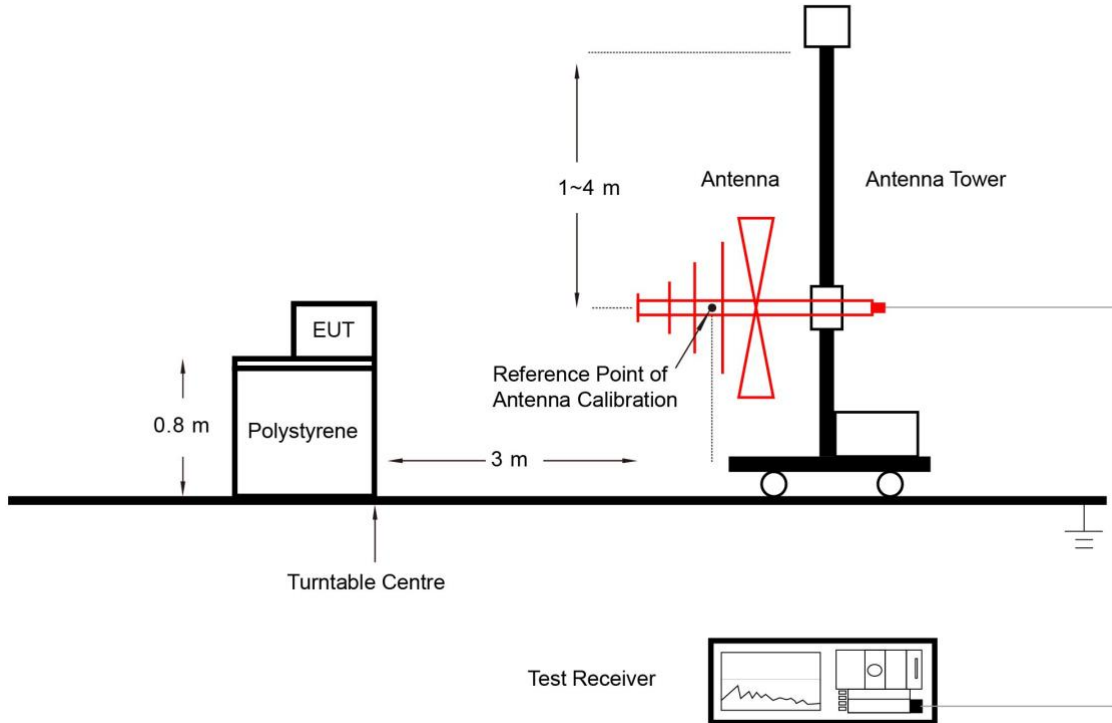
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

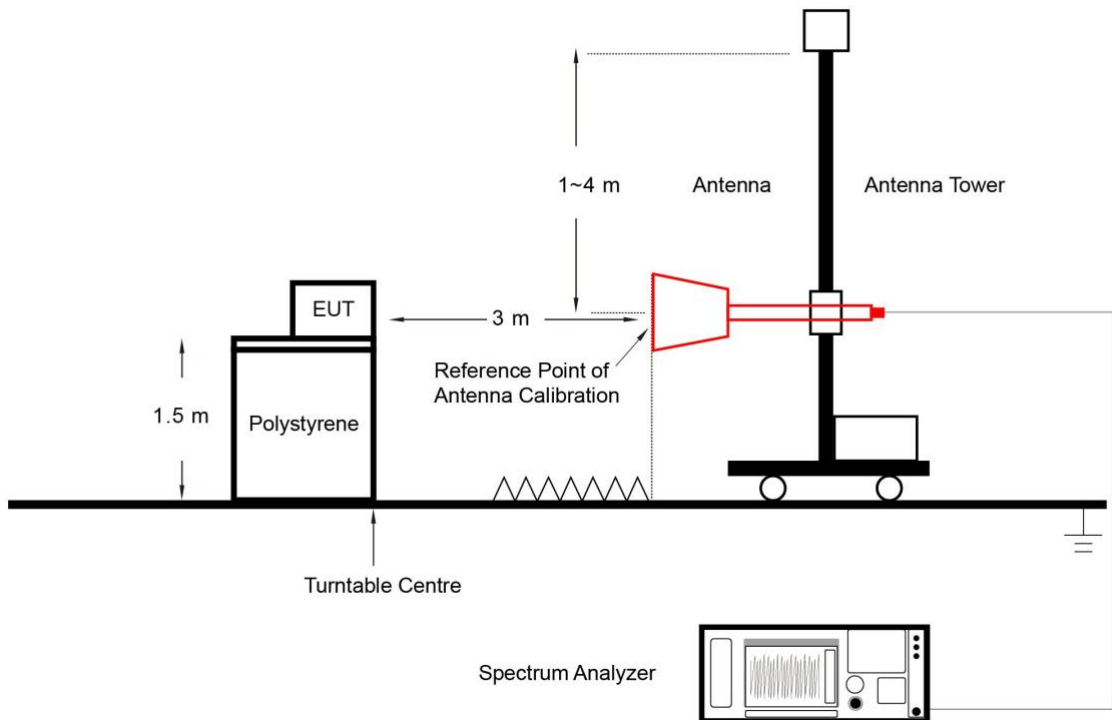
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
4. Detector = Peak
5. Sweep time = auto
6. Trace mode = max hold
7. Trace was allowed to stabilize

6.3.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.3.5. Test Result

Refer to Appendix A.2.

6.4. Radiated Restricted Band Edge Measurement

6.4.1. 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 [$\mu\text{V}/\text{m}$] | 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 |

6.4.2. Test Procedure

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

6.4.3. Test Setting

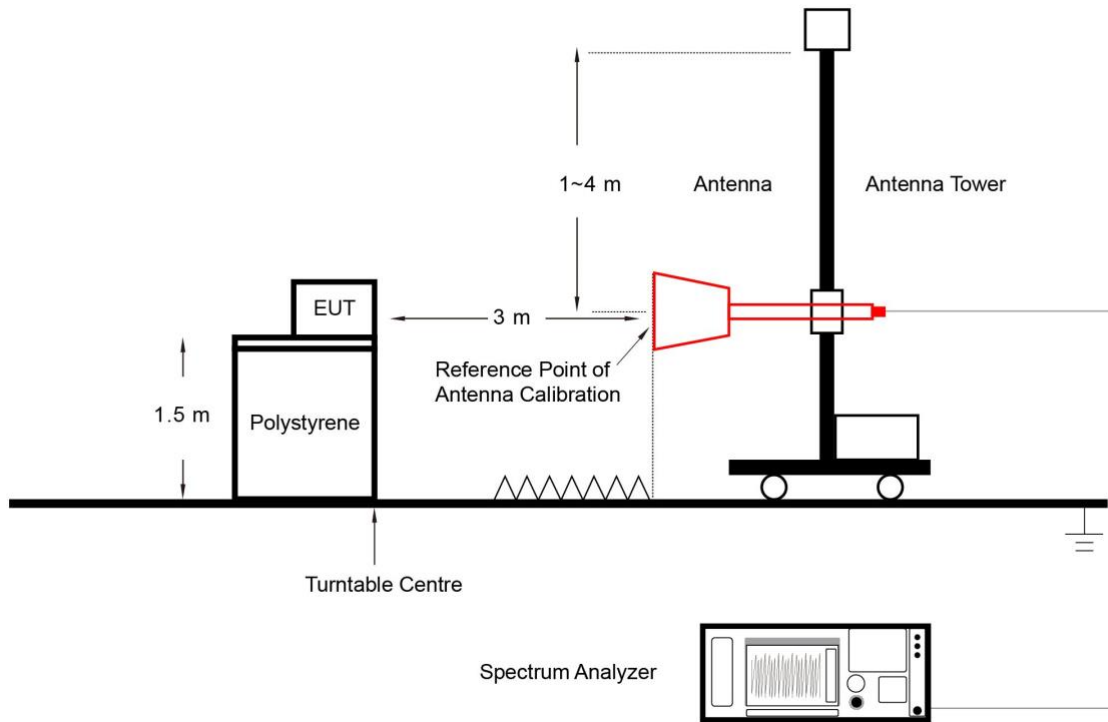
Peak Field Strength Measurements

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 $\geq 1/T$
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

6.4.4. Test Setup



6.4.5. Test Result

Refer to Appendix A.3.

6.5. AC Conducted Emissions Measurement

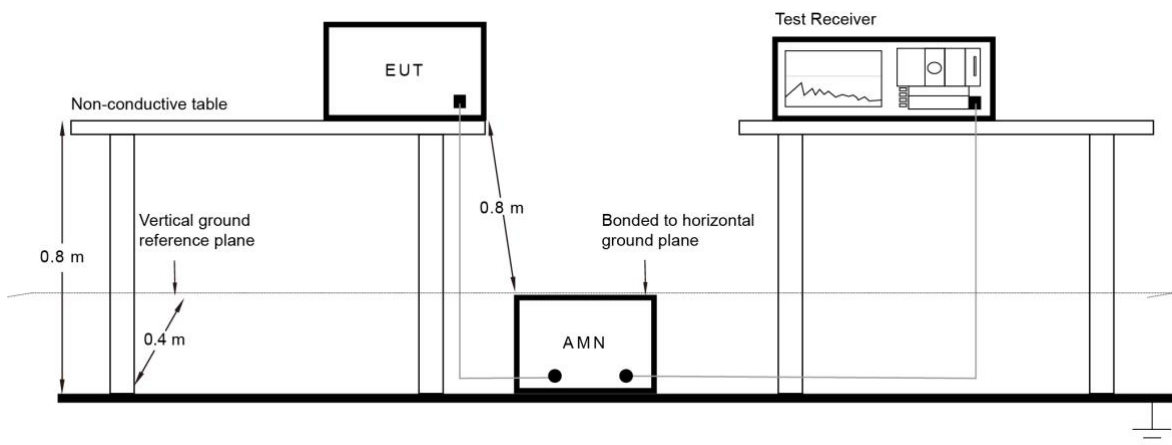
6.5.1. Test Limit

| FCC Part 15 Subpart C Paragraph 15.207 Limits | | |
|-----------------------------------------------|-----------------|-----------------|
| Frequency (MHz) | QP (dB μ V) | AV (dB μ V) |
| 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.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

6.5.2. Test Setup



6.5.3. Test Result

Refer to Appendix A.4.

Appendix A - Test Result

A.1 Output Power Test Result

| | | | |
|-----------|------------|---------------|----------|
| Test Site | WZ-SR5 | Test Engineer | Liz Yuan |
| Test Date | 2022/04/26 | | |

Test Result of Peak Output Power

| Test Mode | Data Rate | Channel No. | Frequency (MHz) | Peak Power (dBm) | Limit (dBm) | Result |
|-----------|-----------|-------------|-----------------|------------------|-------------|--------|
| BLE | 1Mbps | 19 | 2440 | 17.17 | ≤ 30.00 | Pass |
| BLE | 1Mbps | 39 | 2480 | 5.21 | ≤ 30.00 | Pass |
| BLE | 2Mbps | 00 | 2402 | 16.08 | ≤ 30.00 | Pass |
| BLE | 2Mbps | 39 | 2480 | 1.55 | ≤ 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 | 19 | 2440 | 16.93 | ≤ 30.00 | Pass |
| BLE | 1Mbps | 39 | 2480 | 4.59 | ≤ 30.00 | Pass |
| BLE | 2Mbps | 00 | 2402 | 15.90 | ≤ 30.00 | Pass |
| BLE | 2Mbps | 39 | 2480 | -0.95 | ≤ 30.00 | Pass |

A.2 Radiated Spurious Emission Test Result

| | | | |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| Test Site | WZ-AC1 | Test Engineer | Carl Jiang |
| Test Date | 2022/04/06 | Test Mode: | BLE-1Mbps |
| Remark: | 1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. | | |

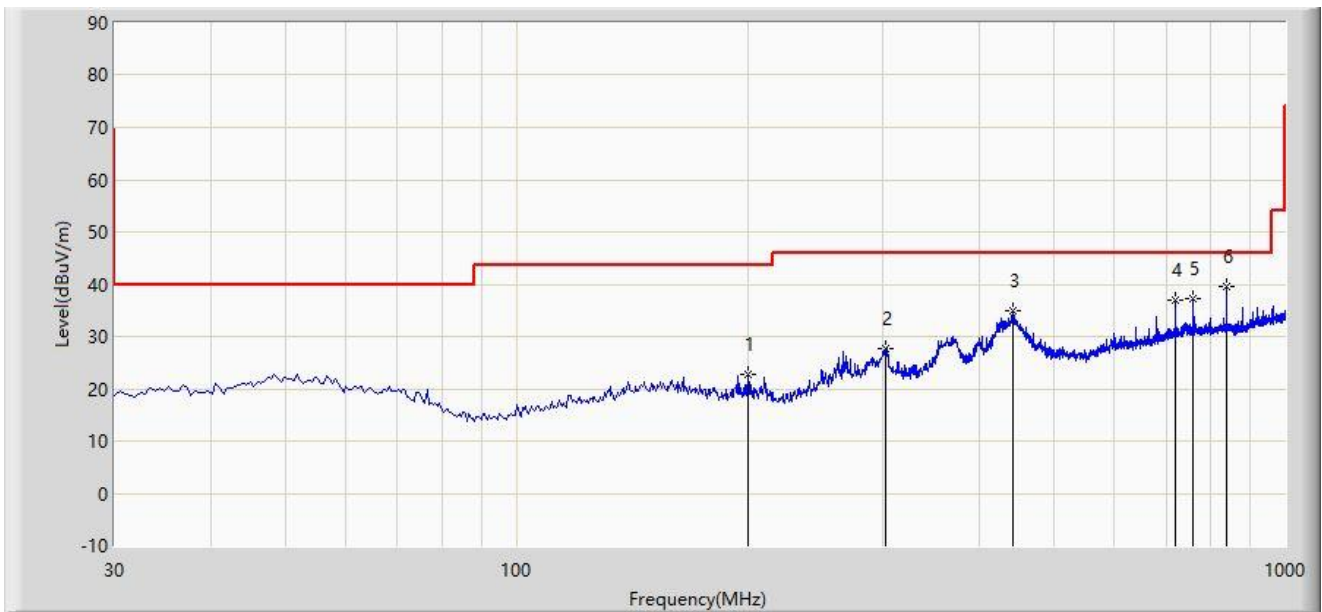
| Test Channel | Frequency (MHz) | Reading Level (dB μ V) | Factor (dB/m) | Measure Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Detector | Polarization |
|--------------|-----------------|----------------------------|---------------|------------------------------|----------------------|-------------|----------|--------------|
| 19 | 4876.0 | 47.5 | 3.9 | 51.4 | 74.0 | -22.6 | Peak | Horizontal |
| | 7621.5 | 37.2 | 8.7 | 45.9 | 74.0 | -28.1 | Peak | Horizontal |
| | 8310.0 | 34.7 | 9.6 | 44.3 | 74.0 | -29.7 | Peak | Horizontal |
| | 3856.0 | 38.9 | 1.1 | 40.0 | 74.0 | -34.0 | Peak | Vertical |
| | 4884.5 | 44.7 | 3.9 | 48.6 | 74.0 | -25.4 | Peak | Vertical |
| | 7485.5 | 37.0 | 8.8 | 45.8 | 74.0 | -28.2 | Peak | Vertical |

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + 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: 2022/04/06 |
| Limit: FCC_Part15.209_RSE(3m) | Engineer: Carl Jiang |
| Probe: VULB 9168_25-2000MHz | Polarity: Horizontal |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE-1M at Channel 2440MHz | |



| No | Mark | Frequency (MHz) | Measure Level (dB μ V/m) | Reading Level (dB μ V) | Margin (dB) | Limit (dB μ V/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------------|----------------------------|-------------|----------------------|---------------|------|
| 1 | | 199.750 | 22.888 | 8.569 | -20.612 | 43.500 | 14.319 | PK |
| 2 | | 301.600 | 27.582 | 9.398 | -18.418 | 46.000 | 18.184 | PK |
| 3 | | 441.765 | 34.970 | 12.900 | -11.030 | 46.000 | 22.070 | PK |
| 4 | | 720.155 | 36.946 | 10.059 | -9.054 | 46.000 | 26.887 | PK |
| 5 | | 759.925 | 37.289 | 9.416 | -8.711 | 46.000 | 27.873 | PK |
| 6 | * | 839.950 | 39.656 | 10.814 | -6.344 | 46.000 | 28.842 | PK |

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

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

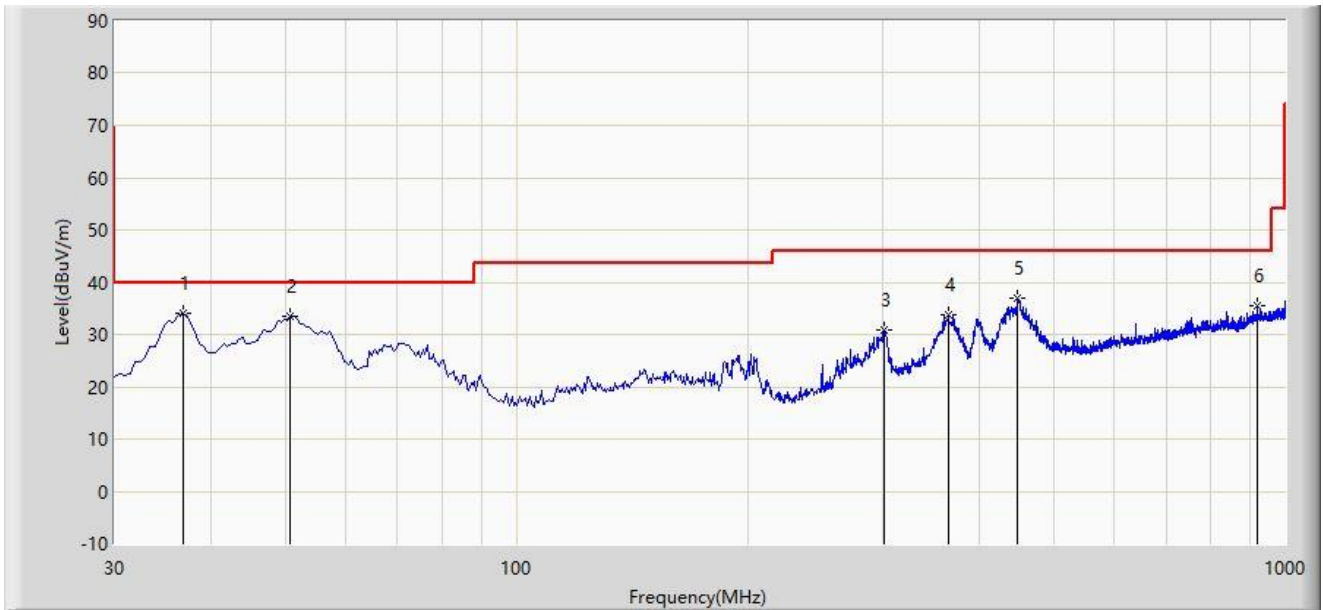
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Note 4: Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Note 5: 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: 2022/04/06 |
| Limit: FCC_Part15.209_RSE(3m) | Engineer: Carl Jiang |
| Probe: VULB 9168_25-2000MHz | Polarity: Vertical |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE-1M at Channel 2440MHz | |



| No | Mark | Frequency (MHz) | Measure Level (dB μ V/m) | Reading Level (dB μ V) | Margin (dB) | Limit (dB μ V/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------------|----------------------------|-------------|----------------------|---------------|------|
| 1 | * | 36.790 | 33.976 | 16.729 | -6.024 | 40.000 | 17.247 | PK |
| 2 | | 50.855 | 33.464 | 14.974 | -6.536 | 40.000 | 18.490 | PK |
| 3 | | 300.630 | 30.853 | 12.695 | -15.147 | 46.000 | 18.158 | PK |
| 4 | | 364.650 | 33.847 | 14.009 | -12.153 | 46.000 | 19.838 | PK |
| 5 | | 448.555 | 36.994 | 14.778 | -9.006 | 46.000 | 22.216 | PK |
| 6 | | 919.975 | 35.575 | 5.837 | -10.425 | 46.000 | 29.738 | PK |

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

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

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

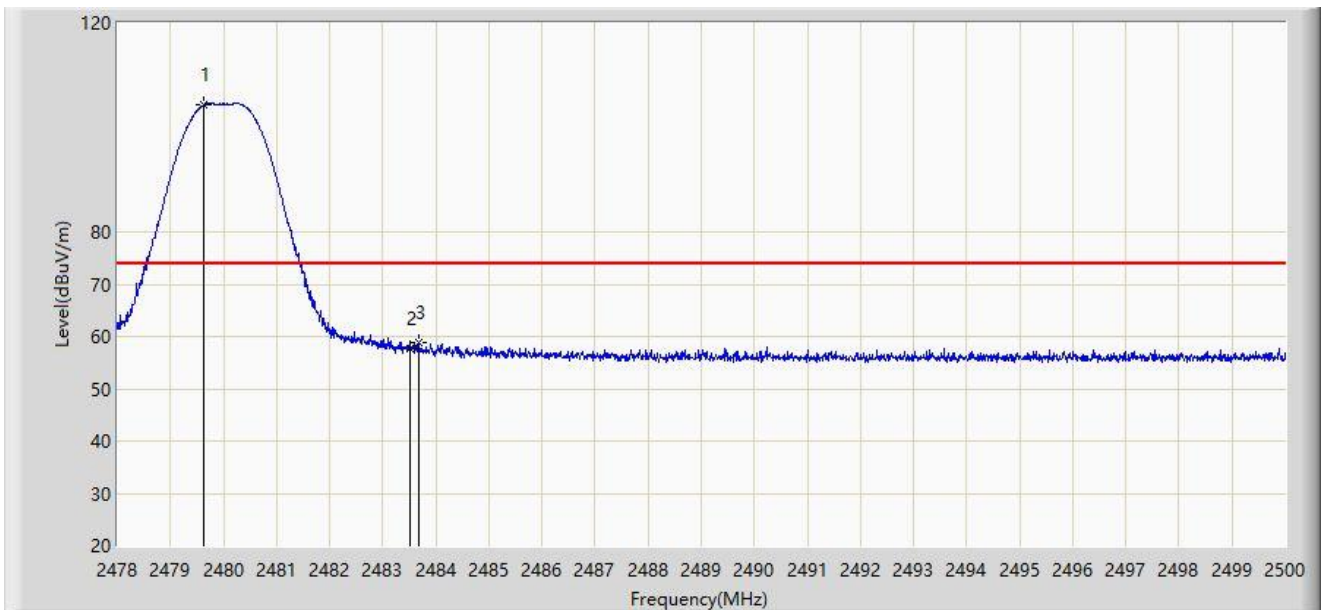
Note 4: Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Note 5: 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.3 Radiated Restricted Band Edge Test Result

| | |
|--------------------------------------------------|--------------------------|
| Site: WZ-AC1 | Time: 2022/07/26 - 16:39 |
| Limit: FCC_Part15_Band Edge(3m) | Engineer: Carl Jiang |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Horizontal |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 1M at Channel 2480MHz | |



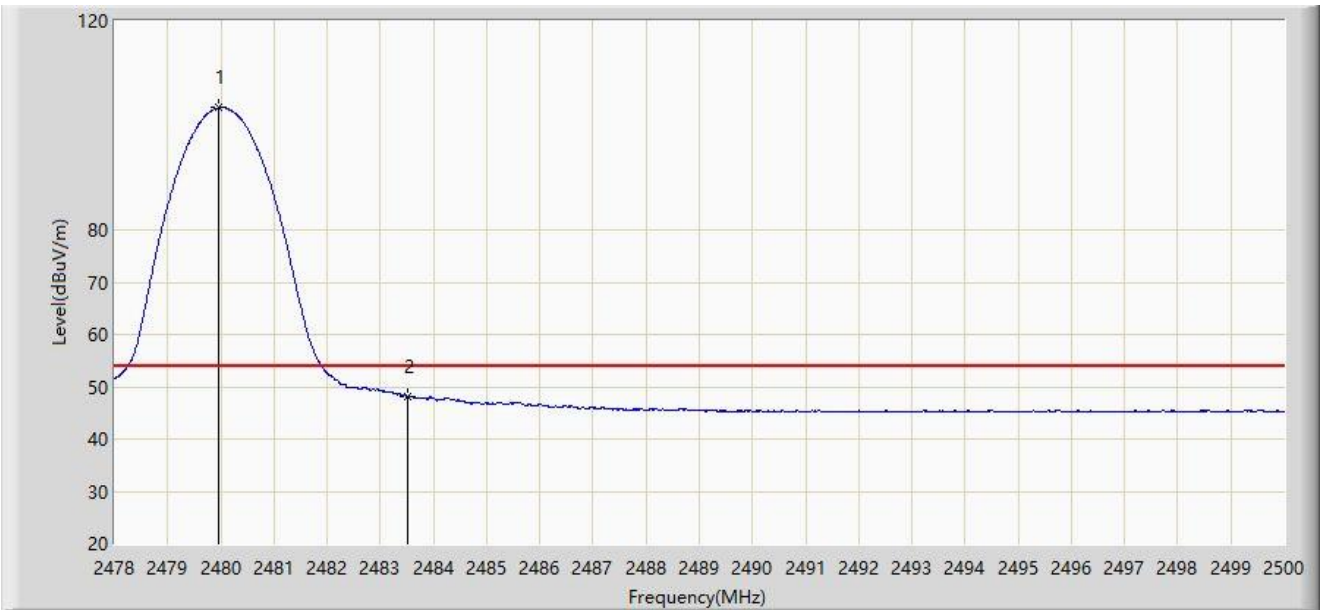
| No | Mark | Frequency (MHz) | Measure Level (dB μ V/m) | Reading Level (dB μ V) | Margin (dB) | Limit (dB μ V/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------------|----------------------------|-------------|----------------------|---------------|------|
| 1 | | 2479.639 | 104.340 | 73.639 | N/A | N/A | 30.702 | PK |
| 2 | | 2483.500 | 57.773 | 27.070 | -16.227 | 74.000 | 30.704 | PK |
| 3 | * | 2483.687 | 58.961 | 28.257 | -15.039 | 74.000 | 30.704 | PK |

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

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

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

| | |
|--------------------------------------------------|--------------------------|
| Site: WZ-AC1 | Time: 2022/07/26 - 17:03 |
| Limit: FCC_Part15_Band Edge(3m) | Engineer: Carl Jiang |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Horizontal |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 1M at Channel 2480MHz | |



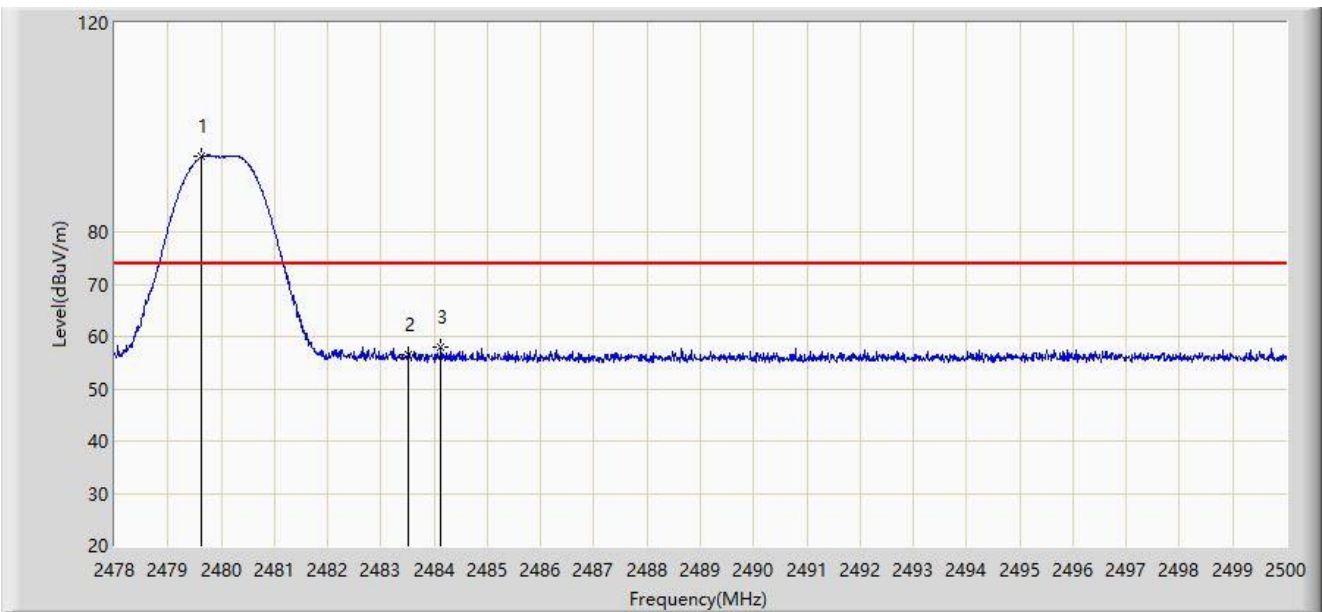
| No | Mark | Frequency (MHz) | Measure Level (dB μ V/m) | Reading Level (dB μ V) | Margin (dB) | Limit (dB μ V/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------------|----------------------------|-------------|----------------------|---------------|------|
| 1 | | 2479.958 | 103.410 | 72.709 | N/A | N/A | 30.701 | AV |
| 2 | * | 2483.500 | 48.218 | 17.515 | -5.782 | 54.000 | 30.704 | AV |

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

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

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

| | |
|--------------------------------------------------|--------------------------|
| Site: WZ-AC1 | Time: 2022/07/26 - 17:04 |
| Limit: FCC_Part15_Band Edge(3m) | Engineer: Carl Jiang |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Vertical |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 1M at Channel 2480MHz | |



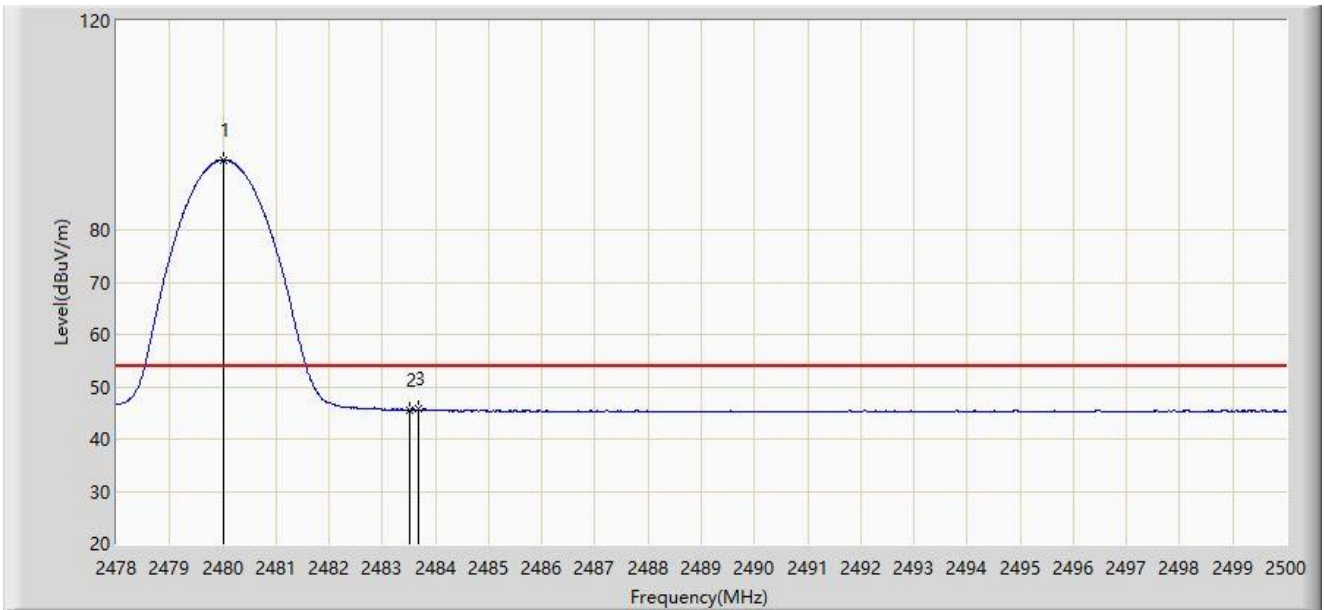
| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------|----------------------|-------------|----------------|---------------|------|
| 1 | | 2479.639 | 94.399 | 63.698 | N/A | N/A | 30.702 | PK |
| 2 | | 2483.500 | 56.459 | 25.756 | -17.541 | 74.000 | 30.704 | PK |
| 3 | * | 2484.127 | 57.855 | 27.151 | -16.145 | 74.000 | 30.704 | 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 | Time: 2022/07/26 - 17:05 |
| Limit: FCC_Part15_Band Edge(3m) | Engineer: Carl Jiang |
| Probe: BBHA9120D_1167_1-18GHz | Polarity: Vertical |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 1M at Channel 2480MHz | |



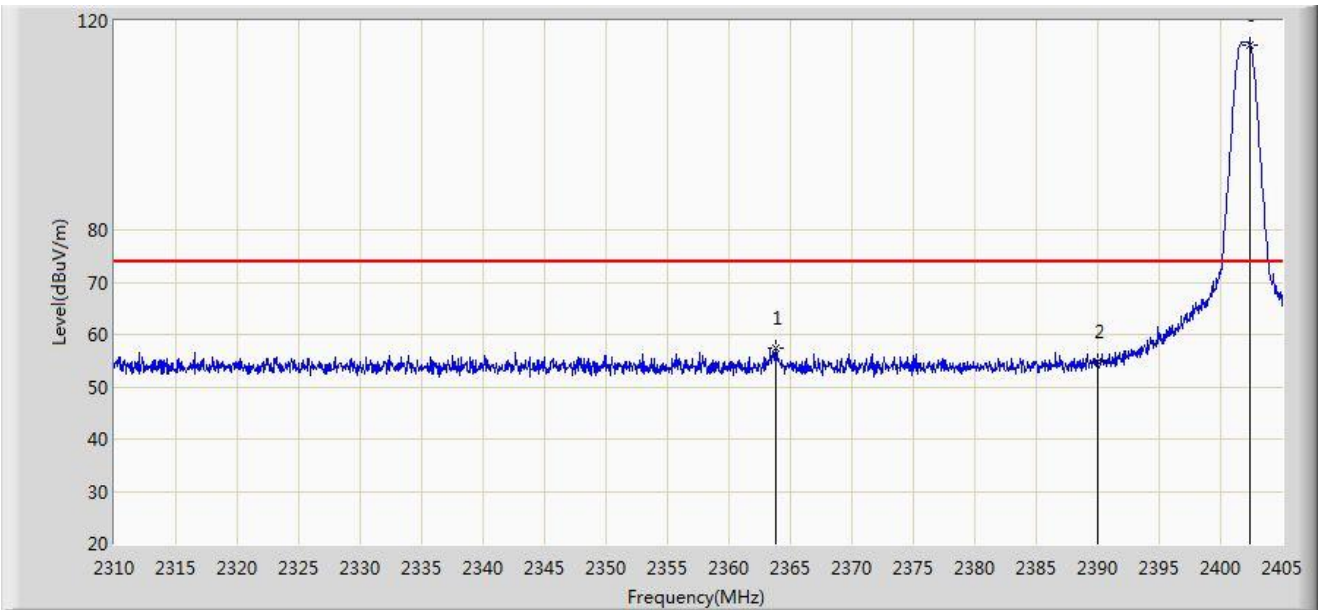
| No | Mark | Frequency (MHz) | Measure Level (dB μ V/m) | Reading Level (dB μ V) | Margin (dB) | Limit (dB μ V/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------------|----------------------------|-------------|----------------------|---------------|------|
| 1 | | 2480.013 | 93.432 | 62.731 | N/A | N/A | 30.701 | AV |
| 2 | | 2483.500 | 45.466 | 14.763 | -8.534 | 54.000 | 30.704 | AV |
| 3 | * | 2483.687 | 45.686 | 14.982 | -8.314 | 54.000 | 30.704 | AV |

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

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

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

| | |
|--------------------------------------------------|--------------------------|
| Site: WZ-AC1 | Time: 2022/04/06 - 15:26 |
| Limit: FCC_Part15_Band Edge(3m) | Engineer: Carl Jiang |
| Probe: WZ-AC1_BBHA9120D_1-18GHz | Polarity: Horizontal |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 2M at Channel 2402MHz | |



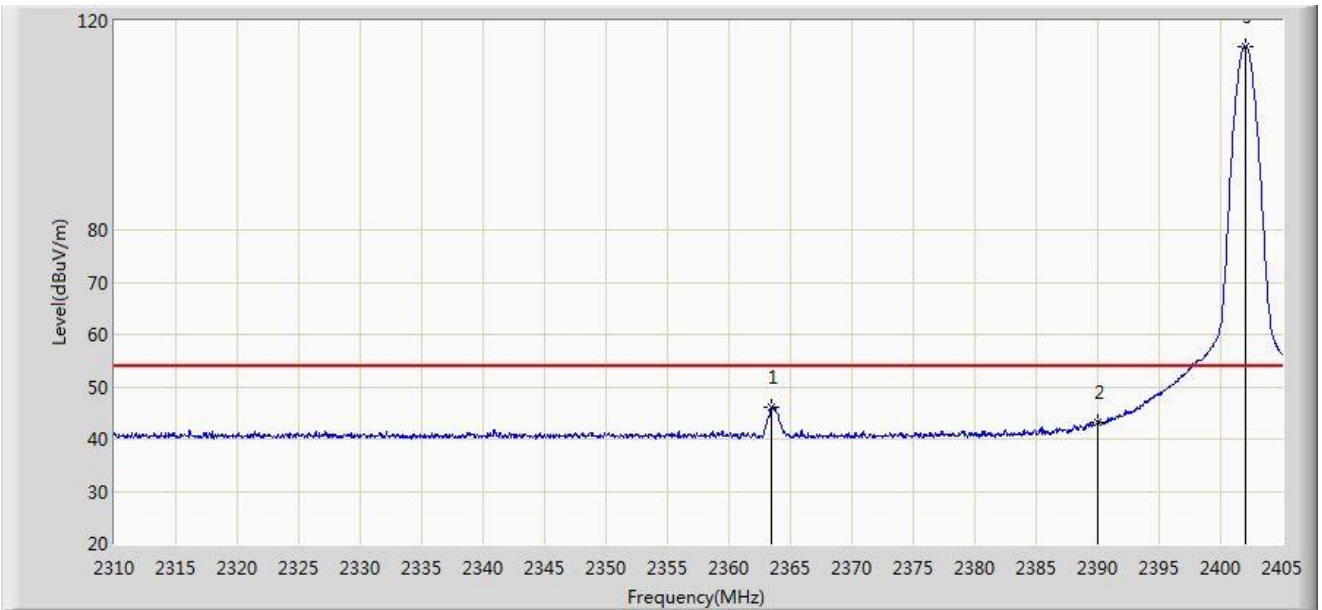
| No | Mark | Frequency (MHz) | Measure Level (dB μ V/m) | Reading Level (dB μ V) | Margin (dB) | Limit (dB μ V/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------------|----------------------------|-------------|----------------------|---------------|------|
| 1 | * | 2363.817 | 57.316 | 26.524 | -16.684 | 74.000 | 30.792 | PK |
| 2 | | 2390.000 | 54.859 | 24.043 | -19.141 | 74.000 | 30.816 | PK |
| 3 | | 2402.435 | 115.256 | 84.417 | N/A | N/A | 30.839 | PK |

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

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

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

| | |
|--------------------------------------------------|--------------------------|
| Site: WZ-AC1 | Time: 2022/04/06 - 15:35 |
| Limit: FCC_Part15_Band Edge(3m) | Engineer: Carl Jiang |
| Probe: WZ-AC1_BBHA9120D_1-18GHz | Polarity: Horizontal |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 2M at Channel 2402MHz | |



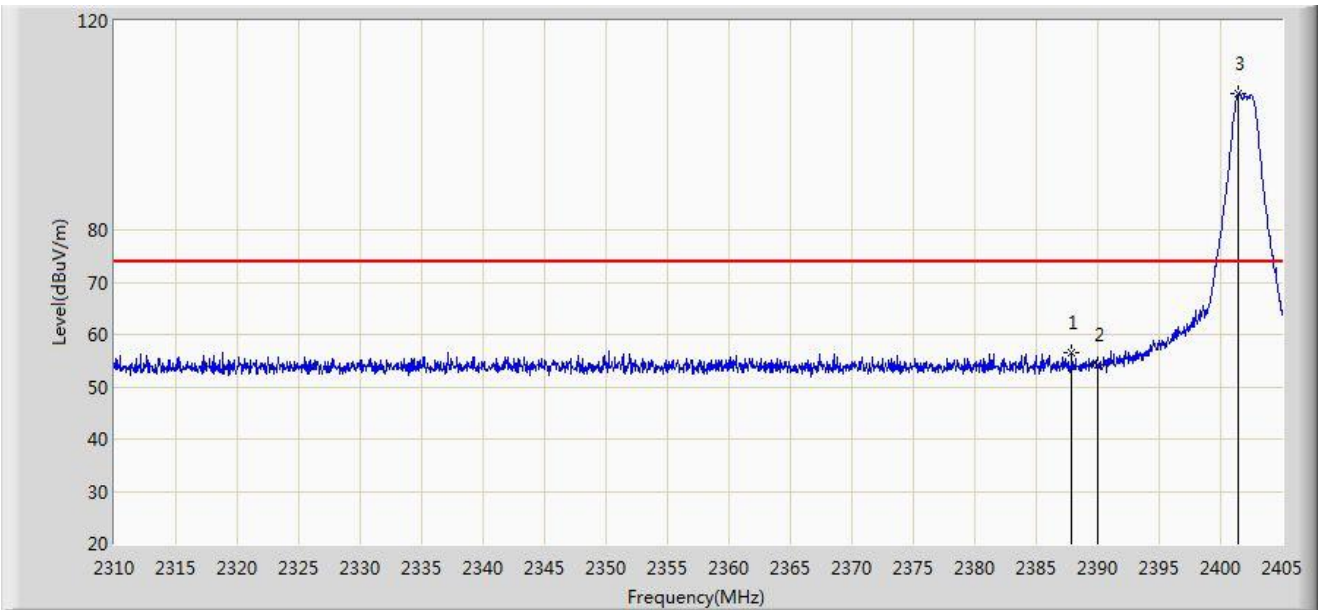
| No | Mark | Frequency (MHz) | Measure Level (dB μ V/m) | Reading Level (dB μ V) | Margin (dB) | Limit (dB μ V/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------------|----------------------------|-------------|----------------------|---------------|------|
| 1 | * | 2363.437 | 45.971 | 15.177 | -8.029 | 54.000 | 30.794 | AV |
| 2 | | 2390.000 | 43.302 | 12.486 | -10.698 | 54.000 | 30.816 | AV |
| 3 | | 2402.008 | 115.211 | 84.372 | N/A | N/A | 30.839 | AV |

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

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

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

| | |
|--------------------------------------------------|--------------------------|
| Site: WZ-AC1 | Time: 2022/04/06 - 15:50 |
| Limit: FCC_Part15_Band Edge(3m) | Engineer: Carl Jiang |
| Probe: WZ-AC1_BBHA9120D_1-18GHz | Polarity: Vertical |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 2M at Channel 2402MHz | |



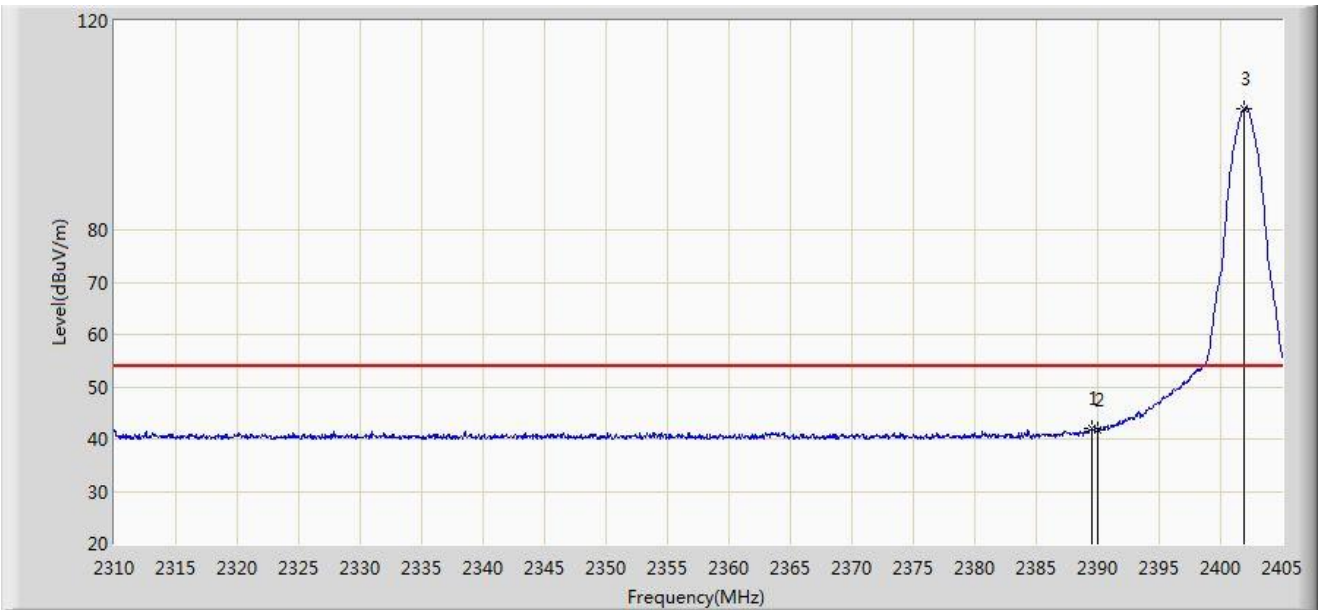
| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------|----------------------|-------------|----------------|---------------|------|
| 1 | * | 2387.900 | 56.610 | 25.797 | -17.390 | 74.000 | 30.814 | PK |
| 2 | | 2390.000 | 54.230 | 23.414 | -19.770 | 74.000 | 30.816 | PK |
| 3 | | 2401.485 | 105.945 | 75.107 | N/A | N/A | 30.838 | 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 | Time: 2022/04/06 - 15:52 |
| Limit: FCC_Part15_Band Edge(3m) | Engineer: Carl Jiang |
| Probe: WZ-AC1_BBHA9120D_1-18GHz | Polarity: Vertical |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 2M at Channel 2402MHz | |



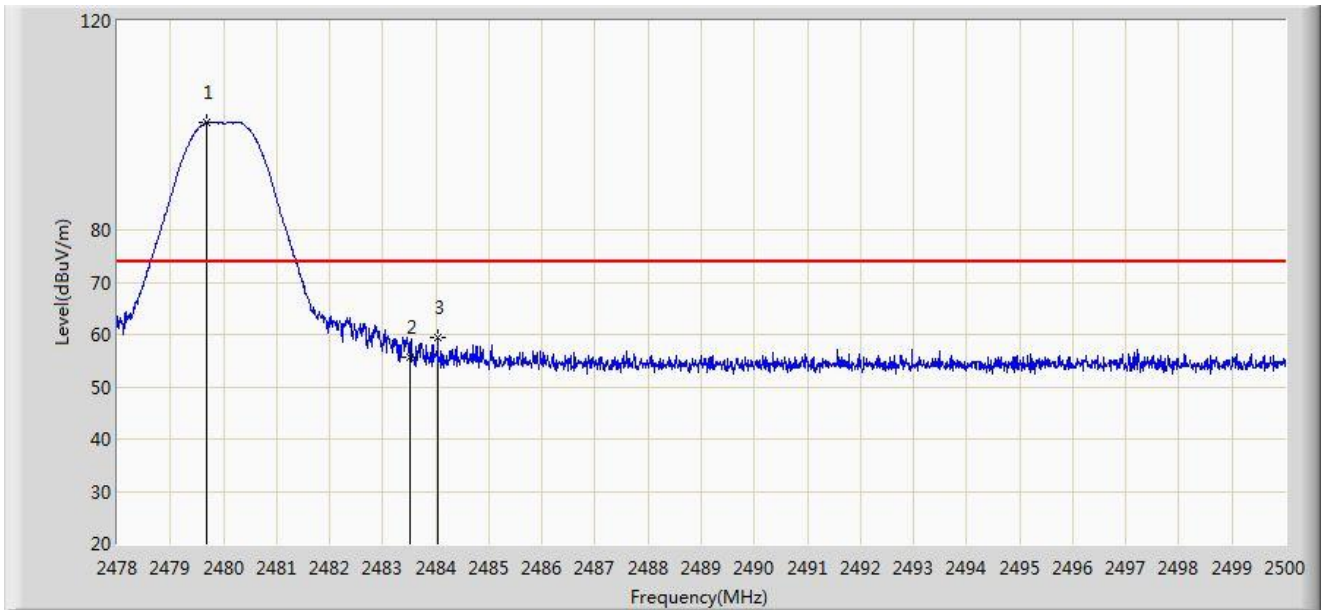
| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------|----------------------|-------------|----------------|---------------|------|
| 1 | * | 2389.515 | 42.086 | 11.271 | -11.914 | 54.000 | 30.815 | AV |
| 2 | | 2390.000 | 41.671 | 10.855 | -12.329 | 54.000 | 30.816 | AV |
| 3 | | 2401.865 | 103.181 | 72.342 | N/A | N/A | 30.839 | 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 | Time: 2022/04/06 - 15:12 |
| Limit: FCC_Part15_Band Edge(3m) | Engineer: Carl Jiang |
| Probe: WZ-AC1_BBHA9120D_1-18GHz | Polarity: Horizontal |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 2M at Channel 2480MHz | |



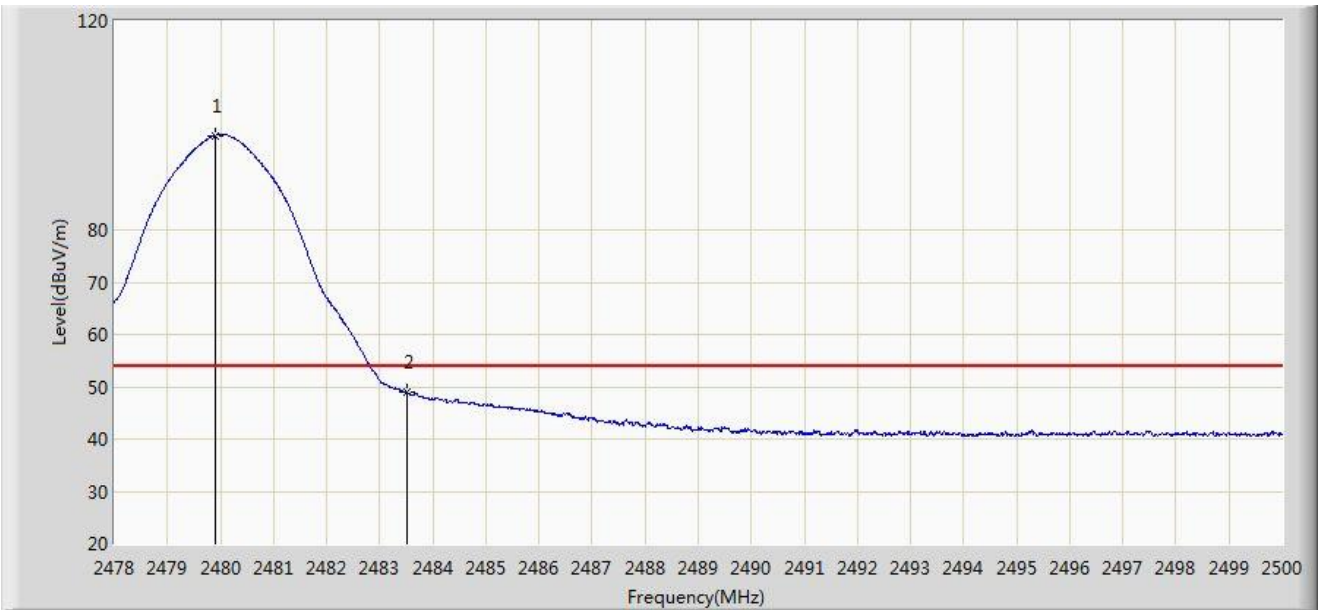
| No | Mark | Frequency (MHz) | Measure Level (dB μ V/m) | Reading Level (dB μ V) | Margin (dB) | Limit (dB μ V/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------------|----------------------------|-------------|----------------------|---------------|------|
| 1 | | 2479.694 | 100.594 | 69.589 | N/A | N/A | 31.005 | PK |
| 2 | | 2483.500 | 55.528 | 24.507 | -18.472 | 74.000 | 31.021 | PK |
| 3 | * | 2484.039 | 59.537 | 28.514 | -14.463 | 74.000 | 31.023 | PK |

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

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

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

| | |
|--------------------------------------------------|--------------------------|
| Site: WZ-AC1 | Time: 2022/04/06 - 15:41 |
| Limit: FCC_Part15_Band Edge(3m) | Engineer: Carl Jiang |
| Probe: WZ-AC1_BBHA9120D_1-18GHz | Polarity: Horizontal |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 2M at Channel 2480MHz | |



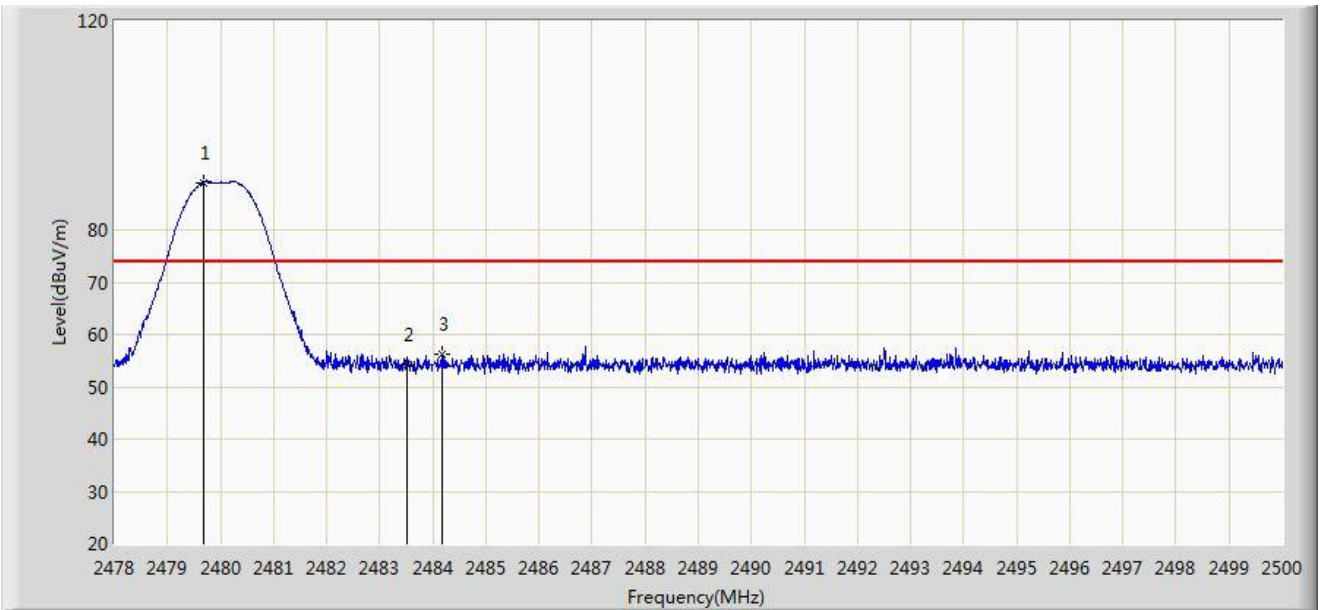
| No | Mark | Frequency (MHz) | Measure Level (dBμV/m) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------|----------------------|-------------|----------------|---------------|------|
| 1 | | 2479.914 | 98.106 | 67.101 | N/A | N/A | 31.005 | AV |
| 2 | * | 2483.500 | 48.898 | 17.877 | -5.102 | 54.000 | 31.021 | 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 | Time: 2022/04/06 - 15:20 |
| Limit: FCC_Part15_Band Edge(3m) | Engineer: Carl Jiang |
| Probe: WZ-AC1_BBHA9120D_1-18GHz | Polarity: Vertical |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 2M at Channel 2480MHz | |



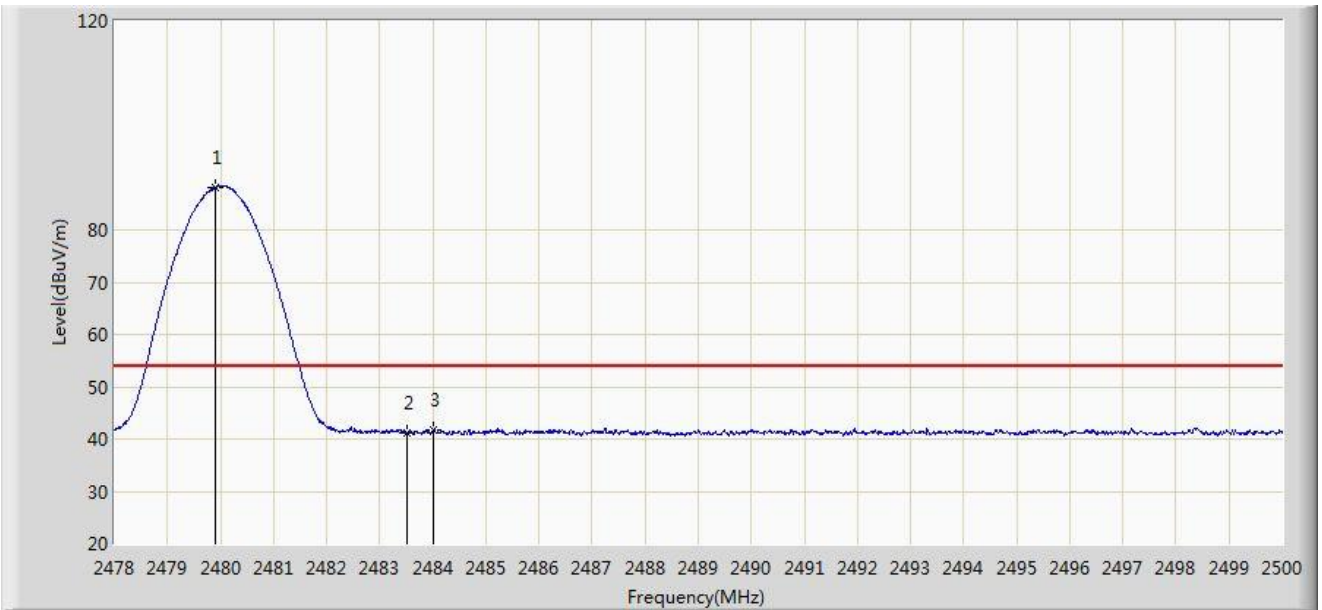
| No | Mark | Frequency (MHz) | Measure Level (dB μ V/m) | Reading Level (dB μ V) | Margin (dB) | Limit (dB μ V/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------------|----------------------------|-------------|----------------------|---------------|------|
| 1 | | 2479.683 | 89.108 | 58.103 | N/A | N/A | 31.005 | PK |
| 2 | | 2483.500 | 54.227 | 23.206 | -19.773 | 74.000 | 31.021 | PK |
| 3 | * | 2484.182 | 56.196 | 25.172 | -17.804 | 74.000 | 31.023 | PK |

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

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

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

| | |
|--------------------------------------------------|--------------------------|
| Site: WZ-AC1 | Time: 2022/04/06 - 15:23 |
| Limit: FCC_Part15_Band Edge(3m) | Engineer: Carl Jiang |
| Probe: WZ-AC1_BBHA9120D_1-18GHz | Polarity: Vertical |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 2M at Channel 2480MHz | |



| No | Mark | Frequency (MHz) | Measure Level (dB μ V/m) | Reading Level (dB μ V) | Margin (dB) | Limit (dB μ V/m) | Factor (dB/m) | Type |
|----|------|-----------------|------------------------------|----------------------------|-------------|----------------------|---------------|------|
| 1 | | 2479.914 | 88.212 | 57.207 | N/A | N/A | 31.005 | AV |
| 2 | | 2483.500 | 41.132 | 10.111 | -12.868 | 54.000 | 31.021 | AV |
| 3 | * | 2484.017 | 41.855 | 10.832 | -12.145 | 54.000 | 31.023 | AV |

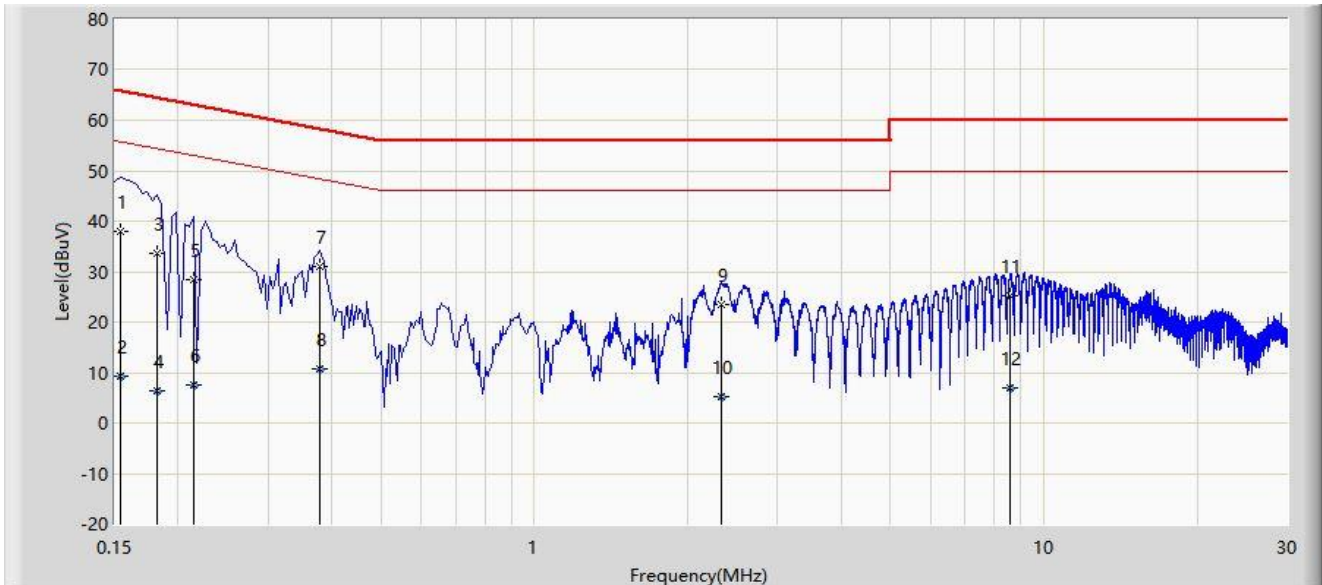
Note 1: " * ", means this data is the worst emission level.

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

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

A.4 AC Conducted Emissions Test Result

| | |
|---------------------------------------------------------|---------------------|
| Site: WZ-SR2 | Time: 2022/05/30 |
| Temperature: 22.9°C | Humidity: 64.8% |
| Limit: FCC_Part15.207_CE_AC Power | Engineer: Helen Han |
| Probe: ENV216_101683_Filter Off_C | Polarity: Line |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 1M at channel 2440MHz | |



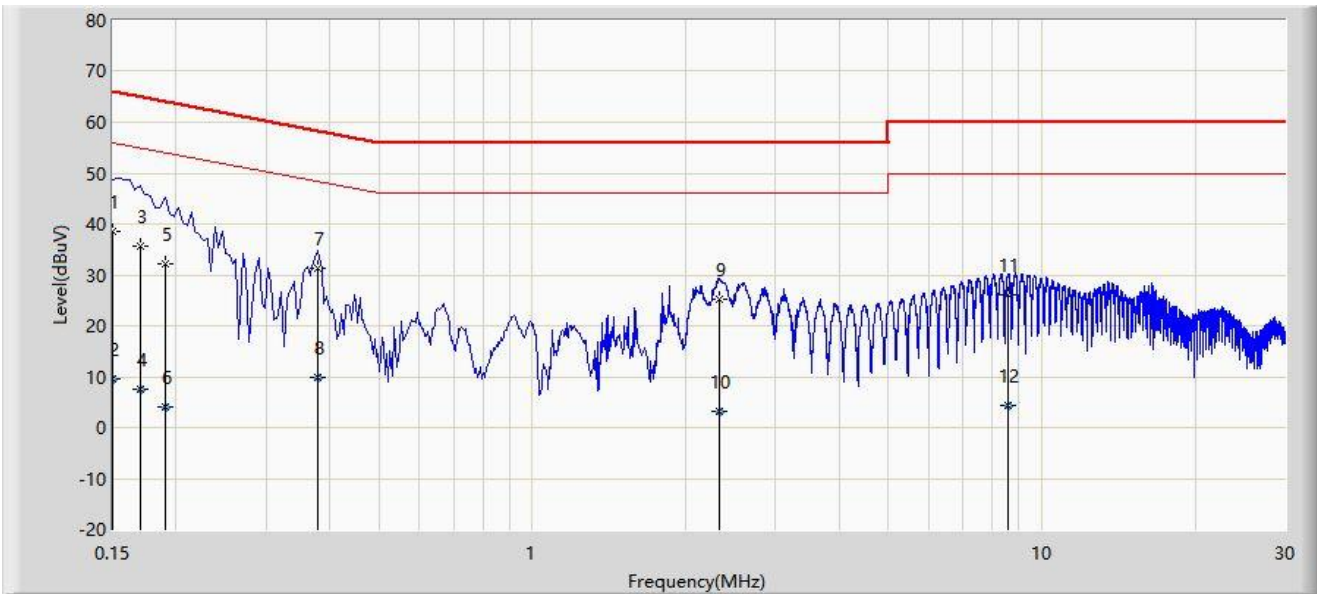
| No | Mark | Frequency (MHz) | Measure Level (dBμV) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV) | Factor (dB) | Type |
|----|------|-----------------|----------------------|----------------------|-------------|--------------|-------------|------|
| 1 | | 0.154 | 38.079 | 28.030 | -27.703 | 65.781 | 10.049 | QP |
| 2 | | 0.154 | 9.284 | -0.765 | -46.497 | 55.781 | 10.049 | AV |
| 3 | | 0.182 | 33.683 | 23.639 | -30.711 | 64.394 | 10.043 | QP |
| 4 | | 0.182 | 6.464 | -3.579 | -47.930 | 54.394 | 10.043 | AV |
| 5 | | 0.214 | 28.453 | 18.408 | -34.596 | 63.049 | 10.045 | QP |
| 6 | | 0.214 | 7.671 | -2.374 | -45.378 | 53.049 | 10.045 | AV |
| 7 | * | 0.378 | 30.981 | 20.894 | -27.342 | 58.323 | 10.088 | QP |
| 8 | | 0.378 | 10.743 | 0.655 | -37.581 | 48.323 | 10.088 | AV |
| 9 | | 2.322 | 23.450 | 13.124 | -32.550 | 56.000 | 10.326 | QP |
| 10 | | 2.322 | 5.105 | -5.221 | -40.895 | 46.000 | 10.326 | AV |
| 11 | | 8.582 | 25.265 | 14.432 | -34.735 | 60.000 | 10.833 | QP |
| 12 | | 8.582 | 7.020 | -3.813 | -42.980 | 50.000 | 10.833 | AV |

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

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

Note 3: Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

| | |
|---------------------------------------------------------|---------------------|
| Site: WZ-SR2 | Time: 2022/05/30 |
| Temperature: 22.9°C | Humidity: 64.8% |
| Limit: FCC_Part15.207_CE_AC Power | Engineer: Helen Han |
| Probe: ENV216_101683_Filter Off_C | Polarity: Neutral |
| EUT: HAN Access Point | Power: 120V/60Hz |
| Test Mode: Transmit by BLE 1M at channel 2440MHz | |



| No | Mark | Frequency (MHz) | Measure Level (dBμV) | Reading Level (dBμV) | Margin (dB) | Limit (dBμV) | Factor (dB) | Type |
|----|------|-----------------|----------------------|----------------------|-------------|--------------|-------------|------|
| 1 | | 0.150 | 38.588 | 28.211 | -27.412 | 66.000 | 10.377 | QP |
| 2 | | 0.150 | 9.549 | -0.827 | -46.451 | 56.000 | 10.377 | AV |
| 3 | | 0.170 | 35.685 | 25.330 | -29.276 | 64.960 | 10.354 | QP |
| 4 | | 0.170 | 7.557 | -2.797 | -47.404 | 54.960 | 10.354 | AV |
| 5 | | 0.190 | 32.199 | 21.860 | -31.838 | 64.037 | 10.339 | QP |
| 6 | | 0.190 | 3.916 | -6.423 | -50.121 | 54.037 | 10.339 | AV |
| 7 | * | 0.378 | 31.328 | 20.969 | -26.995 | 58.323 | 10.360 | QP |
| 8 | | 0.378 | 9.774 | -0.586 | -38.550 | 48.323 | 10.360 | AV |
| 9 | | 2.322 | 25.342 | 14.774 | -30.658 | 56.000 | 10.567 | QP |
| 10 | | 2.322 | 3.297 | -7.271 | -42.703 | 46.000 | 10.567 | AV |
| 11 | | 8.574 | 26.121 | 15.038 | -33.879 | 60.000 | 11.083 | QP |
| 12 | | 8.574 | 4.310 | -6.773 | -45.690 | 50.000 | 11.083 | AV |

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

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

Note 3: Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Appendix B - Test Setup Photograph

Refer to "2203RSU065-UT" file.

Appendix C - EUT Photograph

Refer to "2203RSU065-UE" file.

————— The End —————