RF MEASUREMENT REPORT

FCC ID:	Q9DAPINH605
Applicant:	Hewlett Packard Enterprise
Product:	ACCESS POINT
Model No.:	APINH605
Trademark:	Hewlett Packard Enterprise, HPE aruba networking
FCC Classification:	Digital Transmission System (DTS)
FCC Rule Part(s):	Part 15 Subpart C (Section 15.247)
Result:	Complies
Received Date:	2023-06-25
Test Date:	2023-07-15 ~ 2023-10-10

Reviewed By: Jame Yuan

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
2306RSU039-U2	V01	Initial Report	2023-10-11	Invalid
2306RSU039-U2	V02	Add some description and revise some typo	2023-11-29	Valid

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1. General Information

1.1. Applicant

Hewlett Packard Enterprise

6280 America Center Drive, San Jose CA 95002, United States

1.2. Manufacturer

Hewlett Packard Enterprise

6280 America Center Drive, San Jose CA 95002, United States

1.3. Testing Facility

☒	**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: ☐R-20025 ☐G-20034 ☐C-20020 ☐T-20020 ☐R-20141 ☐G-20134 ☐C-20103 ☐T-20104
☐	**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
☐	**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: 3261 FCC: 291082, TW3261 ISED: TW3261

1.4. Product Information

Product Name	Access Point
Model No.	APINH605
Serial No.	CNQHLHJ04H
Software Version	RAJB-AB06 V2.0
Wi-Fi Specification	802.11a/b/g/n/ac/ax
Bluetooth Specification	BLE only
ZigBee Specification	802.15.4
GNSS Specification	GPS, Galileo, GLONASS
Antenna Information	Refer to Section 1.5
Power Type	AC Adapter Input or PoE Input
Operating Environment	Indoor Use
Remark: 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

Zigbee Specification	802.15.4
Frequency Range	2405 ~ 2480MHz
Channel Number	16
Type of Modulation	O-QPSK
Antenna Type	PIFA
Antenna Gain	3.5dBi

1.6. Working Frequencies

Channel	Frequency	Channel	Frequency	Channel	Frequency
11	2405 MHz	12	2410 MHz	13	2415 MHz
14	2420 MHz	15	2425 MHz	16	2430 MHz
17	2435 MHz	18	2440 MHz	19	2445 MHz
20	2450 MHz	21	2455 MHz	22	2460 MHz
23	2465 MHz	24	2470 MHz	25	2475 MHz
26	2480 MHz	--	--	--	--

1.7. Description of Operating Paths

Filter	Specification	Remark
Wi-Fi		
Filter 1#	Band Pass Filter (2412-2472)	Allowing any transmission on all channels
Filter 2#	Band Pass Filter (2402-2447)	Allowing any transmission on 20MHz channels 1 thru 6 and 40MHz channel 3.
Filter 3#	Band Pass Filter (2452-2472)	Allowing any transmission on 20MHz channel 11
Filter 4#	Band Pass Filter (5150-5895)	Allowing any transmission on all channels
Filter 5#	Band Pass Filter (5150-5835)	Allowing any transmission on UNII Band 1/2a/2c/3
Filter 6#	Band Pass Filter (5925-7125)	Allowing any transmission on UNII Band 5/6/7/8
Bluetooth / ZigBee		
Filter 7#	Band Pass Filter (2402-2480)	Allowing any transmission on all channels
Filter 8#	Band Pass Filter (2402-2430)	Allowing transmission on BLE channels 37 (2402MHz) and 38 (2426MHz) and Zigbee channel 11 (2405MHz)
Filter 9#	Band Pass Filter (2478-2482)	Allowing transmission on BLE channel 39 (2480MHz) and Zigbee channel 26(2480MHz)
Note: ZigBee and BLE can't work simultaneously.		

Working Mode

	Radio 0	Radio 1	BLE/ZigBee
1	2.4G_Full Band (Filter 1#)	6G_Full Band (Filter 6#)	---
2	---	6G_Full Band (Filter 6#)	2.4G_Full Band (Filter 7#)
3	2.4G_Low Band (Filter 2#)	6G_Full Band (Filter 6#)	2.4G_High Band (Filter 9#)
4	2.4G_High Band (Filter 3#)	6G_Full Band (Filter 6#)	2.4G_Low Band (Filter 8#)
5	5G_Full Band (Filter 4#)	2.4G_Full Band (Filter 1#)	---
6	5G_Full Band (Filter 4#)	---	2.4G_Full Band (Filter 7#)
7	5G_Full Band (Filter 4#)	2.4G_Low Band (Filter 2#)	2.4G_High Band (Filter 9#)
8	5G_Full Band (Filter 4#)	2.4G_High Band (Filter 3#)	2.4G_Low Band (Filter 8#)
9	5G_Full Band (Filter 5#)	6G_Full Band (Filter 6#)	2.4G_Full Band (Filter 1#)
10	5G_Full Band (Filter 5#)	6G_Full Band (Filter 6#)	2.4G_Full Band (Filter 1#)
11	5G_Full Band (Filter 5#)	6G_Full Band (Filter 6#)	2.4G_Full Band (Filter 1#)
12	5G_Full Band (Filter 5#)	6G_Full Band (Filter 6#)	2.4G_Full Band (Filter 1#)

2. Test Configuration

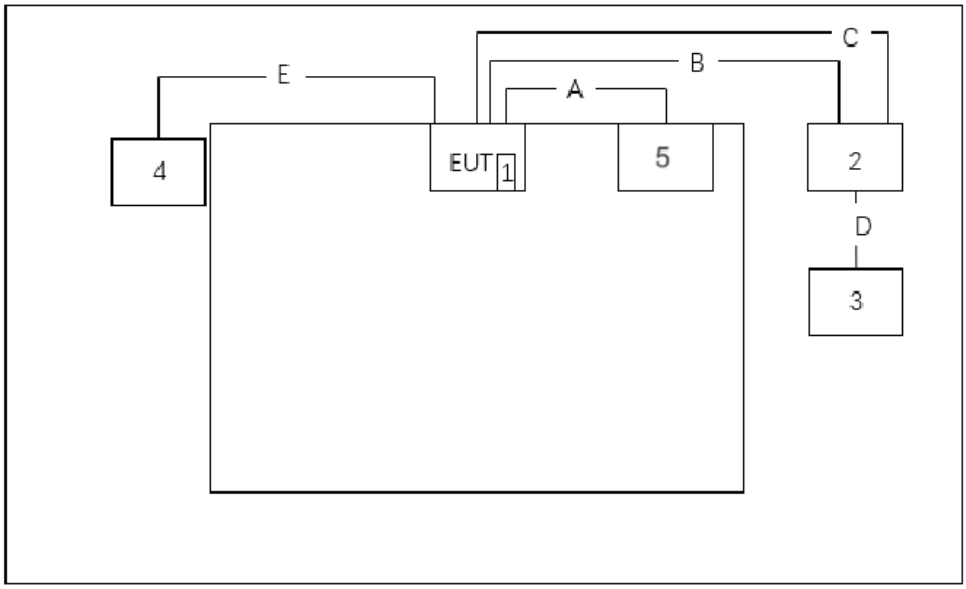
2.1. Test Mode

Mode 1: Transmit by 802.15.4

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



Cable Type		Cable Description	Length
A	Power Cable	Non-Shielded	>1.8m
B ~ E	LAN Cable	Non-Shielded, Cat.5e	> 10m
Product		**Manufacturer**	**Model No.**
1	USB Flash	Samsung	16G
2	2.5G Switch	TP-Link	TL-SH1005
3	Notebook	Lenovo	E495
4	AP Router	Aruba	AP303
5	AC/DC Adapter	Delta Electronics, Inc.	ADP-50GR BD

2.3. Test Software

The test utility software used during testing was “telnet”, and the commands were 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

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
Signal Analyzer	Keysight	N9010B	MRTSUE06603	1 year	2023-10-25	SIP-AC1
Anechoic Chamber	RIKEN	SIP-AC1	MRTSUE06554	1 year	2023-12-22	SIP-AC1
Preamplifier	EMCI	EMC051845SE	MRTSUE06600	1 year	2023-11-07	SIP-AC1
Horn Antenna	R&S	HF907	MRTSUE06610	1 year	2024-06-17	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06616	1 year	2023-11-01	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06620	1 year	2023-11-27	SIP-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06645	1 year	2024-07-13	SIP-AC1
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2023-10-10	SIP-AC1
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06599	1 year	2023-10-13	SIP-AC1
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2024-06-07	SIP-AC3
Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2024-07-14	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06619	1 year	2023-11-01	SIP-AC3
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2024-01-12	SIP-AC3
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06646	1 year	2023-08-16	SIP-AC3
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06646	1 year	2024-08-04	SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2023-12-22	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06622	1 year	2023-11-27	SIP-AC3
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2023-12-28	SIP-AC3
EMI Test Receiver	Agilent	N9038A	MRTSUE06125	1 year	2024-05-23	WZ-AC2
Thermohygrometer	Mingle	ETH529	MRTSUE06170	1 year	2023-11-27	WZ-AC2
Anechoic Chamber	RIKEN	WZ-AC2	MRTSUE06213	1 year	2024-04-20	WZ-AC2
Thermohygrometer	testo	608-H1	MRTSUE11038	1 year	2023-11-01	WZ-AC2
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2024-09-17	WZ-AC2
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2023-08-22	WZ-AC1
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2024-08-09	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
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2024-05-23	WZ-SR2
Shielding Room	MIX-BEP	WZ-SR2	MRTSUE06215	5 years	2026-12-20	WZ-SR2
Thermohygrometer	testo	608-H1	MRTSUE06404	1 year	2024-05-31	WZ-SR2
Four-Line V-Network	R&S	ENV432	MRTSUE06615	1 year	2023-10-08	WZ-SR2

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
EMI Test Receiver	R&S	ESR3	MRTSUE06909	1 year	2023-10-27	WZ-SR2
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
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
Attenuator	MVE	MVE2213	MRTSUE11079	1 year	2024-06-08	WZ-SR5
Attenuator	MVE	MVE2213	MRTSUE11083	1 year	2024-06-08	WZ-SR5

Software	Version	Function
EMI V3	V 3.0.0	EMI Test Software
Controller_MF 7802BS	1.02	RE Antenna & Turntable
BenchVue Power Meter	2018.1	Power
Controller_MF 7802	1.02	RE Antenna & Turntable
Controller_MF 7802	2.03C	RE Antenna & Turntable

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

6. Test Result

6.1. 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 15.209	General Field Strength (Restricted Bands and Radiated Emission)	Radiated	Pass
15.207	AC Conducted Emissions 150kHz - 30MHz	Line Conducted	Pass

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 detailed axis (X, Y, Z) setup refers to “2306RSU039-UT” and axis (X) is the worst condition. The test results shown in the following sections represent the worst-case emissions.

Test Items	Filter 4#	Filter 5#	Filter 6#
6dB Bandwidth	●		
Output Power	●	●	●
Power Spectral Density	●		
Band Edge / Out-of-Band Emissions	●		
Radiated Spurious Emission	●	●	●
Radiated Band Edge	●	●	●
AC Conducted Emissions 150kHz - 30MHz	●		

6.2. 6dB Bandwidth Measurement

6.2.1. Test Limit

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

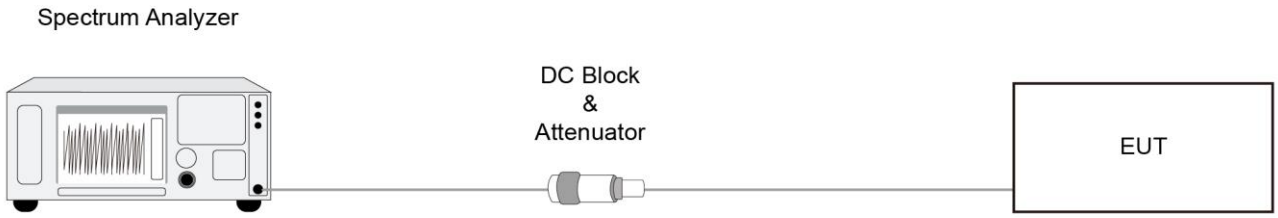
6.2.2. Test Procedure

ANSI C63.10 - 2013 - Section 11.8

6.2.3. 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

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.2.

6.3. Output Power Measurement

6.3.1. 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.

6.3.2. Test Procedure

ANSI C63.10 - 2013 - Section 11.9.1.3

ANSI C63.10 - 2013 - Section 11.9.2.3.2

6.3.3. Test Setting

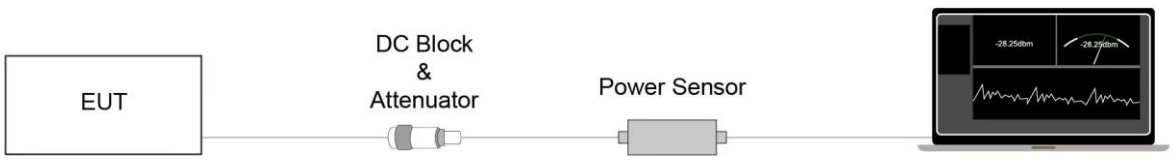
Method PKPM1 (Peak Power Measurement of Signals with DTS BW ≤ 50MHz)

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.

6.3.4. Test Setup



6.3.5. Test Result

Refer to Appendix A.3.

6.4. Power Spectral Density Measurement

6.4.1. 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.

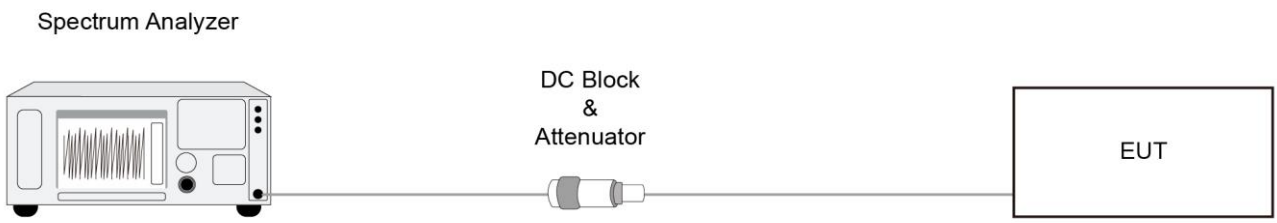
6.4.2. Test Procedure

ANSI C63.10-2013 Section 11.10.2

6.4.3. 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

6.4.4. Test Setup



6.4.5. Test Result

Refer to Appendix A.4.

6.5. Conducted Band Edge and Out-of-Band Emissions Measurement

6.5.1. 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.

6.5.2. Test Procedure

ANSI C63.10-2013 - Section 11.11

6.5.3. Test Settitng

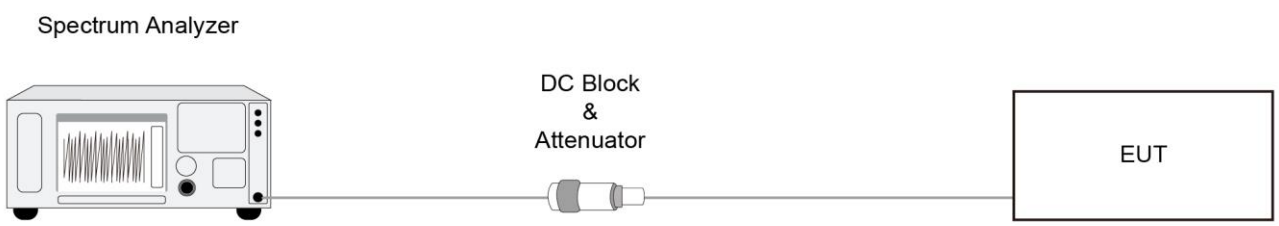
Reference level measurement

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 = 300kHz
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

6.5.4. Test Setup



6.5.5. Test Result

Refer to Appendix A.5.

6.6. Radiated Spurious Emission Measurement

6.6.1. 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 [μV/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

6.6.2. 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)

6.6.3. 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

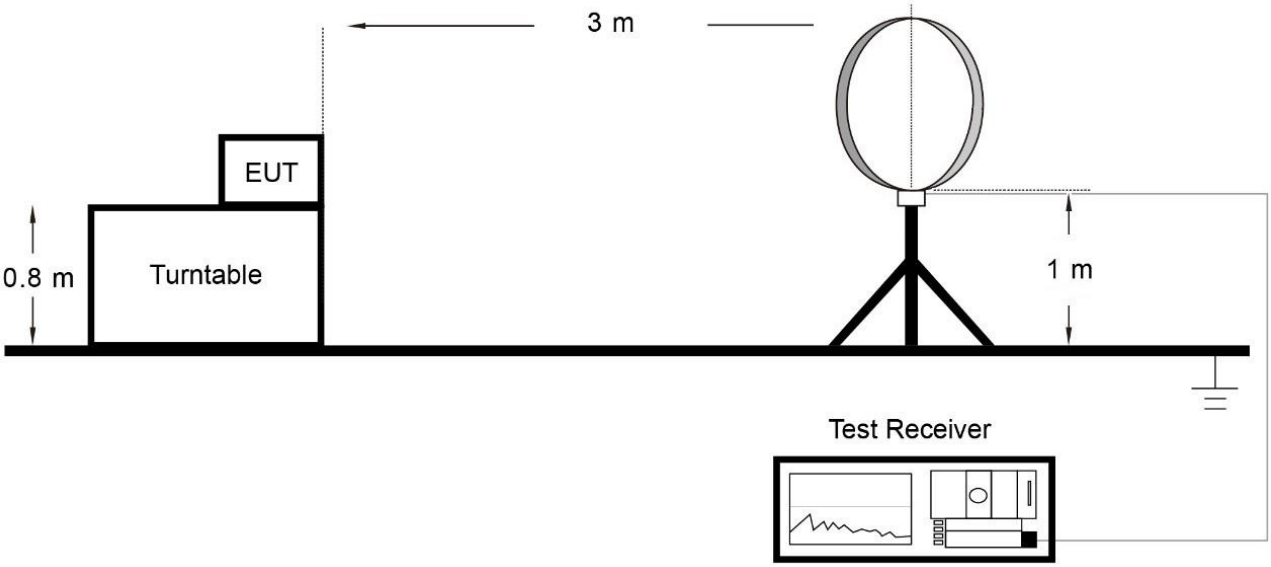
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

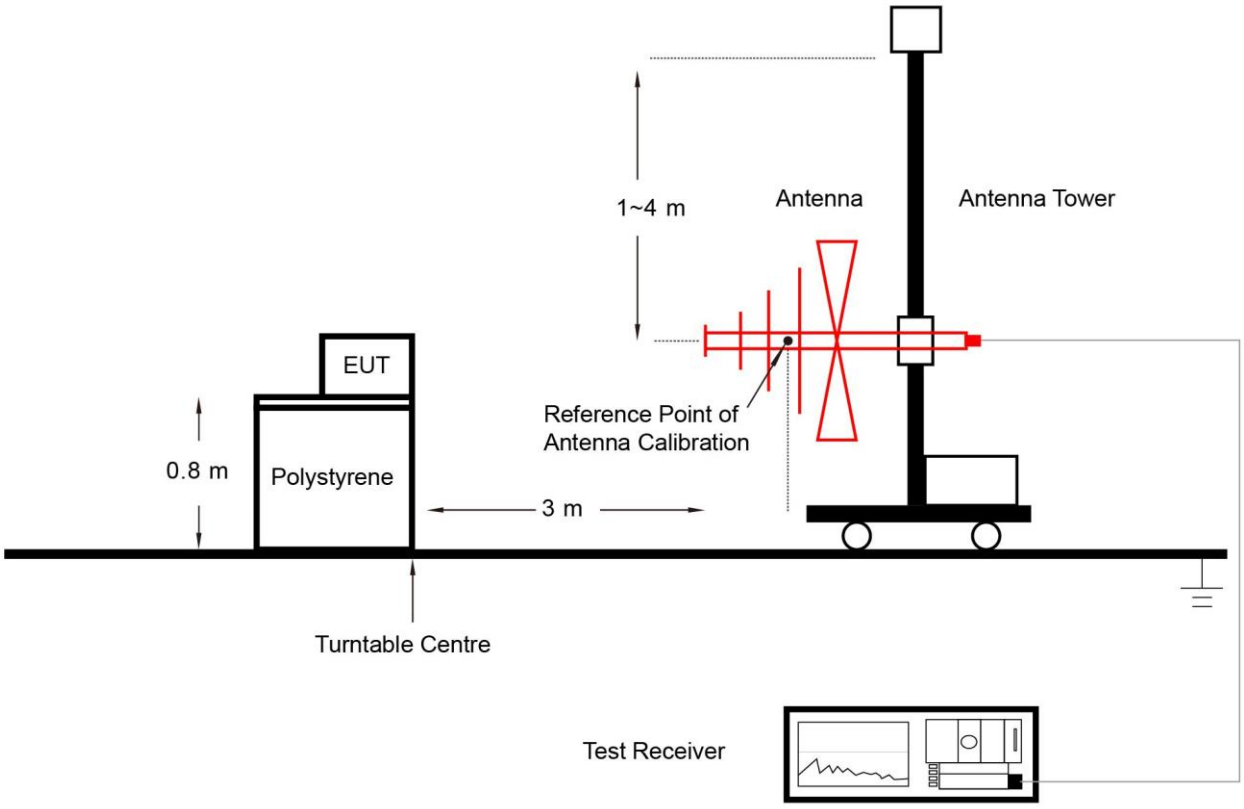
1. Average Measurement Level = Peak Measurement Level - 20 * Log(Duty Cycle) = -20
2. Duty Cycle = 10% (Refer to cover letter)

6.6.4. Test Setup

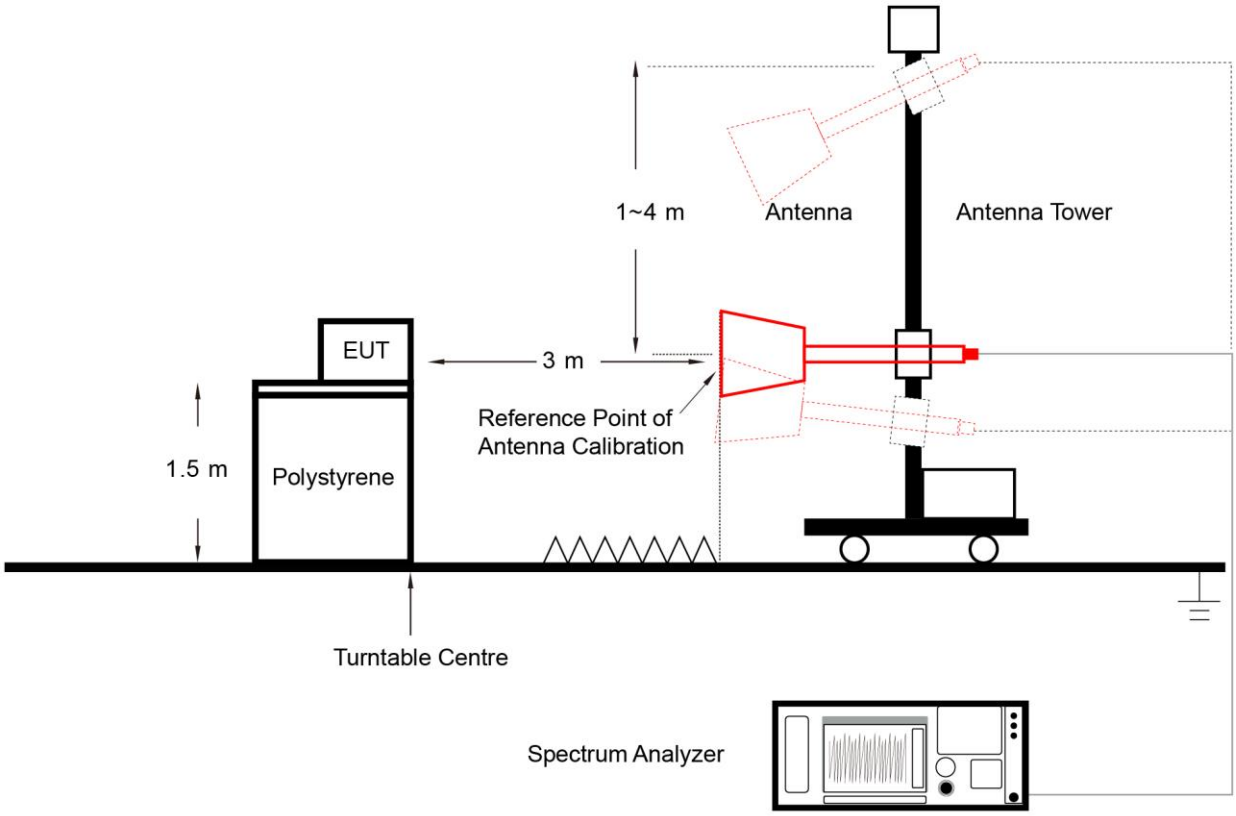
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.6.5. Test Result

Refer to Appendix A.6.

6.7. Radiated Restricted Band Edge Measurement

6.7.1. 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 [μV/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

6.7.2. Test Procedure

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

6.7.3. Test Setting

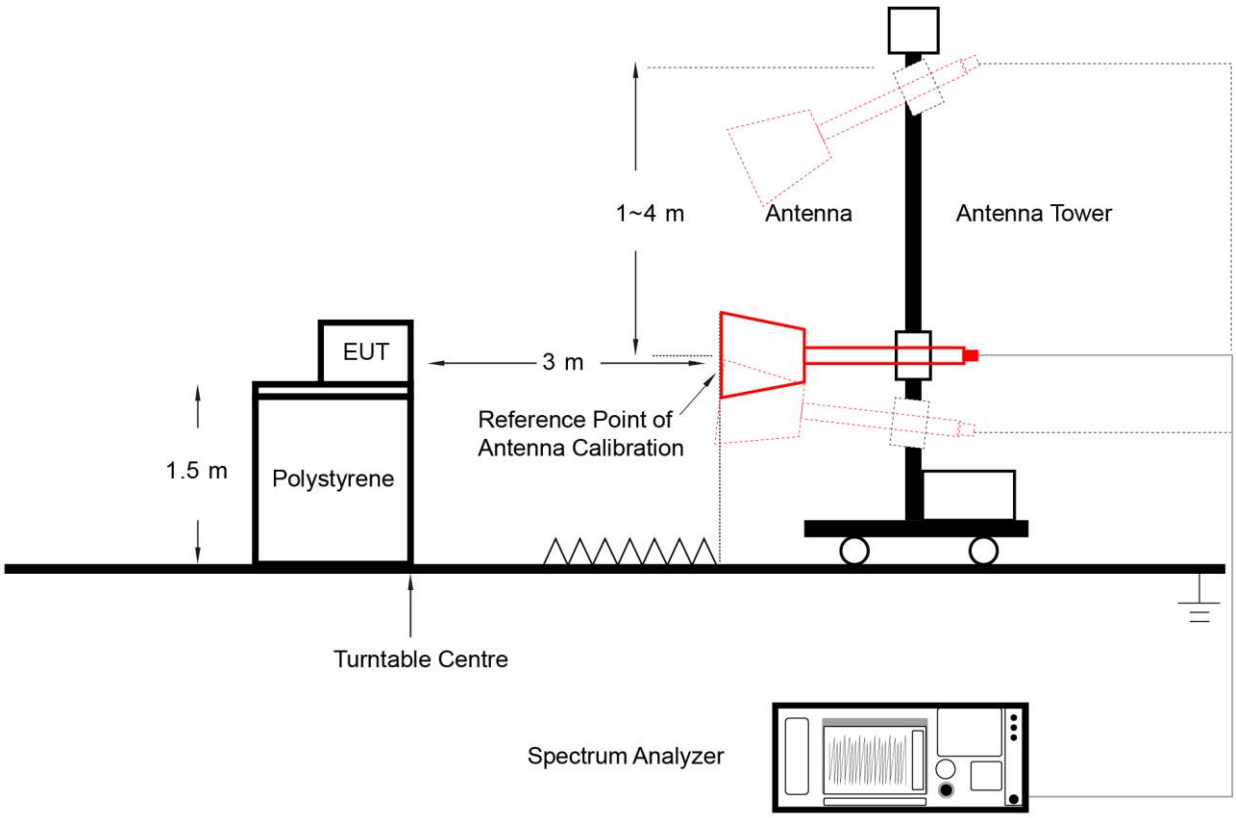
Peak Field Strength Measurements

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. Average Measurement Level = Peak Measurement Level - 20 * Log(Duty Cycle) = -20
2. Duty Cycle = 10% (Refer to cover letter)

6.7.4. Test Setup



6.7.5. Test Result

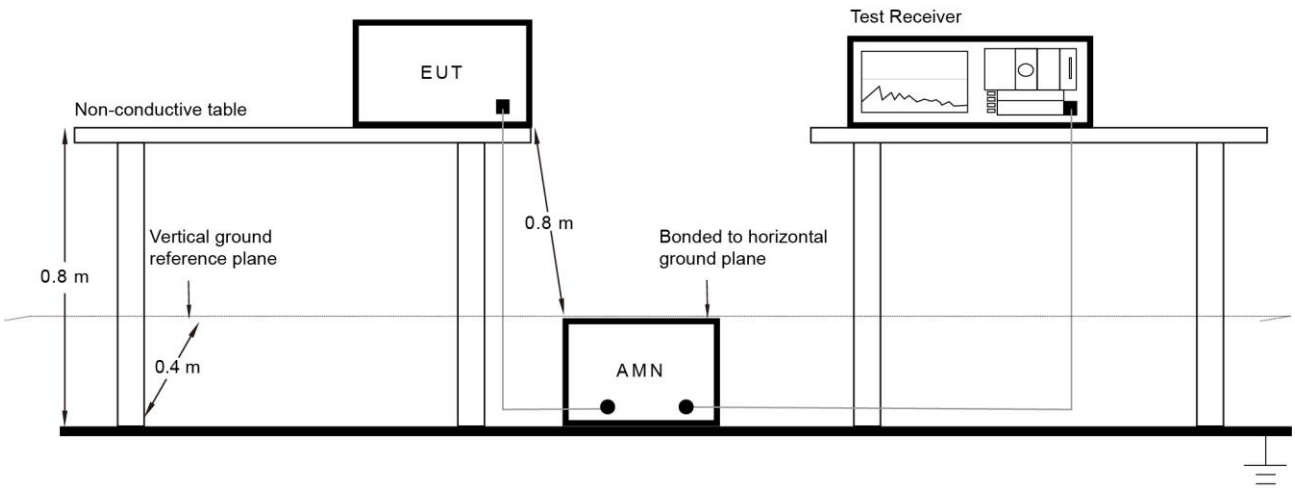
Refer to Appendix A.7.

6.8. AC Conducted Emissions Measurement

6.8.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBμV)	AV (dBμV)
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.		

6.8.2. Test Setup



6.8.3. Test Result

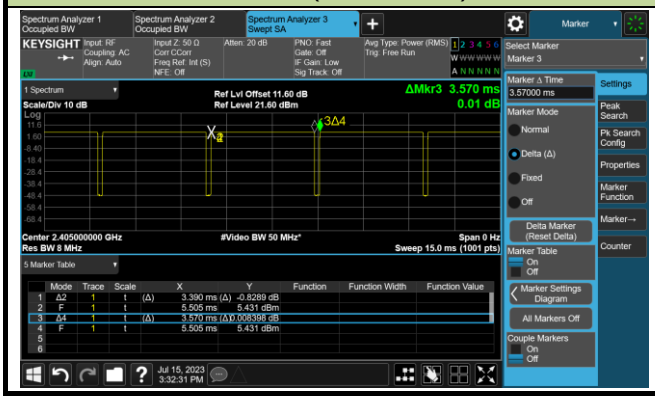
Refer to Appendix A.8.

Appendix A – Test Result

A.1 Duty Cycle Test Result

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-07-15		

Test Mode	Duty Cycle
802.15.4	94.96%

Duty Cycle (T = Transmission Duration)	
802.15.4 (T= 3.390ms)	
	

Note 1: This duty cycle was only suitable for continuous transmission of signals via commands.

Note 2: The manufacturer, declared that the ZigBee normal operation, when implemented, will be limited to a max duty cycle of 10% or less in any 100ms period. So -20dB correction factor was used during peak and average band edge testing.

A.2 6dB Bandwidth Test Result

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-07-15 ~ 2023-07-18		

Test Mode	Modulation Mode	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.15.4	O-QPSK	11	2405	1.101	≥ 0.5	Pass
802.15.4	O-QPSK	18	2440	1.125	≥ 0.5	Pass
802.15.4	O-QPSK	26	2480	1.229	≥ 0.5	Pass

802.15.4 6dB Bandwidth

Channel 11 (2405MHz)

Channel 18 (2440MHz)

Channel 26 (2480MHz)

A.3 Output Power Test Result

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-07-15	Filter	Filter 7#

Test Result of Peak Output Power

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Peak Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	11	2405	4.51	≤ 30.00	Pass
802.15.4	O-QPSK	18	2440	5.00	≤ 30.00	Pass
802.15.4	O-QPSK	26	2480	3.65	≤ 30.00	Pass

Test Result of Average Output Power (Reporting Only)

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Average Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	11	2405	4.39	≤ 30.00	Pass
802.15.4	O-QPSK	18	2440	4.90	≤ 30.00	Pass
802.15.4	O-QPSK	26	2480	3.45	≤ 30.00	Pass

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-07-15	Filter	Filter 8#

Test Result of Peak Output Power

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Peak Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	11	2405	4.41	≤ 30.00	Pass

Test Result of Average Output Power (Reporting Only)

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Average Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	11	2405	4.23	≤ 30.00	Pass

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-07-15	Filter	Filter 9#

Test Result of Peak Output Power

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Peak Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	26	2480	3.12	≤ 30.00	Pass

Test Result of Average Output Power (Reporting Only)

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Average Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	26	2480	3.02	≤ 30.00	Pass

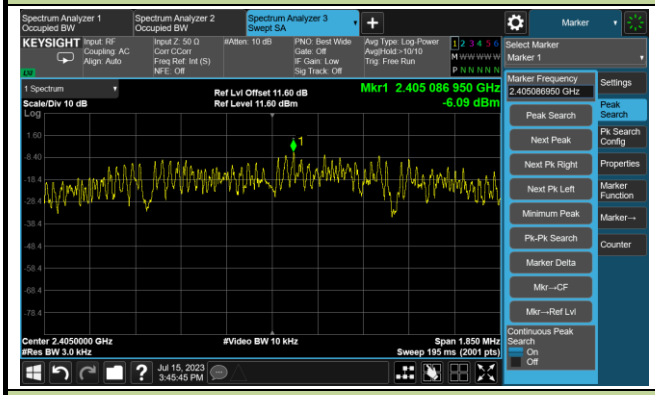
A.4 Power Spectral Density Test Result

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-07-15		

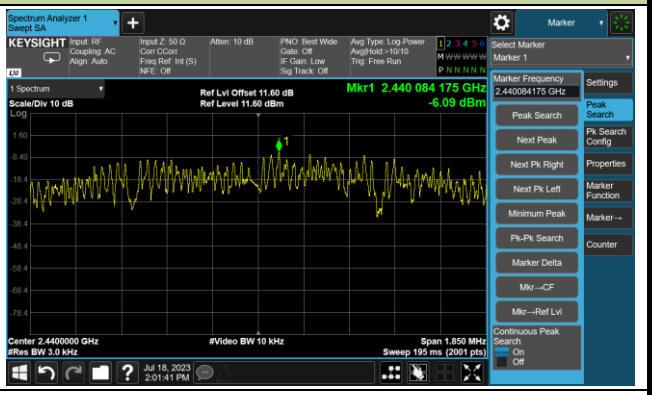
Test Mode	Modulation Mode	Channel No.	Frequency (MHz)	PSD (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
802.15.4	O-QPSK	11	2405	-6.09	≤ 8.00	Pass
802.15.4	O-QPSK	18	2440	-6.09	≤ 8.00	Pass
802.15.4	O-QPSK	26	2480	-7.05	≤ 8.00	Pass

802.15.4 Power Density

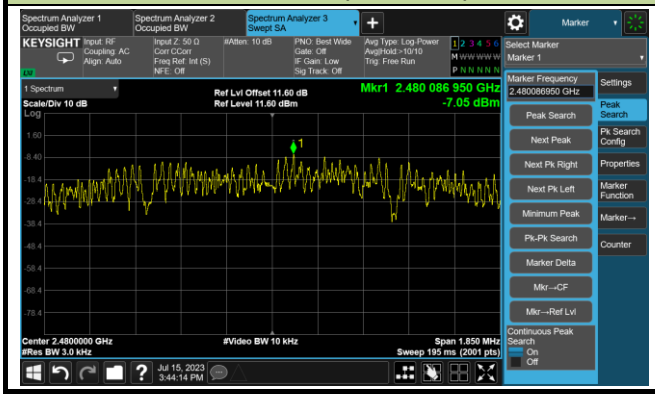
Channel 11 (2405MHz)



Channel 18 (2440MHz)



Channel 26 (2480MHz)



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

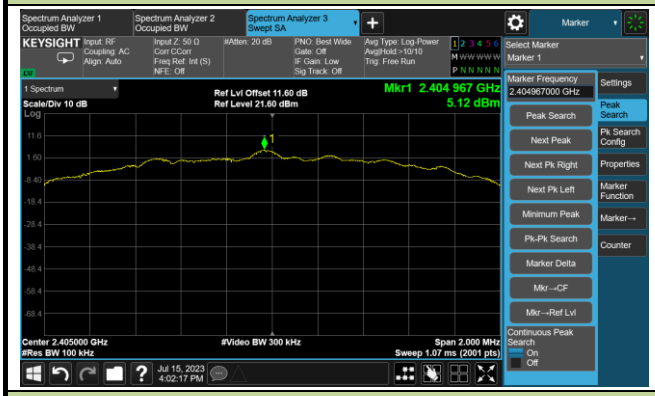
Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-07-15 ~ 2023-07-18		

Test Mode	Data Rate / MCS	Channel No.	Frequency (MHz)	Limit (dBc)	Result
802.15.4	O-QPSK	11	2405	> 20	Pass
802.15.4	O-QPSK	18	2440	> 20	Pass
802.15.4	O-QPSK	26	2480	> 20	Pass

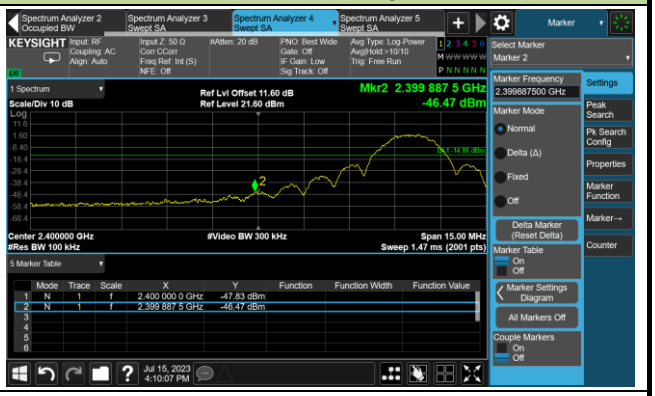
802.15.4 Out-of-Band Emissions

Channel 11 (2405MHz)

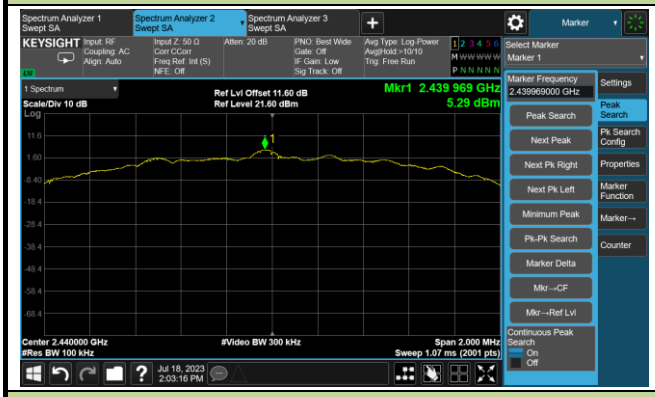
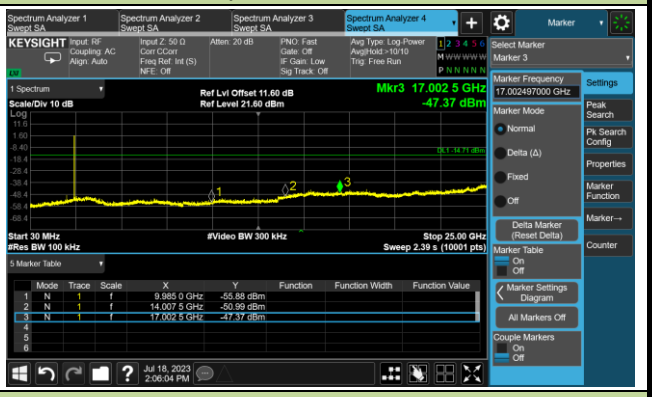
100kHz PSD Reference Level



Low Band Edge



Spurious Emission

Channel 18 (2440MHz)	
100kHz PSD Reference Level	Spurious Emission
	
Channel 26 (2480MHz)	
100kHz PSD Reference Level	High Band Edge
Spurious Emission	

A.6 Radiated Spurious Emission Test Result

Filter 7#:

Test Site	WZ-AC1	Test Engineer	Bob Zhang
Test Date	2023-07-21		
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 (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
11	10911.0	36.4	13.6	50.0	74.0	-24.0	Peak	Horizontal
	12381.5	37.2	12.1	49.3	74.0	-24.7	Peak	Horizontal
	15492.5	35.5	12.6	48.1	74.0	-25.9	Peak	Horizontal
	11021.5	36.2	13.6	49.8	74.0	-24.2	Peak	Vertical
	11497.5	36.5	13.1	49.6	74.0	-24.4	Peak	Vertical
	16113.0	36.8	12.3	49.1	74.0	-24.9	Peak	Vertical
18	11106.5	37.2	13.2	50.4	74.0	-23.6	Peak	Horizontal
	11472.0	36.5	12.8	49.3	74.0	-24.7	Peak	Horizontal
	15875.0	35.9	12.1	48.0	74.0	-26.0	Peak	Horizontal
	10698.5	35.9	14.0	49.9	74.0	-24.1	Peak	Vertical
	11701.5	36.6	12.0	48.6	74.0	-25.4	Peak	Vertical
	15424.5	36.3	12.9	49.2	74.0	-24.8	Peak	Vertical
26	10681.5	35.8	13.8	49.6	74.0	-24.4	Peak	Horizontal
	11455.0	36.0	12.9	48.9	74.0	-25.1	Peak	Horizontal
	12500.5	35.2	12.0	47.2	74.0	-26.8	Peak	Horizontal
	10868.5	36.4	13.5	49.9	74.0	-24.1	Peak	Vertical
	11659.0	36.8	12.1	48.9	74.0	-25.1	Peak	Vertical
	12466.5	36.9	12.0	48.9	74.0	-25.1	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)

Filter 8#:

Test Site	WZ-AC1	Test Engineer	Bob Zhang
Test Date	2023-07-21		
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 (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
11	11098.0	35.9	13.4	49.3	74.0	-24.7	Peak	Horizontal
	11489.0	35.8	13.2	49.0	74.0	-25.0	Peak	Horizontal
	12126.5	36.1	12.3	48.4	74.0	-25.6	Peak	Horizontal
	10792.0	35.8	14.0	49.8	74.0	-24.2	Peak	Vertical
	11395.5	36.3	12.9	49.2	74.0	-24.8	Peak	Vertical
	12441.0	36.1	12.2	48.3	74.0	-25.7	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)								

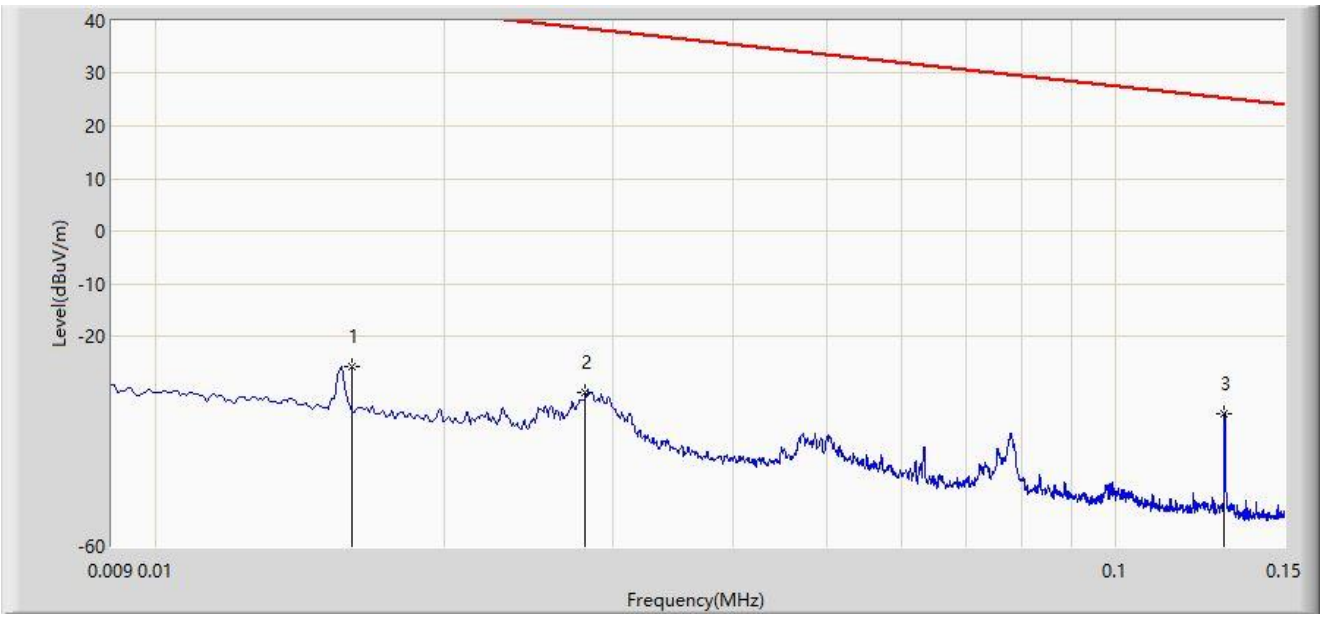
Filter 9#:

Test Site	WZ-AC1	Test Engineer	Bob Zhang
Test Date	2023-07-21		
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 (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
26	11089.5	35.9	13.4	49.3	74.0	-24.7	Peak	Horizontal
	11489.0	36.2	13.2	49.4	74.0	-24.6	Peak	Horizontal
	12458.0	36.0	12.0	48.0	74.0	-26.0	Peak	Horizontal
	11004.5	36.1	13.8	49.9	74.0	-24.1	Peak	Vertical
	11905.5	36.8	12.1	48.9	74.0	-25.1	Peak	Vertical
	12594.0	36.5	11.9	48.4	74.0	-25.6	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 of 9kHz ~ 30MHz:

Site: WZ-AC2	Test Date: 2023-10-10
Limit: FCC_Part15.209_RSE	Engineer: Bob Zhang
Probe: FMZB1519_0.009-30MHz	Polarity: Coaxial
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2405MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		0.016	-25.918	33.896	-69.423	43.505	-59.813	PK
2		0.028	-30.613	30.281	-69.260	38.647	-60.893	PK
3	*	0.130	-34.638	27.509	-59.956	25.319	-62.147	PK

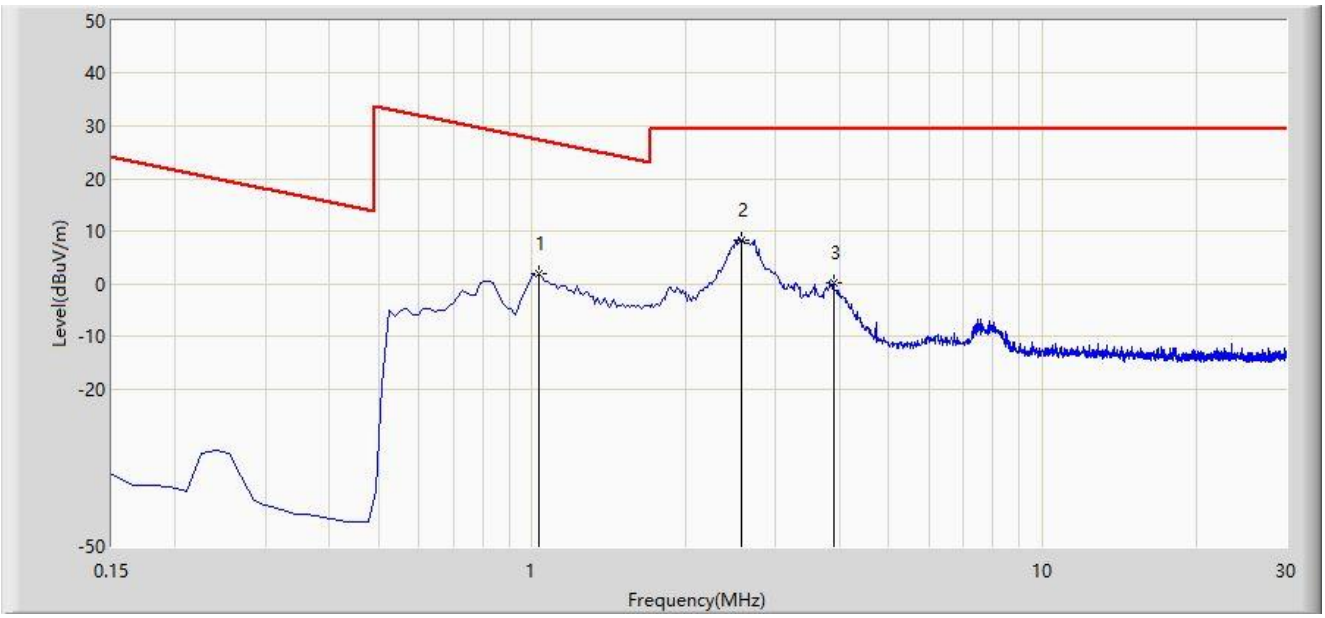
Note 1: " * ", means this data is the worst emission level.

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

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) + 40log(d1/d2) (dB), d1 = 3m, d2 = 300m (9kHz-490kHz) or 30m (490kHz-30MHz).

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

Site: WZ-AC2	Test Date: 2023-10-10
Limit: FCC_Part15.209_RSE	Engineer: Bob Zhang
Probe: FMZB1519_0.009-30MHz	Polarity: Coaxial
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2405MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		1.031	1.762	23.546	-25.595	27.357	-21.784	PK
2	*	2.568	8.332	30.139	-21.168	29.500	-21.807	PK
3		3.896	0.225	21.978	-29.275	29.500	-21.753	PK

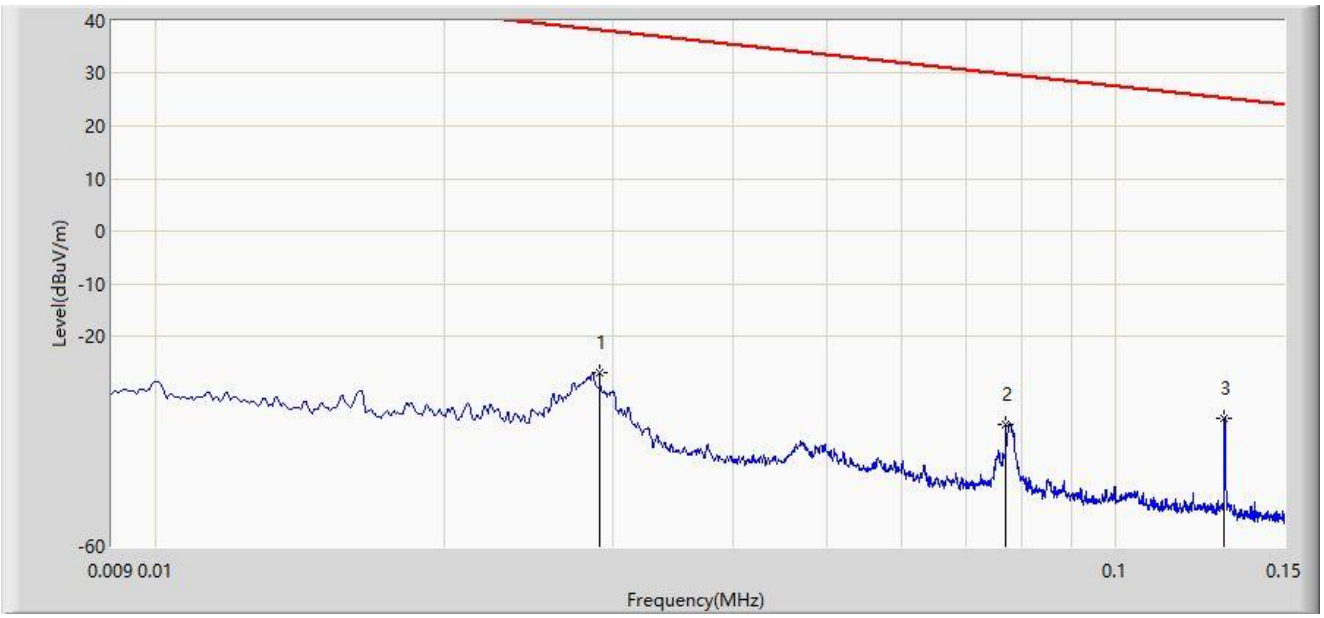
Note 1: " * ", means this data is the worst emission level.

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

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) + 40log(d1/d2) (dB), d1 = 3m, d2 = 300m (9kHz-490kHz) or 30m (490kHz-30MHz).

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

Site: WZ-AC2	Test Date: 2023-10-10
Limit: FCC_Part15.209_RSE	Engineer: Bob Zhang
Probe: FMZB1519_0.009-30MHz	Polarity: Coplanar
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2405MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		0.029	-27.079	33.905	-65.421	38.342	-60.984	PK
2		0.077	-36.810	25.262	-66.676	29.865	-62.072	PK
3	*	0.130	-35.578	26.569	-60.896	25.319	-62.147	PK

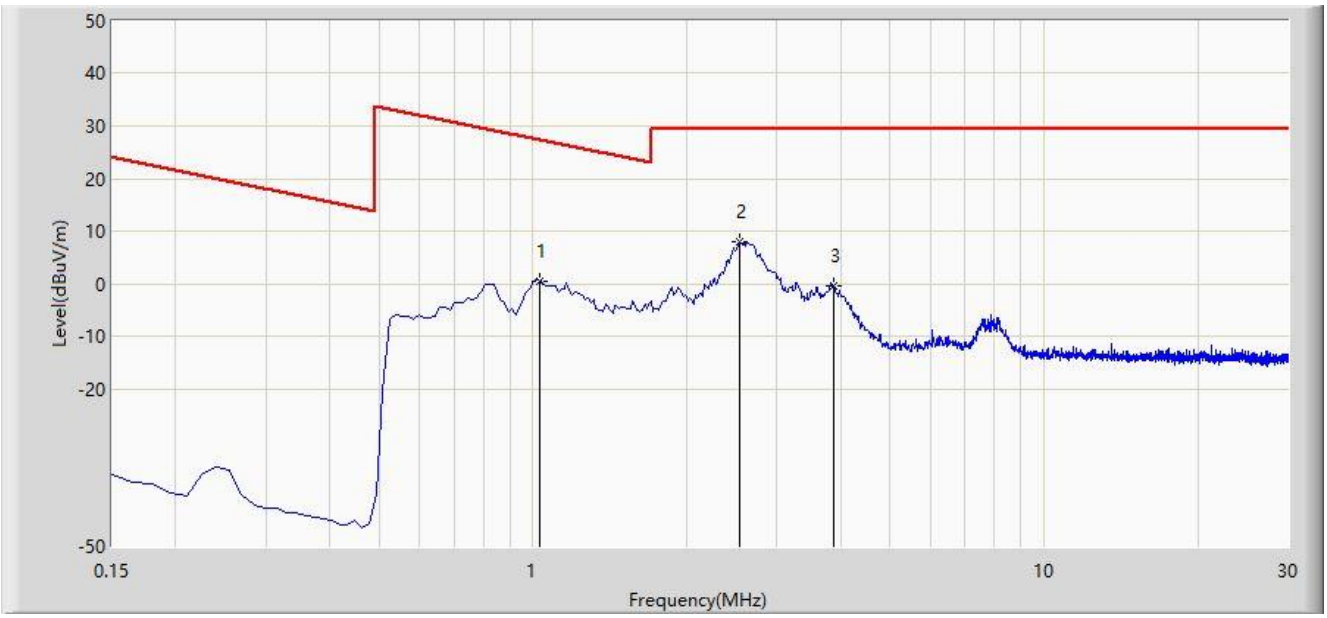
Note 1: " * ", means this data is the worst emission level.

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

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) + 40log(d1/d2) (dB), d1 = 3m, d2 = 300m (9kHz-490kHz) or 30m (490kHz-30MHz).

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

Site: WZ-AC2	Test Date: 2023-10-10
Limit: FCC_Part15.209_RSE	Engineer: Bob Zhang
Probe: FMZB1519_0.009-30MHz	Polarity: Coplanar
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2405MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		1.031	0.509	22.293	-26.848	27.357	-21.784	PK
2	*	2.538	7.928	29.737	-21.572	29.500	-21.810	PK
3		3.866	-0.511	21.243	-30.011	29.500	-21.754	PK

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

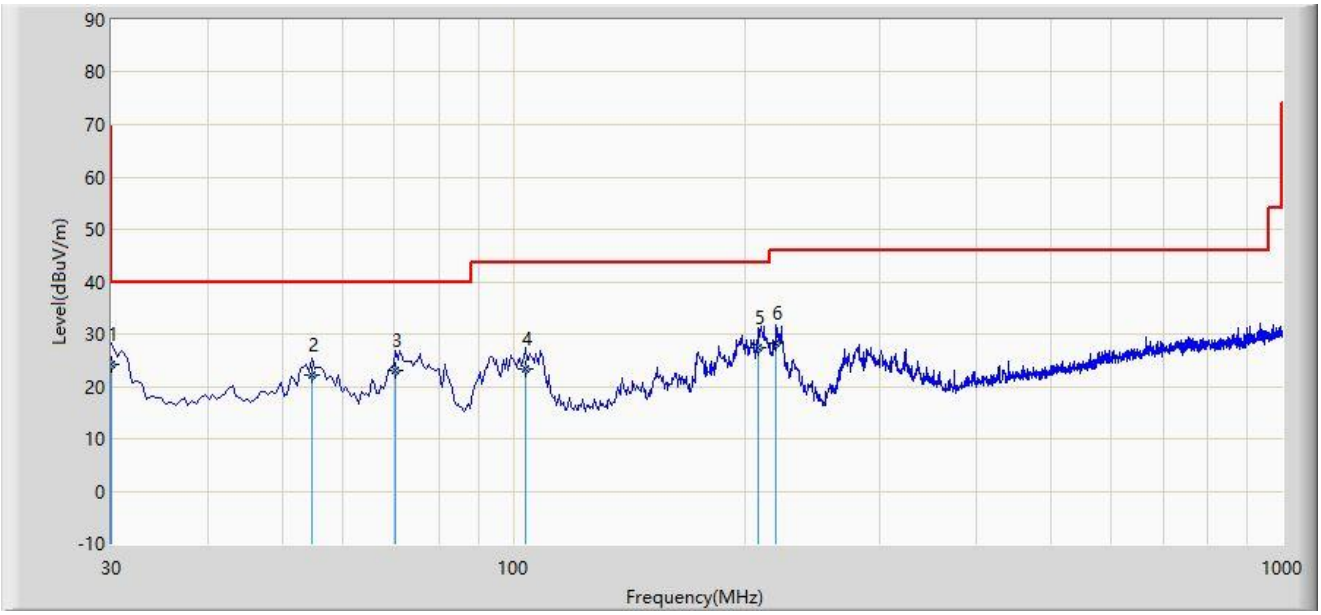
Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) + 40log(d1/d2) (dB), d1 = 3m, d2 = 300m (9kHz-490kHz) or 30m (490kHz-30MHz).

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

The Result of Radiated Emission below 1GHz:

Site: SIP-AC3	Test Date: 2023-07-30
Limit: FCC_Part15.209_RSE(3m)	Engineer: Wayne Wang
Probe: VULB 9168_00997_25-2000MHz	Polarity: Horizontal
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2440MHz	



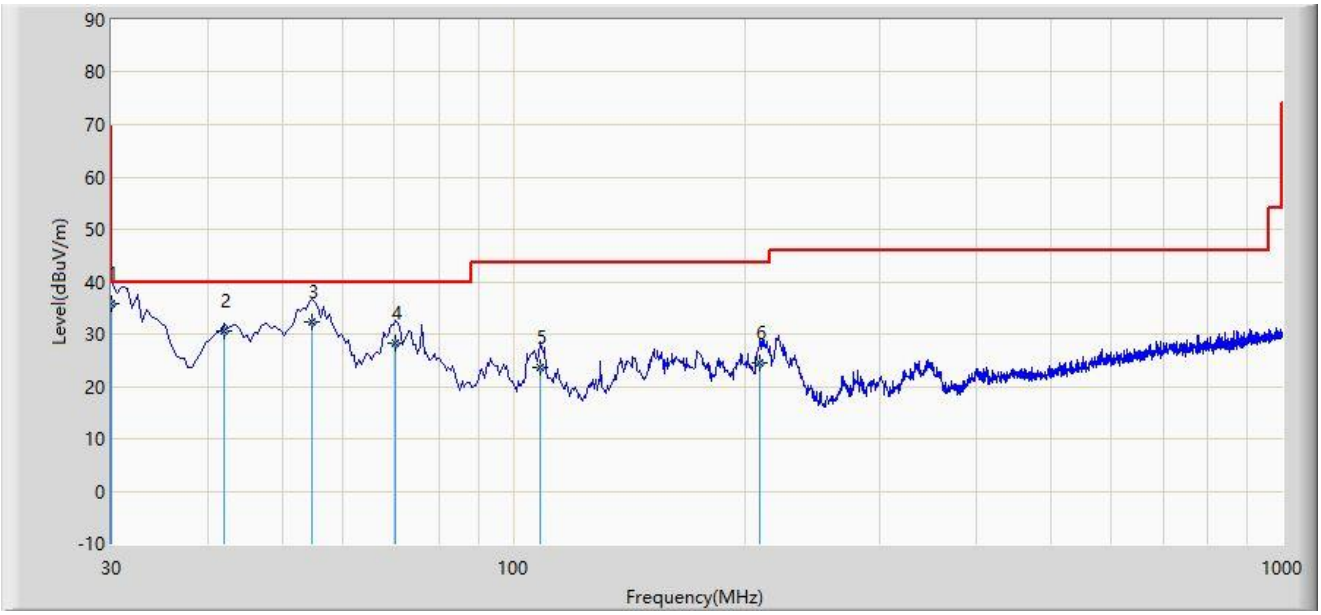
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	30.000	24.246	7.875	-15.754	40.000	16.371	QP
2		54.735	22.179	4.546	-17.821	40.000	17.633	QP
3		70.255	22.977	7.586	-17.023	40.000	15.391	QP
4		103.720	23.286	9.240	-20.214	43.500	14.046	QP
5		208.480	27.471	12.577	-16.029	43.500	14.894	QP
6		219.630	28.382	13.575	-17.618	46.000	14.807	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).

Site: SIP-AC3	Test Date: 2023-07-30
Limit: FCC_Part15.209_RSE(3m)	Engineer: Wayne Wang
Probe: VULB 9168_00997_25-2000MHz	Polarity: Vertical
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2440MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	30.000	35.921	19.730	-4.079	40.000	16.191	QP
2		42.125	30.671	12.980	-9.329	40.000	17.691	QP
3		54.735	32.208	14.575	-7.792	40.000	17.633	QP
4		70.255	28.148	12.757	-11.852	40.000	15.391	QP
5		108.570	23.506	8.680	-19.994	43.500	14.826	QP
6		209.450	24.578	9.680	-18.922	43.500	14.898	QP

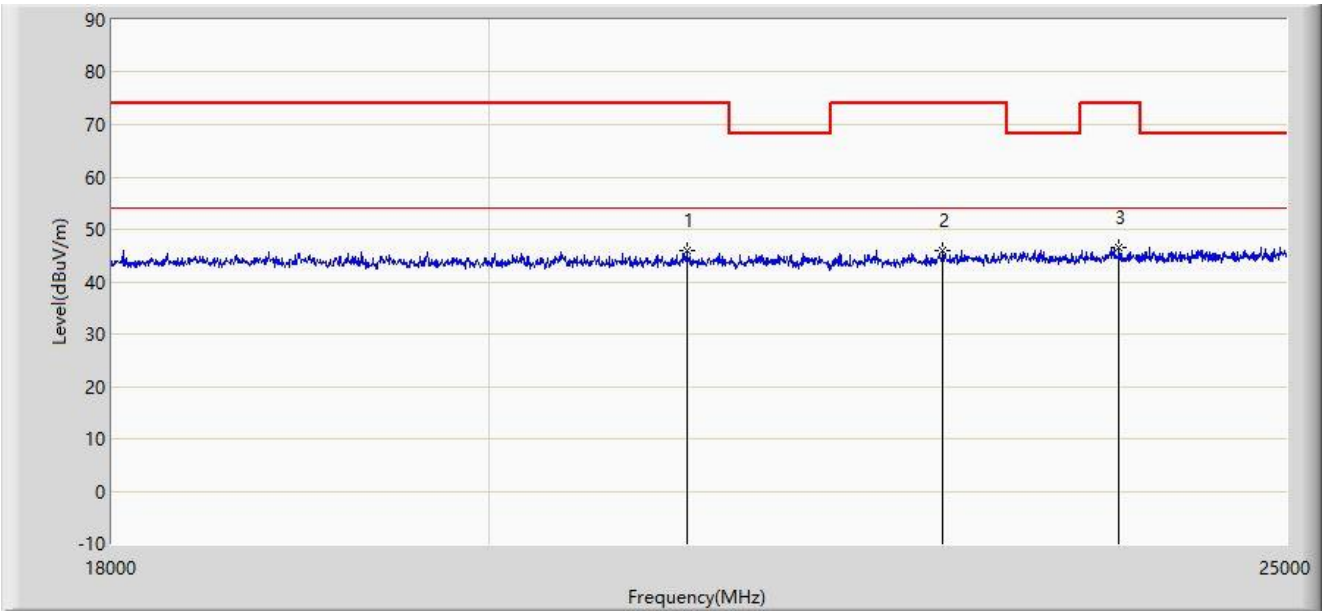
Note 1: " * ", means this data is the worst emission level.

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

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

The Result of Radiated Emission of 18GHz ~ 25GHz:

Site: SIP-AC1	Test Date: 2023-07-30
Limit: FCC_Part15.209_RSE(3m)	Engineer: Wayne Wang
Probe: BBHA 9170_00935_18-40GHz	Polarity: Horizontal
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2440MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		21143.000	45.996	56.655	-28.004	74.000	-10.659	PK
2		22711.000	45.867	55.267	-28.133	74.000	-9.401	PK
3	*	23859.000	46.490	55.842	-27.510	74.000	-9.353	PK

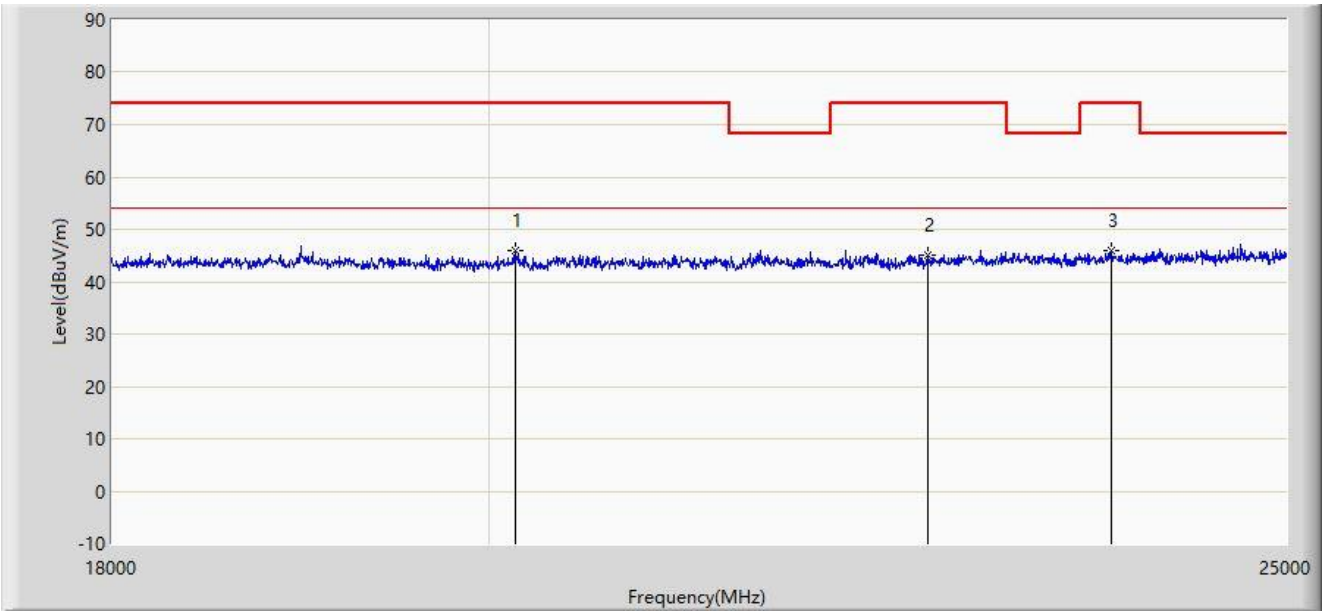
Note 1: " * ", means this data is the worst emission level.

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

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

Note 4: Average measurement was not performed when peak measure level was lower than the average limit.

Site: SIP-AC1	Test Date: 2023-07-30
Limit: FCC_Part15.209_RSE(3m)	Engineer: Wayne Wang
Probe: BBHA 9170_00935_18-40GHz	Polarity: Vertical
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2440MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	20149.000	46.006	57.004	-27.994	74.000	-10.998	PK
2		22613.000	44.991	54.894	-29.009	74.000	-9.904	PK
3		23803.000	45.802	54.798	-28.198	74.000	-8.995	PK

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

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

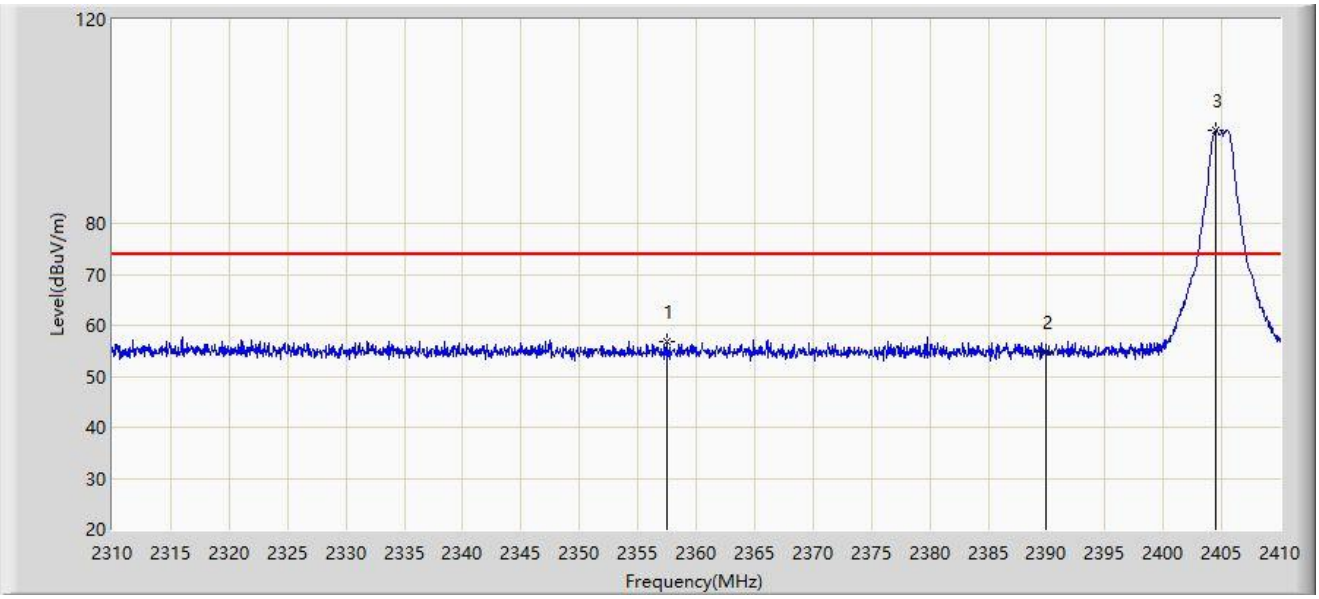
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

Note 4: Average measurement was not performed when peak measure level was lower than the average limit.

A.7 Radiated Restricted Band Edge Test Result

Filter 7#:

Site: WZ-AC1	Test Date: 2023-07-21
Limit: FCC_2.4G_RE(3m)	Engineer: Bob Zhang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2405MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Duty cycle Factor (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2357.450	56.677	25.414	-17.323	N/A	74.000	31.263	PK
		2357.450	36.677	25.414	-17.323	-20.00	54.000	31.263	AV
2		2390.000	54.802	23.644	-19.198	N/A	74.000	31.158	PK
		2390.000	34.802	23.644	-19.198	-20.00	54.000	31.158	AV
3		2404.450	98.146	66.999	N/A	N/A	N/A	31.147	PK
		2404.450	78.146	66.999	N/A	-20.00	N/A	31.147	AV

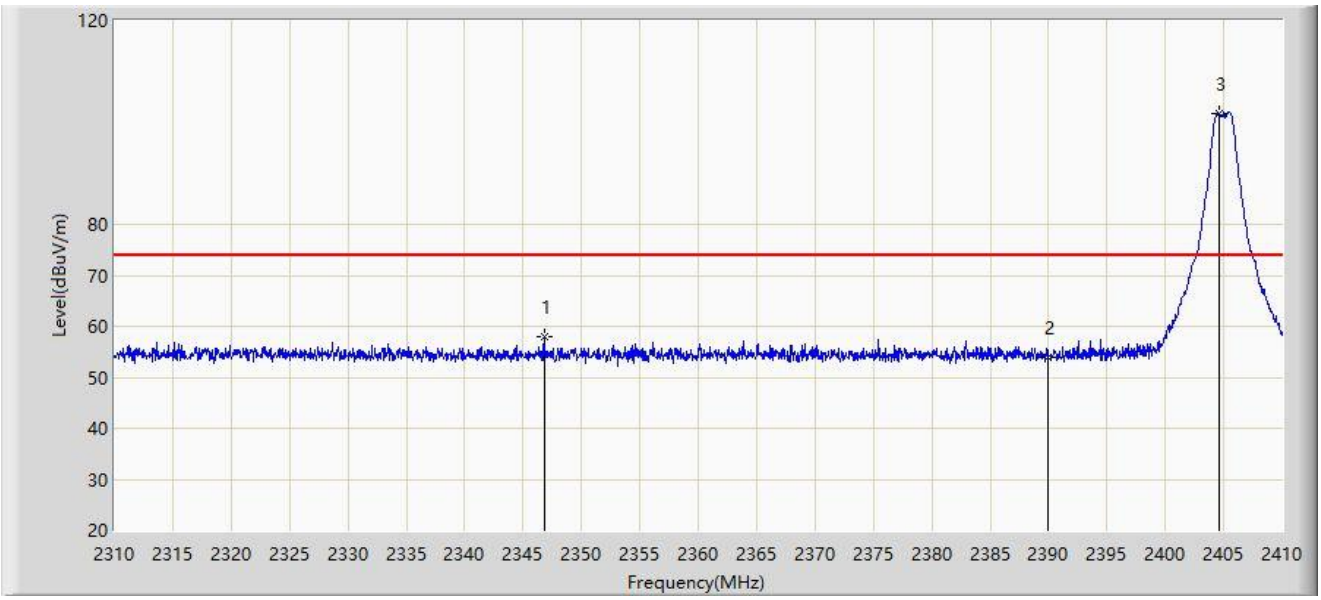
Note 1: " * ", means this data is the worst emission level.

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

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

Note 4. Average Measure Level = Peak Measure Level + Duty Cycle Factor, Duty cycle factor = -20dB.

Site: WZ-AC1	Test Date: 2023-07-21
Limit: FCC_2.4G_RE(3m)	Engineer: Bob Zhang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2405MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Duty cycle Factor (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2346.800	57.942	26.643	-16.058	N/A	74.000	31.299	PK
		2346.800	37.942	26.643	-16.058	-20.00	54.000	31.299	AV
2		2390.000	53.935	22.777	-20.065	N/A	74.000	31.158	PK
		2390.000	33.935	22.777	-20.065	-20.00	54.000	31.158	AV
3		2404.550	101.849	70.702	N/A	N/A	N/A	31.147	PK
		2404.550	81.849	70.702	N/A	-20.00	N/A	31.147	AV

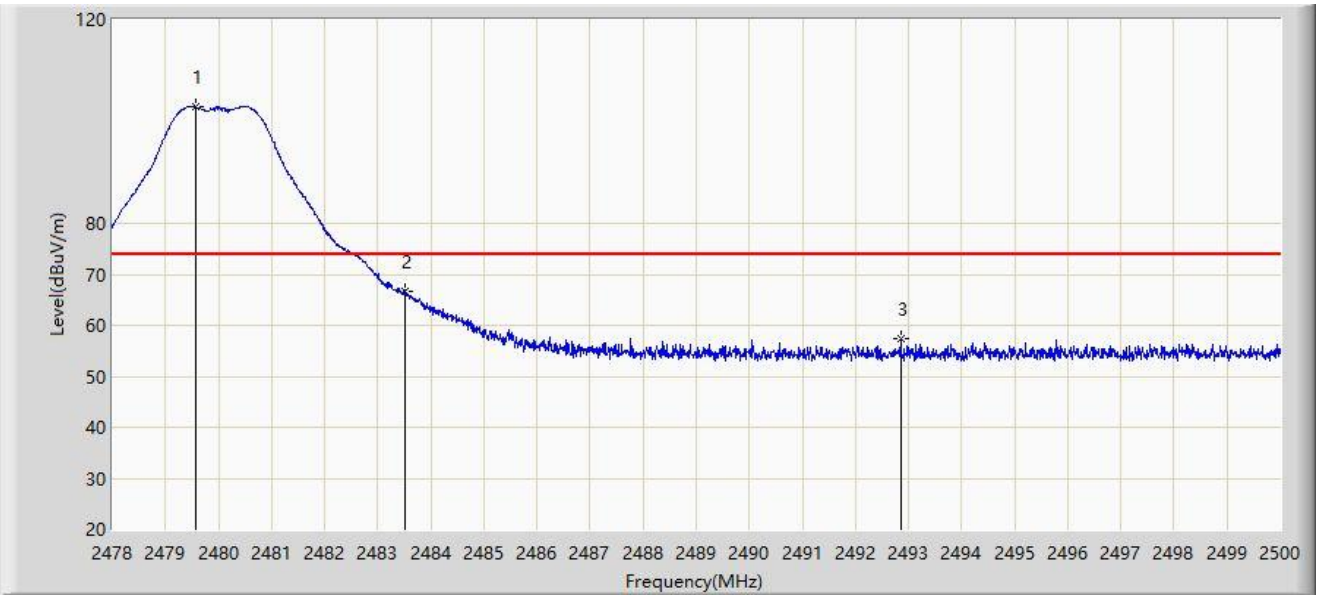
Note 1: " * ", means this data is the worst emission level.

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

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

Note 4. Average Measure Level = Peak Measure Level + Duty Cycle Factor, Duty cycle factor = -20dB.

Site: WZ-AC1	Test Date: 2023-07-21
Limit: FCC_2.4G_RE(3m)	Engineer: Bob Zhang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Duty cycle Factor (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2479.562	102.857	71.768	N/A	N/A	N/A	31.089	PK
		2479.562	82.857	71.768	N/A	-20.00	N/A	31.089	AV
2	*	2483.500	66.738	35.645	-7.262	N/A	74.000	31.093	PK
		2483.500	46.738	35.645	-7.262	-20.00	54.000	31.093	AV
3		2492.850	57.358	26.257	-16.642	N/A	74.000	31.101	PK
		2492.850	37.358	26.257	-16.642	-20.00	54.000	31.101	AV

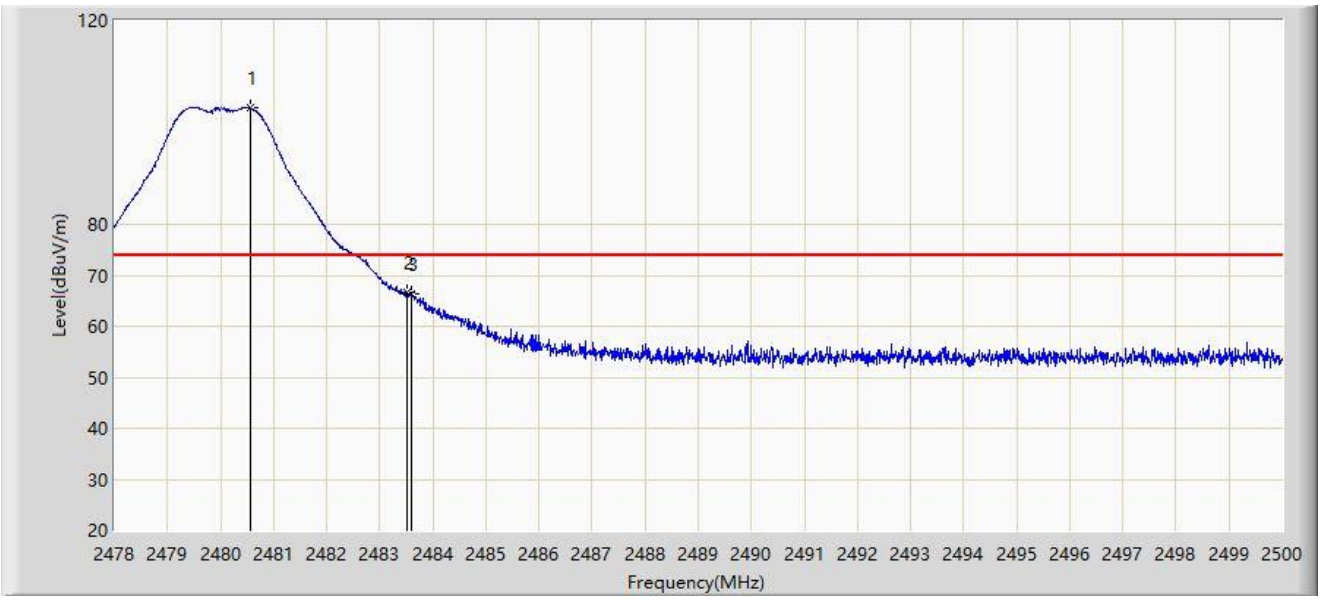
Note 1: " * ", means this data is the worst emission level.

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

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

Note 4. Average Measure Level = Peak Measure Level + Duty Cycle Factor, Duty cycle factor = -20dB.

Site: WZ-AC1	Test Date: 2023-07-21
Limit: FCC_2.4G_RE(3m)	Engineer: Bob Zhang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Duty cycle Factor (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2480.552	102.796	71.706	N/A	N/A	N/A	31.090	PK
		2480.552	82.796	71.706	N/A	-20.00	N/A	31.090	AV
2	*	2483.500	66.680	35.587	-7.320	N/A	74.000	31.093	PK
		2483.500	46.680	35.587	-7.320	-20.00	54.000	31.093	AV
3		2483.610	66.393	35.300	-7.607	N/A	74.000	31.093	PK
		2483.610	46.393	35.300	-7.607	-20.00	54.000	31.093	AV

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

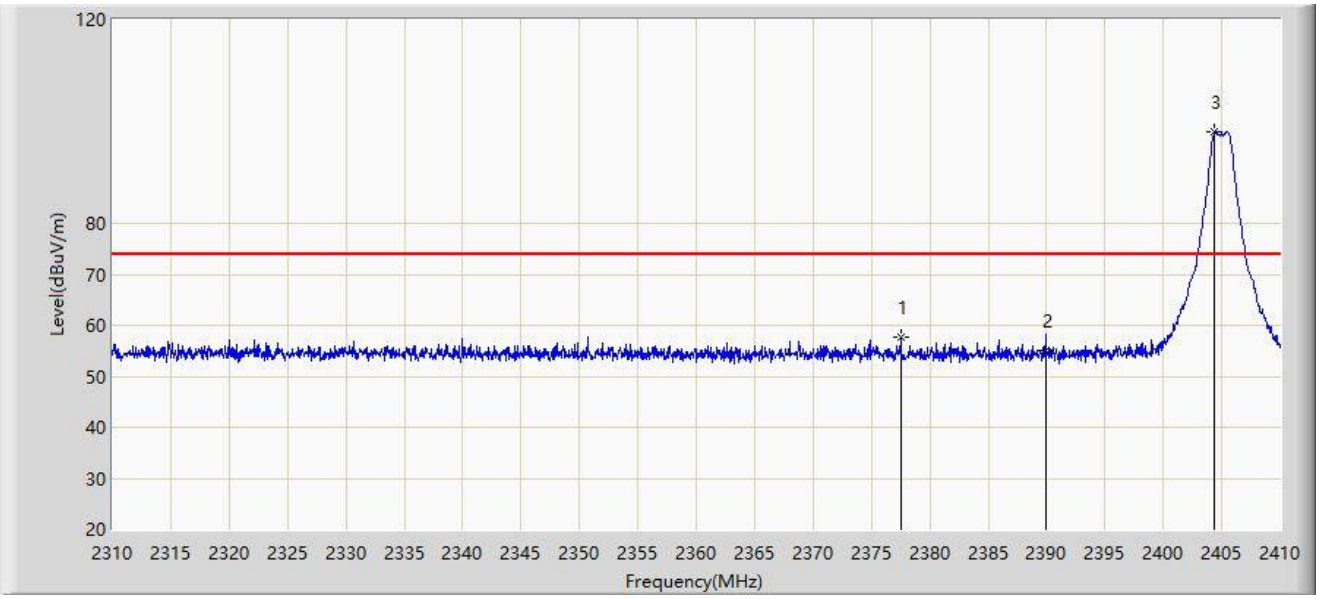
Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

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

Note 4. Average Measure Level = Peak Measure Level + Duty Cycle Factor, Duty cycle factor = -20dB.

Filter 8#:

Site: WZ-AC1	Test Date: 2023-07-21
Limit: FCC_2.4G_RE(3m)	Engineer: Bob Zhang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2405MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Duty cycle Factor (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2377.550	57.547	26.361	-16.453	N/A	74.000	31.186	PK
		2377.550	37.547	26.361	-16.453	-20.00	54.000	31.186	AV
2		2390.000	55.093	23.935	-18.907	N/A	74.000	31.158	PK
		2390.000	35.093	23.935	-18.907	-20.00	54.000	31.158	AV
3		2404.400	97.846	66.699	N/A	N/A	N/A	31.147	PK
		2404.400	77.846	66.699	N/A	-20.00	N/A	31.147	AV

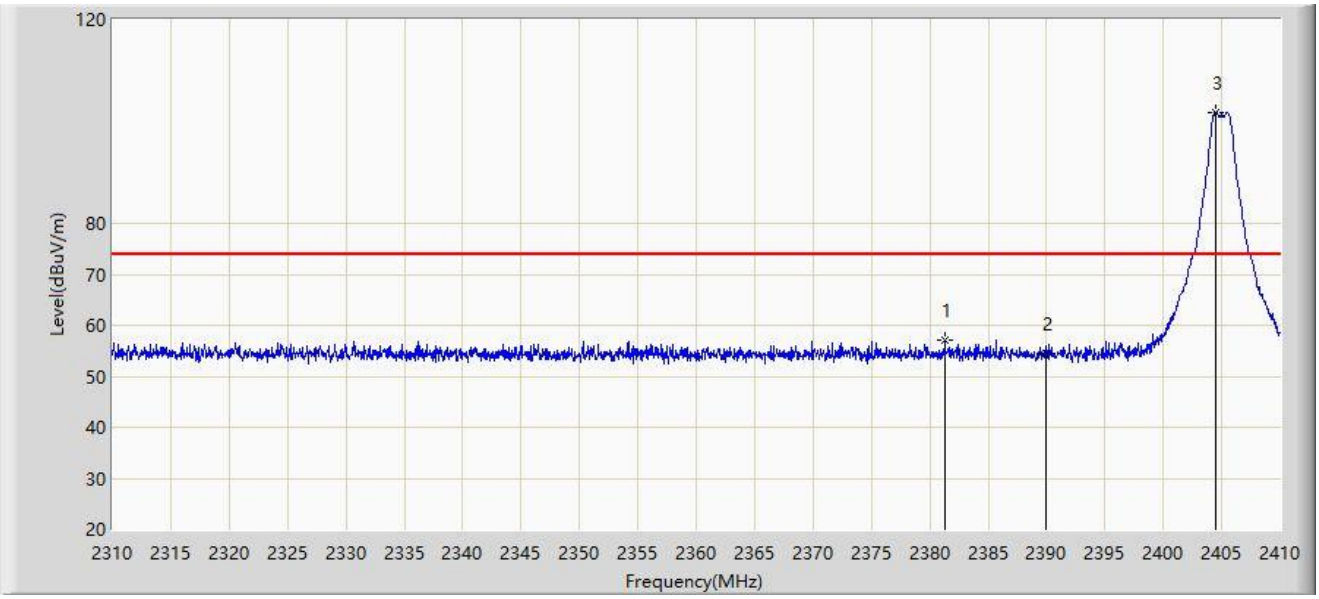
Note 1: " * ", means this data is the worst emission level.

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

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

Note 4. Average Measure Level = Peak Measure Level + Duty Cycle Factor, Duty cycle factor = -20dB.

Site: WZ-AC1	Test Date: 2023-07-21
Limit: FCC_2.4G_RE(3m)	Engineer: Bob Zhang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2405MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Duty cycle Factor (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2381.300	57.154	25.982	-16.846	N/A	74.000	31.172	PK
		2381.300	37.154	25.982	-16.846	-20.00	54.000	31.172	AV
2		2390.000	54.413	23.255	-19.587	N/A	74.000	31.158	PK
		2390.000	34.413	23.255	-19.587	-20.00	54.000	31.158	AV
3		2404.500	101.741	70.594	N/A	N/A	N/A	31.147	PK
		2404.500	81.741	70.594	N/A	-20.00	N/A	31.147	AV

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

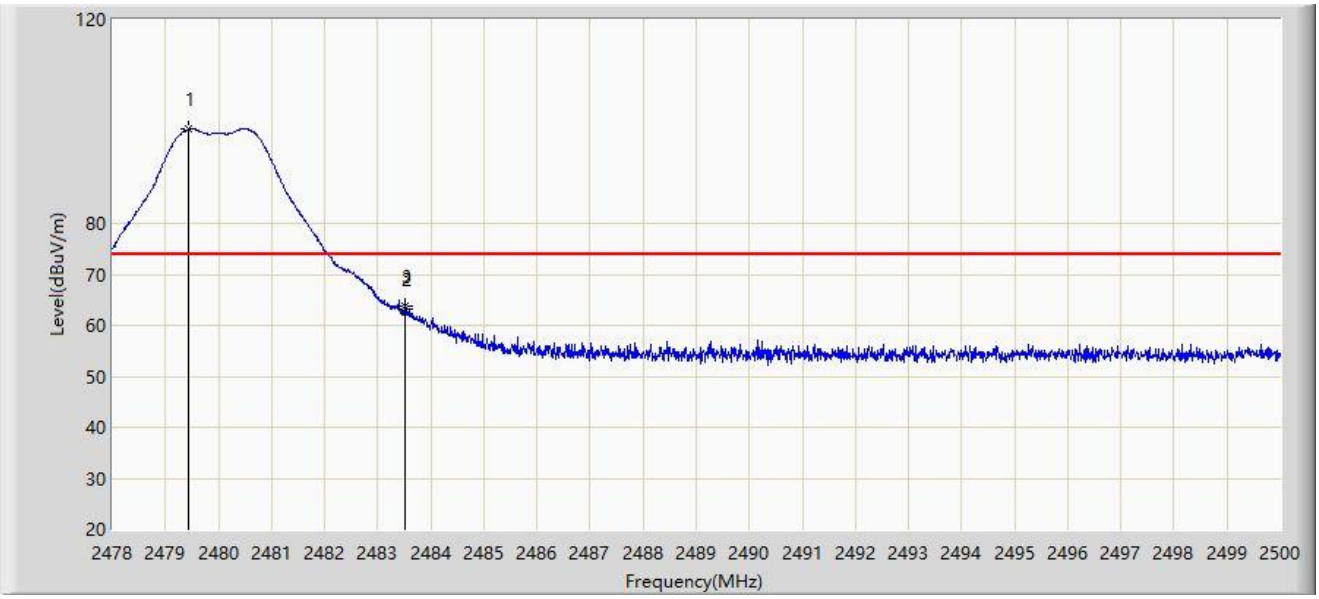
Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

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

Note 4. Average Measure Level = Peak Measure Level + Duty Cycle Factor, Duty cycle factor = -20dB.

Filter 9#:

Site: WZ-AC1	Test Date: 2023-07-21
Limit: FCC_2.4G_RE(3m)	Engineer: Bob Zhang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Duty cycle Factor (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2479.430	98.440	67.351	N/A	N/A	N/A	31.089	PK
		2479.430	78.440	67.351	N/A	-20.00	N/A	31.089	AV
2		2483.500	63.331	32.238	-10.669	N/A	74.000	31.093	PK
		2483.500	43.331	32.238	-10.669	-20.00	54.000	31.093	AV
3	*	2483.511	63.630	32.537	-10.370	N/A	74.000	31.093	PK
		2483.511	43.630	32.537	-10.370	-20.00	54.000	31.093	AV

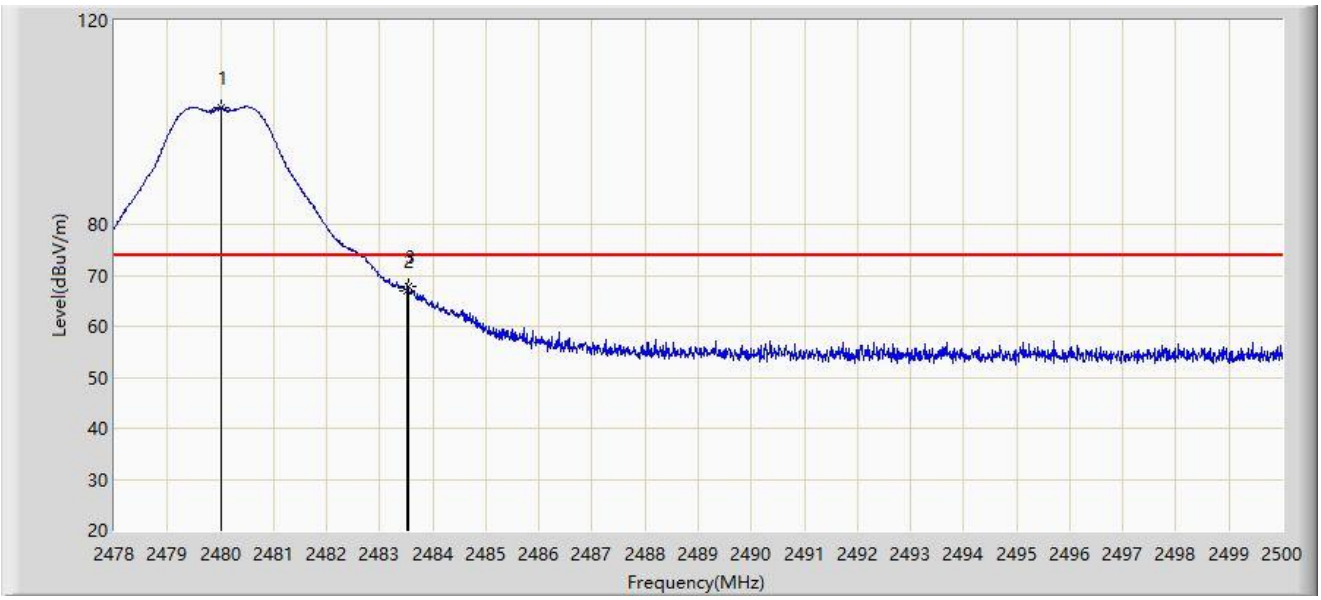
Note 1: " * ", means this data is the worst emission level.

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

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

Note 4. Average Measure Level = Peak Measure Level + Duty Cycle Factor, Duty cycle factor = -20dB.

Site: WZ-AC1	Test Date: 2023-07-21
Limit: FCC_2.4G_RE(3m)	Engineer: Bob Zhang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Duty cycle Factor (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2480.002	102.932	71.842	N/A	N/A	N/A	31.090	PK
		2480.002	82.932	71.842	N/A	-20.00	N/A	31.090	AV
2		2483.500	66.965	35.872	-7.035	N/A	74.000	31.093	PK
		2483.500	46.965	35.872	-7.035	-20.00	54.000	31.093	AV
3	*	2483.533	67.802	36.709	-6.198	N/A	74.000	31.093	PK
		2483.533	47.802	36.709	-6.198	-20.00	54.000	31.093	AV

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

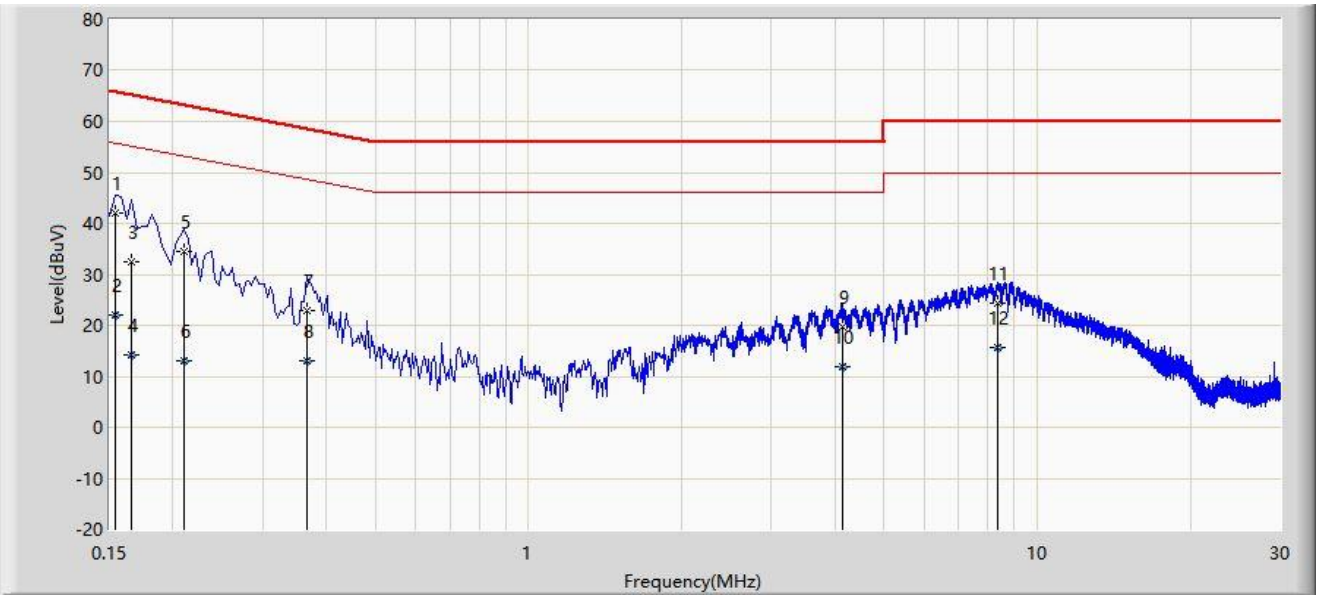
Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

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

Note 4. Average Measure Level = Peak Measure Level + Duty Cycle Factor, Duty cycle factor = -20dB.

A.8 AC Conducted Emissions Test Result

Site: WZ-SR2	Test Date: 2023-08-04
Limit: FCC_Part15.207_CE_AC Power	Engineer: Linda Wei
Probe: ENV216_101683_Filter Off_C	Polarity: Line
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2440MHz	



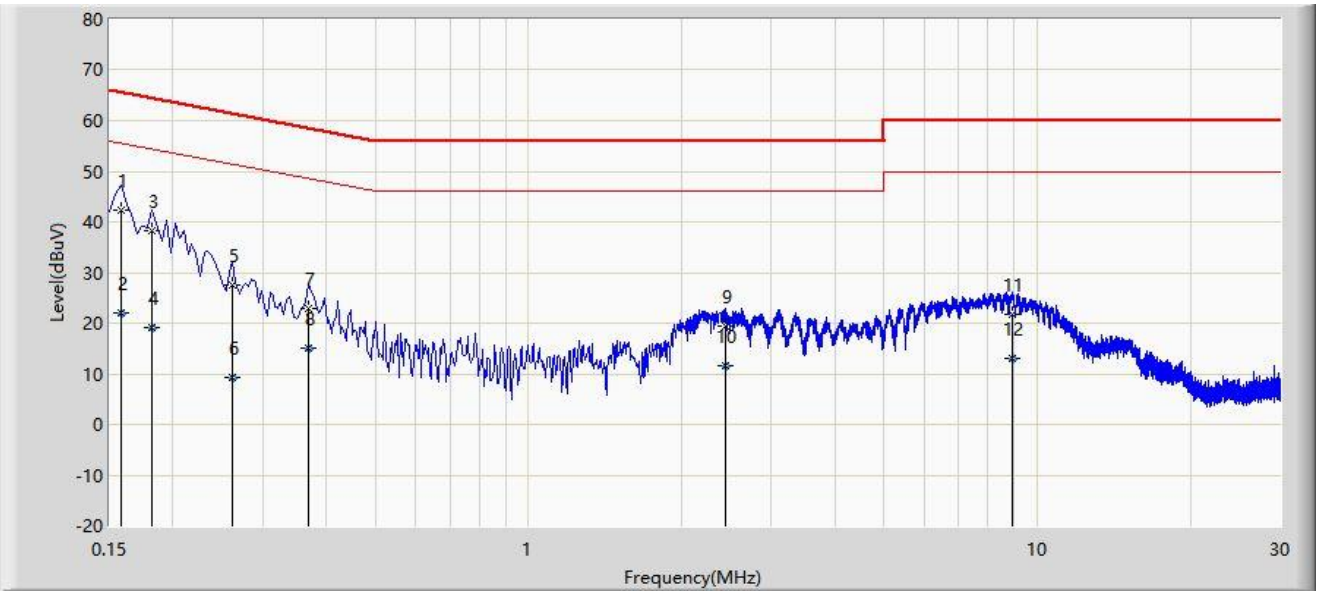
No	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1	*	0.154	42.151	32.436	-23.630	65.781	9.716	QP
2		0.154	22.102	12.386	-33.680	55.781	9.716	AV
3		0.166	32.569	22.852	-32.589	65.158	9.718	QP
4		0.166	14.286	4.568	-40.872	55.158	9.718	AV
5		0.210	34.414	24.685	-28.791	63.205	9.729	QP
6		0.210	13.103	3.374	-40.103	53.205	9.729	AV
7		0.366	22.787	13.007	-35.804	58.591	9.780	QP
8		0.366	13.002	3.223	-35.589	48.591	9.780	AV
9		4.142	19.803	9.643	-36.197	56.000	10.160	QP
10		4.142	11.936	1.776	-34.064	46.000	10.160	AV
11		8.334	24.398	14.132	-35.602	60.000	10.266	QP
12		8.334	15.517	5.251	-34.483	50.000	10.266	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	Test Date: 2023-08-04
Limit: FCC_Part15.207_CE_AC Power	Engineer: Linda Wei
Probe: ENV216_101683_Filter Off_C	Polarity: Neutral
EUT: Access Point	Power: AC 120V/60Hz
Test Mode: Transmit by Zigbee at 2440MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1	*	0.158	42.238	32.532	-23.331	65.568	9.706	QP
2		0.158	22.128	12.422	-33.441	55.568	9.706	AV
3		0.182	38.352	28.640	-26.042	64.394	9.711	QP
4		0.182	19.115	9.404	-35.278	54.394	9.711	AV
5		0.262	27.562	17.831	-33.805	61.368	9.731	QP
6		0.262	9.349	-0.382	-42.019	51.368	9.731	AV
7		0.370	22.764	12.992	-35.737	58.501	9.772	QP
8		0.370	15.110	5.339	-33.391	48.501	9.772	AV
9		2.430	19.440	9.342	-36.560	56.000	10.098	QP
10		2.430	11.689	1.591	-34.311	46.000	10.098	AV
11		8.938	21.641	11.380	-38.359	60.000	10.261	QP
12		8.938	12.922	2.661	-37.078	50.000	10.261	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 “2306RSU039-UT” file.

Appendix C – EUT Photograph

Refer to “2306RSU039-UE” file.

The End