



RF MEASUREMENT REPORT

FCC ID: LNQWF186W
Applicant: Actiontec Electronics Inc.
Product: Wi-Fi 6 Indoor AP
Model No.: WF-186W, WF-186H
Brand Name: Actiontec
FCC Classification: Digital Transmission System (DTS)
FCC Rule Part(s): Part 15 Subpart C (Section 15.247)
Result: Complies
Received Date: 2023-06-19
Test Date: 2023-07-08 ~ 2023-08-02

Reviewed By:

Kevin Guo

Approved By:

Robin Wu



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
2305RSU014-U1	V01	Initial Report	2023-09-16	Invalid
2305RSU014-U1	V02	Correct the Bluetooth version	2023-10-26	Valid

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1. General Information

1.1. Applicant

Actiontec Electronics Inc.

2445 Augustine Drive Suite 501, Santa Clara, California 95054, United States

1.2. Manufacturer

Actiontec Electronics Inc.

2445 Augustine Drive Suite 501, Santa Clara, California 95054, United States

1.3. Testing Facility

<input checked="" type="checkbox"/>	<p>Test Site – MRT Suzhou Laboratory</p> <hr/> <p>Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China</p> <p>Laboratory Location (Suzhou - SIP) 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China</p> <hr/> <p>Laboratory Accreditations</p> <p>A2LA: 3628.01 CNAS: L10551</p> <p>FCC: CN1166 ISED: CN0001</p> <p>VCCI: <input type="checkbox"/>R-20025 <input type="checkbox"/>G-20034 <input type="checkbox"/>C-20020 <input type="checkbox"/>T-20020</p> <p style="padding-left: 100px;"><input type="checkbox"/>R-20141 <input type="checkbox"/>G-20134 <input type="checkbox"/>C-20103 <input type="checkbox"/>T-20104</p>
<input type="checkbox"/>	<p>Test Site – MRT Shenzhen Laboratory</p> <hr/> <p>Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China</p> <hr/> <p>Laboratory Accreditations</p> <p>A2LA: 3628.02 CNAS: L10551</p> <p>FCC: CN1284 ISED: CN0105</p>
<input type="checkbox"/>	<p>Test Site – MRT Taiwan Laboratory</p> <hr/> <p>Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)</p> <hr/> <p>Laboratory Accreditations</p> <p>TAF: L3261-190725</p> <p>FCC: 291082, TW3261 ISED: TW3261</p>

1.4. Product Information

Product Name	Wi-Fi 6 Indoor AP
Model No.	WF-186W, WF-186H
Serial No.	50077119 (Conducted Testing) 1JM232300020(Radiated Testing)
Wi-Fi Specification	802.11a/b/g/n/ac/ax
Bluetooth Specification	V5.1 single mode, BLE only
Antenna Information	Refer to Section 1.5
Working Voltage	By PoE
Note: <ol style="list-style-type: none">1. The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.2. The model difference is the WF-186H removes two LAN ports from the WF-186W, others are exactly the same. WF-186W is selected for the test in this report.	

1.5. Radio Specification under Test

Bluetooth Frequency	2402 ~ 2480MHz
Channel Number	40
Type of modulation	GFSK
Data Rate	1Mbps
Antenna Type	PCB
Antenna Gain	2.05 dBi

1.6. Working Frequencies

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

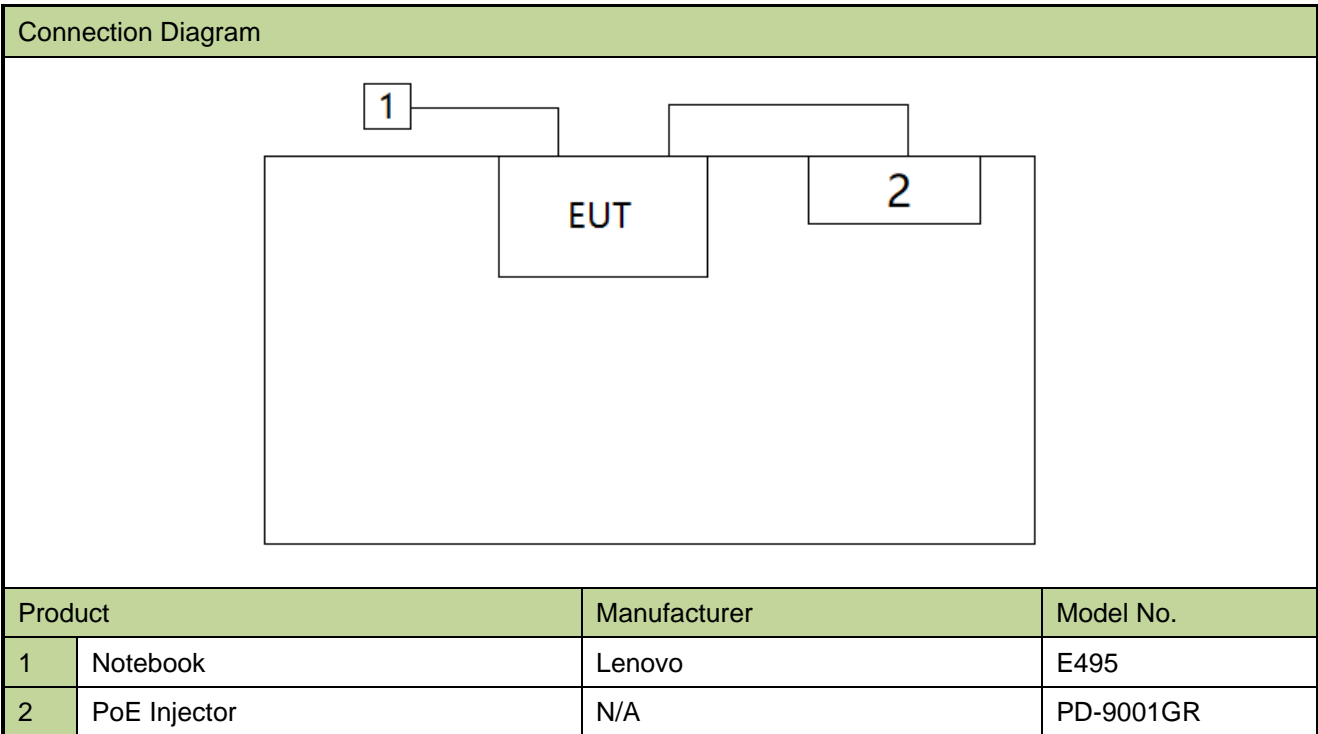
2. Test Configuration

2.1. Test Mode

Mode 1: Transmit by BLE-1Mbps

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.



2.3. Test Software

The test utility software used during testing was “QRCT”, and the version was 5.0-00196.

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
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2023-12-28	SIP-AC2
Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2024-05-23	SIP-AC2
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06598	1 year	2023-11-05	SIP-AC2
Preamplifier	EMCI	EMC051845SE	MRTSUE06601	1 year	2023-11-22	SIP-AC2
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2023-10-10	SIP-AC2
Thermohygrometer	testo	608-H1	MRTSUE06623	1 year	2023-11-27	SIP-AC2
Thermohygrometer	testo	608-H1	MRTSUE06624	1 year	2023-11-27	SIP-AC2
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06647	1 year	2024-06-17	SIP-AC2
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06648	1 year	2023-10-22	SIP-AC2
Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2023-12-22	SIP-AC2
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2024-02-26	SIP-AC2
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2024-05-23	SIP-SR2
EMI Test Receiver	R&S	ESR3	MRTSUE06612	1 year	2024-05-23	SIP-SR2
Thermohygrometer	testo	608-H1	MRTSUE06621	1 year	2023-11-27	SIP-SR2
Shielding Room	MIX-BEP	SIP-SR2	MRTSUE06949	5 years	2024-10-23	SIP-SR2
Signal Analyzer	Keysight	N9010B	MRTSUE06558	1 year	2024-05-23	SIP-TR1
Thermohygrometer	testo	608-H1	MRTSUE11022	1 year	2023-11-01	SIP-TR1
USB Power Sensor	Agilent	U2021XA	MRTSUE06030	1 year	2023-10-08	SIP-TR1

Software	Version	Function
EMI Software	V3.0.0	EMI Test Software
Controller_MF 7802BS	1.02	RE Antenna & Turntable
Agilent Power Panel	V R03.09.00	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: 3.58dB 150kHz~30MHz: 3.20dB
Radiated Disturbance
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 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:

- 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.

6.2. 6dB Bandwidth Measurement

6.2.1. Test Limit

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

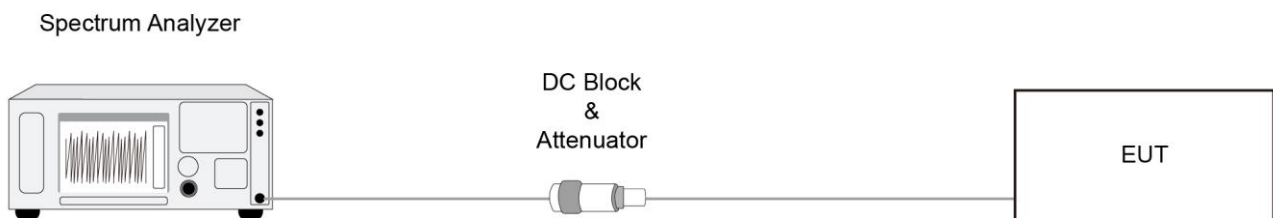
6.2.2. Test Procedure

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 $\geq 3 \times$ 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

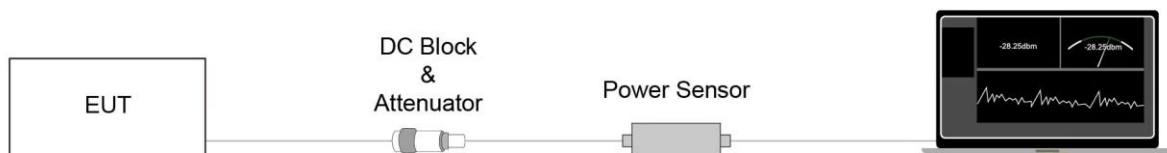
Method PKPM1 (Peak Power Measurement of Signals with DTS BW \leq 50MHz)

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.

6.3.4. 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.

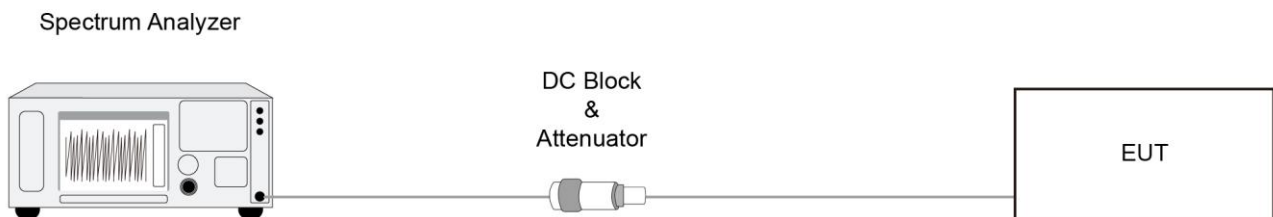
6.4.2. Test Procedure

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 Setting

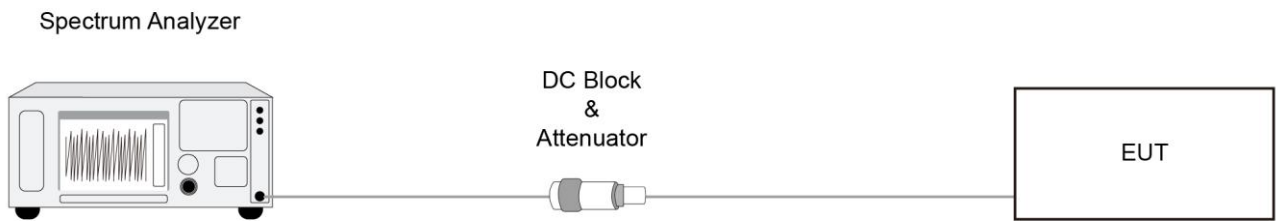
Reference level measurement

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 $\geq 3 \times$ 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 [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

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

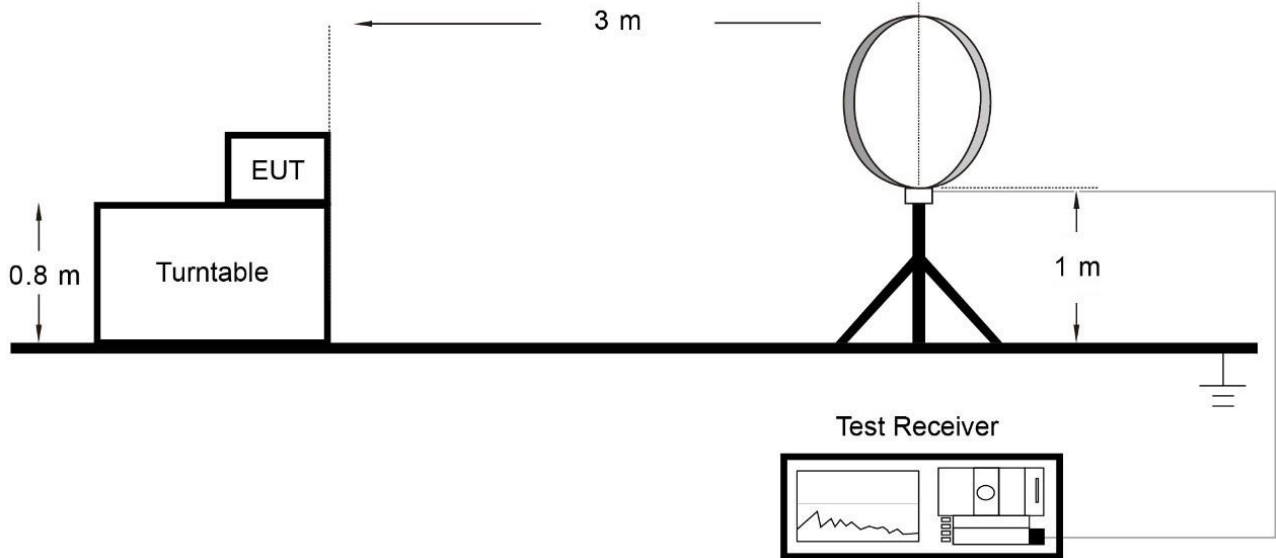
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

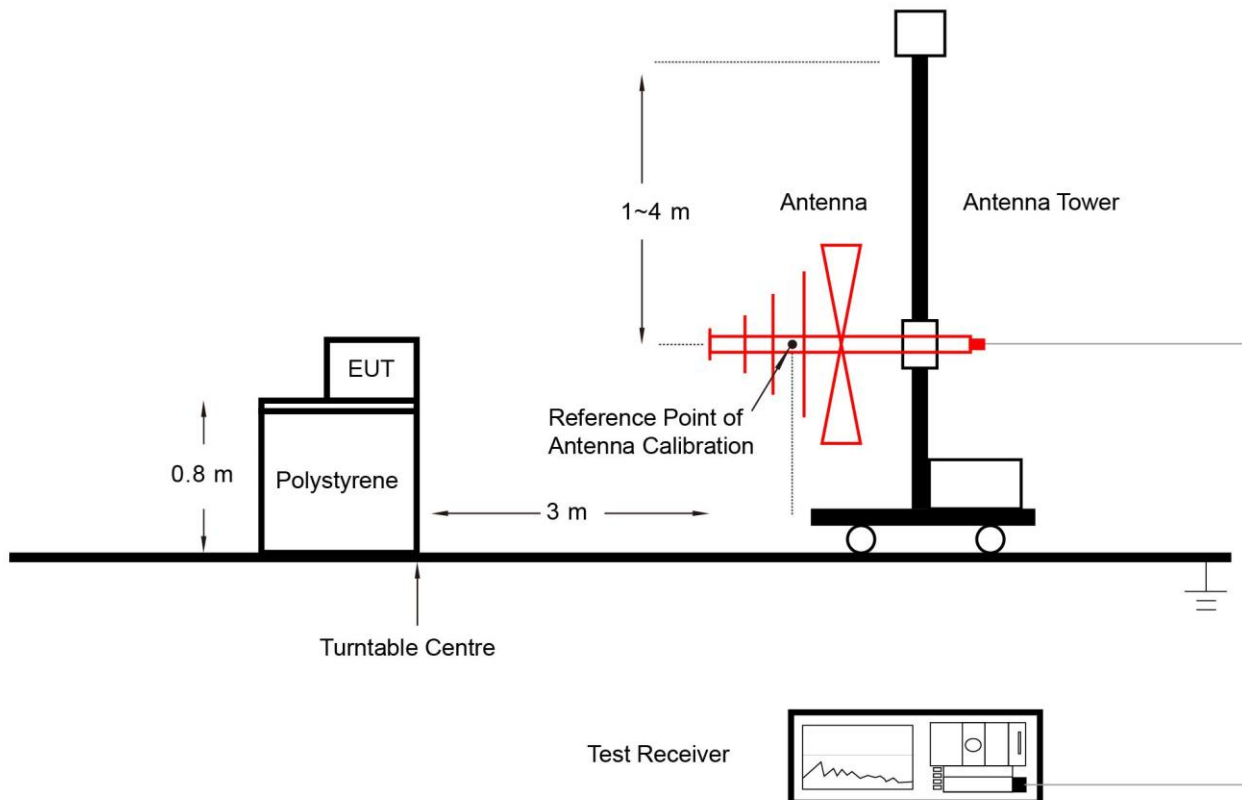
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
4.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

6.6.4. Test Setup

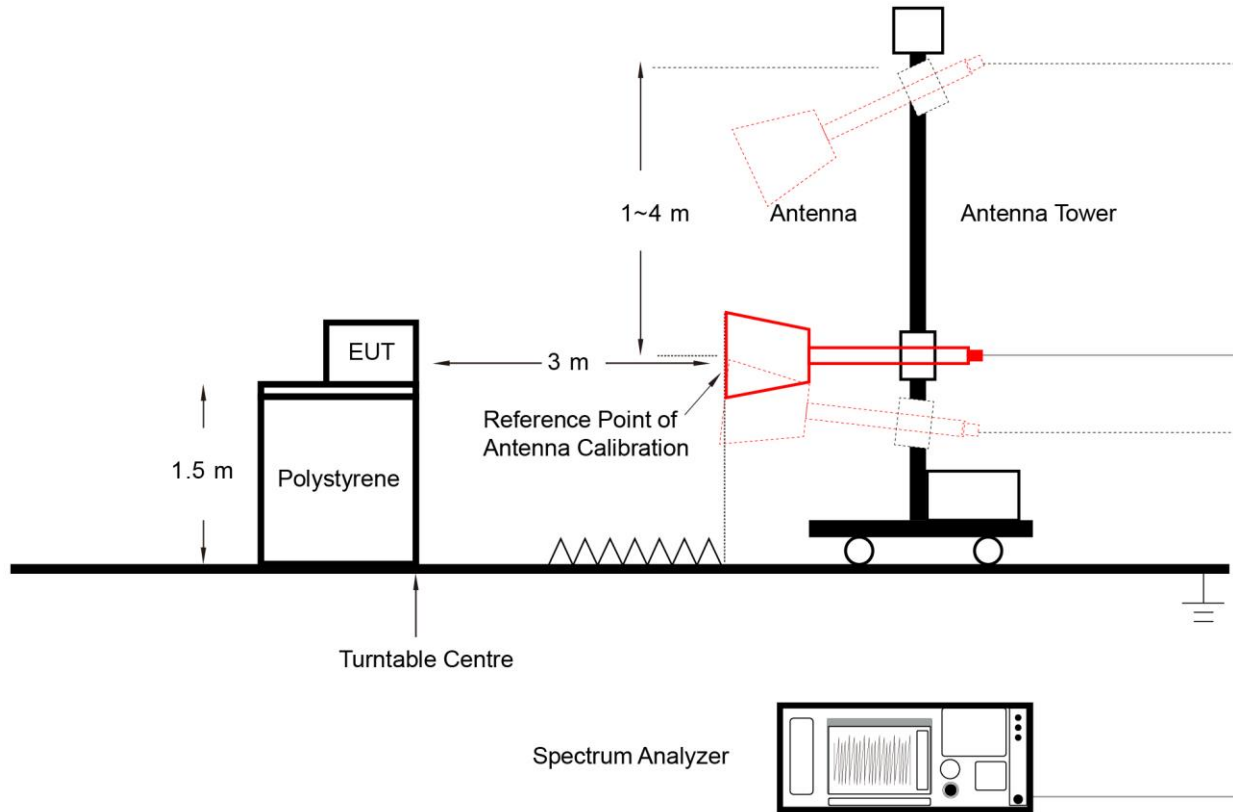
Below 30MHz Test Setup:



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 [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

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

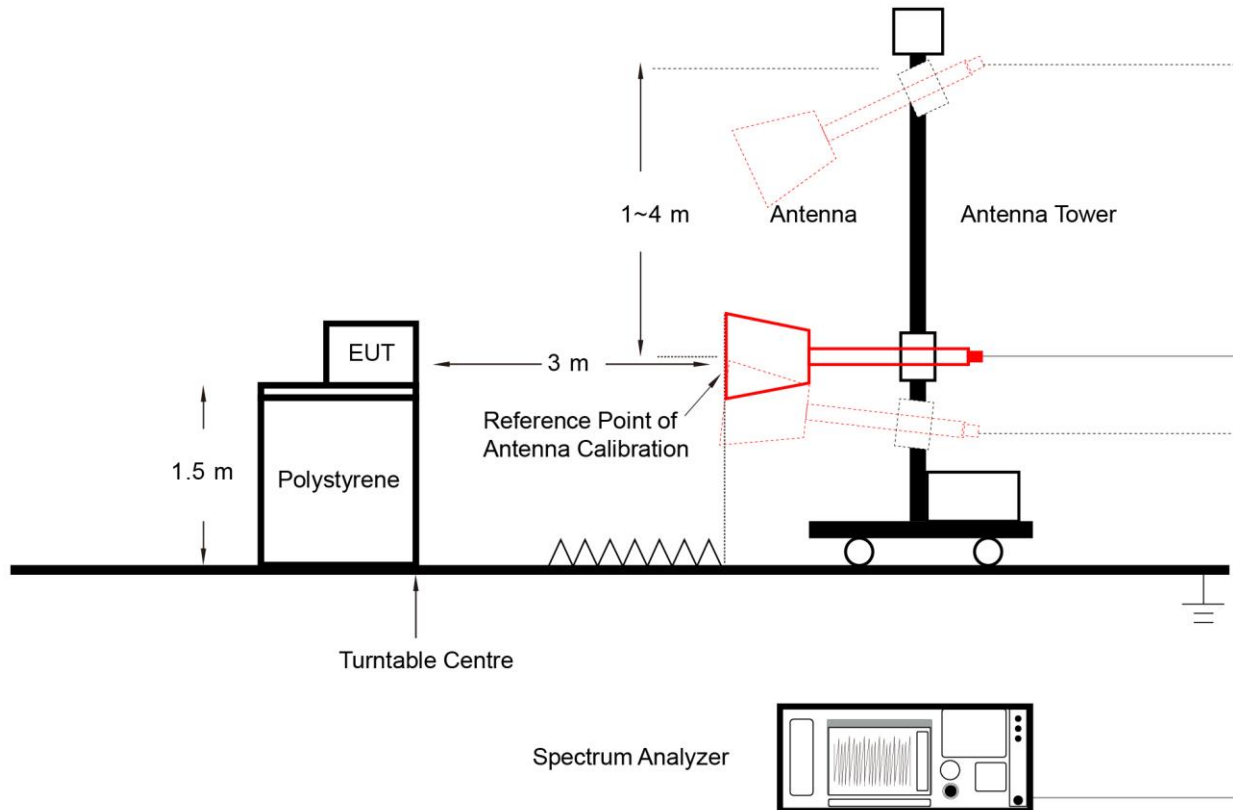
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Field Strength Measurements

1. 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

6.7.4. Test Setup



6.7.5. Test Result

Refer to Appendix A.7.

6.8. AC Conducted Emissions Measurement

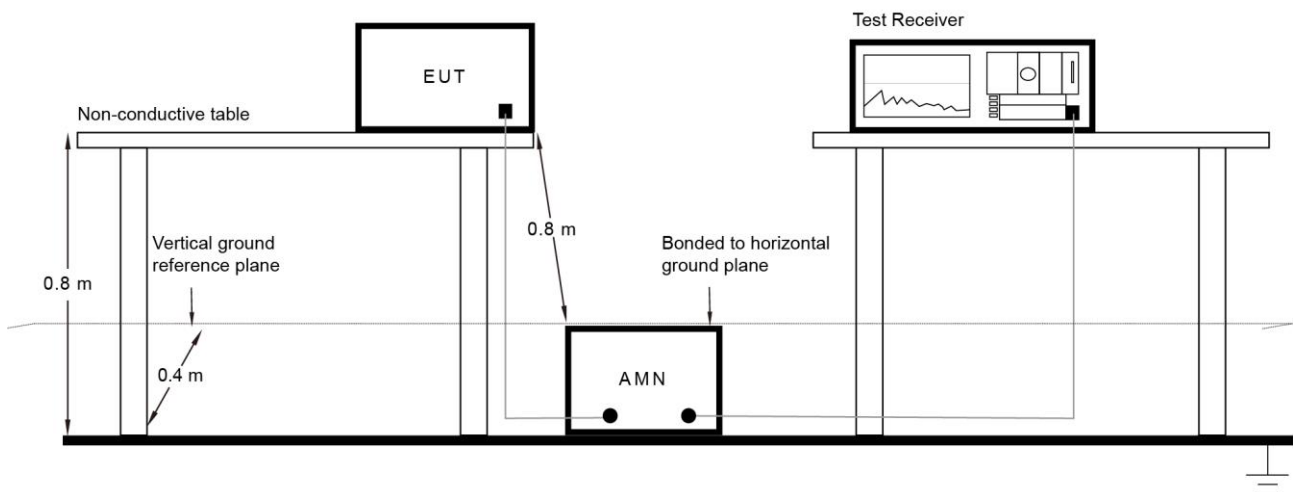
6.8.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

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

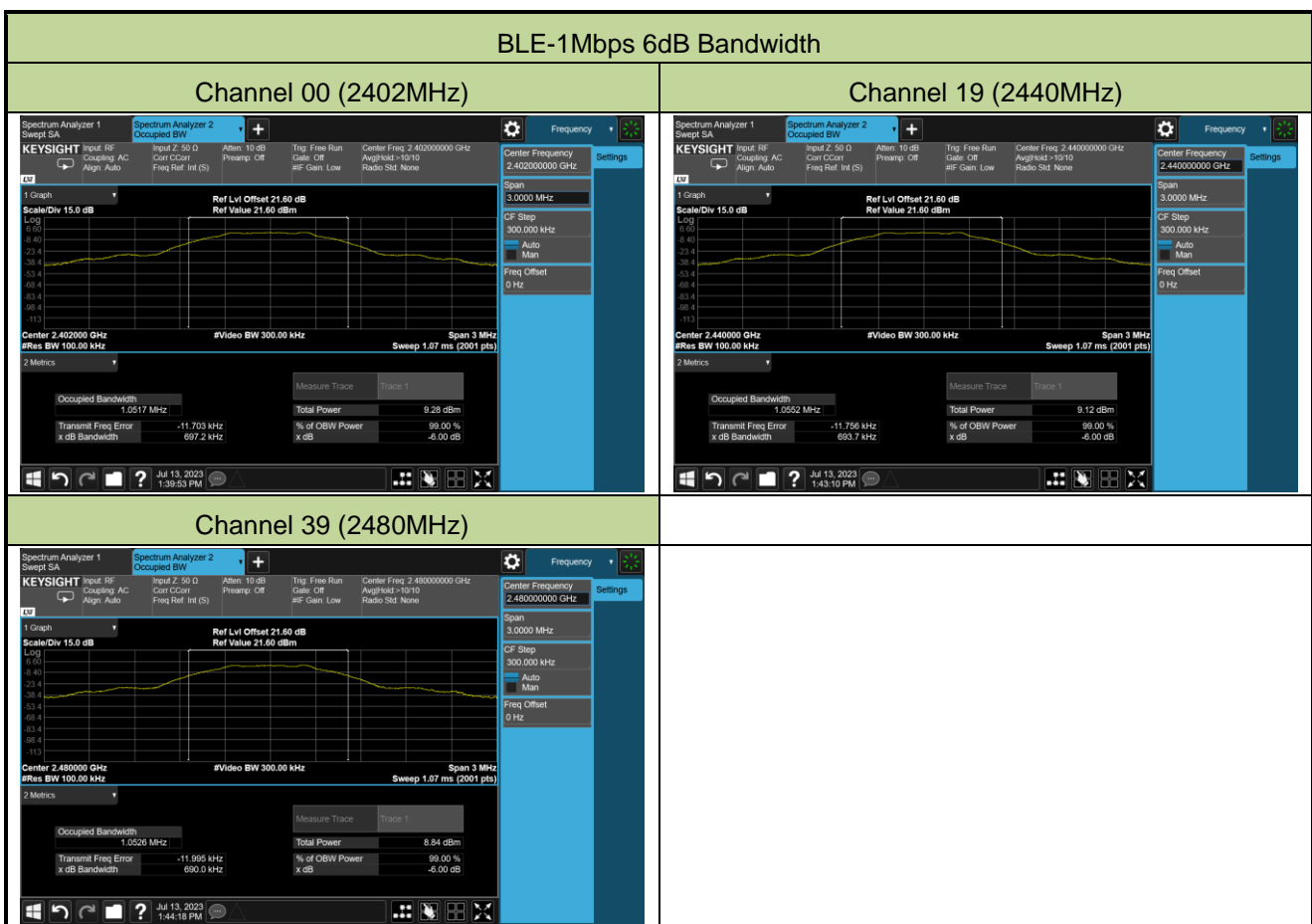
Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2023-07-13		

Test Mode	Duty Cycle
BLE-1Mbps	100%
Duty Cycle (T = Transmission Duration)	
BLE-1Mbps	
 <p>The screenshot shows a Keysight Spectrum Analyzer interface. The main display is a spectrum plot with a single peak marked. The peak is labeled 'Mkr1' with a duration of 3.737 ms and a power level of 2.86 dBm. The plot shows a narrow band of activity around a center frequency of 2.402000000 GHz. The interface includes various control panels for input, settings, and marker functions.</p>	

A.2 6dB Bandwidth Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2023-07-13		

Test Mode	Data Rate	Channel No.	Frequency (MHz)	6dB Bandwidth (KHz)	Limit (KHz)
BLE	1Mbps	00	2402	697.2	≥ 500
BLE	1Mbps	19	2440	693.7	≥ 500
BLE	1Mbps	39	2480	690.0	≥ 500



A.3 Output Power Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2023-07-15		

Test Result of Peak Output Power

Test Mode	Data Rate	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
BLE	1Mbps	00	2402	5.89	≤ 30.00	Pass
BLE	1Mbps	19	2440	5.76	≤ 30.00	Pass
BLE	1Mbps	39	2480	5.44	≤ 30.00	Pass

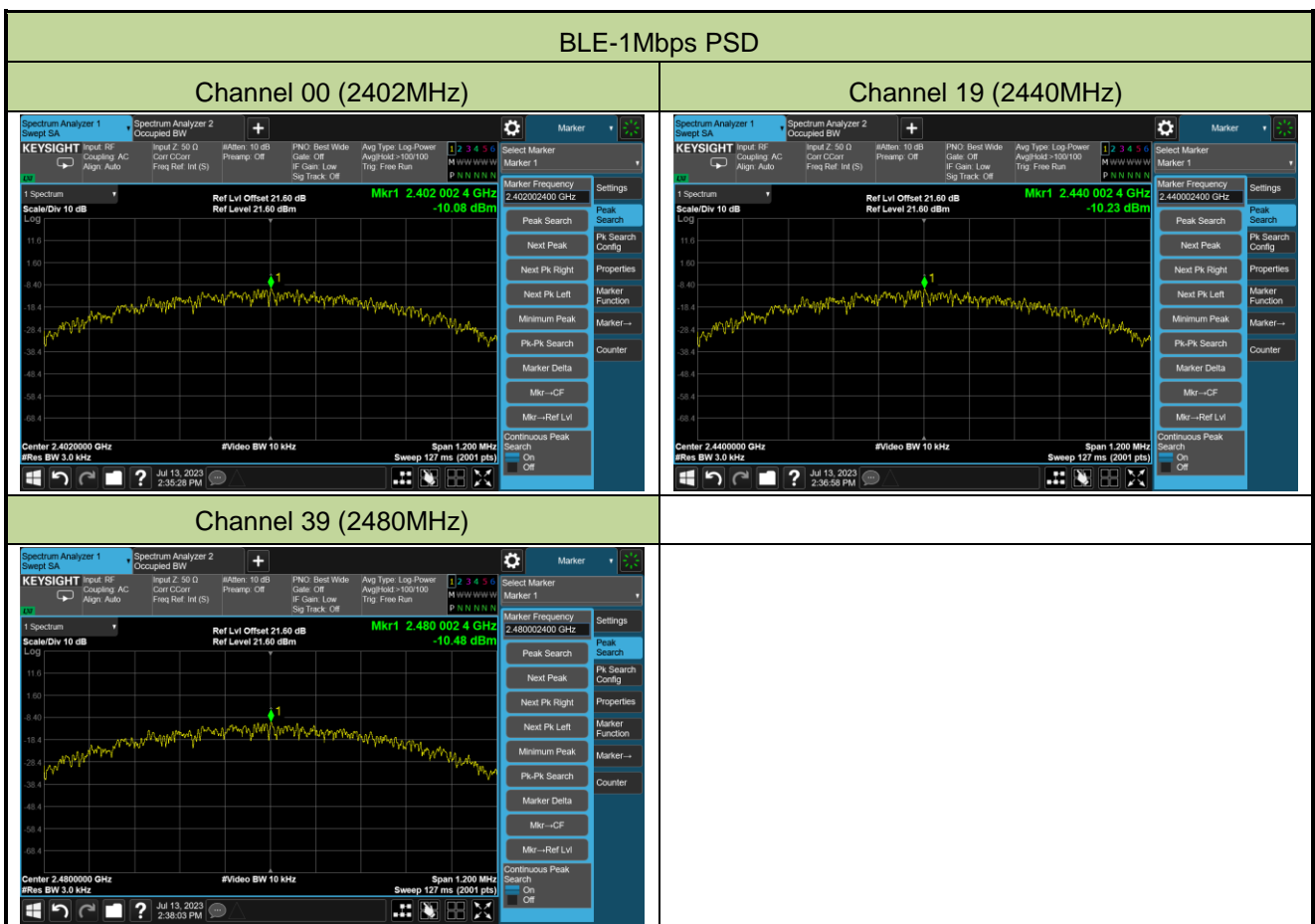
Test Result of Average Output Power (Reporting Only)

Test Mode	Data Rate	Channel No.	Frequency (MHz)	Average Power (dBm)	Limit (dBm)	Result
BLE	1Mbps	00	2402	5.18	≤ 30.00	Pass
BLE	1Mbps	19	2440	4.98	≤ 30.00	Pass
BLE	1Mbps	39	2480	4.56	≤ 30.00	Pass

A.4 Power Spectral Density Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2023-07-13		

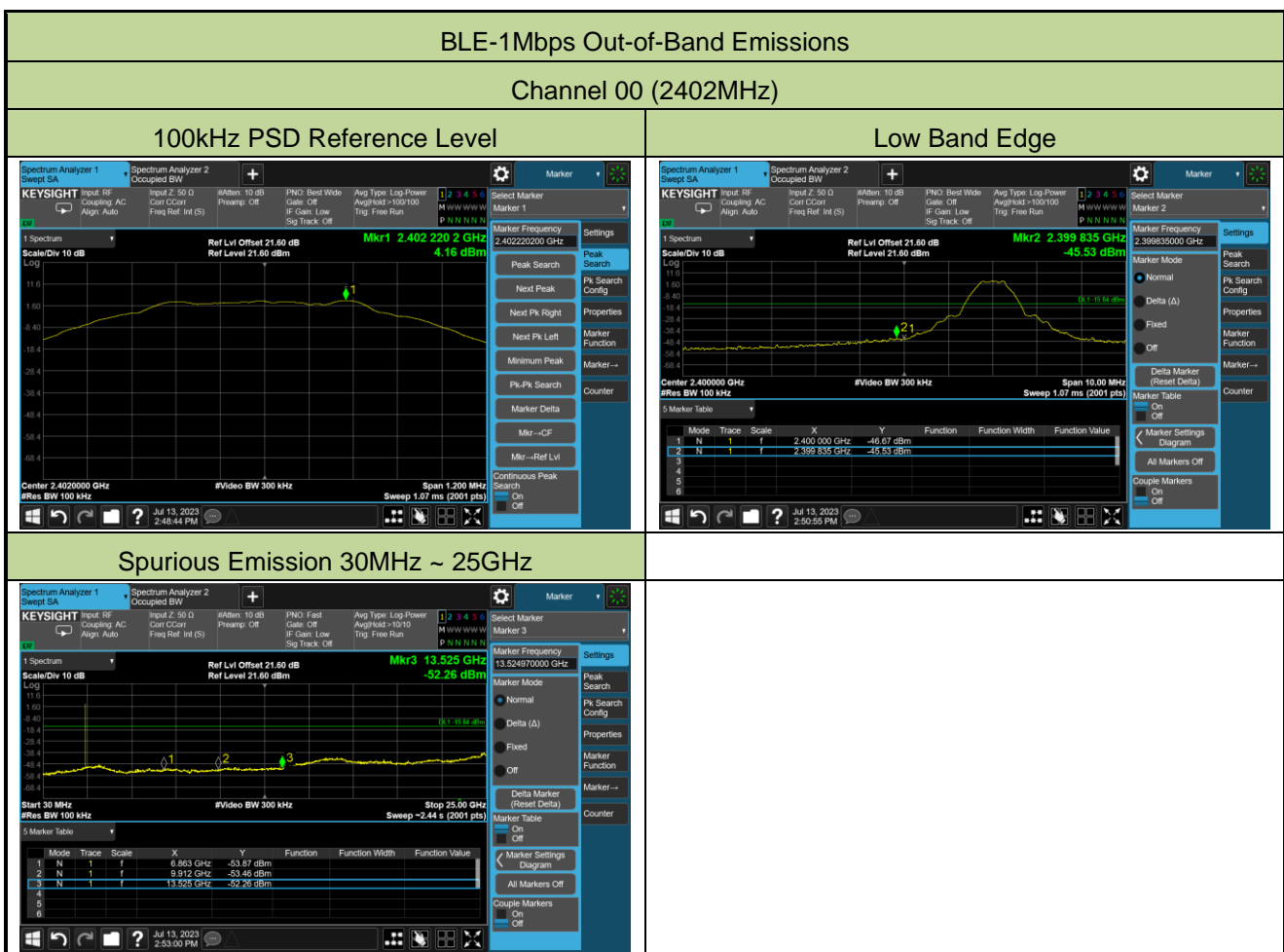
Test Mode	Data Rate	Channel No.	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
BLE	1Mbps	00	2402	-10.08	≤ 8.00	Pass
BLE	1Mbps	19	2440	-10.23	≤ 8.00	Pass
BLE	1Mbps	39	2480	-10.48	≤ 8.00	Pass



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

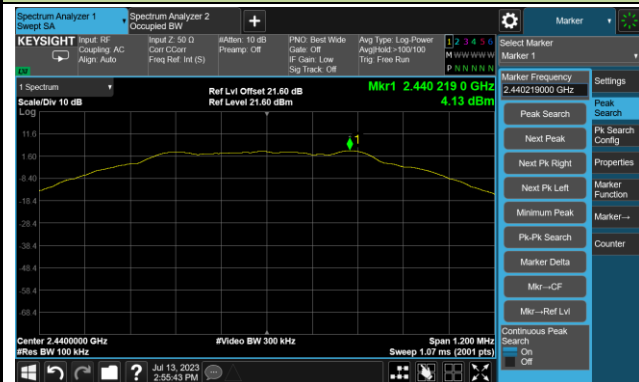
Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2023-07-13		

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

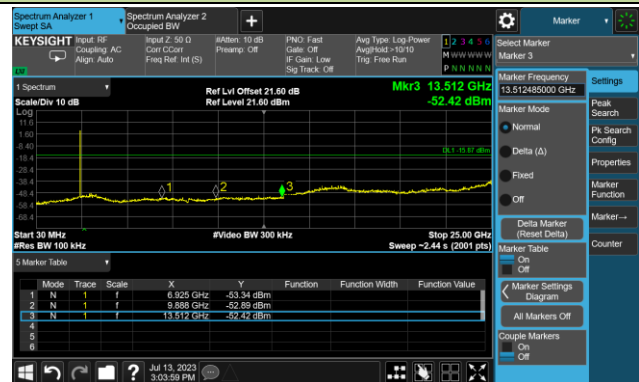


Channel 19 (2440MHz)

100kHz PSD Reference Level

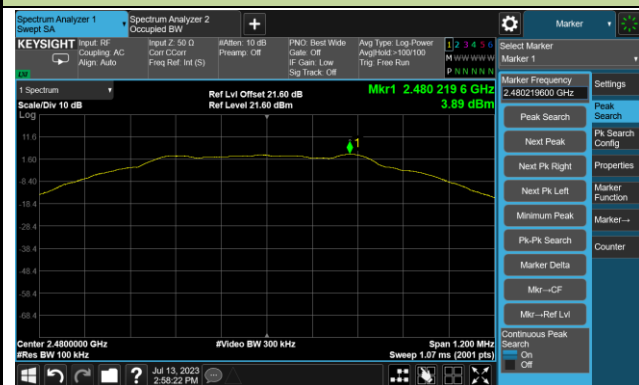


Spurious Emission 30MHz ~ 25GHz



Channel 39 (2480MHz)

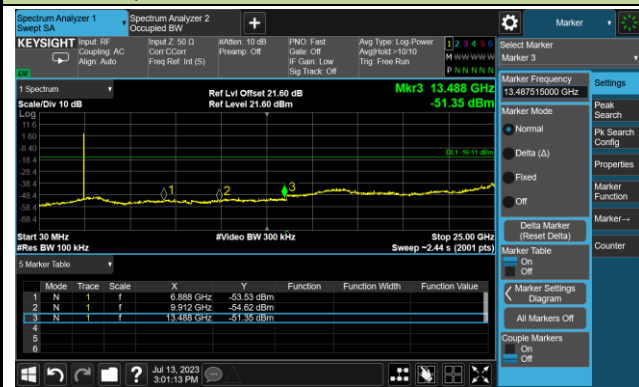
100kHz PSD Reference Level



High Band Edge



Spurious Emission 30MHz ~ 25GHz



A.6 Radiated Spurious Emission Test Result

Test Site	SIP-AC2	Test Engineer	Arvin Ding
Test Date	2023-07-08	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.		

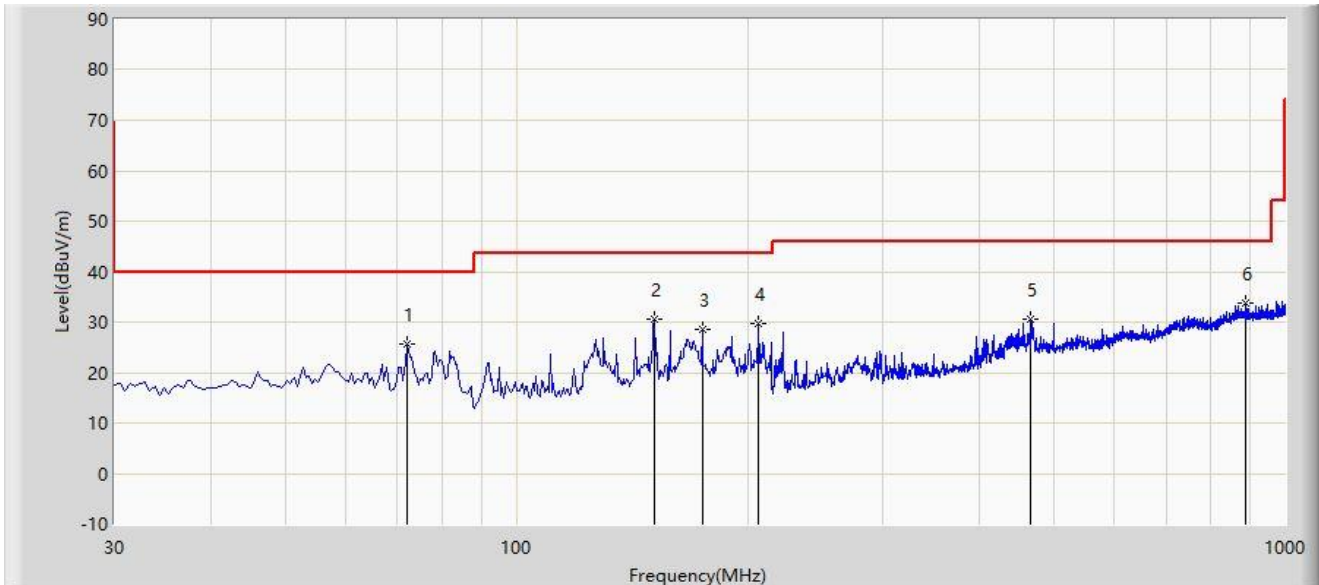
Test Channel	Frequency (MHz)	Reading Level (dB μ V)	Factor (dB/m)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detect or	Polarization
00	8106.0	41.7	2.8	44.5	74.0	-29.5	Peak	Horizontal
	12492.0	39.3	7.5	46.8	74.0	-27.2	Peak	Horizontal
	15628.5	36.8	12.9	49.7	74.0	-24.3	Peak	Horizontal
	8259.0	42.6	2.7	45.3	74.0	-28.7	Peak	Vertical
	11421.0	40.1	6.1	46.2	74.0	-27.8	Peak	Vertical
	15909.0	37.3	13.0	50.3	74.0	-23.7	Peak	Vertical
19	8216.5	41.3	2.4	43.7	74.0	-30.3	Peak	Horizontal
	11710.0	41.0	6.3	47.3	74.0	-26.7	Peak	Horizontal
	15705.0	36.6	13.1	49.7	74.0	-24.3	Peak	Horizontal
	8471.5	41.3	2.6	43.9	74.0	-30.1	Peak	Vertical
	11497.5	39.9	6.3	46.2	74.0	-27.8	Peak	Vertical
	15569.0	36.4	12.5	48.9	74.0	-25.1	Peak	Vertical
39	8106.0	42.4	2.8	45.2	74.0	-28.8	Peak	Horizontal
	11540.0	40.4	6.1	46.5	74.0	-27.5	Peak	Horizontal
	15909.0	36.7	13.0	49.7	74.0	-24.3	Peak	Horizontal
	8148.5	41.4	2.6	44.0	74.0	-30.0	Peak	Vertical
	11608.0	40.1	6.4	46.5	74.0	-27.5	Peak	Vertical
	15994.0	37.2	13.0	50.2	74.0	-23.8	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: SIP-AC2	Test Date: 2023-07-08
Limit: FCC_Part15.209_RE(3m)	Engineer: Arvin Ding
Probe: VULB 9168_00998_25-2000MHz	Polarity: Horizontal
EUT: Wi-Fi 6 Indoor AP	Power: By PoE
Test Mode: Transmit by BLE 1M at 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		72.195	25.546	9.735	-14.454	40.000	15.810	PK
2		151.250	30.601	12.419	-12.899	43.500	18.182	PK
3		174.530	28.489	11.040	-15.011	43.500	17.448	PK
4		206.540	29.789	14.745	-13.711	43.500	15.043	PK
5		466.500	30.620	7.572	-15.380	46.000	23.048	PK
6	*	886.995	33.697	3.555	-12.303	46.000	30.142	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).

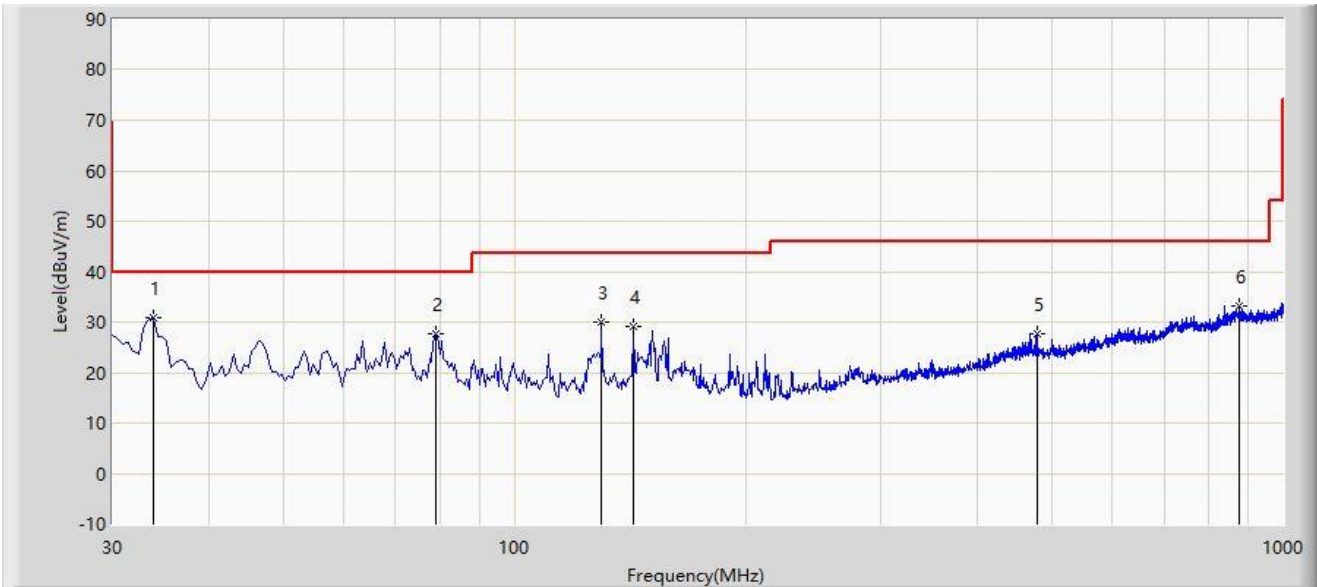
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

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: SIP-AC2	Test Date: 2023-07-08
Limit: FCC_Part15.209_RE(3m)	Engineer: Arvin Ding
Probe: VULB 9168_00998_25-2000MHz	Polarity: Vertical
EUT: Wi-Fi 6 Indoor AP	Power: By PoE
Test Mode: Transmit by BLE 1M at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	33.880	30.891	13.910	-9.109	40.000	16.981	PK
2		78.985	27.566	13.317	-12.434	40.000	14.249	PK
3		129.910	30.118	13.192	-13.382	43.500	16.927	PK
4		143.005	29.172	11.204	-14.328	43.500	17.967	PK
5		479.110	27.603	4.221	-18.397	46.000	23.382	PK
6		877.780	33.097	2.874	-12.903	46.000	30.223	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).

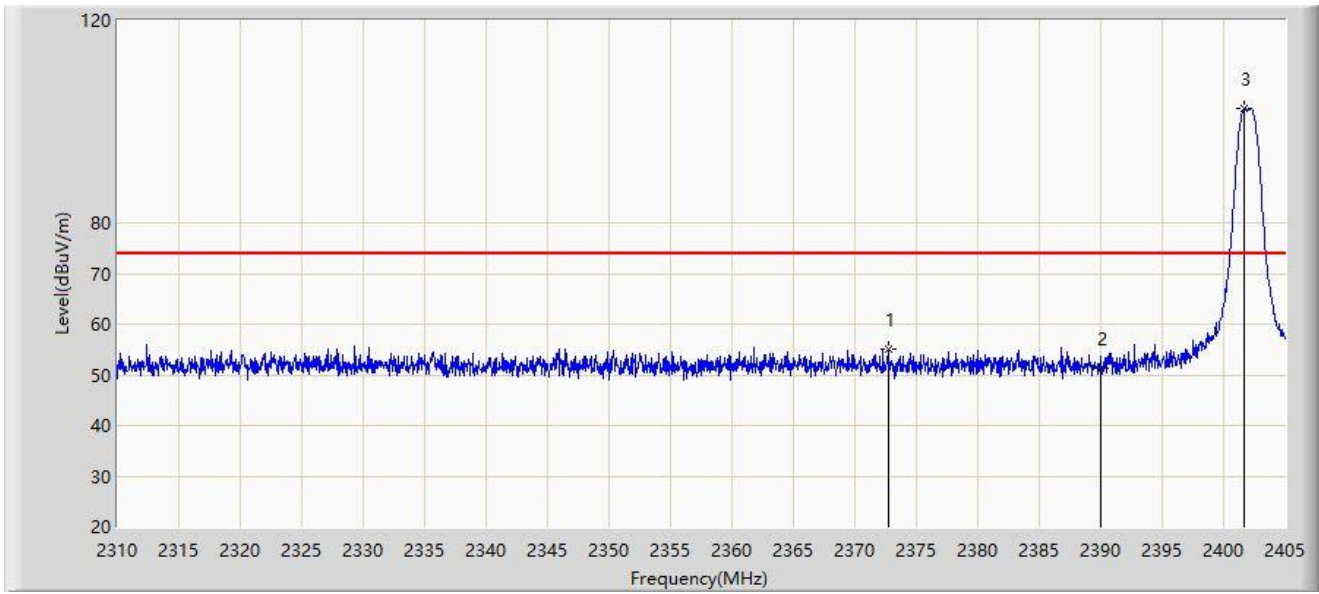
Note 4: Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

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.7 Radiated Restricted Band Edge Test Result

Site: SIP-AC2	Test Date: 2023-07-08
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: BBHA 9120D_02042_1-18GHz	Polarity: Horizontal
EUT: Wi-Fi 6 Indoor AP	Power: By PoE
Test Mode: Transmit by BLE 1M at 2402MHz	



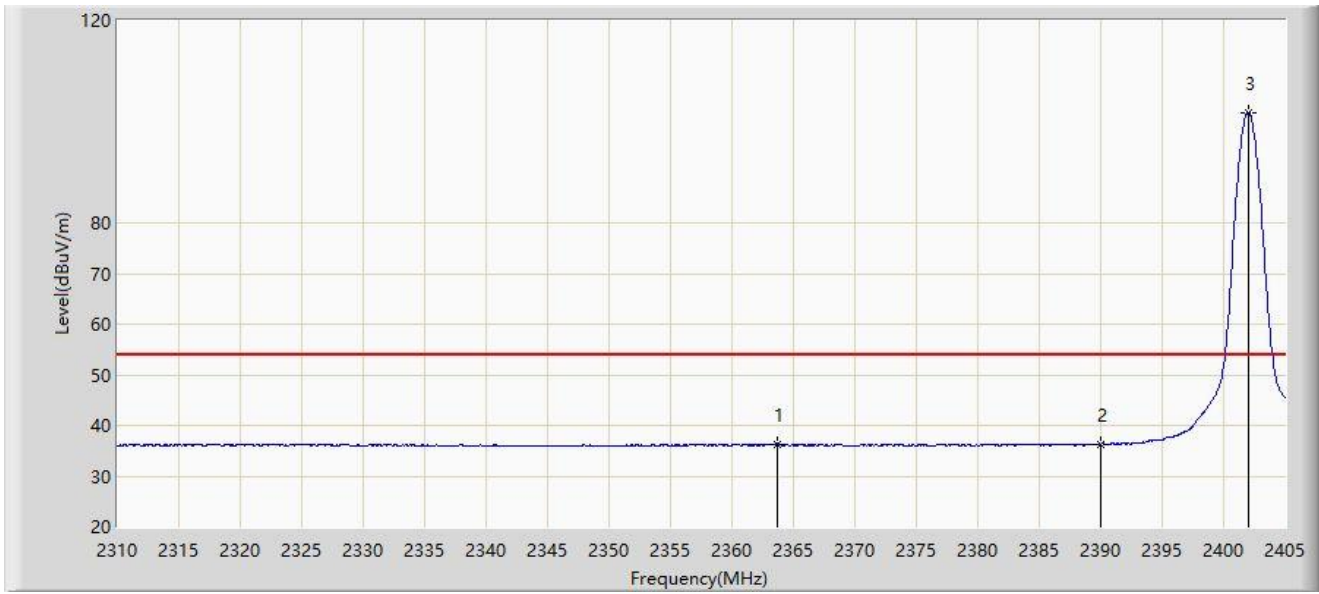
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	2372.700	54.978	22.518	-19.022	74.000	32.460	PK
2		2390.000	51.336	18.953	-22.664	74.000	32.382	PK
3		2401.722	102.538	70.190	N/A	N/A	32.348	PK

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: SIP-AC2	Test Date: 2023-07-08
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: BBHA 9120D_02042_1-18GHz	Polarity: Horizontal
EUT: Wi-Fi 6 Indoor AP	Power: By PoE
Test Mode: Transmit by BLE 1M at 2402MHz	



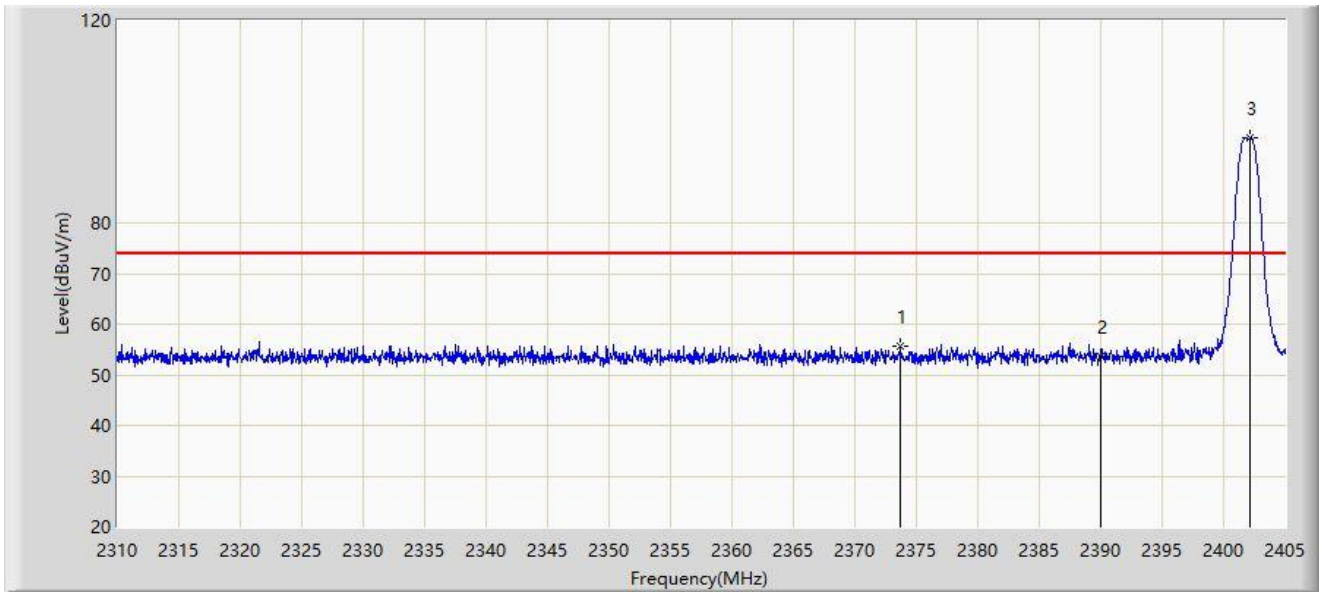
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	2363.722	36.340	3.872	-17.660	54.000	32.468	AV
2		2390.000	36.337	3.954	-17.663	54.000	32.382	AV
3		2402.008	101.778	69.431	N/A	N/A	32.347	AV

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: SIP-AC2	Test Date: 2023-07-08
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: BBHA 9120D_02042_1-18GHz	Polarity: Vertical
EUT: Wi-Fi 6 Indoor AP	Power: By PoE
Test Mode: Transmit by BLE 1M at 2402MHz	



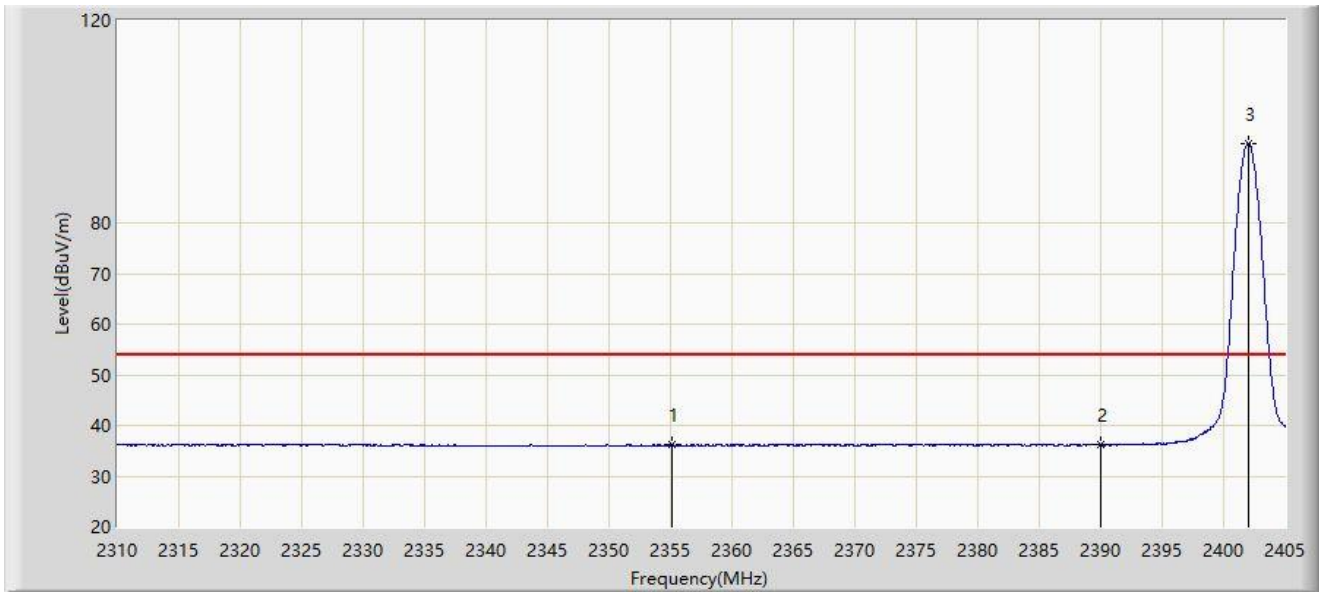
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	2373.745	55.633	23.174	-18.367	74.000	32.459	PK
2		2390.000	53.687	21.304	-20.313	74.000	32.382	PK
3		2402.150	96.720	64.373	N/A	N/A	32.347	PK

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: SIP-AC2	Test Date: 2023-07-08
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: BBHA 9120D_02042_1-18GHz	Polarity: Vertical
EUT: Wi-Fi 6 Indoor AP	Power: By PoE
Test Mode: Transmit by BLE 1M at 2402MHz	



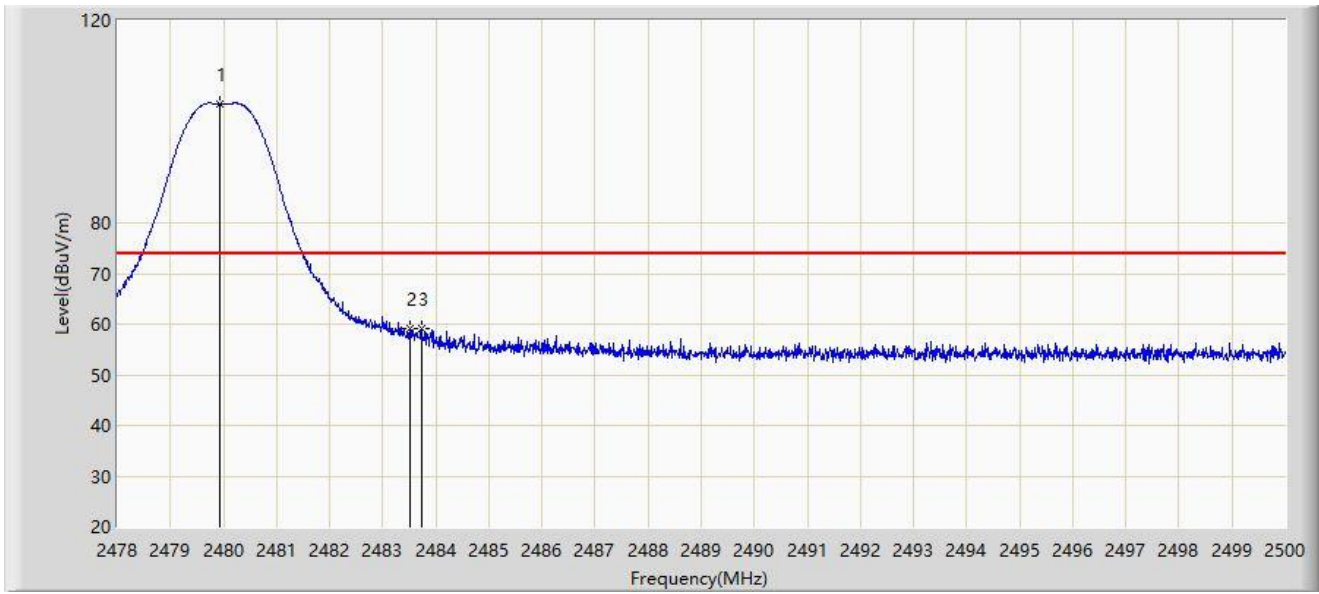
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	2355.125	36.356	3.926	-17.644	54.000	32.430	AV
2		2390.000	36.203	3.820	-17.797	54.000	32.382	AV
3		2402.008	95.678	63.331	N/A	N/A	32.347	AV

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: SIP-AC2	Test Date: 2023-07-08
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: BBHA 9120D_02042_1-18GHz	Polarity: Horizontal
EUT: Wi-Fi 6 Indoor AP	Power: By PoE
Test Mode: Transmit by BLE 1M at 2480MHz	



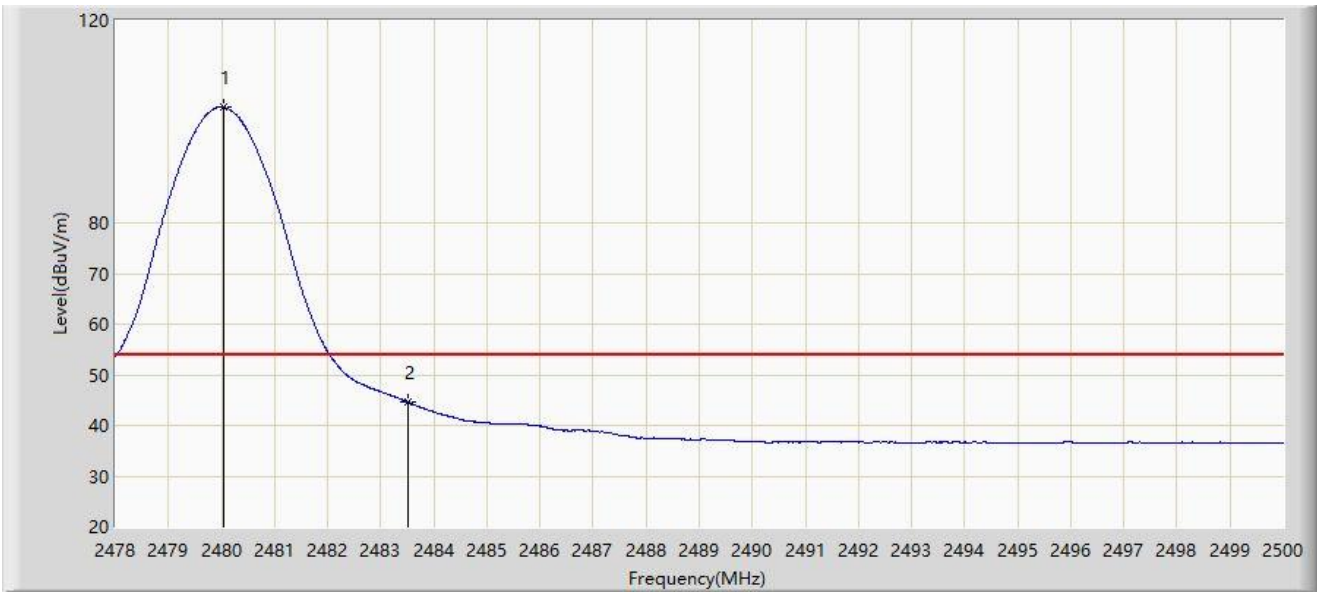
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1		2479.936	103.468	71.257	N/A	N/A	32.211	PK
2		2483.500	59.106	26.883	-14.894	74.000	32.222	PK
3	*	2483.731	59.231	27.008	-14.769	74.000	32.223	PK

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: SIP-AC2	Test Date: 2023-07-08
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: BBHA 9120D_02042_1-18GHz	Polarity: Horizontal
EUT: Wi-Fi 6 Indoor AP	Power: By PoE
Test Mode: Transmit by BLE 1M at 2480MHz	



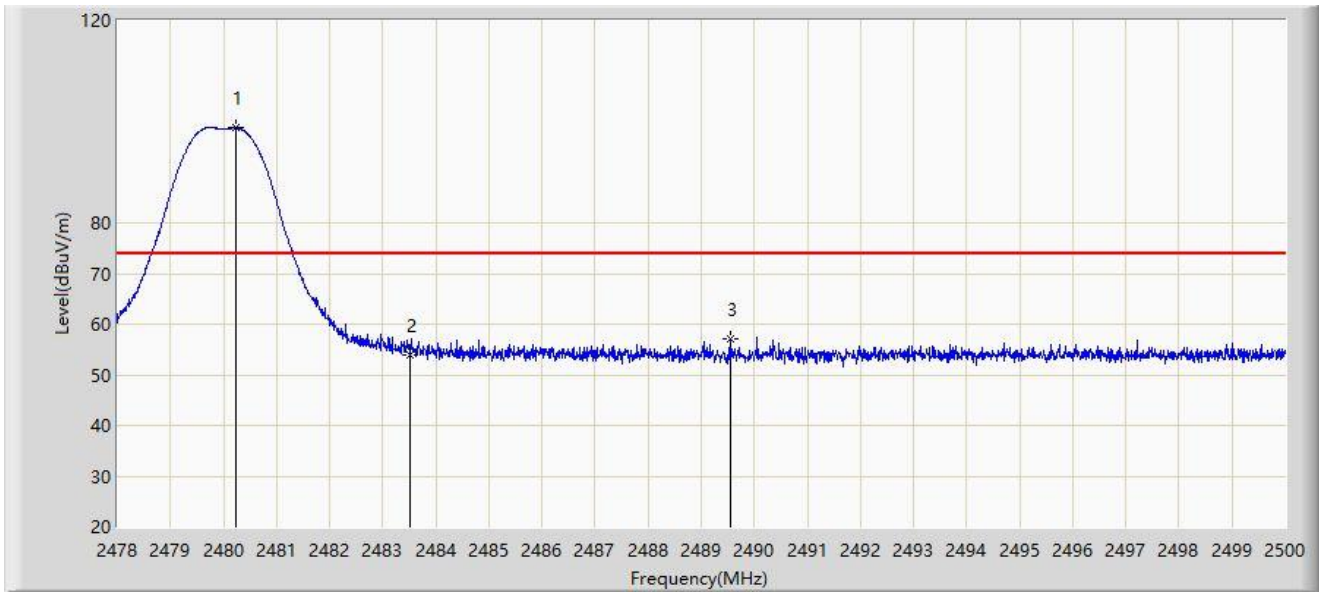
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2480.046	102.804	70.593	N/A	N/A	32.212	AV
2	*	2483.500	44.637	12.414	-9.363	54.000	32.222	AV

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: SIP-AC2	Test Date: 2023-07-08
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: BBHA 9120D_02042_1-18GHz	Polarity: Vertical
EUT: Wi-Fi 6 Indoor AP	Power: By PoE
Test Mode: Transmit by BLE 1M at 2480MHz	



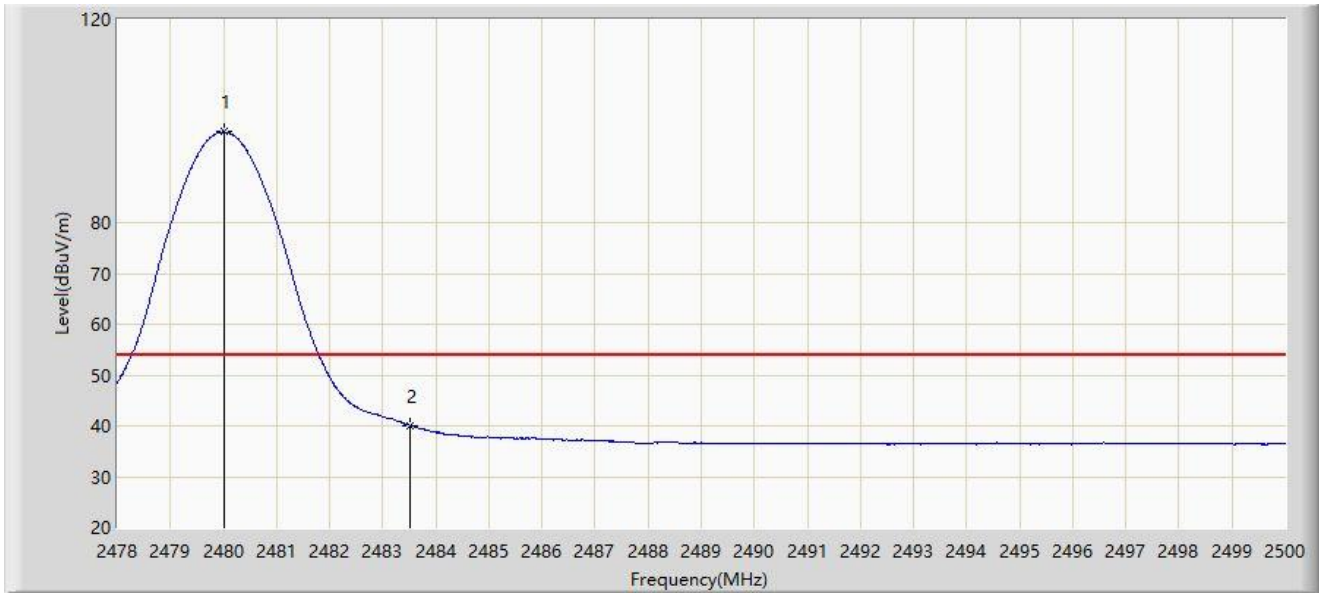
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1		2480.244	98.759	66.547	N/A	N/A	32.212	PK
2		2483.500	53.981	21.758	-20.019	74.000	32.222	PK
3	*	2489.539	57.022	24.780	-16.978	74.000	32.242	PK

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: SIP-AC2	Test Date: 2023-07-08
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: BBHA 9120D_02042_1-18GHz	Polarity: Vertical
EUT: Wi-Fi 6 Indoor AP	Power: By PoE
Test Mode: Transmit by BLE 1M at 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		2480.002	97.832	65.621	N/A	N/A	32.212	AV
2	*	2483.500	40.137	7.914	-13.863	54.000	32.222	AV

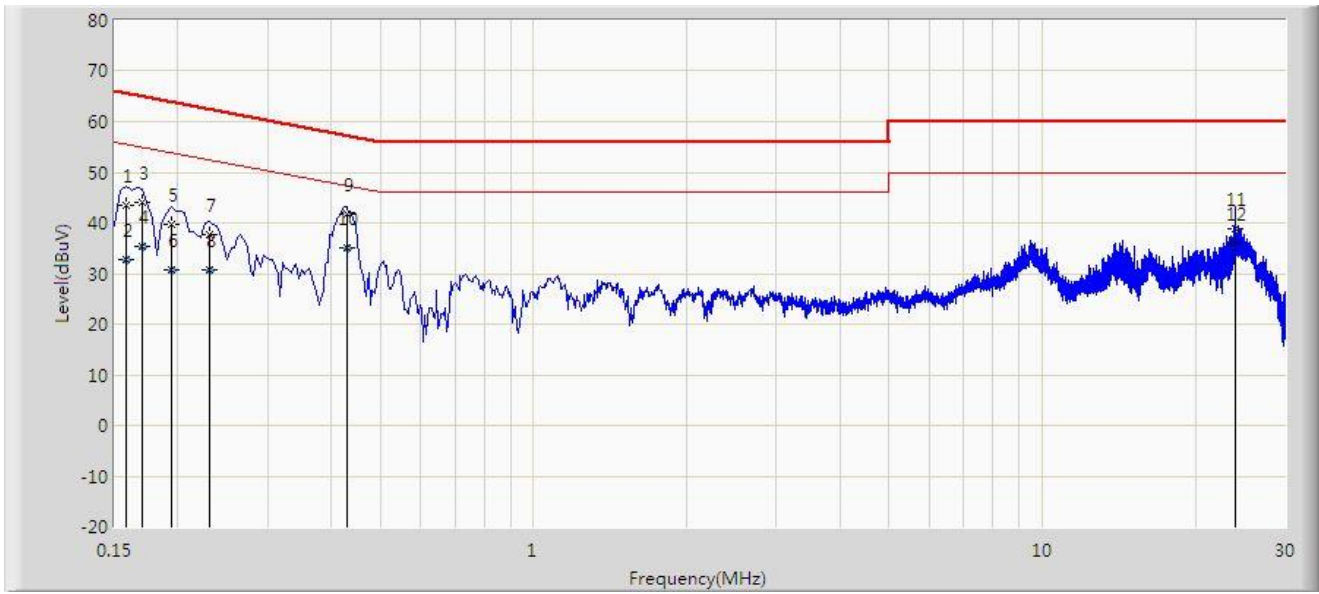
Note 1: " * ", means this data is the worst emission level.

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.8 AC Conducted Emissions Test Result

Site: SIP-SR2	Test Date: 2023-08-02
Limit: FCC_Part15.207_CE_AC Power	Engineer: Mark Long
Probe: SIP-SR2-ENV216_101684_C	Polarity: Line
EUT: Wi-Fi 6 Indoor AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE 1M at 2402MHz	



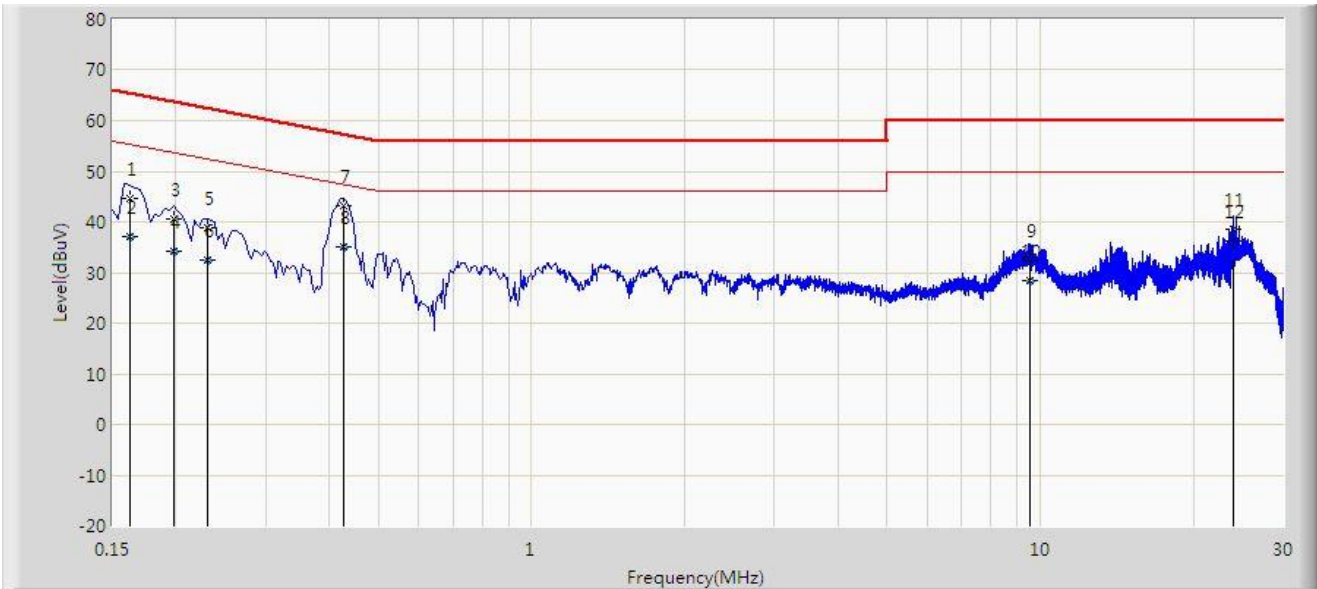
No	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1		0.158	43.516	33.593	-22.052	65.568	9.923	QP
2		0.158	32.755	22.832	-22.814	55.568	9.923	AV
3		0.170	44.193	34.222	-20.768	64.960	9.971	QP
4		0.170	35.465	25.494	-19.496	54.960	9.971	AV
5		0.194	39.839	29.785	-24.024	63.864	10.055	QP
6		0.194	30.646	20.591	-23.218	53.864	10.055	AV
7		0.230	37.661	27.709	-24.789	62.450	9.952	QP
8		0.230	30.833	20.881	-21.617	52.450	9.952	AV
9		0.430	41.775	32.045	-15.478	57.253	9.730	QP
10	*	0.430	35.144	25.414	-12.109	47.253	9.730	AV
11		24.002	38.766	28.308	-21.234	60.000	10.458	QP
12		24.002	35.824	25.366	-14.176	50.000	10.458	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: SIP-SR2	Test Date: 2023-08-02
Limit: FCC_Part15.207_CE_AC Power	Engineer: Mark Long
Probe: SIP-SR2-ENV216_101684_C	Polarity: Neutral
EUT: Wi-Fi 6 Indoor AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE 1M at 2402MHz	



No	Mark	Frequency (MHz)	Measure Level (dB μ V)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V)	Factor (dB)	Type
1		0.162	44.690	35.050	-20.671	65.361	9.640	QP
2		0.162	37.033	27.393	-18.327	55.361	9.640	AV
3		0.198	40.505	30.842	-23.189	63.694	9.663	QP
4		0.198	34.086	24.423	-19.608	53.694	9.663	AV
5		0.230	38.783	29.095	-23.667	62.450	9.688	QP
6		0.230	32.593	22.906	-19.856	52.450	9.688	AV
7		0.426	43.312	33.602	-14.018	57.330	9.710	QP
8	*	0.426	35.124	25.414	-12.207	47.330	9.710	AV
9		9.558	32.486	22.453	-27.514	60.000	10.032	QP
10		9.558	28.402	18.370	-21.598	50.000	10.032	AV
11		24.002	38.682	28.276	-21.318	60.000	10.406	QP
12		24.002	36.186	25.780	-13.814	50.000	10.406	AV

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

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

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

Appendix B - Test Setup Photograph

Refer to "2305RSU014-UT" file.

Appendix C - EUT Photograph

Refer to "2305RSU014-UE" file.

_____ The End _____