

RF MEASUREMENT REPORT

FCC ID: LNQ-WF810G-2
Applicant: Actiontec Electronics Inc.
Product: Wi-Fi 6E Mesh Extender
Model No.: GE6E220C, WF-810G
FCC Classification: Digital Transmission System (DTS)
FCC Rule Part(s): Part 15 Subpart C (Section 15.247)
Result: Complies
Received Date: 2024-01-15
Test Date: 2024-01-22 ~ 2024-02-20

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
2401RSU026-U1	V01	Initial Report	2024-03-11	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

Table with 3 main sections: MRT Suzhou Laboratory (checked), MRT Shenzhen Laboratory (unchecked), and MRT Taiwan Laboratory (unchecked). Each section includes laboratory location, accreditation details, and VCCI checkboxes.

1.4. Product Information

Product Name	Wi-Fi 6E Mesh Extender
Model No.	GE6E220C, WF-810G
EUT Identification No.	20240218Sample#01(Conducted Testing) 20240115Sample#02(Radiated Testing)
Wi-Fi Specification	802.11a/b/g/n/ac/ax
Bluetooth Specification	V5.0 (Single mode, LE only)
Antenna Information	Refer to Section 1.5
Accessory	
Adapter #1	Model No.: ADT-38FKJ-PCU00F Input: 100-240V, 50/60Hz, Max. 1.0A Output: 5.0V=3.0A or 12.0V=3.0A
Adapter #2	Model No.: MS-V3000R150-038B0-US Input: 100-240V ~ 50-60Hz, 1.3A Output: 5.0V=3.0A or 9.0V=3.0A or 12.0V=3.0A or 15.0V=3.0A
Notes:	
<ol style="list-style-type: none"> 1. There is not any hardware or software differences between GE6E220C and WF-810G, only for different brand. 2. The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer. 3. Adapter #1 was selected 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
Antenna Gain	1.66 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	--	--	--	--

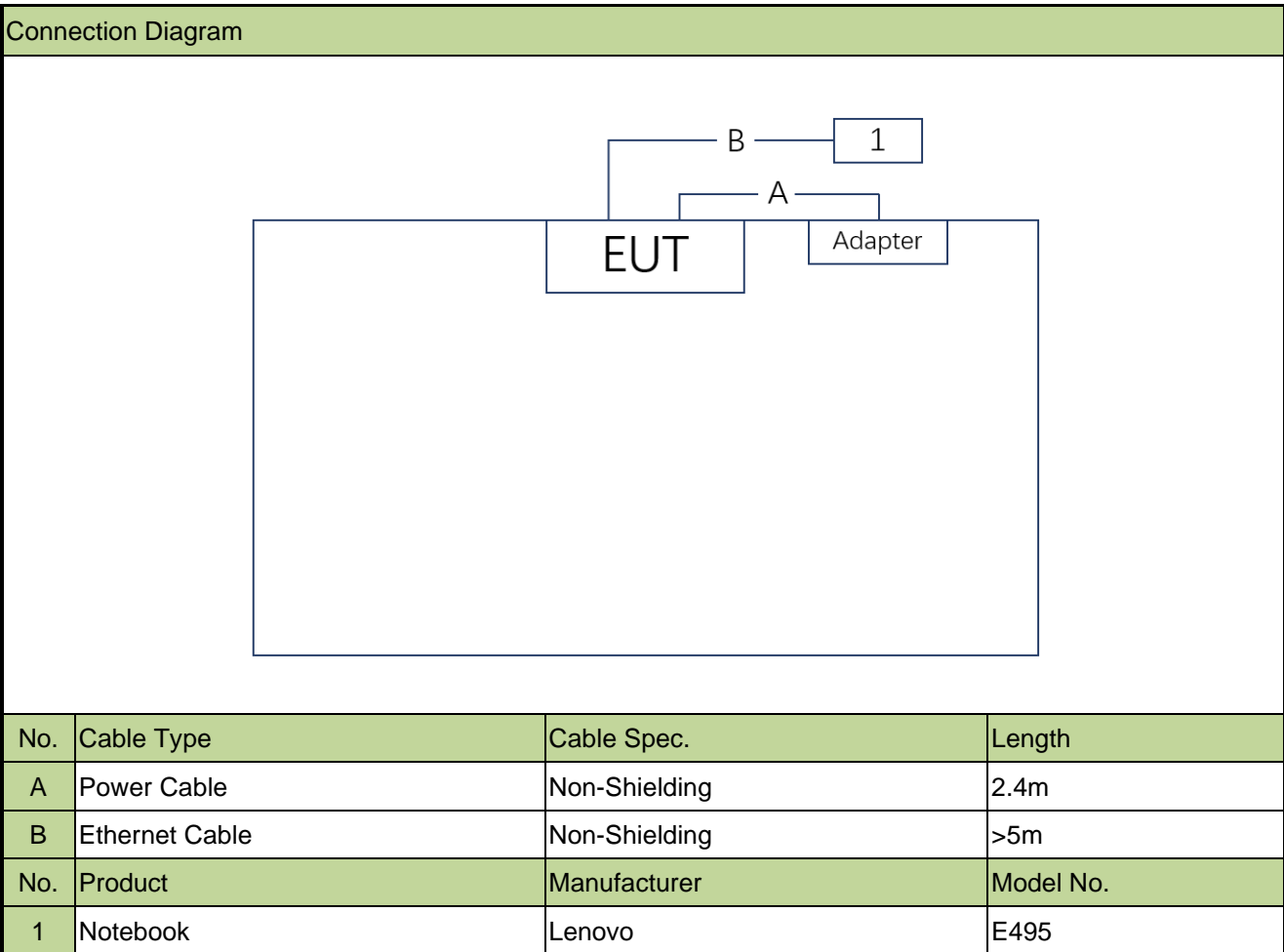
2. Test Configuration

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 3.0.268.0.

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	2024-12-17	SIP-AC2
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2024-10-09	SIP-AC3
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2024-10-23	SIP-AC3
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2025-01-27	SIP-AC3
Signal Analyzer	Keysight	N9010B	MRTSUE07028	1 year	2024-10-23	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06622	1 year	2024-11-03	SIP-AC2
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06647	1 year	2024-06-17	SIP-AC2
Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2024-12-21	SIP-AC2
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06599	1 year	2024-09-24	SIP-AC3
Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2024-07-14	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06619	1 year	2024-10-28	SIP-AC3
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2024-01-12	SIP-AC3
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2025-01-11	SIP-AC3
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06646	1 year	2024-08-04	SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2024-12-21	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE11022	1 year	2024-10-28	SIP-TR1
USB Power Sensor	Keysight	U2021XA	MRTSUE06596	1 year	2024-07-31	SIP-TR1
Signal Analyzer	Keysight	N9010B	MRTSUE07036	1 year	2024-02-04	SIP-TR1
Signal Analyzer	Keysight	N9010B	MRTSUE07036	1 year	2025-02-03	SIP-TR1
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
Four-Line V-Network	R&S	ENV432	MRTSUE06614	1 year	2024-10-23	SIP-SR2
Thermohygrometer	testo	608-H1	MRTSUE06621	1 year	2024-11-03	SIP-SR2
Shielding Room	MIX-BEP	SIP-SR2	MRTSUE06949	5 years	2024-10-23	SIP-SR2

Software	Version	Function
EMI V3	V 3.0.0	EMI Test Software
Controller_MF 7802BS	1.02	RE Antenna & Turntable
BenchVue Power Meter	2019	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
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: 2.61dB Coplanar: 9kHz~30MHz: 2.62dB Horizontal: 30MHz~200MHz: 3.79dB 200MHz~1GHz: 3.91dB 1GHz~40GHz: 4.99dB Vertical: 30MHz~200MHz: 4.06dB 200MHz~1GHz: 5.21dB 1GHz~40GHz: 4.90dB
Spurious Emissions, Conducted
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 2.2dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 1.4dB
Power Spectrum Density
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 2.2dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 2.7%

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.

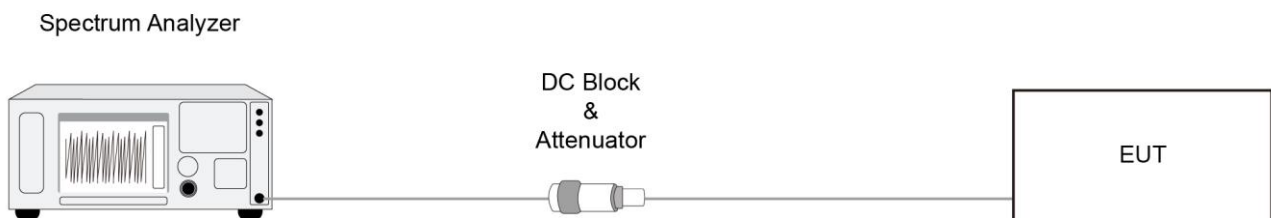
6.2.2. Test Procedure

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

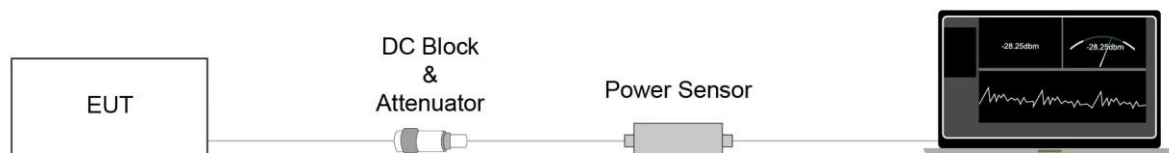
Method PKPM1 (Peak Power Measurement of Signals with DTS BW \leq 50MHz)

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.

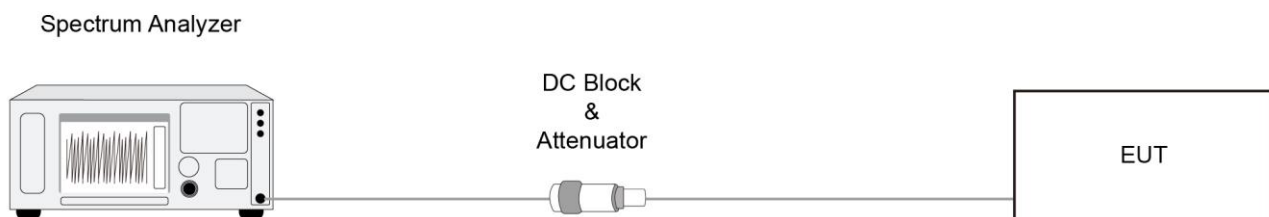
6.4.2. Test Procedure

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

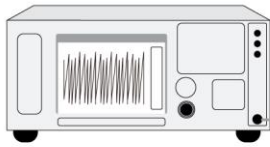
1. Set instrument center frequency to DTS channel center frequency
2. Set the span to ≥ 1.5 times the DTS bandwidth
3. Set the RBW = 100 kHz
4. Set the VBW $\geq 3 \times$ RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize

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

Spectrum Analyzer



DC Block
&
Attenuator



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

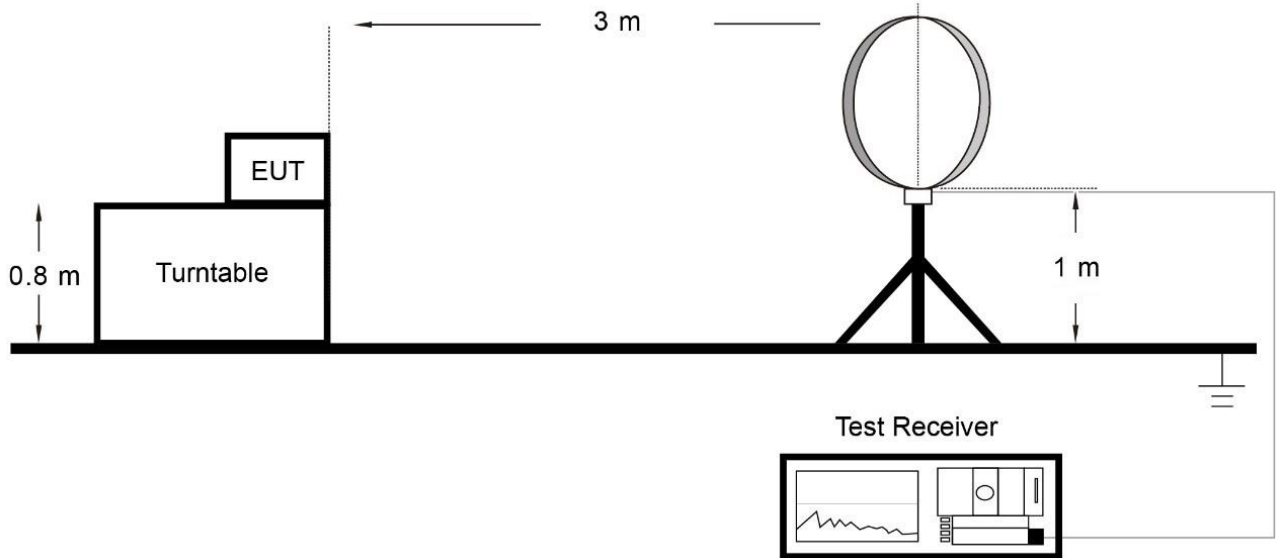
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

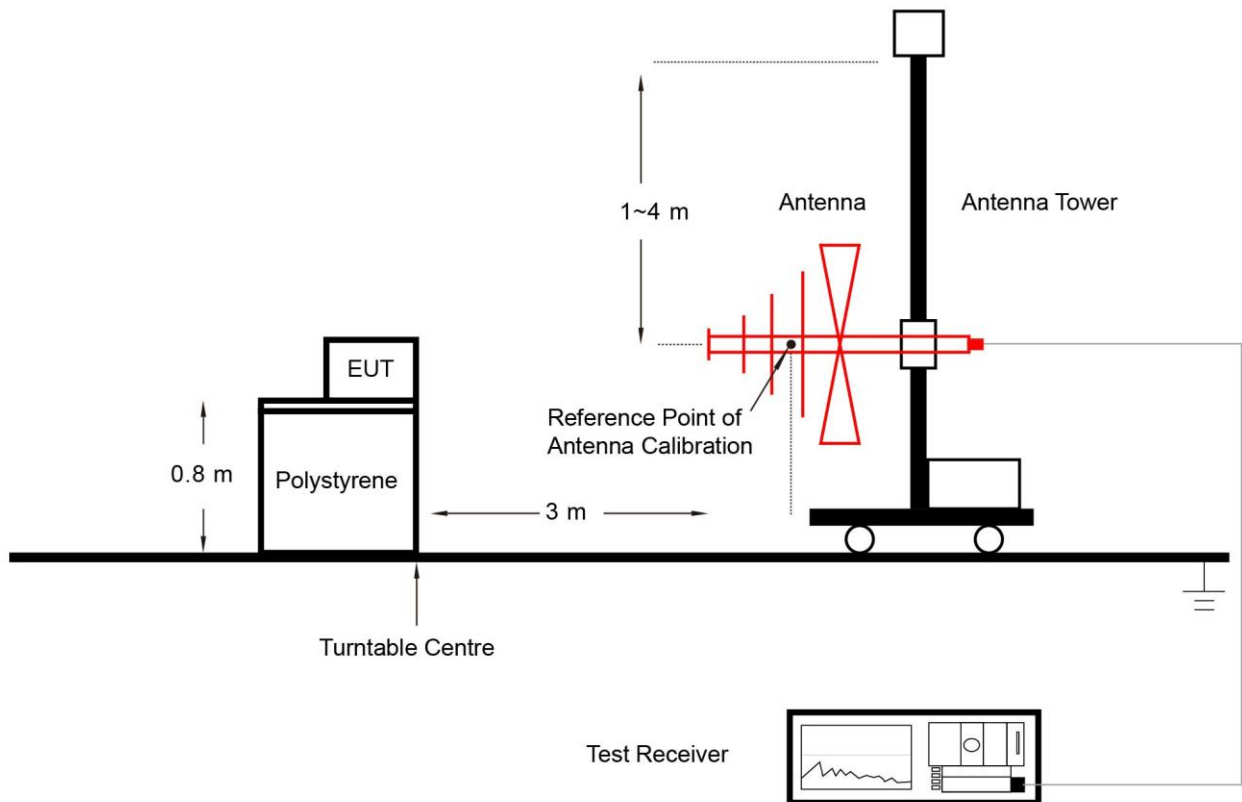
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
4.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

6.6.4. Test Setup

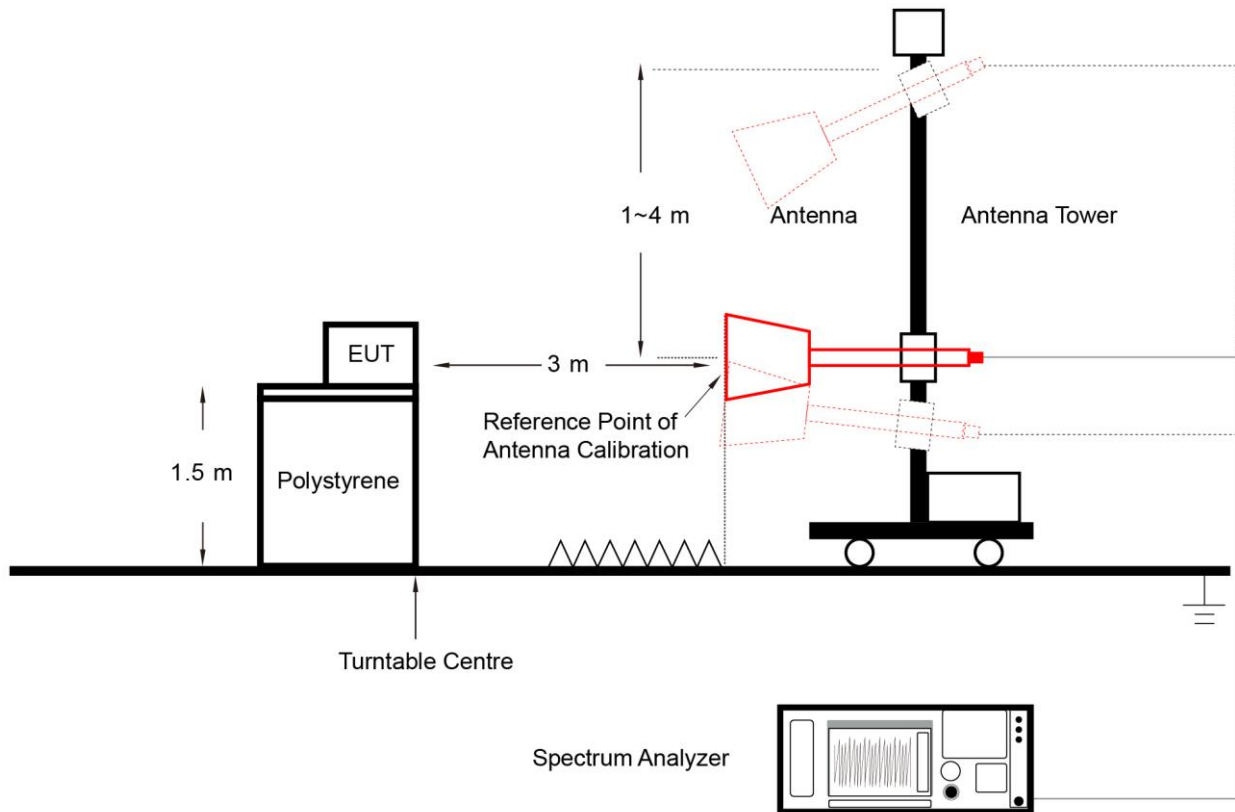
Below 30MHz Test Setup:



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

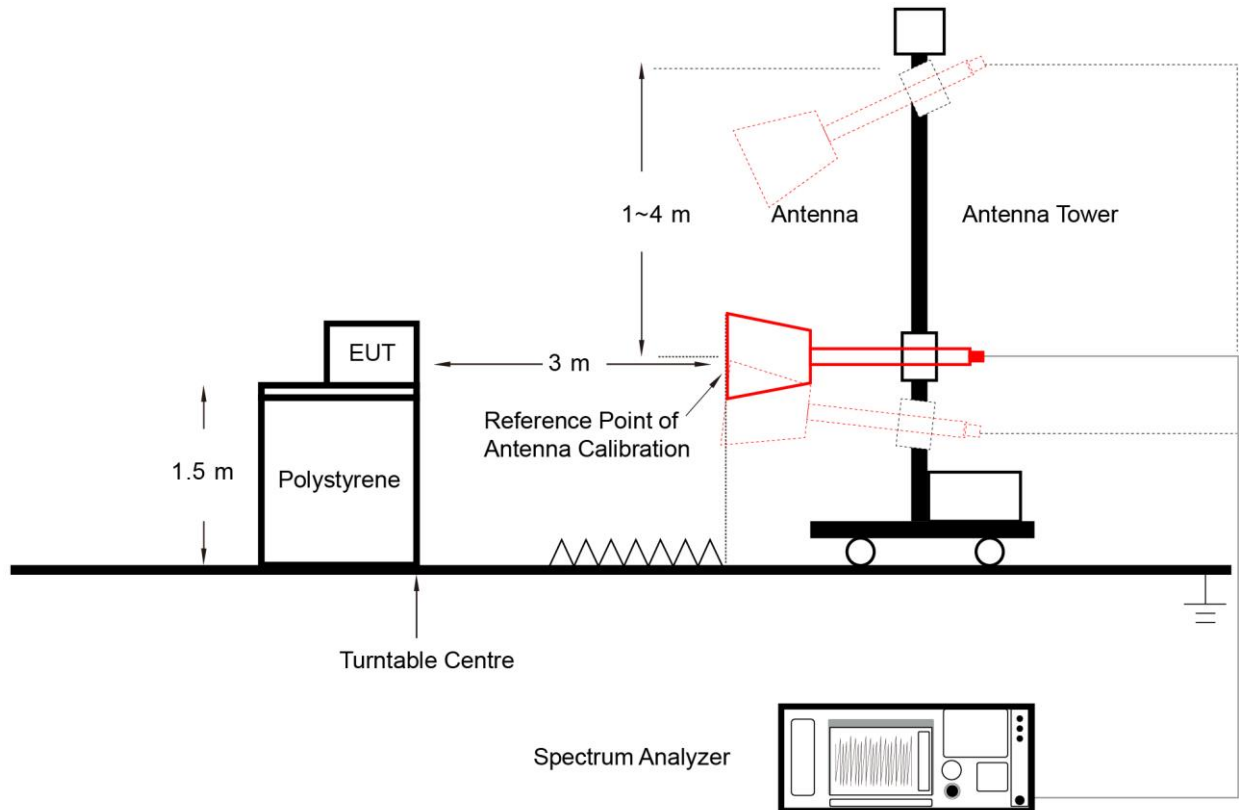
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

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

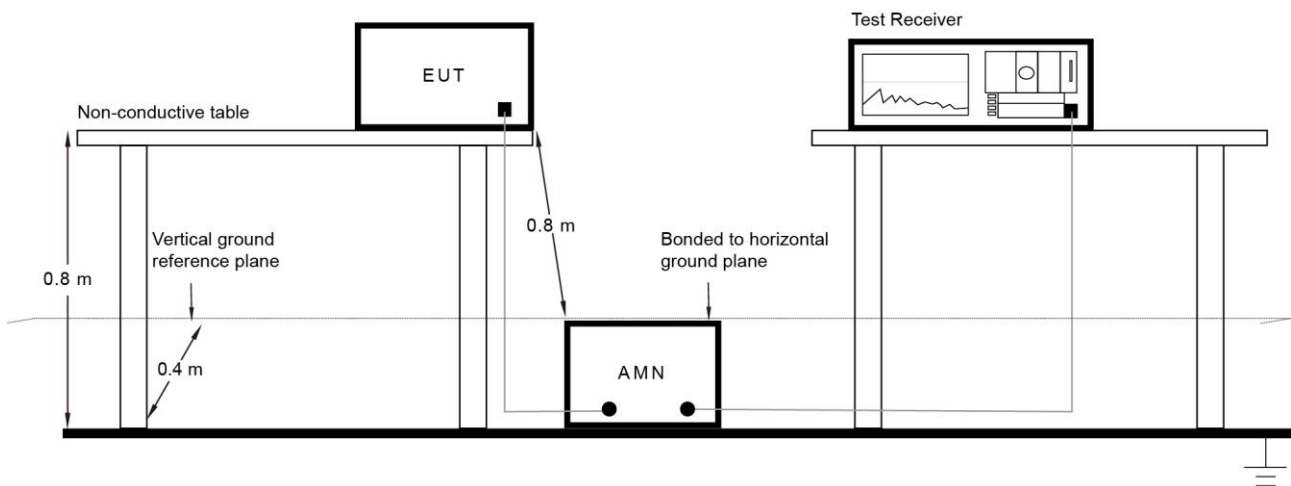
6.8.1. Test Limit

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	Alan Yu
Test Date	2024-02-20		

Test Mode	Duty Cycle
BLE-1Mbps	66.58%

Duty Cycle (T = Transmission Duration)

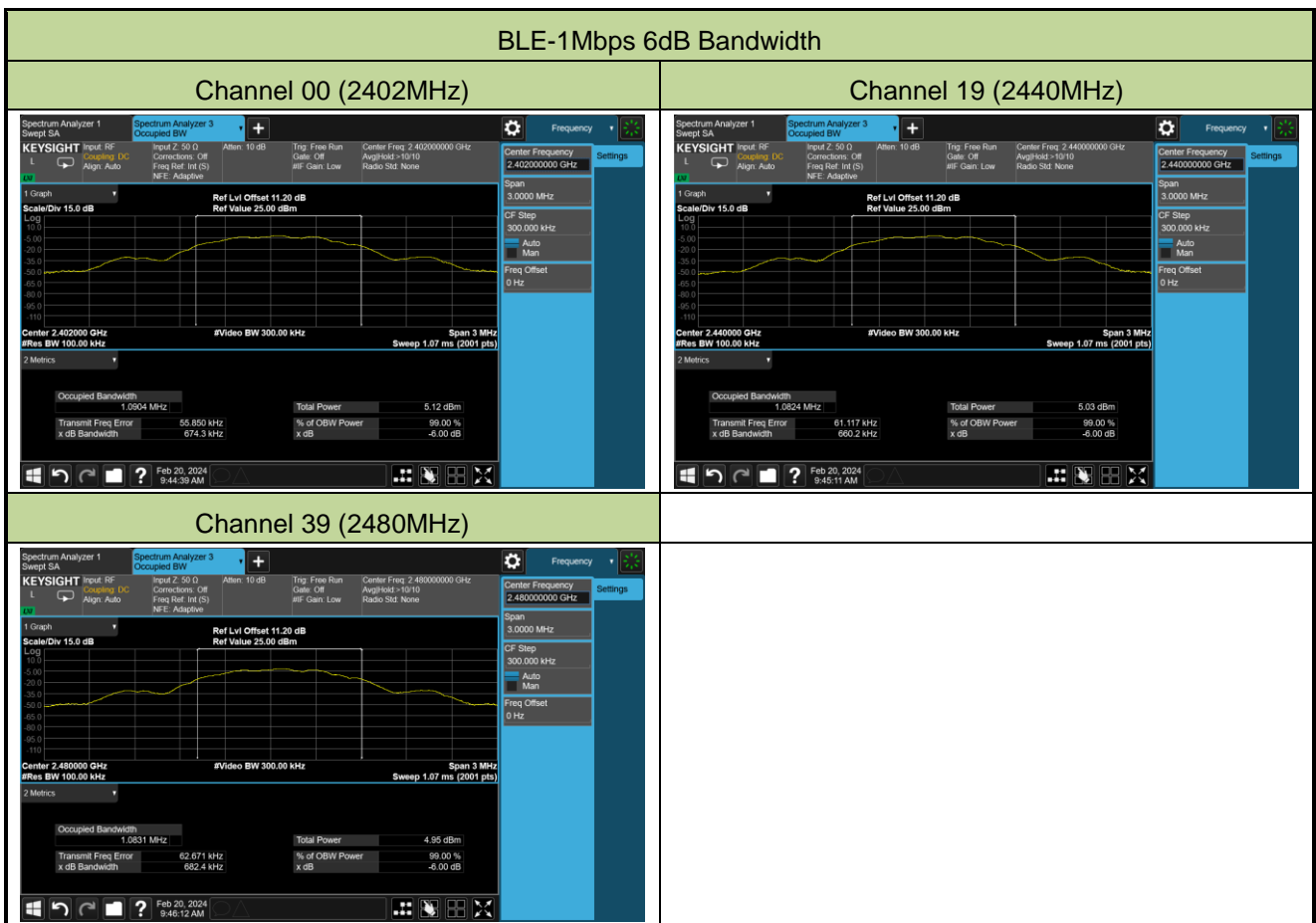
BLE-1Mbps (T = 415.5 μ s)



A.2 6dB Bandwidth Test Result

Test Site	SIP-TR1	Test Engineer	Alan Yu
Test Date	2024-02-20		

Test Mode	Data Rate	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
BLE	1Mbps	00	2402	0.6743	≥ 0.5
BLE	1Mbps	19	2440	0.6602	≥ 0.5
BLE	1Mbps	39	2480	0.6824	≥ 0.5



A.3 Output Power Test Result

Test Site	SIP-TR1	Test Engineer	Alan Yu
Test Date	2024-02-20		

Test Result of Peak Output Power

Test Mode	Data Rate	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
BLE	1Mbps	00	2402	-0.68	≤ 30.00	Pass
BLE	1Mbps	19	2440	-0.74	≤ 30.00	Pass
BLE	1Mbps	39	2480	-0.85	≤ 30.00	Pass

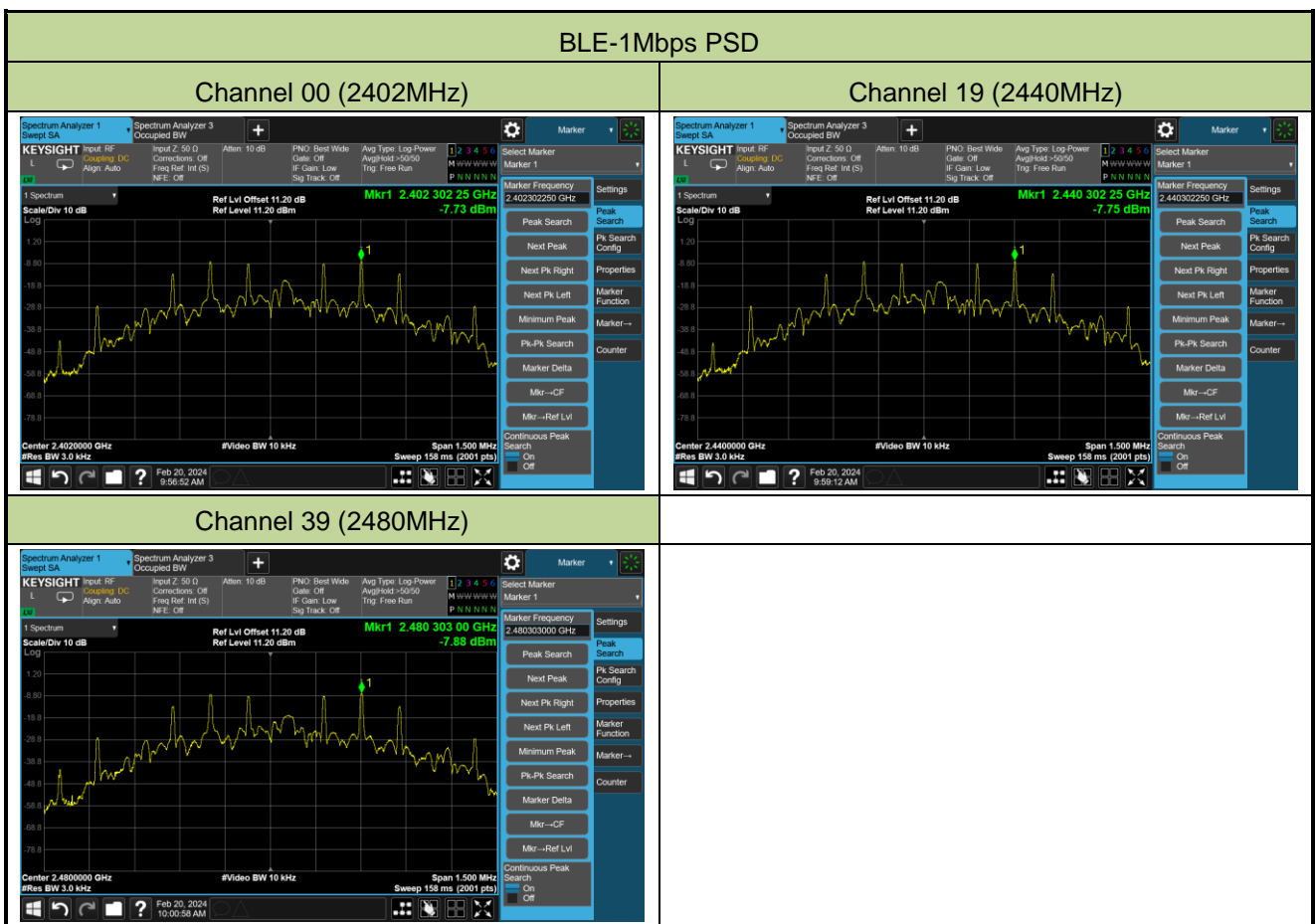
Test Result of Average Output Power (Reporting Only)

Test Mode	Data Rate	Channel No.	Frequency (MHz)	Average Power (dBm)	Limit (dBm)	Result
BLE	1Mbps	00	2402	-0.94	≤ 30.00	Pass
BLE	1Mbps	19	2440	-1.02	≤ 30.00	Pass
BLE	1Mbps	39	2480	-1.21	≤ 30.00	Pass

A.4 Power Spectral Density Test Result

Test Site	SIP-TR1	Test Engineer	Alan Yu
Test Date	2024-02-20		

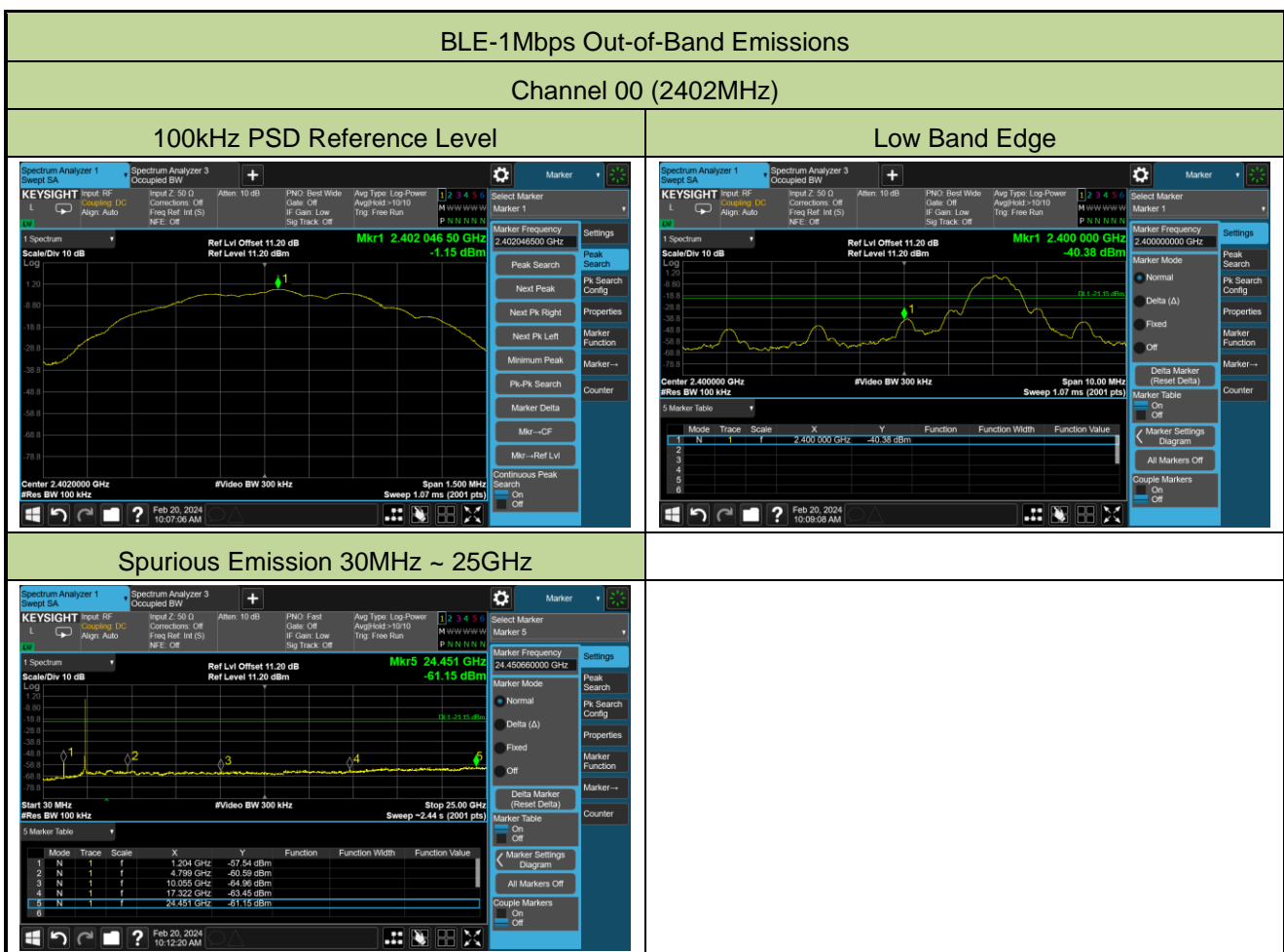
Test Mode	Data Rate	Channel No.	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
BLE	1Mbps	00	2402	-7.73	≤ 8.00	Pass
BLE	1Mbps	19	2440	-7.75	≤ 8.00	Pass
BLE	1Mbps	39	2480	-7.88	≤ 8.00	Pass



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

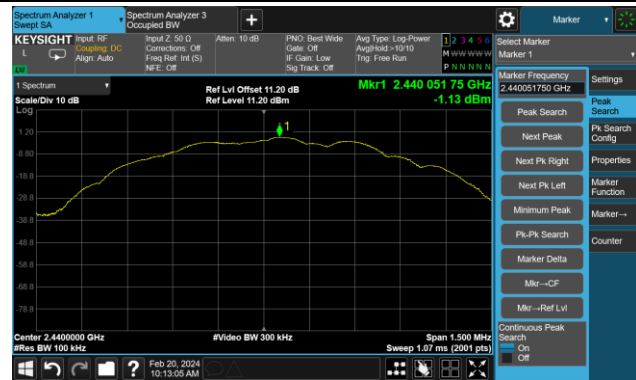
Test Site	SIP-TR1	Test Engineer	Alan Yu
Test Date	2024-02-20		

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

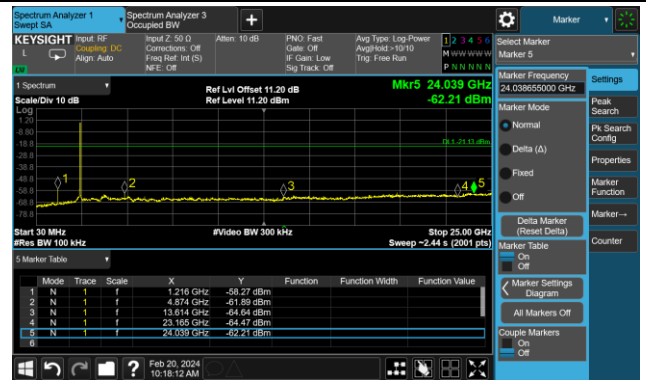


Channel 19 (2440MHz)

100kHz PSD Reference Level

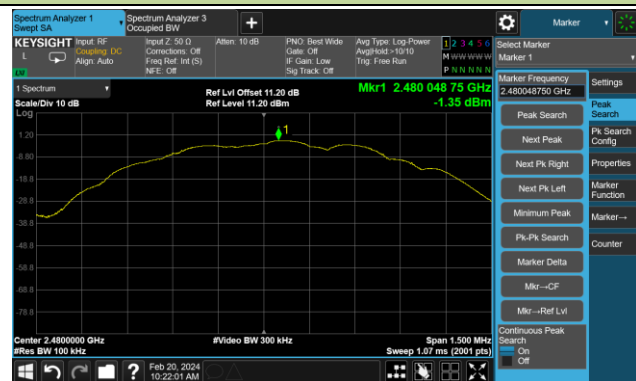


Spurious Emission 30MHz ~ 25GHz

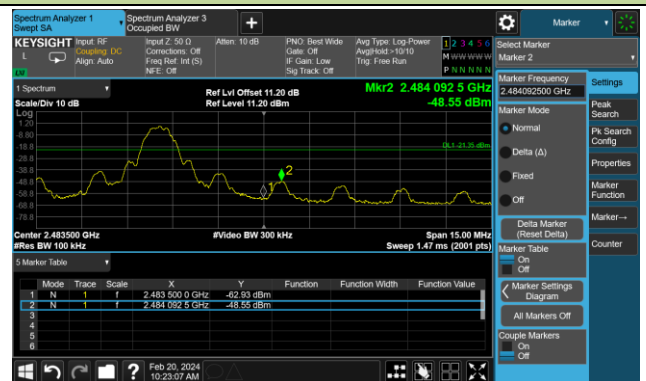


Channel 39 (2480MHz)

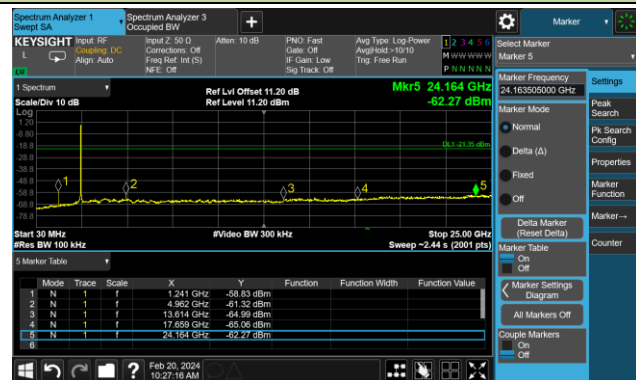
100kHz PSD Reference Level



High Band Edge



Spurious Emission 30MHz ~ 25GHz



A.6 Radiated Spurious Emission Test Result

Test Site	SIP-AC3	Test Engineer	Arvin Ding
Test Date	2024-01-22	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 shown in the report.		

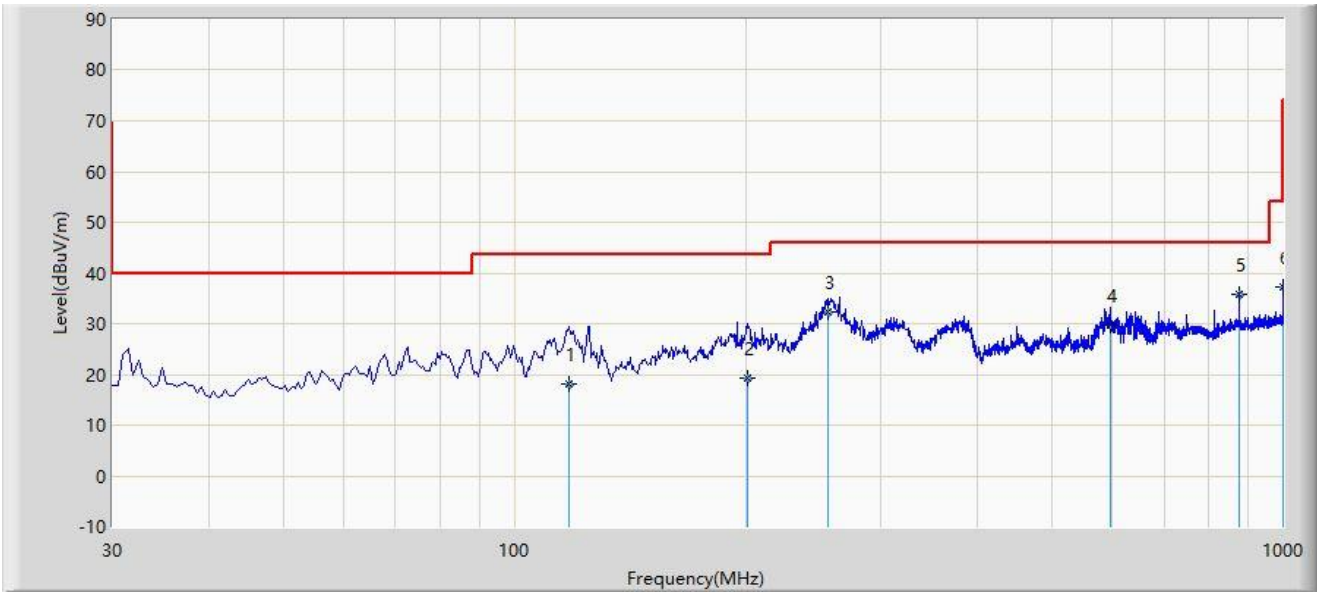
Test Channel	Frequency (MHz)	Reading Level (dB μ V)	Factor (dB/m)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
00	8284.5	55.3	-3.3	52.0	74.0	-22.0	Peak	Horizontal
	8284.5	54.0	-3.3	50.7	54.0	-3.3	Average	Horizontal
	11914.0	50.2	-1.8	48.4	74.0	-25.6	Peak	Horizontal
	17915.0	45.0	8.3	53.3	74.0	-20.7	Peak	Horizontal
	17915.0	32.7	8.3	41.0	54.0	-13.0	Average	Horizontal
	8148.5	49.4	-3.4	46.0	74.0	-28.0	Peak	Vertical
	11914.0	50.4	-1.8	48.6	74.0	-25.4	Peak	Vertical
	17906.5	45.1	8.2	53.3	74.0	-20.7	Peak	Vertical
	17906.5	33.2	8.2	41.4	54.0	-12.6	Average	Vertical
19	8284.5	55.8	-3.3	52.5	74.0	-21.5	Peak	Horizontal
	8284.5	54.0	-3.3	50.7	54.0	-3.3	Average	Horizontal
	11914.0	50.5	-1.8	48.7	74.0	-25.3	Peak	Horizontal
	17906.5	44.8	8.2	53.0	74.0	-21.0	Peak	Horizontal
	17906.5	33.0	8.2	41.2	54.0	-12.8	Average	Horizontal
	8284.5	49.4	-3.3	46.1	74.0	-27.9	Peak	Vertical
	11914.0	50.6	-1.8	48.8	74.0	-25.2	Peak	Vertical
	17957.5	44.3	9.0	53.3	74.0	-20.7	Peak	Vertical
	17957.5	32.5	9.0	41.5	54.0	-12.5	Average	Vertical
39	8284.5	55.7	-3.3	52.4	74.0	-21.6	Peak	Horizontal
	8284.5	54.2	-3.3	50.9	54.0	-3.1	Average	Horizontal
	11914.0	50.3	-1.8	48.5	74.0	-25.5	Peak	Horizontal
	17966.0	44.6	9.4	54.0	74.0	-20.0	Peak	Horizontal
	17966.0	33.4	9.4	42.8	54.0	-11.2	Average	Horizontal
	8395.0	49.7	-3.2	46.5	74.0	-27.5	Peak	Vertical
	11914.0	50.2	-1.8	48.4	74.0	-25.6	Peak	Vertical
	17898.0	44.8	8.1	52.9	74.0	-21.1	Peak	Vertical
	17898.0	32.2	8.1	40.3	54.0	-13.7	Average	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: 2024-02-01
Limit: FCC_Part15.209_RSE(3m)	Engineer: Barry Wu
Probe: VULB 9168_00999_25-2000MHz	Polarity: Horizontal
EUT: Wi-Fi 6E Mesh Extender	Power: AC 120V/60Hz
Test Mode: Transmit by BLE_1M at 2402MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		117.785	18.181	2.500	-25.319	43.500	15.680	QP
2		201.205	19.277	4.100	-24.223	43.500	15.177	QP
3		255.525	32.452	15.300	-13.548	46.000	17.152	QP
4		595.510	29.803	4.200	-16.197	46.000	25.602	QP
5	*	875.355	35.854	5.600	-10.146	46.000	30.254	QP
6		1000.000	37.335	6.100	-16.665	54.000	31.235	QP

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

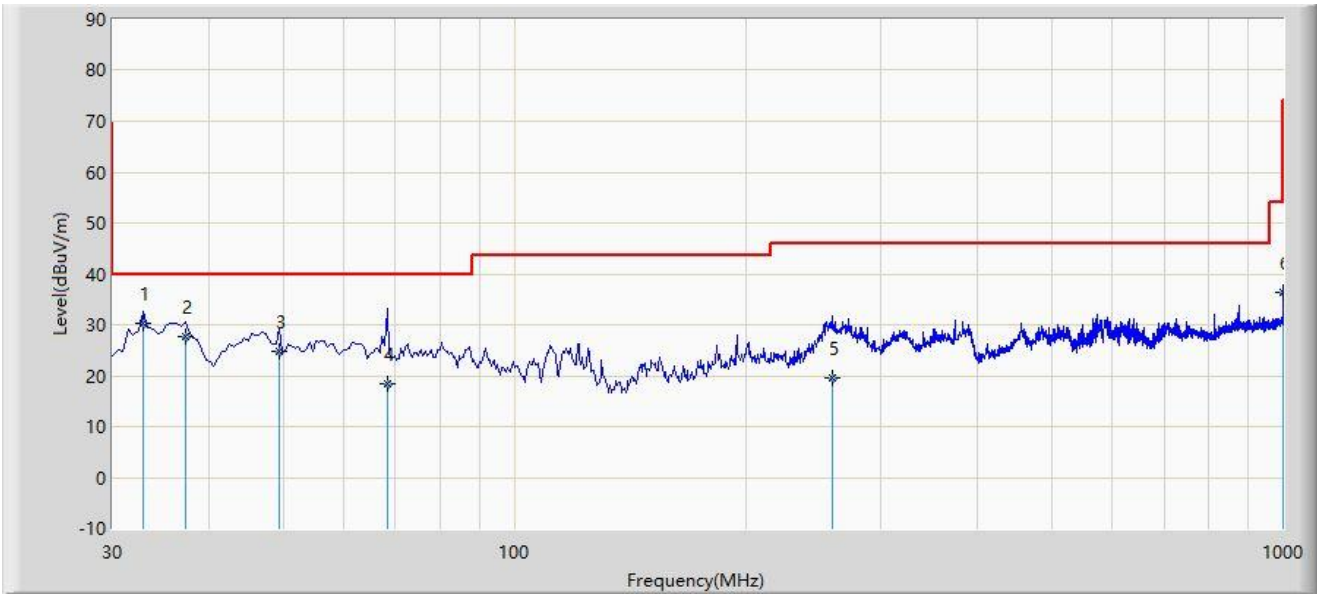
Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

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

Note 4: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz and 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value.

Therefore, the data is not presented in the report.

Site: SIP-AC2	Test Date: 2024-02-01
Limit: FCC_Part15.209_RSE(3m)	Engineer: Barry Wu
Probe: VULB 9168_00999_25-2000MHz	Polarity: Vertical
EUT: Wi-Fi 6E Mesh Extender	Power: AC 120V/60Hz
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	*	32.910	30.322	13.400	-9.678	40.000	16.922	QP
2		37.275	27.587	10.200	-12.413	40.000	17.387	QP
3		49.400	24.783	6.300	-15.217	40.000	18.483	QP
4		68.315	18.531	2.100	-21.469	40.000	16.430	QP
5		258.920	19.511	2.300	-26.489	46.000	17.211	QP
6		1000.000	36.335	5.100	-17.665	54.000	31.235	QP

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).

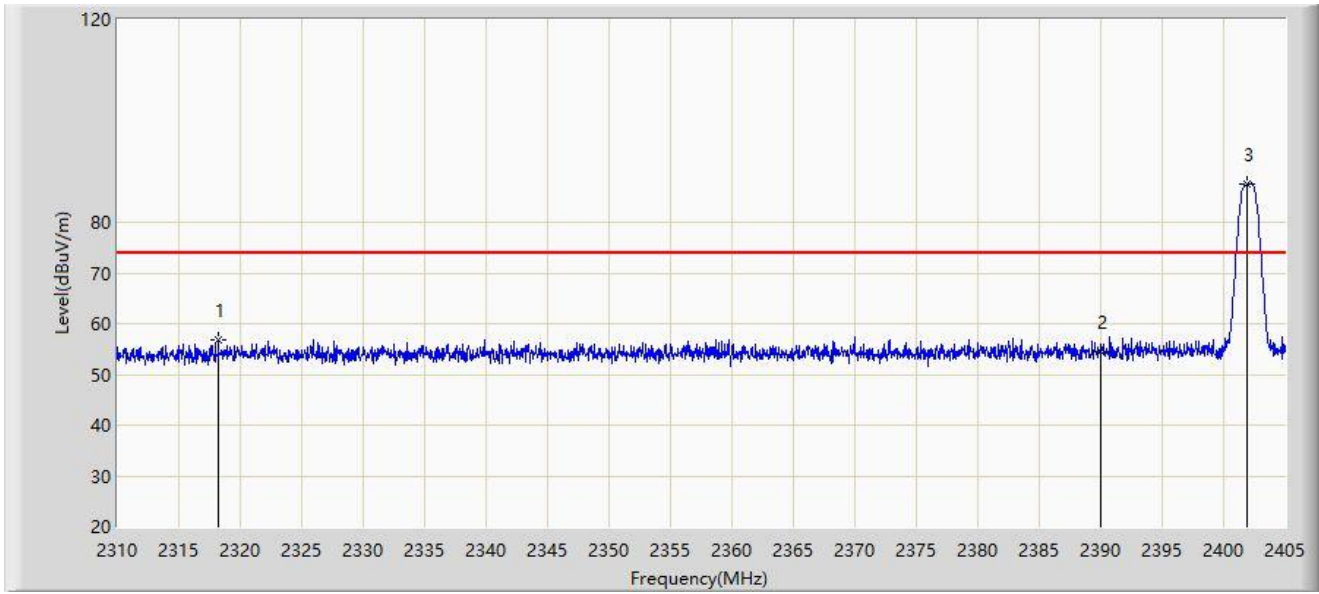
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Note 4: 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-AC3	Test Date: 2024-01-22
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Wi-Fi 6E Mesh Extender	Power: AC 120V/60Hz
Test Mode: Transmit by BLE_1M at 2402MHz	



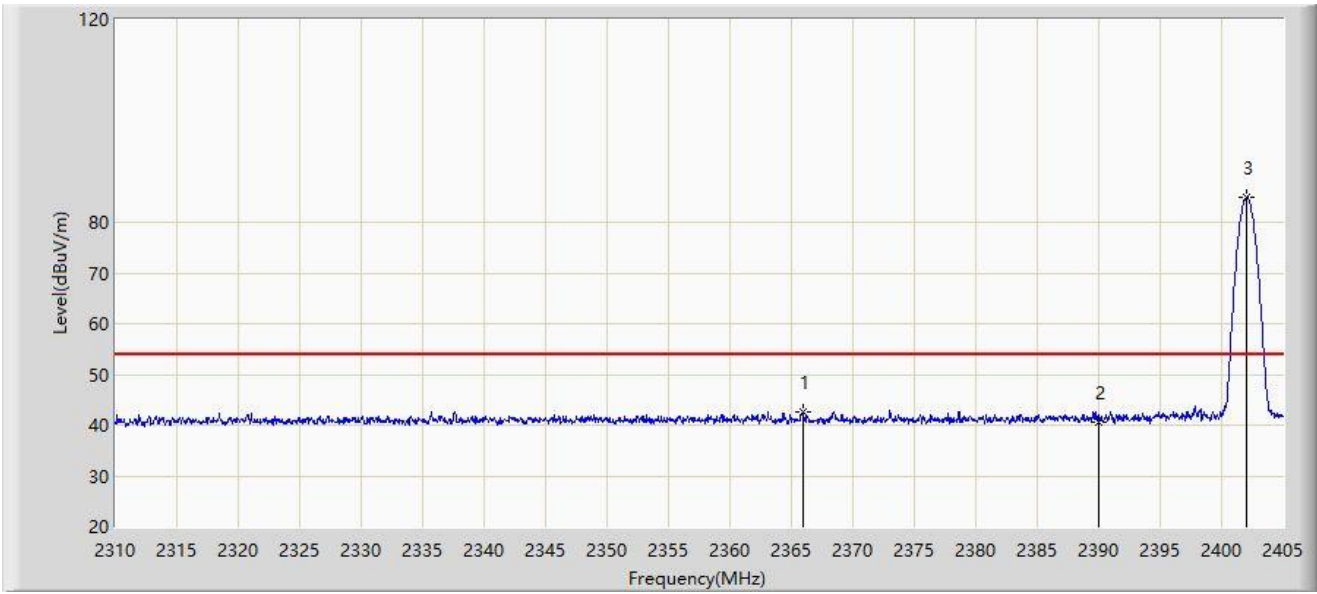
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	2318.218	56.865	25.275	-17.135	74.000	31.590	PK
2		2390.000	54.476	22.453	-19.524	74.000	32.023	PK
3		2401.865	87.638	55.601	N/A	N/A	32.038	PK

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-AC3	Test Date: 2024-01-22
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Wi-Fi 6E Mesh Extender	Power: AC 120V/60Hz
Test Mode: Transmit by BLE_1M at 2402MHz	



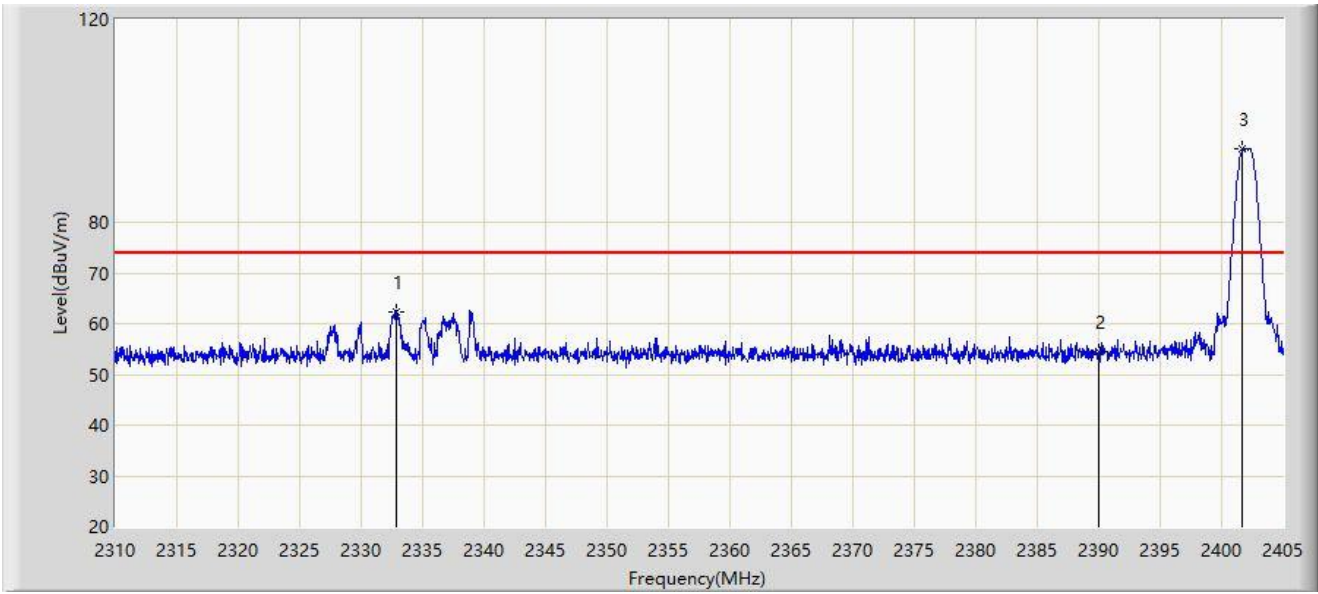
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	2365.955	42.526	10.582	-11.474	54.000	31.945	AV
2		2390.000	40.637	8.614	-13.363	54.000	32.023	AV
3		2402.008	84.845	52.807	N/A	N/A	32.037	AV

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-AC3	Test Date: 2024-01-22
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Wi-Fi 6E Mesh Extender	Power: AC 120V/60Hz
Test Mode: Transmit by BLE_1M at 2402MHz	



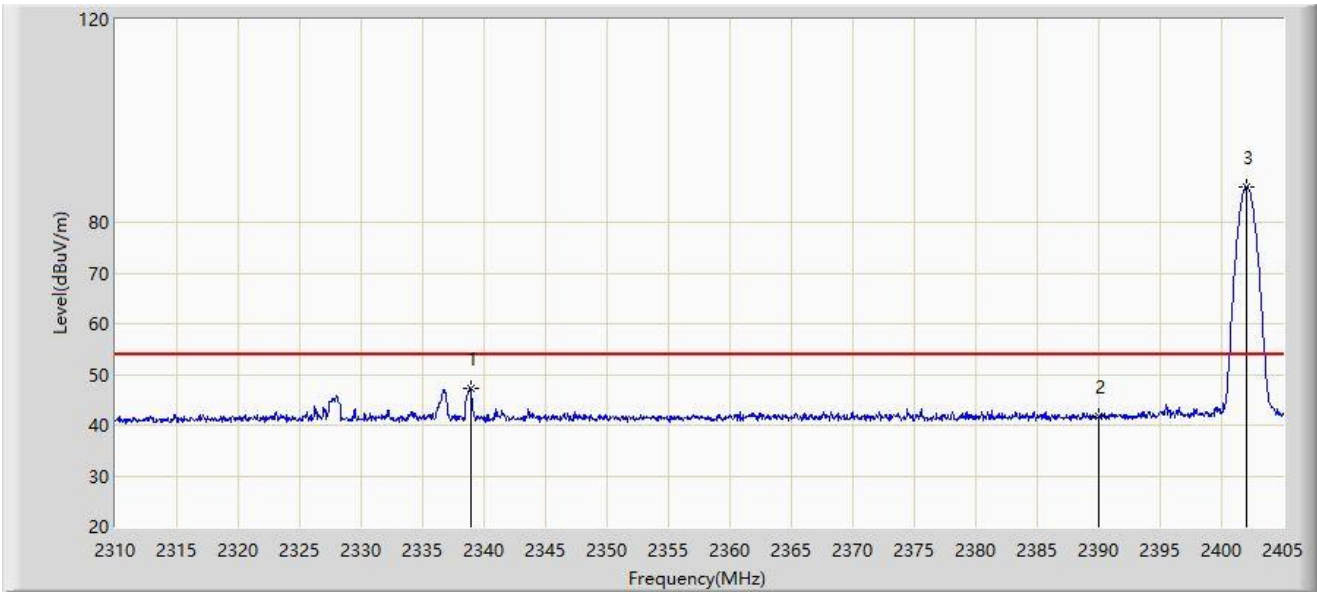
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2332.800	62.400	30.712	-11.600	74.000	31.688	PK
2		2390.000	54.401	22.378	-19.599	74.000	32.023	PK
3		2401.722	94.477	62.440	N/A	N/A	32.037	PK

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

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

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

Site: SIP-AC3	Test Date: 2024-01-22
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Wi-Fi 6E Mesh Extender	Power: AC 120V/60Hz
Test Mode: Transmit by BLE_1M at 2402MHz	



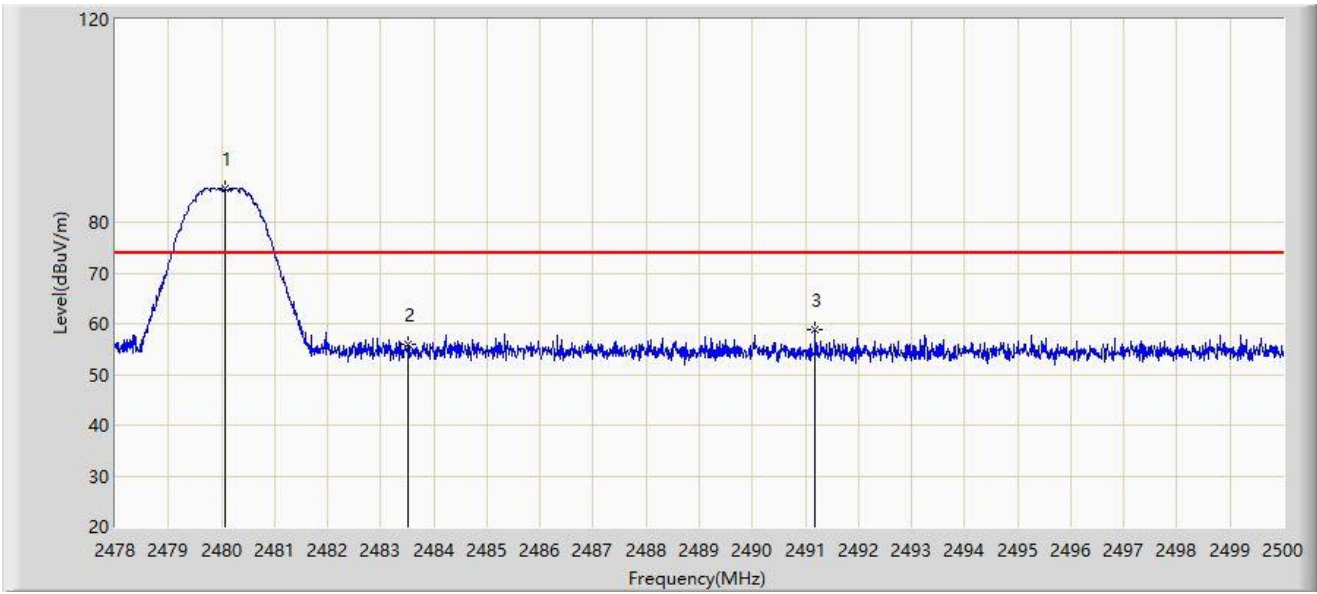
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2338.927	47.222	15.494	-6.778	54.000	31.728	AV
2		2390.000	41.716	9.693	-12.284	54.000	32.023	AV
3		2402.008	86.999	54.961	N/A	N/A	32.037	AV

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-AC3	Test Date: 2024-01-22
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Wi-Fi 6E Mesh Extender	Power: AC 120V/60Hz
Test Mode: Transmit by BLE_1M at 2480MHz	



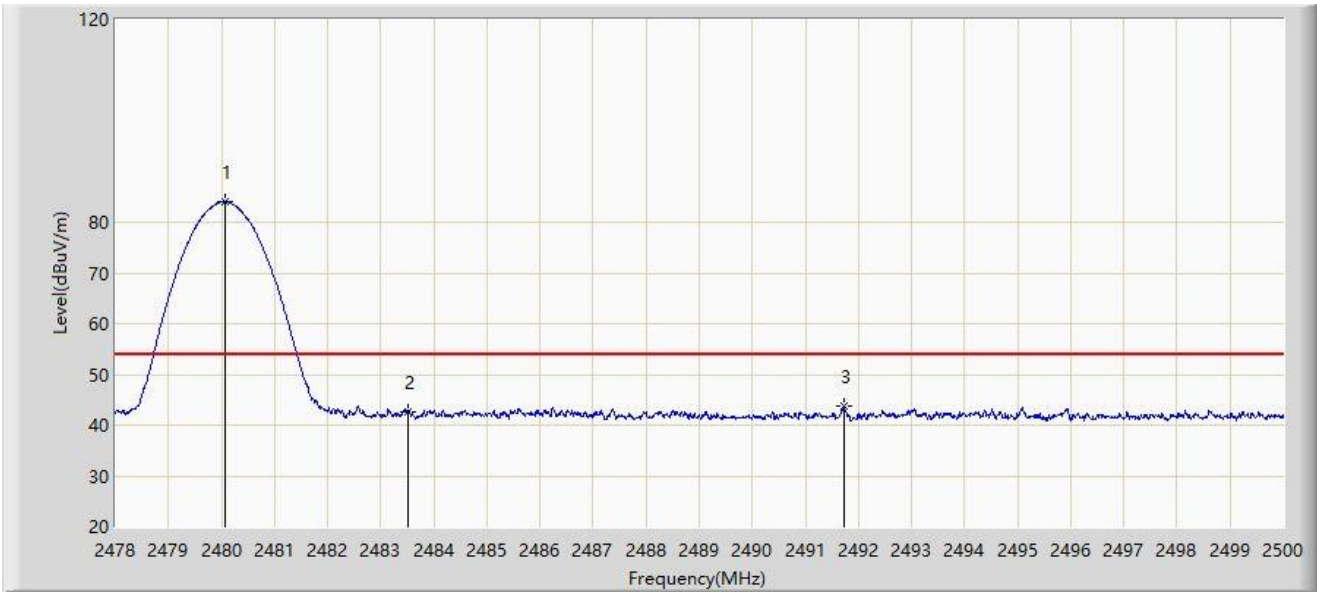
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1		2480.068	86.800	54.517	N/A	N/A	32.282	PK
2		2483.500	55.905	23.605	-18.095	74.000	32.300	PK
3	*	2491.189	58.800	26.460	-15.200	74.000	32.340	PK

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-AC3	Test Date: 2024-01-22
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Wi-Fi 6E Mesh Extender	Power: AC 120V/60Hz
Test Mode: Transmit by BLE_1M at 2480MHz	



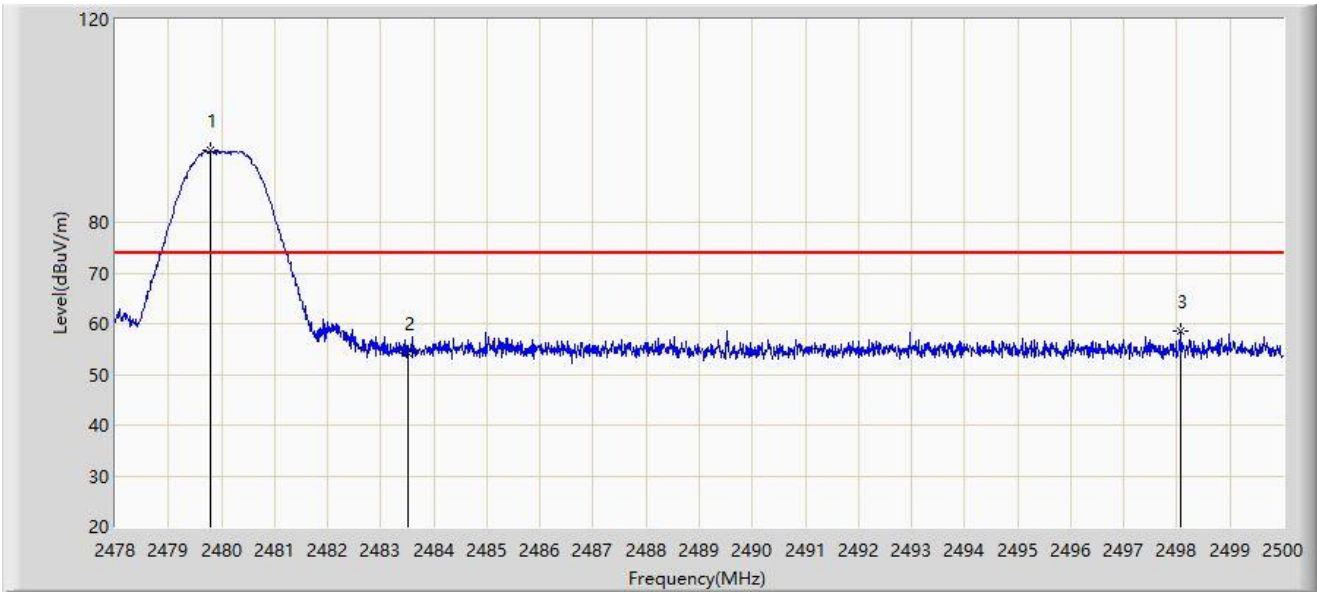
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1		2480.079	84.056	51.773	N/A	N/A	32.282	AV
2		2483.500	42.693	10.393	-11.307	54.000	32.300	AV
3	*	2491.728	43.635	11.292	-10.365	54.000	32.343	AV

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-AC3	Test Date: 2024-01-22
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Wi-Fi 6E Mesh Extender	Power: AC 120V/60Hz
Test Mode: Transmit by BLE_1M at 2480MHz	



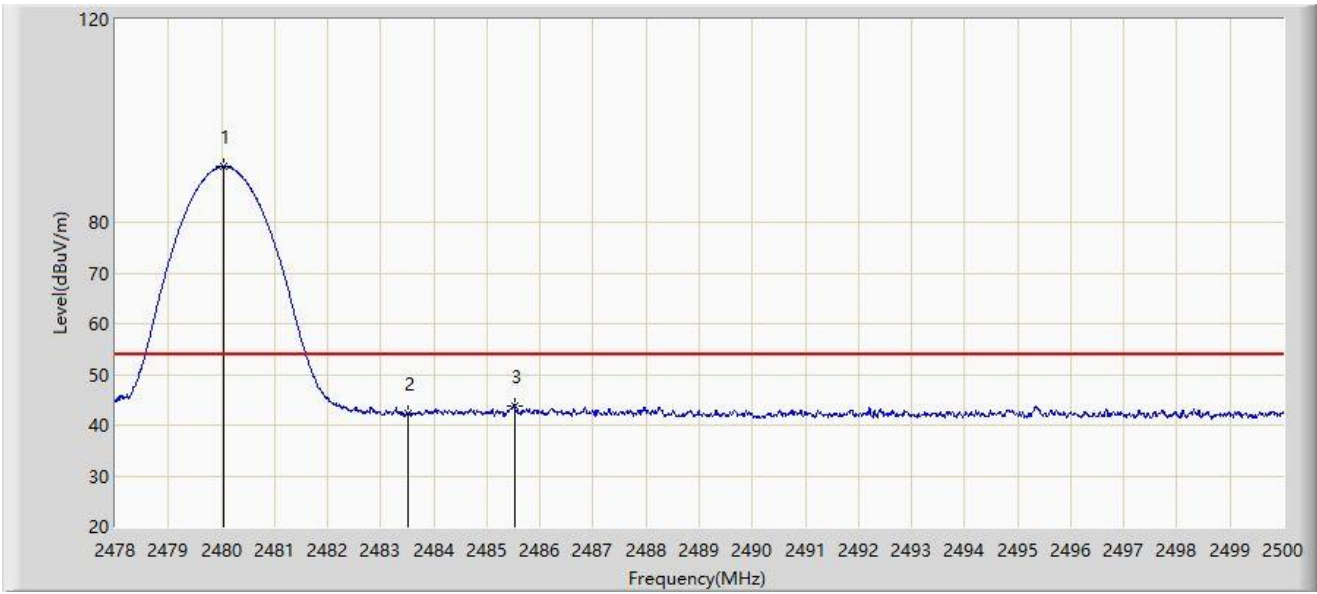
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1		2479.804	94.078	61.797	N/A	N/A	32.281	PK
2		2483.500	54.148	21.848	-19.852	74.000	32.300	PK
3	*	2498.064	58.554	26.174	-15.446	74.000	32.380	PK

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-AC3	Test Date: 2024-01-22
Limit: FCC_2.4G_RE(3m)	Engineer: Arvin Ding
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Wi-Fi 6E Mesh Extender	Power: AC 120V/60Hz
Test Mode: Transmit by BLE_1M at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		2480.046	90.954	58.672	N/A	N/A	32.282	AV
2		2483.500	42.334	10.034	-11.666	54.000	32.300	AV
3	*	2485.513	43.844	11.533	-10.156	54.000	32.311	AV

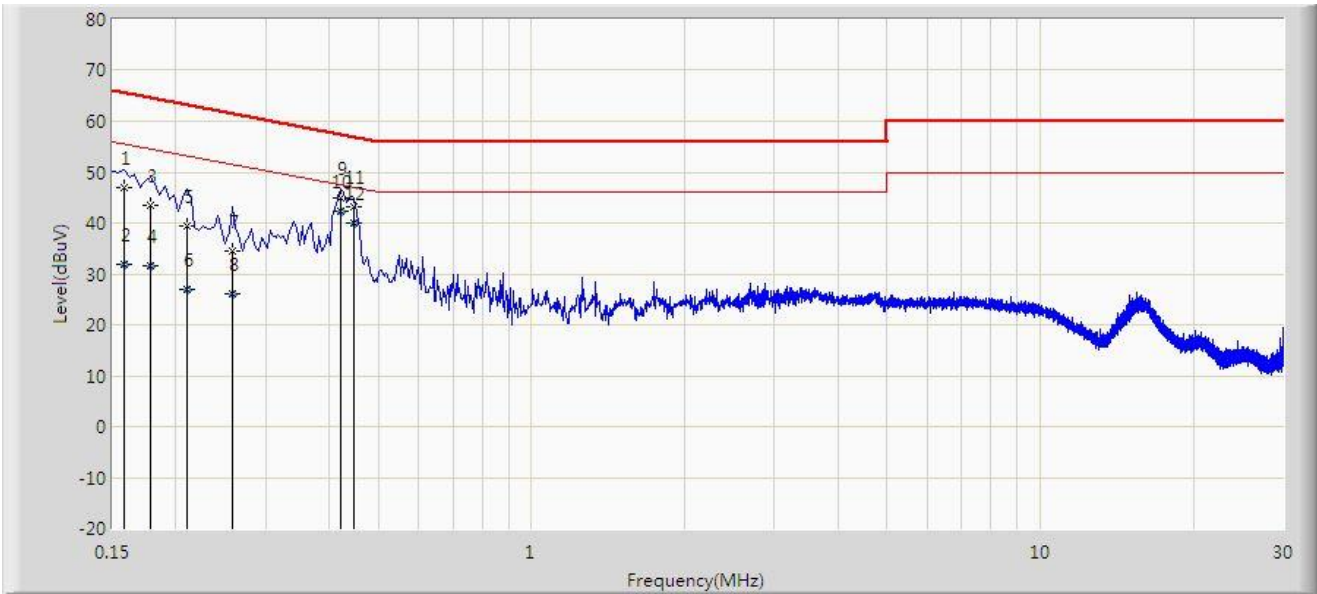
Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBuV/m) = Reading Level (dBuV) + 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: 2024-02-18
Limit: FCC_Part15.207_CE_AC Power	Engineer: Mark Long
Probe: SIP-SR2-ENV216_101684_E	Polarity: Line
EUT: Wi-Fi 6E Mesh Extender	Power: AC 120V/60Hz
Test Mode: Transmit by BLE_1M at 2402MHz	



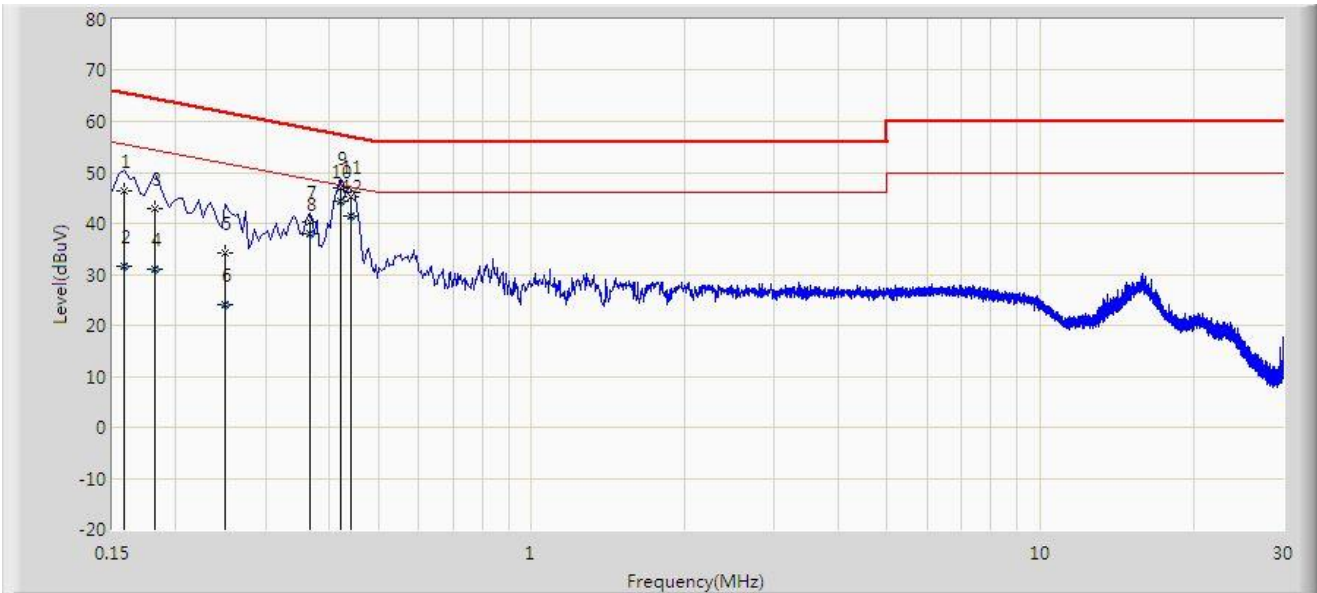
No	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1		0.158	46.906	37.256	-18.663	65.568	9.650	QP
2		0.158	31.962	22.312	-23.606	55.568	9.650	AV
3		0.178	43.432	33.778	-21.147	64.578	9.654	QP
4		0.178	31.596	21.942	-22.983	54.578	9.654	AV
5		0.210	39.415	29.716	-23.790	63.205	9.699	QP
6		0.210	26.857	17.158	-26.348	53.205	9.699	AV
7		0.258	34.572	24.854	-26.923	61.496	9.718	QP
8		0.258	26.135	16.417	-25.361	51.496	9.718	AV
9		0.422	44.889	35.157	-12.519	57.409	9.732	QP
10	*	0.422	42.437	32.705	-4.972	47.409	9.732	AV
11		0.446	43.054	33.319	-13.896	56.949	9.735	QP
12		0.446	39.902	30.167	-7.047	46.949	9.735	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: 2024-02-18
Limit: FCC_Part15.207_CE_AC Power	Engineer: Mark Long
Probe: SIP-SR2-ENV216_101684_E	Polarity: Neutral
EUT: Wi-Fi 6E Mesh Extender	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	46.311	36.661	-19.257	65.568	9.650	QP
2		0.158	31.666	22.016	-23.902	55.568	9.650	AV
3		0.182	42.974	33.321	-21.420	64.394	9.653	QP
4		0.182	31.114	21.461	-23.280	54.394	9.653	AV
5		0.250	34.104	24.394	-27.653	61.757	9.710	QP
6		0.250	24.048	14.338	-27.709	51.757	9.710	AV
7		0.366	40.243	30.521	-18.348	58.591	9.722	QP
8		0.366	37.832	28.110	-10.759	48.591	9.722	AV
9		0.422	46.835	37.105	-10.574	57.409	9.730	QP
10	*	0.422	44.239	34.509	-3.170	47.409	9.730	AV
11		0.442	45.204	35.474	-11.821	57.024	9.730	QP
12		0.442	41.473	31.743	-5.551	47.024	9.730	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 "2401RSU026-UT" file.

Appendix C - EUT Photograph

Refer to "2401RSU026-UE" file.

_____ The End _____