

RF MEASUREMENT REPORT

FCC ID: SFK-WF810B
Applicant: CIG Shanghai Co., Ltd.
Product: Dual-band Wi-Fi 6 Wireless AP
Model No.: WF-810B
Brand Name: CIG
FCC Classification: Digital Transmission System (DTS)
FCC Rule Part(s): Part 15 Subpart C (Section 15.247)
Result: Complies
Received Date: 2022-10-17
Test Date: 2022-12-19 ~ 2023-01-05 (Original Date)
2023-05-14 (Verified Date)

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
2305RSU025-U1	V01	Initial Report	2023-05-16	Valid

Note: This report reused the test data from other authorized device (FCC ID: SFK-WF810E, Original Grant Date: 2023/05/09). And add some spot check verified data according to KDB 484596 D01v01 and the difference between the FCC IDs.

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1.4. Product Information

Product Name	Dual-band Wi-Fi 6 Wireless AP
Model No.	WF-810B
Serial No.	1HG223803250 (Original Sample) 1HG2310B0035 (Verified Sample)
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
Accessories	
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.: ADS036G-W 120300 Input: 100-240V, 50/60Hz, Max. 1.0A Output: 5.0V=3.0A, 9.0V=3.0A, 12.0V=3.0A
<p>Note:</p> <ol style="list-style-type: none"> The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer. Adapter #1 was selected in this report. The device (FCC ID: SFK-WF810B) is based on the authorized device (FCC ID: SFK-WF810E, Original Grant Date: 2023/05/09) to remove all Wi-Fi 6E components, the others are the same as the authorized device. There is not any effect on Bluetooth and Wi-Fi 2.4G/5G. According to the declaration as above, so this device reuses the test data of original device and adds some spot check verified data according to KDB 484596 D01v01. Output power was verified 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	0.9 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

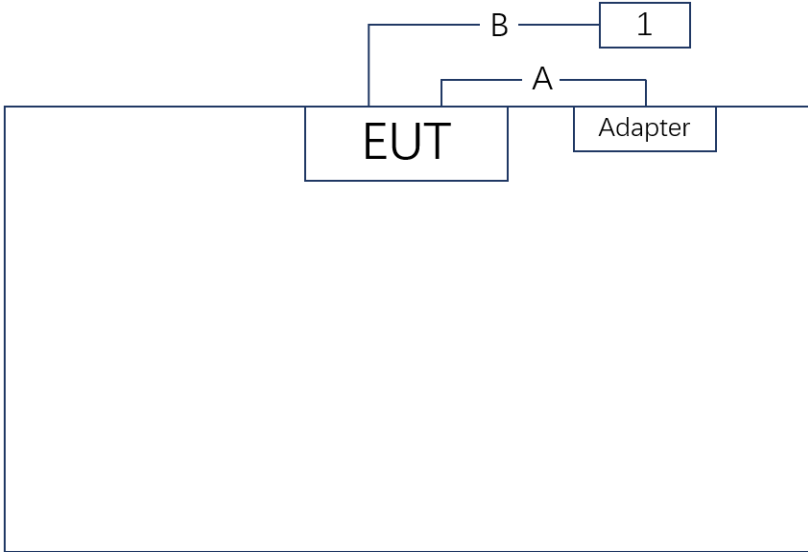
2.1. Test Mode

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.

Connection Diagram



The diagram shows a central box labeled 'EUT'. To its right is a box labeled 'Adapter'. A line labeled 'A' connects the EUT to the Adapter. Above the Adapter is a box labeled '1'. A line labeled 'B' connects the Adapter to box '1'. The entire setup is enclosed in a large rectangular frame.

No.	Cable Type	Cable Spec.	Length
A	Power Cable	Non-Shielding	1.2m
B	Ethernet Cable	Non-Shielding	>5m
No.	Product	Manufacturer	Model No.
1	Notebook	Lenovo	E495

2.3. Test Software

The test utility software used during testing was "Telnet.exe".

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-AC3
Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2023-06-01	SIP-AC3
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06599	1 year	2023-10-13	SIP-AC3
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2023-10-10	SIP-AC3
Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2023-07-30	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06619	1 year	2023-11-01	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06622	1 year	2023-11-27	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
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2023-12-22	SIP-AC3
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2024-02-26	SIP-AC3
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2023-06-01	SIP-SR2
EMI Test Receiver	R&S	ESR3	MRTSUE06612	1 year	2023-06-01	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	MRTSUE07036	1 year	2024-02-29	SIP-TR1
Thermohygrometer	testo	608-H1	MRTSUE11022	1 year	2023-11-01	SIP-TR1
USB Power Sensor	Keysight	U2021XA	MRTSUE06596	1 year	2023-08-23	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.

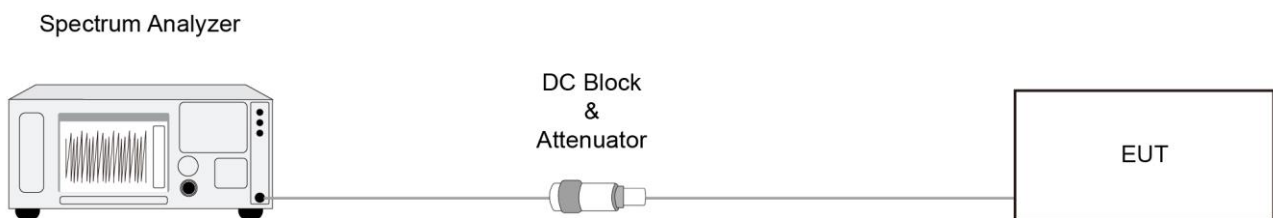
6.2.2. Test Procedure

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

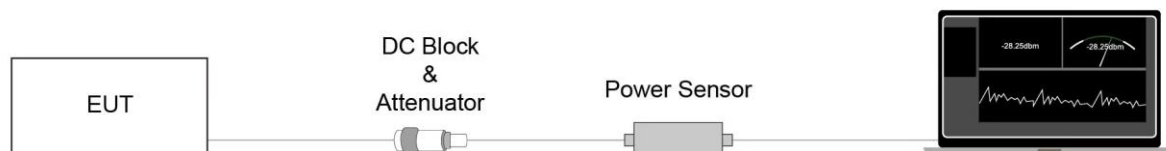
Method PKPM1 (Peak Power Measurement of Signals with DTS BW \leq 50MHz)

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.

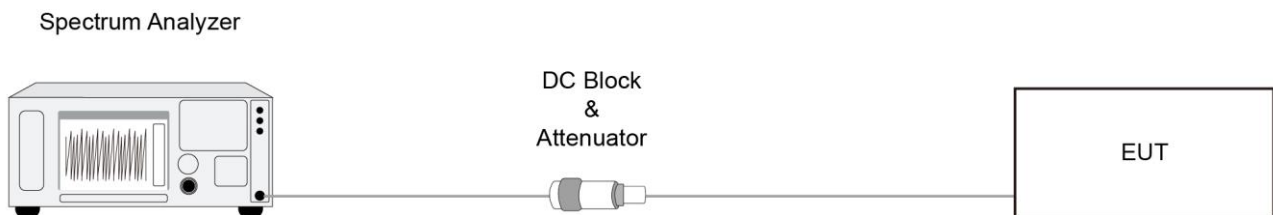
6.4.2. Test Procedure

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

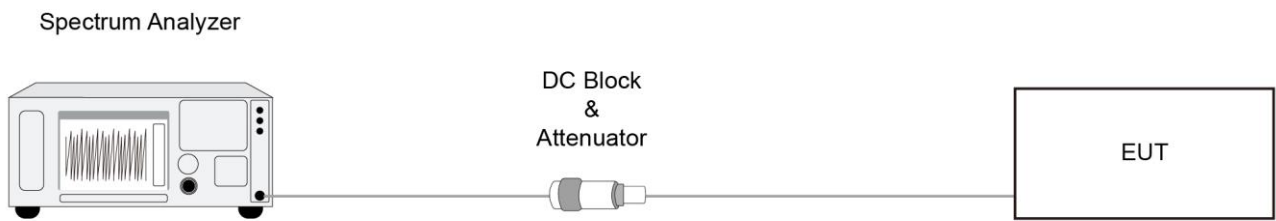
Reference level measurement

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

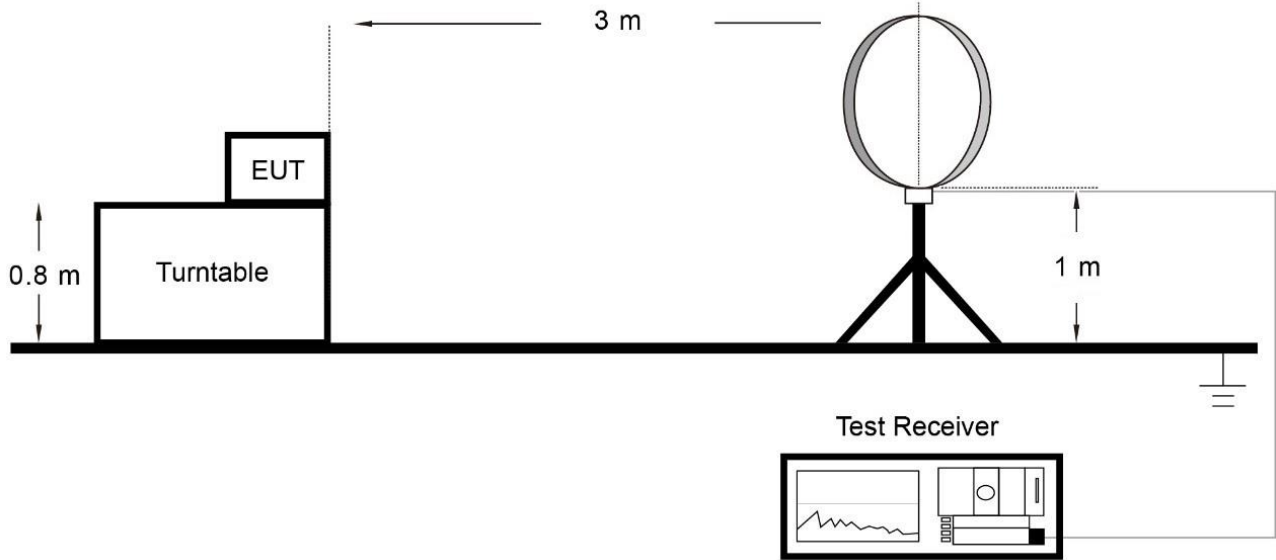
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

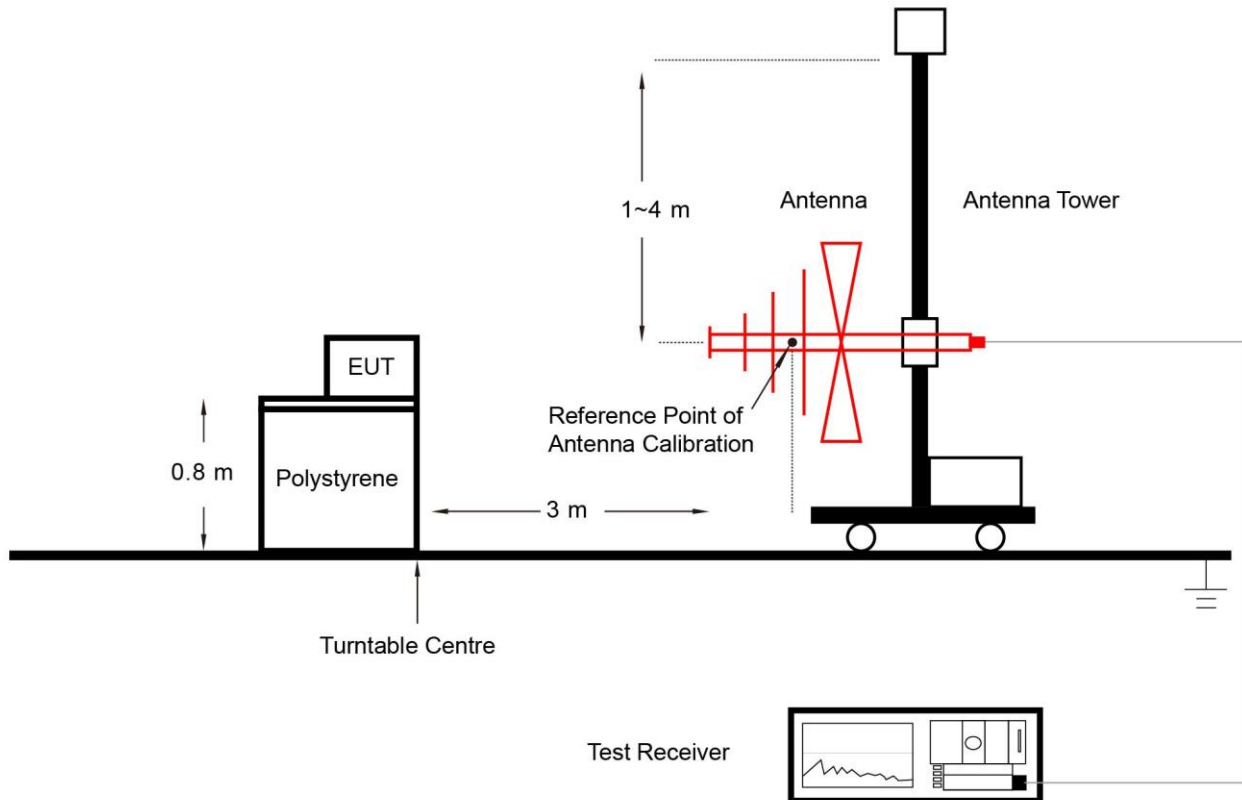
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
4.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

6.6.4. Test Setup

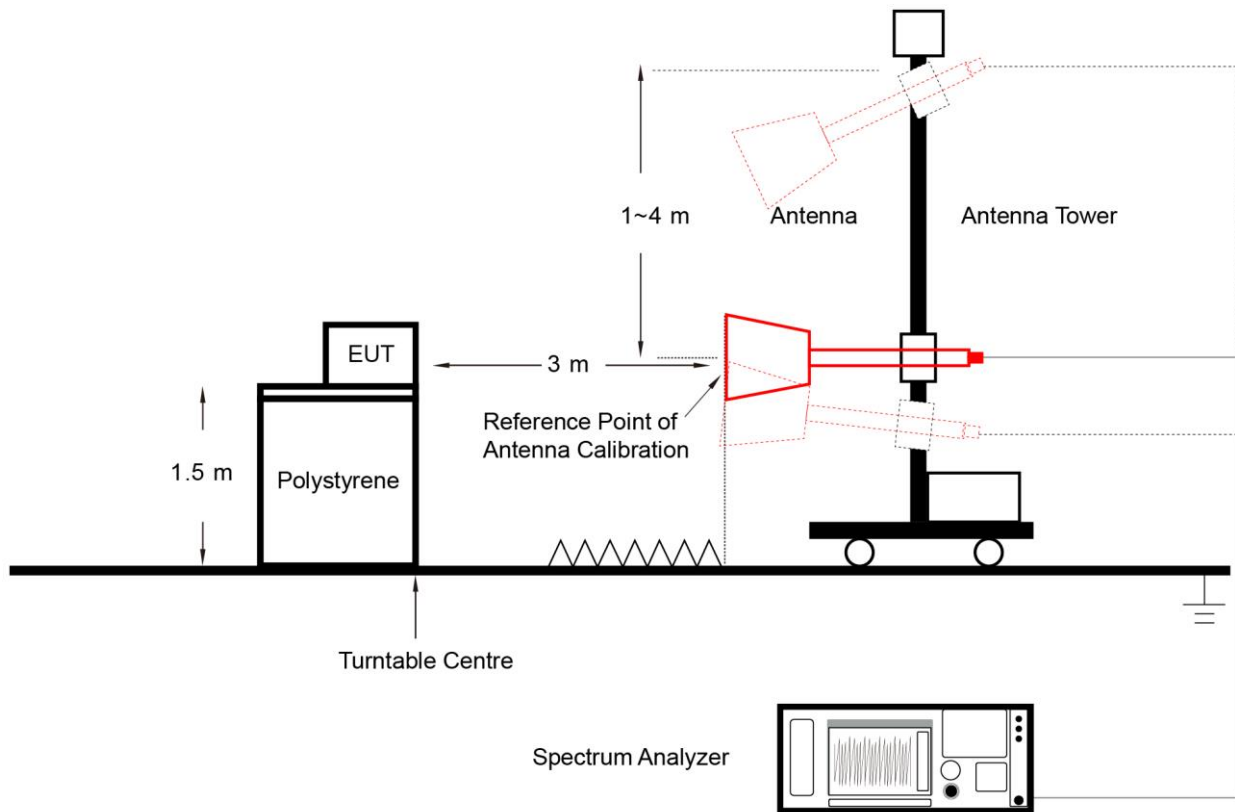
Below 30MHz Test Setup:



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

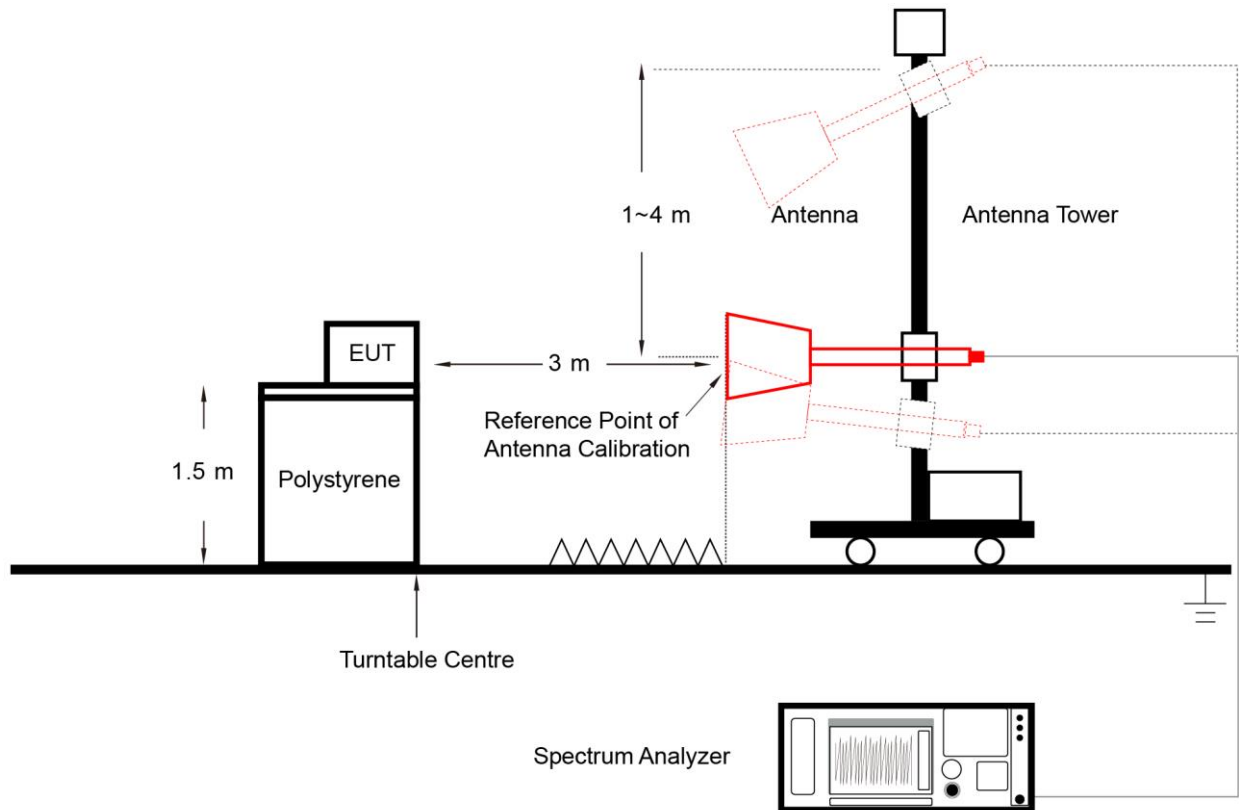
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

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

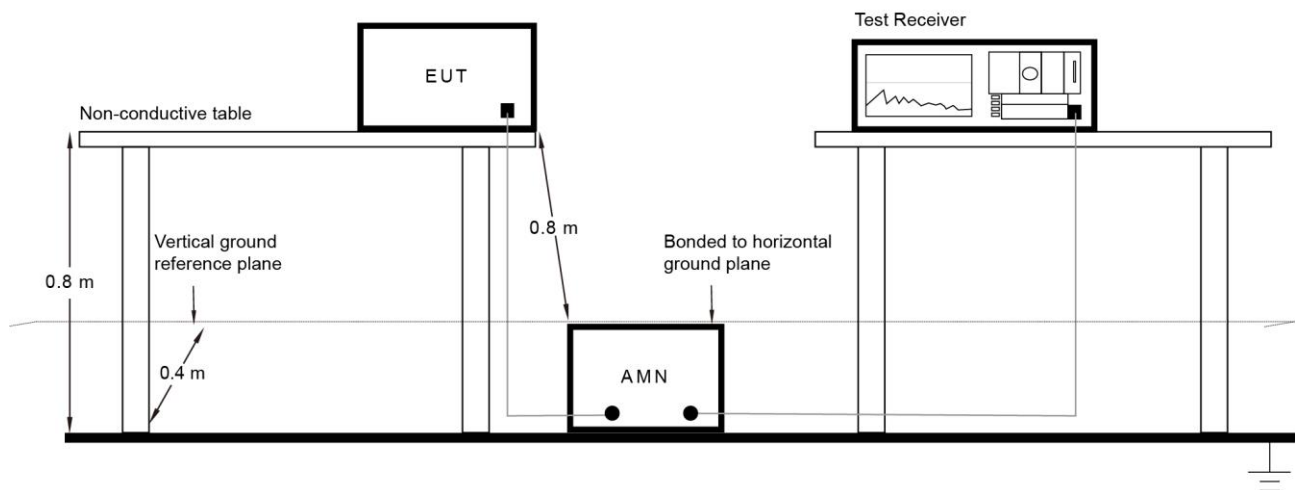
6.8.1. Test Limit

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

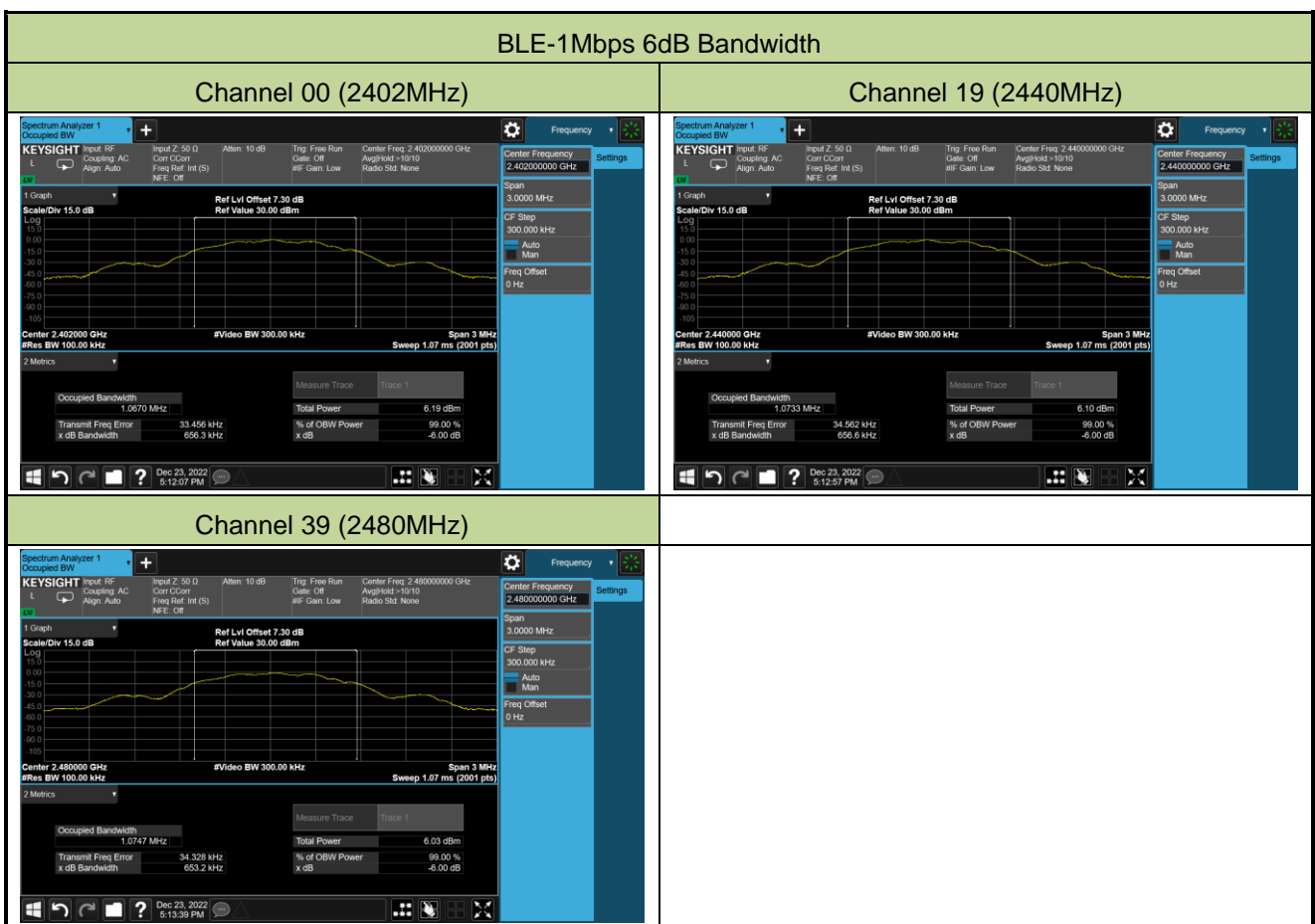
Test Site	SIP-TR1	Test Engineer	Nandy Zhang
Test Date	2022-12-23		

Test Mode	Duty Cycle
BLE-1Mbps	66.42%
Duty Cycle (T = Transmission Duration)	
BLE-1Mbps (T = 415.5 μ s)	

A.2 6dB Bandwidth Test Result

Test Site	SIP-TR1	Test Engineer	Nandy Zhang
Test Date	2022-12-23		

Test Mode	Data Rate	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
BLE	1Mbps	00	2402	0.6563	≥ 0.5
BLE	1Mbps	19	2440	0.6566	≥ 0.5
BLE	1Mbps	39	2480	0.6532	≥ 0.5



A.3 Output Power Test Result

Original Data

Test Site	SIP-TR1	Test Engineer	Nandy Zhang
Test Date	2022-12-23		

Test Result of Peak Output Power

Test Mode	Data Rate	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
BLE	1Mbps	00	2402	0.06	≤ 30.00	Pass
BLE	1Mbps	19	2440	-0.05	≤ 30.00	Pass
BLE	1Mbps	39	2480	-0.18	≤ 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	-0.07	≤ 30.00	Pass
BLE	1Mbps	19	2440	-0.19	≤ 30.00	Pass
BLE	1Mbps	39	2480	-0.32	≤ 30.00	Pass

Verified Data

Test Site	SIP-TR1	Test Engineer	Chase Zhu
Test Date	2023-05-14		

Test Result of Peak Output Power

Test Mode	Data Rate	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
BLE	1Mbps	00	2402	-0.08	≤ 30.00	Pass

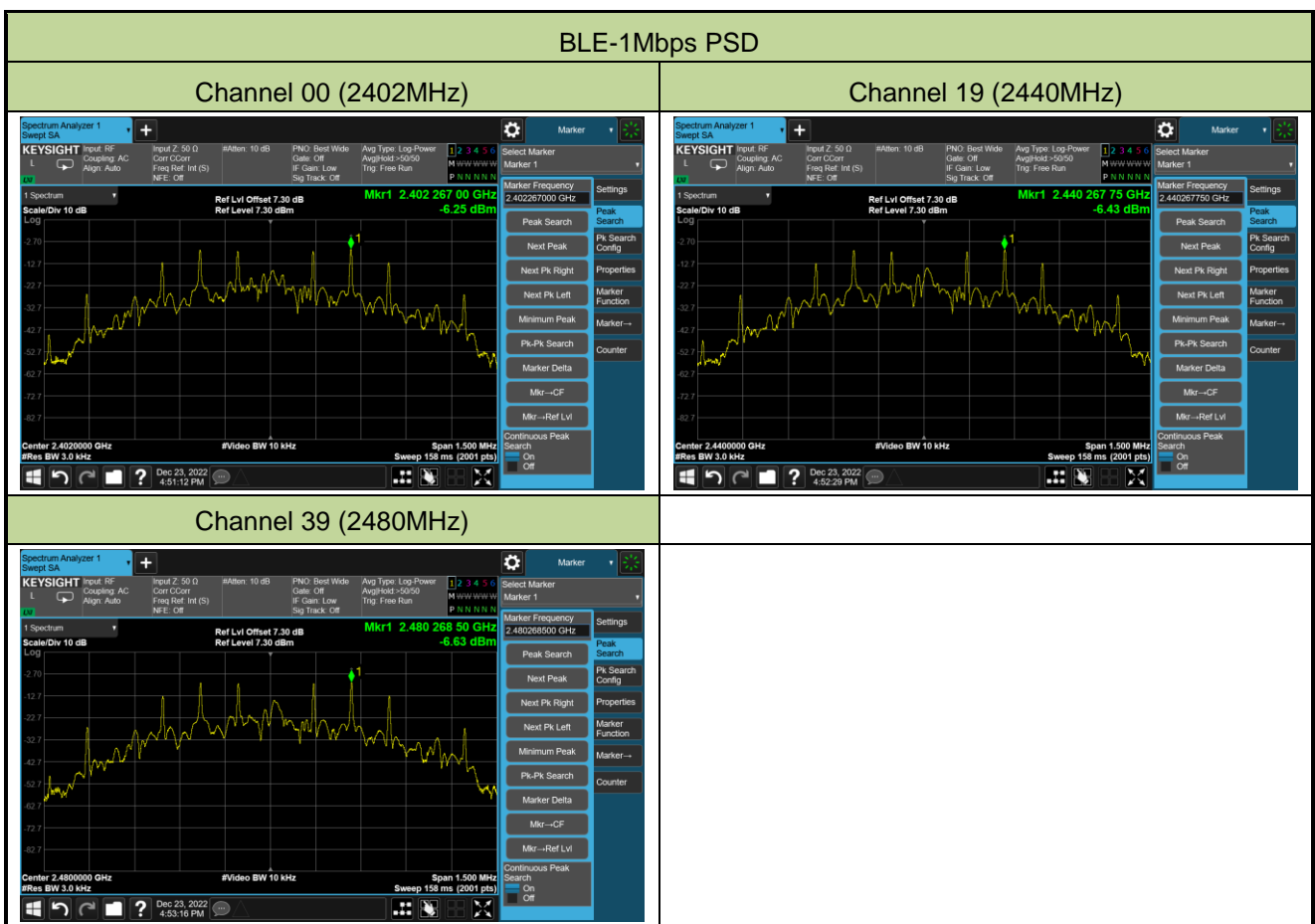
Test Result of Average Output Power

Test Mode	Data Rate	Channel No.	Frequency (MHz)	Average Power (dBm)	Limit (dBm)	Result
BLE	1Mbps	00	2402	-0.11	≤ 30.00	Pass

A.4 Power Spectral Density Test Result

Test Site	SIP-TR1	Test Engineer	Nandy Zhang
Test Date	2023-12-23		

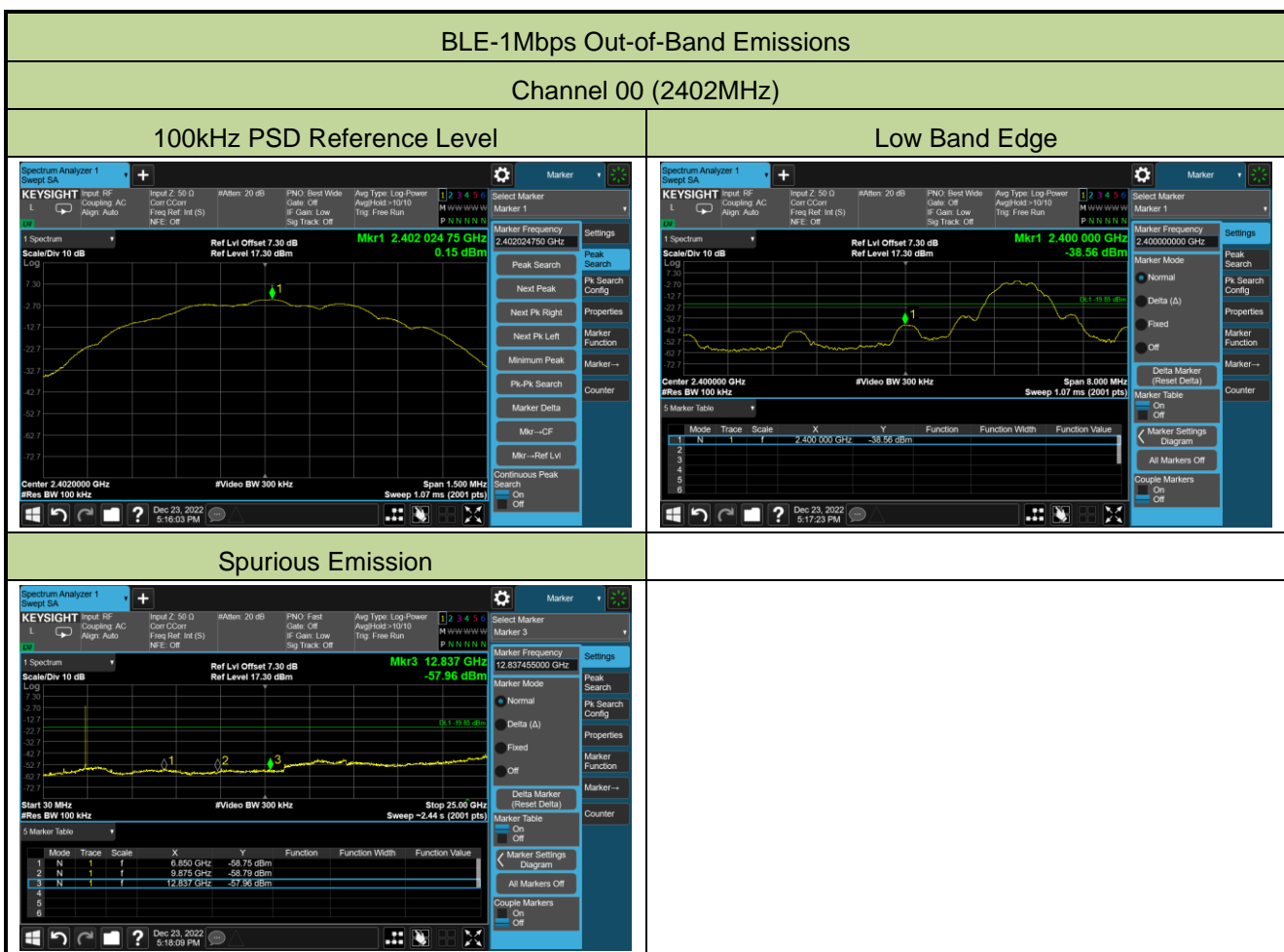
Test Mode	Data Rate	Channel No.	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
BLE	1Mbps	00	2402	-6.25	≤ 8.00	Pass
BLE	1Mbps	19	2440	-6.43	≤ 8.00	Pass
BLE	1Mbps	39	2480	-6.63	≤ 8.00	Pass



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

Test Site	SIP-TR1	Test Engineer	Nandy Zhang
Test Date	2022-12-23		

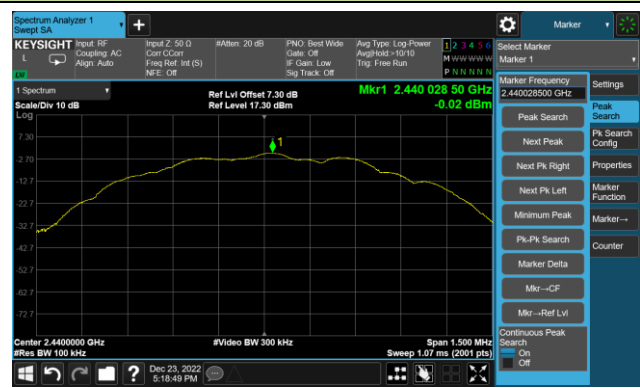
Test Mode	Data Rate / Mbps	Channel No.	Frequency (MHz)	Limit (dBc)	Result
BLE	1	00	2402	20	Pass
BLE	1	19	2440	20	Pass
BLE	1	39	2480	20	Pass



BLE-1Mbps Out-of-Band Emissions

Channel 19 (2440MHz)

100kHz PSD Reference Level



Spurious Emission



Channel 39 (2480MHz)

100kHz PSD Reference Level



High Band Edge



Spurious Emission



A.6 Radiated Spurious Emission Test Result

Test Site	SIP-AC3	Test Engineer	Wayne Wang
Test Date	2022-12-19	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.		

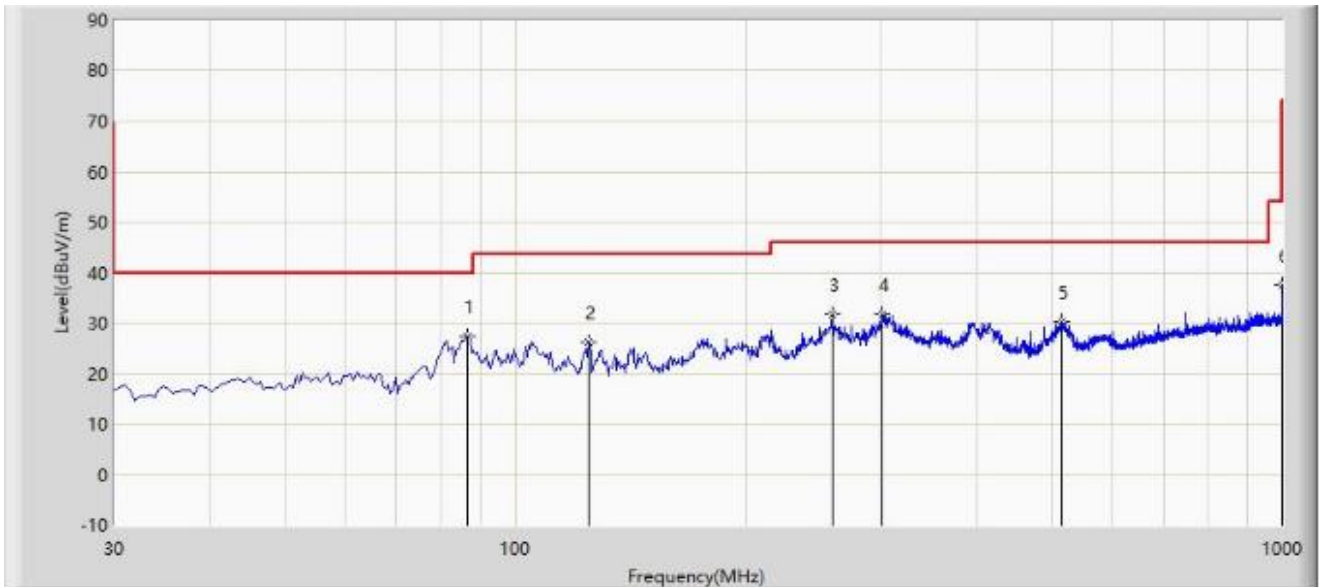
Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detect or	Polarization
00	4714.5	50.3	-8.5	41.8	74.0	-32.2	Peak	Horizontal
	8361.0	48.5	-4.0	44.5	74.0	-29.5	Peak	Horizontal
	11429.5	48.6	-2.8	45.8	74.0	-28.2	Peak	Horizontal
	4774.0	50.2	-8.5	41.7	74.0	-32.3	Peak	Vertical
	7477.0	48.2	-5.5	42.7	74.0	-31.3	Peak	Vertical
	11259.5	48.5	-2.7	45.8	74.0	-28.2	Peak	Vertical
19	7477.0	48.2	-5.5	42.7	74.0	-31.3	Peak	Horizontal
	11251.0	49.0	-2.6	46.4	74.0	-27.6	Peak	Horizontal
	15926.0	45.5	4.2	49.7	74.0	-24.3	Peak	Horizontal
	7400.5	48.9	-5.6	43.3	74.0	-30.7	Peak	Vertical
	11693.0	49.0	-3.0	46.0	74.0	-28.0	Peak	Vertical
	15764.5	45.6	3.9	49.5	74.0	-24.5	Peak	Vertical
39	3720.0	51.2	-10.1	41.1	74.0	-32.9	Peak	Horizontal
	8284.5	48.3	-4.0	44.3	74.0	-29.7	Peak	Horizontal
	15892.0	45.8	4.2	50.0	74.0	-24.0	Peak	Horizontal
	3720.0	51.2	-10.1	41.1	74.0	-32.9	Peak	Vertical
	7426.0	49.4	-5.6	43.8	74.0	-30.2	Peak	Vertical
	15781.5	44.9	4.0	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)

The Result of Radiated Emission below 1GHz:

Site: SIP-AC3	Test Date: 2023-01-05
Limit: FCC_Part15.209_RSE(3m)	Engineer: Wayne Wang
Probe: VULB 9168_00997_25-2000MHz	Polarity: Horizontal
EUT: Dual-band Wi-Fi 6 Wireless AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE-1M at channel 2402MHz	



No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	86.745	27.500	15.252	-12.500	40.000	12.248	PK
2		124.575	26.129	10.081	-17.371	43.500	16.048	PK
3		258.920	31.832	14.931	-14.168	46.000	16.901	PK
4		301.115	31.798	13.365	-14.202	46.000	18.433	PK
5		515.970	30.303	6.676	-15.697	46.000	23.627	PK
6		1000.000	37.409	7.162	-16.591	54.000	30.247	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).

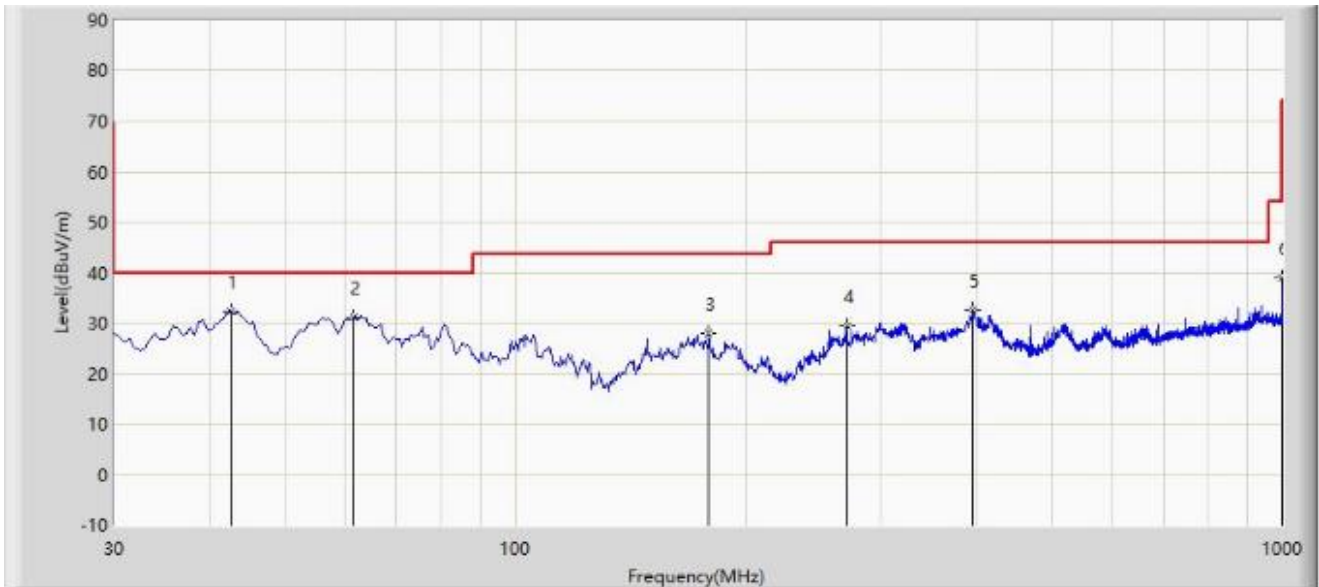
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

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-AC3	Test Date: 2023-01-05
Limit: FCC_Part15.209_RSE(3m)	Engineer: Wayne Wang
Probe: VULB 9168_00997_25-2000MHz	Polarity: Vertical
EUT: Dual-band Wi-Fi 6 Wireless AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE-1M at channel 2402MHz	



No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	42.610	32.427	14.582	-7.573	40.000	17.845	PK
2		61.525	31.233	14.340	-8.767	40.000	16.893	PK
3		178.895	28.092	11.448	-15.408	43.500	16.645	PK
4		270.560	29.292	11.812	-16.708	46.000	17.480	PK
5		394.720	32.752	12.015	-13.248	46.000	20.737	PK
6		1000.000	39.008	8.761	-14.992	54.000	30.247	PK

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

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

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

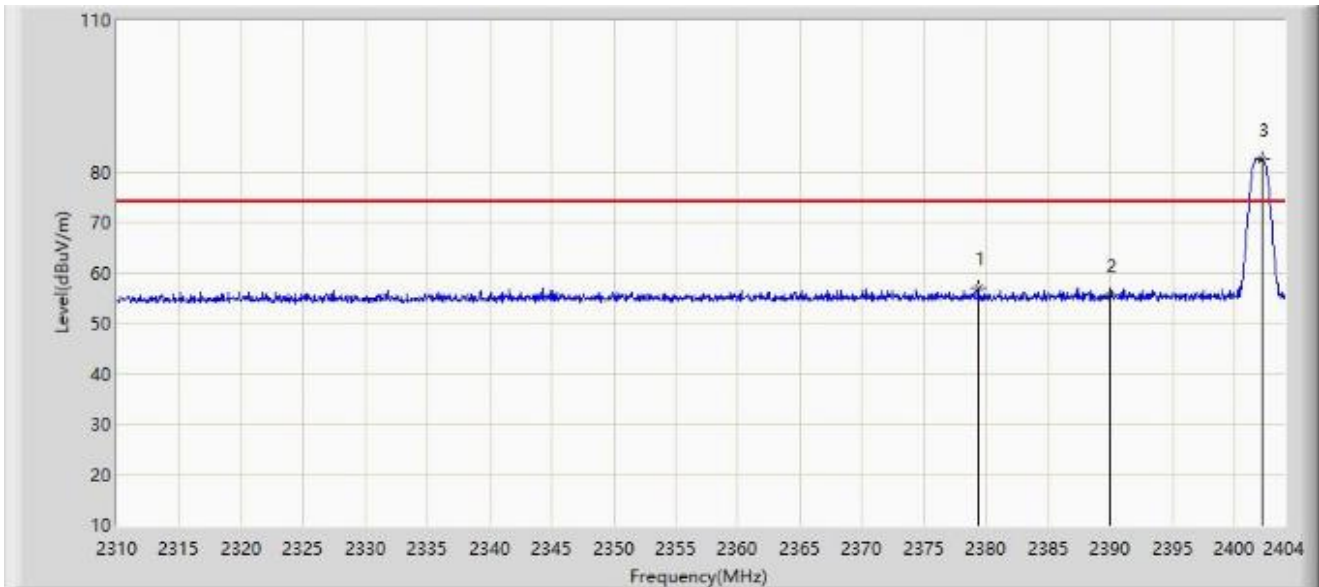
Note 4: Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Note 5: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz and 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value.

Therefore, the data is not presented in the report.

A.7 Radiated Restricted Band Edge Test Result

Site: SIP-AC3	Test Date: 2022-12-19
Limit: FCC_2.4G_RE(3m)	Engineer: Wayne Wang
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Dual-band Wi-Fi 6 Wireless AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE 1M at 2402MHz	



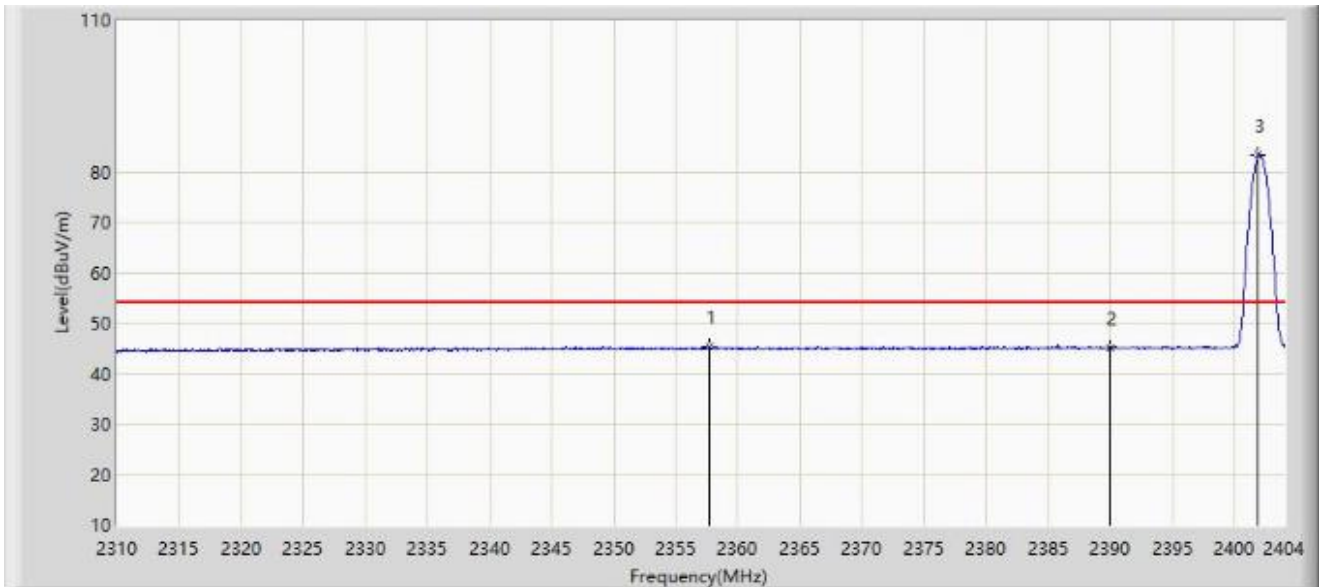
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	2379.325	56.830	24.966	-17.170	74.000	31.865	PK
2		2390.000	55.452	23.523	-18.548	74.000	31.929	PK
3		2402.261	82.574	50.560	N/A	N/A	32.014	PK

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: 2022-12-19
Limit: FCC_2.4G_RE(3m)	Engineer: Wayne Wang
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Dual-band Wi-Fi 6 Wireless AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE 1M at 2402MHz	



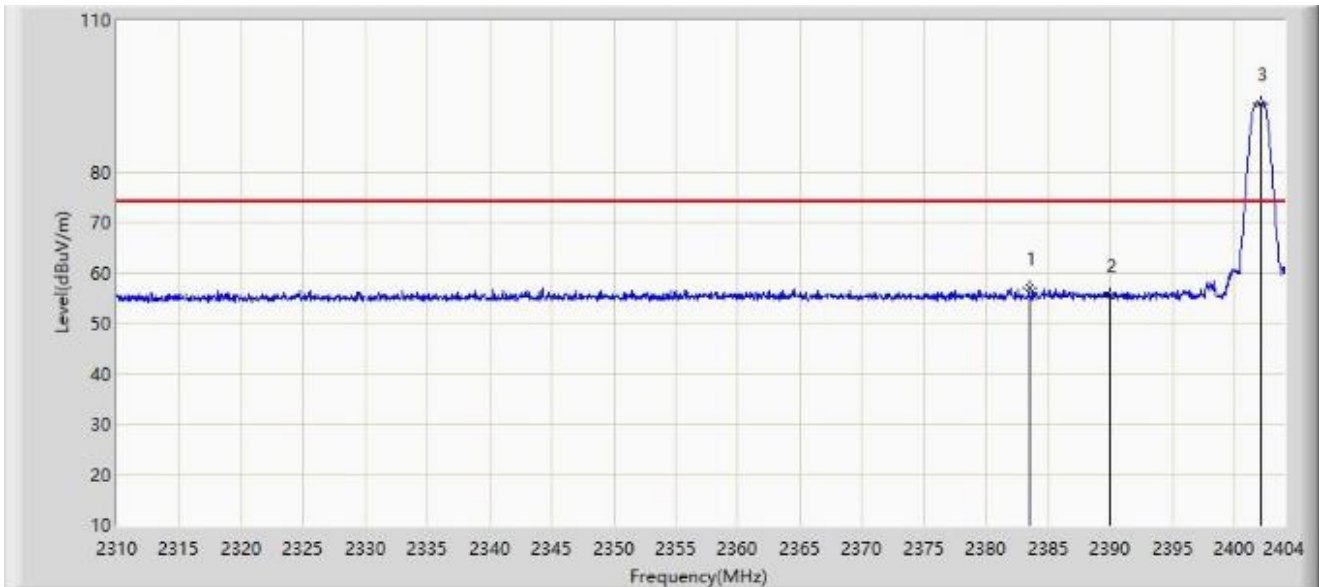
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	2357.705	45.282	13.427	-8.718	54.000	31.855	AV
2		2390.000	45.111	13.182	-8.889	54.000	31.929	AV
3		2401.932	83.214	51.203	N/A	N/A	32.012	AV

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: 2022-12-19
Limit: FCC_2.4G_RE(3m)	Engineer: Wayne Wang
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Dual-band Wi-Fi 6 Wireless AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE 1M at 2402MHz	



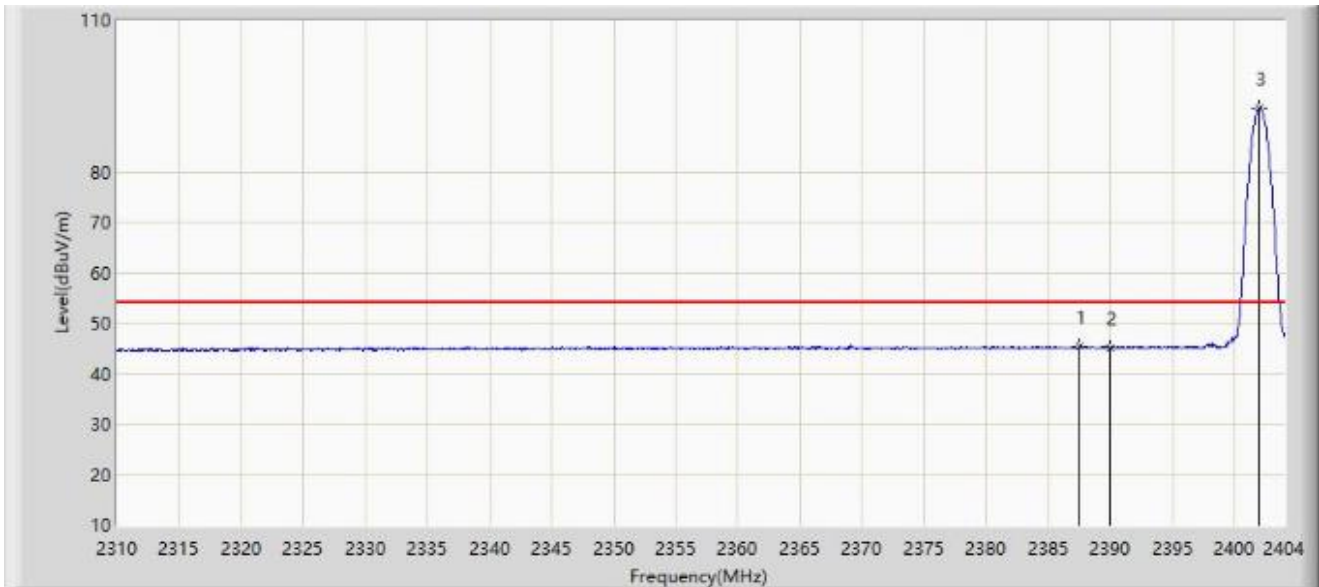
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	2383.461	56.840	24.951	-17.160	74.000	31.890	PK
2		2390.000	55.591	23.662	-18.409	74.000	31.929	PK
3		2402.073	93.600	61.587	N/A	N/A	32.012	PK

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: 2022-12-19
Limit: FCC_2.4G_RE(3m)	Engineer: Wayne Wang
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Dual-band Wi-Fi 6 Wireless AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE 1M at 2402MHz	



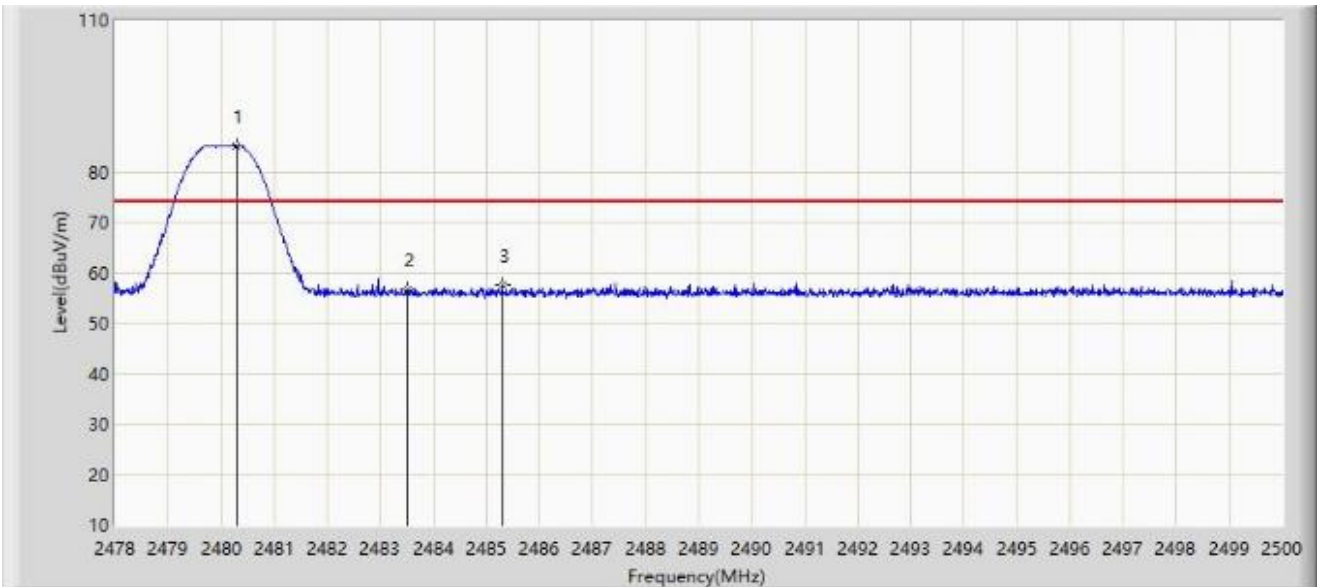
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	2387.456	45.321	13.407	-8.679	54.000	31.914	AV
2		2390.000	45.071	13.142	-8.929	54.000	31.929	AV
3		2402.026	92.634	60.622	N/A	N/A	32.012	AV

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: 2022-12-19
Limit: FCC_2.4G_RE(3m)	Engineer: Wayne Wang
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Dual-band Wi-Fi 6 Wireless AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE 1M at 2480MHz	



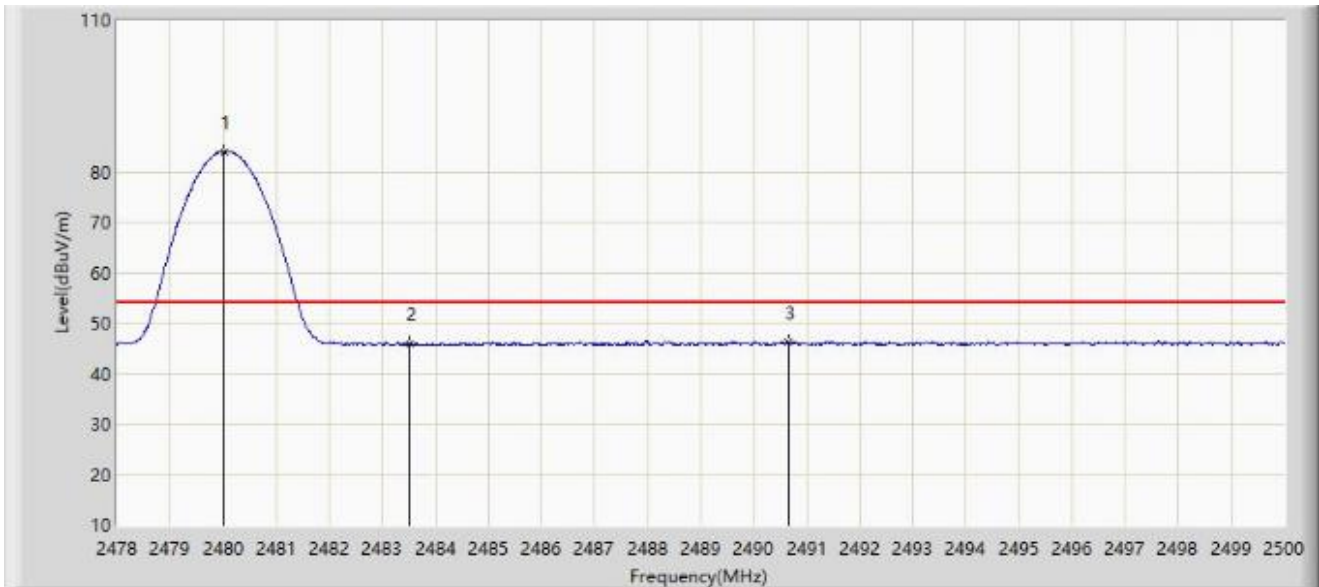
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		2480.277	85.185	52.896	N/A	N/A	32.289	PK
2		2483.500	56.577	24.272	-17.423	74.000	32.305	PK
3	*	2485.304	57.414	25.100	-16.586	74.000	32.314	PK

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).

Site: SIP-AC3	Test Date: 2022-12-19
Limit: FCC_2.4G_RE(3m)	Engineer: Wayne Wang
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Dual-band Wi-Fi 6 Wireless AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE 1M at 2480MHz	



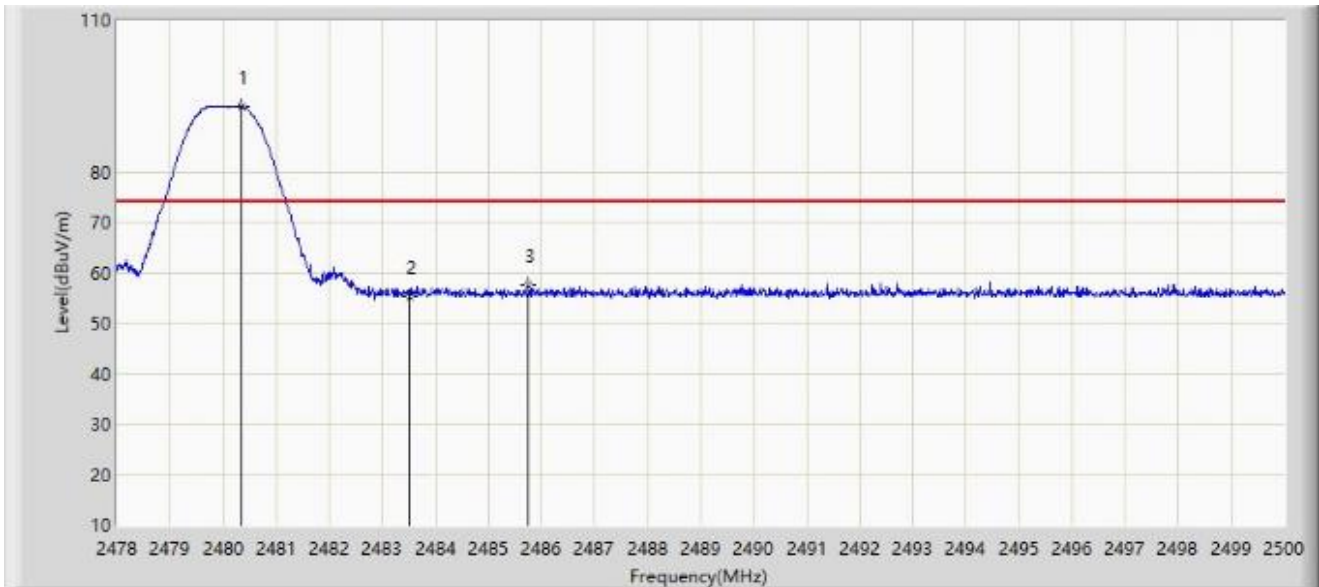
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1		2480.002	83.924	51.636	N/A	N/A	32.287	AV
2		2483.500	45.825	13.520	-8.175	54.000	32.305	AV
3	*	2490.650	46.333	13.992	-7.667	54.000	32.341	AV

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: 2022-12-19
Limit: FCC_2.4G_RE(3m)	Engineer: Wayne Wang
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Dual-band Wi-Fi 6 Wireless AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE 1M at 2480MHz	



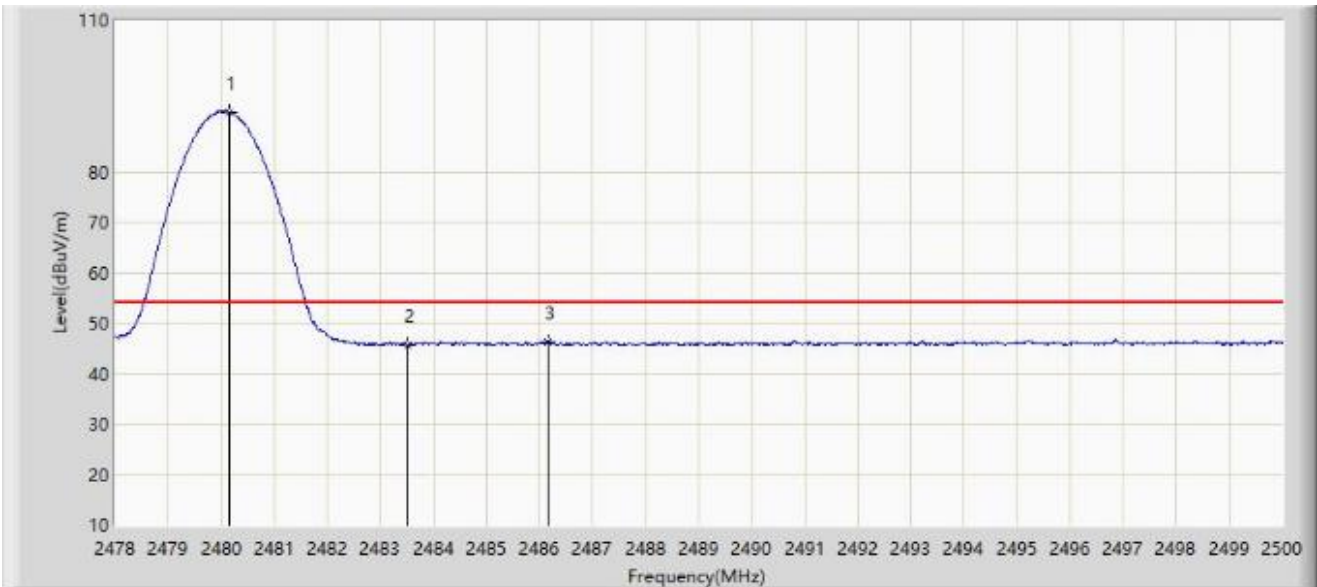
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1		2480.354	92.878	60.589	N/A	N/A	32.289	PK
2		2483.500	55.330	23.025	-18.670	74.000	32.305	PK
3	*	2485.755	57.536	25.220	-16.464	74.000	32.316	PK

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: 2022-12-19
Limit: FCC_2.4G_RE(3m)	Engineer: Wayne Wang
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Dual-band Wi-Fi 6 Wireless AP	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		2480.145	91.850	59.562	N/A	N/A	32.288	AV
2		2483.500	45.686	13.381	-8.314	54.000	32.305	AV
3	*	2486.162	46.290	13.971	-7.710	54.000	32.319	AV

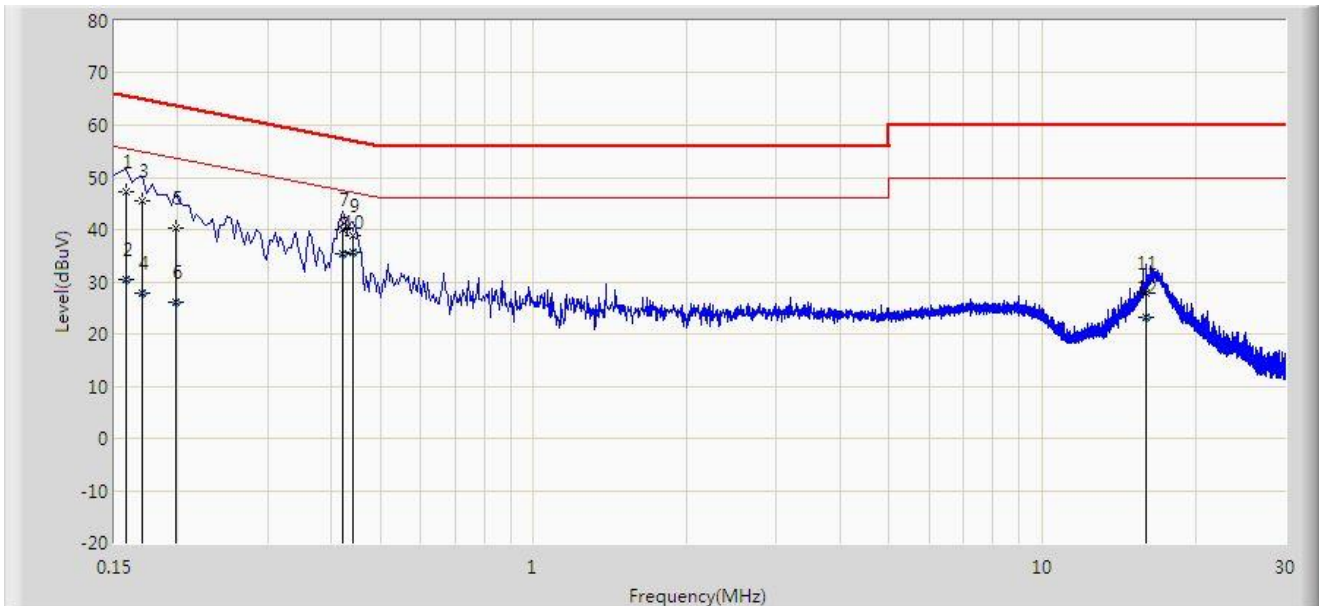
Note 1: " * ", means this data is the worst emission level.

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	Time: 2023/03/23 - 18:14
Temperature: 19.8°C	Humidity: 63.1%
Limit: FCC_Part15.207_CE_AC Power	Engineer: Barry Wu
Probe: SIP-SR2-ENV216_101684_E	Polarity: Line
EUT: Dual-band Wi-Fi 6 Wireless AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE-1M at channel 2402MHz	



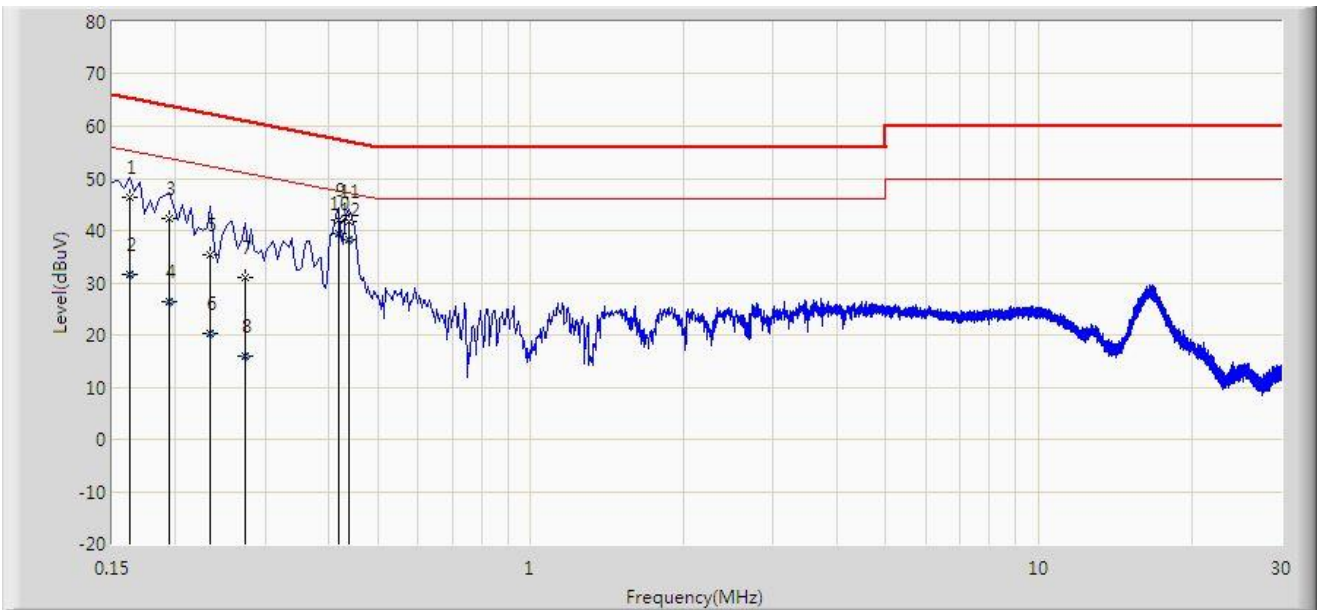
No	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1		0.158	47.293	37.513	-18.275	65.568	9.780	QP
2		0.158	30.461	20.681	-25.108	55.568	9.780	AV
3		0.170	45.427	35.647	-19.533	64.960	9.780	QP
4		0.170	27.882	18.102	-27.079	54.960	9.780	AV
5		0.198	40.265	30.461	-23.429	63.694	9.804	QP
6		0.198	26.000	16.195	-27.694	53.694	9.804	AV
7		0.422	39.922	30.062	-17.487	57.409	9.860	QP
8		0.422	35.298	25.438	-12.111	47.409	9.860	AV
9		0.442	38.928	29.068	-18.096	57.024	9.860	QP
10	*	0.442	35.606	25.746	-11.418	47.024	9.860	AV
11		16.002	27.699	17.037	-32.301	60.000	10.663	QP
12		16.002	23.086	12.423	-26.914	50.000	10.663	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	Time: 2023/03/23 - 18:21
Temperature: 19.8°C	Humidity: 63.1%
Limit: FCC_Part15.207_CE_AC Power	Engineer: Barry Wu
Probe: SIP-SR2-ENV216_101684_E	Polarity: Neutral
EUT: Dual-band Wi-Fi 6 Wireless AP	Power: AC 120V/60Hz
Test Mode: Transmit by BLE-1M at channel 2402MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1		0.162	46.460	36.670	-18.901	65.361	9.790	QP
2		0.162	31.595	21.805	-23.766	55.361	9.790	AV
3		0.194	42.441	32.632	-21.422	63.864	9.809	QP
4		0.194	26.382	16.573	-27.482	53.864	9.809	AV
5		0.234	35.400	25.554	-26.906	62.307	9.846	QP
6		0.234	20.427	10.581	-31.879	52.307	9.846	AV
7		0.274	31.006	21.155	-29.990	60.996	9.852	QP
8		0.274	16.035	6.183	-34.961	50.996	9.852	AV
9		0.418	42.025	32.155	-15.463	57.488	9.870	QP
10	*	0.418	39.458	29.588	-8.030	47.488	9.870	AV
11		0.438	41.859	31.989	-15.240	57.100	9.870	QP
12		0.438	38.388	28.518	-8.711	47.100	9.870	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 "2305RSU025-UT" file.

Appendix C - EUT Photograph

Refer to "2305RSU025-UE" file.

————— The End —————