RF MEASUREMENT REPORT

FCC ID:	Q9DAP32
Applicant:	Hewlett Packard Enterprise Company
Product:	ACCESS POINT
Model No.:	APIN0615
Marketing Name:	AP32
Trademark:	Hewlett Packard Enterprise, HPE aruba networking
FCC Classification:	Digital Transmission System (DTS)
FCC Rule Part(s):	Part 15 Subpart C (Section 15.247)
Result:	Complies
Received Date:	2023-08-25
Test Date:	2023-10-18 ~ 2023-12-29

Reviewed By: Jame Yuan

Approved By: Robin Wu

ilac-MRA

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

The test results relate only to the samples tested.
This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.
The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2308RSU066-U2	V01	Initial Report	2023-11-18	Invalid
2308RSU066-U2	V02	Add spot check test data	2024-01-05	Valid

Note 1: The product is a variation on the existing APIN0615 that had FCC approval (FCC ID: Q9DAPIN0615). The differences are shown in the table below.

Parts of Product	Modification
Top cover	Change ION style look.
Bottom Cover	Yes, Changed Painted white
Light pipe	Yes, Changed. Move to the edge for consistent ION ID
USB Port	Removed
Antenna	Remove BLE/ZigBee/GPS Antenna
PCB	Remove BLE/ZigBee/GPS chipset and match circuit

The applicant remeasured a set of antenna gain that slightly different than before.

Frequency Range (MHz)	Original Wi-Fi Antenna Gain	Current Wi-Fi Antenna Gain
	(dBi)	(dBi)
2400 ~ 2480(Radio 0)	2.0	1.5
2400 ~ 2480(Radio 1)	0.6	1.6
5150 ~ 5895	3.8	3.8
5925 ~ 7125	3.5	3.9

Note 2: Most test data refer to original test report no. 2105TW0006-U3. Spot-check tests were done on these items based on worst-case results reported in the original FCC ID filing.

Test Description	Verdict
6dB Bandwidth	Data referencing with spot check
Output Power	Data referencing with spot check
Power Spectral Density	Data referencing with spot check
Band Edge / Out-of-Band Emissions	Data referencing with spot check
General Field Strength (Restricted Bands and Radiated Emission)	Data referencing with spot check
AC Conducted Emissions 150kHz - 30MHz	Full test

CONTENTS

Description Page

1. General Information 5

1.1. Applicant 5
1.2. Manufacturer 5
1.3. Testing Facility 5
1.4. Product Information 6
1.5. Radio Specification under Test 6
1.6. Working Frequencies 7
1.7. Antenna Details 7

2. Test Configuration 8

2.1. Test Mode 8
2.2. Test System Connection Diagram 8
2.3. Test Software 8
2.4. Applied Standards 9
2.5. Test Environment Condition 9

3. Antenna Requirements 10

4. Measuring Instrument 11

5. Decision Rules and Measurement Uncertainty 12

5.1. Decision Rules 12
5.2. Measurement Uncertainty 12

6. Test Result 13

6.1. Summary 13
6.2. 6dB Bandwidth Measurement 14
6.2.1. Test Limit 14
6.2.2. Test Procedure 14
6.2.3. Test Setting 14
6.2.4. Test Setup 14
6.2.5. Test Result 14
6.3. Output Power Measurement 15
6.3.1. Test Limit 15
6.3.2. Test Procedure 15
6.3.3. Test Setting 15
6.3.4. Test Setup 15
6.3.5. Test Result 15
6.4. Power Spectral Density Measurement 16
6.4.1. Test Limit 16

6.4.2. Test Procedure 16
6.4.3. Test Setting 16
6.4.4. Test Setup 16
6.4.5. Test Result 17
6.5. Conducted Band Edge and Out-of-Band Emissions Measurement 18
6.5.1. Test Limit 18
6.5.2. Test Procedure 18
6.5.3. Test Setting 18
6.5.4. Test Setup 19
6.5.5. Test Result 19
6.6. Radiated Spurious Emission Measurement 20
6.6.1. Test Limit 20
6.6.2. Test Procedure 20
6.6.3. Test Setting 20
6.6.4. Test Setup 22
6.6.5. Test Result 23
6.7. Radiated Restricted Band Edge Measurement 24
6.7.1. Test Limit 24
6.7.2. Test Procedure 25
6.7.3. Test Setting 25
6.7.4. Test Setup 26
6.7.5. Test Result 26
6.8. AC Conducted Emissions Measurement 27
6.8.1. Test Limit 27
6.8.2. Test Setup 27
6.8.3. Test Result 27

Appendix A – Test Result 28

A.1 Duty Cycle Test Result 28
A.2 6dB Bandwidth Test Result 29
A.3 Output Power Test Result 30
A.4 Power Spectral Density Test Result 31
A.5 Conducted Band Edge and Out-of-Band Emissions Test Result 32
A.6 Radiated Spurious Emission Test Result 36
A.7 Radiated Restricted Band Edge Test Result 64
A.8 AC Conducted Emissions Test Result 112

Appendix B – Test Setup Photograph 114

Appendix C – EUT Photograph 115

1. General Information

1.1. Applicant

Hewlett Packard Enterprise Company

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

1.2. Manufacturer

Hewlett Packard Enterprise Company

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

1.3. Testing Facility

☒	**Test Site – MRT Suzhou Laboratory**
	Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China **Laboratory Location (Suzhou - SIP)** 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China
	Laboratory Accreditations
	A2LA: 3628.01 CNAS: L10551 FCC: CN1166 ISED: CN0001 VCCI: ☐R-20025 ☐G-20034 ☐C-20020 ☐T-20020 ☐R-20141 ☐G-20134 ☐C-20103 ☐T-20104
☐	**Test Site – MRT Shenzhen Laboratory**
	Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China
	Laboratory Accreditations
	A2LA: 3628.02 CNAS: L10551 FCC: CN1284 ISED: CN0105
☐	**Test Site – MRT Taiwan Laboratory**
	Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
	Laboratory Accreditations
	TAF: 3261 FCC: 291082, TW3261 ISED: TW3261

1.4. Product Information

Product Name	ACCESS POINT
Model No.	APIN0615
Marketing Name:	AP32
Serial No.	CNQSM1H00H
Software Version	v0.1.12
Wi-Fi Specification	802.11a/b/g/n/ac/ax
Power Type	AC Adapter or PoE input
Operating Temp.	0 ~ 50 °C
Operating Environment	Indoor Use
Accessories	
AC/DC Adapter	Model: WB-18Q12R Input: 100-240V ~ 50/60Hz, 0.5A Max Output: 12.0V, 1.5A, 18W
PoE Injector	Model: ADH-30CR BB Input: 100-240V ~ 1.0A 50-60Hz Output: 55V, 0.55A 30.25W
Remark: 1. The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer. 2. AC Power Adapter and PoE Injector are not sold with Product.	

1.5. Radio Specification under Test

Frequency Range	802.11b/g/n-HT20/ax-HE20: 2412 ~ 2462MHz 802.11n-HT40/ax-HE40: 2422 ~ 2452MHz	
Channel Number	802.11b/g/n-HT20/ax-HE20: 11 802.11n-HT40/ax-HE40: 7	
Type of Modulation	802.11b: DSSS 802.11g/n: OFDM 802.11ax: OFDMA	
Data Rate	802.11b: 1/2/5.5/11Mbps 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 300Mbps 802.11ax: up to 574Mbps	
Support RU	☒ Full RU	☐ Partial RU

1.6. Working Frequencies

802.11b/g/n-HT20/ax-HE20

Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz
04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz
10	2457 MHz	11	2462 MHz	--	--

802.11n-HT40/ax-HE40

Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz
06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	--	--	--	--

1.7. Antenna Details

Antenna Type	Frequency Band (MHz)	Tx Paths	Uncorrelated Gain (dBi)	Correlated Gain (dBi)
PIFA	2412 ~ 2462 (Radio 0)	2	1.5	4.4
PIFA	2412 ~ 2462 (Radio 1)	2	1.6	4.5
PIFA	5150 ~ 5895	2	3.8	6.8
PIFA	5925 ~ 7125	2	3.9	6.9

Note 1: In accordance with KDB 662911 D01v02r01, uncorrelated directional gain was applied for calculating max conducted output power limit and correlated directional gain was applied for calculating PSD limit.

Note 2: The directional gain calculation refers to antenna report provided by the applicant.

2. Test Configuration

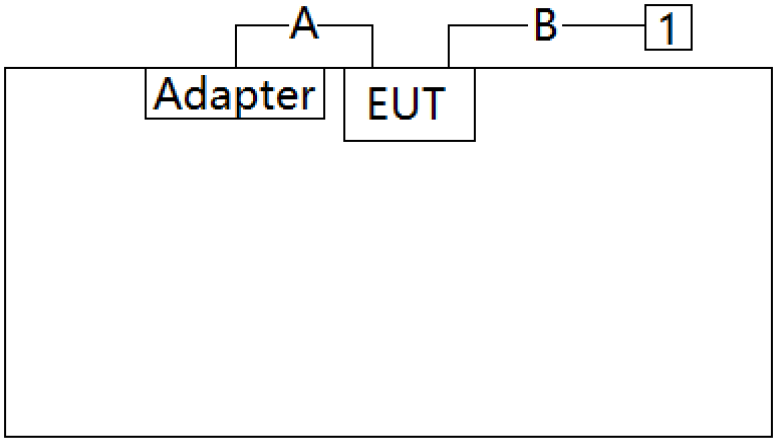
2.1. Test Mode

Mode 1: Transmit by 802.11b_N_{SS}=1 (1Mbps)
Mode 2: Transmit by 802.11g_N_{SS}=1 (6Mbps)
Mode 3: Transmit by 802.11n-HT20_N_{SS}=1 (MCS0)
Mode 4: Transmit by 802.11n-HT40_N_{SS}=1 (MCS0)
Mode 5: Transmit by 802.11ax-HE20_N_{SS}=1 (HE0NSS1)
Mode 6: Transmit by 802.11ax-HE40_N_{SS}=1 (HE0NSS1)

Note: These test modes (worst case) are from the original report.

2.2. Test System Connection Diagram

Connection Diagram – Radiated Emission testing



Cable Type		Cable Description
A	Power Cable	Non shielded, 2.0m
B	LAN Cable	Non shielded, 3.0m

Product		Manufacturer	Model No.
1	Notebook	ThinkPad	E495

2.3. Test Software

The test utility software used during testing was “accessMTool” and the version was “3.2.1.5”.

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 Name	Manufacturer	Model No.	Asset No.	Cali. Interval	Cal. Due Date	Test Site
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2024-10-09	SIP-AC3
Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2024-05-23	SIP-AC3
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	2023-11-01	SIP-AC3
				1 year	2024-10-28	SIP-AC3
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2024-01-12	SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2023-12-22	SIP-AC3
				1 year	2024-12-21	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE11255	1 year	2024-08-13	SIP-AC3
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2024-02-26	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE11022	1 year	2023-11-01	SIP-TR1
				1 year	2024-10-28	SIP-TR1
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	2024-02-29	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 Software	V3.0.0	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

Note: For Radiated Spurious Emission and Radiated Restricted Band Edge, the EUT setup for testing is determined by the original report.

6.2. 6dB Bandwidth Measurement

6.2.1. Test Limit

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

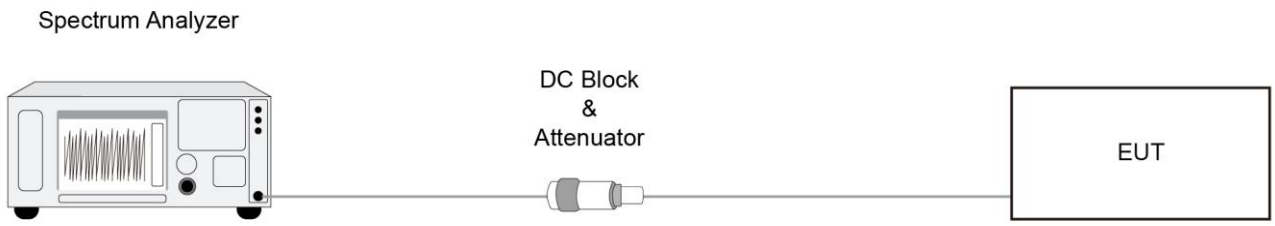
6.2.2. Test Procedure

ANSI C63.10 - 2013 - Section 11.8

6.2.3. Test Setting

1. The Spectrum's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. Set RBW = 100 kHz
3. VBW ≥ 3 × RBW
4. Detector = Peak
5. Trace mode = Max hold
6. Sweep = Auto couple
7. Allow the trace to stabilize.

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.2.

6.3. Output Power Measurement

6.3.1. Test Limit

The maximum output power shall be less 1 Watt (30dBm).

The conducted output power limit specified in paragraph FCC Part 15.247(b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs FCC Part 15.247(b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

6.3.2. Test Procedure

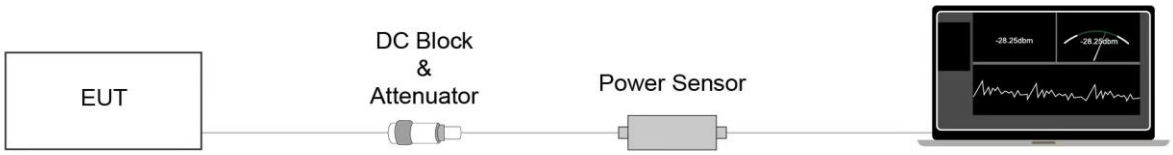
ANSI C63.10 - 2013 - Section 11.9.2.3.2

6.3.3. Test Setting

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.

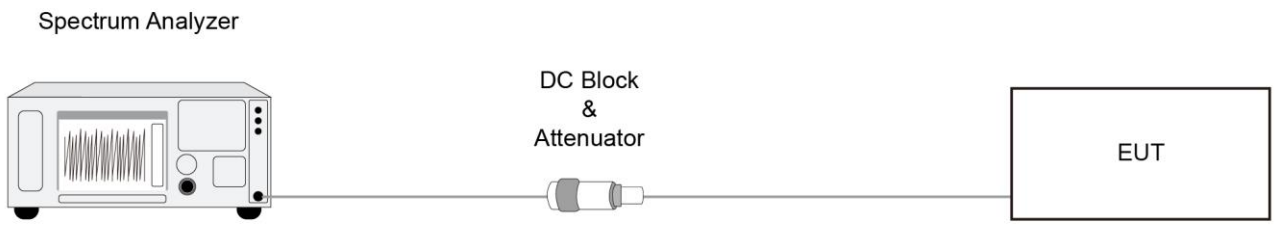
6.4.2. Test Procedure

ANSI C63.10 - 2013 - Section 11.10.5

6.4.3. Test Setting

1. Measure the duty cycle (x) of the transmitter output signal.
2. Set instrument center frequency to DTS channel center frequency.
3. Set span to at least 1.5 times the OBW.
4. RBW = 10 kHz.
5. VBW = 30 kHz.
6. Detector = RMS.
7. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
8. Sweep time = auto couple.
9. Don't use sweep triggering. Allow sweep to "free run".
10. Employ trace averaging (RMS) mode over a minimum of 100 traces.
11. Use the peak marker function to determine the maximum amplitude level.
12. Add 10 log (1/x), where x is the duty cycle measured in step (a, to the measured PSD to compute the average PSD during the actual transmission time. If measured value exceeds requirement specified by regulatory agency, then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).

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

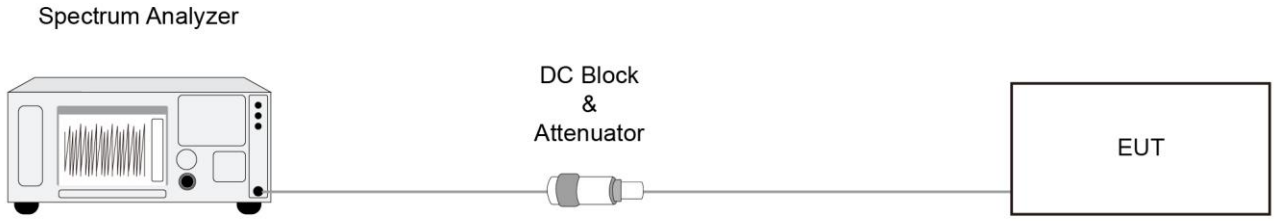
Reference level measurement

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 ≥ 3 x RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize

Emission level measurement

1. Set the center frequency and span to encompass frequency range to be measured
2. RBW = 100kHz
3. VBW = 300kHz
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

6.5.4. Test Setup



6.5.5. Test Result

Refer to Appendix A.5.

6.6. Radiated Spurious Emission Measurement

6.6.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [μV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.6.2. Test Procedure

ANSI C63.10 - 2013 - Section 11.11 & 11.12

ANSI C63.10 - 2013 - Section 6.3 (General Requirements)

ANSI C63.10 - 2013 - Section 6.4 (Standard test method below 30MHz)

ANSI C63.10 - 2013 - Section 6.5 (Standard test method above 30MHz to 1GHz)

ANSI C63.10 - 2013 - Section 6.6 (Standard test method above 1GHz)

6.6.3. Test Setting

Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000MHz	1MHz

Quasi-Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. Span was set greater than 1MHz

3. RBW = as specified in Table 1

4. Detector = CISPR quasi-peak

5. Sweep time = auto couple

6. Trace was allowed to stabilize

Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBW = 3MHz

4. Detector = peak

5. Sweep time = auto couple

6. Trace mode = max hold

7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

1. 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 ≥ 98%, set VBW = 10 Hz.

If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.

802.11b 1Mbps	VBW = 82Hz	802.11g 6Mbps	VBW = 510Hz
802.11n-HT20 MCS0	VBW = 510Hz	802.11n-HT40 MCS0	VBW = 1.1KHz
802.11ax-HE20 MCS0	VBW = 680Hz	802.11ax-HE40 MCS0	VBW = 1.3kHz

4. Detector = Peak

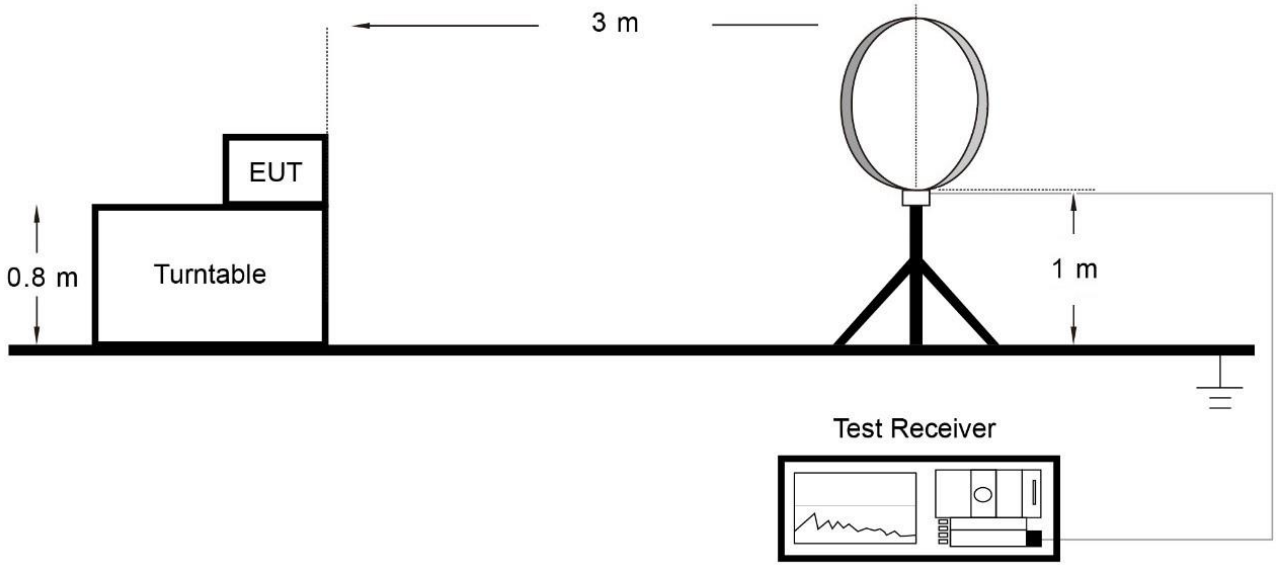
5. Sweep time = auto

6. Trace mode = max hold

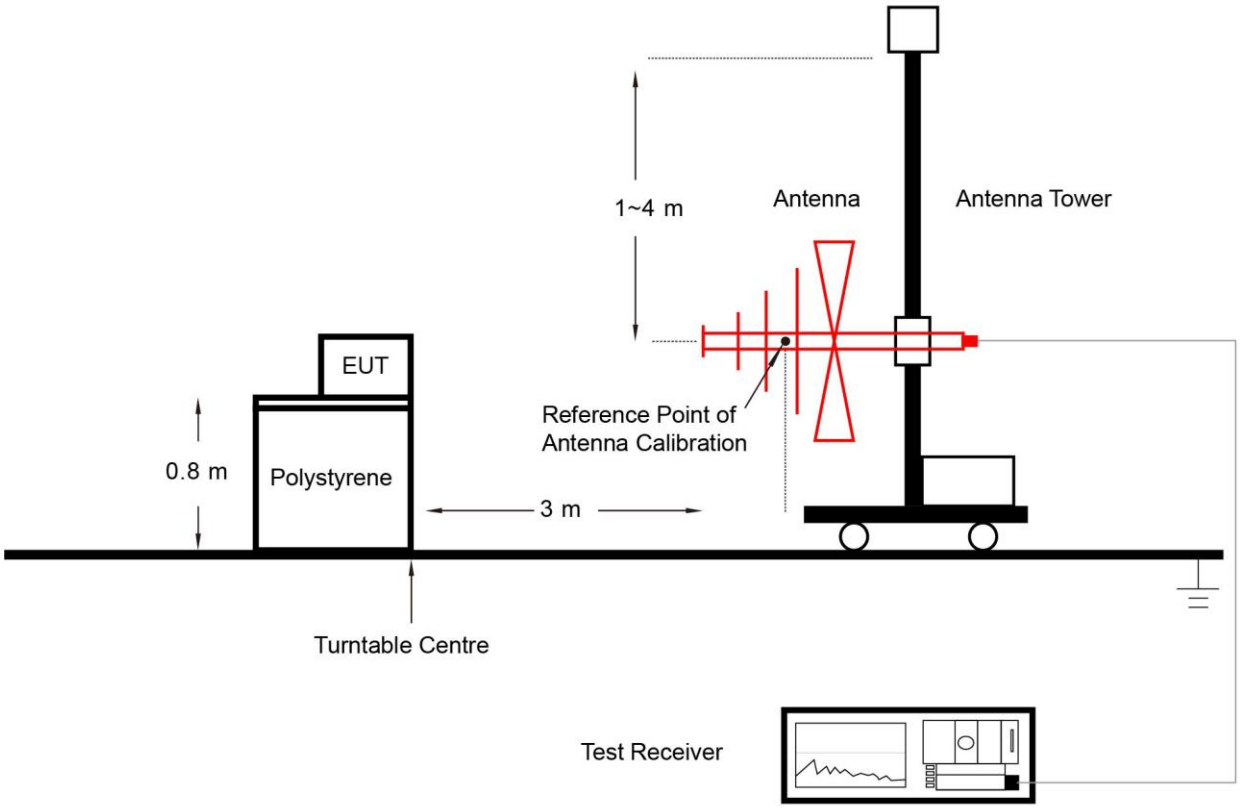
7. Trace was allowed to stabilize

6.6.4. Test Setup

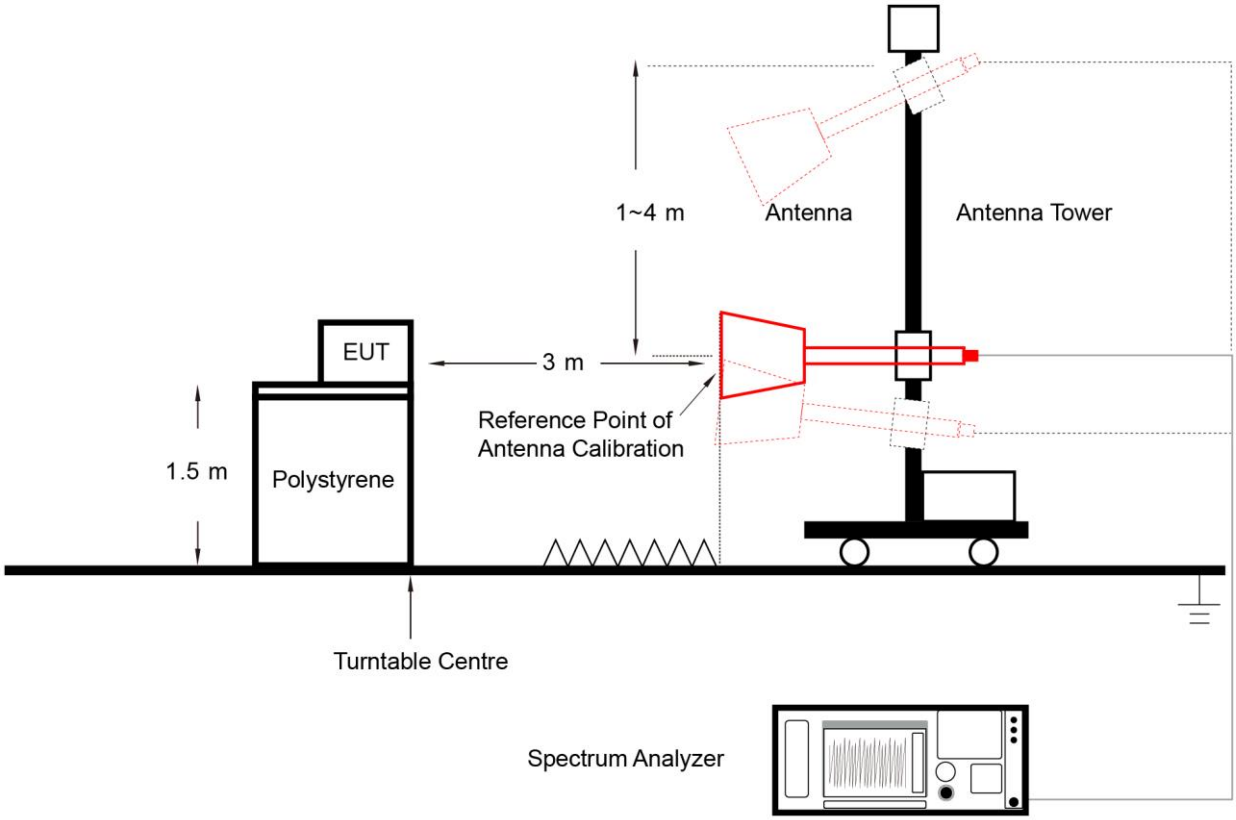
Below 30MHz Test Setup:



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

6.7.2. Test Procedure

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

6.7.3. Test Setting

Peak Field Strength Measurements

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

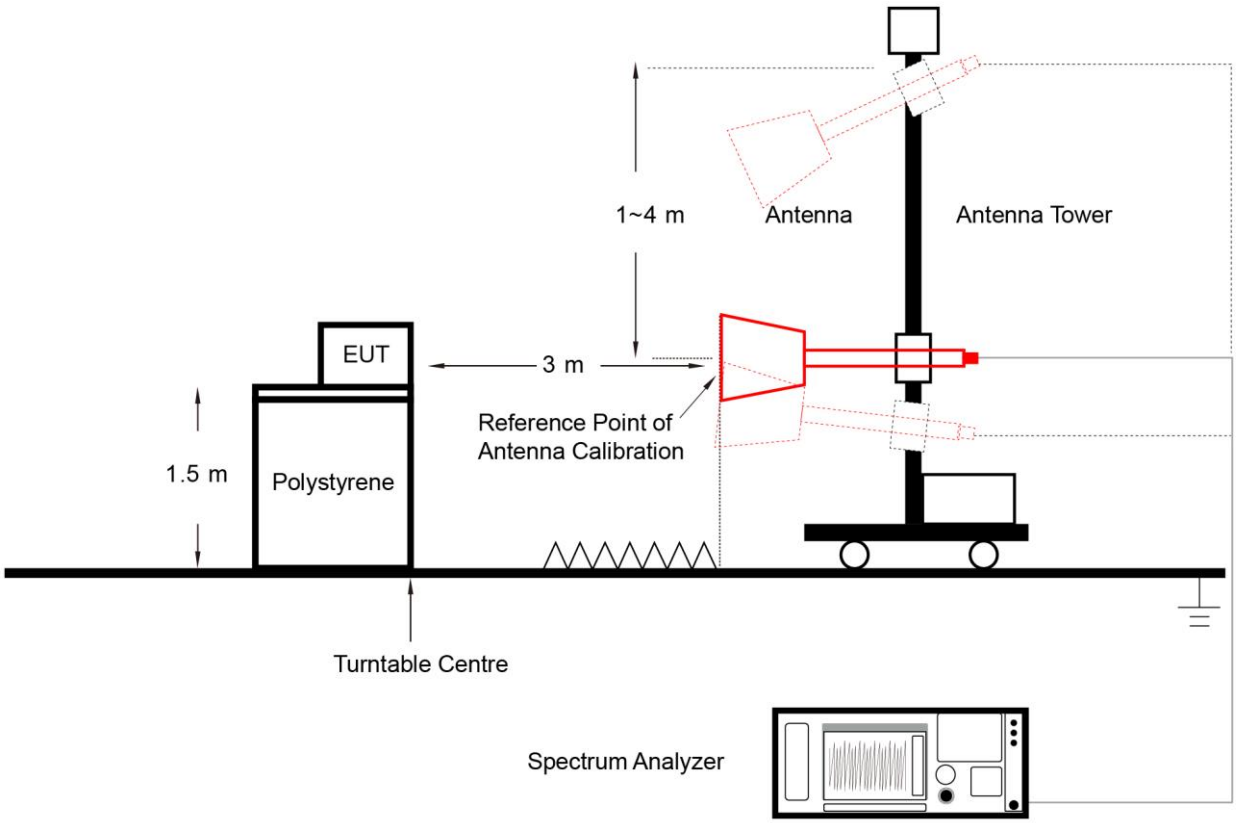
Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW ≥ 1/T

802.11b 1Mbps	VBW = 82Hz	802.11g 6Mbps	VBW = 510Hz
802.11n-HT20 MCS0	VBW = 510Hz	802.11n-HT40 MCS0	VBW = 1.1KHz
802.11ax-HE20 MCS0	VBW = 680Hz	802.11ax-HE40 MCS0	VBW = 1.3kHz

4. Average Type = Voltage
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

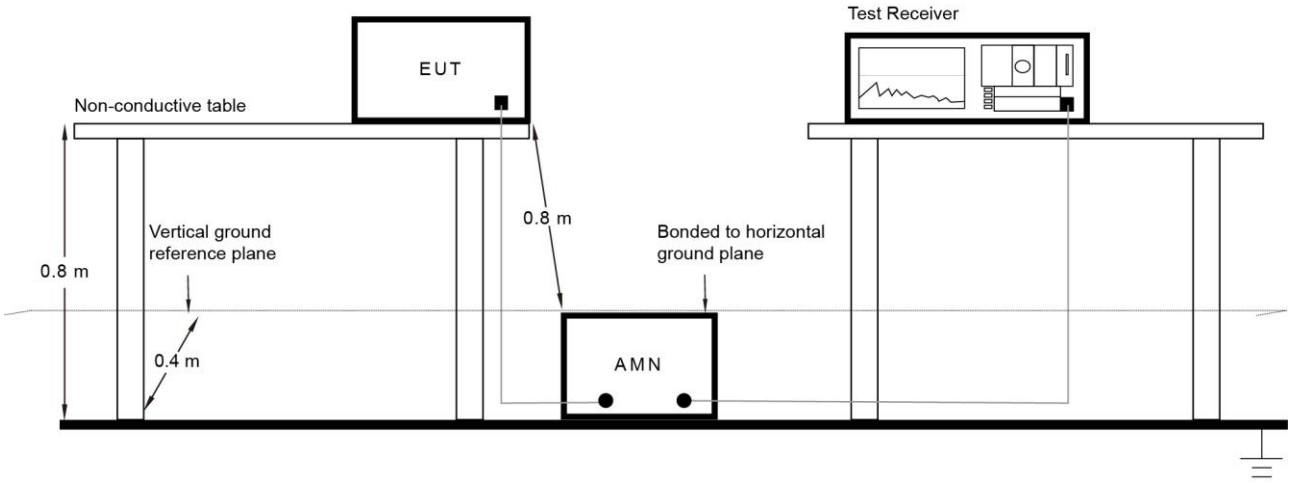
Refer to Appendix A.7.

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

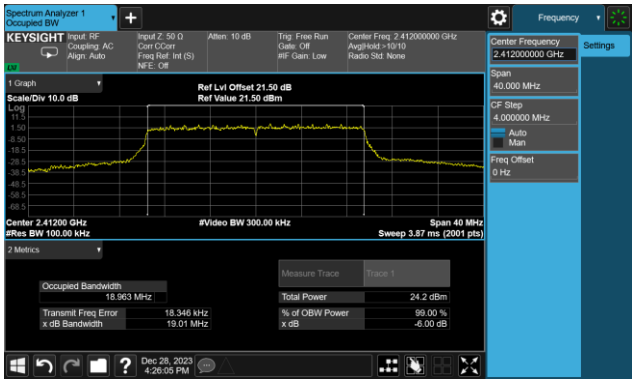
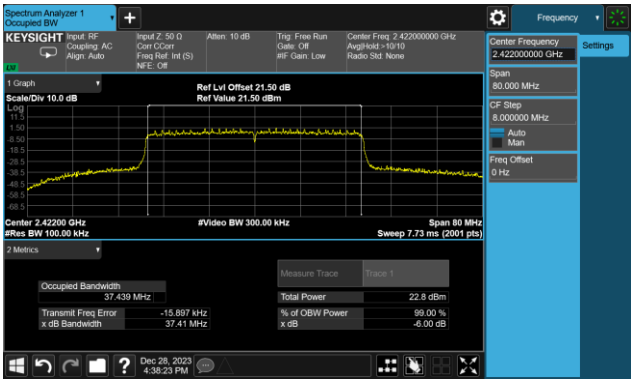
A.1 Duty Cycle Test Result

Refer to MRT report no. 2105TW0006-U3 Clause 2.8.

A.2 6dB Bandwidth Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2023-12-28	Radio	0
Remark	Spot Check		

Test Mode	Data Rate / MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
11ax-HE20	MCS0	01	2412	19.01	≥ 0.5
11ax-HE40	MCS0	03	2422	37.41	≥ 0.5

6dB Bandwidth	
802.11ax-HE20 Channel 01 (2412MHz)	802.11ax-HE40 Channel 03 (2422MHz)
	

A.3 Output Power Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2023-10-30	Radio	0
Remark	Spot Check		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Output Power (dBm)	Ant 1 Output Power (dBm)	Output Power (dBm)	Limit (dBm)
b	1Mbps	1	2412	18.33	18.12	21.24	≤ 30.00
g	6Mbps	1	2412	16.67	15.84	19.29	≤ 30.00
n-HT20	MCS0	1	2412	16.54	15.74	19.17	≤ 30.00
n-HT40	MCS0	3	2422	14.92	14.86	17.90	≤ 30.00
ax-HE20	HE0NSS1	1	2412	16.22	15.33	18.81	≤ 30.00
ax-HE40	HE0NSS1	3	2422	14.78	14.89	17.85	≤ 30.00

Note: Output Power (dBm) = 10*log(10^(Ant0 Output Power (dBm)/10) + 10^(Ant1 Output Power (dBm)/10)).

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2023-10-30	Radio	1
Remark	Spot Check		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 2 Output Power (dBm)	Ant 3 Output Power (dBm)	Output Power (dBm)	Limit (dBm)
b	1Mbps	1	2412	17.71	17.72	20.73	≤ 30.00
g	6Mbps	1	2412	15.85	16.27	19.08	≤ 30.00
n-HT20	MCS0	1	2412	15.45	16.89	19.24	≤ 30.00
n-HT40	MCS0	3	2422	15.90	15.72	18.82	≤ 30.00
ax-HE20	HE0NSS1	1	2412	15.62	16.04	18.85	≤ 30.00
ax-HE40	HE0NSS1	3	2422	14.76	13.62	17.24	≤ 30.00

Note: Output Power (dBm) = 10*log(10^(Ant0 Output Power (dBm)/10) + 10^(Ant1 Output Power (dBm)/10)).

A.4 Power Spectral Density Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2023-12-28	Radio	0
Remark	Spot Check		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	PSD (dBm/ 10kHz)		Duty Cycle (%)	Total PSD (dBm/10kHz)	Limit (dBm/3kHz)
				Ant 0	Ant 1			
11ax-HE20	MCS0	01	2412	-12.850	-13.907	97.76	-10.24	≤ 8.00
11ax-HE40	MCS0	03	2422	-15.788	-16.423	95.93	-12.90	≤ 8.00

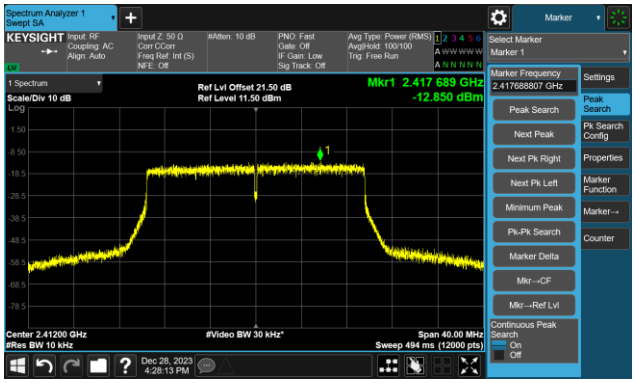
Note 1:

When EUT duty cycle ≥ 98%, Total PSD (dBm / 10kHz) = 10*log {$10^{(\text{Ant 0 PSD}/10)}$ + $10^{(\text{Ant 1 PSD}/10)}$} (dBm / 10kHz).

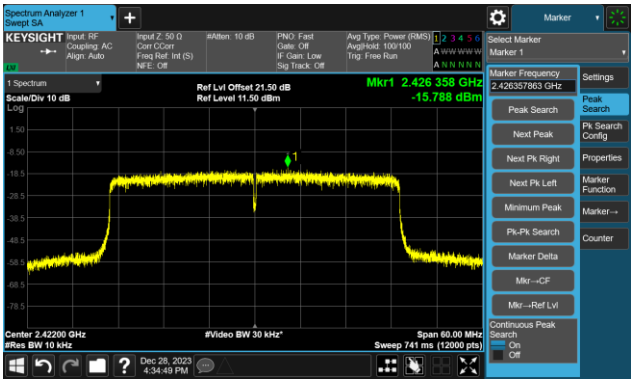
When EUT duty cycle < 98%, Total PSD (dBm / 10kHz) = 10*log {$10^{(\text{Ant 0 PSD}/10)}$ + $10^{(\text{Ant 1 PSD}/10)}$} (dBm / 10kHz) + 10*log (1/Duty Cycle).

AVGPSD - Ant 0

802.11ax-HE20 Channel 01 (2412MHz)

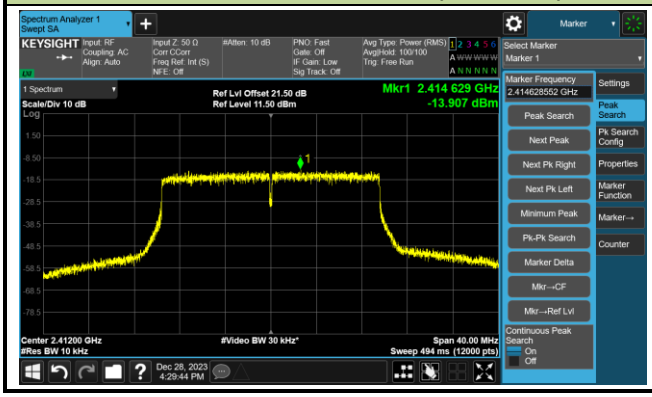


802.11ax-HE40 Channel 03 (2422MHz)

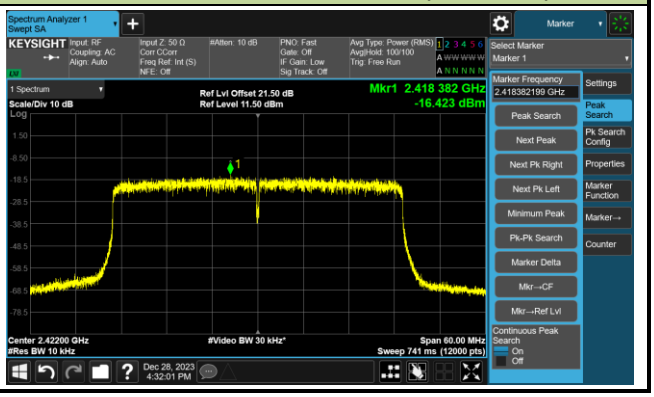


AVGPSD - Ant 1

802.11ax-HE20 Channel 01 (2412MHz)



802.11ax-HE40 Channel 03 (2422MHz)



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

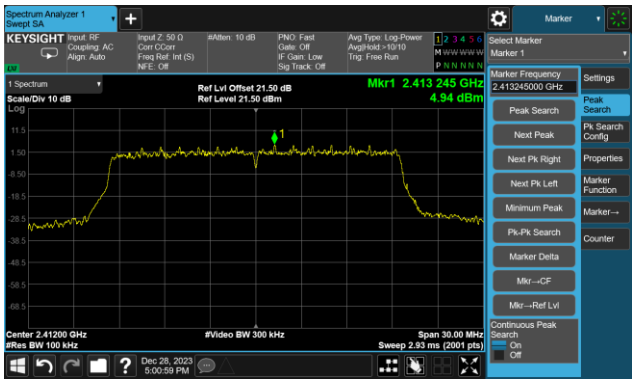
Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2023-12-28	Radio	0
Remark	Spot Check		

Test Mode	Data Rate / MCS	Channel No.	Frequency (MHz)	Limit
11ax-HE20	MCS0	01	2412	30dBc
11ax-HE40	MCS0	03	2422	30dBc

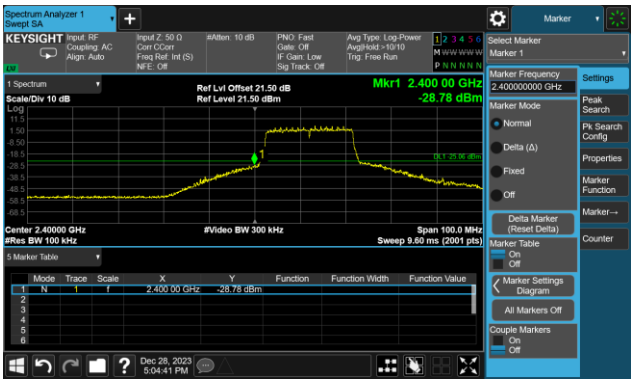
802.11ax-HE20 Out-of-Band Emissions – Ant 0

Channel 01 (2412MHz)

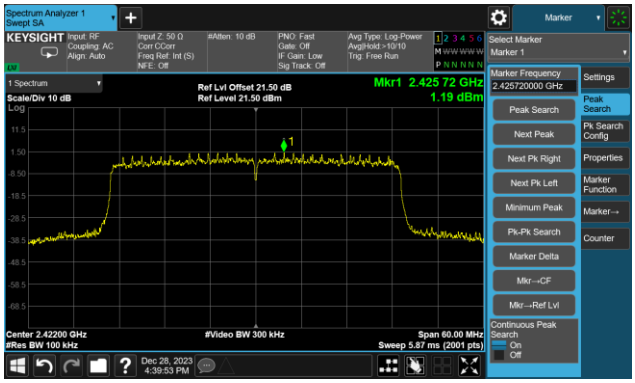
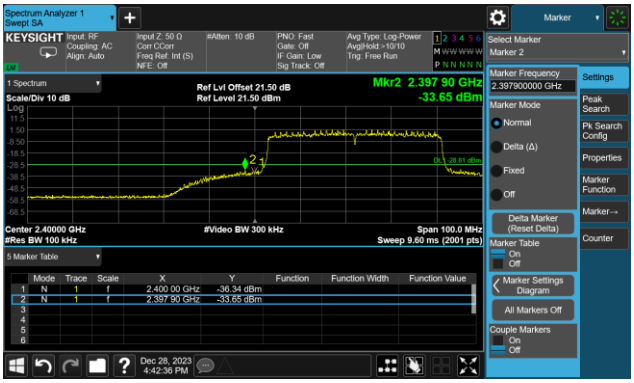
Reference Level

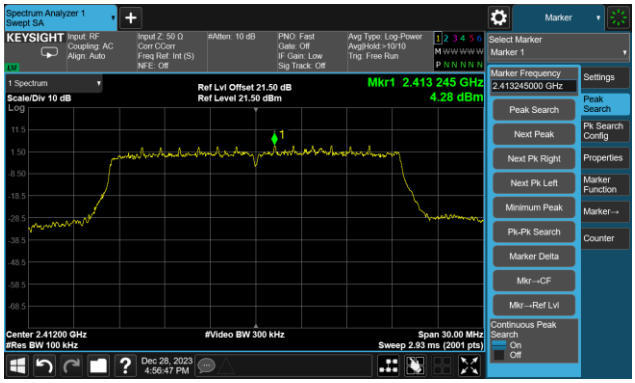
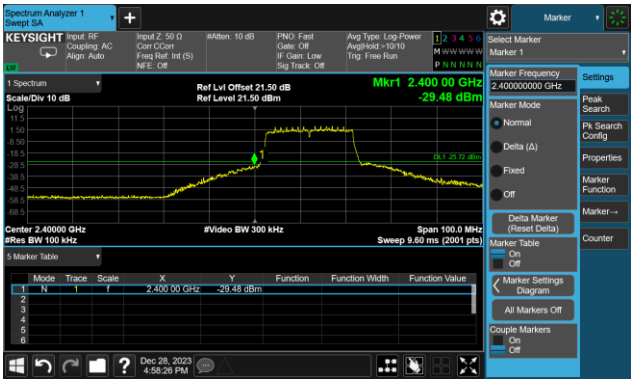


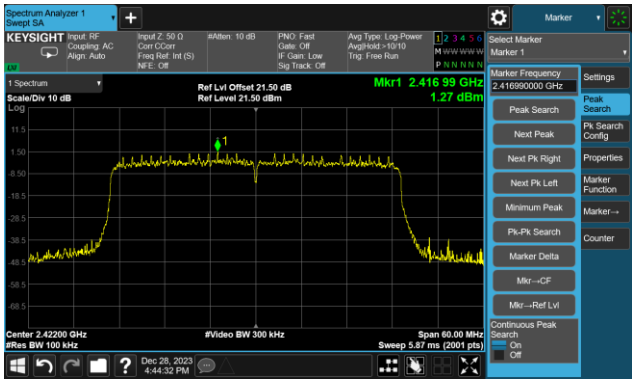
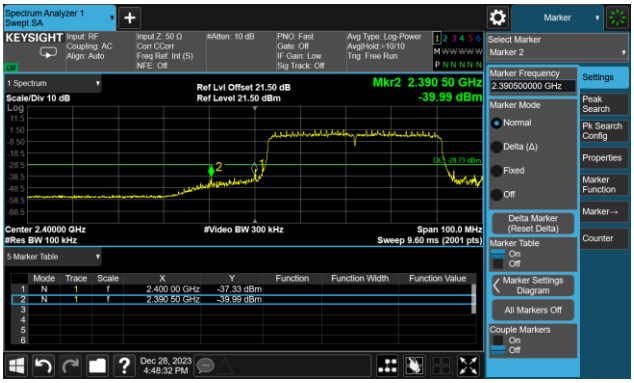
Low Band Edge



Spurious Emission

802.11ax-HE40 Out-of-Band Emissions – Ant 0	
Channel 03 (2422MHz)	
Reference Level	Low Band Edge
	
Spurious Emission	

802.11ax-HE20 Out-of-Band Emissions – Ant 1	
Channel 01 (2412MHz)	
Reference Level	Low Band Edge
	
Spurious Emission	

802.11ax-HE40 Out-of-Band Emissions – Ant 1	
Channel 03 (2422MHz)	
Reference Level	Low Band Edge
	
Spurious Emission	

A.6 Radiated Spurious Emission Test Result

Test Site	SIP-AC3	Test Engineer	Fusco Pan
Test Date	2023-10-18	Test Mode:	802.11b
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.		
Remark	Spot Check – Radio 0		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	7630.0	49.4	-4.3	45.1	74.0	-28.9	Peak	Horizontal
	8259.0	48.6	-3.3	45.3	74.0	-28.7	Peak	Horizontal
	11038.5	48.4	-1.1	47.3	74.0	-26.7	Peak	Horizontal
	7494.0	48.9	-4.5	44.4	74.0	-29.6	Peak	Vertical
	8403.5	49.9	-3.2	46.7	74.0	-27.3	Peak	Vertical
	10945.0	48.0	-1.0	47.0	74.0	-27.0	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)								

Test Site	SIP-AC3	Test Engineer	Fusco Pan
Test Date	2023-10-18	Test Mode:	802.11g
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.		
Remark	Spot Check – Radio 0		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	7655.5	49.2	-4.2	45.0	74.0	-29.0	Peak	Horizontal
	8327.0	49.6	-3.4	46.2	74.0	-27.8	Peak	Horizontal
	11208.5	47.7	-1.3	46.4	74.0	-27.6	Peak	Horizontal
	7706.5	49.5	-4.1	45.4	74.0	-28.6	Peak	Vertical
	8412.0	48.8	-3.2	45.6	74.0	-28.4	Peak	Vertical
	11412.5	47.6	-1.1	46.5	74.0	-27.5	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)								

Test Site	SIP-AC3	Test Engineer	Fusco Pan
Test Date	2023-10-18	Test Mode:	802.11n-HT20
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.		
Remark	Spot Check – Radio 0		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	7502.5	49.0	-4.5	44.5	74.0	-29.5	Peak	Horizontal
	8250.5	48.4	-3.3	45.1	74.0	-28.9	Peak	Horizontal
	11310.5	47.9	-1.2	46.7	74.0	-27.3	Peak	Horizontal
	7621.5	49.2	-4.3	44.9	74.0	-29.1	Peak	Vertical
	8242.0	48.7	-3.2	45.5	74.0	-28.5	Peak	Vertical
	11523.0	48.0	-1.2	46.8	74.0	-27.2	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)								

Test Site	SIP-AC3	Test Engineer	Fusco Pan
Test Date	2023-10-18	Test Mode:	802.11n-HT40
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.		
Remark	Spot Check – Radio 0		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
03	8208.0	49.1	-3.2	45.9	74.0	-28.1	Peak	Horizontal
	9381.0	48.6	-2.1	46.5	74.0	-27.5	Peak	Horizontal
	11319.0	48.1	-1.1	47.0	74.0	-27.0	Peak	Horizontal
	7715.0	49.5	-4.1	45.4	74.0	-28.6	Peak	Vertical
	8395.0	48.7	-3.3	45.4	74.0	-28.6	Peak	Vertical
	11319.0	47.8	-1.1	46.7	74.0	-27.3	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)								

Test Site	SIP-AC3	Test Engineer	Fusco Pan
Test Date	2023-10-18	Test Mode:	802.11ax-HE20
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.		
Remark	Spot Check – Radio 0		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	7511.0	49.2	-4.4	44.8	74.0	-29.2	Peak	Horizontal
	8361.0	49.0	-3.4	45.6	74.0	-28.4	Peak	Horizontal
	11412.5	47.5	-1.1	46.4	74.0	-27.6	Peak	Horizontal
	9194.0	48.7	-2.2	46.5	74.0	-27.5	Peak	Vertical
	11854.5	48.5	-1.6	46.9	74.0	-27.1	Peak	Vertical
	13384.5	49.1	0.1	49.2	74.0	-24.8	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)								

Test Site	SIP-AC3	Test Engineer	Fusco Pan
Test Date	2023-10-18	Test Mode:	802.11ax-HE40
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.		
Remark	Spot Check – Radio 0		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
03	4833.5	57.7	-9.7	48.0	54.0	-6.0	Average	Horizontal
	8284.5	49.2	-5.2	44.0	74.0	-30.0	Peak	Horizontal
	11591.0	46.4	-3.4	43.0	74.0	-31.0	Peak	Horizontal
	4842.0	53.9	-9.6	44.3	74.0	-29.7	Peak	Vertical
	9058.0	47.9	-5.0	42.9	74.0	-31.1	Peak	Vertical
	12177.5	47.1	-2.8	44.3	74.0	-29.7	Peak	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m) Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)								

Test Site	SIP-AC3	Test Engineer	Fusco Pan
Test Date	2023-10-18	Test Mode:	802.11b
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.		
Remark	Spot Check – Radio 1		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	7621.5	49.7	-4.3	45.4	74.0	-28.6	Peak	Horizontal
	8242.0	48.7	-3.2	45.5	74.0	-28.5	Peak	Horizontal
	11200.0	47.9	-1.3	46.6	74.0	-27.4	Peak	Horizontal
	7681.0	48.6	-4.2	44.4	74.0	-29.6	Peak	Vertical
	8335.5	49.2	-3.4	45.8	74.0	-28.2	Peak	Vertical
	11353.0	48.3	-1.0	47.3	74.0	-26.7	Peak	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m) Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)								

Test Site	SIP-AC3	Test Engineer	Fusco Pan
Test Date	2023-10-18	Test Mode:	802.11g
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.		
Remark	Spot Check – Radio 1		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	7579.0	48.6	-4.4	44.2	74.0	-29.8	Peak	Horizontal
	8259.0	48.5	-3.3	45.2	74.0	-28.8	Peak	Horizontal
	11489.0	48.5	-1.3	47.2	74.0	-26.8	Peak	Horizontal
	7358.0	49.0	-4.8	44.2	74.0	-29.8	Peak	Vertical
	8225.0	48.6	-3.4	45.2	74.0	-28.8	Peak	Vertical
	11948.0	48.3	-1.2	47.1	74.0	-26.9	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)								

Test Site	SIP-AC3	Test Engineer	Fusco Pan
Test Date	2023-10-18	Test Mode:	802.11n-HT20
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.		
Remark	Spot Check – Radio 1		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	7528.0	49.4	-4.6	44.8	74.0	-29.2	Peak	Horizontal
	8267.5	49.6	-3.4	46.2	74.0	-27.8	Peak	Horizontal
	11047.0	47.5	-1.1	46.4	74.0	-27.6	Peak	Horizontal
	8361.0	49.5	-3.4	46.1	74.0	-27.9	Peak	Vertical
	11404.0	47.6	-1.1	46.5	74.0	-27.5	Peak	Vertical
	15883.5	45.4	5.7	51.1	74.0	-22.9	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)								

Test Site	SIP-AC3	Test Engineer	Fusco Pan
Test Date	2023-10-18	Test Mode:	802.11n-HT40
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.		
Remark	Spot Check – Radio 1		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
03	7511.0	49.1	-4.4	44.7	74.0	-29.3	Peak	Horizontal
	8208.0	48.4	-3.2	45.2	74.0	-28.8	Peak	Horizontal
	12143.5	48.9	-1.4	47.5	74.0	-26.5	Peak	Horizontal
	7664.0	48.6	-4.2	44.4	74.0	-29.6	Peak	Vertical
	8225.0	48.8	-3.4	45.4	74.0	-28.6	Peak	Vertical
	11412.5	48.3	-1.1	47.2	74.0	-26.8	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)								

Test Site	SIP-AC3	Test Engineer	Fusco Pan
Test Date	2023-10-18	Test Mode:	802.11ax-HE20
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.		
Remark	Spot Check – Radio 1		

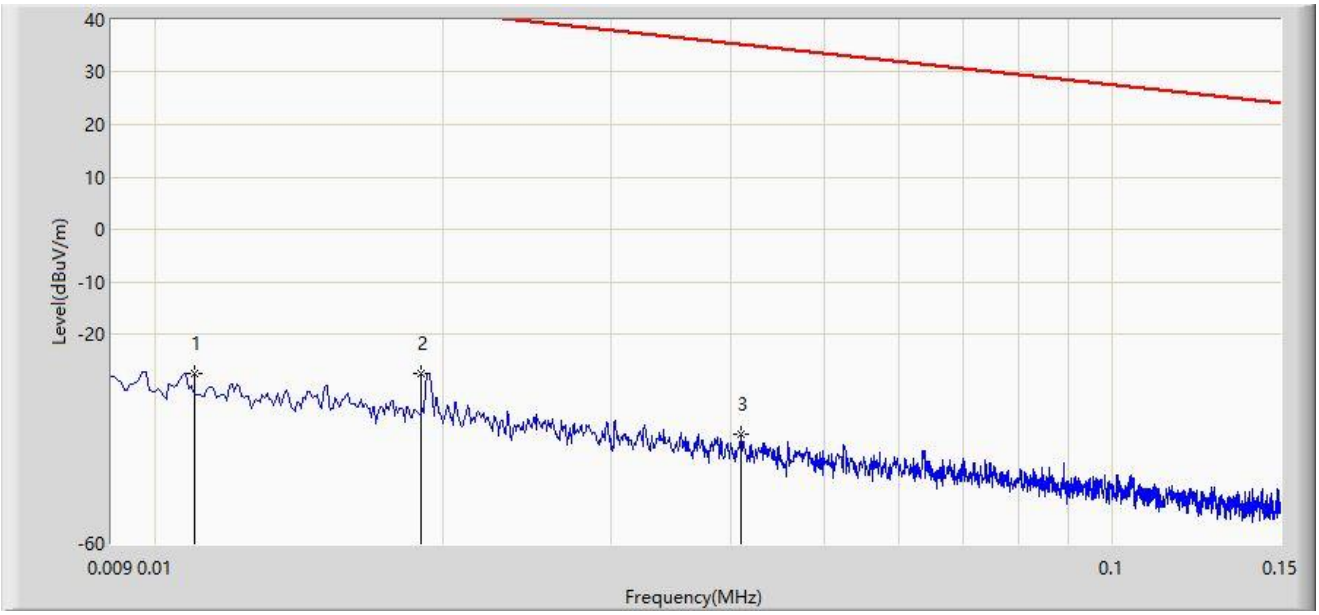
Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	7689.5	48.9	-4.2	44.7	74.0	-29.3	Peak	Horizontal
	8242.0	49.0	-3.2	45.8	74.0	-28.2	Peak	Horizontal
	13291.0	49.1	-0.2	48.9	74.0	-25.1	Peak	Horizontal
	7613.0	48.9	-4.3	44.6	74.0	-29.4	Peak	Vertical
	8412.0	48.9	-3.2	45.7	74.0	-28.3	Peak	Vertical
	11701.5	47.4	-1.3	46.1	74.0	-27.9	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)								

Test Site	SIP-AC3	Test Engineer	Fusco Pan
Test Date	2023-10-18	Test Mode:	802.11ax-HE40
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.		
Remark	Spot Check – Radio 1		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
03	7672.5	48.7	-4.2	44.5	74.0	-29.5	Peak	Horizontal
	8233.5	49.5	-3.3	46.2	74.0	-27.8	Peak	Horizontal
	12279.5	48.3	-1.4	46.9	74.0	-27.1	Peak	Horizontal
	7681.0	49.9	-4.2	45.7	74.0	-28.3	Peak	Vertical
	8335.5	48.4	-3.4	45.0	74.0	-29.0	Peak	Vertical
	11106.5	48.7	-1.3	47.4	74.0	-26.6	Peak	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m) Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)								

The Result of Radiated Emission below 30MHz:

Site: SIP-AC2	Test Date: 2023/10/26
Limit: FCC_Part 15.209_RSE(3m)_PK(9k-30M)	Engineer: Fusco Pan
Probe: FMZB1519B_9kHz-30MHz	Polarity: Coaxial
EUT: EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 0	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		0.011	-27.461	32.652	-74.219	46.758	-60.113	PK
2	*	0.019	-27.465	32.968	-69.478	42.013	-60.433	PK
3		0.041	-39.208	22.033	-74.544	35.336	-61.240	PK

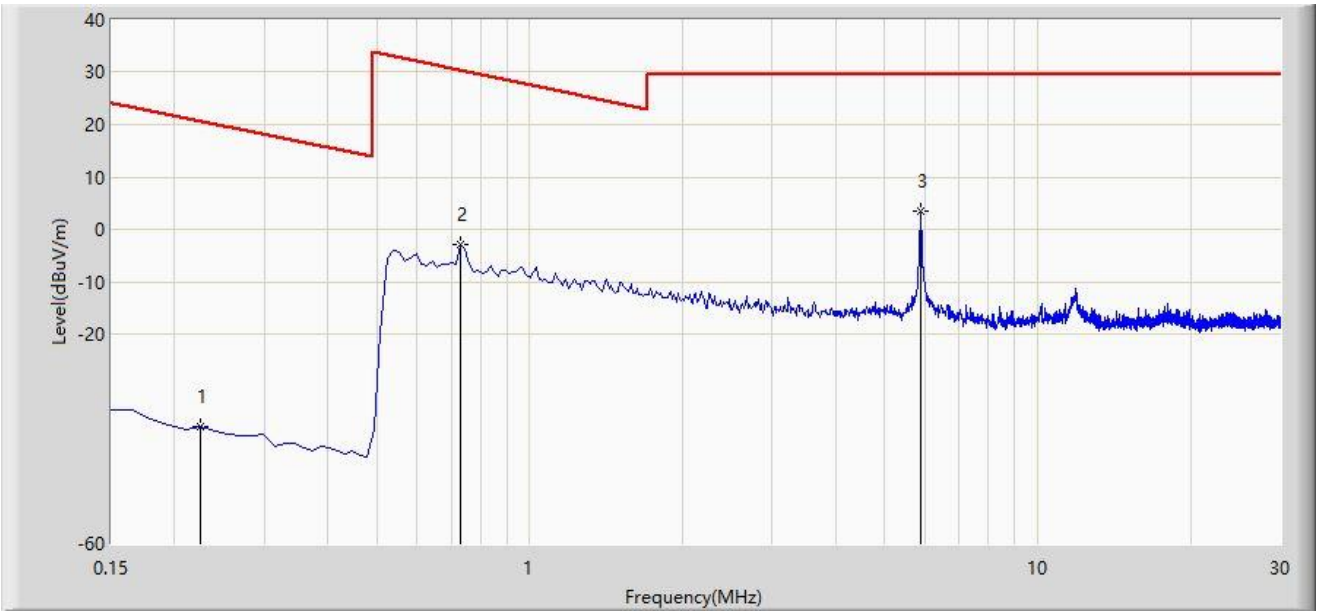
Note 1: " * ", means this data is the worst emission level.

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.

Site: SIP-AC2	Test Date: 2023/10/26
Limit: FCC_Part 15.209_RSE(3m)_PK(9k-30M)	Engineer: Fusco Pan
Probe: FMZB1519B_9kHz-30MHz	Polarity: Coaxial
EUT: EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 0	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		0.225	-37.600	23.884	-58.157	20.557	-61.484	PK
2		0.732	-2.826	18.248	-33.150	30.324	-21.075	PK
3	*	5.881	3.353	24.587	-26.147	29.500	-21.234	PK

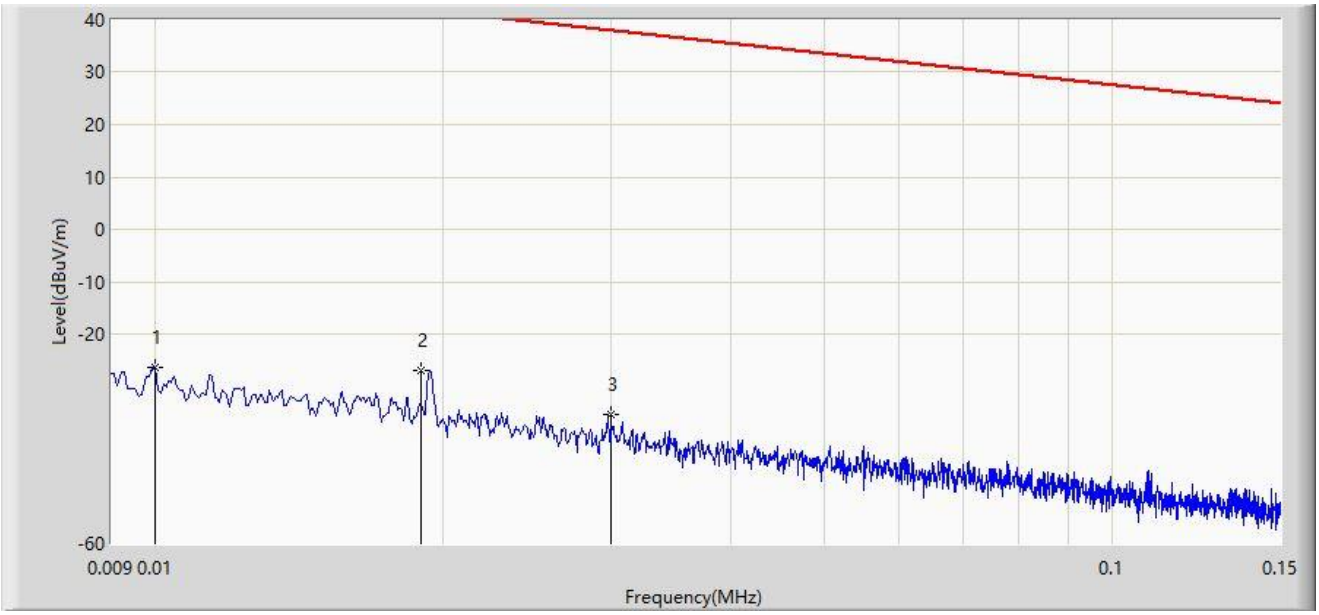
Note 1: " * ", means this data is the worst emission level.

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.

Site: SIP-AC2	Test Date: 2023/10/26
Limit: FCC_Part 15.209_RSE(3m)_PK(9k-30M)	Engineer: Fusco Pan
Probe: FMZB1519B_9kHz-30MHz	Polarity: Coplanar
EUT: EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 0	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		0.010	-26.404	33.669	-73.989	47.585	-60.073	PK
2	*	0.019	-26.955	33.478	-68.968	42.013	-60.433	PK
3		0.030	-35.491	25.382	-73.539	38.048	-60.874	PK

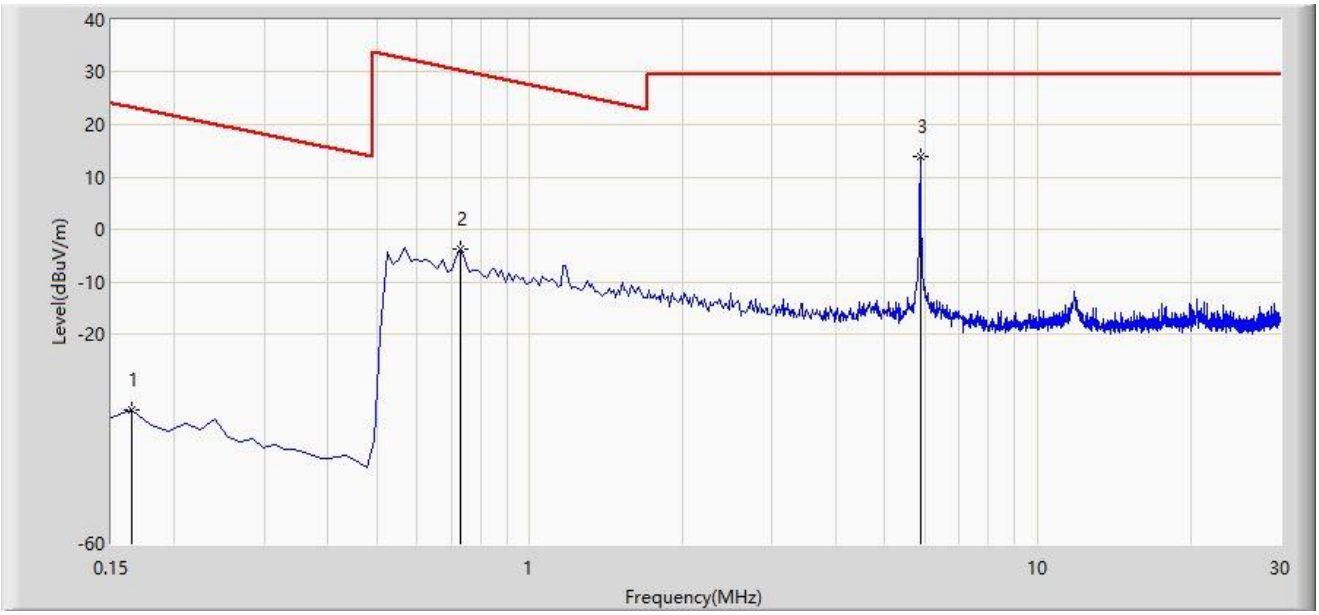
Note 1: " * ", means this data is the worst emission level.

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.

Site: SIP-AC2	Test Date: 2023/10/26
Limit: FCC_Part 15.209_RSE(3m)_PK(9k-30M)	Engineer: Fusco Pan
Probe: FMZB1519B_9kHz-30MHz	Polarity: Coplanar
EUT: EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 0	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		0.165	-34.530	26.819	-57.779	23.249	-61.349	PK
2		0.732	-3.868	17.206	-34.192	30.324	-21.075	PK
3	*	5.866	13.930	35.132	-15.570	29.500	-21.203	PK

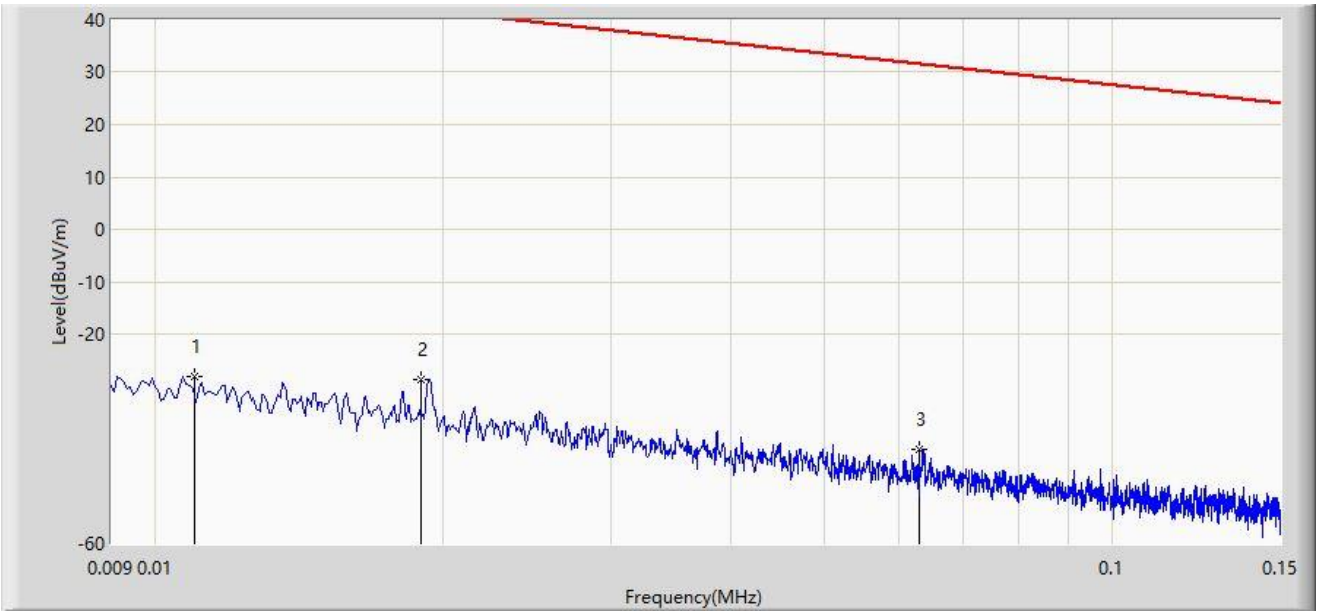
Note 1: " * ", means this data is the worst emission level.

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.

Site: SIP-AC2	Test Date: 2023/10/26
Limit: FCC_Part 15.209_RSE(3m)_PK(9k-30M)	Engineer: Fusco Pan
Probe: FMZB1519B_9kHz-30MHz	Polarity: Coaxial
EUT: EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 1	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		0.011	-28.254	31.859	-75.012	46.758	-60.113	PK
2	*	0.019	-28.589	31.844	-70.602	42.013	-60.433	PK
3		0.063	-42.134	19.189	-73.741	31.607	-61.323	PK

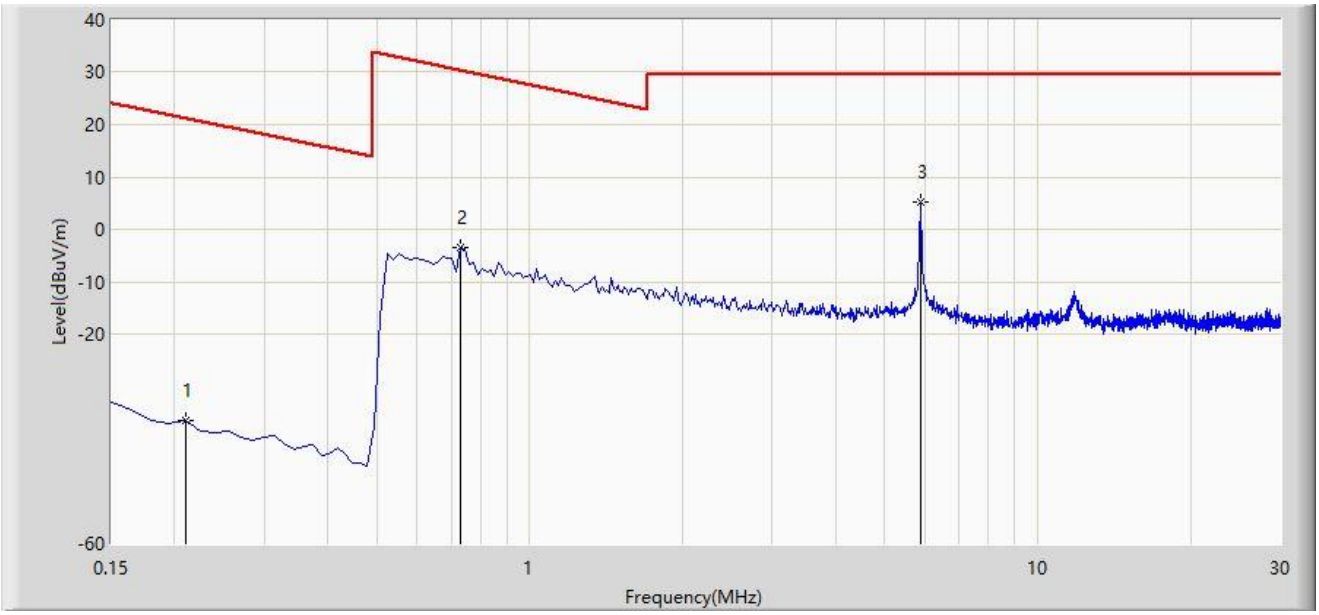
Note 1: " * ", means this data is the worst emission level.

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.

Site: SIP-AC2	Test Date: 2023/10/26
Limit: FCC_Part 15.209_RSE(3m)_PK(9k-30M)	Engineer: Fusco Pan
Probe: FMZB1519B_9kHz-30MHz	Polarity: Coaxial
EUT: EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 1	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		0.210	-36.508	24.954	-57.663	21.155	-61.462	PK
2		0.732	-3.510	17.564	-33.834	30.324	-21.075	PK
3	*	5.881	5.142	26.376	-24.358	29.500	-21.234	PK

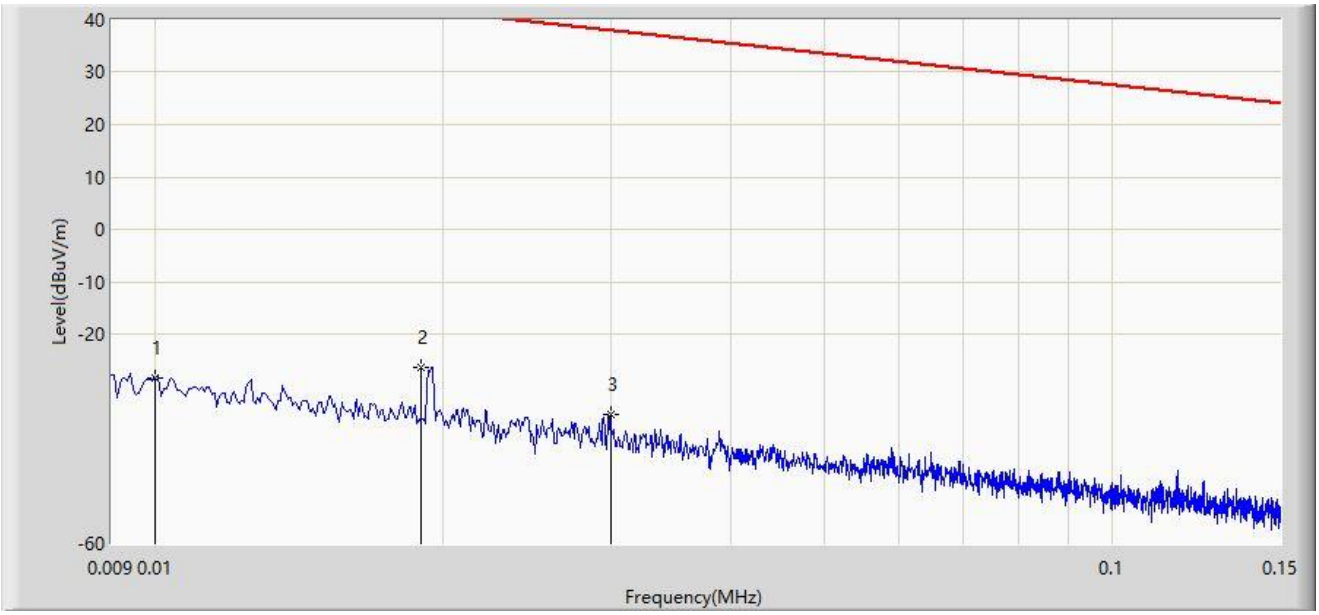
Note 1: " * ", means this data is the worst emission level.

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.

Site: SIP-AC2	Test Date: 2023/10/26
Limit: FCC_Part 15.209_RSE(3m)_PK(9k-30M)	Engineer: Fusco Pan
Probe: FMZB1519B_9kHz-30MHz	Polarity: Coplanar
EUT: EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 1	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		0.010	-28.318	31.755	-75.903	47.585	-60.073	PK
2	*	0.019	-26.254	34.179	-68.267	42.013	-60.433	PK
3		0.030	-35.428	25.445	-73.476	38.048	-60.874	PK

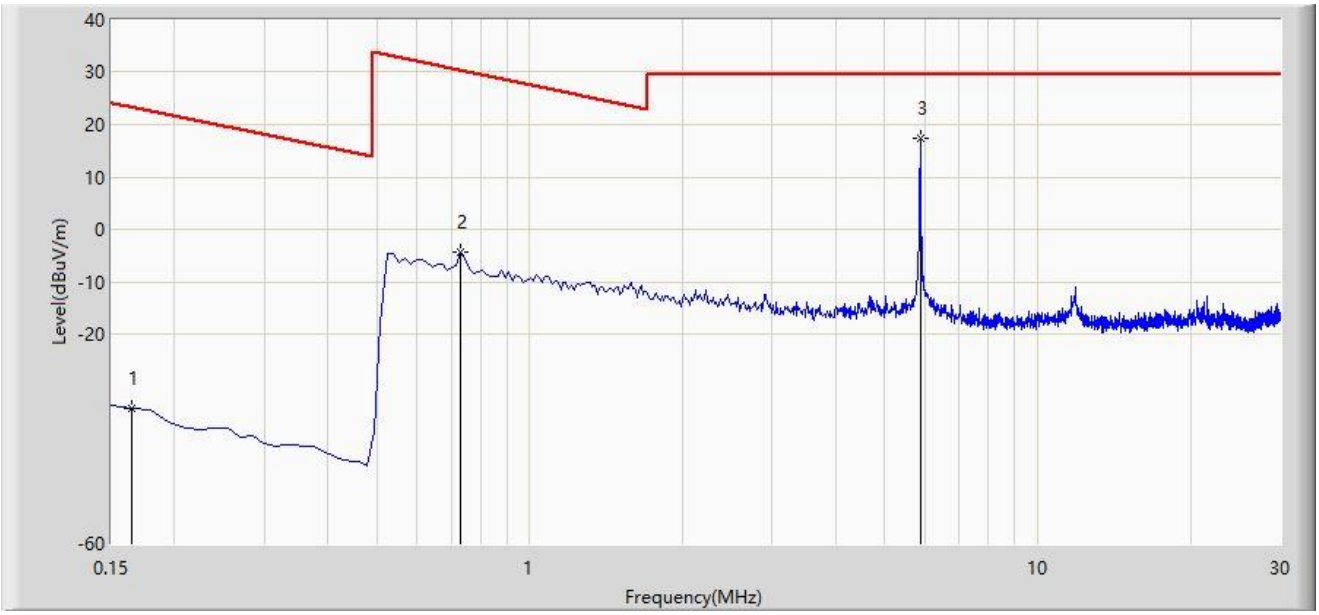
Note 1: " * ", means this data is the worst emission level.

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.

Site: SIP-AC2	Test Date: 2023/10/26
Limit: FCC_Part 15.209_RSE(3m)_PK(9k-30M)	Engineer: Fusco Pan
Probe: FMZB1519B_9kHz-30MHz	Polarity: Coplanar
EUT: EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 1	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		0.165	-34.339	27.010	-57.588	23.249	-61.349	PK
2		0.732	-4.439	16.635	-34.763	30.324	-21.075	PK
3	*	5.866	17.352	38.554	-12.148	29.500	-21.203	PK

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

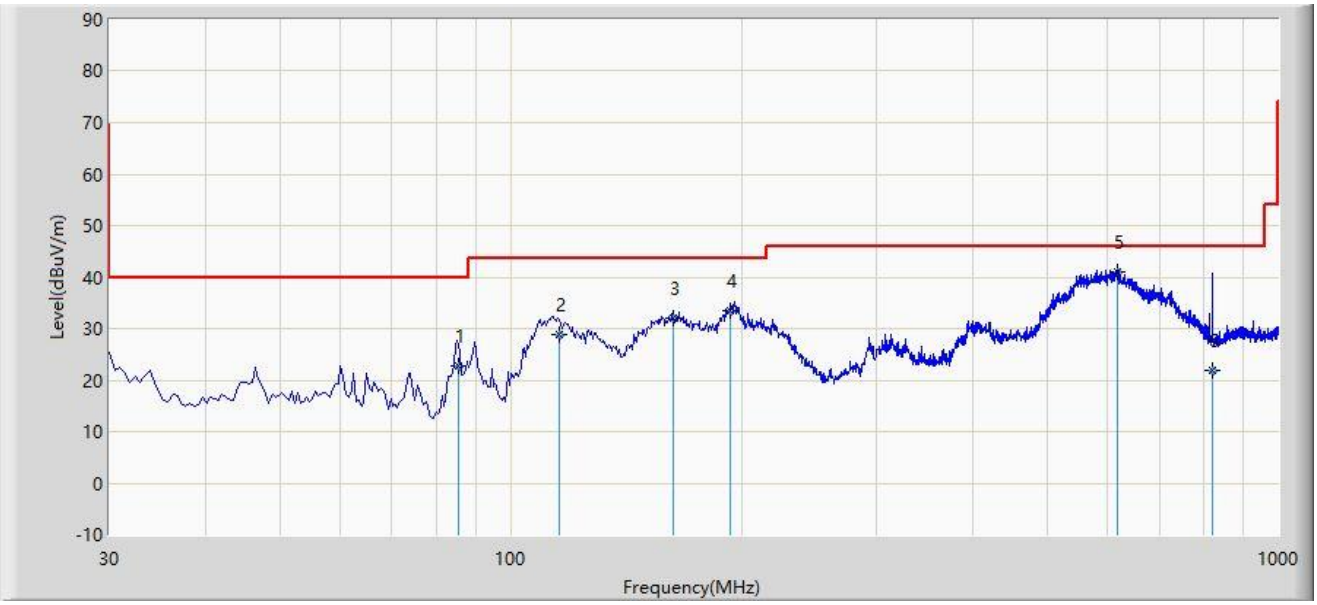
Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

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.

The Result of Radiated Emission below 1GHz:

Site: SIP-AC3	Test Date: 2023-10-19
Limit: FCC_Part15.209_RSE(3m)	Engineer: Fusco Pan
Probe: VULB 9168_00997_25-2000MHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 0	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		85.400	22.856	10.400	-17.144	40.000	12.456	QP
2		115.540	28.830	13.400	-14.670	43.500	15.430	QP
3		163.120	31.907	14.000	-11.593	43.500	17.907	QP
4		193.420	33.366	18.200	-10.134	43.500	15.166	QP
5	*	618.240	41.032	15.000	-4.968	46.000	26.033	QP
6		821.240	21.743	-6.520	-24.257	46.000	28.263	QP

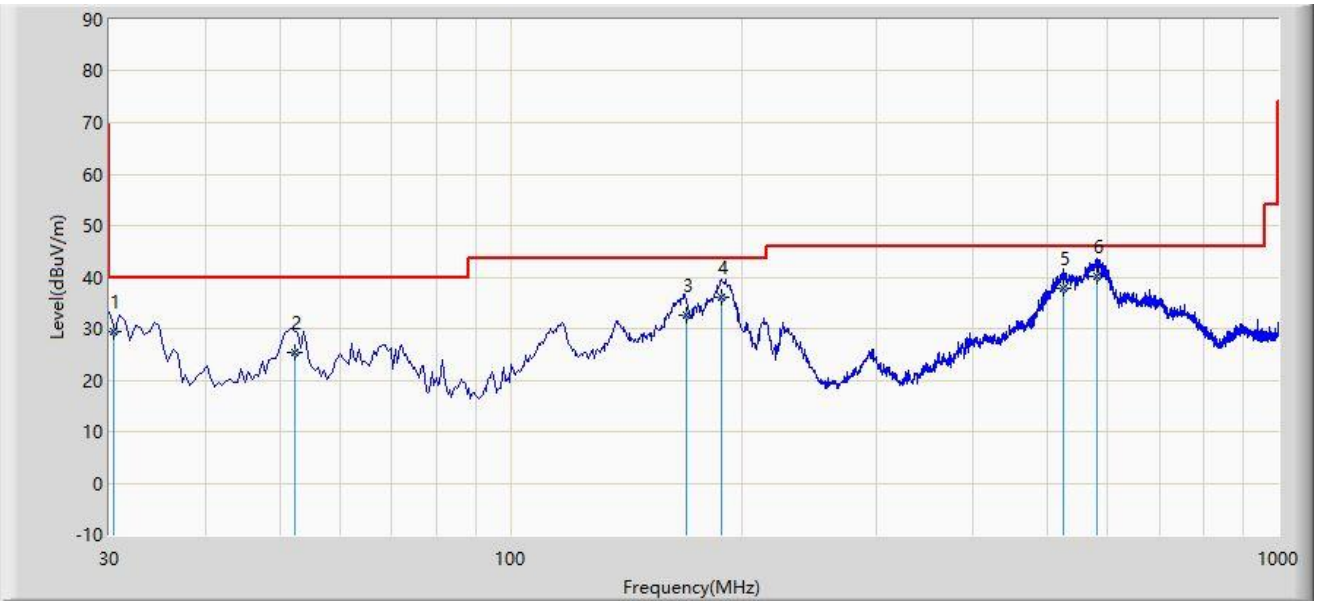
Note 1: " * ", means this data is the worst emission level.

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

Site: SIP-AC3	Test Date: 2023-10-19
Limit: FCC_Part15.209_RSE(3m)	Engineer: Fusco Pan
Probe: VULB 9168_00997_25-2000MHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 0	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		30.358	29.413	13.000	-10.587	40.000	16.412	QP
2		52.335	25.276	7.500	-14.724	40.000	17.776	QP
3		169.424	32.503	14.800	-10.997	43.500	17.703	QP
4		188.550	36.201	20.600	-7.299	43.500	15.601	QP
5		525.120	37.682	14.200	-8.318	46.000	23.482	QP
6	*	580.055	40.197	15.600	-5.803	46.000	24.597	QP

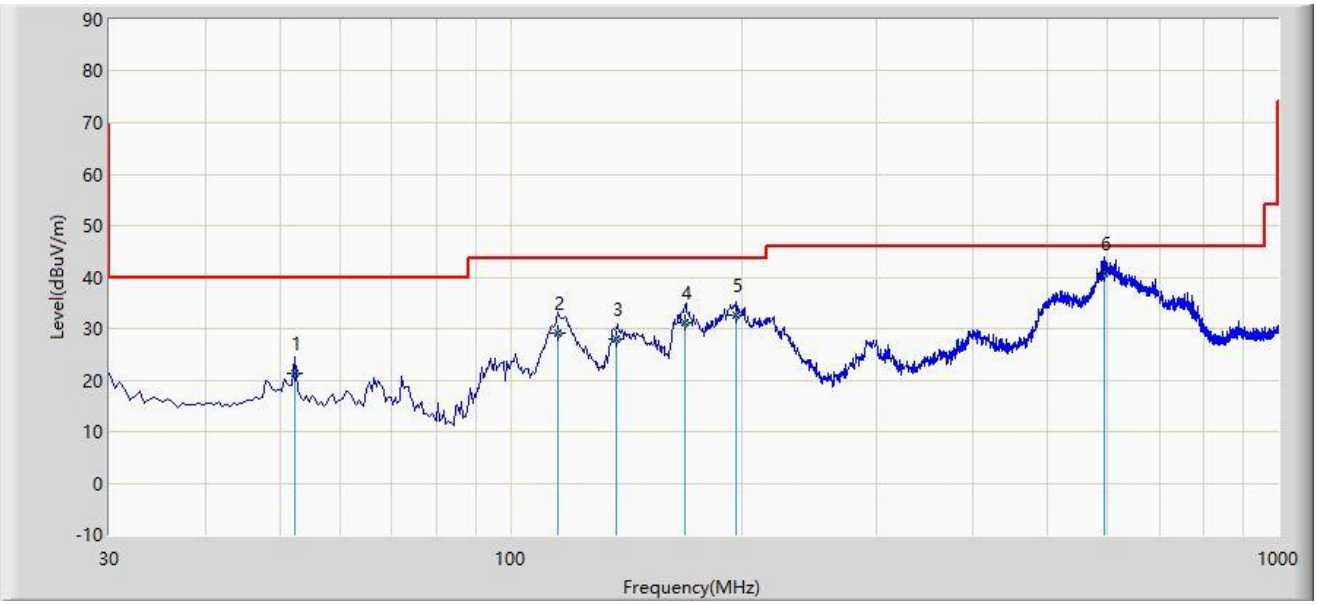
Note 1: " * ", means this data is the worst emission level.

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

Site: SIP-AC3	Test Date: 2023-10-19
Limit: FCC_Part15.209_RSE(3m)	Engineer: Fusco Pan
Probe: VULB 9168_00997_25-2000MHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 1	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		52.450	21.220	3.450	-18.780	40.000	17.770	QP
2		115.460	29.209	13.785	-14.291	43.500	15.425	QP
3		137.570	27.960	10.655	-15.540	43.500	17.305	QP
4		168.400	31.085	13.323	-12.415	43.500	17.762	QP
5		196.450	32.482	17.450	-11.018	43.500	15.032	QP
6	*	594.450	40.765	15.450	-5.235	46.000	25.315	QP

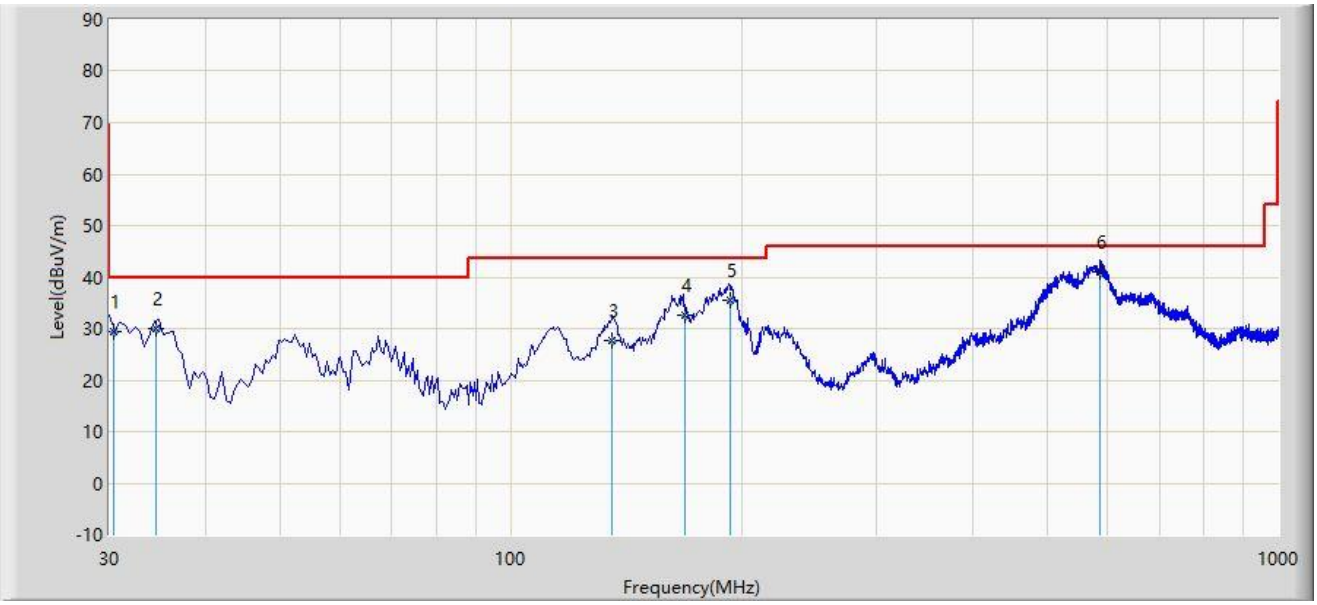
Note 1: " * ", means this data is the worst emission level.

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

Site: SIP-AC3	Test Date: 2023-10-19
Limit: FCC_Part15.209_RSE(3m)	Engineer: Fusco Pan
Probe: VULB 9168_00997_25-2000MHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 1	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		30.450	29.533	13.110	-10.467	40.000	16.423	QP
2		34.540	29.858	12.787	-10.142	40.000	17.072	QP
3		135.750	27.612	10.450	-15.888	43.500	17.162	QP
4		168.545	32.655	14.900	-10.845	43.500	17.754	QP
5		193.450	35.614	20.450	-7.886	43.500	15.163	QP
6	*	585.450	40.949	16.100	-5.051	46.000	24.849	QP

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

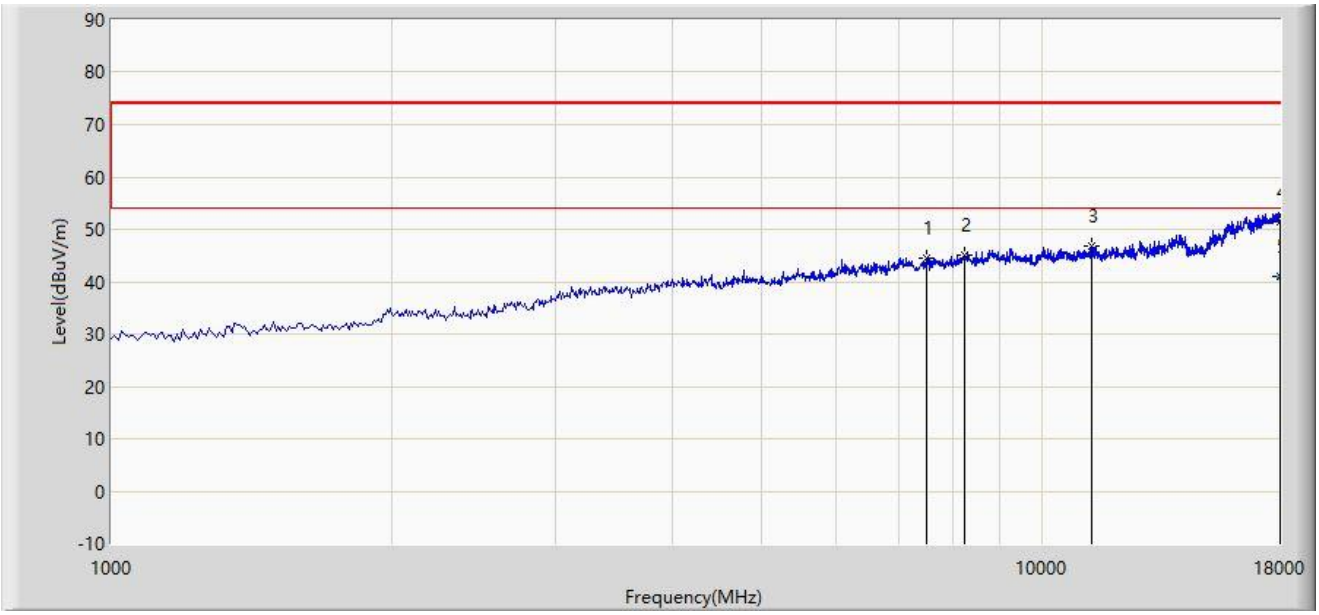
Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

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

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

The Result of Radiated Emission between 1GHz ~ 18GHz:

Site: SIP-AC3	Test Date: 2023/09/15
Limit: FCC_Part15.209_RSE(3m)_2.4G	Engineer: Fusco Pan
Probe: HF907_102862_1-18GHz-AC1	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11n-HT20 at 2412MHz	



No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		7502.500	44.560	49.046	-29.440	74.000	-4.486	PK
2		8250.500	45.166	48.436	-28.834	74.000	-3.271	PK
3		11310.500	46.740	47.919	-27.260	74.000	-1.178	PK
4		18000.000	51.530	51.530	-22.470	74.000	0.000	PK
5	*	18000.000	41.010	41.010	-12.990	54.000	0.000	AV

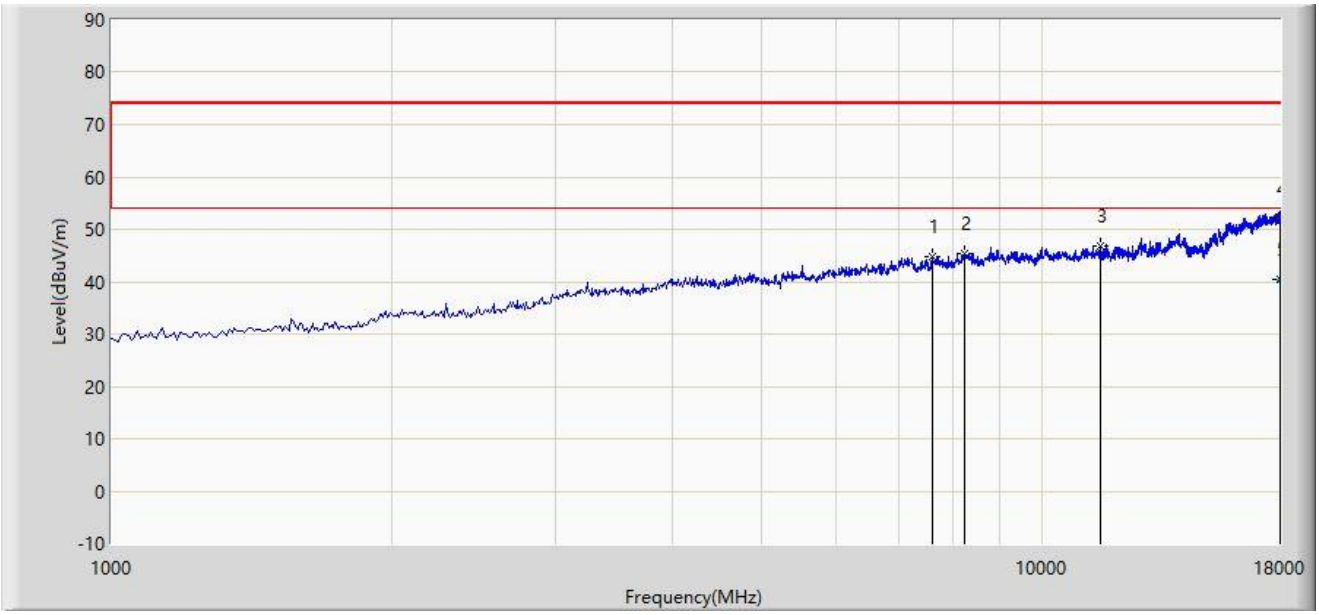
Note 1: " * ", means this data is the worst emission level.

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

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

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

Site: SIP-AC3	Test Date: 2023/09/15
Limit: FCC_Part15.209_RSE(3m)_2.4G	Engineer: Fusco Pan
Probe: HF907_102862_1-18GHz-AC1	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11n-HT20 at 2412MHz	



No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		7621.500	44.862	49.176	-29.138	74.000	-4.314	PK
2		8242.000	45.439	48.652	-28.561	74.000	-3.213	PK
3		11523.000	46.862	48.046	-27.138	74.000	-1.184	PK
4		18000.000	51.908	51.908	-22.092	74.000	0.000	PK
5	*	18000.000	40.500	40.500	-13.500	54.000	0.000	AV

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

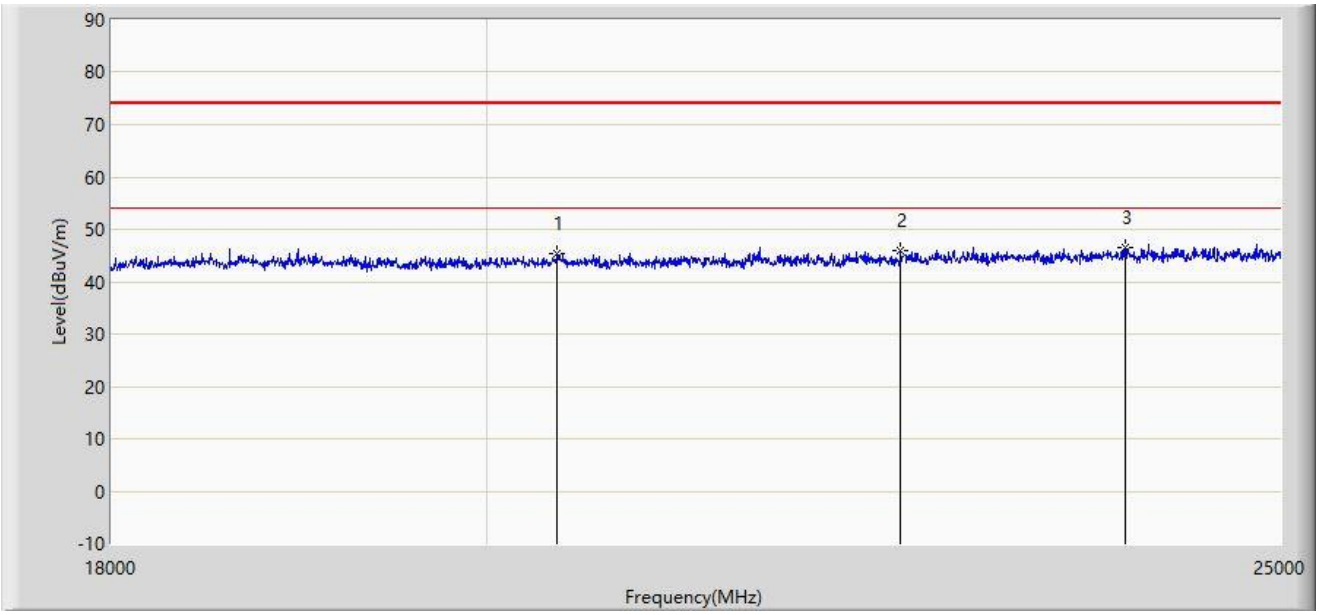
Note 2: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB/m).

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

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

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

Site: SIP-AC2	Test Date: 2023/11/18
Limit: FCC_Part15.209_RSE(3m)_2.4G	Engineer: Fusco Pan
Probe: BBHA 9170_00934_18-40GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		20404.500	45.431	56.543	-28.569	74.000	-11.112	PK
2		22473.000	45.966	55.921	-28.034	74.000	-9.955	PK
3	*	23932.500	46.487	55.562	-27.513	74.000	-9.075	PK

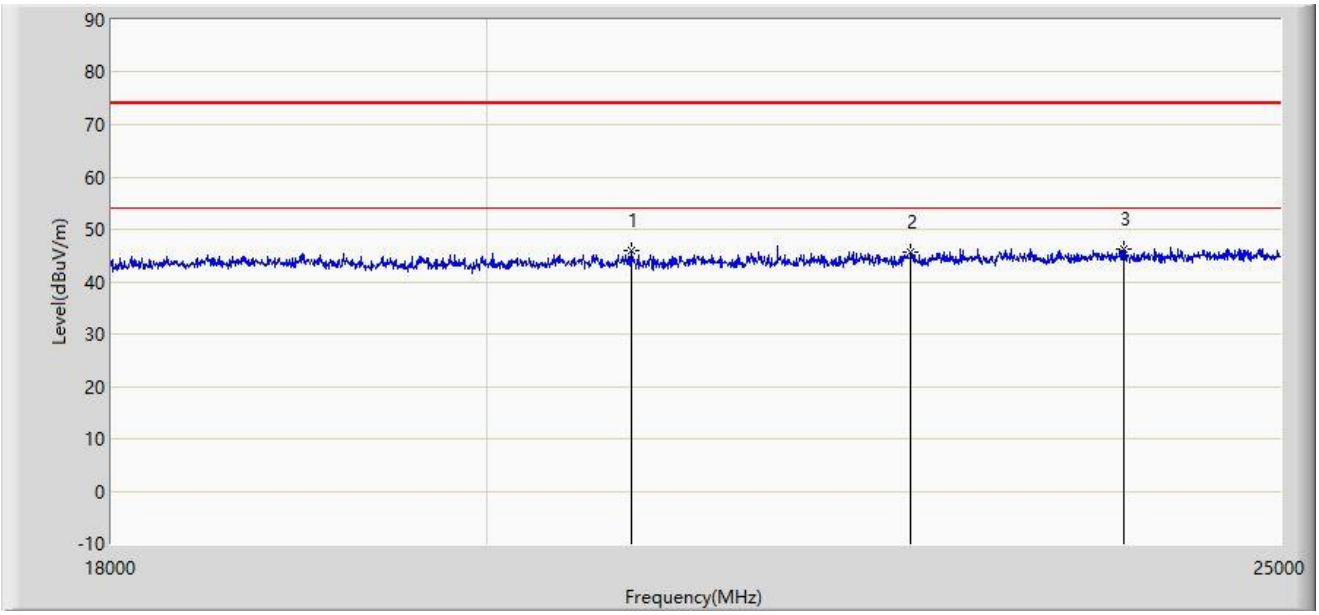
Note 1: " * ", means this data is the worst emission level.

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

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

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

Site: SIP-AC2	Test Date: 2023/11/18
Limit: FCC_Part15.209_RSE(3m)_2.4G	Engineer: Fusco Pan
Probe: BBHA 9170_00934_18-40GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		20831.500	45.976	57.061	-28.024	74.000	-11.085	PK
2		22536.000	45.680	55.253	-28.320	74.000	-9.573	PK
3	*	23922.000	46.366	55.646	-27.634	74.000	-9.280	PK

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

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

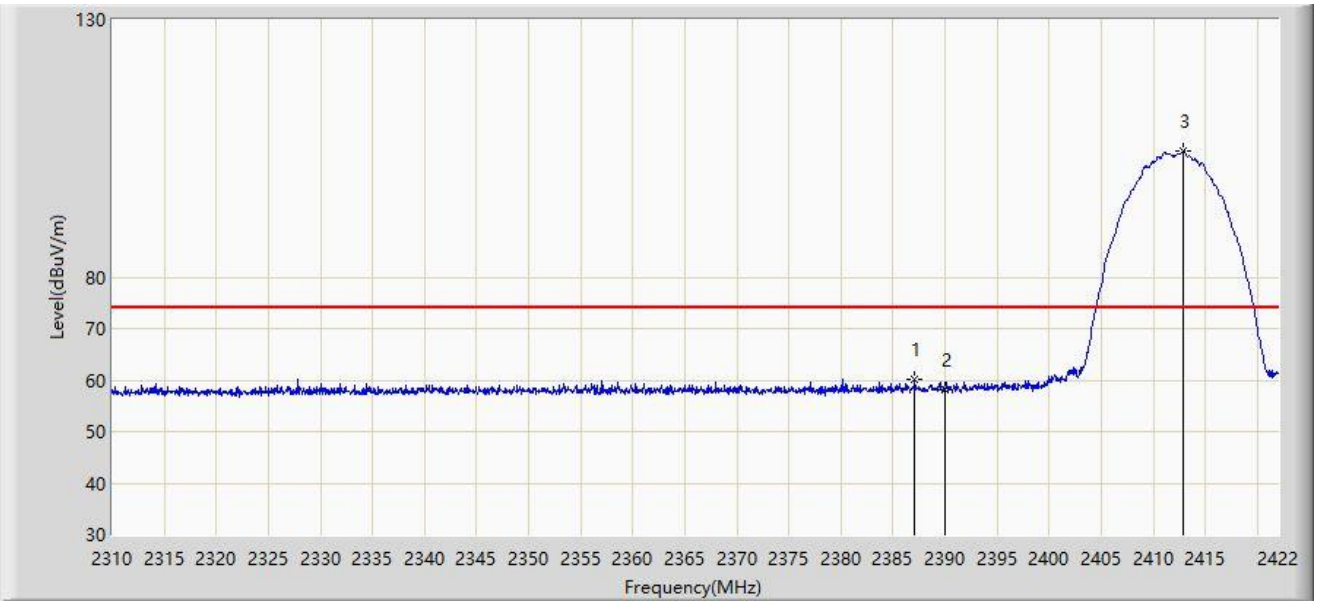
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

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

A.7 Radiated Restricted Band Edge Test Result

Spot Check Test Data

Site: SIP-AC3	Test Date: 2023-10-18
Limit: FCC_2.4G_RE(3m)	Engineer: Fusco Pan
Probe: HF907_102862_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 0	



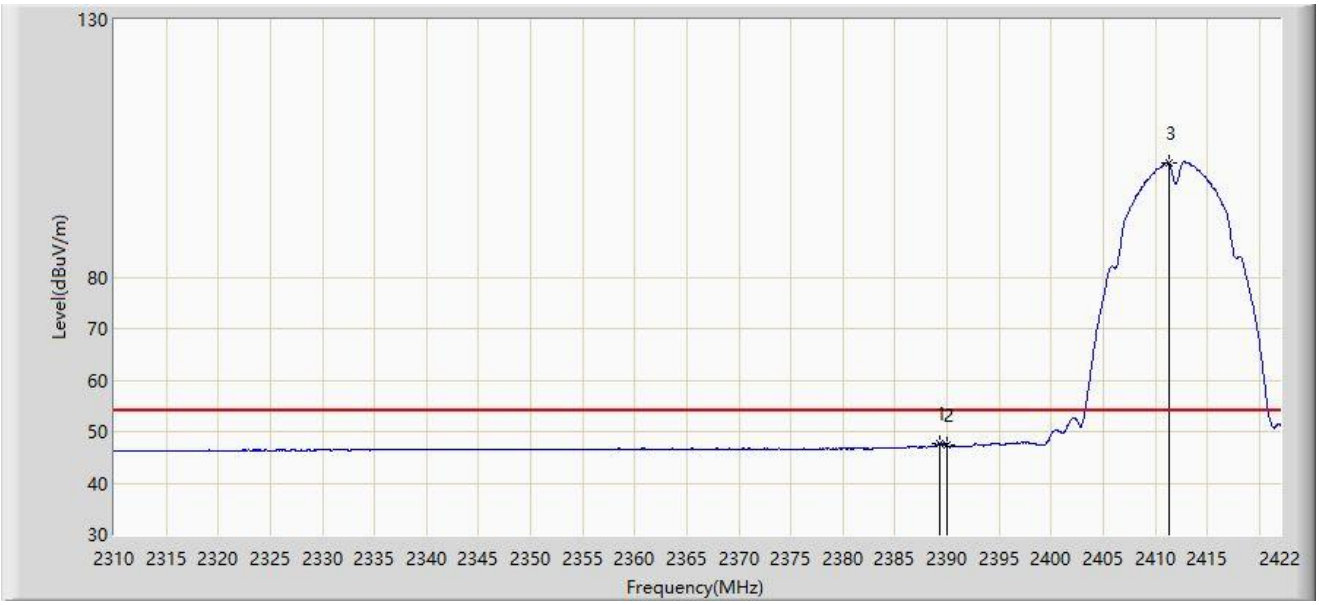
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	2387.056	60.115	27.978	-13.885	74.000	32.137	PK
2		2390.000	58.147	26.004	-15.853	74.000	32.143	PK
3		2412.816	104.476	72.323	N/A	N/A	32.153	PK

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: 2023-10-18
Limit: FCC_2.4G_RE(3m)	Engineer: Fusco Pan
Probe: HF907_102862_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 0	



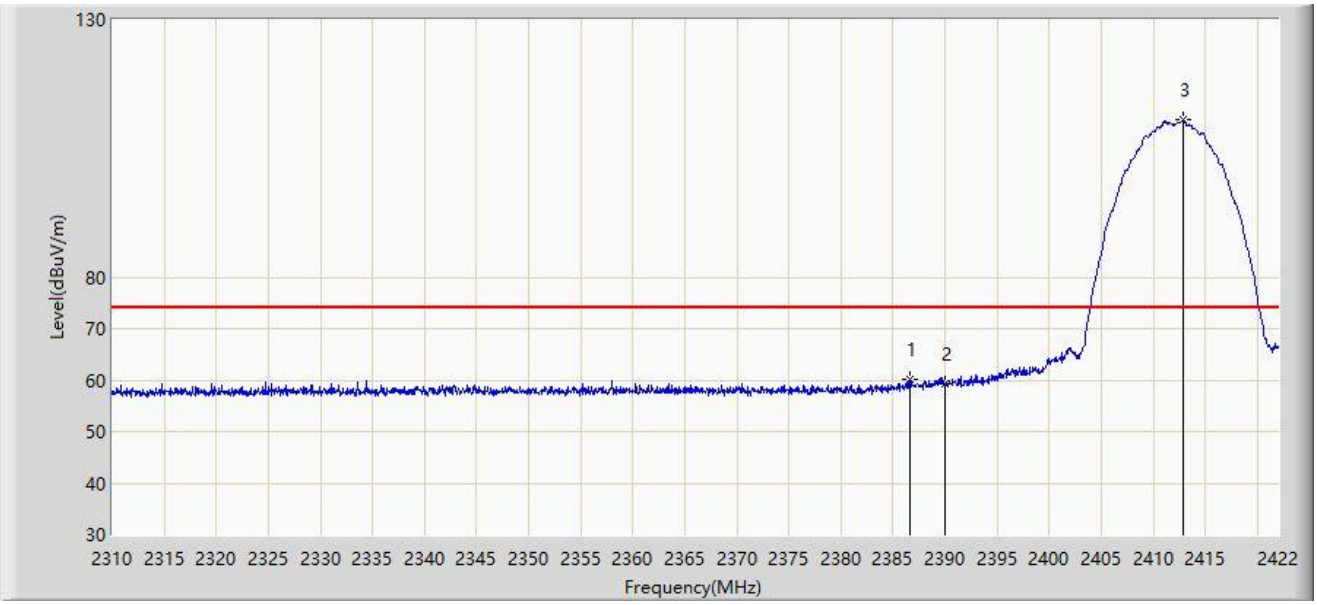
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2389.240	47.681	15.540	-6.319	54.000	32.142	AV
2		2390.000	47.284	15.141	-6.716	54.000	32.143	AV
3		2411.304	102.257	70.103	N/A	N/A	32.154	AV

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: 2023-10-18
Limit: FCC_2.4G_RE(3m)	Engineer: Fusco Pan
Probe: HF907_102862_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 0	



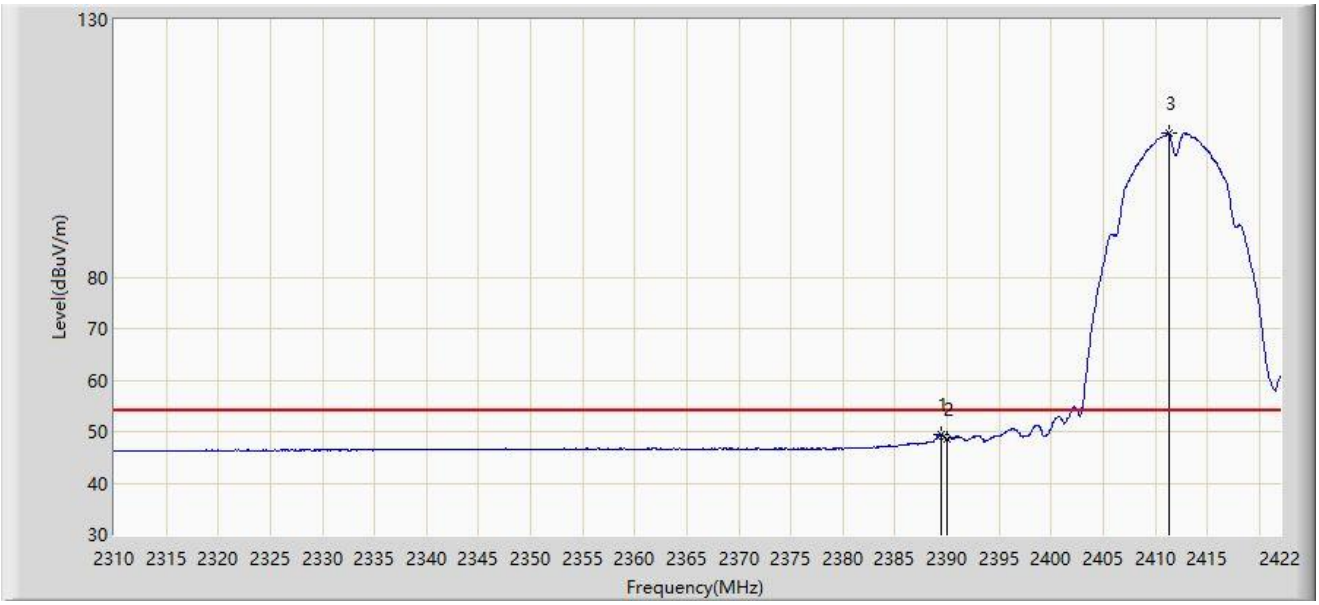
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2386.608	60.019	27.883	-13.981	74.000	32.136	PK
2		2390.000	59.216	27.073	-14.784	74.000	32.143	PK
3		2412.872	110.445	78.292	N/A	N/A	32.153	PK

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: 2023-10-18
Limit: FCC_2.4G_RE(3m)	Engineer: Fusco Pan
Probe: HF907_102862_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11b at 2412MHz Radio 0	



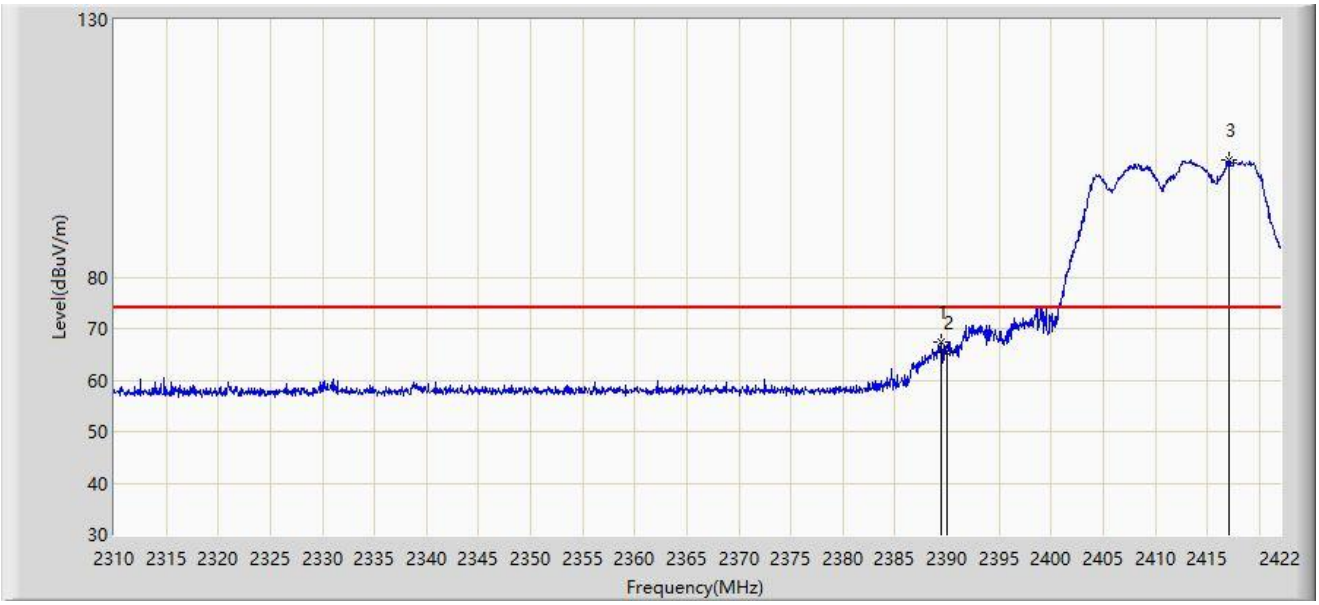
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2389.464	49.434	17.292	-4.566	54.000	32.142	AV
2		2390.000	48.479	16.336	-5.521	54.000	32.143	AV
3		2411.304	107.928	75.774	N/A	N/A	32.154	AV

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: 2023-10-18
Limit: FCC_2.4G_RE(3m)	Engineer: Fusco Pan
Probe: HF907_102862_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11g at 2412MHz Radio 0	



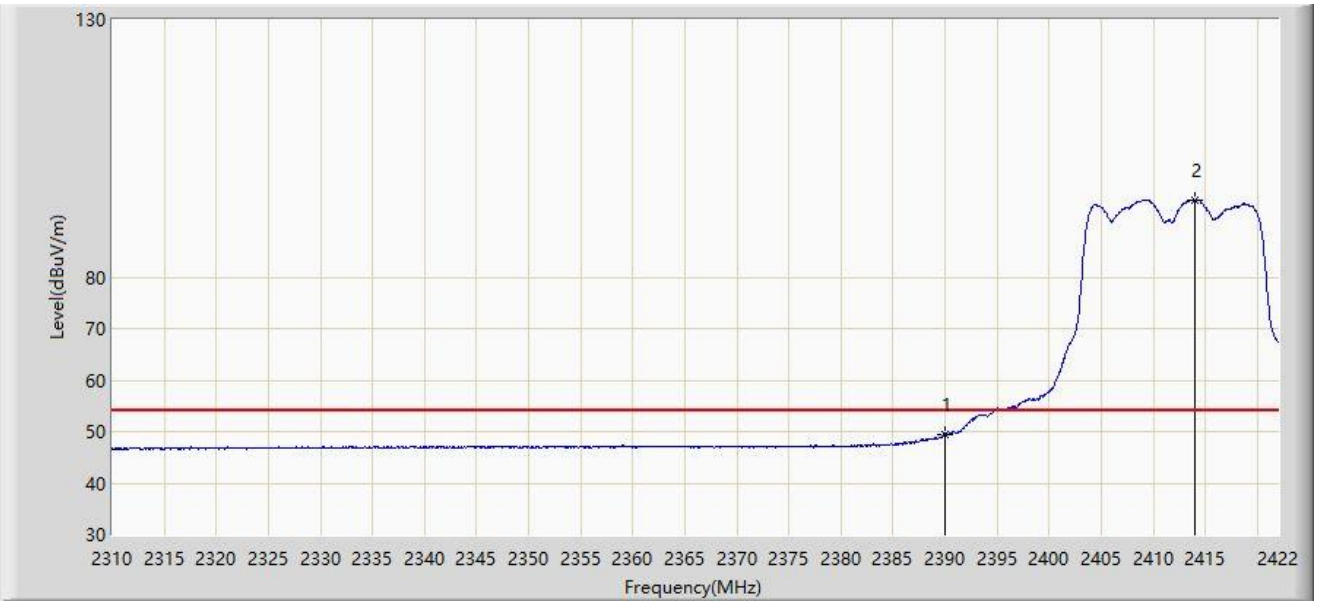
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2389.408	67.454	35.312	-6.546	74.000	32.142	PK
2		2390.000	65.473	33.330	-8.527	74.000	32.143	PK
3		2417.072	102.873	70.722	N/A	N/A	32.151	PK

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: 2023-10-18
Limit: FCC_2.4G_RE(3m)	Engineer: Fusco Pan
Probe: HF907_102862_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by 802.11g at 2412MHz Radio 0	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2390.000	49.543	17.400	-4.457	54.000	32.143	AV
2		2413.936	95.032	62.879	N/A	N/A	32.152	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).