RF MEASUREMENT REPORT

FCC ID:	TK4WLE900VX
Applicant:	Compex Systems Pte Ltd
Application Type:	Class II Permissive Change
Product:	802.11ac Dual Band Module
Model No.:	WLE900VX, WLE900VX-I
Brand Name:	COMPEX
FCC Classification:	Digital Transmission System (DTS)
FCC Rule Part(s):	Part 15 Subpart C (Section 15.247)
Result:	Complies
Test Date:	2022-08-17~ 2022-09-16

Reviewed By: Jame Yuan

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.

Revision History

Report No.	Version	Description	Issue Date	Note
2208RSU014-U1	Rev. 01	Initial Report	2022-09-27	Valid

Note: Based on MRT original report No.1801RSU027-U1, this report adds a new antenna which gain is less than the max gain of all previous antennas, so we only spot check Output power, Band Edge and Radiated Emission.

CONTENTS

1. General Information

1.1. Applicant

Compex Systems Pte Ltd

No:9 Harrison Road, Harrison Industrial Building, #05-01, Singapore 369651

1.2. Manufacturer

Compex Systems Pte Ltd

No:9 Harrison Road, Harrison Industrial Building, #05-01, Singapore 369651

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: L3261-190725				
	FCC: 291082, TW3261		ISED: TW3261		

1.4. Product Information

Product Name	802.11ac Dual Band Module
Model No.	WLE900VX, WLE900VX-I
EUT Identification No.	20220804Sample#03
Wi-Fi Specification	802.11a/b/g/n/ac
Antenna Information	Refer to section 1.7
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification under Test

Frequency Range	802.11b/g/n-HT20: 2412 ~ 2462MHz 802.11n-HT40: 2422 ~ 2452MHz
Channel Number	802.11b/g/n-HT20: 11 802.11n-HT40: 9
Type of Modulation	802.11b: DSSS 802.11g/n: OFDM
Data Rate	802.11b: 1/2/5.5/11Mbps 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 450Mbps

1.6. Working Frequencies

802.11b/g/n-HT20

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

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

Original Antenna List

Antenna Type	Manufacturer	Antenna Gain(dBi)		Directional Gain (dBi)	
		2.4G	5G	2.4G	5G
Panel Antenna 1#	Compex Systems Pte Ltd	11.0	--	11.0	--
Panel Antenna 2#	Kenbotong Communication LTD	10.0	10.0	10.0	10.0
Panel Antenna 3#	Smart Ant Inc	7.0	7.0	7.0	7.0
Panel Antenna 4#	TAOGLAS Inc	4.5	6.7	4.5	6.7
Panel Antenna 5#	Compex Systems Pte Ltd	5.0	5.0	5.0	5.0
Panel Antenna 6#	Compex Systems Pte Ltd	5.0	5.0	5.0	5.0
Omni Antenna 1#	Kunshan Wavelink Electronic Co., Ltd	2.0	2.0	2.0	2.0
Omni Antenna 2#	Smart Ant Co., Ltd	2.5	5.0	2.5	5.0
Omni Antenna 3#	Smart Ant Co., Ltd	3.0	6.0	3.0	6.0
Omni Antenna 4#	Smart Ant Co., Ltd	2.0	2.0	2.0	2.0
Omni Antenna 5#	Smart Ant Co., Ltd	5.0	7.0	5.0	7.0
Omni Antenna 6#	Smart Ant Co., Ltd	3.0	6.0	3.0	6.0
Omni Antenna 7#	Smart Ant Co., Ltd	2.0	2.0	2.0	2.0
Omni Antenna 8#	Smart Ant Co., Ltd	4.5	7.0	4.5	7.0

Add New Antenna

Antenna Type	Manufacturer	Antenna Gain(dBi)		Directional Gain (dBi)	
		2.4G	5G	2.4G	5G
Omni Antenna	Ethertronics Inc	3.6	5.1	3.6	5.1

Note 1: The device didn't support transmit beam-forming mode and Cyclic Delay Diversity (CDD) mode, and the transmit signals are uncorrected, so no add array gain to the band power and band PSD.

Note 2: The directional gain=G_{ANT}

Test Mode	Ant 0	Ant 1	Ant 2	Ant 0+1	Ant 0+1+2
802.11b	√	√	√	×	×
802.11g	√	√	√	×	×
802.11n-HT20	√	√	√	√	√
802.11n-HT40	√	√	√	√	√
Note: "x" means not support, "√" means support					

2. Test Configuration

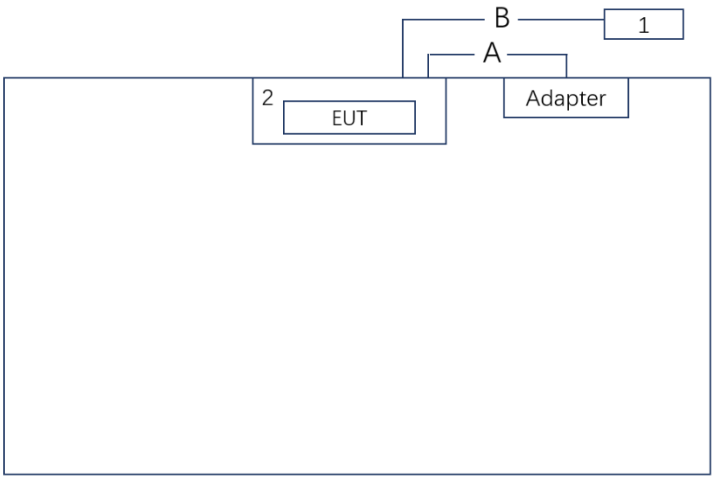
2.1. Test Mode

Mode 1: Transmit by 802.11b (1Mbps) (SISO Mode)
Mode 2: Transmit by 802.11n-HT20(MIMO Mode) (MCS0) N_{SS}=1
Mode 3: Transmit by 802.11n-HT40(MIMO Mode) (MCS0) N_{SS}=1

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 – Radiated Emission testing



Cable Type		Cable Description
A	Power Cable	Non shielded, 1.5m
B	LAN Cable	Non shielded, > 10.0m

Product		Manufacturer	Model No.
1	Notebook	Lenovo	E495
2	Accessory	Compex	WPJ563HV

2.3. Test Software

The test utility software used during testing was “ART2-GUI”, and the version was 2.3.

Final Power Parameter Value for spot check channel.

Test Mode	Test Frequency	Power Parameter Value				
		Ant 0	Ant 1	Ant 2	Ant 0 + 1	Ant 0 + 1 + 2
802.11b	2412	23.0	--	--	Not Support	Not Support
	2437	23.5	--	--		
	2462	24.0	--	--		
802.11n-HT20	2412	--	--	--	--	13.0
802.11n-HT40	2437	20.0	--	--	--	--
	2452	--	--	--	13.5	--

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
- KDB 662911 D01v02r01

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 uses a unique IPEX connector.

Conclusion:

The unit complies with the requirement of §15.203.

4. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Last Cali. Date	Cali. Due Date	Test Site
TRILOG Antenna	Schwarzbeck	VULB 9162	MRTSUE06022	1 year	2023-05-20	WZ-AC2
EMI Test Receiver	Agilent	N9038A	MRTSUE06125	1 year	2023-06-04	WZ-AC2
Thermohygrometer	Mingle	ETH529	MRTSUE06170	1 year	2022-12-01	WZ-AC2
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06171	1 year	2022-10-21	WZ-AC2
Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2022-11-12	WZ-AC2
Anechoic Chamber	RIKEN	WZ-AC2	MRTSUE06213	1 year	2023-04-21	WZ-AC2
Thermohygrometer	testo	Testo 608-H1	MRTSUE11038	1 year	2022-11-11	WZ-AC2
Thermohygrometer	testo	608-H1	MRTSUE06402	1 year	2023-06-06	WZ-SR5
Shielding Room	HUAMING	WZ-SR5	MRTSUE06442	N/A	N/A	WZ-SR5
USB Power Sensor	Agilent	U2021XA	MRTSUE06030	1 year	2022-10-10	WZ-SR5

Software	Version	Function
EMI V3	V3.0.0	EMI Test Software
Controller_MF 7802	1.02	RE Antenna & Turntable
BenchVue Power Meter	2018.1	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.

Radiated Disturbance
Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB
Spurious Emissions, Conducted
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.78dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.13dB

6. Test Result

6.1. Summary

FCC Section(s)	Test Description	Test Condition	Verdict
15.247(b)(3)	Output Power	Conducted	Pass
15.205 15.209	General Field Strength (Restricted Bands and Radiated Emission)	Radiated	Pass

Remark: 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.

6.2. Output Power Measurement

6.2.1. 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.

6.2.2. Test Procedure

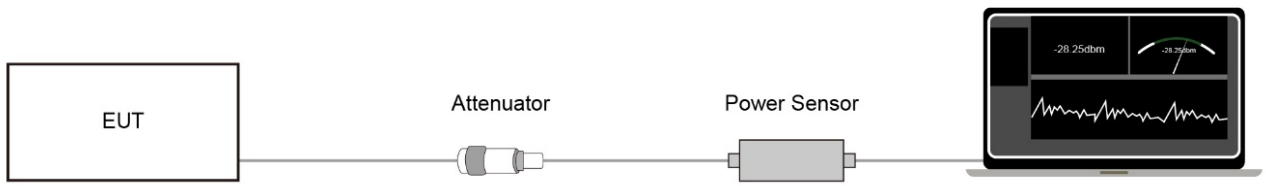
ANSI C63.10 - 2013 - Section 11.9.2.3.2

6.2.3. 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.

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.1.

6.3. Radiated Spurious Emission Measurement

6.3.1. 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

6.3.2. 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)

6.3.3. 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.

4. Detector = Peak

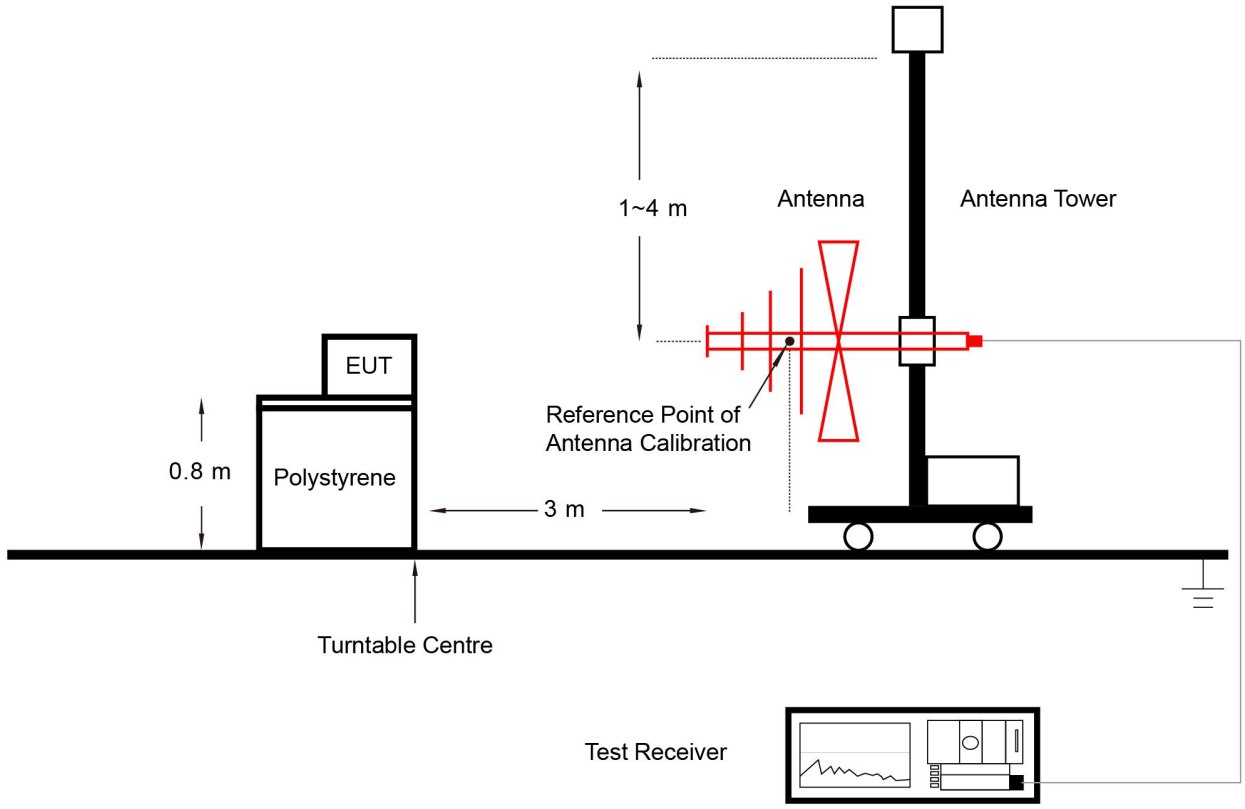
5. Sweep time = auto

6. Trace mode = max hold

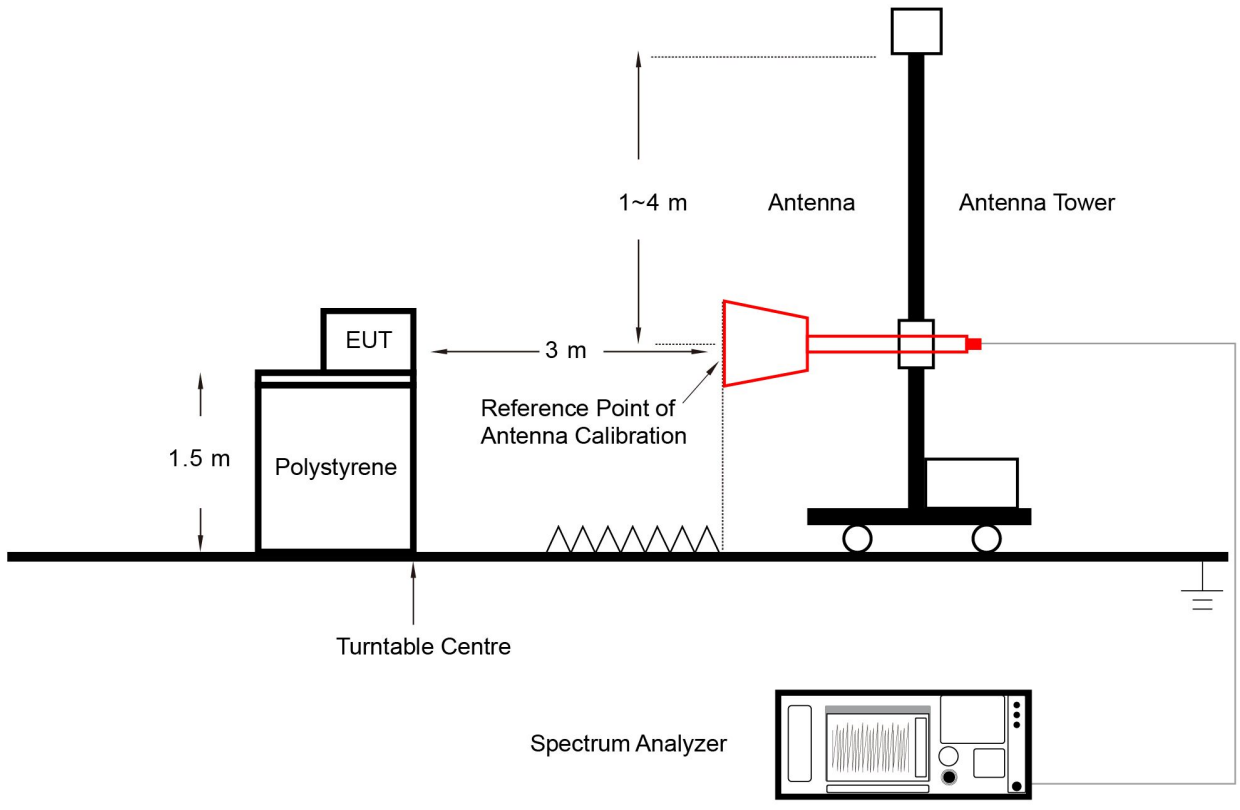
7. Trace was allowed to stabilize

6.3.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.3.5. Test Result

Refer to Appendix A.2.

6.4. Radiated Restricted Band Edge Measurement

6.4.1. 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

6.4.2. Test Procedure

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

6.4.3. Test Setting

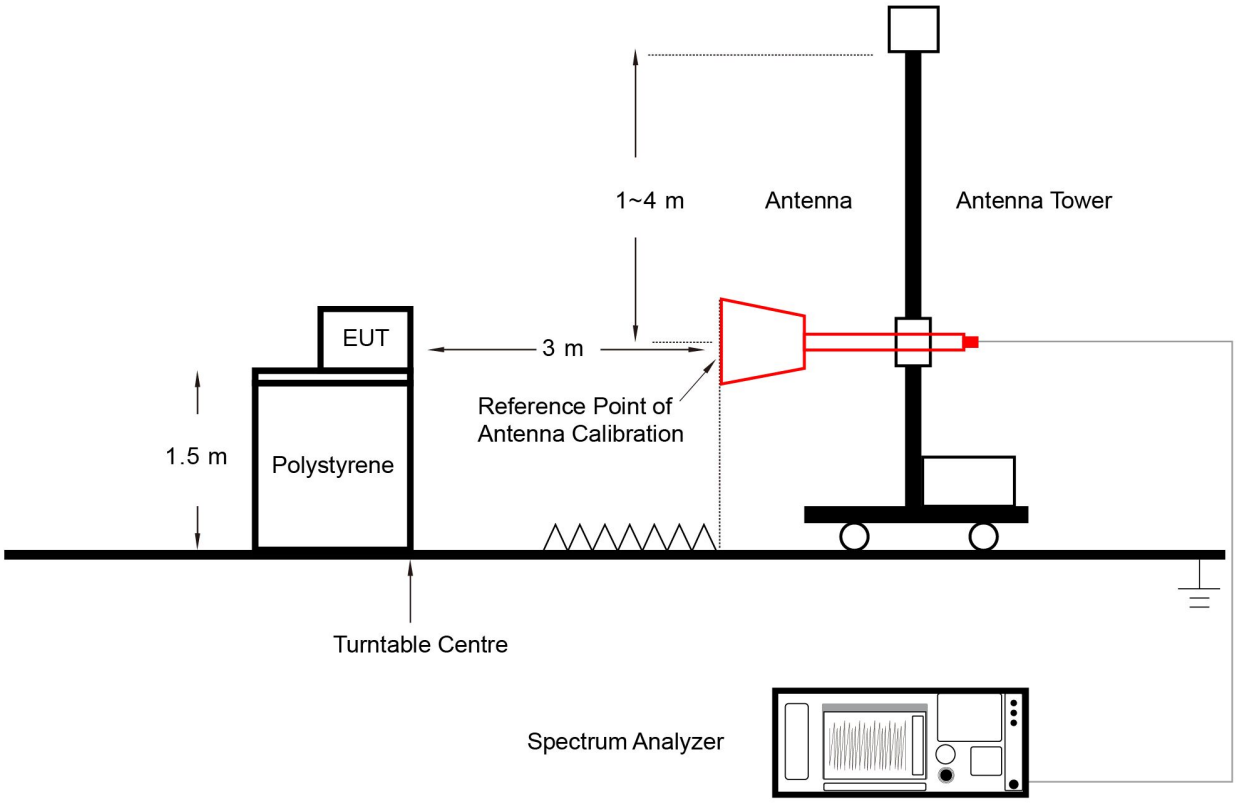
Peak Field Strength Measurements

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
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

6.4.4. Test Setup



6.4.5. Test Result

Refer to Appendix A.3.

Appendix A - Test Result

A.1 Output Power Test Result

Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2022-09-16	Test Mode	1TX

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Limit (dBm)
11b	1Mbps	01	2412	20.96	≤ 30.00
11b	1Mbps	06	2437	21.31	≤ 30.00
11b	1Mbps	11	2462	21.20	≤ 30.00
11n-HT40	MCS0	06	2437	17.30	≤ 30.00

Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2022-08-17	Test Mode	2TX

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Total Average Power (dBm)	Limit (dBm)
11n-HT40	MCS0	09	2452	14.04	14.55	17.31	≤ 30.00

Note: Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)}\}$

Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2022-08-17	Test Mode	3TX

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Ant 2 Average Power (dBm)	Total Average Power (dBm)	Limit (dBm)
11n-HT20	MCS0	01	2412	14.28	14.54	14.32	19.15	≤ 30.00

Note: Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)} + 10^{(\text{Ant 2 Average Power }/10)}\}$

A.2 Radiated Emission Test Result

Test Site	WZ-AC2	Test Engineer	Lucas Wang
Test Date	2022-09-15	Test Mode:	802.11b – Ant 0
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

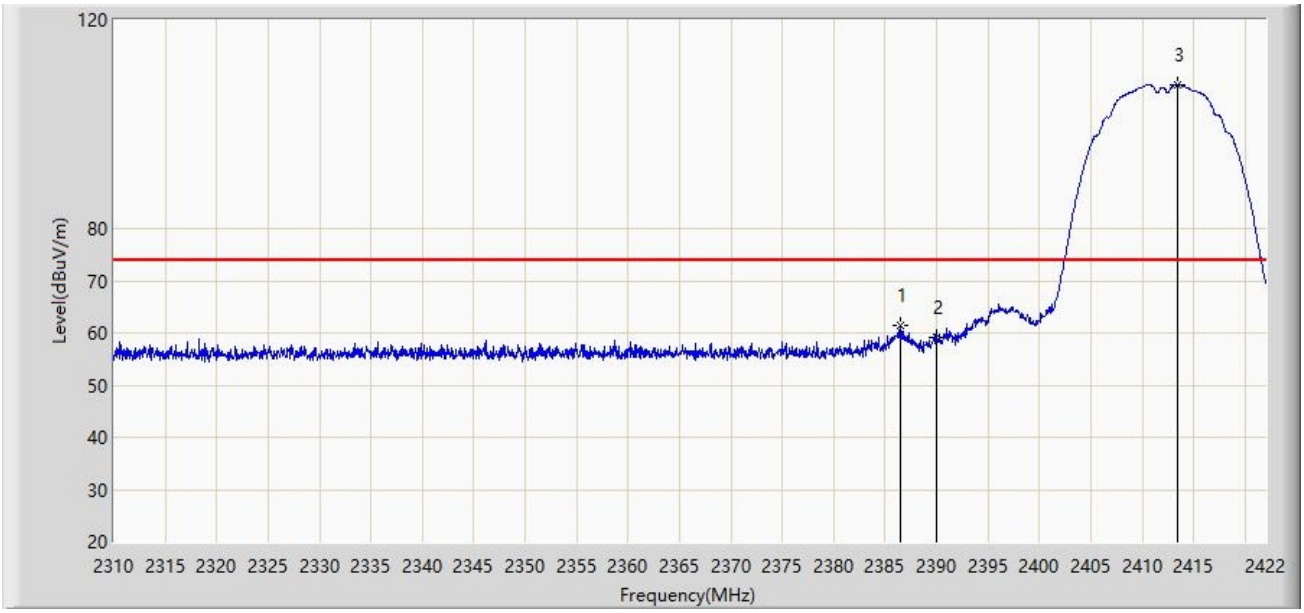
Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	3754.0	41.5	-0.4	41.1	74.0	-32.9	Peak	Horizontal
	4825.0	43.3	4.0	47.3	74.0	-26.7	Peak	Horizontal
	11463.5	32.5	17.2	49.7	74.0	-24.3	Peak	Horizontal
	4825.0	45.3	4.0	49.3	74.0	-24.7	Peak	Vertical
	5003.5	42.5	3.8	46.3	74.0	-27.7	Peak	Vertical
	11446.5	31.7	17.5	49.2	74.0	-24.8	Peak	Vertical
06	4876.0	45.1	3.8	48.9	74.0	-25.1	Peak	Horizontal
	7307.0	43.8	11.1	54.9	74.0	-19.1	Peak	Horizontal
	7307.0	41.1	11.1	52.2	54.0	-1.8	Average	Horizontal
	11200.0	31.2	17.7	48.9	74.0	-25.1	Peak	Horizontal
	3754.0	45.0	-0.4	44.6	74.0	-29.4	Peak	Vertical
	4876.0	45.2	3.8	49.0	74.0	-25.0	Peak	Vertical
	7315.5	44.4	11.2	55.6	74.0	-18.4	Average	Vertical
	7315.5	41.9	11.2	53.1	54.0	-0.9	Peak	Vertical
11	4927.0	49.0	3.8	52.8	74.0	-21.2	Peak	Horizontal
	4927.0	48.2	3.8	52.0	54.0	-2.0	Average	Horizontal
	7383.5	44.3	11.5	55.8	74.0	-18.2	Peak	Horizontal
	7383.5	41.7	11.5	53.2	54.0	-0.8	Average	Horizontal
	11565.5	32.0	17.9	49.9	74.0	-24.1	Peak	Horizontal
	4927.0	46.6	3.8	50.4	74.0	-23.6	Peak	Vertical
	5003.5	41.8	3.8	45.6	74.0	-28.4	Peak	Vertical
	7383.5	44.2	11.5	55.7	74.0	-18.3	Peak	Vertical
	7383.5	41.7	11.5	53.2	54.0	-0.8	Average	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	WZ-AC2	Test Engineer	Lucas Wang
Test Date	2022-08-17	Test Mode:	802.11n-HT40 – Ant 0
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
06	4901.5	42.1	3.8	45.9	74.0	-28.1	Peak	Horizontal
	7358.0	39.9	11.6	51.5	74.0	-22.5	Peak	Horizontal
	7358.0	30.1	11.6	41.7	54.0	-12.3	Average	Horizontal
	10809.0	32.4	16.9	49.3	74.0	-24.7	Peak	Horizontal
	4893.0	44.8	3.8	48.6	74.0	-25.4	Peak	Vertical
	7358.0	42.6	11.6	54.2	74.0	-19.8	Peak	Vertical
	7358.0	32.5	11.6	44.1	54.0	-9.9	Average	Vertical
	11523.0	30.6	17.6	48.2	74.0	-25.8	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)								

A.3 Radiated Restricted Band Edge Test Result

Site: WZ-AC2	Test Date: 2022-09-15
Limit: FCC_2.4G_RE(3m)	Engineer: Lucas Wang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2412MHz – Ant 0	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2386.440	61.345	29.894	-12.655	74.000	31.451	PK
2		2390.000	59.088	27.655	-14.912	74.000	31.433	PK
3		2413.376	107.569	76.213	N/A	N/A	31.356	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: WZ-AC2	Test Date: 2022-09-15
Limit: FCC_2.4G_RE(3m)	Engineer: Lucas Wang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2412MHz – Ant 0	

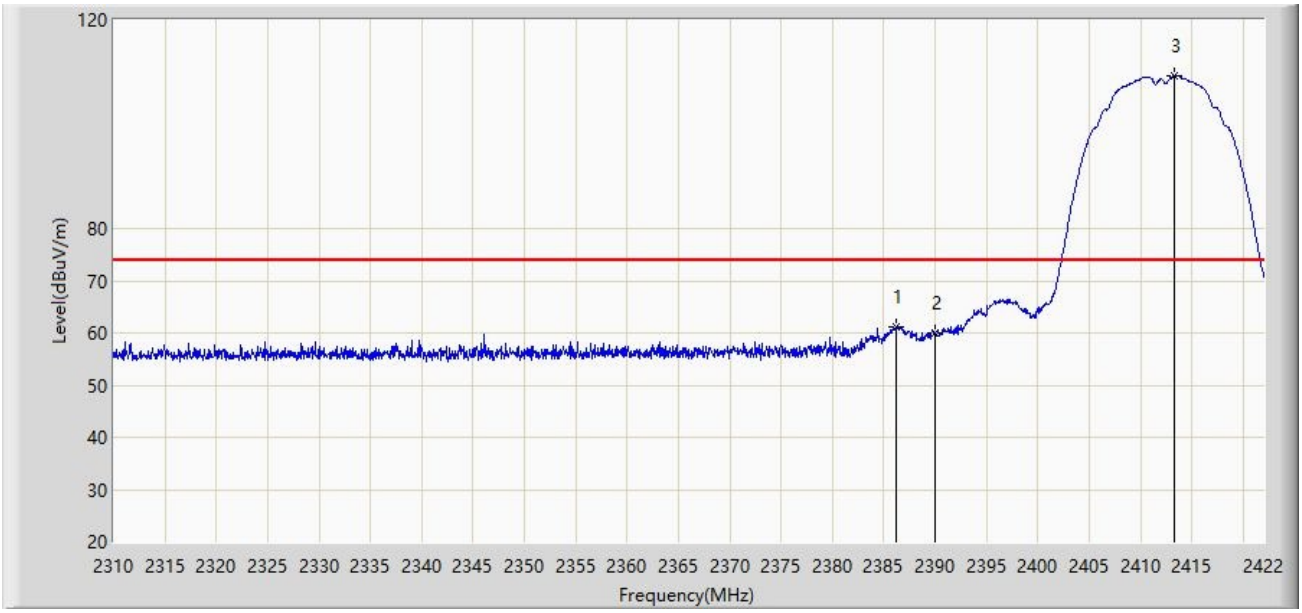
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2387.224	50.417	18.970	-3.583	54.000	31.447	AV
2		2390.000	48.045	16.612	-5.955	54.000	31.433	AV
3		2411.304	104.181	72.820	N/A	N/A	31.361	AV

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: WZ-AC2	Test Date: 2022-09-15
Limit: FCC_2.4G_RE(3m)	Engineer: Lucas Wang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2412MHz – Ant 0	



No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	2386.216	61.276	29.824	-12.724	74.000	31.452	PK
2		2390.000	59.898	28.465	-14.102	74.000	31.433	PK
3		2413.264	109.263	77.907	N/A	N/A	31.356	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: WZ-AC2	Test Date: 2022-09-15
Limit: FCC_2.4G_RE(3m)	Engineer: Lucas Wang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2412MHz – Ant 0	

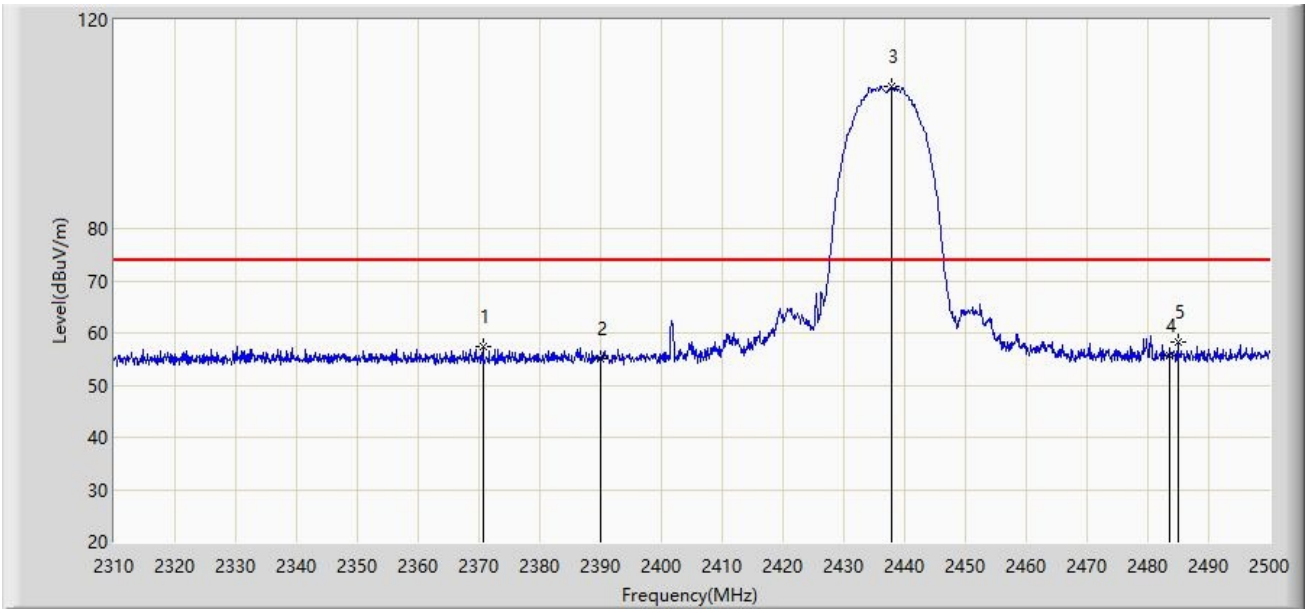
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	2387.056	51.664	20.216	-2.336	54.000	31.448	AV
2		2390.000	48.615	17.182	-5.385	54.000	31.433	AV
3		2412.760	105.030	73.673	N/A	N/A	31.357	AV

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: WZ-AC2	Test Date: 2022-09-15
Limit: FCC_2.4G_RE(3m)	Engineer: Lucas Wang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2437MHz – Ant 0	



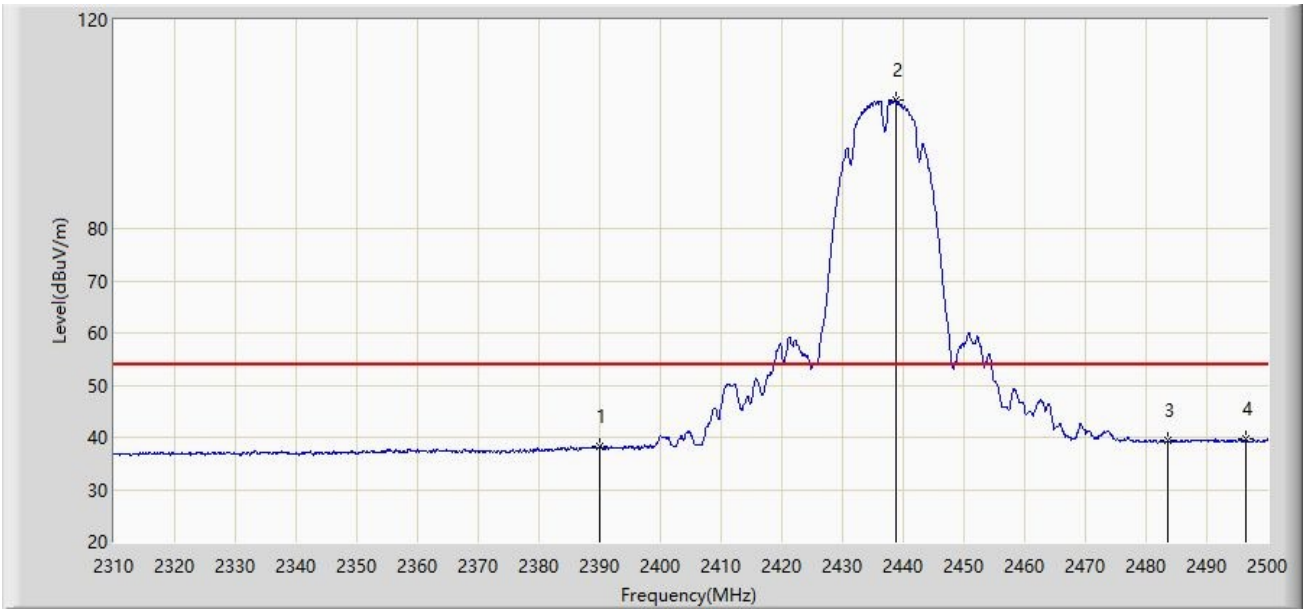
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2370.610	57.296	25.794	-16.704	74.000	31.502	PK
2		2390.000	54.936	23.503	-19.064	74.000	31.433	PK
3		2437.870	107.196	75.880	N/A	N/A	31.316	PK
4		2483.500	55.562	24.247	-18.438	74.000	31.315	PK
5	*	2484.895	58.124	26.807	-15.876	74.000	31.317	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: WZ-AC2	Test Date: 2022-09-15
Limit: FCC_2.4G_RE(3m)	Engineer: Lucas Wang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2437MHz – Ant 0	



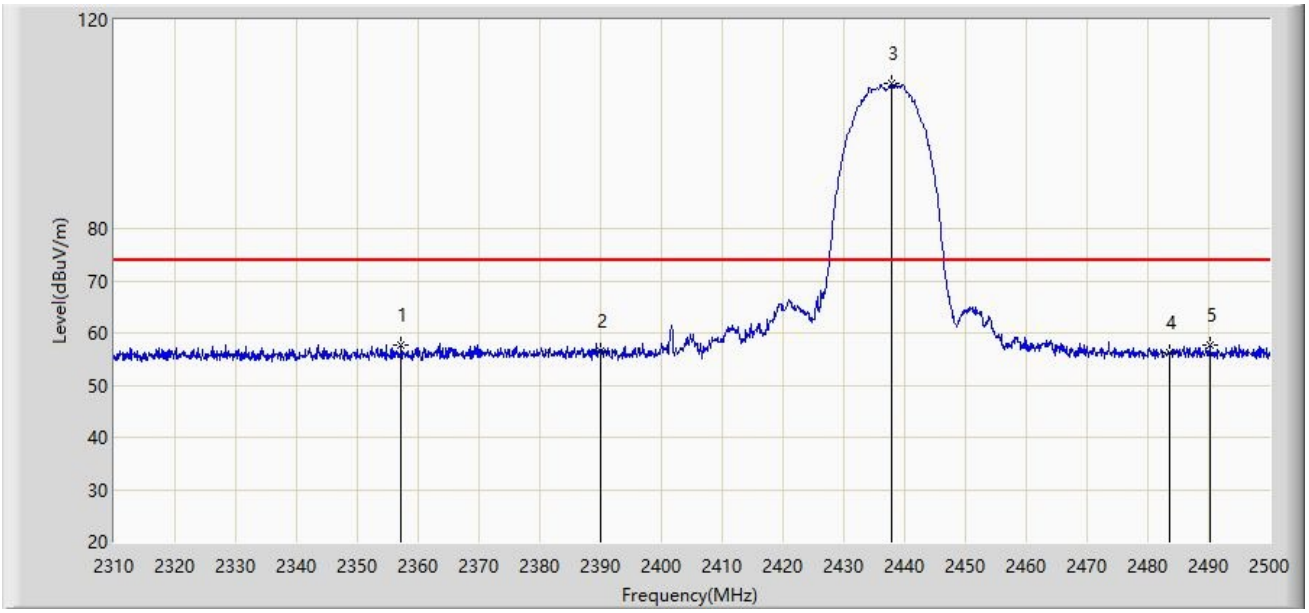
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		2390.000	38.274	6.841	-15.726	54.000	31.433	AV
2		2438.725	104.626	73.309	N/A	N/A	31.316	AV
3		2483.500	39.309	7.994	-14.691	54.000	31.315	AV
4	*	2496.390	39.614	8.268	-14.386	54.000	31.345	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: WZ-AC2	Test Date: 2022-09-15
Limit: FCC_2.4G_RE(3m)	Engineer: Lucas Wang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2437MHz – Ant 0	



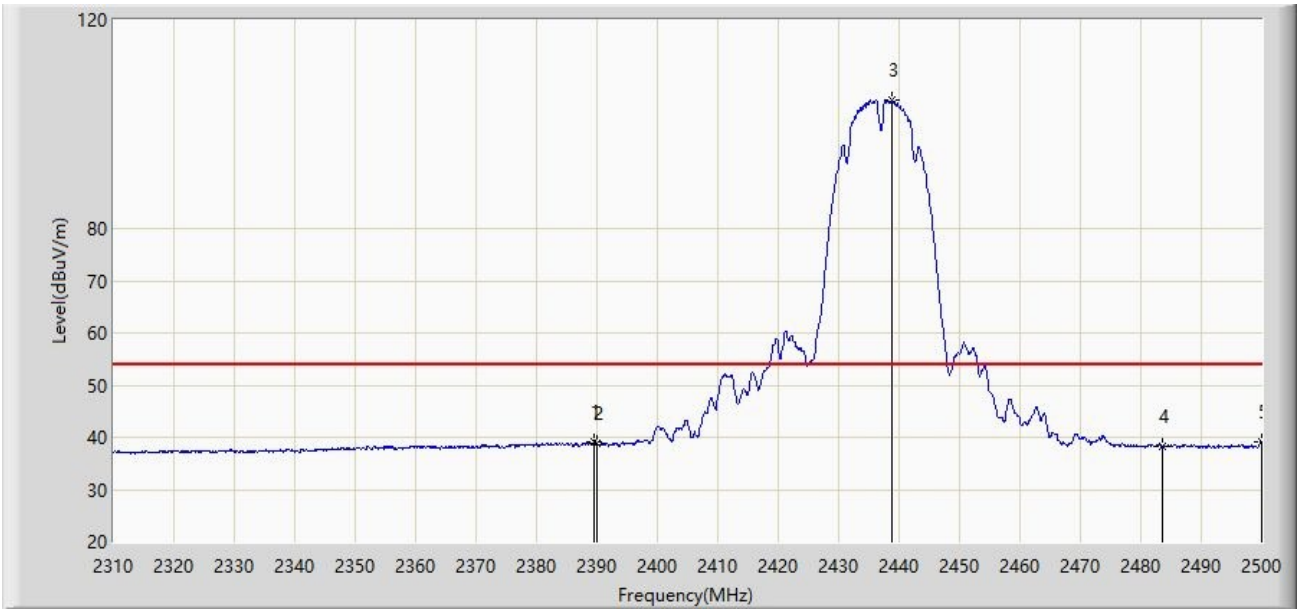
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		2357.215	57.754	26.243	-16.246	74.000	31.511	PK
2		2390.000	56.531	25.098	-17.469	74.000	31.433	PK
3		2437.870	107.716	76.400	N/A	N/A	31.316	PK
4		2483.500	56.172	24.857	-17.828	74.000	31.315	PK
5	*	2490.120	57.769	26.442	-16.231	74.000	31.327	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: WZ-AC2	Test Date: 2022-09-15
Limit: FCC_2.4G_RE(3m)	Engineer: Lucas Wang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2437MHz – Ant 0	



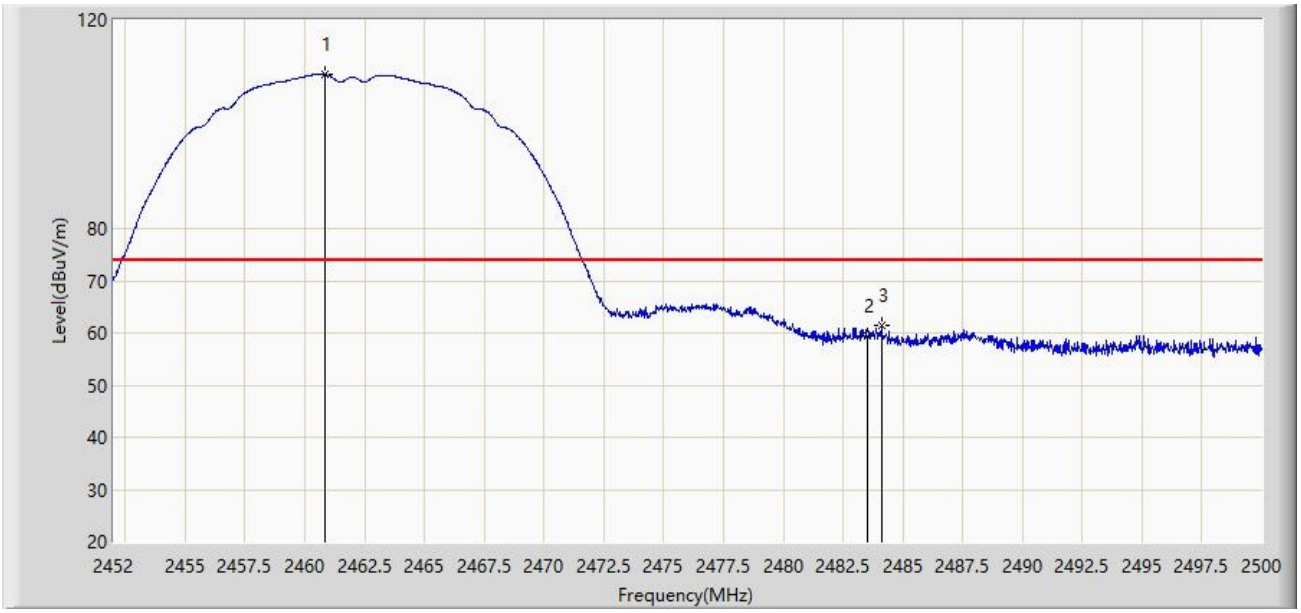
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		2389.515	39.118	7.682	-14.882	54.000	31.436	AV
2		2390.000	38.724	7.291	-15.276	54.000	31.433	AV
3		2438.725	104.620	73.303	N/A	N/A	31.316	AV
4		2483.500	38.196	6.881	-15.804	54.000	31.315	AV
5	*	2499.905	39.168	7.808	-14.832	54.000	31.360	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: WZ-AC2	Test Date: 2022-09-15
Limit: FCC_2.4G_RE(3m)	Engineer: Lucas Wang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2462MHz – Ant 0	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2460.856	109.502	78.170	N/A	N/A	31.332	PK
2		2483.500	59.430	28.115	-14.570	74.000	31.315	PK
3	*	2484.112	61.432	30.116	-12.568	74.000	31.316	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: WZ-AC2	Test Date: 2022-09-15
Limit: FCC_2.4G_RE(3m)	Engineer: Lucas Wang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2462MHz – Ant 0	

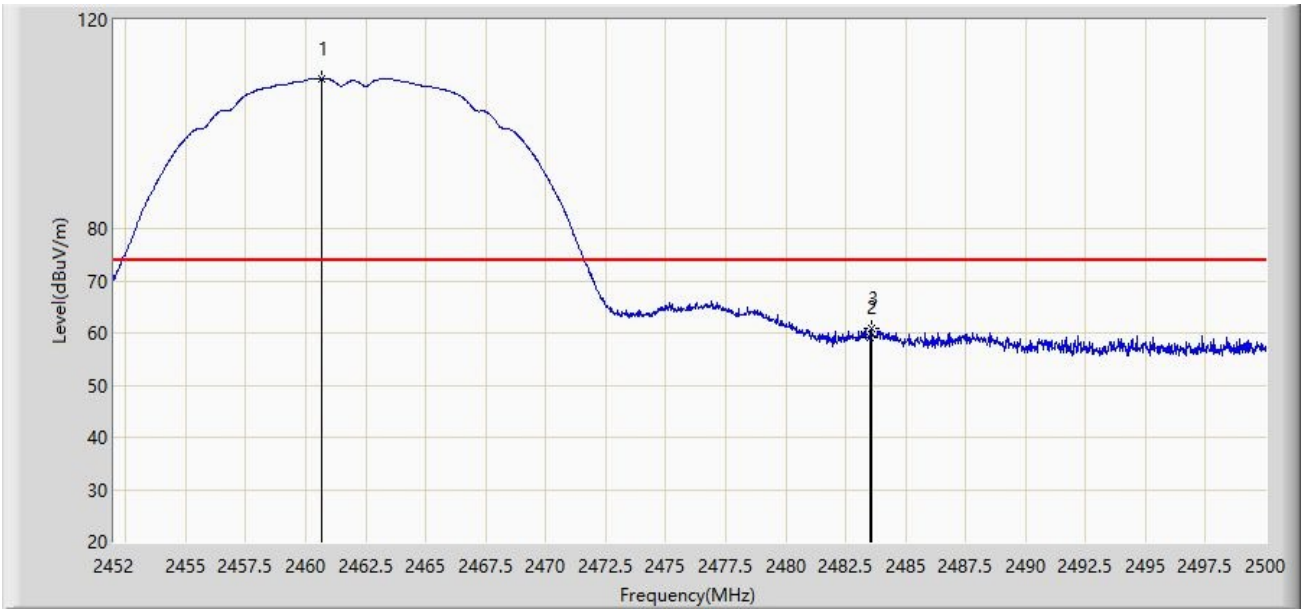
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		2461.240	105.506	74.175	N/A	N/A	31.331	AV
2	*	2483.500	49.727	18.412	-4.273	54.000	31.315	AV

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: WZ-AC2	Test Date: 2022-09-15
Limit: FCC_2.4G_RE(3m)	Engineer: Lucas Wang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2462MHz – Ant 0	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2460.640	108.823	77.490	N/A	N/A	31.333	PK
2		2483.500	59.110	27.795	-14.890	74.000	31.315	PK
3	*	2483.560	60.999	29.684	-13.001	74.000	31.315	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: WZ-AC2	Test Date: 2022-09-15
Limit: FCC_2.4G_RE(3m)	Engineer: Lucas Wang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2462MHz – Ant 0	

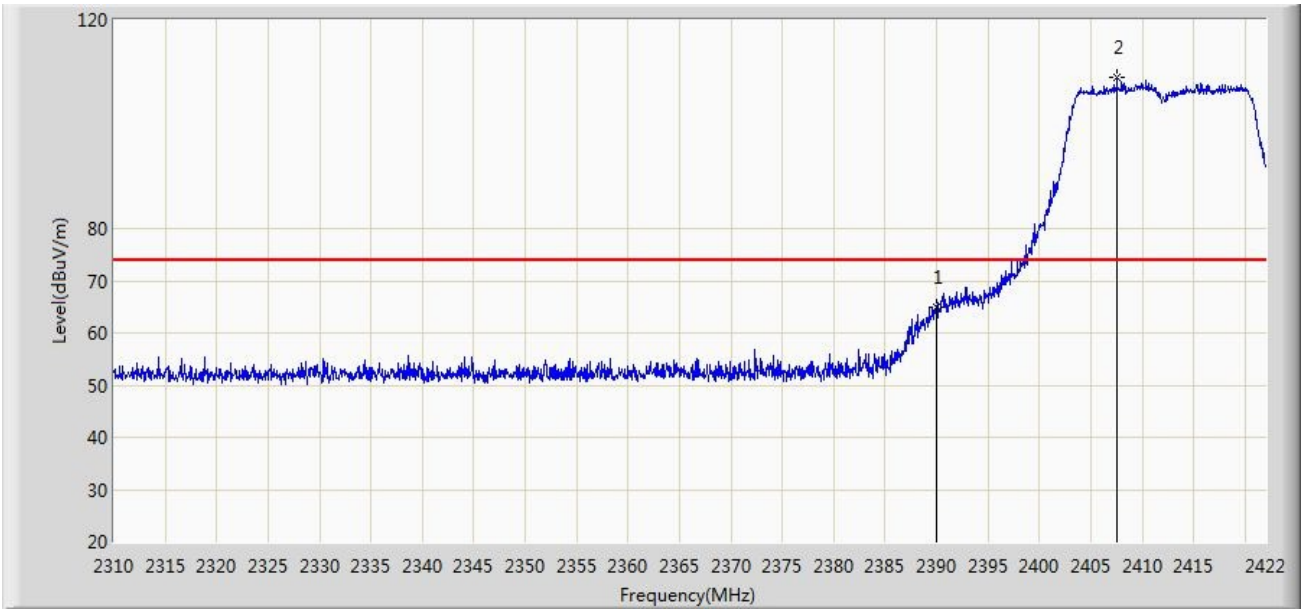
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2461.216	105.141	73.810	N/A	N/A	31.331	AV
2	*	2483.500	48.888	17.573	-5.112	54.000	31.315	AV

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: WZ-AC2	Test Date: 2022-08-17
Limit: FCC_2.4G_RE(3m)	Engineer: Luis Yang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT20 at 2412MHz – Ant 0+1+2	



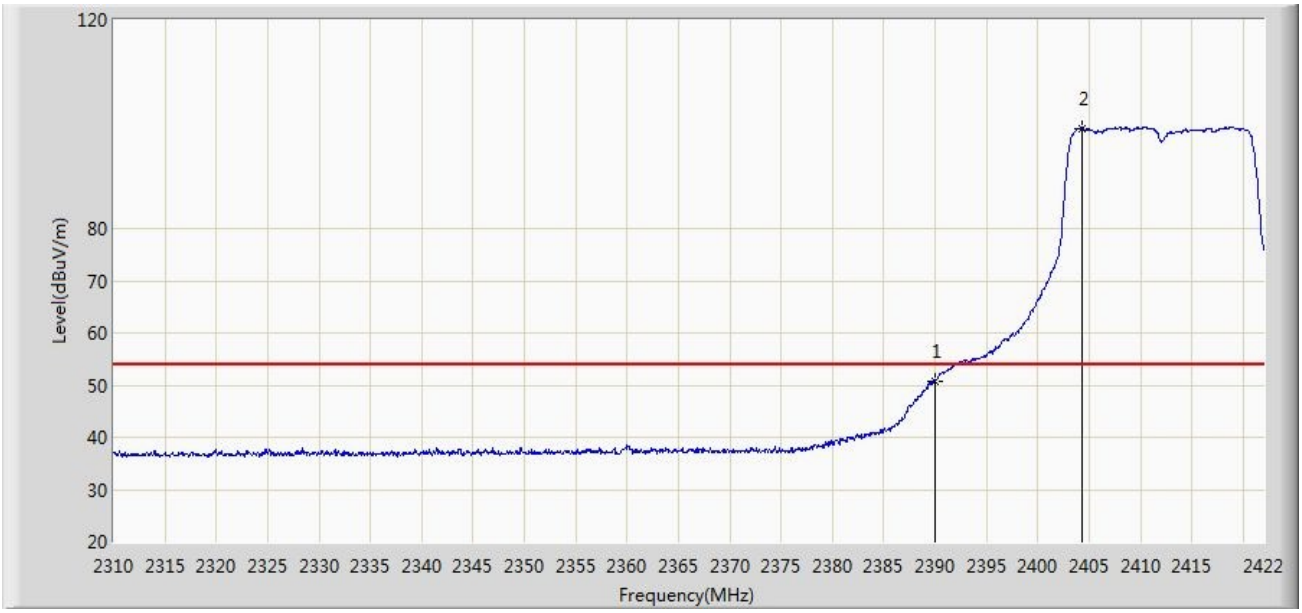
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	2390.000	65.022	33.589	-8.978	74.000	31.433	PK
2		2407.552	108.878	77.508	N/A	N/A	31.371	PK

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: WZ-AC2	Test Date: 2022-08-17
Limit: FCC_2.4G_RE(3m)	Engineer: Luis Yang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT20 at 2412MHz – Ant 0+1+2	



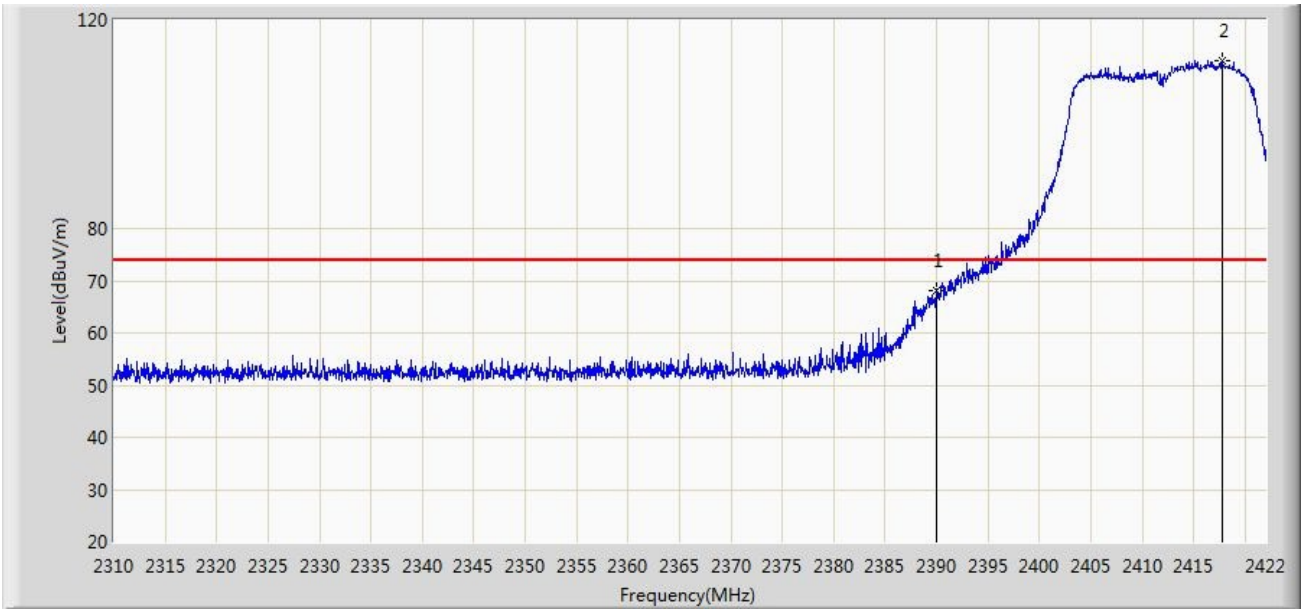
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2390.000	50.806	19.373	-3.194	54.000	31.433	AV
2		2404.360	99.259	67.881	N/A	N/A	31.377	AV

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: WZ-AC2	Test Date: 2022-08-17
Limit: FCC_2.4G_RE(3m)	Engineer: Luis Yang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT20 at 2412MHz – Ant 0+1+2	



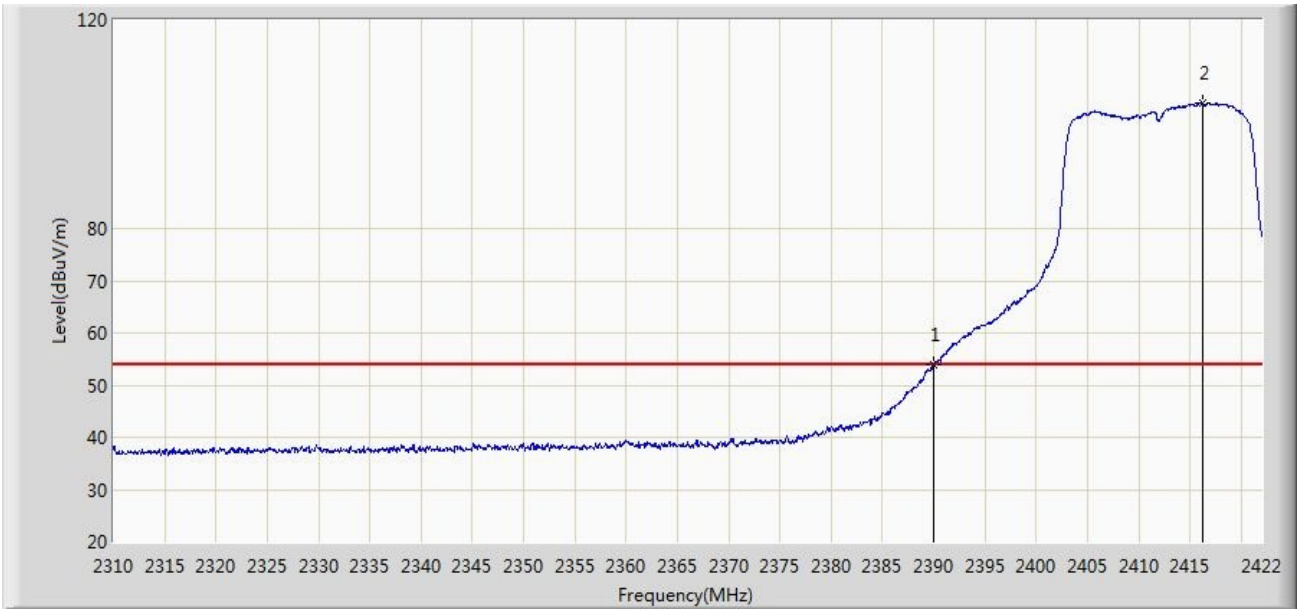
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2390.000	68.224	36.791	-5.776	74.000	31.433	PK
2		2417.744	112.201	80.857	N/A	N/A	31.344	PK

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: WZ-AC2	Test Date: 2022-08-17
Limit: FCC_2.4G_RE(3m)	Engineer: Luis Yang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT20 at 2412MHz – Ant 0+1+2	



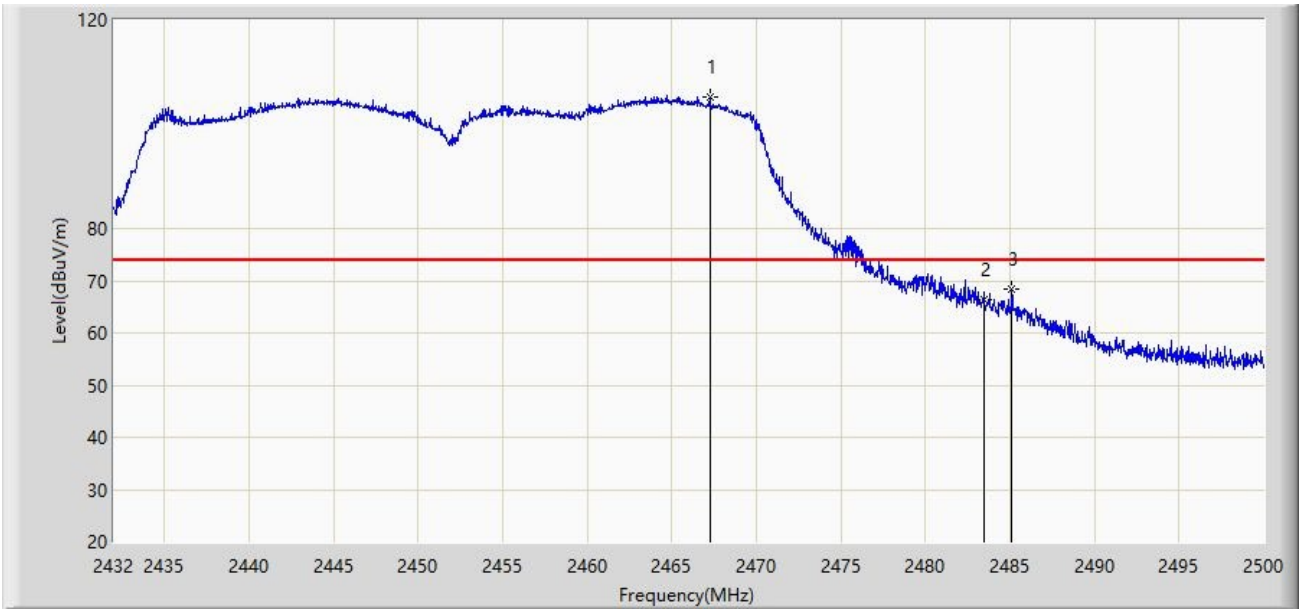
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2390.000	53.837	22.404	-0.163	54.000	31.433	AV
2		2416.176	104.071	72.723	N/A	N/A	31.348	AV

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: WZ-AC2	Test Date: 2022-08-17
Limit: FCC_2.4G_RE(3m)	Engineer: Luis Yang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT40 at 2452MHz – Ant 0+1	



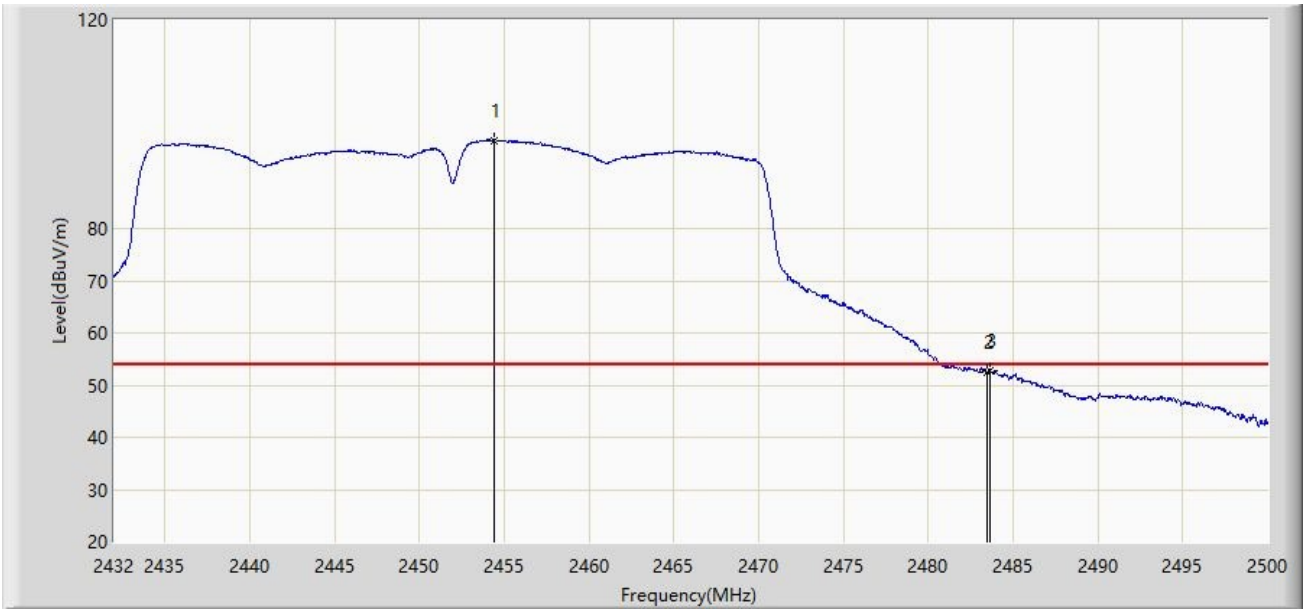
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2467.258	105.273	73.956	N/A	N/A	31.317	PK
2		2483.500	66.253	34.938	-7.747	74.000	31.315	PK
3	*	2485.108	68.373	37.055	-5.627	74.000	31.318	PK

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: WZ-AC2	Test Date: 2022-08-17
Limit: FCC_2.4G_RE(3m)	Engineer: Luis Yang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT40 at 2452MHz – Ant 0+1	



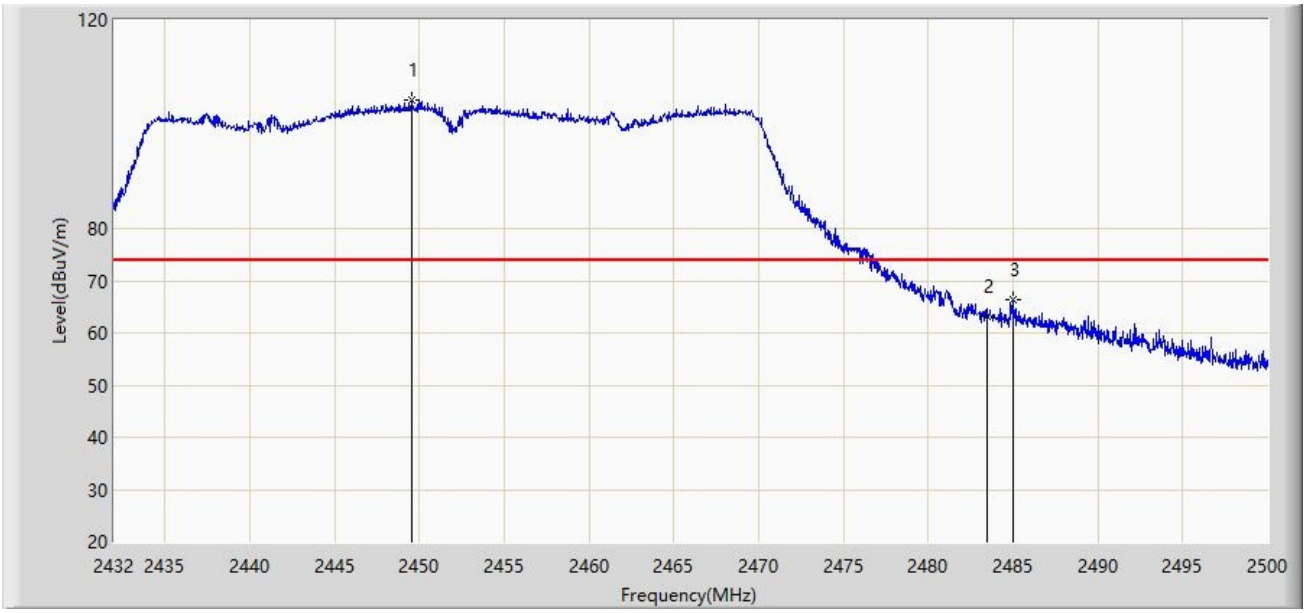
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2454.372	96.877	65.536	N/A	N/A	31.342	AV
2		2483.500	52.401	21.086	-1.599	54.000	31.315	AV
3	*	2483.680	52.623	21.308	-1.377	54.000	31.315	AV

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: WZ-AC2	Test Date: 2022-08-17
Limit: FCC_2.4G_RE(3m)	Engineer: Luis Yang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT40 at 2452MHz – Ant 0+1	



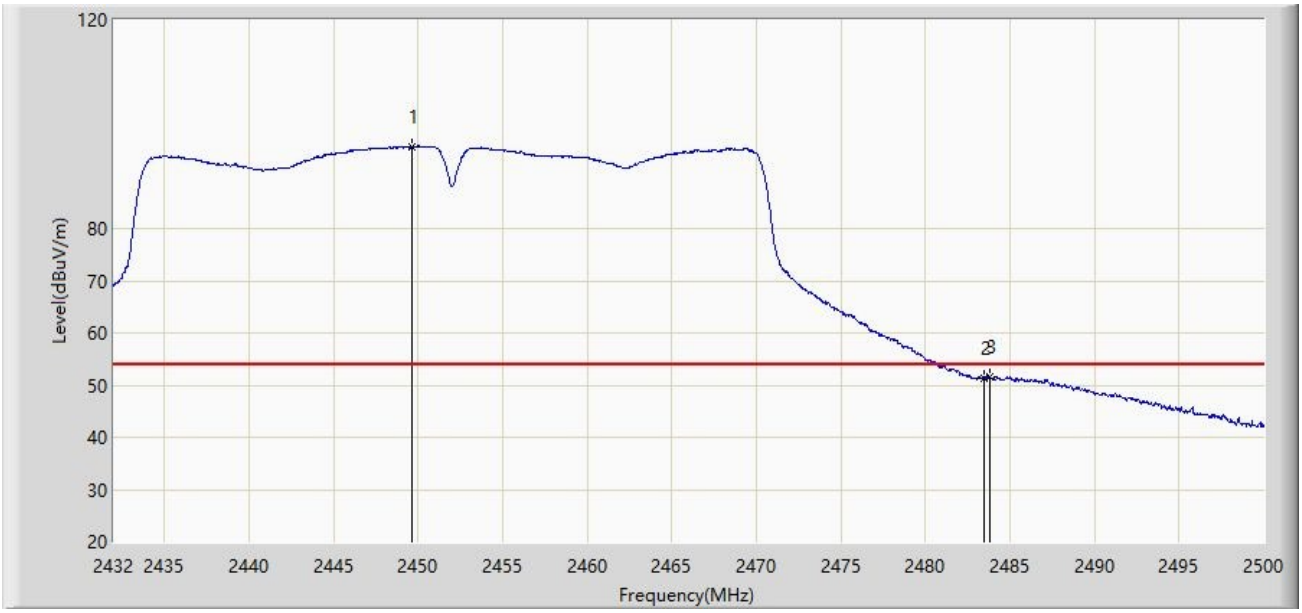
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2449.544	104.631	73.299	N/A	N/A	31.332	PK
2		2483.500	63.170	31.855	-10.830	74.000	31.315	PK
3	*	2484.972	66.363	35.046	-7.637	74.000	31.317	PK

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: WZ-AC2	Test Date: 2022-08-17
Limit: FCC_2.4G_RE(3m)	Engineer: Luis Yang
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: 802.11ac Dual Band Module	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT40 at 2452MHz – Ant 0+1	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2449.612	95.638	64.306	N/A	N/A	31.333	AV
2		2483.500	51.288	19.973	-2.712	54.000	31.315	AV
3	*	2483.816	51.709	20.394	-2.291	54.000	31.315	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).

Appendix B - Test Setup Photograph

Refer to “2208RSU014-UT” file.

Appendix C - EUT Photograph

Refer to “2208RSU014-UE” file.

The End