RF MEASUREMENT REPORT

FCC ID:	TV7L11AX5
Applicant:	Mikrotikls SIA
Product:	L11UG-5HaxD-US NetBox 5 ax
Model No.:	L11UG-5HaxD-US L11UG-5HaxD-NB-US
Brand Name:	MikroTik
FCC Classification:	Unlicensed National Information Infrastructure (NII)
FCC Rule Part(s):	Part 15 Subpart E (Section 15.407)
Result:	Complies
Received Date:	2023-09-01
Test Date:	2024-03-13 ~ 2024-03-28

Reviewed By: Vincent Yu

Approved By: Robin Wu

Revision History

Report No.	Version	Description	Issue Date	Note
2403RSU030-U1	V01	Initial Report	2024-04-11	Valid

CONTENTS

1. General Information

1.1. Applicant

Mikrotikls SIA

Ūnijas iela 2, Riga, LV-1039 LATVIA

1.2. Manufacturer

Mikrotikls SIA

Ūnijas iela 2, Riga, LV-1039 LATVIA

1.3. Testing Facility

<table>
<tr><td>☒</td><td colspan="5">Test Site – MRT Suzhou Laboratory</td></tr>
<tr><td></td><td colspan="5">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</td></tr>
<tr><td></td><td colspan="5">Laboratory Accreditations</td></tr>
<tr><td></td><td colspan="2">A2LA: 3628.01</td><td colspan="3">CNAS: L10551</td></tr>
<tr><td></td><td colspan="2">FCC: CN1166</td><td colspan="3">ISED: CN0001</td></tr>
<tr><td></td><td rowspan="2">VCCI:</td><td>☐R-20025</td><td>☐G-20034</td><td>☐C-20020</td><td>☐T-20020</td></tr>
<tr><td></td><td>☐R-20141</td><td>☐G-20134</td><td>☐C-20103</td><td>☐T-20104</td></tr>
<tr><td>☐</td><td colspan="5">Test Site – MRT Shenzhen Laboratory</td></tr>
<tr><td></td><td colspan="5">Laboratory Location (Shenzhen)
1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China</td></tr>
<tr><td></td><td colspan="5">Laboratory Accreditations</td></tr>
<tr><td></td><td colspan="2">A2LA: 3628.02</td><td colspan="3">CNAS: L10551</td></tr>
<tr><td></td><td colspan="2">FCC: CN1284</td><td colspan="3">ISED: CN0105</td></tr>
<tr><td>☐</td><td colspan="5">Test Site – MRT Taiwan Laboratory</td></tr>
<tr><td></td><td colspan="5">Laboratory Location (Taiwan)
No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)</td></tr>
<tr><td></td><td colspan="5">Laboratory Accreditations</td></tr>
<tr><td></td><td colspan="5">TAF: 3261</td></tr>
<tr><td></td><td colspan="2">FCC: 291082, TW3261</td><td colspan="3">ISED: TW3261</td></tr>
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1.4. Product Information

Product Name	L11UG-5HaxD-US NetBox 5 ax
Model No.	L11UG-5HaxD-US L11UG-5HaxD-NB-US
EUT Serial No.	L11UG-5HaxD-US: HEM08NA93Q1/320 L11UG-5HaxD-NB-US: HEQ096MM7FF/339
Wi-Fi Specification	802.11a/n/ac/ax
Antenna Information	Refer to section 1.7
Power Type	AC/DC Adapter Input or PoE Input
Operating Environment	Outdoor Use
Accessories	
AC/DC Adapter	Model No.: SAW30-240-1200G Input Power: 100 - 240V ~ 50/60Hz, 0.8A Output Power: 24.0V ⎓ 1.2A 28.8W
Gigabit PoE	Input: 18-57V PIN 4, 5: 18-57V PIN 7, 8 Return

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. PoE needs to be used with an AC adapter. L11UG-5HaxD-NB-US only can powered by PoE.
3. For model differences, please refer to the Operation Description document.

1.5. Radio Specification under Test

Frequency Range	For 802.11a/n-HT20/ac-VHT20/ax-HE20: 5180~5240MHz, 5260~5320MHz, 5500~5720MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40/ax-HE40: 5190~5230MHz, 5270~5310MHz, 5510~5710MHz, 5755~5795MHz For 802.11ac-VHT80/ax-HE80: 5210MHz, 5290MHz, 5530MHz, 5610 MHz, 5690MHz, 5775MHz For 802.11ac-VHT160/ax-HE160: 5250MHz, 5570MHz	
Type of Modulation	802.11a/n/ac: OFDM 802.11ax: OFDMA	
Data Rate	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 300Mbps 802.11ac: up to 1732Mbps 802.11ax: up to 2402Mbps	
Channel Puncturing Function	☐ Supported	☒ Unsupported
Support RU	☒ Full RU	☐ Partial RU

1.6. Working Frequencies

802.11a/n-HT20/ac-VHT20/ax-HE20

Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180 MHz	40	5200 MHz	44	5220 MHz
48	5240 MHz	52	5260 MHz	56	5280 MHz
60	5300 MHz	64	5320 MHz	100	5500 MHz
104	5520 MHz	108	5540 MHz	112	5560 MHz
116	5580 MHz	120	5600 MHz	124	5620 MHz
128	5640 MHz	132	5660 MHz	136	5680 MHz
140	5700 MHz	144	5720 MHz	149	5745 MHz
153	5765 MHz	157	5785 MHz	161	5805 MHz
165	5825 MHz	--	--	--	--

802.11n-HT40/ac-VHT40/ax-HE40

Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	54	5270 MHz
62	5310 MHz	102	5510 MHz	110	5550MHz
118	5590 MHz	126	5630 MHz	134	5670 MHz
142	5710 MHz	151	5755 MHz	159	5795 MHz

802.11ac-VHT80/ax-HE80

Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz	106	5530 MHz
122	5610 MHz	138	5690 MHz	155	5775 MHz

802.11ac-VHT160/ax-HE160

Channel	Frequency	Channel	Frequency	Channel	Frequency
50	5250 MHz	114	5570 MHz	--	--

1.7. Antenna Details

Antenna Type	Antenna Model	Frequency Range (MHz)	Max. PK Gain (dBi)	CDD DG (dBi)	
				For Power	For PSD
Dish Antenna	MTAD-5G-30D3	5150 ~ 5250	28.0	28.0	31.01
		5250 ~ 5850	30.0	30.0	33.01

Notes:

1. The EUT only supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.
2. The Maximum antenna gain of any elevation angle above 30 degrees is the same as the gain in the above table.

2. Test Configuration

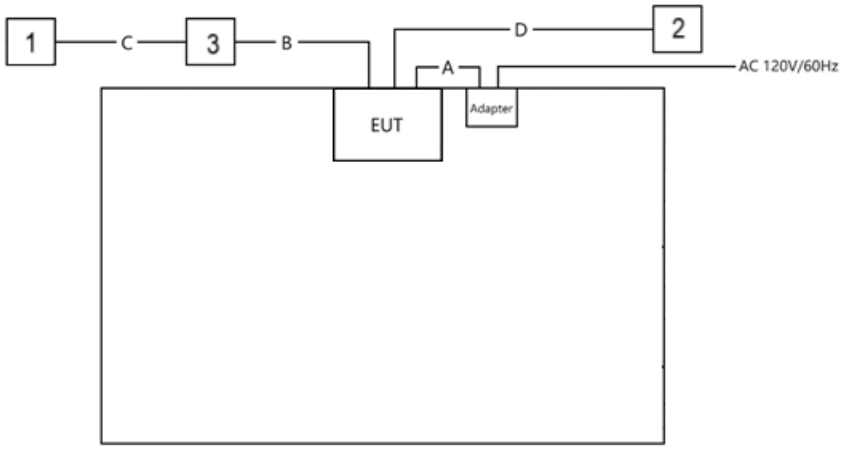
2.1. Test Mode

CDD Mode
Mode 1: Transmit by 802.11a_N_{SS}=1 (6Mbps)
Mode 2: Transmit by 802.11ac-VHT20_N_{SS}=1 (MCS0)
Mode 3: Transmit by 802.11ac-VHT80_N_{SS}=1 (MCS0)
Mode 4: Transmit by 802.11ac-VHT160_N_{SS}=1 (MCS0)
Mode 5: Transmit by 802.11ax-HE20_N_{SS}=1 (MCS0)
Mode 6: Transmit by 802.11ax-HE40_N_{SS}=1 (MCS0)
Mode 7: Transmit by 802.11ax-HE80_N_{SS}=1 (MCS0)
Notes: 1. The above test modes are the worst-case mode selected from the RF report of FCC ID: TV7L23AX52 (Report No.: 2308RSU088-U1) as the worst spot-check test mode in this report. 2. All modes of operation and data rates were investigated, so all RF test requirements shall be executed at the worst data rate.

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.

Connection Diagram



Cable Type		Cable Description	Length
A	Power Cable	Non-Shielding	1.5m
B	Optical Cable	Non-Shielding	>10m
C	LAN Cable	Non-Shielding Cat5e	0.5m
D	LAN Cable	Non-Shielding Cat5e	>10m
Product		Manufacturer	Model No.
1	PC	AVITA	NS13A3
2	PC	ASUS	K5504V
3	Switch	TP-Link	TL-SG2226

2.3. Test Software

The test utility software used during testing was “winbox.exe”, the version was “3.39” and commands are provided by the manufacturer.

2.4. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15.407
- KDB 789033 D02v02r01
- KDB 662911 D01v02r01
- 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 model L11UG-5HaxD-US and L11UG-5HaxD-NB-US use unique antenna connectors.

Conclusion:

The unit complies with the requirement of §15.203.

4. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
TRILOG Antenna	Schwarzbeck	VULB 9162	MRTSUE06022	1 year	2024-05-15	WZ-AC2
EMI Test Receiver	Agilent	N9038A	MRTSUE06125	1 year	2024-05-23	WZ-AC2
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06171	1 year	2024-10-11	WZ-AC2
Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2024-05-07	WZ-AC2
Anechoic Chamber	RIKEN	WZ-AC2	MRTSUE06213	1 year	2024-04-20	WZ-AC2
Thermohygrometer	testo	608-H1	MRTSUE11263	1 year	2024-11-07	WZ-AC2
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06597	1 year	2024-11-04	WZ-AC2
Preamplifier	EMCI	EMC184045SE	MRTSUE06640	1 year	2025-01-11	WZ-AC2
USB Power Sensor	Keysight	U2021XA	MRTSUE06447	1 year	2024-05-23	WZ-SR5
Thermohygrometer	testo	608-H1	MRTSUE06402	1 year	2024-05-31	WZ-SR5
Shielding Room	HUAMING	WZ-SR5	MRTSUE06442	N/A	N/A	WZ-SR5
Signal Analyzer	Keysight	N9010B	MRTSUE06457	1 year	2024-05-23	WZ-SR5
Signal Analyzer	Keysight	N9010B	MRTSUE06558	1 year	2024-05-23	WZ-SR5

Software	Version	Function
EMI V3	V 3.0.0	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 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
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

6. Test Result

6.1. Summary

FCC Section(s)	Test Description	Test Condition	Verdict
15.407(a)(1)(i), (2), (3)(i)	Maximum Conducted Output Power	Conducted	Pass
15.407(a)(1)(i), (2), (3)(i), (13)	Peak Power Spectral Density		Pass
15.407(b)(1), (2), (3), (4)(i)	Undesirable Emissions	Radiated	Pass
15.205, 15.209 15.407(b)(8), (9), (10)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)		Pass

Remark:

1. 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.
2. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.
3. This report is for C2PC application. Based on original application (FCC ID: TV7L11AX5), added a high gain antenna. The devices in this report apply the Data Referencing based on the C2PC application of the reference device (FCC ID: TV7L23AX52, Model No.: L23UGSR-5HaxD2HaxD-US, Report No.: 2308RSU088-U1), and perform the spot check test on the items in this report.

6.2. Output Power Measurement

6.2.1. Test Limit

For an outdoor access point operating in the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm).

If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

6.2.2. Test Procedure

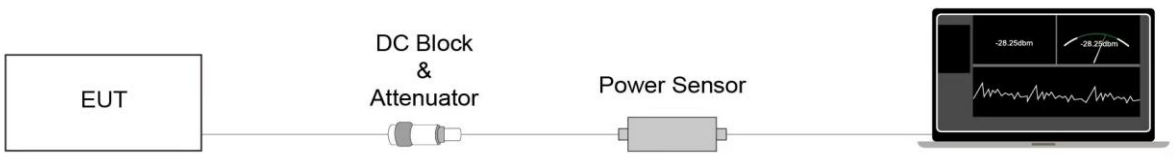
KDB 789033D02v02r01- Section Ⅱ)E)3)b) Method PM-G

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. Power Spectral Density Measurement

6.3.1. Test Limit

For an outdoor access point operating in the band 5.15–5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

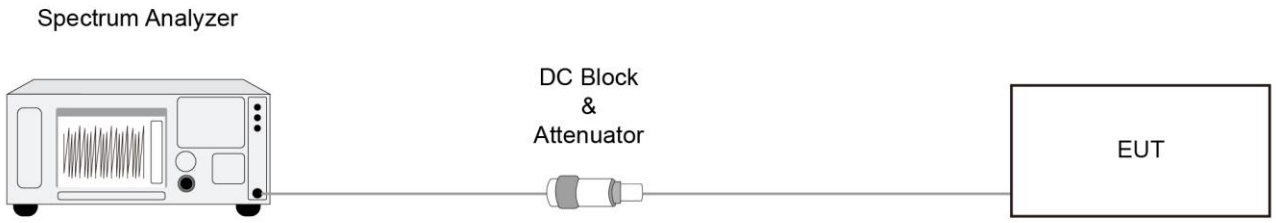
6.3.2. Test Procedure

KDB 789033 D02v02r01-Section Ⅱ)F)

6.3.3. Test Setting

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire 26dB EBW of the signal.
3. RBW = 1MHz (510kHz, if measurement bandwidth of Maximum PSD is specified in 500 kHz)
4. VBW = 3 × RBW
5. Number of sweep points ≥ 2 × (span / RBW)
6. Detector = power averaging (Average)
7. Sweep time = auto
8. Trigger = free run
9. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
10. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
11. Add 10*log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10*log(1/0.25) = 6 dB if the duty cycle is 25 percent.

6.3.4. Test Setup



6.3.5. Test Result

Refer to Appendix A.2.

6.4. Radiated Spurious Emission Measurement

6.4.1. 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

6.4.2. Test Procedure

KDB 789033 D02v02r01- Section II)G)

6.4.3. 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

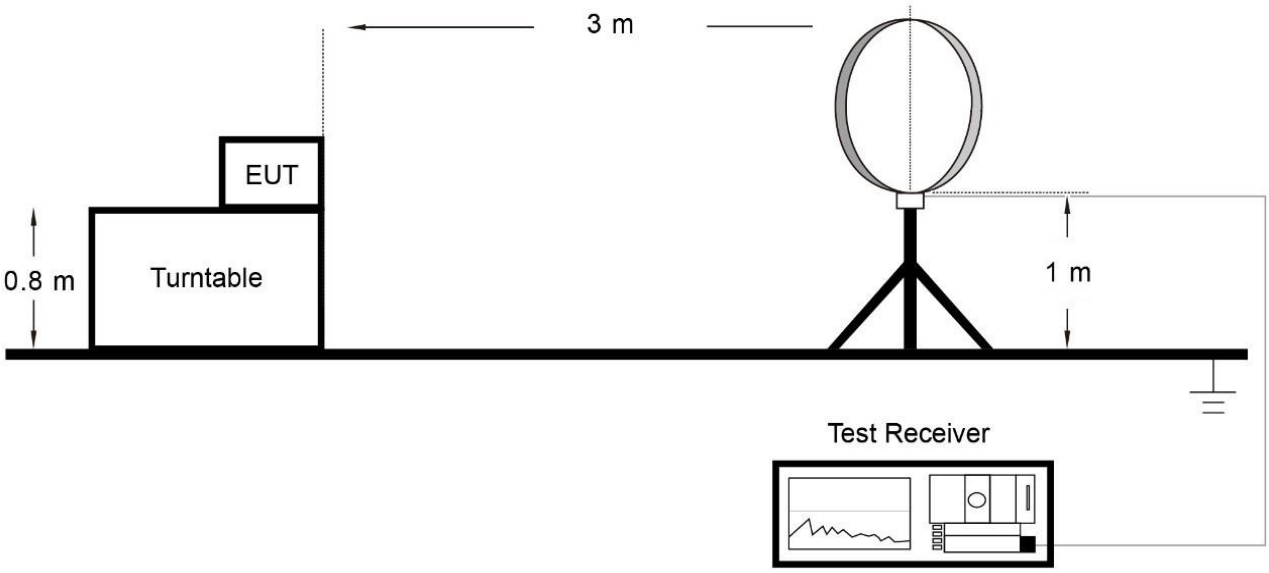
5. Sweep time = auto

6. Trace mode = max hold

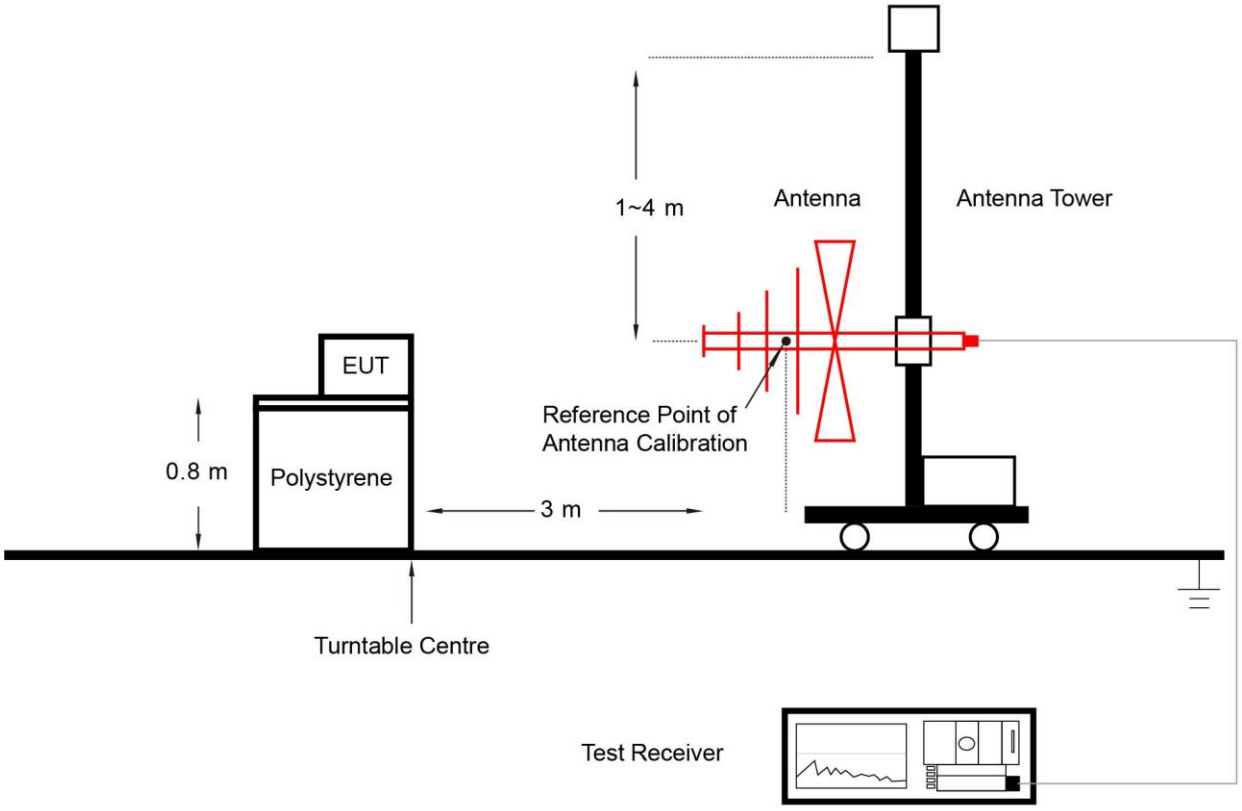
7. Trace was allowed to stabilize

6.4.4. Test Setup

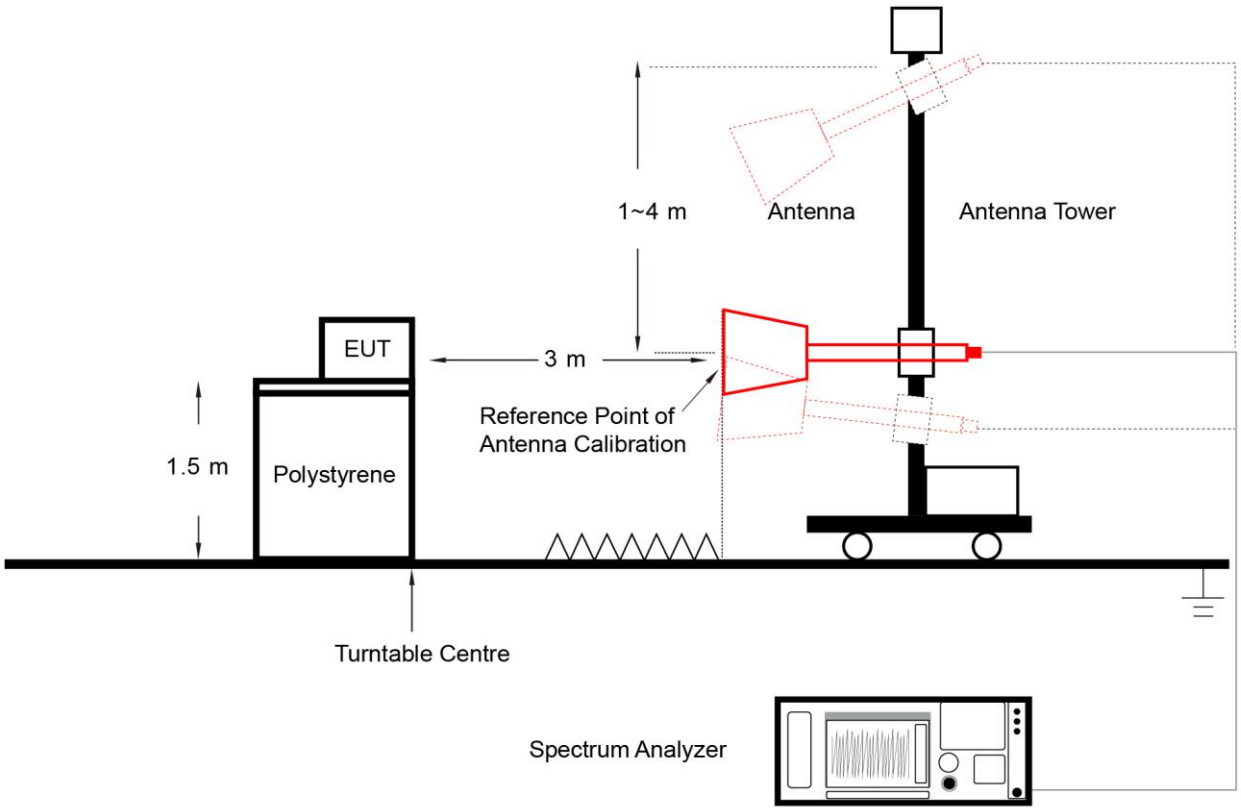
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.4.5. Test Result

Refer to Appendix A.3.

6.5. Radiated Restricted Band Edge Measurement

6.5.1. 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	--	--	--

For 15.407(b) requirement:

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Refer to KDB 789033 D02v02r01 G)2)c), as specified in § 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a maximum emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in § 15.407(b)(4)). However, an out-of-band emission that complies with both the peak and average limits of § 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz maximum emission limit.

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

6.5.2. Test Procedure

KDB 789033 D02v02r01- Section II)G)

6.5.3. Test Setting

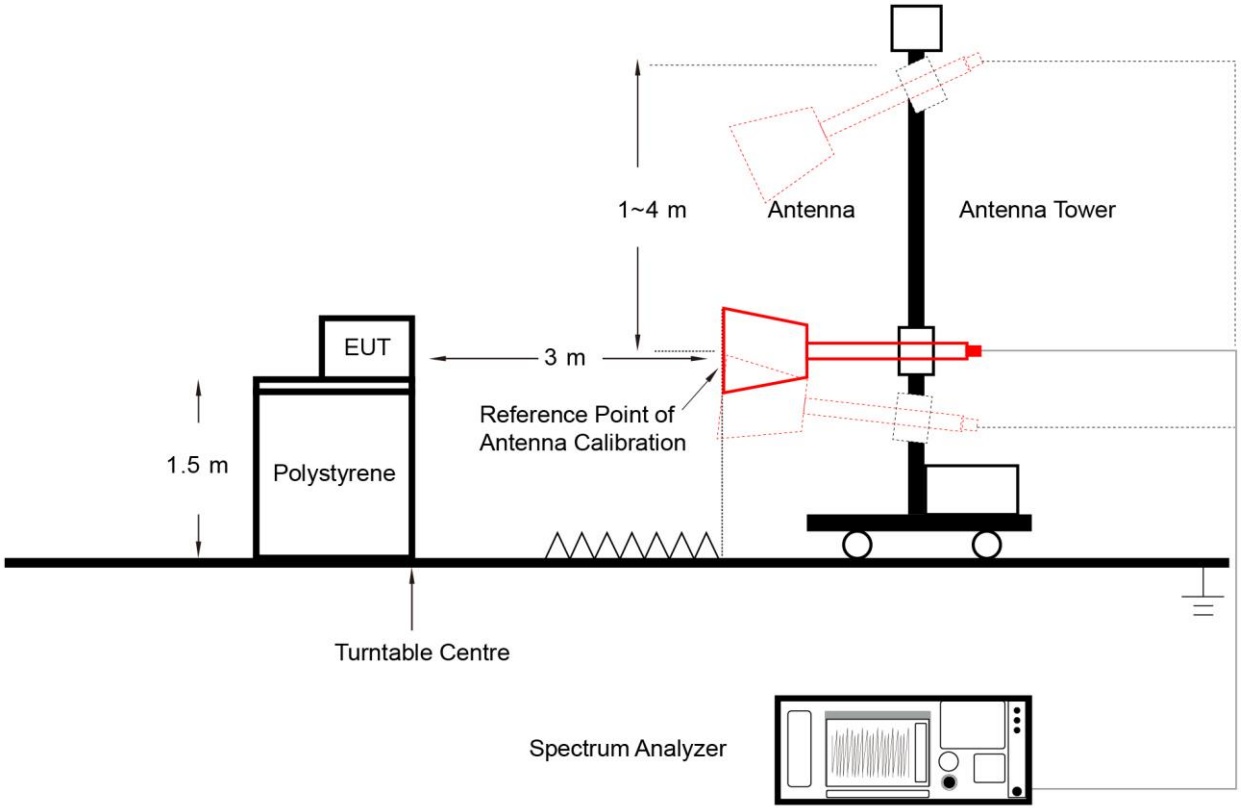
Peak Measurements above 1GHz

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 = 10Hz
4. If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration
5. Detector = Peak
6. Sweep time = Auto
7. Trace mode = Max hold
8. Trace was allowed to stabilize

6.5.4. Test Setup



6.5.5. Test Result

Refer to Appendix A.4.

Appendix A – Test Result

A.1 Output Power Test Result

Test Site	WZ-SR5	Test Engineer	Cloud Guo
Test Date	2024-03-13		
Test Configuration	L11UG-5HaxD-US (UNII-Band 1)		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	30 Degree EIRP (dBm)	30 Degree EIRP Limit (dBm)	Result
11ax-HE80	MCS0	42	5210	-12.18	-11.84	-9.00	8.00	19.00	≤ 21.00	Pass

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

Note 2: 30 Degree EIRP (dBm) = Total Average Power (dBm) + 30° Ant Gain(dBi).

Test Site	WZ-SR5	Test Engineer	Cloud Guo
Test Date	2024-03-13		
Test Configuration	L11UG-5HaxD-US (UNII-2a & UNII-2c & UNII-3)		

Test Mode	Data Rate MCS	Channel No.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Power Limit (dBm)
				Ant 0	Ant 1		
11ax-HE80	MCS0	58	5290	-3.60	-3.78	-0.68	≤ -0.02
11ax-HE80	MCS0	106	5530	-3.66	-3.27	-0.45	≤ -0.02
11ac-VHT20	MCS0	165	5825	2.88	2.86	5.88	≤ 6.00

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

Note 2: For 5250-5350MHz & 5470-5725MHz, the conducted power limit is as below.

802.11ax-HE80: 11 + 10 $\log_{10}$ B – (Ant Gain – 6) > -0.02dBm.

Test Site	WZ-SR5	Test Engineer	Cloud Guo
Test Date	2024-03-13		
Test Configuration	L11UG-5HaxD-NB-US (UNII-Band 1)		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	30 Degree EIRP (dBm)	30 Degree EIRP Limit (dBm)	Result
11ax-HE80	MCS0	42	5210	-12.88	-12.19	-9.51	8.00	18.49	≤ 21.00	Pass

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

Note 2: 30 Degree EIRP (dBm) = Total Average Power (dBm) + 30° Ant Gain(dBi).

Test Site	WZ-SR5	Test Engineer	Cloud Guo
Test Date	2024-03-13		
Test Configuration	L11UG-5HaxD-NB-US (UNII-2a & UNII-2c & UNII-3)		

Test Mode	Data Rate MCS	Channel No.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Power Limit (dBm)
				Ant 0	Ant 1		
11ax-HE80	MCS0	58	5290	-4.65	-7.27	-2.76	≤ -0.02
11ax-HE80	MCS0	106	5530	-4.43	-4.35	-1.38	≤ -0.02
11ac-VHT20	MCS0	165	5825	2.37	1.78	5.10	≤ 6.00

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

Note 2: For 5250-5350MHz & 5470-5725MHz, the conducted power limit is as below.

802.11ax-HE80: 11 + 10 $\log_{10}$ B – (Ant Gain – 6) > -0.02dBm.

A.2 Power Spectral Density Test Result

Test Site	WZ-SR5	Test Engineer	Cloud Guo
Test Date	2024-03-13		
Test Configuration	L11UG-5HaxD-US		
Test Item	Power Spectral Density (UNII-Band 1 & UNII-2a & UNII-2c)		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	AV PSD (dBm/ MHz)		Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/MHz)
				Ant 0	Ant 1			
11a	6Mbps	44	5220	-23.088	-22.860	99.80	-19.96	≤ - 8.01
11ax-HE20	MCS0	64	5320	-21.154	-20.761	99.62	-17.94	≤ - 16.01
11a	MCS0	140	5700	-18.863	-19.254	99.80	-16.04	≤ - 16.01

Note 1: When EUT duty cycle ≥ 98%, the total PSD (dBm/MHz) =10*log {$10^{(\text{Ant 0 AVGPSD}/10)}$ + $10^{(\text{Ant 1 AVGPSD}/10)}$}.

Note 2:

For 5150 - 5250MHz Band: PSD Limit (dBm/MHz) = 17 - (31.01 - 6) = -8.01dBm/MHz

For 5250 - 5350MHz Band: PSD Limit (dBm/MHz) = 11 - (33.01 - 6) = -16.01dBm/MHz.

For 5470 - 5725MHz Band: PSD Limit (dBm/MHz) = 11 - (33.01 - 6) = -16.01dBm/MHz.

Test Site	WZ-SR5	Test Engineer	Cloud Guo
Test Date	2024-03-13		
Test Configuration	L11UG-5HaxD-US		
Test Item	Power Spectral Density (UNII-Band 3)		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	AV PSD (dBm/ 510kHz)		Duty Cycle (%)	Total PSD (dBm/ 510kHz)	PSD Limit (dBm/ 500kHz)
				Ant 0	Ant 1			
11a	6Mbps	165	5825	-9.559	-9.172	99.80	-6.35	≤ 2.99

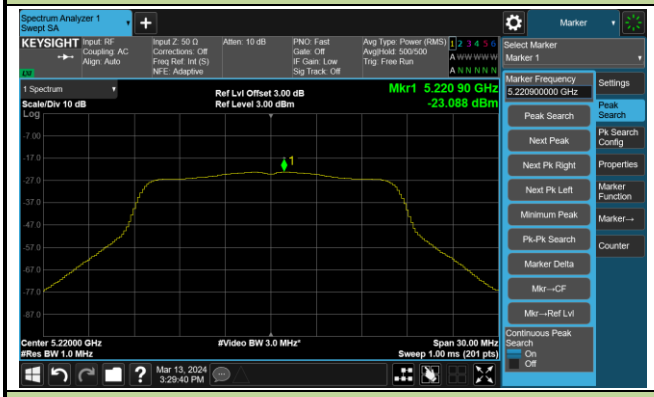
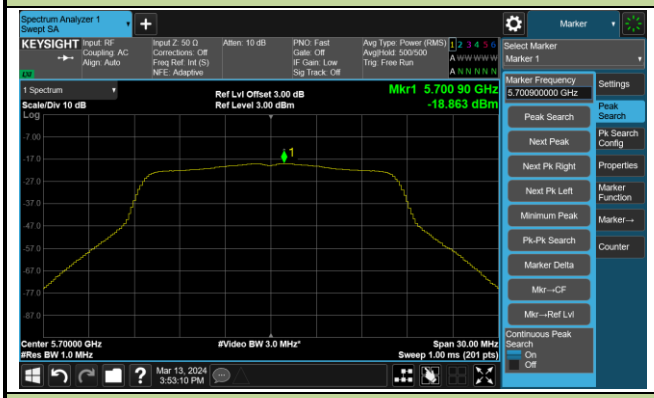
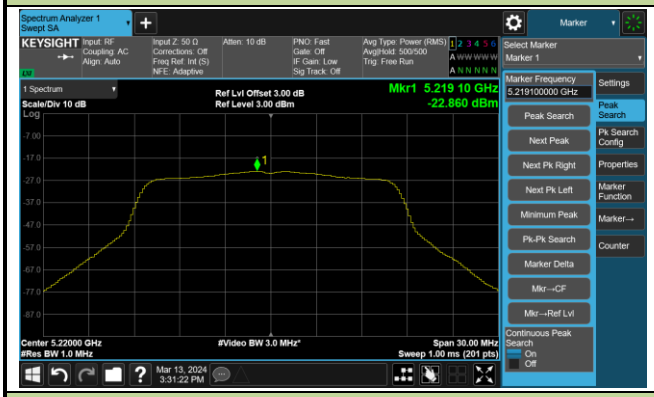
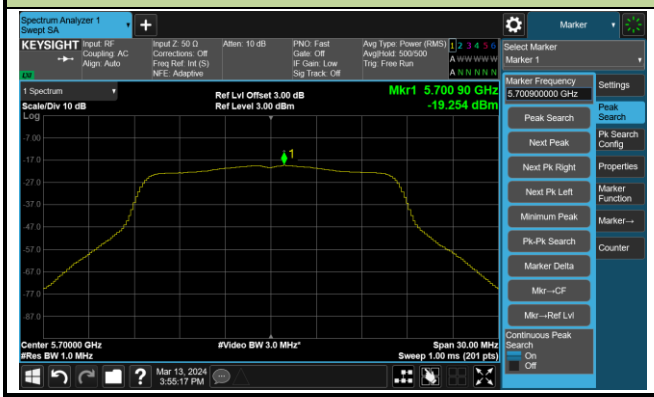
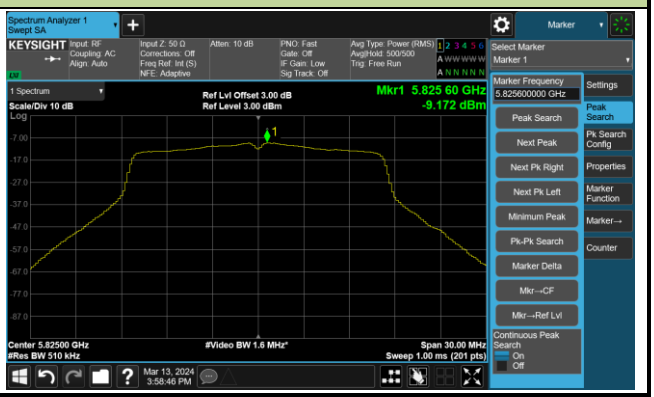
Note 1:

When EUT duty cycle < 98%, the total PSD (dBm/510kHz) =10*log {$10^{(\text{Ant 0 AVGPSD}/10)}$ + $10^{(\text{Ant 1 AVGPSD}/10)}$}

+10*log (1/Duty cycle).

When EUT duty cycle ≥ 98%, the total PSD (dBm/510kHz) =10*log {$10^{(\text{Ant 0 AVGPSD}/10)}$ + $10^{(\text{Ant 1 AVGPSD}/10)}$}.

Note 2: PSD Limit (dBm/500kHz) = 30 - (33.01 - 6) = 2.99 dBm/500kHz.

Power Spectral Density- Ant 0	
802.11a Channel 44 (5220MHz)	802.11ax-HE20 Channel 64 (5320MHz)
	
802.11a Channel 140 (5700MHz)	802.11a Channel 165 (5825MHz)
	
Power Spectral Density- Ant 1	
802.11a Channel 44 (5220MHz)	802.11ax-HE20 Channel 64 (5320MHz)
	
802.11a Channel 140 (5700MHz)	802.11a Channel 165 (5825MHz)
	

Test Site	WZ-SR5	Test Engineer	Cloud Guo
Test Date	2024-03-13~2024-03-15		
Test Configuration	L11UG-5HaxD-NB-US		
Test Item	Power Spectral Density (UNII-Band 1 & UNII-2a)		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	AV PSD (dBm/ MHz)		Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/MHz)
				Ant 0	Ant 1			
11a	6Mbps	44	5220	-22.492	-21.960	99.80	-19.21	≤ - 8.01
11ax-HE20	MCS0	64	5320	-21.539	-22.215	99.62	-18.85	≤ - 16.01
11a	MCS0	140	5700	-19.256	-18.864	99.80	-16.05	≤ - 16.01

Note 1: When EUT duty cycle ≥ 98%, the total PSD (dBm/MHz) =10*log {$10^{(\text{Ant 0 AVGPSD}/10)}$ + $10^{(\text{Ant 1 AVGPSD}/10)}$}.

Note 2:

For 5150 - 5250MHz Band: PSD Limit (dBm/MHz) = 17 - (31.01 - 6) = -8.01dBm/MHz

For 5250 - 5350MHz Band: PSD Limit (dBm/MHz) = 11 - (33.01 - 6) = -16.01dBm/MHz.

For 5470 - 5725MHz Band: PSD Limit (dBm/MHz) = 11 - (33.01 - 6) = -16.01dBm/MHz.

Test Site	WZ-SR5	Test Engineer	Cloud Guo
Test Date	2024-03-13		
Test Configuration	L11UG-5HaxD-NB-US		
Test Item	Power Spectral Density (UNII-Band 3)		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	AV PSD (dBm/ 510kHz)		Duty Cycle (%)	Total PSD (dBm/ 510kHz)	PSD Limit (dBm/ 500kHz)
				Ant 0	Ant 1			
11a	6Mbps	157	5785	-10.724	-10.109	99.80	-7.40	≤ 2.99

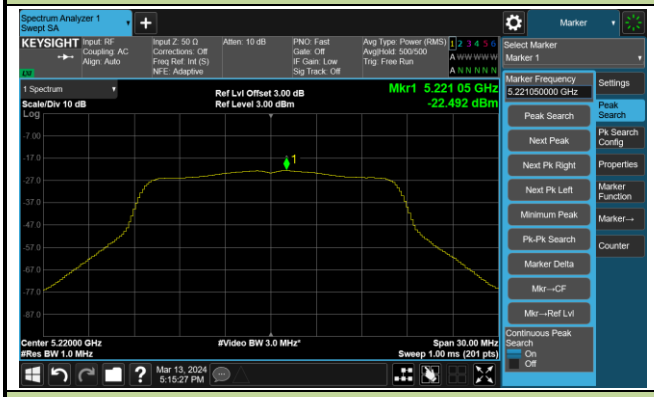
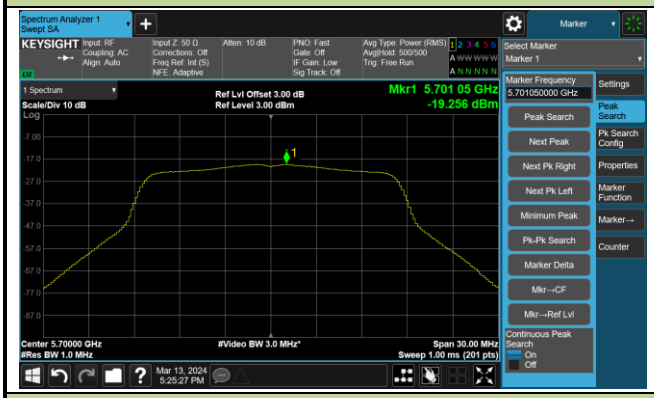
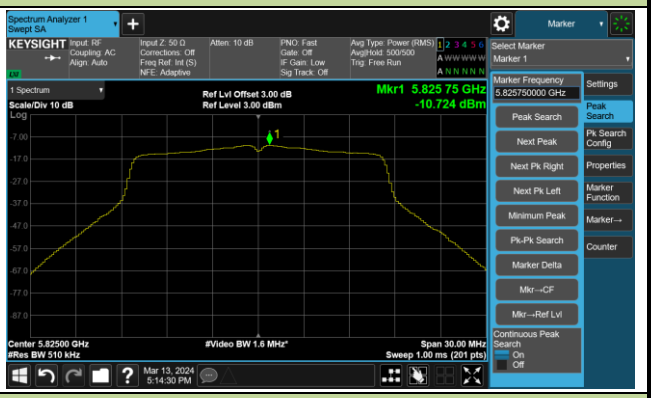
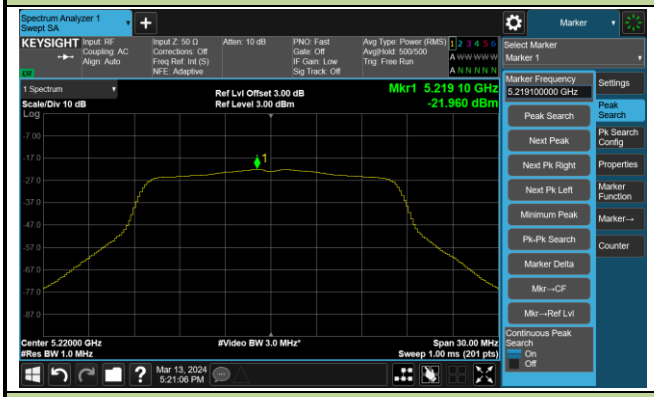
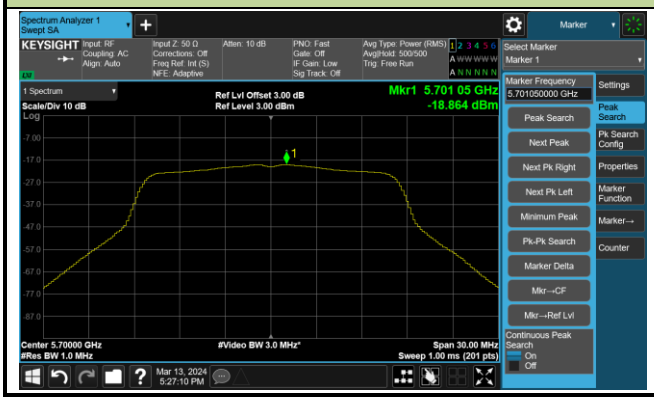
Note 1:

When EUT duty cycle < 98%, the total PSD (dBm/510kHz) =10*log {$10^{(\text{Ant 0 AVGPSD}/10)}$ + $10^{(\text{Ant 1 AVGPSD}/10)}$}

+10*log (1/Duty cycle).

When EUT duty cycle ≥ 98%, the total PSD (dBm/510kHz) =10*log {$10^{(\text{Ant 0 AVGPSD}/10)}$ + $10^{(\text{Ant 1 AVGPSD}/10)}$}.

Note 2: PSD Limit (dBm/500kHz) = 30 - (33.01 - 6) = 2.99 dBm/500kHz.

Power Spectral Density- Ant 0	
802.11a Channel 44 (5220MHz)	802.11ax-HE20 Channel 64 (5320MHz)
	
802.11a Channel 140 (5700MHz)	802.11a Channel 165 (5825MHz)
	
Power Spectral Density- Ant 1	
802.11a Channel 44 (5220MHz)	802.11ax-HE20 Channel 64 (5320MHz)
	
802.11a Channel 140 (5700MHz)	802.11a Channel 165 (5825MHz)
	

A.3 Radiated Spurious Emission Test Result

L11UG-5HaxD-US:

Test Site	WZ-AC2	Test Engineer	Dick Shen
Test Date	2024-03-25	Test Mode	802.11ac-VHT80 – Channel 42
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	7451.500	32.0	12.2	44.2	74.0	-29.8	Peak	Vertical
*	9670.000	35.4	13.4	48.9	68.2	-19.3	Peak	Vertical
	11557.000	32.5	17.9	50.4	74.0	-23.6	Peak	Vertical
*	14931.500	33.3	19.7	53.0	68.2	-15.2	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

Note 2: 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	Dick Shen
Test Date	2024-03-25	Test Mode	802.11ac-VHT20 – Channel 52
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.		

Mark	Frequency (MHz)	Reading Level (dBµV)	Factor (dB/m)	Measure Level (dBµV/m)	Limit (dBµV/m)	Margin (dB/m)	Detector	Polarization
	7409.000	32.8	11.7	44.6	74.0	-29.4	Peak	Horizontal
*	10129.000	33.1	14.2	47.3	68.2	-20.9	Peak	Horizontal
	11327.500	31.5	17.4	48.9	74.0	-25.1	Peak	Horizontal
*	14532.000	31.9	20.1	52.0	68.2	-16.2	Peak	Horizontal

Note 1: “*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBµV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

Note 2: 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	Dick Shen
Test Date	2024-03-25	Test Mode	802.11ac-VHT80 – Channel 106
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB/m)	Detector	Polarization
	8140.000	33.0	11.7	44.8	74.0	-29.2	Peak	Vertical
*	9738.000	32.9	13.5	46.4	68.2	-21.8	Peak	Vertical
	11591.000	31.7	17.3	49.0	74.0	-25.0	Peak	Vertical
*	14226.000	31.4	20.0	51.4	68.2	-16.8	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

L11UG-5HaxD-NB-US:

Test Site	WZ-AC2	Test Engineer	Dick Shen
Test Date	2024-03-25	Test Mode	802.11ac-VHT80 – Channel 42
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	8335.500	34.9	11.0	45.9	74.0	-28.1	Peak	Vertical
*	10511.500	31.9	15.4	47.4	68.2	-20.8	Peak	Vertical
	11812.000	30.9	17.7	48.6	74.0	-25.4	Peak	Vertical
*	14209.000	31.9	19.8	51.8	68.2	-16.4	Peak	Vertical

Note 1: "*" is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

Note 2: 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	Dick Shen
Test Date	2024-03-25	Test Mode	802.11ac-VHT20 – Channel 52
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB/m)	Detector	Polarization
	8412.000	40.9	11.4	52.3	74.0	-21.7	Peak	Horizontal
*	10520.000	33.9	15.4	49.3	68.2	-18.9	Peak	Horizontal
	11514.500	31.2	17.3	48.5	74.0	-25.5	Peak	Horizontal
*	14370.500	32.1	20.2	52.3	68.2	-15.9	Peak	Horizontal

Note 1: “*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

Note 2: 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	Dick Shen
Test Date	2024-03-25	Test Mode	802.11ac-VHT80 – Channel 106
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB/m)	Detector	Polarization
	8293.000	35.2	11.0	46.1	74.0	-27.9	Peak	Vertical
*	9916.500	33.1	13.7	46.8	68.2	-21.4	Peak	Vertical
	11106.500	32.0	16.7	48.6	74.0	-25.4	Peak	Vertical
*	14447.000	32.1	20.4	52.5	68.2	-15.7	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

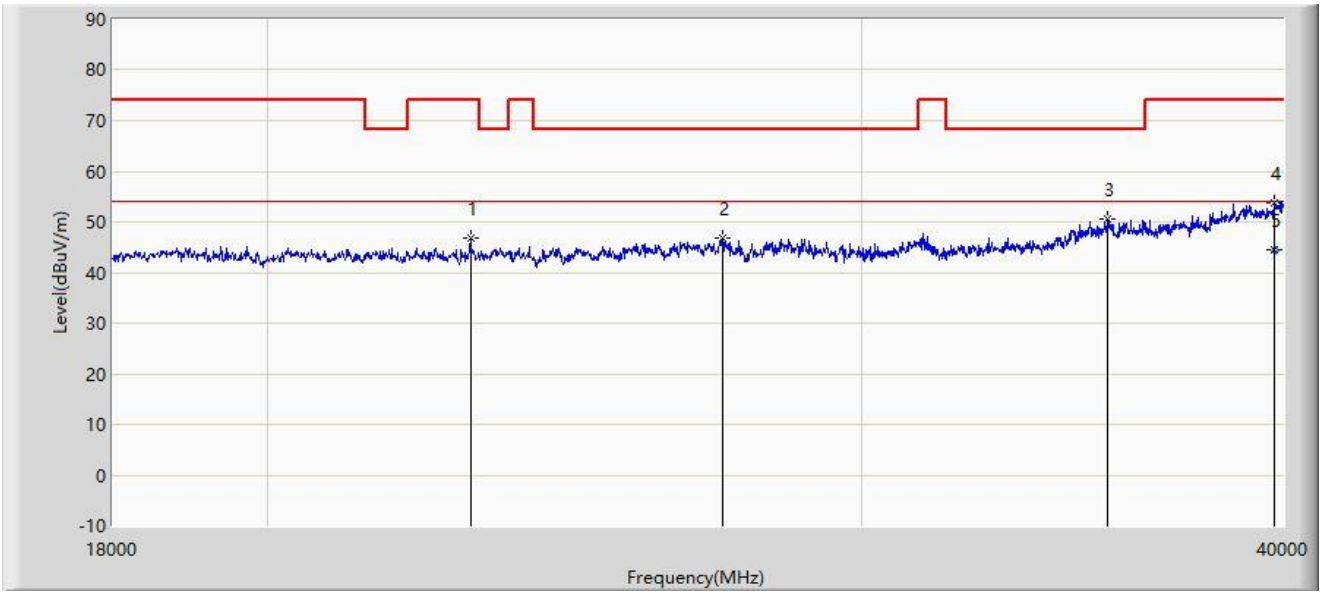
Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

The Result of Radiated Emission above 18GHz:

L11UG-5HaxD-US:

Site: WZ-AC2	Test Date: 2024-03-26
Limit: FCC_Part15.209_RSE(3m)	Engineer: Dick Shen
Probe: BBHA9170_549_18-40GHz	Polarity: Vertical
EUT: L11UG-5HaxD-US	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11a at 5745MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		22983.000	46.845	54.017	-27.155	74.000	-7.172	PK
2		27284.000	46.789	53.346	-21.411	68.200	-6.557	PK
3		35490.000	50.500	57.019	-17.700	68.200	-6.519	PK
4		39769.000	53.712	53.667	-20.288	74.000	0.044	PK
5	*	39769.000	44.545	44.500	-9.455	54.000	0.044	AV

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

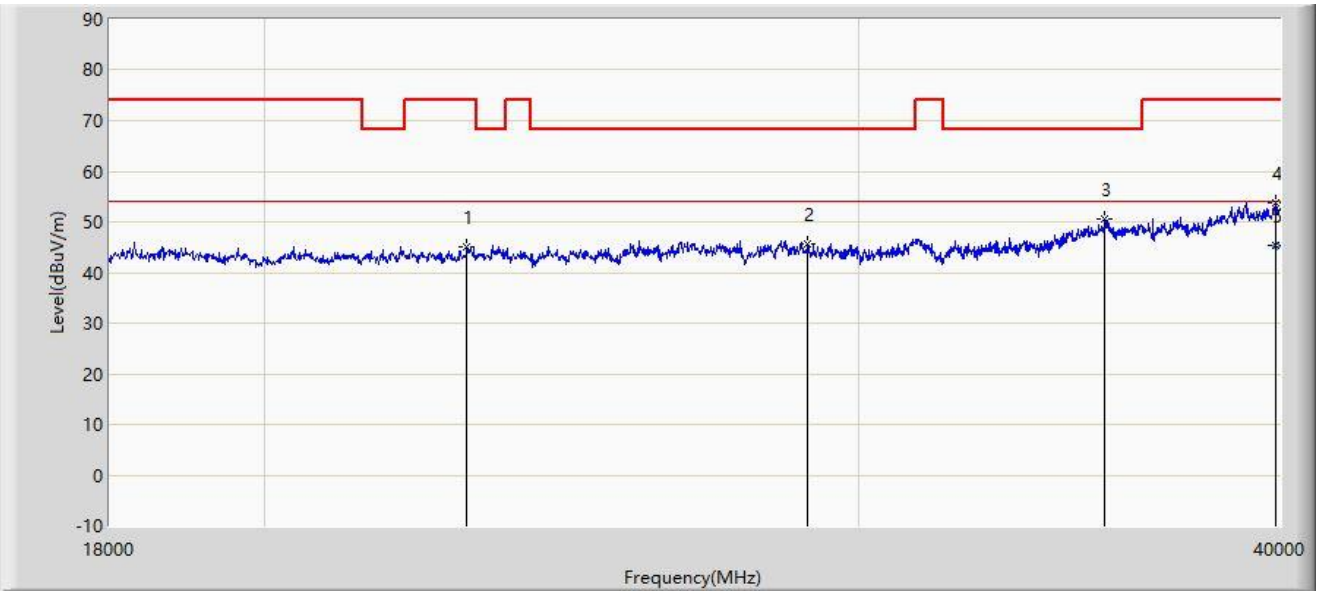
Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

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.

L11UG-5HaxD-NB-US:

Site: WZ-AC2	Test Date: 2024-03-26
Limit: FCC_Part15.209_RSE(3m)	Engineer: Dick Shen
Probe: BBHA9170_549_18-40GHz	Polarity: Vertical
EUT: L11UG-5HaxD-NB-US	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11a at 5745MHz	



No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		22972.000	45.193	52.490	-28.807	74.000	-7.297	PK
2		28978.000	45.646	53.570	-22.554	68.200	-7.924	PK
3		35501.000	50.456	56.903	-17.744	68.200	-6.447	PK
4		39868.000	53.637	52.690	-20.363	74.000	0.947	PK
5	*	39868.000	45.447	44.500	-8.553	54.000	0.947	AV

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

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

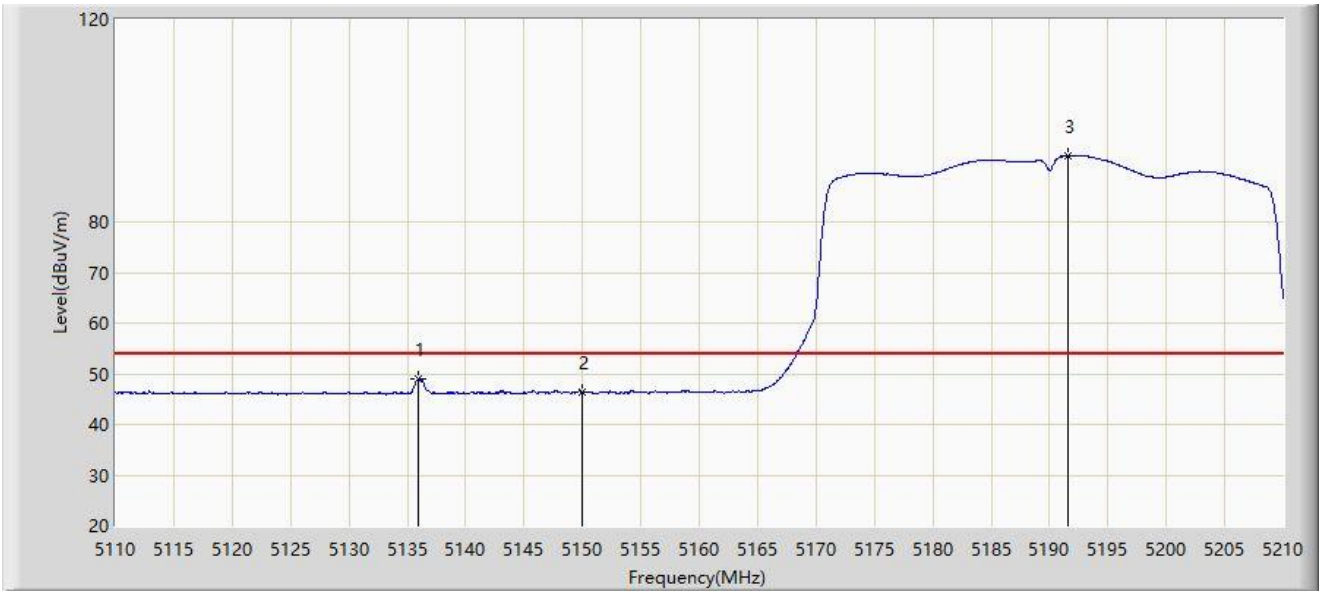
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

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

A.4 Radiated Restricted Band Edge Test Result

L11UG-5HaxD-US:

Site: WZ-AC2	Test Date: 2024-03-24
Limit: FCC_5G_RE(3m)	Engineer: Dick Shen
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: L11UG-5HaxD-US	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at 5190MHz	



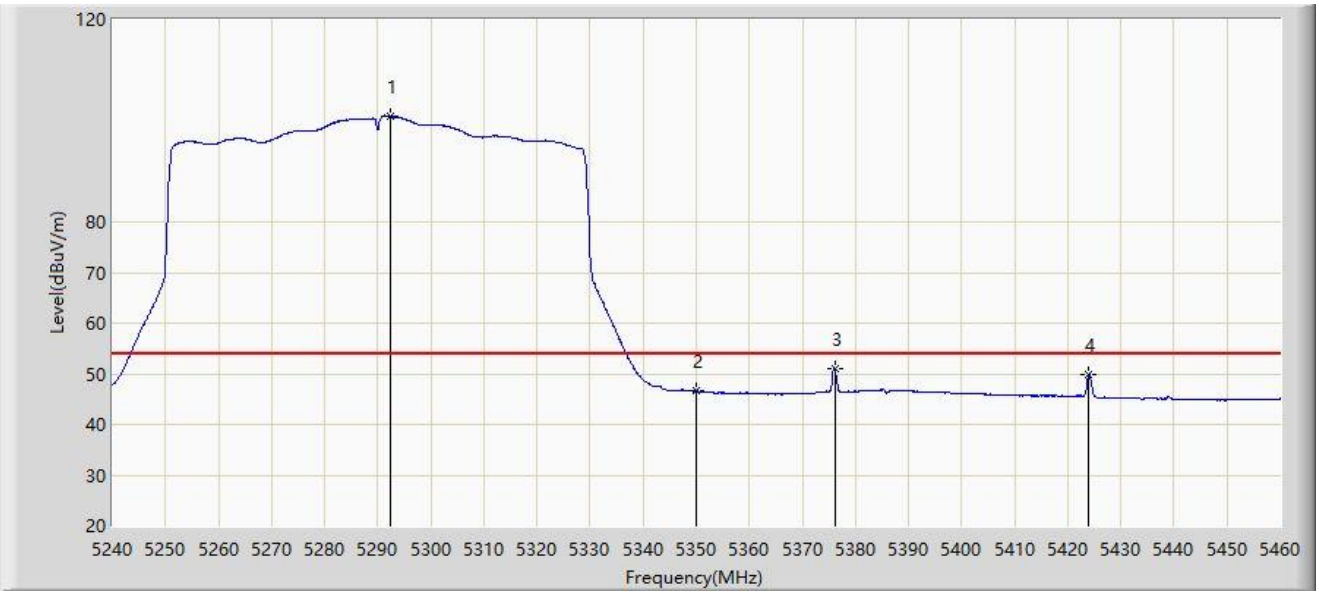
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	5135.950	49.108	45.785	-4.892	54.000	3.323	AV
2		5150.000	46.291	42.809	-7.709	54.000	3.482	AV
3		5191.600	92.998	89.984	N/A	N/A	3.014	AV

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).

Site: WZ-AC2	Test Date: 2024-03-24
Limit: FCC_5G_RE(3m)	Engineer: Dick Shen
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: L11UG-5HaxD-US	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE80 at 5290MHz	



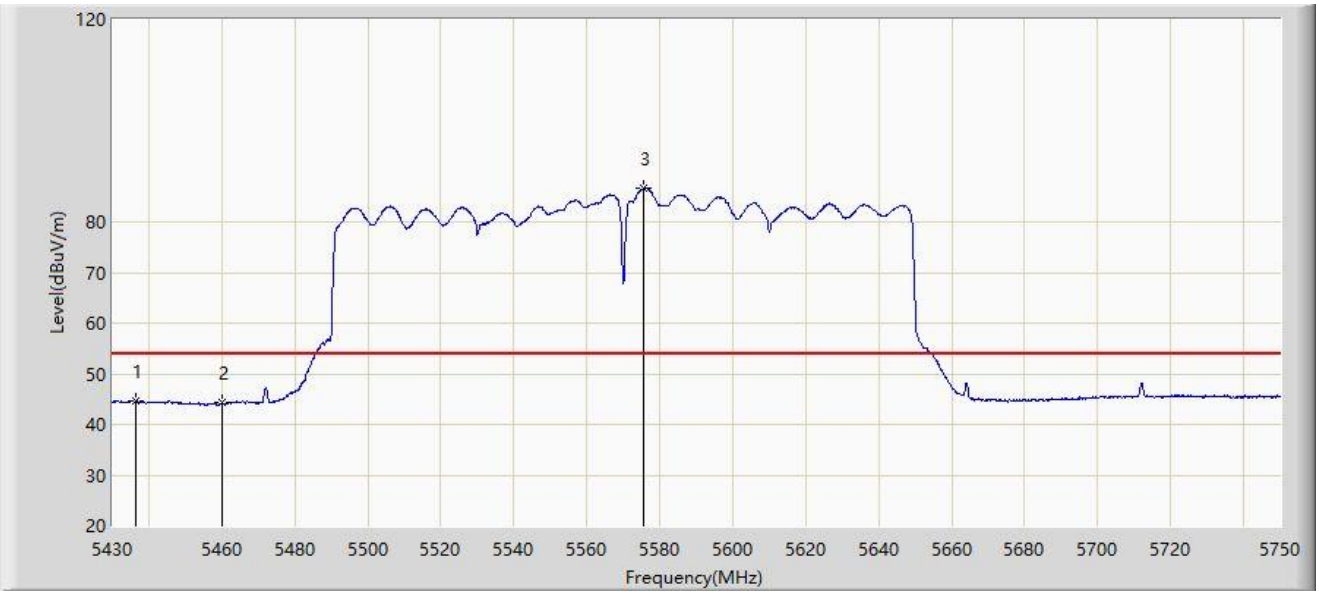
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		5292.250	100.906	98.274	N/A	N/A	2.632	AV
2		5350.000	46.528	43.708	-7.472	54.000	2.820	AV
3	*	5376.070	50.927	47.928	-3.073	54.000	2.999	AV
4		5423.920	49.737	46.416	-4.263	54.000	3.321	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).

Site: WZ-AC2	Test Date: 2024-03-24
Limit: FCC_5G_RE(3m)	Engineer: Dick Shen
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: L11UG-5HaxD-US	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ac-VHT160 at 5570MHz	



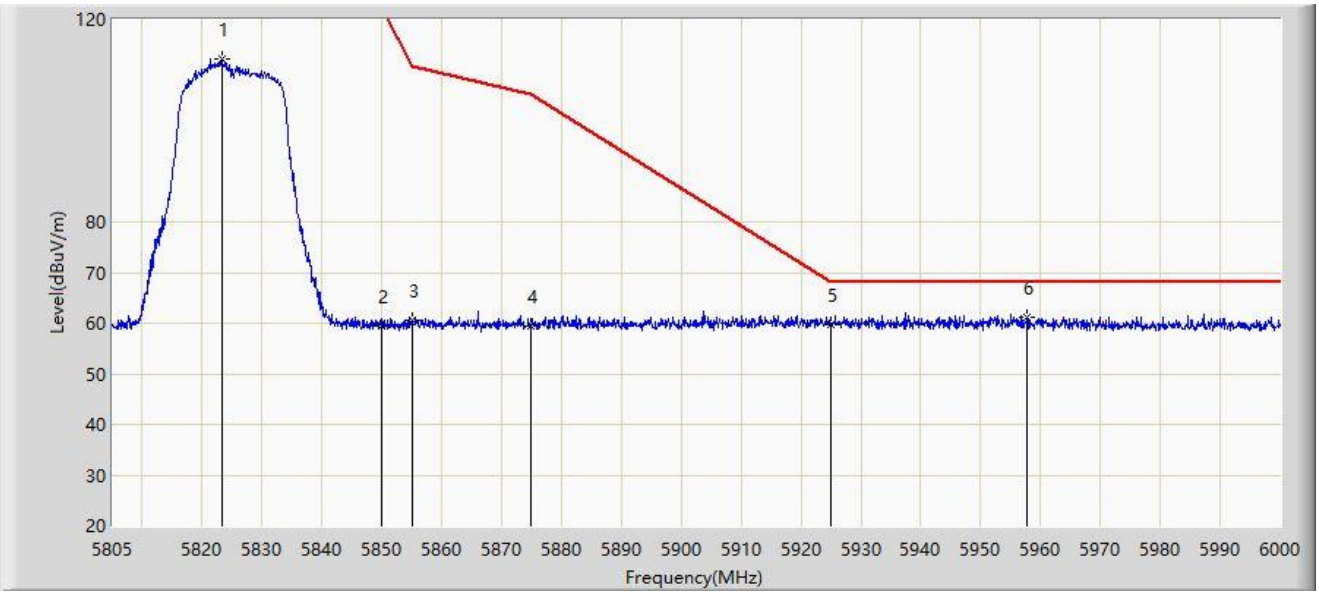
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	5436.400	44.728	41.552	-9.272	54.000	3.176	AV
2		5460.000	44.262	41.113	-9.738	54.000	3.149	AV
3		5575.600	86.684	83.242	N/A	N/A	3.441	AV

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).

Site: WZ-AC2	Test Date: 2024-03-24
Limit: FCC_5.8G_RE(3m)	Engineer: Dick Shen
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: L11UG-5HaxD-US	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ac-VHT20 at 5825MHz	



No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		5823.232	112.042	107.156	N/A	N/A	4.885	PK
2		5850.000	59.463	54.480	-62.737	122.200	4.984	PK
3		5855.000	60.534	55.496	-50.266	110.800	5.038	PK
4		5875.000	59.528	54.397	-45.672	105.200	5.131	PK
5		5925.000	59.834	54.599	-8.366	68.200	5.236	PK
6	*	5957.783	61.215	55.829	-6.985	68.200	5.385	PK

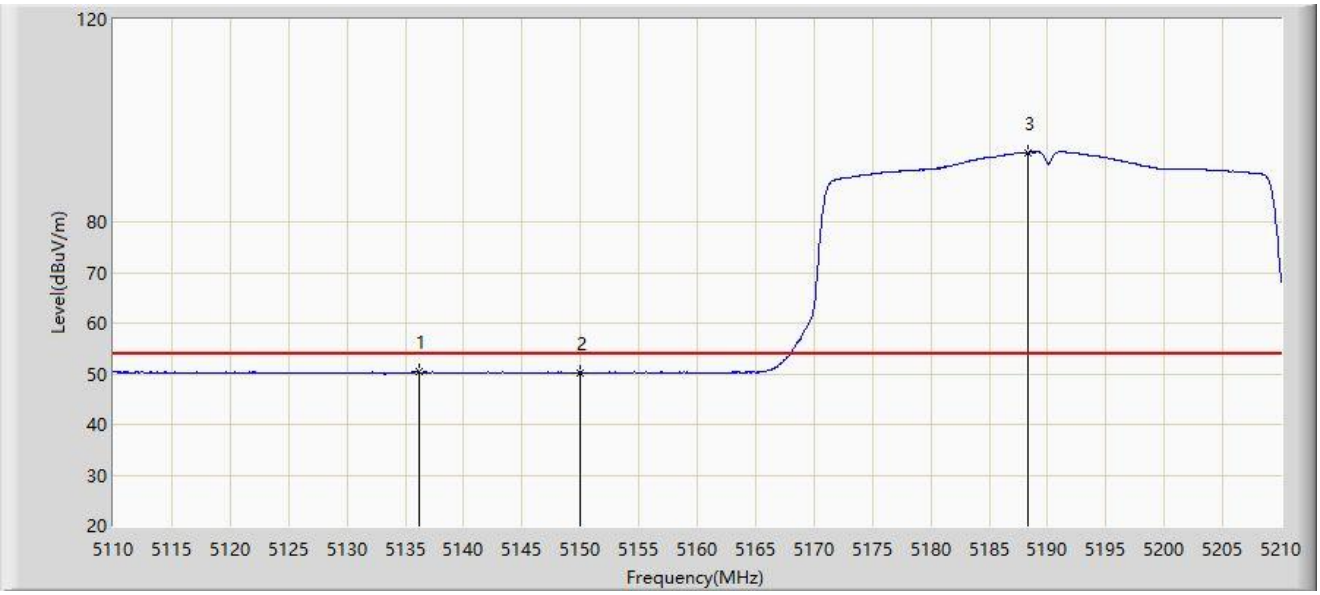
Note 1: " * ", means this data is the worst emission level.

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).

L11UG-5HaxD-NB-US:

Site: WZ-AC2	Test Date: 2024-03-28
Limit: FCC_5G_RE(3m)	Engineer: Dick Shen
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: L11NB Band1	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at 5190MHz	



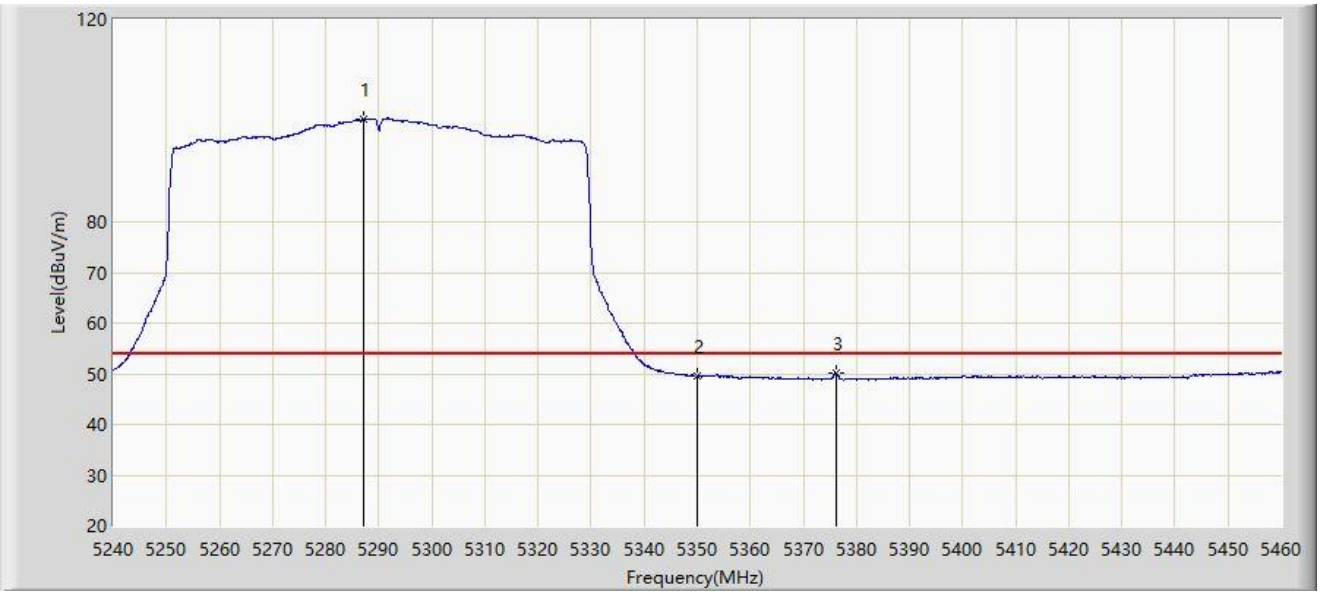
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	5136.250	50.345	47.018	-3.655	54.000	3.327	AV
2		5150.000	50.218	46.736	-3.782	54.000	3.482	AV
3		5188.350	93.765	90.680	N/A	N/A	3.084	AV

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).

Site: WZ-AC2	Test Date: 2024-03-28
Limit: FCC_5G_RE(3m)	Engineer: Dick Shen
Probe: BBHA9120D_1457_1-18GHz	Polarity: Vertical
EUT: L11UG-5HaxD-NB-US	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE80 at 5290MHz	



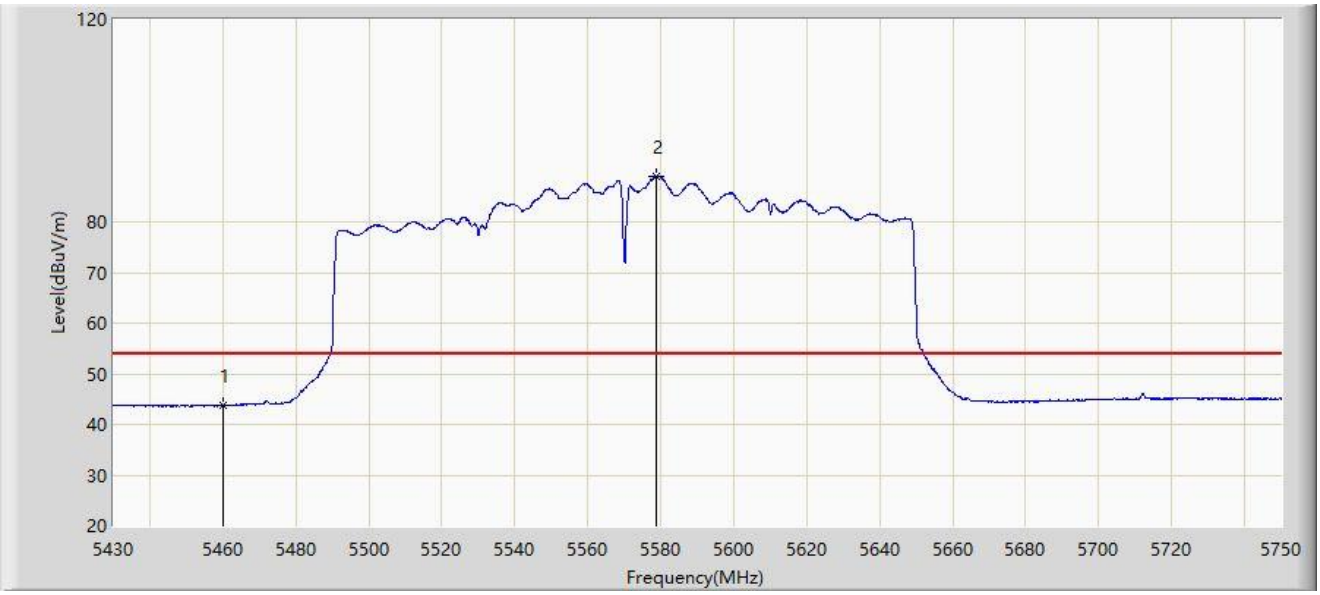
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		5287.080	100.287	97.727	N/A	N/A	2.560	AV
2		5350.000	49.676	46.856	-4.324	54.000	2.820	AV
3	*	5376.070	50.126	47.127	-3.874	54.000	2.999	AV

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).

Site: WZ-AC2	Test Date: 2024-03-24
Limit: FCC_5G_RE(3m)	Engineer: Dick Shen
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: L11UG-5HaxD-NB-US	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ac-VHT160 at 5570MHz	



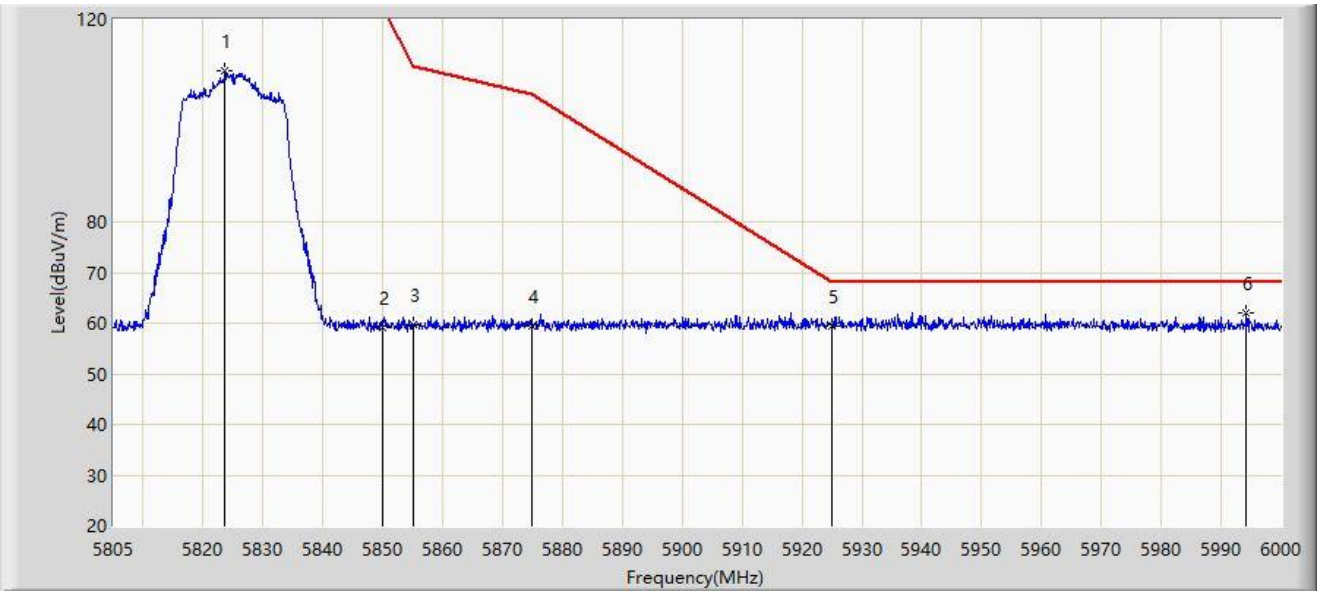
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	5460.000	43.782	40.633	-10.218	54.000	3.149	AV
2		5578.640	88.954	85.509	N/A	N/A	3.445	AV

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).

Site: WZ-AC2	Test Date: 2024-03-24
Limit: FCC_5.8G_RE(3m)	Engineer: Dick Shen
Probe: BBHA9120D_1457_1-18GHz	Polarity: Horizontal
EUT: L11UG-5HaxD-NB-US	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ac-VHT20 at 5825MHz	



No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		5823.623	109.912	105.031	N/A	N/A	4.881	PK
2		5850.000	59.061	54.078	-63.139	122.200	4.984	PK
3		5855.000	59.593	54.555	-51.207	110.800	5.038	PK
4		5875.000	59.334	54.203	-45.866	105.200	5.131	PK
5		5925.000	59.477	54.242	-8.723	68.200	5.236	PK
6	*	5994.248	62.171	56.813	-6.029	68.200	5.358	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).

Appendix B – Test Setup Photograph

Refer to “2403RSU030-UT” file.

Appendix C – EUT Photograph

Refer to “2403RSU030-UE” file.

The End