RF MEASUREMENT REPORT

FCC ID:	VPYLBEE5HY1MW
Applicant:	Murata Manufacturing Co., Ltd.
Product:	Communication Module
Model No.:	LBEE5HY1MW
FCC Classification:	Unlicensed National Information Infrastructure (NII)
FCC Rule Part(s):	Part 15 Subpart E (Section 15.407)
Result:	Complies
Test Date:	2022-09-06 ~ 2022-09-08

Reviewed By: Sunny Sun

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 KDB789033. Test results reported herein relate only to the item(s) tested.

Revision History

Report No.	Version	Description	Issue Date	Note
2208RSU054-U3	Rev. 01	Initial Report	2022-09-27	Invalid
2208RSU054-U3	Rev. 02	Update CIIPC Description	2022-10-11	Valid

Note: This report is prepared for FCC Class II permissive change for changing antenna type, antenna gain and reduce power, so output power and radiated spurious emissions test were evaluated.

CONTENTS

1. General Information

1.1. Applicant

Murata Manufacturing Co., Ltd.

10-1, Higashikotari 1-chome, Nagaokakyo-shi, Kyoto 617-8555, Japan

1.2. Manufacturer

Murata Manufacturing Co., Ltd.

10-1, Higashikotari 1-chome, Nagaokakyo-shi, Kyoto 617-8555, Japan

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	Communication Module
Model No.	LBEE5HY1MW
Test Sample ID.	20220820Sample#19
Wi-Fi Specification	802.11a/b/g/n
Bluetooth Specification	BR & EDR
Antenna Information	Refer to clause 1.6
Working Voltage	DC 3.3V
Working Temperature	-30 ~ 85 °C
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	For 802.11a/n-HT20: 5150~5250MHz, 5250~5350MHz
Type of Modulation	802.11a/n: OFDM
Data Rate	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 72.2Mbps

1.6. Antenna information

Antenna Type	Frequency Band (MHz)	Max Antenna Gain (dBi)
Wi-Fi Antenna (SISO Mode)		
PCB Antenna	2412 ~ 2462	2.10
	5150 ~ 5250	3.50
	5250 ~ 5350	3.50
Bluetooth Antenna		
PCB Antenna	2402 ~ 2480	2.10

1.7. Working Frequencies

802.11a/n-HT20

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	--	--

2. Test Configuration

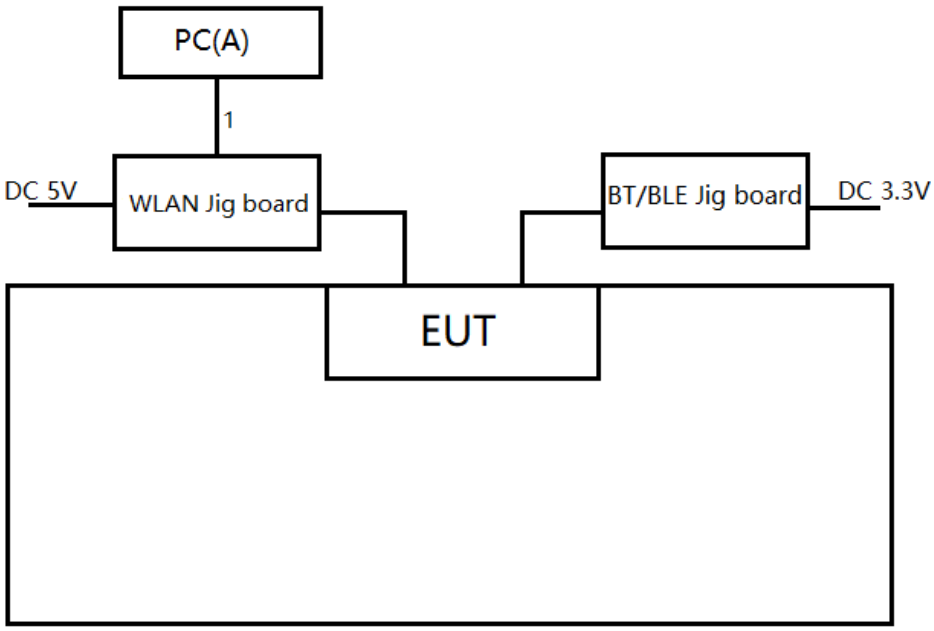
2.1. Test Mode

Mode 1: Transmit by 802.11a (6Mbps)
Mode 2: Transmit by 802.11n-HT20 (MCS0)

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



Product		Manufacturer	Model No.
A	Notebook (for RF Test)	HP	HP-TPN-I125
Cable Type		Cable Description	
1	USB Cable	Shielded, 3.0m	

2.3. Test Software

The test utility software used during testing was “Tera Term.exe”, and the version was 4.106.

Note: Final parameter value was as following.

Test Mode	Test Channel No.	Test Frequency (MHz)	Power Parameter Value
802.11a	36	5180	40
	44	5220	44
	48	5240	44
	52	5260	44
	60	5300	40
	64	5320	40
802.11n-HT20	36	5180	40
	44	5220	44
	48	5240	44
	52	5260	44
	60	5300	40
	64	5320	40

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
- 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.**

Conclusion:

The unit complies with the requirement of §15.203.

4. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2022-12-29	SIP-AC3
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2023-03-14	SIP-AC3
Signal Analyzer	Keysight	N9020B	MRTSUE06604	1 year	2023-09-06	SIP-AC3
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2023-06-08	SIP-AC3
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06598	1 year	2022-11-09	SIP-AC3
Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2023-07-30	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06619	1 year	2022-11-02	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06622	1 year	2022-11-28	SIP-AC3
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2023-01-13	SIP-AC3
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06646	1 year	2023-08-16	SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2022-12-23	SIP-AC3
Temperature Chamber	BAOYT	BYG-408CS	MRTSUE06847	1 year	2023-02-22	SIP-TR1
Thermohygrometer	testo	Testo 608-H1	MRTSUE11022	1 year	2022-11-02	SIP-TR1
Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2023-07-08	SIP-TR1
USB Power Sensor	Keysight	U2021XA	MRTSUE06595	1 year	2023-08-23	SIP-TR1

Software	Version	Function
EMI Software	V3.0.0	EMI Test Software

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 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
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
15.407(a)(1)(ii), (2), (3)(i)	Maximum Conducted Output Power	Conducted	Pass
15.205, 15.209 15.407(b)(8), (9), (10)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Radiated	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 ofthe system to connect the EUT to the analyzer at all frequencies of interest.
2. Output power test was verified over all data rates of each mode (data refers to operational description), and then choose the maximum power output (low data rate) for final test of each channel.
3. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.

6.2. Output Power Measurement

6.2.1. Test Limit

For client devices in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

For the 5.25-5.35 GHz, 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.

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

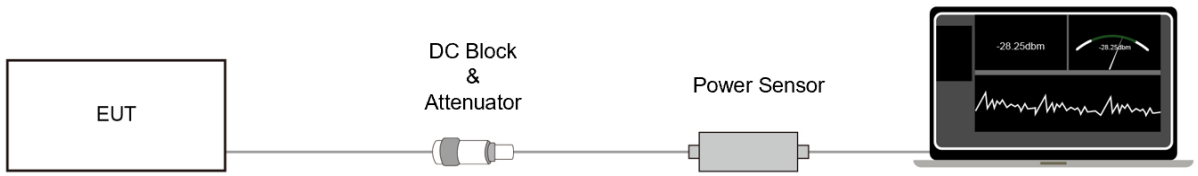
KDB 789033D02v02r01- Section II)E)3)b) Method PM-G

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. 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

KDB 789033 D02v02r01- Section II)G)

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

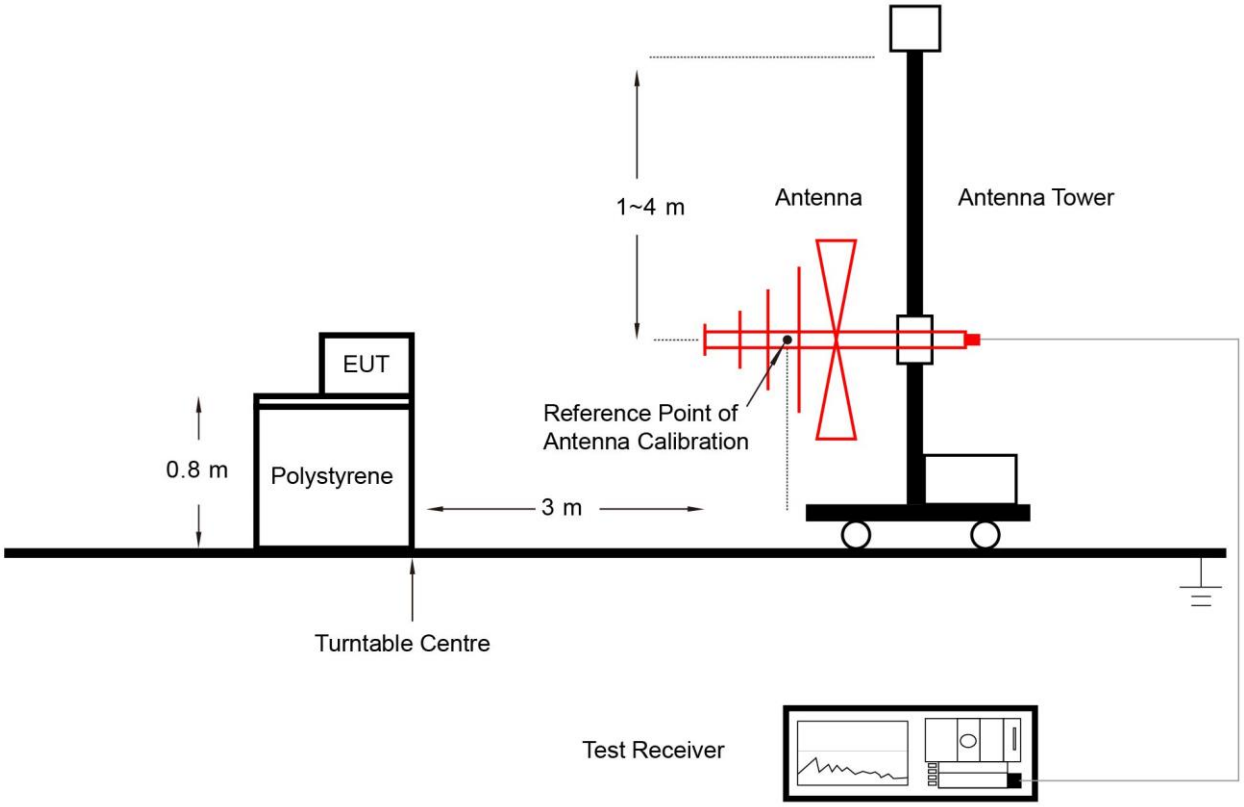
5. Sweep time = auto

6. Trace mode = max hold

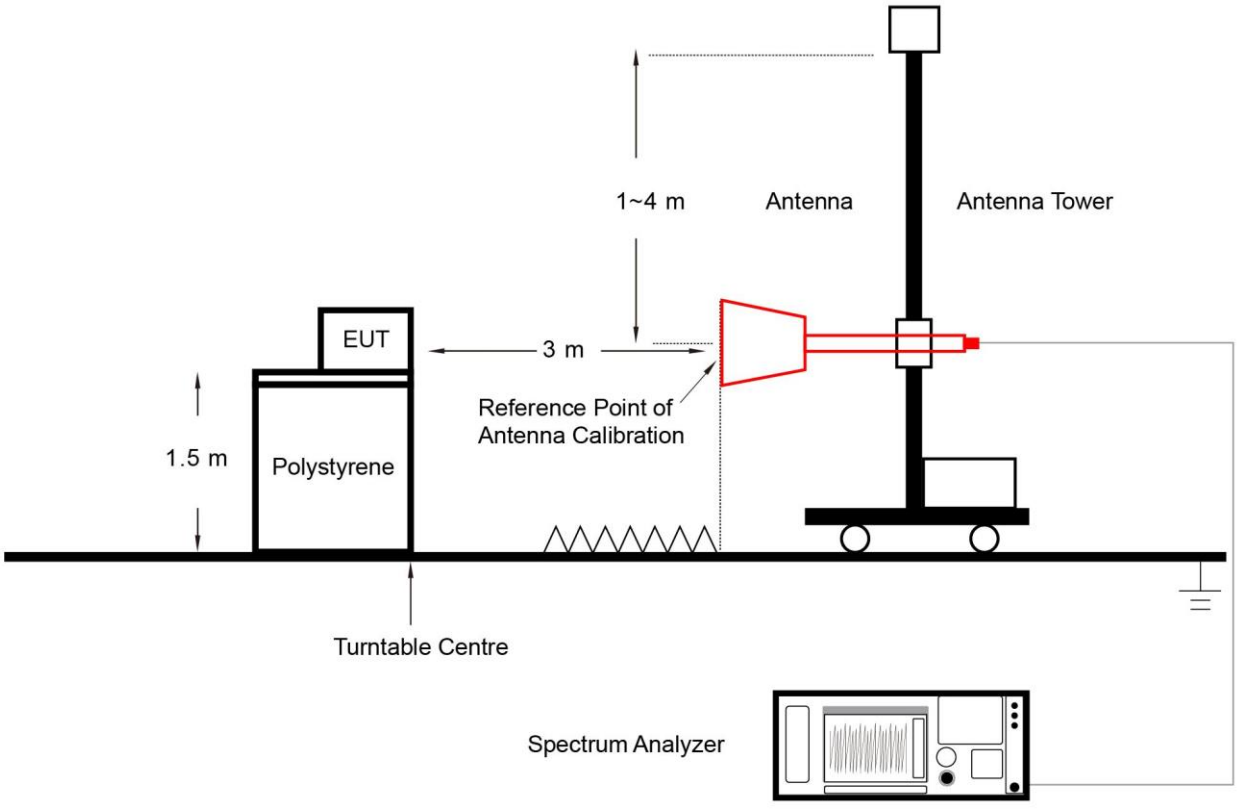
7. Trace was allowed to stabilize

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	--	--	--

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.

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

6.4.2. Test Procedure

KDB 789033 D02v02r01- Section II)G)

6.4.3. Test Setting

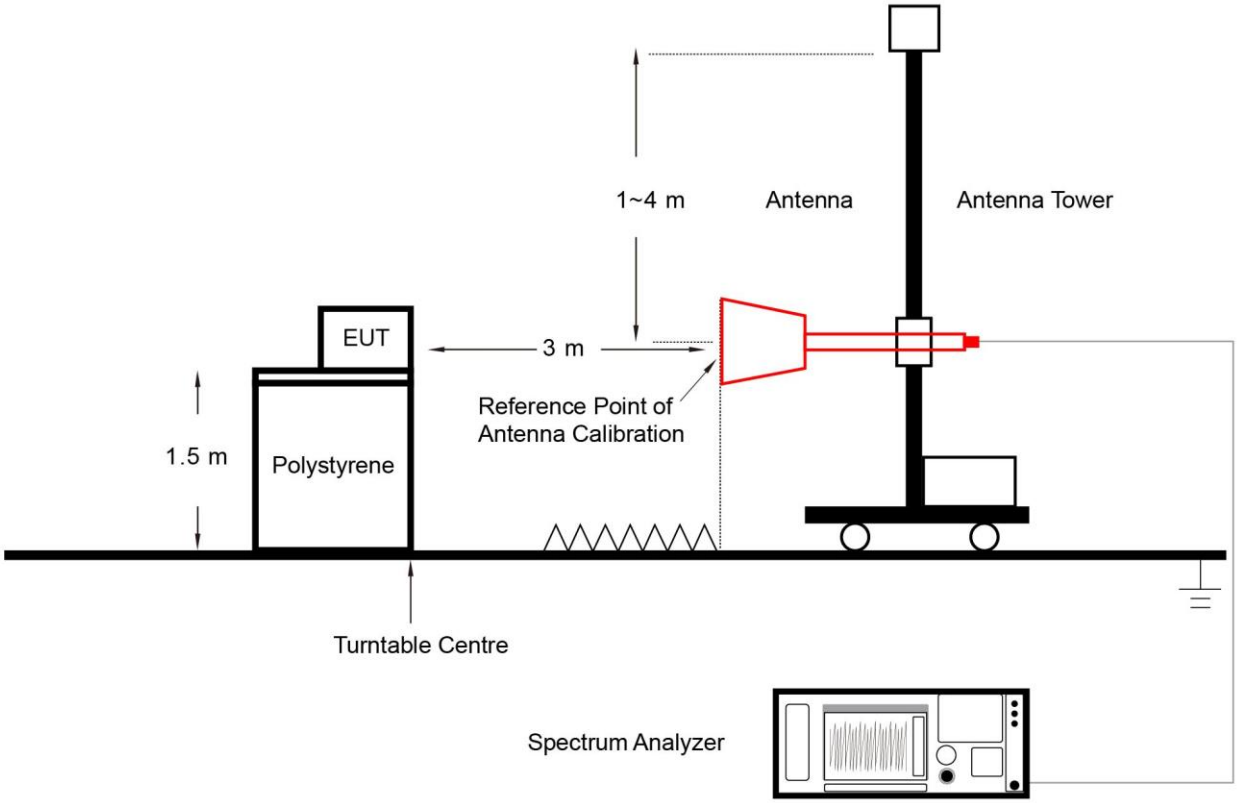
Peak Measurements above 1GHz

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

6.4.4. Test Setup



6.4.5. Test Result

Refer to Appendix A.3.

Appendix A – Test Result

A.1 Output Power Test Result

Power output test was verified over all data rates of each mode shown as below, and then choose the maximum power output (gray marker) for final test of each channel.

Test Mode	Bandwidth (MHz)	Channel No.	Frequency (MHz)	Data Rate / MCS	Average Power (dBm)
802.11a	20	36	5180	6Mbps	11.08
				24Mbps	10.96
				54Mbps	10.90
802.11n	20	36	5180	MCS0	10.78
				MCS3	10.66
				MCS7	10.61

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2022-09-06		

Test Mode	Data Rate MCS	Channel No.	Freq. (MHz)	Average Power (dBm)	Average Power Limit (dBm)
11a	6Mbps	36	5180	11.16	≤ 23.98
11a	6Mbps	44	5220	11.98	≤ 23.98
11a	6Mbps	48	5240	12.00	≤ 23.98
11a	6Mbps	52	5260	12.06	≤ 23.26
11a	6Mbps	60	5300	11.21	≤ 23.26
11a	6Mbps	64	5320	11.34	≤ 23.26
11n-HT20	MCS0	36	5180	10.78	≤ 23.98
11n-HT20	MCS0	44	5220	11.78	≤ 23.98
11n-HT20	MCS0	48	5240	11.65	≤ 23.98
11n-HT20	MCS0	52	5260	11.66	≤ 23.52
11n-HT20	MCS0	60	5300	11.02	≤ 23.52
11n-HT20	MCS0	64	5320	11.01	≤ 23.52

Note 1: Max EIRP (dBm) = Average Power (dBm) + Antenna Gain (dBi).

Note 2: Max Conducted Output Power Limit Calculation as below:

For 5250-5350MHz

Max Conducted Output Power Limit = 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz, which is cited from MRT original report, report no.: 1802WSU008-U4, clause 7.2.5.

802.11a: 11 + 10*log (16.84MHz) = 23.26dBm < 30dBm;

802.11n-HT20: 11 + 10*log (17.88MHz) = 23.52dBm < 30dBm;

A.2 Radiated Spurious Emission Test Result

Test Site	SIP-AC3	Test Engineer	Simon Lu
Test Date	2022-09-07	Test Mode	802.11a – Channel 36
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
*	9993.0	47.3	-2.2	45.1	68.2	-23.1	Peak	Horizontal
	11276.5	48.3	-2.8	45.5	74.0	-28.5	Peak	Horizontal
*	14107.0	46.8	2.2	49.0	68.2	-19.2	Peak	Horizontal
	15807.0	46.3	3.8	50.1	74.0	-23.9	Peak	Horizontal
*	9942.0	48.1	-2.2	45.9	68.2	-22.3	Peak	Vertical
	11625.0	48.8	-3.0	45.8	74.0	-28.2	Peak	Vertical
*	13954.0	47.1	1.9	49.0	68.2	-19.2	Peak	Vertical
	15586.0	46.2	4.3	50.5	74.0	-23.5	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	SIP-AC3	Test Engineer	Simon Lu
Test Date	2022-09-07	Test Mode	802.11a – Channel 44
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
*	9899.5	47.9	-2.6	45.3	68.2	-22.9	Peak	Horizontal
	11251.0	49.1	-2.6	46.5	74.0	-27.5	Peak	Horizontal
*	14039.0	46.8	2.1	48.9	68.2	-19.3	Peak	Horizontal
	15475.5	46.4	4.1	50.5	74.0	-23.5	Peak	Horizontal
*	9746.5	48.1	-2.8	45.3	68.2	-22.9	Peak	Vertical
	11225.5	47.9	-2.7	45.2	74.0	-28.8	Peak	Vertical
*	14107.0	47.3	2.2	49.5	68.2	-18.7	Peak	Vertical
	15679.5	45.8	4.1	49.9	74.0	-24.1	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	SIP-AC3	Test Engineer	Simon Lu
Test Date	2022-09-07	Test Mode	802.11a – Channel 48
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
*	10316.0	47.8	-2.3	45.5	68.2	-22.7	Peak	Horizontal
	12339.0	49.3	-2.5	46.8	74.0	-27.2	Peak	Horizontal
*	13979.5	46.8	1.9	48.7	68.2	-19.5	Peak	Horizontal
	15373.5	46.4	4.3	50.7	74.0	-23.3	Peak	Horizontal
*	9687.0	48.3	-2.8	45.5	68.2	-22.7	Peak	Vertical
	11438.0	47.9	-2.7	45.2	74.0	-28.8	Peak	Vertical
*	14243.0	47.2	2.6	49.8	68.2	-18.4	Peak	Vertical
	15722.0	46.2	3.9	50.1	74.0	-23.9	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	SIP-AC3	Test Engineer	Simon Lu
Test Date	2022-09-07	Test Mode	802.11a – 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)	Detector	Polarization
*	9959.0	47.6	-2.1	45.5	68.2	-22.7	Peak	Horizontal
	11693.0	49.6	-3.0	46.6	74.0	-27.4	Peak	Horizontal
*	14260.0	47.1	2.4	49.5	68.2	-18.7	Peak	Horizontal
	15917.5	45.6	4.2	49.8	74.0	-24.2	Peak	Horizontal
*	10154.5	47.3	-2.5	44.8	68.2	-23.4	Peak	Vertical
	12381.5	48.3	-2.6	45.7	74.0	-28.3	Peak	Vertical
*	14115.5	47.2	2.2	49.4	68.2	-18.8	Peak	Vertical
	15518.0	45.6	4.2	49.8	74.0	-24.2	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	SIP-AC3	Test Engineer	Simon Lu
Test Date	2022-09-07	Test Mode	802.11a – Channel 60
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
*	10171.5	48.2	-2.5	45.7	68.2	-22.5	Peak	Horizontal
	10868.5	47.8	-2.6	45.2	74.0	-28.8	Peak	Horizontal
*	14175.0	46.5	2.6	49.1	68.2	-19.1	Peak	Horizontal
	15781.5	45.8	4.0	49.8	74.0	-24.2	Peak	Horizontal
*	10018.5	47.3	-2.2	45.1	68.2	-23.1	Peak	Vertical
	12211.5	49.3	-2.8	46.5	74.0	-27.5	Peak	Vertical
*	13945.5	46.6	1.8	48.4	68.2	-19.8	Peak	Vertical
	15773.0	45.9	4.0	49.9	74.0	-24.1	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	SIP-AC3	Test Engineer	Simon Lu
Test Date	2022-09-07	Test Mode	802.11a – Channel 64
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
*	9984.5	47.5	-2.1	45.4	68.2	-22.8	Peak	Horizontal
	12347.5	48.3	-2.4	45.9	74.0	-28.1	Peak	Horizontal
*	13996.5	46.9	2.1	49.0	68.2	-19.2	Peak	Horizontal
	15450.0	46.3	4.1	50.4	74.0	-23.6	Peak	Horizontal
*	10222.5	48.0	-2.4	45.6	68.2	-22.6	Peak	Vertical
	11514.5	49.1	-3.2	45.9	74.0	-28.1	Peak	Vertical
*	13971.0	47.0	1.6	48.6	68.2	-19.6	Peak	Vertical
	15773.0	46.9	4.0	50.9	74.0	-23.1	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	SIP-AC3	Test Engineer	Simon Lu
Test Date	2022-09-07	Test Mode	802.11n-HT20 – Channel 36
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
*	10401.0	47.2	-2.3	44.9	68.2	-23.3	Peak	Horizontal
	11642.0	48.4	-2.9	45.5	74.0	-28.5	Peak	Horizontal
*	14081.5	47.1	2.2	49.3	68.2	-18.9	Peak	Horizontal
	16121.5	46.3	4.5	50.8	74.0	-23.2	Peak	Horizontal
*	9984.5	47.7	-2.1	45.6	68.2	-22.6	Peak	Vertical
	11599.5	49.0	-2.9	46.1	74.0	-27.9	Peak	Vertical
*	14047.5	47.3	2.1	49.4	68.2	-18.8	Peak	Vertical
	15492.5	46.5	4.0	50.5	74.0	-23.5	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	SIP-AC3	Test Engineer	Simon Lu
Test Date	2022-09-07	Test Mode	802.11n-HT20 – Channel 44
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
*	9933.5	48.0	-2.3	45.7	68.2	-22.5	Peak	Horizontal
	11625.0	48.2	-3.0	45.2	74.0	-28.8	Peak	Horizontal
*	14192.0	46.1	2.5	48.6	68.2	-19.6	Peak	Horizontal
	15900.5	45.8	4.2	50.0	74.0	-24.0	Peak	Horizontal
*	10460.5	48.9	-2.6	46.3	68.2	-21.9	Peak	Vertical
	12339.0	48.9	-2.5	46.4	74.0	-27.6	Peak	Vertical
*	14056.0	46.7	2.2	48.9	68.2	-19.3	Peak	Vertical
	15645.5	45.6	4.1	49.7	74.0	-24.3	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	SIP-AC3	Test Engineer	Simon Lu
Test Date	2022-09-07	Test Mode	802.11n-HT20 – Channel 48
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
*	9959.0	47.9	-2.1	45.8	68.2	-22.4	Peak	Horizontal
	11633.5	48.6	-3.0	45.6	74.0	-28.4	Peak	Horizontal
*	14005.0	46.5	2.1	48.6	68.2	-19.6	Peak	Horizontal
	15977.0	45.3	4.5	49.8	74.0	-24.2	Peak	Horizontal
*	9967.5	48.4	-2.1	46.3	68.2	-21.9	Peak	Vertical
	11803.5	48.9	-3.3	45.6	74.0	-28.4	Peak	Vertical
*	14064.5	46.8	2.2	49.0	68.2	-19.2	Peak	Vertical
	16130.0	45.7	4.6	50.3	74.0	-23.7	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)

Test Site	SIP-AC3	Test Engineer	Simon Lu
Test Date	2022-09-07	Test Mode	802.11n-HT20 – 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)	Detector	Polarization
*	10231.0	47.8	-2.3	45.5	68.2	-22.7	Peak	Horizontal
	12237.0	48.7	-2.5	46.2	74.0	-27.8	Peak	Horizontal
*	14090.0	47.0	2.2	49.2	68.2	-19.0	Peak	Horizontal
	15441.5	45.2	4.1	49.3	74.0	-24.7	Peak	Horizontal
*	9678.5	48.5	-2.7	45.8	68.2	-22.4	Peak	Vertical
	11633.5	47.0	-3.0	44.0	74.0	-30.0	Peak	Vertical
*	13911.5	45.6	1.6	47.2	68.2	-21.0	Peak	Vertical
	15671.0	45.8	4.2	50.0	74.0	-24.0	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	SIP-AC3	Test Engineer	Simon Lu
Test Date	2022-09-07	Test Mode	802.11n-HT20 – Channel 60
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
*	10231.0	48.0	-2.3	45.7	68.2	-22.5	Peak	Horizontal
	12279.5	49.0	-2.5	46.5	74.0	-27.5	Peak	Horizontal
*	14812.5	47.4	3.3	50.7	68.2	-17.5	Peak	Horizontal
	16121.5	45.1	4.5	49.6	74.0	-24.4	Peak	Horizontal
*	10069.5	47.6	-2.3	45.3	68.2	-22.9	Peak	Vertical
	10732.5	49.3	-2.6	46.7	74.0	-27.3	Peak	Vertical
*	14064.5	47.2	2.2	49.4	68.2	-18.8	Peak	Vertical
	15662.5	46.3	4.1	50.4	74.0	-23.6	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	SIP-AC3	Test Engineer	Simon Lu
Test Date	2022-09-07	Test Mode	802.11n-HT20 – Channel 64
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
*	10035.5	46.6	-2.1	44.5	68.2	-23.7	Peak	Horizontal
	11820.5	48.7	-3.3	45.4	74.0	-28.6	Peak	Horizontal
*	13945.5	47.0	1.8	48.8	68.2	-19.4	Peak	Horizontal
	15688.0	46.2	4.0	50.2	74.0	-23.8	Peak	Horizontal
*	10146.0	47.2	-2.6	44.6	68.2	-23.6	Peak	Vertical
	12296.5	48.5	-2.4	46.1	74.0	-27.9	Peak	Vertical
*	14022.0	47.6	1.9	49.5	68.2	-18.7	Peak	Vertical
	15832.5	46.0	3.9	49.9	74.0	-24.1	Peak	Vertical

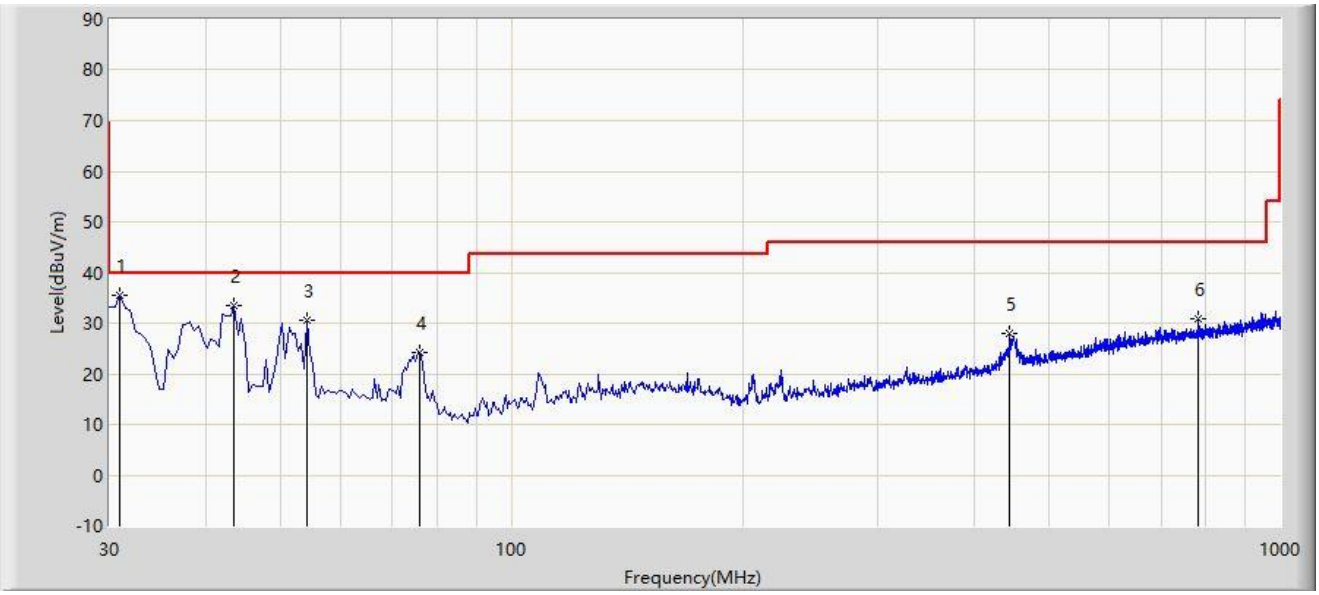
Note 1: “*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

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 below 1GHz:

Site: SIP-AC3	Test Date: 2022-09-08
Limit: FCC_Part15.209_RE(3m)	Engineer: Simon Lu
Probe: VULB 9168_00997_25-2000MHz	Polarity: Horizontal
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11a at 5260MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	30.970	35.607	19.254	-4.393	40.000	16.353	PK
2		43.580	33.522	15.603	-6.478	40.000	17.919	PK
3		54.250	30.508	12.853	-9.492	40.000	17.655	PK
4		76.075	24.219	9.988	-15.781	40.000	14.231	PK
5		444.190	27.969	5.843	-18.031	46.000	22.126	PK
6		781.750	30.739	2.562	-15.261	46.000	28.177	PK

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

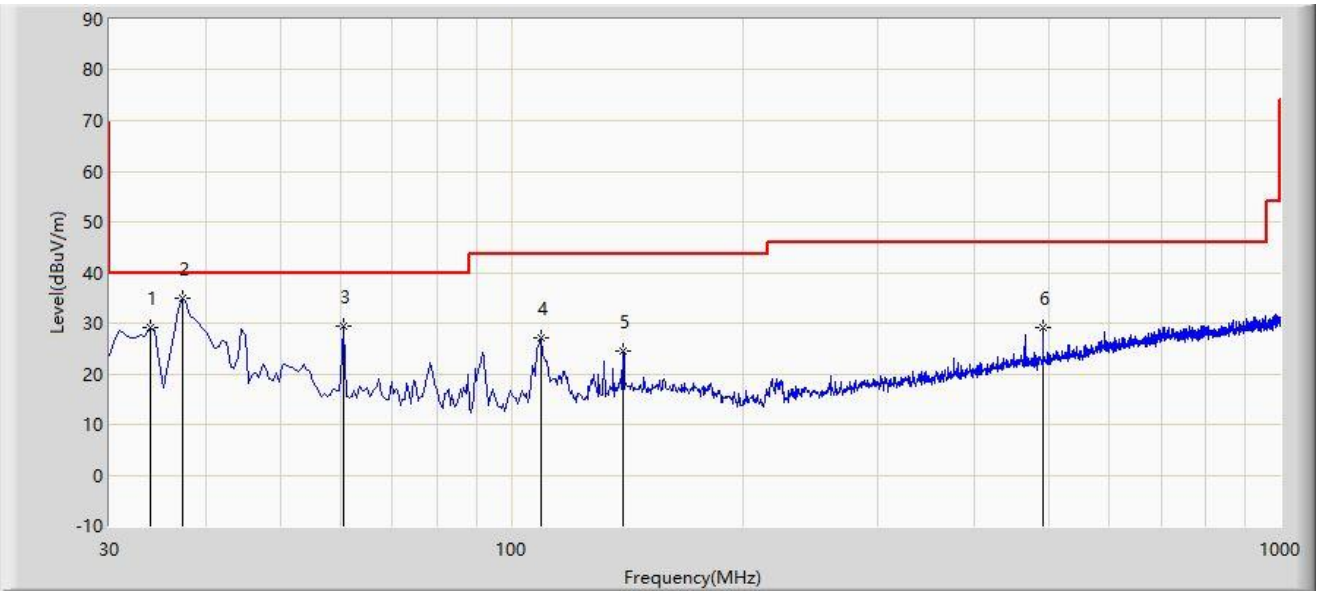
Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

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.

Note 5: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz and 18GHz to 40GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Site: SIP-AC3	Test Date: 2022-09-08
Limit: FCC_Part15.209_RE(3m)	Engineer: Simon Lu
Probe: VULB 9168_00997_25-2000MHz	Polarity: Vertical
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11a at 5260MHz	



No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		33.880	29.005	12.110	-10.995	40.000	16.895	PK
2	*	37.275	34.867	17.580	-5.133	40.000	17.288	PK
3		60.555	29.445	12.433	-10.555	40.000	17.012	PK
4		109.540	26.970	12.184	-16.530	43.500	14.786	PK
5		139.610	24.429	6.966	-19.071	43.500	17.463	PK
6		491.720	29.044	6.120	-16.956	46.000	22.924	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.

Note 5: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz and 18GHz to 40GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

A.3 Radiated Restricted Band Edge Test Result

Site: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11a at 5180MHz	

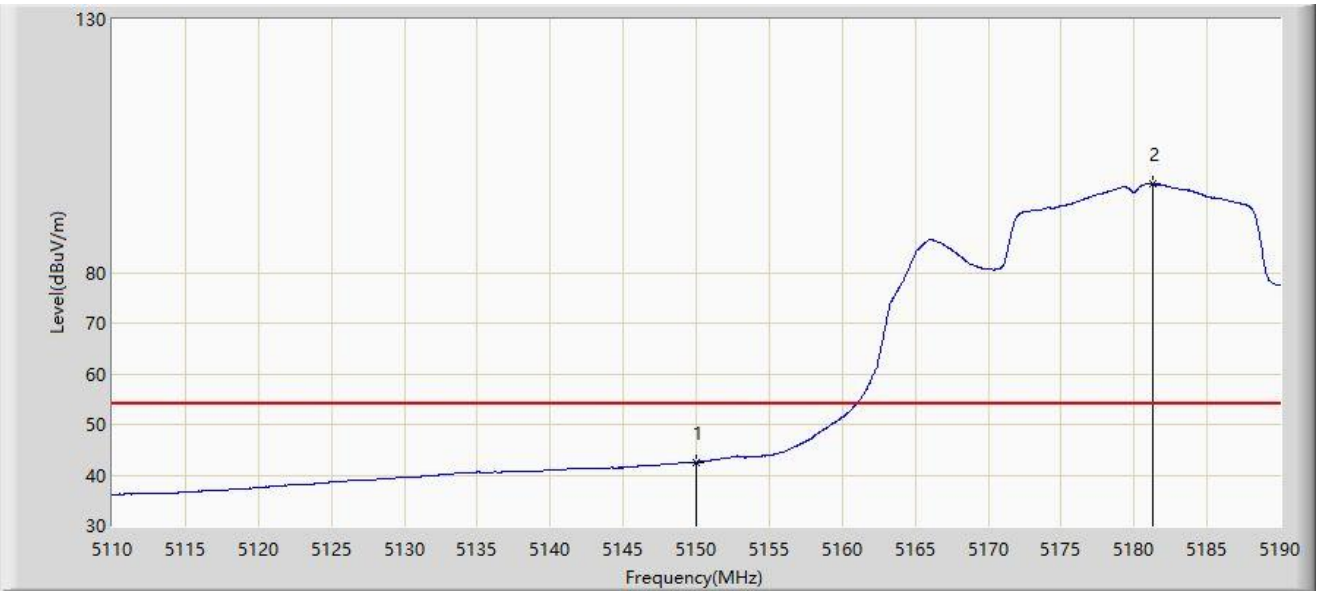
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	5150.000	64.161	67.186	-9.839	74.000	-3.026	PK
2		5180.680	106.185	64.783	N/A	N/A	41.401	PK

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).

Site: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11a at 5180MHz	



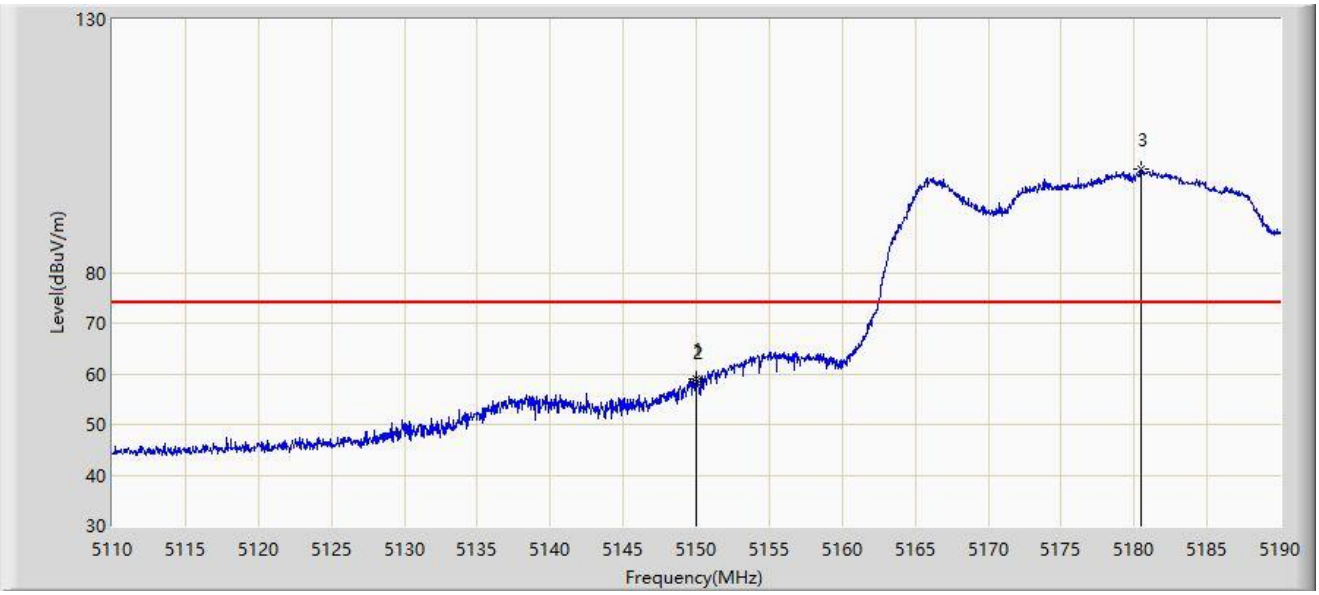
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	5150.000	42.548	45.573	-11.452	54.000	-3.026	AV
2		5181.240	97.514	56.451	N/A	N/A	41.063	AV

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: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11a at 5180MHz	



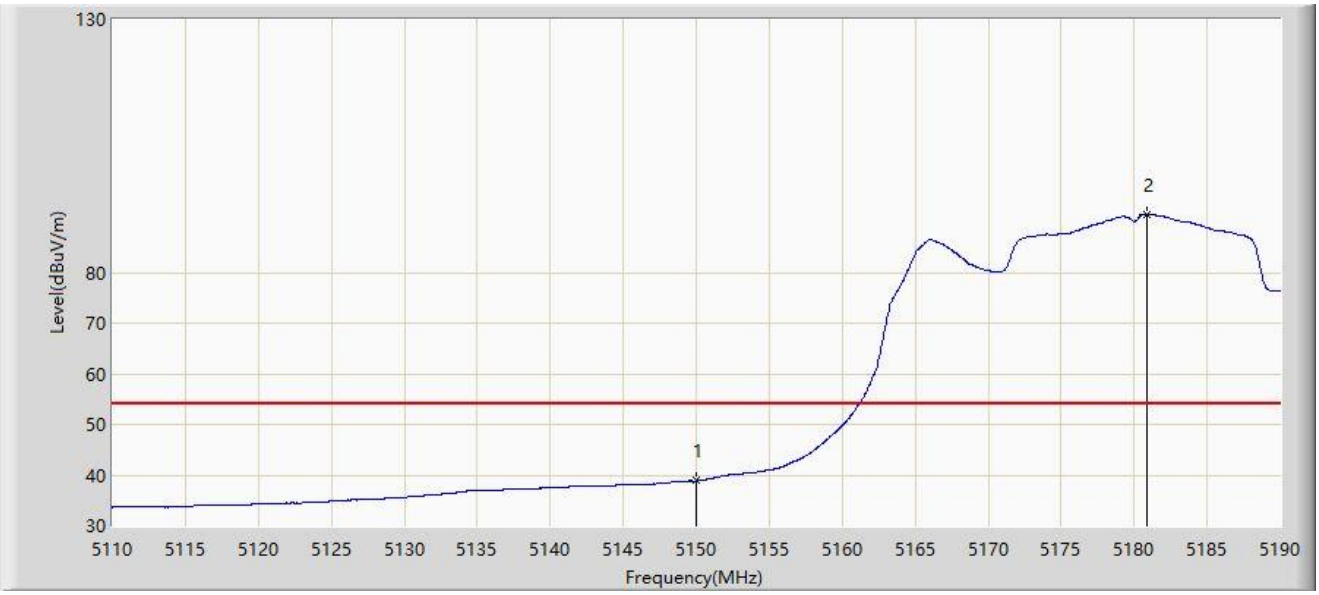
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	5149.960	59.116	62.154	-14.884	74.000	-3.039	PK
2		5150.000	58.349	61.374	-15.651	74.000	-3.026	PK
3		5180.480	100.440	58.917	N/A	N/A	41.523	PK

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).

Site: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11a at 5180MHz	



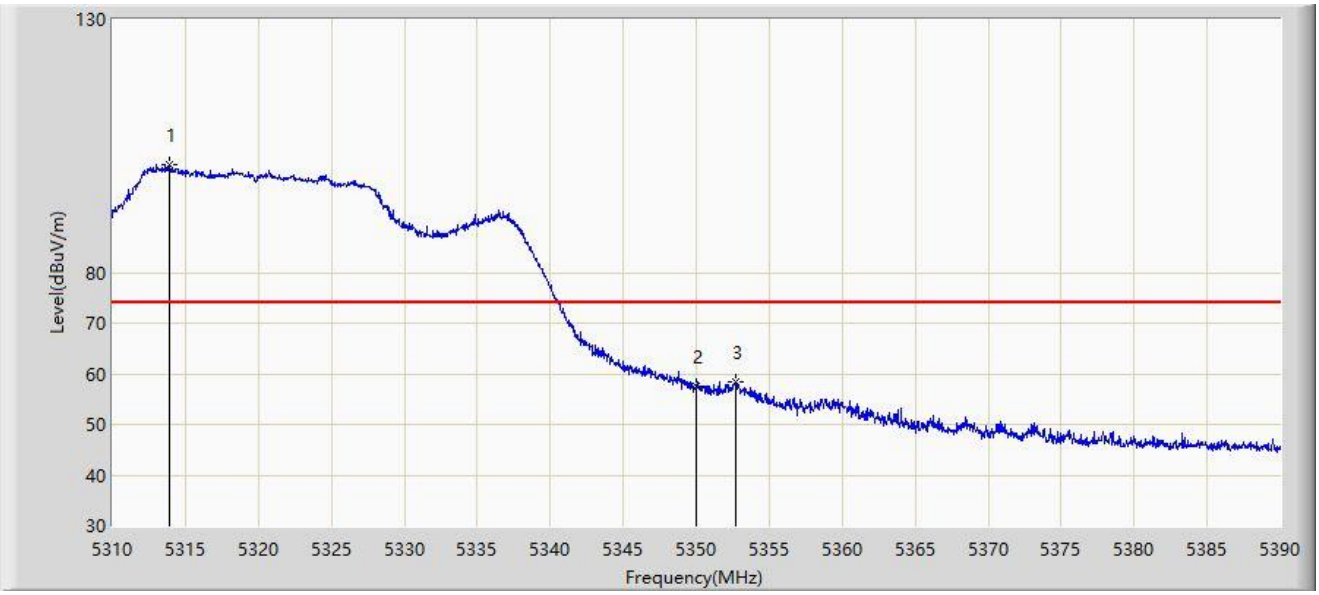
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	5150.000	38.869	41.894	-15.131	54.000	-3.026	AV
2		5180.880	91.352	50.072	N/A	N/A	41.280	AV

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: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11a at 5320MHz	



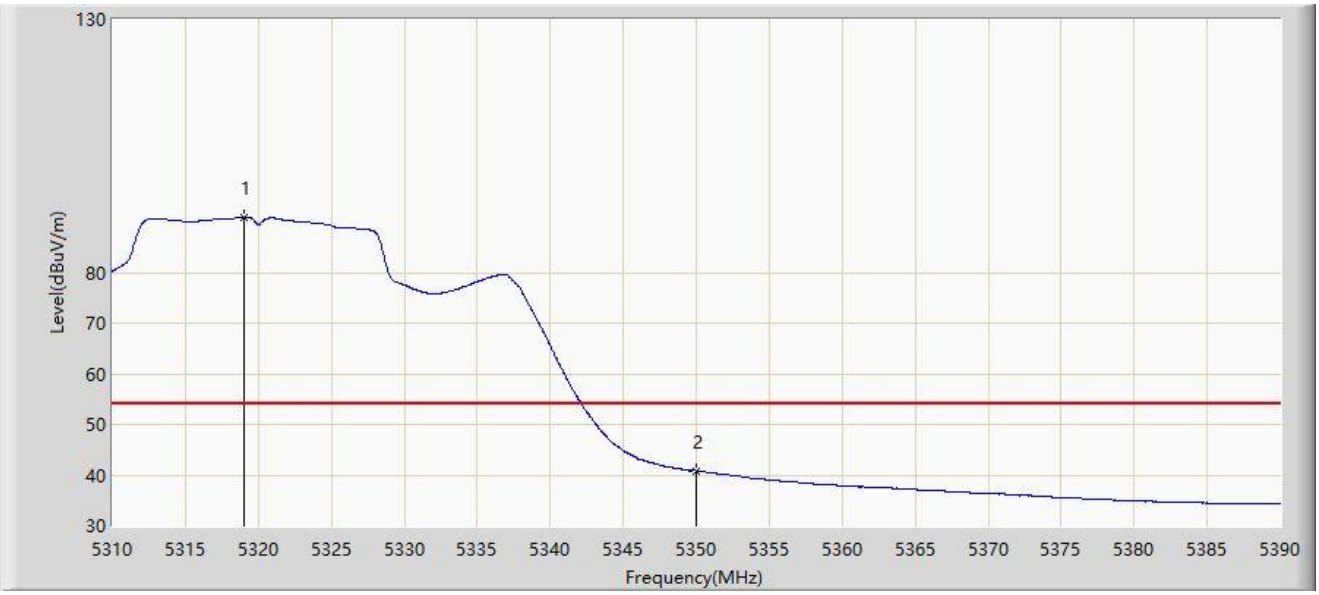
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		5313.920	101.448	54.944	N/A	N/A	46.504	PK
2		5350.000	57.573	59.023	-16.427	74.000	-1.451	PK
3	*	5352.720	58.422	61.004	-15.578	74.000	-2.582	PK

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).

Site: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11a at 5320MHz	



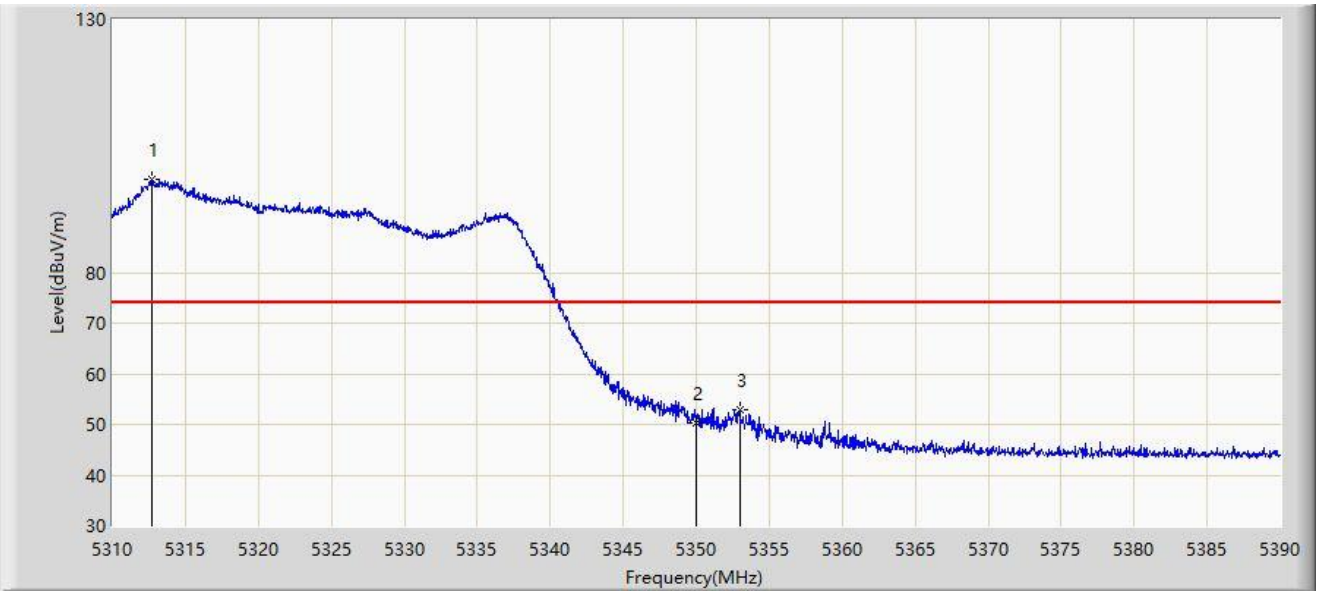
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		5319.040	90.971	51.266	N/A	N/A	39.705	AV
2	*	5350.000	40.833	42.283	-13.167	54.000	-1.451	AV

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: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11a at 5320MHz	



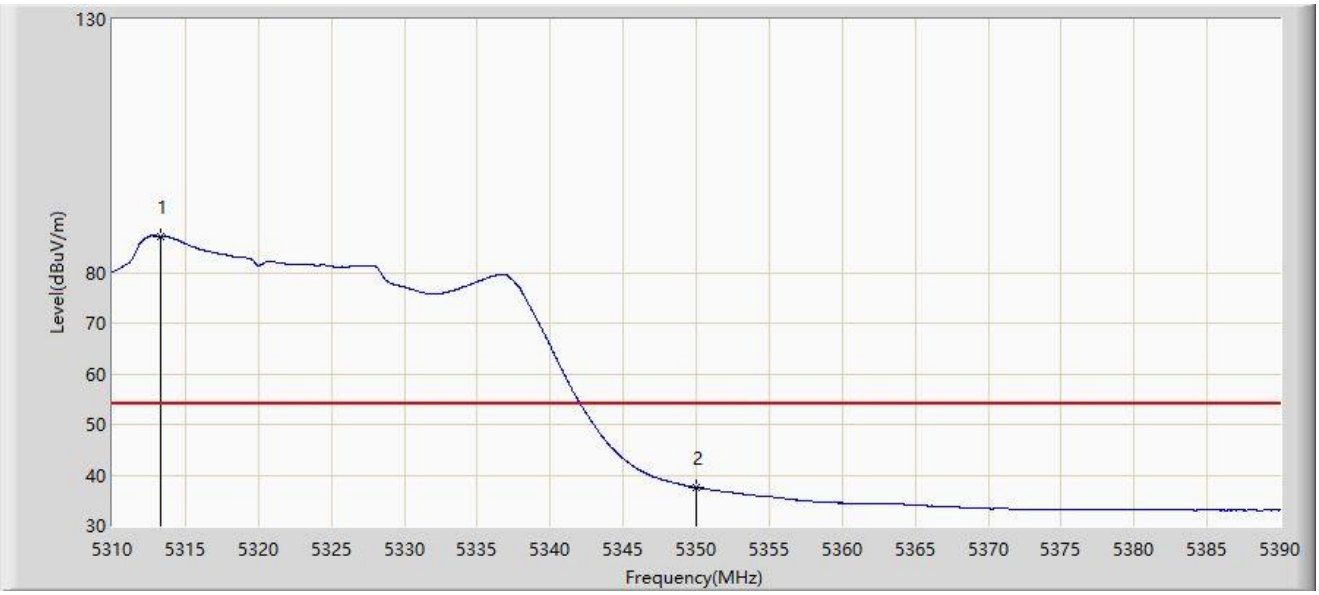
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		5312.720	98.321	52.015	N/A	N/A	46.305	PK
2		5350.000	50.433	51.883	-23.567	74.000	-1.451	PK
3	*	5353.000	52.810	55.495	-21.190	74.000	-2.685	PK

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).

Site: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11a at 5320MHz	



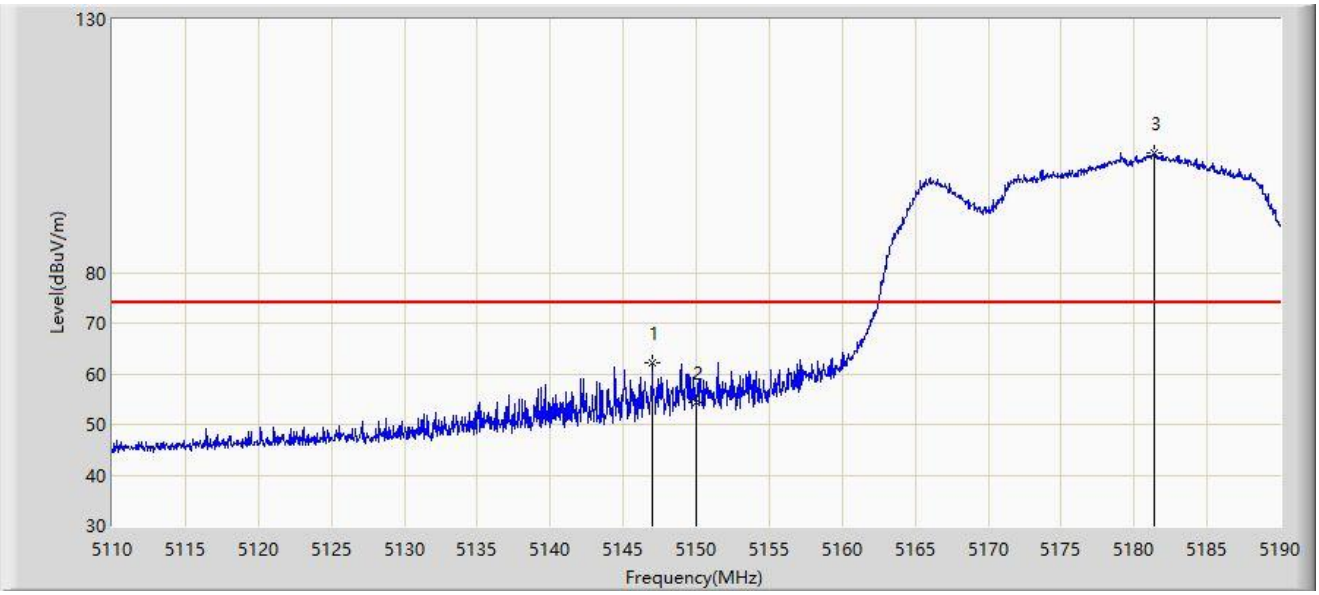
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		5313.320	87.236	40.615	N/A	N/A	46.621	AV
2	*	5350.000	37.541	38.991	-16.459	54.000	-1.451	AV

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: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11n-HT20 at 5180MHz	



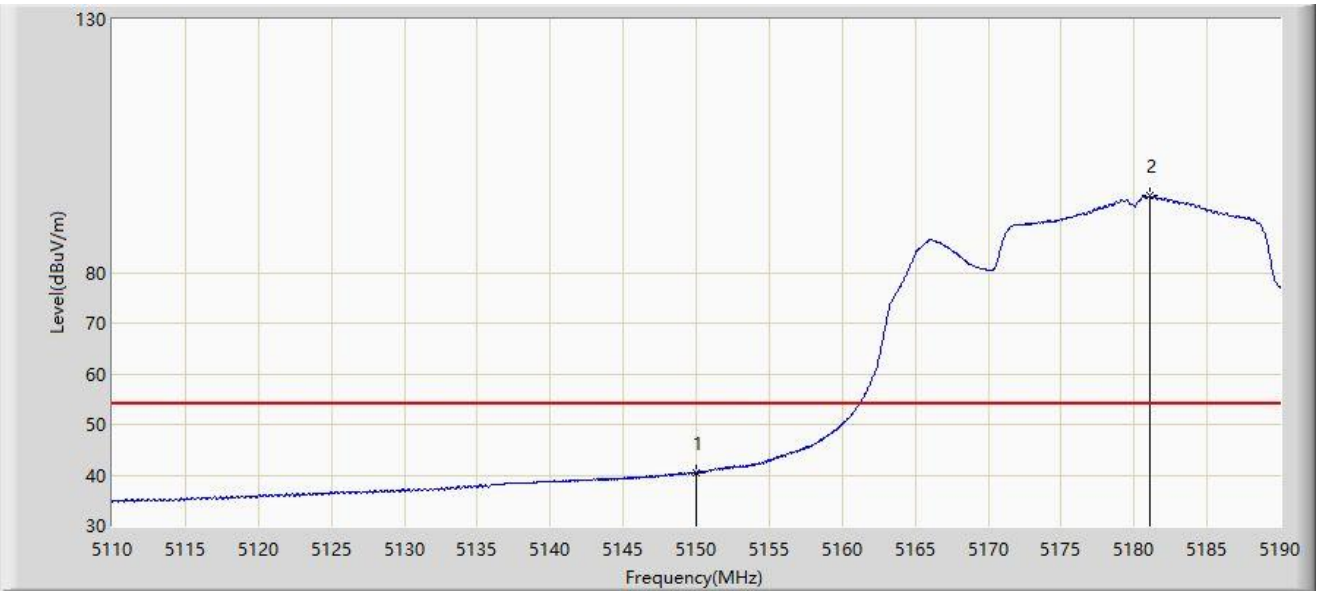
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	5147.000	62.241	65.879	-11.759	74.000	-3.639	PK
2		5150.000	54.431	57.456	-19.569	74.000	-3.026	PK
3		5181.360	103.500	62.581	N/A	N/A	40.919	PK

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).

Site: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11n-HT20 at 5180MHz	



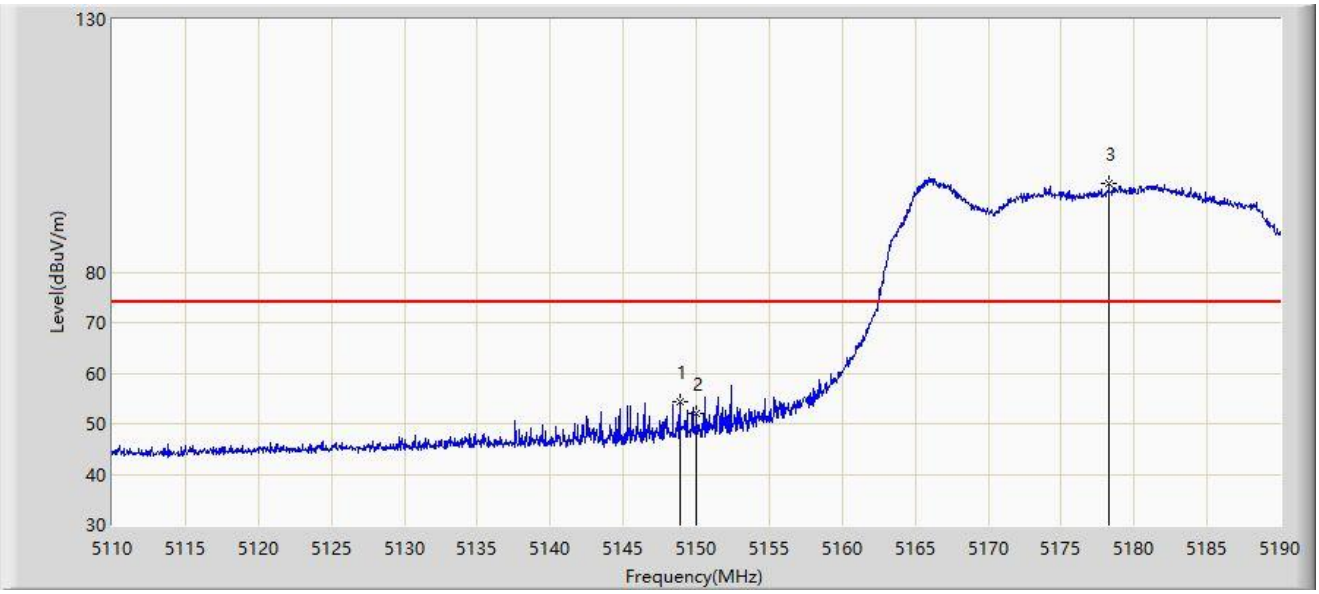
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	5150.000	40.566	43.591	-13.434	54.000	-3.026	AV
2		5181.040	95.105	53.921	N/A	N/A	41.183	AV

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: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11n-HT20 at 5180MHz	



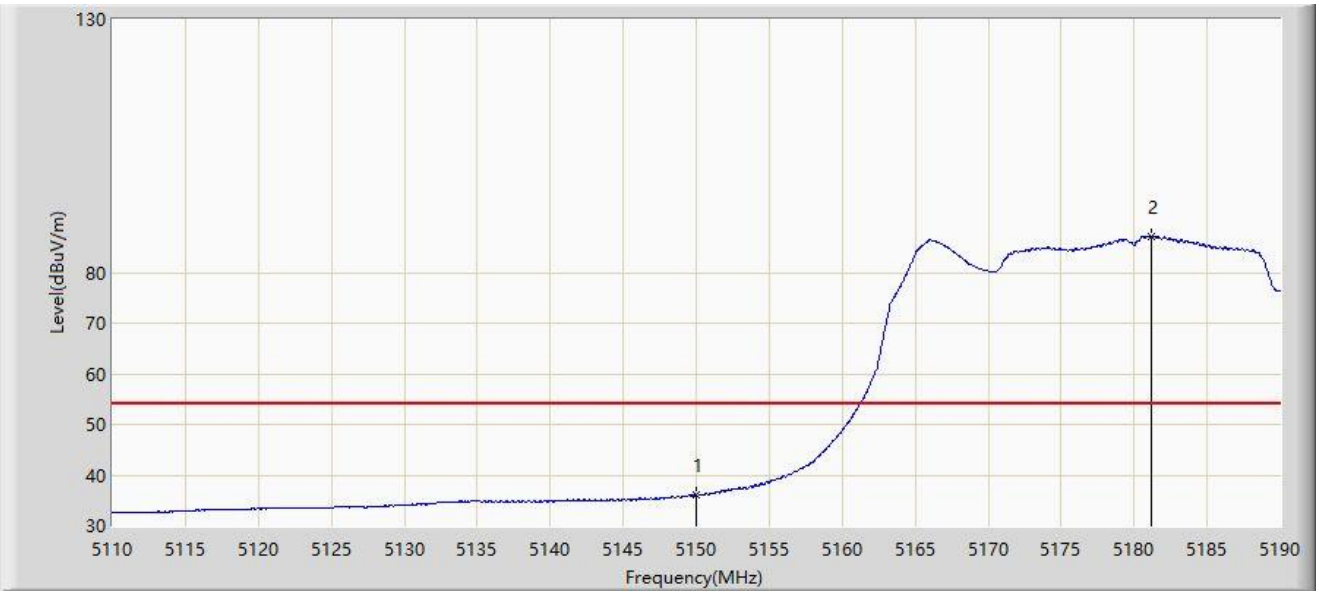
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	5148.880	54.369	57.626	-19.631	74.000	-3.257	PK
2		5150.000	52.056	55.081	-21.944	74.000	-3.026	PK
3		5178.280	97.472	56.499	N/A	N/A	40.973	PK

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).

Site: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11n-HT20 at 5180MHz	



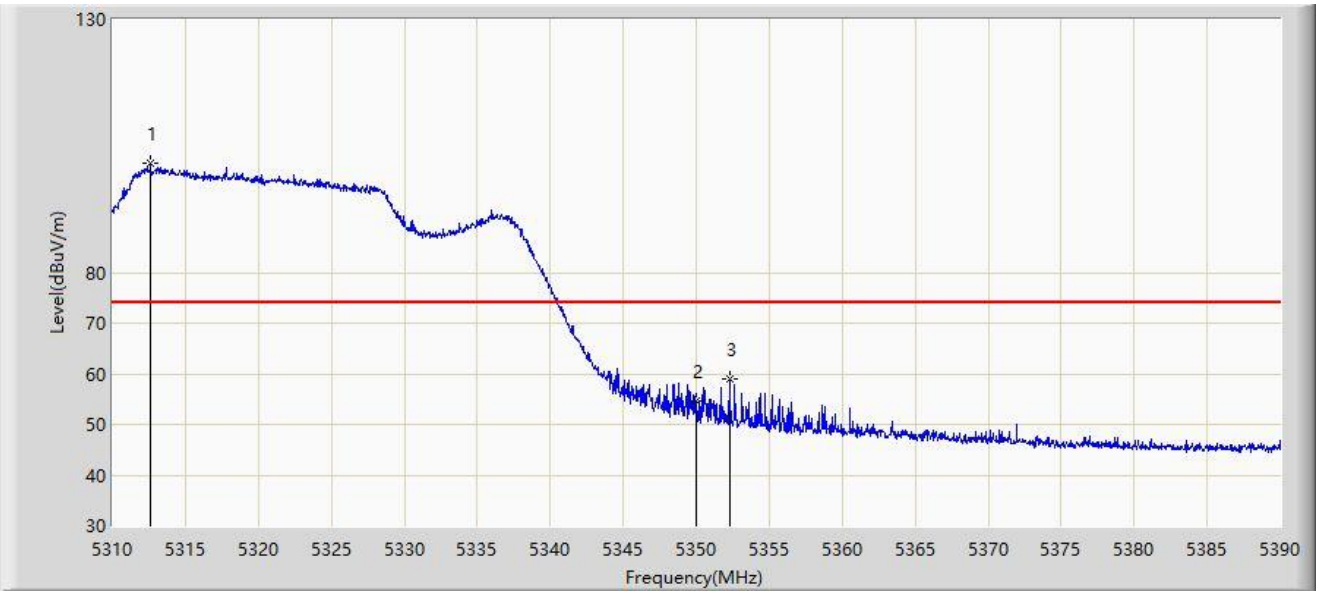
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1	*	5150.000	35.973	38.998	-18.027	54.000	-3.026	AV
2		5181.200	87.010	45.923	N/A	N/A	41.087	AV

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: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11n-HT20 at 5320MHz	



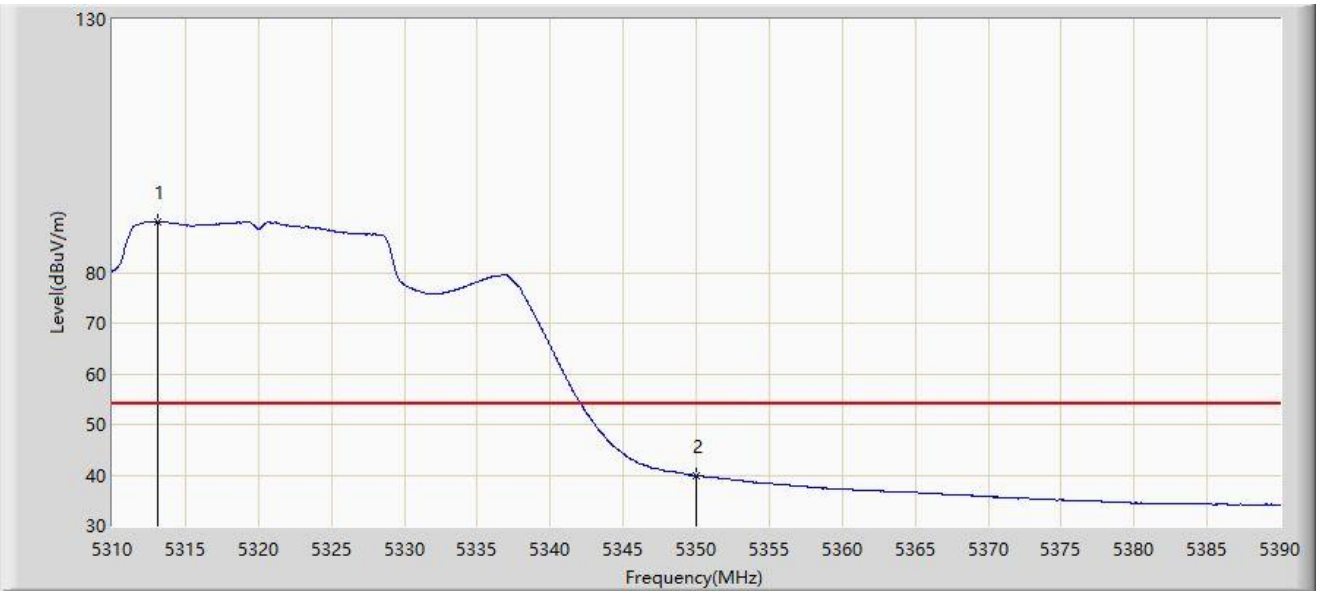
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		5312.600	101.650	55.516	N/A	N/A	46.134	PK
2		5350.000	54.501	55.951	-19.499	74.000	-1.451	PK
3	*	5352.280	58.999	61.421	-15.001	74.000	-2.423	PK

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).

Site: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11n-HT20 at 5320MHz	



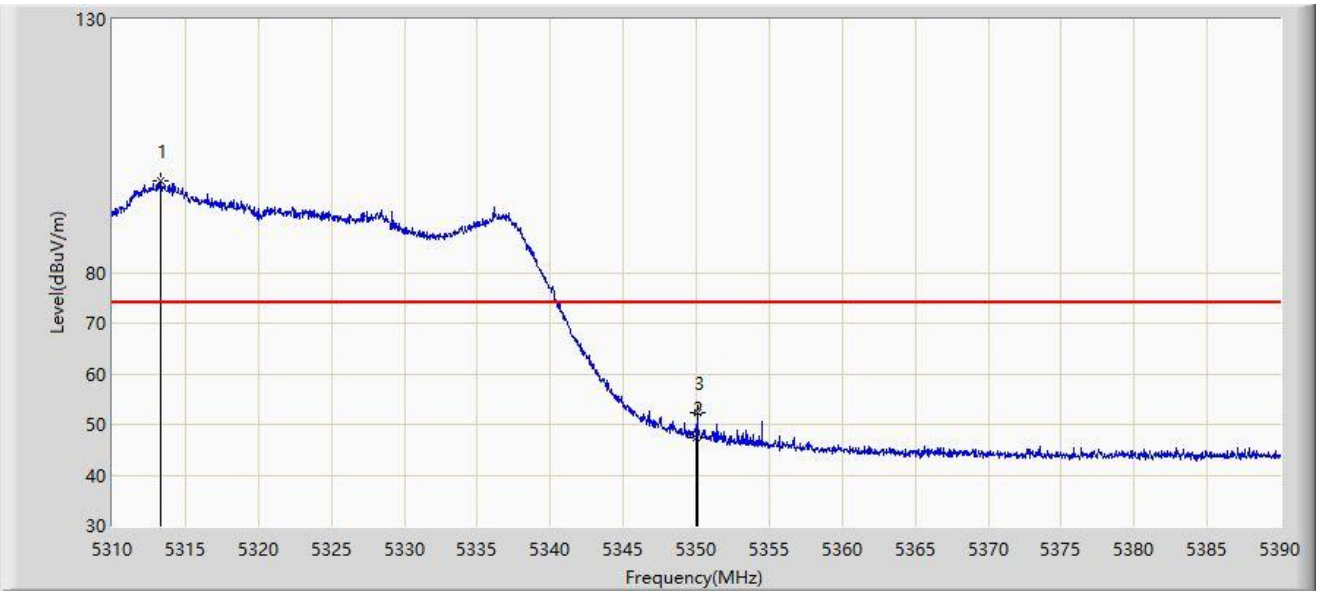
No	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB/m)	Type
1		5313.080	89.927	43.432	N/A	N/A	46.495	AV
2	*	5350.000	39.958	41.408	-14.042	54.000	-1.451	AV

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: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11n-HT20 at 5320MHz	



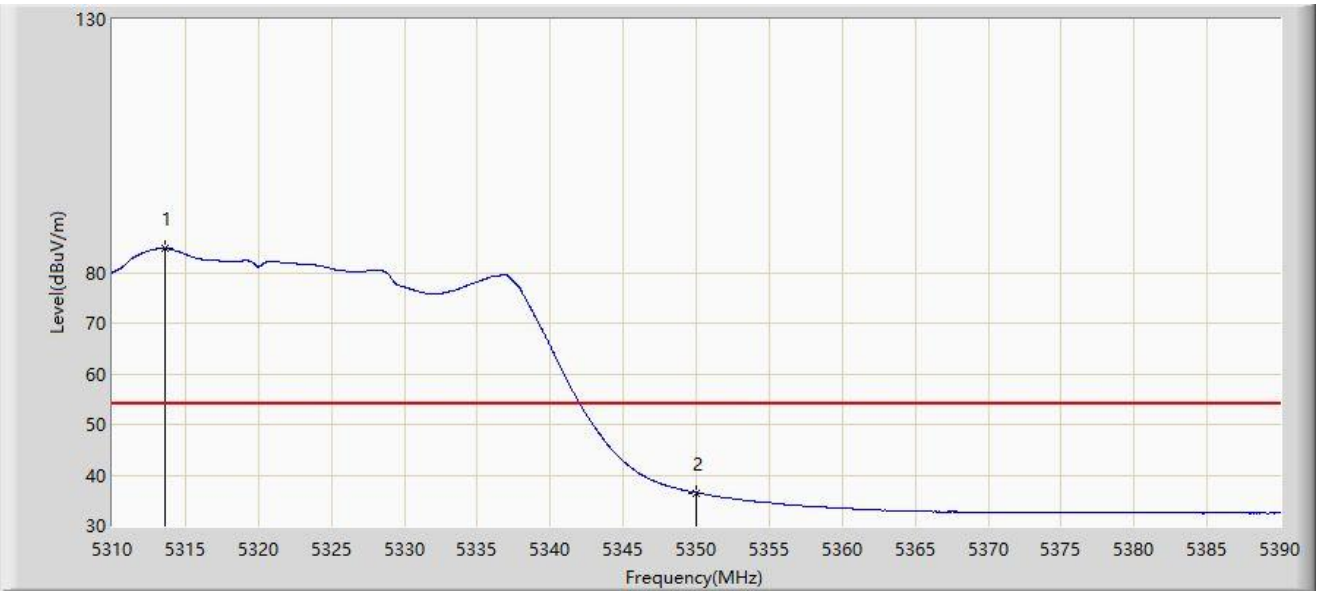
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		5313.280	98.254	51.654	N/A	N/A	46.600	PK
2		5350.000	47.306	48.756	-26.694	74.000	-1.451	PK
3	*	5350.080	52.307	53.800	-21.693	74.000	-1.494	PK

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).

Site: SIP-AC3	Test Date: 2022-09-07
Limit: FCC_Part15_15.209 RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: Communication Module	Power: DC 3.3V
Test Mode: Transmit by 802.11n-HT20 at 5320MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		5313.560	84.838	38.090	N/A	N/A	46.748	AV
2	*	5350.000	36.506	37.956	-17.494	54.000	-1.451	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).

Appendix B – Test Setup Photograph

Refer to “2208RSU054-UT” file.

Appendix C – EUT Photograph

Refer to “2208RSU054-UE” file.

The End