FCC RF Test Report

For

Shenzhen CYX Industrial Co., Ltd.

Test Standards:	Part 15 Subpart E §15. 407
Product Description:	TV BOX
Tested Model:	A95X F3 Air
Additional Model No.	A95X F3 Slim, A95X F3, A95X D1, A95X D2, A95X F4, A95X F4 Air, A95X F4 Slim, A95X F5 Air, A95X F5 Slim, A95X F6 Air, A95X F6 Slim, A95X F7 Air, A95X F7 Slim, A95X F8 Air, A95X F8 Slim, A95X F5, A95X F6, A95X F7, A95X F8
FCC ID:	2AVBM-A95XF3AIR
Classification	(NII)Unlicensed National Information Infrastructure
Report No.:	EC2001001RF03
Tested Date:	2019-12-03 to 2020-01-08
Issued Date:	2020-01-08
Prepared By:	Jerry Wang / Engineer
Approved By:	Bacon Wu / RF Manager

Hunan Ecloud Testing Technology Co., Ltd.

Building A1, Changsha E Center, No. 18 Xiangtai Avenue, Liuyang Economic and Technological Development Zone, Hunan, P.R.C

Tel.: +86-731-89634887 Fax.: +86-731-89634887

www.hn-ecloud.com

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	2020.01.08	Valid	Original Report

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Summary of Test Result

FCC Rule	Description	Limit	Result	Remark
2.1049 15.403(i)	26dB & 99% Bandwidth	-	Pass	-
15.407(a)	Maximum Conducted Output Power	FCC≤24dBm	Pass	
15.407(a)	Power Spectral Density	FCC≤11dBm	Pass	
15.407(b)	Unwanted Emissions	15.407(b) 15.209(a)	Pass	Under limit 2.48 dB at 43.58 MHz
15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 8.20 dB at 0.182 MHz
15.407(g)	Frequency Stability	Within Operation Band	Pass	
15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	
15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	

1 Test Laboratory

1.1 Test facility

CNAS (accreditation number: L11138)

Hunan Ecloud Testing Technology Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1244 , Test Firm Registration Number: 793308)

Hunan Ecloud Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

ISED(CAB identifier: CN0012, ISED# :24347)

Hunan Ecloud Testing Technology Co., Ltd. has been listed on the Wireless Device Testing Laboratories list of innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements.

A2LA (Certificate Code: 4895.01)

Hunan Ecloud Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

2 General Description

2.1 Applicant

Shenzhen CYX Industrial Co., Ltd.
5/F, one buildings, xiazao industrial zone, zaohe road, Longhua District, Shenzhen, China

2.2 Manufacturer

Shenzhen CYX Industrial Co., Ltd.
5/F, one buildings, xiazao industrial zone, zaohe road, Longhua District, Shenzhen, China

2.3 General Description Of EUT

PRODUCT	TV BOX
MODEL NO.	A95X F3 Air
Additional NO.	A95X F3 Slim, A95X F3, A95X D1, A95X D2, A95X F4, A95X F4 Air, A95X F4 Slim, A95X F5 Air, A95X F5 Slim, A95X F6 Air, A95X F6 Slim, A95X F7 Air, A95X F7 Slim, A95X F8 Air, A95X F8 Slim, A95X F5, A95X F6, A95X F7, A95X F8
Difference Description	Only the model name is different
FCC ID	2AVBM-A95XF3AIR
POWER SUPPLY	120Vac
MODULATION TECHNOLOGY	256QAM,64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TYPE	802.11a/n/ac : OFDM
OPERATING FREQUENCY	U-NII-1:5150~5250MHz
MAX. OUTPUT POWER	802.11a : 13.42 dBm (0.0220 W) 802.11n HT20 : 12.16 dBm (0.0164 W) 802.11n HT40 : 11.62 dBm (0.0145 W) 802.11ac VHT20 : 11.95 dBm (0.0157 W) 802.11ac VHT40 : 11.37 dBm (0.0137 W) 802.11ac VHT80 : 13.37 dBm (0.0217 W)
ANTENNA TYPE	PCB Antenna type with 1dBi gain at U-NII-1
HW version	A95XF3_V81
SW version	A95X_F3_AIR_M_9.0.0
I/O PORTS	Refer to user's manual

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

3. The EUT was powered by the following adapters:

MODEL:	TSL-1681
INPUT:	110-240V~50/60Hz 0.3A
OUTPUT:	5V DC 2A
DC LINE:	1.0 m
Note: Add a magnetic ring at both ends of the power cord for testing	

4. The EUT matched the following HDMI cable:

Model:	A95X F3 Air
Signal Line:	0.8 Meter/Shielded

5. The EUT matched the following Remote controller:

Model:	A95X F3 Air

2.4 Modification of EUT

No modifications are made to the EUT during all test items.

2.5 Applicable Standards

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

- FCC Part 15 Subpart E §15.407
- ANSI C63.10-2013
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- IC RSS-247 Issue 2
- IC RSS-Gen Issue 5

Remark:

1. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

3 Test Configuration of Equipment Under Test

3.1 Carrier Frequency and Channel

U-NII-1

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	40	5200 MHz
38	5190 MHz	46	5230 MHz
40	5200 MHz	48	5240 MHz
42	5210 MHz		

3.2 Test Mode

Based on the baseline scan, the worst - case data rates were:

MODULATION	DATA RATE
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0

3.2.1 Antenna Port Conducted Measurement

Summary table of Test Cases				
Test Item	Modulation			
	802.11 a	802.11n HT20/ 802.11ac VHT20	802.11n HT40/ 802.11ac VHT40	802.11ac VHT80
U-NII-1	Mode 1: CH36 Mode 2: CH40 Mode 3: CH48	Mode 4: CH36 Mode 5: CH40 Mode 6: CH48	Mode 7: CH38 Mode 8: CH46	Mode 9: CH42

3.2.2 Radiated Emission Test (Below 1GHz)

Radiated Test Cases	802.11ac VHT80
	Mode 9: CH42

Note : 1. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna

diversity architecture) and packet type. It was determined that Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.

2. Following channel(s) was (were) selected for the final test as listed above

3.2.3 Radiated Bandedge and Radiated Emission Test (Above 1GHz)

Summary table of Test Cases				
Test Item	**Modulation**			
	802.11 a	**802.11n HT20/ 802.11ac VHT20**	**802.11n HT40/ 802.11ac VHT40**	**802.11ac VHT80**
U-NII-1	Mode 1: CH36 Mode 2: CH40 Mode 3: CH48	Mode 4: CH36 Mode 5: CH40 Mode 6: CH48	Mode 7: CH38 Mode 8: CH46	Mode 9: CH42

Note : 1. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type. It was determined that Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.

2. Following channel(s) was (were) selected for the final test as listed above

3.2.4 Power Line Conducted Emission Test:

AC Conducted Emission	Mode 1 : 5G WLAN Link + HDMI + TF Card Upload + USB playing + Ping

3.3 Support Equipment

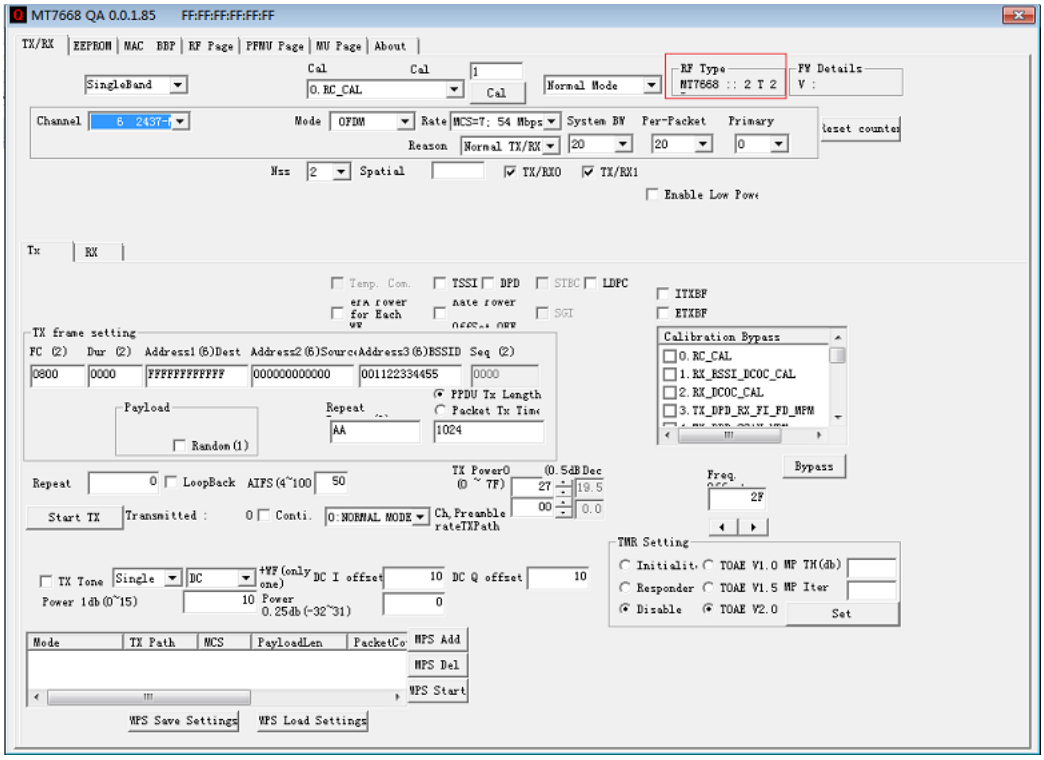
Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
2.	Notebook	Lenovo	E540	FCC DoC	N/A	shielded cable DC O/P 1.8 m unshielded AC I/P cable1.2 m

3.4 Test Setup

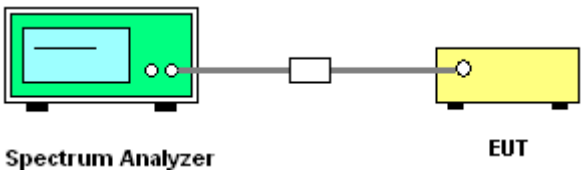
The EUT is continuously communicating to the WIFI tester during the tests.

EUT was set in the Hidden menu mode to enable WIFI communications.

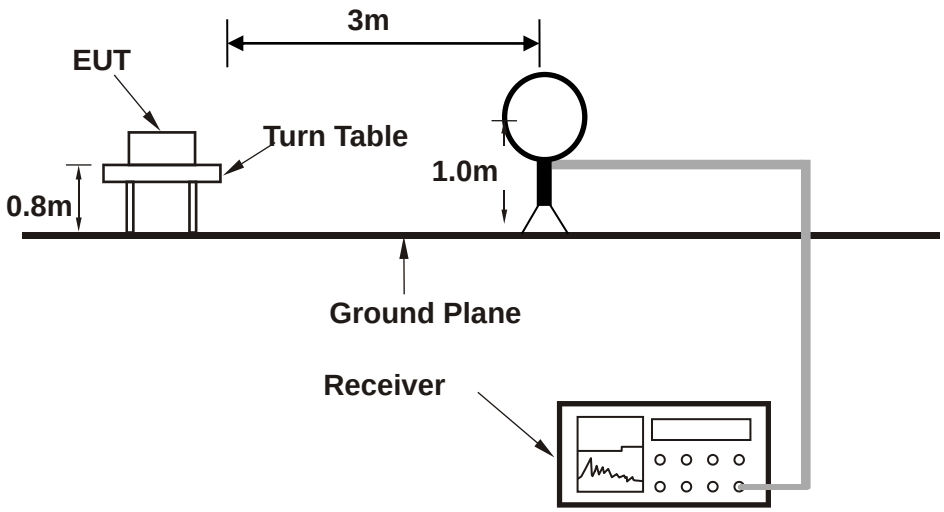
The following picture is a screenshot of the test software



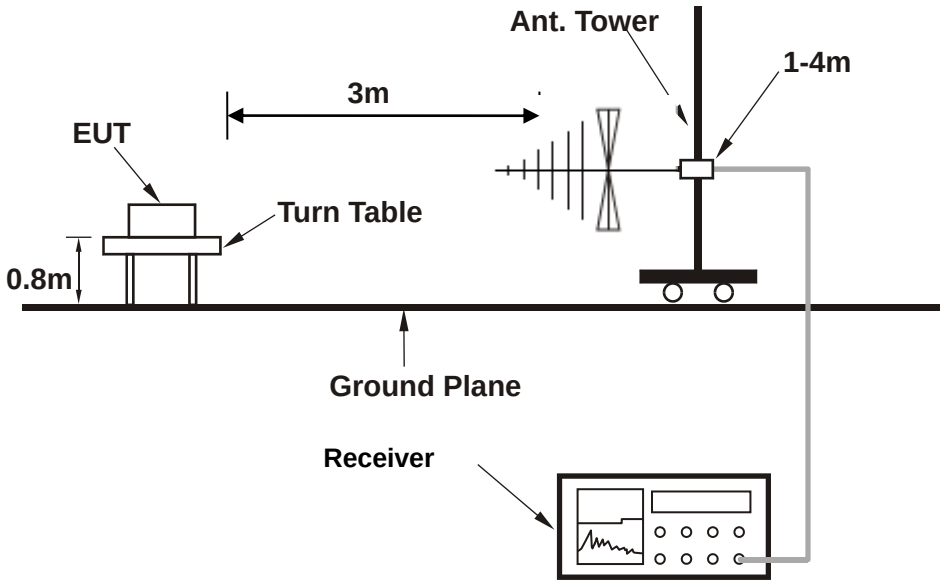
Setup diagram for Conducted Test



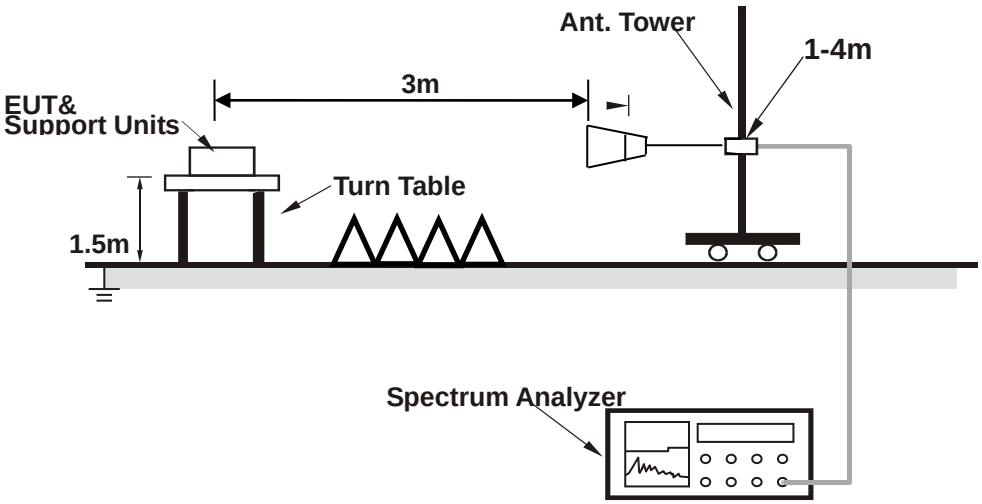
Setup diagram for Raidation(9KHz~30MHz) Test



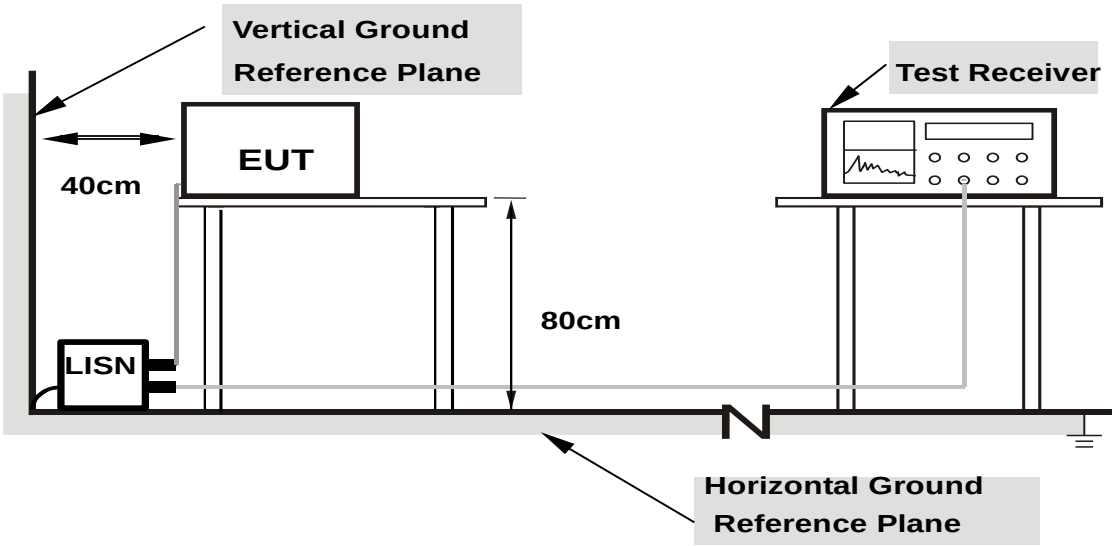
Setup diagram for Raidation(Below 1G) Test



Setup diagram for Raidation(Above1G) Test



Setup diagram for AC Conducted Emission Test



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.5 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 5 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 5 + 10 = 15 (dB)

For all radiated test items:

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Over Limit (dB μ V/m) = Level(dB μ V/m) - Limit Level (dB μ V/m)

4 Test Result

4.1 26dB and 99% Occupied Bandwidth Measurement

4.1.1 Limit of 26dB and 99% Bandwidth

There is no limit bandwidth for U-NII-1

4.1.2 Test Procedures

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the Antenna port to the spectrum analyzer.
4. 26dB Band width Measurement: Set the spectrum analyzer as 1% of emission BW Sweep=auto,Detector = Peak, Trace Mode = Max Hold, Manually readjust RBW until the RBW/EBW ratio is 1% based on EBW as observed on the result of pre-sequence measurement.
5. Mark the peak frequency and –26dB (upper and lower) frequency.
6. Repeat the procedures as list above until all test default channels (low, middle, and high) are completed.
7. Measure and record the results in the test report.

4.1.3 Test Result of 26dB Bandwidth

Refer to Appendix A1 of this test report.

4.1.4 Test Result of 99% Bandwidth

Refer to Appendix A2 of this test report.

4.2 Maximum Conducted Output Power Measurement

4.2.1 Limit of Peak Output Power

Operation Band	EUT Category		Limit
U-NII-1		Access Point(Mater Device)	1 Watt(30dBm)
		Fixed point-to-point Acess Ponit	1 Watt(30dBm)
	√	Mobile and portable clinet device	250mW(23.98dBm)
U-NII-2A			250mW(23.98dBm) or 11dBm+10 log B
U-NII-2C			250mW(23.98dBm) or 11dBm+10 log B

4.2.2 Test Procedures

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.
4. Spectrum Analyzer is used as the auxiliary test equipment to conduct the output power measurement.
5. Set span to encompass the entire emission bandwidth (EBW) of the signal. Set sweep trigger to “free run.”, RBW = 1 MHz, Set VBW ≥ 1/T, where T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation, Sweep time = auto, Detector = peak..
6. Video filtering shall be applied to power signal (rms), it shall be set to operate on a linear voltage signal.
7. Trace mode = max hold. Allow max hold to run for at least 60 seconds
8. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.

4.2.3 Test Result of Peak Output Power

Refer to Appendix B of this test report.

4.3 Power Spectral Density Measurement

4.3.1 Limits of Power Spectral Density

Operztion Band	EUT Category		Limit
U-NII-1		Access Point(Mater Device)	17dBm/MHz
		Fixed point-to-point Acess Ponit	
	√	Mobile and portable clinet device	11dBm/ MHz
U-NII-2A			11dBm/ MHz
U-NII-2C			11dBm/ MHz

4.3.2 Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
4. Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging(SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
5. User the cursor on spectrum to peak search the highest level of trace.
6. Record the max. reading and add 10 log(1/duty cycle).
7. Repeat above procedures until all default test channel (low, middle, and high) was complete.

4.3.3 Test Result of Power Spectral Density

Refer to Appendix C of this test report.

4.4 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

4.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of –27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

(2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Note: The following formula is used to convert the EIRP to field strength.

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

EIRP (dBm)	Field Strength at 3m (dBμV/m)
-17	78.2
-27	68.2

4.4.2 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04. Section G) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz

   • RBW = 120 kHz

   • VBW = 300 kHz

   • Detector = Peak

   • Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

   • RBW = 1 MHz

   • VBW ≥ 3 MHz

   • Detector = Peak

   • Sweep time = auto

   • Trace mode = max hold

   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

   • RBW = 1 MHz

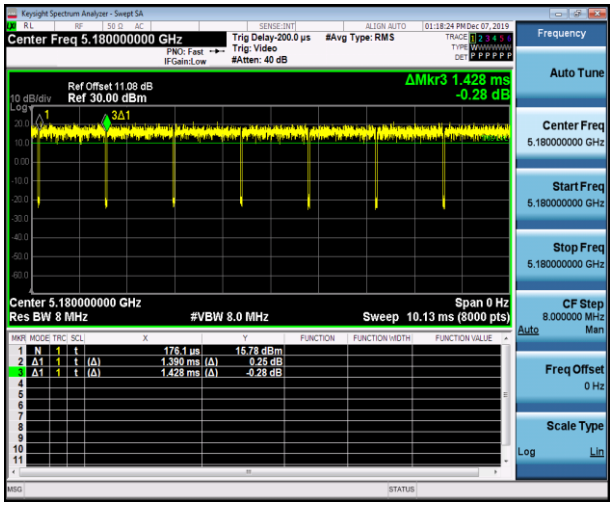
   • VBW = 10 Hz, when duty cycle is no less than 98 percent.

   • VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

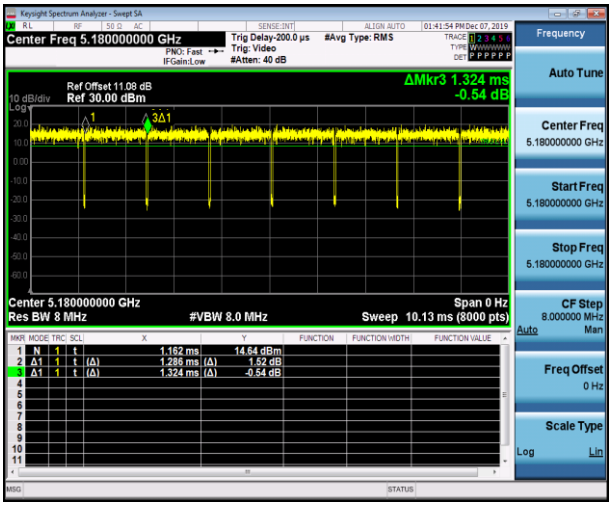
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground..
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be

measured in average mode again and reported.

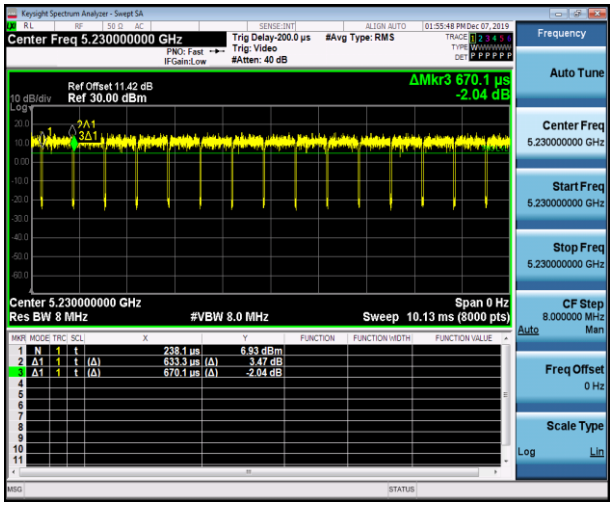
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	97.34	1.39	0.72	1kHz
802.11n HT20	97.13	1.29	0.78	1kHz
802.11n HT40	94.52	0.63	1.59	3kHz
802.11ac HT20	94.68	0.68	1.47	3kHz
802.11ac HT40	90.49	0.35	2.86	3kHz
802.11ac HT80	64.60	0.18	5.56	10kHz



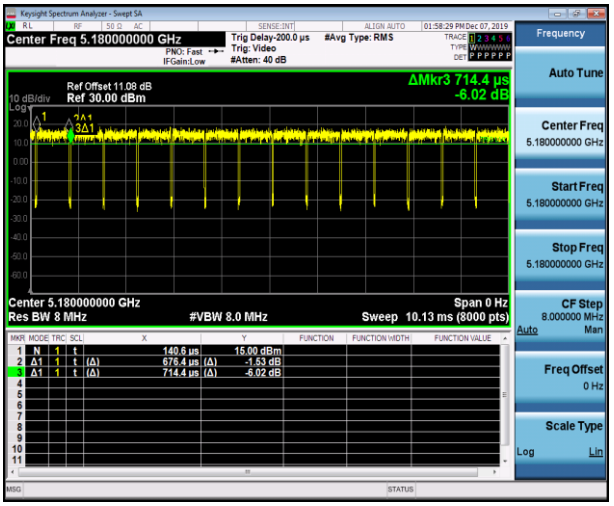
802.11a



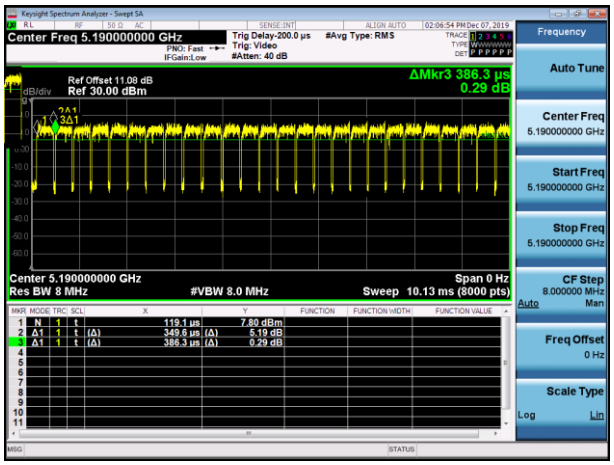
802.11n HT20



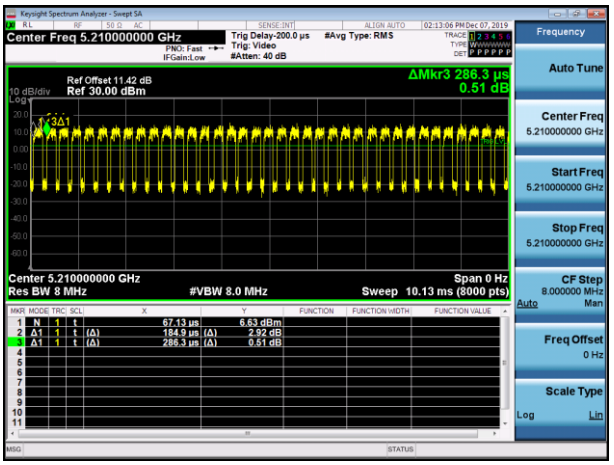
802.11n HT40



802.11ac HT20



802.11ac HT40



802.11ac HT80

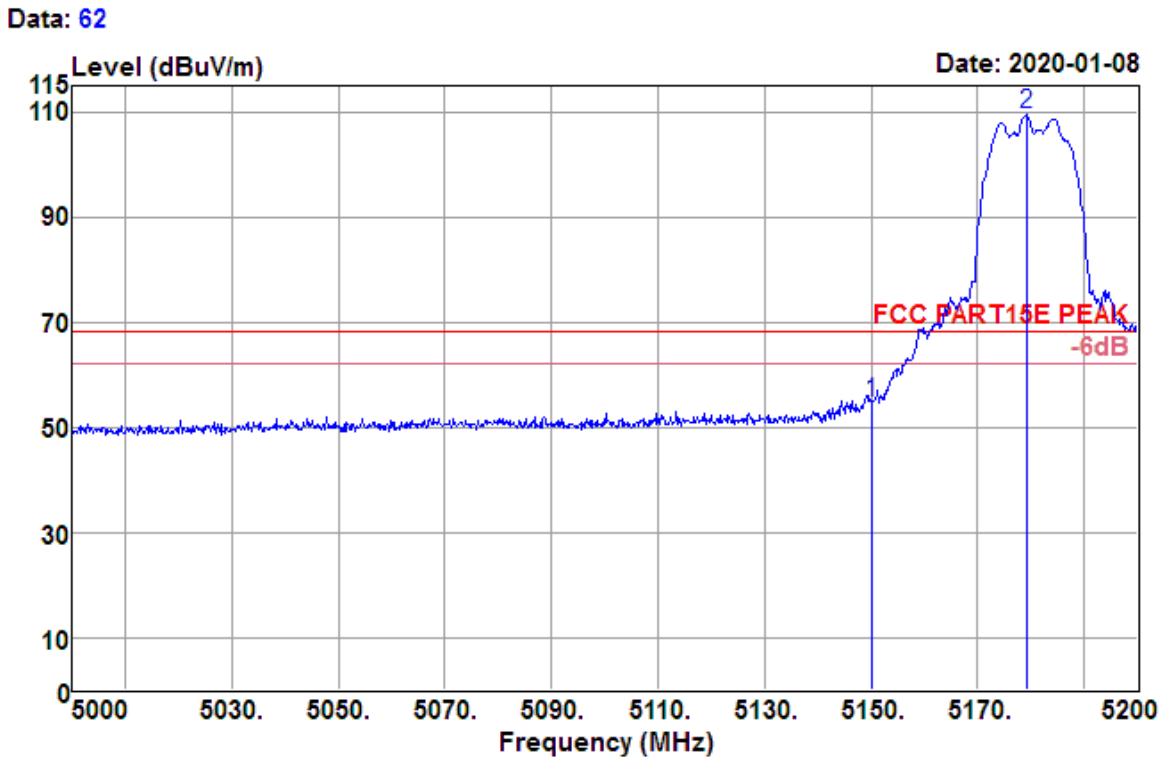
8. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

4.4.3 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

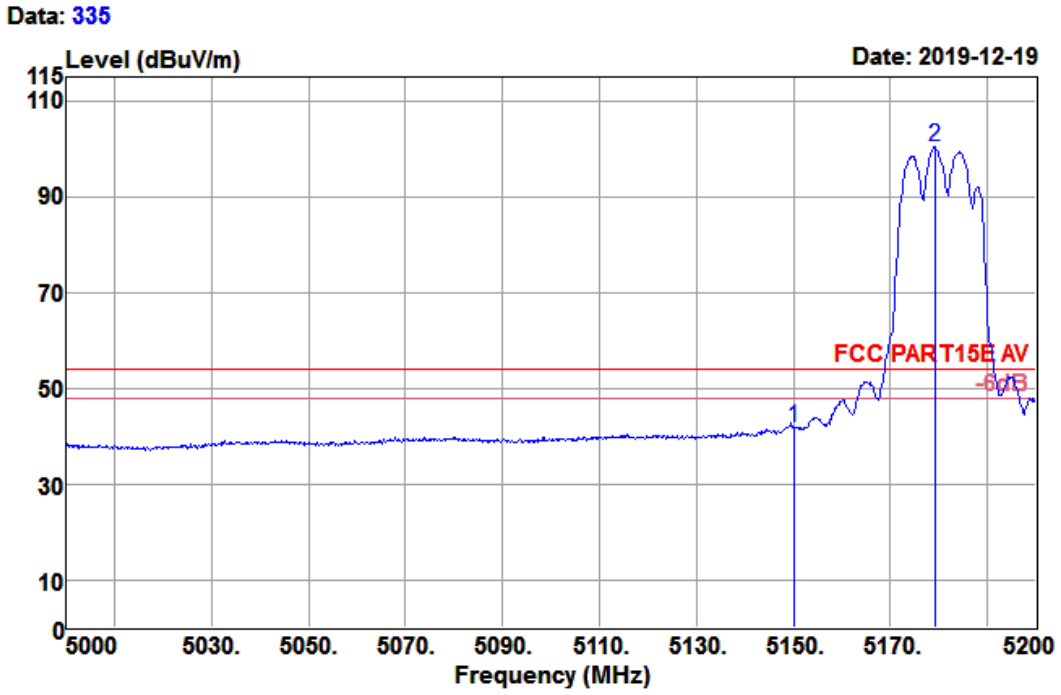
4.4.4 Test Result of Radiated Spurious at Band Edges

Test Mode :	802.11a CH36 5180MHz	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	5.0GHz~5.2GHz	**Polarization :**	Horizontal



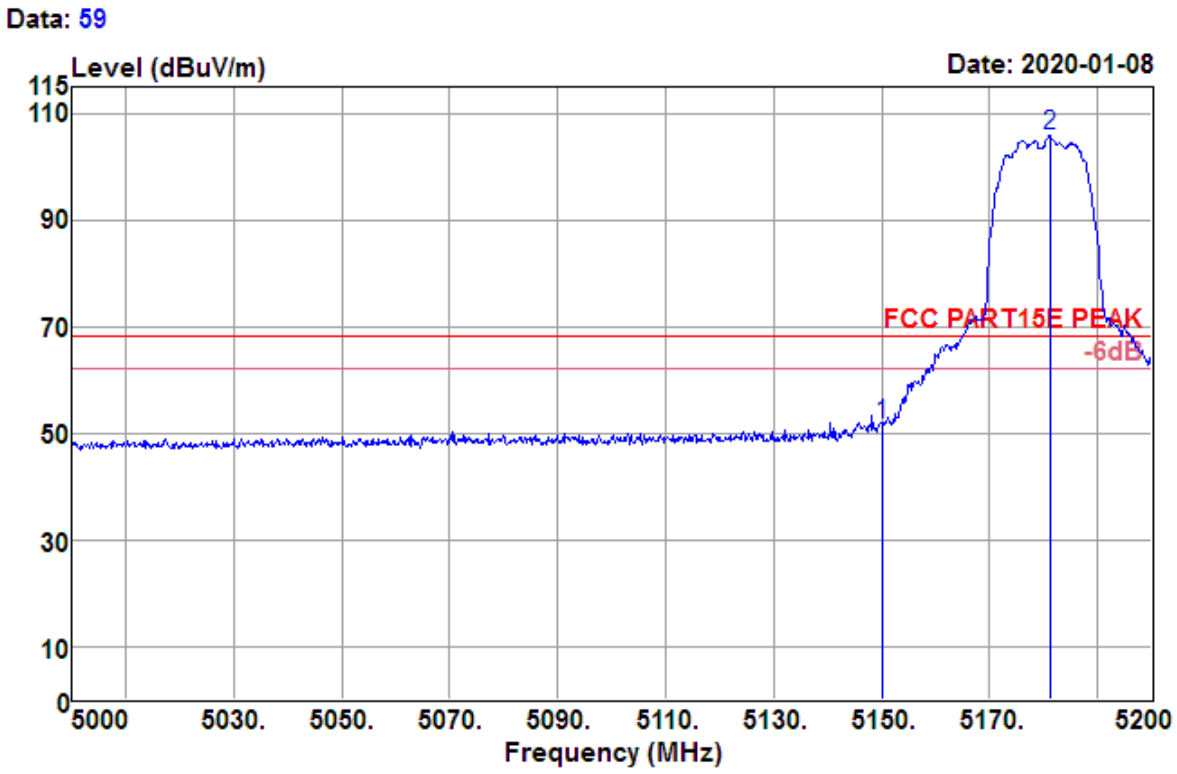
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5150.000	52.22	31.82	5.65	34.96	54.73	68.20	-13.47	Peak
5179.200	107.11	31.84	5.68	35.00	109.63	68.20	41.43	Peak

Test Mode :	802.11a CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.2GHz	Polarization :	Horizontal



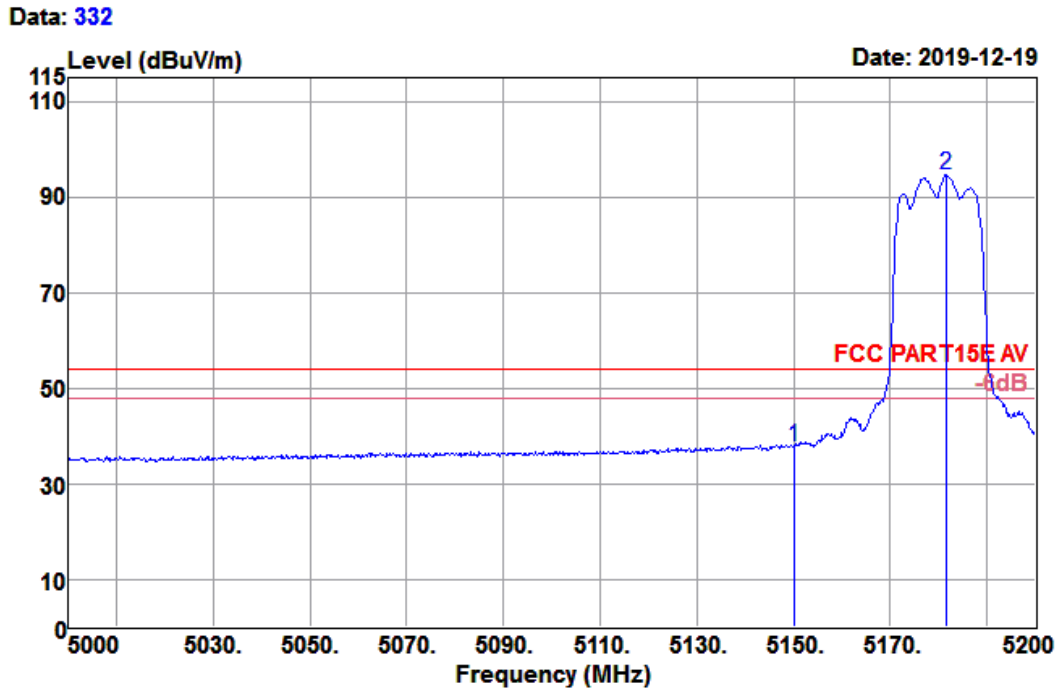
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5150.000	39.24	31.82	5.65	34.96	41.75	54.00	-12.25	Average
5179.200	97.82	31.84	5.68	35.00	100.34	54.00	46.34	Average

Test Mode :	802.11a CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.2GHz	Polarization :	Vertical



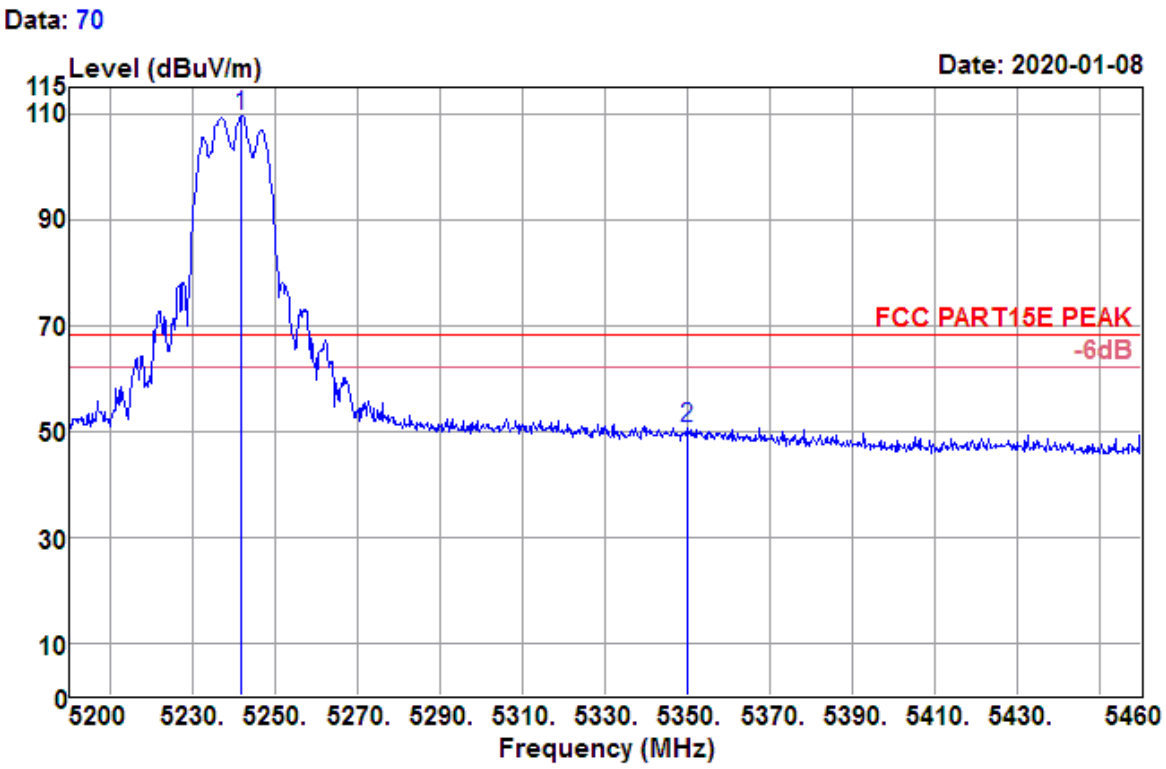
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
5150.000	49.04	31.82	5.65	34.96	51.55	68.20	-16.65	Peak
5181.200	103.38	31.84	5.68	35.01	105.89	68.20	37.69	Peak

Test Mode :	802.11a CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.2GHz	Polarization :	Vertical



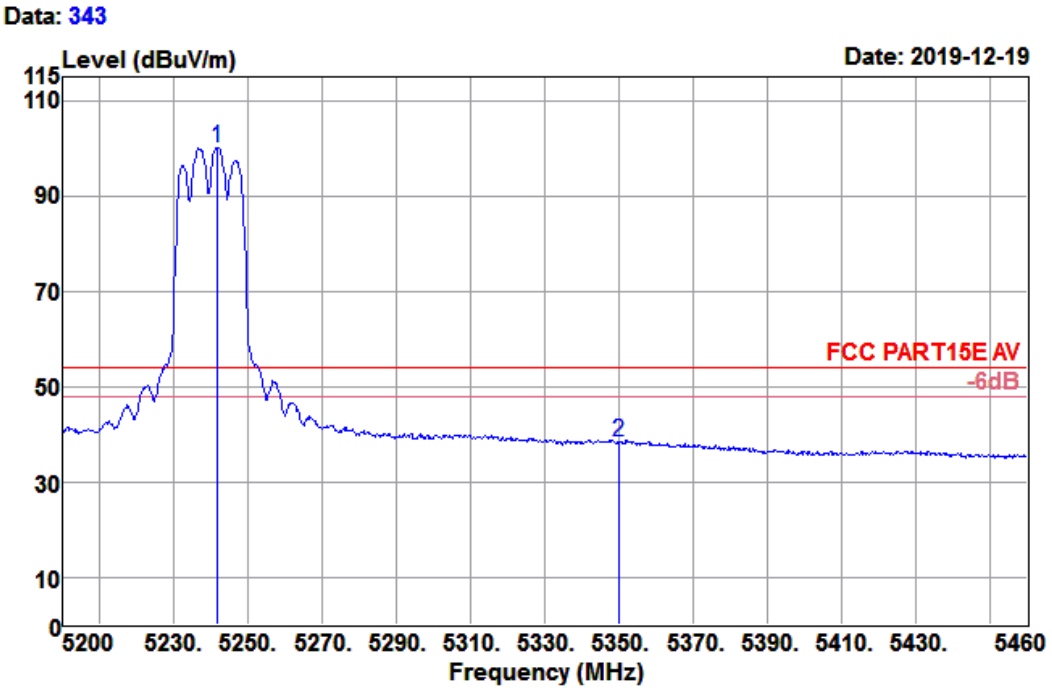
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5150.000	35.24	31.82	5.65	34.96	37.75	54.00	-16.25	Average
5181.600	92.01	31.85	5.68	35.01	94.53	54.00	40.53	Average

Test Mode :	802.11a CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.2GHz~5.46GHz	Polarization :	Horizontal



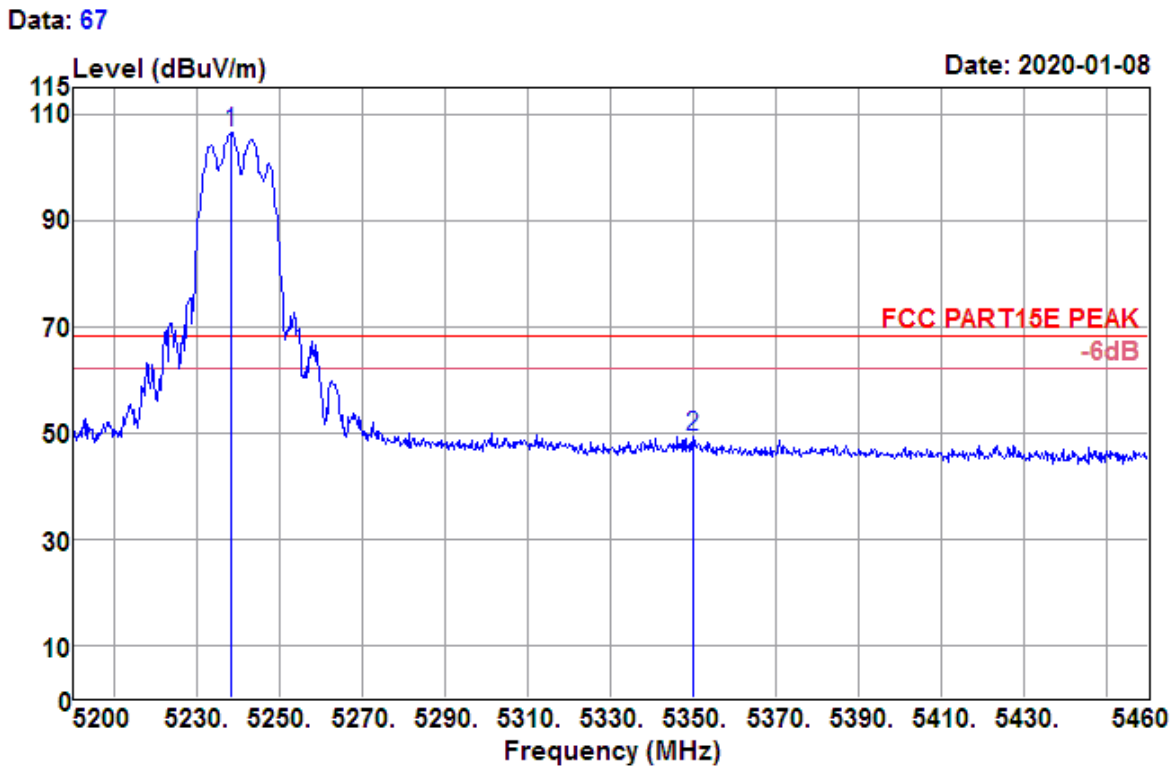
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5241.860	107.14	31.89	5.70	35.11	109.62	68.20	41.42	Peak
5350.000	48.24	31.98	5.71	35.30	50.63	68.20	-17.57	Peak

Test Mode :	802.11a CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.2GHz~5.46GHz	Polarization :	Horizontal



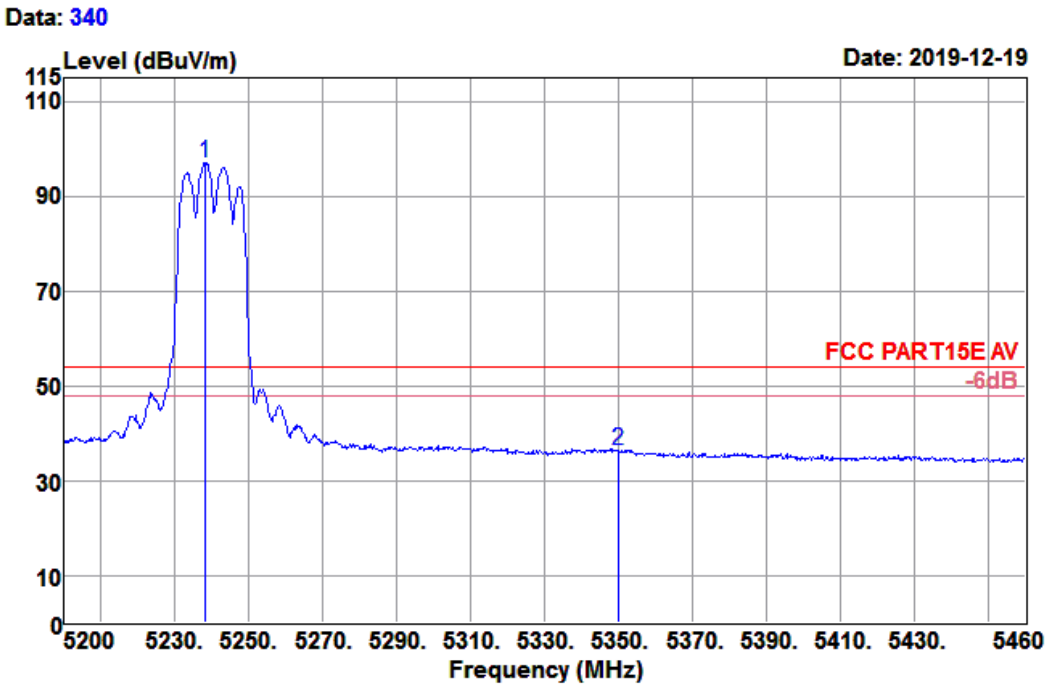
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5241.860	97.76	31.89	5.70	35.11	100.24	54.00	46.24	Average
5350.000	35.92	31.98	5.71	35.30	38.31	54.00	-15.69	Average

Test Mode :	802.11a CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.2GHz~5.46GHz	Polarization :	Vertical



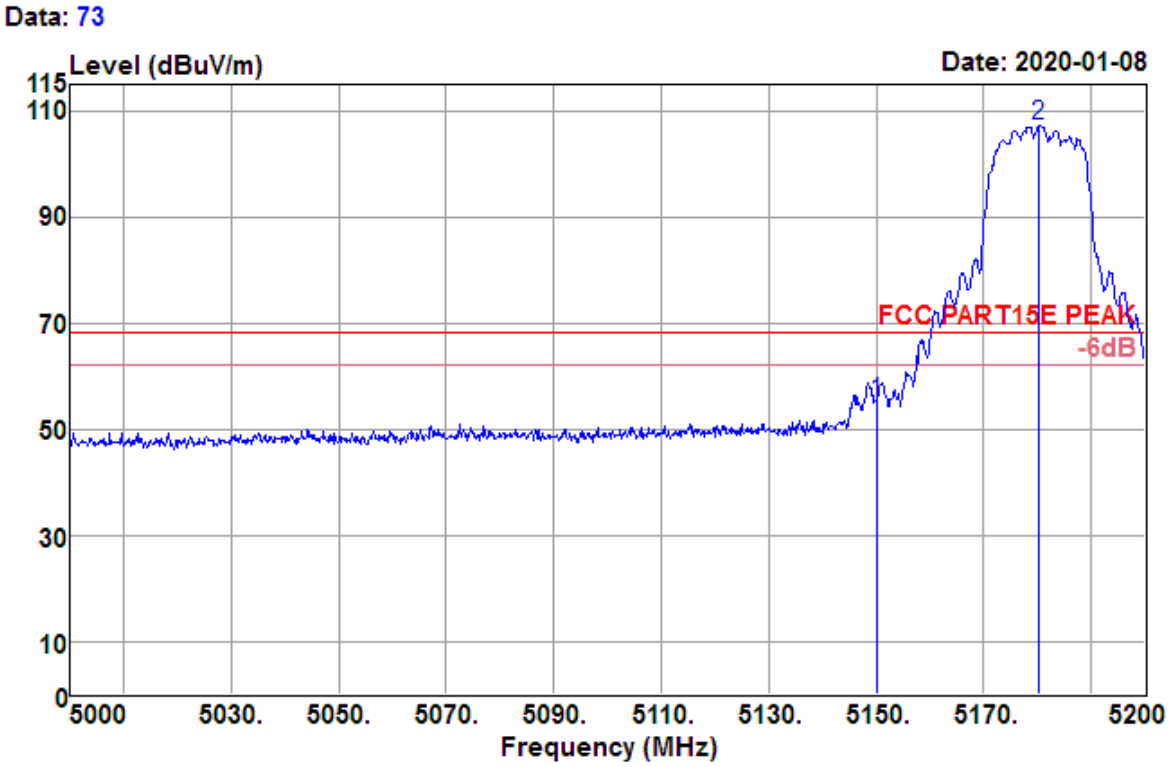
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5238.220	104.06	31.89	5.70	35.10	106.55	68.20	38.35	Peak
5350.000	46.89	31.98	5.71	35.30	49.28	68.20	-18.92	Peak

Test Mode :	802.11a CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.2GHz~5.46GHz	Polarization :	Vertical



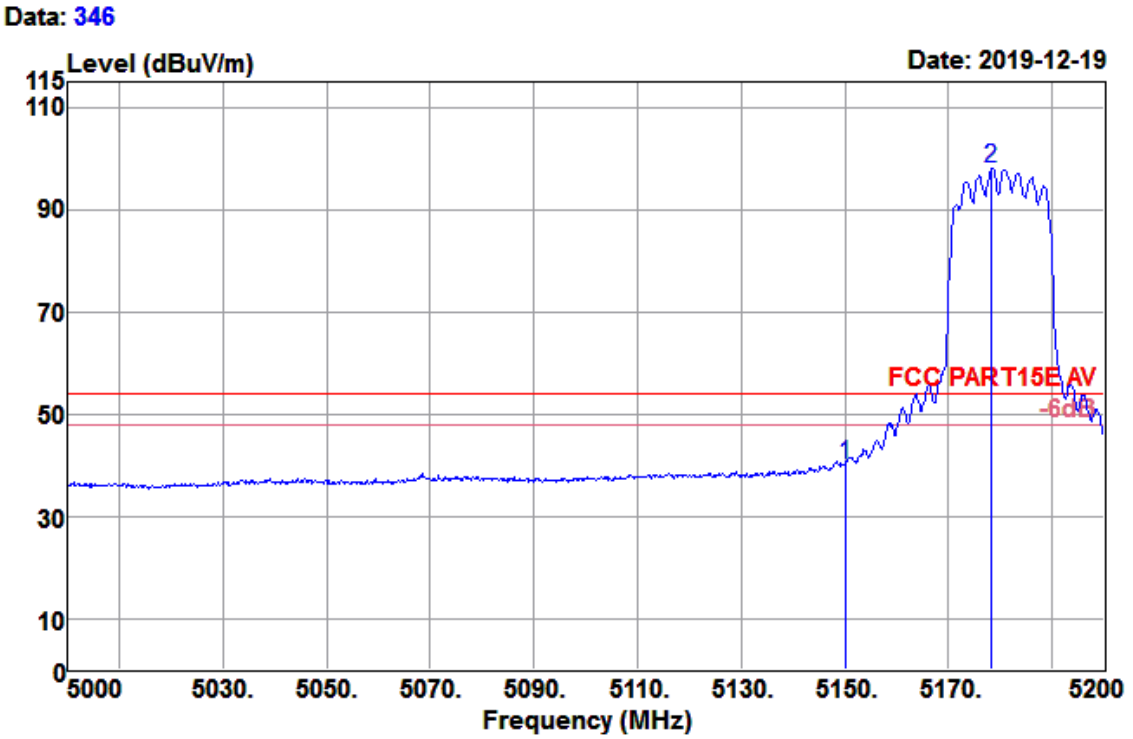
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5238.220	94.68	31.89	5.70	35.10	97.17	54.00	43.17	Average
5350.000	34.00	31.98	5.71	35.30	36.39	54.00	-17.61	Average

Test Mode :	802.11n HT20 CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.2GHz	Polarization :	Horizontal



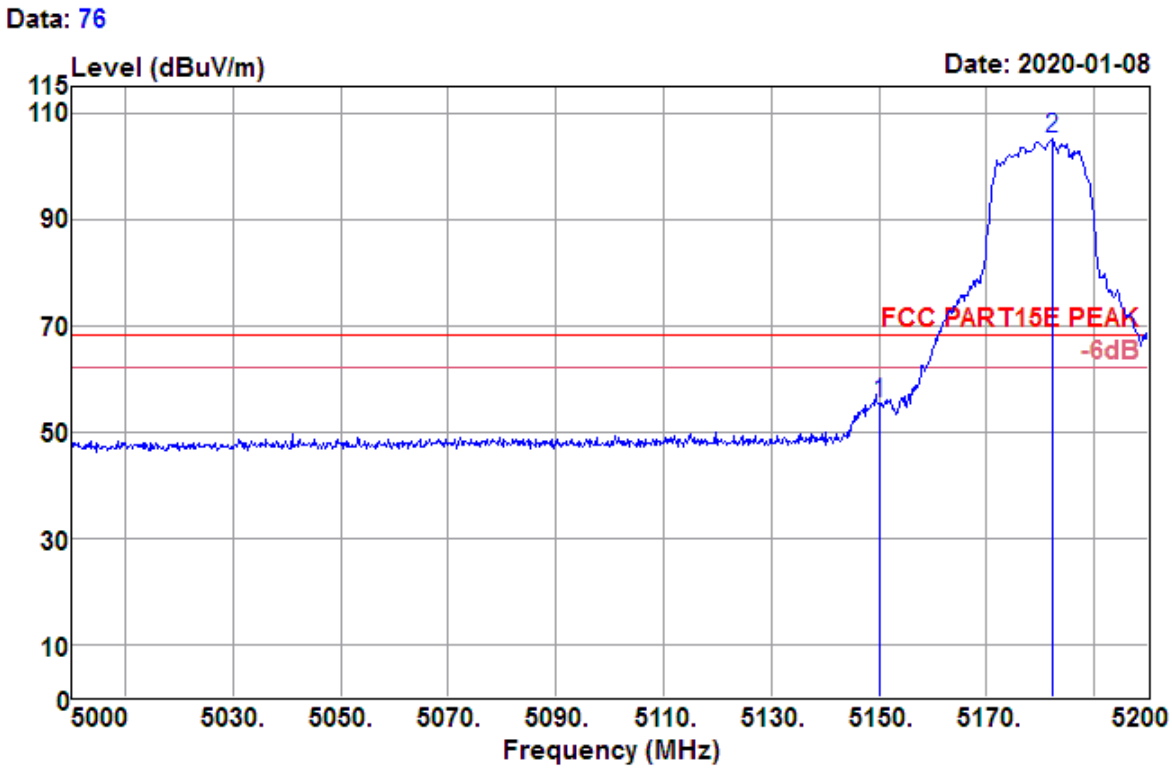
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
5150.000	52.60	31.82	5.65	34.96	55.11	68.20	-13.09	Peak
5180.400	104.77	31.84	5.68	35.01	107.28	68.20	39.08	Peak

Test Mode :	802.11n HT20 CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.2GHz	Polarization :	Horizontal



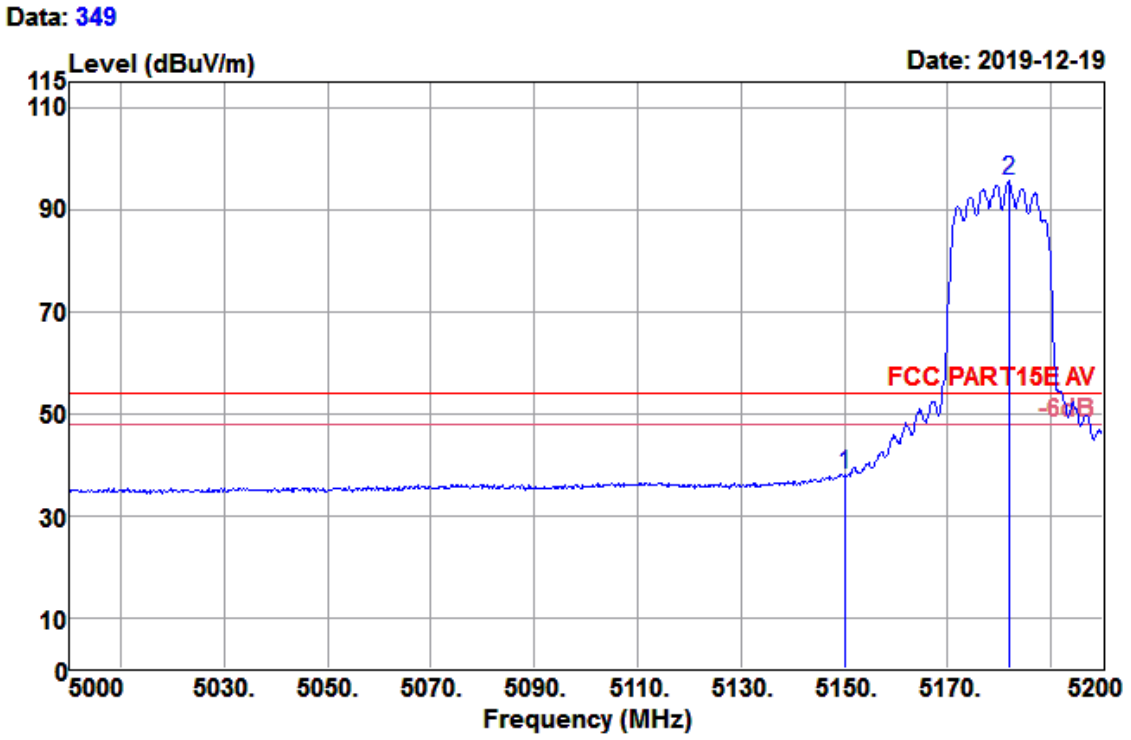
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
5150.000	37.54	31.82	5.65	34.96	40.05	54.00	-13.95	Average
5178.400	95.58	31.84	5.68	35.00	98.10	54.00	44.10	Average

Test Mode :	802.11n HT20 CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.2GHz	Polarization :	Vertical



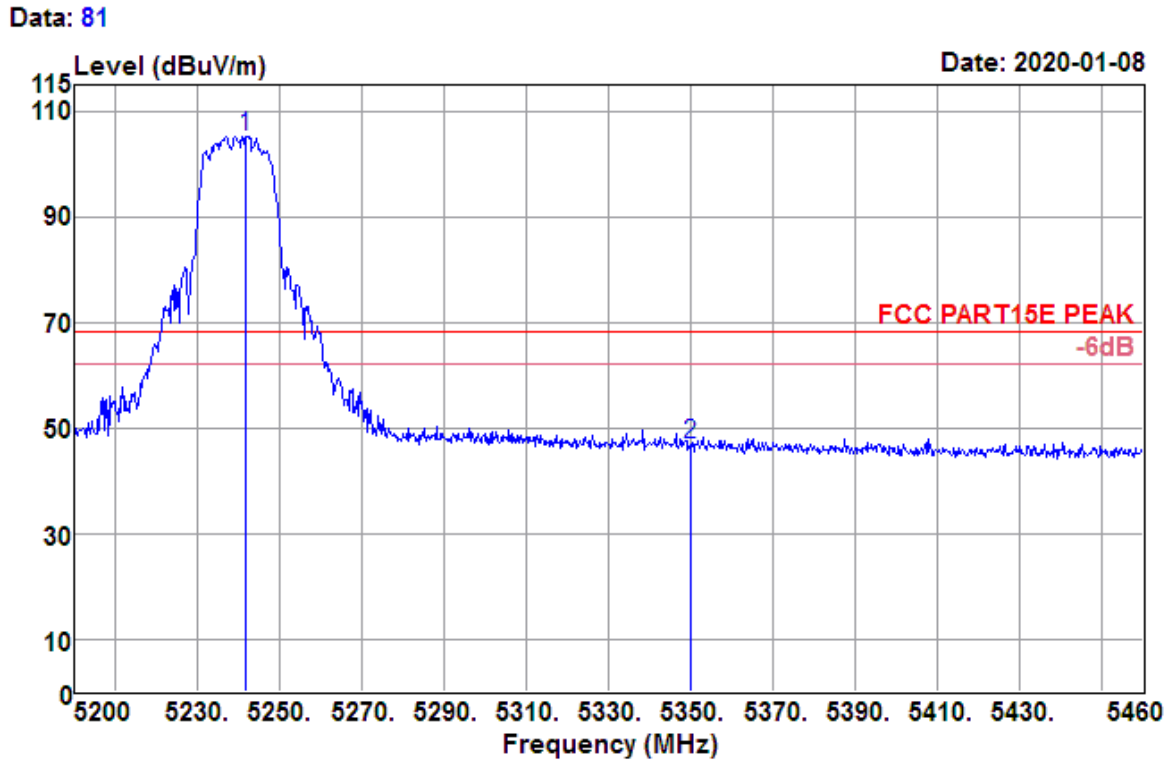
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5150.000	52.97	31.82	5.65	34.96	55.48	68.20	-12.72	Peak
5182.200	102.68	31.85	5.68	35.01	105.20	68.20	37.00	Peak

Test Mode :	802.11n HT20 CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.2GHz	Polarization :	Vertical



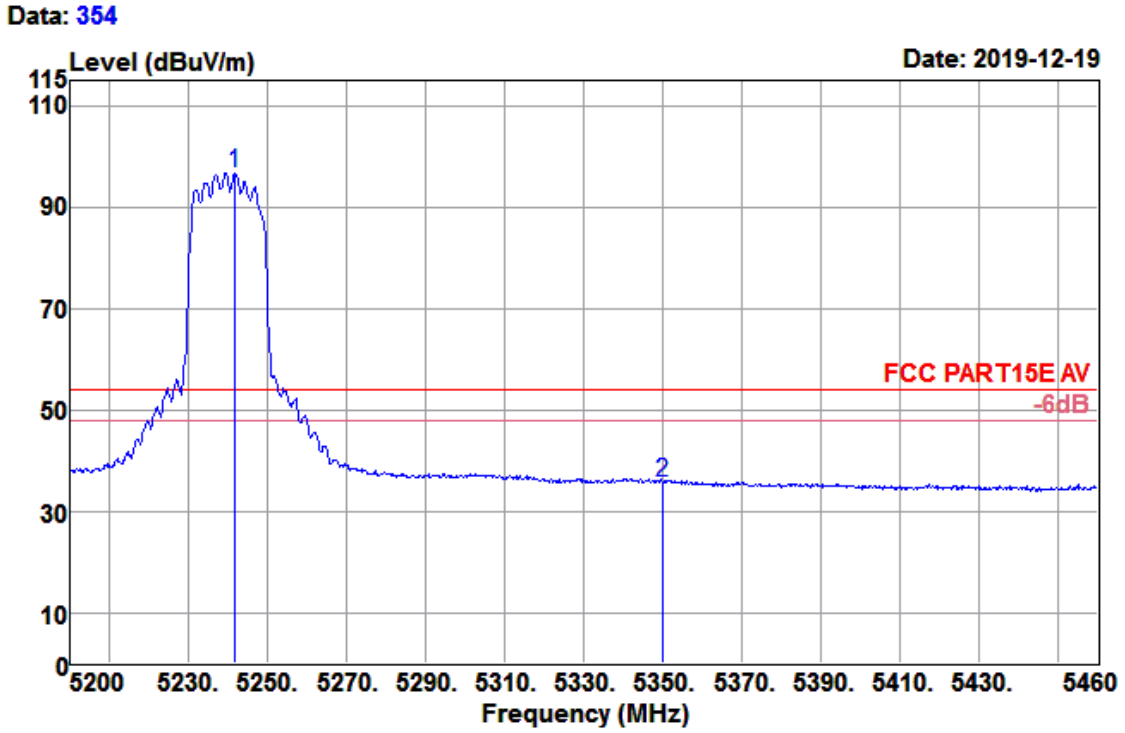
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
5150.000	35.38	31.82	5.65	34.96	37.89	54.00	-16.11	Average
5181.800	93.15	31.85	5.68	35.01	95.67	54.00	41.67	Average

Test Mode :	802.11n HT20 CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.2GHz~5.46GHz	Polarization :	Horizontal



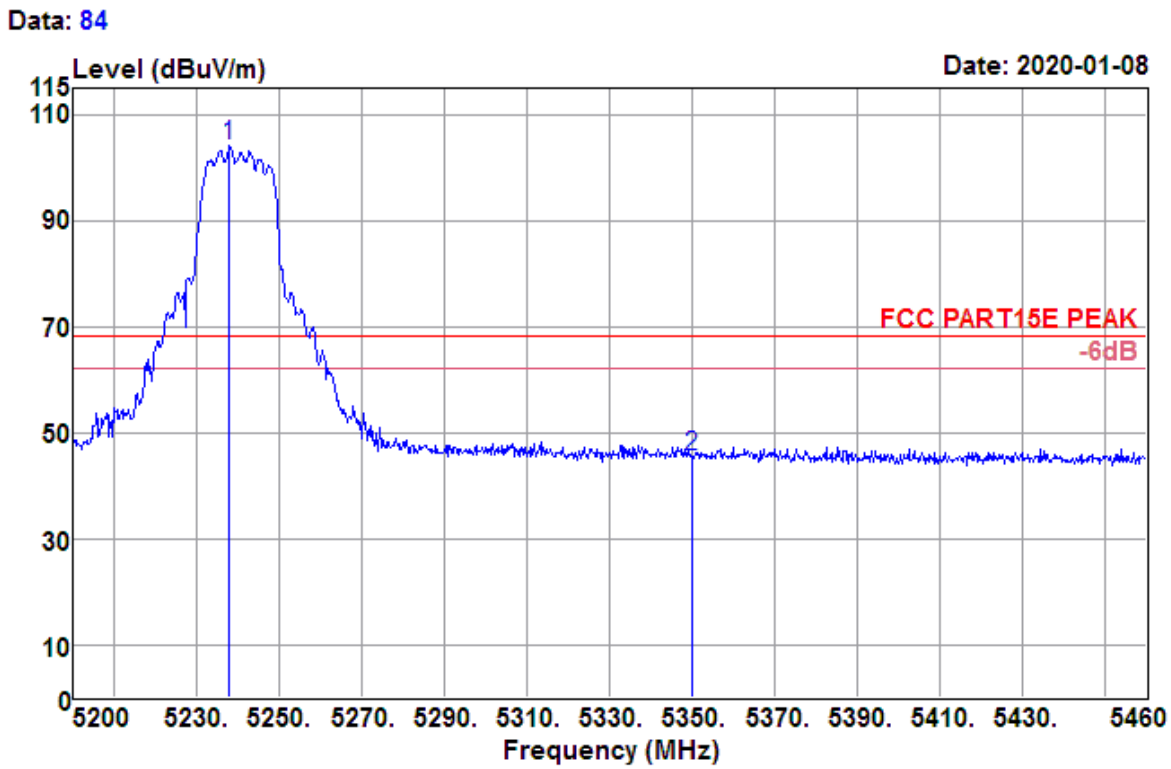
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
5241.860	102.74	31.89	5.70	35.11	105.22	68.20	37.02	Peak
5350.000	44.46	31.98	5.71	35.30	46.85	68.20	-21.35	Peak

Test Mode :	802.11n HT20 CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.2GHz~5.46GHz	Polarization :	Horizontal



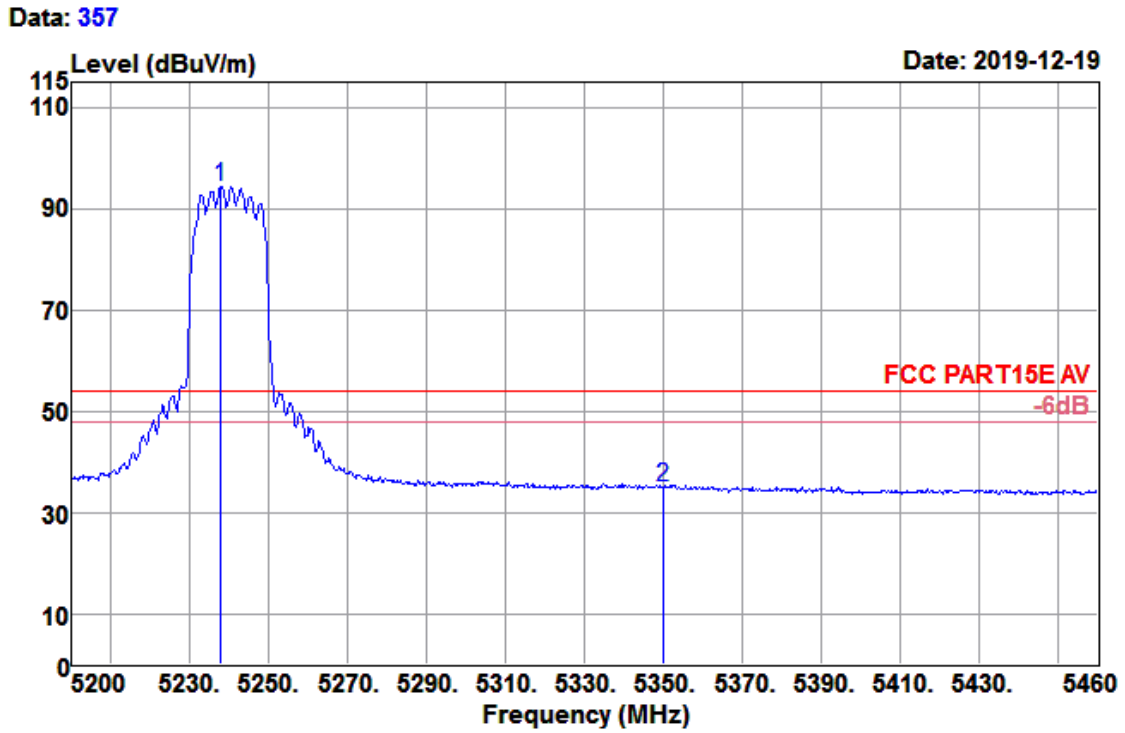
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
5241.600	94.25	31.89	5.70	35.11	96.73	54.00	42.73	Average
5350.000	33.14	31.98	5.71	35.30	35.53	54.00	-18.47	Average

Test Mode :	802.11n HT20 CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.2GHz~5.46GHz	Polarization :	Vertical



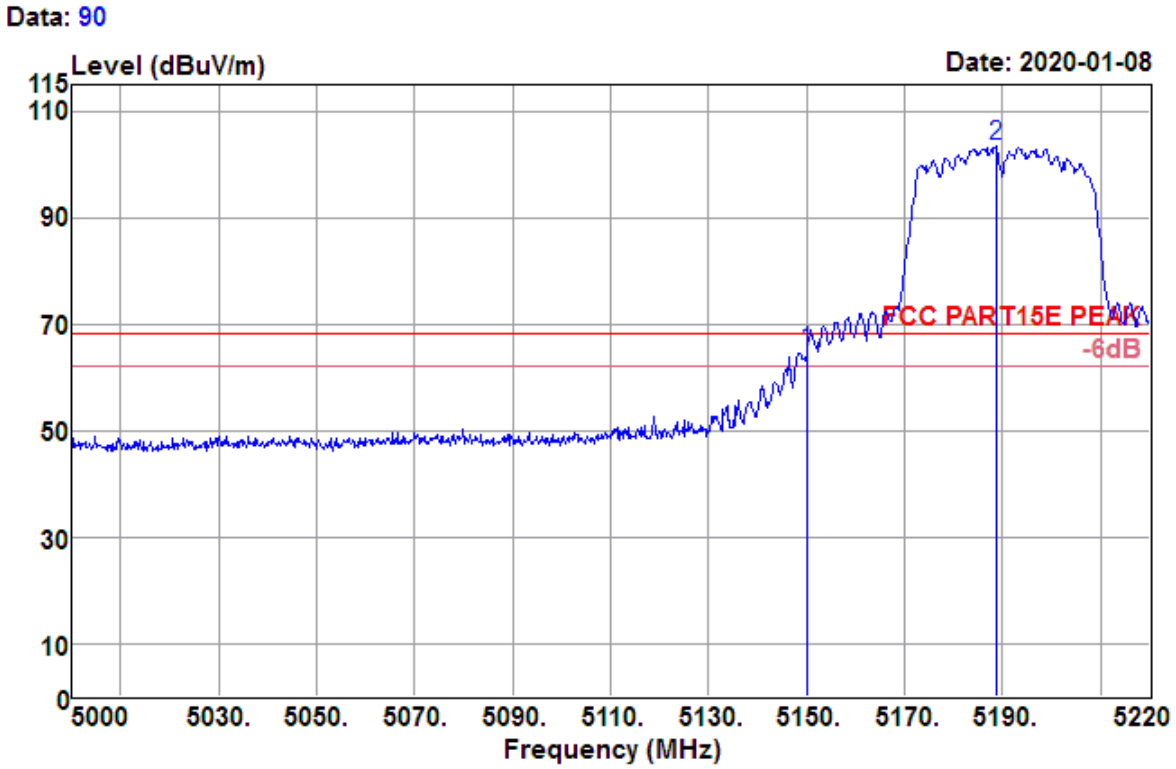
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5237.960	101.67	31.89	5.70	35.10	104.16	68.20	35.96	Peak
5350.000	43.15	31.98	5.71	35.30	45.54	68.20	-22.66	Peak

Test Mode :	802.11n HT20 CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.2GHz~5.46GHz	Polarization :	Vertical



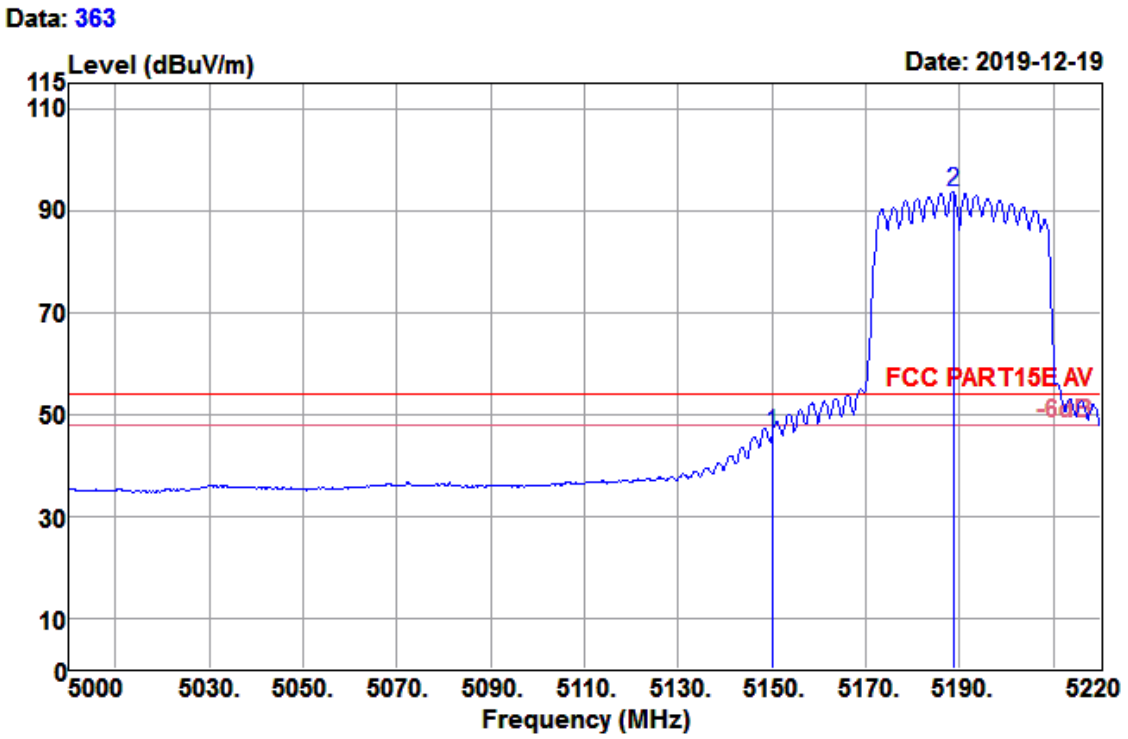
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5237.960	91.98	31.89	5.70	35.10	94.47	54.00	40.47	Average
5350.000	32.66	31.98	5.71	35.30	35.05	54.00	-18.95	Average

Test Mode :	802.11n HT40 CH38 5190MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.22GHz	Polarization :	Horizontal



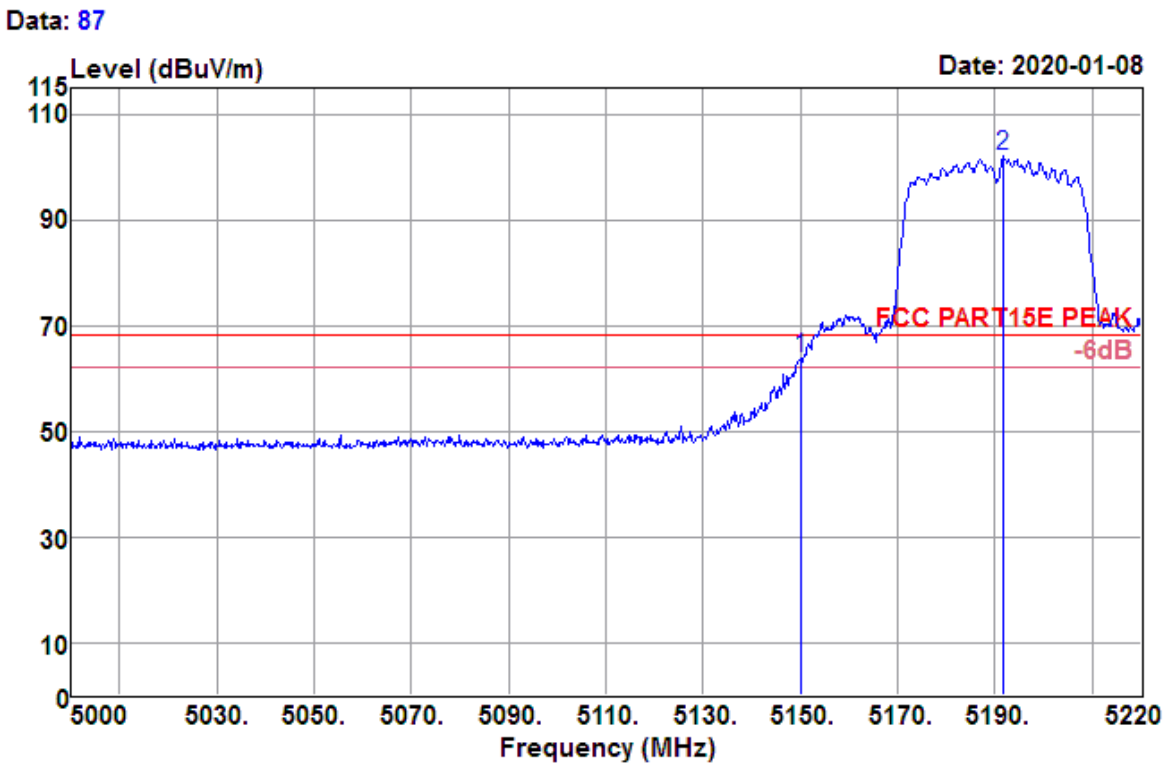
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5150.000	62.22	31.82	5.65	34.96	64.73	68.20	-3.47	Peak
5188.540	100.81	31.85	5.69	35.02	103.33	68.20	35.13	Peak

Test Mode :	802.11n HT40 CH38 5190MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.22GHz	Polarization :	Horizontal



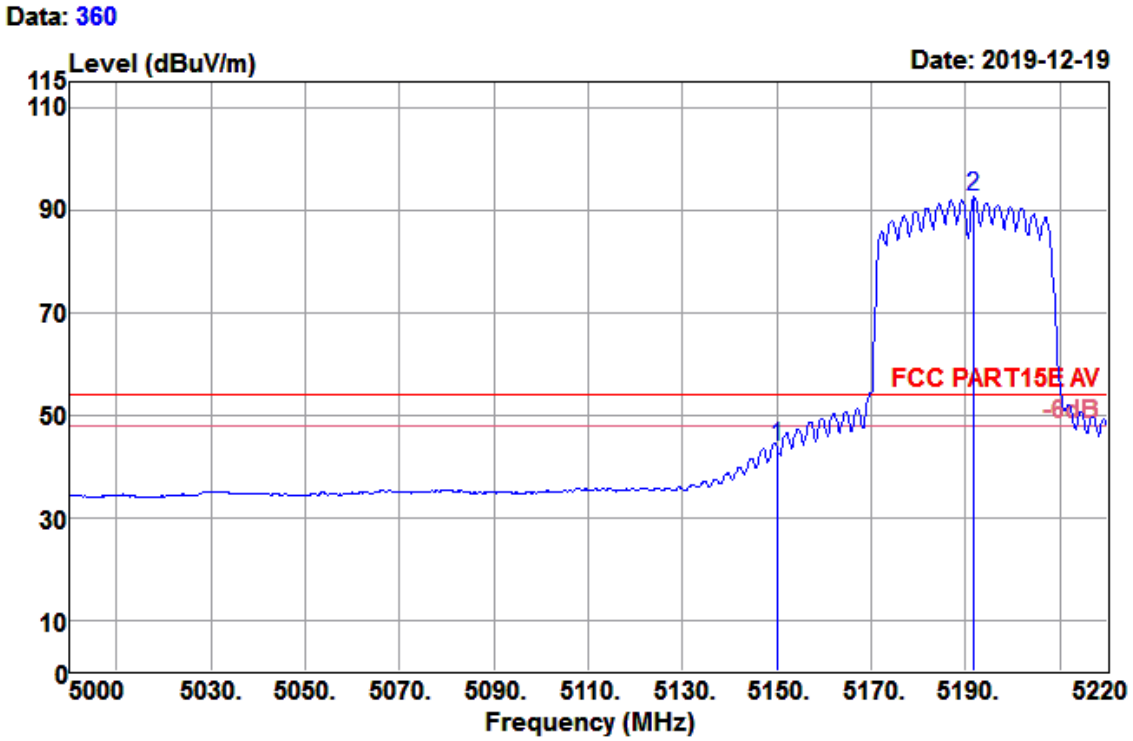
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
5150.000	43.51	31.82	5.65	34.96	46.02	54.00	-7.98	Average
5188.540	91.17	31.85	5.69	35.02	93.69	54.00	39.69	Average

Test Mode :	802.11n HT40 CH38 5190MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.22GHz	Polarization :	Vertical



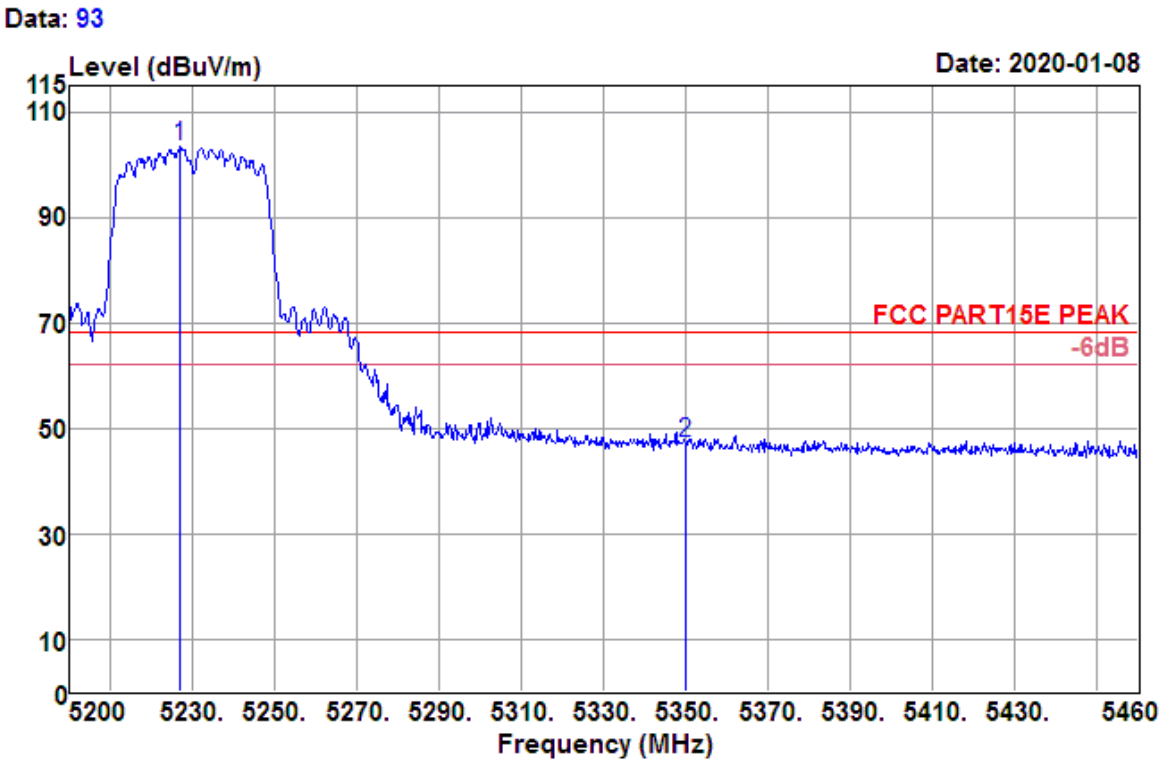
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5150.000	61.18	31.82	5.65	34.96	63.69	68.20	-4.51	Peak
5191.620	99.48	31.85	5.69	35.03	101.99	68.20	33.79	Peak

Test Mode :	802.11n HT40 CH38 5190MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.22GHz	Polarization :	Vertical



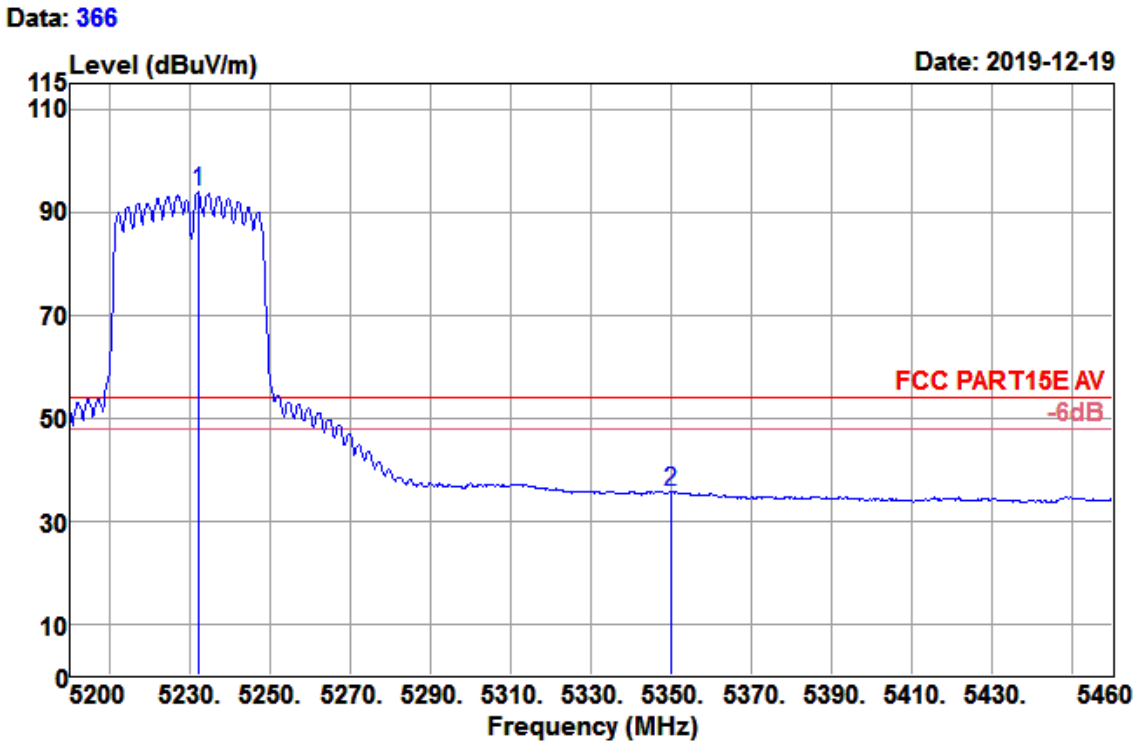
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
5150.000	41.32	31.82	5.65	34.96	43.83	54.00	-10.17	Average
5191.840	90.04	31.85	5.69	35.03	92.55	54.00	38.55	Average

Test Mode :	802.11n HT40 CH46 5230MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.2GHz~5.46GHz	Polarization :	Horizontal



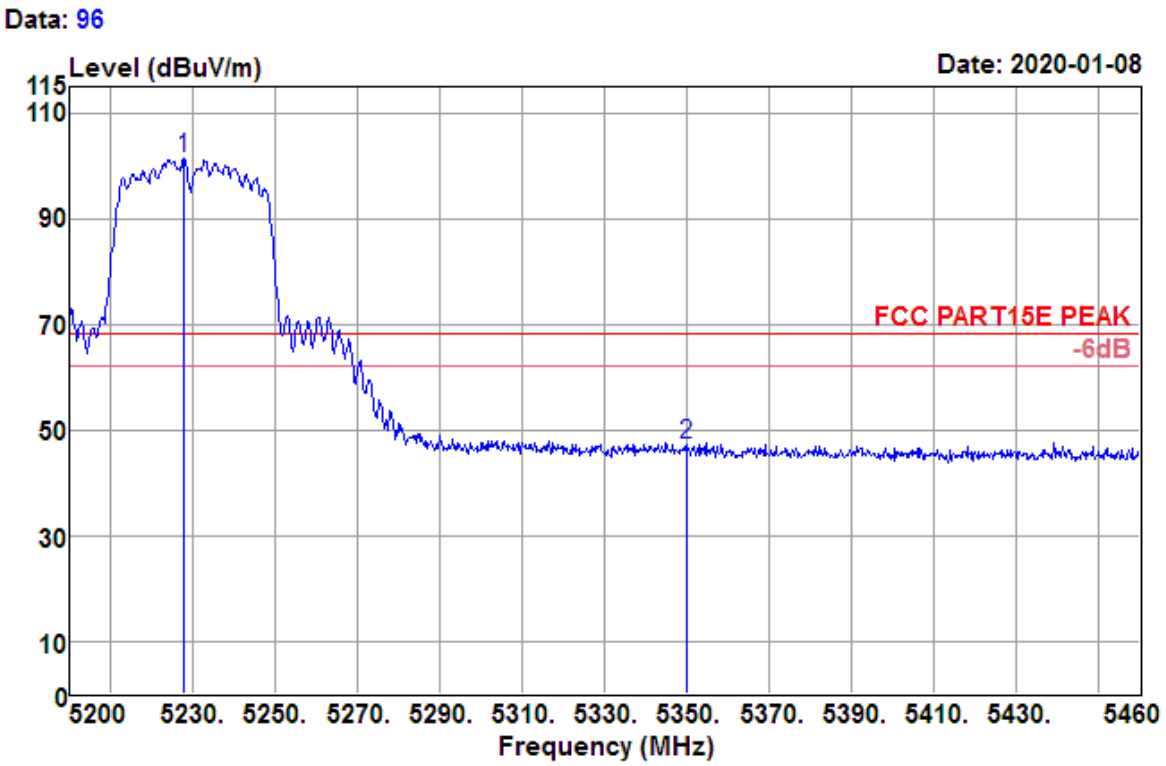
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5227.040	100.89	31.88	5.70	35.09	103.38	68.20	35.18	Peak
5350.000	44.86	31.98	5.71	35.30	47.25	68.20	-20.95	Peak

Test Mode :	802.11n HT40 CH46 5230MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.2GHz~5.46GHz	Polarization :	Horizontal



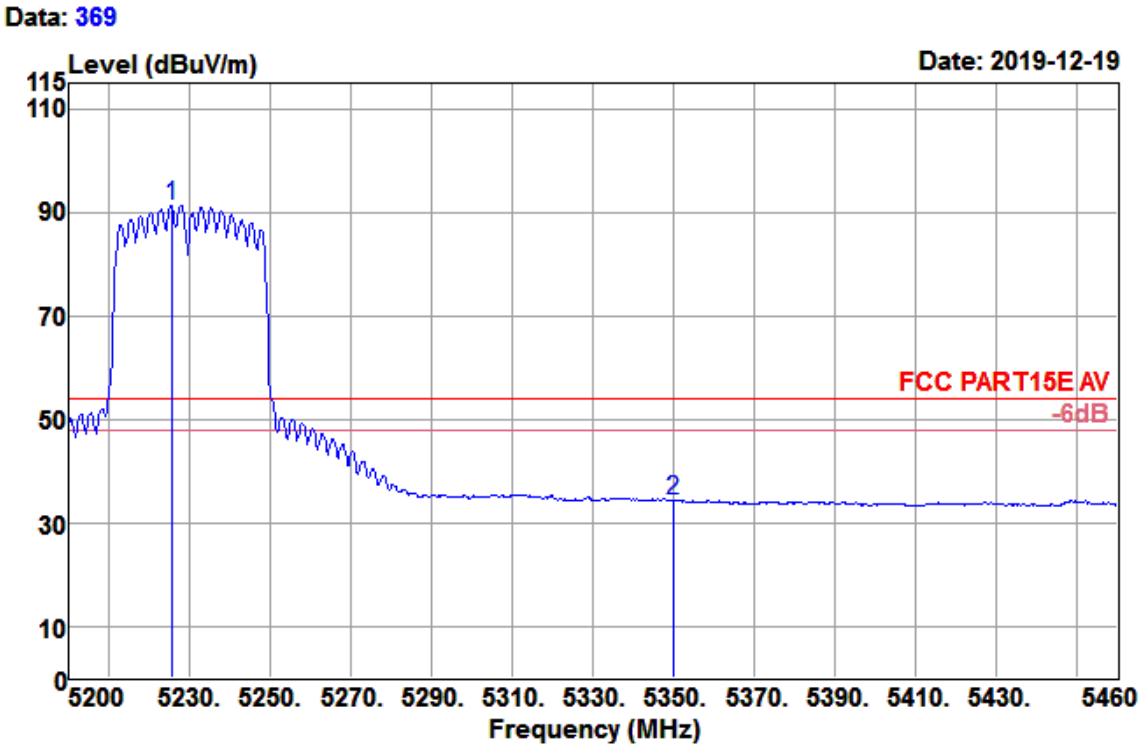
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5231.980	91.33	31.89	5.70	35.09	93.83	54.00	39.83	Average
5350.000	33.29	31.98	5.71	35.30	35.68	54.00	-18.32	Average

Test Mode :	802.11n HT40 CH46 5230MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.2GHz~5.46GHz	Polarization :	Vertical



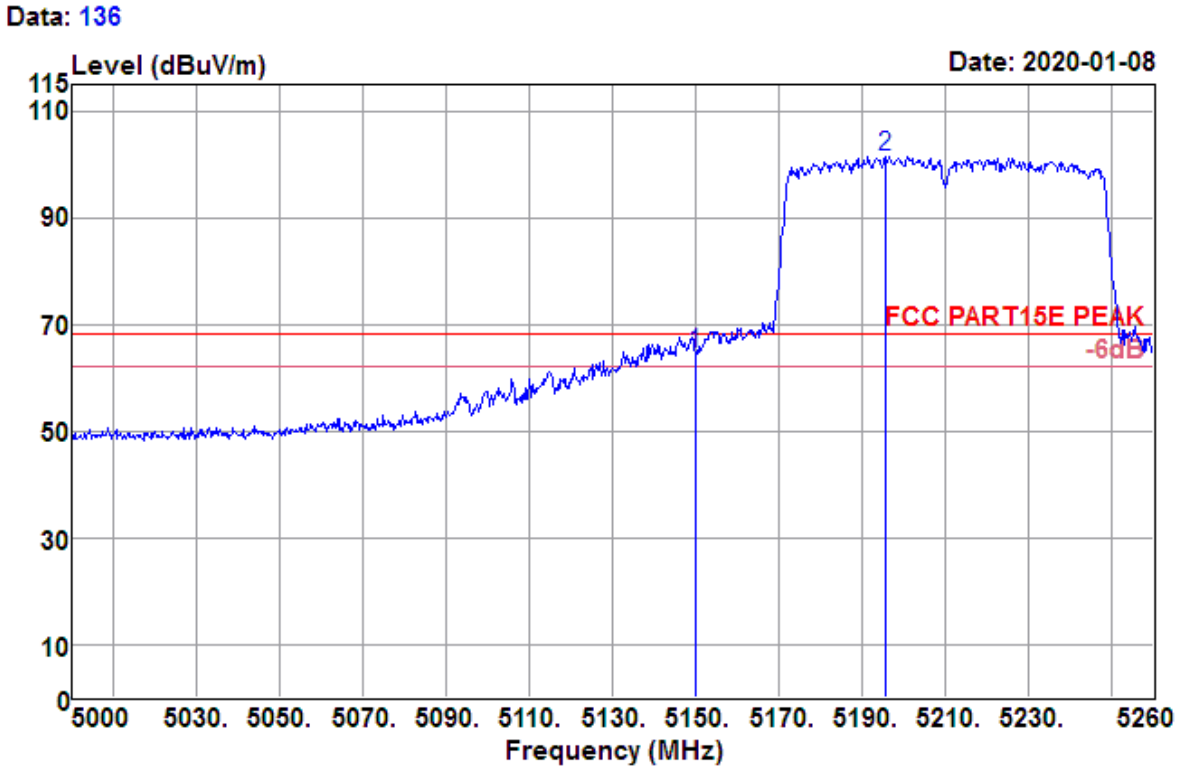
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5227.820	98.82	31.88	5.70	35.09	101.31	68.20	33.11	Peak
5350.000	44.72	31.98	5.71	35.30	47.11	68.20	-21.09	Peak

Test Mode :	802.11n HT40 CH46 5230MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.2GHz~5.46GHz	Polarization :	Vertical



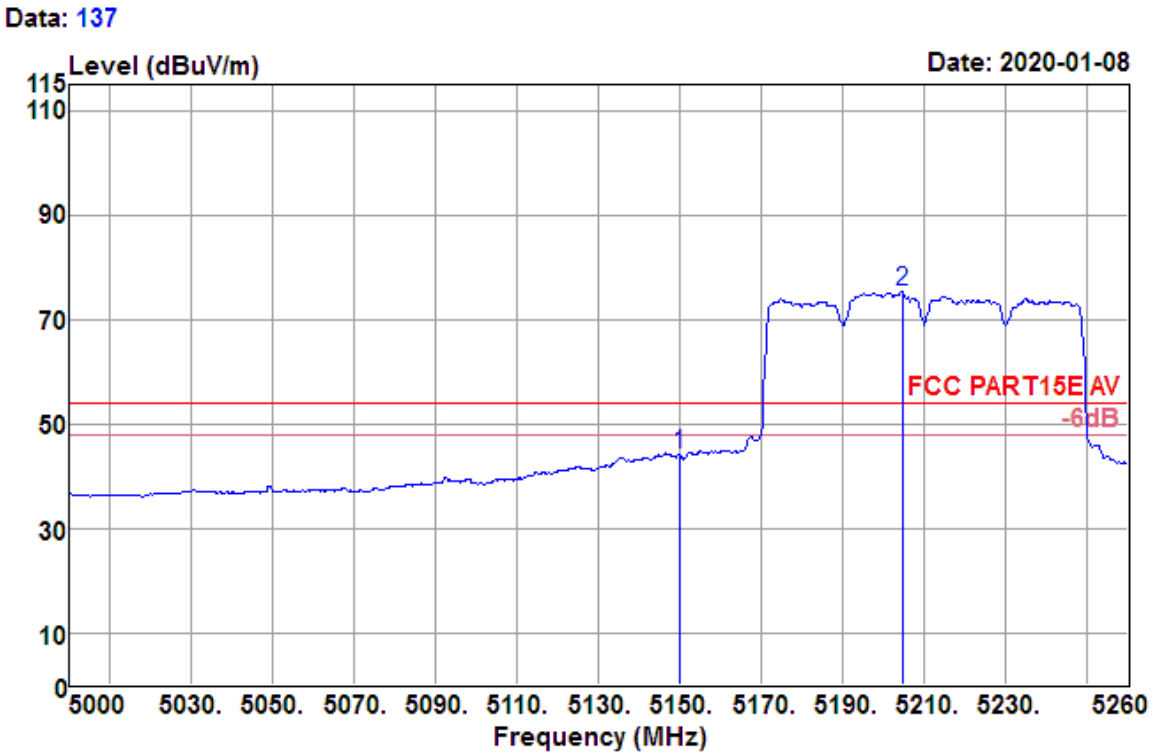
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5225.480	88.83	31.88	5.70	35.08	91.33	54.00	37.33	Average
5350.000	31.99	31.98	5.71	35.30	34.38	54.00	-19.62	Average

Test Mode :	802.11ac VHT80 CH42 5210MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.26GHz	Polarization :	Horizontal



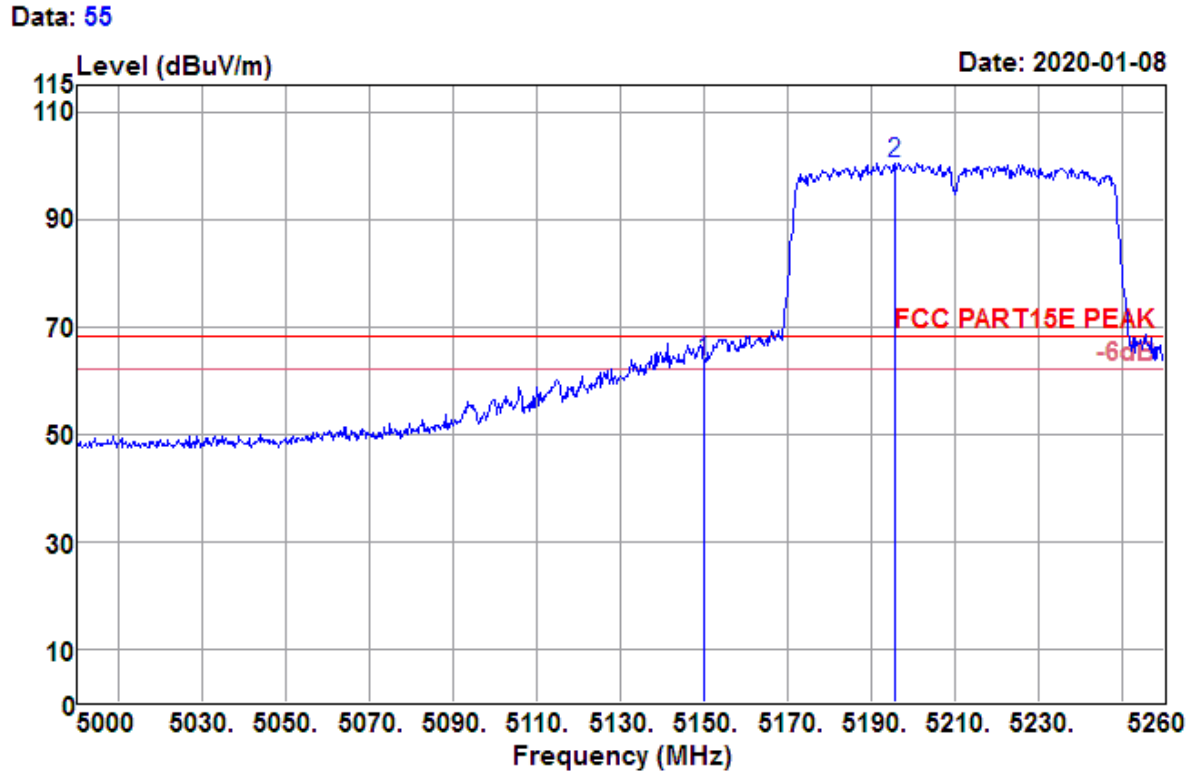
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
5150.000	61.86	31.82	5.65	34.96	64.37	68.20	-3.83	Peak
5195.520	99.02	31.86	5.70	35.03	101.55	68.20	33.35	Peak

Test Mode :	802.11ac VHT80 CH42 5210MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.26GHz	Polarization :	Horizontal



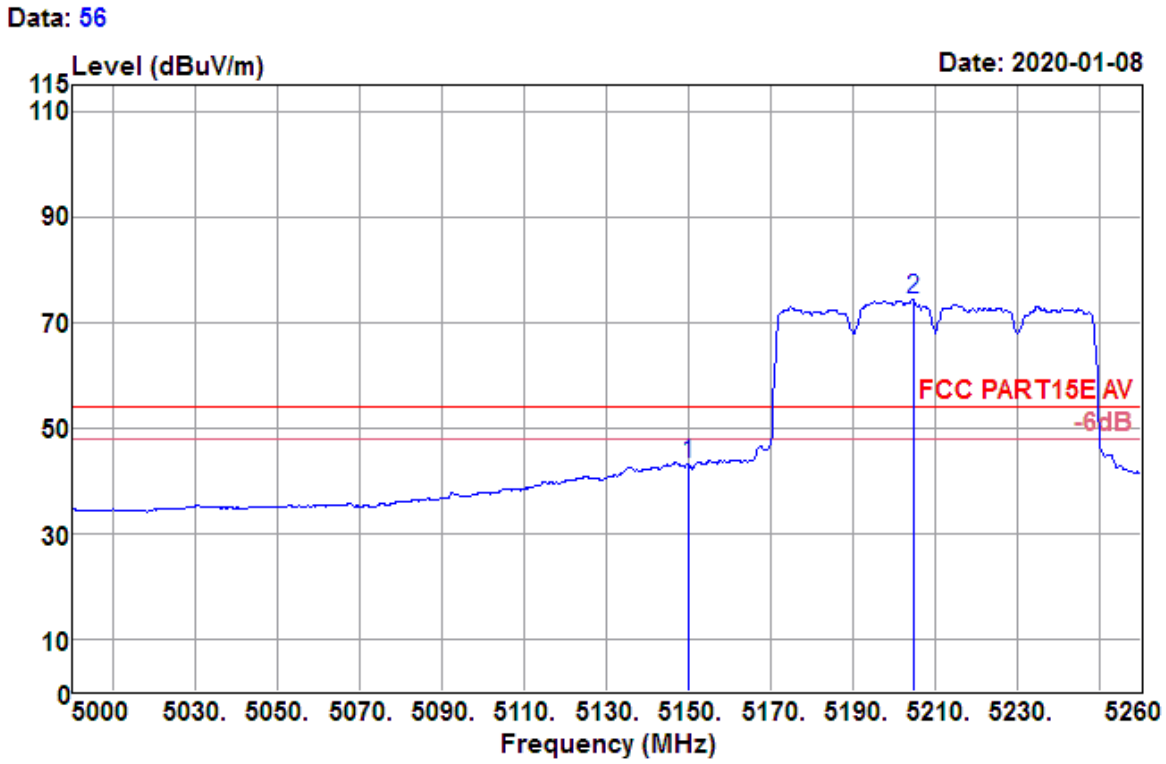
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5150.000	41.44	31.82	5.65	34.96	43.95	54.00	-10.05	Average
5204.620	72.78	31.86	5.70	35.05	75.29	54.00	21.29	Average

Test Mode :	802.11ac VHT80 CH42 5210MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.26GHz	Polarization :	Vertical



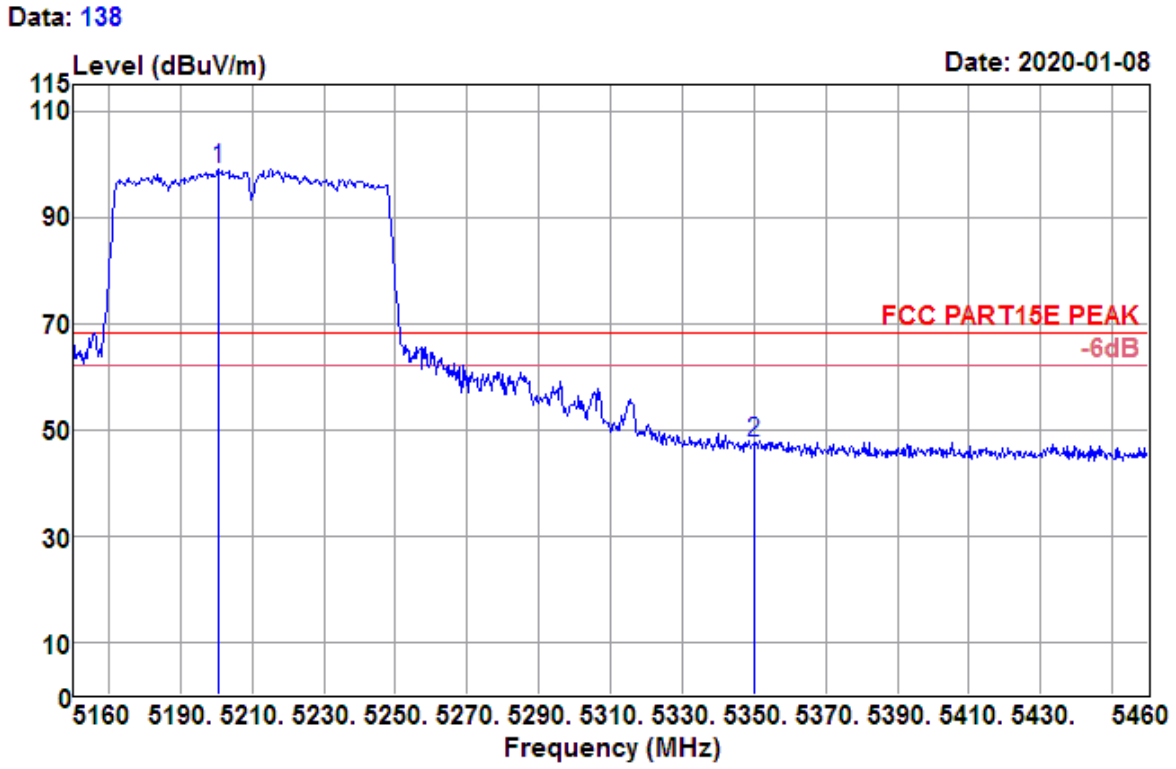
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
5150.000	60.86	31.82	5.65	34.96	63.37	68.20	-4.83	Peak
5195.520	98.02	31.86	5.70	35.03	100.55	68.20	32.35	Peak

Test Mode :	802.11ac VHT80 CH42 5210MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.0GHz~5.26GHz	Polarization :	Vertical



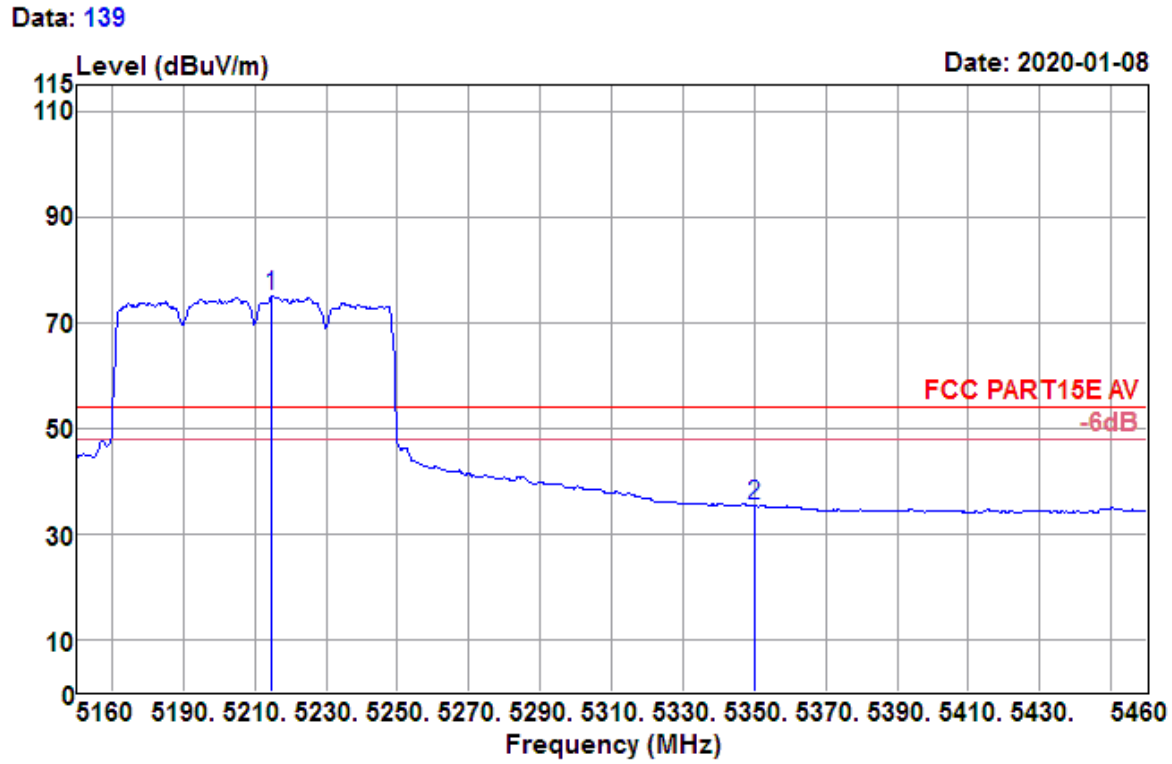
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
5150.000	40.44	31.82	5.65	34.96	42.95	54.00	-11.05	Average
5204.620	71.78	31.86	5.70	35.05	74.29	54.00	20.29	Average

Test Mode :	802.11ac VHT80 CH42 5210MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.16GHz~5.46GHz	Polarization :	Horizontal



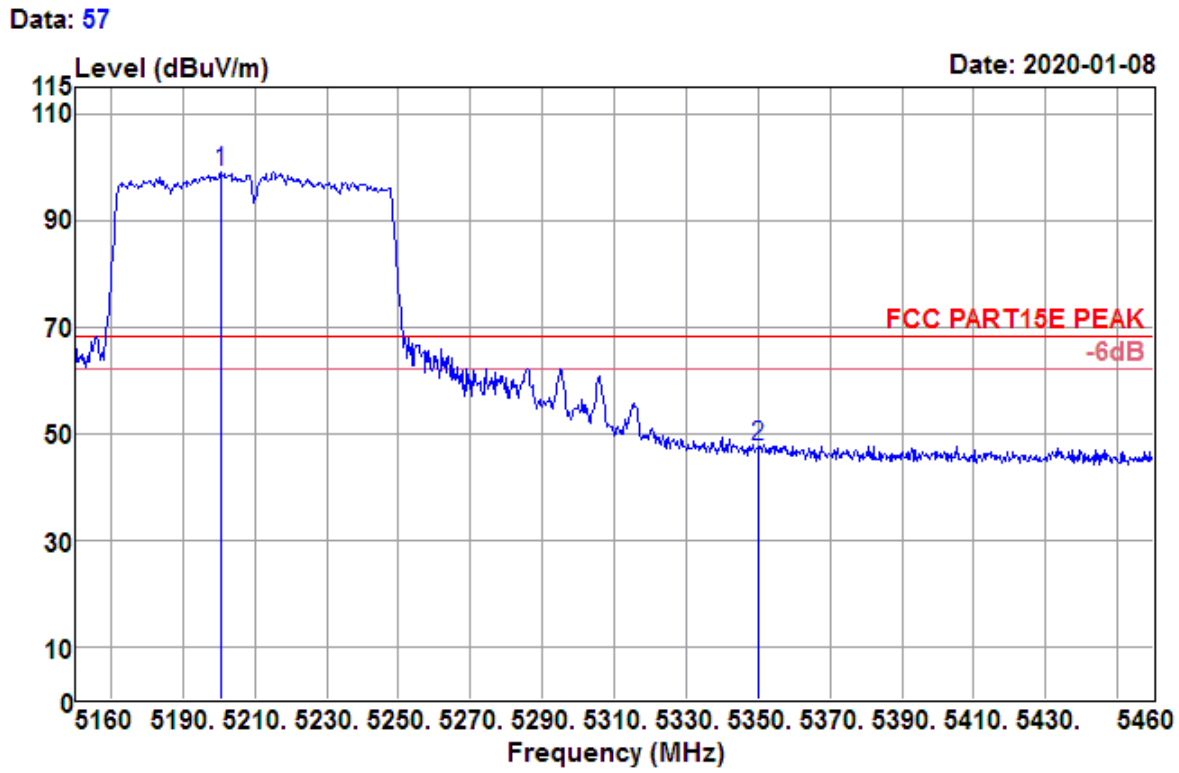
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5200.800	96.66	31.86	5.70	35.04	99.18	68.20	30.98	Peak
5350.000	45.22	31.98	5.71	35.30	47.61	68.20	-20.59	Peak

Test Mode :	802.11ac VHT80 CH42 5210MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.16GHz~5.46GHz	Polarization :	Horizontal



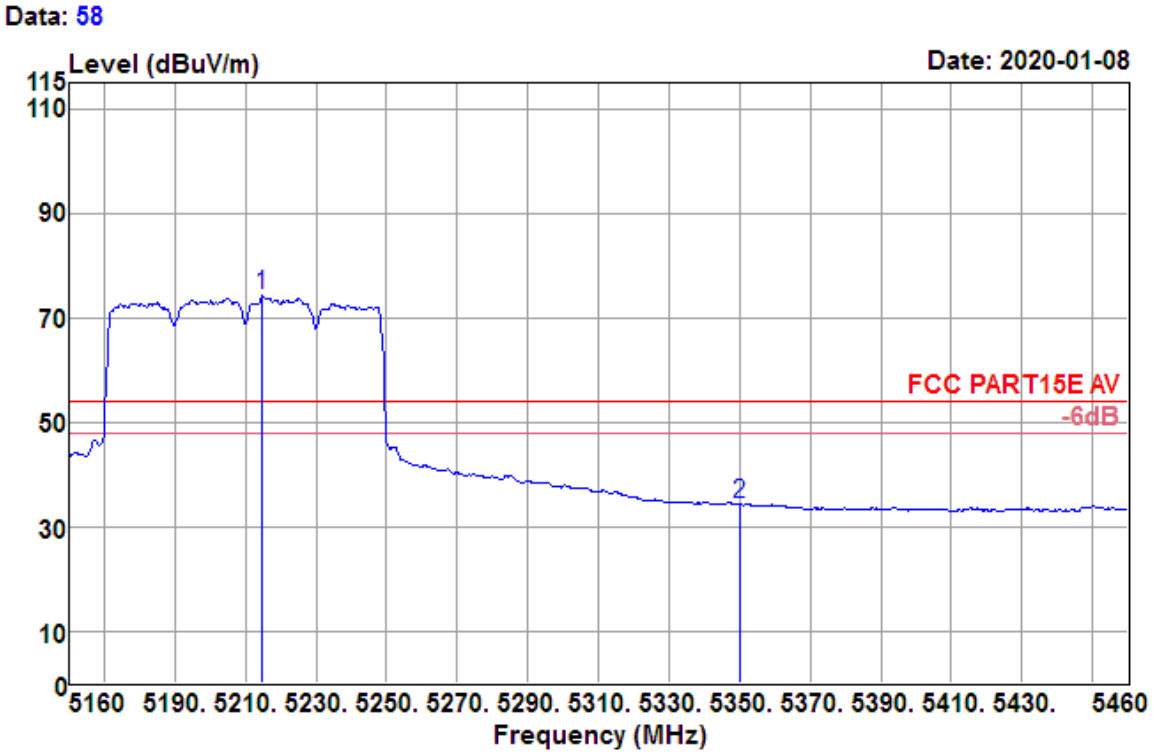
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5214.900	72.65	31.87	5.70	35.07	75.15	54.00	21.15	Average
5350.000	32.91	31.98	5.71	35.30	35.30	54.00	-18.70	Average

Test Mode :	802.11ac VHT80 CH42 5210MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.16GHz~5.46GHz	Polarization :	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5200.800	96.66	31.86	5.70	35.04	99.18	68.20	30.98	Peak
5350.000	45.22	31.98	5.71	35.30	47.61	68.20	-20.59	Peak

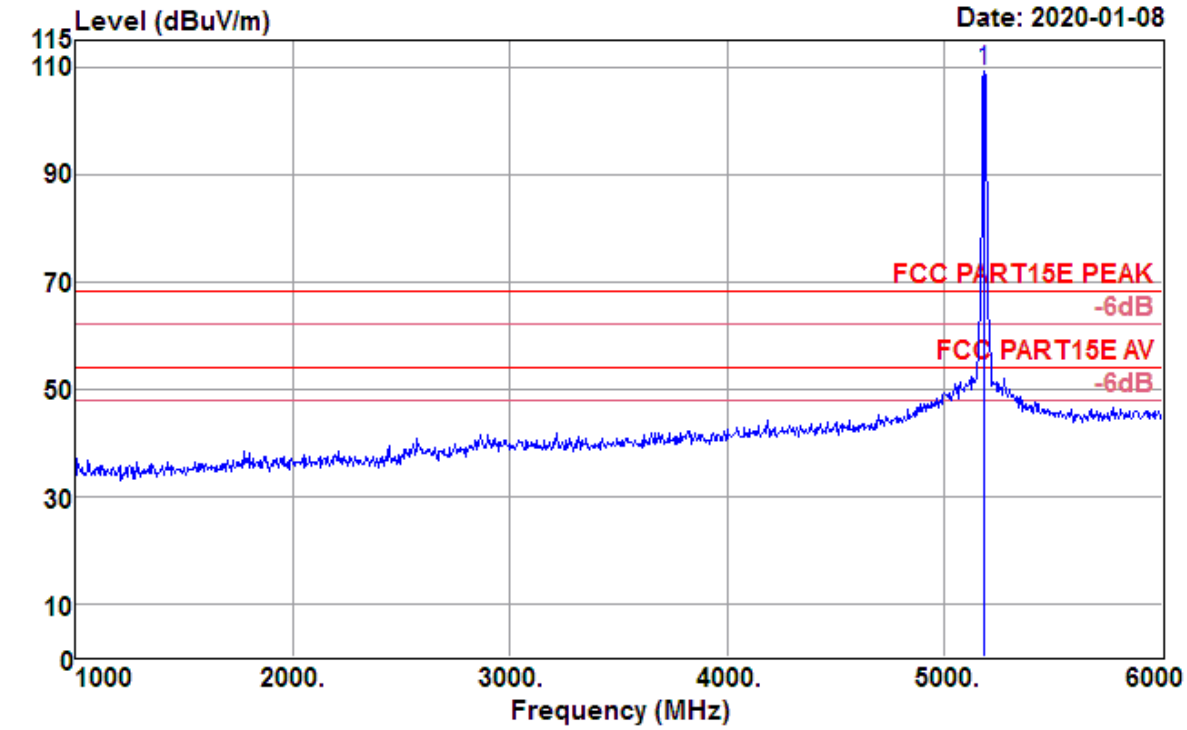
Test Mode :	802.11ac VHT80 CH42 5210MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	5.16GHz~5.46GHz	Polarization :	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5214.900	71.65	31.87	5.70	35.07	74.15	54.00	20.15	Average
5350.000	31.91	31.98	5.71	35.30	34.30	54.00	-19.70	Average

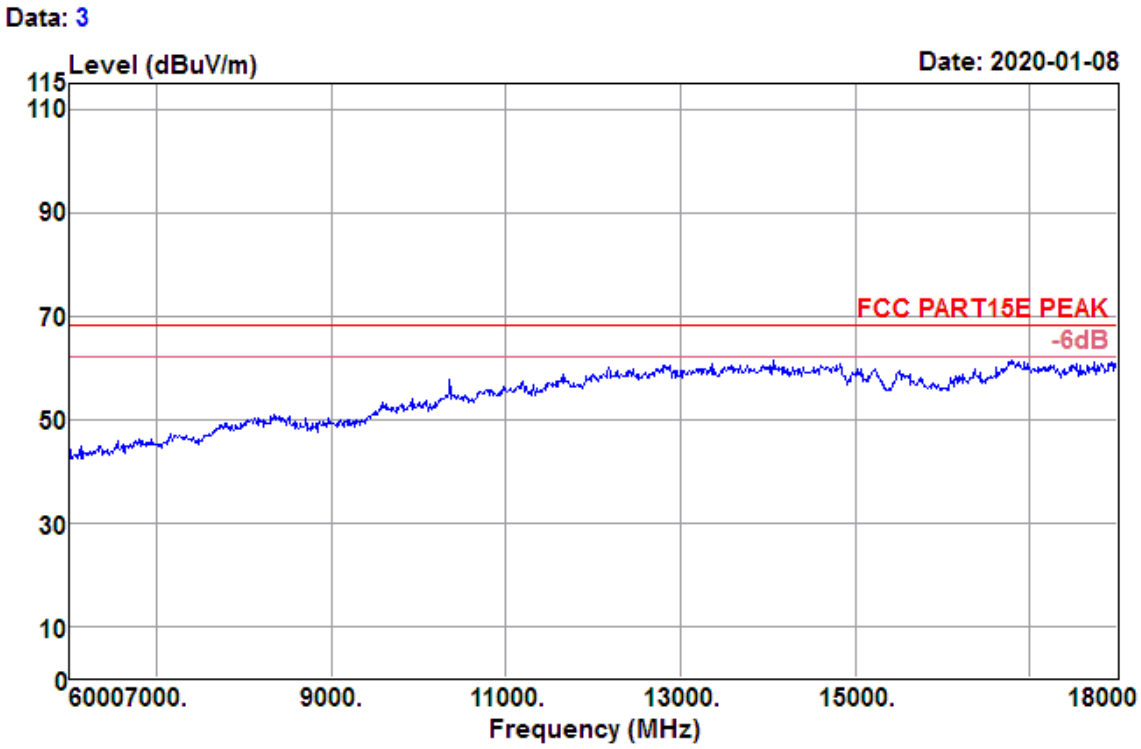
4.4.5 Test Result of Radiated Spurious Emission (1GHz ~ 10th Harmonic)

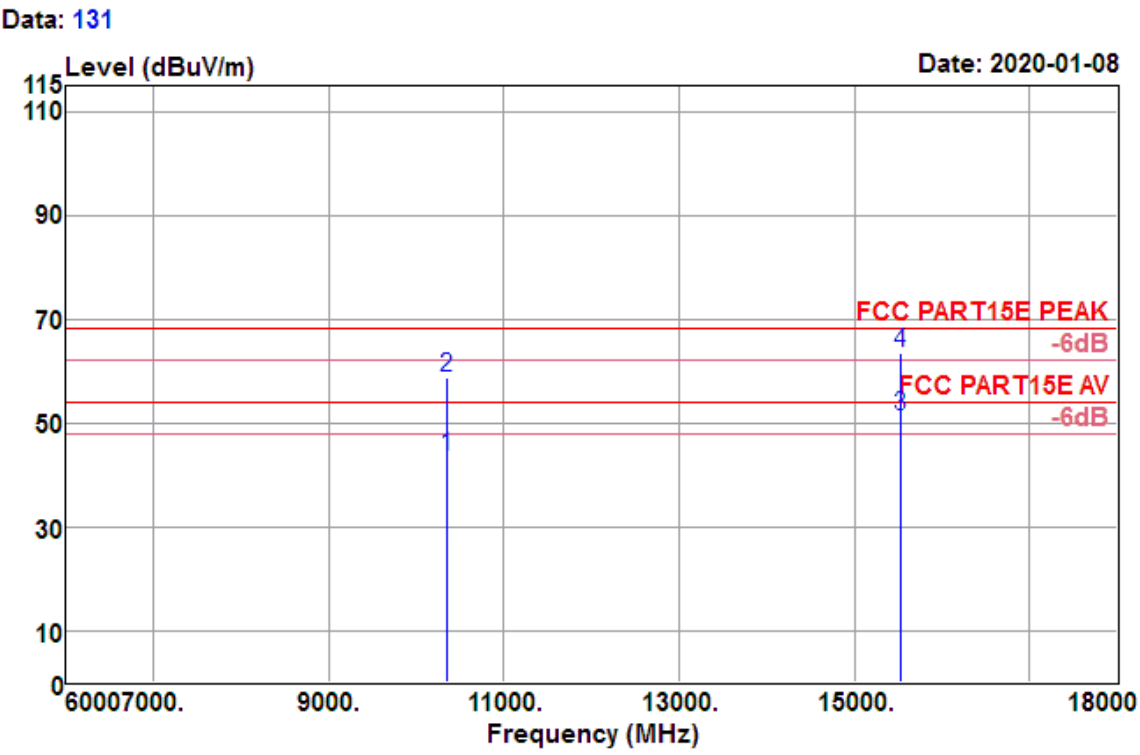
Test Mode :	802.11a CH36 5180MHz	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~6GHz	**Polarization :**	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5180.000	106.79	31.84	5.68	35.01	109.30	68.20	41.10	Peak

Test Mode :	802.11a CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Horizontal

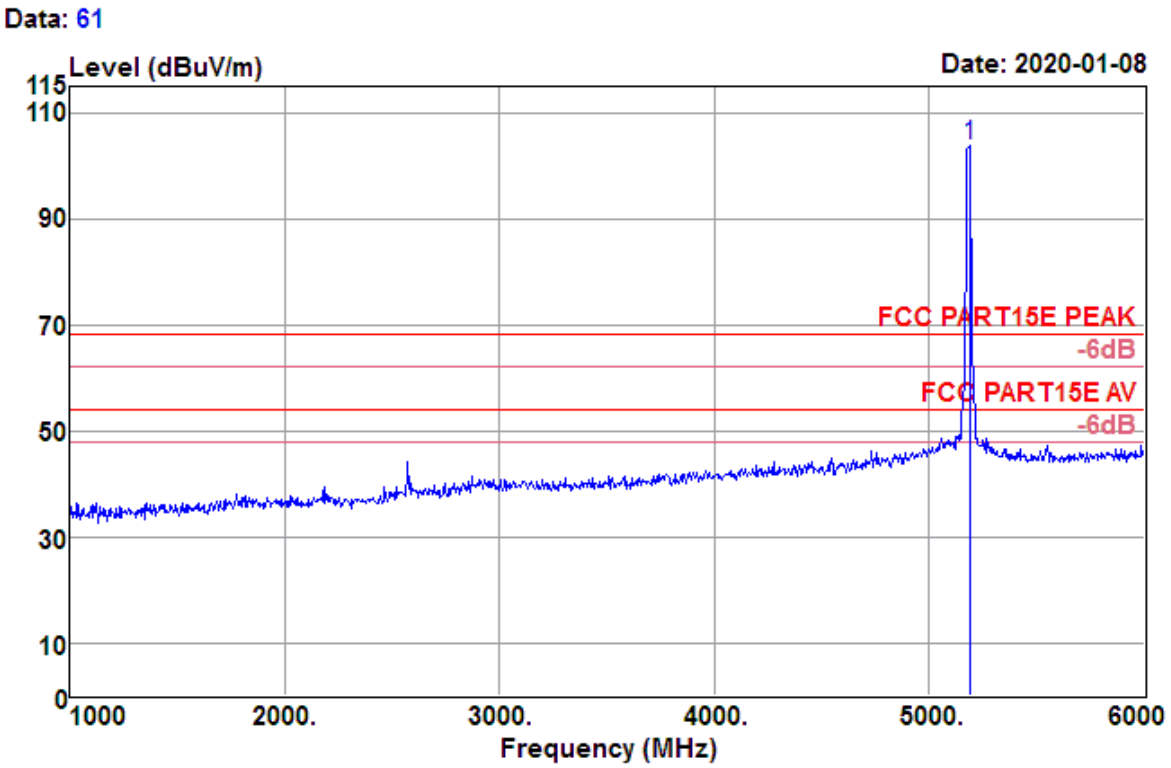




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10360.000	27.93	39.15	11.90	35.61	43.37	54.00	-10.63	Average
10360.000	43.30	39.15	11.90	35.61	58.74	68.20	-9.46	Peak
15540.000	27.67	39.03	16.34	31.88	51.16	54.00	-2.84	Average
15540.000	40.04	39.03	16.34	31.88	63.53	68.20	-4.67	Peak

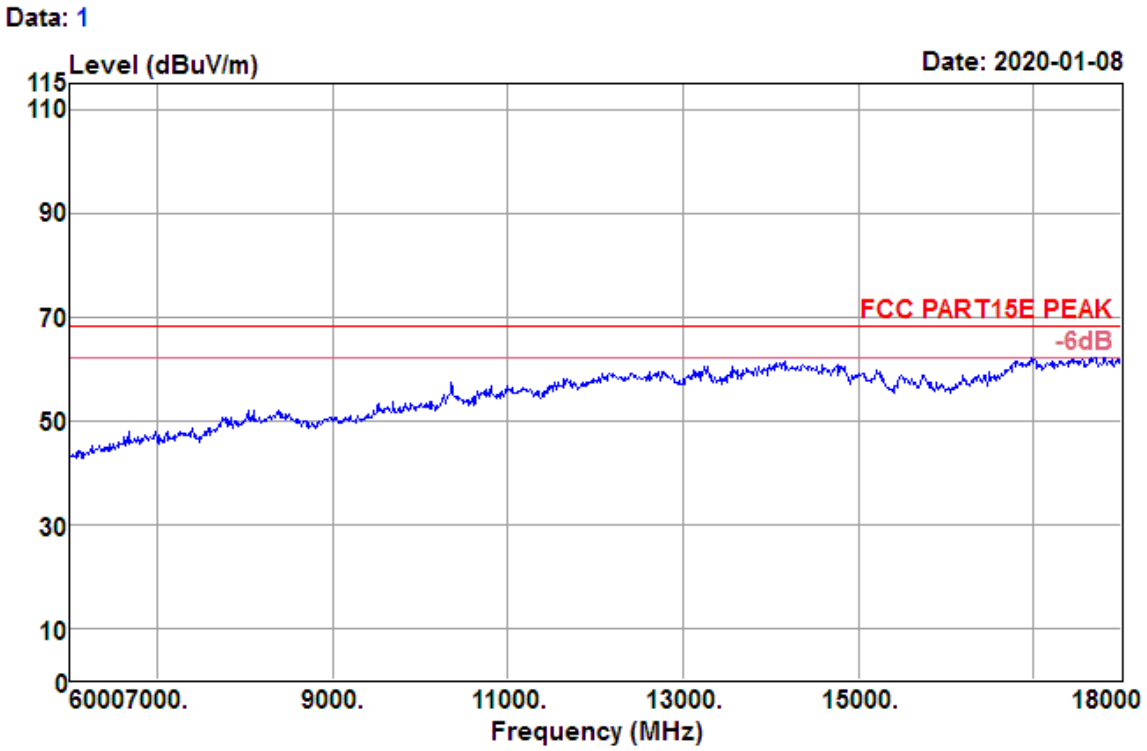
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

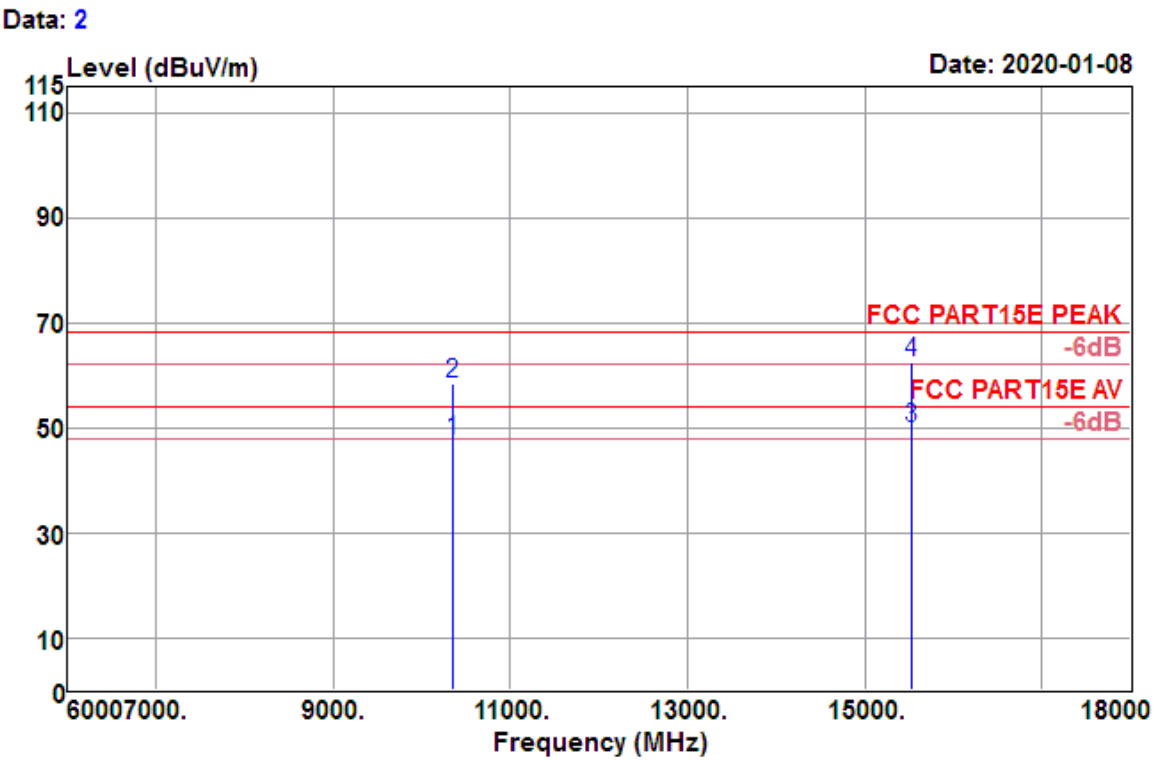
Test Mode :	802.11a CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5185.000	101.16	31.85	5.69	35.01	103.69	68.20	35.49	Peak

Test Mode :	802.11a CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Vertical

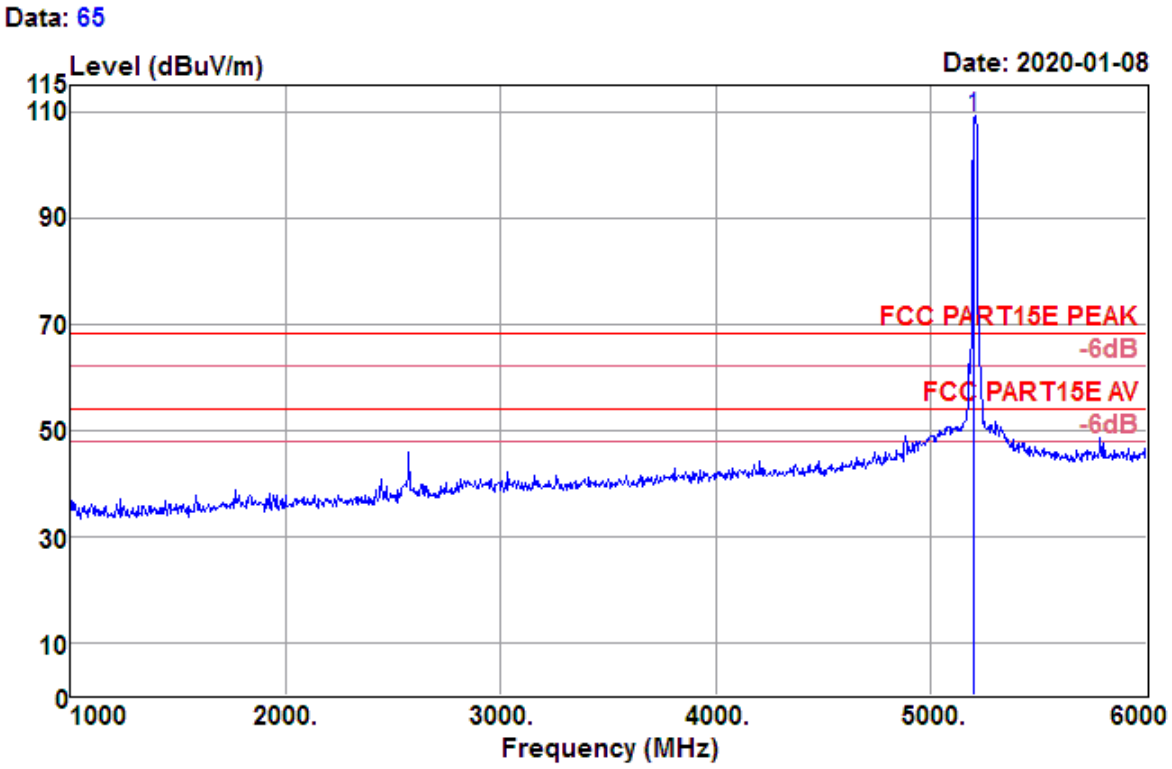




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10360.000	32.08	39.15	11.90	35.61	47.52	54.00	-6.48	Average
10360.000	42.86	39.15	11.90	35.61	58.30	68.20	-9.90	Peak
15540.000	26.55	39.03	16.34	31.88	50.04	54.00	-3.96	Average
15540.000	38.84	39.03	16.34	31.88	62.33	68.20	-5.87	Peak

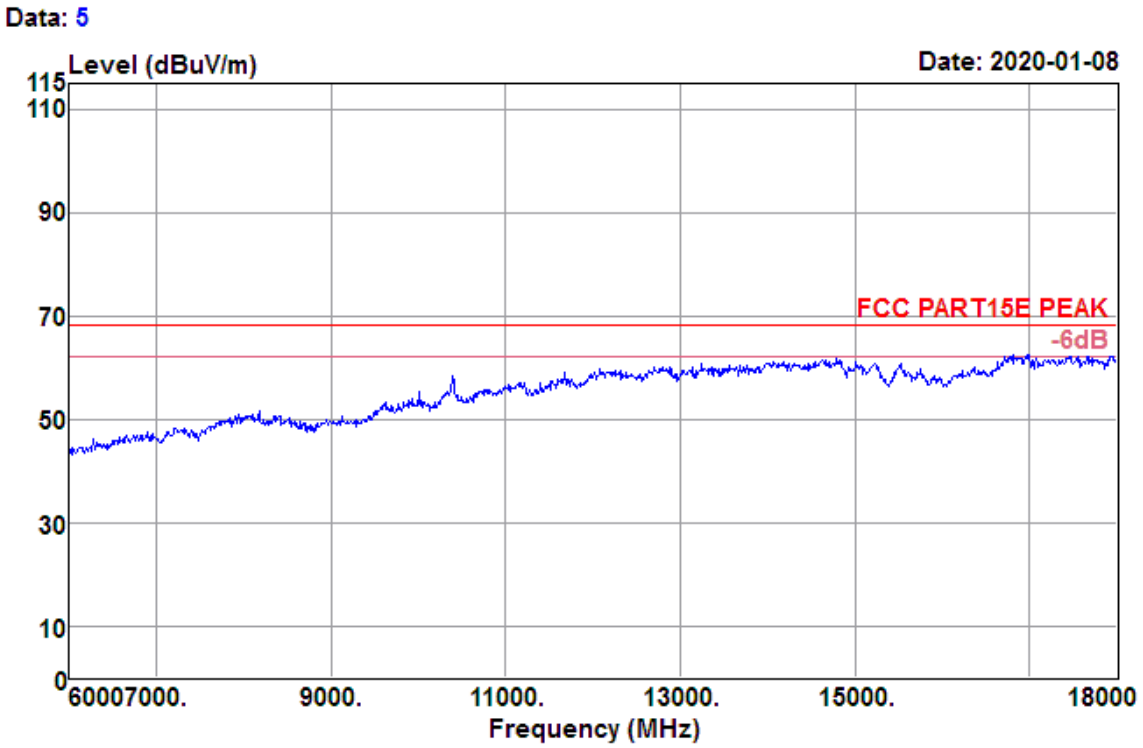
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

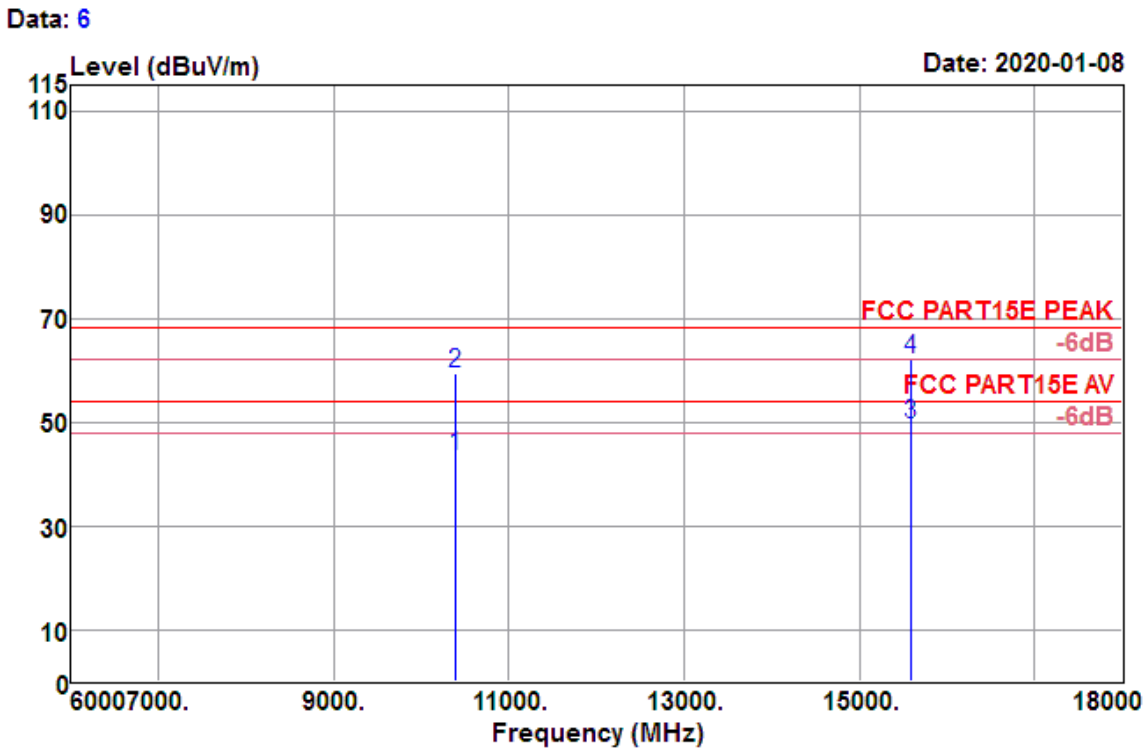
Test Mode :	802.11a CH40 5200MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5200.000	106.37	31.86	5.70	35.04	108.89	68.20	40.69	Peak

Test Mode :	802.11a CH40 5200MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Horizontal

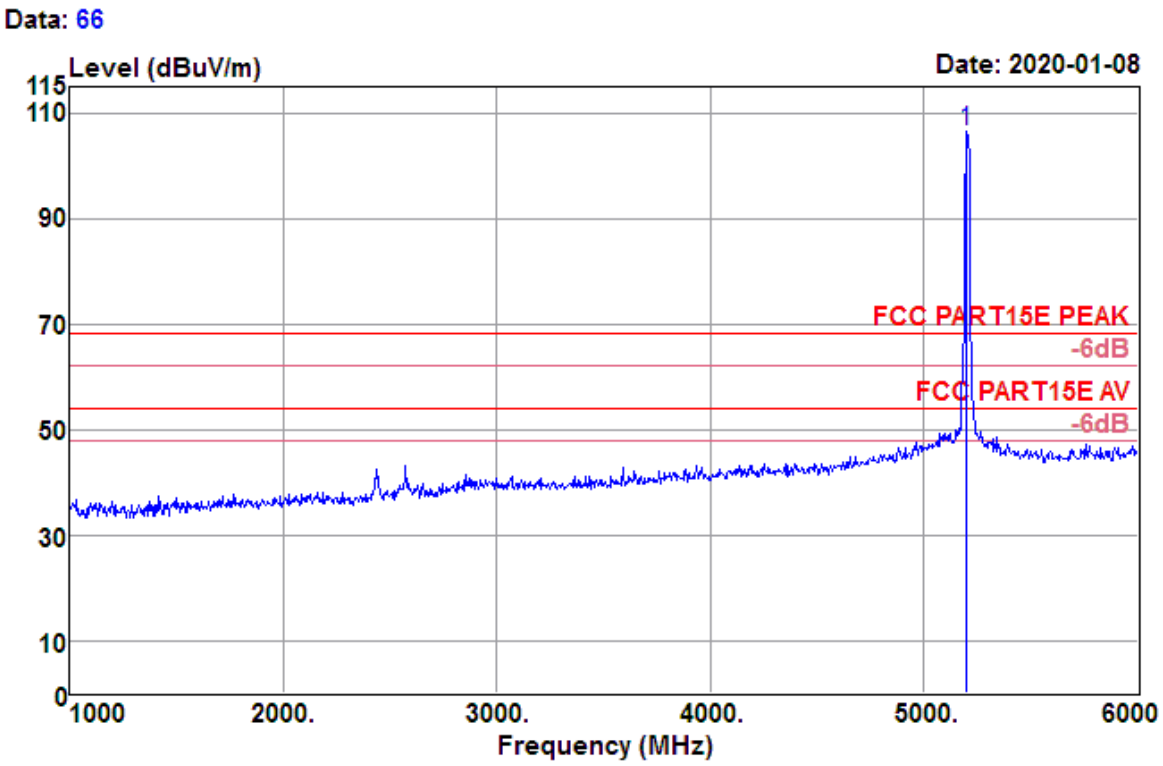




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
10400.000	27.69	39.22	11.96	35.52	43.35	54.00	-10.65	Average
10400.000	43.63	39.22	11.96	35.52	59.29	68.20	-8.91	Peak
15600.000	26.13	38.84	16.28	31.86	49.39	54.00	-4.61	Average
15600.000	38.75	38.84	16.28	31.86	62.01	68.20	-6.19	Peak

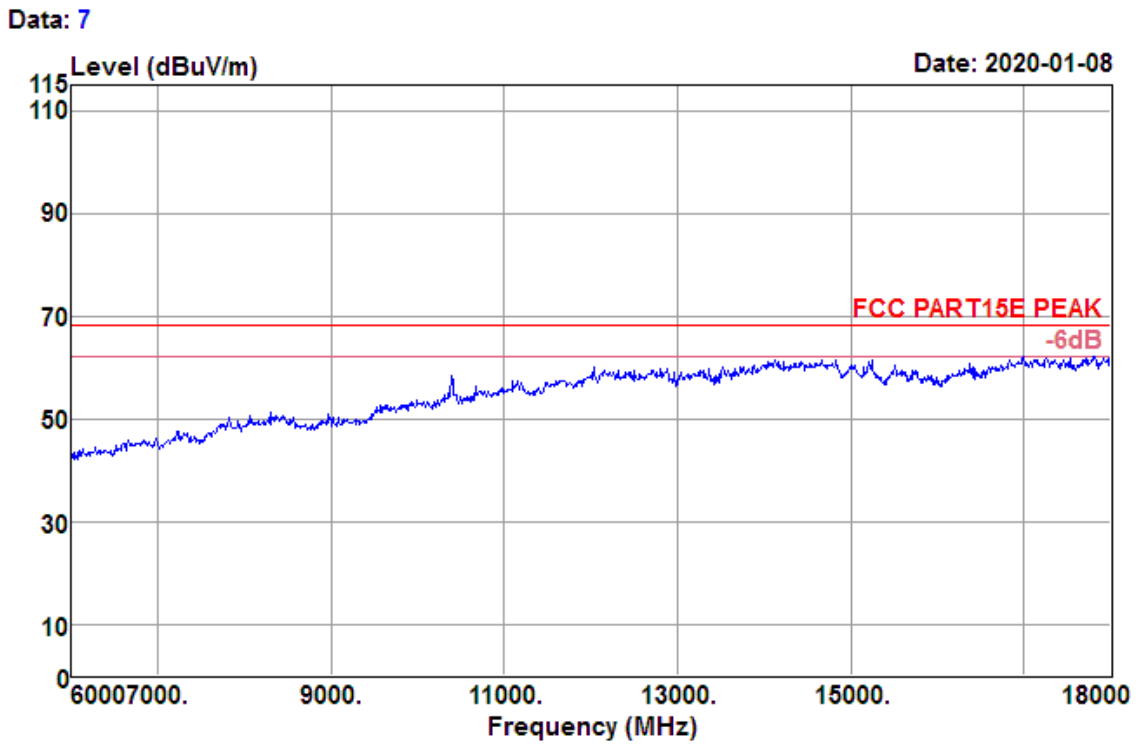
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

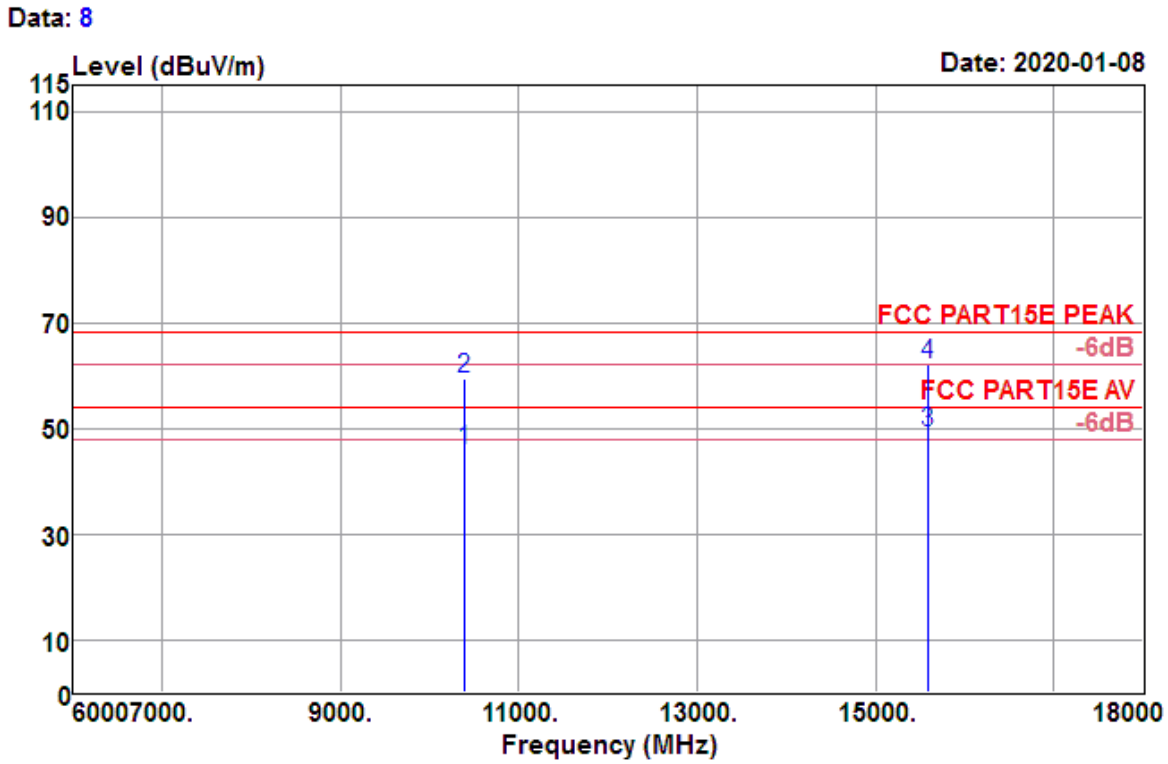
Test Mode :	802.11a CH40 5200MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5200.000	104.16	31.86	5.70	35.04	106.68	68.20	38.48	Peak

Test Mode :	802.11a CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Vertical

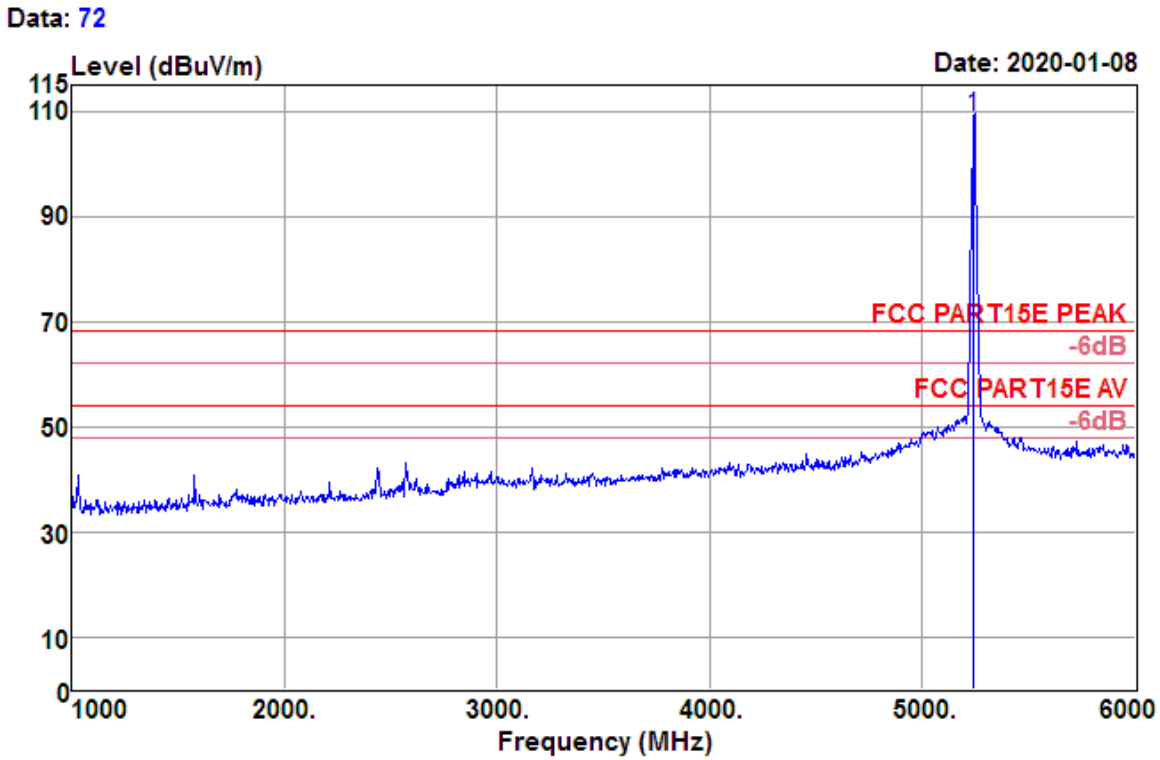




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10400.000	30.02	39.22	11.96	35.52	45.68	54.00	-8.32	Average
10400.000	43.61	39.22	11.96	35.52	59.27	68.20	-8.93	Peak
15600.000	26.06	38.84	16.28	31.86	49.32	54.00	-4.68	Average
15600.000	38.98	38.84	16.28	31.86	62.24	68.20	-5.96	Peak

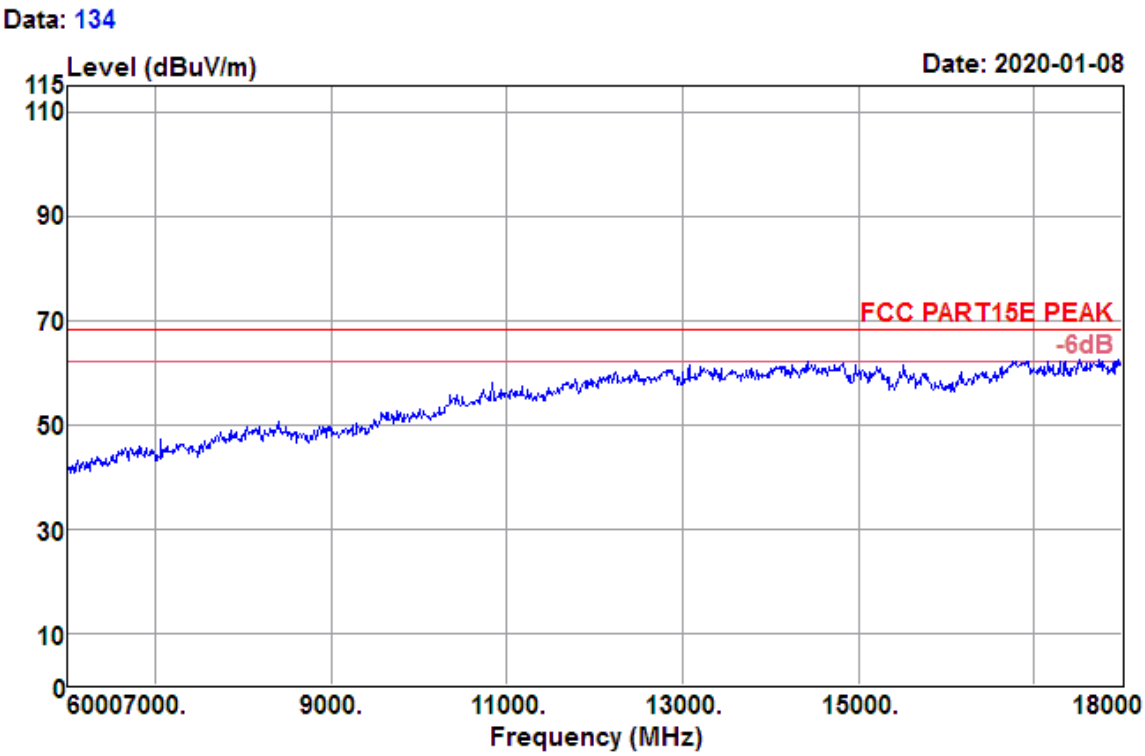
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

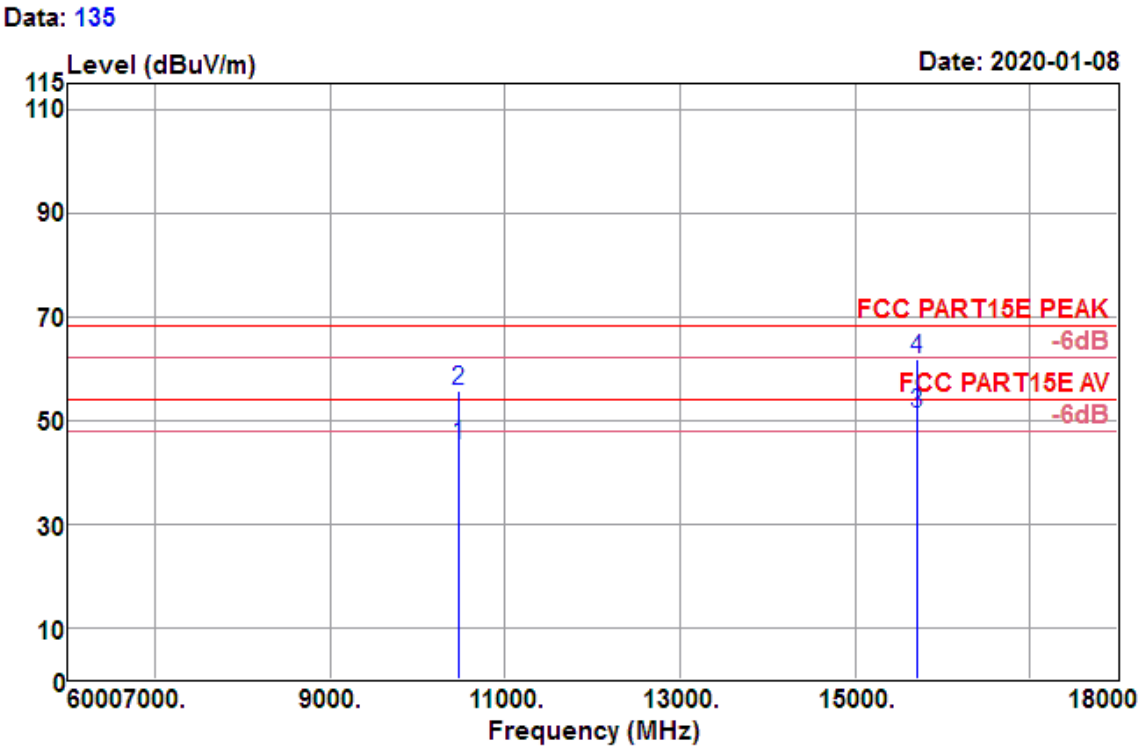
Test Mode :	802.11a CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5240.000	106.52	31.89	5.70	35.11	109.00	68.20	40.80	Peak

Test Mode :	802.11a CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Horizontal

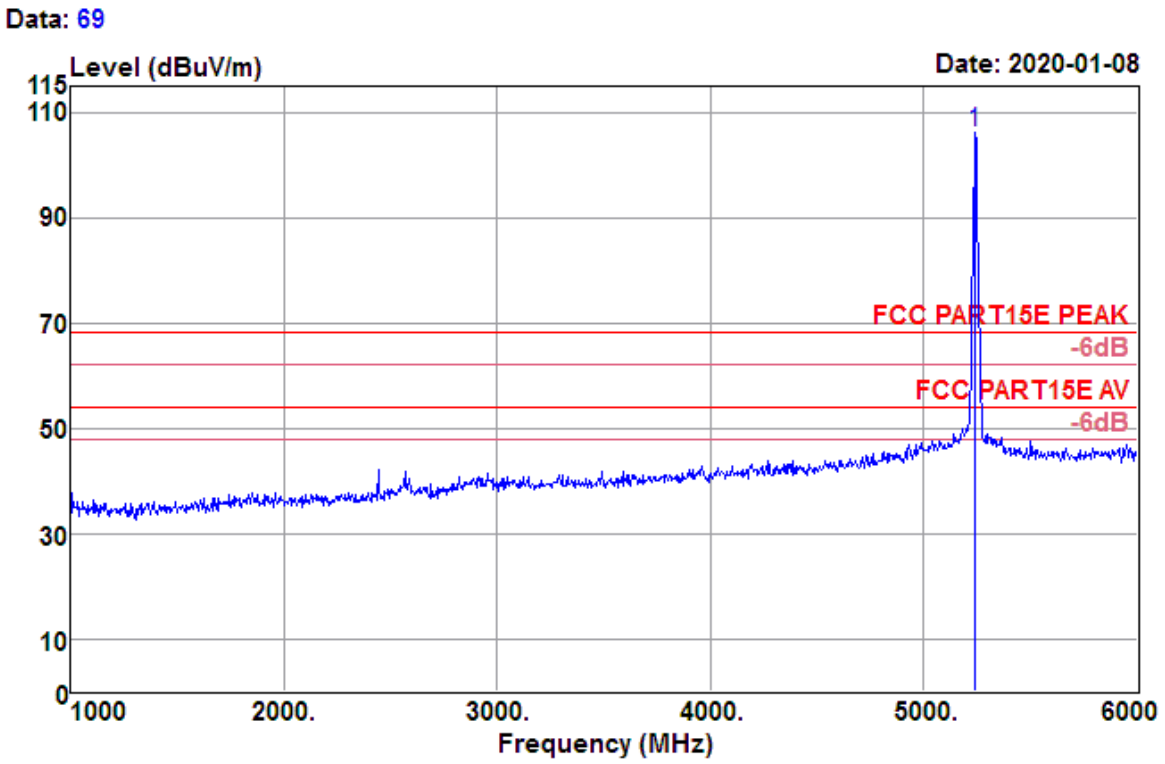




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10480.000	29.16	39.36	12.07	35.34	45.25	54.00	-8.75	Average
10480.000	39.68	39.36	12.07	35.34	55.77	68.20	-12.43	Peak
15720.000	28.54	38.47	16.15	31.81	51.35	54.00	-2.65	Average
15720.000	38.83	38.47	16.15	31.81	61.64	68.20	-6.56	Peak

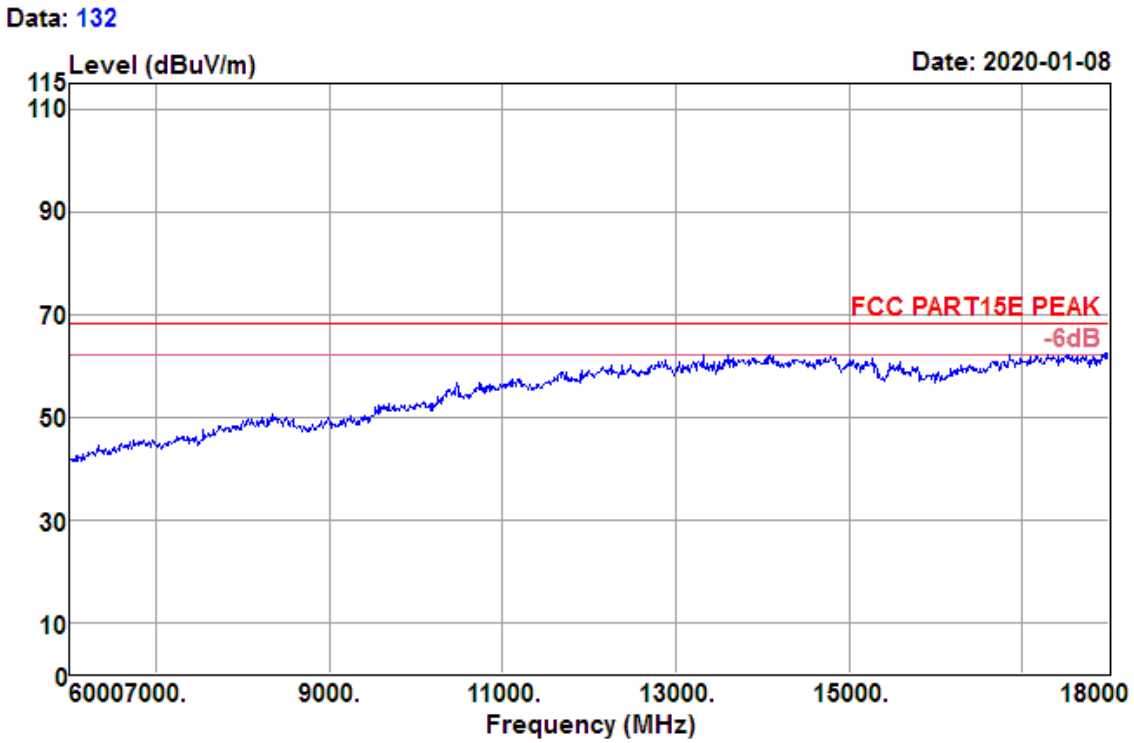
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

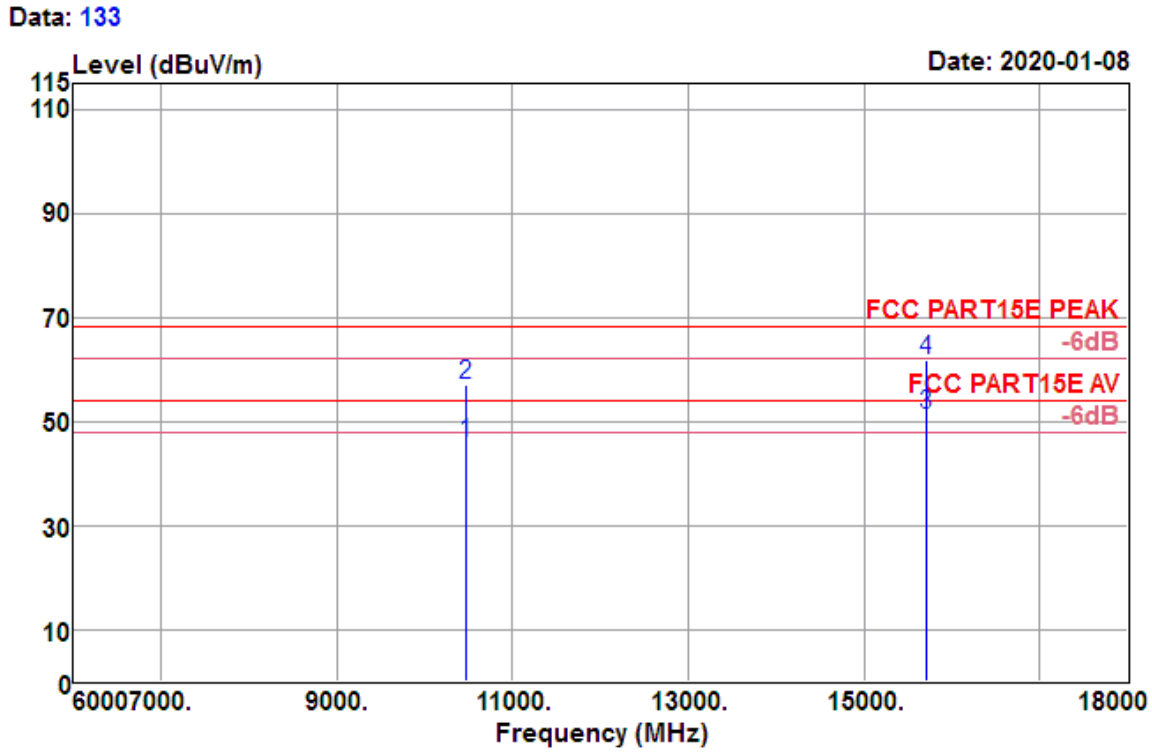
Test Mode :	802.11a CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5240.000	103.58	31.89	5.70	35.11	106.06	68.20	37.86	Peak

Test Mode :	802.11a CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Vertical

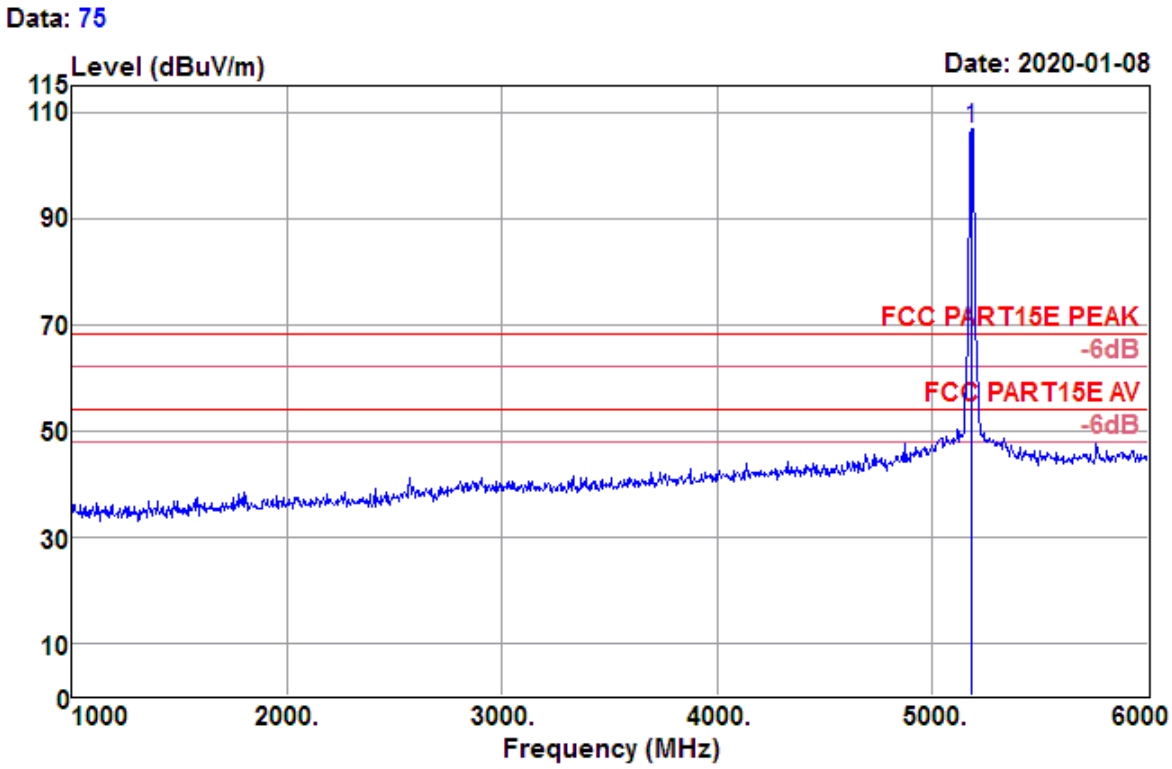




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10480.000	29.62	39.36	12.07	35.34	45.71	54.00	-8.29	Average
10480.000	40.82	39.36	12.07	35.34	56.91	68.20	-11.29	Peak
15720.000	28.51	38.47	16.15	31.81	51.32	54.00	-2.68	Average
15720.000	38.96	38.47	16.15	31.81	61.77	68.20	-6.43	Peak

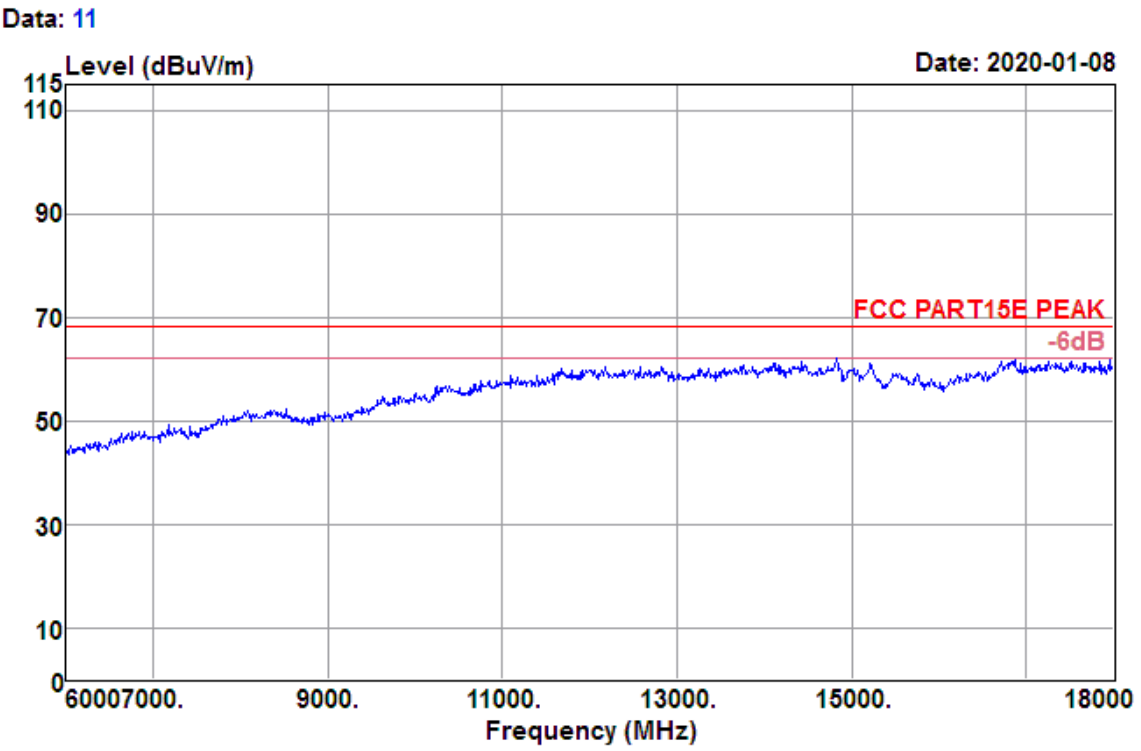
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

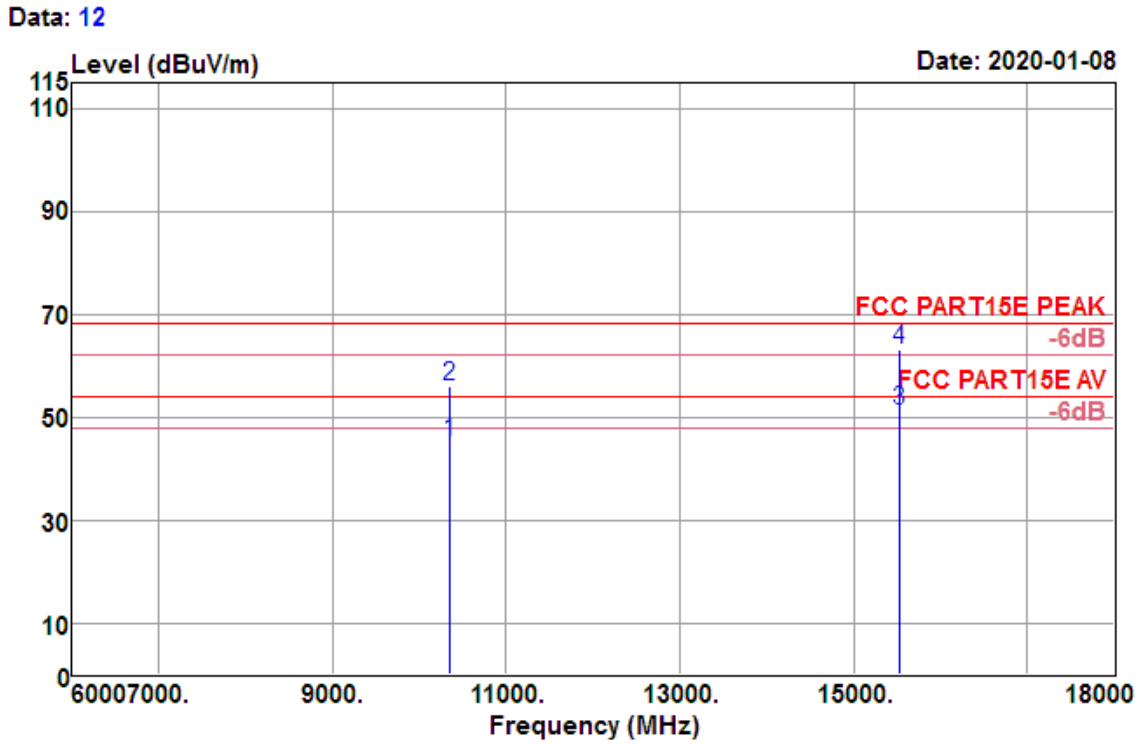
Test Mode :	802.11n HT20 CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5180.000	104.50	31.84	5.68	35.01	107.01	68.20	38.81	Peak

Test Mode :	802.11n HT20 CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Horizontal

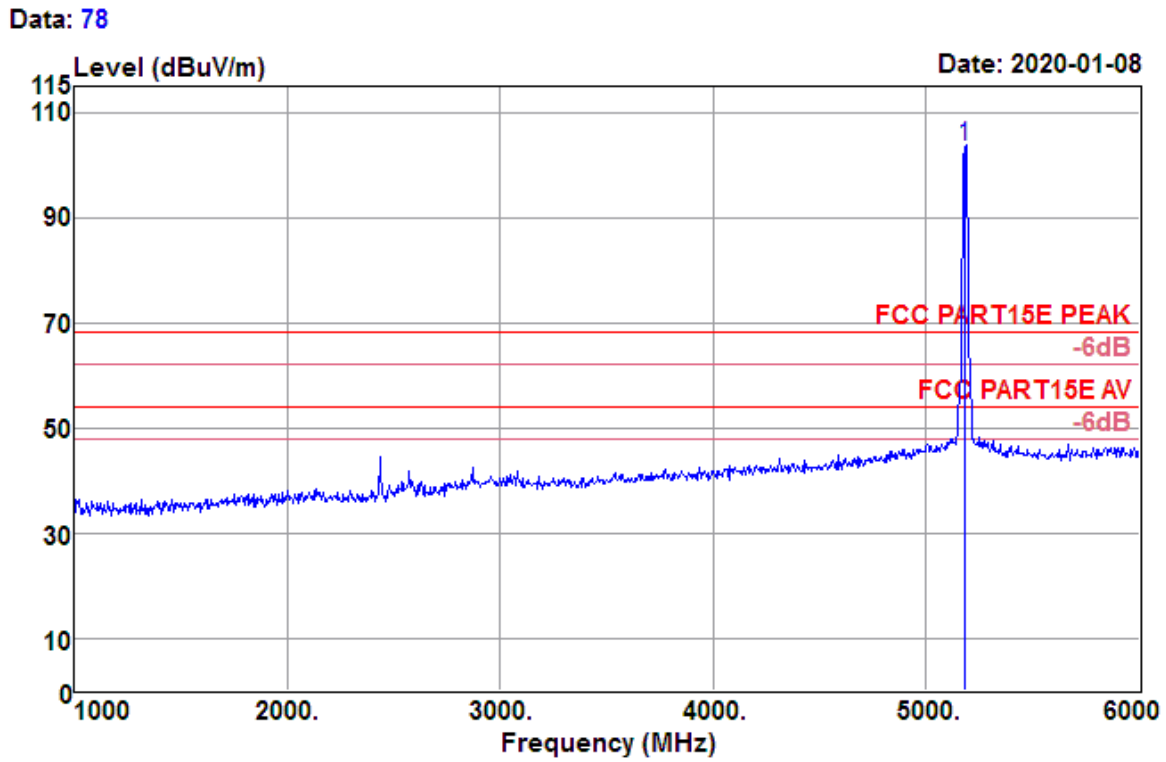




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10360.000	29.83	39.15	11.90	35.61	45.27	54.00	-8.73	Average
10360.000	40.63	39.15	11.90	35.61	56.07	68.20	-12.13	Peak
15540.000	27.80	39.03	16.34	31.88	51.29	54.00	-2.71	Average
15540.000	39.64	39.03	16.34	31.88	63.13	68.20	-5.07	Peak

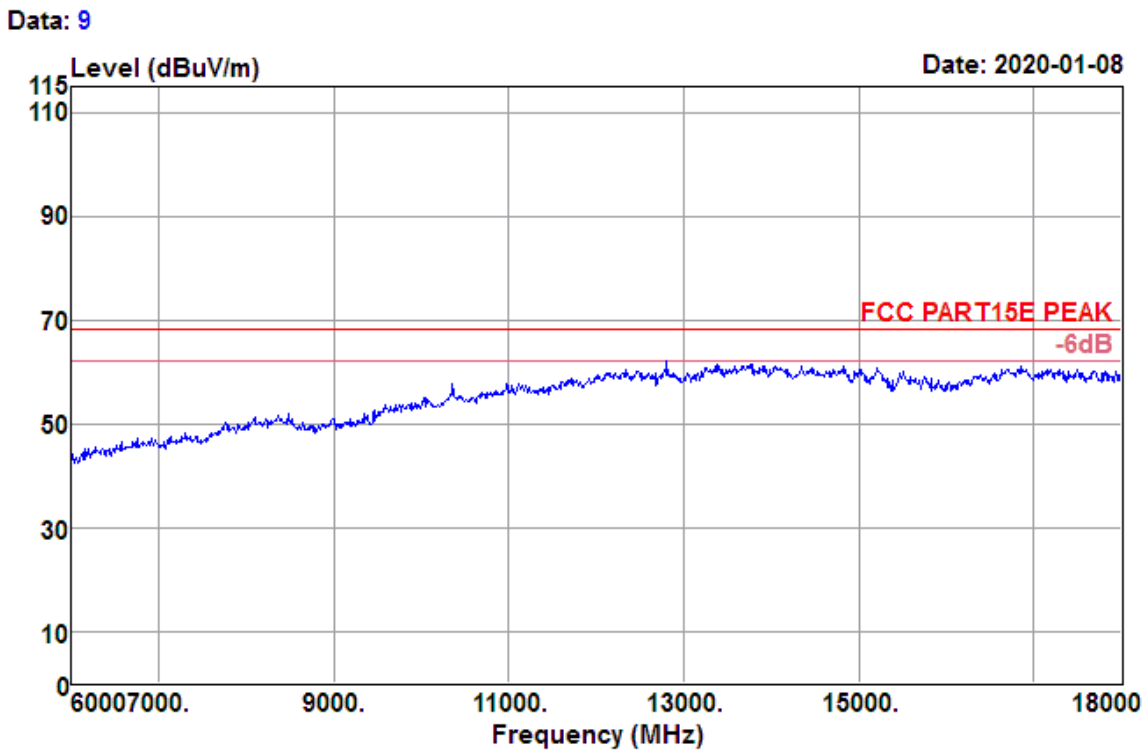
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

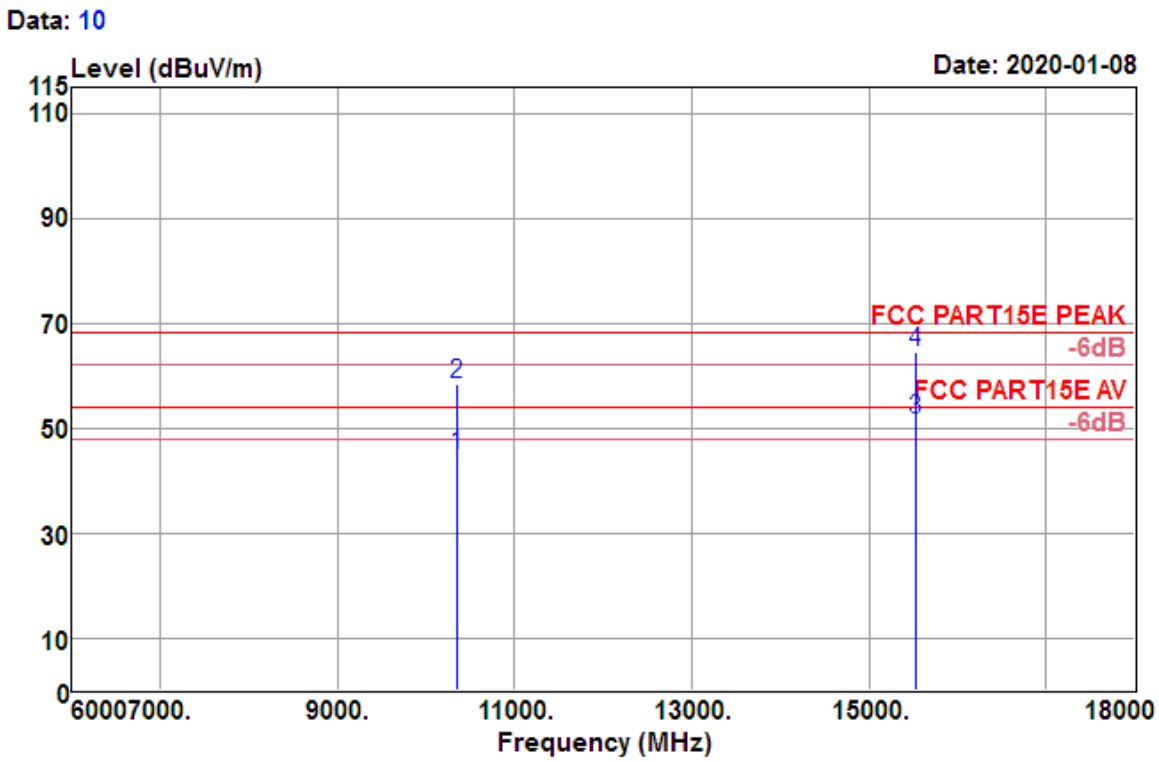
Test Mode :	802.11n HT20 CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5180.000	100.86	31.84	5.68	35.01	103.37	68.20	35.17	Peak

Test Mode :	802.11n HT20 CH36 5180MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Vertical

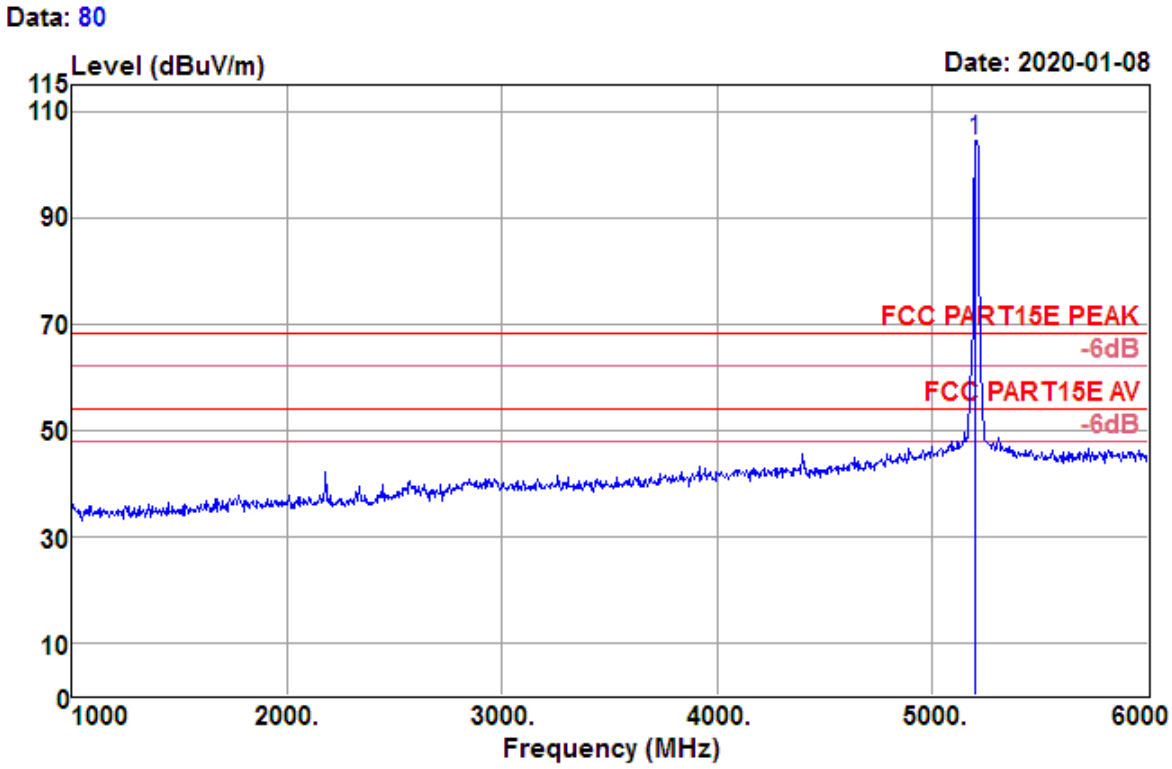




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10360.000	29.30	39.15	11.90	35.61	44.74	54.00	-9.26	Average
10360.000	43.07	39.15	11.90	35.61	58.51	68.20	-9.69	Peak
15540.000	27.92	39.03	16.34	31.88	51.41	54.00	-2.59	Average
15540.000	41.12	39.03	16.34	31.88	64.61	68.20	-3.59	Peak

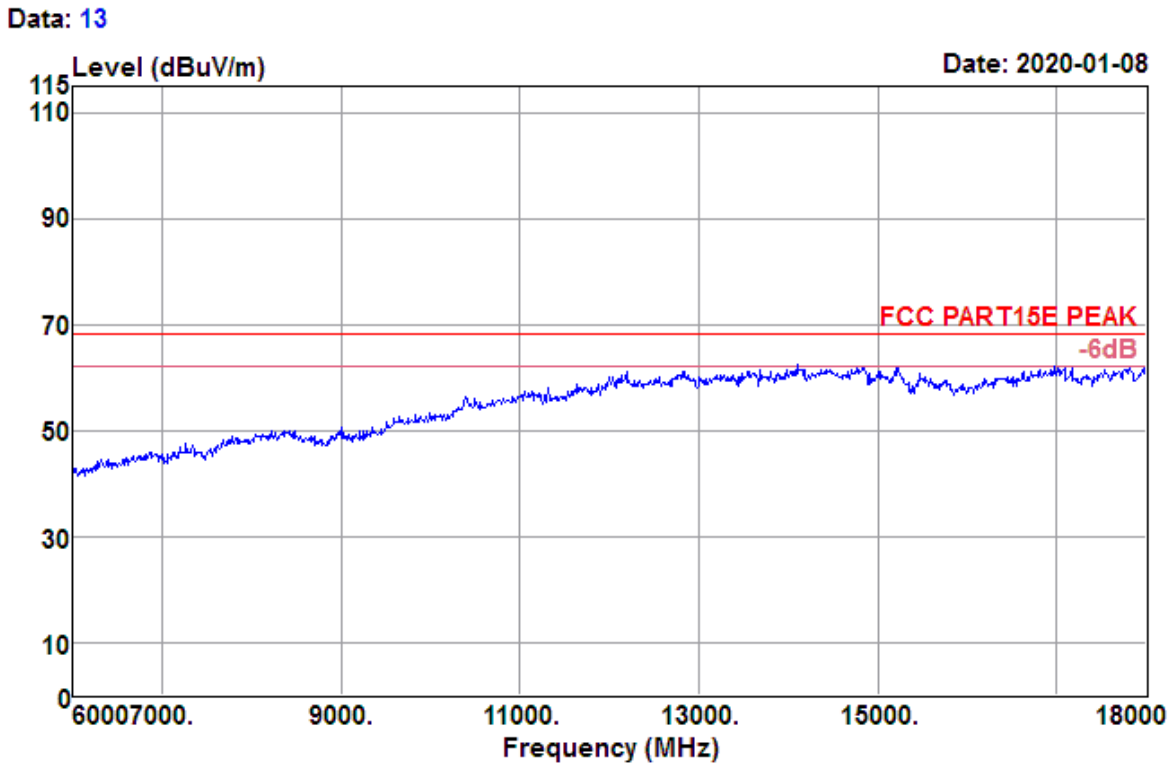
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

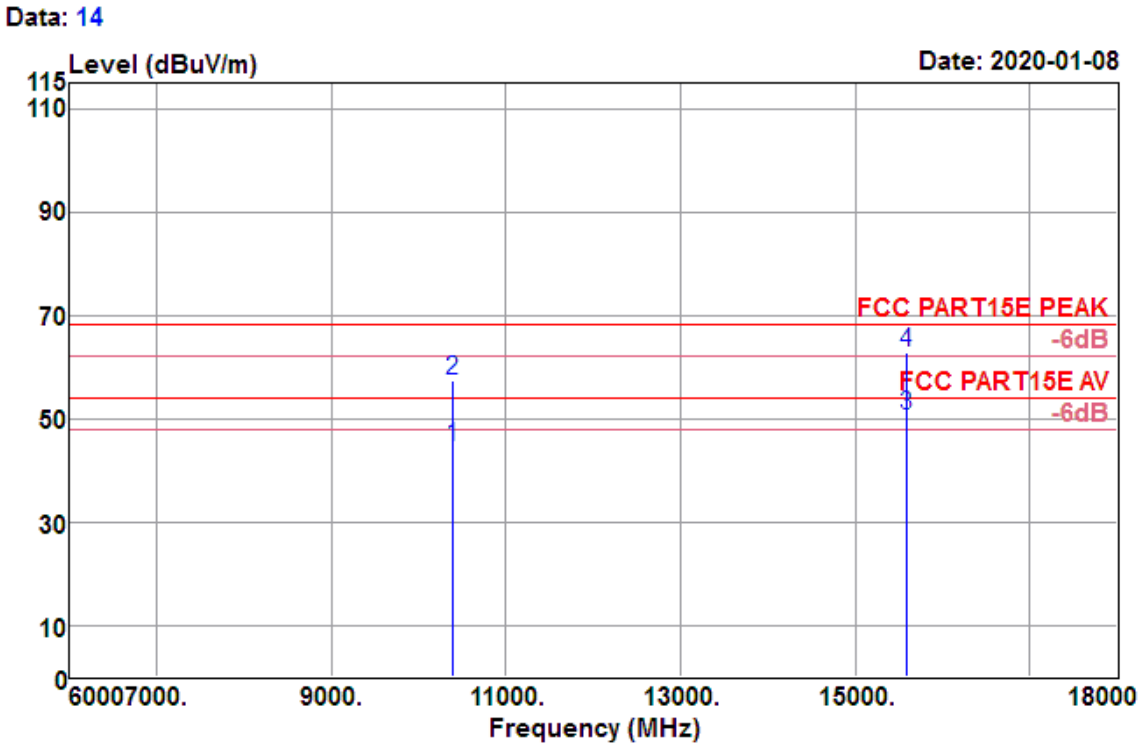
Test Mode :	802.11n HT20 CH40 5200MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5200.000	102.07	31.86	5.70	35.04	104.59	68.20	36.39	Peak

Test Mode :	802.11n HT20 CH40 5200MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Horizontal

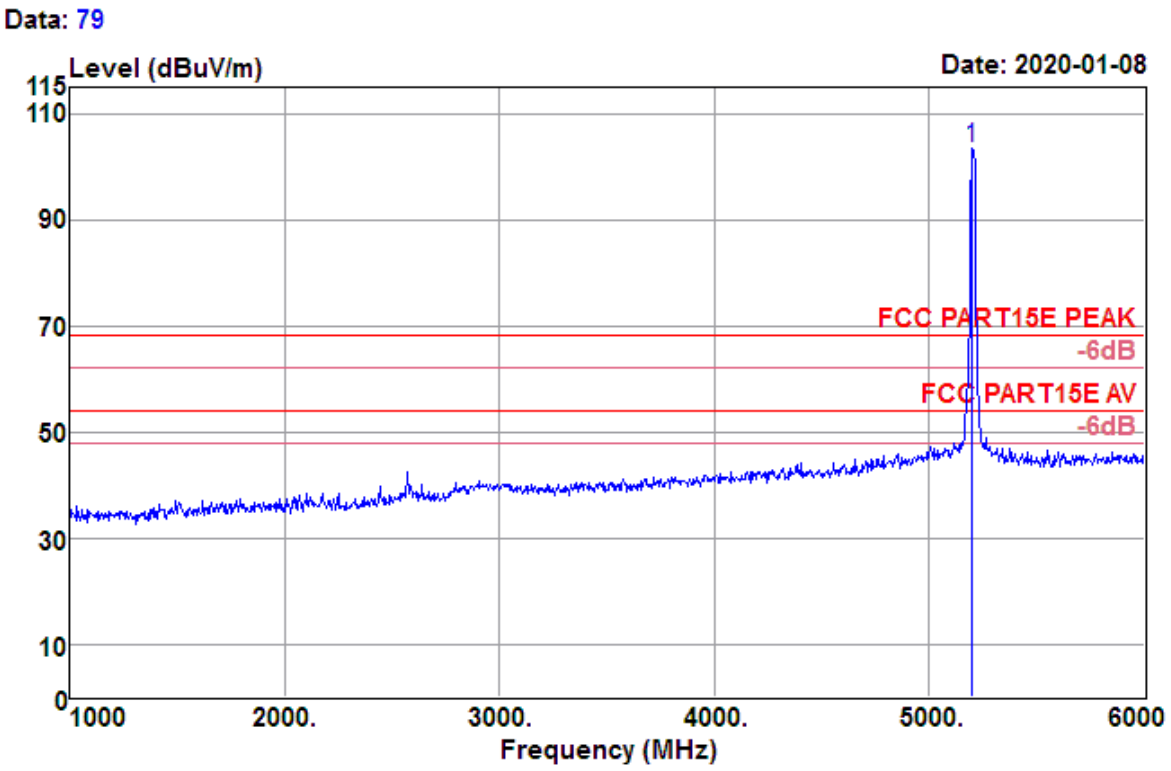




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10400.000	28.70	39.22	11.96	35.52	44.36	54.00	-9.64	Average
10400.000	41.60	39.22	11.96	35.52	57.26	68.20	-10.94	Peak
15600.000	27.38	38.84	16.28	31.86	50.64	54.00	-3.36	Average
15600.000	39.58	38.84	16.28	31.86	62.84	68.20	-5.36	Peak

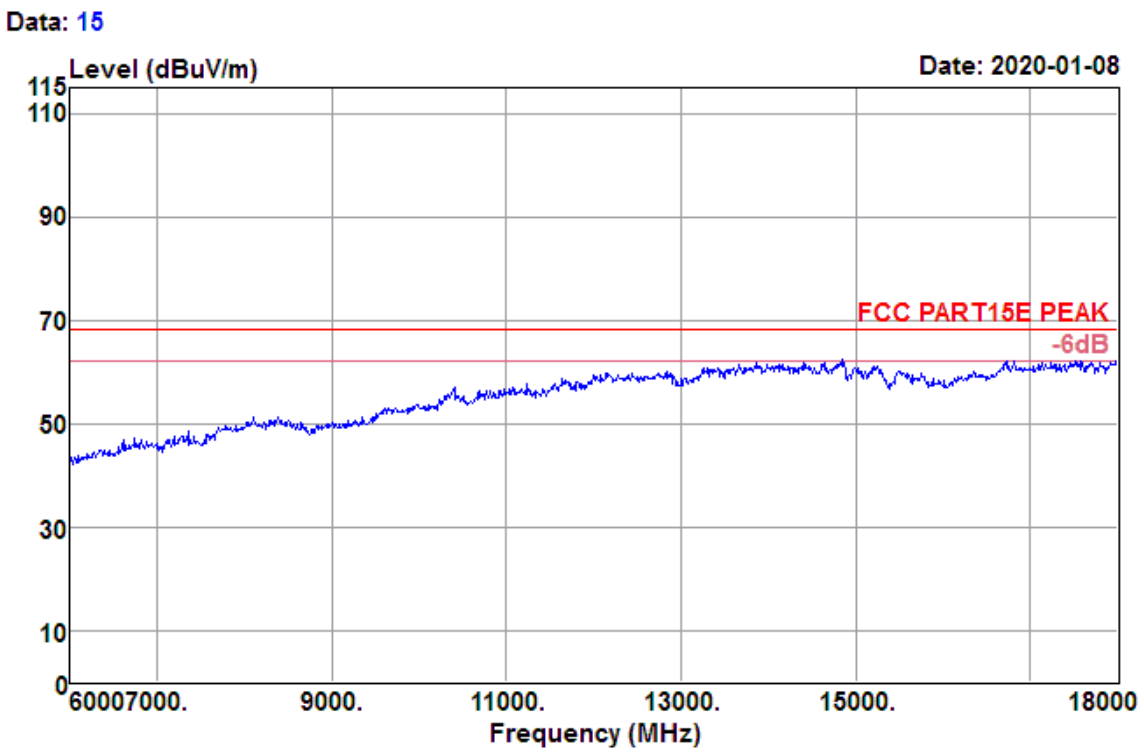
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

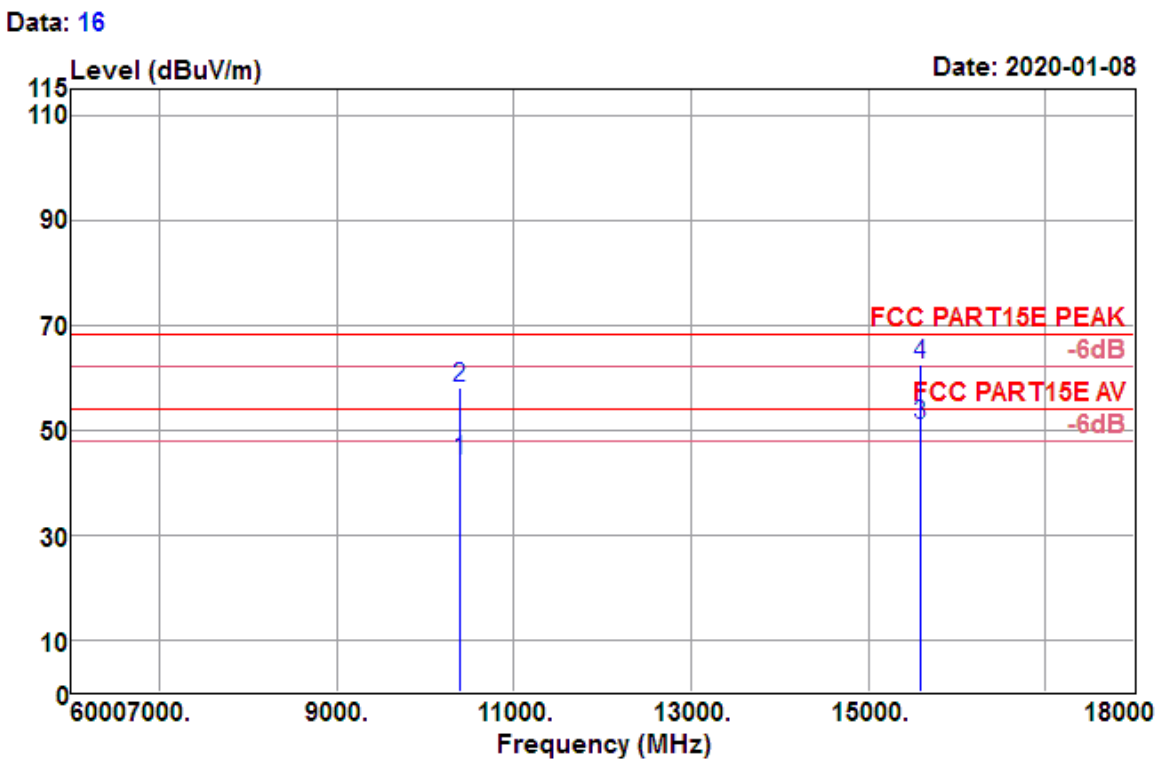
Test Mode :	802.11n HT20 CH40 5200MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5200.000	101.01	31.86	5.70	35.04	103.53	68.20	35.33	Peak

Test Mode :	802.11n HT20 CH40 5200MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Vertical

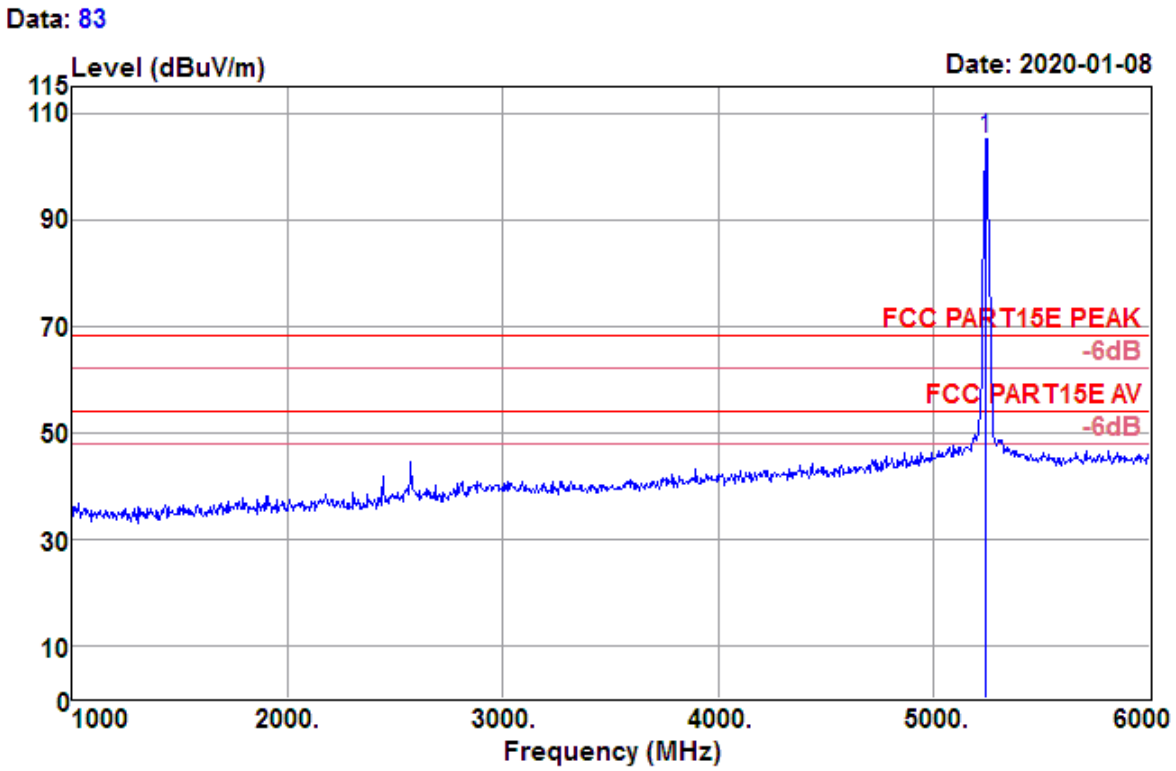




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
10400.000	28.51	39.22	11.96	35.52	44.17	54.00	-9.83	Average
10400.000	42.48	39.22	11.96	35.52	58.14	68.20	-10.06	Peak
15600.000	27.54	38.84	16.28	31.86	50.80	54.00	-3.20	Average
15600.000	39.30	38.84	16.28	31.86	62.56	68.20	-5.64	Peak

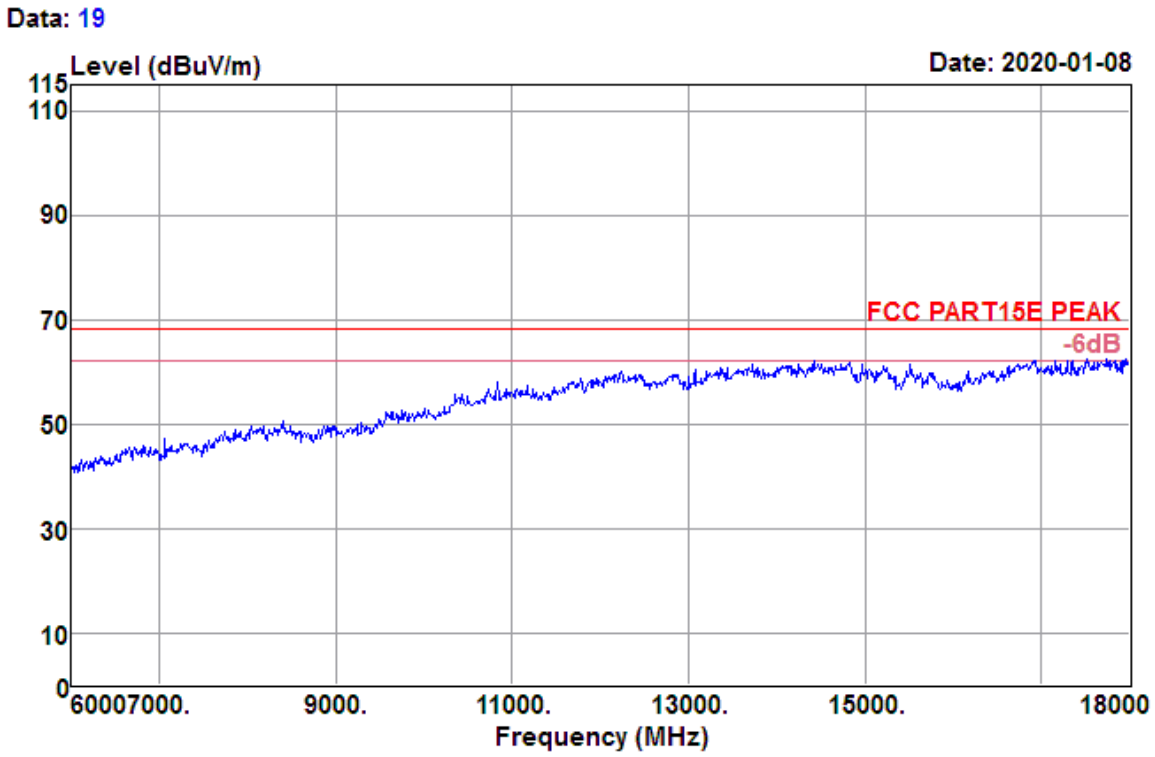
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

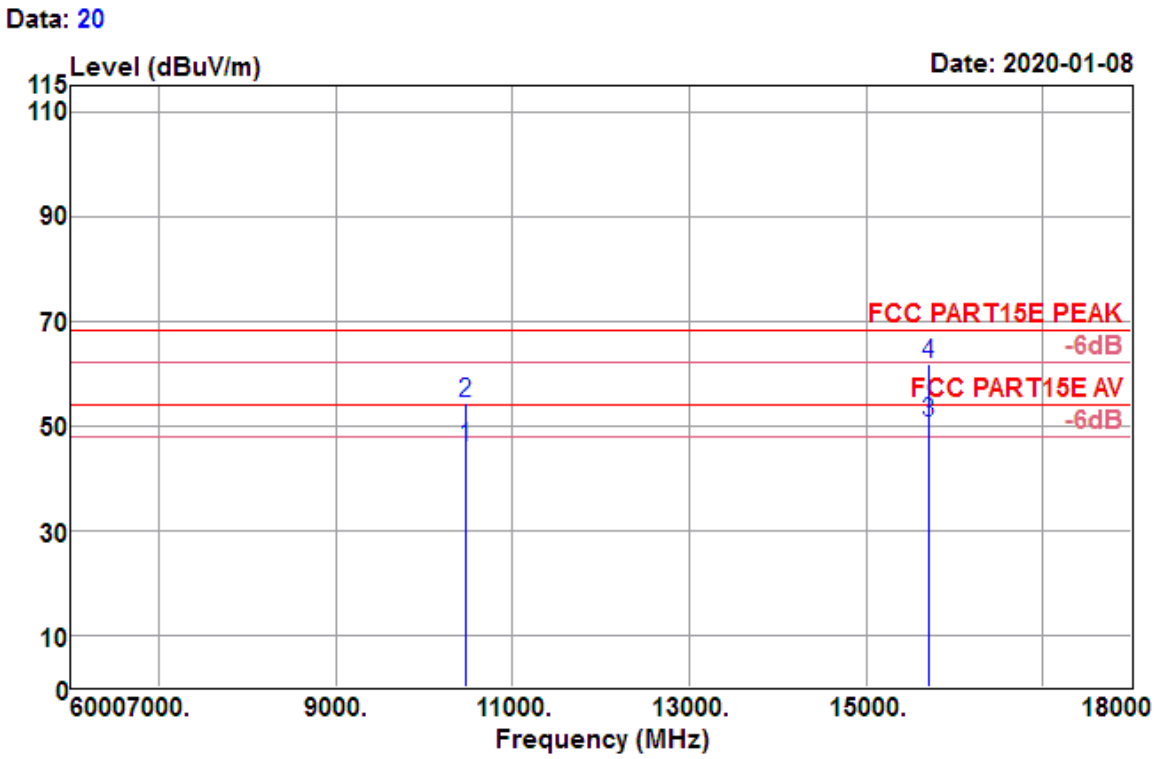
Test Mode :	802.11n HT20 CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5240.000	102.64	31.89	5.70	35.11	105.12	68.20	36.92	Peak

Test Mode :	802.11n HT20 CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Horizontal

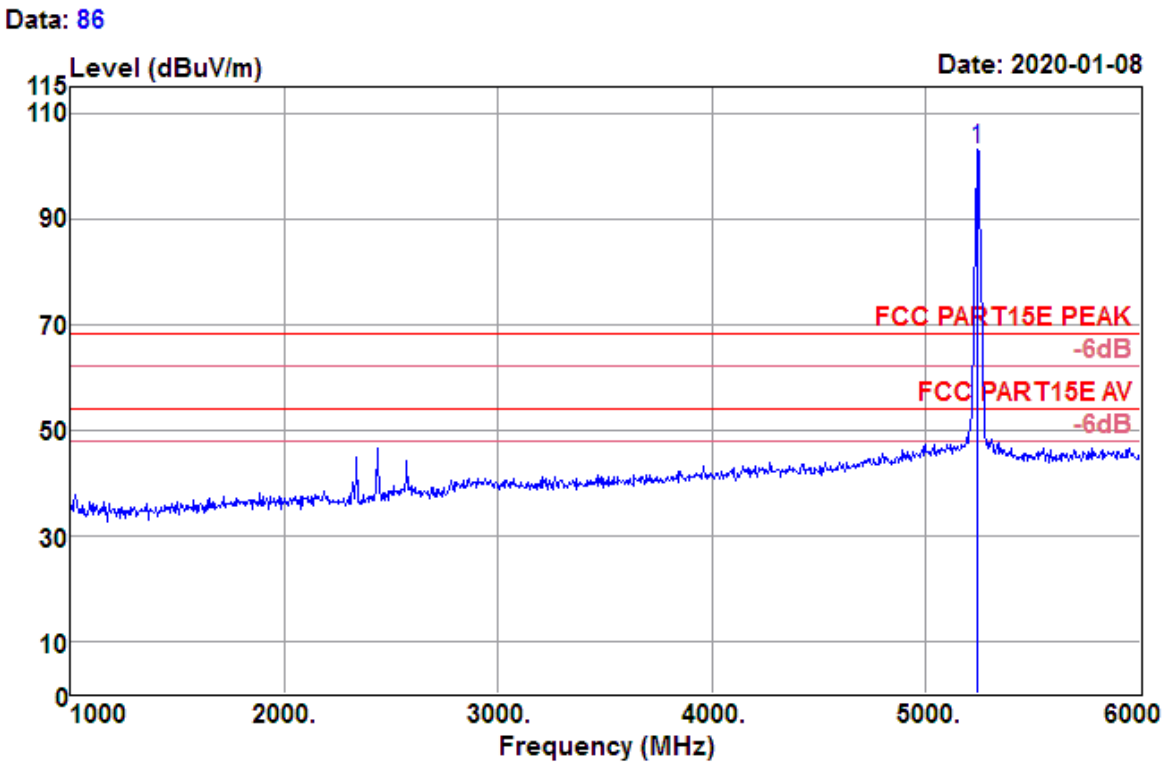




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10480.000	29.57	39.36	12.07	35.34	45.66	54.00	-8.34	Average
10480.000	38.08	39.36	12.07	35.34	54.17	68.20	-14.03	Peak
15720.000	27.68	38.47	16.15	31.81	50.49	54.00	-3.51	Average
15720.000	39.07	38.47	16.15	31.81	61.88	68.20	-6.32	Peak

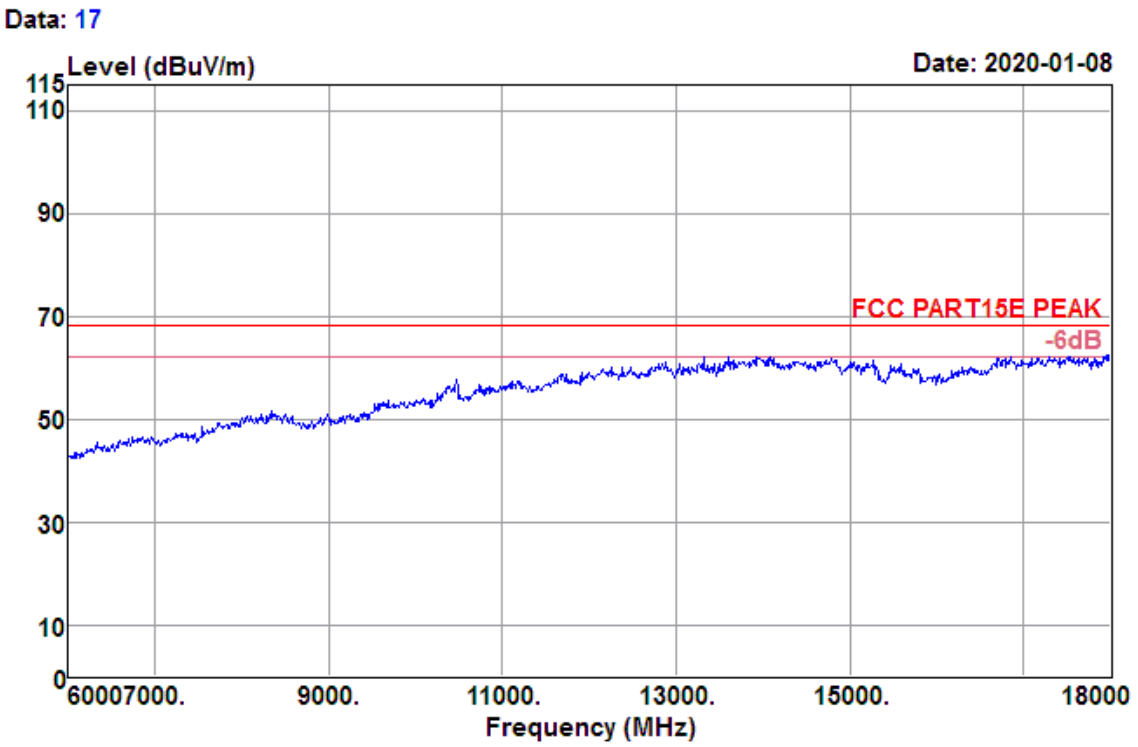
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

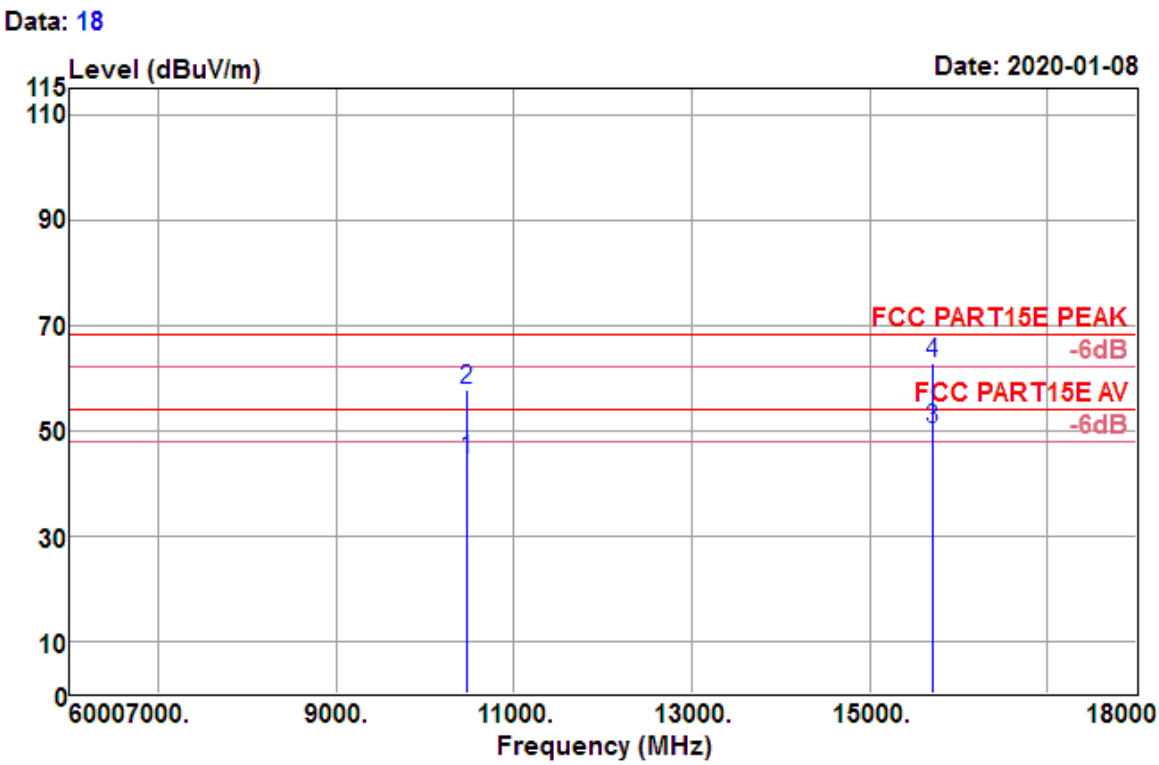
Test Mode :	802.11n HT20 CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5240.000	100.58	31.89	5.70	35.11	103.06	68.20	34.86	Peak

Test Mode :	802.11n HT20 CH48 5240MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Vertical

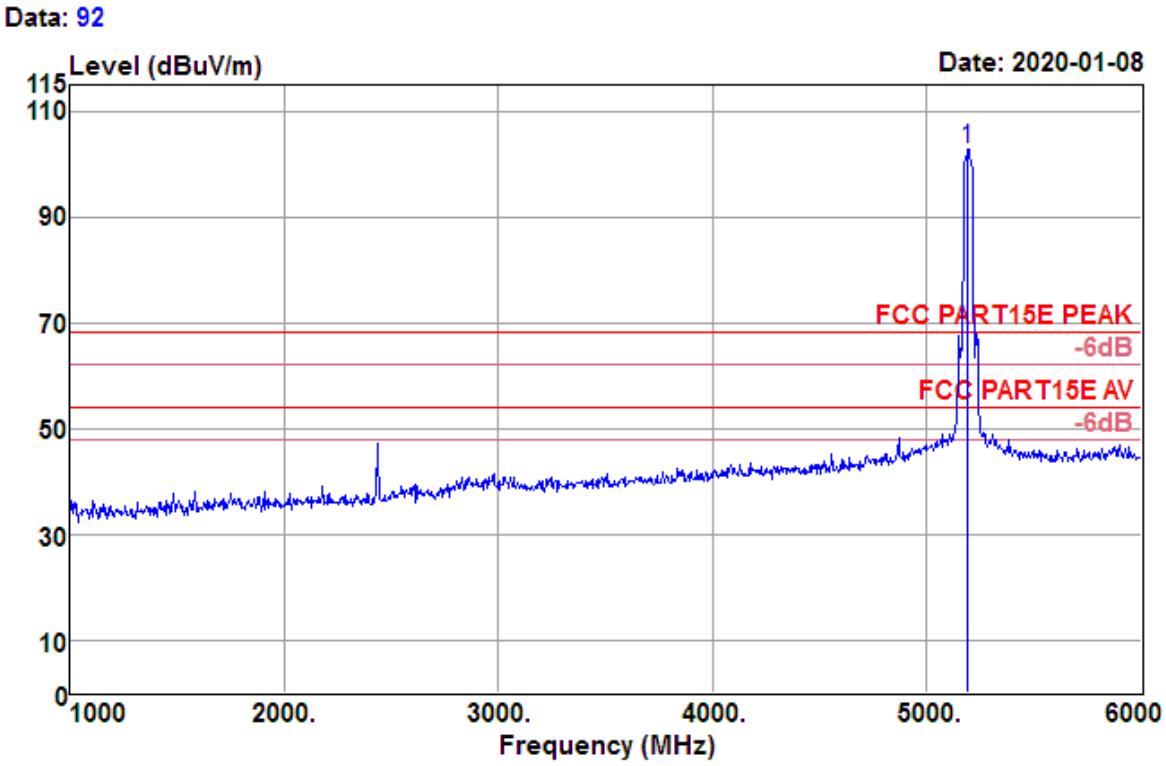




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10480.000	28.35	39.36	12.07	35.34	44.44	54.00	-9.56	Average
10480.000	41.48	39.36	12.07	35.34	57.57	68.20	-10.63	Peak
15720.000	27.42	38.47	16.15	31.81	50.23	54.00	-3.77	Average
15720.000	39.82	38.47	16.15	31.81	62.63	68.20	-5.57	Peak

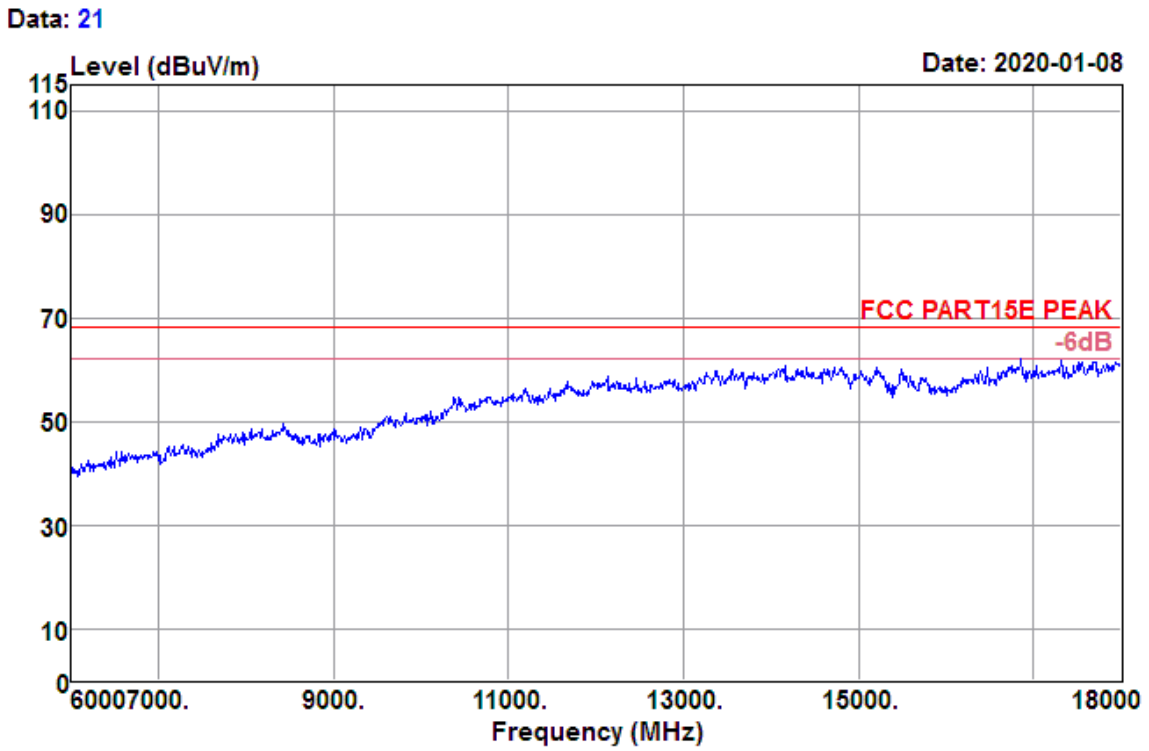
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

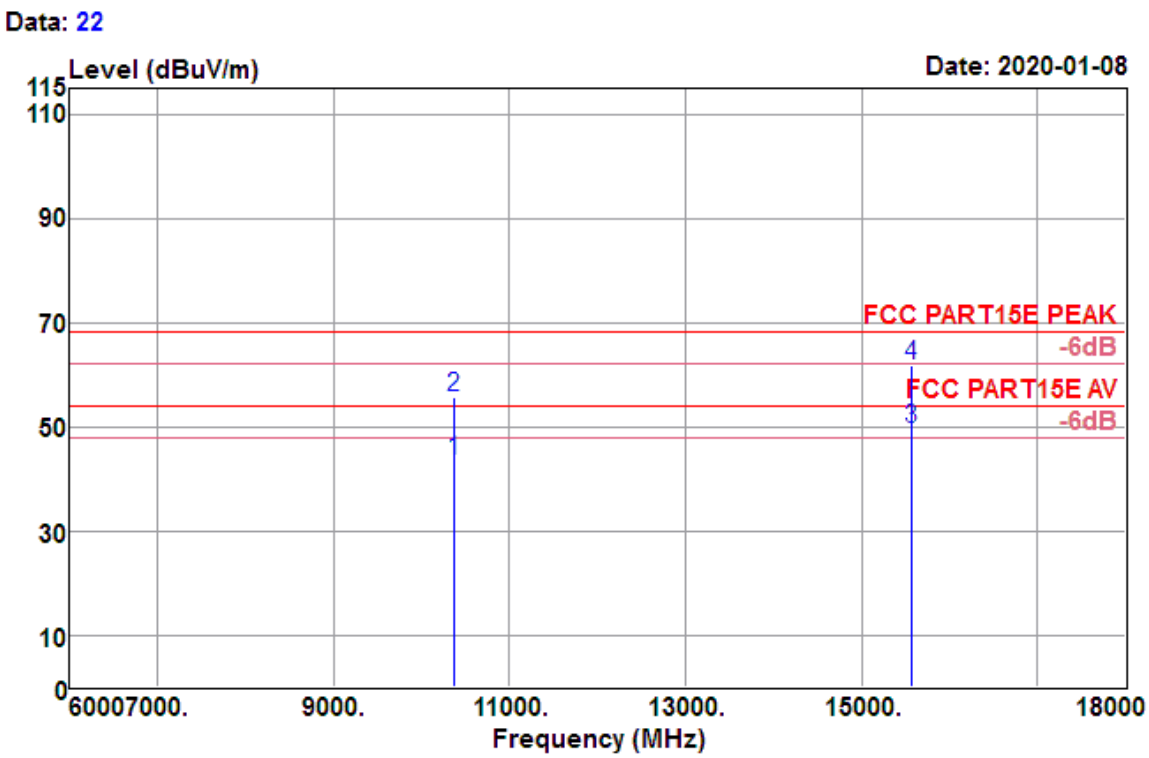
Test Mode :	802.11n HT40 CH38 5190MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5190.000	100.44	31.85	5.69	35.02	102.96	68.20	34.76	Peak

Test Mode :	802.11n HT40 CH38 5190MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Horizontal

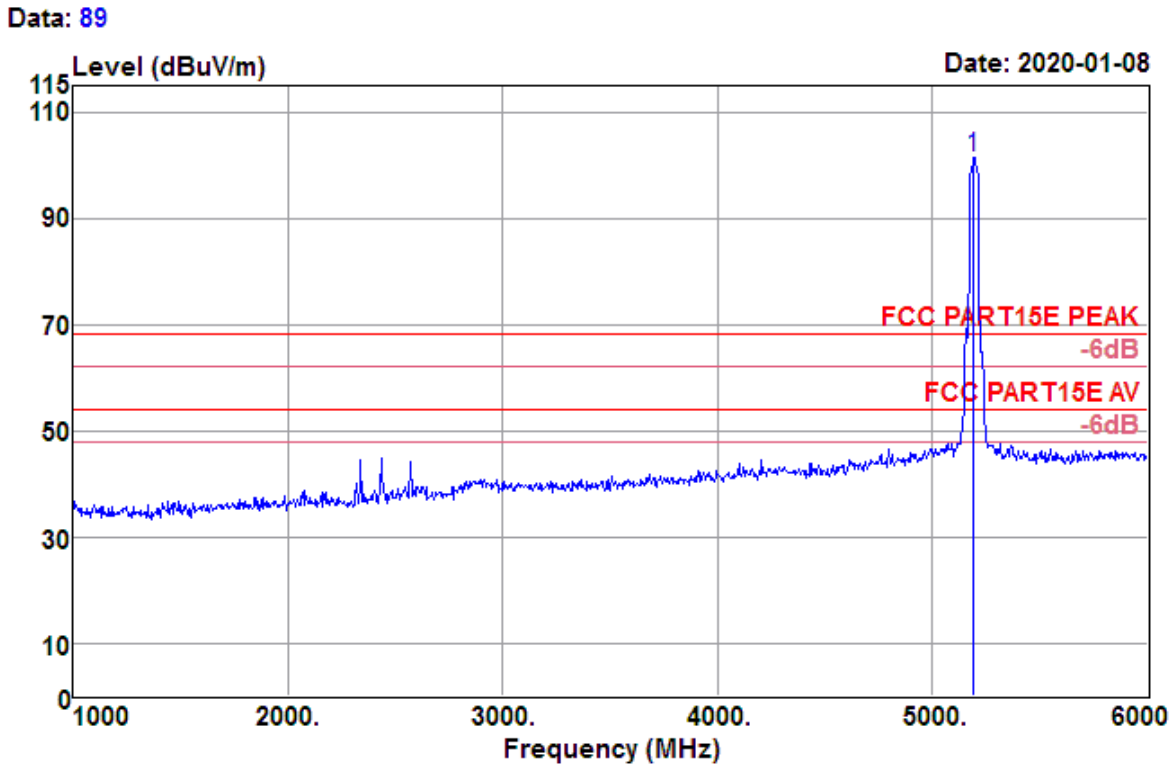




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10380.000	27.81	39.18	11.93	35.56	43.36	54.00	-10.64	Average
10380.000	40.06	39.18	11.93	35.56	55.61	68.20	-12.59	Peak
15570.000	26.10	38.93	16.31	31.87	49.47	54.00	-4.53	Average
15570.000	38.49	38.93	16.31	31.87	61.86	68.20	-6.34	Peak

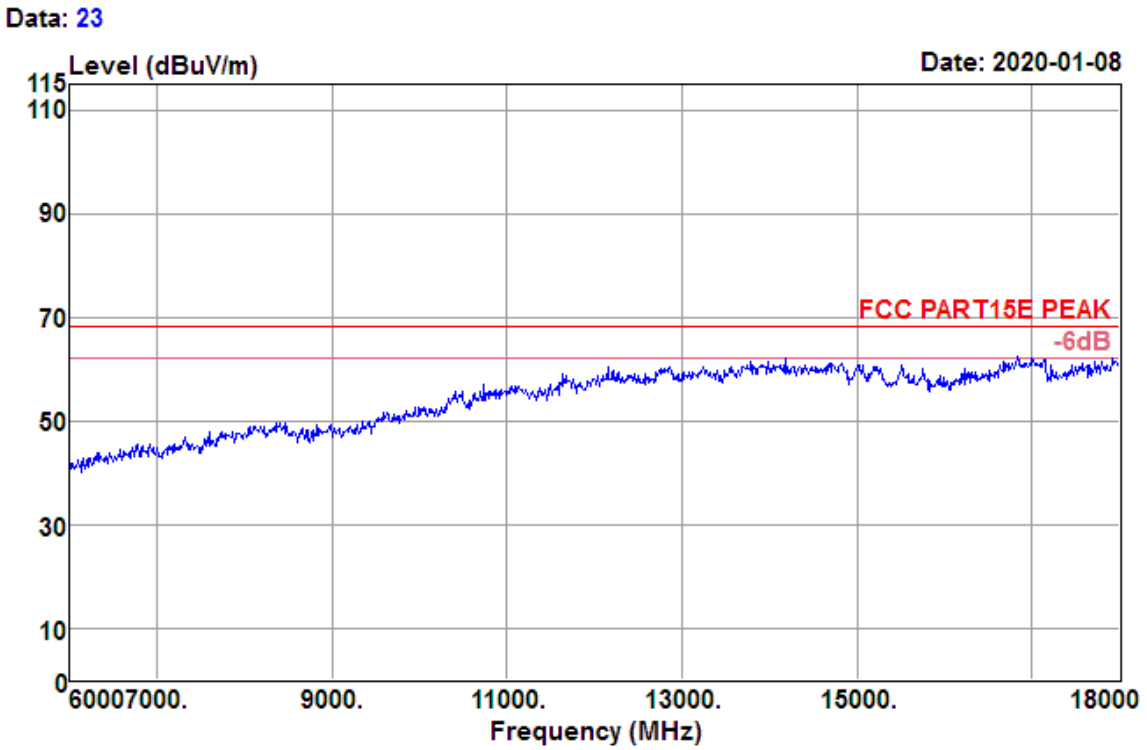
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

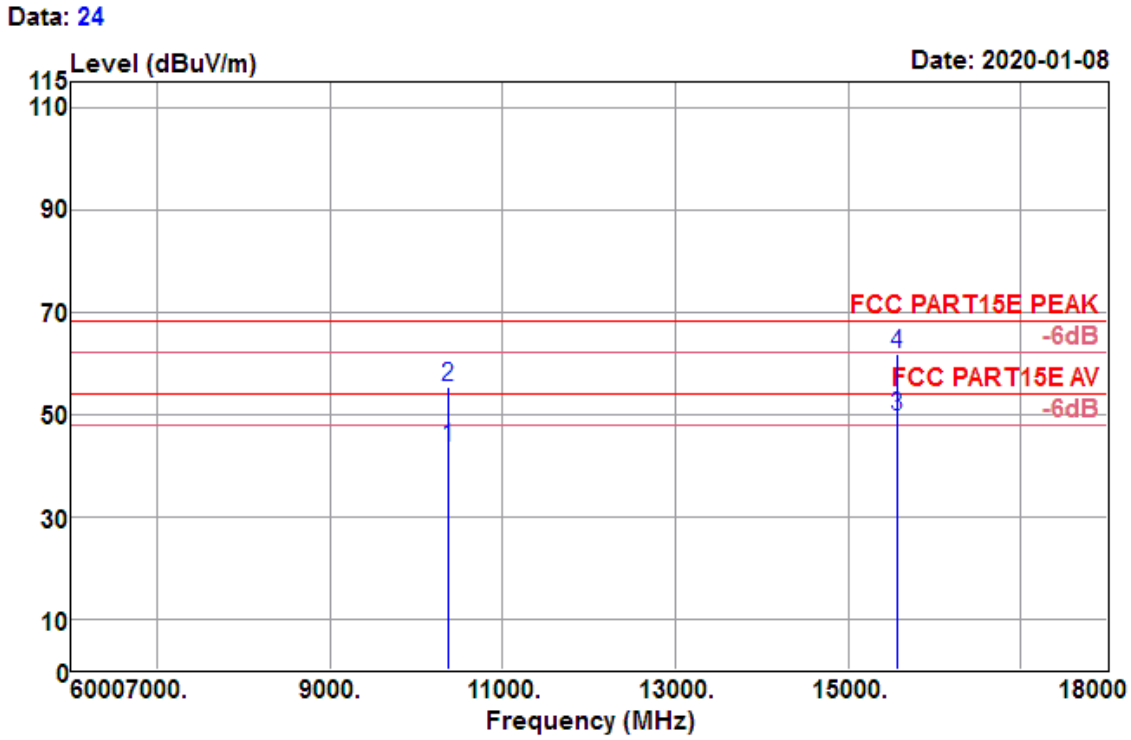
Test Mode :	802.11n HT40 CH38 5190MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5190.000	98.88	31.85	5.69	35.02	101.40	68.20	33.20	Peak

Test Mode :	802.11n HT40 CH38 5190MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Vertical

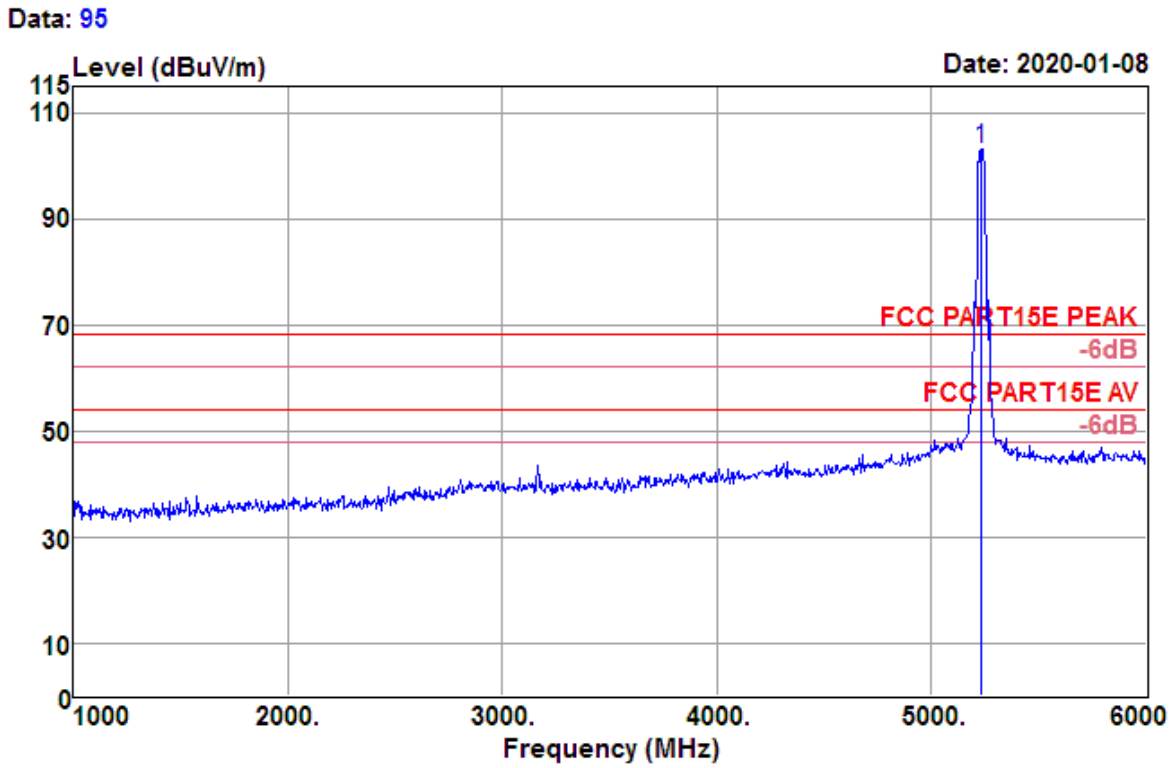




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10380.000	27.84	39.18	11.93	35.56	43.39	54.00	-10.61	Average
10380.000	39.87	39.18	11.93	35.56	55.42	68.20	-12.78	Peak
15570.000	26.32	38.93	16.31	31.87	49.69	54.00	-4.31	Average
15570.000	38.35	38.93	16.31	31.87	61.72	68.20	-6.48	Peak

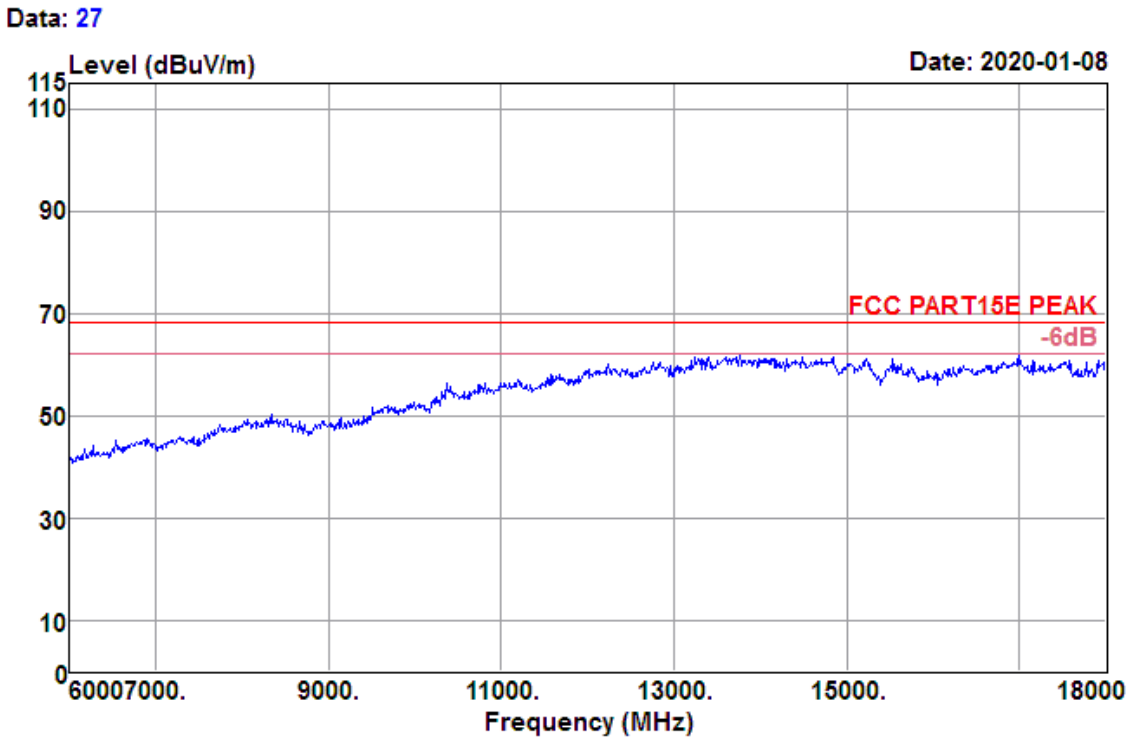
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

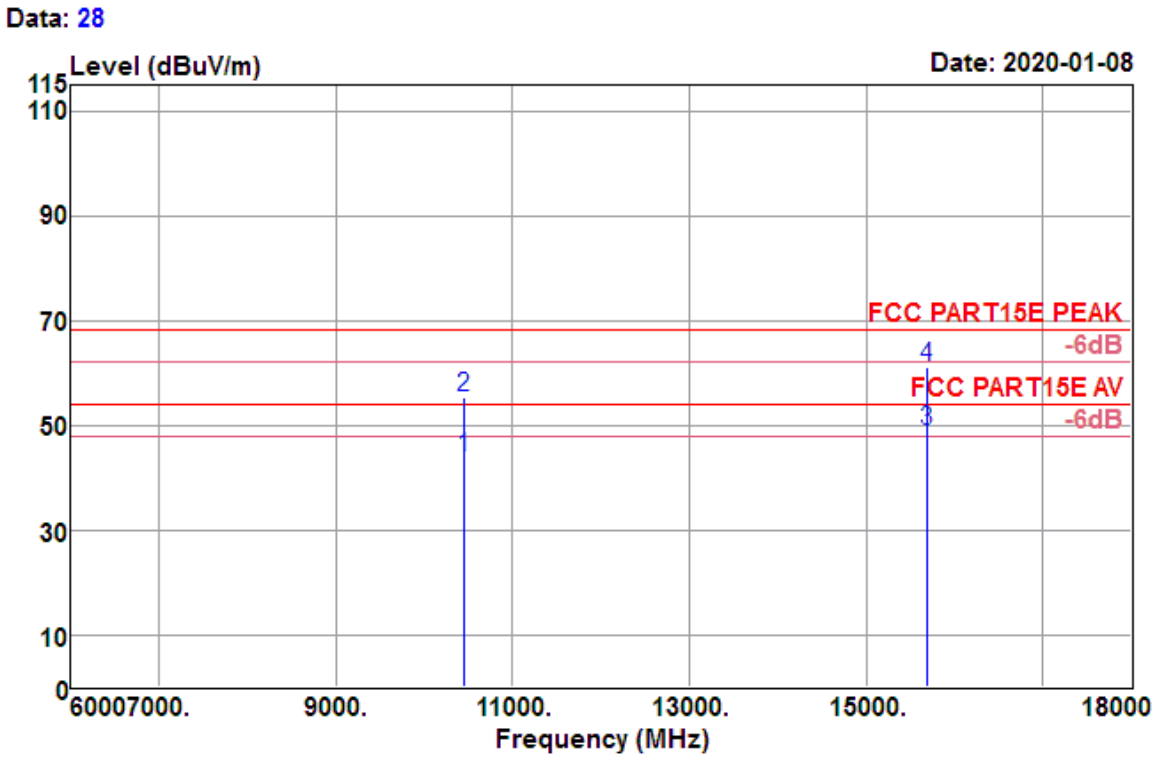
Test Mode :	802.11n HT40 CH46 5230MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5230.000	100.63	31.88	5.70	35.09	103.12	68.20	34.92	Peak

Test Mode :	802.11n HT40 CH46 5230MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Horizontal

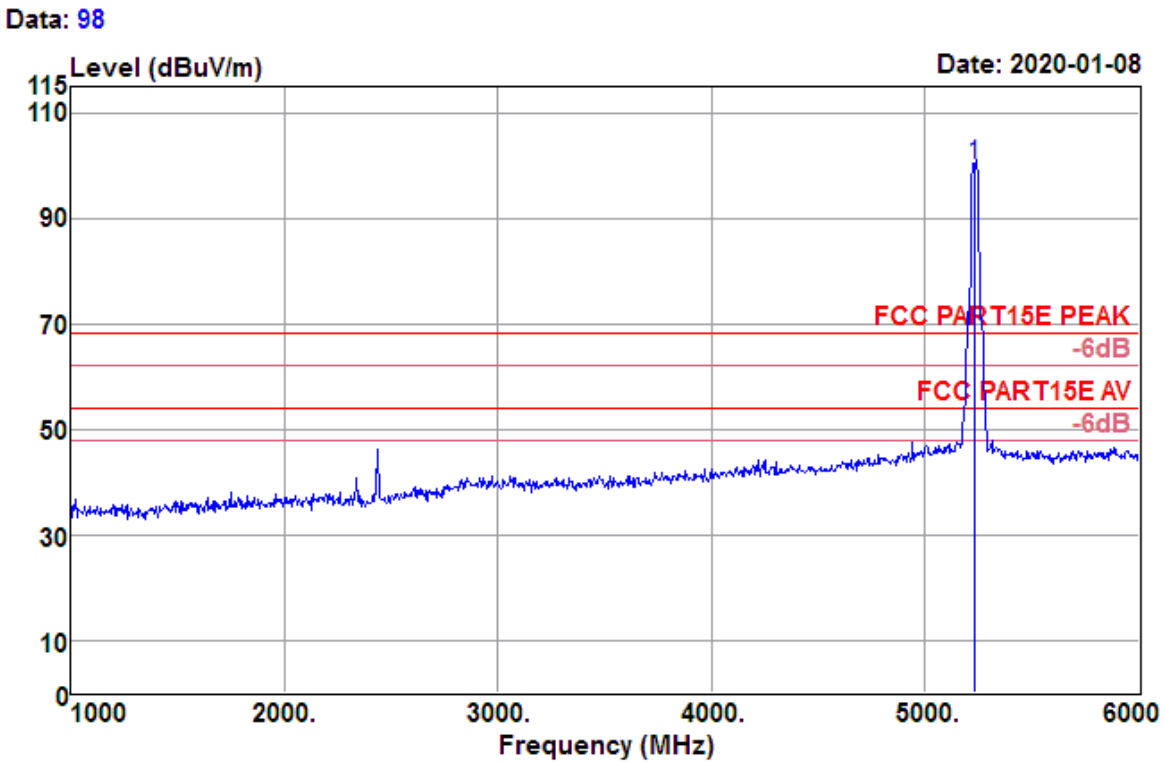




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10460.000	27.86	39.33	12.04	35.39	43.84	54.00	-10.16	Average
10460.000	39.18	39.33	12.04	35.39	55.16	68.20	-13.04	Peak
15690.000	25.94	38.56	16.18	31.82	48.86	54.00	-5.14	Average
15690.000	38.06	38.56	16.18	31.82	60.98	68.20	-7.22	Peak

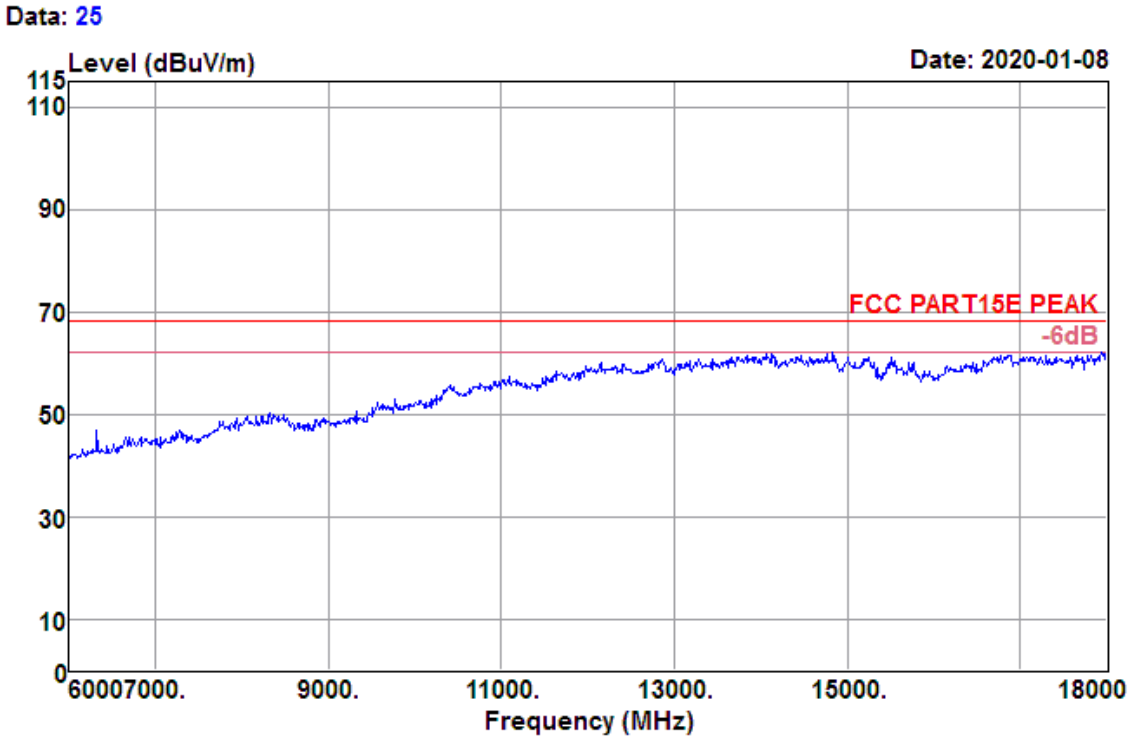
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

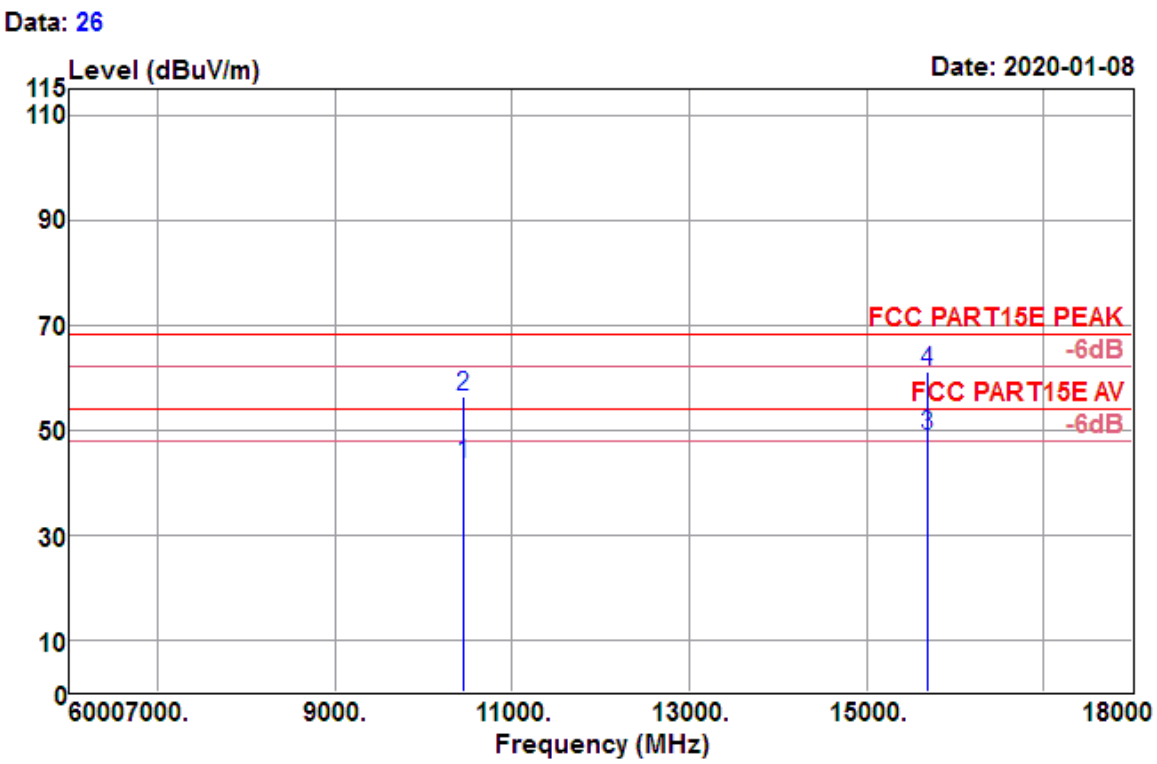
Test Mode :	802.11n HT40 CH46 5230MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5230.000	97.65	31.88	5.70	35.09	100.14	68.20	31.94	Peak

Test Mode :	802.11n HT40 CH46 5230MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Vertical

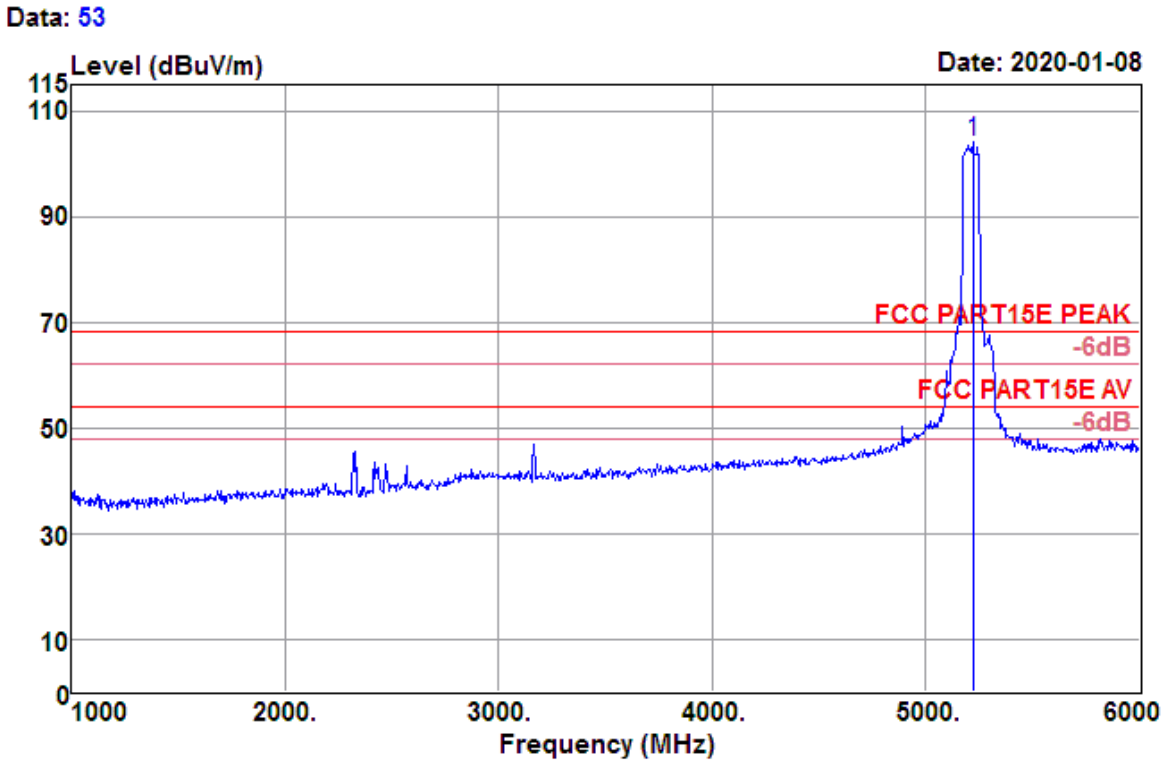




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10460.000	27.62	39.33	12.04	35.39	43.60	54.00	-10.40	Average
10460.000	40.35	39.33	12.04	35.39	56.33	68.20	-11.87	Peak
15690.000	25.89	38.56	16.18	31.82	48.81	54.00	-5.19	Average
15690.000	38.03	38.56	16.18	31.82	60.95	68.20	-7.25	Peak

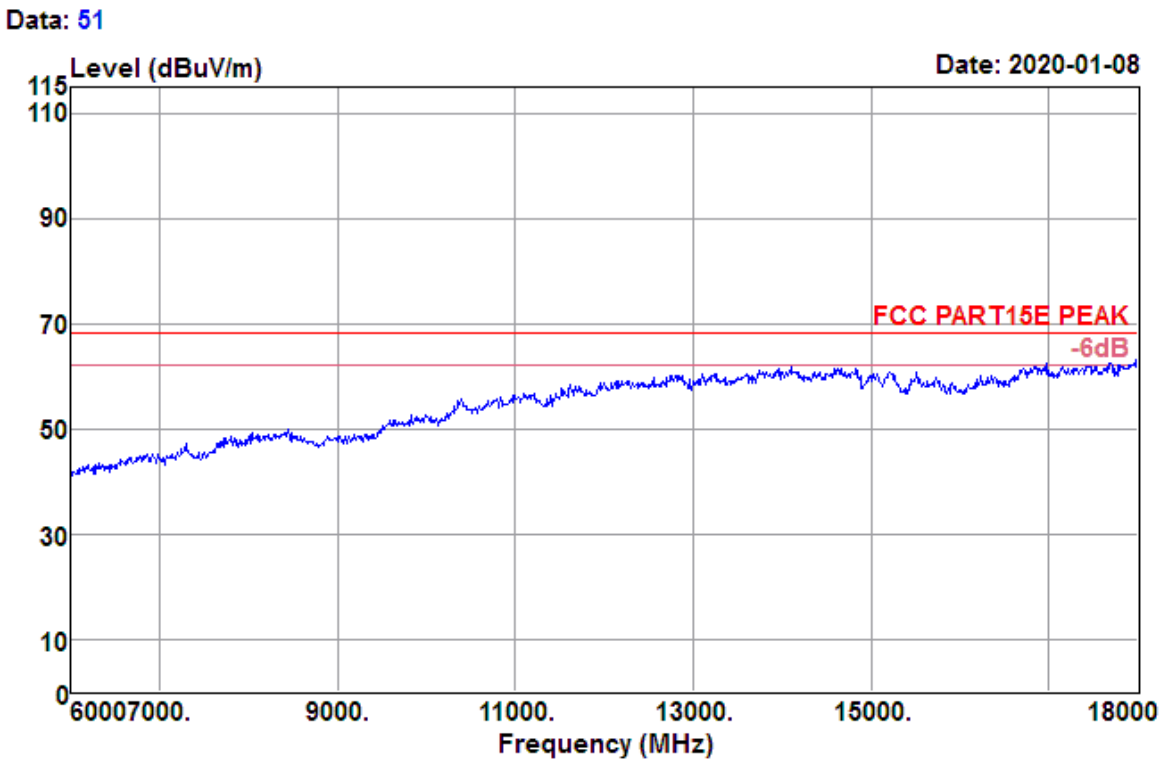
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

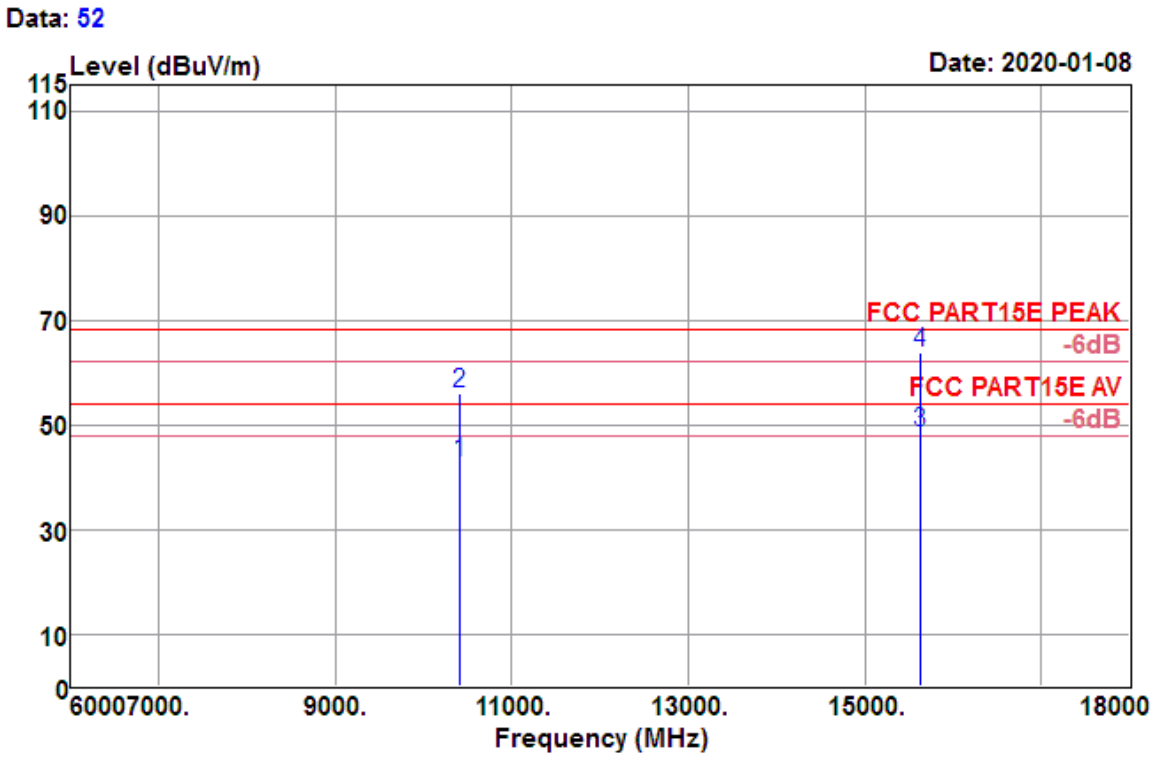
Test Mode :	802.11ac VHT80 CH42 5210MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5220.000	101.81	31.88	5.70	35.07	104.32	68.20	36.12	Peak

Test Mode :	802.11ac VHT80 CH42 5210MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Horizontal

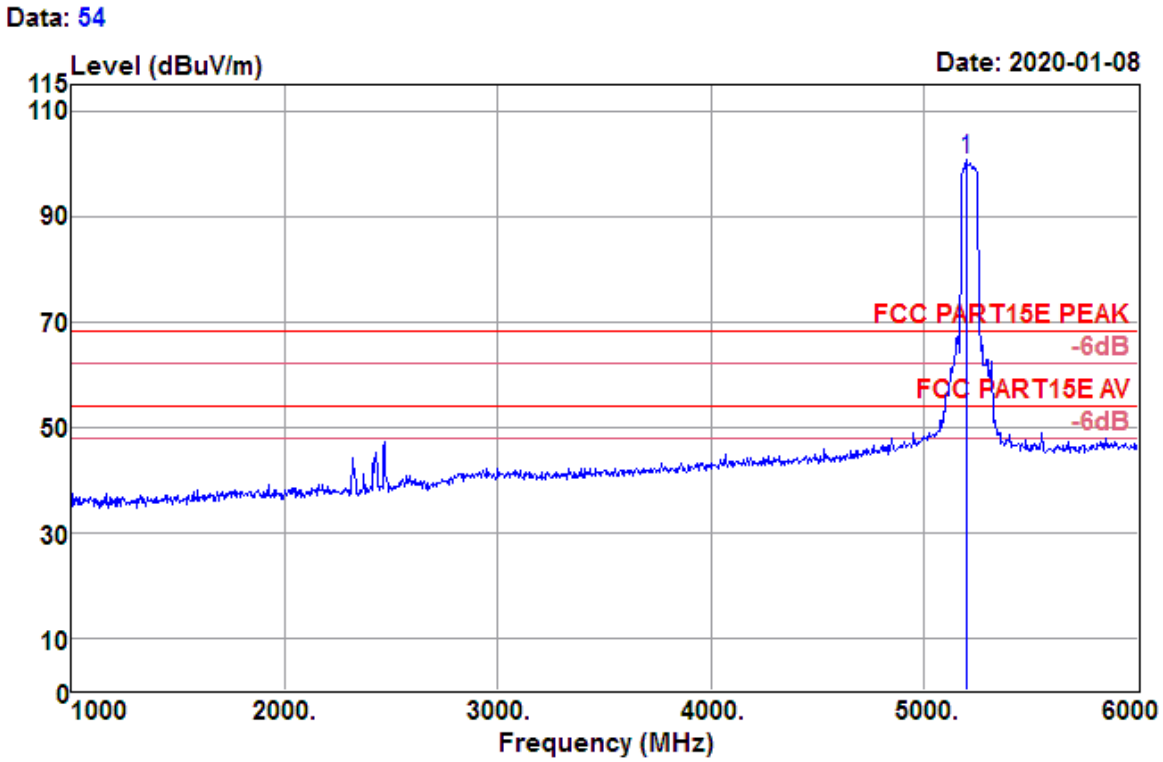




Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10420.000	27.03	39.26	11.98	35.48	42.79	54.00	-11.21	Average
10420.000	40.33	39.26	11.98	35.48	56.09	68.20	-12.11	Peak
15630.000	25.52	38.75	16.24	31.85	48.66	54.00	-5.34	Average
15630.000	40.54	38.75	16.24	31.85	63.68	68.20	-4.52	Peak

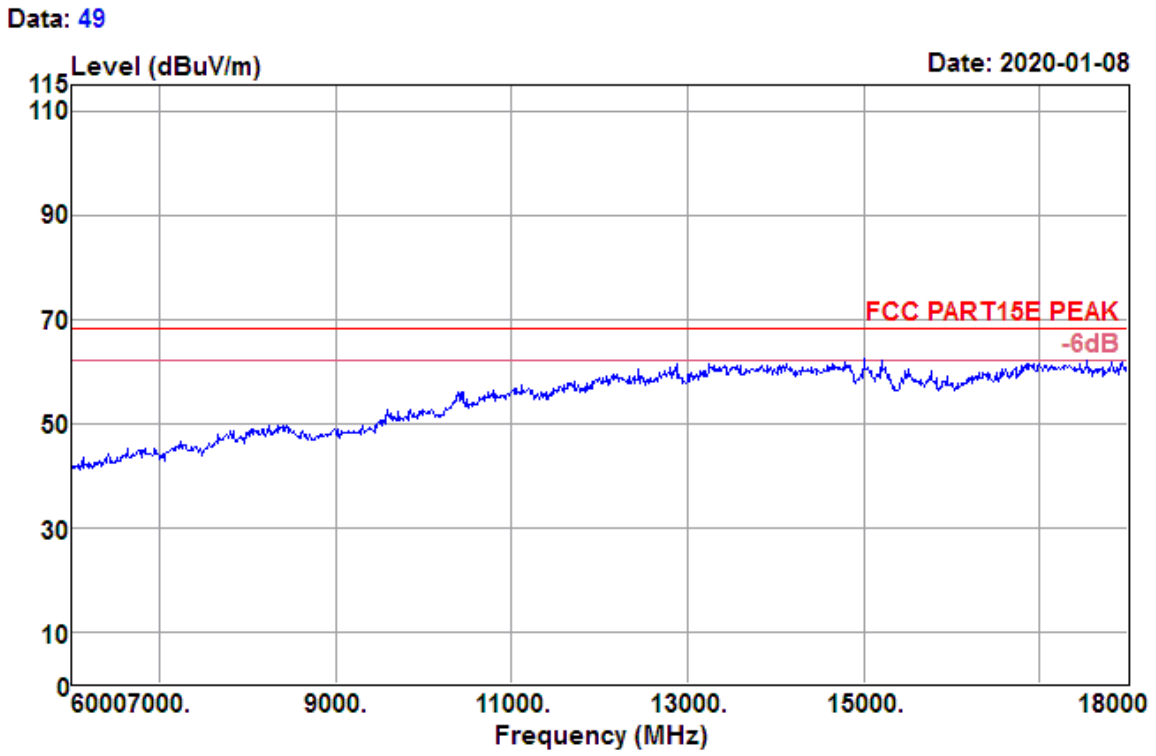
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

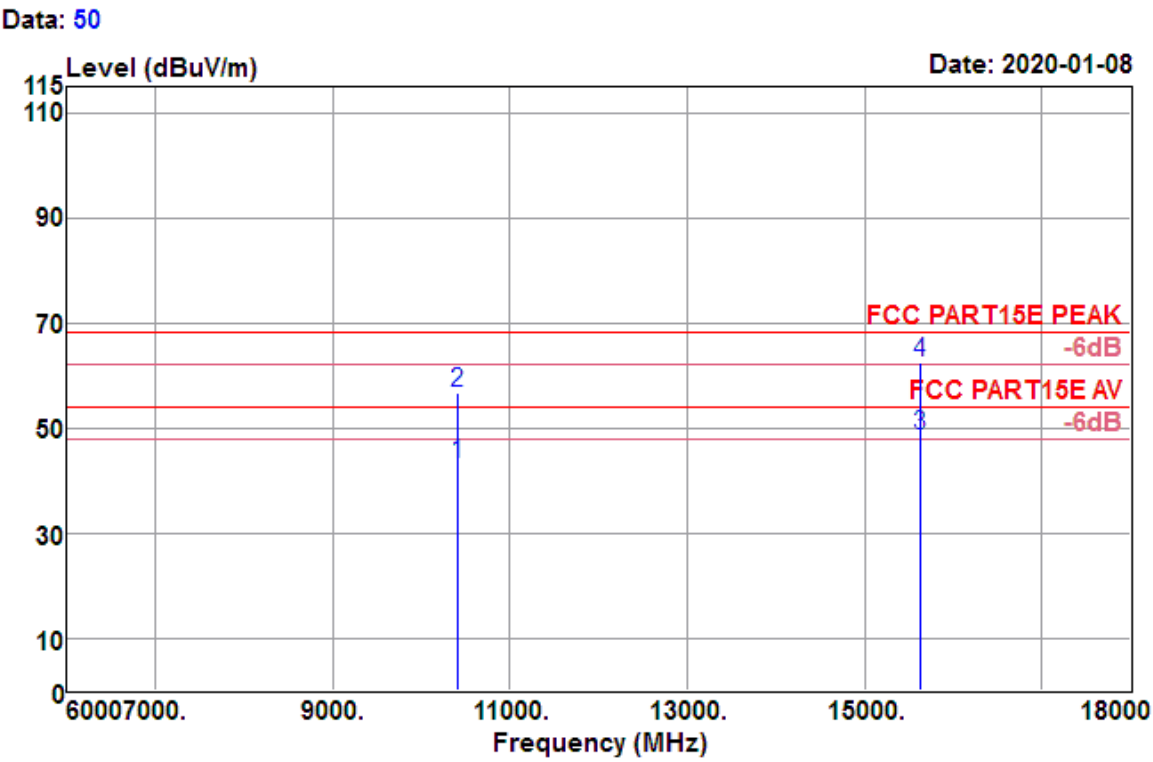
Test Mode :	802.11ac VHT80 CH42 5210MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	1GHz~6GHz	Polarization :	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
5195.000	98.20	31.86	5.70	35.03	100.73	68.20	32.53	Peak

Test Mode :	802.11ac VHT80 CH42 5210MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	6GHz~18GHz	Polarization :	Vertical



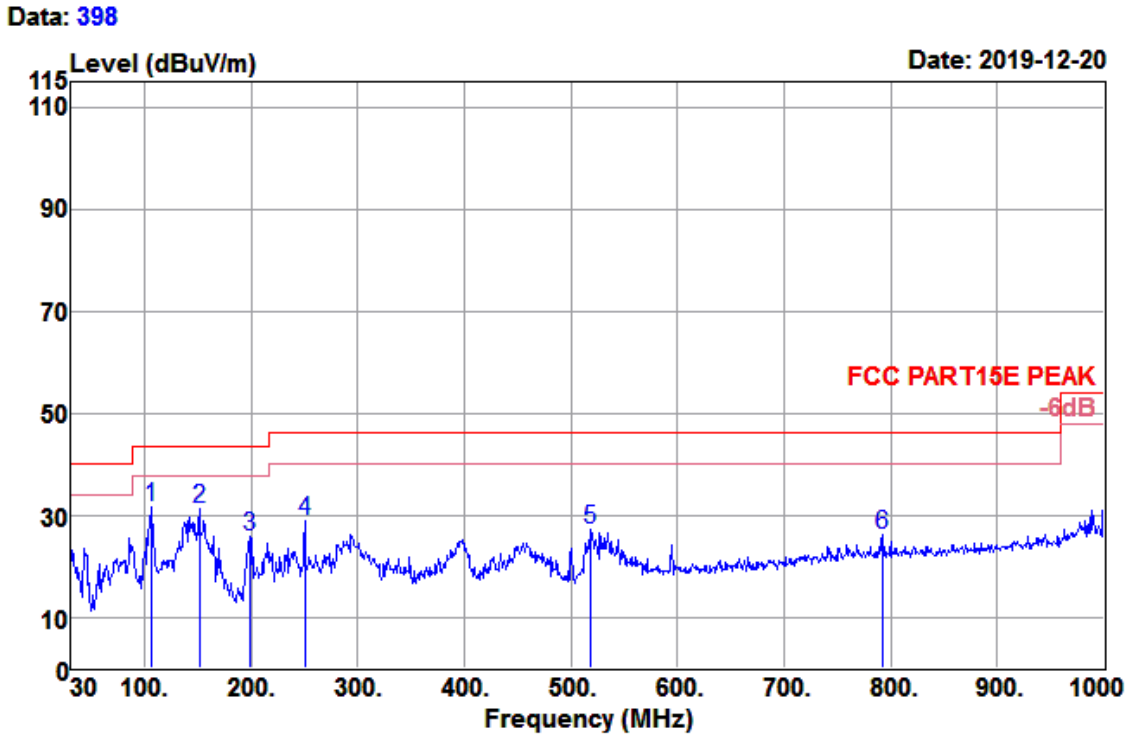


Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
10420.000	27.26	39.26	11.98	35.48	43.02	54.00	-10.98	Average
10420.000	40.80	39.26	11.98	35.48	56.56	68.20	-11.64	Peak
15630.000	25.40	38.75	16.24	31.85	48.54	54.00	-5.46	Average
15630.000	39.22	38.75	16.24	31.85	62.36	68.20	-5.84	Peak

Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

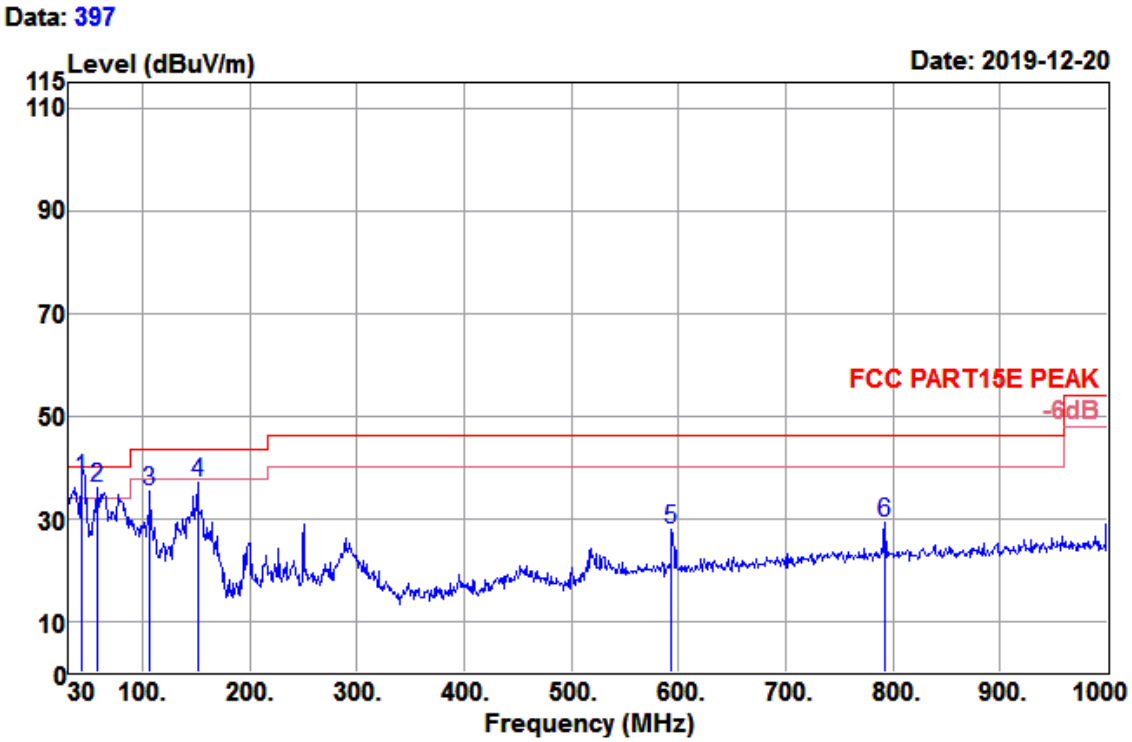
4.4.6 Test Result of Radiated Spurious Emission (30MHz ~ 1GHz)

Test Mode :	802.11 ac VHT80 CH42 5210MHz	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	30MHz~1GHz	**Polarization :**	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
106.630	52.69	9.60	1.97	32.60	31.66	43.50	-11.84	Peak
151.250	47.31	14.41	2.13	32.63	31.22	43.50	-12.28	Peak
198.780	45.40	10.66	2.37	32.65	25.78	43.50	-17.72	Peak
250.190	45.96	13.10	2.54	32.68	28.92	46.00	-17.08	Peak
517.910	37.83	18.33	3.68	32.85	26.99	46.00	-19.01	Peak
792.420	31.02	22.37	4.64	32.02	26.01	46.00	-19.99	Peak

Test Mode :	802.11 ac VHT80 CH106 5530MHz	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	63~65%
Frequencey Range	30MHz~1GHz	Polarization :	Vertical



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
43.580	55.81	12.70	1.54	32.53	37.52	40.00	-2.48	QP
58.130	55.27	11.64	1.64	32.50	36.05	40.00	-3.95	Peak
106.630	56.46	9.60	1.97	32.60	35.43	43.50	-8.07	Peak
151.250	53.22	14.41	2.13	32.63	37.13	43.50	-6.37	Peak
593.570	36.80	19.88	3.92	32.62	27.98	46.00	-18.02	Peak
792.420	34.14	22.37	4.64	32.02	29.13	46.00	-16.87	Peak

4.5 AC Conducted Emission Measurement

4.5.1 Limit of AC Conducted Emission

FCC §15.207

IC RSS-GEN 8.8

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

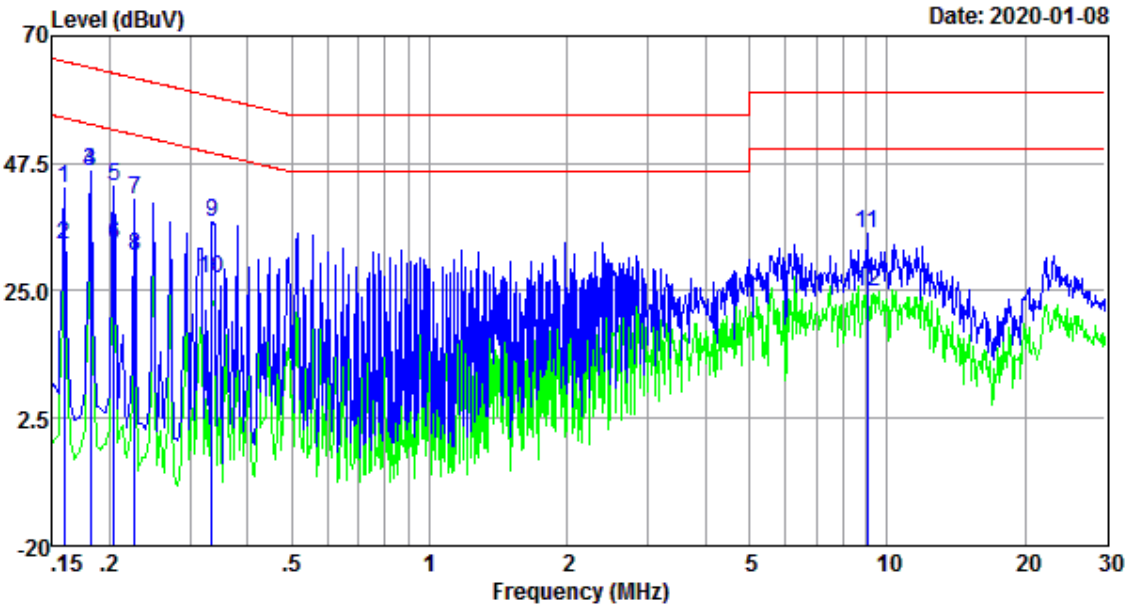
*Decreases with the logarithm of the frequency.

4.5.2 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

4.5.3 Test Result of AC Conducted Emission

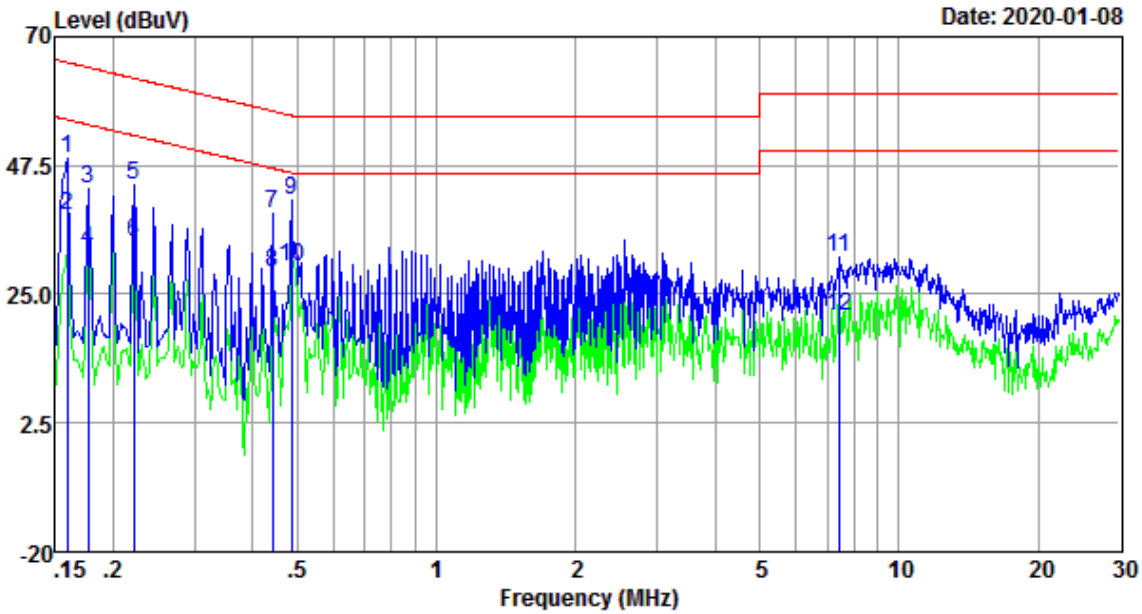
Test Mode :	Mode 1	Temperature :	21~23℃
Test Engineer :	Jerry Wang	Relative Humidity :	41~43%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	5G WLAN Link + HDMI + TF Card Upload + USB playing + Ping		



Freq	Reading level	LISN/ISN factor	Cable loss	Result level	Limit level	Over limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.159	33.47	9.63	0.04	43.14	65.52	-22.38	QP
0.159	23.61	9.63	0.04	33.28	55.52	-22.24	Average
0.182	36.54	9.64	0.04	46.22	64.42	-18.20	QP
0.182	36.54	9.64	0.04	46.22	54.42	-8.20	Average
0.204	33.85	9.65	0.04	43.54	63.45	-19.91	QP
0.204	23.54	9.65	0.04	33.23	53.45	-20.22	Average
0.227	31.55	9.65	0.04	41.24	62.57	-21.33	QP
0.227	21.56	9.65	0.04	31.25	52.57	-21.32	Average
0.334	27.44	9.68	0.04	37.16	59.35	-22.19	QP
0.334	17.33	9.68	0.04	27.05	49.35	-22.30	Average
9.059	24.91	9.97	0.10	34.98	60.00	-25.02	QP
9.059	14.81	9.97	0.10	24.88	50.00	-25.12	Average

Result Level= Reading Level + LISN Factor + Cable Loss

Test Mode :	Mode 1	Temperature :	21~23℃
Test Engineer :	Jerry Wang	Relative Humidity :	41~43%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	5G WLAN Link + HDMI + TF Card Upload + USB playing + Ping		



Freq MHz	Reading level dBuV	LISN/ISN factor dB	Cable loss dB	Result level dBuV	Limit level dBuV	Over limit dB	Remark
0.159	39.11	9.59	0.04	48.74	65.52	-16.78	QP
0.159	29.07	9.59	0.04	38.70	55.52	-16.82	Average
0.177	33.64	9.60	0.04	43.28	64.64	-21.36	QP
0.177	23.32	9.60	0.04	32.96	54.64	-21.68	Average
0.222	34.30	9.61	0.04	43.95	62.74	-18.79	QP
0.222	24.45	9.61	0.04	34.10	52.74	-18.64	Average
0.442	29.29	9.63	0.04	38.96	57.02	-18.06	QP
0.442	19.01	9.63	0.04	28.68	47.02	-18.34	Average
0.486	31.72	9.64	0.04	41.40	56.23	-14.83	QP
0.486	20.02	9.64	0.04	29.70	46.23	-16.53	Average
7.407	21.51	9.81	0.09	31.41	60.00	-28.59	QP
7.407	11.41	9.81	0.09	21.31	50.00	-28.69	Average

Result Level= Reading Level + LISN Factor + Cable Loss

4.6 Frequency Stability Measurement

4.6.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

4.6.2 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

4.6.3 Test Result of Frequency Stability

Refer to Appendix D of this test report.

4.7 Automatically Discontinue Transmission

4.7.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

4.7.2 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

4.8 Antenna Requirements

4.8.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.8.2 Antenna Connected Construction

An embedded-in antenna design is used.

4.8.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Due Date	Remark
Spectrum Analyzer	Keysight	N9010A	MY56070788	2020-01-22	2020-01-22	Conducted
Power Sensor	Keysight	U2021XA	MY56510025	2020-01-22	2020-01-22	Conducted
Power Sensor	Keysight	U2021XA	MY57030005	2020-01-22	2020-01-22	Conducted
Power Sensor	Keysight	U2021XA	MY56510018	2020-01-22	2020-01-22	Conducted
Power Sensor	Keysight	U2021XA	MY56480002	2020-01-22	2020-01-22	Conducted
Thermal Chamber	Sanmtest	SMC-408-CD	2435	2020-05-08	2020-05-08	Conducted
Base Station	R&S	CMW 270	101231	2020-01-22	2020-01-22	Conducted
Signal Generator (Interferer)	Keysight	N5182B	MY56200384	2020-04-18	2020-04-18	Conducted
Signal Generator (Blocker)	Keysight	N5171B	MY56200661	2020-01-22	2020-01-22	Conducted

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV 40	101433	2019-02-18	2020-02-17	Radiation
Amplifier	Sonoma	310	363917	2019-01-22	2020-01-21	Radiation
Amplifier	Schwarzbeck	BBV 9718	327	2019-01-22	2020-01-21	Radiation
Amplifier	Narda	TTA1840-35-HG	2034380	2019-05-15	2020-05-14	Radiation
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-051	2017-03-03	2020-03-02	Radiation
Broadband Antenna	Schwarzbeck	VULB 9168	9168-757	2017-03-03	2020-03-02	Radiation
Horn Antenna	Schwarzbeck	BBHA 9120 D	1677	2017-03-03	2020-03-02	Radiation
Horn Antenna	COM-POWER	AH-1840	101117	2018-06-20	2021-06-19	Radiation
Test Software	Audix	E3	6.111221a	N/A	N/A	Radiation
Filter	Micro-Tronics	BRM 50702	G266	N/A	N/A	Radiation

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Due Date	Remark
LISN	R&S	ENV216	102125	2019-01-22	2020-01-21	Conducted
LISN	R&S	ENV432	101327	2019-01-22	2020-01-21	Conducted
EMI Test Receiver	R&S	ESR3	102143	2019-01-23	2020-01-22	Conducted
EMI Test Software	Audix	E3	N/A	N/A	N/A	Conducted

N/A: No Calibration Required

6 Uncertainty of Evaluation

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.67dB
Radiated emissions	30MHz ~ 1GMHz	5.05dB
	1GHz ~ 18GHz	5.06 dB
	18GHz ~ 40GHz	3.65dB

MEASUREMENT	UNCERTAINTY
Occupied Channel Bandwidth	±0.1%
RF output power, conducted	±1.2dB
Power density, conducted	±1.2dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

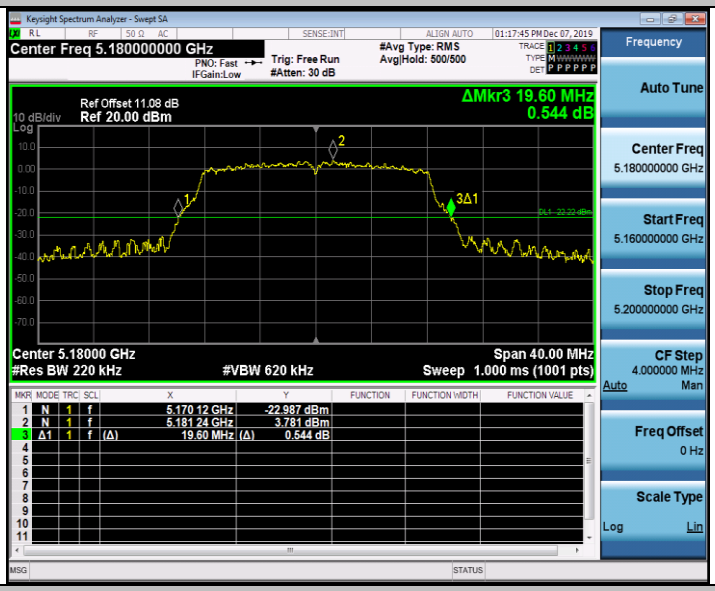
Appendix A1: Emission Bandwidth

Test Result

TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1		19.600	5170.120	5189.720	---	PASS
			19.600	5190.200	5209.800	---	PASS
			19.640	5230.200	5249.840	---	PASS
11N20SISO	Ant1		20.200	5169.960	5190.160	---	PASS
			20.320	5189.840	5210.160	---	PASS
			20.320	5229.880	5250.200	---	PASS
11N40SISO	Ant1		40.320	5169.840	5210.160	---	PASS
			40.000	5210.000	5250.000	---	PASS
11AC20SISO	Ant1		20.160	5169.920	5190.080	---	PASS
			20.160	5189.920	5210.080	---	PASS
			20.080	5229.960	5250.040	---	PASS
11AC40SISO	Ant1		40.080	5170.000	5210.080	---	PASS
			40.320	5209.840	5250.160	---	PASS
			80.640	5169.520	5250.160	---	PASS

Test Graphs

11A_Ant1_5180



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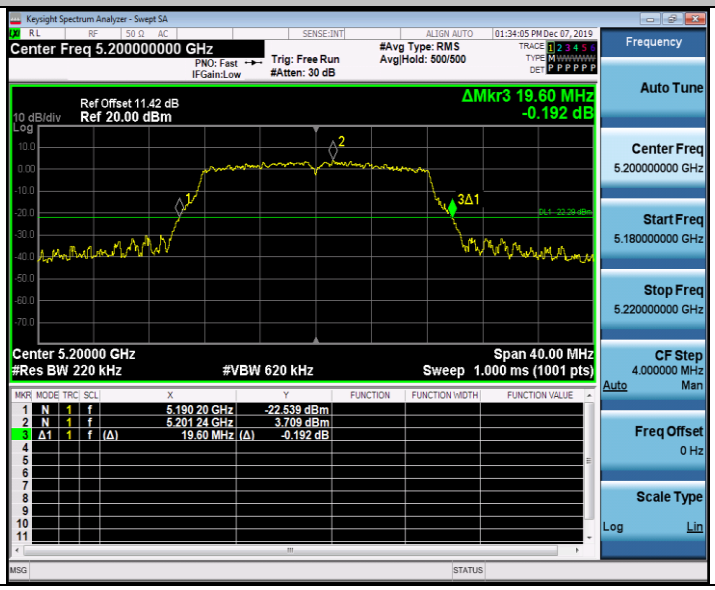

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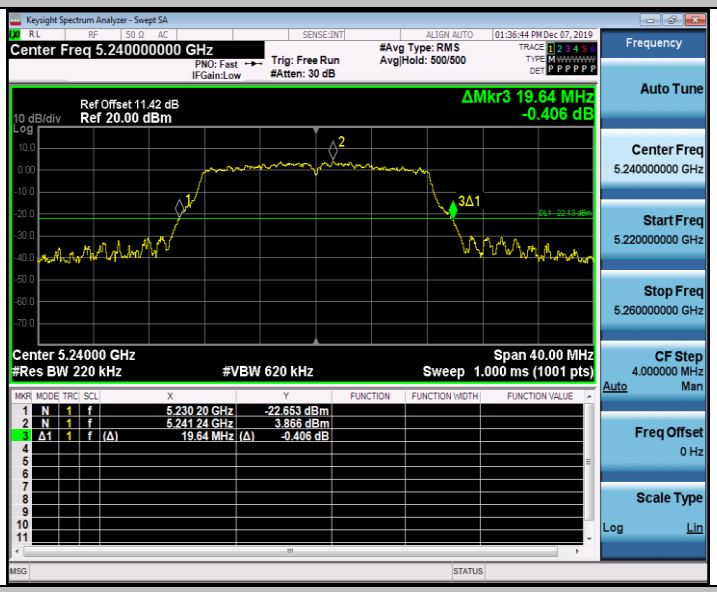
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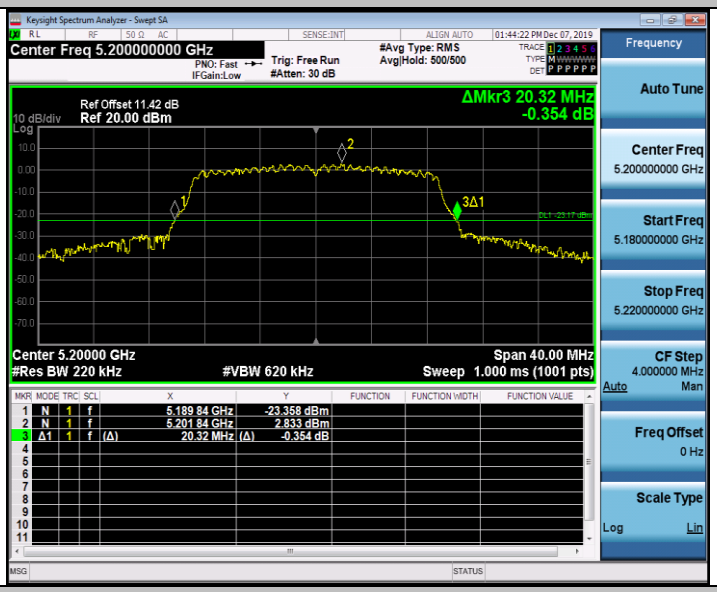
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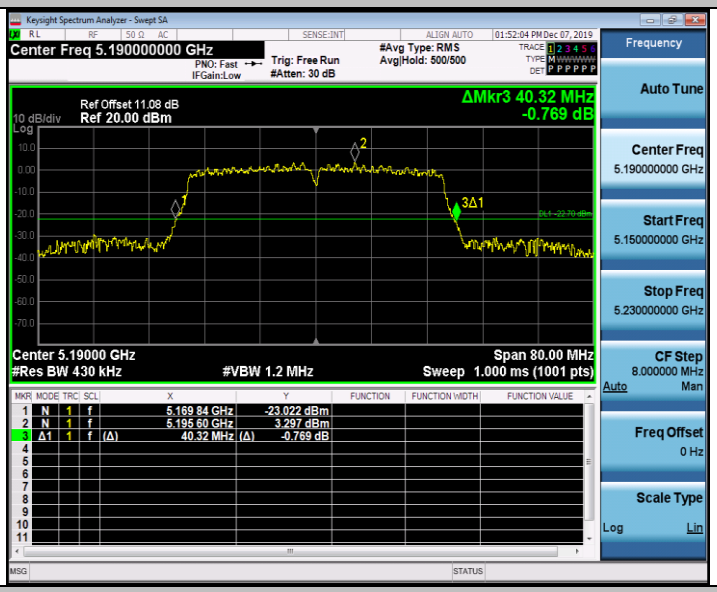
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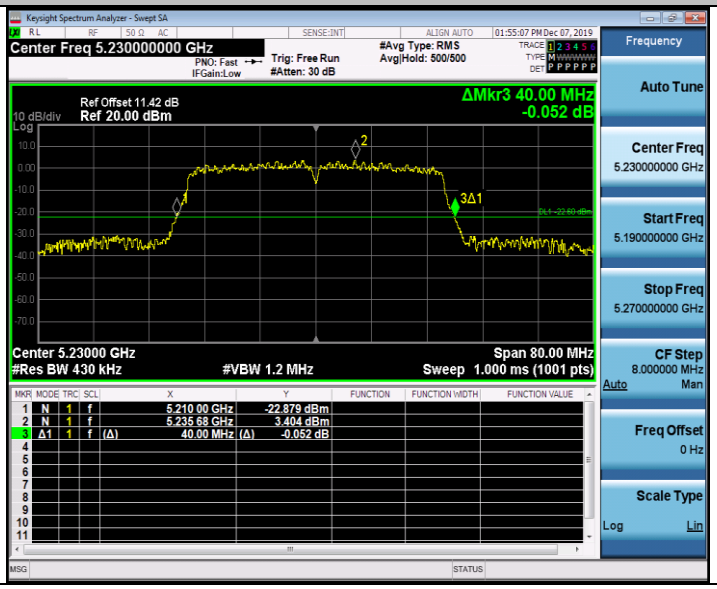

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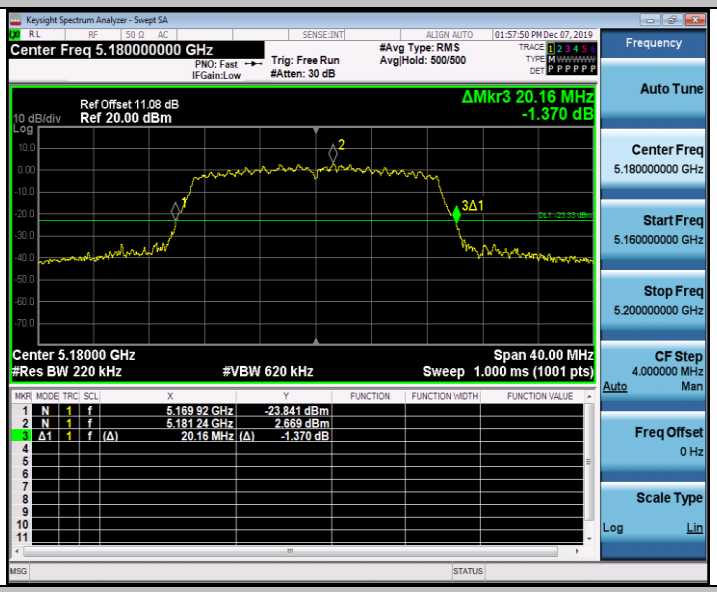
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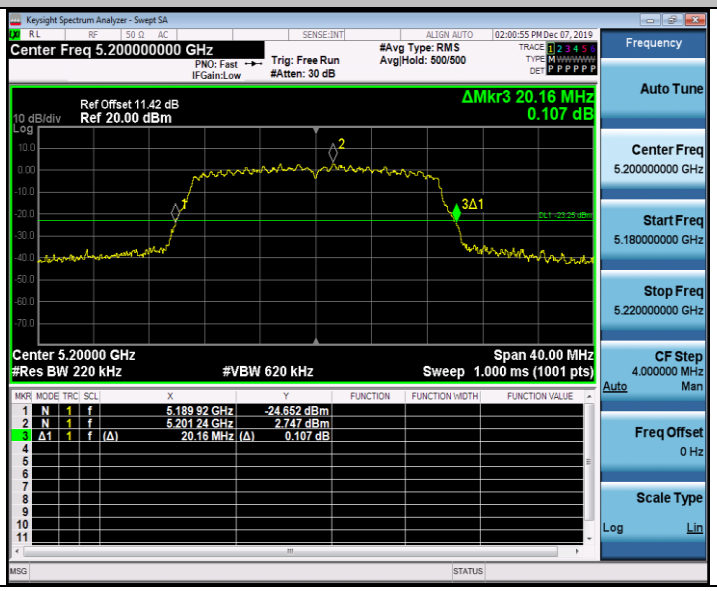

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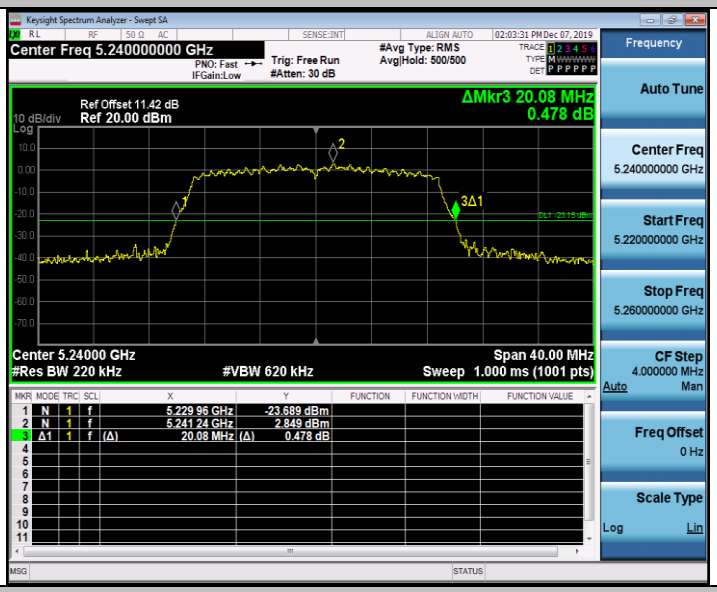

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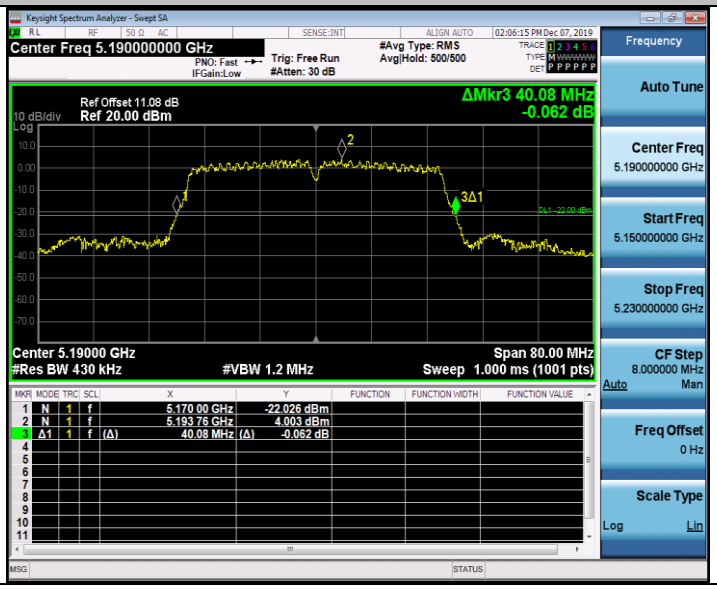

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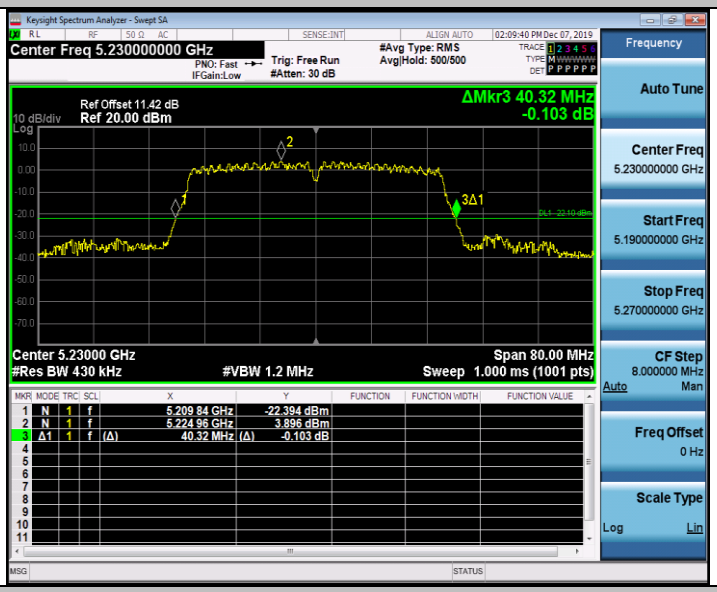

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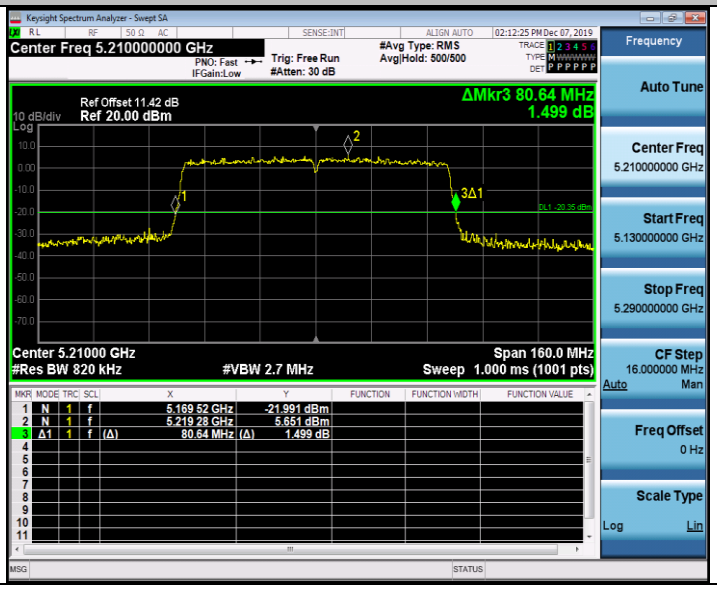
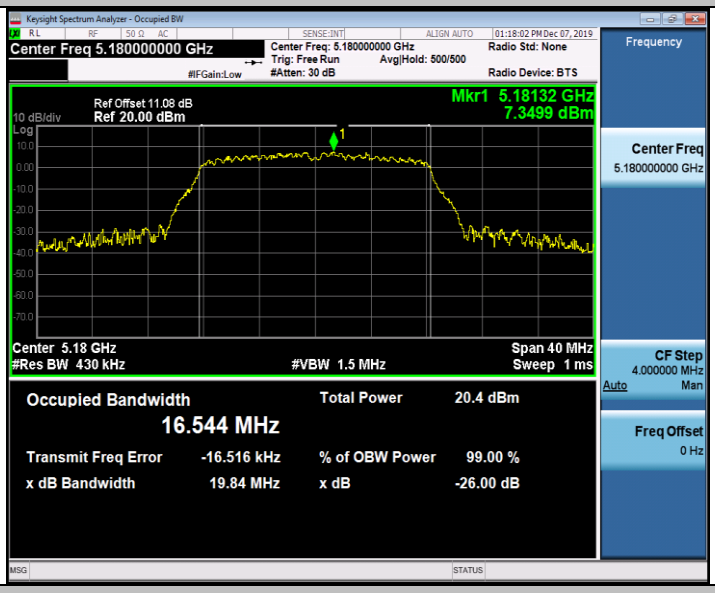


Appendix A2: Occupied channel bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1		16.544	5171.711	5188.255	---	PASS
			16.579	5191.693	5208.272	---	PASS
			16.575	5231.690	5248.265	---	PASS
11N20SISO	Ant1		17.548	5171.224	5188.772	---	PASS
			17.577	5191.199	5208.776	---	PASS
			17.591	5231.180	5248.771	---	PASS
11N40SISO	Ant1		36.481	5171.761	5208.242	---	PASS
			36.503	5211.752	5248.255	---	PASS
11AC20SISO	Ant1		17.719	5171.120	5188.839	---	PASS
			17.685	5191.136	5208.821	---	PASS
			17.695	5231.115	5248.810	---	PASS
11AC40SISO	Ant1		36.314	5171.803	5208.117	---	PASS
			36.222	5211.846	5248.068	---	PASS
			75.917	5172.041	5247.958	---	PASS

Test Graphs

11A_Ant1_5180

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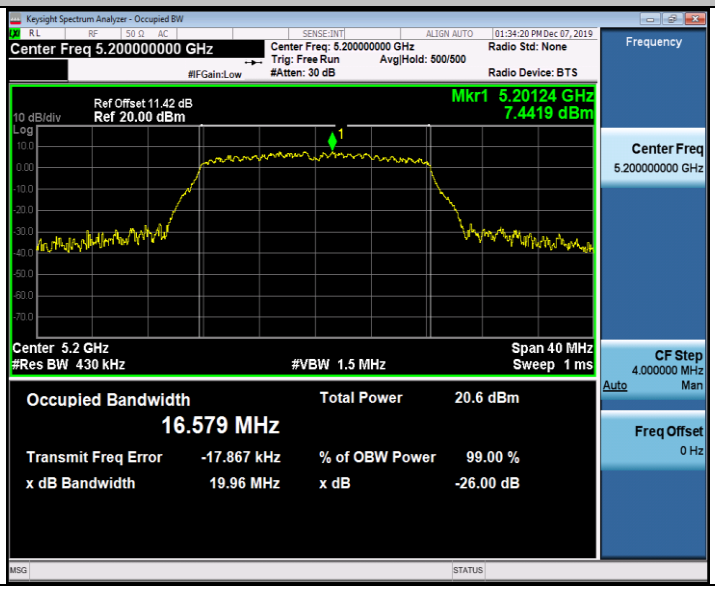

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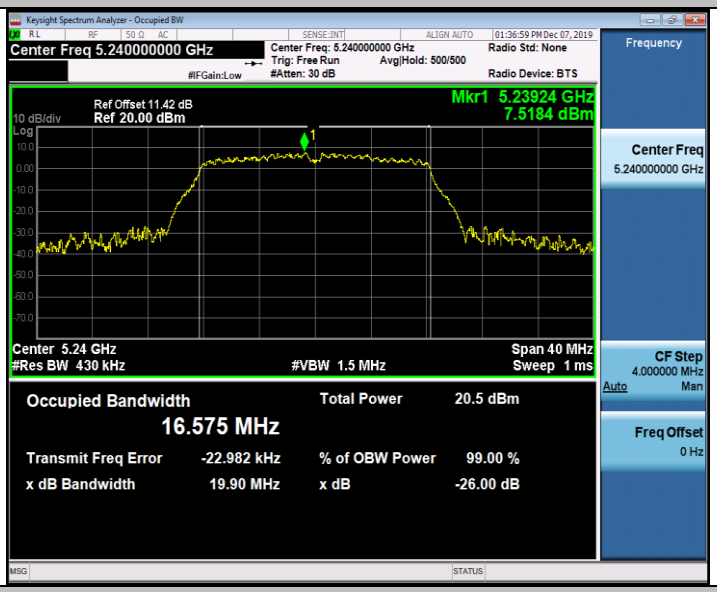
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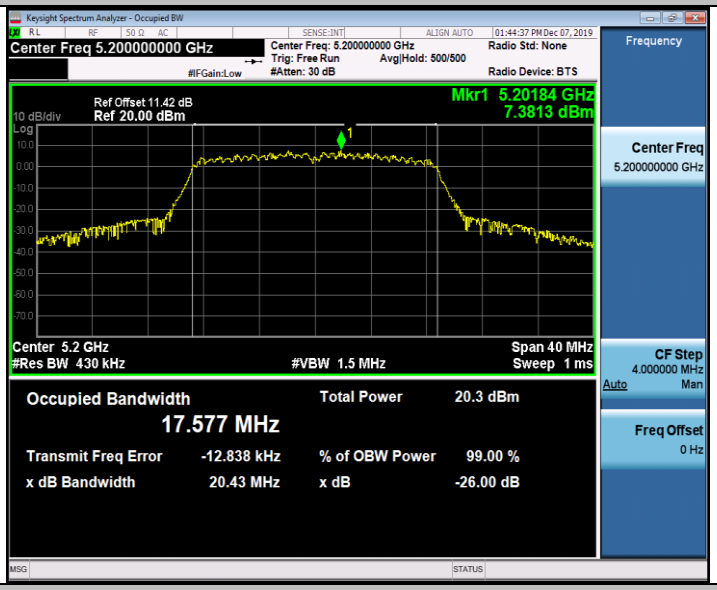
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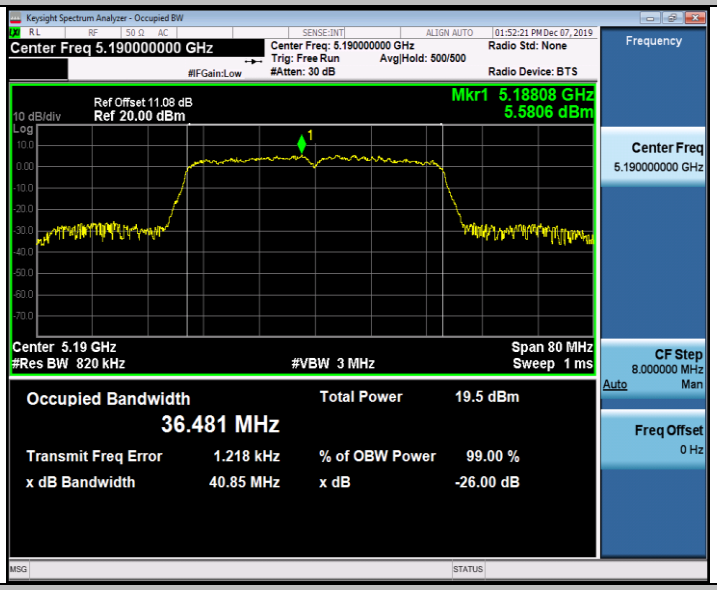
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11AC20SISO_Ant1_5180


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