RF Test Report

For

Condeco Ltd

Test Standards:	Part 15C Subpart C §15.247
Product Description:	V3 Desk Screen
Tested Model:	201850
FCC ID:	2ACML-201850
Classification	(DTS) Digital Transmission System
Report No.:	EC1911039RF01
Tested Date:	2019-12-10 to 2019-12-30
Issued Date:	2019-12-30
Prepared By:	Jerry Wang Jerry Wang / Engineer
Approved By:	Bacon Wu 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

Note: The test results in this report apply exclusively to the tested model / sample. Without written approval of Hunan Ecloud Testing Technology Co., Ltd., the test report shall not be reproduced except in full.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	2019.12.30	Valid	Original Report

TABLE OF CONTENTS

1 TEST LABORATORY 5

1.1 Test facility 5

2 GENERAL DESCRIPTION 6

2.1 Applicant 6
2.2 Manufacturer 6
2.3 General Description Of EUT 6
2.4 Modification of EUT 7
2.5 Applicable Standards 7

3 TEST CONFIGURATION OF EQUIPMENT UNDER TEST 8

3.1 Descriptions of Test Mode 8
3.2 Test Mode 9
3.3 Support Equipment 10
3.4 Test Setup 10
3.5 Measurement Results Explanation Example 12

4 TEST RESULT 13

4.1 DTS and Occupied Channel Bandwidth Measurement 13
4.2 Maximum Conducted Output Power Measurement 14
4.3 Maximum Power Spectral Density Measurement 15
4.4 Band Edges and Spurious Emission Measurement 16
4.5 Radiated Band Edges and Spurious Emission Measurement 17
4.6 AC Conducted Emission Measurement 126
4.7 Antenna Requirements 129

5 LIST OF MEASURING EQUIPMENT 130

6 UNCERTAINTY OF EVALUATION 132

Appendix A: DTS Bandwidth 133
Appendix B: Occupied Channel Bandwidth 140
Appendix C: Maximum conducted output power 147
Appendix D: Duty Cycle 154
Appendix E: Maximum power spectral density 161
Appendix F: Band edge measurements 168
Appendix G: Conducted Spurious Emission 173
Appendix H: Setup Photographs 193

Summary Of Test Result

FCC Rule	Description	Limit	Result	Remark
15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
-	99% Bandwidth	-	Pass	-
15.247(b)(3)	Peak Output Power	≤ 30dBm	Pass	-
15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
15.247(d)	Conducted Band Edges and Spurious Emission	≤ 20dBc	Pass	-
15.247(d)	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 7.22 dB at 4874 MHz
15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 20.43 dB at 0.442 MHz
15.203 & 15.247(b)	Antenna Requirement	15.203 & 15.247(b)	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

Condeco Ltd
8th Floor Exchange Tower, 2 Harbour Exchange Square. London. E14 9GE London United Kingdom

2.2 Manufacturer

Condeco Ltd
8th Floor Exchange Tower, 2 Harbour Exchange Square. London. E14 9GE London United Kingdom

2.3 General Description Of EUT

Product	V3 Desk Screen
Model No.	201850
Additional No.	N/A
Difference Description	N/A
FCC ID	2ACML-201850
Power Supply	5Vdc
Modulation Technology	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Type	802.11b : DSSS 802.11g/n : OFDM
Operating Frequency	2412-2462MHz
Number Of Channel	11
Max. Output Power	802.11b : 16.21 dBm (0.0418 W) 802.11g : 13.89 dBm (0.0245 W) 802.11n HT20 : 13.46 dBm (0.0222 W) 802.11n HT40 : 12.66 dBm (0.0185 W)
Antenna Type	Ceramics Antenna with -0.94dBi gain
HW Version	201850R14
SW Version	V8.1.0
I/O Ports	Refer to user's manual
Cable Supplied	USB cable: Shielded, Undetachable, 2.0m

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.

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 C §15.247
- ANSI C63.10-2013
- KDB 558074 D01 15.247 Meas Guidance v05r02

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 Descriptions of Test Mode

11 channels are provided for 802.11b, 802.11g and 802.11n(HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

7 channels are provided for 802.11n(HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
		7	2442 MHz
		8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz		
5	2432 MHz		
6	2437 MHz		

The transmitter has a maximum peak conducted output power as follows:

Frequency Range(MHz)	Mode	Rate	Output Power(dBm)
2412~2462	802.11b	1Mbps	16.21
2412~2462	802.11g	6Mbps	13.89
2412~2462	802.11n HT20	MCS0	13.46
2422~2452	802.11n HT40	MCS0	12.66

a. Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

3.2 Test Mode

3.2.1 Antenna Port Conducted Measurement

Summary table of Test Cases				
Test Item	**Modulation**			
	802.11 b	**802.11 g**	**802.11n HT20**	**802.11n HT40**
Conducted Test Cases	Mode 1: CH01 Mode 2: CH06 Mode 3: CH011	Mode 1: CH01 Mode 2: CH06 Mode 3: CH011	Mode 1: CH01 Mode 2: CH06 Mode 3: CH011	Mode 1: CH03 Mode 2: CH06 Mode 3: CH09

3.2.2 Radiated Emission Test (Below 1GHz)

Radiated Test Cases	**802.11 b**
	Mode 1: CH01

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. 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 Emission Test (Above 1GHz)

Test Item	**Modulation**			
	802.11 b	**802.11 g**	**802.11n HT20**	**802.11n HT40**
Radiated Test Cases	Mode 1: CH01 Mode 2: CH06 Mode 3: CH11	Mode 1: CH01 Mode 2: CH06 Mode 3: CH11	Mode 1: CH01 Mode 2: CH06 Mode 3: CH11	Mode 1: CH03 Mode 2: CH06 Mode 3: CH09

Note : 1. The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z 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. For frequency above 18GHz, the measured value is much lower than the limit, therefore, it is not reflected in the report.

3.2.4 Power Line Conducted Emission Test:

AC Conducted Emission	Mode 1 : BT Tethering+WLAN Link+NFC+RFID+Charging from Adapter

3.3 Support Equipment

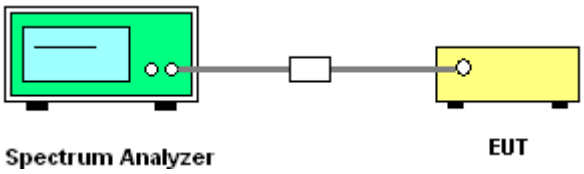
Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	NETGARE	R7800	PY315100319	N/A	unshielded AC I/P cable1.2 m
2.	Notebook	Lenovo	E470C	FCC DoC	N/A	shielded cable DC O/P 1.8 m unshielded AC I/P cable1.2 m
3.	USB Power Adapter	Apple	A1401	FCC DoC	N/A	N/A

3.4 Test Setup

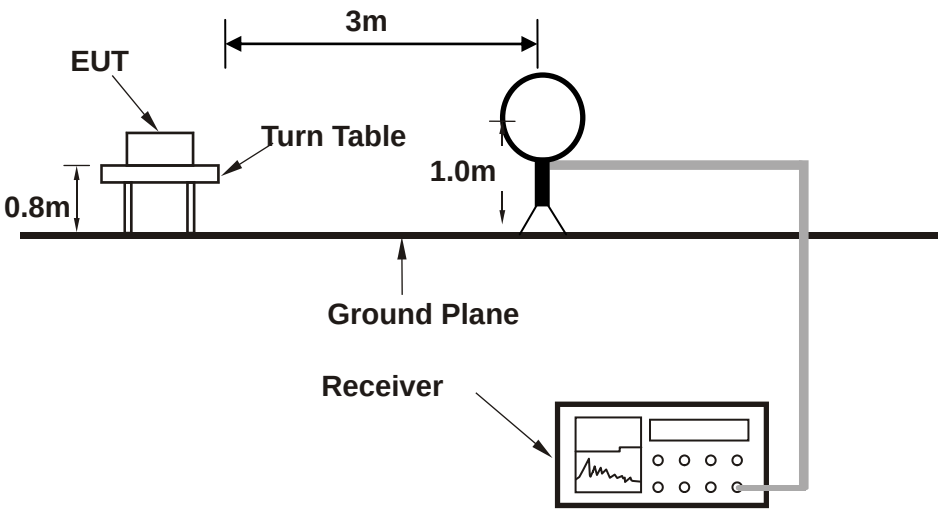
The EUT is continuously communicating to the WIFI tester during the tests.

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

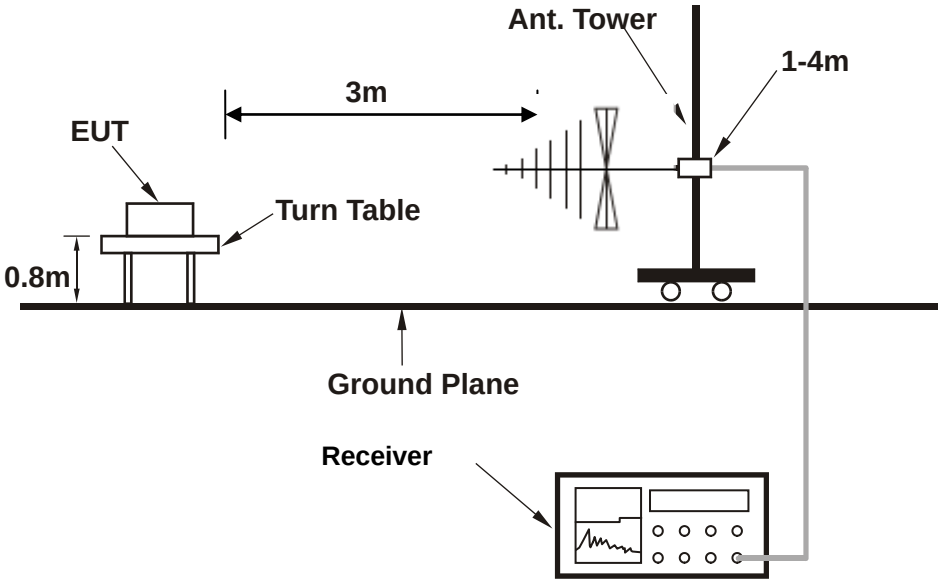
Setup diagram for Conducted Test



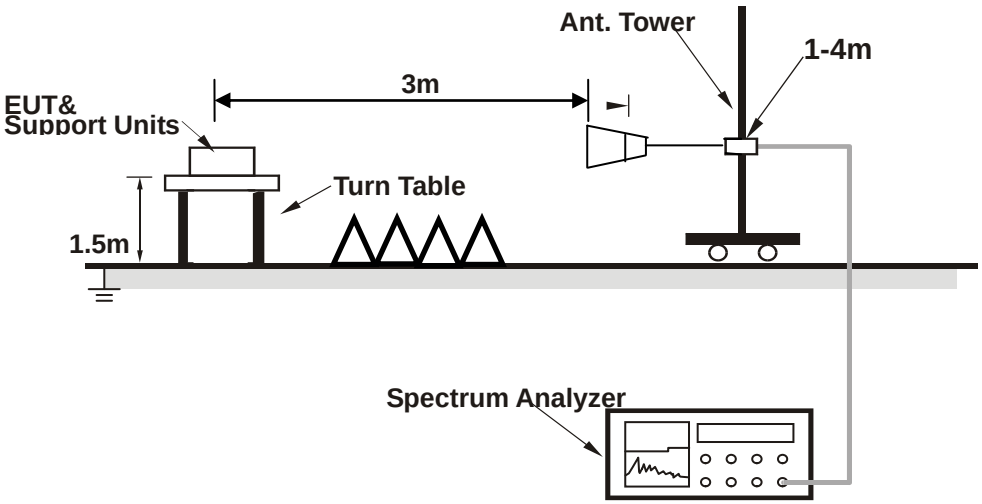
Setup diagram for Raidation(9KHz~30MHz) Test



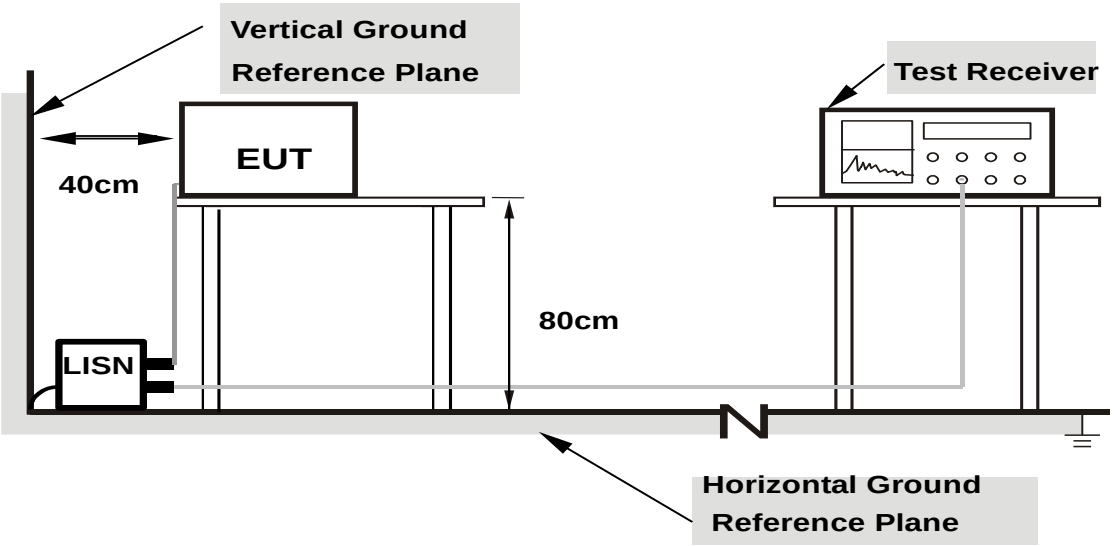
Setup diagram for Raidation(Below 1G) Test



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 DTS and Occupied Channel Bandwidth Measurement

4.1.1 Limit of 6dB Bandwidth

FCC §15.247 (a) (2)

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

4.1.2 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v05r02.
2. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
3. Turn on the EUT and connect it to measurement instrument.
4. Set to the maximum power setting and enable Transmitting the EUT transmit continuously
5. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
6. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) setting should be 1%-5% of OBW, please revise and set the Video bandwidth (VBW) ≥3* RBW.

4.1.3 Test Result of 6dB Bandwidth

Refer to Appendix A of this test report.

4.1.4 Test Result of 99% Bandwidth

Refer to Appendix B of this test report.

4.2 Maximum Conducted Output Power Measurement

4.2.1 Limit of Output Power

FCC §15.247 (b)(3)

For systems using digital modulation in the 2400-2483.5 MHz bands: 30dBm.

4.2.2 Test Procedures

1. The testing follows the Measurement Procedure of ANSI C63.10-2013 section 11.9.2.2.4 Measurement using a spectrum analyzer.
2. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
3. Turn on the EUT and connect it to spectrum analyzer.
4. Set to the maximum power setting and enaBle Transmitting the EUT transmit continuously
5. Measure the duty cycle, x, of the transmitter output signal as described in below:
   a. Set the center frequency of the instrument to the center frequency of the transmission.
   b. Set RBW to the largest availaBle Transmitting value.
   c. Set detector = peak
6. Set span to at least 1.5*OBW.Set RBW=510KHz,VBW=2MHz, Number of points in sweep ≥ 2/3* span, Sweep time = auto. Detector = RMS
7. Allow the sweep to “free run”. Trace average 100 traces in RMS mode
8. Compute power by integrating the spectrum across the OBW of the signal using the instrument’s Channel power measurement function with band limits set equal to the OBW band edges.
9. Add 10 log (1/x), where x is the duty cycle. The duty cycle factor has been compensated to the ‘offset ” of the spectrum analyser.

4.2.3 Test Result of Peak Output Power

Refer to Appendix C of this test report.

4.2.4 Test Result of Duty Cycle

Refer to Appendix D of this test report.

4.3 Maximum Power Spectral Density Measurement

4.3.1 Limits of Power Spectral Density

FCC§15.247(e)

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

4.3.2 Test Procedure

1. The testing follows Measurement Procedure 8.4 DTS maximum power spectral density level in the fundamental emission of ANSI C63.10-2013 section 11.9.2.2.4
2. Turn on the EUT and connect it to measurement instrument.
3. Measure the duty cycle, x, of the transmitter output signal as described in below:
   a. Set the center frequency of the instrument to the center frequency of the transmission.
   b. Set RBW to the largest availaBle Transmitting value.
   c. Set detector = peak
4. Set span to at least 1.5*OBW.Set RBW= 30 KHz,VBW=100 KHz, Number of points in sweep ≥ 2/3* span, Sweep time = auto.
5. Detector = power averaging (rms), Sweep time = auto couple, Trace mode = averaging (rms) mode over a minimum of 100 traces. Use the peak marker function to determine the maximum power level.
6. Add 10 log (1/x), where x is the duty cycle.
7. Measure and record the results in the test report.
8. The Measured power density (dBm)/ 100kHz is a reference level and used as 30dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.
9. Add 10 log(1/x), where x is the duty cycle. The duty cycle factor has been compensated to the ‘offset ” of the spectrum analyser.

4.3.3 Test Result of Power Spectral Density

Refer to Appendix E of this test report.

4.4 Band Edges and Spurious Emission Measurement

4.4.1 Limit of Conducted Band Edges and Spurious Emission

FCC §15.247 (d)

Maximum conducted (average) output power was used to determine compliance, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).

4.4.2 Test Procedures

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument.
3. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
4. Measure and record the results in the test report.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

4.4.3 Test Result of Conducted Band Edges

Refer to Appendix F of this test report.

4.4.4 Test Result of Conducted Spurious Emission

Refer to Appendix G of this test report.

4.5 Radiated Band Edges and Spurious Emission Measurement

4.5.1 Limit of Radiated Band Edges and Spurious Emission

FCC §15.247 (d)

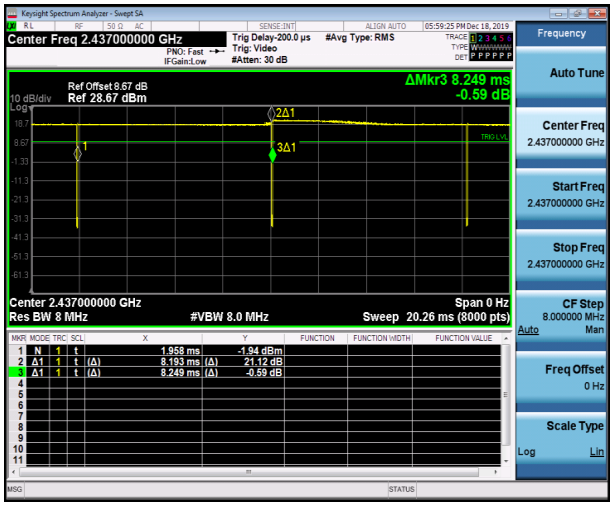
In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 30 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

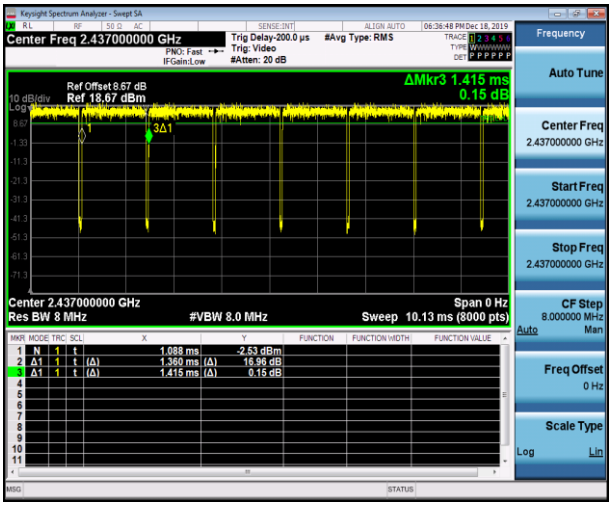
4.5.2 Test Procedures

1. 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.
2. The measurement distance is 3 meter.
3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz, RBW=1MHz for f>1GHz ; VBW RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
   (3) For average measurement:
   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.

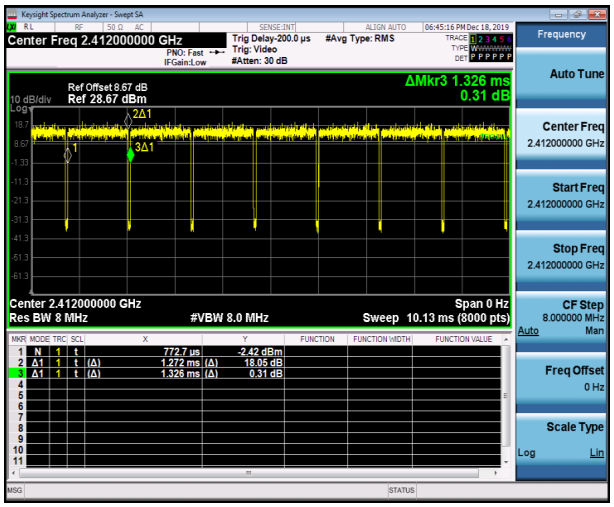
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	99.32	8.19	-	10Hz
802.11g	96.15	1.36	0.74	1kHz
802.11n HT20	95.89	1.27	0.79	1kHz
802.11n HT40	92.07	0.63	1.59	3kHz



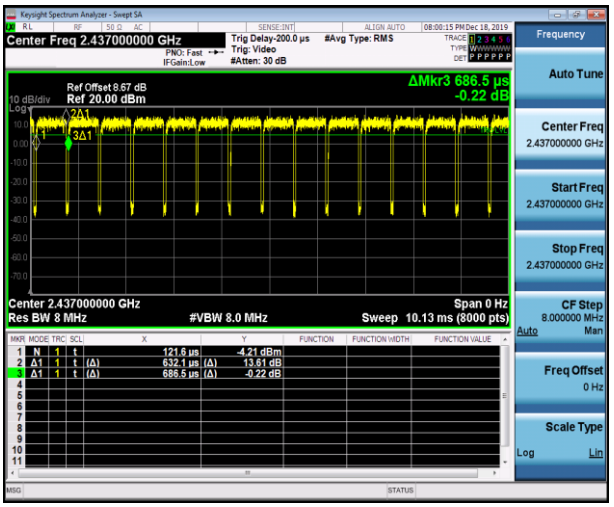
802.11b



802.11g



802.11n HT20



802.11n HT40

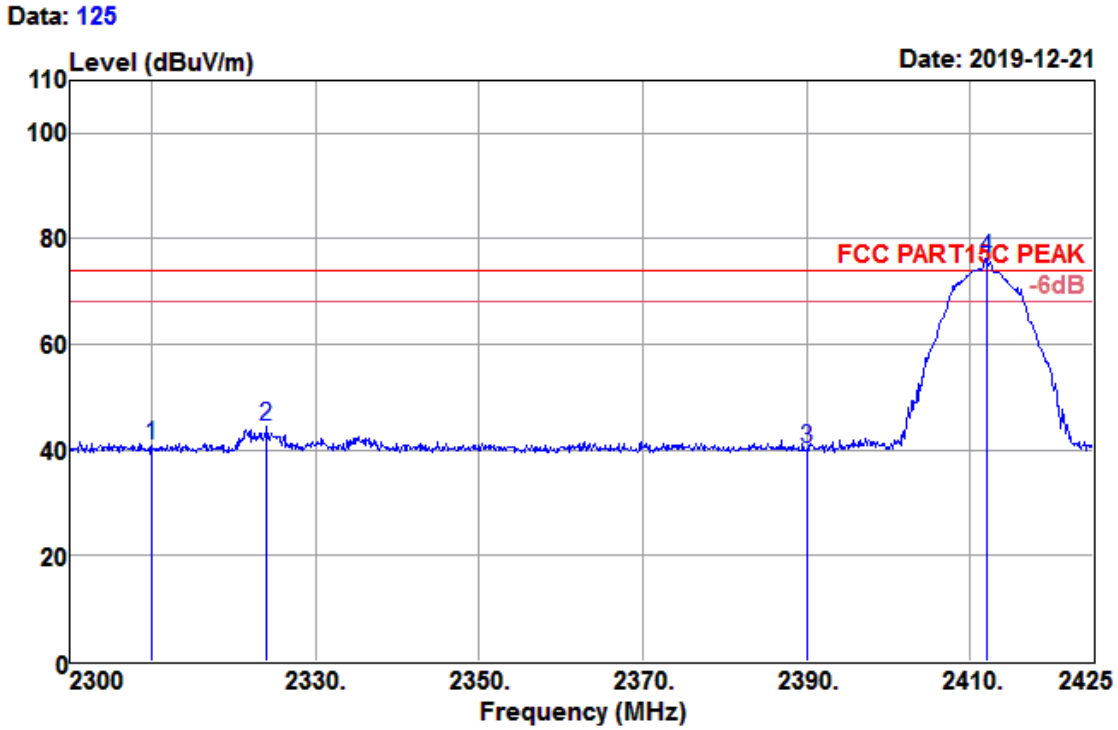
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

4.5.3 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.

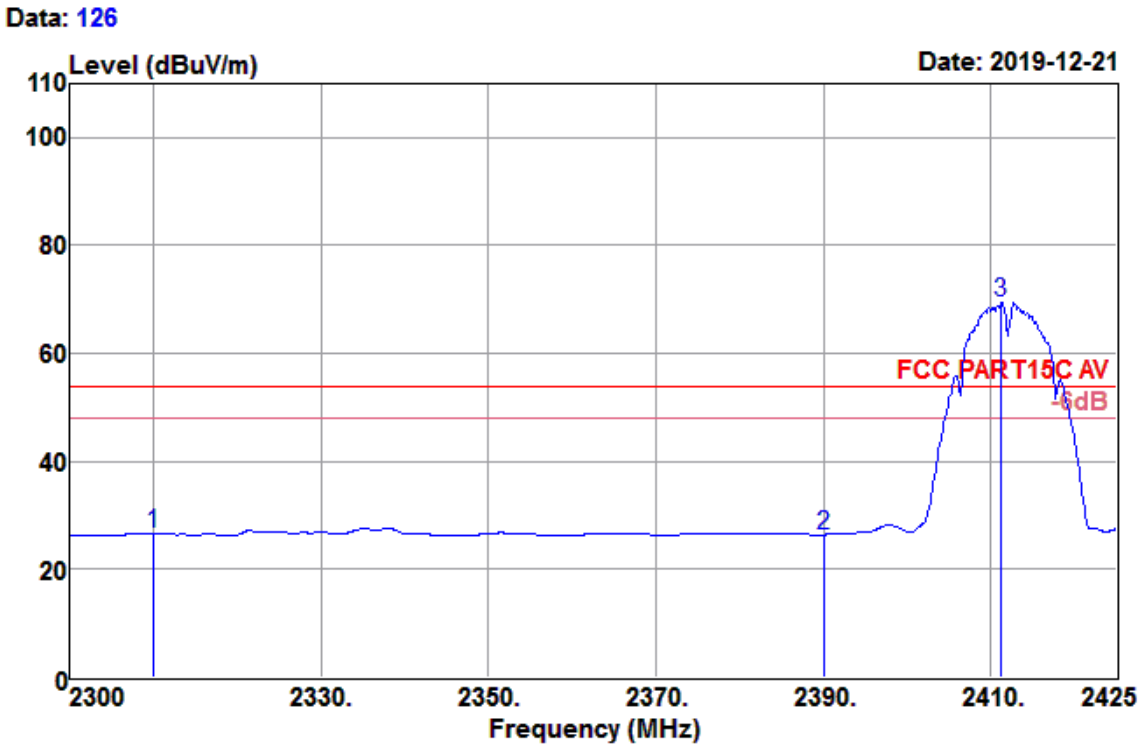
4.5.4 Test Result of Radiated Spurious at Band Edges

Test Mode :	802.11b CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Horizontal



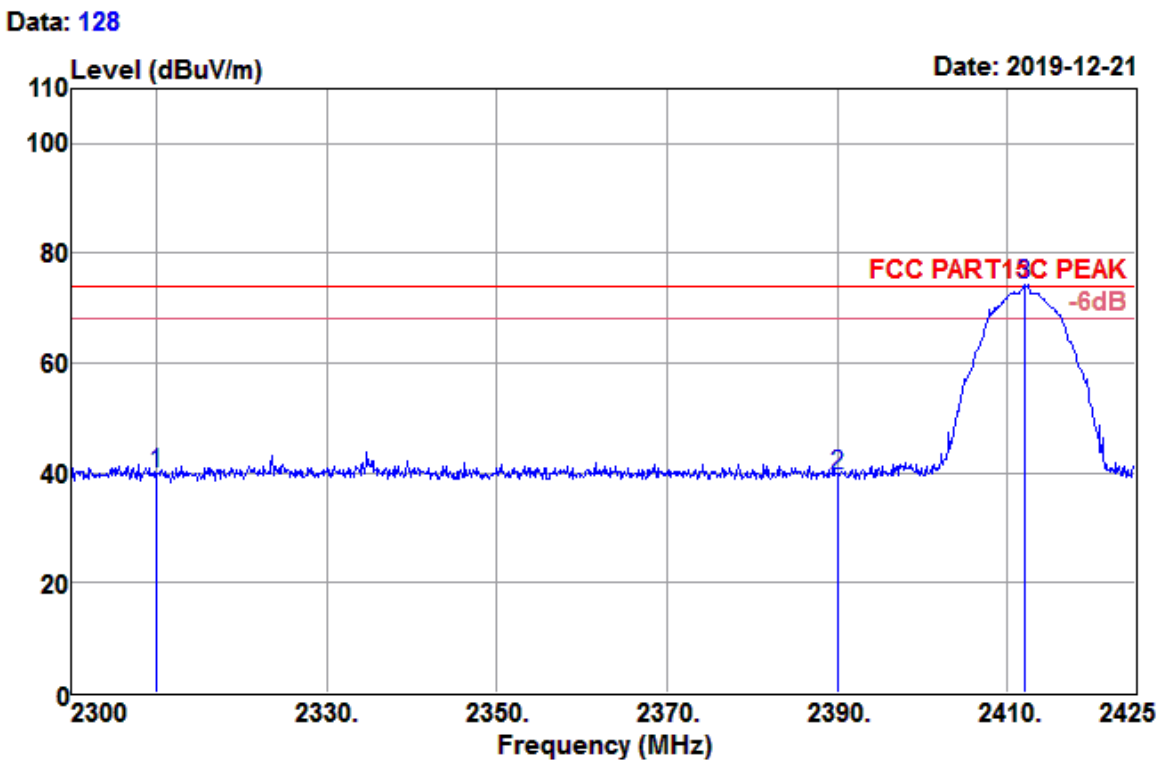
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	45.83	26.91	3.48	35.43	40.79	74.00	-33.21	Peak
2324.125	49.48	26.94	3.49	35.45	44.46	74.00	-29.54	Peak
2390.000	45.04	27.11	3.53	35.55	40.13	74.00	-33.87	Peak
2412.125	81.19	27.17	3.55	35.58	76.33	74.00	2.33	Peak

Test Mode :	802.11b CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Horizontal



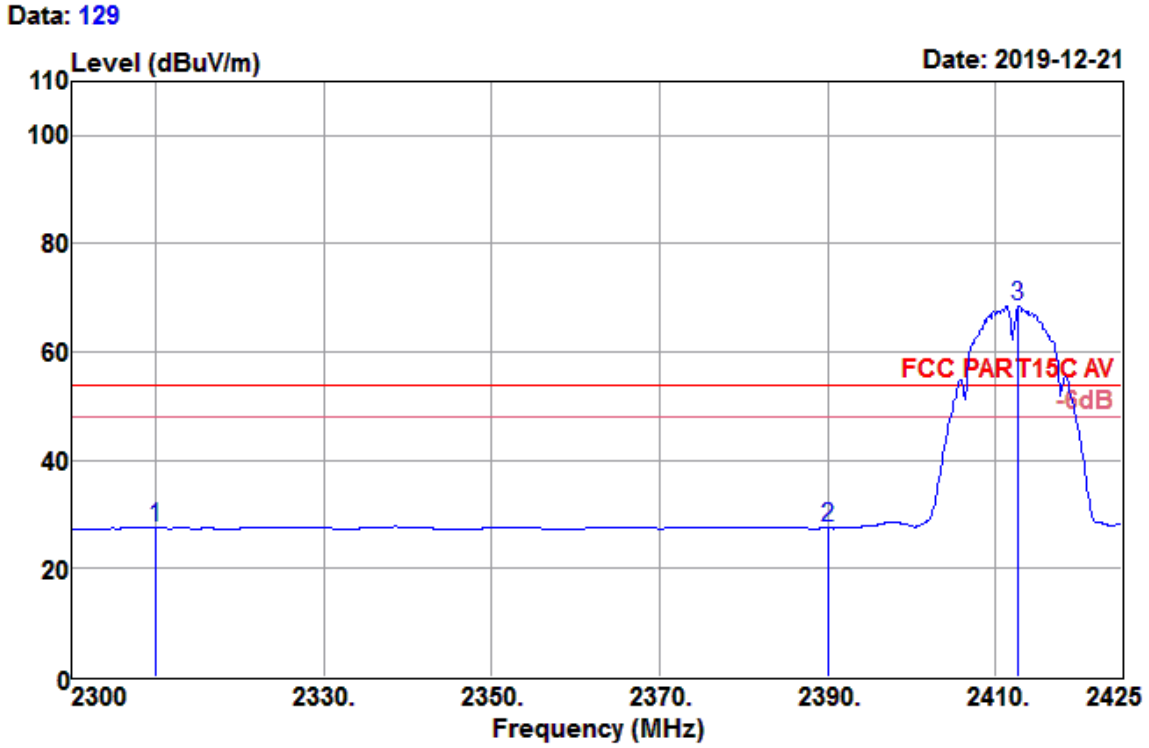
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	31.61	26.91	3.48	35.43	26.57	54.00	-27.43	Average
2390.000	31.31	27.11	3.53	35.55	26.40	54.00	-27.60	Average
2411.250	74.31	27.17	3.55	35.58	69.45	54.00	15.45	Average

Test Mode :	802.11b CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Vertical



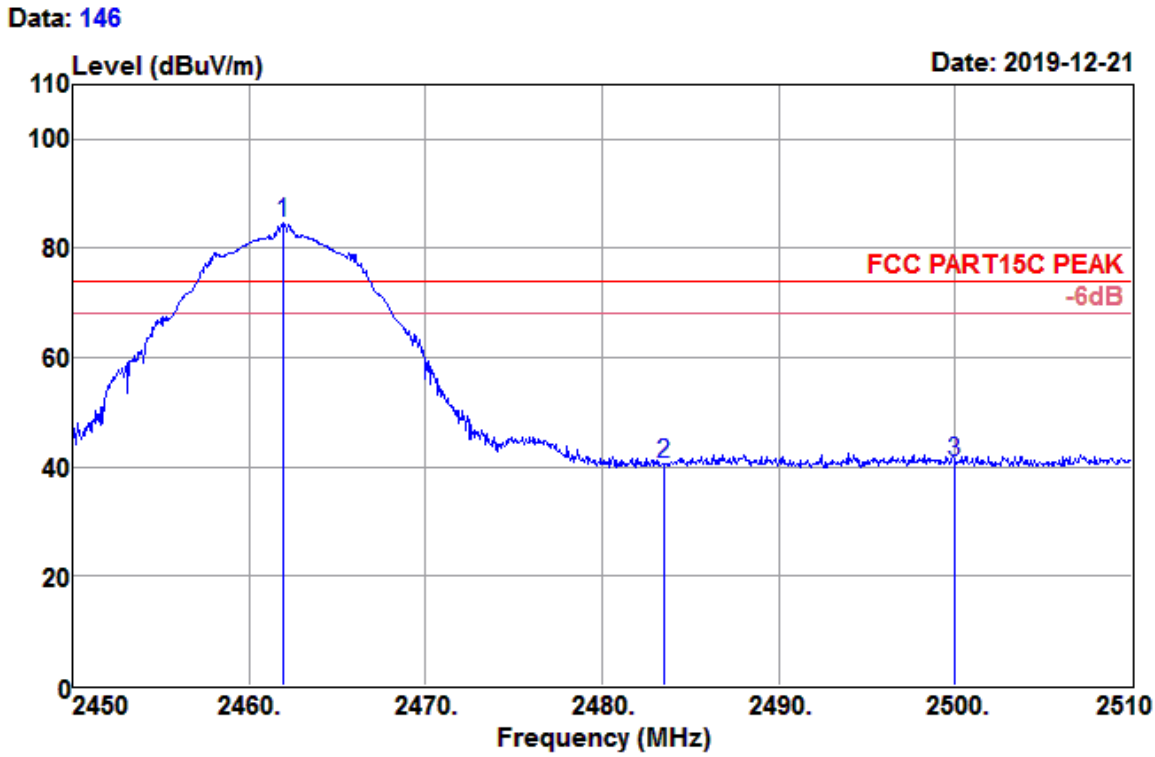
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	44.83	26.91	3.48	35.43	39.79	74.00	-34.21	Peak
2390.000	44.61	27.11	3.53	35.55	39.70	74.00	-34.30	Peak
2412.125	79.18	27.17	3.55	35.58	74.32	74.00	0.32	Peak

Test Mode :	802.11b CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Vertical



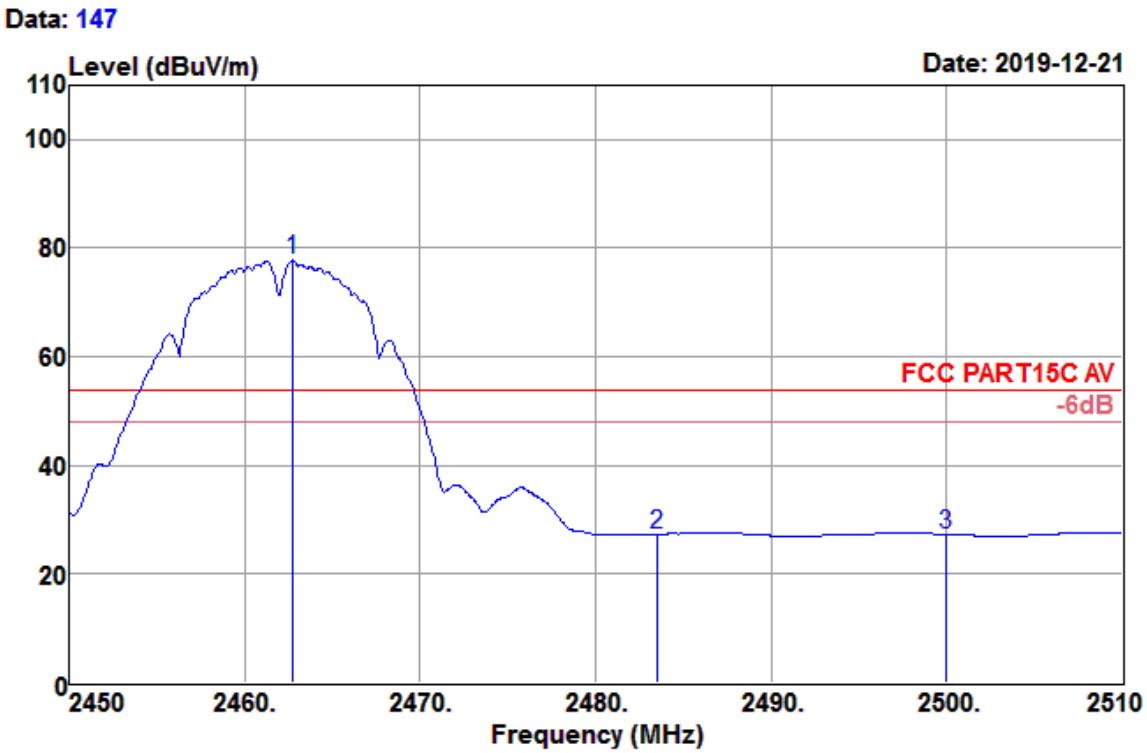
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	32.61	26.91	3.48	35.43	27.57	54.00	-26.43	Average
2390.000	32.37	27.11	3.53	35.55	27.46	54.00	-26.54	Average
2412.750	73.44	27.17	3.55	35.58	68.58	54.00	14.58	Average

Test Mode :	802.11b CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.45GHz~2.51GHz	**Polarization :**	Horizontal



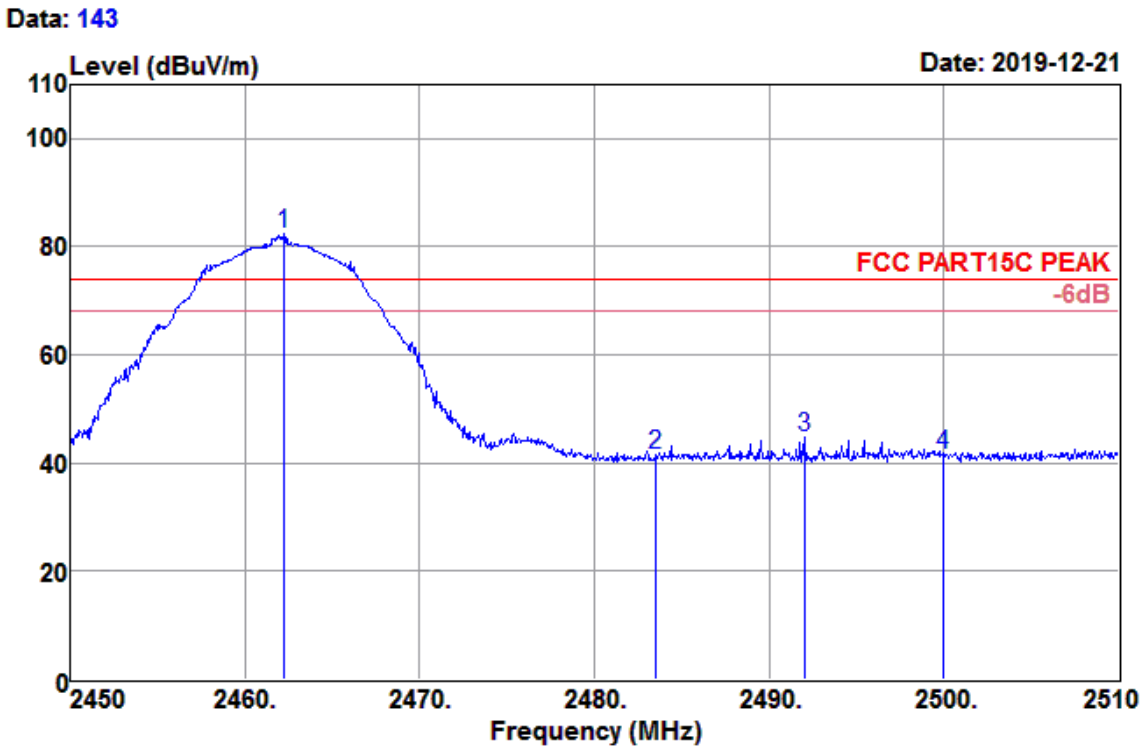
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2461.940	89.52	27.30	3.58	35.65	84.75	74.00	10.75	Peak
2483.500	45.28	27.36	3.59	35.68	40.55	74.00	-33.45	Peak
2500.000	45.52	27.40	3.60	35.70	40.82	74.00	-33.18	Peak

Test Mode :	802.11b CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.45GHz~2.51GHz	**Polarization :**	Horizontal



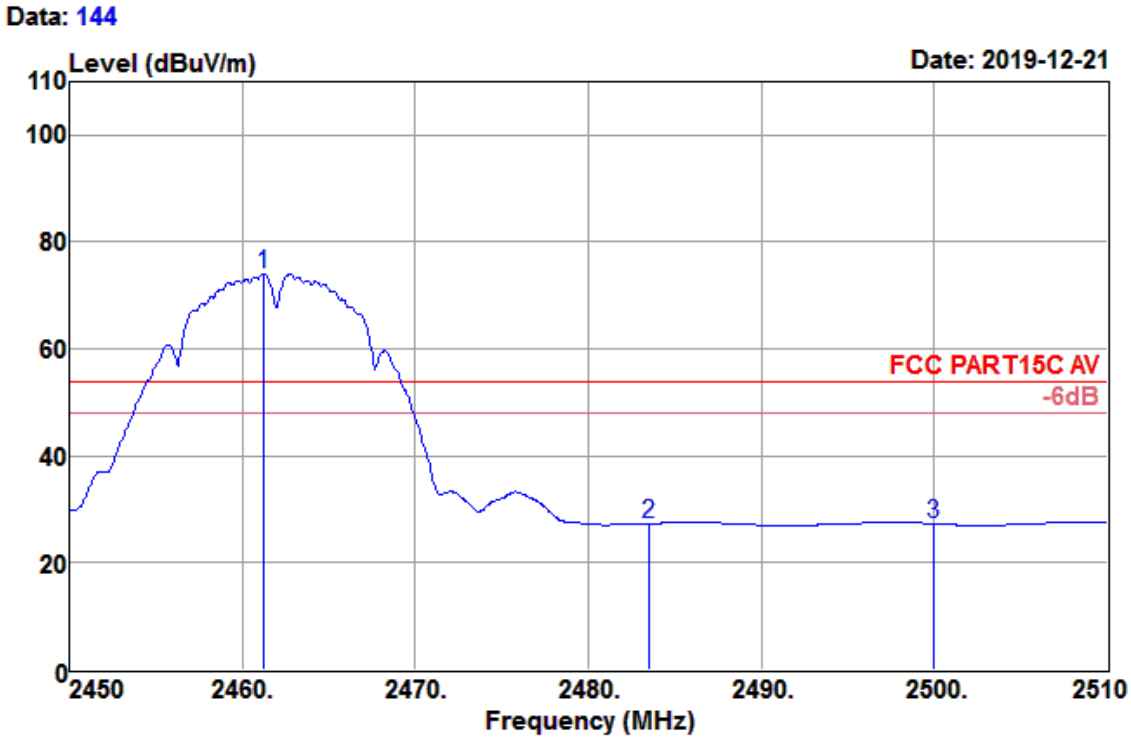
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2462.720	82.52	27.30	3.58	35.65	77.75	54.00	23.75	Average
2483.500	32.06	27.36	3.59	35.68	27.33	54.00	-26.67	Average
2500.000	32.03	27.40	3.60	35.70	27.33	54.00	-26.67	Average

Test Mode :	802.11b CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.45GHz~2.51GHz	**Polarization :**	Vertical



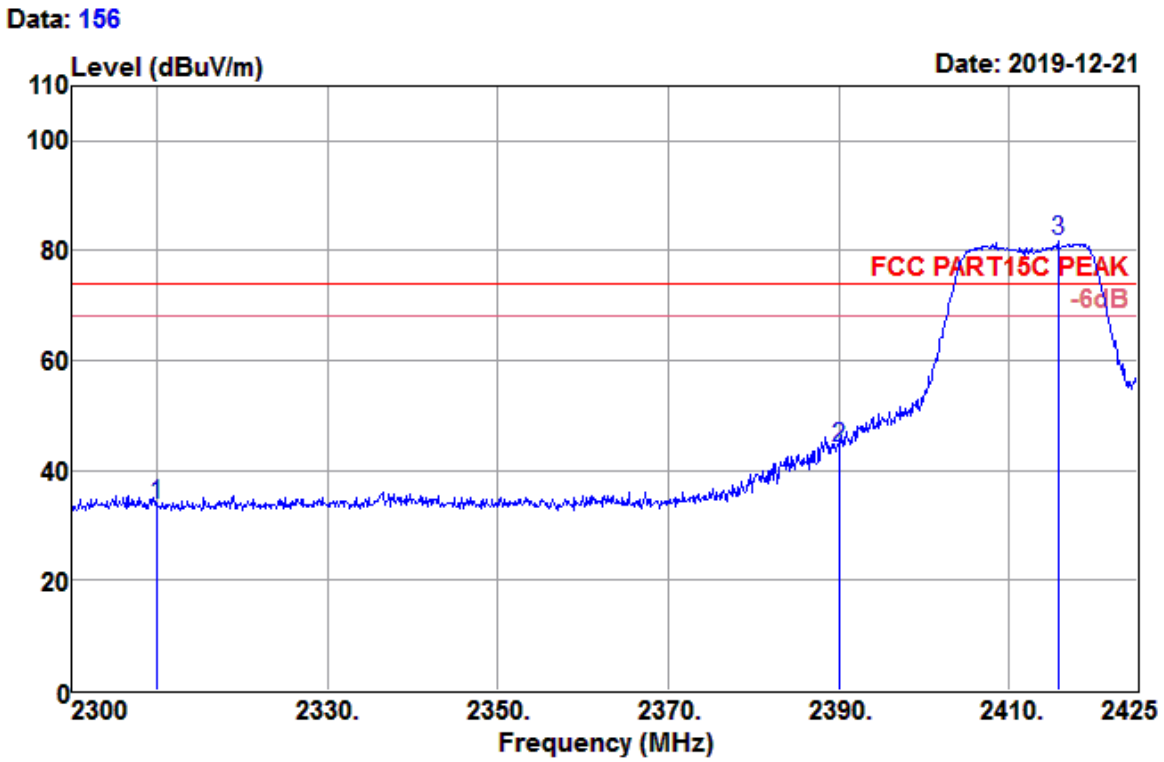
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2462.240	87.28	27.30	3.58	35.65	82.51	74.00	8.51	Peak
2483.500	46.26	27.36	3.59	35.68	41.53	74.00	-32.47	Peak
2492.000	49.51	27.38	3.60	35.69	44.80	74.00	-29.20	Peak
2500.000	46.24	27.40	3.60	35.70	41.54	74.00	-32.46	Peak

Test Mode :	802.11b CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.45GHz~2.51GHz	**Polarization :**	Vertical



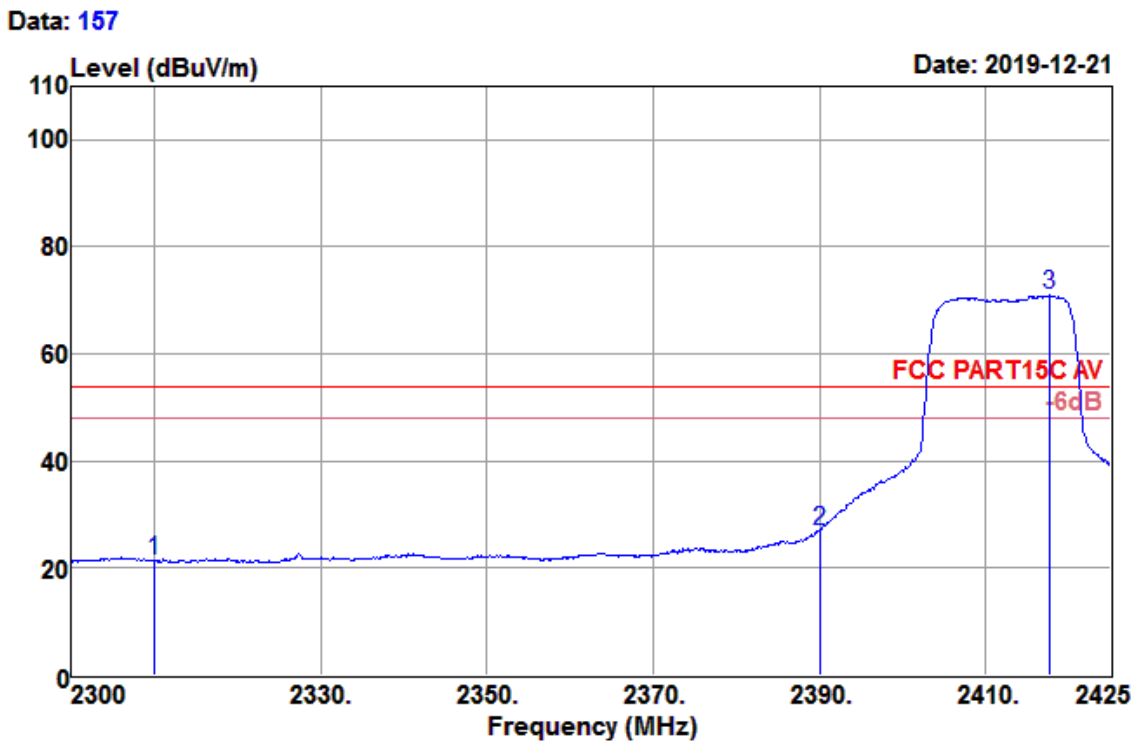
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2461.220	78.86	27.30	3.58	35.65	74.09	54.00	20.09	Average
2483.500	32.03	27.36	3.59	35.68	27.30	54.00	-26.70	Average
2500.000	32.02	27.40	3.60	35.70	27.32	54.00	-26.68	Average

Test Mode :	802.11g CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Horizontal



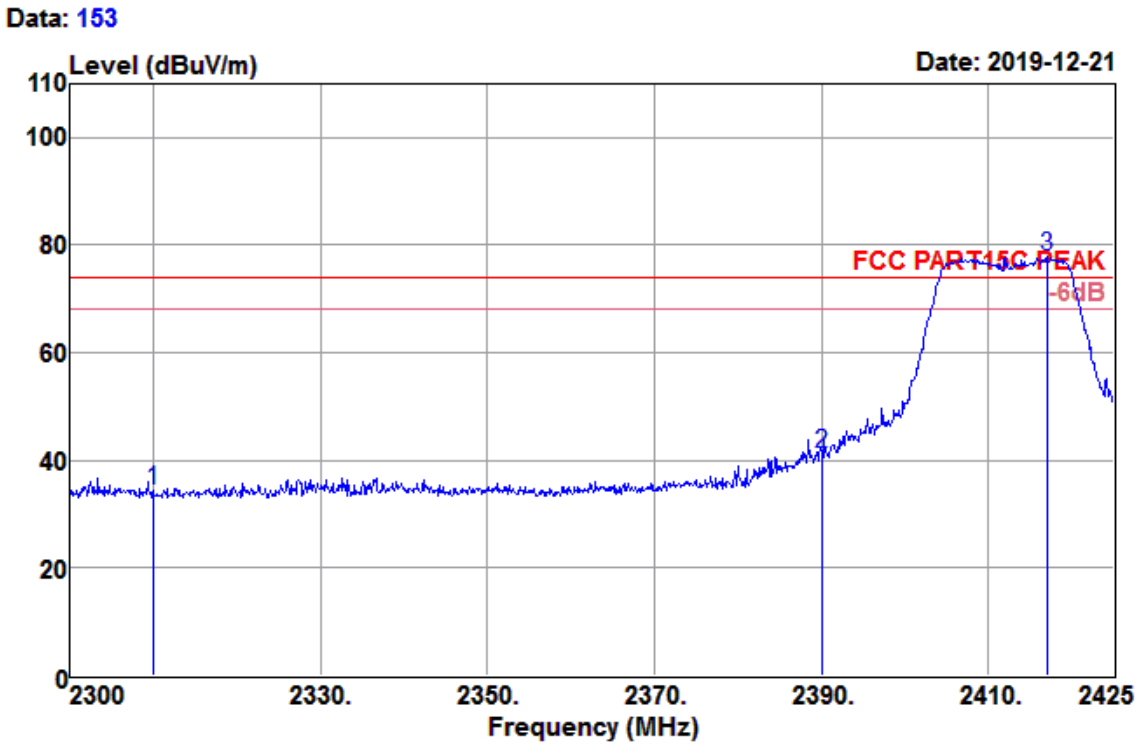
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	38.95	26.91	3.48	35.43	33.91	74.00	-40.09	Peak
2390.000	48.90	27.11	3.53	35.55	43.99	74.00	-30.01	Peak
2415.750	86.78	27.18	3.55	35.58	81.93	74.00	7.93	Peak

Test Mode :	802.11g CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Horizontal



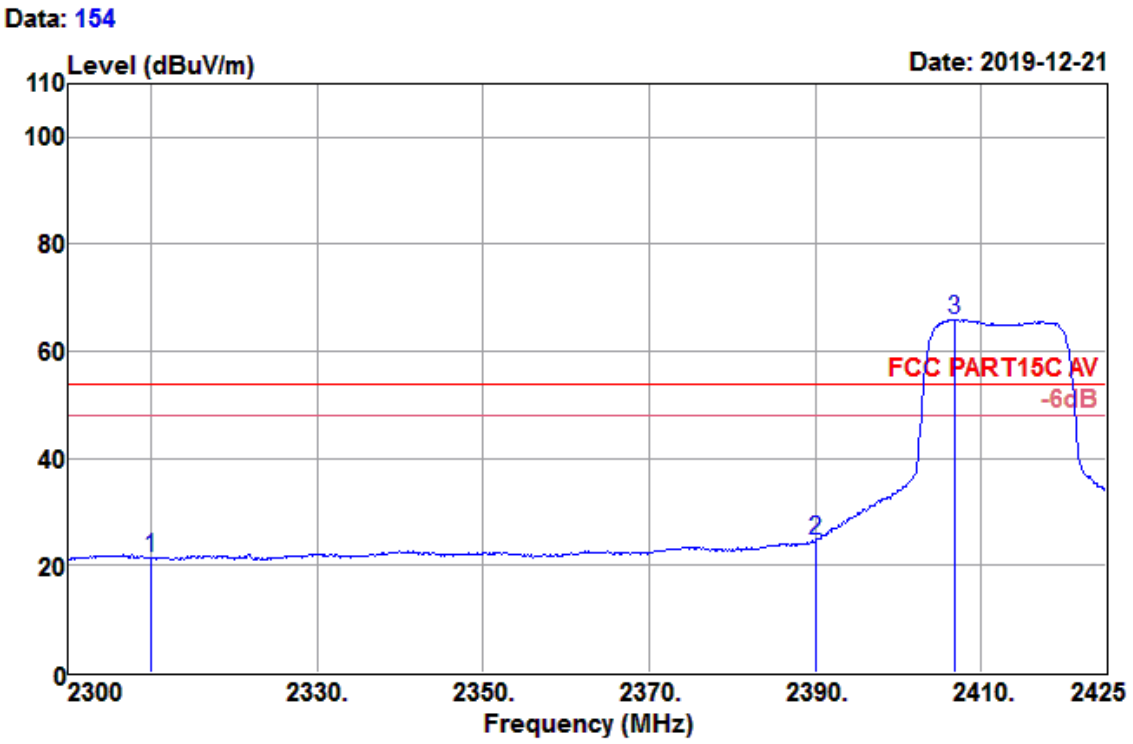
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	26.39	26.91	3.48	35.43	21.35	54.00	-32.65	Average
2390.000	32.00	27.11	3.53	35.55	27.09	54.00	-26.91	Average
2417.625	75.76	27.19	3.55	35.58	70.92	54.00	16.92	Average

Test Mode :	802.11g CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Vertical



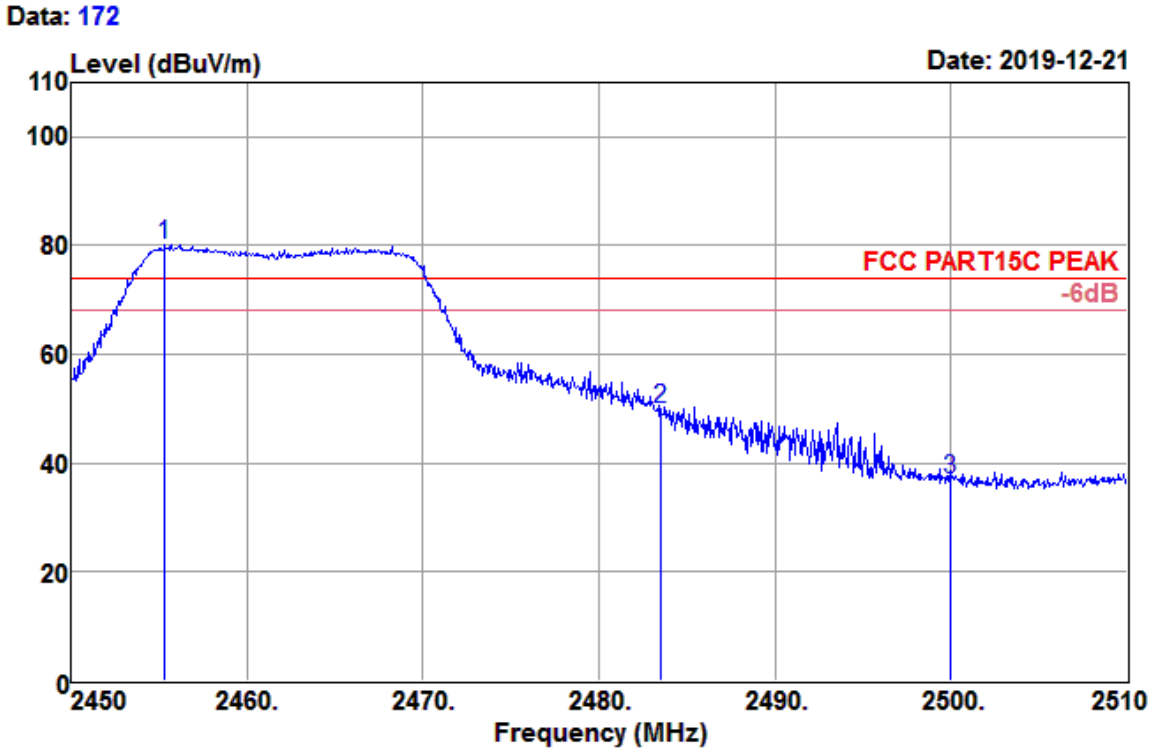
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	39.55	26.91	3.48	35.43	34.51	74.00	-39.49	Peak
2390.000	46.08	27.11	3.53	35.55	41.17	74.00	-32.83	Peak
2417.000	82.62	27.18	3.55	35.58	77.77	74.00	3.77	Peak

Test Mode :	802.11g CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Vertical



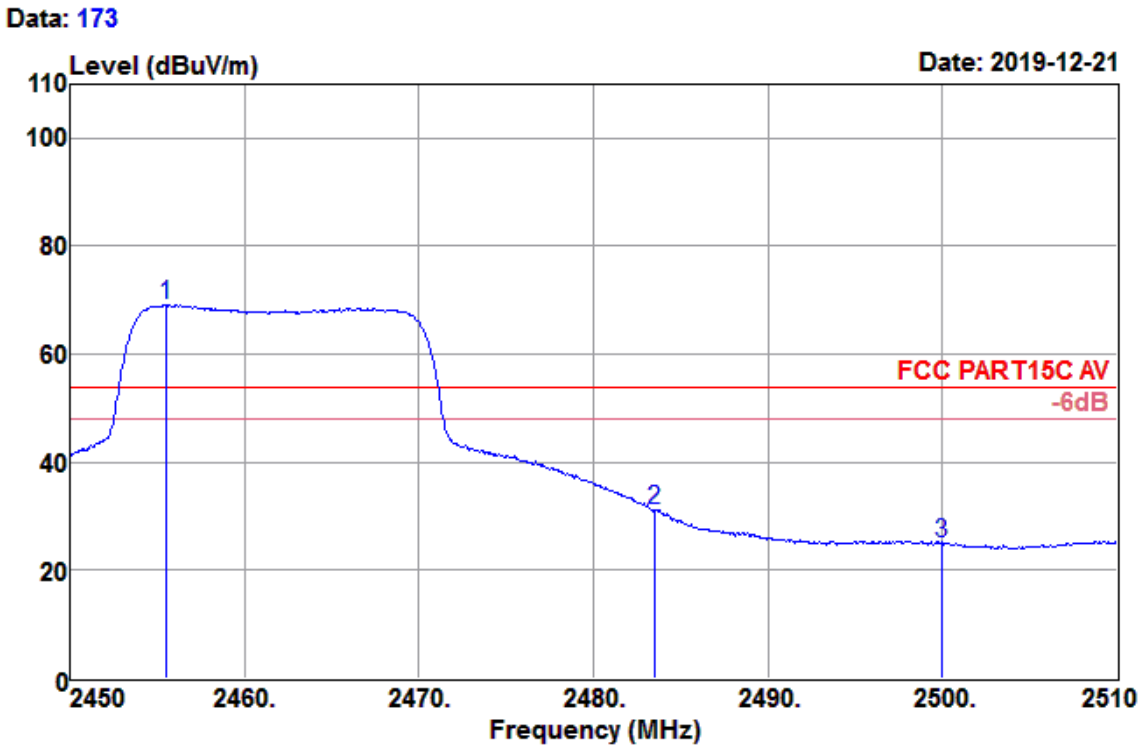
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	26.59	26.91	3.48	35.43	21.55	54.00	-32.45	Average
2390.000	29.51	27.11	3.53	35.55	24.60	54.00	-29.40	Average
2406.750	70.86	27.16	3.54	35.57	65.99	54.00	11.99	Average

Test Mode :	802.11g CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.45GHz~2.51GHz	**Polarization :**	Horizontal



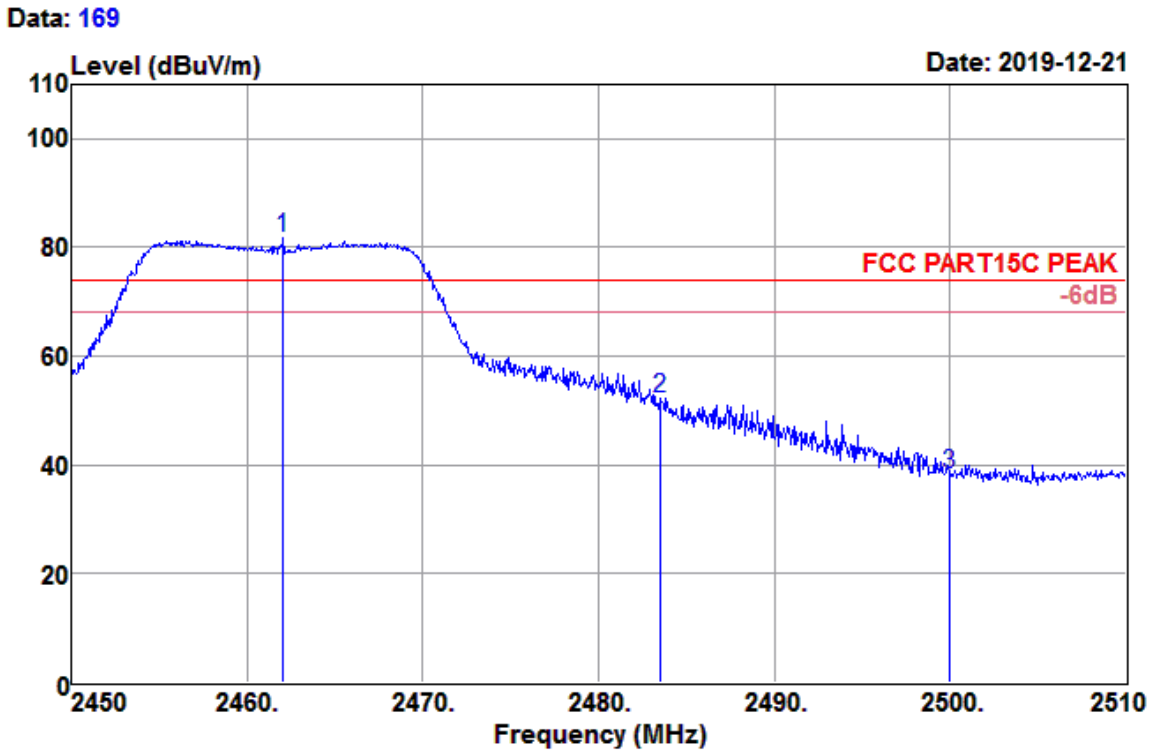
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2455.340	84.98	27.28	3.57	35.64	80.19	74.00	6.19	Peak
2483.500	54.69	27.36	3.59	35.68	49.96	74.00	-24.04	Peak
2500.000	41.84	27.40	3.60	35.70	37.14	74.00	-36.86	Peak

Test Mode :	802.11g CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.45GHz~2.51GHz	**Polarization :**	Horizontal



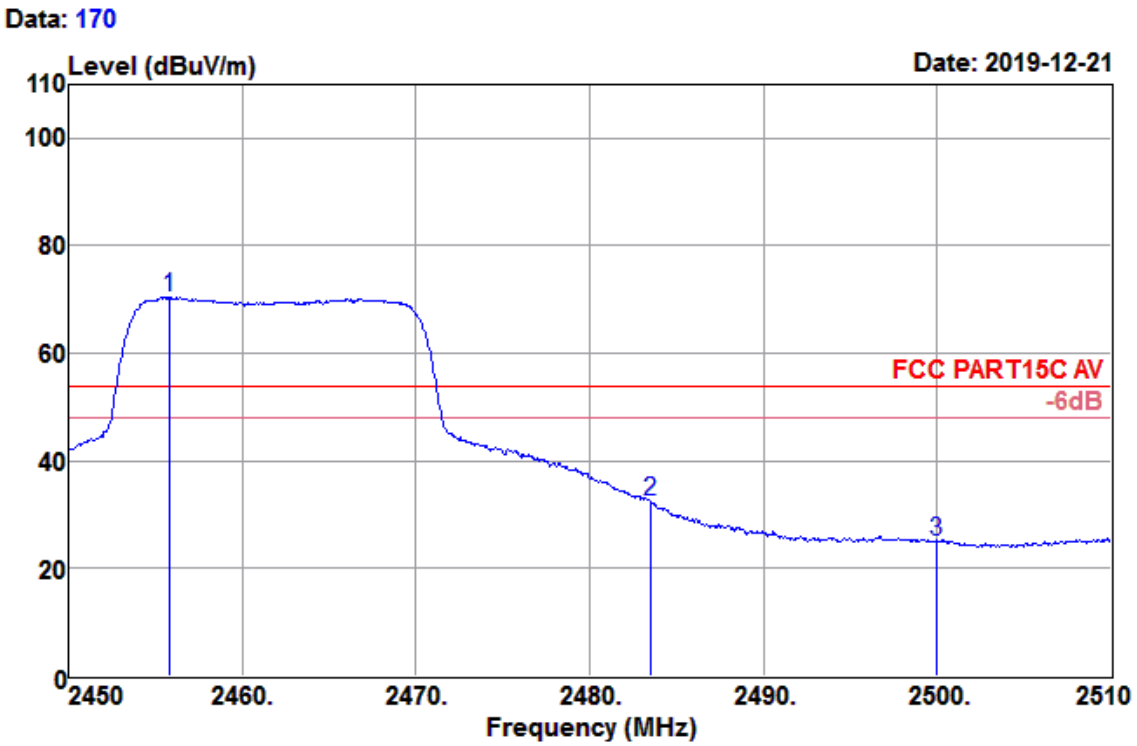
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2455.520	73.86	27.28	3.57	35.64	69.07	54.00	15.07	Average
2483.500	35.74	27.36	3.59	35.68	31.01	54.00	-22.99	Average
2500.000	29.83	27.40	3.60	35.70	25.13	54.00	-28.87	Average

Test Mode :	802.11g CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.45GHz~2.51GHz	**Polarization :**	Vertical



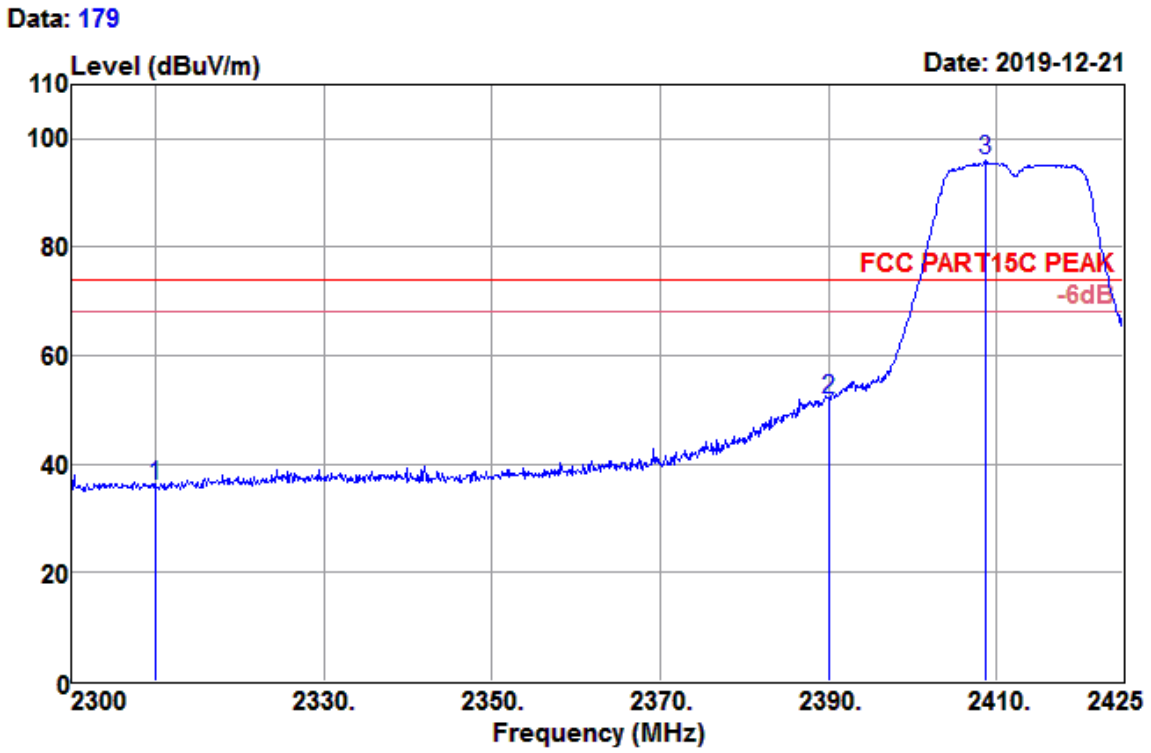
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2462.060	86.47	27.30	3.58	35.65	81.70	74.00	7.70	Peak
2483.500	56.91	27.36	3.59	35.68	52.18	74.00	-21.82	Peak
2500.000	43.01	27.40	3.60	35.70	38.31	74.00	-35.69	Peak

Test Mode :	802.11g CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.45GHz~2.51GHz	**Polarization :**	Vertical



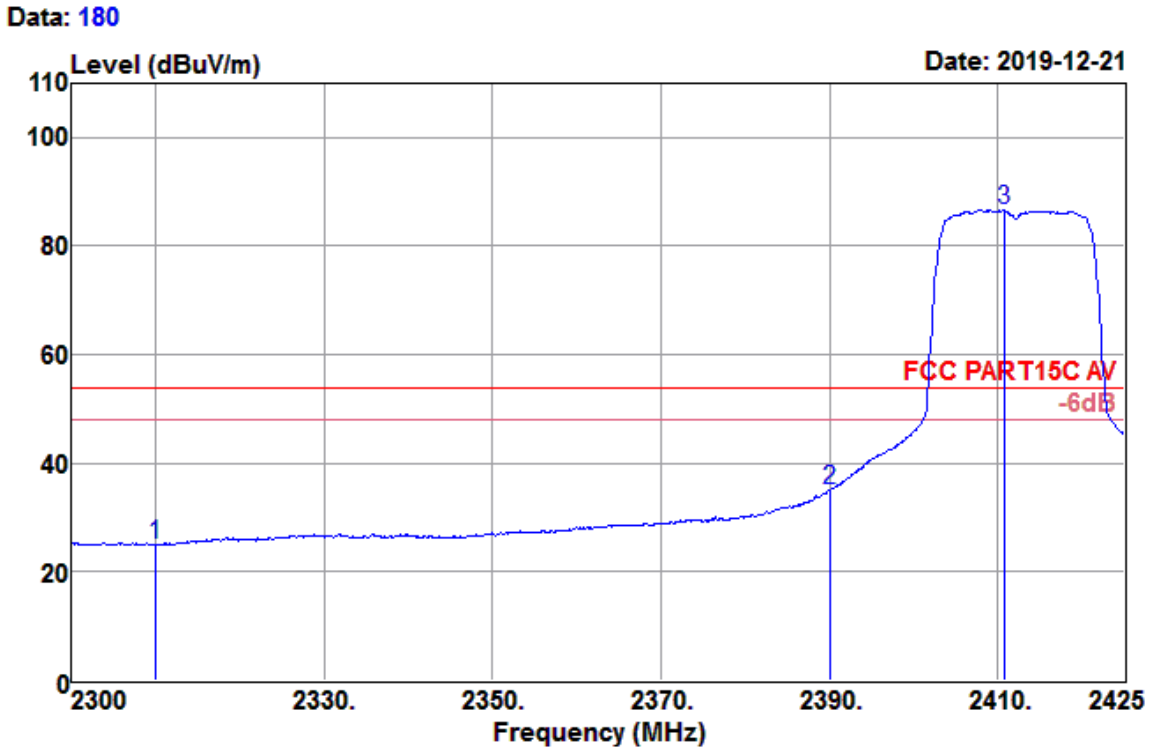
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2455.820	75.16	27.29	3.57	35.64	70.38	54.00	16.38	Average
2483.500	37.08	27.36	3.59	35.68	32.35	54.00	-21.65	Average
2500.000	29.63	27.40	3.60	35.70	24.93	54.00	-29.07	Average

Test Mode :	802.11n HT20 CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Horizontal



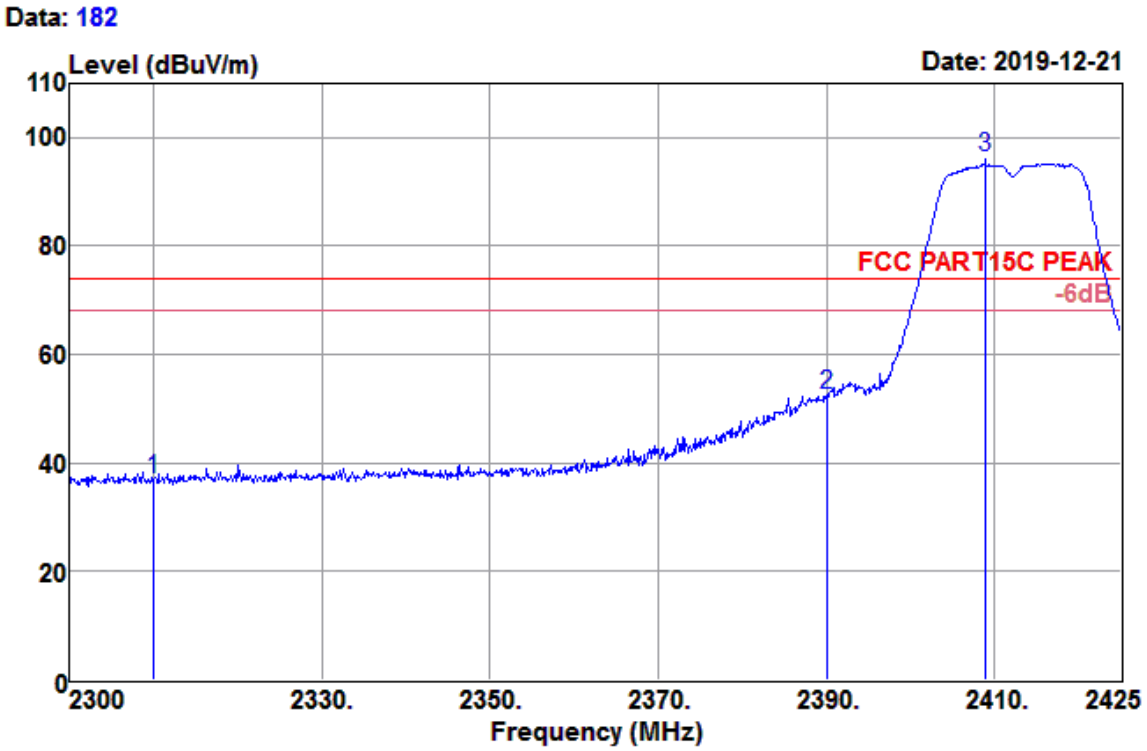
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	41.07	26.91	3.48	35.43	36.03	74.00	-37.97	Peak
2390.000	56.92	27.11	3.53	35.55	52.01	74.00	-21.99	Peak
2408.750	100.90	27.16	3.55	35.57	96.04	74.00	22.04	Peak

Test Mode :	802.11n HT20 CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Horizontal



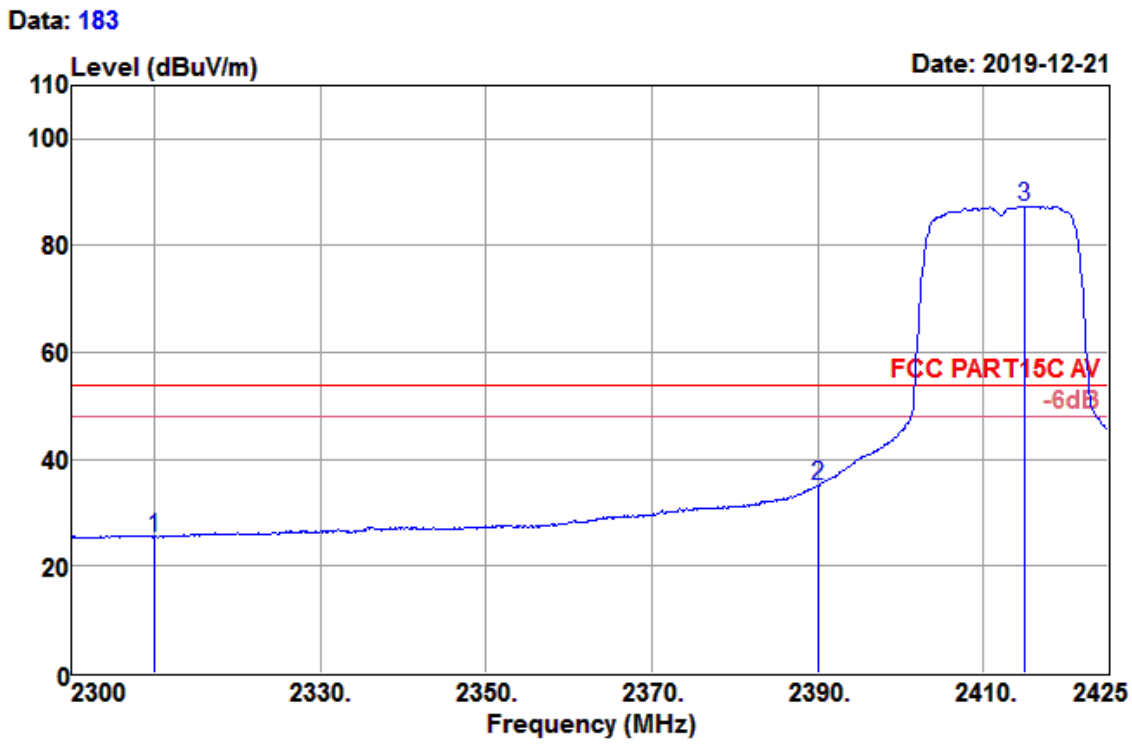
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	30.07	26.91	3.48	35.43	25.03	54.00	-28.97	Average
2390.000	39.83	27.11	3.53	35.55	34.92	54.00	-19.08	Average
2410.875	91.54	27.17	3.55	35.58	86.68	54.00	32.68	Average

Test Mode :	802.11n HT20 CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Vertical



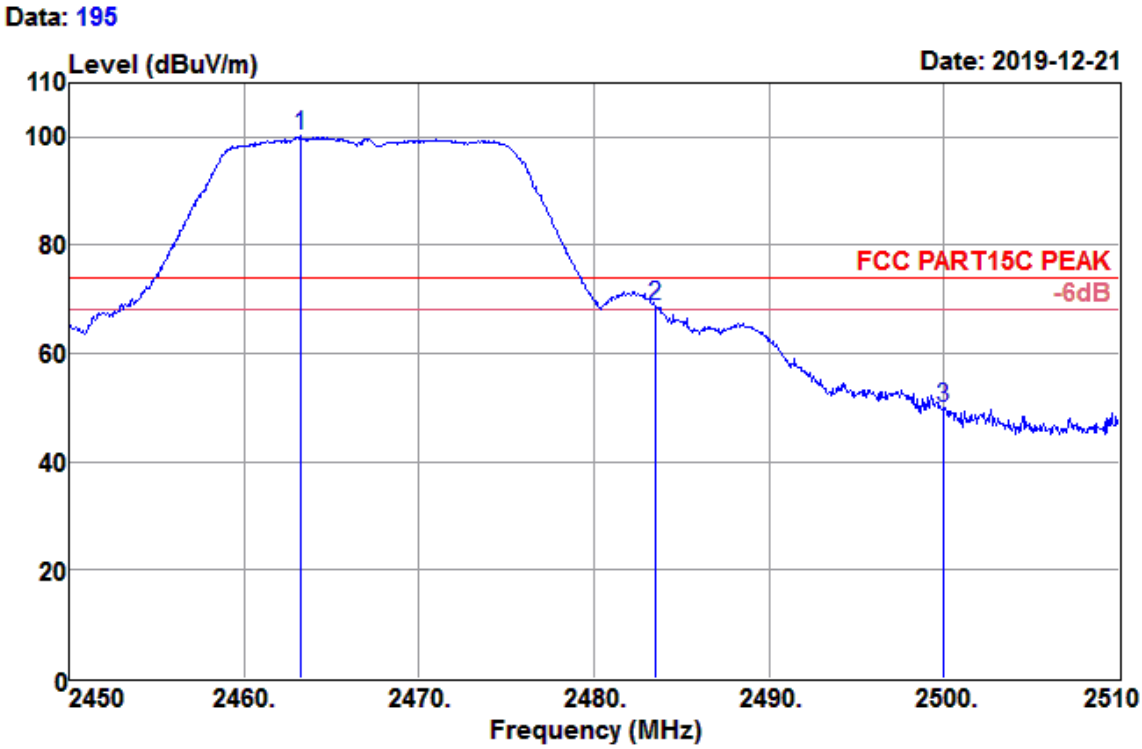
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	41.95	26.91	3.48	35.43	36.91	74.00	-37.09	Peak
2390.000	57.50	27.11	3.53	35.55	52.59	74.00	-21.41	Peak
2408.875	101.16	27.16	3.55	35.57	96.30	74.00	22.30	Peak

Test Mode :	802.11n HT20 CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Vertical



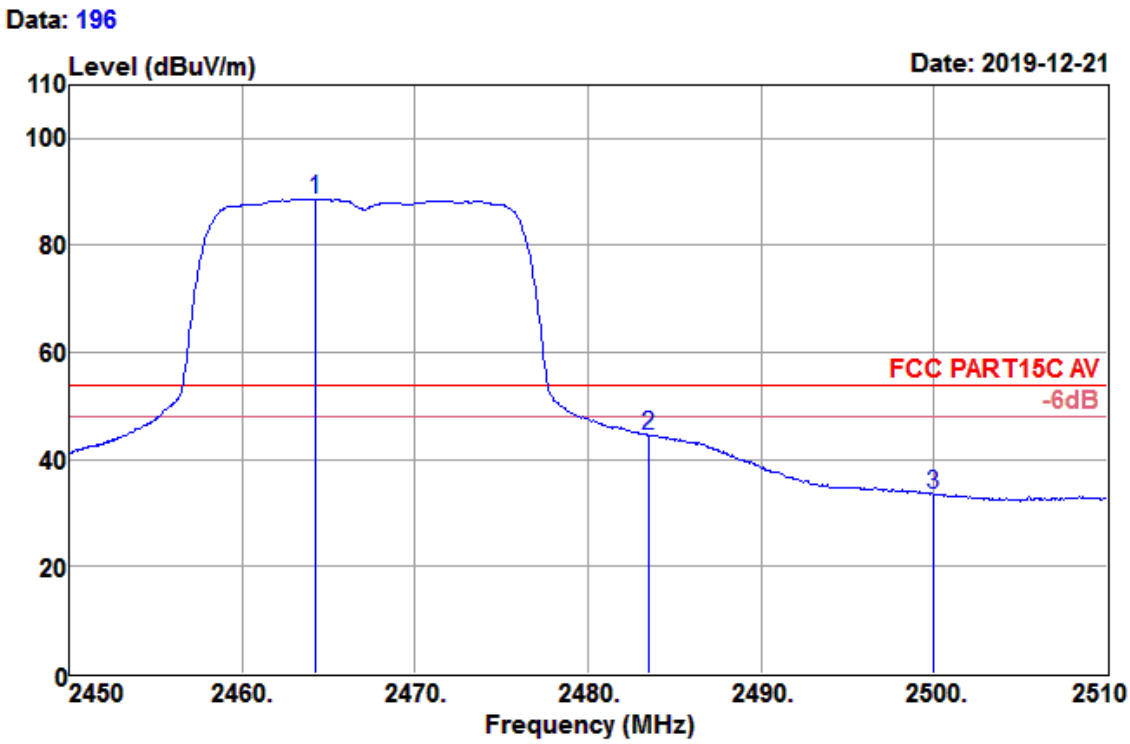
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	30.42	26.91	3.48	35.43	25.38	54.00	-28.62	Average
2390.000	39.92	27.11	3.53	35.55	35.01	54.00	-18.99	Average
2415.000	92.21	27.18	3.55	35.58	87.36	54.00	33.36	Average

Test Mode :	802.11n HT20 CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.45GHz~2.51GHz	**Polarization :**	Horizontal



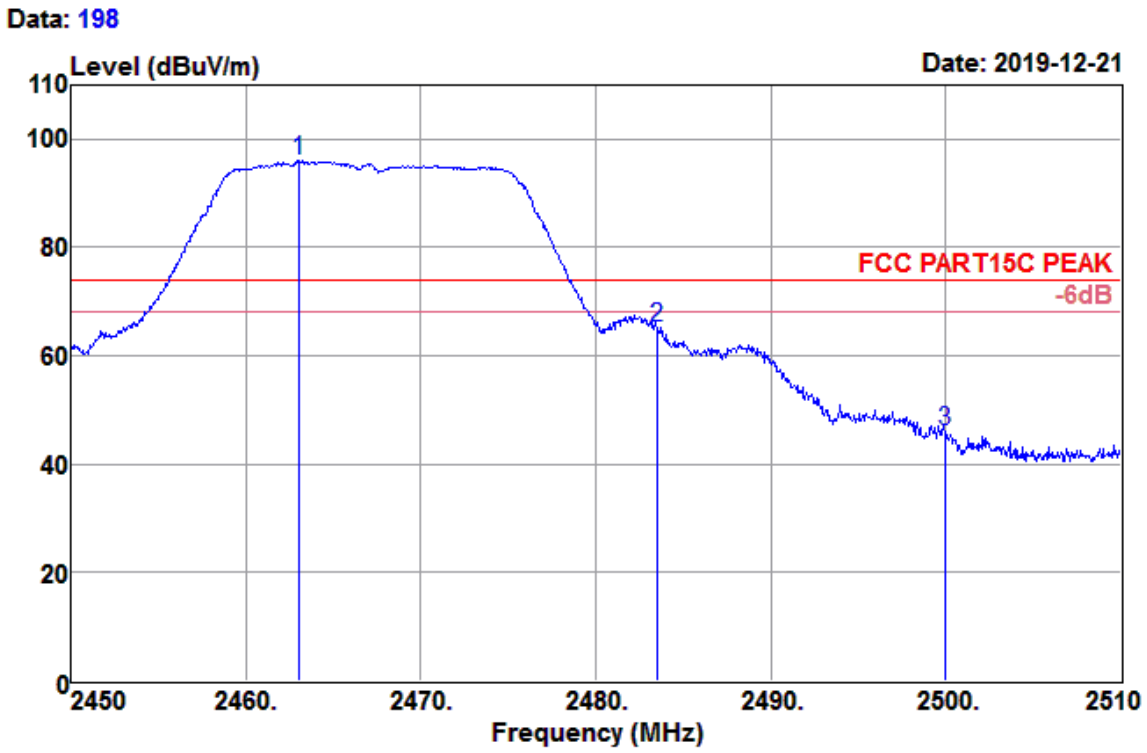
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2463.200	104.98	27.30	3.58	35.65	100.21	74.00	26.21	Peak
2483.500	73.69	27.36	3.59	35.68	68.96	74.00	-5.04	Peak
2500.000	54.63	27.40	3.60	35.70	49.93	74.00	-24.07	Peak

Test Mode :	802.11n HT20 CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.45GHz~2.51GHz	**Polarization :**	Horizontal



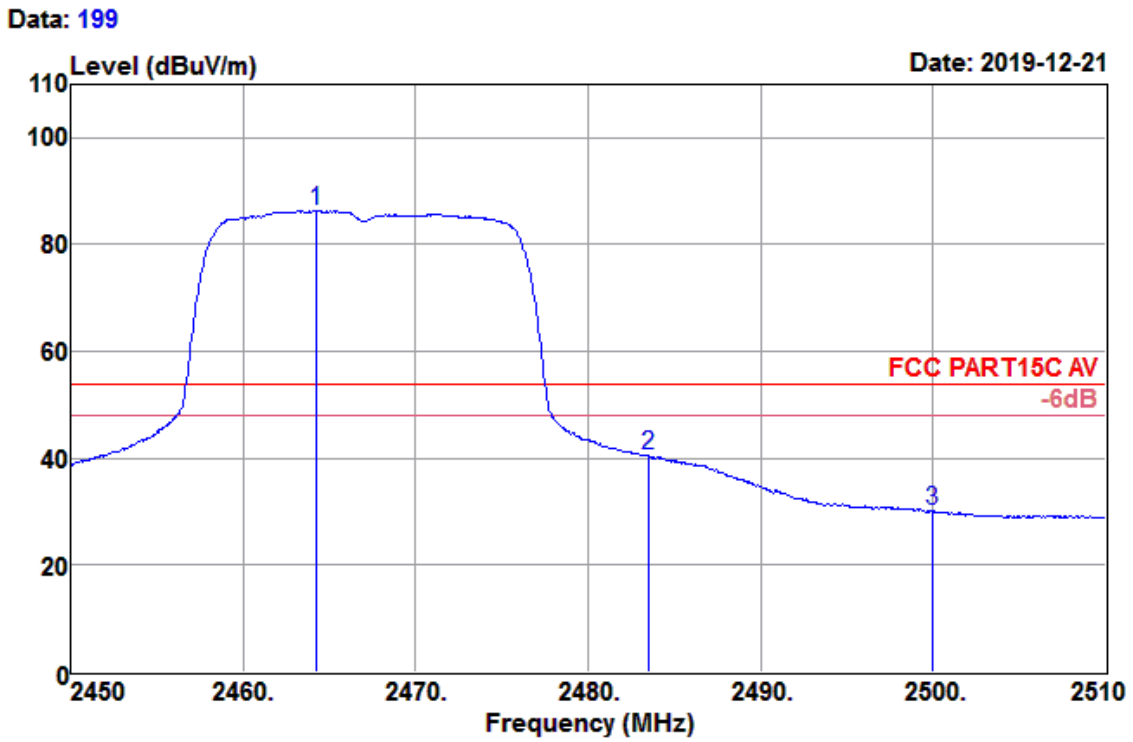
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2464.280	93.39	27.31	3.58	35.65	88.63	54.00	34.63	Average
2483.500	49.35	27.36	3.59	35.68	44.62	54.00	-9.38	Average
2500.000	38.22	27.40	3.60	35.70	33.52	54.00	-20.48	Average

Test Mode :	802.11n HT20 CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.45GHz~2.51GHz	**Polarization :**	Vertical



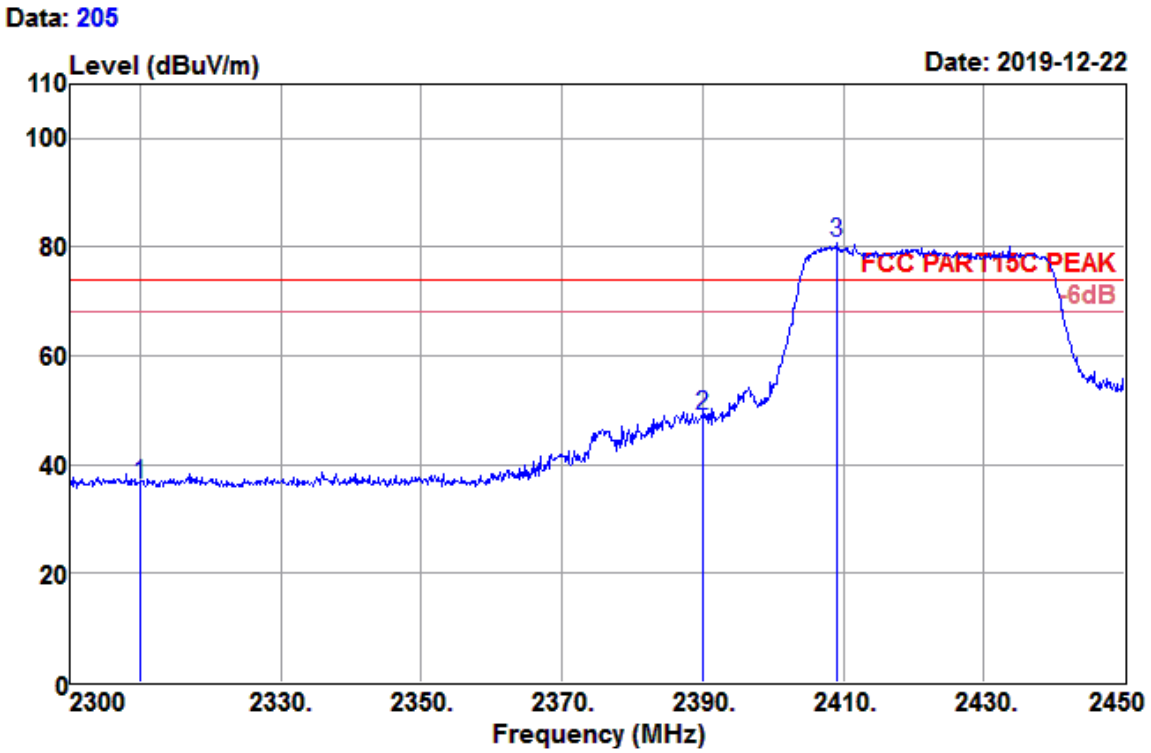
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2463.020	100.95	27.30	3.58	35.65	96.18	74.00	22.18	Peak
2483.500	69.98	27.36	3.59	35.68	65.25	74.00	-8.75	Peak
2500.000	50.77	27.40	3.60	35.70	46.07	74.00	-27.93	Peak

Test Mode :	802.11n HT20 CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.45GHz~2.51GHz	**Polarization :**	Vertical



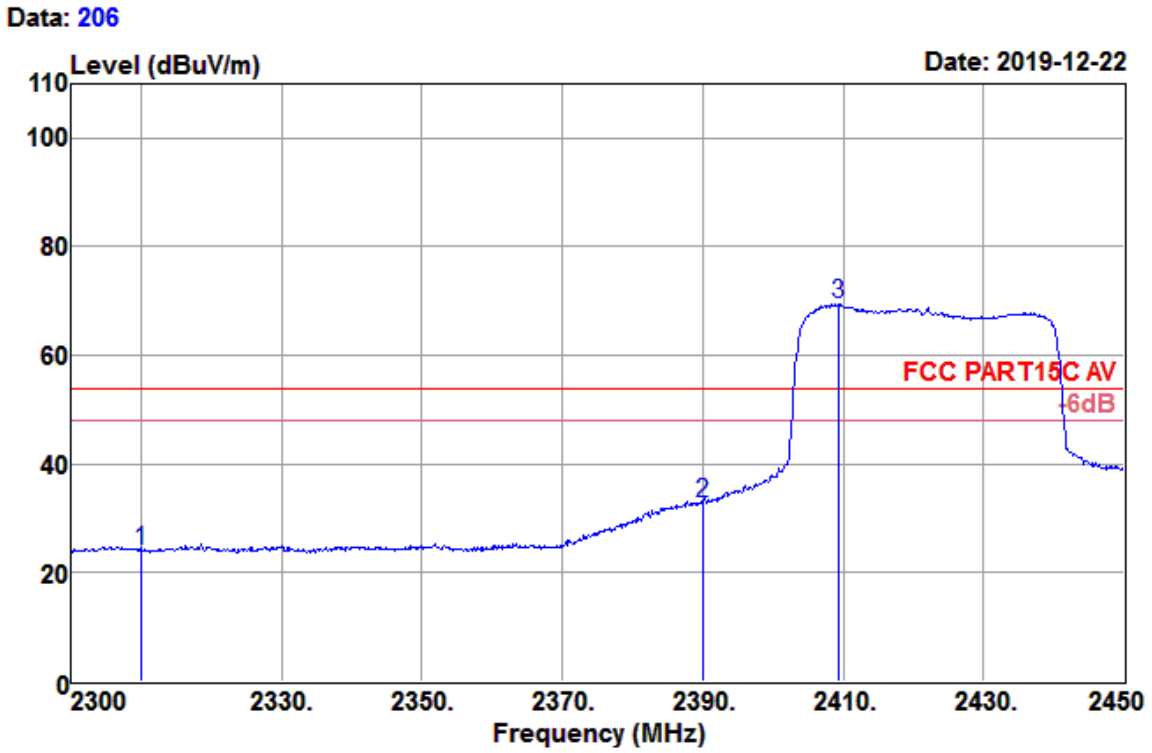
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2464.220	91.12	27.31	3.58	35.65	86.36	54.00	32.36	Average
2483.500	45.19	27.36	3.59	35.68	40.46	54.00	-13.54	Average
2500.000	34.83	27.40	3.60	35.70	30.13	54.00	-23.87	Average

Test Mode :	802.11n HT40 CH03 (2422 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.45GHz	**Polarization :**	Horizontal



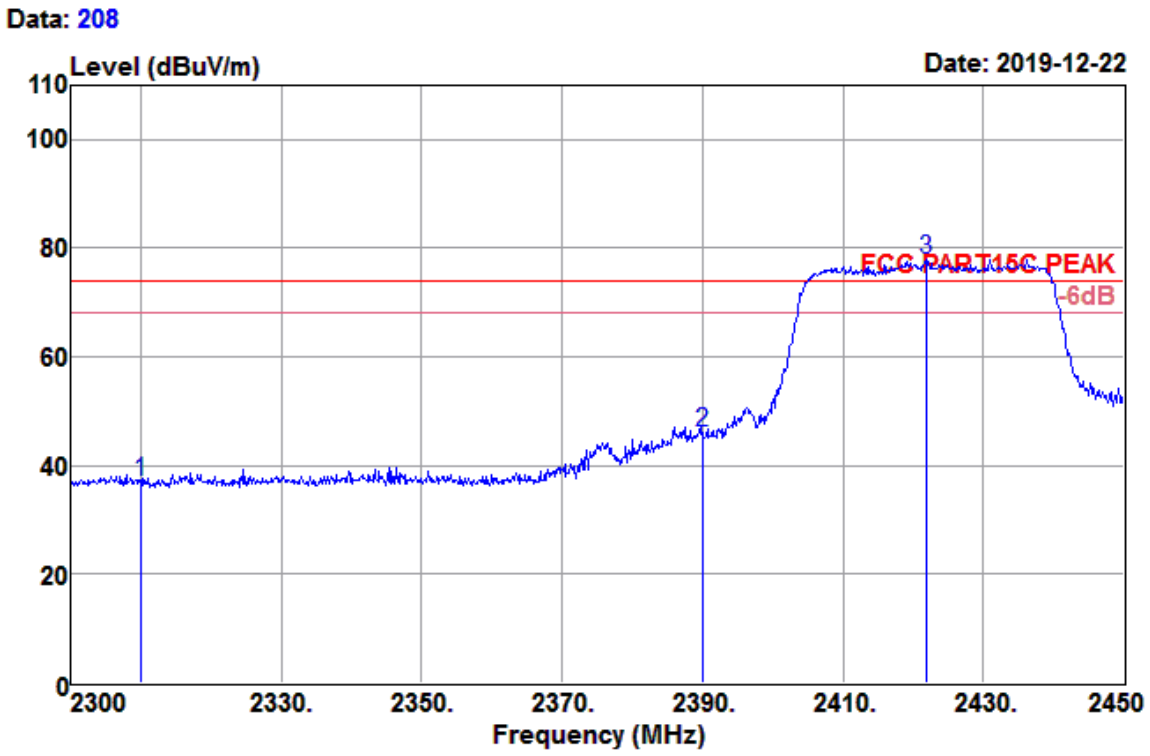
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	41.35	26.91	3.48	35.43	36.31	74.00	-37.69	Peak
2390.000	53.92	27.11	3.53	35.55	49.01	74.00	-24.99	Peak
2409.050	85.70	27.16	3.55	35.57	80.84	74.00	6.84	Peak

Test Mode :	802.11n HT40 CH03 (2422 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.45GHz	**Polarization :**	Horizontal



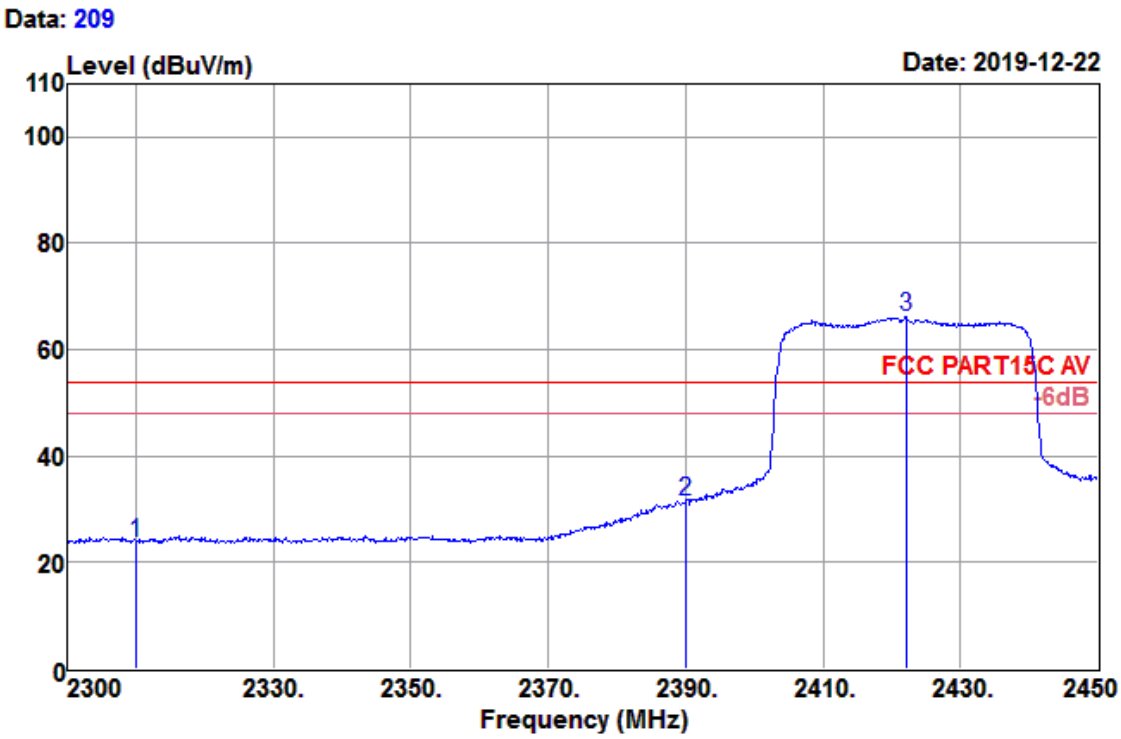
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	29.08	26.91	3.48	35.43	24.04	54.00	-29.96	Average
2390.000	37.75	27.11	3.53	35.55	32.84	54.00	-21.16	Average
2409.350	74.23	27.16	3.55	35.57	69.37	54.00	15.37	Average

Test Mode :	802.11n HT40 CH03 (2422 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.45GHz	**Polarization :**	Vertical



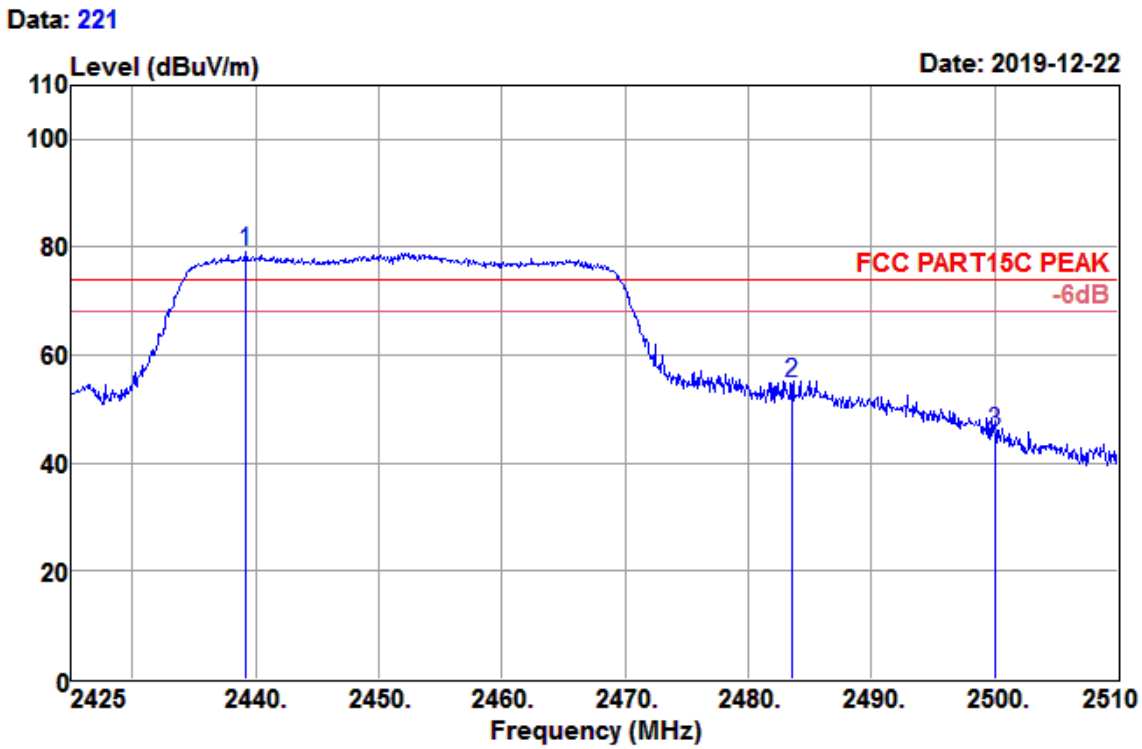
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	42.02	26.91	3.48	35.43	36.98	74.00	-37.02	Peak
2390.000	50.99	27.11	3.53	35.55	46.08	74.00	-27.92	Peak
2421.800	82.81	27.20	3.55	35.59	77.97	74.00	3.97	Peak

Test Mode :	802.11n HT40 CH03 (2422 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.3GHz~2.45GHz	**Polarization :**	Vertical



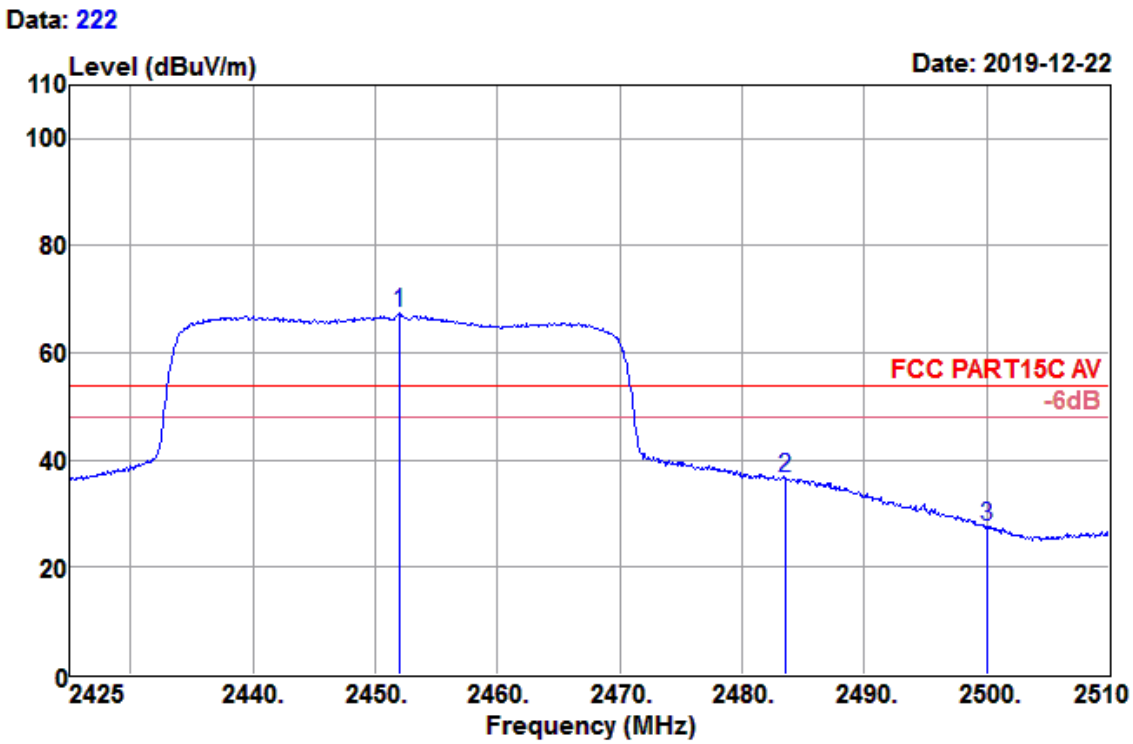
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	28.84	26.91	3.48	35.43	23.80	54.00	-30.20	Average
2390.000	36.52	27.11	3.53	35.55	31.61	54.00	-22.39	Average
2422.100	71.13	27.20	3.55	35.59	66.29	54.00	12.29	Average

Test Mode :	802.11n HT40 CH09 (2452 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.425GHz~2.51GHz	**Polarization :**	Horizontal



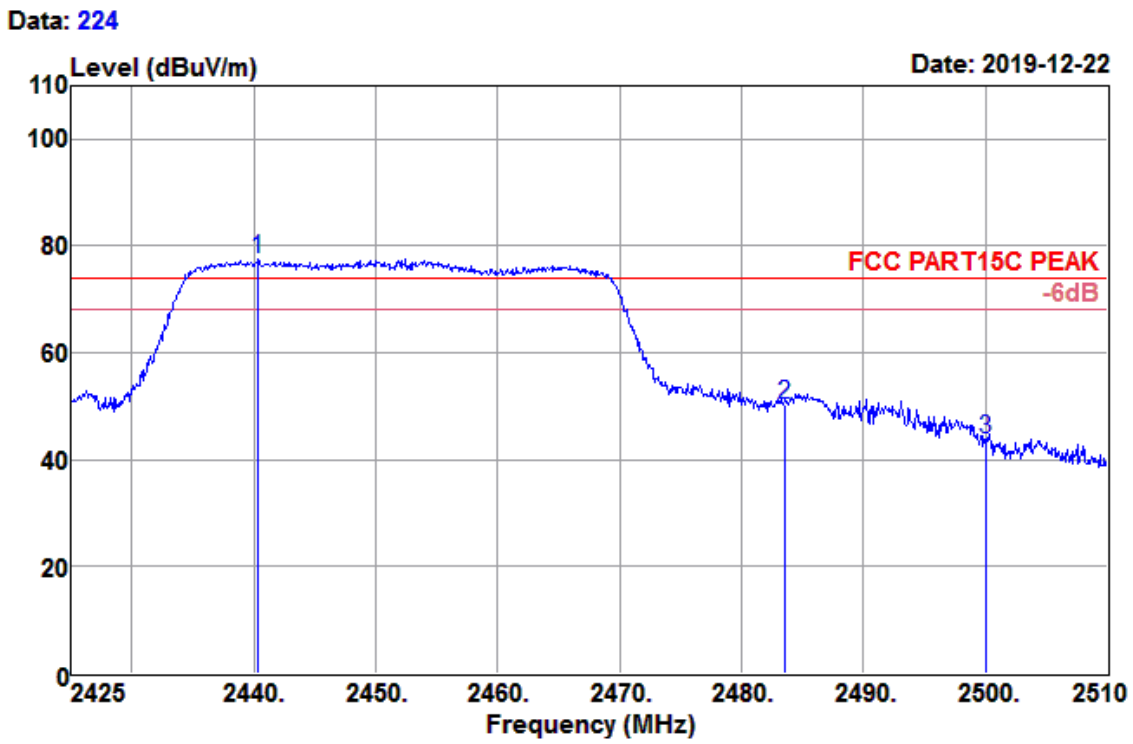
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2439.195	83.90	27.24	3.56	35.61	79.09	74.00	5.09	Peak
2483.500	59.47	27.36	3.59	35.68	54.74	74.00	-19.26	Peak
2500.000	50.47	27.40	3.60	35.70	45.77	74.00	-28.23	Peak

Test Mode :	802.11n HT40 CH09 (2452 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.425GHz~2.51GHz	**Polarization :**	Horizontal



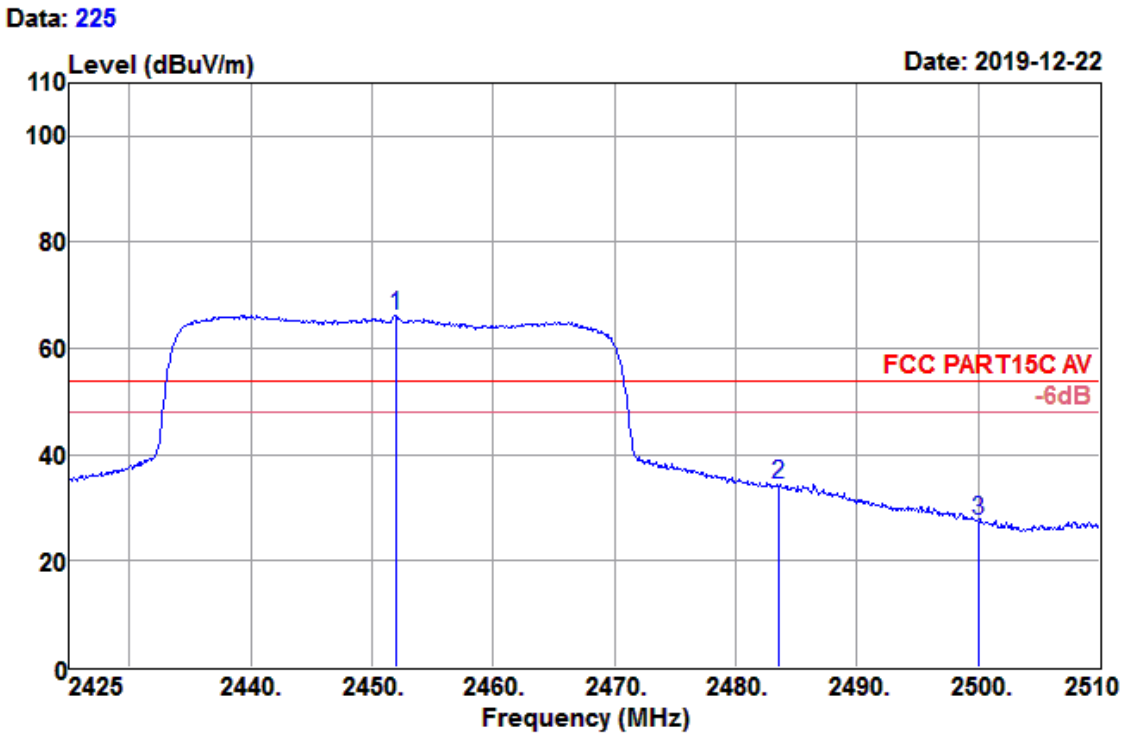
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2452.030	72.16	27.28	3.57	35.63	67.38	54.00	13.38	Average
2483.500	41.42	27.36	3.59	35.68	36.69	54.00	-17.31	Average
2500.000	32.14	27.40	3.60	35.70	27.44	54.00	-26.56	Average

Test Mode :	802.11n HT40 CH09 (2452 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.425GHz~2.51GHz	**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
2440.385	82.32	27.25	3.56	35.62	77.51	74.00	3.51	Peak
2483.500	54.96	27.36	3.59	35.68	50.23	74.00	-23.77	Peak
2500.000	48.56	27.40	3.60	35.70	43.86	74.00	-30.14	Peak

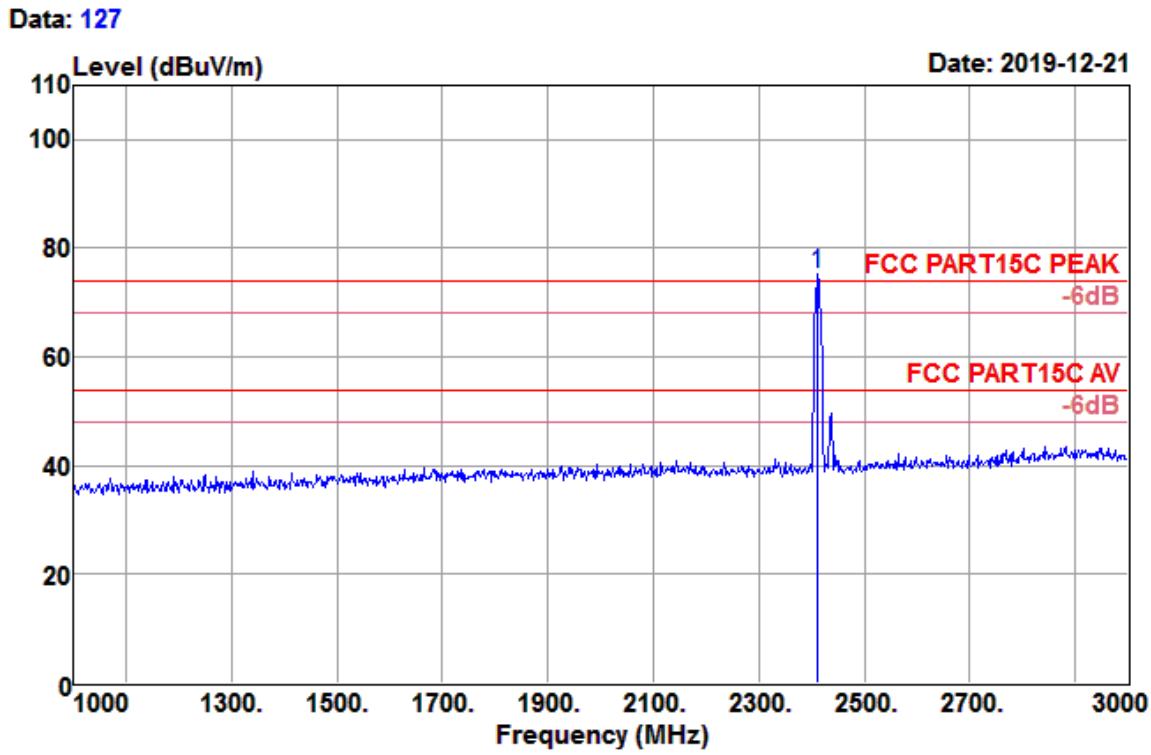
Test Mode :	802.11n HT40 CH09 (2452 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	2.425GHz~2.51GHz	**Polarization :**	Vertical



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
2452.030	70.98	27.28	3.57	35.63	66.20	54.00	12.20	Average
2483.500	39.19	27.36	3.59	35.68	34.46	54.00	-19.54	Average
2500.000	32.33	27.40	3.60	35.70	27.63	54.00	-26.37	Average

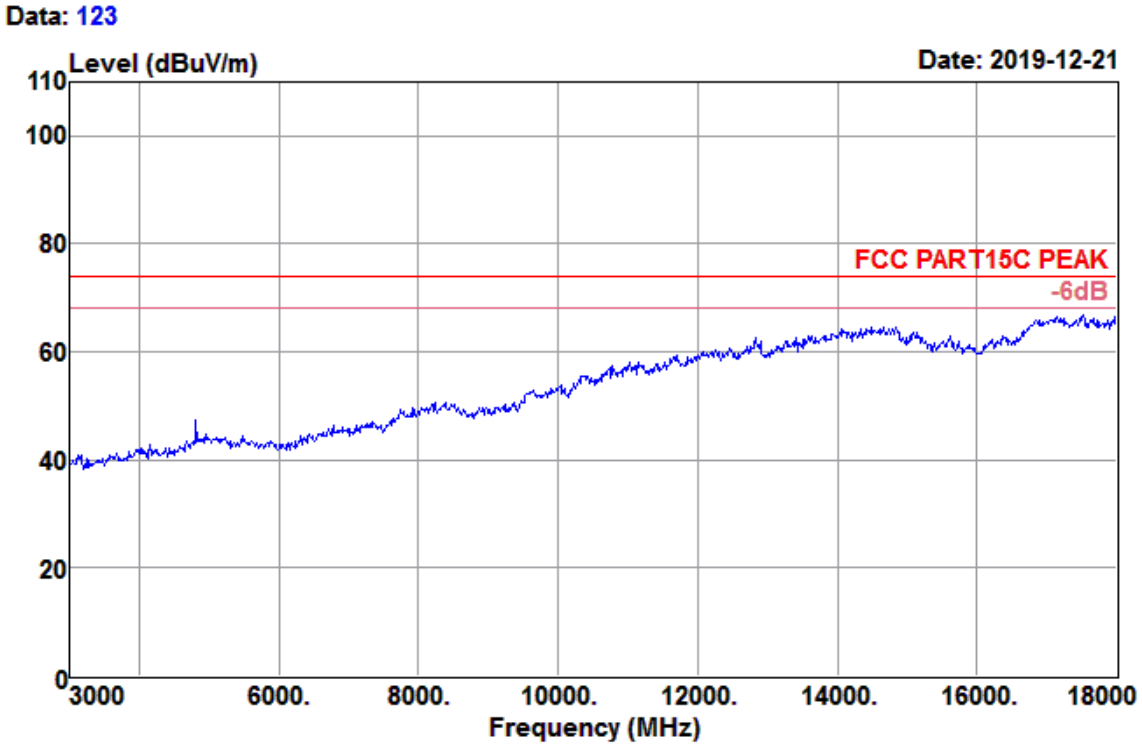
4.5.5 Test Result of Radiated Spurious Emission (1GHz ~ 10th Harmonic)

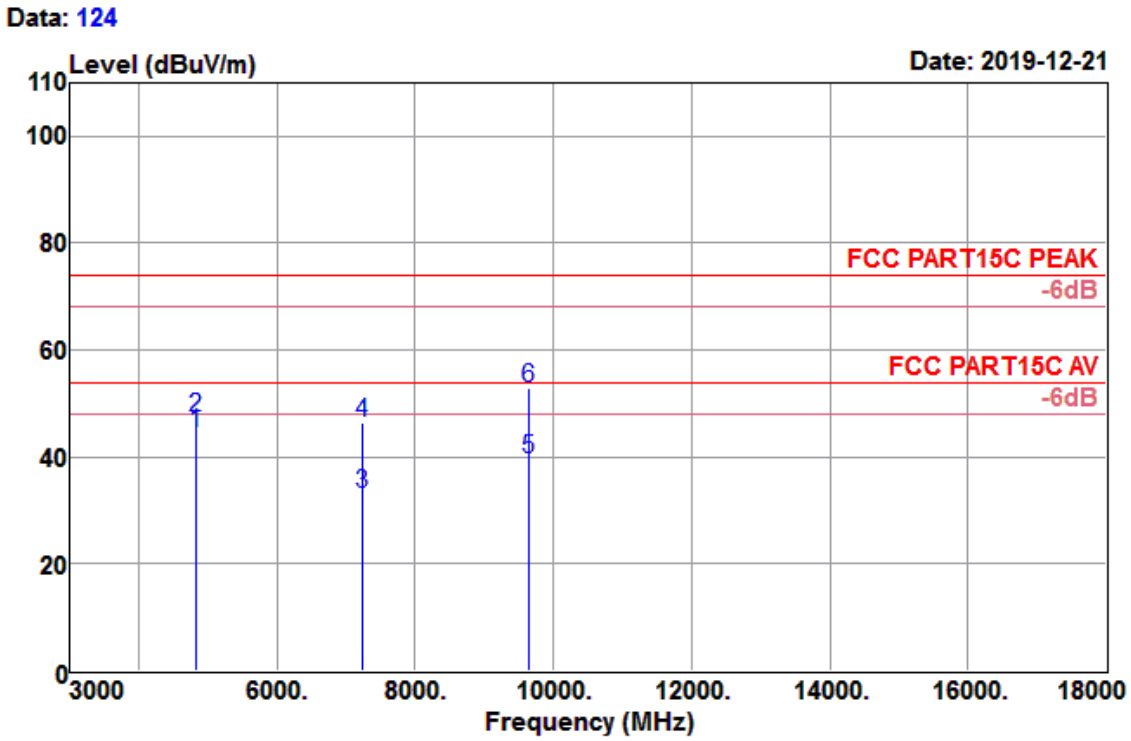
Test Mode :	802.11b CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Horizontal



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
2412.000	80.13	27.17	3.55	35.58	75.27	74.00	1.27	Peak

Test Mode :	802.11b CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Horizontal

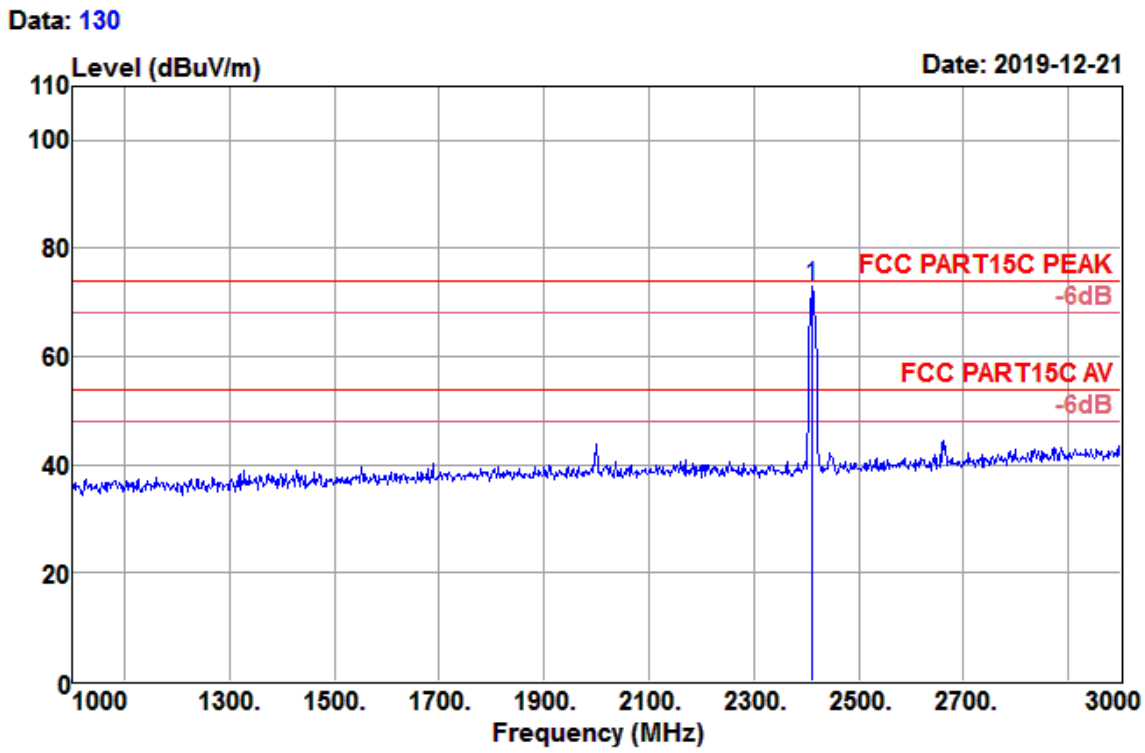




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4824.000	42.51	31.28	5.56	34.84	44.51	54.00	-9.49	Average
4824.000	45.41	31.28	5.56	34.84	47.41	74.00	-26.59	Peak
7236.000	26.00	35.94	7.61	36.40	33.15	54.00	-20.85	Average
7236.000	39.22	35.94	7.61	36.40	46.37	74.00	-27.63	Peak
9648.000	27.85	37.87	10.41	36.40	39.73	54.00	-14.27	Average
9648.000	41.18	37.87	10.41	36.40	53.06	74.00	-20.94	Peak

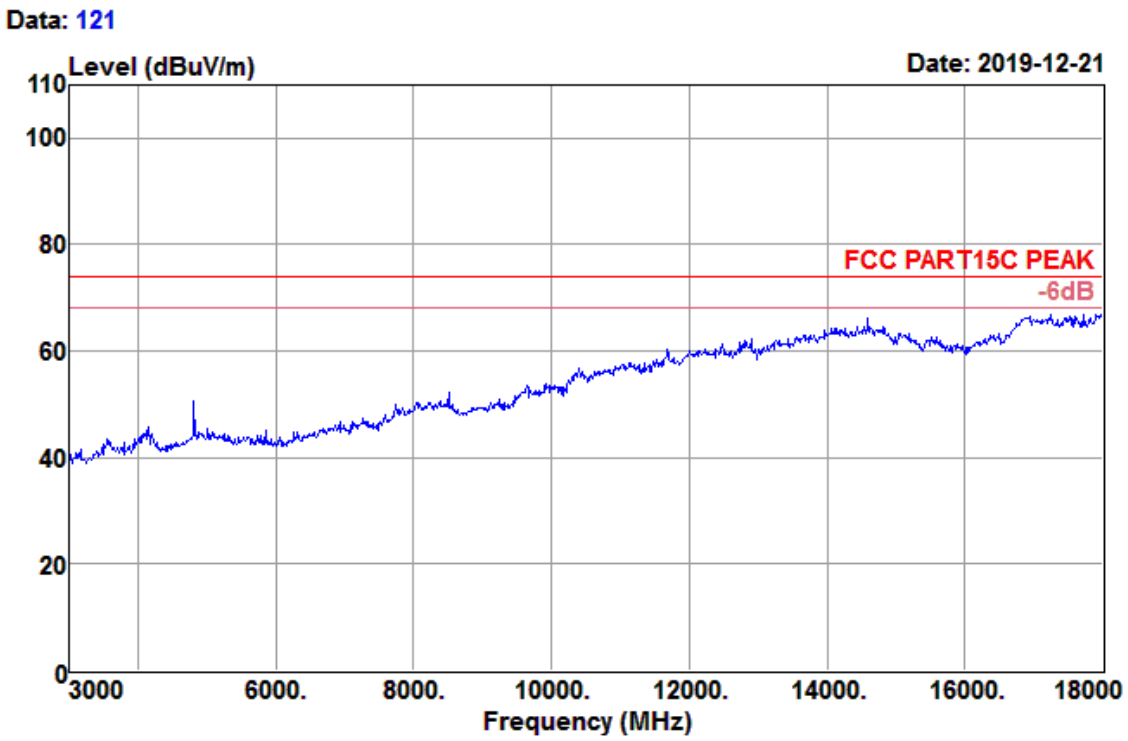
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

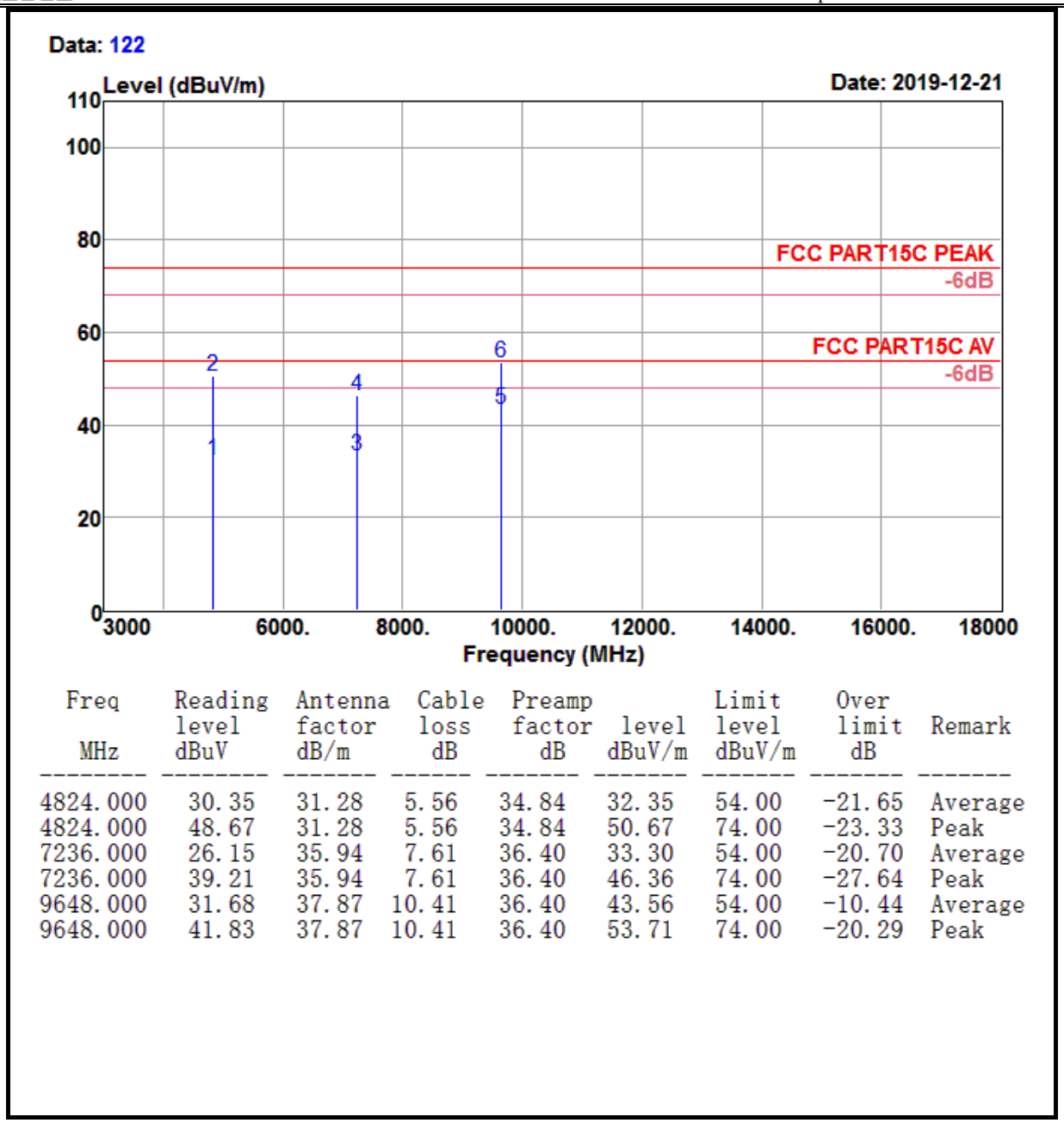
Test Mode :	802.11b CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Vertical



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
2412.000	77.80	27.17	3.55	35.58	72.94	74.00	-1.06	Peak

Test Mode :	802.11b CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Vertical

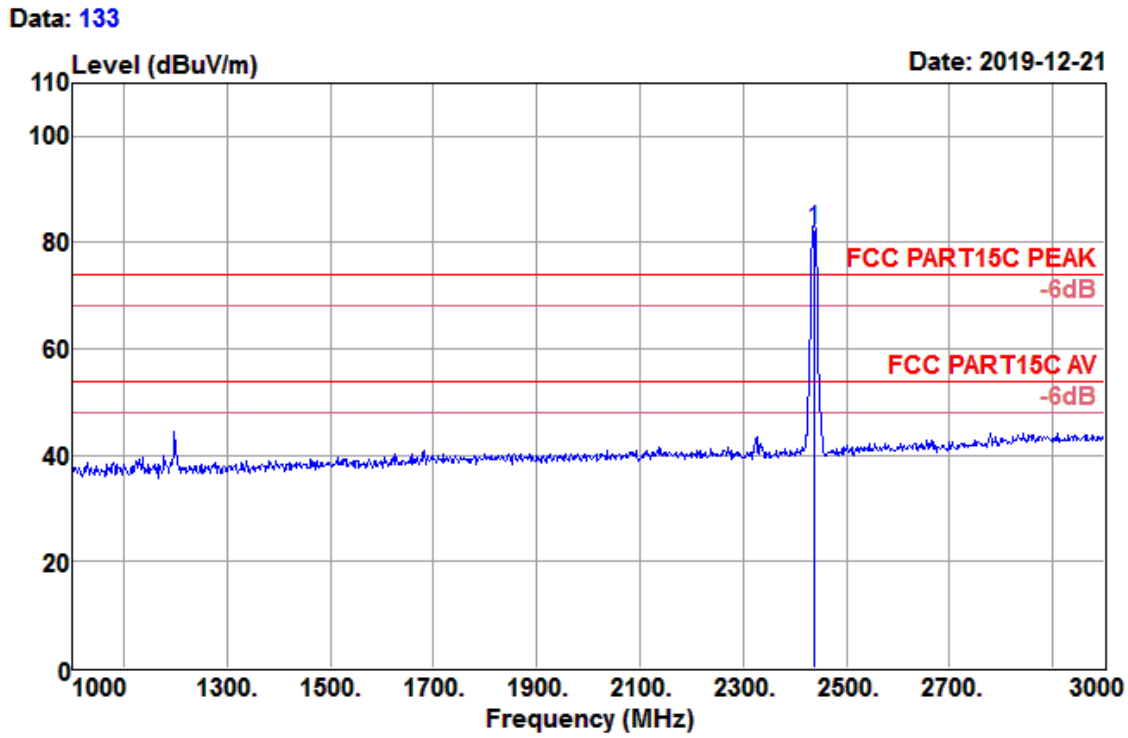




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4824.000	30.35	31.28	5.56	34.84	32.35	54.00	-21.65	Average
4824.000	48.67	31.28	5.56	34.84	50.67	74.00	-23.33	Peak
7236.000	26.15	35.94	7.61	36.40	33.30	54.00	-20.70	Average
7236.000	39.21	35.94	7.61	36.40	46.36	74.00	-27.64	Peak
9648.000	31.68	37.87	10.41	36.40	43.56	54.00	-10.44	Average
9648.000	41.83	37.87	10.41	36.40	53.71	74.00	-20.29	Peak

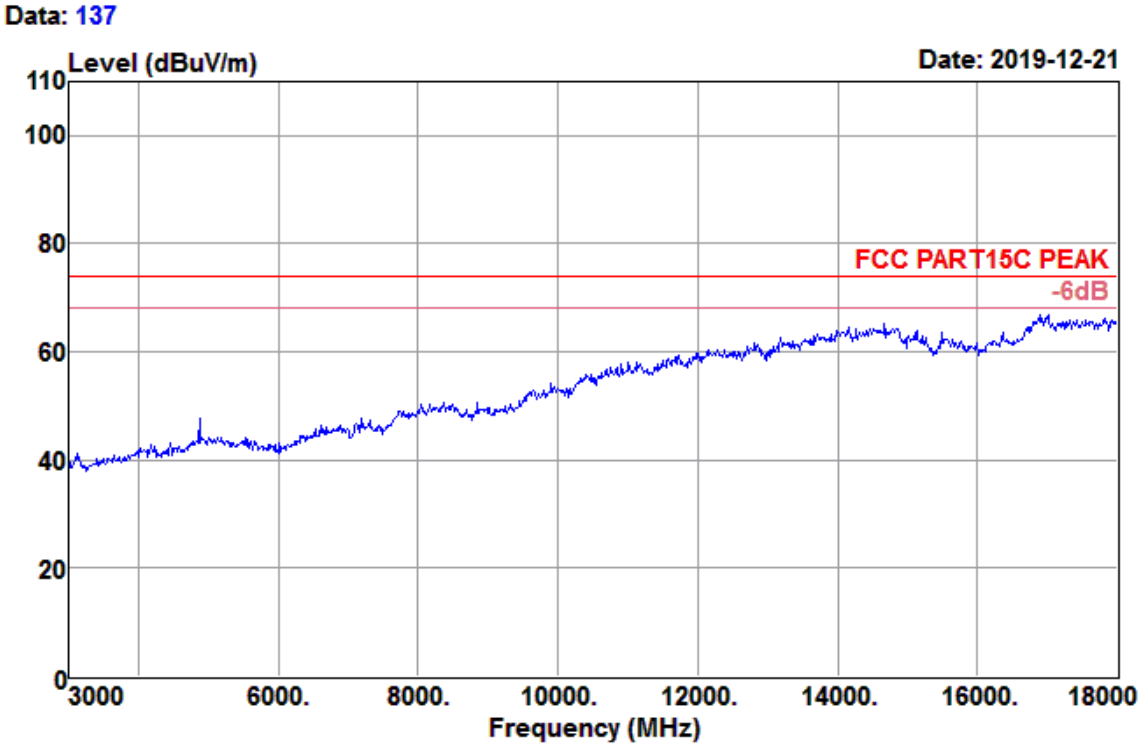
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

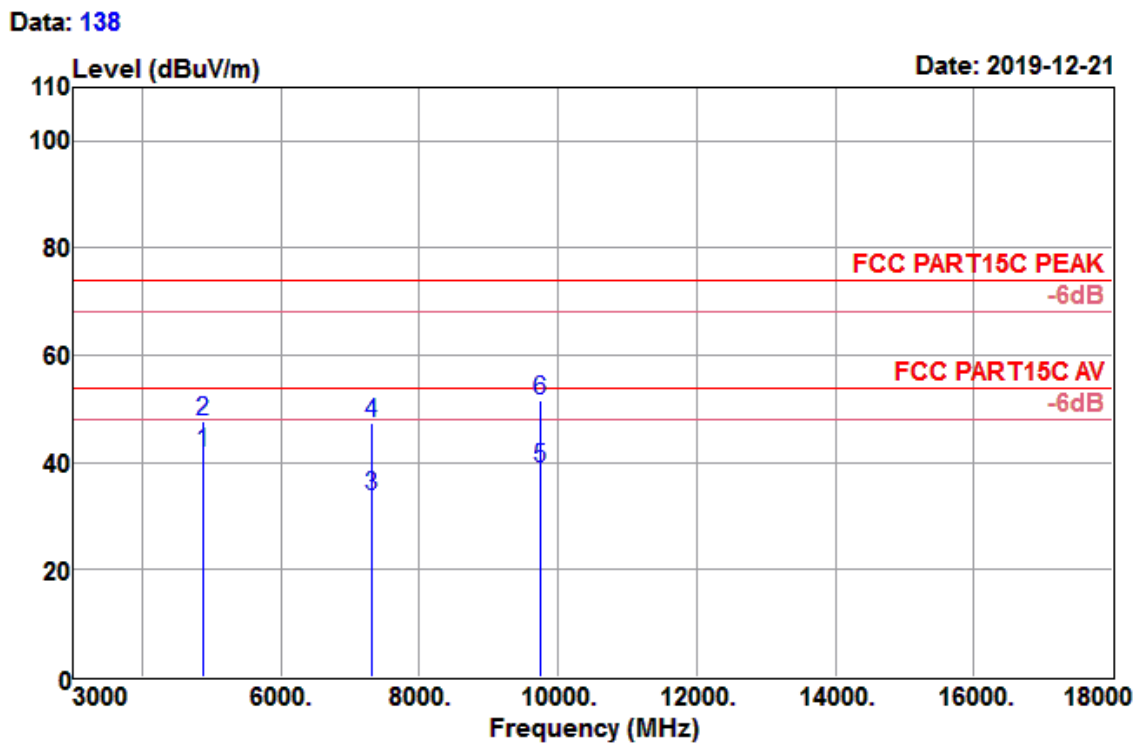
Test Mode :	802.11b CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Horizontal



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
2437.000	87.35	27.24	3.56	35.61	82.54	74.00	8.54	Peak

Test Mode :	802.11b CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Horizontal

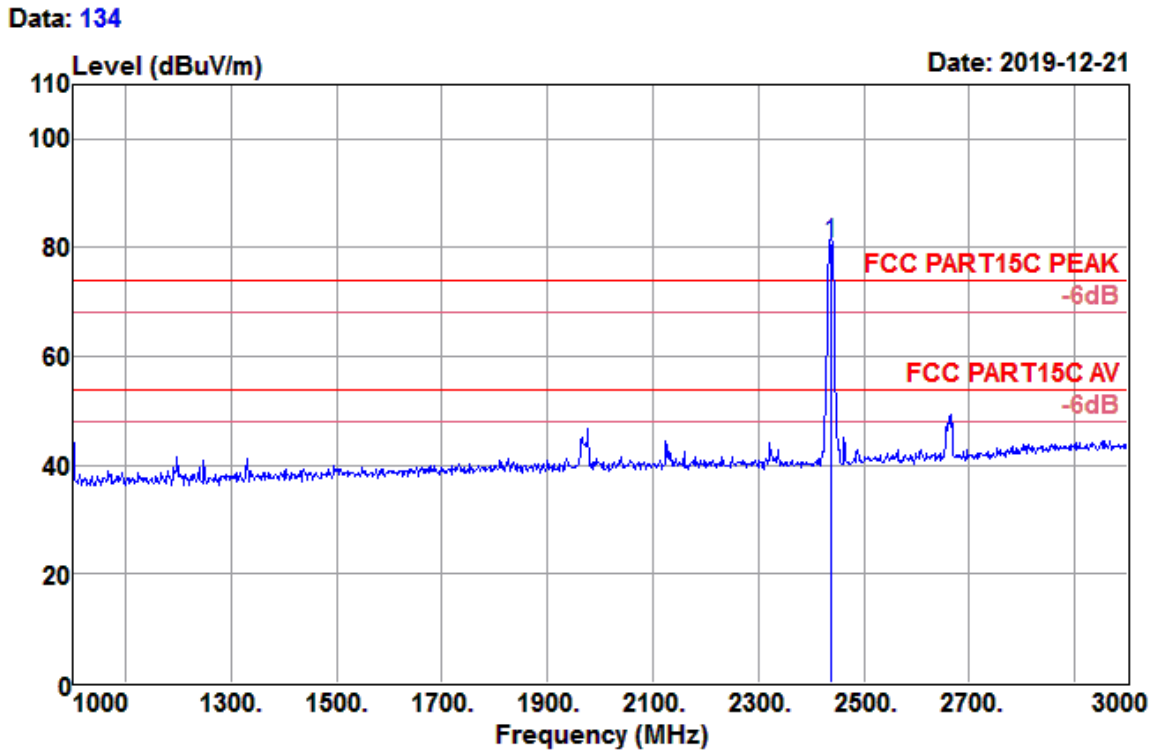




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4874.000	39.64	31.40	5.55	34.80	41.79	54.00	-12.21	Average
4874.000	45.51	31.40	5.55	34.80	47.66	74.00	-26.34	Peak
7311.000	26.52	36.12	7.53	36.40	33.77	54.00	-20.23	Average
7311.000	40.19	36.12	7.53	36.40	47.44	74.00	-26.56	Peak
9748.000	26.69	38.05	10.70	36.40	39.04	54.00	-14.96	Average
9748.000	39.32	38.05	10.70	36.40	51.67	74.00	-22.33	Peak

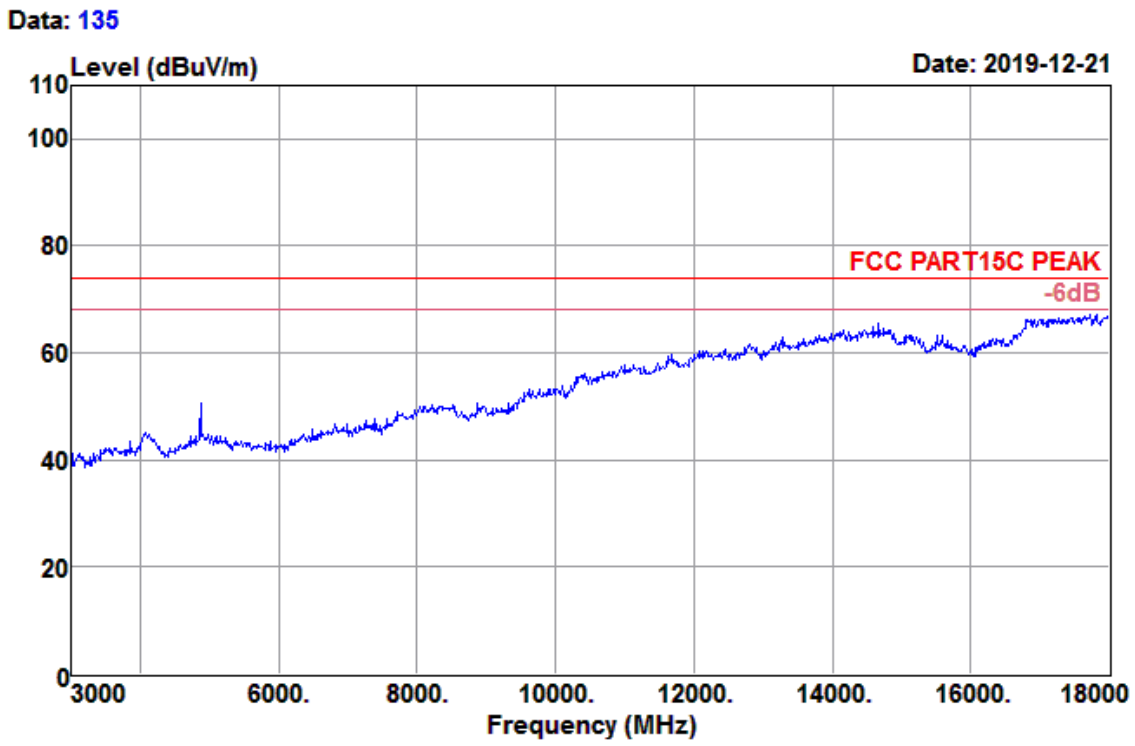
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

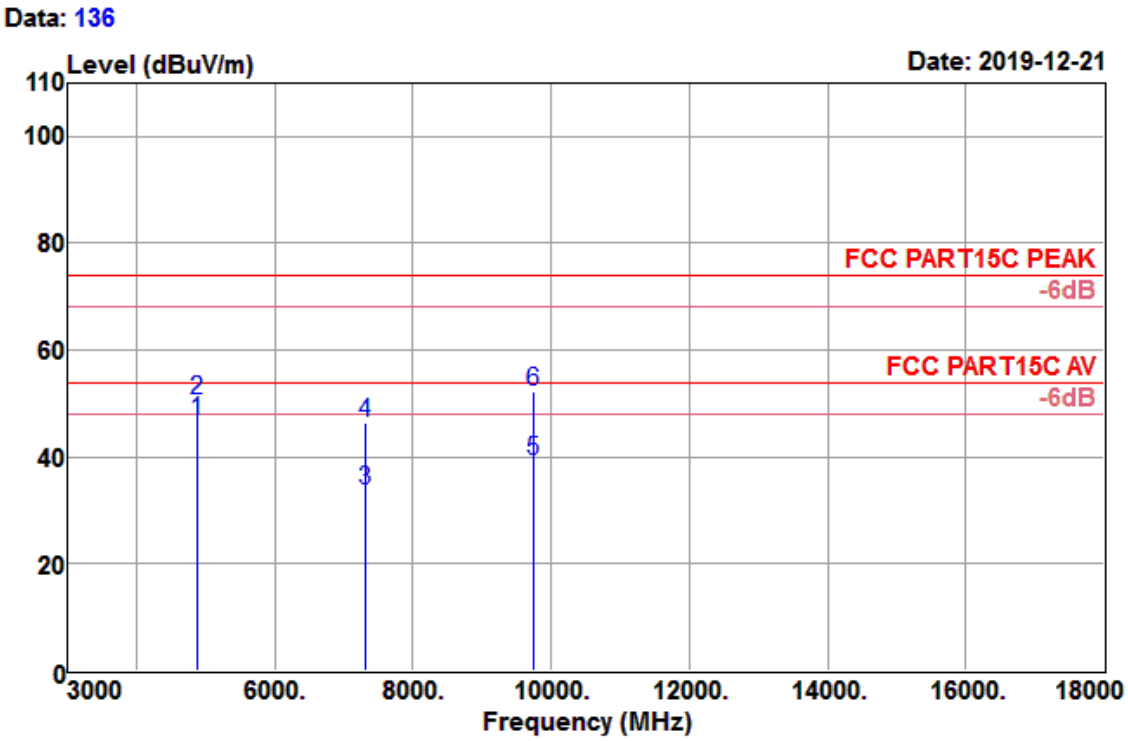
Test Mode :	802.11b CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Vertical



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
2437.000	85.50	27.24	3.56	35.61	80.69	74.00	6.69	Peak

Test Mode :	802.11b CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Vertical

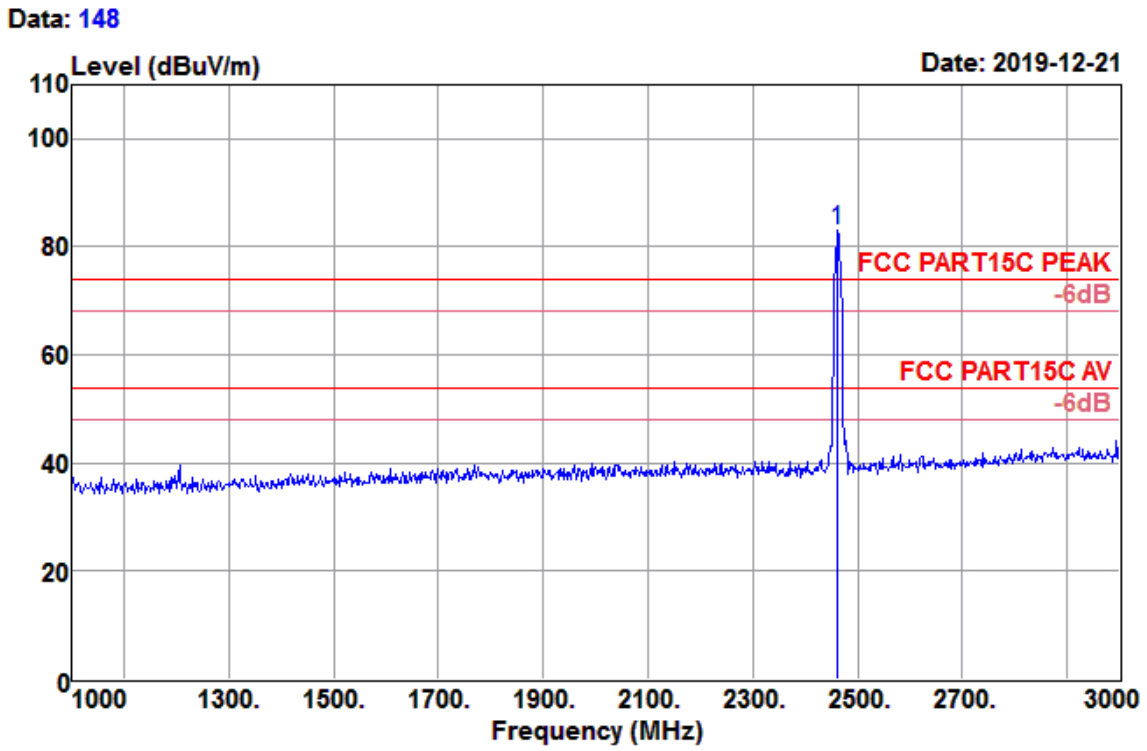




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4874.000	44.63	31.40	5.55	34.80	46.78	54.00	-7.22	Average
4874.000	48.46	31.40	5.55	34.80	50.61	74.00	-23.39	Peak
7311.000	26.48	36.12	7.53	36.40	33.73	54.00	-20.27	Average
7311.000	39.03	36.12	7.53	36.40	46.28	74.00	-27.72	Peak
9748.000	27.03	38.05	10.70	36.40	39.38	54.00	-14.62	Average
9748.000	40.02	38.05	10.70	36.40	52.37	74.00	-21.63	Peak

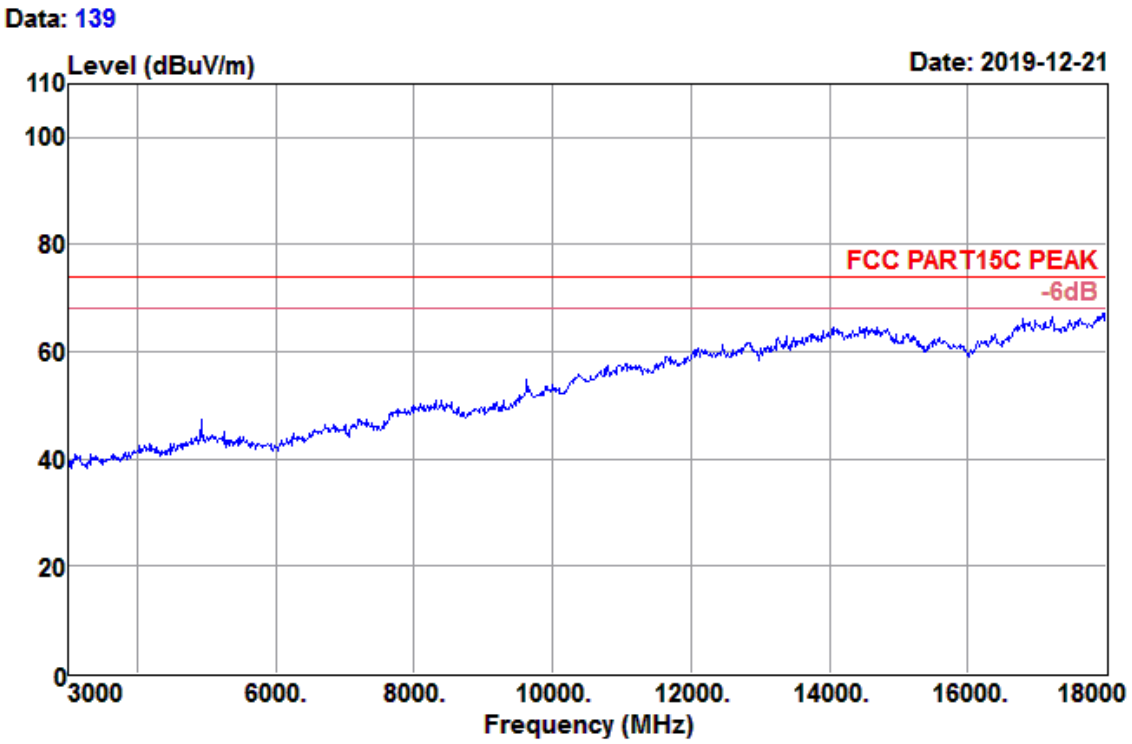
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

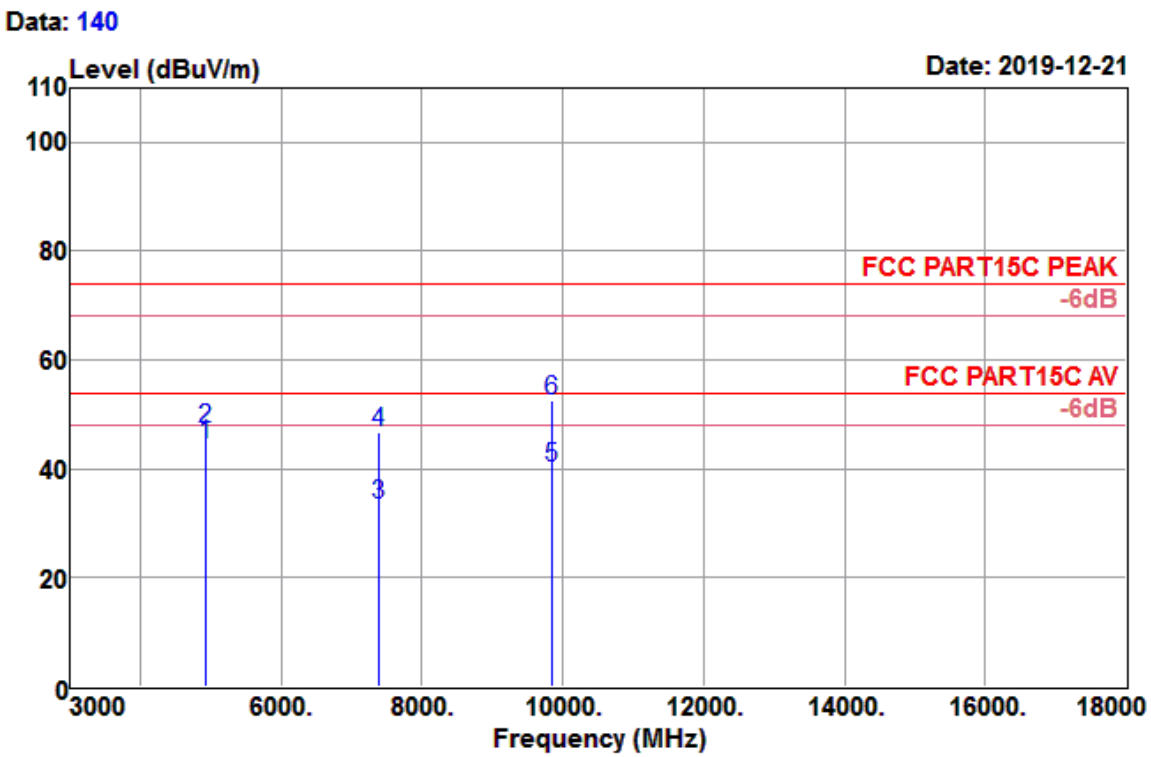
Test Mode :	802.11b CH11 (2462MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Horizontal



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
2462.000	87.98	27.30	3.58	35.65	83.21	74.00	9.21	Peak

Test Mode :	802.11b CH11 (2462MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Horizontal

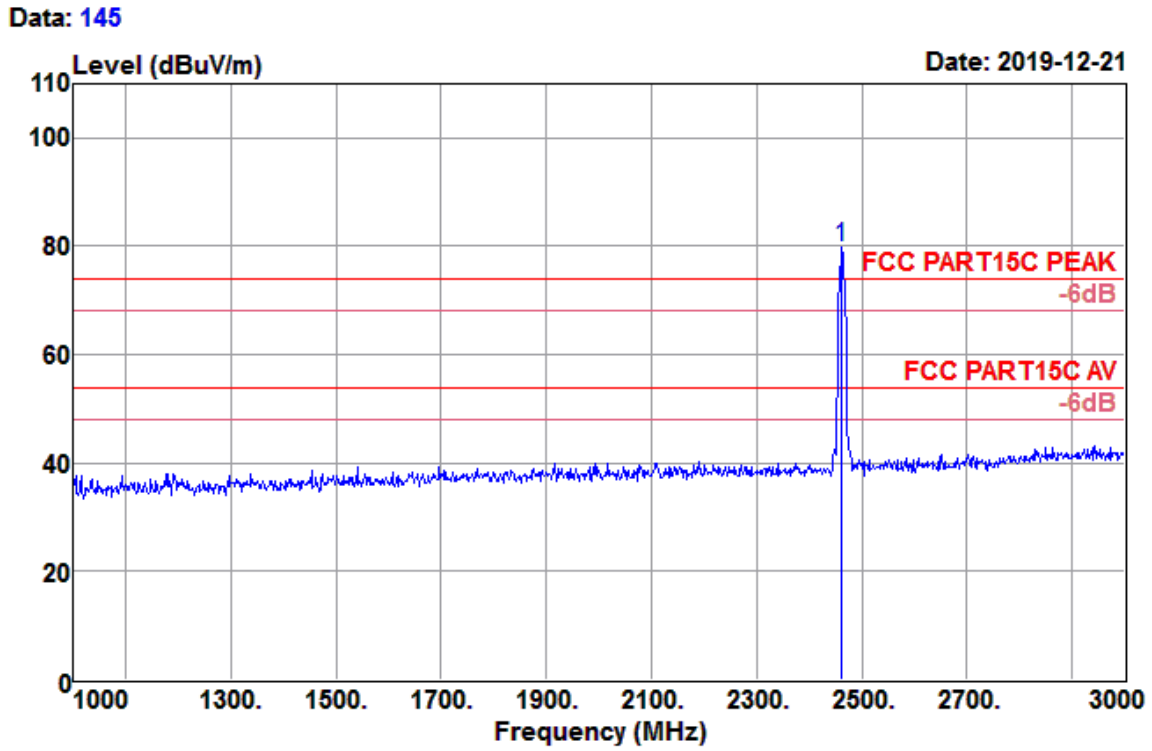




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4924.000	42.16	31.52	5.53	34.76	44.45	54.00	-9.55	Average
4924.000	44.97	31.52	5.53	34.76	47.26	74.00	-26.74	Peak
7386.000	26.13	36.29	7.46	36.40	33.48	54.00	-20.52	Average
7386.000	39.54	36.29	7.46	36.40	46.89	74.00	-27.11	Peak
9848.000	27.52	38.23	10.98	36.40	40.33	54.00	-13.67	Average
9848.000	39.63	38.23	10.98	36.40	52.44	74.00	-21.56	Peak

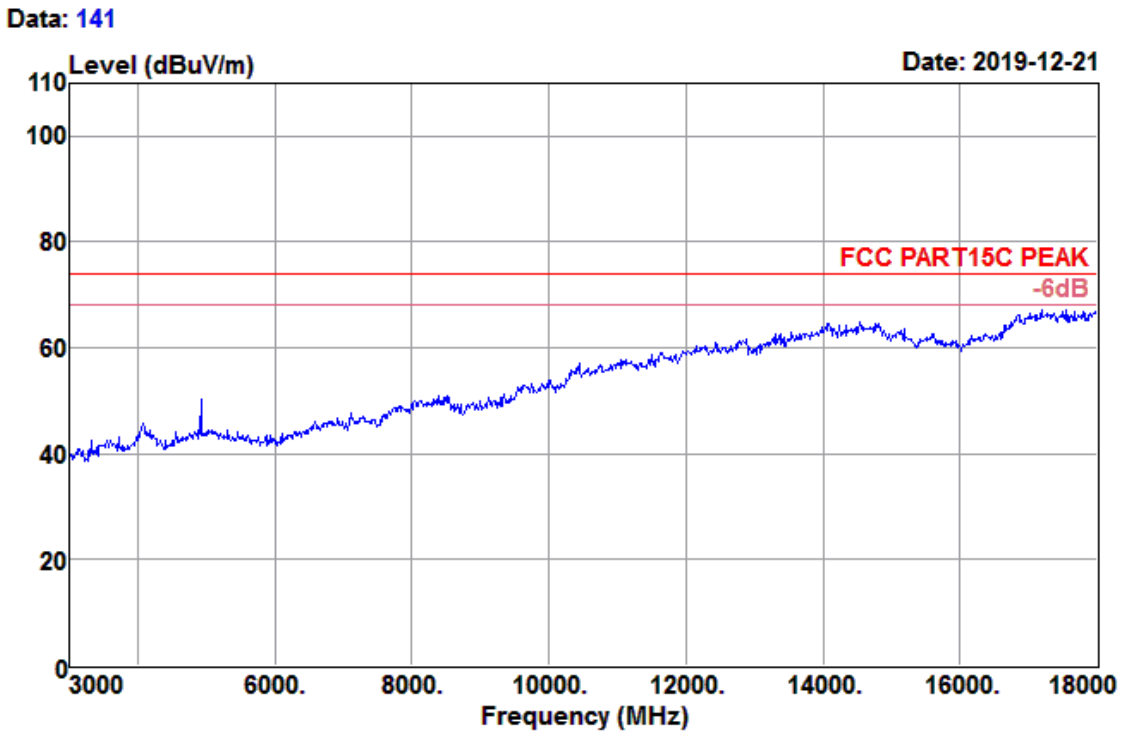
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

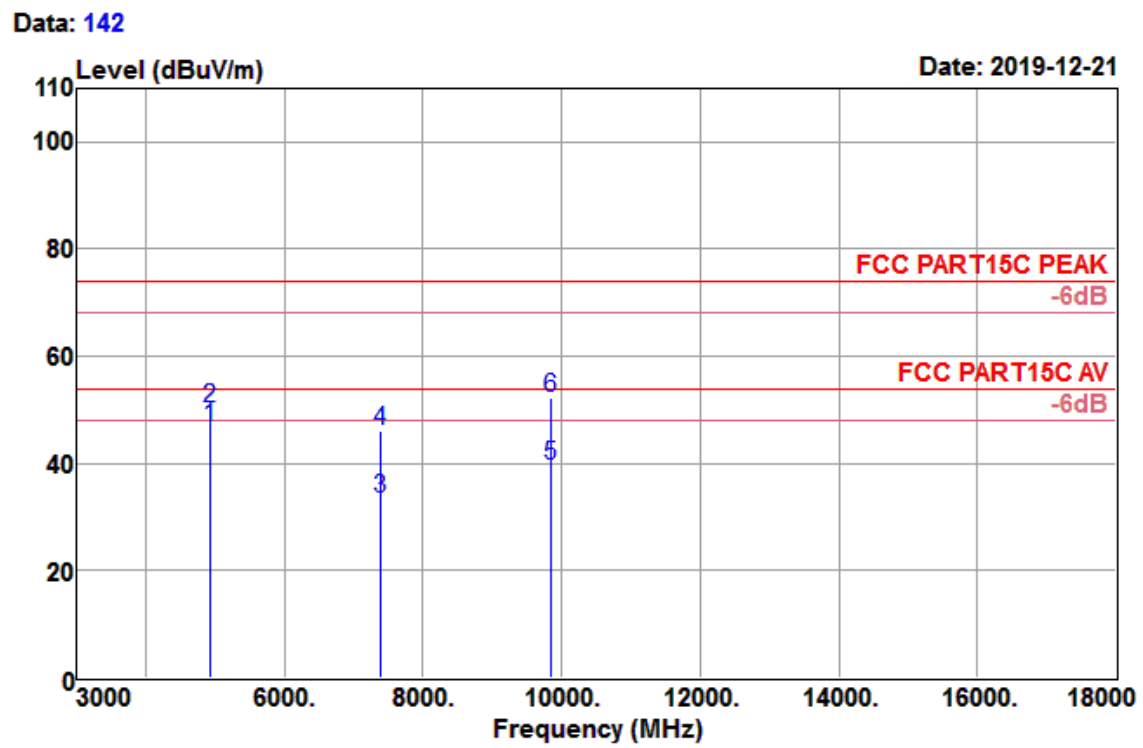
Test Mode :	802.11b CH11 (2462MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Vertical



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
2462.000	84.52	27.30	3.58	35.65	79.75	74.00	5.75	Peak

Test Mode :	802.11b CH11 (2462MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Vertical

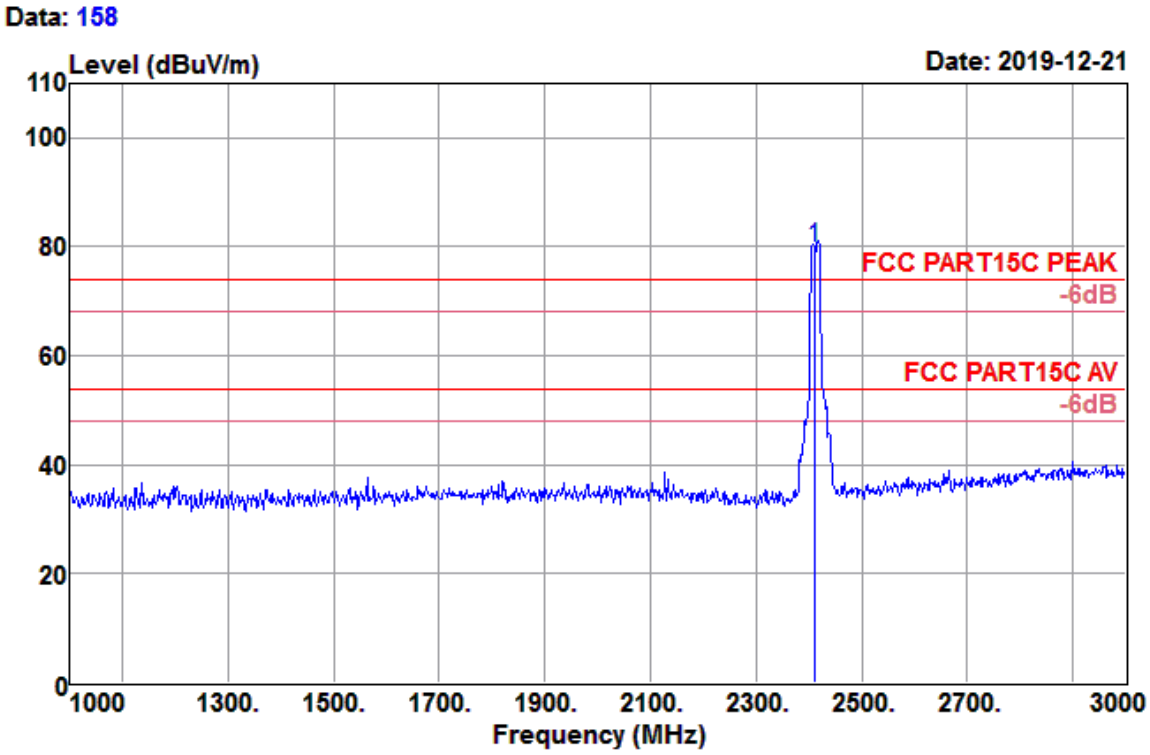




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4924.000	44.48	31.52	5.53	34.76	46.77	54.00	-7.23	Average
4924.000	47.94	31.52	5.53	34.76	50.23	74.00	-23.77	Peak
7386.000	25.94	36.29	7.46	36.40	33.29	54.00	-20.71	Average
7386.000	38.60	36.29	7.46	36.40	45.95	74.00	-28.05	Peak
9848.000	26.77	38.23	10.98	36.40	39.58	54.00	-14.42	Average
9848.000	39.55	38.23	10.98	36.40	52.36	74.00	-21.64	Peak

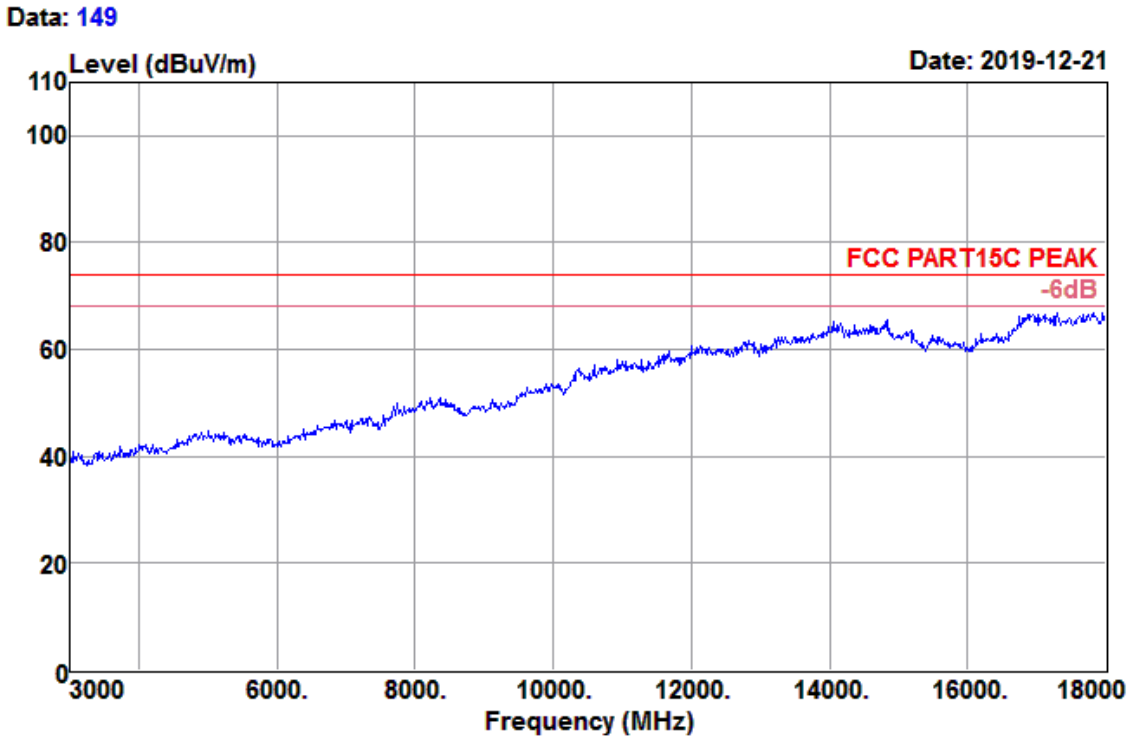
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

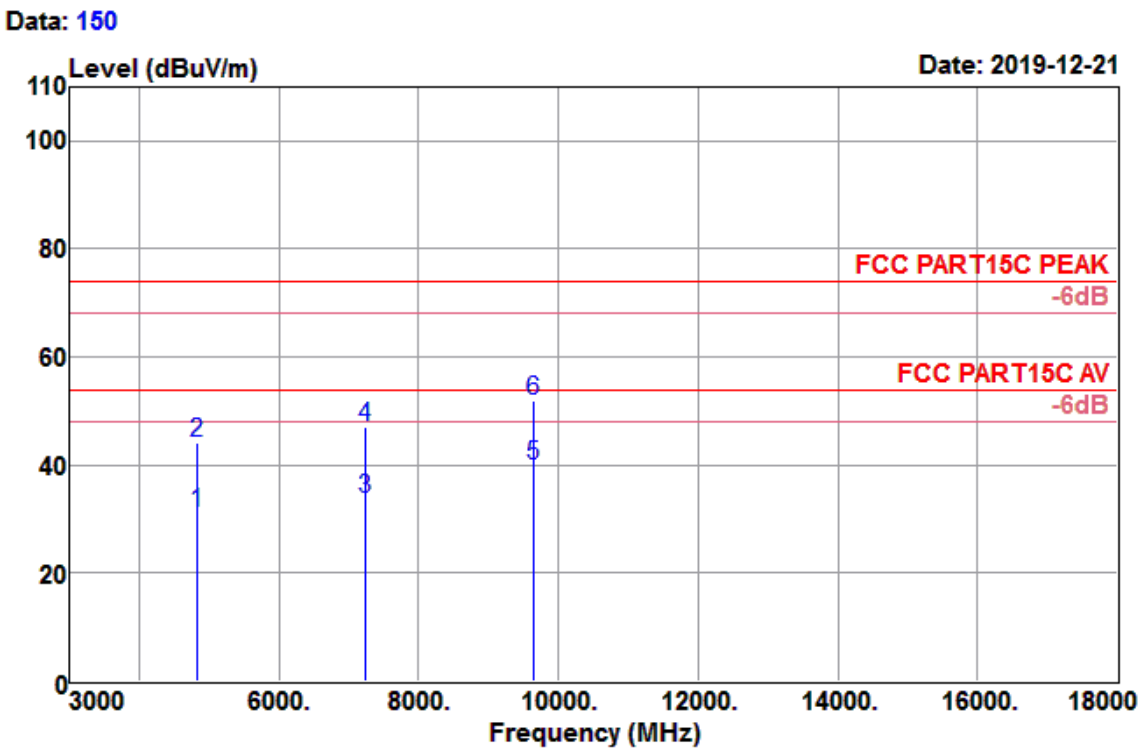
Test Mode :	802.11g CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Horizontal



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
2412.000	84.54	27.17	3.55	35.58	79.68	74.00	5.68	Peak

Test Mode :	802.11g CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Horizontal

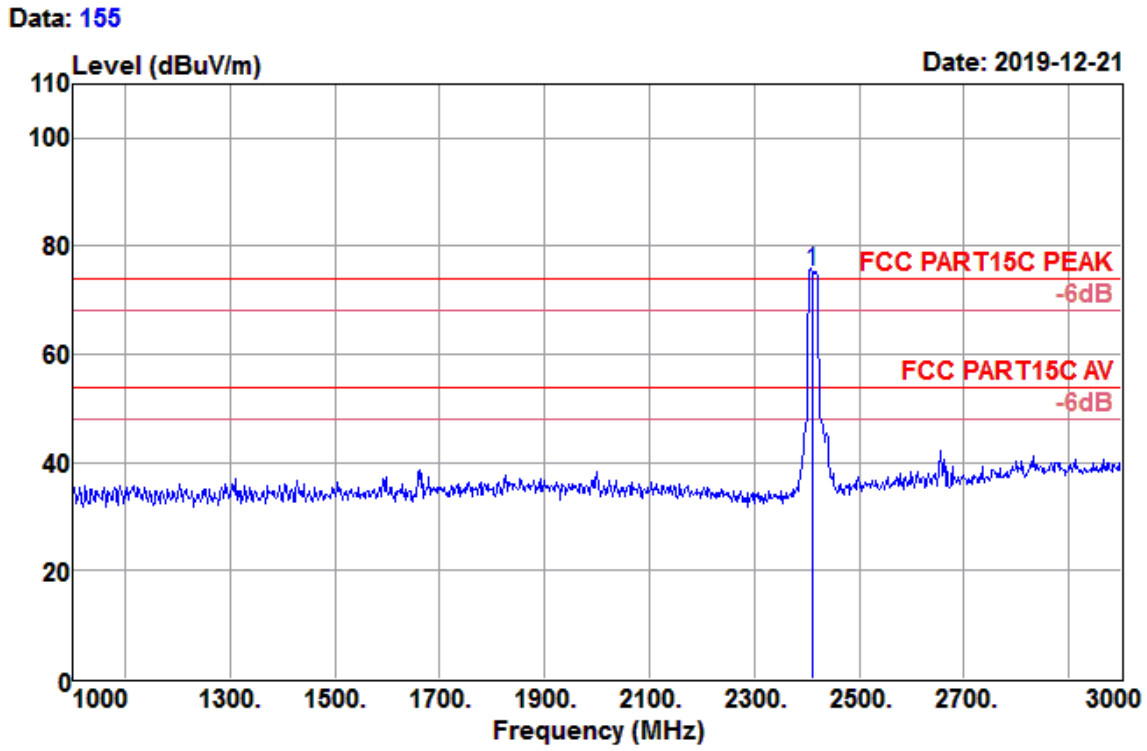




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4824.000	29.01	31.28	5.56	34.84	31.01	54.00	-22.99	Average
4824.000	42.06	31.28	5.56	34.84	44.06	74.00	-29.94	Peak
7236.000	26.75	35.94	7.61	36.40	33.90	54.00	-20.10	Average
7236.000	39.85	35.94	7.61	36.40	47.00	74.00	-27.00	Peak
9648.000	28.14	37.87	10.41	36.40	40.02	54.00	-13.98	Average
9648.000	40.16	37.87	10.41	36.40	52.04	74.00	-21.96	Peak

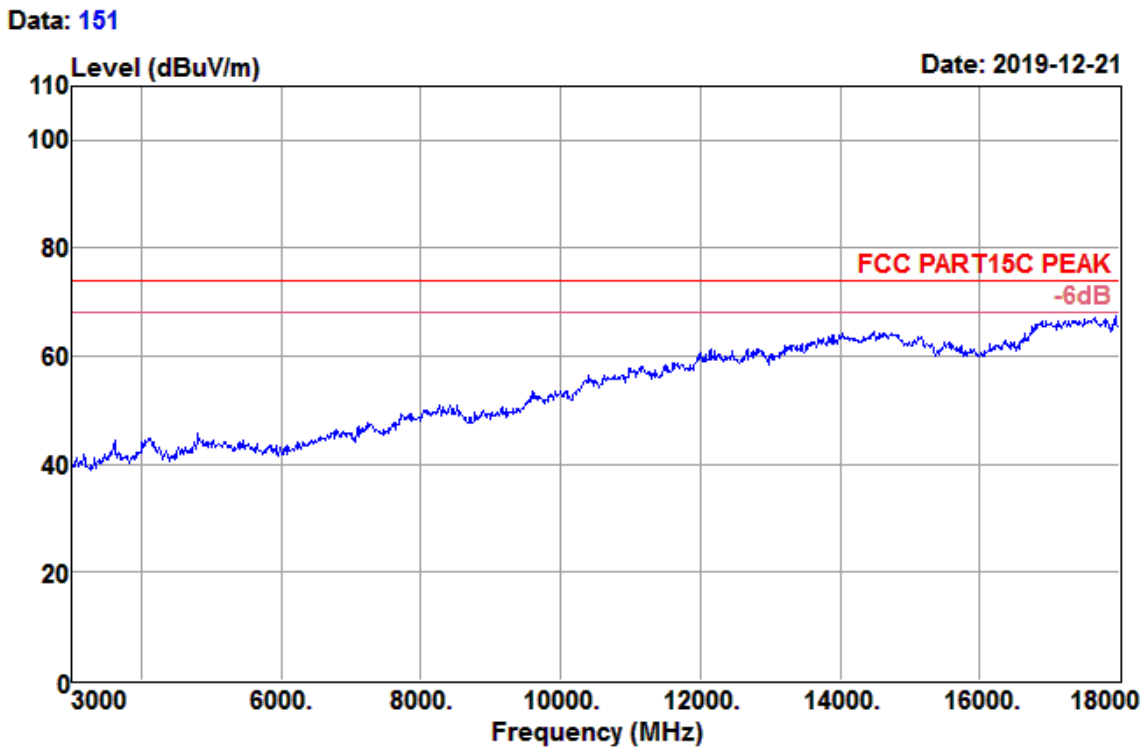
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

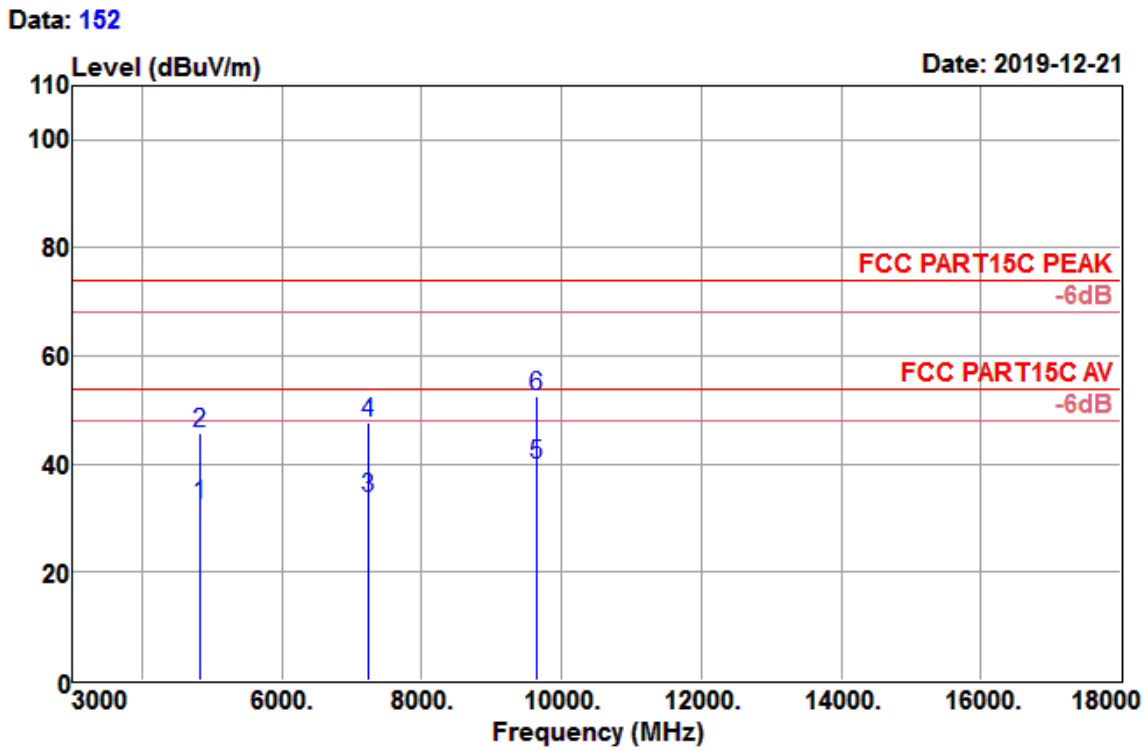
Test Mode :	802.11g CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Vertical



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
2412.000	80.21	27.17	3.55	35.58	75.35	74.00	1.35	Peak

Test Mode :	802.11g CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Vertical

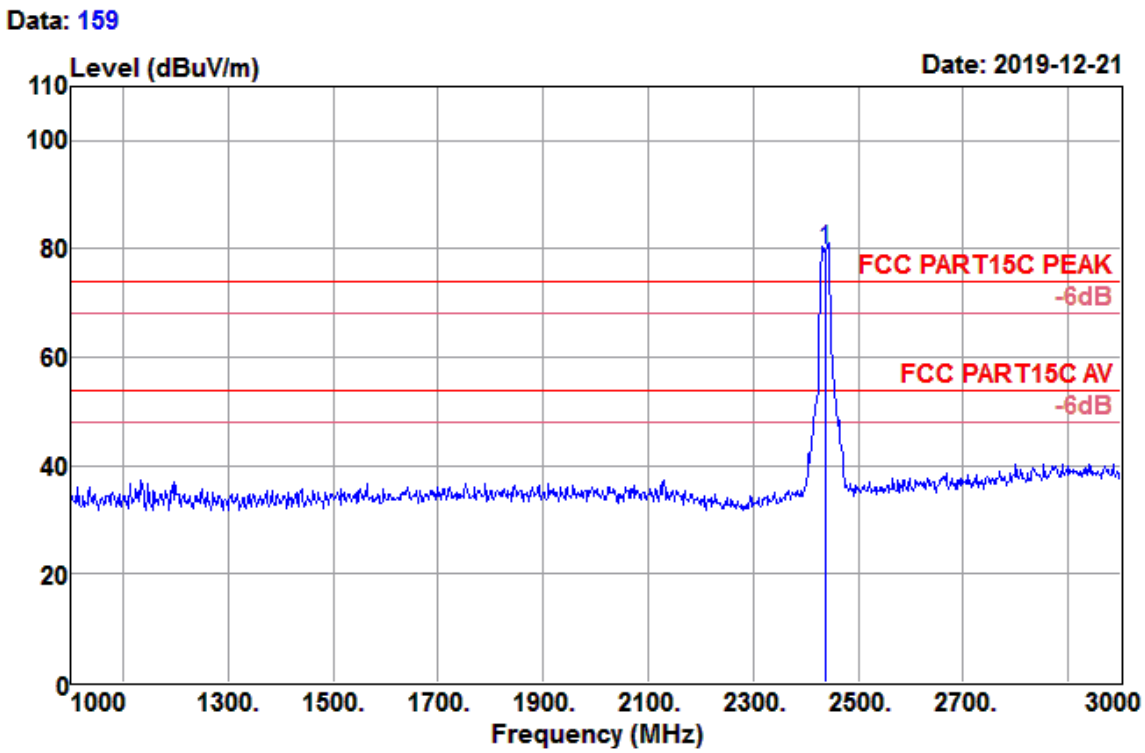




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4824.000	30.62	31.28	5.56	34.84	32.62	54.00	-21.38	Average
4824.000	43.86	31.28	5.56	34.84	45.86	74.00	-28.14	Peak
7236.000	26.51	35.94	7.61	36.40	33.66	54.00	-20.34	Average
7236.000	40.68	35.94	7.61	36.40	47.83	74.00	-26.17	Peak
9648.000	27.98	37.87	10.41	36.40	39.86	54.00	-14.14	Average
9648.000	40.56	37.87	10.41	36.40	52.44	74.00	-21.56	Peak

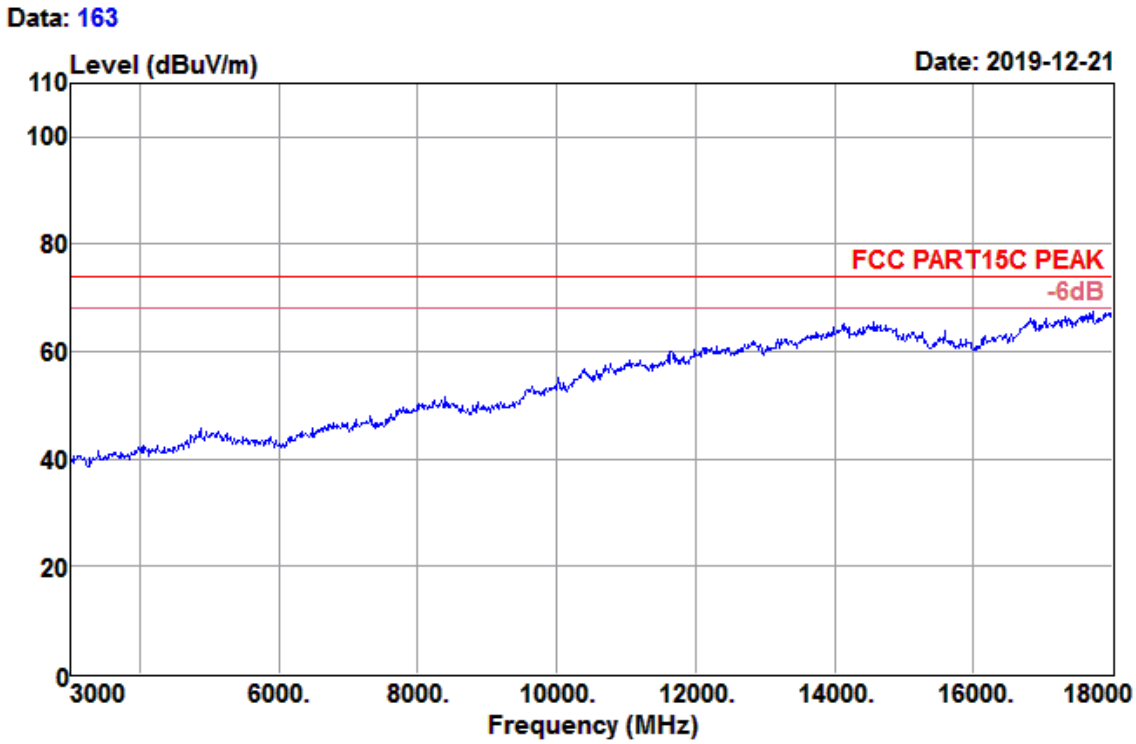
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

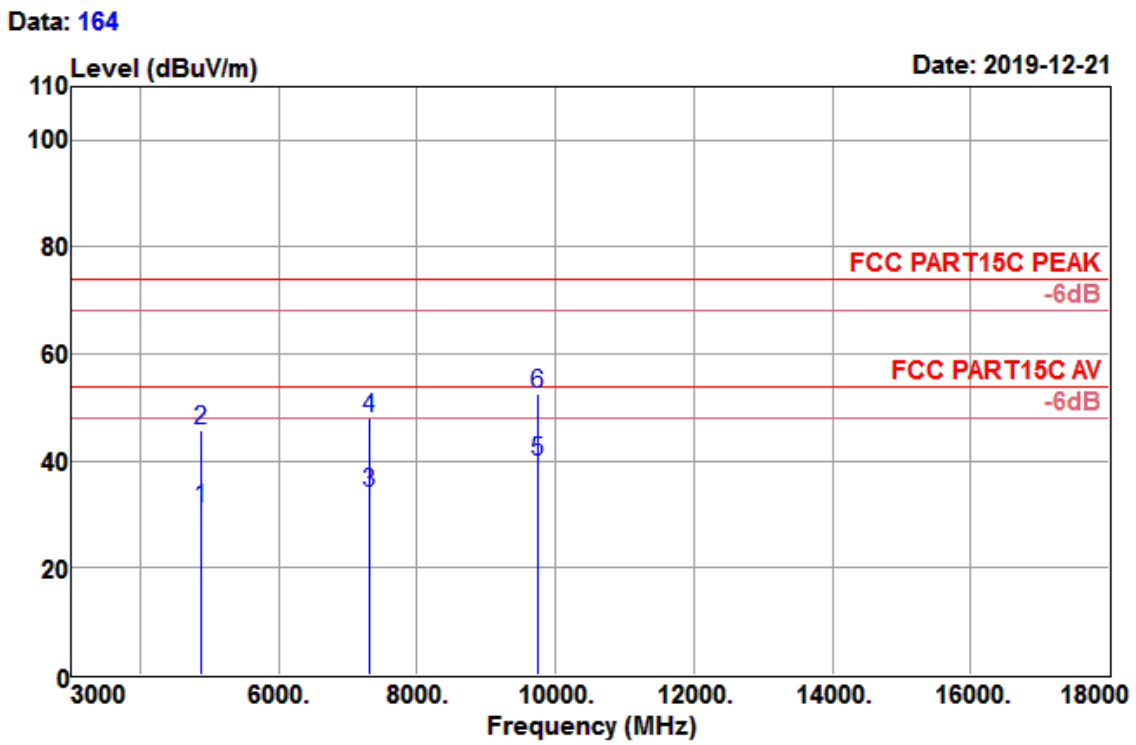
Test Mode :	802.11g CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Horizontal



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
2437.000	84.52	27.24	3.56	35.61	79.71	74.00	5.71	Peak

Test Mode :	802.11g CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Horizontal

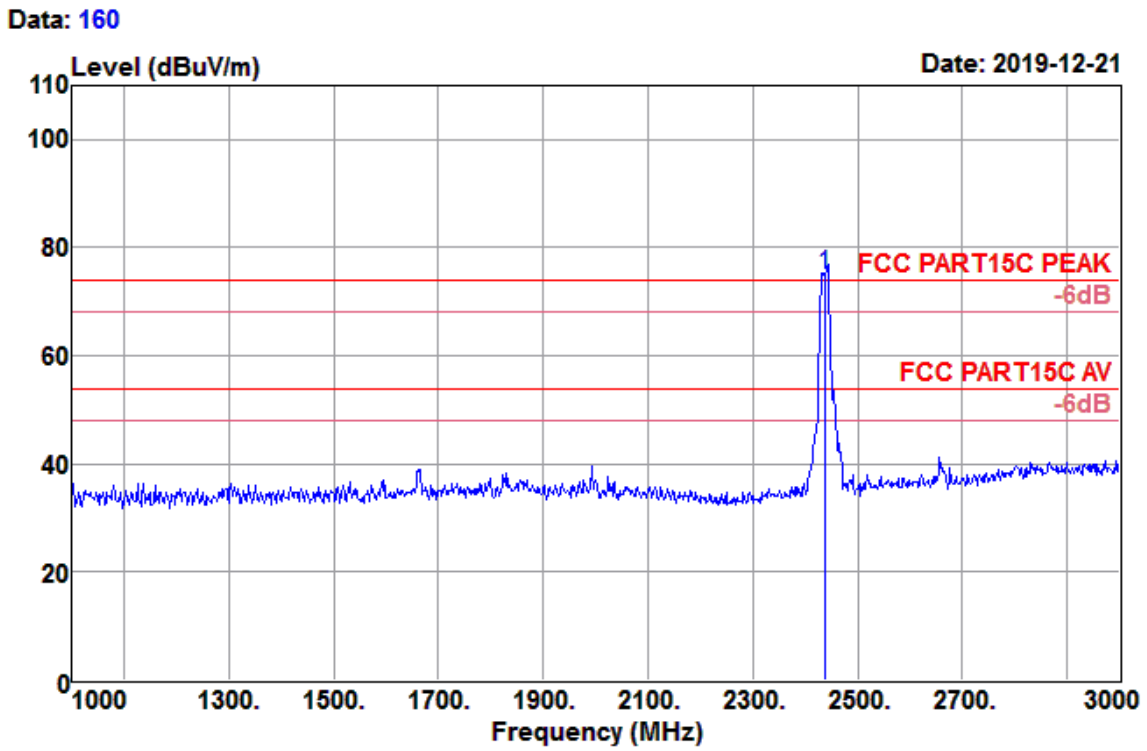




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4874.000	29.12	31.40	5.55	34.80	31.27	54.00	-22.73	Average
4874.000	43.68	31.40	5.55	34.80	45.83	74.00	-28.17	Peak
7311.000	26.95	36.12	7.53	36.40	34.20	54.00	-19.80	Average
7311.000	40.66	36.12	7.53	36.40	47.91	74.00	-26.09	Peak
9748.000	27.60	38.05	10.70	36.40	39.95	54.00	-14.05	Average
9748.000	40.30	38.05	10.70	36.40	52.65	74.00	-21.35	Peak

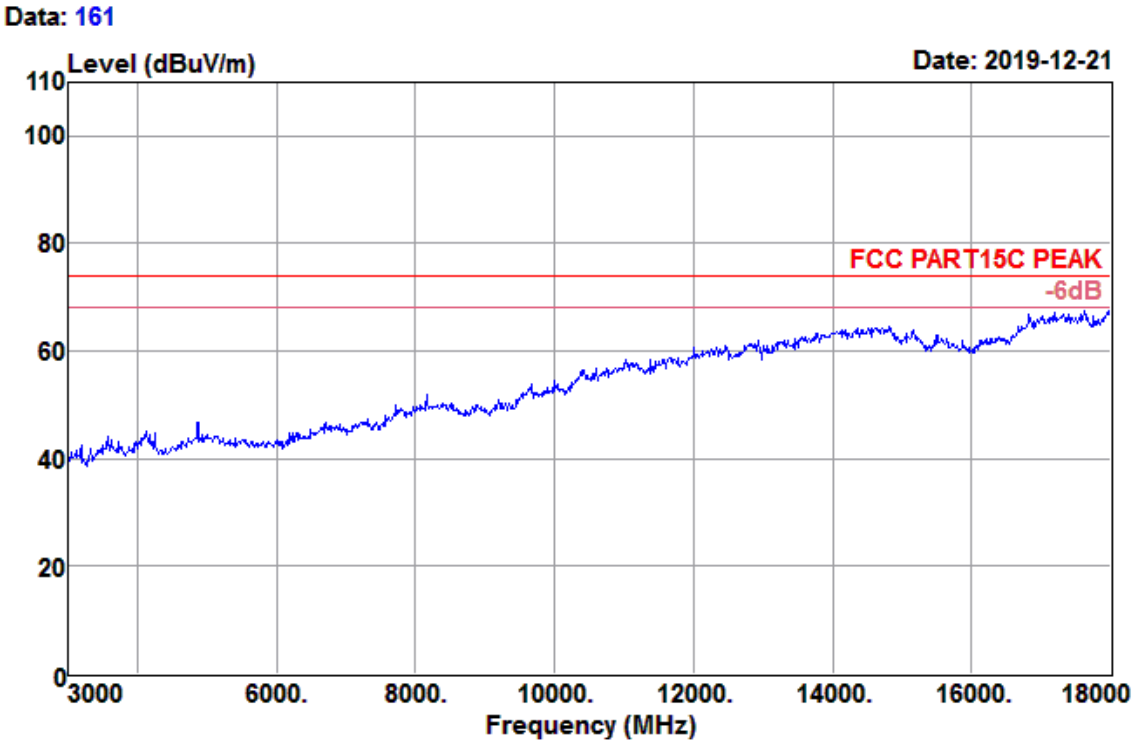
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

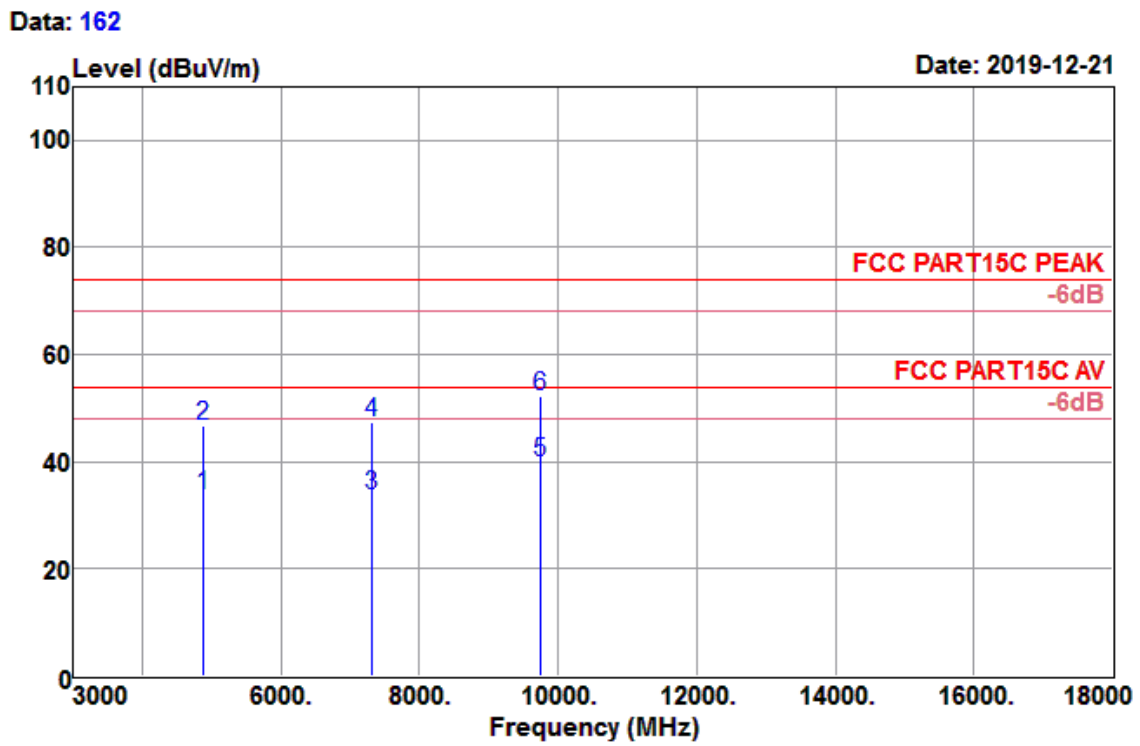
Test Mode :	802.11g CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Vertical



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
2437.000	79.76	27.24	3.56	35.61	74.95	74.00	0.95	Peak

Test Mode :	802.11g CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Vertical

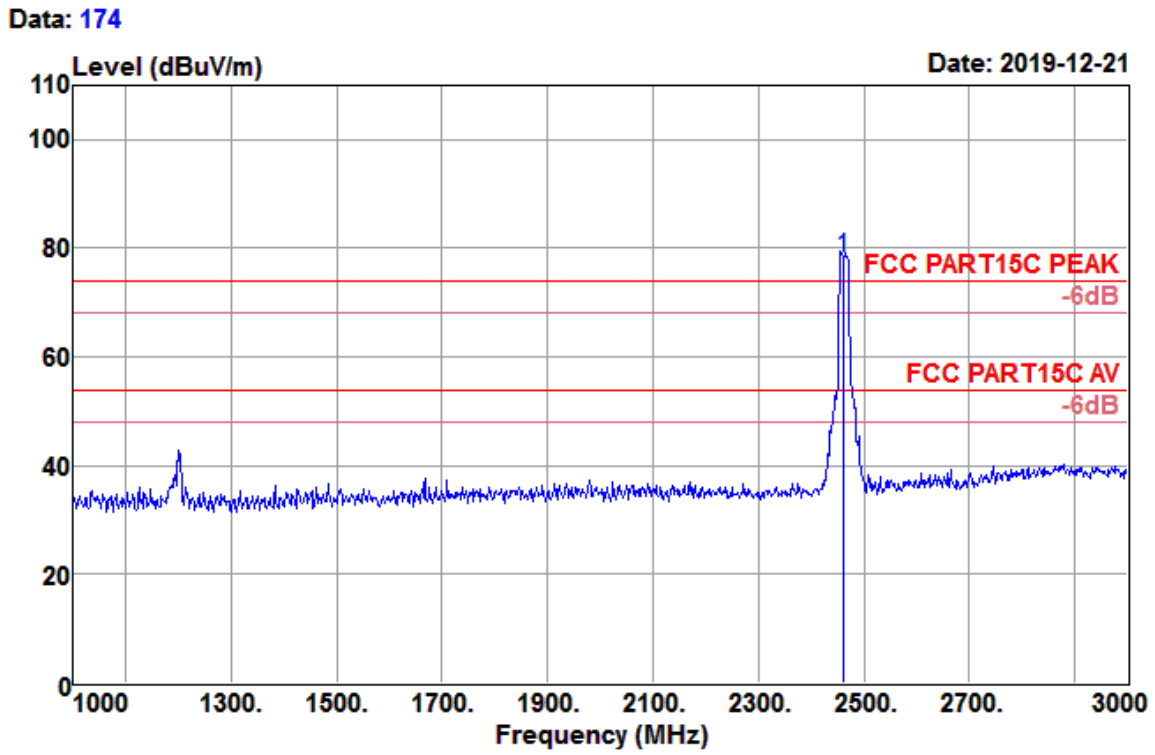




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4874.000	31.71	31.40	5.55	34.80	33.86	54.00	-20.14	Average
4874.000	44.55	31.40	5.55	34.80	46.70	74.00	-27.30	Peak
7311.000	26.63	36.12	7.53	36.40	33.88	54.00	-20.12	Average
7311.000	40.09	36.12	7.53	36.40	47.34	74.00	-26.66	Peak
9748.000	27.59	38.05	10.70	36.40	39.94	54.00	-14.06	Average
9748.000	39.86	38.05	10.70	36.40	52.21	74.00	-21.79	Peak

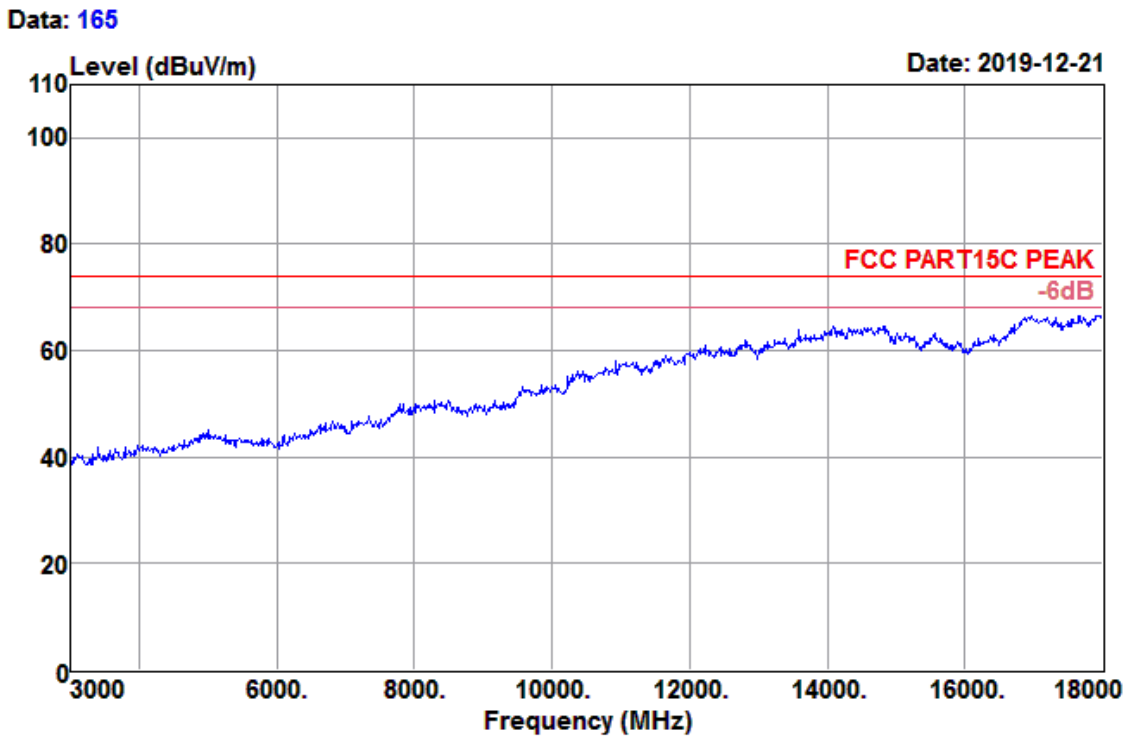
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

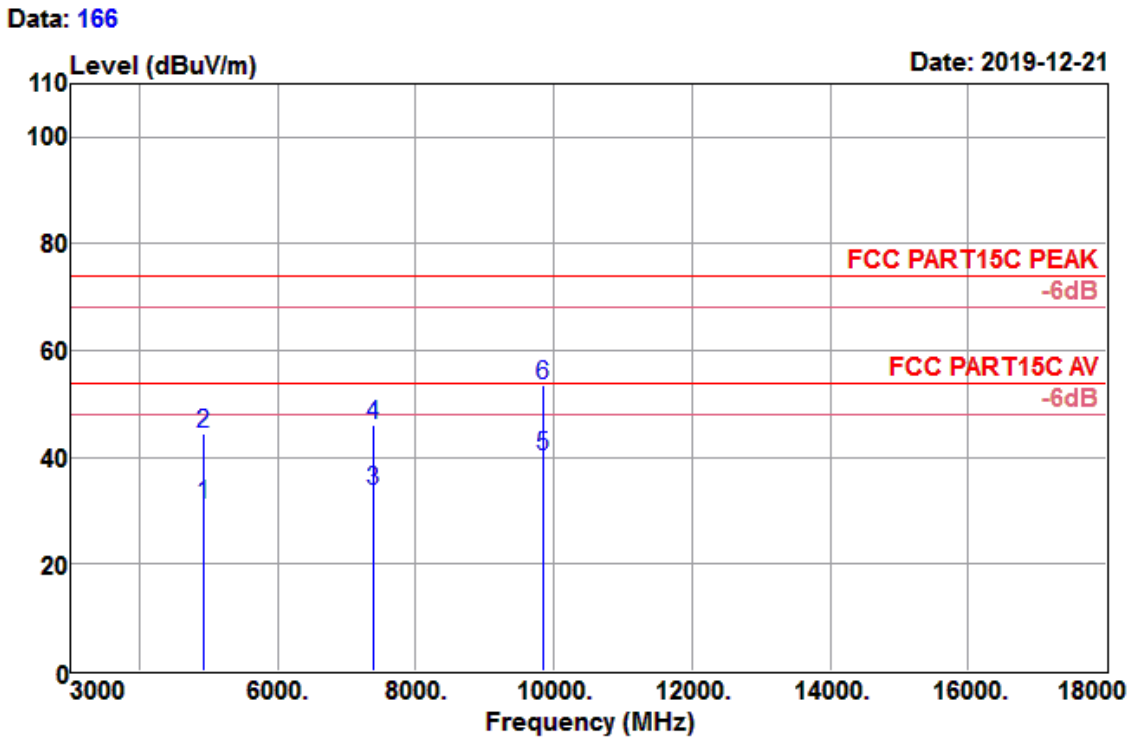
Test Mode :	802.11g CH11 (2462MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Horizontal



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
2462.000	83.03	27.30	3.58	35.65	78.26	74.00	4.26	Peak

Test Mode :	802.11g CH11 (2462MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Horizontal

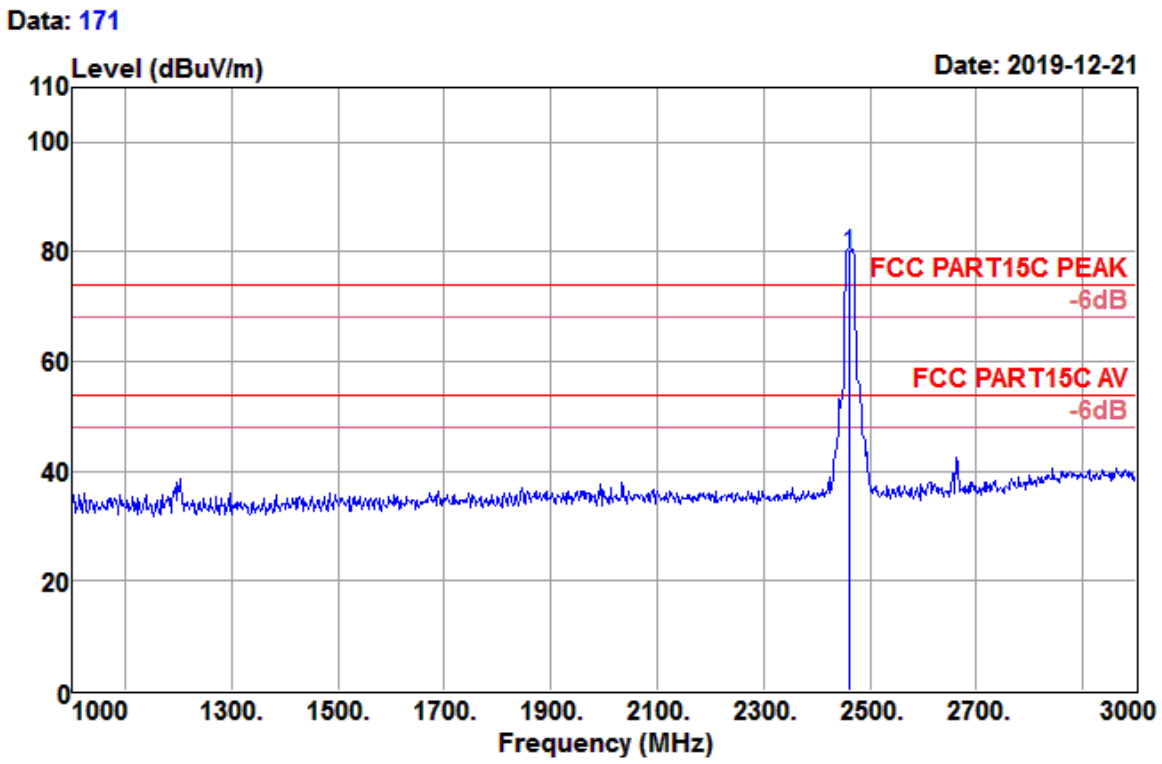




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4924.000	28.81	31.52	5.53	34.76	31.10	54.00	-22.90	Average
4924.000	42.13	31.52	5.53	34.76	44.42	74.00	-29.58	Peak
7386.000	26.51	36.29	7.46	36.40	33.86	54.00	-20.14	Average
7386.000	38.87	36.29	7.46	36.40	46.22	74.00	-27.78	Peak
9848.000	27.43	38.23	10.98	36.40	40.24	54.00	-13.76	Average
9848.000	40.88	38.23	10.98	36.40	53.69	74.00	-20.31	Peak

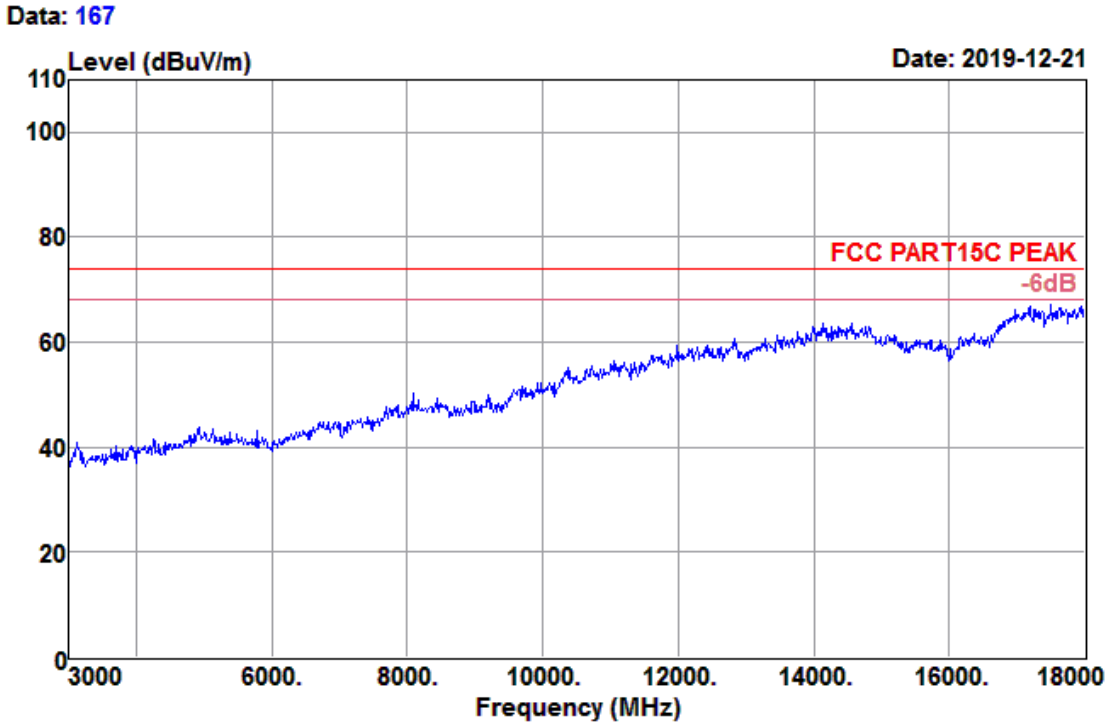
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

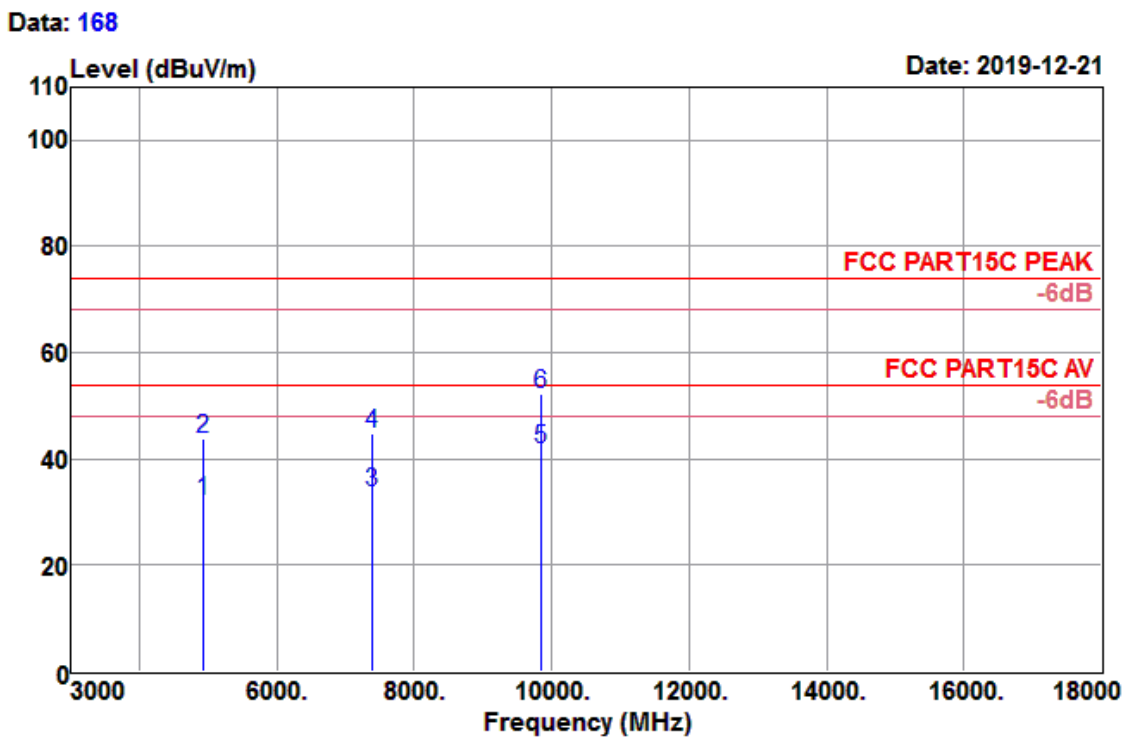
Test Mode :	802.11g CH11 (2462MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Vertical



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
2462.000	84.30	27.30	3.58	35.65	79.53	74.00	5.53	Peak

Test Mode :	802.11g CH11 (2462MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Vertical

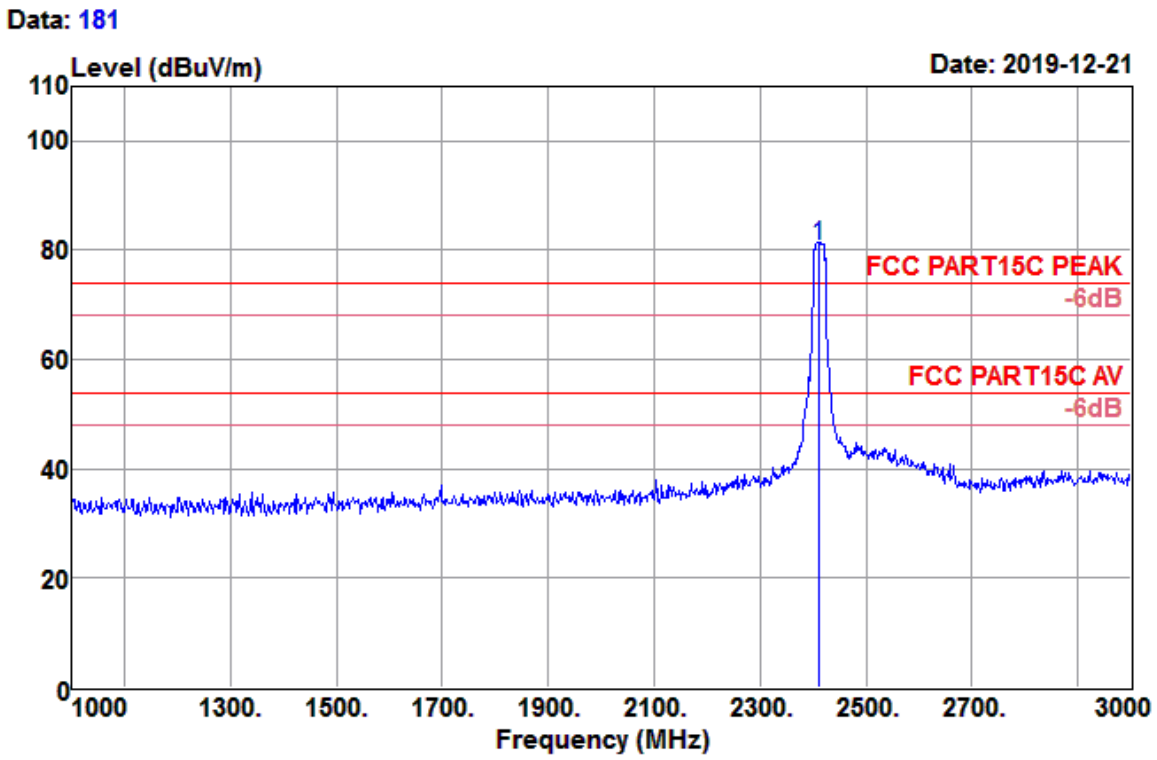




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4924.000	29.93	31.52	5.53	34.76	32.22	54.00	-21.78	Average
4924.000	41.38	31.52	5.53	34.76	43.67	74.00	-30.33	Peak
7386.000	26.57	36.29	7.46	36.40	33.92	54.00	-20.08	Average
7386.000	37.43	36.29	7.46	36.40	44.78	74.00	-29.22	Peak
9848.000	28.95	38.23	10.98	36.40	41.76	54.00	-12.24	Average
9848.000	39.61	38.23	10.98	36.40	52.42	74.00	-21.58	Peak

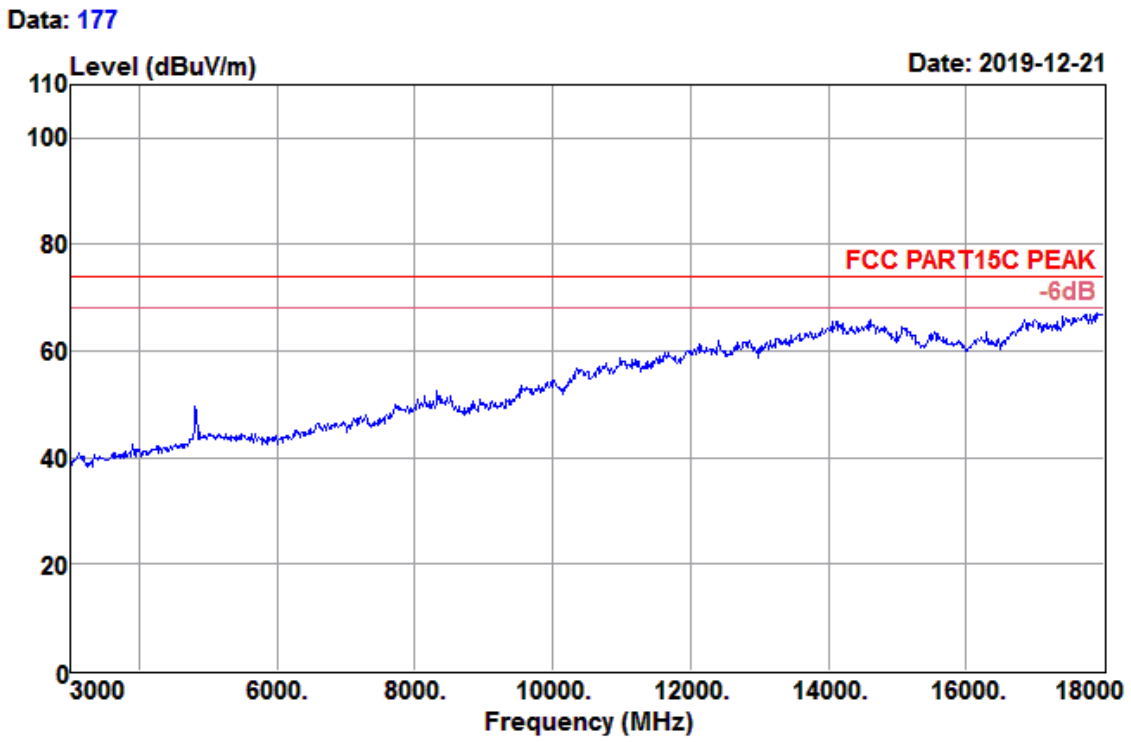
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

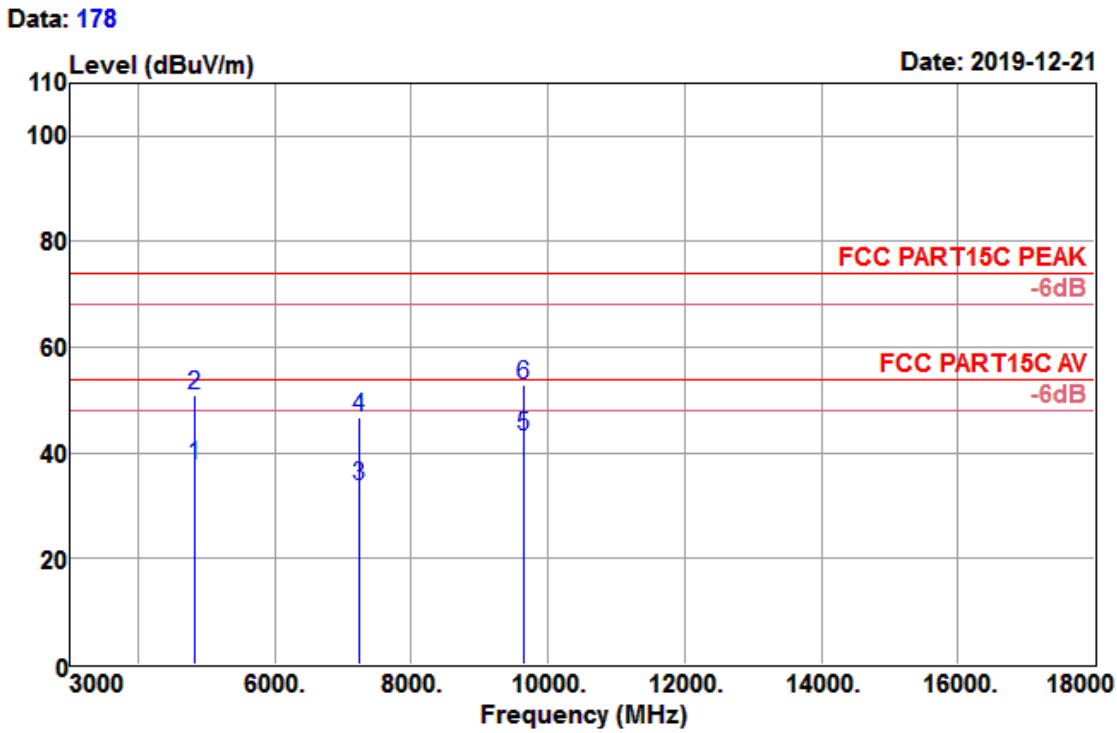
Test Mode :	802.11n HT20 CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Horizontal



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
2412.000	85.81	27.17	3.55	35.58	80.95	74.00	6.95	Peak

Test Mode :	802.11n HT20 CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Horizontal

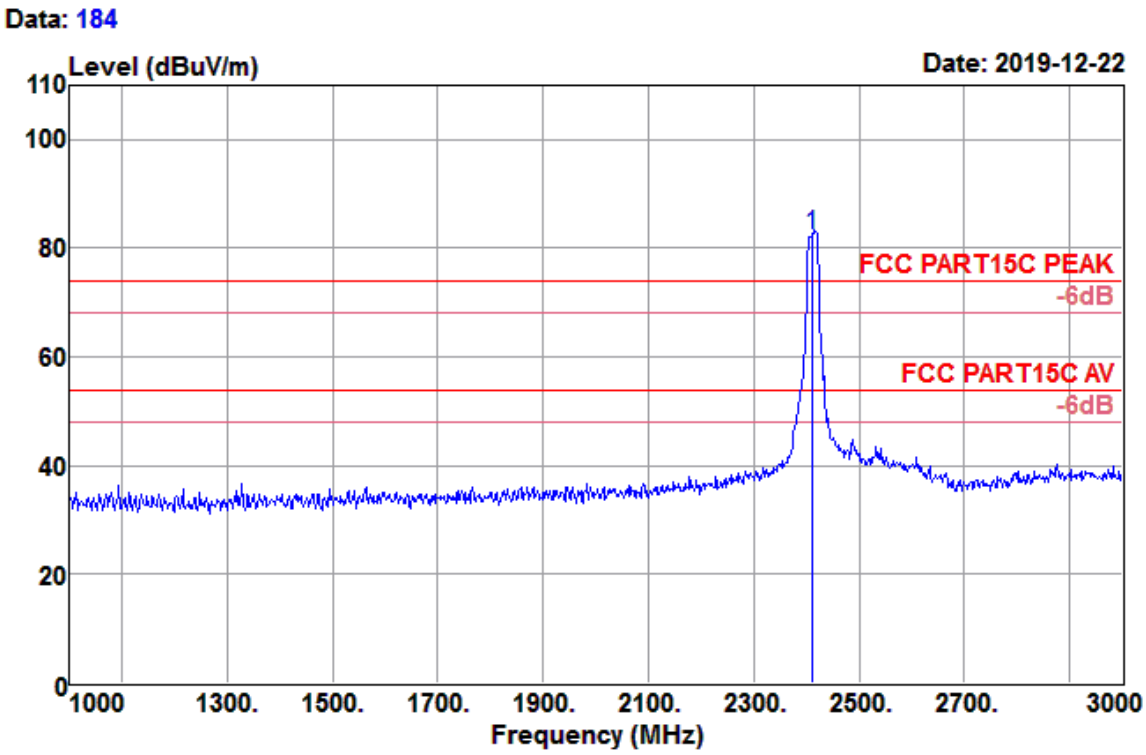




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4824.000	35.76	31.28	5.56	34.84	37.76	54.00	-16.24	Average
4824.000	48.82	31.28	5.56	34.84	50.82	74.00	-23.18	Peak
7236.000	26.58	35.94	7.61	36.40	33.73	54.00	-20.27	Average
7236.000	39.69	35.94	7.61	36.40	46.84	74.00	-27.16	Peak
9648.000	31.17	37.87	10.41	36.40	43.05	54.00	-10.95	Average
9648.000	41.00	37.87	10.41	36.40	52.88	74.00	-21.12	Peak

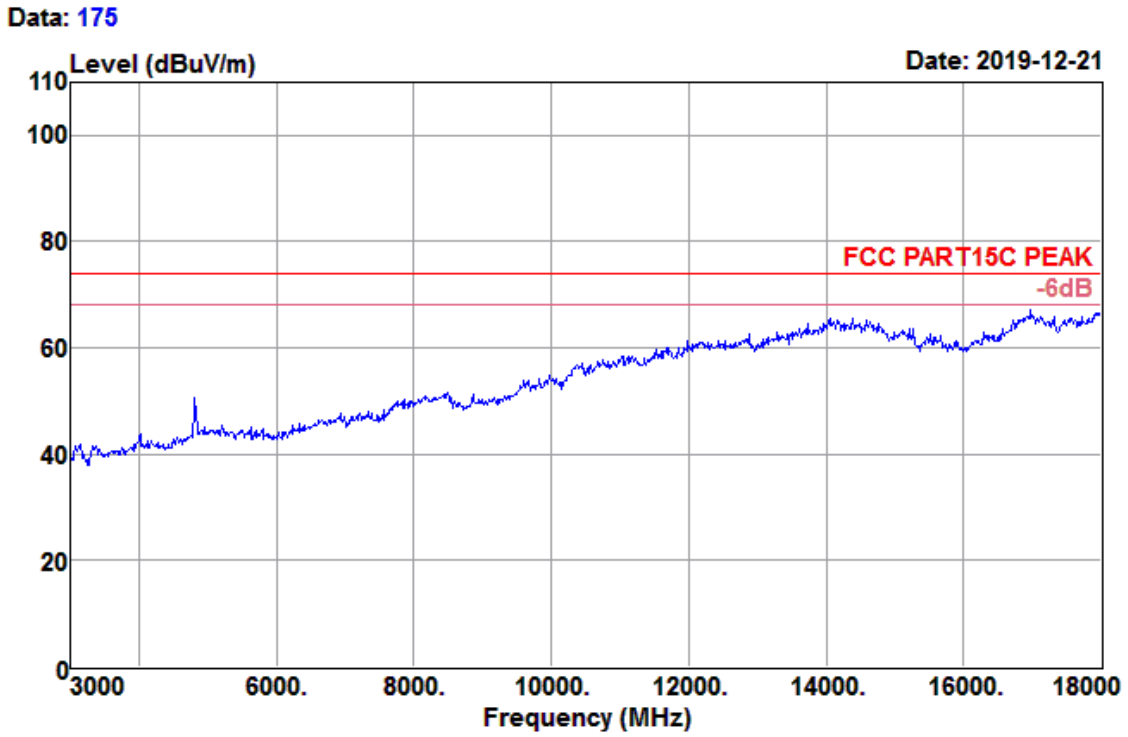
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

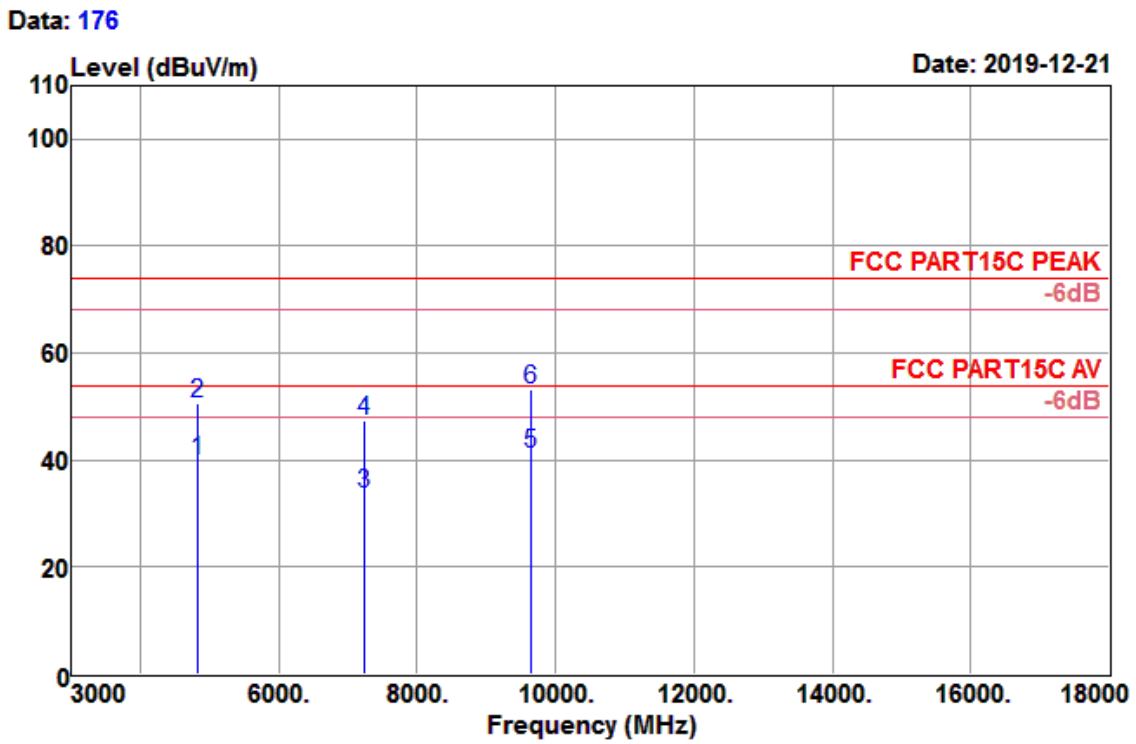
Test Mode :	802.11n HT20 CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Vertical



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
2412.000	87.23	27.17	3.55	35.58	82.37	74.00	8.37	Peak

Test Mode :	802.11n HT20 CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Vertical

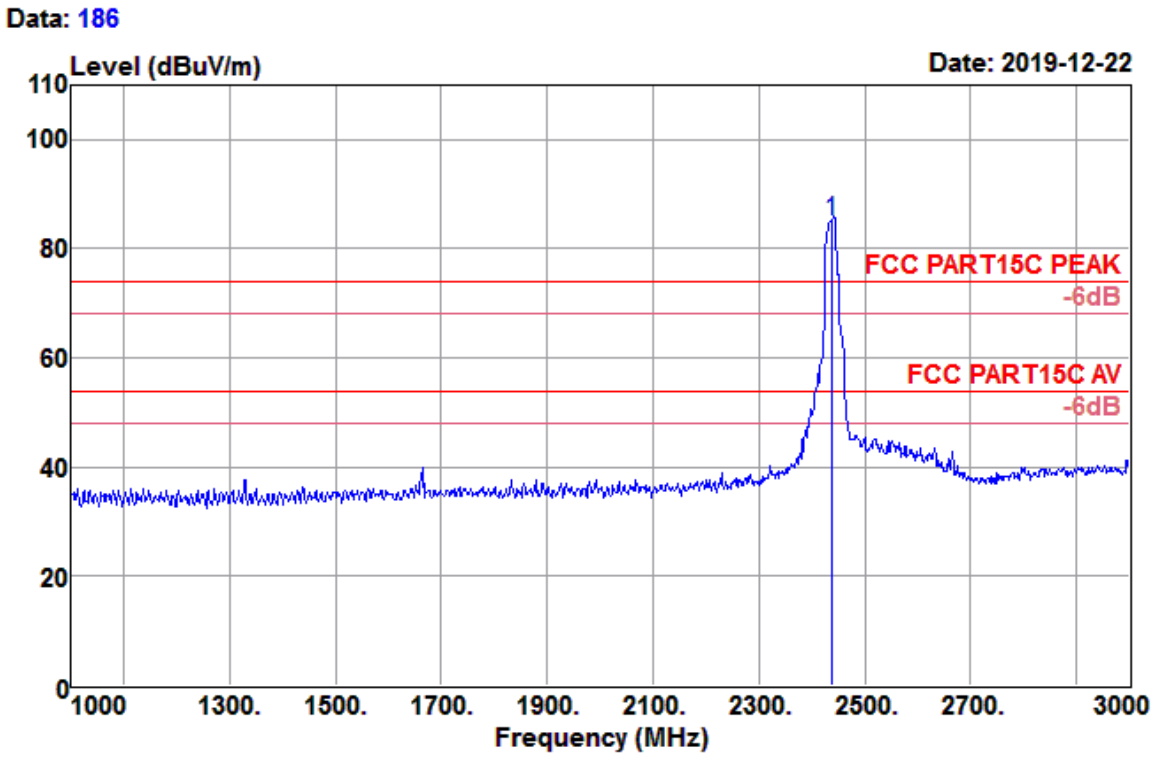




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4824.000	37.79	31.28	5.56	34.84	39.79	54.00	-14.21	Average
4824.000	48.77	31.28	5.56	34.84	50.77	74.00	-23.23	Peak
7236.000	26.73	35.94	7.61	36.40	33.88	54.00	-20.12	Average
7236.000	40.31	35.94	7.61	36.40	47.46	74.00	-26.54	Peak
9648.000	29.27	37.87	10.41	36.40	41.15	54.00	-12.85	Average
9648.000	41.43	37.87	10.41	36.40	53.31	74.00	-20.69	Peak

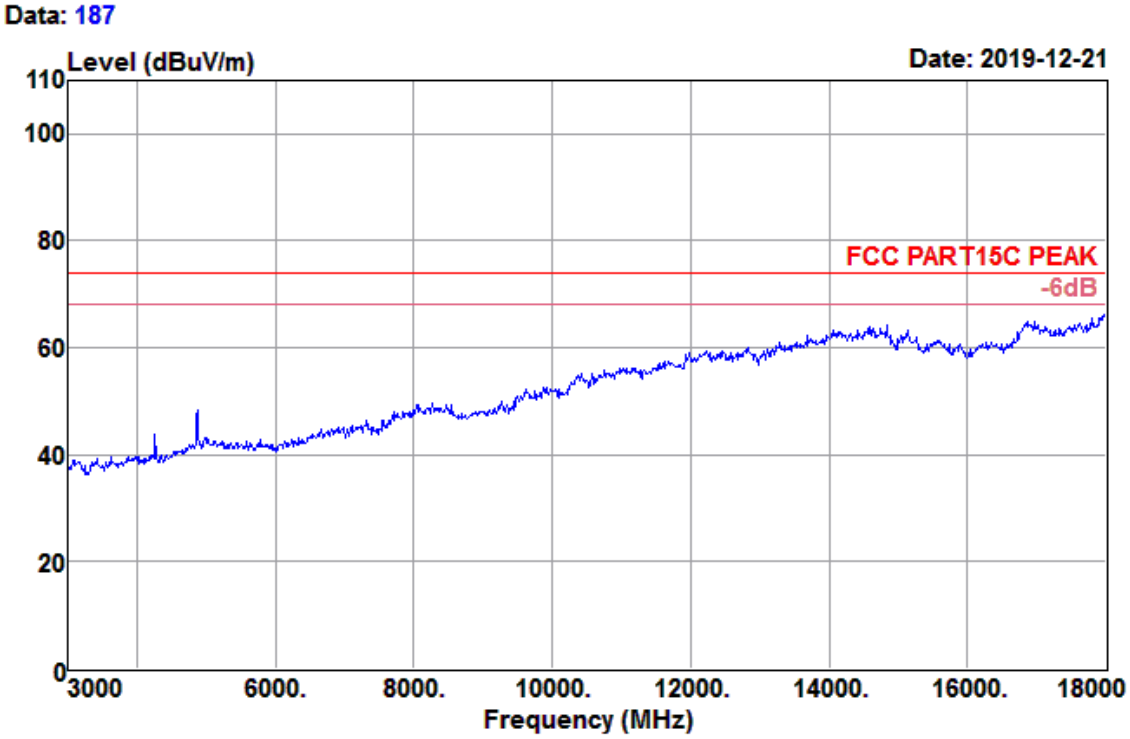
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

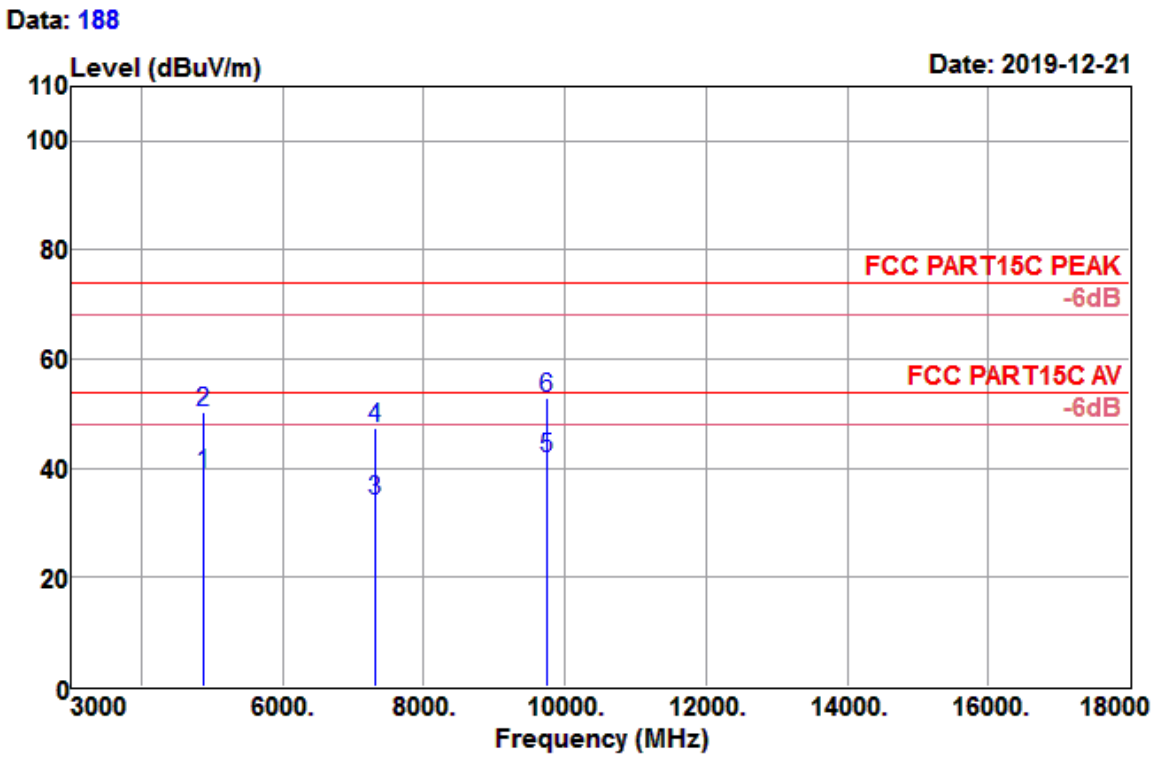
Test Mode :	802.11n HT20 CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Horizontal



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
2437.000	89.82	27.24	3.56	35.61	85.01	74.00	11.01	Peak

Test Mode :	802.11n HT20 CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Horizontal

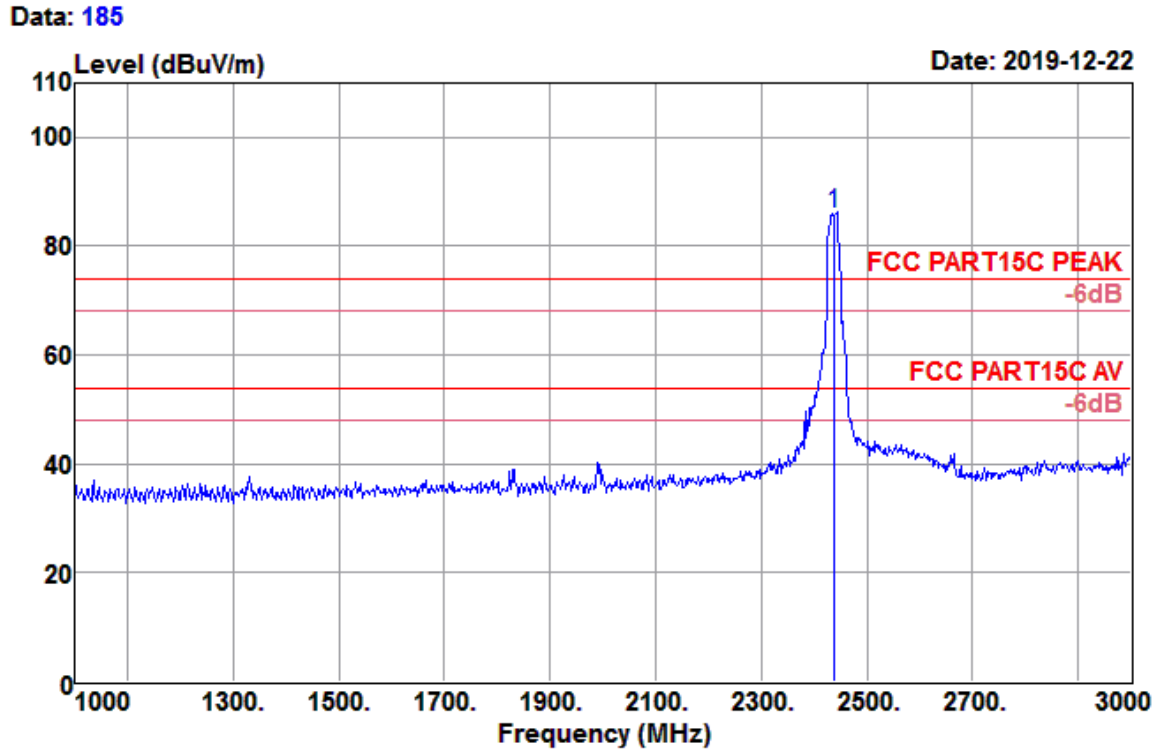




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4874.000	36.80	31.40	5.55	34.80	38.95	54.00	-15.05	Average
4874.000	48.28	31.40	5.55	34.80	50.43	74.00	-23.57	Peak
7311.000	26.77	36.12	7.53	36.40	34.02	54.00	-19.98	Average
7311.000	40.03	36.12	7.53	36.40	47.28	74.00	-26.72	Peak
9748.000	29.50	38.05	10.70	36.40	41.85	54.00	-12.15	Average
9748.000	40.56	38.05	10.70	36.40	52.91	74.00	-21.09	Peak

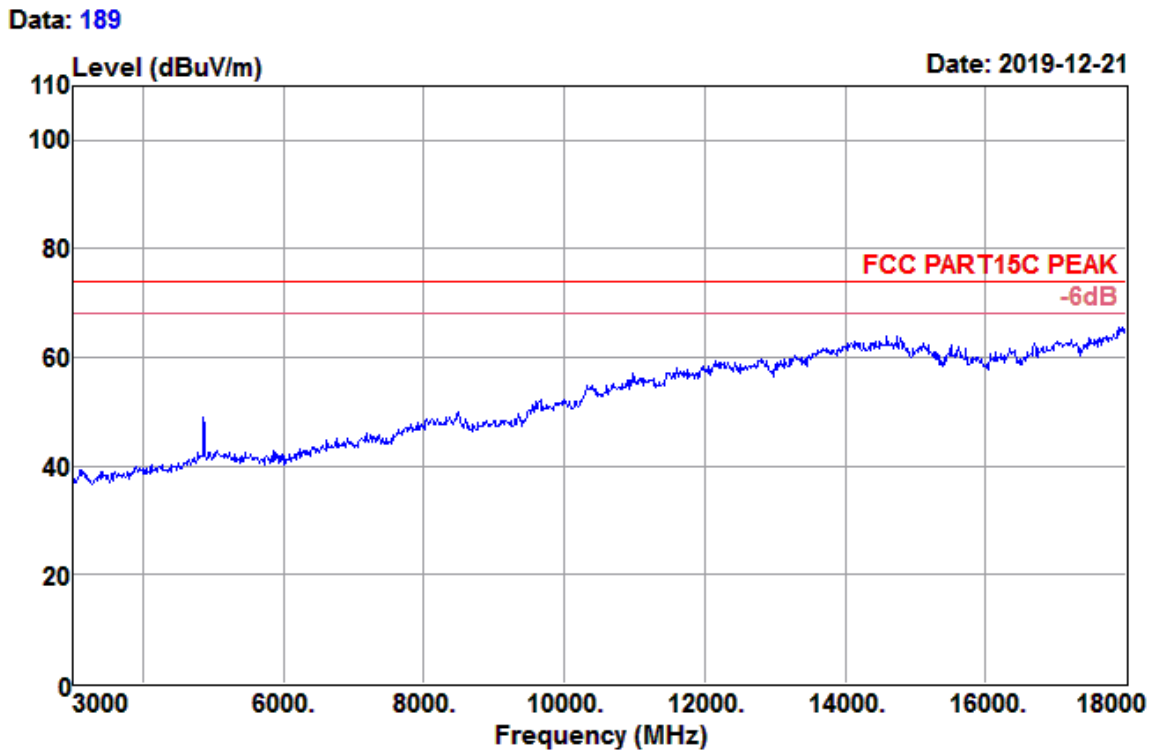
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

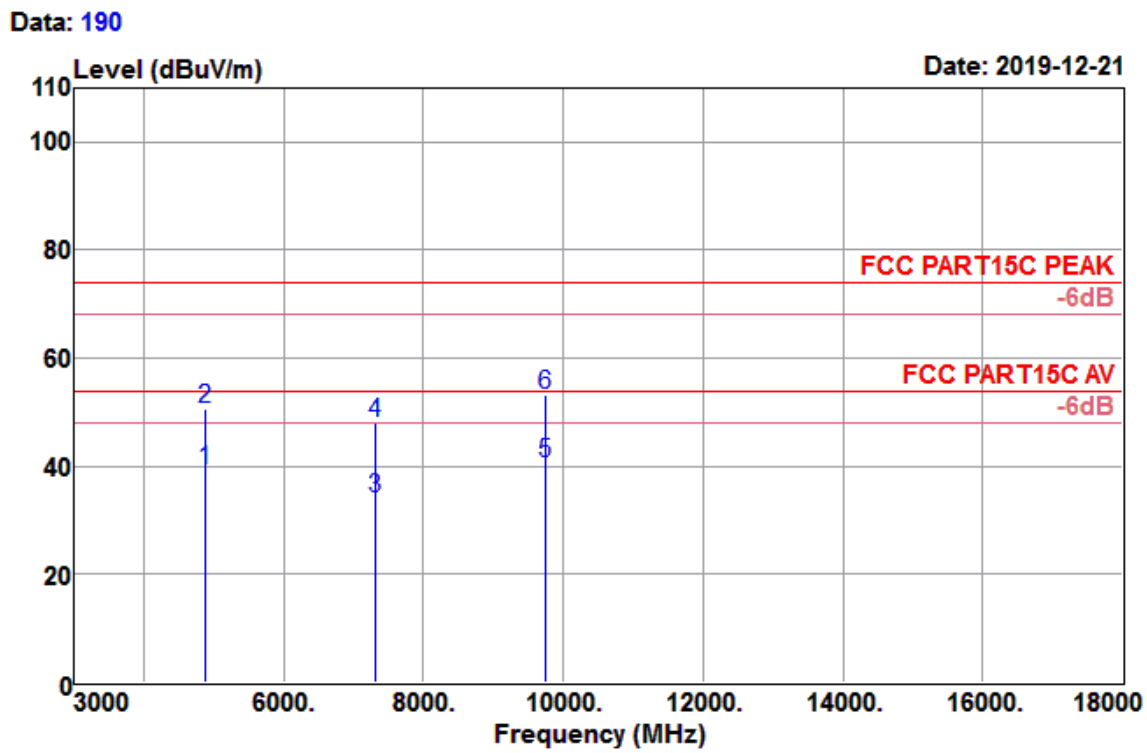
Test Mode :	802.11n HT20 CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Vertical



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
2437.000	90.67	27.24	3.56	35.61	85.86	74.00	11.86	Peak

Test Mode :	802.11n HT20 CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Vertical

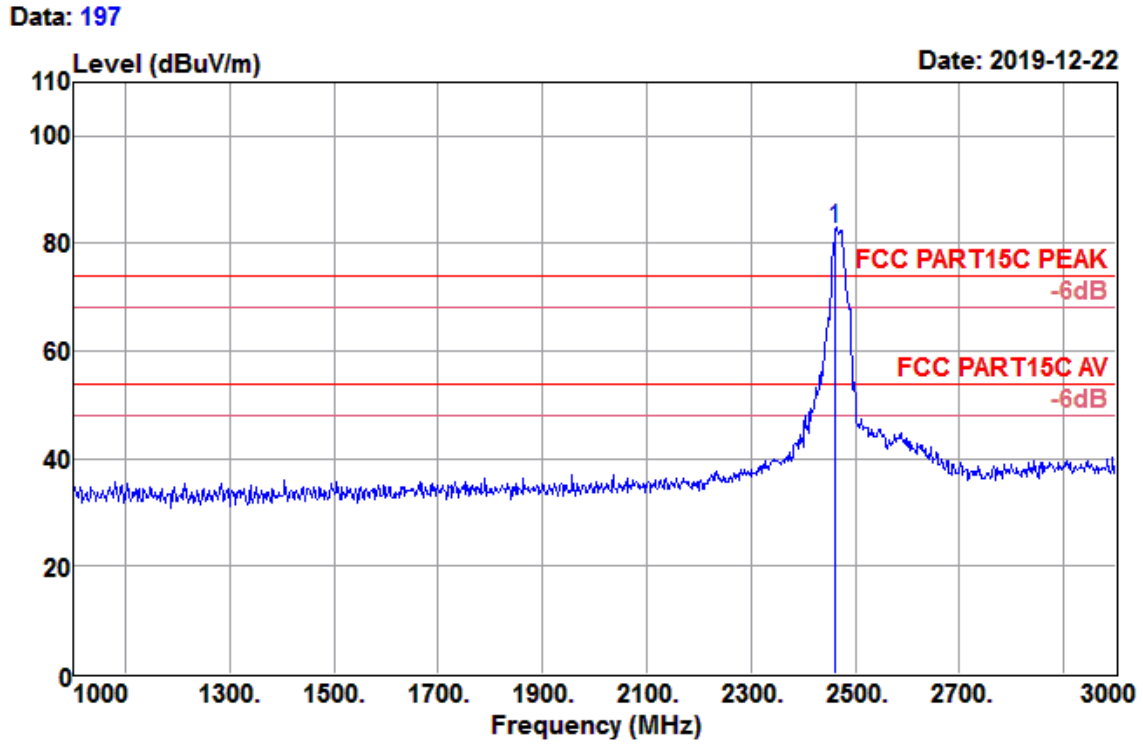




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4874.000	36.97	31.40	5.55	34.80	39.12	54.00	-14.88	Average
4874.000	48.59	31.40	5.55	34.80	50.74	74.00	-23.26	Peak
7311.000	26.78	36.12	7.53	36.40	34.03	54.00	-19.97	Average
7311.000	40.80	36.12	7.53	36.40	48.05	74.00	-25.95	Peak
9748.000	28.37	38.05	10.70	36.40	40.72	54.00	-13.28	Average
9748.000	40.97	38.05	10.70	36.40	53.32	74.00	-20.68	Peak

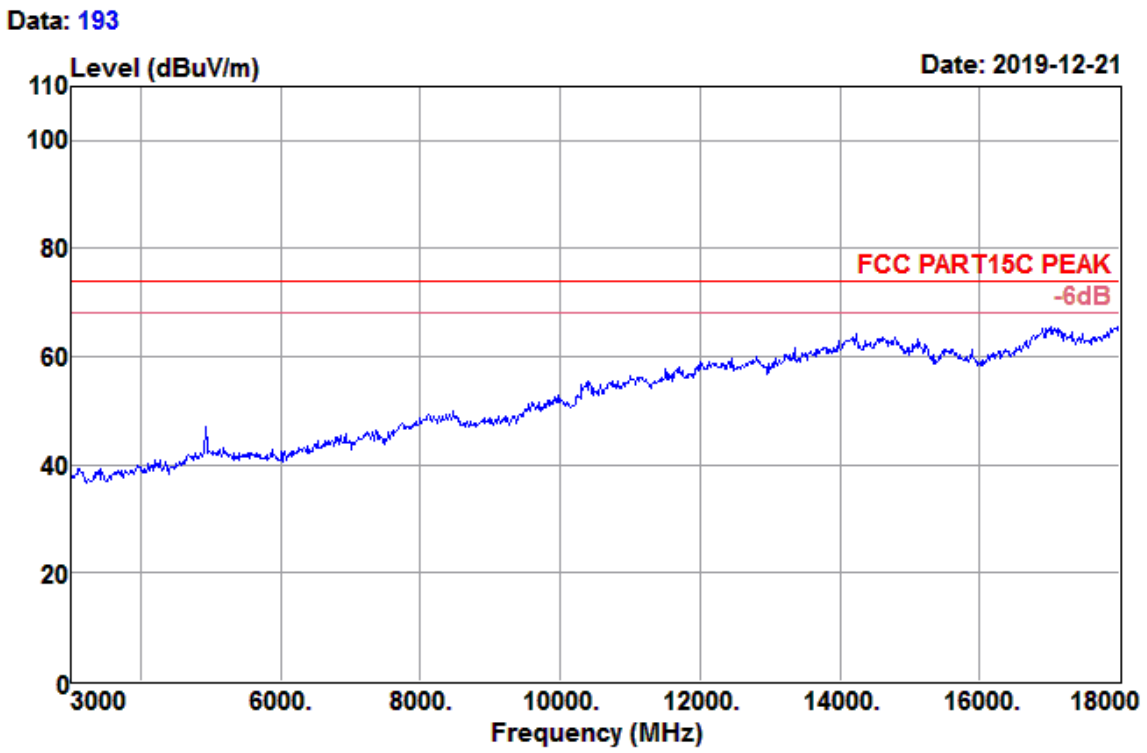
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

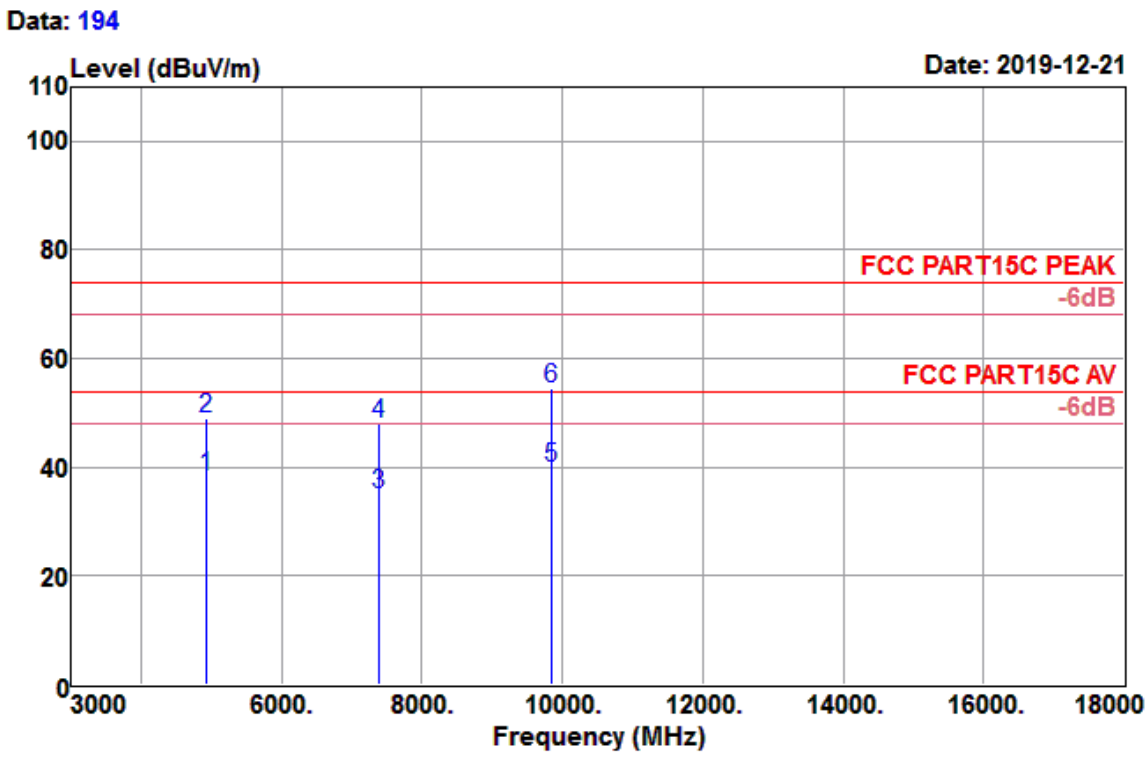
Test Mode :	802.11n HT20 CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Horizontal



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
2462.000	87.57	27.30	3.58	35.65	82.80	74.00	8.80	Peak

Test Mode :	802.11n HT20 CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Horizontal

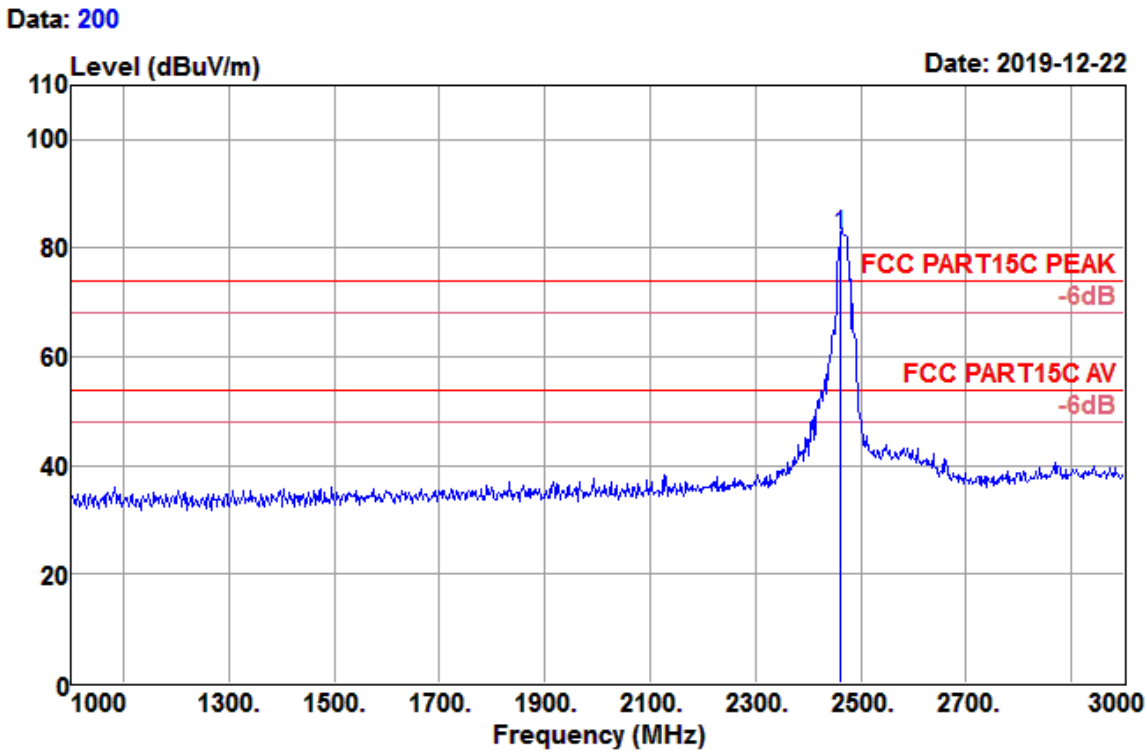




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4924.000	35.87	31.52	5.53	34.76	38.16	54.00	-15.84	Average
4924.000	46.71	31.52	5.53	34.76	49.00	74.00	-25.00	Peak
7386.000	27.81	36.29	7.46	36.40	35.16	54.00	-18.84	Average
7386.000	40.65	36.29	7.46	36.40	48.00	74.00	-26.00	Peak
9848.000	27.07	38.23	10.98	36.40	39.88	54.00	-14.12	Average
9848.000	41.66	38.23	10.98	36.40	54.47	74.00	-19.53	Peak

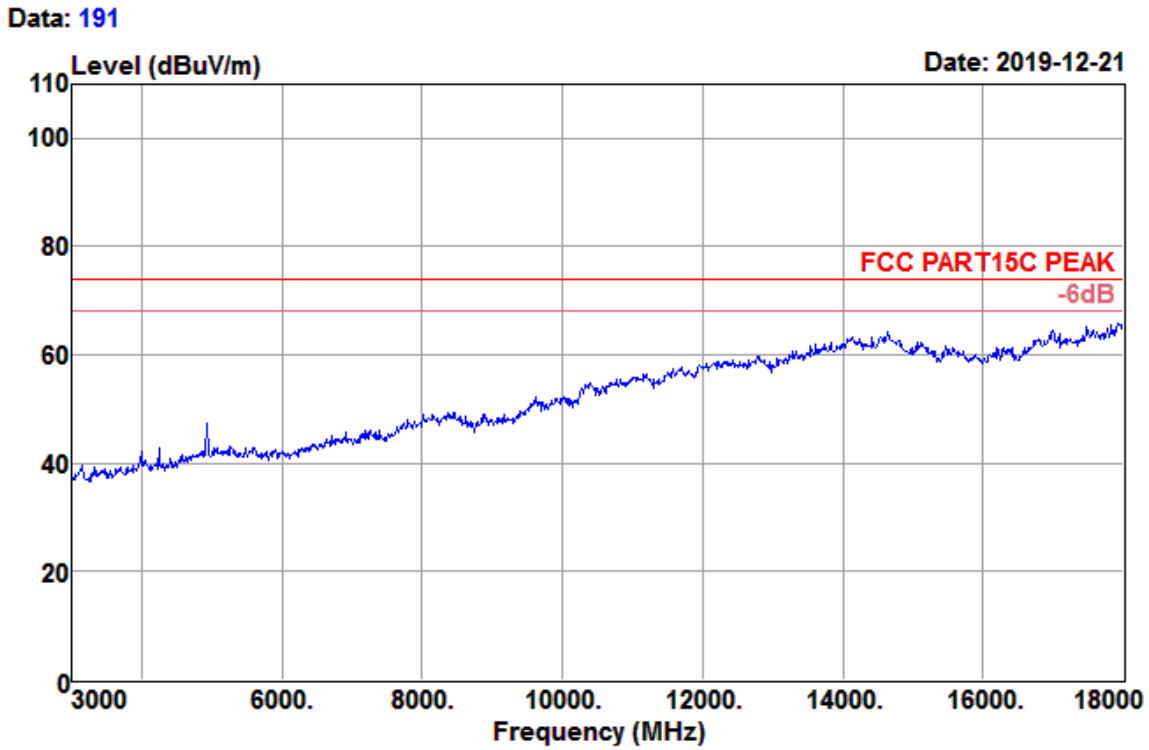
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

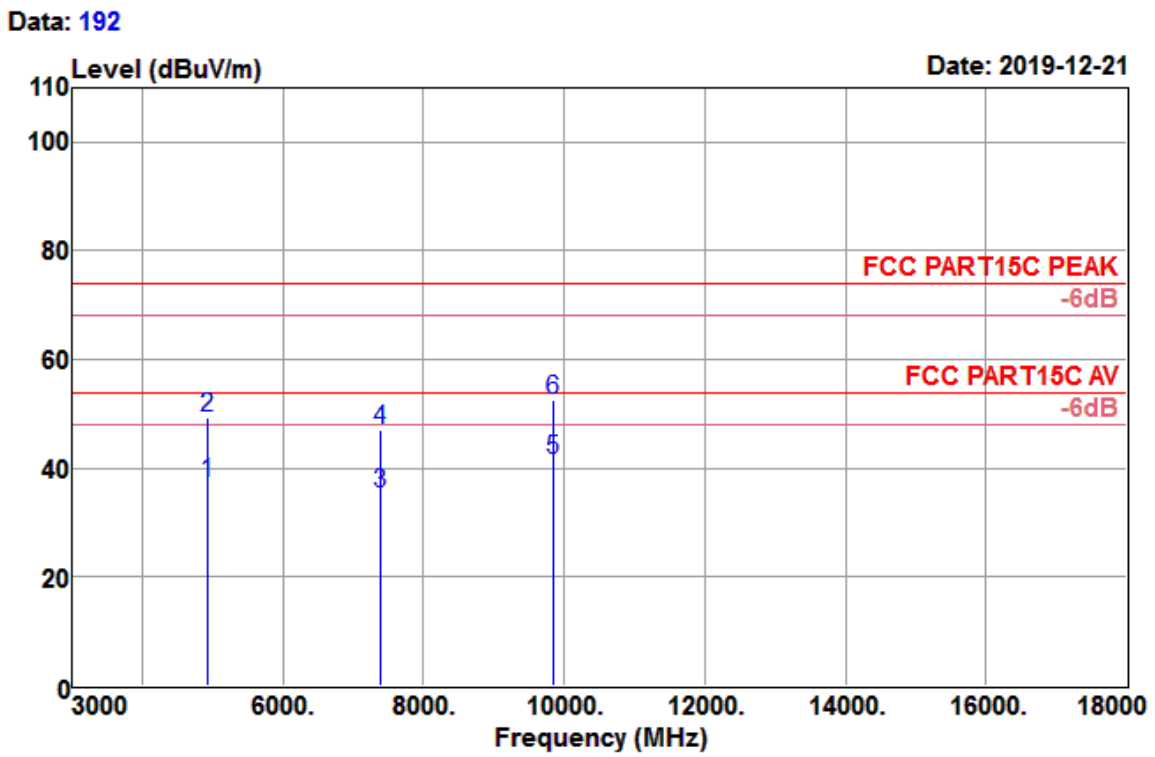
Test Mode :	802.11n HT20 CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Vertical



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
2462.000	87.21	27.30	3.58	35.65	82.44	74.00	8.44	Peak

Test Mode :	802.11n HT20 CH11 (2462 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Vertical

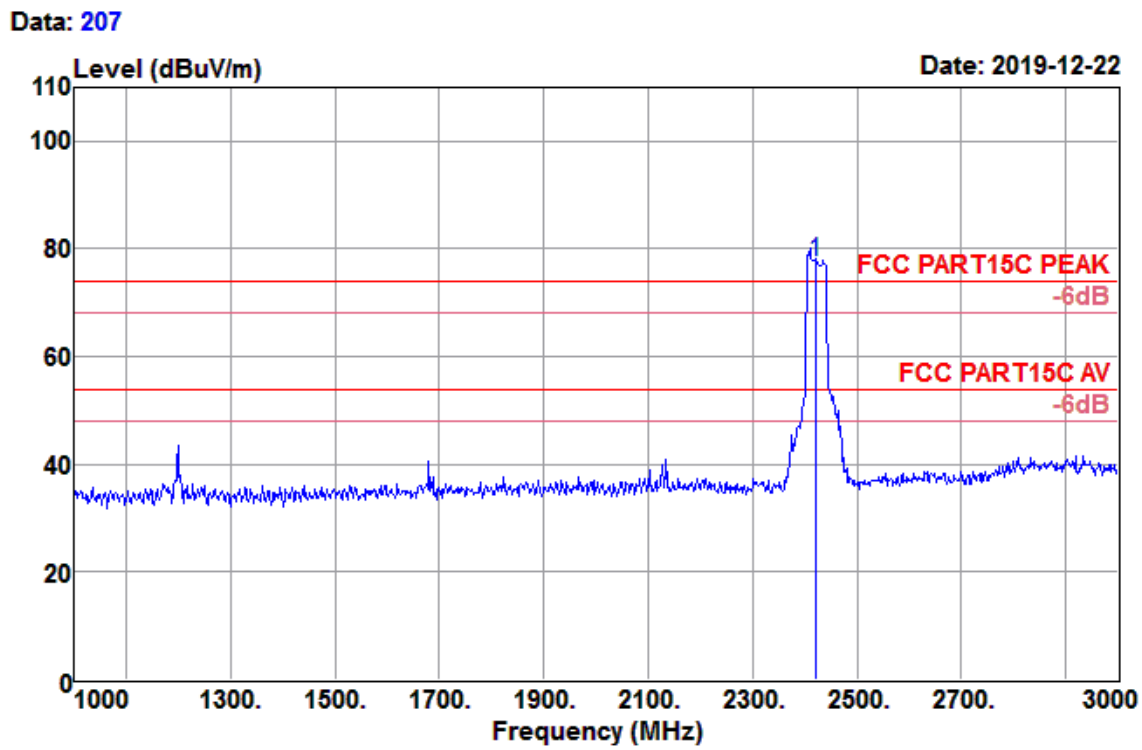




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4924.000	34.95	31.52	5.53	34.76	37.24	54.00	-16.76	Average
4924.000	47.17	31.52	5.53	34.76	49.46	74.00	-24.54	Peak
7386.000	27.96	36.29	7.46	36.40	35.31	54.00	-18.69	Average
7386.000	39.69	36.29	7.46	36.40	47.04	74.00	-26.96	Peak
9848.000	28.61	38.23	10.98	36.40	41.42	54.00	-12.58	Average
9848.000	39.66	38.23	10.98	36.40	52.47	74.00	-21.53	Peak

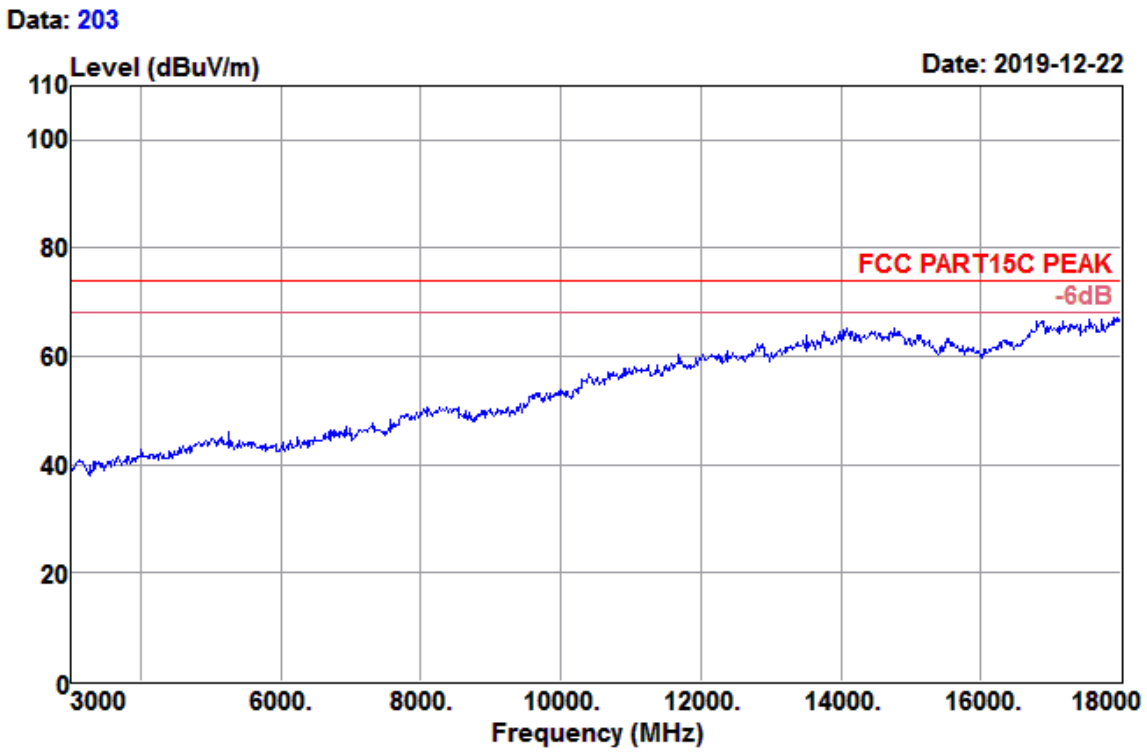
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

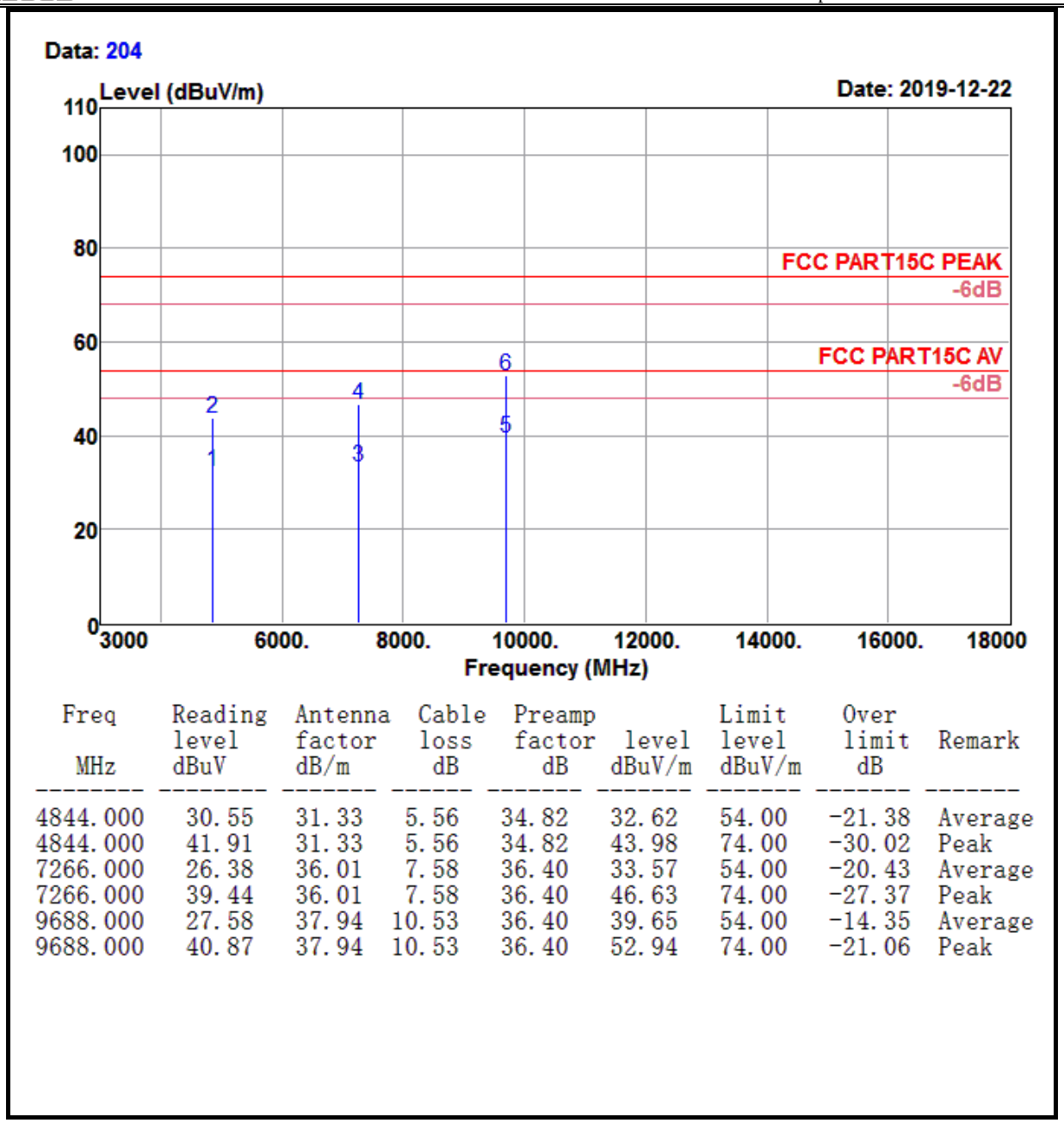
Test Mode :	802.11n HT40 CH03 (2422 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Horizontal



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
2422.000	82.50	27.20	3.55	35.59	77.66	74.00	3.66	Peak

Test Mode :	802.11n HT40 CH03 (2422 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Horizontal

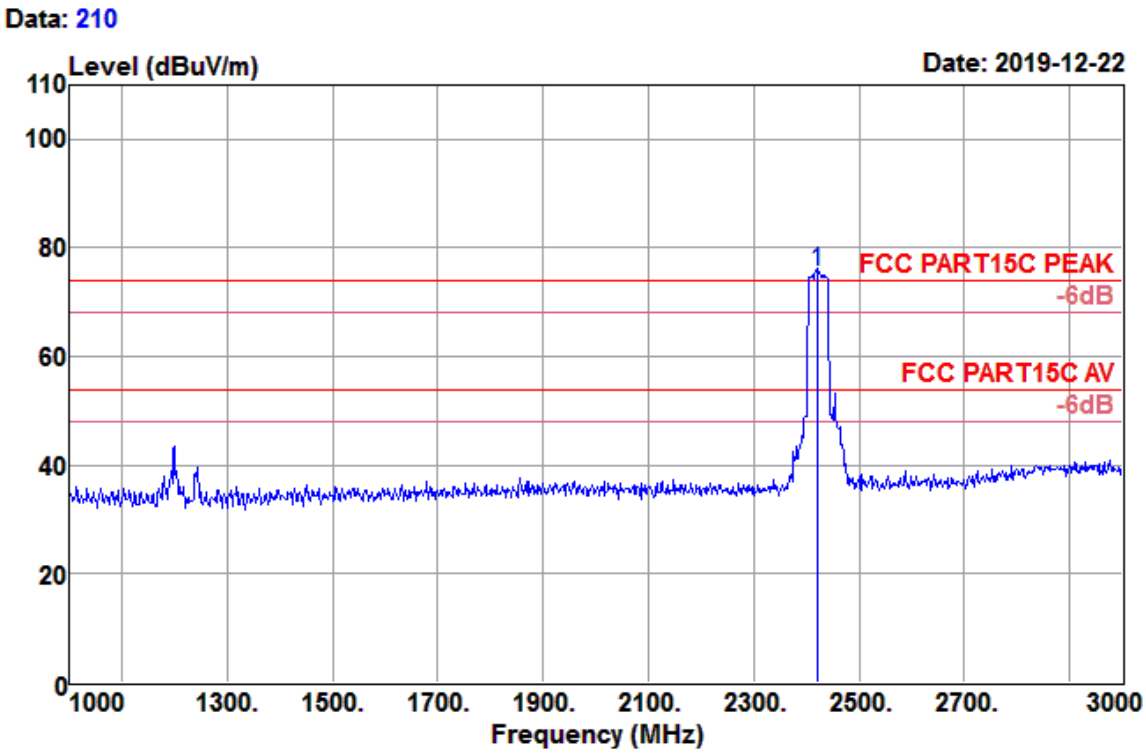




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4844.000	30.55	31.33	5.56	34.82	32.62	54.00	-21.38	Average
4844.000	41.91	31.33	5.56	34.82	43.98	74.00	-30.02	Peak
7266.000	26.38	36.01	7.58	36.40	33.57	54.00	-20.43	Average
7266.000	39.44	36.01	7.58	36.40	46.63	74.00	-27.37	Peak
9688.000	27.58	37.94	10.53	36.40	39.65	54.00	-14.35	Average
9688.000	40.87	37.94	10.53	36.40	52.94	74.00	-21.06	Peak

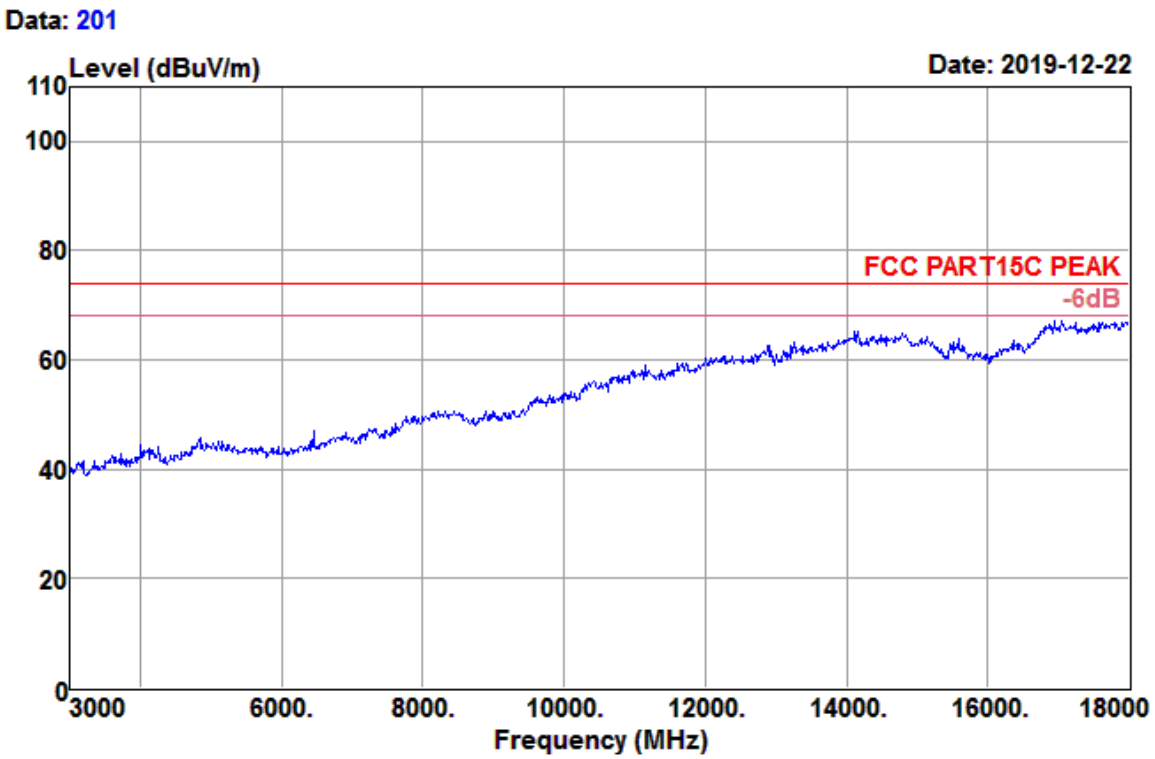
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

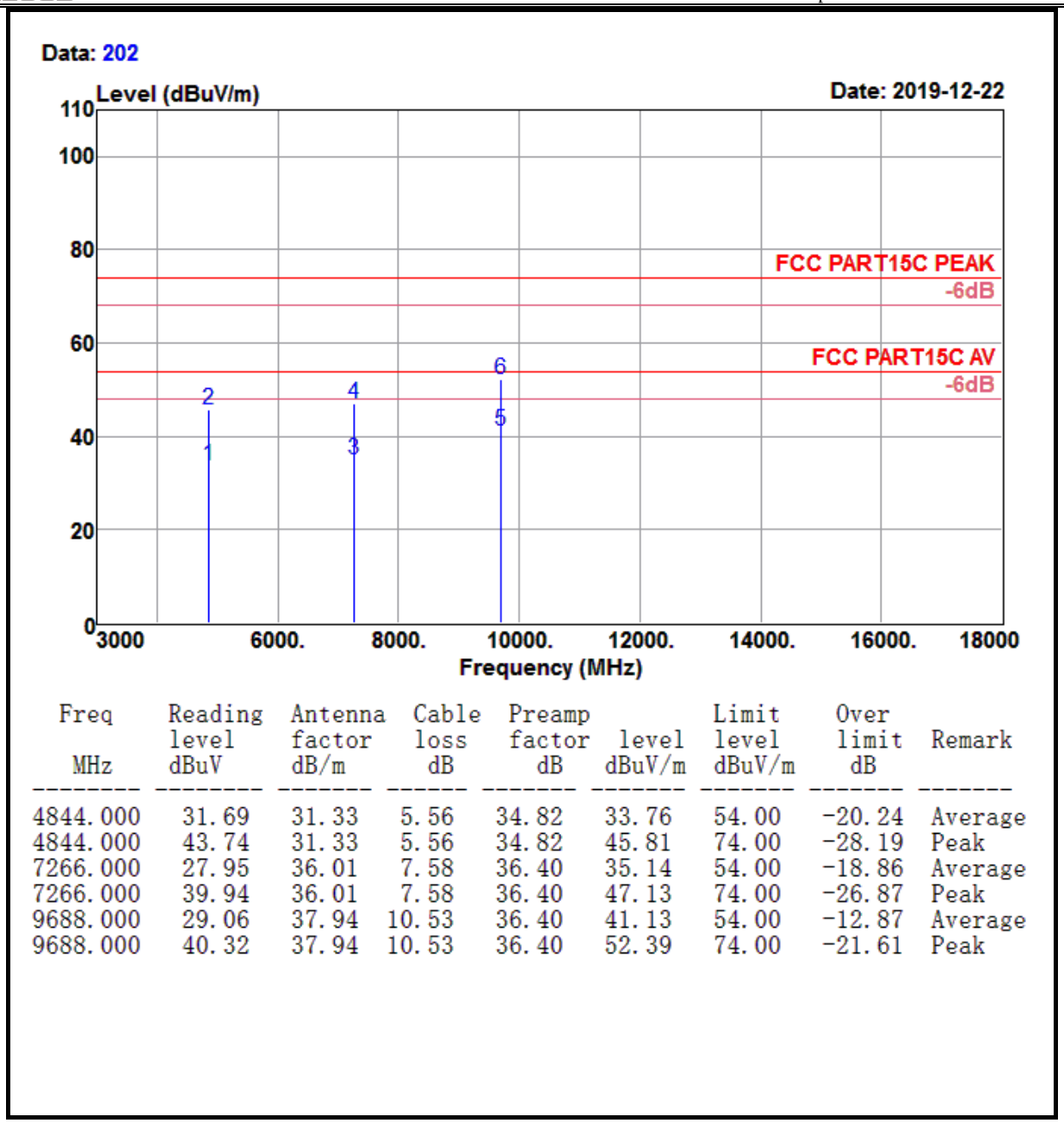
Test Mode :	802.11n HT40 CH03 (2422 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Vertical



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
2422.000	80.33	27.20	3.55	35.59	75.49	74.00	1.49	Peak

Test Mode :	802.11n HT40 CH03 (2422 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Vertical

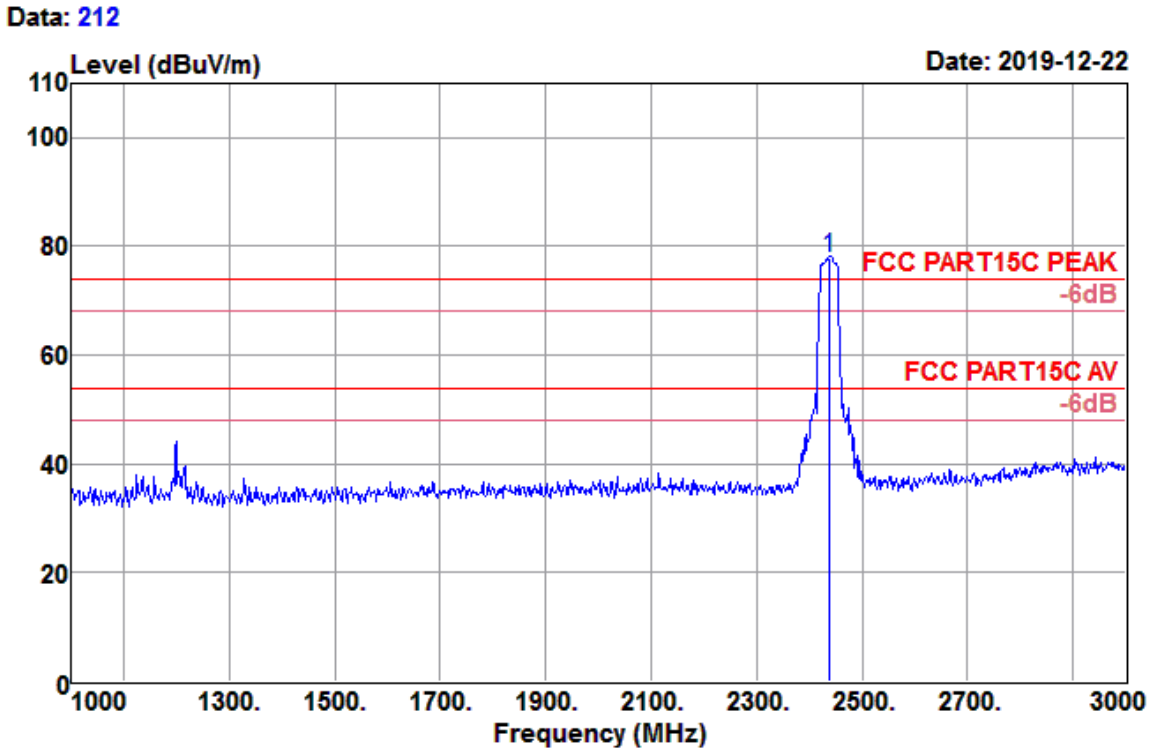




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4844.000	31.69	31.33	5.56	34.82	33.76	54.00	-20.24	Average
4844.000	43.74	31.33	5.56	34.82	45.81	74.00	-28.19	Peak
7266.000	27.95	36.01	7.58	36.40	35.14	54.00	-18.86	Average
7266.000	39.94	36.01	7.58	36.40	47.13	74.00	-26.87	Peak
9688.000	29.06	37.94	10.53	36.40	41.13	54.00	-12.87	Average
9688.000	40.32	37.94	10.53	36.40	52.39	74.00	-21.61	Peak

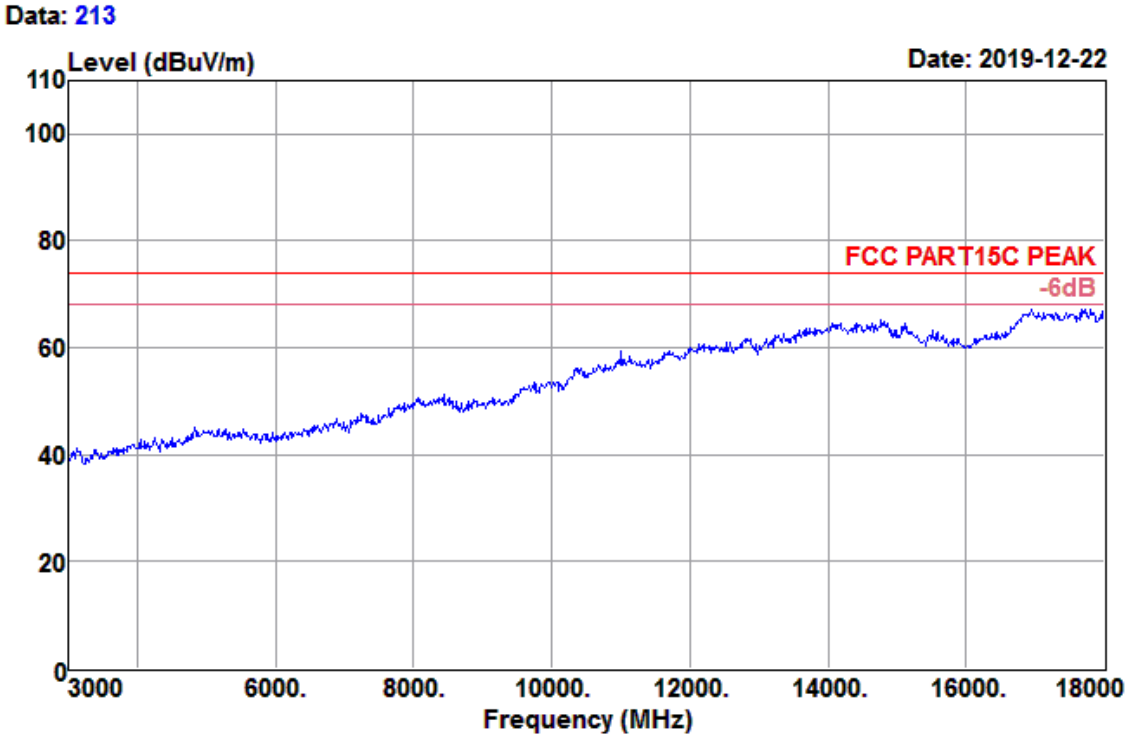
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

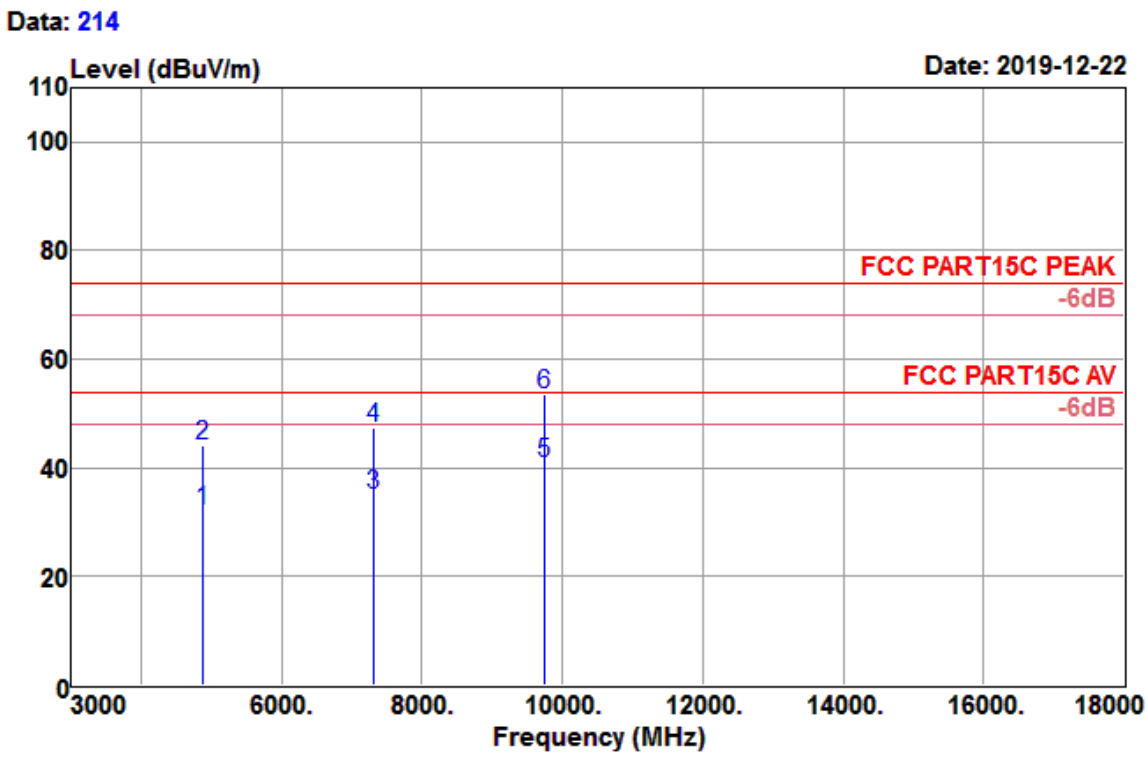
Test Mode :	802.11n HT40 CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Horizontal



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
2437.000	82.83	27.24	3.56	35.61	78.02	74.00	4.02	Peak

Test Mode :	802.11n HT40 CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Horizontal

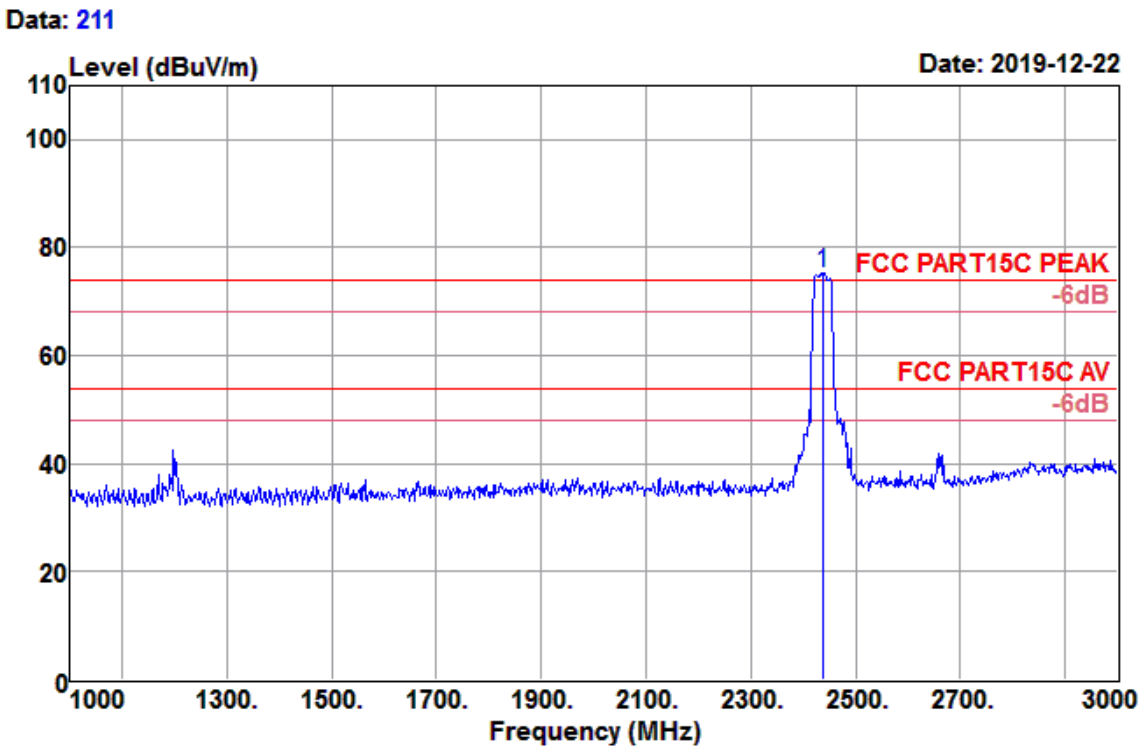




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4874.000	30.06	31.40	5.55	34.80	32.21	54.00	-21.79	Average
4874.000	41.97	31.40	5.55	34.80	44.12	74.00	-29.88	Peak
7311.000	27.75	36.12	7.53	36.40	35.00	54.00	-19.00	Average
7311.000	40.00	36.12	7.53	36.40	47.25	74.00	-26.75	Peak
9748.000	28.63	38.05	10.70	36.40	40.98	54.00	-13.02	Average
9748.000	41.09	38.05	10.70	36.40	53.44	74.00	-20.56	Peak

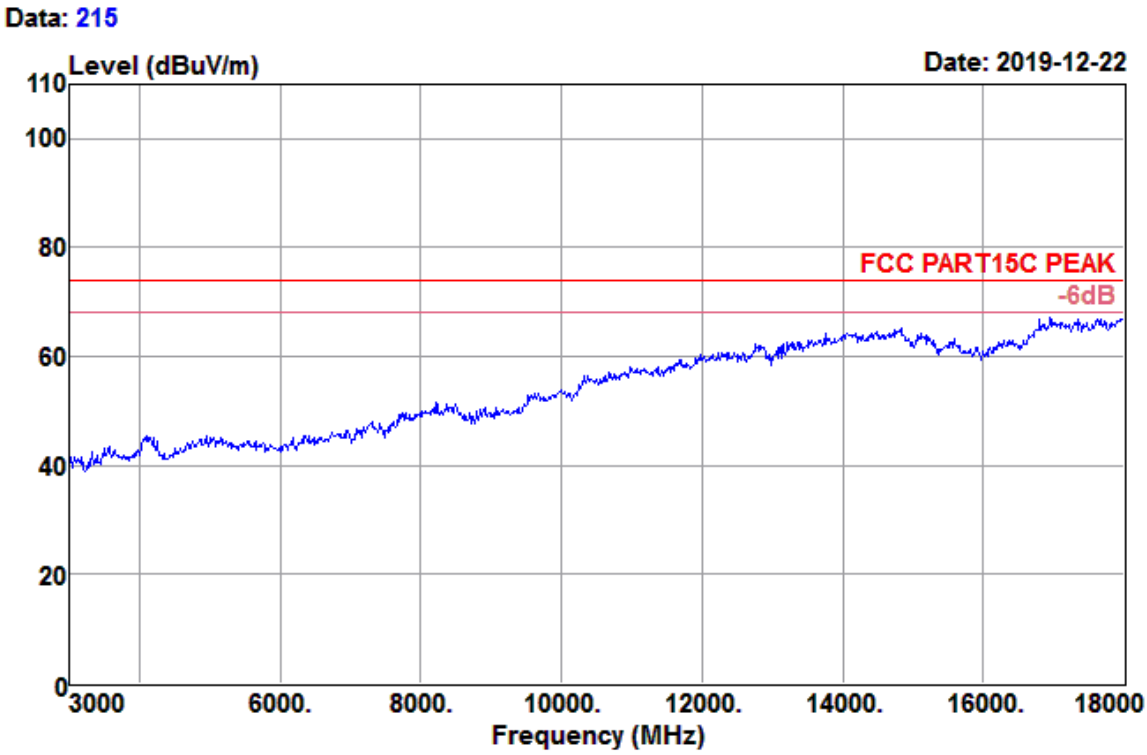
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

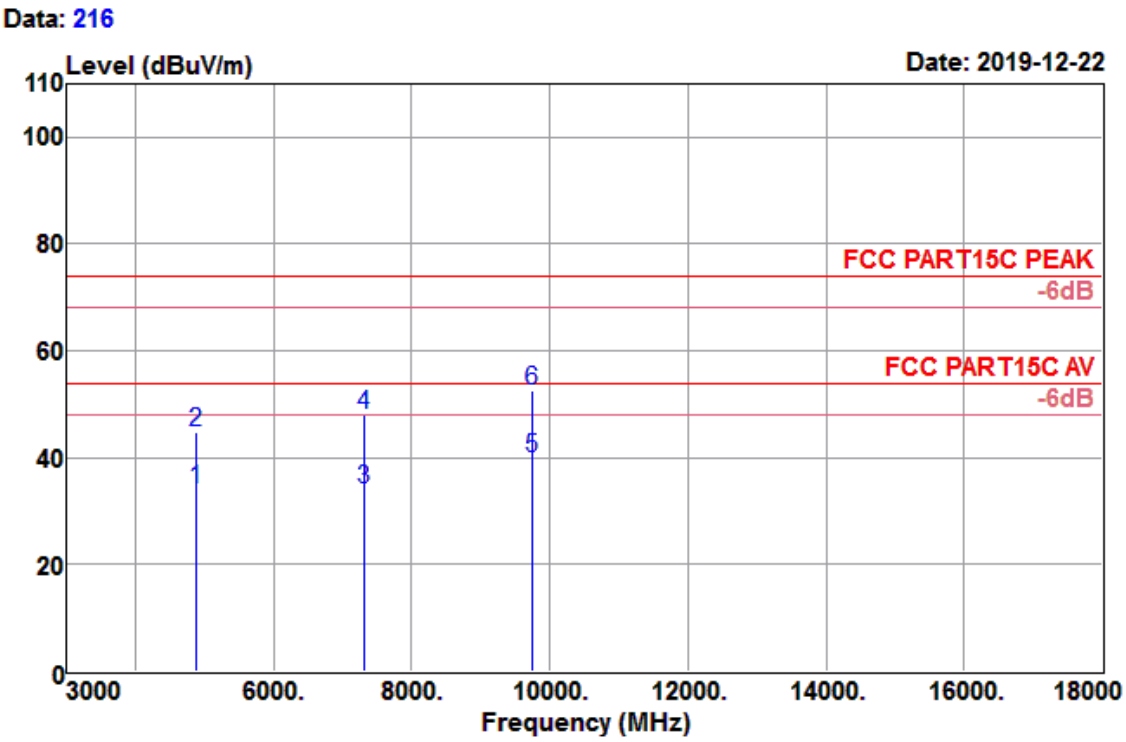
Test Mode :	802.11n HT40 CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Vertical



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
2437.000	79.96	27.24	3.56	35.61	75.15	74.00	1.15	Peak

Test Mode :	802.11n HT40 CH06 (2437MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Vertical

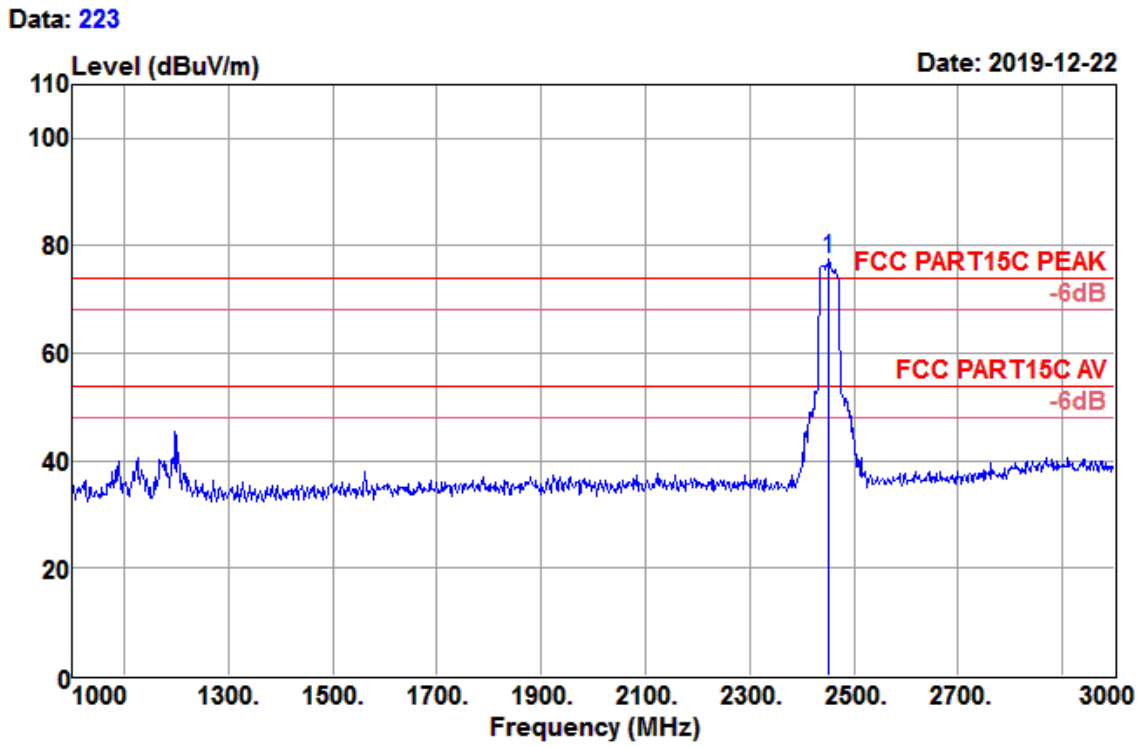




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4874.000	31.91	31.40	5.55	34.80	34.06	54.00	-19.94	Average
4874.000	42.52	31.40	5.55	34.80	44.67	74.00	-29.33	Peak
7311.000	26.85	36.12	7.53	36.40	34.10	54.00	-19.90	Average
7311.000	40.91	36.12	7.53	36.40	48.16	74.00	-25.84	Peak
9748.000	27.45	38.05	10.70	36.40	39.80	54.00	-14.20	Average
9748.000	40.27	38.05	10.70	36.40	52.62	74.00	-21.38	Peak

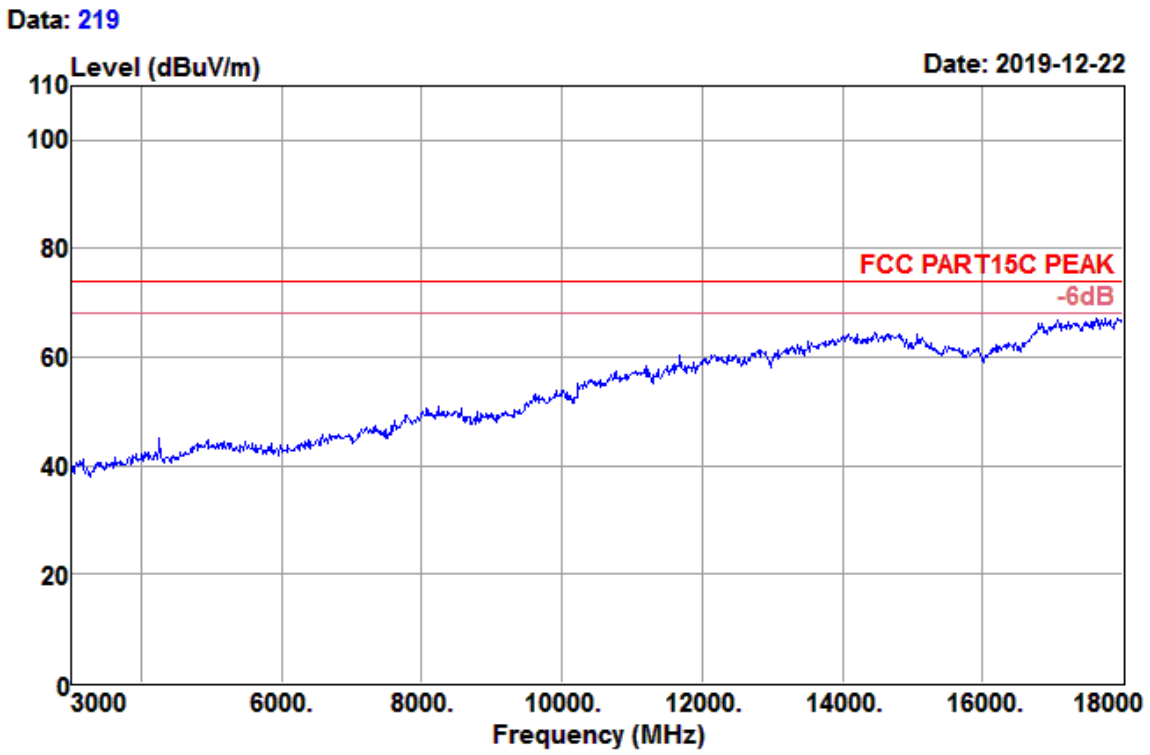
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

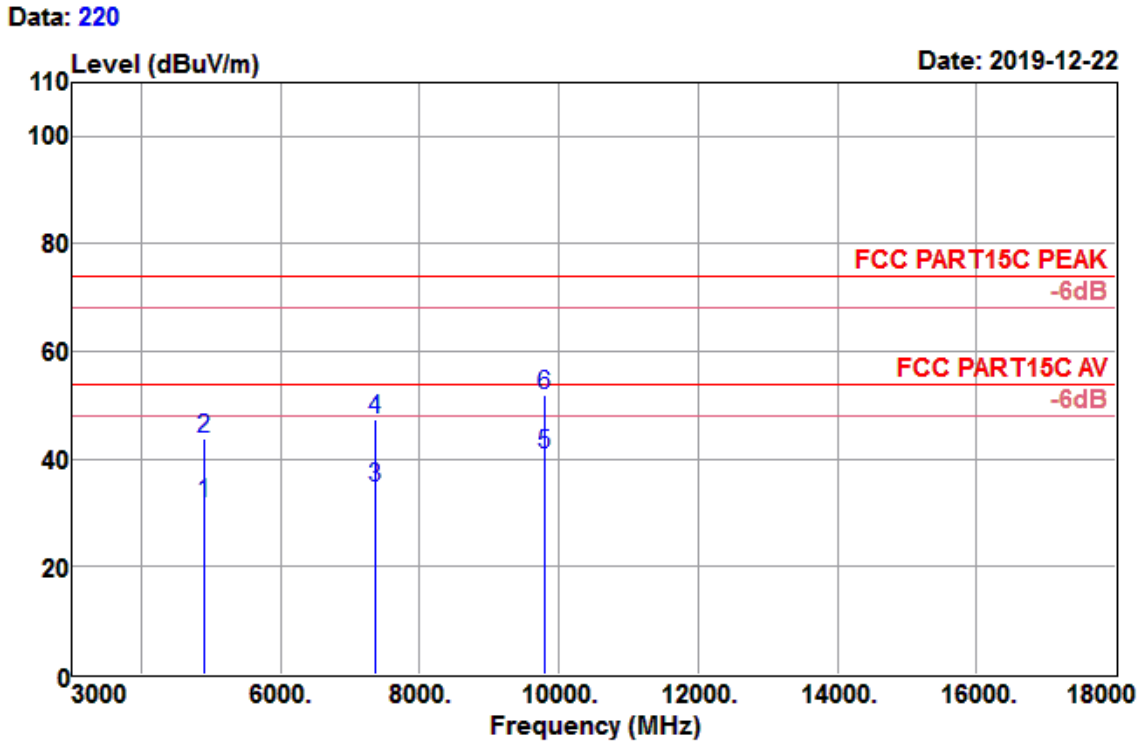
Test Mode :	802.11n HT40 CH09(2452 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Horizontal



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
2452.000	82.18	27.28	3.57	35.63	77.40	74.00	3.40	Peak

Test Mode :	802.11n HT40 CH09(2452 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Horizontal

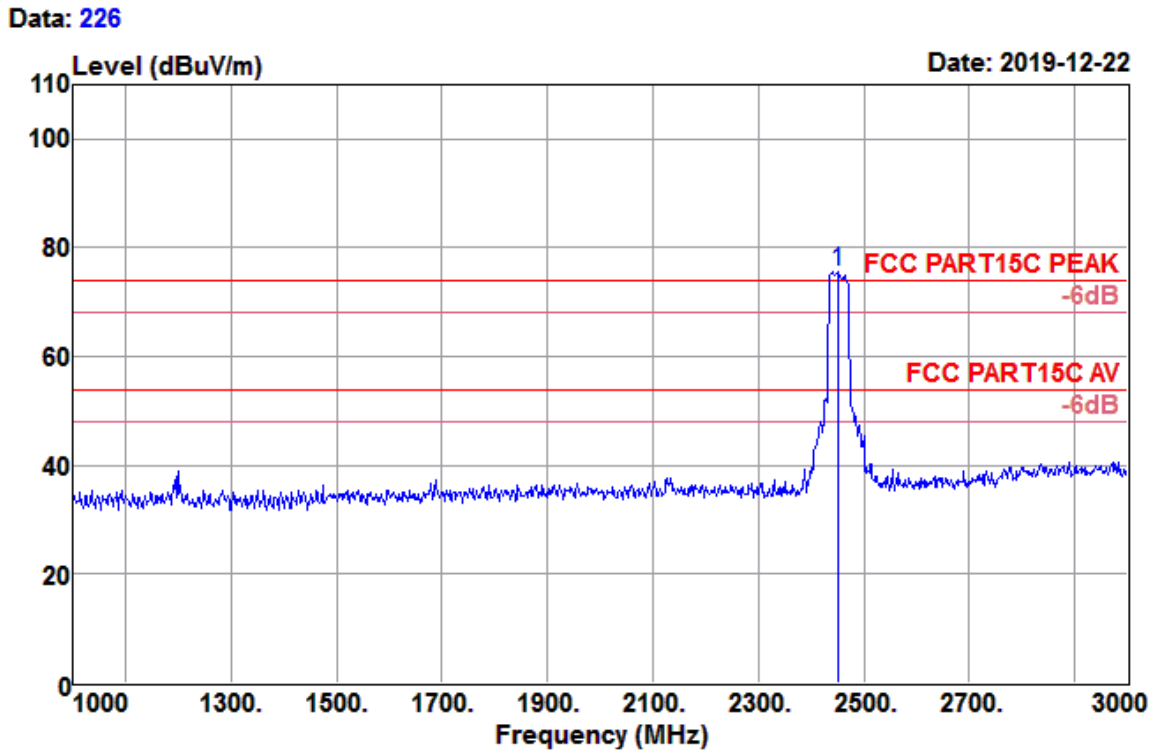




Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4904.000	29.60	31.47	5.54	34.78	31.83	54.00	-22.17	Average
4904.000	41.69	31.47	5.54	34.78	43.92	74.00	-30.08	Peak
7356.000	27.34	36.22	7.49	36.40	34.65	54.00	-19.35	Average
7356.000	39.95	36.22	7.49	36.40	47.26	74.00	-26.74	Peak
9808.000	28.22	38.15	10.87	36.40	40.84	54.00	-13.16	Average
9808.000	39.23	38.15	10.87	36.40	51.85	74.00	-22.15	Peak

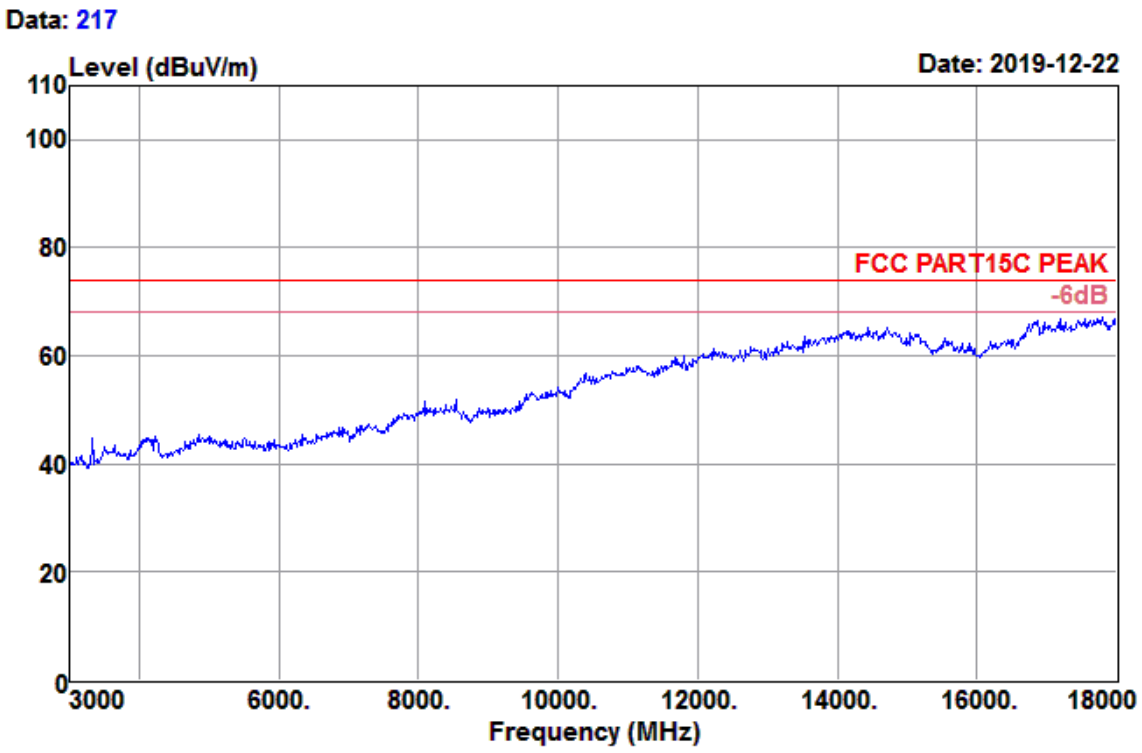
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

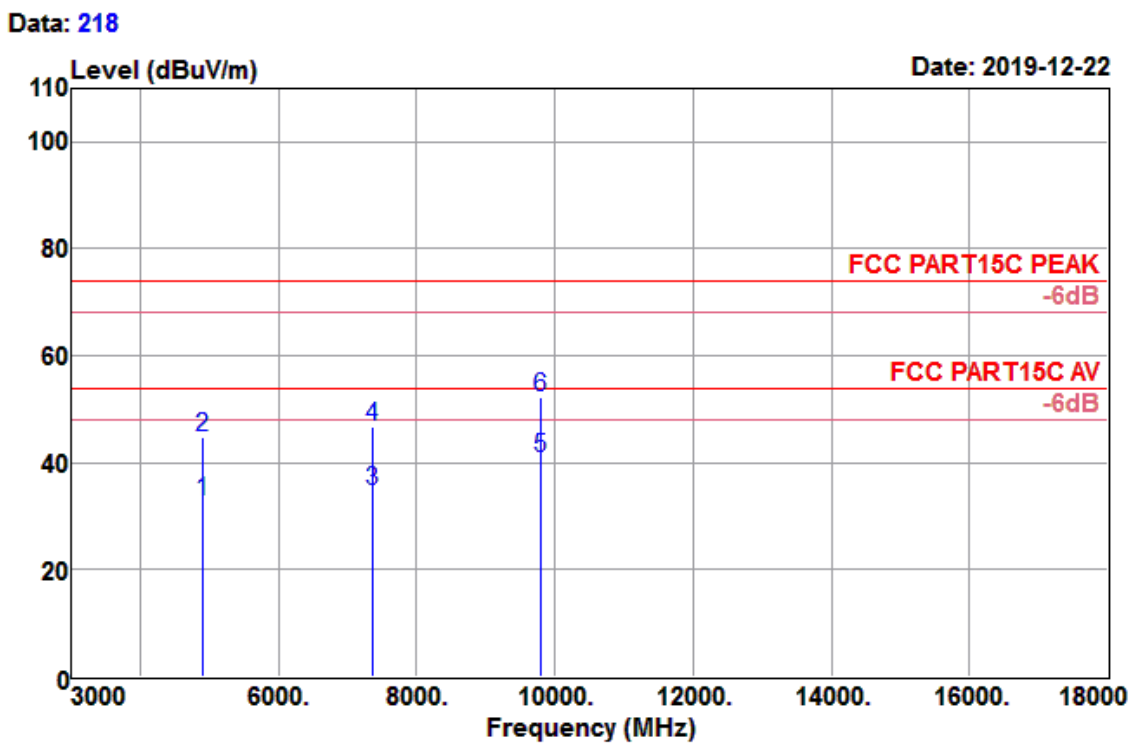
Test Mode :	802.11n HT40 CH09(2452 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	1GHz~3GHz	**Polarization :**	Vertical



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
2452.000	80.44	27.28	3.57	35.63	75.66	74.00	1.66	Peak

Test Mode :	802.11n HT40 CH09(2452 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	3GHz~18GHz	**Polarization :**	Vertical



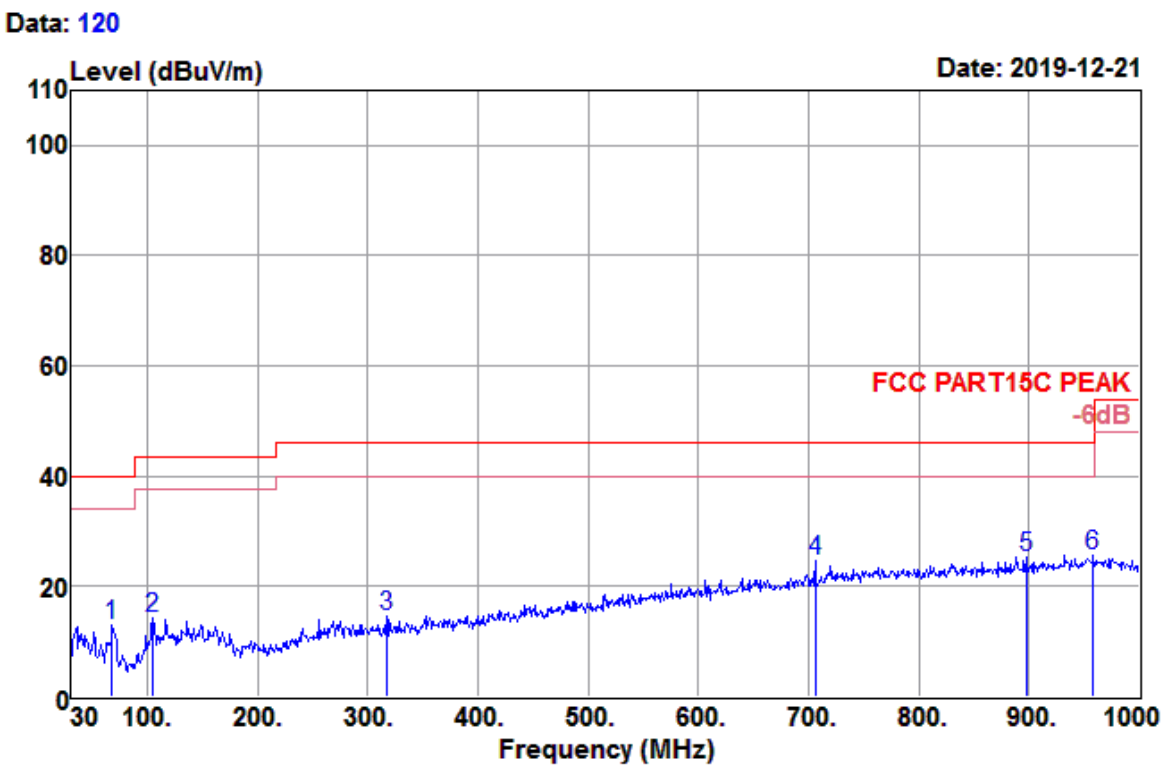


Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4904.000	30.55	31.47	5.54	34.78	32.78	54.00	-21.22	Average
4904.000	42.44	31.47	5.54	34.78	44.67	74.00	-29.33	Peak
7356.000	27.53	36.22	7.49	36.40	34.84	54.00	-19.16	Average
7356.000	39.54	36.22	7.49	36.40	46.85	74.00	-27.15	Peak
9808.000	28.17	38.15	10.87	36.40	40.79	54.00	-13.21	Average
9808.000	39.68	38.15	10.87	36.40	52.30	74.00	-21.70	Peak

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

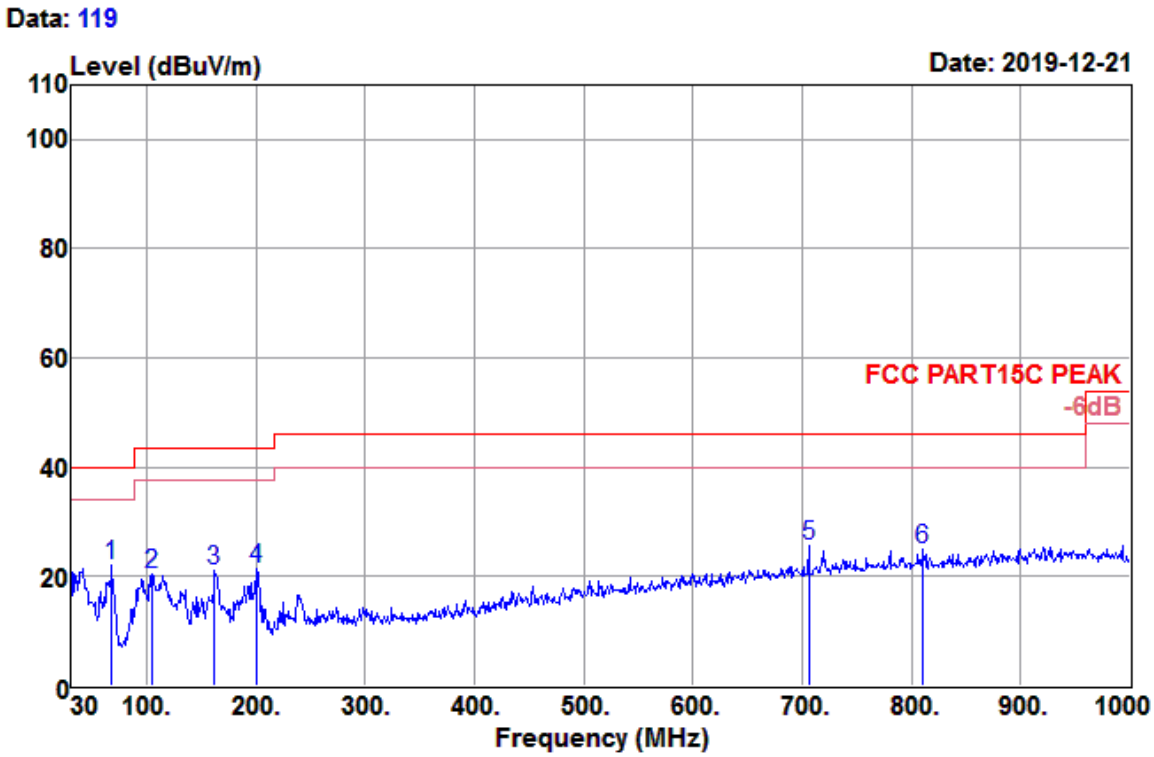
4.5.6 Test Result of Radiated Spurious Emission (30MHz ~ 1GHz)

Test Mode :	802.11b CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	63~65%
Frequencey Range	30MHz~1GHz	**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
67.830	33.84	10.07	1.70	32.50	13.11	40.00	-26.89	Peak
104.690	35.65	9.42	1.96	32.60	14.43	43.50	-29.07	Peak
317.120	30.24	14.41	2.84	32.72	14.77	46.00	-31.23	Peak
706.090	31.42	21.32	4.28	32.28	24.74	46.00	-21.26	Peak
897.180	28.86	23.46	4.98	31.85	25.45	46.00	-20.55	Peak
958.290	27.96	24.40	5.16	31.76	25.76	46.00	-20.24	Peak

Test Mode :	802.11b CH01 (2412 MHz)	**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
67.830	42.94	10.07	1.70	32.50	22.21	40.00	-17.79	Peak
104.690	41.81	9.42	1.96	32.60	20.59	43.50	-22.91	Peak
161.920	37.99	13.70	2.19	32.63	21.25	43.50	-22.25	Peak
199.750	41.04	10.61	2.38	32.65	21.38	43.50	-22.12	Peak
706.090	32.38	21.32	4.28	32.28	25.70	46.00	-20.30	Peak
810.850	29.88	22.49	4.68	31.98	25.07	46.00	-20.93	Peak

4.6 AC Conducted Emission Measurement

4.6.1 Limit of AC Conducted Emission

FCC §15.207

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

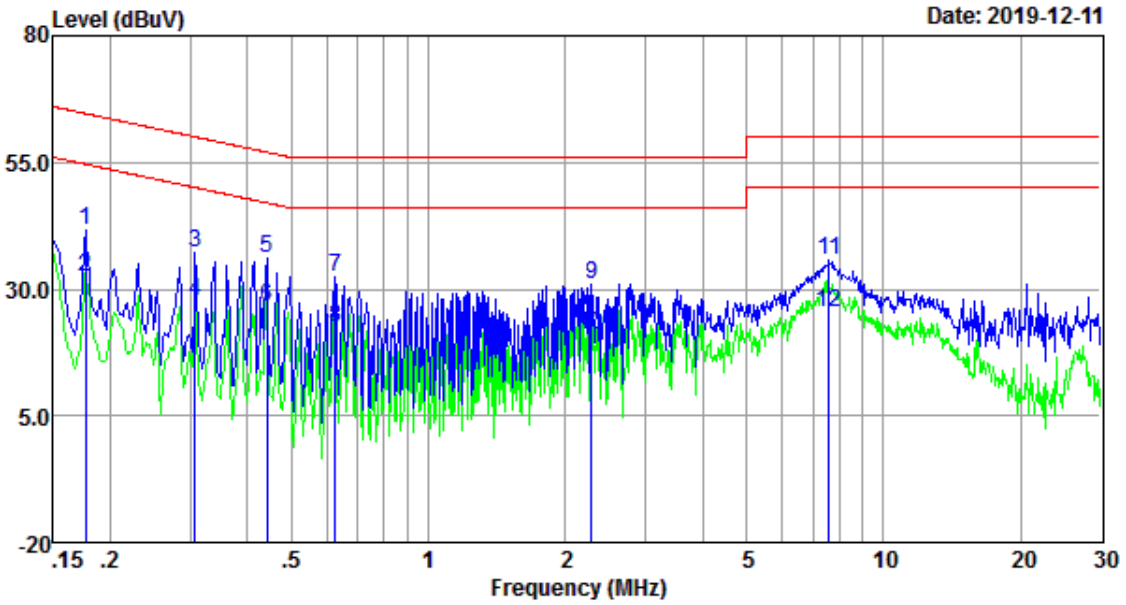
*Decreases with the logarithm of the frequency.

4.6.2 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.

4.6.3 Test Result of AC Conducted Emission

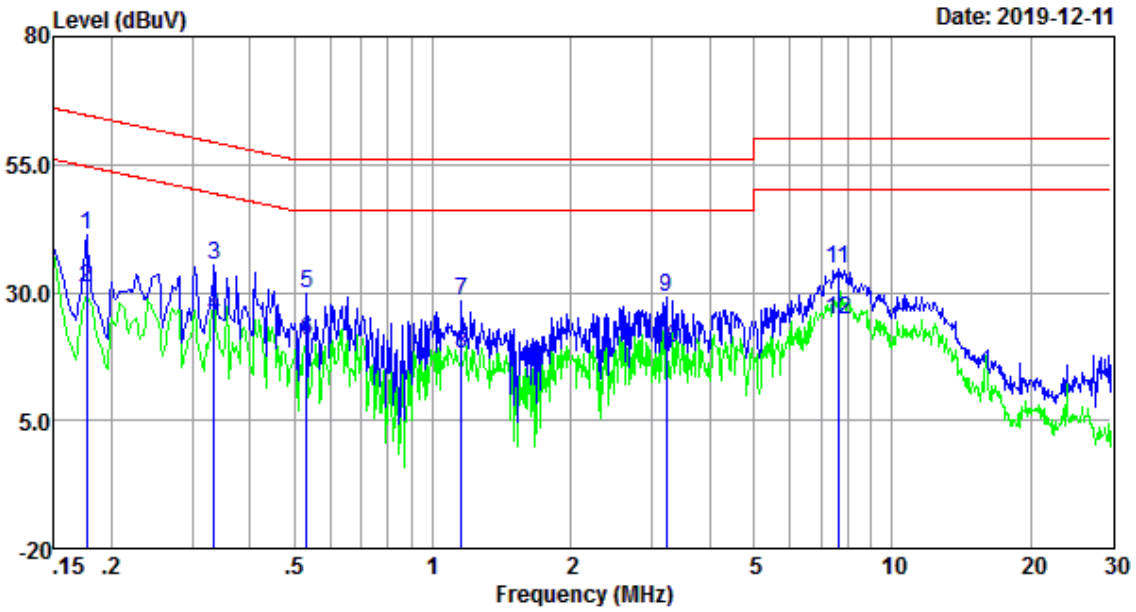
Test Mode :	Mode 1	**Temperature :**	24℃
Test Engineer :	Jerry.Wang	**Relative Humidity :**	52%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	BT Tethering+WLAN Link+NFC+RFID+Charging from Adapter		



Freq MHz	Reading level dBuV	LISN/ISN factor dB	Cable loss dB	Result level dBuV	Limit level dBuV	Over limit dB	Remark
0.177	32.12	9.64	0.04	41.80	64.64	-22.84	QP
0.177	22.66	9.64	0.04	32.34	54.64	-22.30	Average
0.307	27.49	9.66	0.04	37.19	60.06	-22.87	QP
0.307	17.94	9.66	0.04	27.64	50.06	-22.42	Average
0.442	26.39	9.71	0.04	36.14	57.02	-20.88	QP
0.442	16.84	9.71	0.04	26.59	47.02	-20.43	Average
0.624	22.68	9.74	0.04	32.46	56.00	-23.54	QP
0.624	12.82	9.74	0.04	22.60	46.00	-23.40	Average
2.285	21.08	9.81	0.06	30.95	56.00	-25.05	QP
2.285	11.03	9.81	0.06	20.90	46.00	-25.10	Average
7.606	25.53	9.93	0.09	35.55	60.00	-24.45	QP
7.606	15.34	9.93	0.09	25.36	50.00	-24.64	Average

Result Level= Reading Level + LISN Factor + Cable Loss

Test Mode :	Mode 1	**Temperature :**	24℃
Test Engineer :	Jerry.Wang	**Relative Humidity :**	52%
Test Voltage :	120Vac / 60Hz	**Phase :**	NEUTRAL
Function Type :	BT Tethering+WLAN Link+NFC+RFID+Charging from Adapter		



Freq MHz	Reading level dBuV	LISN/ISN factor dB	Cable loss dB	Result level dBuV	Limit level dBuV	Over limit dB	Remark
0.177	31.63	9.60	0.04	41.27	64.64	-23.37	QP
0.177	21.22	9.60	0.04	30.86	54.64	-23.78	Average
0.334	25.78	9.62	0.04	35.44	59.35	-23.91	QP
0.334	15.56	9.62	0.04	25.22	49.35	-24.13	Average
0.532	20.12	9.65	0.04	29.81	56.00	-26.19	QP
0.532	10.82	9.65	0.04	20.51	46.00	-25.49	Average
1.153	18.72	9.71	0.05	28.48	56.00	-27.52	QP
1.153	8.16	9.71	0.05	17.92	46.00	-28.08	Average
3.224	19.24	9.76	0.07	29.07	56.00	-26.93	QP
3.224	9.41	9.76	0.07	19.24	46.00	-26.76	Average
7.646	24.60	9.82	0.09	34.51	60.00	-25.49	QP
7.646	14.68	9.82	0.09	24.59	50.00	-25.41	Average

Result Level= Reading Level + LISN Factor + Cable Loss

4.7 Antenna Requirements

4.7.1 Standard Applicable

According to antenna requirement of §15.203.

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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 manufacturer may design the unit so that a broken antenna can be re-placed by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded..

And according to §15.247(4)(1), system operating in the 2400-2483.5MHz bands that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 Antenna Connected Construction

An embedded-in antenna design is used.

4.7.3 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	2019-01-23	2020-01-22	Conducted
Power Sensor	Keysight	U2021XA	MY56510025	2019-01-23	2020-01-22	Conducted
Power Sensor	Keysight	U2021XA	MY57030005	2019-01-23	2020-01-22	Conducted
Power Sensor	Keysight	U2021XA	MY56510018	2019-01-23	2020-01-22	Conducted
Power Sensor	Keysight	U2021XA	MY56480002	2019-01-23	2020-01-22	Conducted
Thermal Chamber	Sanmtest	SMC-408-CD	2435	2019-05-09	2020-05-08	Conducted
Base Station	R&S	CMW 270	101231	2019-01-23	2020-01-22	Conducted
Signal Generator (Interferer)	Keysight	N5182B	MY56200384	2019-04-19	2020-04-18	Conducted
Signal Generator (Blocker)	Keysight	N5171B	MY56200661	2019-01-23	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	Auidx	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	2.60dB
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.

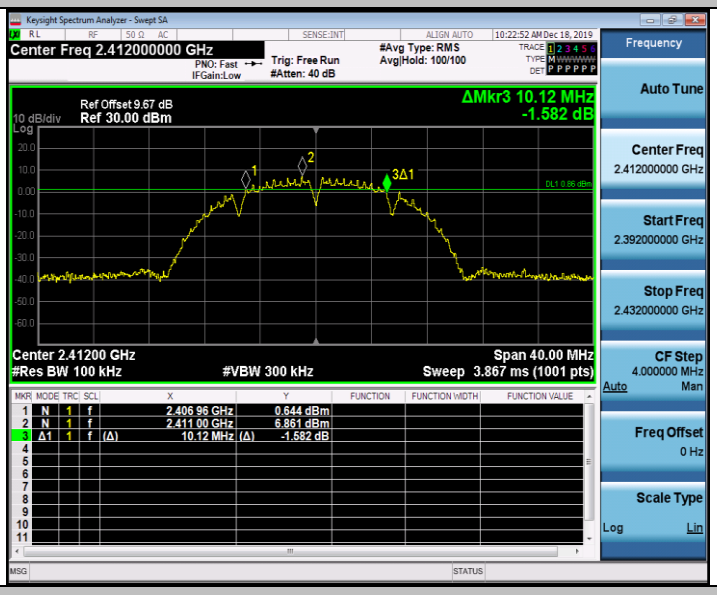
Appendix A: DTS Bandwidth

Test Result

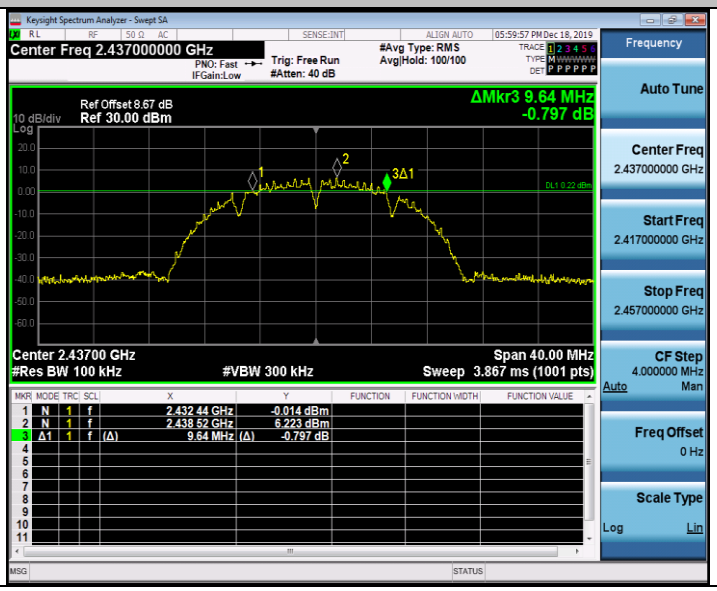
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	10.120	2406.960	2417.080	>=0.5	PASS
		2437	9.640	2432.440	2442.080	>=0.5	PASS
		2462	10.040	2456.960	2467.000	>=0.5	PASS
11G	Ant1	2412	16.400	2403.800	2420.200	>=0.5	PASS
		2437	16.400	2428.800	2445.200	>=0.5	PASS
		2462	16.400	2453.800	2470.200	>=0.5	PASS
11N20SISO	Ant1	2412	16.840	2403.560	2420.400	>=0.5	PASS
		2437	17.120	2428.440	2445.560	>=0.5	PASS
		2462	16.880	2453.560	2470.440	>=0.5	PASS
11N40SISO	Ant1	2422	35.360	2404.320	2439.680	>=0.5	PASS
		2437	35.440	2419.320	2454.760	>=0.5	PASS
		2452	35.360	2434.320	2469.680	>=0.5	PASS

Test Graphs

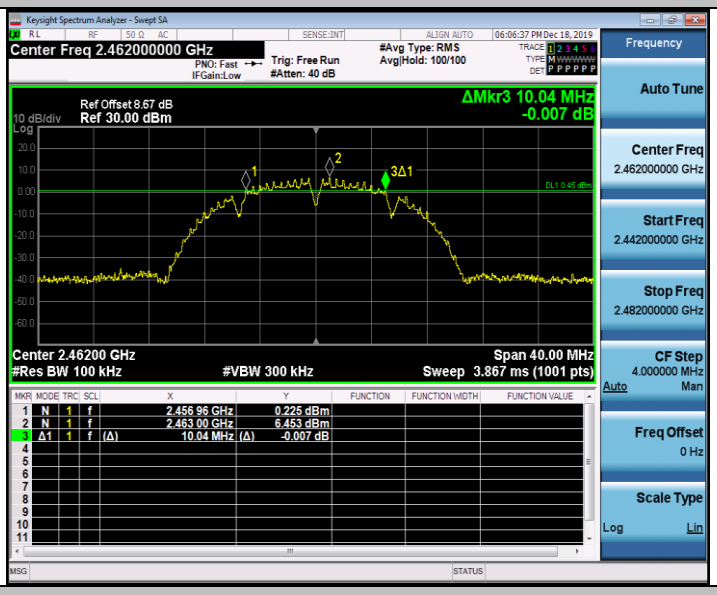
11B_Ant1_2412



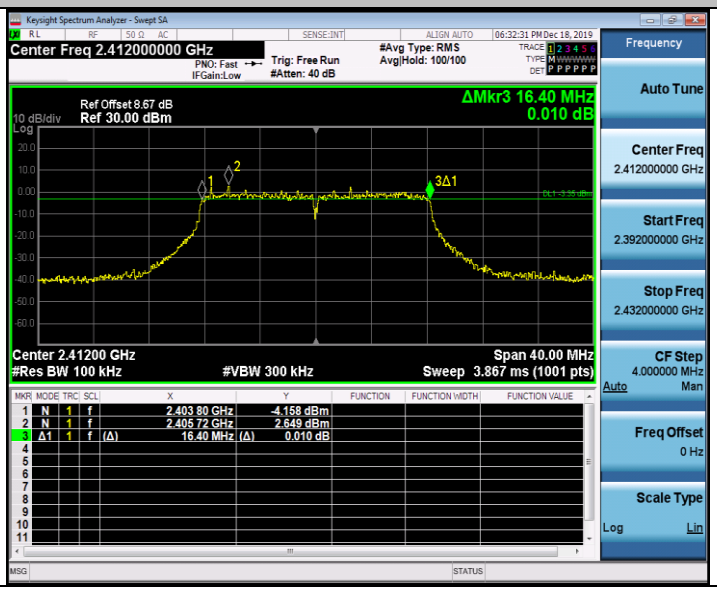
11B_Ant1_2437



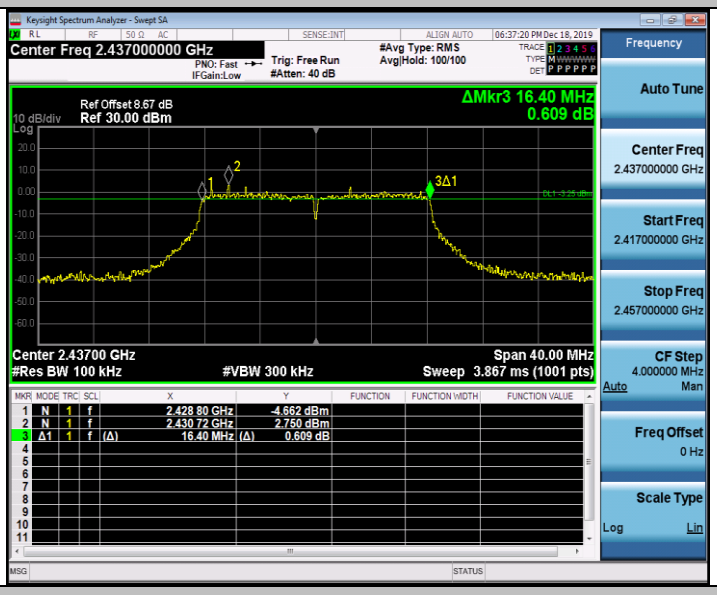
11B_Ant1_2462



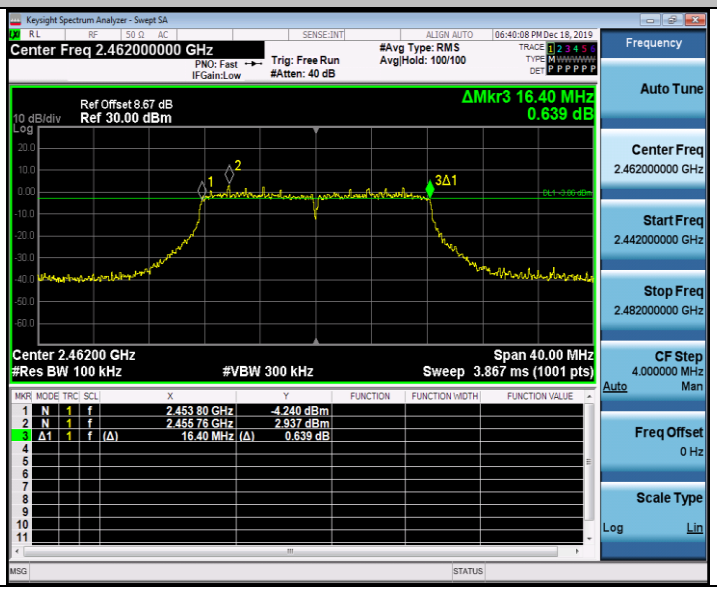
11G_Ant1_2412



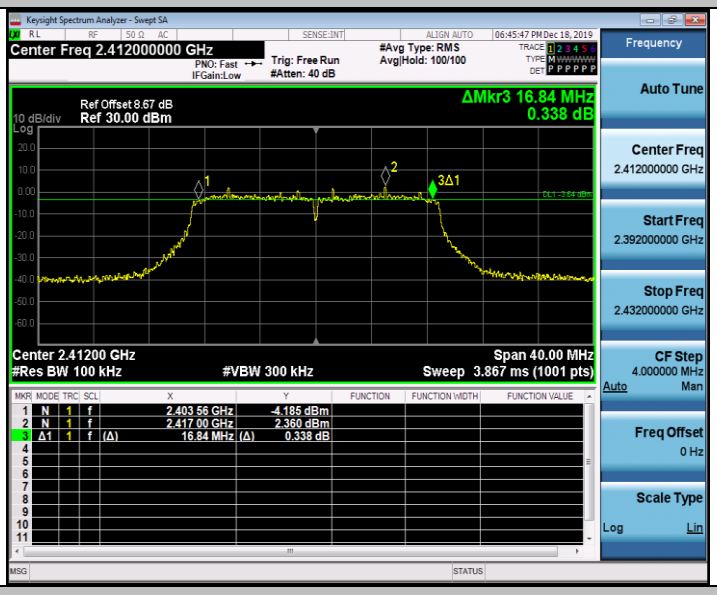
11G_Ant1_2437



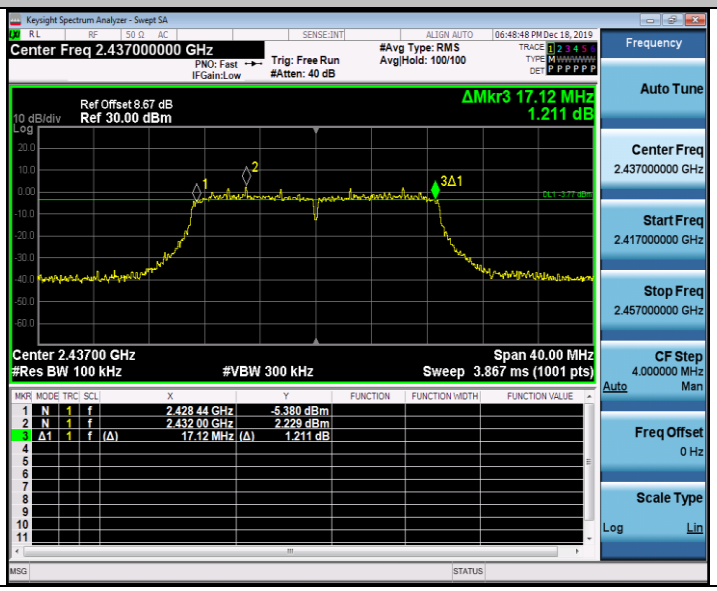
11G_Ant1_2462

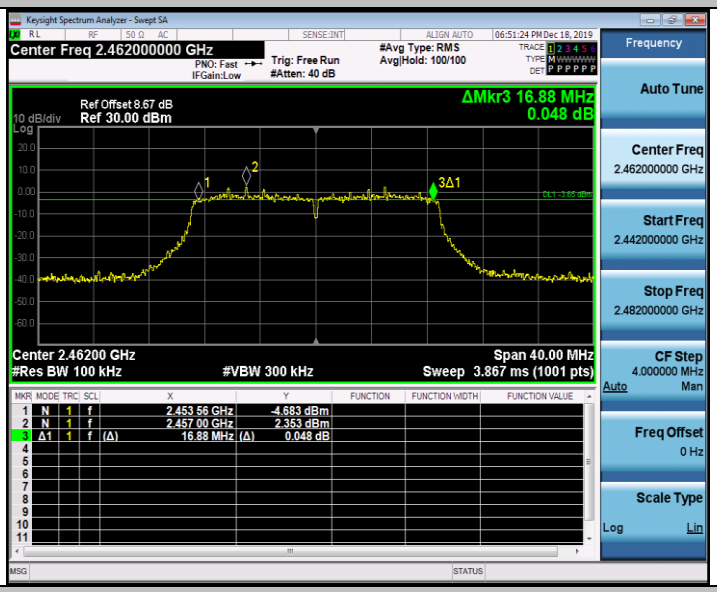


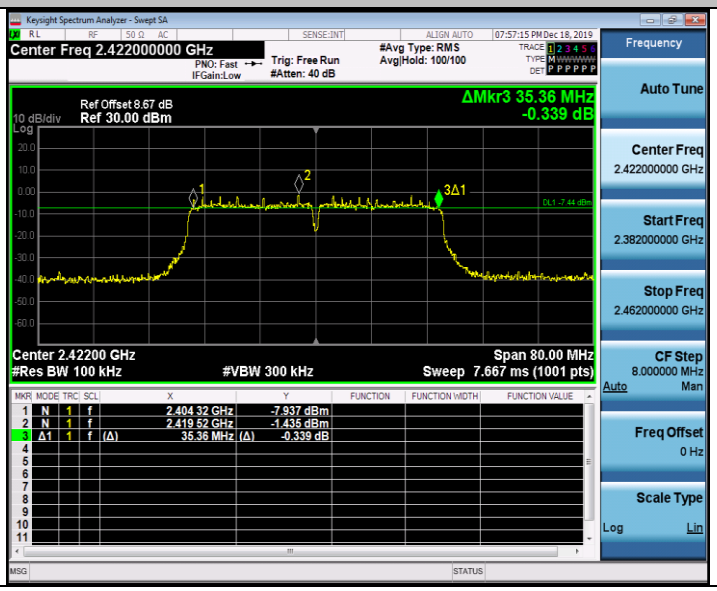
11N20SISO_Ant1_2412



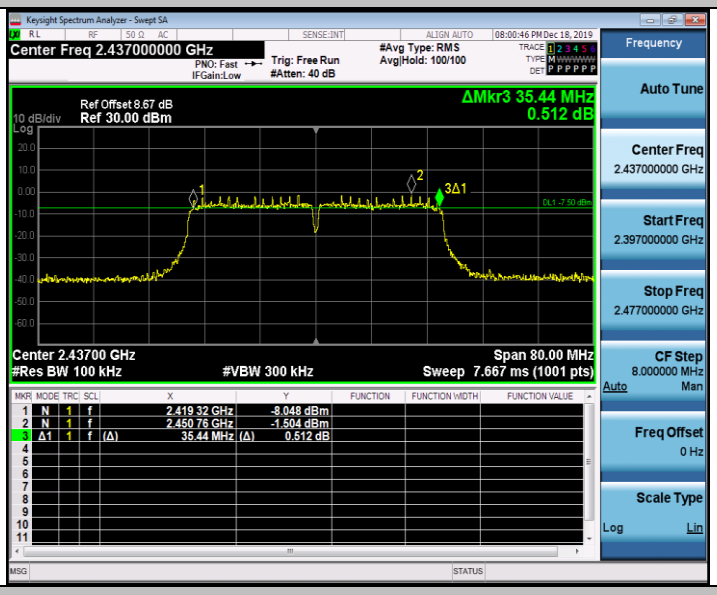
11N20SISO_Ant1_2437



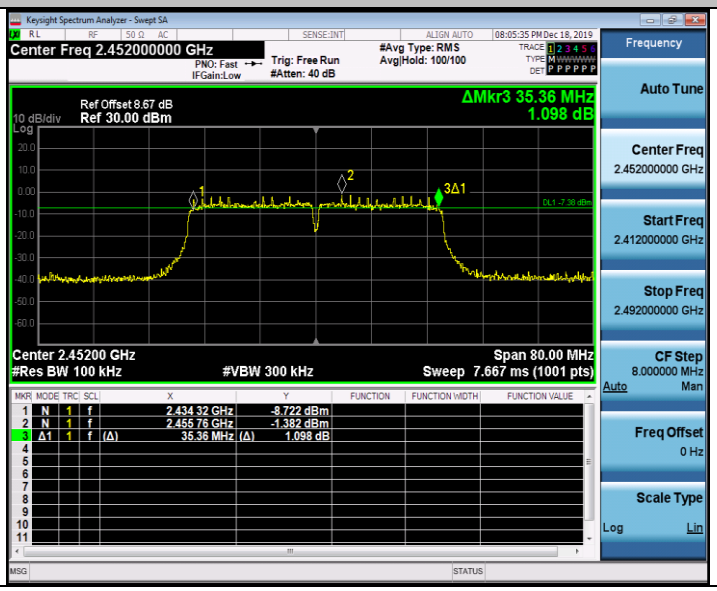
11N20SISO_Ant1_2462


11N40SISO_Ant1_2422


11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	15.025	2404.480	2419.505	---	PASS
		2437	15.022	2429.484	2444.506	---	PASS
		2462	15.000	2454.473	2469.473	---	PASS
11G	Ant1	2412	17.006	2403.513	2420.519	---	PASS
		2437	17.032	2428.527	2445.559	---	PASS
		2462	17.034	2453.493	2470.527	---	PASS
11N20SISO	Ant1	2412	17.991	2402.999	2420.990	---	PASS
		2437	17.956	2427.995	2445.951	---	PASS
		2462	17.991	2453.009	2471.000	---	PASS
11N40SISO	Ant1	2422	36.265	2403.904	2440.169	---	PASS
		2437	36.317	2418.903	2455.220	---	PASS
		2452	36.258	2433.892	2470.150	---	PASS

Test Graphs

11B_Ant1_2412

11B_Ant1_2437

11B_Ant1_2462

11G_Ant1_2412

11G_Ant1_2437

11G_Ant1_2462

11N20SISO_Ant1_2412

11N20SISO_Ant1_2437

11N20SISO_Ant1_2462

11N40SISO_Ant1_2422