



TEST REPORT

APPLICANT : mMax Communications, Inc.
PRODUCT NAME : Mobile Hotspot
MODEL NAME : HPP-M14
BRAND NAME : Hot Pepper
FCC ID : 2AWVS-M14
STANDARD(S) : 47 CFR Part 15 Subpart C
RECEIPT DATE : 2020-07-15
TEST DATE : 2020-07-15 to 2020-08-06
ISSUE DATE : 2020-08-19

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Change History		
Version	Date	Reason for change
1.0	2020-08-19	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	mMax Communications, Inc.
Applicant Address:	5151 California Ave., Suite 100, Irvine 92617, USA
Manufacturer:	mMax Communications, Inc.
Manufacturer Address:	5151 California Ave., Suite 100, Irvine 92617, USA

1.2. Equipment Under Test (EUT) Description

Product Name:	Mobile Hotspot
Serial No:	(N/A, marked #1 by test site)
Hardware Version:	SD305T_V1.0
Software Version:	Fresno_V1.0.2_RLK
Modulation Type:	OFDM
Modulation Mode:	802.11n(HT20),802.11n(HT40),802.11ac(HT20), 802.11ac(HT40),802.11ac(HT80)
Operating Frequency Range:	5.180 GHz- 5.240 GHz; 5.745GHz- 5.825GHz
Channel Number:	Refer to 1.3
Antenna Type:	PIFA Antenna
Antenna Gain:	5.1G: 0.5 dBi; 5.8G:0.3dBi
Accessory Information:	Battery
	Manufacturer: Shenzhen Chaonengtong Technology Co.,LTD.
	Brand Name: Hot Pepper
	Model No.: C2020M14
	Capacity: 3000mAh
	Rated Voltage: 3.70V
	Charge Limit: 4.20V
	AC Adapter
	Manufacturer: Shenzhen King Fu Lin Technology Co.,Ltd
	Brand Name: Hot Pepper
	Model No.: KFL-C060500100
	Rated Input: 100-240V ~ 50/60Hz 0.2A



	Rated Output:	5V=1.0A
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Note 1: The U-NII band is applicable to this report, another bands of operation (2.4GHz) is documented in a separate report.

Note 2: WIFI hotspot does not support U-NII band.

Note 3: During test, the duty cycle of the EUT was setting to 100%.

Note 4: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



1.3. The channel number and frequency of EUT

Frequency Range: 5180-5240MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	36	5180	40	5200
	44	5220	48	5240
40MHz	38	5190	46	5230
80MHz	42	5210	/	/
Frequency Range: 5745-5805MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	149	5745	153	5765
	157	5785	161	5805
	165	5825	/	/
40MHz	151	5755	159	5795
80MHz	155	5775	/	/

Note 1: The black bold channels were selected for test.



1.4. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No	Identity	Document Title
1	47 CFR Part 15	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result
1	15.203	Antenna Requirement	N/A	N/A	PASS
2	15.407(a) (e)	Emission Bandwidth	Jul 15, 2020	Stefan Sun	PASS
3	15.407(a)	Maximum conducted output Power	Jul 15, 2020	Stefan Sun	PASS
4	15.407(a)	Peak Power spectral density	Jul 15, 2020	Stefan Sun	PASS
5	15.407(b)	Restricted Frequency Bands	Jul 25, 2020 Jul 28, 2020	Yaming Luo	PASS
6	15.407(g)	Frequency Stability	Jul 15, 2020	Stefan Sun	PASS
7	15.207	Conducted Emission	Aug 6, 2020	Yaming Luo	PASS
8	15.407(b)	Radiated Emission	Jul 25, 2020 Jul 28, 2020	Yaming Luo	PASS
9	15.407(c)	Automatically discontinue transmission requirement	N/A	N/A	PASS

Note1: The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10 2013 and KDB789033 D02 v02r01.

Note2: The path loss has been calibrated by the system.

1.5. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 -60
Atmospheric Pressure (kPa):	86-106



2. 47 CFR Part 15C Requirements

2.1. Antenna requirement

2.1.1. Applicable Standard

According to FCC 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.

2.1.2. Result: Compliant

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

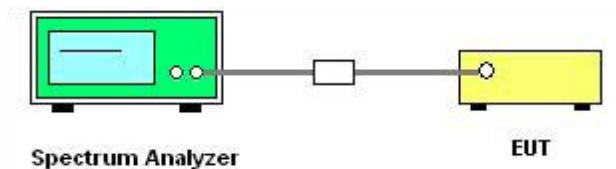
2.2. Emission Bandwidth

2.2.1. Requirement

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement. Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

2.2.2. Test Description

A. Test Setup:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

B. Test Procedure

1. KDB 789033 Section C) 1) Emission Bandwidth was used in order to prove compliance

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission.
Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

2. KDB 789033 Section C) 2) minimum emission bandwidth for the band 5.725-5.85GHz was used in order to prove compliance.

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.



e) Sweep = auto couple.

f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

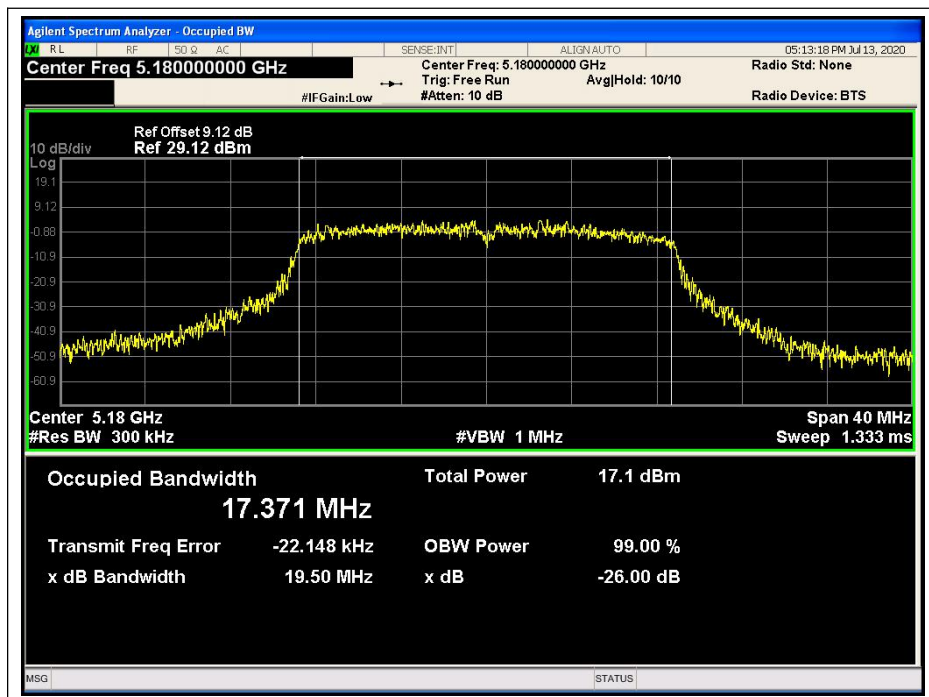
2.2.3. Test Result

802.11ac20 Test mode

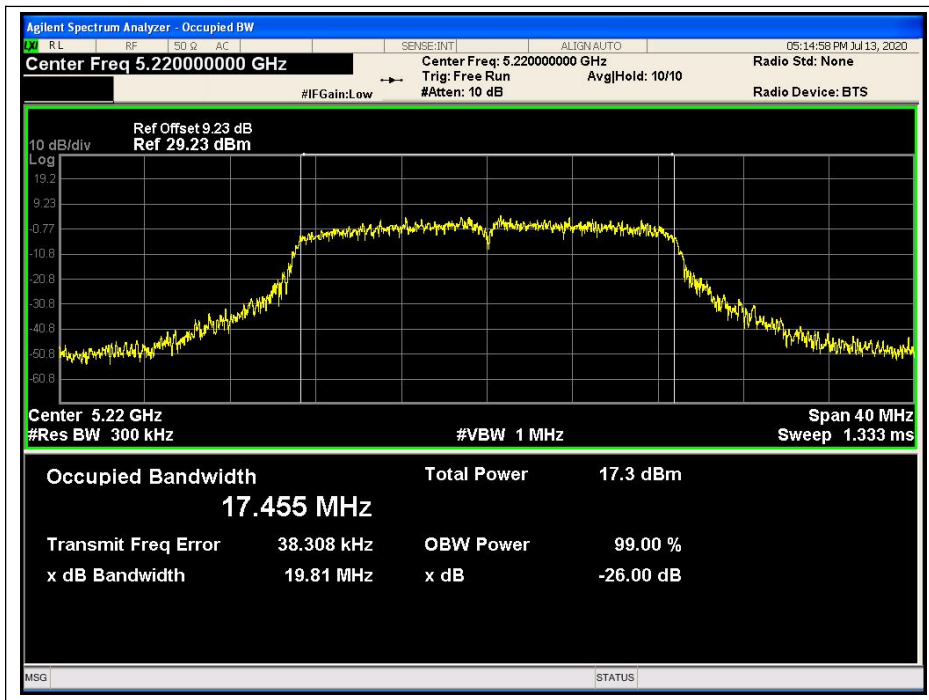
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	19.5
44	5220	19.81
48	5240	19.92
Channel	Frequency (MHz)	6dB Bandwidth (MHz)
149	5745	14.16
157	5785	16.92
165	5825	13.73

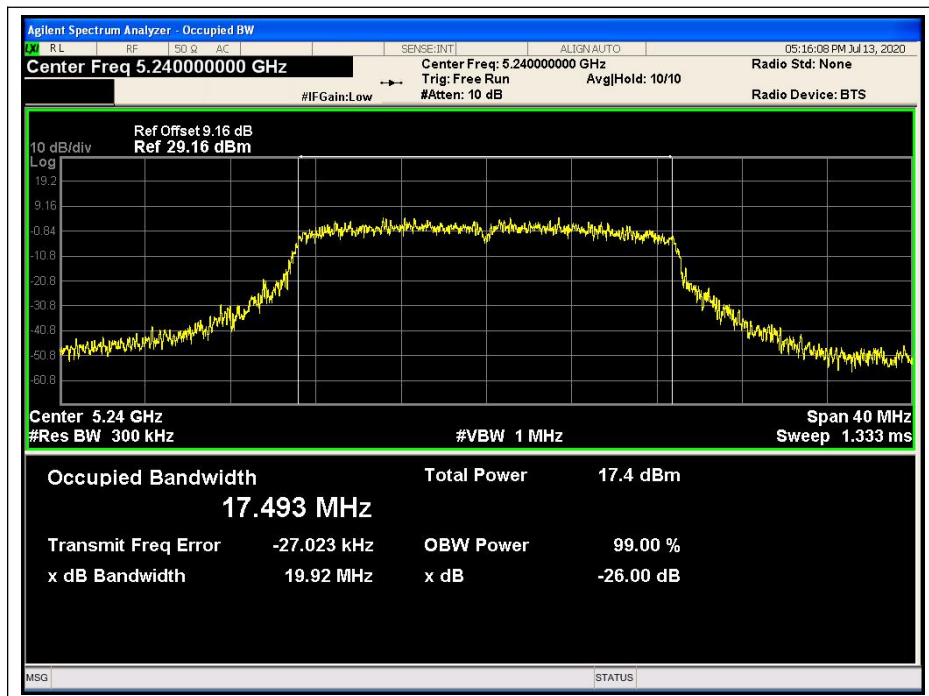
B. Test Plots



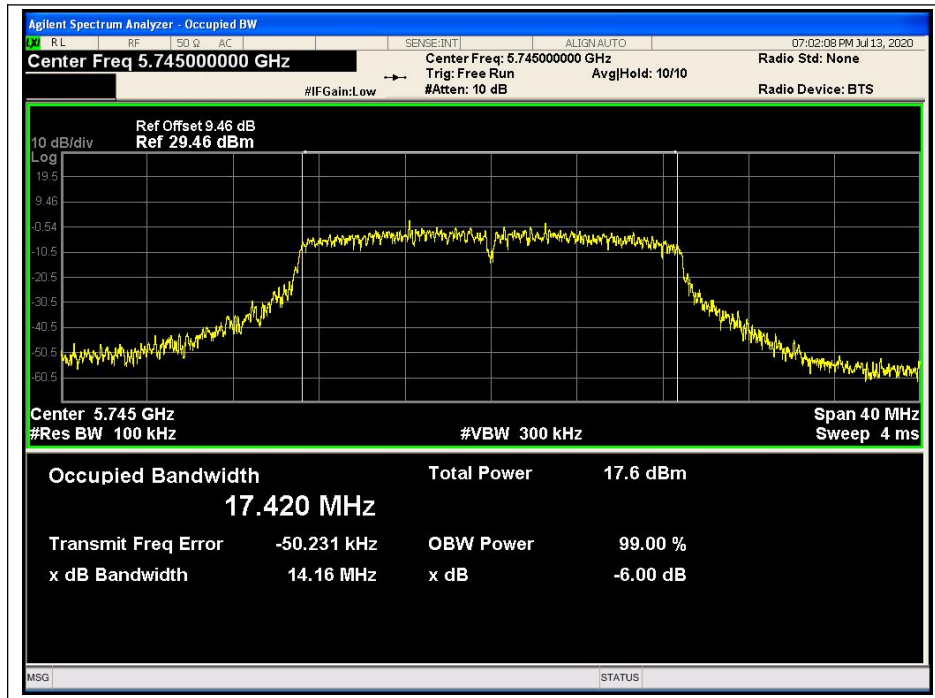
(Channel 36, 5180MHz, 802.11ac20)



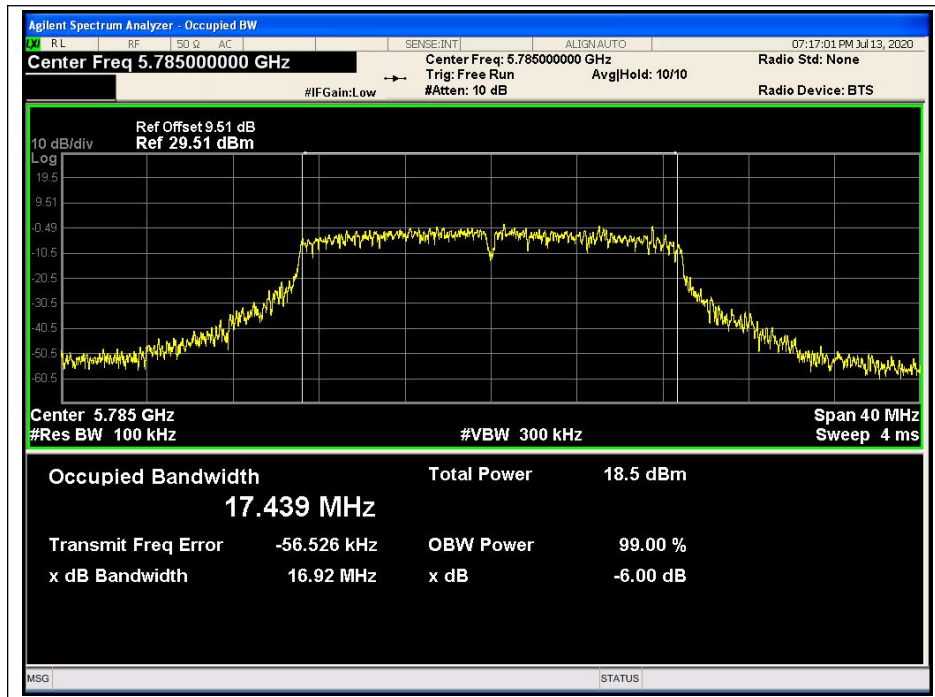
(Channel 44, 5220 MHz, 802.11ac20)



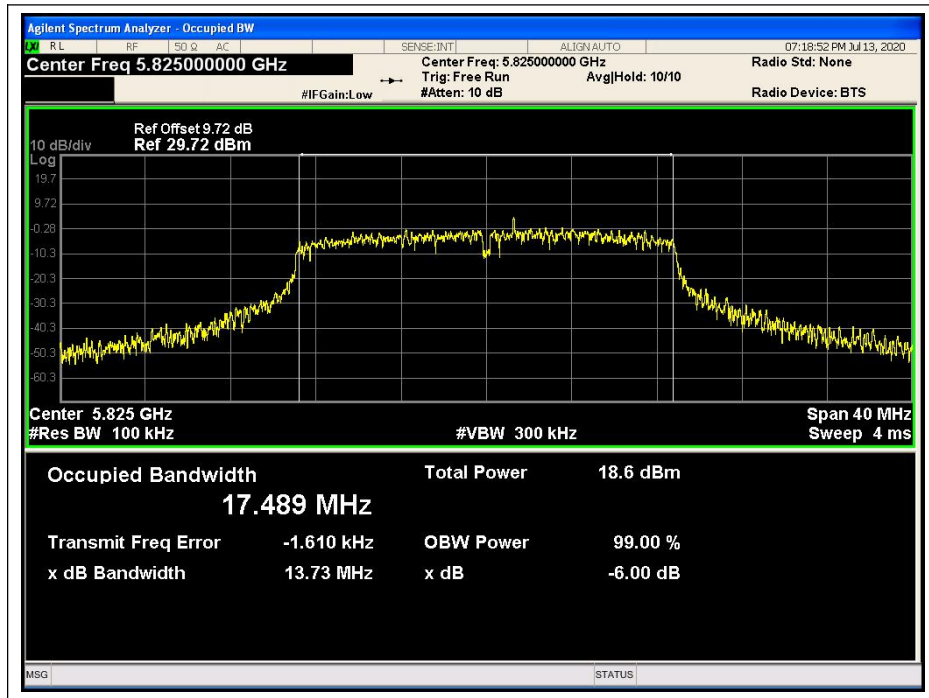
(Channel 48, 5240MHz, 802.11ac20)



(Channel 149, 5745MHz, 802.11ac20)



(Channel 157, 5785MHz, 802.11ac20)



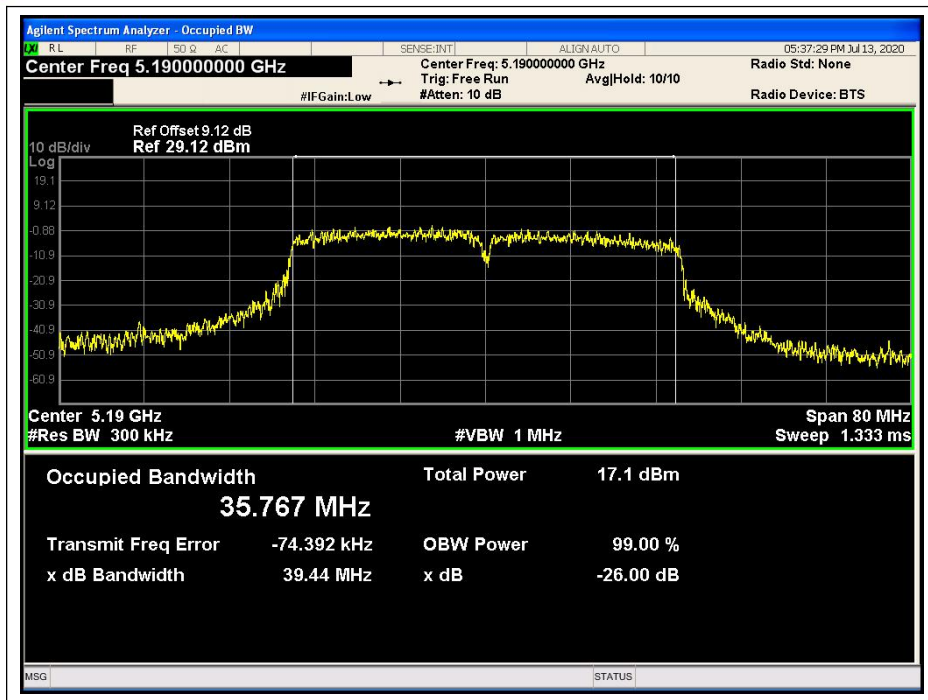
(Channel 165, 5825MHz, 802.11ac20)

802.11ac40 Test mode

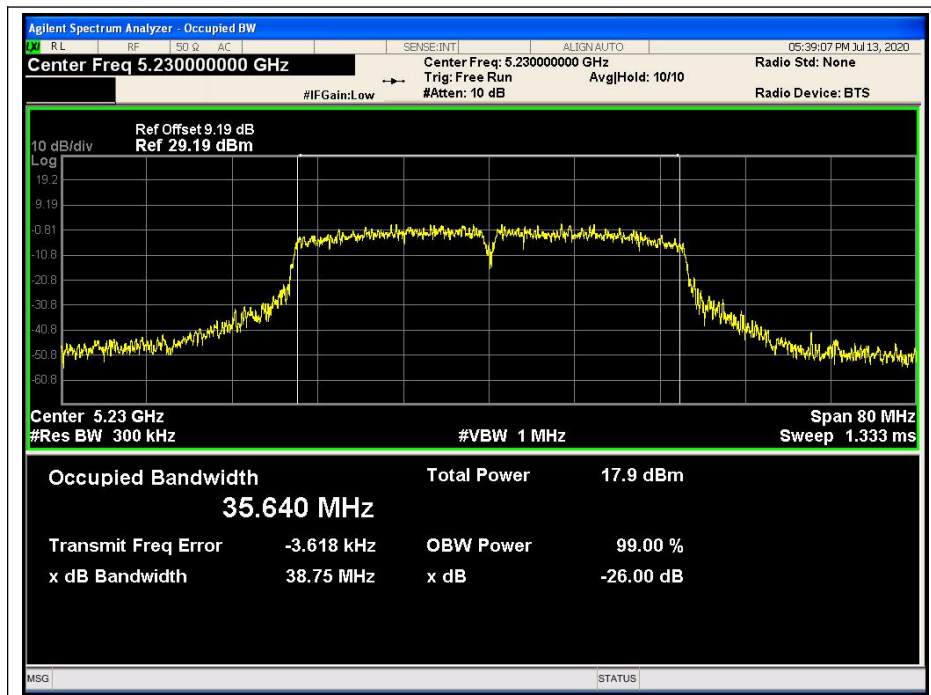
C. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
38	5190	39.44
46	5230	38.75
Channel	Frequency (MHz)	6dB Bandwidth (MHz)
151	5755	34.84
159	5795	34.14

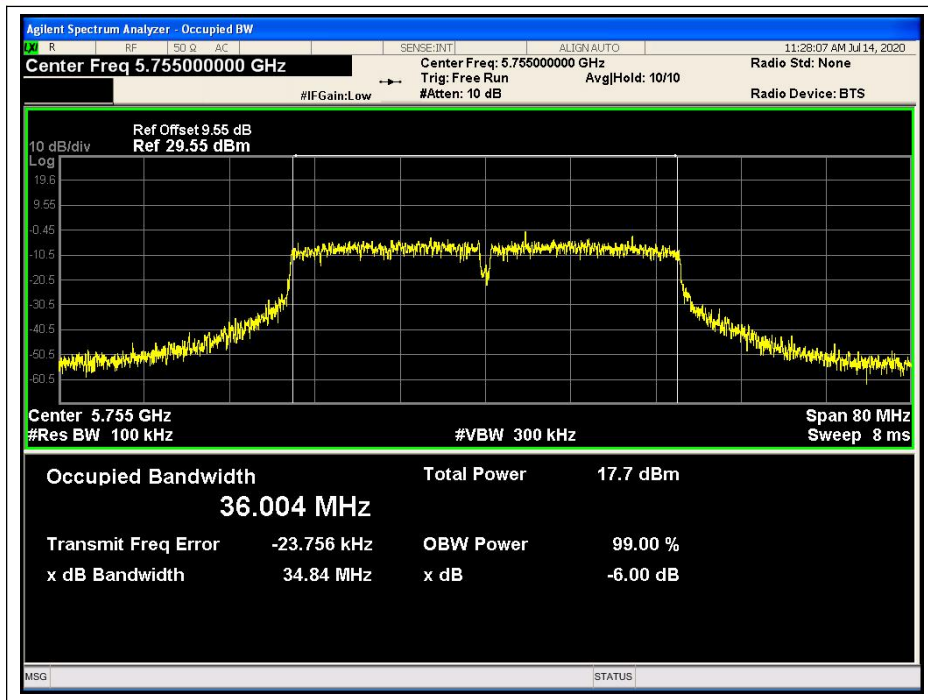
D. Test Plots



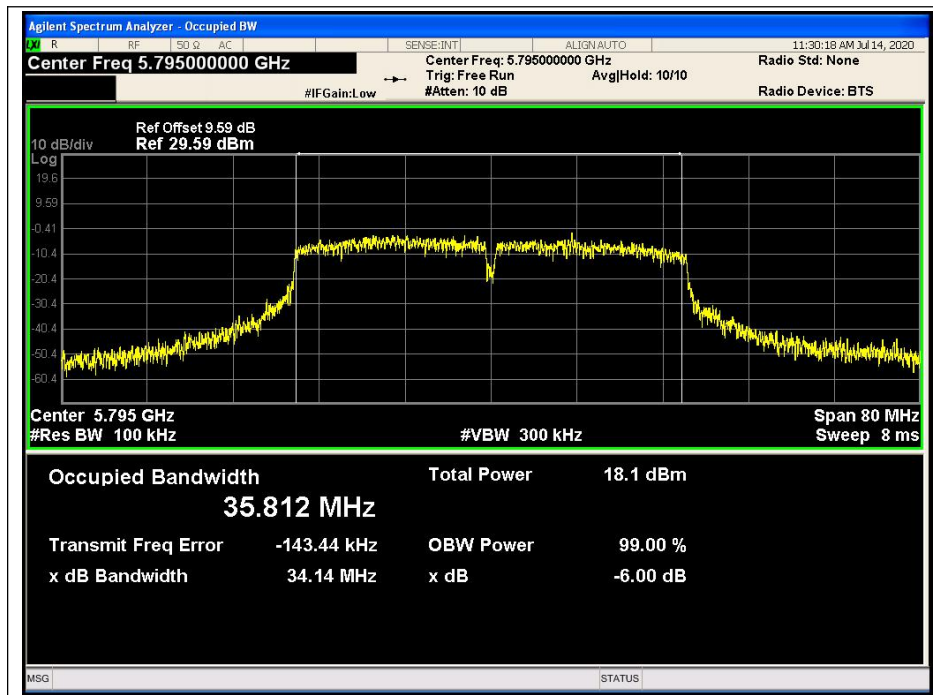
(Channel 38, 5190MHz, 802.11ac40)



(Channel 46, 5230 MHz, 802.11ac40)



(Channel 151, 5755MHz, 802.11ac40)



(Channel 159, 5795MHz, 802.11ac40)

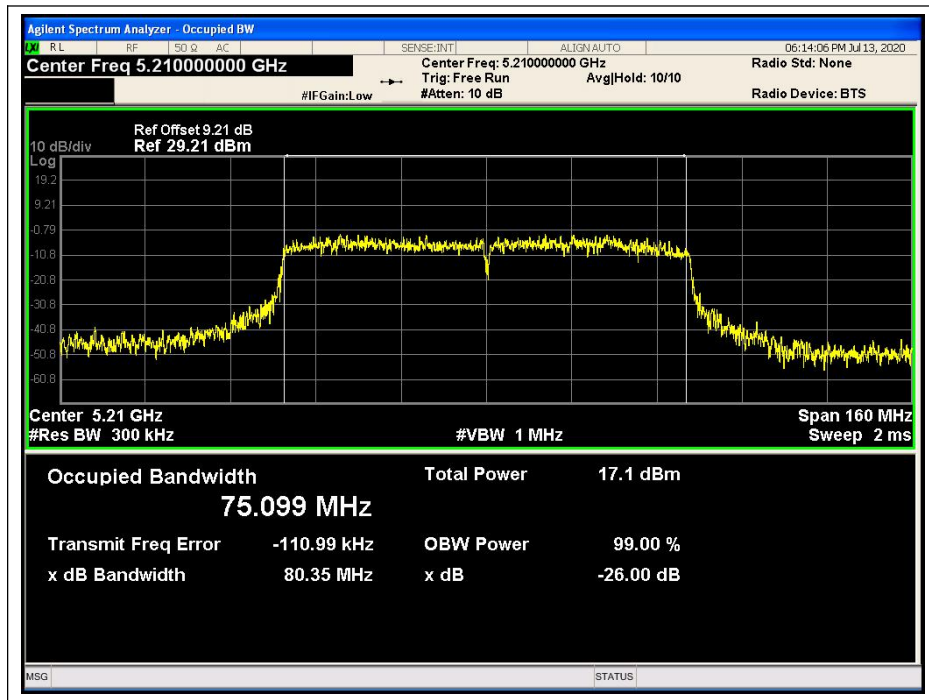


802.11ac80 Test mode

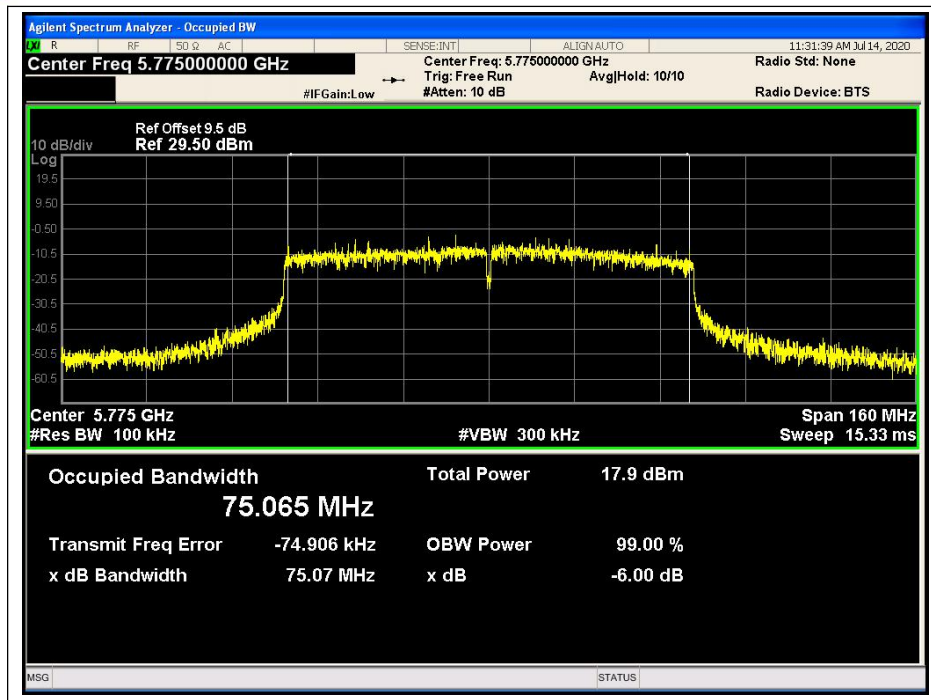
E. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
42	5210	80.35
Channel	Frequency (MHz)	6dB Bandwidth (MHz)
155	5775	75.07

F. Test Plots



(Channel 42, 5210MHz, 802.11ac80)



(Channel 155, 5775 MHz, 802.11ac80)

2.3. Maximum conducted output power

2.3.1. Requirement

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

(2) For the 5.25-5.35 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

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

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

(4) According to KDB662911D01 Measure-and-sum technique, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in units that are directly proportional to power.

(5) According to KDB 662911 D01, the directional gain = $G_{\text{ANT}} + 10 \log(N_{\text{ANT}})$ dBi, where G_{ANT} is the antenna gain in dBi, N_{ANT} is the number of outputs.

2.3.2. Test Description

Section E) 3) of KDB 789033 defines a methodology using a USB Wideband Power Sensor.

A. Test Set:



The EUT (Equipment under the test) which is coupled to the USB Wideband Power Sensor; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading, all test result in USB Wideband Power Sensor.



2.3.3. Test Result

Duty Cycle Factor

Mode	Channel	Frequency (MHz)	T _{on} (ms)	T _(on+off) (ms)	Duty Cycle (%)	Duty Cycle Factor
802.11 ac20	36	5180	100	100	100	0
802.11 ac40	38	5190	100	100	100	0
802.11 ac80	42	5210	100	100	100	0
802.11 HT20	36	5180	100	100	100	0
802.11 HT40	38	5190	100	100	100	0

802.11ac20 Test mode

Channel	Frequency (MHz)	Average Output Power (dBm)	Limit		Verdict
			(dBm)	11+10*log(EBW) (dBm)	
36	5180	17.78	24	23.90	PASS
44	5220	18.08		23.97	
48	5240	18.09		23.99	
149	5745	17.63	30		
157	5785	18.65			
165	5825	18.67			

Note: Power limit is 24dBm or 11+10*log(EBW)

802.11ac40 Test mode

Channel	Frequency (MHz)	Average Output Power (dBm)	Limit		Verdict
			(dBm)	11+10*log(EBW) (dBm)	
38	5190	17.62	24	26.96	PASS
46	5230	18.35		26.88	
151	5755	17.76	30		
159	5795	18.16			

Note: Power limit is 24dBm or 11+10*log(EBW)

802.11ac80 Test mode

Channel	Frequency (MHz)	Average Output Power (dBm)	Limit		Verdict
			(dBm)	11+10*log(EBW) (dBm)	
42	5210	17.56	24	30.05	PASS
155	5775	17.68	30		

Note: Power limit is 24dBm or 11+10*log(EBW)



802.11n (HT20) Test mode

Channel	Frequency (MHz)	Average Output Power (dBm)	Limit		Verdict
			(dBm)	11+10*log(EBW) (dBm)	
36	5180	17.88	24	23.88	PASS
44	5220	18.00		23.89	
48	5240	18.10		23.93	
149	5745	17.71	30		
157	5785	18.65			
165	5825	18.64			
Note: Power limit is 24dBm or 11+10*log(EBW)					

802.11n (HT40) Test mode

Channel	Frequency (MHz)	Average Output Power (dBm)	Limit		Verdict
			(dBm)	11+10*log(EBW) (dBm)	
38	5190	17.65	24	26.84	PASS
46	5230	18.41		26.90	PASS
151	5755	17.89	30		PASS
159	5795	18.24			PASS
Note: Power limit is 24dBm or 11+10*log(EBW)					

Note: The duty cycle factor has been compensated into the test result

2.4. Peak Power spectral density

2.4.1. Requirement

(1) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

(2) For the 5.25-5.35 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

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

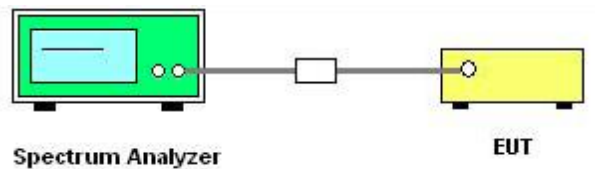
If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(4) According to KDB662911D01 Measure-and-sum technique, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in units that are directly proportional to power.

(5) According to KDB 662911 D01, the directional gain = $G_{ANT} + 10\log(N_{ANT})$ dBi, where G_{ANT} is the antenna gain in dBi, N_{ANT} is the number of outputs.

2.4.2. Test Description

A. Test Set:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

B. Test Procedure

KDB 789033 Section F) Maximum Power Spectral Density (PSD) Method SA-1 was used in order to prove compliance.test procedure for Band 1 and Band 2A:

- 1) Set span to encompass the entire 26-dB emission bandwidth
- 2) Set RBW = 1 MHz. Set VBW \geq 3 MHz.
- 3) Number of points in sweep \geq 2 Span / RBW. Sweep time = auto.
- 4) Detector = RMS (i.e., power averaging)
- 5) Trace average at least 100 traces in power averaging (i.e., RMS) mode
- 6) Record the max value



Band 4 test procedure:

For devices operating in the band 5.725–5.85 GHz, the rules specify a measurement bandwidth of 500 kHz

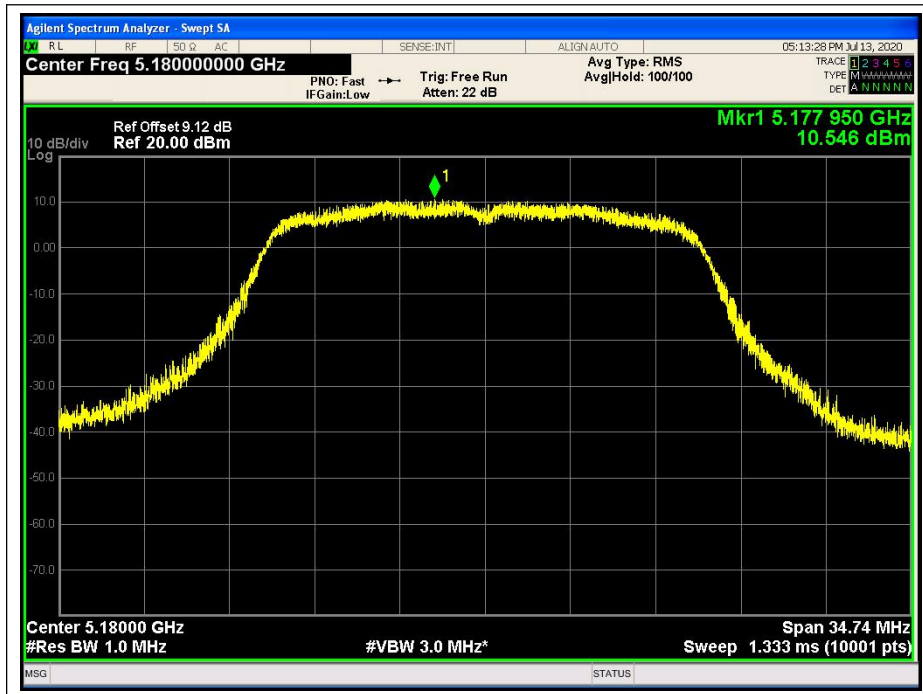
2.4.3. Test Result

802.11ac20 Test mode

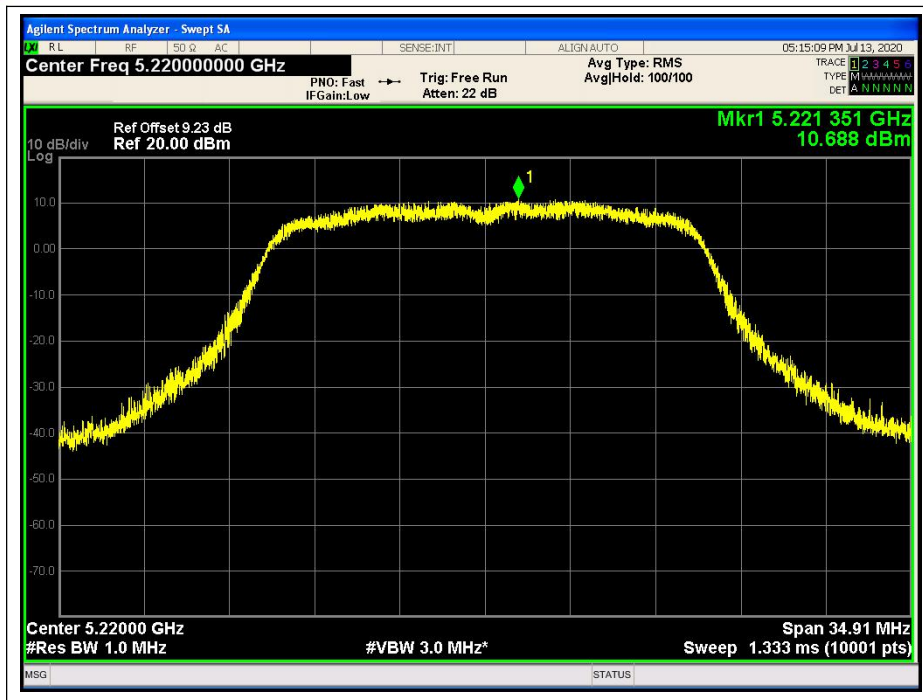
A. Test Verdict:

Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	10.546	11	PASS
44	5220	10.688		
48	5240	10.552		
Channel	Frequency (MHz)	Measured PSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
149	5745	6.565	30	PASS
157	5785	8.682		
165	5825	7.916		

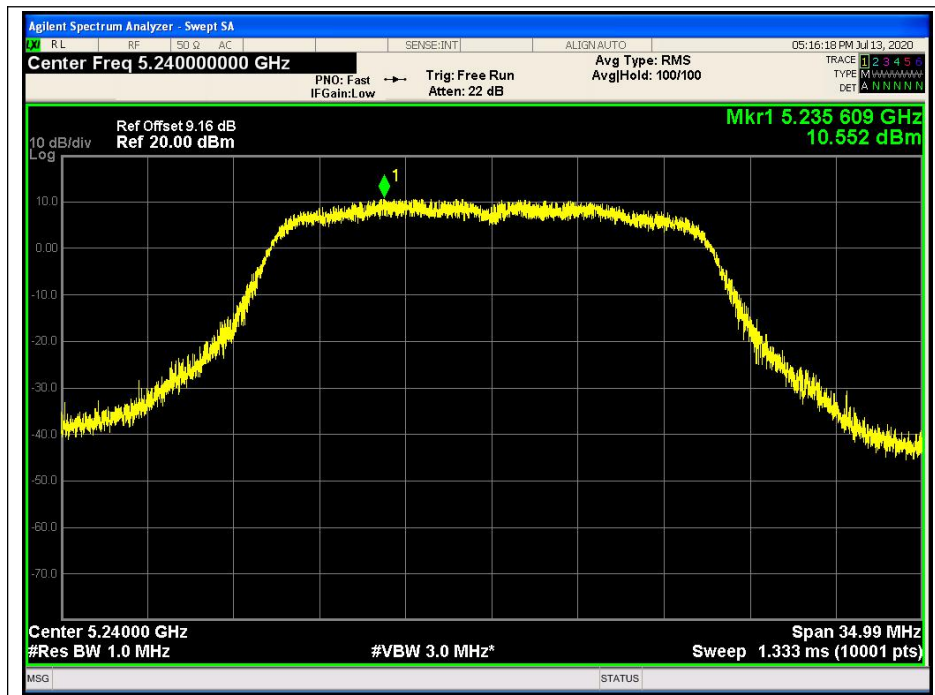
B. Test Plots



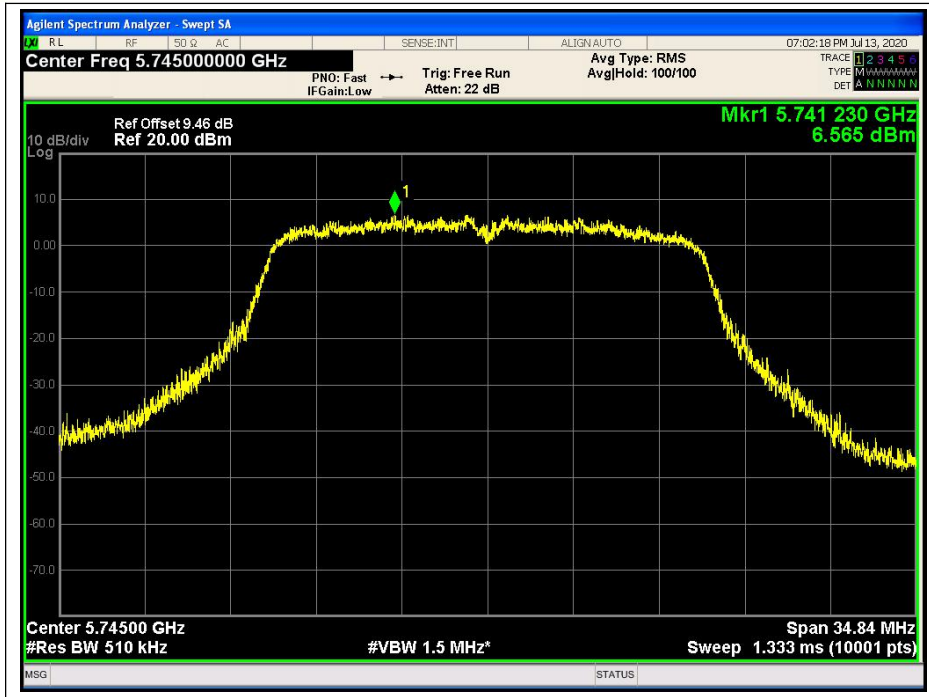
(Channel 36, 5180MHz, 802.11ac20)



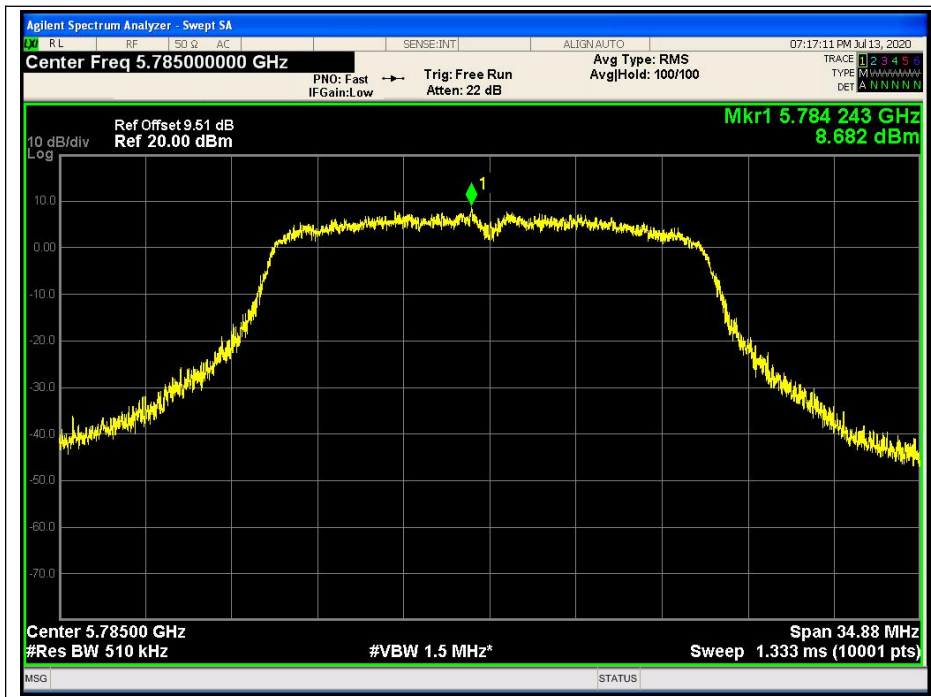
(Channel 44, 5220 MHz, 802.11ac20)



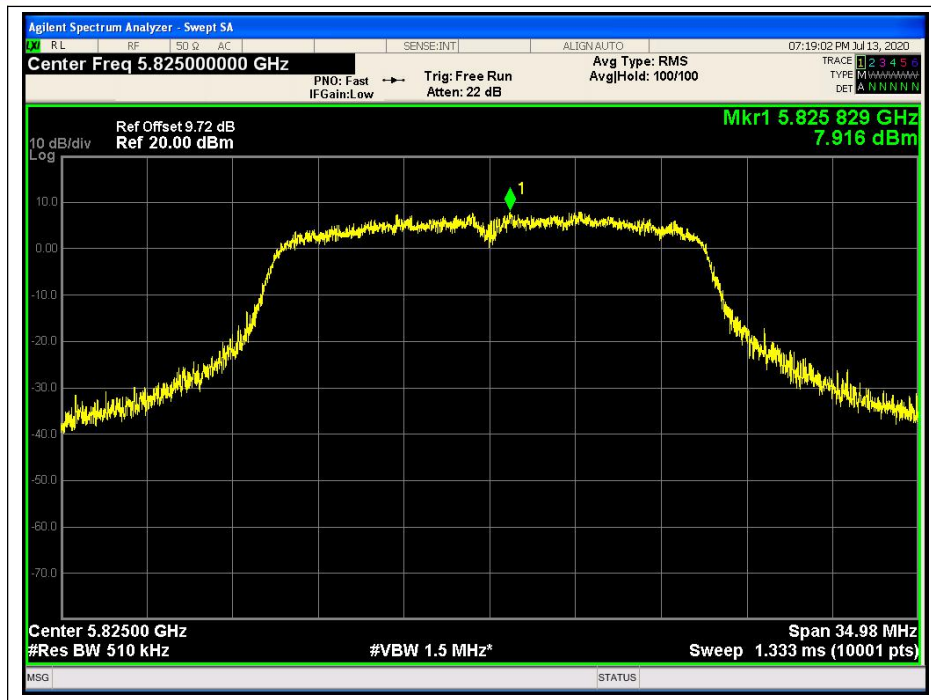
(Channel 48, 5240MHz, 802.11ac20)



(Channel 149, 5745MHz, 802.11ac20)



(Channel 157, 5785 MHz, 802.11ac20)



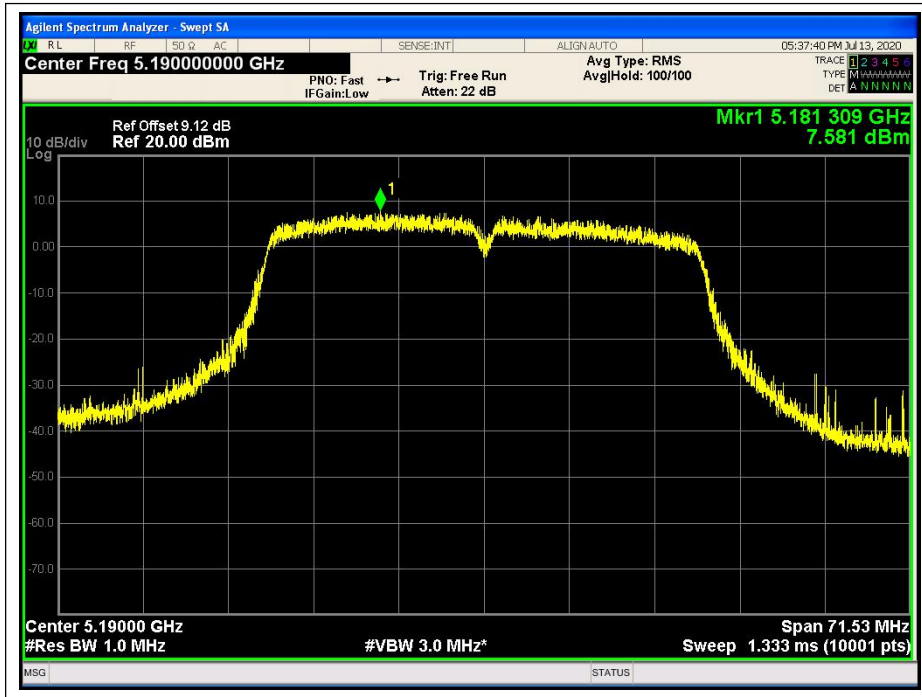
(Channel 165, 5825MHz, 802.11ac20)

802.11ac40 Test mode

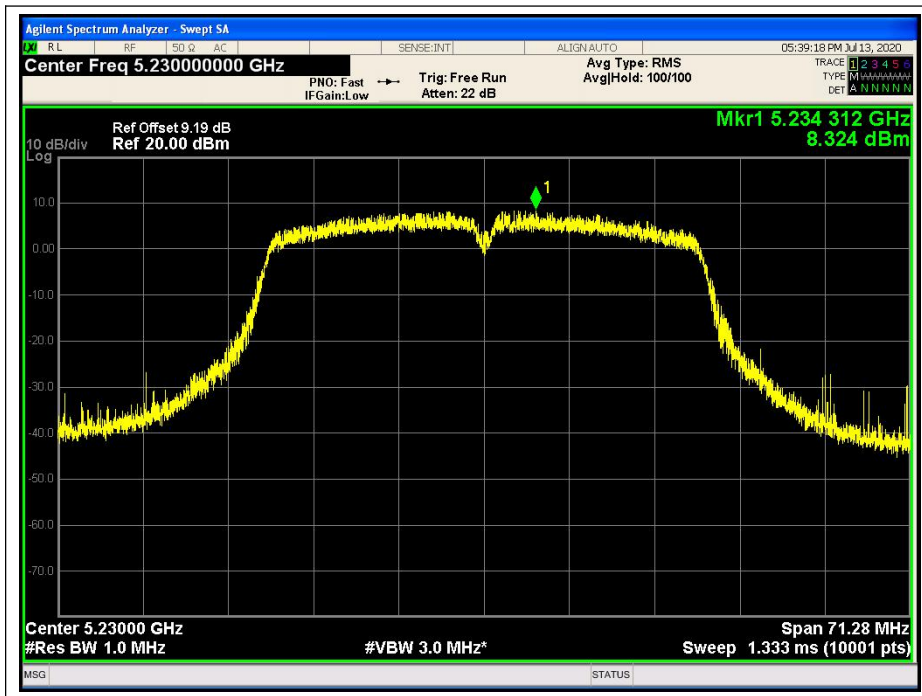
C. Test Verdict:

Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
38	5190	7.581	11	PASS
46	5230	8.324		
Channel	Frequency (MHz)	Measured PSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
151	5755	3.439	30	PASS
159	5795	4.225		

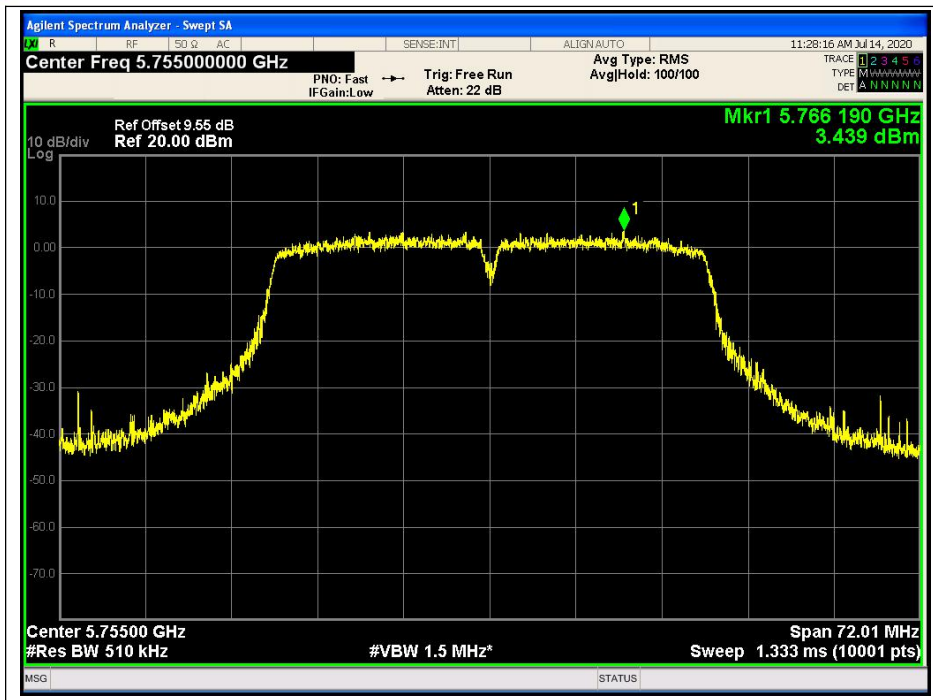
D. Test Plots



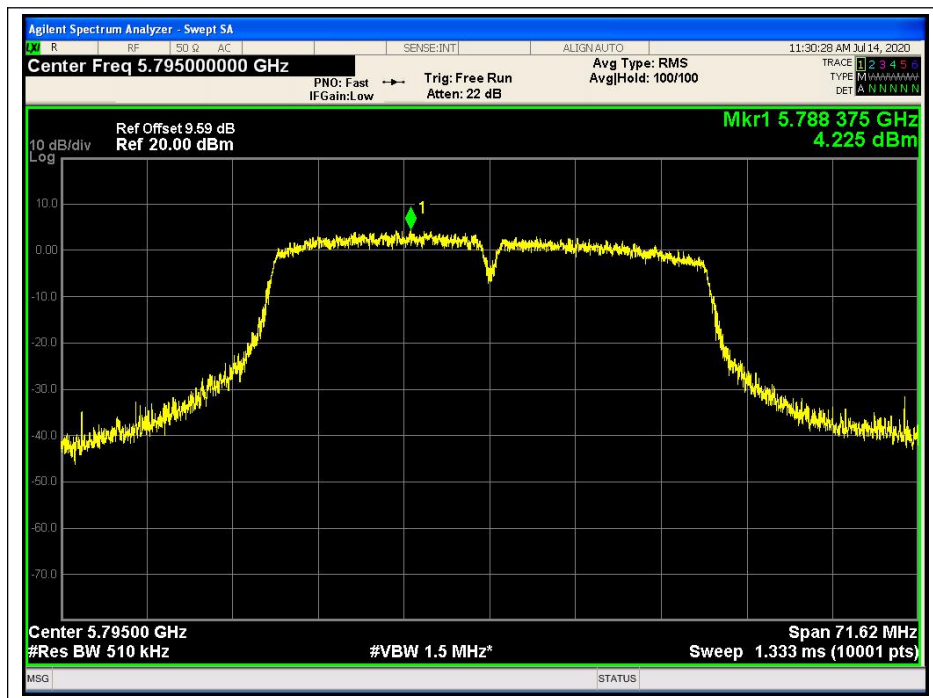
(Channel 38, 5190MHz, 802.11ac40)



(Channel 46, 5230 MHz, 802.11ac40)



(Channel 151, 5755MHz, 802.11ac40)



(Channel 159, 5795MHz, 802.11ac40)

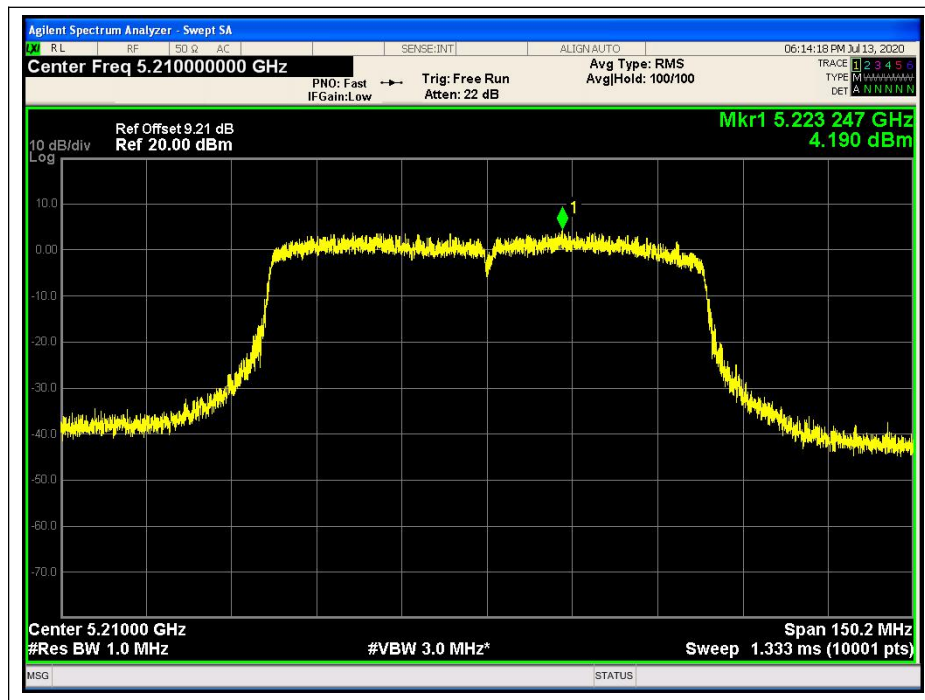


802.11ac80 Test mode

E. Test Verdict:

Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
42	5210	4.19	11	PASS
Channel	Frequency (MHz)	Measured PSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
155	5775	1.592	30	PASS

F. Test Plots



(Channel 42, 5210MHz, 802.11ac80)



(Channel 155, 5775 MHz, 802.11ac80)

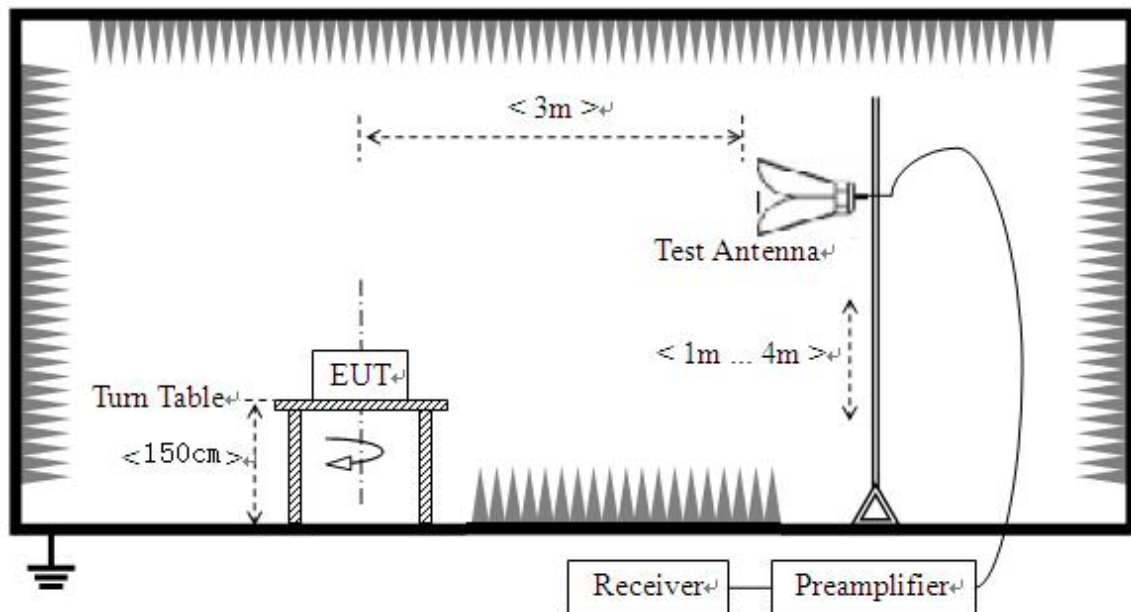
2.5. Restricted Frequency Bands

2.5.1. Requirement

According to FCC section 15.407(b)(7), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

2.5.2. Test Description

A. Test Setup



The Module is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

KDB 789033 Section H) 3)5)6(d)) was used in order to prove compliance

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.



- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasipeak detection (QP) at frequency below 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
- 3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
- 4. All modes of operation were investigated and the worst-case emissions are reported.



2.5.3. Test Result

The lowest and highest channels are tested to verify Restricted Frequency Bands.

The measurement results are obtained as below:

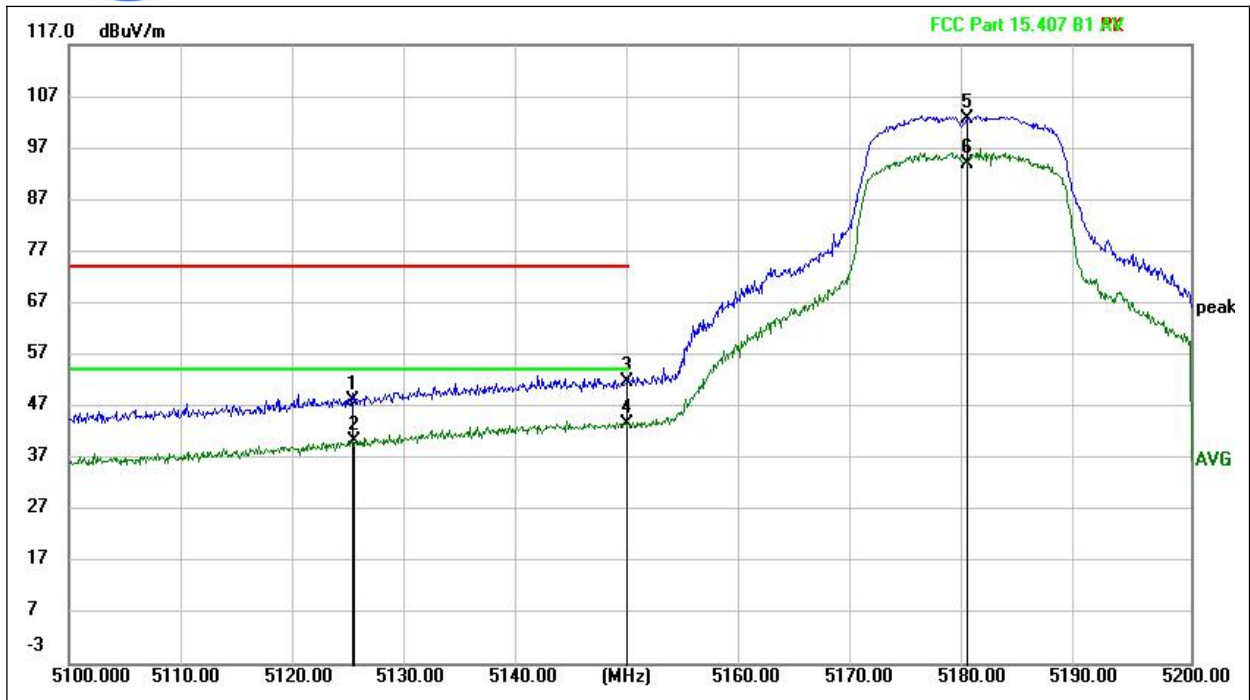
$$E \text{ [dB}\mu\text{V/m]} = U_R + A_{\text{Factor}} \text{ [dB]}; AT = L_{\text{Cable loss}} \text{ [dB]} - G_{\text{preamp}} \text{ [dB]}$$

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain; A_{Factor} : Antenna Factor at 3m

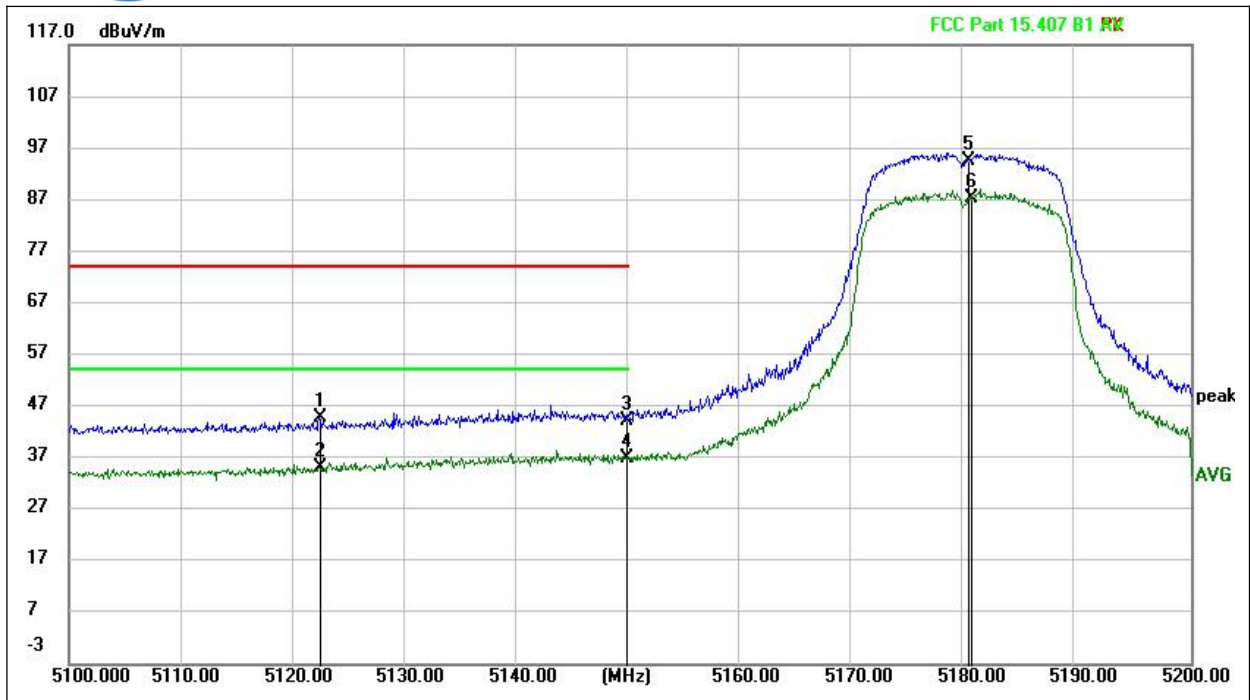
802.11ac20 Test mode

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Pol	Verdict
		PK/AV						
36	5150.000	PK	55.02	-3.24	51.78	74.00	H	PASS
36	5150.000	AV	46.76	-3.24	43.52	54.00	H	PASS
36	5150.000	PK	47.33	-3.24	44.09	74.00	V	PASS
36	5150.000	AV	40.14	-3.24	36.90	54.00	V	PASS
48	5350.000	PK	45.01	-2.56	42.45	74.00	H	PASS
48	5350.000	AV	36.98	-2.56	34.42	54.00	H	PASS
48	5350.000	PK	45.01	-2.56	42.45	74.00	V	PASS
48	5350.000	AV	36.98	-2.56	34.42	54.00	V	PASS



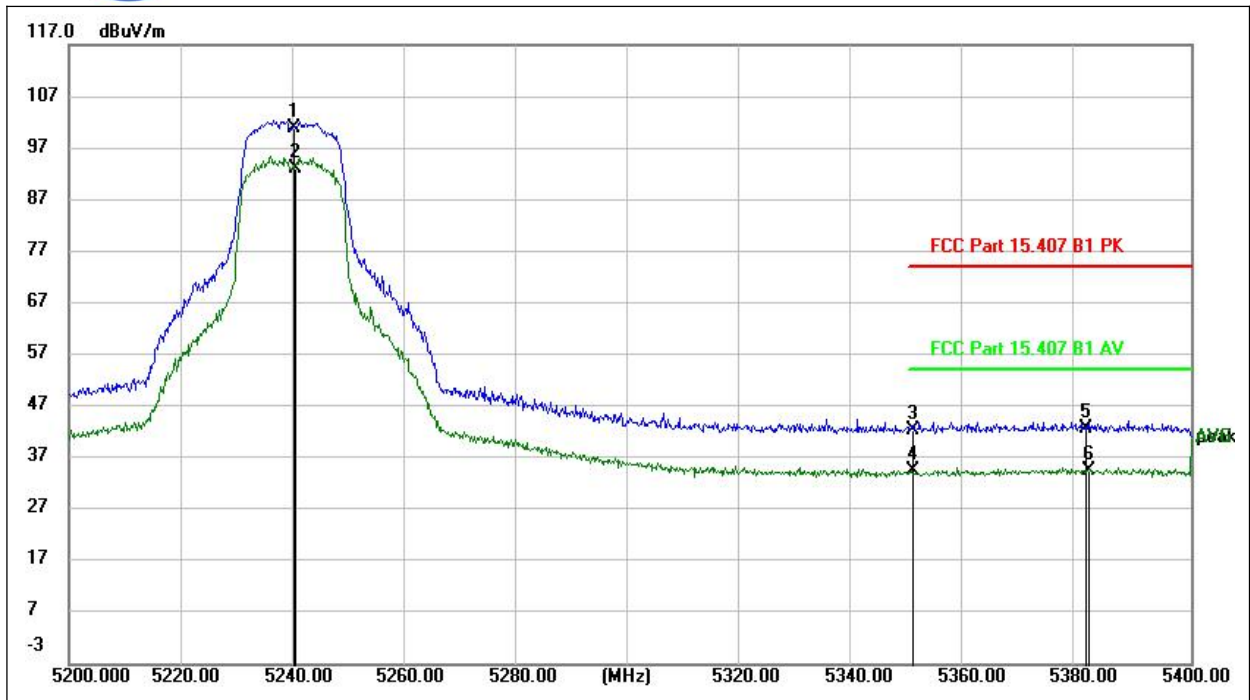
(802.11ac20 _5180MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
5125.240	51.32	-3.12	48.20	74.00	-25.80	peak	PASS
5125.375	43.29	-3.12	40.17	54.00	-13.83	AVG	PASS
5150.000	55.02	-3.24	51.78	74.00	-22.22	peak	PASS
5150.000	46.76	-3.24	43.52	54.00	-10.48	AVG	PASS
5180.060	105.81	-3.04	102.77	N/A	N/A	peak	N/A
5180.060	97.11	-3.04	94.07	N/A	N/A	AVG	N/A



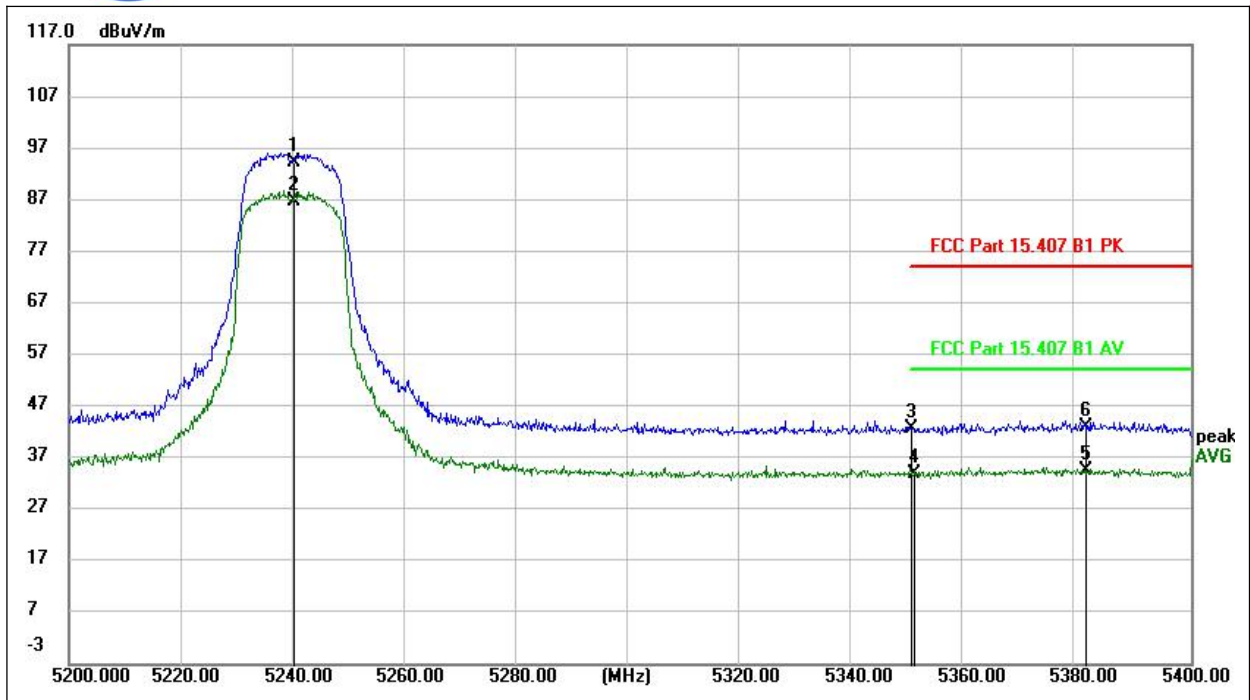
(802.11ac20_5180MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
5122.375	47.81	-3.10	44.71	74.00	-29.29	peak	PASS
5122.375	38.15	-3.10	35.05	54.00	-18.95	AVG	PASS
5150.000	47.33	-3.24	44.09	74.00	-29.91	peak	PASS
5150.000	40.14	-3.24	36.90	54.00	-17.10	AVG	PASS
5180.155	97.69	-3.04	94.65	N/A	N/A	peak	N/A
5180.365	90.49	-3.04	87.45	N/A	N/A	AVG	N/A



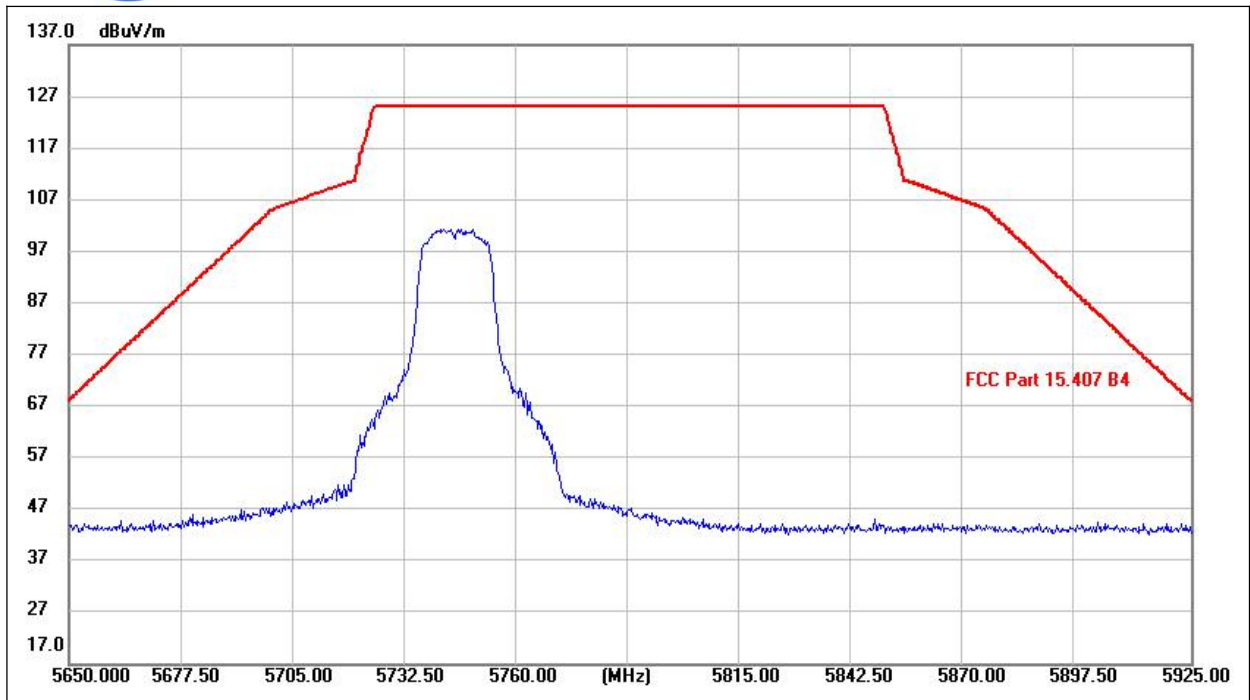
(802.11ac20 _5240MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
5240.110	103.77	-3.05	100.72	N/A	N/A	peak	N/A
5240.230	96.18	-3.05	93.13	N/A	N/A	AVG	N/A
5350.000	45.01	-2.56	42.45	74.00	-31.55	peak	PASS
5350.000	36.98	-2.56	34.42	54.00	-19.58	AVG	PASS
5381.130	44.92	-2.29	42.63	74.00	-31.37	peak	PASS
5381.750	36.90	-2.30	34.60	54.00	-19.40	AVG	PASS

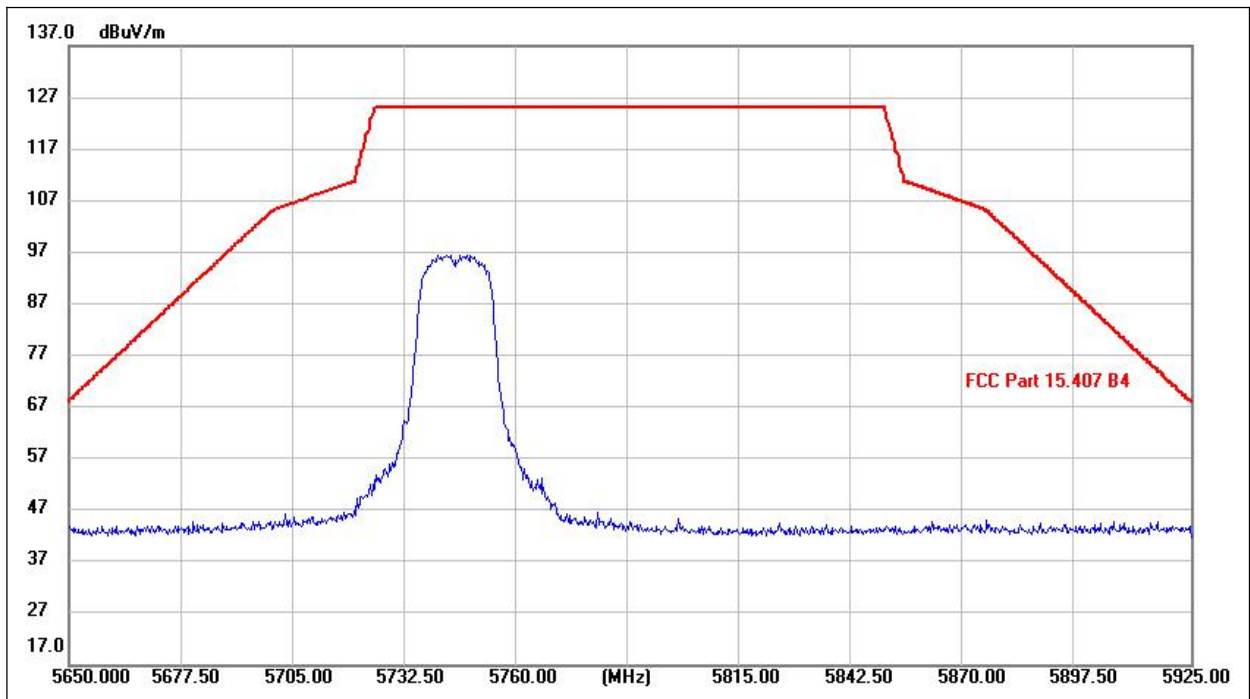


(802.11ac20_5240MHz, Antenna Vertical)

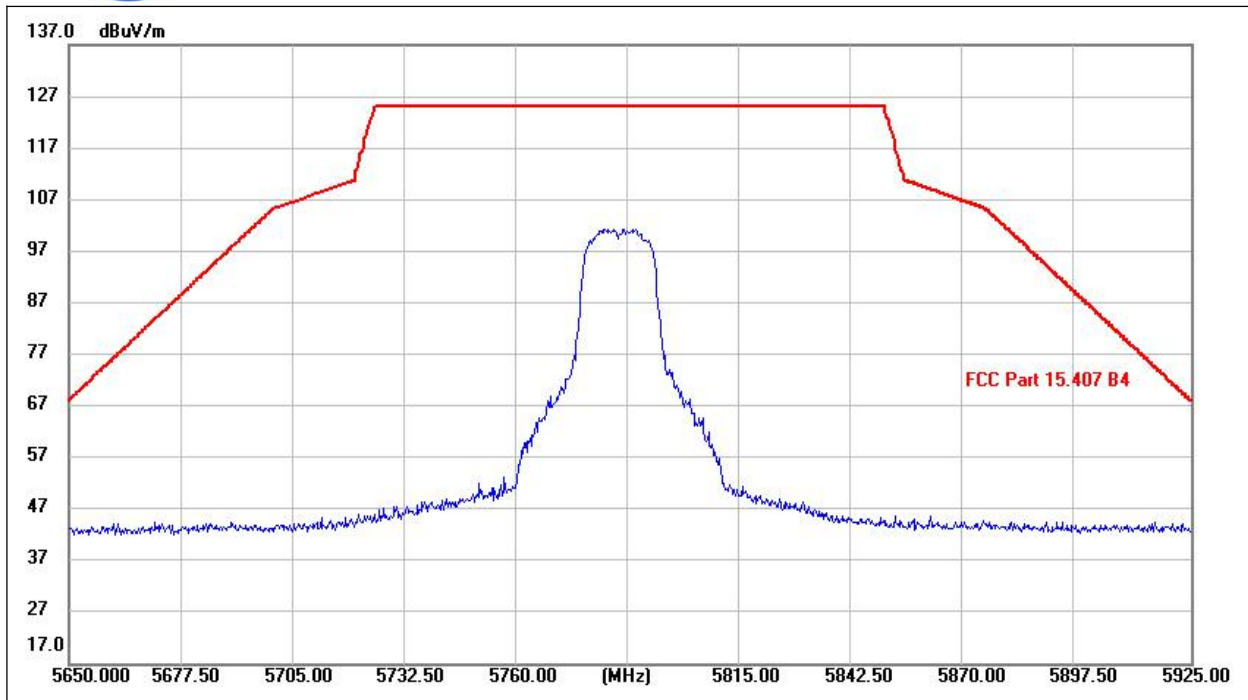
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
5240.110	103.77	-3.05	100.72	N/A	N/A	peak	N/A
5240.230	96.18	-3.05	93.13	N/A	N/A	AVG	N/A
5350.000	45.01	-2.56	42.45	74.00	-31.55	peak	PASS
5350.000	36.98	-2.56	34.42	54.00	-19.58	AVG	PASS
5381.130	44.92	-2.29	42.63	74.00	-31.37	peak	PASS
5381.750	36.90	-2.30	34.60	54.00	-19.40	AVG	PASS



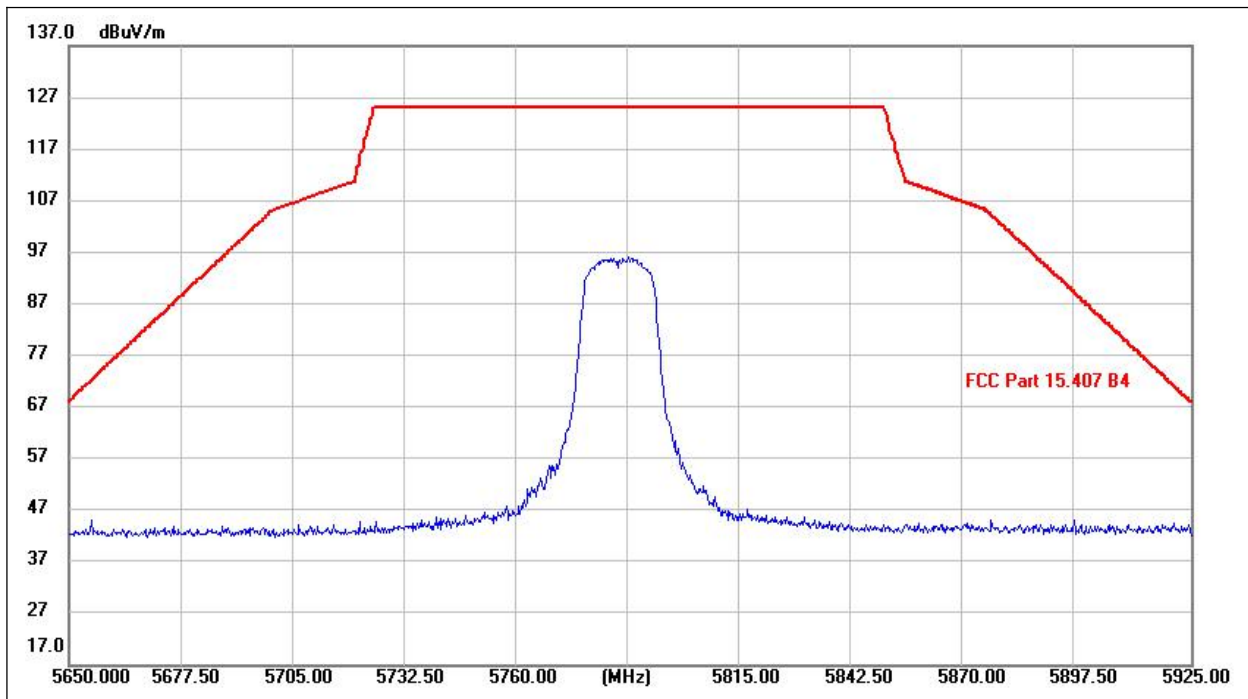
(802.11ac20_5745MHz, Antenna Horizontal)



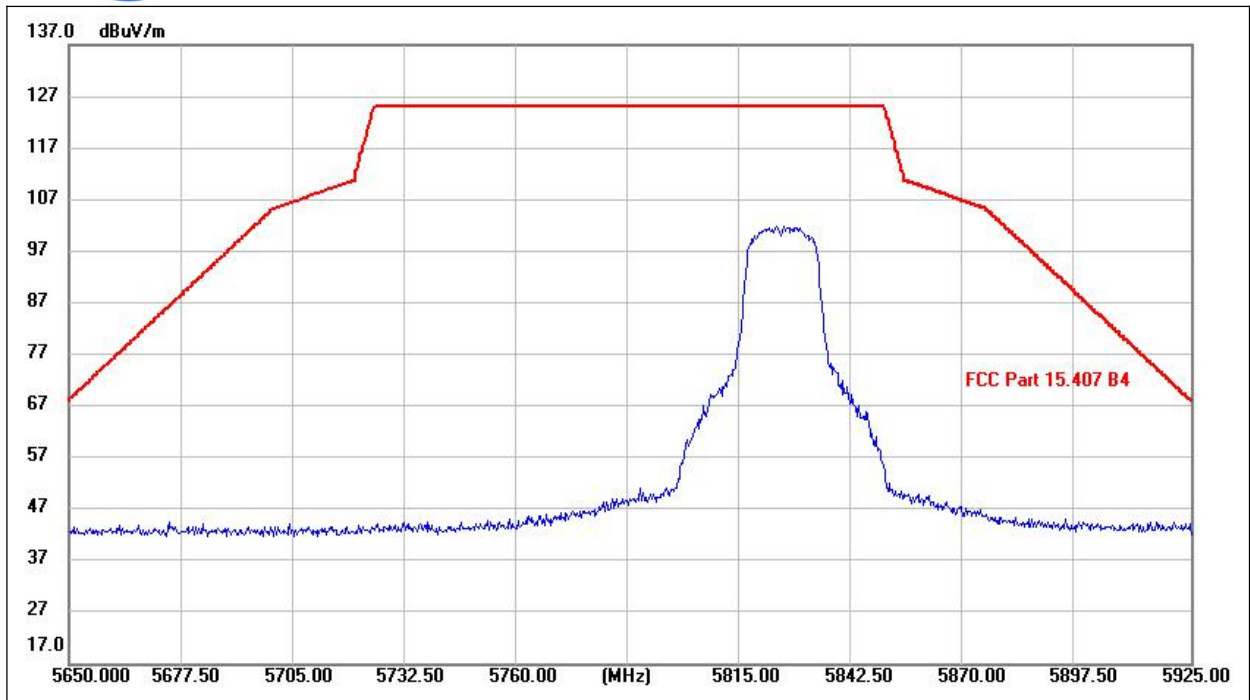
(802.11ac20_5745MHz, Antenna Vertical)



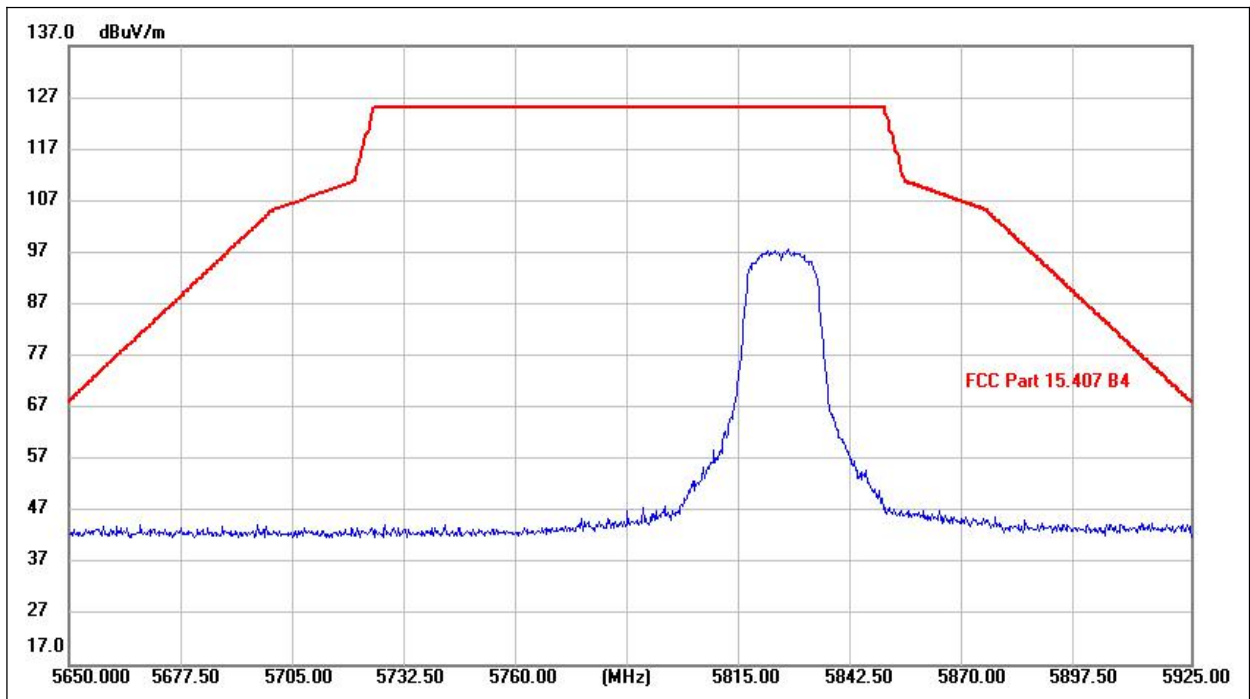
(802.11ac20_5785MHz, Antenna Horizontal)



(802.11ac20_5785MHz, Antenna Vertical)



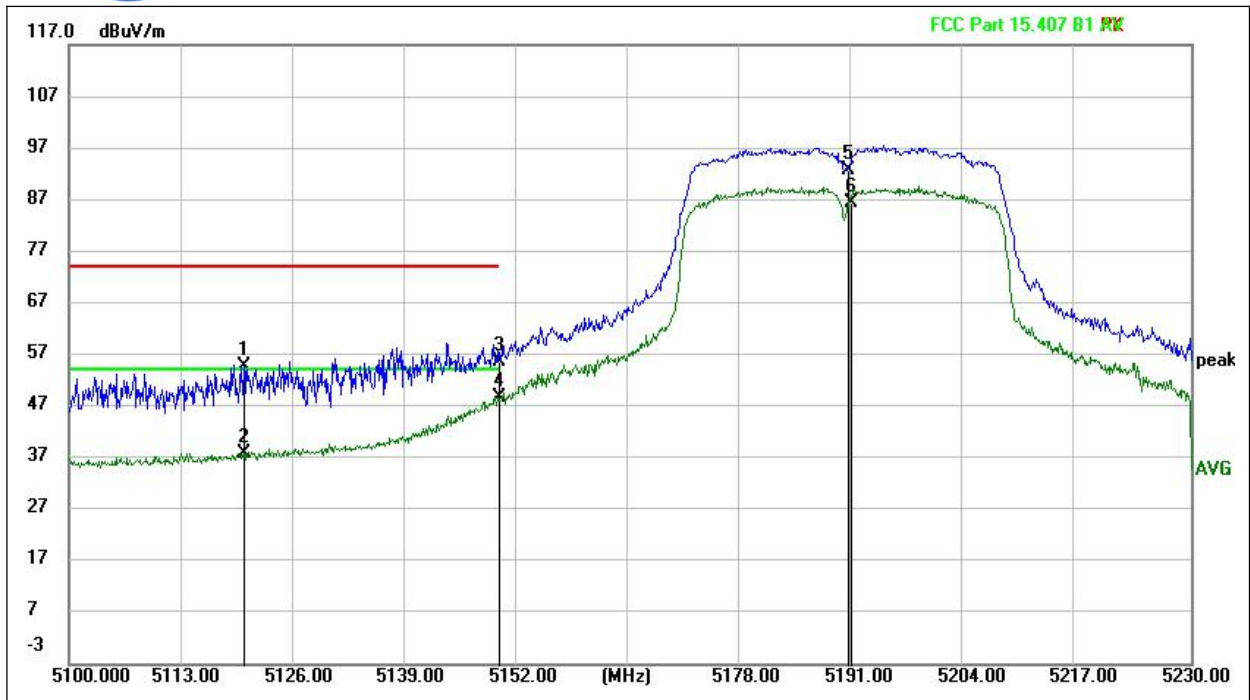
(802.11ac20_5825MHz, Antenna Horizontal)



(802.11ac20_5825MHz, Antenna Vertical)

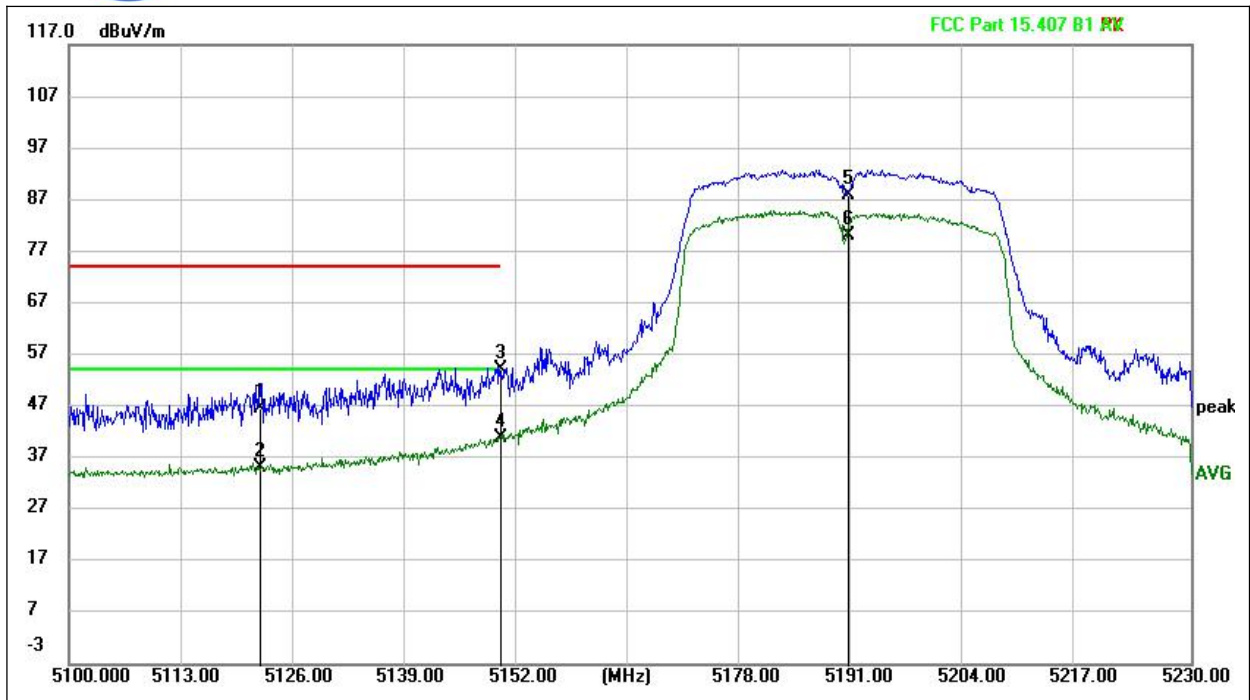
**802.11ac40 Test mode**

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Pol	Verdict
		PK/AV						
38	5150.000	PK	58.92	-3.24	55.68	74.00	H	PASS
38	5150.000	AV	52.07	-3.24	48.83	54.00	H	PASS
38	5150.000	PK	57.29	-3.24	54.05	74.00	V	PASS
38	5150.000	AV	44.04	-3.24	40.80	54.00	V	PASS
46	5350.000	PK	48.96	-2.56	46.40	74.00	H	PASS
46	5350.000	AV	36.44	-2.56	33.88	54.00	H	PASS
46	5350.000	PK	44.73	-2.56	42.17	74.00	V	PASS
46	5350.000	AV	36.47	-2.56	33.91	54.00	V	PASS



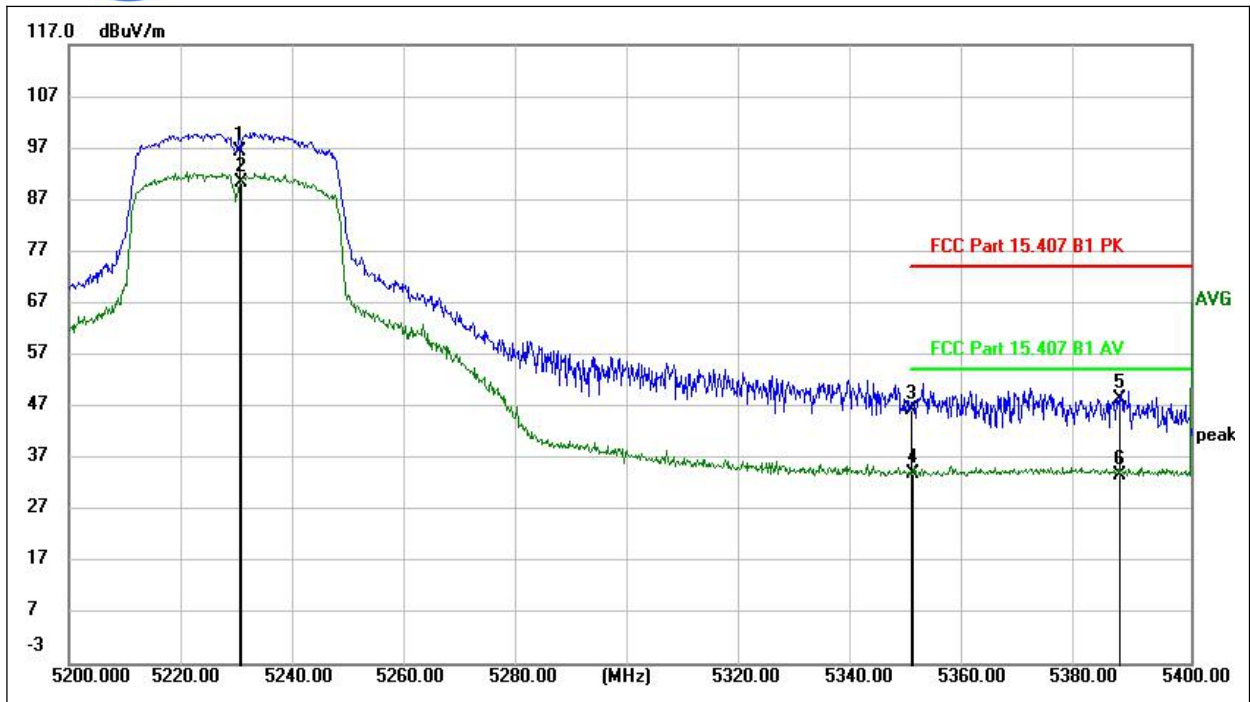
(802.11ac40_5190MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
5120.280	57.87	-3.09	54.78	74.00	-19.22	peak	PASS
5120.280	40.89	-3.09	37.80	54.00	-16.20	AVG	PASS
5150.000	58.92	-3.24	55.68	74.00	-18.32	peak	PASS
5150.000	52.07	-3.24	48.83	54.00	-5.17	AVG	PASS
5190.324	95.62	-3.02	92.60	N/A	N/A	peak	N/A
5190.525	89.35	-3.02	86.33	N/A	N/A	AVG	N/A



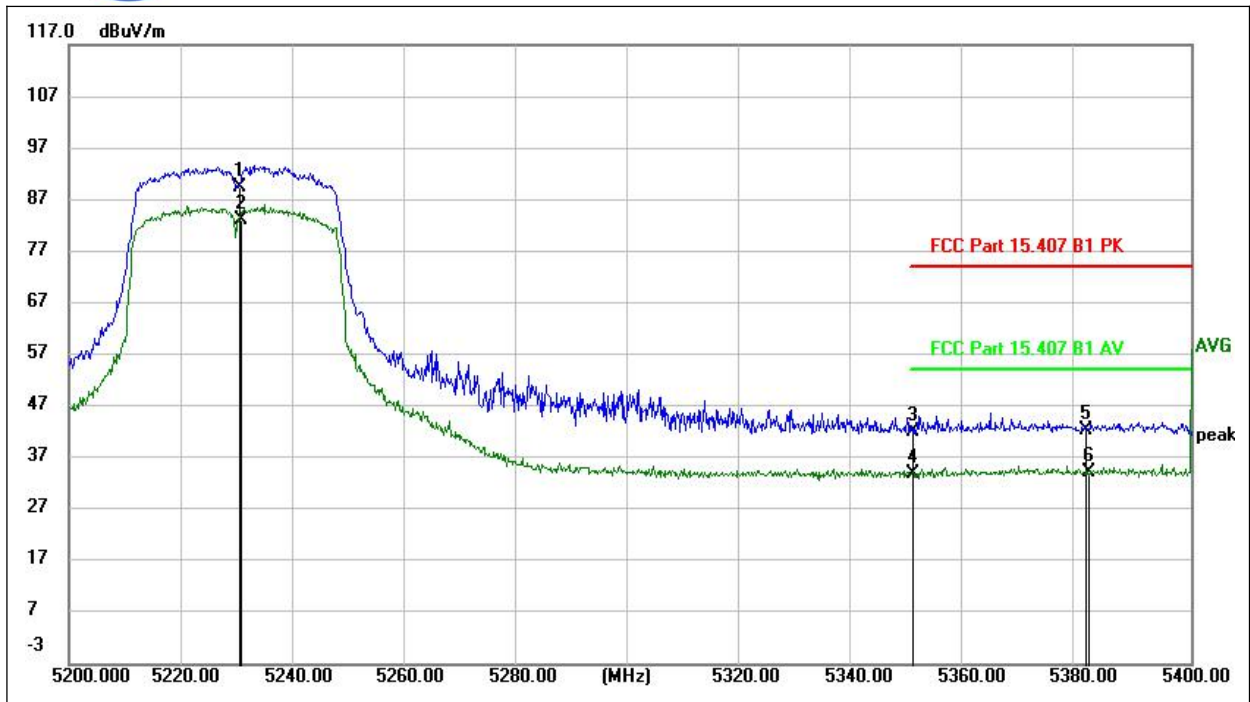
(802.11ac40_5190MHz,, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
5122.002	49.73	-3.10	46.63	74.00	-27.37	peak	PASS
5122.113	38.25	-3.10	35.15	54.00	-18.85	AVG	PASS
5150.000	57.29	-3.24	54.05	74.00	-19.95	peak	PASS
5150.000	44.04	-3.24	40.80	54.00	-13.20	AVG	PASS
5190.266	91.04	-3.02	88.02	N/A	N/A	peak	N/A
5190.266	83.13	-3.02	80.11	N/A	N/A	AVG	N/A



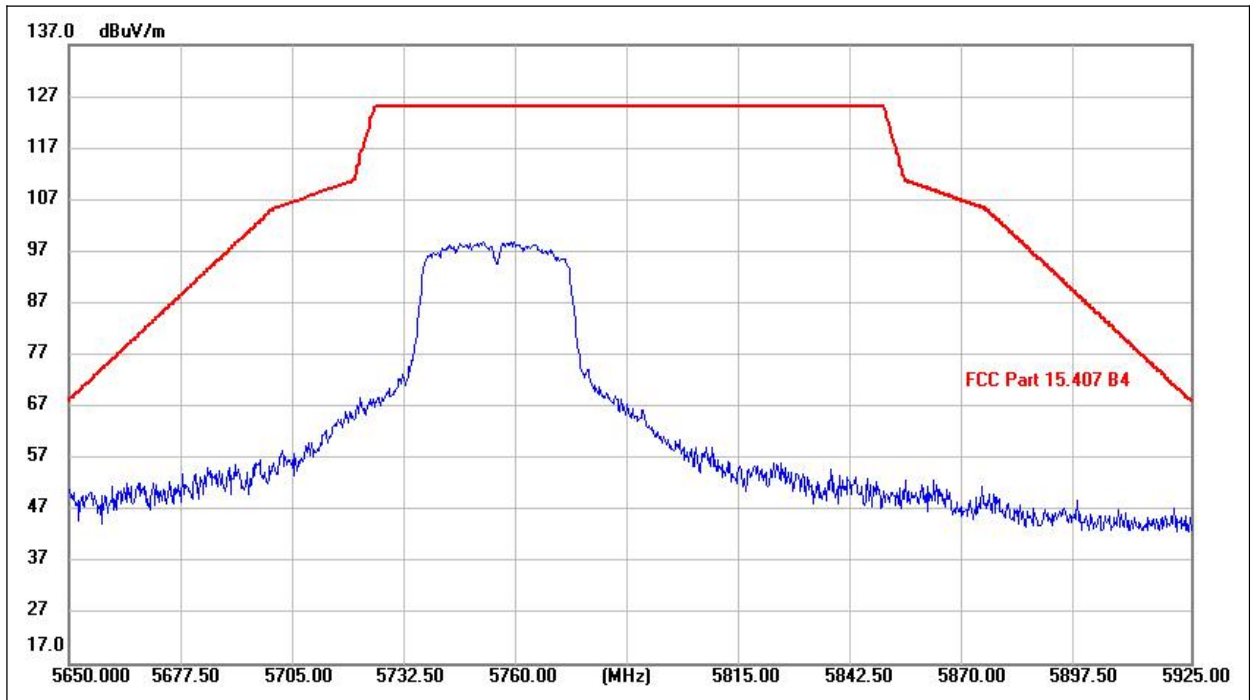
(802.11ac40_5230MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
5230.230	99.33	-3.00	96.33	N/A	N/A	peak	N/A
5230.740	93.20	-3.01	90.19	N/A	N/A	AVG	N/A
5350.000	48.96	-2.56	46.40	74.00	-27.60	peak	PASS
5350.000	36.44	-2.56	33.88	54.00	-20.12	AVG	PASS
5387.020	50.66	-2.36	48.30	74.00	-25.70	peak	PASS
5387.360	35.99	-2.36	33.63	54.00	-20.37	AVG	PASS

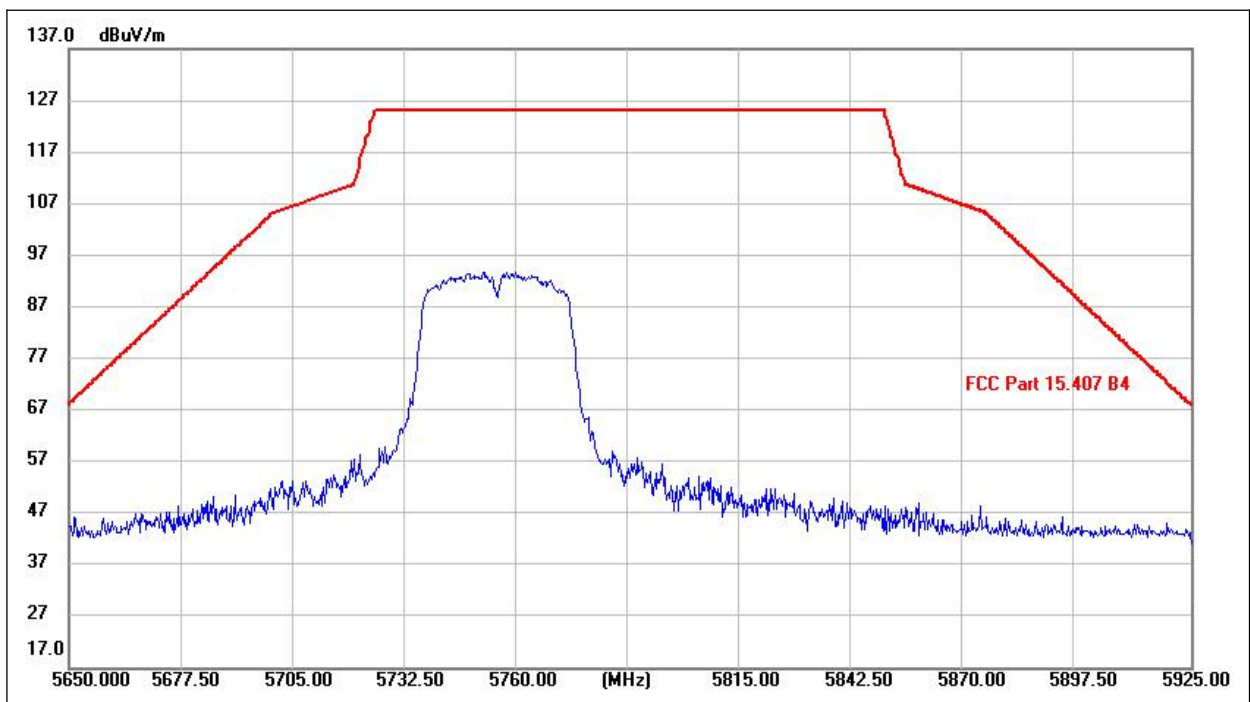


(802.11ac40_5230MHz, Antenna Vertical)

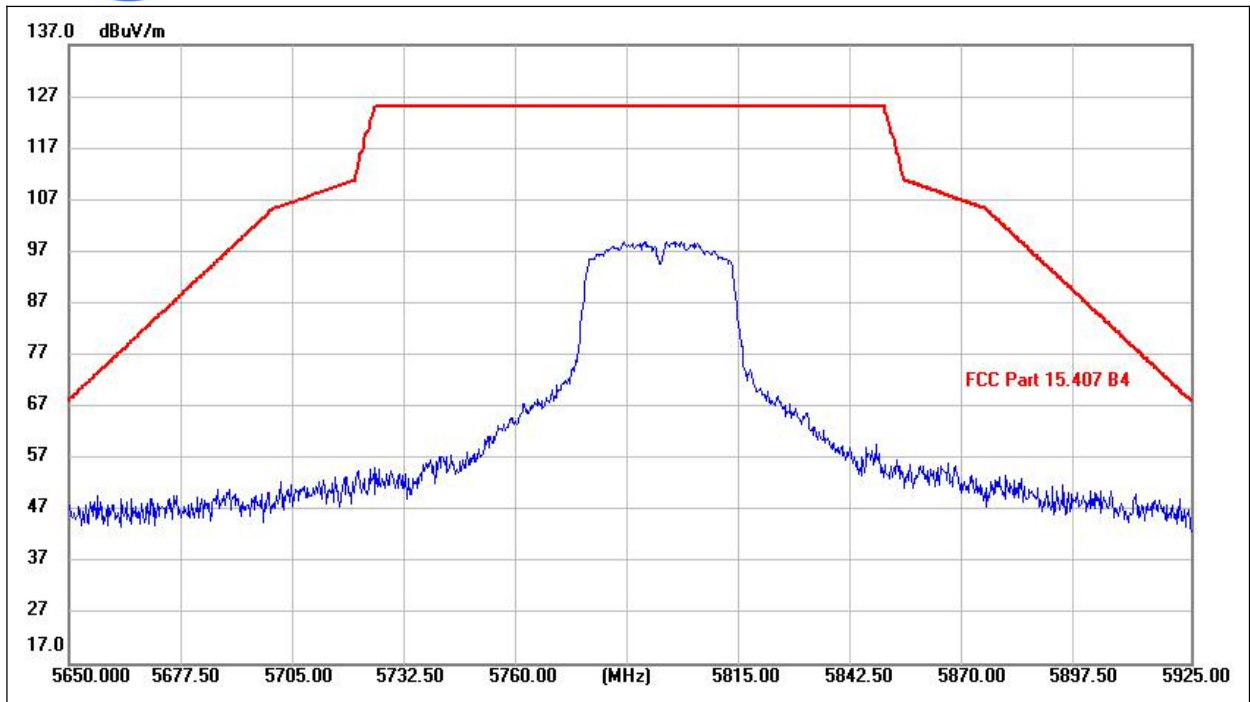
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
5230.350	92.40	-3.00	89.40	N/A	N/A	peak	N/A
5230.570	86.09	-3.01	83.08	N/A	N/A	AVG	N/A
5350.000	44.73	-2.56	42.17	74.00	-31.83	peak	PASS
5350.000	36.47	-2.56	33.91	54.00	-20.09	AVG	PASS
5381.290	44.54	-2.29	42.25	74.00	-31.75	peak	PASS
5381.780	36.48	-2.30	34.18	54.00	-19.82	AVG	PASS



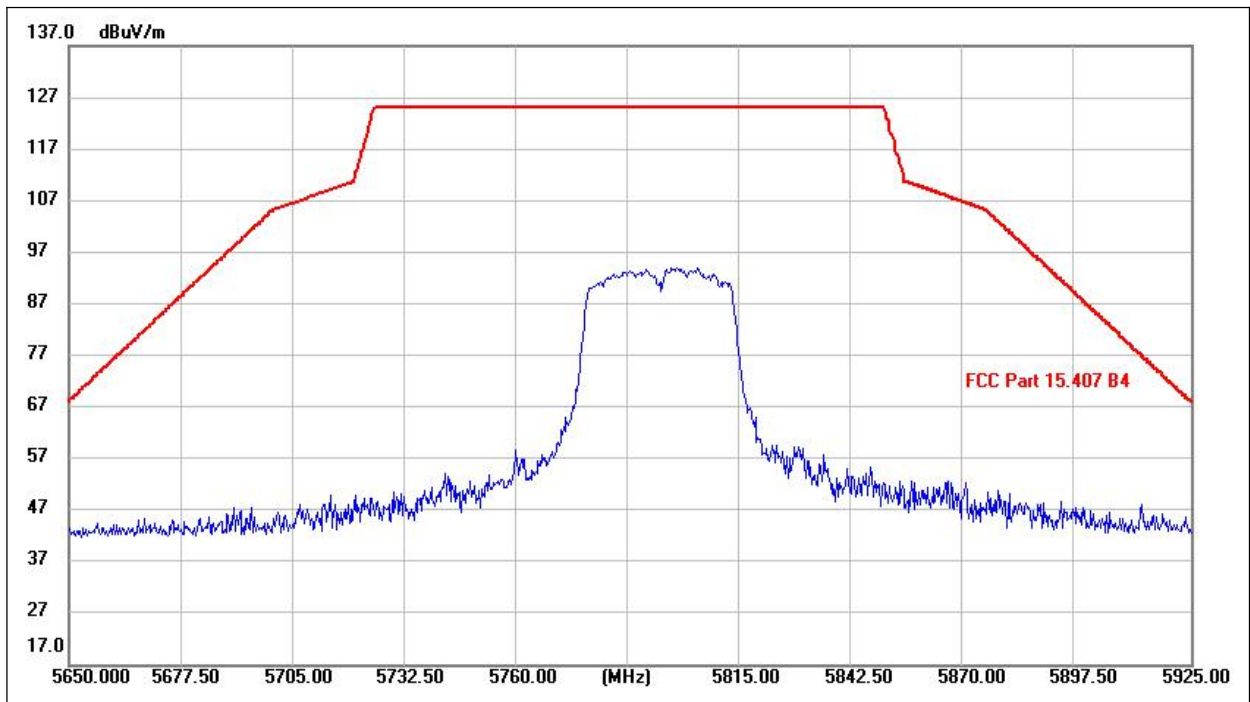
(802.11ac40 _5755MHz, Antenna Horizontal)



(802.11ac40 _5755MHz, Antenna Vertical)



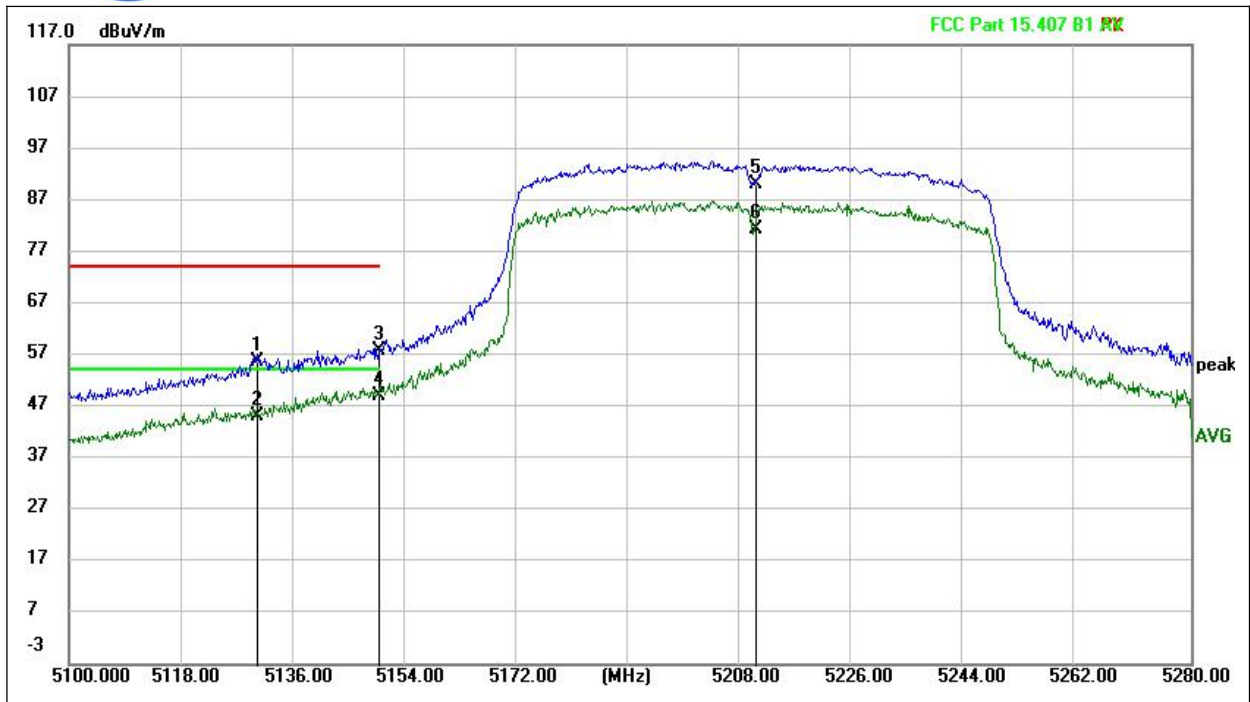
(802.11ac40_5795MHz, Antenna Horizontal)



(802.11ac40_5795MHz, Antenna Vertical)

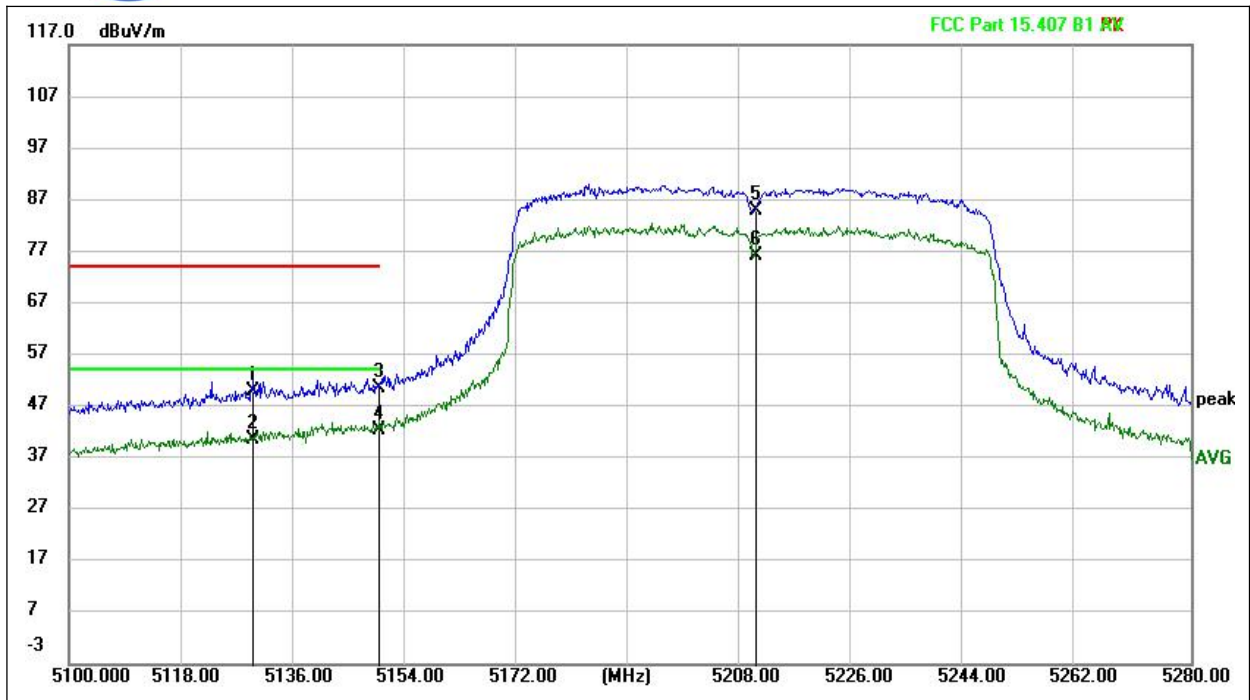
**802.11ac80 Test mode**

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Pol	Verdict
		PK/AV						
42	5150.000	PK	61.01	-3.24	57.77	74.00	H	PASS
42	5150.000	AV	52.18	-3.24	48.94	54.00	H	PASS
42	5150.000	PK	53.71	-3.24	50.47	74.00	V	PASS
42	5150.000	AV	45.59	-3.24	42.35	54.00	V	PASS



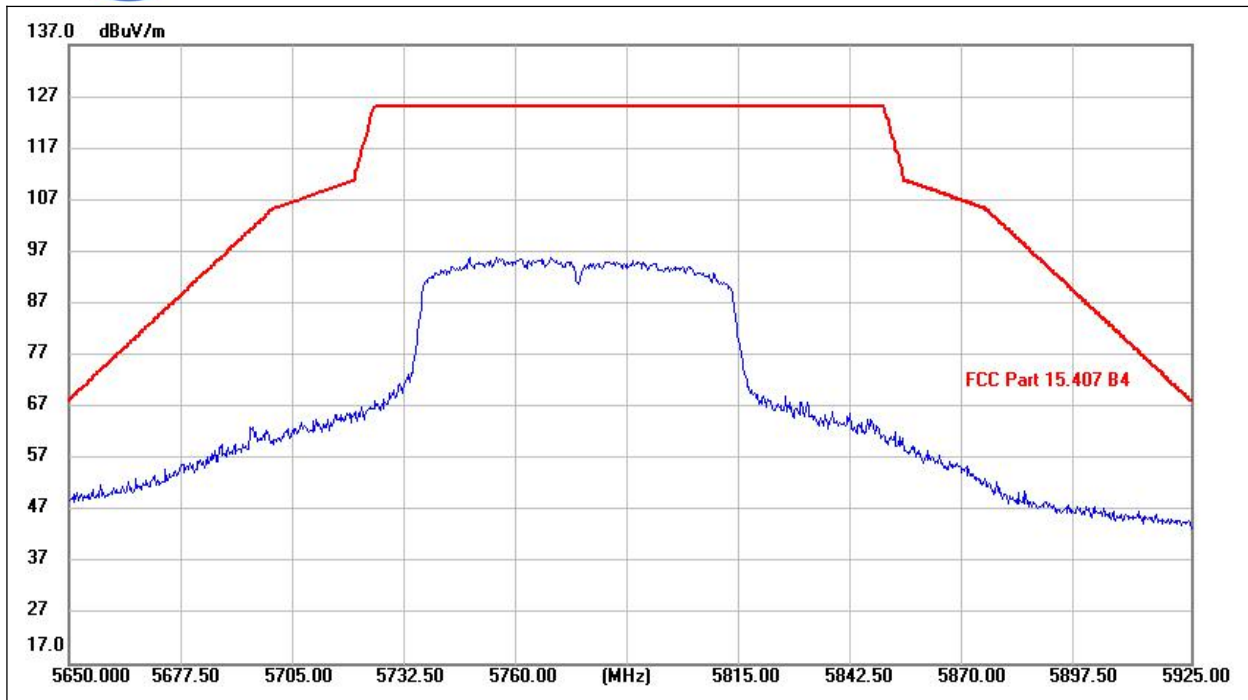
(802.11ac80_5210MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
5130.231	58.81	-3.15	55.66	74.00	-18.34	peak	PASS
5130.231	48.31	-3.15	45.16	54.00	-8.84	AVG	PASS
5150.000	61.01	-3.24	57.77	74.00	-16.23	peak	PASS
5150.000	52.18	-3.24	48.94	54.00	-5.06	AVG	PASS
5210.223	93.06	-2.95	90.11	N/A	N/A	peak	N/A
5210.223	84.20	-2.95	81.25	N/A	N/A	AVG	N/A

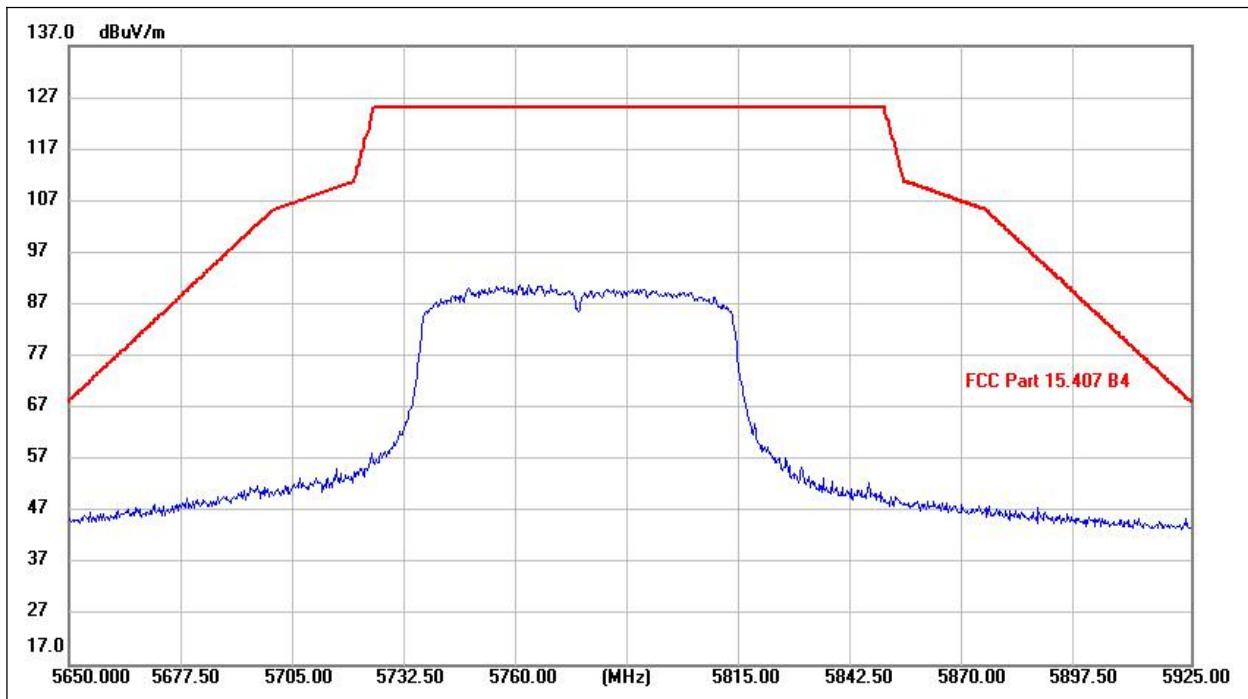


(802.11ac80_5190MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
5129.421	52.92	-3.13	49.79	74.00	-24.21	peak	PASS
5129.421	43.56	-3.13	40.43	54.00	-13.57	AVG	PASS
5150.000	53.71	-3.24	50.47	74.00	-23.53	peak	PASS
5150.000	45.59	-3.24	42.35	54.00	-11.65	AVG	PASS
5210.187	87.75	-2.95	84.80	N/A	N/A	peak	N/A
5210.187	79.18	-2.95	76.23	N/A	N/A	AVG	N/A



(802.11ac80_5775MHz, Antenna Horizontal)



(802.11ac80_5775MHz, Antenna Vertical)



2.6. Frequency Stability

2.6.1. Requirement

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

2.6.2. Test Procedure

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -15°C to 55°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

2.6.3. Test Result

Frequency Stability Measurements for UNII Band 1 (Ch. 36)

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq Dev. (Hz)	Deviation (%)
100%	3.8	+25(Ref)	5179.980	-20000	-3.86
100%		-15	5179.986	-14000	-2.70
100%		-5	5179.970	-30000	-5.79
100%		5	5179.978	-22000	-4.24
100%		+15	5179.980	-20000	-3.86
100%		+25	5179.964	-36000	-6.94
100%		+35	5179.971	-29000	-5.59
100%		+45	5179.984	-16000	-3.08
100%		+55	5179.970	-30000	-5.79
85%		3.5	+25	5179.977	-23000
115%	4.35	+25	5179.986	-14000	-2.70



Frequency Stability Measurements for UNII Band 2A (Ch. 52)

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq Dev. (Hz)	Deviation (%)
100%	3.8	+25(Ref)	5260.025	25000	4.75
100%		-15	5260.033	33000	6.27
100%		-5	5260.040	40000	7.60
100%		5	5260.034	34000	6.46
100%		+15	5260.012	12000	2.28
100%		+25	5260.013	13000	2.47
100%		+35	5260.020	20000	3.80
100%		+45	5260.031	31000	5.89
100%		+55	5260.030	30000	5.70
85%		3.5	+25	5260.034	34000
115%	4.35	+25	5260.021	21000	3.99

Frequency Stability Measurements for UNII Band 3 (Ch. 149)

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq Dev. (Hz)	Deviation (%)
100%	3.8	+25(Ref)	5745.040	40000	6.96
100%		-15	5745.044	44000	7.65
100%		-5	5745.034	34000	5.91
100%		5	5745.039	39000	6.78
100%		+15	5745.044	44000	7.65
100%		+25	5745.038	38000	6.61
100%		+35	5745.065	65000	5.40
100%		+45	5745.044	44000	7.66
100%		+55	5745.038	38000	6.61
100%		+25	5745.036	42000	6.26
85%	3.5	+25	5745.042	45000	7.31
115%	4.35	+25(Ref)	5745.032	32000	5.57

Note: Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

2.7. Conducted Emission

2.7.1. Requirement

According to FCC section 15.207, for an intentional radiator 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 within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

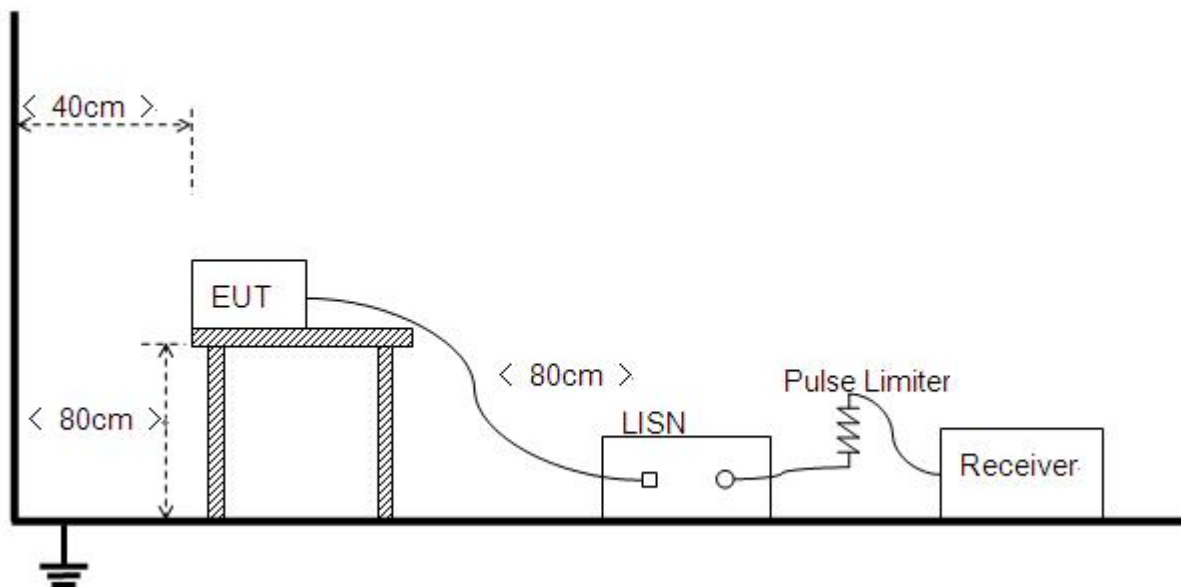
Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- (a) The lower limit shall apply at the band edges.
- (b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.7.2. Test Description

A. Test Setup:



The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2013.



2.7.3. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

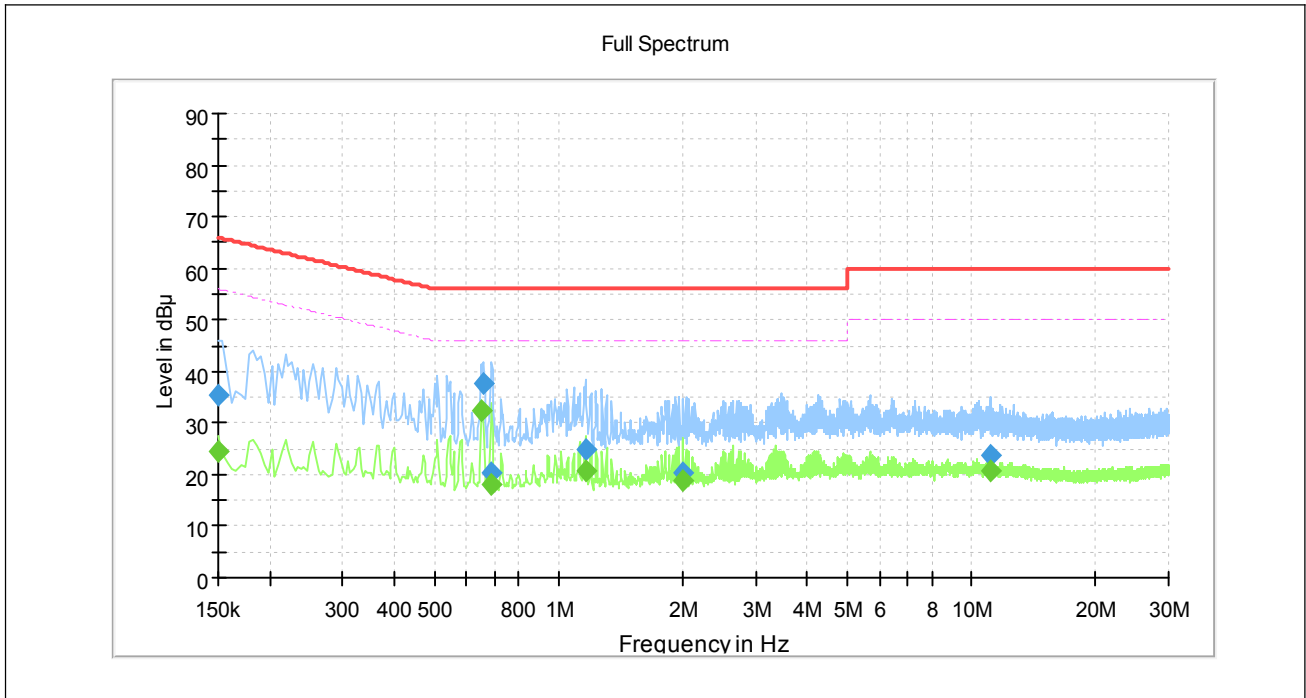
A. Test setup:

The EUT configuration of the emission tests is Charging + Wlan 5G Link.

Note: The test voltage is AC 120V/60Hz.

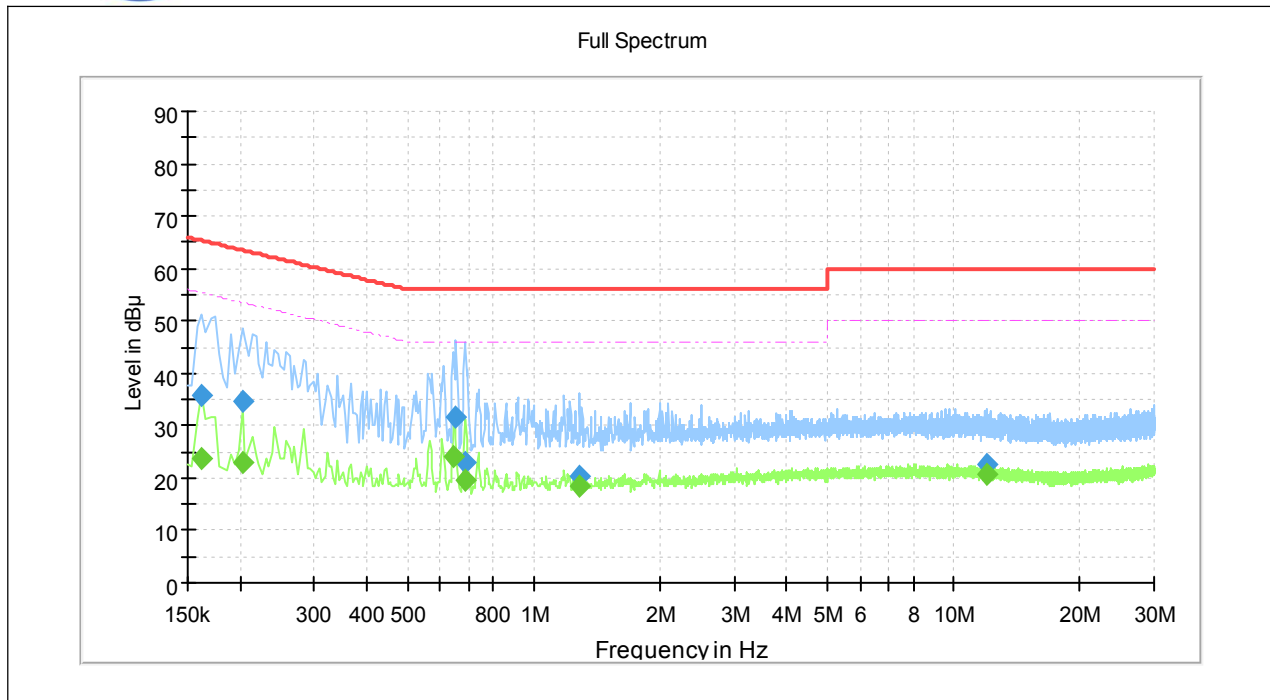


A. Test Plots:



(Plot A: L Phase)

Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Verdict
0.150000	---	24.57	56.00	31.43	L1	10.2	PASS
0.150000	35.40	---	66.00	30.60	L1	10.2	PASS
0.654000	---	32.25	46.00	13.76	L1	10.2	PASS
0.658000	37.55	---	56.00	18.45	L1	10.2	PASS
0.690000	---	18.05	46.00	27.95	L1	10.2	PASS
0.690000	20.24	---	56.00	35.76	L1	10.2	PASS
1.162000	24.76	---	56.00	31.24	L1	10.3	PASS
1.162000	---	20.70	46.00	25.30	L1	10.3	PASS
1.998000	20.20	---	56.00	35.80	L1	10.3	PASS
1.998000	---	18.65	46.00	27.35	L1	10.3	PASS
11.074000	---	20.88	50.00	29.12	L1	10.6	PASS
11.074000	23.68	---	60.00	36.32	L1	10.6	PASS



(Plot B: N Phase)

Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Verdict
0.162000	---	23.88	55.36	31.48	N	10.5	PASS
0.162000	35.80	---	65.36	29.56	N	10.5	PASS
0.202000	---	22.88	53.53	30.65	N	10.4	PASS
0.202000	34.53	---	63.53	28.99	N	10.4	PASS
0.646000	---	24.19	46.00	21.81	N	10.4	PASS
0.654000	31.45	---	56.00	24.55	N	10.4	PASS
0.686000	22.90	---	56.00	33.10	N	10.4	PASS
0.686000	---	19.55	46.00	26.45	N	10.4	PASS
1.286000	20.41	---	56.00	35.59	N	10.5	PASS
1.286000	---	18.58	46.00	27.42	N	10.5	PASS
11.986000	---	20.78	50.00	29.22	N	10.9	PASS
11.986000	22.45	---	60.00	37.55	N	10.9	PASS

2.8. Radiated Emission

2.8.1. Requirement

The peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (3) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

The following formula is used to convert the equipment isotropic radiated power(eirp) to field strength (dBμV/m);

$$E = 1000000 \times \sqrt{30P} / 3 \mu\text{V/m}$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

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

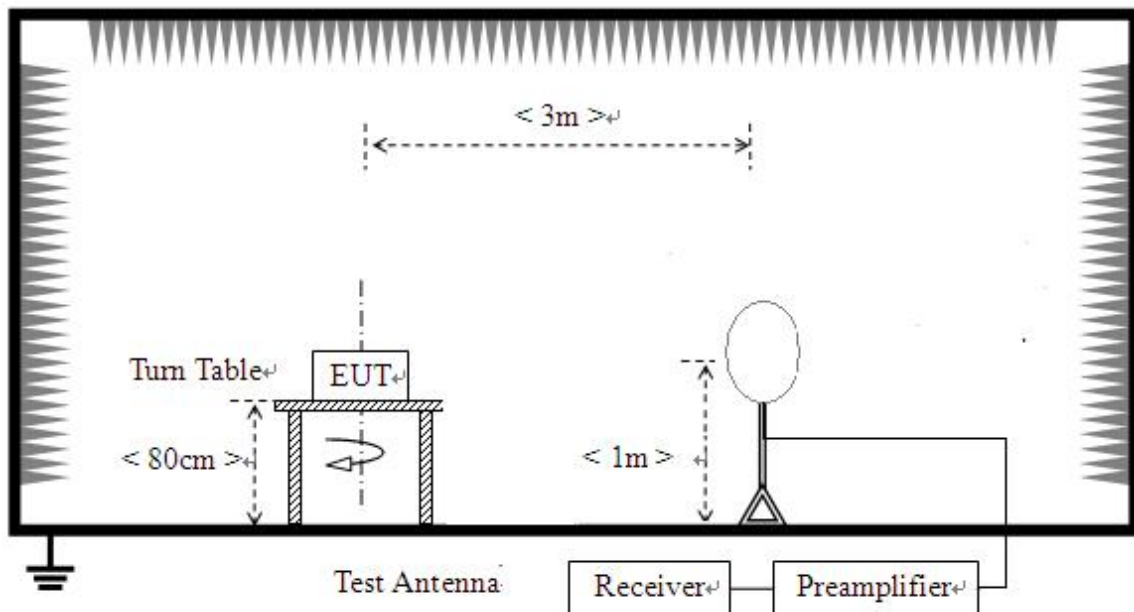
Note:

For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

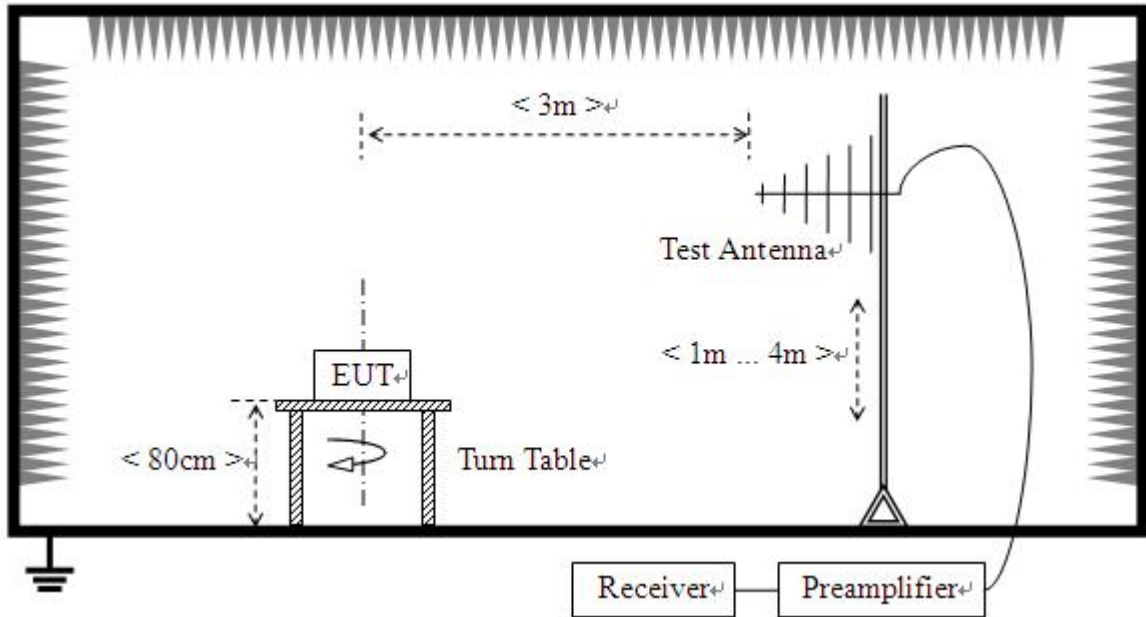
In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table)

2.8.2. Test Description**A. Test Setup:**

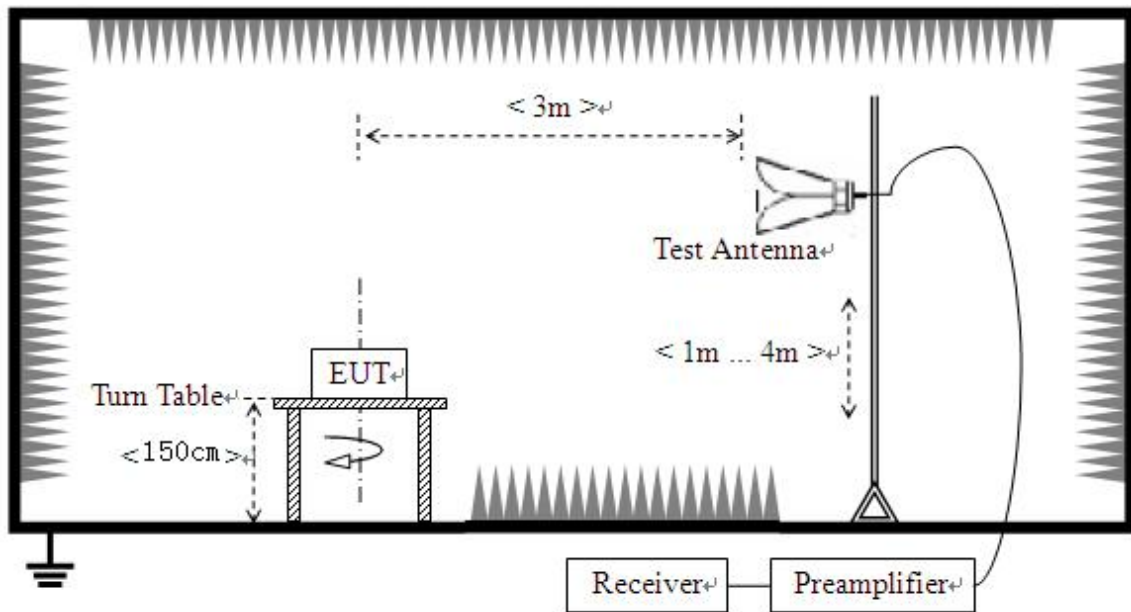
- 1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to 1GHz



3) For radiated emissions above 1GHz



The RF absorbing material used on the reference ground plane and on the turntable have a maximum height (thickness) of 30 cm (12 in) and have a minimum-rated attenuation of 20 dB at all frequencies from 1 GHz to 18 GHz.

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.10 (2013). For radiated emissions below or equal to 1GHz, The EUT was set-up on insulator 80cm above the Ground Plane, For radiated emissions above 1GHz, The EUT



was set-up on insulator 150cm above the Ground Plane. The set-up and test methods were according to ANSI C63.10

For the Test Antenna:

(a) In the frequency range of 9kHz to 30MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.

(b) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Place the test antenna at 3m away from area of the EUT, while keeping the test antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The test antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final test antenna elevation shall be that which maximizes the emissions. The test antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. The emission levels at both horizontal and vertical polarizations should be tested.

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.



- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

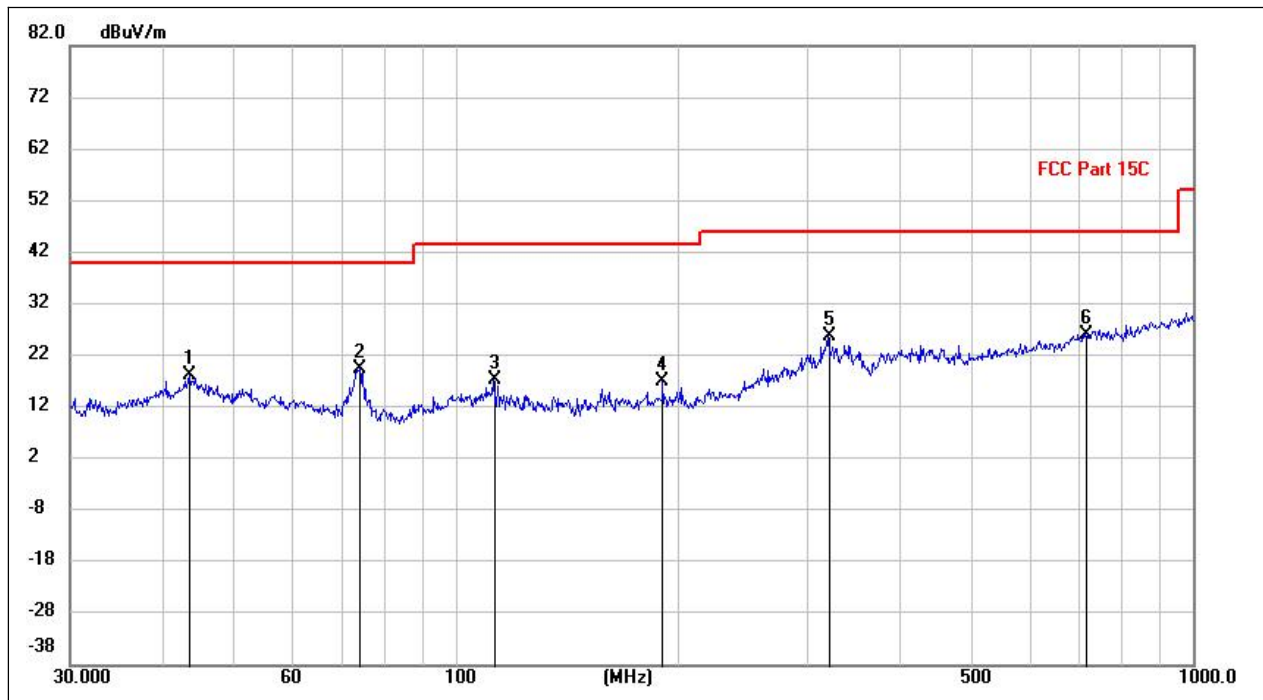
- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasipeak detection (QP) at frequency below 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
- 3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
- 4. All modes of operation were investigated and the worst-case emissions are reported.

2.8.3. Test Result

Note1: For the frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

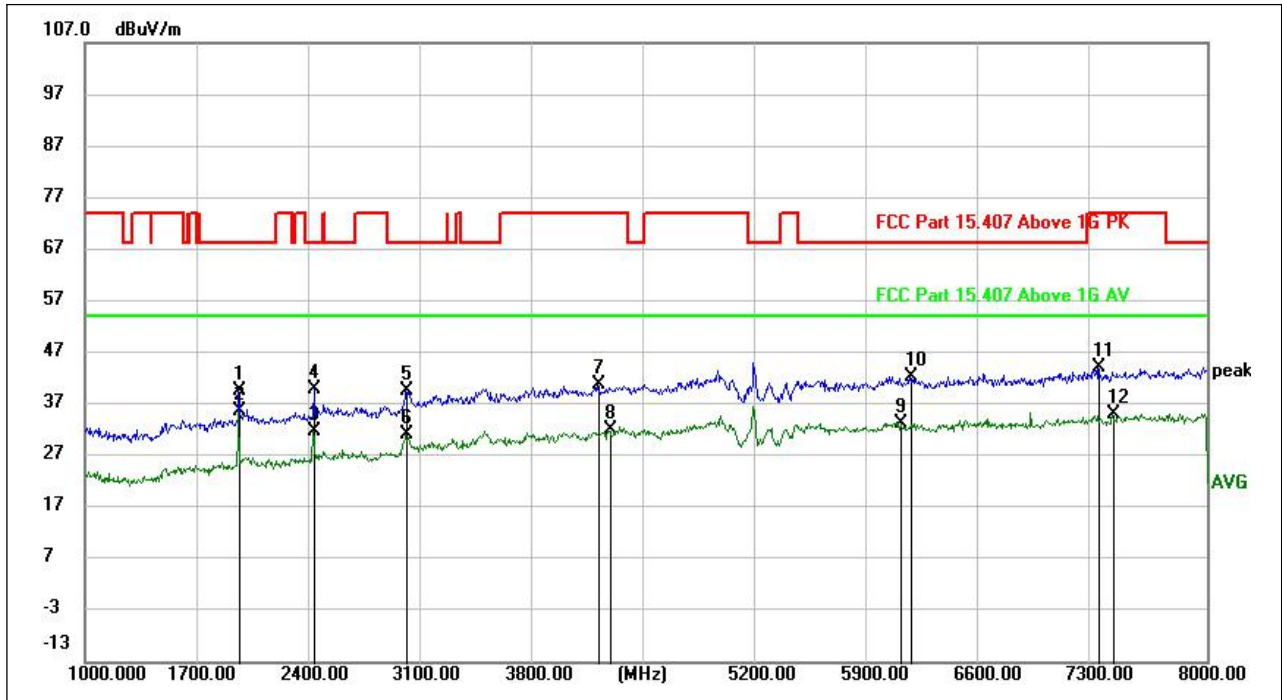
Note2: For the frequency, which started from 18GHz to 40GHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

802.11ac20 Test mode



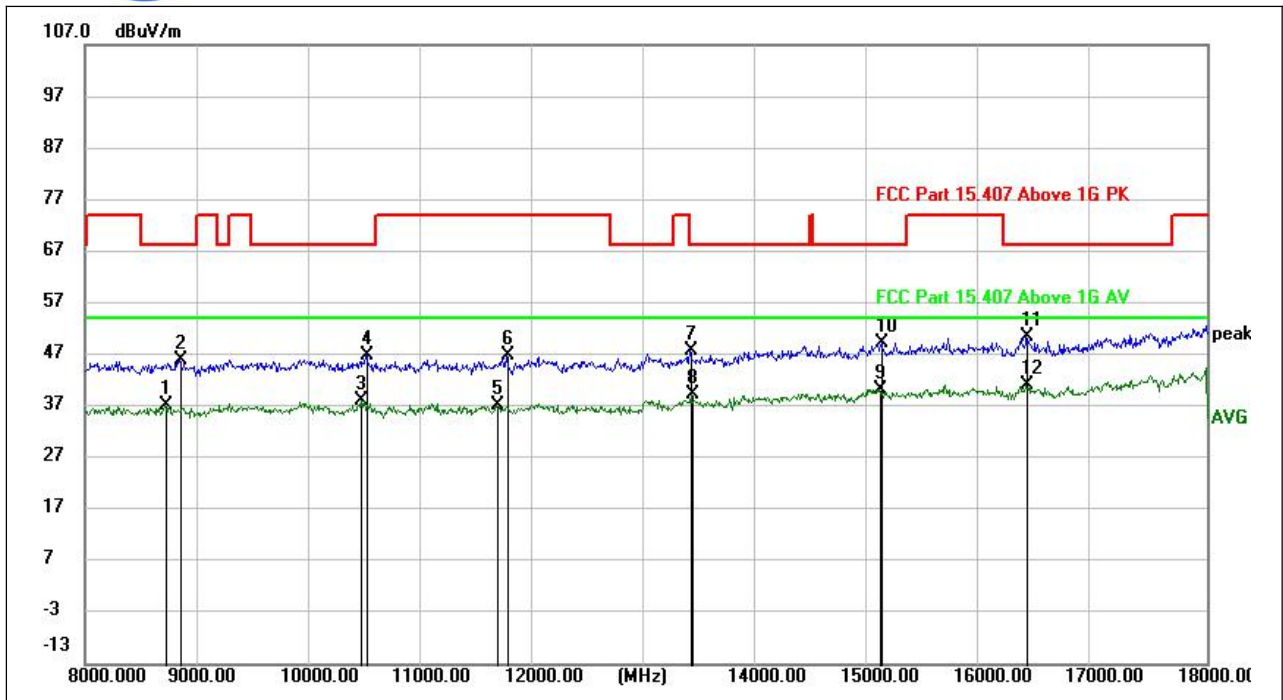
(802.11ac20_5180MHz, Antenna Horizontal, 30MHz to 1GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
43.5057	3.03	15.26	18.29	40.00	-21.71	peak	PASS
74.1351	9.43	9.99	19.42	40.00	-20.58	peak	PASS
112.6625	3.47	13.93	17.40	43.50	-26.10	peak	PASS
191.0738	3.68	13.45	17.13	43.50	-26.37	peak	PASS
320.4984	7.90	17.94	25.84	46.00	-20.16	peak	PASS
715.8030	1.05	25.00	26.05	46.00	-19.95	peak	PASS



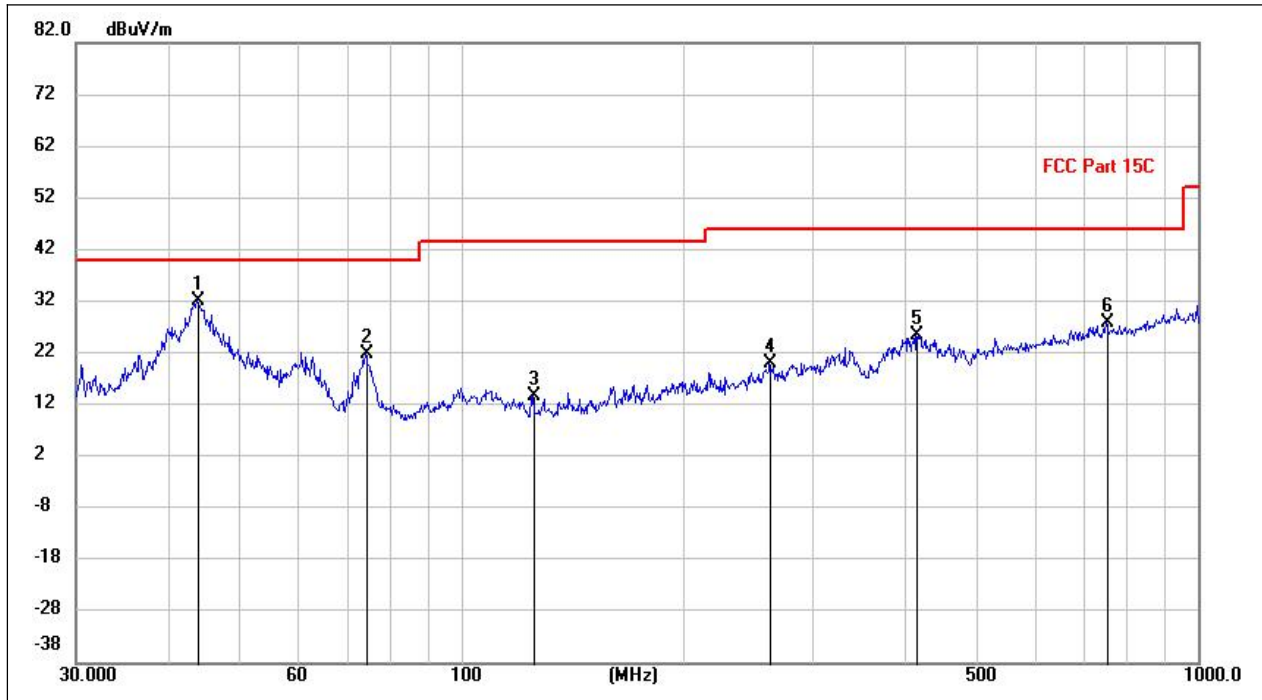
(802.11ac20_5180MHz, Antenna Horizontal, 1GHz to 8GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
1962.500	52.97	-13.27	39.70	68.20	-28.50	peak	PASS
1962.500	48.85	-13.27	35.58	54.00	-18.42	AVG	PASS
2432.550	43.63	-11.98	31.65	54.00	-22.35	AVG	PASS
2433.600	51.72	-11.95	39.77	68.20	-28.43	peak	PASS
3005.150	48.98	-9.22	39.76	68.20	-28.44	peak	PASS
3005.150	40.44	-9.22	31.22	54.00	-22.78	AVG	PASS
4205.650	45.92	-5.10	40.82	74.00	-33.18	peak	PASS
4273.200	37.38	-5.18	32.20	54.00	-21.80	AVG	PASS
6089.700	36.82	-3.41	33.41	54.00	-20.59	AVG	PASS
6154.100	45.26	-2.88	42.38	68.20	-25.82	peak	PASS
7323.450	45.53	-1.35	44.18	74.00	-29.82	peak	PASS
7416.550	36.56	-1.62	34.94	54.00	-19.06	AVG	PASS



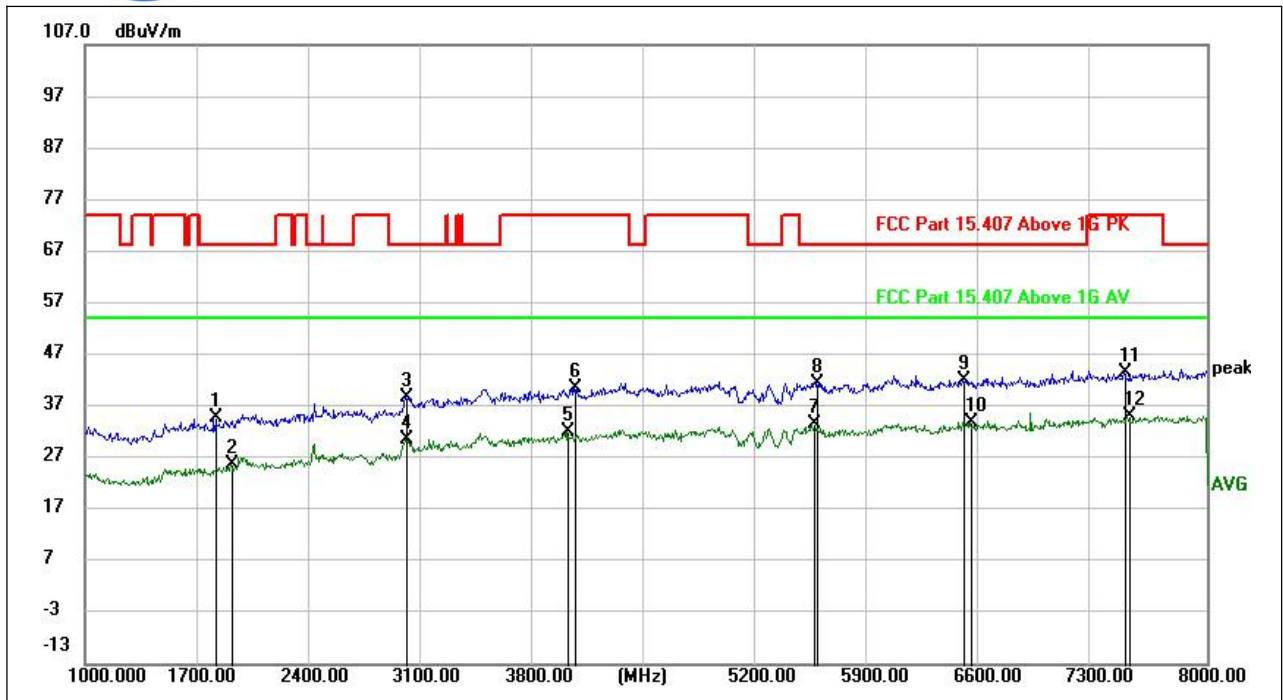
(802.11ac20_5180MHz, Antenna Horizontal, 8GHz to 18GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
8722.000	35.51	1.69	37.20	54.00	-16.80	AVG	PASS
8852.500	43.76	2.09	45.85	68.20	-22.35	peak	PASS
10469.000	35.17	3.02	38.19	54.00	-15.81	AVG	PASS
10511.000	43.62	3.14	46.76	68.20	-21.44	peak	PASS
11677.500	33.50	3.78	37.28	54.00	-16.72	AVG	PASS
11761.500	42.70	4.11	46.81	74.00	-27.19	peak	PASS
13401.000	41.20	6.62	47.82	68.20	-20.38	peak	PASS
13411.500	32.54	6.64	39.18	54.00	-14.82	AVG	PASS
15090.000	29.86	10.34	40.20	54.00	-13.80	AVG	PASS
15109.500	39.35	10.02	49.37	68.20	-18.83	peak	PASS
16393.000	39.08	11.36	50.44	68.20	-17.76	peak	PASS
16393.000	29.69	11.36	41.05	54.00	-12.95	AVG	PASS



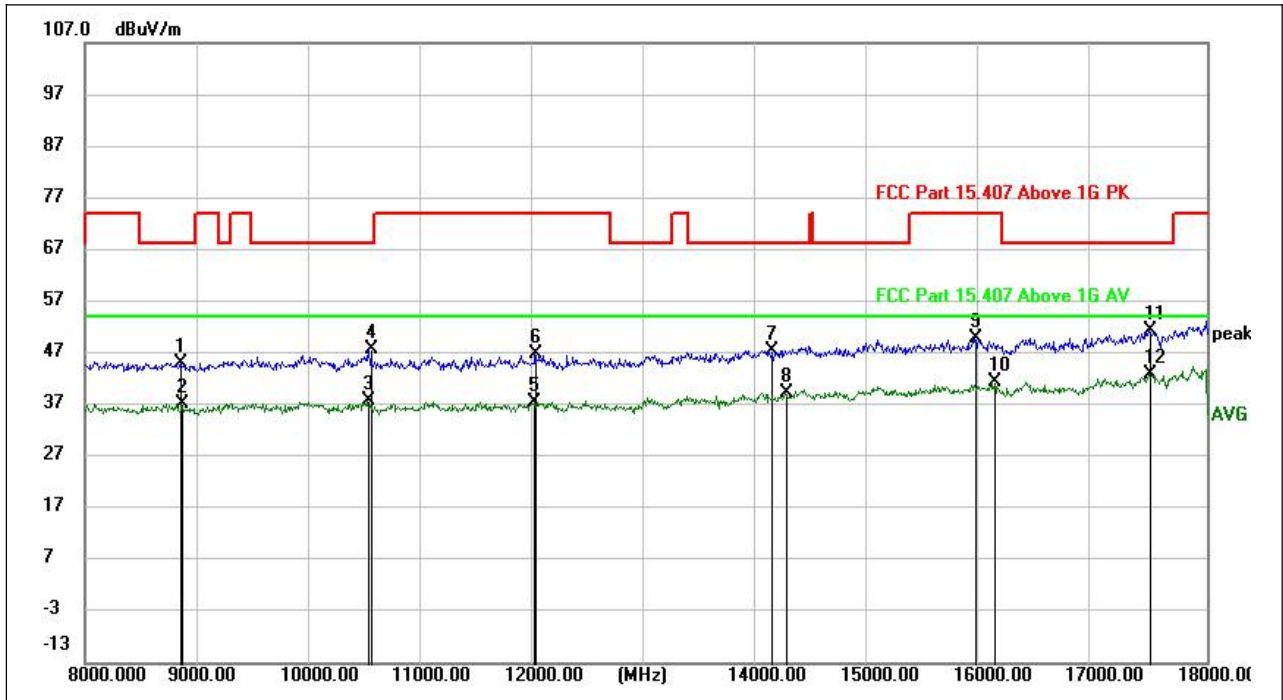
(802.11ac20 _5180MHz, Antenna Vertical, 30MHz to 1GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
43.8580	16.76	15.27	32.03	40.00	-7.97	peak	PASS
74.1871	11.85	9.98	21.83	40.00	-18.17	peak	PASS
125.0066	2.55	11.12	13.67	43.50	-29.83	peak	PASS
262.4350	4.33	15.60	19.93	46.00	-26.07	peak	PASS
415.5958	5.82	19.60	25.42	46.00	-20.58	peak	PASS
751.9517	1.68	26.06	27.74	46.00	-18.26	peak	PASS



(802.11ac20_5180MHz, Antenna Vertical , 1GHz to 8GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
1817.250	49.30	-14.60	34.70	68.20	-33.50	peak	PASS
1919.800	39.73	-14.10	25.63	54.00	-28.37	AVG	PASS
3002.350	45.79	-7.07	38.72	68.20	-29.48	peak	PASS
3002.350	37.49	-7.07	30.42	54.00	-23.58	AVG	PASS
4017.000	36.99	-5.01	31.98	54.00	-22.02	AVG	PASS
4058.300	45.94	-5.34	40.60	74.00	-33.40	peak	PASS
5543.350	36.71	-3.05	33.66	54.00	-20.34	AVG	PASS
5568.200	44.67	-3.19	41.48	68.20	-26.72	peak	PASS
6482.750	44.23	-2.17	42.06	68.20	-26.14	peak	PASS
6528.600	36.00	-2.03	33.97	54.00	-20.03	AVG	PASS
7488.650	44.53	-1.14	43.39	74.00	-30.61	peak	PASS
7511.750	36.20	-1.04	35.16	54.00	-18.84	AVG	PASS

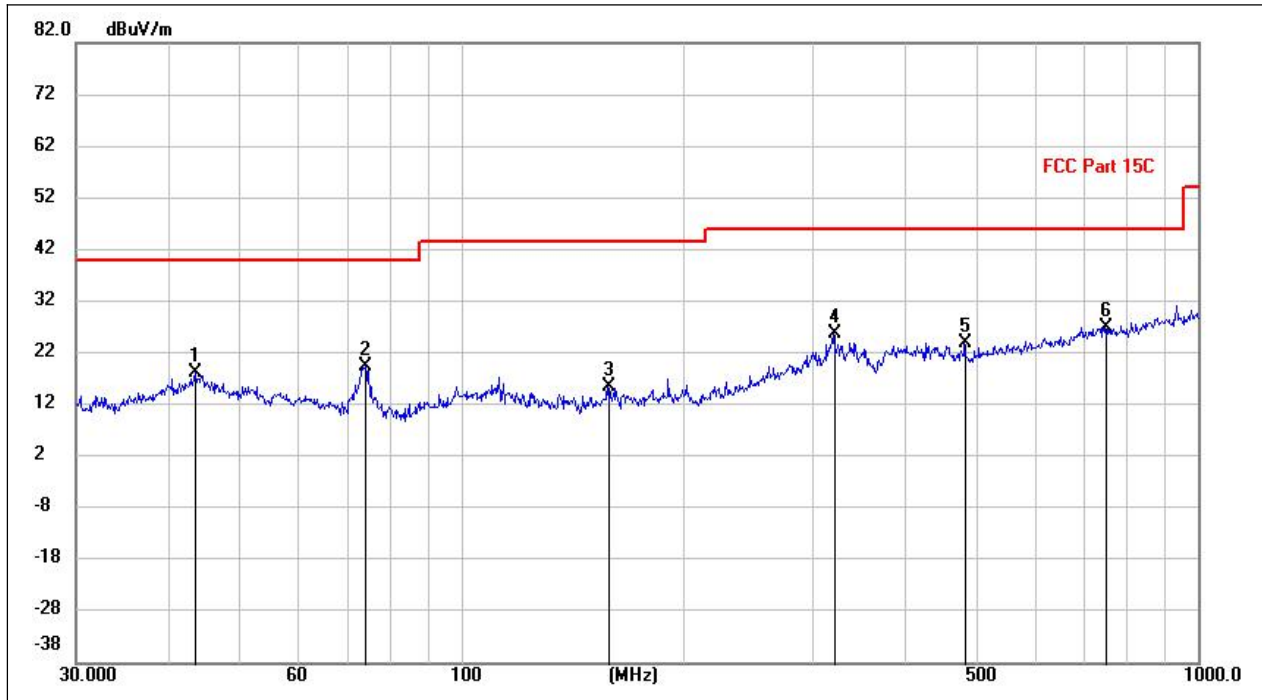


(802.11a_5180MHz, Antenna Vertical, 8GHz to 18GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
8859.500	43.28	1.90	45.18	68.20	-23.02	peak	PASS
8866.000	35.45	1.83	37.28	54.00	-16.72	AVG	PASS
10520.500	34.22	3.69	37.91	54.00	-16.09	AVG	PASS
10541.500	44.54	3.34	47.88	68.20	-20.32	peak	PASS
12008.500	32.77	4.84	37.61	54.00	-16.39	AVG	PASS
12018.000	41.98	4.90	46.88	74.00	-27.12	peak	PASS
14117.000	39.45	8.15	47.60	68.20	-20.60	peak	PASS
14250.500	31.02	8.22	39.24	54.00	-14.76	AVG	PASS
15935.000	38.47	11.30	49.77	74.00	-24.23	peak	PASS
16105.000	30.08	11.23	41.31	54.00	-12.69	AVG	PASS
17499.500	36.49	14.74	51.23	68.20	-16.97	peak	PASS
17499.500	28.10	14.74	42.84	54.00	-11.16	AVG	PASS

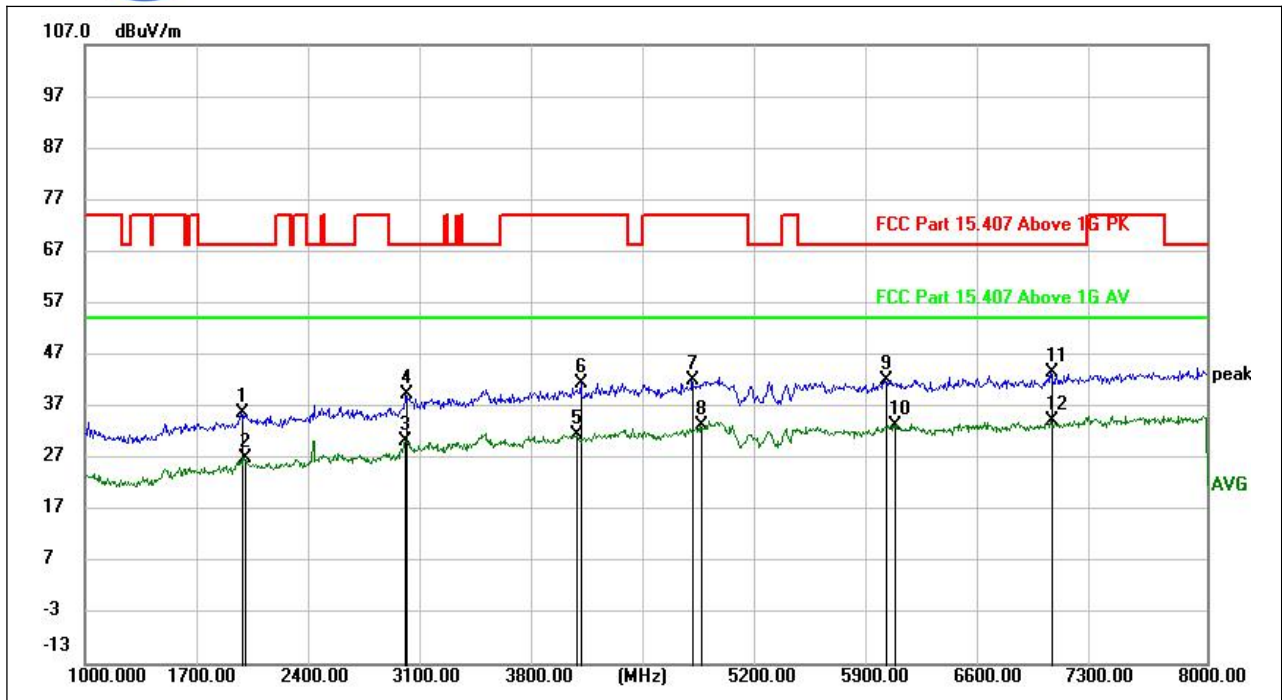


Plots for Channel = 44



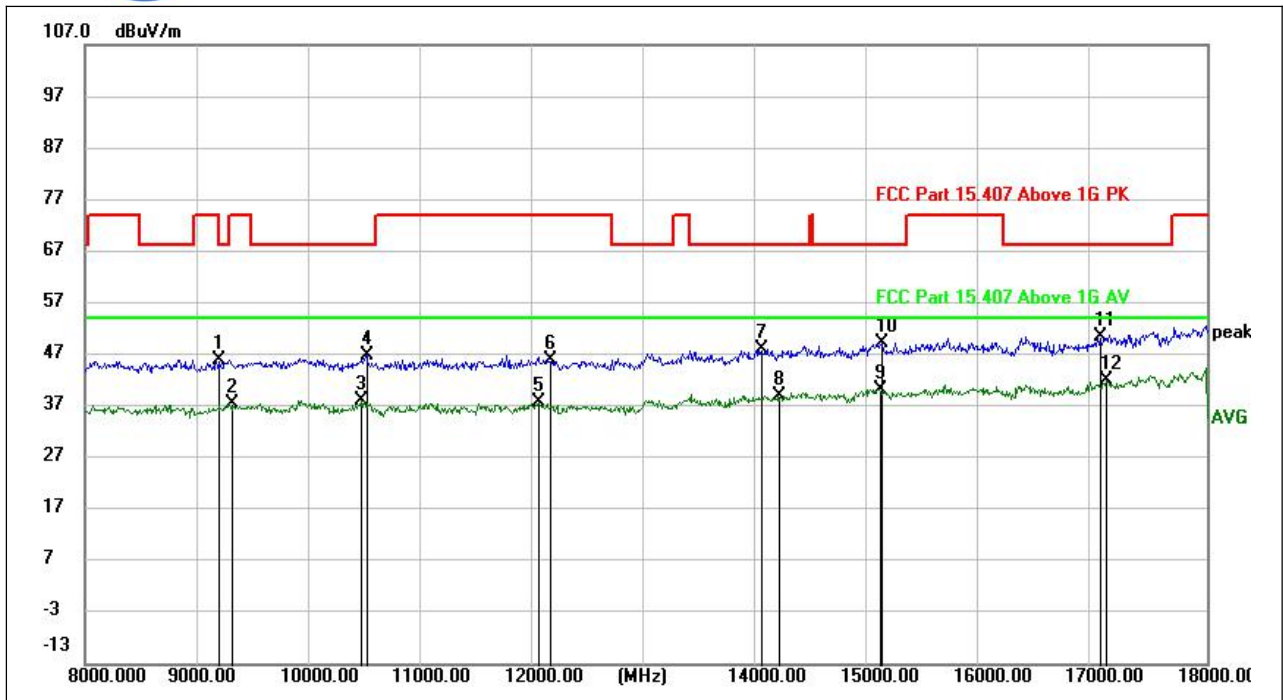
(802.11ac20_5220MHz, Antenna Horizontal, 30MHz to 1GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
43.5057	3.03	15.26	18.29	40.00	-21.71	peak	PASS
74.1351	9.43	9.99	19.42	40.00	-20.58	peak	PASS
158.5843	3.84	11.75	15.59	43.50	-27.91	peak	PASS
320.4984	7.90	17.94	25.84	46.00	-20.16	peak	PASS
482.9771	2.81	21.15	23.96	46.00	-22.04	peak	PASS
749.8453	0.89	26.00	26.89	46.00	-19.11	peak	PASS



(802.11ac20_5220MHz, Antenna Horizontal, 1GHz to 8GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
1981.400	48.64	-12.92	35.72	68.20	-32.48	peak	PASS
1994.700	40.21	-13.23	26.98	54.00	-27.02	AVG	PASS
3000.250	39.66	-9.29	30.37	54.00	-23.63	AVG	PASS
3004.100	48.53	-9.23	39.30	68.20	-28.90	peak	PASS
4070.900	36.84	-5.30	31.54	54.00	-22.46	AVG	PASS
4094.350	47.14	-5.80	41.34	74.00	-32.66	peak	PASS
4792.600	45.98	-4.07	41.91	74.00	-32.09	peak	PASS
4847.550	37.18	-4.02	33.16	54.00	-20.84	AVG	PASS
6002.550	45.88	-3.78	42.10	68.20	-26.10	peak	PASS
6051.550	36.62	-3.43	33.19	54.00	-20.81	AVG	PASS
7030.850	45.51	-1.92	43.59	68.20	-24.61	peak	PASS
7030.850	36.09	-1.92	34.17	54.00	-19.83	AVG	PASS



(802.11ac20_5220MHz, Antenna Horizontal, 8GHz to 18GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Verdict
9183.500	44.14	1.81	45.95	74.00	-28.05	peak	PASS
9307.000	35.36	2.10	37.46	54.00	-16.54	AVG	PASS
10469.000	35.17	3.02	38.19	54.00	-15.81	AVG	PASS
10511.000	43.62	3.14	46.76	68.20	-21.44	peak	PASS
12047.500	33.23	4.55	37.78	54.00	-16.22	AVG	PASS
12141.500	41.79	4.22	46.01	74.00	-27.99	peak	PASS
14021.000	39.72	8.44	48.16	68.20	-20.04	peak	PASS
14189.000	30.54	8.39	38.93	54.00	-15.07	AVG	PASS
15090.000	29.86	10.34	40.20	54.00	-13.80	AVG	PASS
15109.500	39.35	10.02	49.37	68.20	-18.83	peak	PASS
17041.500	39.45	11.09	50.54	68.20	-17.66	peak	PASS
17105.500	30.46	11.63	42.09	54.00	-11.91	AVG	PASS