REPORT No. : XM19030031W01

TEST REPORT

APPLICANT	:	DELTA NETWORKS (XIAMEN) LTD.
PRODUCT NAME	:	Industrial Wi-Fi/LTE CATM module
MODEL NAME	:	VCB-5003L6-W
BRAND NAME	:	N/A
FCC ID	:	2AMVP-VCB5003L6W
STANDARD(S)	:	47 CFR Part 15 Subpart C
TEST DATE	:	2019-04-11 to 2019-05-22
ISSUE DATE	:	2019-05-22

Prepared by: Lion Xiao (Project Engineer)

Approved by: Anne Liu(Supervisor)

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DIRECTORY

Change History		
Version	**Date**	**Reason for change**
1.0	2019-05-22	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	DELTA NETWORKS (XIAMEN) LTD.
Applicant Address:	Room 416, 4F, Buliding No.39, Wanghai Road, Xiamen, Software Park,361008 Xiamen,Fujian,China
Manufacturer:	DELTA NETWORKS (XIAMEN) LTD.
Manufacturer Address:	Room 416, 4F, Buliding No.39, Wanghai Road, Xiamen, Software Park,361008 Xiamen,Fujian,China

1.2. Equipment Under Test (EUT) Description

Product Name:	Industrial Wi-Fi/LTE CATM module
Serial No:	(N/A, marked #1 by test site)
Hardware Version:	V1.0
Software Version:	V1.0
Modulation Type:	DSSS, OFDM
Operating Frequency Range:	802.11b/g/n-20MHz: 2.412GHz - 2.462GHz 802.11n-40MHz: 2.422GHz - 2.452GHz
Channel Number:	802.11b/g/n-20MHz: 11 802.11n-40MHz: 7
Install Antenna Type:	Stick Antenna
Install Antenna Gain:	2 dBi

Note 1: The EUT is operating at 2.4GHz ISM; it supports 802.11b, 802.11g, 802.11n and they are all tested in this report.

For 802.11b/g/n-20MHz (2.4GHz band), the frequencies allocated is F (MHz) =2412+5*(n-1) (1<=n<=11). The lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 1 (2412MHz), 6 (2437MHz) and 11 (2462MHz).

For 802.11n-40MHz, the frequencies allocated is F (MHz) =2412+5*(n-1) (3<=n<=9). The lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 3 (2422MHz), 6 (2437MHz) and 9 (2452MHz).

Note 2: The EUT connected to the serial port of the computer with a serial communication cable, we use the dedicated software to control the EUT continuous transmission.

Note 3: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.3. 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	15.247(b)	Output Power	Apr 11, 2019	Lion Xiao	**PASS**
3	15.247(a)	Bandwidth	Apr 12, 2019	Lion Xiao	**PASS**
4	15.247(d)	Conducted Spurious Emission and Band Edge	Apr 11, 2019 Apr 12, 2019	Lion Xiao	**PASS**
5	15.247(e)	Power spectral density (PSD)	Apr 11, 2019	Lion Xiao	**PASS**
6	15.247(d)	Restricted Frequency Bands	Apr 20, 2019 May 06, 2019	Jiefeng Zhang	**PASS**
7	15.207	Conducted Emission	Apr 20, 2019	Jiefeng Zhang	**PASS**
8	15.209, 15.247(d)	Radiated Emission	Apr 20, 2019 May 06, 2019	Jiefeng Zhang	**PASS**
Note: The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10 2013 and KDB558074 D01 v05.					

1.4. 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 connector. Please refer to the EUT external photos.
The WiFi antenna connector is RP-SMA-male
The install antenna is stick antenna and max gain 2dBi

2.2. Output Power

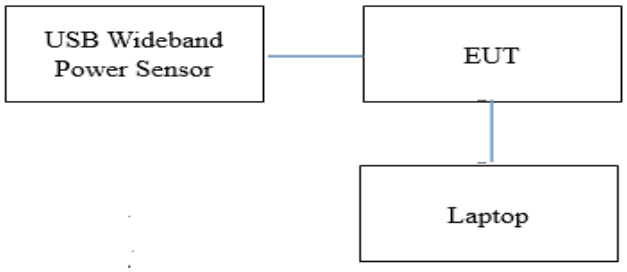
2.2.1. Requirement

According to FCC section 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum peak conducted output power of the intentional radiator shall not exceed1 Watt.

2.2.2. Test Description

The measured output power was calculated by the reading of the USB Wideband Power Sensor and calibration.

A. Test Setup:



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.

B. Equipments List:

Please refer ANNEX B(4).

2.2.3. Test Result

Duty Cycle Factor

Mode	Channel	Frequency (MHz)	T_{on} (ms)	$T_{(on+off)}$ (ms)	Duty Cycle (%)	Duty Cycle Factor
802.11 b	6	2437	100	100	100	0
802.11 g	6	2437	100	100	100	0
802.11 n20	6	2437	100	100	100	0
802.11 n40	6	2437	100	100	100	0

Output Average Power

Mode	Channel	Frequency (MHz)	Output Average Power		Limit		Verdict
			dBm	W	dBm	W	
802.11 b	1	2412	17.04	0.051	30	1	PASS
	6	2437	17.00	0.050			PASS
	11	2462	17.28	0.053			PASS
802.11 g	1	2412	14.41	0.028			PASS
	6	2437	14.93	0.031			PASS
	11	2462	14.26	0.027			PASS
802.11 n20	1	2412	13.10	0.020			PASS
	6	2437	13.37	0.022			PASS
	11	2462	13.50	0.022			PASS
802.11 n40	3	2422	13.41	0.022			PASS
	6	2437	13.55	0.023			PASS
	9	2452	13.76	0.024			PASS
Note: The duty cycle factor has been compensated into the test result							

Output Peak Power

Mode	Channel	Frequency (MHz)	Output Peak Power		Limit		Verdict
			dBm	W	dBm	W	
802.11 b	1	2412	22.62	0.183	30	1	PASS
	6	2437	22.49	0.177			PASS
	11	2462	22.97	0.198			PASS
802.11 g	1	2412	21.15	0.130			PASS
	6	2437	21.53	0.142			PASS
	11	2462	20.88	0.122			PASS
802.11 n20	1	2412	20.20	0.105			PASS
	6	2437	20.33	0.108			PASS
	11	2462	20.59	0.115			PASS
802.11 n40	3	2422	20.33	0.108			PASS
	6	2437	20.61	0.115			PASS
	9	2452	20.87	0.122			PASS
Note: The duty cycle factor has been compensated into the test result							

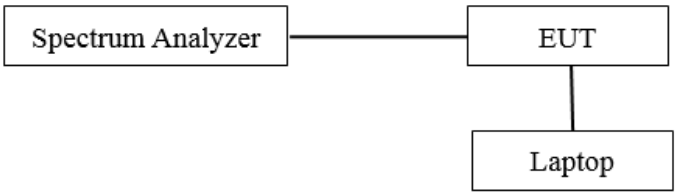
2.3. Bandwidth

2.3.1. Requirement

According to FCC section 15.247(a) (2), Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

2.3.2. 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.

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

KDB 558074 Section 8.1 Option 1 was used in order to prove compliance.

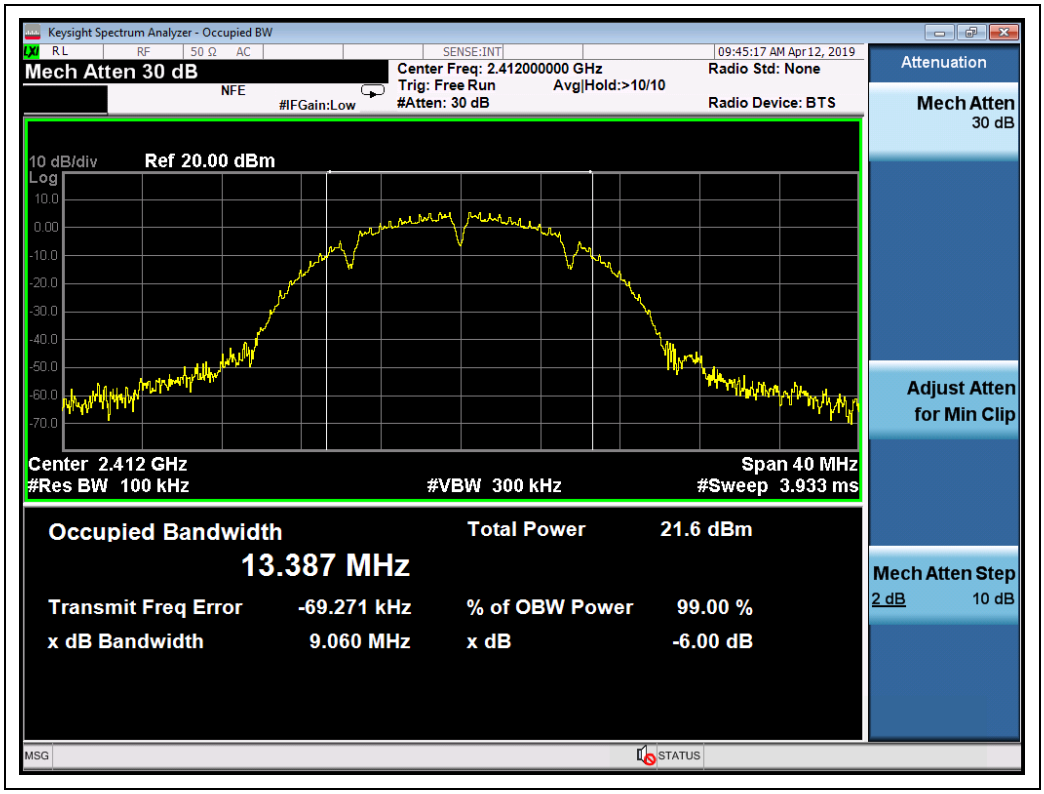
B. Equipments List:

Please refer ANNEX B(4).

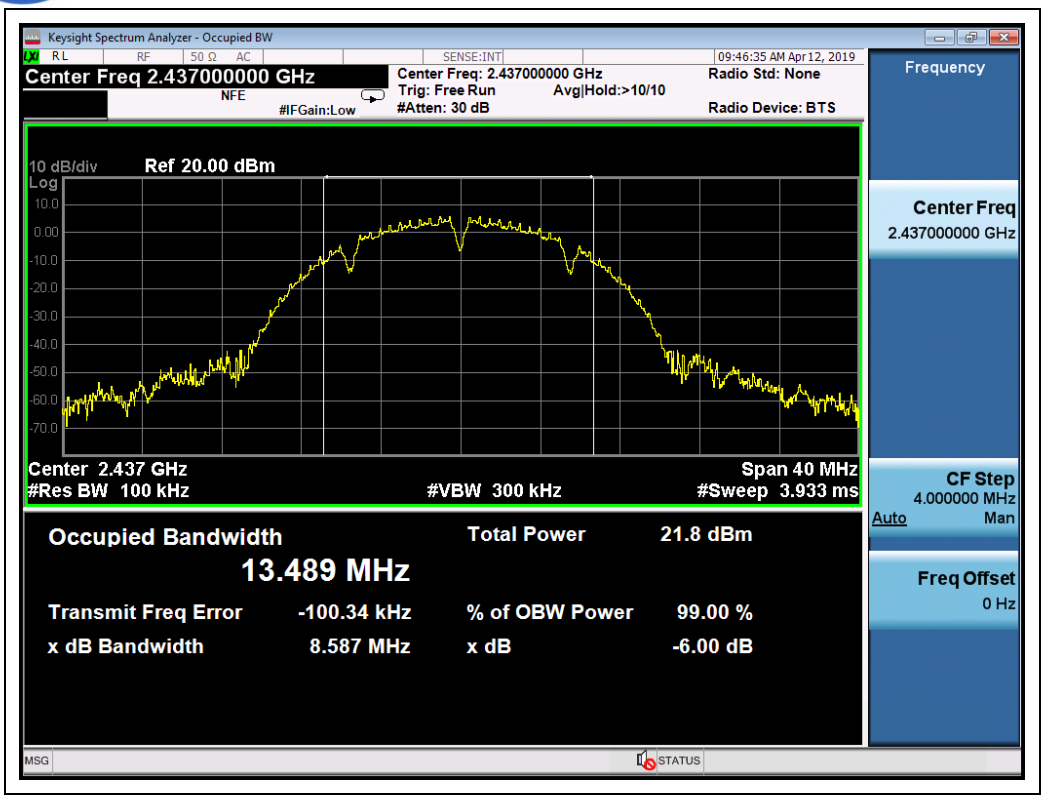
2.3.3. Test Result

Mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (kHz)	Result
802.11 b	1	2412	9.06	≥500	PASS
	6	2437	8.59	≥500	PASS
	11	2462	9.06	≥500	PASS
802.11 g	1	2412	16.37	≥500	PASS
	6	2437	16.35	≥500	PASS
	11	2462	16.36	≥500	PASS
802.11 n20	1	2412	17.54	≥500	PASS
	6	2437	17.59	≥500	PASS
	11	2462	17.55	≥500	PASS
802.11 n40	3	2422	35.78	≥500	PASS
	6	2437	35.78	≥500	PASS
	9	2452	36.03	≥500	PASS

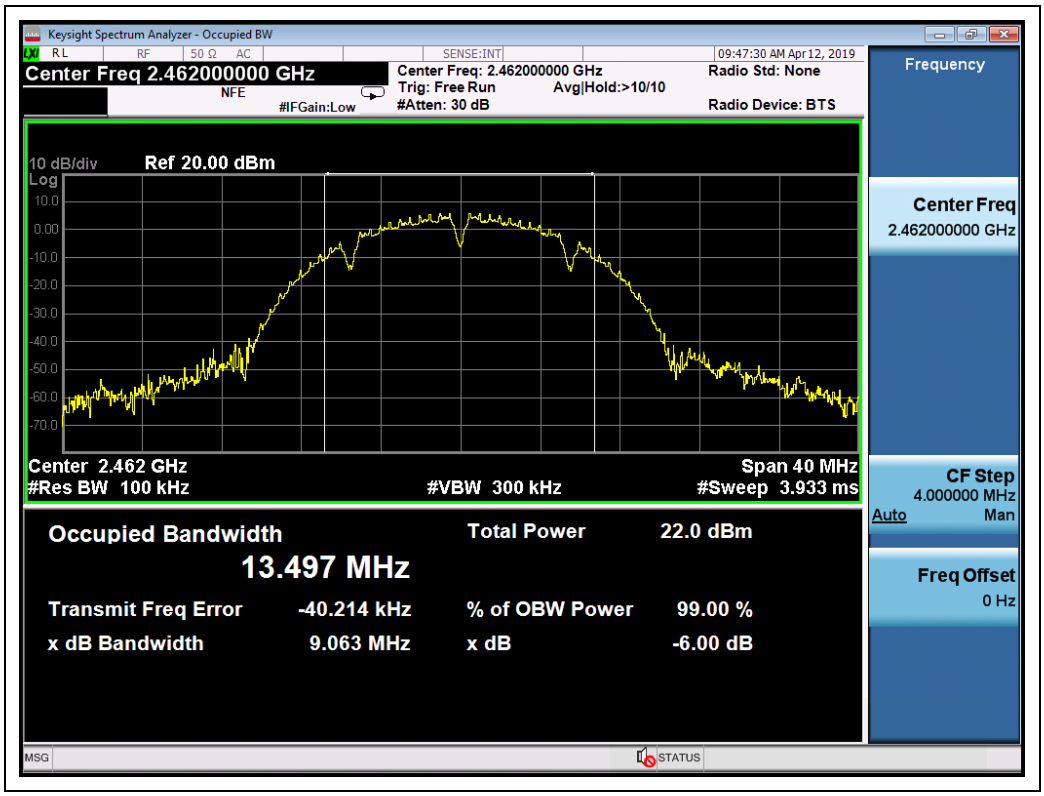
Test Plots



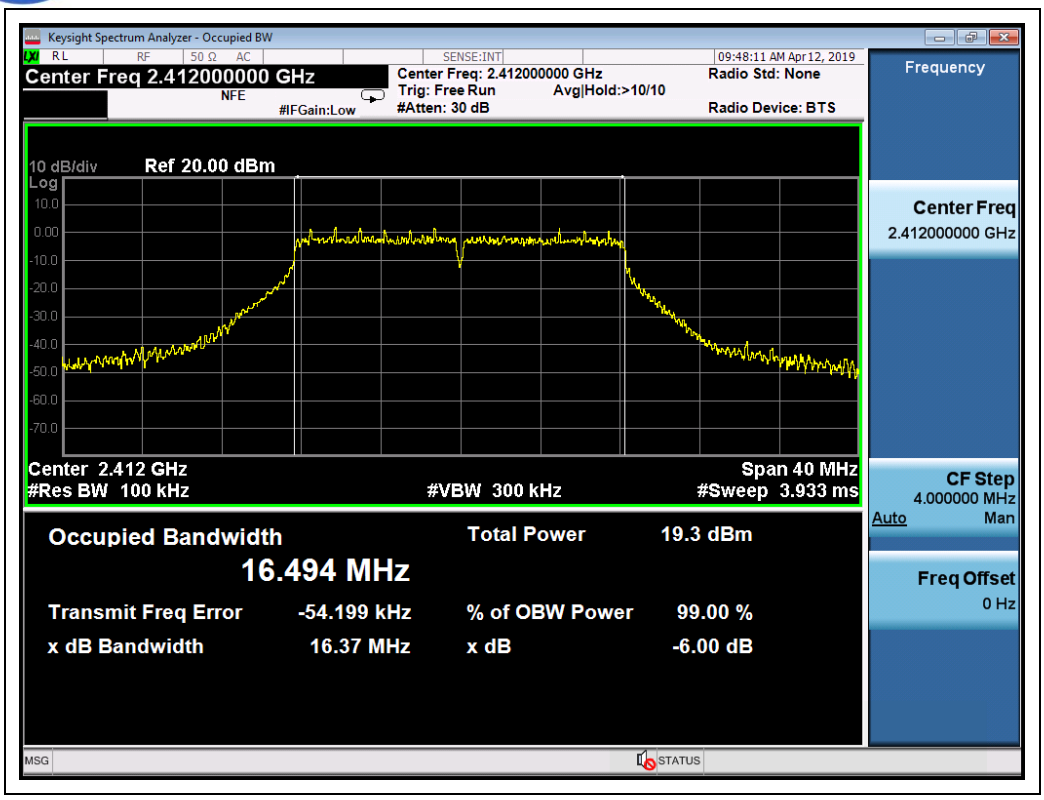
(Channel 1, 2412MHz, 802.11 b)



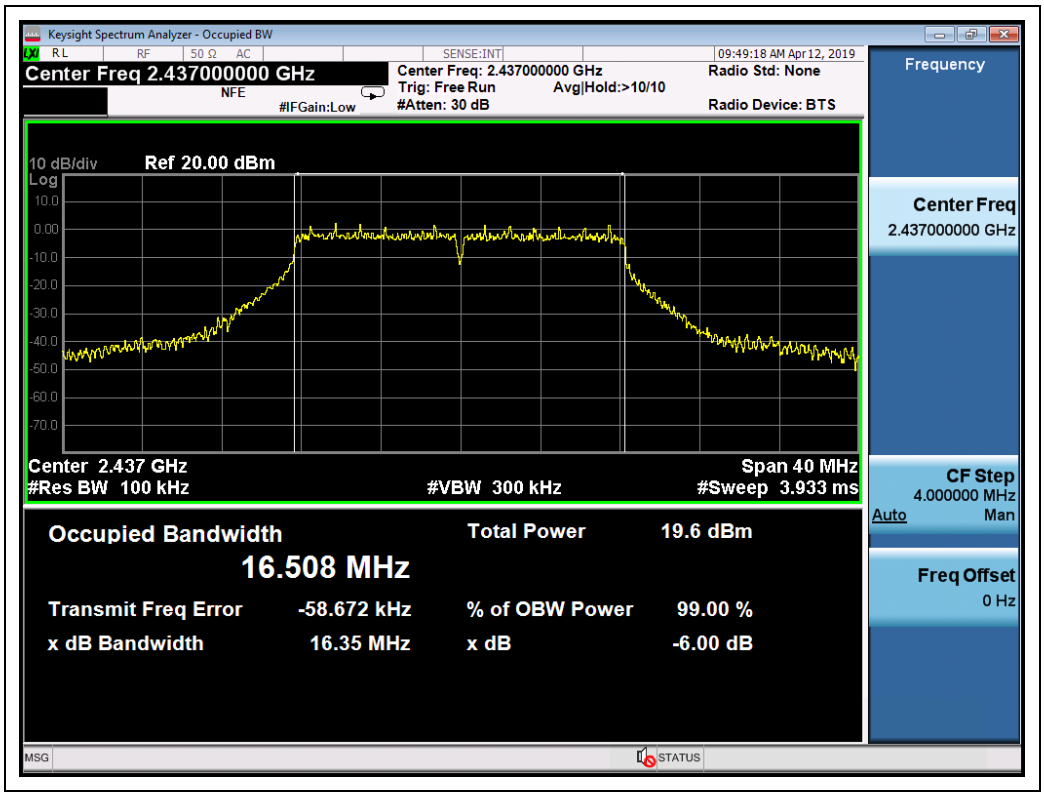
(Channel 6, 2437 MHz, 802.11 b)



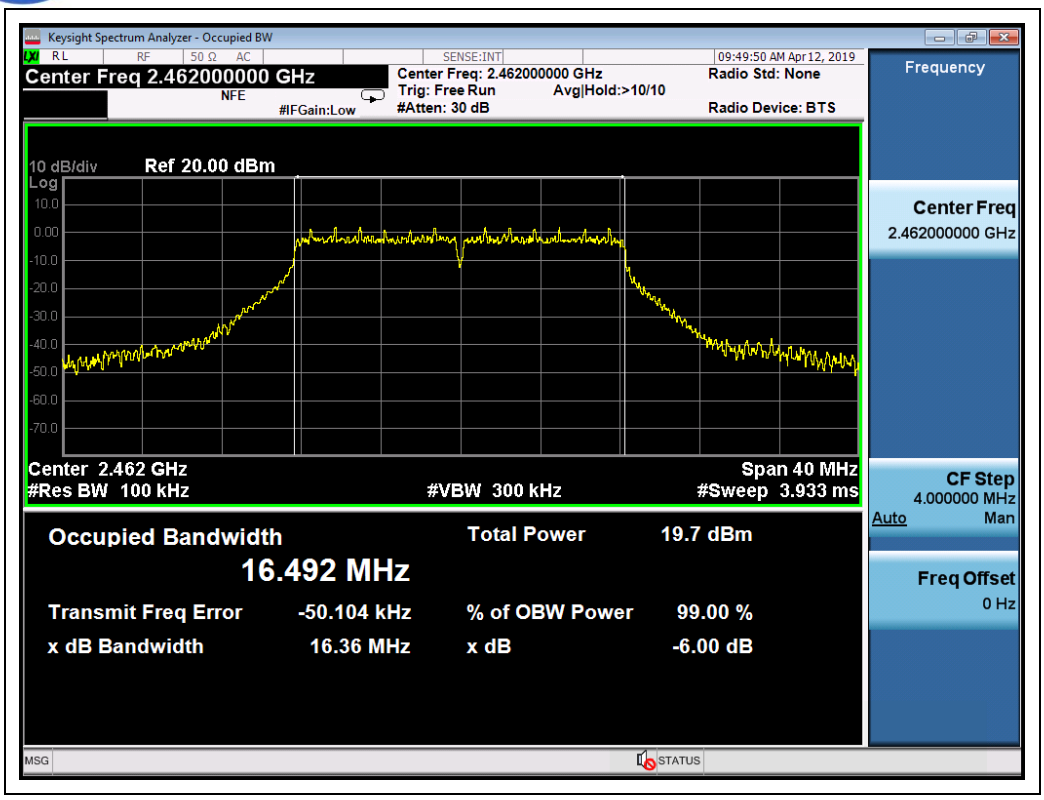
(Channel 11, 2462MHz, 802.11 b)



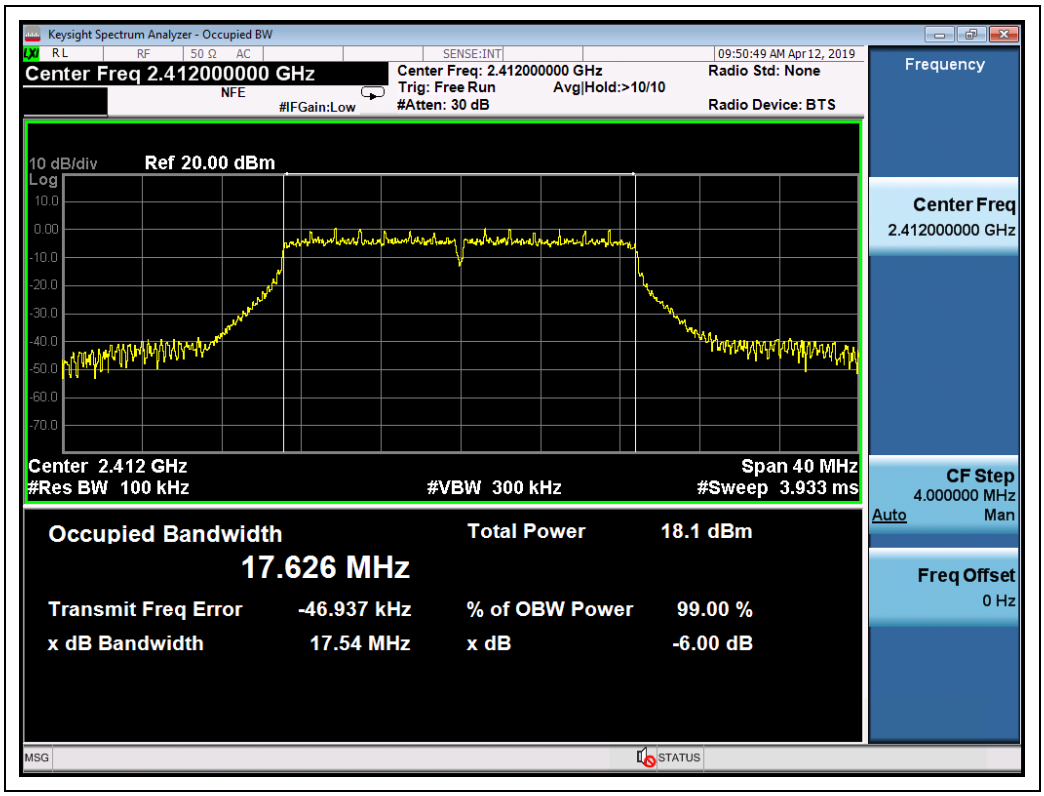
(Channel 1, 2412MHz, 802.11 g)



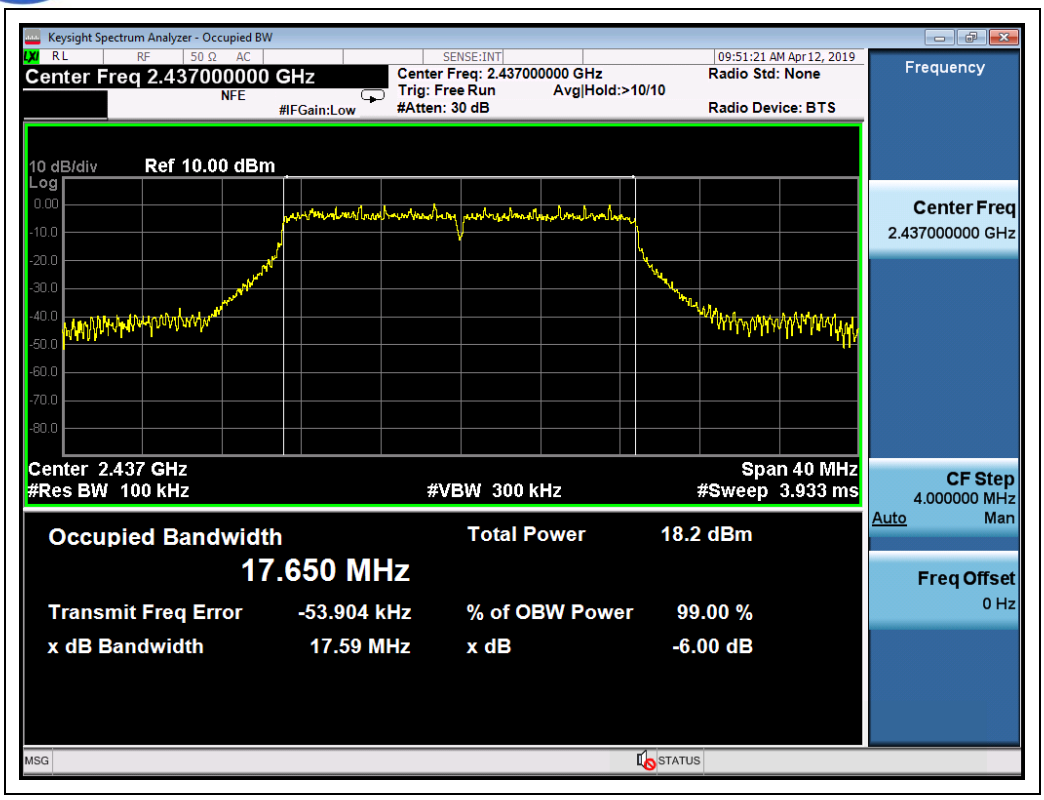
(Channel 6, 2437MHz, 802.11 g)



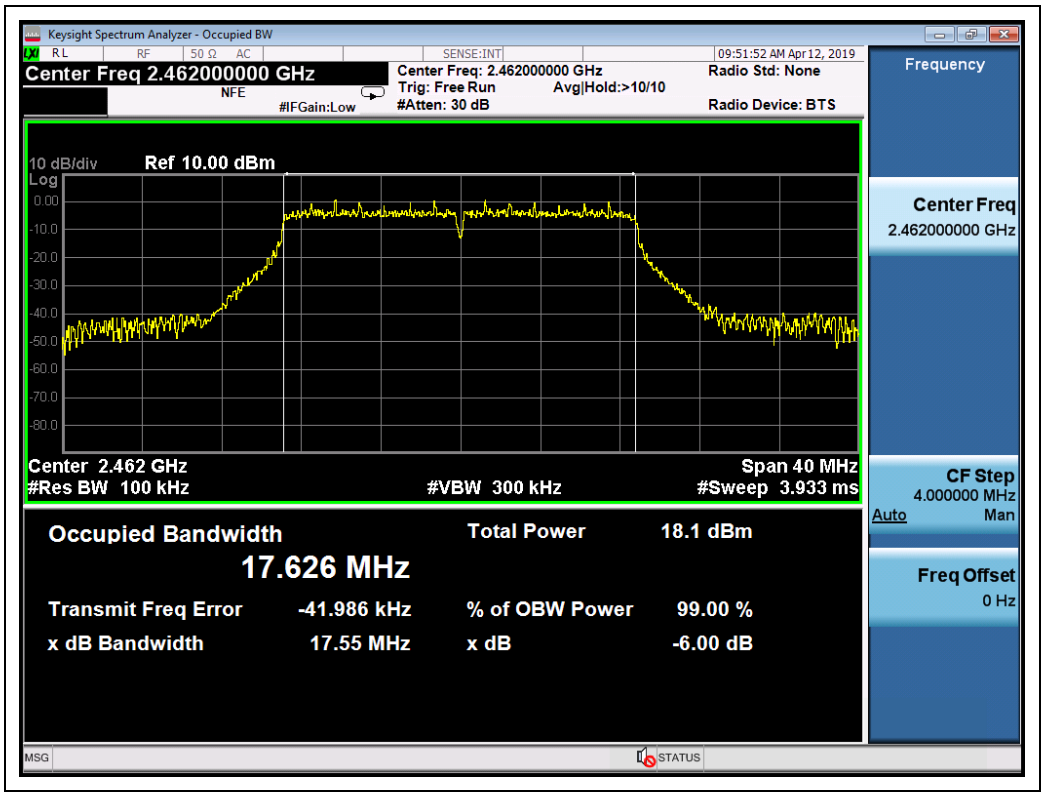
(Channel 11, 2462MHz, 802.11 g)



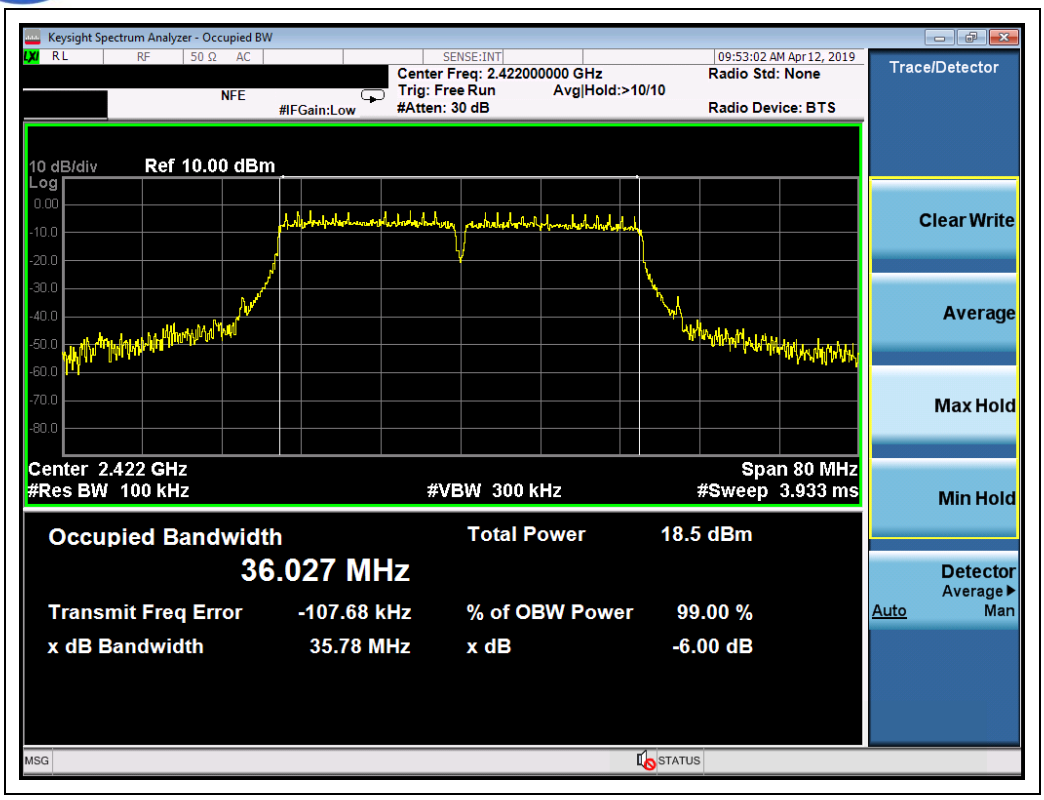
(Channel 1, 2412MHz, 802.11 n20)



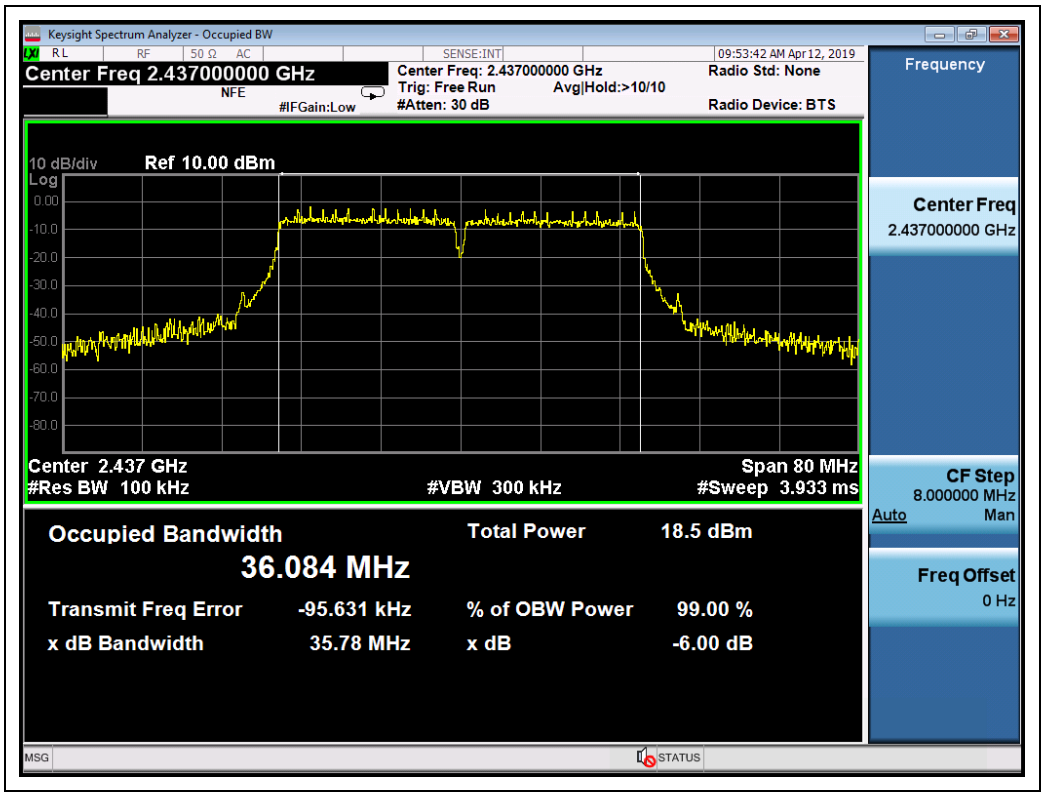
(Channel 6, 2437MHz, 802.11 n20)



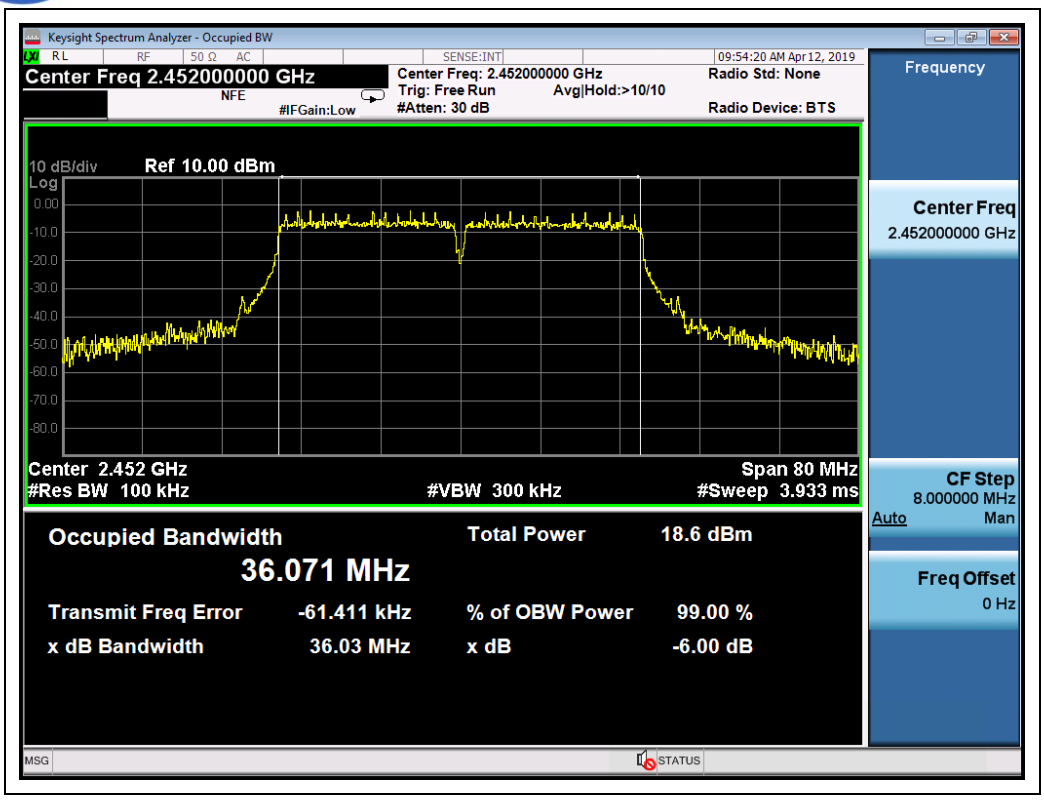
(Channel 11, 2462MHz, 802.11 n20)



(Channel 3, 2422Mz, 802.11 n40)



(Channel 6, 2437MHz, 802.11 n40)



(Channel 9, 2452MHz, 802.11 n40)

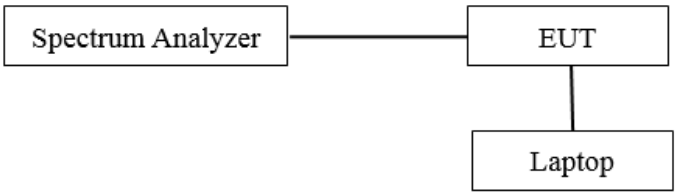
2.4. Conducted Spurious Emissions and Band Edge

2.4.1. Requirement

According to FCC section 15.247(c), 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, based on either an RF conducted or a radiated measurement.

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.

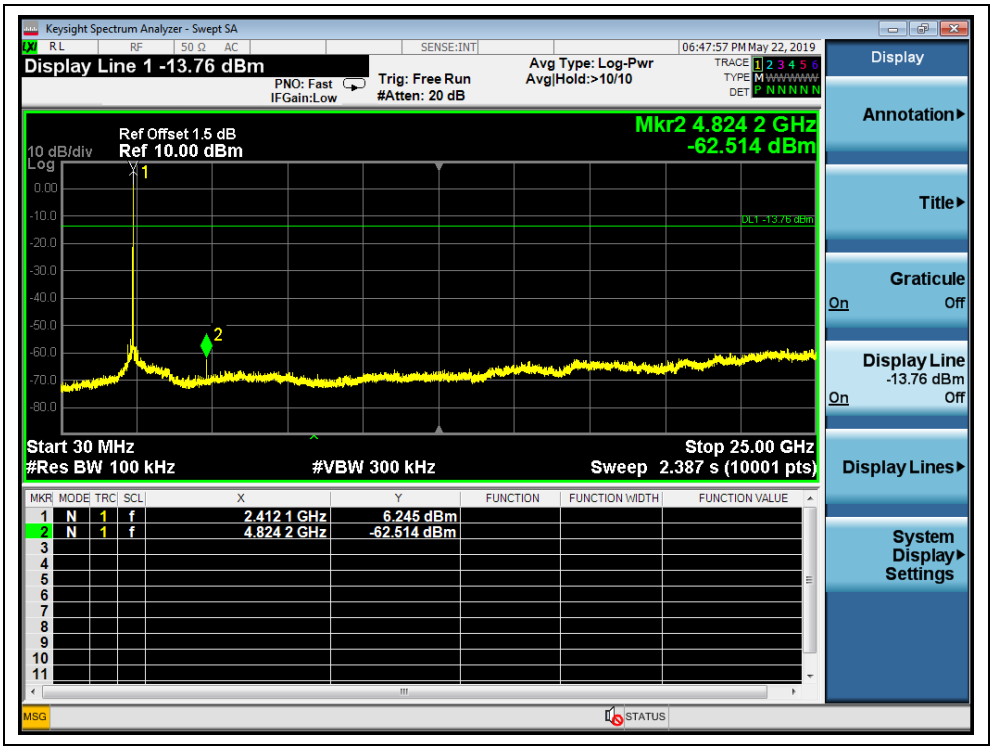
Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

KDB 558074 Section 11.0 was used in order to prove compliance.

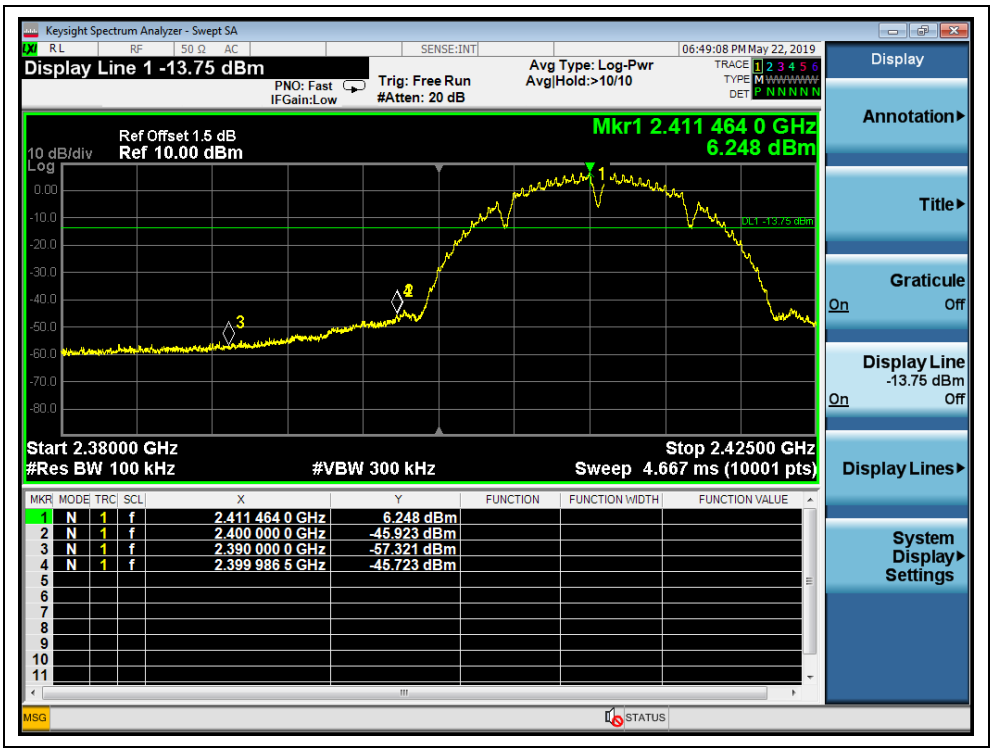
B. Equipments List:

Please refer ANNEX B(4).

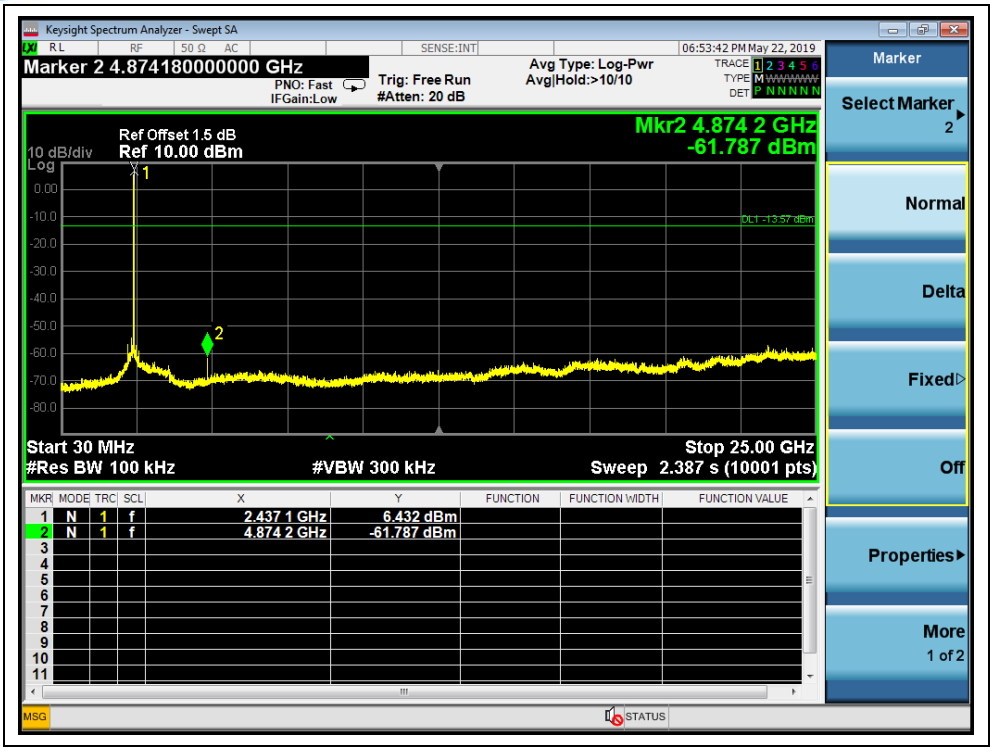
2.4.3. Test Result



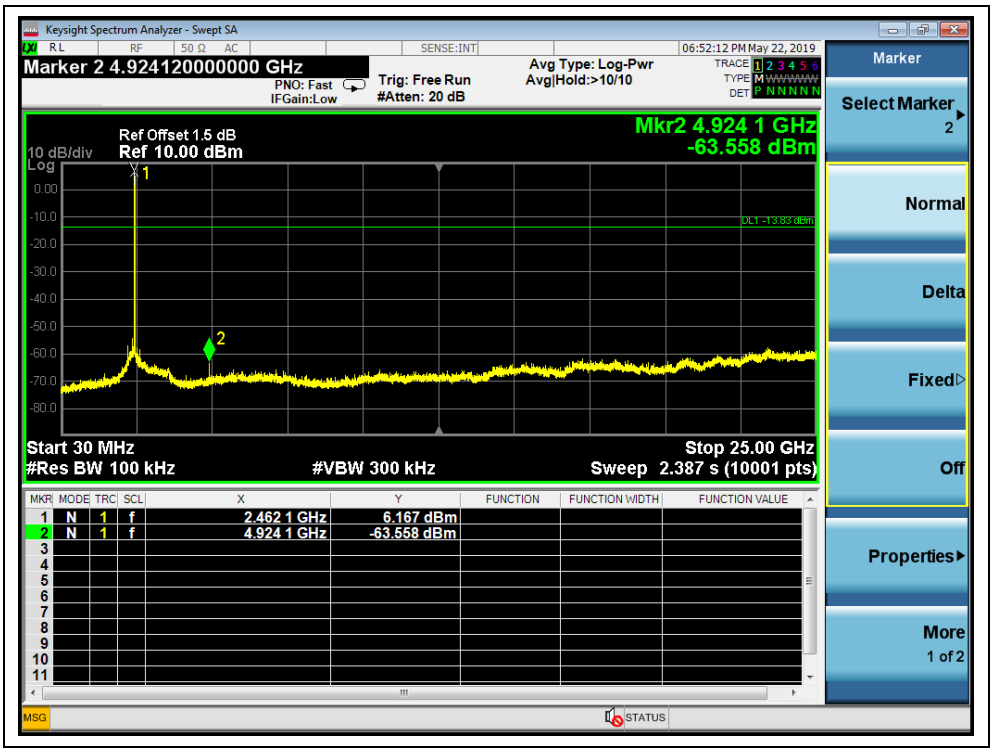
(Channel = 1, 30MHz to 25GHz, 802.11 b)



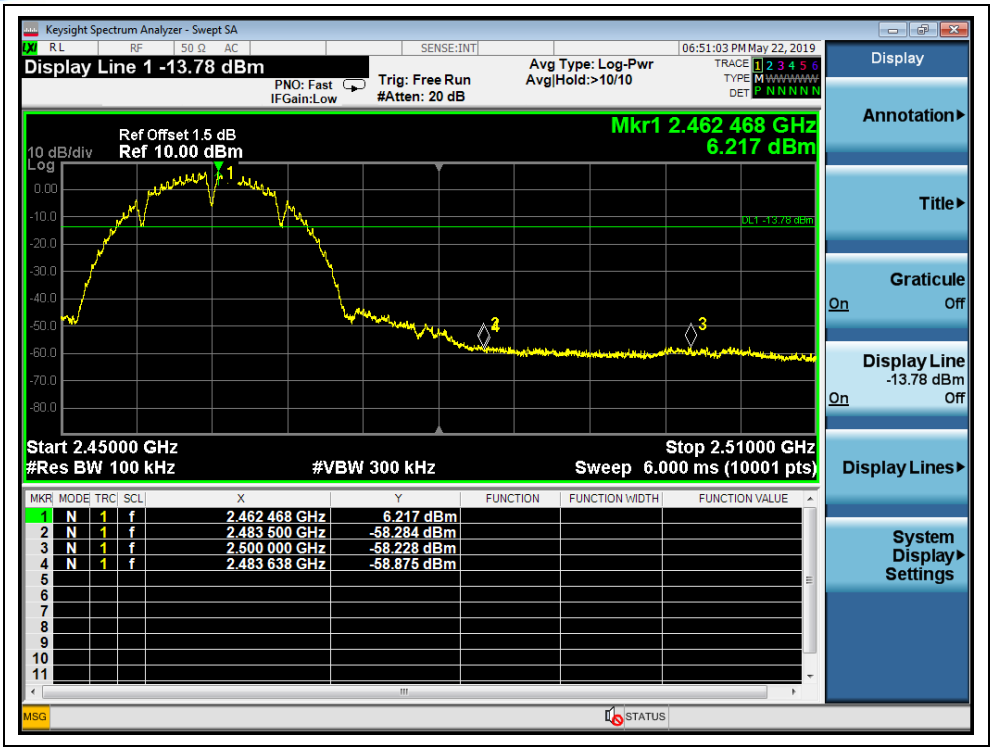
(Band Edge @ Channel = 1, 802.11 b)



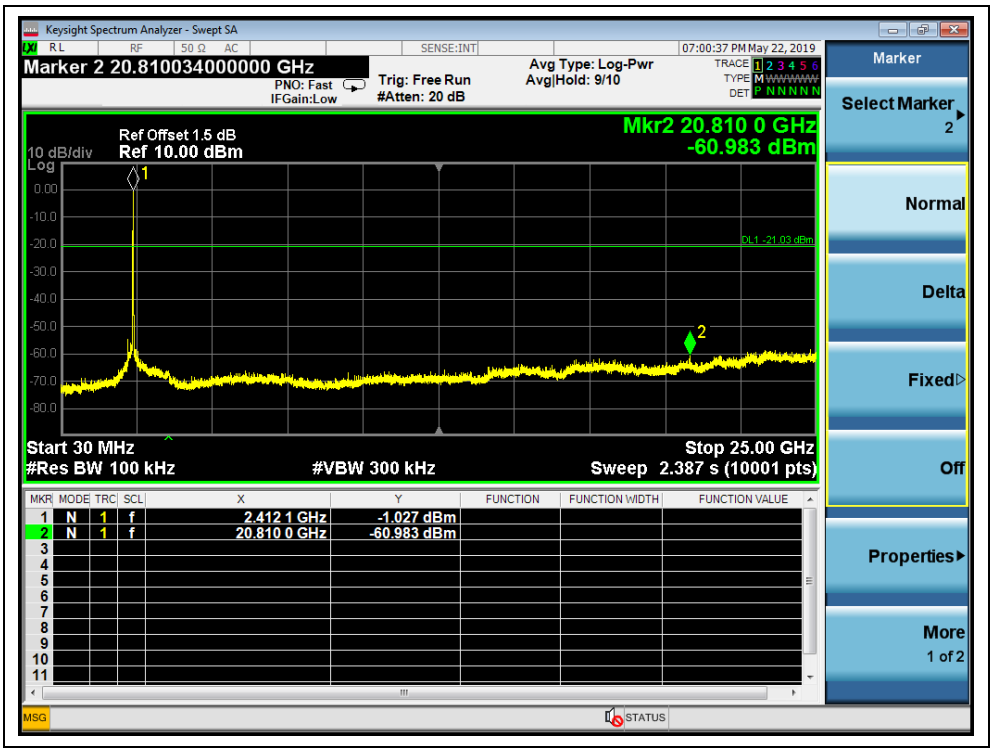
(Channel = 6, 30MHz to 25GHz, 802.11 b)



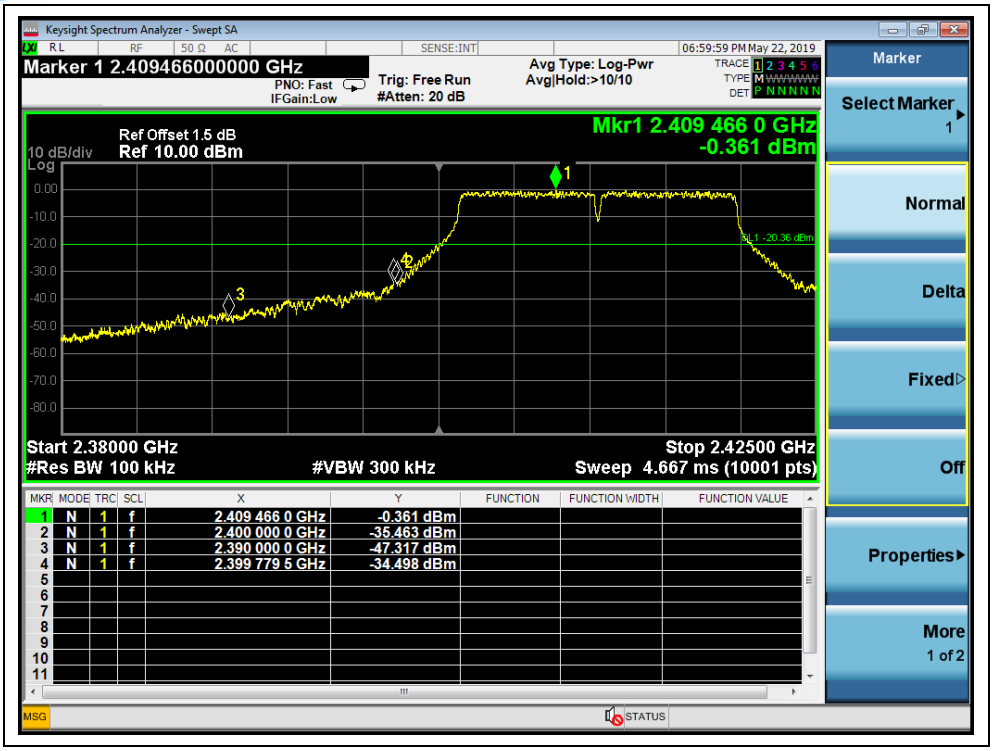
(Channel = 11, 30MHz to 25GHz, 802.11 b)



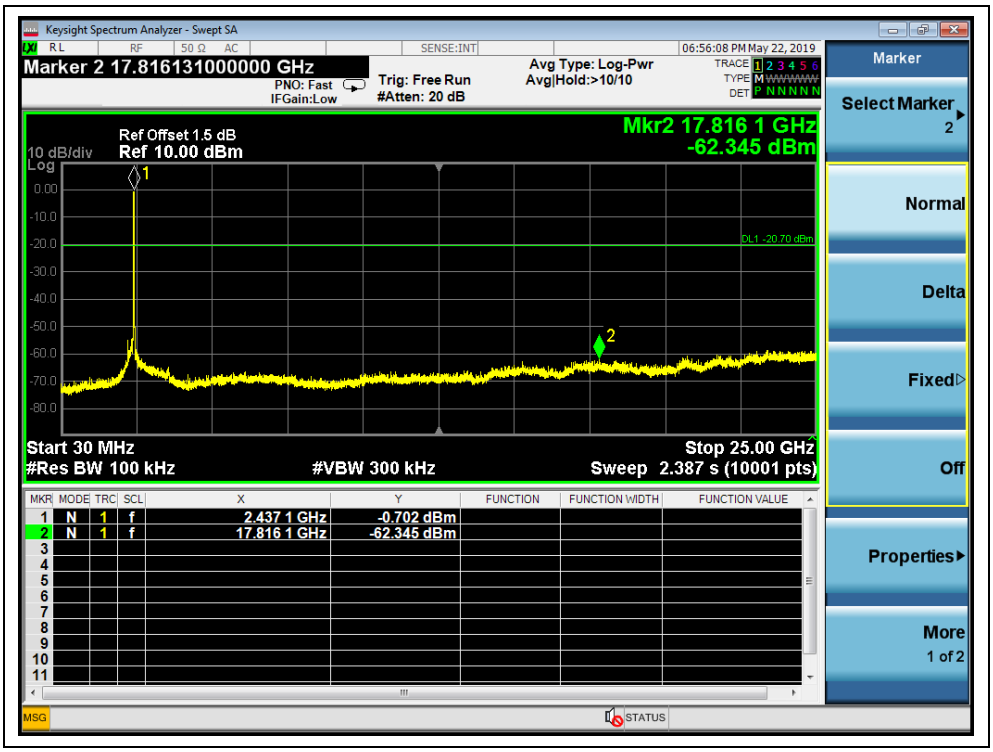
(Band Edge @ Channel = 11, 802.11 b)



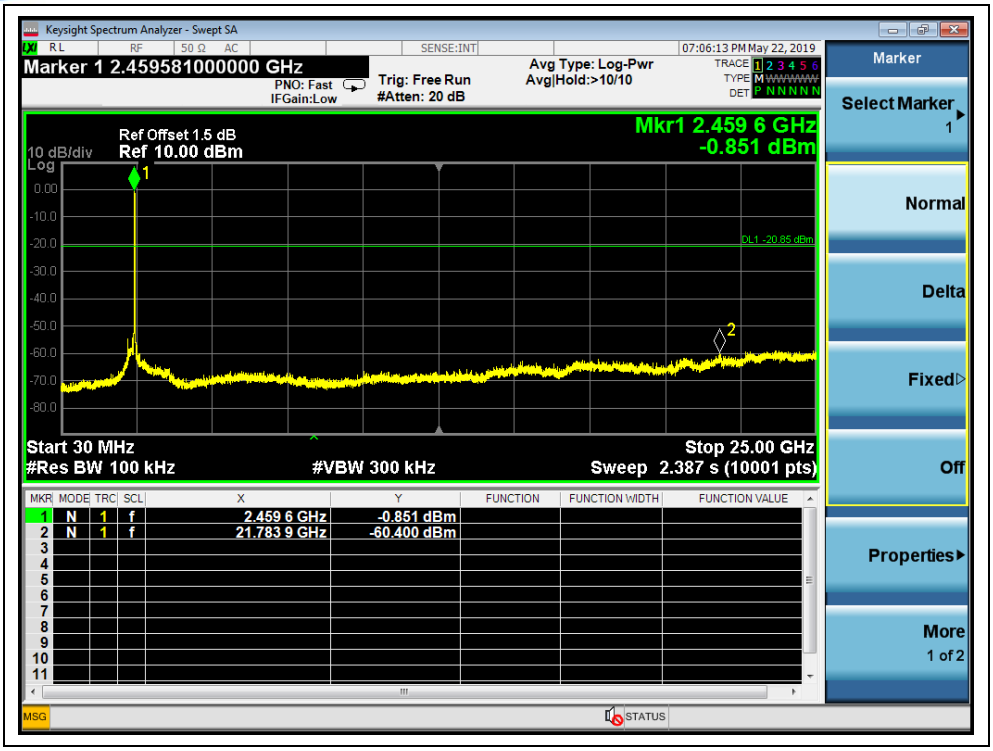
(Channel = 1, 30MHz to 25GHz, 802.11 g)



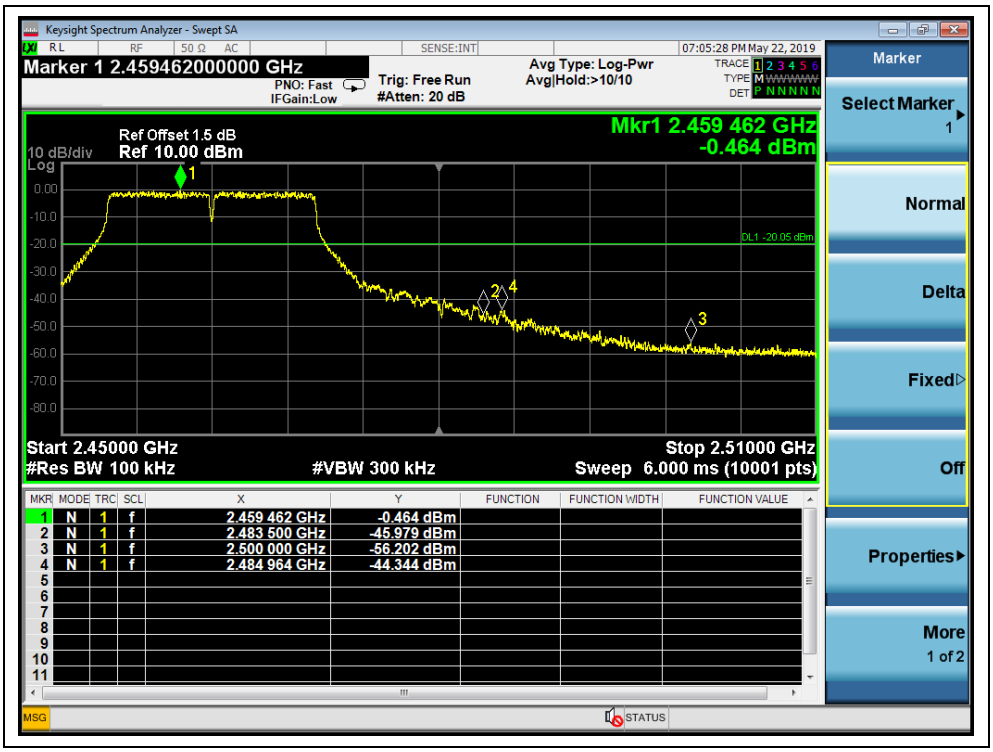
(Band Edge @ Channel = 1, 802.11 g)



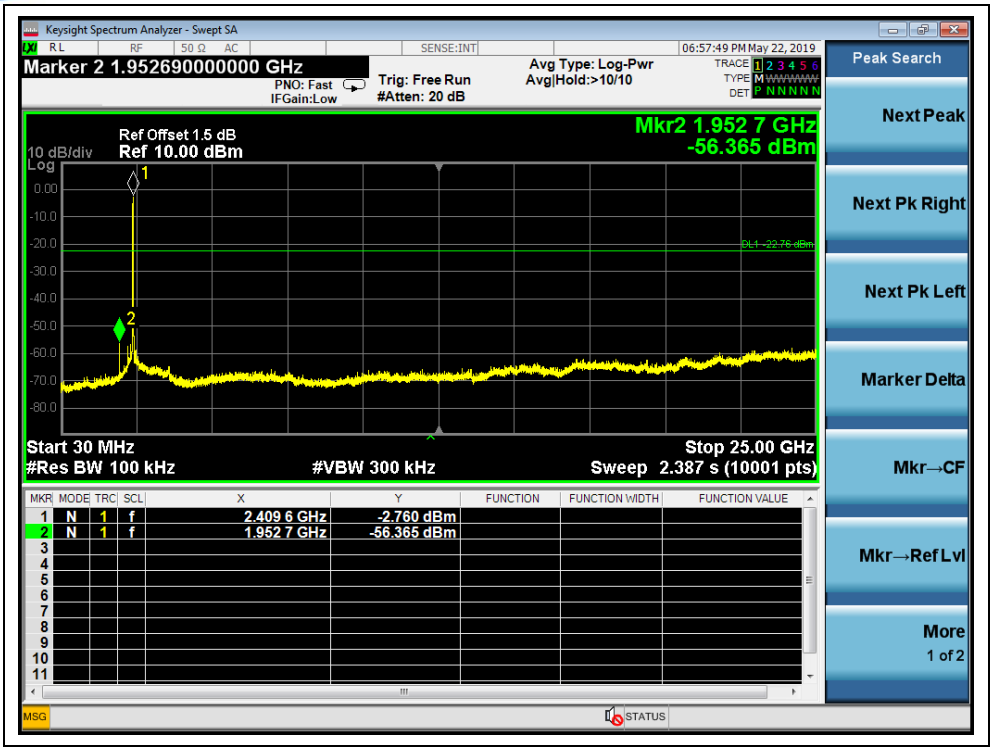
(Channel = 6, 30MHz to 25GHz, 802.11 g)



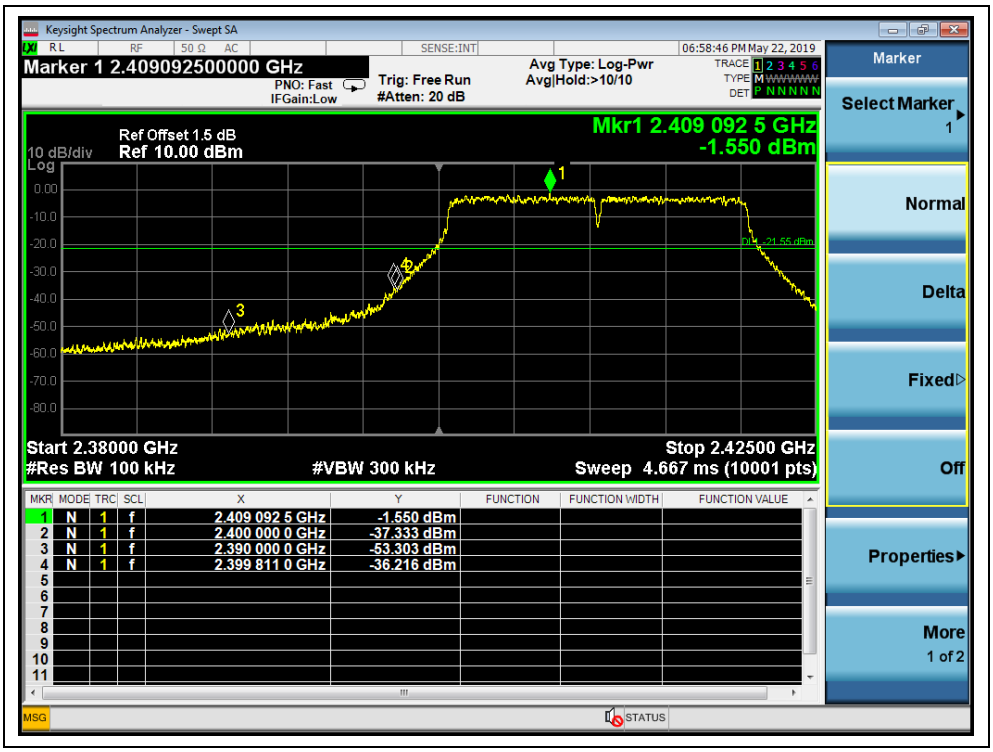
(Channel = 11, 30MHz to 25GHz, 802.11 g)



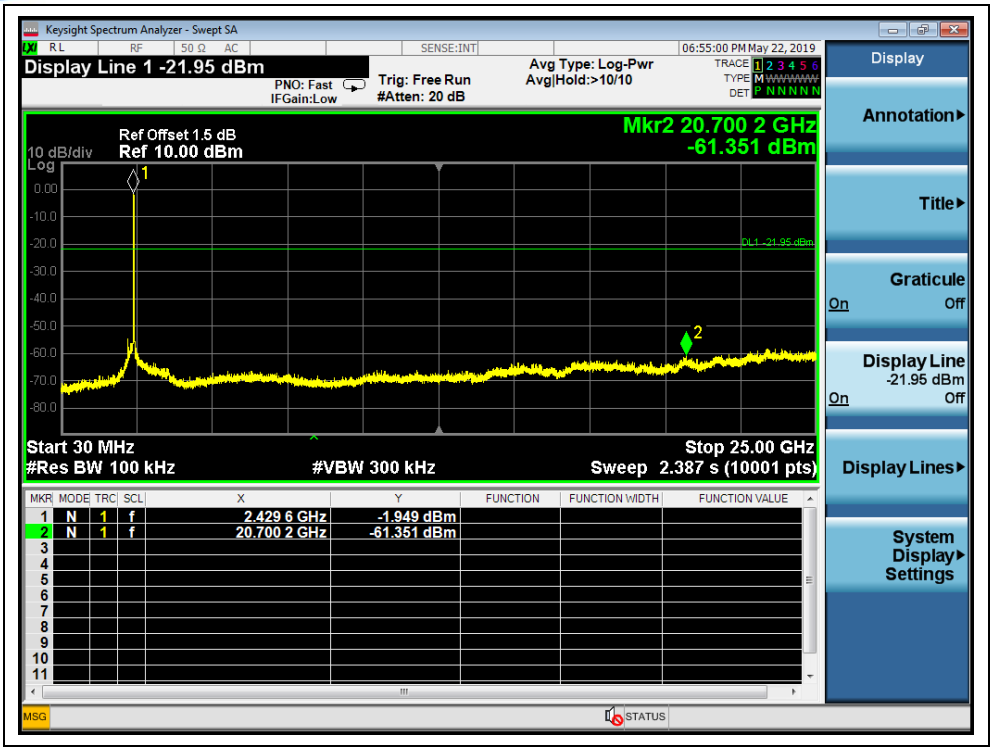
(Band Edge @ Channel = 11, 802.11 g)



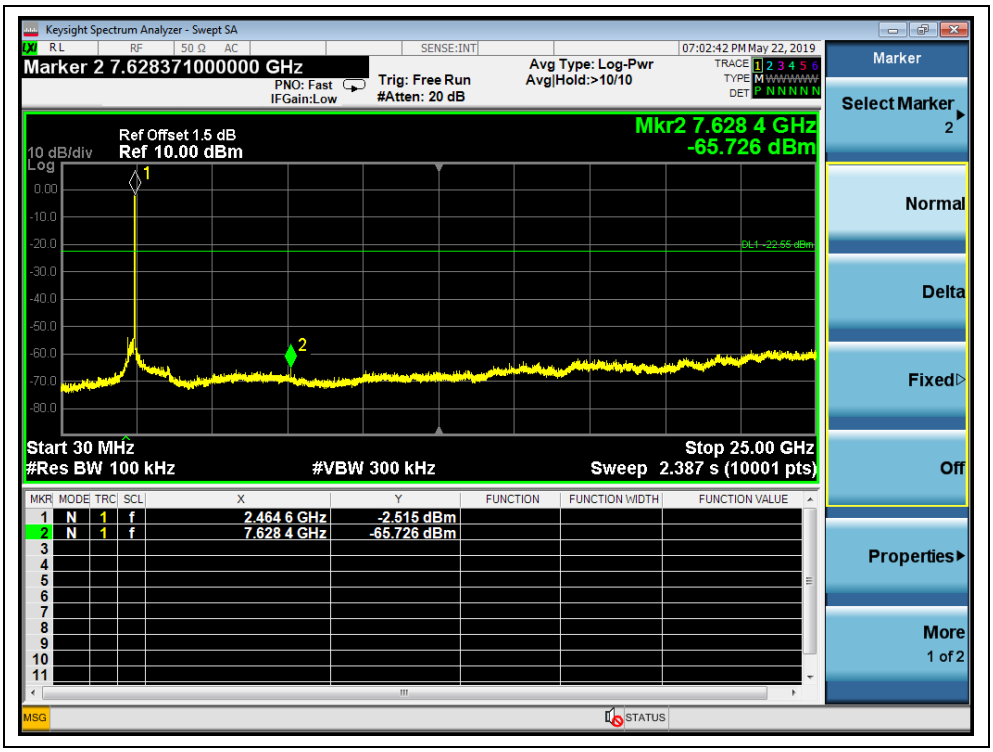
(Channel = 1, 30MHz to 25GHz, 802.11 n20)



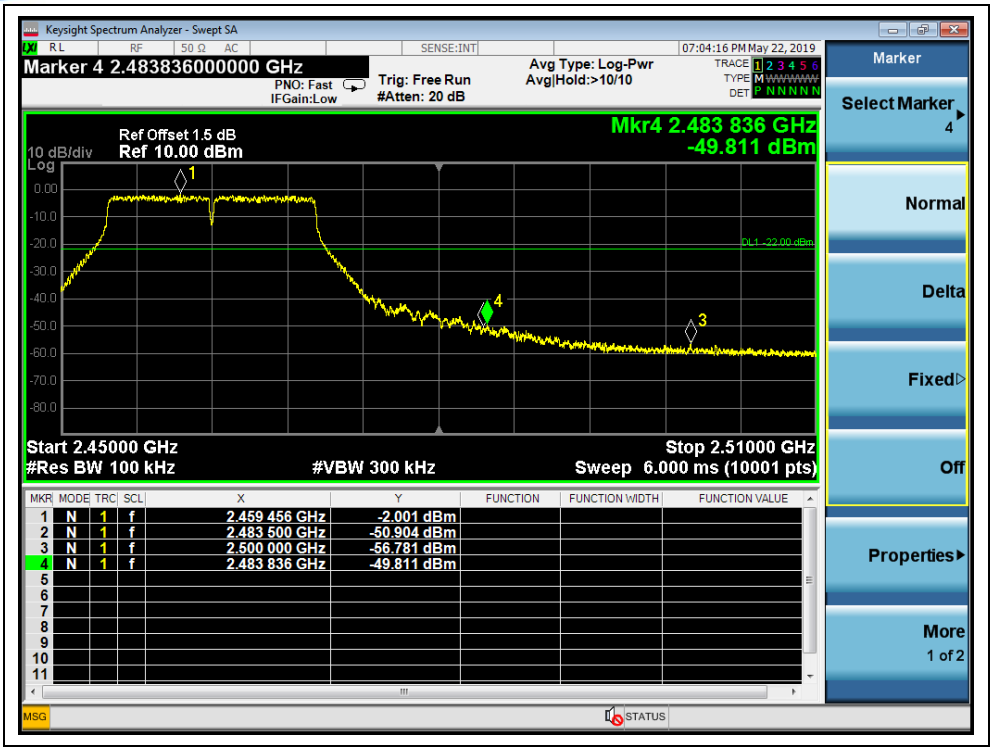
(Band Edge @ Channel = 1, 802.11 n20)



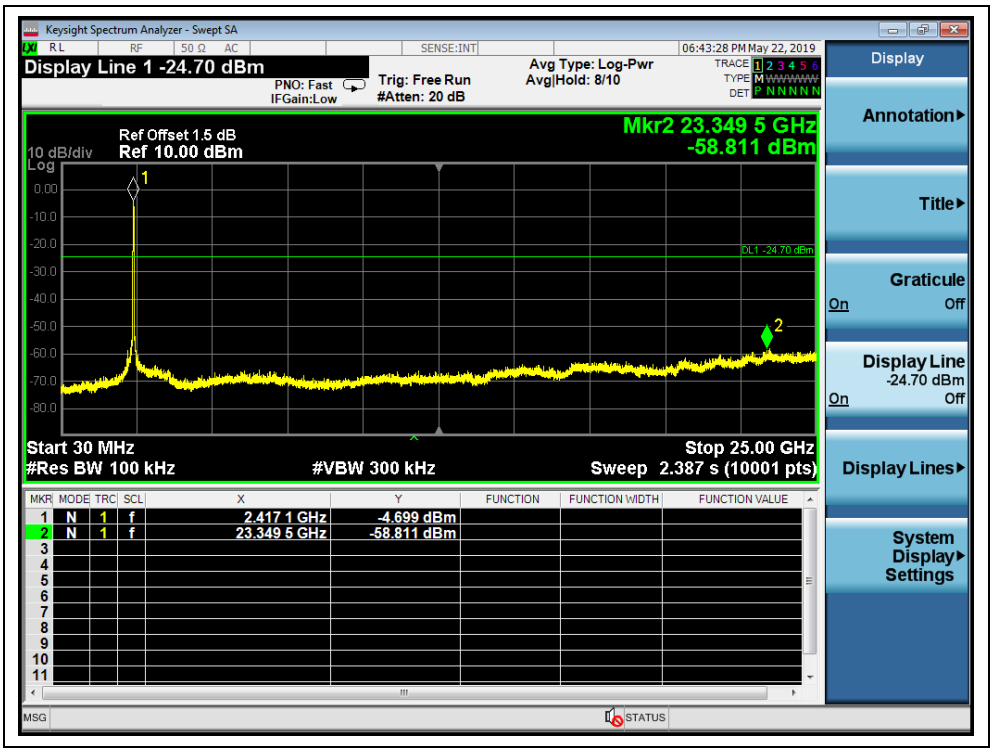
(Channel = 6, 30MHz to 25GHz, 802.11 n20)



(Channel = 11, 30MHz to 25GHz, 802.11 n20)

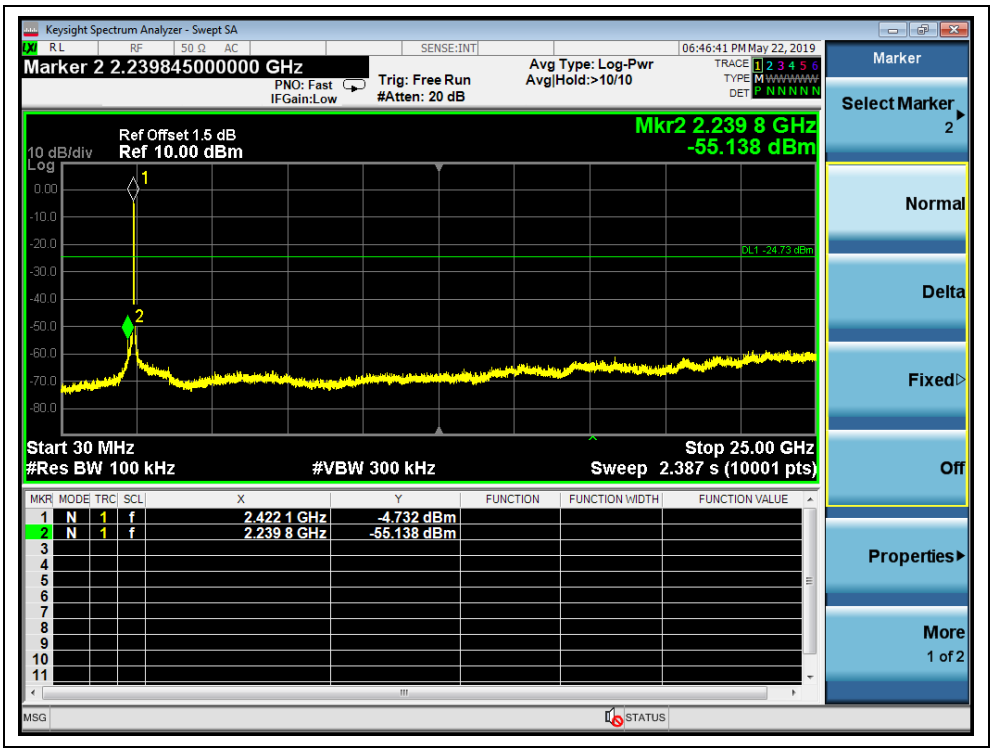


(Band Edge @ Channel = 11, 802.11 n20)

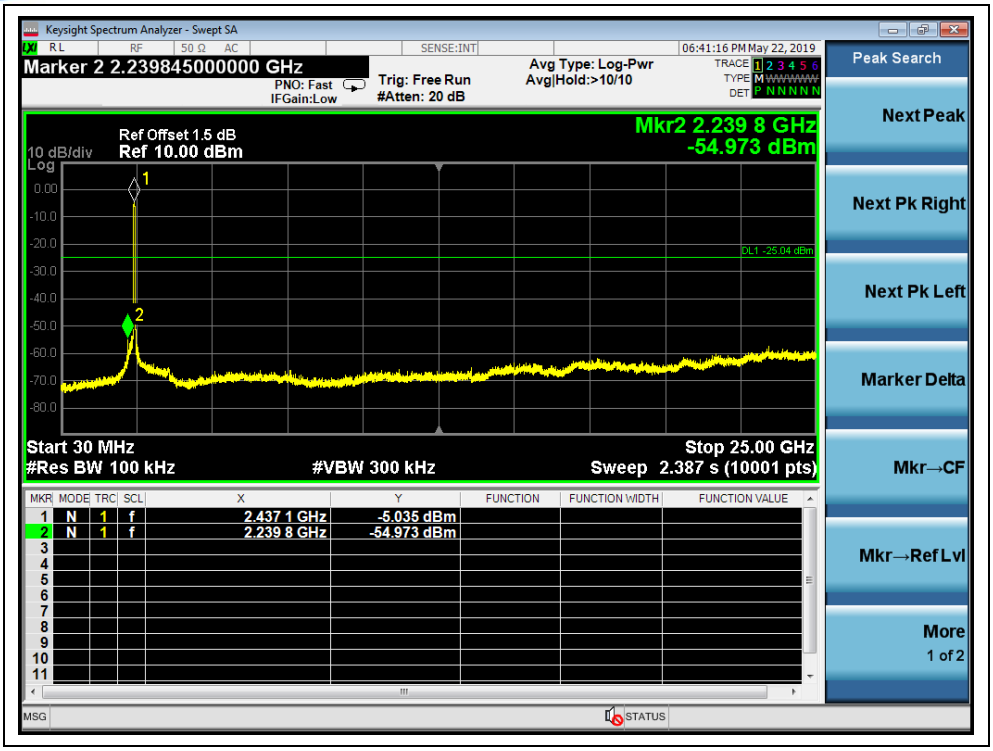


(Channel = 3, 30MHz o 25GHz, 802.11 n40)

(Band Edge @ Channel = 3, 802.11 n40)



(Channel = 6, 30MHz to 25GHz, 802.11 n40)



(Channel = 9, 30MHz to 25GHz, 802.11 n40)

(Band Edge @ Channel = 9, 802.11 n40)

Note: The power of the Module transmitting frequency should be ignored.

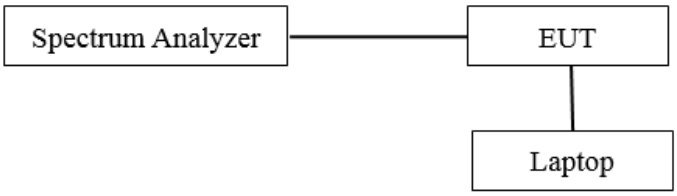
2.5. Power spectral density (PSD)

2.5.1. Requirement

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

2.5.2. 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.

KDB 558074 Section 10.2 was used in order to prove compliance.

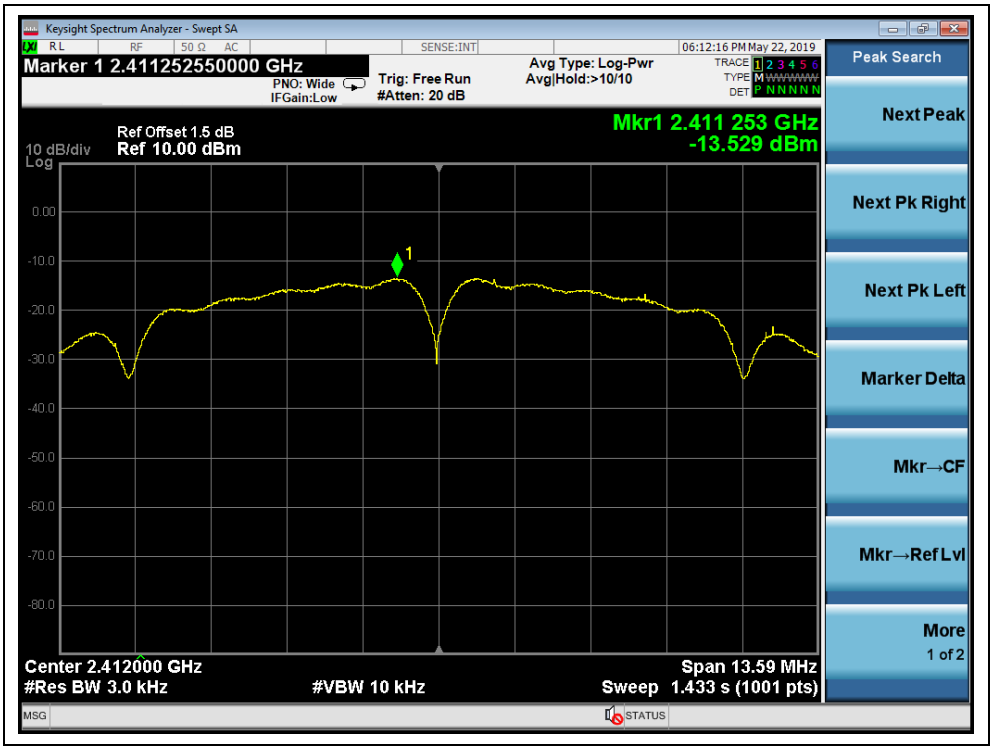
B. Equipments List:

Please refer ANNEX B(4).

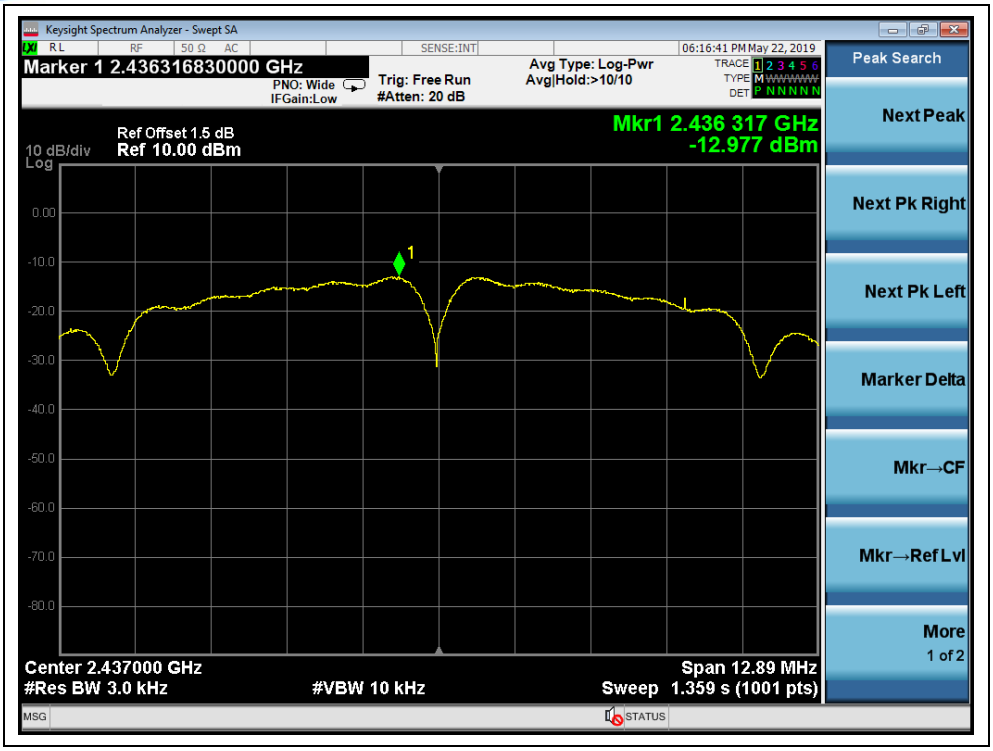
2.5.3. Test Result

Mode	Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
802.11 b	1	2412	-13.529	≤8	PASS
	6	2437	-12.977	≤8	PASS
	11	2462	-13.539	≤8	PASS
802.11 g	1	2412	-14.470	≤8	PASS
	6	2437	-14.038	≤8	PASS
	11	2462	-14.394	≤8	PASS
802.11 n20	1	2412	-14.783	≤8	PASS
	6	2437	-13.940	≤8	PASS
	11	2462	-14.975	≤8	PASS
802.11 n40	3	2422	-16.201	≤8	PASS
	6	2437	-16.158	≤8	PASS
	9	2452	-16.434	≤8	PASS

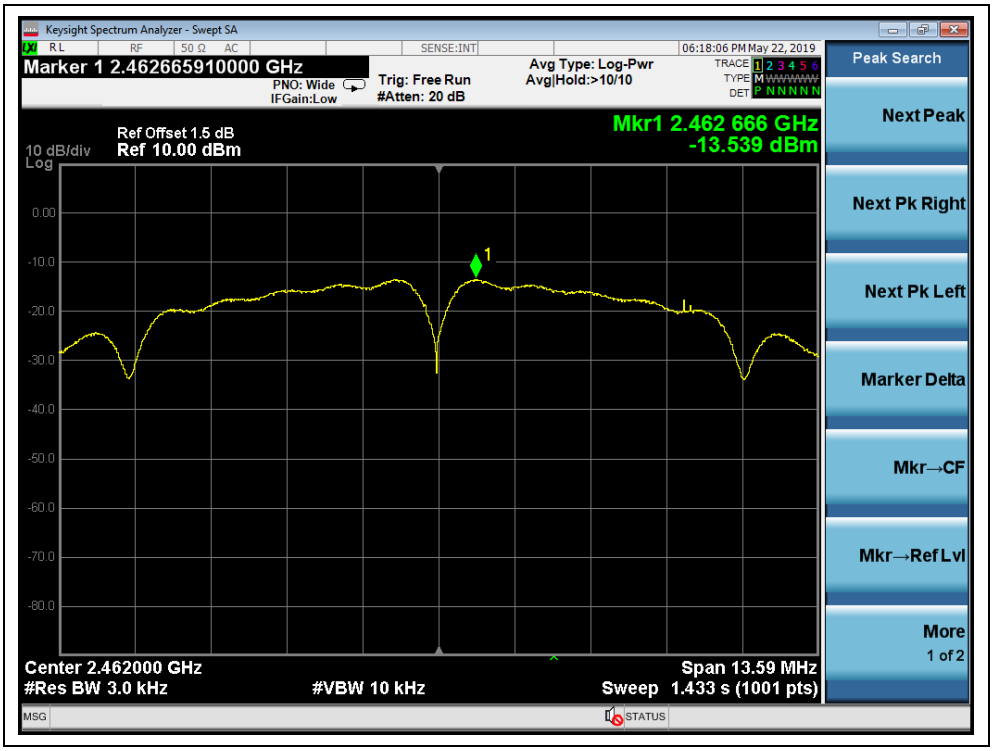
Test Plots:



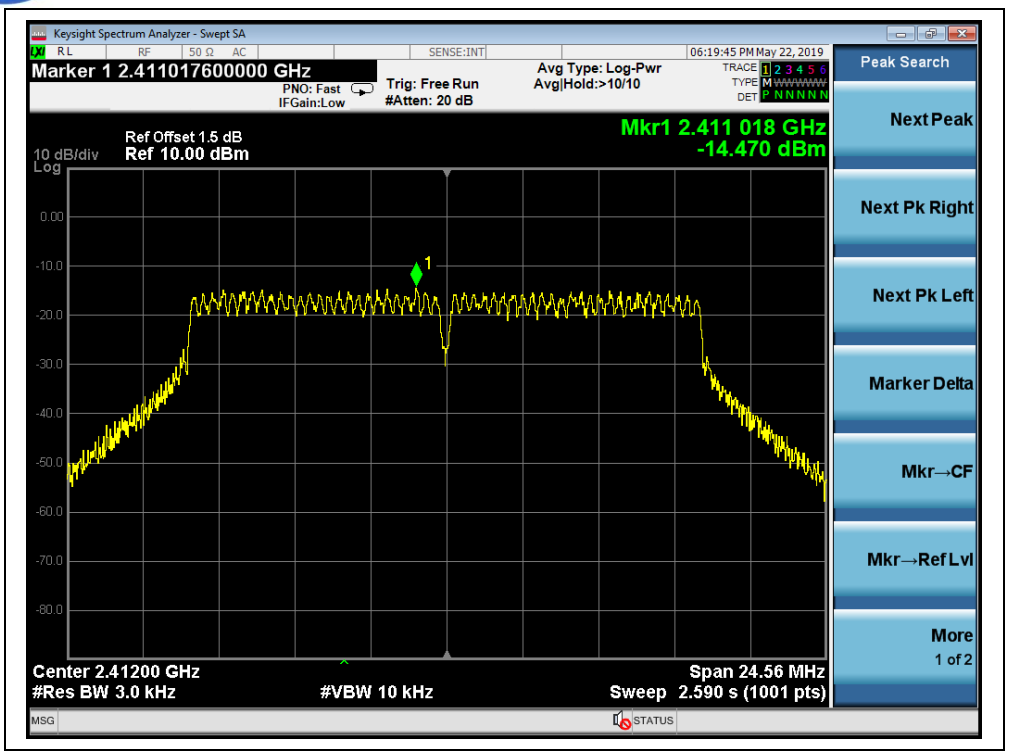
(Channel = 1, 802.11 b)



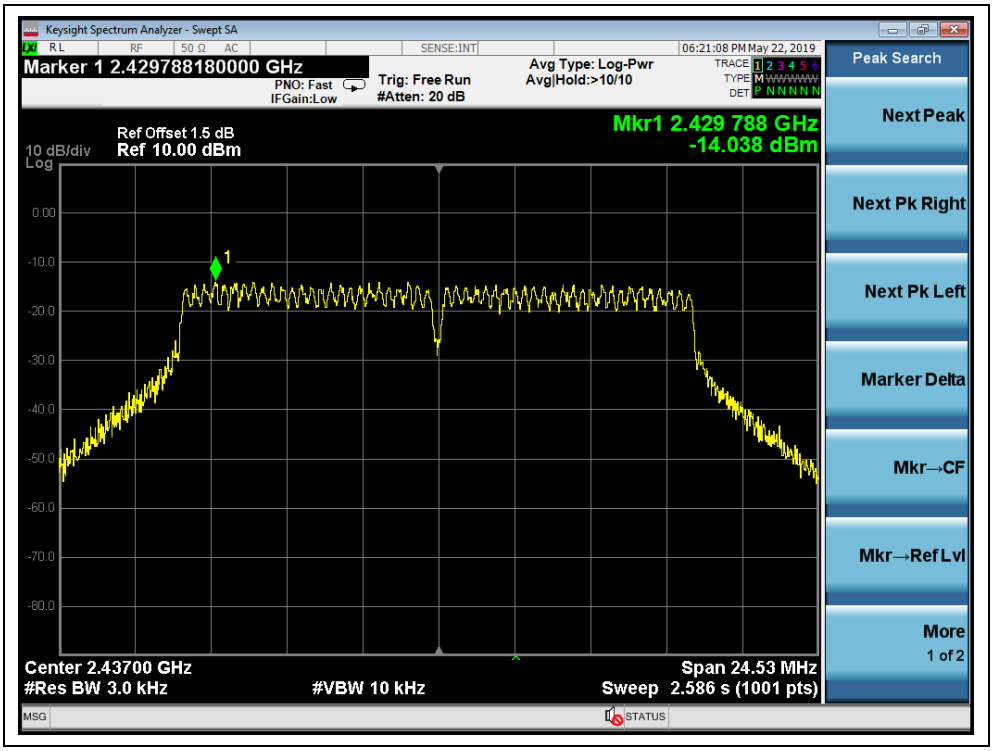
(Channel = 6, 802.11 b)



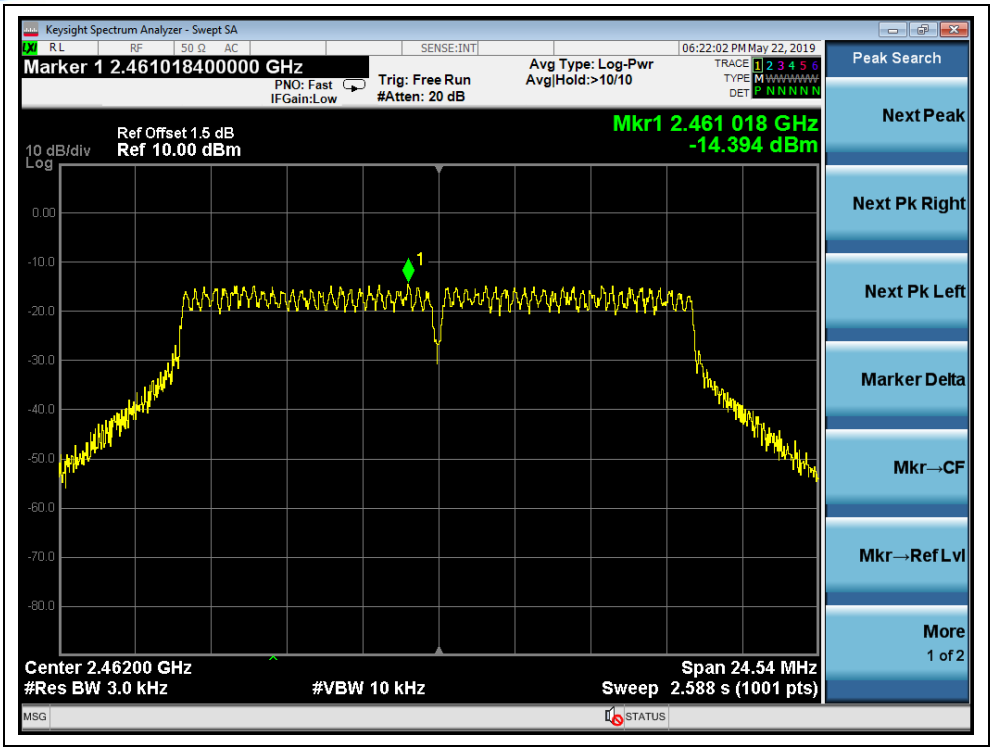
(Channel = 11, 802.11b)



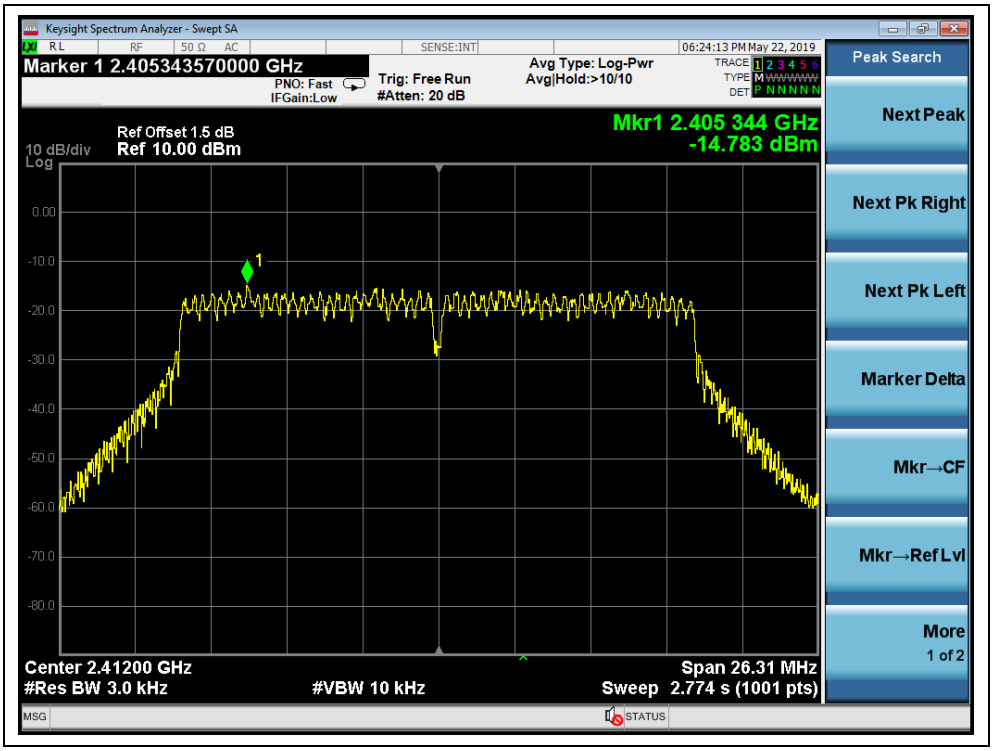
(Channel = 1, 802.11 g)



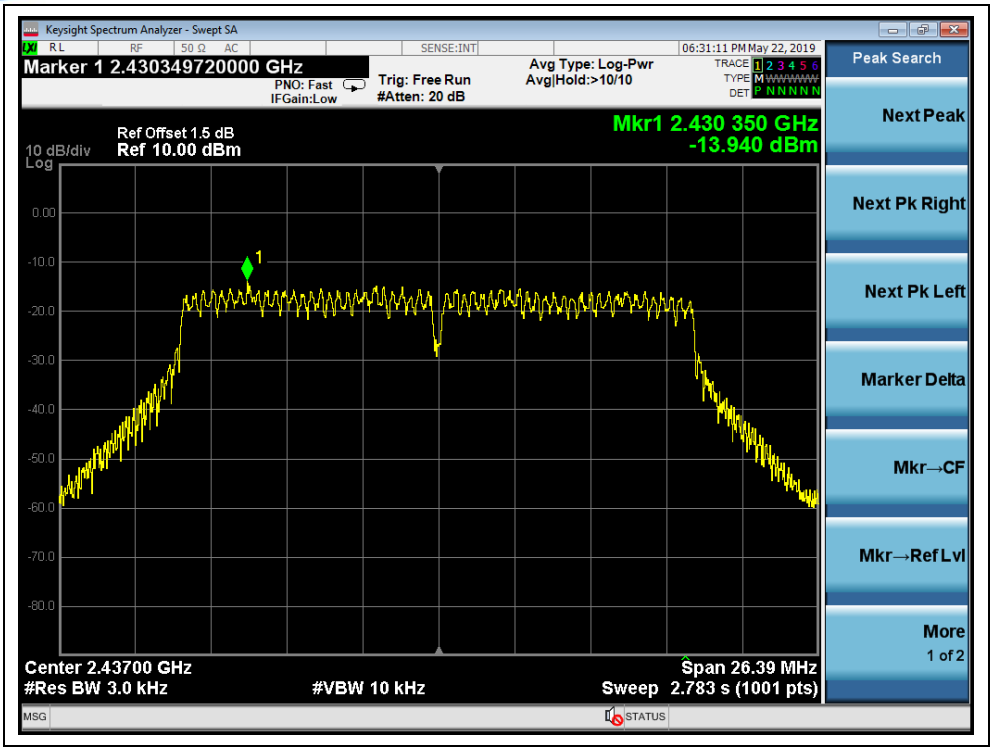
(Channel = 6, 802.11 g)



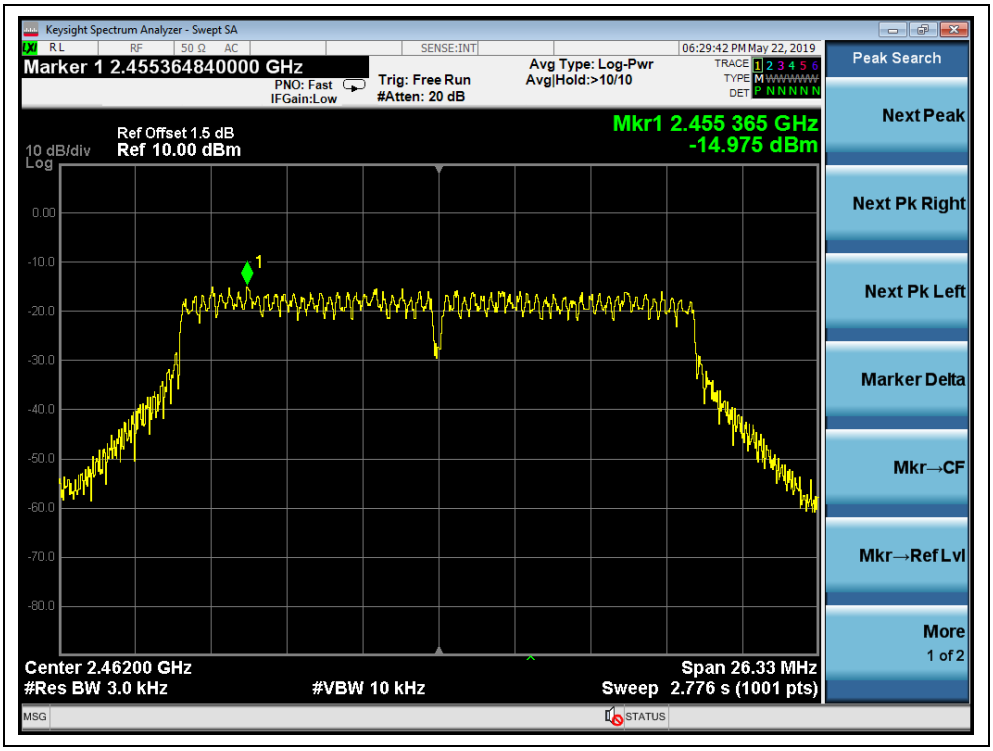
(Channel = 11, 802.11 g)



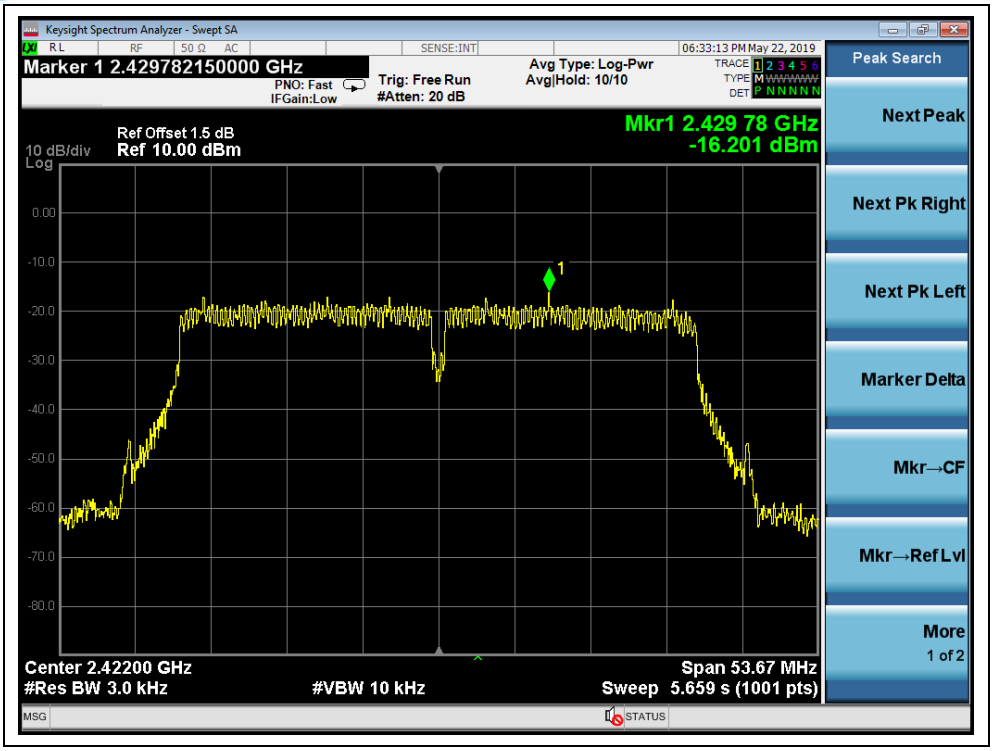
(Channel = 1, 802.11 n20)



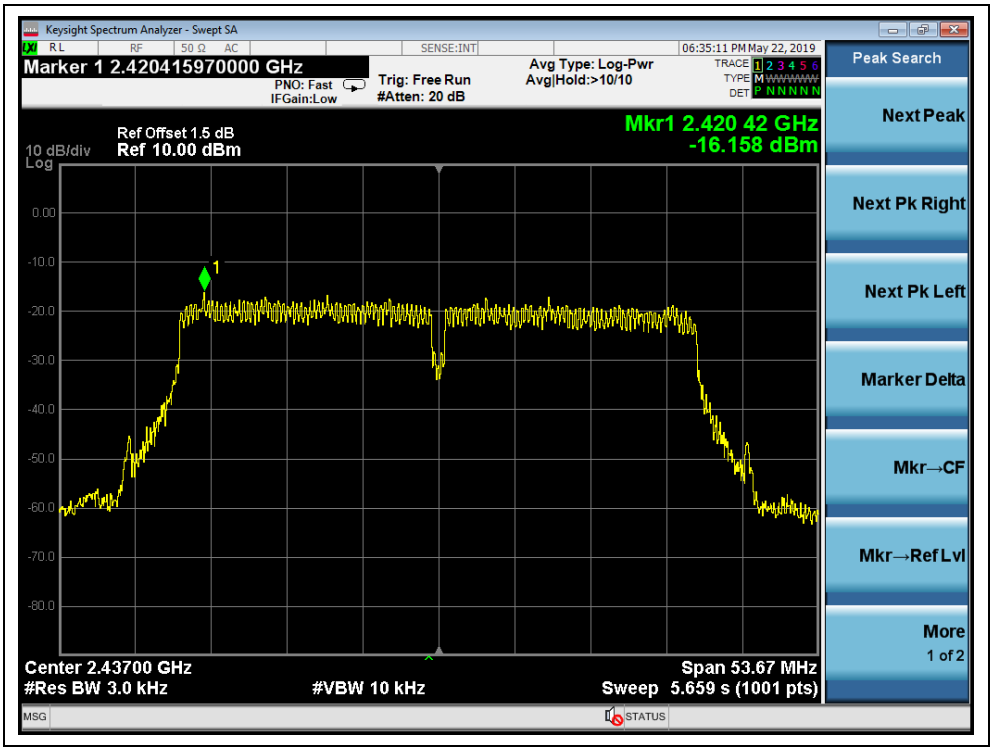
(Channel = 6, 802.11 n20)



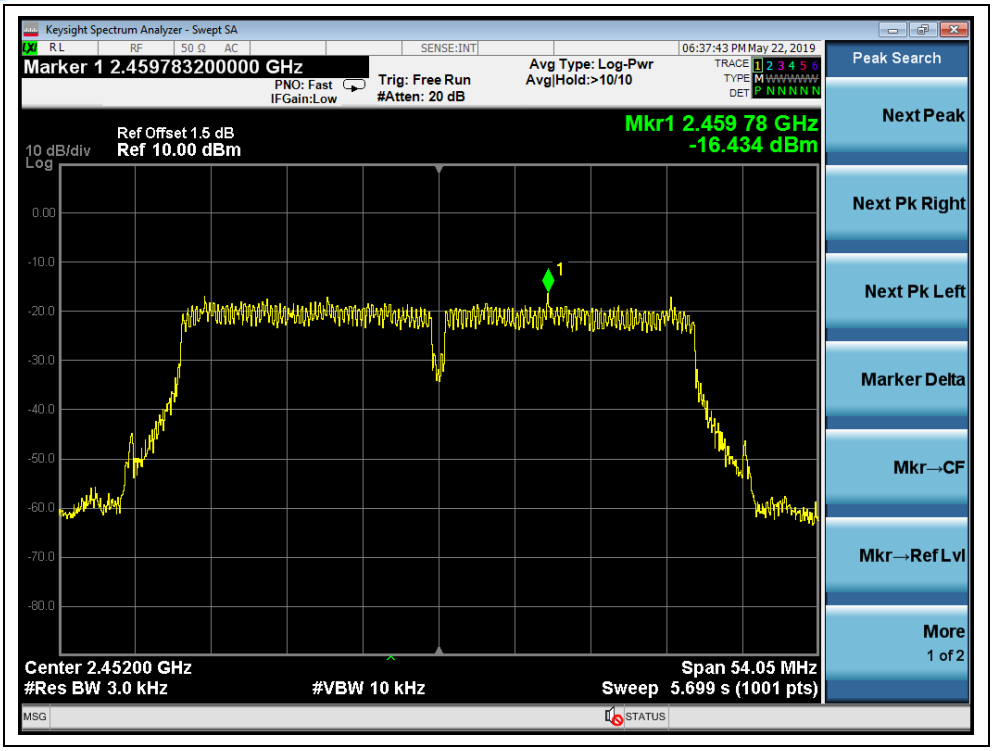
(Channel = 11, 802.11 n20)



(Channel = 3, 802.11 n40)



(Channel = 6, 802.11 n40)



(Channel = 9, 802.11 n40)

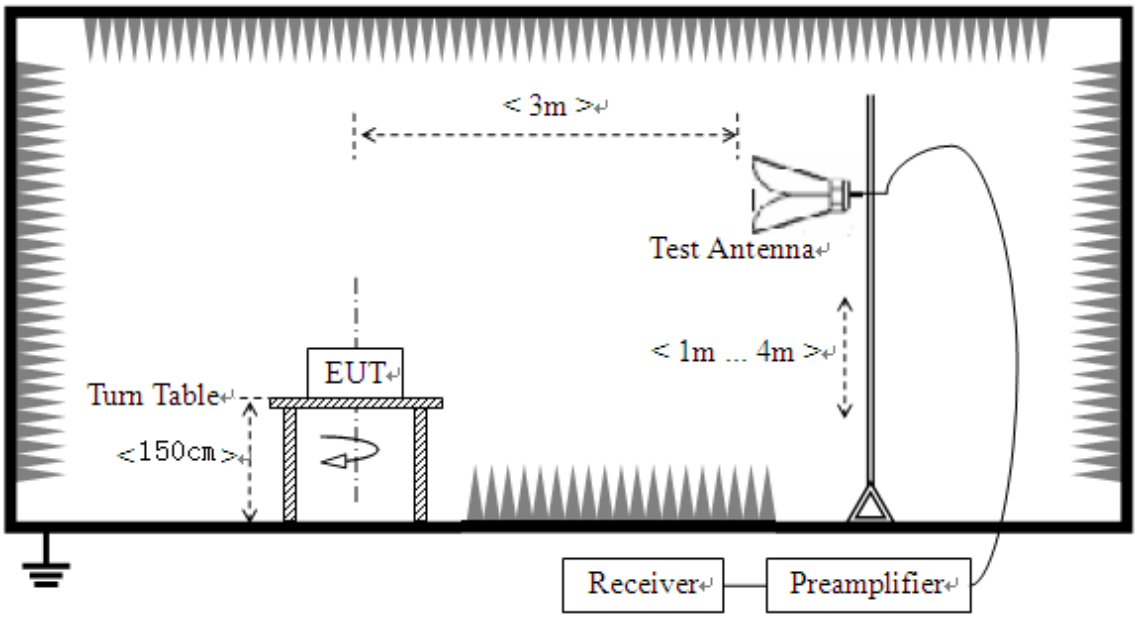
2.6. Restricted Frequency Bands

2.6.1. Requirement

According to FCC section 15.247(d), 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).

2.6.2. Test Description

A. Test Setup



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 ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

B. Equipments List:

Please refer ANNEX B(4).

2.6.3. Test Mode

Mode 1: WiFi Link (The WIFI module independently operation)

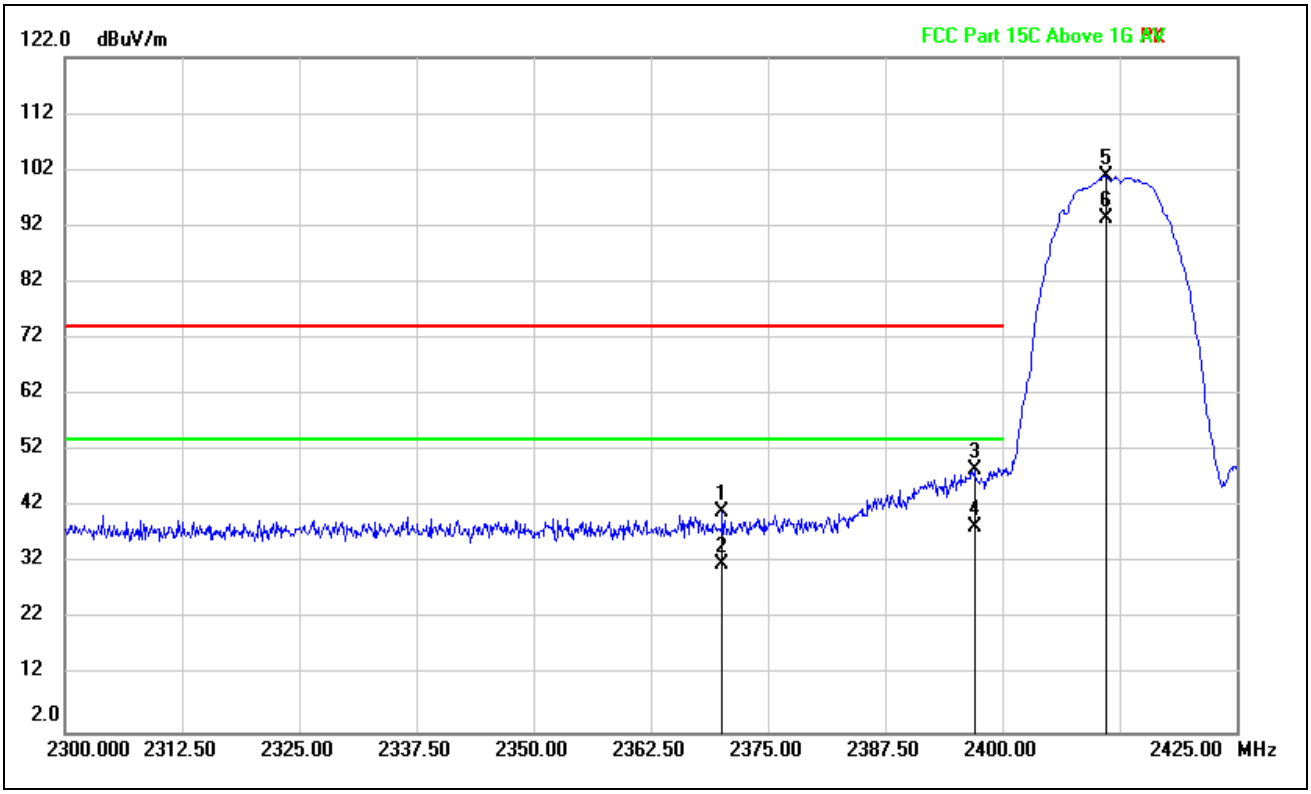
Mode 2: GSM 850 Link + WiFi Link (The WIFI module and the WWAN module are simultaneous operation, the worst case of WWAN module is GSM850)

2.6.4. Test Result

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

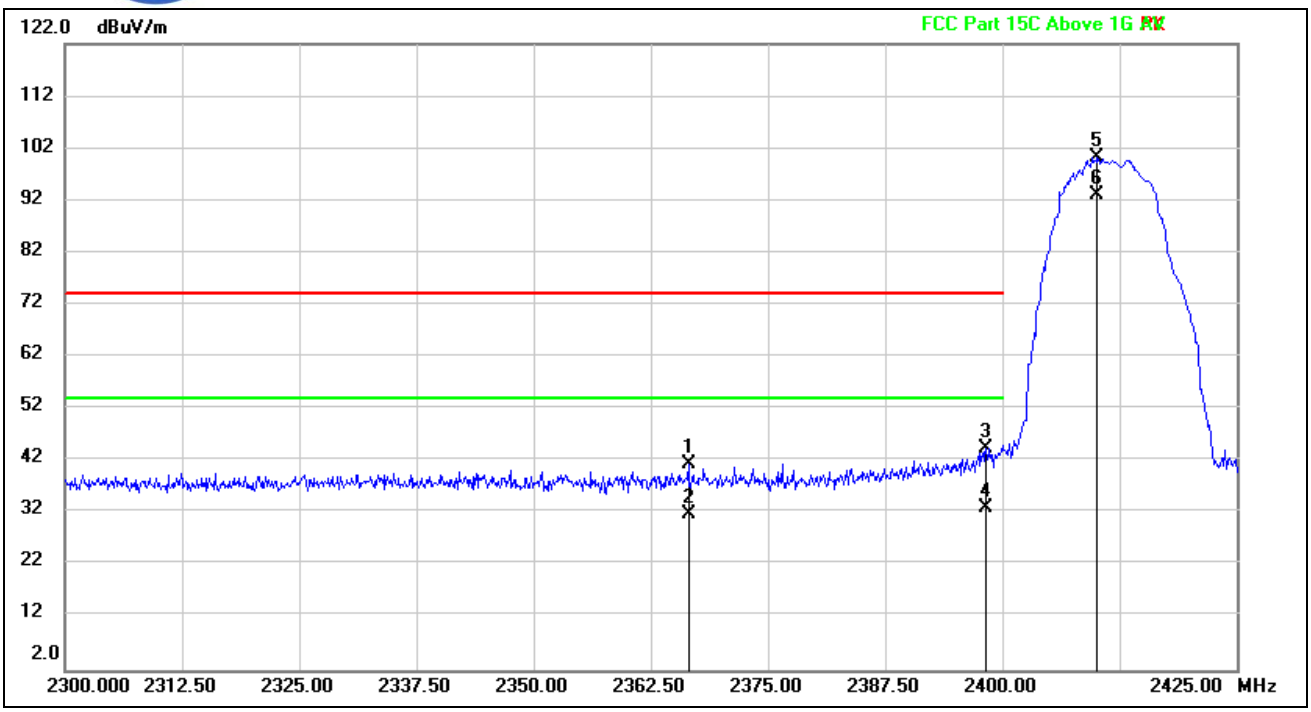
The measurement results are obtained as below:
$E\ [dB\mu V/m] = U_R + A_T + A_{Factor}\ [dB]$; $A_T = L_{Cable\ loss}\ [dB] - G_{preamp}\ [dB]$
A_T: Total correction Factor except Antenna
U_R: Receiver Reading
G_{preamp}: Preamplifier Gain
A_{Factor}: Antenna Factor at 3m

Mode 1: WiFi Link



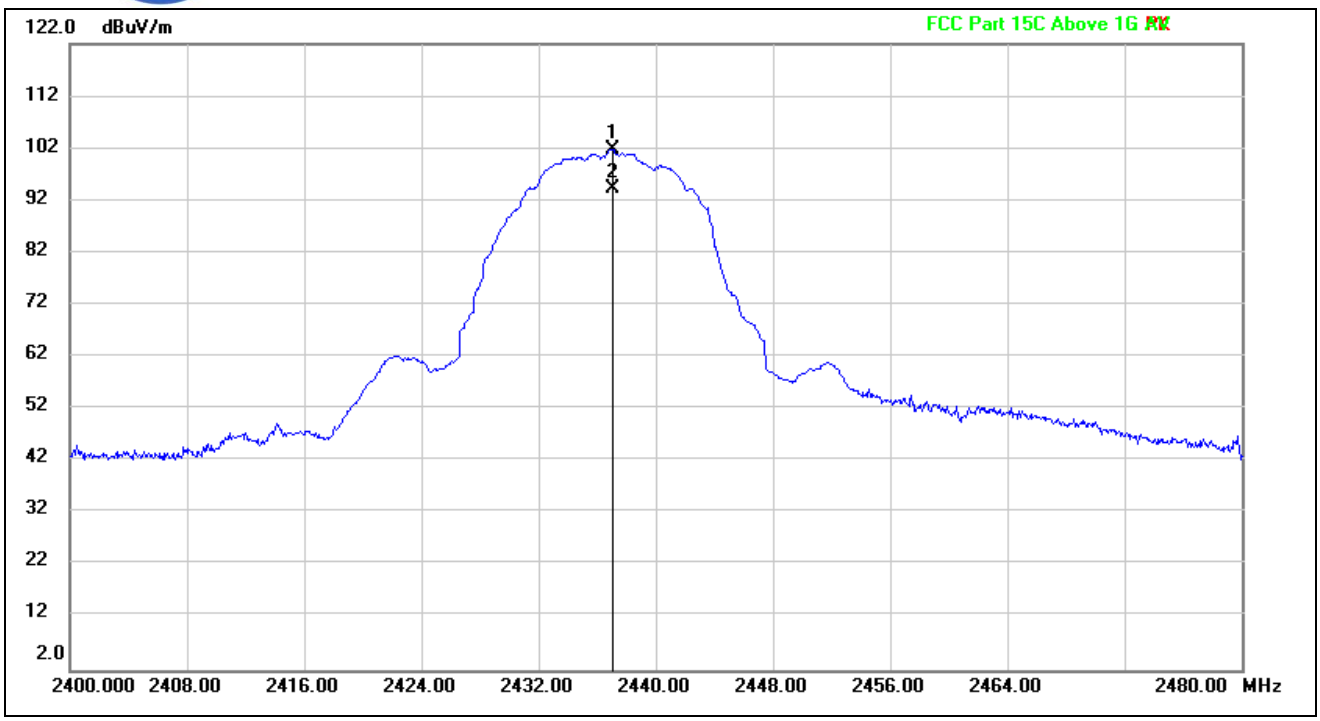
(802.11b _2412MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2370.125	11.02	30.16	41.18	74.00	-32.82	peak	H
2370.125	1.71	30.16	31.87	54.00	-22.13	AVG	H
2397.000	17.15	31.48	48.63	74.00	-25.37	peak	H
2397.000	7.09	31.48	38.57	54.00	-15.43	AVG	H
2411.000	69.68	31.12	100.80	--	--	peak	H
2411.000	62.33	31.12	93.45	--	--	AVG	H



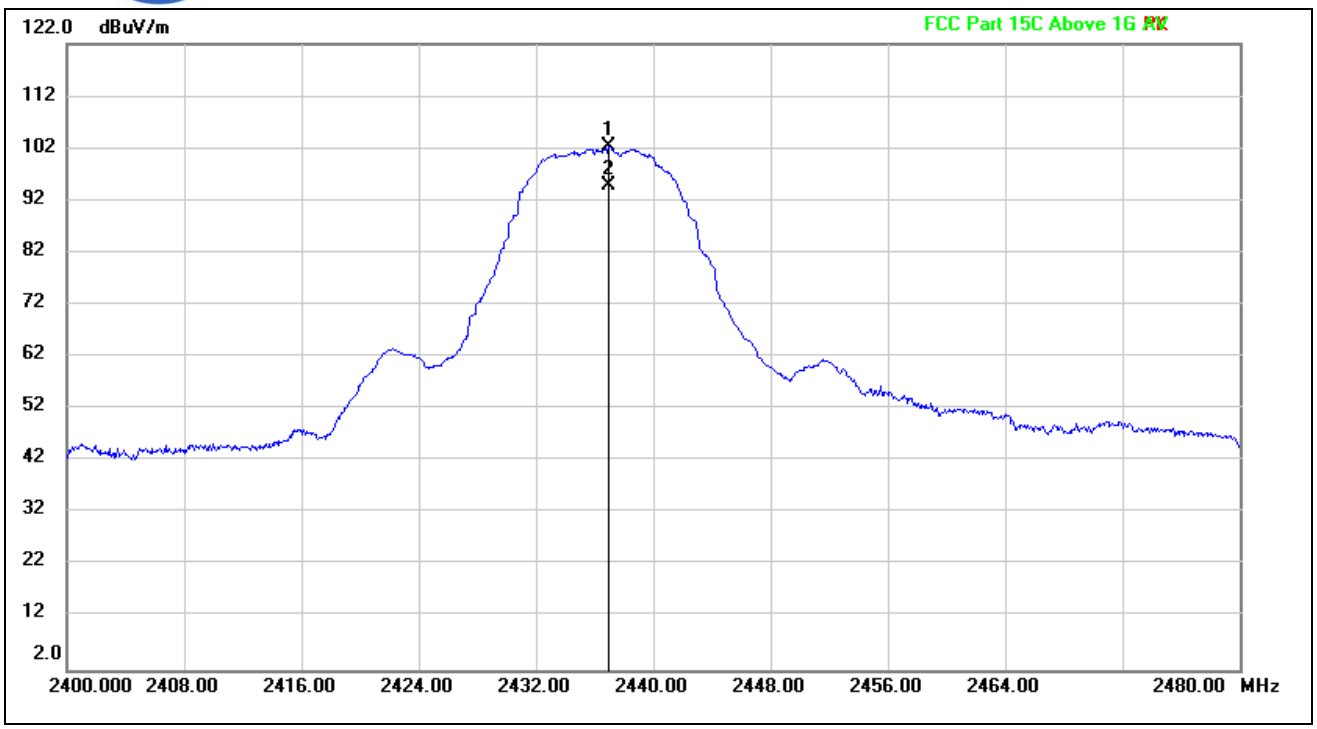
(802.11b _2412MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2366.500	11.35	30.14	41.49	74.00	-32.51	peak	V
2366.500	1.73	30.14	31.87	54.00	-22.13	AVG	V
2398.250	12.88	31.57	44.45	74.00	-29.55	peak	V
2398.250	1.60	31.57	33.17	54.00	-20.83	AVG	V
2410.125	68.97	31.17	100.14	--	--	peak	V
2410.125	62.00	31.17	93.17	--	--	AVG	V



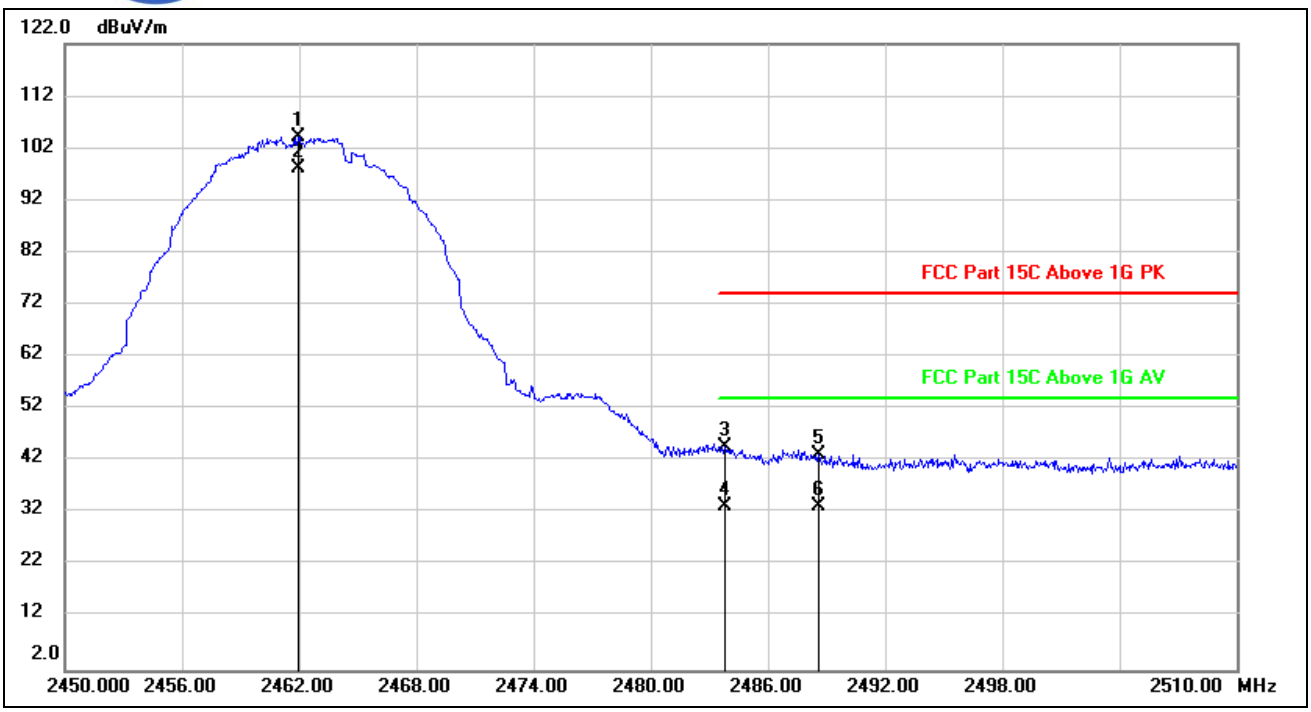
(802.11b _2437MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2437.040	71.09	30.76	101.85	--	--	peak	H
2437.040	63.55	30.76	94.31	--	--	AVG	H



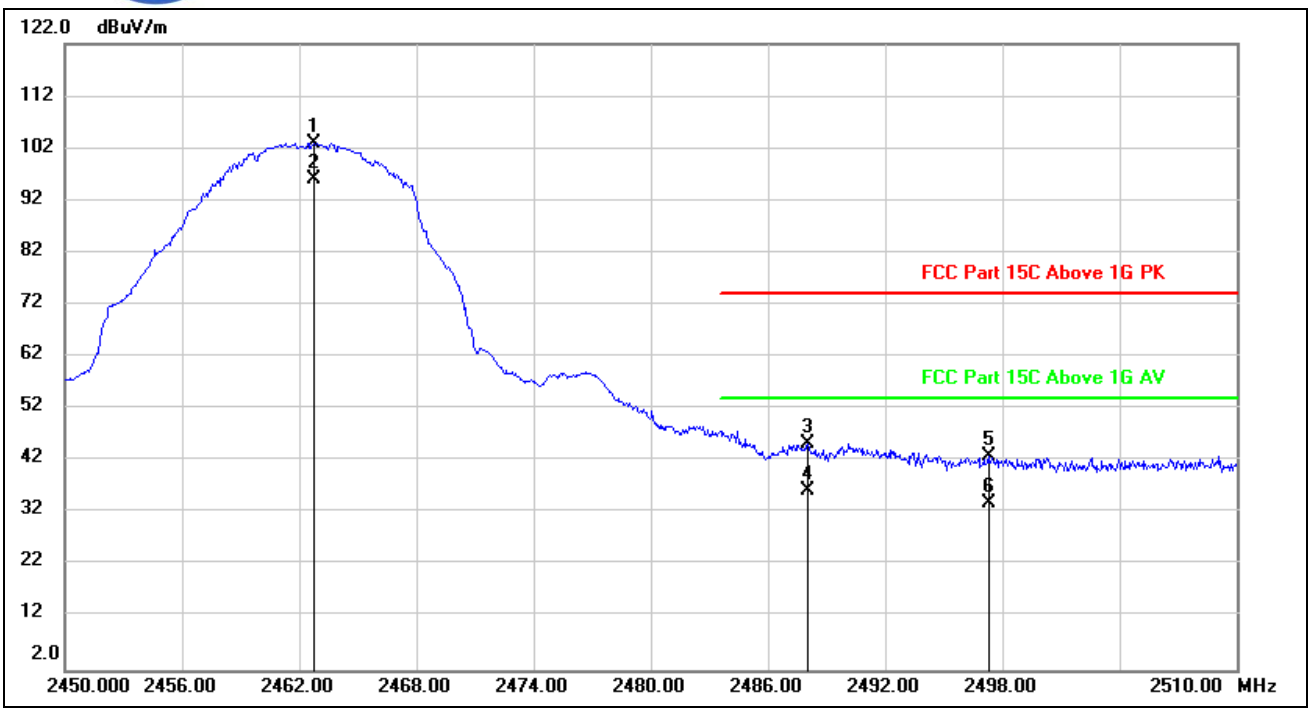
(802.11b _2437MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2436.960	71.46	30.76	102.22	--	--	peak	V
2436.960	63.99	30.76	94.75	--	--	AVG	V



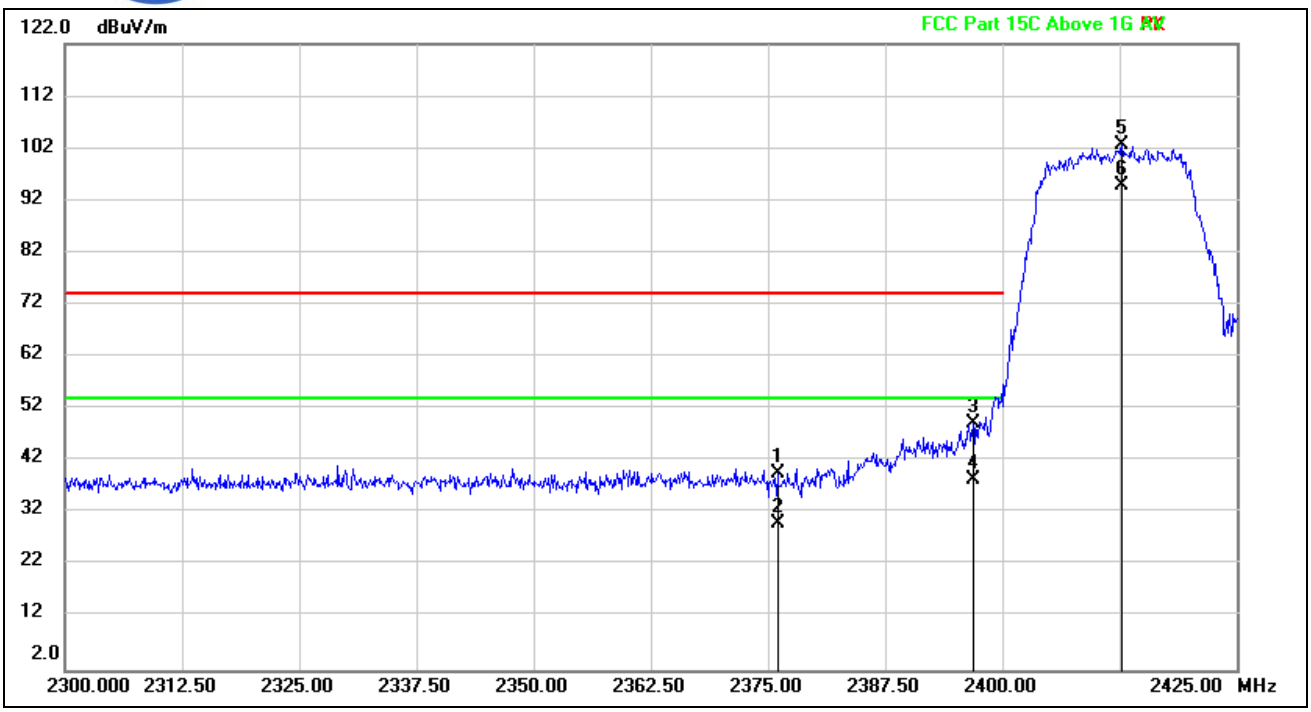
(802.11b _2462MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2461.940	73.02	31.01	104.03	--	--	peak	H
2461.940	67.00	31.01	98.01	--	--	AVG	H
2483.780	13.53	31.17	44.70	74.00	-29.30	peak	H
2483.780	2.17	31.17	33.34	54.00	-20.66	AVG	H
2488.580	12.13	31.20	43.33	74.00	-30.67	peak	H
2488.580	2.01	31.20	33.21	54.00	-20.79	AVG	H



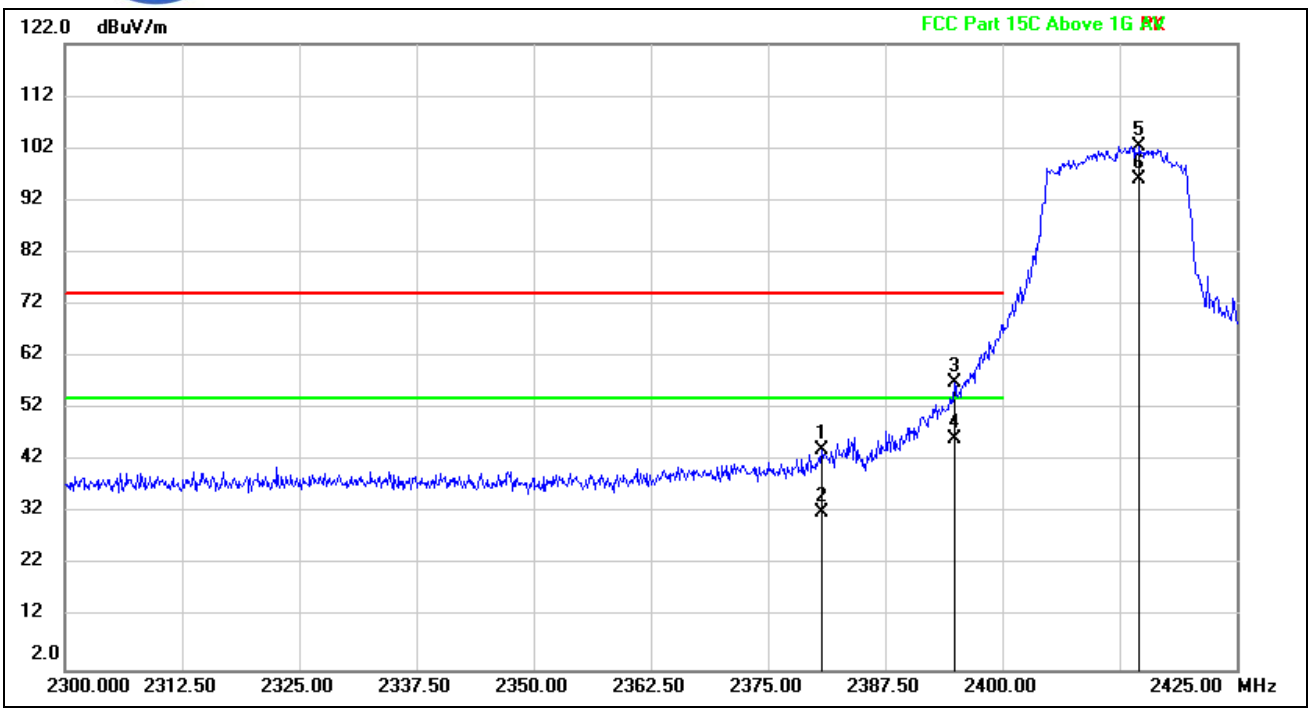
(802.11b _2462MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2462.780	72.06	31.02	103.08	--	--	peak	V
2462.780	65.09	31.02	96.11	--	--	AVG	V
2488.040	14.21	31.20	45.41	74.00	-28.59	peak	V
2488.040	5.07	31.20	36.27	54.00	-17.73	AVG	V
2497.280	11.58	31.26	42.84	74.00	-31.16	peak	V
2497.280	2.68	31.26	33.94	54.00	-20.06	AVG	V



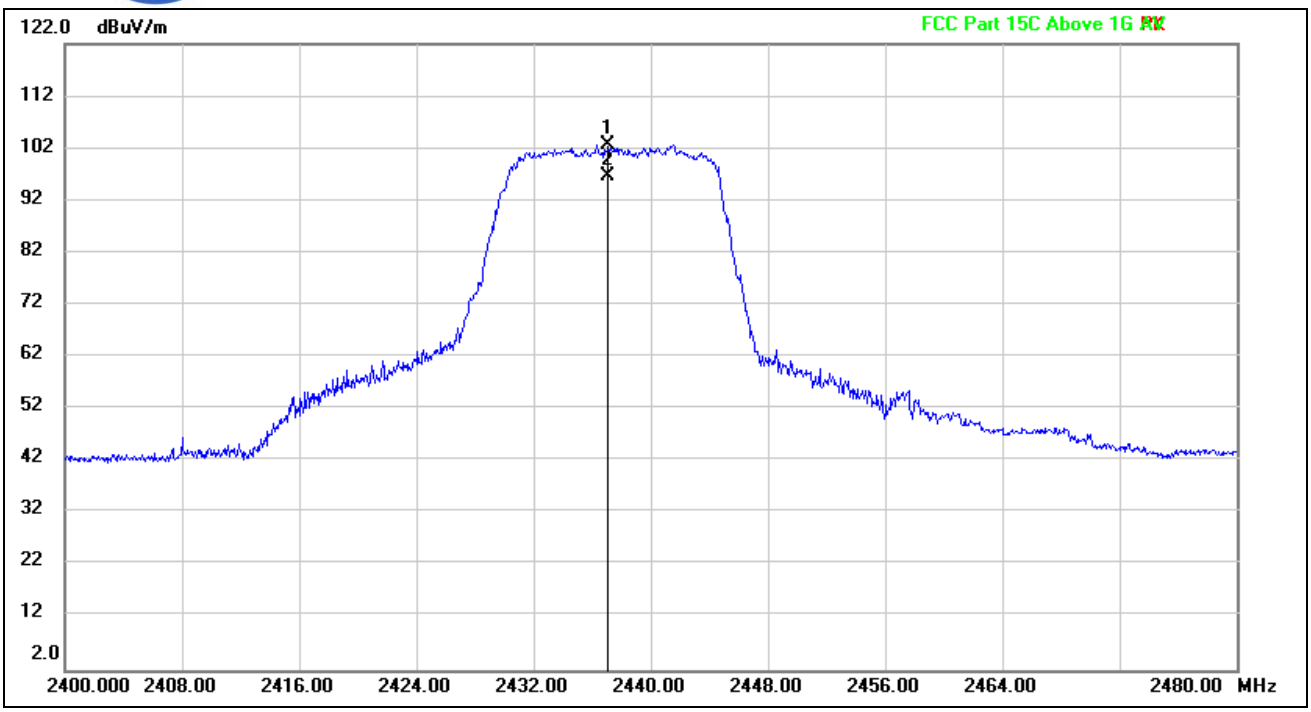
(802.11g _2412MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2376.000	9.34	30.20	39.54	74.00	-34.46	peak	H
2376.000	-0.12	30.20	30.08	54.00	-23.92	AVG	H
2396.875	17.83	31.47	49.30	74.00	-24.70	peak	H
2396.875	7.11	31.47	38.58	54.00	-15.42	AVG	H
2412.750	71.53	31.03	102.56	--	--	peak	H
2412.750	63.76	31.03	94.79	--	--	AVG	H



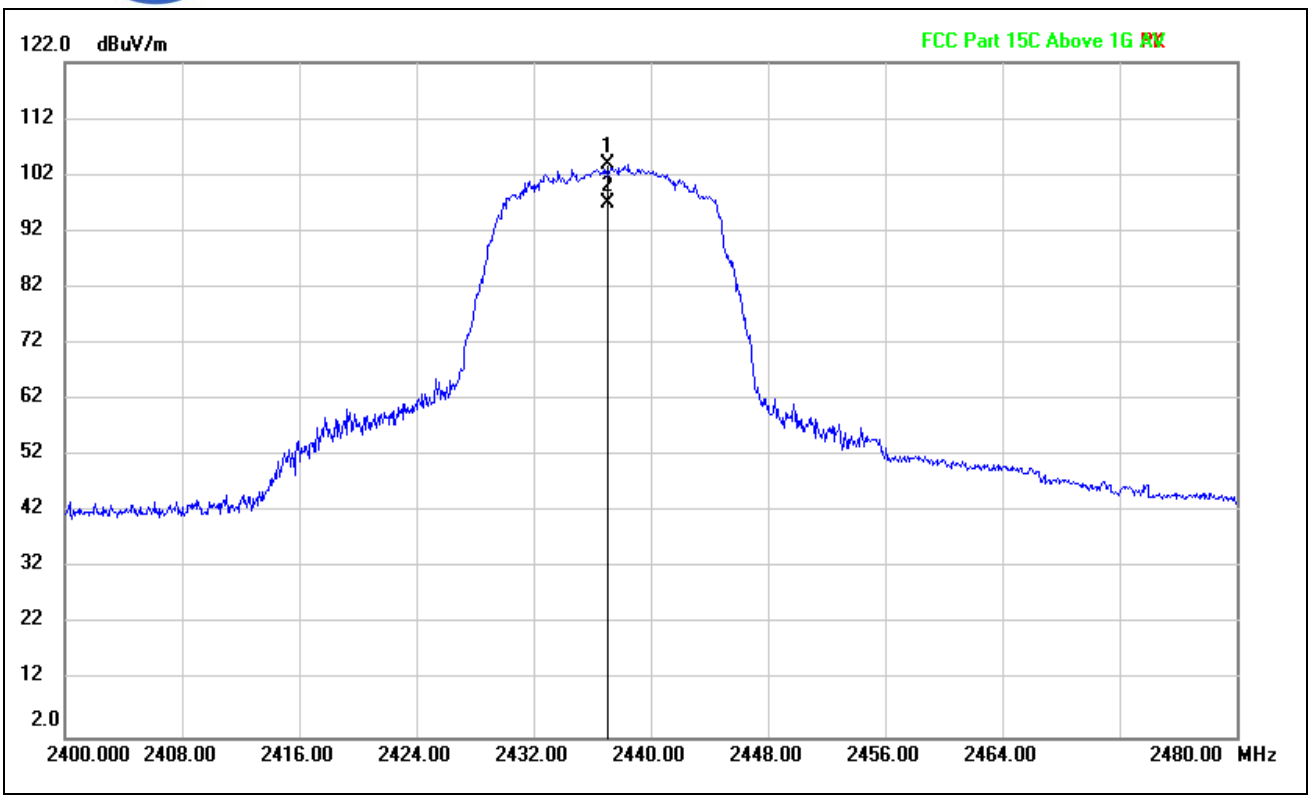
(802.11g _2412MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2380.750	13.77	30.28	44.05	74.00	-29.95	peak	V
2380.750	1.79	30.28	32.07	54.00	-21.93	AVG	V
2394.875	25.78	31.32	57.10	74.00	-16.90	peak	V
2394.875	15.08	31.32	46.40	54.00	-7.60	AVG	V
2414.625	71.45	30.93	102.38	--	--	peak	V
2414.625	65.20	30.93	96.13	--	--	AVG	V



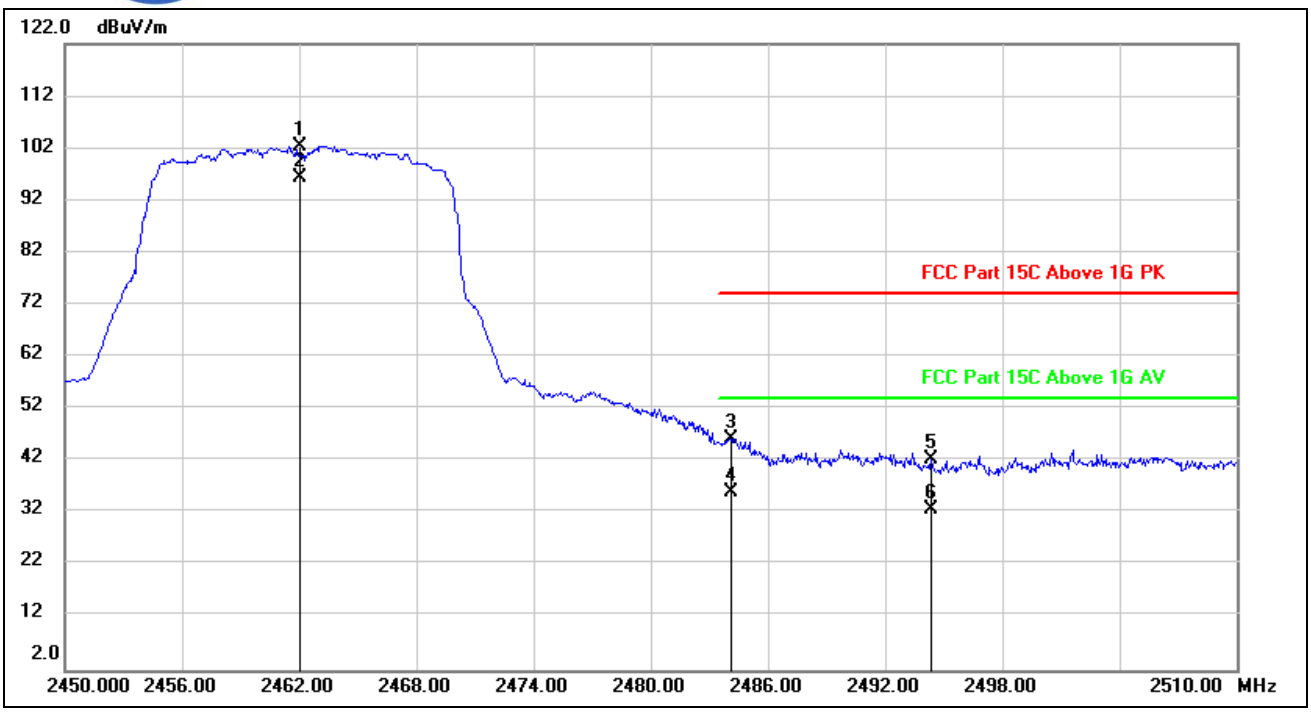
(802.11g _2437MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2437.000	71.75	30.76	102.51	--	--	peak	H
2437.000	65.99	30.76	96.75	--	--	AVG	H



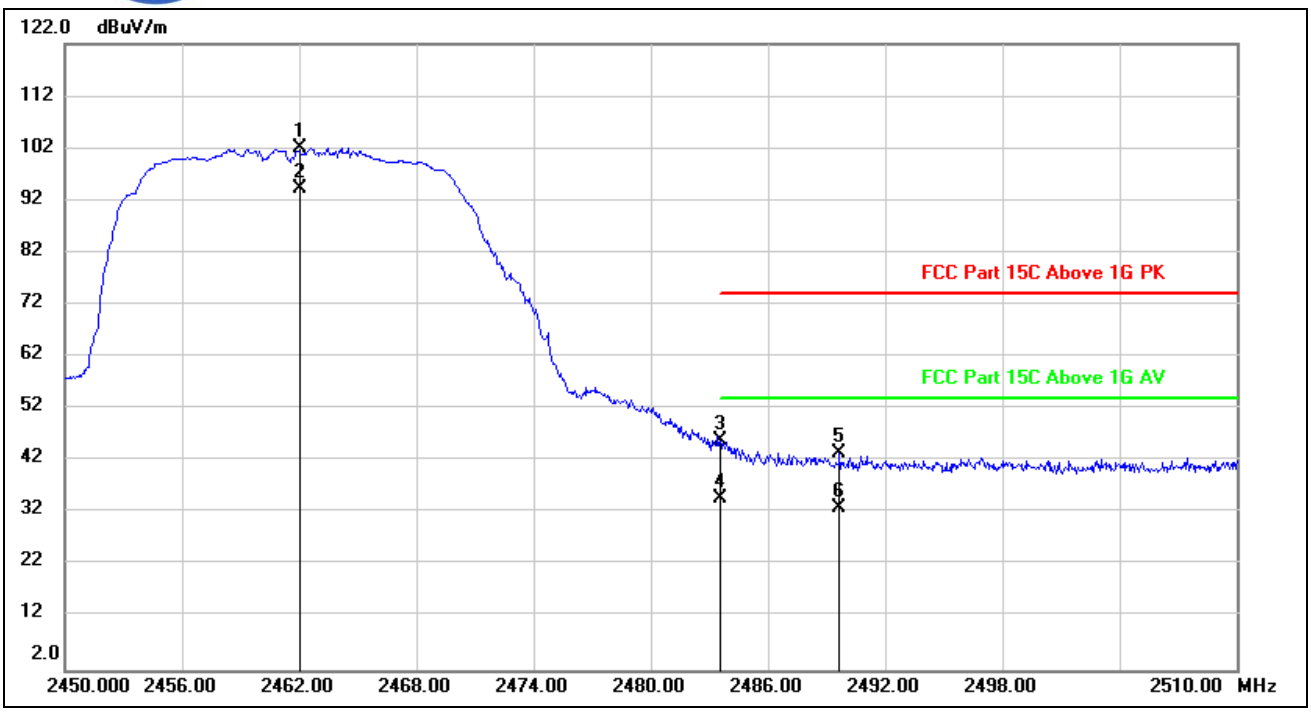
(802.11g _2437MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2437.000	73.01	30.76	103.77	--	--	peak	V
2437.000	66.09	30.76	96.85	--	--	AVG	V



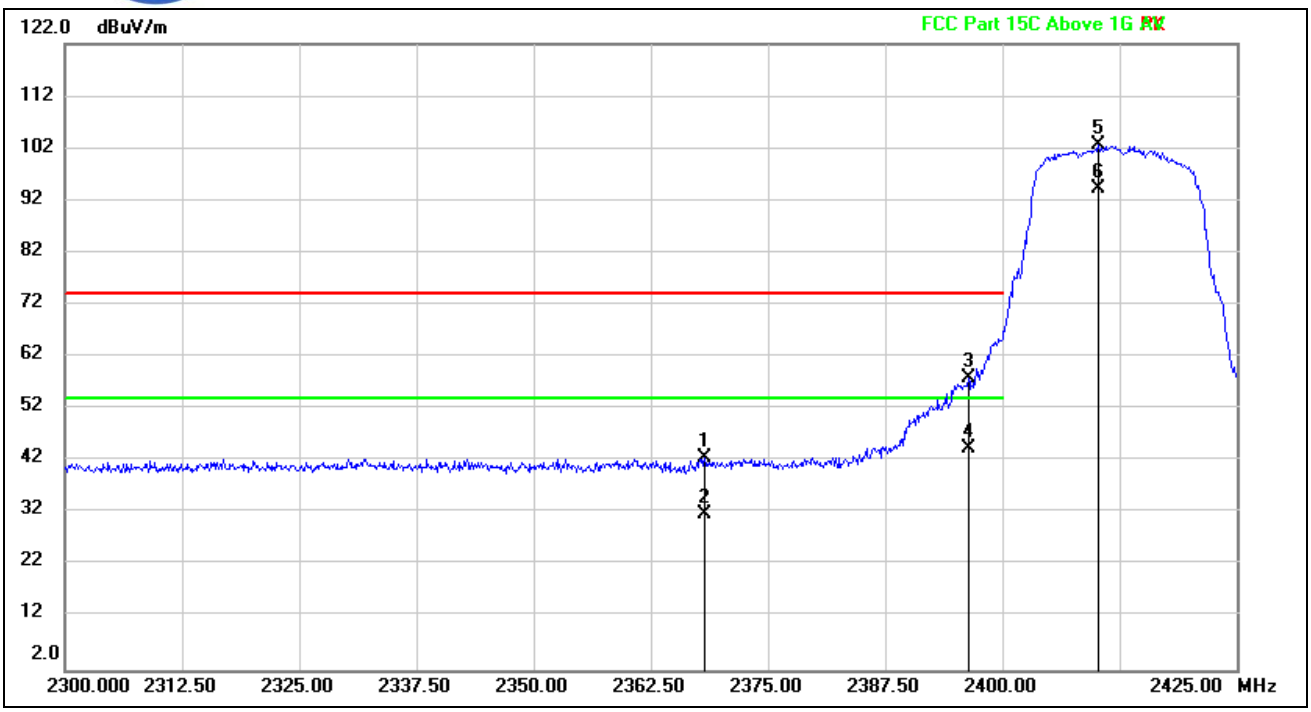
(802.11g _2462MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2462.000	71.33	31.01	102.34	--	--	peak	H
2462.000	65.20	31.01	96.21	--	--	AVG	H
2484.140	15.14	31.17	46.31	74.00	-27.69	peak	H
2484.140	4.89	31.17	36.06	54.00	-17.94	AVG	H
2494.340	11.04	31.24	42.28	74.00	-31.72	peak	H
2494.340	1.37	31.24	32.61	54.00	-21.39	AVG	H



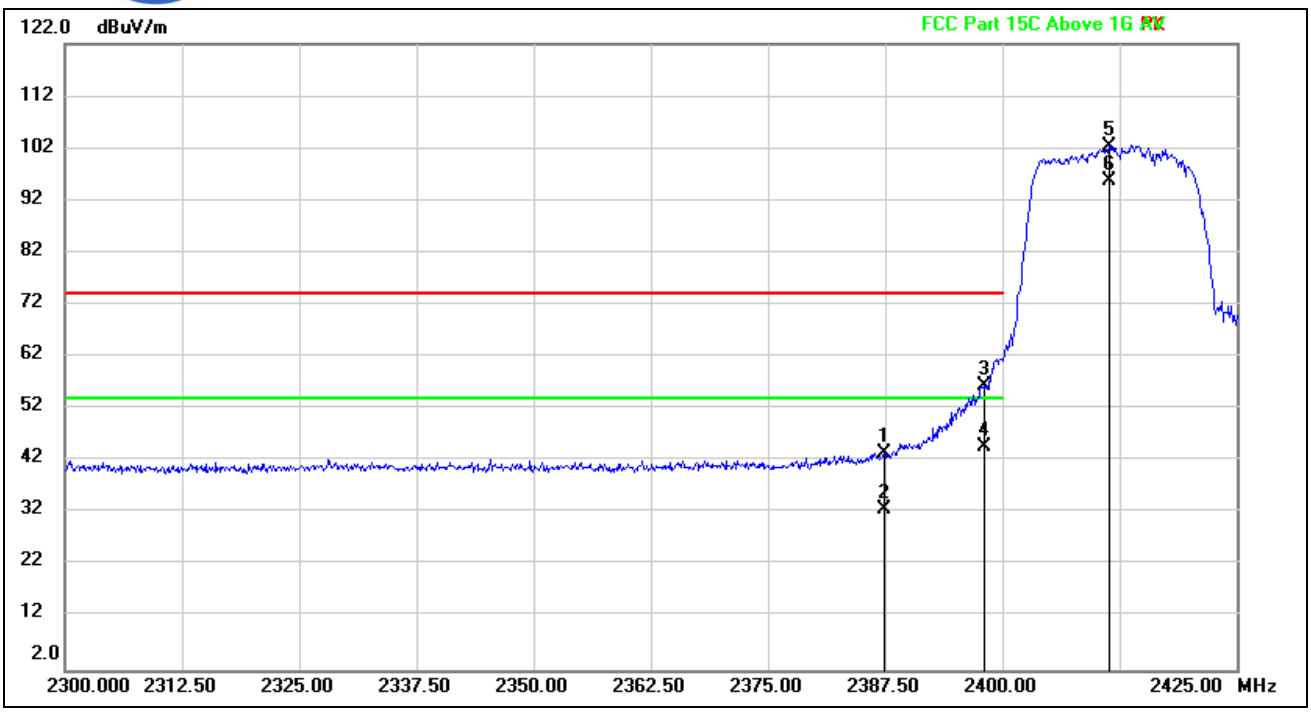
(802.11g _2462MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2462.000	70.95	31.01	101.96	--	--	peak	V
2462.000	63.20	31.01	94.21	--	--	AVG	V
2483.540	14.92	31.16	46.08	74.00	-27.92	peak	V
2483.540	3.77	31.16	34.93	54.00	-19.07	AVG	V
2489.660	12.22	31.21	43.43	74.00	-30.57	peak	V
2489.660	1.95	31.21	33.16	54.00	-20.84	AVG	V



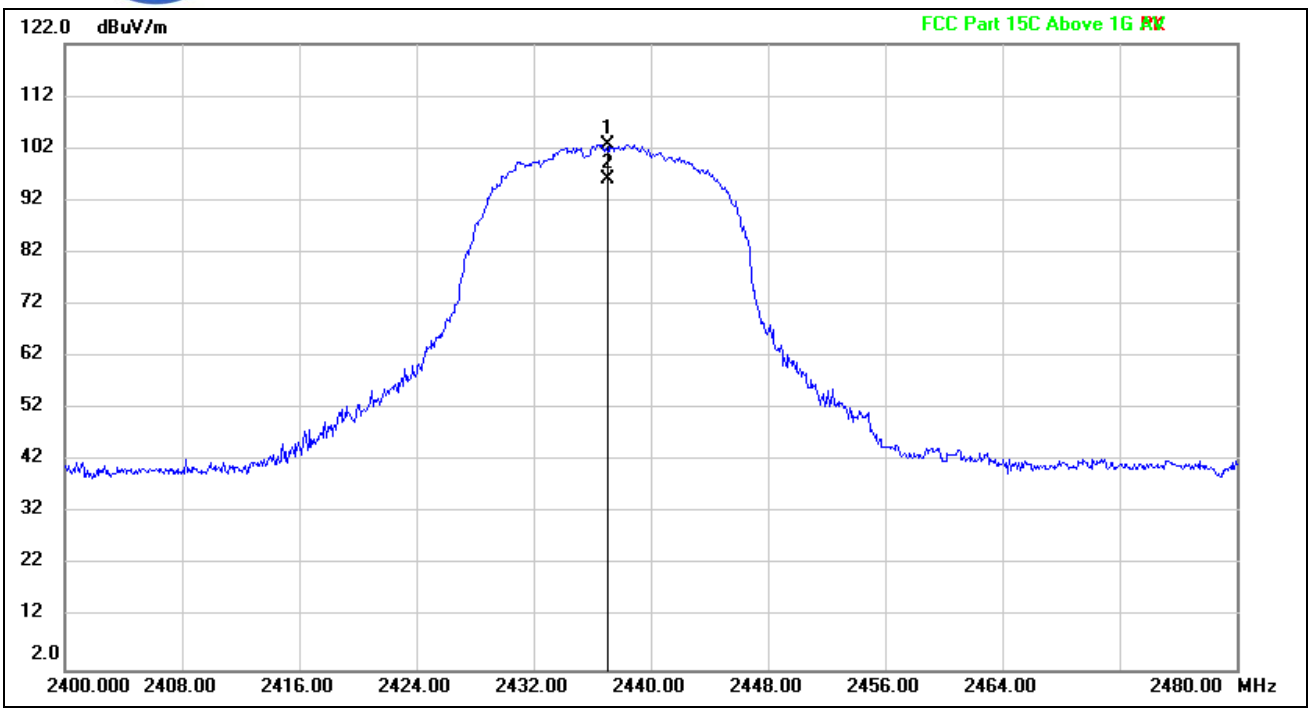
(802.11n20 _2412MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2368.250	12.60	30.15	42.75	74.00	-31.25	peak	H
2368.250	1.56	30.15	31.71	54.00	-22.29	AVG	H
2396.375	26.47	31.43	57.90	74.00	-16.10	peak	H
2396.375	13.00	31.43	44.43	54.00	-9.57	AVG	H
2410.250	71.45	31.16	102.61	--	--	peak	H
2410.250	63.08	31.16	94.24	--	--	AVG	H



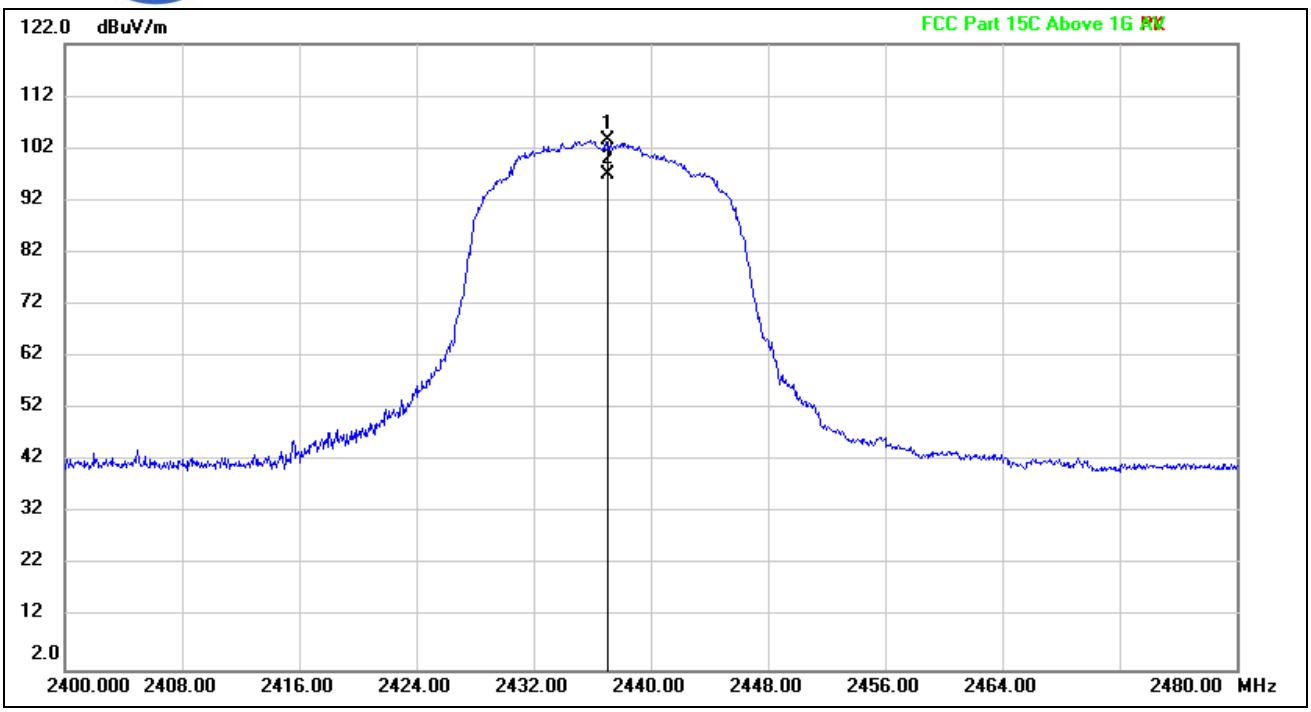
(802.11n20 _2412MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2387.375	12.79	30.77	43.56	74.00	-30.44	peak	V
2387.375	1.88	30.77	32.65	54.00	-21.35	AVG	V
2398.125	24.92	31.56	56.48	74.00	-17.52	peak	V
2398.125	13.07	31.56	44.63	54.00	-9.37	AVG	V
2411.375	71.17	31.10	102.27	--	--	peak	V
2411.375	64.71	31.10	95.81	--	--	AVG	V



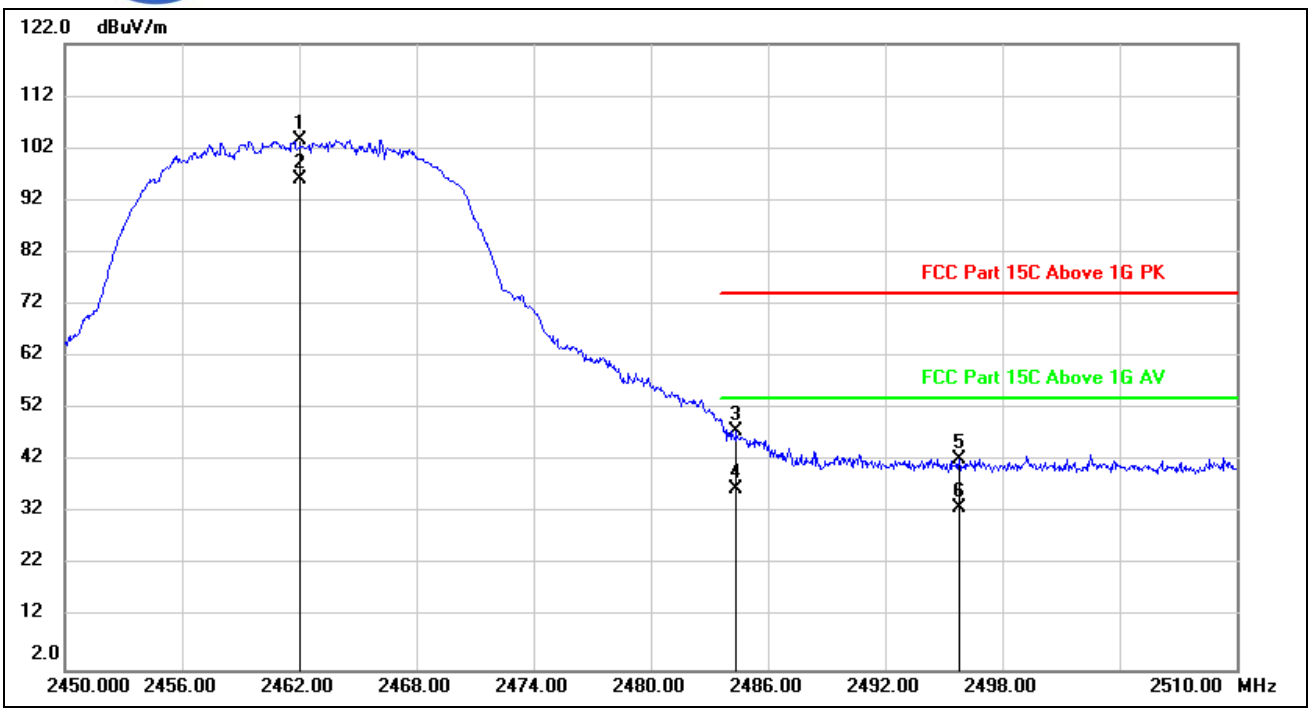
(802.11n20_2437MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2437.000	72.01	30.76	102.77	--	--	peak	H
2437.000	65.30	30.76	96.06	--	--	AVG	H



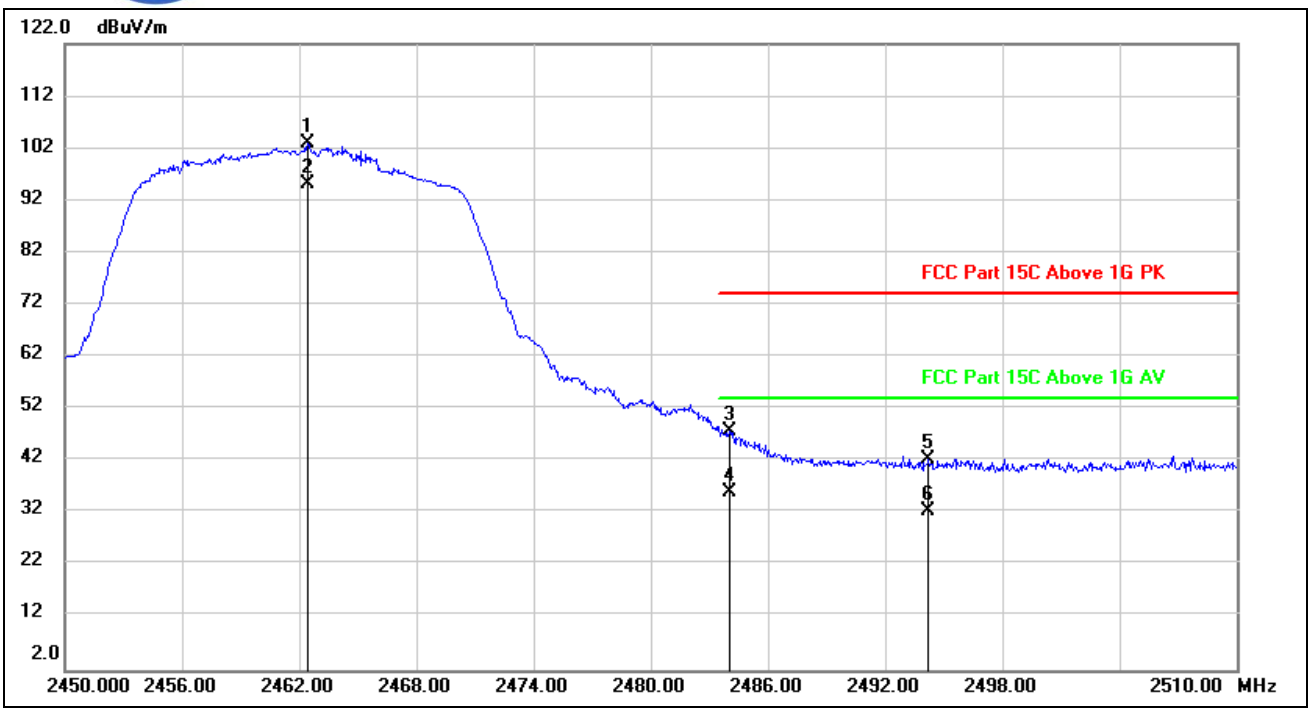
(802.11n20 _2437MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2437.000	72.69	30.76	103.45	--	--	peak	V
2437.000	66.20	30.76	96.96	--	--	AVG	V



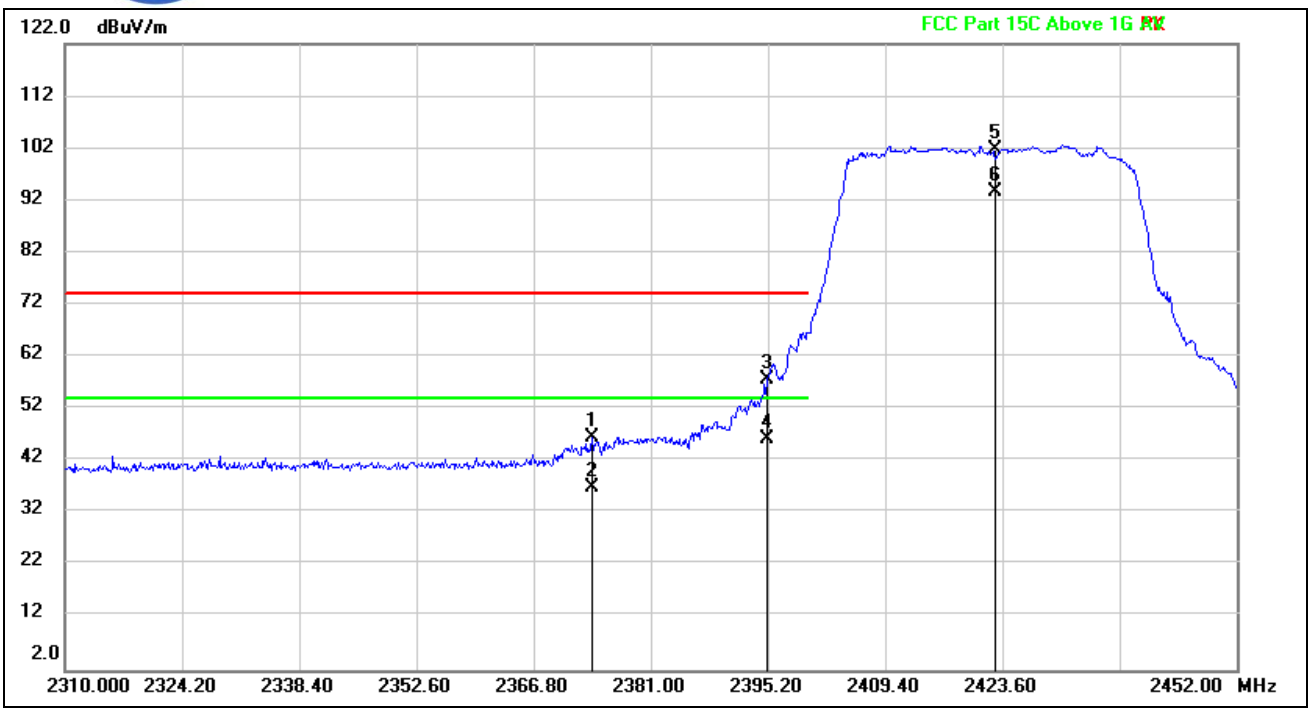
(802.11n20 _2462MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2462.000	72.47	31.01	103.48	--	--	peak	H
2462.000	65.00	31.01	96.01	--	--	AVG	H
2484.380	16.68	31.17	47.85	74.00	-26.15	peak	H
2484.380	5.37	31.17	36.54	54.00	-17.46	AVG	H
2495.780	11.19	31.25	42.44	74.00	-31.56	peak	H
2495.780	1.72	31.25	32.97	54.00	-21.03	AVG	H



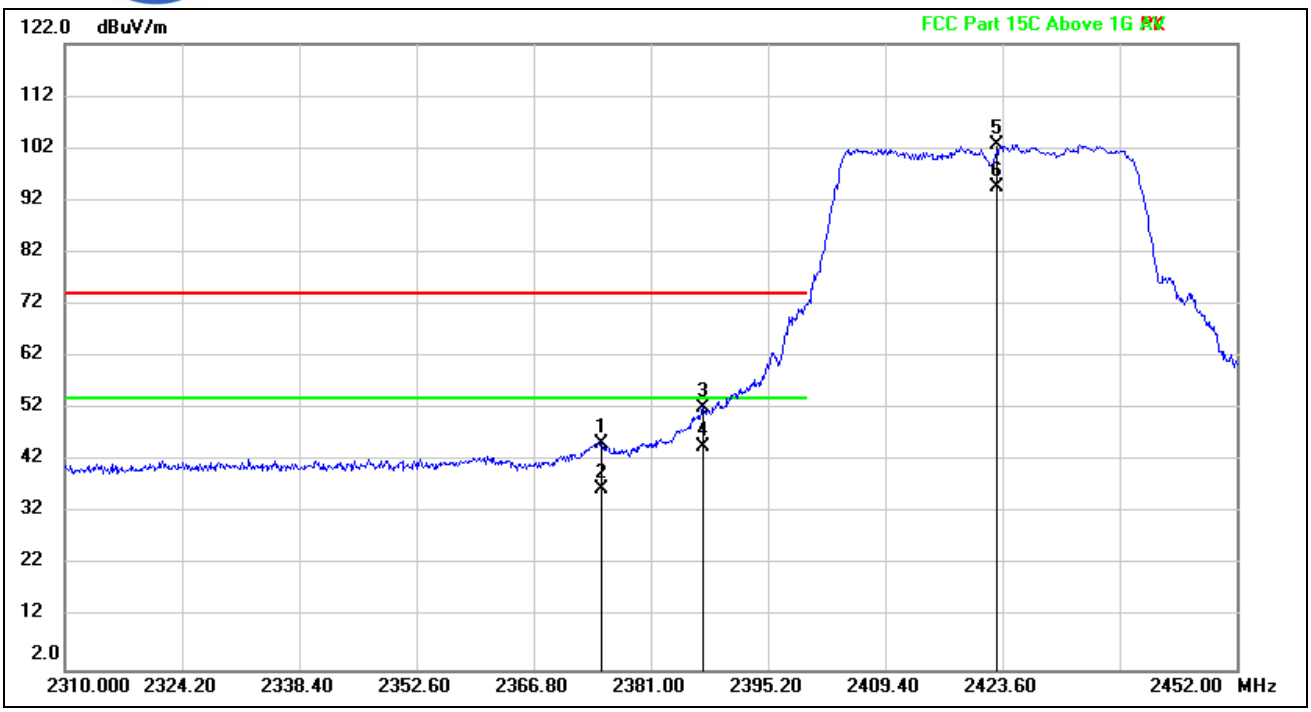
(802.11n20 _2462MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2462.420	71.84	31.02	102.86	--	--	peak	V
2462.420	64.01	31.02	95.03	--	--	AVG	V
2484.020	16.45	31.17	47.62	74.00	-26.38	peak	V
2484.020	4.98	31.17	36.15	54.00	-17.85	AVG	V
2494.220	11.17	31.24	42.41	74.00	-31.59	peak	V
2494.220	1.19	31.24	32.43	54.00	-21.57	AVG	V



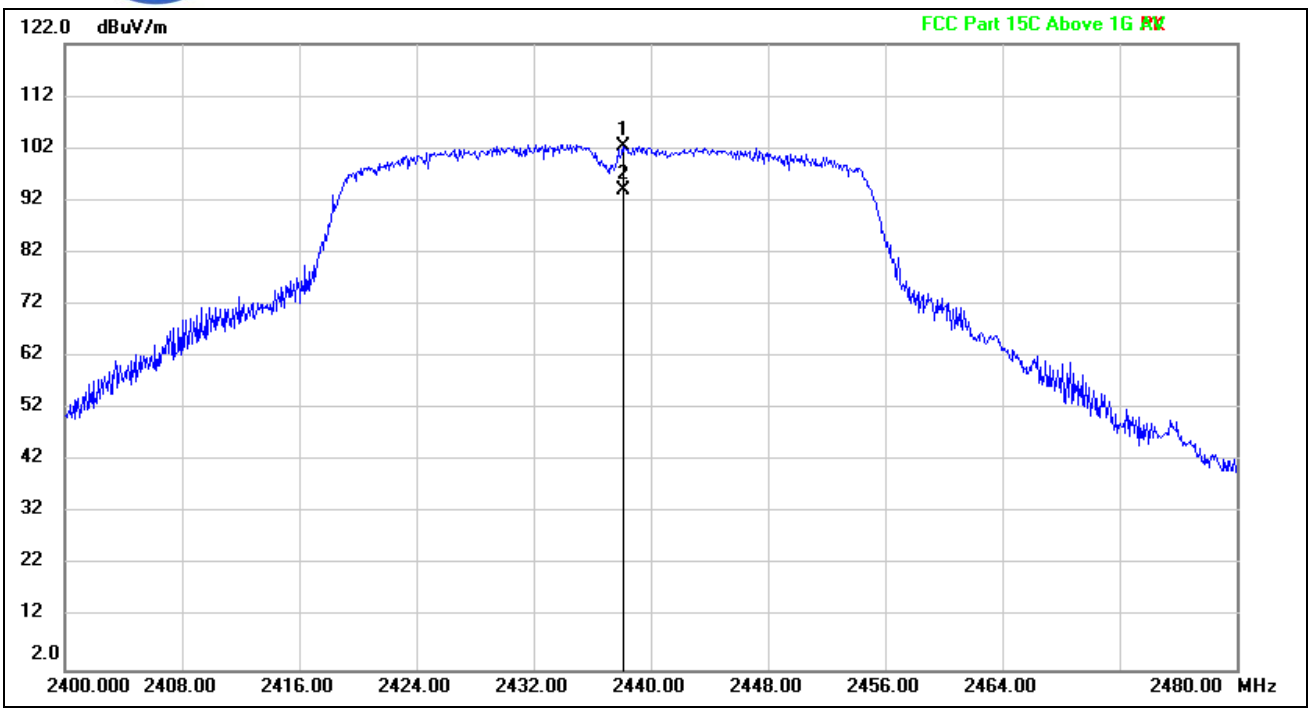
(802.11n40 _2422MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2373.900	16.45	30.18	46.63	74.00	-27.37	peak	H
2373.900	6.77	30.18	36.95	54.00	-17.05	AVG	H
2395.058	26.41	31.33	57.74	74.00	-16.26	peak	H
2395.058	15.01	31.33	46.34	54.00	-7.66	AVG	H
2422.742	71.08	30.67	101.75	--	--	peak	H
2422.742	63.09	30.67	93.76	--	--	AVG	H



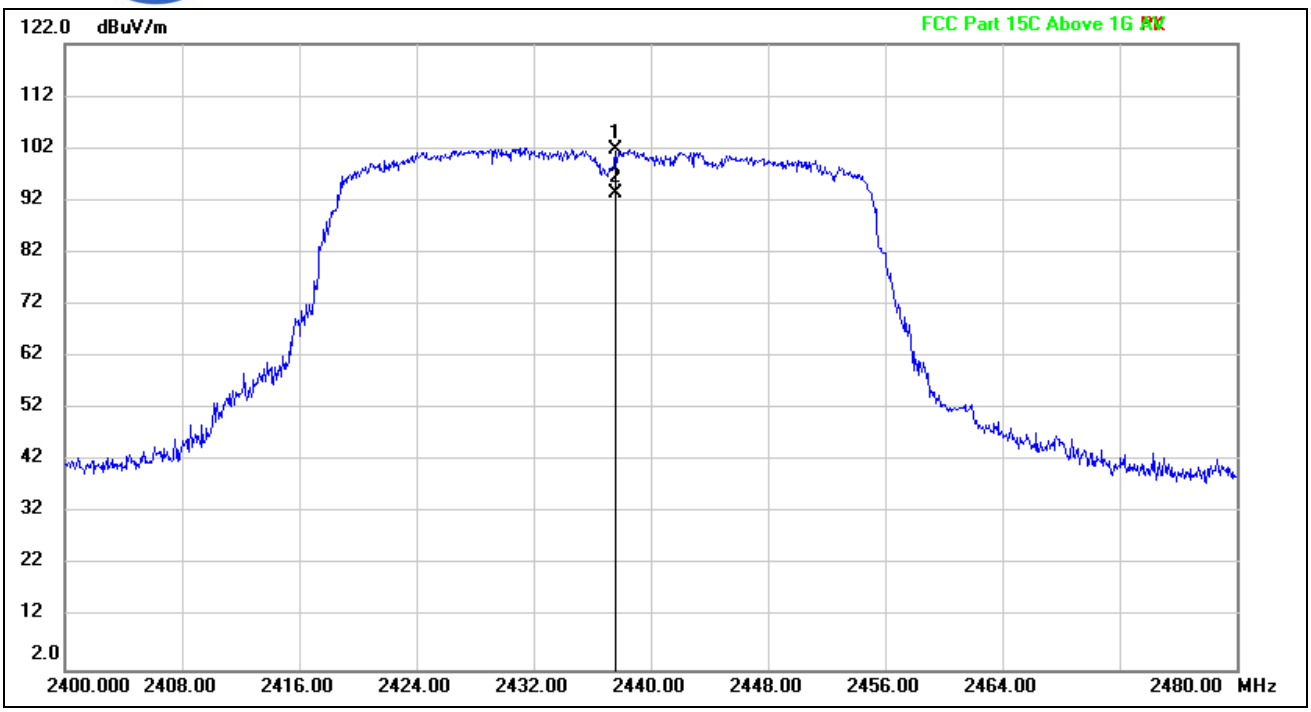
(802.11n40 _2422MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2375.036	15.18	30.19	45.37	74.00	-28.63	peak	V
2375.036	6.33	30.19	36.52	54.00	-17.48	AVG	V
2387.248	21.58	30.76	52.34	74.00	-21.66	peak	V
2387.248	14.00	30.76	44.76	54.00	-9.24	AVG	V
2422.878	71.97	30.67	102.64	--	--	peak	V
2422.878	63.90	30.67	94.57	--	--	AVG	V



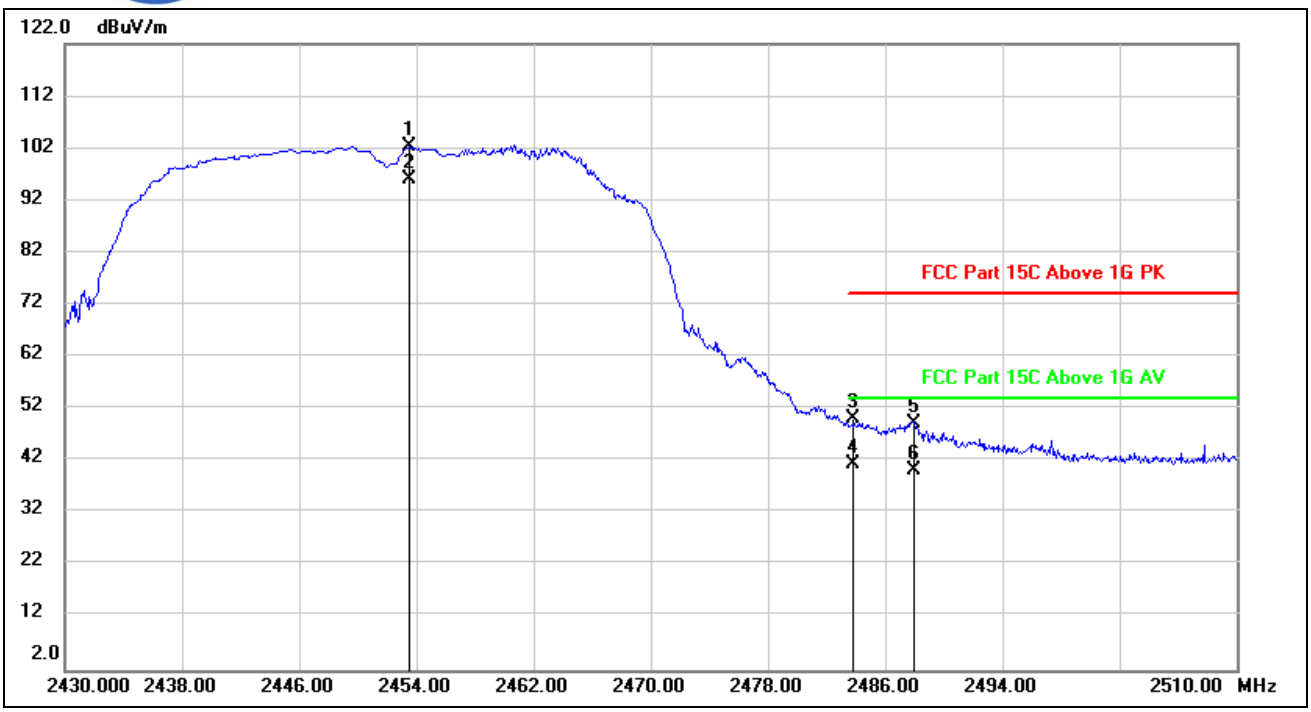
(802.11n40_2437MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2438.080	71.62	30.77	102.39	--	--	peak	H
2438.080	63.30	30.77	94.07	--	--	AVG	H



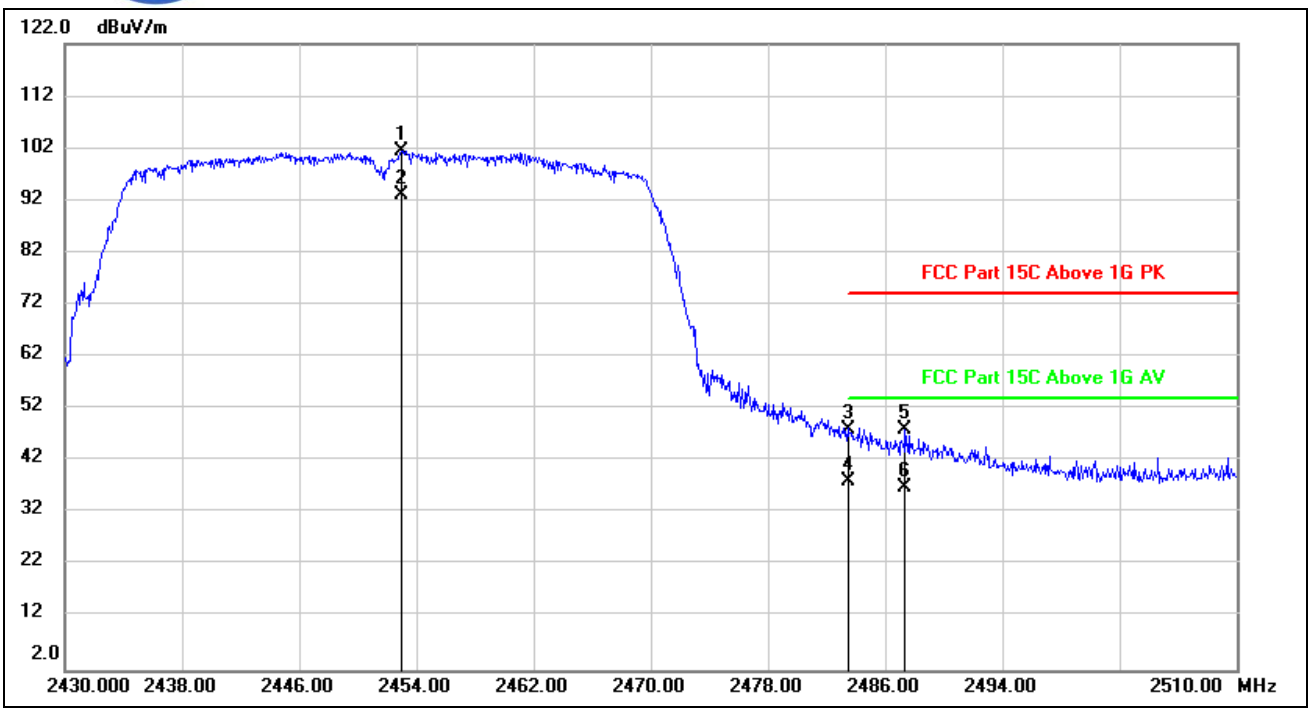
(802.11n40 _2437MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2437.560	70.89	30.76	101.65	--	--	peak	V
2437.560	62.65	30.76	93.41	--	--	AVG	V



(802.11n40 _2452MHz, Antenna Horizontal)

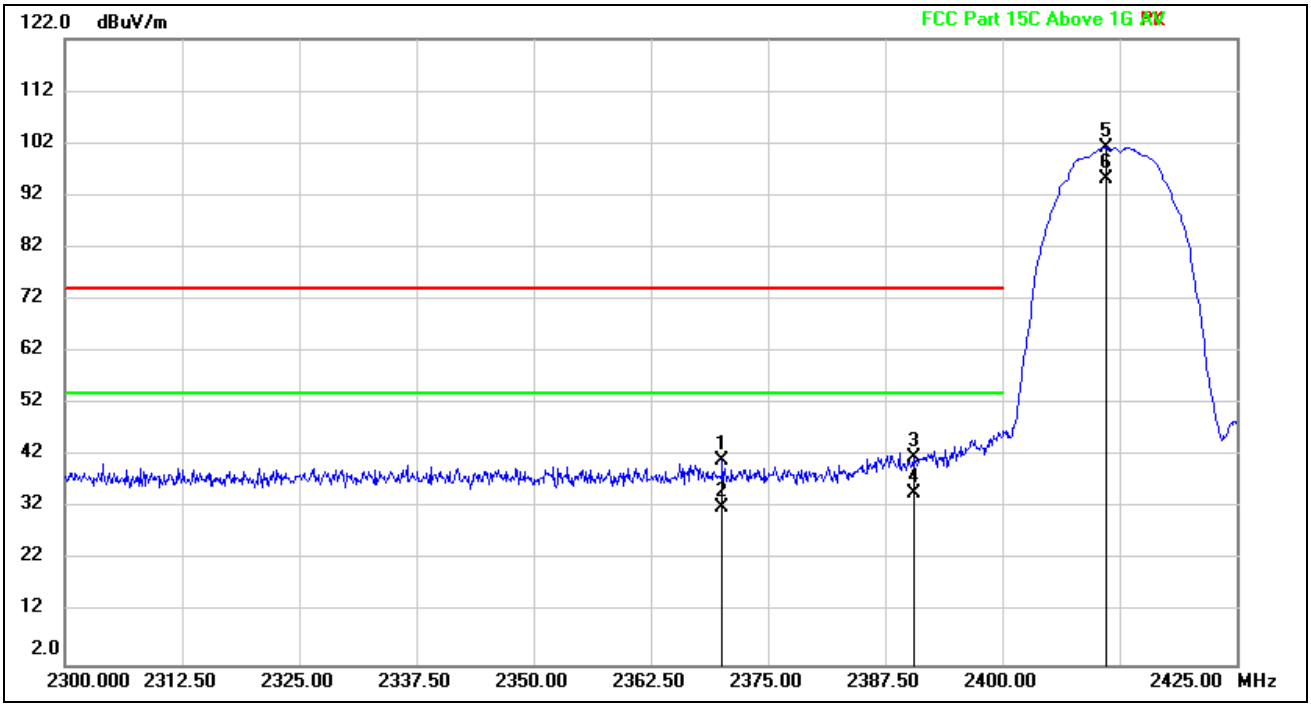
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2453.520	71.35	30.93	102.28	--	--	peak	H
2453.520	65.12	30.93	96.05	--	--	AVG	H
2483.720	19.03	31.17	50.20	74.00	-23.80	peak	H
2483.720	10.37	31.17	41.54	54.00	-12.46	AVG	H
2487.920	17.94	31.20	49.14	74.00	-24.86	peak	H
2487.920	8.90	31.20	40.10	54.00	-13.90	AVG	H



(802.11n40 _2452MHz, Antenna Vertical)

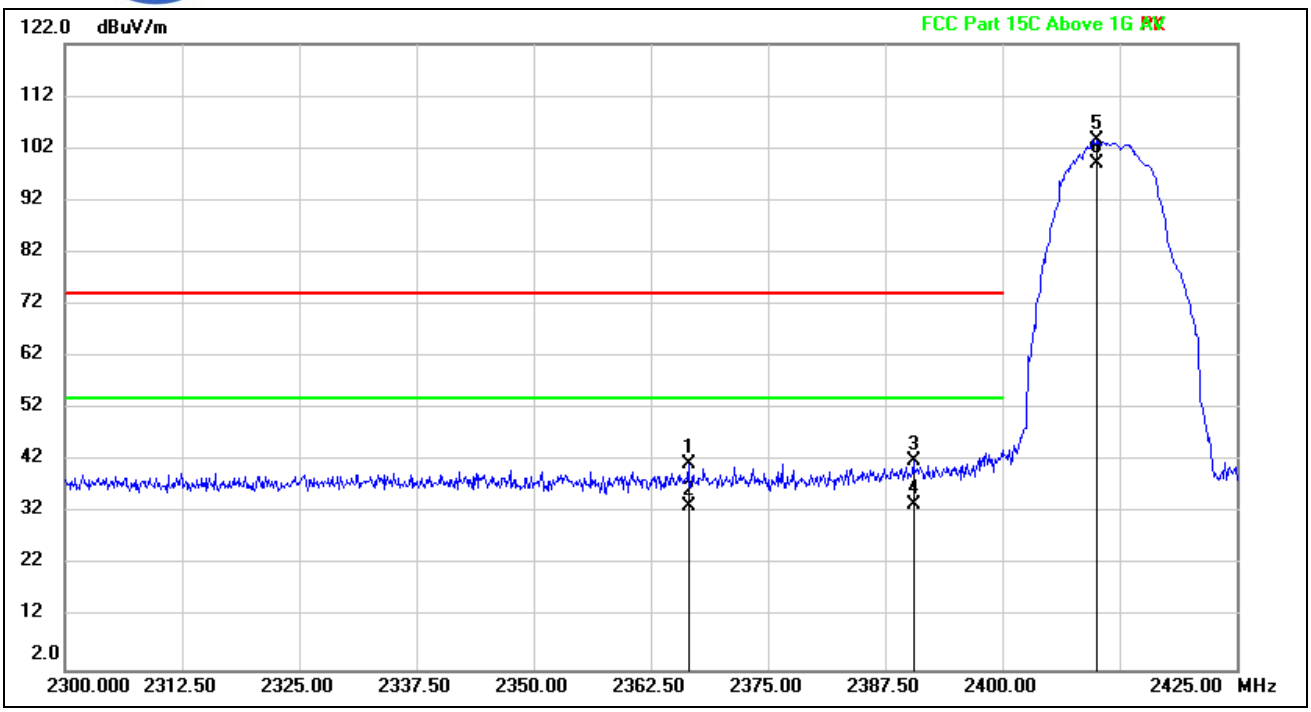
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2452.960	70.64	30.92	101.56	--	--	peak	V
2452.960	62.24	30.92	93.16	--	--	AVG	V
2483.500	17.01	31.16	48.17	74.00	-25.83	peak	V
2483.500	6.90	31.16	38.06	54.00	-15.94	AVG	V
2487.360	16.85	31.19	48.04	74.00	-25.96	peak	V
2487.360	5.77	31.19	36.96	54.00	-17.04	AVG	V

Mode 2: GSM 850 Link + WiFi Link



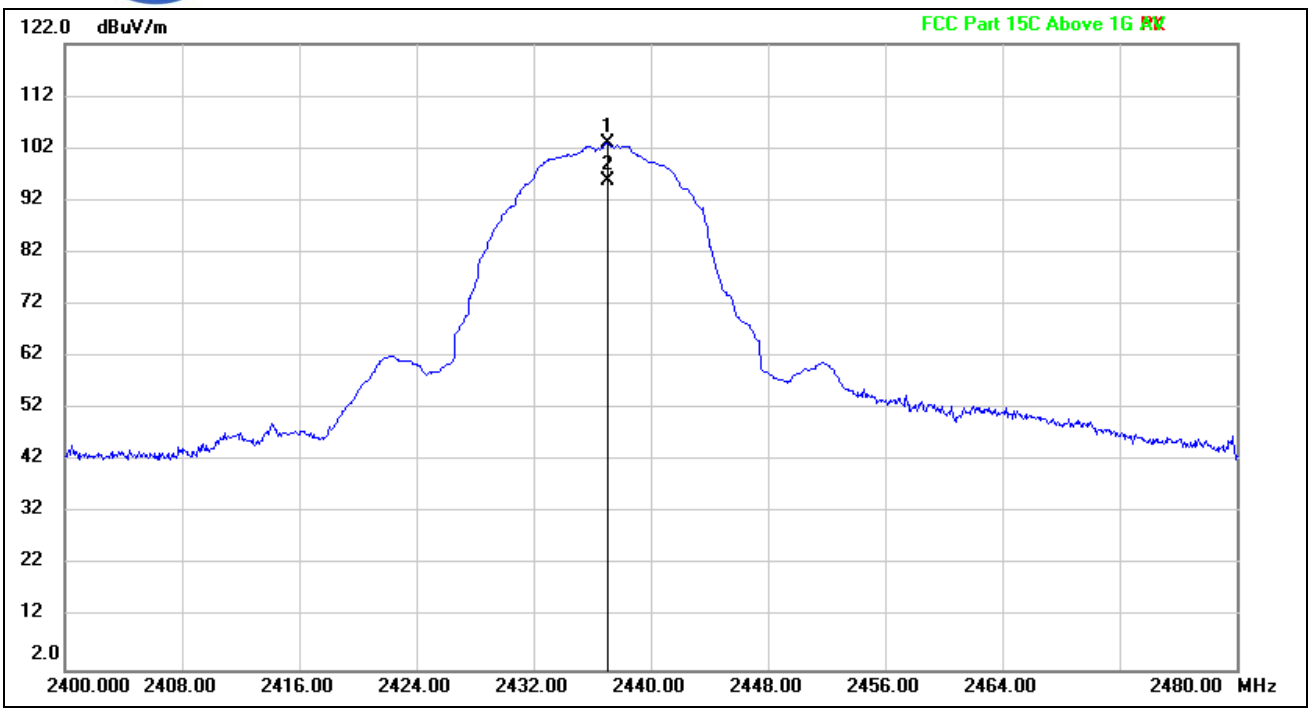
(802.11b _2412MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2370.125	11.02	30.16	41.18	74.00	-32.82	peak	H
2370.125	1.95	30.16	32.11	54.00	-21.89	AVG	H
2390.625	10.81	31.01	41.82	74.00	-32.18	peak	H
2390.625	0.29	31.01	31.30	54.00	-22.70	AVG	H
2411.000	70.18	31.12	101.30	--	--	peak	H
2411.000	64.04	31.12	95.16	--	--	AVG	H



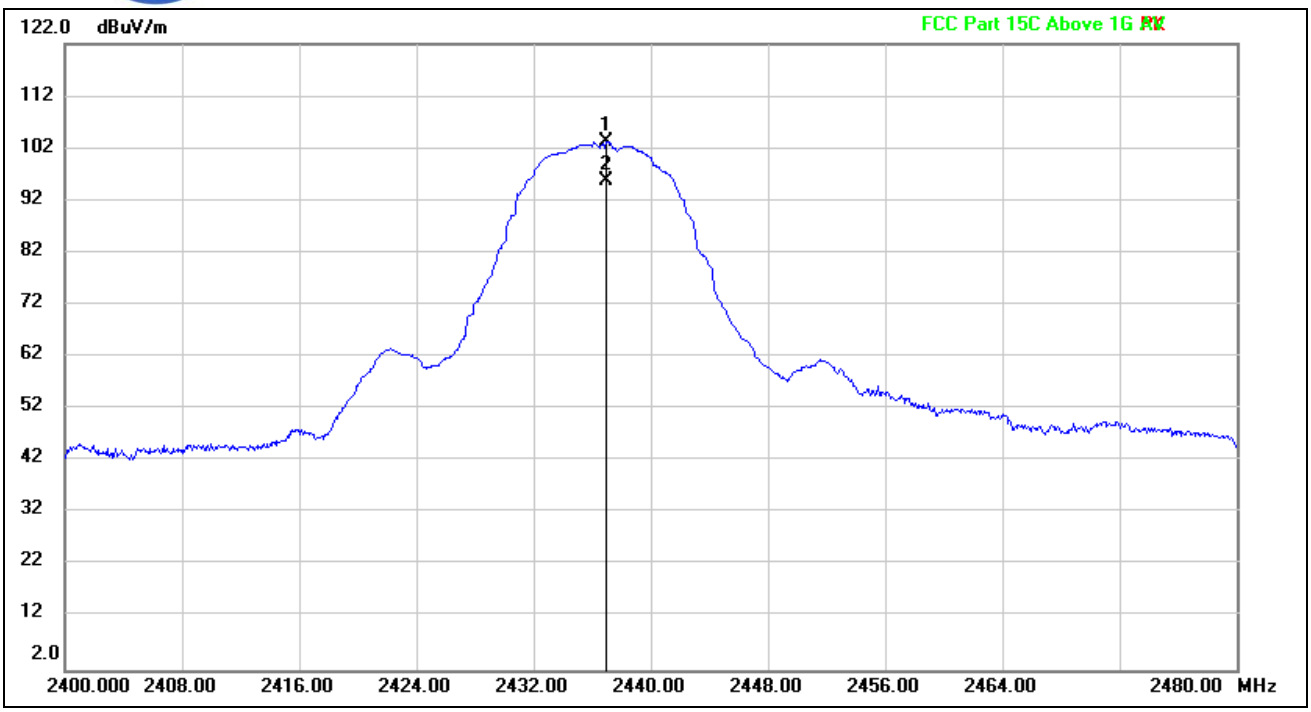
(802.11b _2412MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2366.500	11.35	30.14	41.49	74.00	-32.51	peak	V
2366.500	3.13	30.14	33.27	54.00	-20.73	AVG	V
2390.500	11.05	31.00	42.05	74.00	-31.95	peak	V
2390.500	2.75	31.00	33.75	54.00	-20.25	AVG	V
2410.125	72.47	31.17	103.64	--	--	peak	V
2410.125	67.89	31.17	99.06	--	--	AVG	V



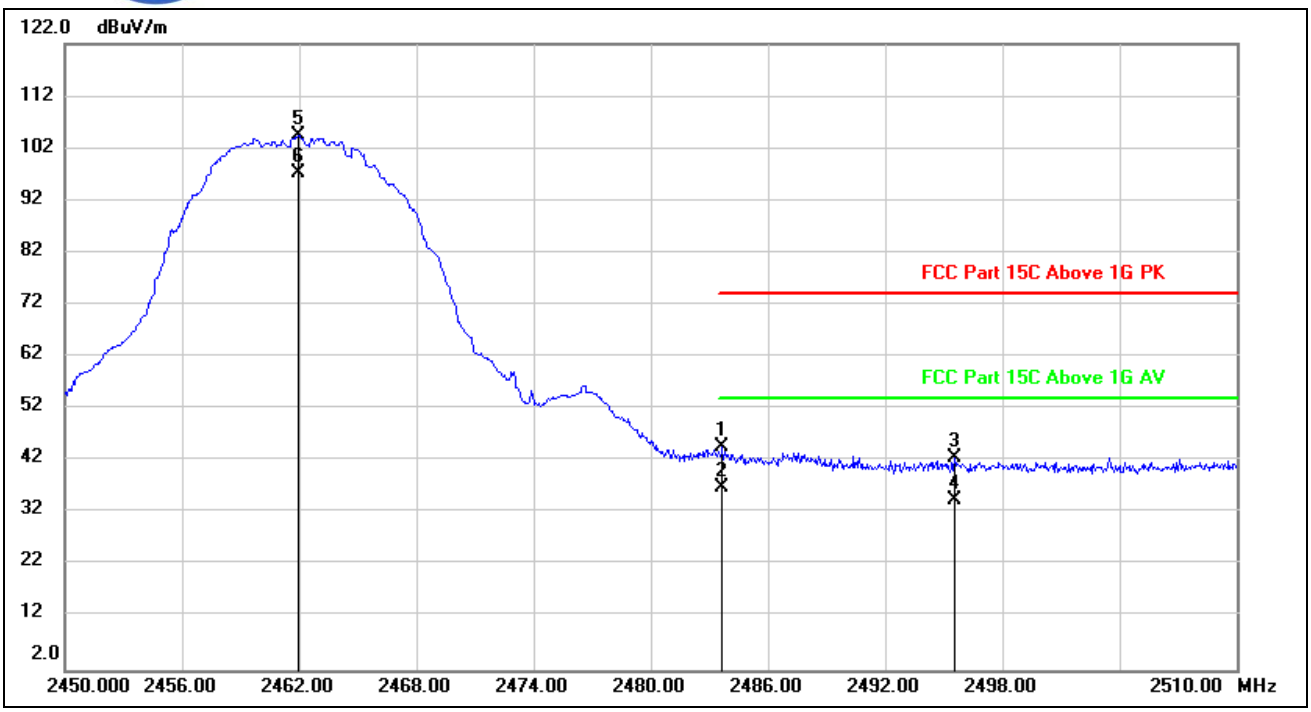
(802.11b _2437MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2437.040	72.09	30.76	102.85	--	--	peak	H
2437.040	64.90	30.76	95.66	--	--	AVG	H



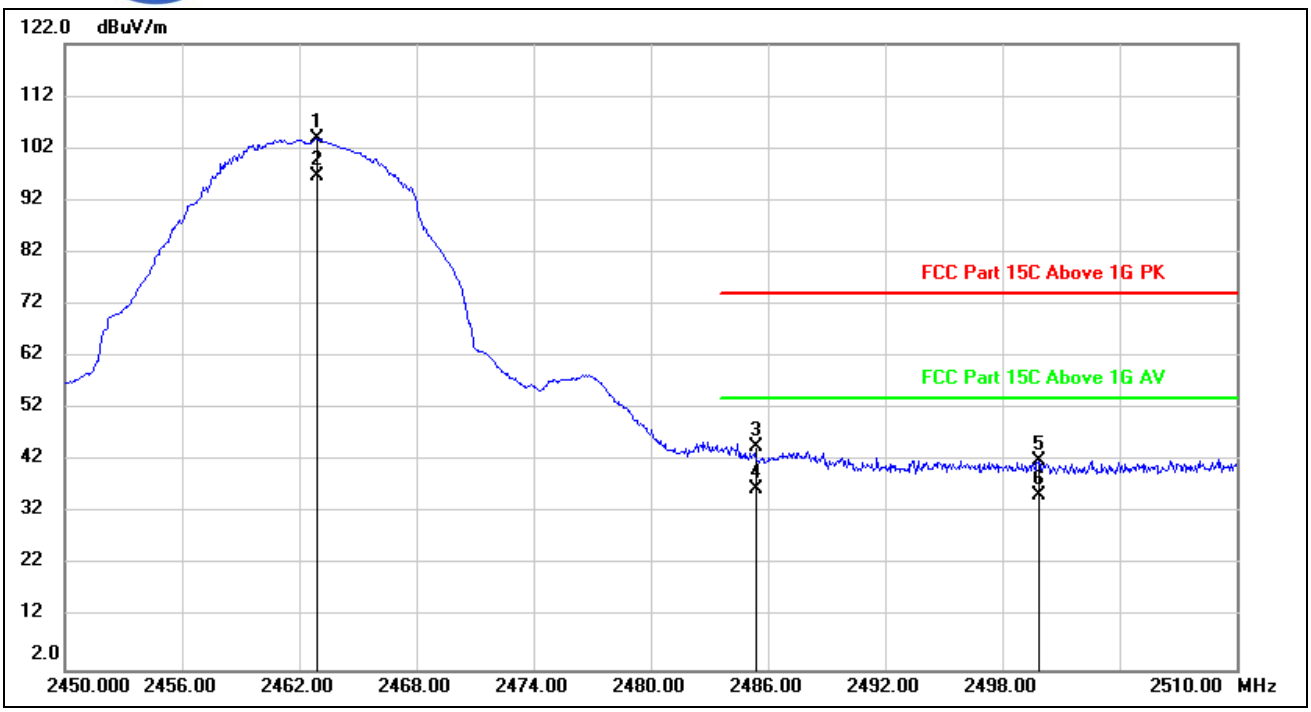
(802.11b _2437MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2436.960	72.46	30.76	103.22	--	--	peak	V
2436.960	65.00	30.76	95.76	--	--	AVG	V



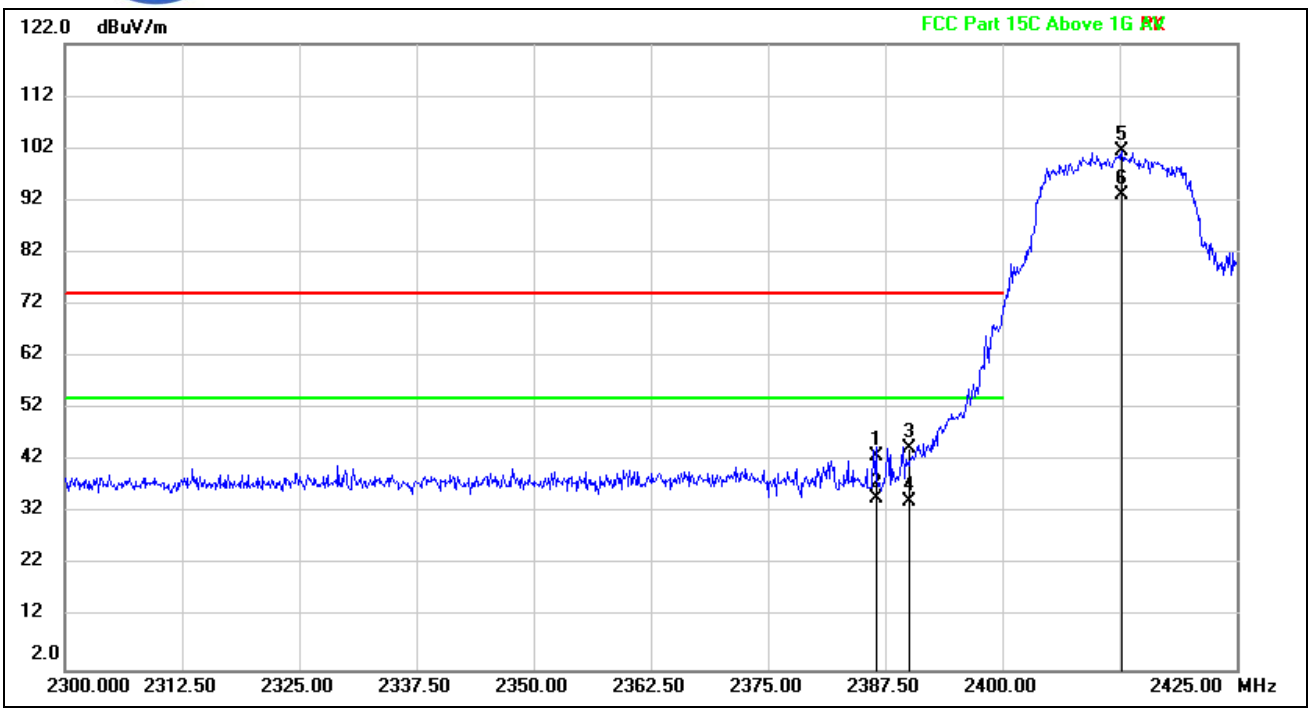
(802.11b _2462MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2483.660	13.52	31.17	44.69	74.00	-29.31	peak	H
2483.660	5.65	31.17	36.82	54.00	-17.18	AVG	H
2495.540	11.42	31.25	42.67	74.00	-31.33	peak	H
2495.540	3.20	31.25	34.45	54.00	-19.55	AVG	H
2461.940	73.52	31.01	104.53	--	--	peak	H
2461.940	66.31	31.01	97.32	--	--	AVG	H



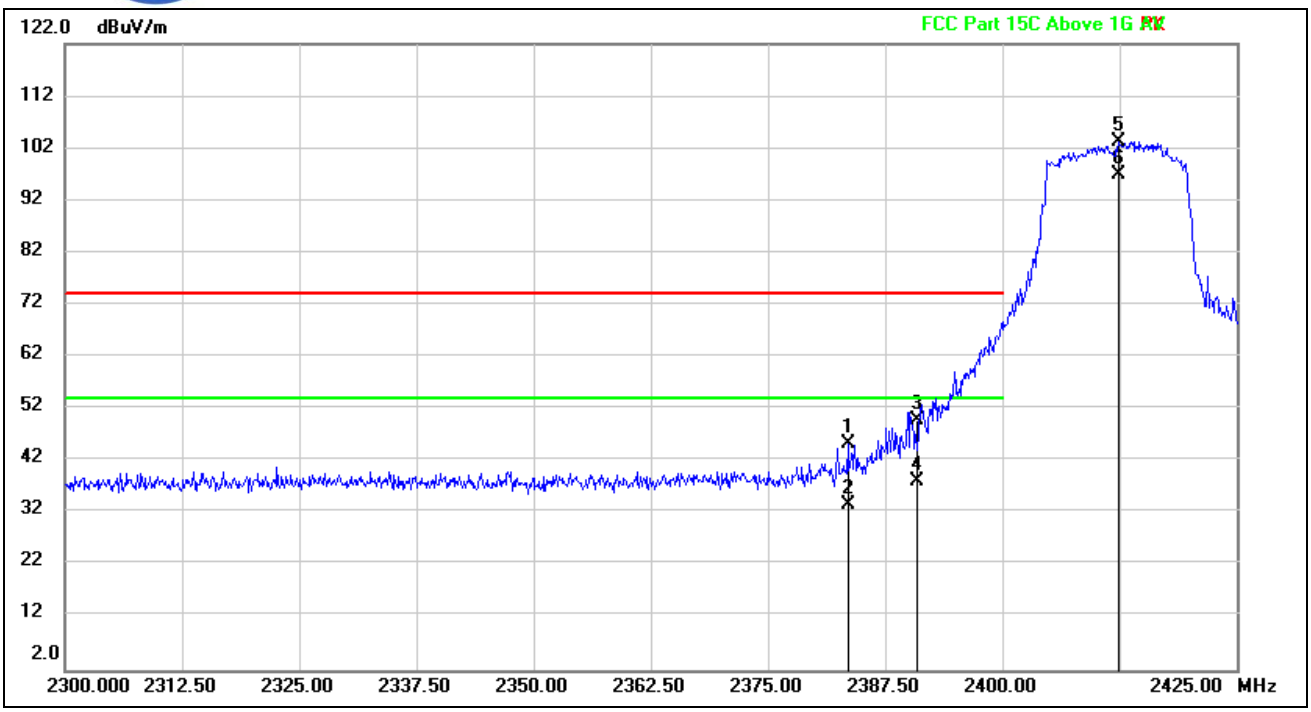
(802.11b _2462MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2462.900	72.85	31.02	103.87	--	--	peak	V
2462.900	65.70	31.02	96.72	--	--	AVG	V
2485.360	13.43	31.18	44.61	74.00	-29.39	peak	V
2485.360	5.60	31.18	36.78	54.00	-17.22	AVG	V
2499.860	10.71	31.28	41.99	74.00	-32.01	peak	V
2499.860	4.30	31.28	35.58	54.00	-18.42	AVG	V



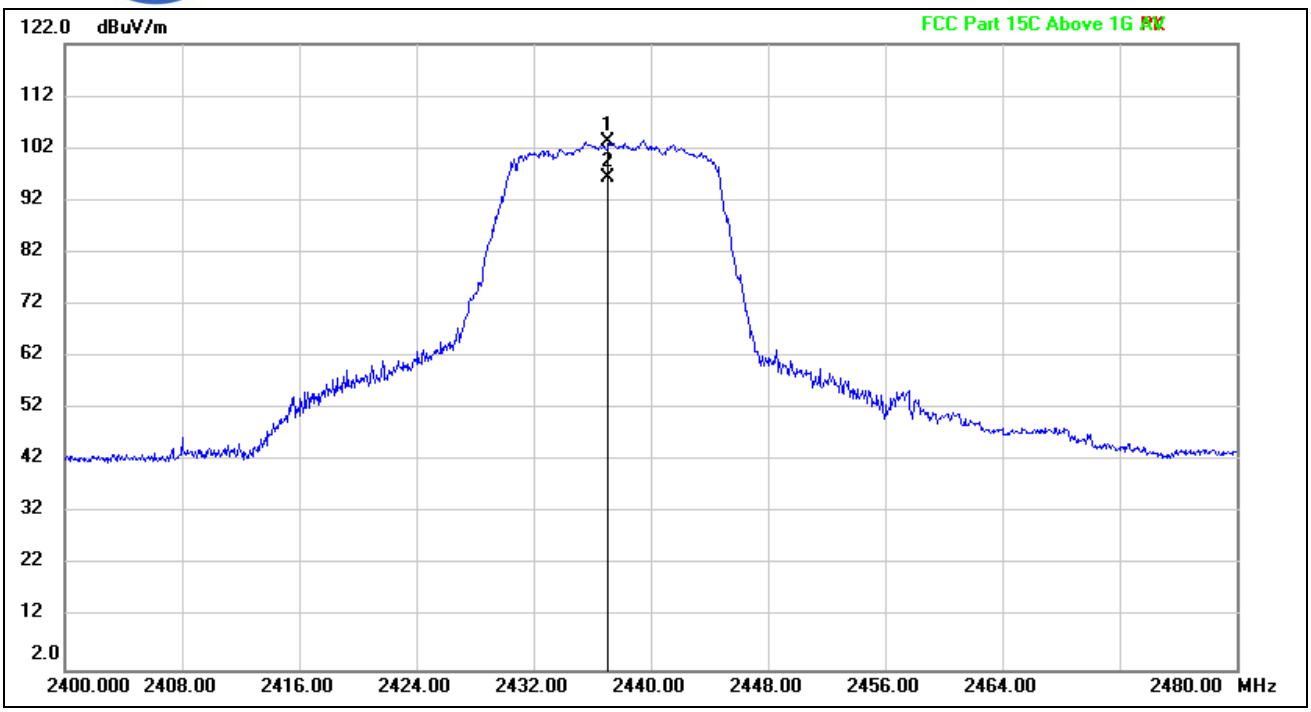
(802.11g _2412MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2386.500	12.19	30.70	42.89	74.00	-31.11	peak	H
2386.500	4.10	30.70	34.80	54.00	-19.20	AVG	H
2390.000	13.50	30.96	44.46	74.00	-29.54	peak	H
2390.000	3.14	30.96	34.10	54.00	-19.90	AVG	H
2412.750	70.53	31.03	101.56	--	--	peak	H
2412.750	62.12	31.03	93.15	--	--	AVG	H



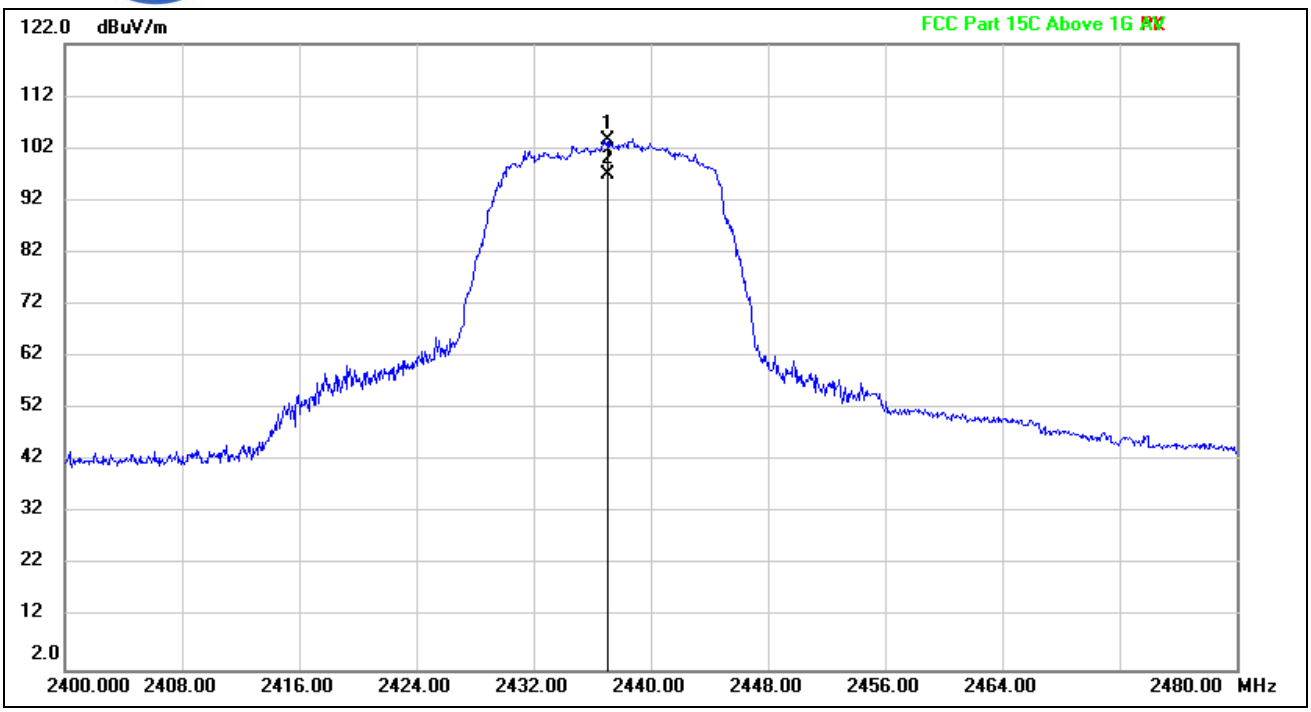
(802.11g _2412MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2383.500	14.81	30.48	45.29	74.00	-28.71	peak	V
2383.500	3.21	30.48	33.69	54.00	-20.31	AVG	V
2390.875	18.94	31.02	49.96	74.00	-24.04	peak	V
2390.875	7.14	31.02	38.16	54.00	-15.84	AVG	V
2412.375	72.21	31.05	103.26	--	--	peak	V
2412.375	66.00	31.05	97.05	--	--	AVG	V



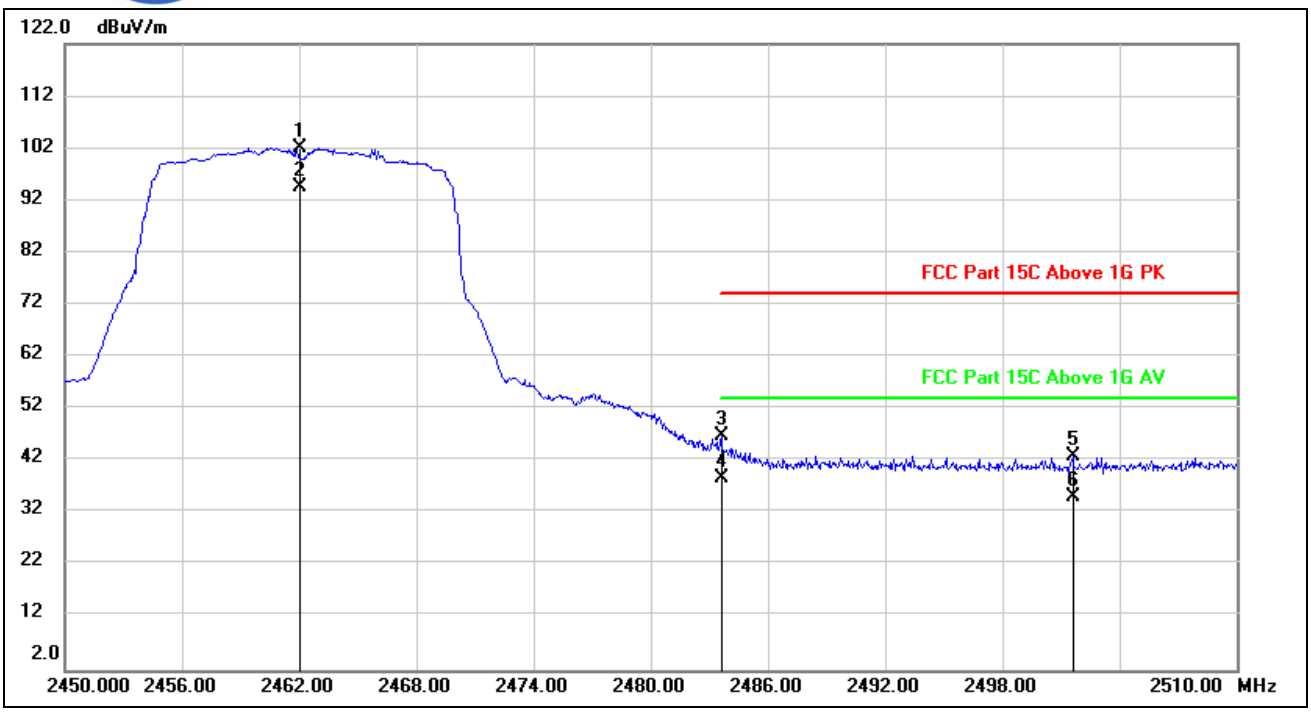
(802.11g _2437MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2437.000	72.61	30.76	103.37	--	--	peak	H
2437.000	65.45	30.76	96.21	--	--	AVG	H



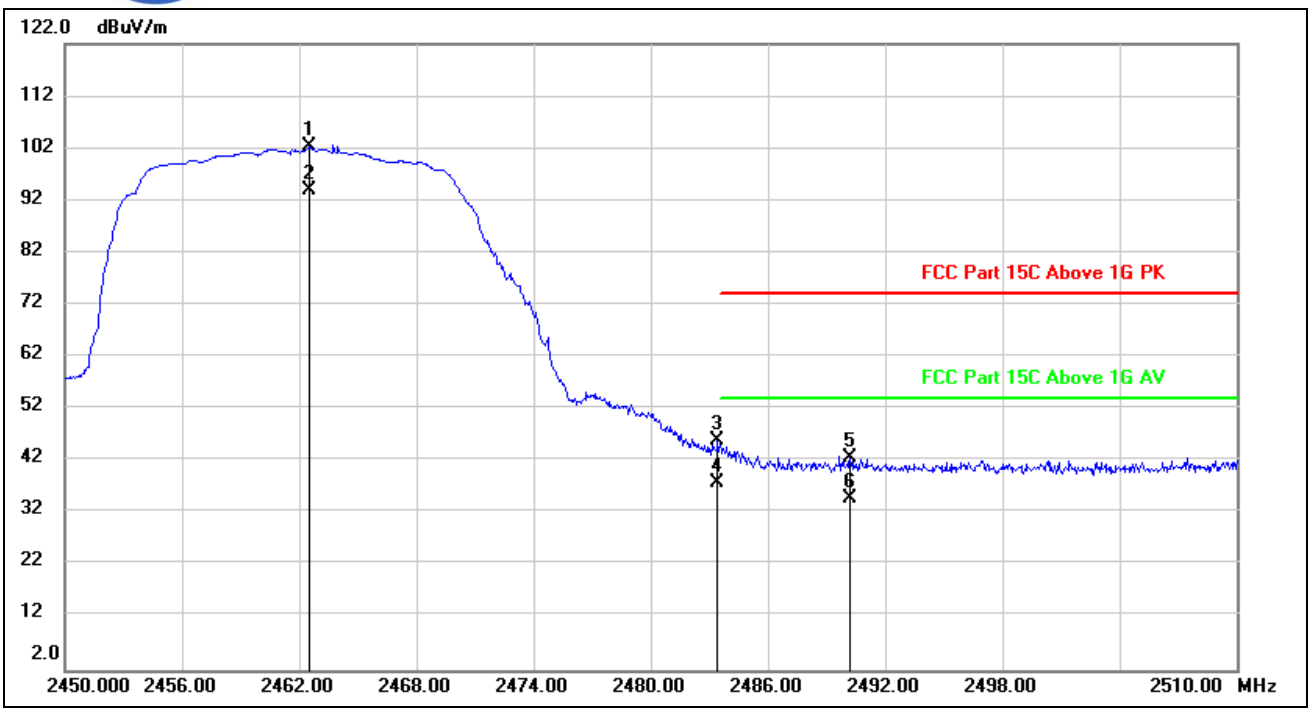
(802.11g _2437MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2437.000	72.69	30.76	103.45	--	--	peak	V
2437.000	66.30	30.76	97.06	--	--	AVG	V



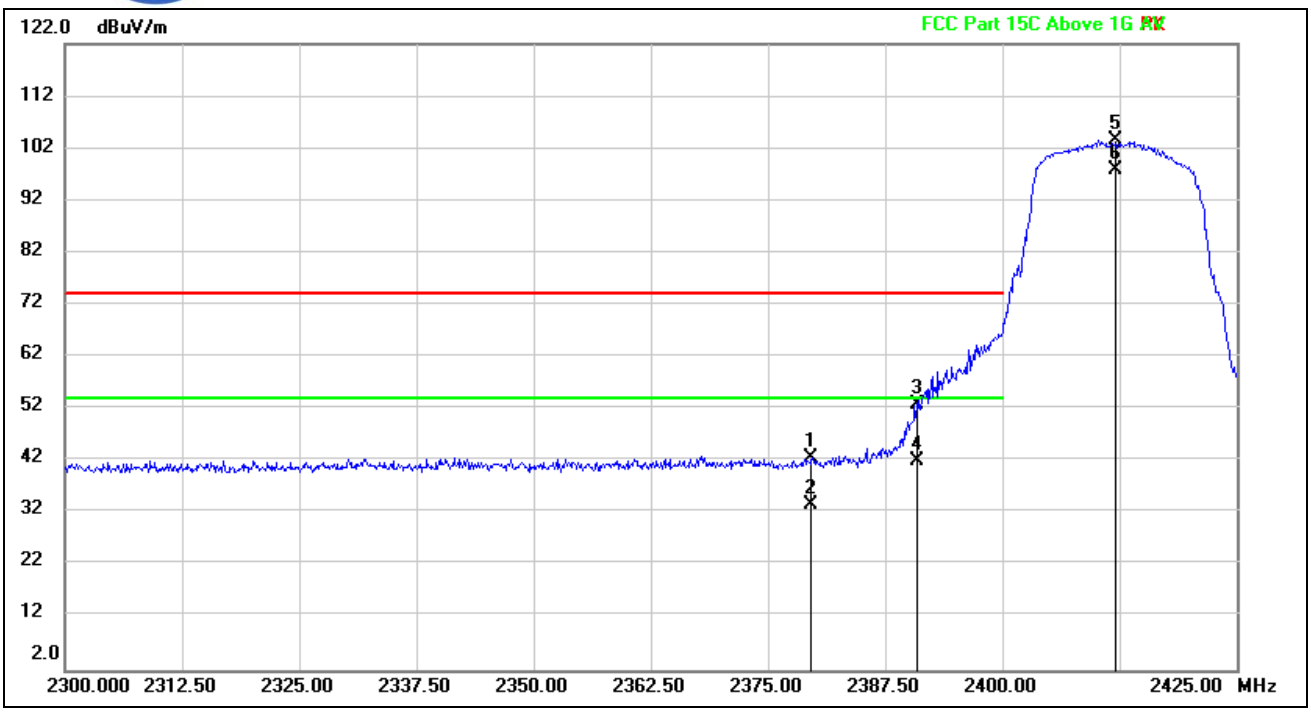
(802.11g _2462MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2462.000	71.04	31.01	102.05	--	--	peak	H
2462.000	63.43	31.01	94.44	--	--	AVG	H
2483.600	15.74	31.17	46.91	74.00	-27.09	peak	H
2483.600	7.55	31.17	38.72	54.00	-15.28	AVG	H
2501.600	11.81	31.28	43.09	74.00	-30.91	peak	H
2501.600	3.89	31.28	35.17	54.00	-18.83	AVG	H



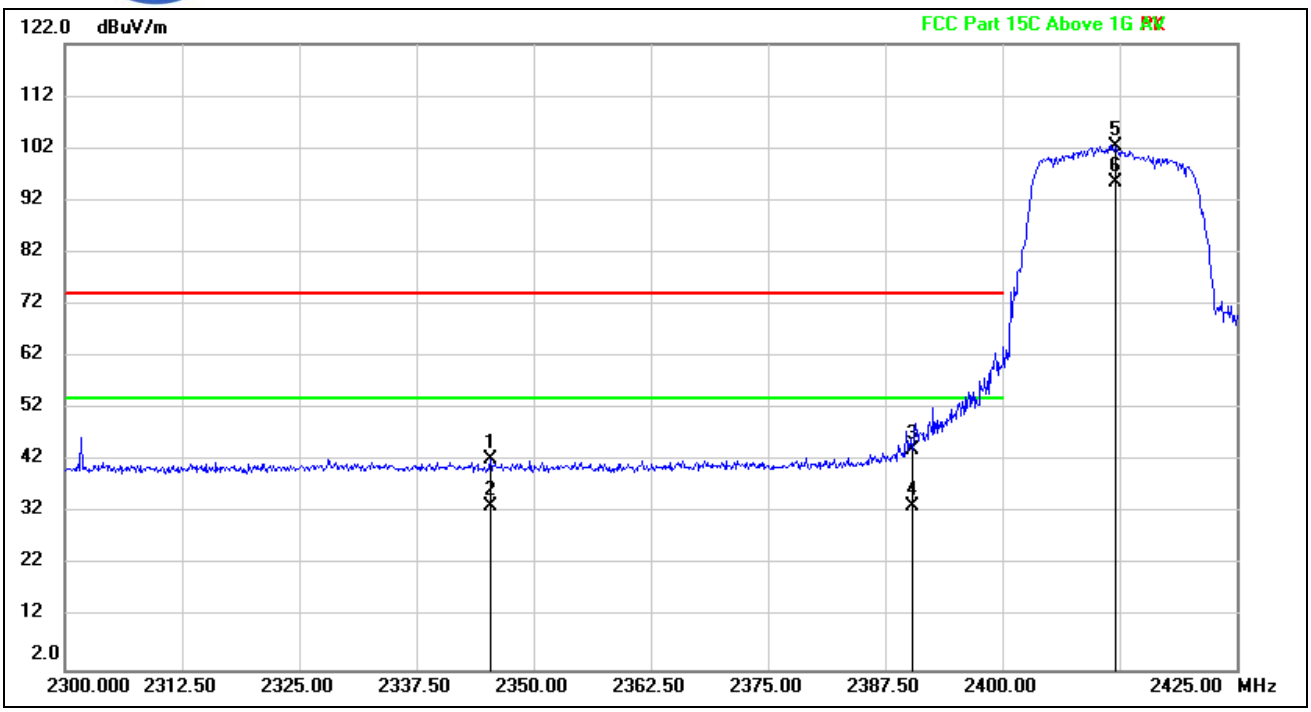
(802.11g _2462MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2462.540	71.29	31.02	102.31	--	--	peak	V
2462.540	63.00	31.02	94.02	--	--	AVG	V
2483.500	14.70	31.16	45.86	74.00	-28.14	peak	V
2483.500	6.80	31.16	37.96	54.00	-16.04	AVG	V
2490.200	11.57	31.21	42.78	74.00	-31.22	peak	V
2490.200	3.70	31.21	34.91	54.00	-19.09	AVG	V



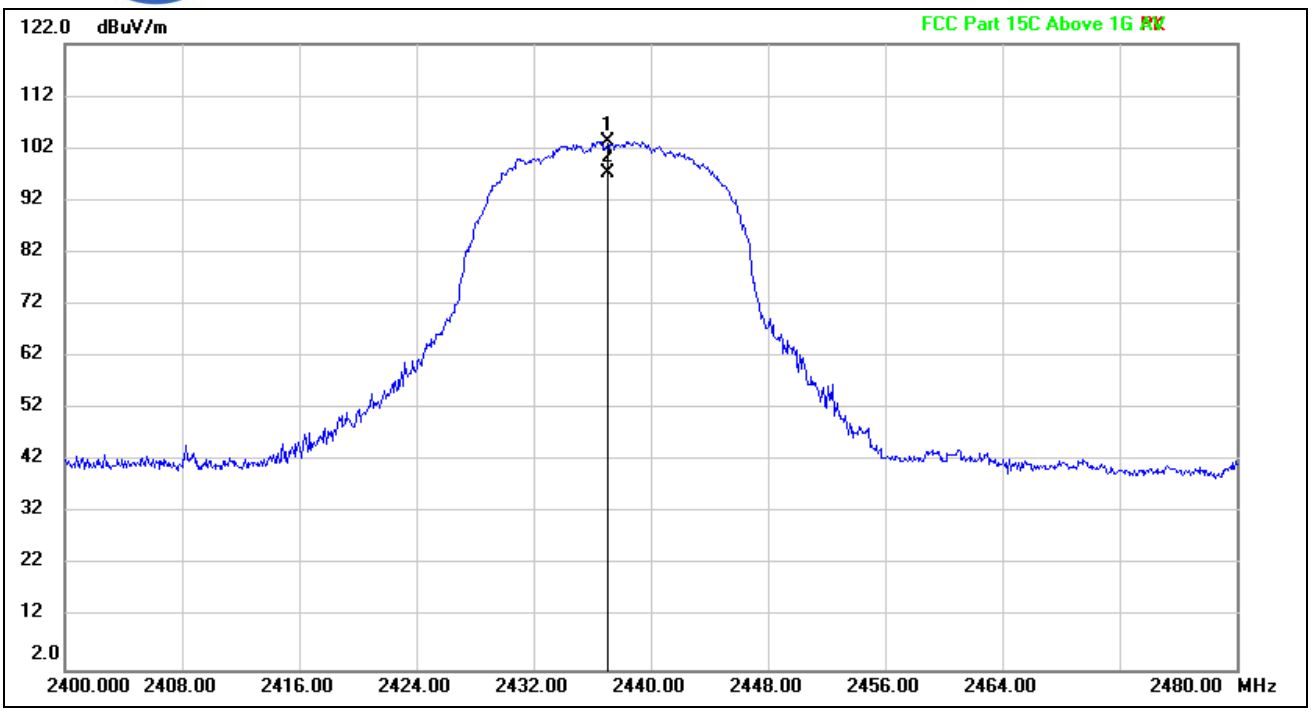
(802.11n20 _2412MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2379.500	12.56	30.22	42.78	74.00	-31.22	peak	H
2379.500	3.52	30.22	33.74	54.00	-20.26	AVG	H
2390.875	21.95	31.02	52.97	74.00	-21.03	peak	H
2390.875	11.05	31.02	42.07	54.00	-11.93	AVG	H
2412.000	72.54	31.07	103.61	--	--	peak	H
2412.000	66.70	31.07	97.77	--	--	AVG	H



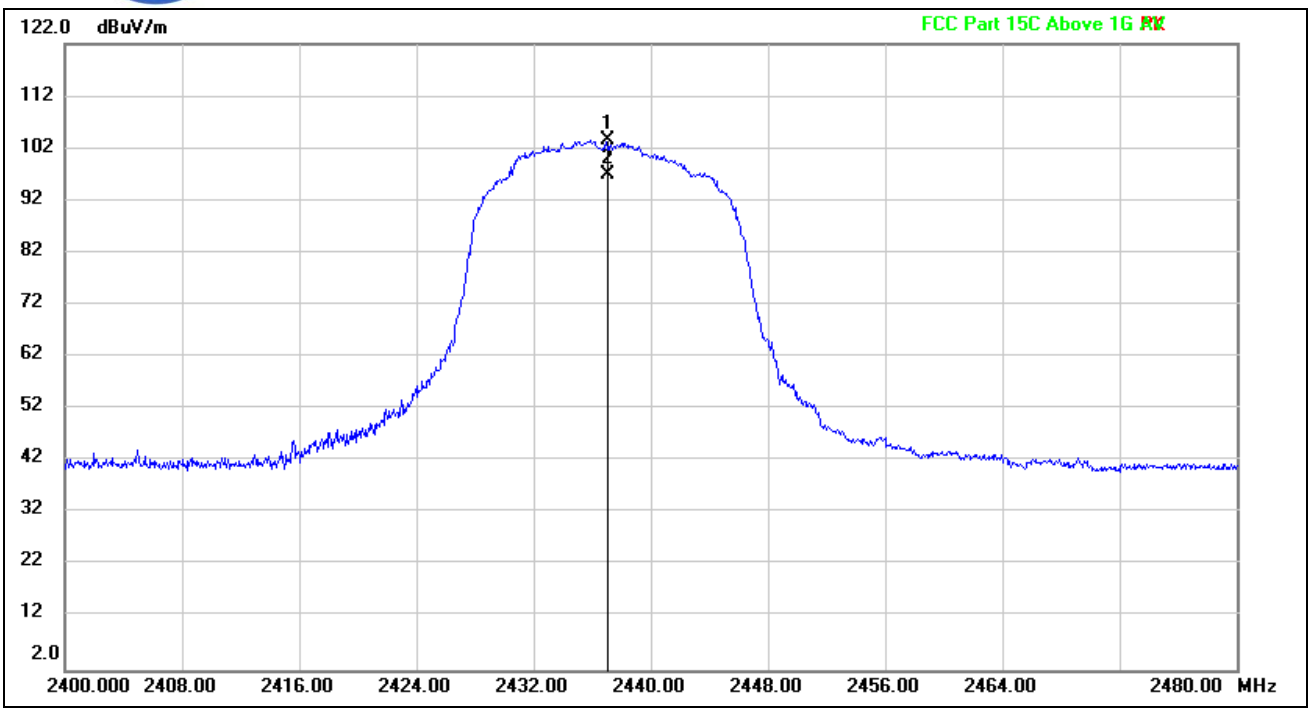
(802.11n20 _2412MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2345.375	12.31	30.00	42.31	74.00	-31.69	peak	V
2345.375	3.30	30.00	33.30	54.00	-20.70	AVG	V
2390.375	13.12	30.99	44.11	74.00	-29.89	peak	V
2390.375	2.59	30.99	33.58	54.00	-20.42	AVG	V
2412.000	71.24	31.07	102.31	--	--	peak	V
2412.000	64.33	31.07	95.40	--	--	AVG	V



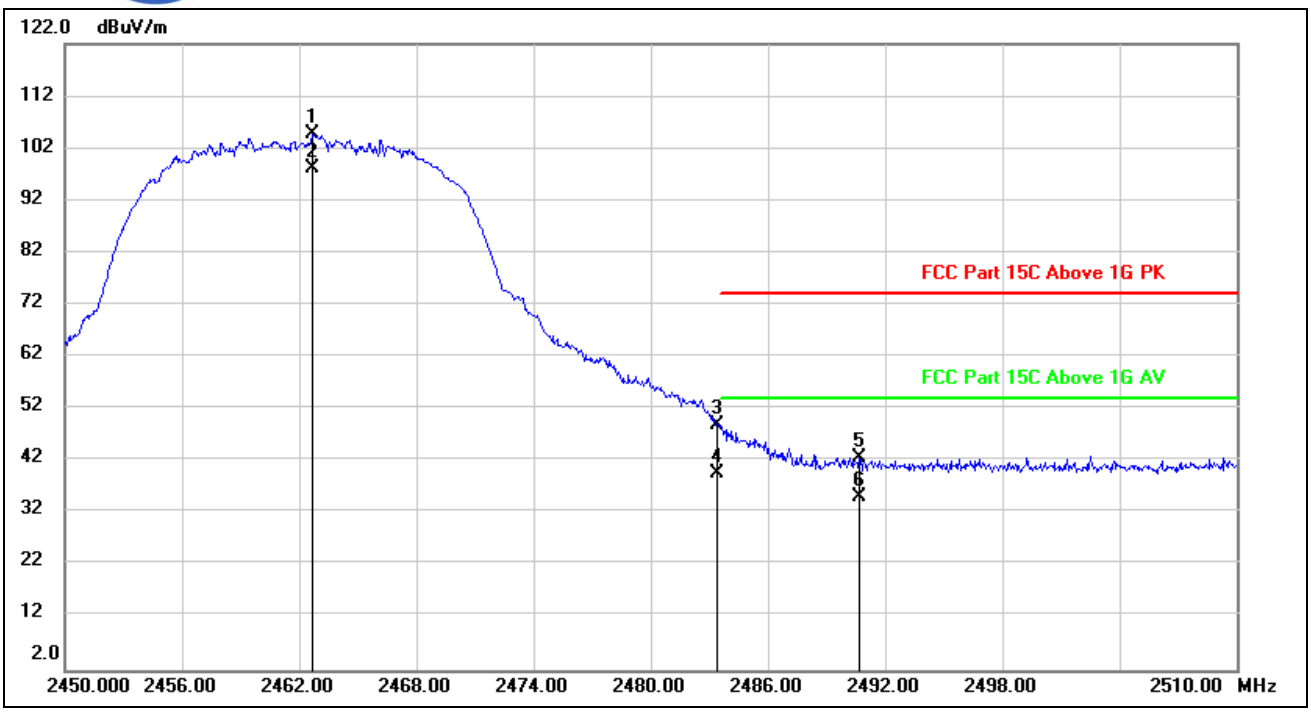
(802.11n20_2437MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2437.000	72.51	30.76	103.27	--	--	peak	H
2437.000	66.40	30.76	97.16	--	--	AVG	H



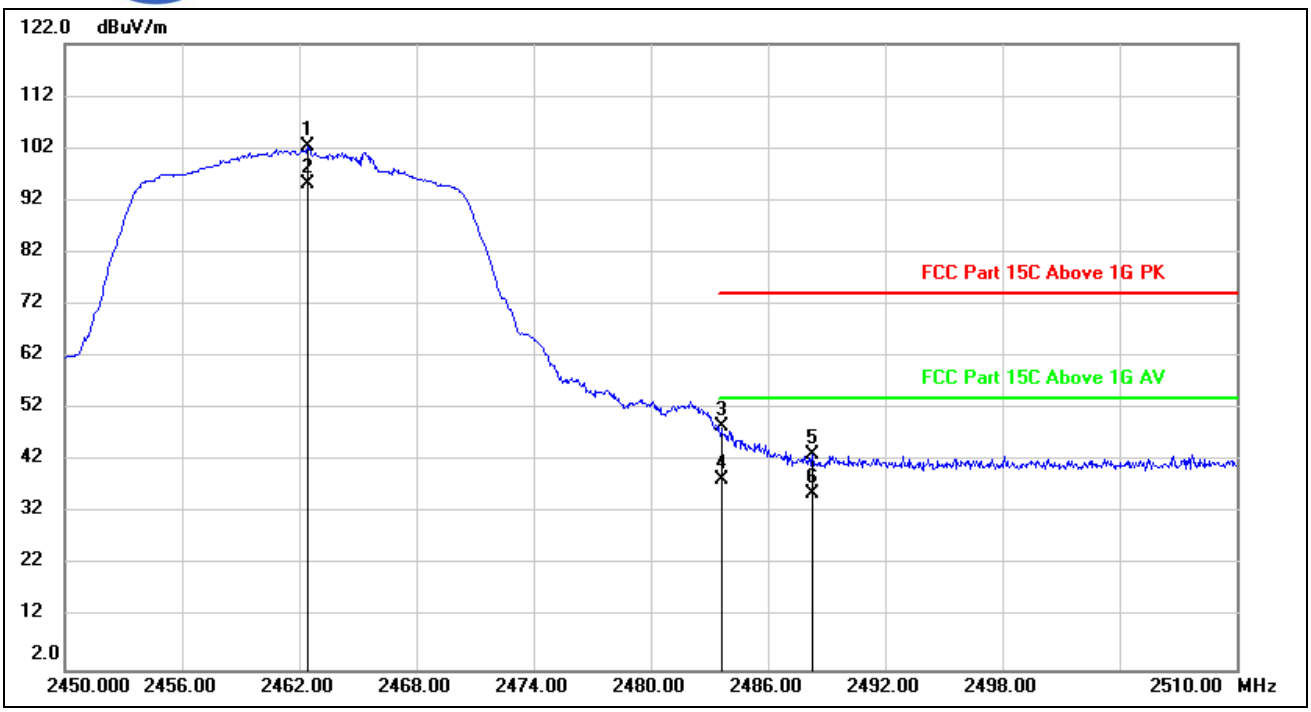
(802.11n20 _2437MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2437.000	72.69	30.76	103.45	--	--	peak	V
2437.000	66.20	30.76	96.96	--	--	AVG	V



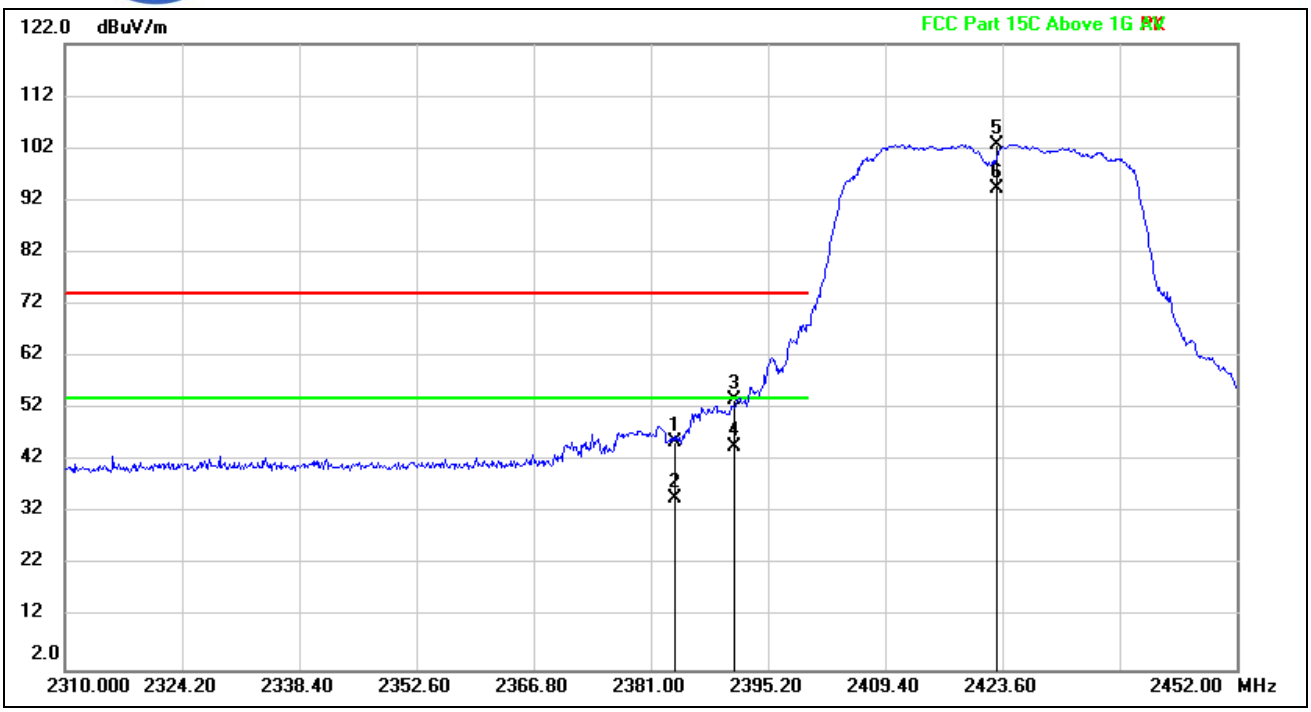
(802.11n20 _2462MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2462.660	73.83	31.02	104.85	--	--	peak	H
2462.660	67.00	31.02	98.02	--	--	AVG	H
2483.500	17.89	31.16	49.05	74.00	-24.95	peak	H
2483.500	8.43	31.16	39.59	54.00	-14.41	AVG	H
2490.680	11.53	31.21	42.74	74.00	-31.26	peak	H
2490.680	4.00	31.21	35.21	54.00	-18.79	AVG	H



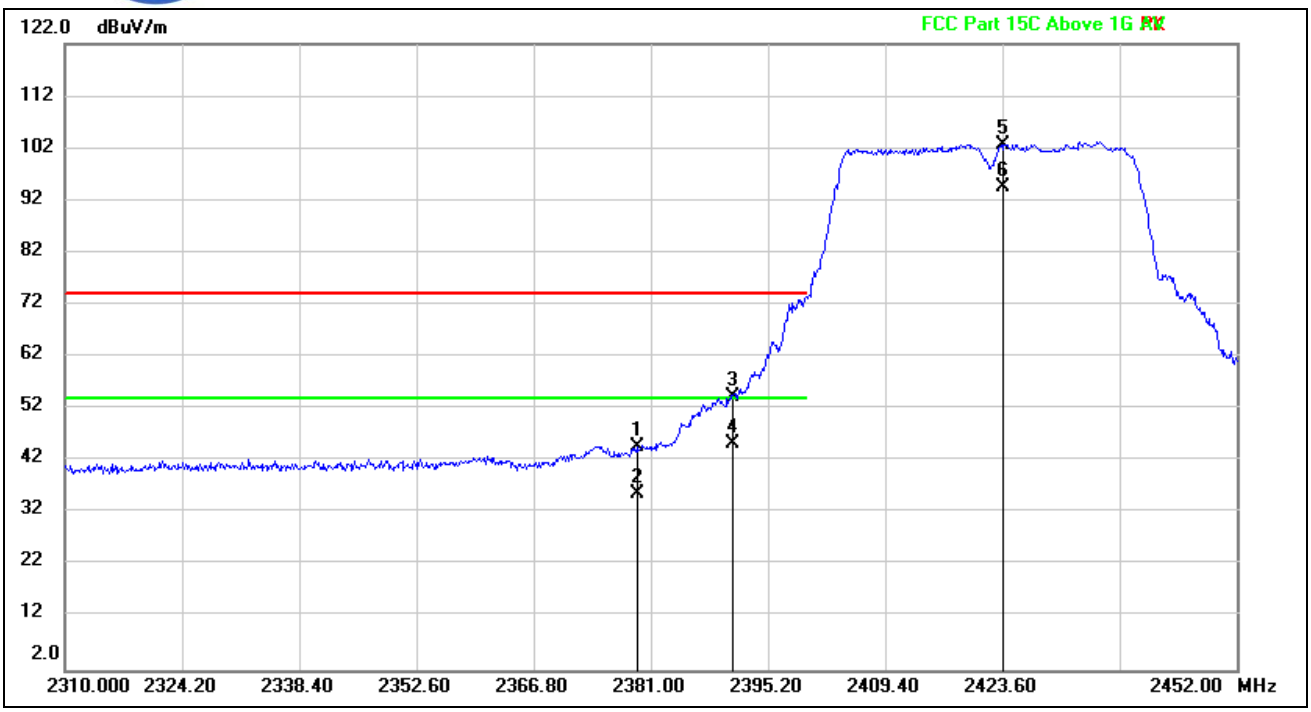
(802.11n20 _2462MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2462.420	71.34	31.02	102.36	--	--	peak	V
2462.420	63.99	31.02	95.01	--	--	AVG	V
2483.580	17.55	31.17	48.72	74.00	-25.28	peak	V
2483.580	7.36	31.17	38.53	54.00	-15.47	AVG	V
2488.280	12.09	31.20	43.29	74.00	-30.71	peak	V
2488.280	4.53	31.20	35.73	54.00	-18.27	AVG	V



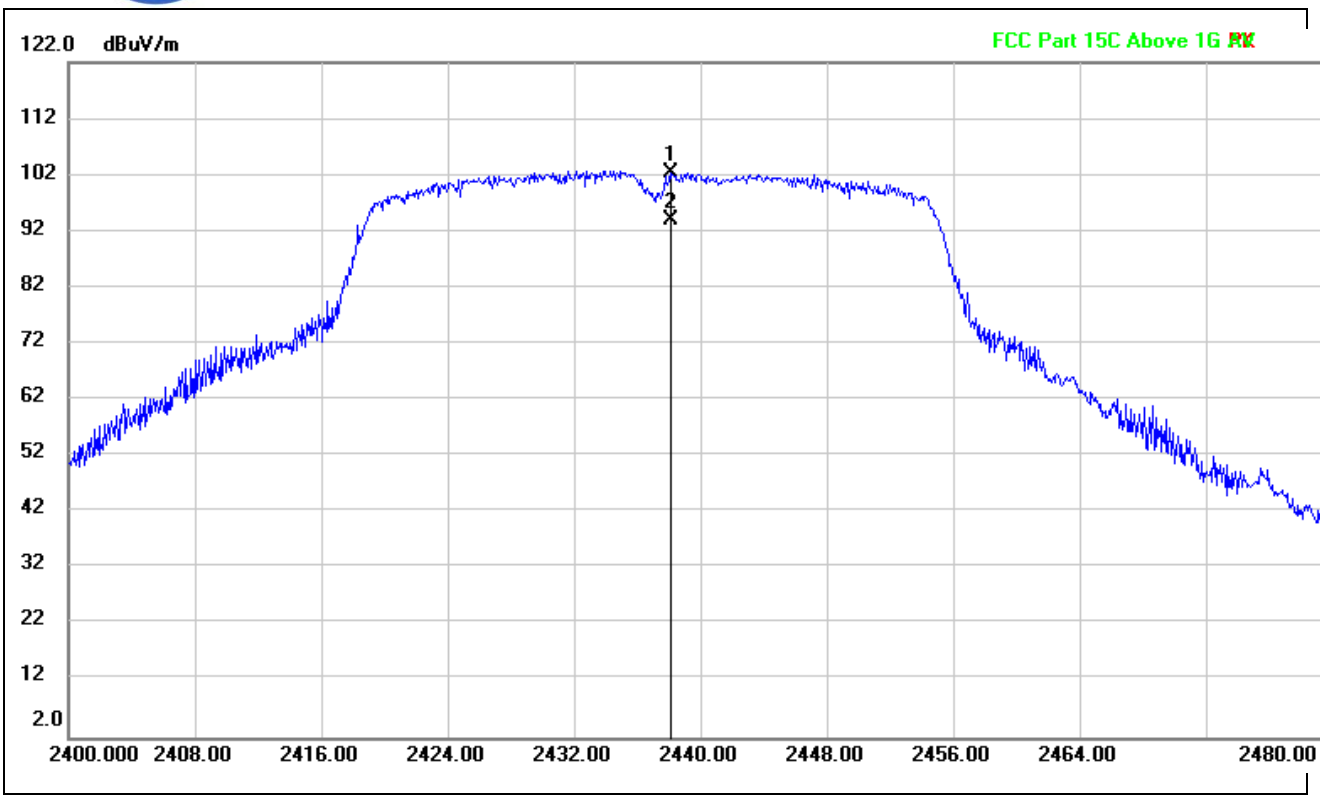
(802.11n40 _2422MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2383.840	15.30	30.50	45.80	74.00	-28.20	peak	H
2383.840	4.30	30.50	34.80	54.00	-19.20	AVG	H
2390.952	22.64	31.03	53.67	74.00	-20.33	peak	H
2390.952	13.64	31.03	44.67	54.00	-9.33	AVG	H
2422.878	72.10	30.67	102.77	--	--	peak	H
2422.878	63.68	30.67	94.35	--	--	AVG	H



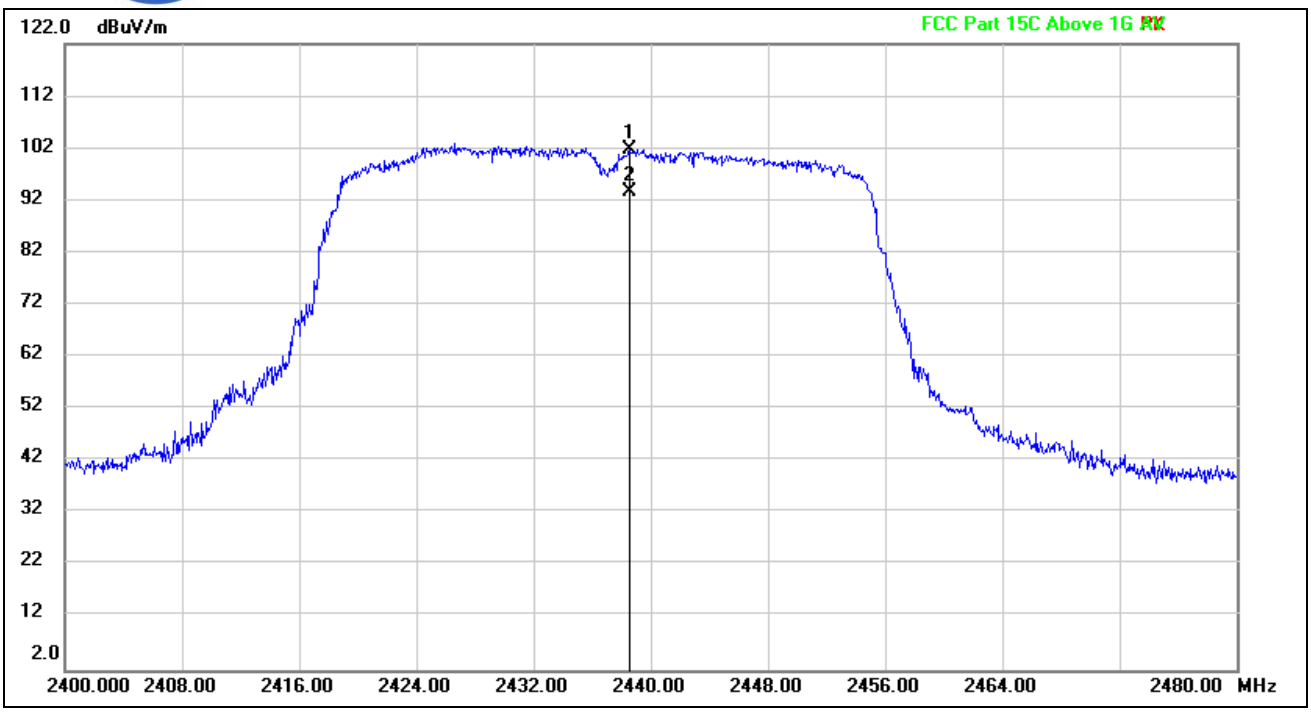
(802.11n40 _2422MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2379.296	14.67	30.22	44.89	74.00	-29.11	peak	V
2379.296	5.63	30.22	35.85	54.00	-18.15	AVG	V
2390.916	23.47	31.03	54.50	74.00	-19.50	peak	V
2390.916	14.31	31.03	45.34	54.00	-8.66	AVG	V
2423.742	72.04	30.67	102.71	--	--	peak	V
2423.742	64.00	30.67	94.67	--	--	AVG	V



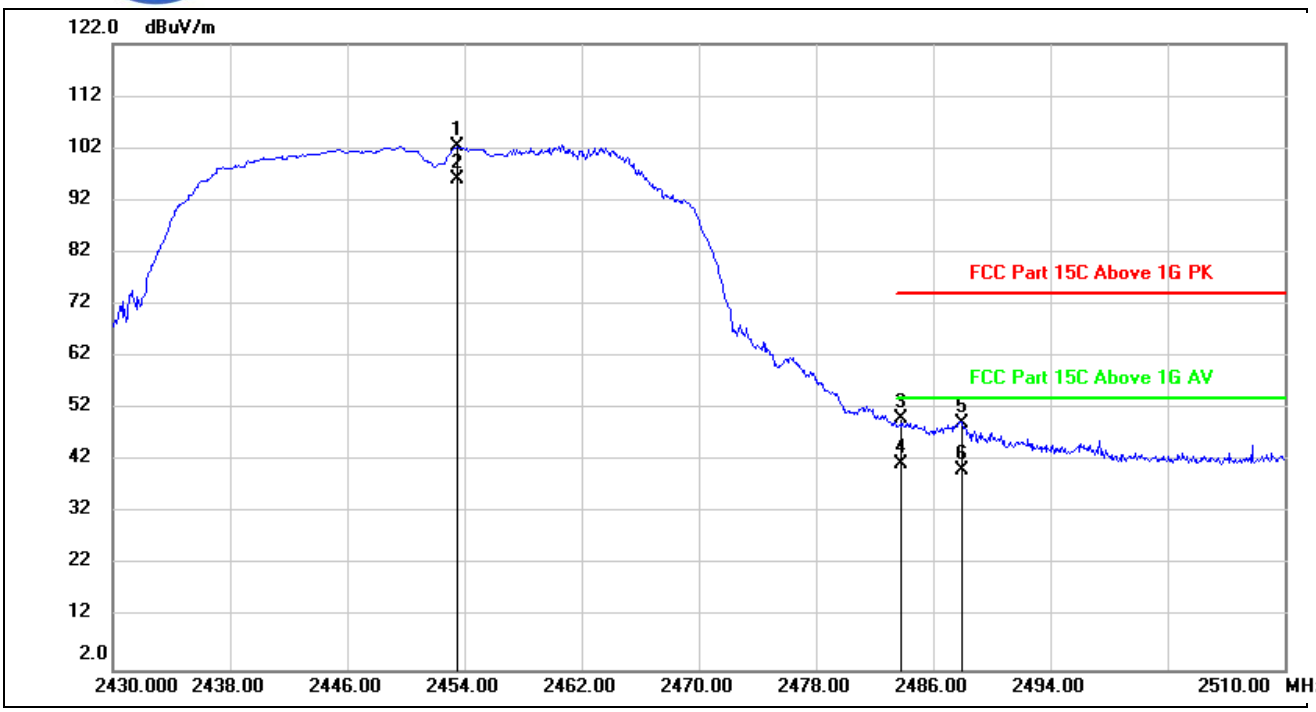
(802.11n40_2437MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2438.080	71.62	30.77	102.39	--	--	peak	H
2438.080	63.30	30.77	94.07	--	--	AVG	H



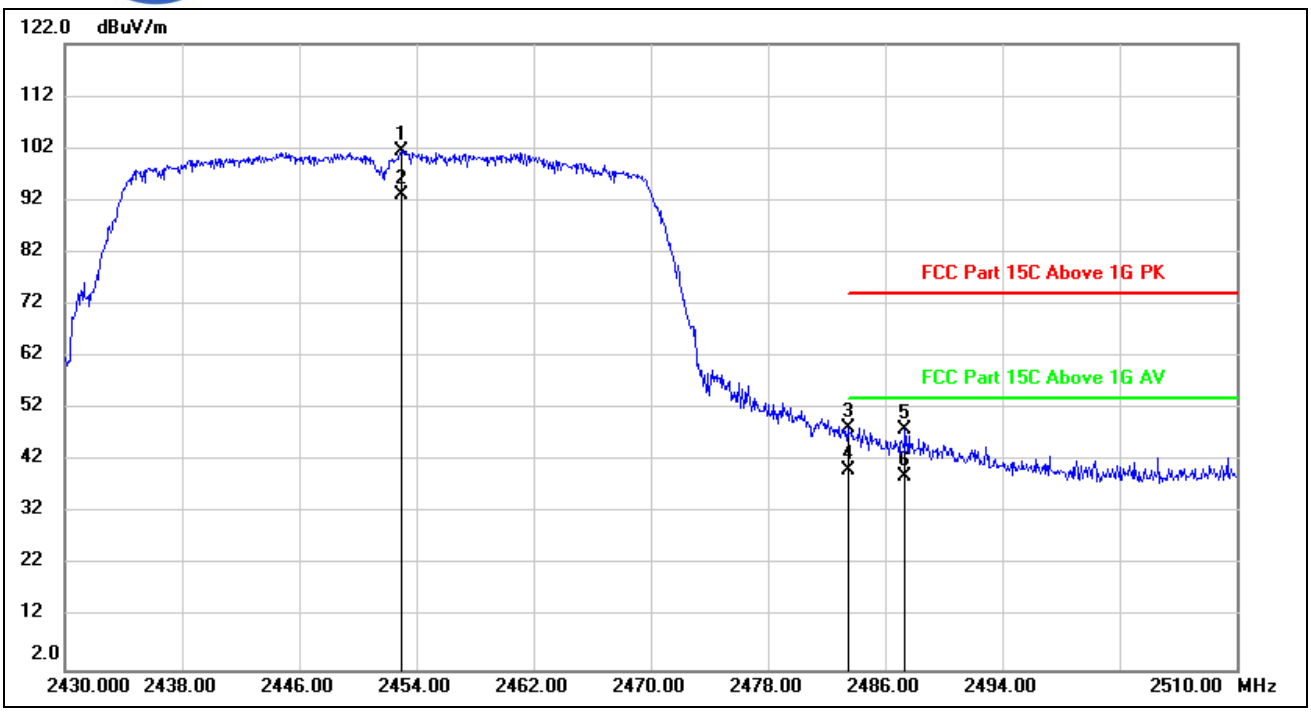
(802.11n40 _2437MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2438.560	70.88	30.77	101.65	--	--	peak	V
2438.560	62.72	30.77	93.49	--	--	AVG	V



(802.11n40 _2452MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2453.520	71.35	30.93	102.28	--	--	peak	H
2453.520	65.12	30.93	96.05	--	--	AVG	H
2483.720	19.03	31.17	50.20	74.00	-23.80	peak	H
2483.720	10.37	31.17	41.54	54.00	-12.46	AVG	H
2487.920	17.94	31.20	49.14	74.00	-24.86	peak	H
2487.920	8.90	31.20	40.10	54.00	-13.90	AVG	H



(802.11n40 _2452MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2452.960	70.64	30.92	101.56	--	--	peak	V
2452.960	62.2	30.92	93.12	--	--	AVG	V
2483.500	17.15	31.16	48.31	74.00	-25.69	peak	V
2483.500	8.92	31.16	40.08	54.00	-13.92	AVG	V
2487.360	16.87	31.19	48.06	74.00	-25.94	peak	V
2487.360	6.99	31.19	38.18	54.00	-15.82	AVG	V