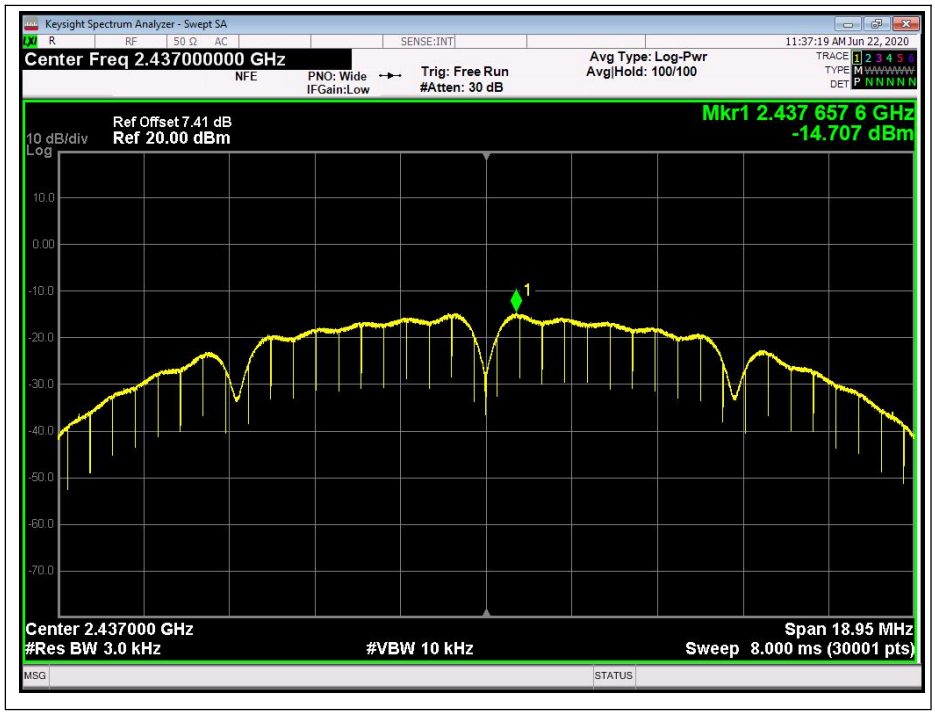
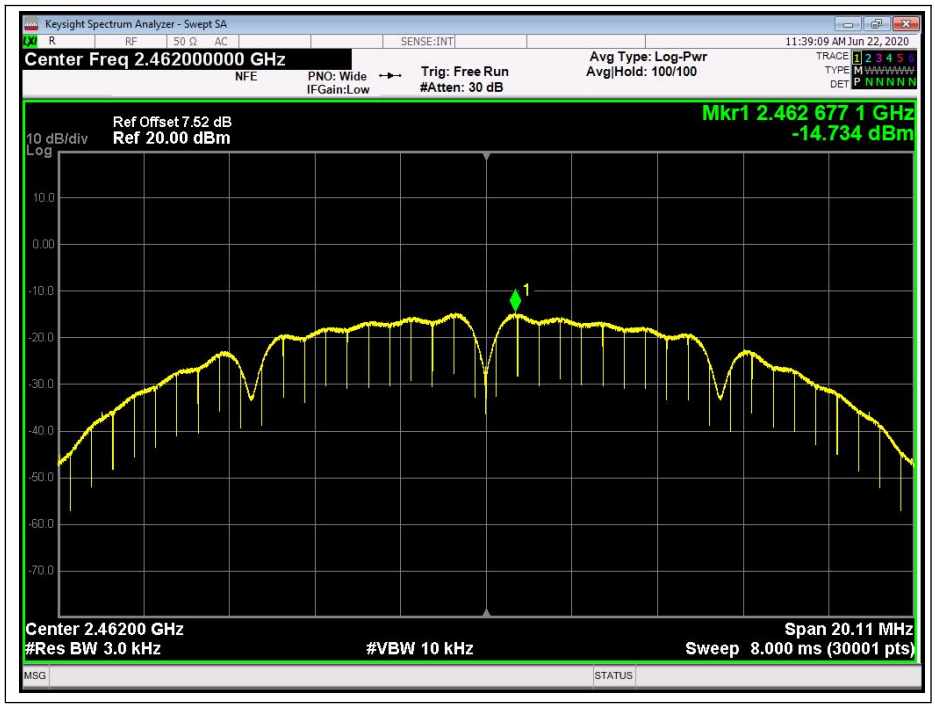
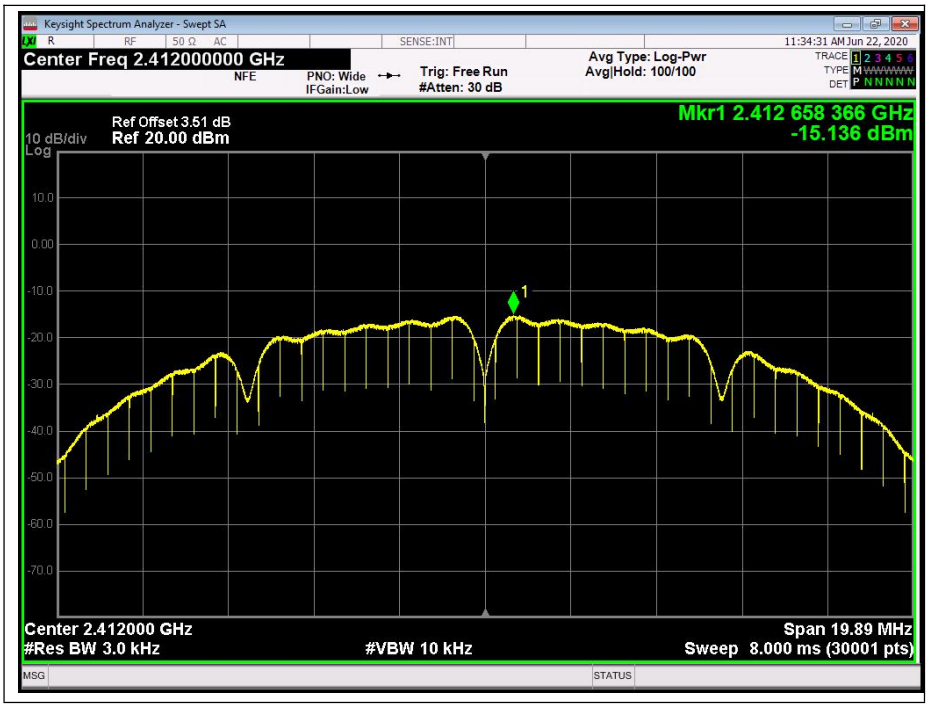


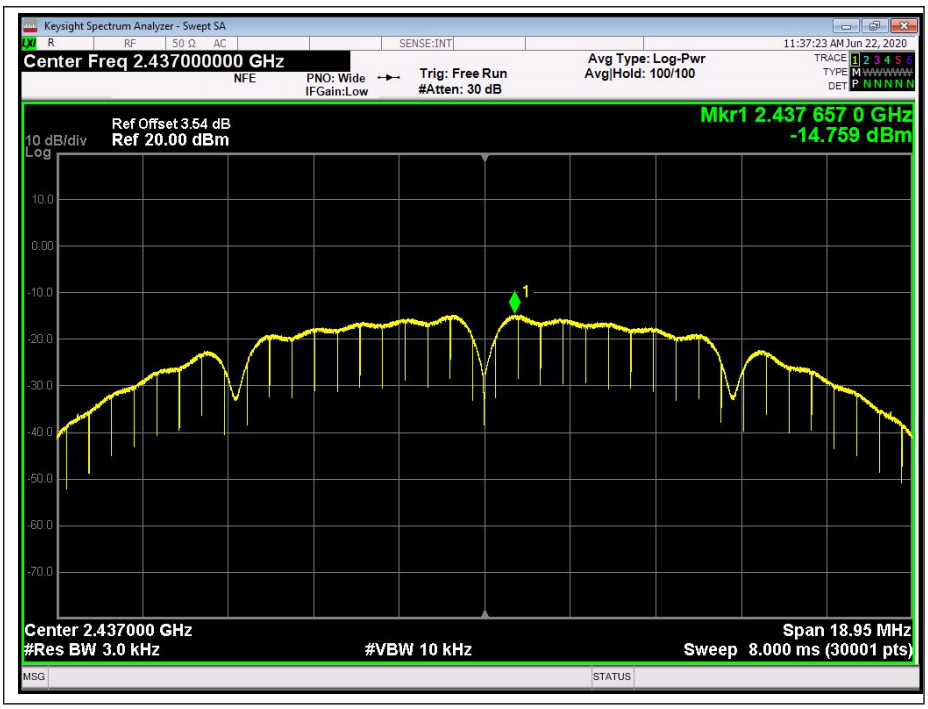
(Channel = 6, 802.11b;ANT0)



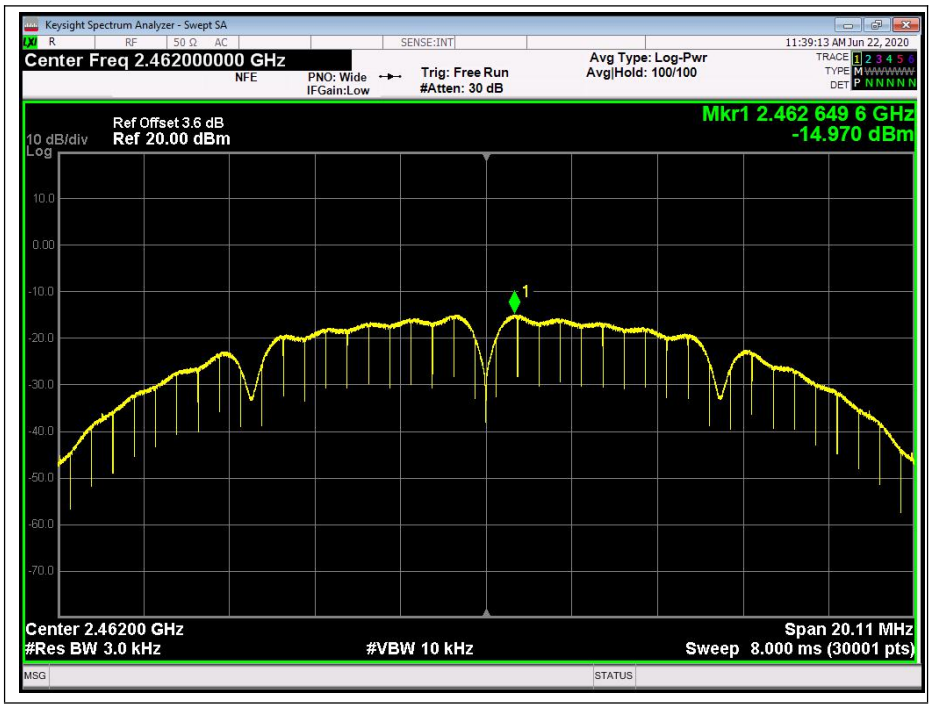
(Channel = 11, 802.11b;ANT0)



(Channel = 1, 802.11b;ANT1)



(Channel = 6, 802.11b;ANT1)



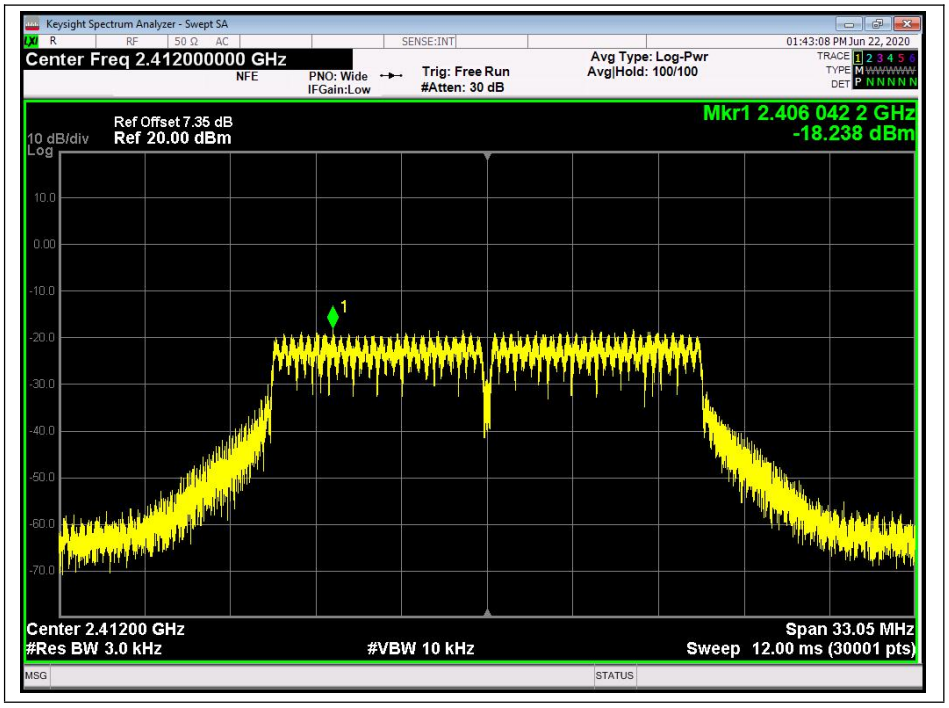
(Channel = 11, 802.11b;ANT1)

802.11g Test mode

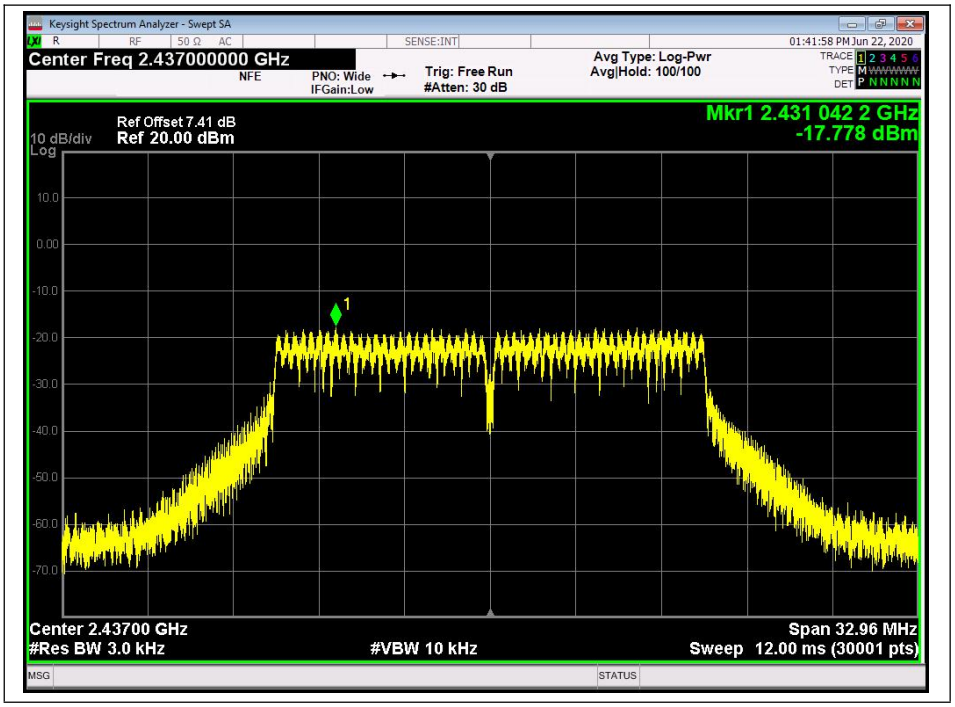
A. Test Verdict:

Spectral power density (dBm/3kHz)					
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)		Limit (dBm/3kHz)	Verdict
		ANT 0	ANT 1		
1	2412	-18.238	-17.198	8	**PASS**
6	2437	-17.778	-16.817	8	**PASS**
11	2462	-17.329	-16.807	8	**PASS**

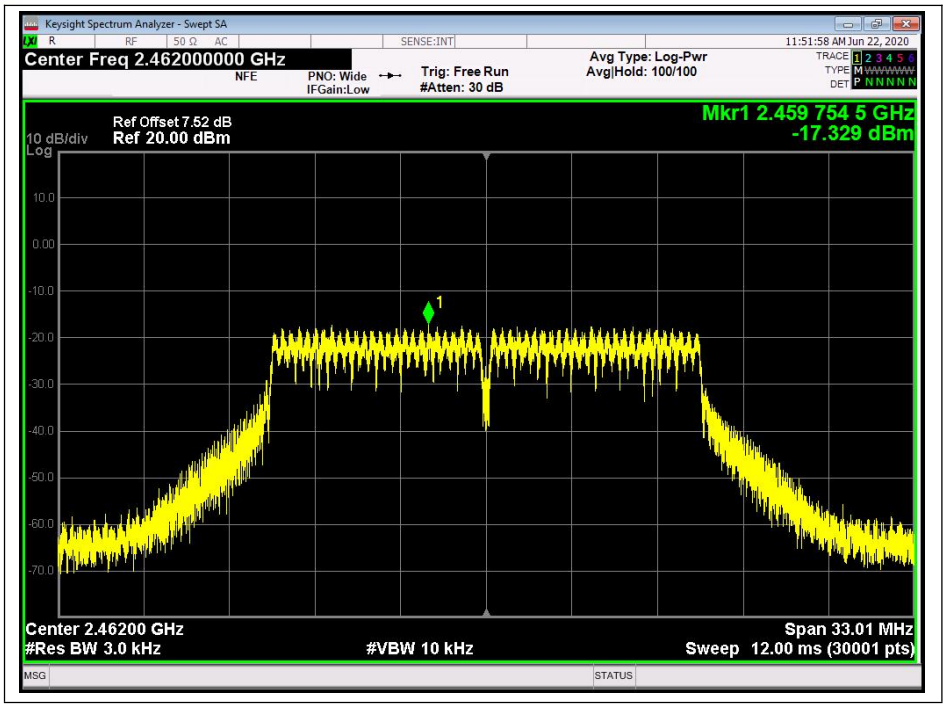
B. Test Plots:



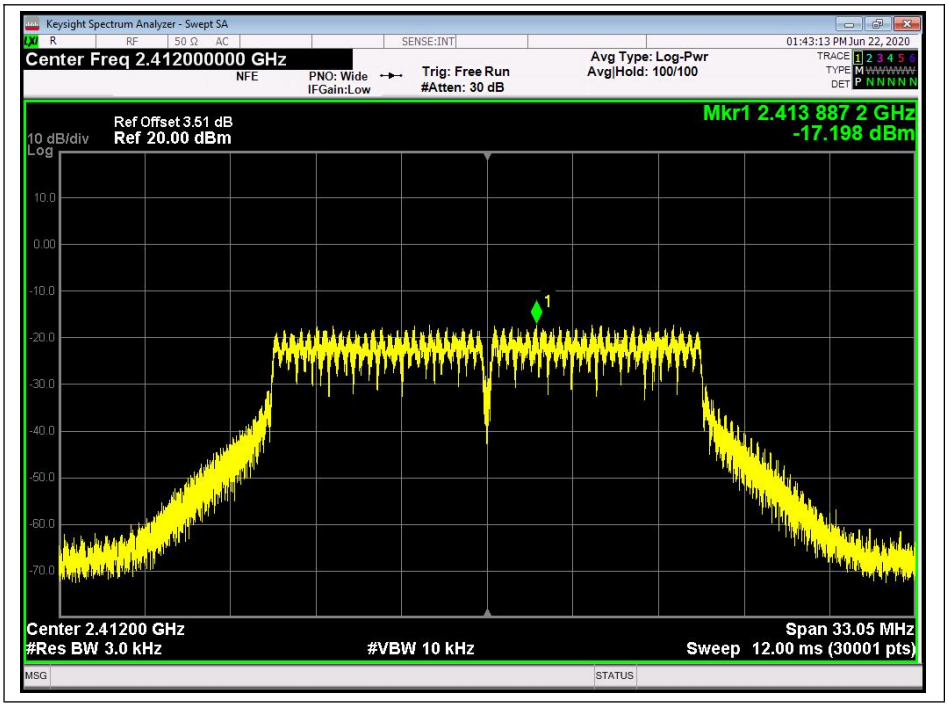
(Channel = 1, 802.11g;ANT0)



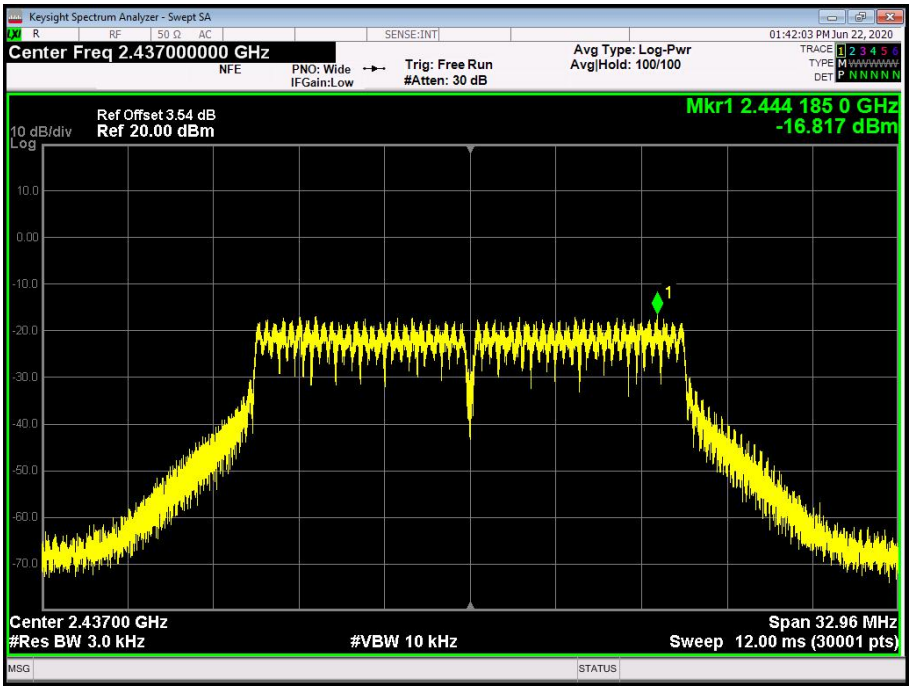
(Channel = 6, 802.11g;ANT0)



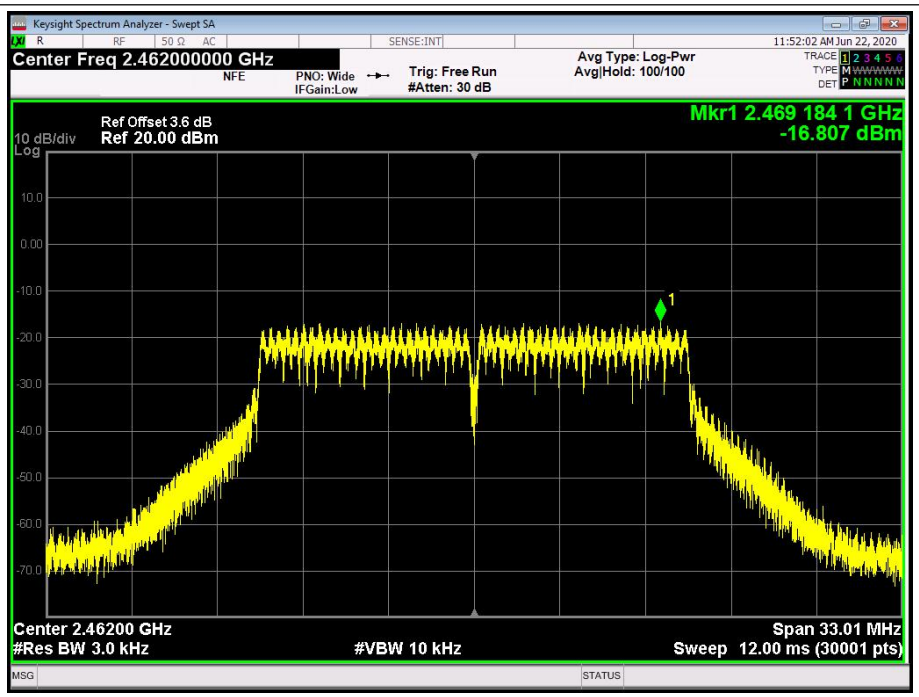
(Channel = 11, 802.11g;ANT0)



(Channel = 1, 802.11g;ANT1)



(Channel = 6, 802.11g;ANT1)



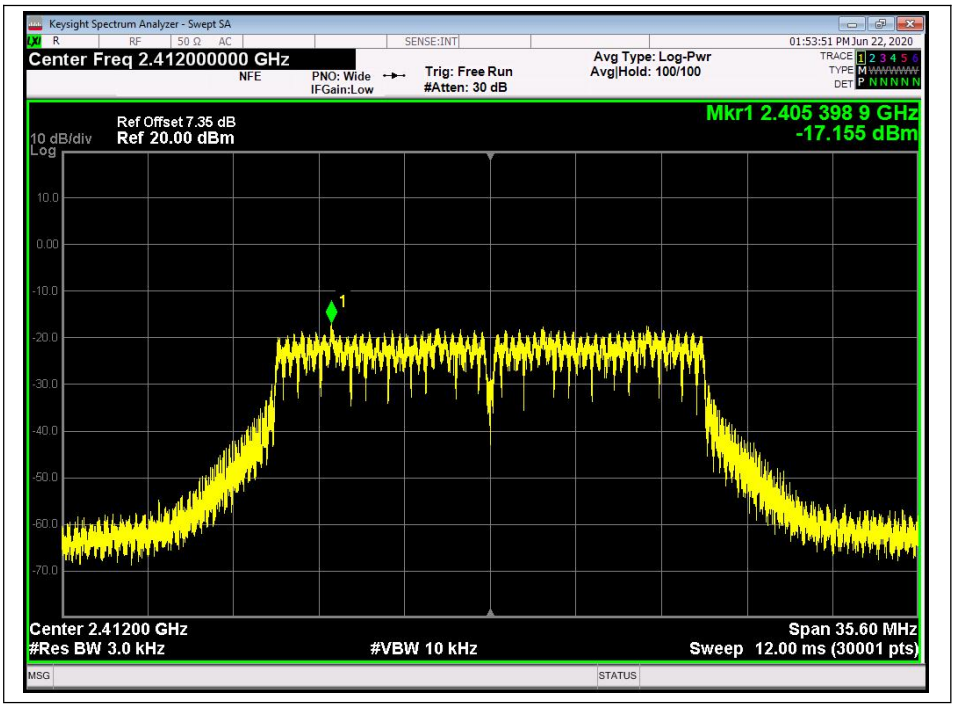
(Channel = 11, 802.11g;ANT1)

802.11n-20MHz Test mode

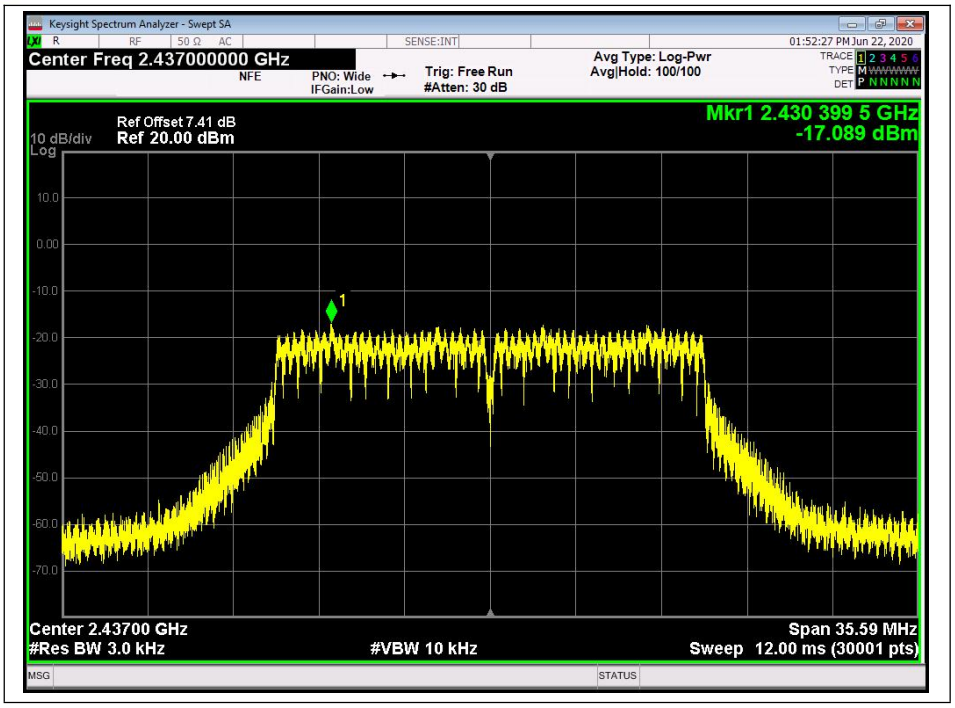
A. Test Verdict:

Spectral power density (dBm/3kHz)						
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)			Limit (dBm/3kHz)	Verdict
		ANT 0	ANT 1	Total		
1	2412	-17.155	-16.394	-13.748	8	**PASS**
6	2437	-17.089	-16.293	-13.662	8	**PASS**
11	2462	-16.612	-16.336	-13.462	8	**PASS**

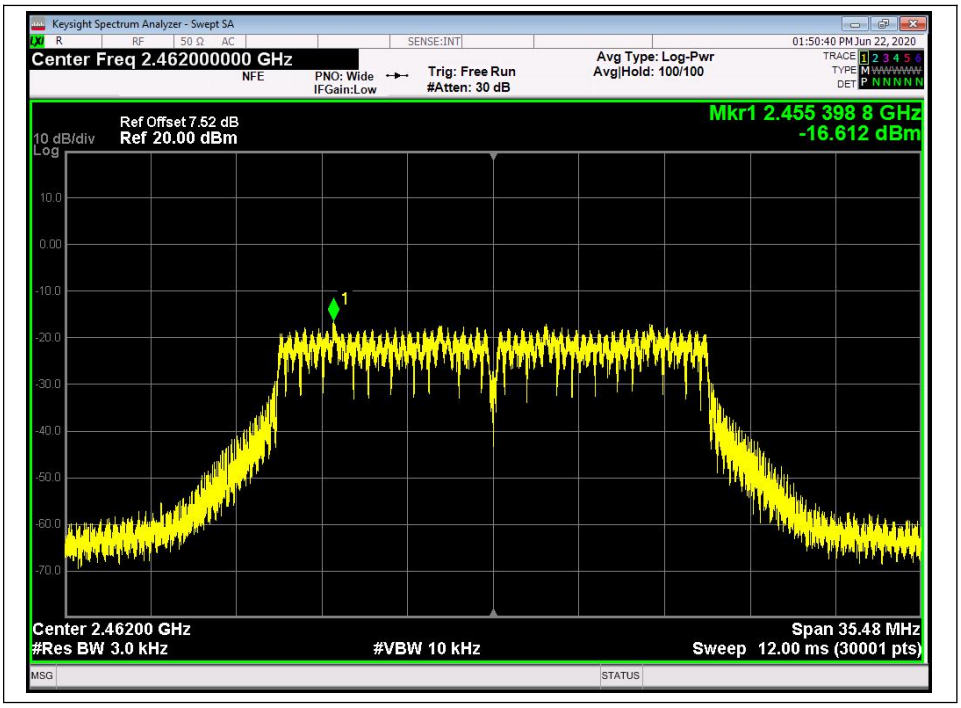
B. Test Plots:



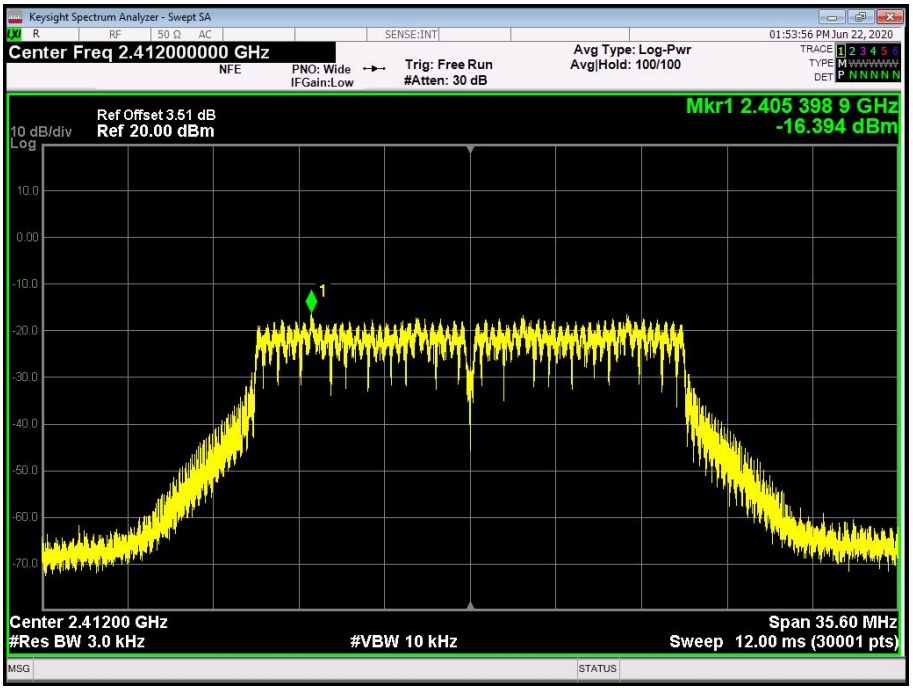
(Channel = 1, 802.11n-20MHz;ANT0)



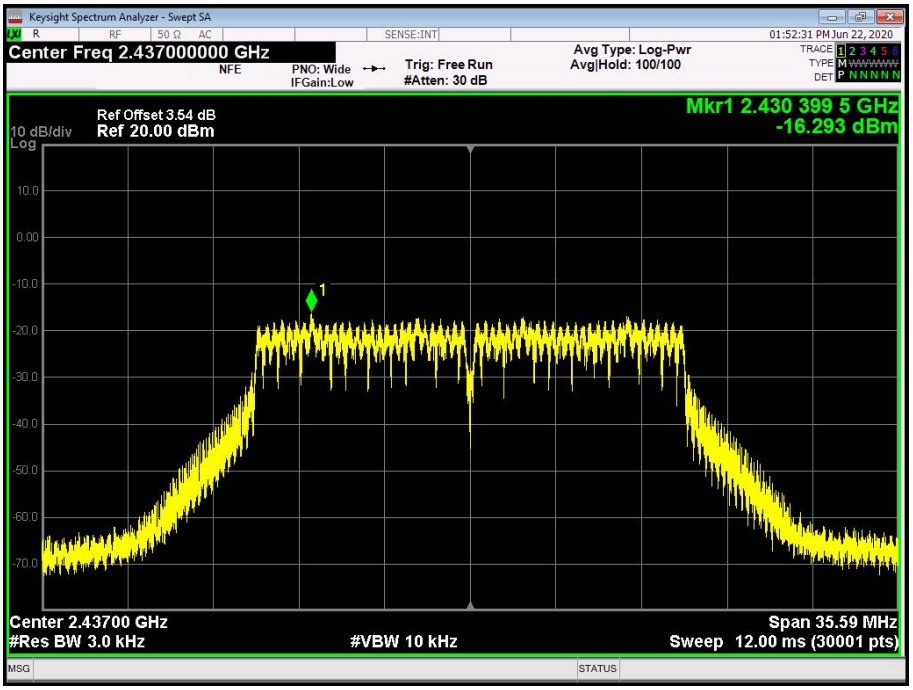
(Channel = 6, 802.11n-20MHz;ANT0)



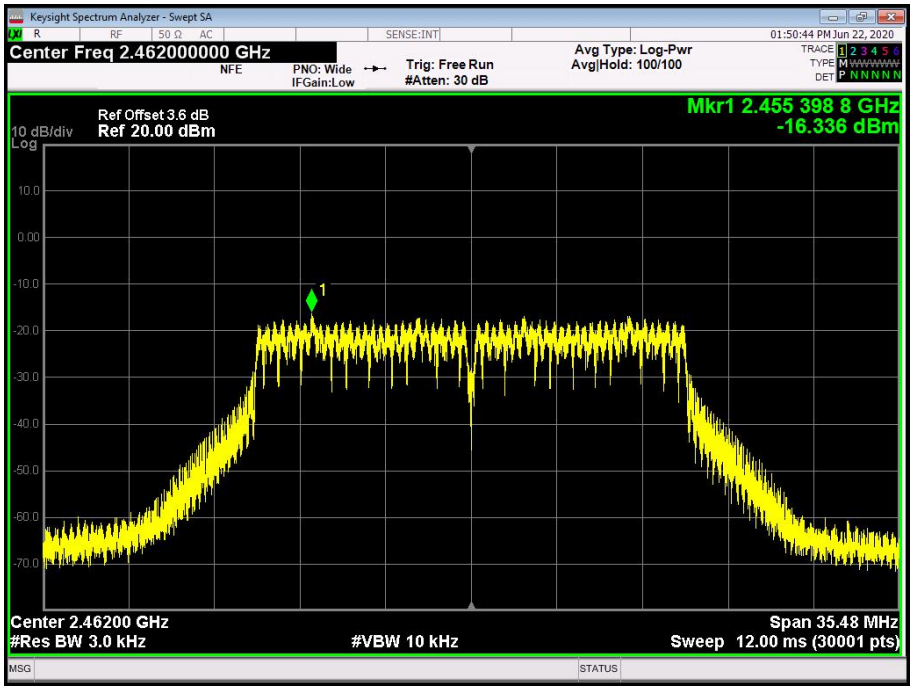
(Channel = 11, 802.11n-20MHz;ANT0)



(Channel = 1, 802.11n-20MHz;ANT1)



(Channel = 6, 802.11n-20MHz;ANT1)



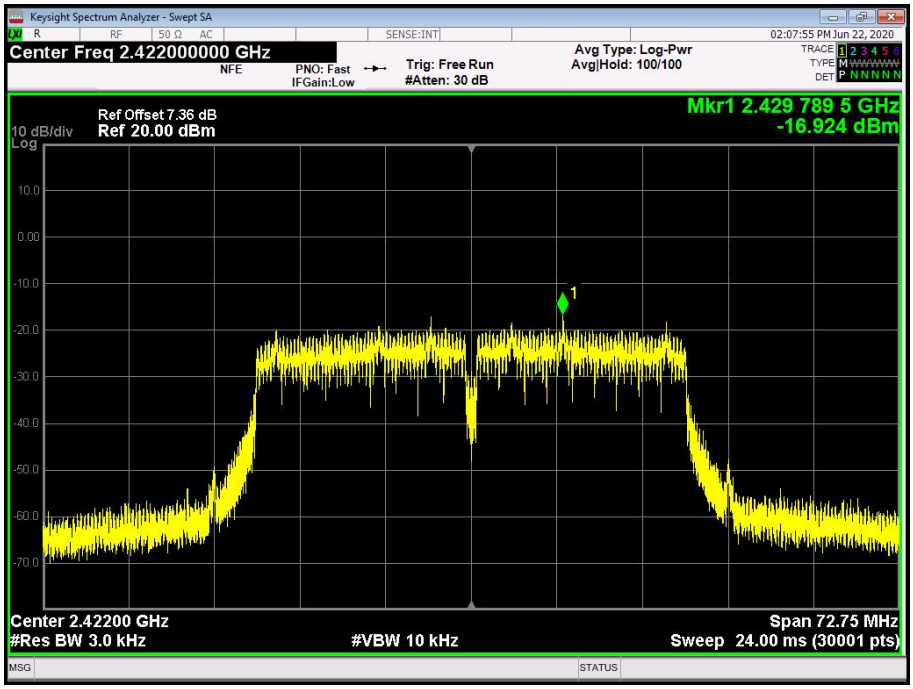
(Channel = 11, 802.11n-20MHz;ANT1)

802.11n-40MHz Test mode

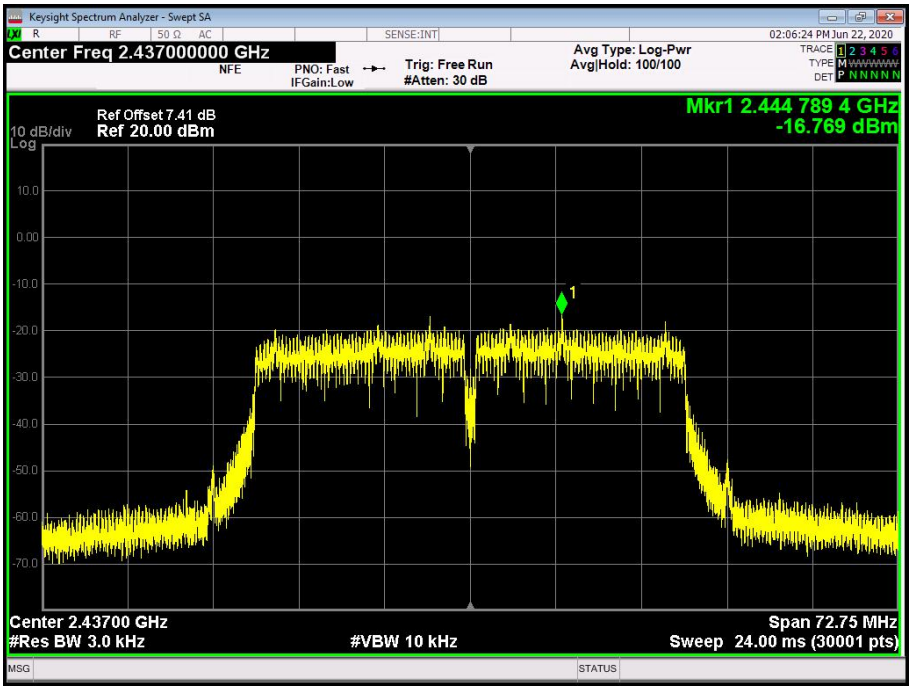
A. Test Verdict:

Spectral power density (dBm/3kHz)						
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)			Limit (dBm/3kHz)	Verdict
		ANT 0	ANT 1	Total		
3	2422	-16.924	-16.865	-13.884	8	**PASS**
6	2437	-16.769	-16.763	-13.756	8	**PASS**
9	2452	-16.467	-16.738	-13.590	8	**PASS**

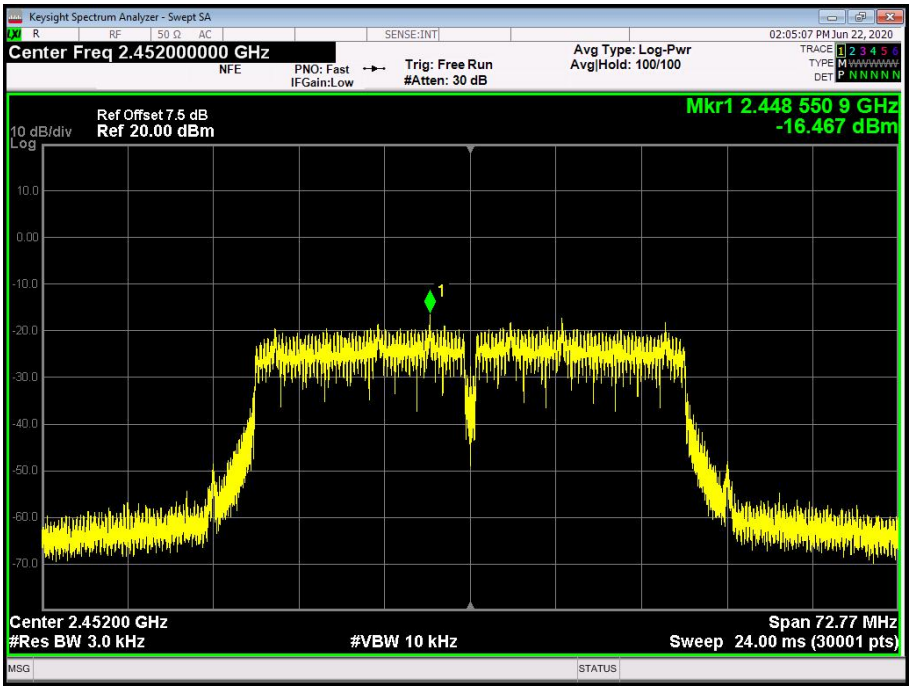
B. Test Plots:



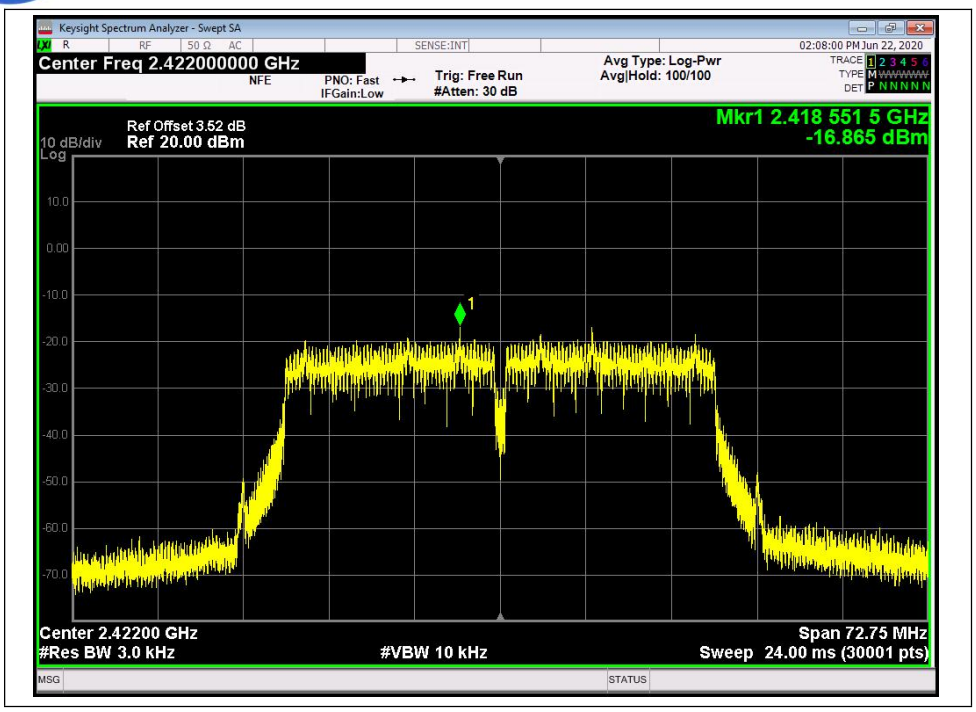
(Channel = 3, 802.11n-40MHz;ANT0)



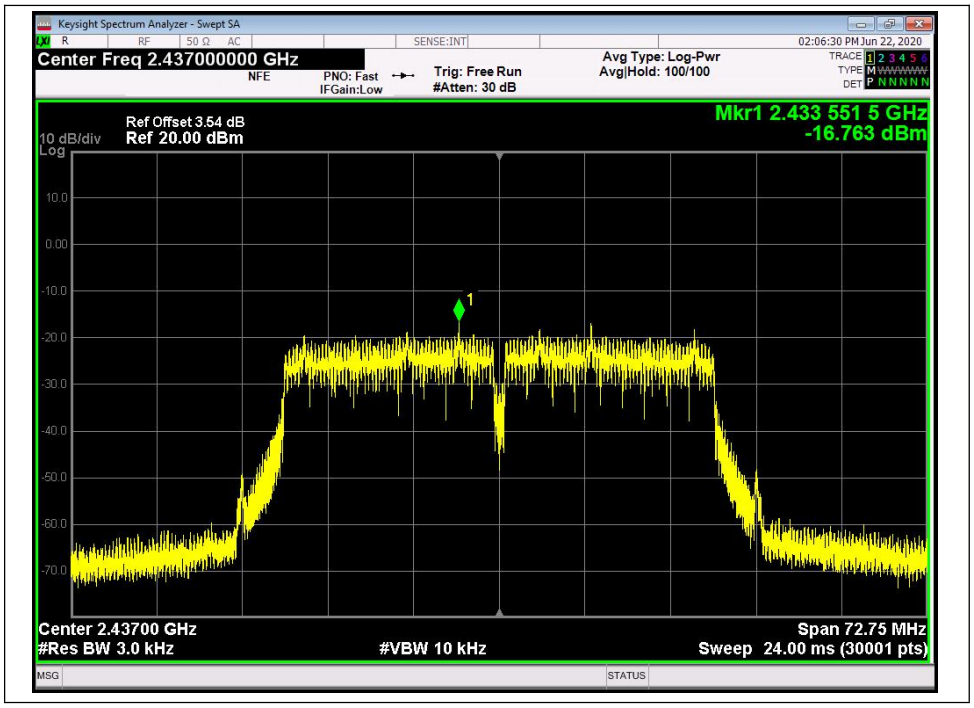
(Channel = 6, 802.11n-40MHz;ANT0)



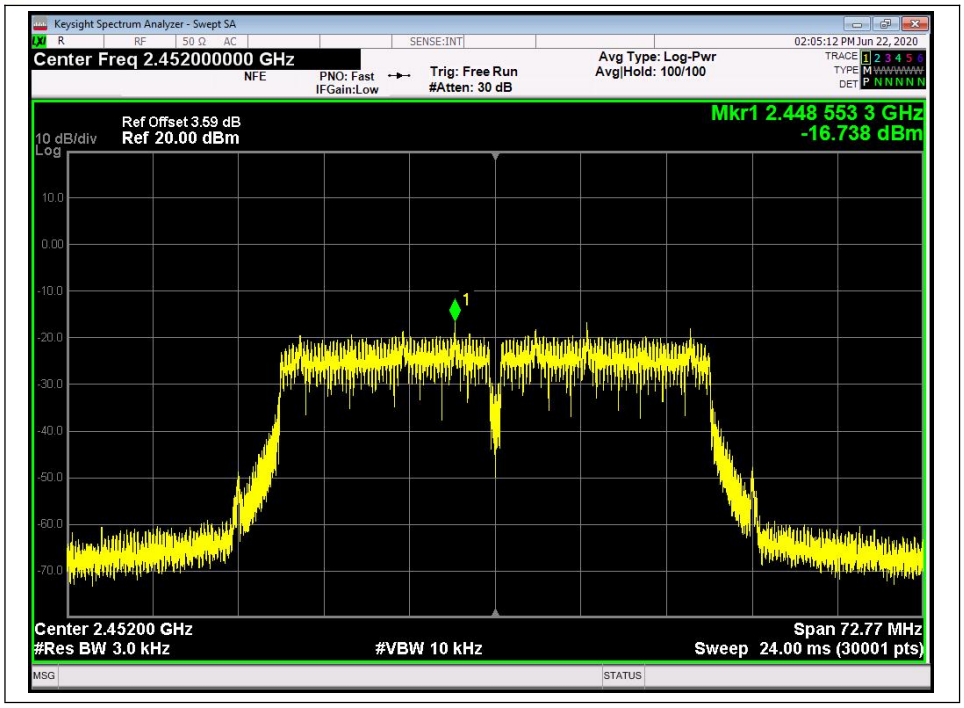
(Channel = 9, 802.11n-40MHz;ANT0)



(Channel = 3, 802.11n-40MHz;ANT1)



(Channel = 6, 802.11n-40MHz;ANT1)



(Channel = 9, 802.11n-40MHz;ANT1)

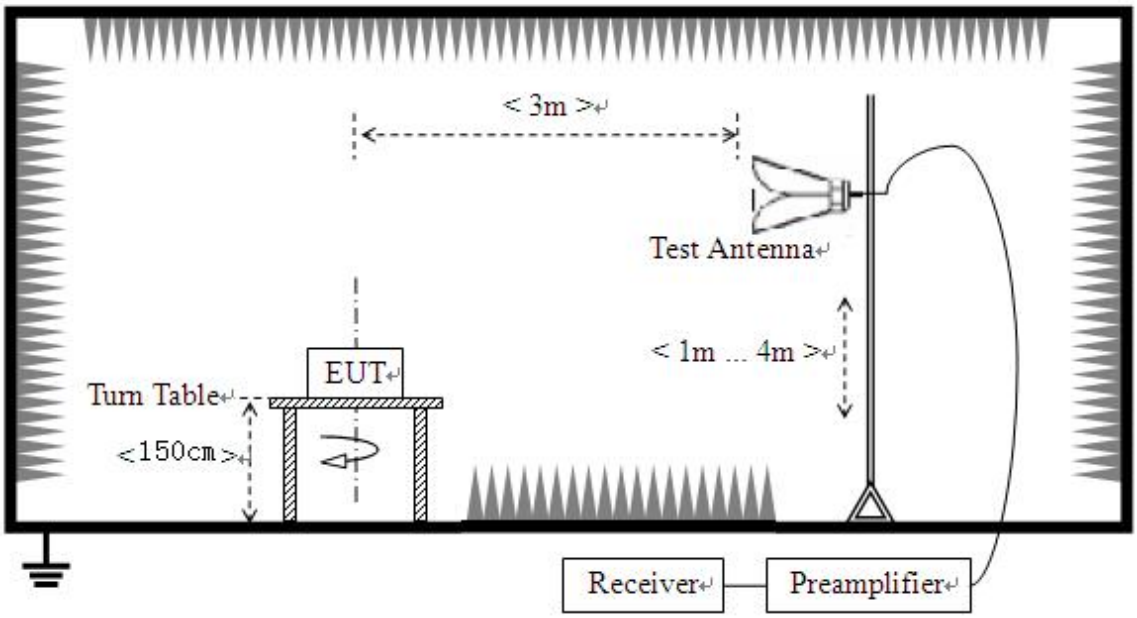
2.6. Restricted Frequency Bands

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



The EUT 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.

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.

KDB 558074 Section 12.1 was used in order to prove compliance.

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 ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.

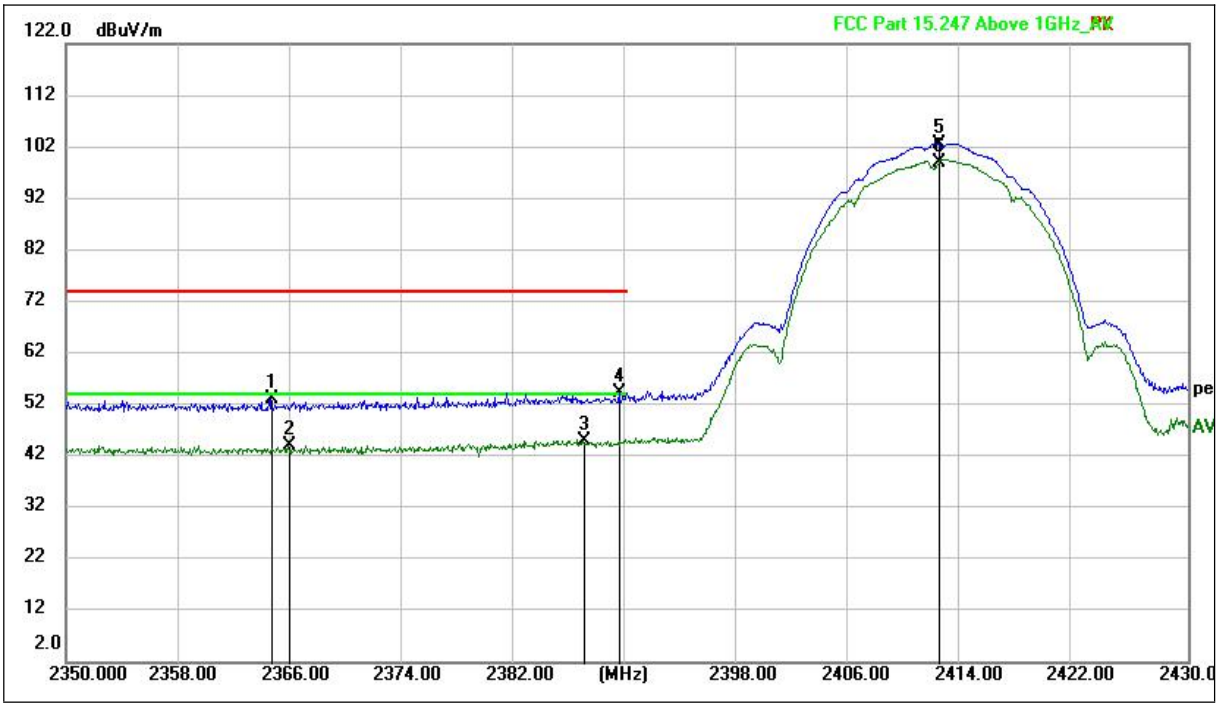
4. All modes of operation were investigated and the worst-case emissions are reported.

B. Equipments List:

Please refer ANNEX B(4).

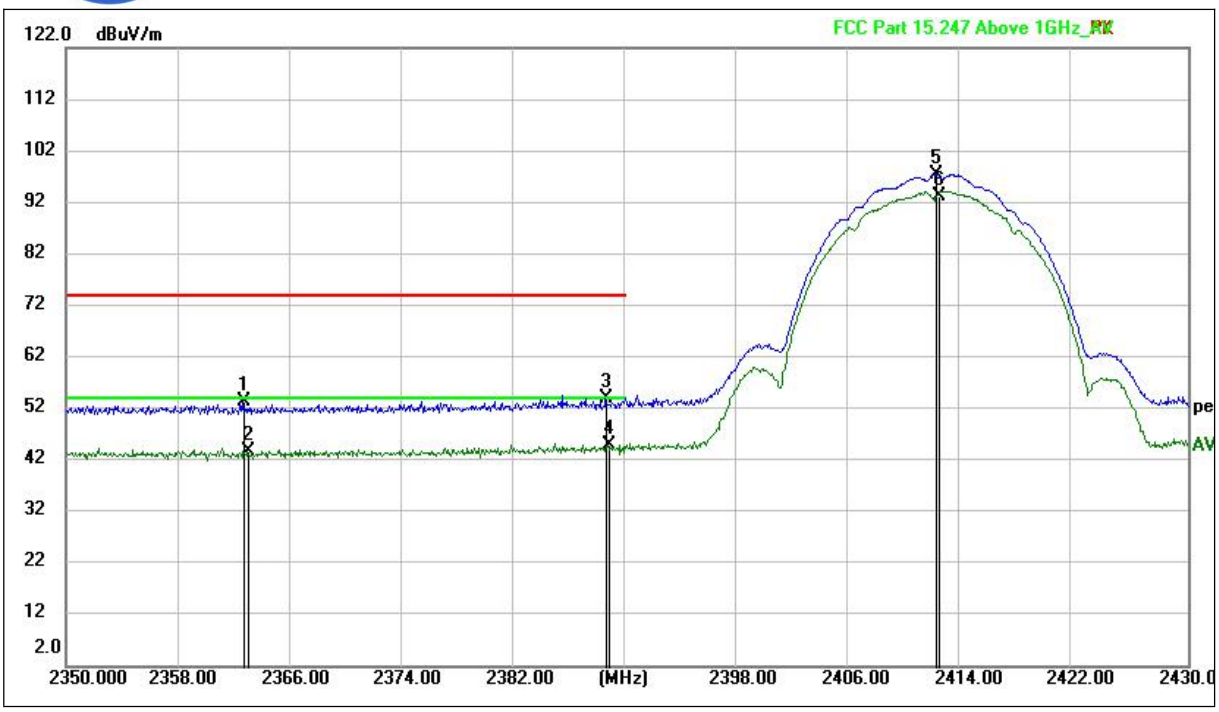
2.6.3. Test Result

802.11b Test mode



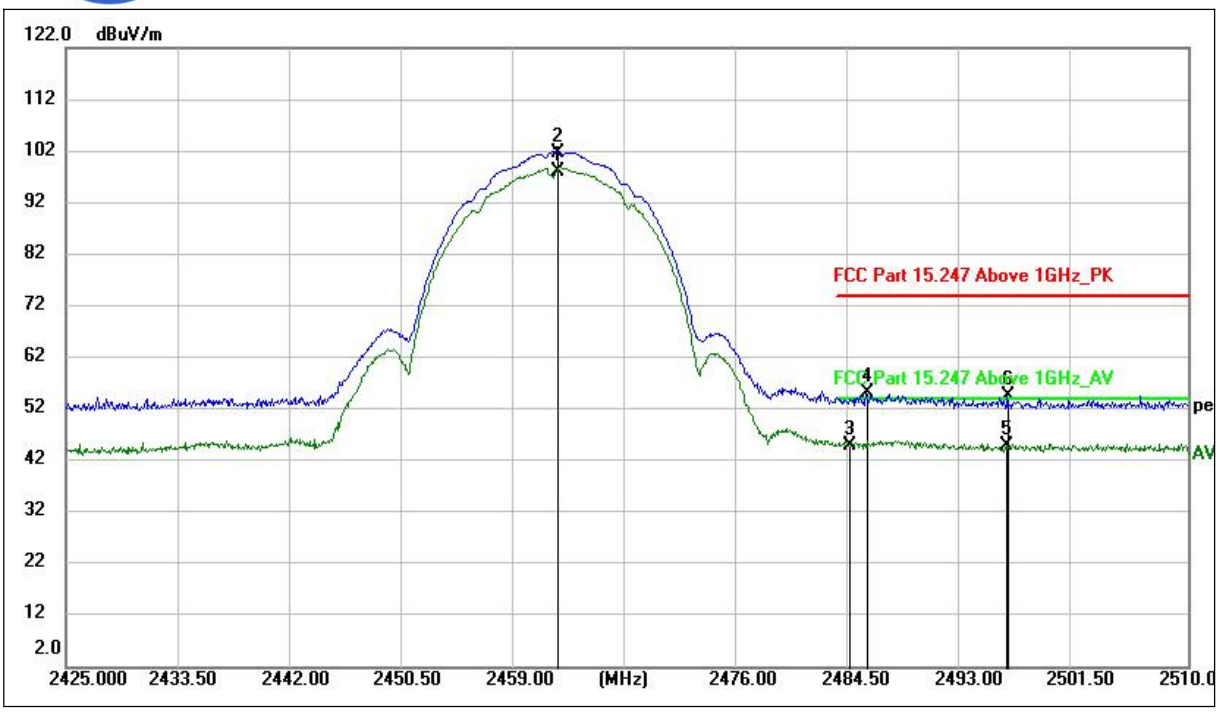
(802.11b _2412MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2364.688	12.97	40.09	53.06	74.00	-20.94	peak	H
2365.880	3.99	40.11	44.10	54.00	-9.90	AVG	H
2386.956	4.33	40.73	45.06	54.00	-8.94	AVG	H
2389.492	13.40	40.92	54.32	74.00	-19.68	peak	H
2412.204	61.54	41.12	102.66	N/A	N/A	peak	H
2412.292	57.73	41.11	98.84	N/A	N/A	AVG	H



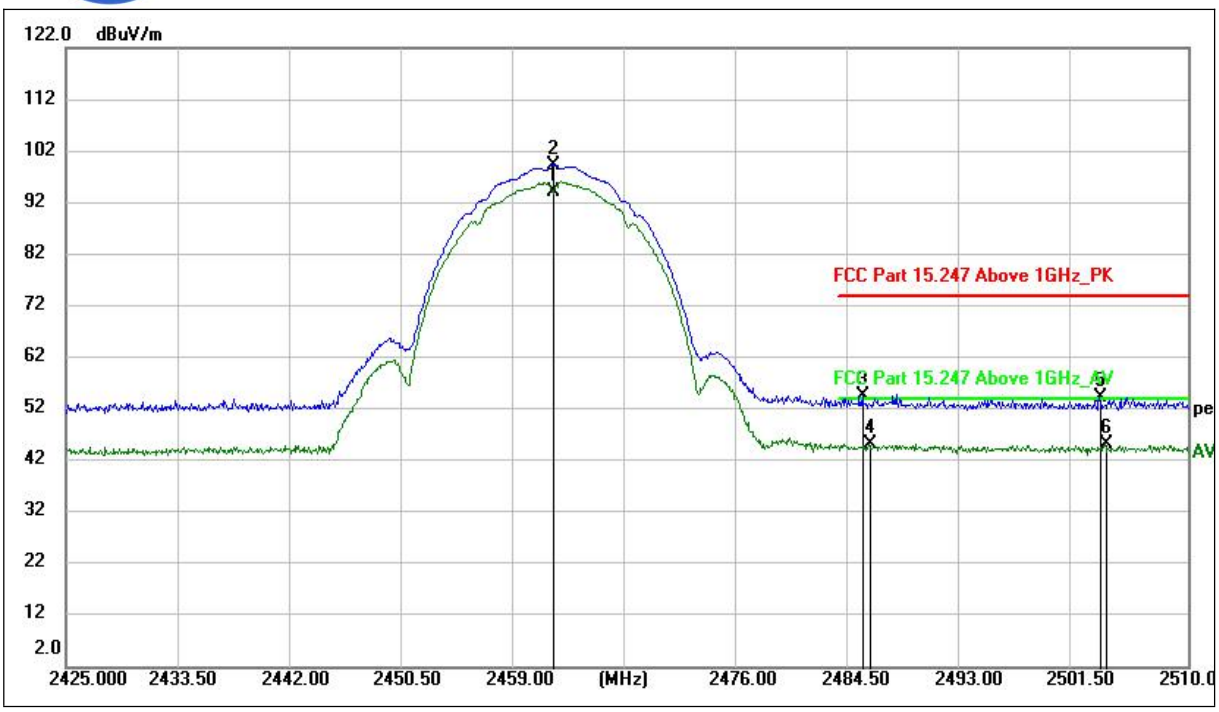
(802.11b _2412MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2362.680	13.36	40.07	53.43	74.00	-20.57	peak	V
2363.016	3.64	40.08	43.72	54.00	-10.28	AVG	V
2388.512	13.20	40.85	54.05	74.00	-19.95	peak	V
2388.680	4.19	40.86	45.05	54.00	-8.95	AVG	V
2412.040	56.26	41.13	97.39	N/A	N/A	peak	V
2412.164	52.16	41.12	93.28	N/A	N/A	AVG	V



(802.11b _2462MHz, Antenna Horizontal)

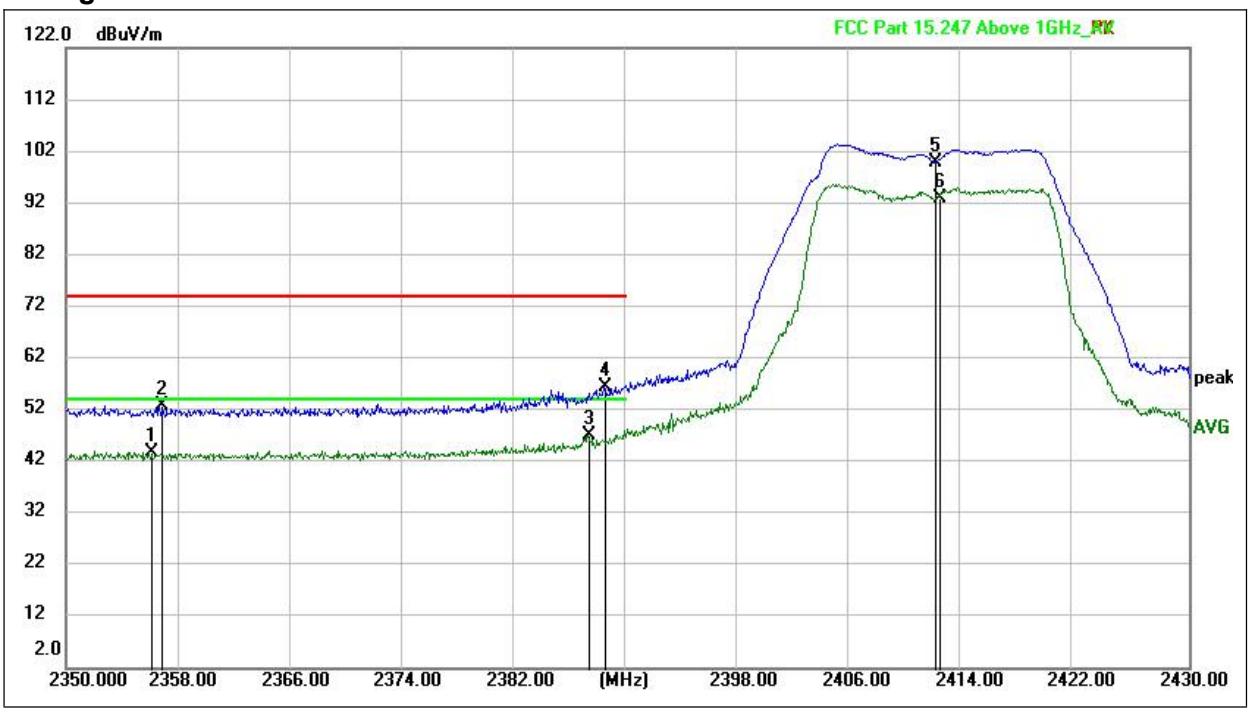
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2462.200	56.41	41.50	97.91	N/A	N/A	AVG	H
2462.281	60.25	41.51	101.76	N/A	N/A	peak	H
2484.347	3.12	41.74	44.86	54.00	-9.14	AVG	H
2485.626	13.46	41.70	55.16	74.00	-18.84	peak	H
2496.298	3.65	41.45	45.10	54.00	-8.90	AVG	H
2496.370	13.25	41.45	54.70	74.00	-19.30	peak	H



(802.11b _2462MHz, Antenna Vertical)

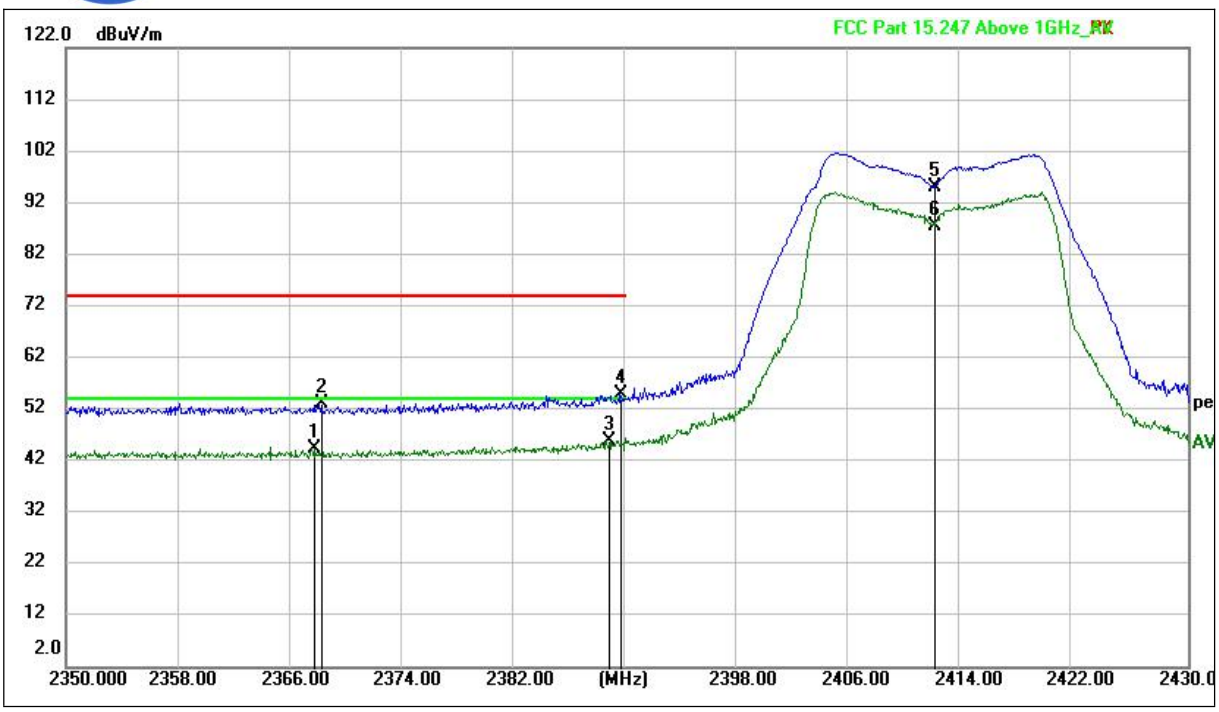
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2461.907	52.58	41.48	94.06	N/A	N/A	AVG	V
2461.975	57.86	41.49	99.35	N/A	N/A	peak	V
2485.410	12.92	41.71	54.63	74.00	-19.37	peak	V
2485.928	3.58	41.69	45.27	54.00	-8.73	AVG	V
2503.345	12.77	41.49	54.26	74.00	-19.74	peak	V
2503.812	3.68	41.49	45.17	54.00	-8.83	AVG	V

802.11g Test mode



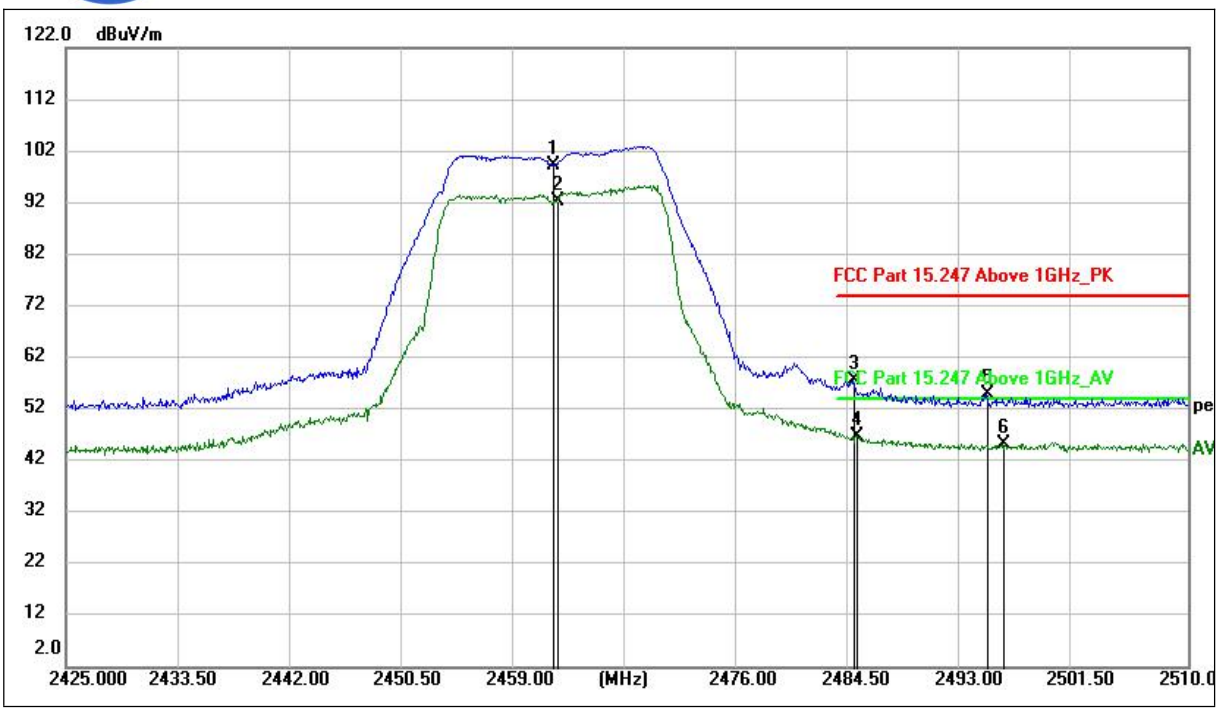
(802.11g _2412MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2356.004	3.78	40.00	43.78	54.00	-10.22	AVG	H
2356.744	12.78	40.01	52.79	74.00	-21.21	peak	H
2387.248	6.23	40.76	46.99	54.00	-7.01	AVG	H
2388.380	15.73	40.84	56.57	74.00	-17.43	peak	H
2411.980	58.72	41.13	99.85	N/A	N/A	peak	H
2412.172	51.75	41.12	92.87	N/A	N/A	AVG	H



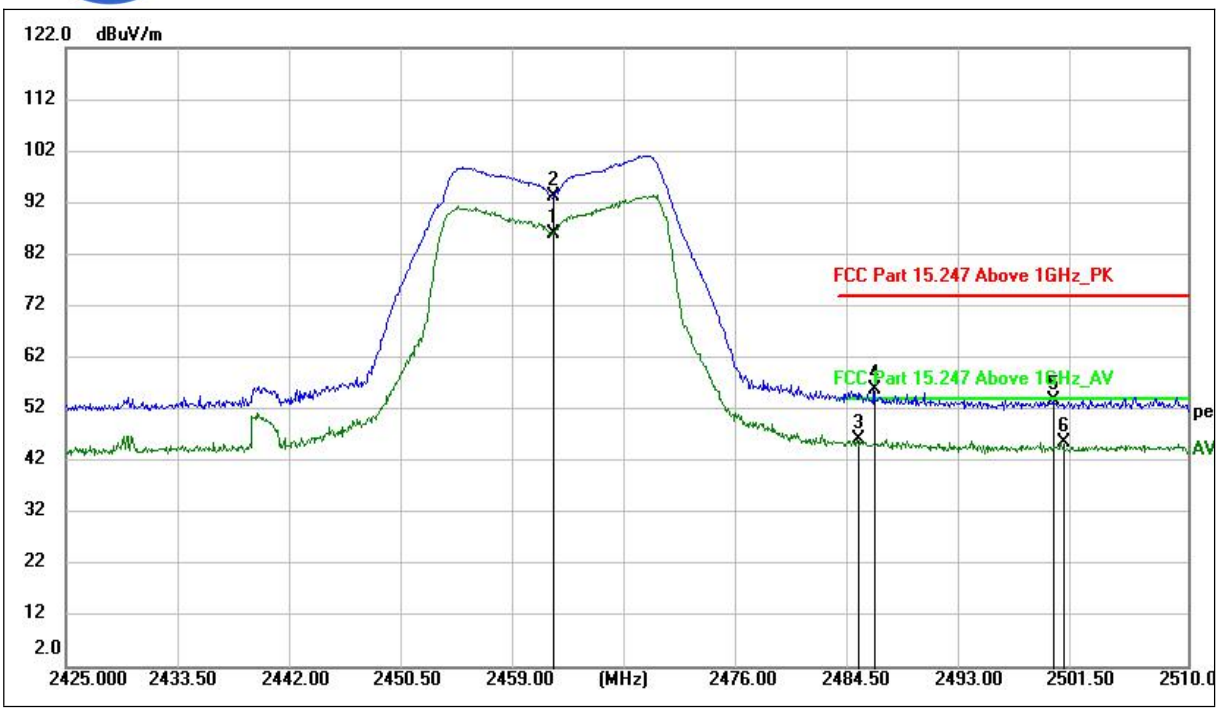
(802.11g _2412MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2367.612	4.18	40.13	44.31	54.00	-9.69	AVG	V
2368.196	12.87	40.13	53.00	74.00	-21.00	peak	V
2388.660	5.14	40.86	46.00	54.00	-8.00	AVG	V
2389.600	14.11	40.93	55.04	74.00	-18.96	peak	V
2411.940	53.85	41.13	94.98	N/A	N/A	peak	V
2411.996	46.41	41.13	87.54	N/A	N/A	AVG	V



(802.11g _2462MHz, Antenna Horizontal)

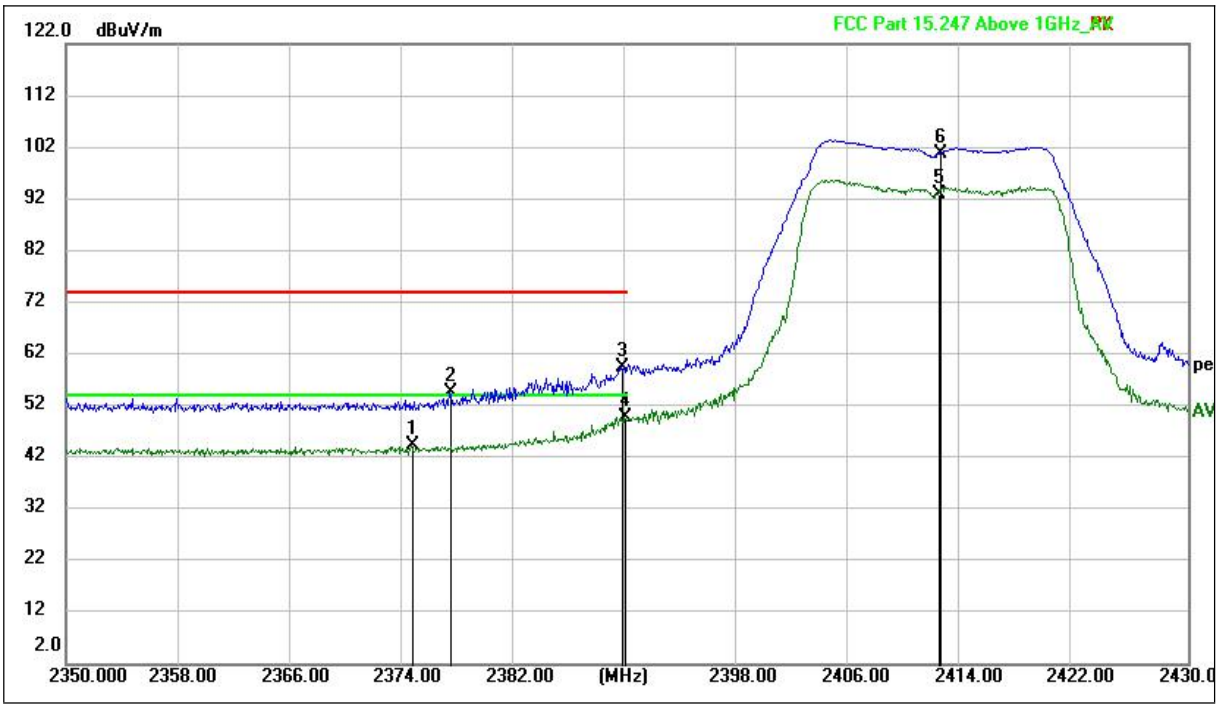
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2461.826	57.64	41.48	99.12	N/A	N/A	peak	H
2462.188	50.95	41.50	92.45	N/A	N/A	AVG	H
2484.734	15.92	41.72	57.64	74.00	-16.36	peak	H
2484.865	5.19	41.72	46.91	54.00	-7.09	AVG	H
2494.832	13.45	41.44	54.89	74.00	-19.11	peak	H
2496.013	3.94	41.45	45.39	54.00	-8.61	AVG	H



(802.11g _2462MHz, Antenna Vertical)

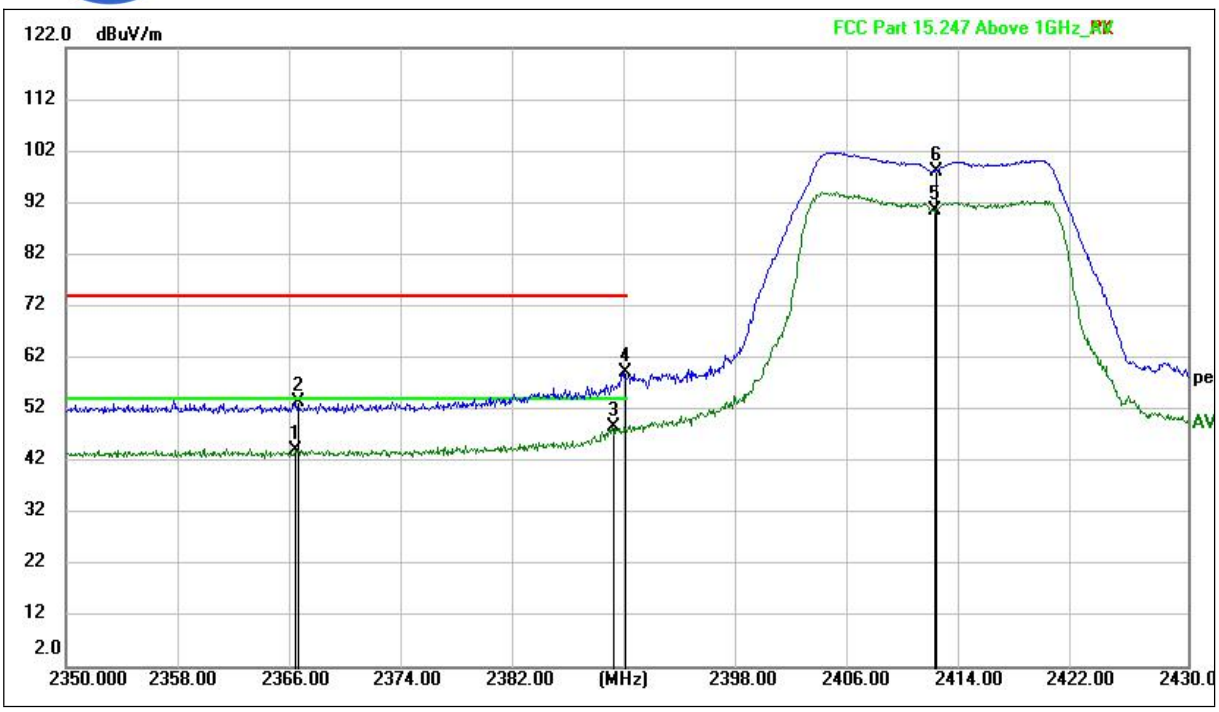
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2461.843	44.35	41.48	85.83	N/A	N/A	AVG	V
2461.975	51.65	41.49	93.14	N/A	N/A	peak	V
2484.985	4.37	41.71	46.08	54.00	-7.92	AVG	V
2486.255	14.19	41.68	55.87	74.00	-18.13	peak	V
2499.830	12.15	41.48	53.63	74.00	-20.37	peak	V
2500.514	3.96	41.48	45.44	54.00	-8.56	AVG	V

802.11n-20MHz Test mode



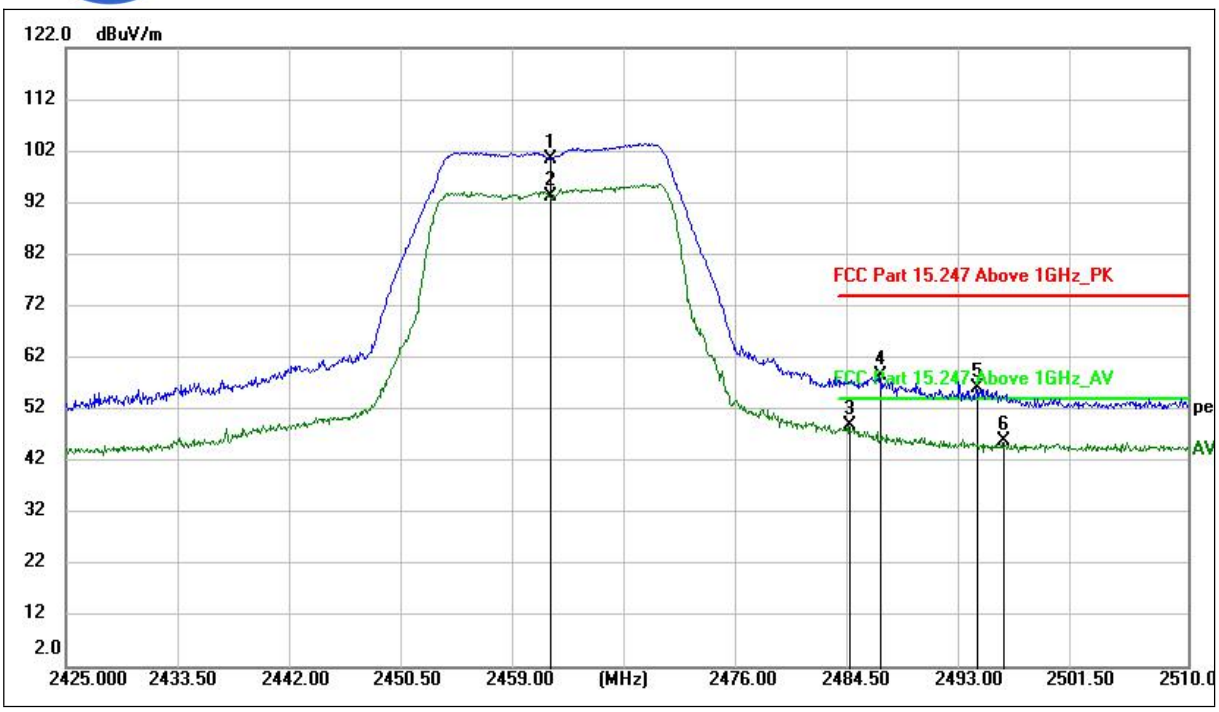
(802.11n_20M _2412MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2374.648	4.32	40.19	44.51	54.00	-9.49	AVG	H
2377.416	14.35	40.20	54.55	74.00	-19.45	peak	H
2389.676	18.35	40.94	59.29	74.00	-14.71	peak	H
2389.884	8.82	40.95	49.77	54.00	-4.23	AVG	H
2412.188	51.80	41.12	92.92	N/A	N/A	AVG	H
2412.328	59.61	41.11	100.72	N/A	N/A	peak	H



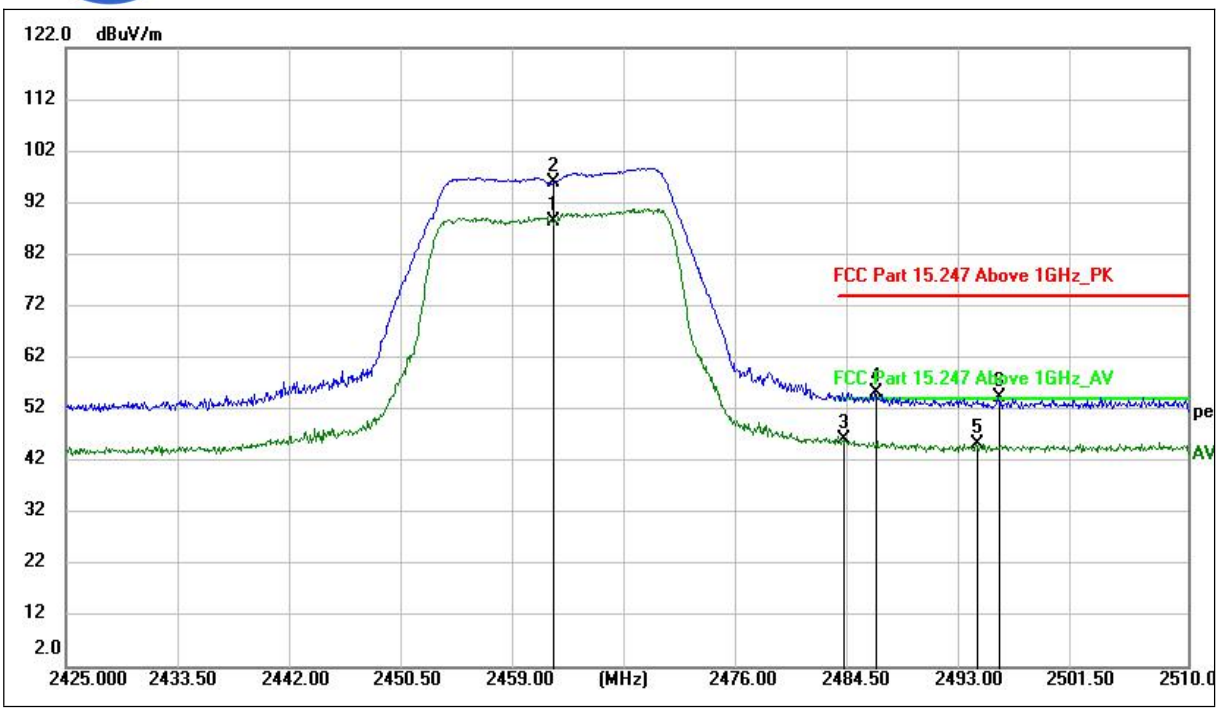
(802.11n_20M _2412MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2366.344	4.10	40.11	44.21	54.00	-9.79	AVG	V
2366.536	13.40	40.11	53.51	74.00	-20.49	peak	V
2389.020	7.62	40.89	48.51	54.00	-5.49	AVG	V
2389.844	18.24	40.95	59.19	74.00	-14.81	peak	V
2411.956	49.32	41.13	90.45	N/A	N/A	AVG	V
2412.048	56.95	41.13	98.08	N/A	N/A	peak	V



(802.11n_20M _2462MHz, Antenna Horizontal)

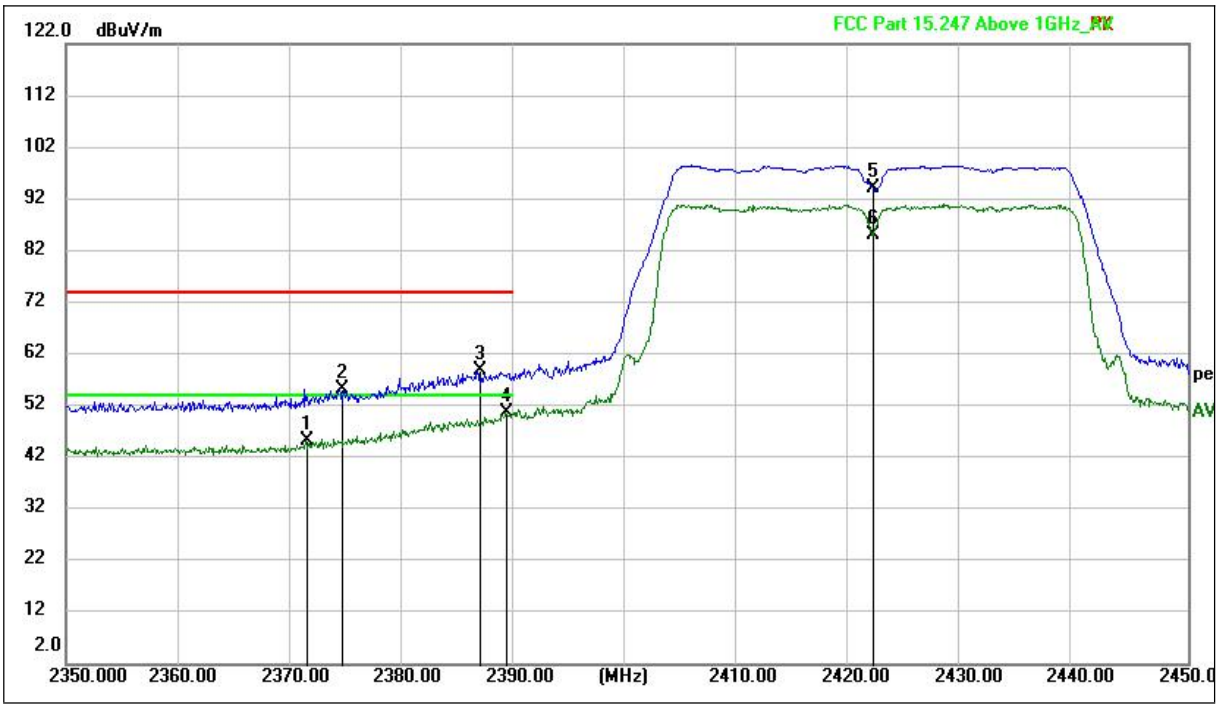
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2461.673	58.98	41.48	100.46	N/A	N/A	peak	H
2461.673	51.67	41.48	93.15	N/A	N/A	AVG	H
2484.390	7.17	41.74	48.91	54.00	-5.09	AVG	H
2486.693	16.87	41.67	58.54	74.00	-15.46	peak	H
2494.016	14.59	41.44	56.03	74.00	-17.97	peak	H
2496.017	4.27	41.45	45.72	54.00	-8.28	AVG	H



(802.11n_20M _2462MHz, Antenna Vertical)

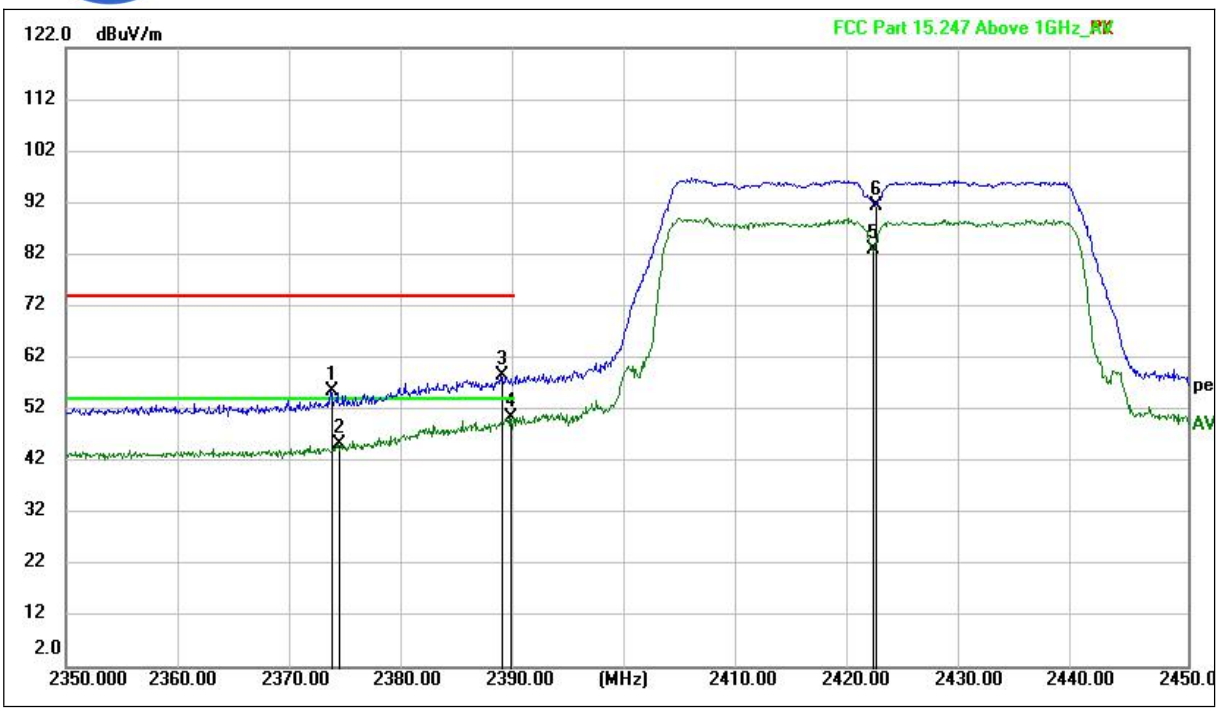
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2461.928	46.99	41.49	88.48	N/A	N/A	AVG	V
2461.975	54.39	41.49	95.88	N/A	N/A	peak	V
2483.986	4.37	41.75	46.12	54.00	-7.88	AVG	V
2486.315	13.67	41.67	55.34	74.00	-18.66	peak	V
2494.046	3.83	41.44	45.27	54.00	-8.73	AVG	V
2495.716	12.84	41.45	54.29	74.00	-19.71	peak	V

802.11n-40MHz Test mode



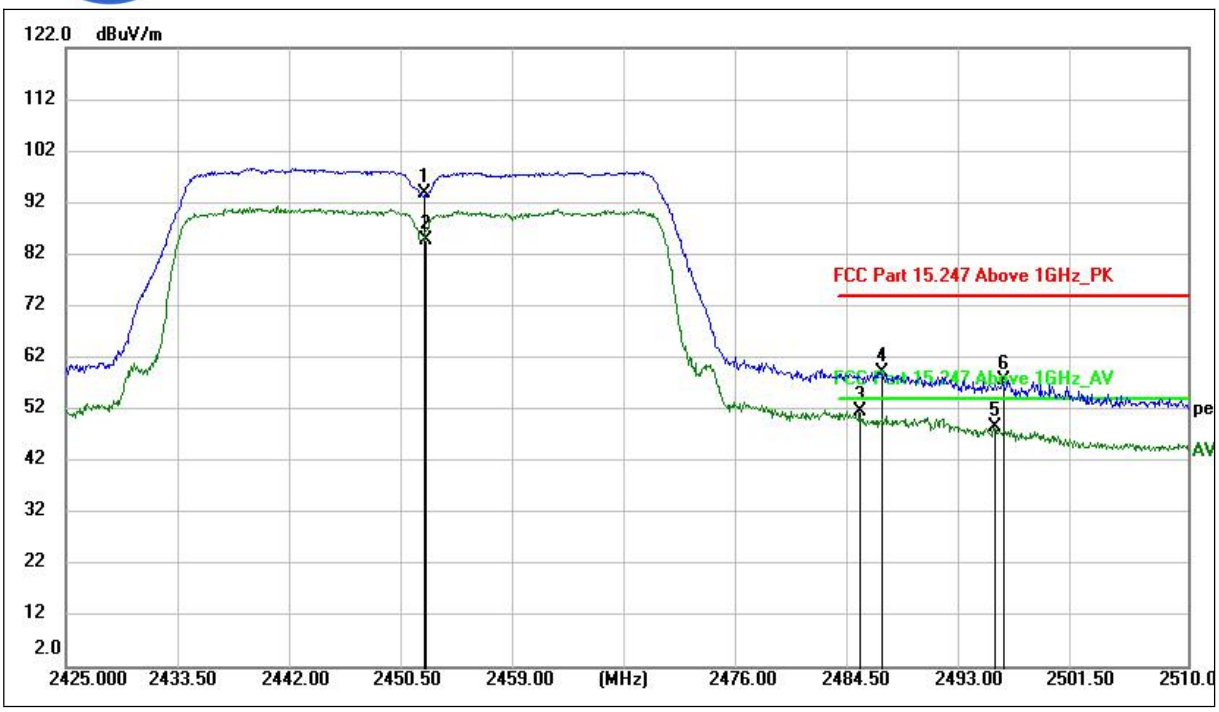
(802.11n_40M _2422MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2371.480	5.00	40.16	45.16	54.00	-8.84	AVG	H
2374.505	14.90	40.19	55.09	74.00	-18.91	peak	H
2386.825	18.09	40.73	58.82	74.00	-15.18	peak	H
2389.250	9.92	40.90	50.82	54.00	-3.18	AVG	H
2421.910	53.45	40.76	94.21	N/A	N/A	peak	H
2421.910	44.28	40.76	85.04	N/A	N/A	AVG	H



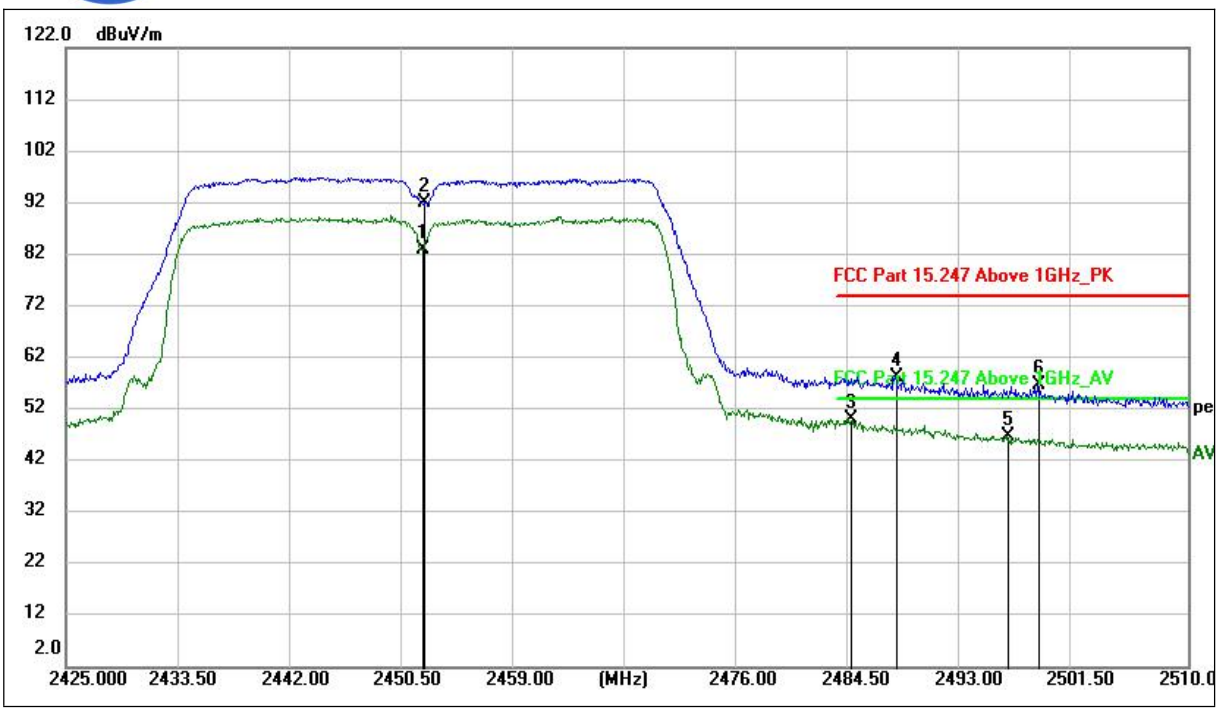
(802.11n_40M _2422MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2373.625	15.25	40.18	55.43	74.00	-18.57	peak	V
2374.355	4.96	40.19	45.15	54.00	-8.85	AVG	V
2388.815	17.76	40.87	58.63	74.00	-15.37	peak	V
2389.620	9.59	40.93	50.52	54.00	-3.48	AVG	V
2421.935	42.26	40.76	83.02	N/A	N/A	AVG	V
2422.160	50.75	40.76	91.51	N/A	N/A	peak	V



(802.11n_40M _2452MHz, Antenna Horizontal)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2452.085	52.72	41.10	93.82	N/A	N/A	peak	H
2452.213	43.80	41.11	84.91	N/A	N/A	AVG	H
2485.125	9.96	41.72	51.68	54.00	-2.32	AVG	H
2486.761	17.59	41.67	59.26	74.00	-14.74	peak	H
2495.346	7.06	41.45	48.51	54.00	-5.49	AVG	H
2496.026	16.21	41.45	57.66	74.00	-16.34	peak	H



(802.11n_40M _2452MHz, Antenna Vertical)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
2452.021	41.82	41.10	82.92	N/A	N/A	AVG	V
2452.175	50.78	41.11	91.89	N/A	N/A	peak	V
2484.474	8.35	41.73	50.08	54.00	-3.92	AVG	V
2487.925	16.68	41.63	58.31	74.00	-15.69	peak	V
2496.340	5.30	41.45	46.75	54.00	-7.25	AVG	V
2498.682	15.31	41.47	56.78	74.00	-17.22	peak	V

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 50μH/50Ω line impedance stabilization network (LISN).

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

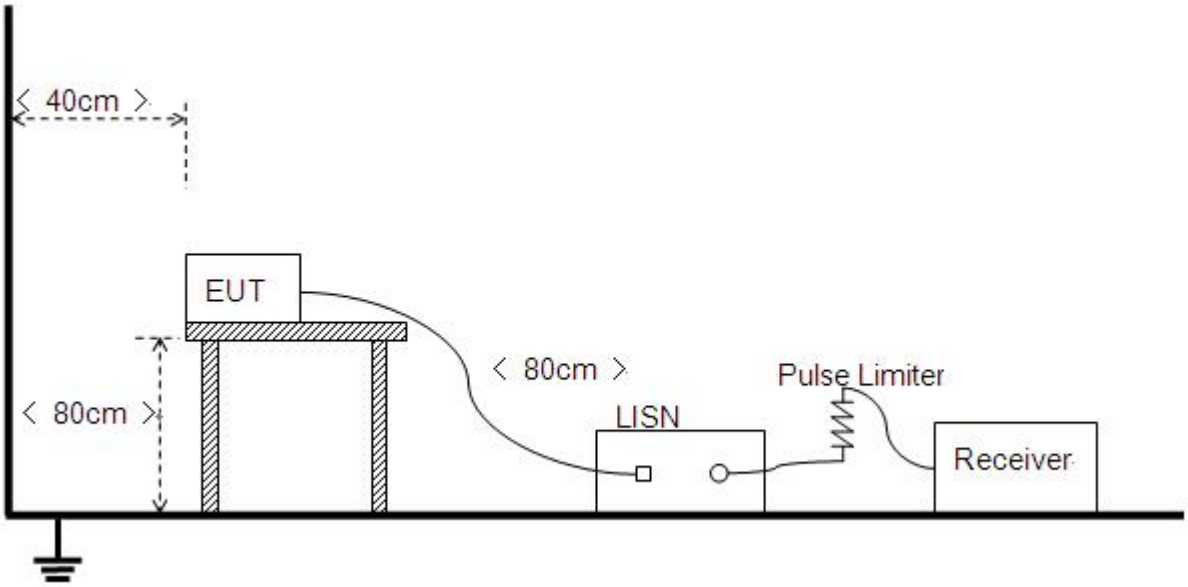
NOTE:

(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.

B. Equipments List:

Please refer ANNEX B(4).

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.

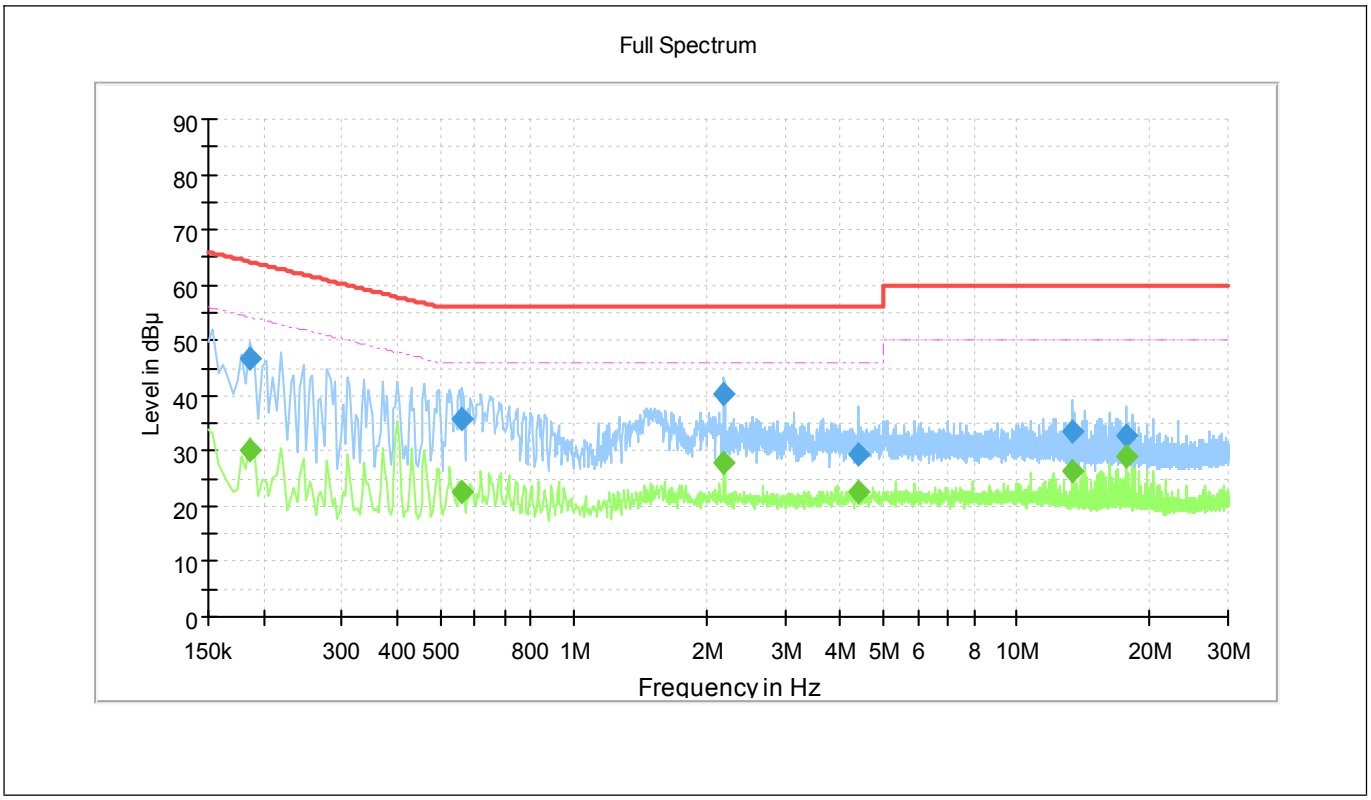
Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test setup:

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

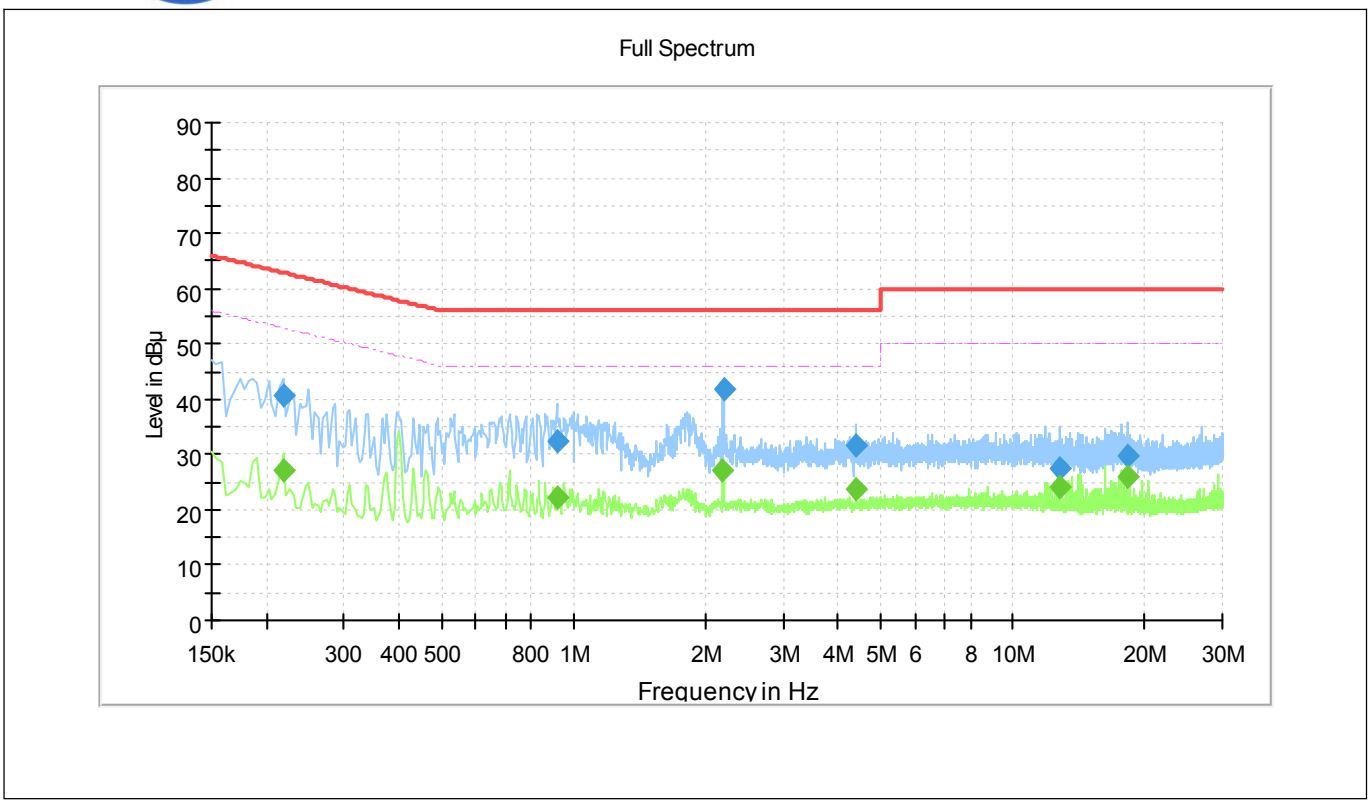
Note: The test voltage is AC 120V/60Hz.

B. Test Plots:



(Plot A: L Phase)

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.186000	---	30.14	54.21	24.08	L1	10.2
0.186000	46.53	---	64.21	17.68	L1	10.2
0.562000	---	22.74	46.00	23.26	L1	10.2
0.562000	35.66	---	56.00	20.34	L1	10.2
2.190000	---	27.79	46.00	18.21	L1	10.3
2.190000	40.31	---	56.00	15.69	L1	10.3
4.382000	29.19	---	56.00	26.81	L1	10.4
4.382000	---	22.65	46.00	23.35	L1	10.4
13.418000	33.64	---	60.00	26.36	L1	10.8
13.418000	---	26.27	50.00	23.73	L1	10.8
17.694000	---	28.94	50.00	21.06	L1	10.8
17.694000	32.69	---	60.00	27.31	L1	10.8



(Plot A: N Phase)

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.218000	---	27.16	52.90	25.74	N	10.4
0.218000	40.62	---	62.90	22.28	N	10.4
0.918000	---	22.39	46.00	23.61	N	10.4
0.918000	32.32	---	56.00	23.68	N	10.4
2.190000	---	27.27	46.00	18.73	N	10.5
2.194000	41.94	---	56.00	14.06	N	10.5
4.386000	31.79	---	56.00	24.21	N	10.6
4.386000	---	23.70	46.00	22.30	N	10.6
12.746000	27.60	---	60.00	32.40	N	10.9
12.746000	---	23.95	50.00	26.05	N	10.9
18.246000	---	26.16	50.00	23.84	N	11.0
18.246000	29.60	---	60.00	30.40	N	11.0

2.8. Radiated Emission

2.8.1. Requirement

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

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.

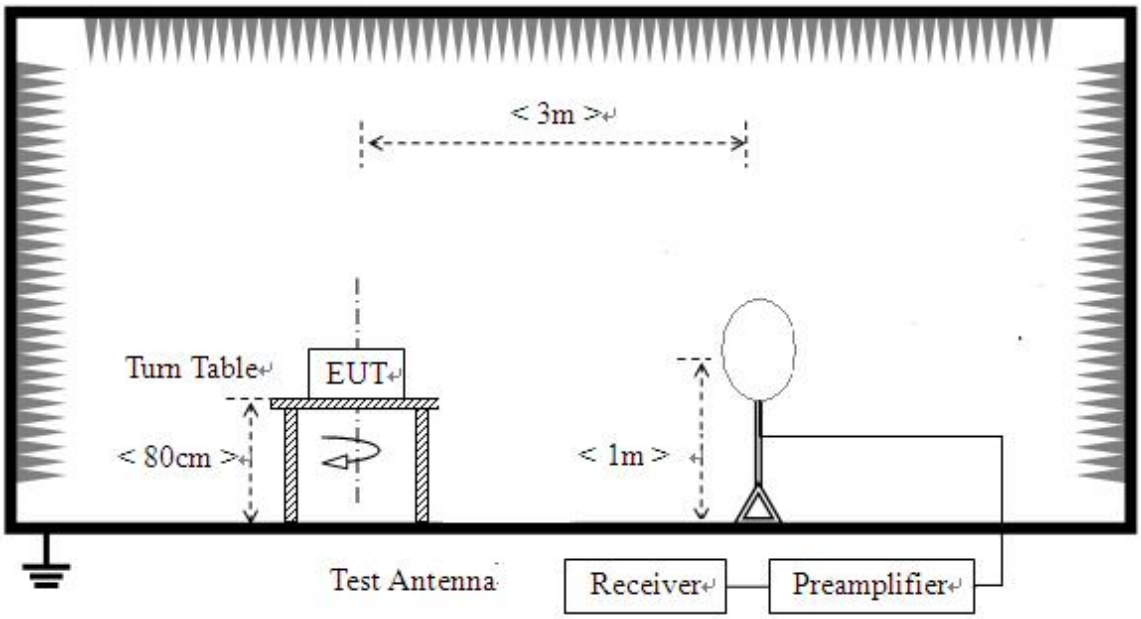
For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK)

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)

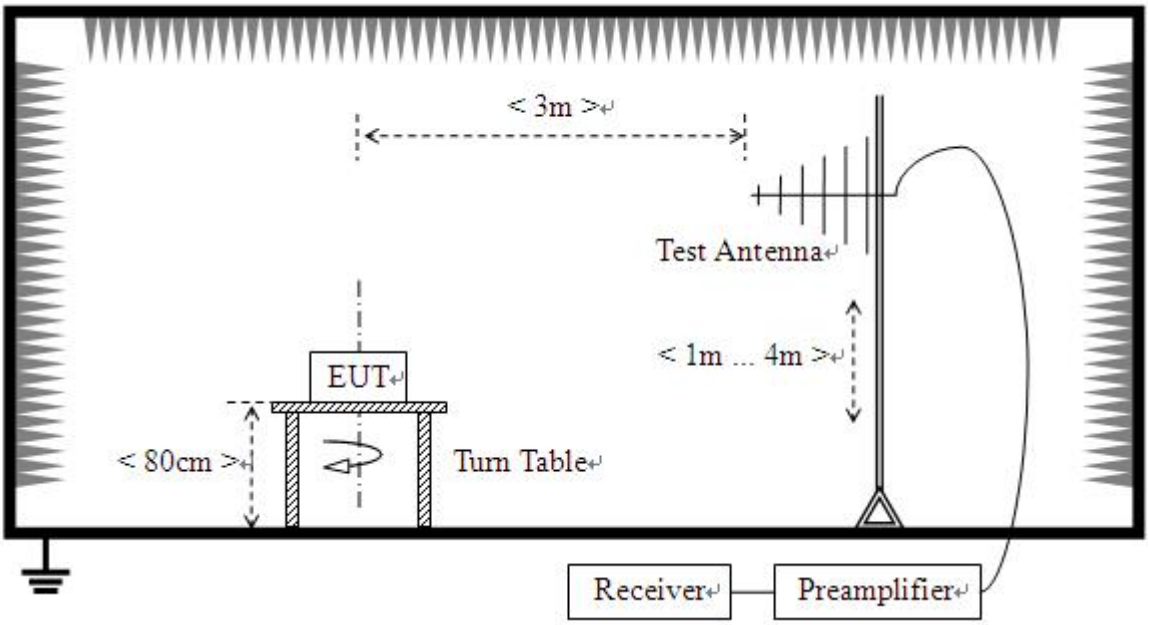
2.8.2. Test Description

A. Test Setup:

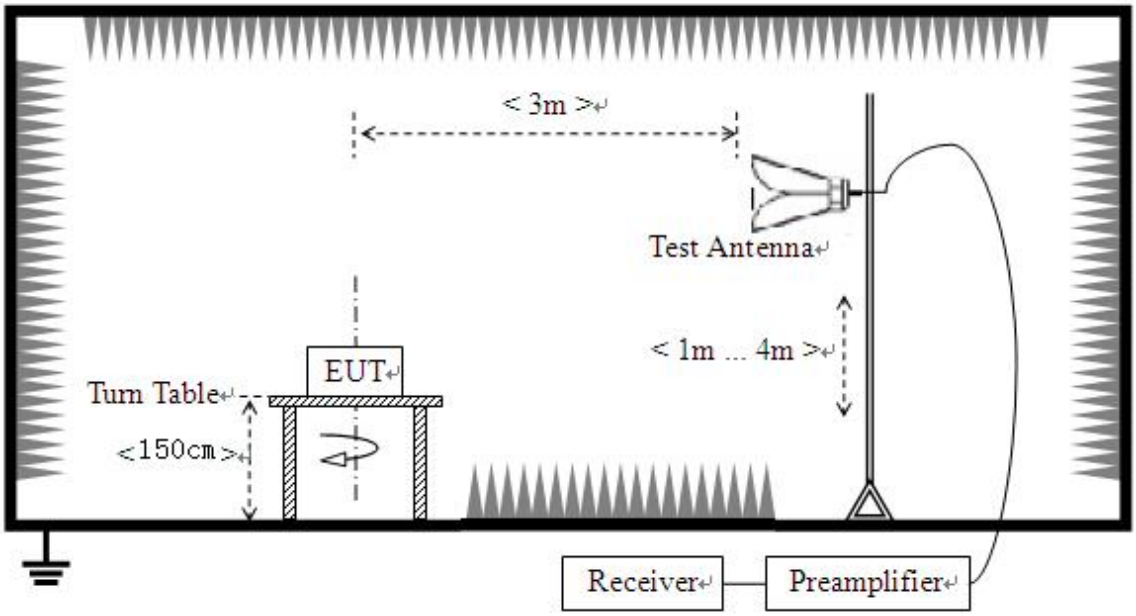
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 3GHz



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. Test site have a minimum area of the ground plane covered with RF absorbing material as specified in Figure 6 of ANSI C63.4: 2014.

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 radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement 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 measurement antenna elevation shall be that which maximizes the emissions. The measurement 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 EUT 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

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 ≥ 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.

A. Equipments List:

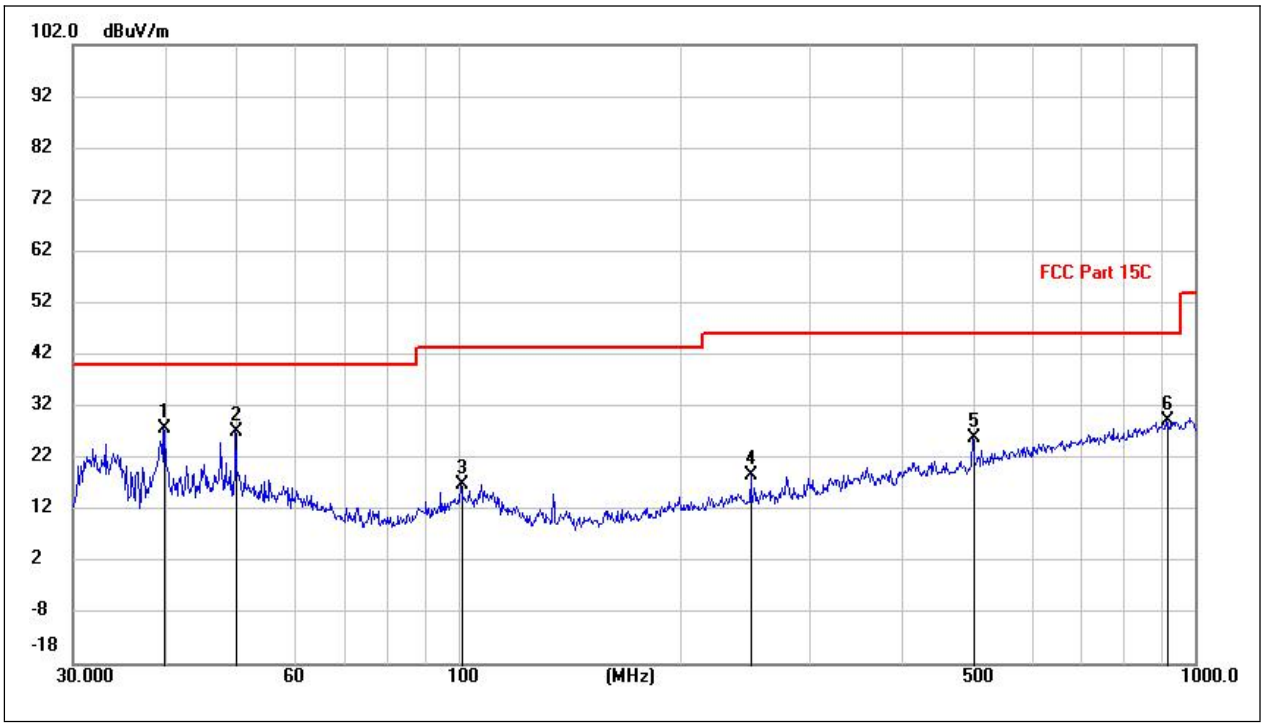
Please refere ANNEX B(4).

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.

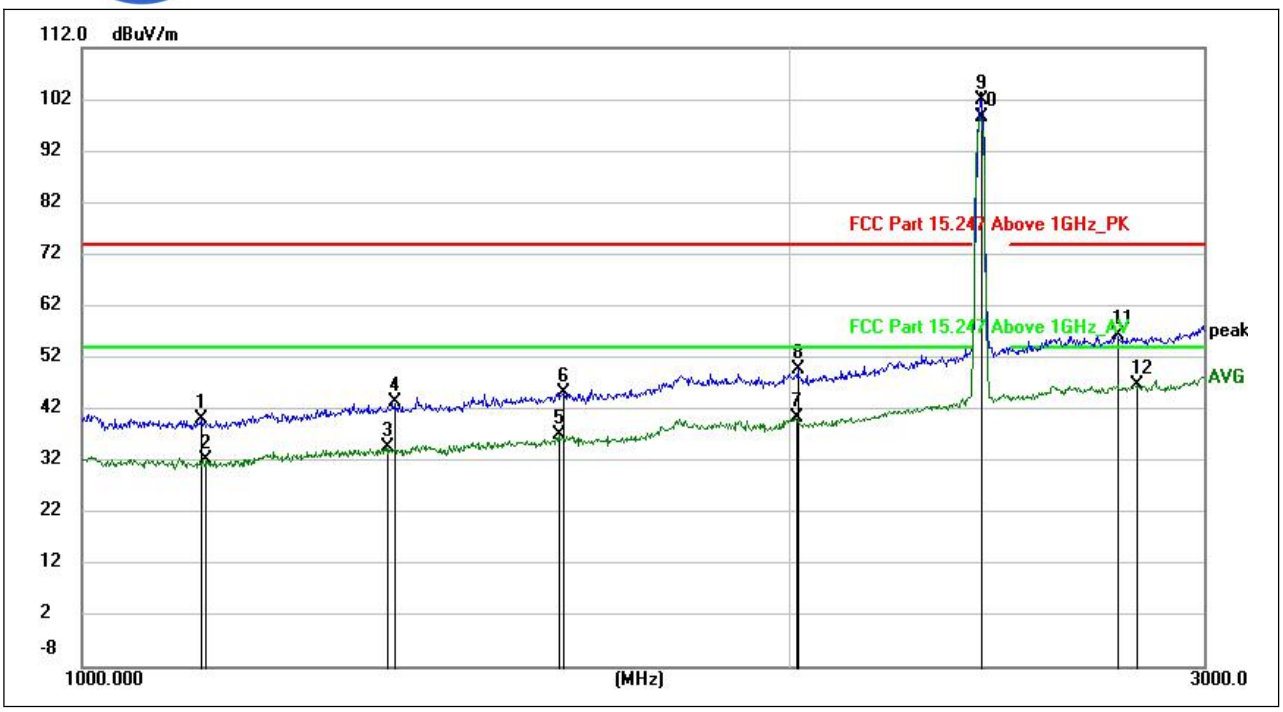
Note2: For the frequency, which started from 18GHz to 40GHz, was pre-scanned and the result which was 10dB lower than the limit was not recorded.

802.11b Test mode



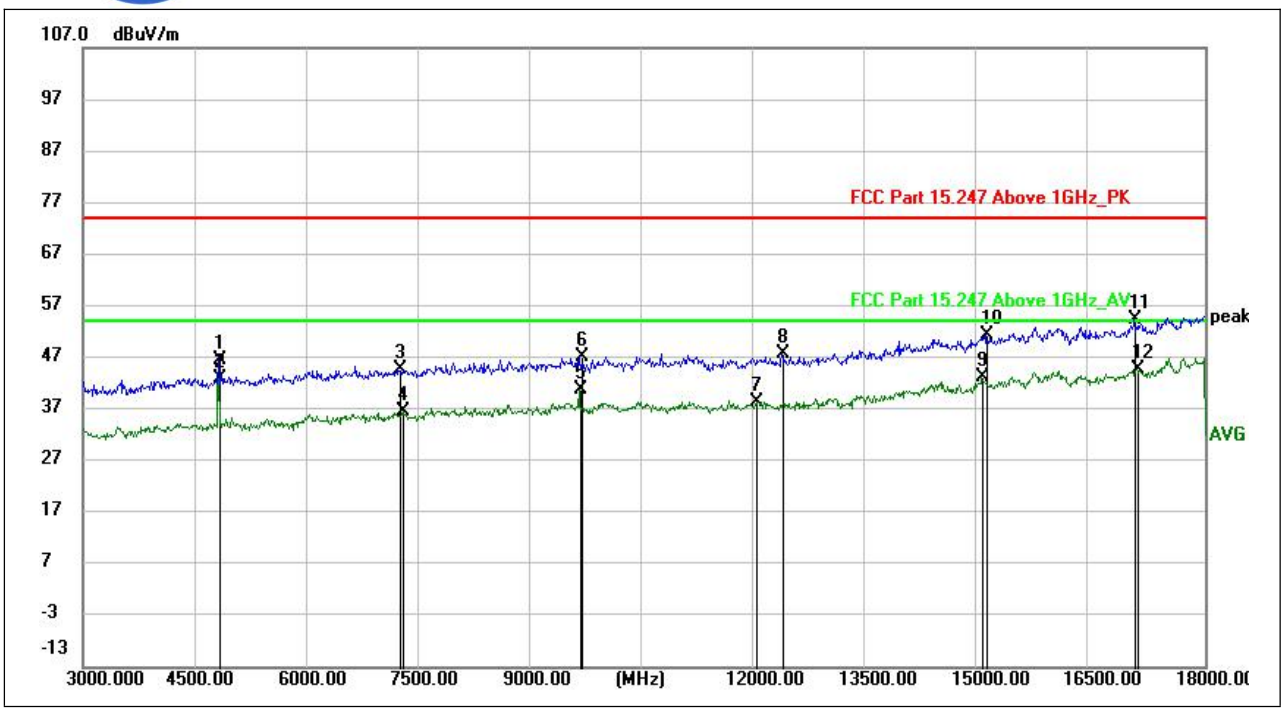
(802.11b _2412MHz, Antenna Horizontal, 30MHz to 1GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
39.9732	12.09	15.66	27.75	40.00	-12.25	peak	H
50.0128	10.76	16.20	26.96	40.00	-13.04	peak	H
101.0756	1.84	14.97	16.81	43.50	-26.69	peak	H
250.0380	3.74	14.89	18.63	46.00	-27.37	peak	H
500.0380	3.79	22.00	25.79	46.00	-20.21	peak	H
916.0687	1.13	28.00	29.13	46.00	-16.87	peak	H



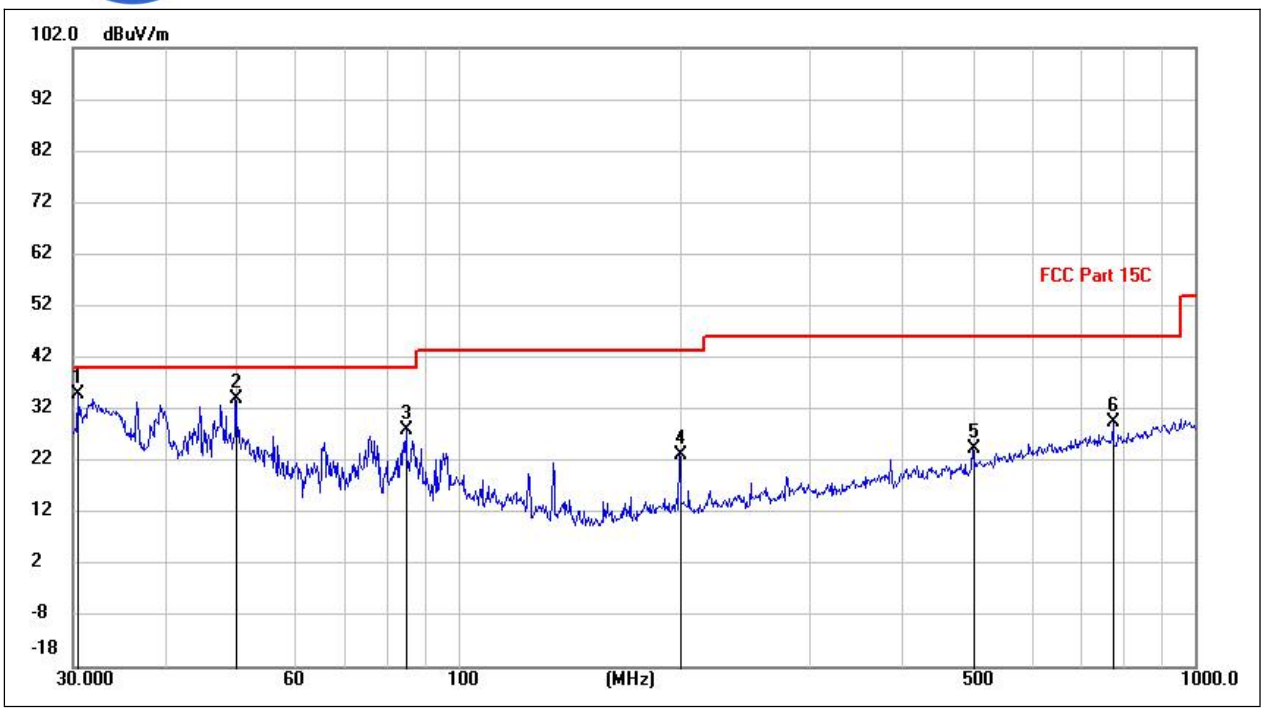
(802.11b _2412MHz, Antenna Horizontal, 1GHz to 3GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
1123.998	11.05	28.90	39.95	74.00	-34.05	peak	H
1128.081	3.42	28.93	32.35	54.00	-21.65	AVG	H
1349.233	3.74	31.03	34.77	54.00	-19.23	AVG	H
1357.336	12.45	31.07	43.52	74.00	-30.48	peak	H
1596.636	2.92	34.09	37.01	54.00	-16.99	AVG	H
1603.316	11.06	34.12	45.18	74.00	-28.82	peak	H
2013.382	3.42	36.87	40.29	54.00	-13.71	AVG	H
2017.368	13.19	36.65	49.84	74.00	-24.16	peak	H
2412.594	60.71	41.10	101.81	N/A	N/A	peak	H
2412.594	57.35	41.10	98.45	N/A	N/A	AVG	H
2756.355	12.58	43.78	56.36	74.00	-17.64	peak	H
2806.159	2.55	44.21	46.76	54.00	-7.24	AVG	H



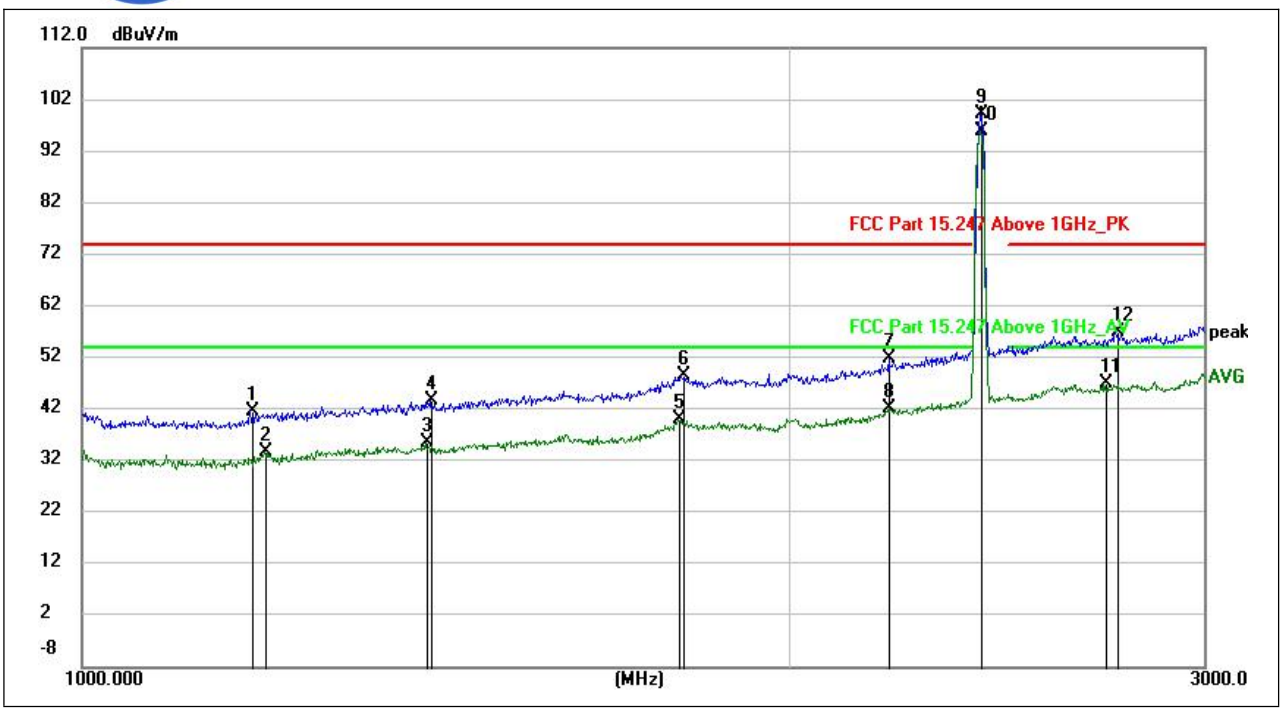
(802.11b _2412MHz, Antenna Horizontal, 3GHz to 18GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
4824.000	49.87	-3.22	46.65	74.00	-27.35	peak	H
4824.000	46.13	-3.22	42.91	54.00	-11.09	AVG	H
7236.000	45.07	-0.36	44.71	74.00	-29.29	peak	H
7286.250	36.91	-0.29	36.62	54.00	-17.38	AVG	H
9648.000	39.10	1.71	40.81	54.00	-13.19	AVG	H
9661.500	45.42	1.66	47.08	74.00	-26.92	peak	H
12011.250	34.46	3.93	38.39	54.00	-15.61	AVG	H
12360.000	43.13	4.49	47.62	74.00	-26.38	peak	H
15018.000	32.25	10.84	43.09	54.00	-10.91	AVG	H
15084.750	41.57	9.77	51.34	74.00	-22.66	peak	H
17070.000	42.69	11.58	54.27	74.00	-19.73	peak	H
17109.000	32.84	11.87	44.71	54.00	-9.29	AVG	H



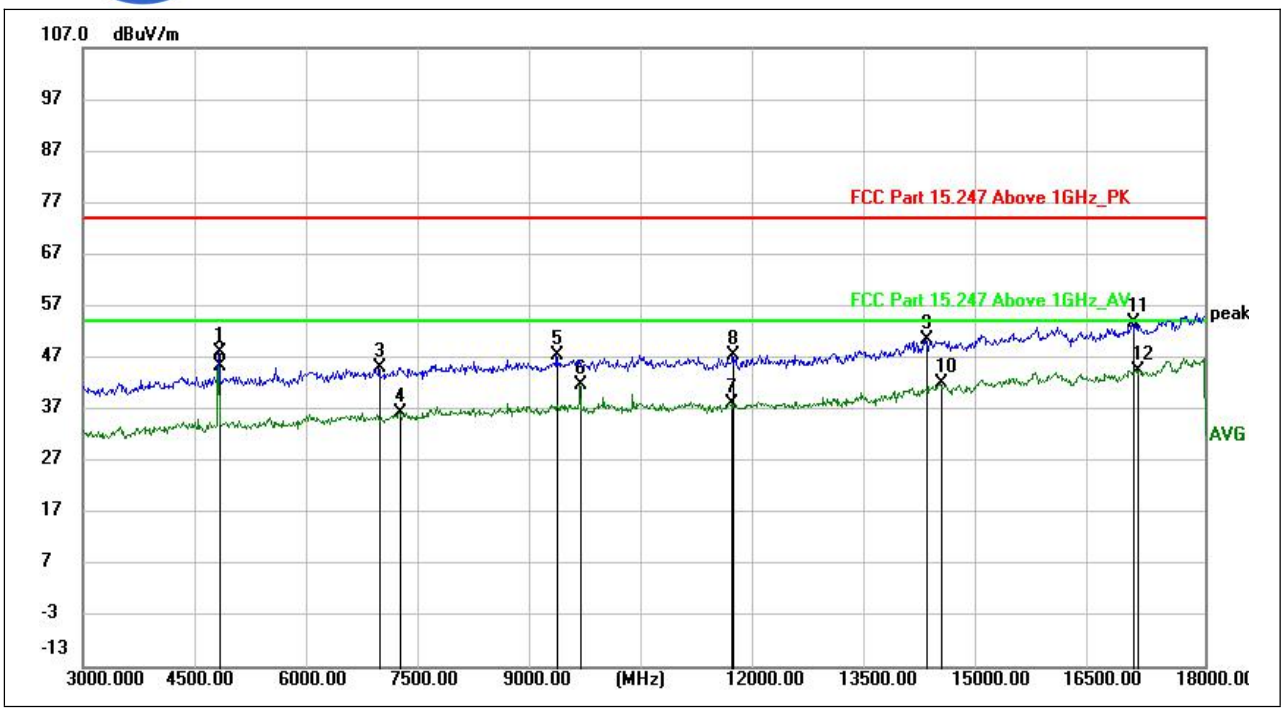
(802.11b _2412MHz, Antenna Vertical, 30MHz to 1GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
30.4611	21.86	13.07	34.93	40.00	-5.07	peak	V
50.0128	17.93	16.20	34.13	40.00	-5.87	peak	V
85.2383	17.24	10.74	27.98	40.00	-12.02	peak	V
199.9856	8.71	14.36	23.07	43.50	-20.43	peak	V
500.0380	2.46	22.00	24.46	46.00	-21.54	peak	V
775.1091	3.54	26.07	29.61	46.00	-16.39	peak	V



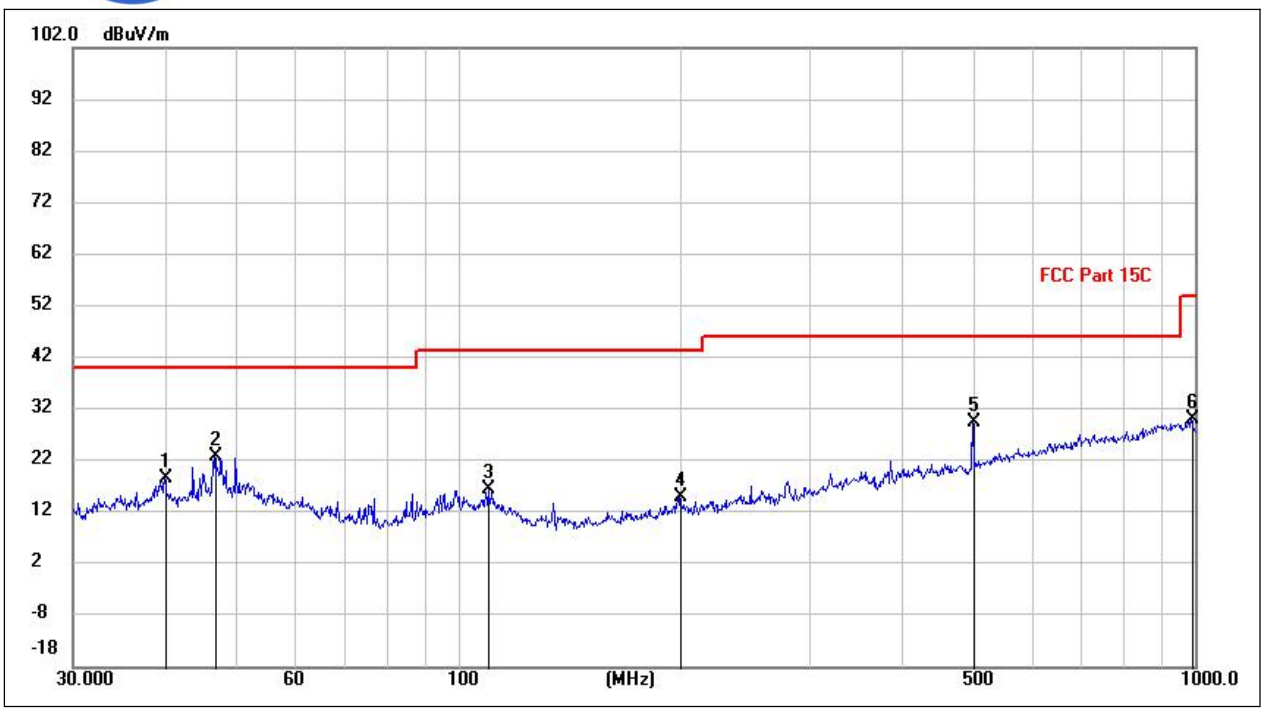
(802.11b _2412MHz, Antenna Vertical , 1GHz to 3GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
1181.157	12.18	29.42	41.60	74.00	-32.40	peak	V
1196.700	3.32	30.46	33.78	54.00	-20.22	AVG	V
1401.277	3.75	31.95	35.70	54.00	-18.30	AVG	V
1407.371	11.94	31.73	43.67	74.00	-30.33	peak	V
1795.997	3.65	36.48	40.13	54.00	-13.87	AVG	V
1801.332	11.89	36.69	48.58	74.00	-25.42	peak	V
2204.755	12.99	38.82	51.81	74.00	-22.19	peak	V
2204.755	3.38	38.82	42.20	54.00	-11.80	AVG	V
2412.859	58.00	41.08	99.08	N/A	N/A	peak	V
2412.859	54.65	41.08	95.73	N/A	N/A	AVG	V
2724.742	4.00	42.95	46.95	54.00	-7.05	AVG	V
2755.144	13.17	43.80	56.97	74.00	-17.03	peak	V



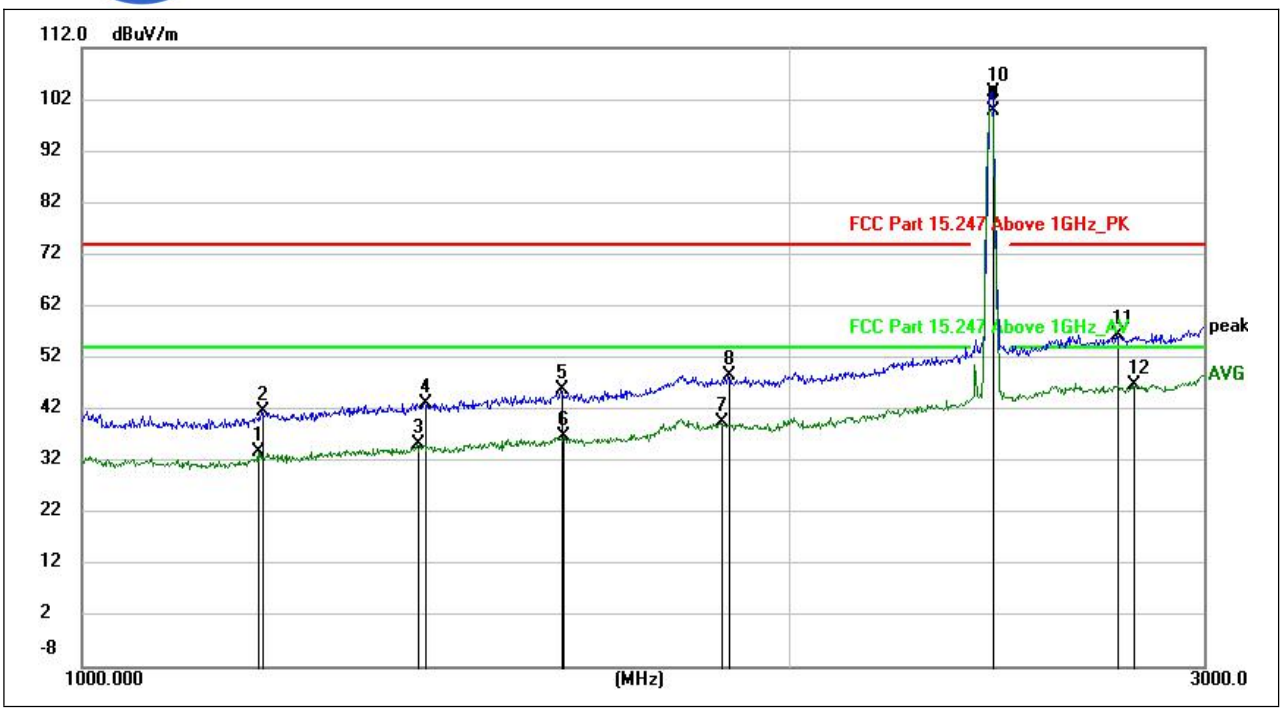
(802.11b _2412MHz, Antenna Vertical, 3GHz to 18GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
4824.000	51.40	-3.22	48.18	74.00	-25.82	peak	V
4824.000	48.51	-3.22	45.29	54.00	-8.71	AVG	V
6969.750	45.61	-0.58	45.03	74.00	-28.97	peak	V
7239.750	36.66	-0.35	36.31	54.00	-17.69	AVG	V
9337.500	45.62	1.70	47.32	74.00	-26.68	peak	V
9648.000	40.09	1.71	41.80	54.00	-12.20	AVG	V
11682.750	34.35	3.87	38.22	54.00	-15.78	AVG	V
11693.250	43.32	4.01	47.33	74.00	-26.67	peak	V
14269.500	42.22	8.35	50.57	74.00	-23.43	peak	V
14481.000	33.13	8.78	41.91	54.00	-12.09	AVG	V
17038.500	40.93	12.92	53.85	74.00	-20.15	peak	V
17093.250	31.94	12.63	44.57	54.00	-9.43	AVG	V



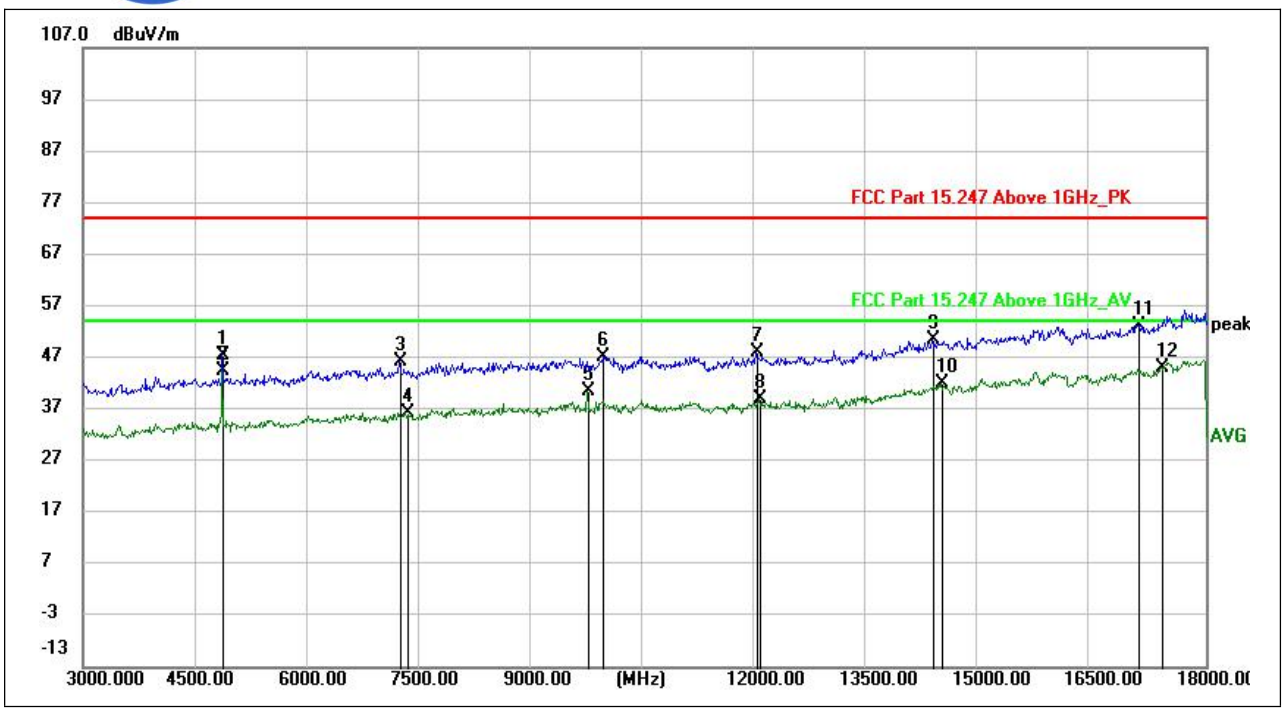
(802.11b _2437MHz, Antenna Horizontal, 30MHz to 1GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
40.0223	2.85	15.68	18.53	40.00	-21.47	peak	H
46.7319	7.34	15.48	22.82	40.00	-17.18	peak	H
109.9308	1.59	14.97	16.56	43.50	-26.94	peak	H
199.9856	0.74	14.36	15.10	43.50	-28.40	peak	H
500.0380	7.44	22.00	29.44	46.00	-16.56	peak	H
992.4892	1.63	28.58	30.21	54.00	-23.79	peak	H



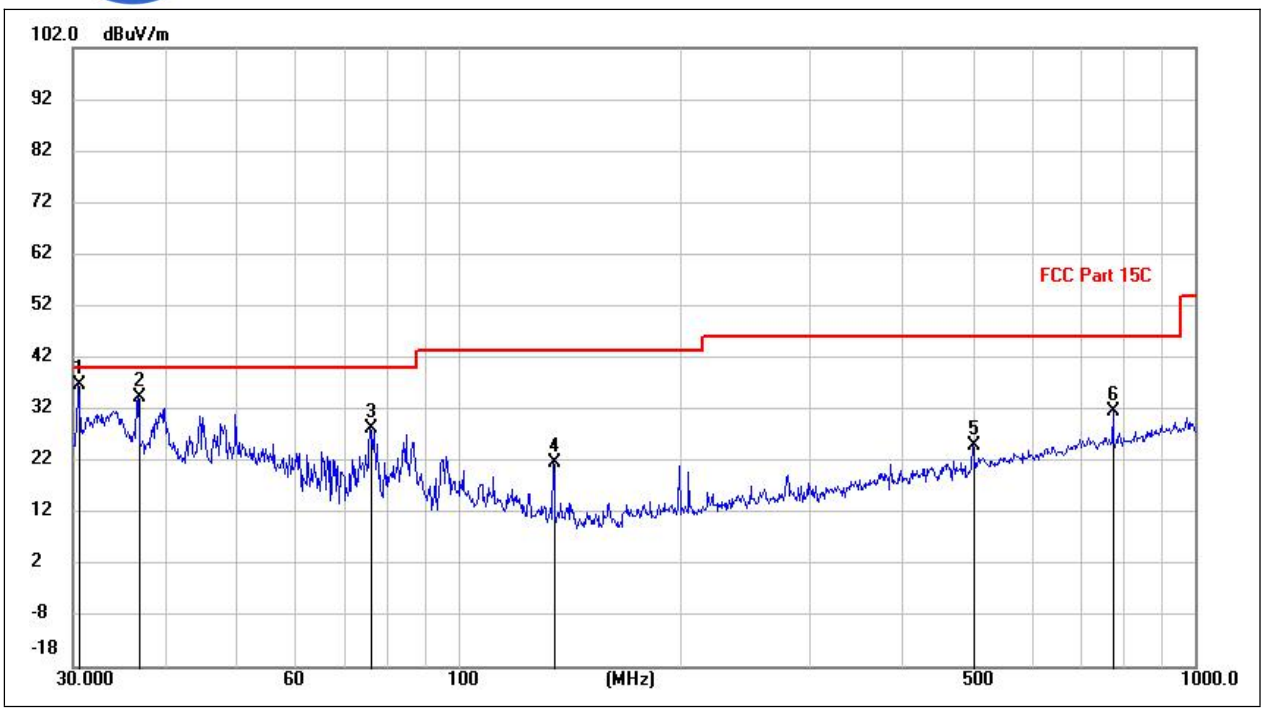
(802.11b _2437MHz, Antenna Horizontal, 1GHz to 3GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
1188.512	3.83	29.93	33.76	54.00	-20.24	AVG	H
1193.549	11.30	30.25	41.55	74.00	-32.45	peak	H
1389.931	3.59	31.59	35.18	54.00	-18.82	AVG	H
1399.815	11.16	32.00	43.16	74.00	-30.84	peak	H
1599.357	11.53	34.20	45.73	74.00	-28.27	peak	H
1602.787	2.64	34.14	36.78	54.00	-17.22	AVG	H
1871.739	3.71	35.88	39.59	54.00	-14.41	AVG	H
1884.636	12.59	35.87	48.46	74.00	-25.54	peak	H
2437.906	59.03	40.80	99.83	N/A	N/A	AVG	H
2438.441	62.54	40.80	103.34	N/A	N/A	peak	H
2758.173	12.61	43.71	56.32	74.00	-17.68	peak	H
2800.000	2.06	44.76	46.82	54.00	-7.18	AVG	H



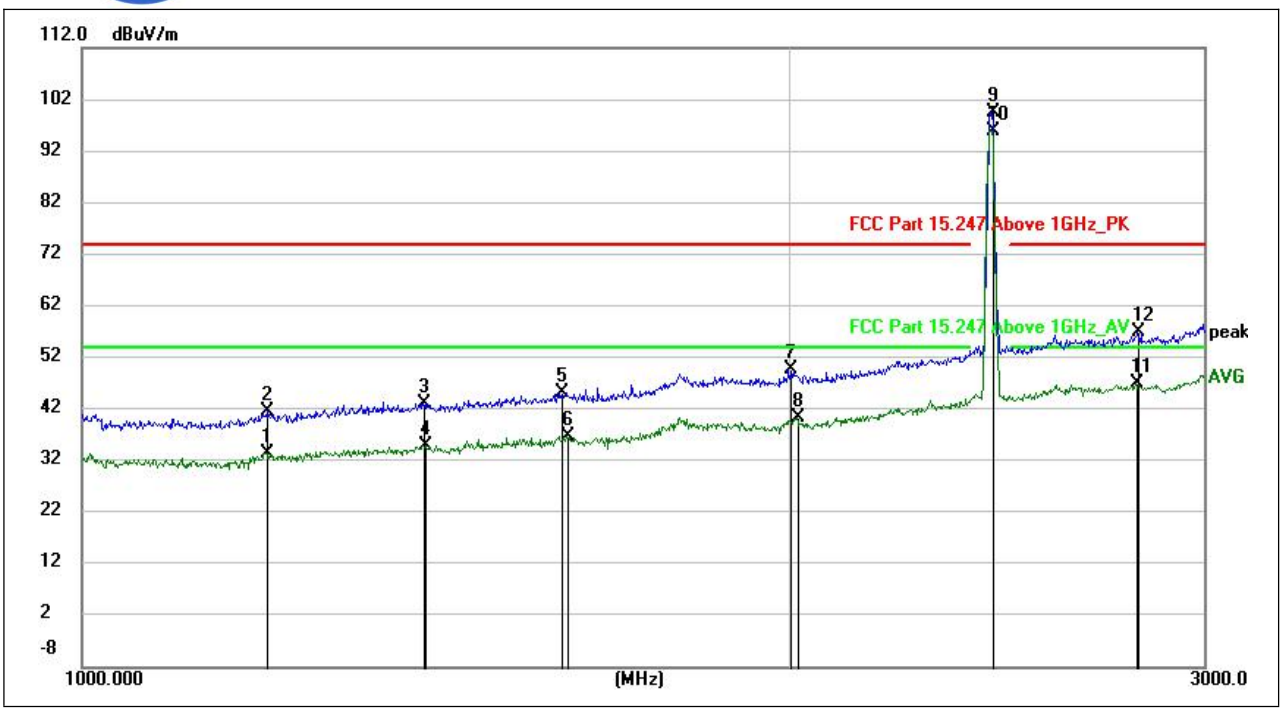
(802.11b _2437MHz, Antenna Horizontal, 3GHz to 18GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
4873.500	50.35	-2.86	47.49	74.00	-26.51	peak	H
4873.500	47.16	-2.86	44.30	54.00	-9.70	AVG	H
7242.000	46.53	-0.34	46.19	74.00	-27.81	peak	H
7324.500	36.61	-0.24	36.37	54.00	-17.63	AVG	H
9747.750	38.58	2.00	40.58	54.00	-13.42	AVG	H
9948.750	45.14	2.05	47.19	74.00	-26.81	peak	H
12006.000	44.06	3.87	47.93	74.00	-26.07	peak	H
12039.000	34.61	4.25	38.86	54.00	-15.14	AVG	H
14352.750	41.29	9.06	50.35	74.00	-23.65	peak	H
14474.250	34.11	7.98	42.09	54.00	-11.91	AVG	H
17100.750	41.57	11.74	53.31	74.00	-20.69	peak	H
17415.000	31.68	13.33	45.01	54.00	-8.99	AVG	H



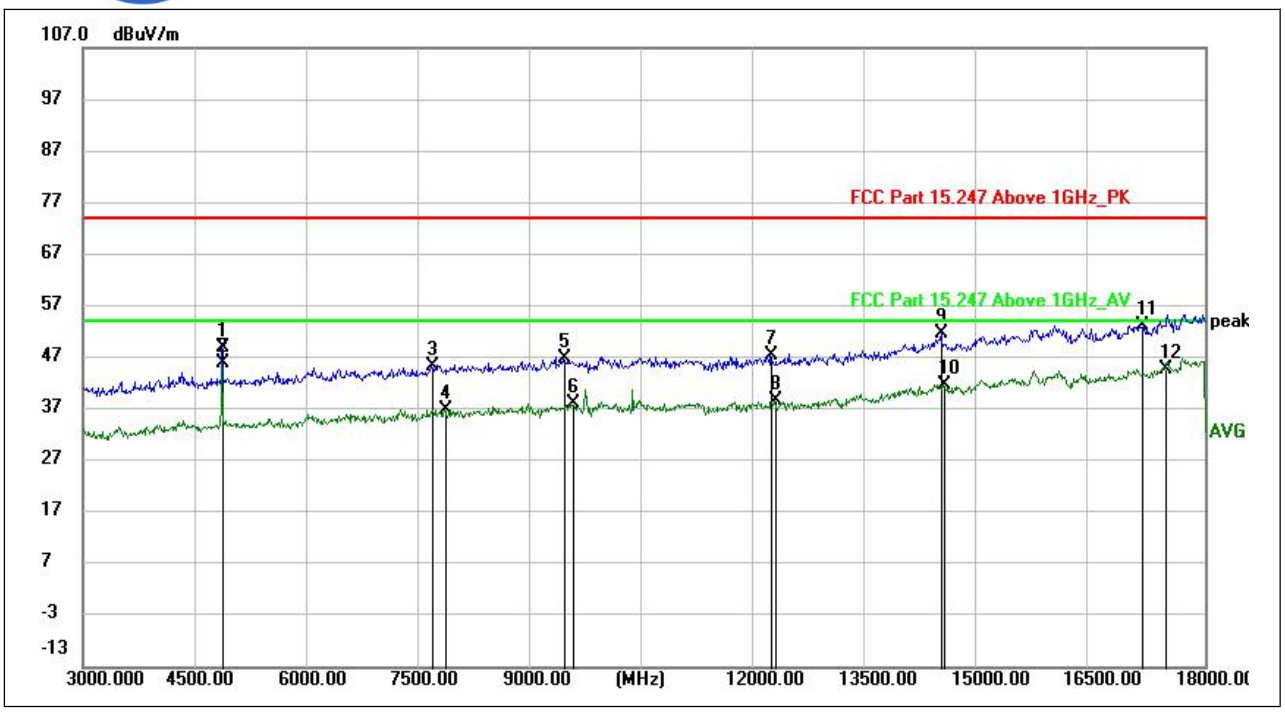
(802.11b _2437MHz, Antenna Vertical, 30MHz to 1GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
30.5788	23.82	12.86	36.68	40.00	-3.32	peak	V
36.7919	20.76	13.49	34.25	40.00	-5.75	peak	V
76.1240	18.79	9.62	28.41	40.00	-11.59	peak	V
135.0082	11.09	10.50	21.59	43.50	-21.91	peak	V
500.0380	3.01	22.00	25.01	46.00	-20.99	peak	V
775.1091	5.46	26.07	31.53	46.00	-14.47	peak	V



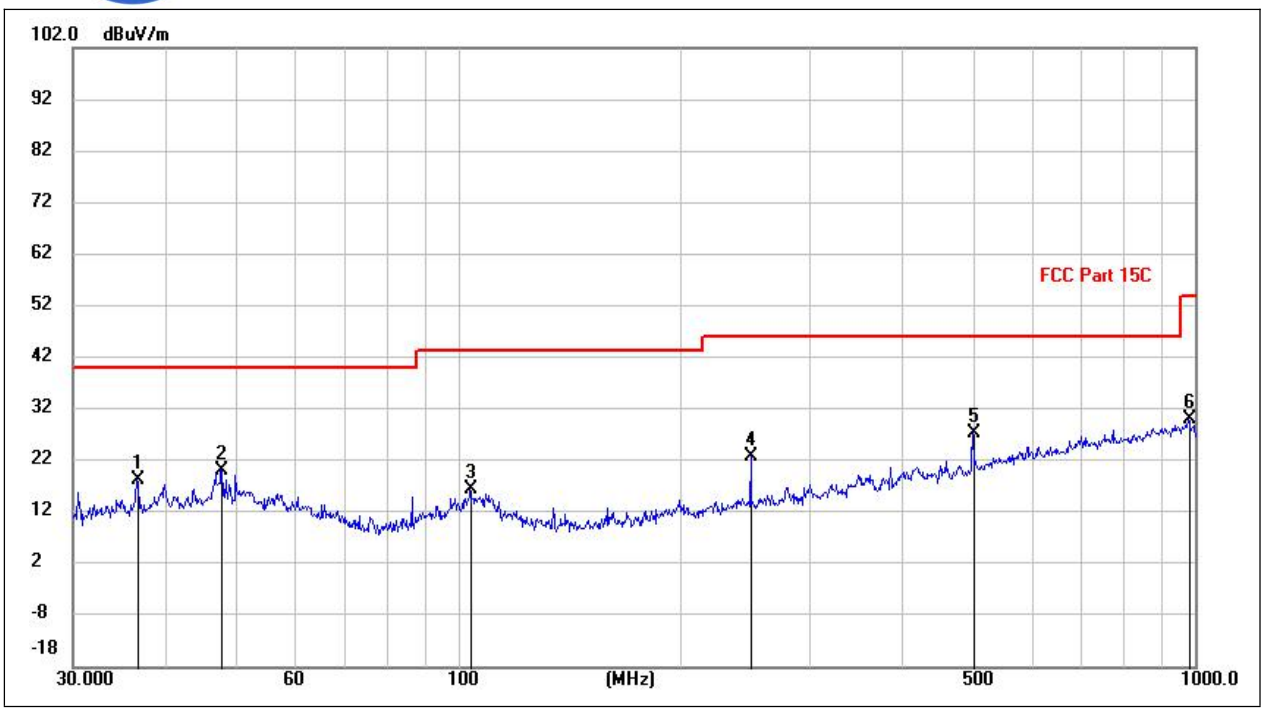
(802.11b _2437MHz, Antenna Vertical , 1GHz to 3GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
1198.411	2.95	30.59	33.54	54.00	-20.46	AVG	V
1199.728	10.79	30.68	41.47	74.00	-32.53	peak	V
1396.896	11.28	31.88	43.16	74.00	-30.84	peak	V
1400.661	2.97	31.98	34.95	54.00	-19.05	AVG	V
1598.567	11.14	34.17	45.31	74.00	-28.69	peak	V
1608.167	2.81	33.96	36.77	54.00	-17.23	AVG	V
2000.704	12.58	37.15	49.73	74.00	-24.27	peak	V
2015.595	3.58	36.75	40.33	54.00	-13.67	AVG	V
2437.638	58.67	40.79	99.46	N/A	N/A	peak	V
2437.638	55.21	40.79	96.00	N/A	N/A	AVG	V
2807.855	3.06	44.06	47.12	54.00	-6.88	AVG	V
2813.259	13.39	43.60	56.99	74.00	-17.01	peak	V



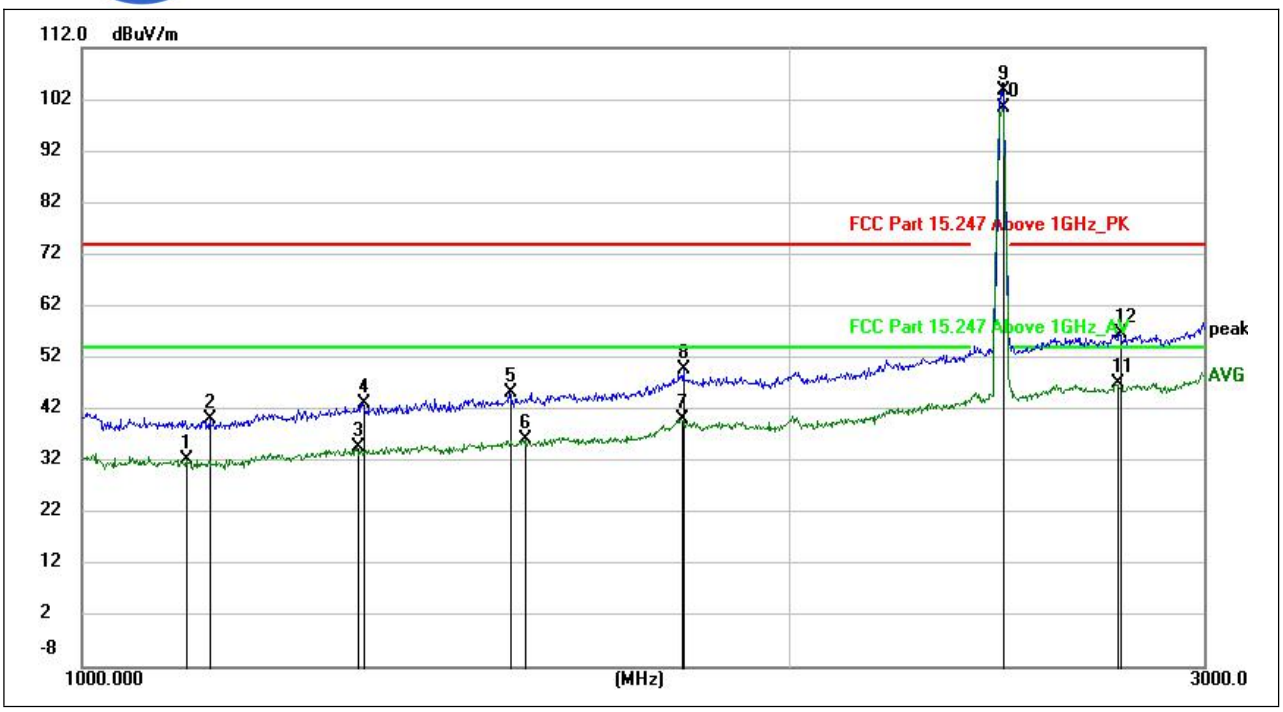
(802.11b _2437MHz, Antenna Vertical, 3GHz to 18GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
4873.500	51.71	-2.86	48.85	74.00	-25.15	peak	V
4873.500	48.66	-2.86	45.80	54.00	-8.20	AVG	V
7668.000	44.42	0.78	45.20	74.00	-28.80	peak	V
7850.250	36.52	0.37	36.89	54.00	-17.11	AVG	V
9435.750	44.84	2.12	46.96	74.00	-27.04	peak	V
9542.250	35.65	2.37	38.02	54.00	-15.98	AVG	V
12204.750	43.44	4.01	47.45	74.00	-26.55	peak	V
12242.250	34.57	4.04	38.61	54.00	-15.39	AVG	V
14487.750	42.92	8.77	51.69	74.00	-22.31	peak	V
14506.500	32.64	9.02	41.66	54.00	-12.34	AVG	V
17145.750	40.31	12.93	53.24	74.00	-20.76	peak	V
17473.500	30.55	14.29	44.84	54.00	-9.16	AVG	V



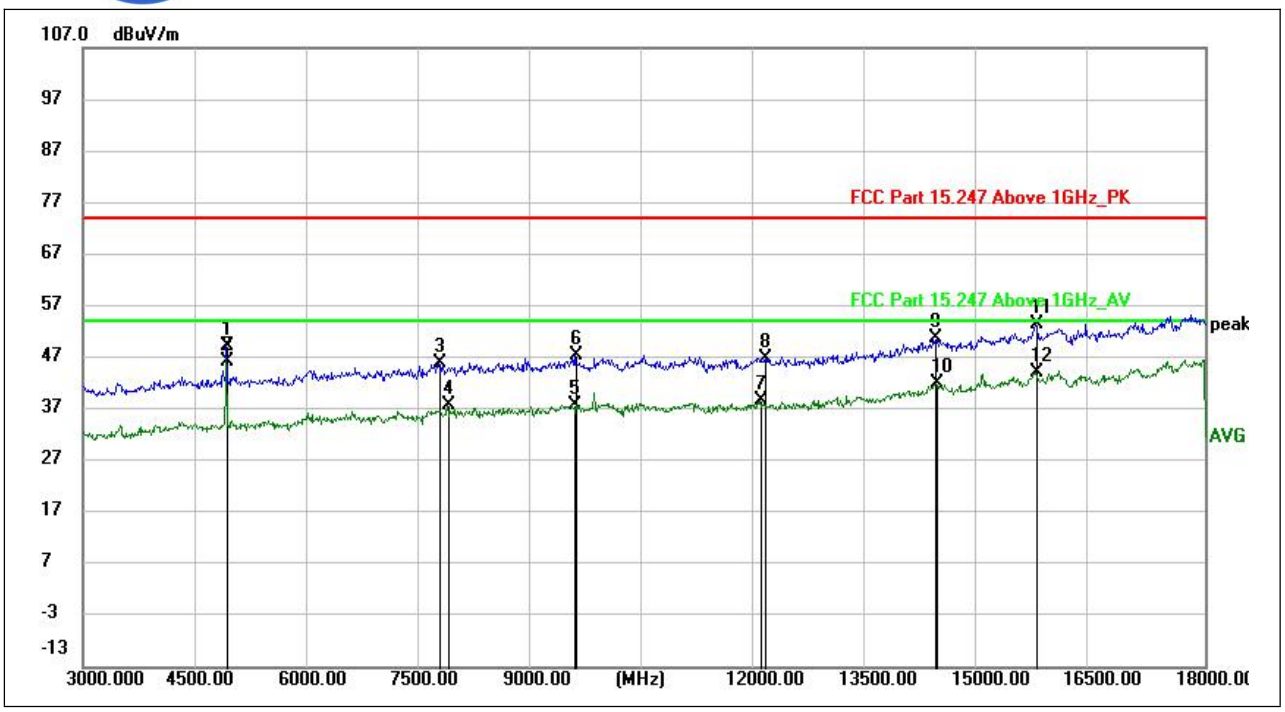
(802.11b _2462MHz, Antenna Horizontal, 30MHz to 1GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
36.7468	4.84	13.46	18.30	40.00	-21.70	peak	H
47.7925	4.59	15.50	20.09	40.00	-19.91	peak	H
103.9694	2.35	14.30	16.65	43.50	-26.85	peak	H
249.9942	7.94	14.89	22.83	46.00	-23.17	peak	H
500.0380	5.35	22.00	27.35	46.00	-18.65	peak	H
979.3521	1.43	28.69	30.12	54.00	-23.88	peak	H



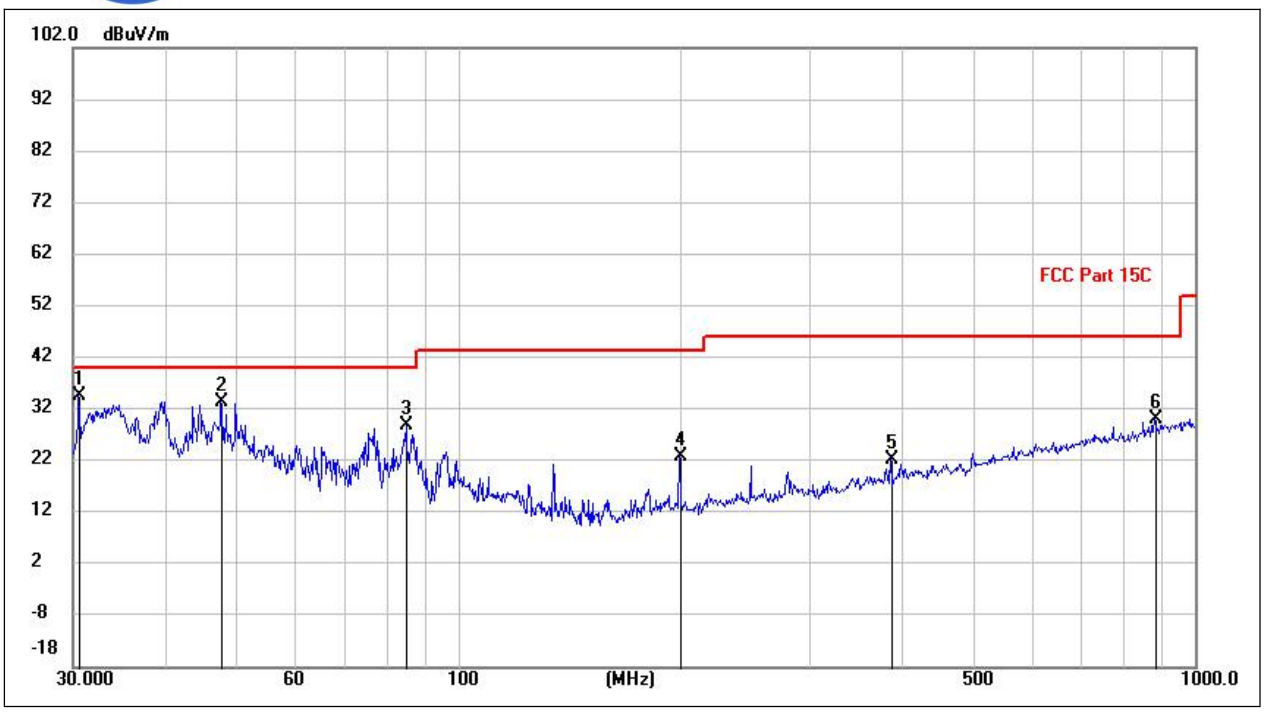
(802.11b _2462MHz, Antenna Horizontal, 1GHz to 3GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
1108.060	3.27	29.01	32.28	54.00	-21.72	AVG	H
1133.672	11.14	29.01	40.15	74.00	-33.85	peak	H
1310.375	3.75	30.78	34.53	54.00	-19.47	AVG	H
1317.593	12.23	30.78	43.01	74.00	-30.99	peak	H
1521.626	12.24	32.92	45.16	74.00	-28.84	peak	H
1544.277	2.88	33.26	36.14	54.00	-17.86	AVG	H
1799.453	3.42	36.74	40.16	54.00	-13.84	AVG	H
1802.421	13.08	36.62	49.70	74.00	-24.30	peak	H
2462.942	62.32	41.52	103.84	N/A	N/A	peak	H
2462.942	58.83	41.52	100.35	N/A	N/A	AVG	H
2755.144	3.21	43.80	47.01	54.00	-6.99	AVG	H
2763.784	13.01	43.53	56.54	74.00	-17.46	peak	H



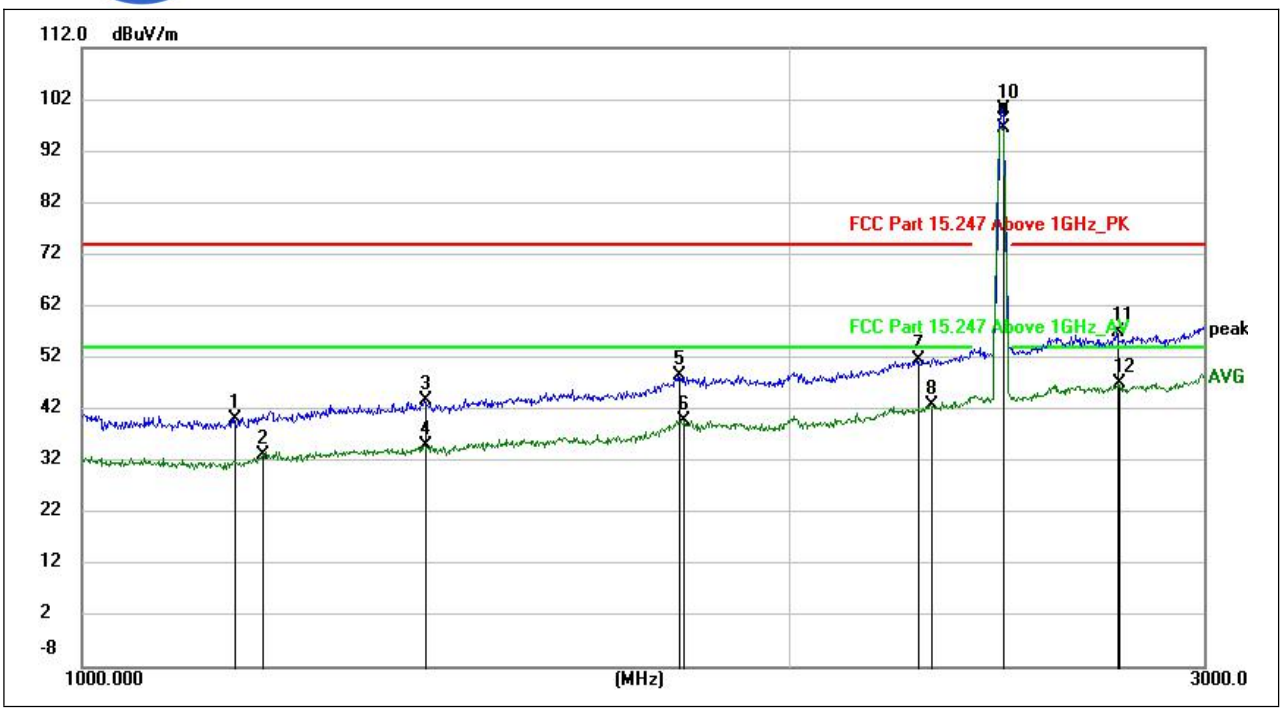
(802.11b _2462MHz, Antenna Horizontal, 3GHz to 18GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
4923.750	52.14	-2.74	49.40	74.00	-24.60	peak	H
4923.750	48.98	-2.74	46.24	54.00	-7.76	AVG	H
7761.000	45.58	0.22	45.80	74.00	-28.20	peak	H
7885.500	37.41	0.27	37.68	54.00	-16.32	AVG	H
9556.500	35.51	2.35	37.86	54.00	-16.14	AVG	H
9585.750	45.33	2.12	47.45	74.00	-26.55	peak	H
12067.500	34.41	4.24	38.65	54.00	-15.35	AVG	H
12123.750	42.97	3.89	46.86	74.00	-27.14	peak	H
14395.500	41.27	9.40	50.67	74.00	-23.33	peak	H
14414.250	32.86	9.31	42.17	54.00	-11.83	AVG	H
15742.500	42.33	11.10	53.43	74.00	-20.57	peak	H
15742.500	33.03	11.10	44.13	54.00	-9.87	AVG	H



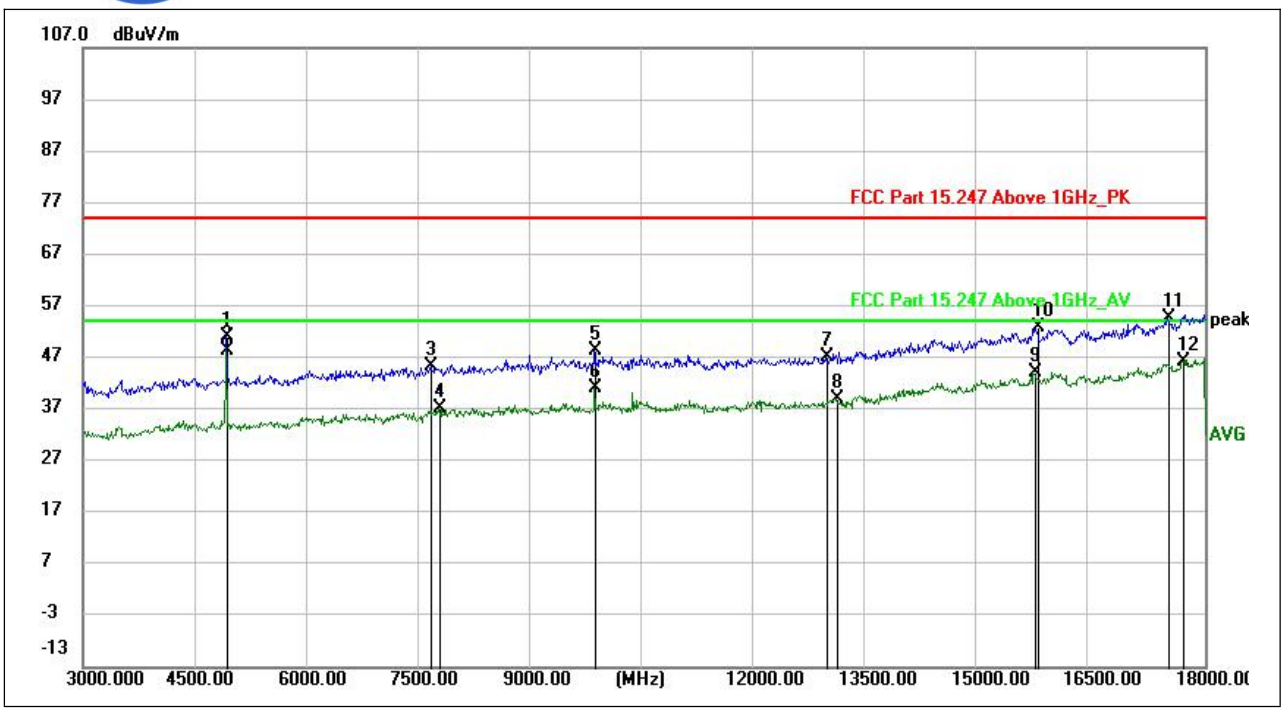
(802.11b _2462MHz, Antenna Vertical, 30MHz to 1GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
30.5628	21.76	12.89	34.65	40.00	-5.35	peak	V
47.8009	18.02	15.50	33.52	40.00	-6.48	peak	V
85.2532	18.03	10.74	28.77	40.00	-11.23	peak	V
200.0206	8.53	14.36	22.89	43.50	-20.61	peak	V
387.5161	4.05	18.33	22.38	46.00	-23.62	peak	V
882.3344	2.48	27.72	30.20	46.00	-15.80	peak	V



(802.11b _2462MHz, Antenna Vertical , 1GHz to 3GHz)

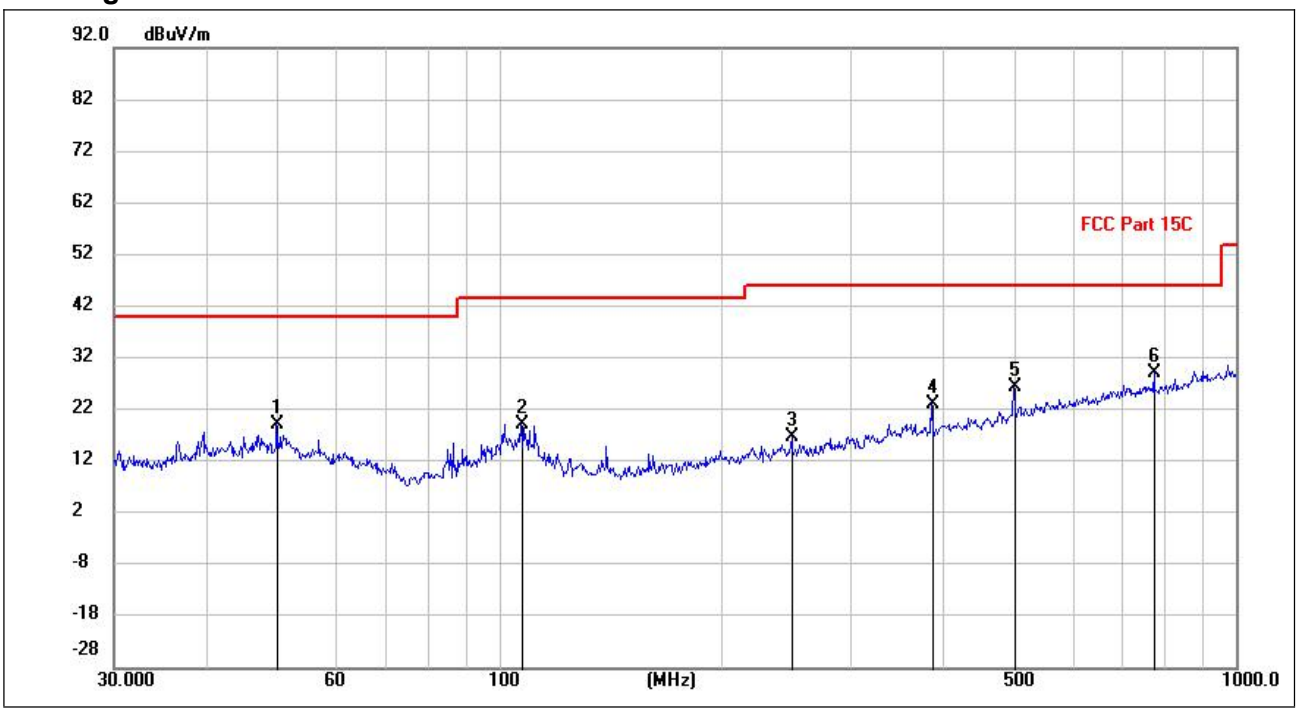
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
1160.513	11.12	29.05	40.17	74.00	-33.83	peak	V
1194.730	2.73	30.32	33.05	54.00	-20.95	AVG	V
1399.354	11.62	31.98	43.60	74.00	-30.40	peak	V
1399.354	3.02	31.98	35.00	54.00	-19.00	AVG	V
1795.011	12.05	36.39	48.44	74.00	-25.56	peak	V
1800.640	3.04	36.74	39.78	54.00	-14.22	AVG	V
2267.020	12.36	39.21	51.57	74.00	-22.43	peak	V
2297.988	2.96	39.73	42.69	54.00	-11.31	AVG	V
2462.806	55.05	41.52	96.57	N/A	N/A	AVG	V
2463.212	58.48	41.53	100.01	N/A	N/A	peak	V
2756.053	13.06	43.79	56.85	74.00	-17.15	peak	V
2760.901	3.31	43.62	46.93	54.00	-7.07	AVG	V



(802.11b _2462MHz, Antenna Vertical, 3GHz to 18GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
4923.750	53.73	-2.74	50.99	74.00	-23.01	peak	V
4923.750	51.24	-2.74	48.50	54.00	-5.50	AVG	V
7664.250	44.57	0.84	45.41	74.00	-28.59	peak	V
7767.000	37.07	0.25	37.32	54.00	-16.68	AVG	V
9848.250	46.38	1.97	48.35	74.00	-25.65	peak	V
9848.250	39.01	1.97	40.98	54.00	-13.02	AVG	V
12943.500	42.01	5.22	47.23	74.00	-26.77	peak	V
13068.750	32.55	6.39	38.94	54.00	-15.06	AVG	V
15727.500	32.73	11.26	43.99	54.00	-10.01	AVG	V
15750.750	41.89	10.92	52.81	74.00	-21.19	peak	V
17520.000	40.00	14.77	54.77	74.00	-19.23	peak	V
17707.500	31.94	14.44	46.38	54.00	-7.62	AVG	V

802.11g Test mode



(802.11g _2412MHz, Antenna Horizontal, 30MHz to 1GHz)

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Pol
49.9777	3.10	16.19	19.29	40.00	-20.71	peak	H
107.1713	4.74	14.46	19.20	43.50	-24.30	peak	H
250.0380	1.80	14.89	16.69	46.00	-29.31	peak	H
387.5161	4.92	18.33	23.25	46.00	-22.75	peak	H
500.0380	4.32	22.00	26.32	46.00	-19.68	peak	H
775.1091	2.97	26.07	29.04	46.00	-16.96	peak	H