

Fig.97 Conducted Spurious Emission (Center Frequency, 802.11-VHT40, CH6)

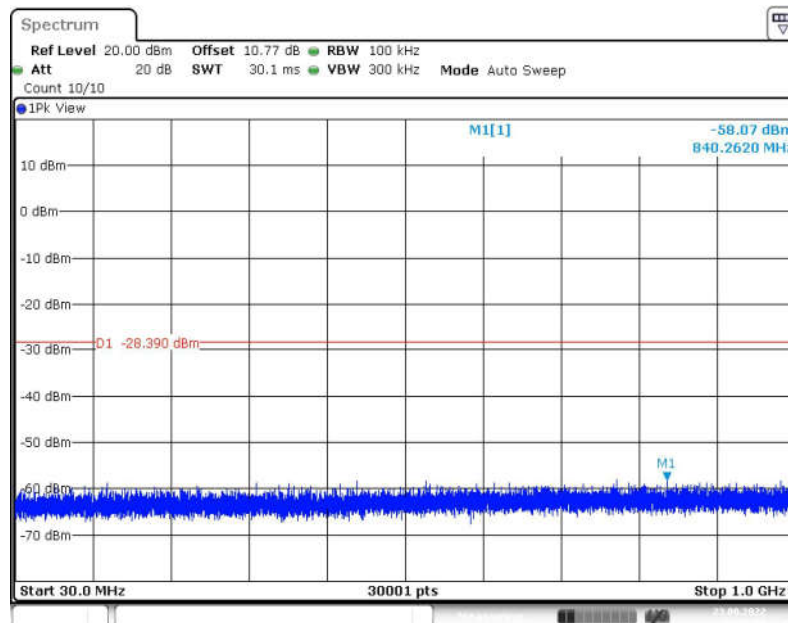


Fig.98 Conducted Spurious Emission (30MHz -1GHz, 802.11-VHT40, CH6)

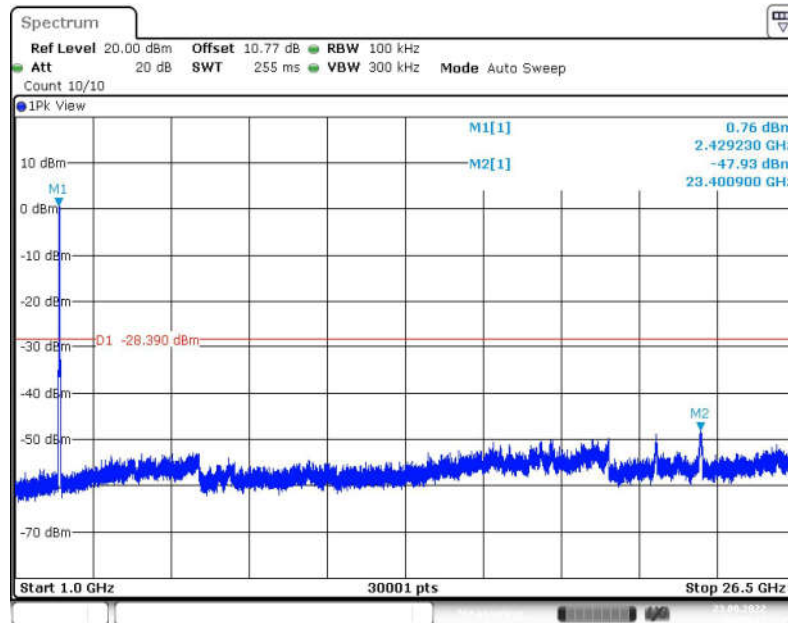


Fig.99 Conducted Spurious Emission (1GHz-26.5GHz, 802.11-VHT40, CH6)

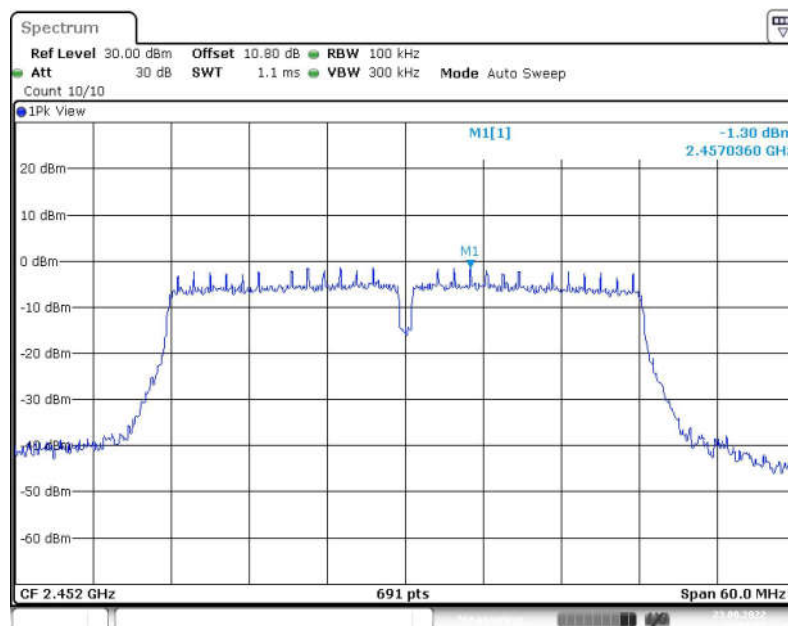


Fig.100 Conducted Spurious Emission (Center Frequency, 802.11-VHT40, CH9)

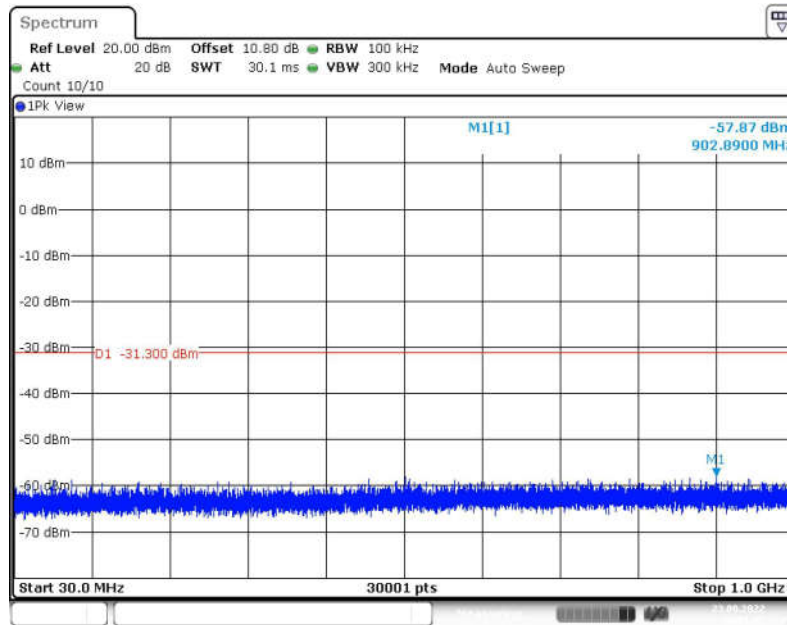


Fig.101 Conducted Spurious Emission (30MHz -1GHz, 802.11-VHT40, CH9)

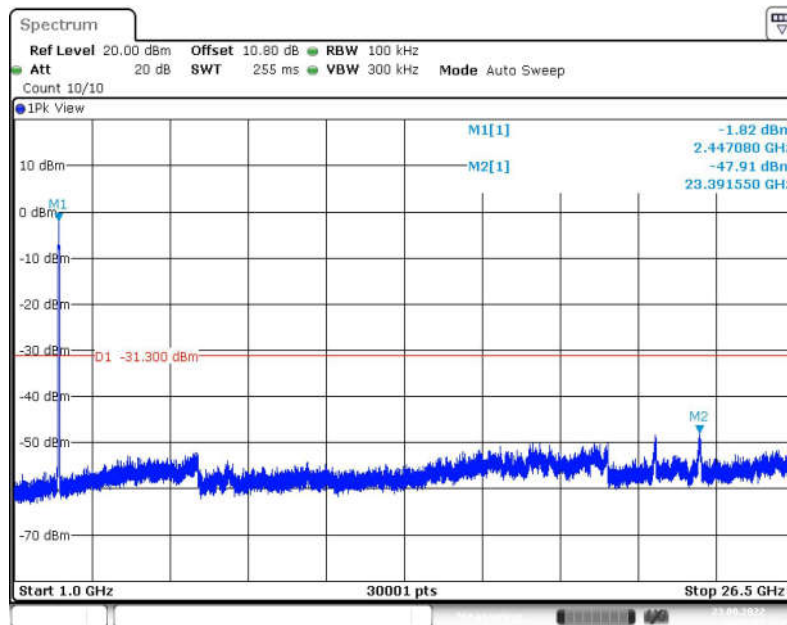


Fig.102 Conducted Spurious Emission (1GHz-26.5GHz, 802.11-VHT40, CH9)



### A.6 Radiated Emission

**Method of Measurement:** See ANSI C63.10-clause 11.11&11.12.

**Measurement Limit:**

Standard	Limit (dBm)
FCC 47 CFR Part 15.247, 15.205, 15.209	20dBm below peak output 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) (see § 15.205(c)).

**Limit in restricted band:**

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

**Test Condition:**

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

**Note:** According to the performance evaluation, the radiated emission margin of EUT is over 20dB in the band from 9kHz to 30MHz. Therefore, the measurement starts from 30MHz to tenth harmonic. The measurement results include the horizontal polarization and vertical polarization measurements. For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.



**Measurement Results:**

Mode	Frequency (MHz)	Frequency Range	Test Results	Conclusion
802.11b	2412(CH1)	1 GHz ~18 GHz	Fig.103	<b>P</b>
	2437(CH6)	1 GHz ~18 GHz	Fig.104	<b>P</b>
	2462(CH11)	1 GHz ~18 GHz	Fig.105	<b>P</b>
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.106	<b>P</b>
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.107	<b>P</b>
802.11g	2412(CH1)	1 GHz ~18 GHz	Fig.108	<b>P</b>
	2437(CH6)	1 GHz ~18 GHz	Fig.109	<b>P</b>
	2462(CH11)	1 GHz ~18 GHz	Fig.110	<b>P</b>
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.111	<b>P</b>
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.112	<b>P</b>
802.11n- HT20	2412(CH1)	1 GHz ~18 GHz	Fig.113	<b>P</b>
	2437(CH6)	1 GHz ~18 GHz	Fig.114	<b>P</b>
	2462(CH11)	1 GHz ~18 GHz	Fig.115	<b>P</b>
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.116	<b>P</b>
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.117	<b>P</b>
802.11n- HT40	2422(CH3)	1 GHz ~18 GHz	Fig.118	<b>P</b>
	2437(CH6)	1 GHz ~18 GHz	Fig.119	<b>P</b>
	2452(CH9)	1 GHz ~18 GHz	Fig.120	<b>P</b>
	Restricted Band (CH3)	2.38 GHz ~ 2.45 GHz	Fig.121	<b>P</b>
	Restricted Band (CH9)	2.45 GHz ~ 2.5 GHz	Fig.122	<b>P</b>
802.11- VHT20	2412(CH1)	1 GHz ~18 GHz	Fig.123	<b>P</b>
	2437(CH6)	1 GHz ~18 GHz	Fig.124	<b>P</b>
	2462(CH11)	1 GHz ~18 GHz	Fig.125	<b>P</b>
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.126	<b>P</b>
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.127	<b>P</b>
802.11- VHT40	2422(CH3)	1 GHz ~18 GHz	Fig.128	<b>P</b>
	2437(CH6)	1 GHz ~18 GHz	Fig.129	<b>P</b>
	2452(CH9)	1 GHz ~18 GHz	Fig.130	<b>P</b>
	Restricted Band (CH3)	2.38 GHz ~ 2.45 GHz	Fig.131	<b>P</b>
	Restricted Band (CH9)	2.45 GHz ~ 2.5 GHz	Fig.132	<b>P</b>
/	All Channels	9 kHz ~30 MHz	Fig.133	<b>P</b>
		30 MHz ~1 GHz	Fig.134	<b>P</b>
		18 GHz ~26.5 GHz	Fig.135	<b>P</b>



**Worst-Case Result:**

**802.11b CH6 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4874.400000	54.08	74.00	19.92	H	3.7
7008.857143	44.55	74.00	29.45	H	4.9
10428.428572	47.17	74.00	26.83	V	9.0
12881.142857	47.39	74.00	26.61	V	11.0
14806.285714	50.38	74.00	23.62	V	12.8
17006.142857	54.12	74.00	19.88	V	18.4

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4874.400000	47.23	54.00	6.77	H	3.7
7008.857143	35.24	54.00	18.76	H	4.9
10428.428572	36.97	54.00	17.03	V	9.0
12881.142857	36.40	54.00	17.60	V	11.0
14806.285714	37.86	54.00	16.14	V	12.8
17006.142857	41.99	54.00	12.01	V	18.4

**802.11g CH6 (1GHz-18GHz)**

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4872.600000	50.12	74.00	23.88	H	3.7
8871.857143	44.87	74.00	29.13	H	6.5
10415.571429	47.36	74.00	26.64	V	9.1
14607.428572	48.31	74.00	22.69	V	12.0
16822.285714	54.56	74.00	19.44	V	17.8
17916.857143	55.39	74.00	18.61	H	18.9

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4872.600000	37.27	54.00	16.73	H	3.7
8871.857143	33.86	54.00	21.14	H	6.5
10415.571429	35.90	54.00	19.10	V	9.1
14607.428572	41.63	54.00	12.37	V	12.0
16822.285714	41.77	54.00	12.23	V	17.8
17916.857143	42.68	54.00	11.32	H	18.9



**802.11n-HT20 CH6 (1GHz-18GHz)**

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4875.000000	49.32	74.00	24.68	H	3.7
7015.714286	44.51	74.00	29.49	V	5.0
10422.428572	47.71	74.00	26.29	H	9.0
13378.714286	48.11	74.00	25.89	V	11.4
16808.142857	54.04	74.00	19.96	H	17.8
17982.000000	55.24	74.00	18.76	H	19.2

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4875.000000	36.59	54.00	17.41	H	3.7
7015.714286	33.50	54.00	21.50	V	5.0
10422.428572	36.04	54.00	18.96	H	9.0
13378.714286	36.99	54.00	18.01	V	11.4
16808.142857	42.91	54.00	12.09	H	17.8
17982.000000	43.68	54.00	11.32	H	19.2

**802.11n-HT40 CH6 (1GHz-18GHz)**

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4429.500000	46.69	74.00	27.31	H	3.5
5988.300000	47.87	74.00	26.13	H	5.0
8927.142857	45.65	74.00	28.35	H	6.5
12456.857143	49.06	74.00	24.94	H	11.4
16881.000000	54.08	74.00	19.92	H	18.0
17908.714286	54.28	74.00	19.72	H	18.9

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4429.500000	33.69	54.00	20.31	H	3.5
5988.300000	35.82	54.00	18.18	H	5.0
8927.142857	33.31	54.00	20.69	H	6.5
12456.857143	36.30	54.00	17.70	H	11.4
16881.000000	41.86	54.00	12.14	H	18.0
17908.714286	42.45	54.00	11.55	H	18.9



**802.11-VHT20 CH6 (1GHz-18GHz)**

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4671.900000	47.03	74.00	26.97	H	4.6
5940.900000	47.88	74.00	26.12	H	4.5
8795.142857	44.81	74.00	29.19	V	6.2
11941.714286	48.09	74.00	25.91	H	10.2
17115.857143	54.75	74.00	19.25	H	18.4
17898.428571	55.13	74.00	18.87	V	18.8

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4671.900000	34.62	54.00	19.38	H	4.6
5940.900000	35.30	54.00	18.70	H	4.5
8795.142857	32.43	54.00	21.57	V	6.2
11941.714286	35.15	54.00	18.85	H	10.2
17115.857143	42.13	54.00	11.87	H	18.4
17898.428571	42.23	54.00	11.77	V	18.8

**802.11-VHT40 CH6 (1GHz-18GHz)**

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
3890.100000	45.33	74.00	28.67	V	1.9
5991.000000	48.23	74.00	25.77	V	5.0
8821.285714	44.56	74.00	29.44	V	6.3
13323.857143	48.66	74.00	25.34	V	11.3
16852.714286	53.62	74.00	20.38	V	17.9
17899.714286	54.87	74.00	19.13	H	18.8

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
3890.100000	33.38	54.00	20.62	V	1.9
5991.000000	35.87	54.00	18.13	V	5.0
8821.285714	32.77	54.00	21.23	V	6.3
13323.857143	35.99	54.00	18.01	V	11.3
16852.714286	41.60	54.00	12.40	V	17.9
17899.714286	42.29	54.00	11.71	H	18.8

**Note:**

A "reference path loss" is established and the  $A_{Rpl}$  is the attenuation of "reference path loss", and Antenna Factor, the gain of the preamplifier, the cable loss.  $P_{Mea}$  is the field strength recorded from the instrument. The measurement results are obtained as described below:

Result=  $P_{Mea}$  +Cable Loss +Antenna Factor-Gain of the preamplifier.

**See below for test graphs.**

**Conclusion: PASS**



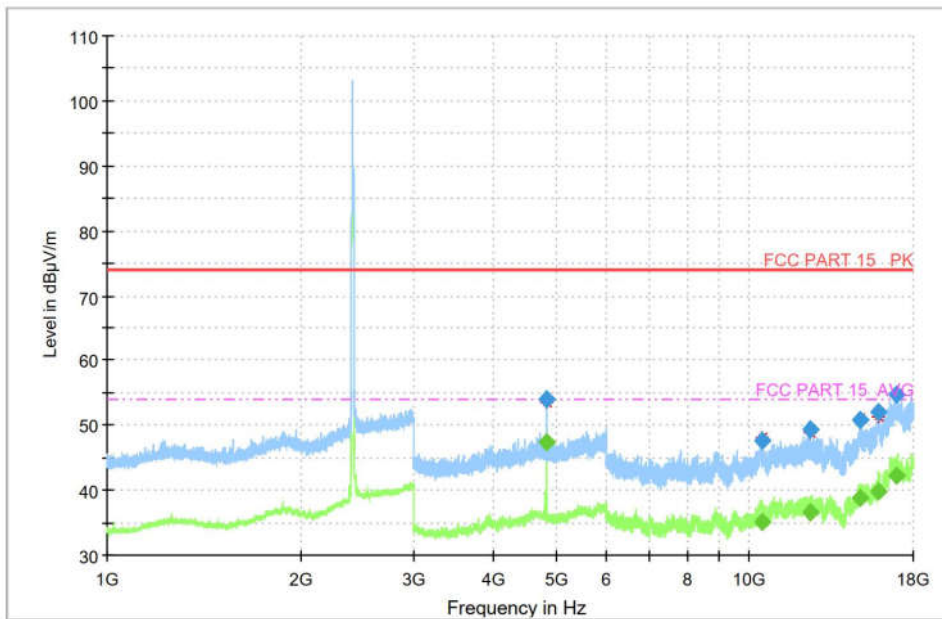


Fig.103 Radiated Spurious Emission (802.11b, CH1, 1GHz-18GHz)

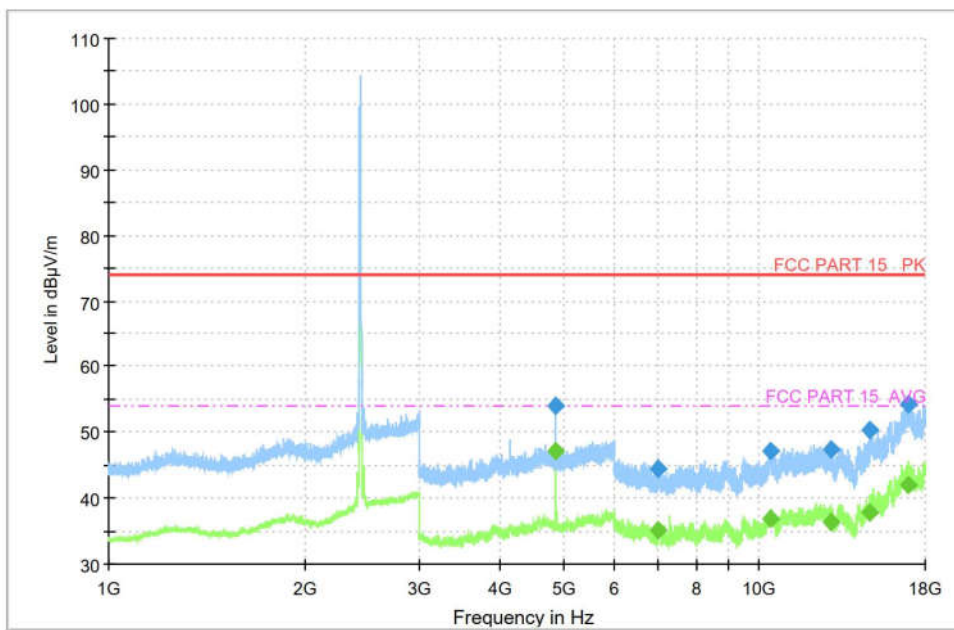
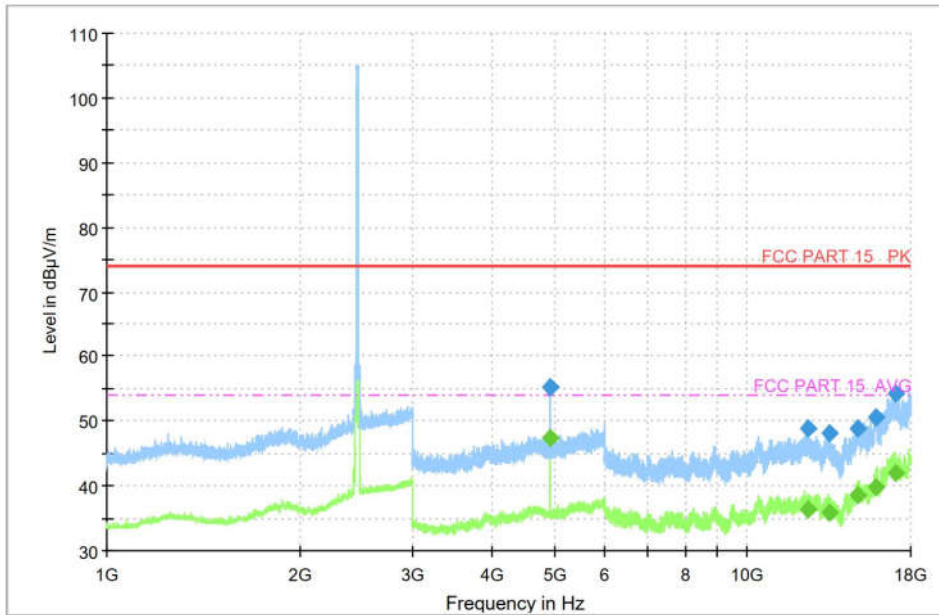
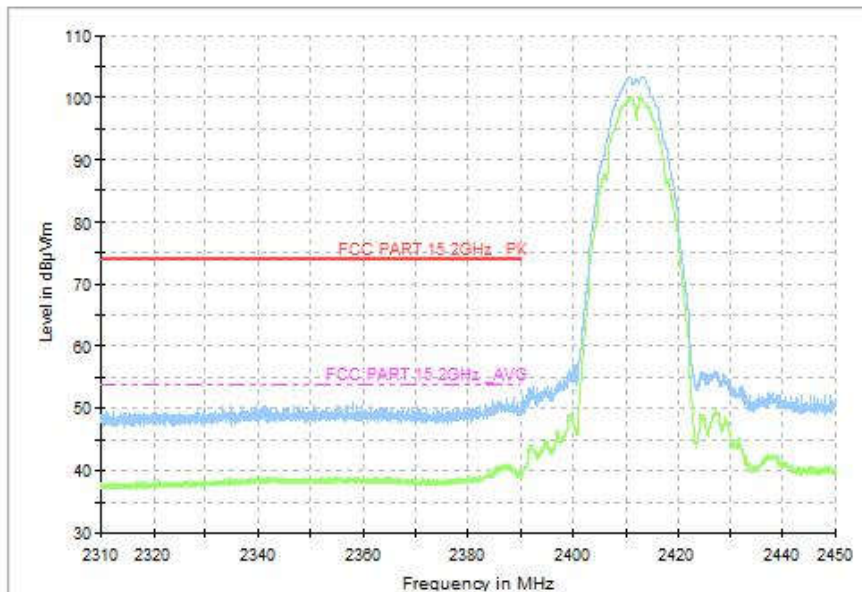


Fig.104 Radiated Spurious Emission (802.11b, CH6, 1GHz-18GHz)



**Fig.105 Radiated Spurious Emission (802.11b, CH11, 1GHz-18GHz)**



**Fig.106 Radiated Restricted Band (802.11b, CH1, 2.38GHz~2.45GHz)**

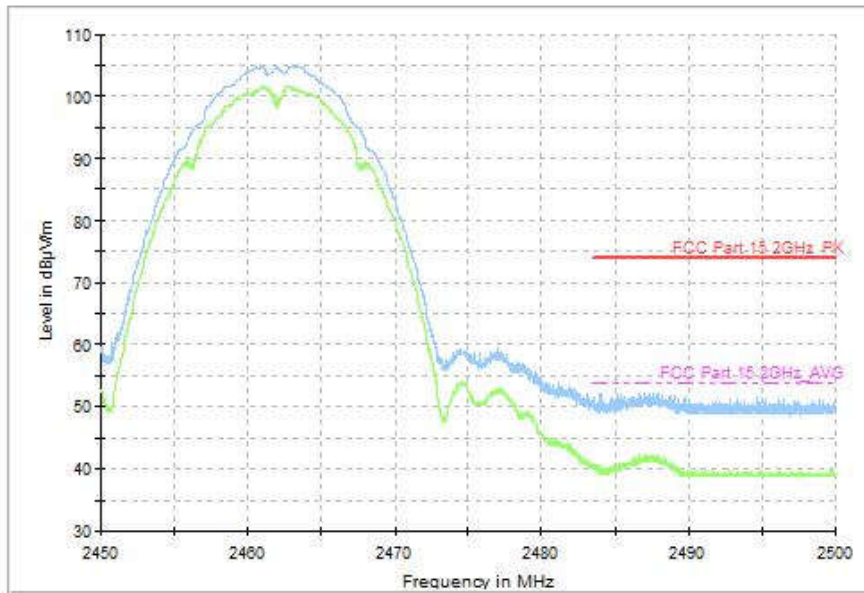


Fig.107 Radiated Restricted Band (802.11b, CH11, 2.45GHz~2.50GHz)

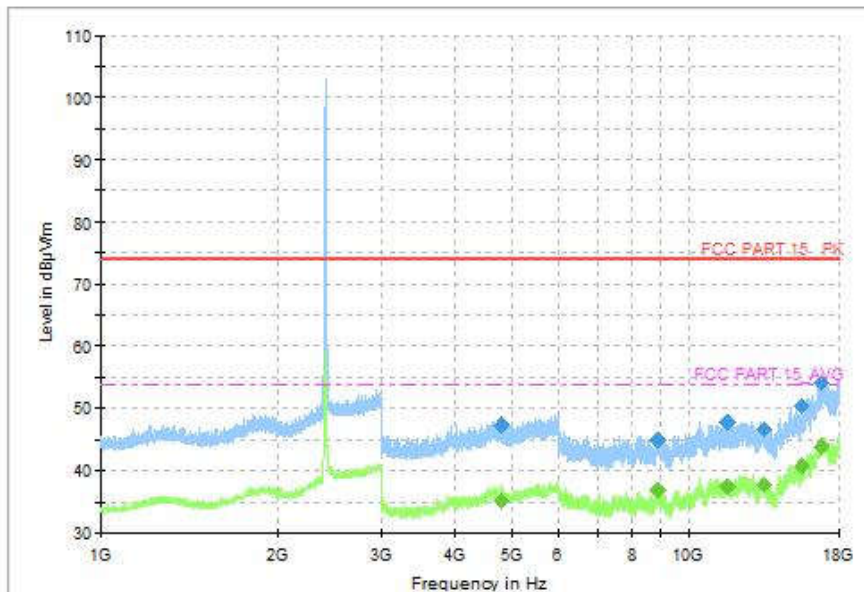


Fig.108 Radiated Spurious Emission (802.11g, CH1, 1GHz-18GHz)

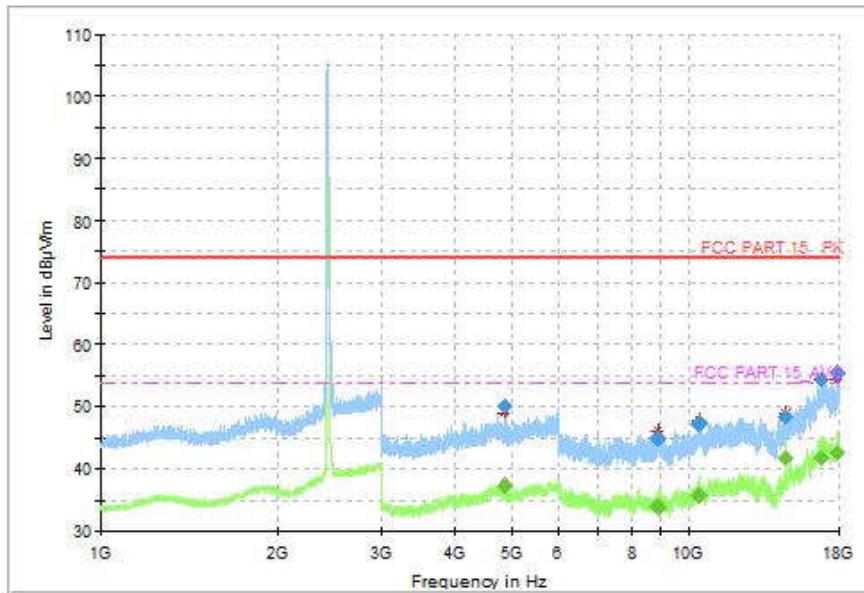


Fig.109 Radiated Spurious Emission (802.11g, CH6, 1GHz-18GHz)

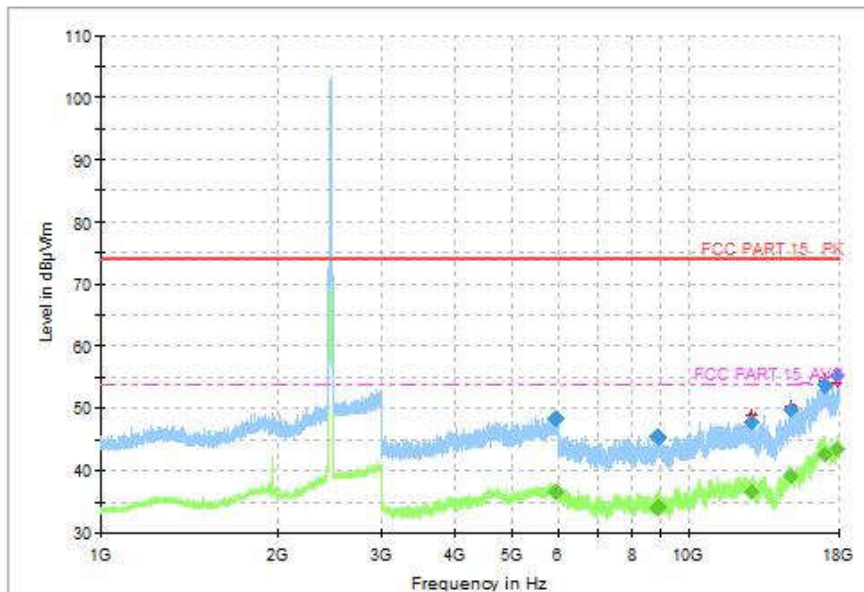


Fig.110 Radiated Spurious Emission (802.11g, CH11, 1GHz-18GHz)

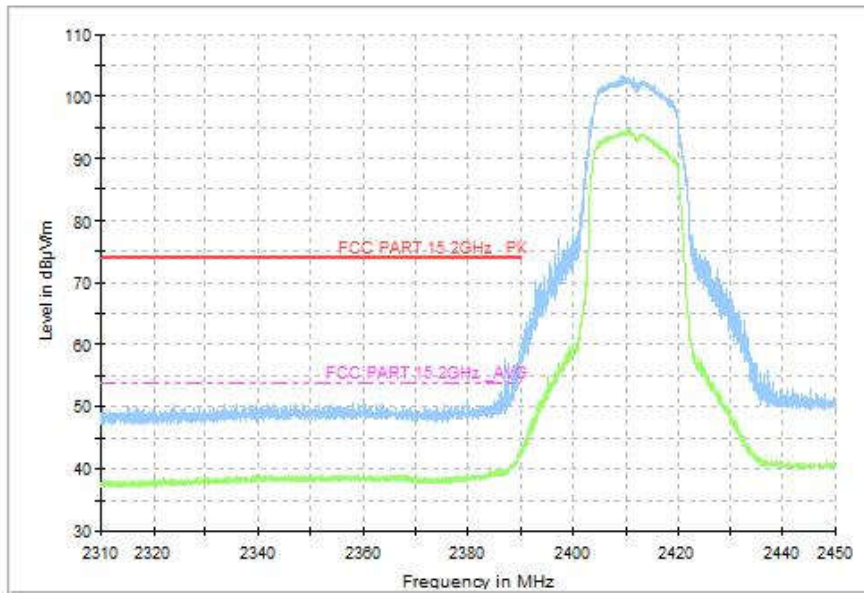


Fig.111 Radiated Restricted Band (802.11g, CH1, 2.38GHz~2.45GHz)

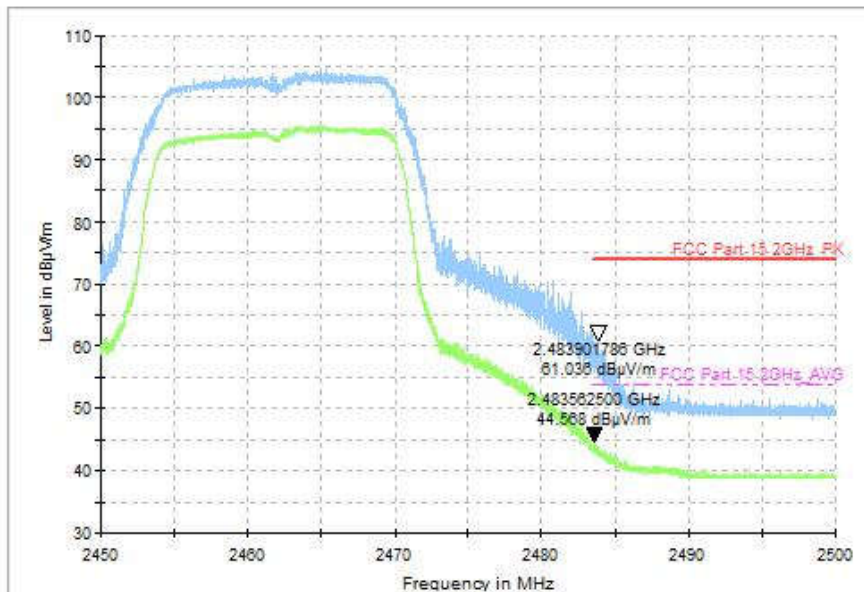


Fig.112 Radiated Restricted Band (802.11g, CH11, 2.45GHz~2.50GHz)

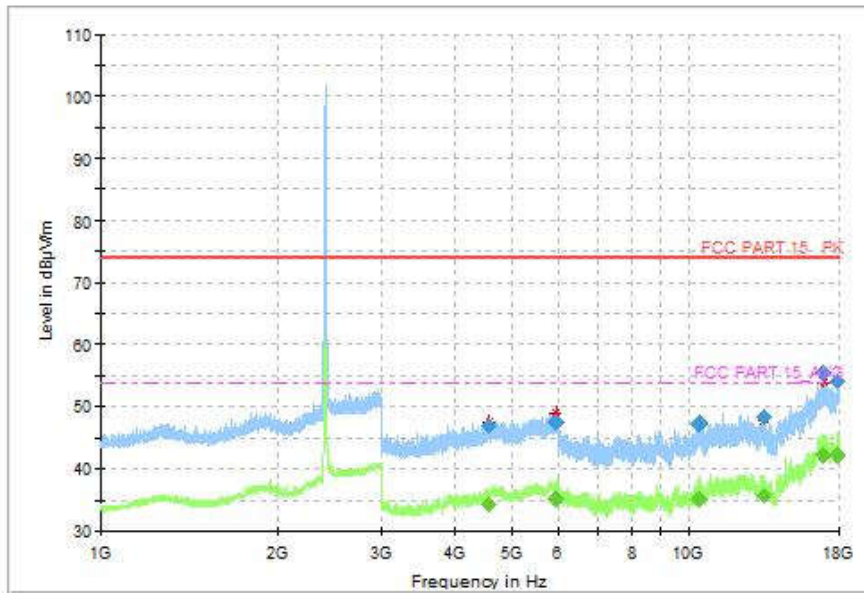


Fig.113 Radiated Spurious Emission (802.11n-HT20, CH1, 1GHz-18GHz)

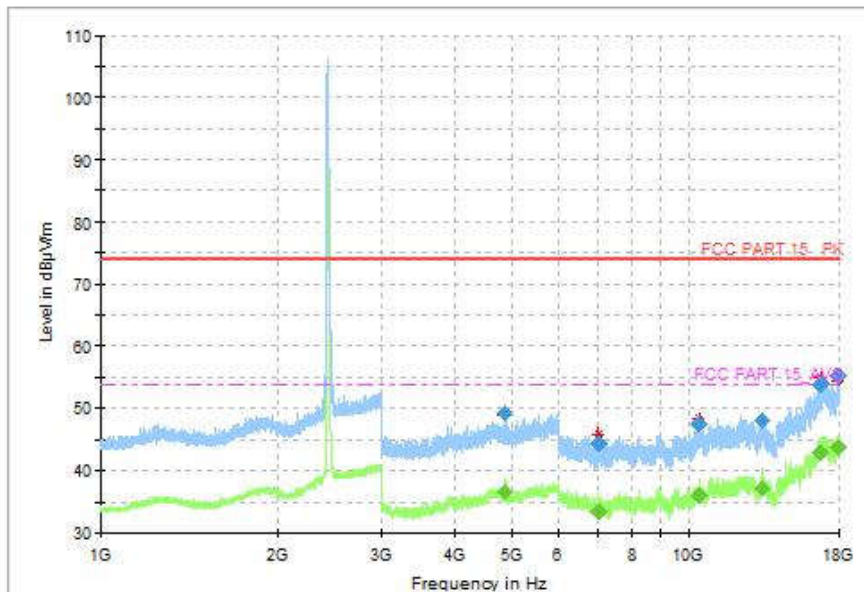


Fig.114 Radiated Spurious Emission (802.11n-HT20, CH6, 1GHz-18GHz)

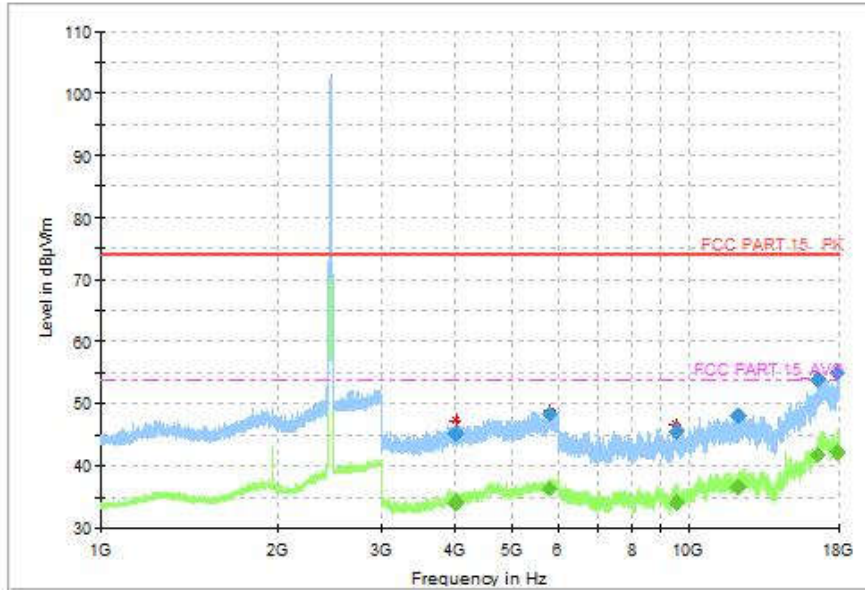


Fig.115 Radiated Spurious Emission (802.11n-HT20, CH11, 1GHz-18GHz)

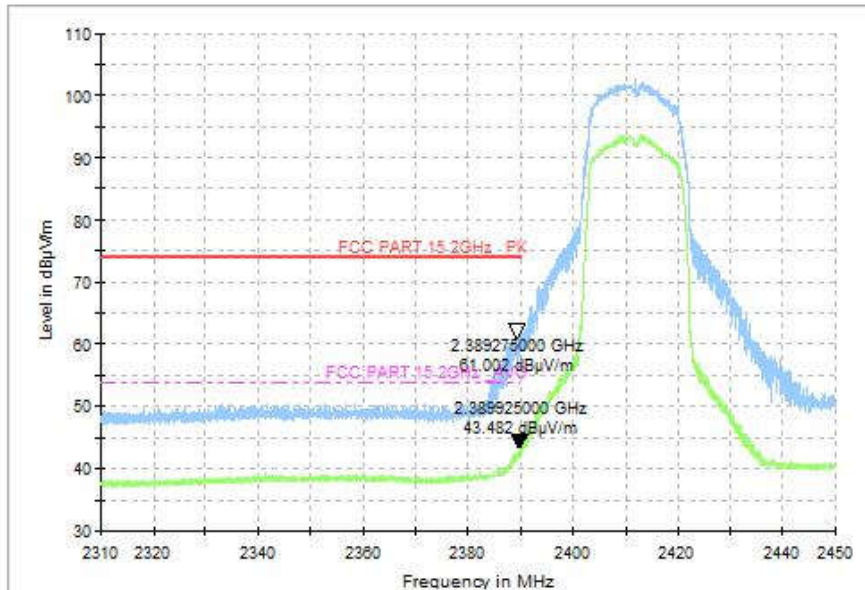


Fig.116 Radiated Restricted Band (802.11n-HT20, CH1, 2.38GHz~2.45GHz)

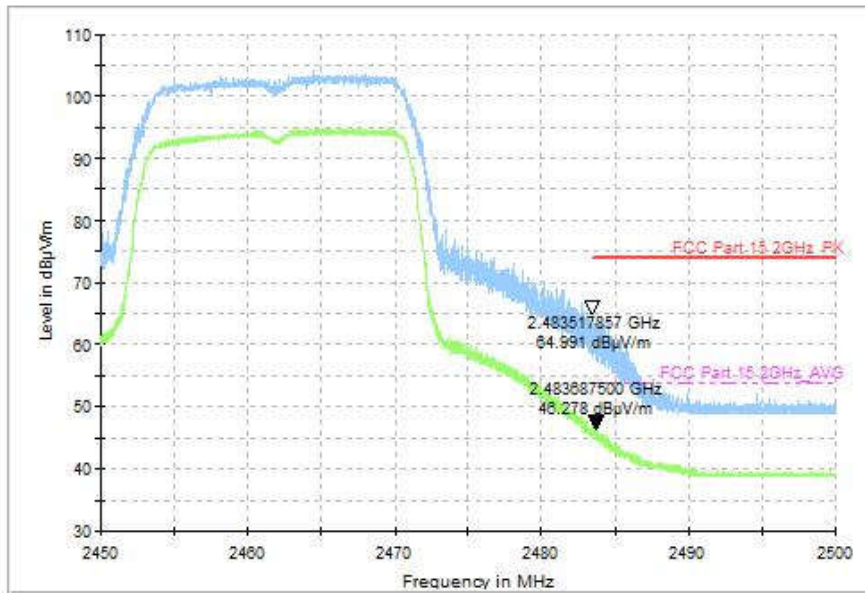


Fig.117 Radiated Spurious Emission (802.11n-HT20, CH11, 2.45GHz~2.50GHz)

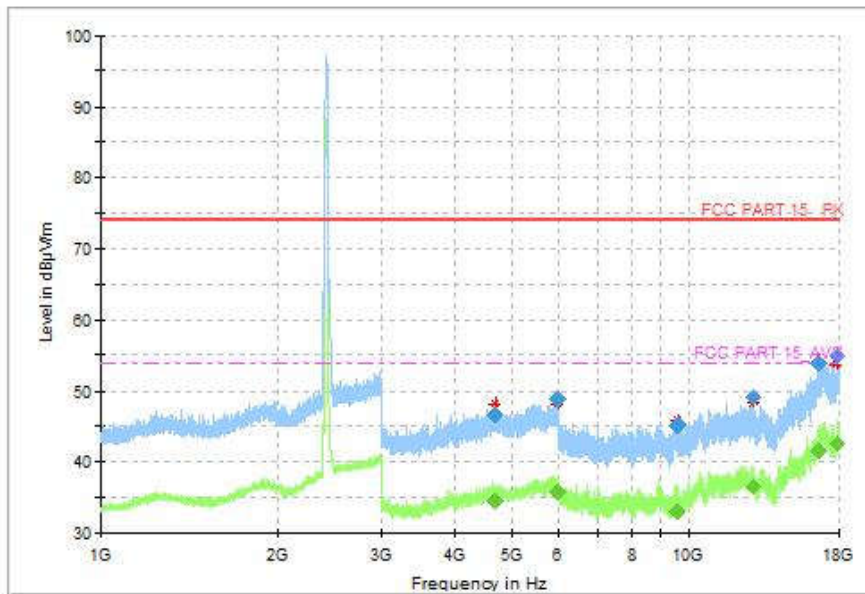
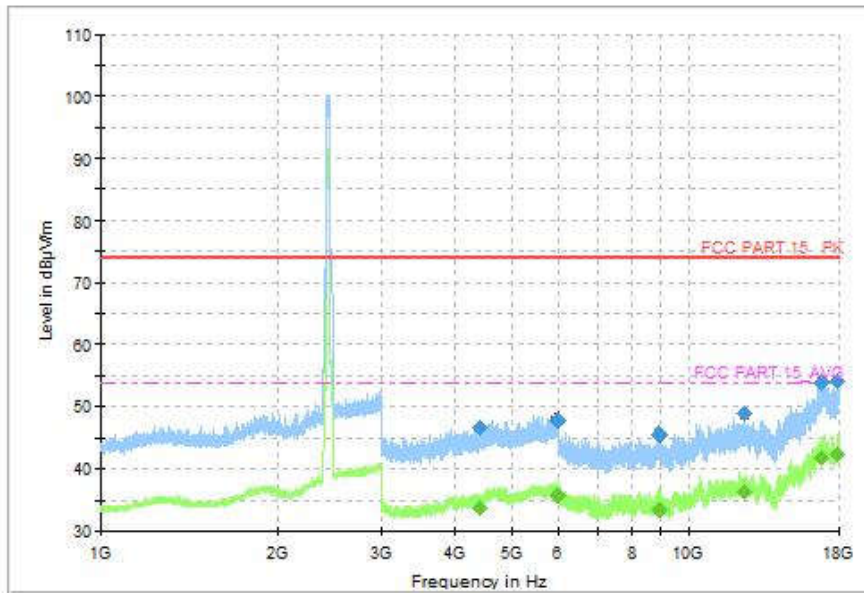
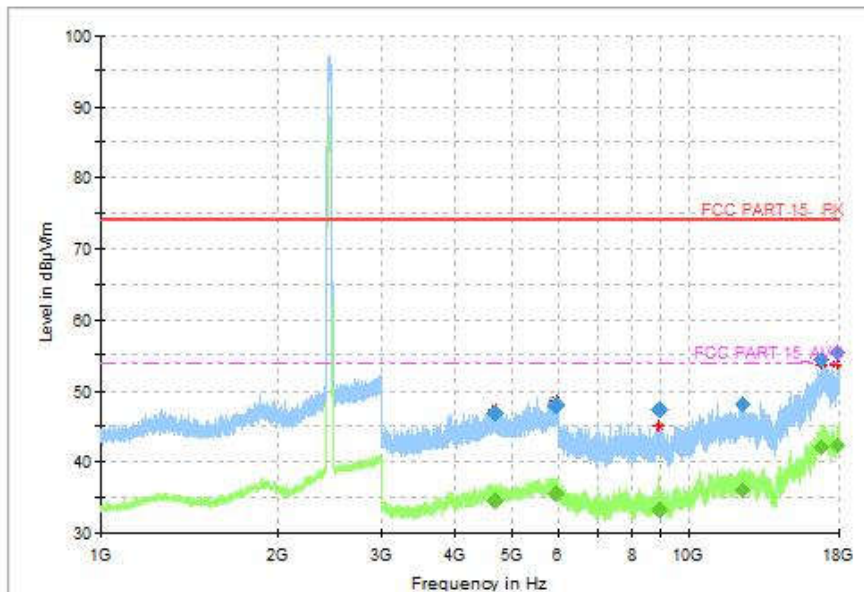


Fig.118 Radiated Spurious Emission (802.11n-HT40, CH3, 1GHz~18GHz)





**Fig.119 Radiated Spurious Emission (802.11n-HT40, CH6, 1GHz-18GHz)**



**Fig.120 Radiated Spurious Emission (802.11n-HT40, CH9, 1GHz-18GHz)**

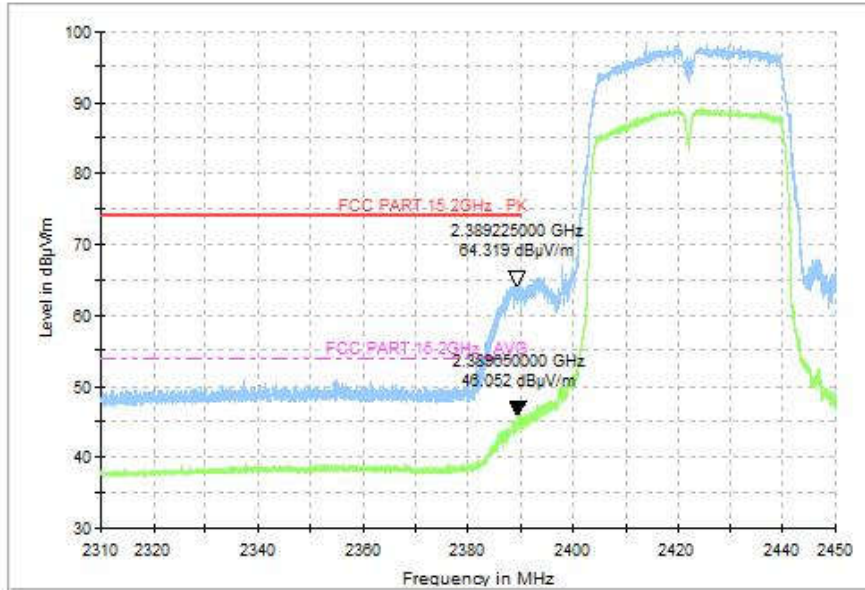


Fig.121 Radiated Restricted Band (802.11n-HT40, CH3, 2.38GHz~2.45GHz)

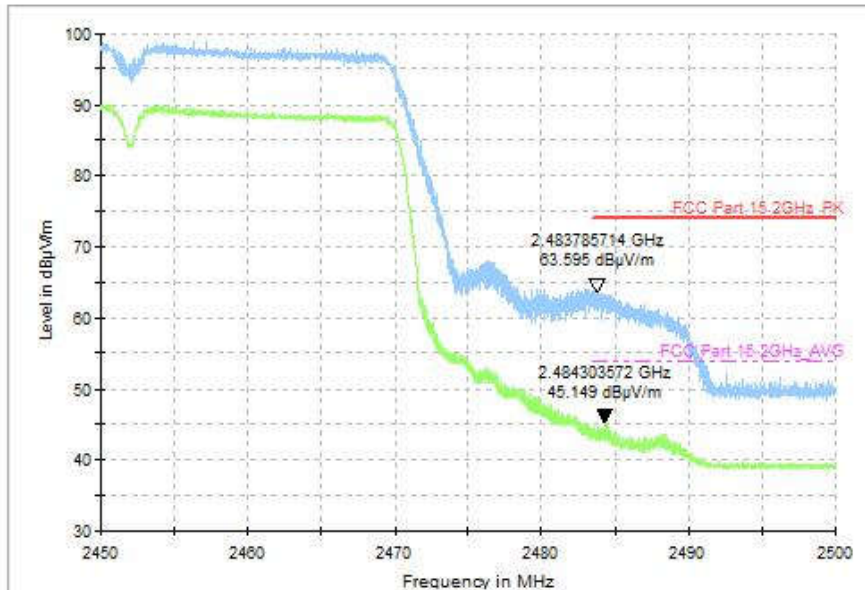


Fig.122 Radiated Spurious Emission (802.11n-HT40, CH9, 2.45GHz~2.50GHz)

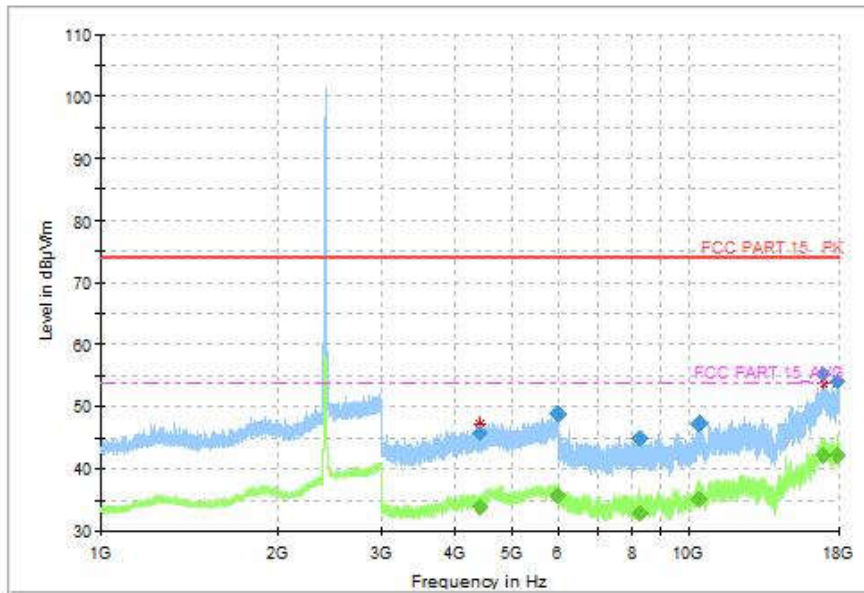


Fig.123 Radiated Spurious Emission (802.11-VHT20, CH1, 1GHz-18GHz)

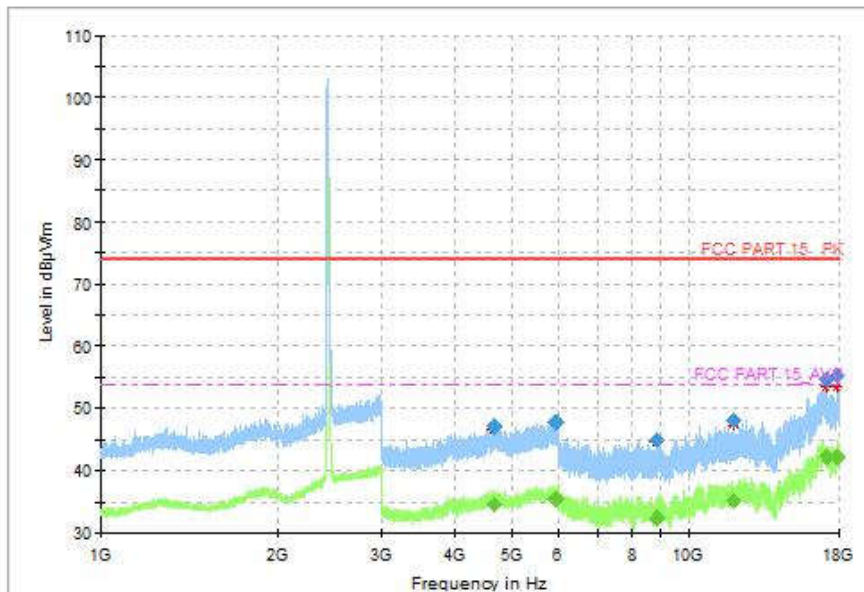


Fig.124 Radiated Spurious Emission (802.11-VHT20, CH6, 1GHz-18GHz)

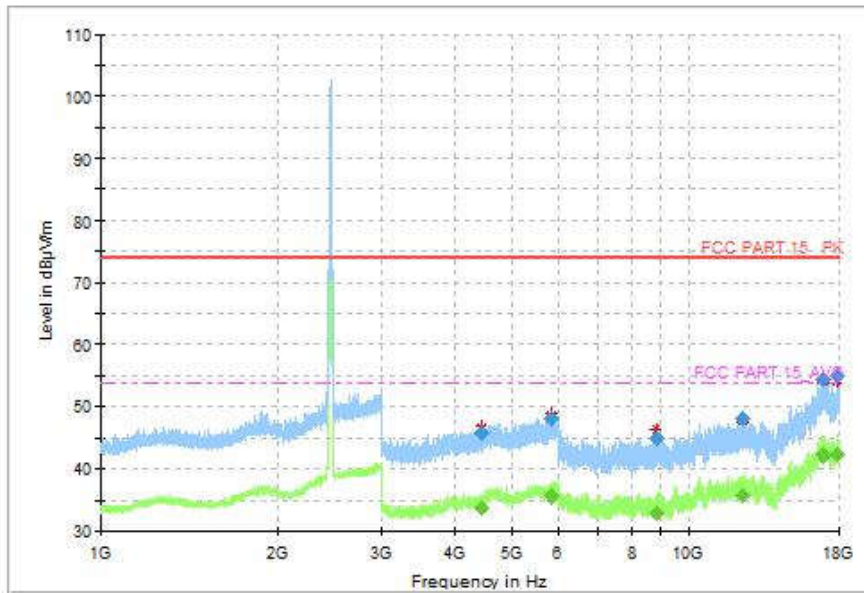


Fig.125 Radiated Spurious Emission (802.11-VHT20, CH11, 1GHz-18GHz)

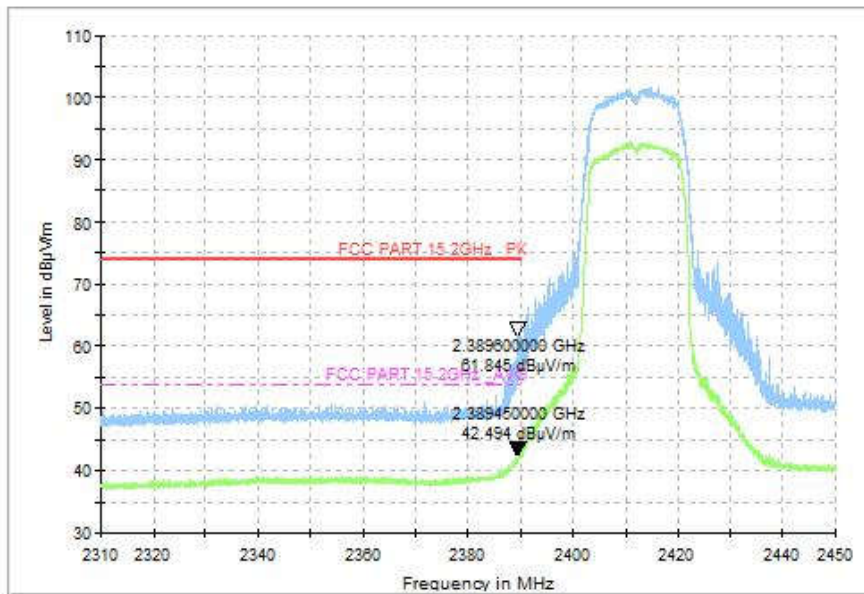


Fig.126 Radiated Restricted Band (802.11-VHT20, CH1, 2.38GHz~2.45GHz)

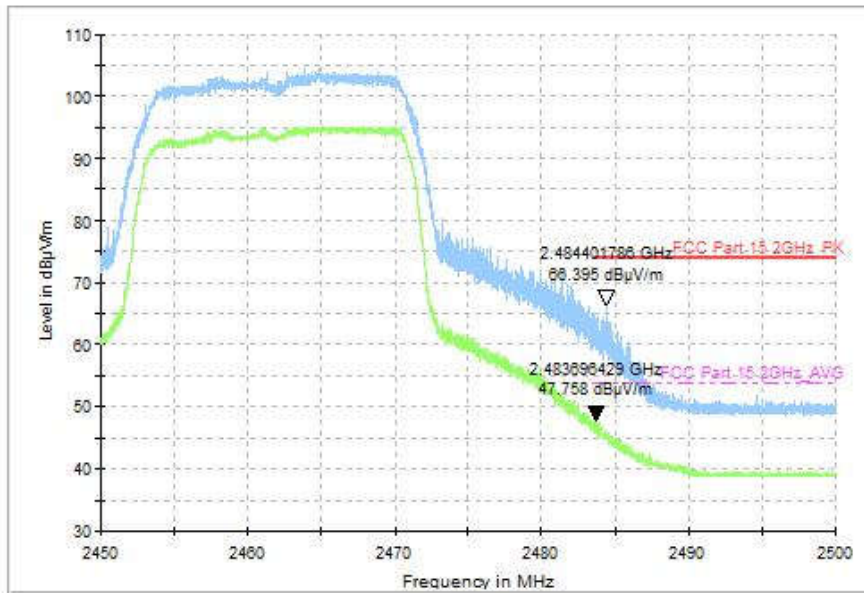


Fig.127 Radiated Spurious Emission (802.11-VHT20, CH11, 2.45GHz~2.50GHz)

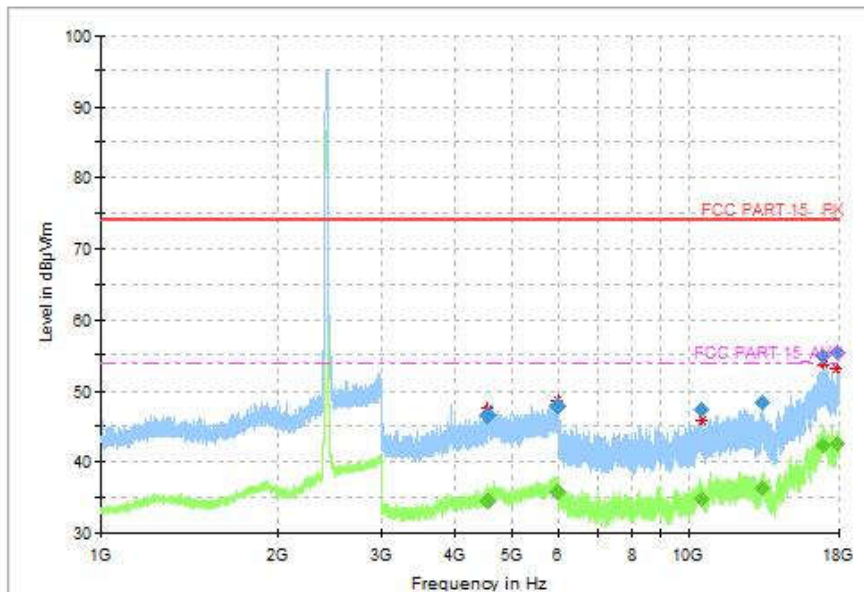


Fig.128 Radiated Spurious Emission (802.11-VHT40, CH3, 1GHz~18GHz)

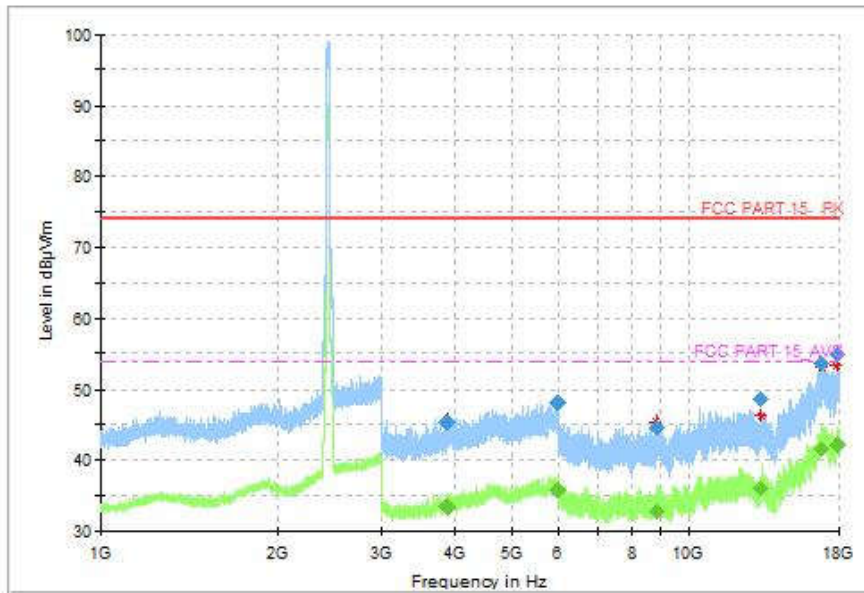


Fig.129 Radiated Spurious Emission (802.11-VHT40, CH6, 1 GHz-18 GHz)

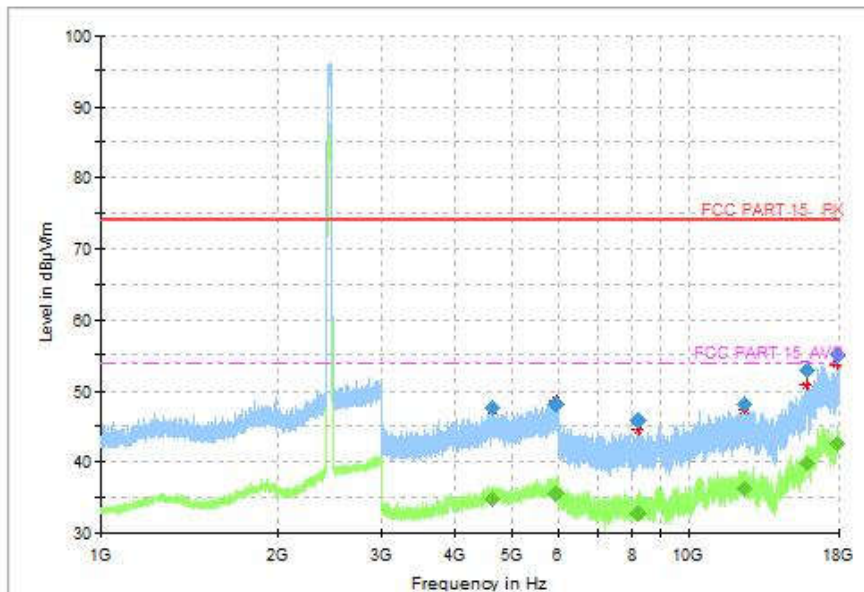
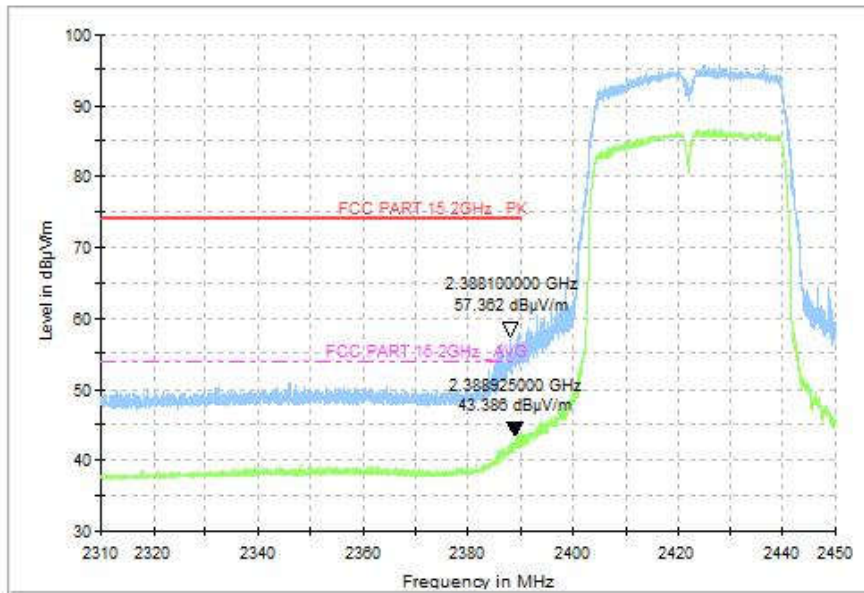
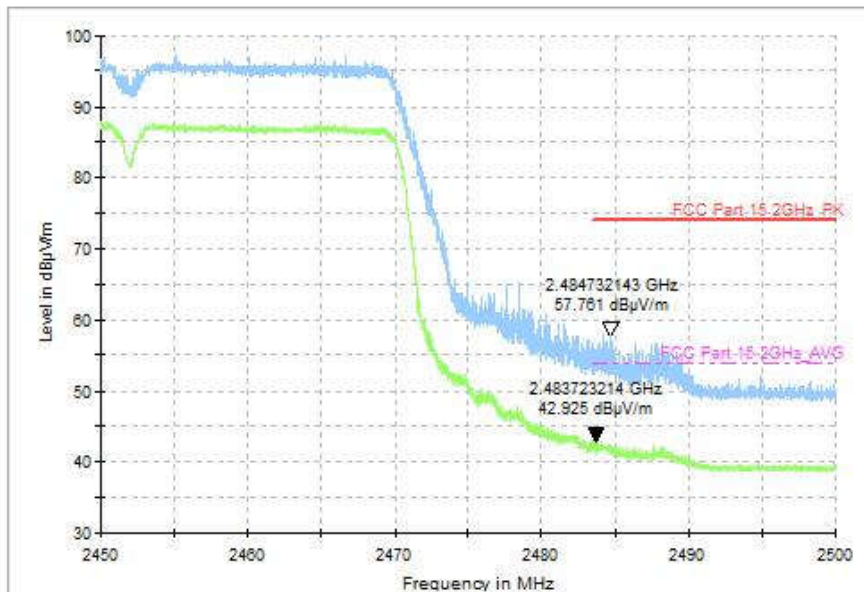


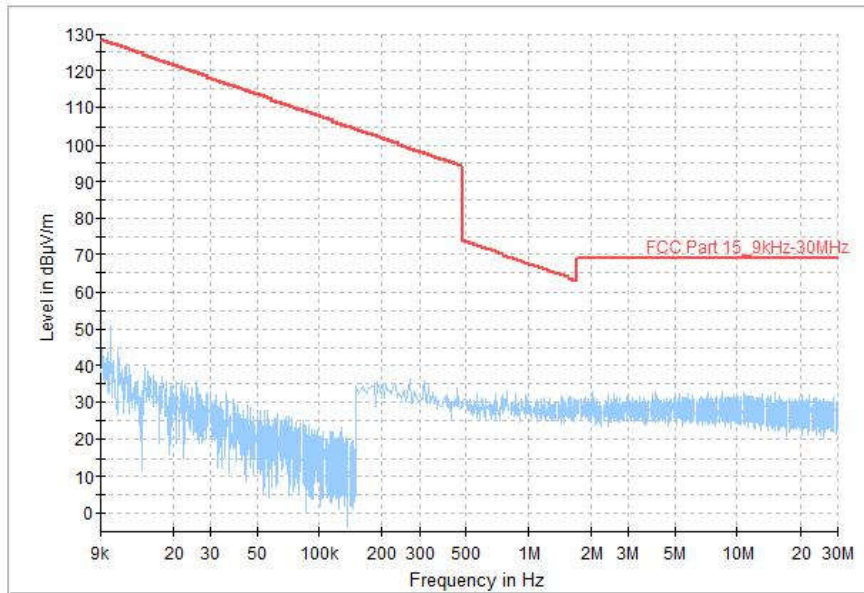
Fig.130 Radiated Spurious Emission (802.11-VHT40, CH9, 1GHz-18GHz)



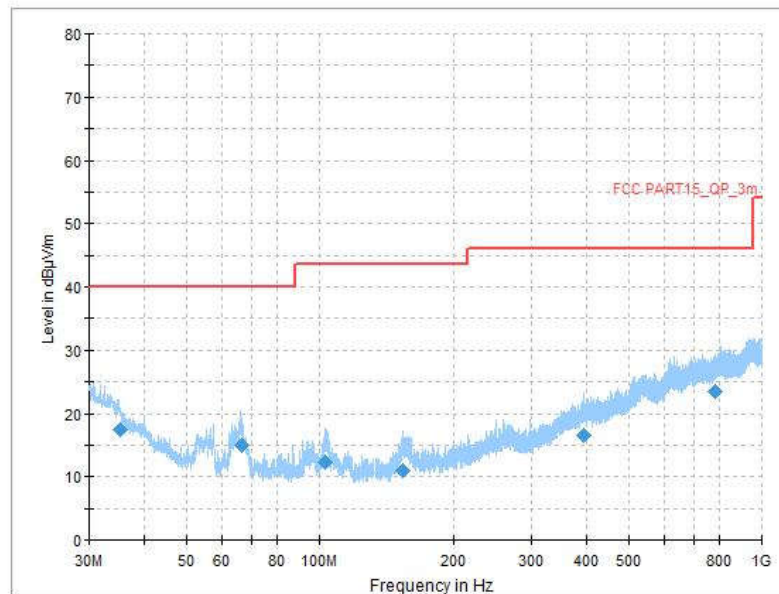
**Fig.131 Radiated Restricted Band (802.11-VHT40, CH3, 2.38GHz~2.45GHz)**



**Fig.132 Radiated Spurious Emission (802.11-VHT40, CH9, 2.45GHz~2.50GHz)**



**Fig.133 Radiated Spurious Emission (All channel, 9kHz~30MHz)**



**Fig.134 Radiated Spurious Emission (All channel, 30MHz~1GHz)**



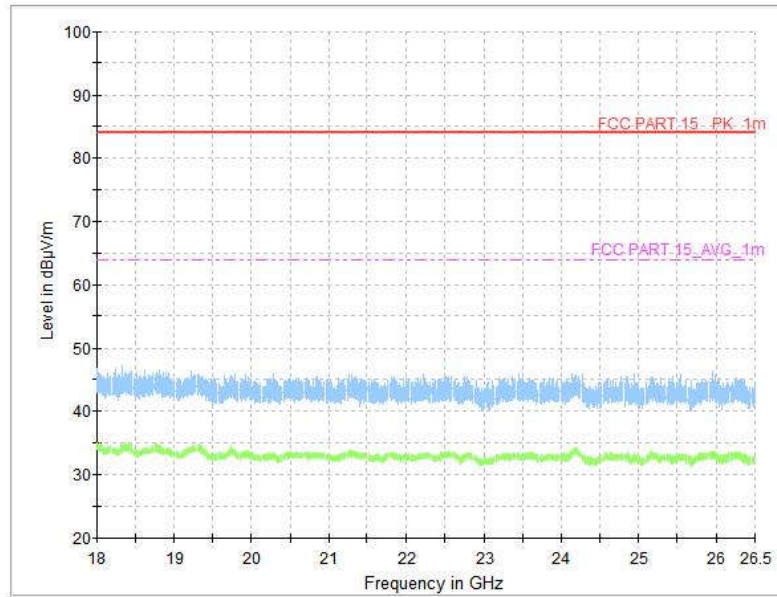


Fig.135 Radiated Spurious Emission (All channel, 18GHz~26.5GHz)



### A.7 AC Power line Conducted Emission

Method of Measurement: See ANSI C63.10-clause 6.2.

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit:

WLAN 2.4GHz - AE2, AE3

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
			Traffic	Idle	
0.15 to 0.5	66 to 56	56 to 46	Fig.136	Fig.137	<b>P</b>
0.5 to 5	56	46			
5 to 30	60	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note: The measurement results include the L1 and N measurements.

See below for test graphs.

Conclusion: PASS

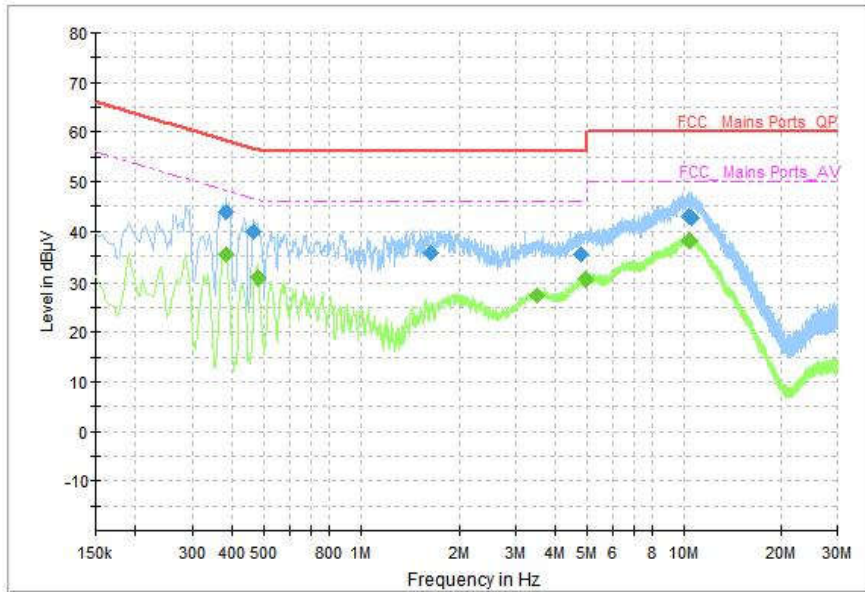


Fig.136 AC Power line Conducted Emission (Traffic)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.382000	43.87	58.24	14.36	N	ON	10
0.466000	39.89	56.59	16.70	N	ON	10
1.642000	35.51	56.00	20.49	N	ON	10
4.770000	35.41	56.00	20.59	L1	ON	10
10.298000	42.85	60.00	17.15	L1	ON	10
10.634000	42.65	60.00	17.35	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.382000	35.47	48.24	12.77	N	ON	10
0.478000	30.70	46.37	15.67	N	ON	10
3.510000	27.38	46.00	18.62	L1	ON	10
4.930000	30.56	46.00	15.44	L1	ON	10
10.342000	38.24	50.00	11.76	L1	ON	10
10.494000	38.01	50.00	11.99	L1	ON	10

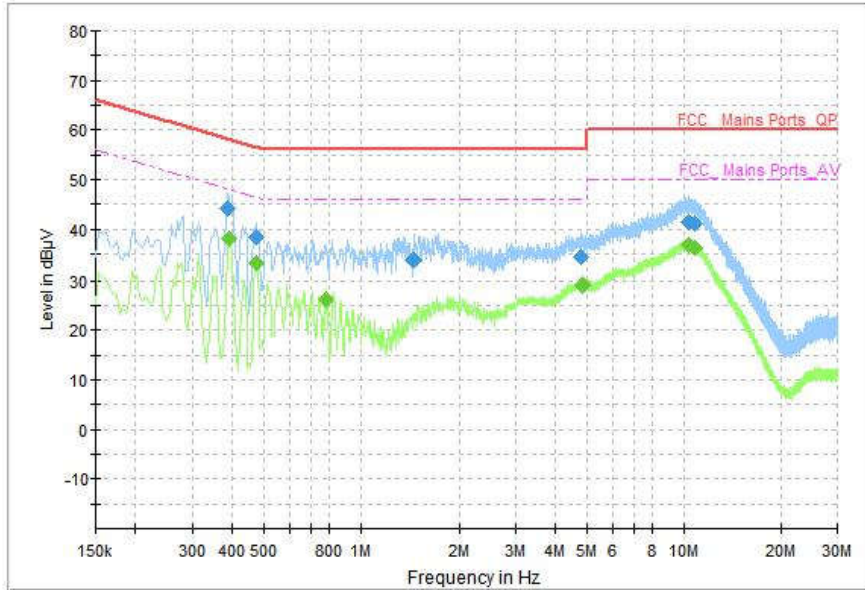


Fig.137 AC Power line Conducted Emission (Idle)

**Measurement Results: Quasi Peak**

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.386000	44.12	58.15	14.03	N	ON	10
0.474000	38.43	56.44	18.01	N	ON	10
1.454000	33.82	56.00	22.18	N	ON	10
4.770000	34.48	56.00	21.52	L1	ON	10
10.362000	41.46	60.00	18.54	L1	ON	10
10.810000	41.12	60.00	18.88	L1	ON	10

**Measurement Results: Average**

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.390000	38.05	48.06	10.01	N	ON	10
0.474000	33.33	46.44	13.11	N	ON	10
0.782000	26.33	46.00	19.67	N	ON	10
4.834000	28.86	46.00	17.14	L1	ON	10
10.330000	36.99	50.00	13.01	L1	ON	10
10.834000	36.38	50.00	13.62	L1	ON	10

\*\*\*END OF REPORT\*\*\*