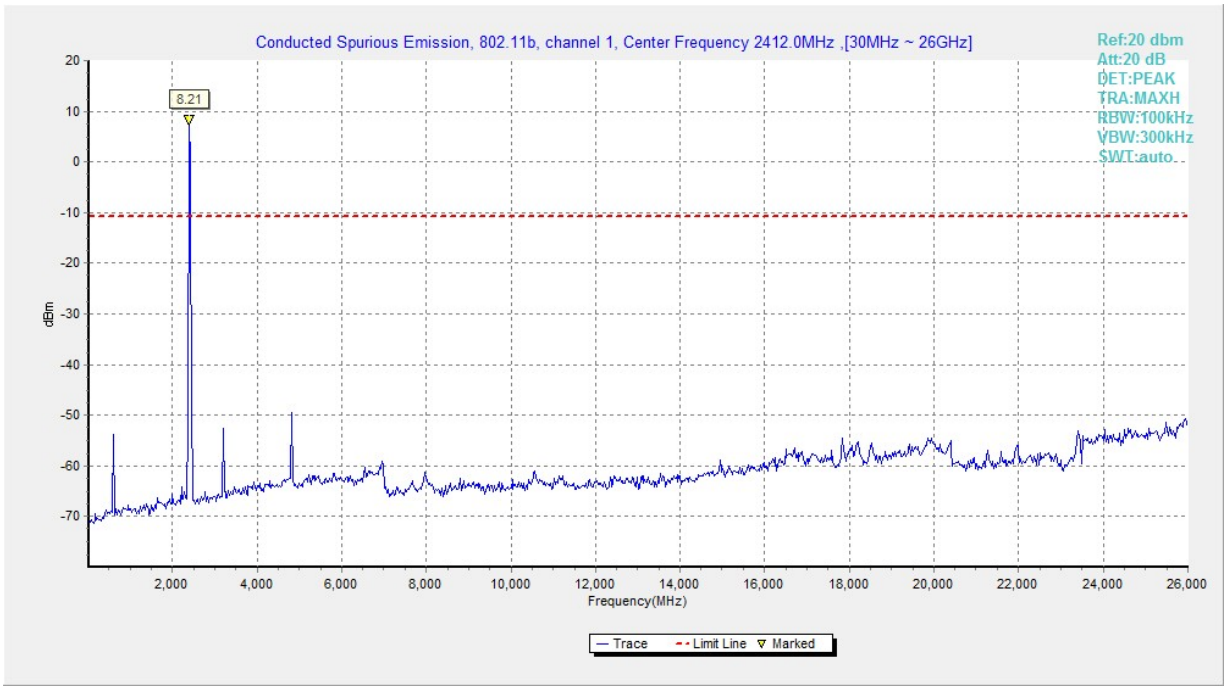

Fig.33 Conducted Spurious Emission (802.11b, CH1)

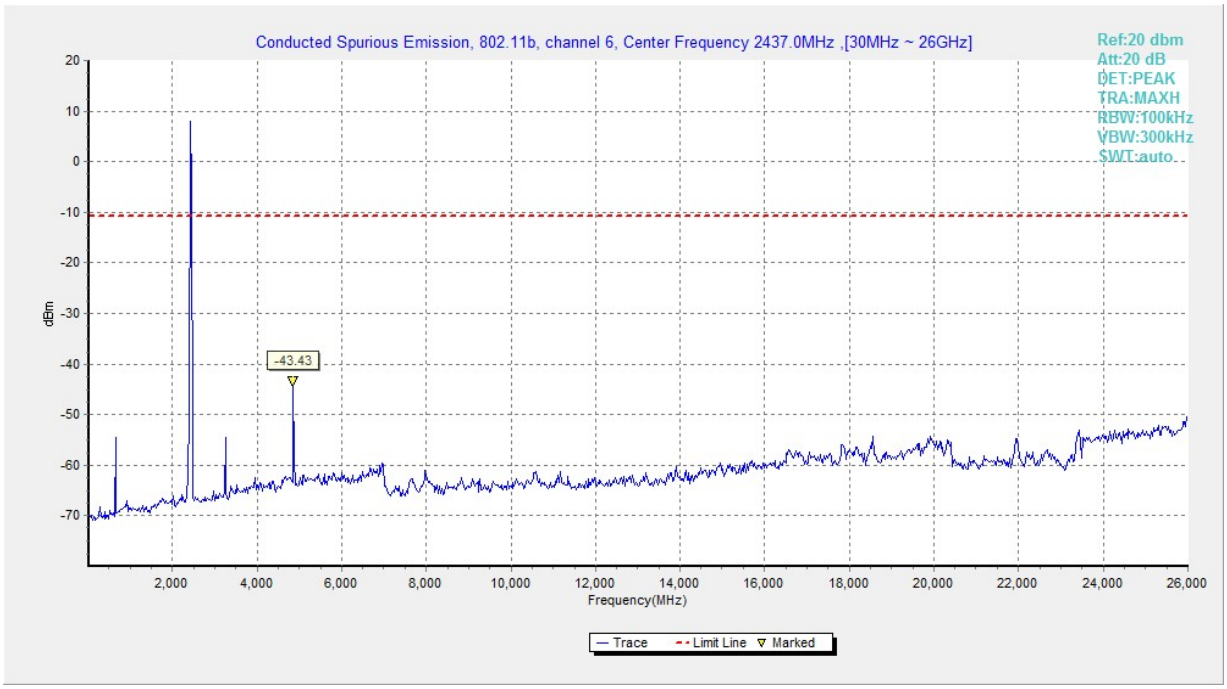

Fig.34 Conducted Spurious Emission (802.11b, CH6)

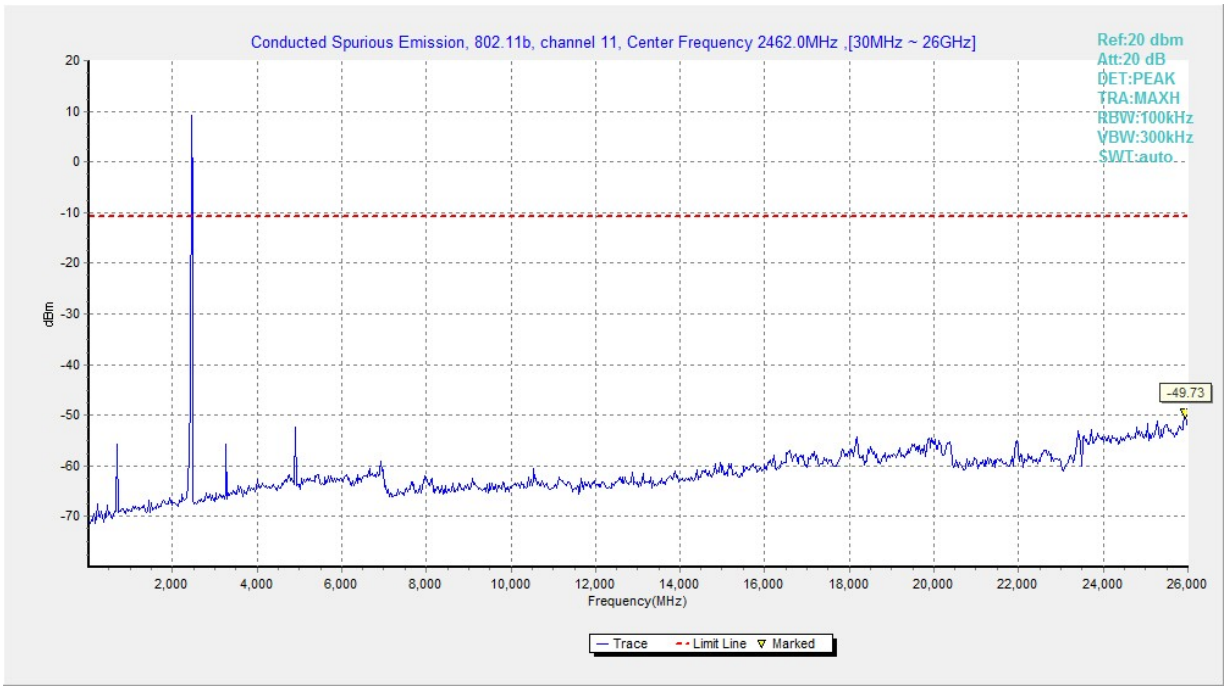

Fig.35 Conducted Spurious Emission (802.11b, CH11)

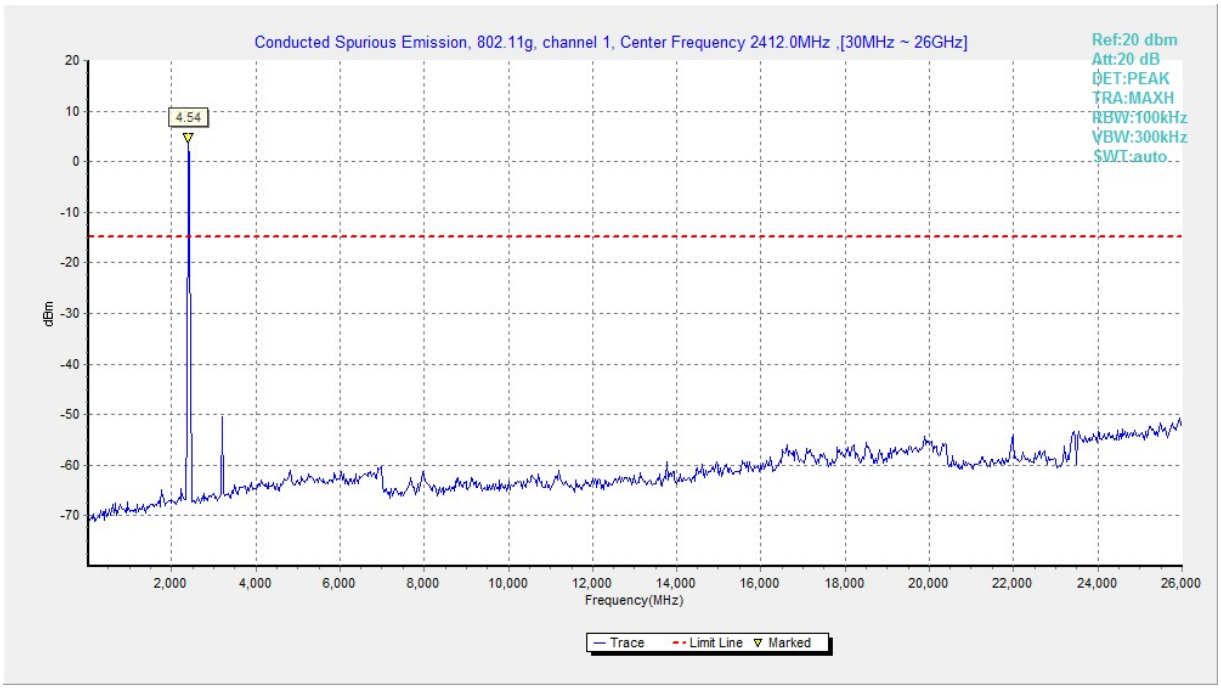

Fig.36 Conducted Spurious Emission (802.11g, CH1)

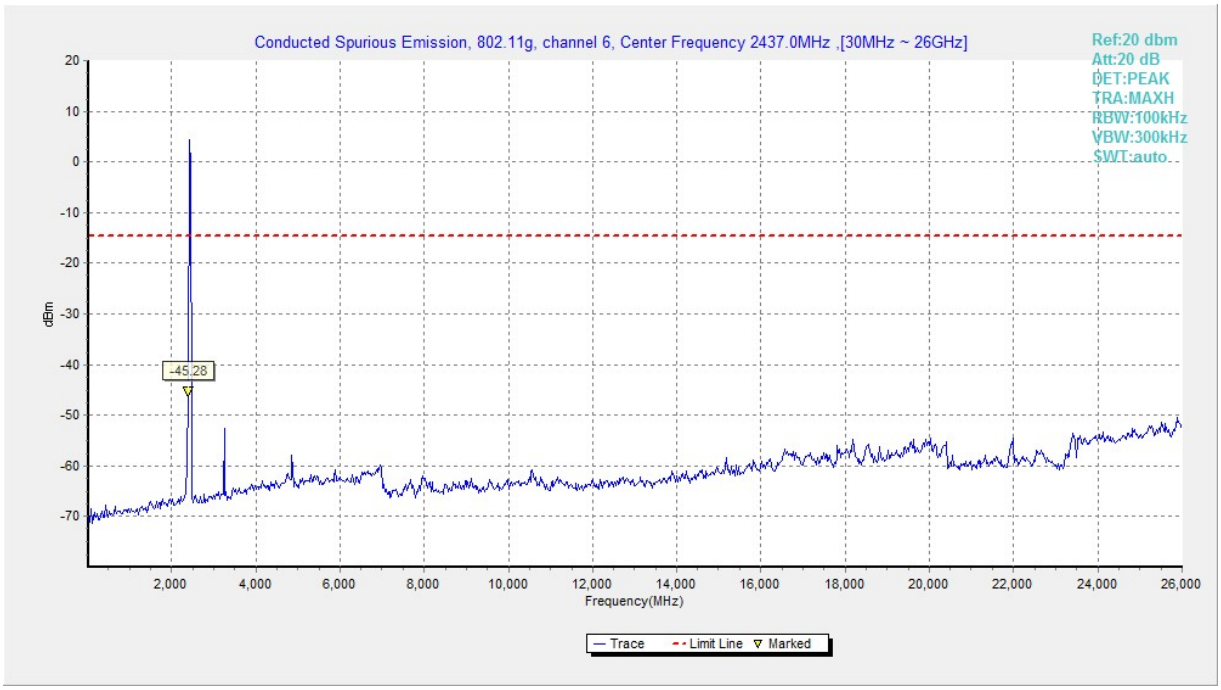

Fig.37 Conducted Spurious Emission (802.11g, CH6)

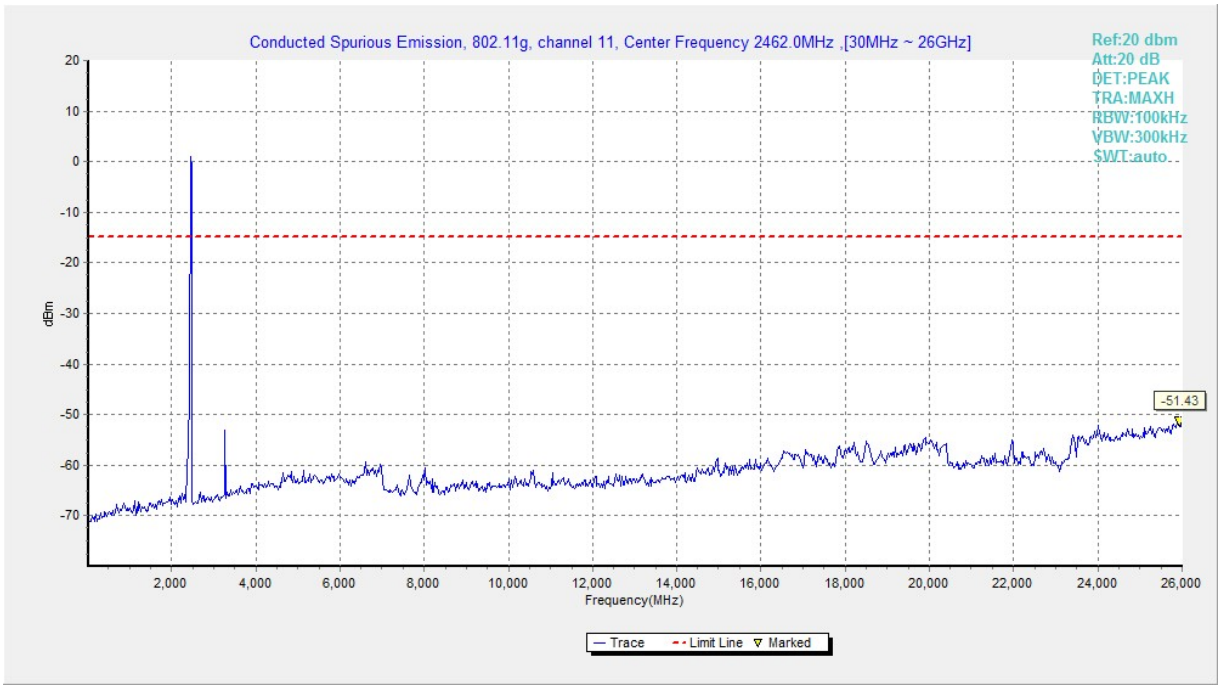

Fig.38 Conducted Spurious Emission (802.11g, CH11)

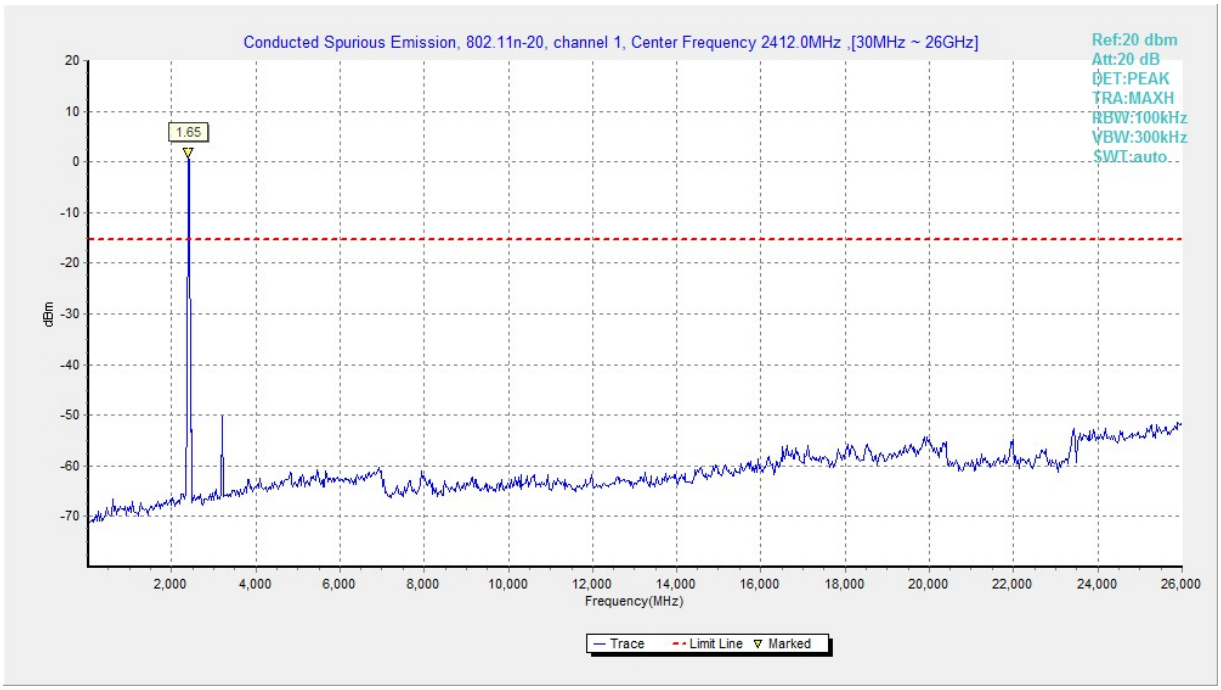

Fig.39 Conducted Spurious Emission (802.11n HT20, CH1)

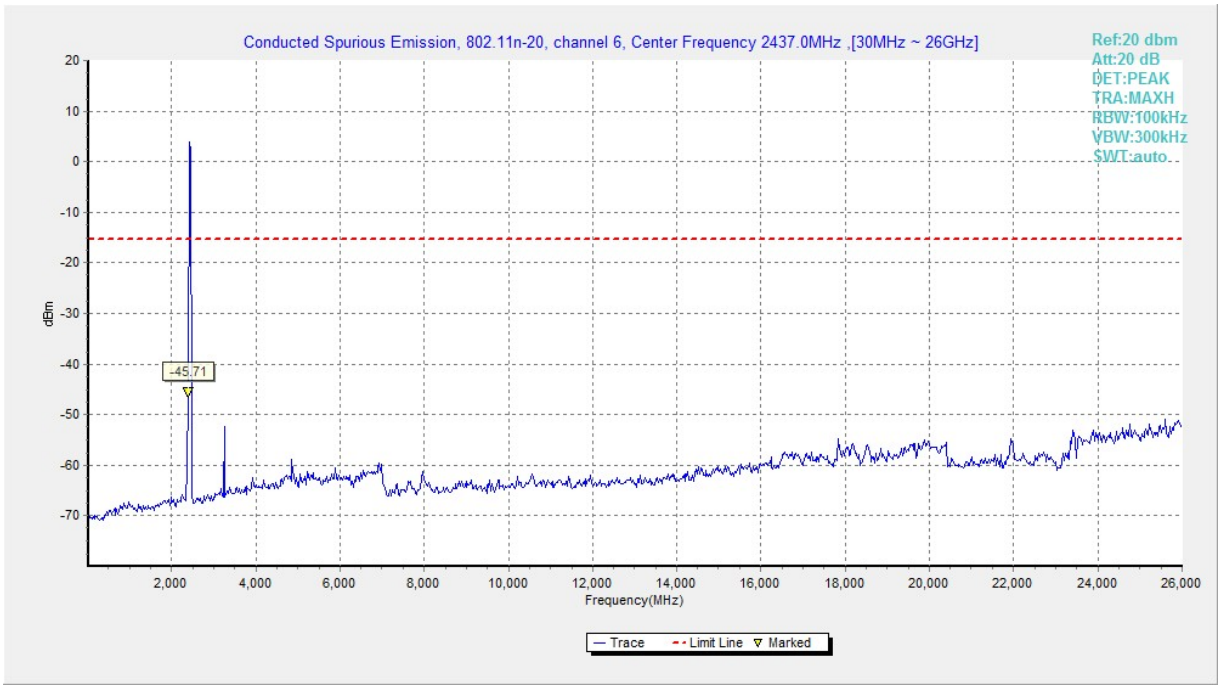

Fig.40 Conducted Spurious Emission (802.11n HT20, CH6)

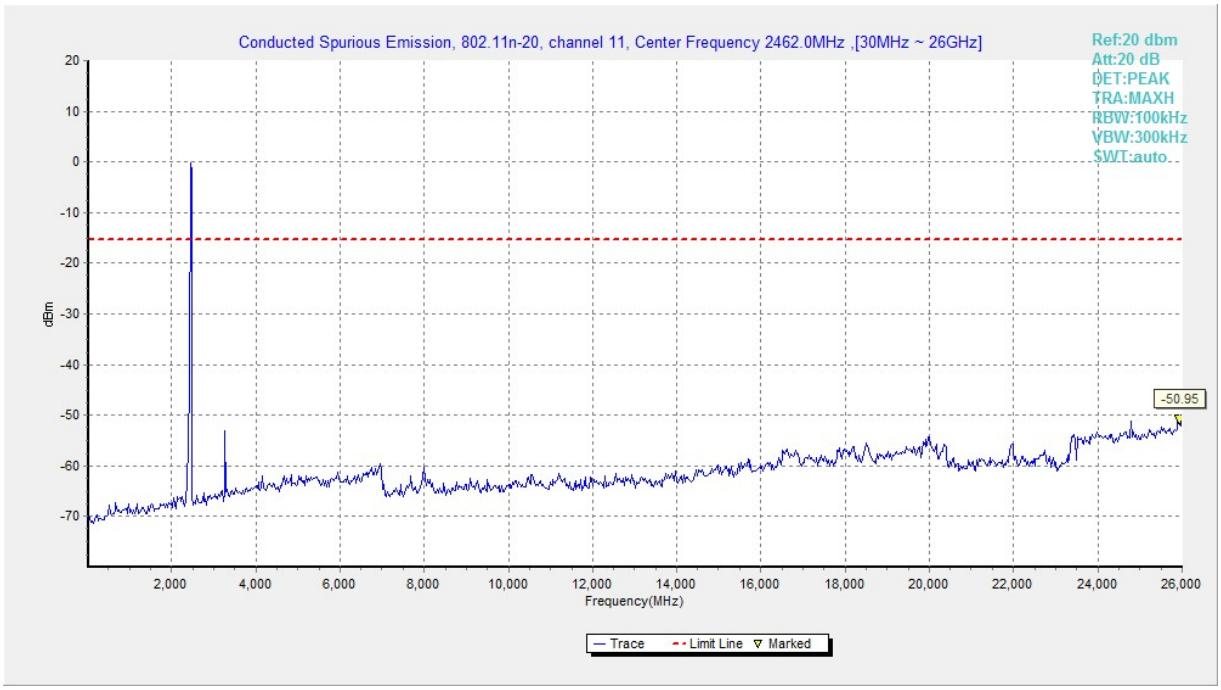

Fig.41 Conducted Spurious Emission (802.11n HT20, CH11)

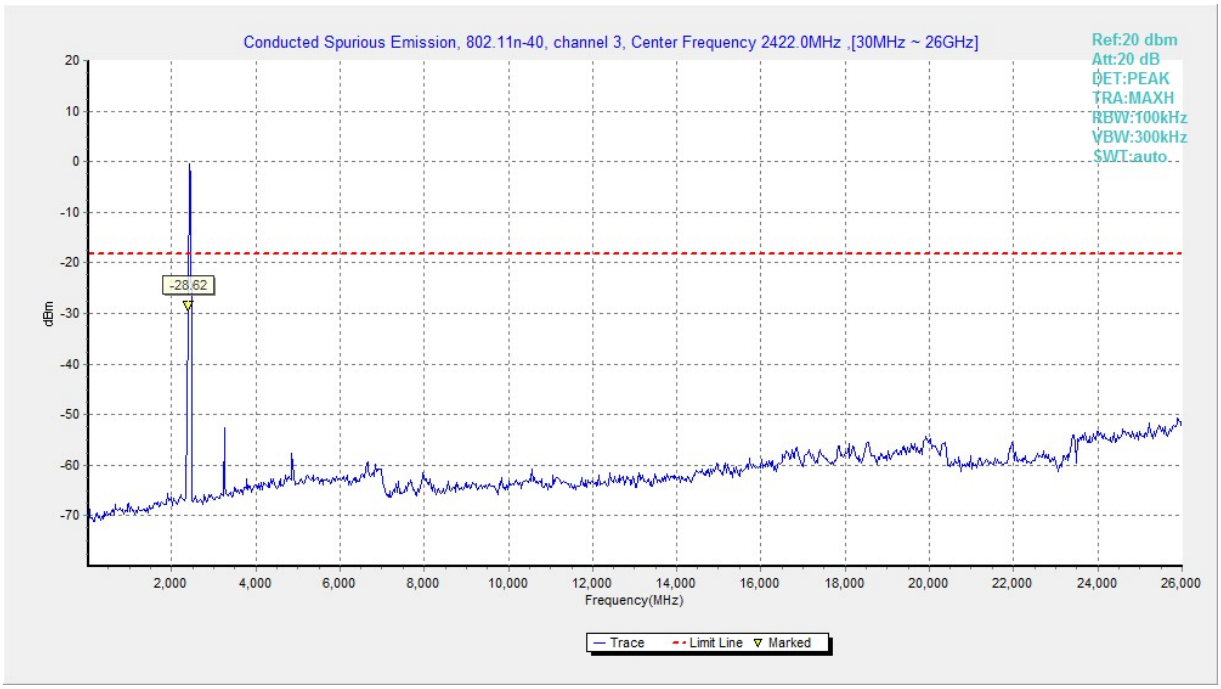

Fig.42 Conducted Spurious Emission (802.11n HT40, CH3)

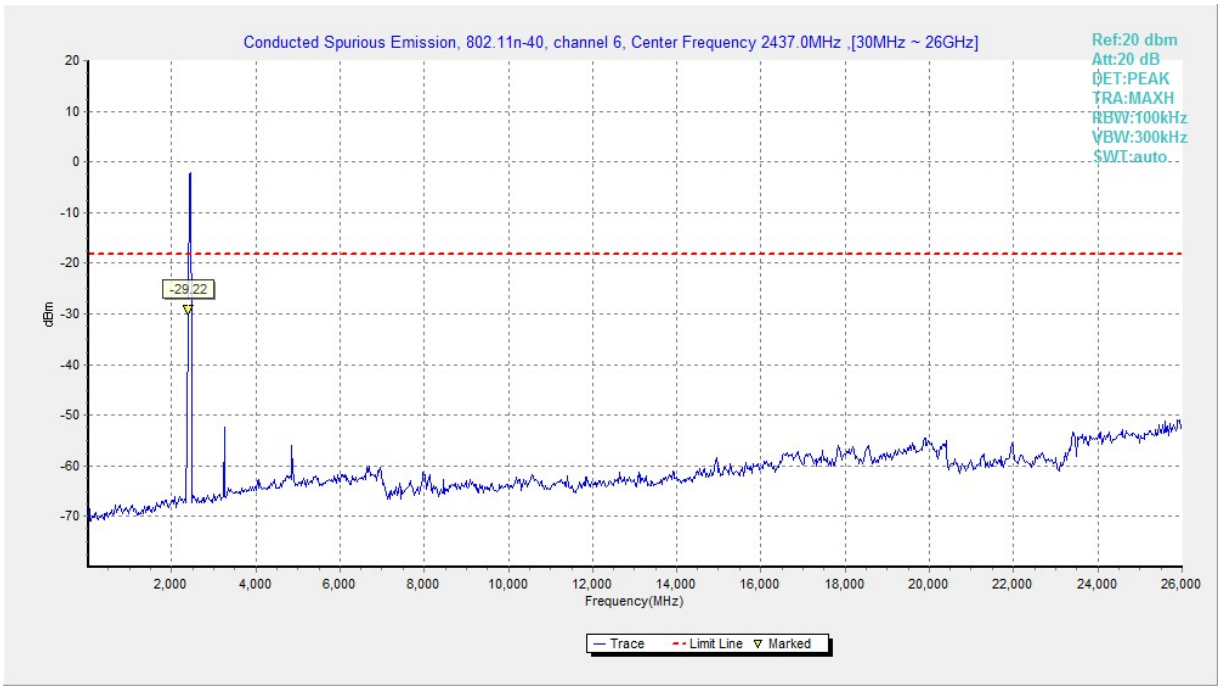

Fig.43 Conducted Spurious Emission (802.11n HT40, CH6)

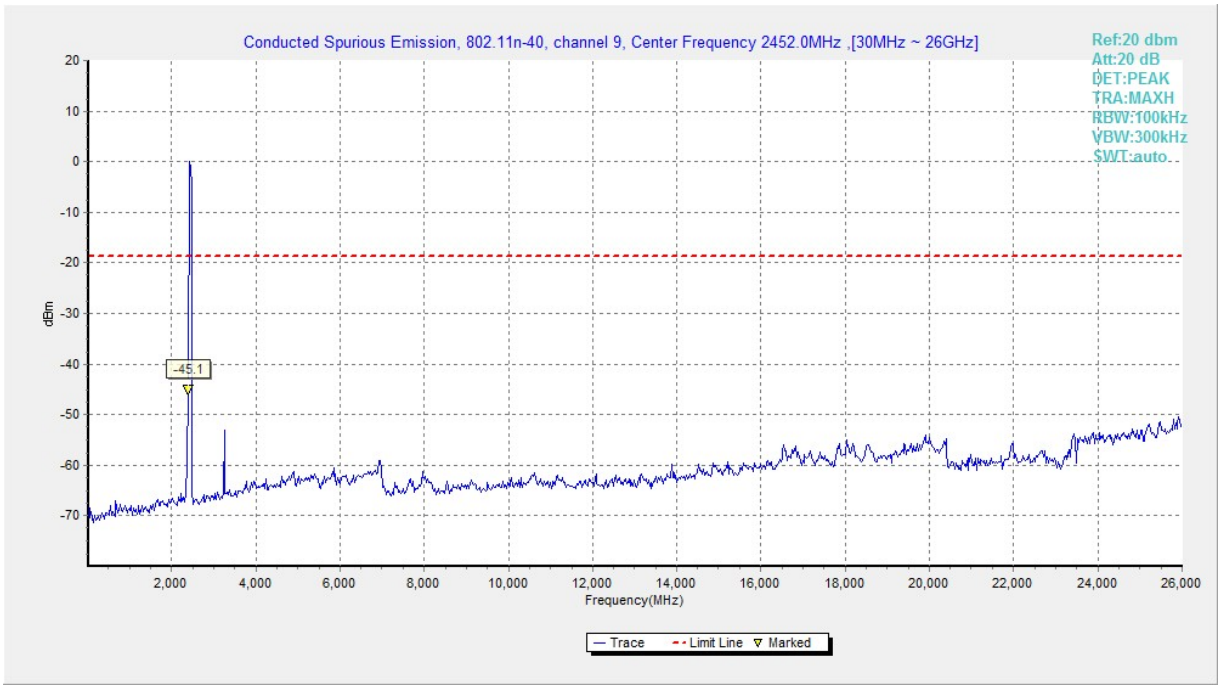

Fig.44 Conducted Spurious Emission (802.11n HT40, CH9)

A.6 Radiated Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	20dB 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 below 30MHz. Therefore, the measurement starts from 30MHz to tenth harmonic.

The measurement results include the horizontal polarization and vertical polarization measurements.

Measurement Results:

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	CH 1	1 GHz ~18 GHz	Fig.45	P
	CH 6	1 GHz ~18 GHz	Fig.46	P
	CH 11	1 GHz ~18 GHz	Fig.47	P
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.48	P
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.49	P
802.11g	CH 1	1 GHz ~18 GHz	Fig.50	P
	CH 6	1 GHz ~18 GHz	Fig.51	P
	CH 11	1 GHz ~18 GHz	Fig.52	P
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.53	P
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.54	P
802.11n HT20	CH 1	1 GHz ~18 GHz	Fig.55	P
	CH 6	1 GHz ~18 GHz	Fig.56	P
	CH 11	1 GHz ~18 GHz	Fig.57	P
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.58	P
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.59	P
802.11n HT40	CH 3	1 GHz ~18 GHz	Fig.60	P
	CH 6	1 GHz ~18 GHz	Fig.61	P
	CH 9	1 GHz ~18 GHz	Fig.62	P
	Restricted Band (CH3)	2.38 GHz ~ 2.45 GHz	Fig.63	P
	Restricted Band (CH9)	2.45 GHz ~ 2.5 GHz	Fig.64	P
/	All Channels	9 kHz ~30 MHz	Fig.65	P
		30 MHz ~1 GHz	Fig.66	P
		18 GHz ~26.5 GHz	Fig.67	P

Worst-Case Result:

802.11b CH1 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
4824.000000	56.10	---	74.00	17.90	H	13.6
6196.000000	52.14	---	74.00	21.86	V	18.9
6431.687500	46.58	---	74.00	27.42	V	6.4
13567.687500	47.20	---	74.00	26.80	V	12.3
14367.000000	47.06	---	74.00	26.94	V	13.0
17006.875000	50.92	---	74.00	23.08	H	16.6
4824.000000	---	52.49	54.00	1.51	H	13.6
6195.000000	---	41.43	54.00	12.57	H	18.9
6431.687500	---	40.40	54.00	13.60	V	6.4
13494.625000	---	35.91	54.00	18.09	V	12.5
14427.812500	---	36.48	54.00	17.52	V	13.0
17017.375000	---	39.23	54.00	14.77	V	16.6

802.11g CH11 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
5467.000000	48.69	---	74.00	25.31	V	15.2
6138.000000	50.02	---	74.00	23.98	V	18.2
6564.987500	48.58	---	74.00	25.42	V	6.1
13406.687500	46.78	---	74.00	27.22	V	12.6
15720.187500	47.45	---	74.00	26.55	V	14.3
17361.250000	50.12	---	74.00	23.88	V	17.0
5395.500000	---	38.33	54.00	15.67	V	15.3
6189.500000	---	40.86	54.00	13.14	H	18.9
6564.987500	---	43.88	54.00	10.12	V	6.1
13398.375000	---	36.27	54.00	17.73	H	12.6
15682.562500	---	37.51	54.00	16.49	V	14.1
17228.250000	---	39.58	54.00	14.42	H	17.0

802.11n HT20 CH11 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
4920.500000	49.72	---	74.00	24.28	V	13.8
6564.987500	47.58	---	74.00	26.42	V	6.1
7374.462500	42.83	---	74.00	31.17	H	5.2
13444.750000	46.22	---	74.00	27.78	H	12.6
15714.937500	48.57	---	74.00	25.43	V	14.3
17838.125000	49.39	---	74.00	24.61	V	16.7
4929.000000	---	38.79	54.00	15.21	V	13.8
6564.987500	---	43.53	54.00	10.47	V	6.1
7388.437500	---	32.57	54.00	21.43	H	5.2
13436.875000	---	36.67	54.00	17.33	V	12.6
15643.625000	---	37.76	54.00	16.24	H	13.9
17831.562500	---	39.54	54.00	14.46	H	16.7

802.11n HT40 CH9 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
6178.000000	51.27	---	74.00	22.73	V	18.9
6538.650000	50.79	---	74.00	23.21	V	6.2
13492.000000	46.41	---	74.00	27.59	V	12.5
14514.875000	47.13	---	74.00	26.87	H	13.0
15635.750000	47.99	---	74.00	26.01	H	13.9
16945.187500	49.49	---	74.00	24.51	V	16.4
6194.000000	---	41.62	54.00	12.38	H	18.9
6538.650000	---	46.87	54.00	7.13	V	6.2
13501.187500	---	36.91	54.00	17.09	V	12.5
14530.187500	---	37.30	54.00	16.70	V	13.0
15614.750000	---	37.90	54.00	16.10	H	13.8
16986.312500	---	39.67	54.00	14.33	H	16.5

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

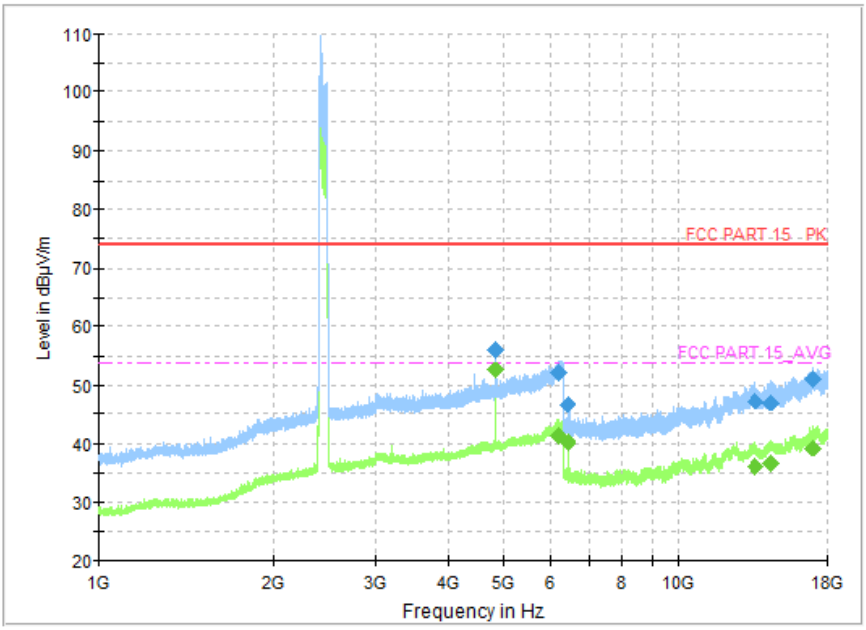

Fig.45 Radiated Spurious Emission (802.11b, CH1, 1 GHz-18GHz)

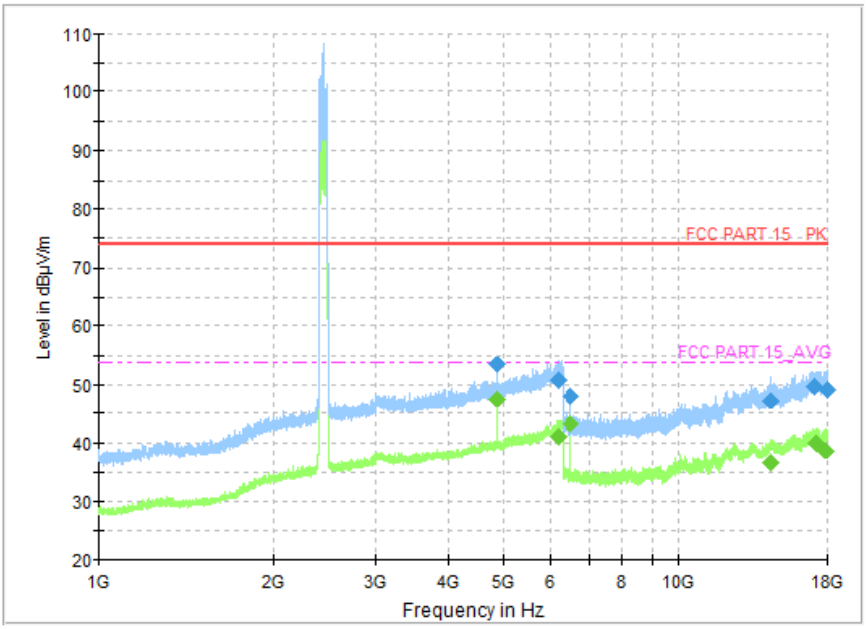

Fig.46 Radiated Spurious Emission (802.11b, CH6, 1 GHz-18GHz)

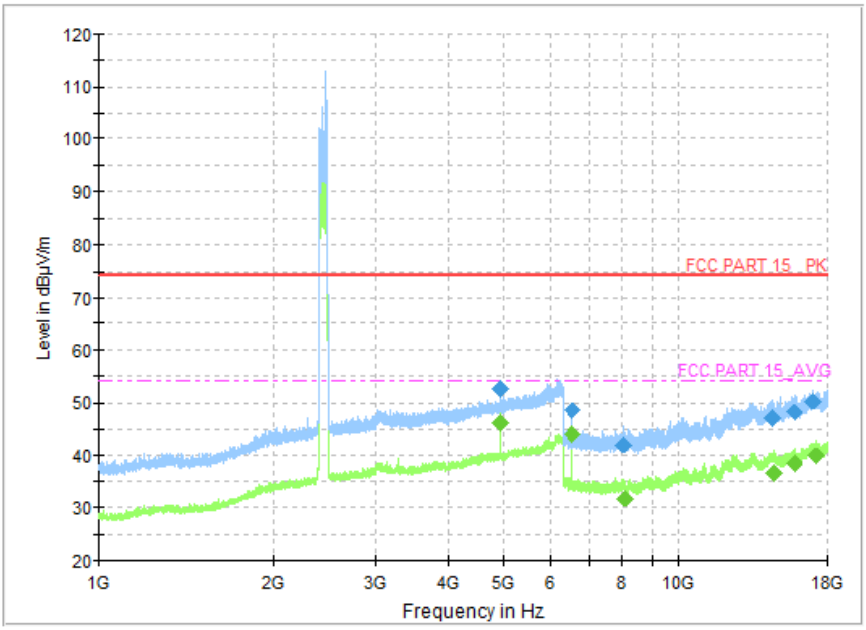

Fig.47 Radiated Spurious Emission (802.11b, CH11, 1 GHz-18GHz)

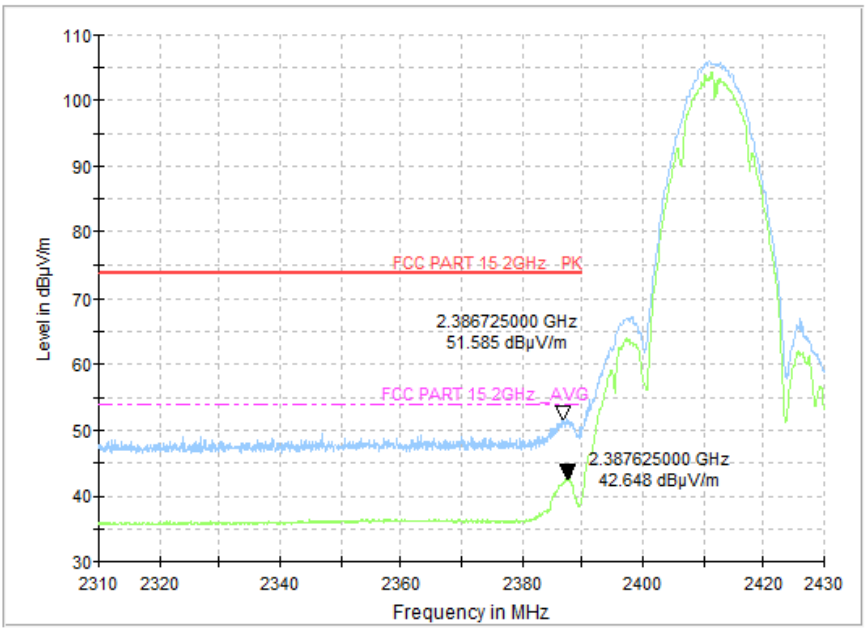

Fig.48 Radiated Restricted Band (802.11b, CH1, 2.38GHz~2.45GHz)

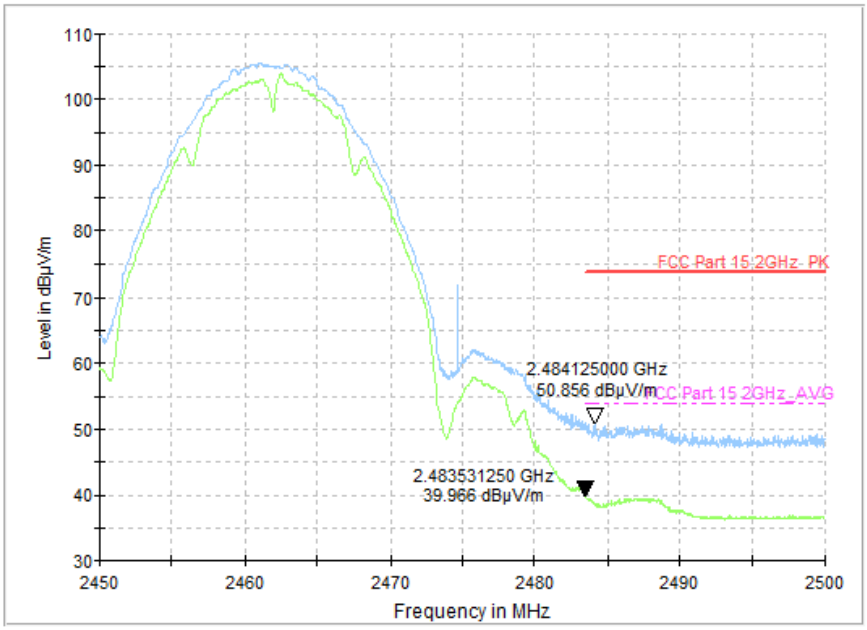

Fig.49 Radiated Restricted Band (802.11b, CH11, 2.45GHz~2.5GHz)

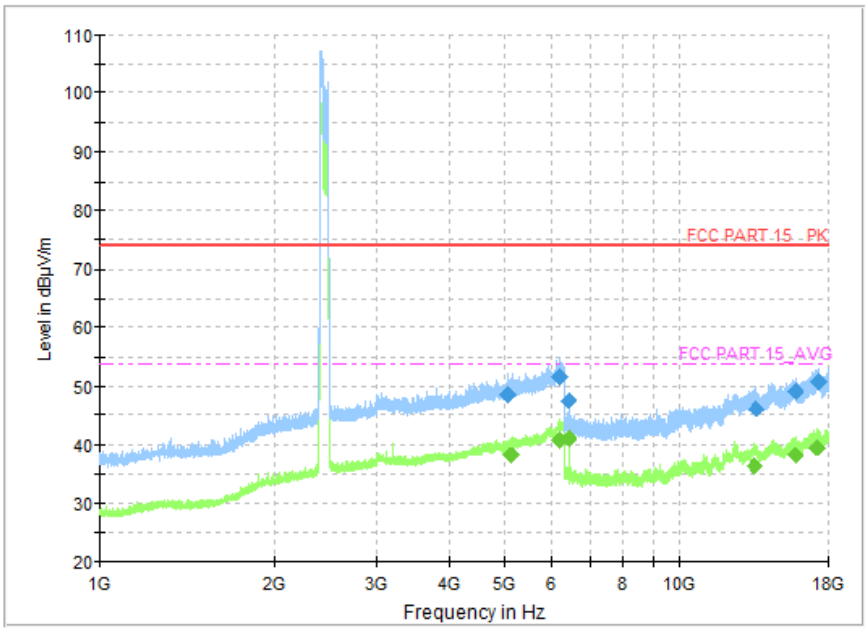

Fig.50 Radiated Spurious Emission (802.11g, CH1, 1 GHz-18 GHz)

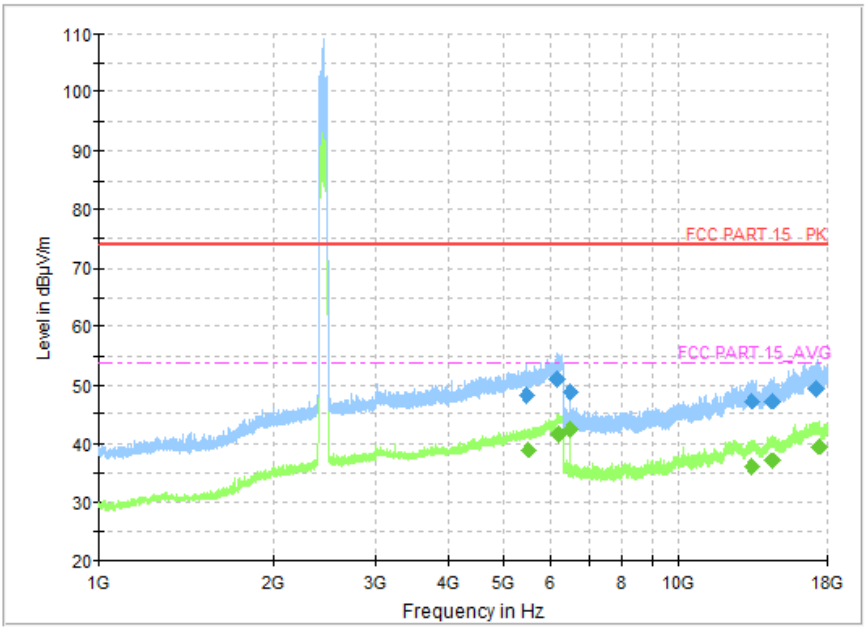

Fig.51 Radiated Spurious Emission (802.11g, CH6, 1 GHz-18 GHz)

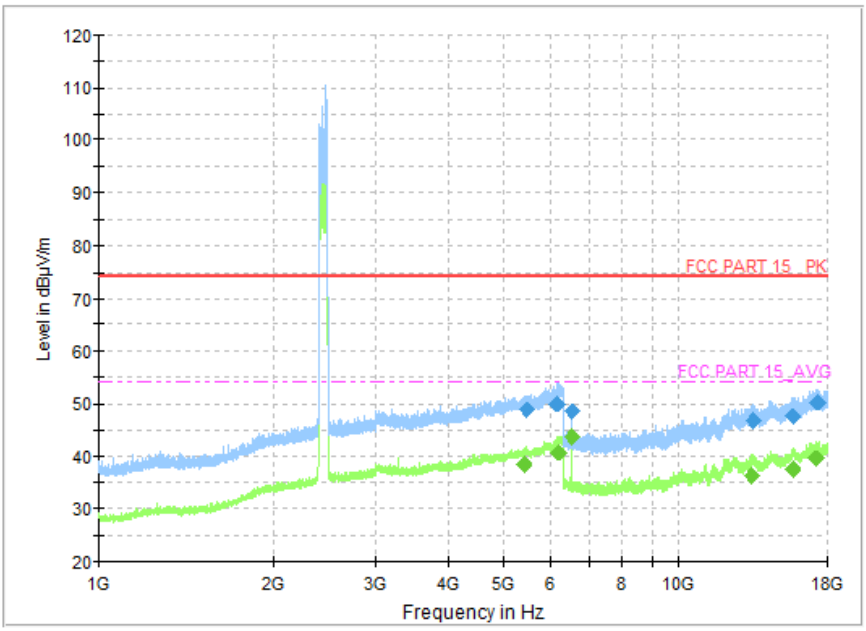

Fig.52 Radiated Spurious Emission (802.11g, CH11, 1 GHz-18 GHz)

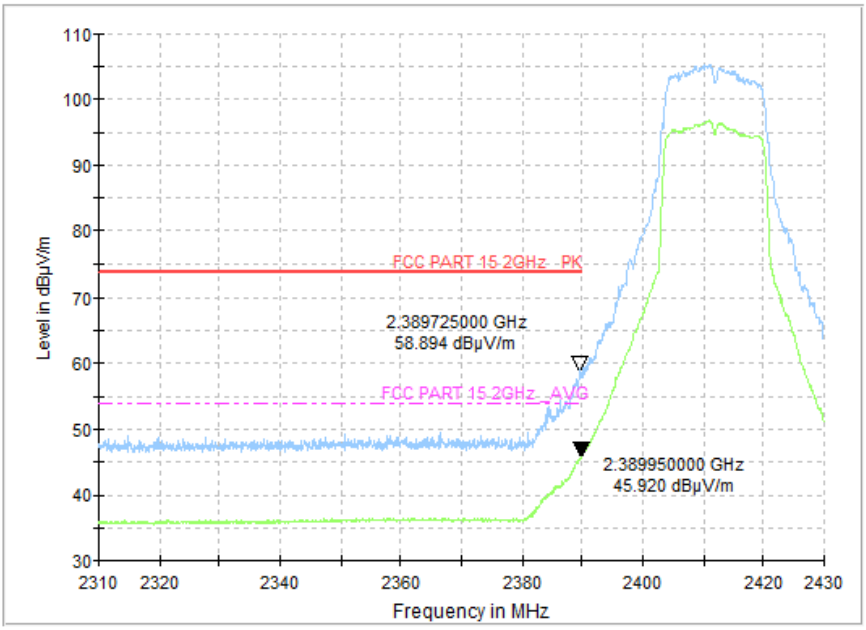

Fig.53 Radiated Restricted Band (802.11g, CH1, 2.38GHz~2.45GHz)

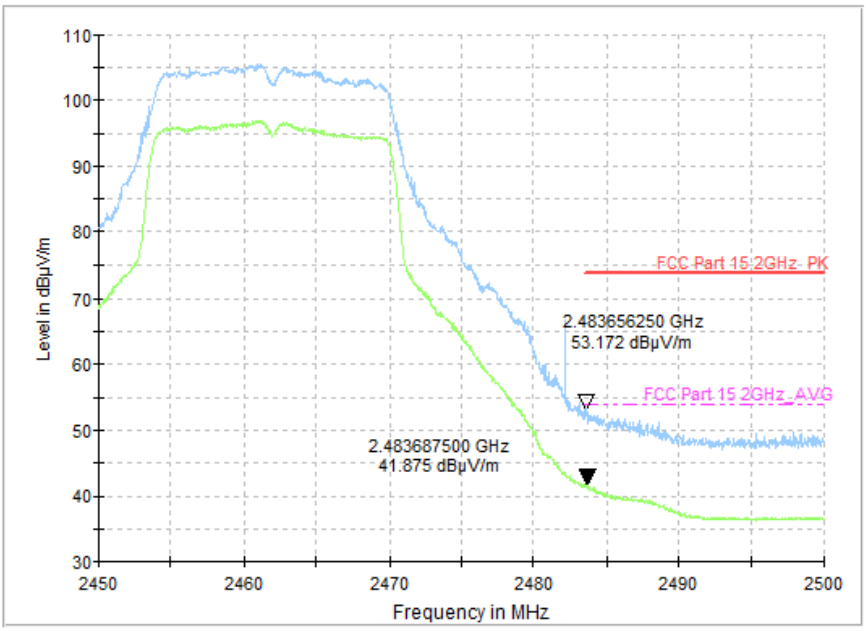

Fig.54 Radiated Restricted Band (802.11g, CH11, 2.45GHz~2.5GHz)

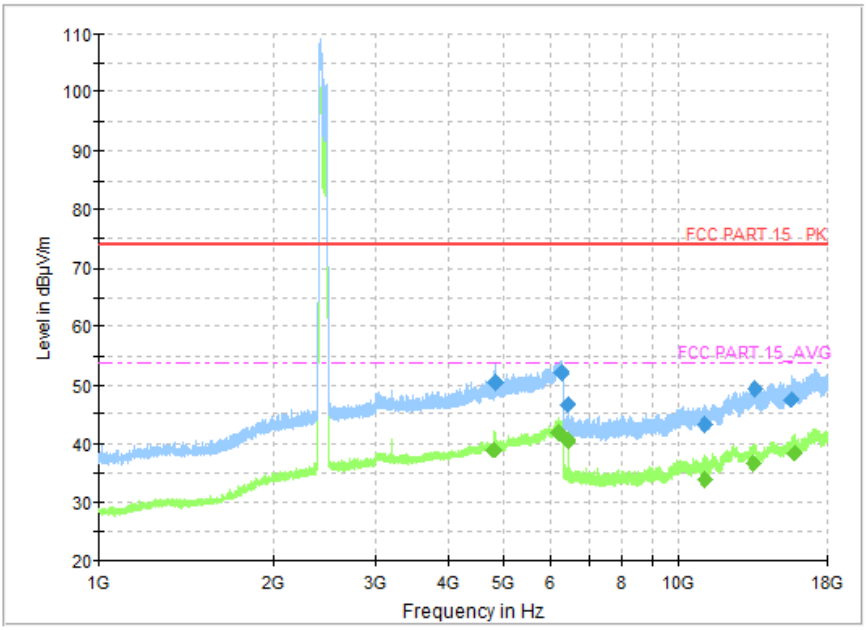

Fig.55 Radiated Spurious Emission (802.11n HT20, CH1, 1 GHz-18 GHz)

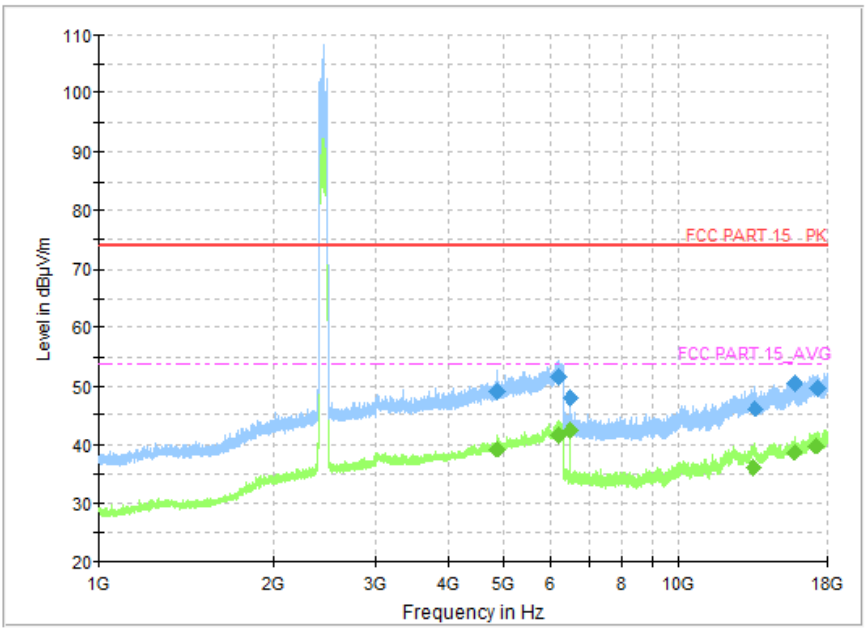

Fig.56 Radiated Spurious Emission (802.11n HT20, CH6, 1 GHz-18 GHz)

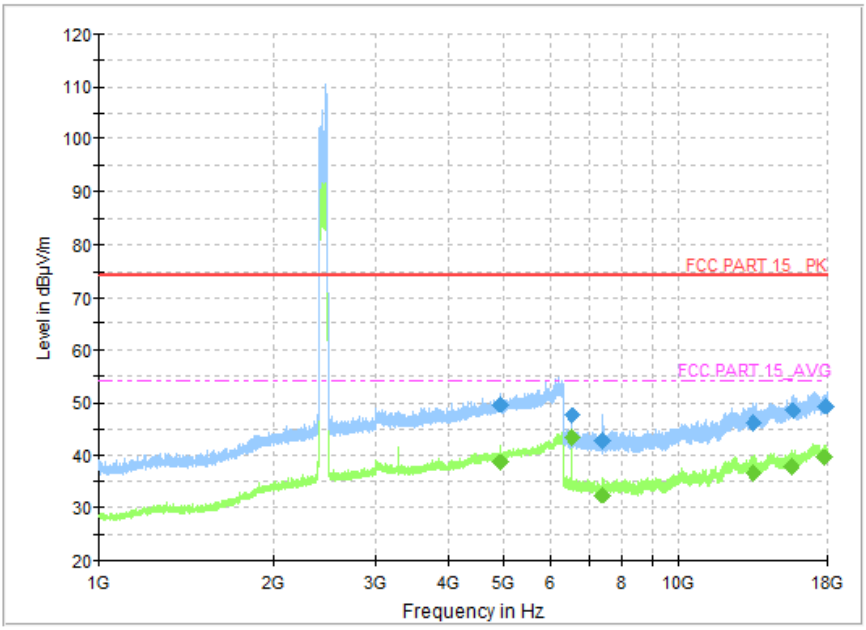

Fig.57 Radiated Spurious Emission (802.11n HT20, CH11, 1 GHz-18 GHz)

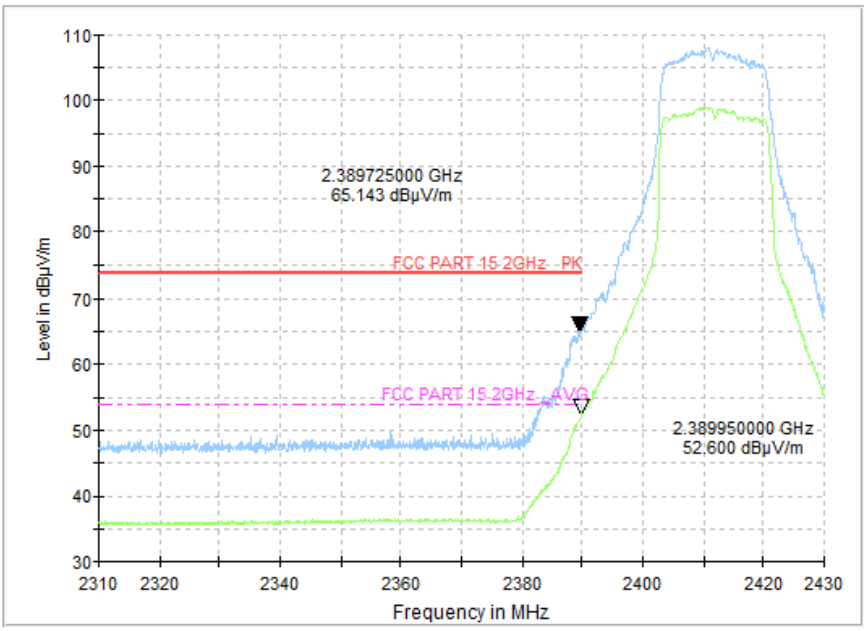

Fig.58 Radiated Restricted Band (802.11n HT20, CH1, 2.38GHz~2.45GHz)

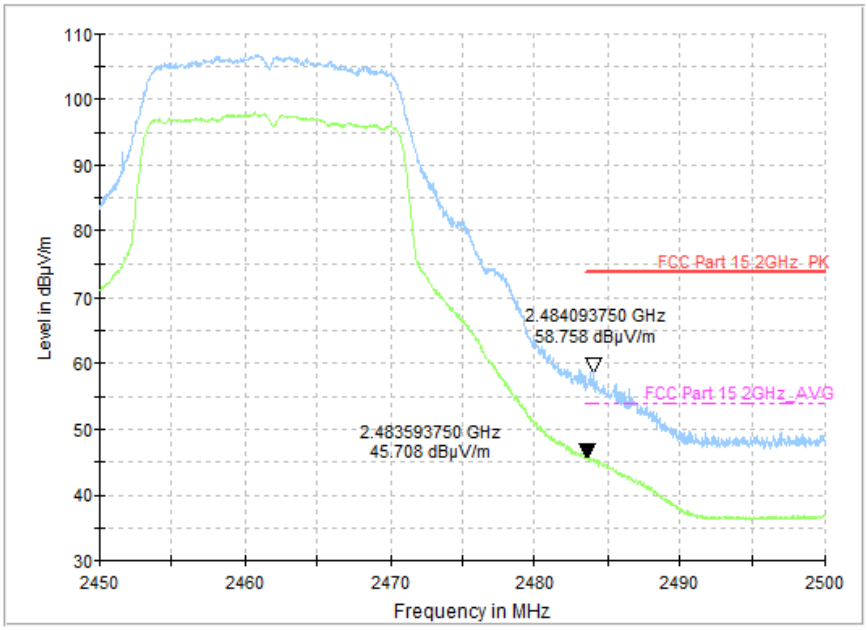

Fig.59 Radiated Restricted Band (802.11n HT20, CH11, 2.45GHz~2.5GHz)

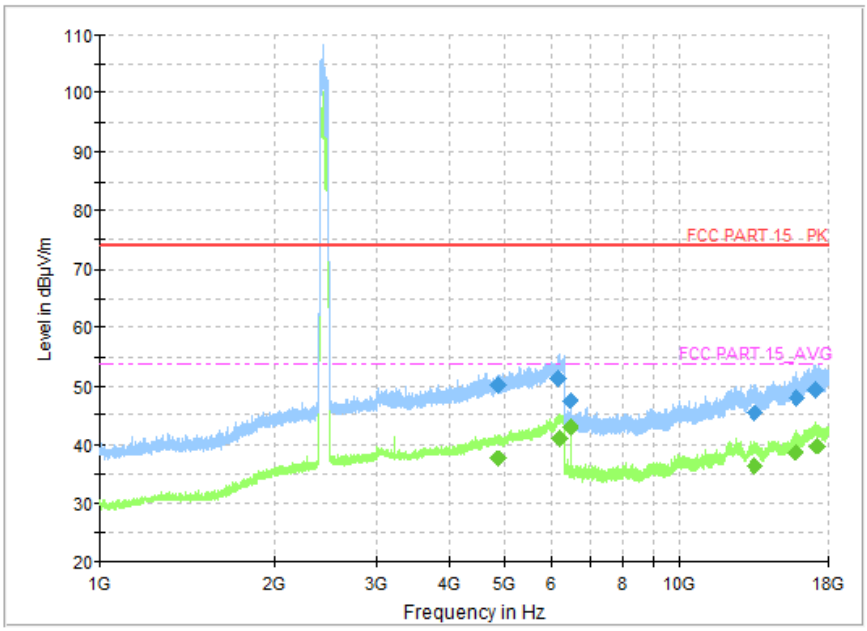

Fig.60 Radiated Spurious Emission (802.11n HT40, CH3, 1 GHz-18 GHz)

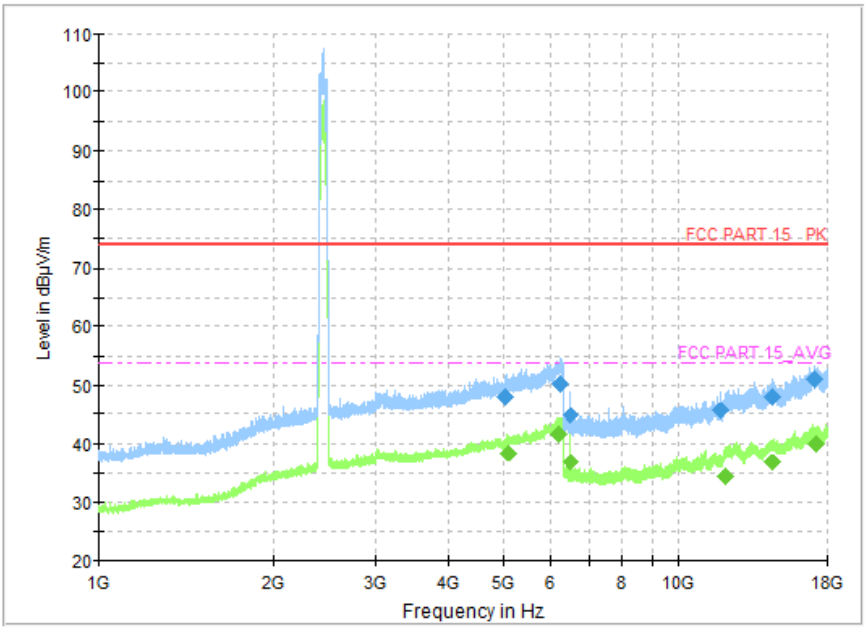

Fig.61 Radiated Spurious Emission (802.11n HT40, CH6, 1 GHz-18 GHz)

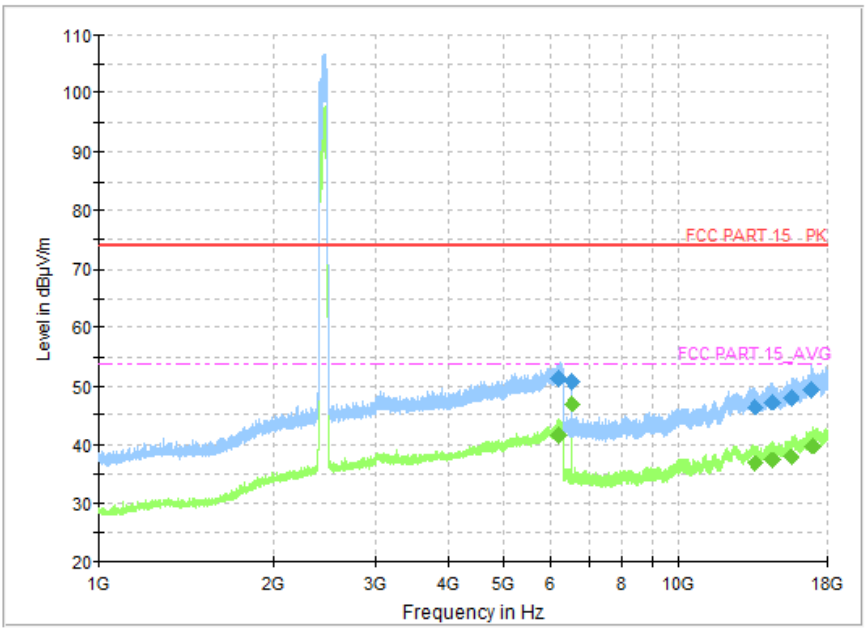

Fig.62 Radiated Spurious Emission (802.11n HT40, CH9, 1 GHz-18 GHz)

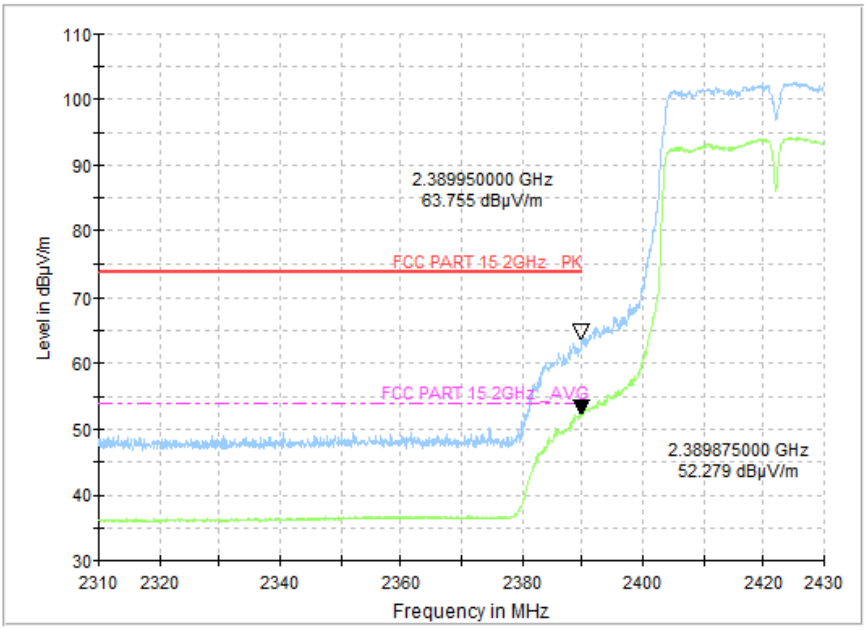

Fig.63 Radiated Restricted Band (802.11n HT40, CH3, 2.38GHz~2.45GHz)

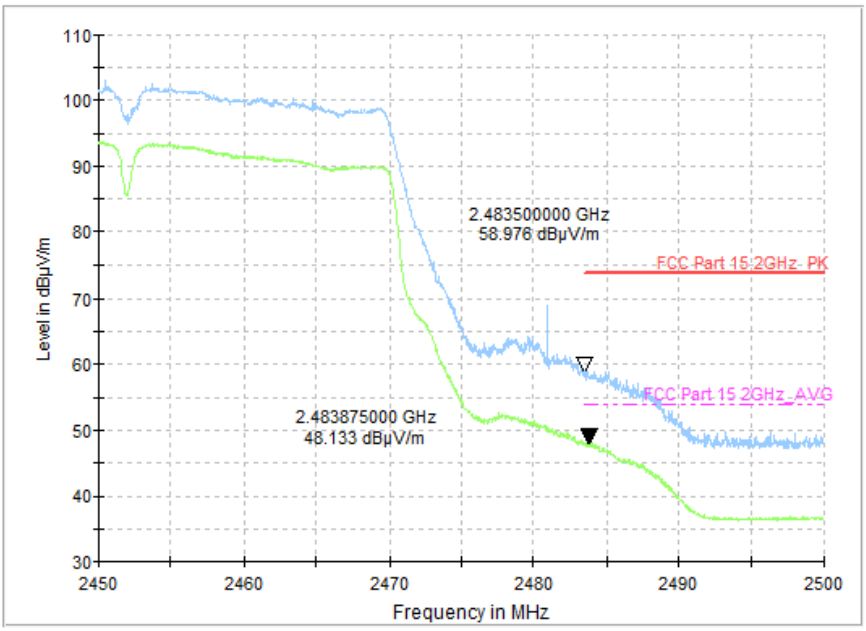

Fig.64 Radiated Restricted Band (802.11n HT40, CH9, 2.45GHz~2.5GHz)

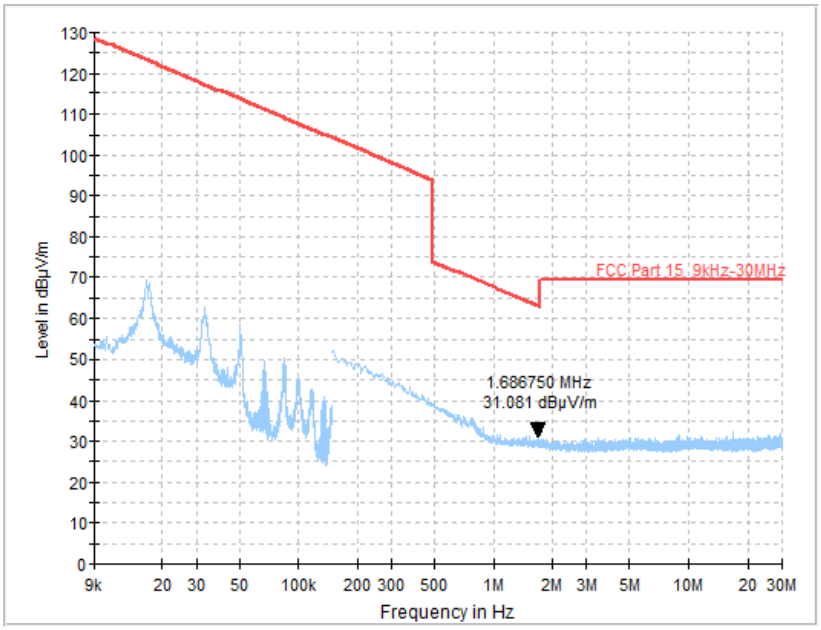

Fig.65 Radiated Spurious Emission (All Channels, 9 kHz-30 MHz)

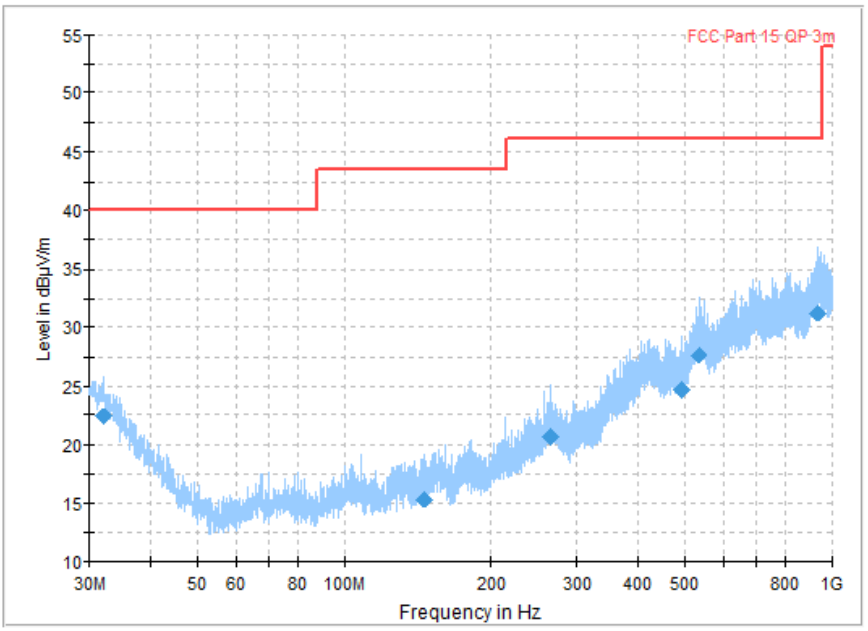

Fig.66 Radiated Spurious Emission (All Channels, 30MHz-1 GHz)

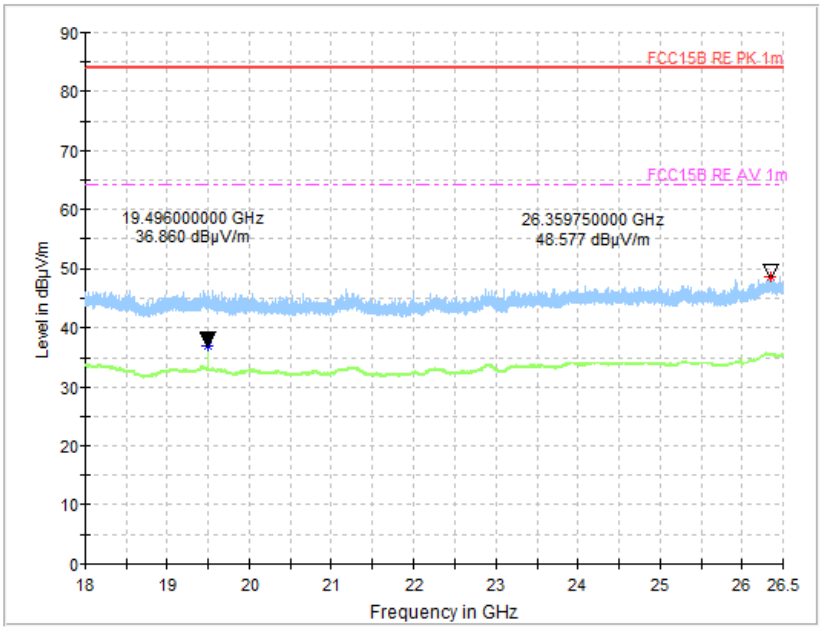

Fig.67 Radiated Spurious Emission (All Channels, 18 GHz-26.5 GHz)

A.7 AC Power line Conducted Emission

Test Condition:

Voltage（V）	Frequency（Hz）
120	60

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		Traffic	Idle	
0.15 to 0.5	66 to 56	Fig.68	Fig.69	P
0.5 to 5	56			
5 to 30	60			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

WLAN (Average Limit)

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV)		Conclusion
		Traffic	Idle	
0.15 to 0.5	56 to 46	Fig.68	Fig.69	P
0.5 to 5	46			
5 to 30	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

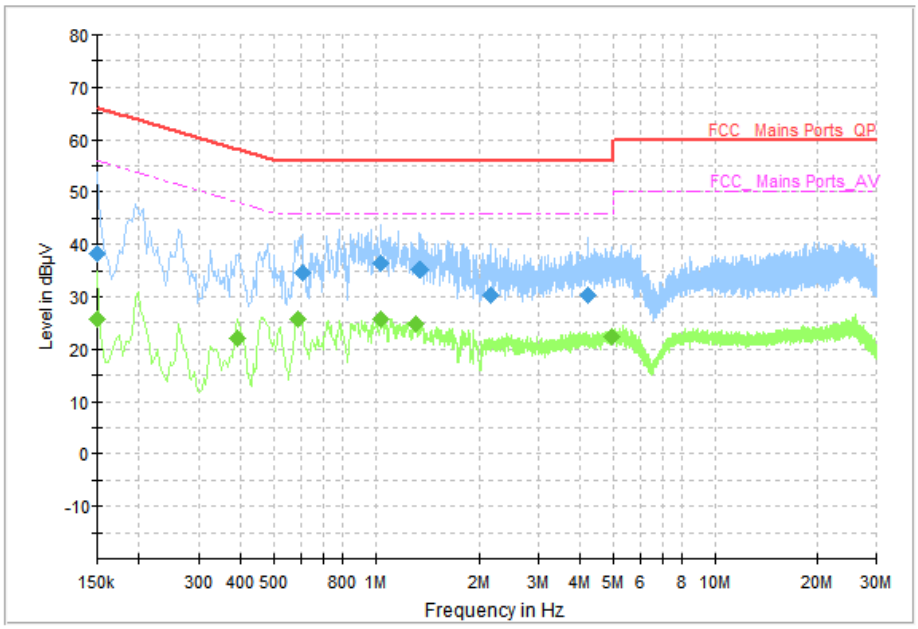

Fig.68 AC Power line Conducted Emission (Traffic)

Measurement Results: Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	38.09	66.00	27.91	N	ON	10
0.606000	34.65	56.00	21.35	L1	ON	10
1.034000	36.34	56.00	19.66	L1	ON	10
1.346000	35.30	56.00	20.70	L1	ON	10
2.158000	30.38	56.00	25.62	L1	ON	10
4.190000	30.41	56.00	25.59	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	25.88	56.00	30.12	N	ON	10
0.390000	21.96	48.06	26.10	N	ON	10
0.586000	25.61	46.00	20.39	L1	ON	10
1.038000	25.71	46.00	20.29	L1	ON	10
1.314000	24.67	46.00	21.33	L1	ON	10
4.926000	22.35	46.00	23.65	L1	ON	10

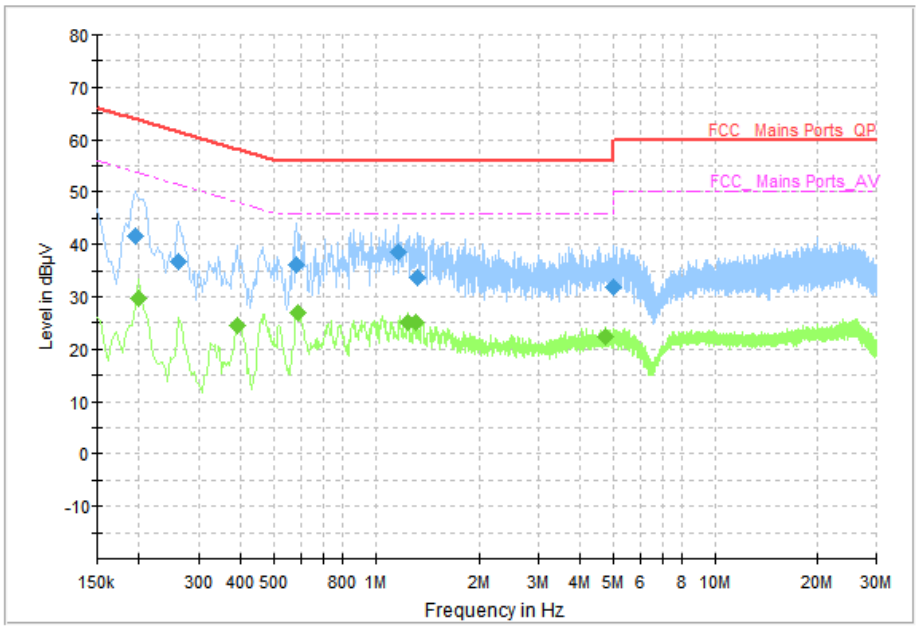

Fig.69 AC Power line Conducted Emission (Idle)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.194000	41.70	63.86	22.16	L1	ON	10
0.262000	36.69	61.37	24.67	N	ON	10
0.582000	35.96	56.00	20.04	L1	ON	10
1.166000	38.47	56.00	17.53	L1	ON	10
1.330000	33.66	56.00	22.34	L1	ON	10
4.990000	31.91	56.00	24.09	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.198000	29.73	53.69	23.97	L1	ON	10
0.390000	24.55	48.06	23.51	L1	ON	10
0.590000	27.02	46.00	18.98	L1	ON	10
1.242000	25.17	46.00	20.83	L1	ON	10
1.314000	25.05	46.00	20.95	L1	ON	10
4.726000	22.25	46.00	23.75	L1	ON	10

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