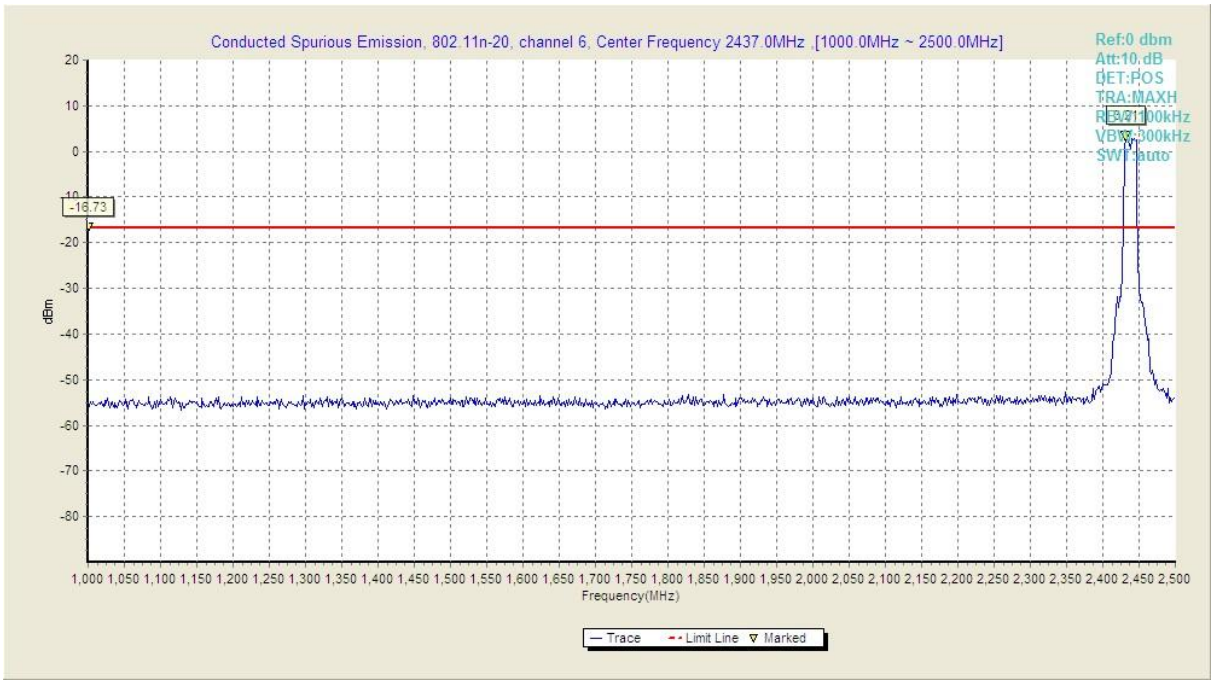

Fig.A.6.1.59 Conducted Spurious Emission (802.11n-HT20, Ch6, 1 GHz-2.5 GHz)

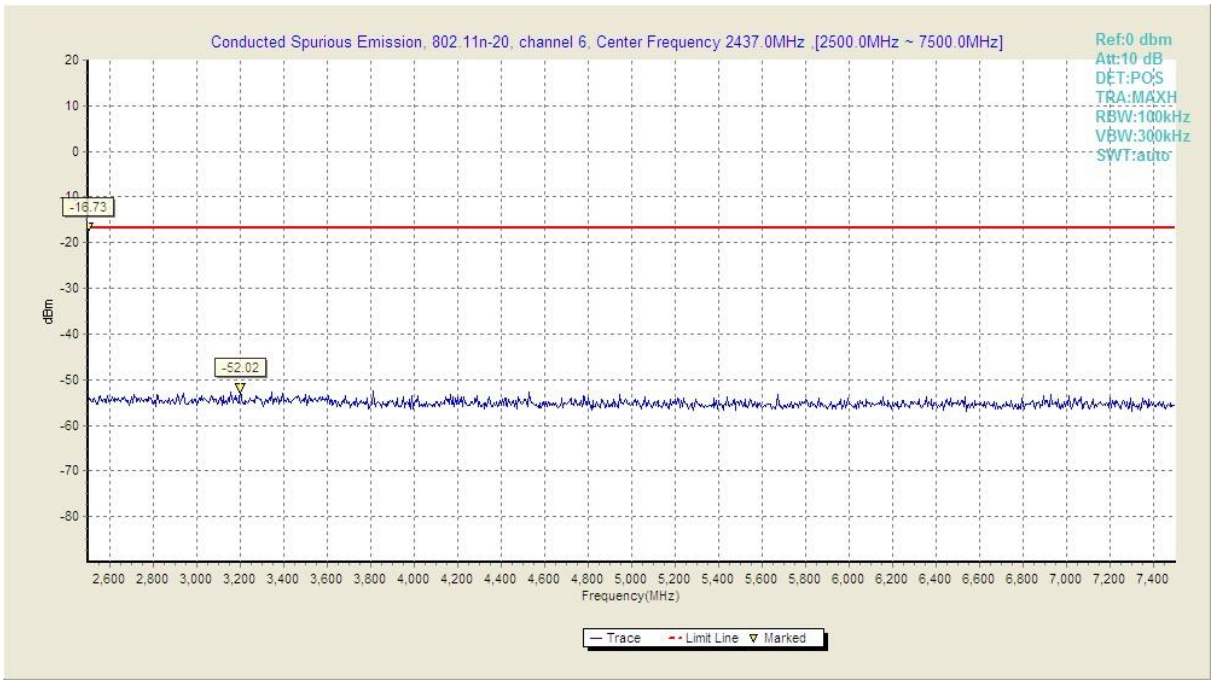

Fig.A.6.1.60 Conducted Spurious Emission (802.11n-HT20, Ch6, 2.5 GHz-7.5 GHz)

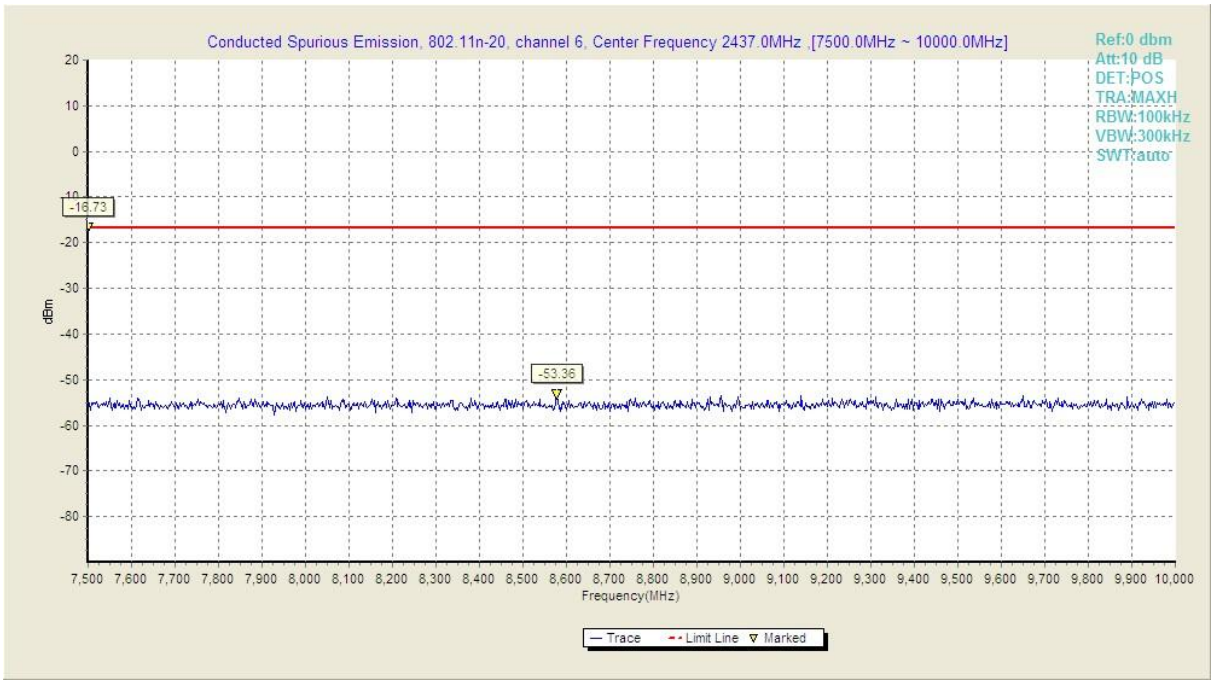

Fig.A.6.1.61 Conducted Spurious Emission (802.11n-HT20, Ch6, 7.5 GHz-10 GHz)

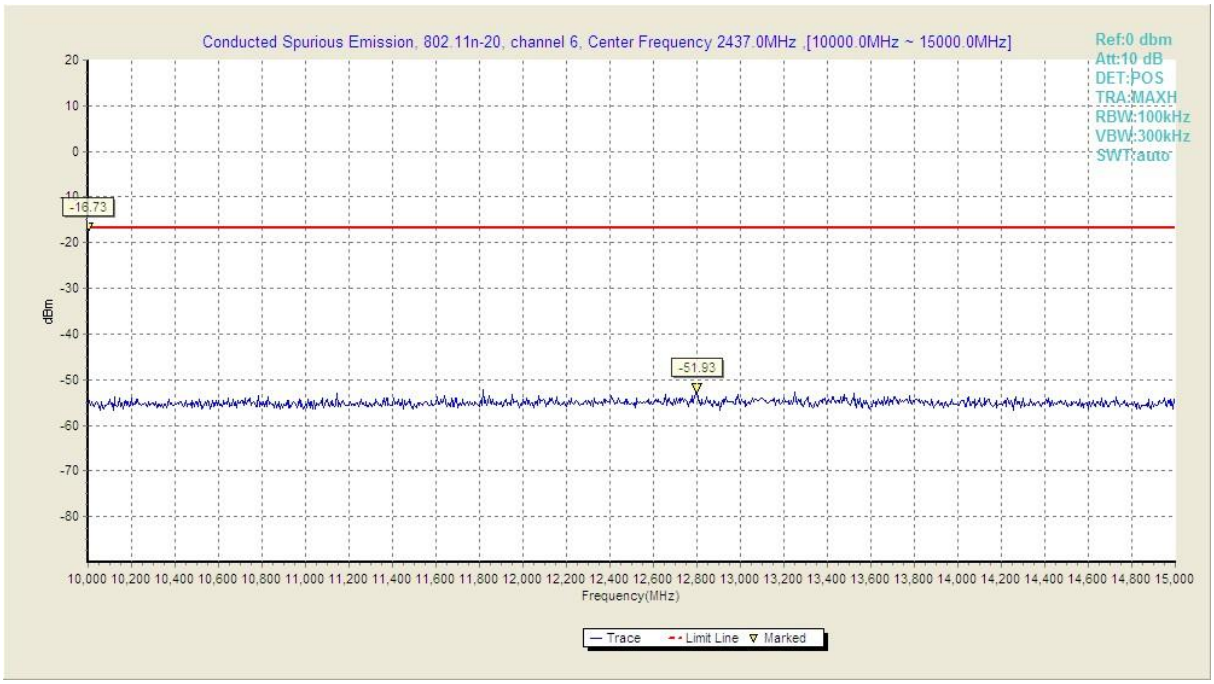

Fig.A.6.1.62 Conducted Spurious Emission (802.11n-HT20, Ch6, 10 GHz-15 GHz)

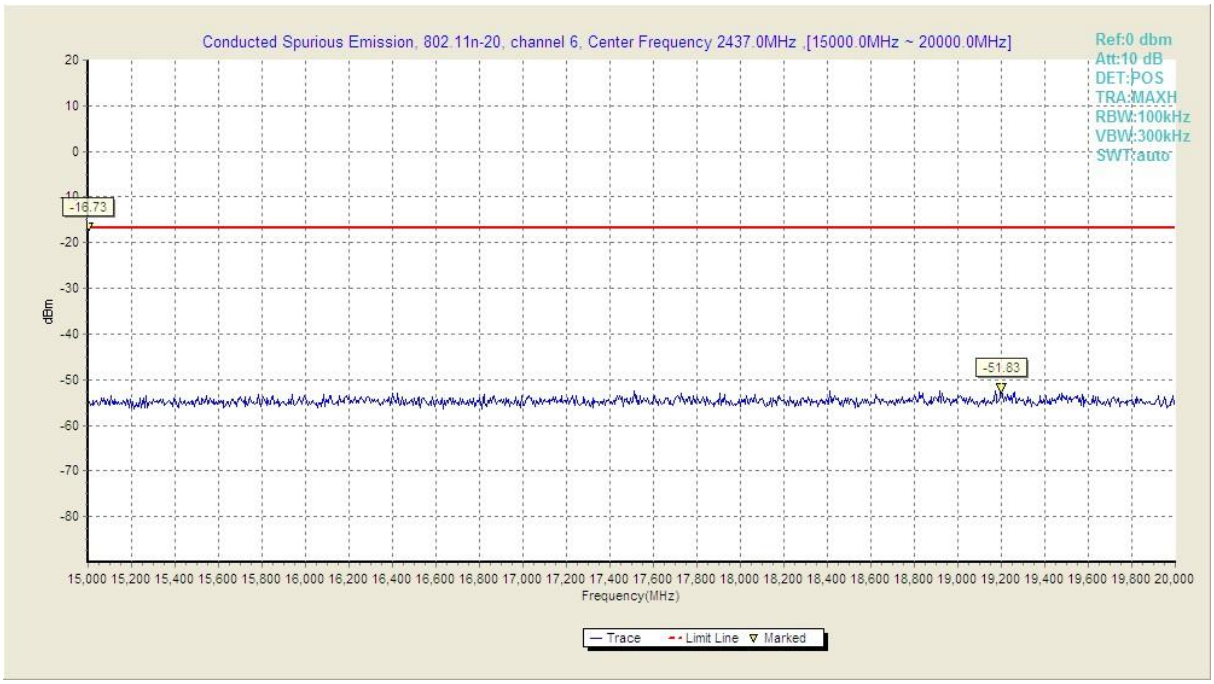

Fig.A.6.1.63 Conducted Spurious Emission (802.11n-HT20, Ch6, 15 GHz-20 GHz)

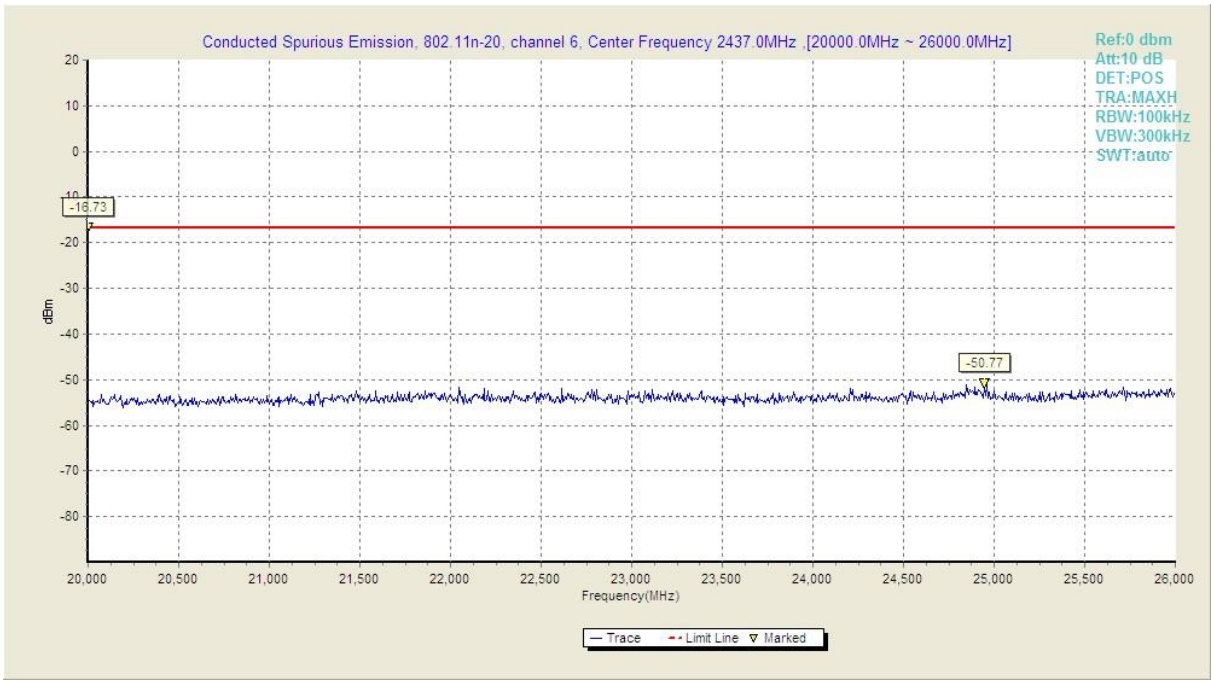

Fig.A.6.1.64 Conducted Spurious Emission (802.11n-HT20, Ch6, 20 GHz-26 GHz)

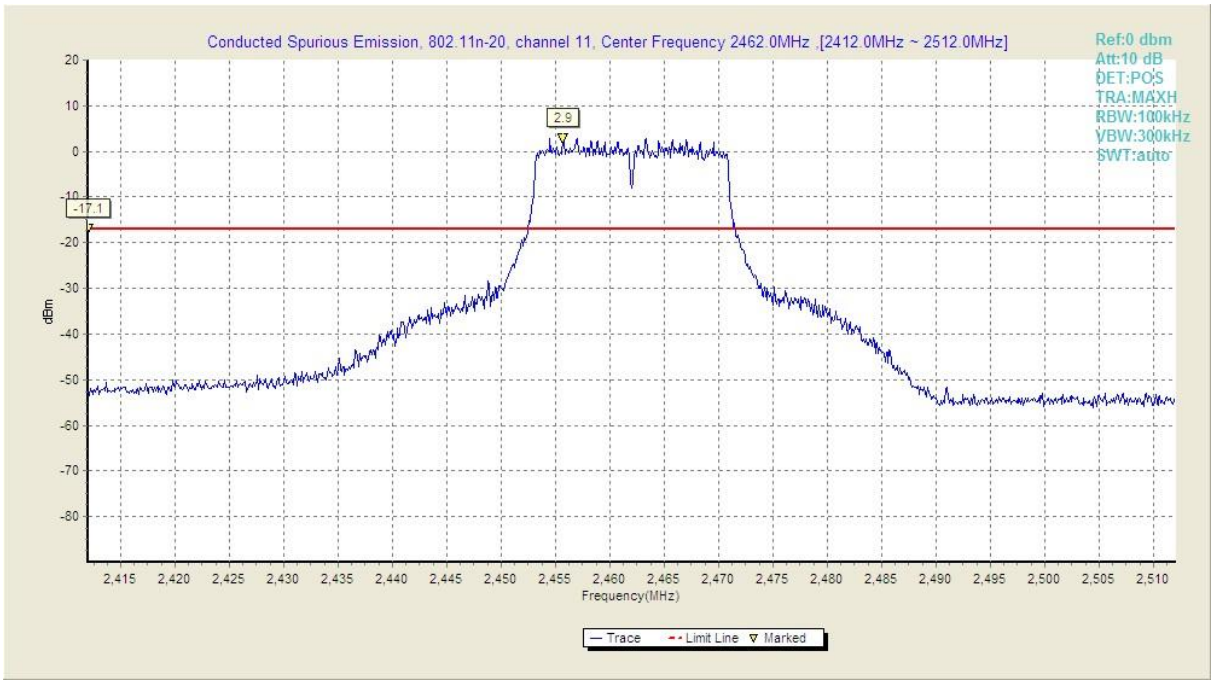

Fig.A.6.1.65 Conducted Spurious Emission (802.11n-HT20, Ch11, Center Frequency)

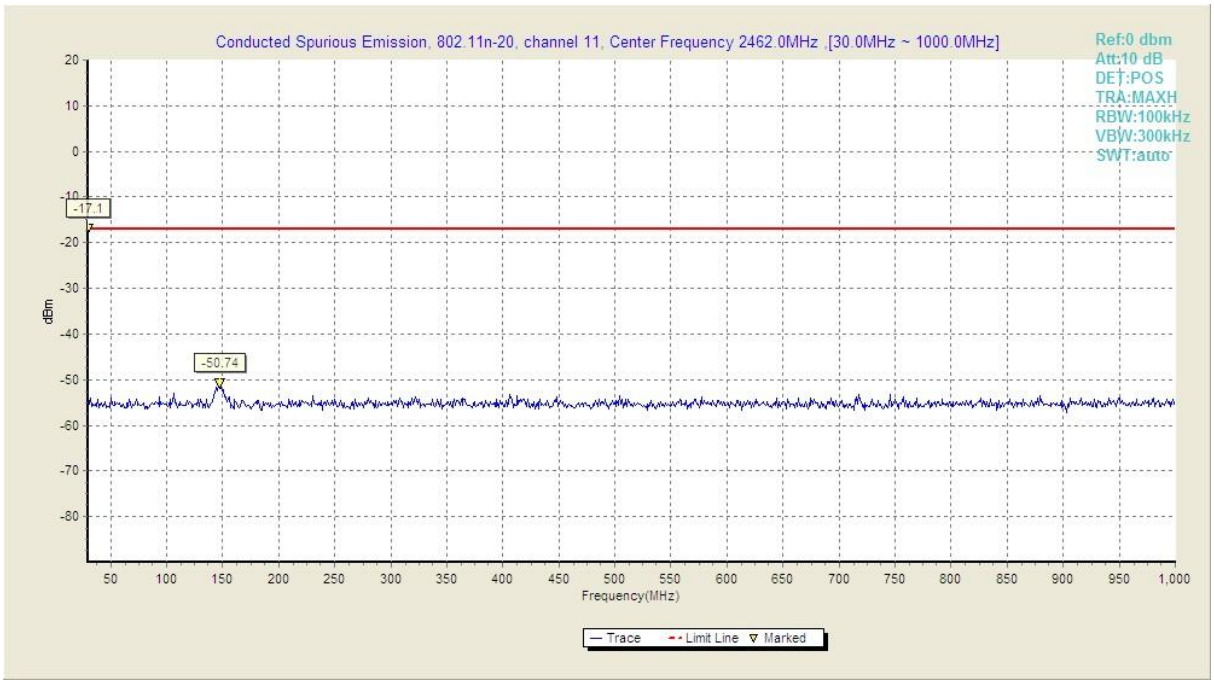

Fig.A.6.1.66 Conducted Spurious Emission (802.11n-HT20, Ch11, 30 MHz-1 GHz)

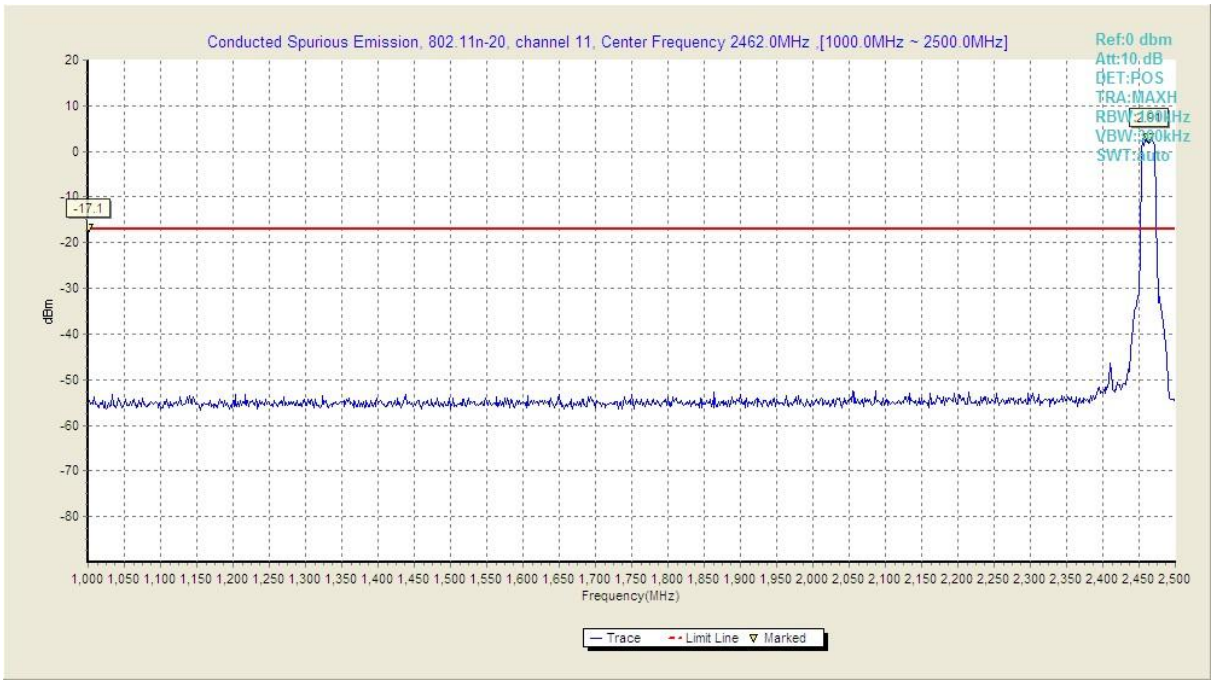

Fig.A.6.1.67 Conducted Spurious Emission (802.11n-HT20, Ch11, 1 GHz-2.5 GHz)

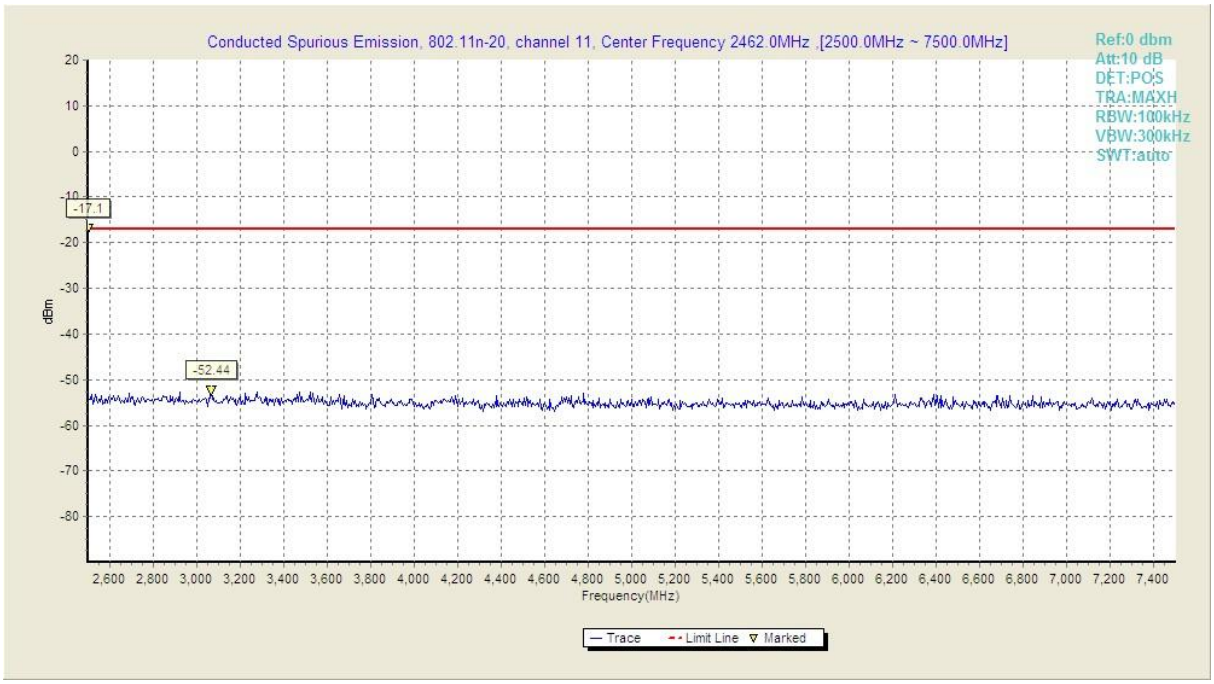

Fig.A.6.1.68 Conducted Spurious Emission (802.11n-HT20, Ch11, 2.5 GHz-7.5 GHz)

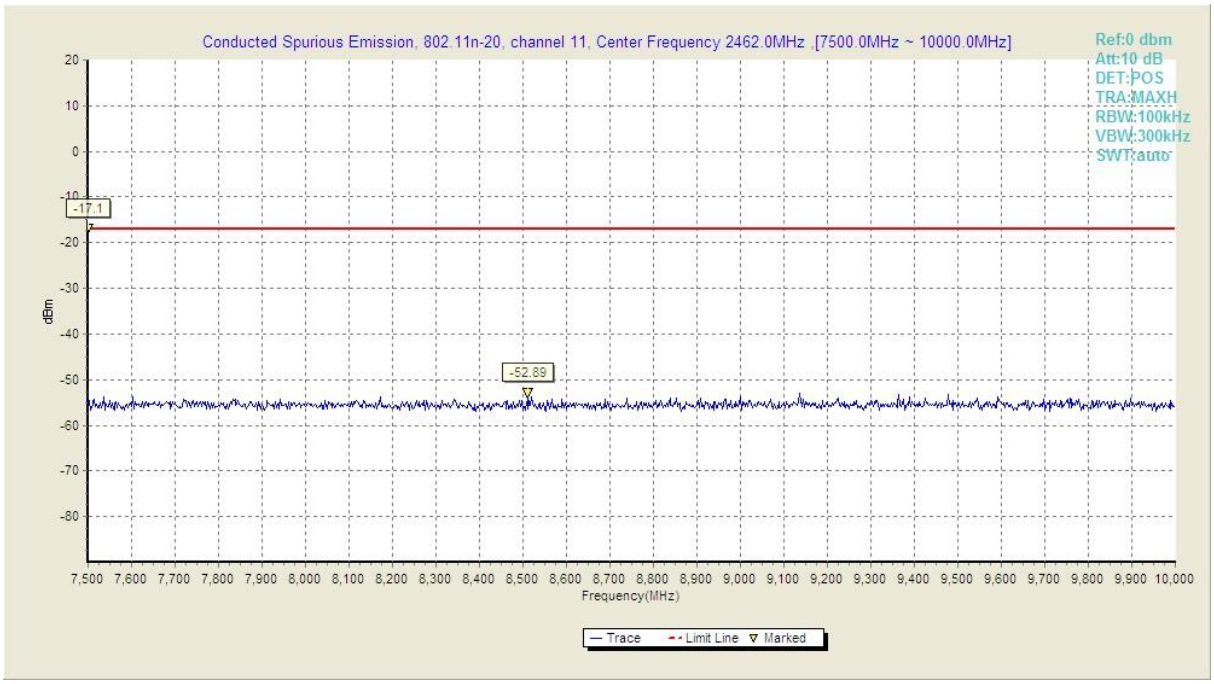

Fig.A.6.1.69 Conducted Spurious Emission (802.11n-HT20, Ch11, 7.5 GHz-10 GHz)

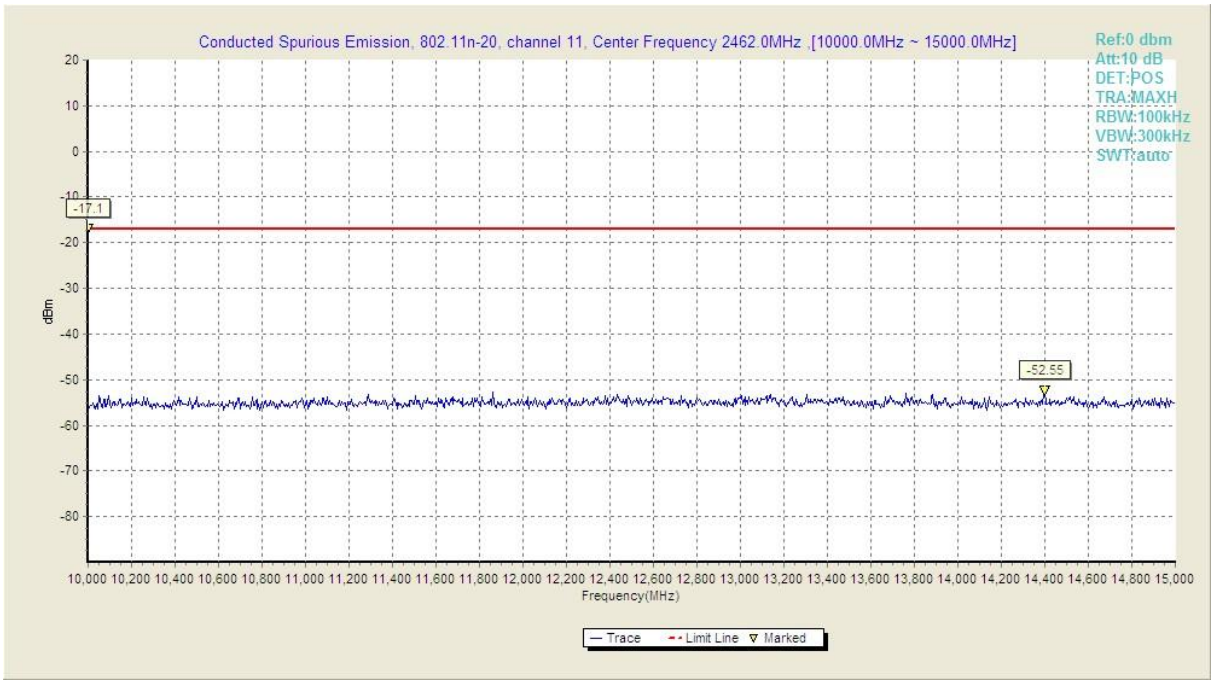

Fig.A.6.1.70 Conducted Spurious Emission (802.11n-HT20, Ch11, 10 GHz-15 GHz)

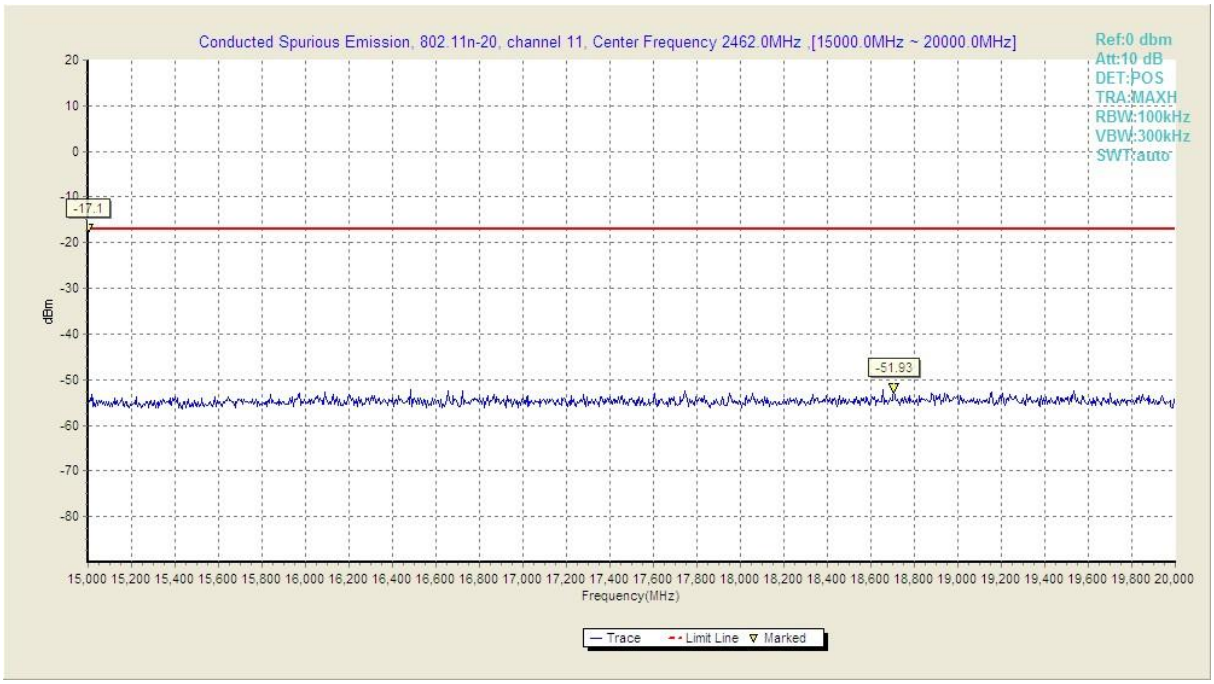

Fig.A.6.1.71 Conducted Spurious Emission (802.11n-HT20, Ch11, 15 GHz-20 GHz)

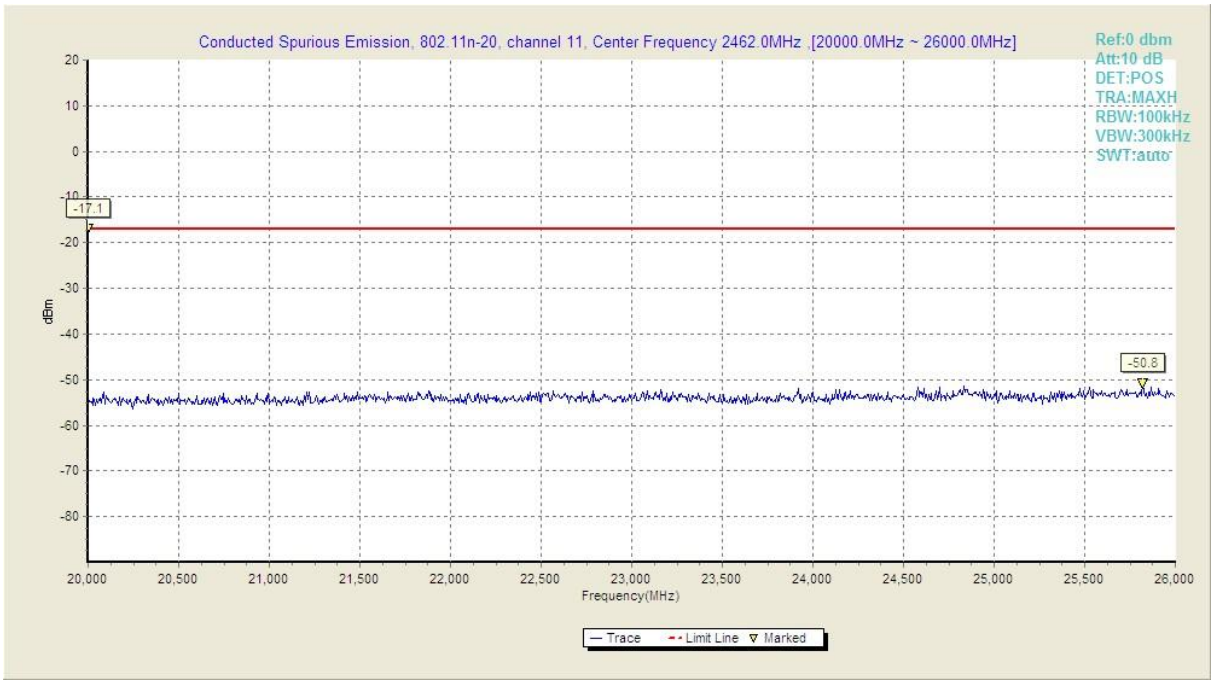

Fig.A.6.1.72 Conducted Spurious Emission (802.11n-HT20, Ch11, 20 GHz-26 GHz)

A.6.2 Transmitter Spurious Emission - Radiated

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)).
The measurement is made according to KDB558074.

Limit in restricted band:

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

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	100KHz/300KHz	5
1000-4000	1MHz/1MHz	15
4000-18000	1MHz/1MHz	40
18000-26500	1MHz/1MHz	20

Modulation type and data rate tested:

802.11b	802.11g	802.11n-HT20
11Mbps(CCK)	54Mbps(OFDM)	MCS5(OFDM)

Measurement Results:

802.11b/g mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	Power	2.38GHz ~2.45GHz	Fig.A.6.2.1	**P**
	1	30 MHz ~1 GHz	Fig.A.6.2.2	**P**
		1 GHz ~ 3 GHz	Fig.A.6.2.3	**P**
		3 GHz ~ 18 GHz	Fig.A.6.2.4	**P**
	6	30 MHz ~1 GHz	Fig.A.6.2.5	**P**
		1 GHz ~ 3 GHz	Fig.A.6.2.6	**P**
		3 GHz ~ 18 GHz	Fig.A.6.2.7	**P**
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.8	**P**
	11	30 MHz ~1 GHz	Fig.A.6.2.9	**P**
		1 GHz ~ 3 GHz	Fig.A.6.2.10	**P**
		3 GHz ~ 18 GHz	Fig.A.6.2.11	**P**
802.11g	Power	2.38GHz ~2.43GHz	Fig.A.6.2.12	**P**
	1	30 MHz ~1 GHz	Fig.A.6.2.13	**P**
		1 GHz ~ 3 GHz	Fig.A.6.2.14	**P**
		3 GHz ~ 18 GHz	Fig.A.6.2.15	**P**
	6	30 MHz ~1 GHz	Fig.A.6.2.16	**P**
		1 GHz ~ 3 GHz	Fig.A.6.2.17	**P**
		3 GHz ~ 18 GHz	Fig.A.6.2.18	**P**
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.19	**P**
	11	30 MHz ~1 GHz	Fig.A.6.2.20	**P**
		1 GHz ~ 3 GHz	Fig.A.6.2.21	**P**
		3 GHz ~ 18 GHz	Fig.A.6.2.22	**P**

802.11n mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	Power	2.38GHz ~2.45GHz	Fig.A.6.2.23	**P**
	1	30 MHz ~1 GHz	Fig.A.6.2.24	**P**
		1 GHz ~ 3 GHz	Fig.A.6.2.25	**P**
		3 GHz ~ 18 GHz	Fig.A.6.2.26	**P**
	6	30 MHz ~1 GHz	Fig.A.6.2.27	**P**
		1 GHz ~ 3 GHz	Fig.A.6.2.28	**P**
		3 GHz ~ 18 GHz	Fig.A.6.2.29	**P**
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.30	**P**
	11	30 MHz ~1 GHz	Fig.A.6.2.31	**P**
		1 GHz ~ 3 GHz	Fig.A.6.2.32	**P**
		3 GHz ~ 18 GHz	Fig.A.6.2.33	**P**

Conclusion: Pass

Measurement Uncertainty:

Frequency Range	Uncertainty(dB)
f ≤ 1GHz	3.9
f>1GHz	4.3

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”, and including the gain of receive antenna, 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}+$A_{Rpl=}$ P_{Mea}+Cable Loss+Antenna Factor

802.11b

Ch1

Frequency(MHz)	Result (dBuV/m)	ARPL* (dB)	P_{Mea} (dBuV/m)	Polarization
2357	35.8	1.7	34.1	VERTICAL
4823.5	47.2	5.8	41.4	HORIZONTAL
7562.25	37.4	7	30.4	VERTICAL
9648.25	40.1	9.2	30.9	HORIZONTAL
13451	42.7	11.4	31.3	VERTICAL
16787	48.7	14.3	34.4	VERTICAL

Ch6

Frequency(MHz)	Result (dBuV/m)	ARPL* (dB)	P_{Mea} (dBuV/m)	Polarization
2357	36.2	1.7	34.5	VERTICAL
4874.25	39.5	5.9	33.6	HORIZONTAL
7557.875	36.3	6.9	29.4	VERTICAL
9748.875	40.4	9.2	31.2	HORIZONTAL
12667	41.7	11.2	30.5	VERTICAL
16791	47	14.3	32.7	VERTICAL

Ch11

Frequency(MHz)	Result (dBuV/m)	ARPL* (dB)	P_{Mea} (dBuV/m)	Polarization
2357	36.3	1.7	34.6	VERTICAL
4924.125	52.6	5.9	46.7	HORIZONTAL
7554.375	36.6	6.9	29.7	HORIZONTAL
10026	39.5	9.4	30.1	VERTICAL
12683	41.8	11.2	30.6	HORIZONTAL
16764	47.9	14.3	33.6	HORIZONTAL

802.11g

Ch1

Frequency(MHz)	Result (dBuV/m)	ARPL* (dB)	P_{Mea} (dBuV/m)	Polarization
2357	36.4	1.7	34.7	VERTICAL
4823.5	46.2	5.8	40.4	HORIZONTAL
7552.625	36.8	6.9	29.9	VERTICAL
9648.25	40.4	9.2	31.2	HORIZONTAL
13176	42.1	11.5	30.6	VERTICAL
16749	47.7	14.3	33.4	VERTICAL

Ch6

Frequency(MHz)	Result (dBuV/m)	ARPL* (dB)	P_{Mea} (dBuV/m)	Polarization
2357	36.2	1.7	34.5	VERTICAL
4873.375	35.5	5.9	29.6	HORIZONTAL
7557	36.7	6.9	29.8	VERTICAL
9748.875	40.4	9.2	31.2	HORIZONTAL
13456	42.1	11.4	30.7	VERTICAL
16748	47.9	14.3	33.6	VERTICAL

Ch11

Frequency(MHz)	Result (dBuV/m)	ARPL* (dB)	P_{Mea} (dBuV/m)	Polarization
2357	36	1.7	34.3	VERTICAL
4925	38.5	5.9	32.6	HORIZONTAL
7562.25	37	7	30	VERTICAL
9848.625	41.7	9.3	32.4	HORIZONTAL
13445	42.2	11.4	30.8	VERTICAL
16760	48.3	14.3	34	VERTICAL

802.11n-HT20

Ch1

Frequency(MHz)	Result (dBuV/m)	ARPL* (dB)	P_{Mea} (dBuV/m)	Polarization
2357	36	1.7	34.3	VERTICAL
4827	36	5.8	30.2	HORIZONTAL
7554.375	36.9	6.9	30	VERTICAL
9648.25	40.4	9.2	31.2	HORIZONTAL
13446	42	11.4	30.6	VERTICAL
16745	47.9	14.3	33.6	VERTICAL

Ch6

Frequency(MHz)	Result (dBuV/m)	ARPL* (dB)	P_{Mea} (dBuV/m)	Polarization
2357	36.2	1.7	34.5	VERTICAL
4873.375	34.7	5.9	28.8	HORIZONTAL
7562.25	36.9	7	29.9	VERTICAL
9748.875	40.1	9.2	30.9	HORIZONTAL
13439	42.2	11.4	30.8	VERTICAL
16782	48	14.3	33.7	VERTICAL

Ch11

Frequency(MHz)	Result (dBuV/m)	ARPL* (dB)	P_{Mea} (dBuV/m)	Polarization
2357	36.3	1.7	34.6	VERTICAL
4927.625	34.8	5.9	28.9	HORIZONTAL
7555.25	36.9	6.9	30	VERTICAL
9848.625	39.8	9.3	30.5	HORIZONTAL
13456	42.3	11.4	30.9	VERTICAL
16765	48.2	14.3	33.9	VERTICAL

*ARPL = Gain of antenna + Gain of preamplifier + Cable loss

Test graphs as below:

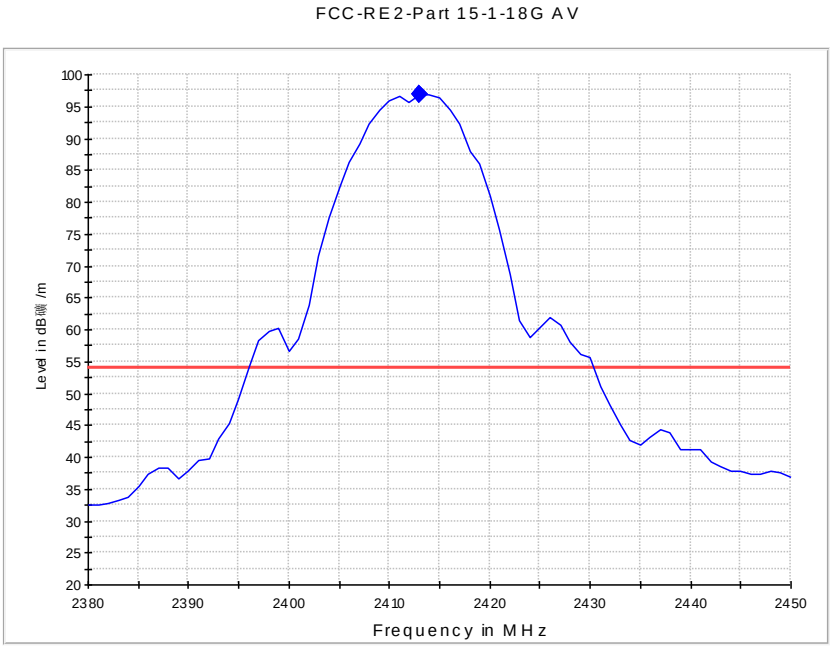

Fig.A.6.2.1 Radiated Spurious Emission (Power): 802.11b, ch1, 2.38 GHz – 2.45GHz

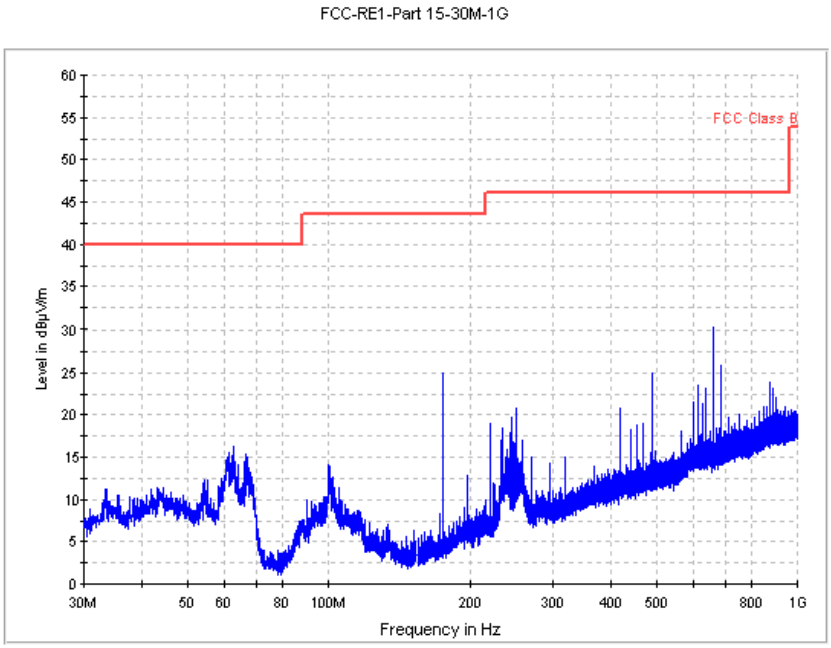

Fig.A.6.2.2 Radiated Spurious Emission (802.11b, Ch1, 30 MHz-1 GHz)

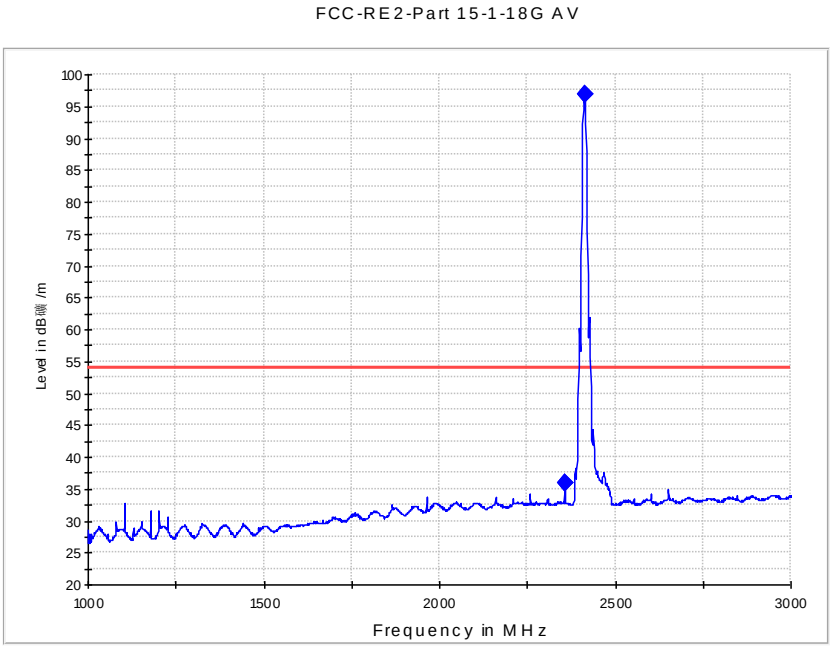

Fig.A.6.2.3 Radiated Spurious Emission (802.11b, Ch1, 1 GHz-3 GHz)

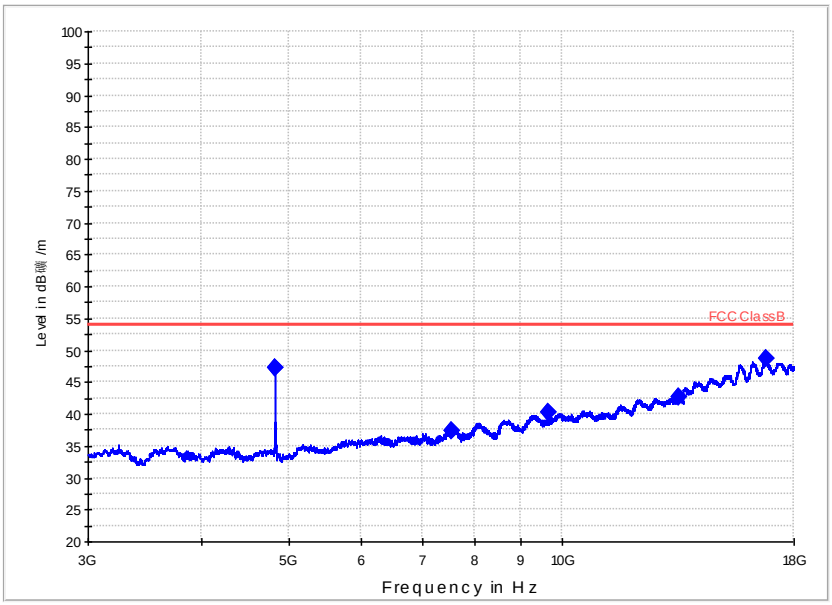

Fig.A.6.2.4 Radiated Spurious Emission (802.11b, Ch1, 3 GHz-18 GHz)

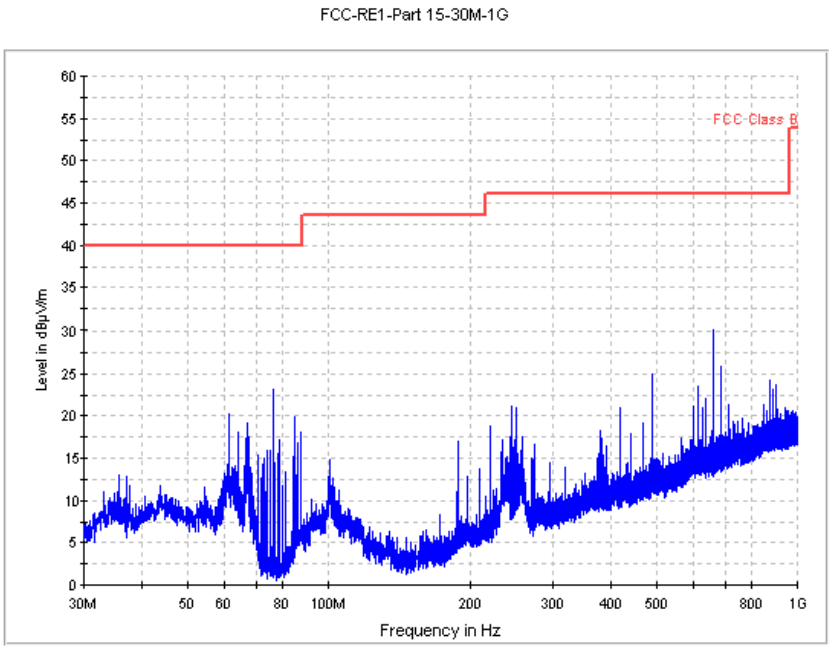

Fig.A.6.2.5 Radiated Spurious Emission (802.11b, Ch6, 30 MHz-1 GHz)

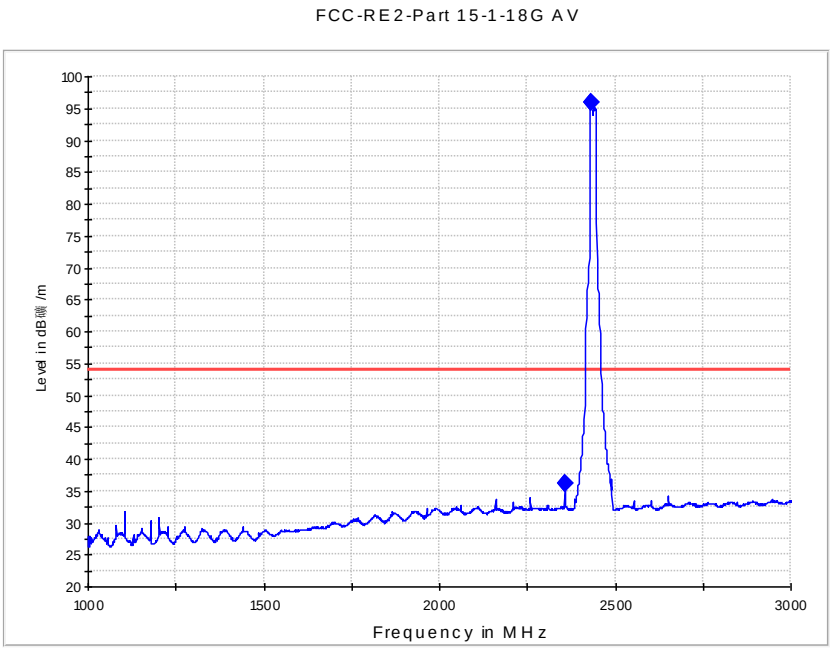

Fig.A.6.2.6 Radiated Spurious Emission (802.11b, Ch6, 1 GHz-3 GHz)

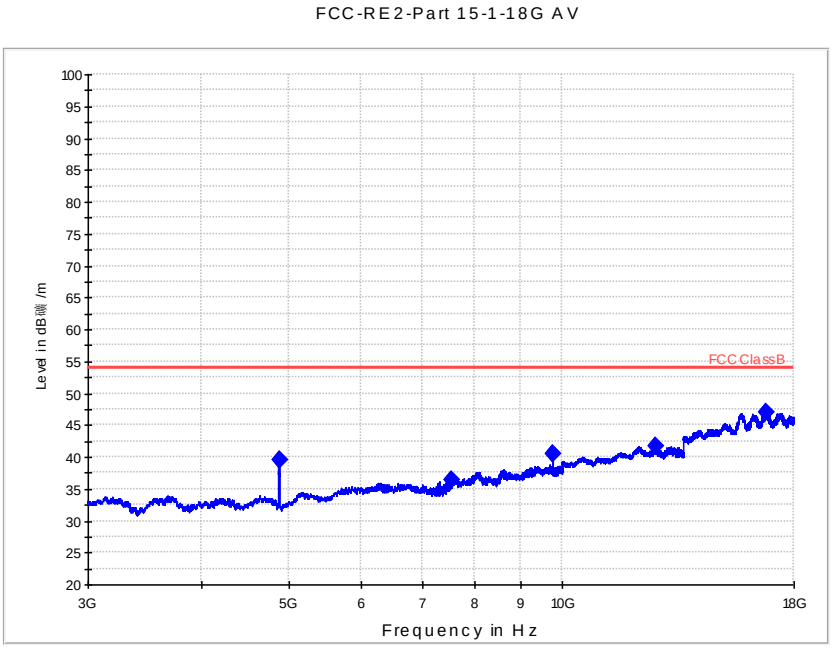

Fig.A.6.2.7 Radiated Spurious Emission (802.11b, Ch6, 3 GHz-18 GHz)

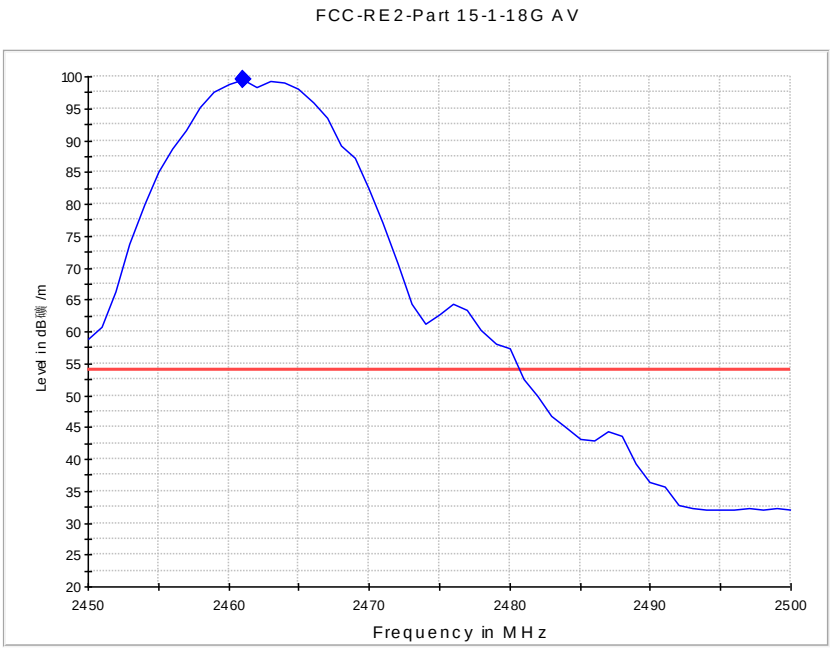

Fig.A.6.2.8 Radiated Spurious Emission (Power): 802.11b, ch11, 2.45 GHz - 2.50GHz

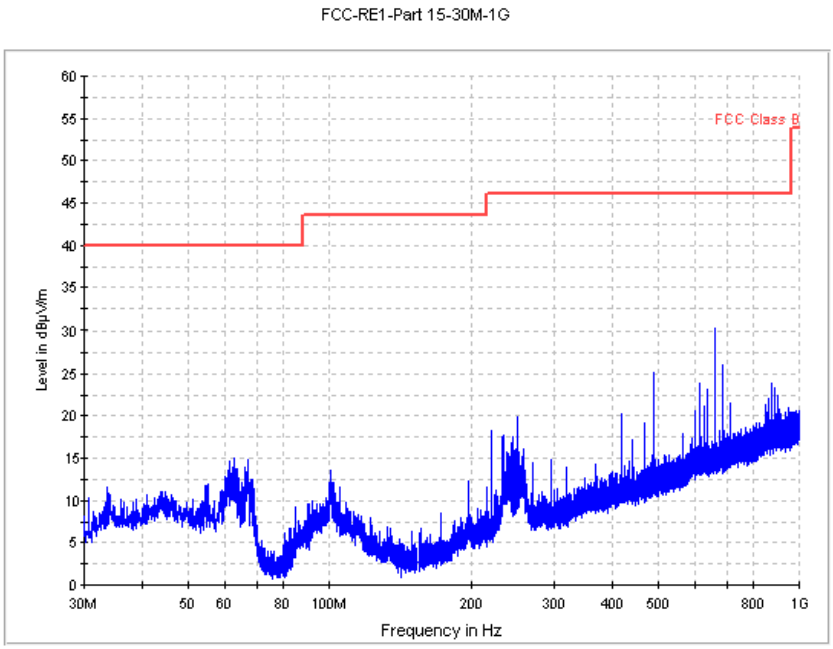

Fig.A.6.2.9 Radiated Spurious Emission (802.11b, Ch11, 30 MHz-1 GHz)

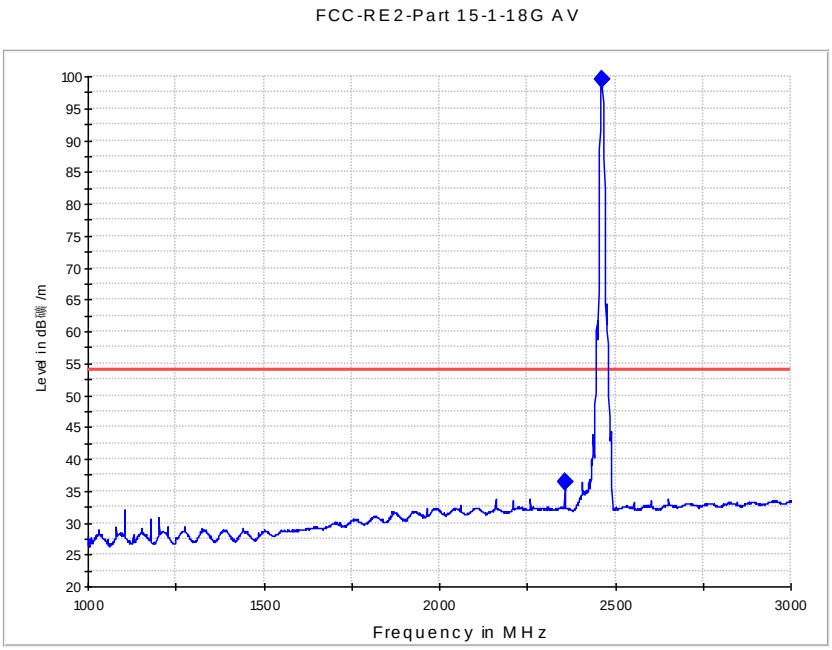

Fig.A.6.2.10 Radiated Spurious Emission (802.11b, Ch11, 1 GHz-3 GHz)

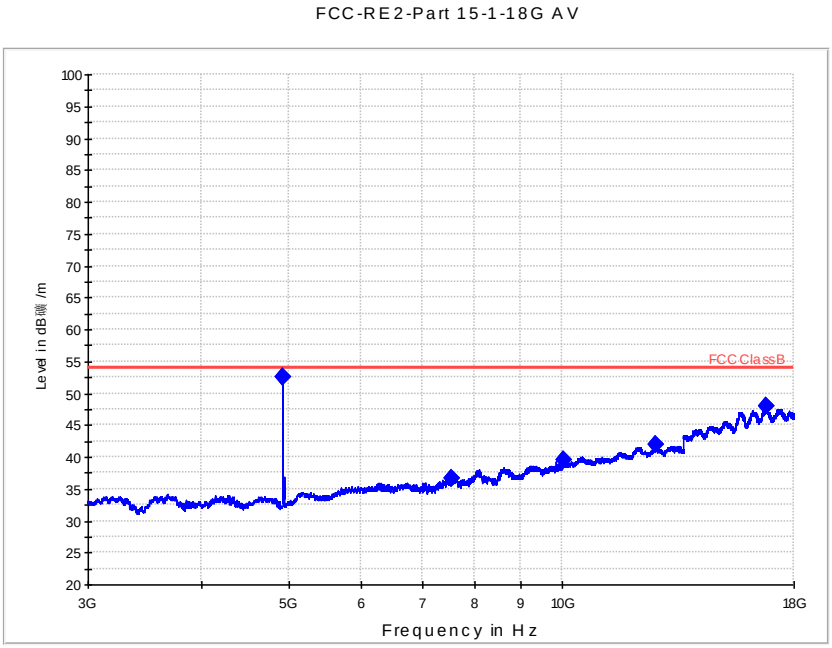

Fig.A.6.2.11 Radiated Spurious Emission (802.11b, Ch11, 3 GHz-18 GHz)

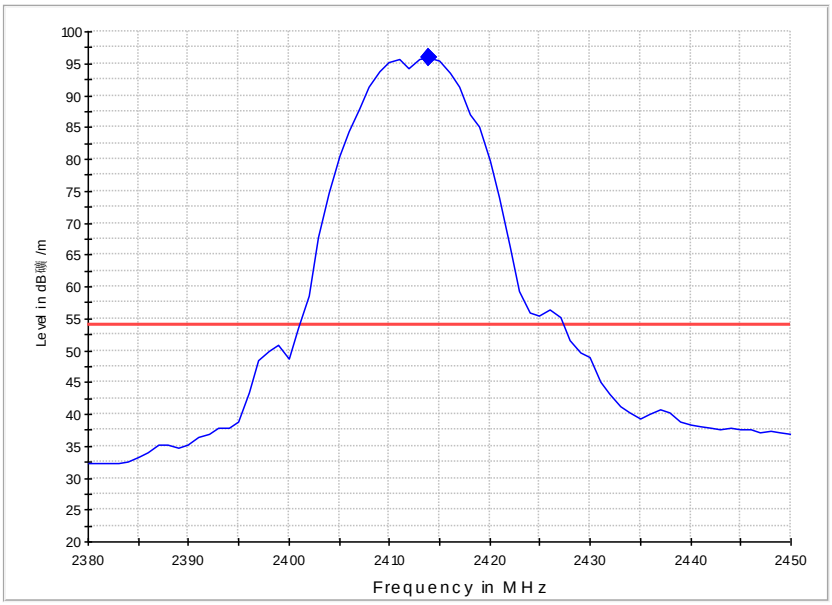

Fig.A.6.2.12 Radiated Spurious Emission (Power): 802.11g, ch1, 2.38 GHz - 2.45GHz

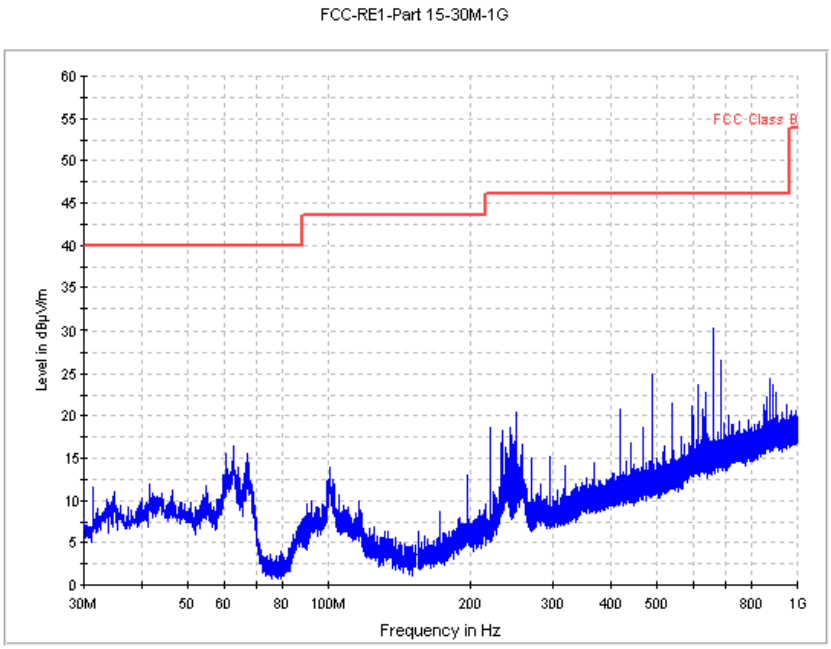

Fig.A.6.2.13 Radiated Spurious Emission (802.11g, Ch1, 30 MHz-1 GHz)

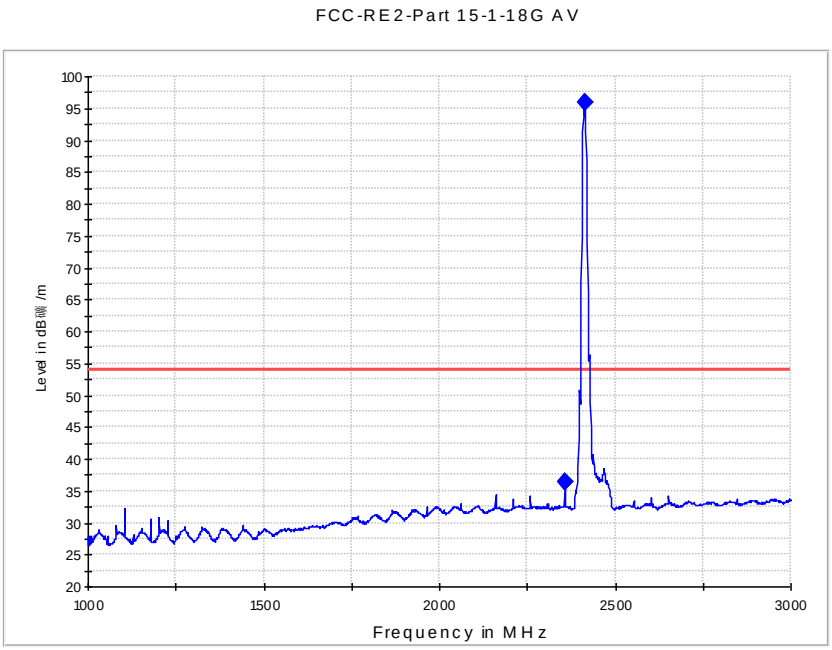

Fig.A.6.2.14 Radiated Spurious Emission (802.11g, Ch1, 1 GHz-3 GHz)

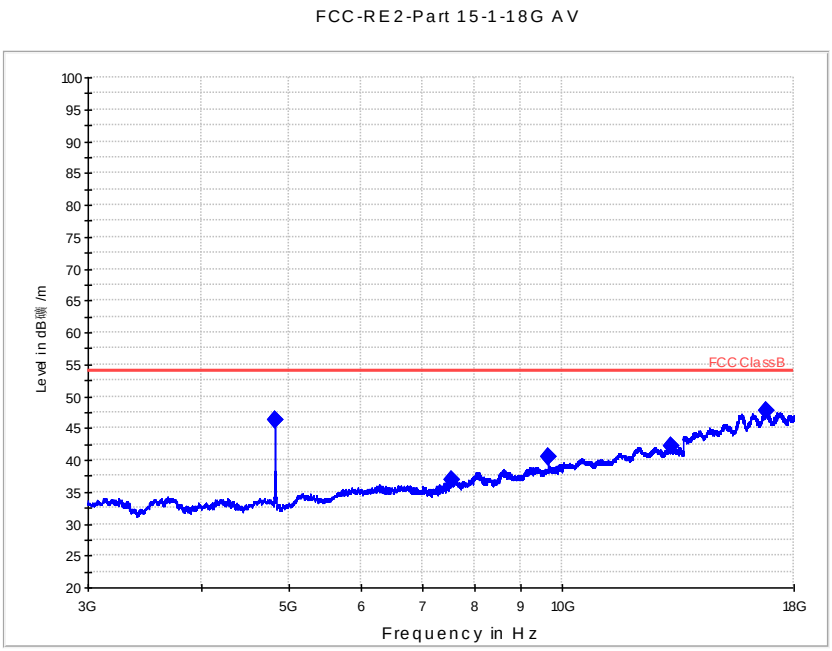

Fig.A.6.2.15 Radiated Spurious Emission (802.11g, Ch1, 3 GHz-18 GHz)

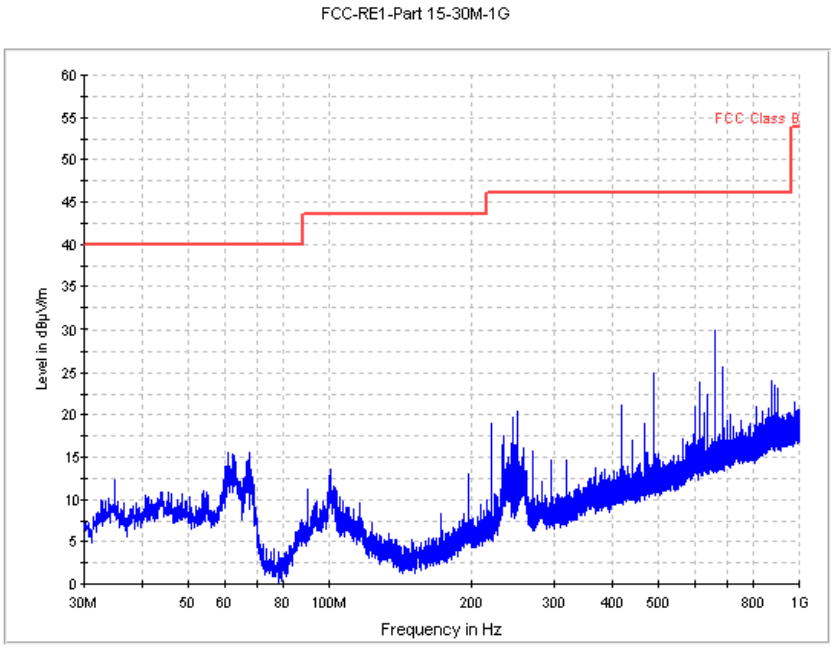

Fig.A.6.2.16 Radiated Spurious Emission (802.11g, Ch6, 30 MHz-1 GHz)

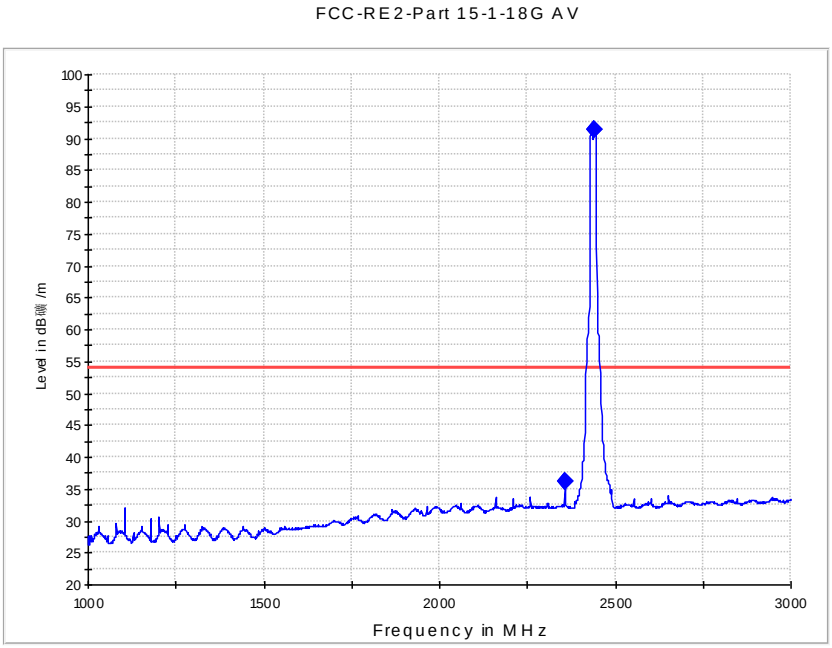

Fig.A.6.2.17 Radiated Spurious Emission (802.11g, Ch6, 1 GHz-3 GHz)

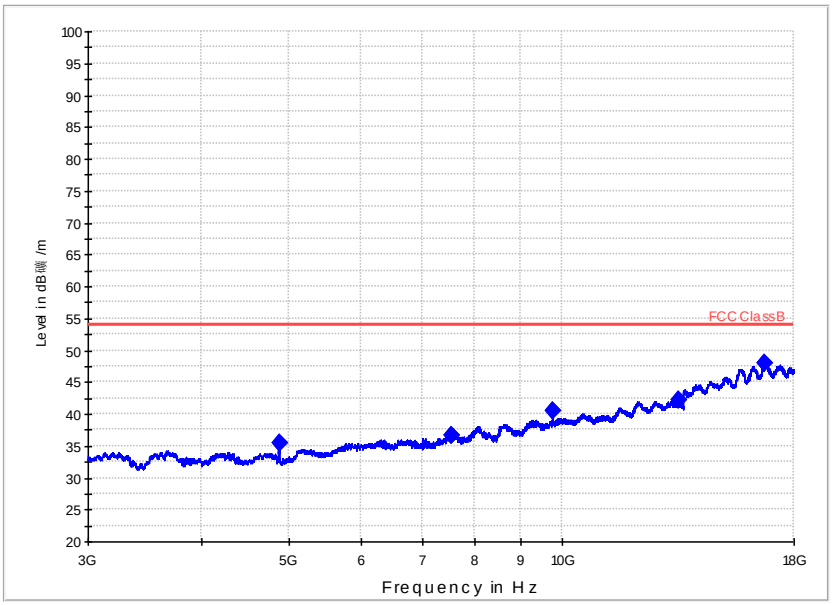

Fig.A.6.2.18 Radiated Spurious Emission (802.11g, Ch6, 3 GHz-18 GHz)

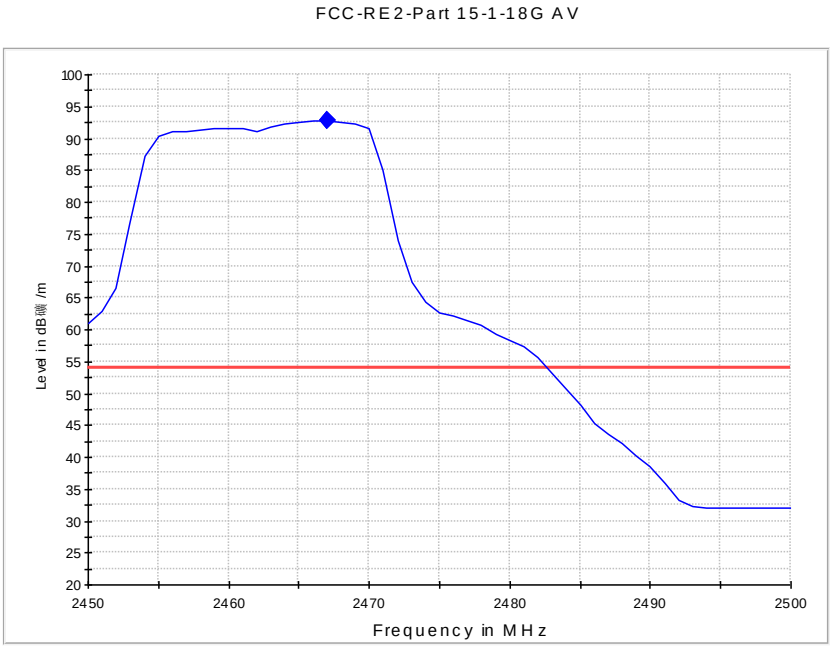

Fig.A.6.2.19 Radiated Spurious Emission (Power): 802.11g, ch11, 2.45 GHz - 2.50GHz

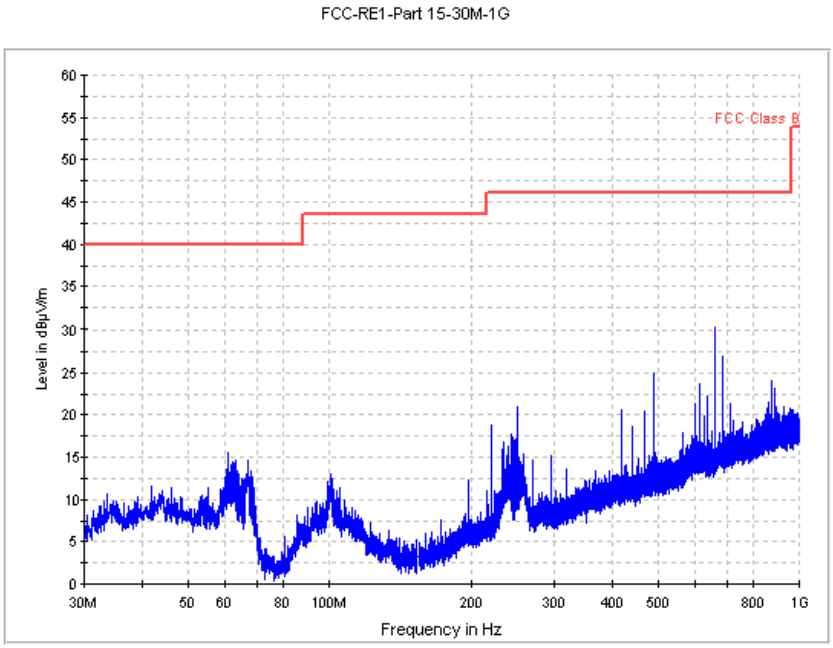

Fig.A.6.2.20 Radiated Spurious Emission (802.11g, Ch11, 30 MHz-1 GHz)

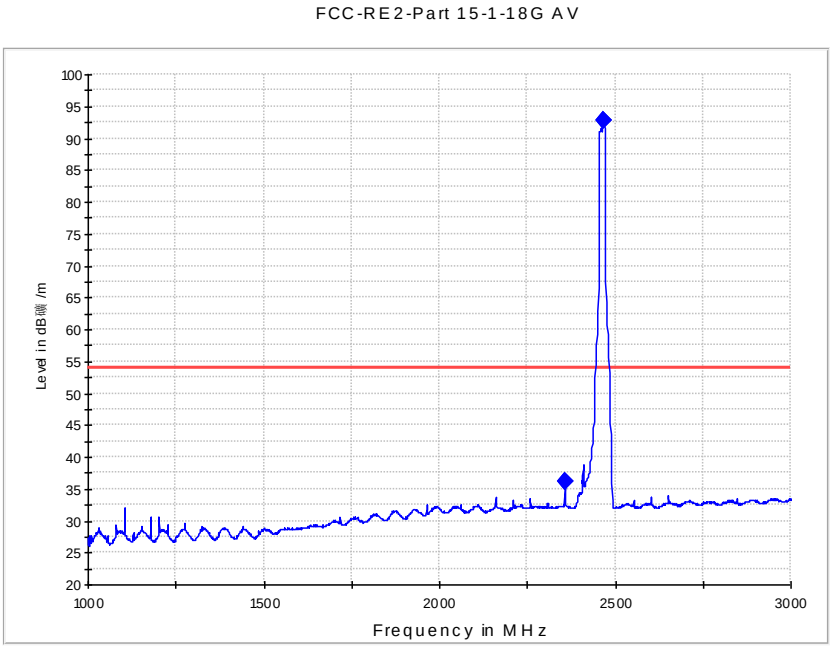

Fig.A.6.2.21 Radiated Spurious Emission (802.11g, Ch11, 1 GHz-3 GHz)

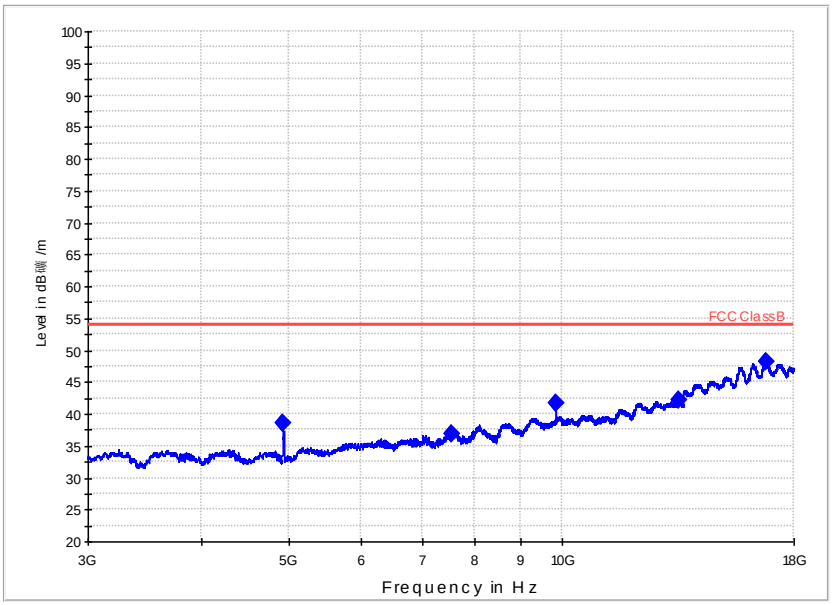

Fig.A.6.2.22 Radiated Spurious Emission (802.11g, Ch11, 3 GHz-18 GHz)

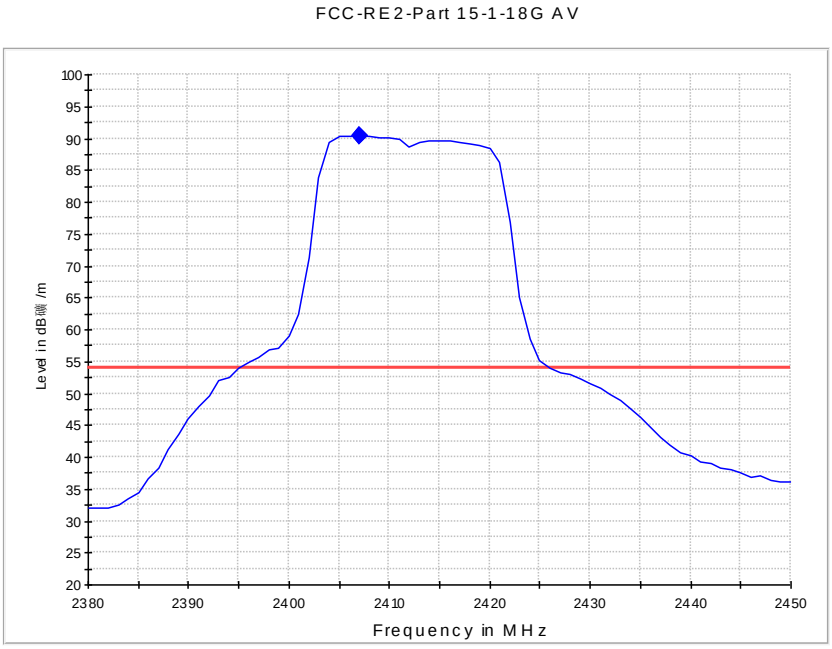

Fig.A.6.2.23 Radiated Spurious Emission (Power): 802.11n-HT20, ch1, 2.38 GHz - 2.45GHz

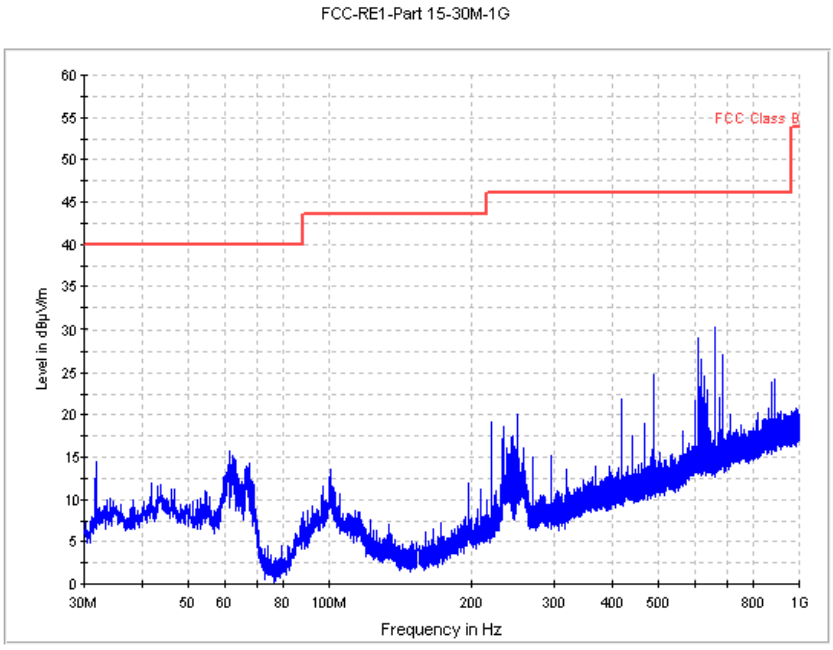

Fig.A.6.2.24 Radiated Spurious Emission (802.11n-HT20, Ch1, 30 MHz-1 GHz)

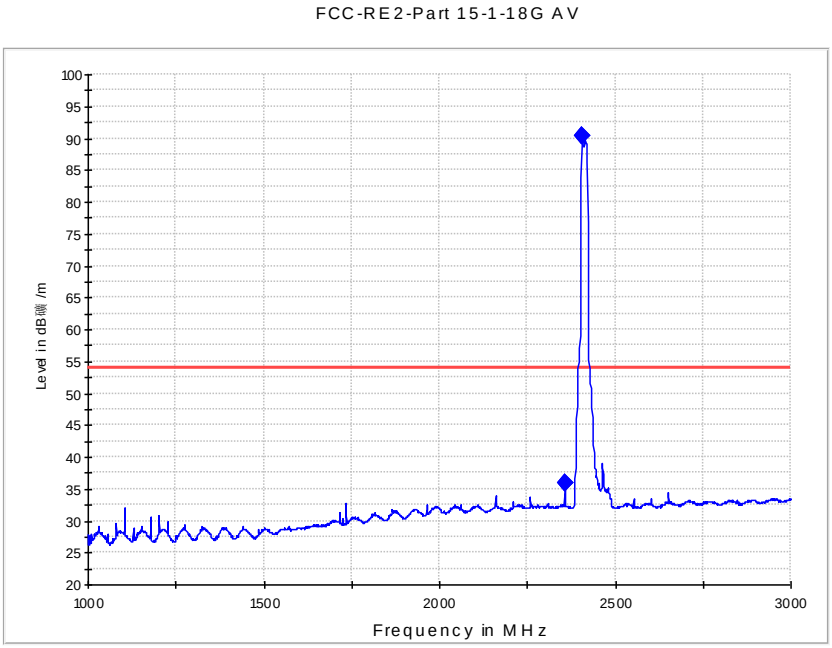

Fig.A.6.2.25 Radiated Spurious Emission (802.11n-HT20, Ch1, 1 GHz-3 GHz)

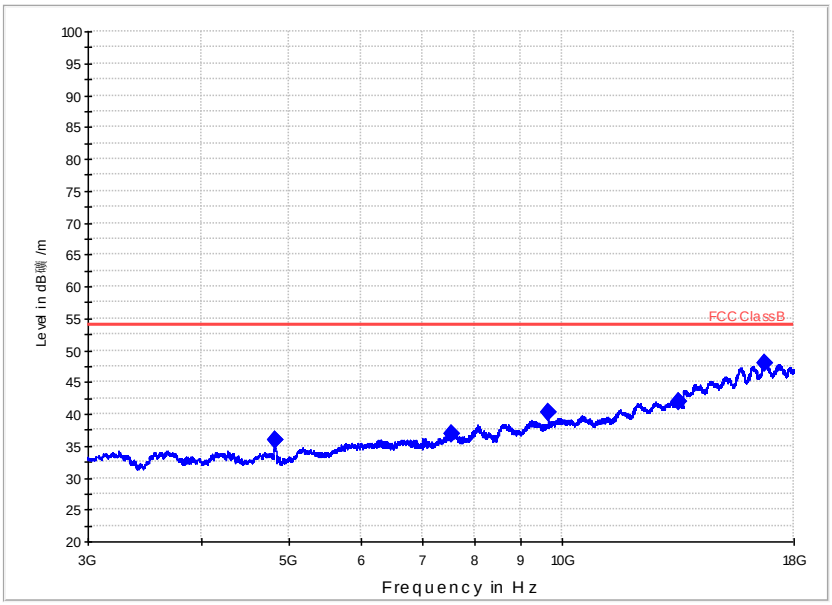

Fig.A.6.2.26 Radiated Spurious Emission (802.11n-HT20, Ch1, 3 GHz-18 GHz)

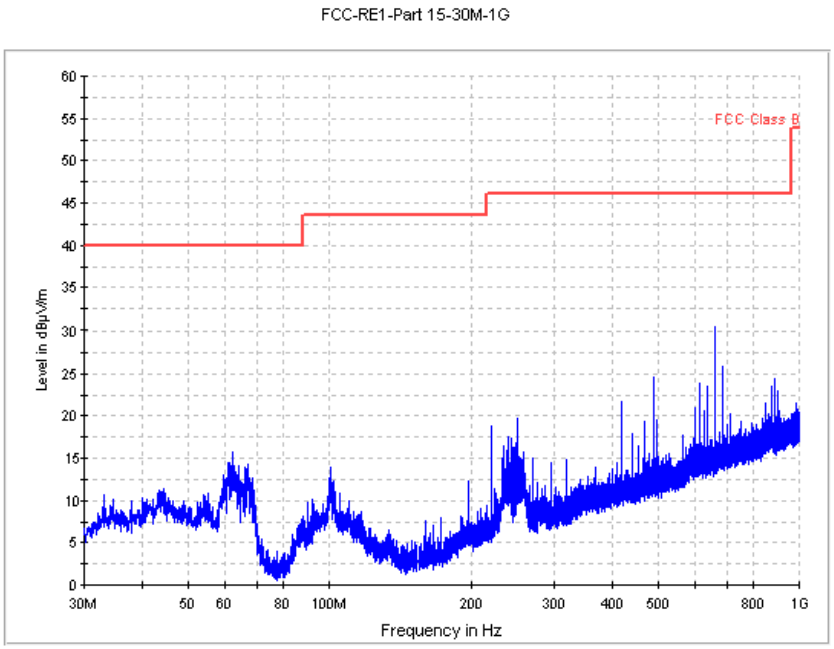

Fig.A.6.2.27 Radiated Spurious Emission (802.11n-HT20, Ch6, 30 MHz-1 GHz)

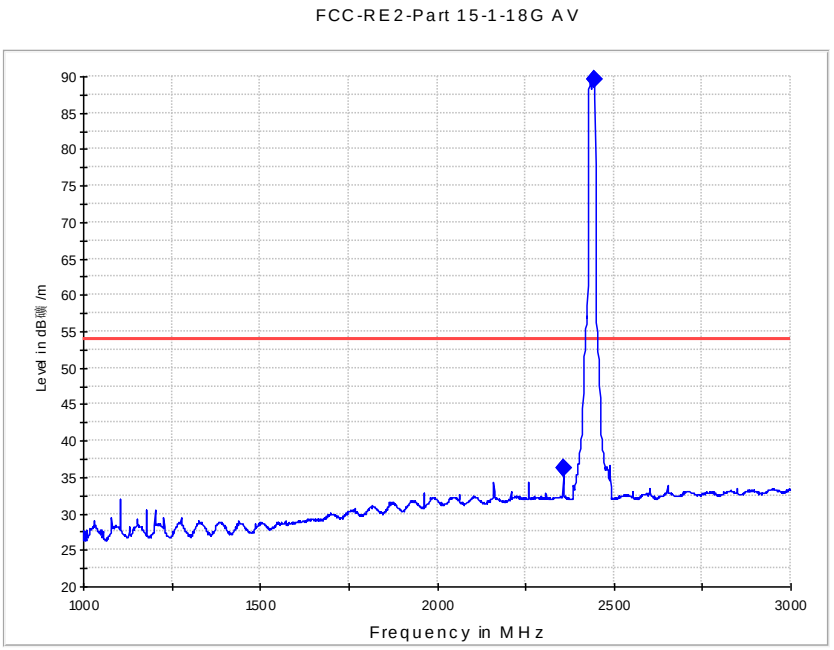

Fig.A.6.2.28 Radiated Spurious Emission (802.11n-HT20, Ch6, 1 GHz-3 GHz)

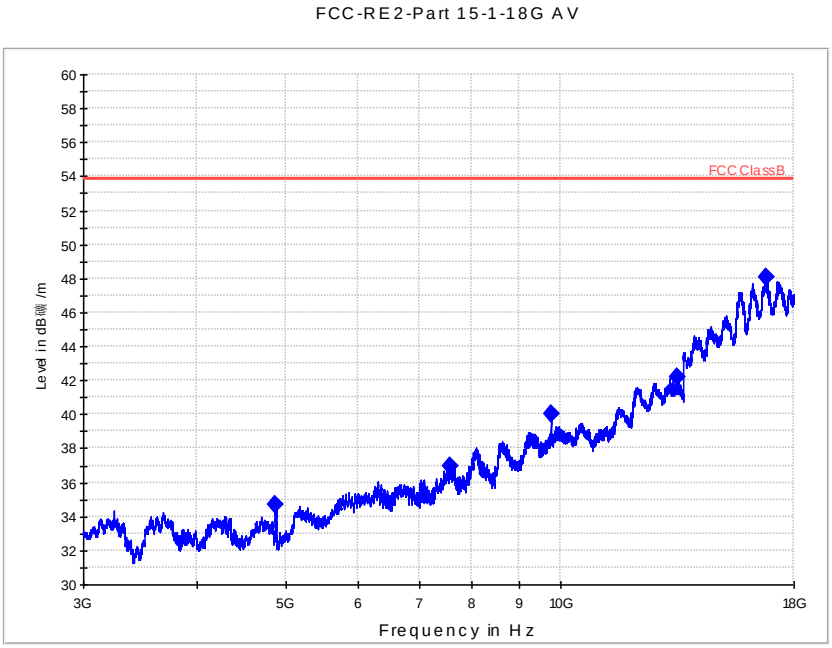

Fig.A.6.2.29 Radiated Spurious Emission (802.11n-HT20, Ch6, 3 GHz-18 GHz)

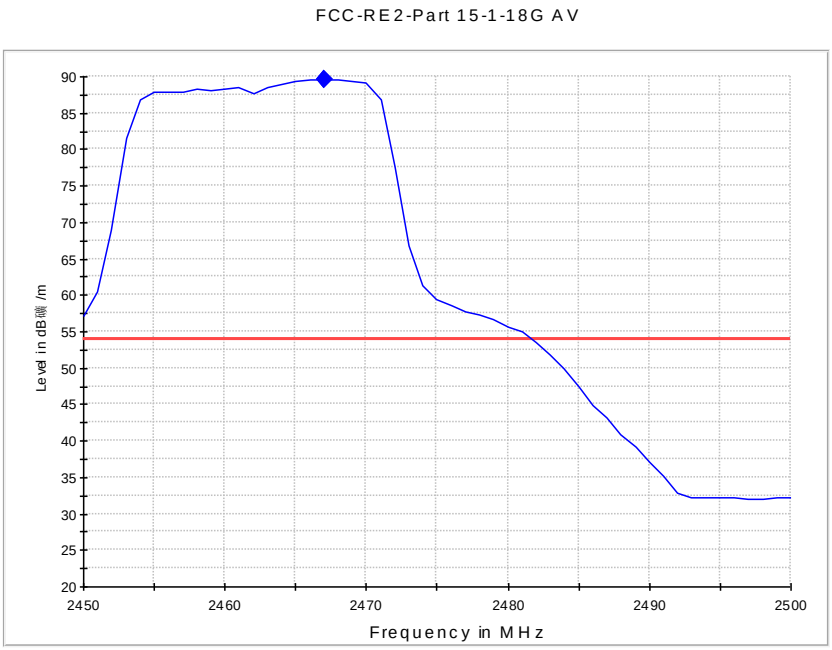

Fig.A.6.2.30 Radiated Spurious Emission (Power): 802.11n-HT20, ch11, 2.45 GHz - 2.50GHz

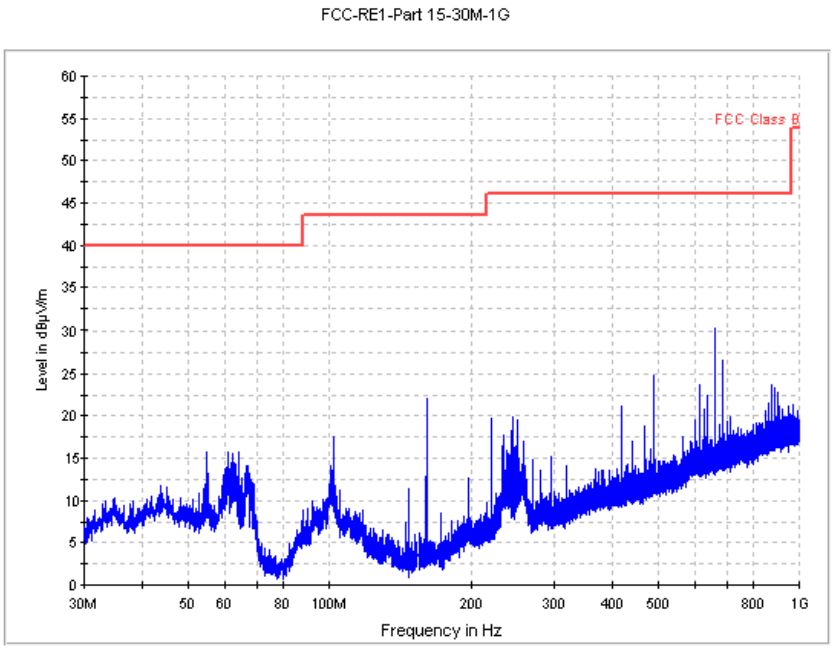

Fig.A.6.2.31 Radiated Spurious Emission (802.11n-HT20, Ch11, 30 MHz-1 GHz)

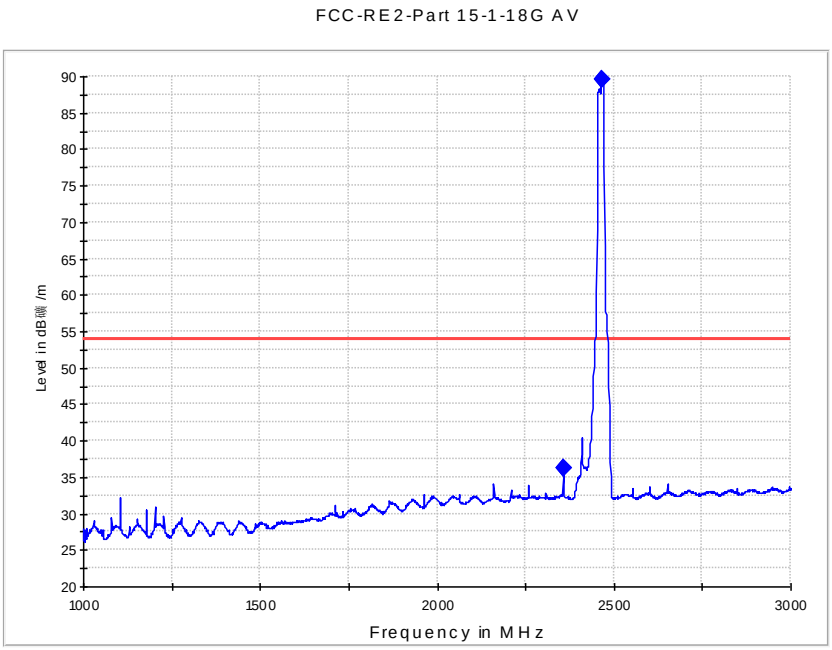

Fig.A.6.2.32 Radiated Spurious Emission (802.11n-HT20, Ch11, 1 GHz-3 GHz)

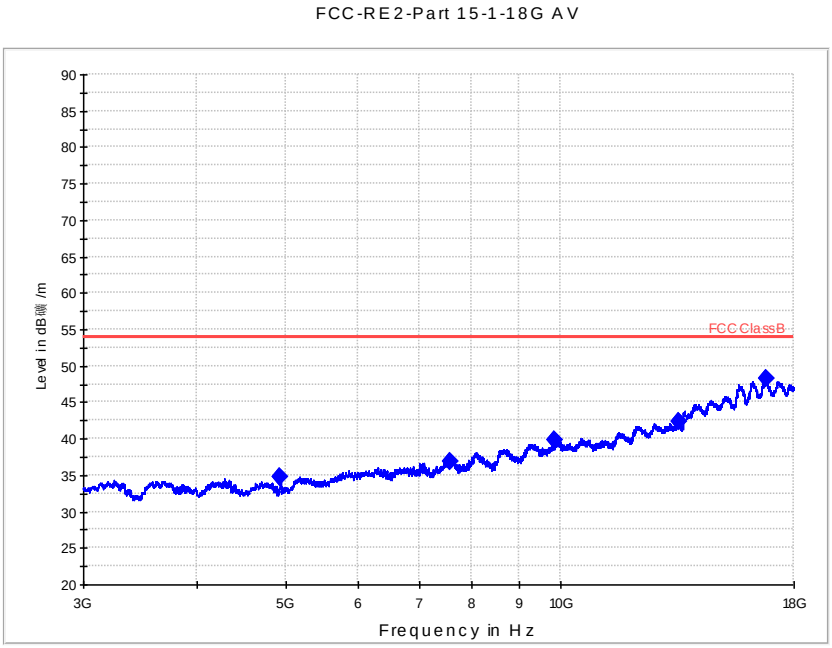

Fig.A.6.2.33 Radiated Spurious Emission (802.11n-HT20, Ch11, 3 GHz-18 GHz)

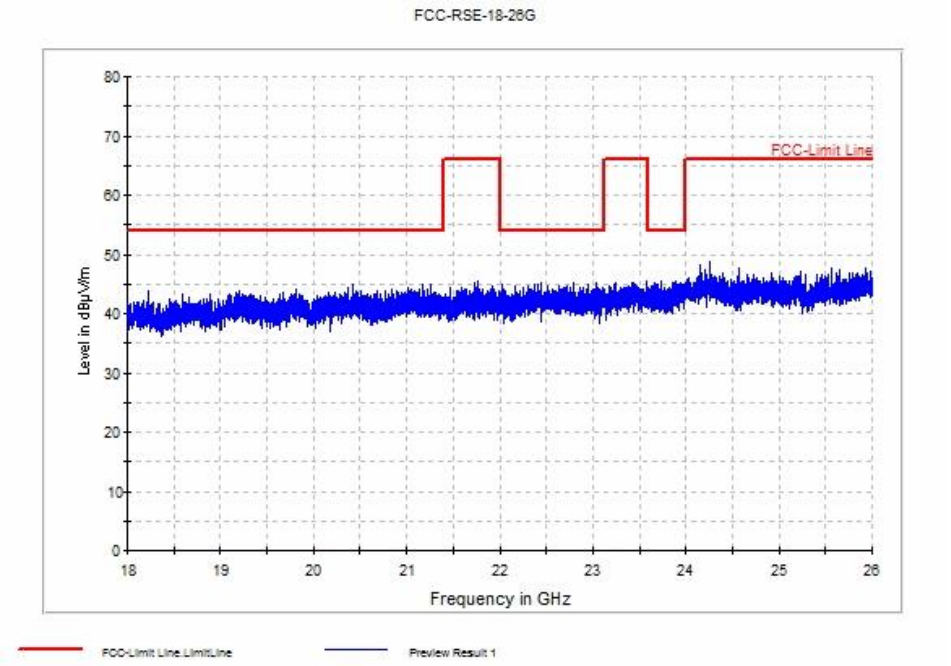

Fig.A.6.2.34 Radiated Spurious Emission (All channels): 18GHz – 26.5GHz

A.7. AC Powerline 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
		With charger			
		802.11b	802.11g	802.11n (HT20)	
0.15 to 0.5	66 to 56	Fig.A.7.1	Fig.A.7.2	Fig.A.7.3	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 Limit (dBμV)	Result (dBμV)			Conclusion
		With charger			
		802.11b	802.11g	802.11n (HT20)	
0.15 to 0.5	56 to 46	Fig.A.7.1	Fig.A.7.2	Fig.A.7.3	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.					

The measurement is made according to KDB558074.

Conclusion: Pass

Measurement uncertainty:

Expanded measurement uncertainty for this test item is U =3.2dB, k=2.

Test graphs as below:

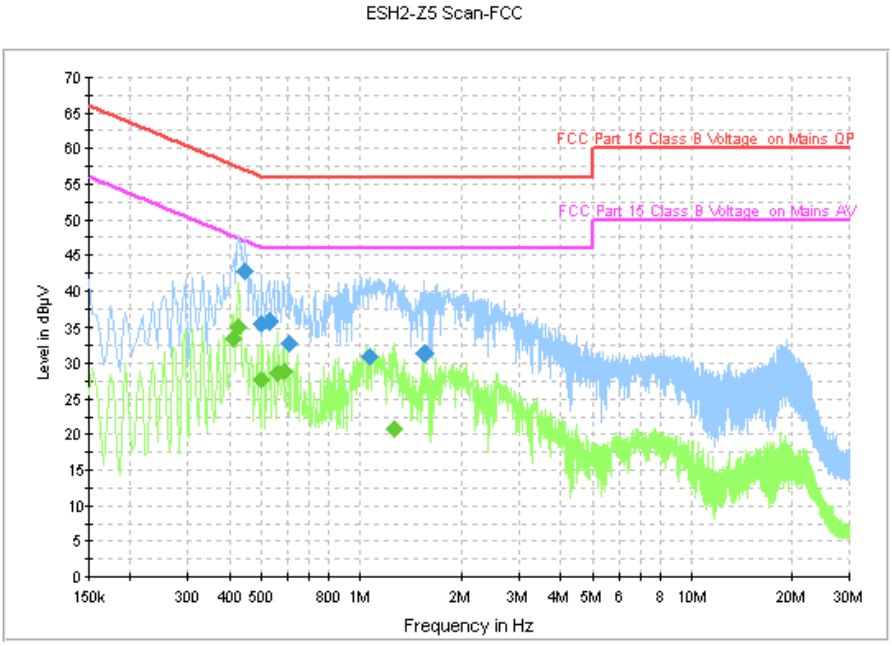

Fig.A.7.1 AC Powerline Conducted Emission-802.11b

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.446000	42.8	FLO	N	10.1	14.2	56.9
0.502000	35.5	FLO	L1	10.0	20.5	56.0
0.530000	35.8	FLO	L1	10.0	20.2	56.0
0.606000	32.9	FLO	N	10.1	23.1	56.0
1.062000	31.0	FLO	L1	10.1	25.0	56.0
1.554000	31.5	FLO	L1	10.1	24.5	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.410000	33.5	FLO	L1	10.0	14.2	47.6
0.426000	35.1	FLO	L1	10.0	12.2	47.3
0.502000	27.8	FLO	L1	10.0	18.2	46.0
0.562000	28.7	FLO	L1	10.1	17.3	46.0
0.586000	28.9	FLO	L1	10.1	17.1	46.0
1.262000	20.9	FLO	L1	10.1	25.1	46.0

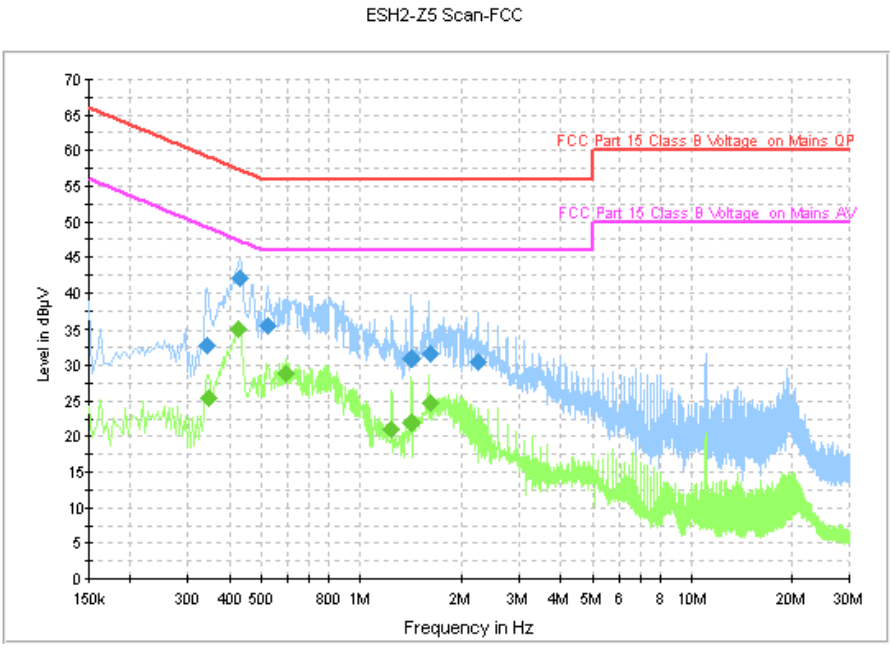

Fig.A.7.2 AC Powerline Conducted Emission-802.11g

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.342000	32.8	FLO	L1	10.0	26.3	59.2
0.430000	42.1	FLO	L1	10.0	15.2	57.3
0.522000	35.6	FLO	L1	10.0	20.4	56.0
1.418000	30.8	FLO	L1	10.1	25.2	56.0
1.610000	31.6	FLO	L1	10.1	24.4	56.0
2.238000	30.5	FLO	L1	10.1	25.5	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.346000	25.4	FLO	L1	10.0	23.7	49.1
0.426000	35.2	FLO	L1	10.0	12.1	47.3
0.594000	28.9	FLO	L1	10.1	17.1	46.0
1.242000	21.1	FLO	L1	10.1	24.9	46.0
1.426000	21.9	FLO	L1	10.1	24.1	46.0
1.610000	24.8	FLO	L1	10.1	21.2	46.0

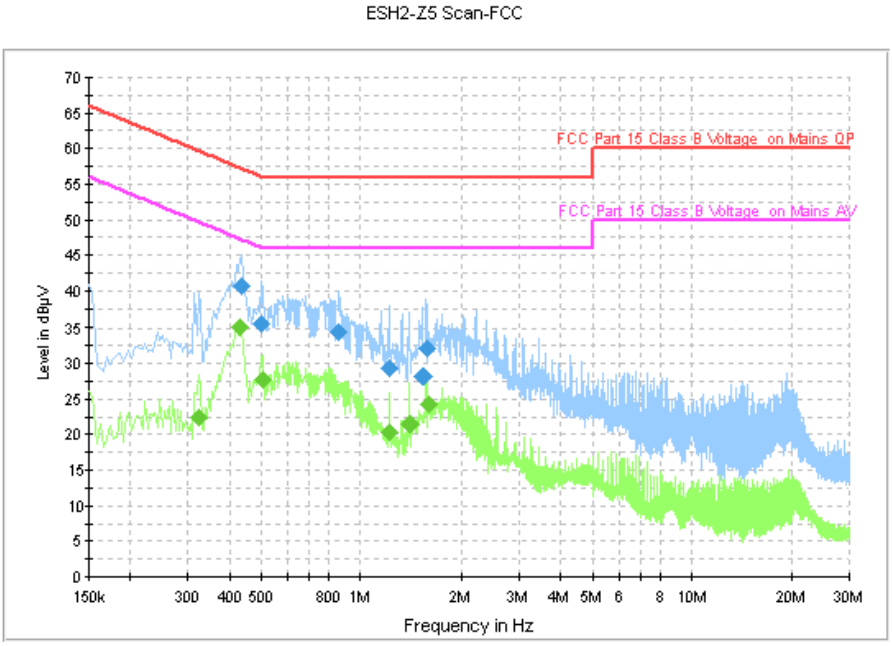

Fig.A.7.3 AC Powerline Conducted Emission-802.11n

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.438000	40.8	FLO	L1	10.0	16.3	57.1
0.498000	35.7	FLO	L1	10.0	20.4	56.0
0.862000	34.5	FLO	L1	10.0	21.5	56.0
1.218000	29.4	FLO	L1	10.1	26.6	56.0
1.538000	28.3	FLO	N	10.1	27.7	56.0
1.578000	32.1	FLO	L1	10.1	23.9	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.322000	22.4	FLO	L1	10.0	27.3	49.7
0.430000	35.1	FLO	L1	10.0	12.2	47.3
0.506000	27.6	FLO	L1	10.0	18.4	46.0
1.222000	20.2	FLO	L1	10.1	25.8	46.0
1.402000	21.5	FLO	L1	10.1	24.5	46.0
1.586000	24.2	FLO	L1	10.1	21.8	46.0

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