

Fig.A.6.1.35 Conducted Spurious Emission (802.11g, Ch6, 1 GHz-2.5 GHz)

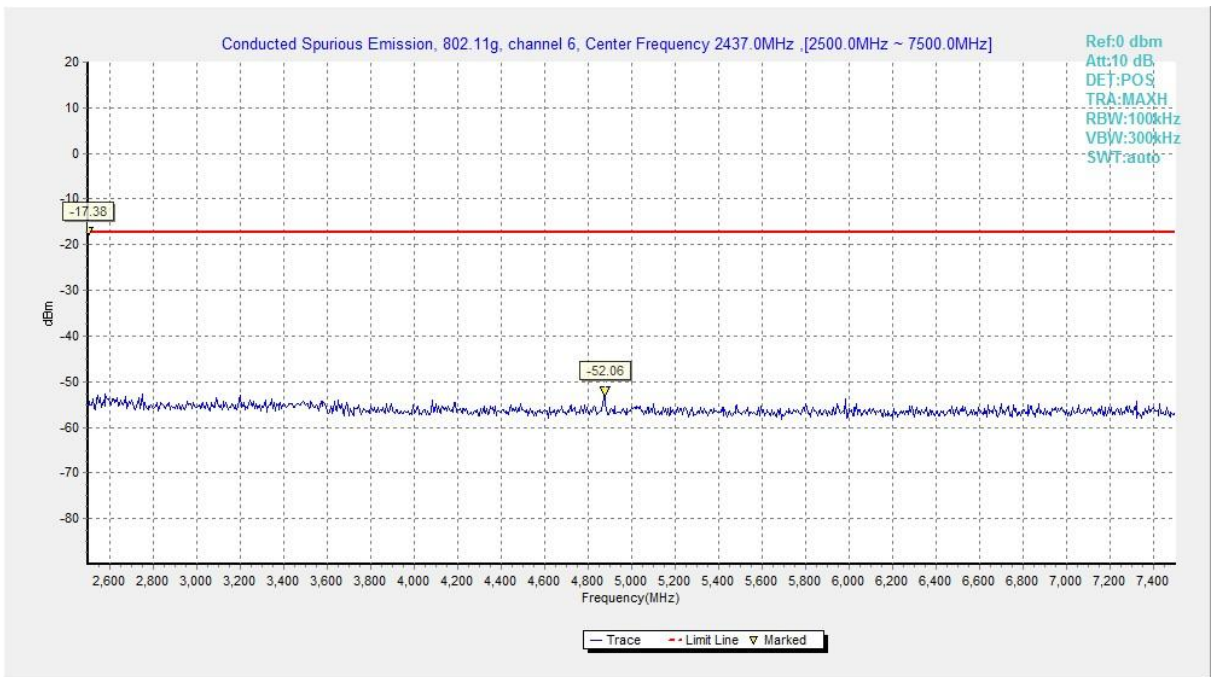


Fig.A.6.1.36 Conducted Spurious Emission (802.11g, Ch6, 2.5 GHz-7.5 GHz)

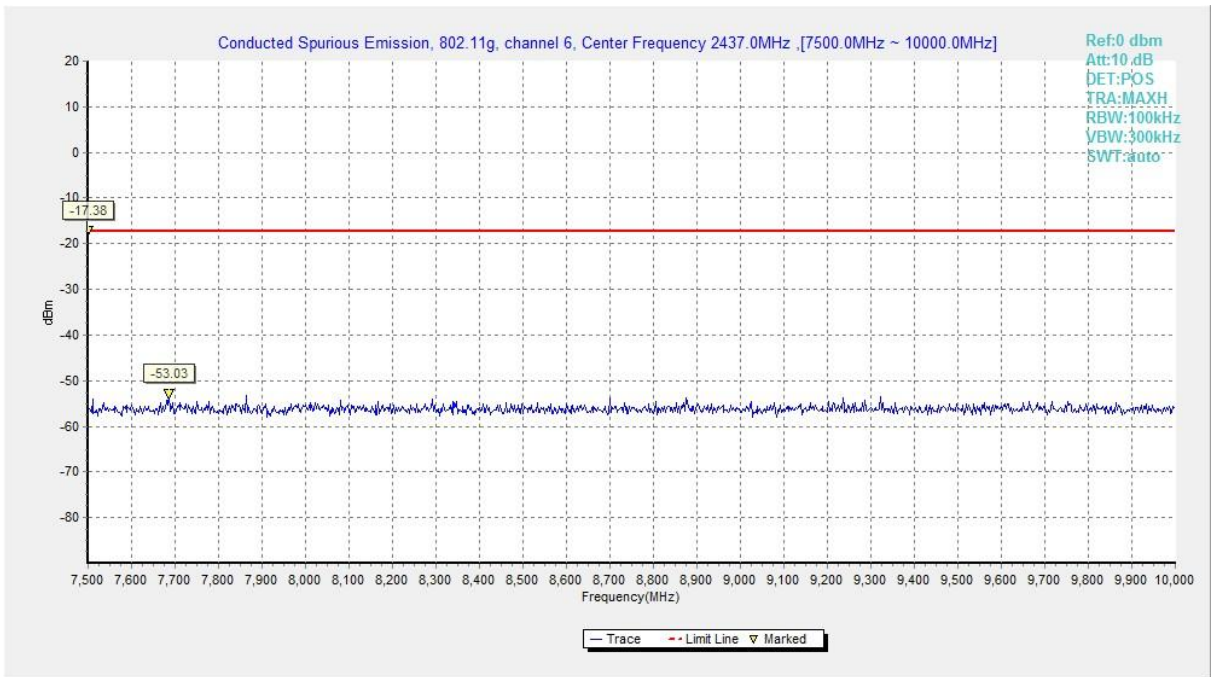


Fig.A.6.1.37 Conducted Spurious Emission (802.11g, Ch6, 7.5 GHz-10 GHz)

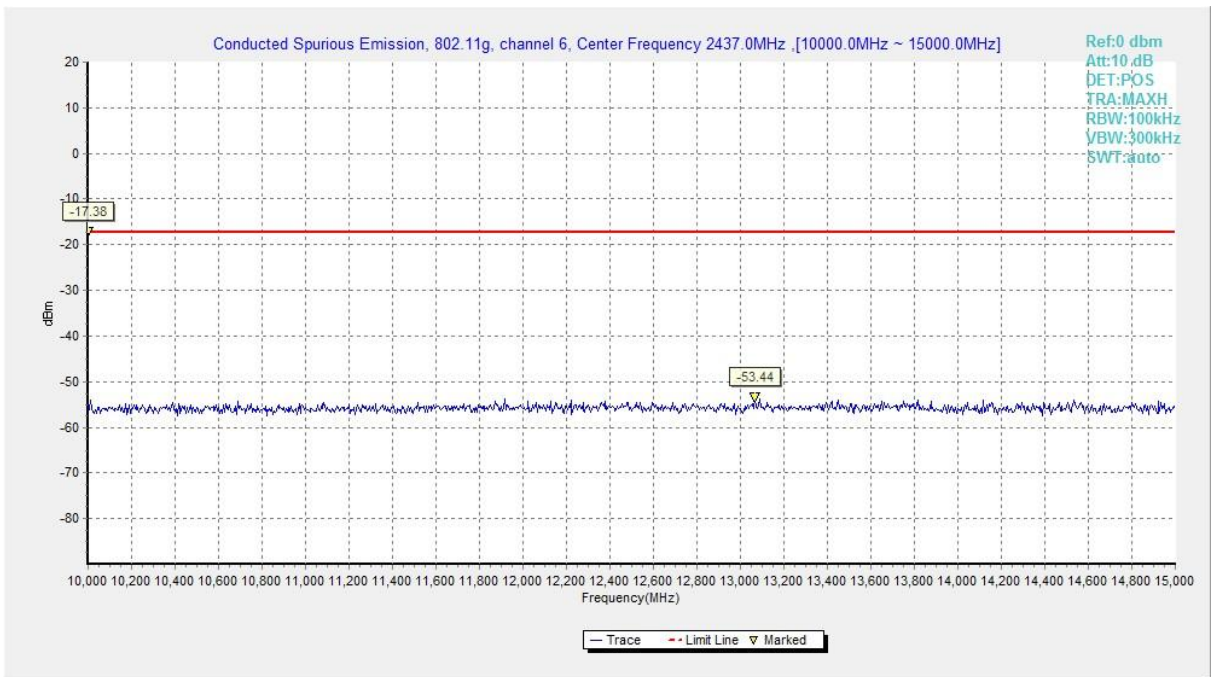


Fig.A.6.1.38 Conducted Spurious Emission (802.11g, Ch6, 10 GHz-15 GHz)

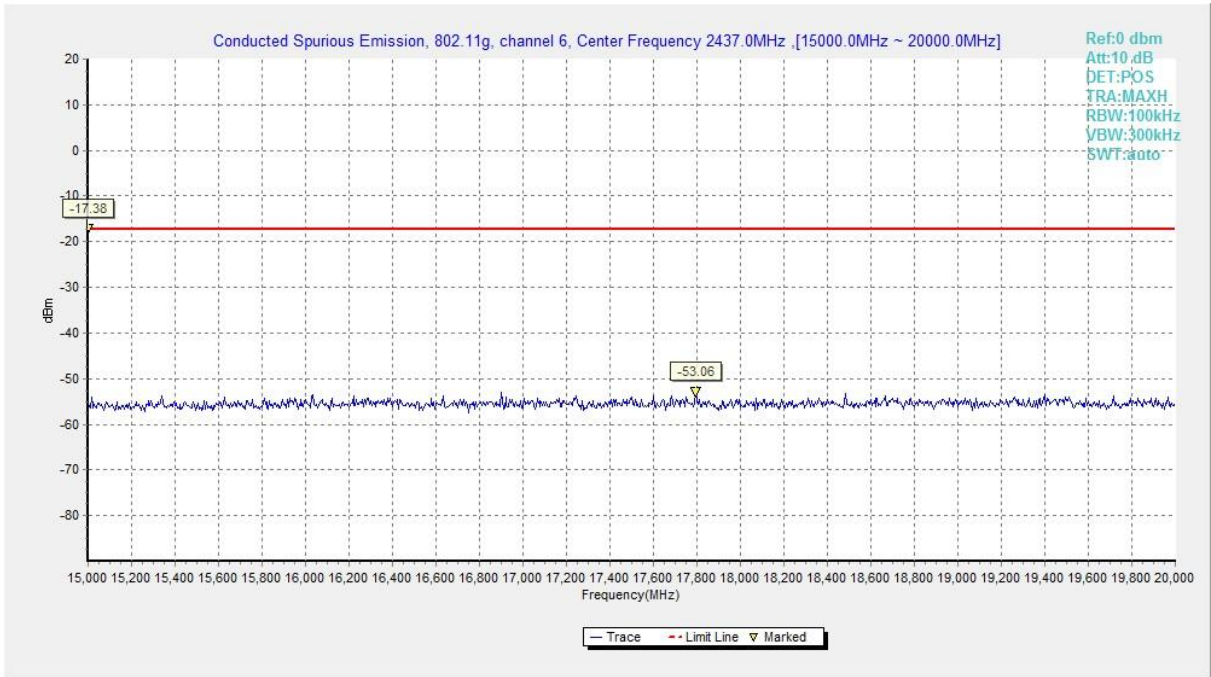


Fig.A.6.1.39 Conducted Spurious Emission (802.11g, Ch6, 15 GHz-20 GHz)

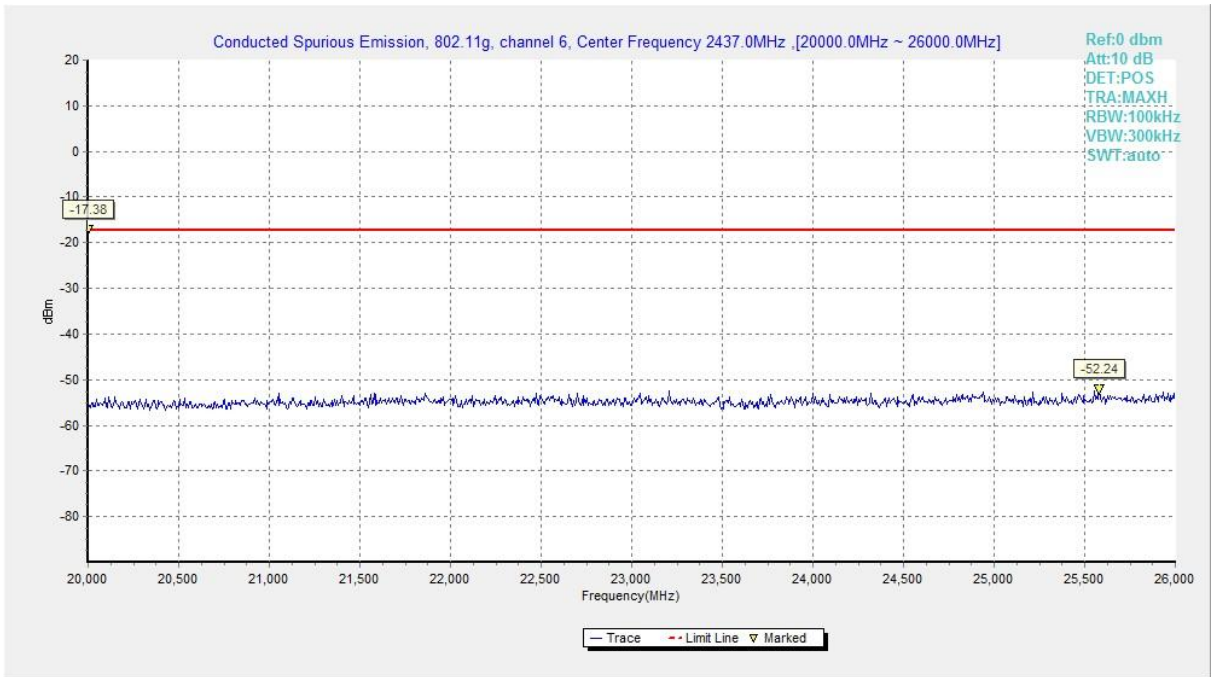


Fig.A.6.1.40 Conducted Spurious Emission (802.11g, Ch6, 20 GHz-26 GHz)

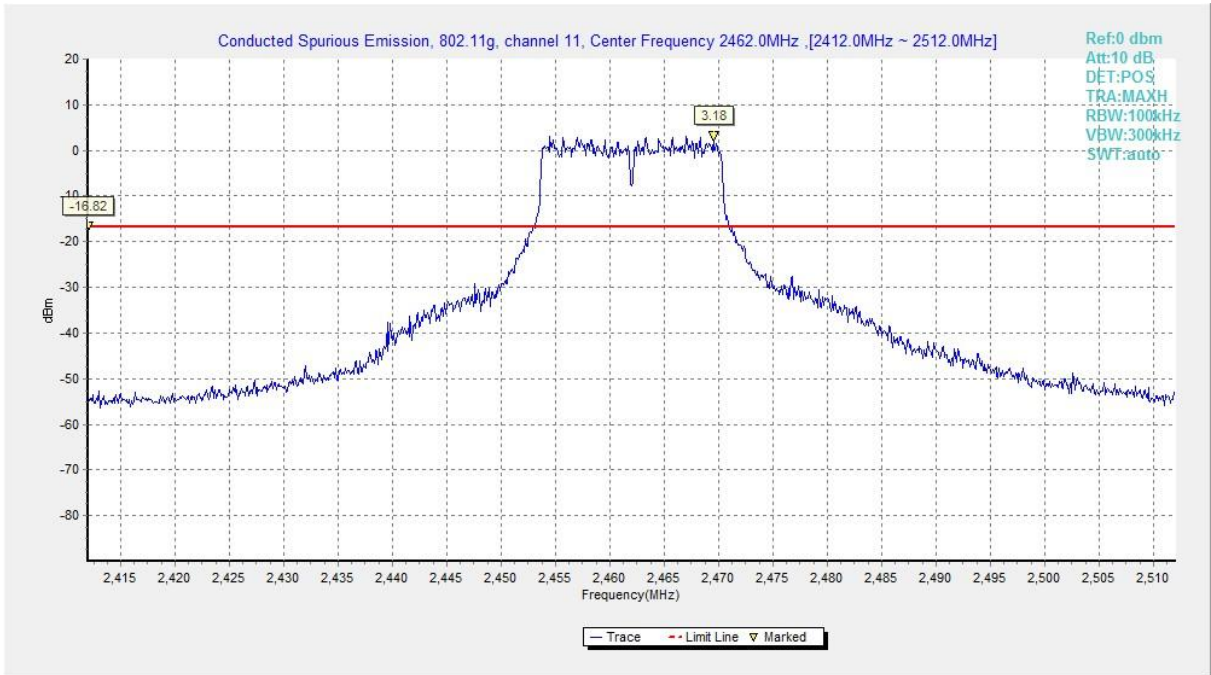


Fig.A.6.1.41 Conducted Spurious Emission (802.11g, Ch11, Center Frequency)

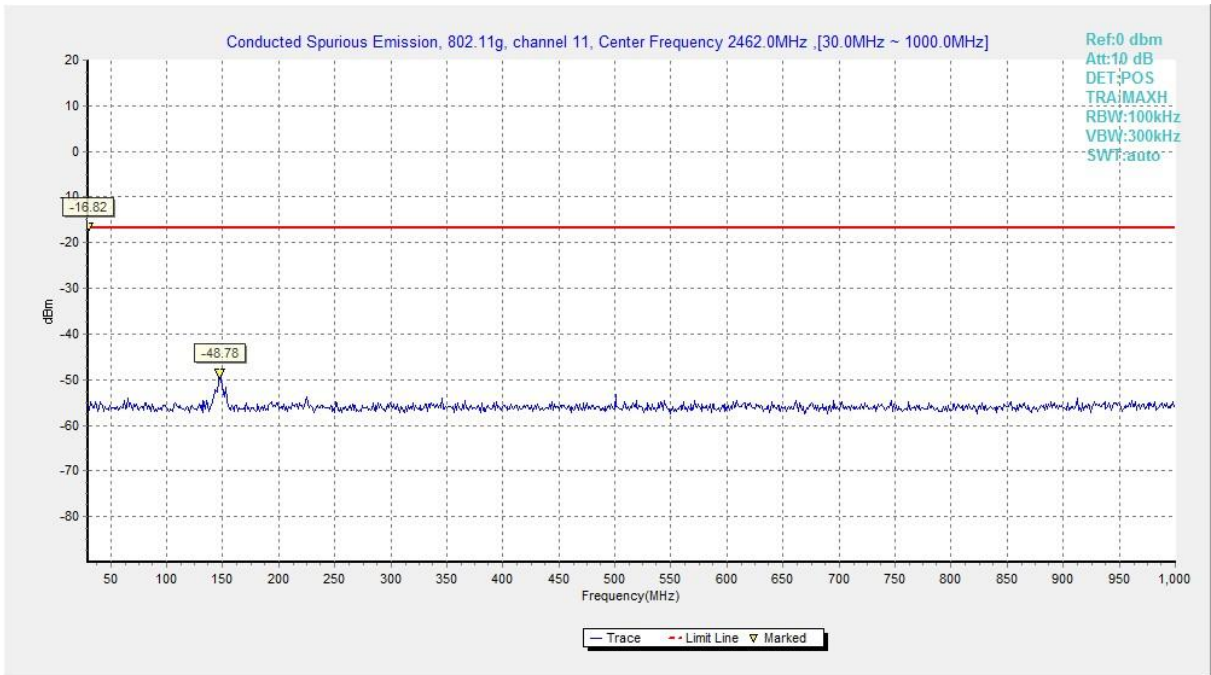


Fig.A.6.1.42 Conducted Spurious Emission (802.11g, Ch11, 30 MHz-1 GHz)

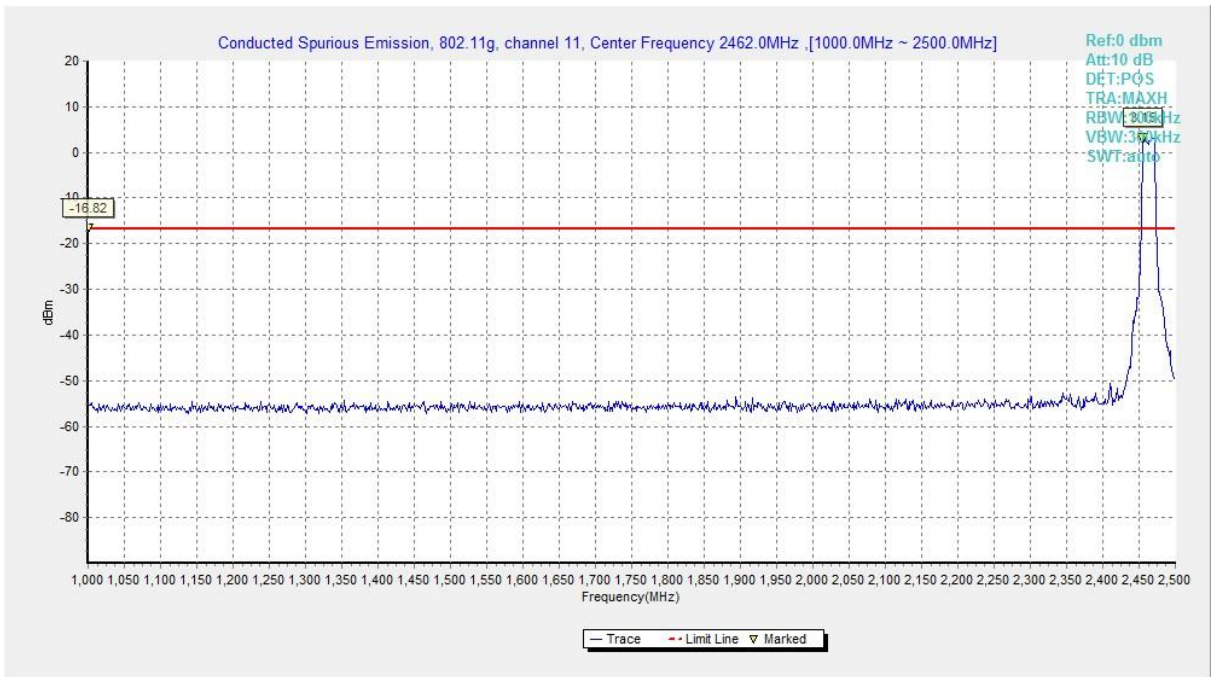


Fig.A.6.1.43 Conducted Spurious Emission (802.11g, Ch11, 1 GHz-2.5 GHz)

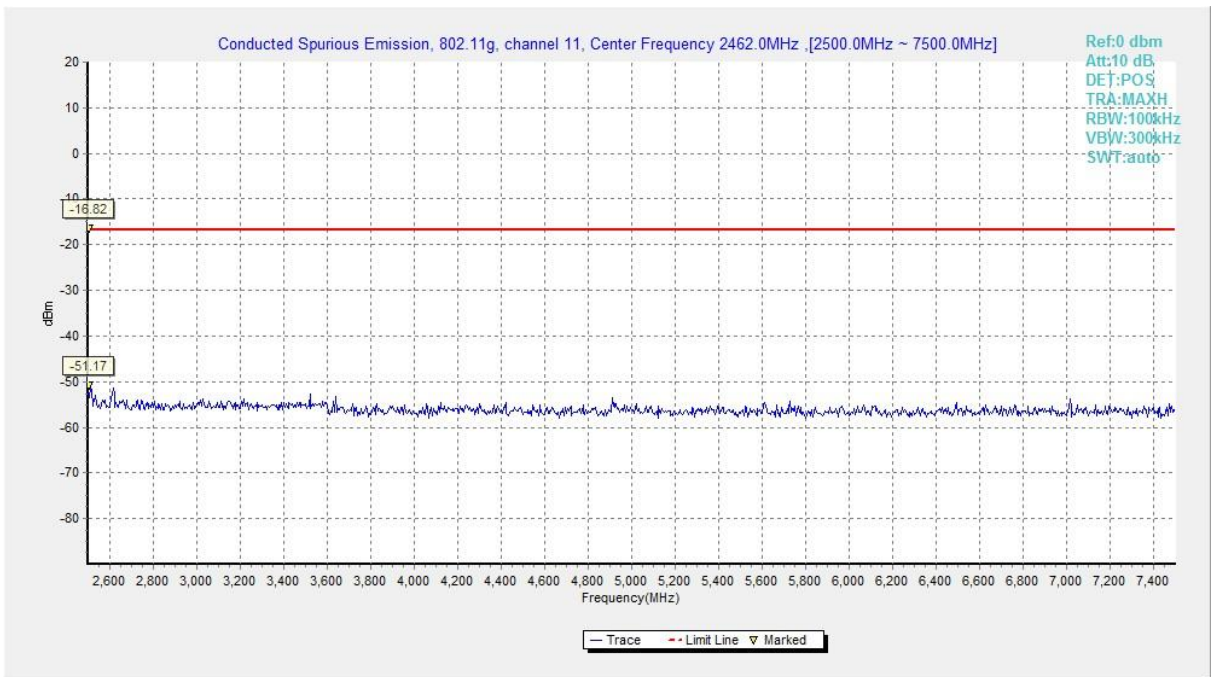


Fig.A.6.1.44 Conducted Spurious Emission (802.11g, Ch11, 2.5 GHz-7.5 GHz)

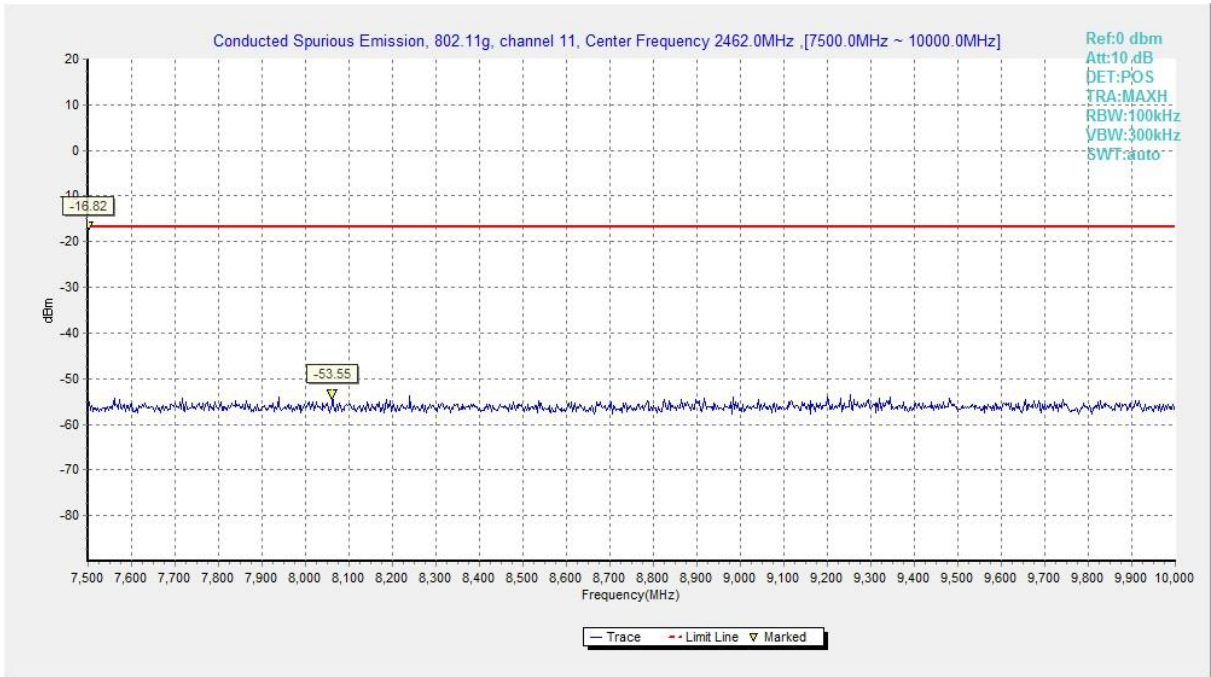


Fig.A.6.1.45 Conducted Spurious Emission (802.11g, Ch11, 7.5 GHz-10 GHz)

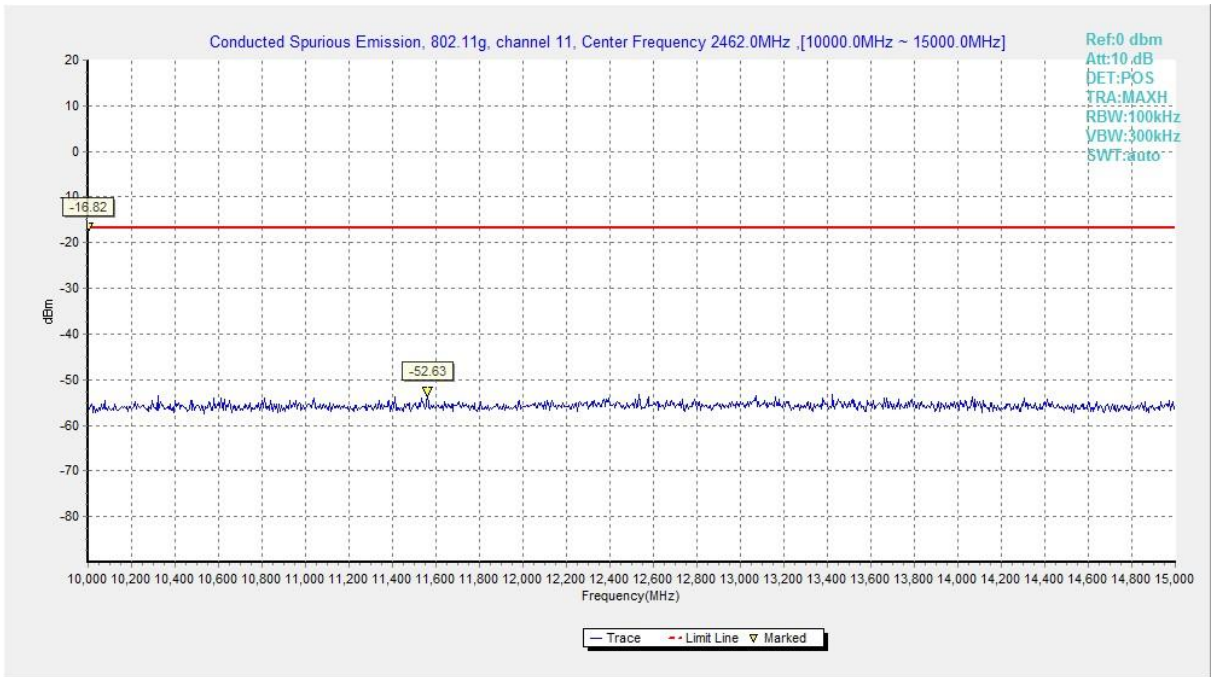


Fig.A.6.1.46 Conducted Spurious Emission (802.11g, Ch11, 10 GHz-15 GHz)

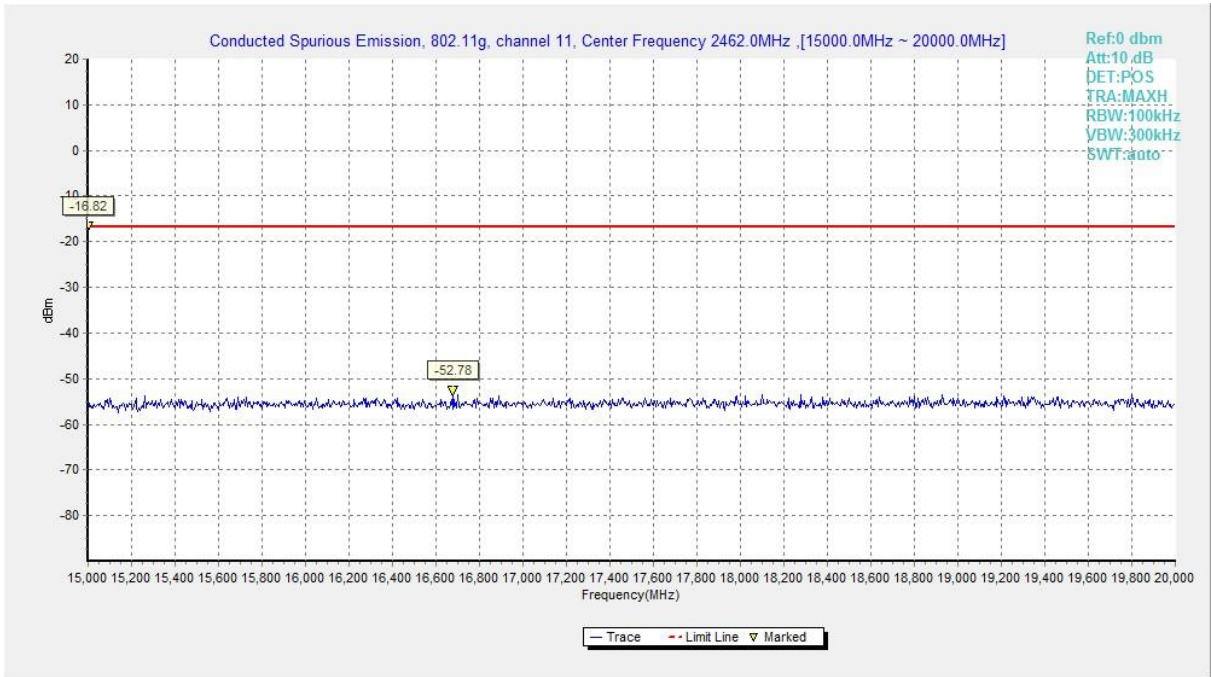


Fig.A.6.1.47 Conducted Spurious Emission (802.11g, Ch11, 15 GHz-20 GHz)

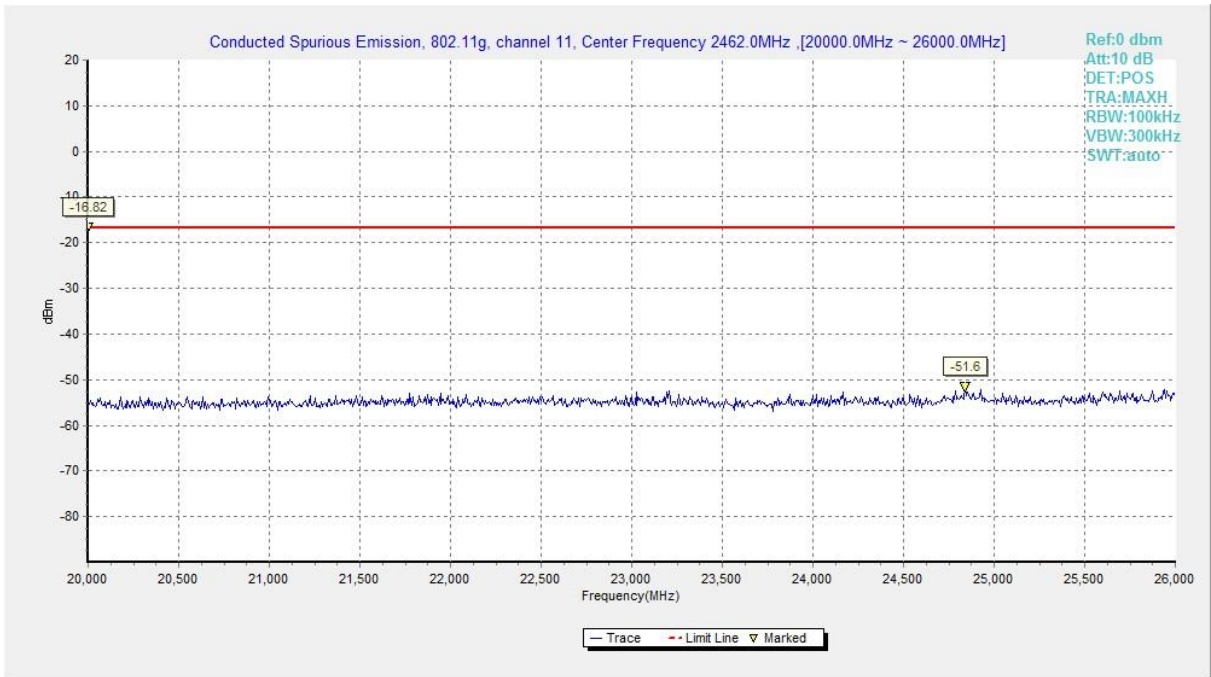


Fig.A.6.1.48 Conducted Spurious Emission (802.11g, Ch11, 20 GHz-26 GHz)

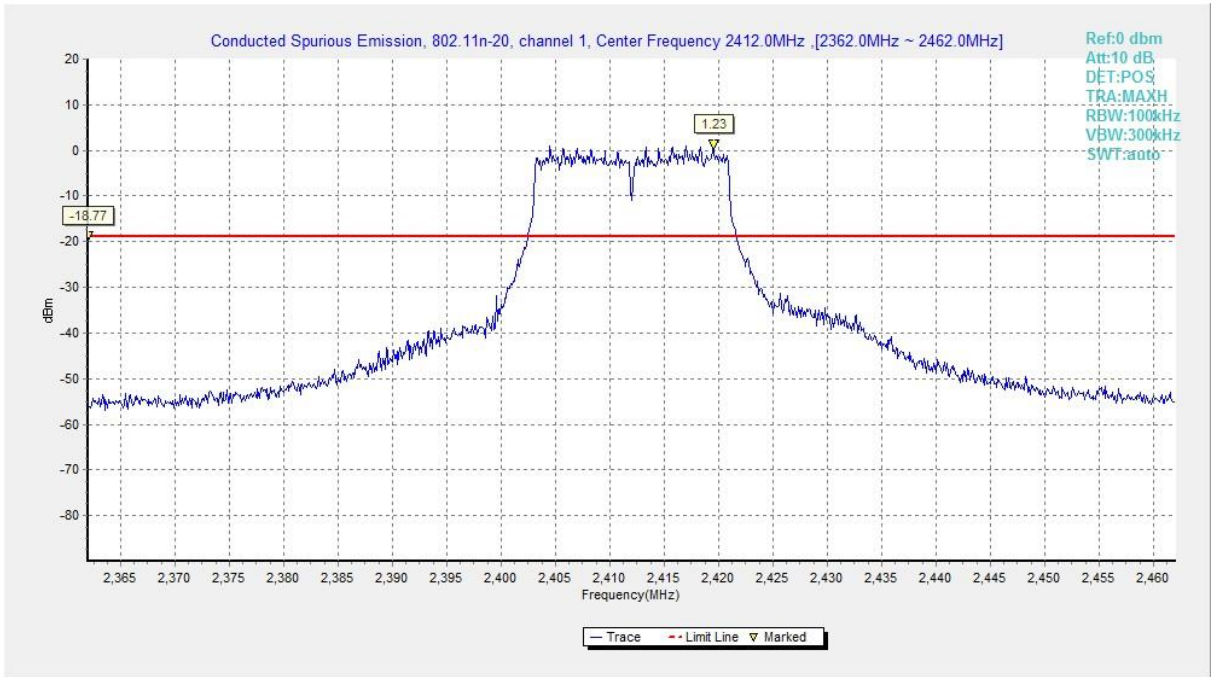


Fig.A.6.1.49 Conducted Spurious Emission (802.11n-HT20, Ch1, Center Frequency)

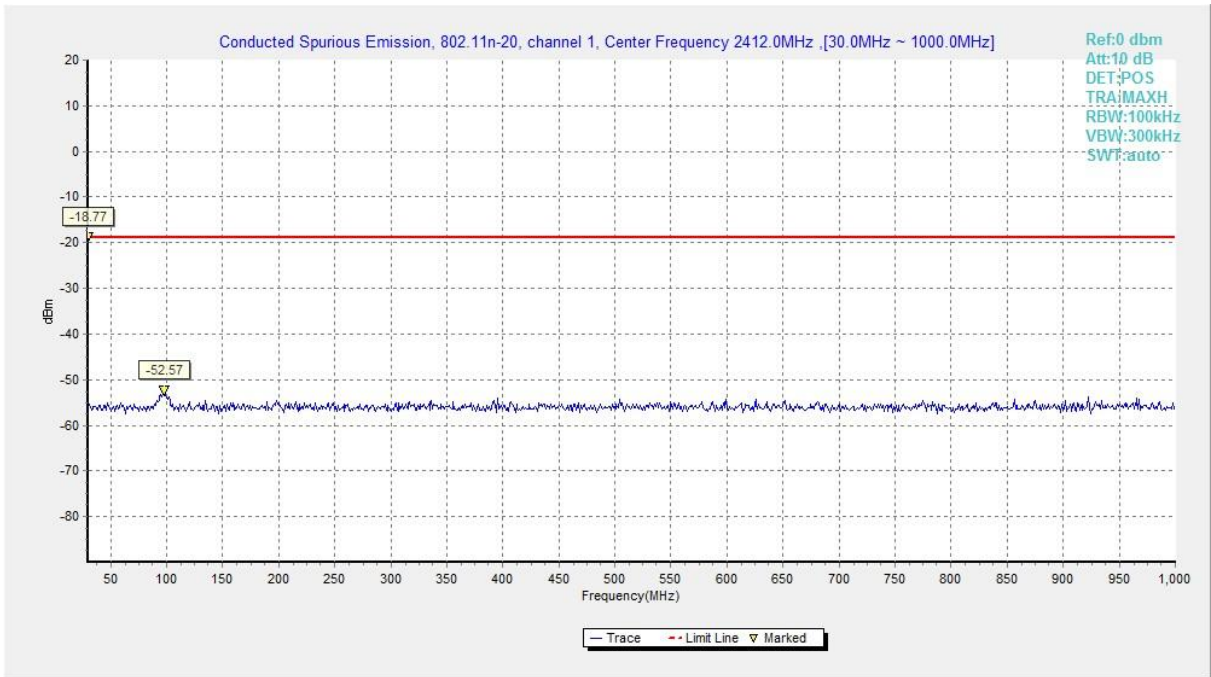


Fig.A.6.1.50 Conducted Spurious Emission (802.11n-HT20, Ch1, 30 MHz-1 GHz)

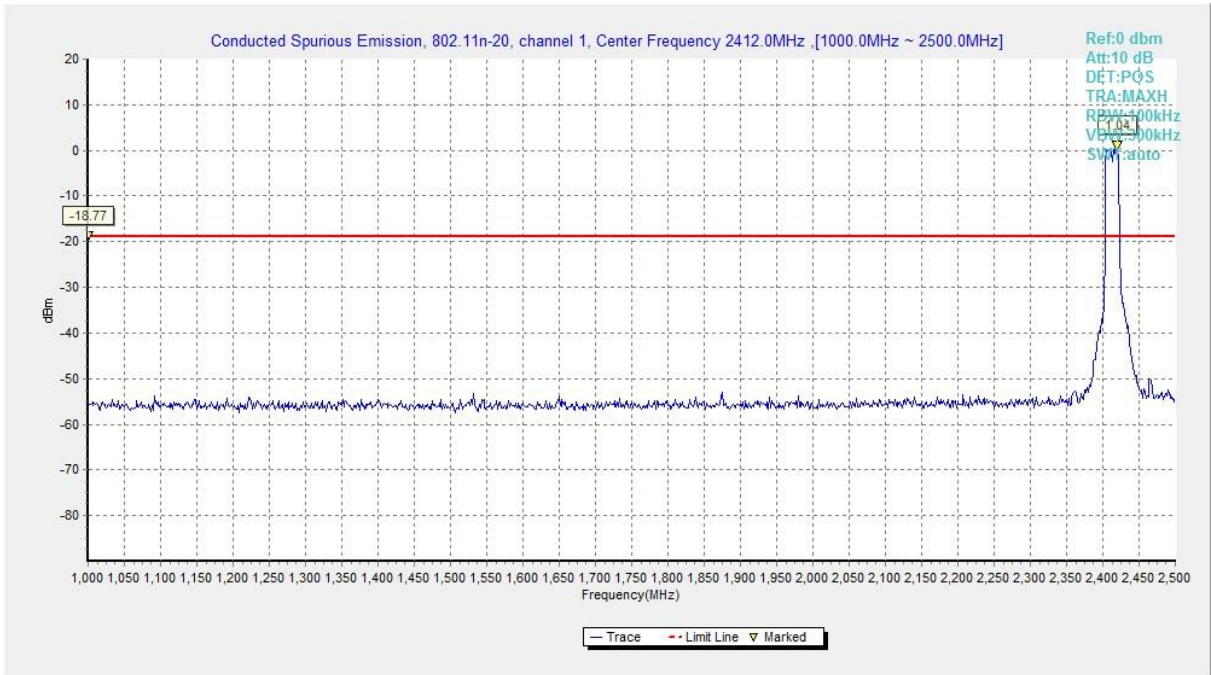


Fig.A.6.1.51 Conducted Spurious Emission (802.11n-HT20, Ch1, 1 GHz-2.5 GHz)

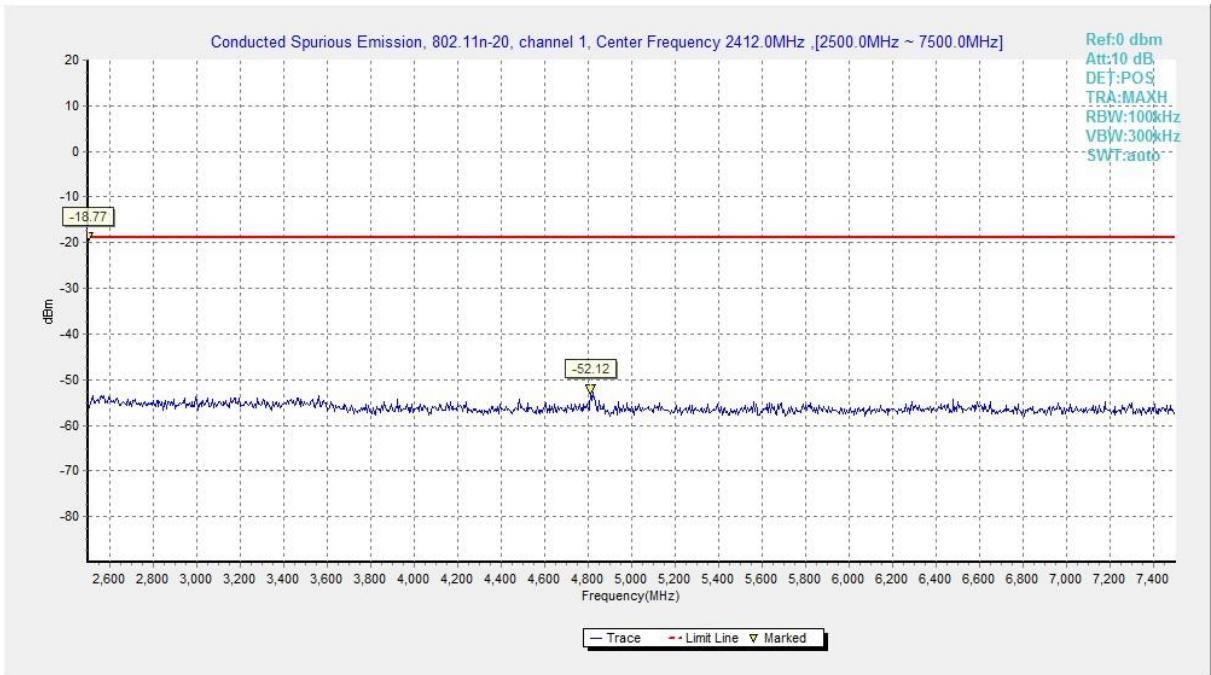


Fig.A.6.1.52 Conducted Spurious Emission (802.11n-HT20, Ch1, 2.5 GHz-7.5 GHz)

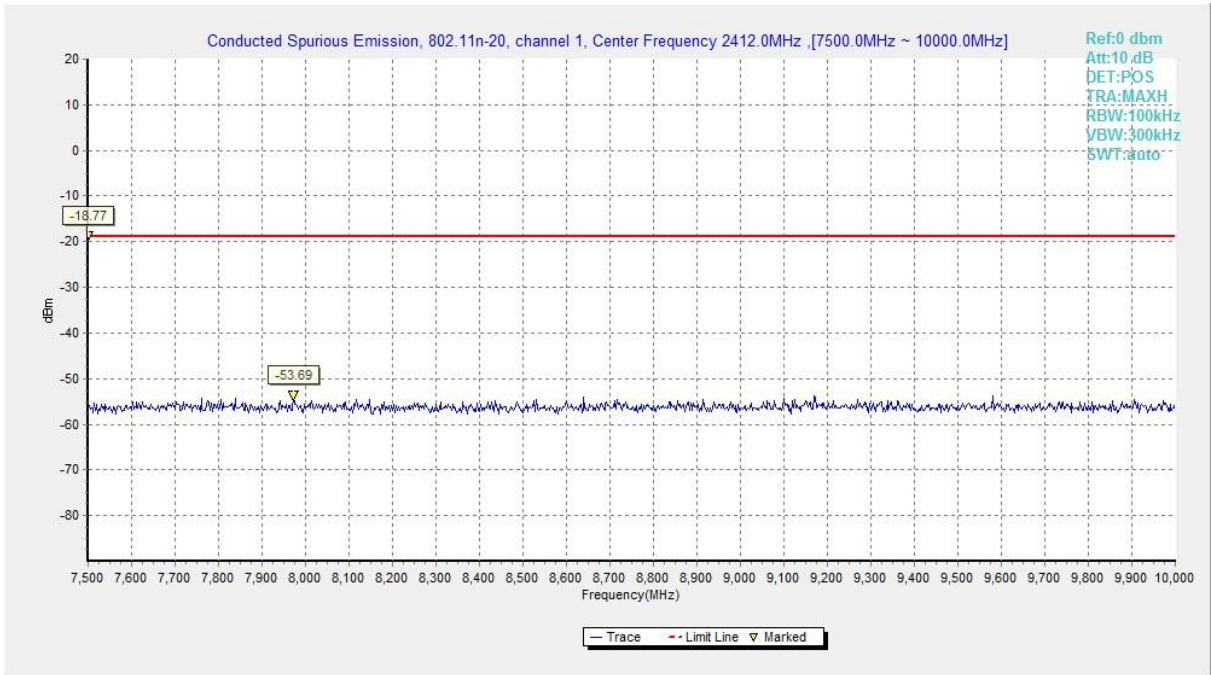


Fig.A.6.1.53 Conducted Spurious Emission (802.11n-HT20, Ch1, 7.5 GHz-10 GHz)

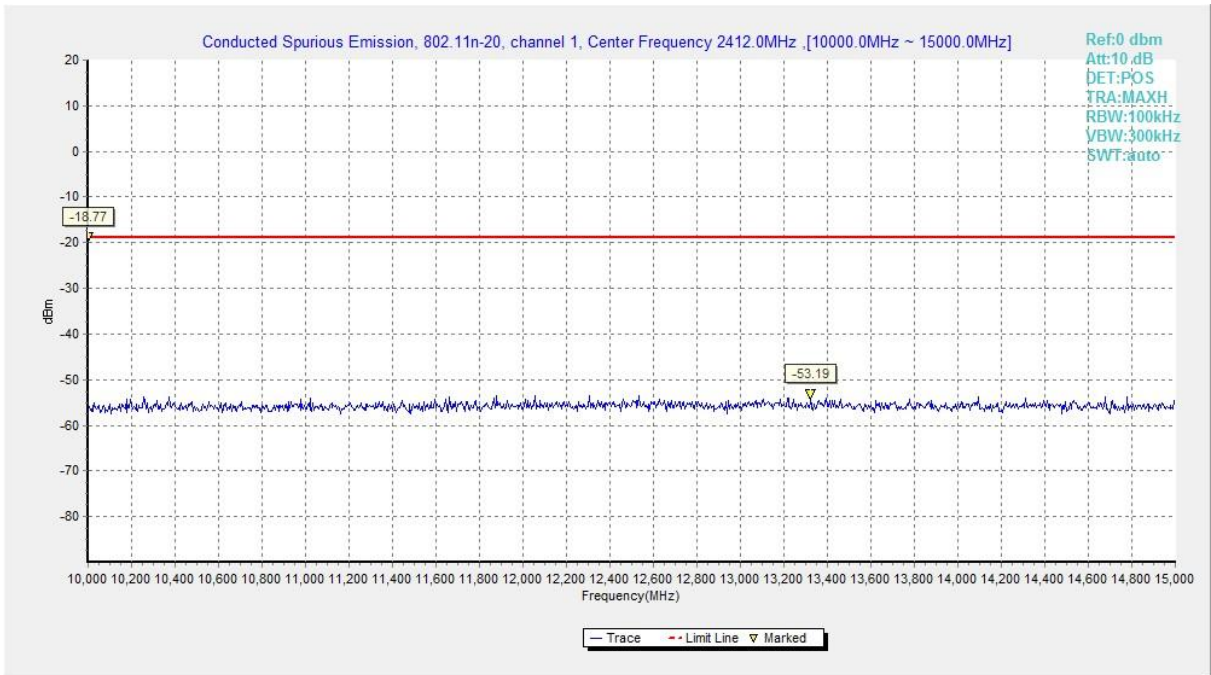


Fig.A.6.1.54 Conducted Spurious Emission (802.11n-HT20, Ch1, 10 GHz-15 GHz)

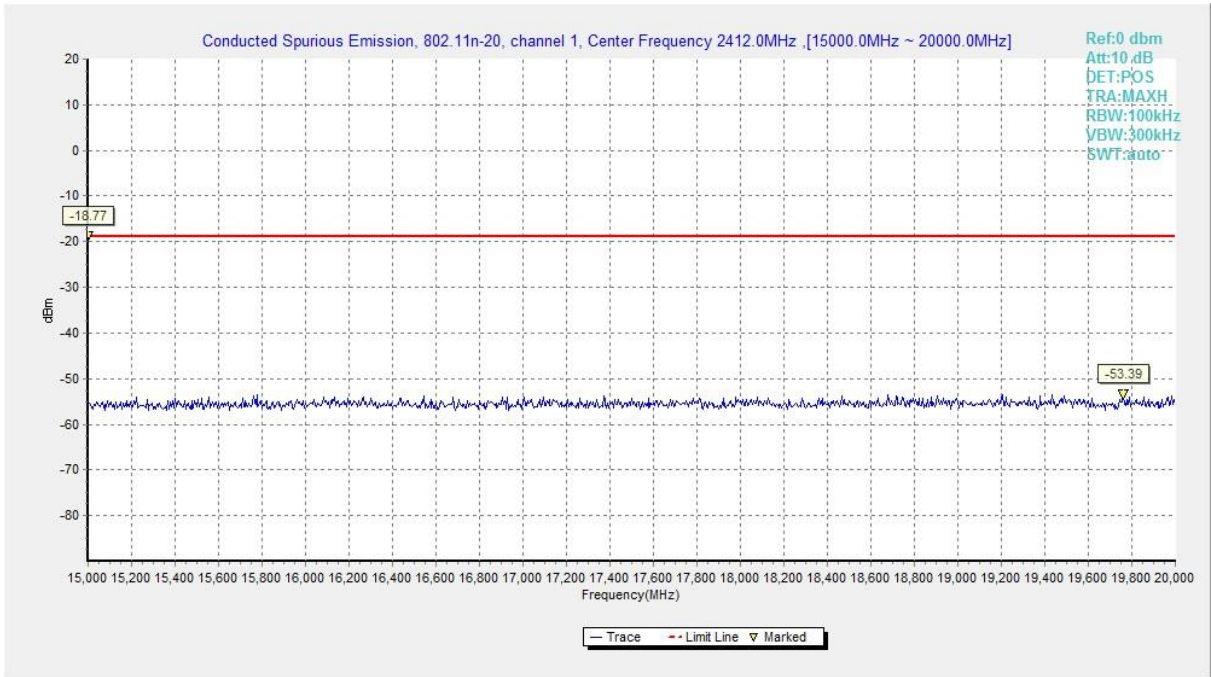


Fig.A.6.1.55 Conducted Spurious Emission (802.11n-HT20, Ch1, 15 GHz-20 GHz)

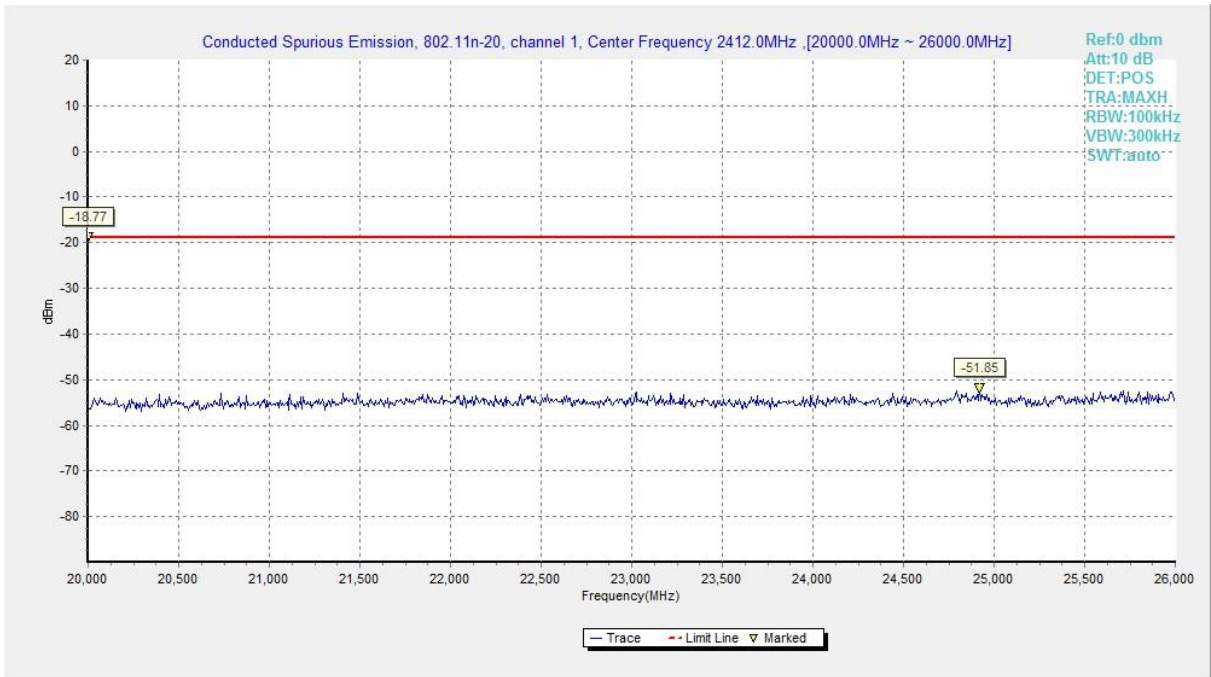


Fig.A.6.1.56 Conducted Spurious Emission (802.11n-HT20, Ch1, 20 GHz-26 GHz)

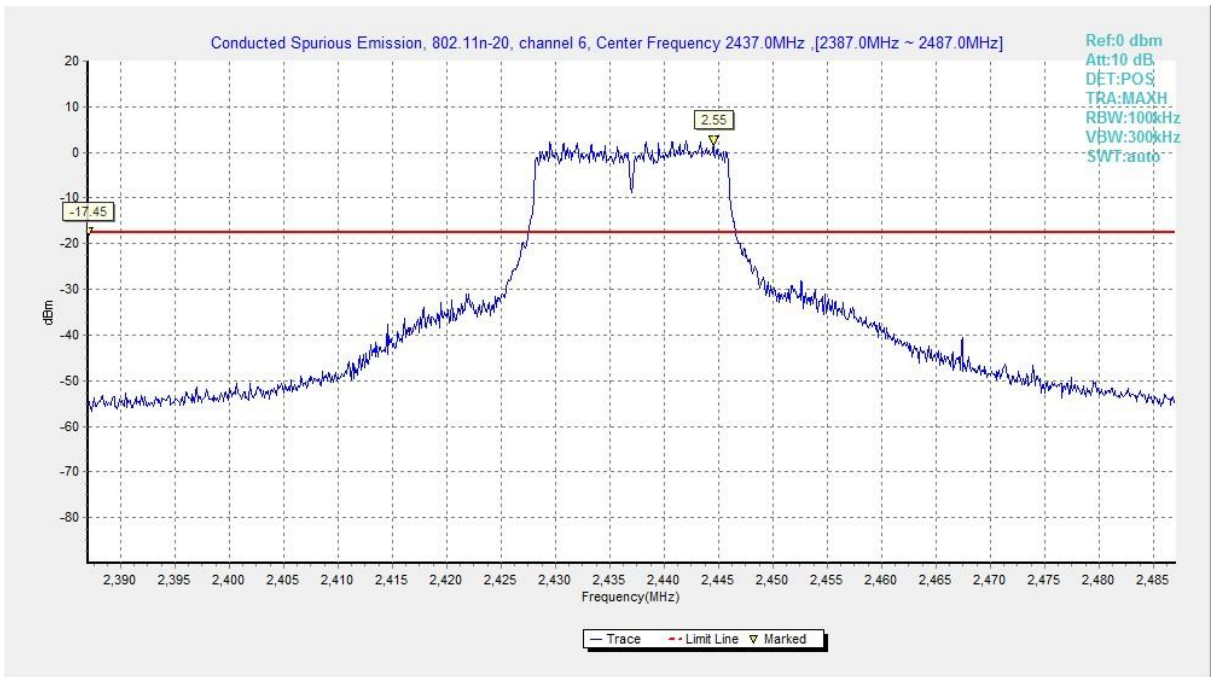


Fig.A.6.1.57 Conducted Spurious Emission (802.11n-HT20, Ch6, Center Frequency)

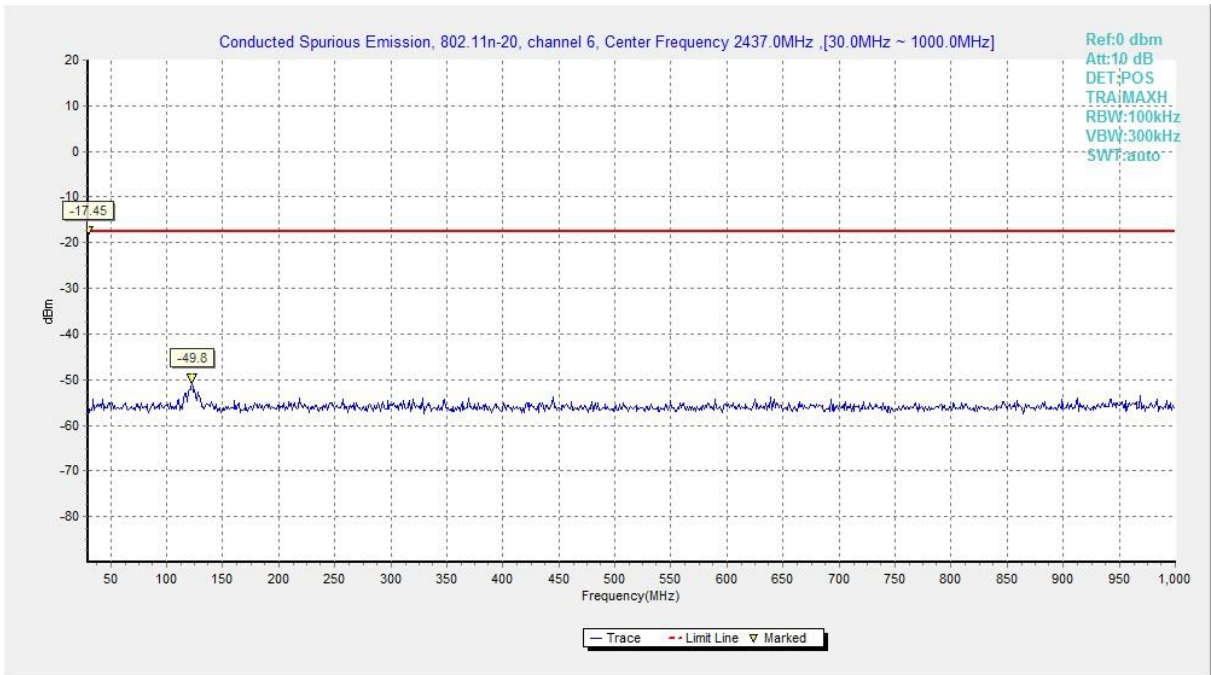


Fig.A.6.1.58 Conducted Spurious Emission (802.11n-HT20, Ch6, 30 MHz-1 GHz)

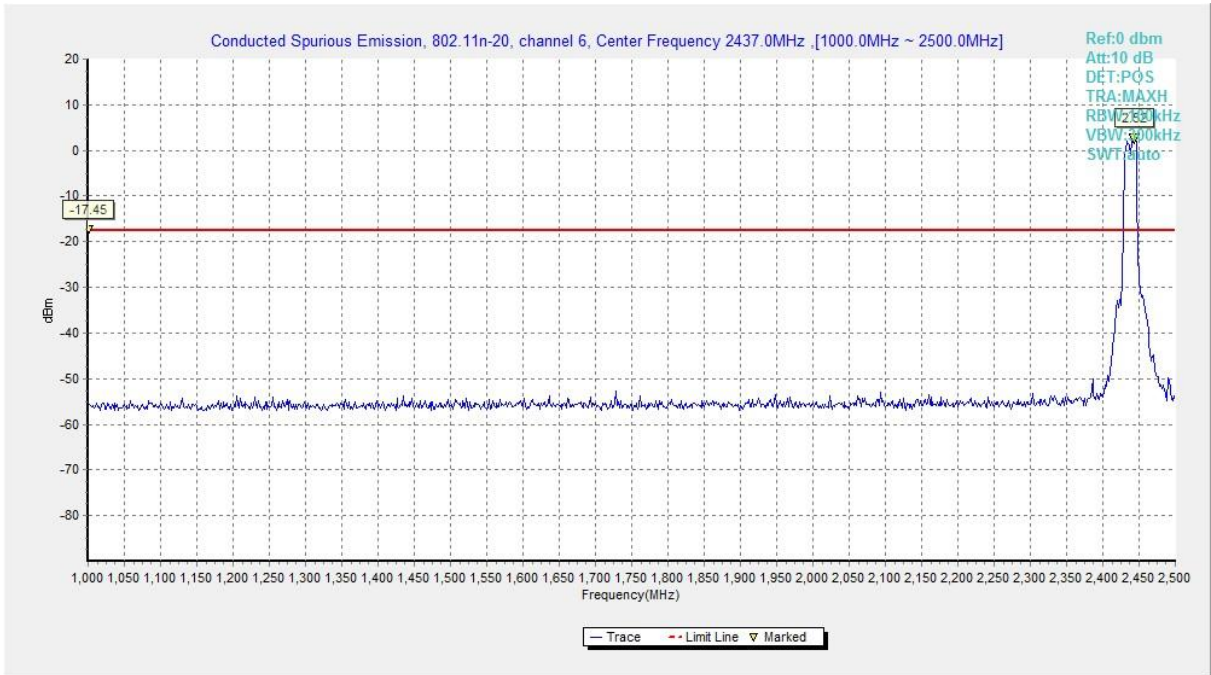


Fig.A.6.1.59 Conducted Spurious Emission (802.11n-HT20, Ch6, 1 GHz-2.5 GHz)

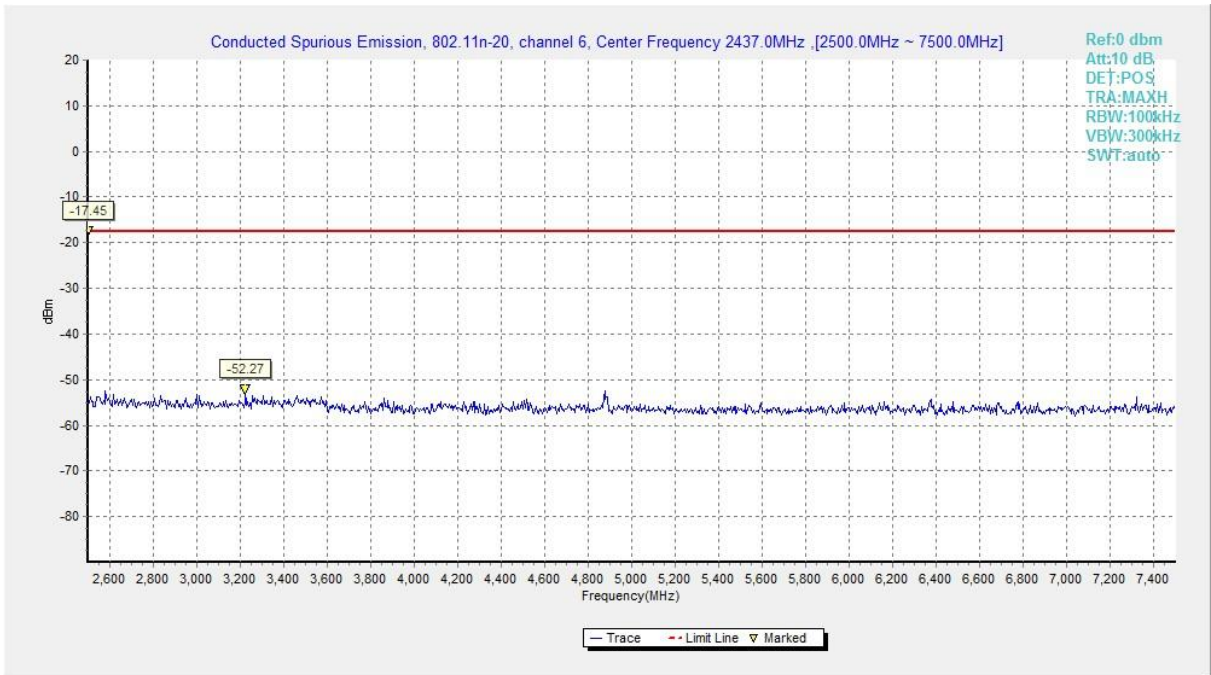


Fig.A.6.1.60 Conducted Spurious Emission (802.11n-HT20, Ch6, 2.5 GHz-7.5 GHz)

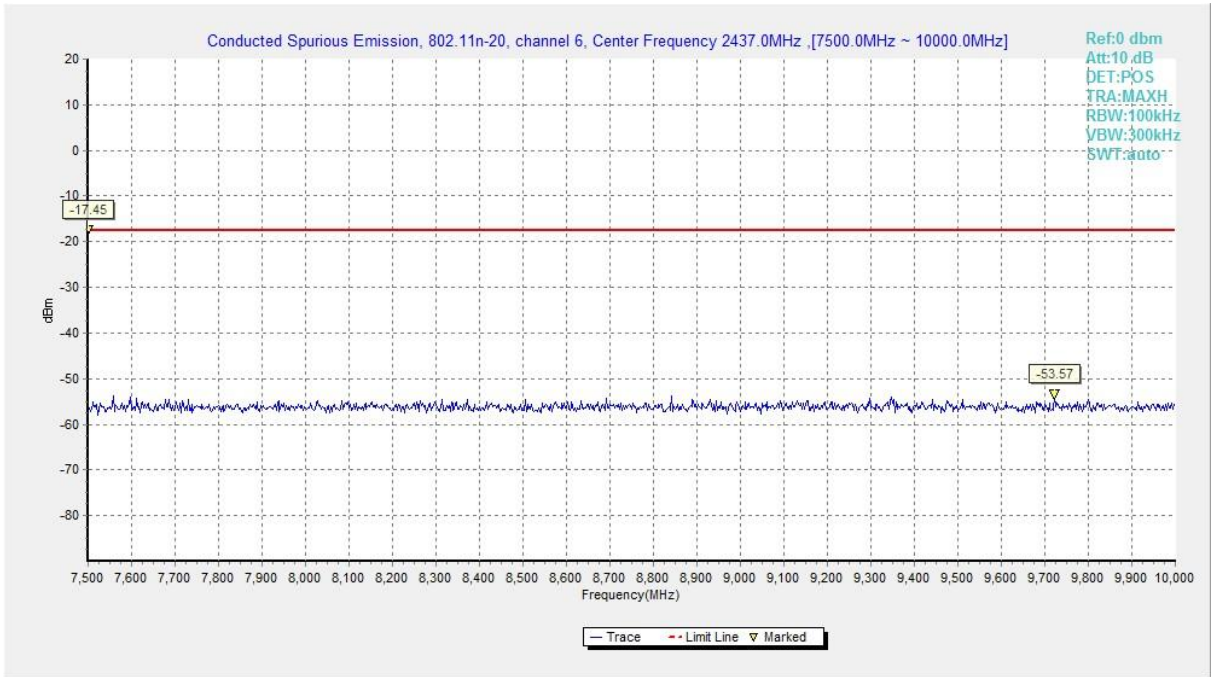


Fig.A.6.1.61 Conducted Spurious Emission (802.11n-HT20, Ch6, 7.5 GHz-10 GHz)

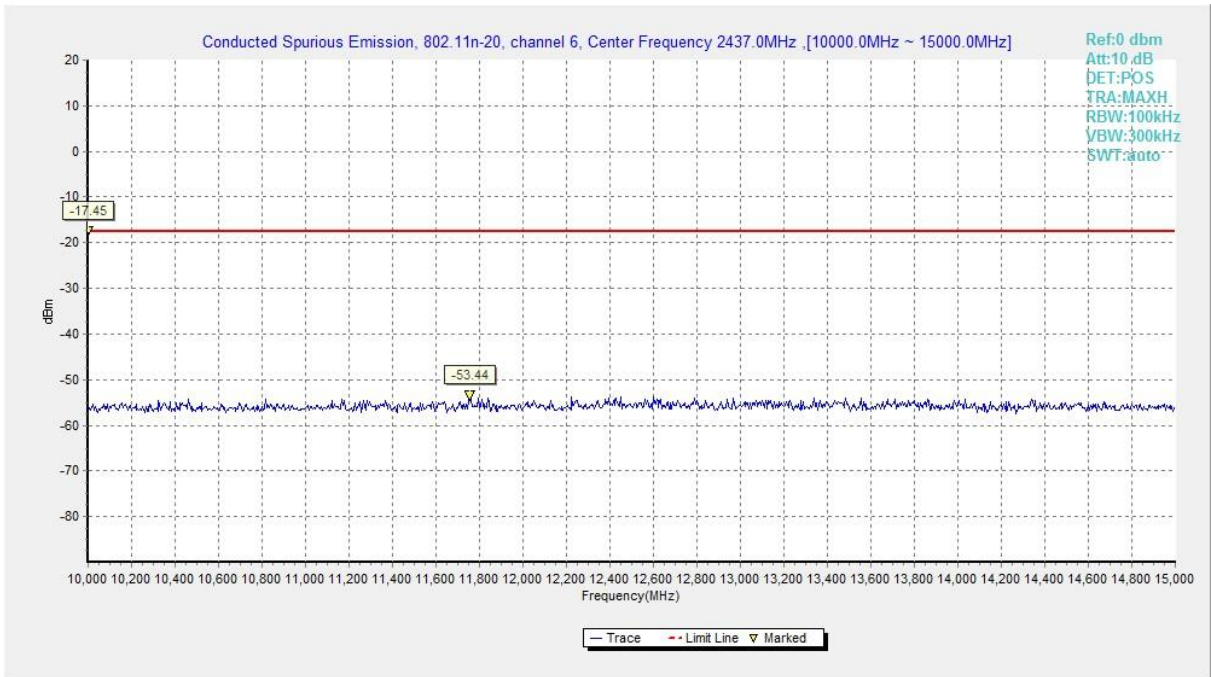


Fig.A.6.1.62 Conducted Spurious Emission (802.11n-HT20, Ch6, 10 GHz-15 GHz)

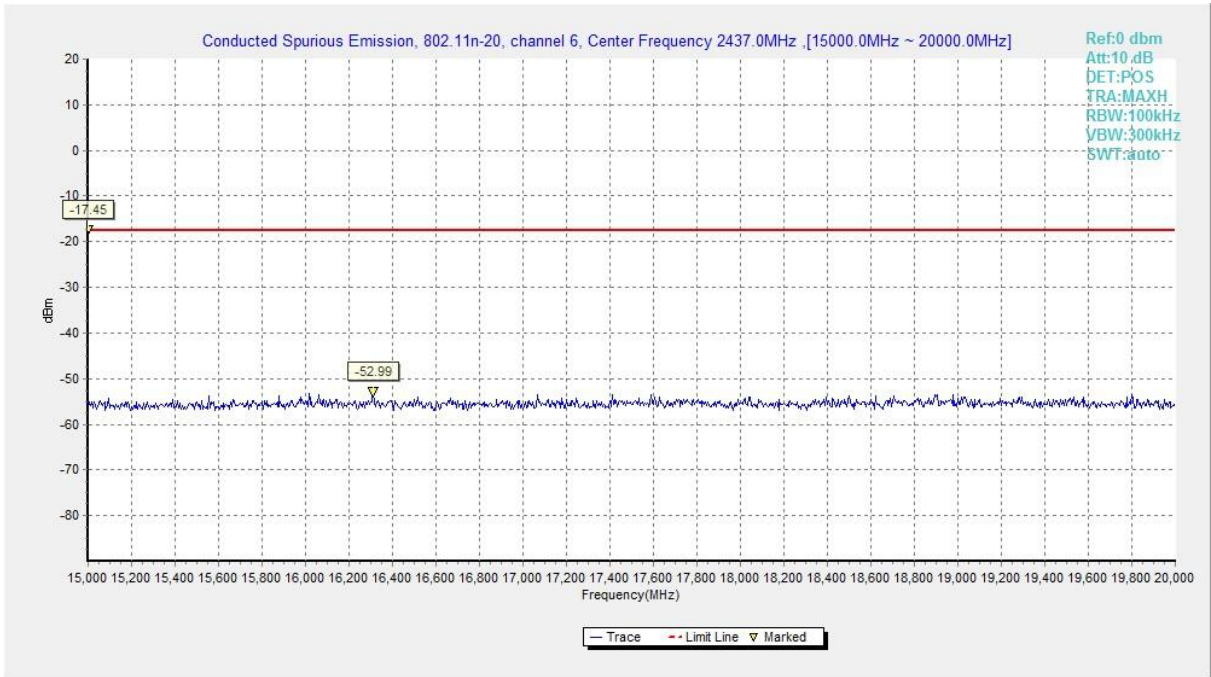


Fig.A.6.1.63 Conducted Spurious Emission (802.11n-HT20, Ch6, 15 GHz-20 GHz)

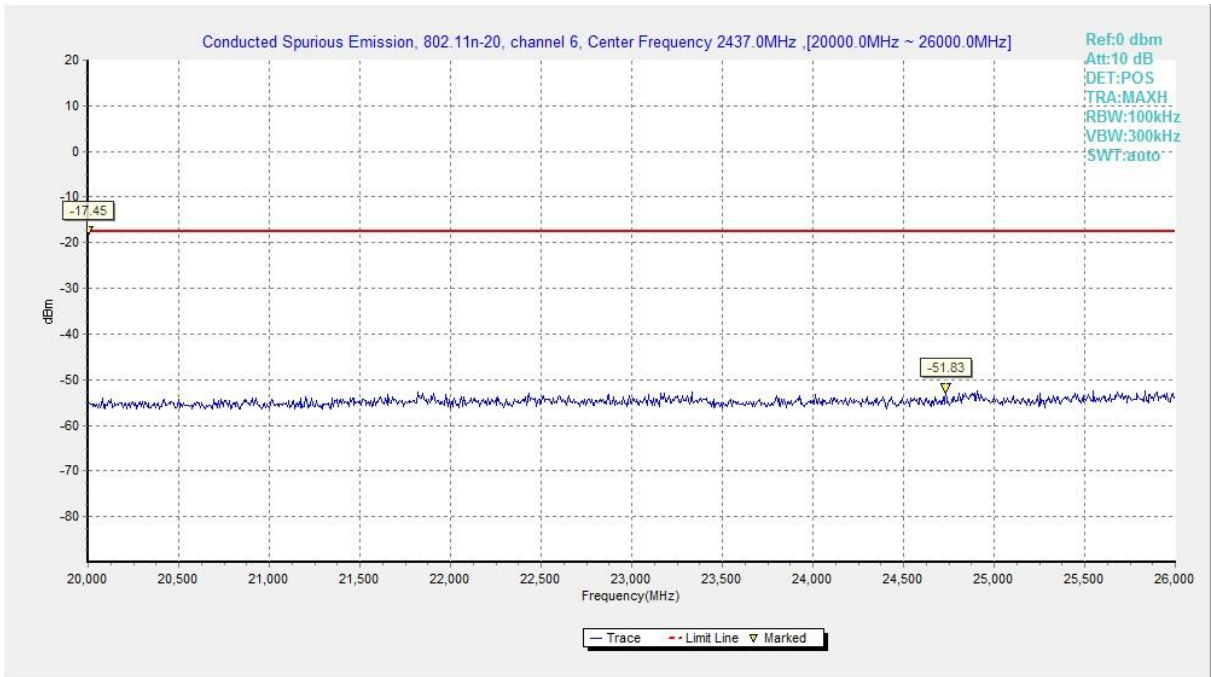


Fig.A.6.1.64 Conducted Spurious Emission (802.11n-HT20, Ch6, 20 GHz-26 GHz)

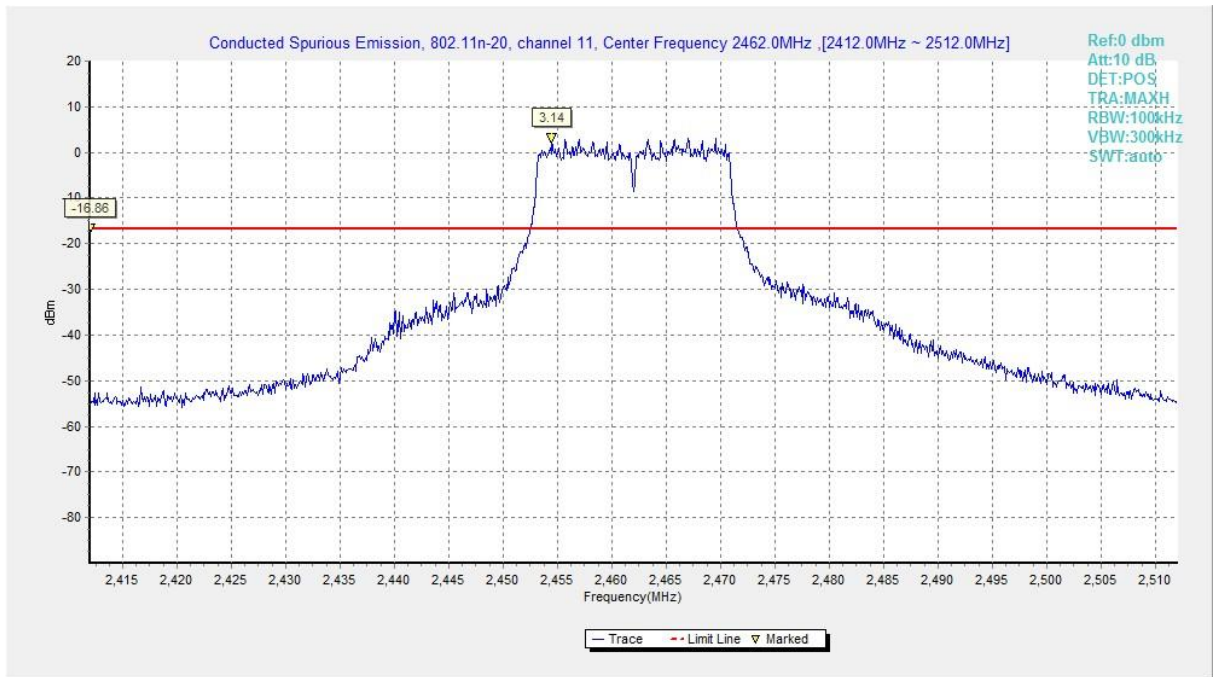


Fig.A.6.1.65 Conducted Spurious Emission (802.11n-HT20, Ch11, Center Frequency)

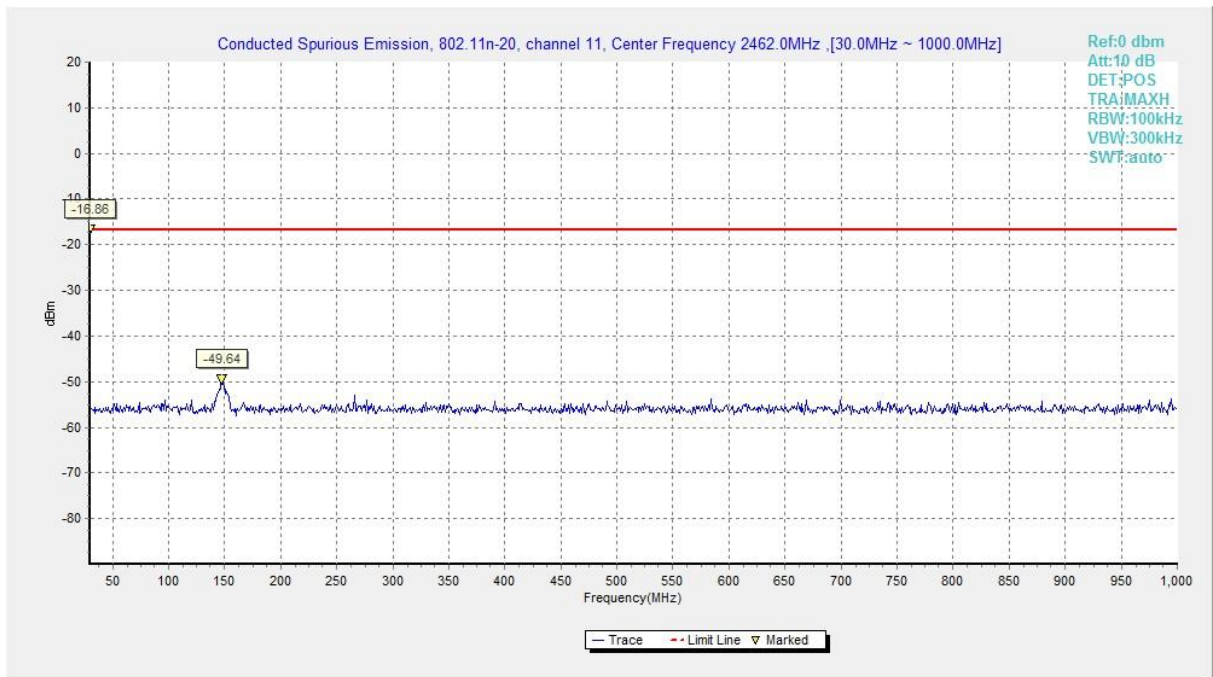


Fig.A.6.1.66 Conducted Spurious Emission (802.11n-HT20, Ch11, 30 MHz-1 GHz)

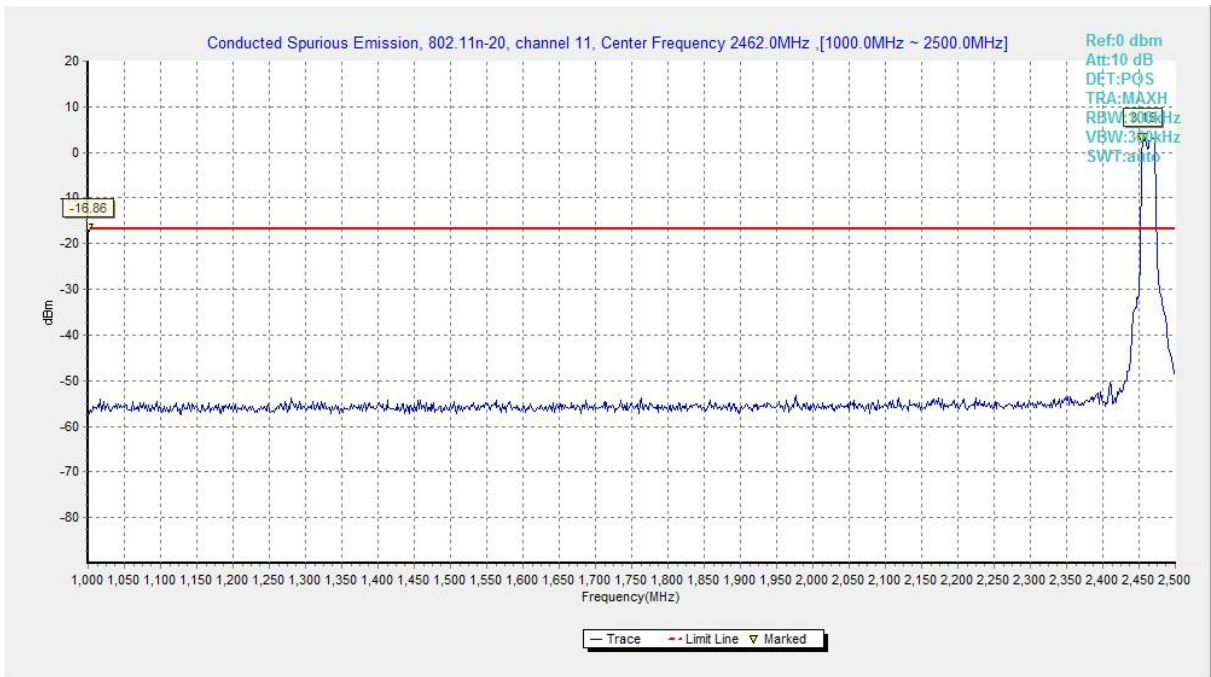


Fig.A.6.1.67 Conducted Spurious Emission (802.11n-HT20, Ch11, 1 GHz-2.5 GHz)

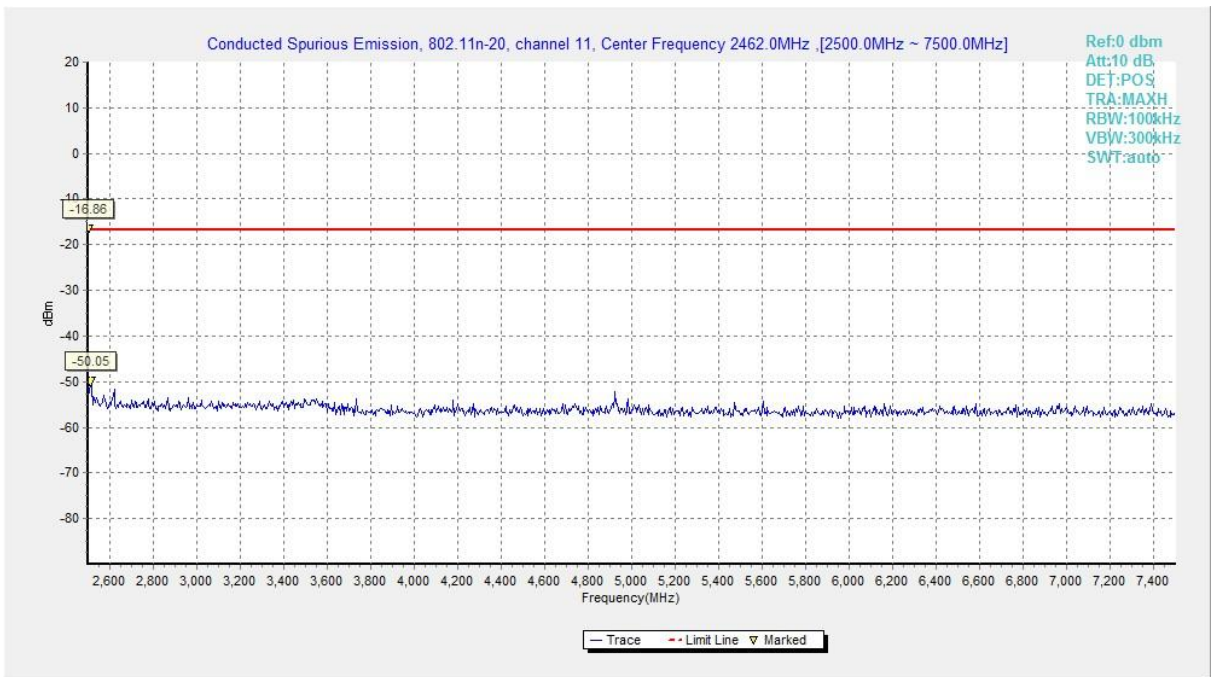


Fig.A.6.1.68 Conducted Spurious Emission (802.11n-HT20, Ch11, 2.5 GHz-7.5 GHz)

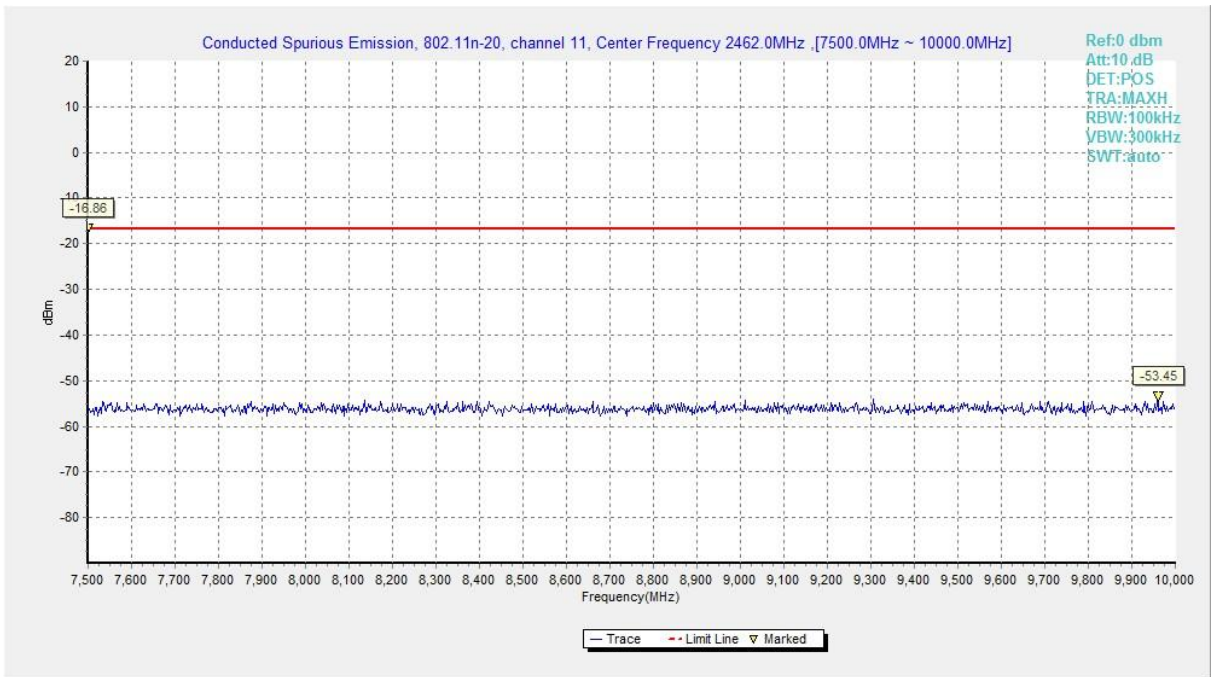


Fig.A.6.1.69 Conducted Spurious Emission (802.11n-HT20, Ch11, 7.5 GHz-10 GHz)

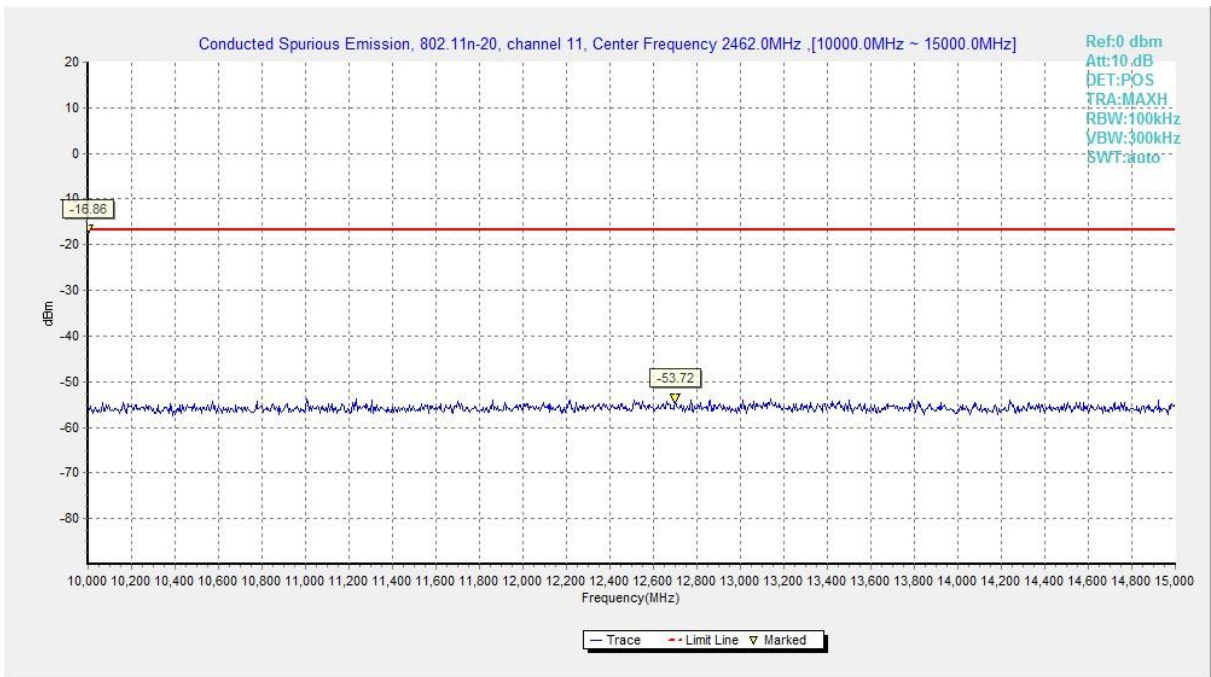


Fig.A.6.1.70 Conducted Spurious Emission (802.11n-HT20, Ch11, 10 GHz-15 GHz)

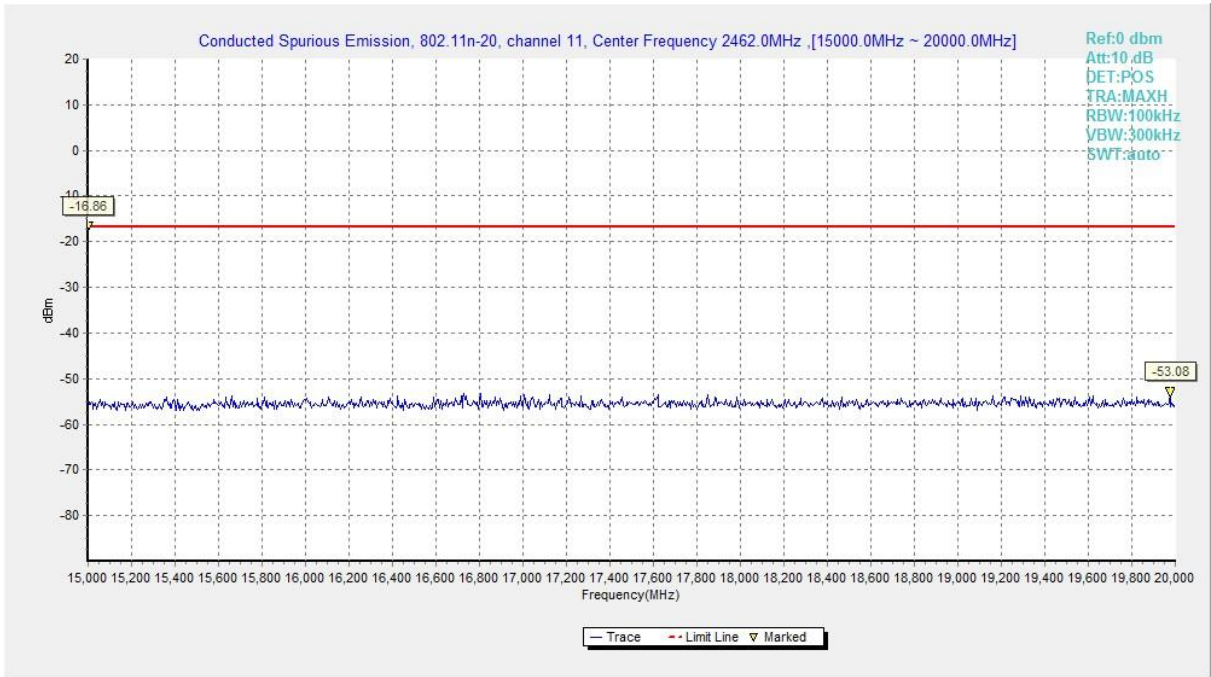


Fig.A.6.1.71 Conducted Spurious Emission (802.11n-HT20, Ch11, 15 GHz-20 GHz)

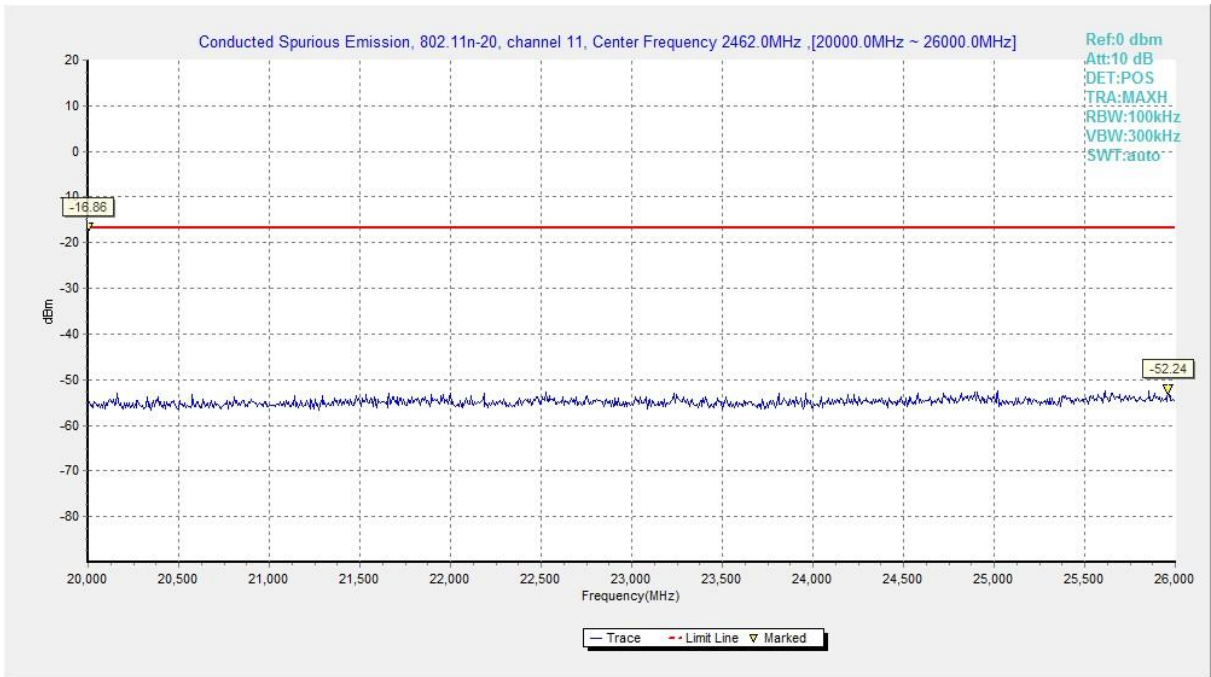


Fig.A.6.1.72 Conducted Spurious Emission (802.11n-HT20, Ch11, 20 GHz-26 GHz)

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	1 GHz ~ 3 GHz	Fig.A.6.2.2	P
		3 GHz ~ 18 GHz	Fig.A.6.2.3	P
	6	30 MHz ~1 GHz	Fig.A.6.2.4	P
		1 GHz ~ 3 GHz	Fig.A.6.2.5	P
		3 GHz ~ 18 GHz	Fig.A.6.2.6	P
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.7	P
	11	1 GHz ~ 3 GHz	Fig.A.6.2.8	P
		3 GHz ~ 18 GHz	Fig.A.6.2.9	P
	802.11g	Power	2.38GHz ~2.43GHz	Fig.A.6.2.10
1		1 GHz ~ 3 GHz	Fig.A.6.2.11	P
		3 GHz ~ 18 GHz	Fig.A.6.2.12	P
6		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
Power		2.45GHz ~2.5GHz	Fig.A.6.2.16	P
11		1 GHz ~ 3 GHz	Fig.A.6.2.17	P
		3 GHz ~ 18 GHz	Fig.A.6.2.18	P

802.11n mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	Power	2.38GHz ~2.45GHz	Fig.A.6.2.19	P
	1	1 GHz ~ 3 GHz	Fig.A.6.2.20	P
		3 GHz ~ 18 GHz	Fig.A.6.2.21	P
	6	30 MHz ~1 GHz	Fig.A.6.2.22	P
		1 GHz ~ 3 GHz	Fig.A.6.2.23	P
		3 GHz ~ 18 GHz	Fig.A.6.2.24	P
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.25	P
	11	1 GHz ~ 3 GHz	Fig.A.6.2.26	P
		3 GHz ~ 18 GHz	Fig.A.6.2.27	P
	/	All channels	18 GHz~ 26.5 GHz	Fig.A.6.2.28

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:

$$\text{Result} = P_{Mea} + A_{Rpl} = P_{Mea} + \text{Cable Loss} + \text{Antenna Factor}$$

802.11b

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2388.000	43.5	-38.8	27.7	54.600	HORIZONTAL
17710.500	56.2	-18.9	45.6	29.500	VERTICAL
17709.000	56.2	-18.9	45.6	29.500	HORIZONTAL
17665.500	55.8	-18.9	45.6	29.100	VERTICAL
17982.000	55.3	-17.7	45.6	27.400	VERTICAL
17682.000	55.2	-18.9	45.6	28.500	HORIZONTAL

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17710.500	55.8	-18.9	45.6	29.100	HORIZONTAL
17695.500	55.7	-18.9	45.6	29.000	VERTICAL
17709.000	55.3	-18.9	45.6	28.600	VERTICAL
17508.000	55.1	-19.2	45.6	28.700	VERTICAL
17677.500	55.1	-18.9	45.6	28.400	VERTICAL
17662.500	54.8	-18.9	45.6	28.100	VERTICAL

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2484.280	43.4	-38.9	27.7	54.600	VERTICAL
17950.500	55.7	-17.7	45.6	27.800	HORIZONTAL
17674.500	55.3	-18.9	45.6	28.600	HORIZONTAL
17919.000	55.1	-17.7	45.6	27.200	VERTICAL
17710.500	55.1	-18.9	45.6	28.400	VERTICAL
17712.000	55.0	-18.9	45.6	28.300	VERTICAL

802.11g

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
2389.800	52.8	-38.8	27.7	63.900	HORIZONTAL
17974.500	55.2	-17.7	45.6	27.300	VERTICAL
17712.000	54.9	-18.9	45.6	28.200	HORIZONTAL
17731.500	54.9	-18.9	45.6	28.200	VERTICAL
17907.000	54.9	-18.5	45.6	27.800	VERTICAL
17677.500	54.8	-18.9	45.6	28.100	VERTICAL

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
17955.000	54.7	-17.7	45.6	26.800	HORIZONTAL
17701.500	54.7	-18.9	45.6	28.000	VERTICAL
17667.000	54.6	-18.9	45.6	27.900	VERTICAL
17956.500	54.6	-17.7	45.6	26.700	VERTICAL
17719.500	54.6	-18.9	45.6	27.900	VERTICAL
17644.500	54.6	-18.9	45.6	27.900	HORIZONTAL

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
2484.000	54.3	-38.9	27.7	65.500	HORIZONTAL
17985.000	55.0	-17.7	45.6	27.100	HORIZONTAL
17716.500	54.9	-18.9	45.6	28.200	VERTICAL
17992.500	54.9	-17.7	45.6	27.000	VERTICAL
17946.000	54.8	-17.7	45.6	26.900	VERTICAL
17970.000	54.7	-17.7	45.6	26.800	VERTICAL

802.11n-HT20

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
2389.500	53.9	-38.8	27.7	65.000	VERTICAL
17709.000	55.9	-18.9	45.6	29.200	VERTICAL
17721.000	55.5	-18.9	45.6	28.800	HORIZONTAL
17911.500	55.2	-18.5	45.6	28.100	VERTICAL
17727.000	55.2	-18.9	45.6	28.500	VERTICAL
17670.000	55.1	-18.9	45.6	28.400	VERTICAL

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
17638.500	55.7	-18.9	45.6	29.000	VERTICAL
17989.500	55.0	-17.7	45.6	27.100	VERTICAL
17683.500	54.9	-18.9	45.6	28.200	VERTICAL
17964.000	54.8	-17.7	45.6	26.900	HORIZONTAL
17863.500	54.7	-18.5	45.6	27.600	VERTICAL
17719.500	54.7	-18.9	45.6	28.000	VERTICAL

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
2483.860	53.0	-38.9	27.7	64.200	VERTICAL
17835.000	55.0	-18.5	45.6	27.900	VERTICAL
17854.500	54.7	-18.5	45.6	27.600	HORIZONTAL
17901.000	54.7	-18.5	45.6	27.600	VERTICAL
17919.000	54.5	-17.7	45.6	26.600	VERTICAL
17826.000	54.5	-18.5	45.6	27.400	VERTICAL

Test graphs as below:

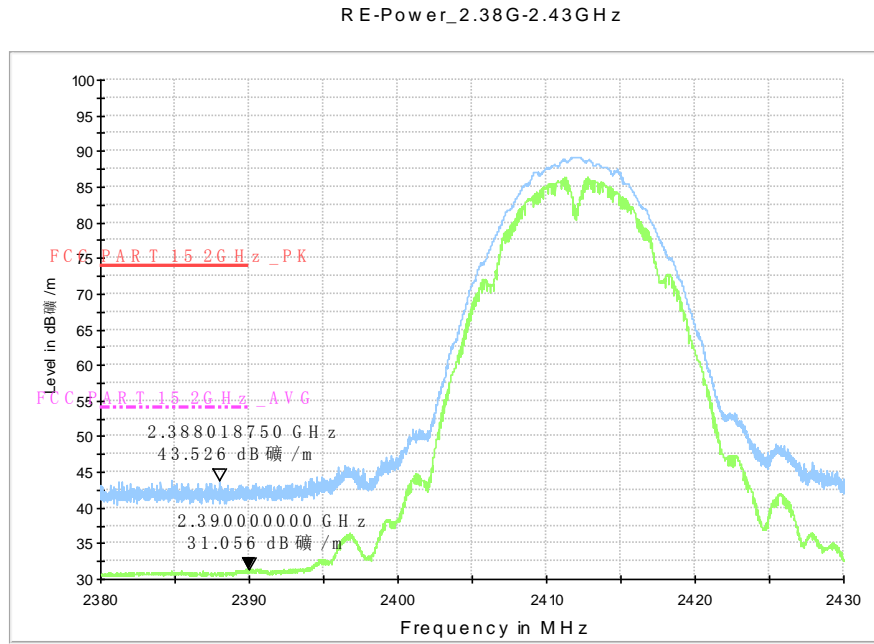


Fig.A.6.2.1 Radiated Spurious Emission (Power): 802.11b, ch1, 2.38 GHz – 2.45GHz

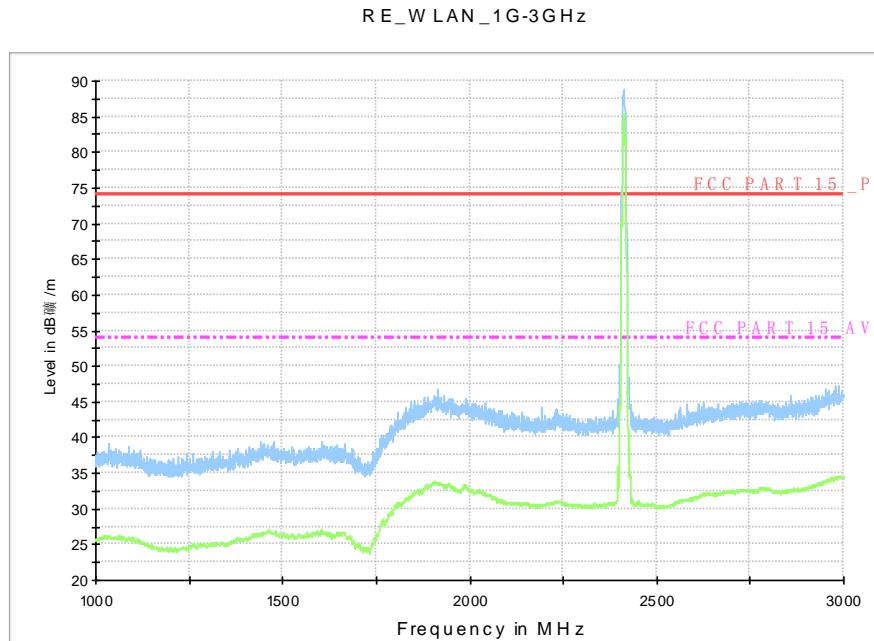


Fig.A.6.2.2 Radiated Spurious Emission (802.11b, Ch1, 1 GHz-3 GHz)

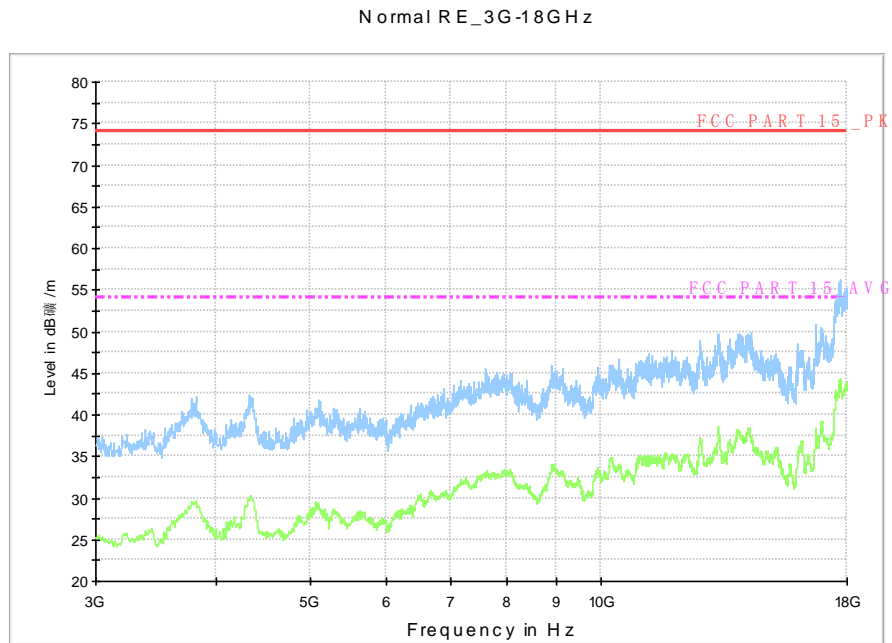


Fig.A.6.2.3 Radiated Spurious Emission (802.11b, Ch1, 3 GHz-18 GHz)

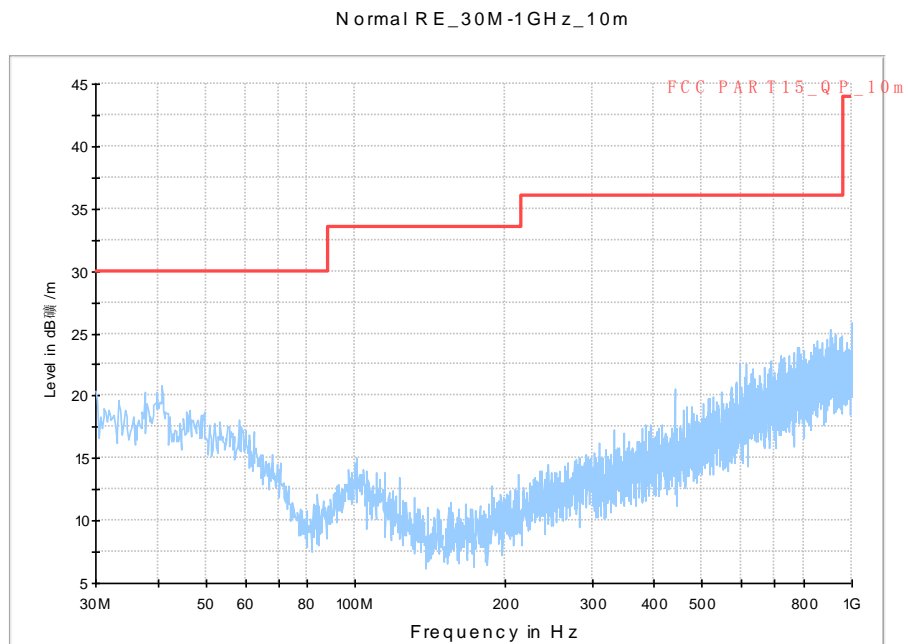


Fig.A.6.2.4 Radiated Spurious Emission (802.11b, Ch6, 30 MHz-1 GHz)

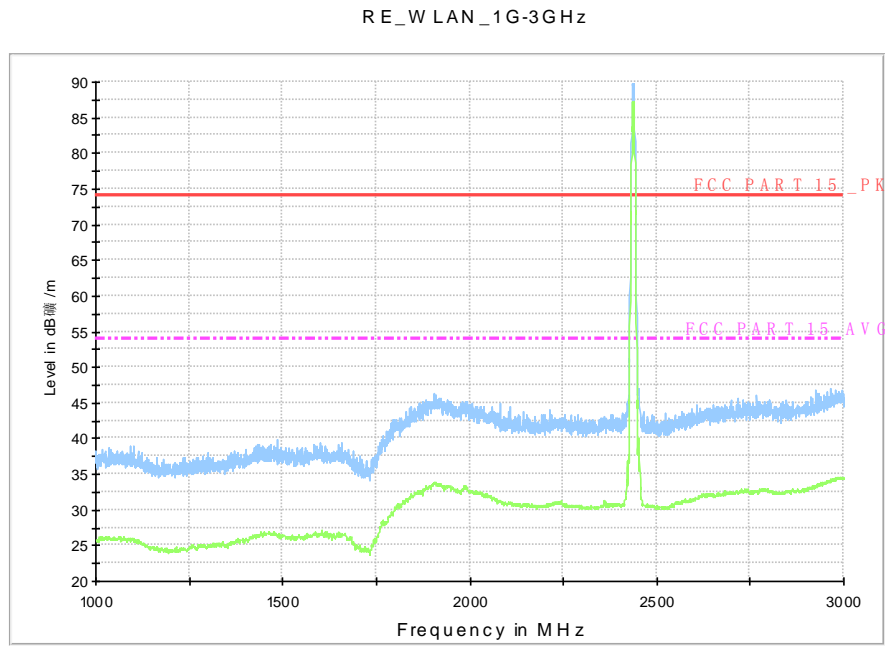


Fig.A.6.2.5 Radiated Spurious Emission (802.11b, Ch6, 1 GHz-3 GHz)

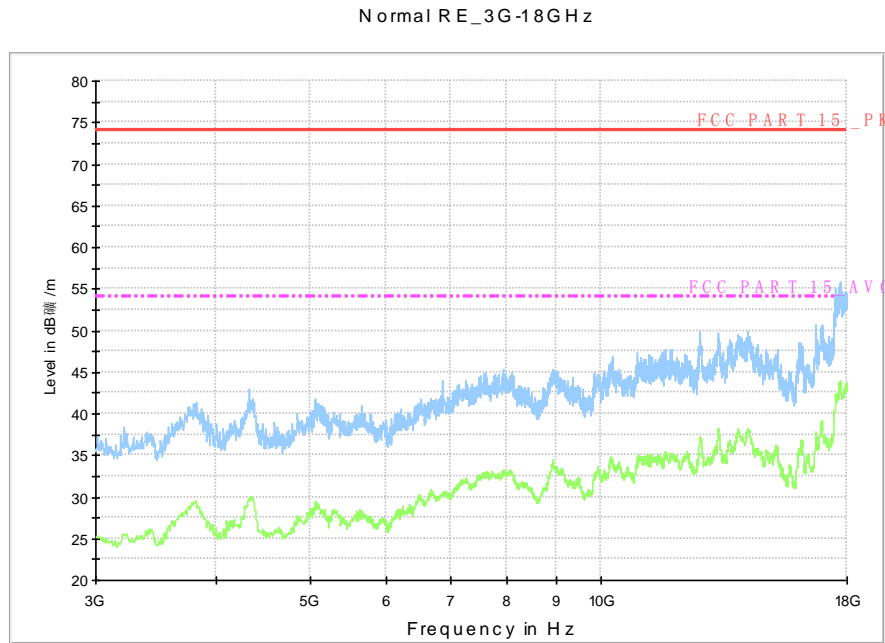


Fig.A.6.2.6 Radiated Spurious Emission (802.11b, Ch6, 3 GHz-18 GHz)

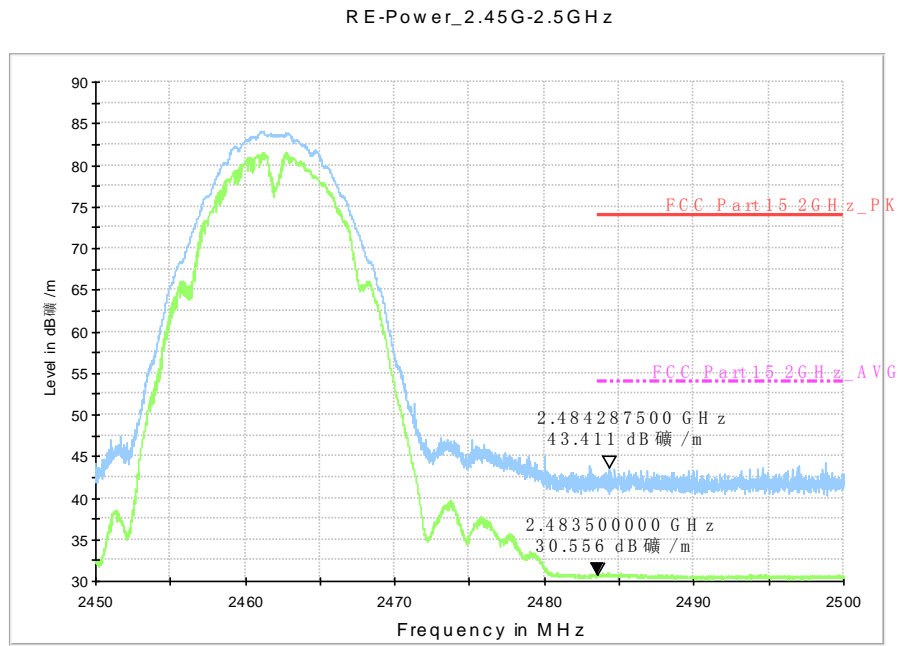


Fig.A.6.2.7 Radiated Spurious Emission (Power): 802.11b, ch11, 2.45 GHz - 2.50GHz

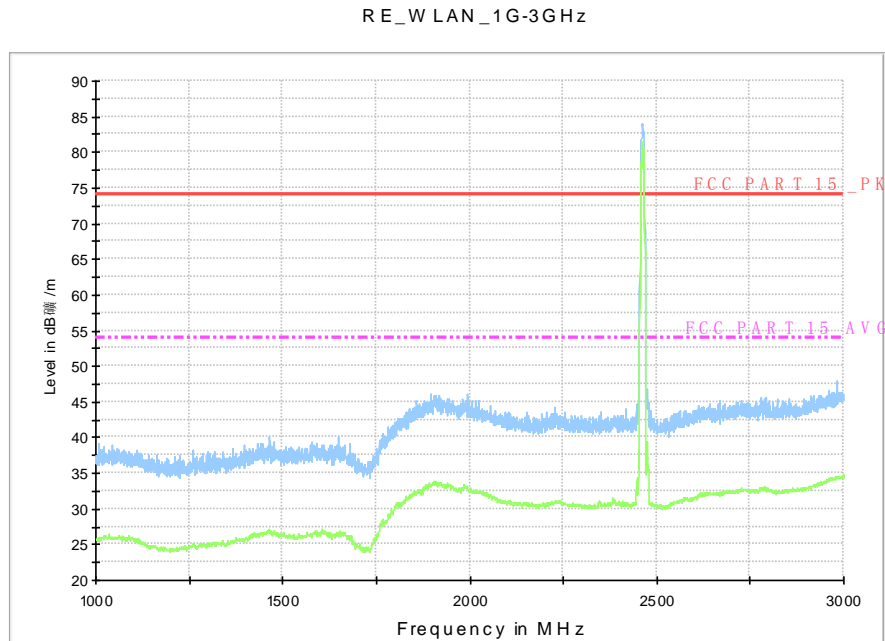


Fig.A.6.2.8 Radiated Spurious Emission (802.11b, Ch11, 1 GHz-3 GHz)

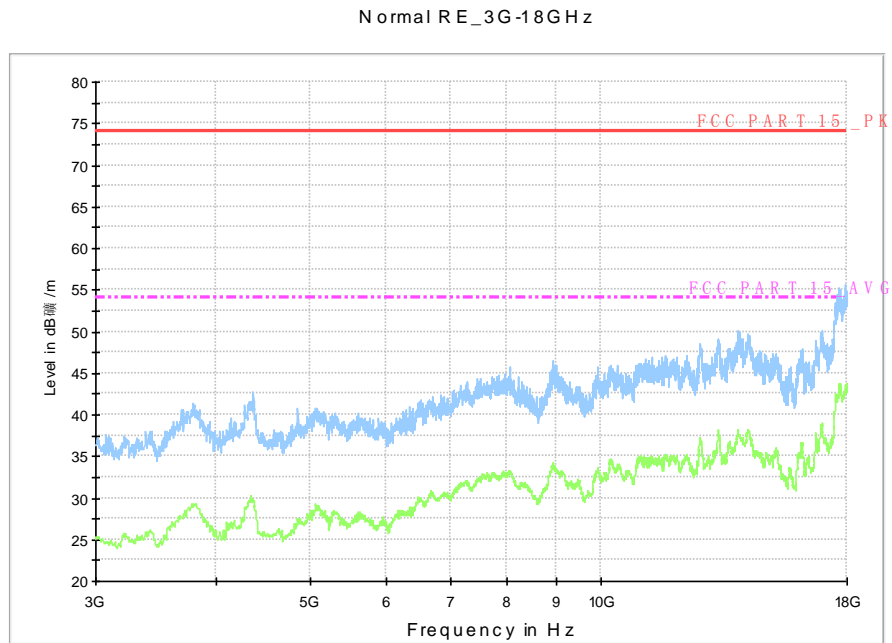


Fig.A.6.2.9 Radiated Spurious Emission (802.11b, Ch11, 3 GHz-18 GHz)

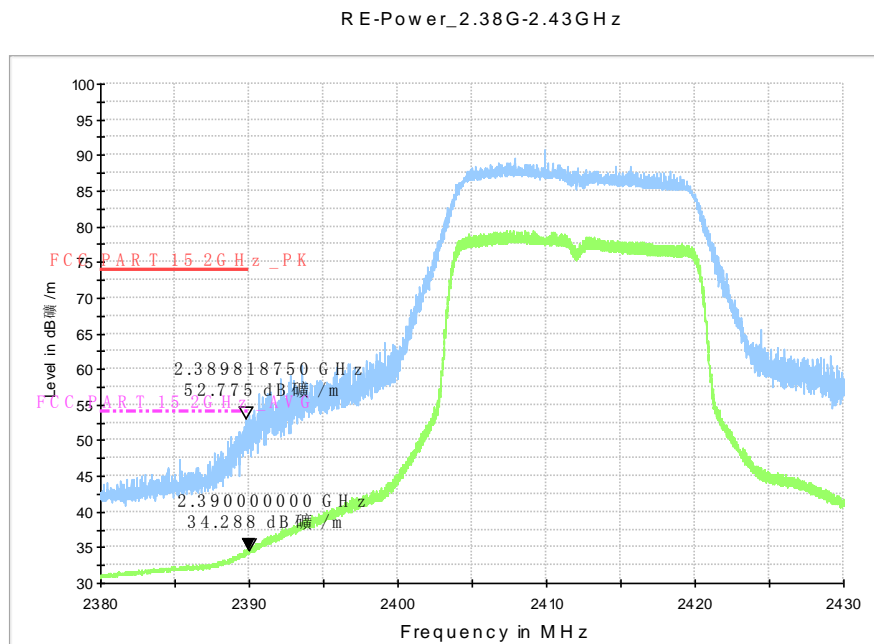


Fig.A.6.2.10 Radiated Spurious Emission (Power): 802.11g, ch1, 2.38 GHz - 2.45GHz

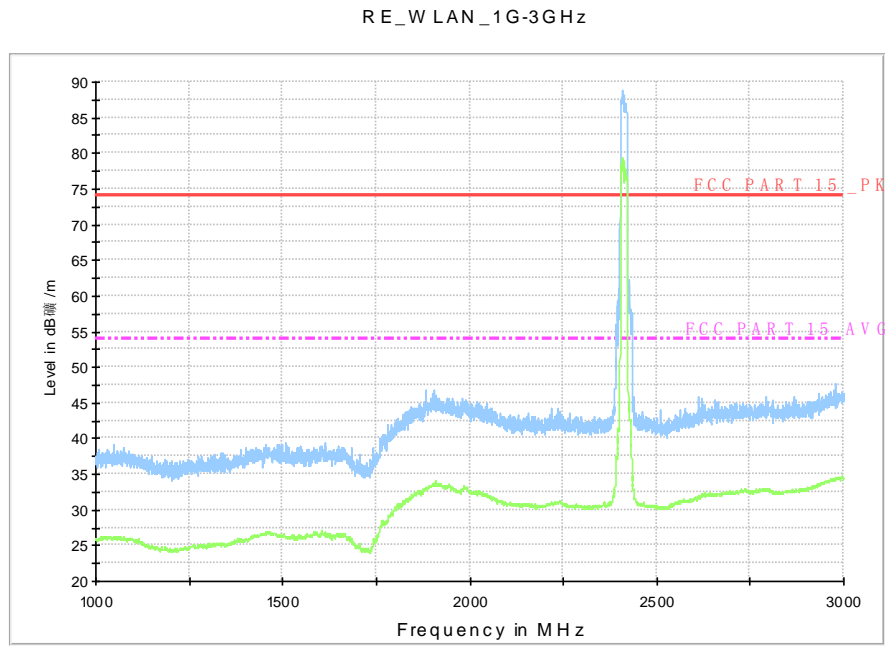


Fig.A.6.2.11 Radiated Spurious Emission (802.11g, Ch1, 1 GHz-3 GHz)

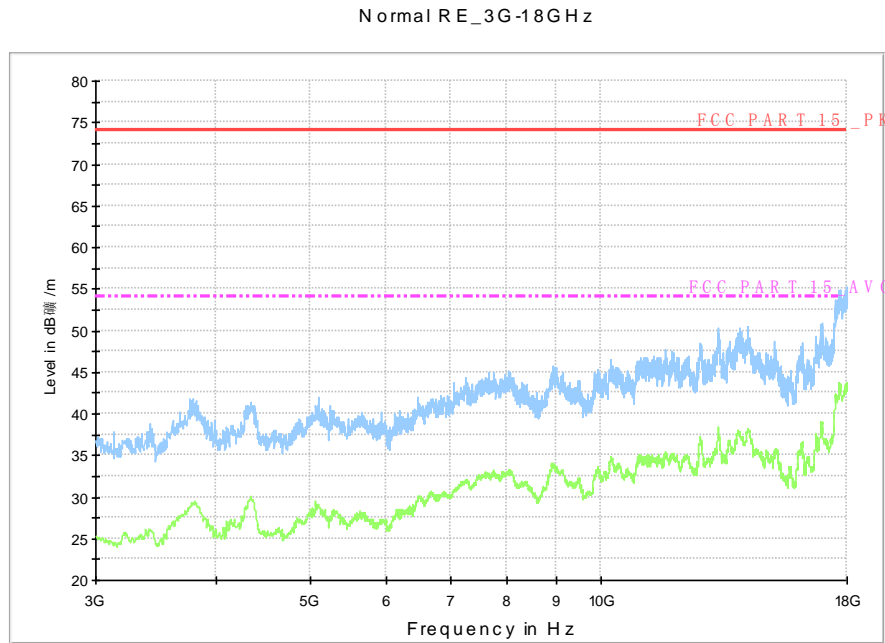


Fig.A.6.2.12 Radiated Spurious Emission (802.11g, Ch1, 3 GHz-18 GHz)

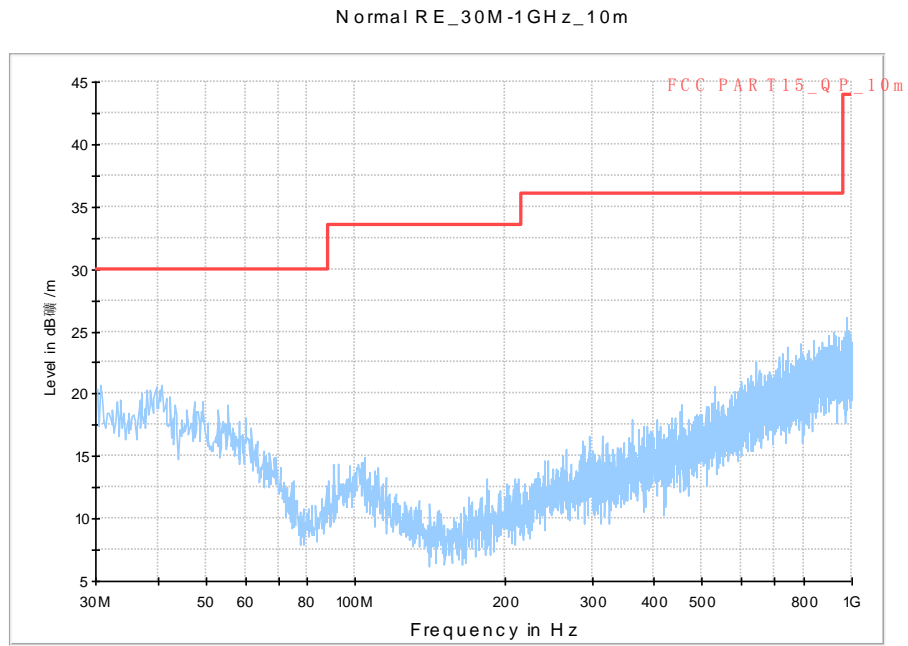


Fig.A.6.2.13 Radiated Spurious Emission (802.11g, Ch6, 30 MHz-1 GHz)

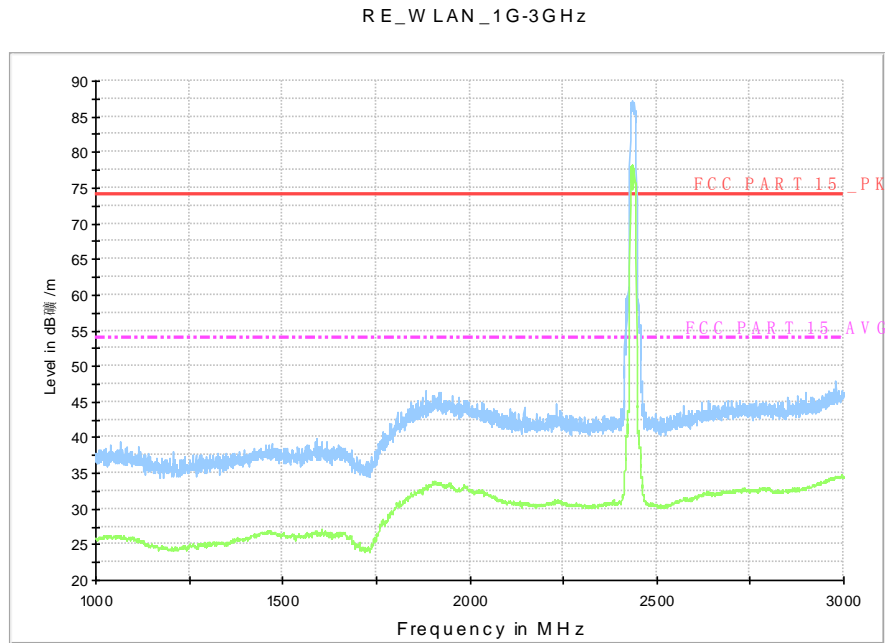


Fig.A.6.2.14 Radiated Spurious Emission (802.11g, Ch6, 1 GHz-3 GHz)

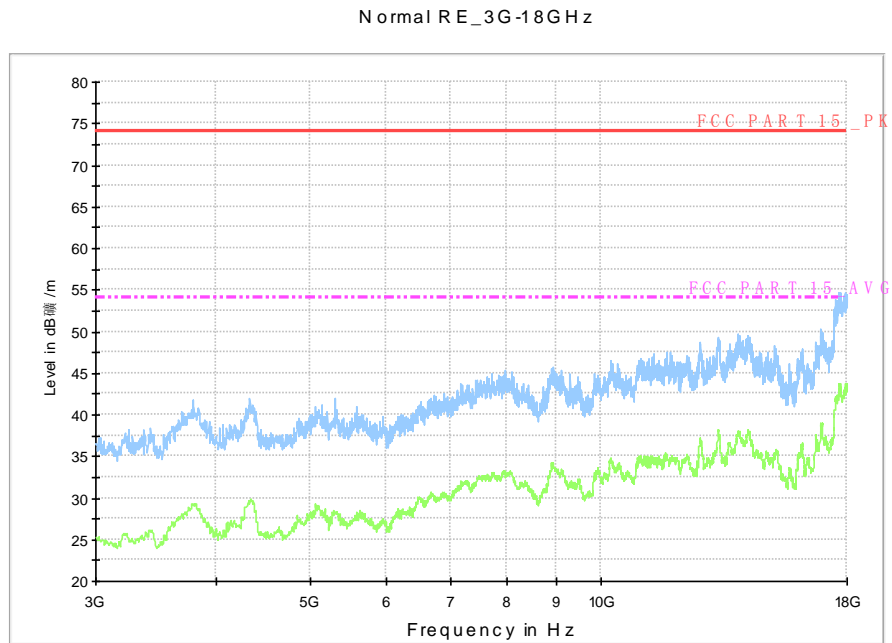


Fig.A.6.2.15 Radiated Spurious Emission (802.11g, Ch6, 3 GHz-18 GHz)

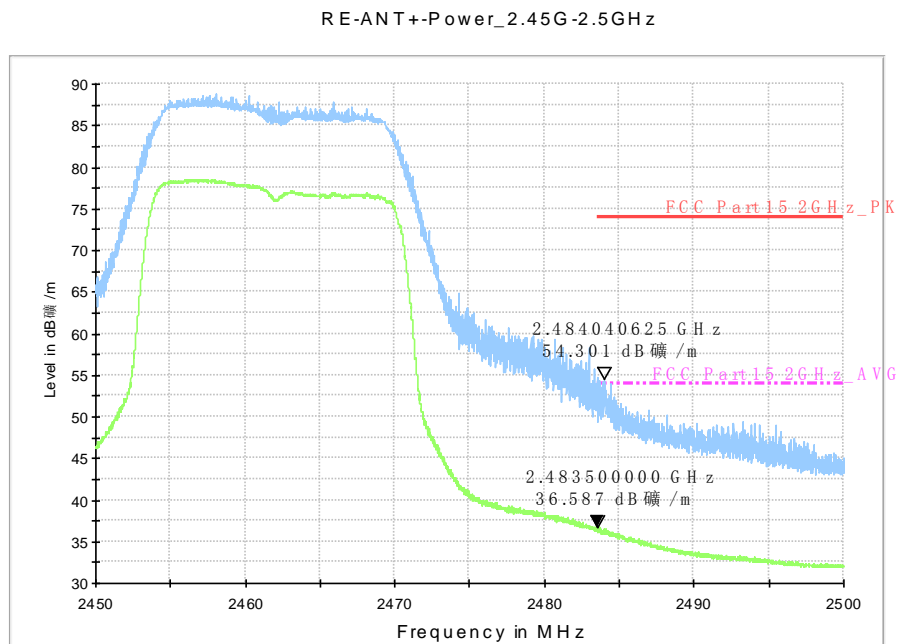


Fig.A.6.2.16 Radiated Spurious Emission (Power): 802.11g, ch11, 2.45 GHz - 2.50GHz

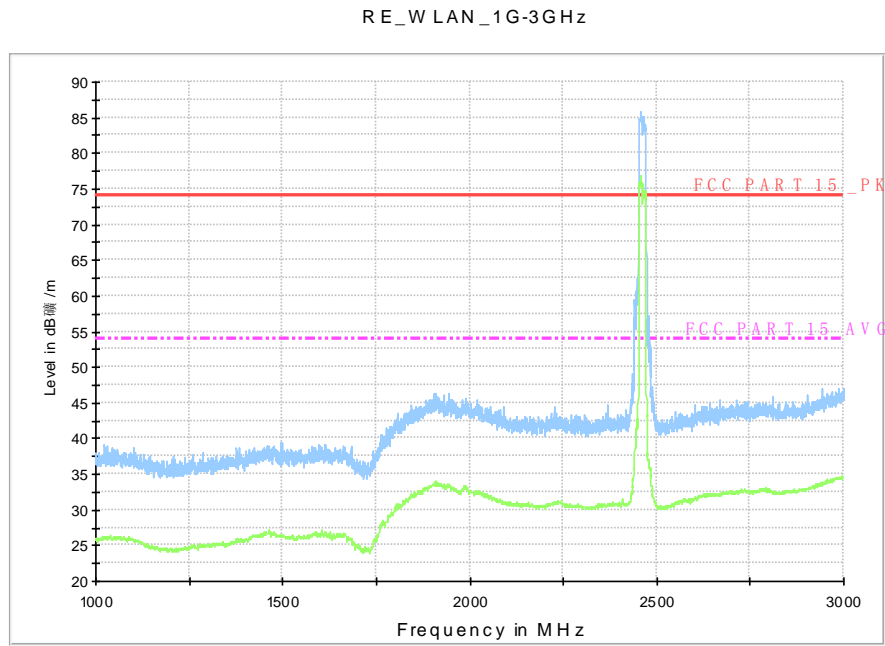


Fig.A.6.2.17 Radiated Spurious Emission (802.11g, Ch11, 1 GHz-3 GHz)

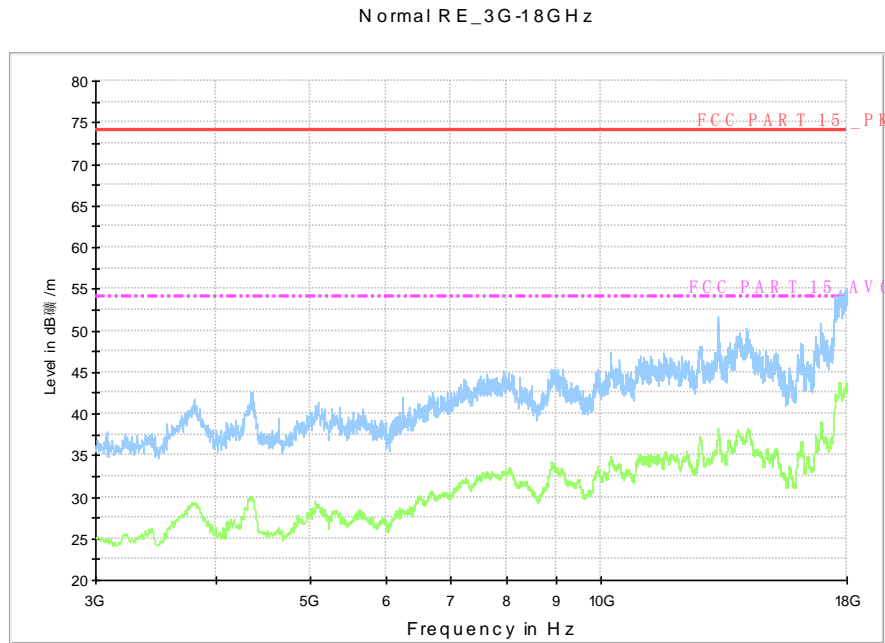


Fig.A.6.2.18 Radiated Spurious Emission (802.11g, Ch11, 3 GHz-18 GHz)

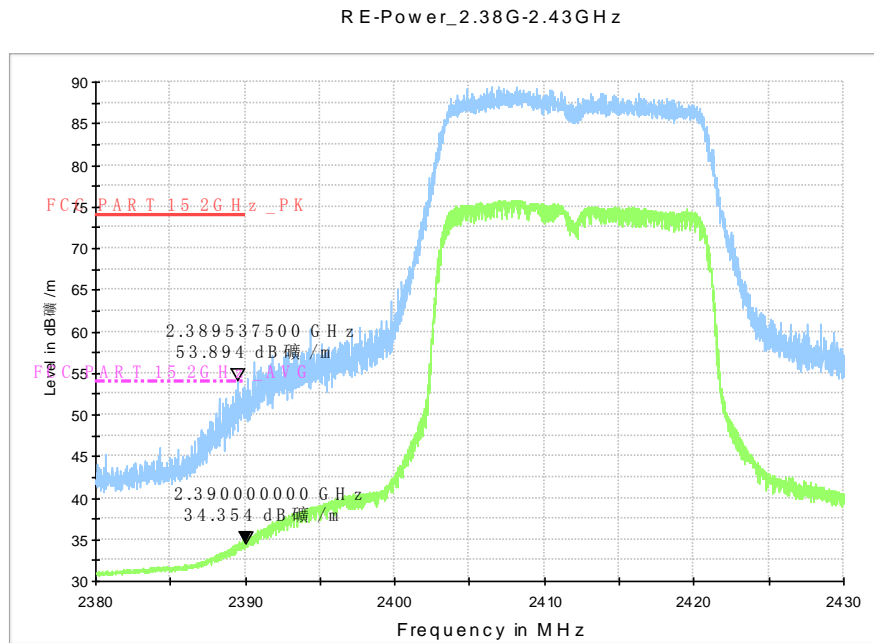


Fig.A.6.2.19 Radiated Spurious Emission (Power): 802.11n-HT20, ch1, 2.38 GHz - 2.45GHz

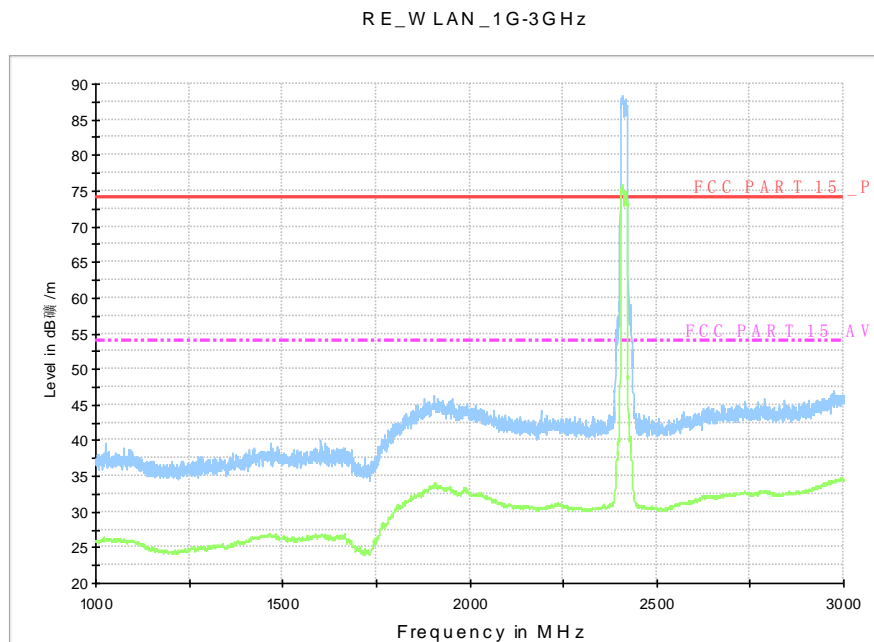


Fig.A.6.2.20 Radiated Spurious Emission (802.11n-HT20, Ch1, 1 GHz-3 GHz)

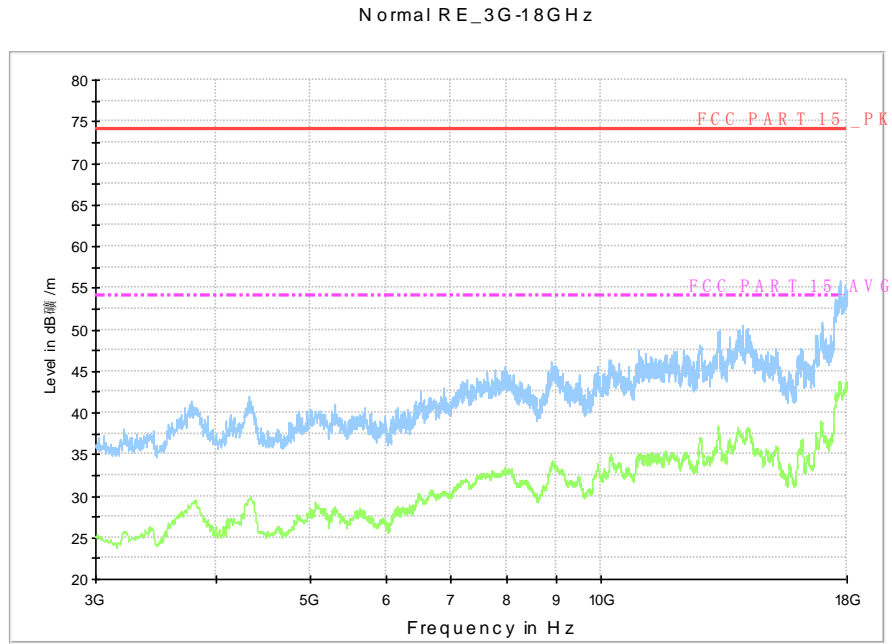


Fig.A.6.2.21 Radiated Spurious Emission (802.11n-HT20, Ch1, 3 GHz-18 GHz)

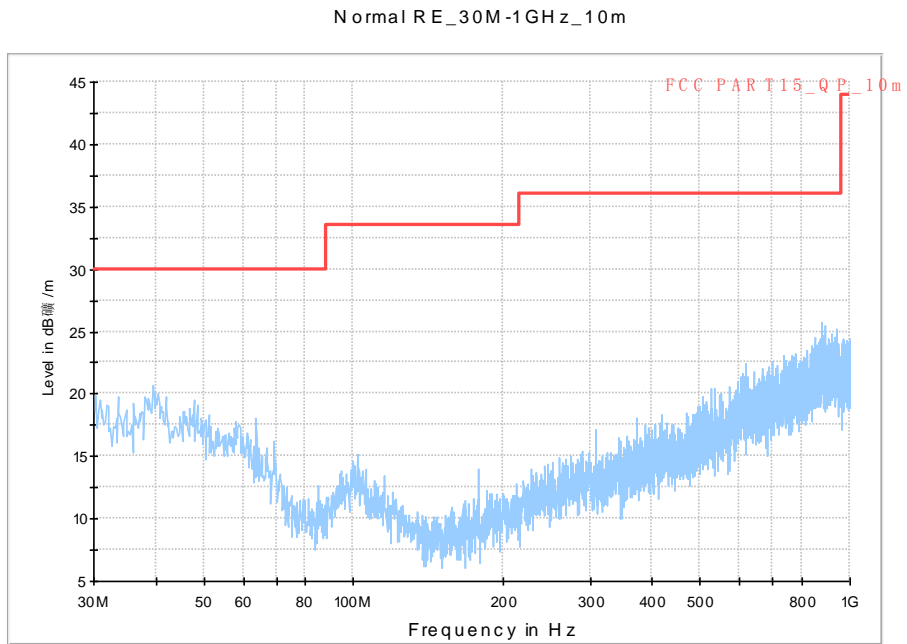


Fig.A.6.2.22 Radiated Spurious Emission (802.11n-HT20, Ch6, 30 MHz-1 GHz)

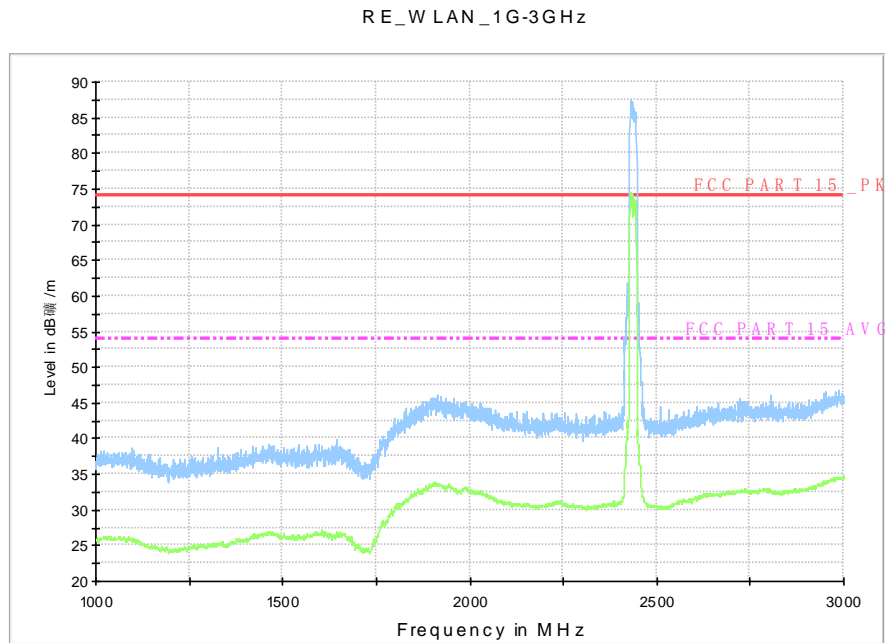


Fig.A.6.2.23 Radiated Spurious Emission (802.11n-HT20, Ch6, 1 GHz-3 GHz)

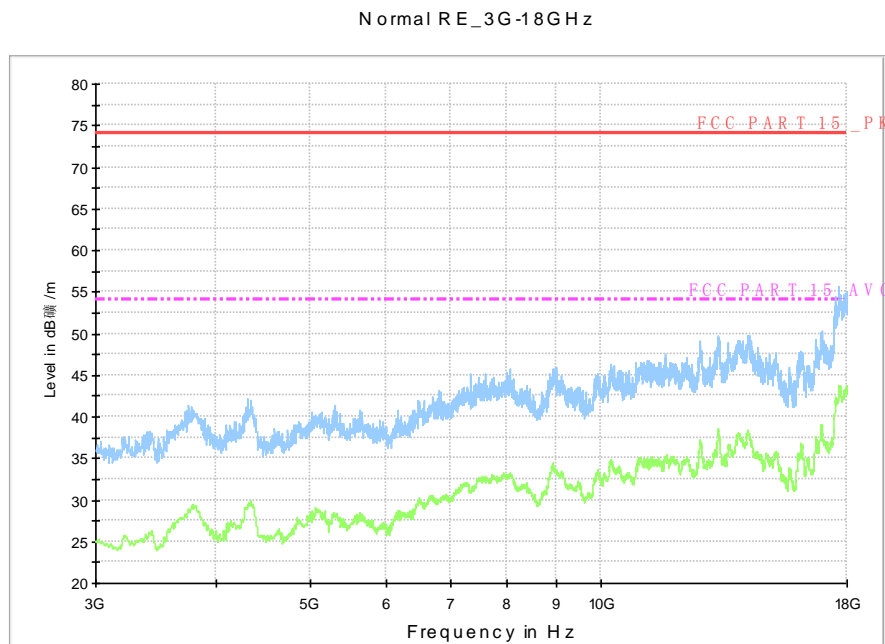


Fig.A.6.2.24 Radiated Spurious Emission (802.11n-HT20, Ch6, 3 GHz-18 GHz)

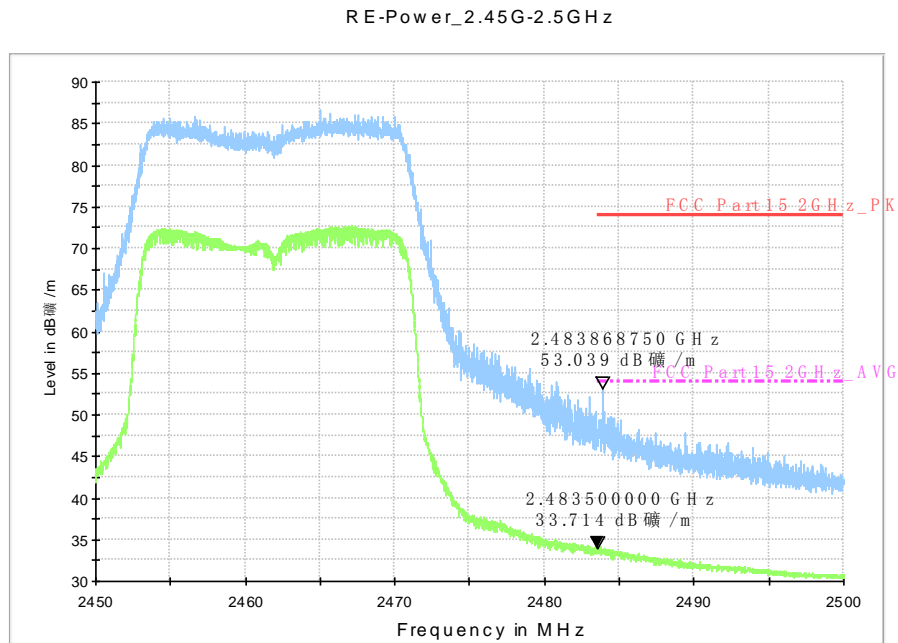


Fig.A.6.2.25 Radiated Spurious Emission (Power): 802.11n-HT20, ch11, 2.45 GHz - 2.50GHz

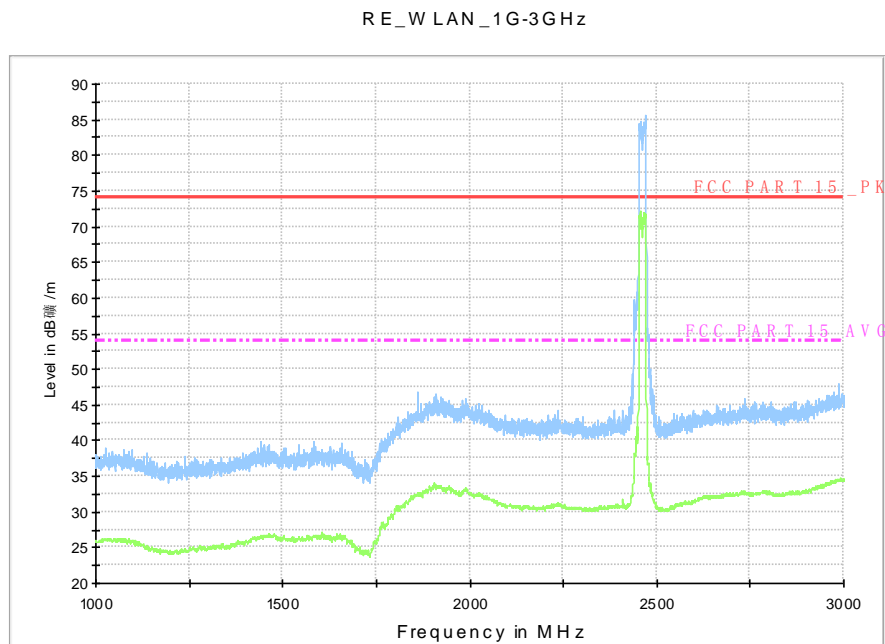


Fig.A.6.2.26 Radiated Spurious Emission (802.11n-HT20, Ch11, 1 GHz-3 GHz)

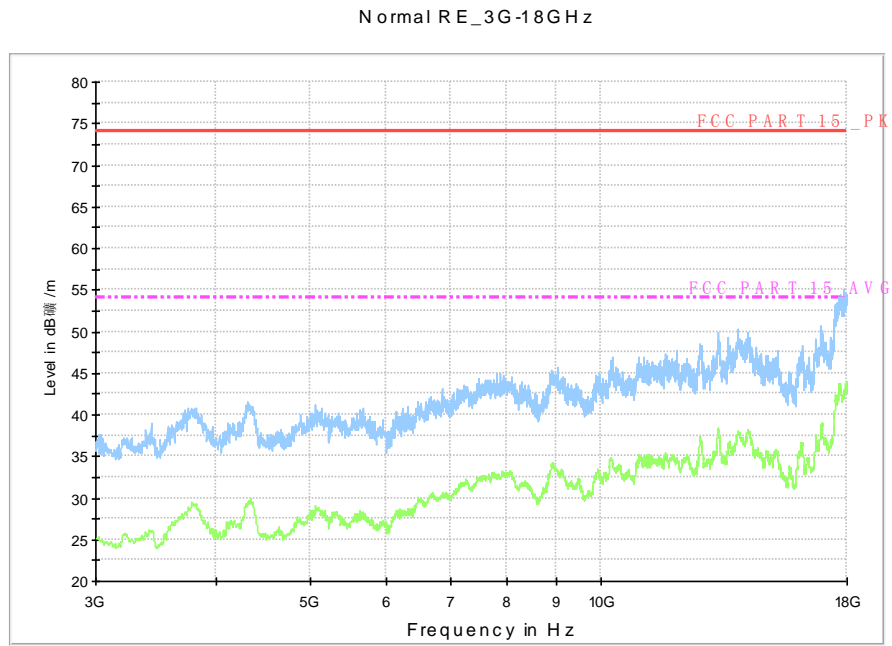


Fig.A.6.2.27 Radiated Spurious Emission (802.11n-HT20, Ch11, 3 GHz-18 GHz)

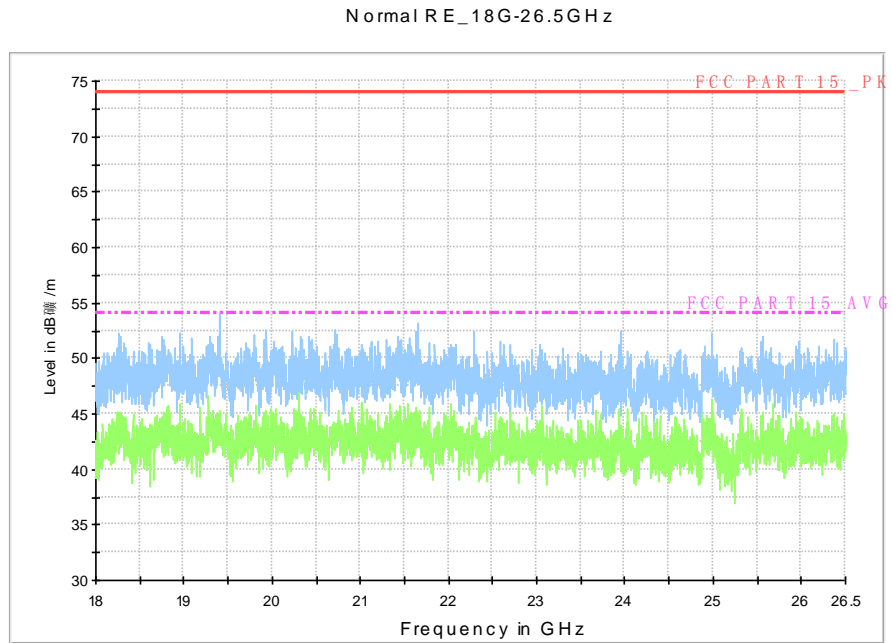


Fig.A.6.2.28 Radiated Spurious Emission (All channels): 18GHz – 26.5GHz

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 (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		802.11b	Idle	
0.15 to 0.5	66 to 56	Fig.A.7.1	Fig.A.7.2	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 (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		802.11b	Idle	
0.15 to 0.5	56 to 46	Fig.A.7.1	Fig.A.7.2	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.

Conclusion: Pass

Measurement uncertainty:

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

Test graphs as below:

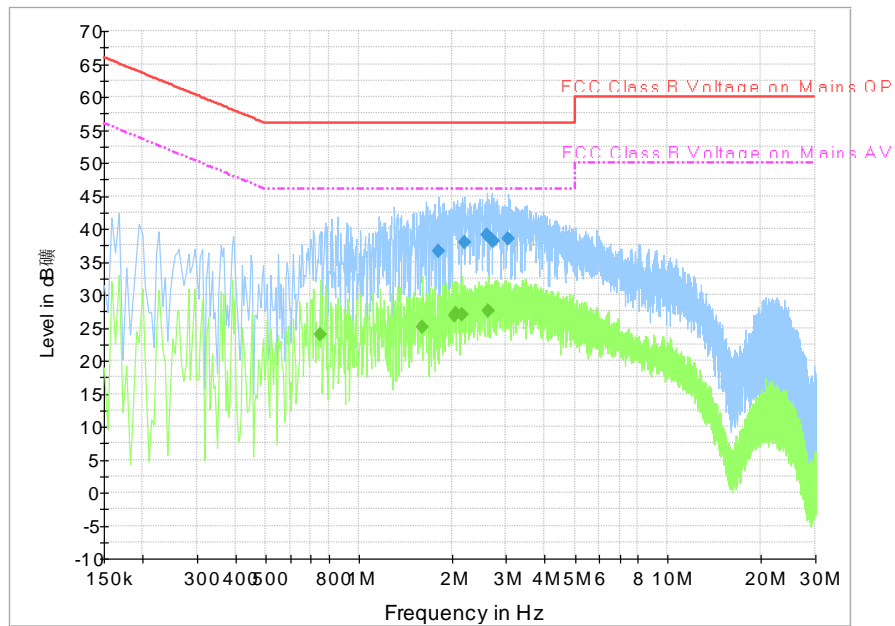


Fig.A.7.1 AC Powerline Conducted Emission-802.11b

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)
1.819500	36.5	GND	L1	9.7	19.5	56.0
2.193000	38.0	GND	N	9.7	18.0	56.0
2.602500	39.0	GND	L1	9.7	17.0	56.0
2.688000	38.3	GND	N	9.7	17.7	56.0
2.733000	38.1	GND	N	9.7	17.9	56.0
3.052500	38.5	GND	N	9.7	17.5	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.748500	23.9	GND	L1	9.8	22.1	46.0
1.603500	25.0	GND	L1	9.7	21.0	46.0
2.035500	26.7	GND	L1	9.7	19.3	46.0
2.071500	27.2	GND	L1	9.7	18.8	46.0
2.166000	27.1	GND	L1	9.7	18.9	46.0
2.616000	27.6	GND	N	9.7	18.4	46.0

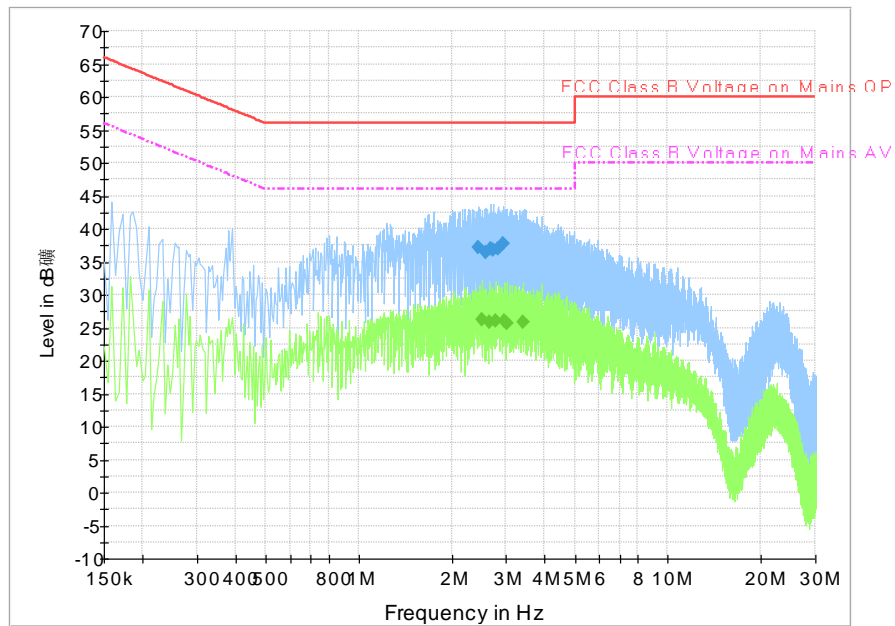


Fig.A.7.2 AC Powerline Conducted Emission-Idle

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

Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
2.445000	37.1	GND	L1	9.7	18.9	56.0
2.566500	36.4	GND	L1	9.7	19.6	56.0
2.670000	37.0	GND	L1	9.7	19.0	56.0
2.715000	36.9	GND	L1	9.7	19.1	56.0
2.814000	37.1	GND	N	9.7	18.9	56.0
2.940000	37.7	GND	N	9.7	18.3	56.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
2.517000	26.2	GND	L1	9.7	19.8	46.0
2.647500	25.8	GND	N	9.7	20.2	46.0
2.764500	26.1	GND	L1	9.7	19.9	46.0
2.953500	26.1	GND	N	9.7	19.9	46.0
3.012000	25.6	GND	L1	9.7	20.4	46.0
3.390000	25.8	GND	N	9.7	20.2	46.0