

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

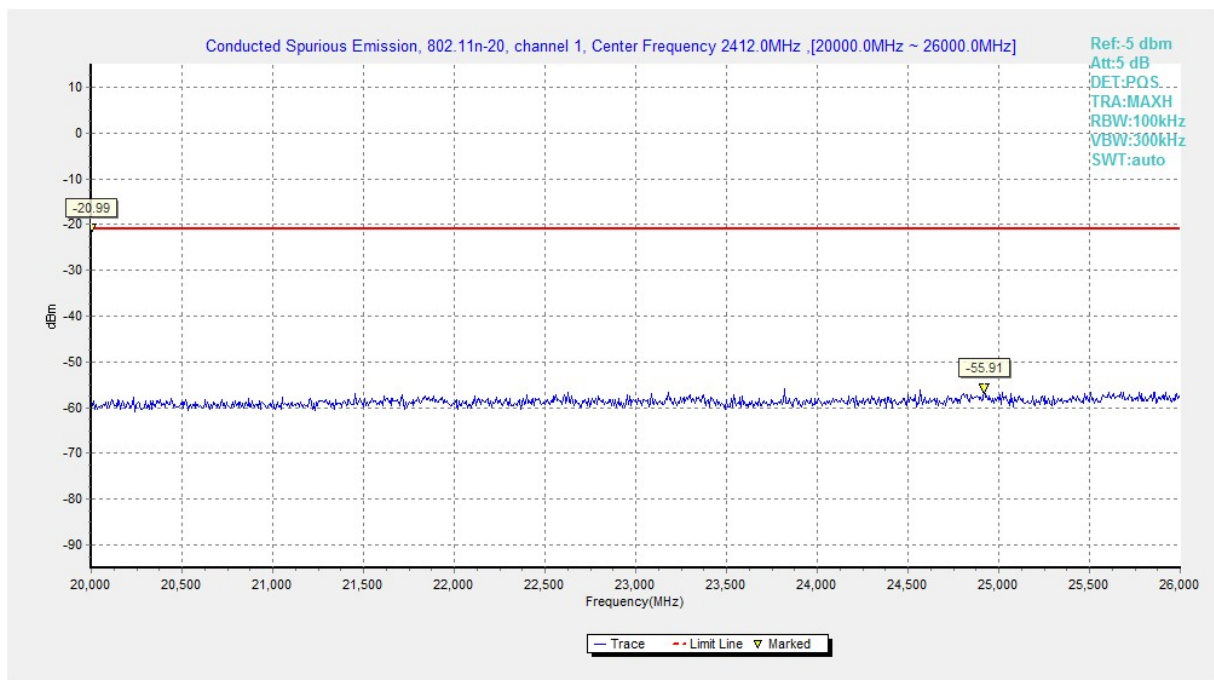
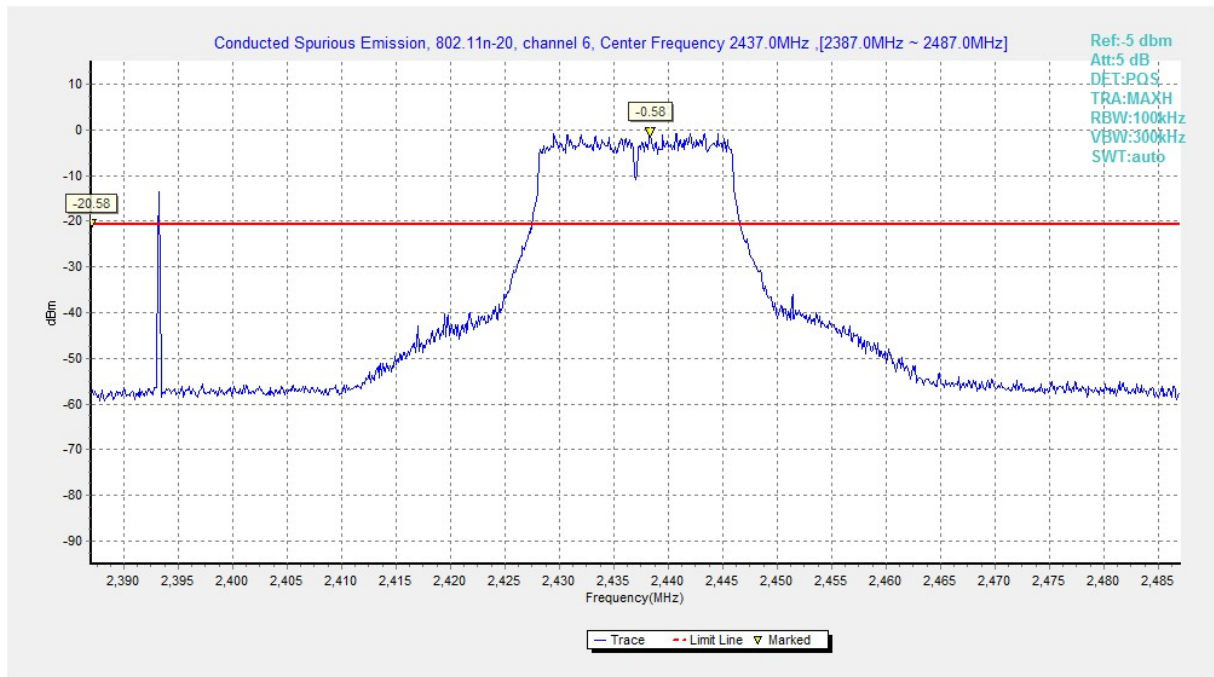
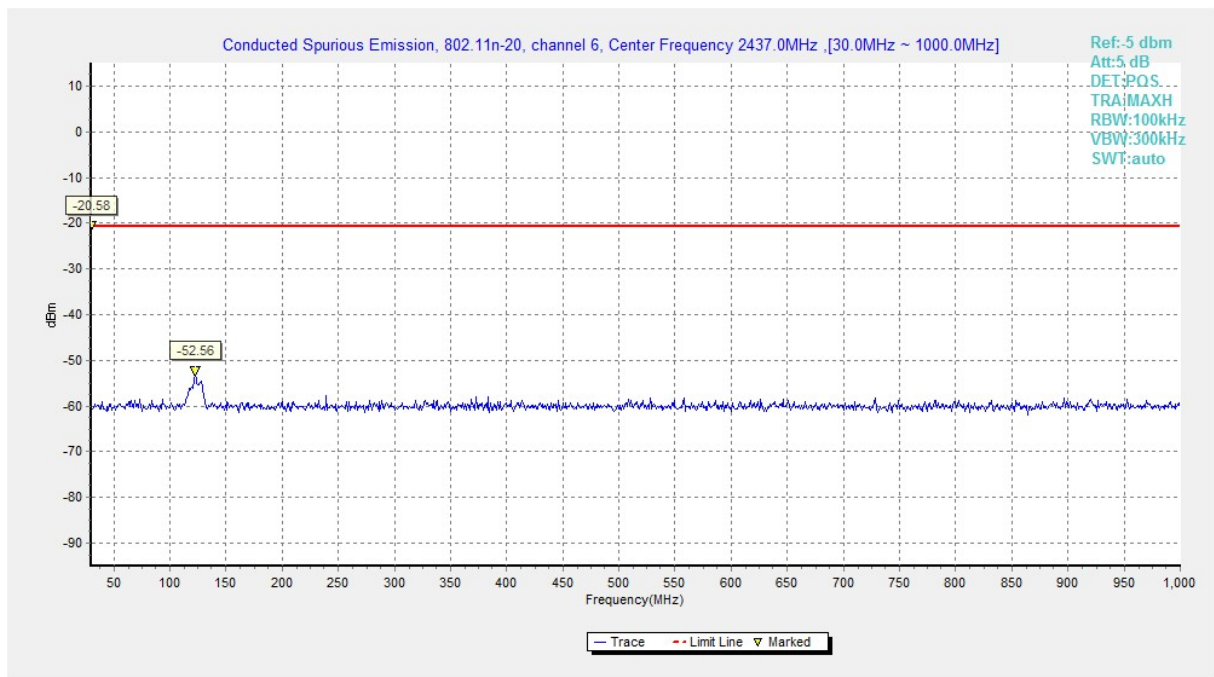


Fig.A.6.1.56 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch1, 20 GHz-26 GHz)



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



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

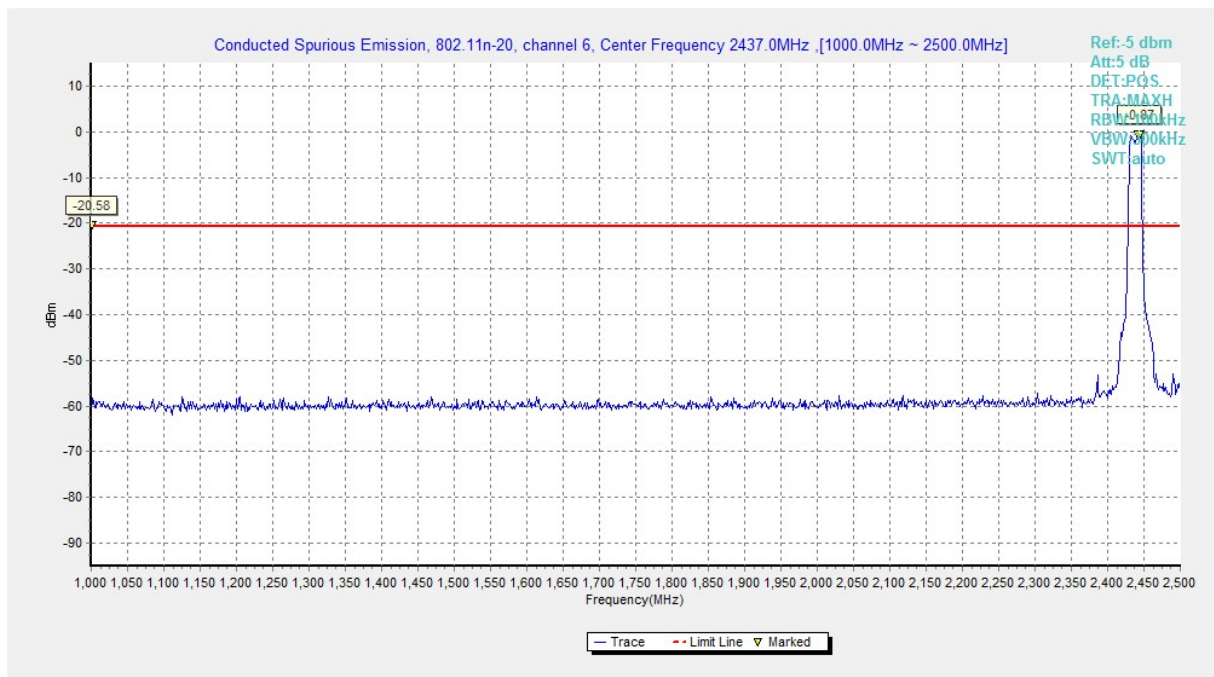


Fig.A.6.1.59 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 1 GHz-2.5 GHz)

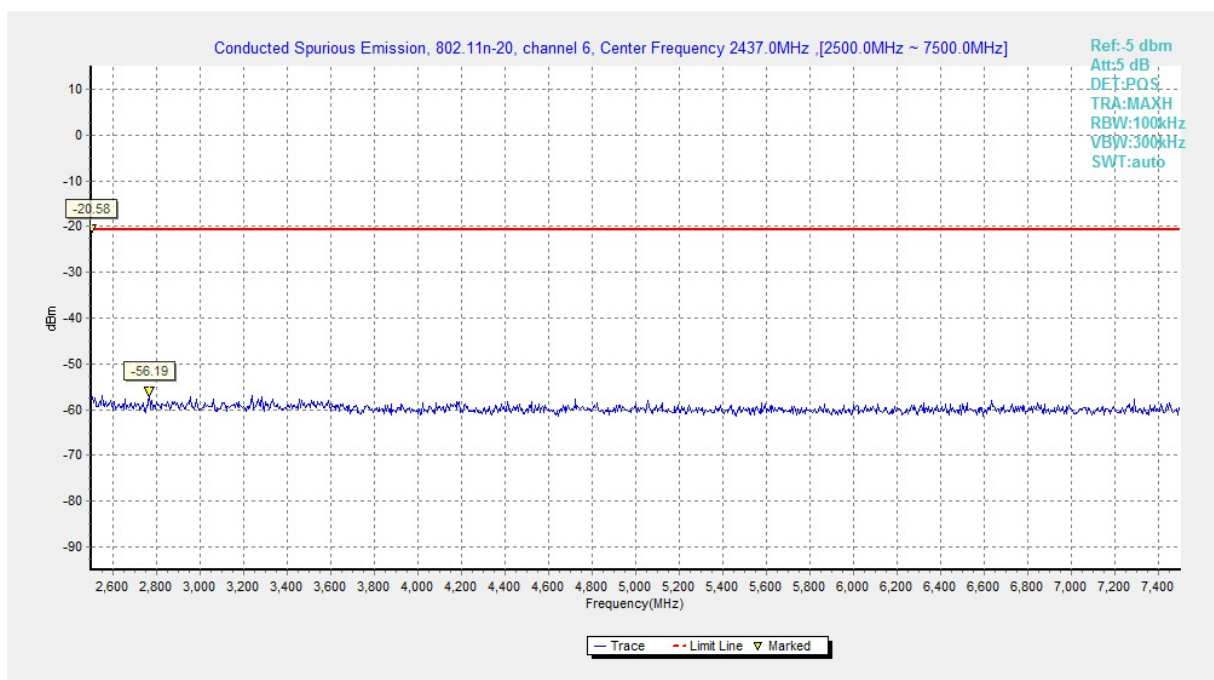


Fig.A.6.1.60 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 2.5 GHz-7.5 GHz)

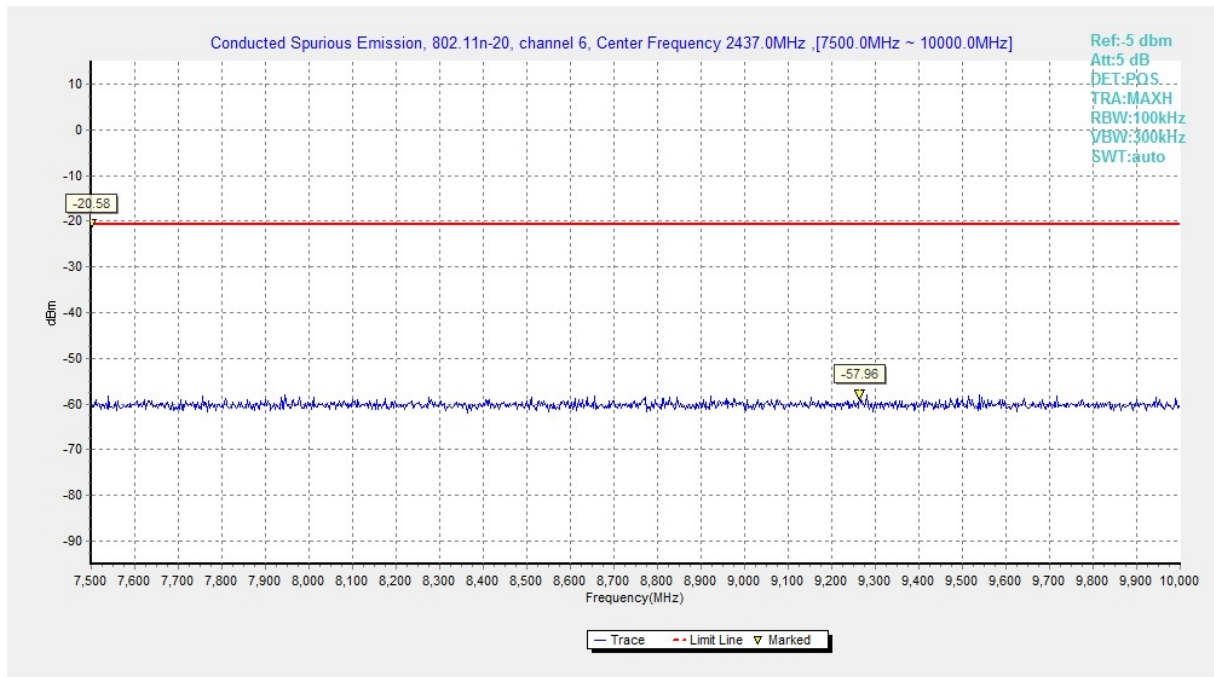


Fig.A.6.1.61 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 7.5 GHz-10 GHz)

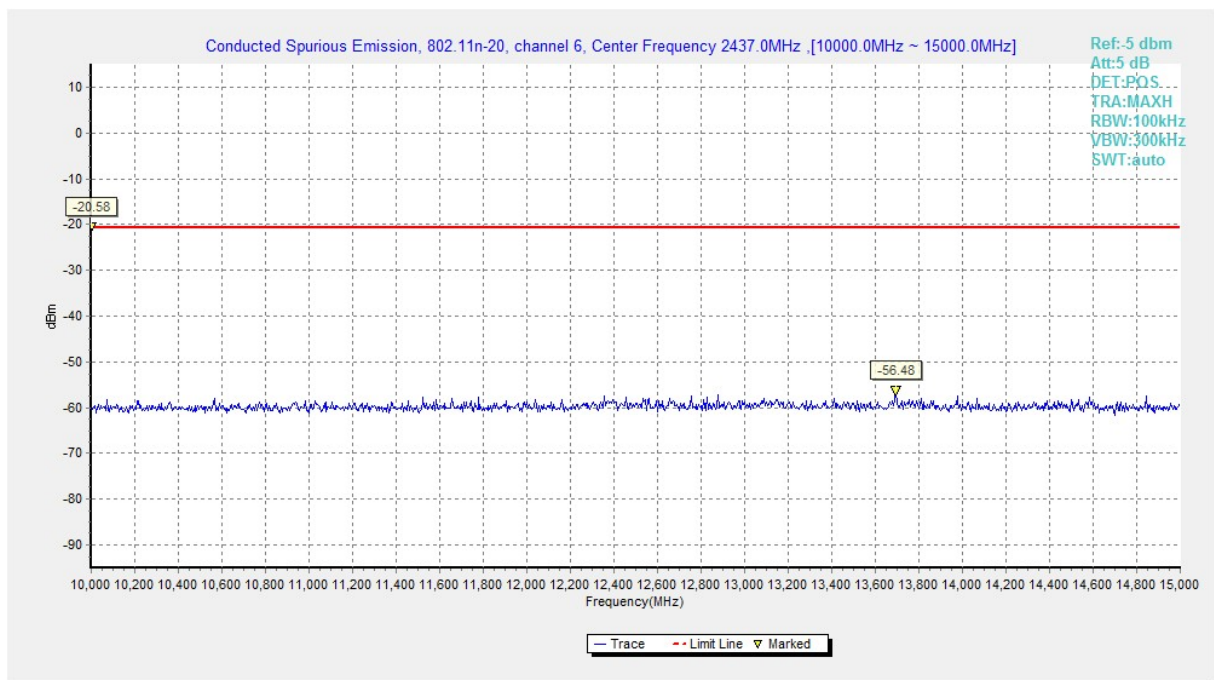


Fig.A.6.1.62 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 10 GHz-15 GHz)



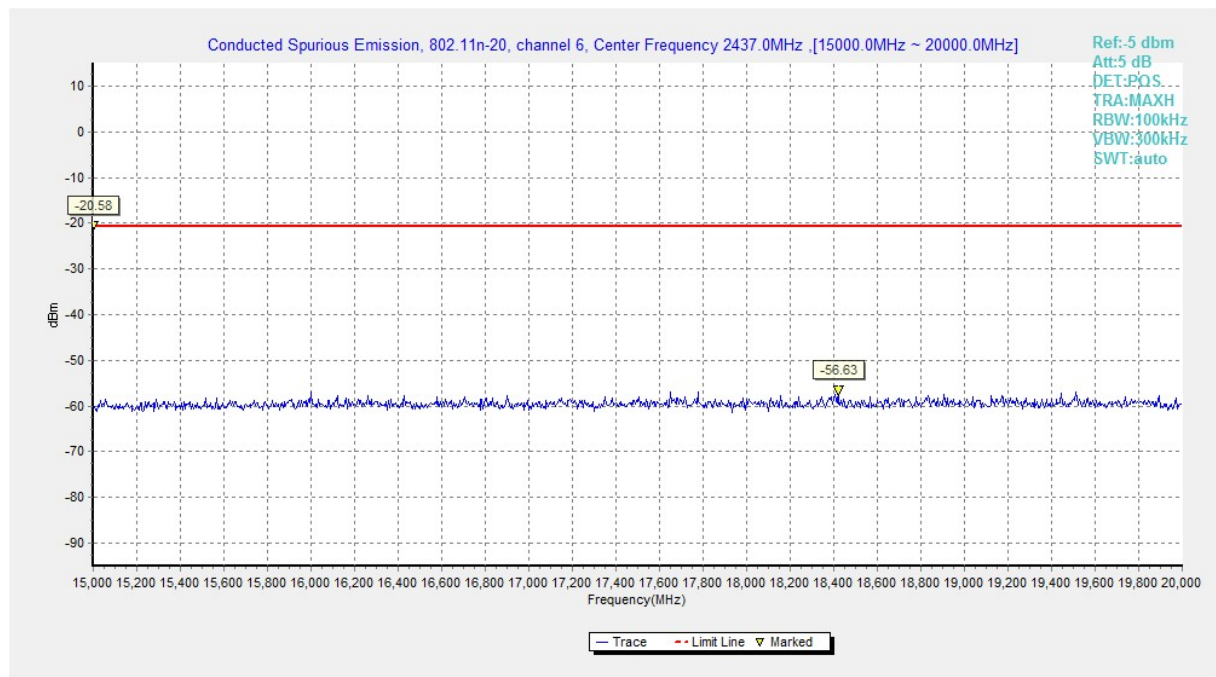


Fig.A.6.1.63 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 15 GHz-20 GHz)

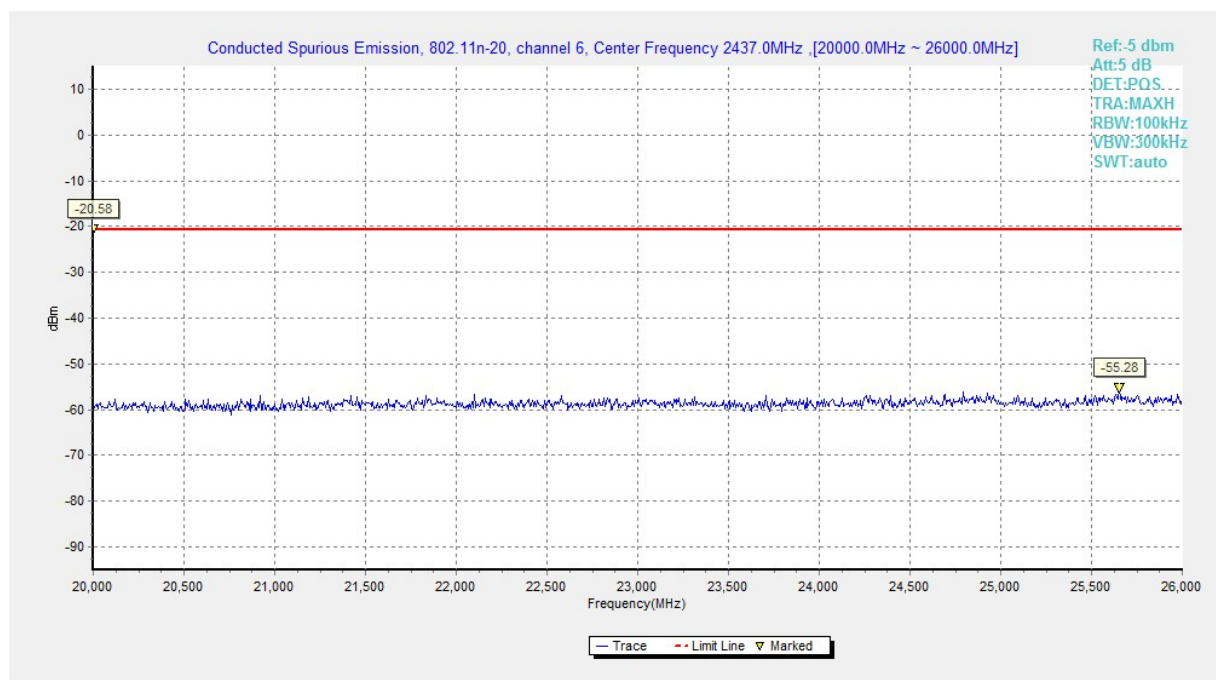
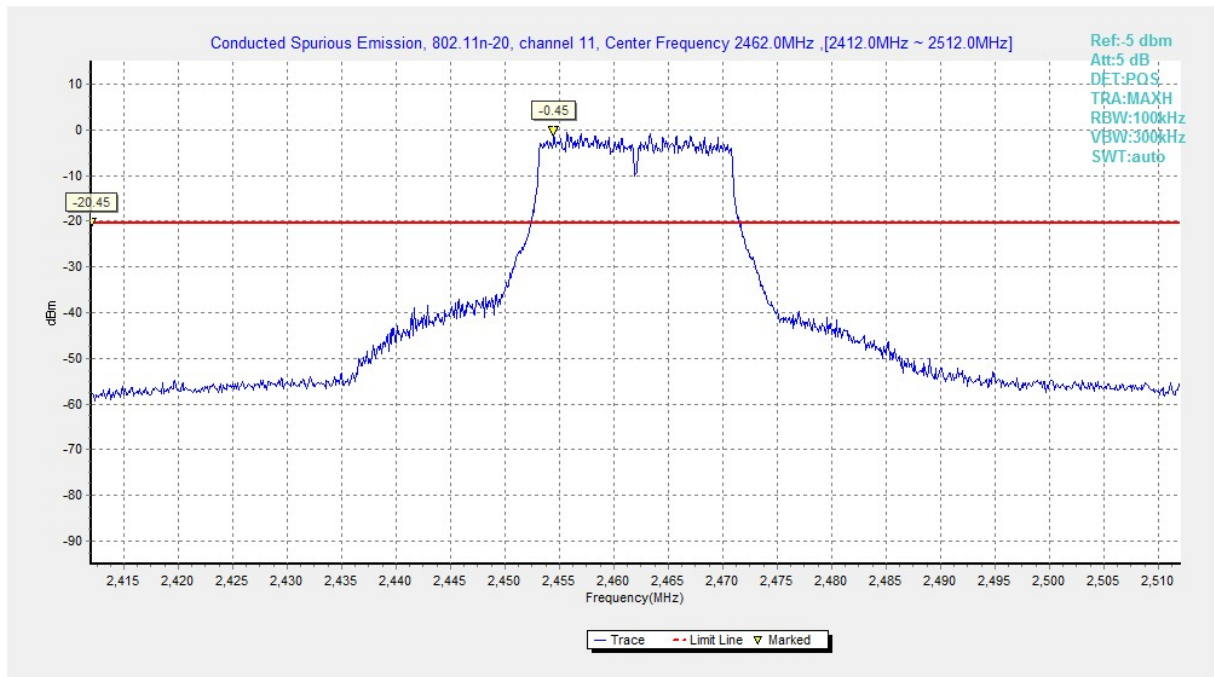
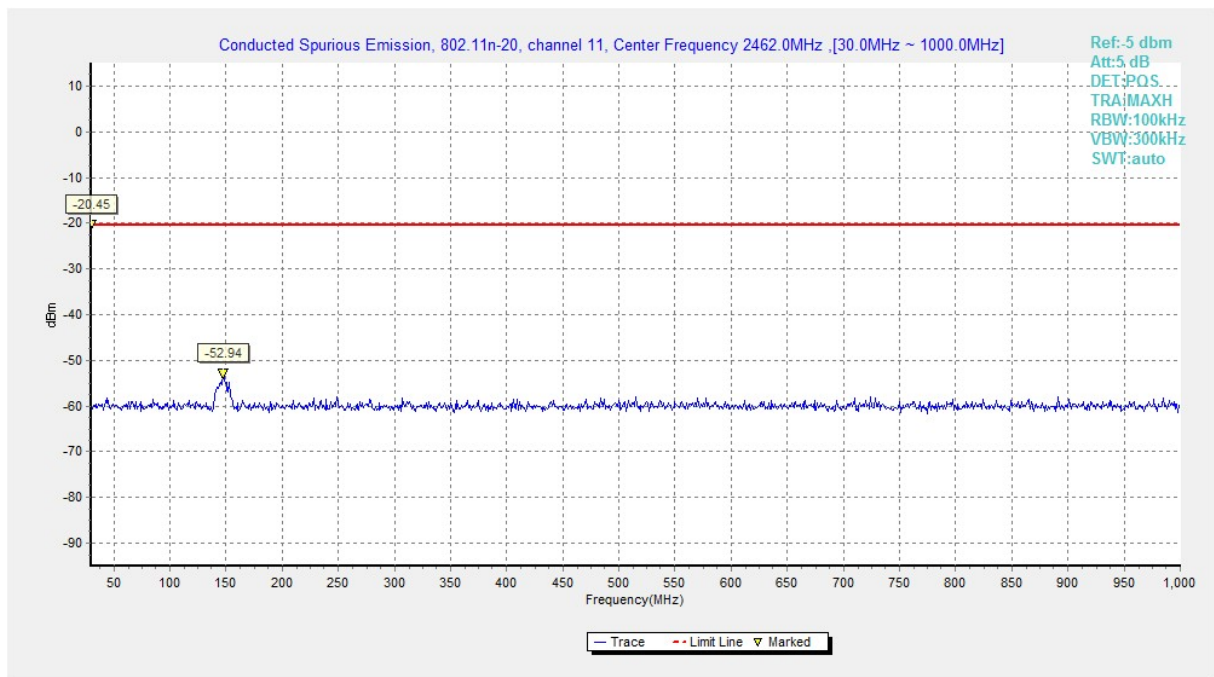


Fig.A.6.1.64 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 20 GHz-26 GHz)



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



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

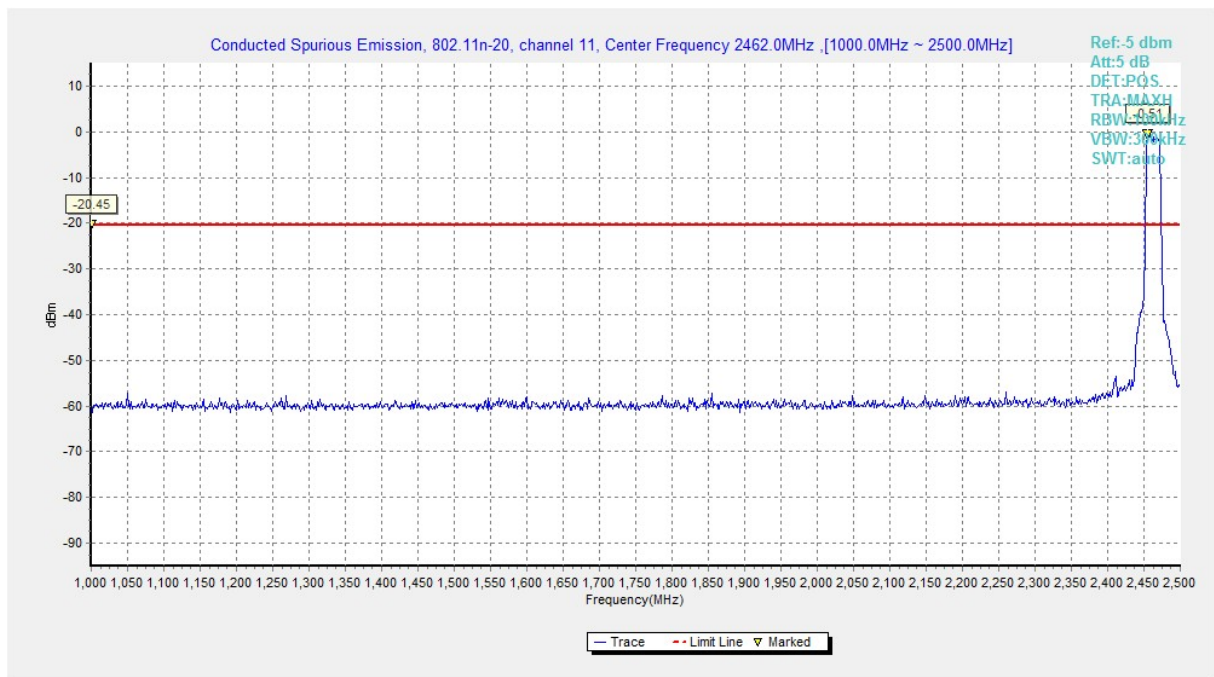


Fig.A.6.1.67 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 1 GHz-2.5 GHz)

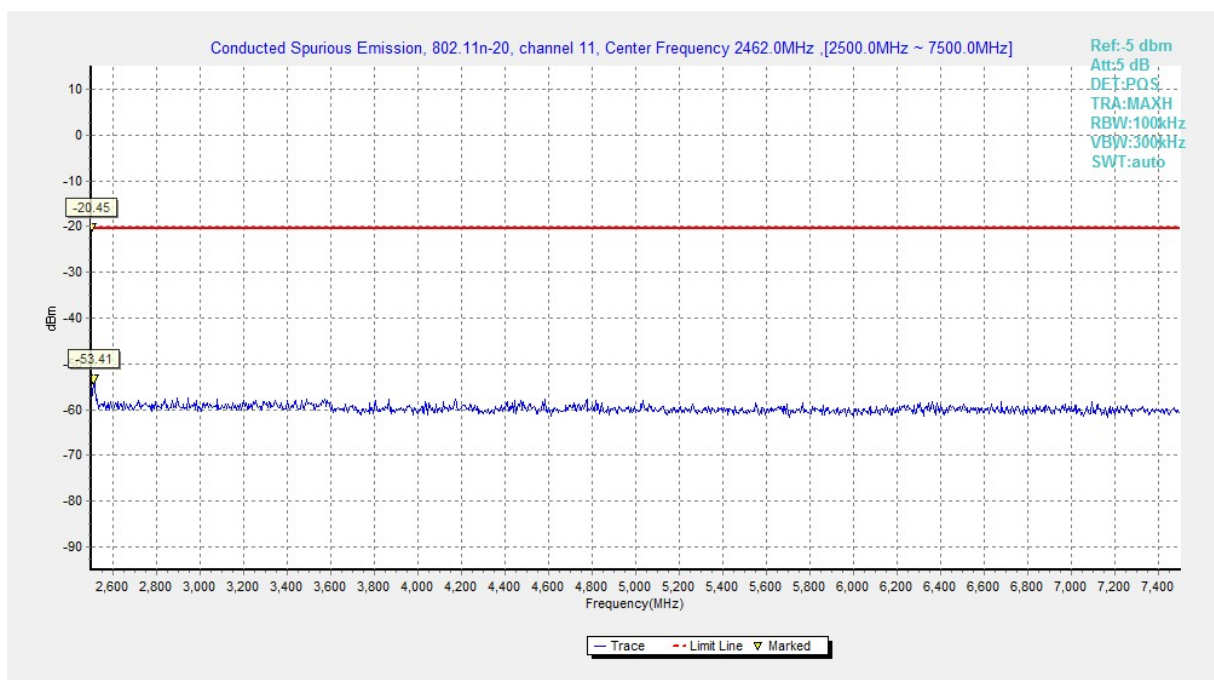
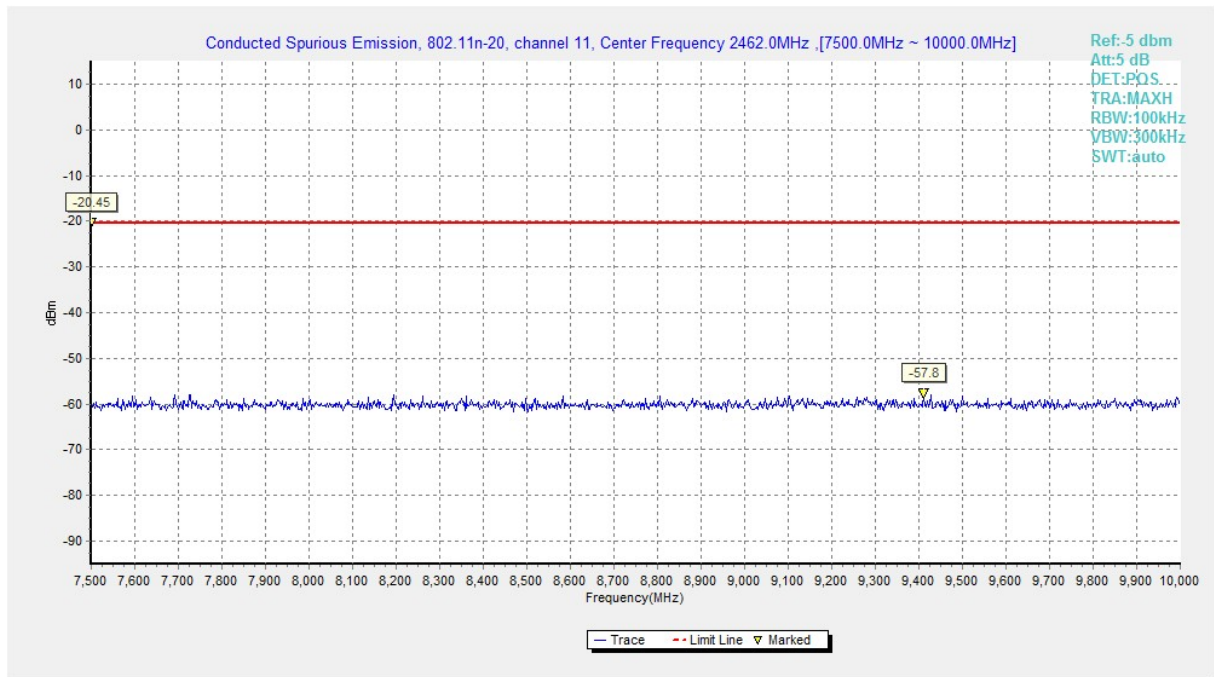
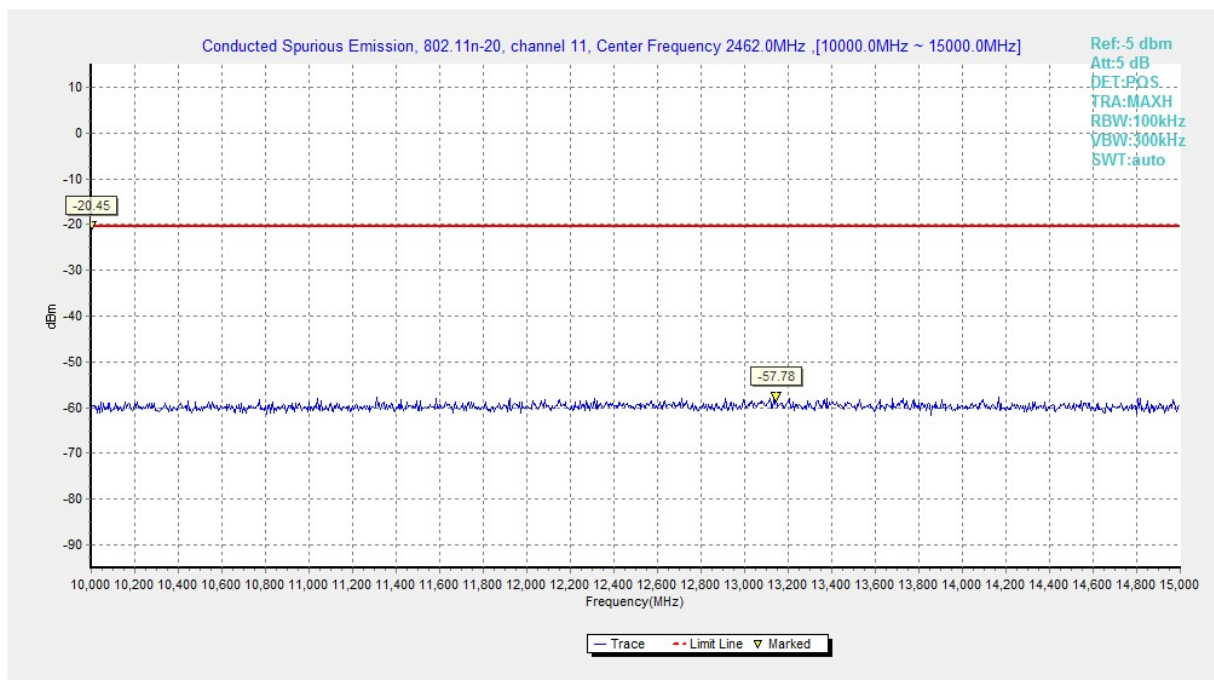


Fig.A.6.1.68 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 2.5 GHz-7.5 GHz)



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



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



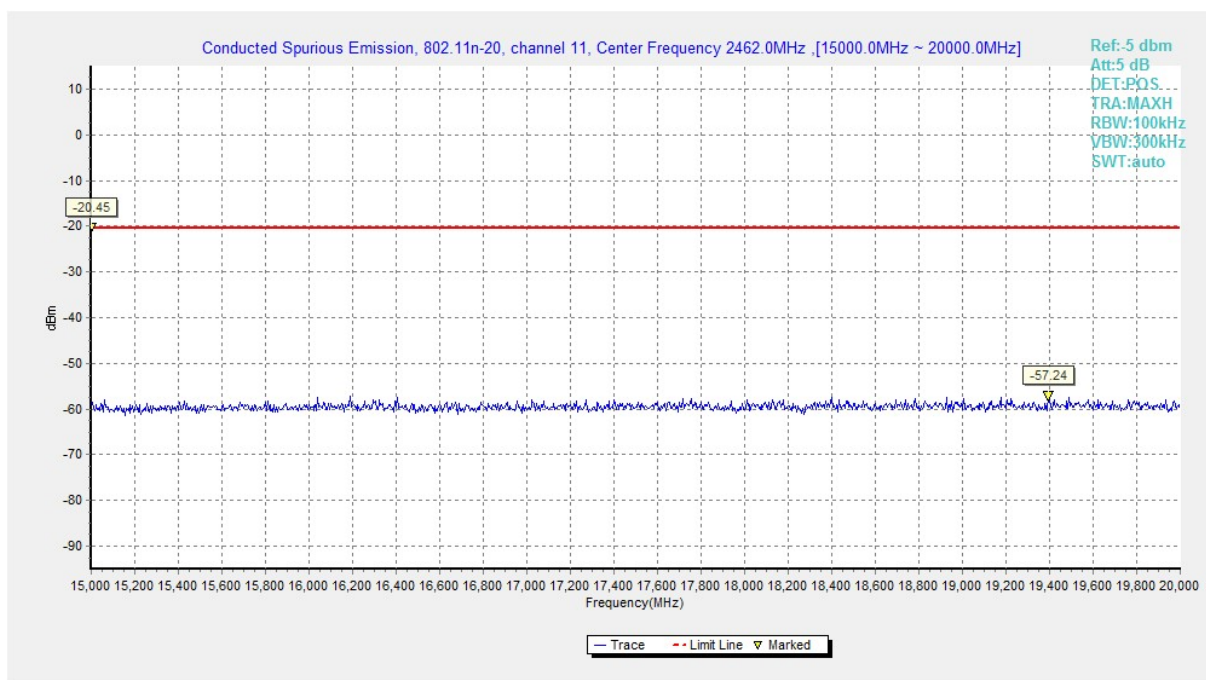


Fig.A.6.1.71 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 15 GHz-20 GHz)

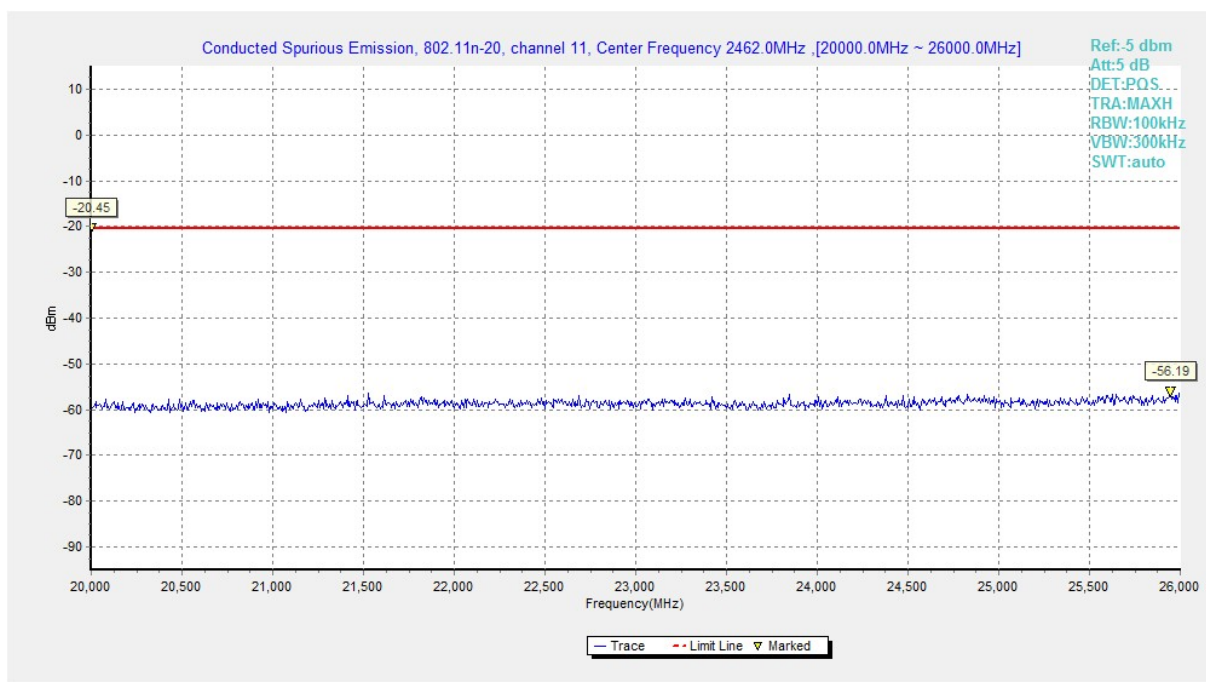


Fig.A.6.1.72 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 20 GHz-26 GHz)

### 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

#### EUT ID:EUT1

#### Modulation type and data rate tested:

802.11b	802.11g	802.11n-HT20
11Mbps(CCK)	54Mbps(OFDM)	MCS7(OFDM)

**Measurement Results:**
**802.11b mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	Power	2.38GHz ~2.45GHz	Fig.A.6.2.1	<b>P</b>
	1	1 GHz ~ 3 GHz	Fig.A.6.2.2	<b>P</b>
		3 GHz ~ 18 GHz	Fig.A.6.2.3	<b>P</b>
	6	30 MHz ~1 GHz	Fig.A.6.2.4	<b>P</b>
		1 GHz ~ 3 GHz	Fig.A.6.2.5	<b>P</b>
		3 GHz ~ 18 GHz	Fig.A.6.2.6	<b>P</b>
		18 GHz~ 26.5 GHz	Fig.A.6.2.7	<b>P</b>
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.8	<b>P</b>
	11	1 GHz ~ 3 GHz	Fig.A.6.2.9	<b>P</b>
		3 GHz ~ 18 GHz	Fig.A.6.2.10	<b>P</b>

**802.11g mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11g	Power	2.38GHz ~2.43GHz	Fig.A.6.2.11	<b>P</b>
	1	1 GHz ~ 3 GHz	Fig.A.6.2.12	<b>P</b>
		3 GHz ~ 18 GHz	Fig.A.6.2.13	<b>P</b>
	6	30 MHz ~1 GHz	Fig.A.6.2.14	<b>P</b>
		1 GHz ~ 3 GHz	Fig.A.6.2.15	<b>P</b>
		3 GHz ~ 18 GHz	Fig.A.6.2.16	<b>P</b>
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.17	<b>P</b>
	11	1 GHz ~ 3 GHz	Fig.A.6.2.18	<b>P</b>
		3 GHz ~ 18 GHz	Fig.A.6.2.19	<b>P</b>

**802.11n-HT20 mode**

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

**Conclusion: Pass**

**Measurement Uncertainty:**

Frequency Range	Uncertainty(dB)
$f \leq 1\text{GHz}$	3.9
$f > 1\text{GHz}$	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)	ARPL (dB)	PMea(dBuv/m)	Polarization
9916	61.6	20.1	41.5	V
12687	61.8	19.3	42.5	V
14135	62	17.1	44.9	H
15800	62.5	17	45.5	H
16188	62.7	16.7	46	H
16821	61.8	16.9	44.9	H



Ch6

Frequency(MHz)	Result(dBuv/m)	ARPL (dB)	PMea(dBuv/m)	Polarization
10184	61.9	20.1	41.8	V
10457	61.9	20.4	41.5	V
14182	61.9	17.3	44.6	H
15677	62.4	16.7	45.7	V
16290	61.8	16.9	44.9	V
16773	62.2	16.7	45.5	H

Ch11

Frequency(MHz)	Result(dBuv/m)	ARPL (dB)	PMea(dBuv/m)	Polarization
10469	61.9	20.4	41.5	V
11513	61.9	19.3	42.6	V
13607	61.9	17.7	44.2	H
15729	62.9	16.8	46.1	V
16307	62.2	17	45.2	V
16798	62.4	16.8	45.6	V

**802.11g**

Ch1

Frequency(MHz)	Result(dBuv/m)	ARPL (dB)	PMea(dBuv/m)	Polarization
14398	57.5	13.4	44.1	H
14931	57.6	13.7	43.9	H
15682	60	13.9	46.1	H
16198	60.6	14.4	46.2	H
16792	60.8	15.3	45.5	H
17276	60.3	15.4	44.9	H

Ch6

Frequency(MHz)	Result(dBuv/m)	ARPL (dB)	PMea(dBuv/m)	Polarization
10529	61.8	20.2	41.6	V
12104	61.8	19.2	42.6	H
14616	61.7	16.9	44.8	V
15690	62.7	16.8	45.9	V
16204	61.8	16.7	45.1	H
16759	61.9	16.7	45.2	V

Ch11

Frequency(MHz)	Result(dBuv/m)	ARPL (dB)	PMea(dBuv/m)	Polarization
9956.25	61.8	20.4	41.4	H
12134	62	19.3	42.7	V
14159	62.8	17.2	45.6	V
15726	62.4	16.8	45.6	V
16212	62.8	16.6	46.2	V
16792	62.1	16.8	45.3	V

**802.11n-HT20**

Ch1

Frequency(MHz)	Result(dBuv/m)	ARPL (dB)	PMea(dBuv/m)	Polarization
13995	57.5	12	45.5	V
15038	58.3	13.3	45	H
15794	60.3	14.2	46.1	V
16212	59.9	14.4	45.5	H
16764	60.8	15.1	45.7	H
17308	60.9	15.4	45.5	H

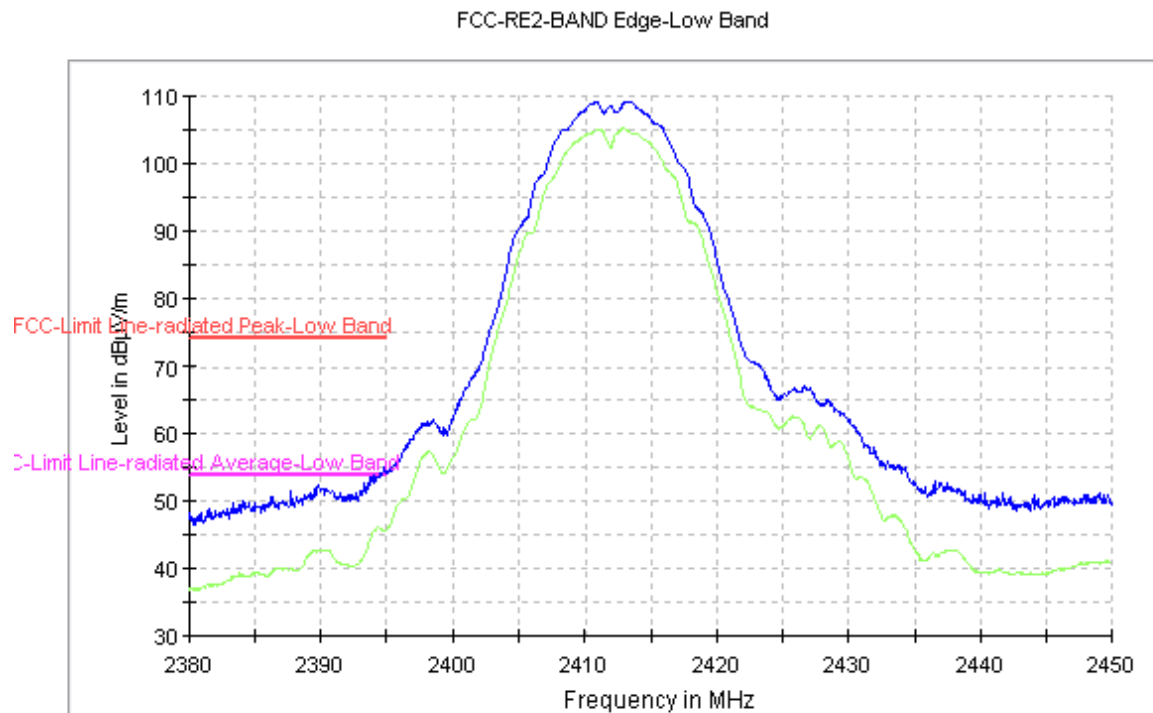
Ch6

Frequency(MHz)	Result(dBuv/m)	ARPL (dB)	PMea(dBuv/m)	Polarization
14341	57.1	13.3	43.8	H
15079	58.4	13.1	45.3	V
15781	59.2	14.2	45	V
16176	60.1	14.5	45.6	V
16805	60.7	15.4	45.3	H
17329	60.4	15.5	44.9	H

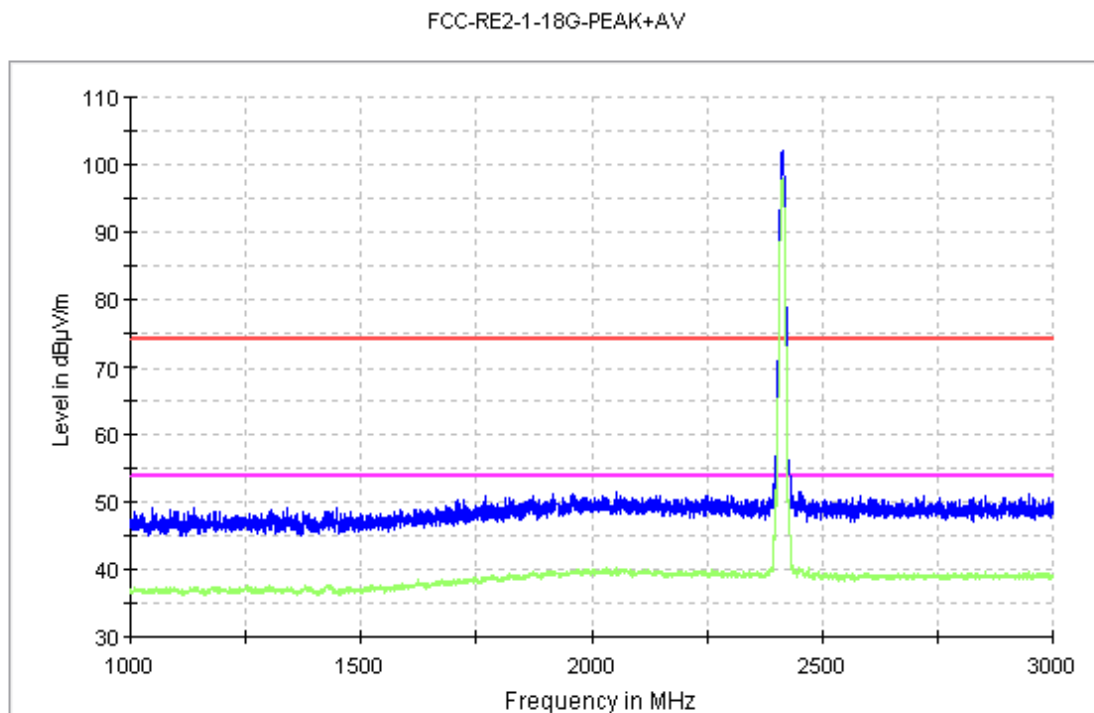
Ch11

Frequency(MHz)	Result(dBuv/m)	ARPL (dB)	PMea(dBuv/m)	Polarization
14140	57.1	12.3	44.8	H
15141	58.1	12.9	45.2	V
15711	60	13.9	46.1	H
16219	60.4	14.4	46	H
16871	60.8	15.8	45	V
17372	60.8	15.5	45.3	H

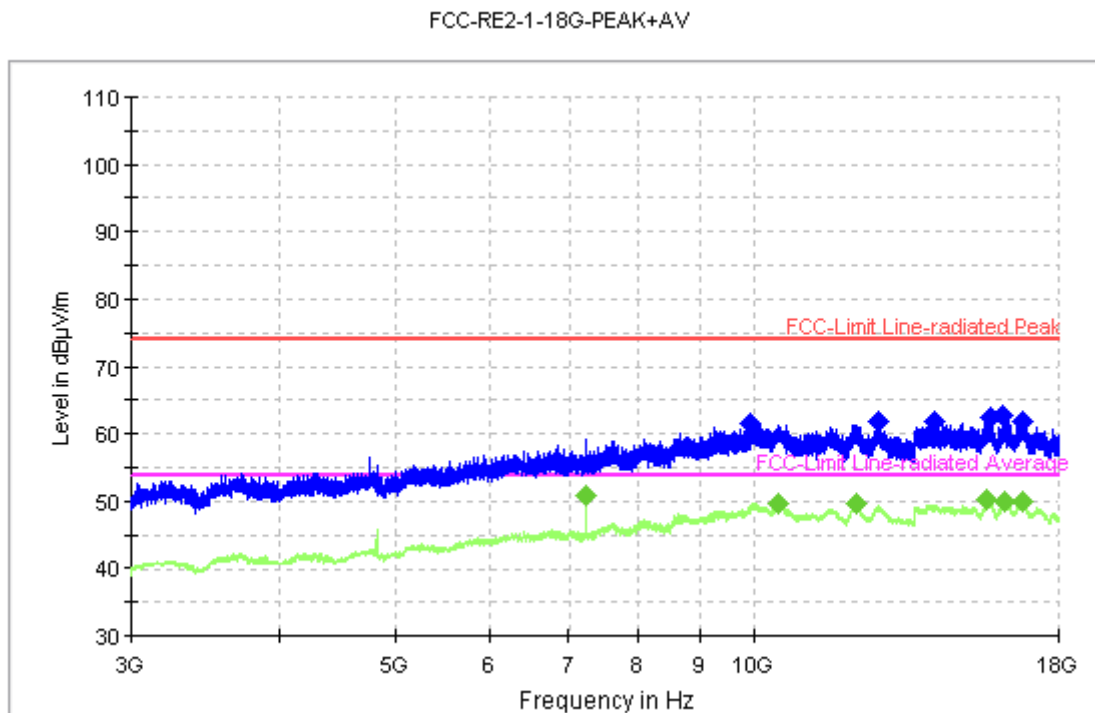
**Test graphs as below:**



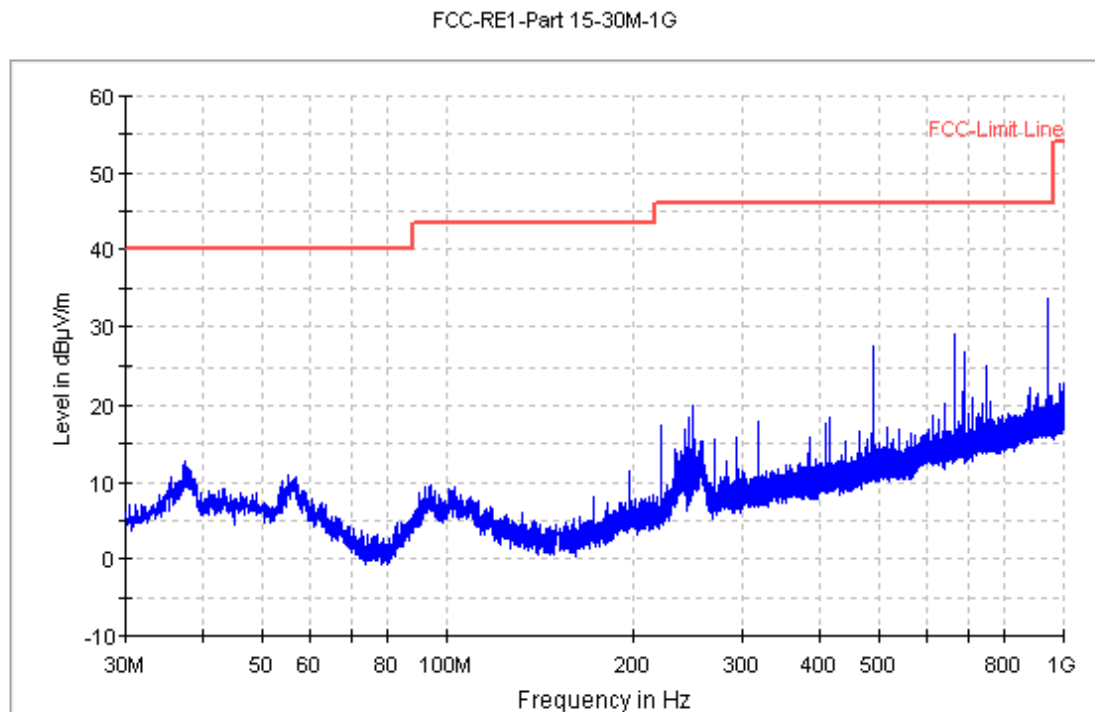
**Fig.A.6.2.1 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch1, 2.38 GHz – 2.45GHz**



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

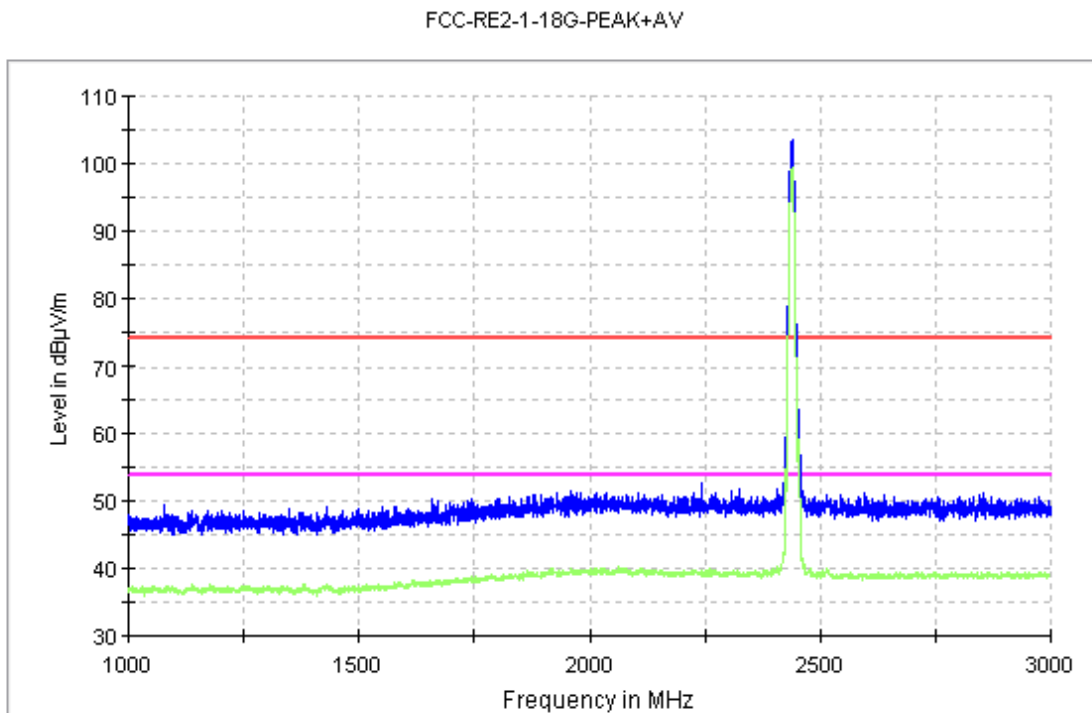


**Fig.A.6.2.3 Transmitter Spurious Emission - Radiated (802.11b, Ch1, 3 GHz-18 GHz)**

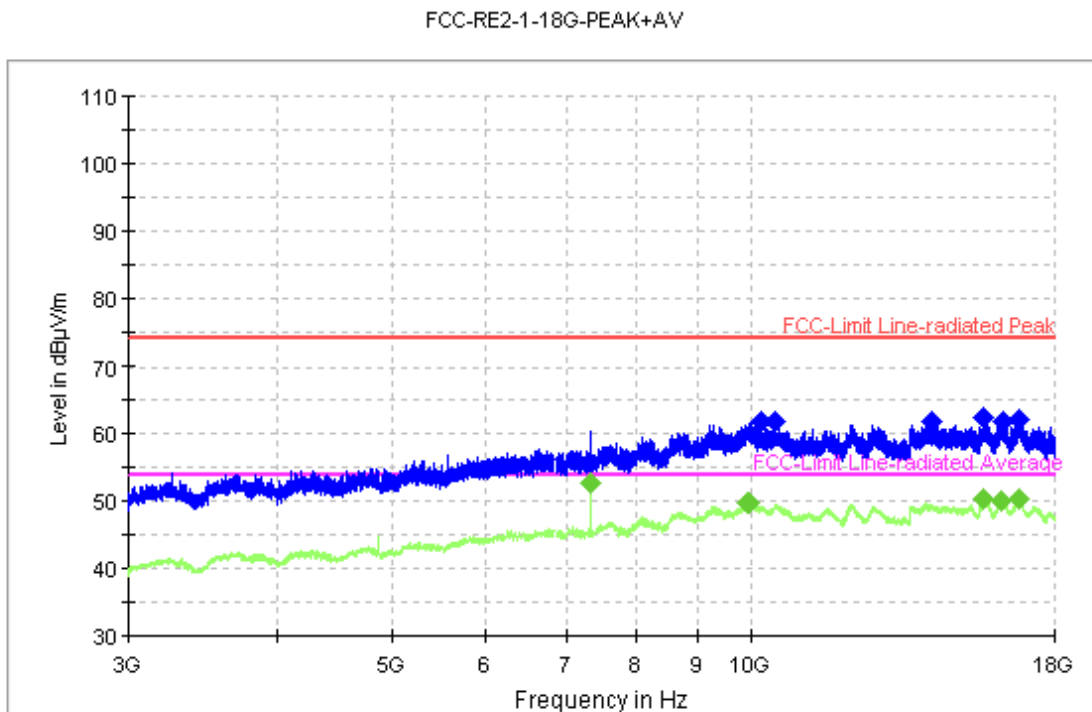


**Fig.A.6.2.4 Transmitter Spurious Emission - Radiated (802.11b, Ch6, 30 MHz-1 GHz)**

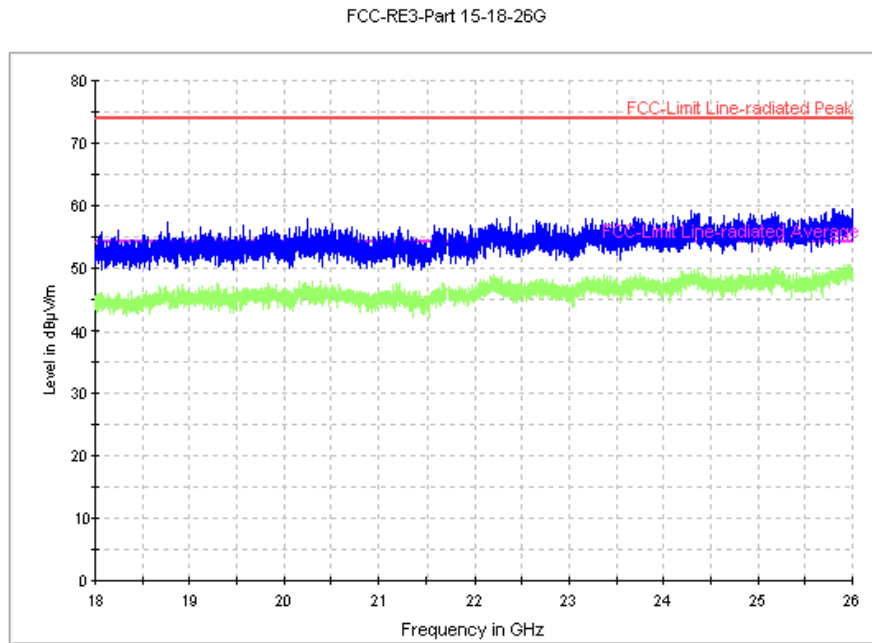




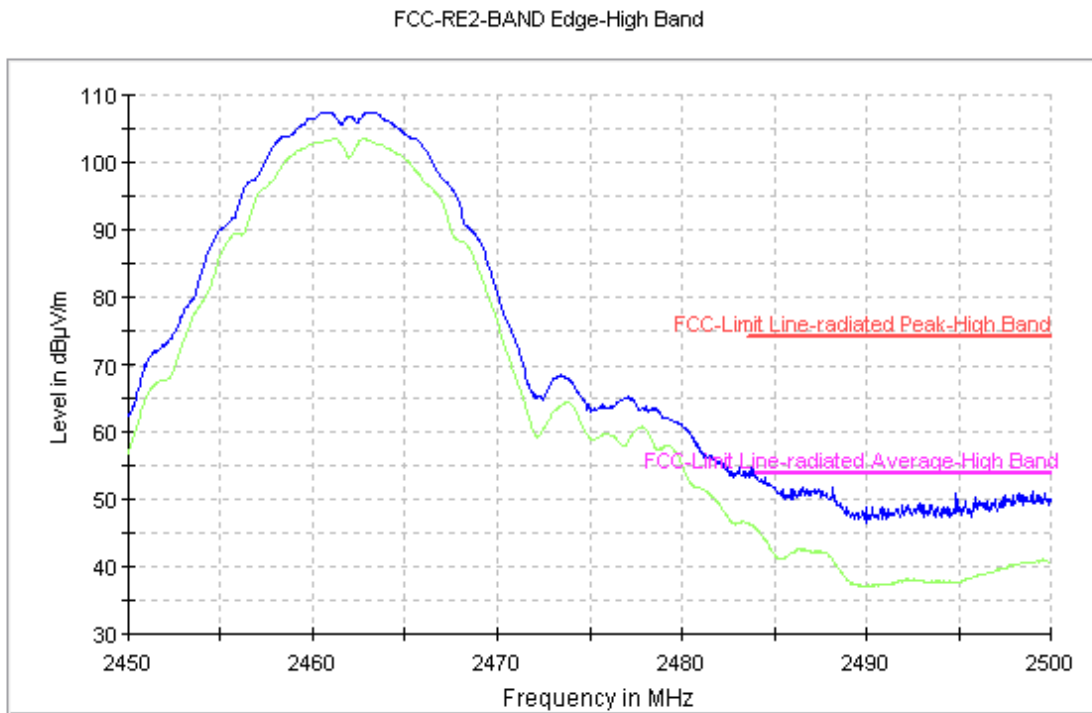
**Fig.A.6.2.5 Transmitter Spurious Emission - Radiated (802.11b, Ch6, 1 GHz-3 GHz)**



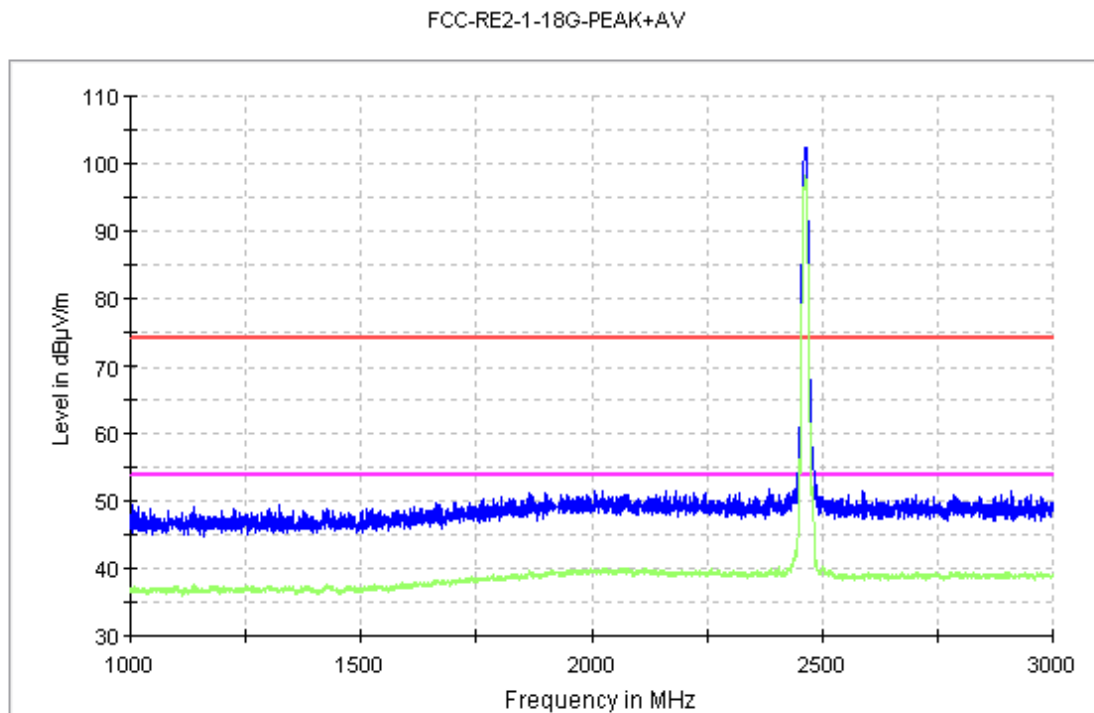
**Fig.A.6.2.6 Transmitter Spurious Emission - Radiated (802.11b, Ch6, 3 GHz-18 GHz)**



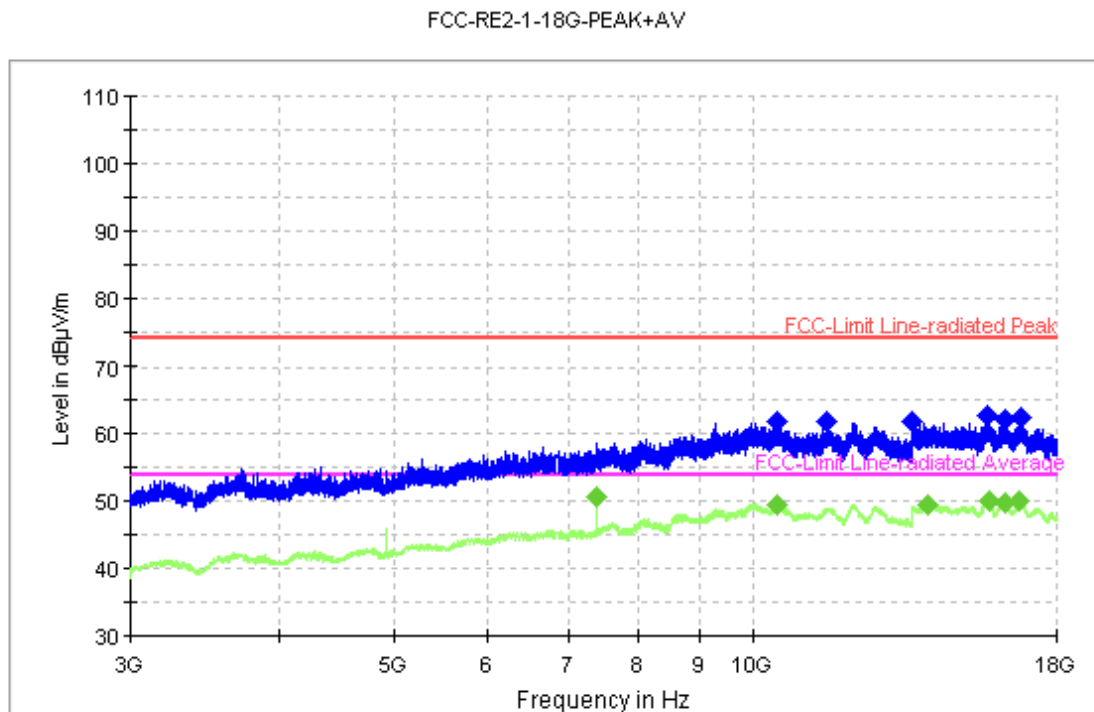
**Fig.A.6.2.7 Transmitter Spurious Emission - Radiated (802.11b, Ch6, 18GHz – 26.5GHz)**



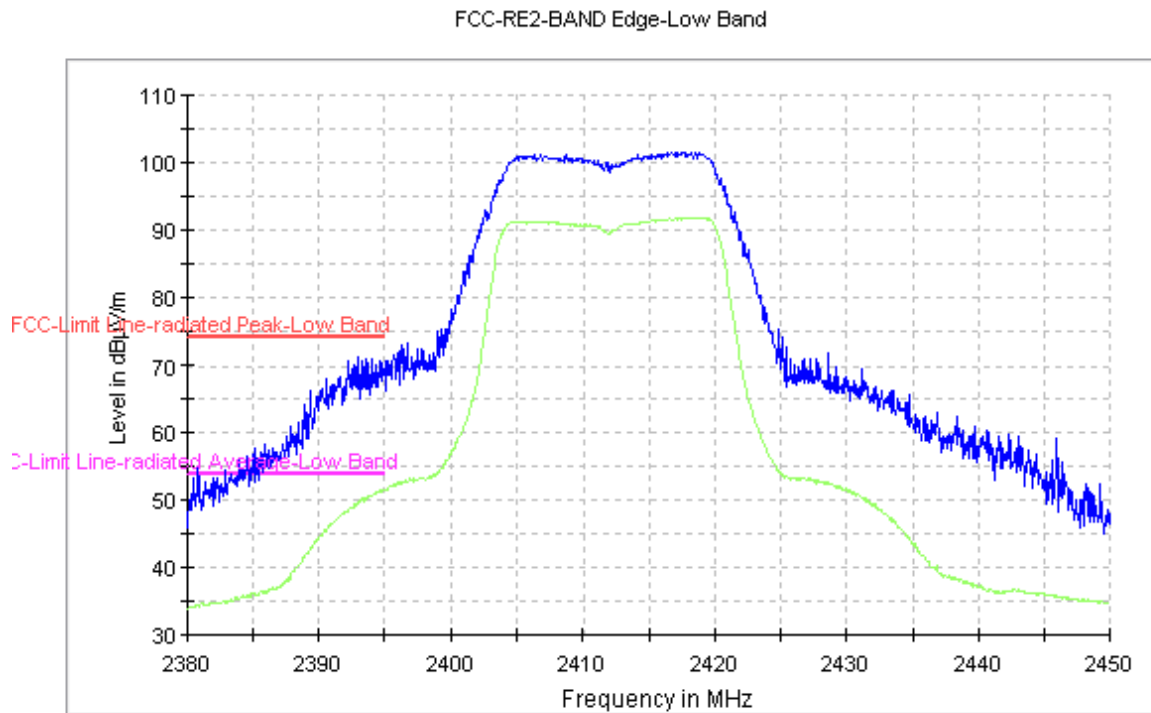
**Fig.A.6.2.8 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch11, 2.45 GHz - 2.50GHz**



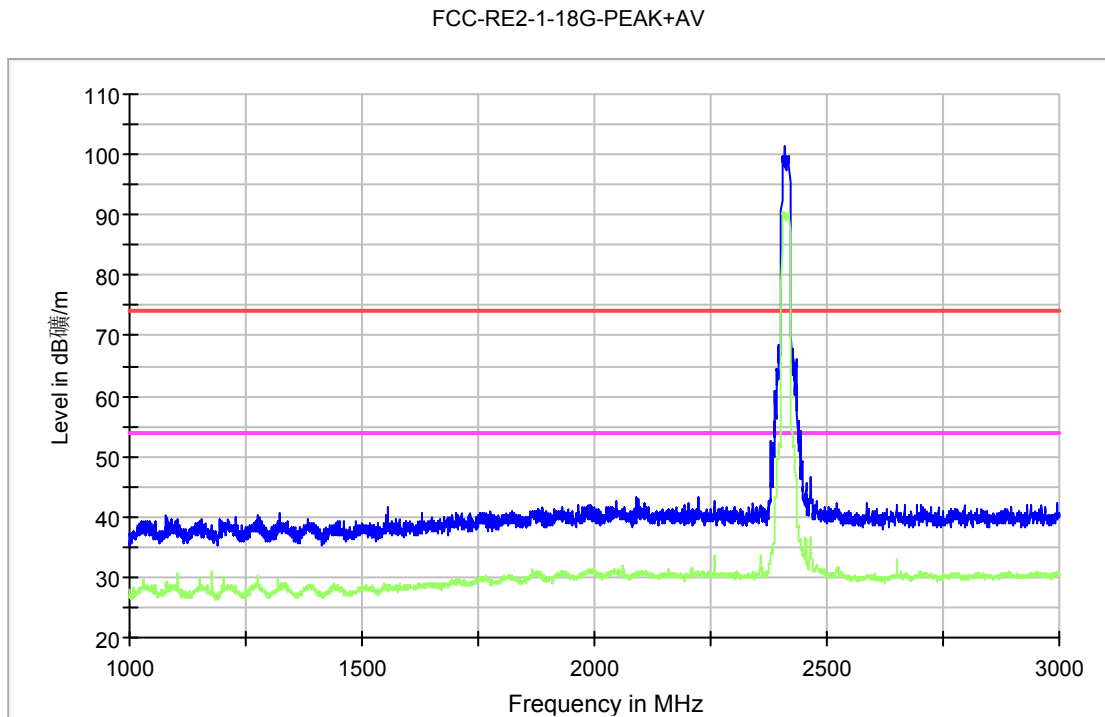
**Fig.A.6.2.9 Transmitter Spurious Emission - Radiated (802.11b, Ch11, 1 GHz-3 GHz)**



**Fig.A.6.2.10 Transmitter Spurious Emission - Radiated (802.11b, Ch11, 3 GHz-18 GHz)**

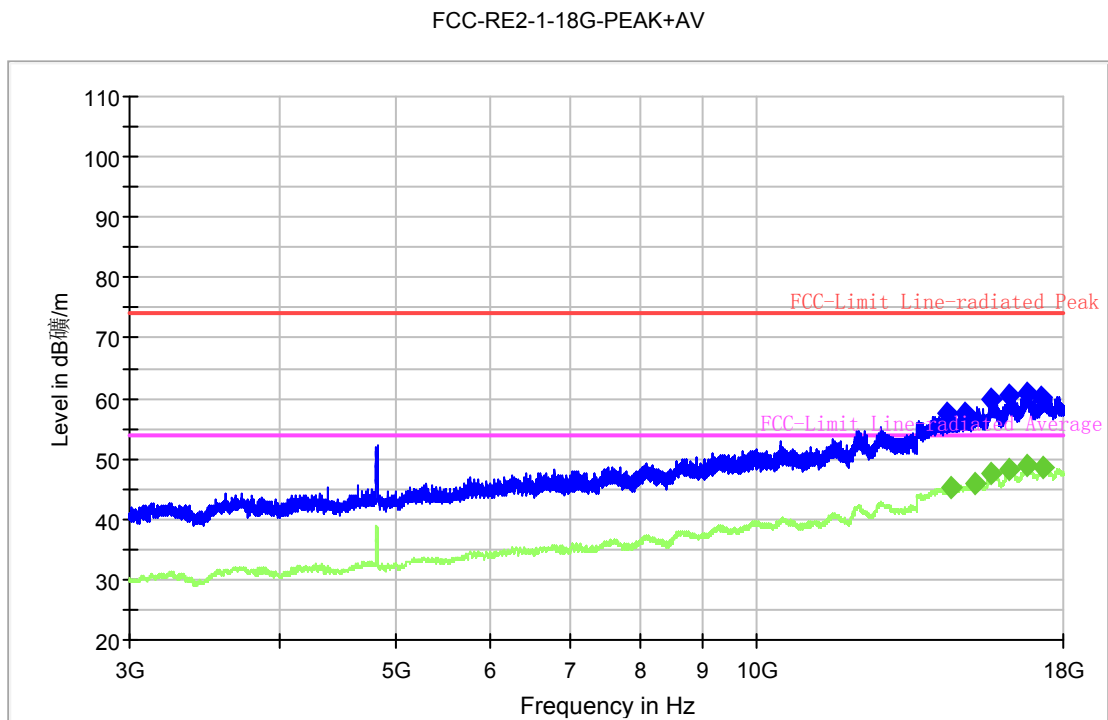


**Fig.A.6.2.11 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch1, 2.38 GHz - 2.45GHz**

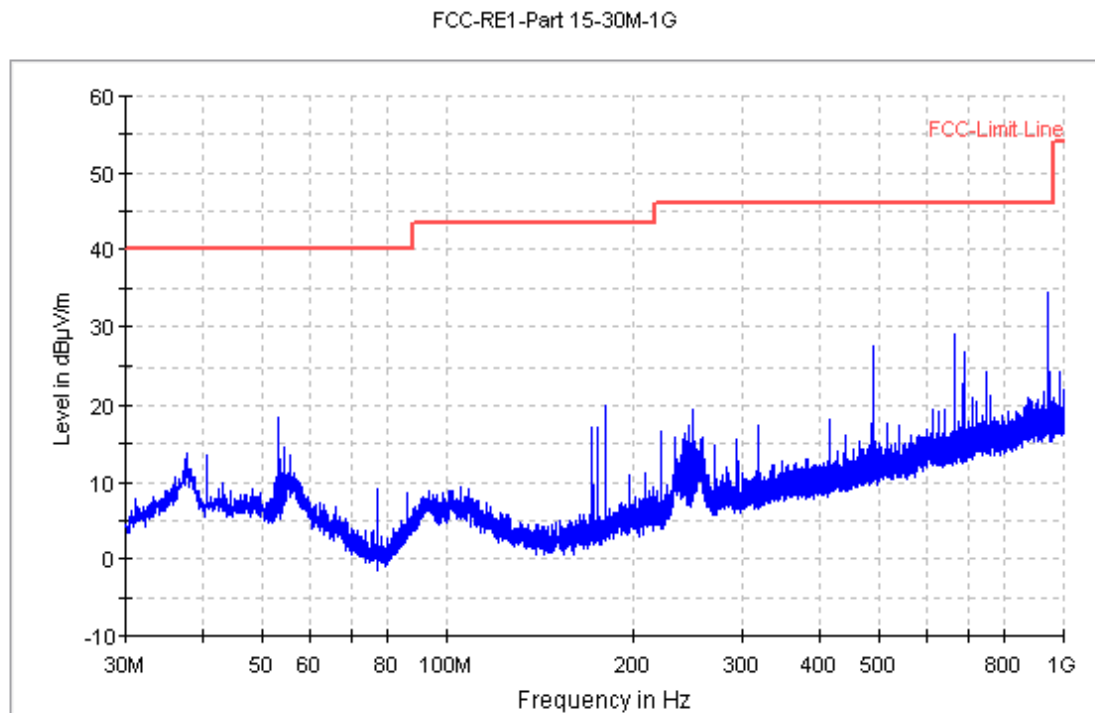




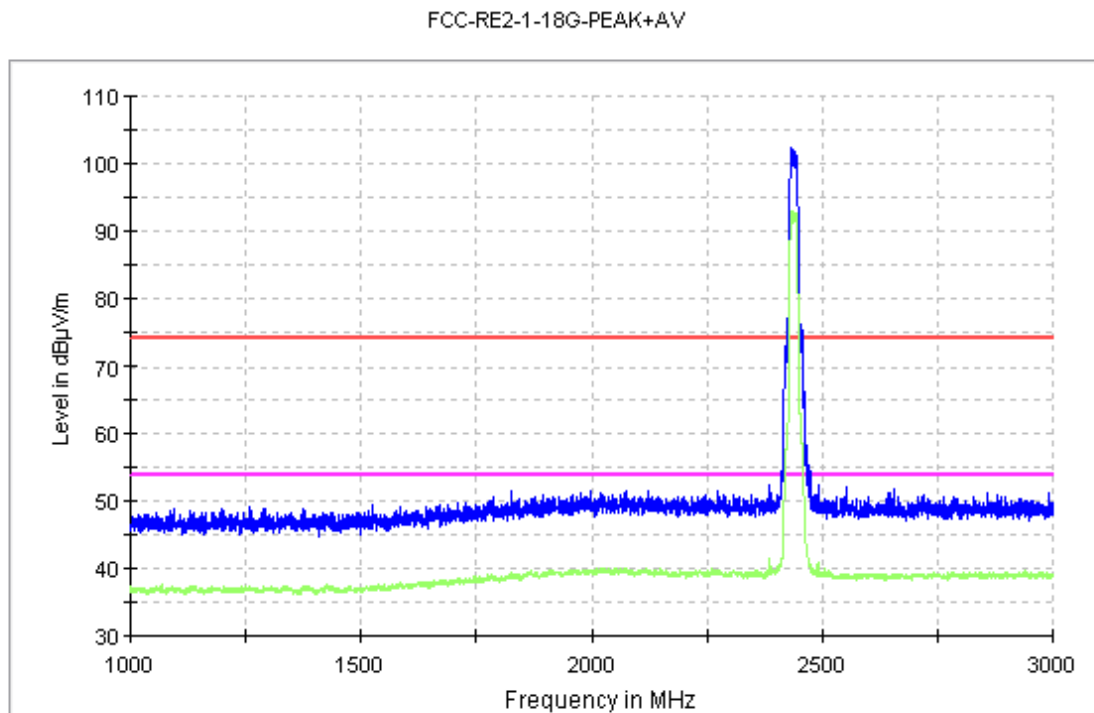
**Fig.A.6.2.12 Transmitter Spurious Emission - Radiated (802.11g, Ch1, 1 GHz-3 GHz)**



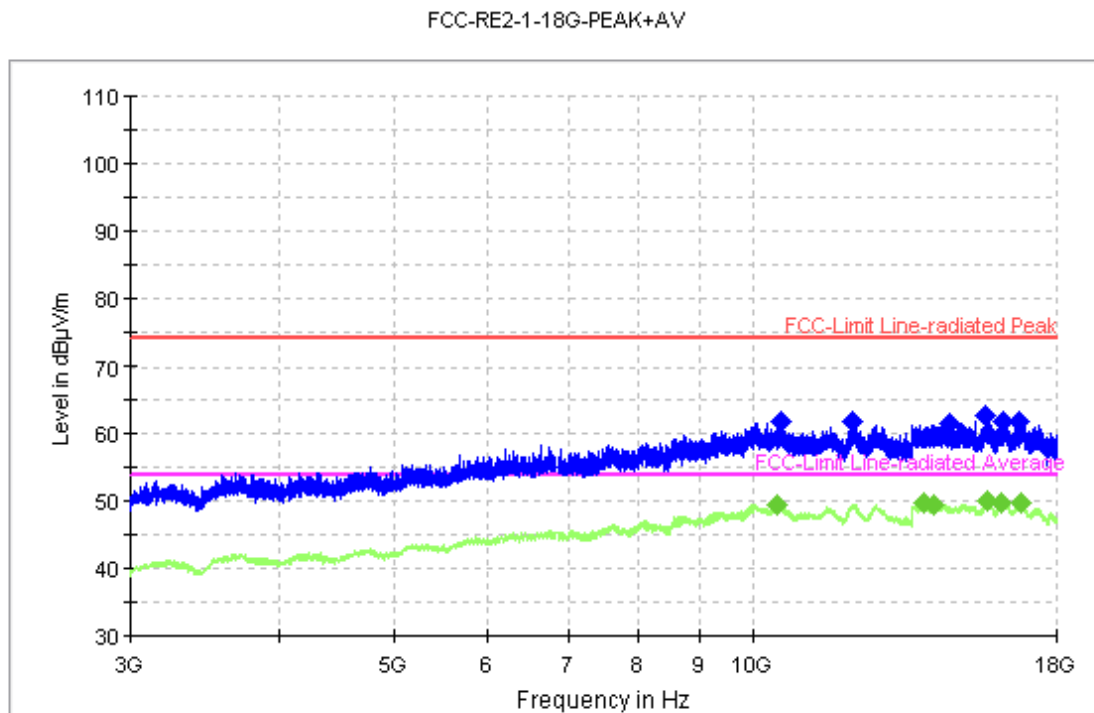
**Fig.A.6.2.13 Transmitter Spurious Emission - Radiated (802.11g, Ch1, 3 GHz-18 GHz)**



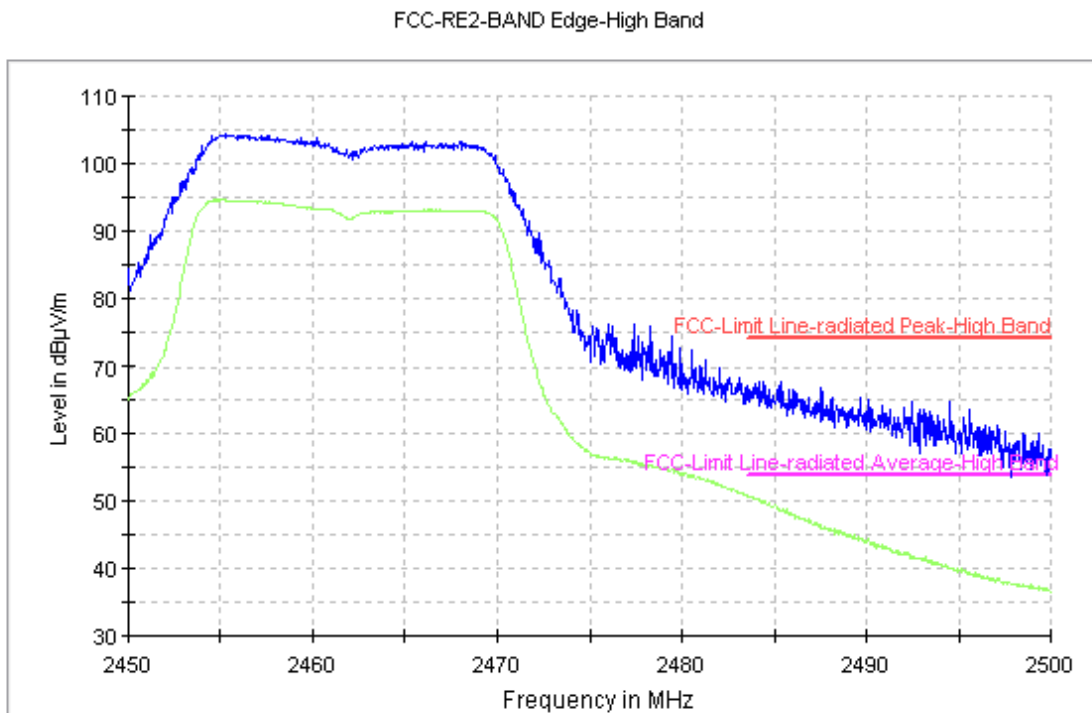
**Fig.A.6.2.14 Transmitter Spurious Emission - Radiated (802.11g, Ch6, 30 MHz-1 GHz)**



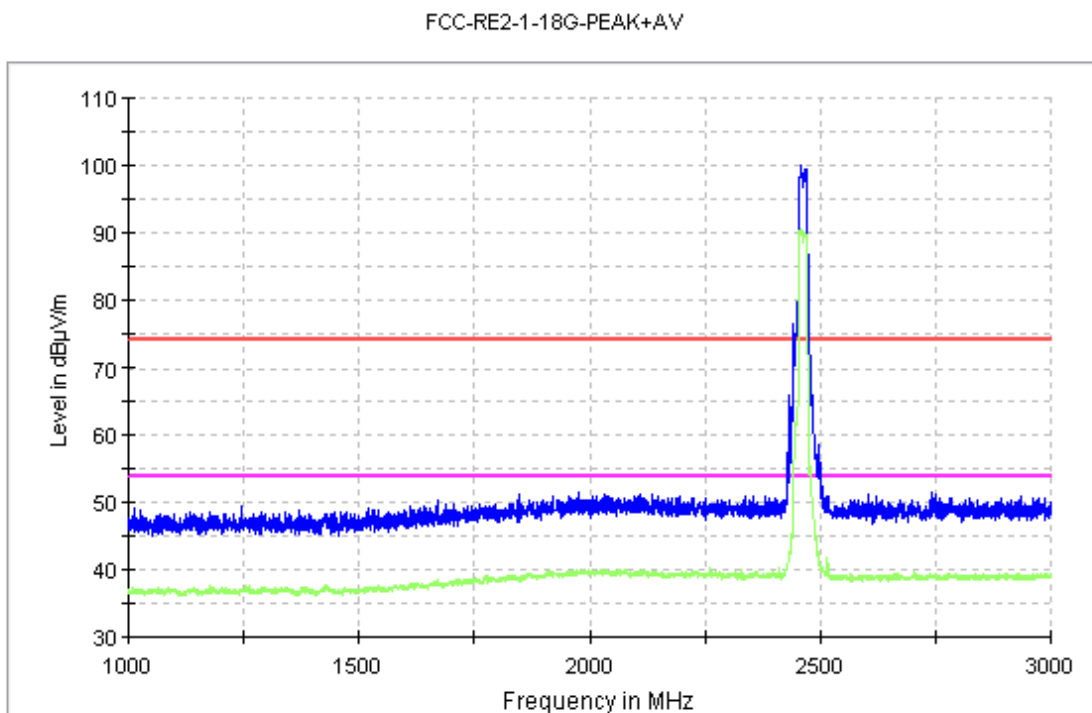
**Fig.A.6.2.15 Transmitter Spurious Emission - Radiated (802.11g, Ch6, 1 GHz-3 GHz)**



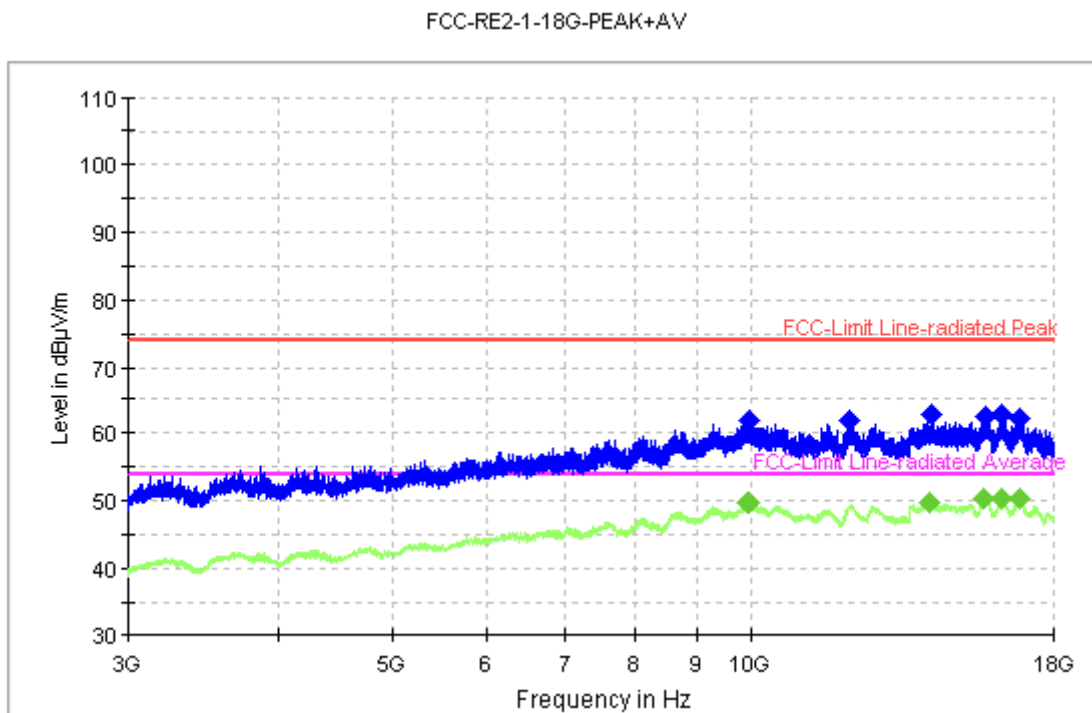
**Fig.A.6.2.16 Transmitter Spurious Emission - Radiated (802.11g, Ch6, 3 GHz-18 GHz)**



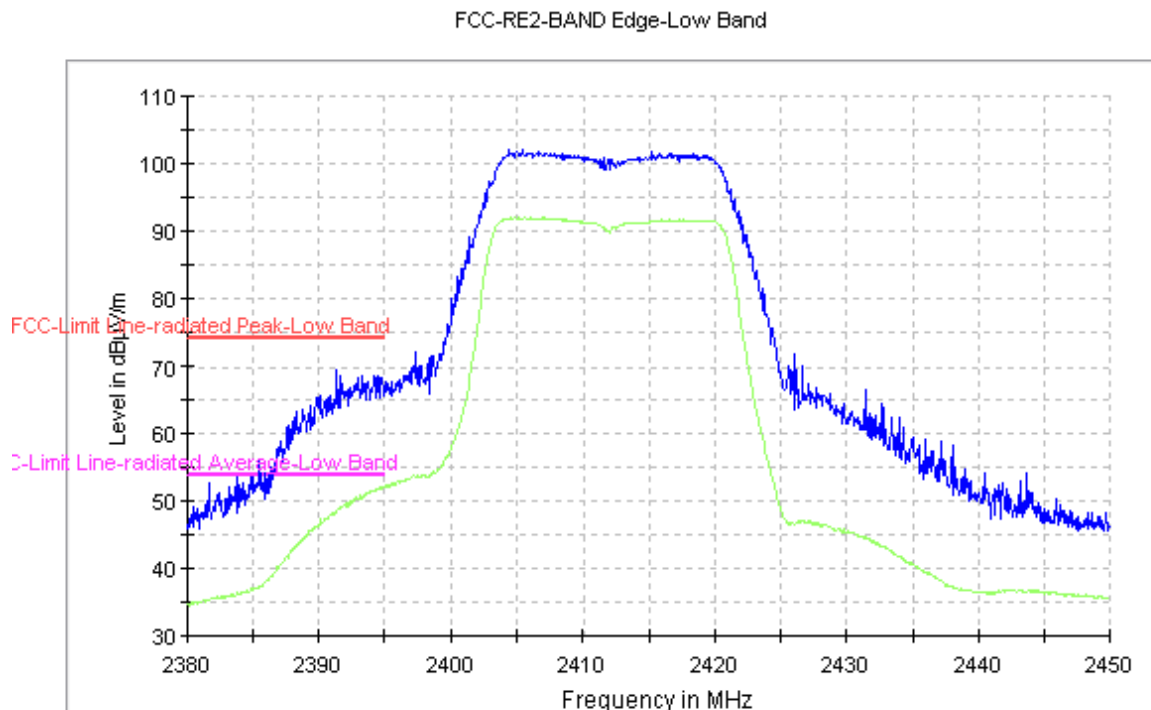
**Fig.A.6.2.17 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch11, 2.45 GHz - 2.50GHz**



**Fig.A.6.2.18 Transmitter Spurious Emission - Radiated (802.11g, Ch11, 1 GHz-3 GHz)**



**Fig.A.6.2.19 Transmitter Spurious Emission - Radiated (802.11g, Ch11, 3 GHz-18 GHz)**



**Fig.A.6.2.20 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch1, 2.38 GHz -**



2.45GHz

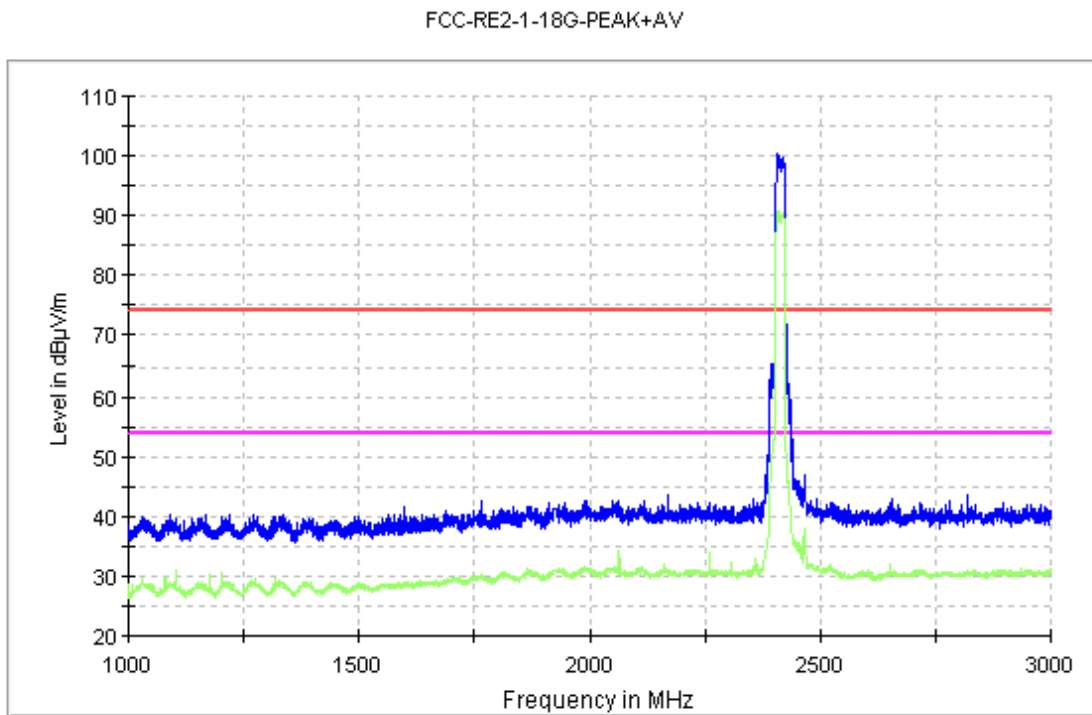
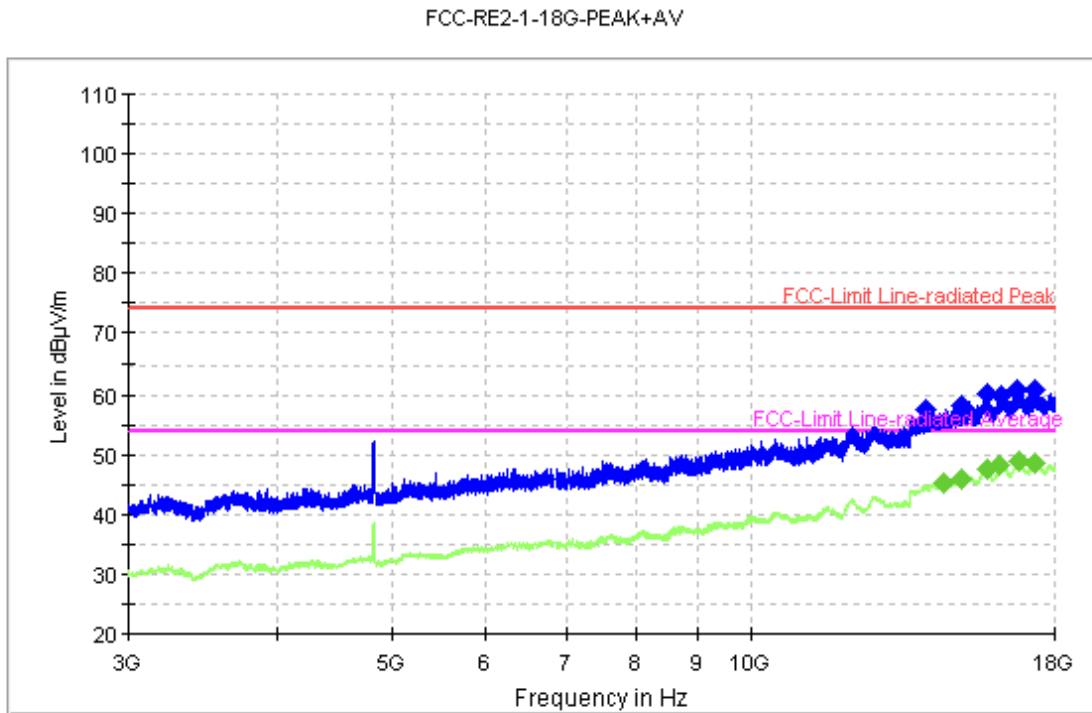
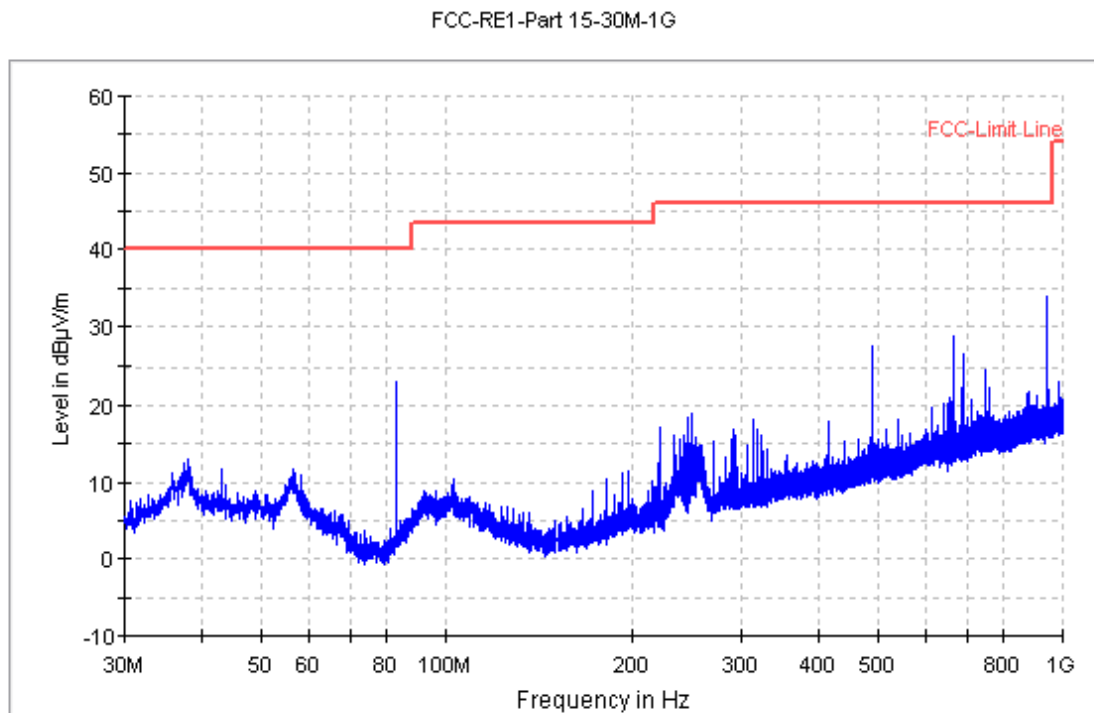


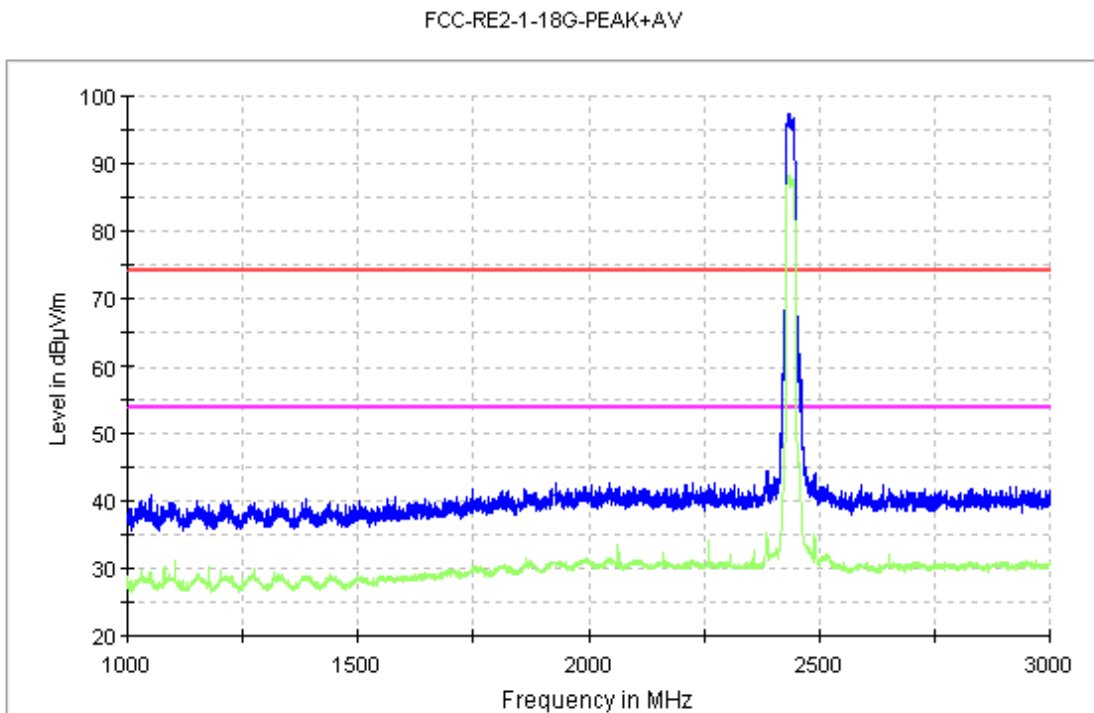
Fig.A.6.2.21 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch1, 1 GHz-3 GHz)



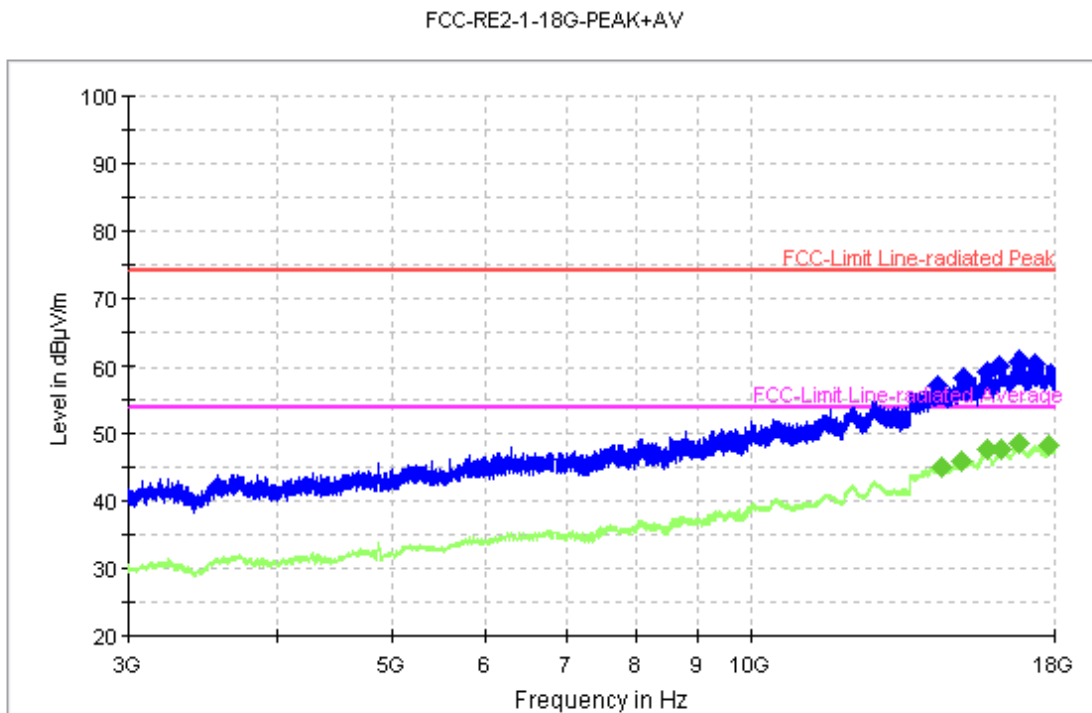
**Fig.A.6.2.22 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch1, 3 GHz-18 GHz)**



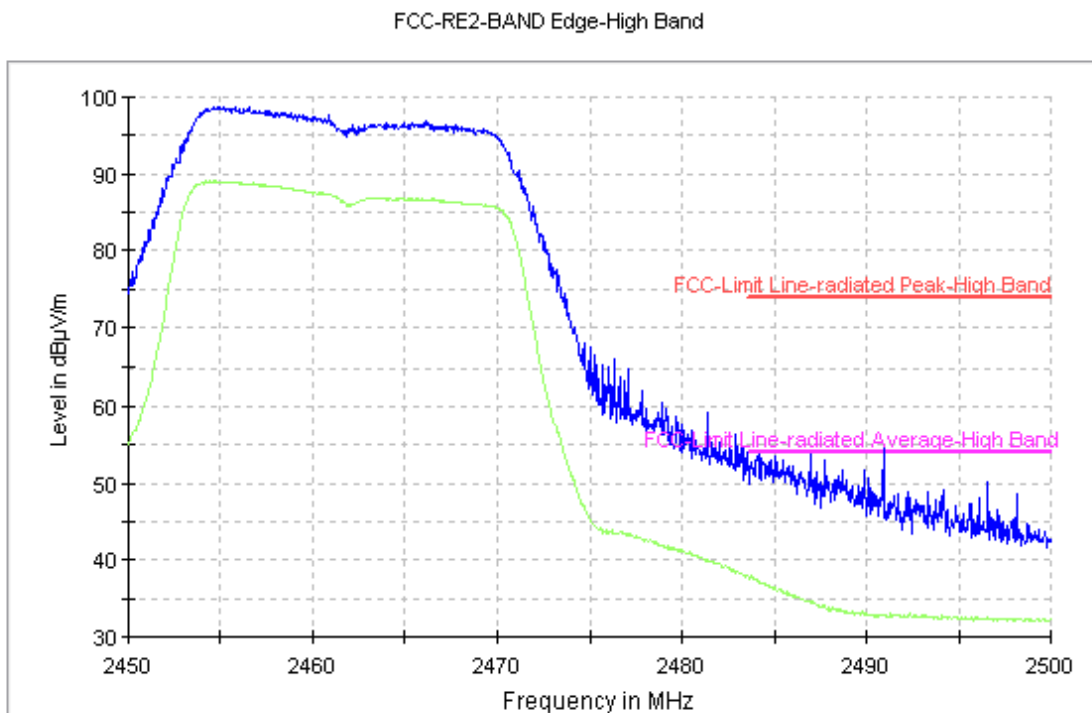
**Fig.A.6.2.23 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch6, 30 MHz-1 GHz)**



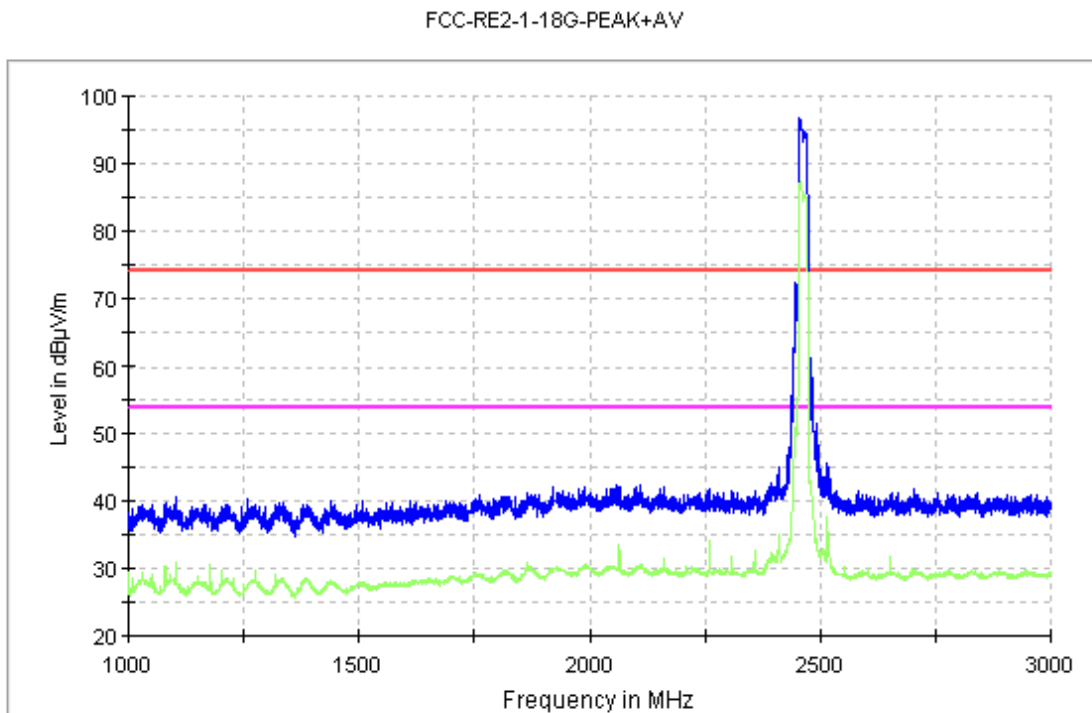
**Fig.A.6.2.24 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch6, 1 GHz-3 GHz)**



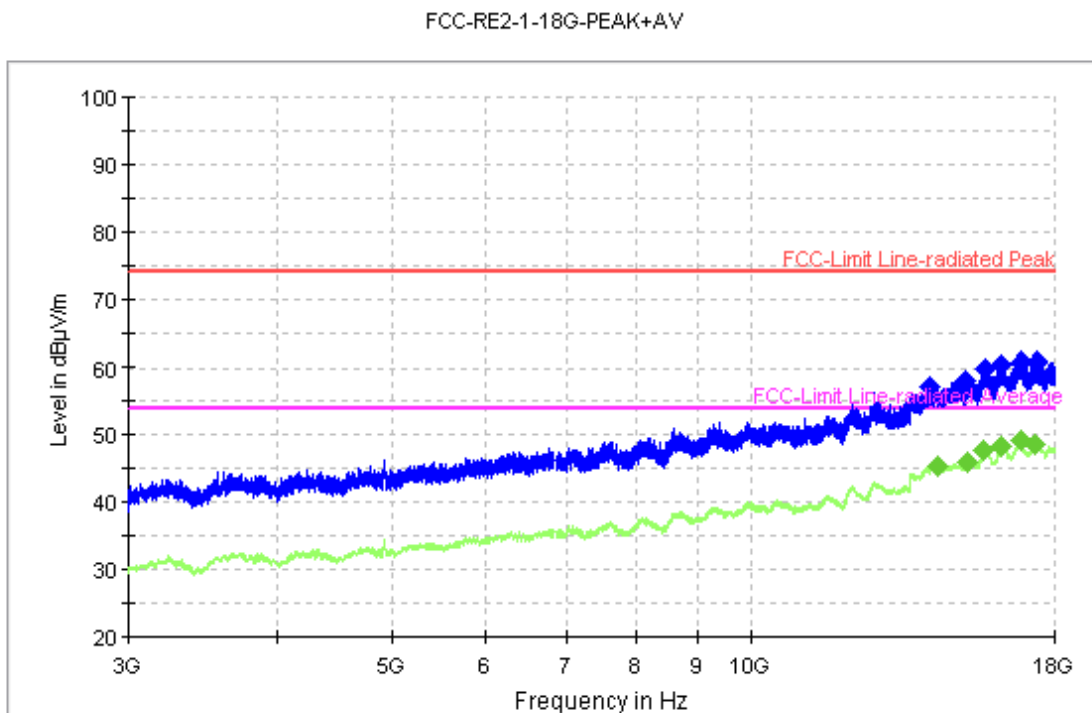
**Fig.A.6.2.25 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch6, 3 GHz-18 GHz)**



**Fig.A.6.2.26 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch11, 2.45 GHz - 2.50GHz**



**Fig.A.6.2.27 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch11, 1 GHz-3 GHz)**



**Fig.A.6.2.28 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch11, 3 GHz-18 GHz)**

## A.7. Transmitter Spurious Emission - Radiated < 30MHz

Measurement Limit:

Frequency (MHz)	Field strength( $\mu\text{V}/\text{m}$ )	Measurement distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30

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)).

Measurement Results:

Mode	Frequency Range	Test Results	Conclusion
802.11b	9 kHz ~30 MHz	Fig.A.7.1	P

Conclusion: PASS

Test graphs as below:

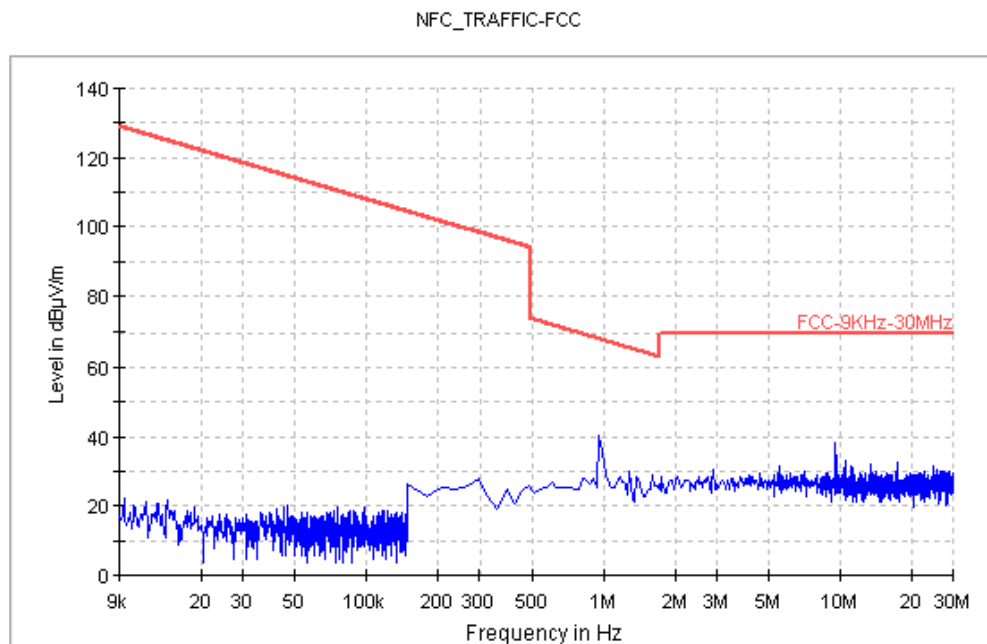


Fig.A.7.1 Transmitter Spurious Emission - Radiated (802.11b, 9 kHz ~30 MHz)

## A.8. 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	Idle	
0.15 to 0.5	66 to 56	Fig.A.8.1	Fig.A.8.2	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 (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11b	Idle	
0.15 to 0.5	56 to 46	Fig.A.8.1	Fig.A.8.2	P
0.5 to 5	46			
5 to 30	50			

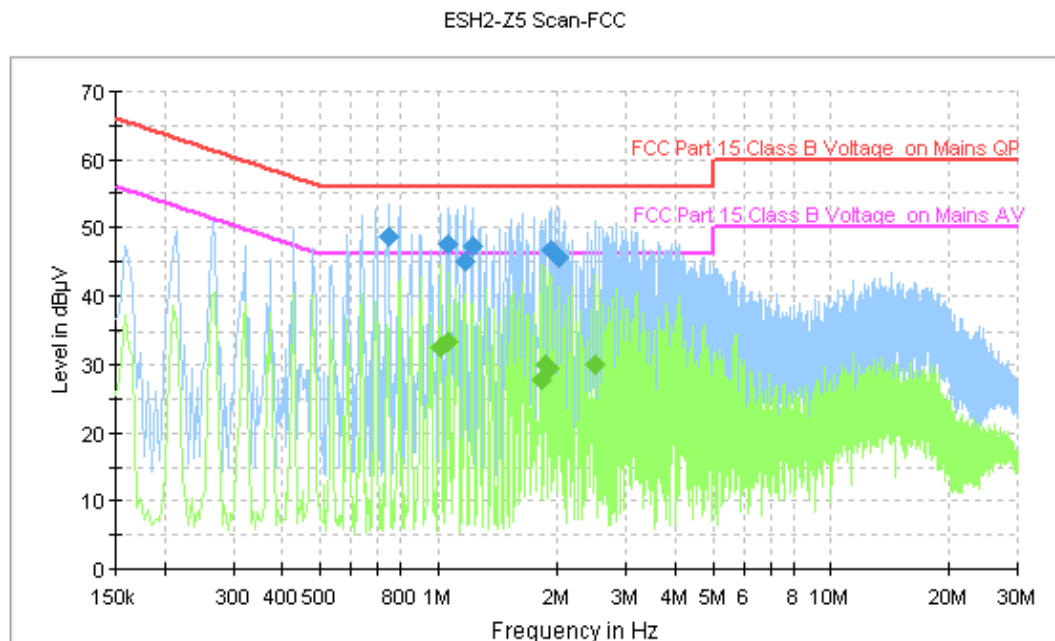
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

### Conclusion: Pass

### Measurement uncertainty:

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

### Test graphs as below:



**Fig.A.8.1 AC Powerline Conducted Emission-802.11b**

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

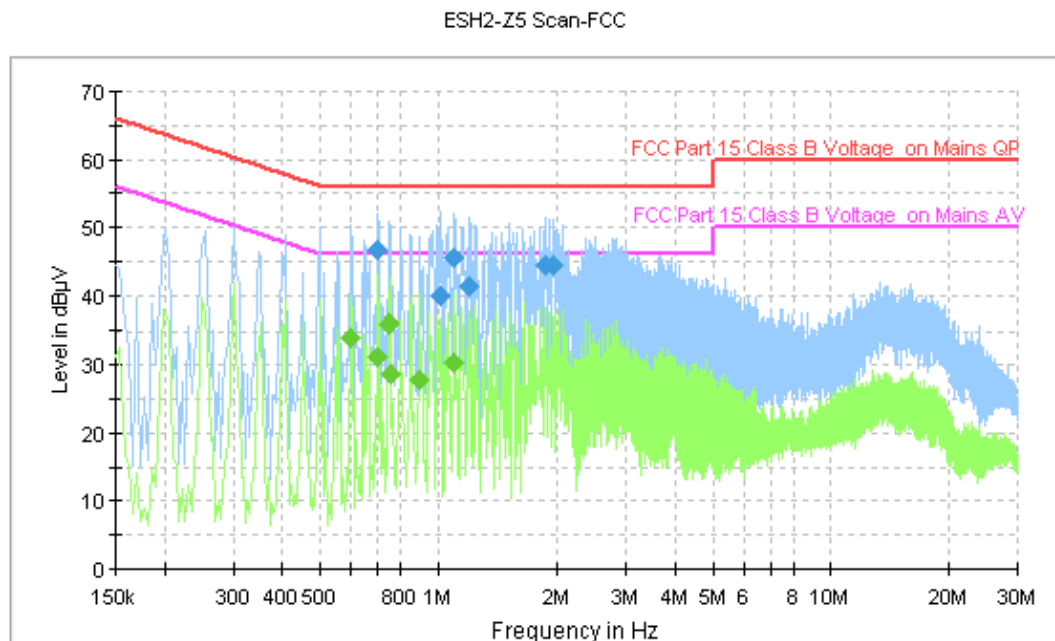
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.746000	48.7	FLO	L1	10.0	7.3	56.0
1.066000	47.5	FLO	L1	10.1	8.5	56.0
1.174000	44.9	FLO	L1	10.1	11.1	56.0
1.226000	47.2	FLO	L1	10.1	8.8	56.0
1.918000	46.7	FLO	L1	10.1	9.3	56.0
2.018000	45.6	FLO	L1	10.1	10.4	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.010000	32.6	FLO	L1	10.0	13.4	46.0
1.062000	33.4	FLO	L1	10.1	12.6	46.0
1.814000	27.7	FLO	L1	10.1	18.3	46.0
1.866000	30.1	FLO	L1	10.1	15.9	46.0
1.910000	29.6	FLO	L1	10.1	16.4	46.0
2.506000	30.2	FLO	L1	10.2	15.8	46.0





**Fig.A.8.2 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 (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.702000	46.7	FLO	L1	10.0	9.3	56.0
1.010000	39.9	FLO	L1	10.0	16.1	56.0
1.102000	45.5	FLO	L1	10.1	10.5	56.0
1.206000	41.4	FLO	L1	10.1	14.6	56.0
1.858000	44.3	FLO	L1	10.1	11.7	56.0
1.950000	44.4	FLO	L1	10.1	11.6	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.598000	33.9	FLO	L1	10.1	12.1	46.0
0.702000	31.1	FLO	L1	10.0	14.9	46.0
0.746000	36.1	FLO	L1	10.0	9.9	46.0
0.754000	28.6	FLO	L1	10.1	17.4	46.0
0.902000	27.9	FLO	L1	10.1	18.1	46.0
1.102000	30.4	FLO	L1	10.1	15.6	46.0

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