

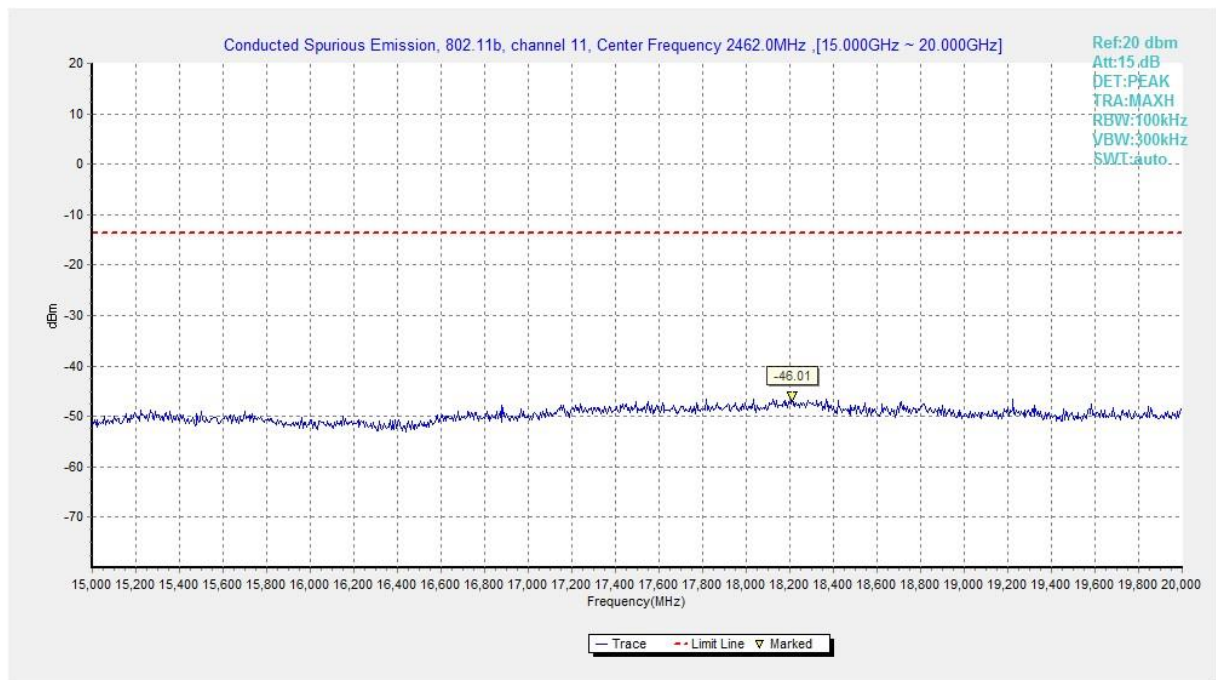


Fig.A.6.1.23 Transmitter Spurious Emission - Conducted (802.11b, Ch11, 15 GHz-20 GHz)

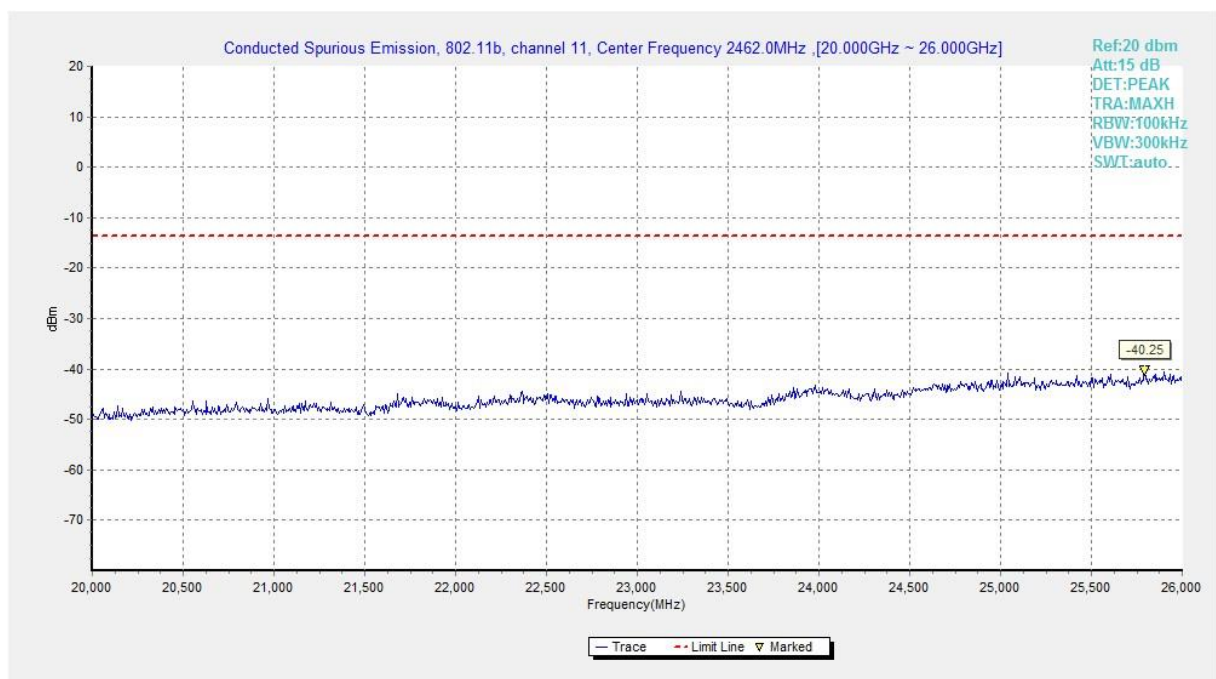


Fig.A.6.1.24 Transmitter Spurious Emission - Conducted (802.11b, Ch11, 20 GHz-26 GHz)

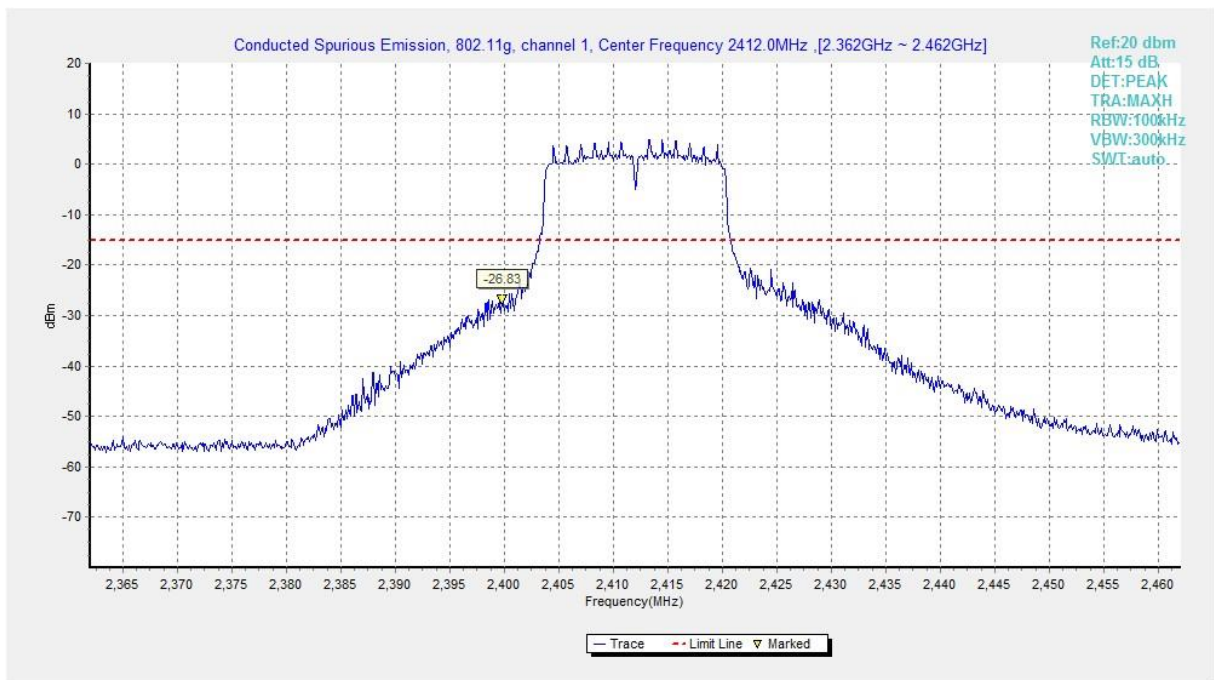


Fig.A.6.1.25 Transmitter Spurious Emission - Conducted (802.11g, Ch1, Center Frequency)

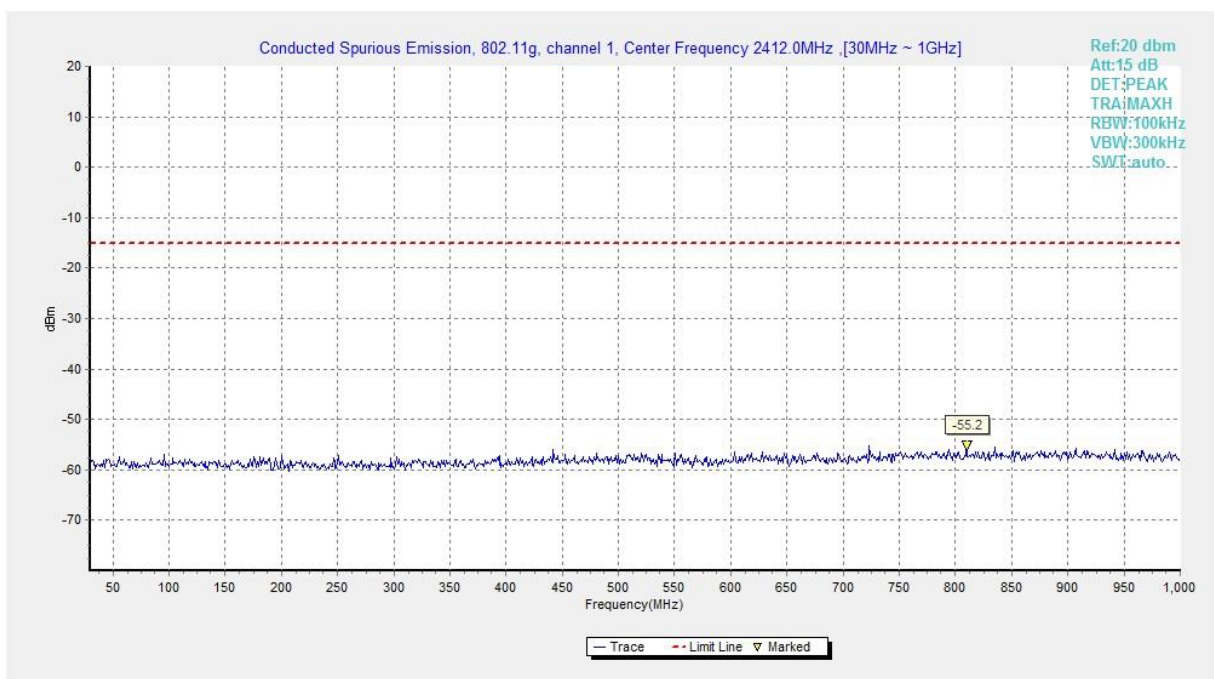


Fig.A.6.1.26 Transmitter Spurious Emission - Conducted (802.11g, Ch1, 30 MHz-1 GHz)

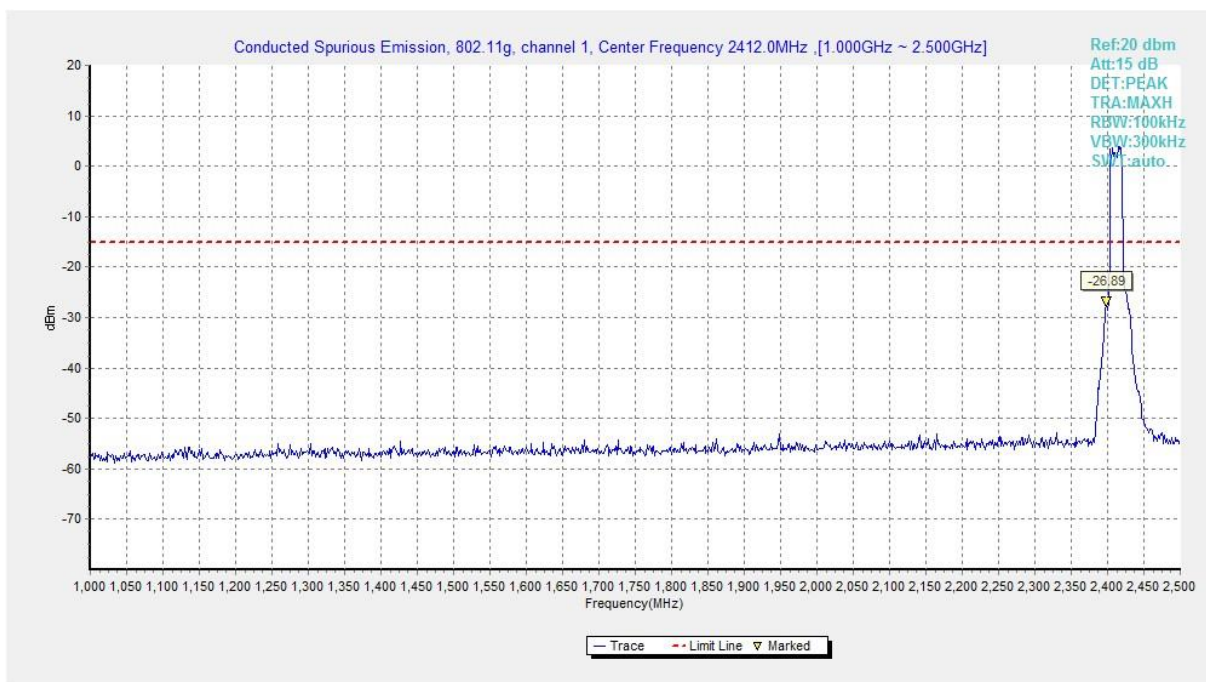


Fig.A.6.1.27 Transmitter Spurious Emission - Conducted (802.11g, Ch1, 1 GHz-2.5 GHz)

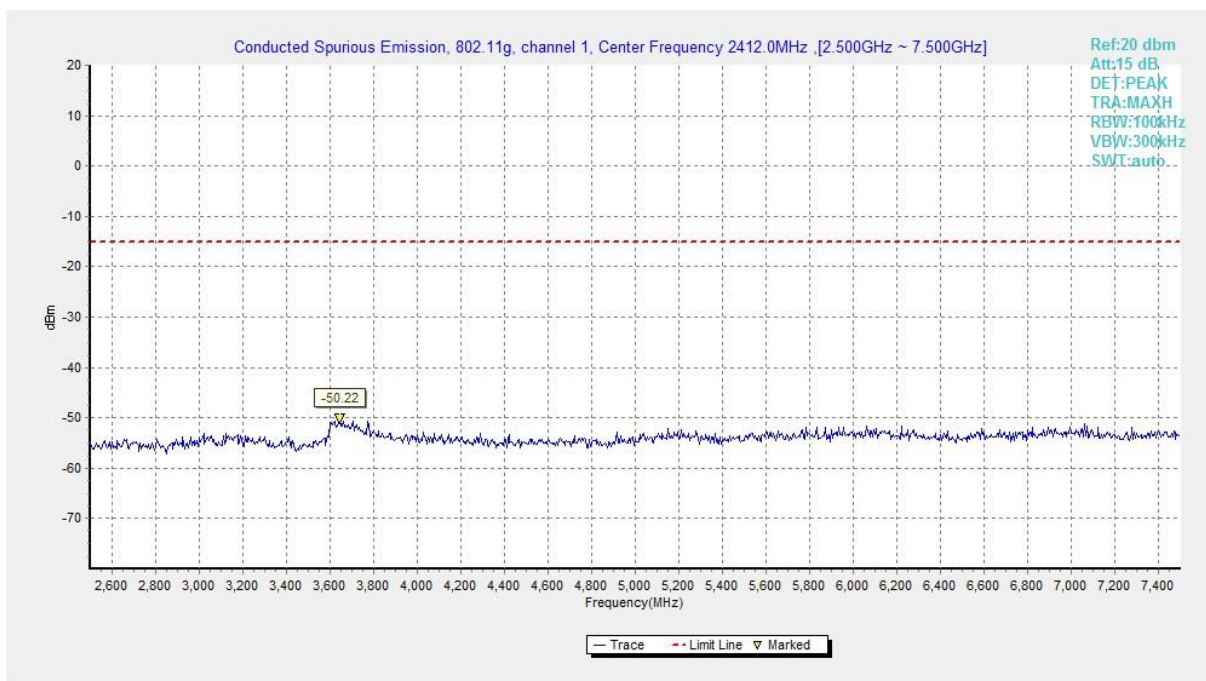


Fig.A.6.1.28 Transmitter Spurious Emission - Conducted (802.11g, Ch1, 2.5 GHz-7.5 GHz)

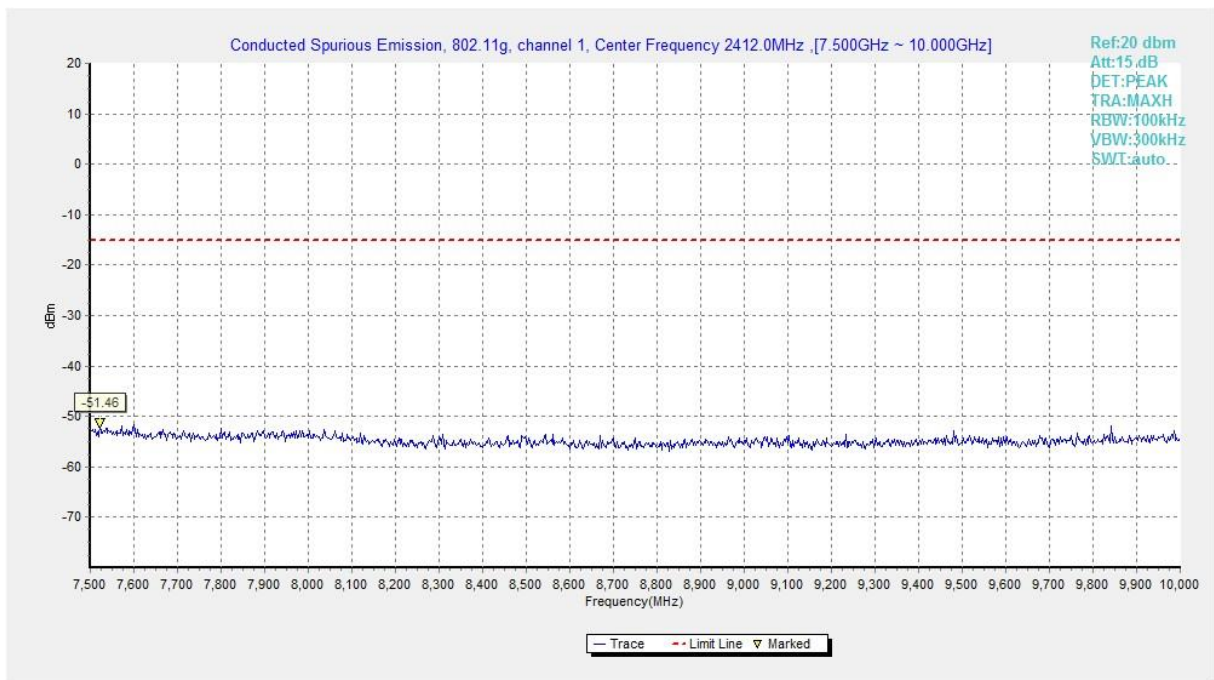


Fig.A.6.1.29 Transmitter Spurious Emission - Conducted (802.11g, Ch1, 7.5 GHz-10 GHz)

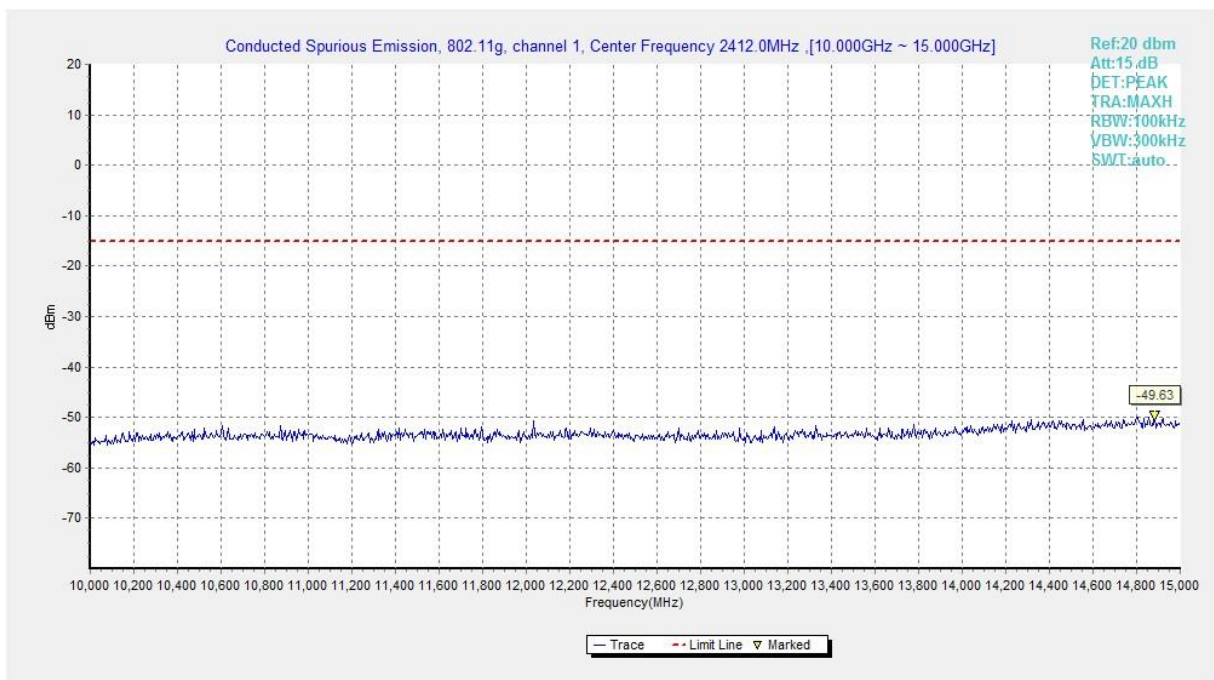


Fig.A.6.1.30 Transmitter Spurious Emission - Conducted (802.11g, Ch1, 10 GHz-15 GHz)

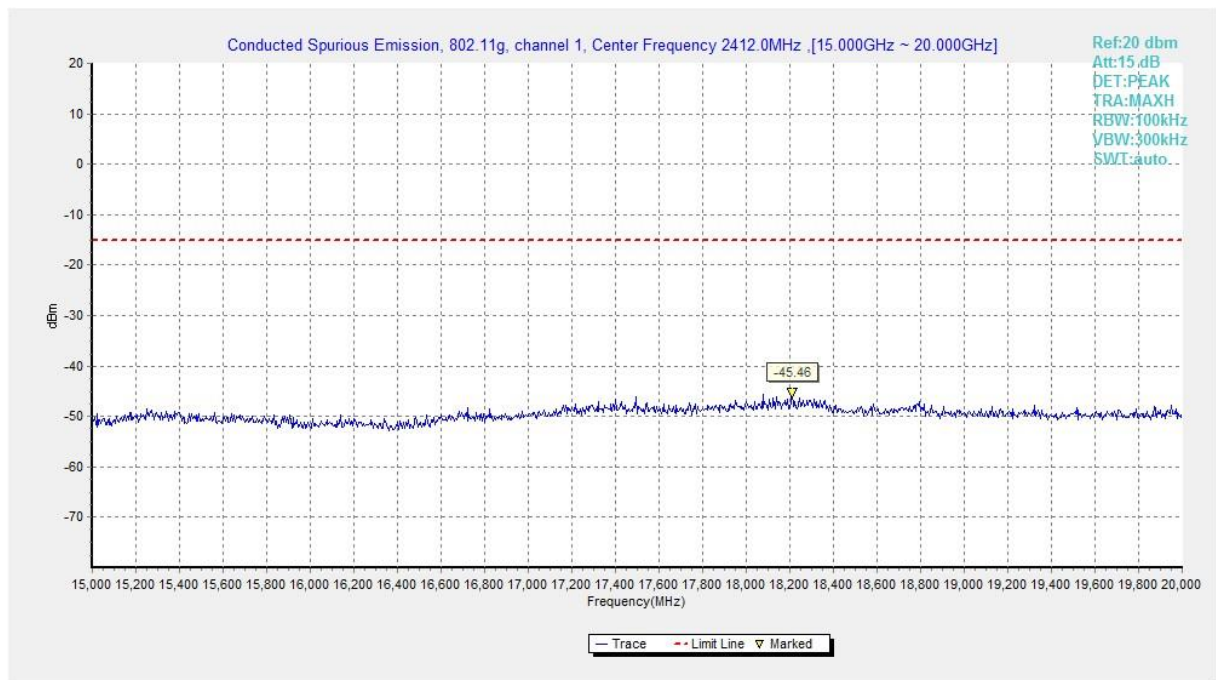


Fig.A.6.1.31 Transmitter Spurious Emission - Conducted (802.11g, Ch1, 15 GHz-20 GHz)

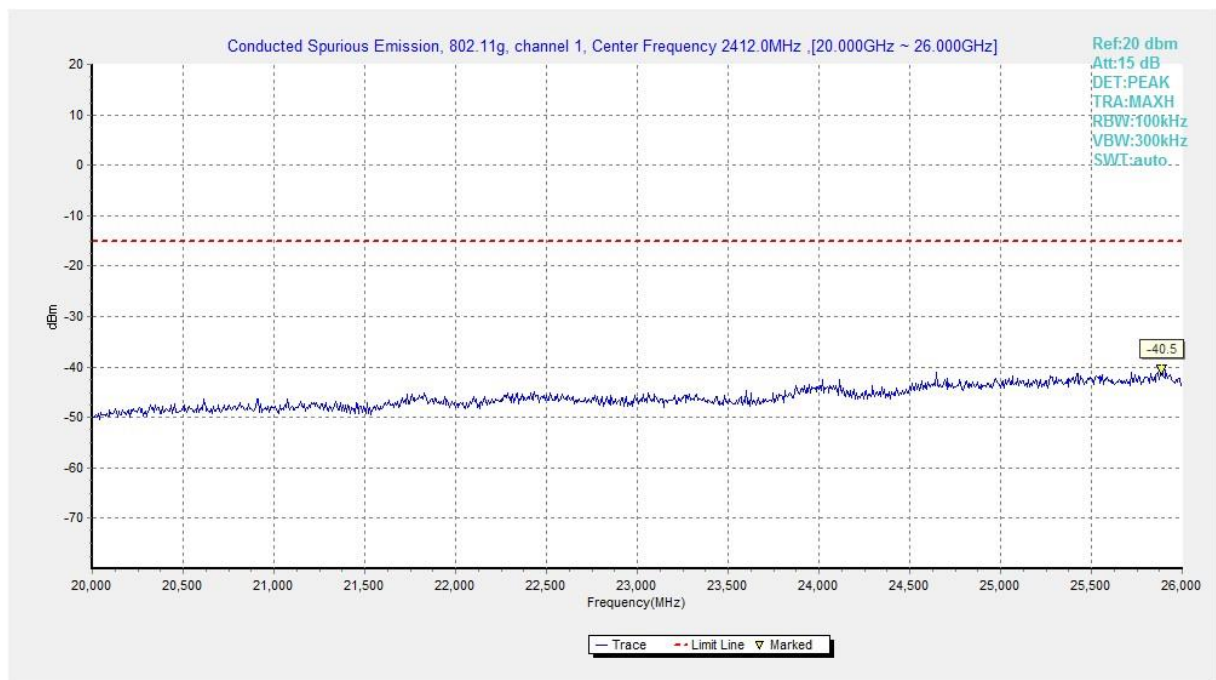


Fig.A.6.1.32 Transmitter Spurious Emission - Conducted (802.11g, Ch1, 20 GHz-26 GHz)

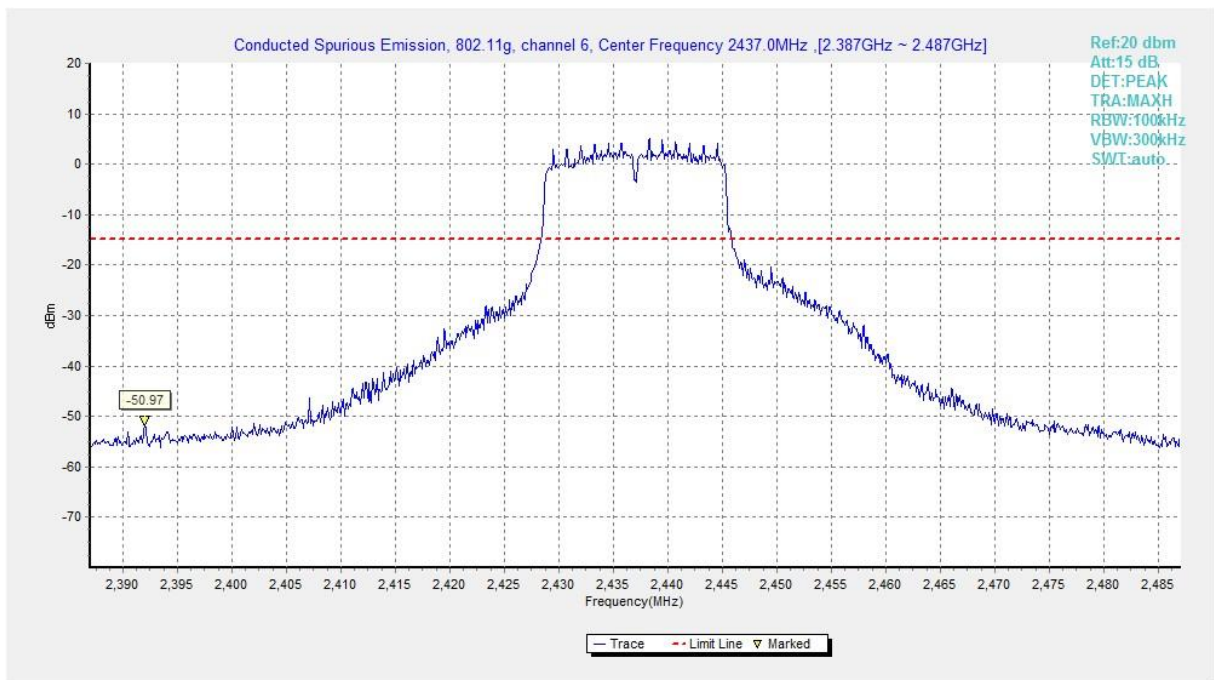


Fig.A.6.1.33 Transmitter Spurious Emission - Conducted (802.11g, Ch6, Center Frequency)

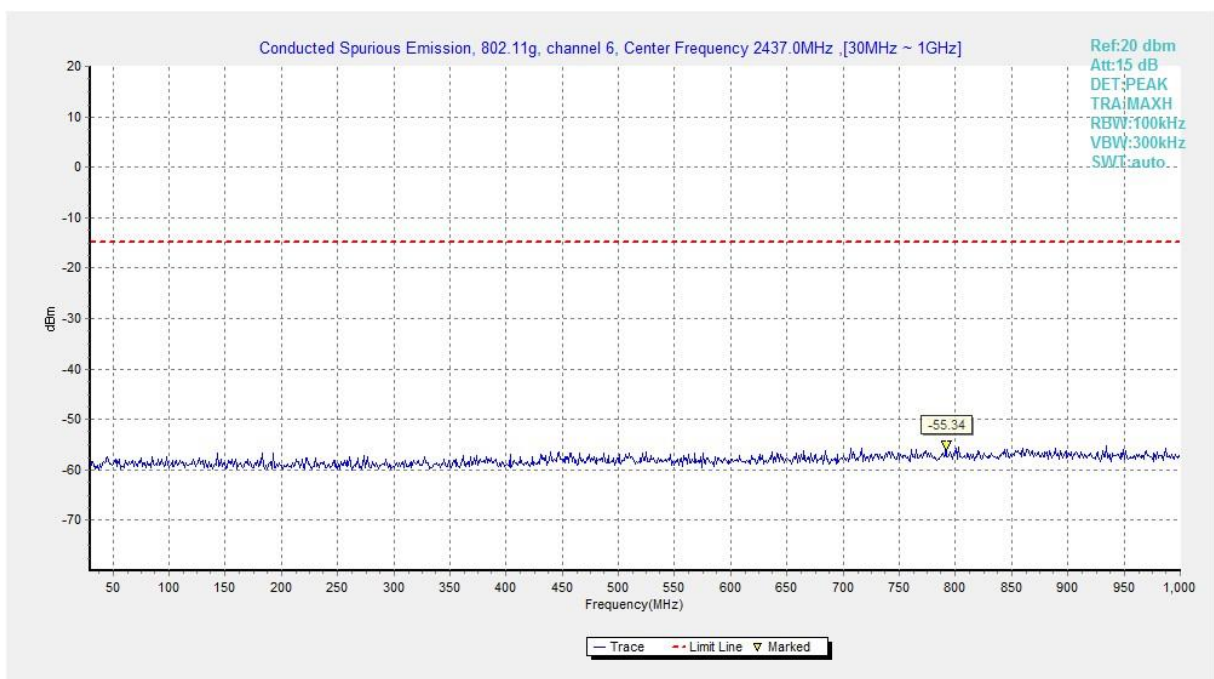


Fig.A.6.1.34 Transmitter Spurious Emission - Conducted (802.11g, Ch6, 30 MHz-1 GHz)

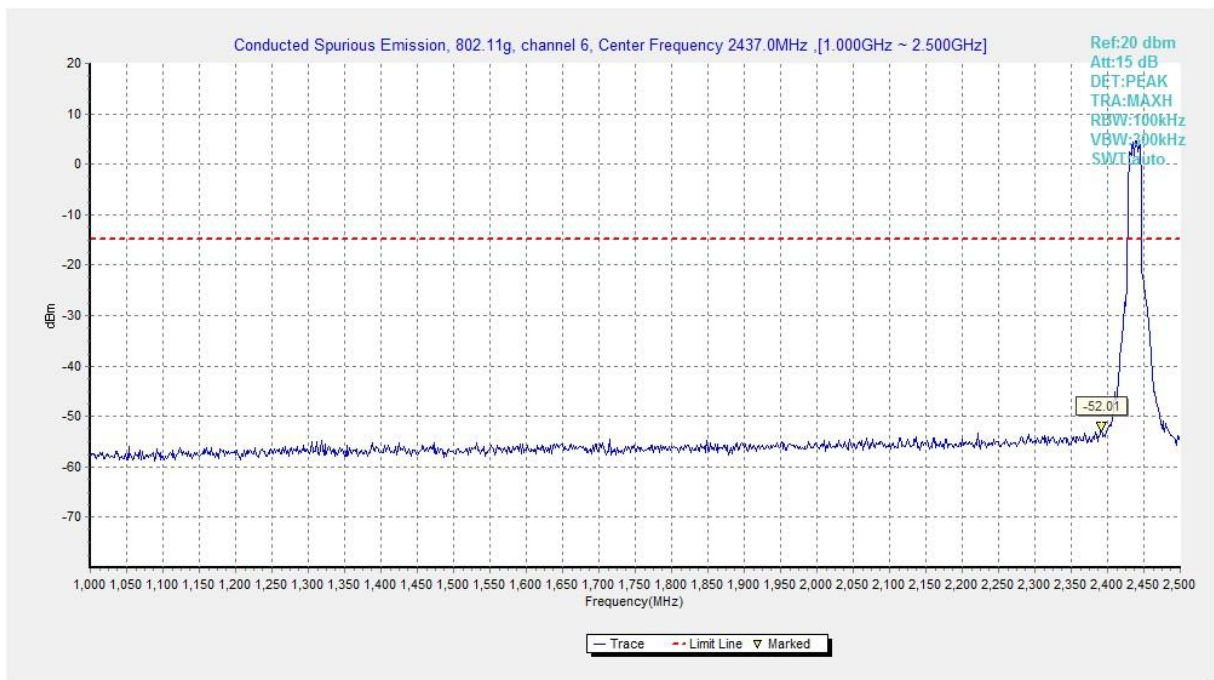


Fig.A.6.1.35 Transmitter Spurious Emission - Conducted (802.11g, Ch6, 1 GHz-2.5 GHz)

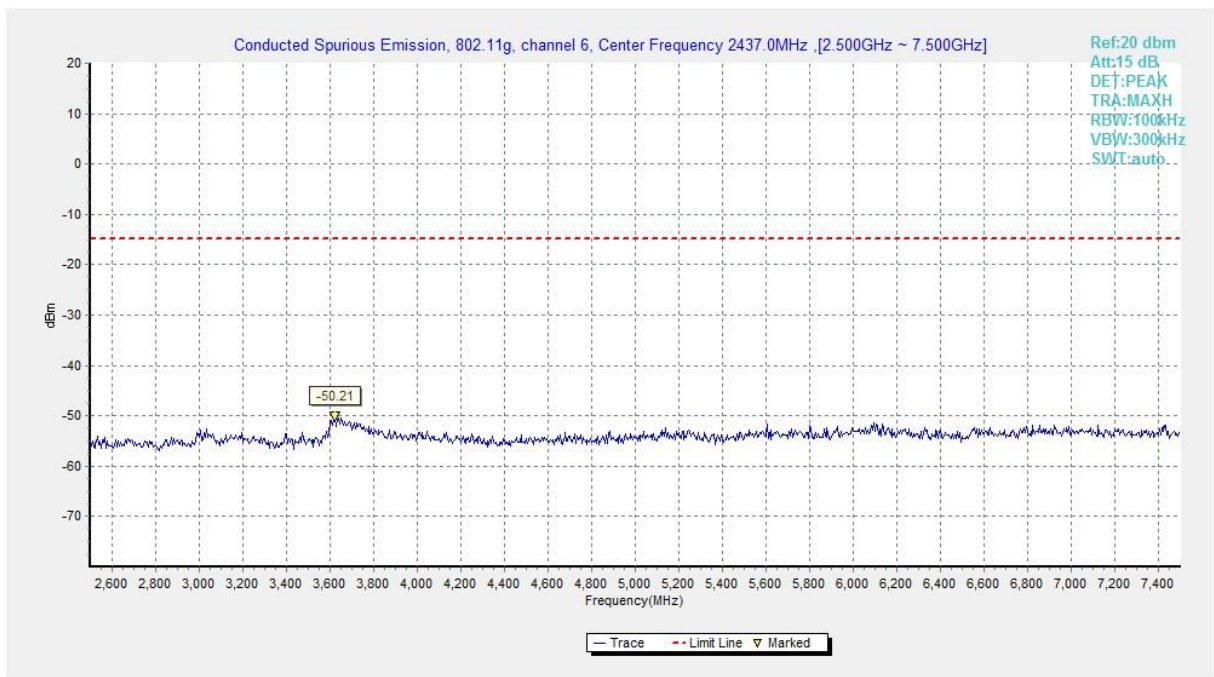


Fig.A.6.1.36 Transmitter Spurious Emission - Conducted (802.11g, Ch6, 2.5 GHz-7.5 GHz)

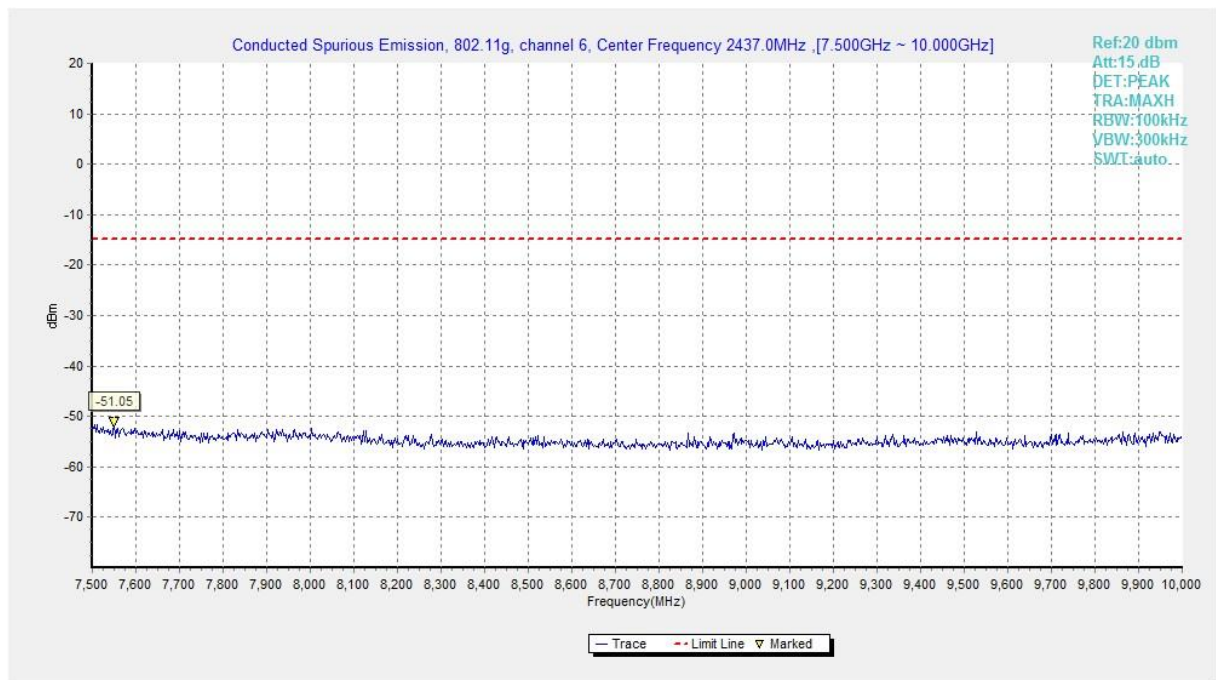


Fig.A.6.1.37 Transmitter Spurious Emission - Conducted (802.11g, Ch6, 7.5 GHz-10 GHz)

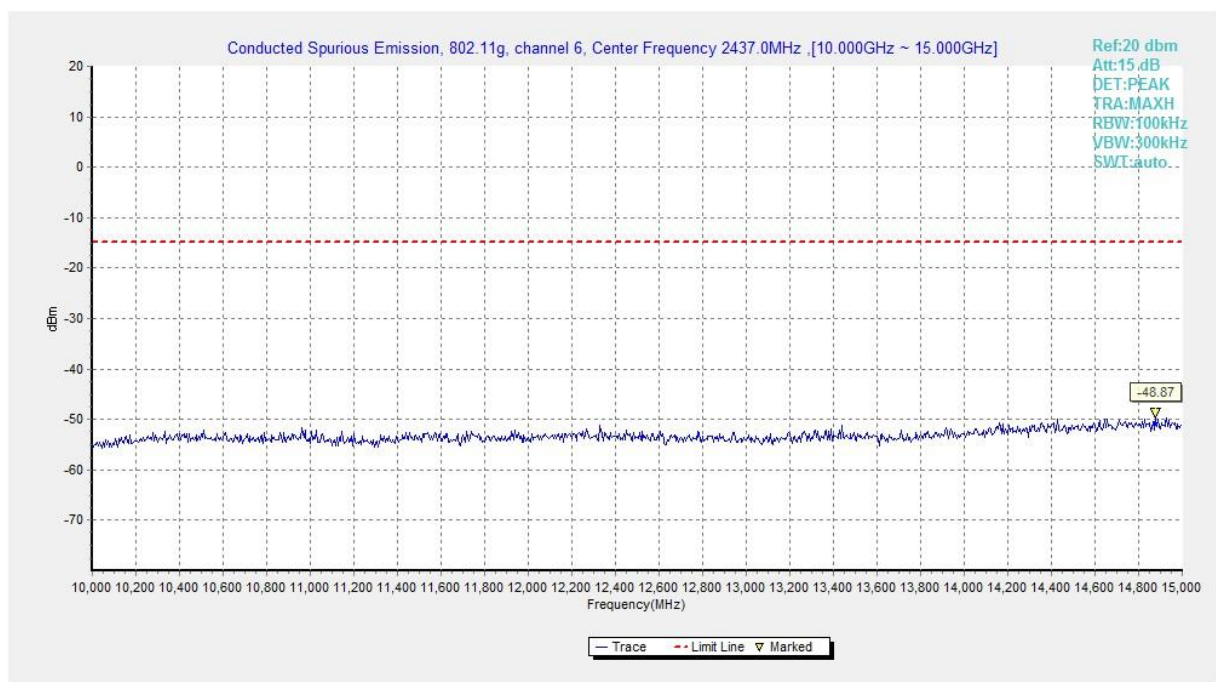


Fig.A.6.1.38 Transmitter Spurious Emission - Conducted (802.11g, Ch6, 10 GHz-15 GHz)

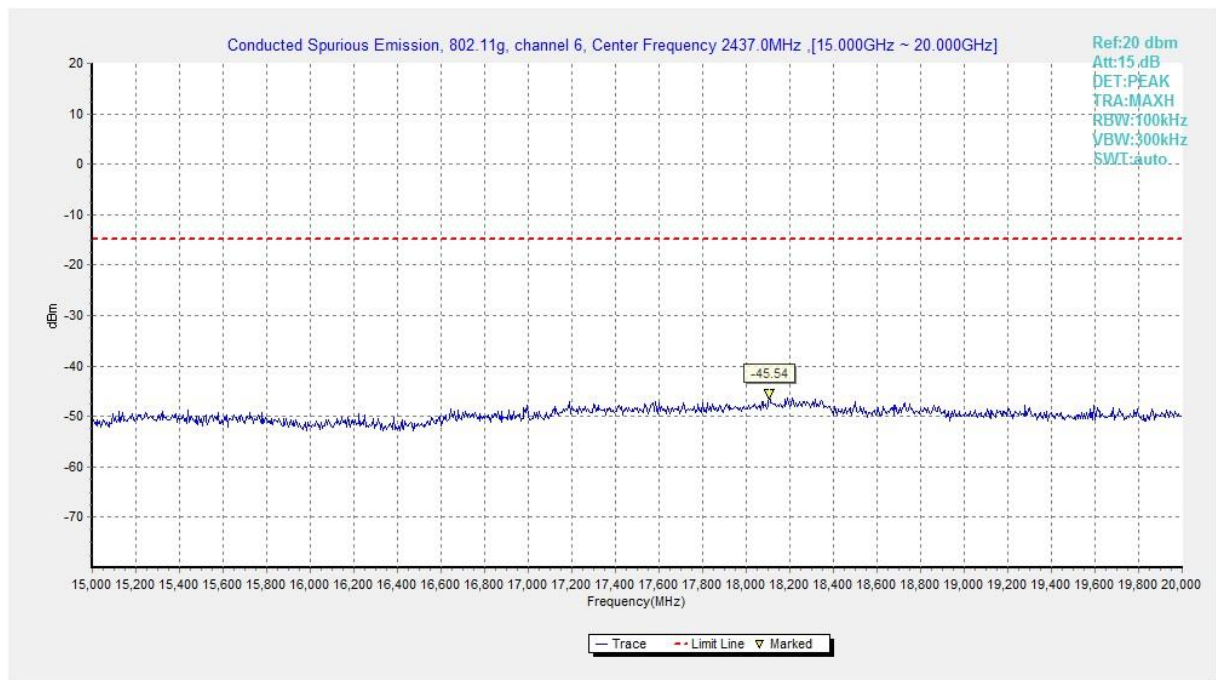


Fig.A.6.1.39 Transmitter Spurious Emission - Conducted (802.11g, Ch6, 15 GHz-20 GHz)

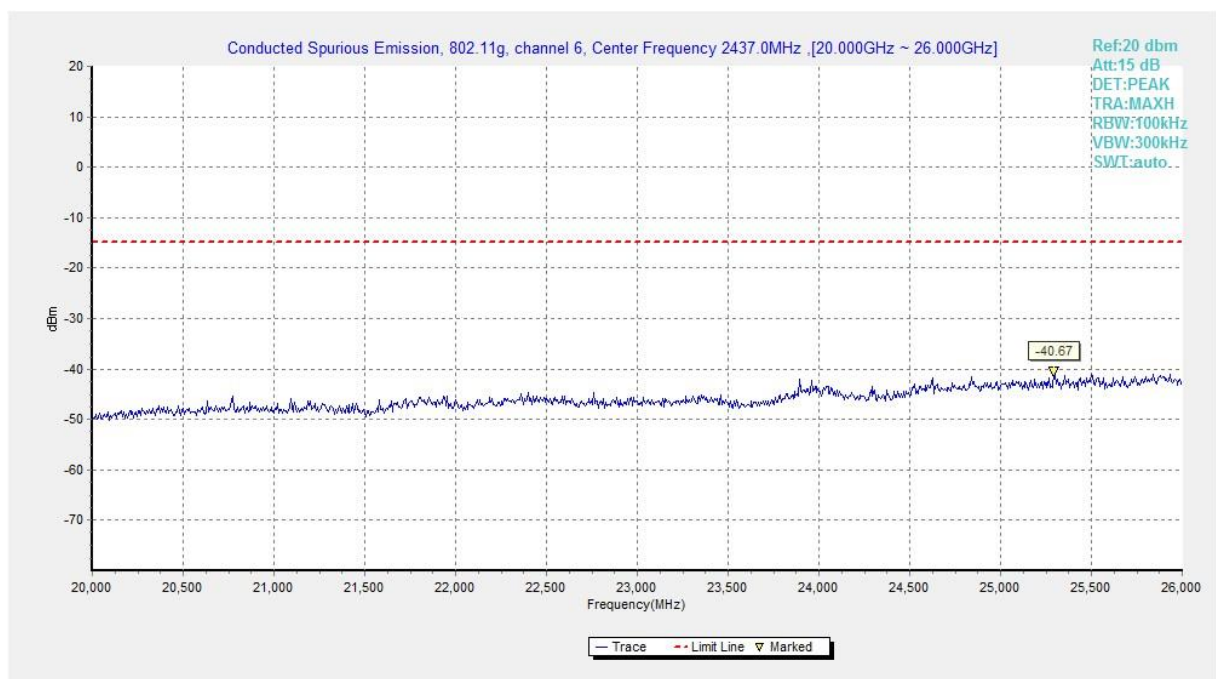


Fig.A.6.1.40 Transmitter Spurious Emission - Conducted (802.11g, Ch6, 20 GHz-26 GHz)

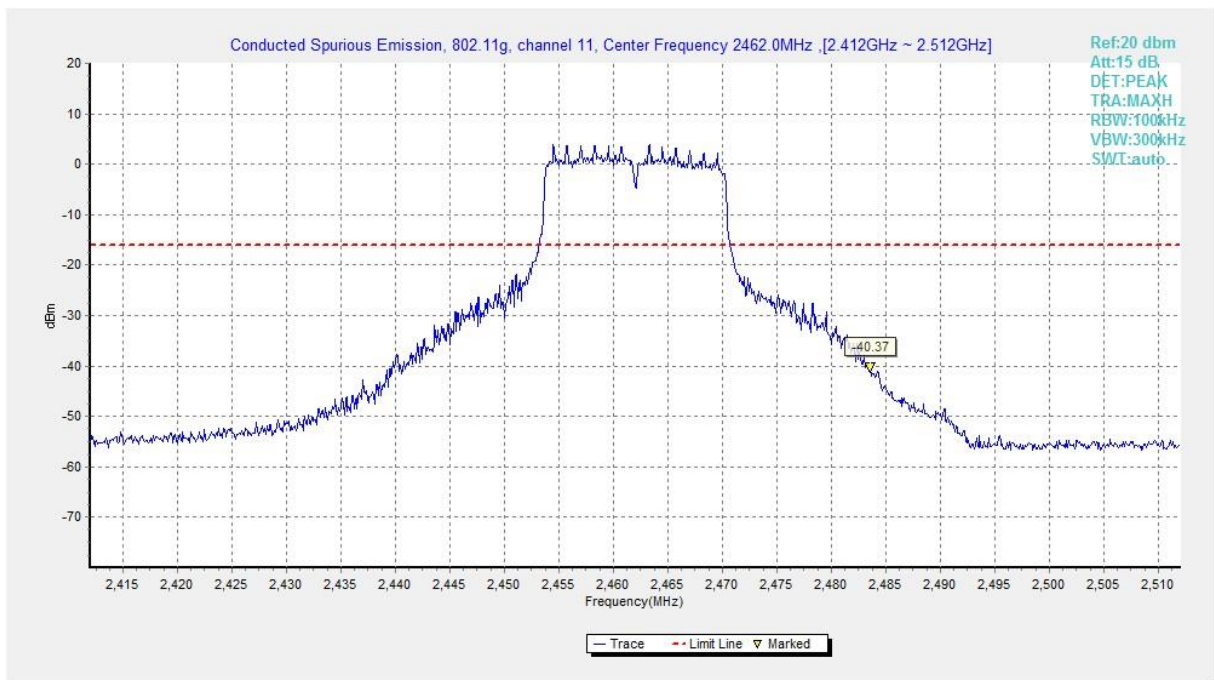


Fig.A.6.1.41 Transmitter Spurious Emission - Conducted (802.11g, Ch11, Center Frequency)

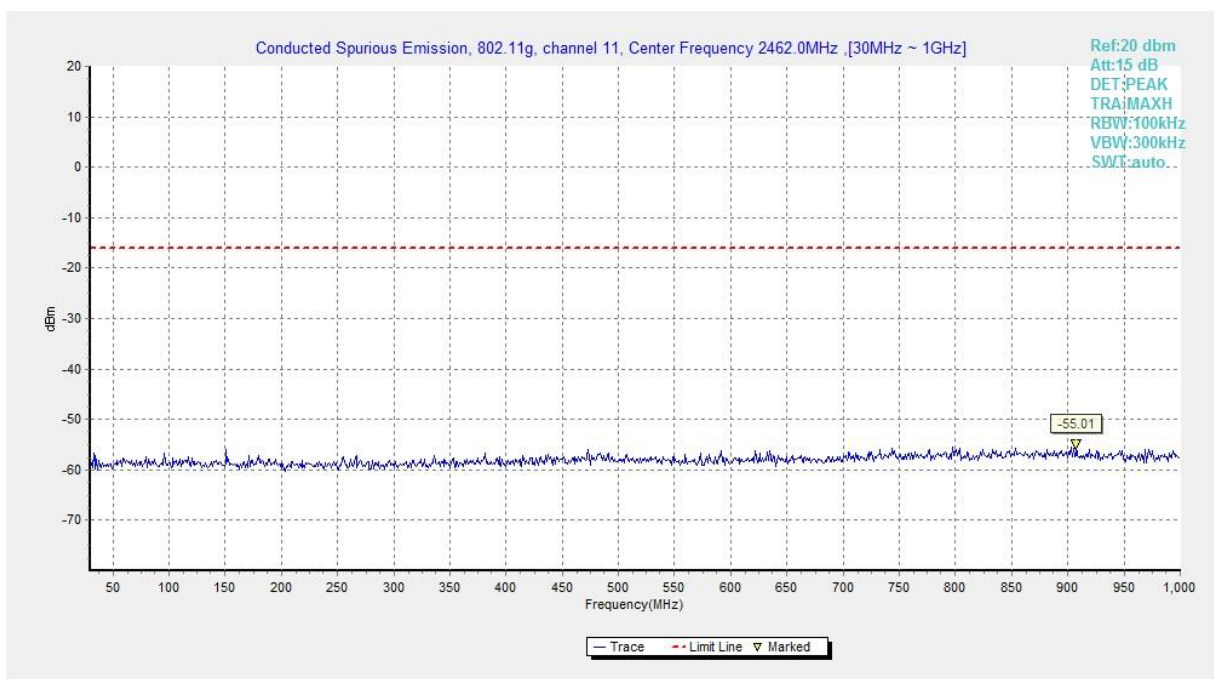


Fig.A.6.1.42 Transmitter Spurious Emission - Conducted (802.11g, Ch11, 30 MHz-1 GHz)

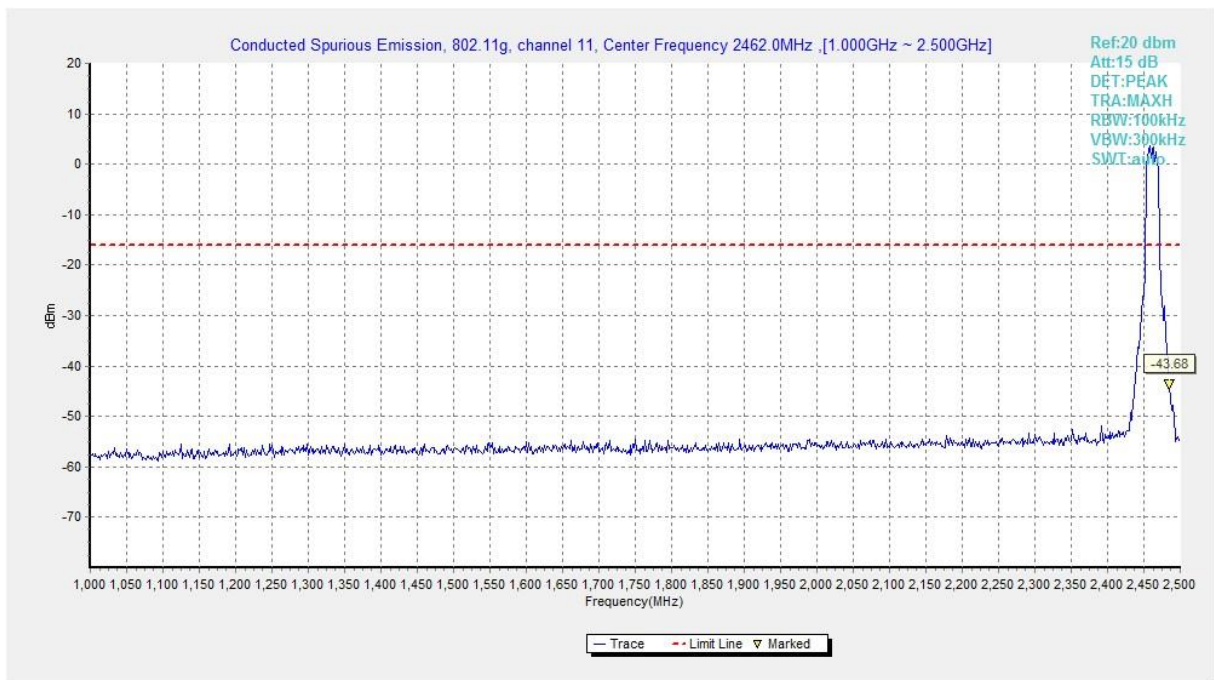


Fig.A.6.1.43 Transmitter Spurious Emission - Conducted (802.11g, Ch11, 1 GHz-2.5 GHz)

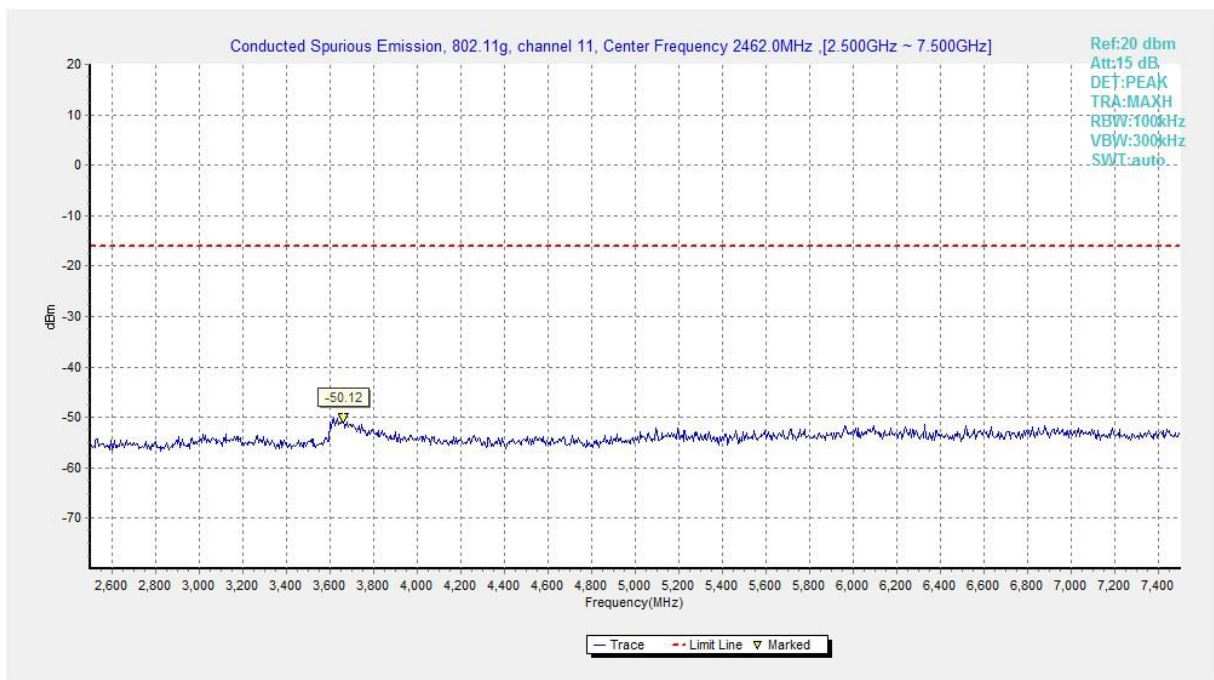


Fig.A.6.1.44 Transmitter Spurious Emission - Conducted (802.11g, Ch11, 2.5 GHz-7.5 GHz)

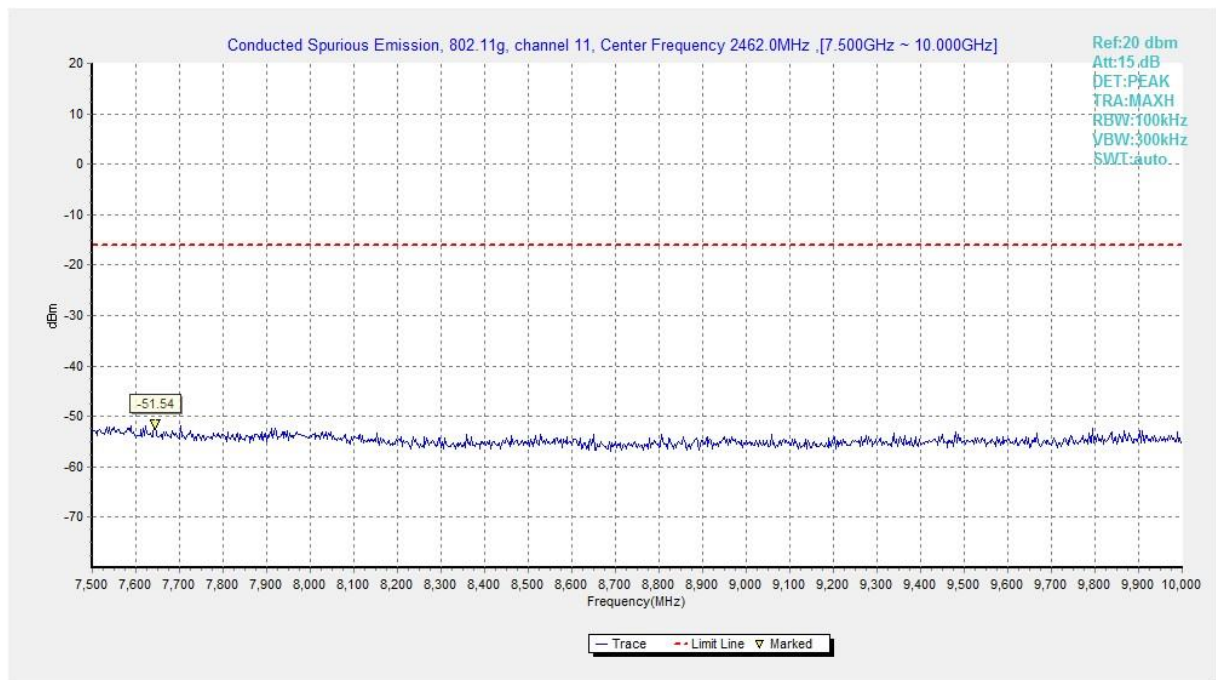


Fig.A.6.1.45 Transmitter Spurious Emission - Conducted (802.11g, Ch11, 7.5 GHz-10 GHz)

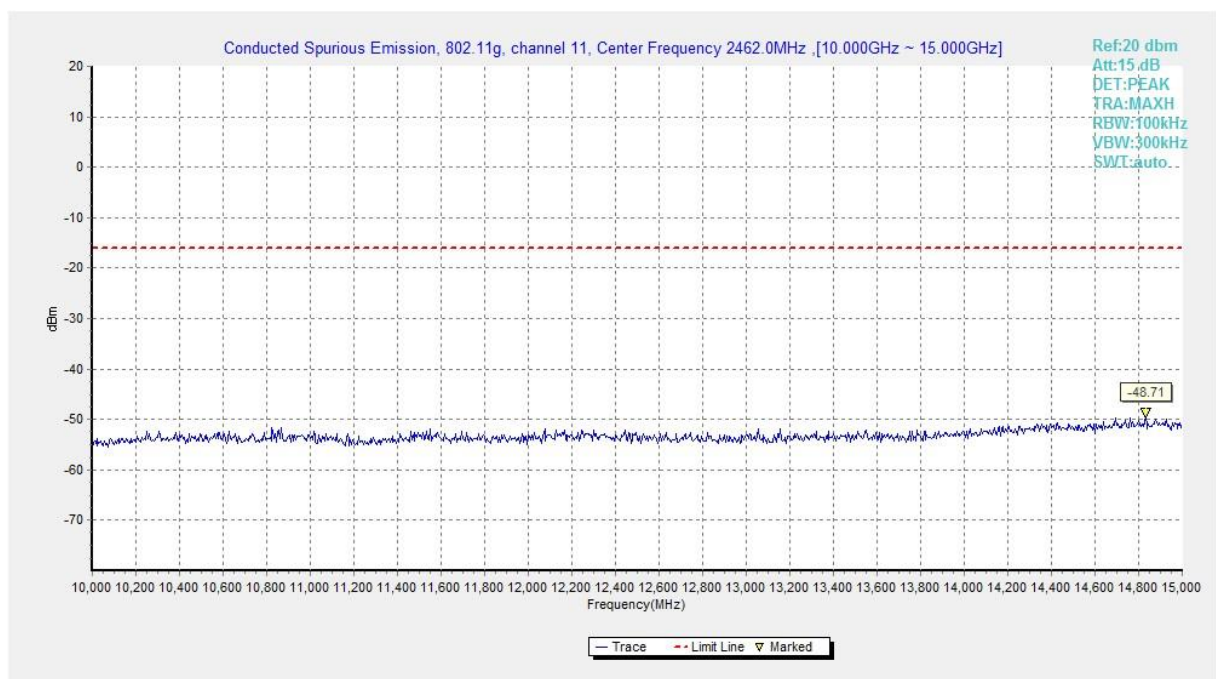


Fig.A.6.1.46 Transmitter Spurious Emission - Conducted (802.11g, Ch11, 10 GHz-15 GHz)

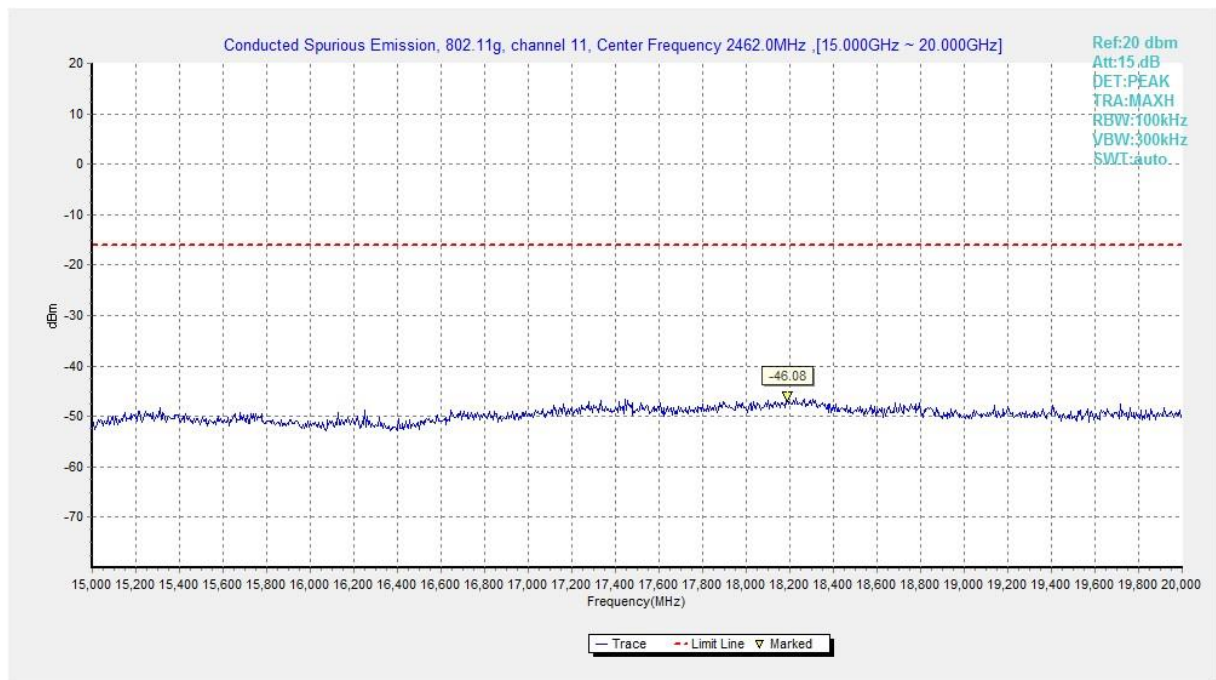


Fig.A.6.1.47 Transmitter Spurious Emission - Conducted (802.11g, Ch11, 15 GHz-20 GHz)

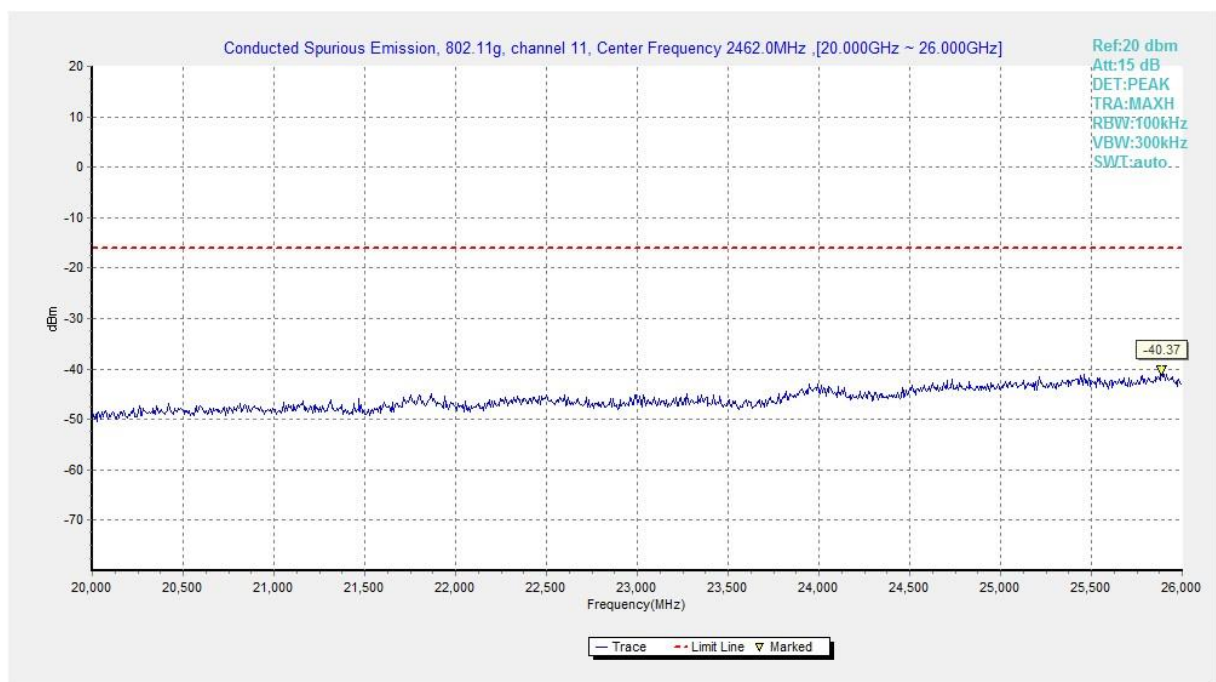


Fig.A.6.1.48 Transmitter Spurious Emission - Conducted (802.11g, Ch11, 20 GHz-26 GHz)

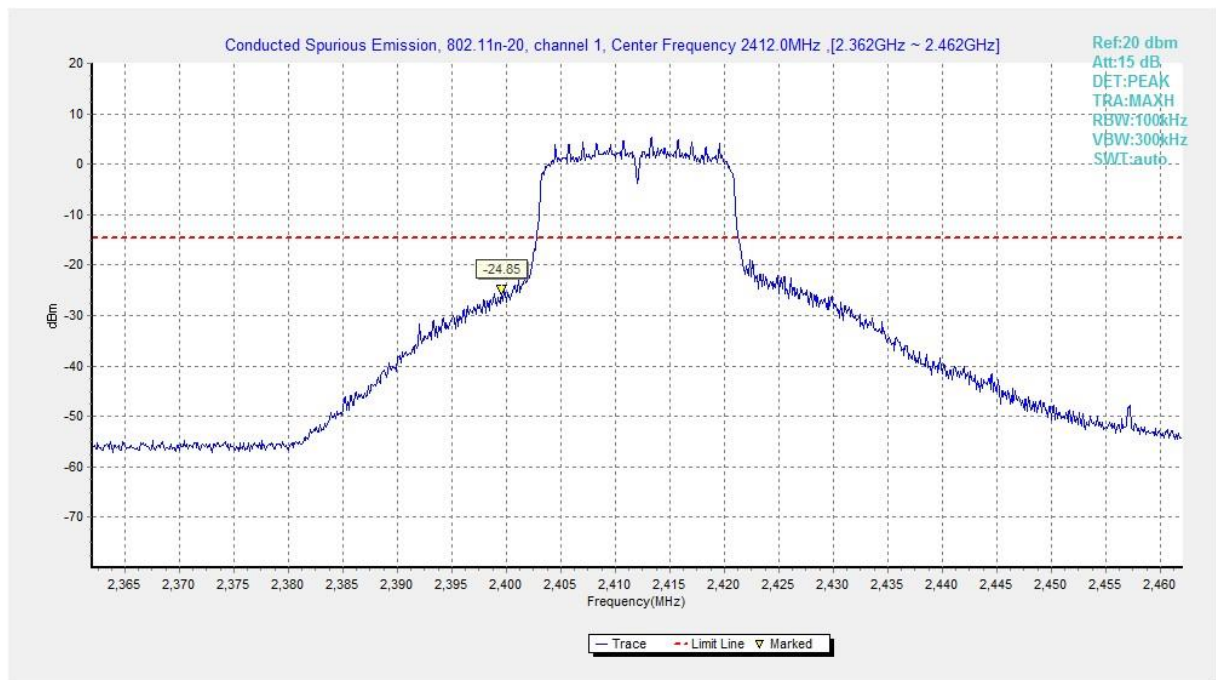


Fig.A.6.1.49 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch1, Center Frequency)

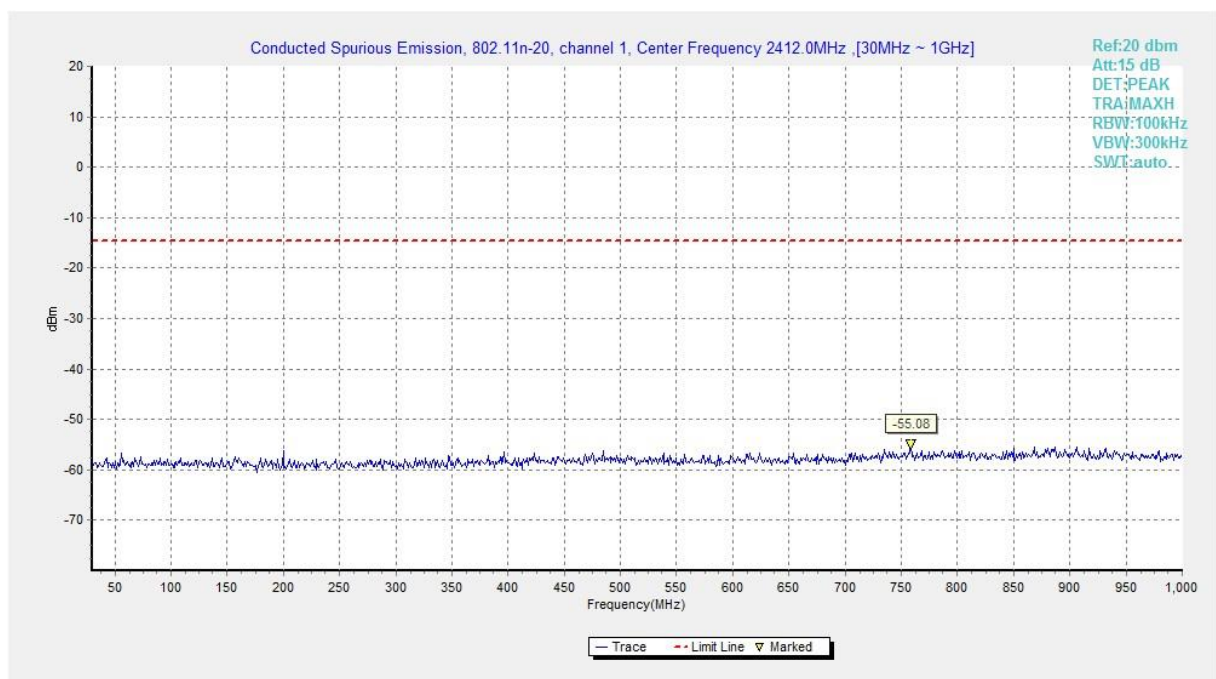


Fig.A.6.1.50 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch1, 30 MHz-1 GHz)

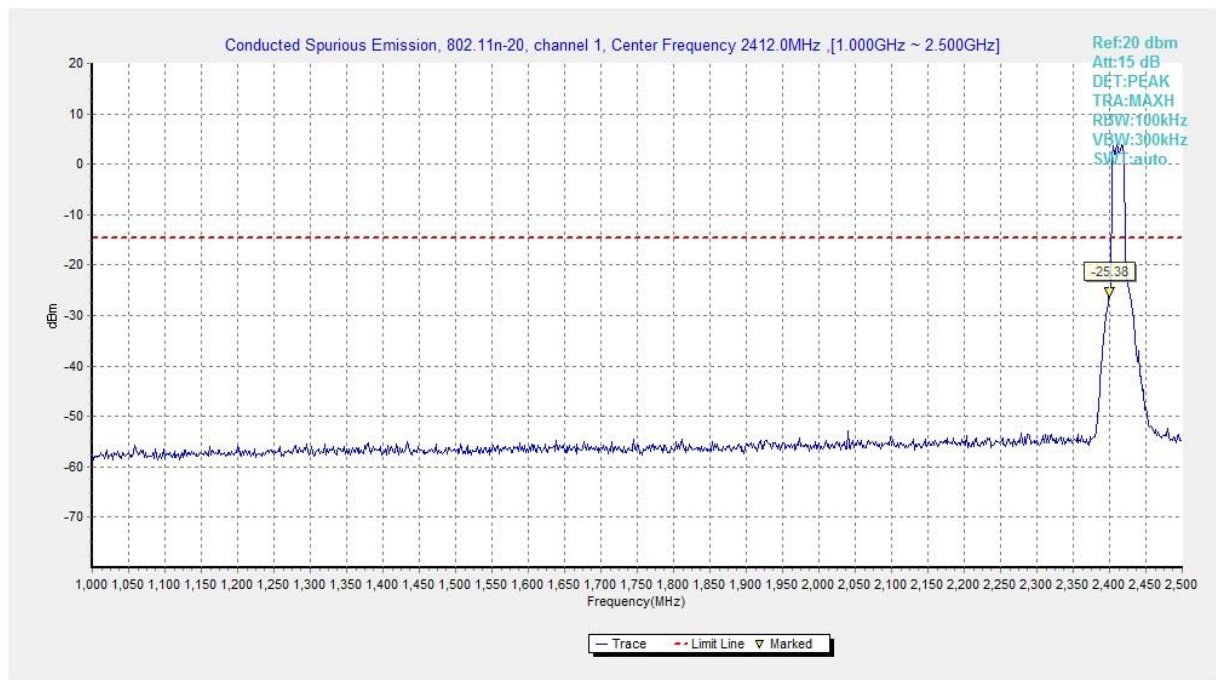


Fig.A.6.1.51 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch1, 1 GHz-2.5 GHz)

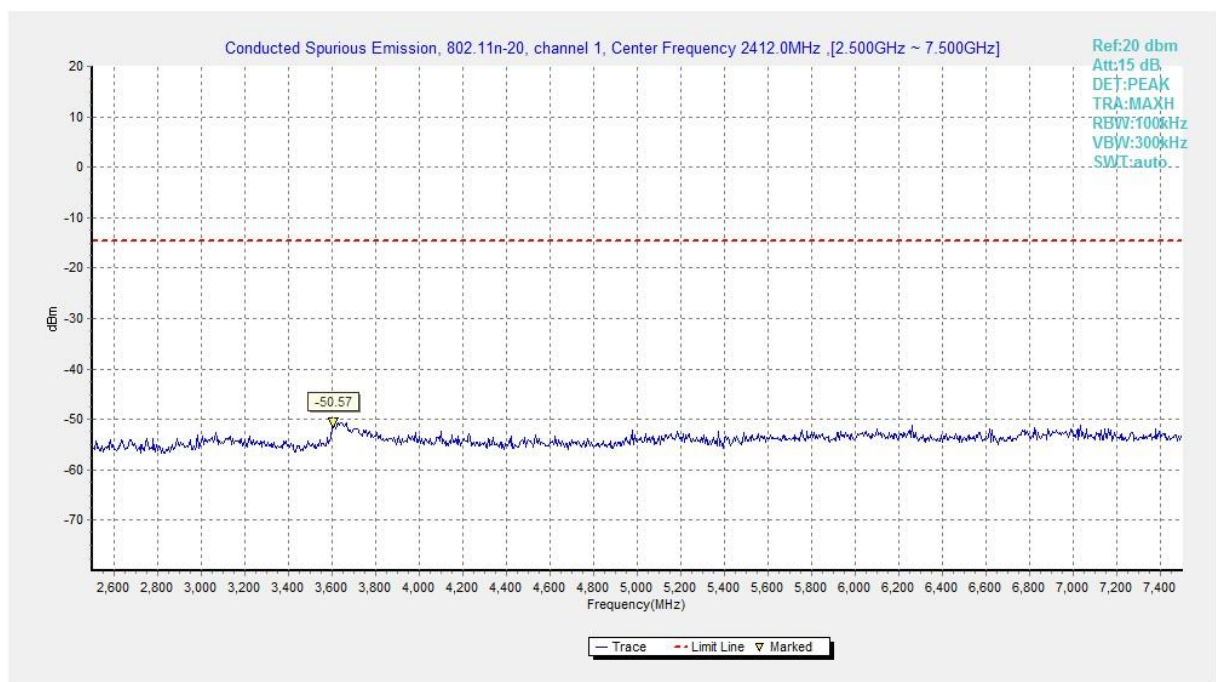


Fig.A.6.1.52 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch1, 2.5 GHz-7.5 GHz)

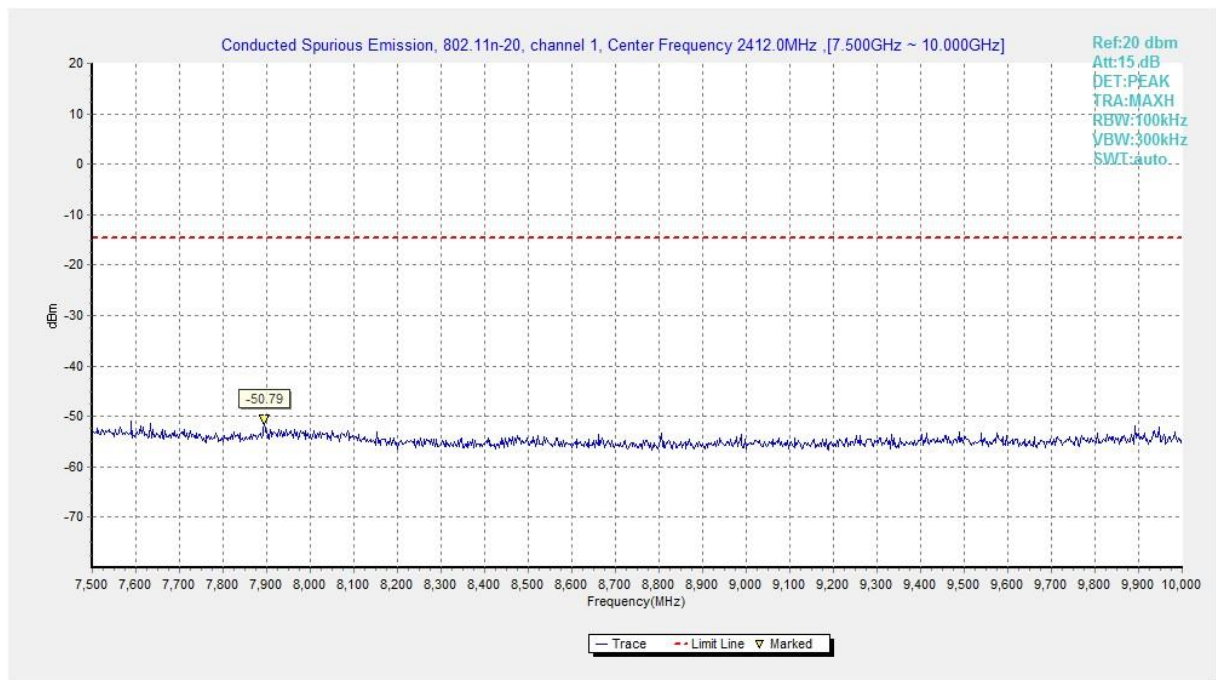


Fig.A.6.1.53 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch1, 7.5 GHz-10 GHz)

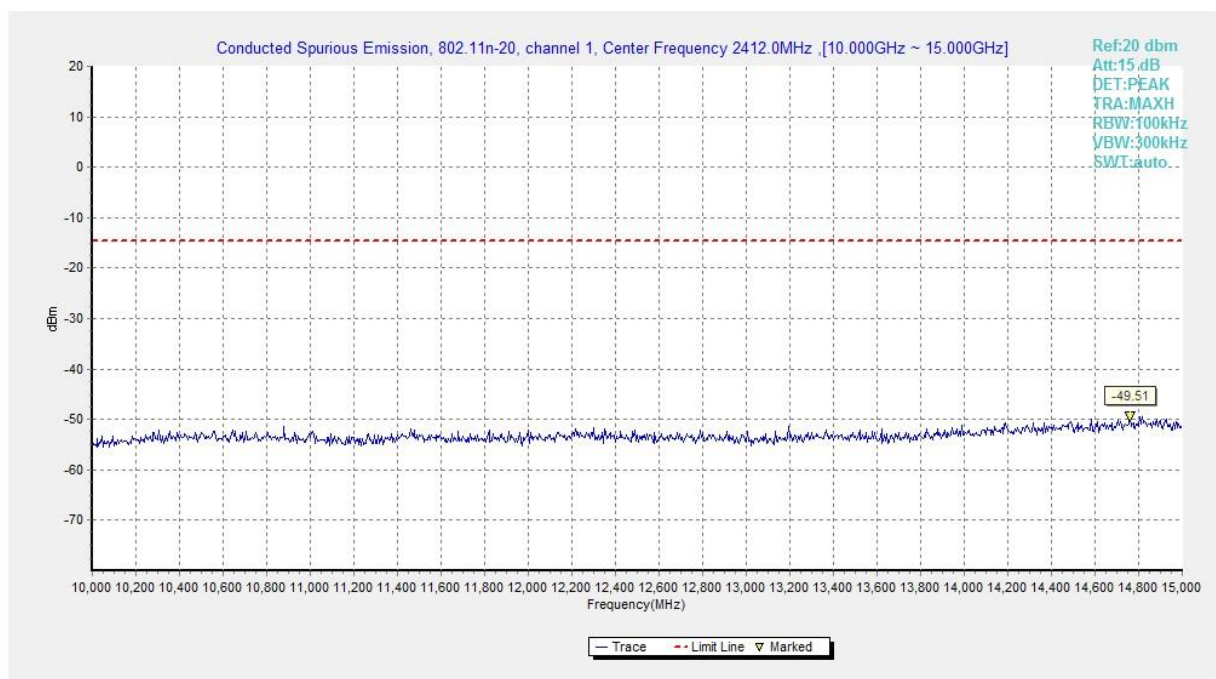


Fig.A.6.1.54 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch1, 10 GHz-15 GHz)

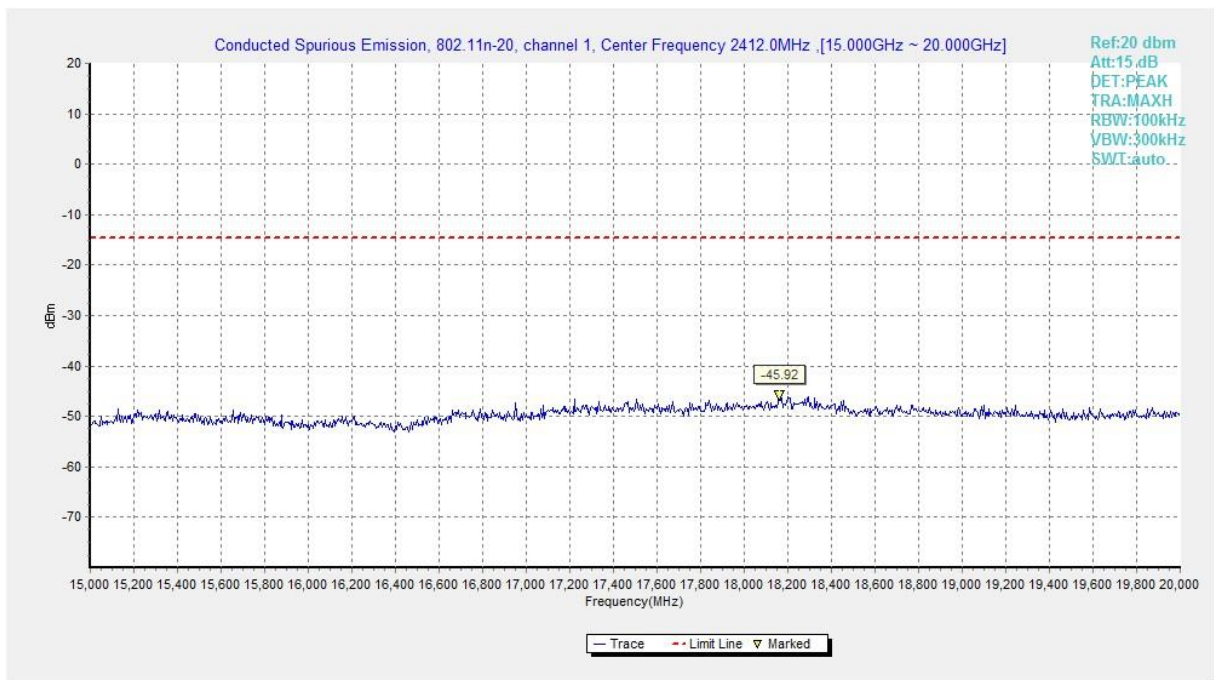


Fig.A.6.1.55 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch1, 15 GHz-20 GHz)

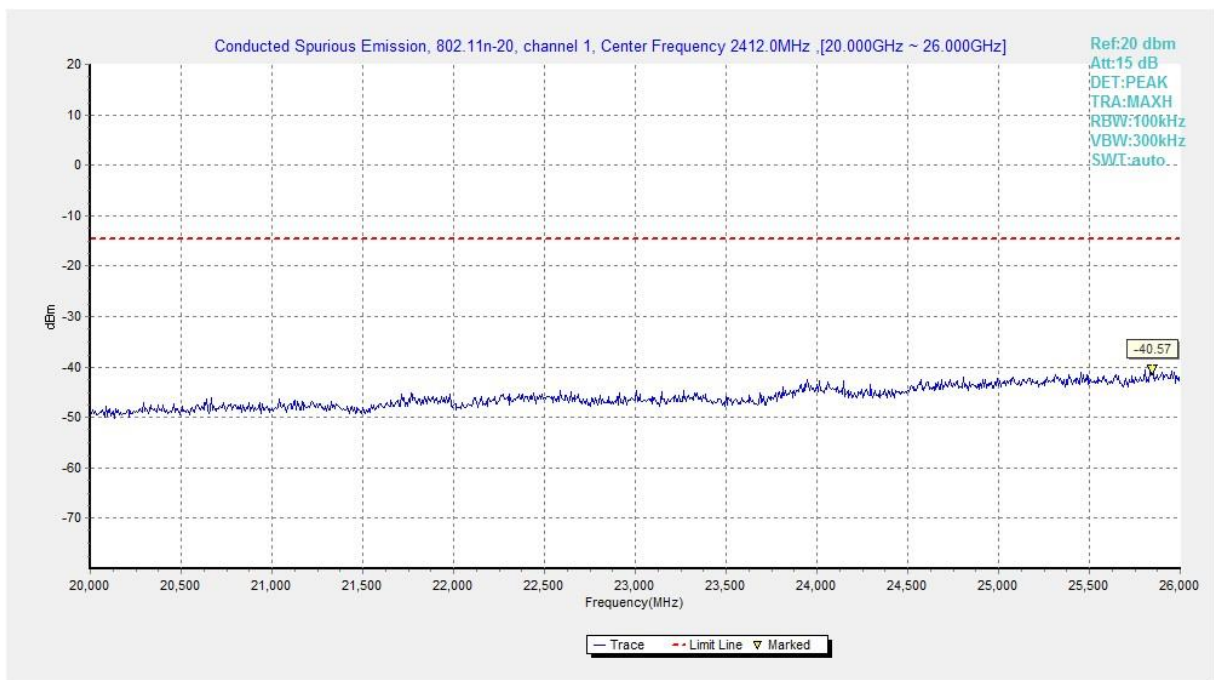


Fig.A.6.1.56 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch1, 20 GHz-26 GHz)

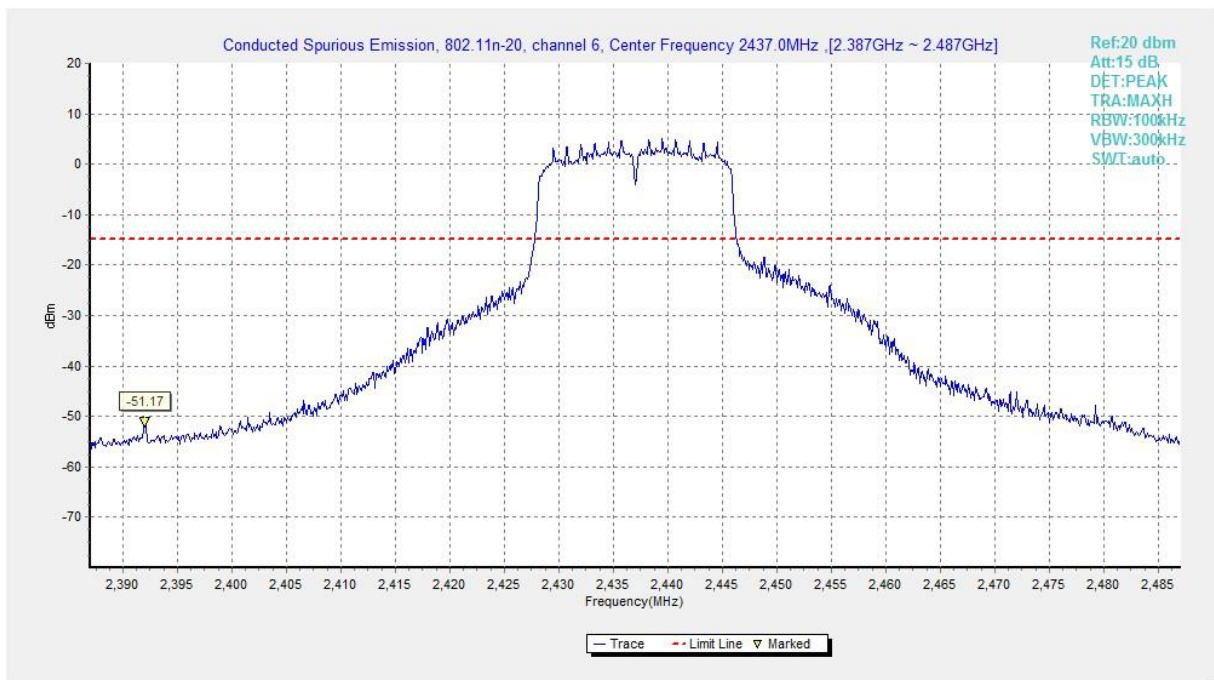


Fig.A.6.1.57 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, Center Frequency)

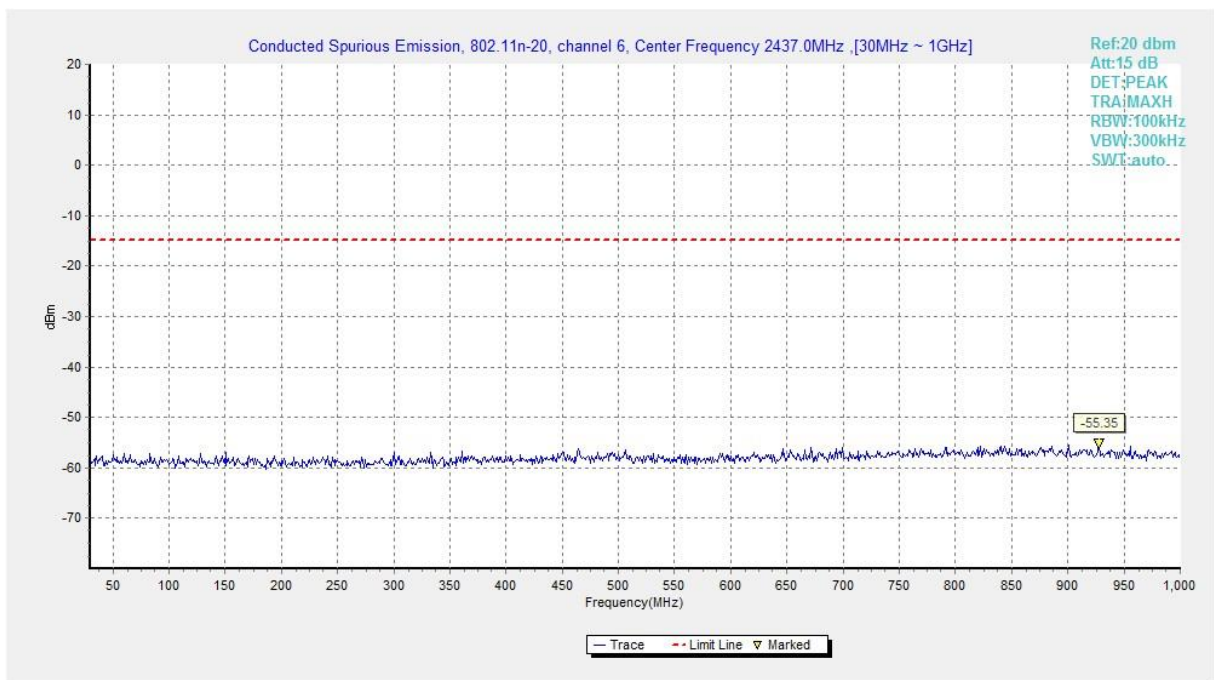


Fig.A.6.1.58 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 30 MHz-1 GHz)

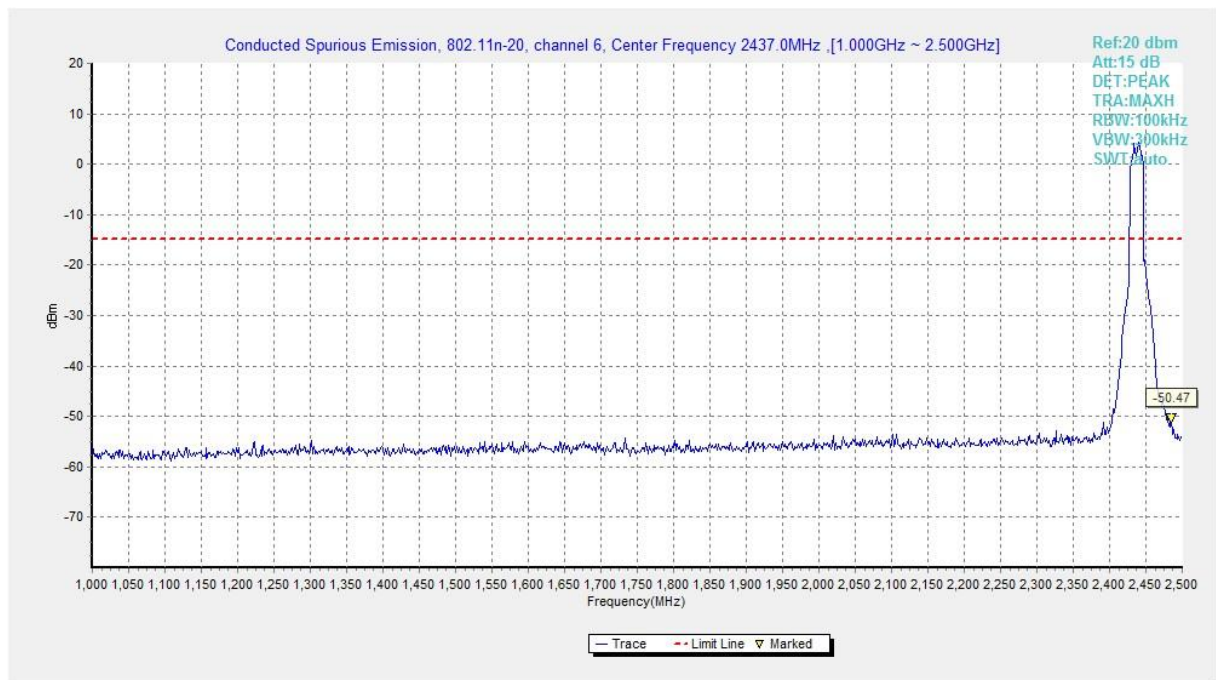


Fig.A.6.1.59 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 1 GHz-2.5 GHz)

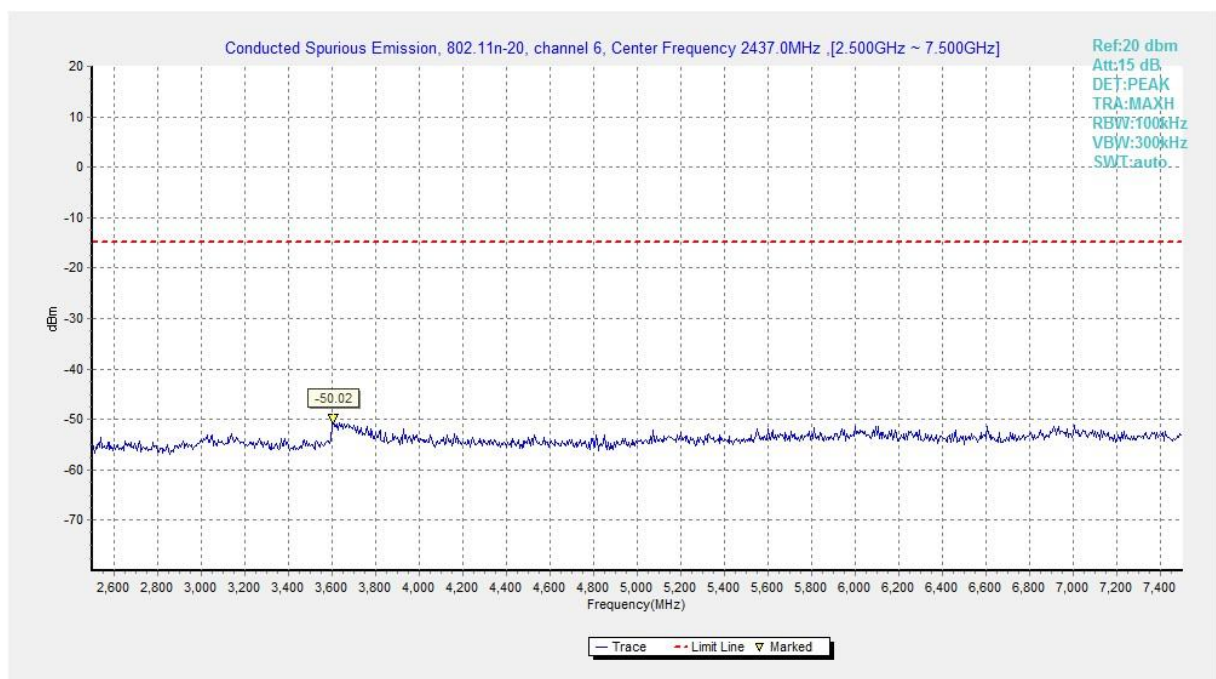


Fig.A.6.1.60 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 2.5 GHz-7.5 GHz)

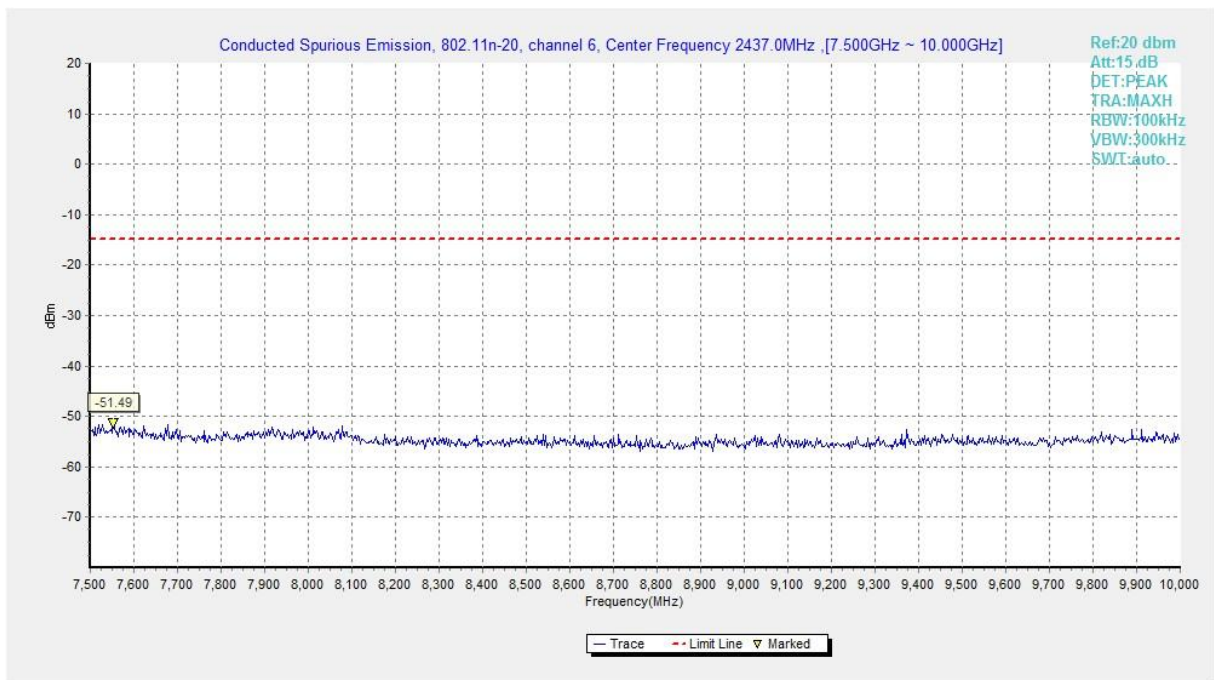


Fig.A.6.1.61 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 7.5 GHz-10 GHz)

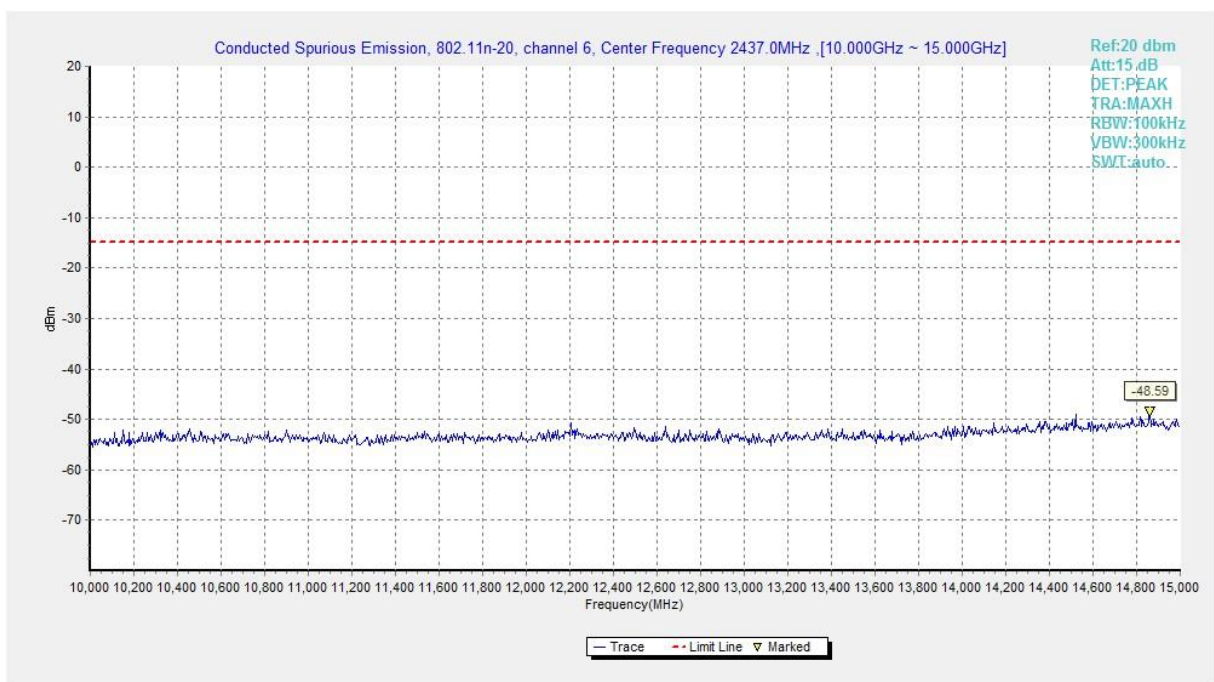


Fig.A.6.1.62 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 10 GHz-15 GHz)

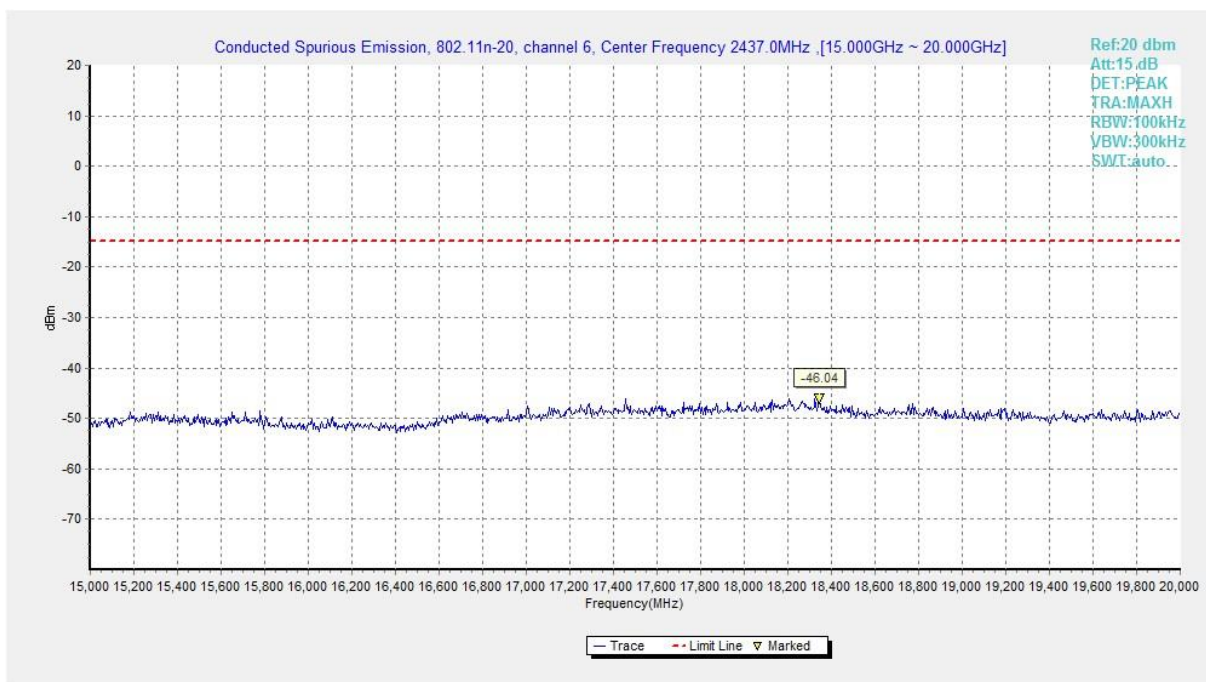


Fig.A.6.1.63 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 15 GHz-20 GHz)

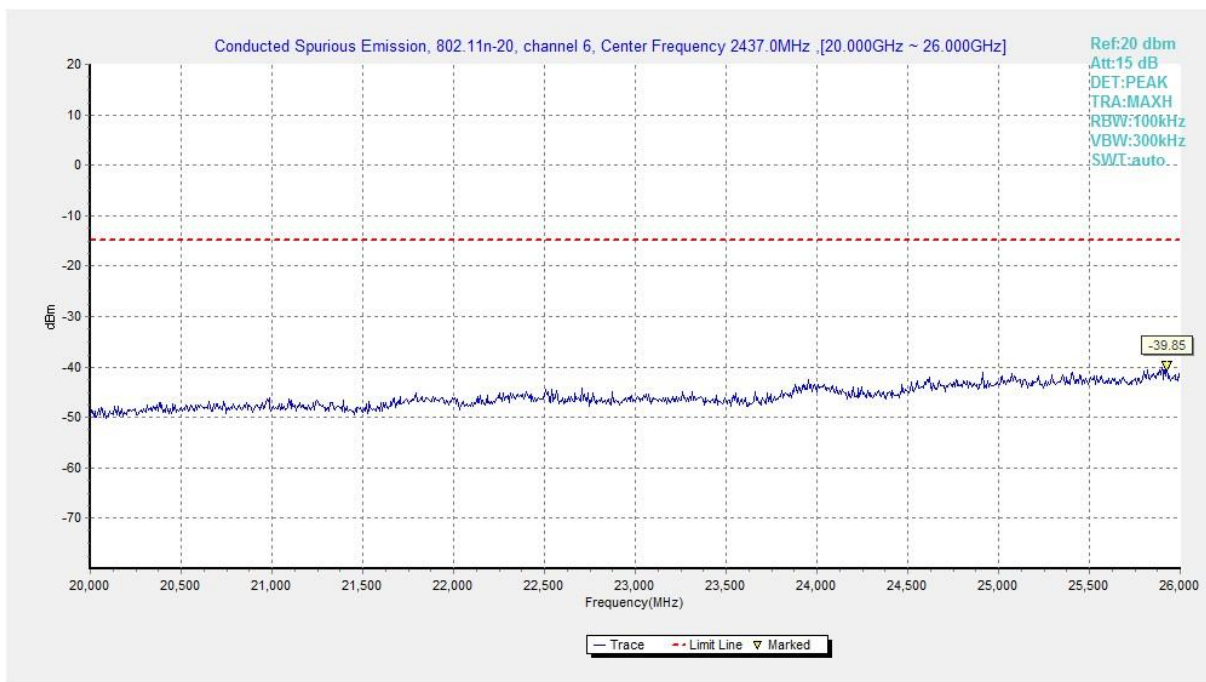


Fig.A.6.1.64 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 20 GHz-26 GHz)

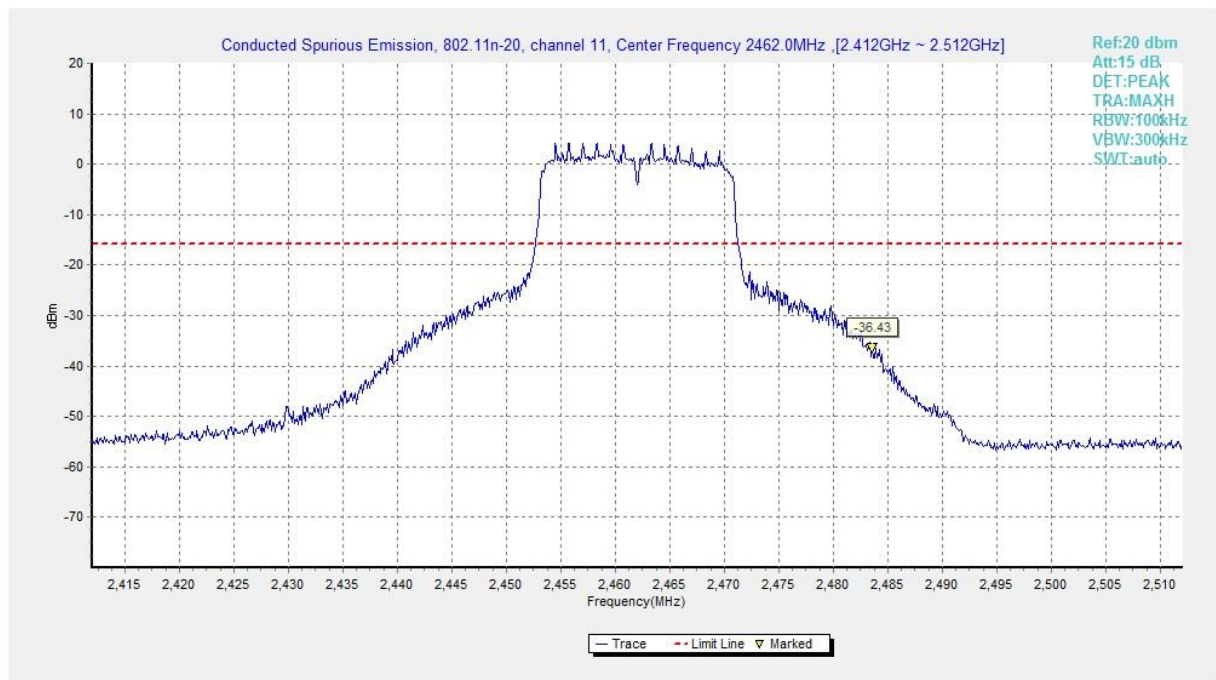


Fig.A.6.1.65 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, Center Frequency)

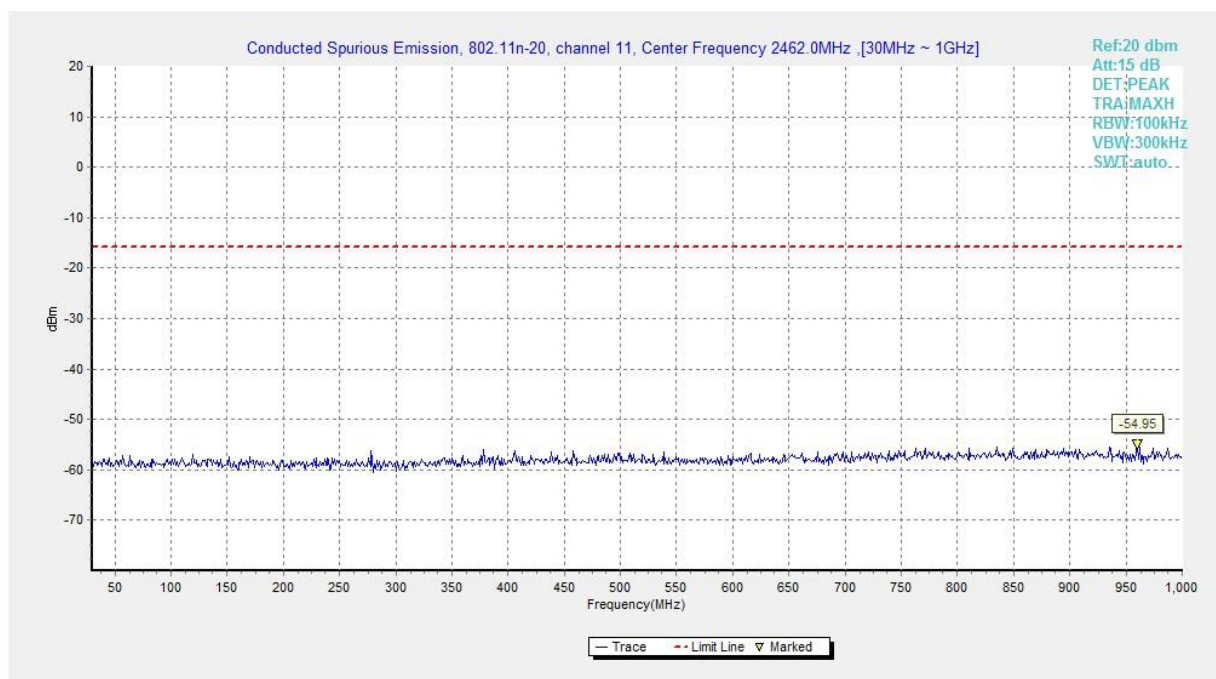


Fig.A.6.1.66 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 30 MHz-1 GHz)

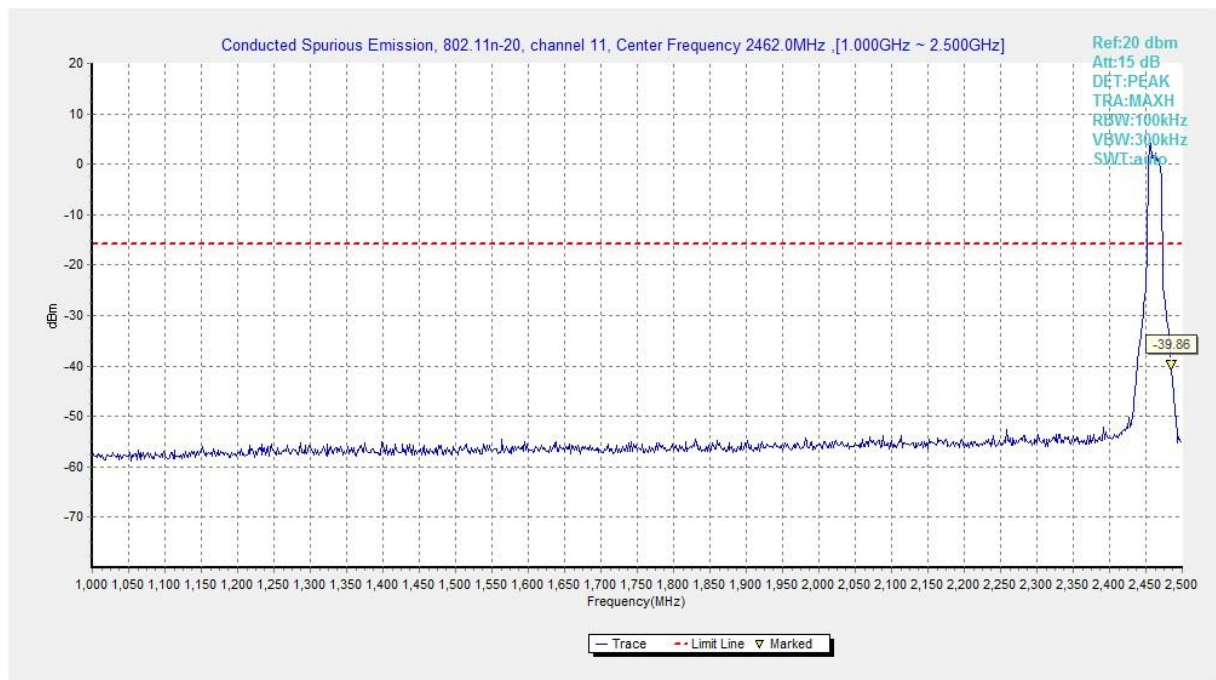


Fig.A.6.1.67 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 1 GHz-2.5 GHz)

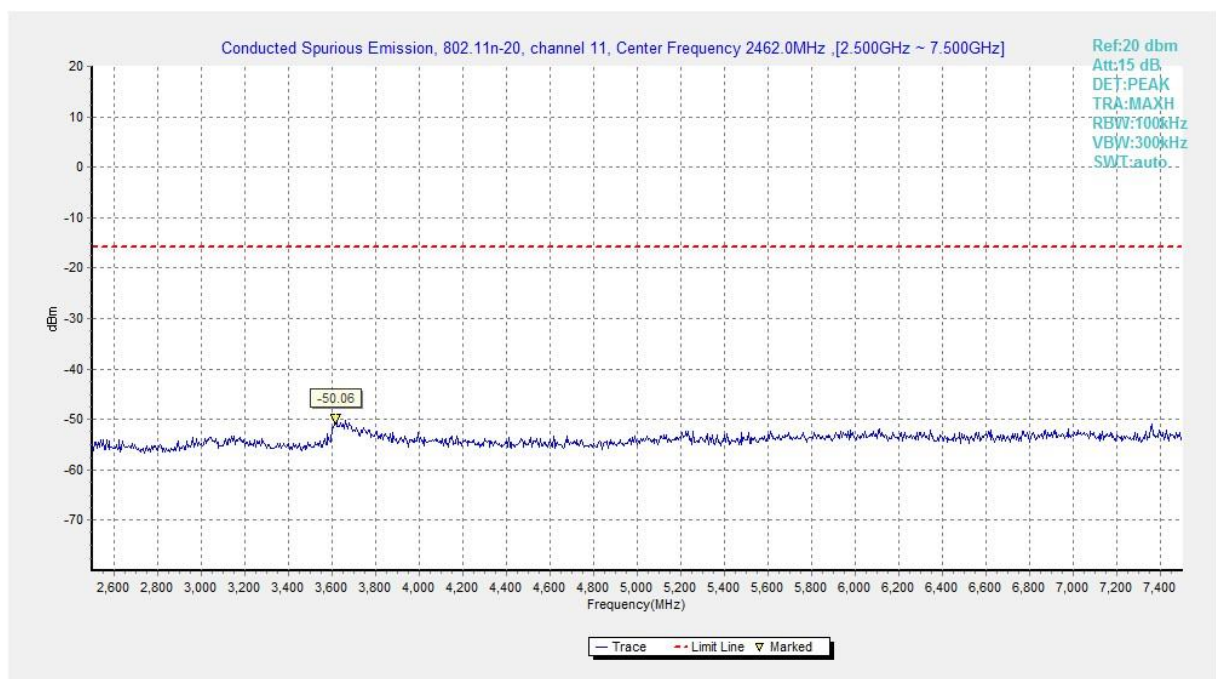


Fig.A.6.1.68 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 2.5 GHz-7.5 GHz)

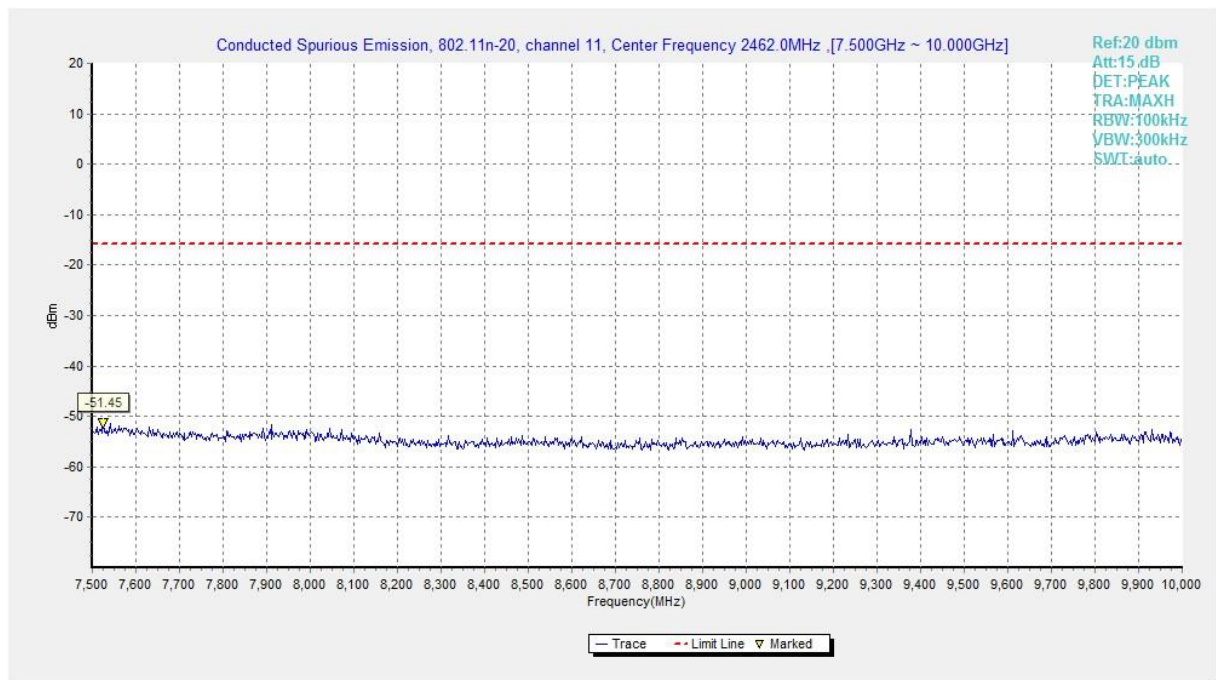


Fig.A.6.1.69 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 7.5 GHz-10 GHz)

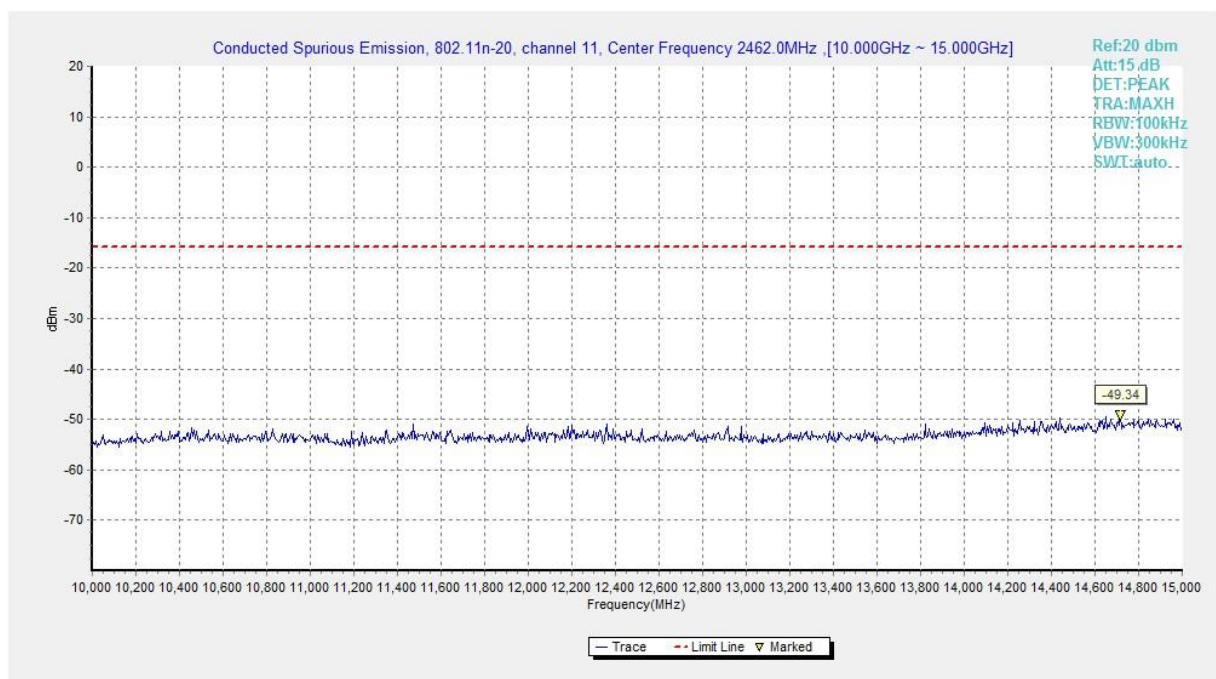


Fig.A.6.1.70 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 10 GHz-15 GHz)

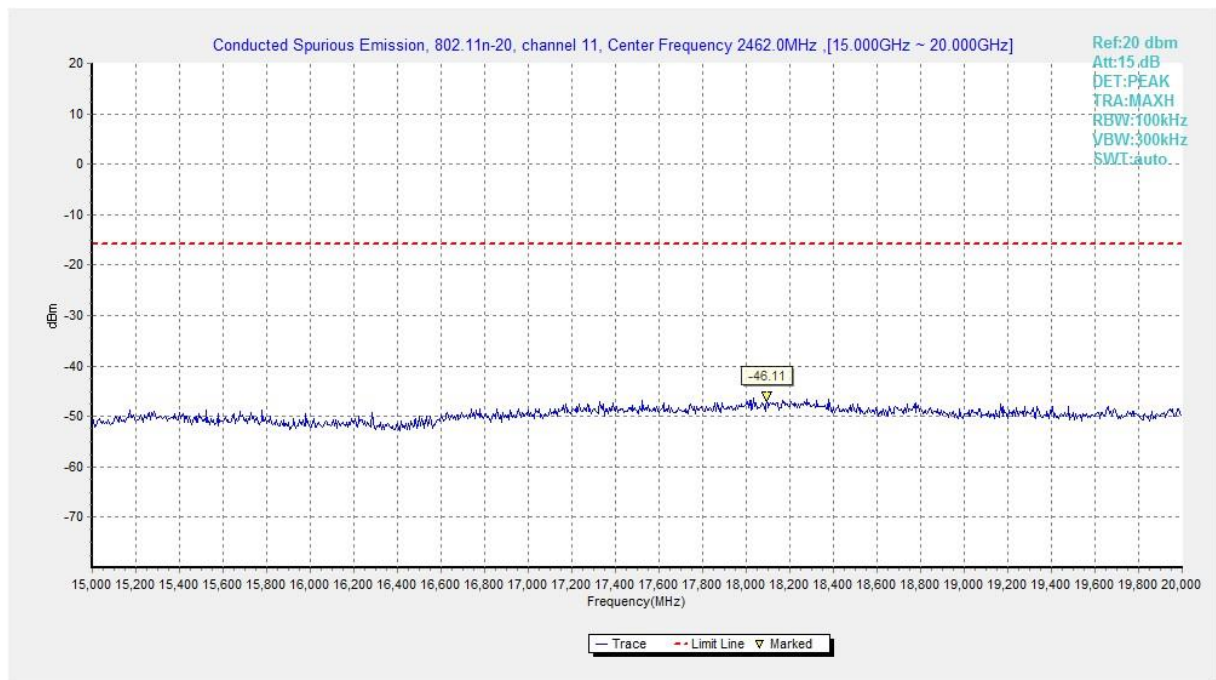


Fig.A.6.1.71 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 15 GHz-20 GHz)

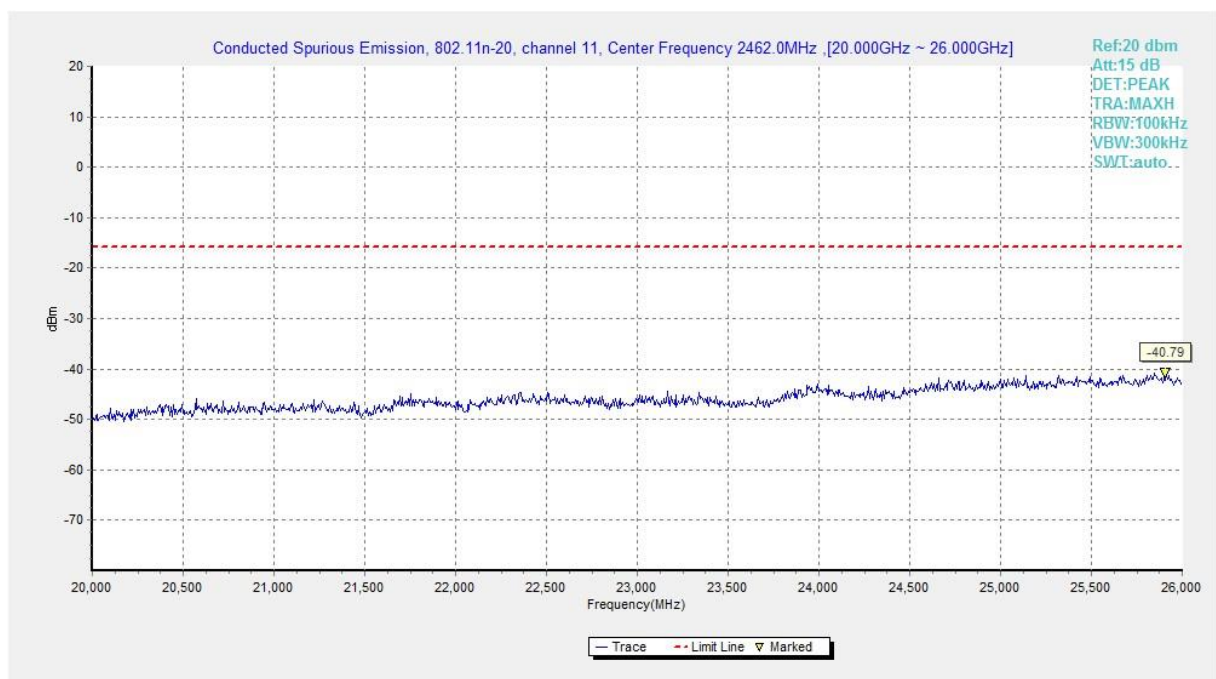


Fig.A.6.1.72 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 20 GHz-26 GHz)

A.6.2 Transmitter Spurious Emission - Radiated

Method of Measurement: See ANSI C63.10-2013-clause 6.4 & 6.5 & 6.6

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 (uV/m)	Field strength (dBuV/m)	Measurement distance (m)
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Frequency (MHz)	Field strength(μV/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

Set up:

Tabletop devices shall be placed on a nonconducting platform with nominal top surface dimensions 1 m by 1.5 m. For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m

The EUT and transmitting antenna shall be centered on the turntable.

Test Procedure

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The receiver references:

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

EUT ID: UT19a
Measurement results:
802.11b mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	1	2.31GHz~2.43GHz---L	Fig.A.6.2.1	P
	11	2.45GHz~2.50GHz---H	Fig.A.6.2.2	P

802.11g mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11g	1	2.31GHz~2.43GHz---L	Fig.A.6.2.3	P
	11	2.45GHz~2.50GHz---H	Fig.A.6.2.4	P

802.11n-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	1	2.31GHz~2.43GHz---L	Fig.A.6.2.5	P
	11	2.45GHz~2.50GHz---H	Fig.A.6.2.6	P

Conclusion: Pass
Note:

1. 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= $P_{Mea}+A_{Rpl}= P_{Mea}+Cable Loss+Antenna Factor$

2. The range of evaluated frequency is from 9 kHz to 26GHz. Measurement value show only up to 6 maximum emissions noted.

Peak
802.11b
Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2389.436	61.60	3.5	31.9	26.24	74.0	12.4	H
2389.702	61.37	3.5	31.9	26.01	74.0	12.6	H
4824.000	44.17	-29.0	33.9	39.21	74.0	29.8	V
7236.000	46.64	-27.1	35.6	38.16	74.0	27.4	V
9648.000	43.64	-27.1	37.0	33.72	74.0	30.4	V
12060.000	44.65	-26.4	38.9	32.18	74.0	29.4	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2374.600	46.36	-31.9	31.9	46.40	74.0	27.6	H
2521.600	47.05	-31.7	32.0	46.68	74.0	27.0	V
4874.000	47.36	-29.1	34.0	42.55	74.0	26.6	H
7311.000	44.32	-27.4	35.6	36.08	74.0	29.7	V
9748.000	44.26	-27.3	37.1	34.50	74.0	29.7	V
12185.000	45.90	-25.4	38.9	32.42	74.0	28.1	H

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2483.885	64.32	3.4	32.0	28.92	74.0	9.7	V
2484.020	65.27	3.4	32.0	29.87	74.0	8.7	V
4924.000	42.48	-29.1	34.0	37.57	74.0	31.5	H
7386.000	43.73	-27.5	35.6	35.59	74.0	30.3	V
9848.000	44.40	-27.4	37.2	34.53	74.0	29.6	H
12310.000	44.82	-25.5	38.9	31.43	74.0	29.2	V

802.11g

Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2388.694	68.70	3.5	31.9	33.34	74.0	5.3	V
2389.828	68.56	3.5	31.9	33.19	74.0	5.4	H
4824.000	41.48	-29.0	33.9	36.51	74.0	32.5	V
7236.000	46.17	-27.1	35.6	37.69	74.0	27.8	V
9648.000	43.60	-27.1	37.0	33.68	74.0	30.4	V
12060.000	45.02	-26.4	38.9	32.55	74.0	29.0	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2342.200	46.66	-32.5	31.8	47.29	74.0	27.3	V
2505.200	46.37	-31.8	32.0	46.12	74.0	27.6	V
4874.000	42.61	-29.1	34.0	37.79	74.0	31.4	H
7311.000	42.93	-27.4	35.6	34.70	74.0	31.1	V
9748.000	42.18	-27.3	37.1	32.43	74.0	31.8	H
12185.000	45.61	-25.4	38.9	32.13	74.0	28.4	V

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2483.775	66.19	3.4	32.0	30.79	74.0	7.8	V
2484.170	65.71	3.4	32.0	30.31	74.0	8.3	H
4924.000	42.53	-29.1	34.0	37.62	74.0	31.5	V
7386.000	44.14	-27.5	35.6	35.99	74.0	29.9	V
9848.000	42.72	-27.4	37.2	32.85	74.0	31.3	H
12310.000	44.54	-25.5	38.9	31.15	74.0	29.5	H

802.11n-HT20
Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2389.534	68.96	3.5	31.9	33.59	74.0	5.0	H
2389.856	69.26	3.5	31.9	33.89	74.0	4.7	H
4824.000	43.00	-29.0	33.9	38.04	74.0	31.0	H
7236.000	45.30	-27.1	35.6	36.82	74.0	28.7	V
9648.000	43.02	-27.1	37.0	33.10	74.0	31.0	H
12060.000	46.24	-26.4	38.9	33.77	74.0	27.8	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2316.400	46.91	-32.6	31.8	47.67	74.0	27.1	V
2530.600	47.61	-31.8	32.1	47.34	74.0	26.4	V
4874.000	43.06	-29.1	34.0	38.24	74.0	30.9	V
7311.000	43.32	-27.4	35.6	35.09	74.0	30.7	H
9748.000	43.23	-27.3	37.1	33.48	74.0	30.8	V
12185.000	45.70	-25.4	38.9	32.22	74.0	28.3	H

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2483.535	70.49	3.4	32.0	35.09	74.0	3.5	H
2483.775	69.01	3.4	32.0	33.61	74.0	5.0	V
4924.000	42.92	-29.1	34.0	38.02	74.0	31.1	H
7386.000	42.91	-27.5	35.6	34.77	74.0	31.1	V
9848.000	43.69	-27.4	37.2	33.82	74.0	30.3	V
12310.000	45.23	-25.5	38.9	31.85	74.0	28.8	V

Average

802.11b

Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2388.540	48.93	3.5	31.9	13.57	54.0	5.1	V
2389.980	49.11	3.5	31.9	13.75	54.0	4.9	V
4824.000	36.49	-29.0	33.9	31.53	54.0	17.5	H
7236.000	37.77	-27.1	35.6	29.30	54.0	16.2	V
9648.000	33.49	-27.1	37.0	23.57	54.0	20.5	H
12060.000	33.92	-26.4	38.9	21.45	54.0	20.1	V

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2417.880	48.82	3.4	31.9	13.52	54.0	5.2	V
2451.660	49.81	3.5	31.9	14.37	54.0	4.2	V
4874.000	39.17	-29.1	34.0	34.36	54.0	14.8	H
7311.000	35.04	-27.4	35.6	26.81	54.0	19.0	H
9748.000	33.21	-27.3	37.1	23.46	54.0	20.8	H
12185.000	35.05	-25.4	38.9	21.57	54.0	19.0	V

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2483.520	48.12	3.4	32.0	12.72	54.0	5.9	V
2483.580	48.12	3.4	32.0	12.73	54.0	5.9	V
4924.000	40.74	-29.1	34.0	35.83	54.0	13.3	V
7386.000	35.04	-27.5	35.6	26.90	54.0	19.0	V
9848.000	32.60	-27.4	37.2	22.73	54.0	21.4	V
12310.000	33.99	-25.5	38.9	20.61	54.0	20.0	V

802.11g

Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2389.800	48.91	3.5	31.9	13.55	54.0	5.1	V
2389.920	48.95	3.5	31.9	13.59	54.0	5.1	V
4824.000	31.64	-29.0	33.9	26.67	54.0	22.4	V
7236.000	34.92	-27.1	35.6	26.45	54.0	19.1	V
9648.000	32.77	-27.1	37.0	22.85	54.0	21.2	V
12060.000	33.67	-26.4	38.9	21.20	54.0	20.3	V

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2412.840	48.80	3.4	31.9	13.50	54.0	5.2	V
2462.280	48.82	3.5	32.0	13.40	54.0	5.2	V
4874.000	32.11	-29.1	34.0	27.29	54.0	21.9	V
7311.000	32.98	-27.4	35.6	24.74	54.0	21.0	V
9748.000	32.30	-27.3	37.1	22.54	54.0	21.7	V
12185.000	34.64	-25.4	38.9	21.15	54.0	19.4	V

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2483.580	48.81	3.4	32.0	13.41	54.0	5.2	V
2483.820	48.65	3.4	32.0	13.26	54.0	5.4	V
4924.000	32.76	-29.1	34.0	27.85	54.0	21.2	H
7386.000	32.85	-27.5	35.6	24.70	54.0	21.2	V
9848.000	32.75	-27.4	37.2	22.88	54.0	21.3	V
12310.000	34.08	-25.5	38.9	20.70	54.0	19.9	V

802.11n-HT20
Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2389.740	50.00	3.5	31.9	14.64	54.0	4.0	V
2389.920	50.26	3.5	31.9	14.90	54.0	3.7	V
4824.000	31.65	-29.0	33.9	26.68	54.0	22.4	H
7236.000	34.97	-27.1	35.6	26.49	54.0	19.0	V
9648.000	32.65	-27.1	37.0	22.73	54.0	21.4	V
12060.000	33.72	-26.4	38.9	21.24	54.0	20.3	V

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2411.880	48.84	3.4	31.9	13.54	54.0	5.2	V
2462.940	48.72	3.5	32.0	13.29	54.0	5.3	V
4874.000	32.86	-29.1	34.0	28.05	54.0	21.1	V
7311.000	33.14	-27.4	35.6	24.91	54.0	20.9	H
9748.000	32.57	-27.3	37.1	22.82	54.0	21.4	V
12185.000	34.92	-25.4	38.9	21.44	54.0	19.1	H

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2483.520	48.16	3.4	32.0	12.76	54.0	5.8	V
2483.700	48.08	3.4	32.0	12.69	54.0	5.9	V
4924.000	32.74	-29.1	34.0	27.83	54.0	21.3	H
7386.000	32.25	-27.5	35.6	24.11	54.0	21.8	H
9848.000	32.42	-27.4	37.2	22.55	54.0	21.6	V
12310.000	33.98	-25.5	38.9	20.60	54.0	20.0	V