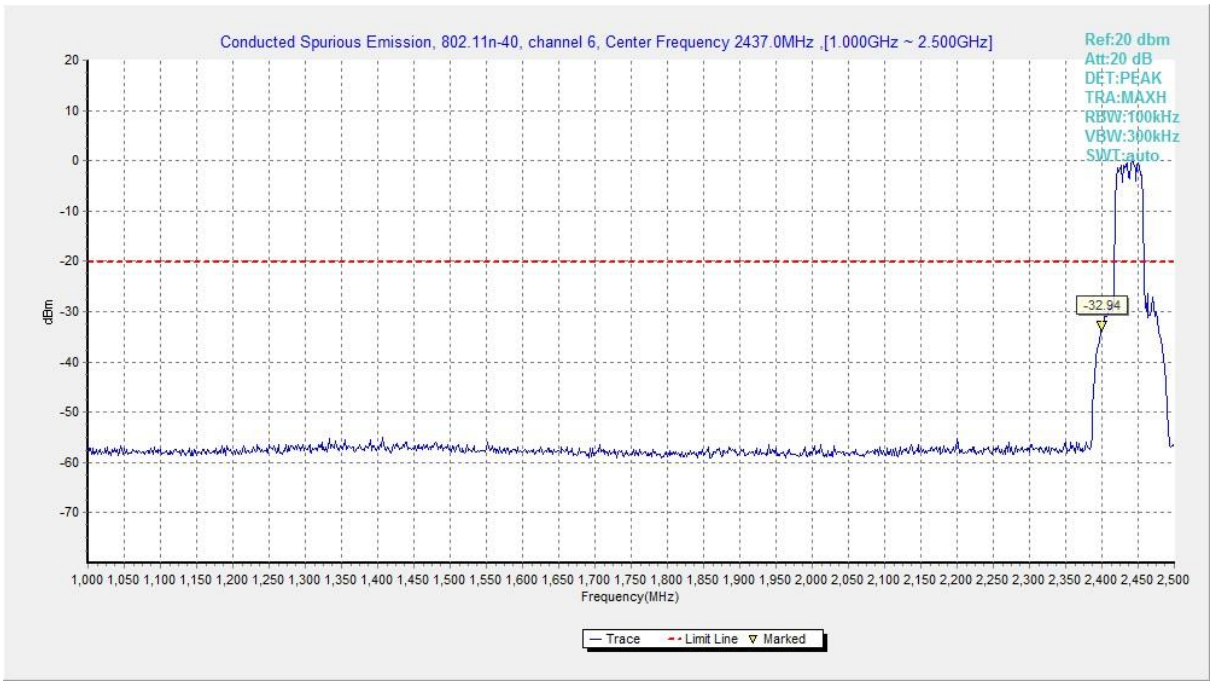


Fig.A.6.1.83 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch6, 1 GHz-2.5 GHz)

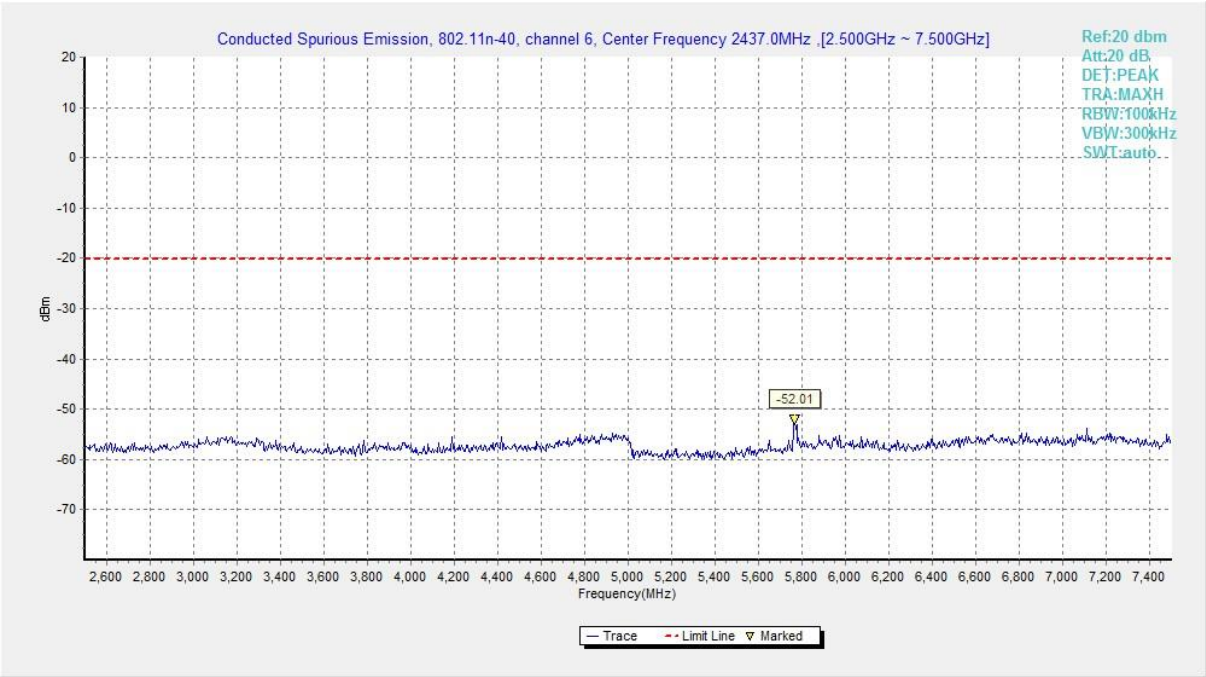


Fig.A.6.1.84 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch6, 2.5 GHz-7.5 GHz)

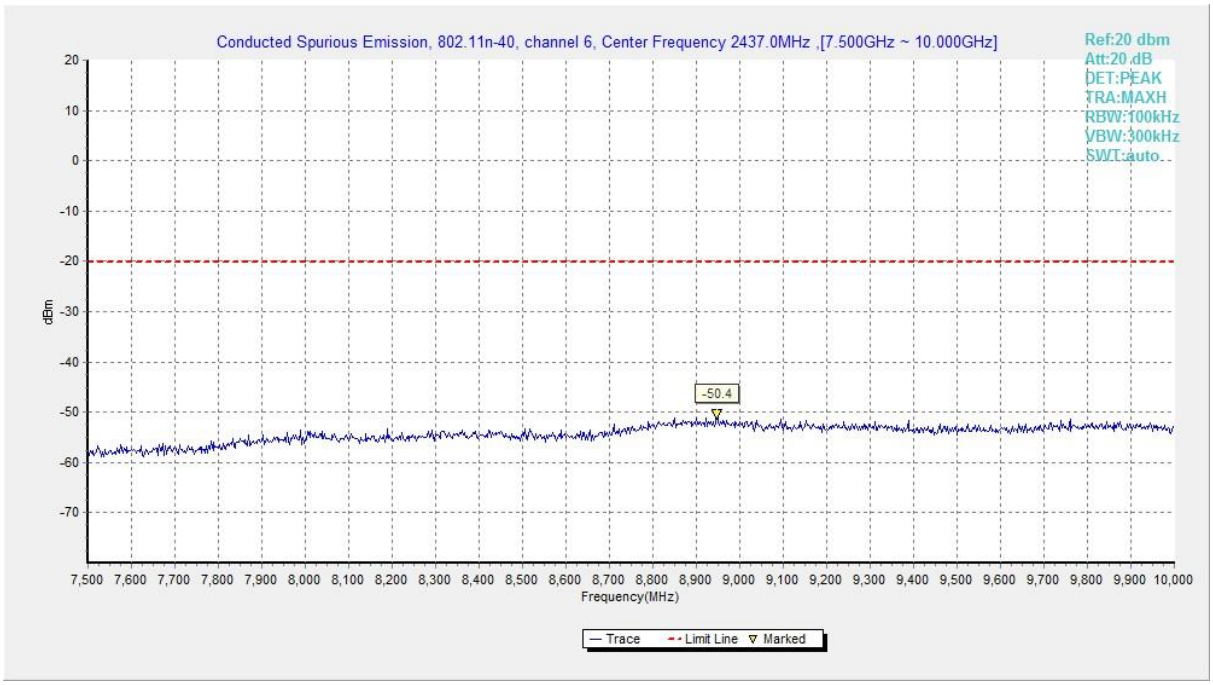


Fig.A.6.1.85 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch6, 7.5 GHz-10 GHz)

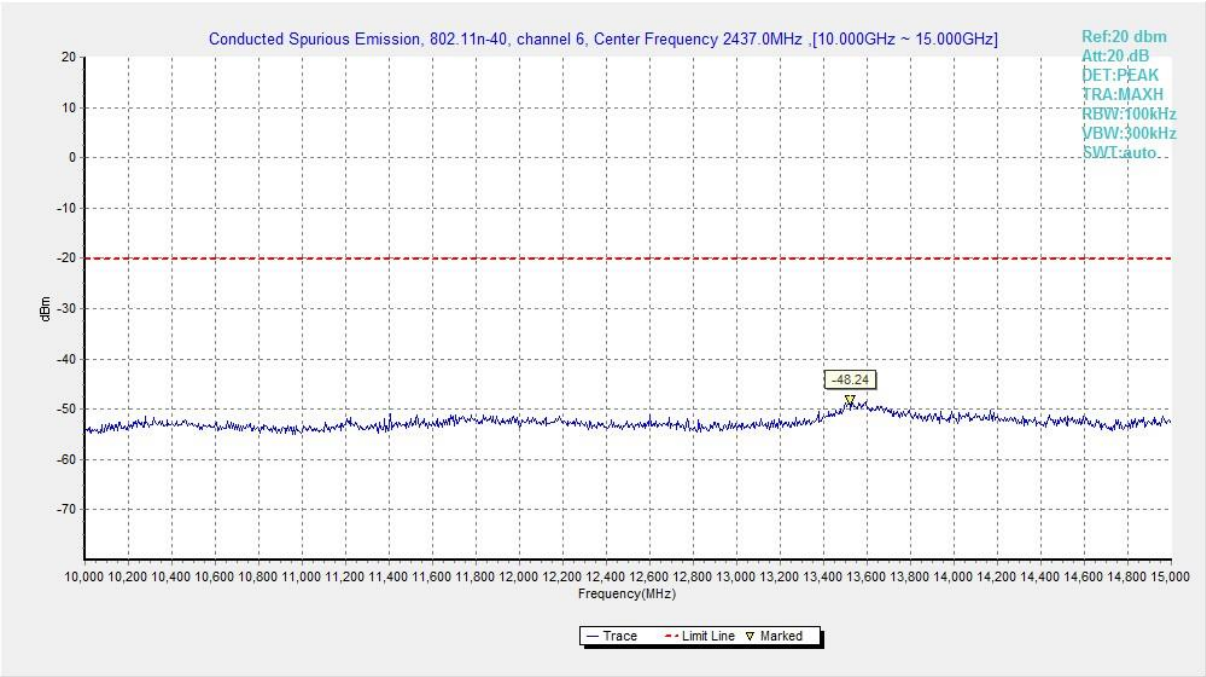


Fig.A.6.1.86 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch6, 10 GHz-15 GHz)

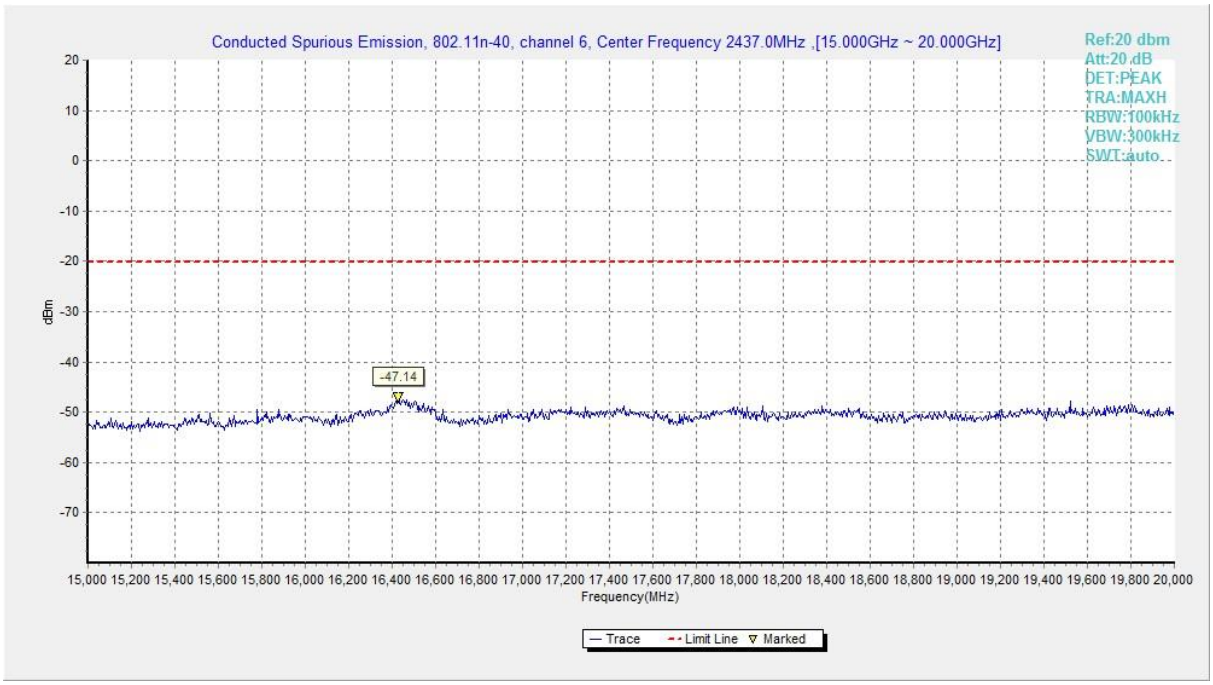


Fig.A.6.1.87 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch6, 15 GHz-20 GHz)

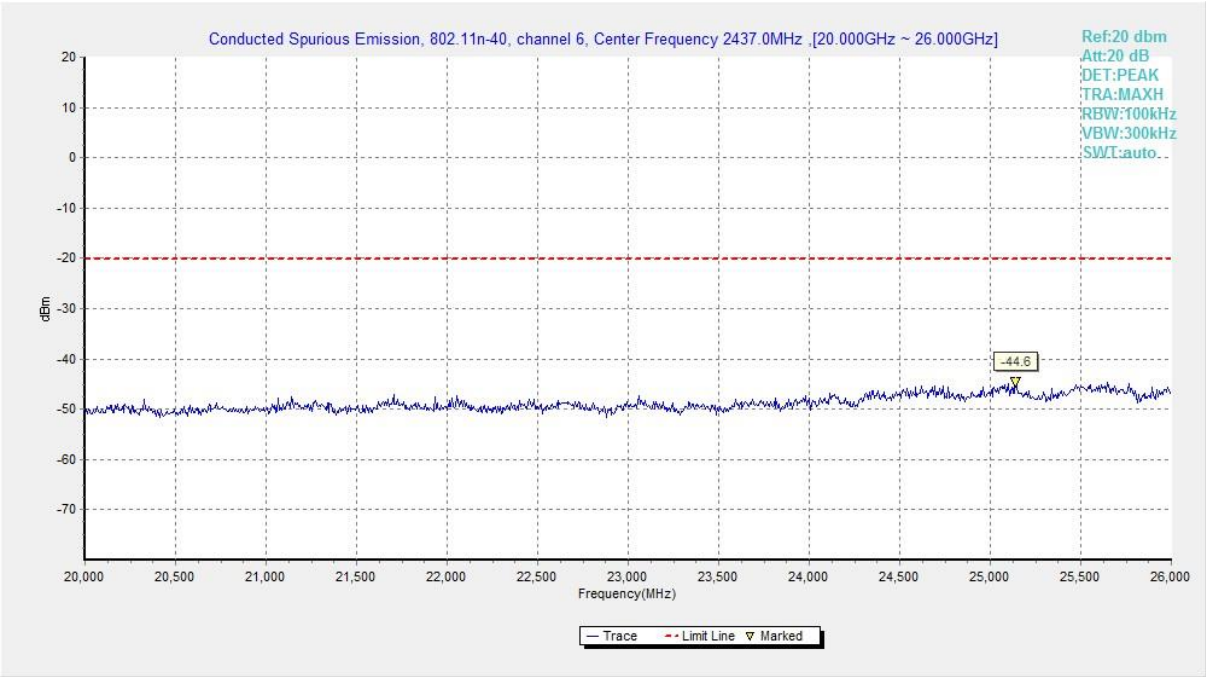


Fig.A.6.1.88 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch6, 20 GHz-26 GHz)

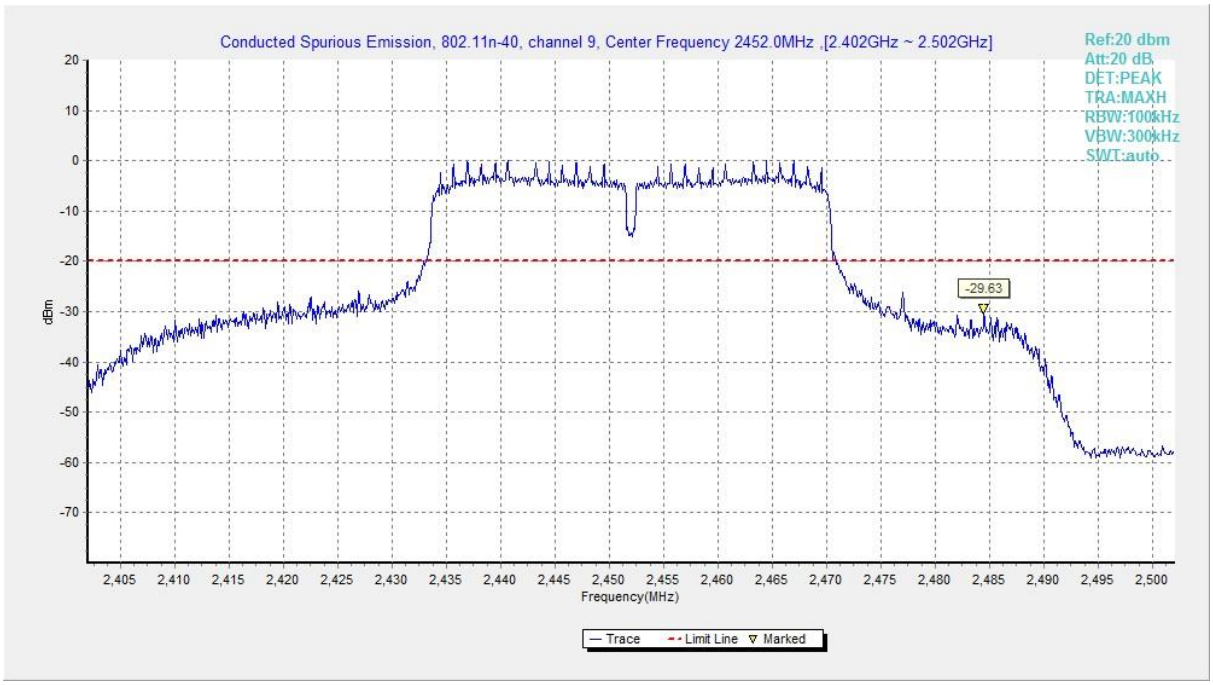


Fig.A.6.1.89 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, Center Frequency)

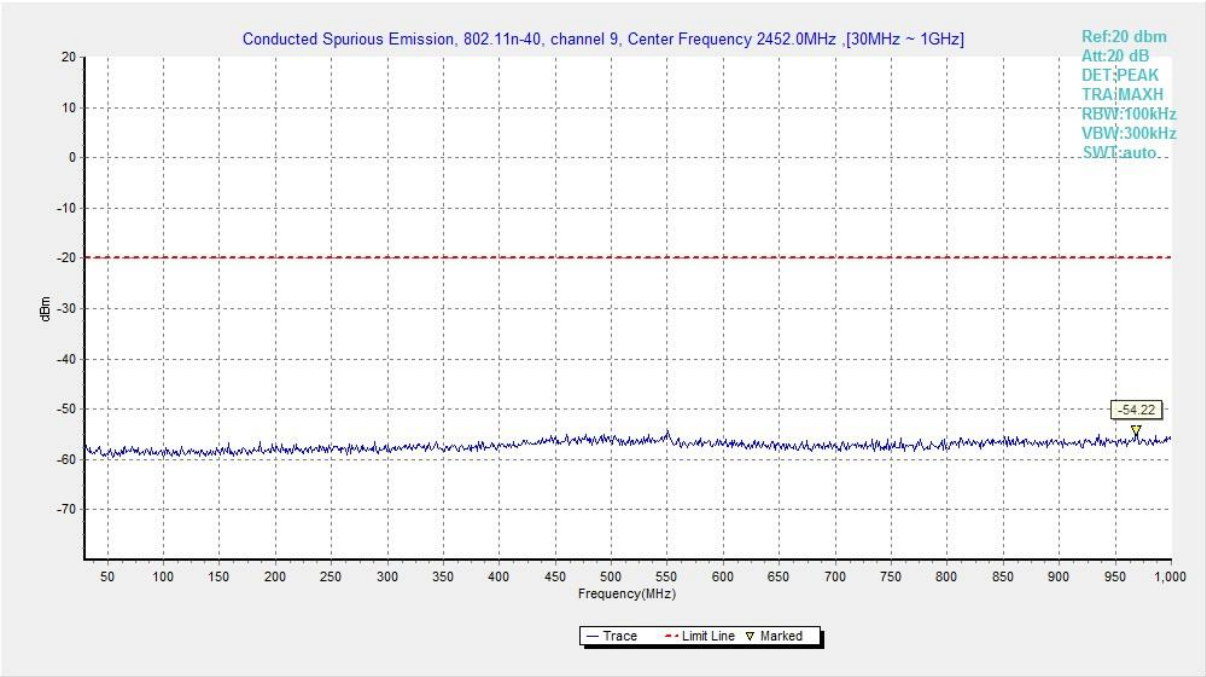


Fig.A.6.1.90 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 30 MHz-1 GHz)

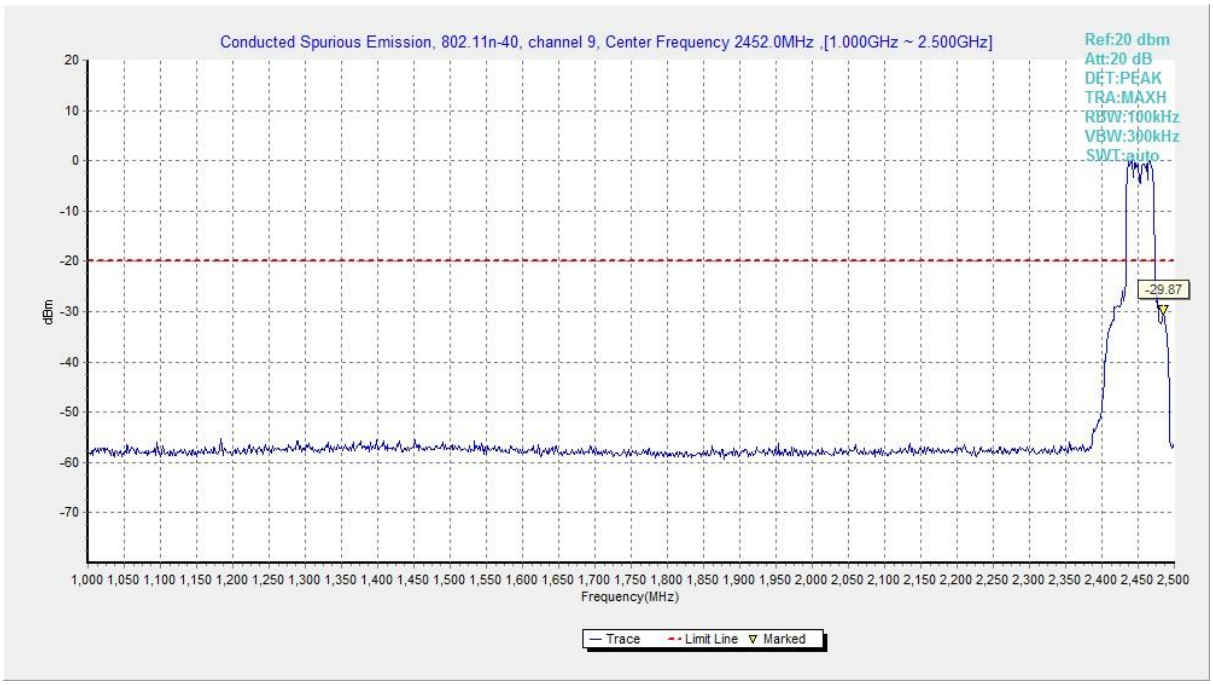


Fig.A.6.1.91 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 1 GHz-2.5 GHz)

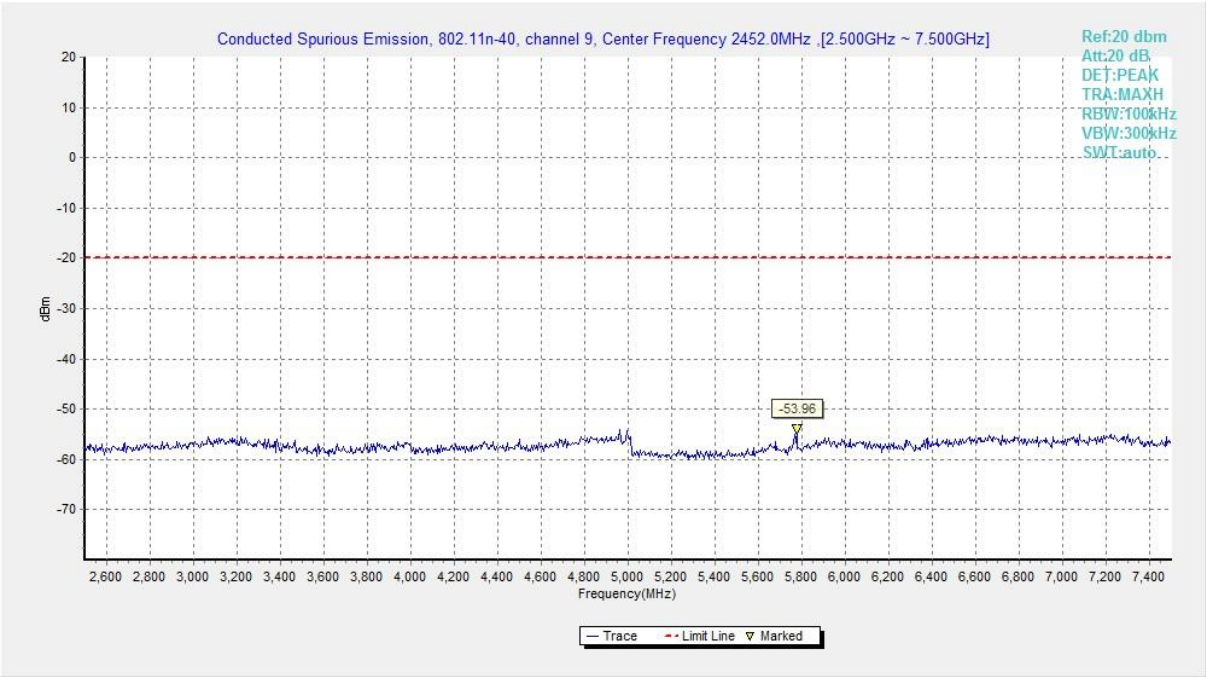


Fig.A.6.1.92 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 2.5 GHz-7.5 GHz)

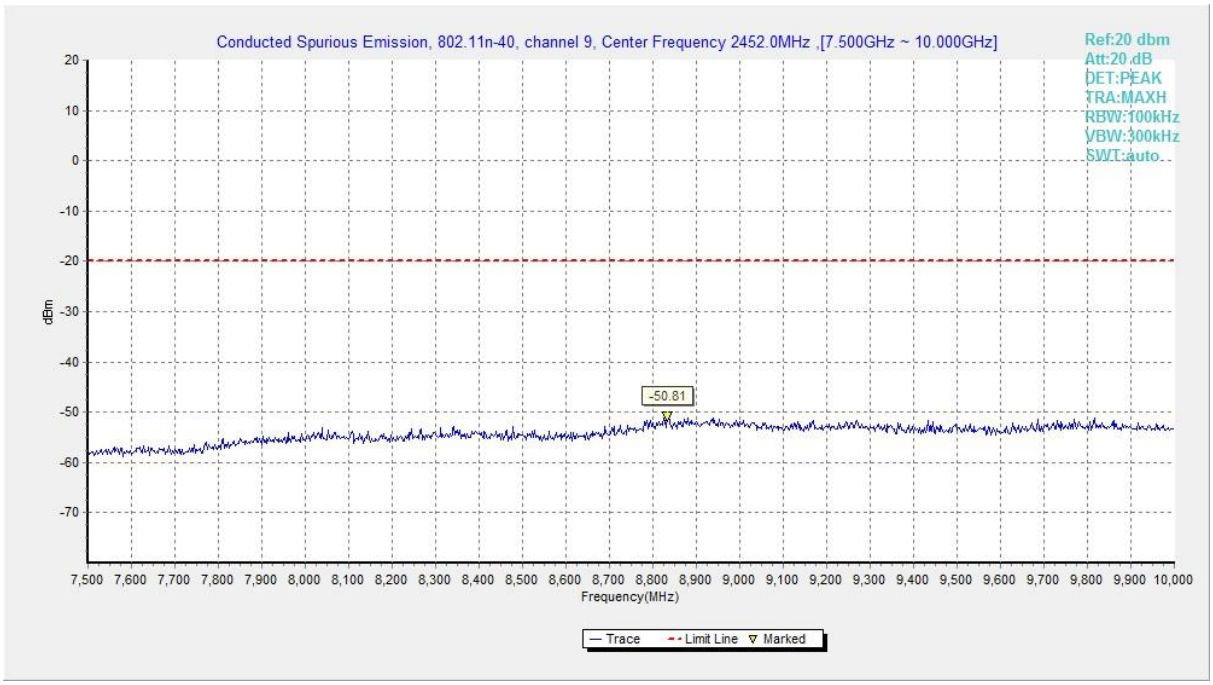


Fig.A.6.1.93 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 7.5 GHz-10 GHz)

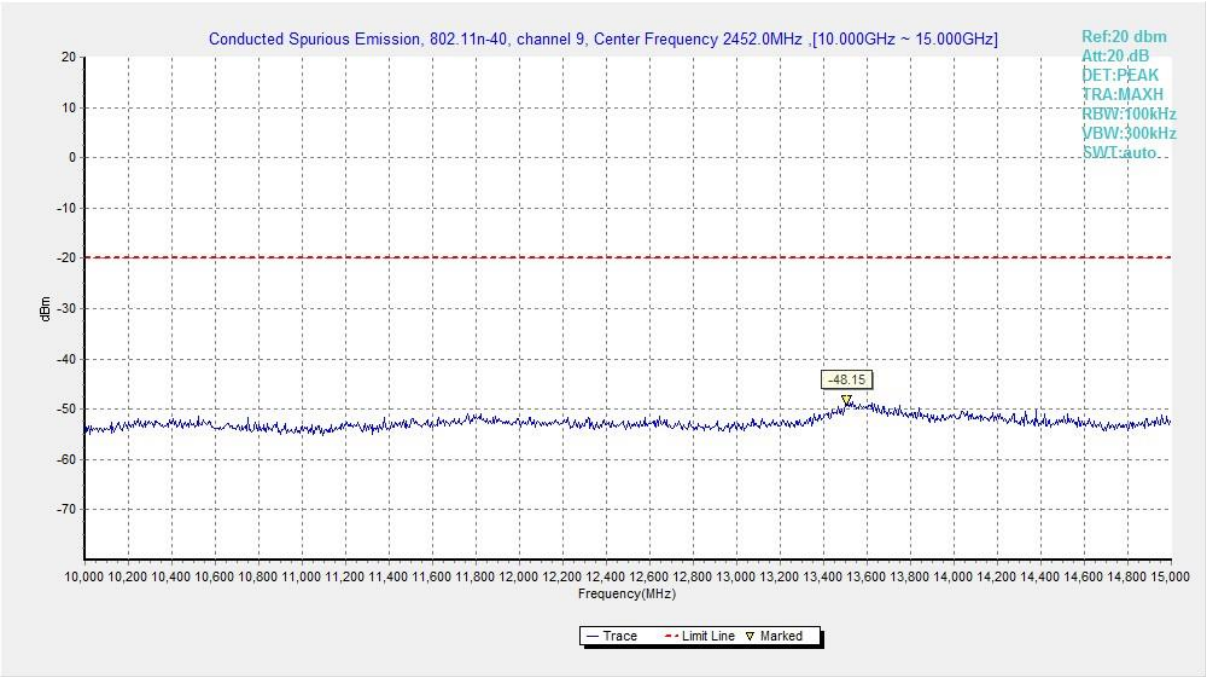


Fig.A.6.1.94 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 10 GHz-15 GHz)

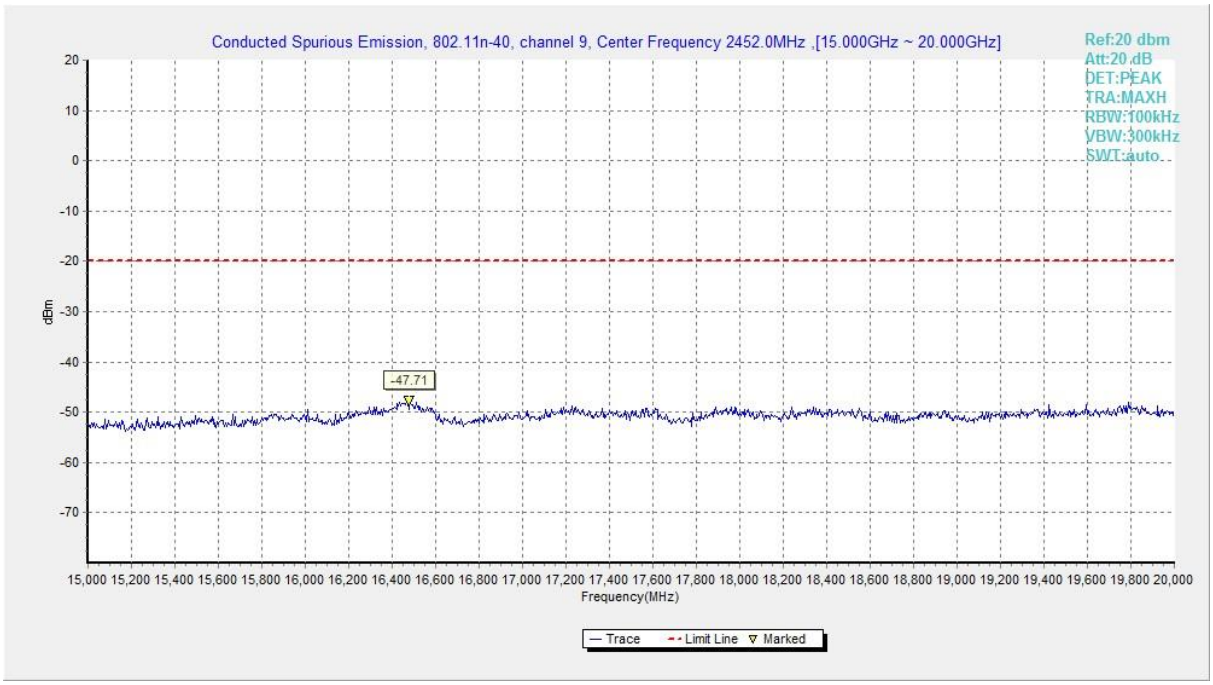


Fig.A.6.1.95 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 15 GHz-20 GHz)

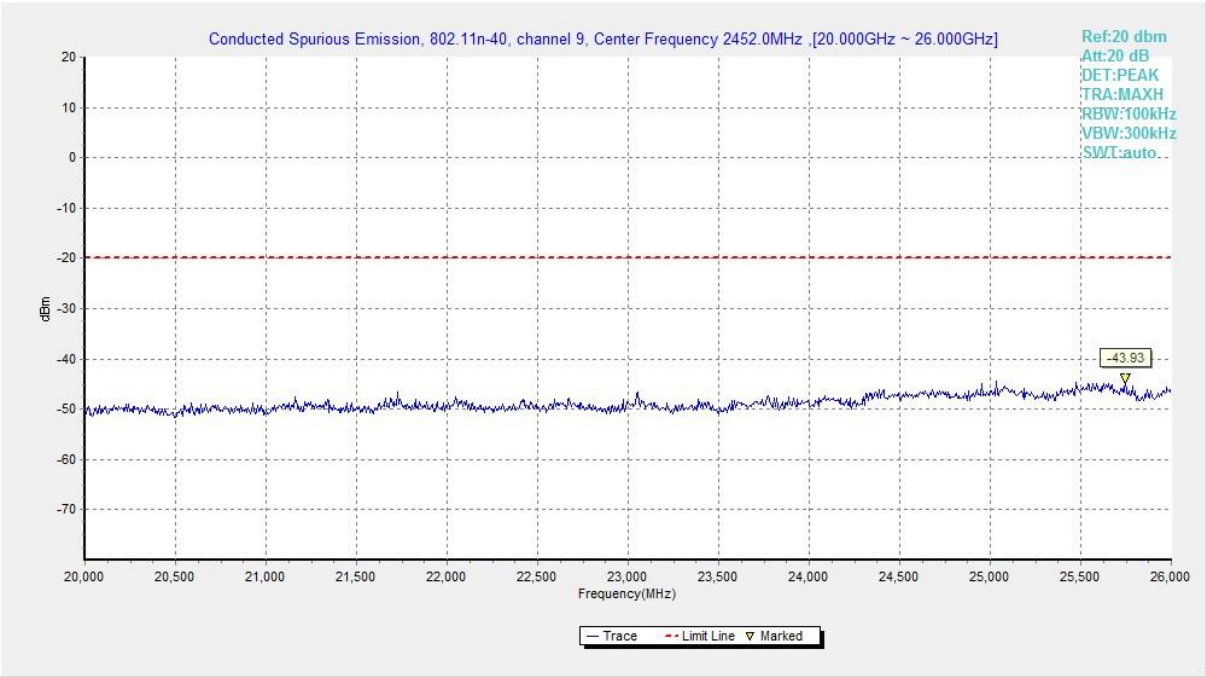


Fig.A.6.1.96 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 20 GHz-26 GHz)

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)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

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

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: EUT3

Measurement Results for Set.11:

802.11b mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	Power	2.38GHz ~2.43GHz	Fig.A.6.2.1	**P**
	1	1 GHz ~ 3 GHz	--	**P**
		3 GHz ~ 18 GHz	--	**P**
	6	9 kHz ~30 MHz	--	**P**
		30 MHz ~1 GHz	--	**P**
		1 GHz ~ 3 GHz	--	**P**
		3 GHz ~ 18 GHz	--	**P**
		18 GHz~ 26.5 GHz	--	**P**
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.2	**P**
	11	1 GHz ~ 3 GHz	--	**P**
		3 GHz ~ 18 GHz	--	**P**

802.11g mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11g	Power	2.38GHz ~2.43GHz	Fig.A.6.2.3	**P**
	1	1 GHz ~ 3 GHz	--	**P**
		3 GHz ~ 18 GHz	--	**P**
	6	30 MHz ~1 GHz	--	**P**
		1 GHz ~ 3 GHz	--	**P**
		3 GHz ~ 18 GHz	--	**P**
		18 GHz~ 26.5 GHz	--	**P**
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.4	**P**
	11	1 GHz ~ 3 GHz	--	**P**
		3 GHz ~ 18 GHz	--	**P**

802.11n-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	Power	2.38GHz ~2.43GHz	Fig.A.6.2.5	**P**
	1	1 GHz ~ 3 GHz	--	**P**
		3 GHz ~ 18 GHz	--	**P**
	6	30 MHz ~1 GHz	--	**P**
		1 GHz ~ 3 GHz	--	**P**
		3 GHz ~ 18 GHz	--	**P**
		18 GHz~ 26.5 GHz	--	**P**
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.6	**P**
	11	1 GHz ~ 3 GHz	--	**P**
		3 GHz ~ 18 GHz	--	**P**

802.11n-HT40 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT40)	Power	2.38GHz ~2.43GHz	Fig.A.6.2.7	**P**
	3	1 GHz ~ 3 GHz	--	**P**
		3 GHz ~ 18 GHz	--	**P**
	6	30 MHz ~1 GHz	--	**P**
		1 GHz ~ 3 GHz	--	**P**
		3 GHz ~ 18 GHz	--	**P**
		18 GHz~ 26.5 GHz	--	**P**
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.8	**P**
	9	1 GHz ~ 3 GHz	--	**P**
		3 GHz ~ 18 GHz	--	**P**

Conclusion: Pass

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-Average

Ch1

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2387.940	43.8	-38.8	27.2	55.449	H
17997.000	40.4	-25.5	43.4	22.502	H
17998.500	40.1	-25.5	43.4	22.202	V
18000.000	40.0	-26.5	46.4	20.105	H
17973.000	40.0	-25.5	43.4	22.102	H
17991.000	39.9	-25.5	43.4	22.002	H

Ch6

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
17998.500	40.2	-25.5	43.4	22.302	H
17997.000	40.1	-25.5	43.4	22.202	H
17995.500	40.1	-25.5	43.4	22.202	V
18000.000	40.1	-26.5	46.4	20.205	H
17992.500	40.0	-25.5	43.4	22.102	H
17986.500	39.9	-25.5	43.4	22.002	H

Ch11

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2487.590	48.3	-39.0	27.2	60.114	H
17997.000	40.0	-25.5	43.4	22.102	H
17994.000	40.0	-25.5	43.4	22.102	V
17998.500	40.0	-25.5	43.4	22.102	H
18000.000	39.9	-26.5	46.4	20.005	H
17995.500	39.8	-25.5	43.4	21.902	H

802.11b-Peak

Ch1

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2389.945	58.4	-38.8	27.2	70.049	H
17865.000	51.9	-25.7	43.4	34.242	H
17869.500	51.7	-25.7	43.4	34.042	V
17967.000	51.6	-25.5	43.4	33.702	H
17913.000	51.5	-25.7	43.4	33.842	H
17977.500	51.4	-25.5	43.4	33.502	H

Ch6

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
17995.500	51.9	-25.5	43.4	34.002	H
17908.500	51.7	-25.7	43.4	34.042	H
17823.000	51.4	-25.7	43.4	33.742	V
17994.000	51.4	-25.5	43.4	33.502	H
17941.500	51.4	-25.5	43.4	33.502	H
17811.000	51.3	-25.7	43.4	33.642	H

Ch11

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2487.615	62.7	-39.0	27.2	74.514	H
17904.000	52.0	-25.7	43.4	34.342	H
17812.500	52.0	-25.7	43.4	34.342	V
17997.000	51.9	-25.5	43.4	34.002	H
17994.000	51.5	-25.5	43.4	33.602	H
17961.000	51.3	-25.5	43.4	33.402	H

802.11g - Average

Ch1

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2389.870	50.9	-38.8	27.2	62.549	H
17998.500	40.0	-25.5	43.4	22.102	H
17995.500	40.0	-25.5	43.4	22.102	V
18000.000	39.9	-26.5	46.4	20.005	H
17992.500	39.9	-25.5	43.4	22.002	H
17994.000	39.8	-25.5	43.4	21.902	H

Ch6

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
17997.000	40.1	-25.5	43.4	22.202	H
17994.000	40.0	-25.5	43.4	22.102	H
18000.000	40.0	-26.5	46.4	20.105	V
17998.500	40.0	-25.5	43.4	22.102	H
17995.500	39.9	-25.5	43.4	22.002	H
17980.500	39.9	-25.5	43.4	22.002	H

Ch11

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2484.440	49.9	-39.0	27.2	61.714	H
17997.000	40.1	-25.5	43.4	22.202	H
17989.500	40.0	-25.5	43.4	22.102	V
17994.000	39.9	-25.5	43.4	22.002	H
18000.000	39.9	-26.5	46.4	20.005	H
17983.500	39.8	-25.5	43.4	21.902	H

802.11g - Peak

Ch1

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2389.790	70.3	-38.8	27.2	81.949	H
17998.500	52.2	-25.5	43.4	34.302	H
17994.000	51.9	-25.5	43.4	34.002	V
17941.500	51.8	-25.5	43.4	33.902	H
17862.000	51.3	-25.7	43.4	33.642	H
17989.500	51.2	-25.5	43.4	33.302	H

Ch6

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
17997.000	52.1	-25.5	43.4	34.202	H
17983.500	51.6	-25.5	43.4	33.702	H
17970.000	51.5	-25.5	43.4	33.602	V
17995.500	51.4	-25.5	43.4	33.502	H
17989.500	51.1	-25.5	43.4	33.202	H
17950.500	51.0	-25.5	43.4	33.102	H

Ch11

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2484.445	67.0	-39.0	27.2	78.814	H
17998.500	52.4	-25.5	43.4	34.502	H
17877.000	51.7	-25.7	43.4	34.042	V
17997.000	51.5	-25.5	43.4	33.602	H
17904.000	51.4	-25.7	43.4	33.742	H
17910.000	51.3	-25.7	43.4	33.642	H

802.11n-HT20-Average

Ch1

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2389.405	47.6	-38.8	27.2	59.249	H
18000.000	40.3	-26.5	46.4	20.405	H
17998.500	40.0	-25.5	43.4	22.102	V
17995.500	40.0	-25.5	43.4	22.102	H
17991.000	40.0	-25.5	43.4	22.102	H
17982.000	39.9	-25.5	43.4	22.002	H

Ch6

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
17992.500	40.1	-25.5	43.4	22.202	H
17995.500	40.0	-25.5	43.4	22.102	H
18000.000	39.9	-26.5	46.4	20.005	V
17997.000	39.9	-25.5	43.4	22.002	H
17994.000	39.9	-25.5	43.4	22.002	H
17998.500	39.9	-25.5	43.4	22.002	H

Ch11

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2483.625	47.6	-39.0	27.2	59.414	H
17998.500	40.2	-25.5	43.4	22.302	H
17995.500	40.0	-25.5	43.4	22.102	V
18000.000	40.0	-26.5	46.4	20.105	H
17997.000	40.0	-25.5	43.4	22.102	H
17992.500	39.9	-25.5	43.4	22.002	H

802.11n-HT20-Peak

Ch1

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2389.570	69.0	-38.8	27.2	80.649	H
17935.500	51.4	-25.5	43.4	33.502	H
17985.000	51.4	-25.5	43.4	33.502	V
17937.000	51.3	-25.5	43.4	33.402	H
17959.500	51.3	-25.5	43.4	33.402	H
17896.500	51.2	-25.7	43.4	33.542	H

Ch6

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
17968.500	52.0	-25.5	43.4	34.102	H
17997.000	51.4	-25.5	43.4	33.502	H
17929.500	51.4	-25.5	43.4	33.502	V
17910.000	51.2	-25.7	43.4	33.542	H
17830.500	51.2	-25.7	43.4	33.542	H
17940.000	51.1	-25.5	43.4	33.202	H

Ch11

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2483.630	62.6	-39.0	27.2	74.414	H
17910.000	51.8	-25.7	43.4	34.142	H
17926.500	51.5	-25.5	43.4	33.602	V
17955.000	51.4	-25.5	43.4	33.502	H
17938.500	51.4	-25.5	43.4	33.502	H
17998.500	51.3	-25.5	43.4	33.402	H

802.11n-HT40-Average

Ch3

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2388.985	42.3	-38.8	27.7	53.400	H
9748.500	44.1	-24.5	38.0	30.600	H
17998.500	40.8	-17.7	45.6	12.900	V
17995.500	40.8	-17.7	45.6	12.900	H
18000.000	40.7	-45.6	44.5	41.766	H
17997.000	40.7	-17.7	45.6	12.800	H

Ch6

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
9748.500	44.0	-24.5	38.0	30.500	H
17995.500	40.8	-17.7	45.6	12.900	H
18000.000	40.7	-45.6	44.5	41.766	V
17998.500	40.7	-17.7	45.6	12.800	H
17917.500	40.6	-17.7	45.6	12.700	H
17980.500	40.6	-17.7	45.6	12.700	H

Ch9

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2484.940	43.2	-38.9	27.7	54.400	H
9748.500	44.3	-24.5	38.0	30.800	H
18000.000	40.8	-45.6	44.5	41.866	V
17995.500	40.7	-17.7	45.6	12.800	H
17992.500	40.6	-17.7	45.6	12.700	H
17935.500	40.6	-17.7	45.6	12.700	H

802.11n-HT40-Peak

Ch3

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2389.250	58.2	-38.8	27.7	69.300	H
17935.500	54.3	-17.7	45.6	26.400	H
17949.000	52.6	-17.7	45.6	24.700	V
17982.000	52.5	-17.7	45.6	24.600	H
18000.000	52.4	-45.6	44.5	53.466	H
17892.000	52.4	-18.5	45.6	25.300	H

Ch6

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
17920.500	53.3	-17.7	45.6	25.400	H
17997.000	52.8	-17.7	45.6	24.900	H
17994.000	52.5	-17.7	45.6	24.600	V
17983.500	52.2	-17.7	45.6	24.300	H
17964.000	52.2	-17.7	45.6	24.300	H
17887.500	52.1	-18.5	45.6	25.000	H

Ch9

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
2487.290	61.1	-38.9	27.7	72.300	H
17932.500	52.4	-17.7	45.6	24.500	H
17881.500	52.4	-18.5	45.6	25.300	V
17818.500	52.3	-18.5	45.6	25.200	H
9748.500	52.2	-24.5	38.0	38.700	H
17950.500	52.2	-17.7	45.6	24.300	H

Test graphs as below:

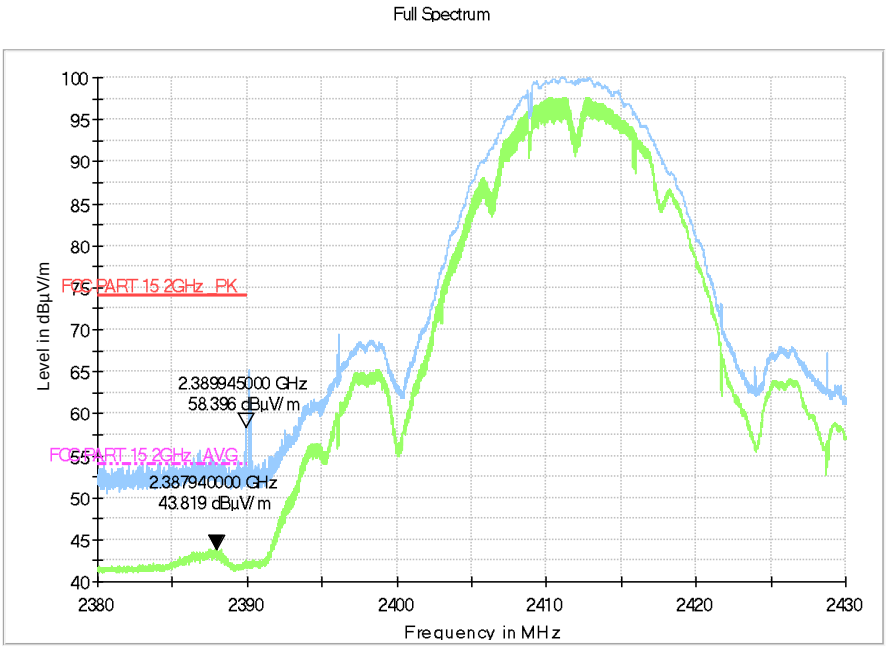


Fig.A.6.2.1 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch1, 2.38 GHz – 2.43GHz

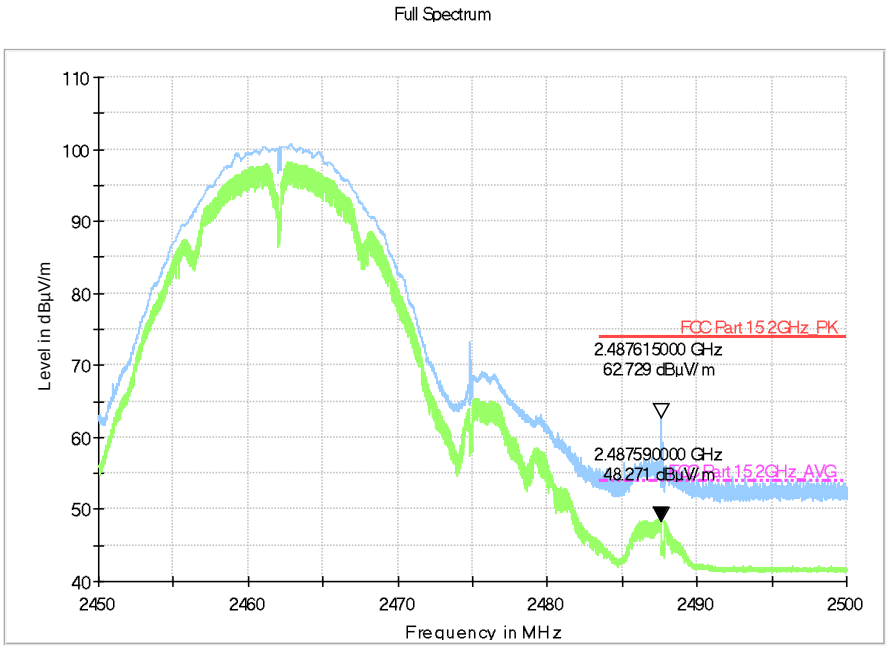


Fig.A.6.2.2 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch11, 2.45 GHz - 2.50GHz

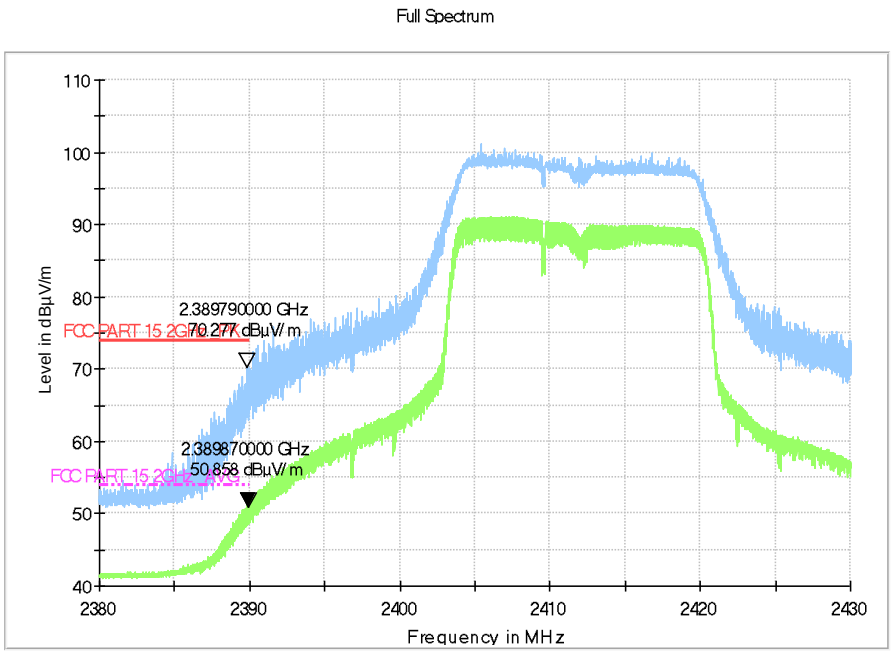


Fig.A.6.2.3 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch1, 2.38 GHz - 2.43GHz

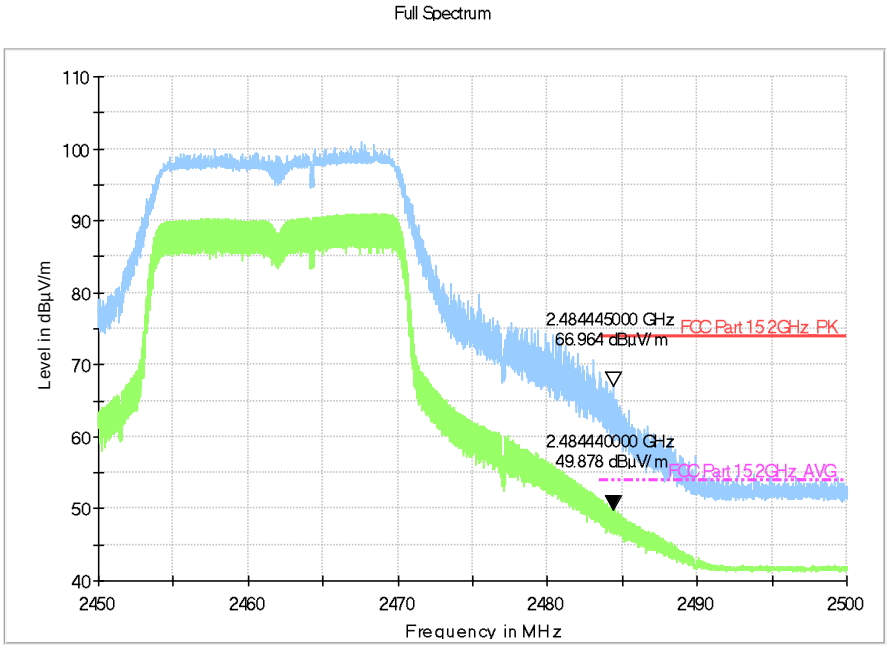


Fig.A.6.2.4 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch11, 2.45 GHz - 2.50GHz

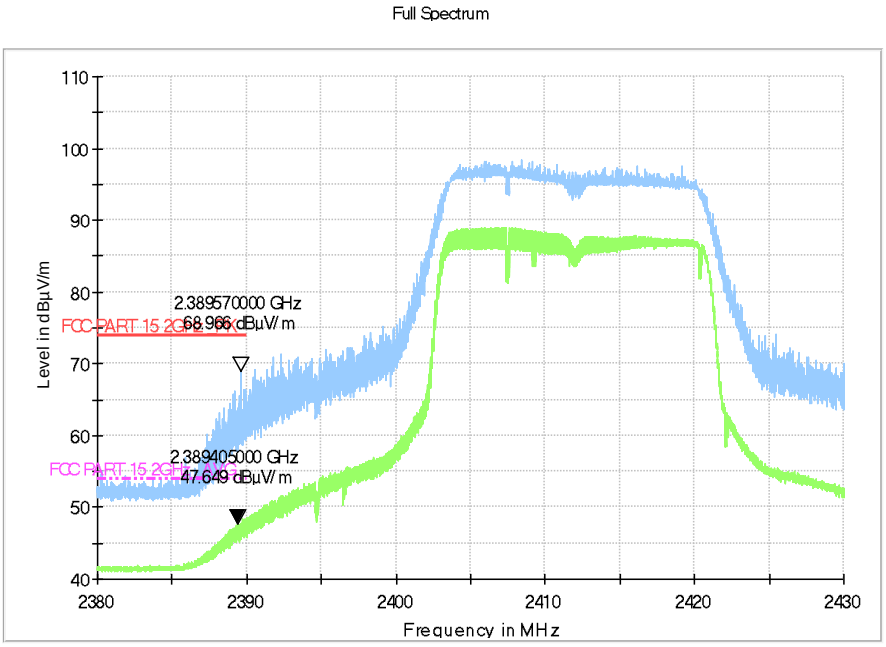


Fig.A.6.2.5 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch1, 2.38 GHz - 2.45GHz

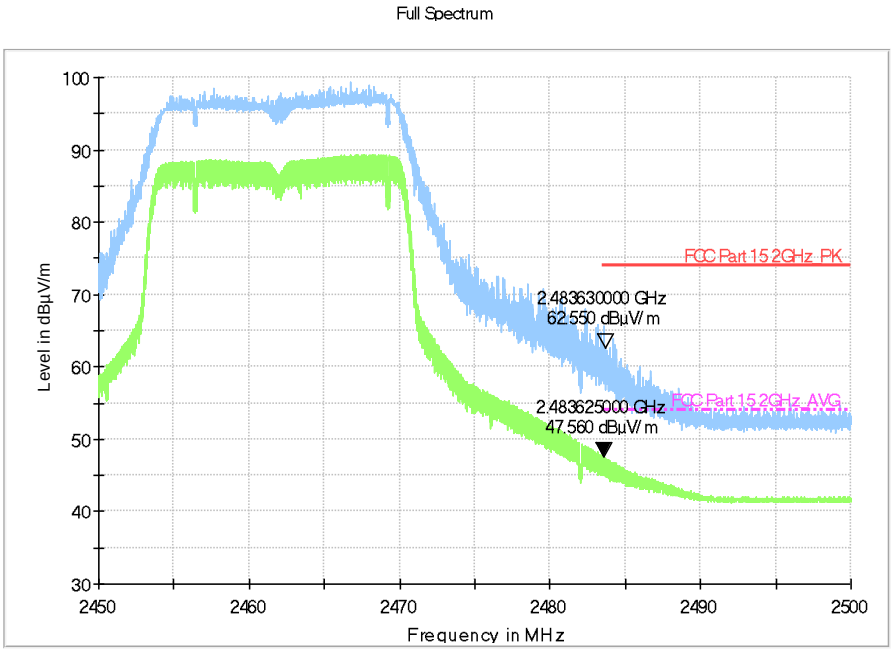


Fig.A.6.2.6 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch11, 2.45 GHz - 2.50GHz

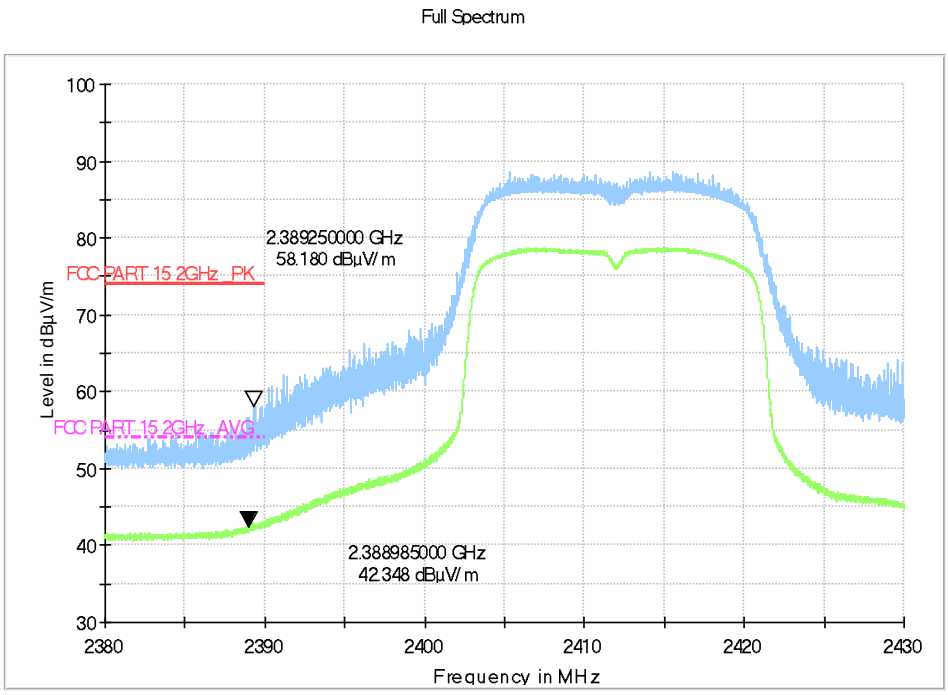


Fig.A.6.2.7 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT40, ch3, 2.38 GHz - 2.43GHz

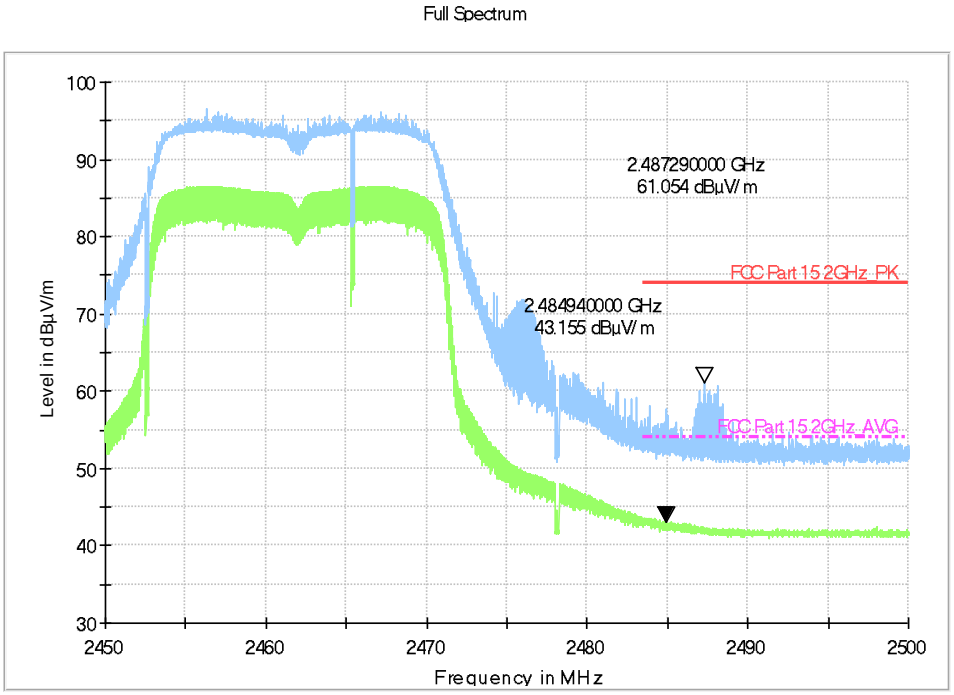
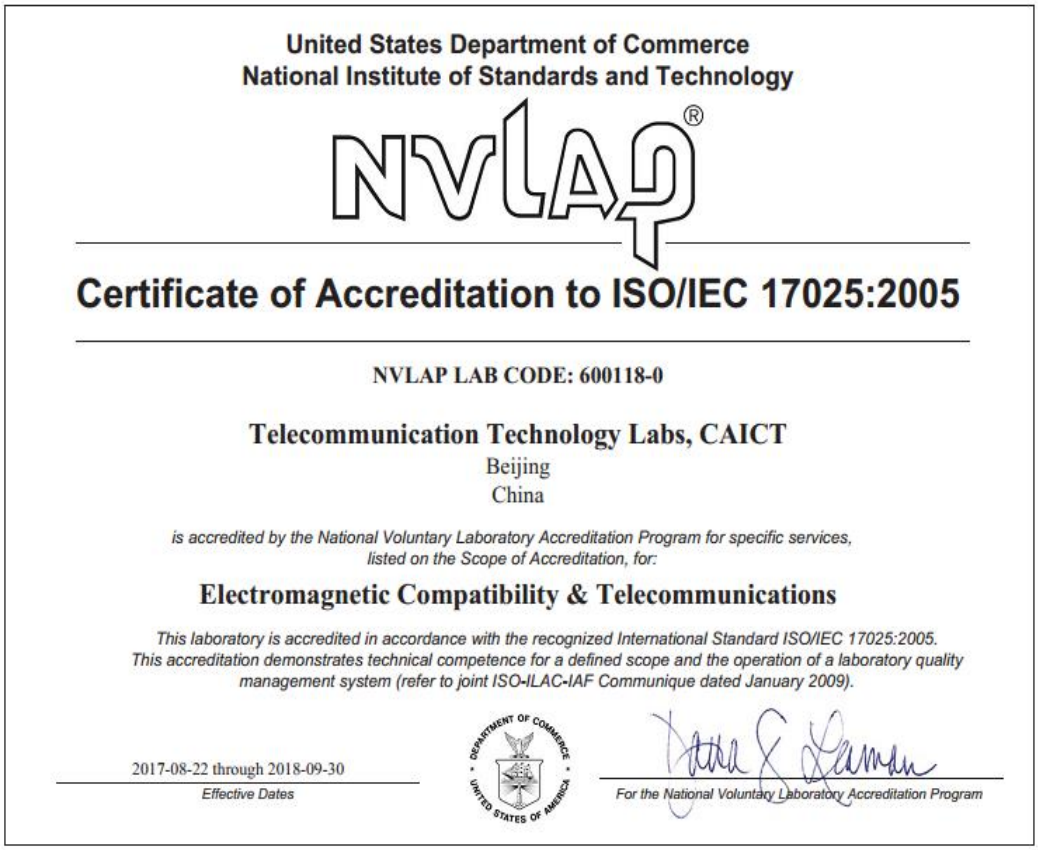


Fig.A.6.2.8 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT40, ch9, 2.45 GHz - 2.50GHz

ANNEX B: Accreditation Certificate



United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 600118-0

Telecommunication Technology Labs, CAICT
Beijing
China

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Electromagnetic Compatibility & Telecommunications

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2017-08-22 through 2018-09-30
Effective Dates

DEPARTMENT OF COMMERCE · UNITED STATES OF AMERICA

For the National Voluntary Laboratory Accreditation Program

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