TEST REPORT

No. I20N02376-WLAN

for

Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd

Feature phone

Model Name: CP3321AT

with

Hardware Version: P1

Software Version: 3321AT.201014.2S

FCC ID: R38YLCP3321AT

Issued Date: 2020-10-20

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of SAICT.

Test Laboratory:

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1. Summary of Test Report

1.1. Test Items

Description	Feature phone
Model Name	CP3321AT
Applicant's name	Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd
Manufacturer's Name	Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd

1.2. Test Standards

FCC Part15-2019; ANSI C63.10-2013

1.3. Test Result

Pass

1.4. Testing Location

Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China

1.5. Project data

Testing Start Date:	2020-09-16
Testing End Date:	2020-10-16

1.6. Signature

Lin Zechuang

(Prepared this test report)

Tang Weisheng

(Reviewed this test report)

Zhang Bojun

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd
Address:	Building B, Boton Science Park, Chaguang Road, Xili Town, Nanshan District, Shenzhen
Contact Person	Yentl Chen
E-Mail	chenyanting@yulong.com
Telephone:	+86 15927320221
Fax:	/

2.2. Manufacturer Information

Company Name:	Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd
Address:	Building B, Boton Science Park, Chaguang Road, Xili Town, Nanshan District, Shenzhen
Contact Person	Yentl Chen
E-Mail	chenyanting@yulong.com
Telephone:	+86 15927320221
Fax:	/

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Feature phone
Model Name	CP3321AT
RF Protocol	IEEE 802.11 b/g/n-HT20/n-HT40
Operating Frequency	2412MHz~2462MHz
Number of Channels	11
Antenna Type	Integrated
Antenna Gain	-0.6dBi
Power Supply	3.8V DC by Battery
FCC ID	R38YLCP3321AT
Condition of EUT as received	No abnormality in appearance

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Shenzhen Academy of Information and Communications Technology.

3.2. Internal Identification of EUT

EUT ID*	IMEI	HW Version	SW Version	Receive Date
UT09aa	990016030008690	P1	3321AT.201014.2S	2020-09-16
UT03aa	990016030008328	P1	3321AT.201014.2S	2020-09-16

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE

AE ID*	Description	AE ID*
AE1	Battery	/
AE2	Travel Charger	/
AE3	Micro B Cable	/

AE1

Model	Li-ion
Manufacturer	Tianjin Lishen
Capacity	1500mAh
Nominal Voltage	3.8V

AE2

Model	618045
Manufacturer	Shenzhen Kosun

AE3

Model	USB A To Micro B
Manufacturer	Shenzhen BRL

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment under Test (EUT) is a model of Feature phone with integrated antenna and battery.
It consists of normal options: Lithium Battery, Charger and USB Cable.
Manual and specifications of the EUT were provided to fulfil the test.
Samples undergoing test were selected by the client.

4. Reference Documents

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz	2019
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013

5. Test Results

5.1. Testing Environment

Normal Temperature: 15~35°C

Relative Humidity: 20~75%

5.2. Test Results

No	Test cases	Sub-clause of Part 15C	Verdict
0	Antenna Requirement	15.203	**P**
1	Maximum Output Power	15.247 (b)	**P**
2	Peak Power Spectral Density	15.247 (e)	**P**
3	6dB Bandwidth	15.247 (a)	**P**
4	Band Edges Compliance	15.247 (d)	**P**
5	Conducted Emission	15.247 (d)	**P**
6	Radiated Emission	15.247, 15.205, 15.209	**P**
7	AC Power line Conducted	15.207	**P**

See **ANNEX A** for details.

5.3. Statements

SAICT has evaluated the test cases requested by the applicant/manufacturer as listed in section 5.2 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2.

6. Test Equipments Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Vector Signal Analyzer	FSV40	100903	Rohde & Schwarz	2021-01-15	1 year
2	Power Sensor	U2021XA	MY55430013	Agilent	2021-01-15	1 year
3	Test Receiver	ESCI	100701	Rohde & Schwarz	2021-08-09	1 year
4	LISN	ENV216	102067	Rohde & Schwarz	2021-07-16	1 year

Radiated test system

NO.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Loop Antenna	HLA6120	35779	TESEQ	2022-04-25	3 years
2	BiLog Antenna	3142E	00224831	ETS-Lindgren	2021-05-17	3 years
3	Horn Antenna	3117	00066577	ETS-Lindgren	2022-04-02	3 years
4	Test Receiver	ESR7	101676	Rohde & Schwarz	2020-11-27	1 year
5	Spectrum Analyser	FSV40	101192	Rohde & Schwarz	2021-01-14	1 year
6	Chamber	FACT3-2.0	1285	ETS-Lindgren	2021-07-19	2 years
7	Horn Antenna	QSH-SL-18-26-S-20	17013	Q-par	2023-01-06	3 years

Test software

No.	Equipment	Manufacturer	Version
1	TechMgr Software	CAICT	2.1.1
2	EMC32	Rohde & Schwarz	8.53.0
3	EMC32	Rohde & Schwarz	10.01.00

The path loss value of conduction test is automatically compensated by the test system.
EUT is engineering software provided by the customer to control the transmitting signal.
The EUT was programmed to be in continuously transmitting mode.

Anechoic Chamber

Fully anechoic Chamber by ETS-Lindgren.

7. Laboratory Environment

Semi-anechoic chambe

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ±4 dB, 3 m distance, from 30 to 1000 MHz

Shielded room

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-1000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω

Fully-anechoic chamber

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Voltage Standing Wave Ratio （VSWR）	≤ 6 dB, from 1 to 18 GHz， 3 m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

8. Measurement Uncertainty

Test Name	Uncertainty (*k*=2)	
1. RF Output Power - Conducted	1.32dB	
2.Power Spectral Density - Conducted	2.32dB	
3.Occupied channel bandwidth - Conducted	66Hz	
4 Transmitter Spurious Emission - Conducted	30MHz≤f≤1GHz	1.41dB
	1GHz≤f≤7GHz	1.92dB
	7GHz≤f≤13GHz	2.31dB
	13GHz≤f≤26GHz	2.61dB
5. Transmitter Spurious Emission - Radiated	9kHz≤f≤30MHz	1.70dB
	30MHz≤f≤1GHz	4.90dB
	1GHz≤f≤18GHz	4.60dB
	18GHz≤f≤40GHz	4.10dB
6. AC Power line Conducted Emission	150kHz≤f≤30MHz	3.00dB

ANNEX A: Detailed Test Results

A.0 Antenna requirement

Measurement Limit:

Standard	Requirement
FCC CRF Part 15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Conclusion: The Directional gains of antenna used for transmitting is -0.6 dBi.
The RF transmitter uses an integrate antenna without connector.

A.1 Maximum Output Power - Conducted

Measurement of method: See ANSI C63.10-2013-Clause 11.9.2.3.2

Method AVGPM-G is a measurement using a gated RF average power meter.

Alternatively, measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

Measurement Limit:

Standard	Limit (dBm)
FCC CRF Part 15.247(b)	< 30

Measurement Results:

Mode	Average Conducted Power (dBm)		
	2412MHz (Ch1)	**2437MHz (Ch6)**	**2462MHz (Ch11)**
802.11b	15.12	15.37	15.79
802.11g	12.70	12.97	13.31
802.11n(HT20)	12.29	11.90	12.39
	2422MHz (Ch3)	**2437MHz (Ch6)**	**2452MHz (Ch9)**
802.11n(HT40)	10.88	10.92	10.95

Note:

Worst-case data rates as provided by the client were: 1Mbps (802.11b), 6Mbps (802.11g), MCS0 (802.11n) are selected as the worst conditions.

The following cases and test graphs are performed with this condition.

The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

A.2 Peak Power Spectral Density

Measurement Limit:

Standard	Limit
FCC CRF Part 15.247(e)	< 8 dBm/3 kHz

Measurement Results:

Mode	Channel	Frequency (MHz)	Test Results (dBm)		Conclusion
802.11b	CH 1	2412	Fig.1	-7.50	**P**
	CH 6	2437	Fig.2	-7.88	**P**
	CH 11	2462	Fig.3	-7.65	**P**
802.11g	CH 1	2412	Fig.4	-13.19	**P**
	CH 6	2437	Fig.5	-13.59	**P**
	CH 11	2462	Fig.6	-13.14	**P**
802.11n (HT20)	CH 1	2412	Fig.7	-14.00	**P**
	CH 6	2437	Fig.8	-14.16	**P**
	CH 11	2462	Fig.9	-13.40	**P**
802.11n (HT40)	CH 3	2422	Fig.10	-16.99	**P**
	CH 6	2437	Fig.11	-16.33	**P**
	CH 9	2452	Fig.12	-16.10	**P**

See below for test graphs.

Conclusion: PASS

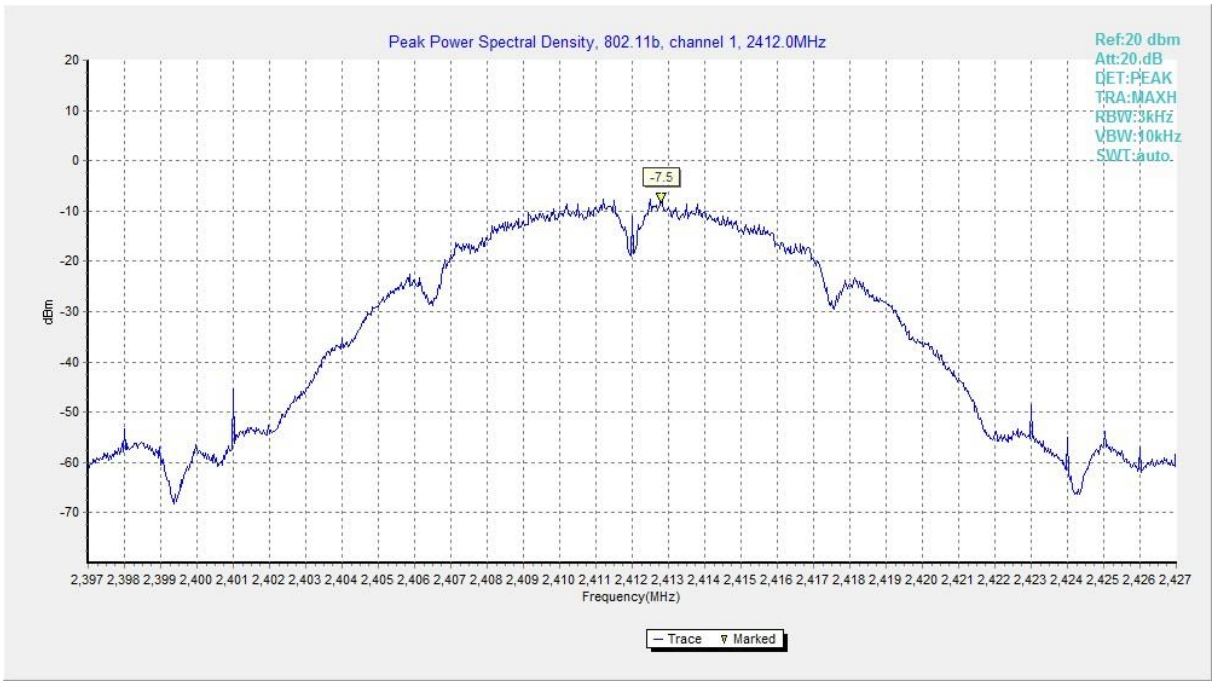

Fig.1 Power Spectral Density (802.11b, CH 1)

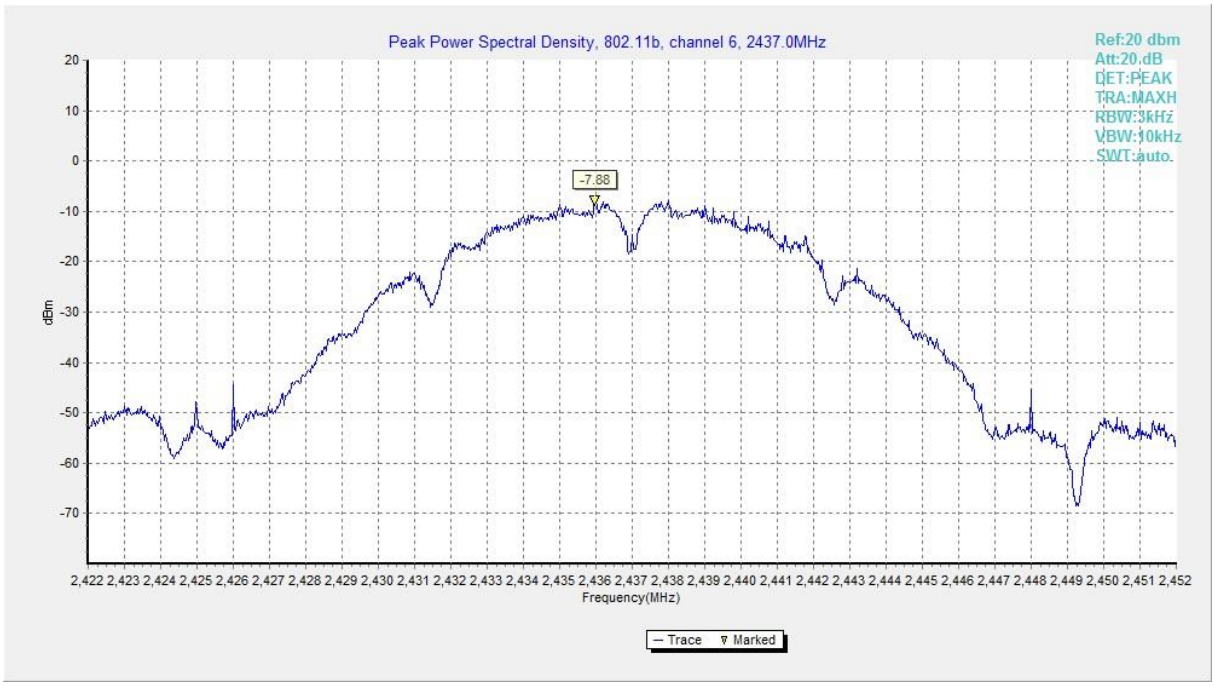

Fig.2 Power Spectral Density (802.11b, CH 6)

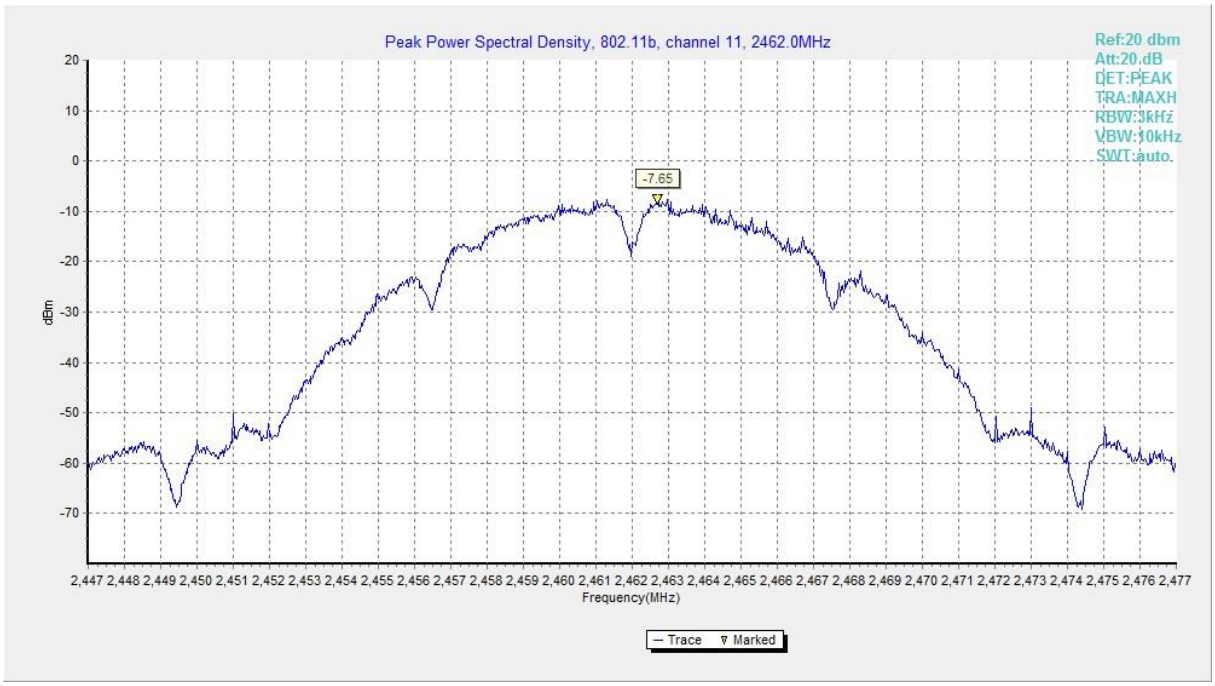

Fig.3 Power Spectral Density (802.11b, CH 11)

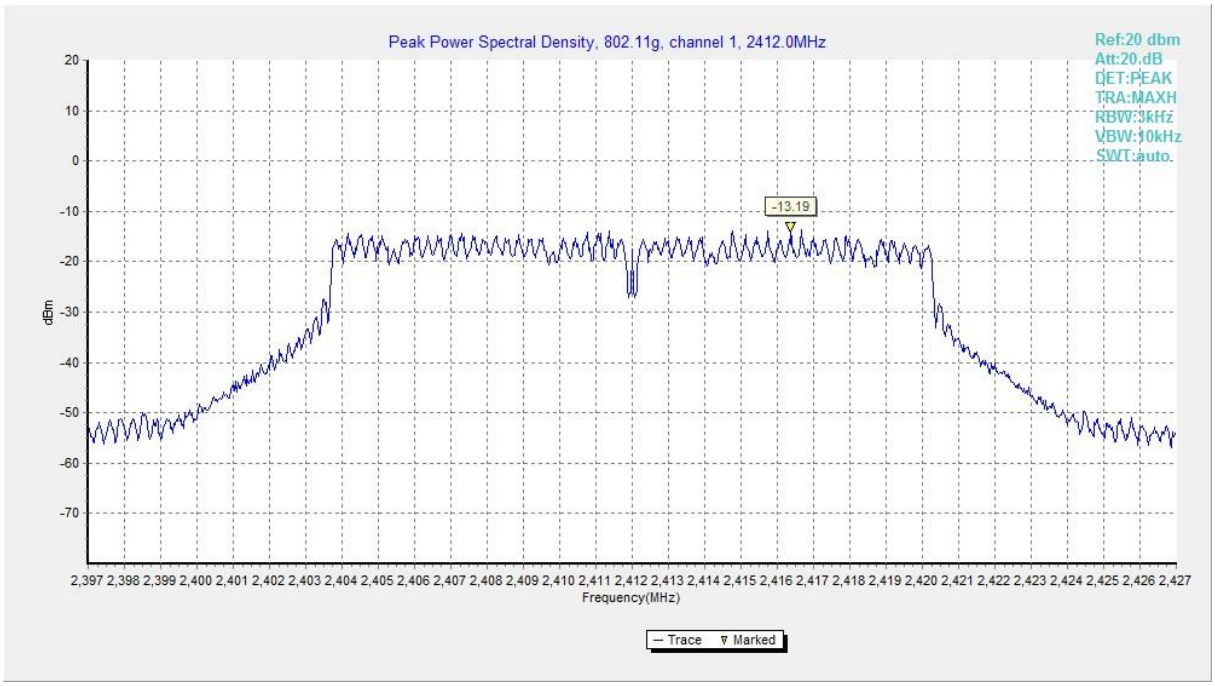

Fig.4 Power Spectral Density (802.11g, CH 1)

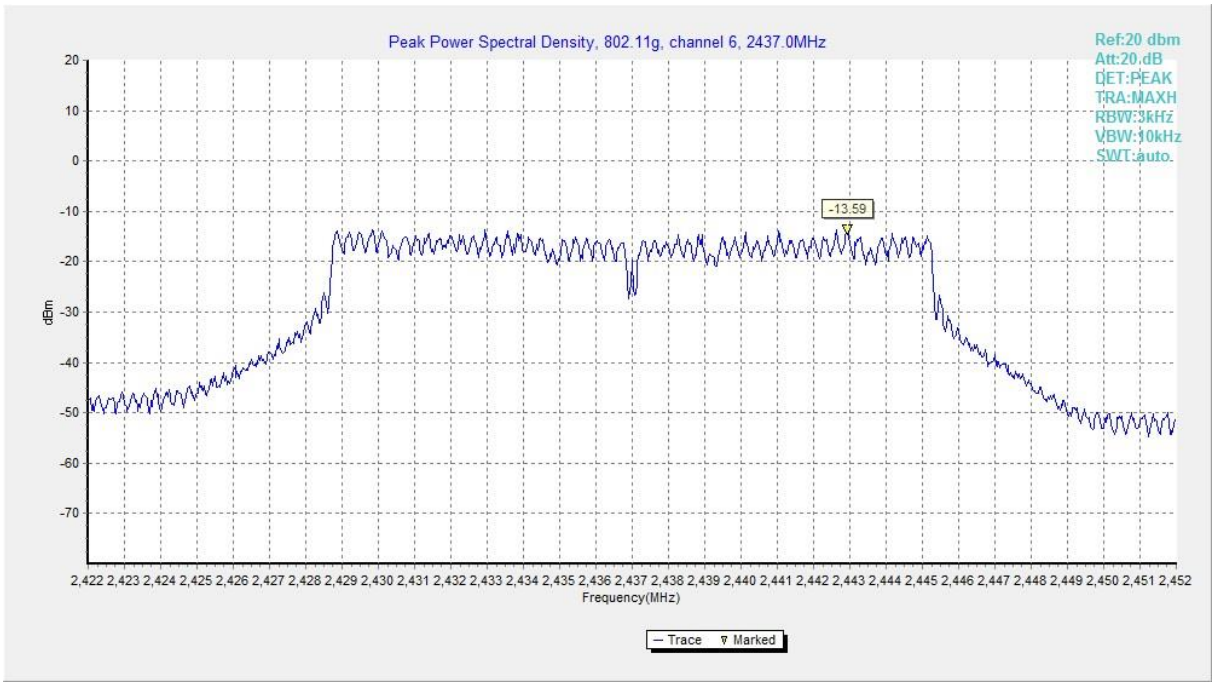

Fig.5 Power Spectral Density (802.11g, CH 6)

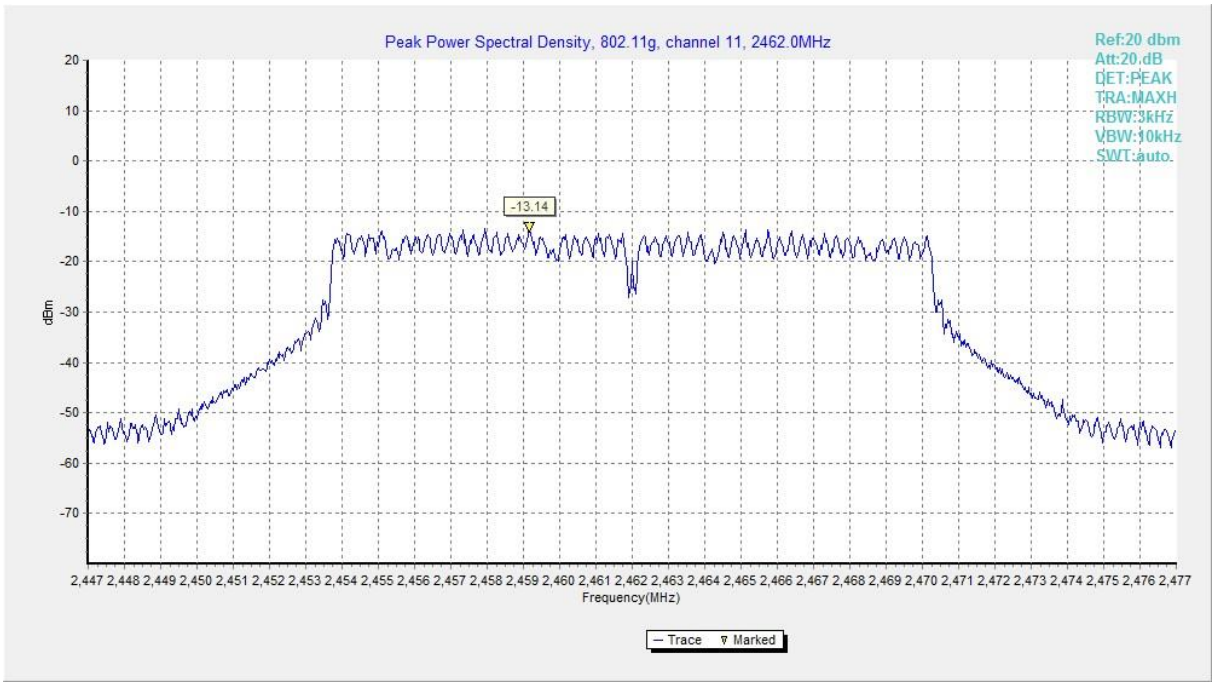

Fig.6 Power Spectral Density (802.11g, CH 11)

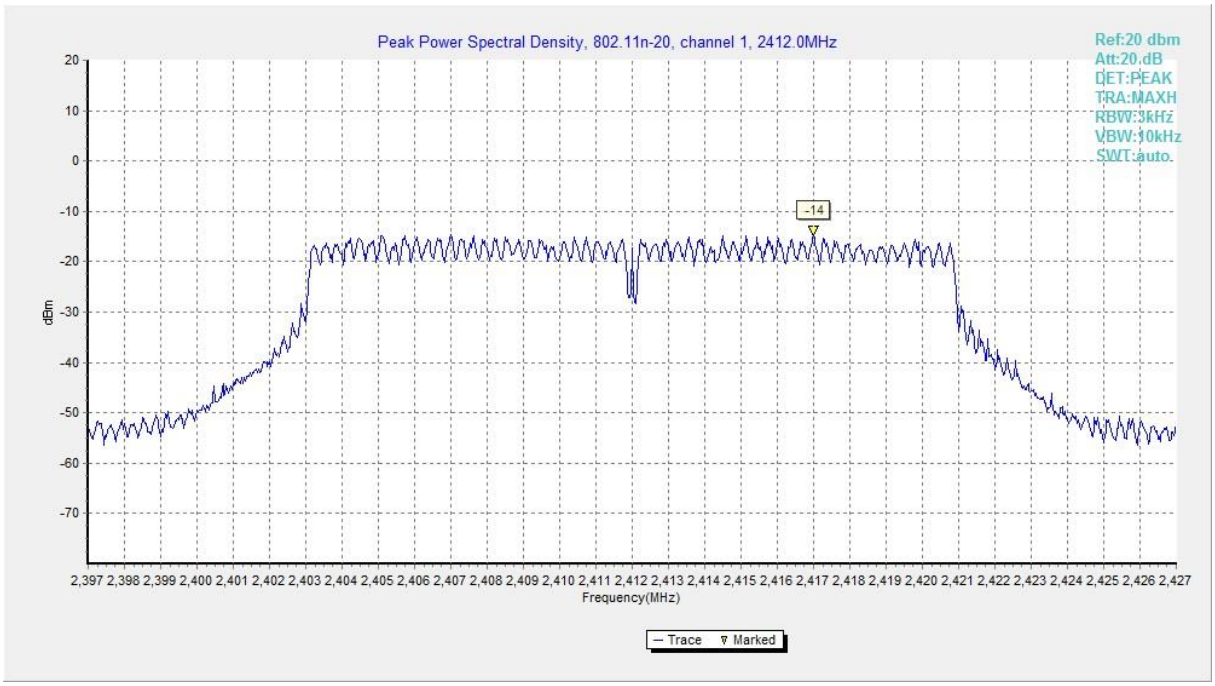

Fig.7 Power Spectral Density (802.11n HT20, CH 1)

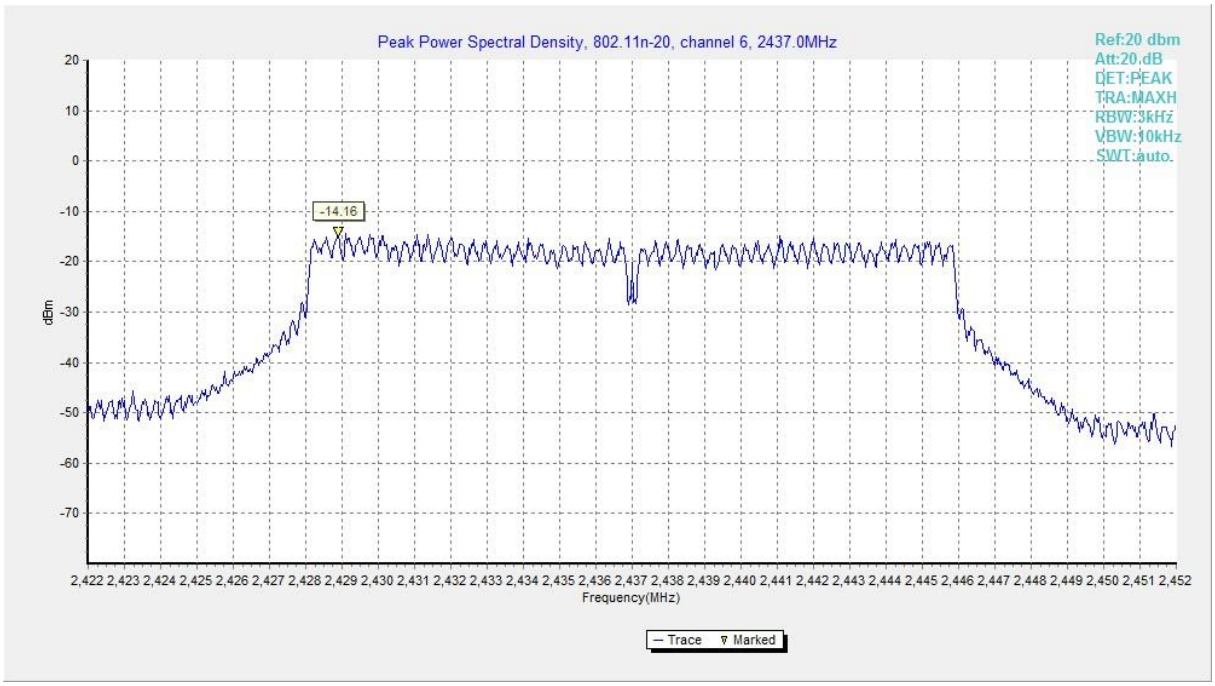

Fig.8 Power Spectral Density (802.11n HT20, CH 6)

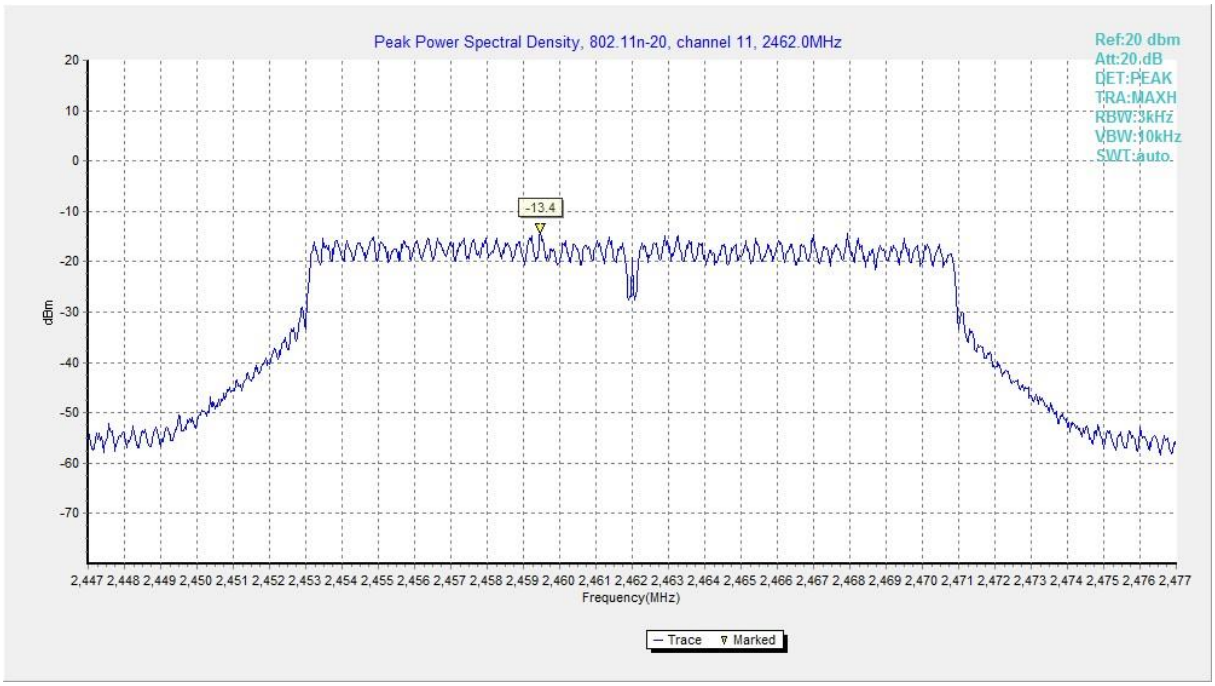

Fig.9 Power Spectral Density (802.11n HT20, CH 11)

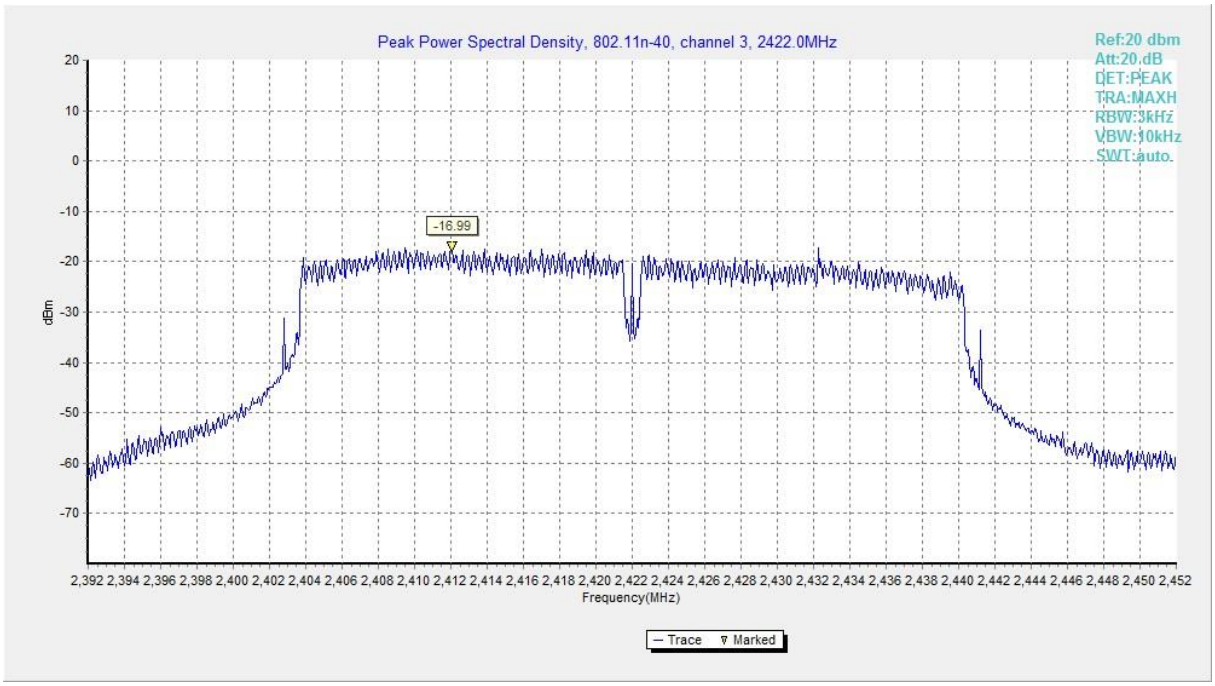

Fig.10 Power Spectral Density (802.11n HT40, CH 3)

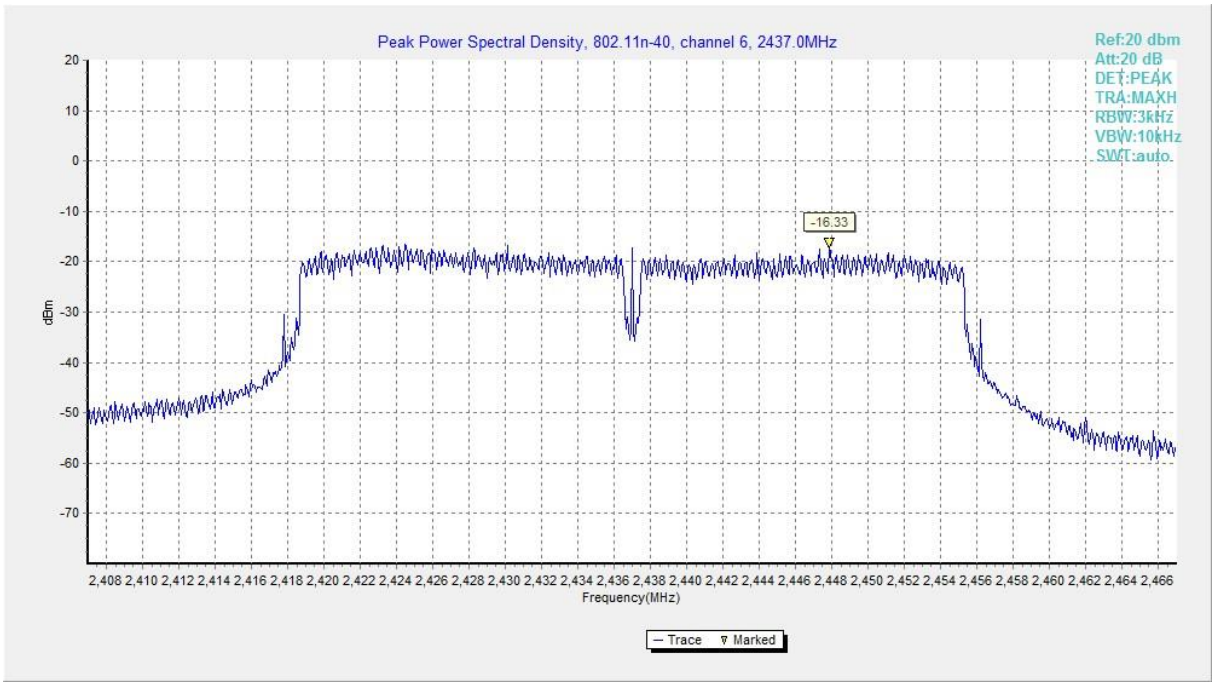

Fig.11 Power Spectral Density (802.11n HT40, CH 6)

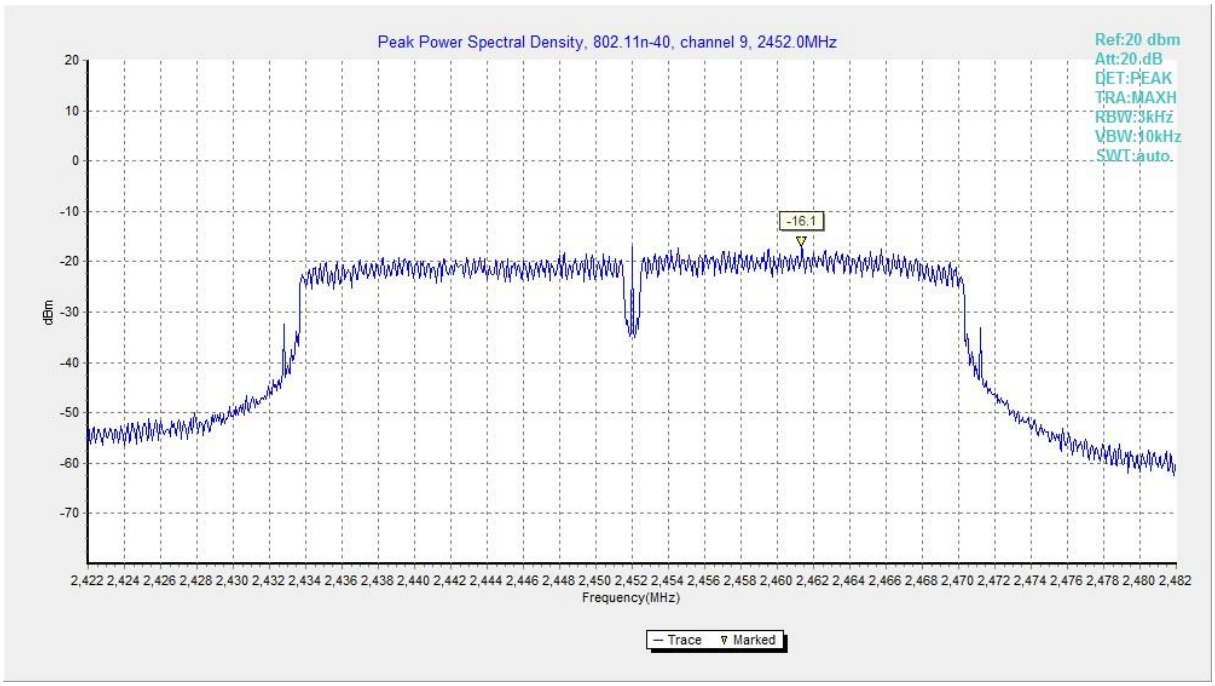

Fig.12 Power Spectral Density (802.11n HT40, CH 9)

A.3 6dB Bandwidth

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a)	≥ 500

Measurement Result:

Mode	Channel	Frequency (MHz)	Test Results (kHz)		Conclusion
802.11b	CH 1	2412	Fig.13	7550	**P**
	CH 6	2437	Fig.14	7100	**P**
	CH 11	2462	Fig.15	7500	**P**
802.11g	CH 1	2412	Fig.16	16300	**P**
	CH 6	2437	Fig.17	16400	**P**
	CH 11	2462	Fig.18	16300	**P**
802.11n HT20	CH 1	2412	Fig.19	17550	**P**
	CH 6	2437	Fig.20	17600	**P**
	CH 11	2462	Fig.21	17300	**P**
802.11n HT40	CH 3	2422	Fig.22	35040	**P**
	CH 6	2437	Fig.23	35520	**P**
	CH 9	2452	Fig.24	35120	**P**

See below for test graphs.

Conclusion: PASS

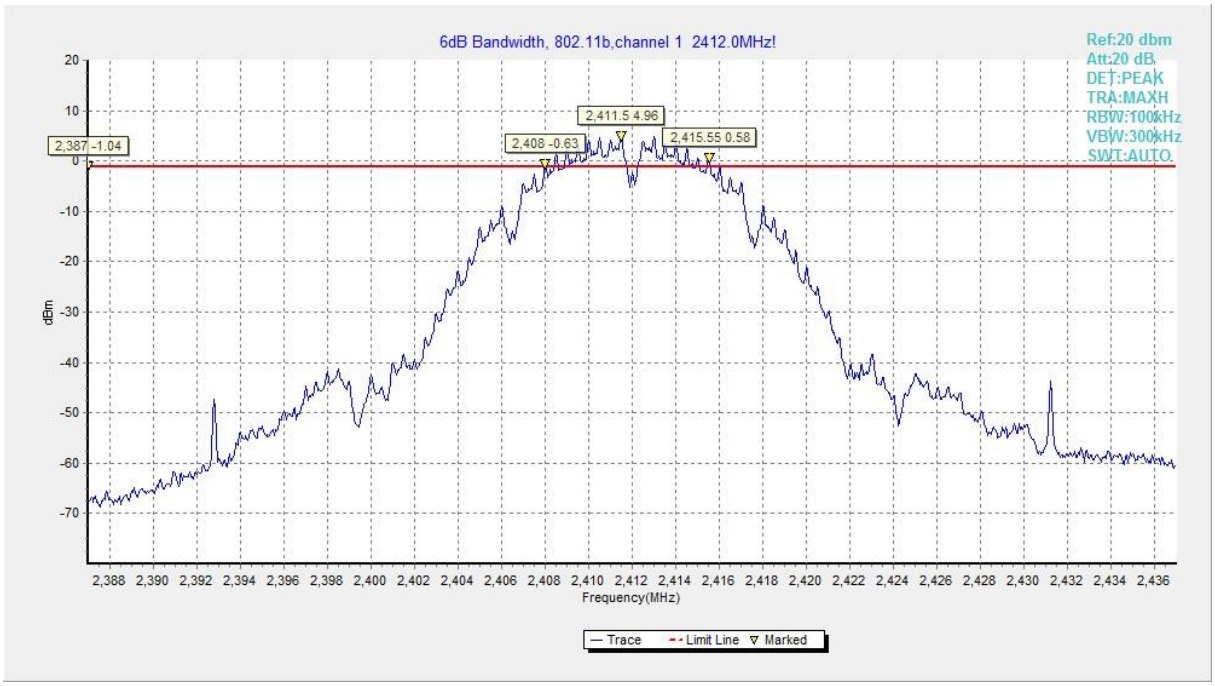

Fig.13 6dB Bandwidth (802.11b, CH 1)

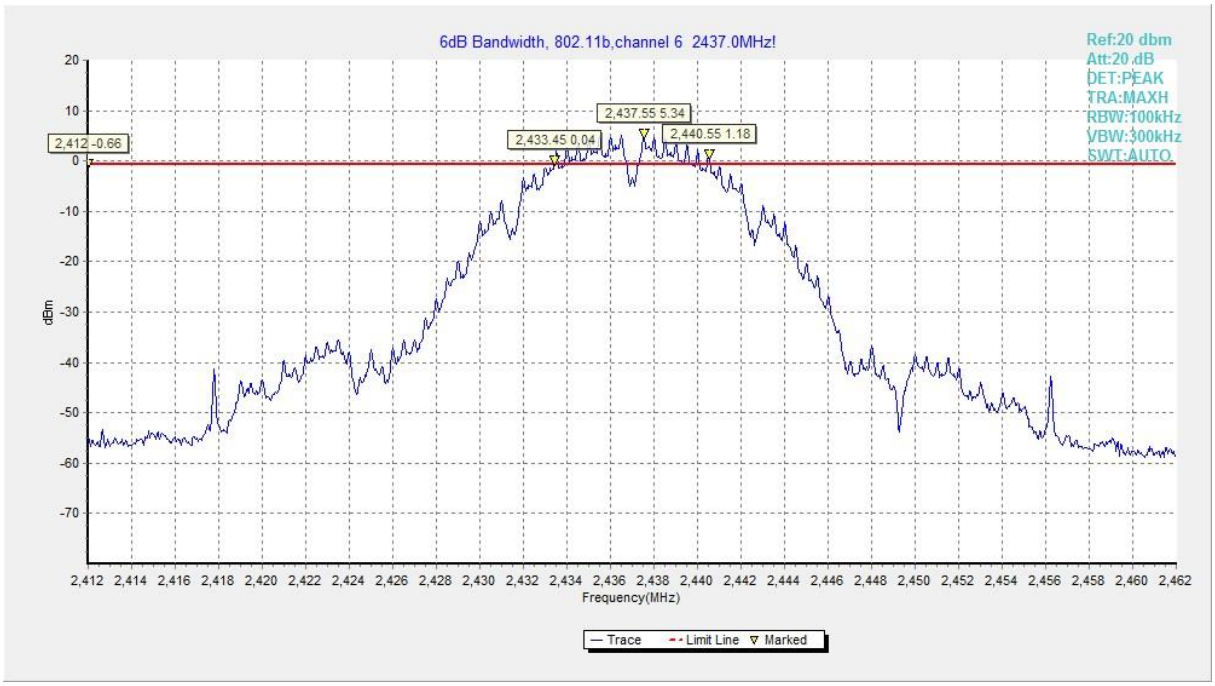

Fig.14 6dB Bandwidth (802.11b, CH 6)

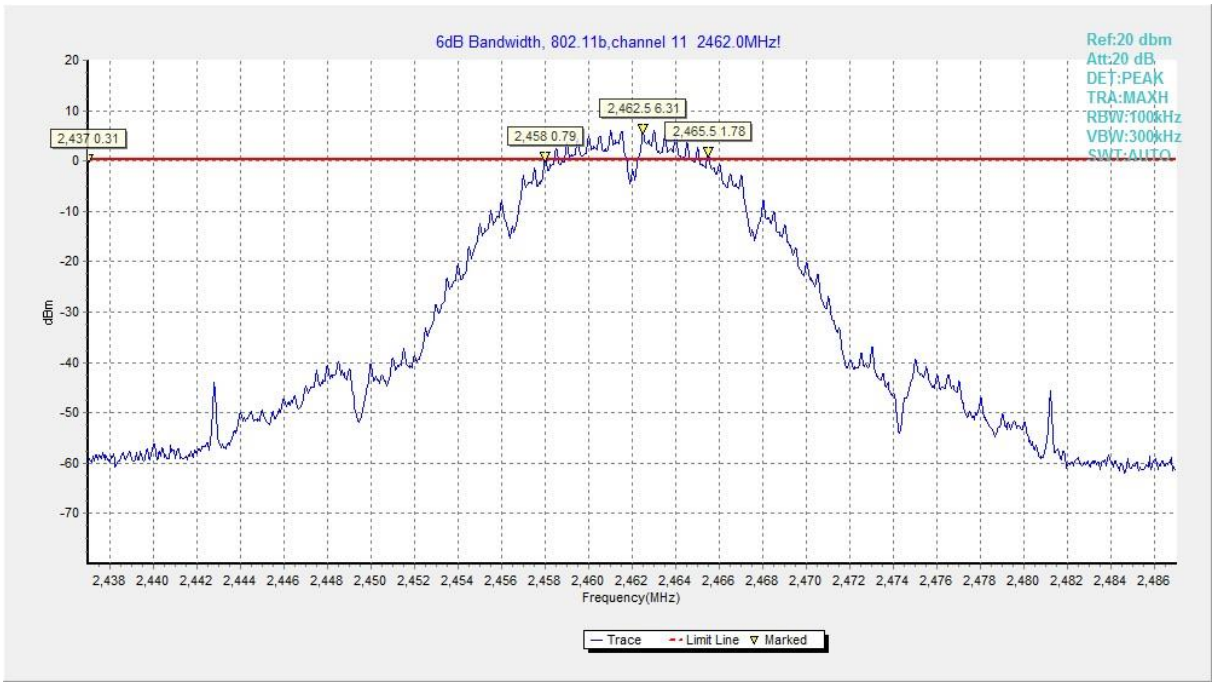

Fig.15 6dB Bandwidth (802.11b, CH 11)

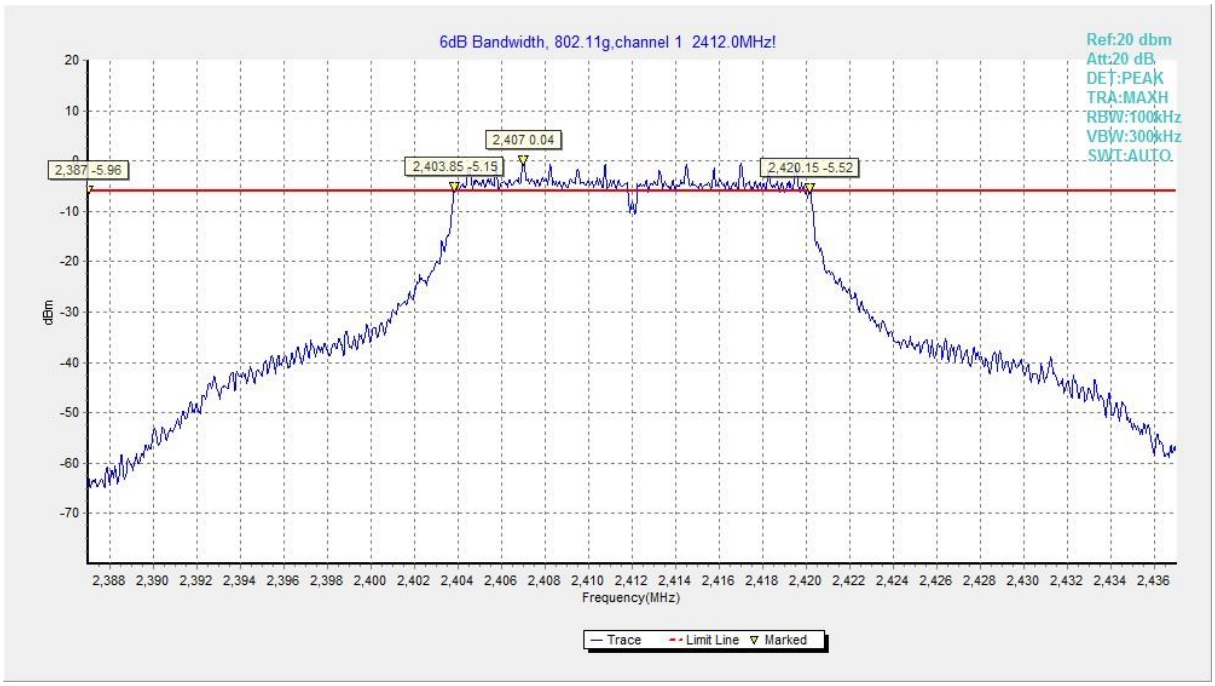

Fig.16 6dB Bandwidth (802.11g, CH 1)

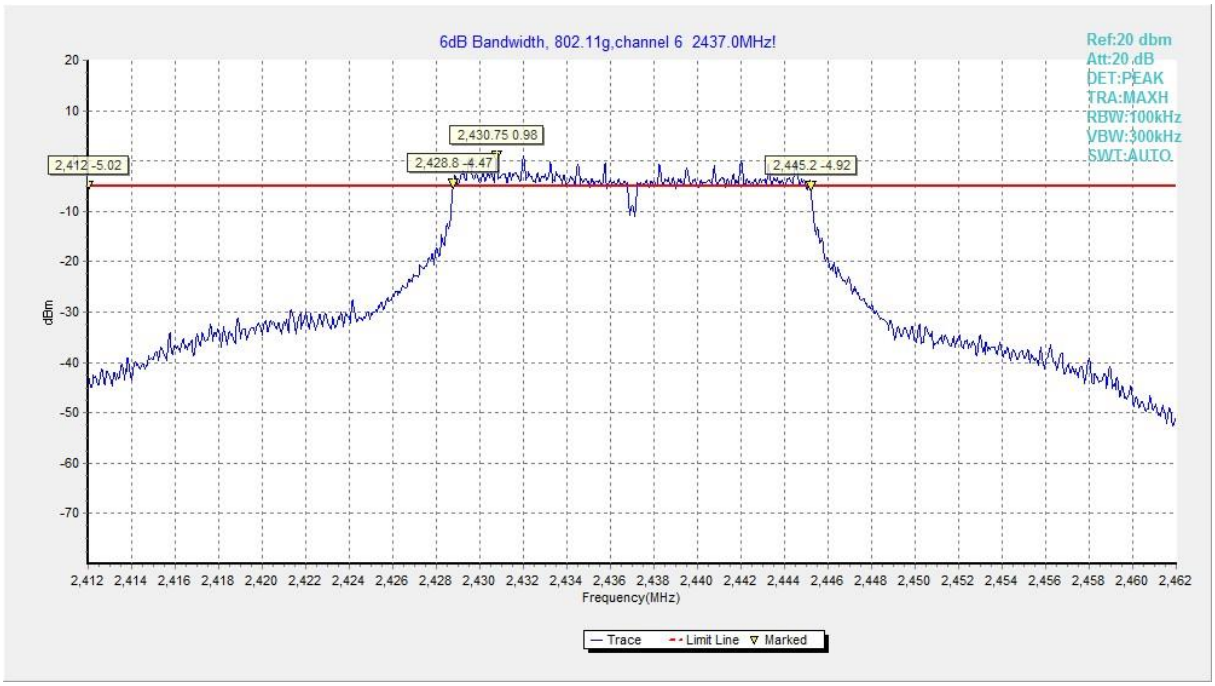

Fig.17 6dB Bandwidth (802.11g, CH 6)

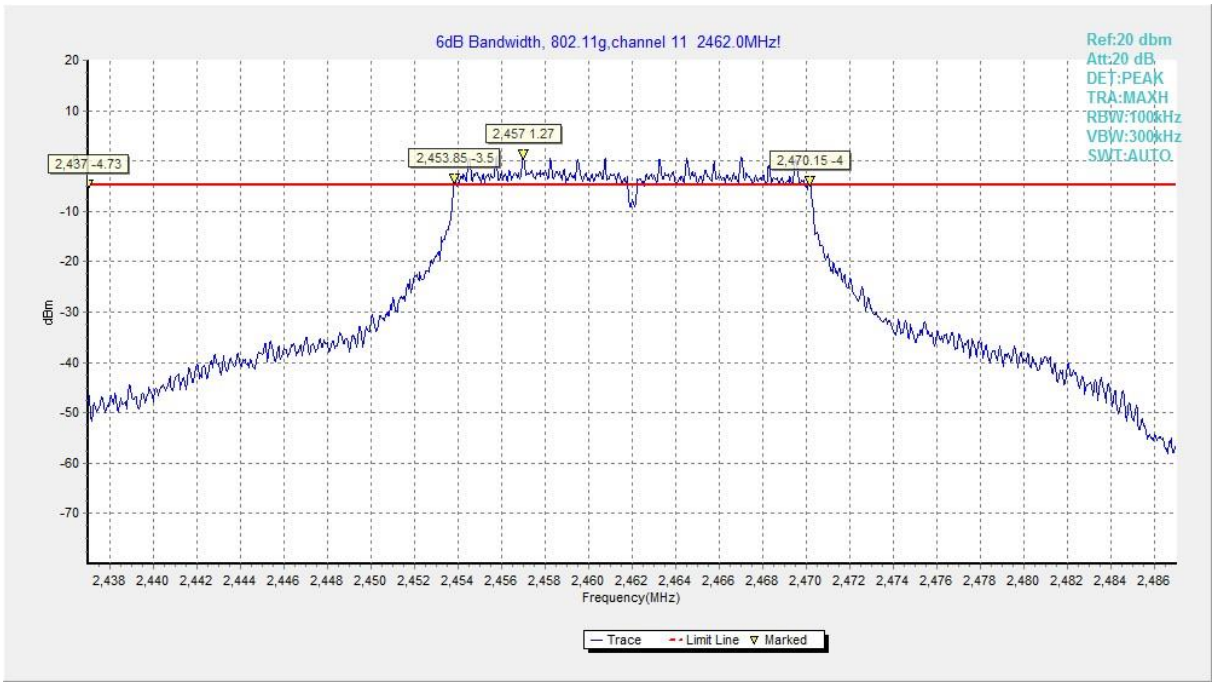

Fig.18 6dB Bandwidth (802.11g, CH 11)

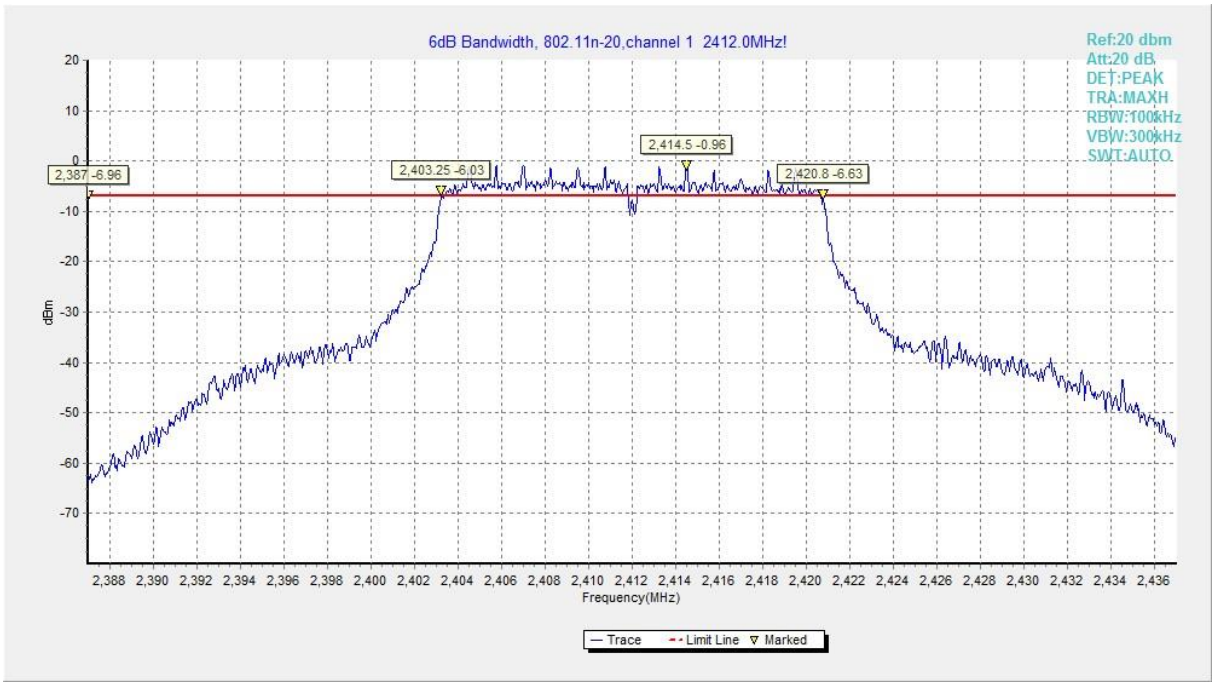

Fig.19 6dB Bandwidth (802.11n HT20, CH 1)

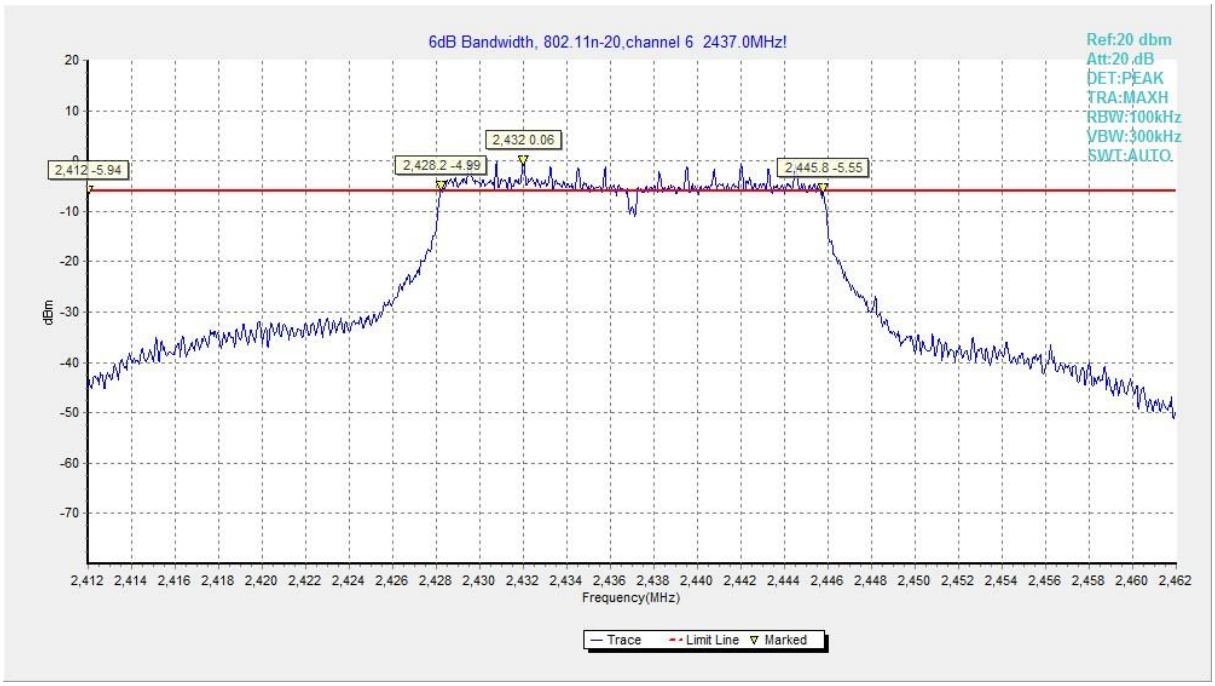

Fig.20 6dB Bandwidth (802.11n HT20, CH 6)

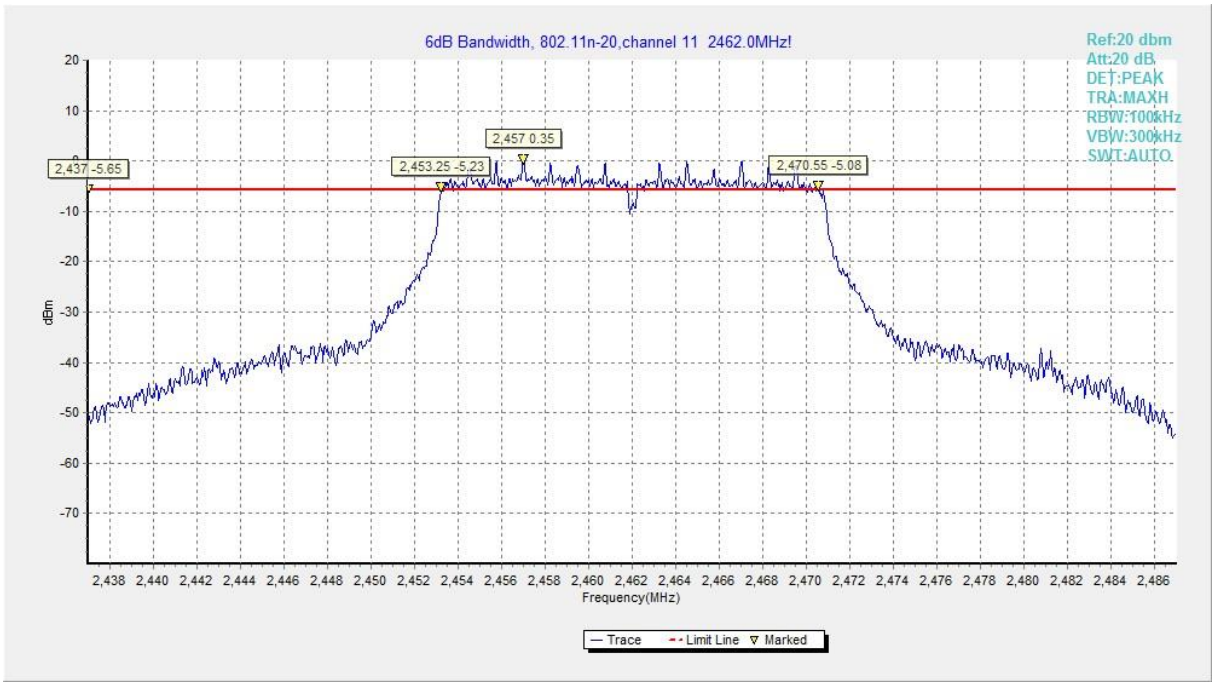

Fig.21 6dB Bandwidth (802.11n HT20, CH 11)

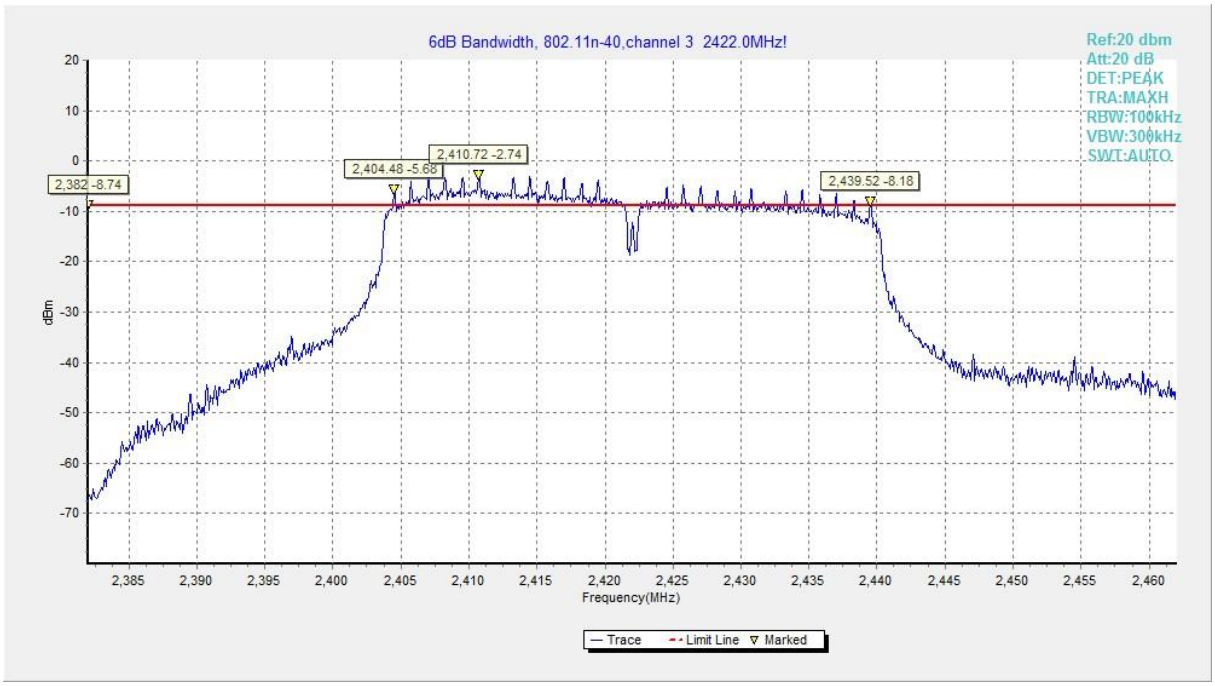

Fig.22 6dB Bandwidth (802.11n HT40, CH 3)

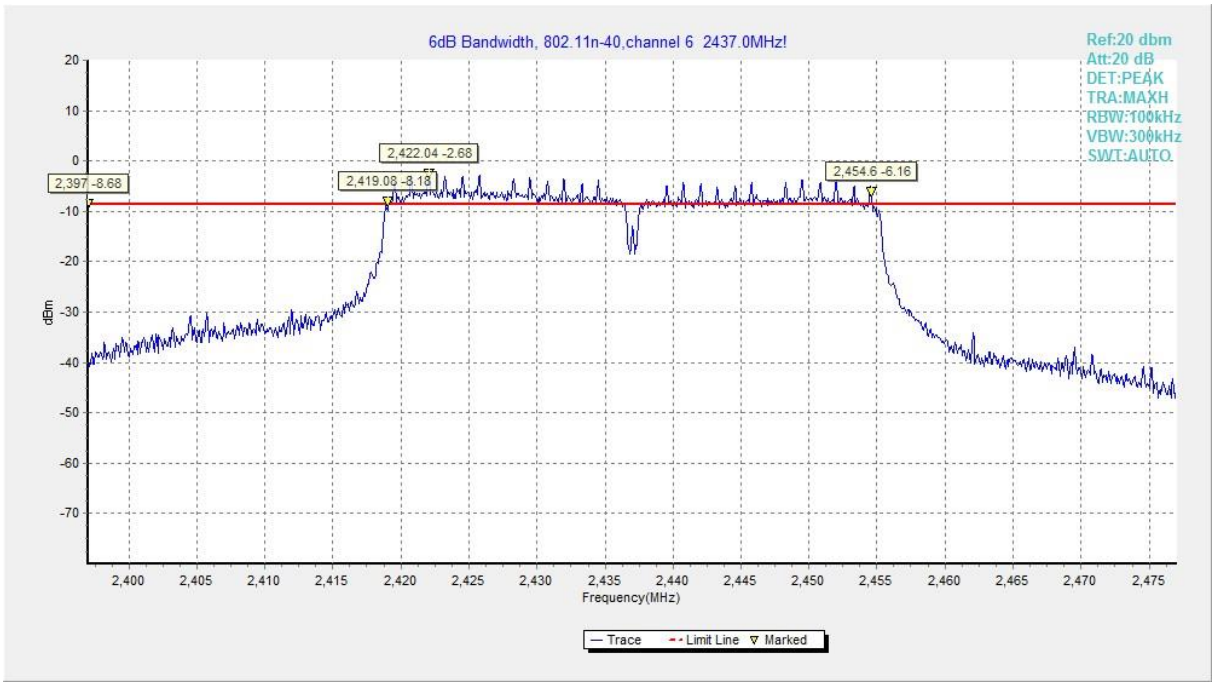

Fig.23 6dB Bandwidth (802.11n HT40, CH 6)

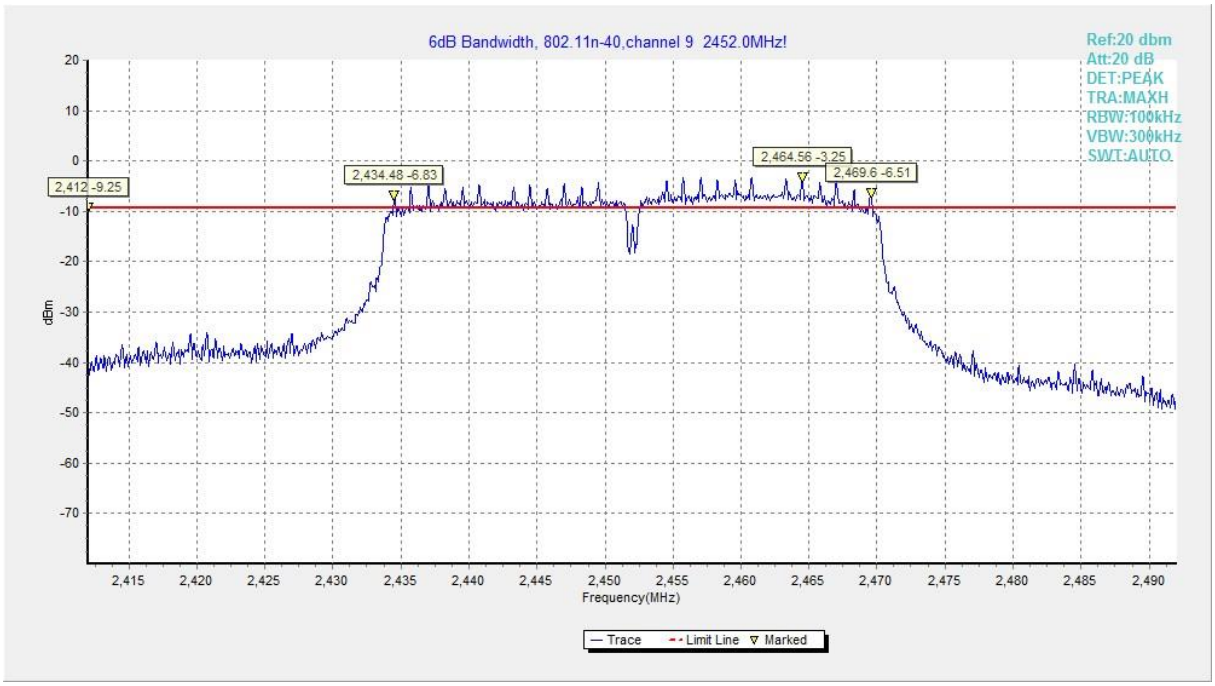

Fig.24 6dB Bandwidth (802.11n HT40, CH 9)

A.4 Band Edges Compliance

Measurement Limit:

Standard	Limit (dBc)
FCC 47 CFR Part 15.247 (d)	> 30

Measurement Result:

Mode	Channel	Frequency (MHz)	Test Results (dBc)		Conclusion
802.11b	CH1	2412	Fig.25	48.11	**P**
	CH11	2462	Fig.26	65.30	**P**
802.11g	CH1	2412	Fig.27	34.03	**P**
	CH11	2462	Fig.28	45.41	**P**
802.11n HT20	CH1	2412	Fig.29	34.77	**P**
	CH11	2462	Fig.30	45.01	**P**
802.11n HT40	CH3	2422	Fig.31	32.84	**P**
	CH9	2452	Fig.32	41.24	**P**

See below for test graphs.

Conclusion: PASS

Fig.25 Band Edges (802.11b, CH 1)

Fig.26 Band Edges (802.11b, CH 11)

Fig.27 Band Edges (802.11g, CH 1)

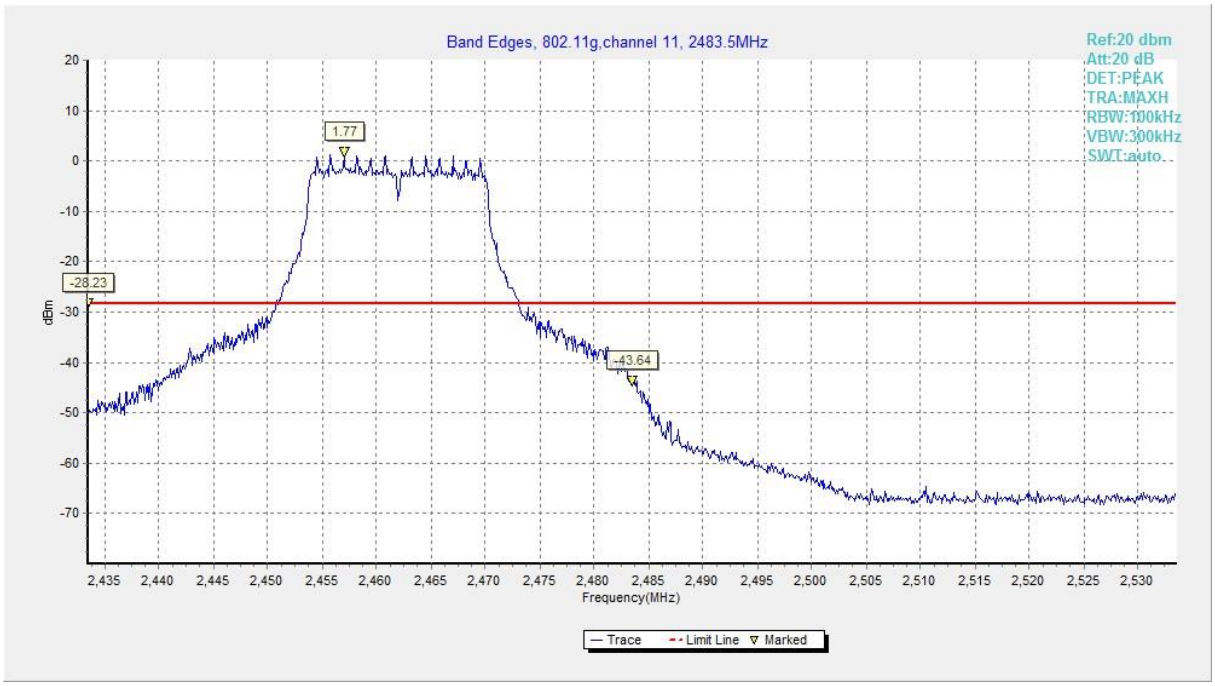

Fig.28 Band Edges (802.11g, CH 11)

Fig.29 Band Edges (802.11n HT20, CH 1)

Fig.30 Band Edges (802.11n HT20, CH 11)

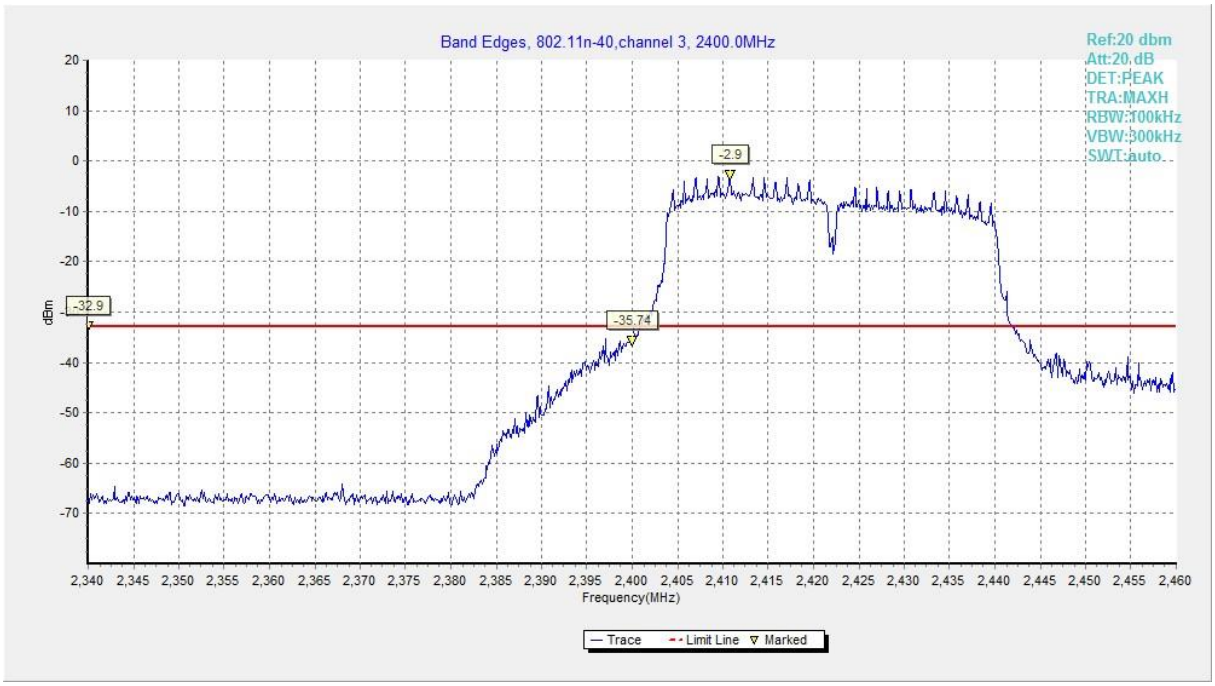

Fig.31 Band Edges (802.11n HT40, CH 3)

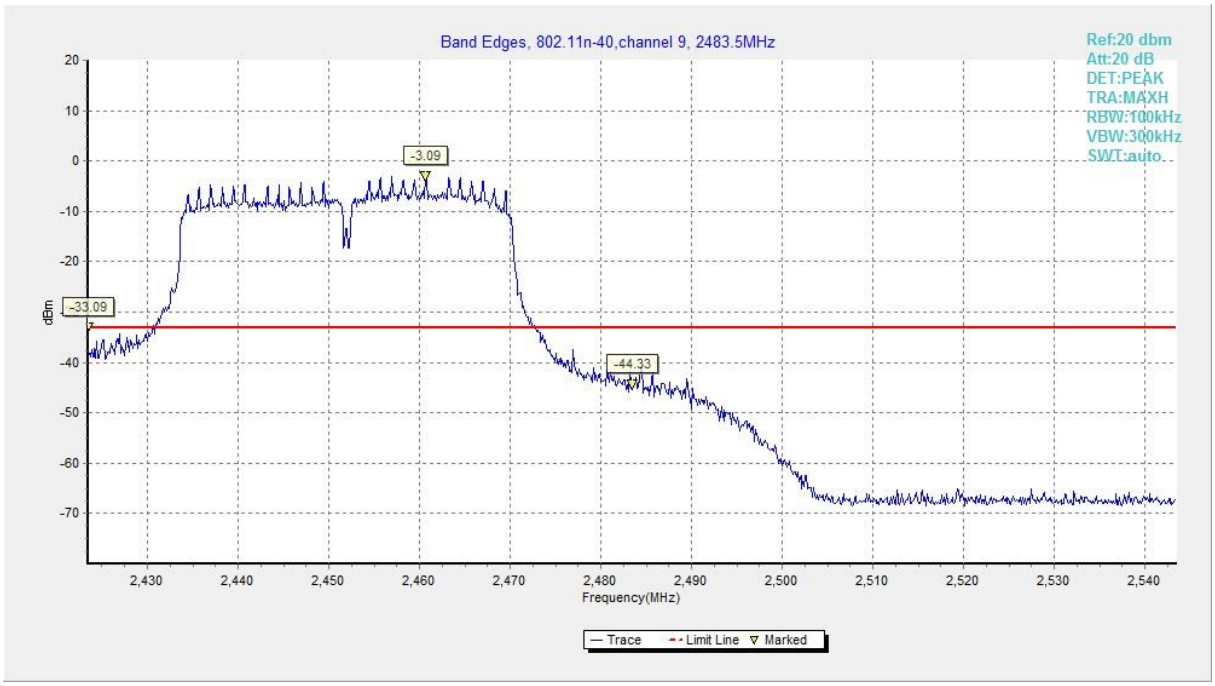

Fig.32 Band Edges (802.11n HT40, CH 9)

A.5 Conducted Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (d)	30dB below peak output power in 100 kHz bandwidth

Measurement Results:

Mode	Channel	Frequency (MHz)	Frequency Range	Test Results	Conclusion
802.11b	CH 1	2412	30MHz-26GHz	Fig.33	**P**
	CH 6	2437	30MHz-26GHz	Fig.34	**P**
	CH 11	2462	30MHz-26GHz	Fig.35	**P**
802.11g	CH 1	2412	30MHz-26GHz	Fig.36	**P**
	CH 6	2437	30MHz-26GHz	Fig.37	**P**
	CH 11	2462	30MHz-26GHz	Fig.38	**P**
802.11n-HT20	CH 1	2412	30MHz-26GHz	Fig.39	**P**
	CH 6	2437	30MHz-26GHz	Fig.40	**P**
	CH 11	2462	30MHz-26GHz	Fig.41	**P**
802.11n-HT40	CH 3	2422	30MHz-26GHz	Fig.42	**P**
	CH 6	2437	30MHz-26GHz	Fig.43	**P**
	CH 9	2452	30MHz-26GHz	Fig.44	**P**

See below for test graphs.

Conclusion: PASS

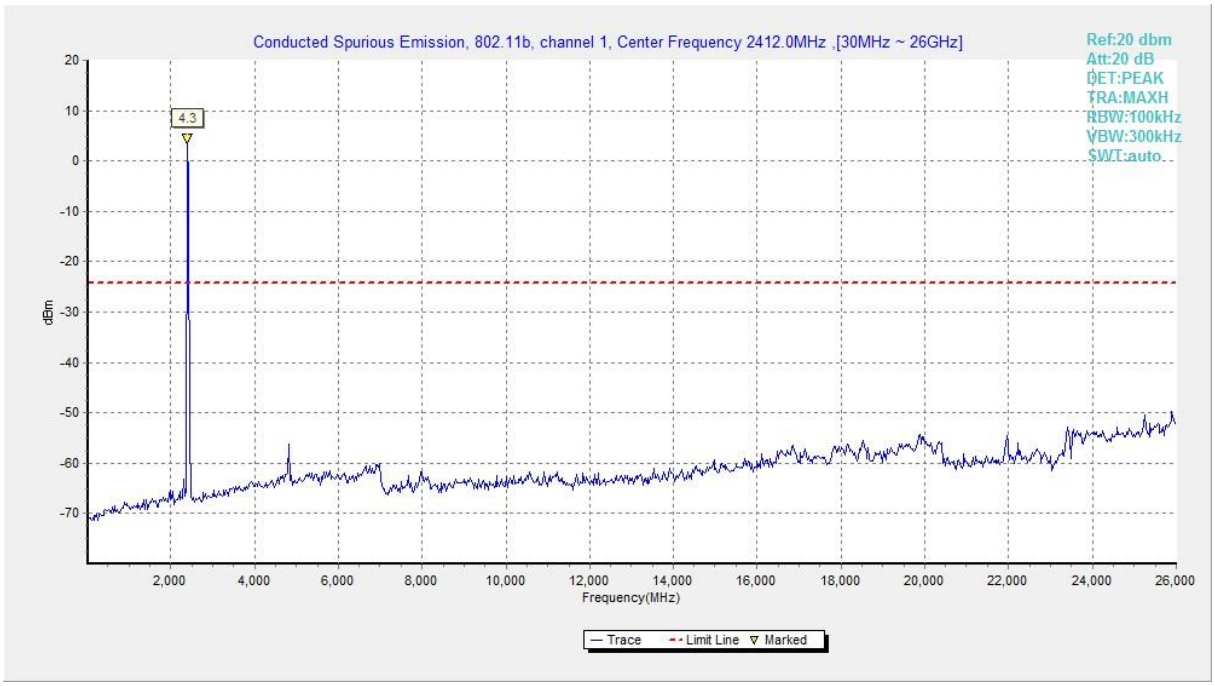

Fig.33 Conducted Spurious Emission (802.11b, CH1)

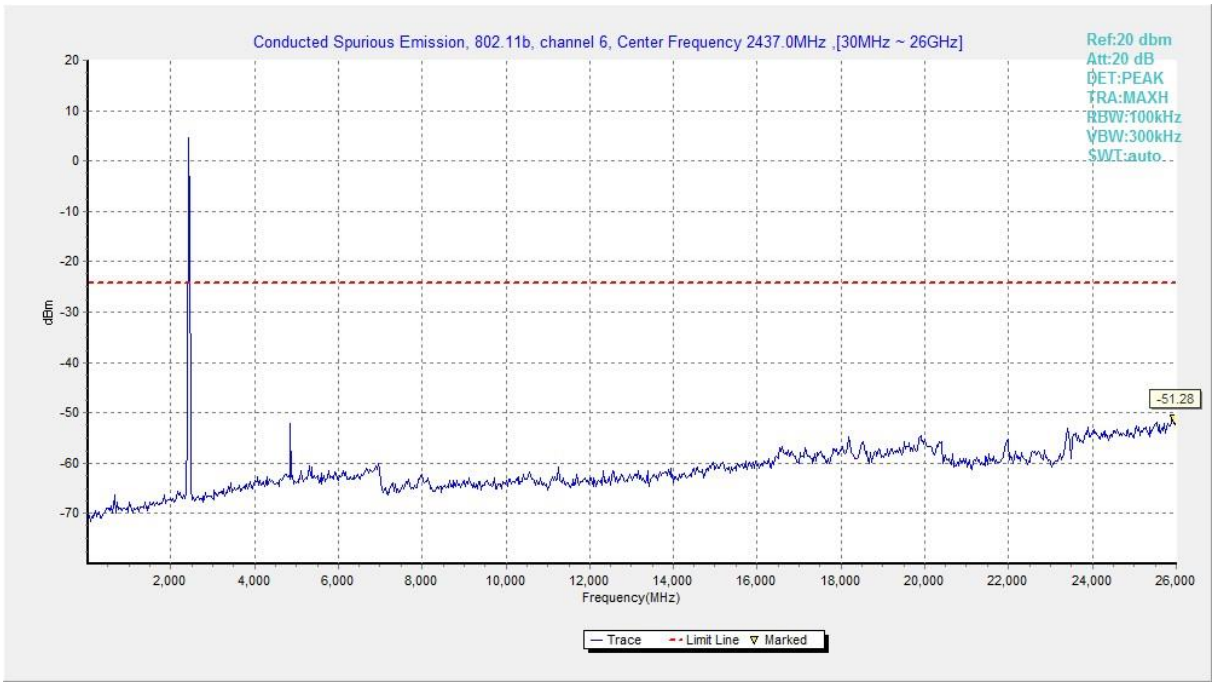

Fig.34 Conducted Spurious Emission (802.11b, CH6)

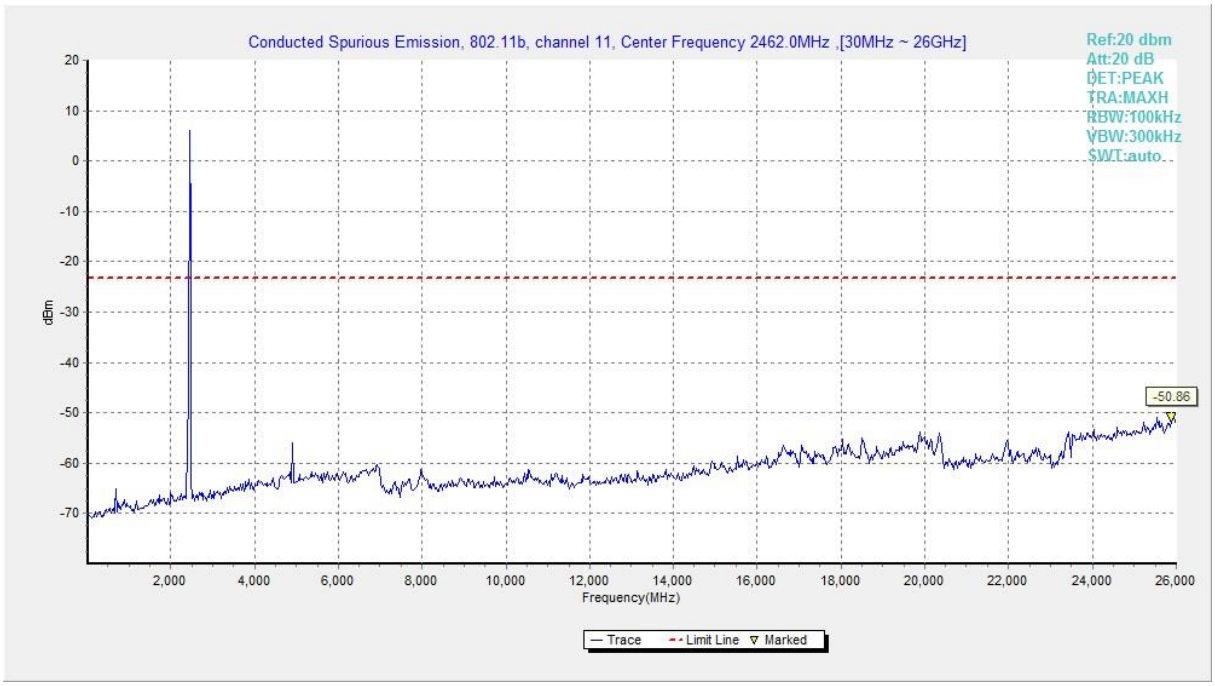

Fig.35 Conducted Spurious Emission (802.11b, CH11)

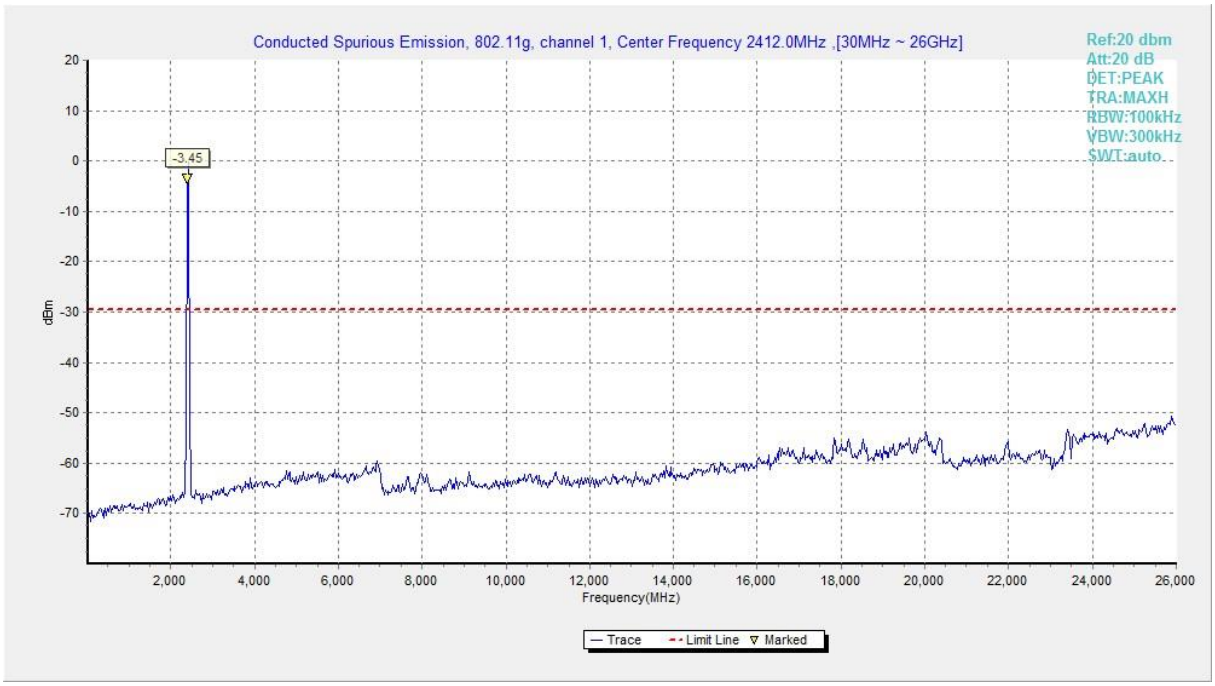

Fig.36 Conducted Spurious Emission (802.11g, CH1)

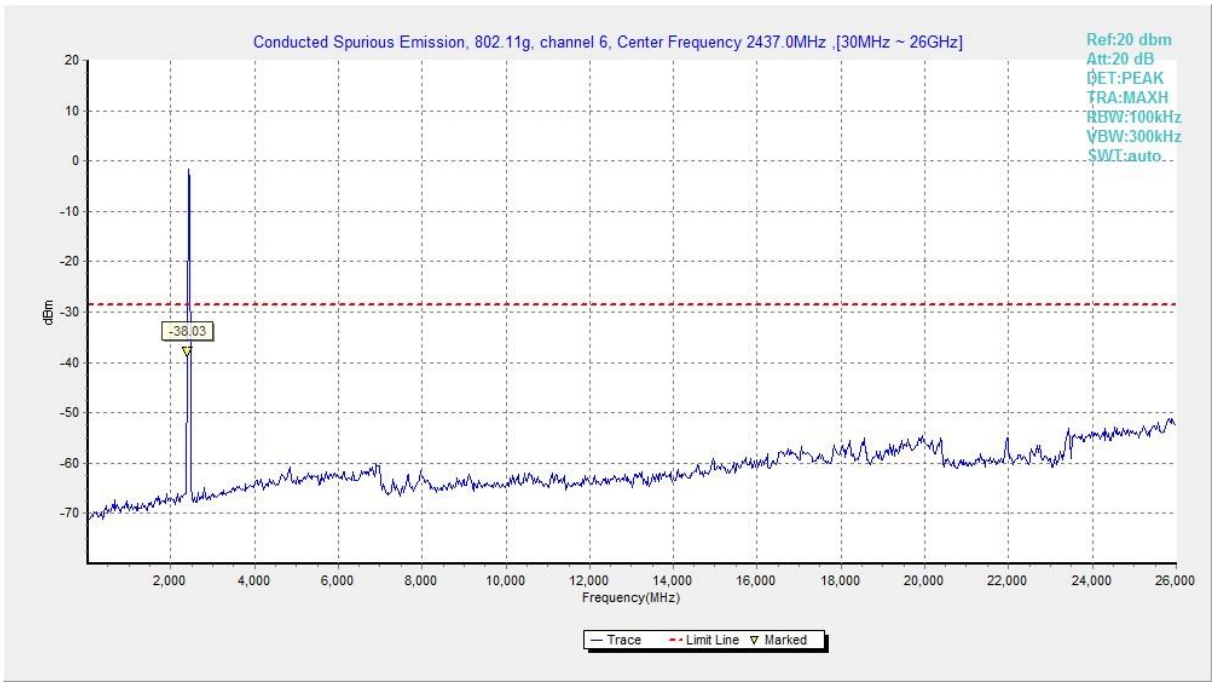

Fig.37 Conducted Spurious Emission (802.11g, CH6)

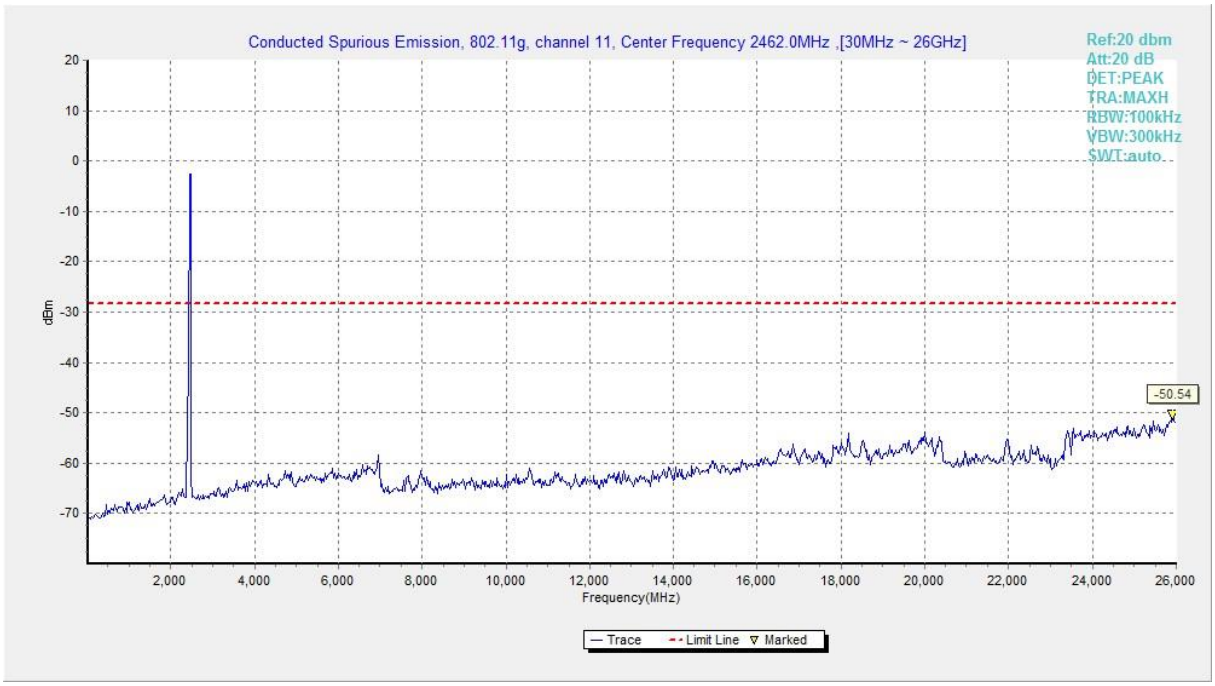

Fig.38 Conducted Spurious Emission (802.11g, CH11)

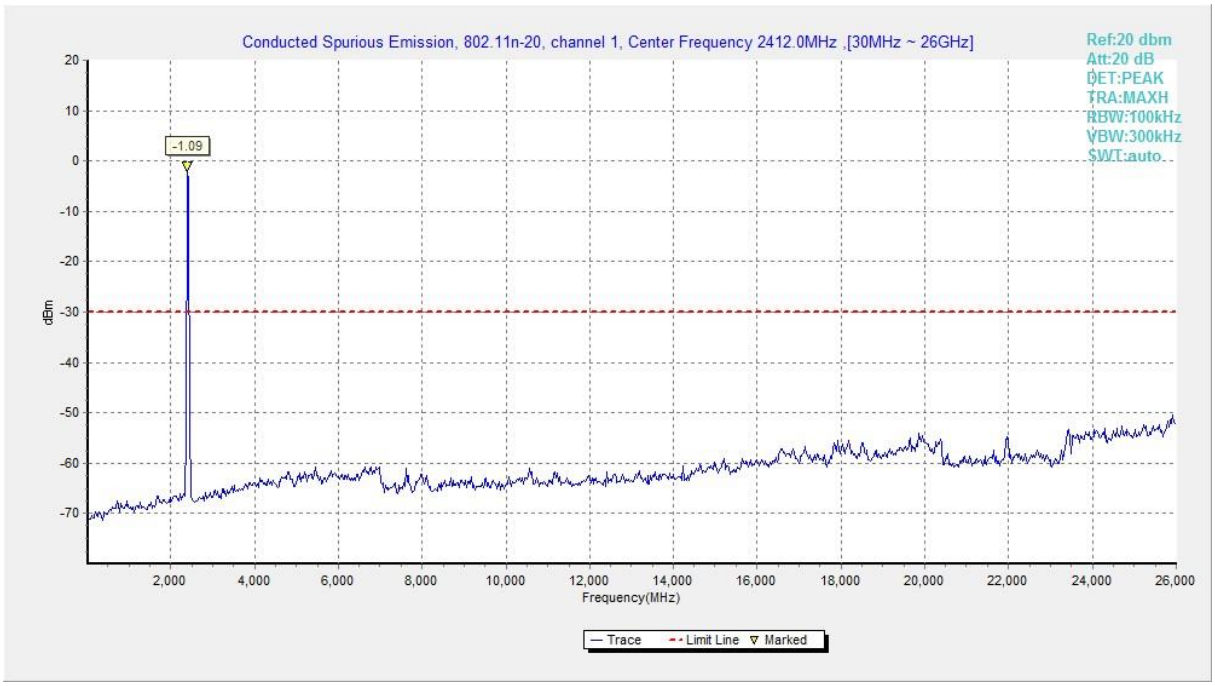

Fig.39 Conducted Spurious Emission (802.11n HT20, CH1)

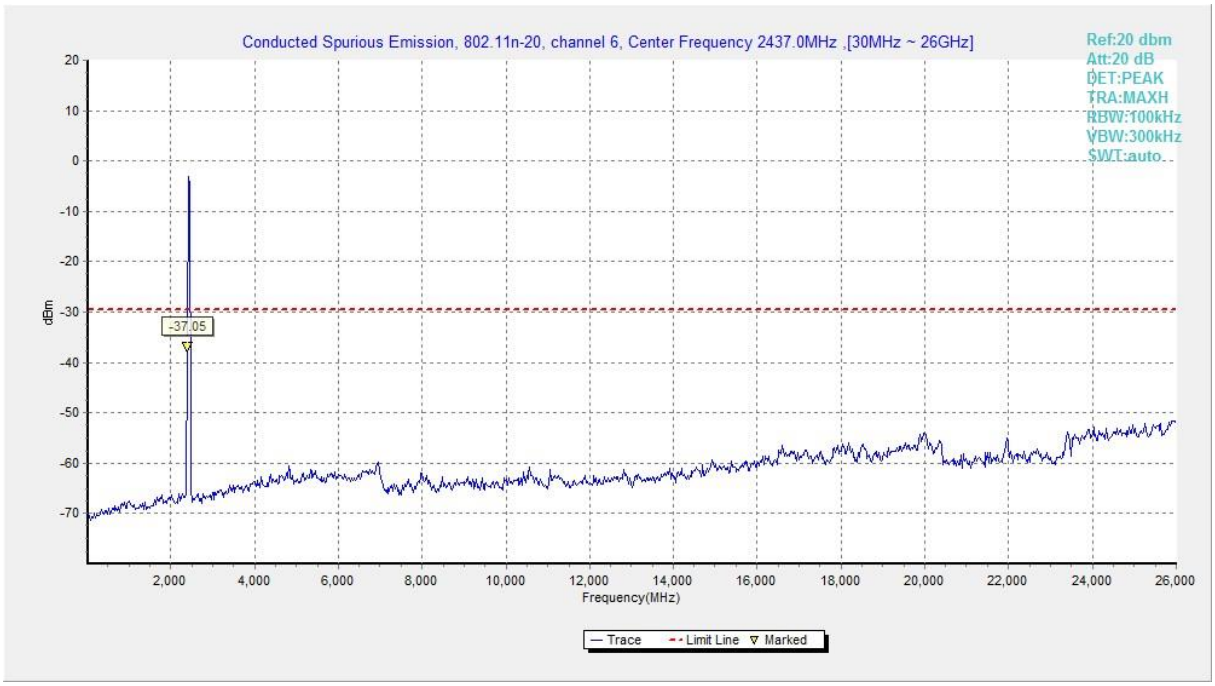

Fig.40 Conducted Spurious Emission (802.11n HT20, CH6)

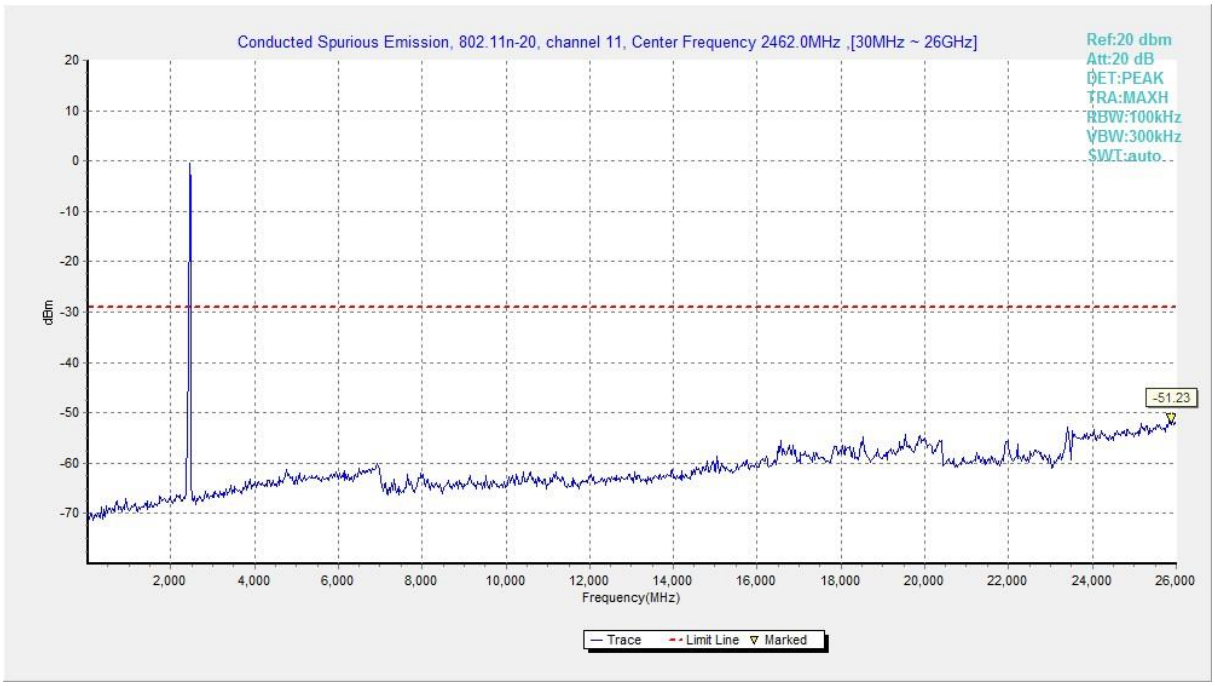

Fig.41 Conducted Spurious Emission (802.11n HT20, CH11)

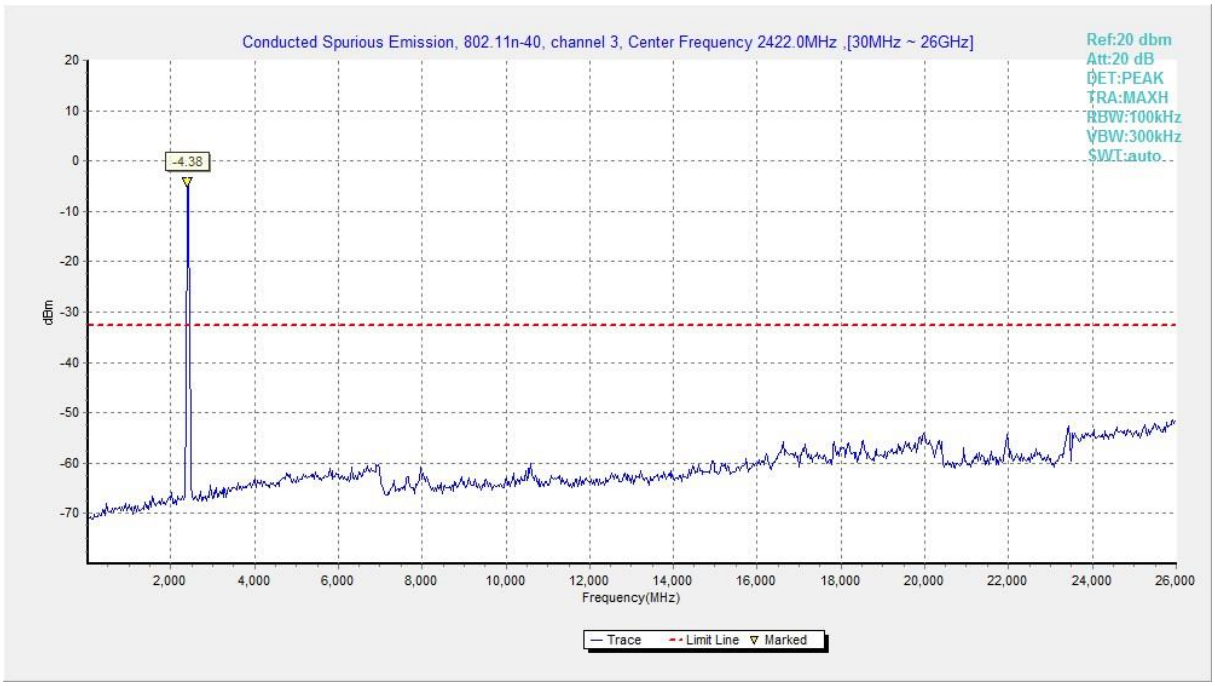

Fig.42 Conducted Spurious Emission (802.11n HT40, CH3)

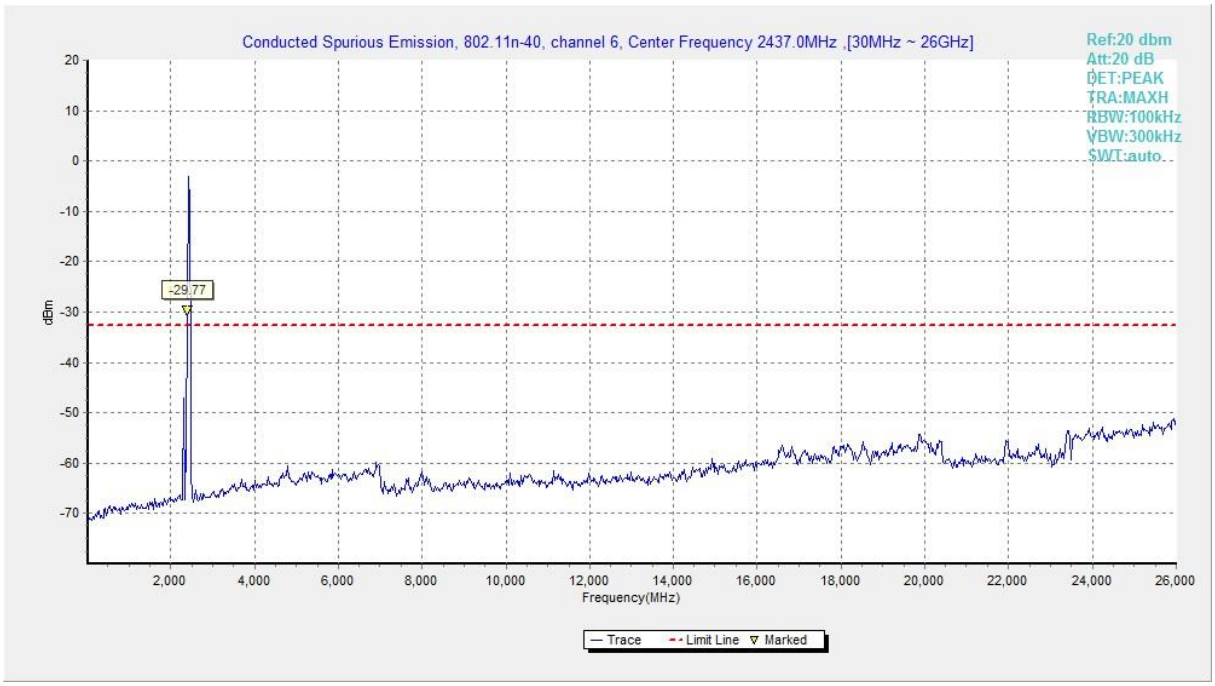

Fig.43 Conducted Spurious Emission (802.11n HT40, CH6)

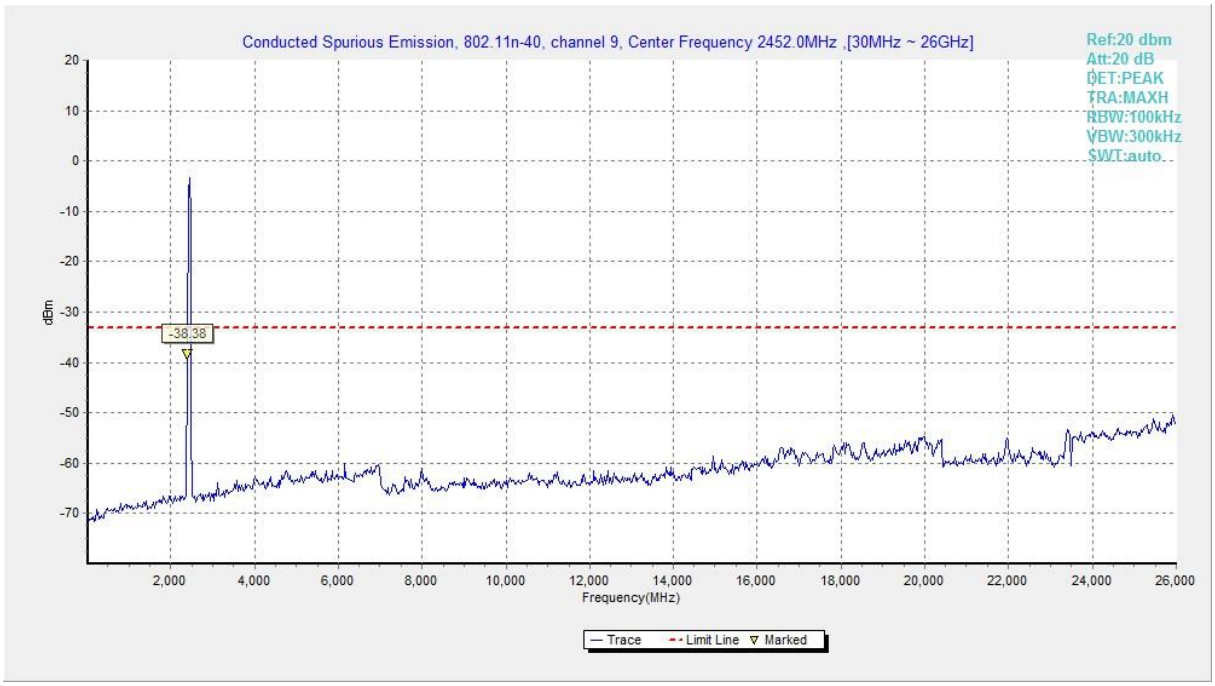

Fig.44 Conducted Spurious Emission (802.11n HT40, CH9)

A.6 Radiated Emission

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(μV/m)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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	120kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

Note:

According to the performance evaluation, the radiated emission margin of EUT is over 20dB in the band below 30MHz. Therefore, the measurement starts from 30MHz to tenth harmonic.

The measurement results include the horizontal polarization and vertical polarization measurements.

Measurement Results:

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	CH 1	1 GHz ~18 GHz	Fig.45	**P**
	CH 6	1 GHz ~18 GHz	Fig.46	**P**
	CH 11	1 GHz ~18 GHz	Fig.47	**P**
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.48	**P**
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.49	**P**
802.11g	CH 1	1 GHz ~18 GHz	Fig.50	**P**
	CH 6	1 GHz ~18 GHz	Fig.51	**P**
	CH 11	1 GHz ~18 GHz	Fig.52	**P**
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.53	**P**
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.54	**P**
802.11n HT20	CH 1	1 GHz ~18 GHz	Fig.55	**P**
	CH 6	1 GHz ~18 GHz	Fig.56	**P**
	CH 11	1 GHz ~18 GHz	Fig.57	**P**
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.58	**P**
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.59	**P**
802.11n HT40	CH 3	1 GHz ~18 GHz	Fig.60	**P**
	CH 6	1 GHz ~18 GHz	Fig.61	**P**
	CH 9	1 GHz ~18 GHz	Fig.62	**P**
	Restricted Band (CH3)	2.38 GHz ~ 2.45 GHz	Fig.63	**P**
	Restricted Band (CH9)	2.45 GHz ~ 2.5 GHz	Fig.64	**P**
/	All Channels	9 kHz ~30 MHz	Fig.65	**P**
		30 MHz ~1 GHz	Fig.66	**P**
		18 GHz ~26.5 GHz	Fig.67	**P**

Worst-Case Result:

802.11b CH11 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
6926.400000	44.35	74.00	29.65	V	2.3
10688.800000	45.30	74.00	28.70	H	6.5
12810.400000	47.14	74.00	26.86	V	8.7
14665.600000	47.95	74.00	26.05	V	9.4
16587.600000	52.54	74.00	21.46	V	13.7
17988.800000	53.77	74.00	20.23	V	15.5

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4924.125000	35.52	54.00	18.48	V	0.0
12823.600000	37.40	54.00	16.60	H	8.6
14904.000000	39.22	54.00	14.78	V	9.6
16594.800000	41.79	54.00	12.21	V	13.7
17415.600000	41.48	54.00	12.52	H	15.3
17918.800000	43.09	54.00	10.91	H	16.0

802.11g CH11 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
11778.400000	46.63	74.00	27.37	H	7.1
12602.400000	47.32	74.00	26.68	V	8.5
13725.600000	47.69	74.00	26.32	V	7.5
15267.600000	49.26	74.00	24.74	V	9.8
16629.200000	52.85	74.00	21.15	H	14.2
17415.600000	51.66	74.00	22.34	V	15.3

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
9492.800000	34.11	54.00	19.89	V	4.2
11640.800000	35.85	54.00	18.15	V	6.8
12830.400000	37.55	54.00	16.45	V	8.6
14869.200000	39.22	54.00	14.78	H	9.5
16630.000000	41.97	54.00	12.03	V	14.2
17918.800000	42.88	54.00	11.12	V	16.0

802.11n HT20 CH11 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
11026.000000	45.51	74.00	28.49	H	6.6
12450.400000	46.62	74.00	27.38	V	8.1
13554.000000	46.24	74.00	27.76	V	7.6
14956.000000	49.74	74.00	24.26	V	9.9
16551.200000	52.15	74.00	21.85	H	13.6
17920.400000	53.66	74.00	20.34	H	16.0

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
9490.400000	33.99	54.00	20.01	H	4.2
11196.800000	35.53	54.00	18.47	V	6.5
12810.400000	37.63	54.00	16.38	H	8.7
14876.400000	38.88	54.00	15.12	V	9.5
16588.400000	41.83	54.00	12.17	V	13.7
17918.000000	42.68	54.00	11.32	H	15.9

802.11n HT40 CH9 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
16540.000000	52.11	74.00	21.89	V	13.6
16642.800000	51.96	74.00	22.04	H	14.1
16798.400000	51.92	74.00	22.08	V	14.8
16970.400000	51.98	74.00	22.02	H	14.2
17256.400000	52.54	74.00	21.46	V	15.0
17621.600000	52.83	74.00	21.17	H	15.4

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
16258.800000	39.12	54.00	14.88	V	12.7
16602.800000	40.67	54.00	13.33	V	13.8
16812.400000	40.39	54.00	13.61	V	14.4
16958.000000	40.59	54.00	13.41	V	14.4
17253.600000	40.03	54.00	13.97	V	15.0
17638.000000	40.64	54.00	13.36	H	15.8

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”, and Antenna Factor, 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} +Cable Loss +Antenna Factor-Gain of the preamplifier.

See below for test graphs.

Conclusion: PASS

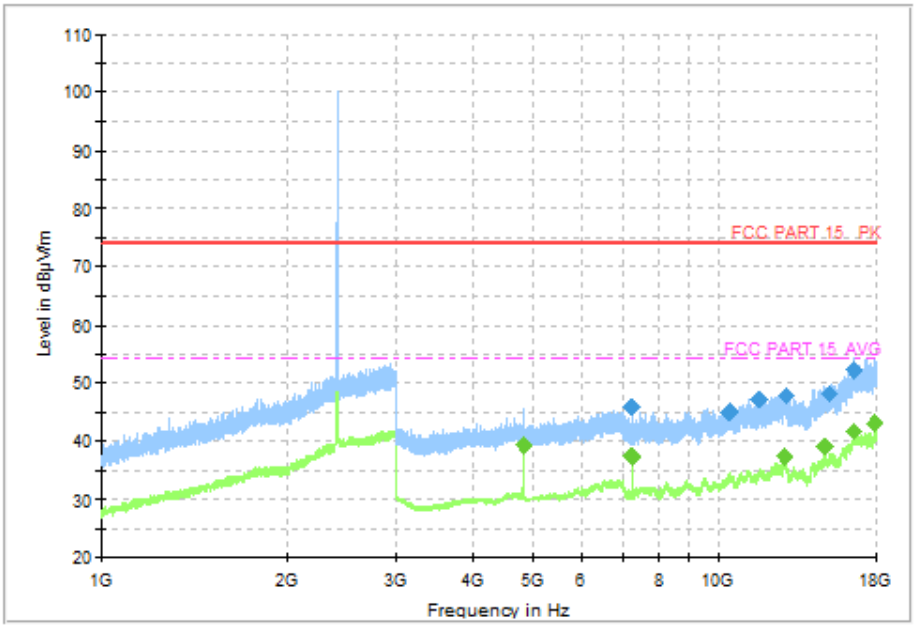

Fig.45 Radiated Spurious Emission (802.11b, CH1, 1 GHz-18GHz)

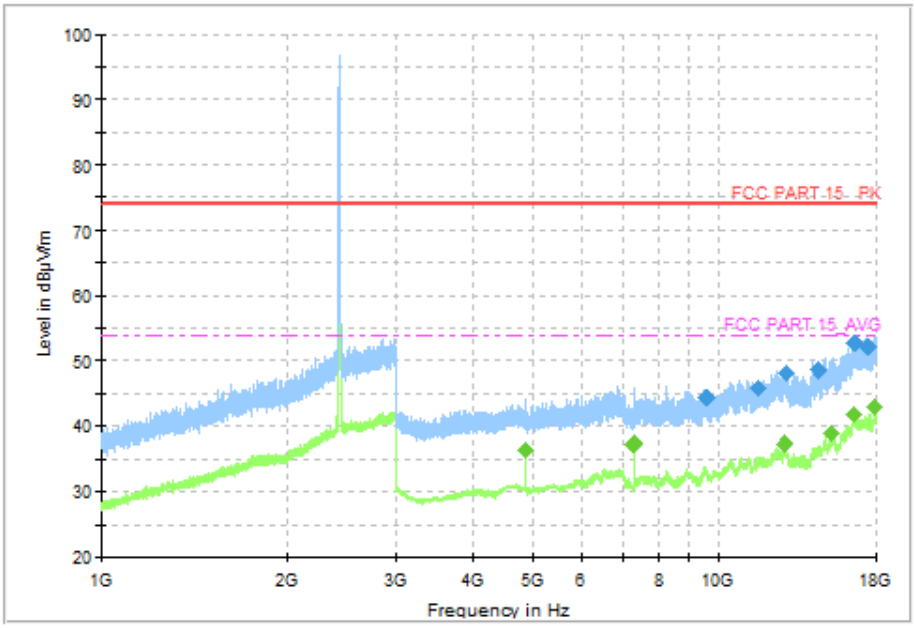

Fig.46 Radiated Spurious Emission (802.11b, CH6, 1 GHz-18GHz)

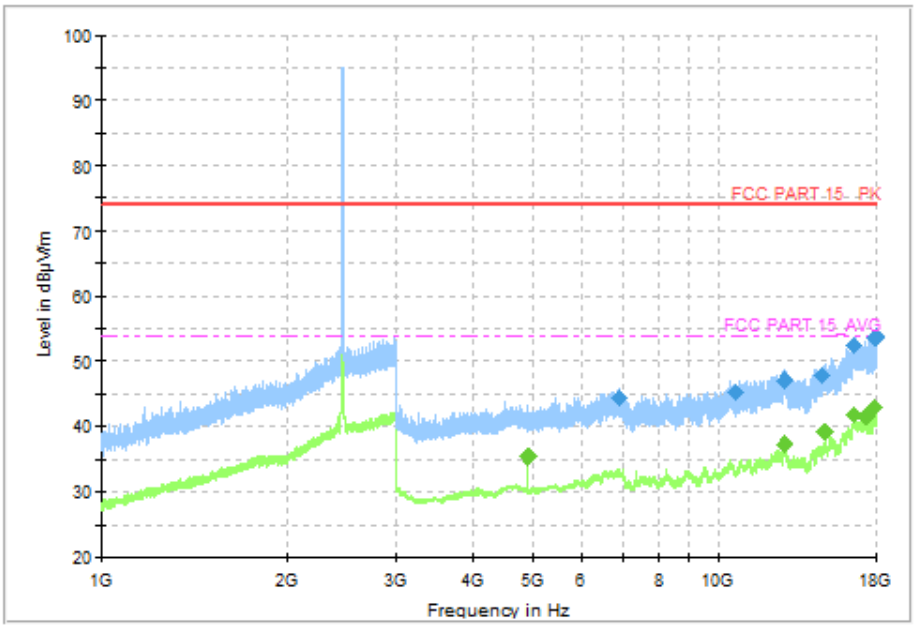

Fig.47 Radiated Spurious Emission (802.11b, CH11, 1 GHz-18GHz)

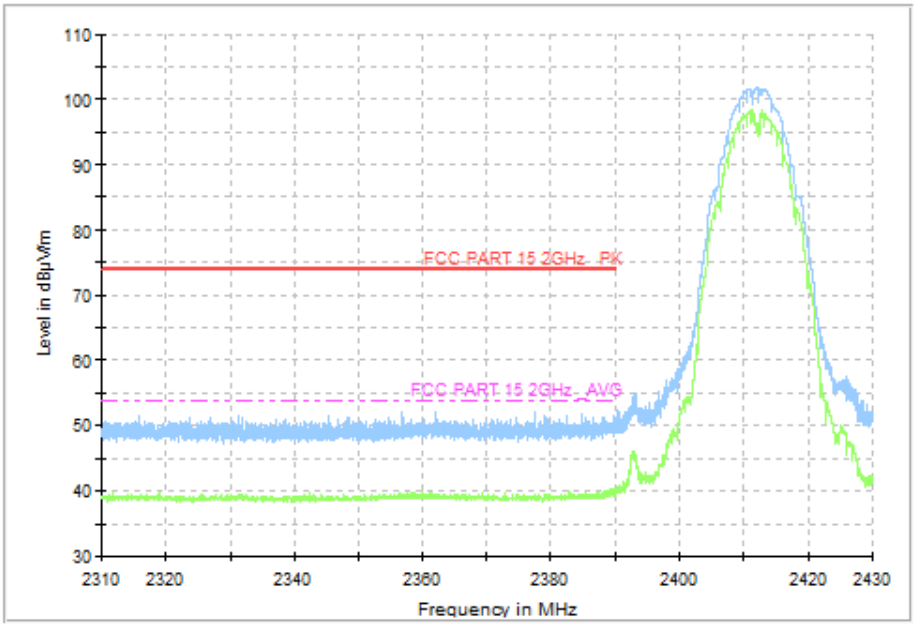

Fig.48 Radiated Restricted Band (802.11b, CH1, 2.38GHz~2.45GHz)

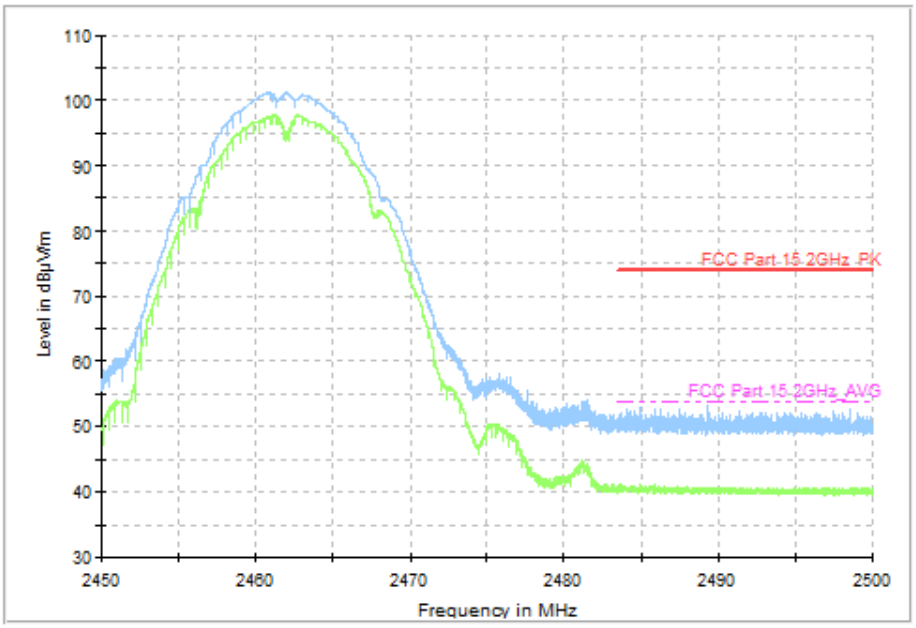

Fig.49 Radiated Restricted Band (802.11b, CH11, 2.45GHz~2.5GHz)

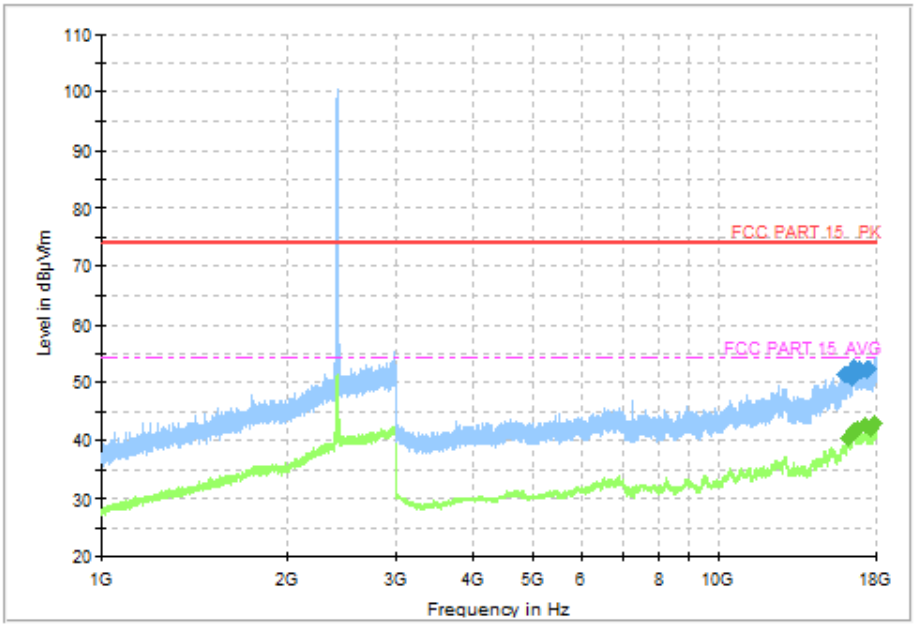

Fig.50 Radiated Spurious Emission (802.11g, CH1, 1 GHz-18 GHz)

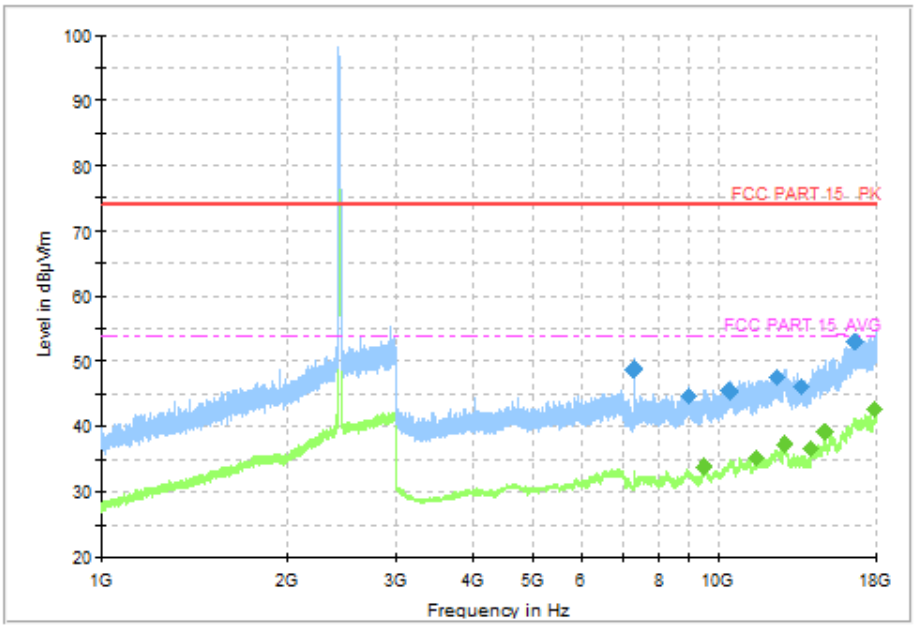

Fig.51 Radiated Spurious Emission (802.11g, CH6, 1 GHz-18 GHz)

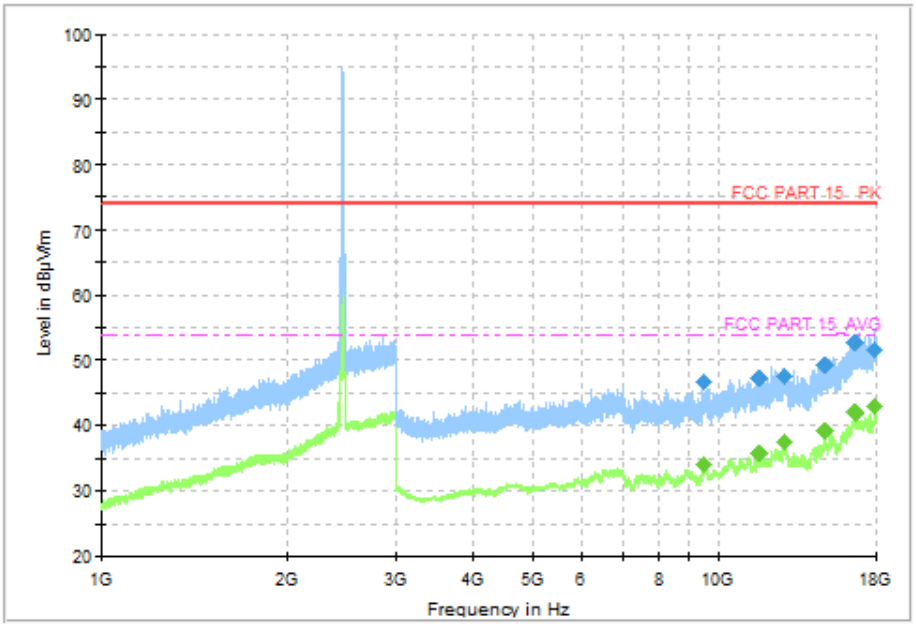

Fig.52 Radiated Spurious Emission (802.11g, CH11, 1 GHz-18 GHz)

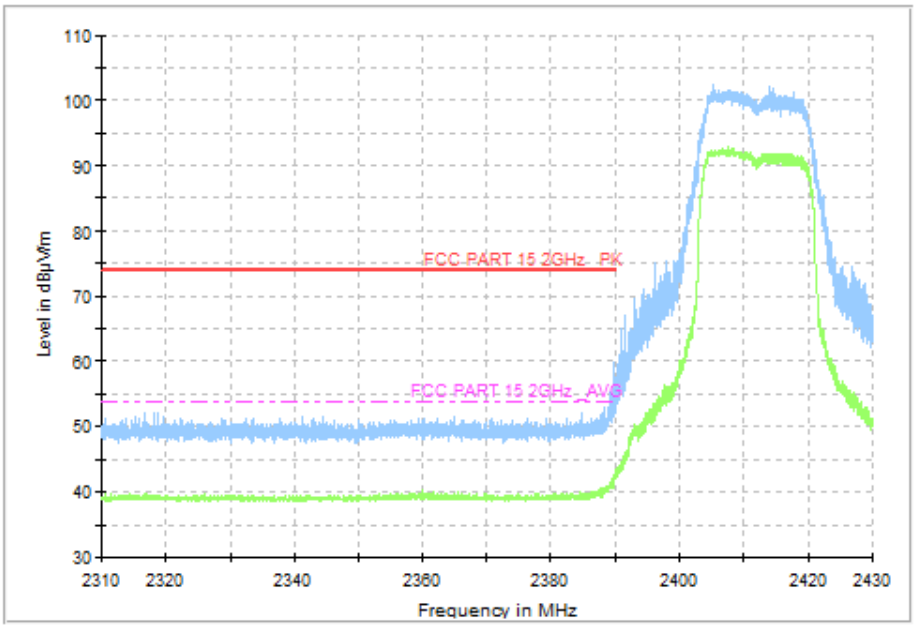

Fig.53 Radiated Restricted Band (802.11g, CH1, 2.38GHz~2.45GHz)

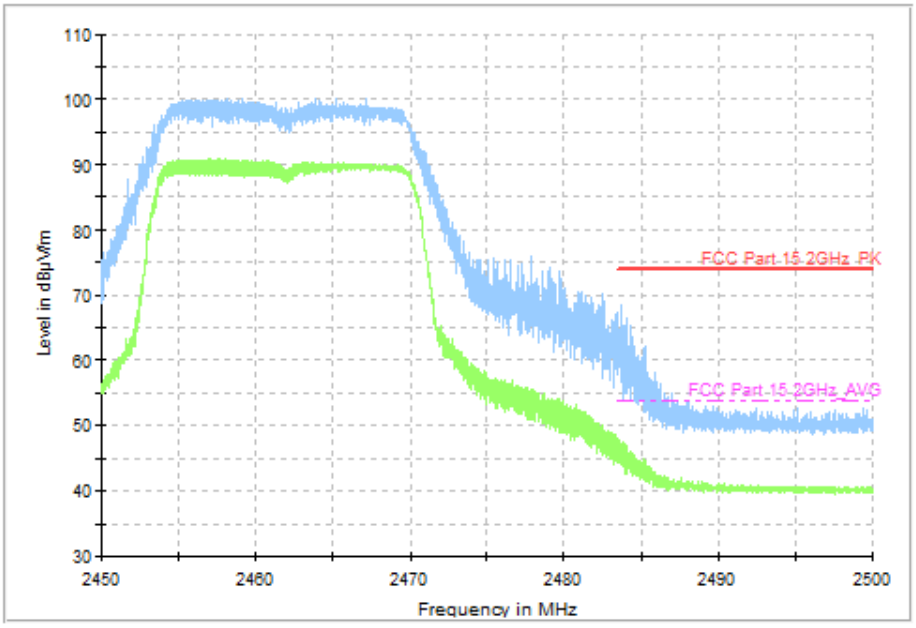

Fig.54 Radiated Restricted Band (802.11g, CH11, 2.45GHz~2.5GHz)

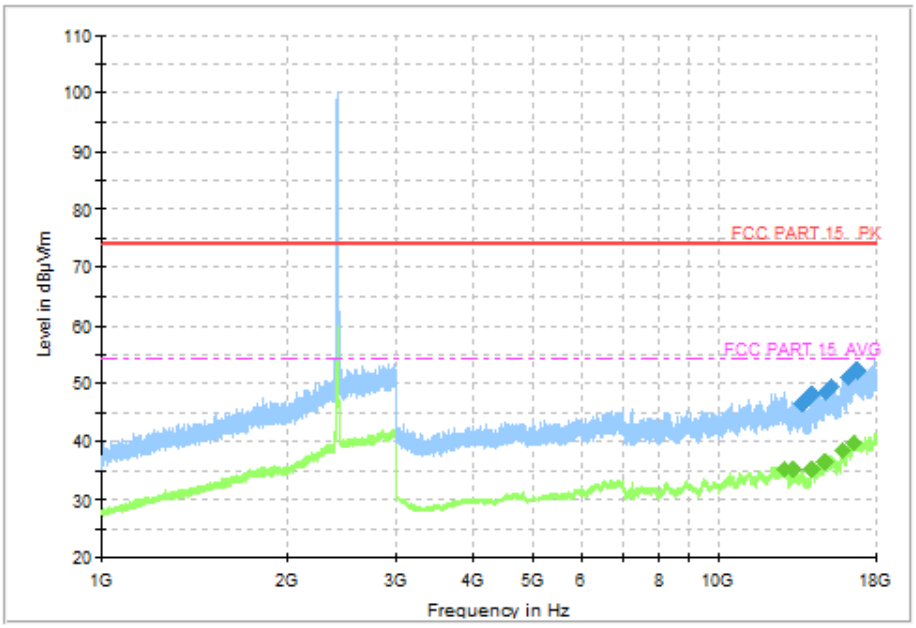

Fig.55 Radiated Spurious Emission (802.11n HT20, CH1, 1 GHz-18 GHz)

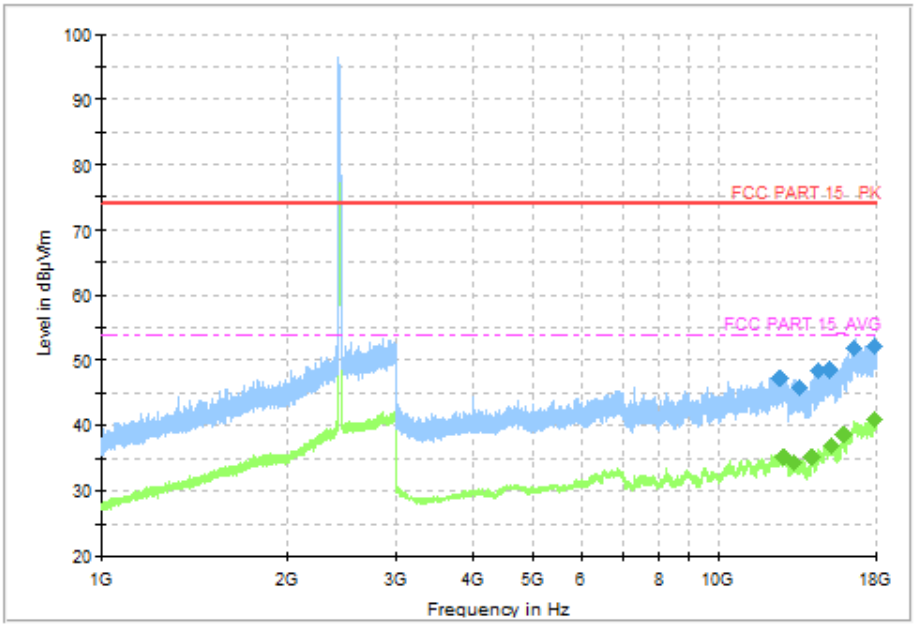

Fig.56 Radiated Spurious Emission (802.11n HT20, CH6, 1 GHz-18 GHz)

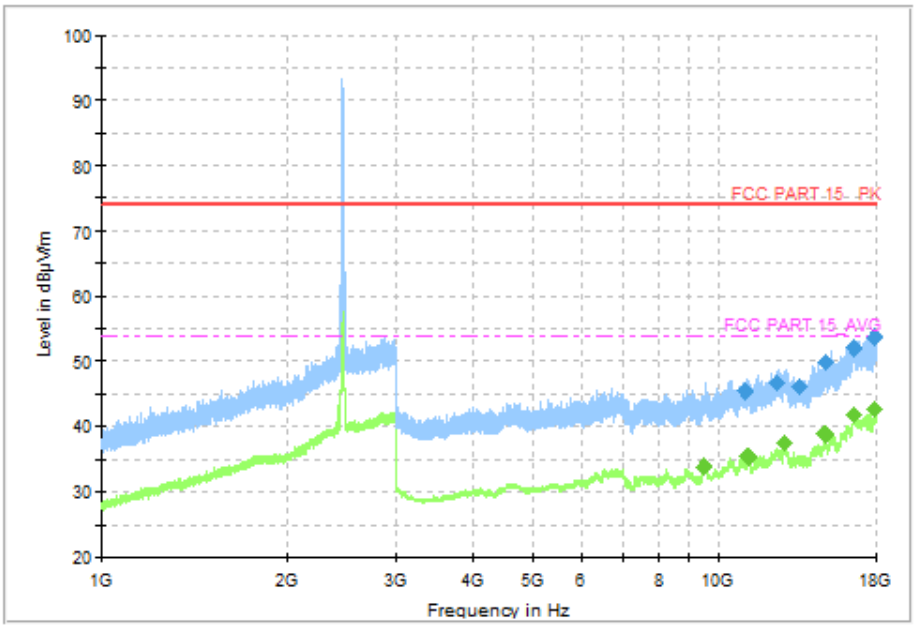

Fig.57 Radiated Spurious Emission (802.11n HT20, CH11, 1 GHz-18 GHz)

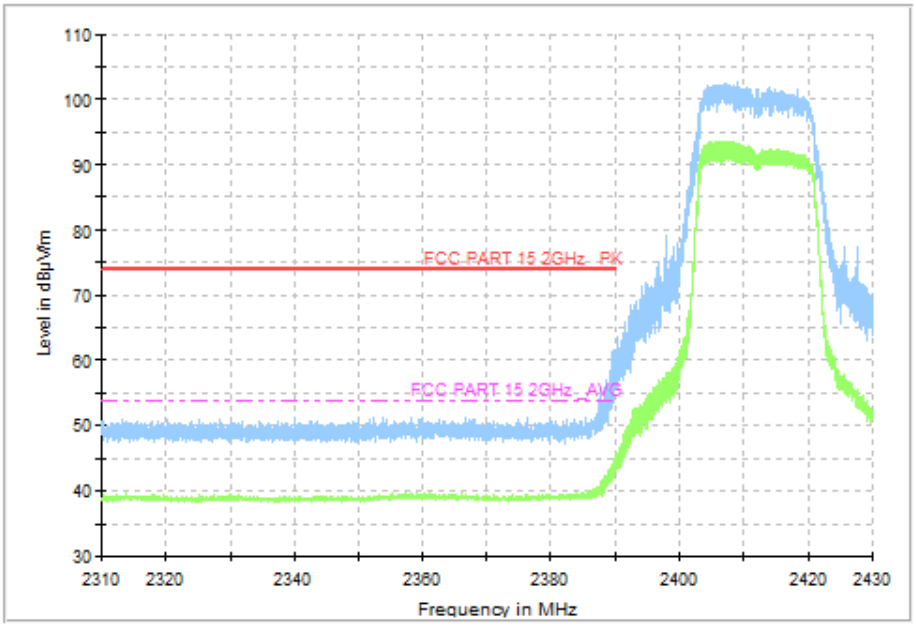

Fig.58 Radiated Restricted Band (802.11n HT20, CH1, 2.38GHz~2.45GHz)

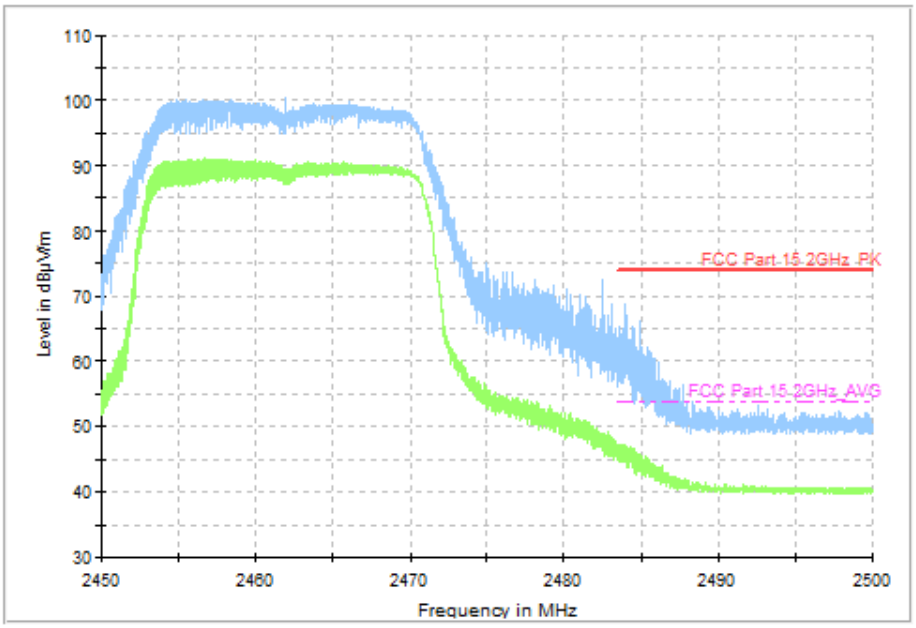

Fig.59 Radiated Restricted Band (802.11n HT20, CH11, 2.45GHz~2.5GHz)

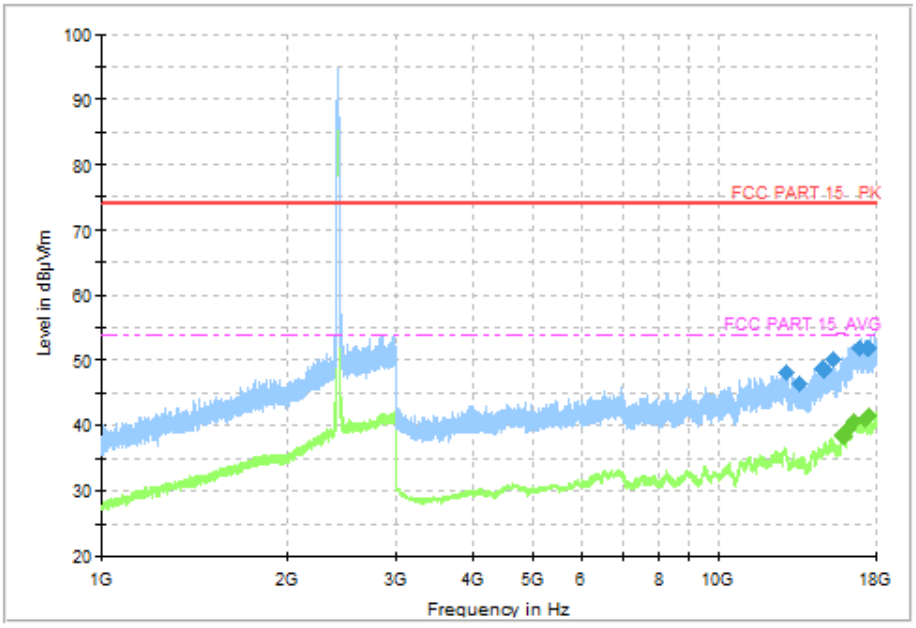

Fig.60 Radiated Spurious Emission (802.11n HT40, CH3, 1 GHz-18 GHz)

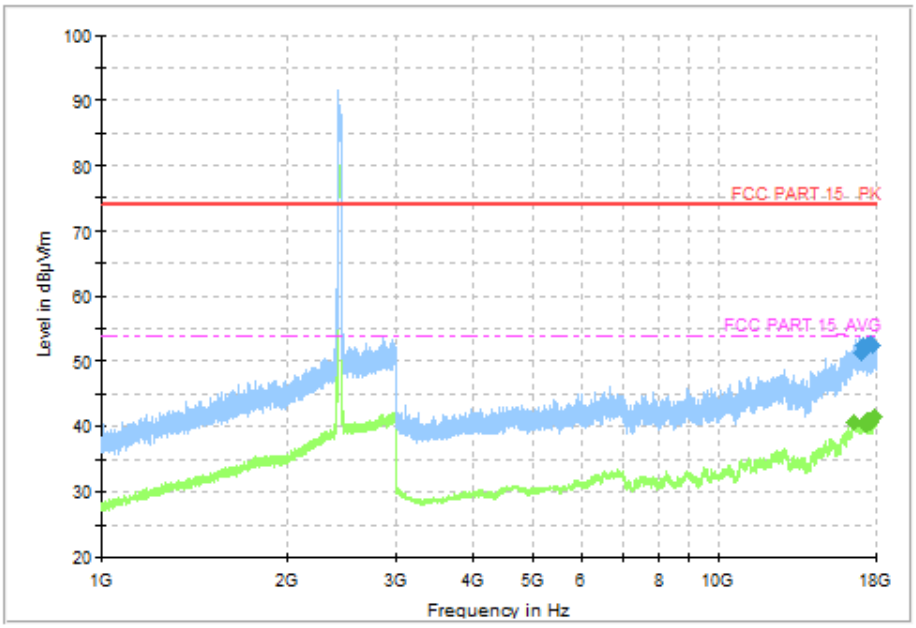

Fig.61 Radiated Spurious Emission (802.11n HT40, CH6, 1 GHz-18 GHz)

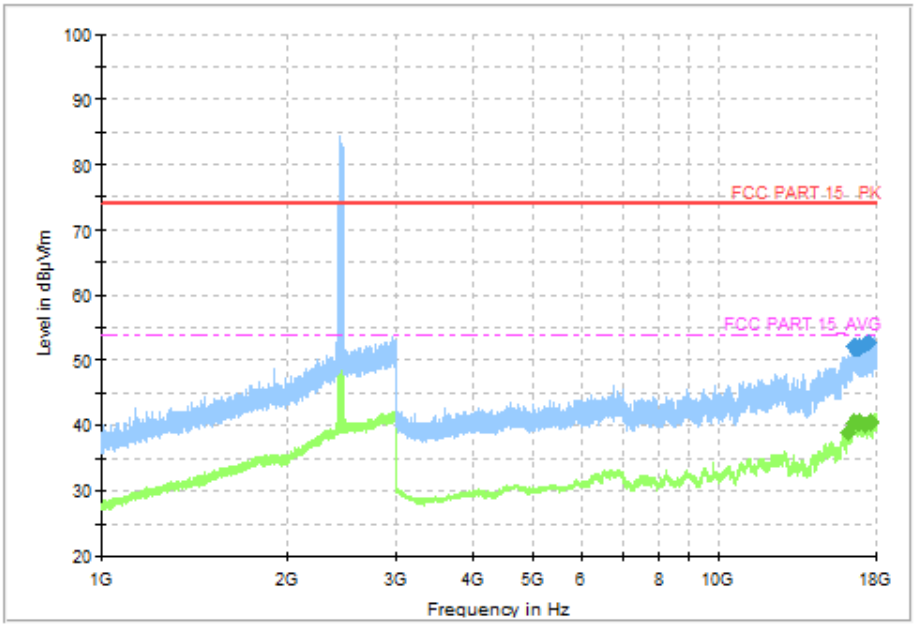

Fig.62 Radiated Spurious Emission (802.11n HT40, CH9, 1 GHz-18 GHz)

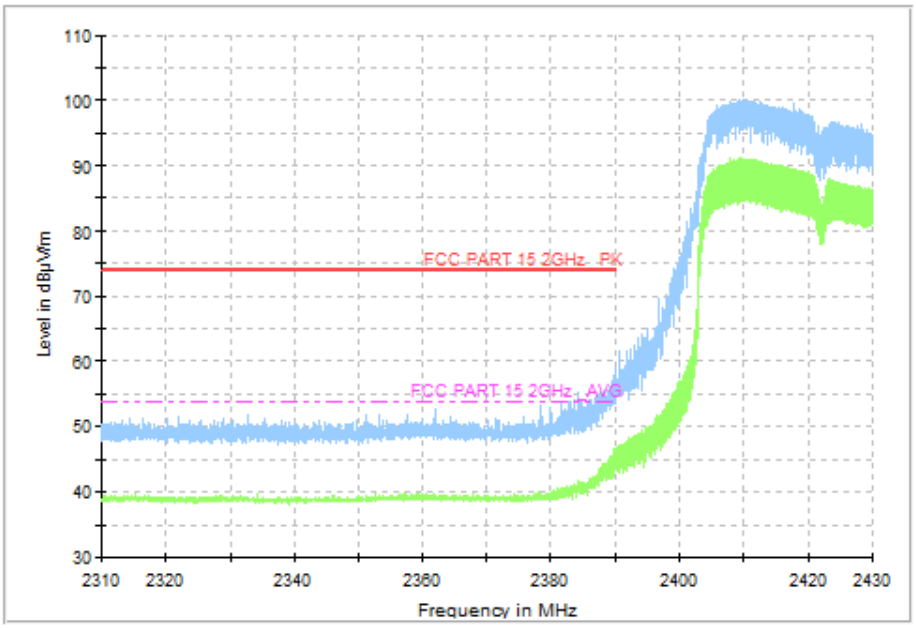

Fig.63 Radiated Restricted Band (802.11n HT40, CH3, 2.38GHz~2.45GHz)

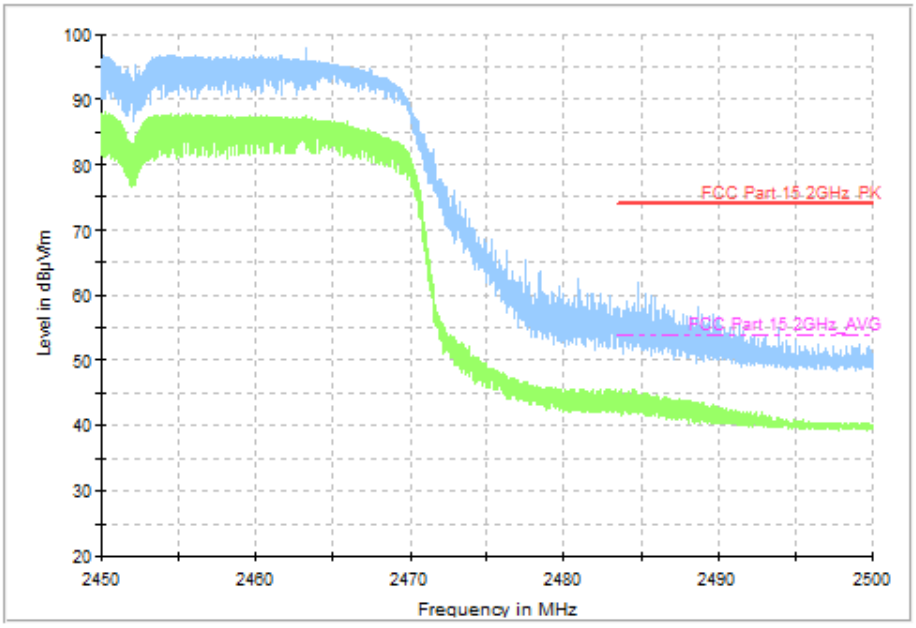

Fig.64 Radiated Restricted Band (802.11n HT40, CH9, 2.45GHz~2.5GHz)

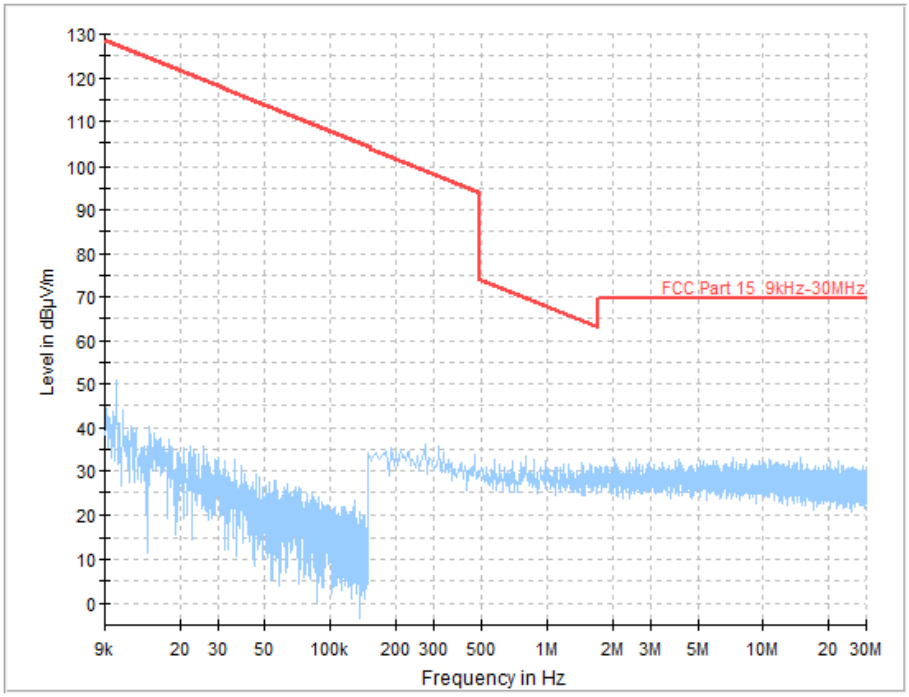

Fig.65 Radiated Spurious Emission (All Channels, 9 kHz-30 MHz)

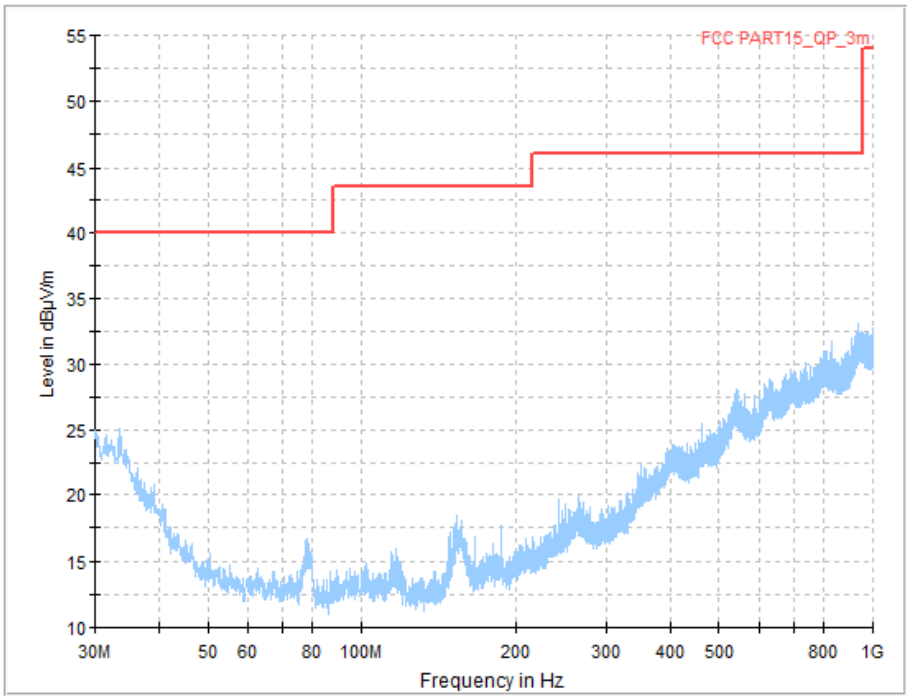

Fig.66 Radiated Spurious Emission (All Channels, 30MHz-1 GHz)

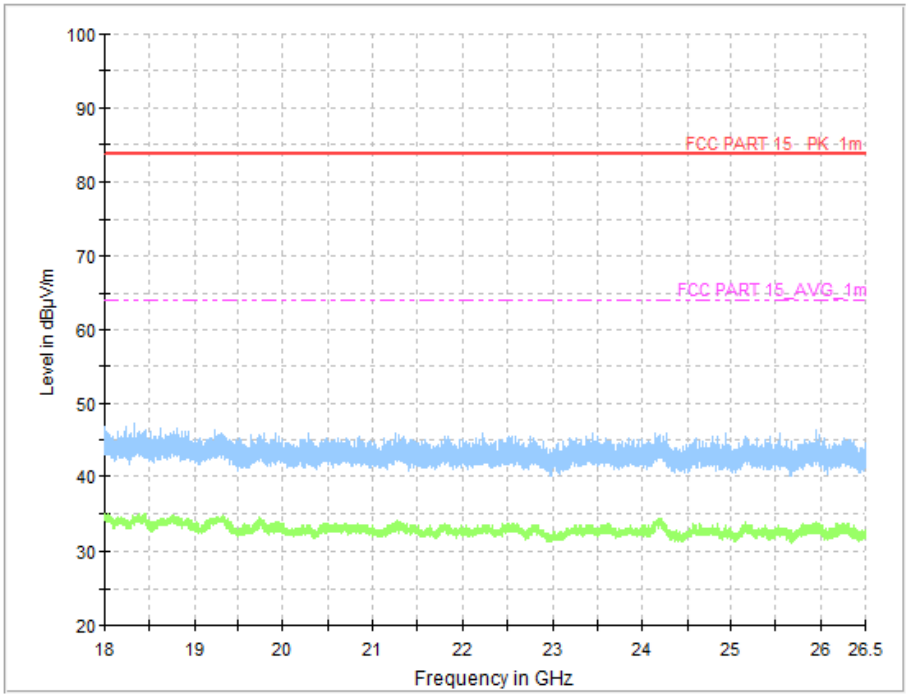

Fig.67 Radiated Spurious Emission (All Channels, 18 GHz-26.5 GHz)

A.7 AC Power line 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
		Traffic	Idle	
0.15 to 0.5	66 to 56	Fig.68	Fig.69	**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-peak Limit (dBμV)	Result (dBμV)		Conclusion
		Traffic	Idle	
0.15 to 0.5	56 to 46	Fig.68	Fig.69	**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.				

Note: The measurement results include the L1 and N measurements.

See below for test graphs.

Conclusion: PASS

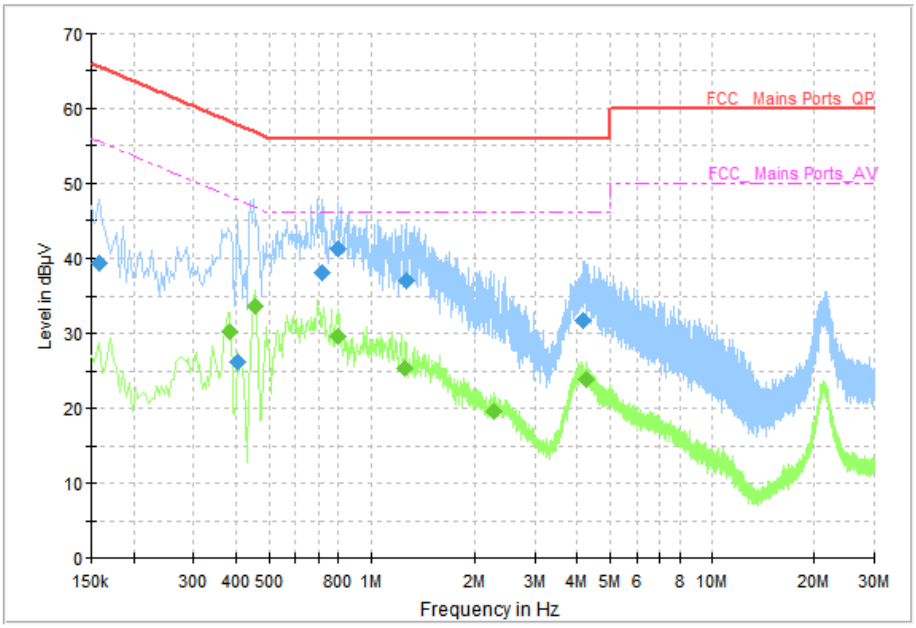

Fig.68 AC Power line Conducted Emission (Traffic)

Measurement Results: Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.158000	39.25	65.57	26.31	L1	ON	10
0.406000	26.28	57.73	31.45	L1	ON	10
0.714000	37.97	56.00	18.03	L1	ON	10
0.798000	41.13	56.00	14.87	L1	ON	10
1.266000	36.95	56.00	19.05	L1	ON	10
4.182000	31.74	56.00	24.26	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.382000	30.37	48.24	17.86	L1	ON	10
0.454000	33.67	46.80	13.13	L1	ON	10
0.798000	29.74	46.00	16.26	L1	ON	10
1.258000	25.36	46.00	20.64	L1	ON	10
2.270000	19.60	46.00	26.40	L1	ON	10
4.266000	23.85	46.00	22.15	L1	ON	10

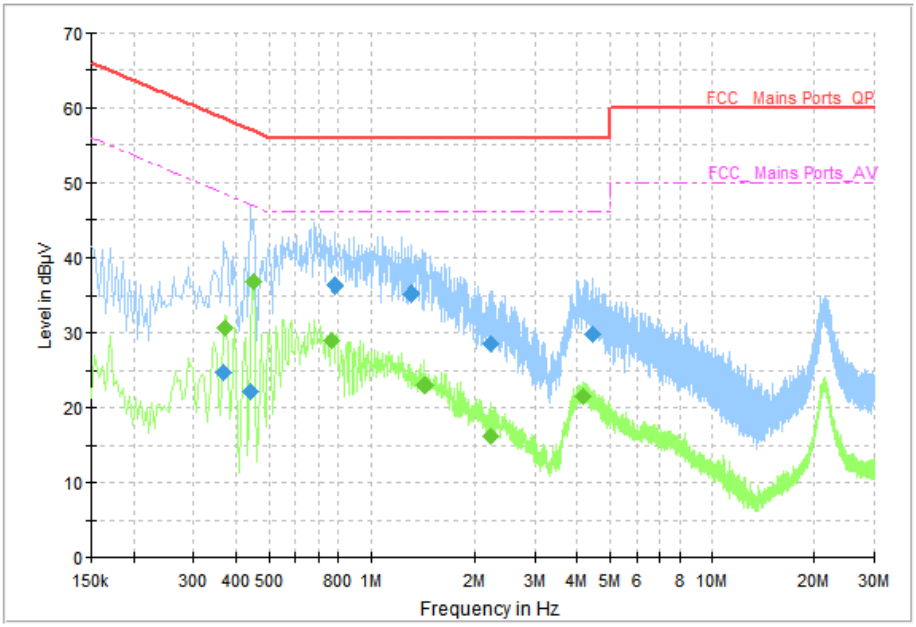

Fig.69 AC Power line Conducted Emission (Idle)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.366000	24.84	58.59	33.75	L1	ON	10
0.442000	22.14	57.02	34.88	L1	ON	10
0.786000	36.32	56.00	19.68	L1	ON	10
1.310000	35.18	56.00	20.82	L1	ON	10
2.234000	28.59	56.00	27.41	L1	ON	10
4.446000	29.92	56.00	26.08	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.370000	30.77	48.50	17.74	L1	ON	10
0.450000	36.75	46.88	10.13	L1	ON	10
0.766000	29.10	46.00	16.90	L1	ON	10
1.430000	23.10	46.00	22.90	L1	ON	10
2.226000	16.27	46.00	29.73	L1	ON	10
4.154000	21.56	46.00	24.44	L1	ON	10

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