TEST REPORT

No. I20N01960-WLAN

for

Spectralink Corporation

Mobile Phone

Model Name: VC9253

with

Hardware Version: DVT1

Software Version: V138

FCC ID: IYG9253

IC: 2128B-9253

Issued Date: 2020-08-28

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.

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1. Summary of Test Report

1.1. Test Items

Description	Mobile Phone
Model Name	VC9253
Applicant's name	Spectralink Corporation
Manufacturer's Name	Spectralink Corporation

1.2. Test Standards

FCC Part15-2019; ANSI C63.10-2013; RSS-247 Issue 2; RSS-Gen Issue 5 A1

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:	2020-07-22
Testing End Date:	2020-08-27

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:	Spectralink Corporation
Address:	2560 55th Street, Boulder CO 80301, USA
Contact Person	Paul Hampton
E-Mail	Paul.Hampton@spectralink.com
Telephone:	+1303-441-7593
Fax:	/

2.2. Manufacturer Information

Company Name:	Spectralink Corporation
Address:	2560 55th Street, Boulder CO 80301, USA
Contact Person	Paul Hampton
E-Mail	Paul.Hampton@spectralink.com
Telephone:	+1303-441-7593
Fax:	/

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

3.1. About EUT

Description	Mobile Phone
Model Name	VC9253
Brand Name	Spectralink
RF Protocol	IEEE 802.11 b/g/n-HT20
Operating Frequency	2412MHz~2462MHz
Number of Channels	11
Antenna Type	Integrated
Antenna Gain	SISO:1.6dBi MIMO:1.5dBi
Power Supply	3.85V DC by Battery
FCC ID	IYG9253
IC	2128B-9253
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
UT07aa	velc02bdcjd000t	DVT1	V138	2020-07-20
UT01aa	velc02bdcjd00aw	DVT1	V138	2020-07-22
UT02aa	velc02bdcjd005n	DVT1	V138	2020-07-22

*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	Charger	/
AE3	Data Cable	/

AE1

Model	BLI9200100
Manufacturer	Ningbo Veken Battery Co., Ltd.
Capacity	3040mAh
Nominal Voltage	3.85V

AE2

Model	IN-CA-310Q
Manufacturer	INNO VISION INTERNATIONAL HOLDINGS LTD.

AE3

Model	XG-US008
Manufacturer	Xunguang Electronics Co.,Ltd.

*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 Mobile 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
RSS-247	Spectrum Management and Telecommunications Radio Standards Specification Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices	Issue 2 February,2017
RSS-Gen	Spectrum Management and Telecommunications Radio Standards Specification General Requirements for Compliance of Radio Apparatus	Issue 5 March,2019 Amendment 1

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	Sub-clause of IC	Verdict
0	Antenna Requirement	15.203	/	**P**
1	Maximum Output Power	15.247 (b)	RSS-247 section 5.4	**P**
2	Peak Power Spectral Density	15.247 (e)	RSS-247 section 5.2	**P**
3	6dB Bandwidth	15.247 (a)	RSS-247 section 5.2	**P**
4	Band Edges Compliance	15.247 (d)	RSS-247 section 5.5	**P**
5	Conducted Emission	15.247 (d)	RSS-247 section 5.5/ RSS-Gen section 6.13	**P**
6	Radiated Emission	15.247, 15.205, 15.209	RSS-247 section 5.5/ RSS-Gen section 6.13	**P**
7	AC Power line Conducted	15.207	RSS-Gen section 8.8	**P**
8	99% Occupied Bandwidth	/	RSS-Gen section 6.7	**/**

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	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

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: SISO: 1.6 dBi;
MIMO: 1.5dBi.

The RF transmitter uses an integrate antenna without connector.

A.1 Maximum Output Power

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)	E.I.R.P Limit (dBm)
FCC CRF Part 15.247(b) & RSS-247 Section 5.4	< 30	< 36

Measurement Results:

Antenna 0:

Mode	Average Conducted Power (dBm)		
	2412MHz (Ch1)	2437MHz (Ch6)	2462MHz (Ch11)
802.11b	17.33	17.49	17.45
802.11g	14.79	14.92	14.81
802.11n(HT20)	14.02	14.08	14.04

Antenna 1:

Mode	Average Conducted Power (dBm)		
	2412MHz (Ch1)	2437MHz (Ch6)	2462MHz (Ch11)
802.11b	17.06	17.17	17.16
802.11g	14.58	14.63	14.62
802.11n(HT20)	13.73	13.86	13.83

MIMO:

Mode	Average Conducted Power (dBm)								
	2412MHz (Ch1)			2437MHz (Ch6)			2462MHz (Ch11)		
	Ant 0	Ant 1	Sum	Ant 0	Ant 1	Sum	Ant 0	Ant 1	Sum
802.11n (HT20)	13.89	13.61	16.76	13.97	13.73	16.86	13.96	13.71	16.85

Note:

Worst-case data rates as provided by the client were: 1Mbps (802.11b), 6Mbps (802.11g), MCS0 (802.11n). Antenna 0 is selected as the worst condition (SISO). The following cases and test graphs are mostly performed with this condition.

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%.

The E.I.R.P Results are listed below:

Antenna 0:

Mode	E.I.R.P（dBm）		
	2412MHz (Ch1)	2437MHz (Ch6)	2462MHz (Ch11)
802.11b	18.93	19.09	19.05
802.11g	16.39	16.52	16.41
802.11n(HT20)	15.62	15.68	15.64

Antenna 1:

Mode	E.I.R.P（dBm）		
	2412MHz (Ch1)	2437MHz (Ch6)	2462MHz (Ch11)
802.11b	18.66	18.77	18.76
802.11g	16.18	16.23	16.22
802.11n(HT20)	15.33	15.46	15.43

MIMO:

Mode	E.I.R.P（dBm）		
	2412MHz (Ch1)	2437MHz (Ch6)	2462MHz (Ch11)
802.11n(HT20)	18.26	18.36	18.35

Note:

E.I.R.P value = Conducted values (with conducted samples) + Antenna Gain.

Conclusion: PASS

A.2 Peak Power Spectral Density

Measurement Limit:

Standard	Limit
FCC CRF Part 15.247(e) & RSS-247 Section 5.2	< 8 dBm/3 kHz

Measurement Results:

SISO:

Mode	Channel	Frequency (MHz)	Test Results(dBm/3 kHz)		Conclusion
802.11b	CH 1	2412	Fig.1	-4.77	P
	CH 6	2437	Fig.2	-4.65	P
	CH 11	2462	Fig.3	-4.78	P
802.11g	CH 1	2412	Fig.4	-11.92	P
	CH 6	2437	Fig.5	-11.80	P
	CH 11	2462	Fig.6	-11.71	P
802.11n HT20	CH 1	2412	Fig.7	-12.27	P
	CH 6	2437	Fig.8	-12.90	P
	CH 11	2462	Fig.9	-12.91	P

MIMO:

Mode	Channel	Frequency (MHz)	Test Results(dBm/3 kHz)			Conclusion
			Ant 0	Ant 1	Sum	
802.11n HT20	CH 1	2412	-13.43	-13.57	-10.49	P
	CH 6	2437	-13.52	-13.63	-10.56	P
	CH 11	2462	-12.19	-12.24	-9.20	P

See below for test graphs.

Conclusion: PASS

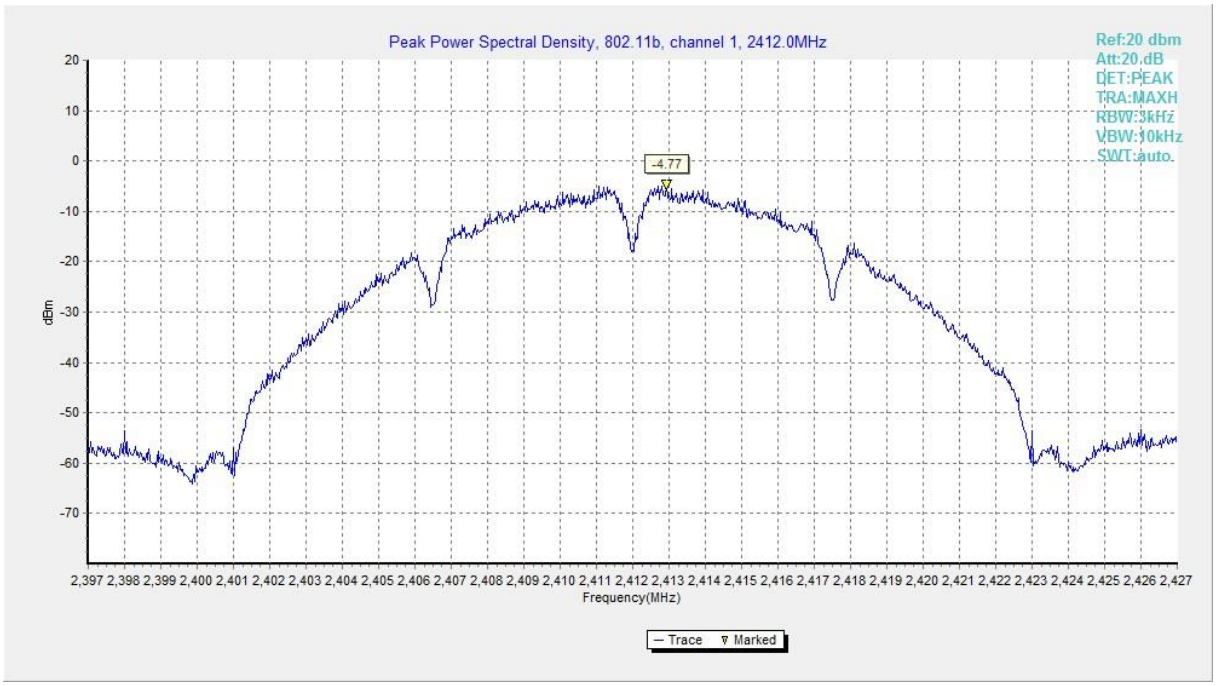

Fig.1 Power Spectral Density (802.11b, CH 1)

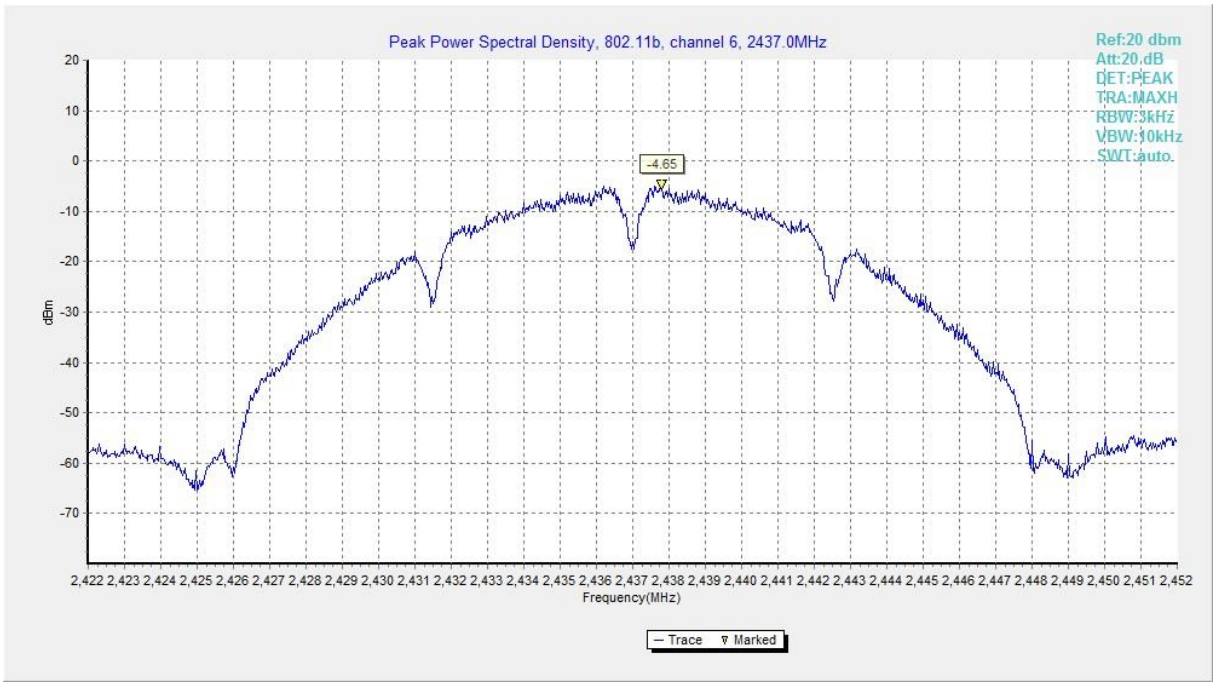

Fig.2 Power Spectral Density (802.11b, CH 6)

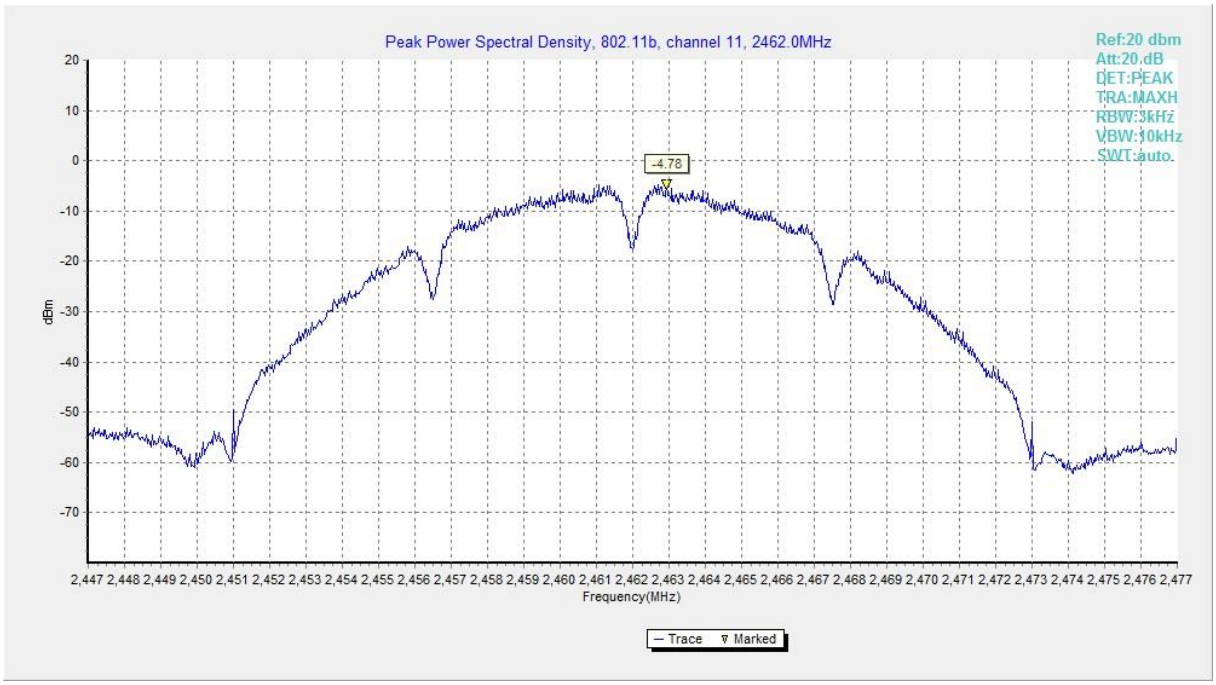

Fig.3 Power Spectral Density (802.11b, CH 11)

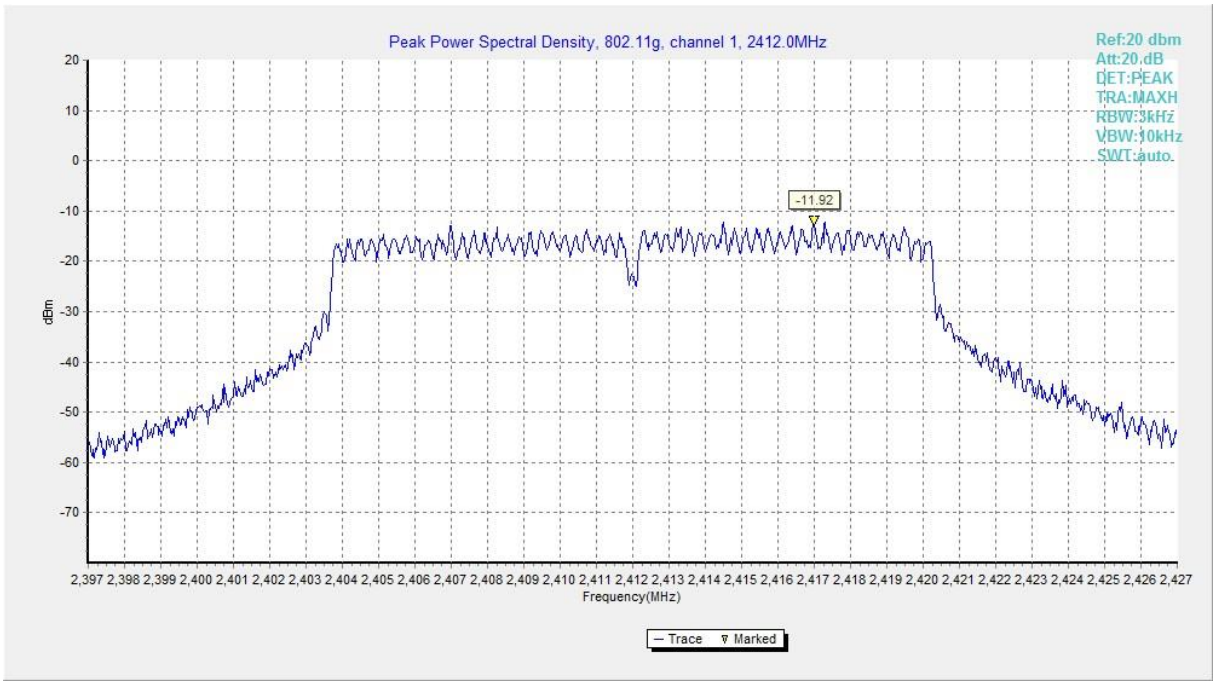

Fig.4 Power Spectral Density (802.11g, CH 1)

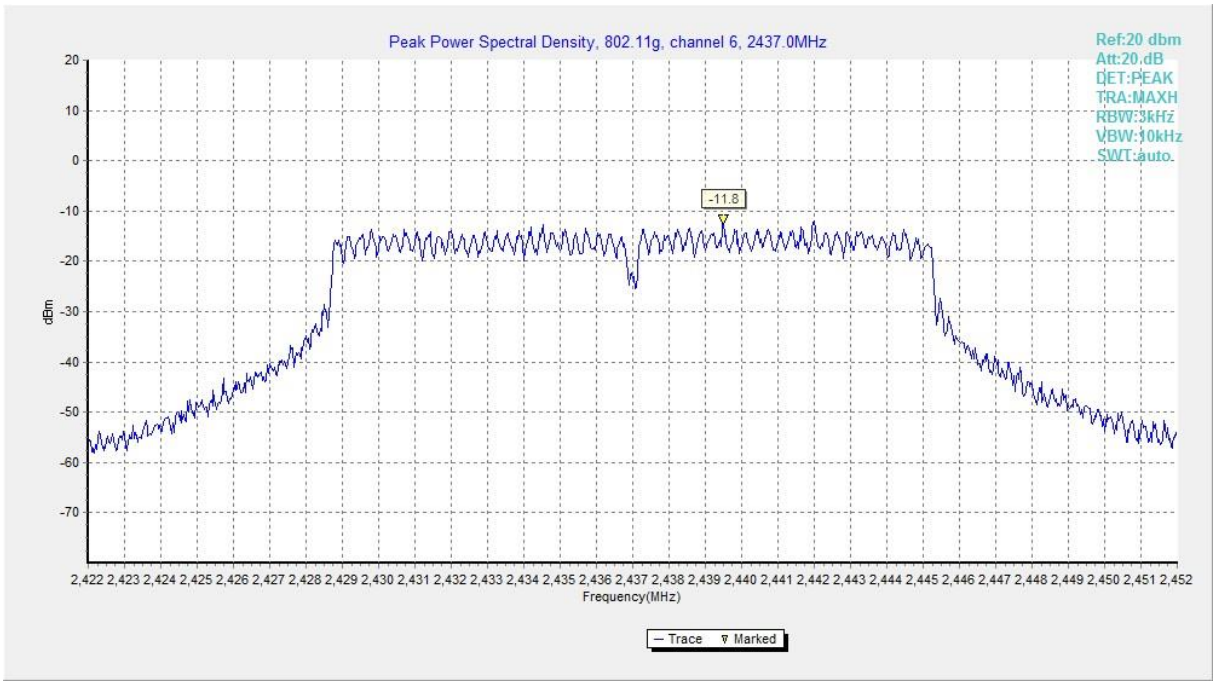

Fig.5 Power Spectral Density (802.11g, CH 6)

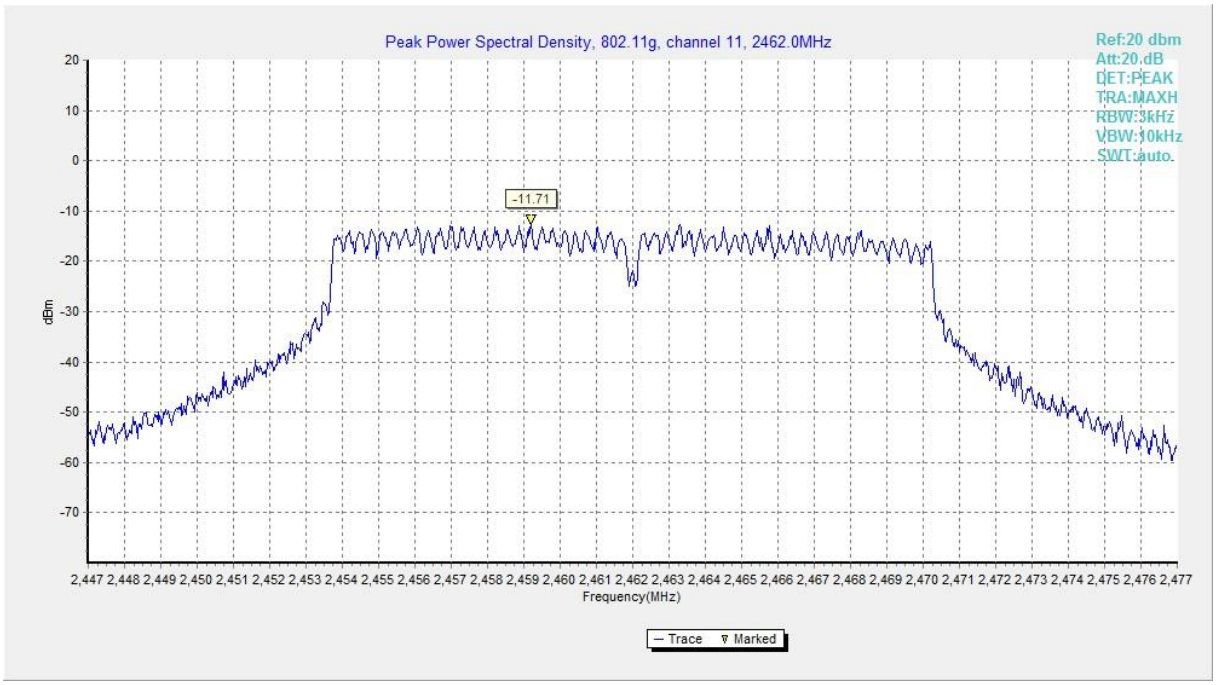

Fig.6 Power Spectral Density (802.11g, CH 11)

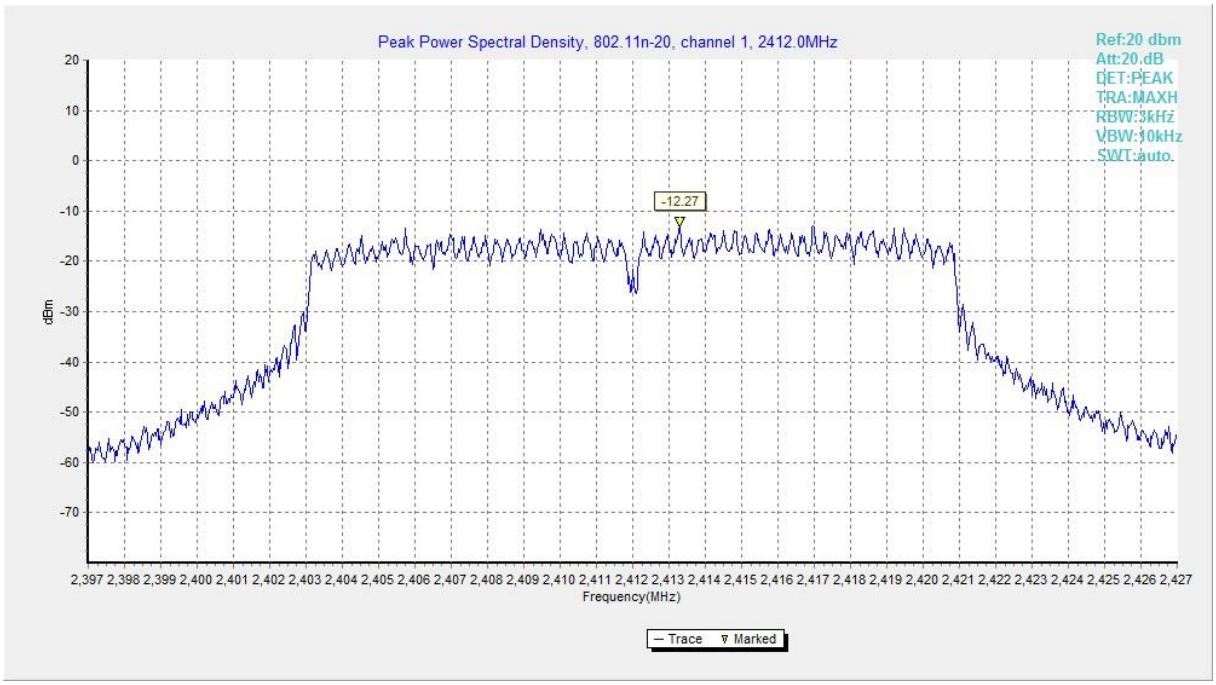

Fig.7 Power Spectral Density (802.11n HT20, CH 1)

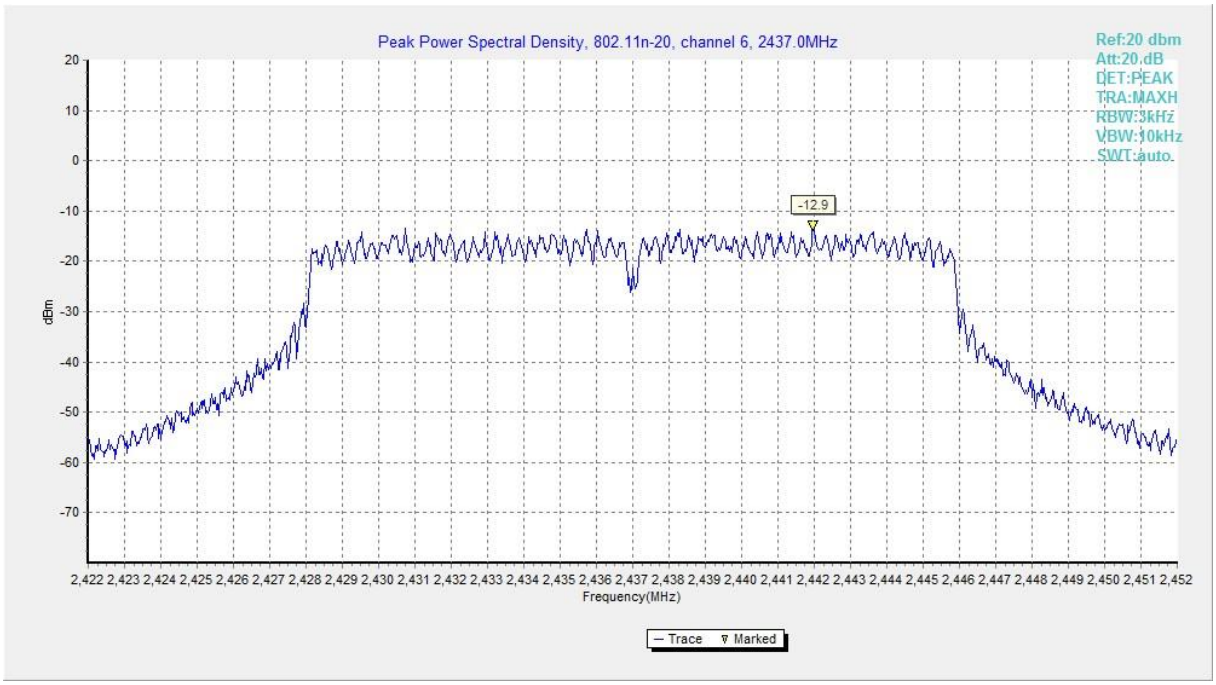

Fig.8 Power Spectral Density (802.11n HT20, CH 6)

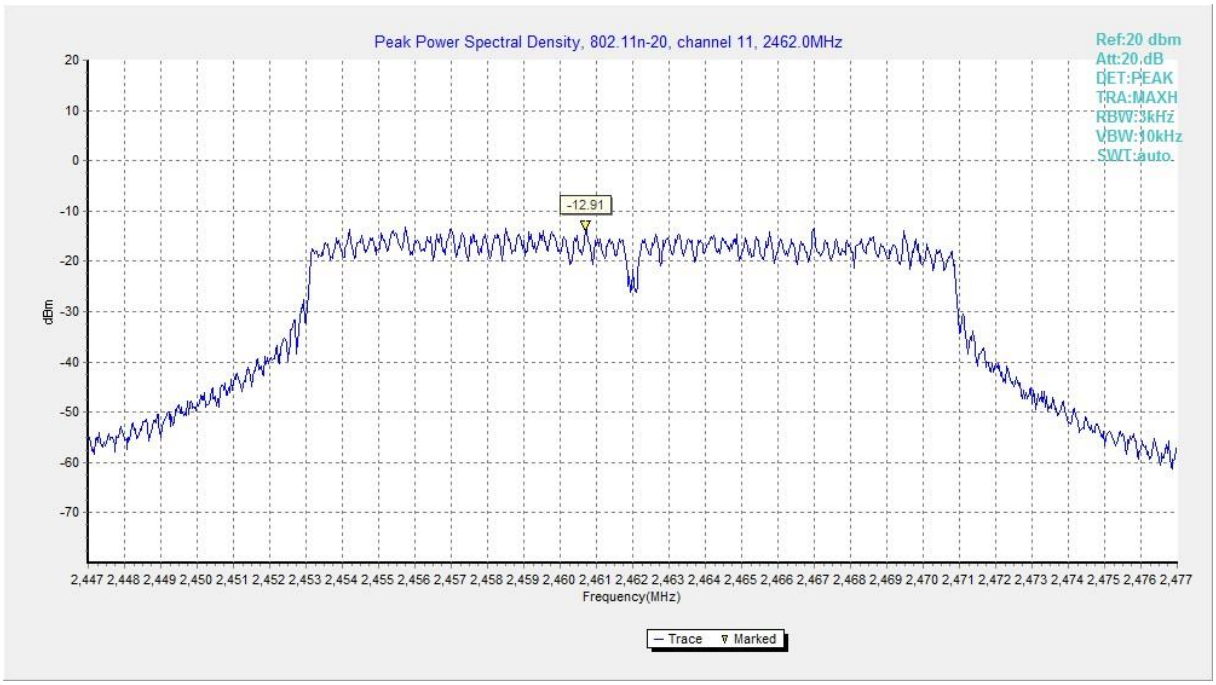

Fig.9 Power Spectral Density (802.11n HT20, CH 11)

A.3 6dB Bandwidth

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a) & RSS-247 Section 5.2	≥ 500

Measurement Result:

Mode	Channel	Frequency (MHz)	Test Results (kHz)		Conclusion
802.11b	CH 1	2412	Fig.10	8050	**P**
	CH 6	2437	Fig.11	8050	**P**
	CH 11	2462	Fig.12	8100	**P**
802.11g	CH 1	2412	Fig.13	15950	**P**
	CH 6	2437	Fig.14	15800	**P**
	CH 11	2462	Fig.15	16050	**P**
802.11n HT20	CH 1	2412	Fig.16	16000	**P**
	CH 6	2437	Fig.17	16800	**P**
	CH 11	2462	Fig.18	16000	**P**

See below for test graphs.

Conclusion: PASS

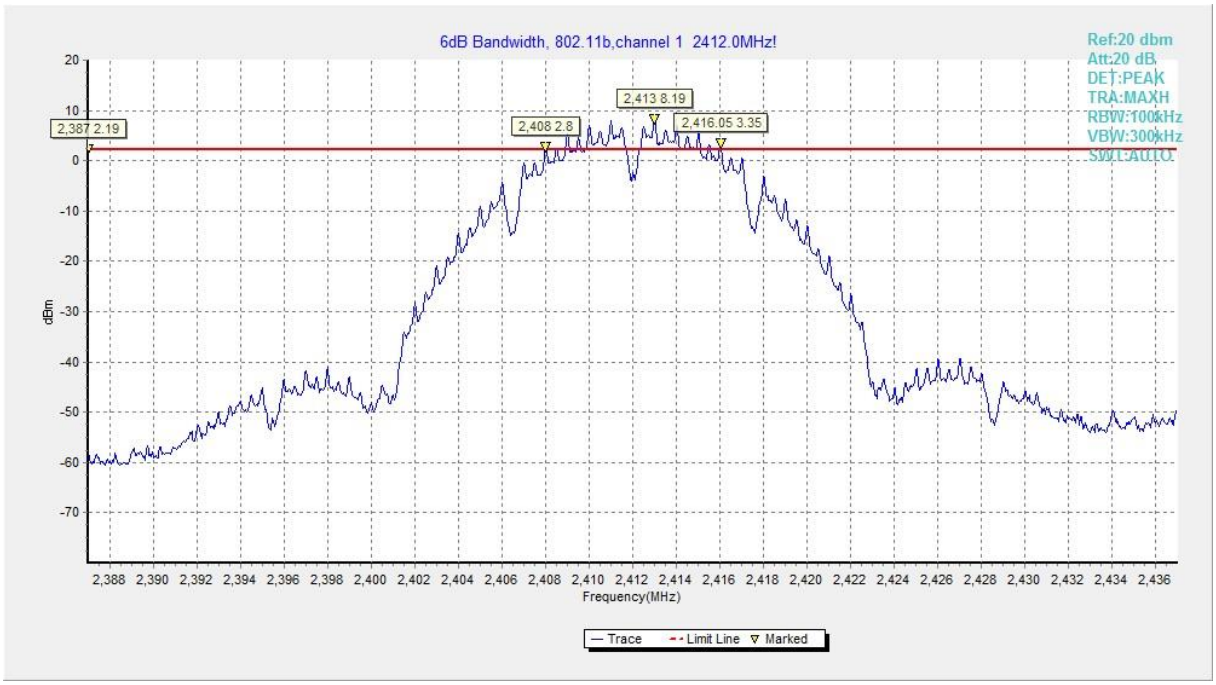

Fig.10 6dB Bandwidth (802.11b, CH 1)

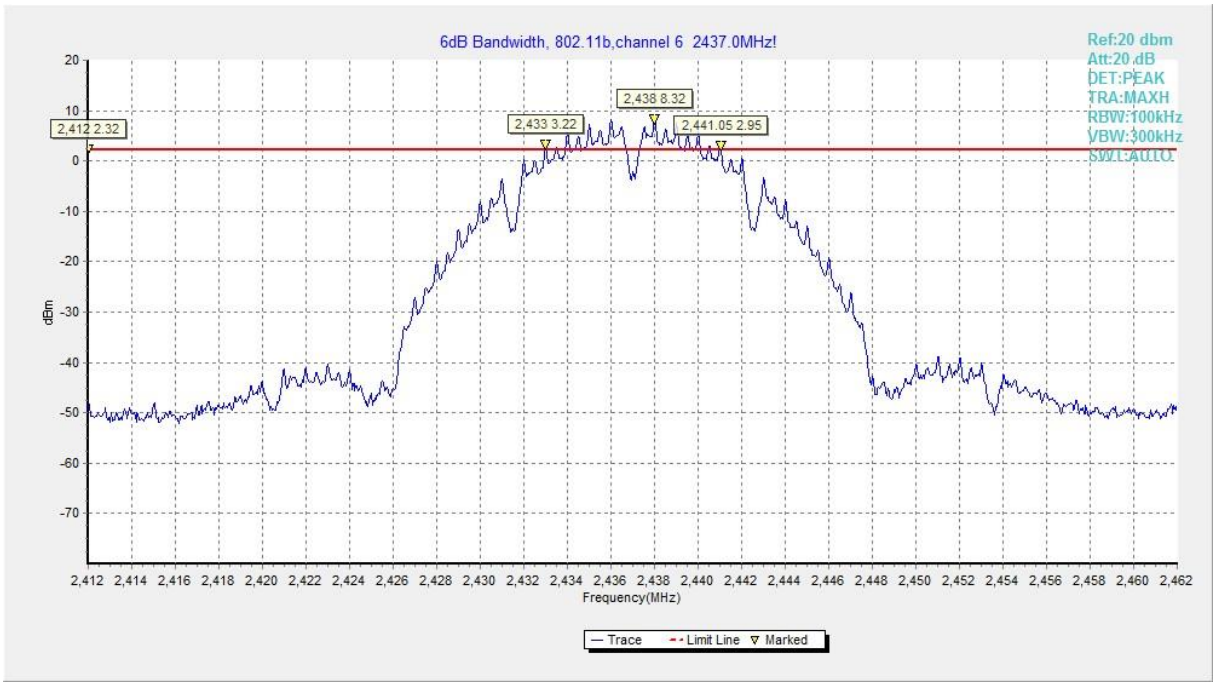

Fig.11 6dB Bandwidth (802.11b, CH 6)

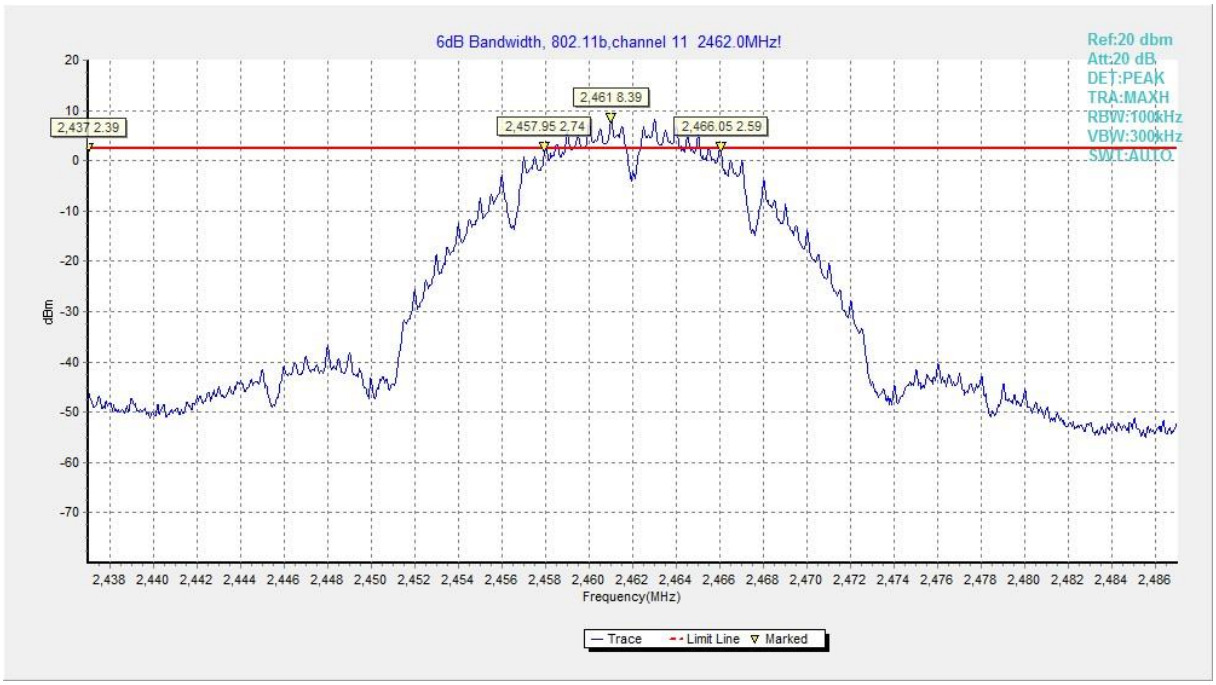

Fig.12 6dB Bandwidth (802.11b, CH 11)

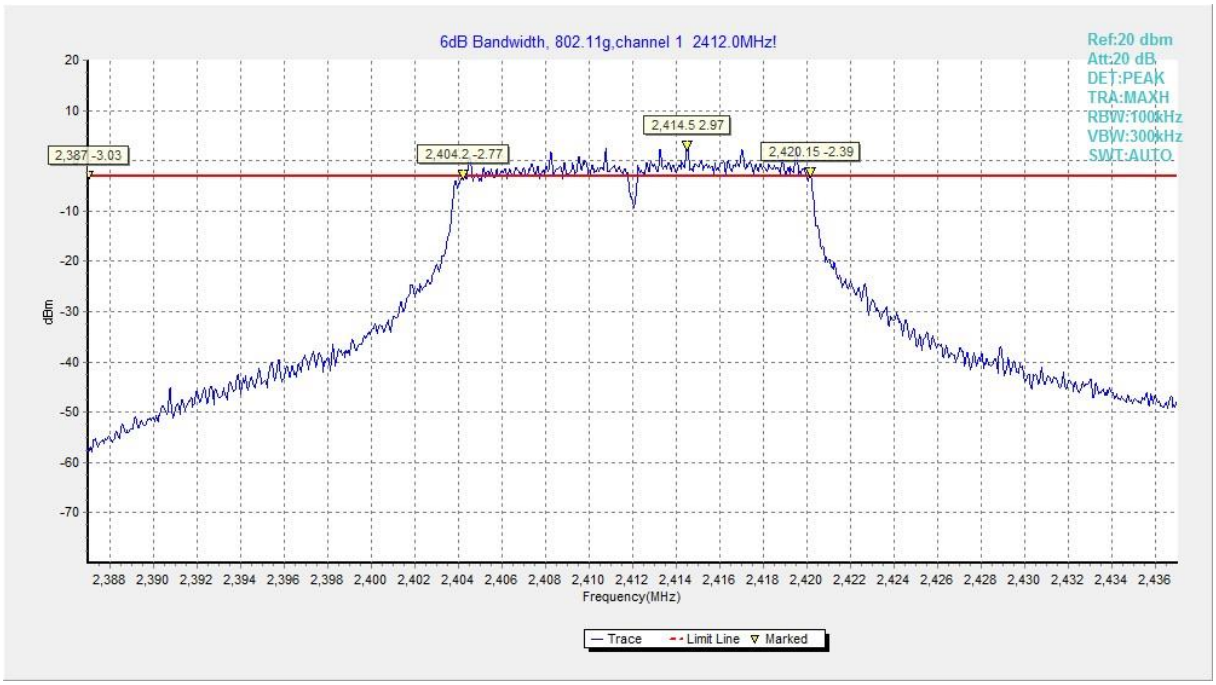

Fig.13 6dB Bandwidth (802.11g, CH 1)

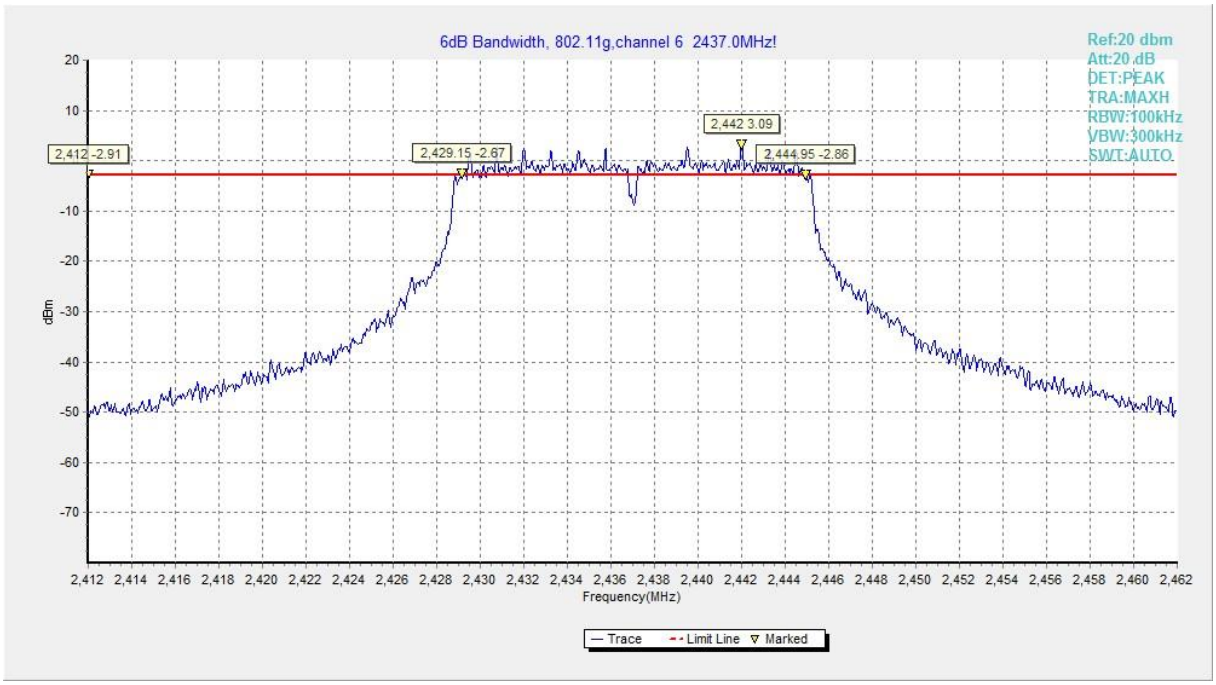

Fig.14 6dB Bandwidth (802.11g, CH 6)

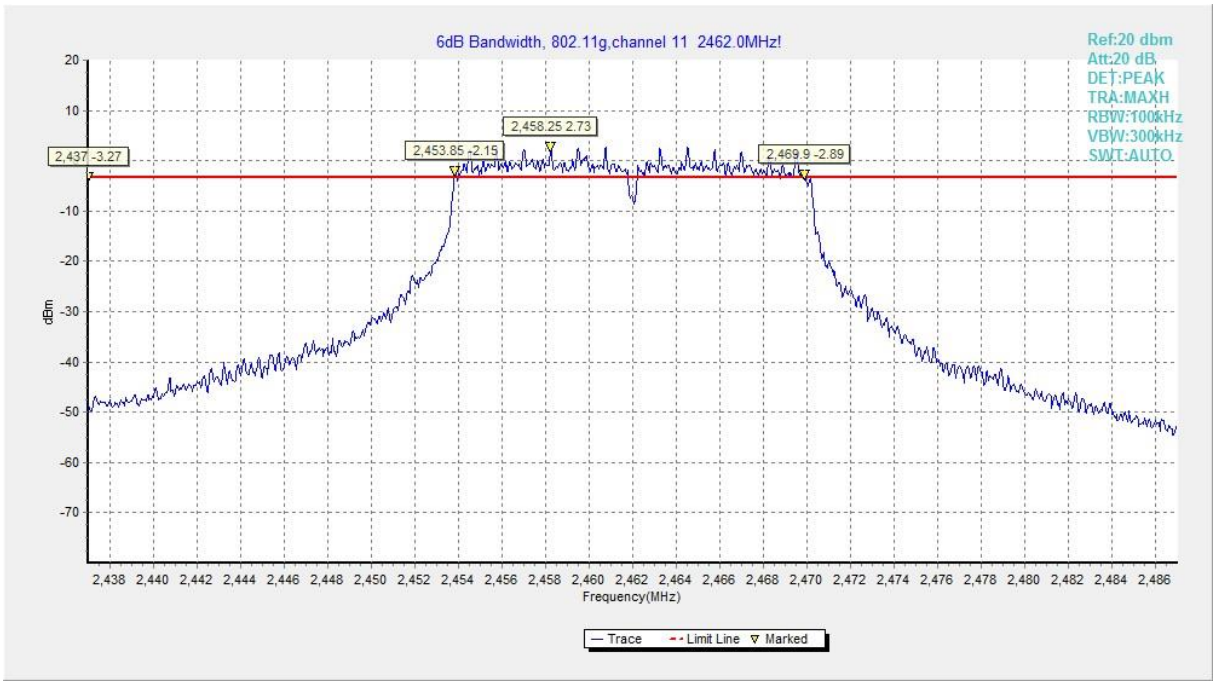

Fig.15 6dB Bandwidth (802.11g, CH 11)

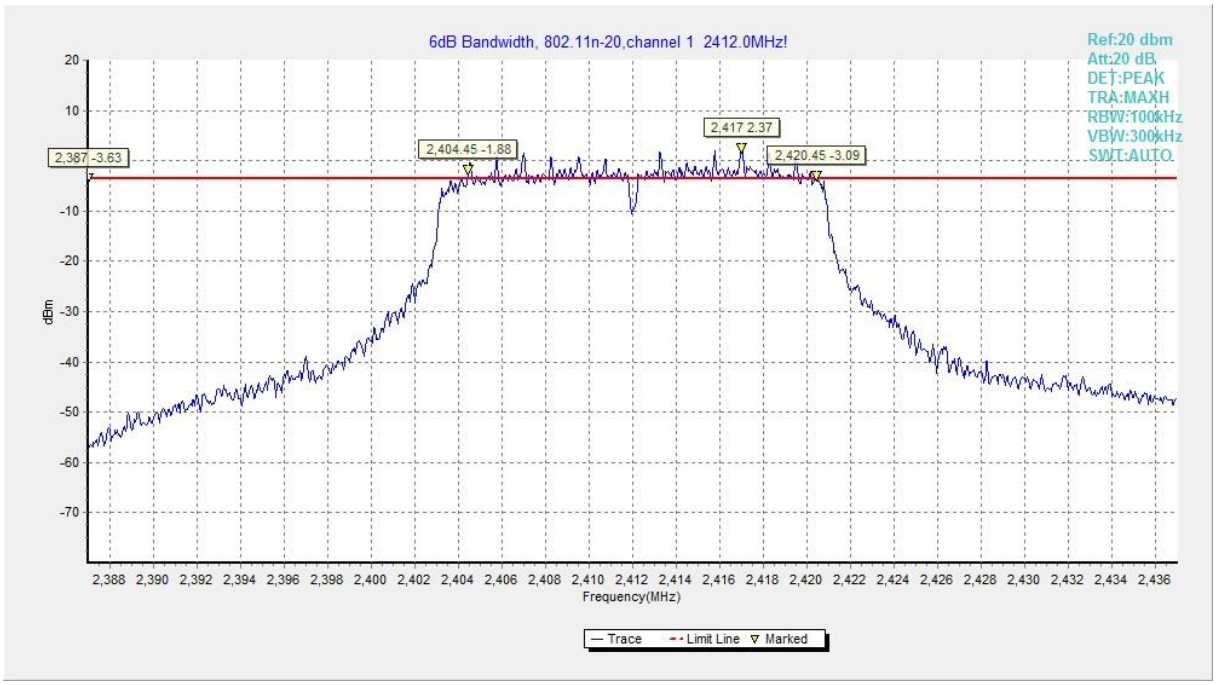

Fig.16 6dB Bandwidth (802.11n HT20, CH 1)

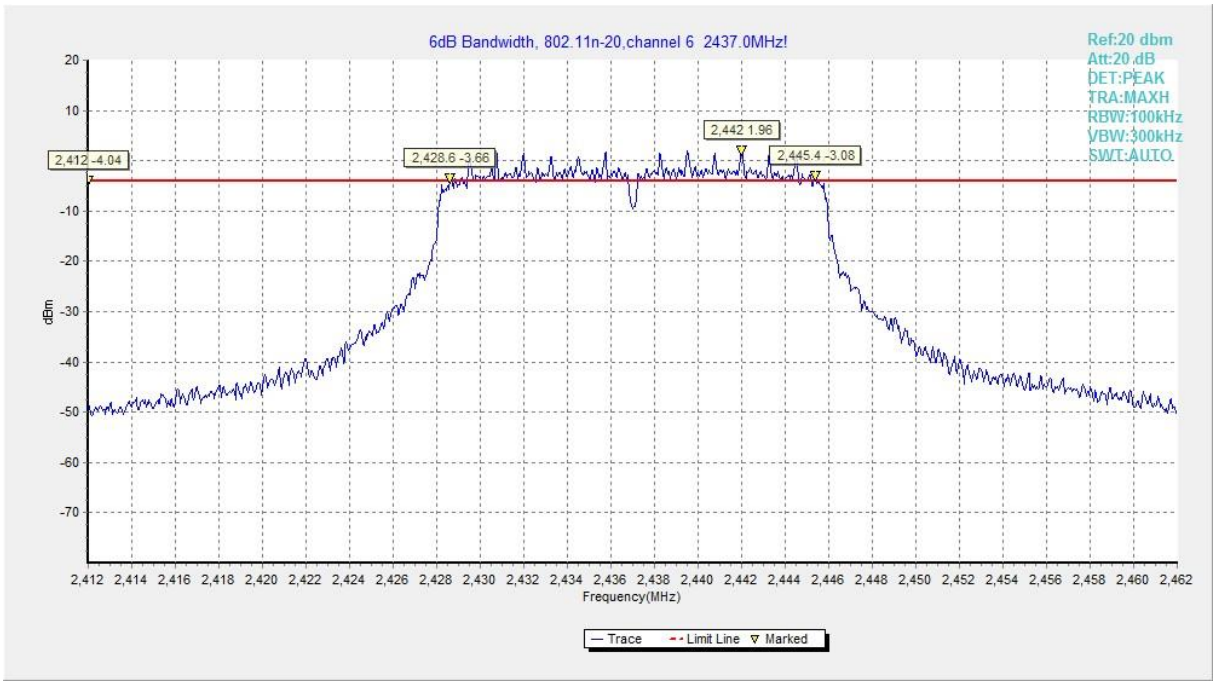

Fig.17 6dB Bandwidth (802.11n HT20, CH 6)

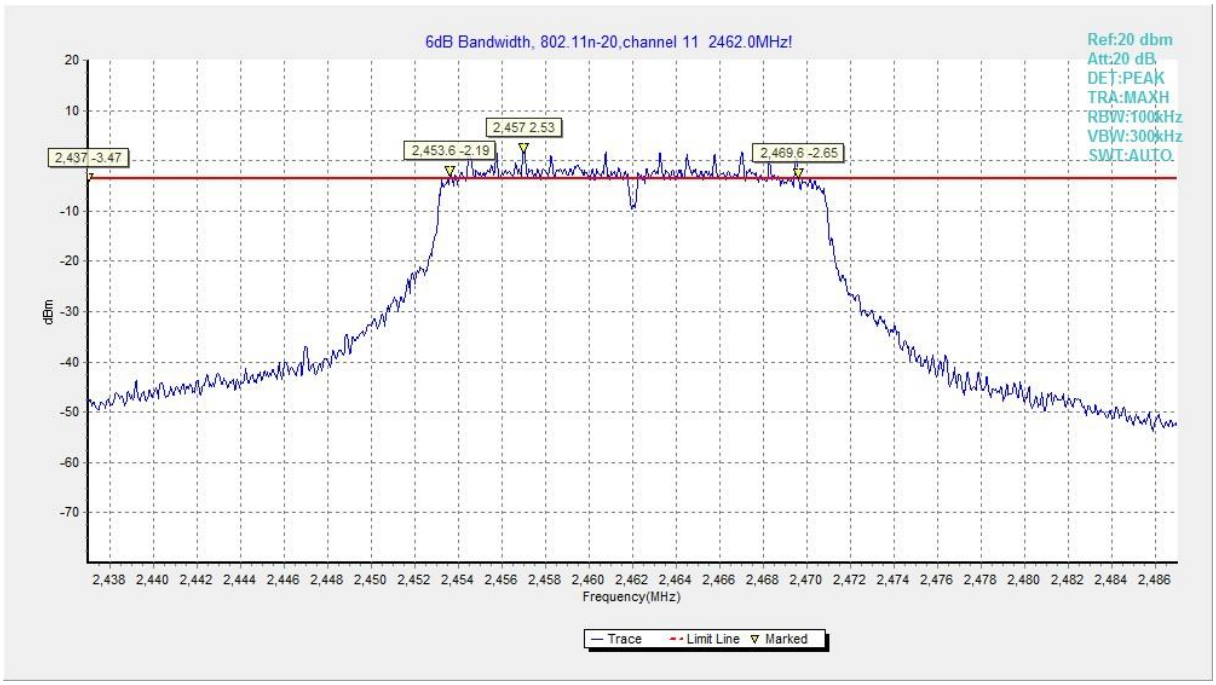

Fig.18 6dB Bandwidth (802.11n HT20, CH 11)

A.4 Band Edges Compliance

Measurement Limit:

Standard	Limit (dB)
FCC 47 CFR Part 15.247 (d) & RSS-247 Section 5.5	> 30

Measurement Result:

Mode	Channel	Frequency (MHz)	Test Results (dBc)		Conclusion
802.11b	CH1	2412	Fig.19	56.18	**P**
	CH11	2462	Fig.20	60.47	**P**
802.11g	CH1	2412	Fig.21	37.00	**P**
	CH11	2462	Fig.22	52.19	**P**
802.11n HT20	CH1	2412	Fig.23	36.65	**P**
	CH11	2462	Fig.24	50.54	**P**

See below for test graphs.

Conclusion: PASS

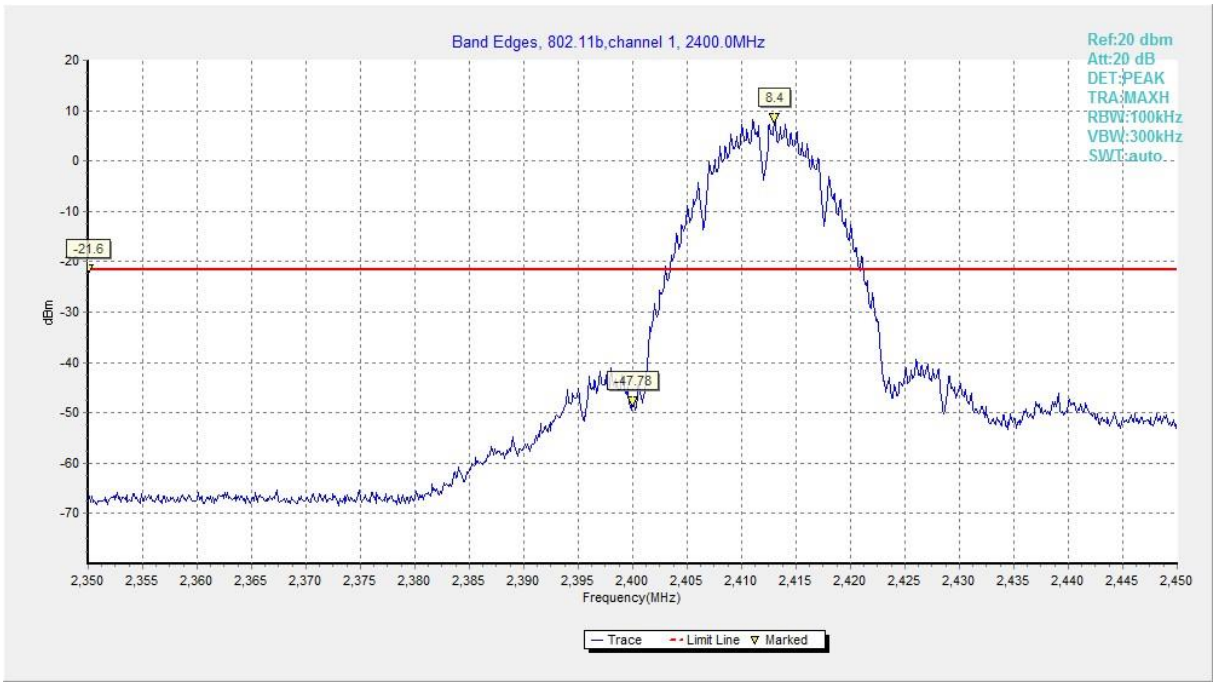

Fig.19 Band Edges (802.11b, CH 1)

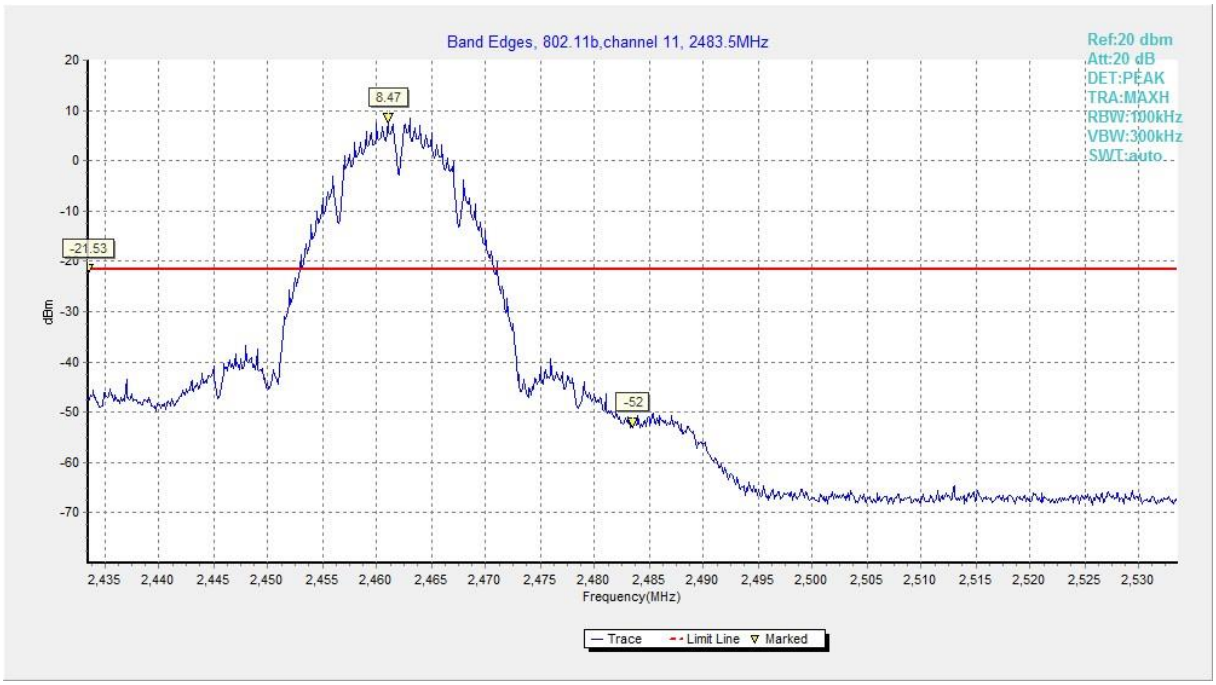

Fig.20 Band Edges (802.11b, CH 11)

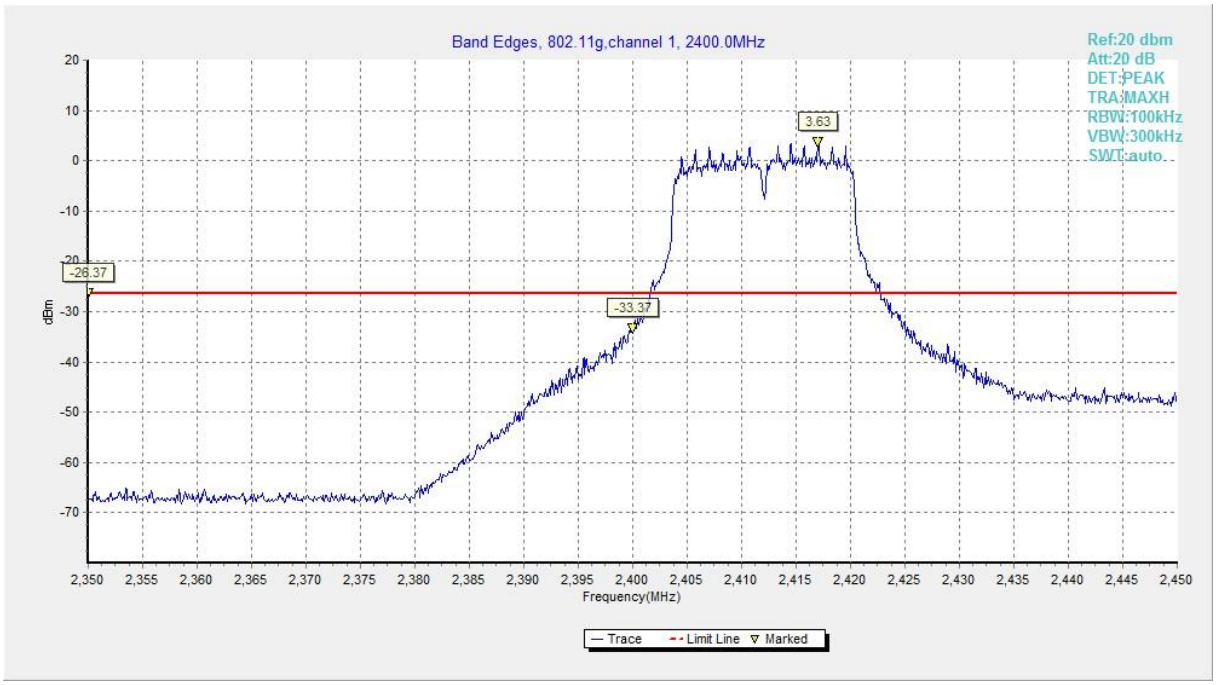

Fig.21 Band Edges (802.11g, CH 1)

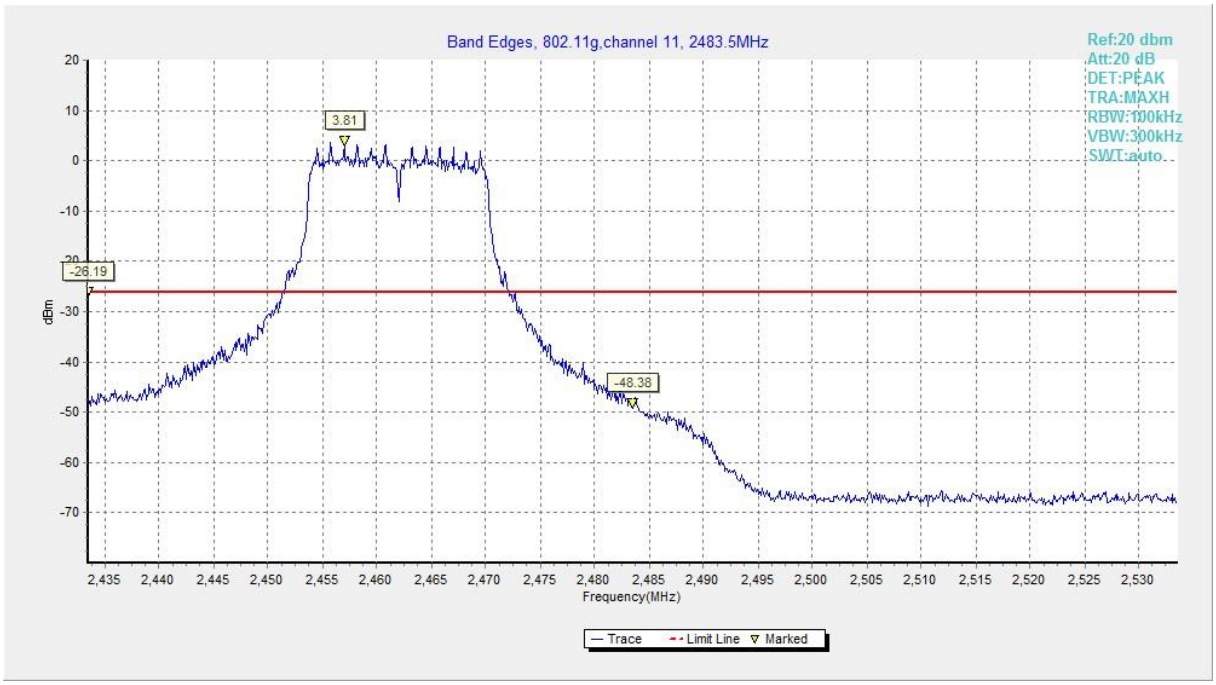

Fig.22 Band Edges (802.11g, CH 11)

Fig.23 Band Edges (802.11n HT20, CH 1)

Fig.24 Band Edges (802.11n HT20, CH 11)

A.5 Conducted Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (d) & RSS-247 Section 5.5/RSS-Gen Section 6.13	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.25	**P**
	CH 6	2437	30MHz-26GHz	Fig.26	**P**
	CH 11	2462	30MHz-26GHz	Fig.27	**P**
802.11g	CH 1	2412	30MHz-26GHz	Fig.28	**P**
	CH 6	2437	30MHz-26GHz	Fig.29	**P**
	CH 11	2462	30MHz-26GHz	Fig.30	**P**
802.11n-HT20	CH 1	2412	30MHz-26GHz	Fig.31	**P**
	CH 6	2437	30MHz-26GHz	Fig.32	**P**
	CH 11	2462	30MHz-26GHz	Fig.33	**P**

See below for test graphs.

Conclusion: PASS

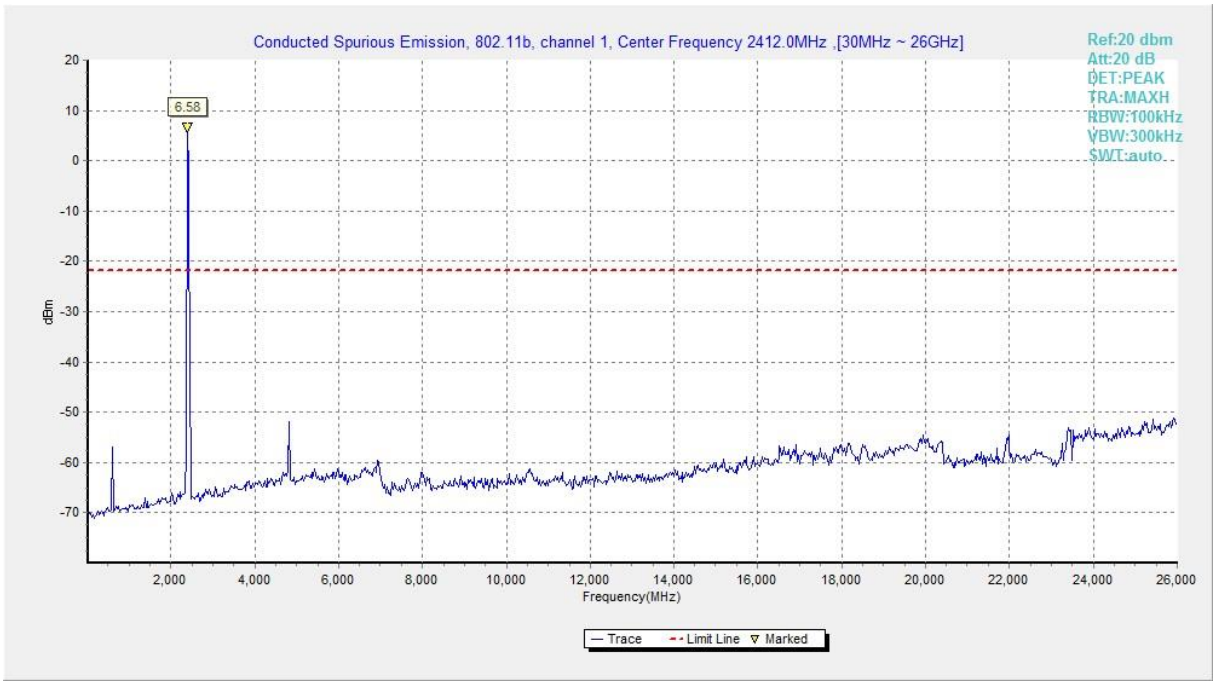

Fig.25 Conducted Spurious Emission (802.11b, CH1)

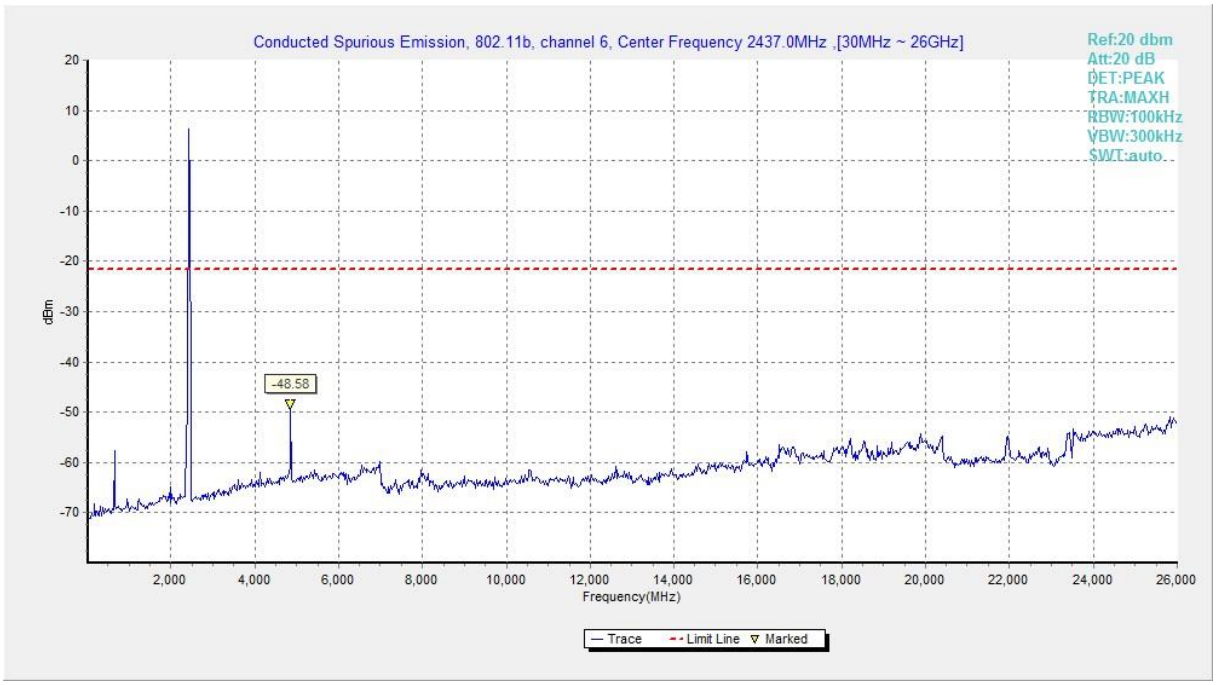

Fig.26 Conducted Spurious Emission (802.11b, CH6)

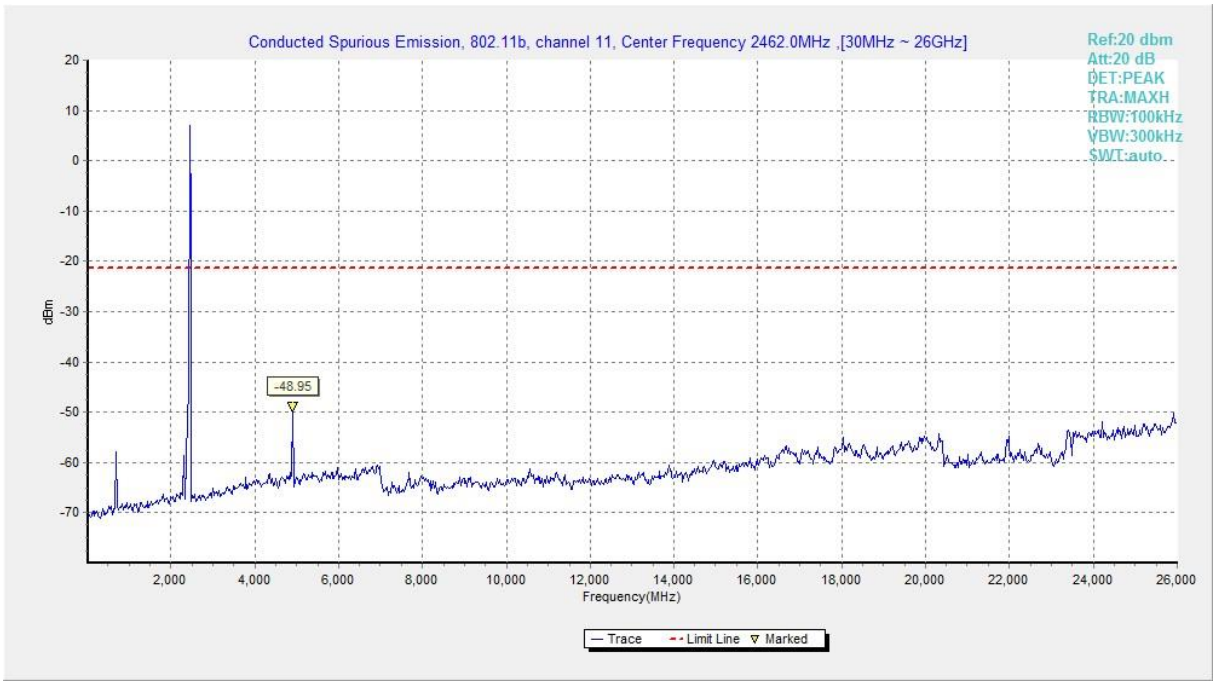

Fig.27 Conducted Spurious Emission (802.11b, CH11)

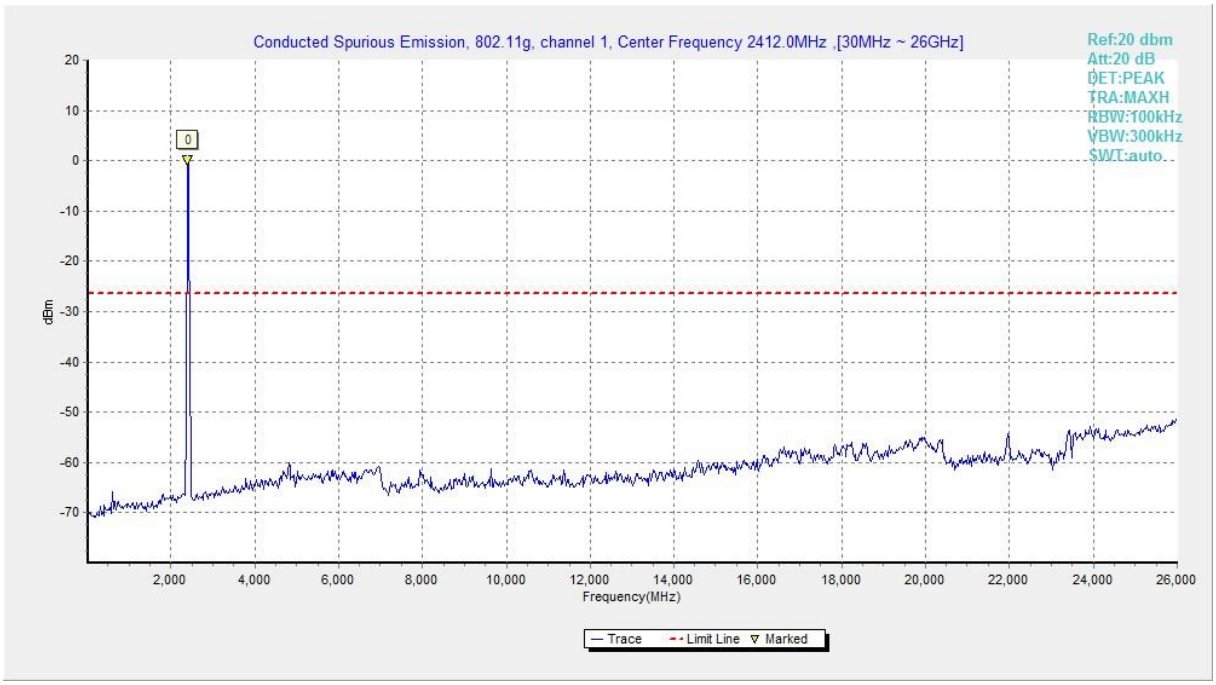

Fig.28 Conducted Spurious Emission (802.11g, CH1)

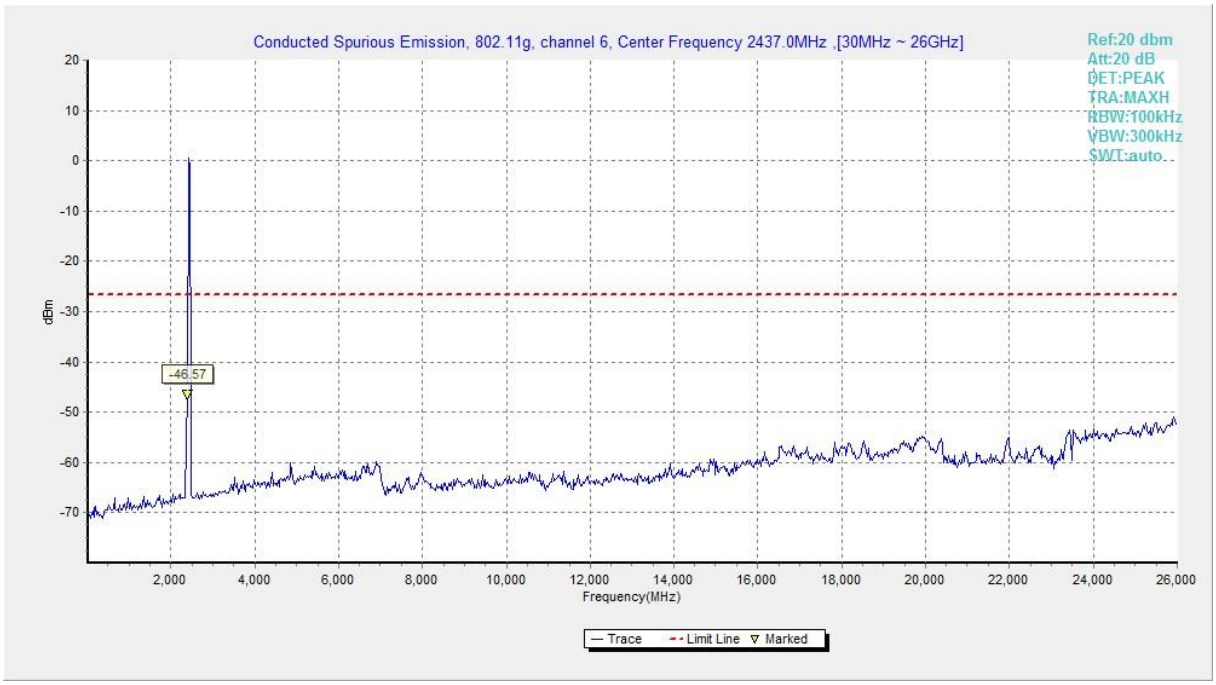

Fig.29 Conducted Spurious Emission (802.11g, CH6)

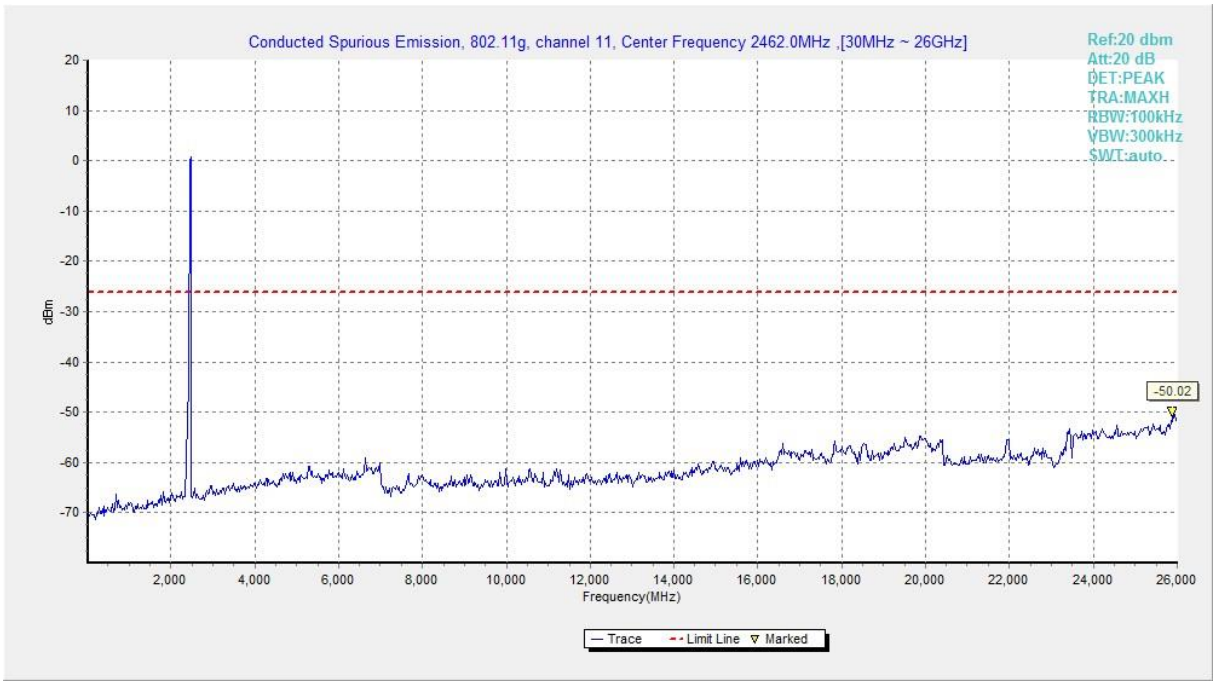

Fig.30 Conducted Spurious Emission (802.11g, CH11)

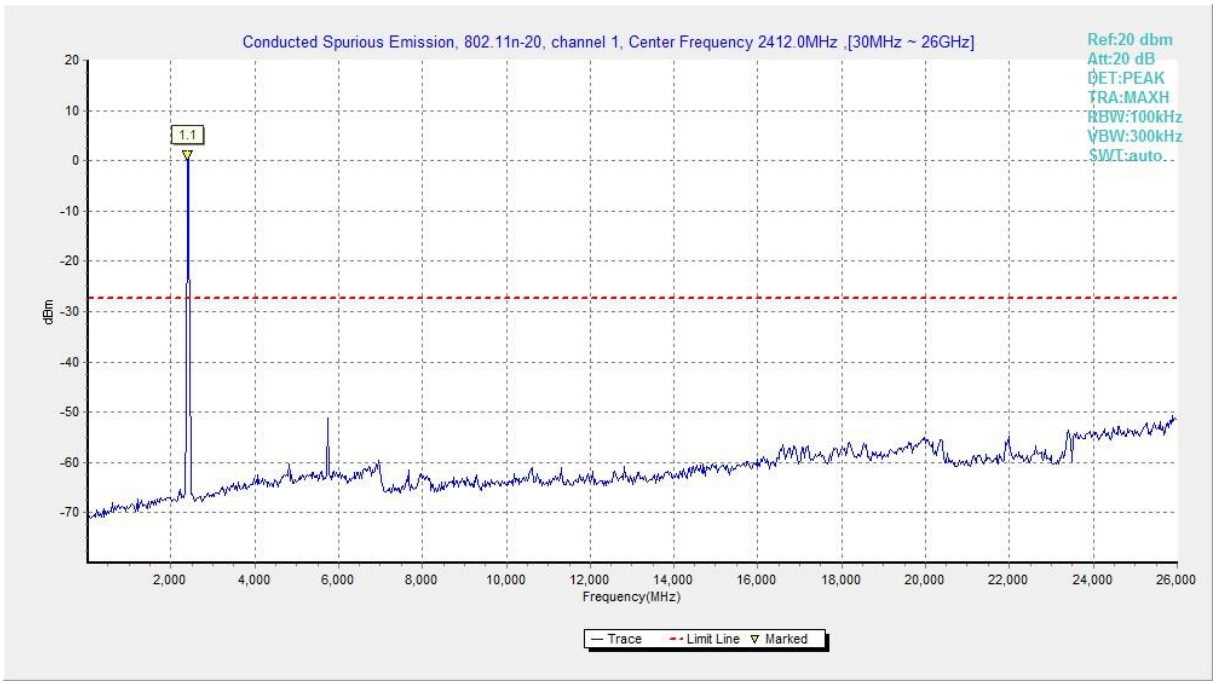

Fig.31 Conducted Spurious Emission (802.11n HT20, CH1)

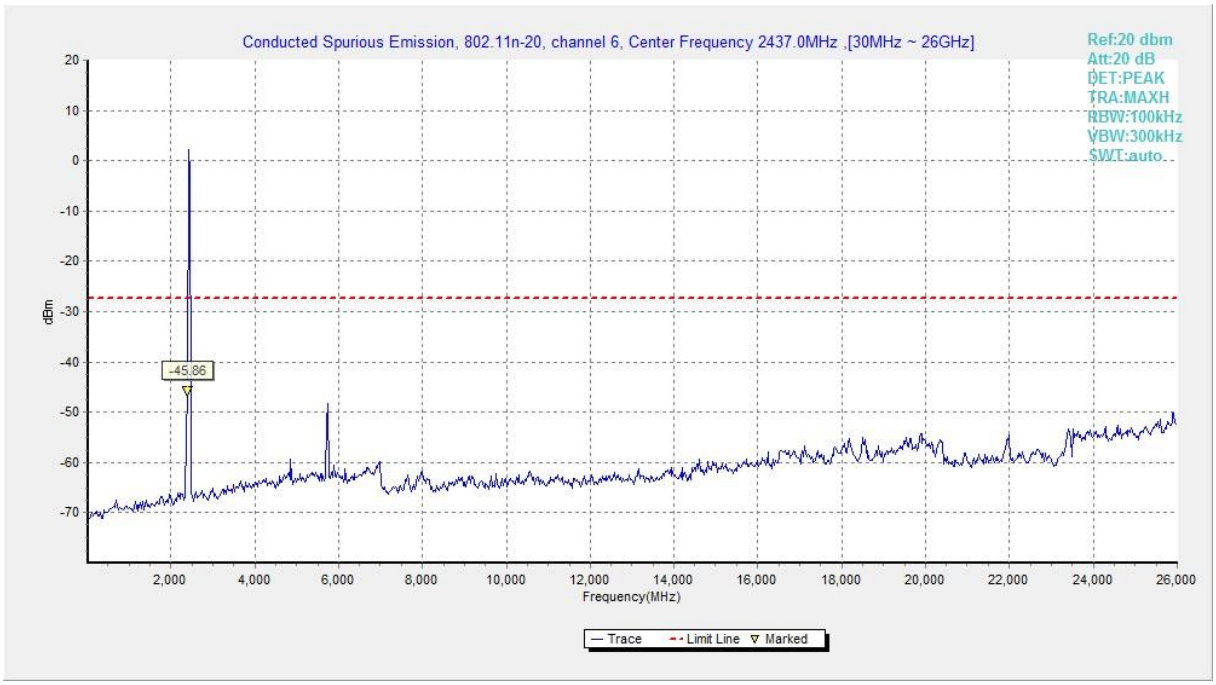

Fig.32 Conducted Spurious Emission (802.11n HT20, CH6)

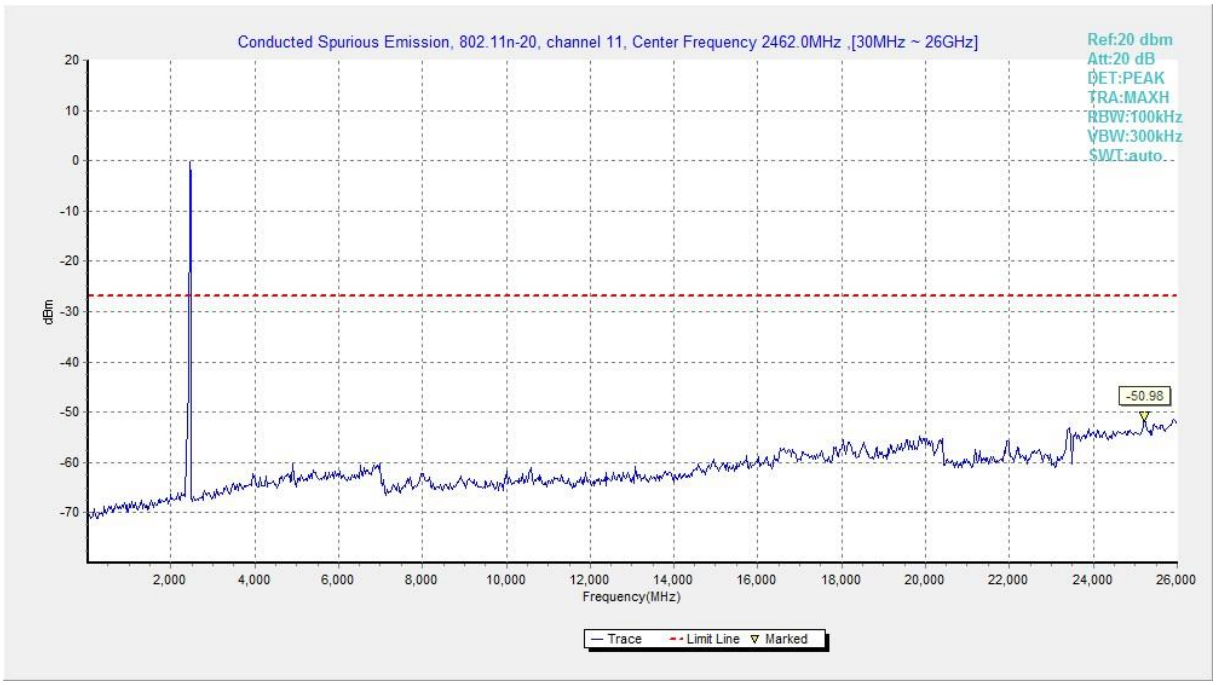

Fig.33 Conducted Spurious Emission (802.11n HT20, CH11)

A.6 Radiated Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209 & RSS-247 section 5.5/RSS-Gen section 6.13	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:

SISO:

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	CH 1	1 GHz ~18 GHz	Fig.34	P
	CH 6	1 GHz ~18 GHz	Fig.35	P
	CH 11	1 GHz ~18 GHz	Fig.36	P
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.37	P
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.38	P
802.11g	CH 1	1 GHz ~18 GHz	Fig.39	P
	CH 6	1 GHz ~18 GHz	Fig.40	P
	CH 11	1 GHz ~18 GHz	Fig.41	P
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.42	P
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.43	P
802.11n HT20	CH 1	1 GHz ~18 GHz	Fig.44	P
	CH 6	1 GHz ~18 GHz	Fig.45	P
	CH 11	1 GHz ~18 GHz	Fig.46	P
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.47	P
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.48	P
/	All Channels	9 kHz ~30 MHz	Fig.49	P
		30 MHz ~1 GHz	Fig.50	P
		18 GHz ~26.5 GHz	Fig.51	P

MIMO:

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n HT20	CH 1	1 GHz ~18 GHz	Fig.52	P
	CH 6	1 GHz ~18 GHz	Fig.53	P
	CH 11	1 GHz ~18 GHz	Fig.54	P
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.55	P
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.56	P
/	All Channels	9 kHz ~30 MHz	Fig.57	P
		30 MHz ~1 GHz	Fig.58	P
		18 GHz ~26.5 GHz	Fig.59	P

Worst-Case Result:

SISO:

802.11b CH6 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
6197.000000	52.41	74.00	21.59	V	17.8
13506.000000	53.47	74.00	20.53	H	17.0
14671.062500	54.30	74.00	19.70	V	18.1
16060.125000	53.43	74.00	20.57	V	18.1
16934.687500	54.77	74.00	19.23	H	19.7
17906.375000	54.64	74.00	19.36	H	19.8

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
6205.500000	41.11	54.00	12.89	V	17.7
13509.500000	41.72	54.00	12.28	V	17.0
14626.000000	43.17	54.00	10.83	H	18.3
16154.187500	41.71	54.00	12.29	V	18.5
16987.187500	43.50	54.00	10.50	V	19.7
17723.062500	43.26	54.00	10.74	V	20.2

802.11g CH6 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
6191.000000	52.51	74.00	21.49	V	17.8
13520.000000	53.98	74.00	20.02	V	17.0
14633.437500	55.00	74.00	19.00	V	18.2
16089.437500	53.67	74.00	20.33	H	18.2
17022.187500	54.70	74.00	19.30	V	19.7
17759.375000	54.95	74.00	19.05	H	20.3

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
6197.500000	41.38	54.00	12.62	V	17.8
13509.062500	41.85	54.00	12.15	V	17.0
14609.812500	43.24	54.00	10.76	H	18.2
16121.375000	41.76	54.00	12.24	V	18.4
16986.750000	43.40	54.00	10.61	H	19.7
17720.000000	43.30	54.00	10.70	H	20.2

802.11n HT20 CH6 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
6168.500000	52.37	74.00	21.63	H	17.7
13661.312500	53.23	74.00	20.77	H	16.5
14615.937500	54.29	74.00	19.71	H	18.2
15702.687500	53.60	74.00	20.40	H	17.1
16958.312500	54.88	74.00	19.12	H	19.7
17421.187500	55.30	74.00	18.70	V	20.0

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
6196.500000	41.20	54.00	12.80	V	17.8
13581.687500	41.60	54.00	12.40	V	16.8
14596.687500	43.36	54.00	10.64	H	18.1
15609.500000	41.71	54.00	12.29	H	17.2
17003.812500	43.49	54.00	10.51	V	19.7
17696.375000	43.24	54.00	10.76	V	20.2

MIMO:

802.11n HT20 CH6 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
6193.000000	53.24	74.00	20.76	H	17.8
12560.262500	52.46	74.00	21.54	V	15.3
13589.562500	53.97	74.00	20.03	V	16.7
14568.250000	54.54	74.00	19.46	V	17.9
15645.375000	53.51	74.00	20.49	V	17.1
17048.437500	55.54	74.00	18.46	V	19.8

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
6158.000000	41.47	54.00	12.53	H	17.5
12480.712500	40.52	54.00	13.48	H	15.6
13519.125000	41.78	54.00	12.22	H	17.0
14577.437500	43.35	54.00	10.65	H	18.0
15598.562500	41.89	54.00	12.11	V	17.2
16986.312500	43.92	54.00	10.08	H	19.7

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

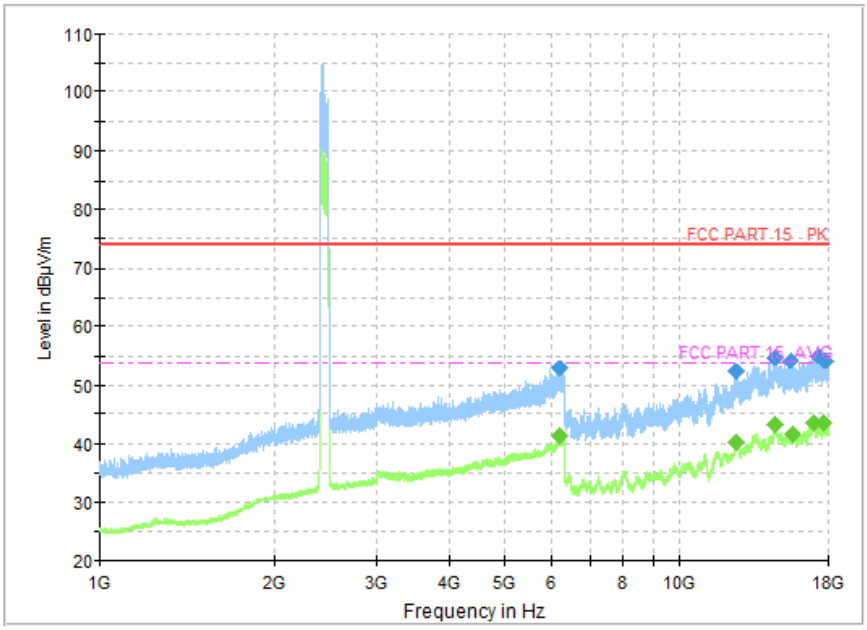

Fig.34 Radiated Spurious Emission (802.11b, CH1, 1 GHz-18GHz)

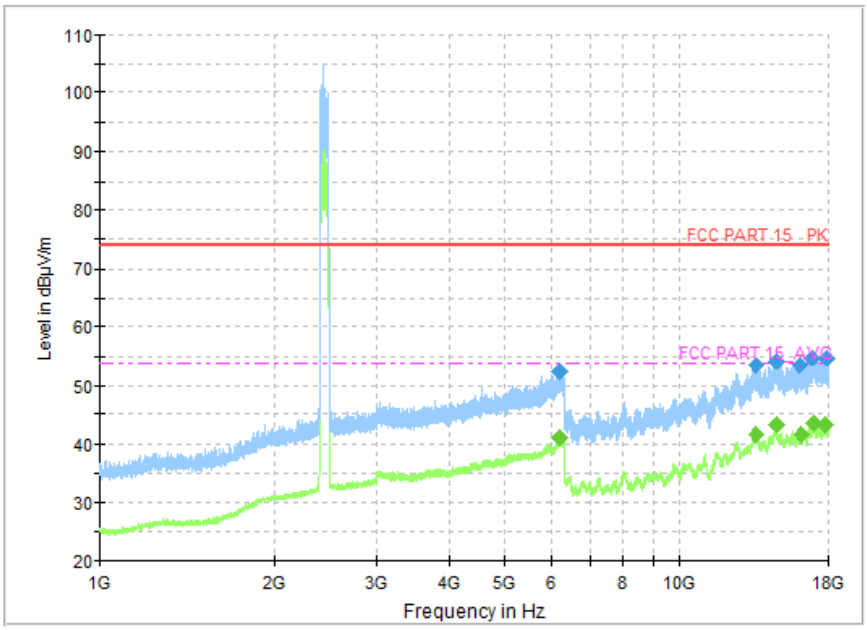

Fig.35 Radiated Spurious Emission (802.11b, CH6, 1 GHz-18GHz)

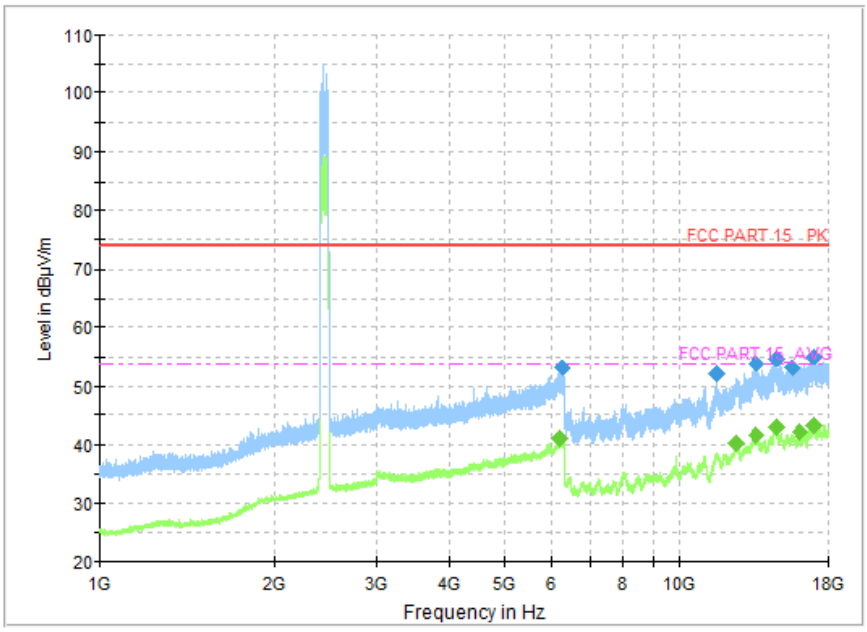

Fig.36 Radiated Spurious Emission (802.11b, CH11, 1 GHz-18GHz)

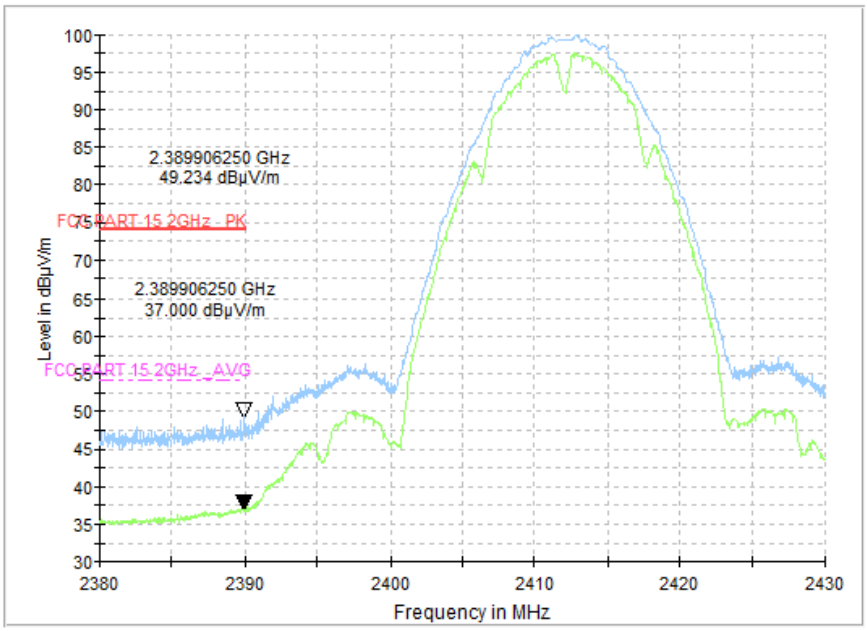

Fig.37 Radiated Restricted Band (802.11b, CH1, 2.38GHz~2.45GHz)

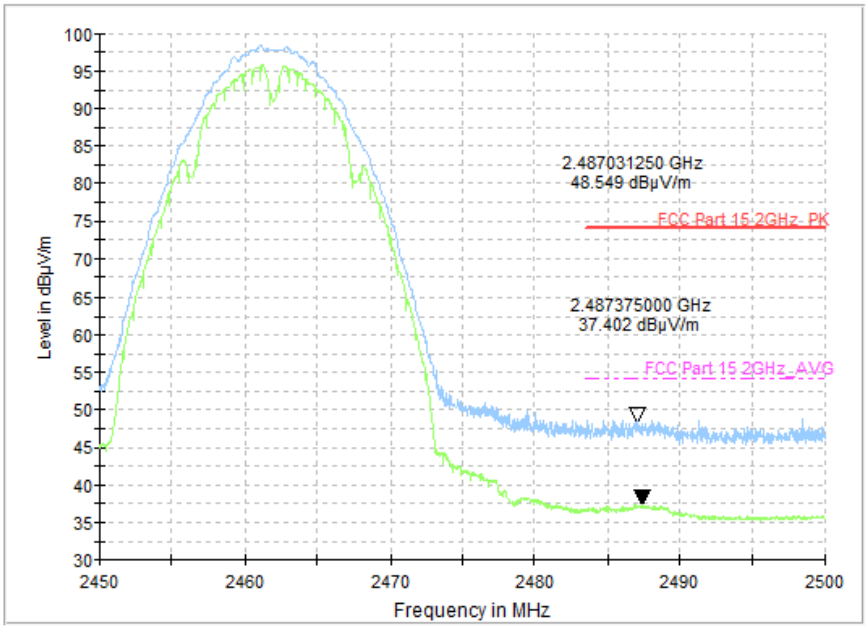

Fig.38 Radiated Restricted Band (802.11b, CH11, 2.45GHz~2.5GHz)

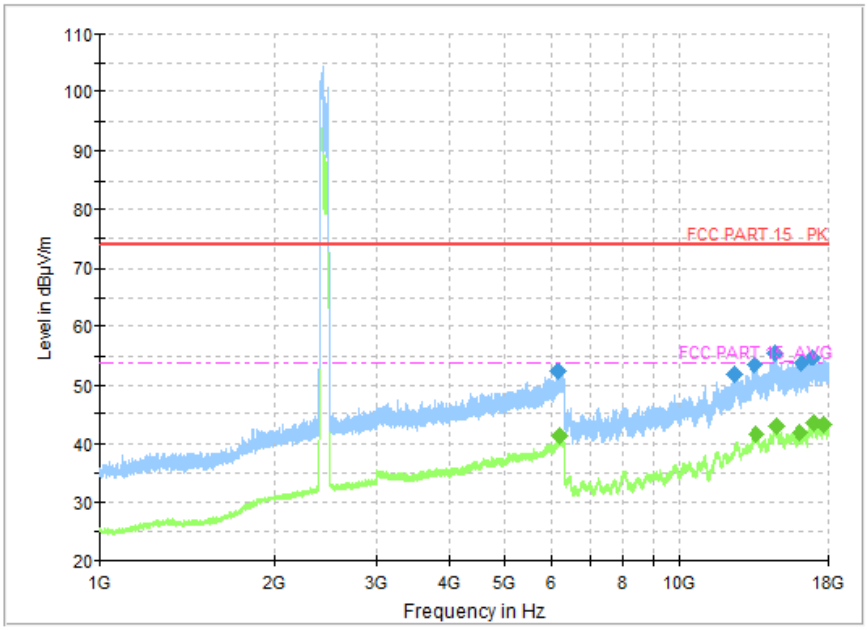

Fig.39 Radiated Spurious Emission (802.11g, CH1, 1 GHz-18 GHz)

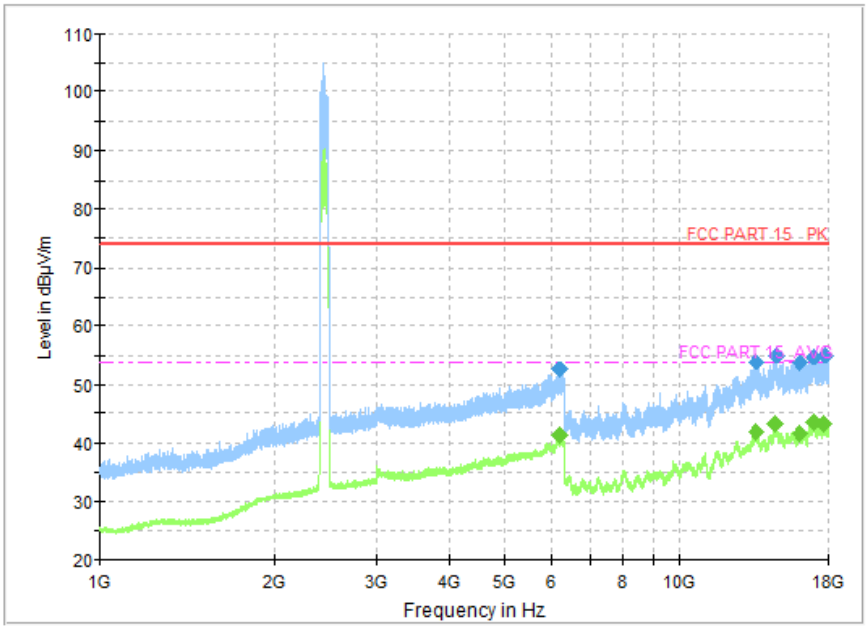

Fig.40 Radiated Spurious Emission (802.11g, CH6, 1 GHz-18 GHz)

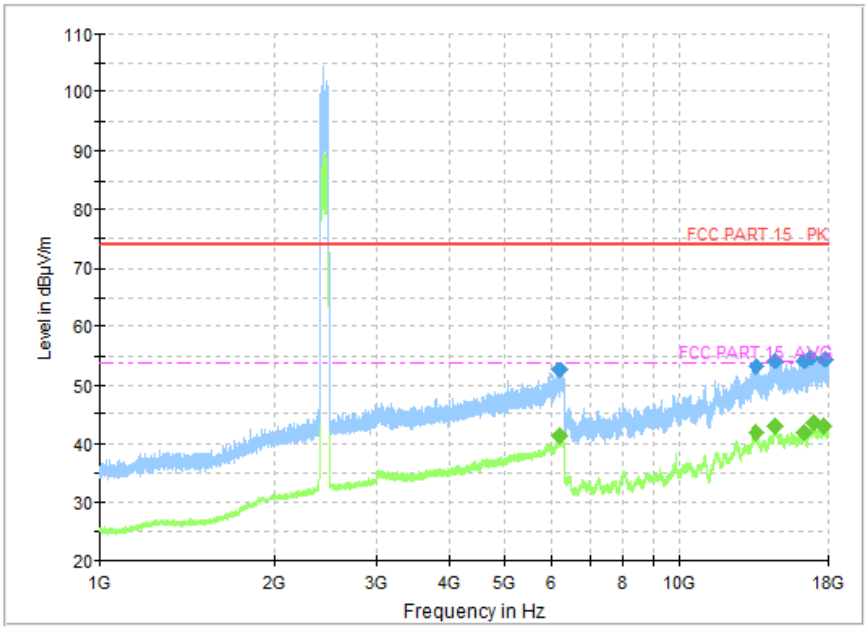

Fig.41 Radiated Spurious Emission (802.11g, CH11, 1 GHz-18 GHz)

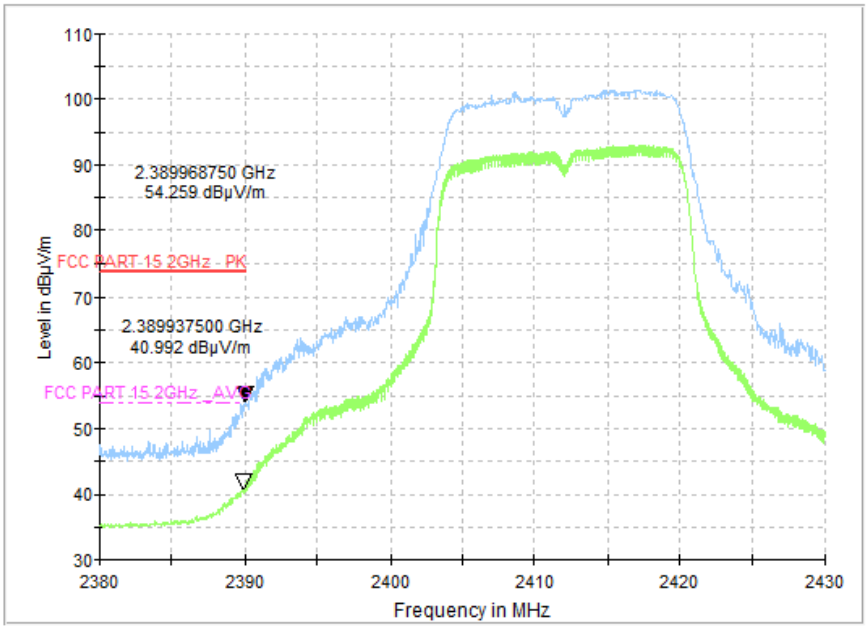

Fig.42 Radiated Restricted Band (802.11g, CH1, 2.38GHz~2.45GHz)

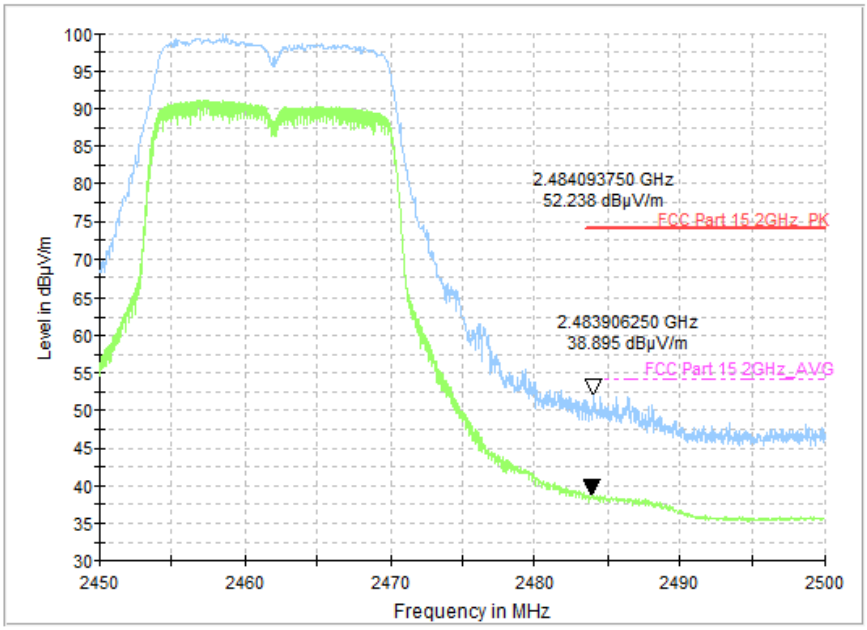

Fig.43 Radiated Restricted Band (802.11g, CH11, 2.45GHz~2.5GHz)

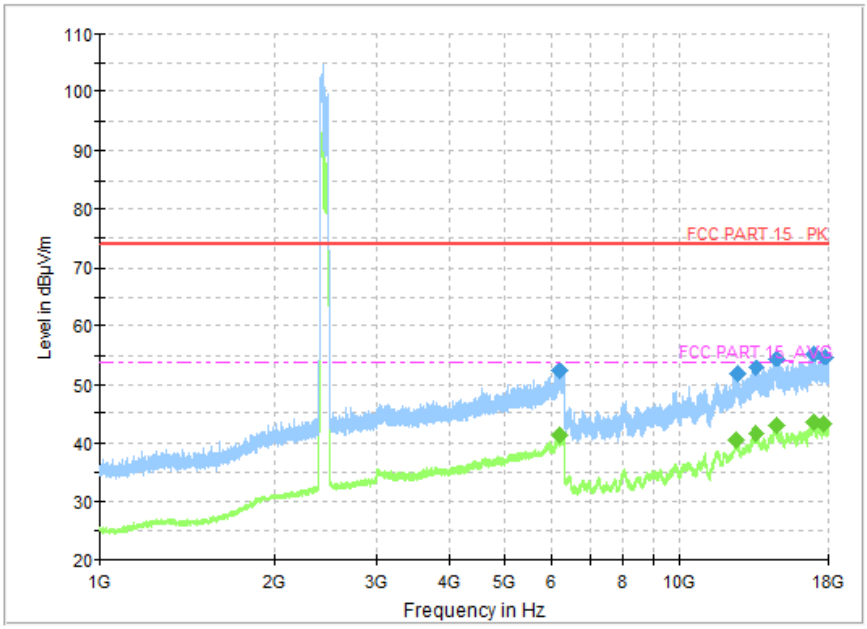

Fig.44 Radiated Spurious Emission (802.11n HT20, CH1, 1 GHz-18 GHz)

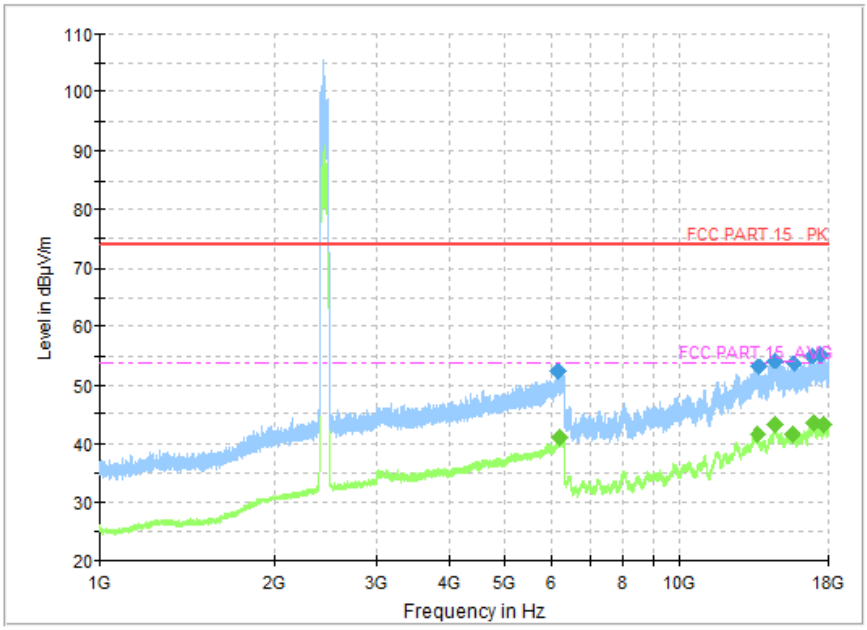

Fig.45 Radiated Spurious Emission (802.11n HT20, CH6, 1 GHz-18 GHz)

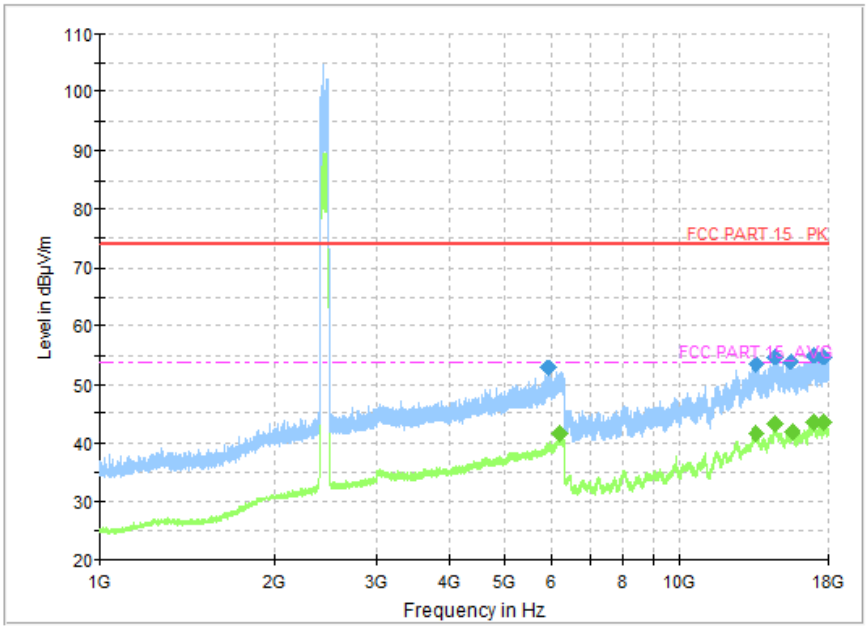

Fig.46 Radiated Spurious Emission (802.11n HT20, CH11, 1 GHz-18 GHz)

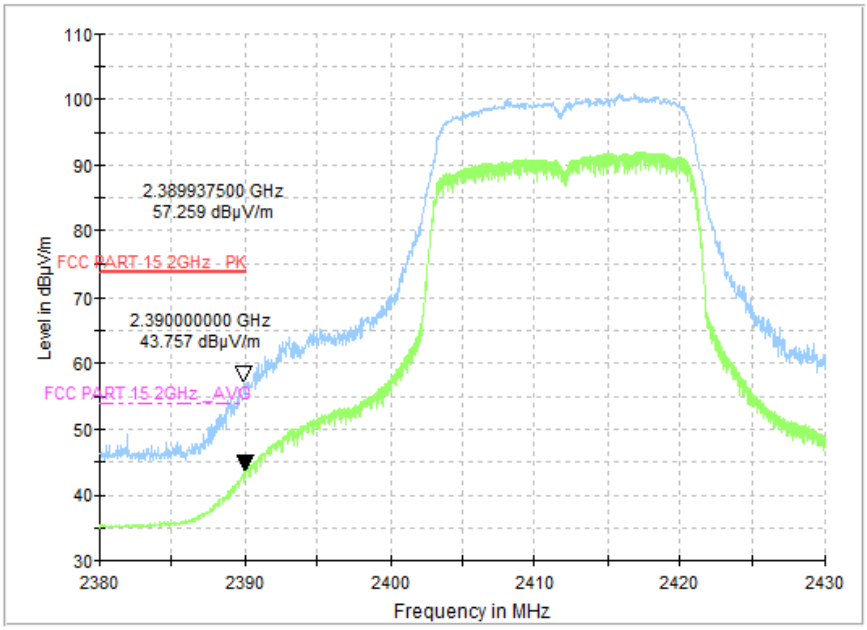

Fig.47 Radiated Restricted Band (802.11n HT20, CH1, 2.38GHz~2.45GHz)

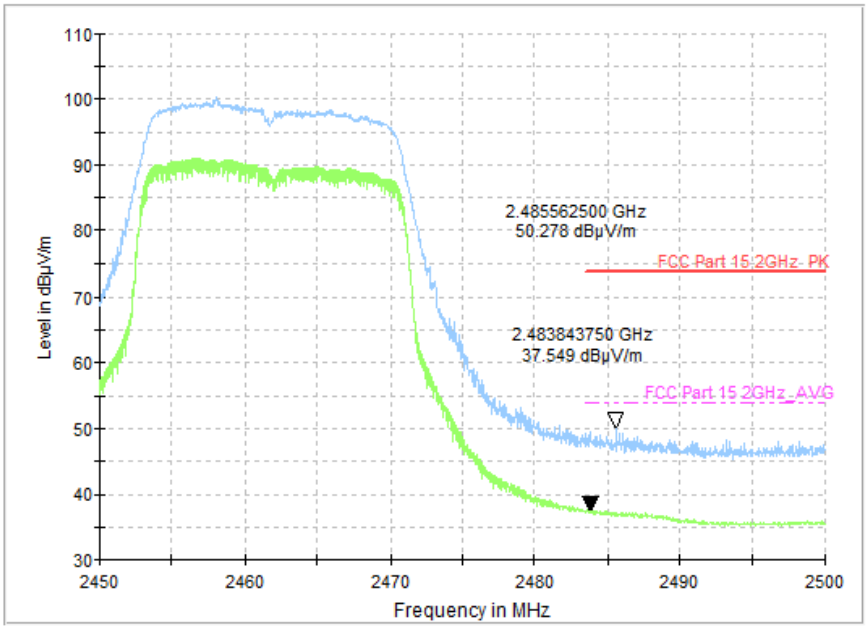

Fig.48 Radiated Restricted Band (802.11n HT20, CH11, 2.45GHz~2.5GHz)

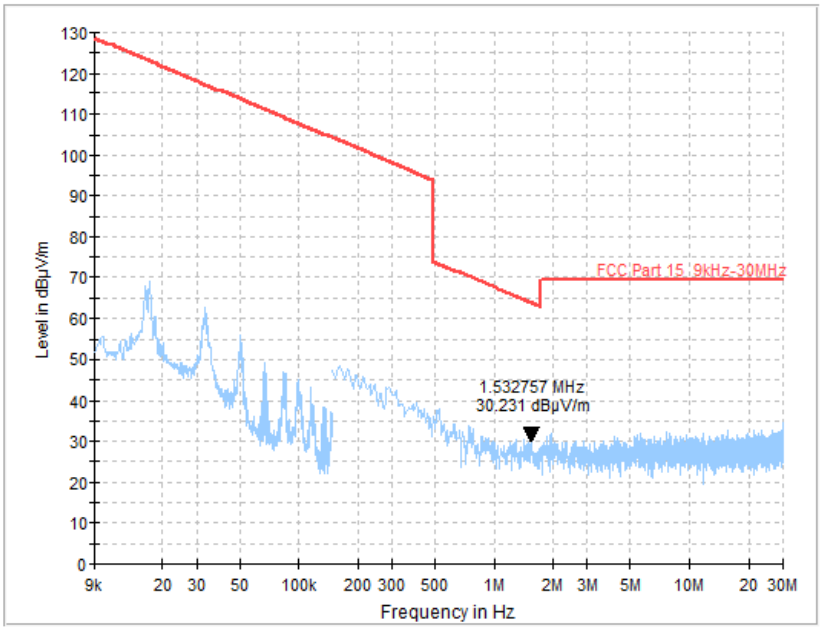

Fig.49 Radiated Spurious Emission (All Channels, 9 kHz-30 MHz)

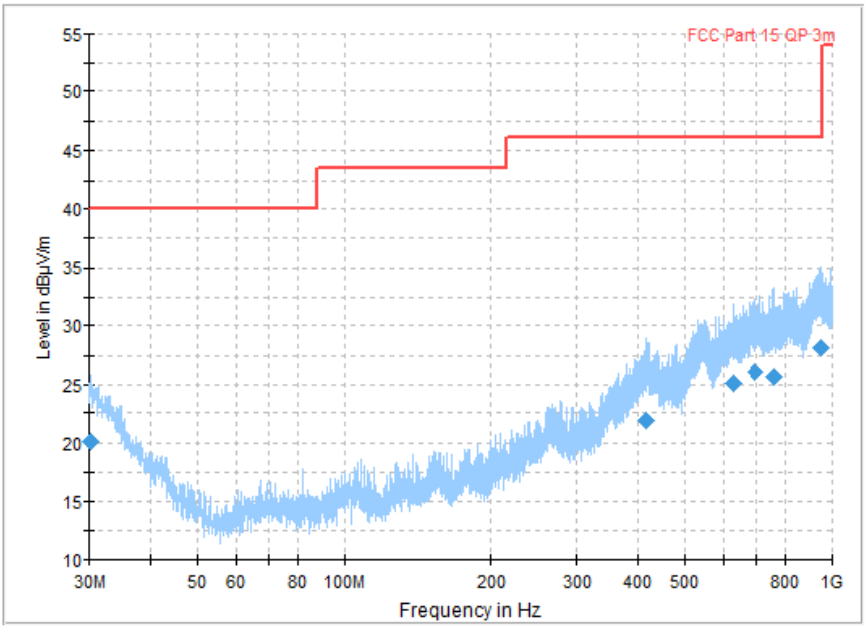

Fig.50 Radiated Spurious Emission (All Channels, 30MHz-1 GHz)

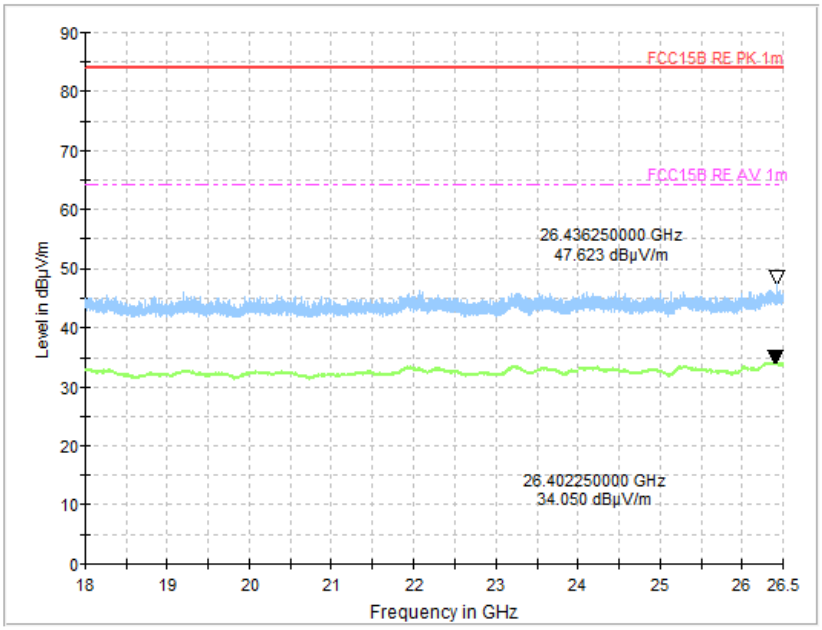

Fig.51 Radiated Spurious Emission (All Channels, 18 GHz-26.5 GHz)

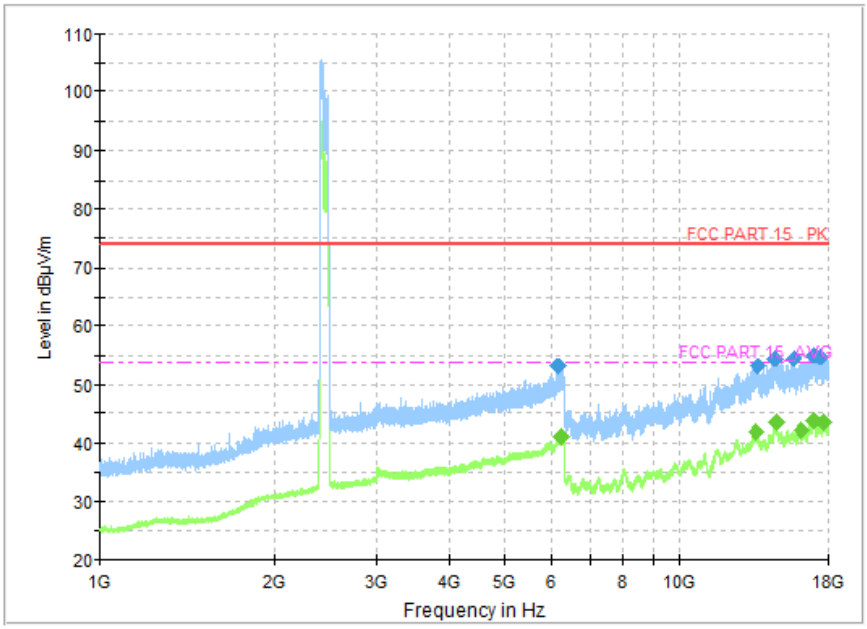

Fig.52 Radiated Spurious Emission (802.11n HT20, CH1, 1 GHz-18 GHz, MIMO)

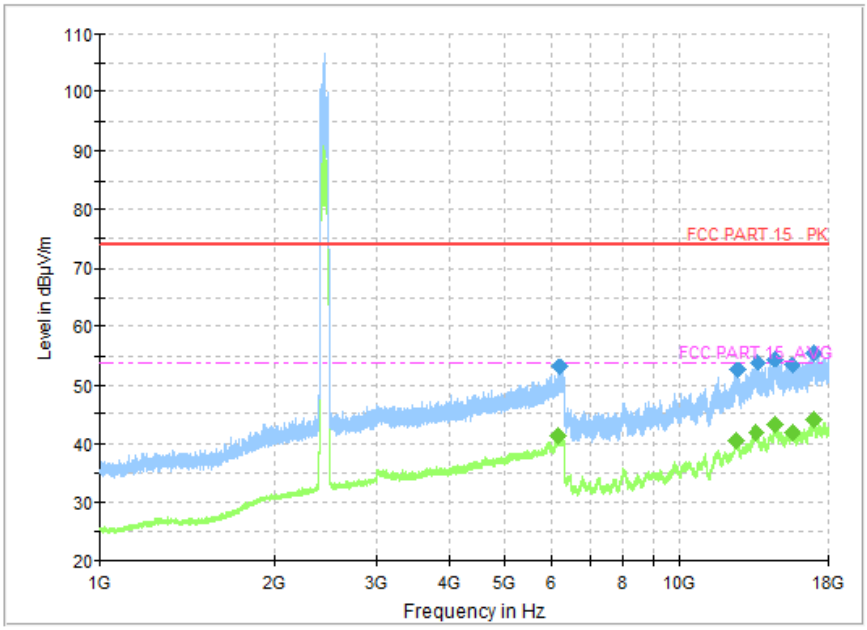

Fig.53 Radiated Spurious Emission (802.11n HT20, CH6, 1 GHz-18 GHz, MIMO)

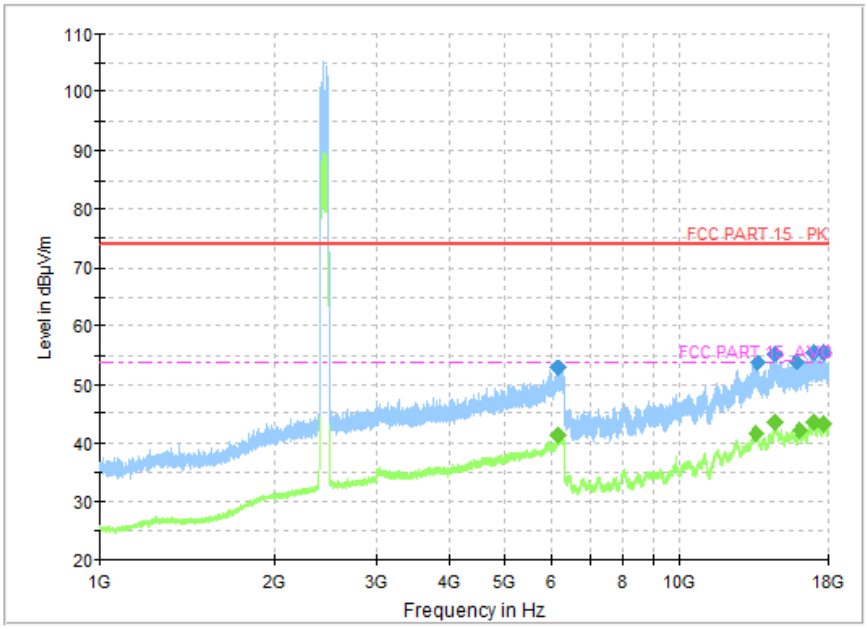

Fig.54 Radiated Spurious Emission (802.11n HT20, CH11, 1 GHz-18 GHz, MIMO)

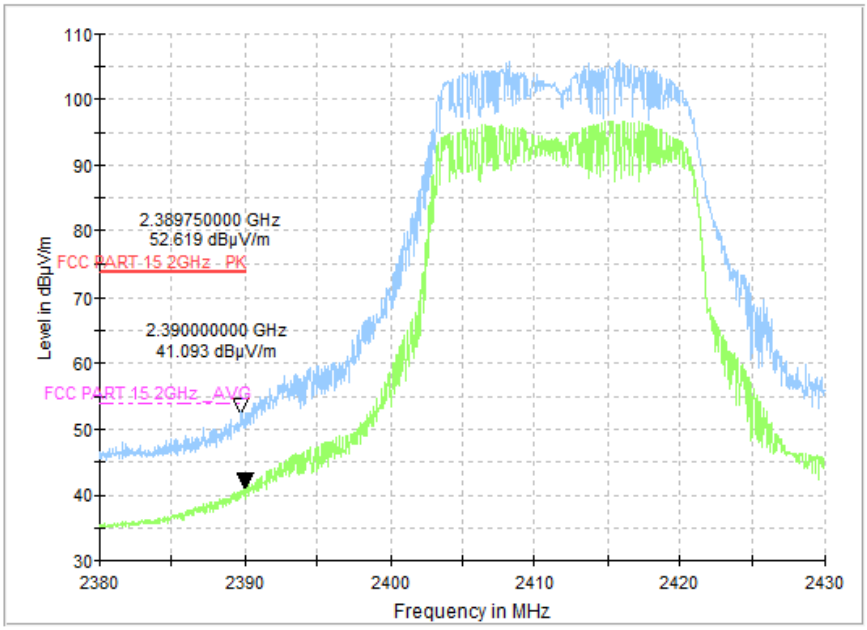

Fig.55 Radiated Restricted Band (802.11n HT20, CH1, 2.38GHz~2.45GHz, MIMO)

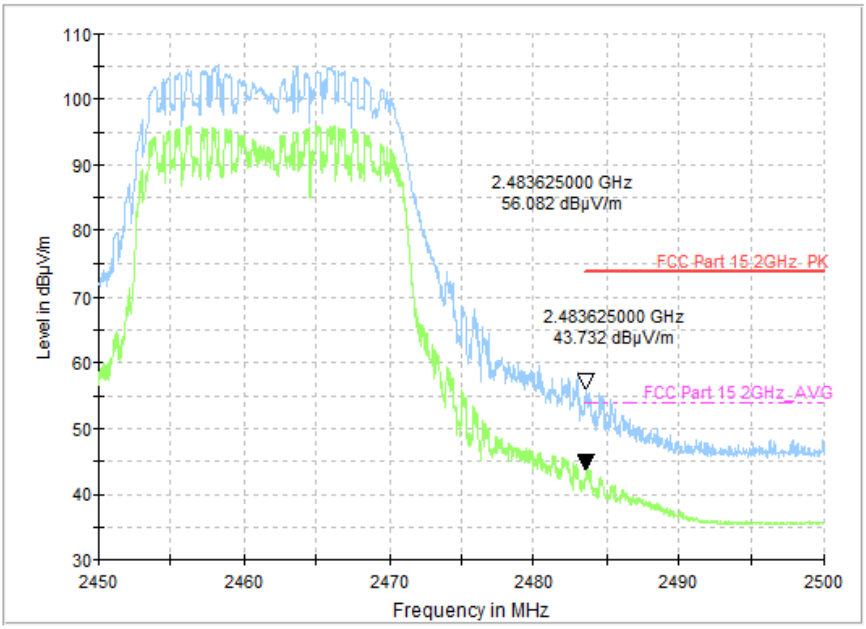

Fig.56 Radiated Restricted Band (802.11n HT20, CH11, 2.45GHz~2.5GHz, MIMO)

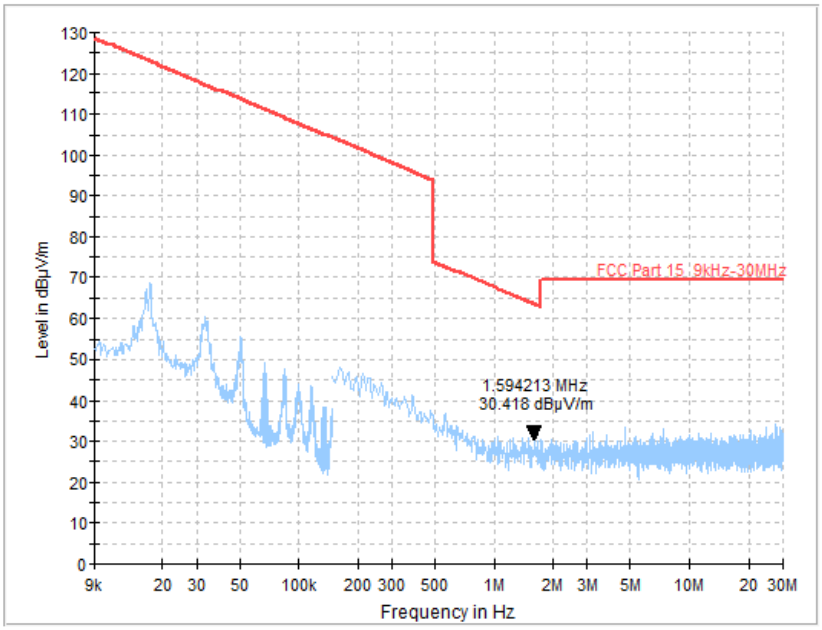

Fig.57 Radiated Spurious Emission (All Channels, 9 kHz-30 MHz, MIMO)

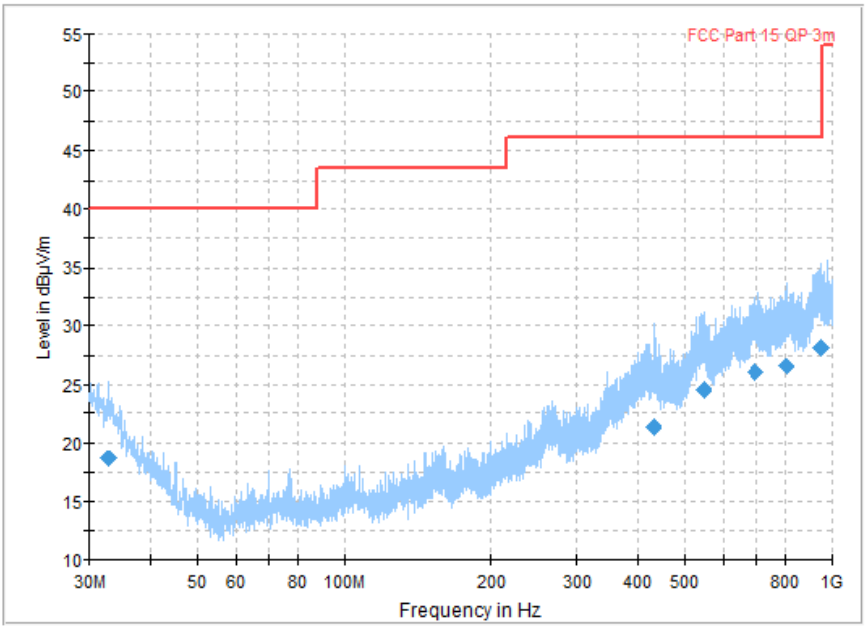

Fig.58 Radiated Spurious Emission (All Channels, 30MHz-1 GHz, MIMO)

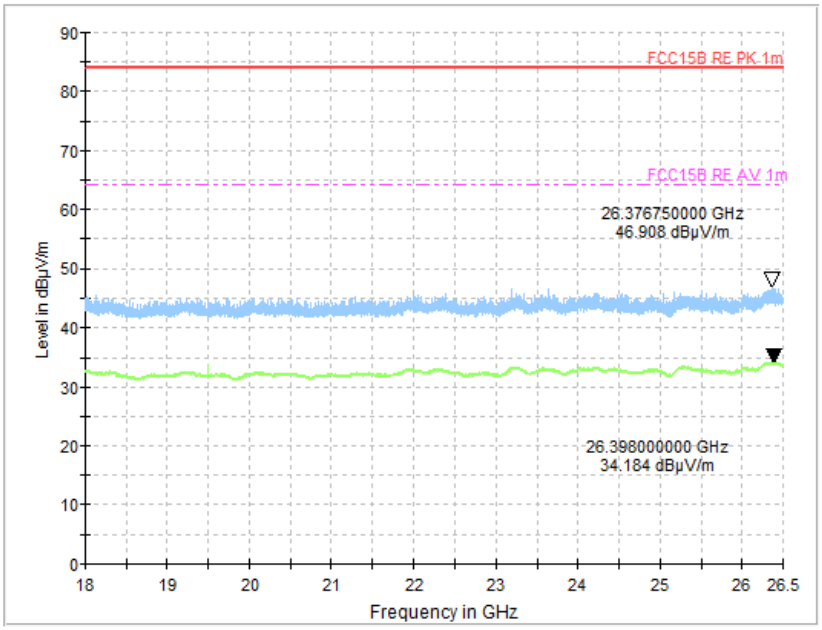

Fig.59 Radiated Spurious Emission (All Channels, 18 GHz-26.5 GHz, MIMO)

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.60	Fig.61	**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.60	Fig.61	**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

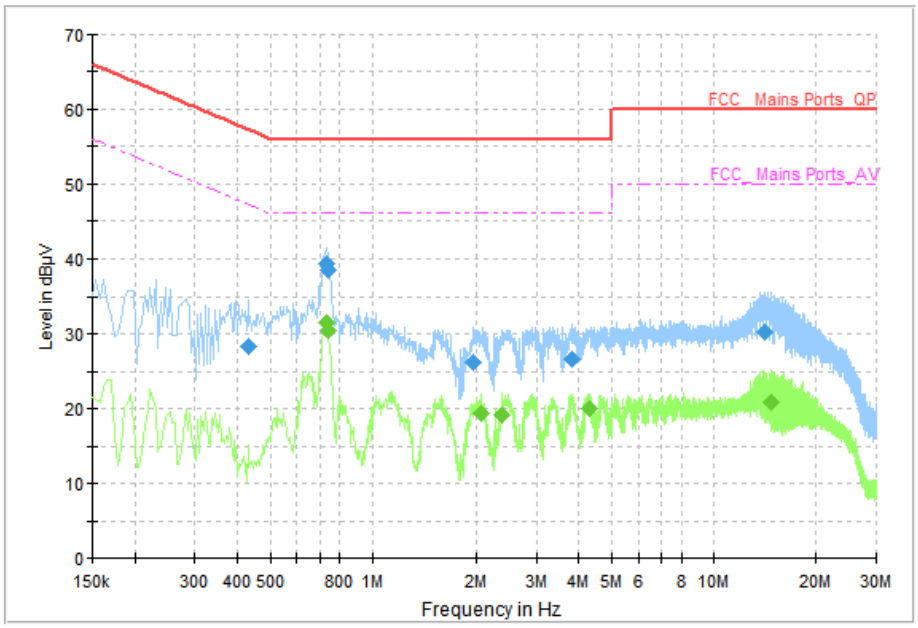

Fig.60 AC Power line Conducted Emission (Traffic)

Measurement Results: Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.430000	28.42	57.25	28.83	L1	ON	10
0.730000	39.17	56.00	16.83	L1	ON	10
0.738000	38.39	56.00	17.61	L1	ON	10
1.966000	26.33	56.00	29.67	L1	ON	10
3.806000	26.76	56.00	29.24	L1	ON	10
14.146000	30.27	60.00	29.73	N	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.730000	31.54	46.00	14.46	L1	ON	10
0.738000	30.59	46.00	15.41	L1	ON	10
2.058000	19.46	46.00	26.54	L1	ON	10
2.386000	19.26	46.00	26.74	L1	ON	10
4.310000	19.98	46.00	26.02	N	ON	10
14.726000	20.83	50.00	29.17	N	ON	10

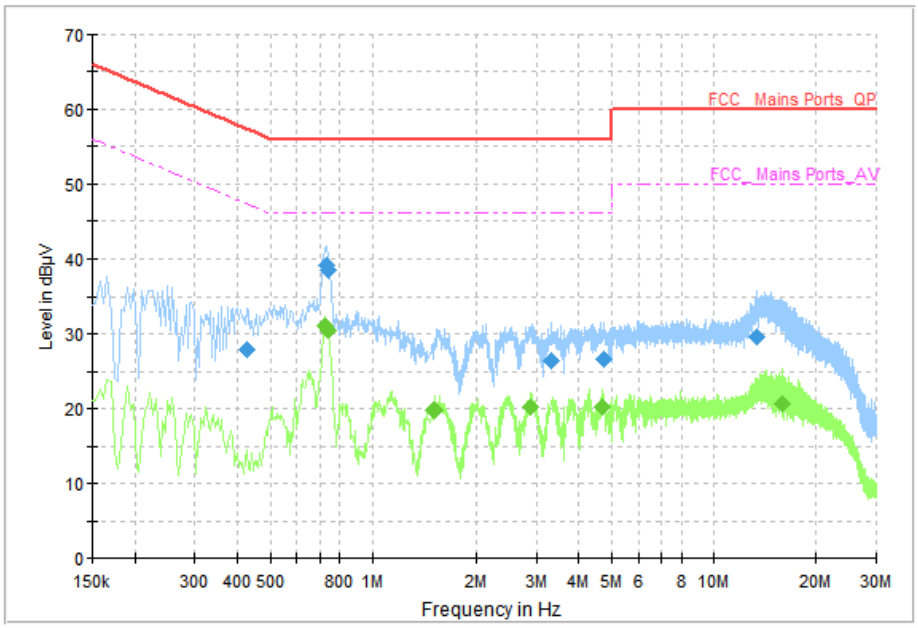

Fig.61 AC Power line Conducted Emission (Idle)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.426000	27.89	57.33	29.44	N	ON	10
0.730000	39.03	56.00	16.97	L1	ON	10
0.738000	38.43	56.00	17.57	L1	ON	10
3.314000	26.54	56.00	29.46	L1	ON	10
4.754000	26.67	56.00	29.33	N	ON	10
13.354000	29.65	60.00	30.35	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.726000	31.24	46.00	14.76	N	ON	10
0.738000	30.54	46.00	15.46	N	ON	10
1.514000	19.84	46.00	26.16	L1	ON	10
2.874000	20.33	46.00	25.67	L1	ON	10
4.694000	20.24	46.00	25.76	N	ON	10
15.902000	20.75	50.00	29.25	N	ON	10

A.8 99% Occupied Bandwidth

Measurement Limit:

Standard	Limit
RSS-Gen section 6.7	/

Measurement Result:

Mode	Channel	Frequency (MHz)	Test Results (MHz)		Conclusion
802.11b	CH1	2412	Fig.62	13.07	/
	CH6	2437	Fig.63	13.12	/
	CH11	2462	Fig.64	13.12	/
802.11g	CH1	2412	Fig.65	16.38	/
	CH6	2437	Fig.66	16.38	/
	CH11	2462	Fig.67	16.38	/
802.11n HT20	CH1	2412	Fig.68	17.54	/
	CH6	2437	Fig.69	17.54	/
	CH11	2462	Fig.70	17.54	/

See below for test graphs.

Conclusion: PASS

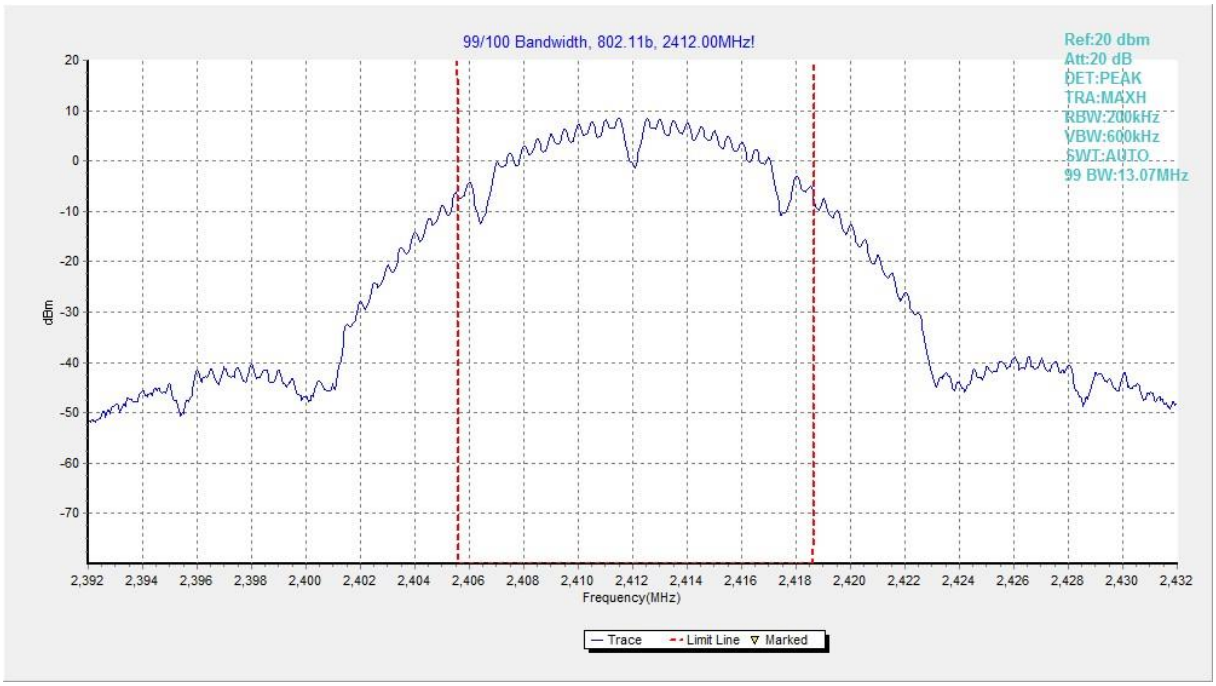

Fig.62 99% Occupied Bandwidth (802.11b, CH 1)

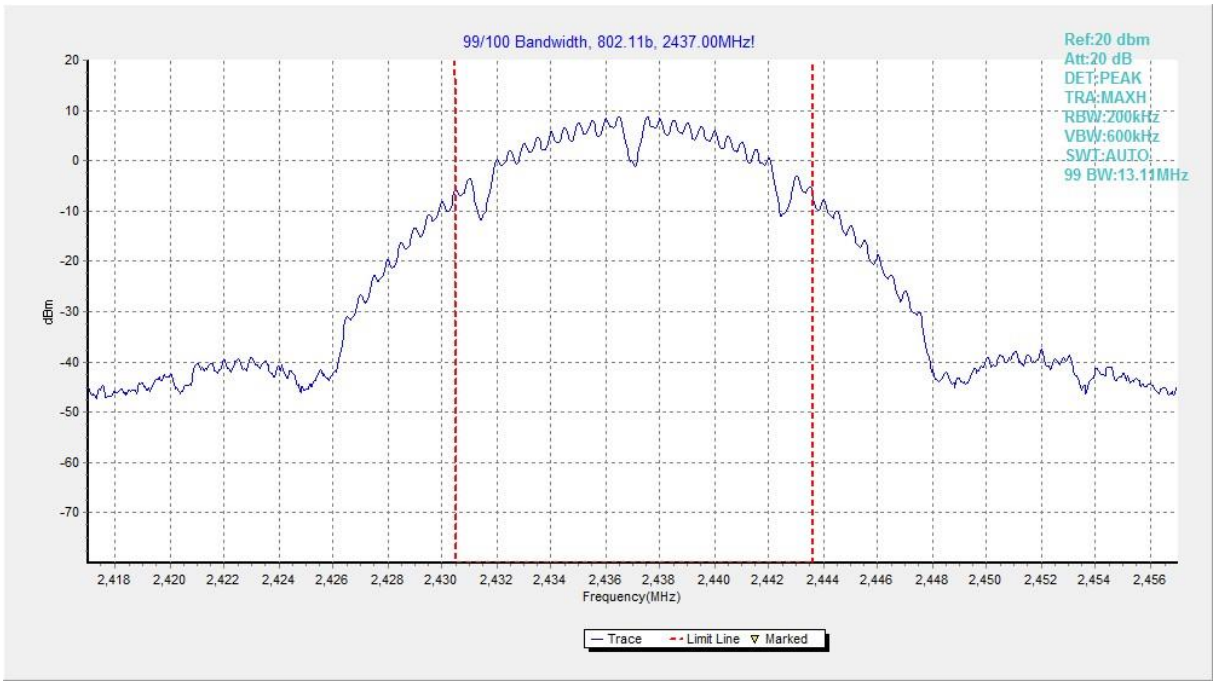

Fig.63 99% Occupied Bandwidth (802.11b, CH 6)

Fig.64 99% Occupied Bandwidth (802.11b, CH 11)

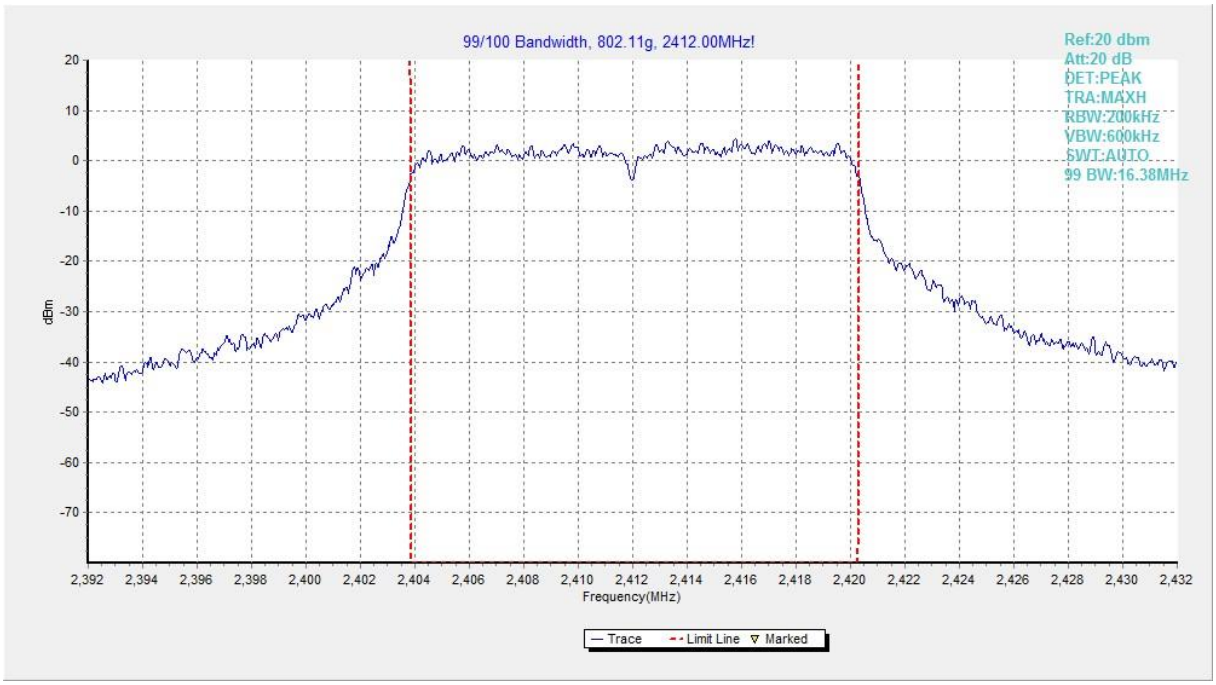

Fig.65 99% Occupied Bandwidth (802.11g, CH 1)

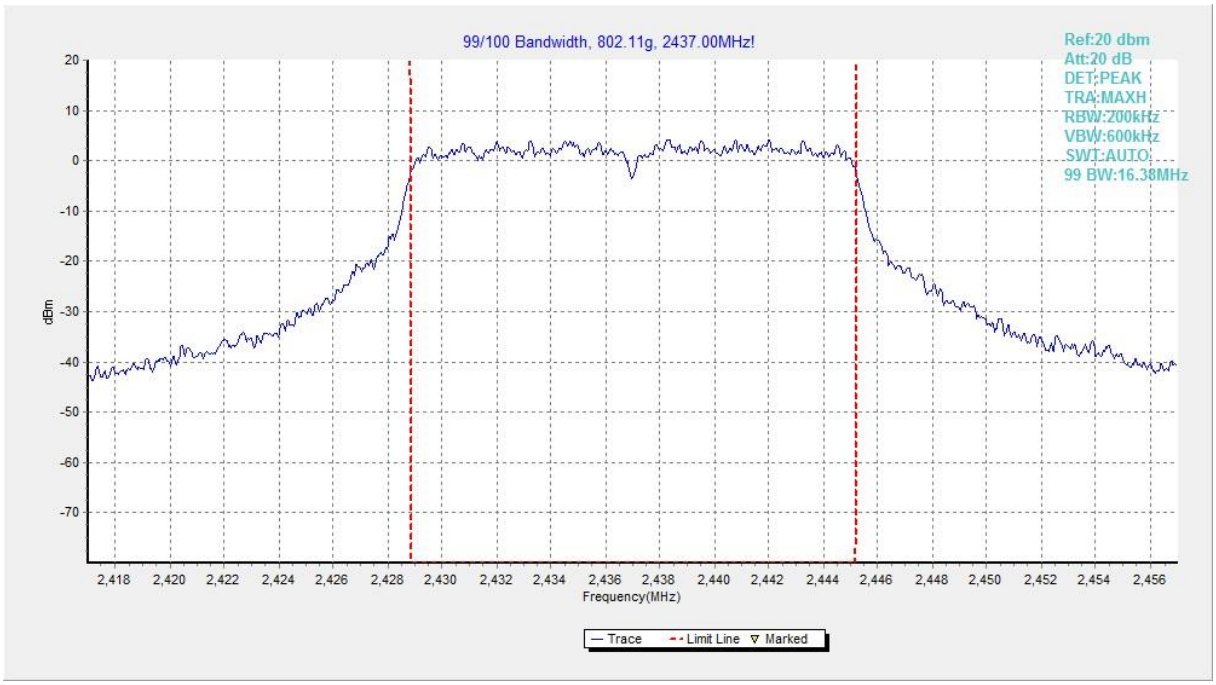

Fig.66 99% Occupied Bandwidth (802.11g, CH 6)

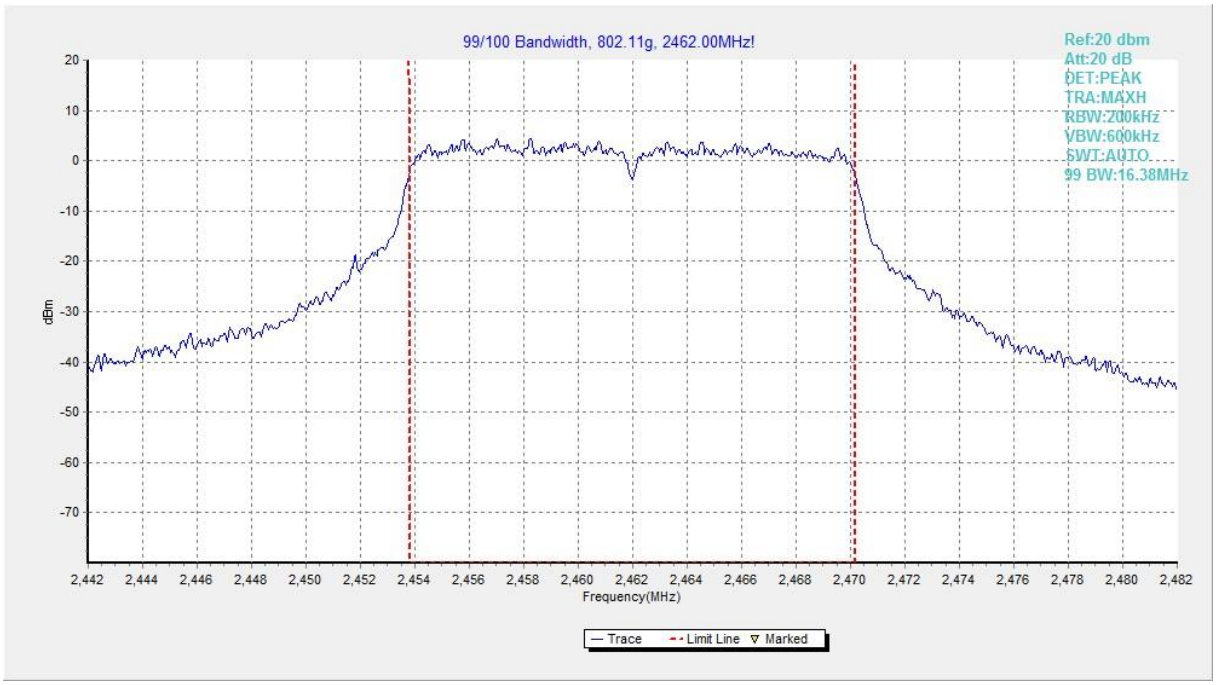

Fig.67 99% Occupied Bandwidth (802.11g, CH 11)

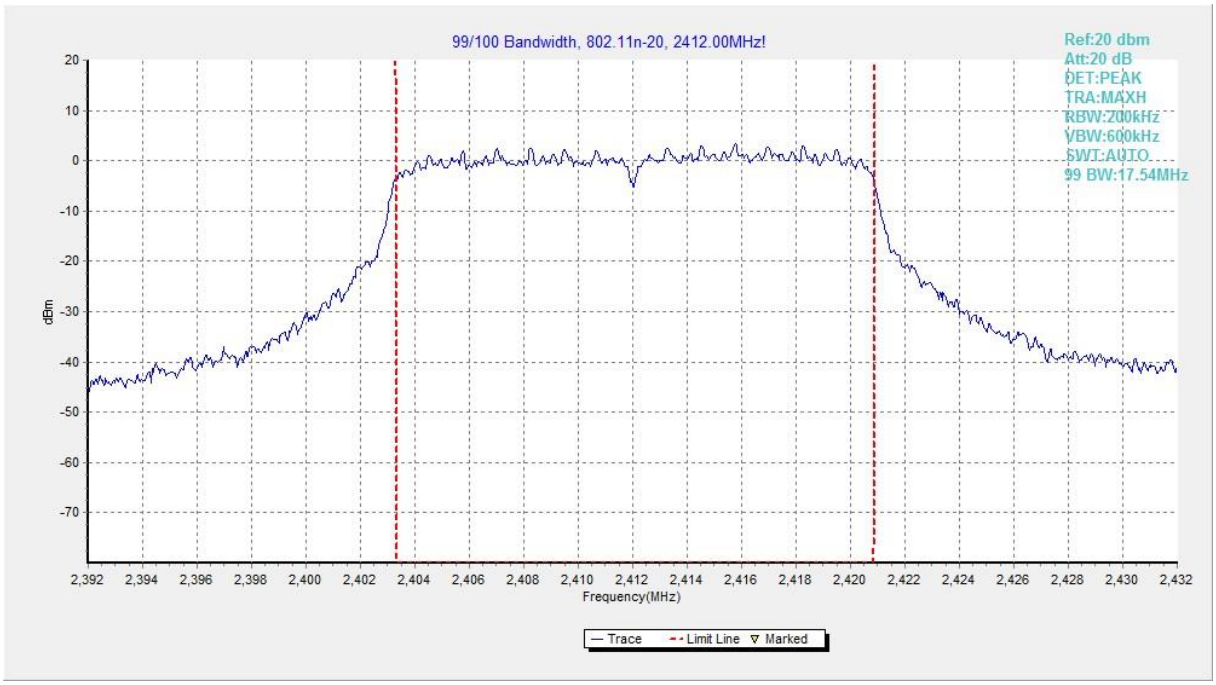

Fig.68 99% Occupied Bandwidth (802.11n HT20, CH 1)

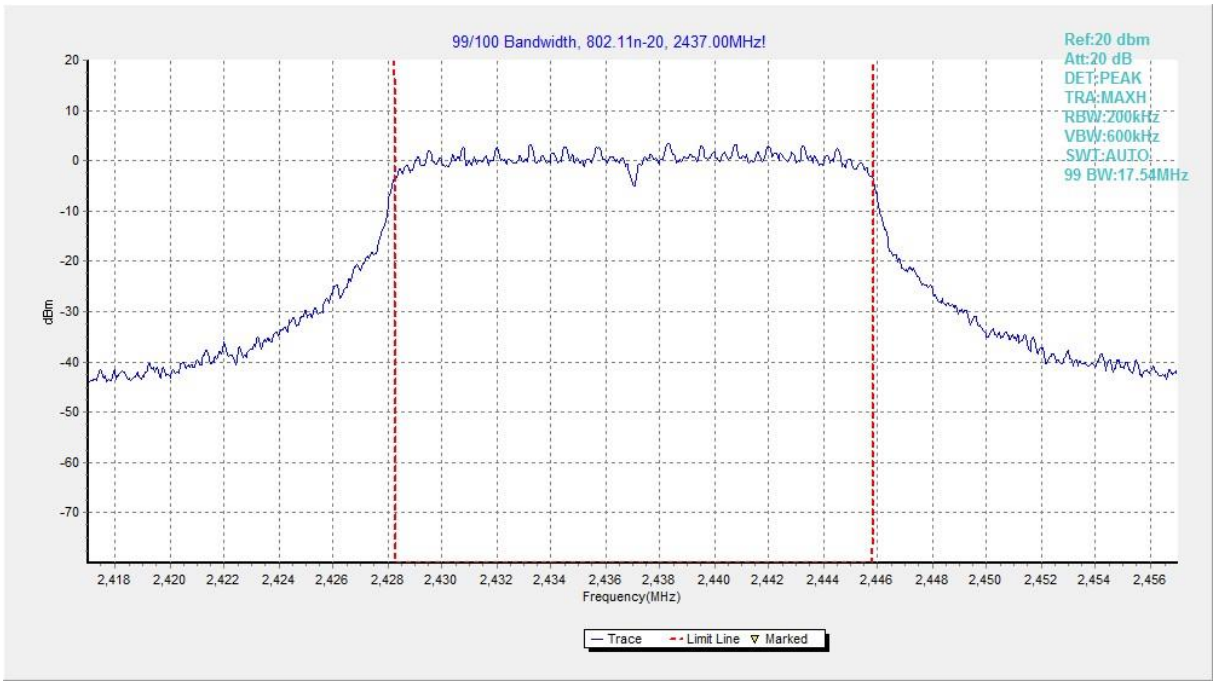

Fig.69 99% Occupied Bandwidth (802.11n HT20, CH 6)

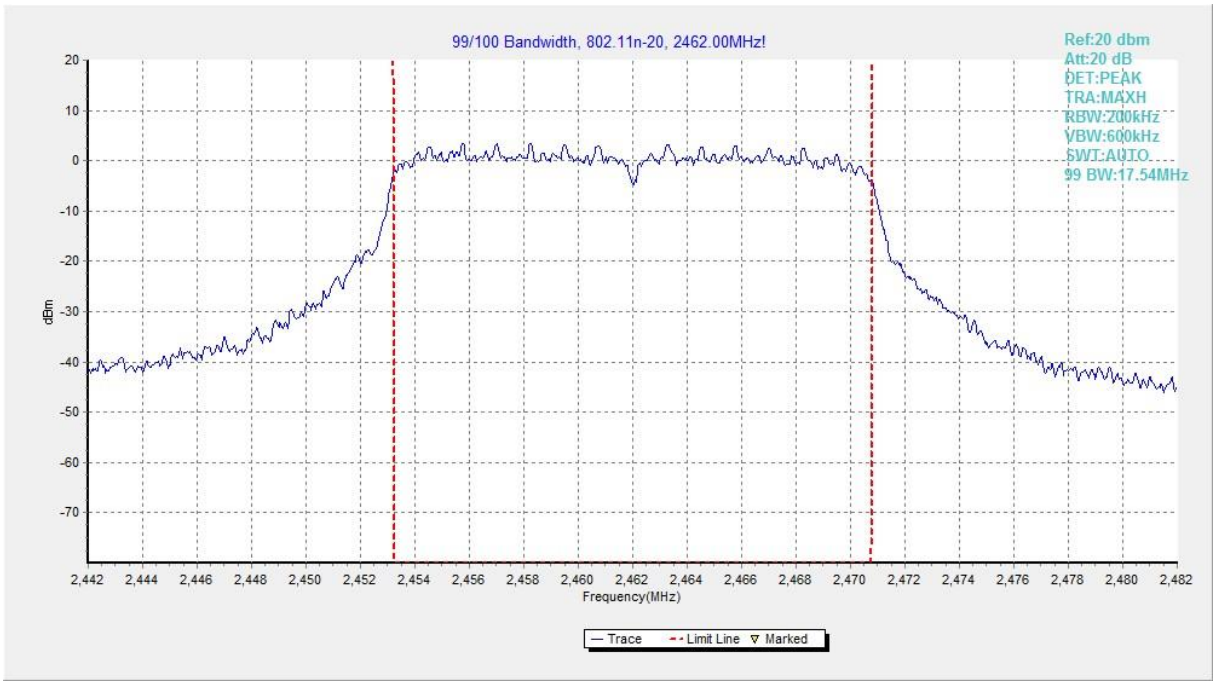

Fig.70 99% Occupied Bandwidth (802.11n HT20, CH 11)

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