



# TEST REPORT

No. I20N02014-WLAN

**TCL Communication Ltd.**

**10 inch wifi tablet**

**Model Name: 8092**

**with**

**Hardware Version: 1.2**

**Software Version: DB9**

**FCC ID: 2ACCJB133**

**Issued Date: 2020-08-21**

**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	10 inch wifi tablet
Model Name	8092
Applicant's name	TCL Communication Ltd.
Manufacturer's Name	TCL Communication Ltd.

### 1.2. Test Standards

FCC Part15-2019; ANSI C63.10-2013

### 1.3. Test Result

**Pass**

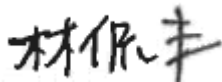
### 1.4. Testing Location

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:	2020-07-28
Testing End Date:	2020-08-13

### 1.6. Signature



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Lin Kanfeng  
(Prepared this test report)



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Tang Weisheng  
(Reviewed this test report)



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Zhang Bojun  
(Approved this test report)



## **2. Client Information**

### **2.1. Applicant Information**

Company Name: TCL Communication Ltd.  
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong  
Contact Person: Gong Zhizhou  
E-Mail: zhizhou.gong@tcl.com  
Telephone: 0086-755-36611722  
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### **2.2. Manufacturer Information**

Company Name: TCL Communication Ltd.  
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong  
Contact Person: Gong Zhizhou  
E-Mail: zhizhou.gong@tcl.com  
Telephone: 0086-755-36611722  
Fax: 0086-755-36612000-81722

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

#### **3.1. About EUT**

Description	10 inch wifi tablet
Model Name	8092
Brand Name	Alcatel
RF Protocol	IEEE 802.11 b/g/n-20/n-40
Operating Frequency	2412MHz~2462MHz
Number of Channels	11
Antenna Type	Integrated
Antenna Gain	1.97dBi
Power Supply	3.85V DC by Battery
FCC ID	2ACCJB133
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**

<b>EUT ID*</b>	<b>IMEI</b>	<b>HW Version</b>	<b>SW Version</b>	<b>Receive Date</b>
EUT1	/	1.2	DB9	2020-07-28

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

#### **3.3. Internal Identification of AE**

<b>AE ID*</b>	<b>Description</b>	<b>SN</b>
AE1	Battery	CAC4000018C7
AE2	Charger	CBA0058AGAC5
AE3	Charger	CBA0058AGAC7

\*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 10 inch wifi tablet with integrated antenna and battery.

It consists of normal options: Lithium Battery and Charger.

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.

<b>Reference</b>	<b>Title</b>	<b>Version</b>
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	15.107, 15.207	P

See **ANNEX A** for details.

### 5.3. Statements

SAICT has evaluated the test cases requested by the applicant/manufacture 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 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	Data Acquisition	U2531A	TW55443507	Agilent	/	/

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Date	Calibration Period
1	LISN	ESH2-Z5	100196	R&S	2021-01-02	1 year
2	Test Receiver	ESCI	100701	R&S	2021-08-05	1 year
3	Loop Antenna	HLA6120	35779	TESEQ	2022-05-01	3 year
4	BiLog Antenna	VULB9163	9163 329	Schwarzbeck	2021-02-16	3 year
5	Horn Antenna	3117	00066585	ETS-Lindgren	2022-03-04	3 year
6	Test Receiver	ESR7	101675	R&S	2021-07-17	1 year
7	Spectrum Analyzer	FSP 40	100378	R&S	2020-12-12	1 year
8	Chamber	FACT5-2.0	4166	ETS-Lindgren	2021-05-12	3 year
9	Antenna	QSH-SL-1 8-26-S-20	17013	Q-par	2021-01-14	3 year
10	Antenna	QSH-SL-2 6-40-K-20	17014	Q-par	2021-01-10	3 year

### 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. = 15 %, 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. = 15 %, 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	$30\text{MHz} \leq f \leq 1\text{GHz}$	1.41dB
	$1\text{GHz} \leq f \leq 7\text{GHz}$	1.92dB
	$7\text{GHz} \leq f \leq 13\text{GHz}$	2.31dB
	$13\text{GHz} \leq f \leq 26\text{GHz}$	2.61dB
5. Transmitter Spurious Emission - Radiated	$9\text{kHz} \leq f \leq 30\text{MHz}$	1.70dB
	$30\text{MHz} \leq f \leq 1\text{GHz}$	4.90dB
	$1\text{GHz} \leq f \leq 18\text{GHz}$	4.60dB
	$18\text{GHz} \leq f \leq 40\text{GHz}$	4.10dB
6. AC Power line Conducted Emission	$150\text{kHz} \leq f \leq 30\text{MHz}$	3.00dB

## **ANNEX A: Detailed Test Results**

### **A.0 Antenna requirement**

#### **Measurement Limit:**

<b>Standard</b>	<b>Requirement</b>
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 1.97dBi. The RF transmitter uses an integrate antenna without connector.

## A.1 Maximum Output Power

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

Method AVGP-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)	< 30	< 36

### Measurement Results:

Mode	Frequency (MHz)	Data Rate	Average Conducted Power (dBm)	E.I.R.P (dBm)	Conclusion
802.11b	2412 (CH1)	1Mbps	14.54	16.51	P
		2Mbps	14.43	16.40	P
		5Mbps	14.45	16.42	P
		11Mbps	14.47	16.44	P
	2437 (CH6)	1Mbps	14.46	16.43	P
		2Mbps	14.43	16.40	P
		5Mbps	14.40	16.37	P
		11Mbps	14.38	16.35	P
	2462 (CH11)	1Mbps	14.55	16.52	P
		2Mbps	14.52	16.49	P
		5Mbps	14.49	16.46	P
		11Mbps	14.50	16.47	P

Mode	Frequency (MHz)	Data Rate	Average Conducted Power (dBm)	E.I.R.P (dBm)	Conclusion
802.11g	2412 (CH1)	6Mbps	13.41	15.38	P
		9Mbps	13.39	15.36	P
		12Mbps	13.36	15.33	P
		18Mbps	13.34	15.31	P
		24Mbps	13.32	15.29	P
		36Mbps	13.33	15.30	P
		48Mbps	13.32	15.29	P
		54Mbps	13.29	15.26	P

	2437 (CH6)	6Mbps	13.46	15.43	P
		9Mbps	13.45	15.42	P
		12Mbps	13.43	15.40	P
		18Mbps	13.42	15.39	P
		24Mbps	13.38	15.35	P
		36Mbps	13.35	15.32	P
		48Mbps	13.36	15.33	P
		54Mbps	13.33	15.30	P
	2462 (CH11)	6Mbps	13.49	15.46	P
		9Mbps	13.47	15.44	P
		12Mbps	13.44	15.41	P
		18Mbps	13.43	15.40	P
		24Mbps	13.40	15.37	P
		36Mbps	13.39	15.36	P
		48Mbps	13.38	15.35	P
		54Mbps	13.42	15.39	P

Mode	Frequency (MHz)	Data Rate	Average Conducted Power (dBm)	E.I.R.P (dBm)	Conclusion
802.11n HT20	2412 (CH1)	MCS0	13.37	15.34	P
		MCS1	13.34	15.31	P
		MCS2	13.32	15.29	P
		MCS3	13.31	15.28	P
		MCS4	13.33	15.30	P
		MCS5	13.30	15.27	P
		MCS6	13.27	15.24	P
		MCS7	13.25	15.22	P
	2437 (CH6)	MCS0	13.51	15.48	P
		MCS1	13.48	15.45	P
		MCS2	13.47	15.44	P
		MCS3	13.43	15.40	P
		MCS4	13.45	15.42	P
		MCS5	13.45	15.42	P
		MCS6	13.42	15.39	P
		MCS7	13.46	15.43	P
	2462 (CH11)	MCS0	13.42	15.39	P
		MCS1	13.41	15.38	P
		MCS2	13.39	15.36	P
		MCS3	13.37	15.34	P
		MCS4	13.38	15.35	P
MCS5		13.35	15.32	P	

		MCS6	13.36	15.33	P
		MCS7	13.37	15.34	P

Mode	Frequency (MHz)	Data Rate	Average Conducted Power (dBm)	E.I.R.P (dBm)	Conclusion
802.11n HT40	2422 (CH3)	MCS0	12.55	14.52	P
		MCS1	12.53	14.50	P
		MCS2	12.50	14.47	P
		MCS3	12.51	14.48	P
		MCS4	12.48	14.45	P
		MCS5	12.47	14.44	P
		MCS6	12.44	14.41	P
		MCS7	12.45	14.42	P
	2437 (CH6)	MCS0	12.17	14.14	P
		MCS1	12.15	14.12	P
		MCS2	12.14	14.11	P
		MCS3	12.15	14.12	P
		MCS4	12.12	14.09	P
		MCS5	12.11	14.08	P
		MCS6	12.08	14.05	P
		MCS7	12.10	14.07	P
	2452 (CH9)	MCS0	12.14	14.11	P
		MCS1	12.12	14.09	P
		MCS2	12.11	14.08	P
		MCS3	12.09	14.06	P
		MCS4	12.06	14.03	P
		MCS5	12.08	14.05	P
		MCS6	12.10	14.07	P
		MCS7	12.09	14.06	P

Note1: E.I.R.P value = Conducted values (with conducted samples) + Antenna Gain.

Note2: The data rate 1Mbps (11b mode), 6Mbps (11g mode) and MCS0 (11n mode) are selected as the Worst-Case. 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:

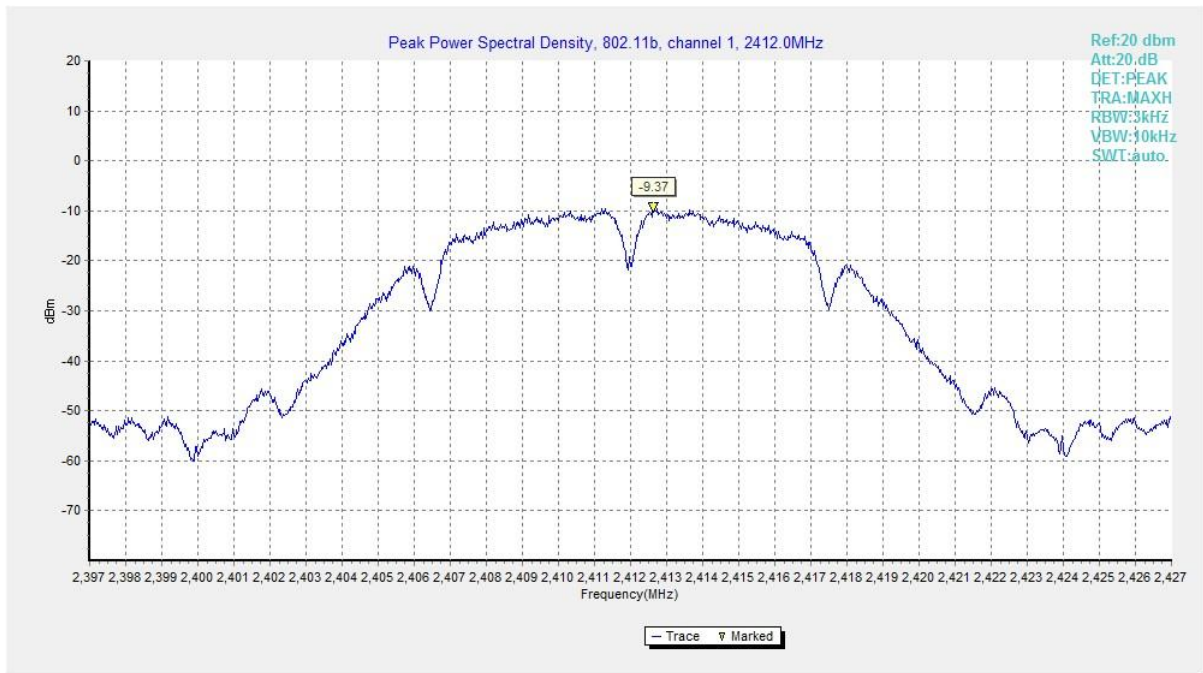
Standard	Limit
FCC CRF Part 15.247(e)	< 8 dBm/3 kHz

### Measurement Results:

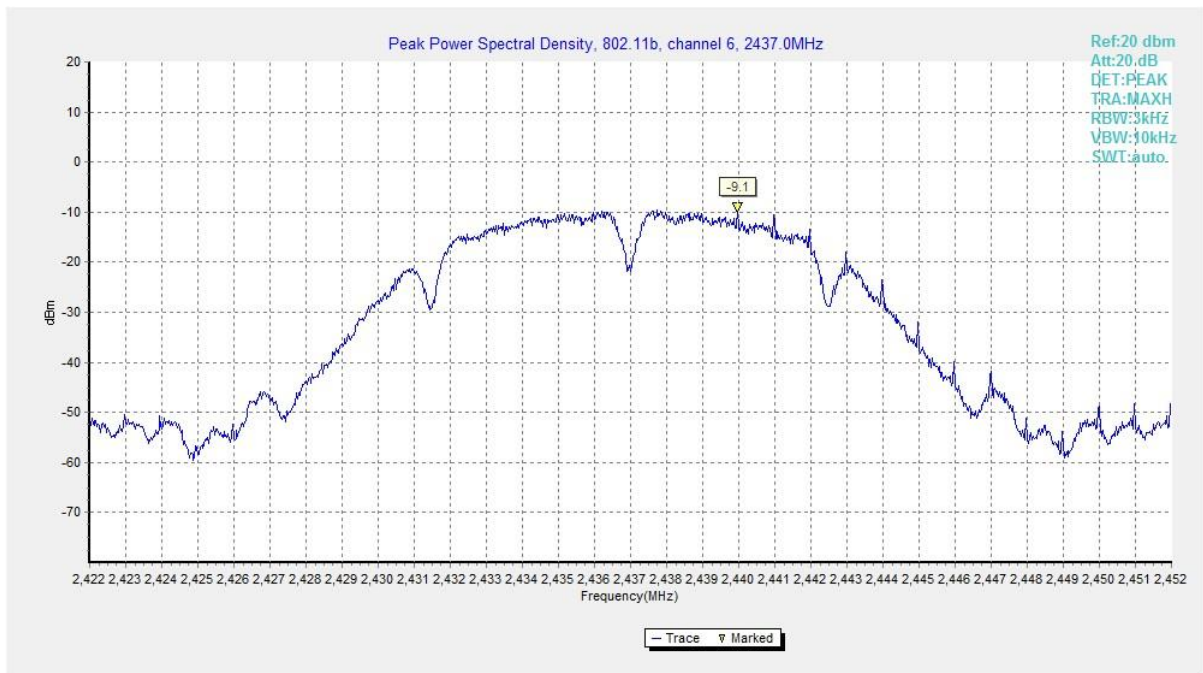
Mode	Channel	Frequency (MHz)	Test Results (dBm)		Conclusion
802.11b	CH 1	2412	Fig.1	-9.37	P
	CH 6	2437	Fig.2	-9.10	P
	CH 11	2462	Fig.3	-9.17	P
802.11g	CH 1	2412	Fig.4	-11.45	P
	CH 6	2437	Fig.5	-11.42	P
	CH 11	2462	Fig.6	-10.81	P
802.11n HT20	CH 1	2412	Fig.7	-11.32	P
	CH 6	2437	Fig.8	-11.41	P
	CH 11	2462	Fig.9	-11.38	P
802.11n HT40	CH 3	2422	Fig.10	-15.32	P
	CH 6	2437	Fig.11	-15.37	P
	CH 9	2452	Fig.12	-14.85	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)**



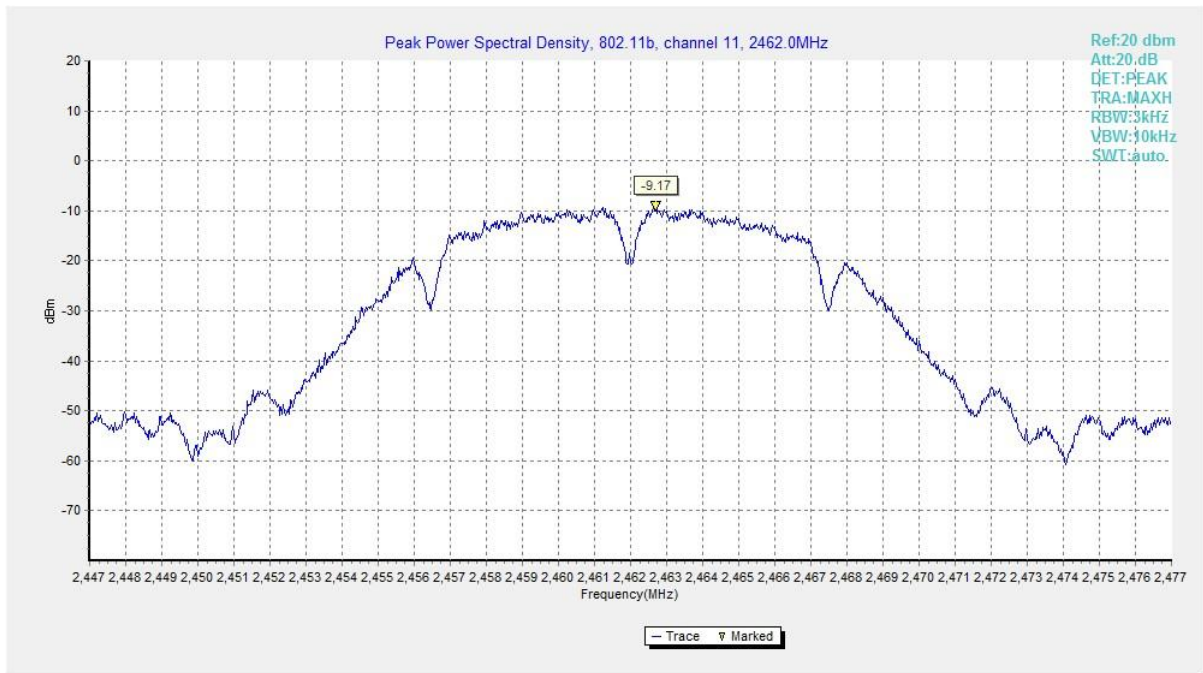


Fig.3 Power Spectral Density (802.11b, CH 11)

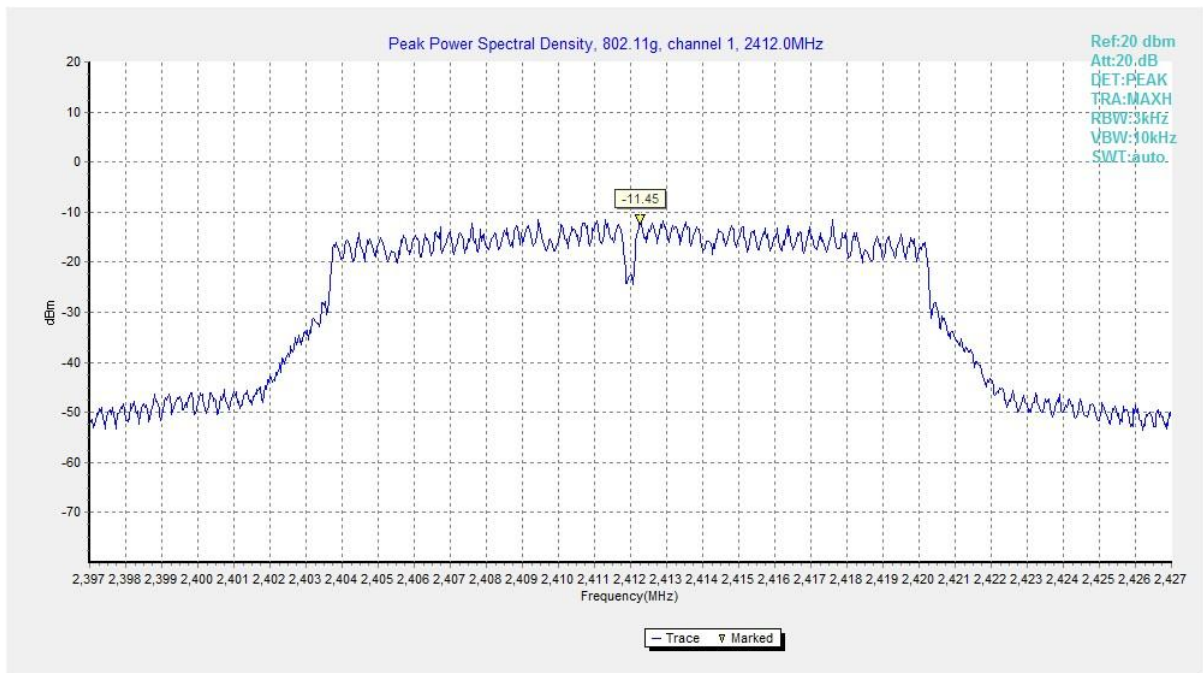
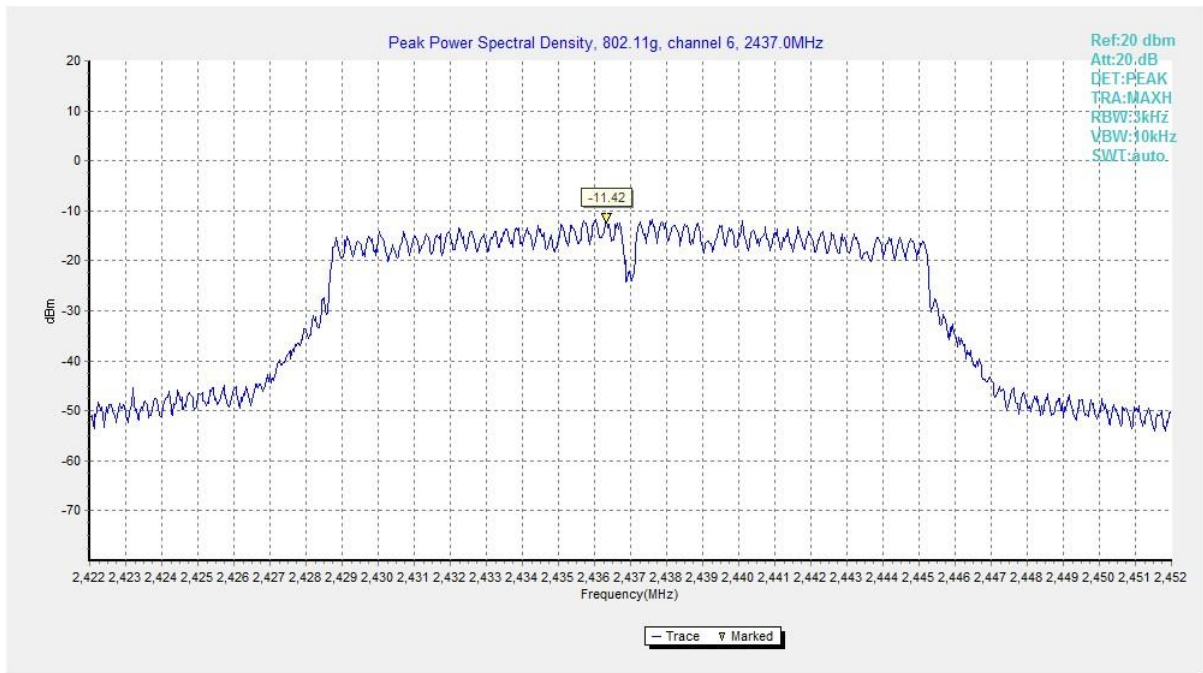
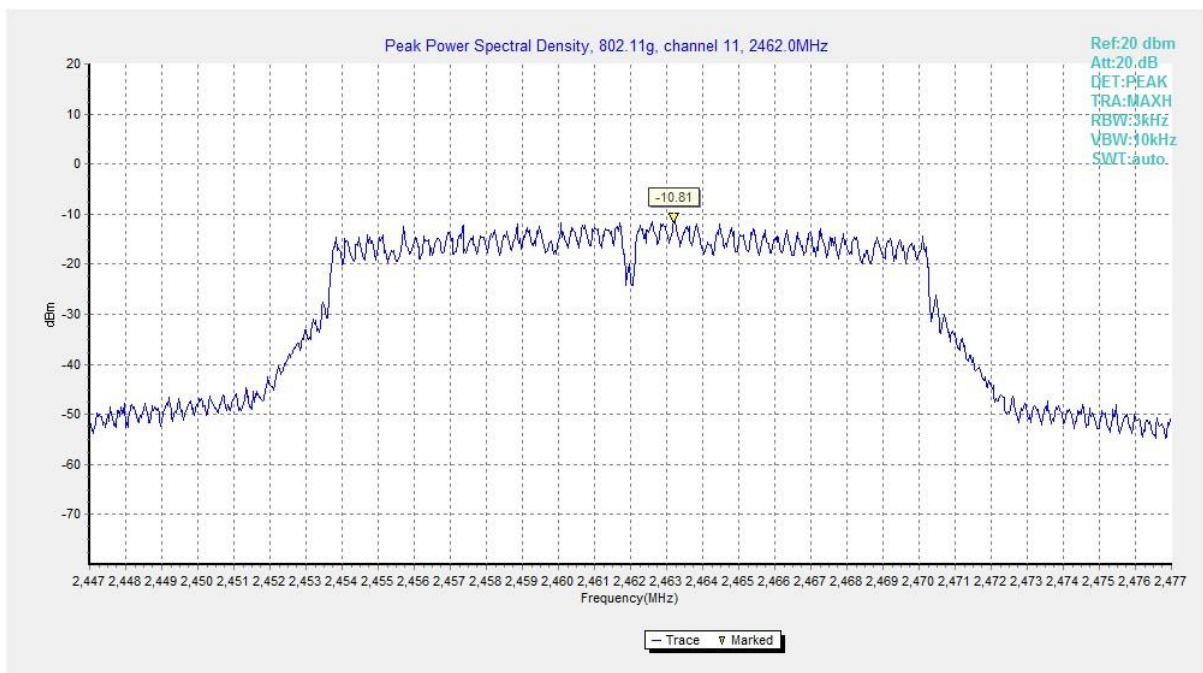


Fig.4 Power Spectral Density (802.11g, CH 1)



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



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

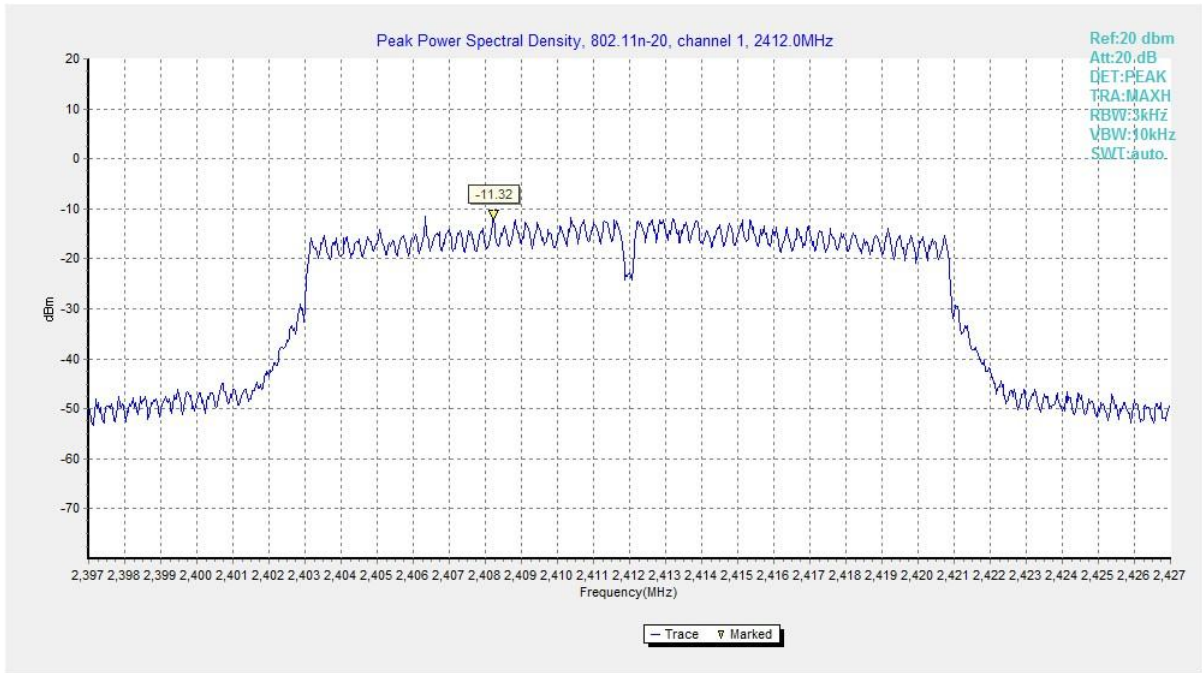


Fig.7 Power Spectral Density (802.11n HT20, CH 1)

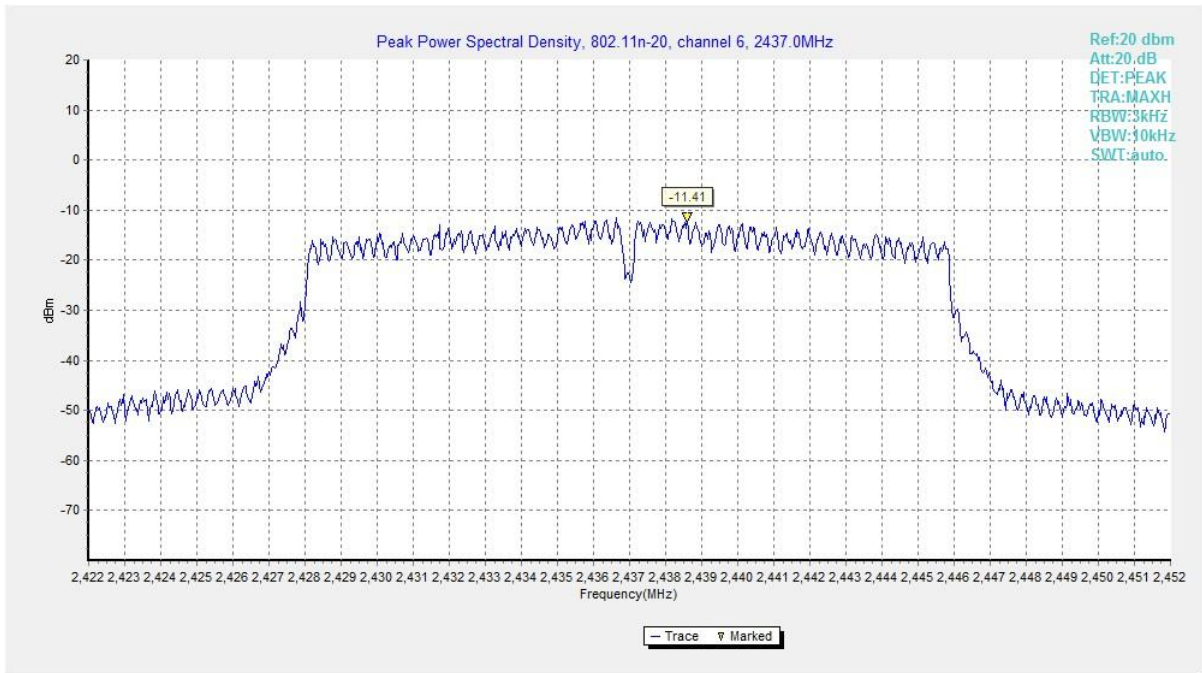
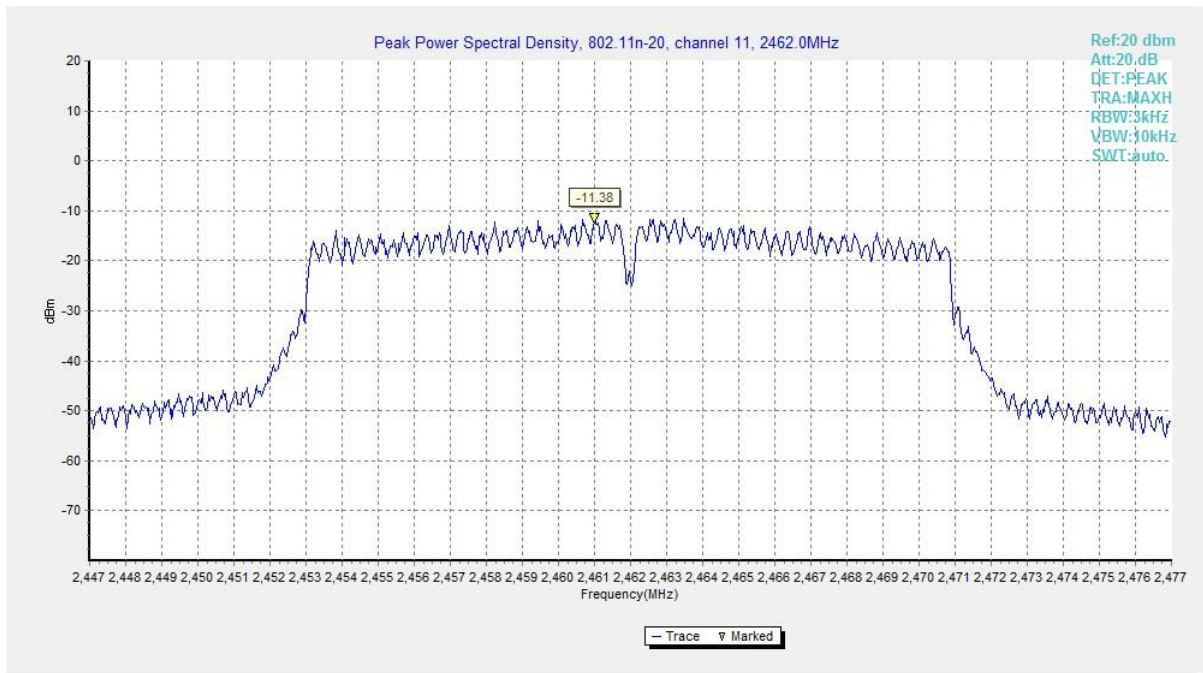
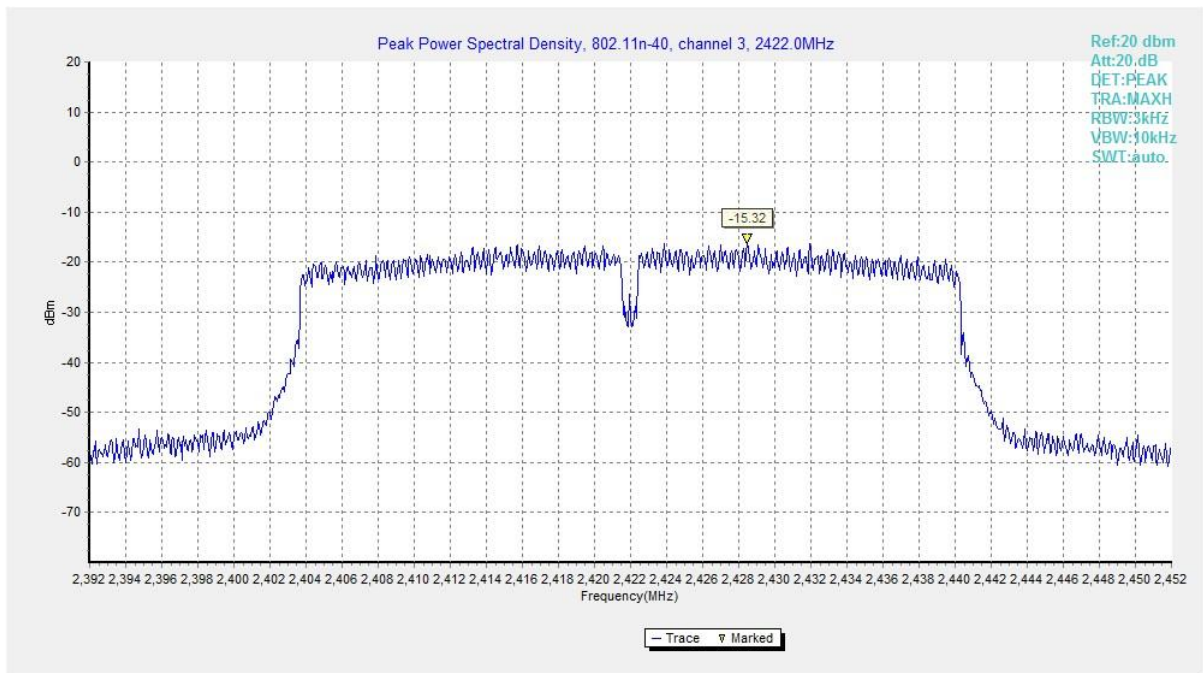


Fig.8 Power Spectral Density (802.11n HT20, CH 6)



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



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

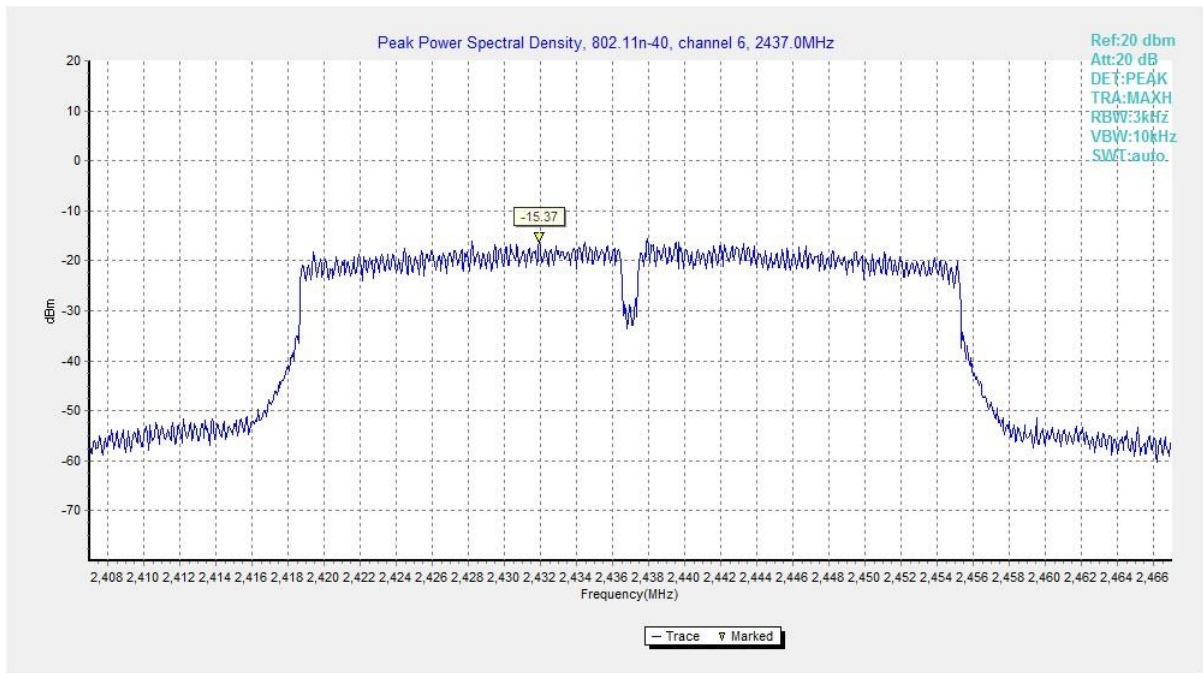


Fig.11 Power Spectral Density (802.11n HT40, CH 6)

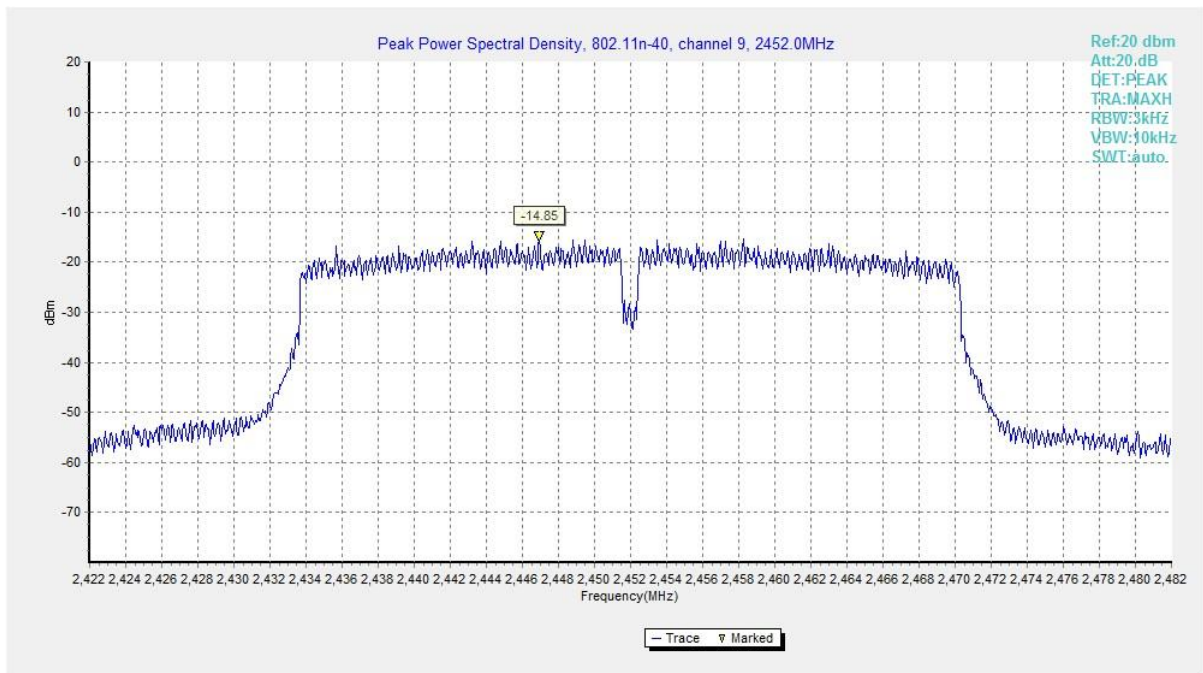


Fig.12 Power Spectral Density (802.11n HT40, CH 9)



### 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	9050	P
	CH 6	2437	Fig.14	9550	P
	CH 11	2462	Fig.15	10050	P
802.11g	CH 1	2412	Fig.16	15150	P
	CH 6	2437	Fig.17	15150	P
	CH 11	2462	Fig.18	15150	P
802.11n HT20	CH 1	2412	Fig.19	15450	P
	CH 6	2437	Fig.20	15150	P
	CH 11	2462	Fig.21	15150	P
802.11n HT40	CH 3	2422	Fig.22	35200	P
	CH 6	2437	Fig.23	35200	P
	CH 9	2452	Fig.24	35200	P

See below for test graphs.

Conclusion: PASS

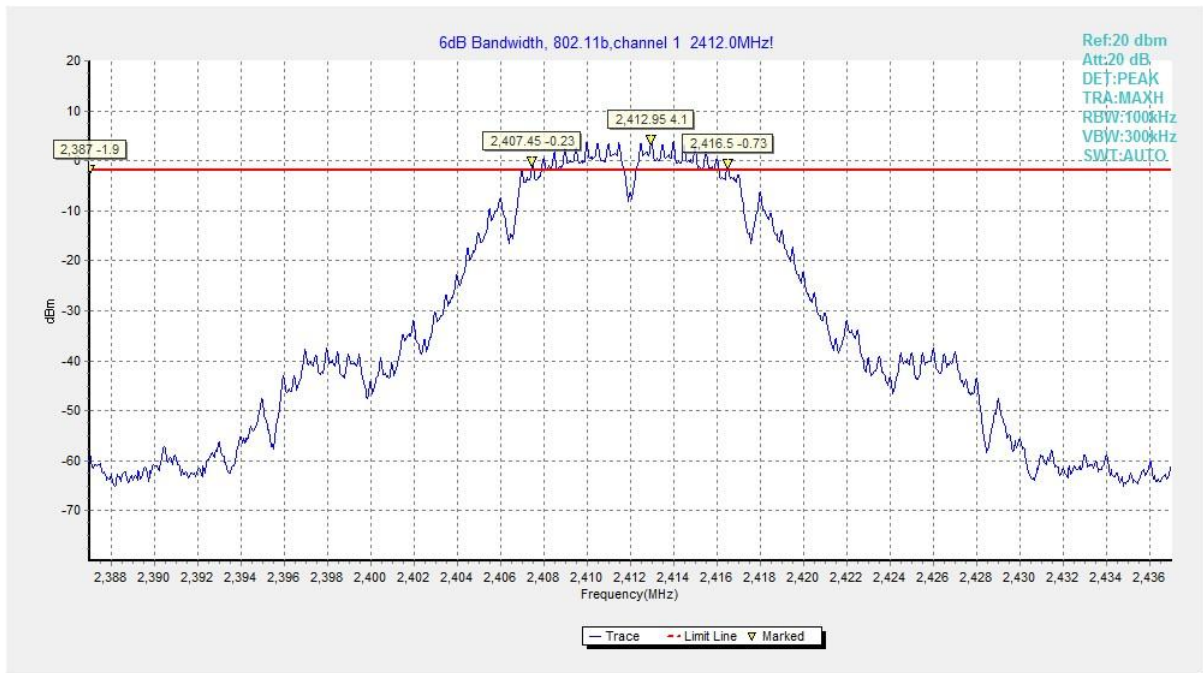


Fig.13 6dB Bandwidth (802.11b, CH 1)

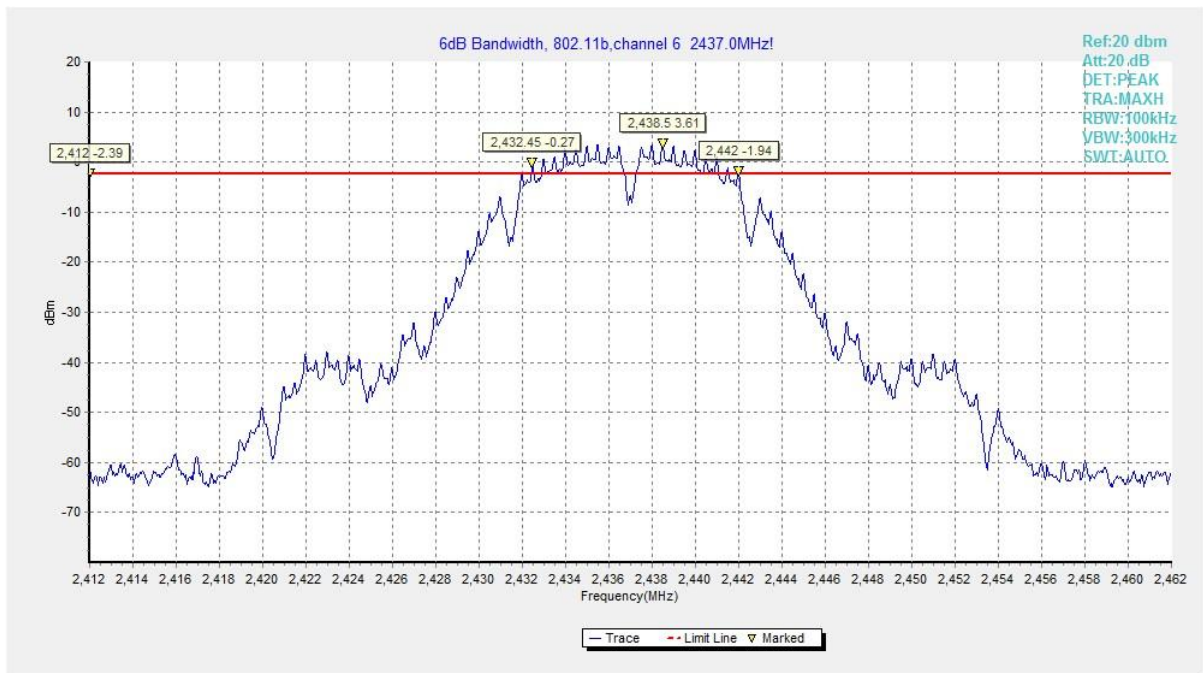


Fig.14 6dB Bandwidth (802.11b, CH 6)

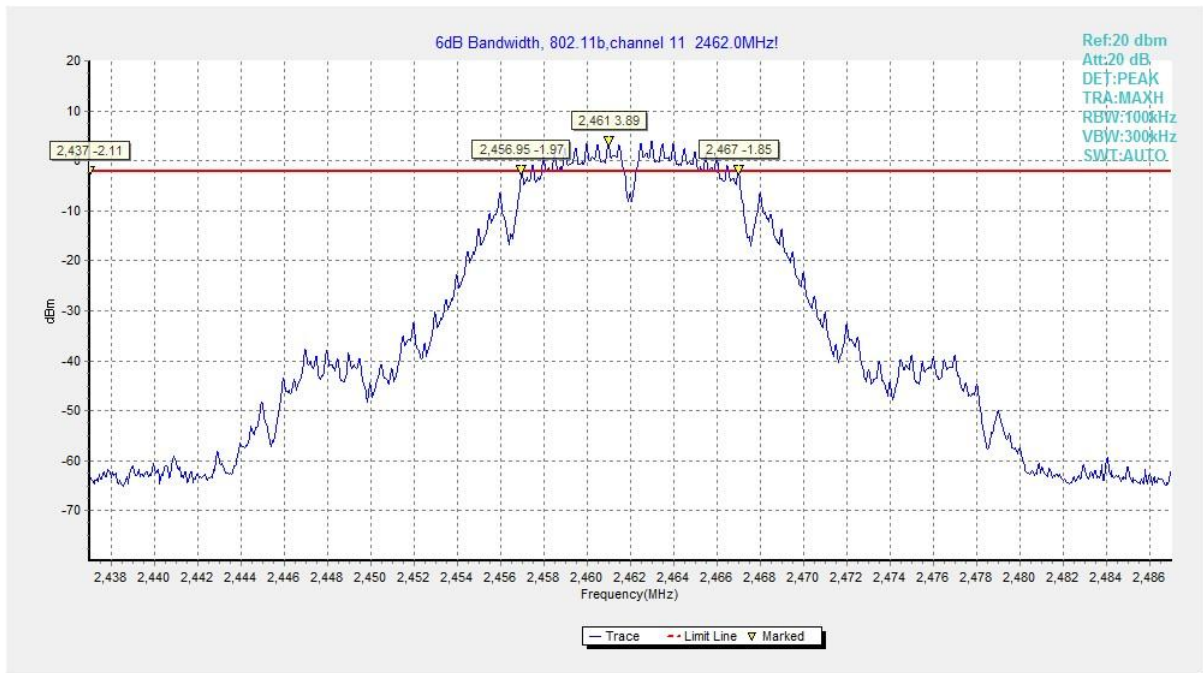


Fig.15 6dB Bandwidth (802.11b, CH 11)

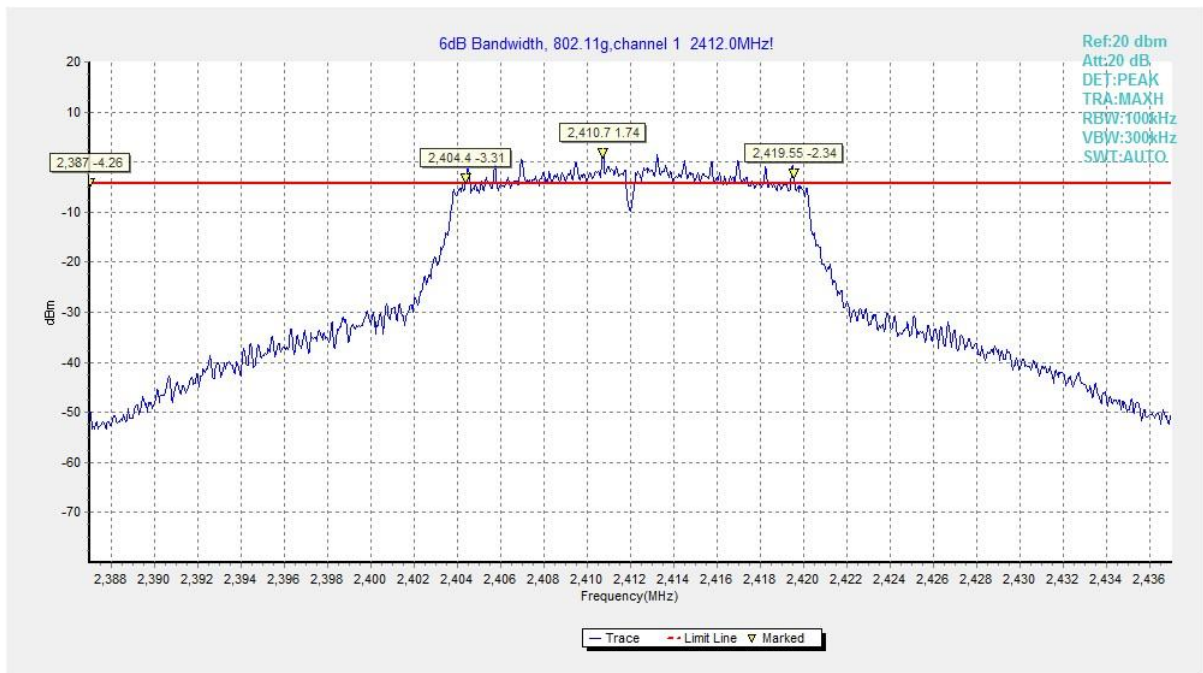


Fig.16 6dB Bandwidth (802.11g, CH 1)



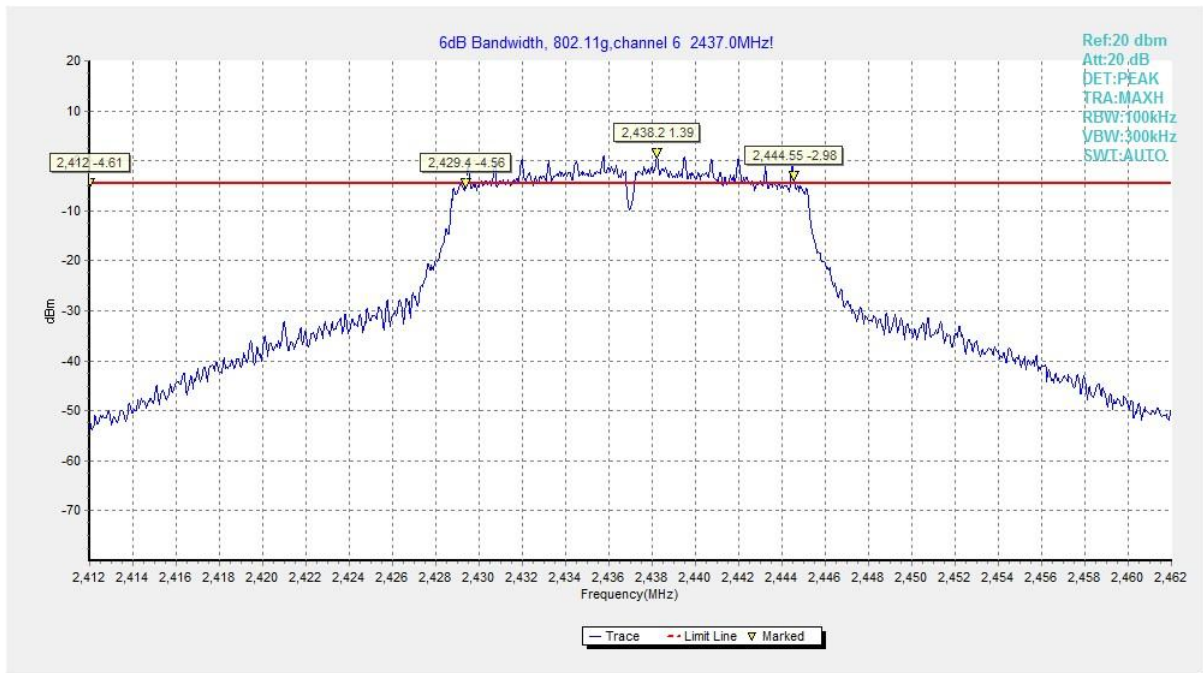


Fig.17 6dB Bandwidth (802.11g, CH 6)

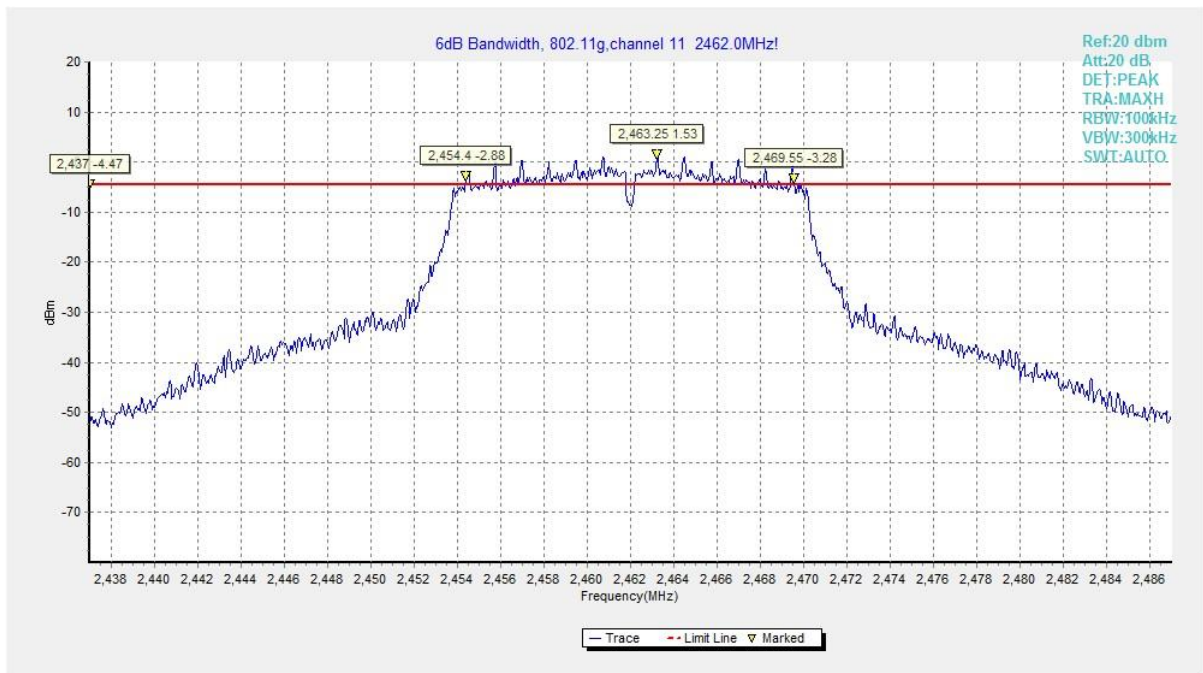


Fig.18 6dB Bandwidth (802.11g, CH 11)

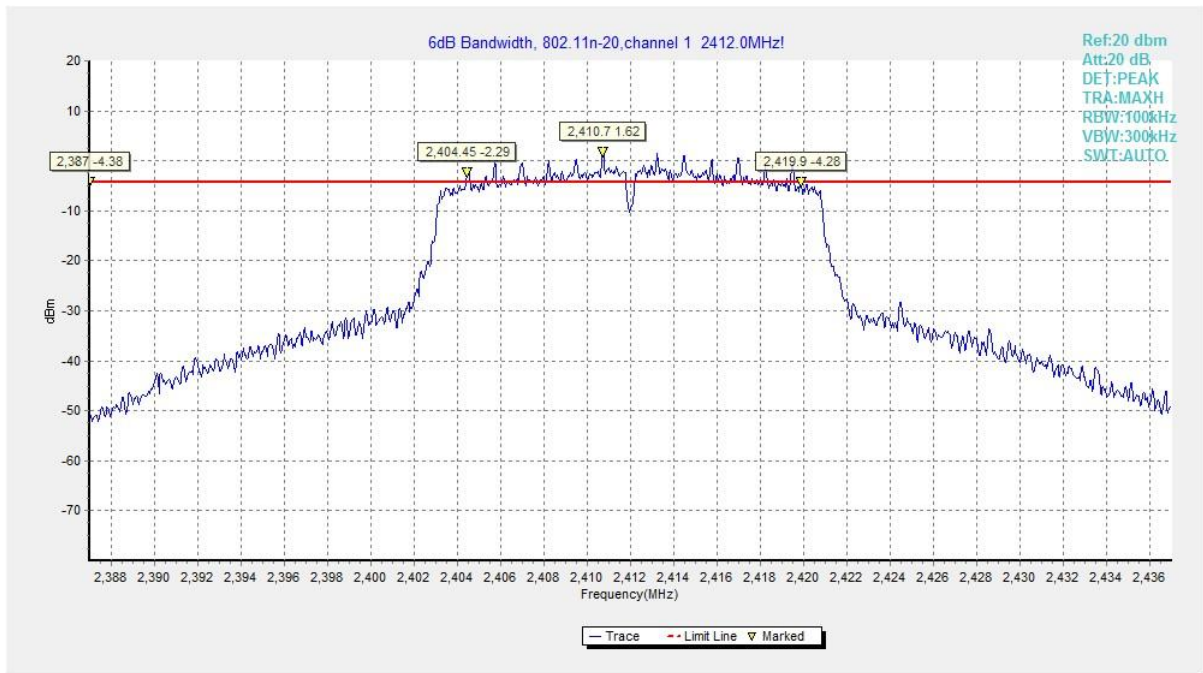


Fig.19 6dB Bandwidth (802.11n HT20, CH 1)

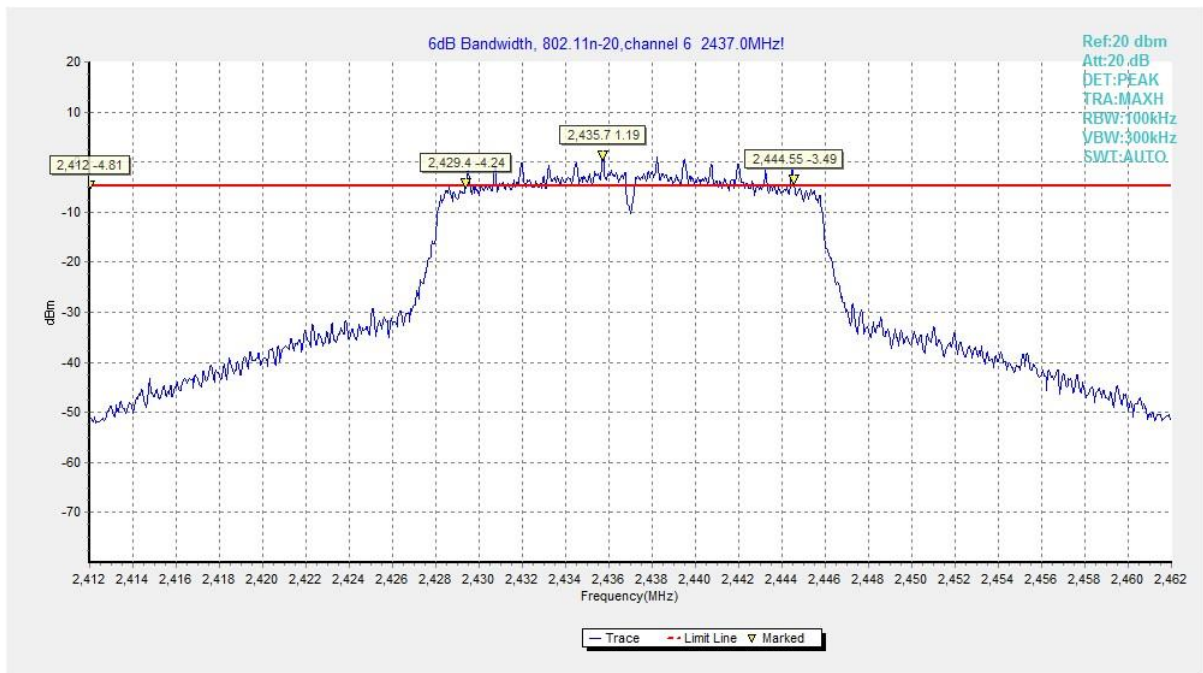


Fig.20 6dB Bandwidth (802.11n HT20, CH 6)

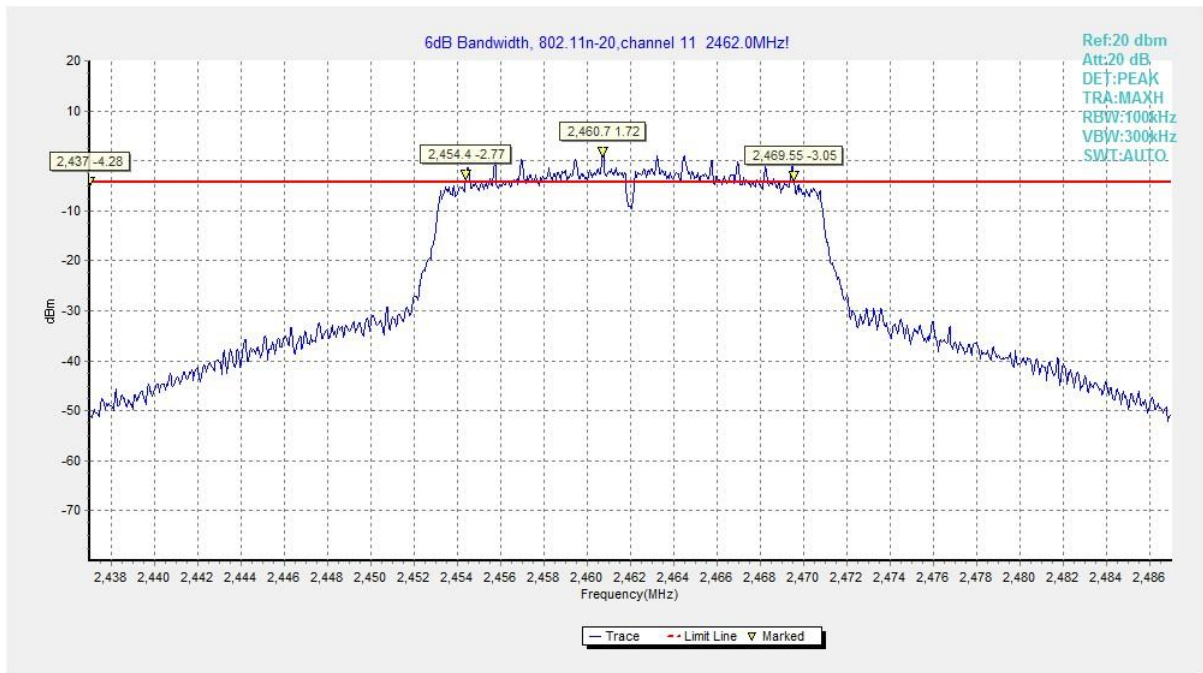


Fig.21 6dB Bandwidth (802.11n HT20, CH 11)

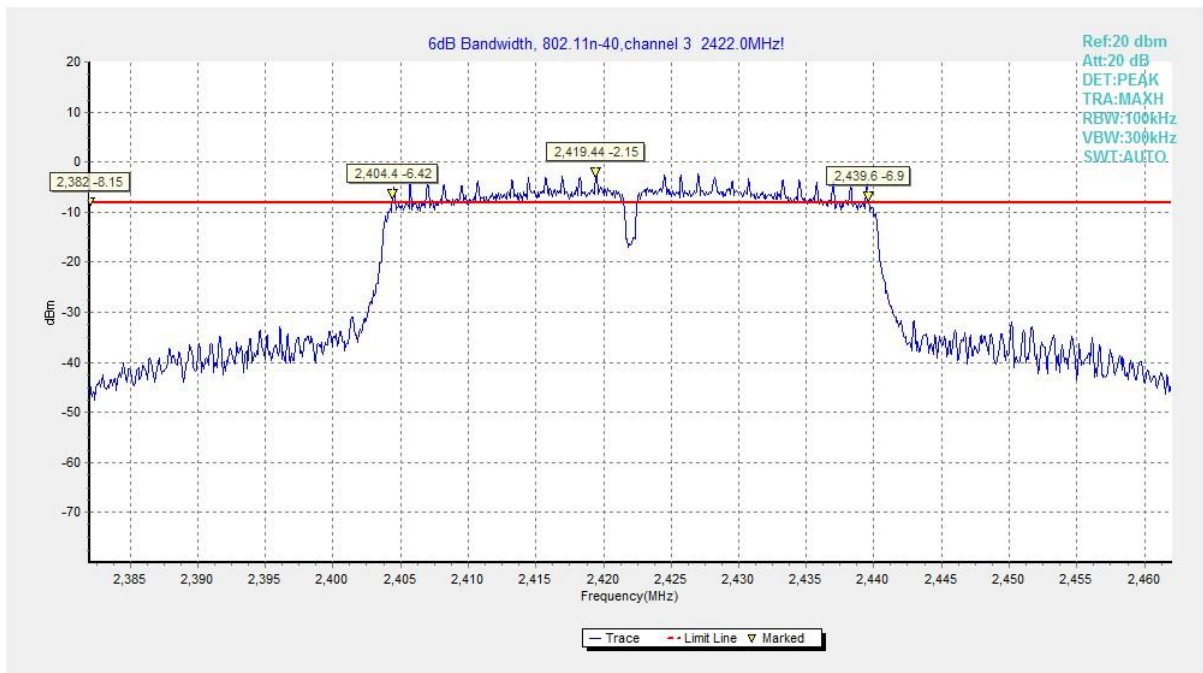


Fig.22 6dB Bandwidth (802.11n HT40, CH 3)

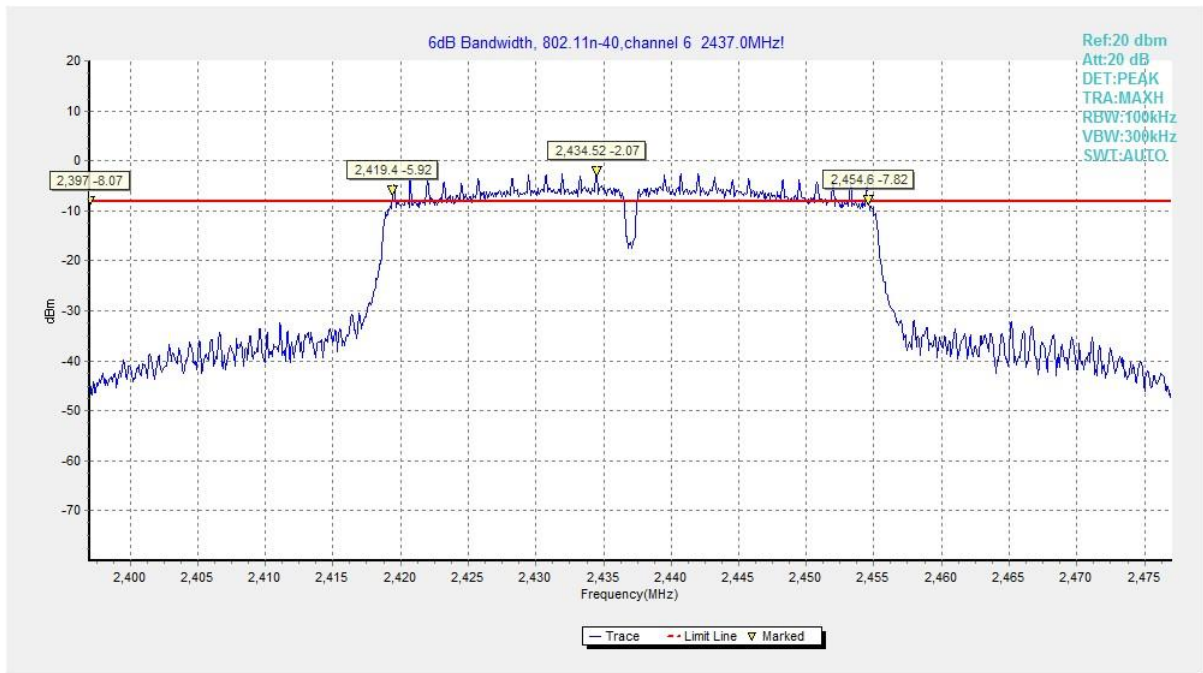


Fig.23 6dB Bandwidth (802.11n HT40, CH 6)

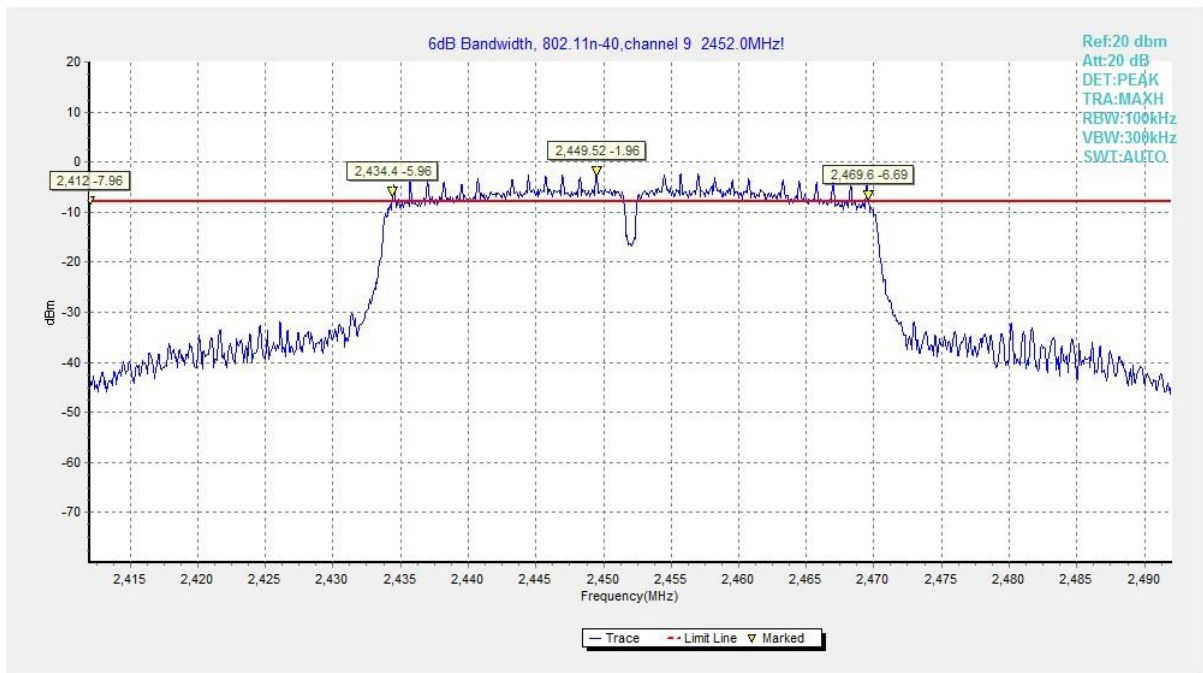


Fig.24 6dB Bandwidth (802.11n HT40, CH 9)

## A.4 Band Edges Compliance

### Measurement Limit:

Standard	Limit (dB)
FCC 47 CFR Part 15.247 (d)	> 20

### Measurement Result:

Mode	Channel	Frequency (MHz)	Test Results (dB)		Conclusion
			Fig.	Value	
802.11b	CH 1	2412	Fig.25	47.85	P
	CH 11	2462	Fig.26	64.59	P
802.11g	CH 1	2412	Fig.27	34.60	P
	CH 11	2462	Fig.28	46.01	P
802.11n HT20	CH 1	2412	Fig.29	34.90	P
	CH 11	2462	Fig.30	44.65	P
802.11n HT40	CH 3	2422	Fig.31	33.69	P
	CH 9	2452	Fig.32	36.97	P

See below for test graphs.

Conclusion: PASS

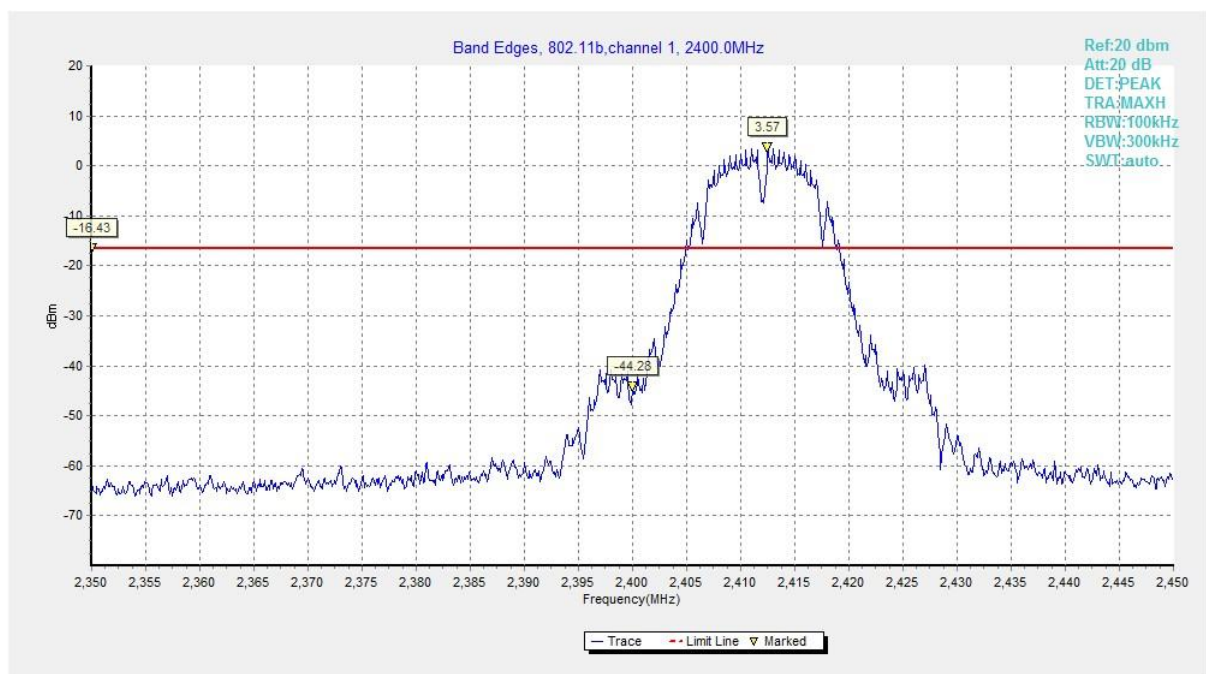


Fig.25 Band Edges (802.11b, CH 1)

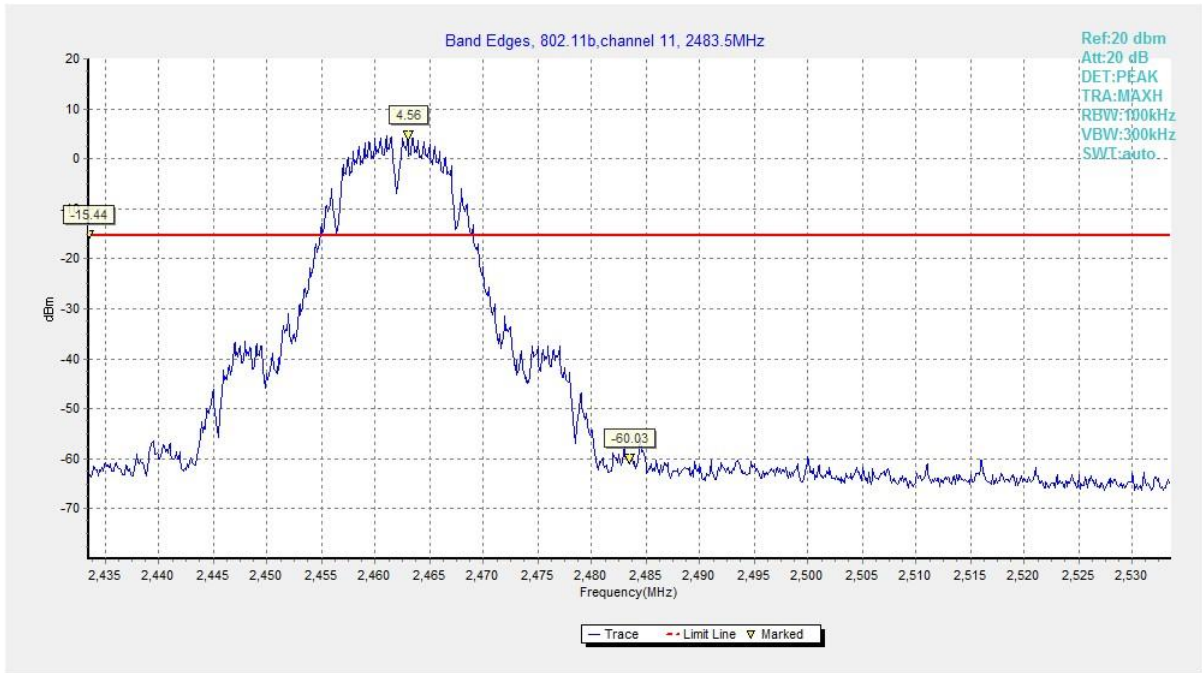


Fig.26 Band Edges (802.11b, CH 11)

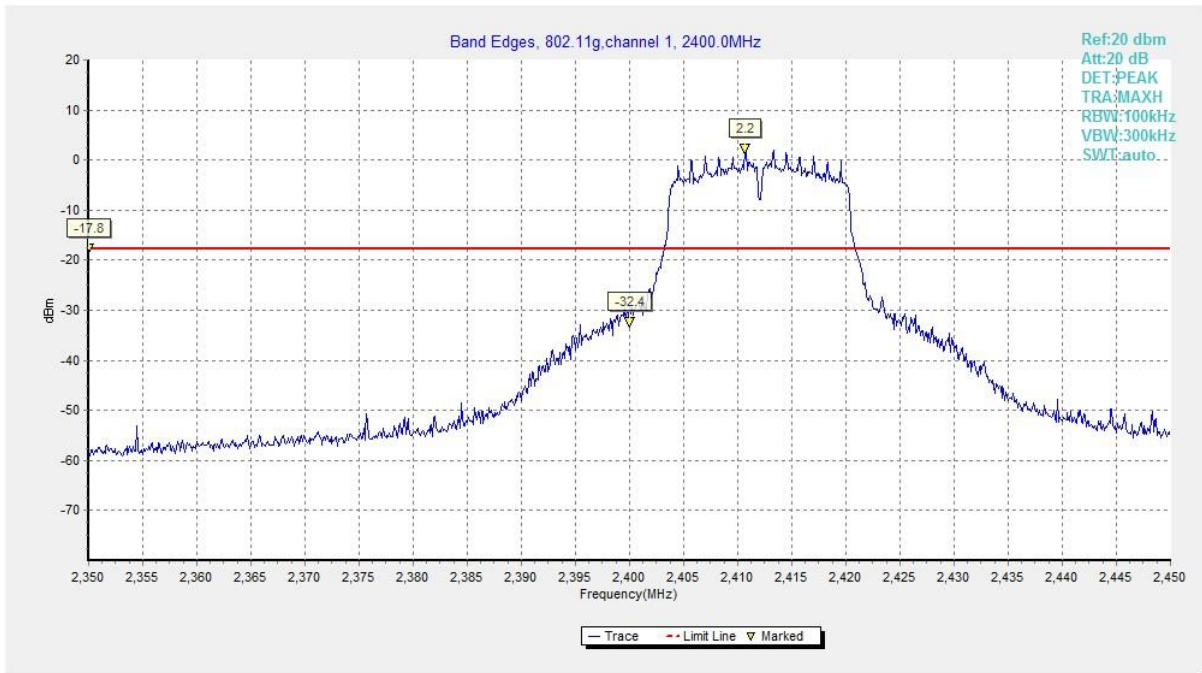


Fig.27 Band Edges (802.11g, CH 1)

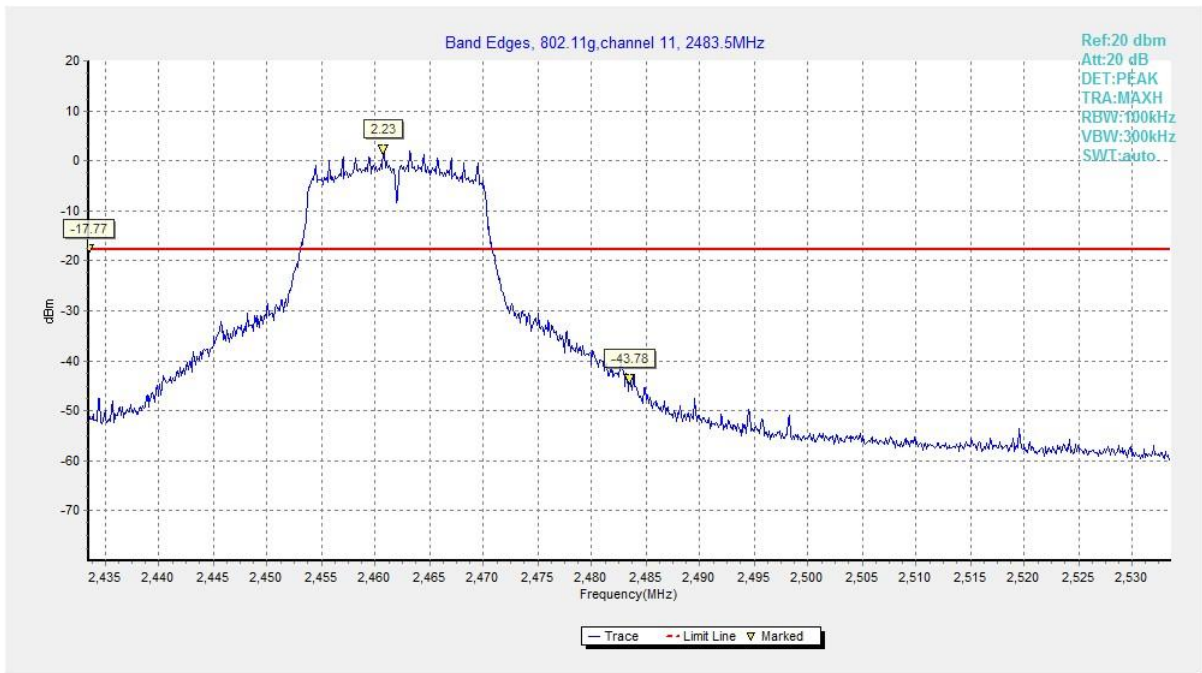


Fig.28 Band Edges (802.11g, CH 11)

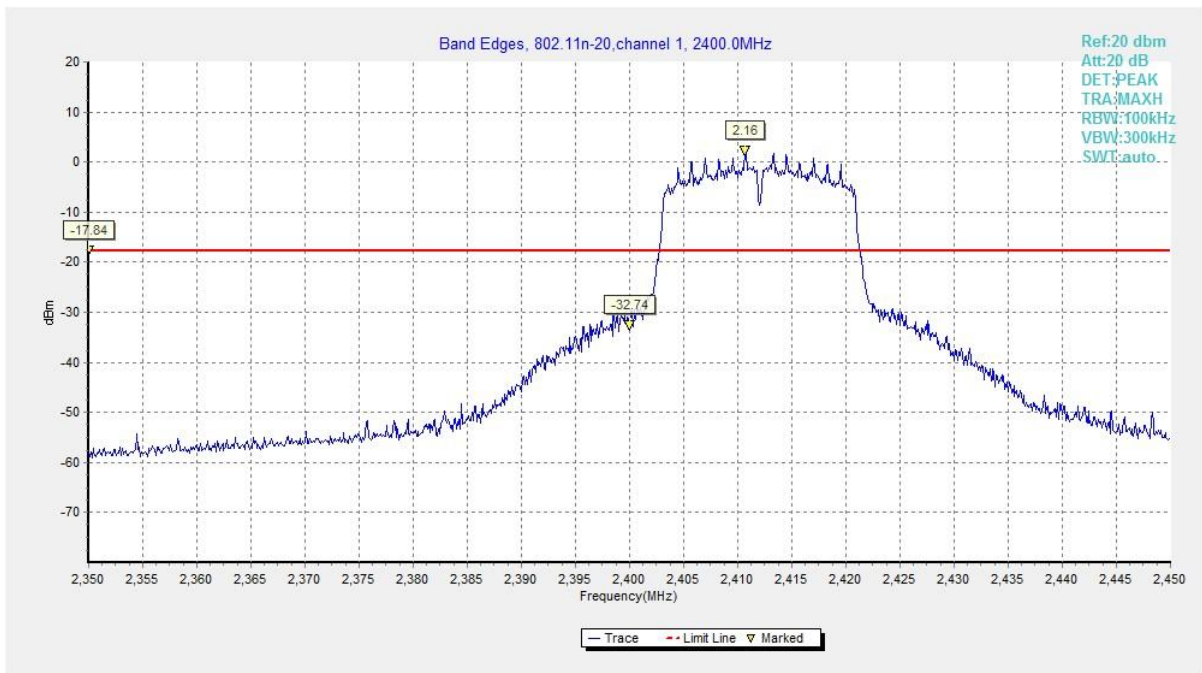


Fig.29 Band Edges (802.11n HT20, CH 1)



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

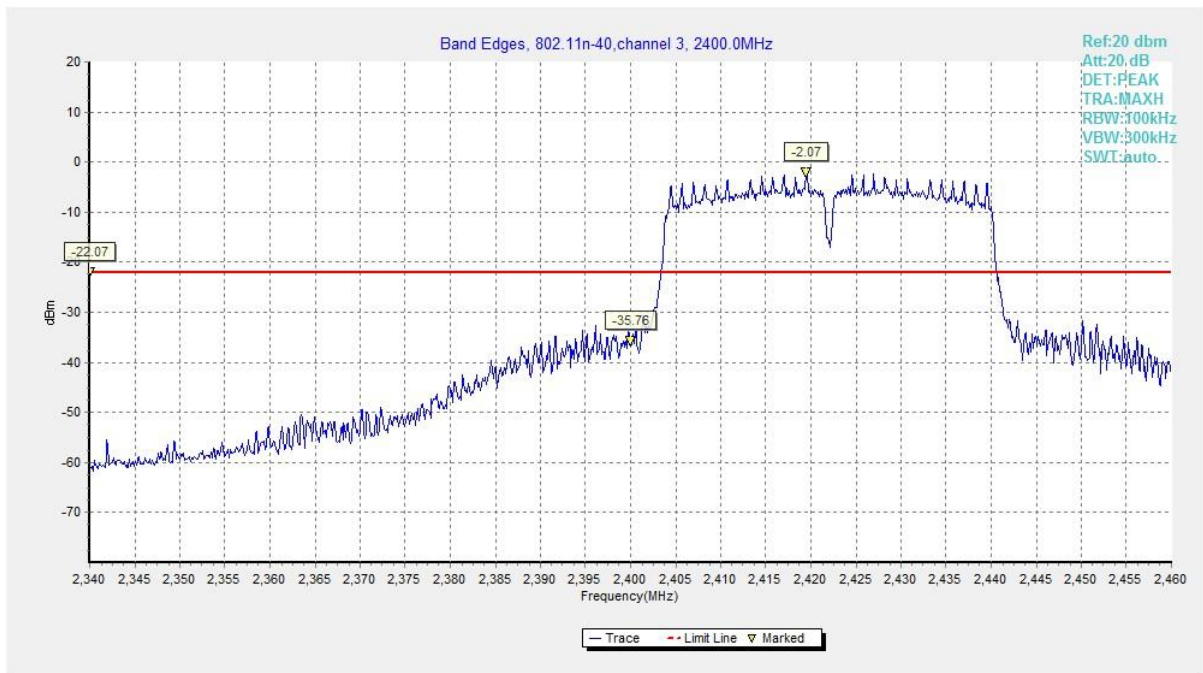


Fig.31 Band Edges (802.11n HT40, CH 3)



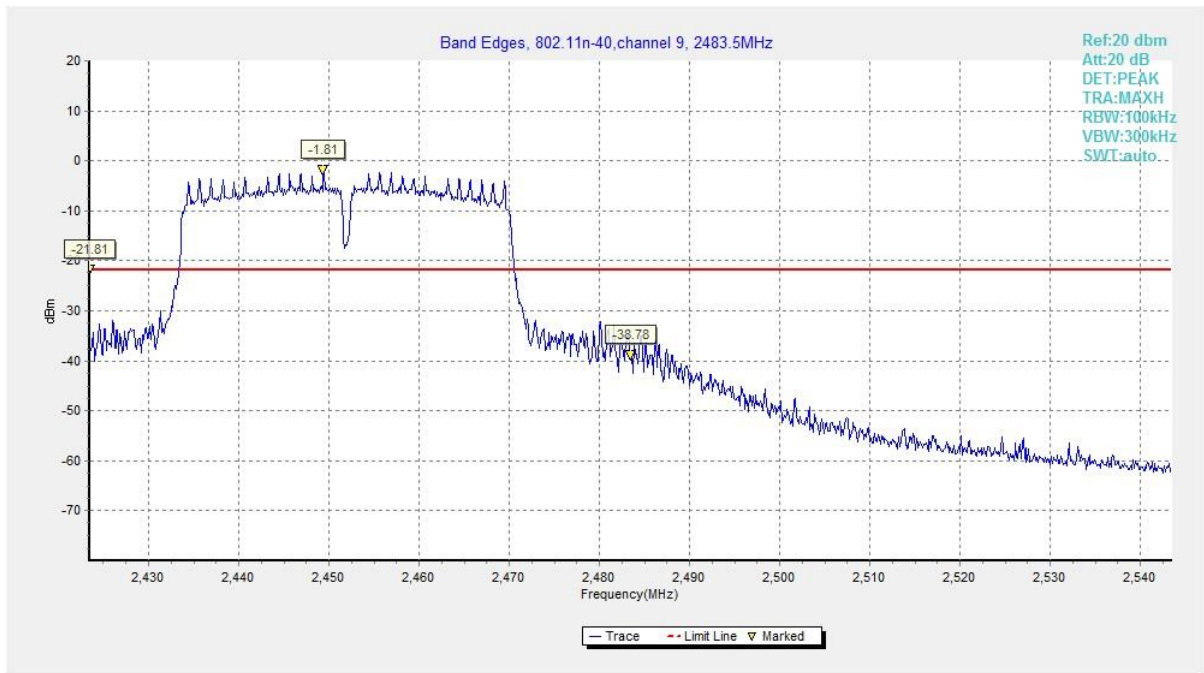


Fig.32 Band Edges (802.11n HT40, CH 9)

## A.5 Conducted Emission

### Measurement Limit:

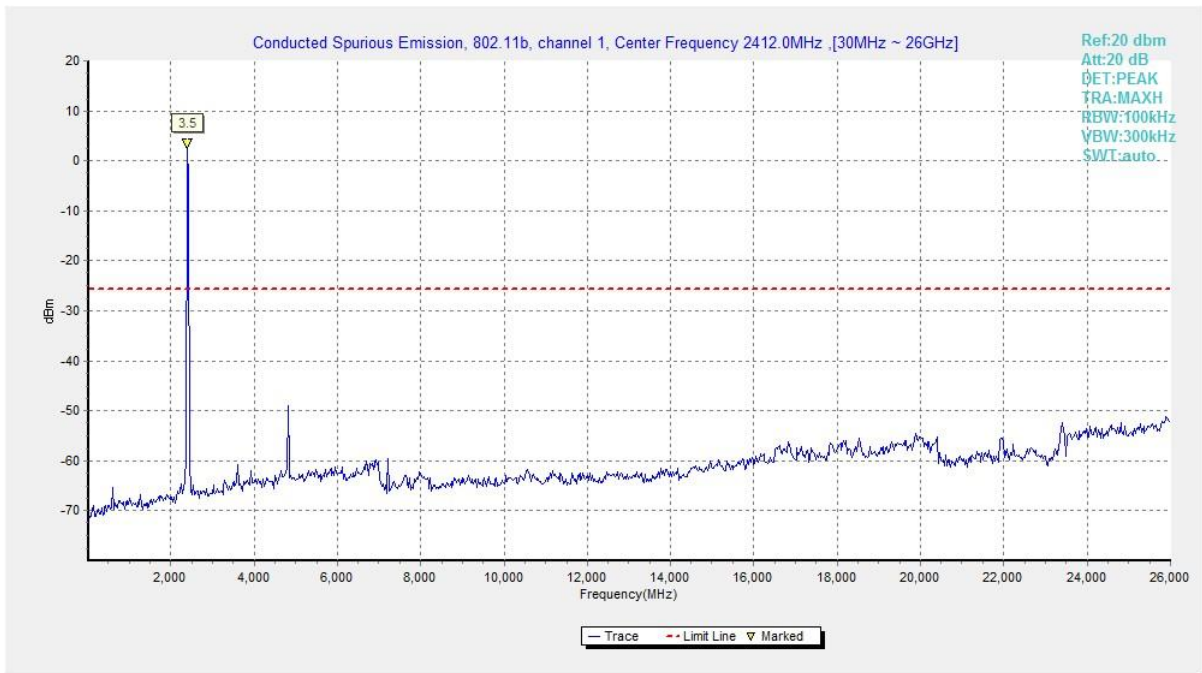
Standard	Limit
FCC 47 CFR Part 15.247 (d)	30dB below peak output power in 100kHz bandwidth

### Measurement Results:

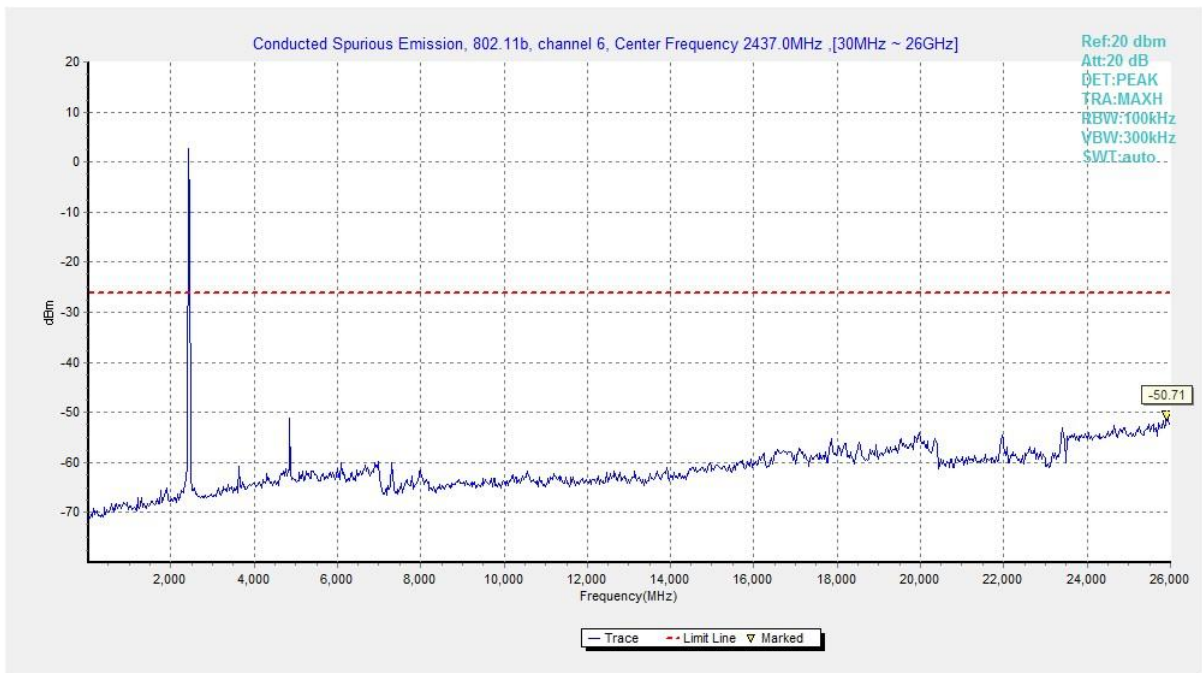
Mode	Channel	Frequency (MHz)	Frequency Range	Test Results	Conclusion
802.11b	CH 1	2412	30MHz-26GHz	Fig.33	P
	CH 6	2437	30MHz-26GHz	Fig.34	P
	CH 11	2462	30MHz-26GHz	Fig.35	P
802.11g	CH 1	2412	30MHz-26GHz	Fig.36	P
	CH 6	2437	30MHz-26GHz	Fig.37	P
	CH 11	2462	30MHz-26GHz	Fig.38	P
802.11n HT20	CH 1	2412	30MHz-26GHz	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.

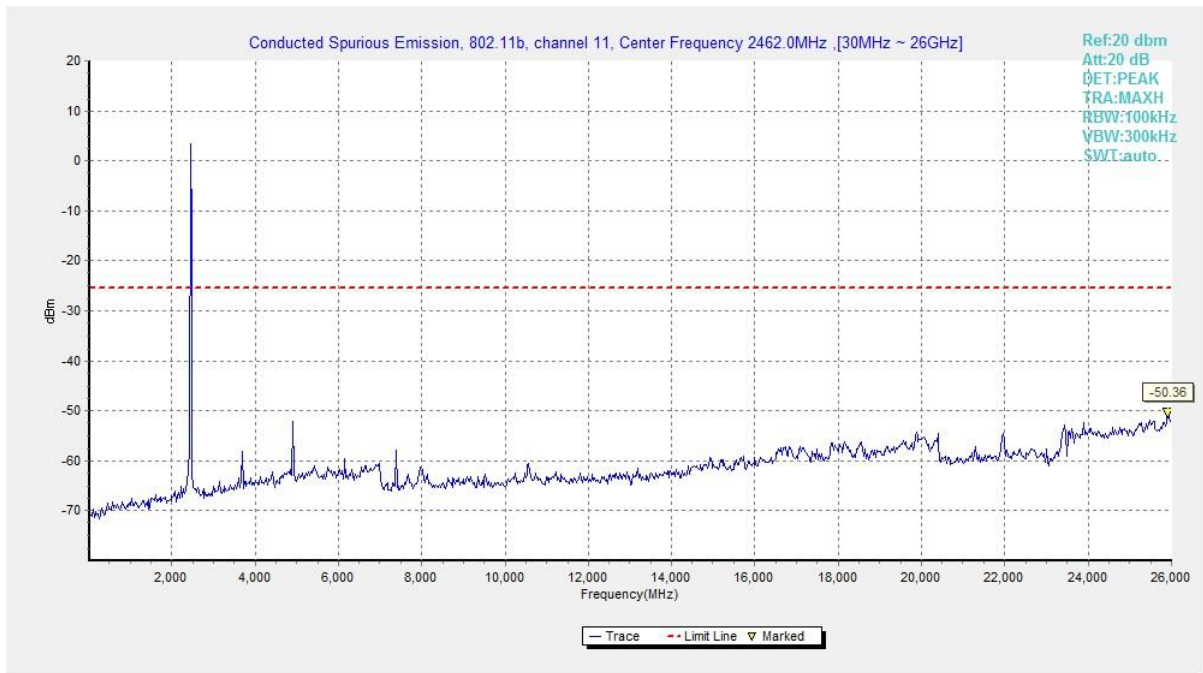
Conclusion: PASS



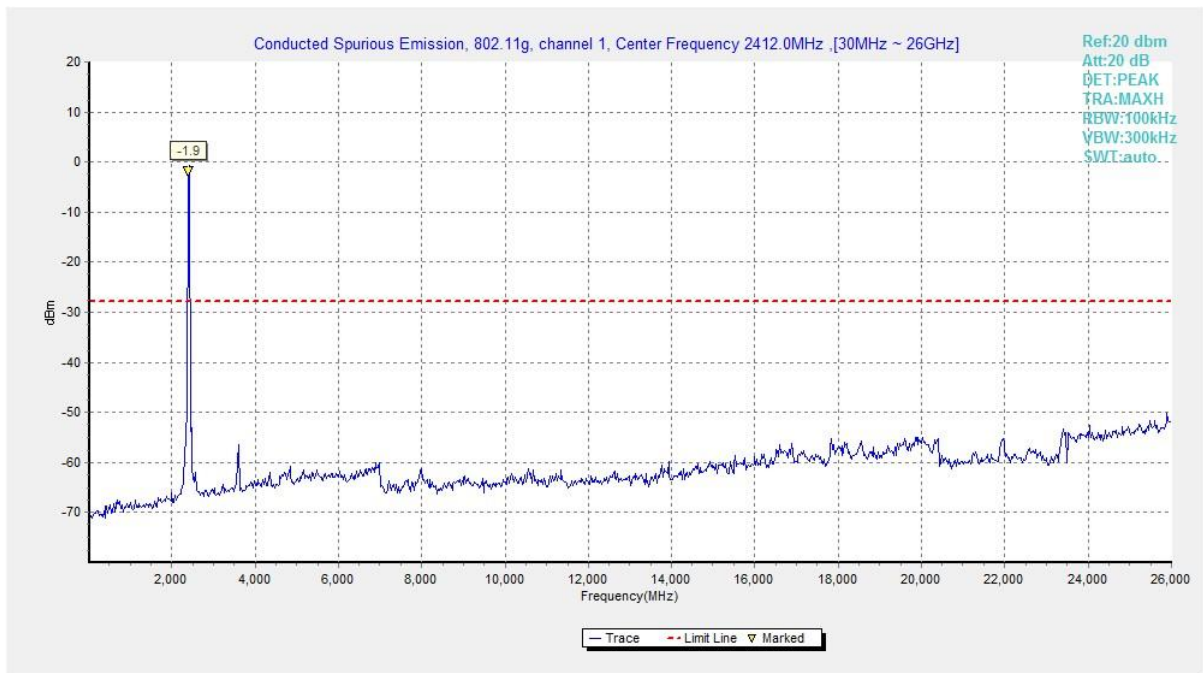
**Fig.33 Conducted Spurious Emission (802.11b, CH1)**



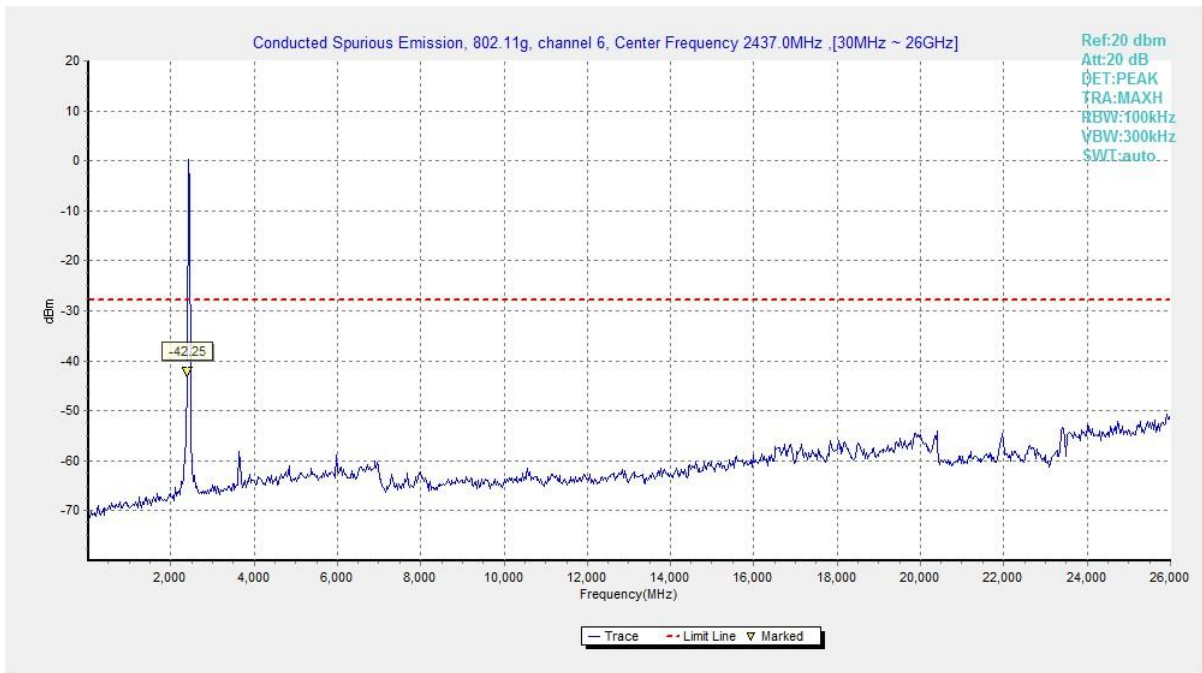
**Fig.34 Conducted Spurious Emission (802.11b, CH6)**



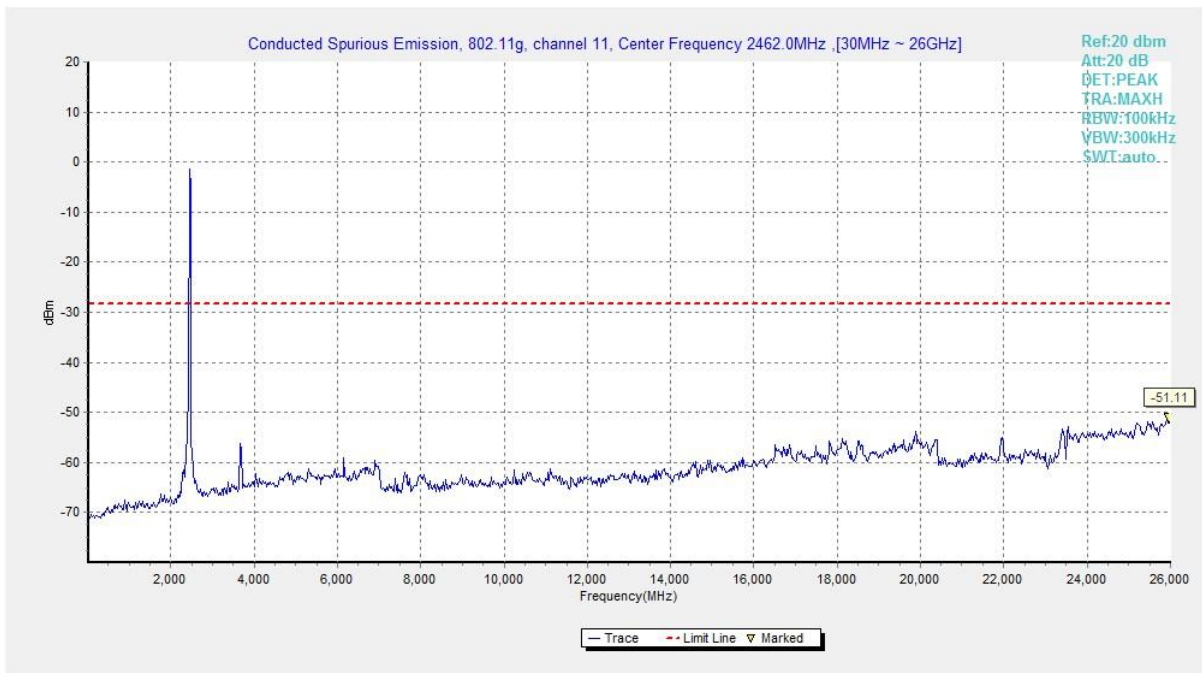
**Fig.35 Conducted Spurious Emission (802.11b, CH11)**



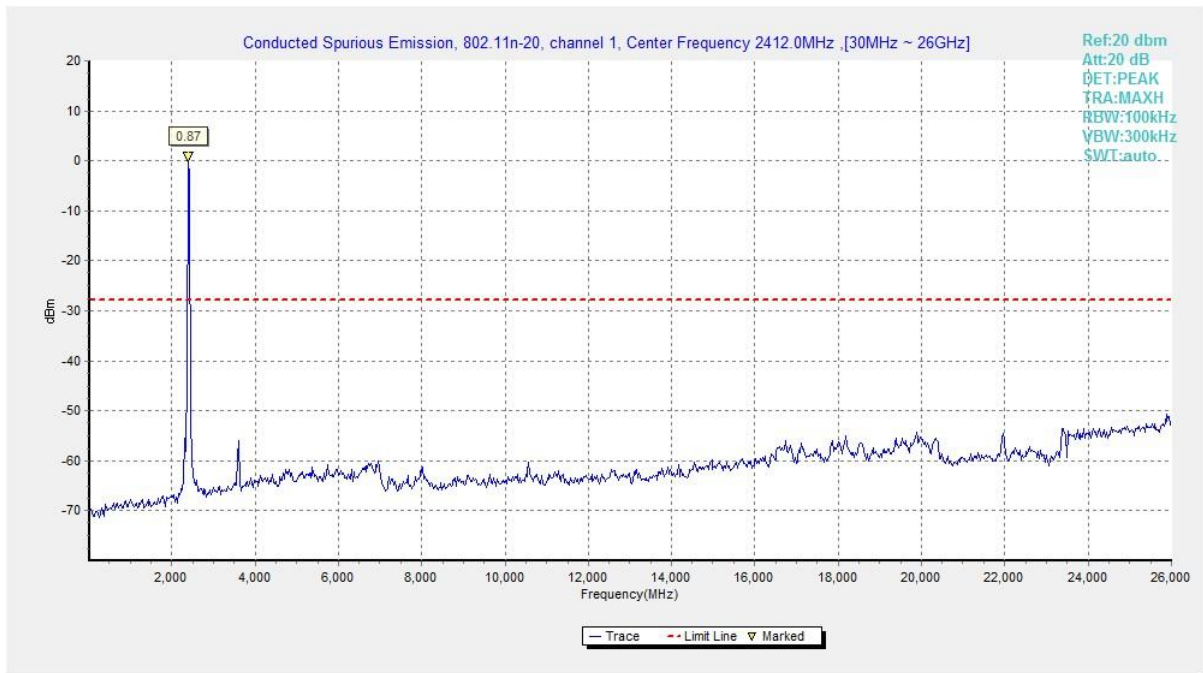
**Fig.36 Conducted Spurious Emission (802.11g, CH1)**



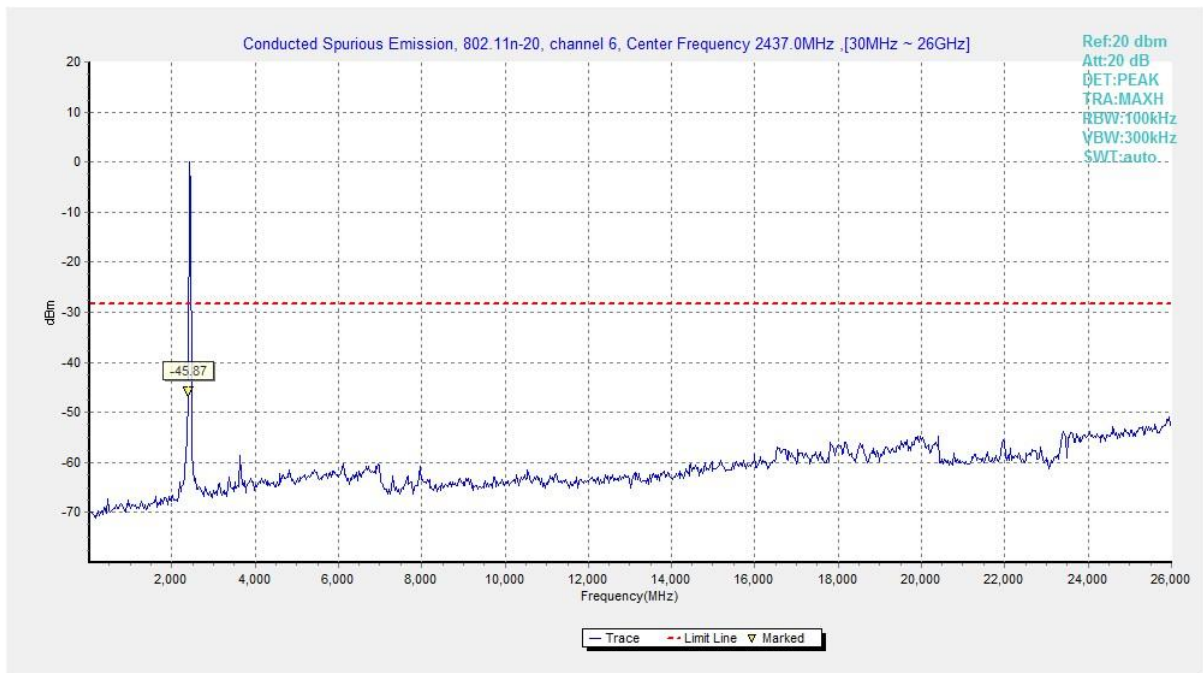
**Fig.37 Conducted Spurious Emission (802.11g, CH6)**



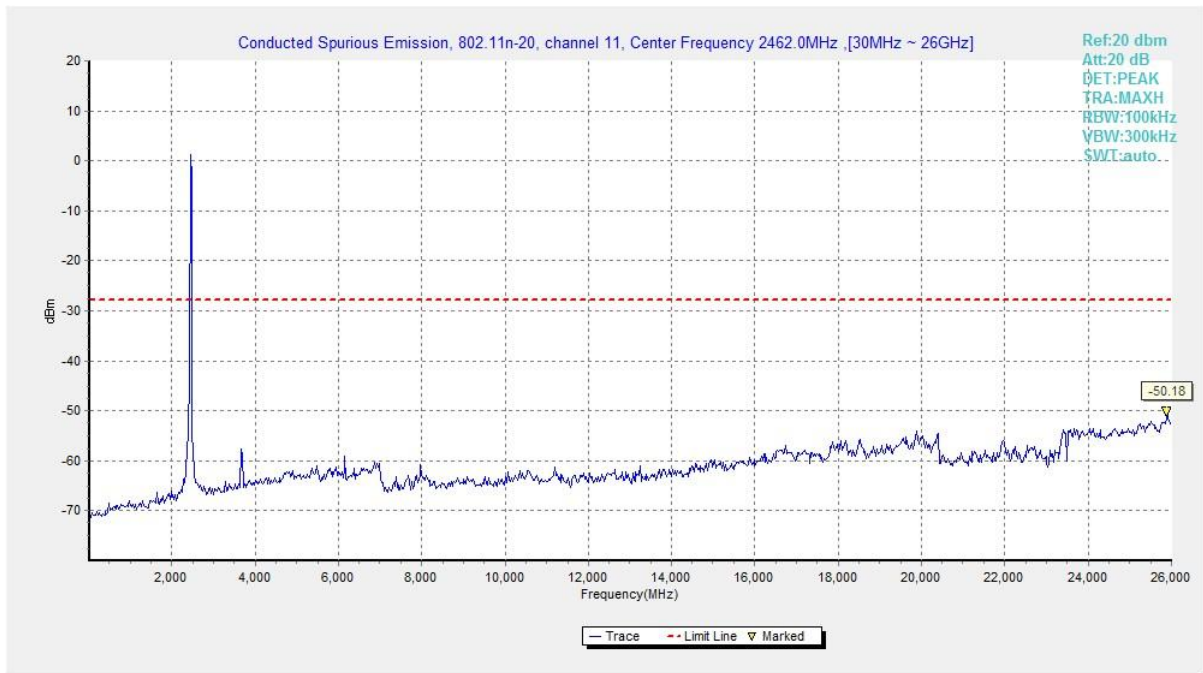
**Fig.38 Conducted Spurious Emission (802.11g, CH11)**



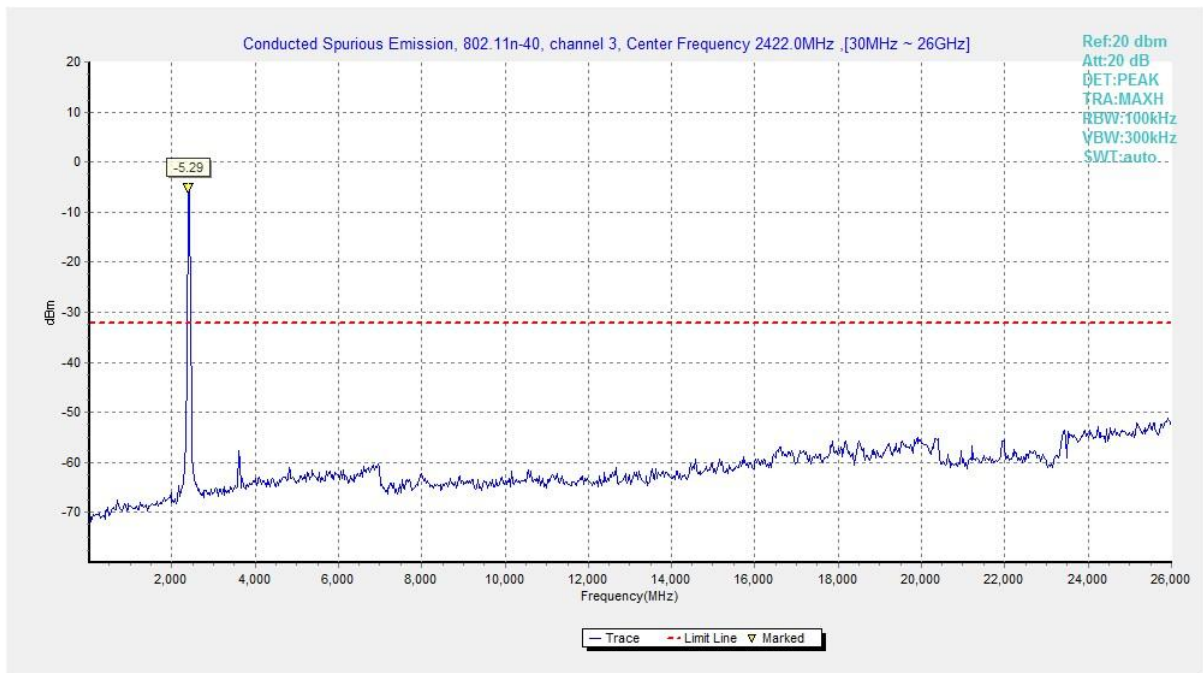
**Fig.39 Conducted Spurious Emission (802.11n HT20, CH1)**



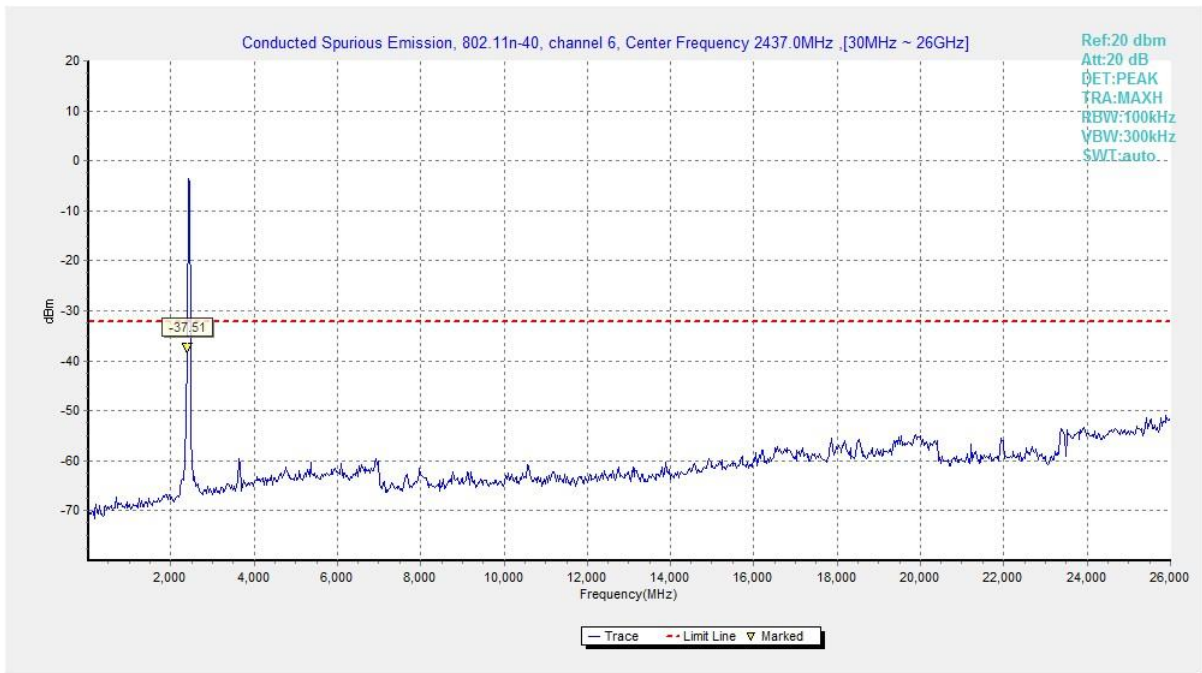
**Fig.40 Conducted Spurious Emission (802.11n HT20, CH6)**



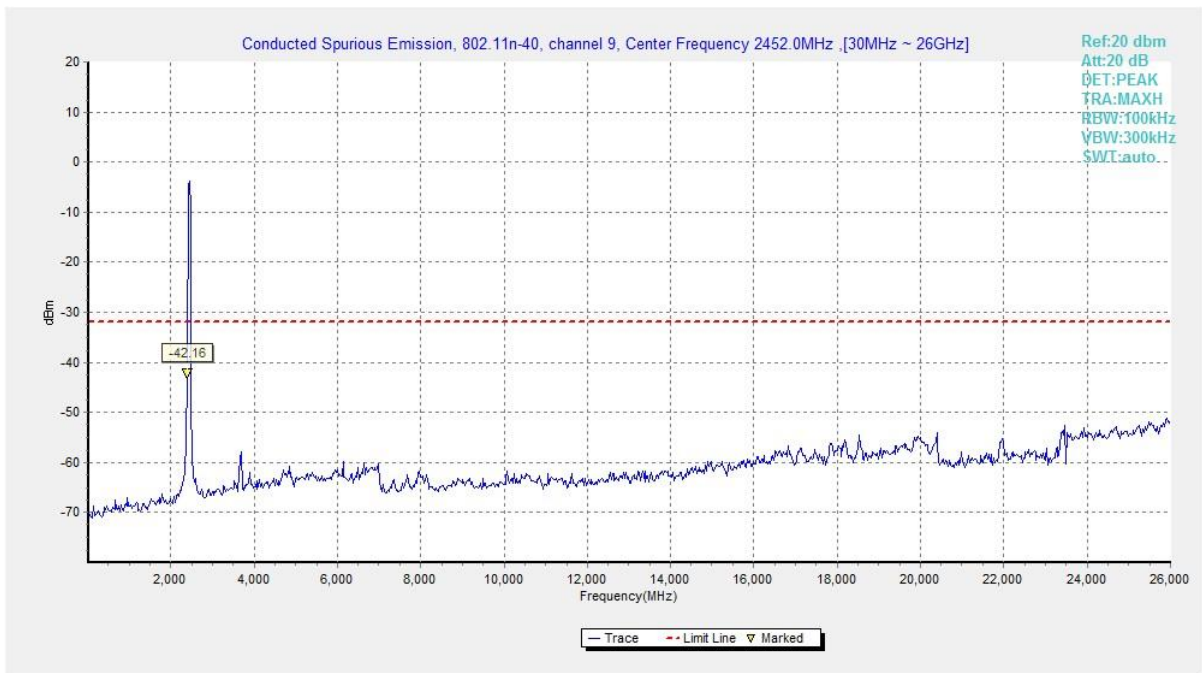
**Fig.41 Conducted Spurious Emission (802.11n HT20, CH11)**



**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 ( $\mu\text{V}/\text{m}$ )	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 from 9kHz to 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 (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
6197.500000	52.93	74.00	21.07	V	17.8
11587.925000	50.98	74.00	23.02	V	13.6
12469.962500	51.53	74.00	22.47	V	15.5
14615.937500	54.84	74.00	19.16	V	18.2
17027.875000	56.02	74.00	17.98	H	19.8
17764.187500	54.77	74.00	19.23	H	20.3

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
4924.000000	43.66	54.00	10.34	H	12.7
11594.912500	38.68	54.00	15.32	V	13.6
12497.912500	40.67	54.00	13.33	V	15.5
14594.500000	43.57	54.00	10.43	V	18.1
16997.687500	43.43	54.00	10.57	H	19.7
17740.562500	42.98	54.00	11.02	H	20.3

**802.11g CH11 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
6186.500000	52.78	74.00	21.22	H	17.9
12551.125000	52.46	74.00	21.54	H	15.4
13510.812500	53.48	74.00	20.52	H	17.0
14606.750000	54.45	74.00	19.55	H	18.1
17001.625000	54.72	74.00	19.28	V	19.7
17667.062500	54.67	74.00	19.33	H	20.2

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
4641.000000	40.59	54.00	13.41	H	12.3
12468.887500	40.37	54.00	13.63	V	15.5
13503.375000	41.57	54.00	12.43	H	17.0
14598.437500	43.00	54.00	11.00	V	18.1
17008.187500	43.54	54.00	10.46	V	19.7
17675.812500	43.42	54.00	10.58	V	20.2

**802.11n HT20 CH6 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
6235.000000	53.17	74.00	20.83	H	17.5
11639.525000	49.88	74.00	24.12	V	13.5
12545.750000	52.09	74.00	21.91	V	15.4
13527.875000	52.84	74.00	21.16	H	17.0
14643.062500	54.79	74.00	19.21	H	18.2
17008.625000	55.20	74.00	18.80	V	19.7

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
4641.500000	39.31	54.00	14.69	H	12.3
11657.262500	38.65	54.00	15.35	H	13.5
12497.912500	40.15	54.00	13.85	H	15.5
13509.062500	42.07	54.00	11.93	H	17.0
14598.437500	42.98	54.00	11.02	H	18.1
16995.937500	43.19	54.00	10.81	V	19.7

**802.11n HT40 CH3 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
6262.500000	52.68	74.00	21.32	V	17.3
12553.812500	52.69	74.00	21.31	V	15.3
13534.875000	52.92	74.00	21.08	H	16.9
14614.625000	54.28	74.00	19.72	H	18.2
15476.500000	52.86	74.00	21.14	H	17.2
17016.937500	54.99	74.00	19.01	V	19.7

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
4641.000000	40.94	54.00	13.06	H	12.3
12500.600000	40.15	54.00	13.86	V	15.5
13535.312500	41.30	54.00	12.70	V	16.9
14562.125000	42.82	54.00	11.18	H	17.9
15563.125000	42.08	54.00	11.92	H	17.2
16986.750000	43.07	54.00	10.93	V	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 =  $P_{\text{Mea}}$  + Cable Loss + Antenna Factor - Gain of the preamplifier

**See below for test graphs.**

**Conclusion: PASS**

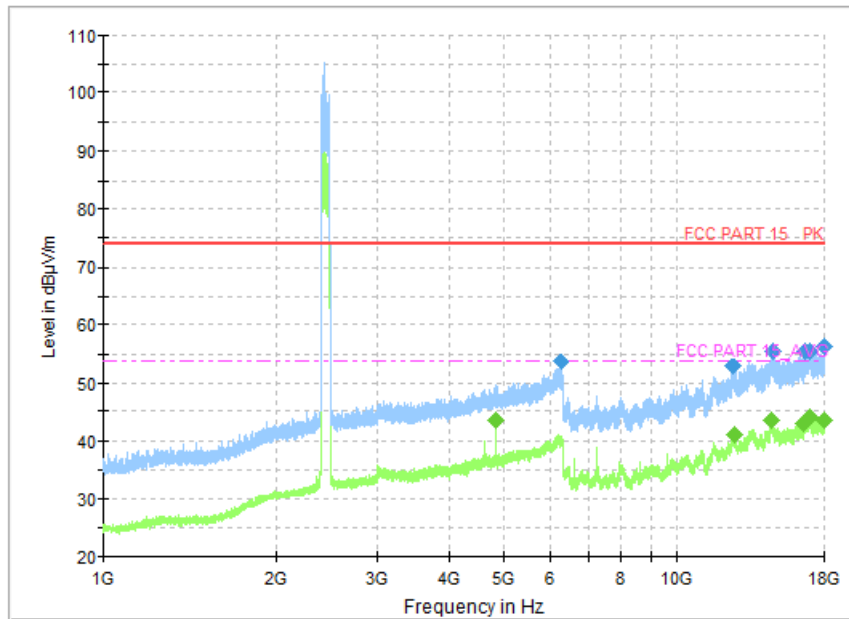


Fig.45 Radiated Spurious Emission (802.11b, CH1, 1GHz-18GHz)

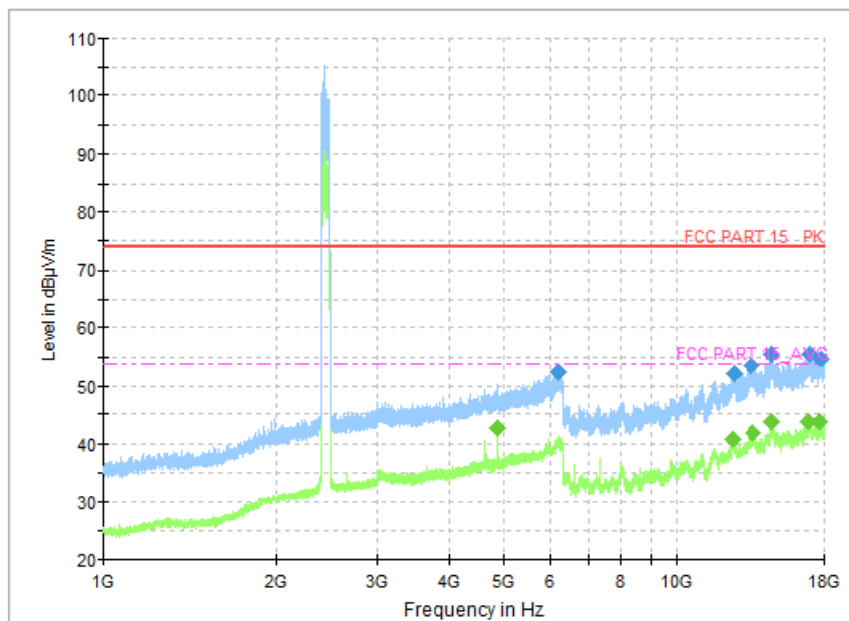


Fig.46 Radiated Spurious Emission (802.11b, CH6, 1GHz-18GHz)

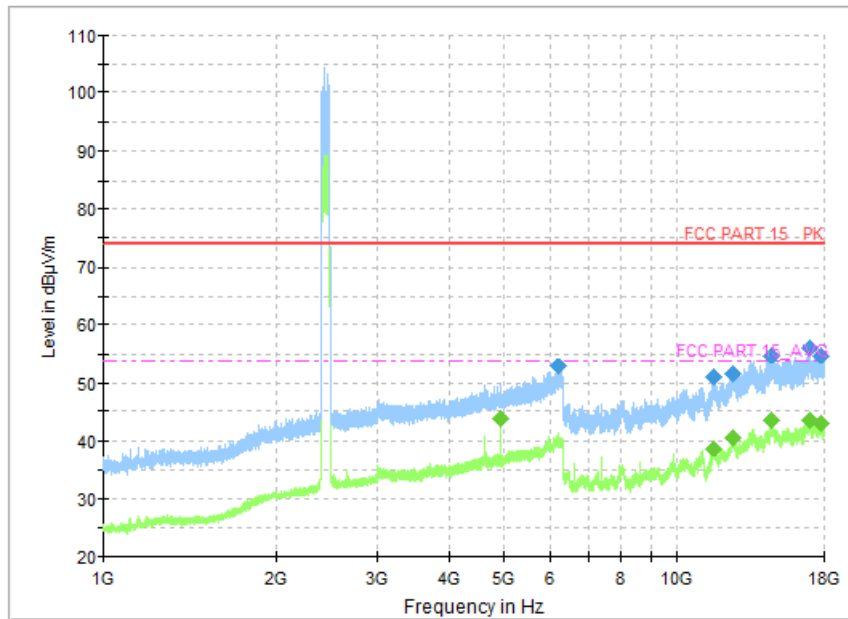


Fig.47 Radiated Spurious Emission (802.11b, CH11, 1GHz-18GHz)

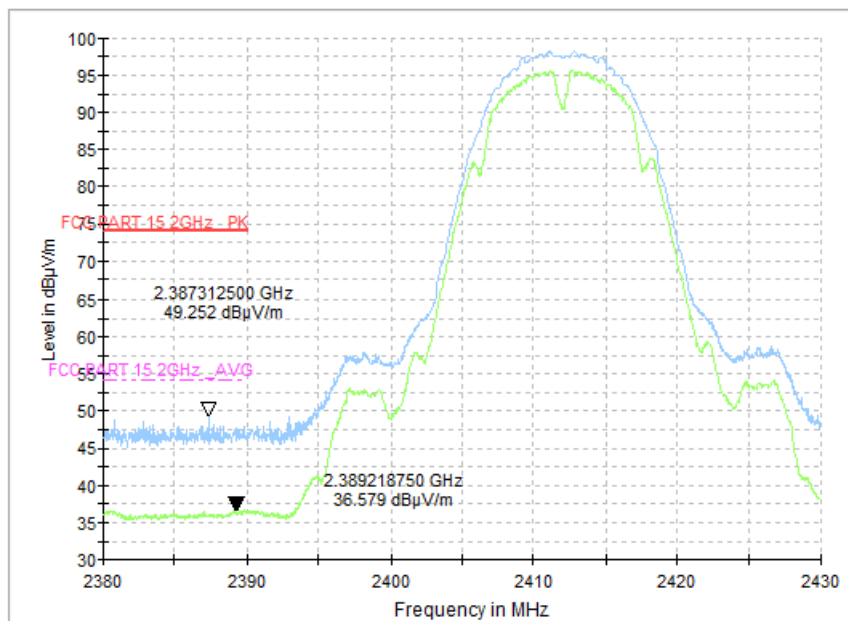


Fig.48 Radiated Restricted Band (802.11b, CH1, 2.38GHz~2.45GHz)

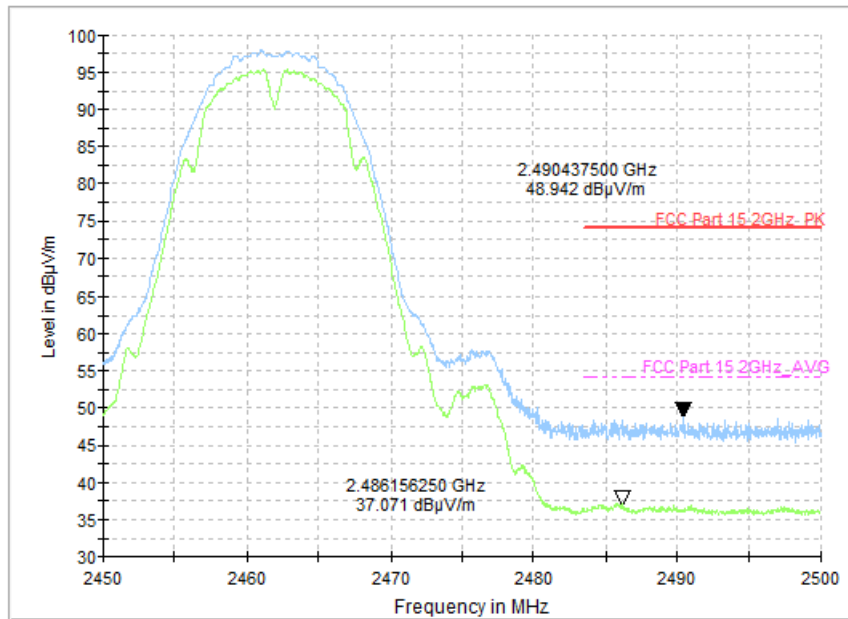


Fig.49 Radiated Restricted Band (802.11b, CH11, 2.45GHz~2.5GHz)

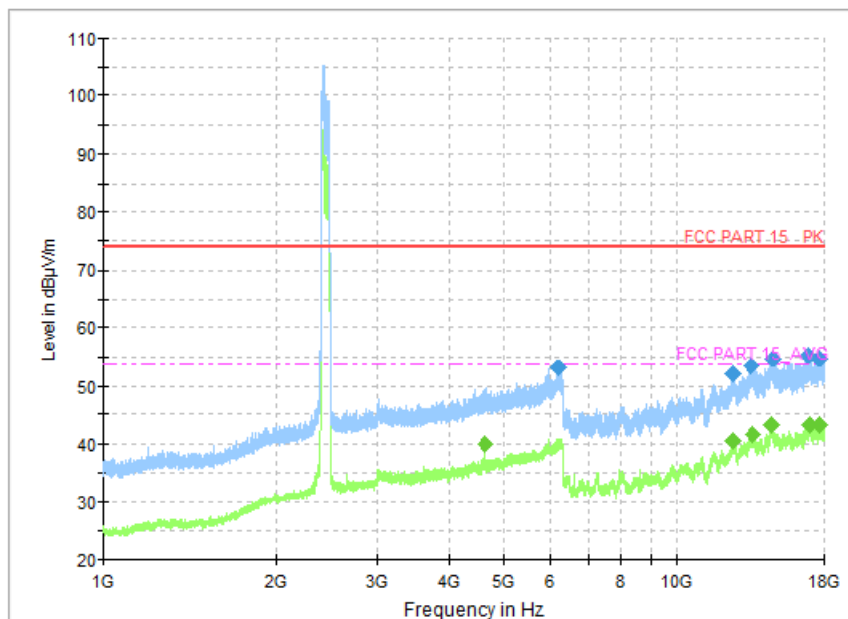


Fig.50 Radiated Spurious Emission (802.11g, CH1, 1GHz~18GHz)



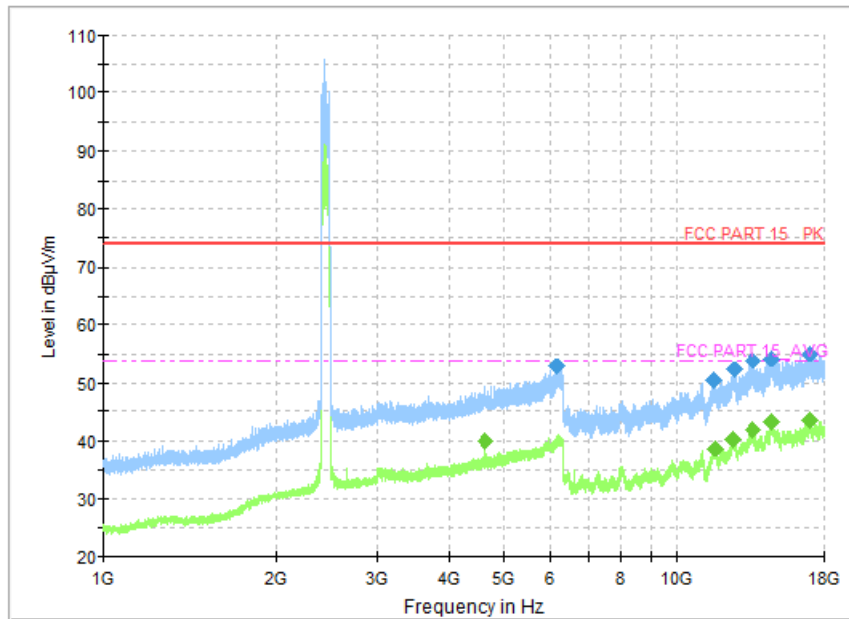


Fig.51 Radiated Spurious Emission (802.11g, CH6, 1GHz-18GHz)

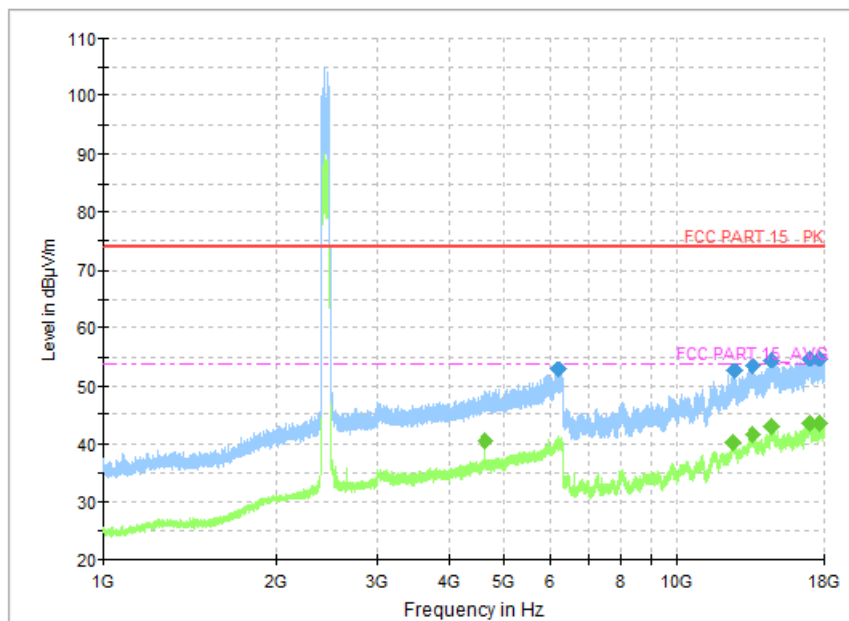


Fig.52 Radiated Spurious Emission (802.11g, CH11, 1GHz-18GHz)

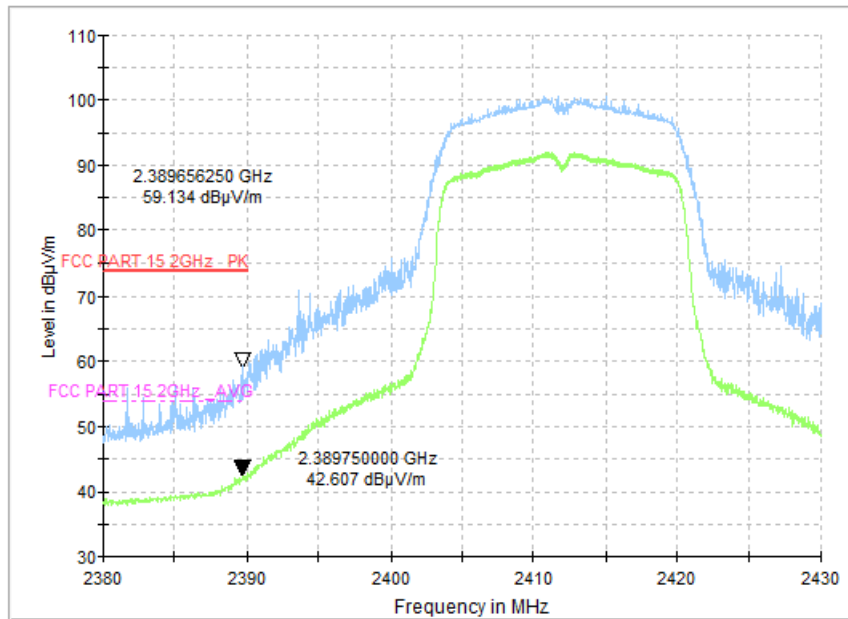


Fig.53 Radiated Restricted Band (802.11g, CH1, 2.38GHz~2.45GHz)

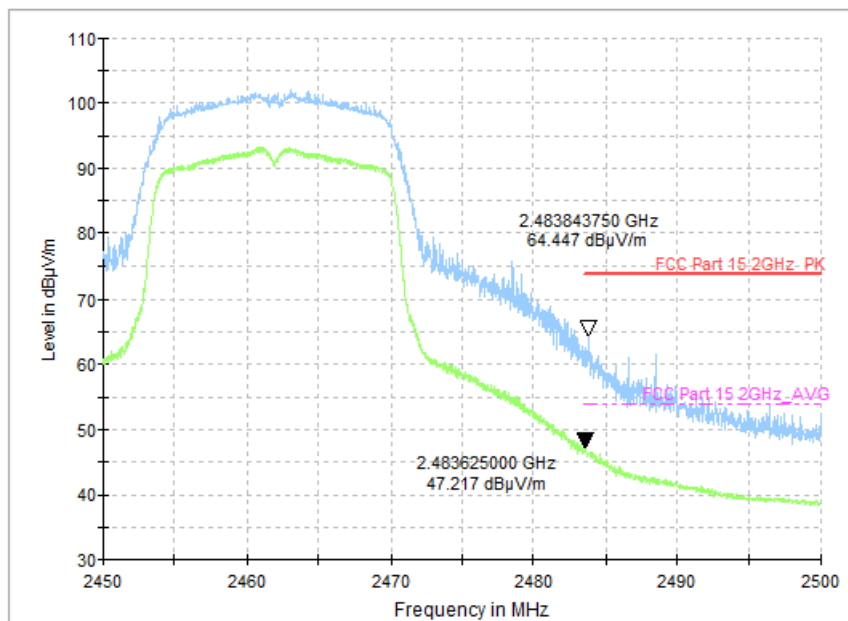
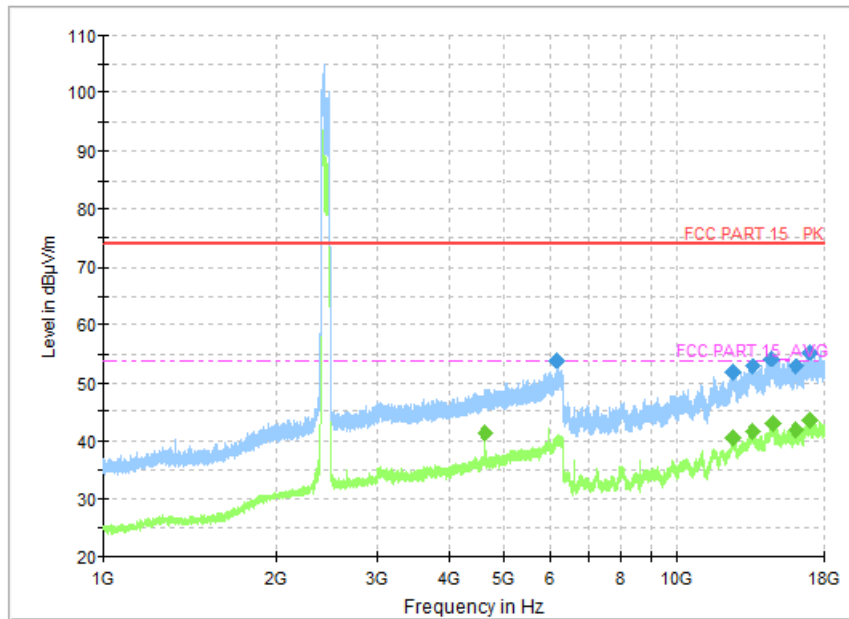
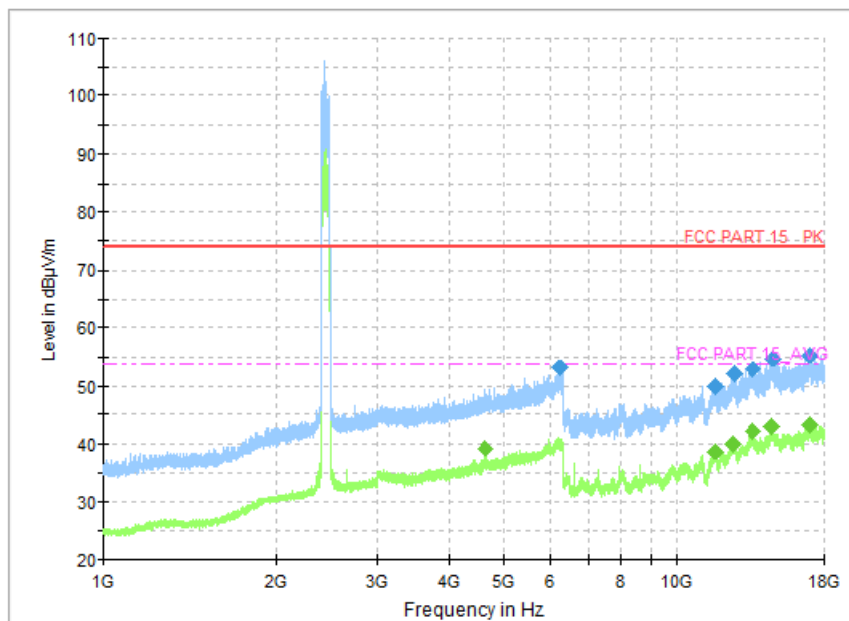


Fig.54 Radiated Restricted Band (802.11g, CH11, 2.45GHz~2.5GHz)



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



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

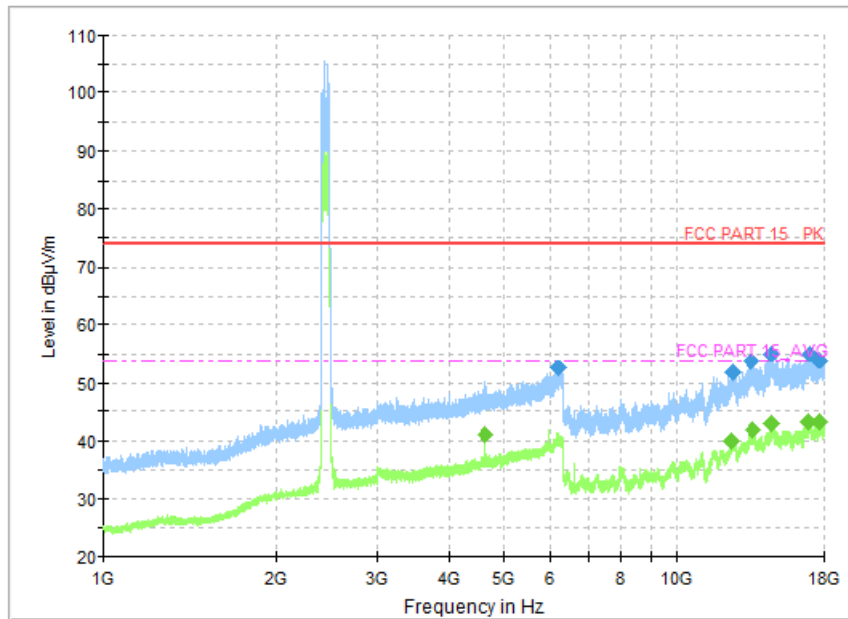


Fig.57 Radiated Spurious Emission (802.11n HT20, CH11, 1GHz-18GHz)

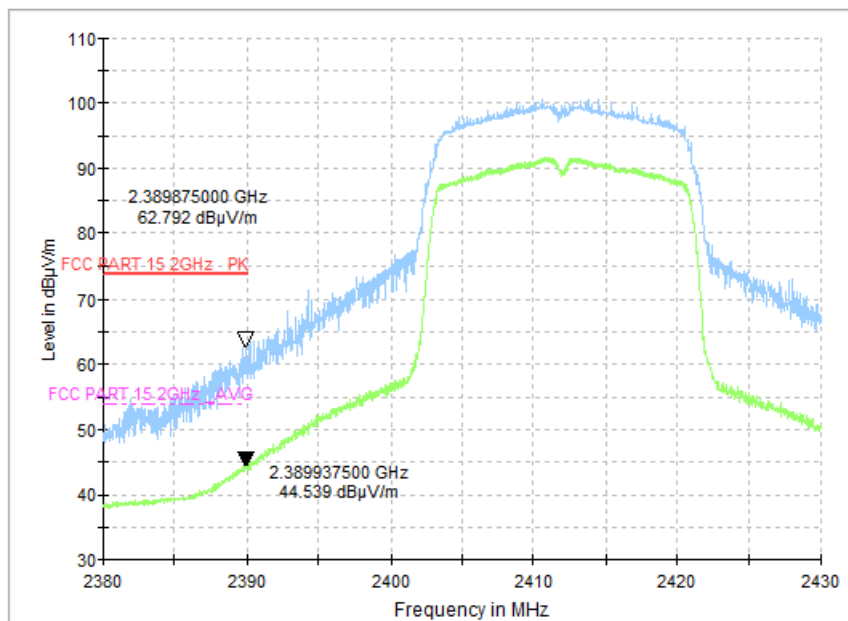


Fig.58 Radiated Restricted Band (802.11n HT20, CH1, 2.38GHz~2.45GHz)

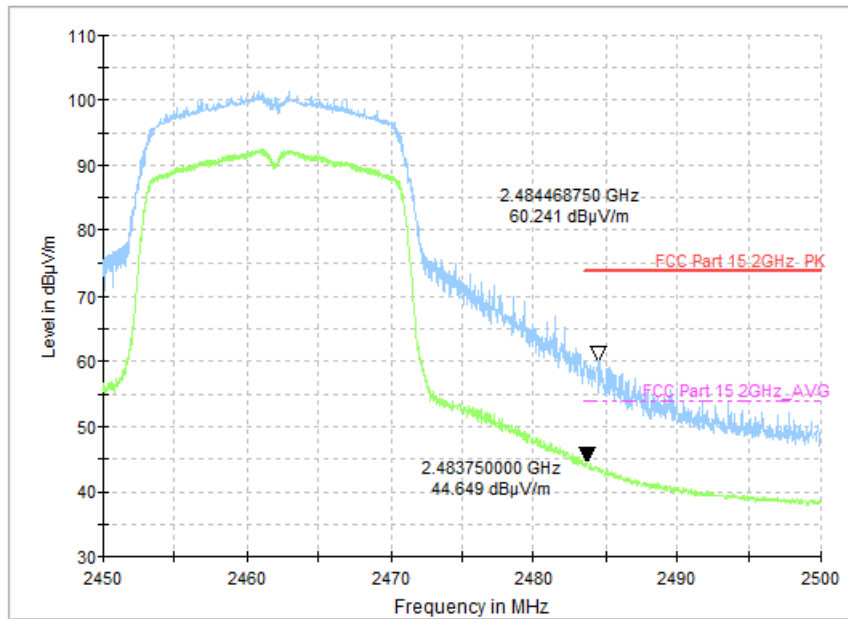


Fig.59 Radiated Restricted Band (802.11n HT20, CH11, 2.45GHz~2.5GHz)

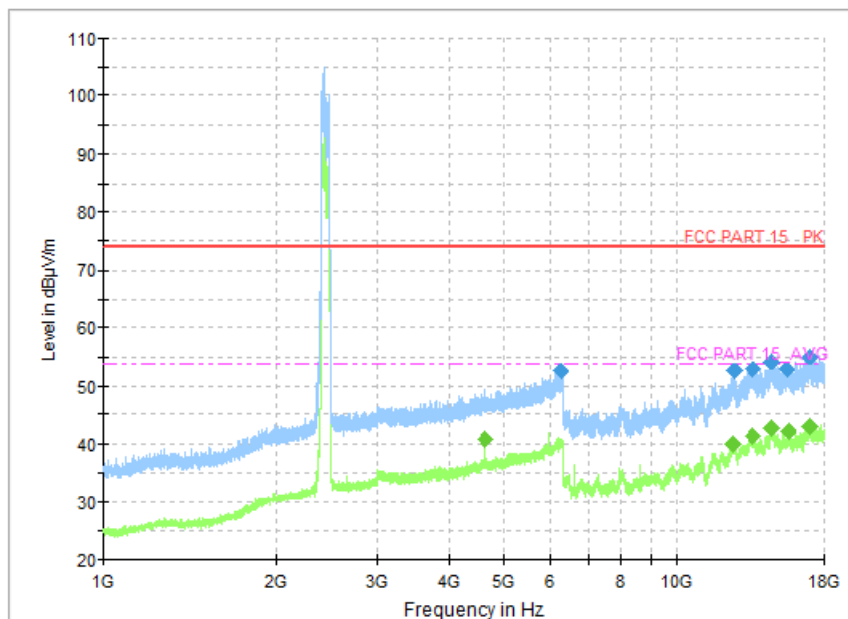


Fig.60 Radiated Spurious Emission (802.11n HT40, CH3, 1GHz~18GHz)

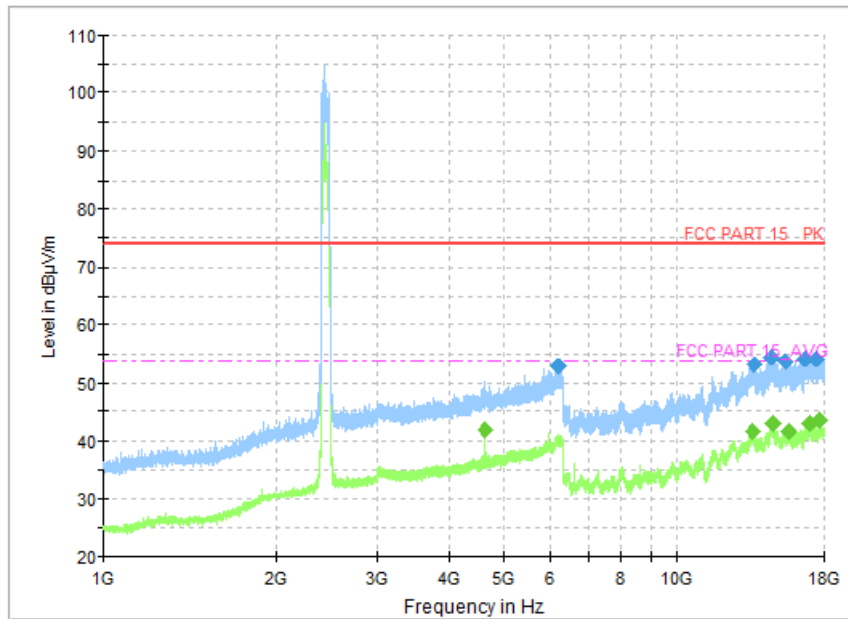


Fig.61 Radiated Spurious Emission (802.11n HT40, CH6, 1GHz-18GHz)

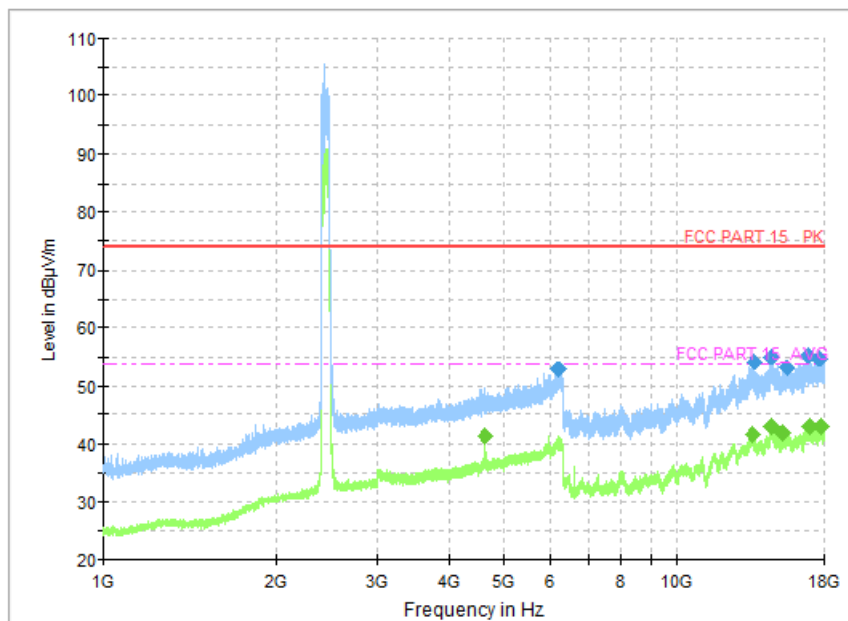


Fig.62 Radiated Spurious Emission (802.11n HT40, CH9, 1GHz-18GHz)

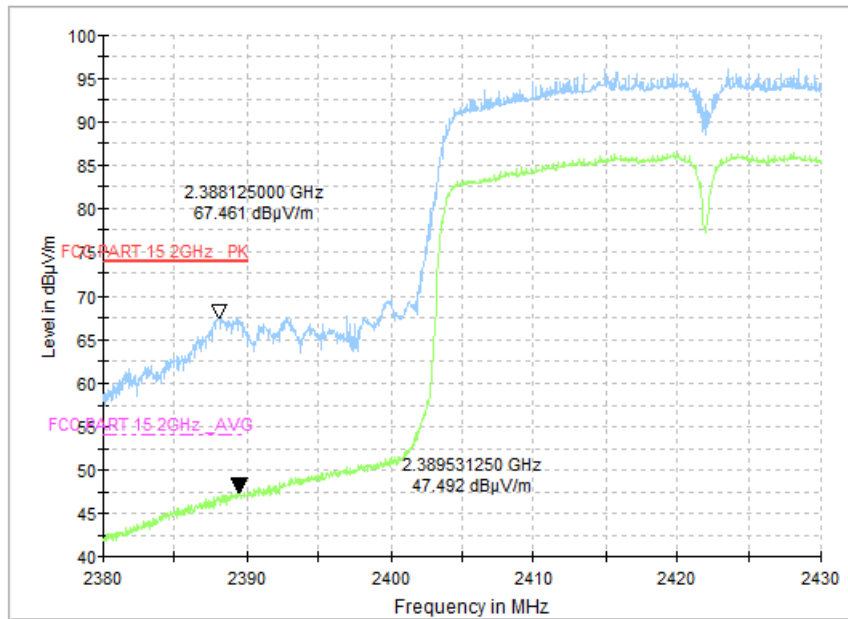


Fig.63 Radiated Restricted Band (802.11n HT40, CH3, 2.38GHz~2.45GHz)

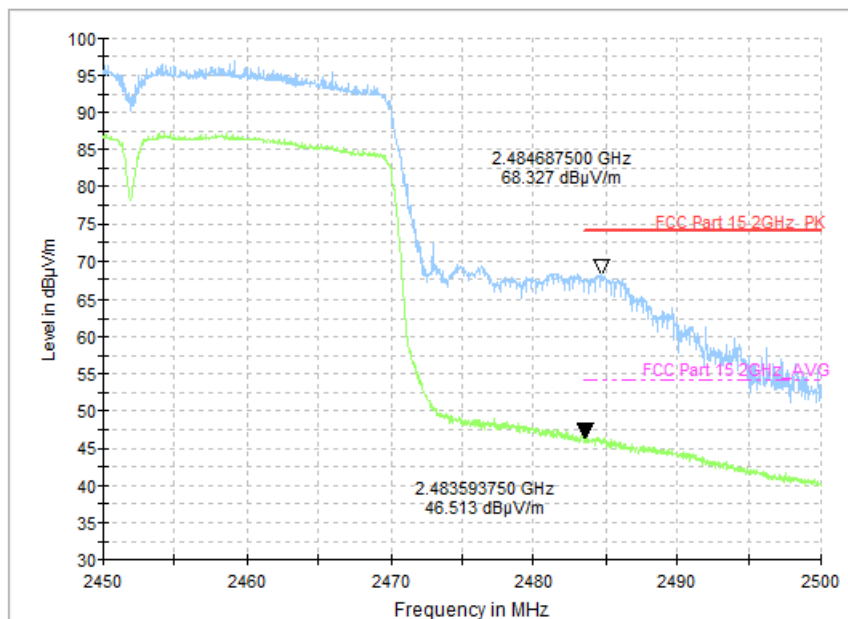


Fig.64 Radiated Restricted Band (802.11n HT40, CH9, 2.45GHz~2.5GHz)

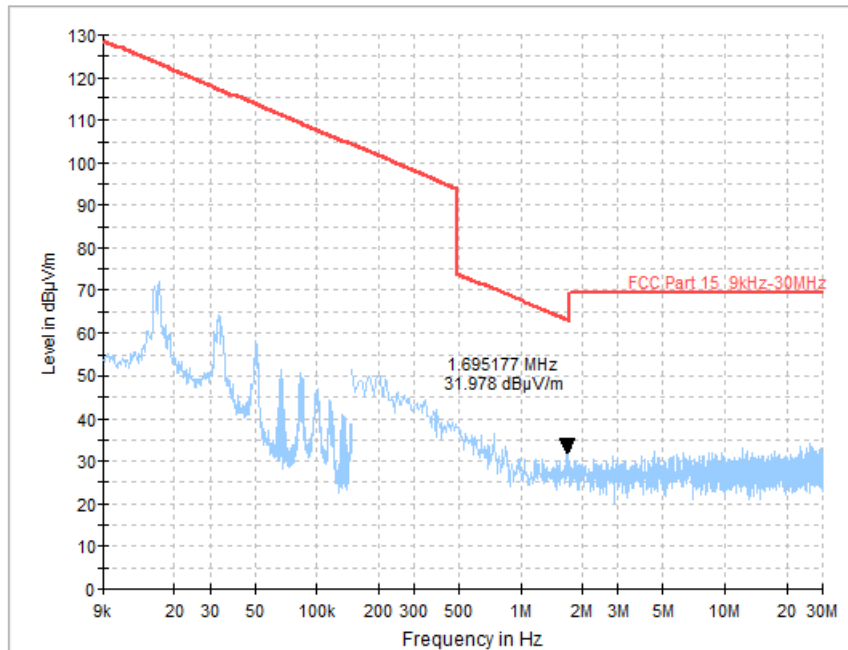


Fig.65 Radiated Spurious Emission (All Channels, 9KHz-30MHz)

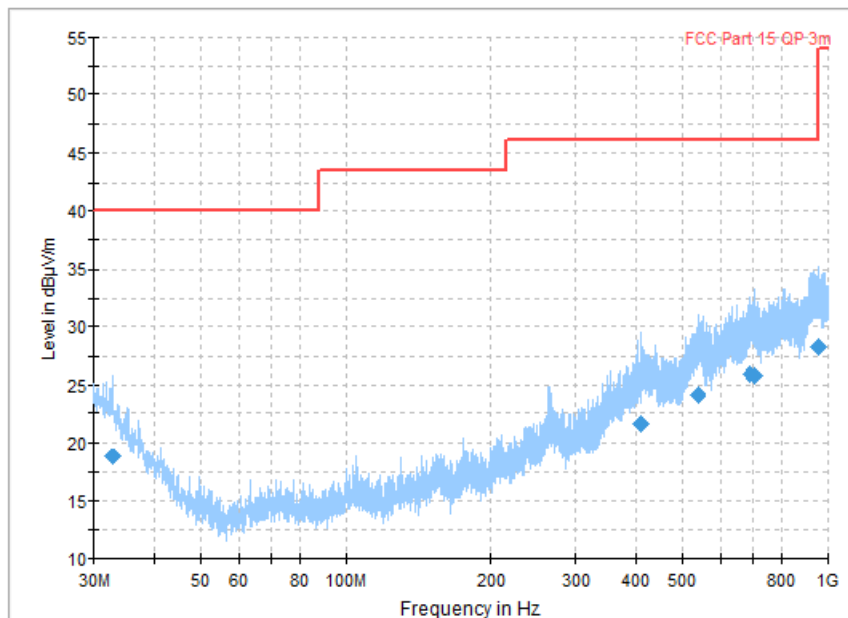


Fig.66 Radiated Spurious Emission (All Channels, 30MHz-1GHz)



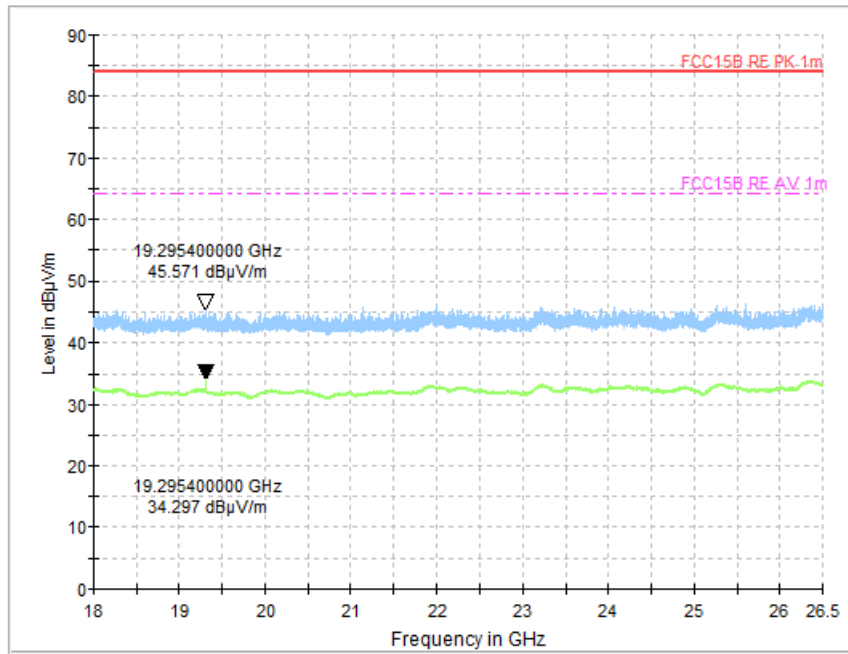


Fig.67 Radiated Spurious Emission (All Channels, 18GHz-26.5GHz)

## A.7 AC Power line Conducted Emission

### Test Condition:

Voltage (V)	Frequency (Hz)
120	60

### Measurement Result and limit:

#### WLAN (Quasi-peak Limit) - AE2

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		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) - AE2

Frequency range (MHz)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		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.

#### WLAN (Quasi-peak Limit) - AE3

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	66 to 56	Fig.70	Fig.71	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) - AE3

Frequency range (MHz)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	56 to 46	Fig.70	Fig.71	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**

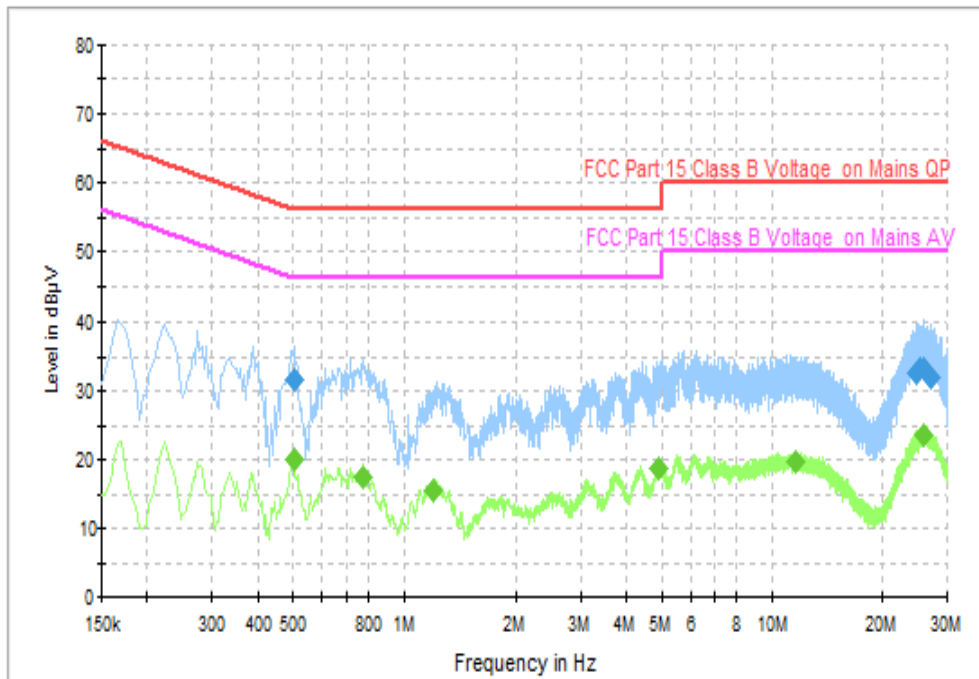


Fig.68 AC Power line Conducted Emission (Traffic, AE2, 120V)

**Measurement Results: Quasi Peak**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.502000	31.5	GND	N	9.7	24.5	56.0
24.786000	32.6	GND	N	10.1	27.4	60.0
25.130000	33.0	GND	N	10.1	27.0	60.0
25.374000	33.1	GND	N	10.0	26.9	60.0
25.898000	33.3	GND	N	10.1	26.7	60.0
26.946000	32.1	GND	N	10.1	27.9	60.0

**Measurement Results: Average**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.502000	20.1	GND	N	9.7	25.9	46.0
0.778000	17.5	GND	N	9.6	28.6	46.0
1.206000	15.5	GND	N	9.6	30.5	46.0
4.882000	18.8	GND	N	9.7	27.2	46.0
11.542000	19.8	GND	N	9.9	30.2	50.0
25.886000	23.4	GND	N	10.1	26.6	50.0

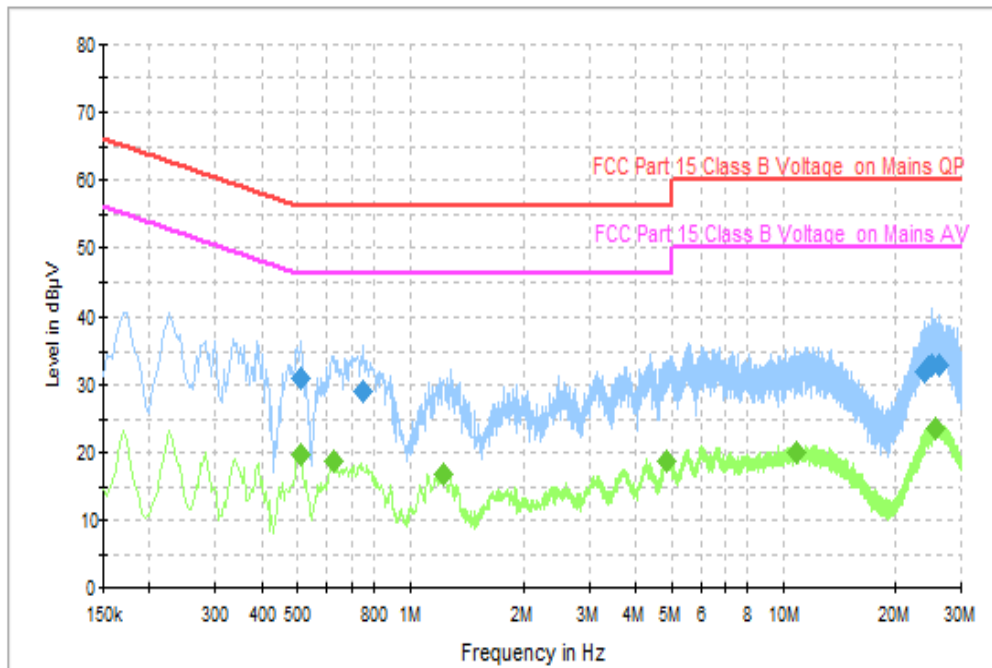


Fig.69 AC Power line Conducted Emission (Idle, AE2, 120V)

**Measurement Results: Quasi Peak**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.510000	31.0	GND	N	9.7	25.0	56.0
0.750000	29.0	GND	N	9.6	27.0	56.0
24.030000	32.0	GND	N	10.0	28.0	60.0
24.454000	32.5	GND	N	10.0	27.5	60.0
25.114000	32.9	GND	N	10.1	27.1	60.0
26.170000	33.0	GND	N	10.1	27.0	60.0

**Measurement Results: Average**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.510000	19.5	GND	N	9.7	26.5	46.0
0.626000	18.6	GND	N	9.6	27.4	46.0
1.234000	16.9	GND	N	9.6	29.1	46.0
4.830000	18.8	GND	N	9.7	27.2	46.0
10.854000	19.9	GND	N	9.9	30.1	50.0
25.682000	23.4	GND	N	10.0	26.6	50.0

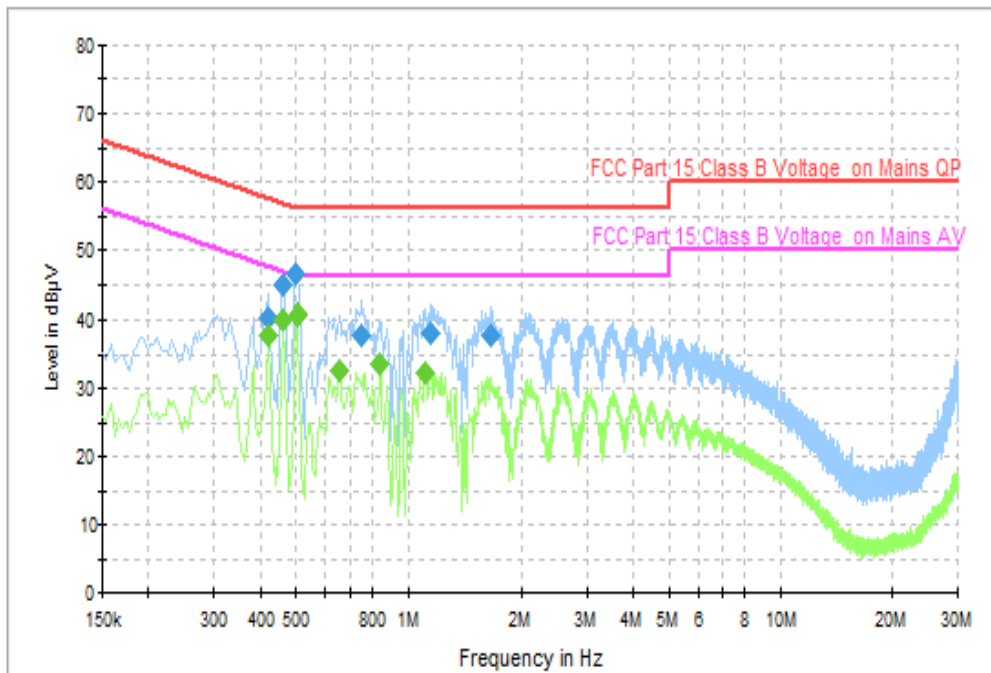


Fig.70 AC Power line Conducted Emission (Traffic, AE3, 120V)

**Measurement Results: Quasi Peak**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.422000	40.4	GND	N	9.7	17.0	57.4
0.462000	44.9	GND	N	9.7	11.7	56.7
0.498000	46.4	GND	N	9.7	9.6	56.0
0.750000	37.7	GND	N	9.6	18.3	56.0
1.150000	38.1	GND	N	9.6	17.9	56.0
1.662000	37.7	GND	N	9.6	18.3	56.0

**Measurement Results: Average**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.418000	37.6	GND	N	9.7	9.9	47.5
0.462000	39.9	GND	N	9.7	6.7	46.7
0.502000	40.7	GND	N	9.7	5.3	46.0
0.654000	32.5	GND	N	9.6	13.5	46.0
0.842000	33.5	GND	N	9.6	12.5	46.0
1.114000	32.3	GND	N	9.6	13.7	46.0

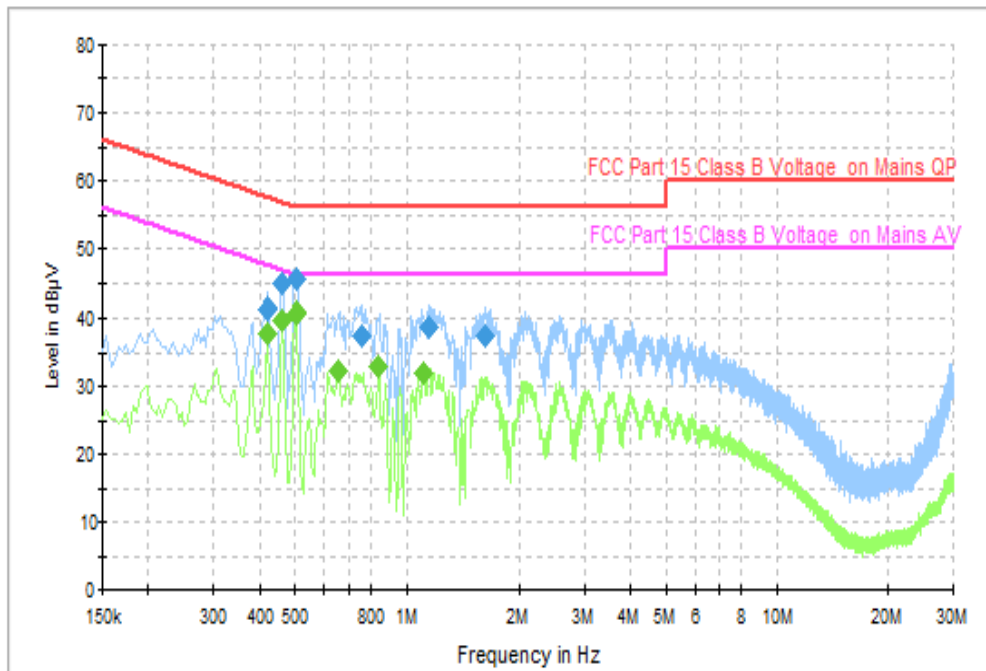


Fig.71 AC Power line Conducted Emission (Idle, AE3, 120V)

**Measurement Results: Quasi Peak**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.418000	41.2	GND	N	9.7	16.3	57.5
0.458000	44.8	GND	N	9.7	12.0	56.7
0.502000	45.6	GND	N	9.7	10.4	56.0
0.754000	37.4	GND	N	9.6	18.6	56.0
1.146000	38.8	GND	N	9.6	17.2	56.0
1.622000	37.5	GND	N	9.6	18.5	56.0

**Measurement Results: Average**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.418000	37.7	GND	N	9.7	9.8	47.5
0.462000	39.7	GND	N	9.7	7.0	46.7
0.502000	40.6	GND	N	9.7	5.4	46.0
0.654000	32.3	GND	N	9.6	13.7	46.0
0.842000	33.0	GND	N	9.6	13.0	46.0
1.114000	32.0	GND	N	9.6	14.0	46.0

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