

# FCC TEST REPORT (WIFI)

for

TeVii Technology Co., Ltd.

wireless HDMI receiver

Model Number: G201RX

Series models: G200RX, VS200VR(RX)

FCC ID: 2ALU5G201RX

Prepared for : TeVii Technology Co., Ltd.

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Report No. : 17KWE025105F

Date of Test : Apr. 10~15, 2017

Date of Report : Apr. 17, 2017

## TABLE OF CONTENTS

Test Report Declaration	Page
<b>1. TEST SUMMARY .....</b>	<b>4</b>
<b>2. GENERAL PRODUCT INFORMATION .....</b>	<b>4</b>
2.1. Product Function.....	4
2.2. Description of Device (EUT) .....	4
2.3. Independent Operation Modes.....	5
2.4. Test Supporting System .....	5
2.5. Test Sites.....	5
2.6. List of Test and Measurement Instruments .....	6
<b>3. TEST SET-UP AND OPERATION MODES.....</b>	<b>7</b>
3.1. Principle of Configuration Selection.....	7
3.2. Block Diagram of Test Set-up.....	7
3.3. Test Software .....	7
3.4. Special Accessories and Auxiliary Equipment.....	7
3.5. Countermeasures to Achieve EMC Compliance .....	7
<b>4. EMISSION TEST RESULTS .....</b>	<b>8</b>
4.1. Conducted Emission at the Mains Terminals Test.....	8
4.2. Radiated Emission Test.....	13
<b>5. BAND EDGE COMPLIANCE TEST.....</b>	<b>36</b>
5.1. Limits .....	36
5.2. Test setup .....	36
5.3. Test Procedure .....	37
<b>6. BANDWIDTH TEST .....</b>	<b>47</b>
6.1. Limits .....	47
6.2. Test Procedure .....	47
<b>7. OUTPUT POWER TEST .....</b>	<b>53</b>
7.1. Limits .....	53
7.2. Test setup .....	53
7.3. Test result .....	53
<b>8. DUTY CYCLE.....</b>	<b>54</b>
8.1. Test Procedure .....	54
8.2. Test Setup .....	54
<b>9. POWER SPECTRAL DENSITY TEST.....</b>	<b>59</b>
9.1. Limits .....	59
9.2. Test setup .....	59
9.3. Test result .....	59
<b>10. ANTENNA REQUIREMENTS .....</b>	<b>72</b>
10.1. Limits .....	72
10.2. Result .....	72
<b>11. PHOTOGRAPHS OF TEST SET-UP .....</b>	<b>73</b>
<b>12. PHOTOGRAPHS OF THE EUT .....</b>	<b>75</b>

# Keyway Testing Technology Co., Ltd.

<b>Applicant:</b>	TeVii Technology Co., Ltd. 7F, No. 143, Sec. 2, Datong Rd.22183 Xizhi District, New Taipei City Taiwan, R.O.C.		
<b>Manufacturer:</b>	TeVii Technology Co., Ltd. 7F, No. 143, Sec. 2, Datong Rd.22183 Xizhi District, New Taipei City Taiwan, R.O.C.		
<b>E.U.T:</b>	wireless HDMI receiver		
<b>Model Number:</b>	G201RX		
<b>Series models:</b>	G200RX, VS200VR(RX)		
<b>Trade Name:</b>	TEVII or Diamond Multimedia	<b>Serial No.:</b>	-----
<b>Date of Receipt:</b>	Apr. 08, 2017	<b>Date of Test:</b>	Apr. 10~15, 2017
<b>Test Specification:</b>	FCC Part 15, Subpart 15.247: Oct. 1, 2016 ANSI C63.10:2013 KDB558074 D01 DTS Meas Guidance v03r05		
<b>Test Result:</b>	The equipment under test was found to be compliance with the requirements of the standards applied.		
<b>Issue Date:</b> Apr. 17, 2017			
Tested by:	Reviewed by:	Approved by:	
		 Andy Gao / Supervisor	
Keven Wu / Engineer	Mark Li / Supervisor	Andy Gao / Supervisor	
<b>Other Aspects:</b>	None.		
Abbreviations: OK/P=passed      fail/F=failed      n.a/N=not applicable      E.U.T=equipment under tested			
<i>This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Keyway Testing Technology Co., Ltd.</i>			

## 1. TEST SUMMARY

Test Items	Test Requirement	Result
Conducted Emissions	15.207	PASS
Radiated Emissions	15.205(a)/15.209/15.247(d)	PASS
6dB&99% Bandwidth	15.247(a)(2)	PASS
Power density	15.247(e)	PASS
Maximum Peak Output Power	15.247(b)	PASS
Duty Cycle	KDB558074 e6.0(b)	PASS
Emissions from out of band	15.247(d)	PASS
Antenna Requirement	15.203	PASS

## 2. GENERAL PRODUCT INFORMATION

### 2.1. Product Function

Refer to Technical Construction Form and User Manual.

### 2.2. Description of Device (EUT)

Product Name:	wireless HDMI receiver
Model No.:	G201RX
Series models:	G200RX, VS200VR(RX)
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(HT20)); 2422MHz~2452MHz (802.11n(HT40))
Channel numbers:	11 for 802.11b/802.11g/802.11n(HT20); 9 for 802.11n(HT40)
Modulation technology:	Direct Sequence Spread Spectrum (DSSS) for (IEEE 802.11b) Orthogonal Frequency Division Multiplexing(OFDM) for (IEEE 802.11g/802.11n)
Data speed (IEEE 802.11b):	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data speed (IEEE 802.11g):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps
Data speed (IEEE 802.11n):	Up to 300Mbps
Antenna Type:	External Antenna*2; cable type
Antenna gain:	3dBi;
Power supply:	DC 5V from adapter
Adapter:	Manufacturer:SHENZHEN FRECOM ELECTRONICS CO.,LTD. Model:F18W6-050250SPA INPUT:AC 100-240V, 50/60Hz, 0.6A OUTPUT:DC 5V/2.5A DC Line:Unshielded, Undetachable 1.2m

## 2.3. Independent Operation Modes

The basic operation modes are:

2.3.1. EUT work WiFi TX mode, and frequency as below:

		Frequency
Mode 1	802.11b	2412MHz
		2437MHz
		2462MHz
		2412MHz
Mode 2	802.11g	2437MHz
		2462MHz
		2412MHz
Mode 3	802.11n(HT20)	2437MHz
		2462MHz
		2412MHz
Mode 4	802.11n(HT40)	2422MHz
		2437MHz
		2452MHz
Mode 5		Link Mode

Remark: 802.11b data speed:1Mbps, 2Mbps, 5.5Mbps, 11Mbps; 802.11g data speed:6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps; 802.11n(HT20)/n(HT40) data speed:MCS0, MCS1, MCS2, MCS3, MCS4, MCS5, MCS6, MCS7. According to ANSI C63.10 standards, the test results was the "worst case" 1Mbps for 802.11b, 6Mbps for 802.11g, MCS0 for 802.11n(HT20)/n(HT40) and its data have been recorded in this report.

## 2.4. Test Supporting System

Notebook  
 Manufacturer: Lenovo  
 M/N: Lenovo G475  
 S/N: GB14477457

## 2.5. Test Sites

### 2.5.1. Test Facilities

Lab Qualifications : Certificated by Industry Canada  
 Registration No.: 9868A  
 Date of registration: December 8, 2011

Certificated by FCC, USA  
 Registration No.: 370994  
 Date of registration: February 21, 2012

Certificated by CNAS China  
 Registration No.: CNAS L5783  
 Date of registration: August 8, 2012

## 2.6. List of Test and Measurement Instruments

### 2.6.1. For conducted emission at the mains terminals test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr. 08,17	Apr. 08,18
Artificial Mains Network	Rohde&Schwarz	ENV216	101315	Apr. 08,17	Apr. 08,18
RF Cable	FUJIKURA	3D-2W	944 Cable	Apr. 08,17	Apr. 08,18

### 2.6.2. For radiated emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr. 08,17	Apr. 08,18
Bilog Antenna	ETS-LINDGREEN	3142D	135452	Apr. 08,17	Apr. 08,18
Spectrum Analyzer	Agilent	E4411B	MY4511304	Apr. 08,17	Apr. 08,18
3m Semi-anechoic Chamber	ETS-LINDGREEN	966	KW01	Apr. 08,17	Apr. 08,18
Signal Amplifier	SONOMA	310	187016	Apr. 08,17	Apr. 08,18
Signal Amplifier	Agilent	8449B	3008A00251	Apr. 08,17	Apr. 08,18
RF Cable	IMRO	IMRO-400	966 Cable 1#	N/A	N/A
MULTI-DEVICE Controller	ETS-LINDGREEN	2090	126913	N/A	N/A
Horn Antenna	SCHWARZBECK	BBHA9170	9170-068	Apr. 08,17	Apr. 08,18
Spectrum Analyzer	Agilent	E4408B	MY44211125	Apr. 08,17	Apr. 08,18
High Pass filter	Micro	HPM50111	324216	Apr. 08,17	Apr. 08,18
Constant temperature and humidity box	GF	GTH-800-40-1P	MAA9906-005	Apr. 08,17	Apr. 08,18
Attenuation	MCE	24-10-34	BN9258	Apr. 08,17	Apr. 08,18
Loop Antenna	ARA	PLA-1030/B	1029	Apr. 08,17	Apr. 08,18
Power Meter	Anritsu	ML2495A	1204003	Apr. 08,17	Apr. 08,18
Power Sensor	Anritsu	MA2411B	1126150	Apr. 08,17	Apr. 08,18

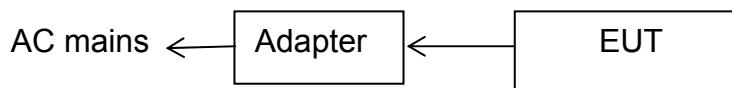
### 3. TEST SET-UP AND OPERATION MODES

#### 3.1. Principle of Configuration Selection

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

#### 3.2. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators



(*EUT: wireless HDMI receiver*)

#### 3.3. Test Software

Final Test Mode	Description
Test Software	MT7620QA

#### 3.4. Special Accessories and Auxiliary Equipment

Notebook  
 Manufacturer: Lenovo  
 M/N: Lenovo G475  
 S/N: GB14477457

#### 3.5. Countermeasures to Achieve EMC Compliance

None.

## 4. EMISSION TEST RESULTS

### 4.1. Conducted Emission at the Mains Terminals Test

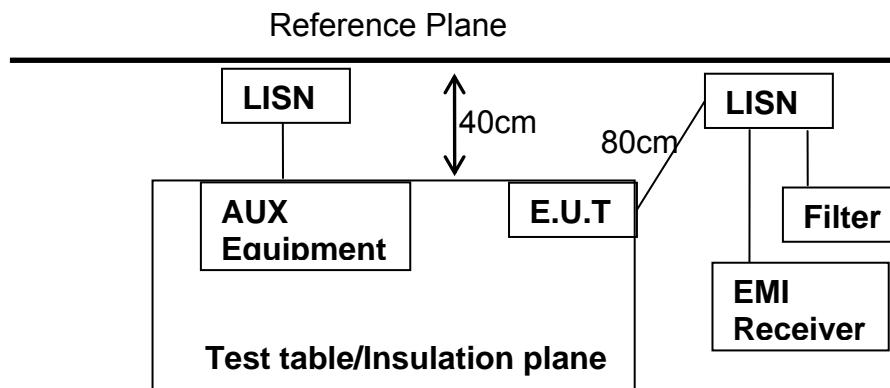
#### 4.1.1. Limit 15.209 limits

Frequency MHz	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

NOTE: 1.The lower limit shall apply at the transition frequencies.  
2.The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.

#### 4.1.2. Test Setup

- 1.The EUT was put on a wooden table which was 0.8 m high above the ground and connected to the AC mains through the Artificial Mains Network (AMN). Where the mains cable supplied by the manufacture was longer than 0.8 m, the excess was folded back and forth parallel to the cable at the center so as to form a bundle no longer than 0.4 m.
- 2.The EUT was kept 0.4 m from any other earthed conducting surface. Both sides of AC line were checked to find out the maximum conducted emission levels according to the test procedure during the conducted emission test.
- 3.The frequency range from 150 kHz to 30 MHz was investigated.
- 4.The bandwidth of the test receiver was set at 9 kHz.
- 5.Pretest for all mode, The test data of the worst case condition(s) was reported on the following page.

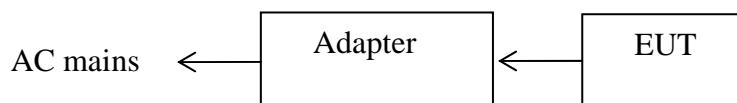


Remark: E.U.T. :Equipment Under Test

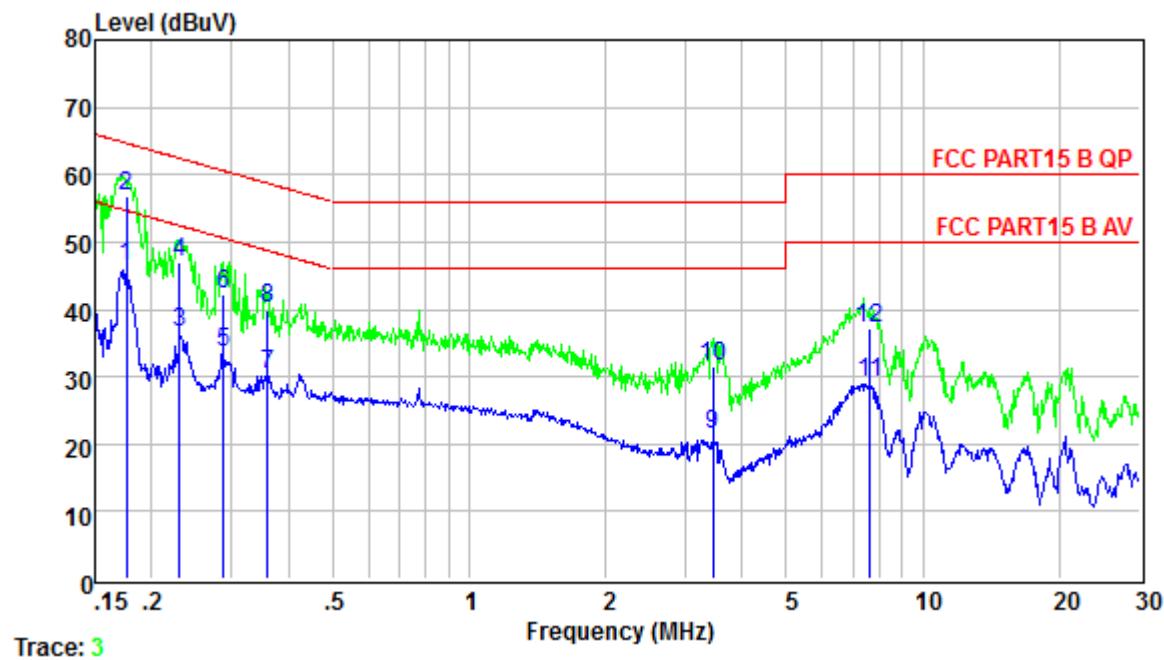
LISN: Line Impedance Stabilization Network

Test table height: 0.8m.

#### Test block

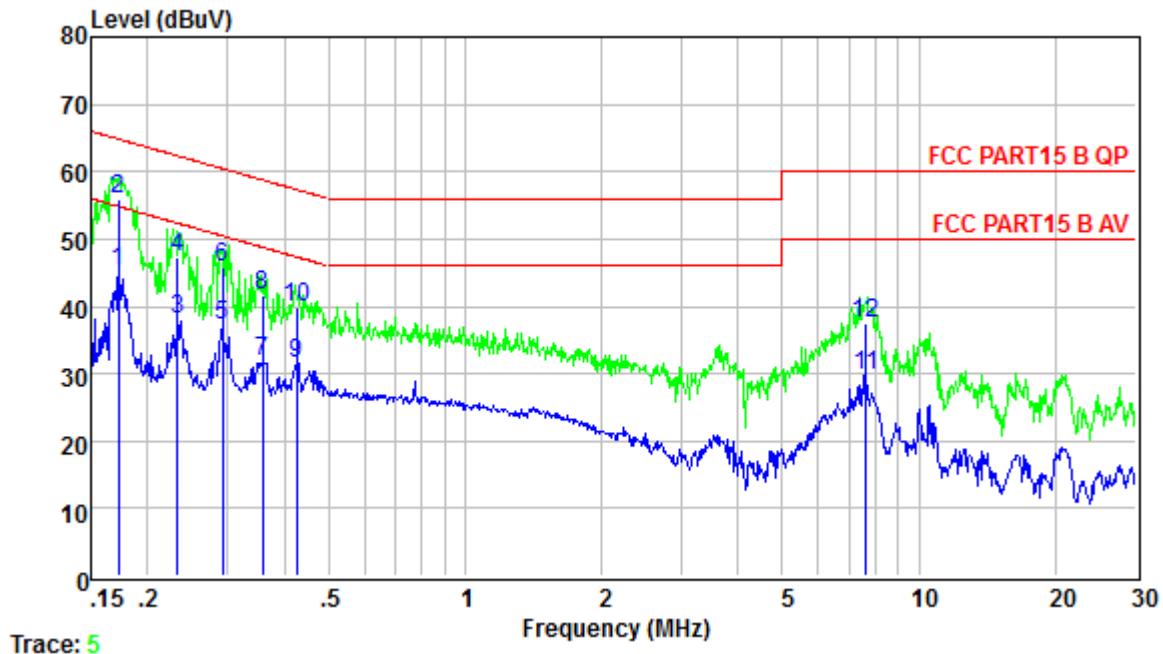


EUT :	wireless HDMI receiver	Model Name :	G201RX
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V form Adapter AC 120V/60Hz	Test Mode :	Mode 5



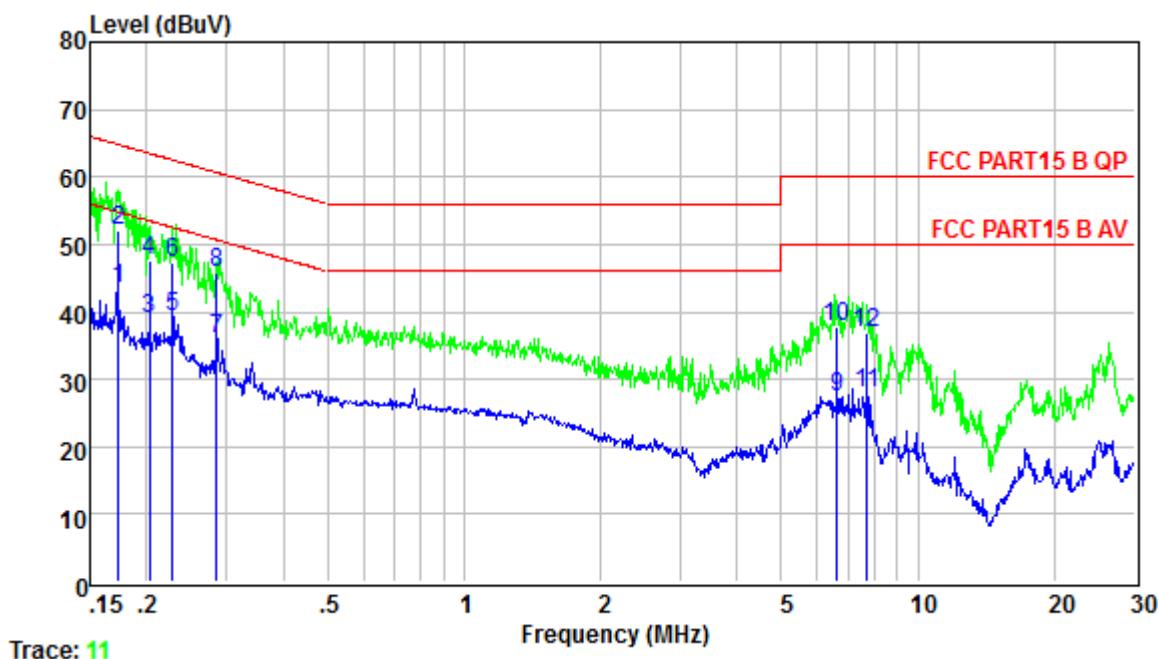
Freq	Level	Limit		Over	Remark
		Line	dBuV		
MHz	dBuV	dBuV			
1	0.176	46.35	54.68	-8.33	Average
2	0.176	56.69	64.68	-7.99	QP
3	0.230	36.55	52.44	-15.89	Average
4	0.230	46.90	62.44	-15.54	QP
5	0.288	33.72	50.59	-16.87	Average
6	0.288	42.10	60.59	-18.49	QP
7	0.360	30.31	48.74	-18.43	Average
8	0.360	40.00	58.74	-18.74	QP
9	3.436	21.53	46.00	-24.47	Average
10	3.436	31.60	56.00	-24.40	QP
11	7.646	29.01	50.00	-20.99	Average
12	7.646	37.20	60.00	-22.80	QP

EUT :	wireless HDMI receiver	Model Name :	G201RX
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5.0V form Adapter AC 120V/60Hz	Test Mode :	Mode 5



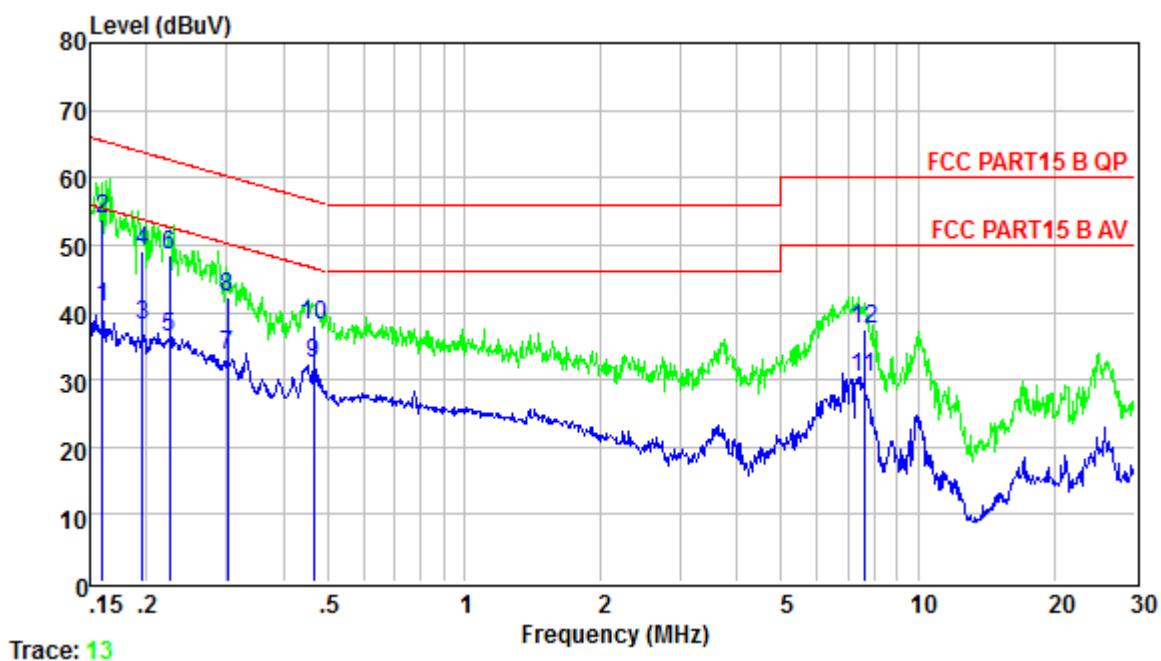
Freq	Level	Limit			Over
		Line	Limit	Remark	
MHz	dBuV	dBuV	dB		
1	0.172	45.31	54.86	-9.55	Average
2	0.172	55.98	64.86	-8.88	QP
3	0.233	38.20	52.35	-14.15	Average
4	0.233	47.40	62.35	-14.95	QP
5	0.292	37.09	50.46	-13.37	Average
6	0.292	45.80	60.46	-14.66	QP
7	0.358	31.93	48.78	-16.85	Average
8	0.358	41.50	58.78	-17.28	QP
9	0.426	31.62	47.33	-15.71	Average
10	0.426	39.80	57.33	-17.53	QP
11	7.646	29.85	50.00	-20.15	Average
12	7.646	37.40	60.00	-22.60	QP

EUT :	wireless HDMI receiver	Model Name :	G201RX
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V form Adapter AC 240V/60Hz	Test Mode :	Mode 5



Freq	Level	Limit		Over	Remark	
		MHz	dBuV	Line	dB	
1	0.173	43.46	54.81	-11.35	Average	
2	0.173	52.18	64.81	-12.63	QP	
3	0.203	38.88	53.49	-14.61	Average	
4	0.203	47.60	63.49	-15.89	QP	
5	0.228	39.30	52.52	-13.22	Average	
6	0.228	47.20	62.52	-15.32	QP	
7	0.285	35.98	50.68	-14.70	Average	
8	0.285	45.70	60.68	-14.98	QP	
9	6.627	27.35	50.00	-22.65	Average	
10	6.627	37.90	60.00	-22.10	QP	
11	7.728	28.08	50.00	-21.92	Average	
12	7.728	36.80	60.00	-23.20	QP	

EUT :	wireless HDMI receiver	Model Name :	G201RX
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5.0V form Adapter AC 240V/60Hz	Test Mode :	Mode 5



Freq	Level	Limit		Over	Remark
		Line	dBuV		
MHz	dBuV	dBuV		dB	
1	0.160	40.64	55.47	-14.83	Average
2	0.160	53.69	65.47	-11.78	QP
3	0.195	38.08	53.80	-15.72	Average
4	0.195	49.10	63.80	-14.70	QP
5	0.224	36.41	52.66	-16.25	Average
6	0.224	48.50	62.66	-14.16	QP
7	0.302	33.67	50.19	-16.52	Average
8	0.302	42.10	60.19	-18.09	QP
9	0.466	32.35	46.58	-14.23	Average
10	0.466	38.10	56.58	-18.48	QP
11	7.606	30.27	50.00	-19.73	Average
12	7.606	37.60	60.00	-22.40	QP

## 4.2. Radiated Emission Test

### 4.2.1. Limit 15.209 limits

Frequency MHz	Distance Meters	Filed Strengths Limit	
		μV/m	dB(μV)/m
30~88	3	100	40.0
88~216	3	150	43.5
216~960	3	200	46.0
960~1000	3	500	54.0
Above 1000	3	74.0dB(μV)/m(Peak) 54.0dB(μV)/m(Average)	

### 4.2.2. Restricted bands of operation

MHz	MHz	MHz	GHz
0.009-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

#### 4.2.3. Test setup

The EUT was placed on a turn table which was 0.8 m(above 1GHz, the high was 1.5m) above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum, and all the final readings from the test receiver were measured with the Quasi-Peak detector.

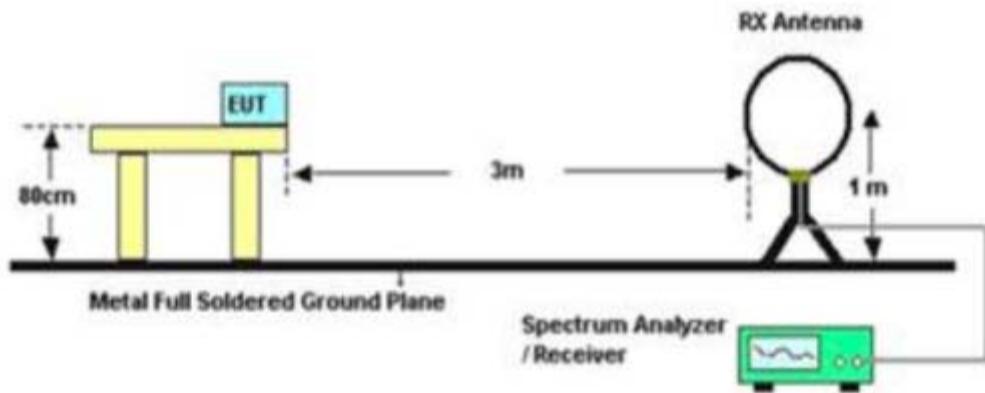
The bandwidth of the EMI test receiver is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz, Both PK and AV measure, PK detector is used.

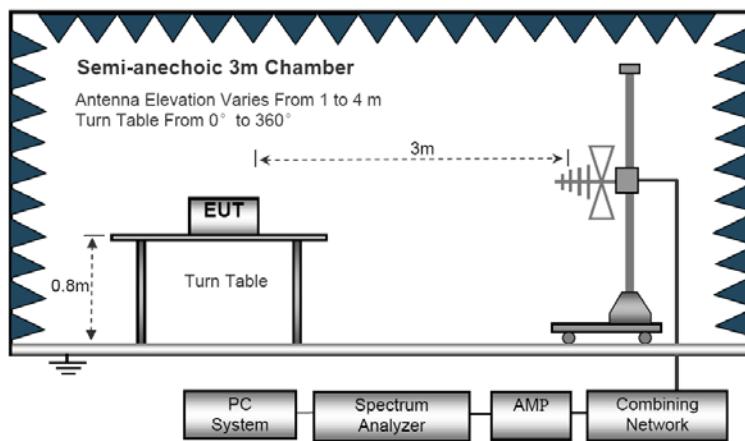
The frequency range from 30MHz to 10<sup>th</sup> harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

- Notes:
1. Emission Level = Antenna Factor + Cable Loss + Meter Reading+Preamp Factor.
  2. Measurement Uncertainty:  $\pm 3.2$  dB at a level of confidence of 95%.
  3. For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.
  4. For emissions below 1GHz, pretest for all mode, The test data of the worst case condition(s) was reported on the following pages.
  5. For Both PK and AV value above 1GHz, PK detector is used.
  6. EUT Pre-scan X/Y/Z orientation, only worst case is presented in the report (Z orientation).

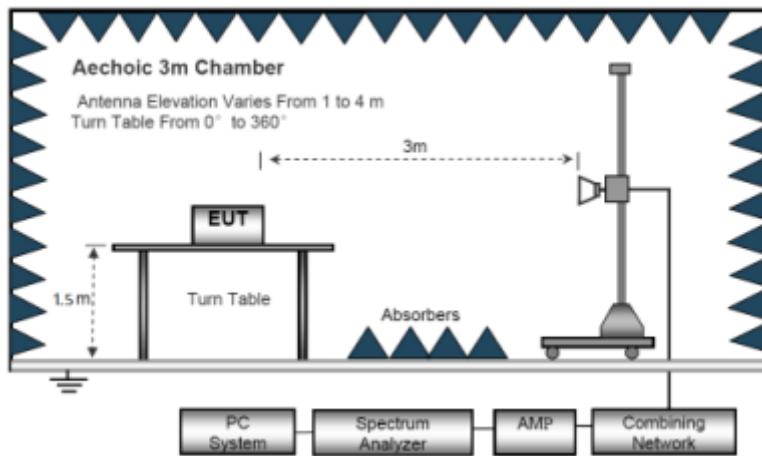
## Radiated Emission Test-Up Frequency Below 30MHz



## Radiated Emission Test-Up Frequency 30MHz- 1GHz



## Radiated Emission Test-Up Frequency Above 1GHz



EUT :	wireless HDMI receiver	Model Name :	G201RX
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010hPa	Test Mode :	TX
Test Voltage :	DC 5.0V form Adapter		

**Below 30MHz**

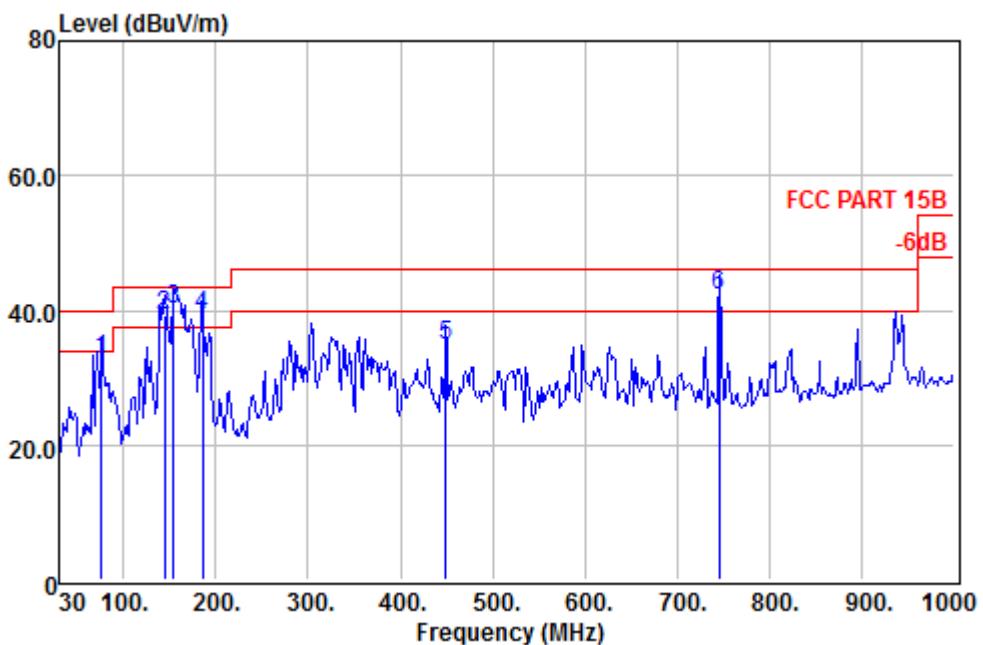
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

**Note:**

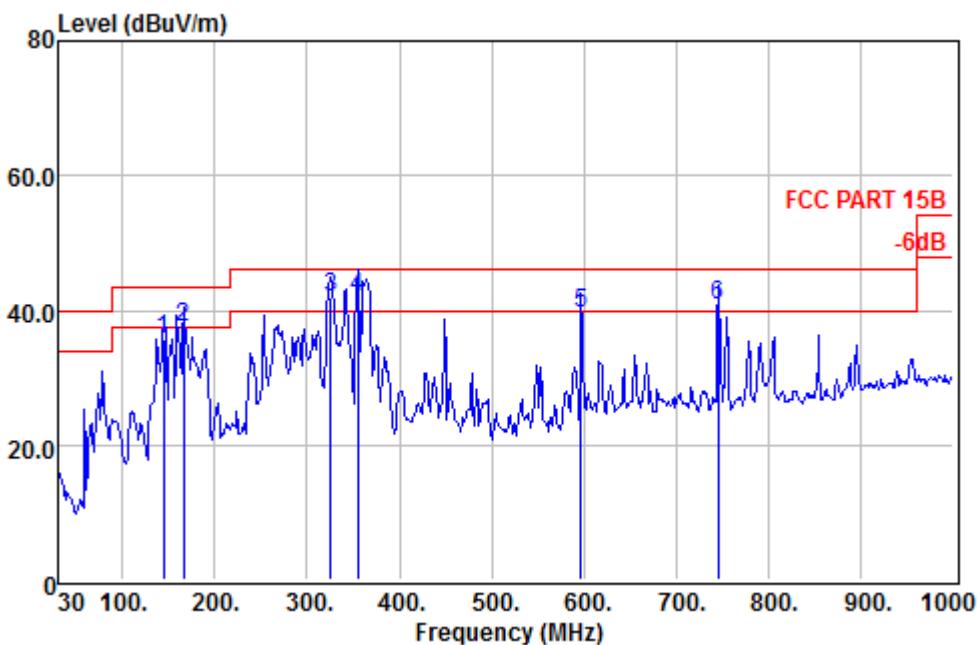
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);  
 Limit line = specific limits(dBuv) + distance extrapolation factor.

<b>Below 1GHz</b>			
EUT :	wireless HDMI receiver	Model Name :	G201RX
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010hPa	Test Mode :	Mode 5
Test Voltage :	DC 5.0V form Adapter		

**Vertical**

Freq	Preamp Factor	Read Level	CableAntenna		Limit Line	Over Limit	Remark	
			Loss	Factor				
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	76.56	31.33	55.26	0.85	7.83	32.61	40.00	-7.39 QP
2 !	144.46	31.23	60.67	1.22	8.67	39.33	43.50	-4.17 QP
3 !	154.16	31.25	61.14	1.22	9.08	40.19	43.50	-3.31 QP
4 !	185.20	31.14	58.83	1.39	10.24	39.32	43.50	-4.18 QP
5	449.04	30.61	45.10	2.62	17.58	34.69	46.00	-11.31 QP
6 !	745.86	30.67	45.98	4.04	22.77	42.12	46.00	-3.88 QP

**Horizontal**

Freq	Preamp Factor	Read Level	CableAntenna		Limit Level	Over Line Limit	Over Remark		
			MHz	dB	dBuV	dB	dBuV/m	dBuV/m	dB
1	144.46	31.23	57.06	1.22	8.67	35.72	43.50	-7.78	QP
2 !	165.80	31.21	57.70	1.30	9.72	37.51	43.50	-5.99	QP
3 !	325.85	30.81	56.10	2.02	14.53	41.84	46.00	-4.16	QP
4 !	354.95	30.64	54.56	2.18	15.92	42.02	46.00	-3.98	QP
5	597.45	30.64	46.37	3.29	20.52	39.54	46.00	-6.46	QP
6 !	745.86	30.67	44.67	4.04	22.77	40.81	46.00	-5.19	QP

Note: 1. Absolute Level= Reading Level + Antenna Factor + Cable Loss - Preamp Factor;

2. Over Limit= Absolute Level – Limit;

3. Mode 5 is the worst mode. And only the worst case is presented in the report .

Above 1GHz				
EUT :	wireless HDMI receiver	Model Name :	G201RX	
Temperature :	20 °C	Relative Humidity :	48%	
Pressure :	1010hPa	Test Voltage :	DC 5.0V form Adapter	

Polar (H/V)	Frequency	Meter Reading	Antenna Factor	Cable loss	Preamp factor	Emissio n Level (dBuV/m)	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
<b>802.11b TX-2412 Ant A</b>									
V	4824	30.56	31.99	12.01	27.50	47.06	54	-6.94	Average
V	4824	44.75	31.99	12.01	27.50	61.25	74	-12.75	Peak
V	7236	38.88	25.31	16.61	27.95	52.85	74	-21.15	Peak
H	4824	30.57	31.99	12.01	27.50	47.07	54	-6.93	Average
H	4824	45.81	31.99	12.01	27.50	62.31	74	-11.69	Peak
H	7236	38.95	25.31	16.61	27.95	52.92	74	-21.08	Peak
<b>802.11b TX-2437 Ant A</b>									
V	4874	32.43	32.11	12.14	27.53	49.15	54	-4.85	Average
V	4874	40.74	32.11	12.14	27.53	57.46	74	-16.54	Peak
V	7311	36.73	24.32	16.62	27.96	49.71	74	-24.29	Peak
H	4874	29.48	32.11	12.14	27.53	46.20	54	-7.80	Average
H	4874	39.81	32.11	12.14	27.53	56.53	74	-17.47	Peak
H	7311	34.65	24.32	16.62	27.96	47.63	74	-26.37	Peak
<b>802.11b TX-2462 Ant A</b>									
V	4924	29.75	32.23	12.28	27.56	46.70	54	-7.30	Average
V	4924	39.89	32.23	12.28	27.56	56.84	74	-17.16	Peak
V	7386	34.58	24.36	16.62	27.98	47.58	74	-26.42	Peak
H	4924	28.77	32.23	12.28	27.56	45.72	54	-8.28	Average
H	4924	41.06	32.23	12.28	27.56	58.01	74	-15.99	Peak
H	7386	36.4	24.36	16.62	27.98	49.40	74	-24.60	Peak

Polar (H/V)	Frequency	Meter Reading	Antenna Factor	Cable loss	Preamp factor	Emissio n Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dB)	(dB)	
<b>802.11b TX-2412 Ant B</b>									
V	4824	30.62	31.99	12.01	27.50	47.12	54	-6.88	Average
V	4824	45.13	31.99	12.01	27.50	61.63	74	-12.37	Peak
V	7236	38.76	25.31	16.61	27.95	52.73	74	-21.27	Peak
H	4824	30.87	31.99	12.01	27.50	47.37	54	-6.63	Average
H	4824	45.56	31.99	12.01	27.50	62.06	74	-11.94	Peak
H	7236	39.12	25.31	16.61	27.95	53.09	74	-20.91	Peak
<b>802.11b TX-2437 Ant B</b>									
V	4874	32.37	32.11	12.14	27.53	49.09	54	-4.91	Average
V	4874	41.03	32.11	12.14	27.53	57.75	74	-16.25	Peak
V	7311	36.83	24.32	16.62	27.96	49.81	74	-24.19	Peak
H	4874	30.12	32.11	12.14	27.53	46.84	54	-7.16	Average
H	4874	40.15	32.11	12.14	27.53	56.87	74	-17.13	Peak
H	7311	34.86	24.32	16.62	27.96	47.84	74	-26.16	Peak
<b>802.11b TX-2462 Ant B</b>									
V	4924	30.24	32.23	12.28	27.56	47.19	54	-6.81	Average
V	4924	40.13	32.23	12.28	27.56	57.08	74	-16.92	Peak
V	7386	34.64	24.36	16.62	27.98	47.64	74	-26.36	Peak
H	4924	28.69	32.23	12.28	27.56	45.64	54	-8.36	Average
H	4924	41.23	32.23	12.28	27.56	58.18	74	-15.82	Peak
H	7386	36.31	24.36	16.62	27.98	49.31	74	-24.69	Peak

Polar (H/V)	Frequency	Meter Reading	Antenna Factor	Cable loss	Preamp factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
<b>802.11g TX-2412 Ant A</b>									
V	4824	28.69	31.99	12.01	27.50	45.19	54	-8.81	Average
V	4824	42.74	31.99	12.01	27.50	59.24	74	-14.76	Peak
V	7236	36.66	25.31	16.61	27.95	50.63	74	-23.37	Peak
H	4824	28.95	31.99	12.01	27.50	45.45	54	-8.55	Average
H	4824	43.82	31.99	12.01	27.50	60.32	74	-13.68	Peak
H	7236	36.51	25.31	16.61	27.95	50.48	74	-23.52	Peak
<b>802.11g TX-2437 Ant A</b>									
V	4874	29.78	32.11	12.14	27.53	46.50	54	-7.50	Average
V	4874	40.85	32.11	12.14	27.53	57.57	74	-16.43	Peak
V	7311	36.07	24.32	16.62	27.96	49.05	74	-24.95	Peak
H	4874	29.70	32.11	12.14	27.53	46.42	54	-7.58	Average
H	4874	39.33	32.11	12.14	27.53	56.05	74	-17.95	Peak
H	7311	34.90	24.32	16.62	27.96	47.88	74	-26.12	Peak
<b>802.11g TX-2462 Ant A</b>									
V	4924	29.63	32.23	12.28	27.56	46.58	54	-7.42	Average
V	4924	39.71	32.23	12.28	27.56	56.66	74	-17.34	Peak
V	7386	34.19	24.36	16.62	27.98	47.19	74	-26.81	Peak
H	4924	28.22	32.23	12.28	27.56	45.17	54	-8.83	Average
H	4924	41.34	32.23	12.28	27.56	58.29	74	-15.71	Peak
H	7386	36.62	24.36	16.62	27.98	49.62	74	-24.38	Peak

Polar (H/V)	Frequency	Meter Reading	Antenna Factor	Cable loss	Preamp factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
<b>802.11g TX-2412 Ant B</b>									
V	4824	28.78	31.99	12.01	27.50	45.28	54	-8.72	Average
V	4824	43.52	31.99	12.01	27.50	60.02	74	-13.98	Peak
V	7236	36.86	25.31	16.61	27.95	50.83	74	-23.17	Peak
H	4824	29.24	31.99	12.01	27.50	45.74	54	-8.26	Average
H	4824	43.62	31.99	12.01	27.50	60.12	74	-13.88	Peak
H	7236	35.96	25.31	16.61	27.95	49.93	74	-24.07	Peak
<b>802.11g TX-2437 Ant B</b>									
V	4874	29.67	32.11	12.14	27.53	46.39	54	-7.61	Average
V	4874	40.55	32.11	12.14	27.53	57.27	74	-16.73	Peak
V	7311	36.12	24.32	16.62	27.96	49.10	74	-24.90	Peak
H	4874	29.67	32.11	12.14	27.53	46.39	54	-7.61	Average
H	4874	39.52	32.11	12.14	27.53	56.24	74	-17.76	Peak
H	7311	35.12	24.32	16.62	27.96	48.10	74	-25.90	Peak
<b>802.11g TX-2462 Ant B</b>									
V	4924	29.58	32.23	12.28	27.56	46.53	54	-7.47	Average
V	4924	39.71	32.23	12.28	27.56	56.66	74	-17.34	Peak
V	7386	34.32	24.36	16.62	27.98	47.32	74	-26.68	Peak
H	4924	28.25	32.23	12.28	27.56	45.20	54	-8.80	Average
H	4924	41.37	32.23	12.28	27.56	58.32	74	-15.68	Peak
H	7386	36.65	24.36	16.62	27.98	49.65	74	-24.35	Peak

Polar (H/V)	Frequency	Meter Reading	Antenna Factor	Cable loss	Preamp factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
<b>802.11n(HT20) TX-2412</b>									
V	4824	30.85	31.99	12.01	27.50	47.35	54	-6.65	Average
V	4824	42.98	31.99	12.01	27.50	59.48	74	-14.52	Peak
V	7236	36.26	25.31	16.61	27.95	50.23	74	-23.77	Peak
H	4824	28.91	31.99	12.01	27.50	45.41	54	-8.59	Average
H	4824	43.54	31.99	12.01	27.50	60.04	74	-13.96	Peak
H	7236	36.77	25.31	16.61	27.95	50.74	74	-23.26	Peak
<b>802.11n(HT20)TX-2437</b>									
V	4874	29.73	32.11	12.14	27.53	46.45	54	-7.55	Average
V	4874	40.19	32.11	12.14	27.53	56.91	74	-17.09	Peak
V	7311	36.38	24.32	16.62	27.96	49.36	74	-24.64	Peak
H	4874	29.72	32.11	12.14	27.53	46.44	54	-7.56	Average
H	4874	39.06	32.11	12.14	27.53	55.78	74	-18.22	Peak
H	7311	34.34	24.32	16.62	27.96	47.32	74	-26.68	Peak
<b>802.11n(HT20) TX-2462</b>									
V	4924	29.55	32.23	12.28	27.56	46.50	54	-7.50	Average
V	4924	39.48	32.23	12.28	27.56	56.43	74	-17.57	Peak
V	7386	34.03	24.36	16.62	27.98	47.03	74	-26.97	Peak
H	4924	28.11	32.23	12.28	27.56	45.06	54	-8.94	Average
H	4924	41.26	32.23	12.28	27.56	58.21	74	-15.79	Peak
H	7386	36.65	24.36	16.62	27.98	49.65	74	-24.35	Peak

Polar (H/V)	Frequency	Meter Reading	Antenna Factor	Cable loss	Preamp factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
<b>802.11n(HT40) TX-2422</b>									
V	4844	30.47	31.75	12.08	27.52	46.78	54	-7.22	Average
V	4844	41.63	31.75	12.08	27.52	57.94	74	-16.06	Peak
V	7266	36.88	25.28	16.65	27.98	50.83	74	-23.17	Peak
H	4844	29.92	31.75	12.08	27.52	46.23	54	-7.77	Average
H	4844	43.21	31.75	12.08	27.52	59.52	74	-14.48	Peak
H	7266	36.20	25.28	16.65	27.98	50.15	74	-23.85	Peak
<b>802.11n(HT40) TX-2437</b>									
V	4874	29.64	32.11	12.14	27.53	46.36	54	-7.64	Average
V	4874	40.83	32.11	12.14	27.53	57.55	74	-16.45	Peak
V	7311	36.01	24.32	16.62	27.96	48.99	74	-25.01	Peak
H	4874	29.14	32.11	12.14	27.53	45.86	54	-8.14	Average
H	4874	39.31	32.11	12.14	27.53	56.03	74	-17.97	Peak
H	7311	34.97	24.32	16.62	27.96	47.95	74	-26.05	Peak
<b>802.11n(HT40) TX-2452</b>									
V	4904	29.48	32.31	12.24	27.51	46.52	54	-7.48	Average
V	4904	39.93	32.31	12.24	27.51	56.97	74	-17.03	Peak
V	7356	34.55	24.42	16.58	27.95	47.60	74	-26.40	Peak
H	4924	28.28	32.31	12.24	27.51	45.32	54	-8.68	Average
H	4924	41.09	32.31	12.24	27.51	58.13	74	-15.87	Peak
H	7386	36.12	24.42	16.58	27.95	49.17	74	-24.83	Peak

Note: 1. When PK value is lower than the Average value limit, average didn't record.

2. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.

**Spurious Emission in Restricted Band (1-25G) :**

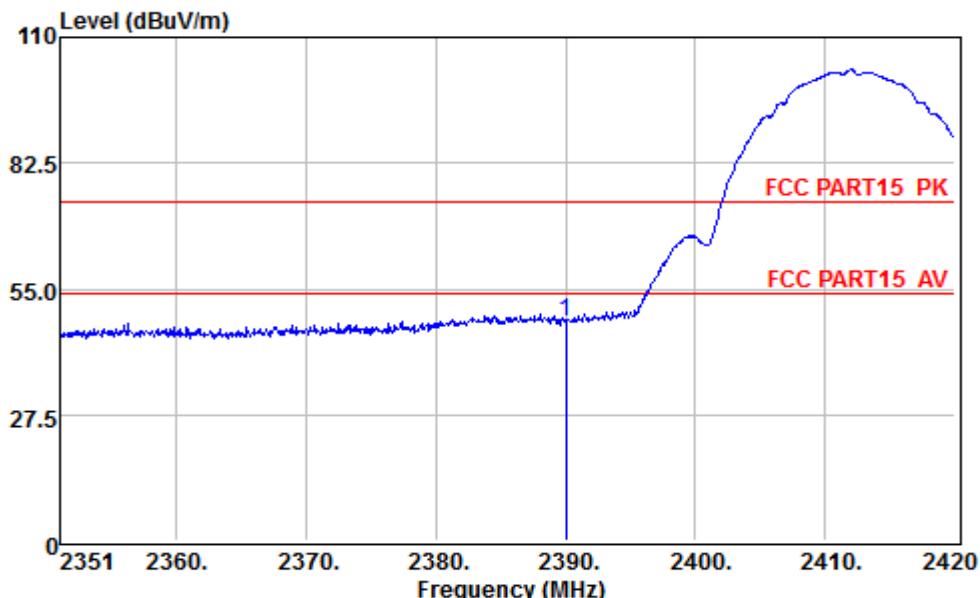
All the modulation modes have been tested and all other emissions more than 20dB below the limit, the worst result was report as below:

Polar (H/V)	Frequency (MHz)	Meter Reading	Antenna Factor	Cable loss	Preamp factor	Emission Level	Limits	Margin	Detector Type
		(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
<b>802.11b-2412MHz</b>									
V	3260	31.32	30.26	9.96	26.63	44.91	74	-29.09	Pk
H	3260	33.47	30.26	9.96	26.63	47.06	74	-26.94	PK
V	3330	31.38	30.33	9.96	26.66	45.01	74	-28.99	Pk
H	3330	32.11	30.33	9.96	26.66	45.74	74	-28.26	PK
V	4100	33.26	31.64	10.61	27.06	48.45	74	-25.55	Pk
H	4100	32.98	31.64	10.61	27.06	48.17	74	-25.83	PK
V	11758	31.74	26.64	17.32	28.98	46.72	74	-27.28	Pk
H	11758	33.53	26.64	17.32	28.98	48.51	74	-25.49	PK
V	17772	32.62	26.27	22.01	30.39	50.51	74	-23.49	Pk
H	17772	33.25	26.27	22.01	30.39	51.14	74	-22.86	PK
<b>802.11g-2412MHz</b>									
V	3260	31.75	30.26	9.96	26.63	45.34	74	-28.66	Pk
H	3260	30.12	30.26	9.96	26.63	43.71	74	-30.29	PK
V	3330	32.15	30.33	9.96	26.66	45.78	74	-28.22	Pk
H	3330	31.65	30.33	9.96	26.66	45.28	74	-28.72	PK
V	4100	33.73	31.64	10.61	27.06	48.92	74	-25.08	Pk
H	4100	32.52	31.64	10.61	27.06	47.71	74	-26.29	PK
V	11758	32.24	26.64	17.32	28.98	47.22	74	-26.78	Pk
H	11758	31.39	26.64	17.32	28.98	46.37	74	-27.63	PK
V	17772	32.85	26.27	22.01	30.39	50.74	74	-23.26	Pk
H	17772	31.64	26.27	22.01	30.39	49.53	74	-24.47	PK
<b>802.11n(HT20)-2412MHz</b>									
V	3260	35.62	30.26	9.96	26.63	49.21	74	-24.79	Pk
H	3260	34.74	30.26	9.96	26.63	48.33	74	-25.67	PK
V	3330	33.65	30.33	9.96	26.66	47.28	74	-26.72	Pk
H	3330	31.73	30.33	9.96	26.66	45.36	74	-28.64	PK
V	4100	35.83	31.64	10.61	27.06	51.02	74	-22.98	Pk
H	4100	33.99	31.64	10.61	27.06	49.18	74	-24.82	PK
V	11758	32.52	26.64	17.32	28.98	47.5	74	-26.5	Pk
H	11758	31.87	26.64	17.32	28.98	46.85	74	-27.15	PK
V	17772	35.91	26.27	22.01	30.39	53.8	74	-20.2	Pk
H	17772	33.63	26.27	22.01	30.39	51.52	74	-22.48	PK
<b>802.11n(HT40)-2422MHz</b>									
V	3260	31.85	30.26	9.96	26.63	45.44	74	-28.56	Pk
H	3260	30.47	30.26	9.96	26.63	44.06	74	-29.94	PK
V	3330	31.92	30.33	9.96	26.66	45.55	74	-28.45	Pk
H	3330	30.78	30.33	9.96	26.66	44.41	74	-29.59	PK
V	4100	33.58	31.64	10.61	27.06	48.77	74	-25.23	Pk
H	4100	32.26	31.64	10.61	27.06	47.45	74	-26.55	PK
V	11758	32.54	26.64	17.32	28.98	47.52	74	-26.48	Pk
H	11758	31.84	26.64	17.32	28.98	46.82	74	-27.18	PK
V	17772	30.81	26.27	22.01	30.39	48.7	74	-25.3	Pk
H	17772	30.18	26.27	22.01	30.39	48.07	74	-25.93	PK

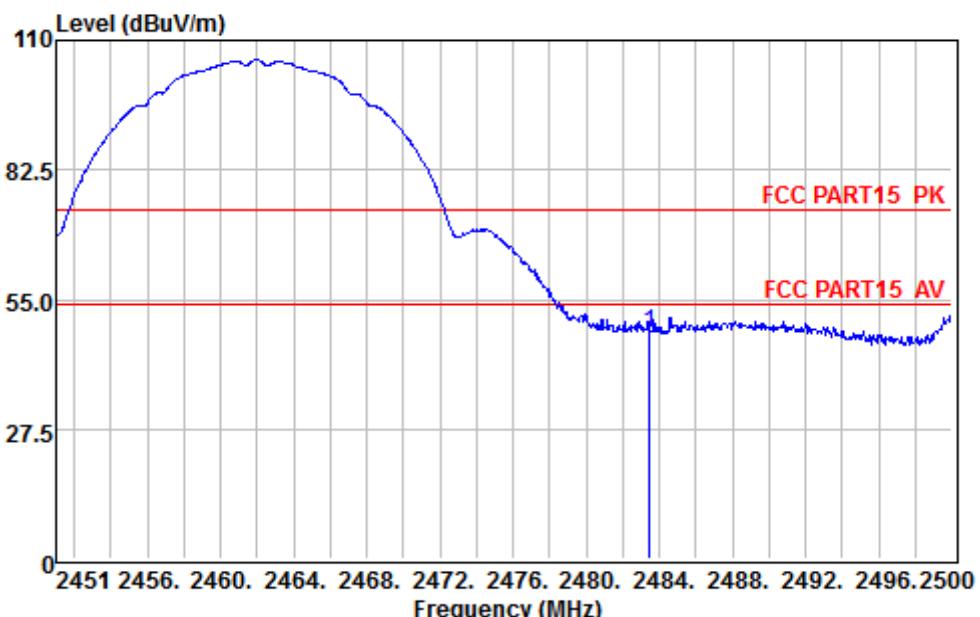
Polar (H/V)	Frequency	Meter	Antenna	Cable	Preamp	Emission	Limits	Margin	Detector
		Reading	Factor	loss	factor	Level			
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
<b>802.11b-2437MHz</b>									
V	3260	31.58	30.26	9.96	26.63	45.17	74	-28.83	Pk
H	3260	31.13	30.26	9.96	26.63	44.72	74	-29.28	PK
V	3330	32.99	30.33	9.96	26.66	46.62	74	-27.38	Pk
H	3330	31.54	30.33	9.96	26.66	45.17	74	-28.83	PK
V	4100	31.65	31.64	10.61	27.06	46.84	74	-27.16	Pk
H	4100	31.24	31.64	10.61	27.06	46.43	74	-27.57	PK
V	11758	32.52	26.64	17.32	28.98	47.50	74	-26.5	Pk
H	11758	32.17	26.64	17.32	28.98	47.15	74	-26.85	PK
V	17772	31.68	26.27	22.01	30.39	49.57	74	-24.43	Pk
H	17772	31.27	26.27	22.01	30.39	49.16	74	-24.84	PK
<b>802.11g-2437MHz</b>									
V	3260	32.94	30.26	9.96	26.63	46.53	74	-27.47	Pk
H	3260	32.33	30.26	9.96	26.63	45.92	74	-28.08	PK
V	3330	32.28	30.33	9.96	26.66	45.91	74	-28.09	Pk
H	3330	32.13	30.33	9.96	26.66	45.76	74	-28.24	PK
V	4100	30.89	31.64	10.61	27.06	46.08	74	-27.92	Pk
H	4100	30.03	31.64	10.61	27.06	45.22	74	-28.78	PK
V	11758	30.76	26.64	17.32	28.98	45.74	74	-28.26	Pk
H	11758	30.19	26.64	17.32	28.98	45.17	74	-28.83	PK
V	17772	31.93	26.27	22.01	30.39	49.82	74	-24.18	Pk
H	17772	31.63	26.27	22.01	30.39	49.52	74	-24.48	PK
<b>802.11n(HT20)-2437MHz</b>									
V	3260	31.66	30.26	9.96	26.63	45.25	74	-28.75	Pk
H	3260	31.28	30.26	9.96	26.63	44.87	74	-29.13	PK
V	3330	31.63	30.33	9.96	26.66	45.26	74	-28.74	Pk
H	3330	31.17	30.33	9.96	26.66	44.80	74	-29.2	PK
V	4100	31.93	31.64	10.61	27.06	47.12	74	-26.88	Pk
H	4100	31.65	31.64	10.61	27.06	46.84	74	-27.16	PK
V	11758	30.69	26.64	17.32	28.98	45.67	74	-28.33	Pk
H	11758	30.16	26.64	17.32	28.98	45.14	74	-28.86	PK
V	17772	31.97	26.27	22.01	30.39	49.86	74	-24.14	Pk
H	17772	31.02	26.27	22.01	30.39	48.91	74	-25.09	PK
<b>802.11n(HT40)-2437MHz</b>									
V	3260	31.74	30.26	9.96	26.63	45.33	74	-28.67	Pk
H	3260	31.08	30.26	9.96	26.63	44.67	74	-29.33	PK
V	3330	31.85	30.33	9.96	26.66	45.48	74	-28.52	Pk
H	3330	31.21	30.33	9.96	26.66	44.84	74	-29.16	PK
V	4100	31.05	31.64	10.61	27.06	46.24	74	-27.76	Pk
H	4100	30.32	31.64	10.61	27.06	45.51	74	-28.49	PK
V	11758	31.99	26.64	17.32	28.98	46.97	74	-27.03	Pk
H	11758	31.18	26.64	17.32	28.98	46.16	74	-27.84	PK
V	17772	30.84	26.27	22.01	30.39	48.73	74	-25.27	Pk
H	17772	30.61	26.27	22.01	30.39	48.50	74	-25.5	PK

Polar (H/V)	Frequency	Meter Reading	Antenna Factor	Cable loss	Preamp factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)			
<b>802.11b-2462MHz</b>									
V	3260	30.64	30.26	9.96	26.63	44.23	74	-29.77	Pk
H	3260	29.98	30.26	9.96	26.63	43.57	74	-30.43	PK
V	3330	30.84	30.33	9.96	26.66	44.47	74	-29.53	Pk
H	3330	30.16	30.33	9.96	26.66	43.79	74	-30.21	PK
V	4100	31.38	31.64	10.61	27.06	46.57	74	-27.43	Pk
H	4100	30.53	31.64	10.61	27.06	45.72	74	-28.28	PK
V	11758	31.98	26.64	17.32	28.98	46.96	74	-27.04	Pk
H	11758	30.85	26.64	17.32	28.98	45.83	74	-28.17	PK
V	17772	30.54	26.27	22.01	30.39	48.43	74	-25.57	Pk
H	17772	30.11	26.27	22.01	30.39	48	74	-26	PK
<b>802.11g-2462MHz</b>									
V	3260	32.73	30.26	9.96	26.63	46.32	74	-27.68	Pk
H	3260	32.28	30.26	9.96	26.63	45.87	74	-28.13	PK
V	3330	32.99	30.33	9.96	26.66	46.62	74	-27.38	Pk
H	3330	31.46	30.33	9.96	26.66	45.09	74	-28.91	PK
V	4100	30.85	31.64	10.61	27.06	46.04	74	-27.96	Pk
H	4100	30.23	31.64	10.61	27.06	45.42	74	-28.58	PK
V	11758	31.89	26.64	17.32	28.98	46.87	74	-27.13	Pk
H	11758	31.27	26.64	17.32	28.98	46.25	74	-27.75	PK
V	17772	32.65	26.27	22.01	30.39	50.54	74	-23.46	Pk
H	17772	31.53	26.27	22.01	30.39	49.42	74	-24.58	PK
<b>802.11n(HT20)-2462MHz</b>									
V	3260	31.74	30.26	9.96	26.63	45.33	74	-28.67	Pk
H	3260	30.75	30.26	9.96	26.63	44.34	74	-29.66	PK
V	3330	30.92	30.33	9.96	26.66	44.55	74	-29.45	Pk
H	3330	29.88	30.33	9.96	26.66	43.51	74	-30.49	PK
V	4100	31.63	31.64	10.61	27.06	46.82	74	-27.18	Pk
H	4100	30.81	31.64	10.61	27.06	46	74	-28	PK
V	11758	31.97	26.64	17.32	28.98	46.95	74	-27.05	Pk
H	11758	31.33	26.64	17.32	28.98	46.31	74	-27.69	PK
V	17772	31.12	26.27	22.01	30.39	49.01	74	-24.99	Pk
H	17772	30.28	26.27	22.01	30.39	48.17	74	-25.83	PK
<b>802.11n(HT40)-2452MHz</b>									
V	3260	32.46	30.26	9.96	26.63	46.05	74	-27.95	Pk
H	3260	31.63	30.26	9.96	26.63	45.22	74	-28.78	PK
V	3330	31.75	30.33	9.96	26.66	45.38	74	-28.62	Pk
H	3330	30.82	30.33	9.96	26.66	44.45	74	-29.55	PK
V	4100	33.67	31.64	10.61	27.06	48.86	74	-25.14	Pk
H	4100	32.54	31.64	10.61	27.06	47.73	74	-26.27	PK
V	11758	31.91	26.64	17.32	28.98	46.89	74	-27.11	Pk
H	11758	30.87	26.64	17.32	28.98	45.85	74	-28.15	PK
V	17772	31.96	26.27	22.01	30.39	49.85	74	-24.15	Pk
H	17772	30.78	26.27	22.01	30.39	48.67	74	-25.33	PK

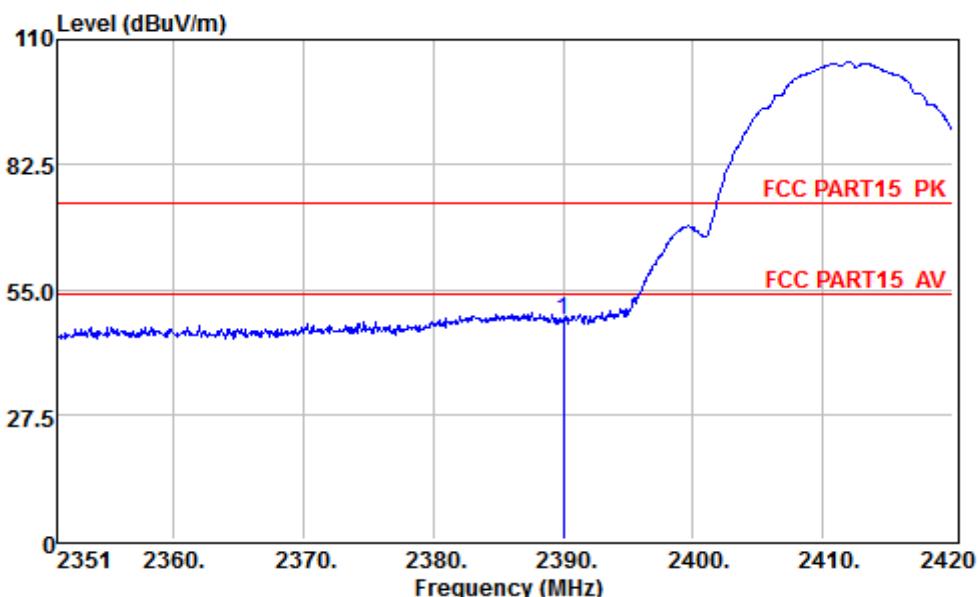
If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

**Spurious Emission in Band Edge:****802.11b - Horizontal**

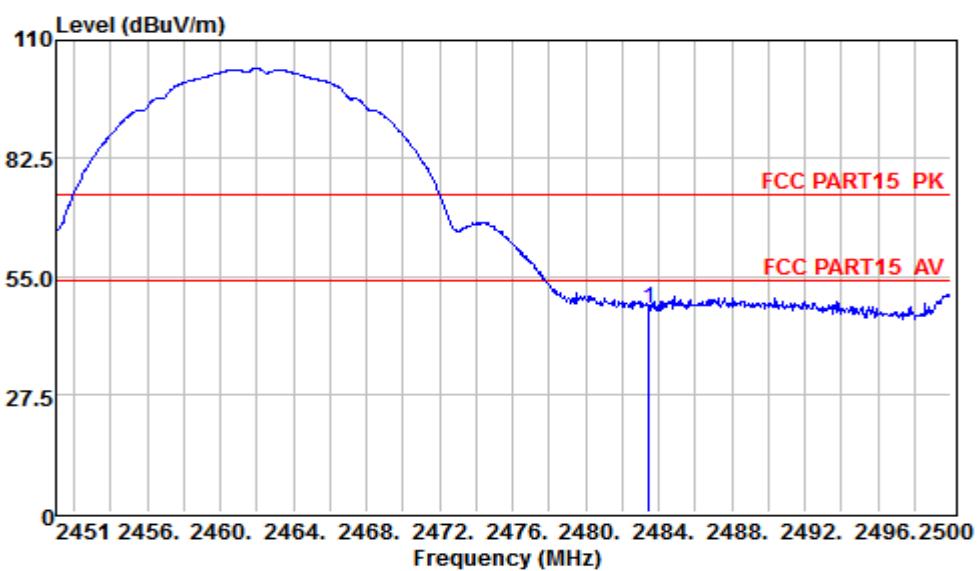
	Preamp Freq	Read Level	Cable Loss	Antenna Factor	Limit Level	Line Limit	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	2390.00	26.32	45.44	0.00	28.72	47.84	74.00	-26.16 Peak



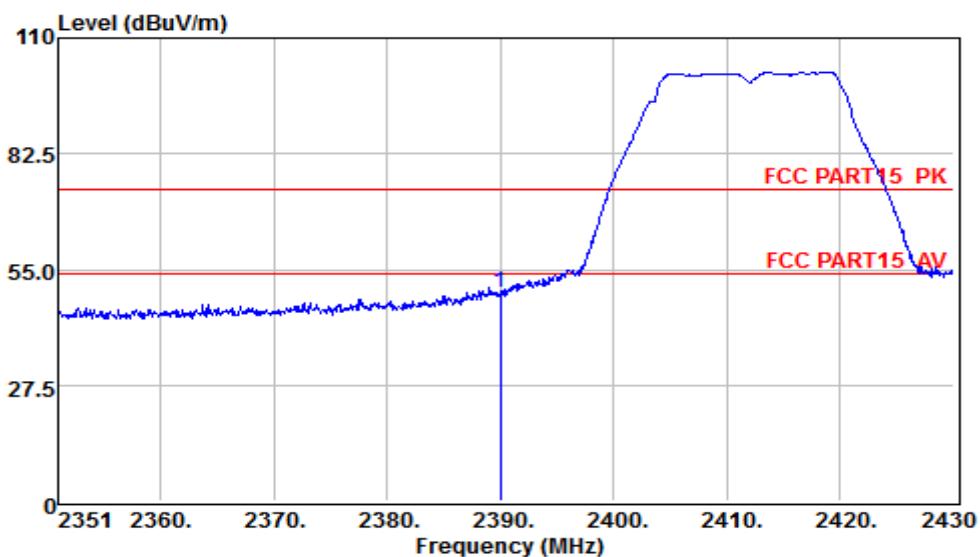
	Preamp Freq	Read Level	Cable Loss	Antenna Factor	Limit Level	Line Limit	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	2483.50	26.34	45.38	0.00	28.79	47.83	74.00	-26.17 Peak

**802.11b - Vertical**

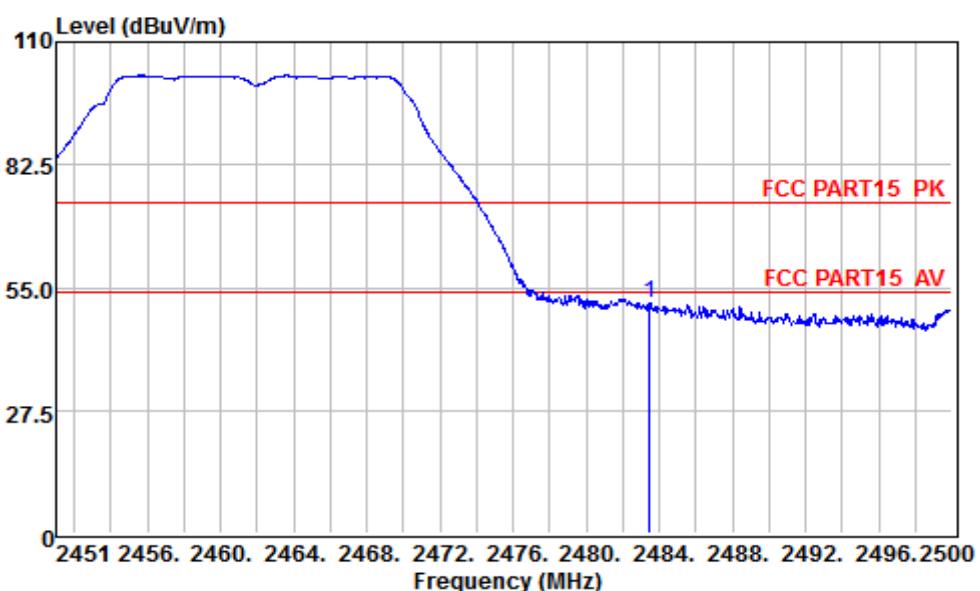
	Preamp Freq	Read Level	Cable Loss	Antenna Factor	Limit Level	Line Level	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	2390.00	26.32	45.82	0.00	28.72	48.22	74.00	-25.78 Peak



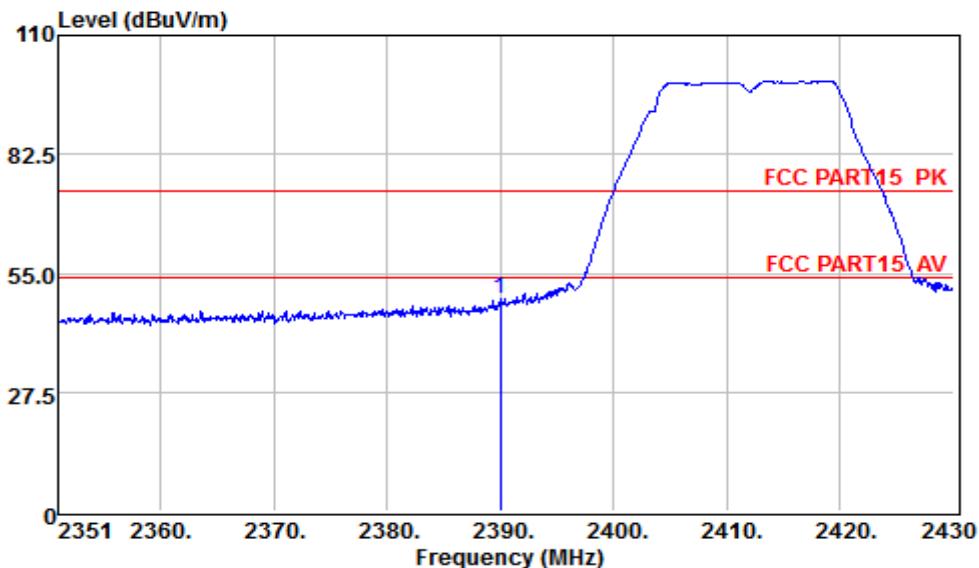
	Preamp Freq	Read Level	Cable Loss	Antenna Factor	Limit Level	Line Level	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	2483.50	26.34	45.00	0.00	28.79	47.45	74.00	-26.55 Peak

**802.11g - Horizontal**

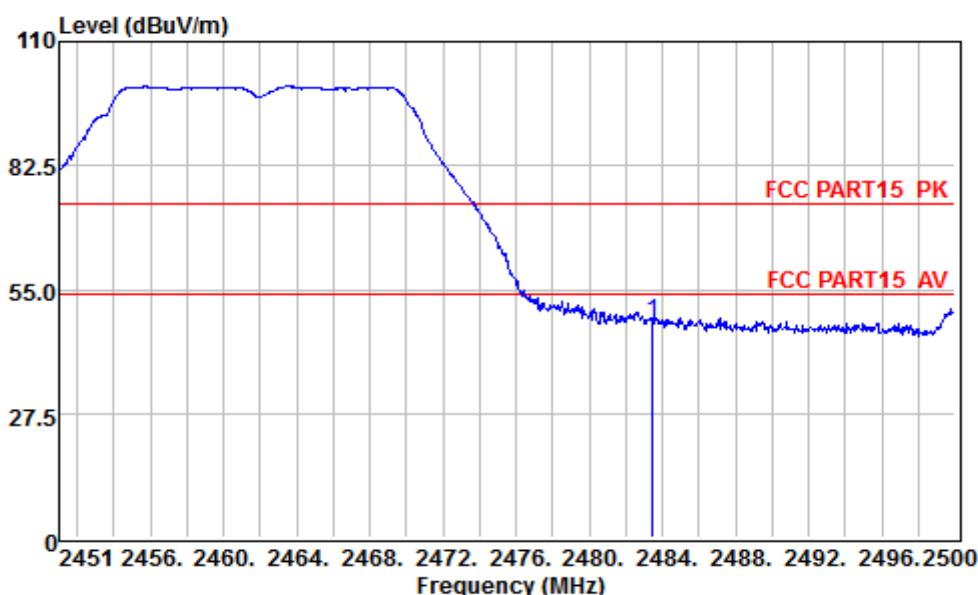
	Preamp Freq	Read Factor	Cable Level	Antenna Loss Factor	Limit Level	Over Line Limit	Over Remark	
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	2390.00	26.32	46.88	0.00	28.72	49.28	74.00	-24.72 Peak



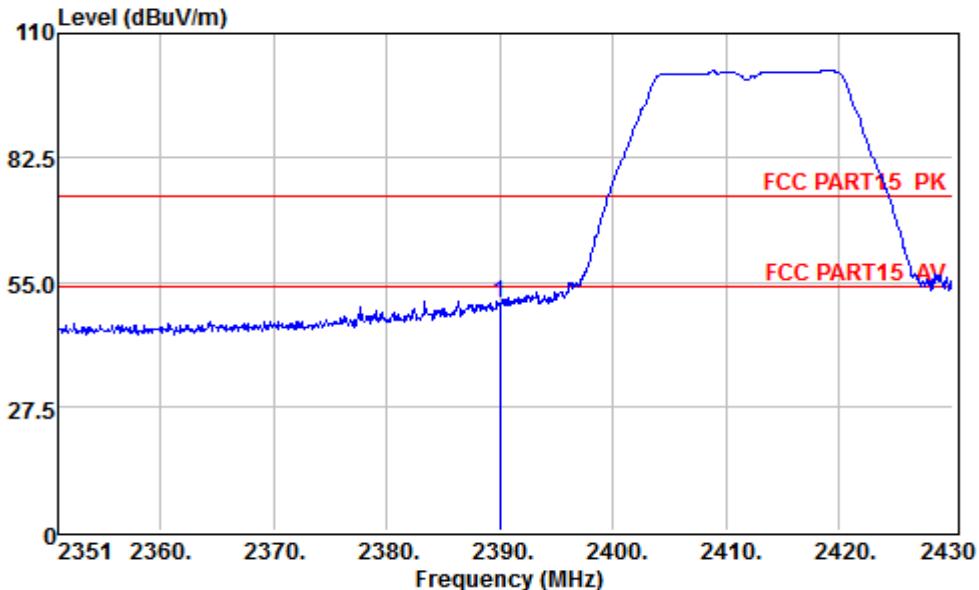
	Preamp Freq	Read Factor	Cable Level	Antenna Loss Factor	Limit Level	Over Line Limit	Over Remark	
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	2483.50	26.34	49.15	0.00	28.79	51.60	74.00	-22.40 Peak

**802.11g - Vertical**

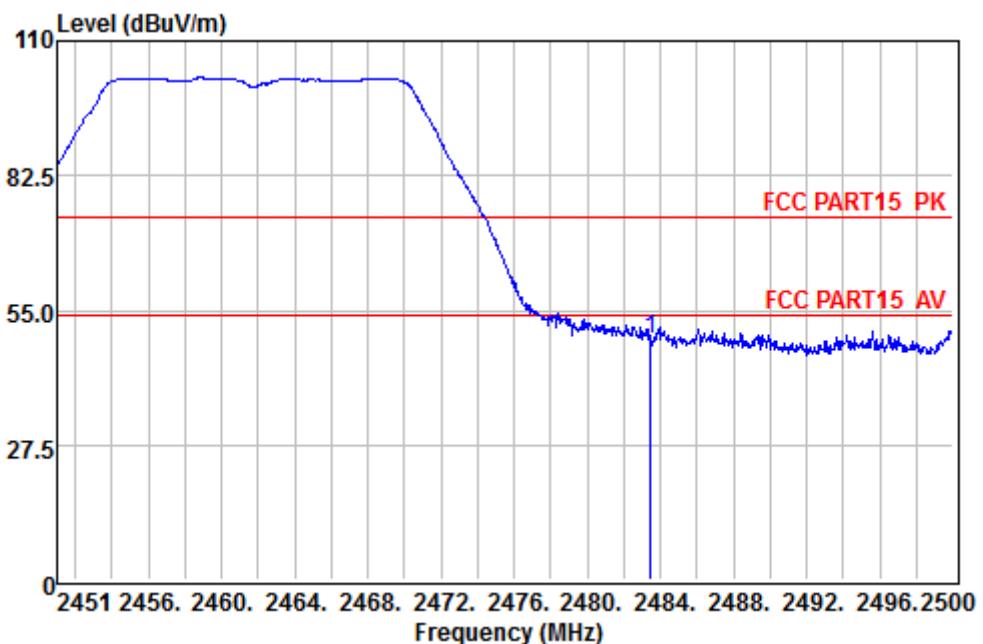
	Preamp Freq	Read Level	Cable Loss	Antenna Factor	Limit Level	Over Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	2390.00	26.32	46.62	0.00	28.72	49.02	74.00	-24.98 Peak



	Preamp Freq	Read Level	Cable Loss	Antenna Factor	Limit Level	Over Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	2483.50	26.34	45.56	0.00	28.79	48.01	74.00	-25.99 Peak

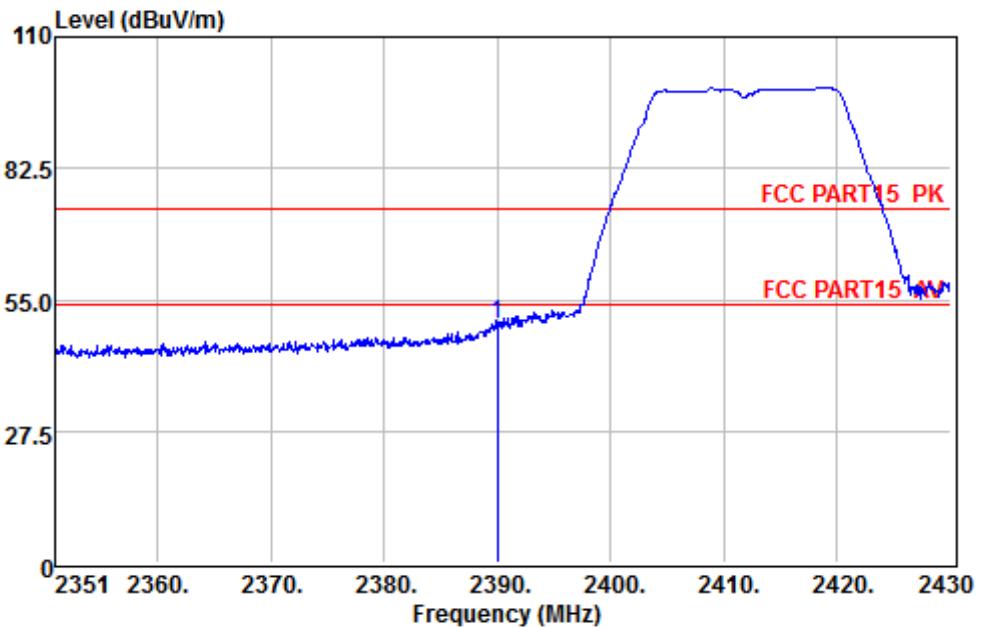
**802.11n(HT20) - Horizontal**

	Preamp Freq	Read Factor	Cable Level	Antenna Loss	Limit Level	Line Level	Over Limit	Remark
	MHz	dB	dB <sub>uV</sub>	dB	dB/m	dB <sub>uV/m</sub>	dB <sub>uV/m</sub>	dB
1	2390.00	26.32	47.81	0.00	28.72	50.21	74.00	-23.79 Peak

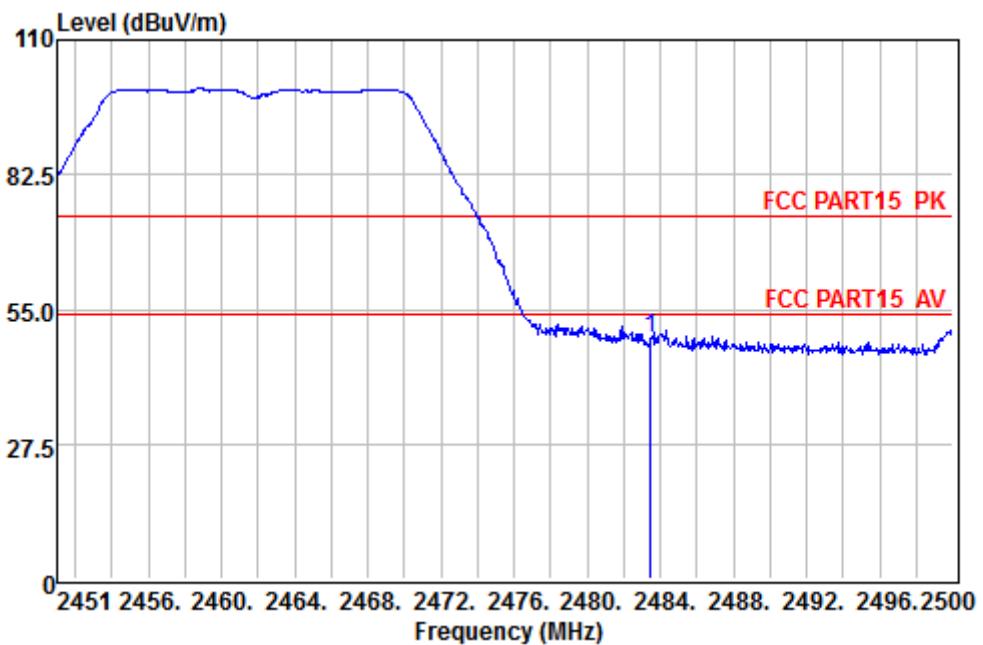


	Preamp Freq	Read Factor	Cable Level	Antenna Loss	Limit Level	Line Level	Over Limit	Remark
	MHz	dB	dB <sub>uV</sub>	dB	dB/m	dB <sub>uV/m</sub>	dB <sub>uV/m</sub>	dB
1	2483.50	26.34	46.80	0.00	28.79	49.25	74.00	-24.75 Peak

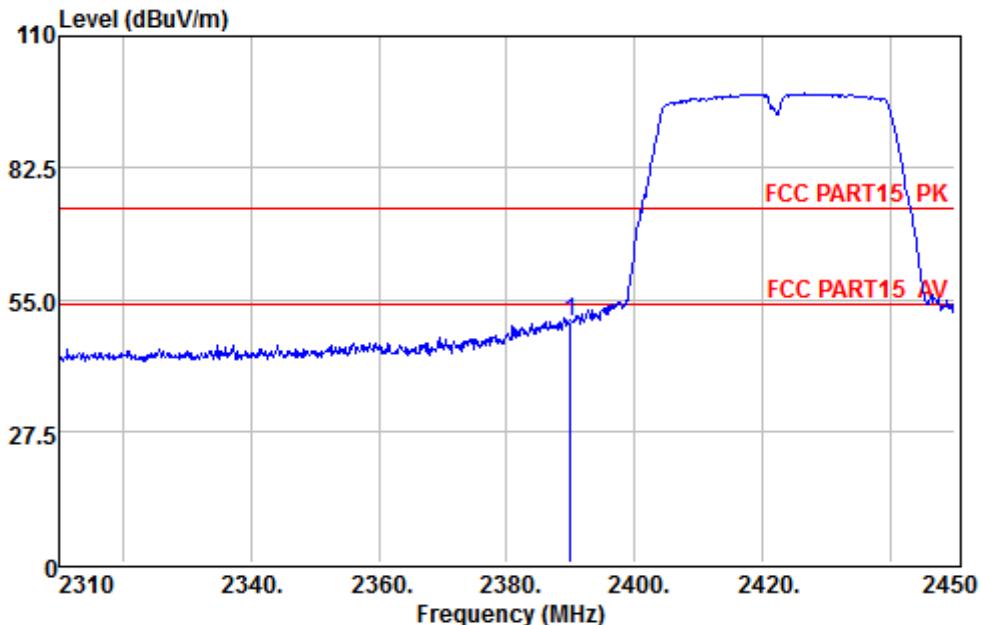
## 802.11n(HT20) - Vertical



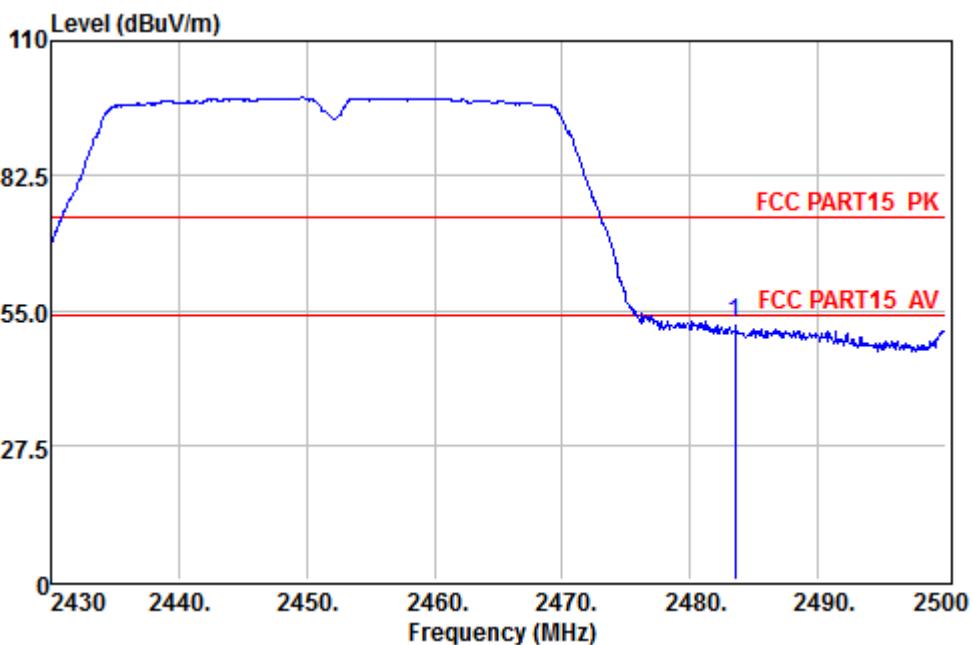
	Preamp Freq	Read Level	Cable Loss	Antenna Factor	Limit Level	Over Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	2390.00	26.32	47.42	0.00	28.72	49.82	74.00	-24.18 Peak



	Preamp Freq	Read Level	Cable Loss	Antenna Factor	Limit Level	Over Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	2483.50	26.34	46.48	0.00	28.79	48.93	74.00	-25.07 Peak

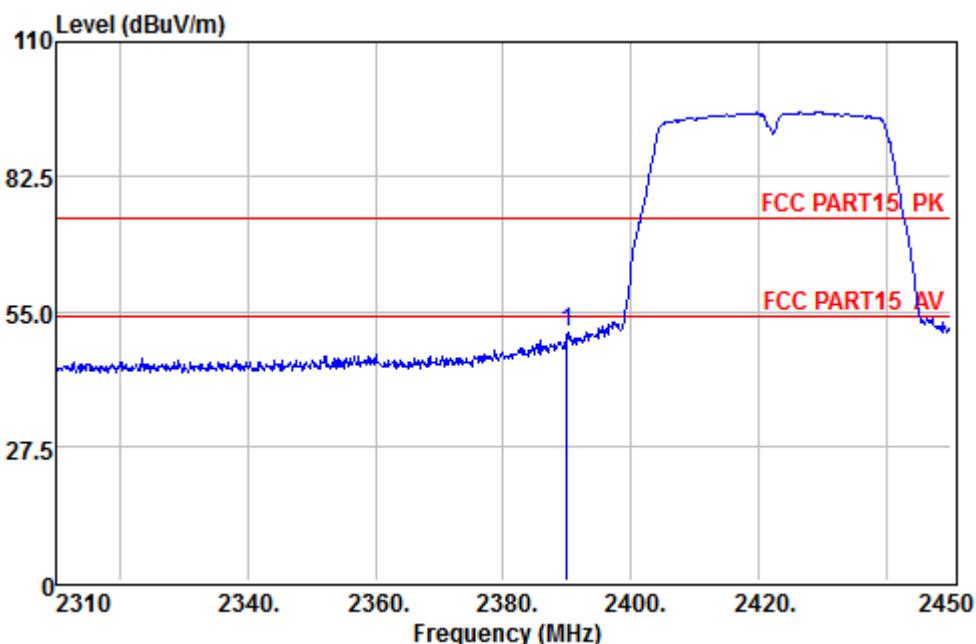
**802.11n(HT40) - Horizontal**

	Preamp Freq	Read Level	Cable Loss	Antenna Factor	Limit Level	Line Limit	Over Limit	Remark
	MHz	dB	dB <sub>UV</sub>	dB	dB/m	dB <sub>UV</sub> /m	dB <sub>UV</sub> /m	dB
1	2390.00	26.32	47.70	0.00	28.72	50.10	74.00	-23.90 Peak

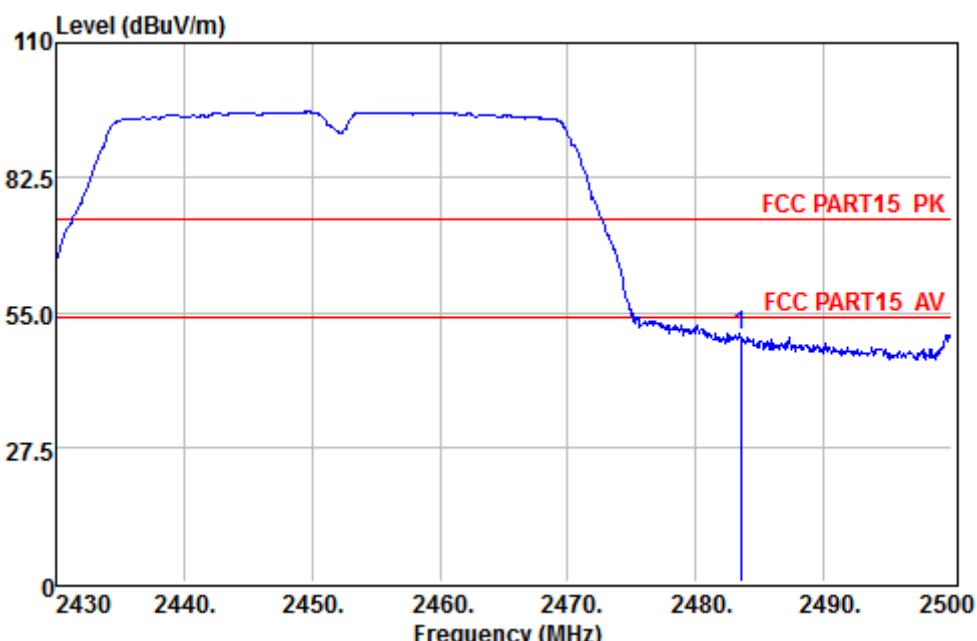


	Preamp Freq	Read Level	Cable Loss	Antenna Factor	Limit Level	Line Limit	Over Limit	Remark
	MHz	dB	dB <sub>UV</sub>	dB	dB/m	dB <sub>UV</sub> /m	dB <sub>UV</sub> /m	dB
1	2483.50	26.34	49.69	0.00	28.79	52.14	74.00	-21.86 Peak

## 802.11n(HT40) - Vertical



	Preamp Freq	Read Factor	Cable Level	Antenna Loss	Limit Level	Line Level	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	2390.00	26.32	48.32	0.00	28.72	50.72	74.00	-23.28 Peak



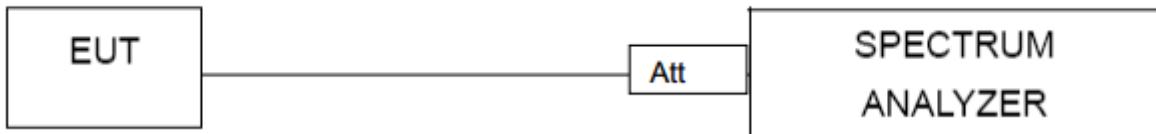
	Preamp Freq	Read Factor	Cable Level	Antenna Loss	Limit Level	Line Level	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	2483.50	26.34	47.92	0.00	28.79	50.37	74.00	-23.63 Peak

## 5. BAND EDGE COMPLIANCE TEST

### 5.1. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. 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)).

### 5.2. Test setup



### 5.3. Test Procedure

- a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b) Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- c) Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- e) Repeat above procedures until all measured frequencies were complete.

#### Conduction band-edge

<b>A Antenna</b>			
Frequency Band MHz	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
802.11b mode			
2400	36.16	20	Pass
2483.5	60.21	20	Pass
802.11g mode			
2400	30.48	20	Pass
2483.5	44.90	20	Pass
802.11n-HT20 mode			
2400	32.57	20	Pass
2483.5	42.84	20	Pass
802.11n-HT40 mode			
2400	29.92	20	Pass
2483.5	36.41	20	Pass

<b>B Antenna</b>			
Frequency Band MHz	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
802.11b mode			
2400	36.13	20	Pass
2483.5	59.41	20	Pass
802.11g mode			
2400	31.65	20	Pass
2483.5	44.52	20	Pass
802.11n-HT20 mode			
2400	32.29	20	Pass
2483.5	40.61	20	Pass
802.11n-HT40 mode			
2400	29.89	20	Pass
2483.5	35.84	20	Pass

## A Antenna

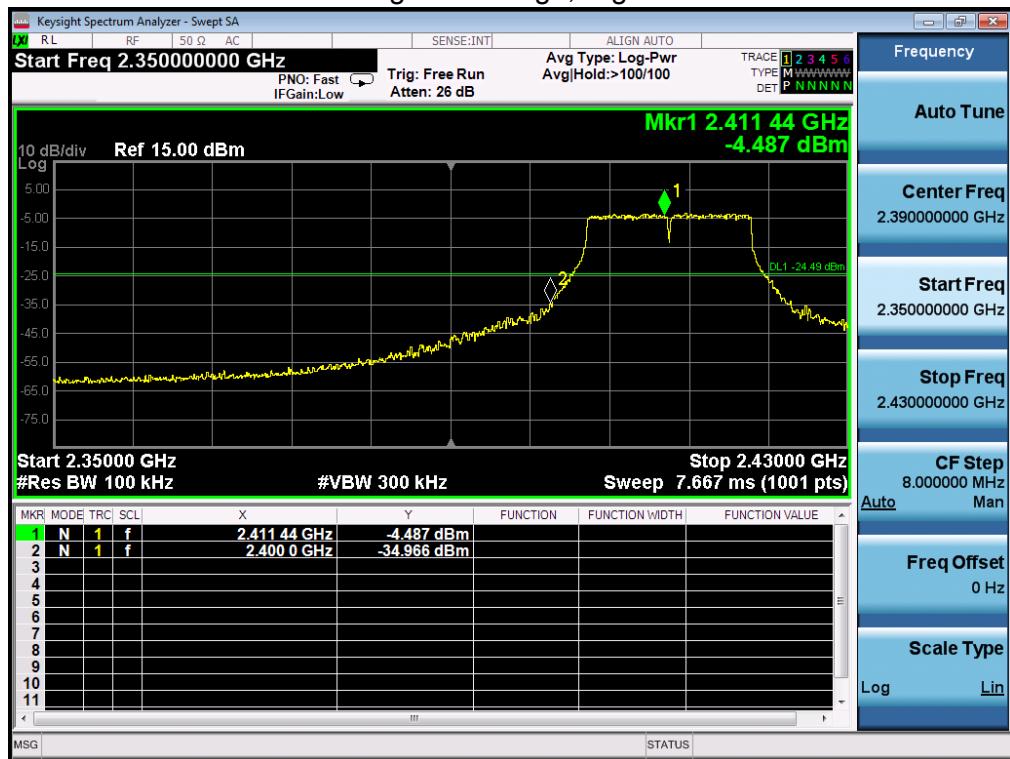
802.11b: Band Edge, Right Side



802.11b: Band Edge, Left Side



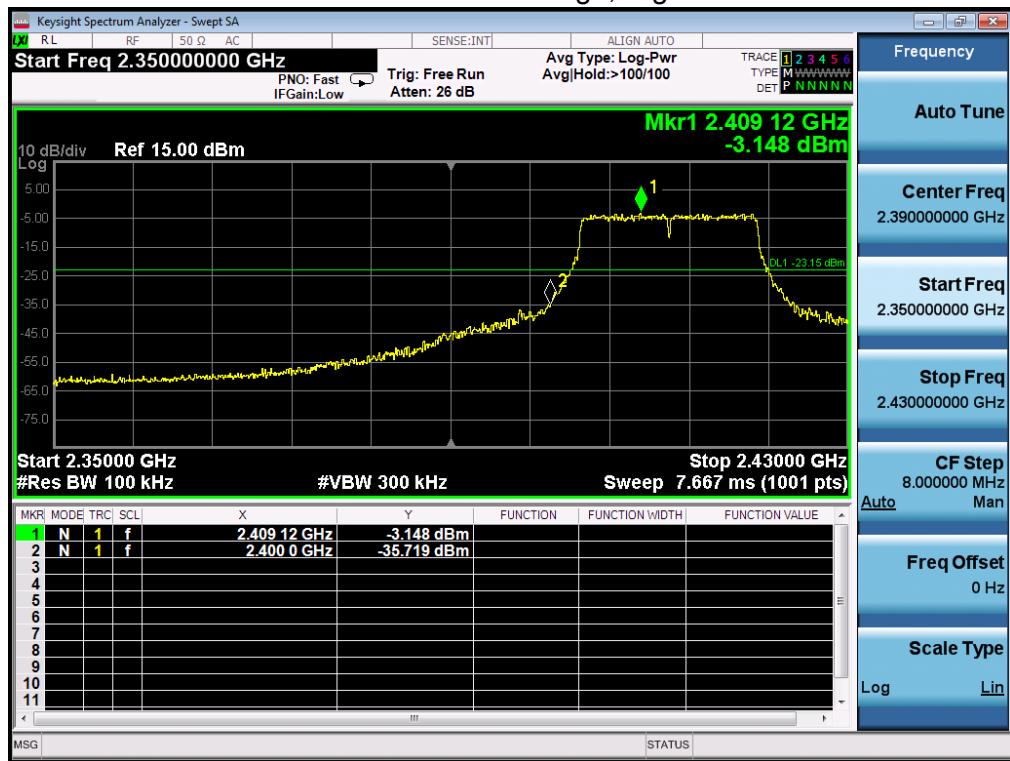
## 802.11g: Band Edge, Right Side



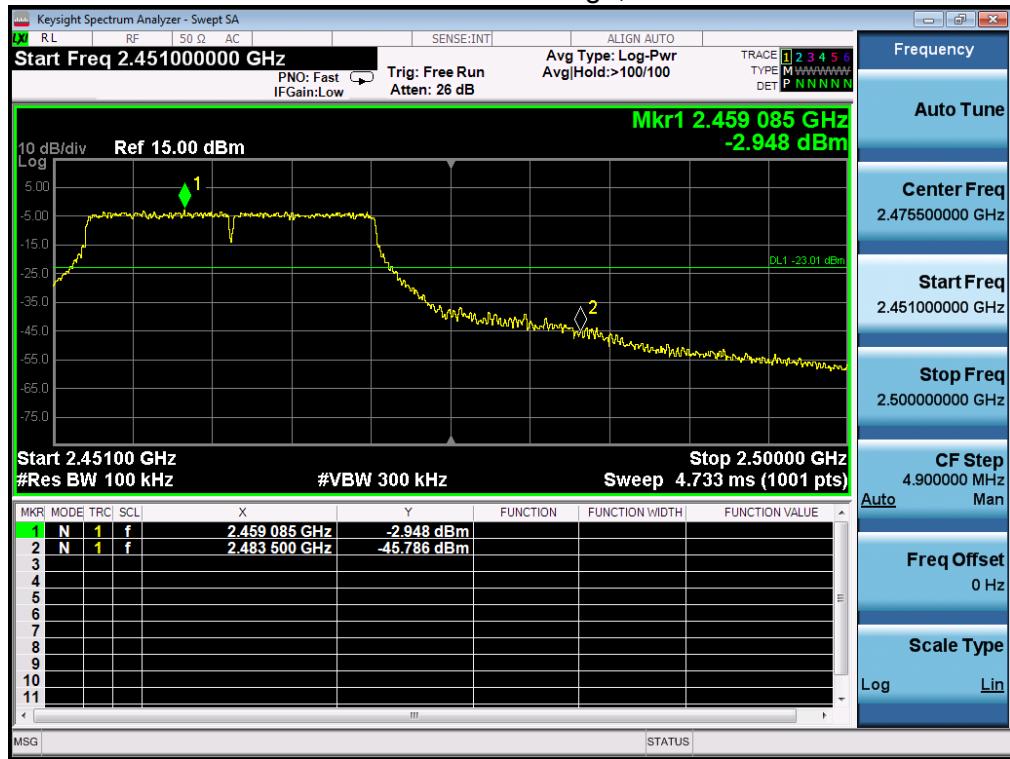
## 802.11g: Band Edge, Left Side



## 802.11n-HT20: Band Edge, Right Side



## 802.11n-HT20: Band Edge, Left Side



## 802.11n-HT40: Band Edge, Right Side

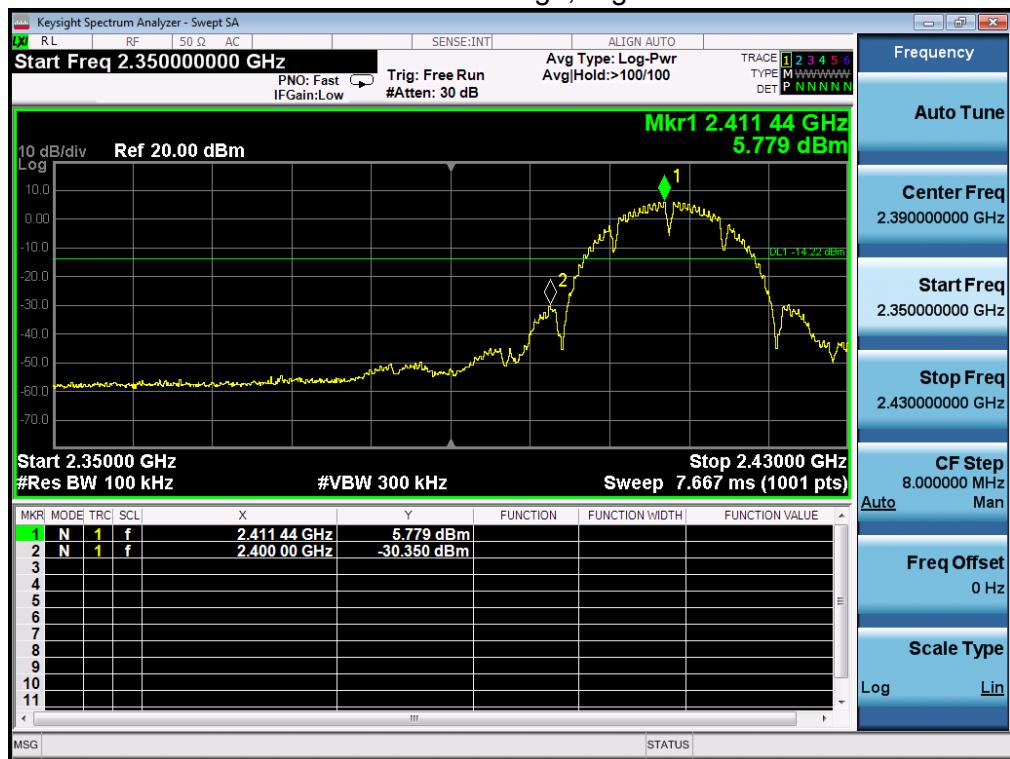


## 802.11n-HT40: Band Edge, Left Side



## B Antenna

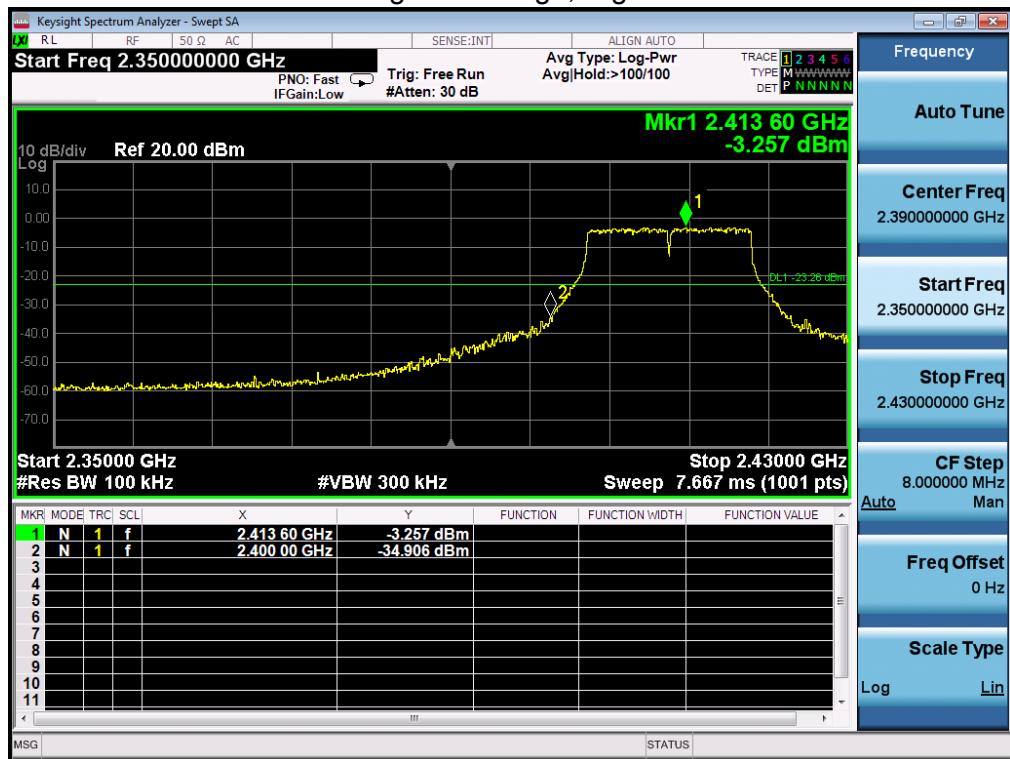
802.11b: Band Edge, Right Side



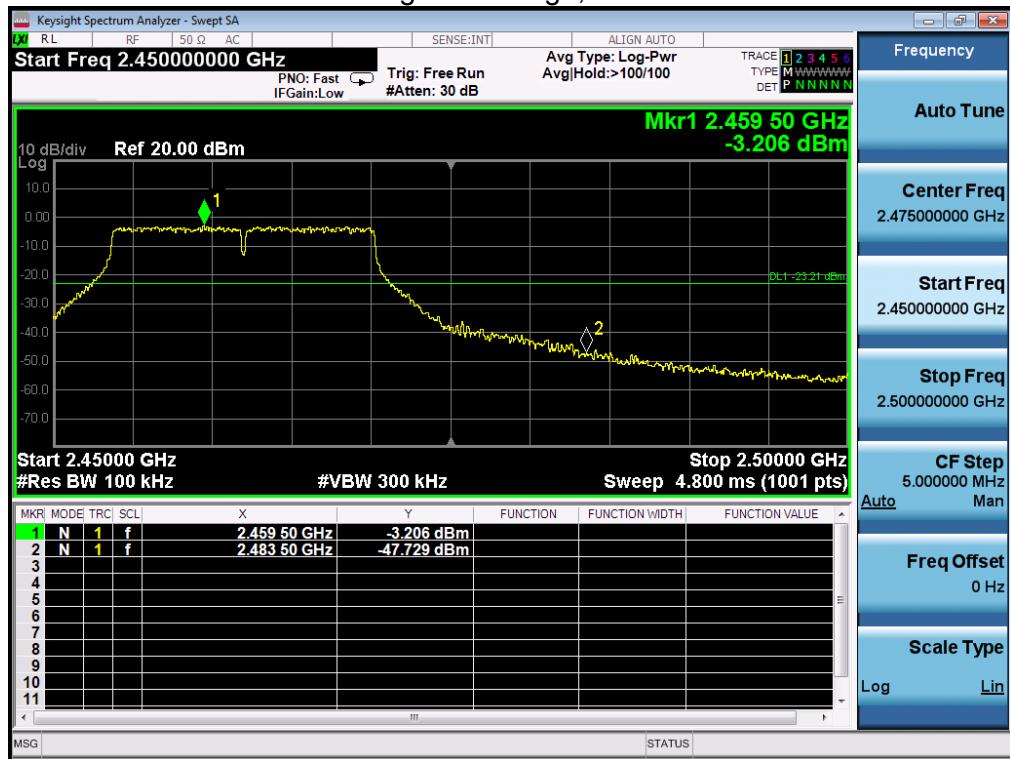
802.11b: Band Edge, Left Side



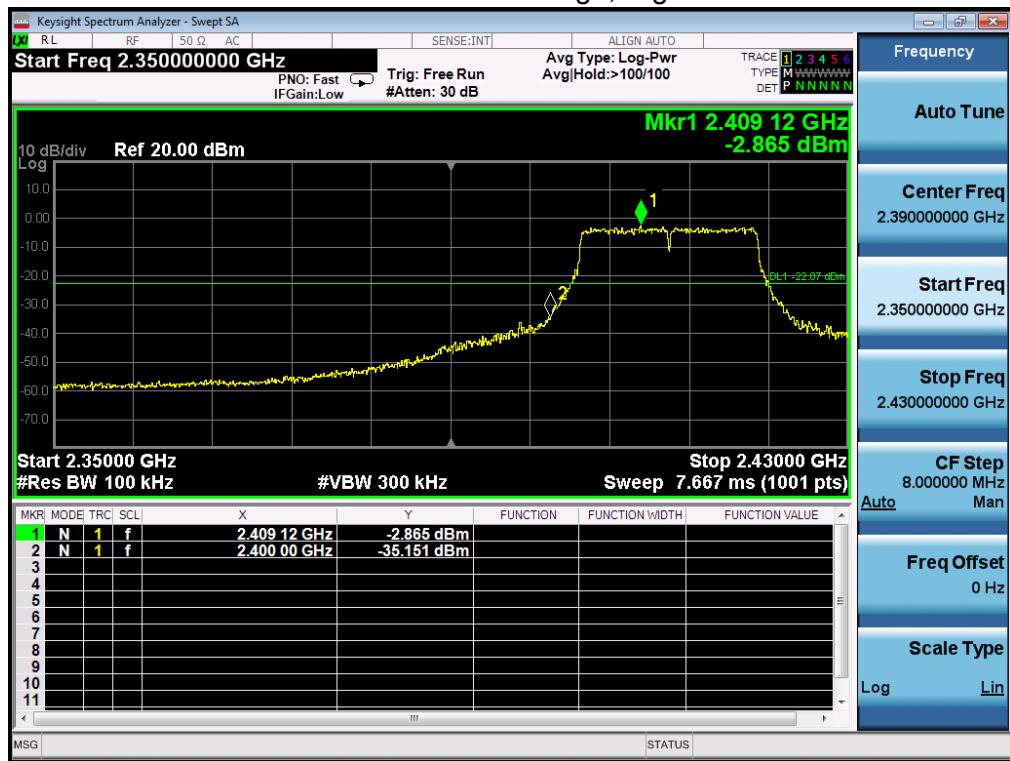
## 802.11g: Band Edge, Right Side



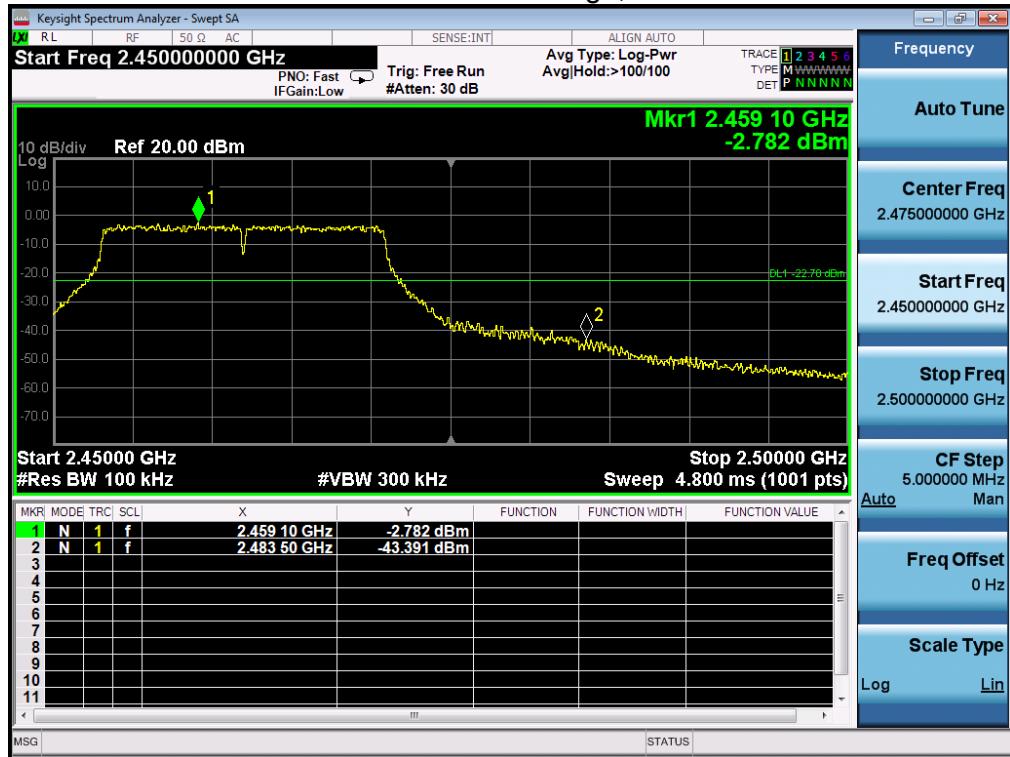
## 802.11g: Band Edge, Left Side



## 802.11n-HT20: Band Edge, Right Side



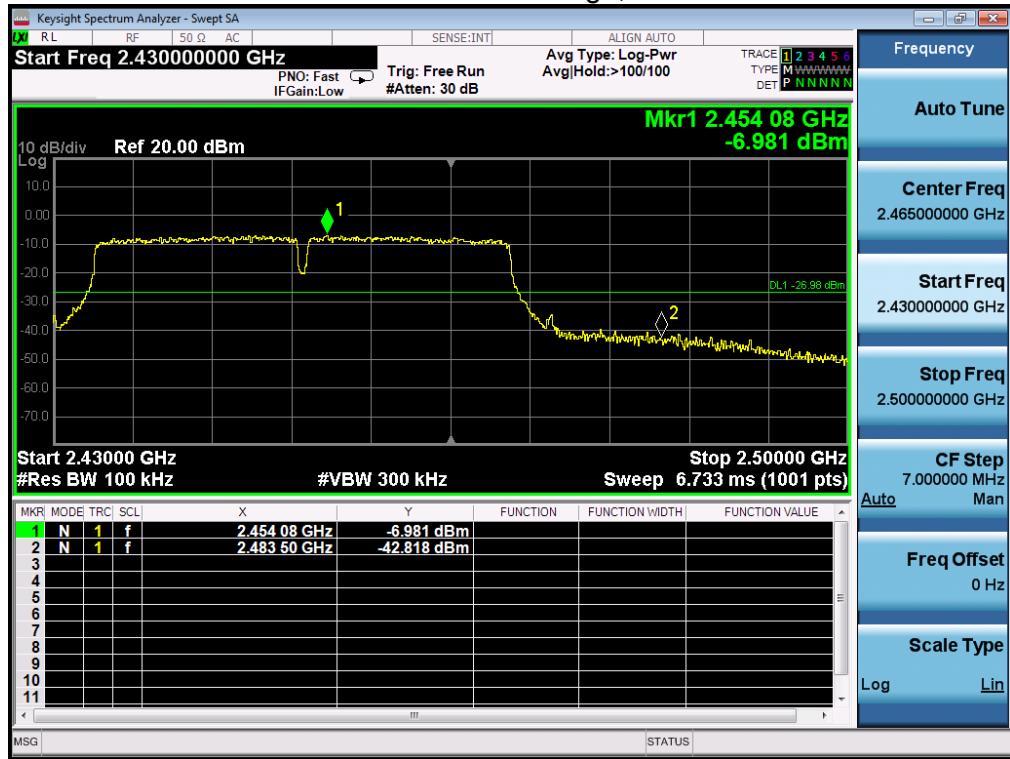
## 802.11n-HT20: Band Edge, Left Side



## 802.11n-HT40: Band Edge, Right Side



## 802.11n-HT40: Band Edge, Left Side



## 6. BANDWIDTH TEST

### 6.1. Limits

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

### 6.2. Test Procedure

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies Associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test data:

#### A Antenna

	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.11b	2412	10.07	>0.5	Pass
	2437	10.07	>0.5	Pass
	2462	10.07	>0.5	Pass
802.11g	2412	16.57	>0.5	Pass
	2437	16.58	>0.5	Pass
	2462	16.57	>0.5	Pass
802.11n (HT20)	2412	17.79	>0.5	Pass
	2437	17.79	>0.5	Pass
	2462	17.78	>0.5	Pass
802.11n (HT40)	2422	36.43	>0.5	Pass
	2437	36.44	>0.5	Pass
	2452	36.43	>0.5	Pass

**B Antenna**

	<b>Frequency (MHz)</b>	<b>6dB Bandwidth (MHz)</b>	<b>Limit (MHz)</b>	<b>Result</b>
802.11b	2412	10.07	>0.5	Pass
	2437	10.07	>0.5	Pass
	2462	10.08	>0.5	Pass
802.11g	2412	16.57	>0.5	Pass
	2437	16.58	>0.5	Pass
	2462	16.58	>0.5	Pass
802.11n (HT20)	2412	17.78	>0.5	Pass
	2437	17.78	>0.5	Pass
	2462	17.78	>0.5	Pass
802.11n (HT40)	2422	36.43	>0.5	Pass
	2437	36.42	>0.5	Pass
	2452	36.44	>0.5	Pass

Test plot as follows: 6dB bandwith

### A Antenna

#### 802.11b 2412MHz



#### 802.11g 2412MHz



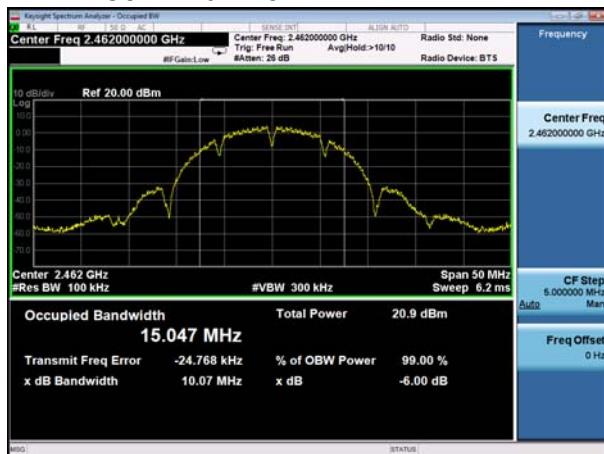
#### 802.11b 2437MHz



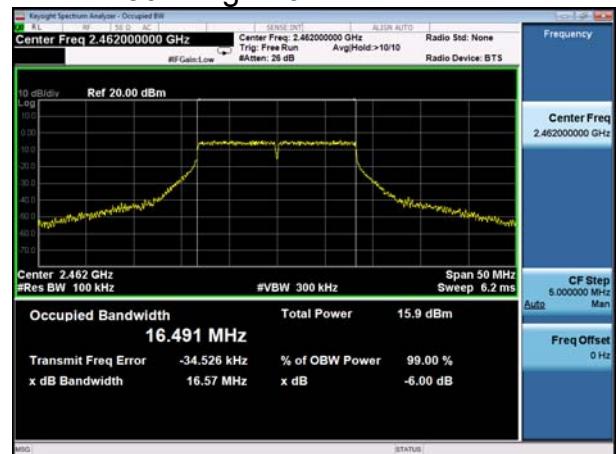
#### 802.11g 2437MHz



#### 802.11b 2462MHz



#### 802.11g 2462MHz



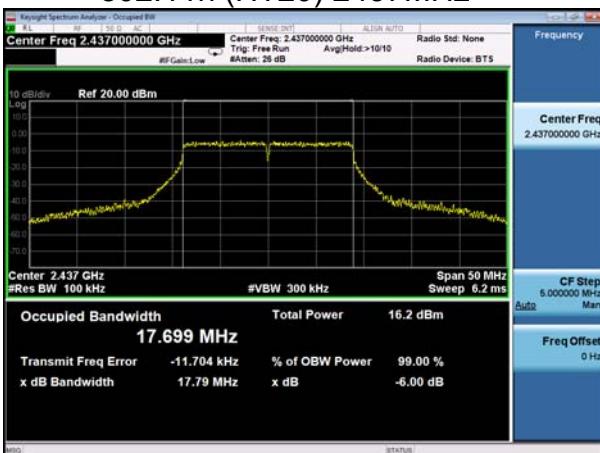
## 802.11n (HT20) 2412MHz



## 802.11n (HT40) 2422MHz



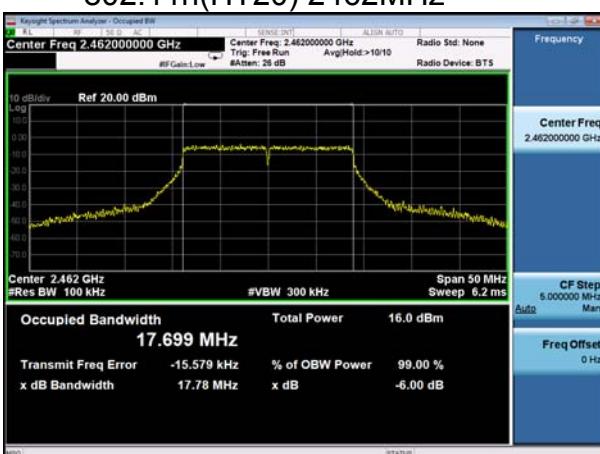
## 802.11n (HT20) 2437MHz



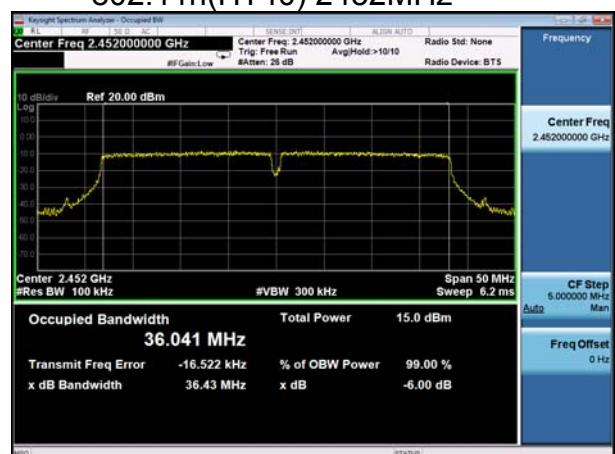
## 802.11n (HT40) 2437MHz



## 802.11n(HT20) 2462MHz



## 802.11n(HT40) 2452MHz



**B Antenna**

802.11b 2412MHz



802.11g 2412MHz



802.11b 2437MHz



802.11g 2437MHz



802.11b 2462MHz



802.11g 2462MHz



## 802.11n (HT20) 2412MHz



## 802.11n (HT40) 2422MHz



## 802.11n (HT20) 2437MHz



## 802.11n (HT40) 2437MHz



## 802.11n(HT20) 2462MHz



## 802.11n(HT40) 2452MHz



## 7. OUTPUT POWER TEST

### 7.1. Limits

For systems using digital modulation in the 2400~2483.5MHz, The output Power shall not exceed 1W (30dBm)

### 7.2. Test setup

1. The Transmitter output (antenna port) was connected to the power meter.
2. Turn on the EUT and power meter and then record the power value.
3. Repeat above procedures on all channels needed to be tested.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.



### 7.3. Test result

Test Channel	Frequency (MHz)	Maximum Conducted Output Power		Total power (dBm)	Limit (dBm)		
		(dBm)					
		Ant A	Ant B				
<b>TX 802.11b Mode</b>							
CH01	2412	8.37	8.45	-	30.0		
CH06	2437	8.82	8.94	-	30.0		
CH11	2462	9.14	9.21	-	30.0		
<b>TX 802.11g Mode</b>							
CH01	2412	9.56	9.73	-	30.0		
CH06	2437	9.84	9.98	-	30.0		
CH11	2462	9.43	9.55	-	30.0		
<b>TX 802.11n(HT20) Mode</b>							
CH01	2412	7.86	7.68	10.78	30.0		
CH06	2437	7.64	7.59	10.63	30.0		
CH11	2462	7.58	7.71	10.66	30.0		
<b>TX 802.11n(HT40) Mode</b>							
CH01	2422	7.16	7.21	10.20	30.0		
CH06	2437	7.54	7.59	10.58	30.0		
CH11	2452	7.32	7.28	10.31	30.0		

- Note:1. 802.11b ,802.11g mode the ANT A and ANT B can't TX and RX at the same time;
2. 802.11n(HT20),802.11n(HT40) mode the ANT A and ANT B can TX and RX at the same time;
3. Directional gain=GANT +10log(N)dbi =3.0+10log2=6.0dbi;
4. For power test the duty cycle is 100% in continuous transmitting mode.
5. TX means Transmitter; RX means Receive.

## 8. DUTY CYCLE

### 8.1. Test Procedure

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW  $\geq$  OBW if possible; otherwise, set RBW to the largest available value. Set VBW  $\geq$  RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are  $> 50/T$  and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if  $T \leq 16.7$  microseconds.)

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Span = Zero Span

RBW = 1MHz

VBW = 3MHz

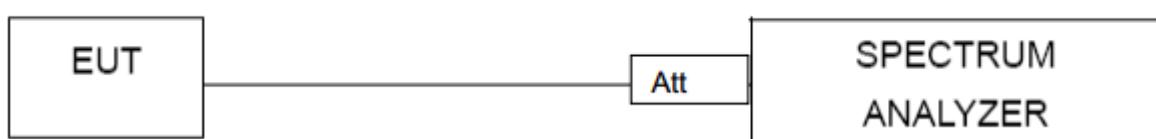
Number of points in Sweep >100

Detector function = peak

Trace = Clear write Measure Ttotal and Ton

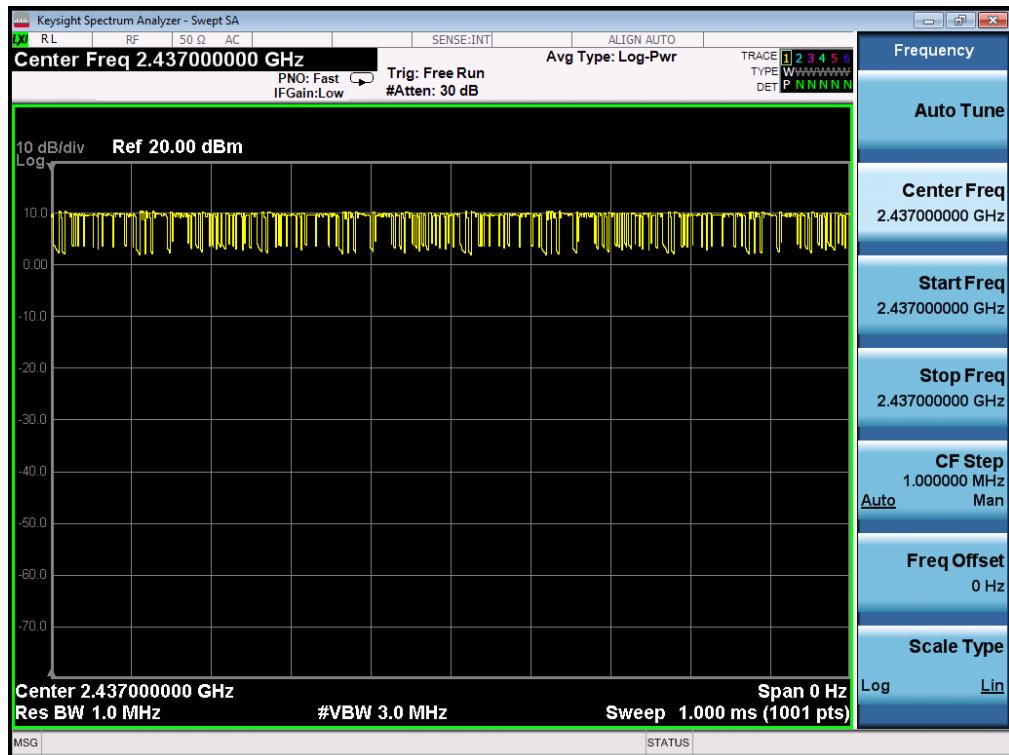
Calculate Duty Cycle = Ton / Ttotal and Duty Cycle Factor=10\*log(1/Duty Cycle)

### 8.2. Test Setup

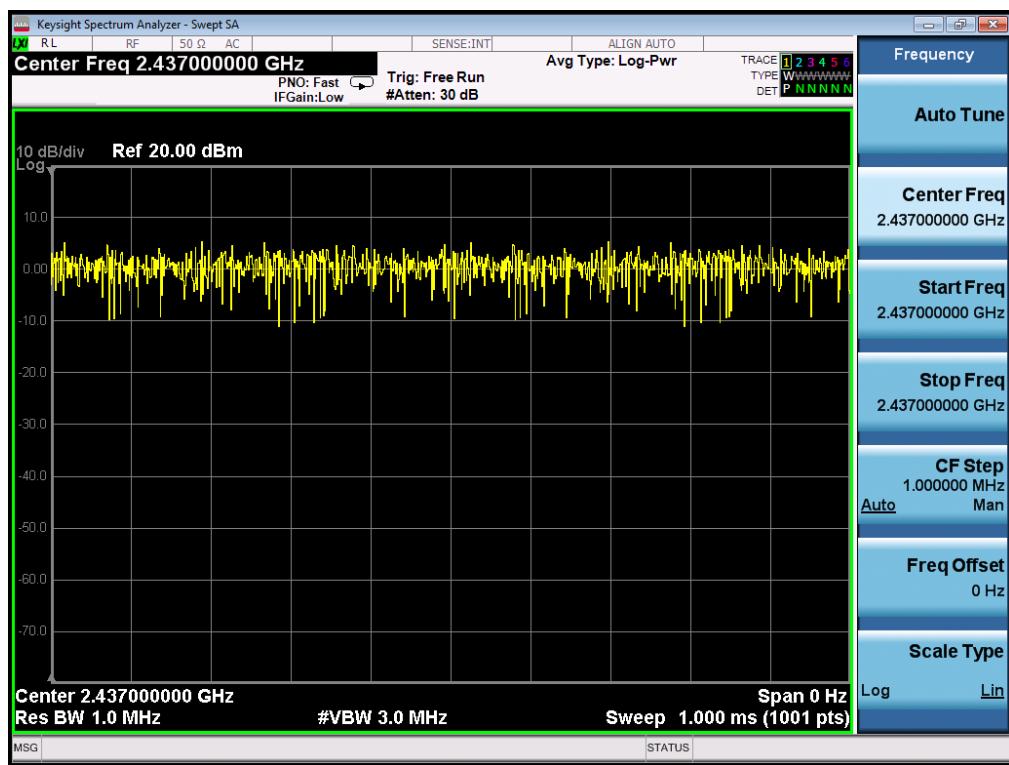


## A Antenna

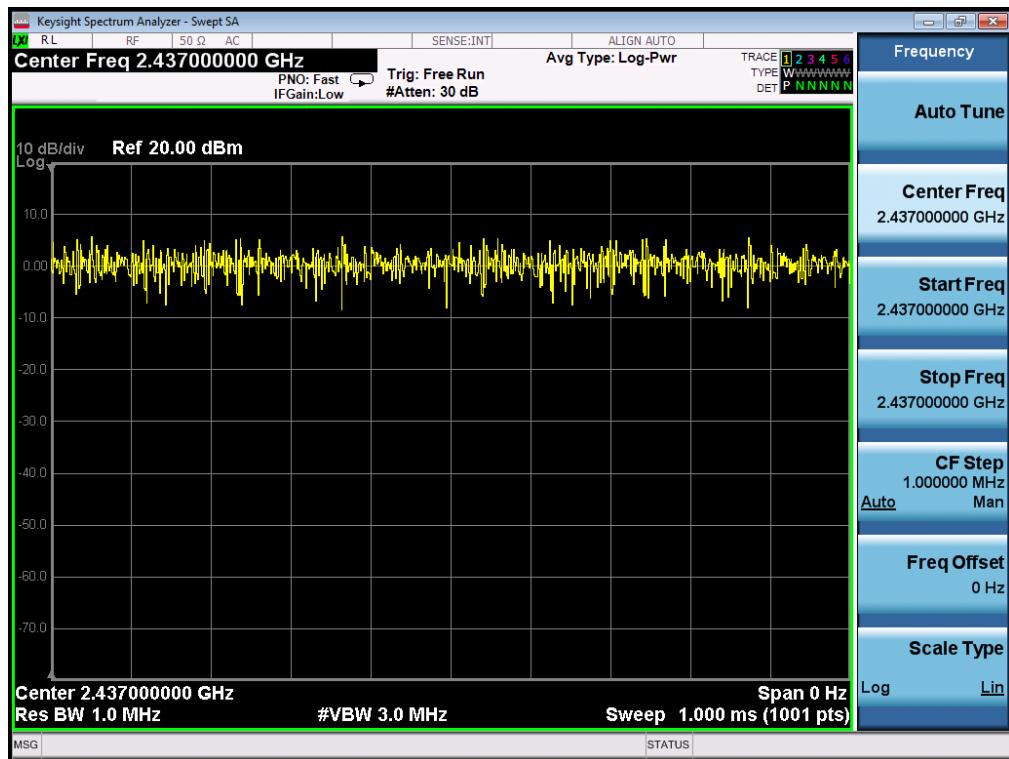
Test plot of Duty Cycle for 802.11b



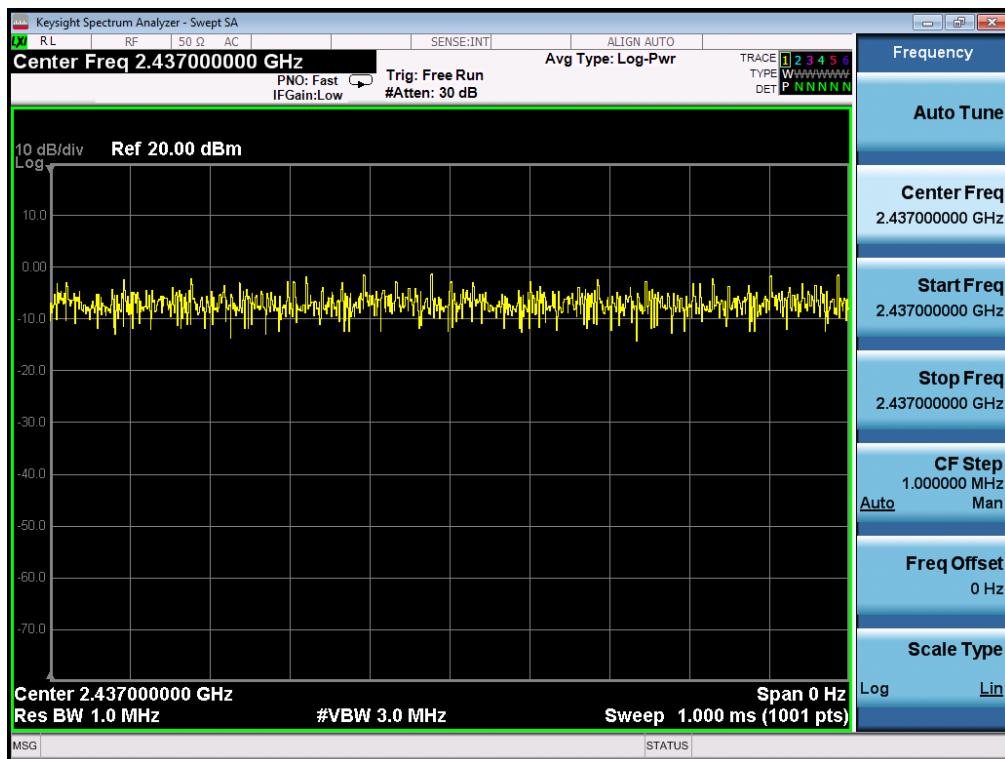
Test plot of Duty Cycle for 802.11g



### Test plot of Duty Cycle for 802.11n-HT20

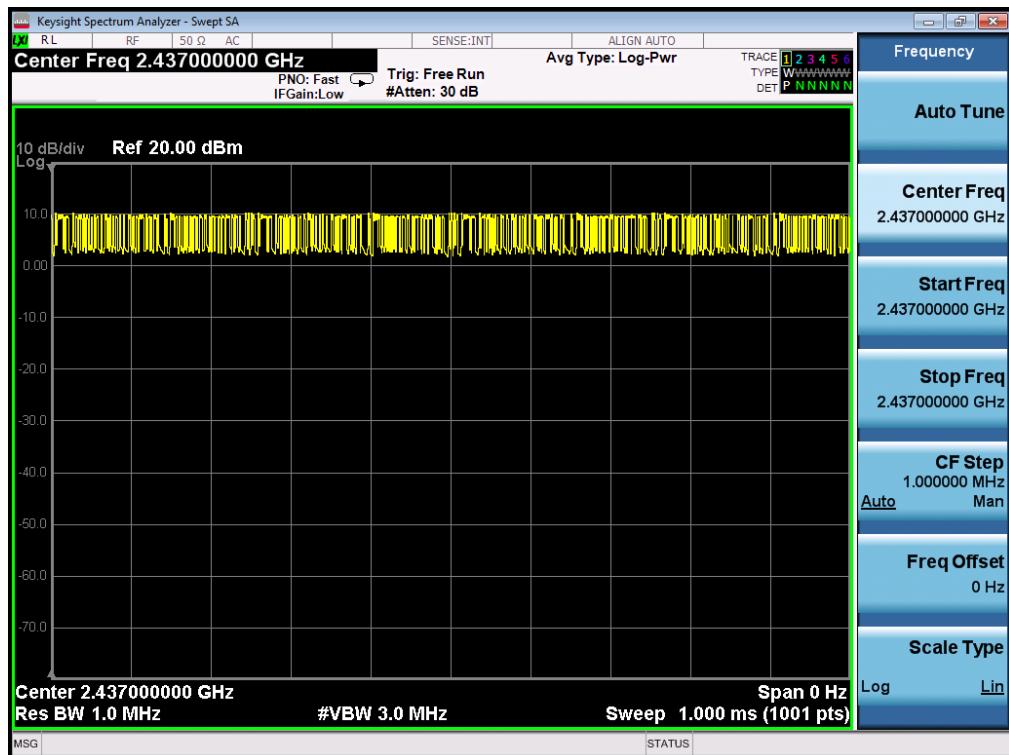


### Test plot of Duty Cycle for 802.11n-HT40

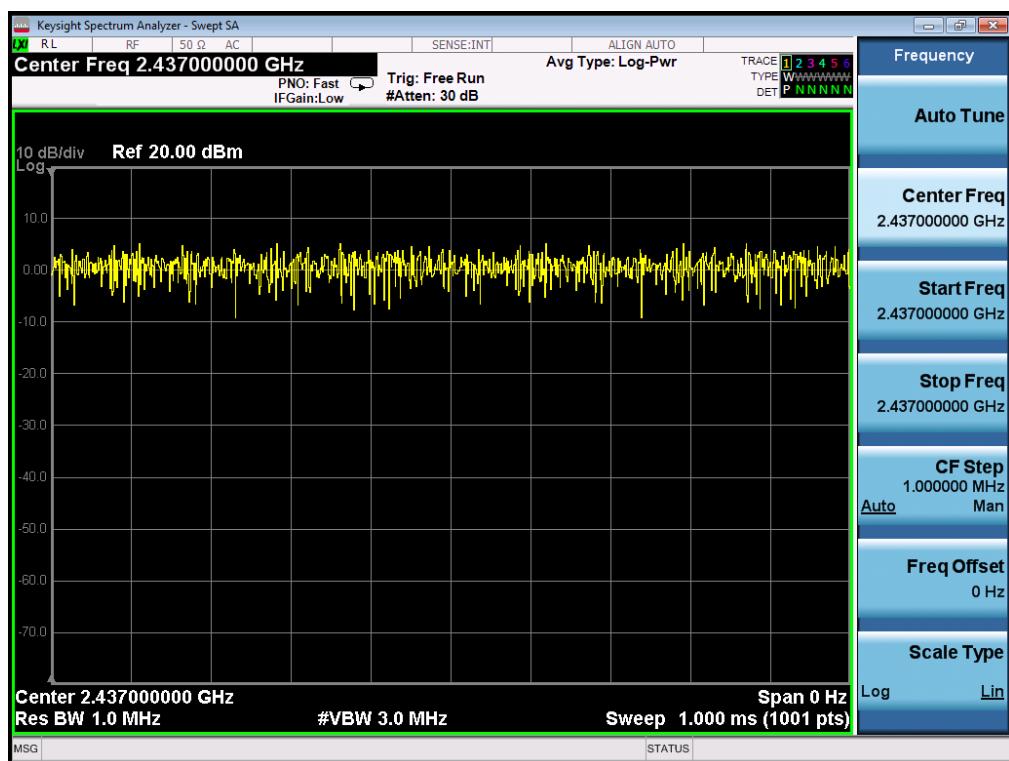


**B Antenna**

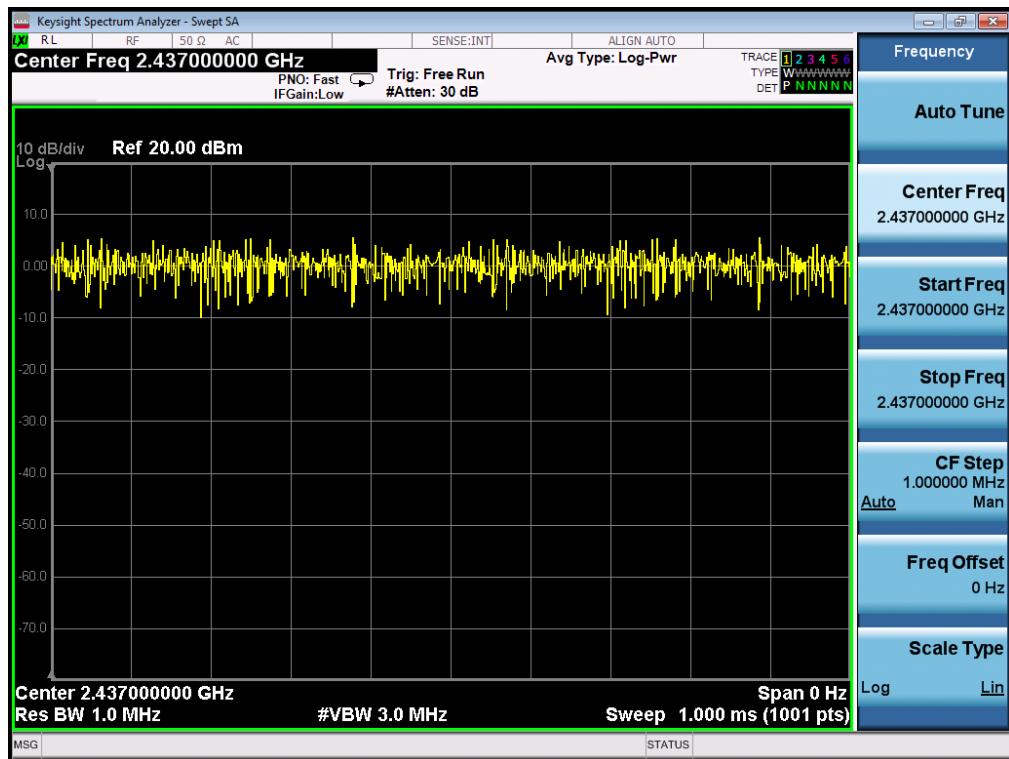
Test plot of Duty Cycle for 802.11b



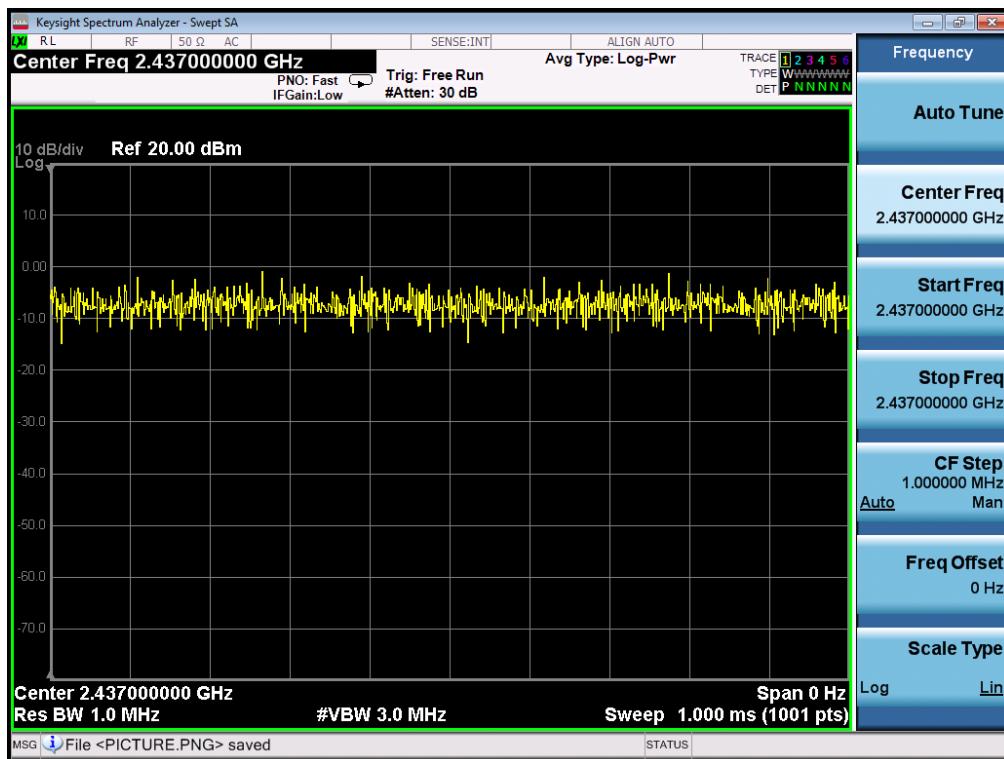
Test plot of Duty Cycle for 802.11g



### Test plot of Duty Cycle for 802.11n-HT20



### Test plot of Duty Cycle for 802.11n-HT40



## 9. POWER SPECTRAL DENSITY TEST

### 9.1. Limits

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

### 9.2. Test setup

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
4. Set the VBW  $\geq 3 \text{ RBW}$ .
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### 9.3. Test result

	Channel Frequency (MHz)	Power density (dBm/3kHz)		Total PSD	Limit (dBm/3kHz)	Result
		Ant A	Ant B			
802.11b	2412	-14.505	-14.605	-	8	Pass
	2437	-14.341	-14.415	-	8	Pass
	2462	-14.576	-14.582	-	8	Pass
	2412	-17.863	-17.682	-	8	Pass
802.11g	2437	-17.715	-17.948	-	8	Pass
	2462	-17.707	-17.860	-	8	Pass
	2412	-17.552	-17.642	-12.86	8	Pass
802.11n (HT20)	2437	-16.757	-17.517	-11.94	8	Pass
	2462	-16.800	-17.500	-12.04	8	Pass
	2422	-17.810	-17.789	-14.79	8	Pass
802.11n (HT40)	2437	-17.915	-20.541	-16.02	8	Pass
	2452	-17.606	-19.861	-15.58	8	Pass

## A Antenna

802.11b 2412MHz



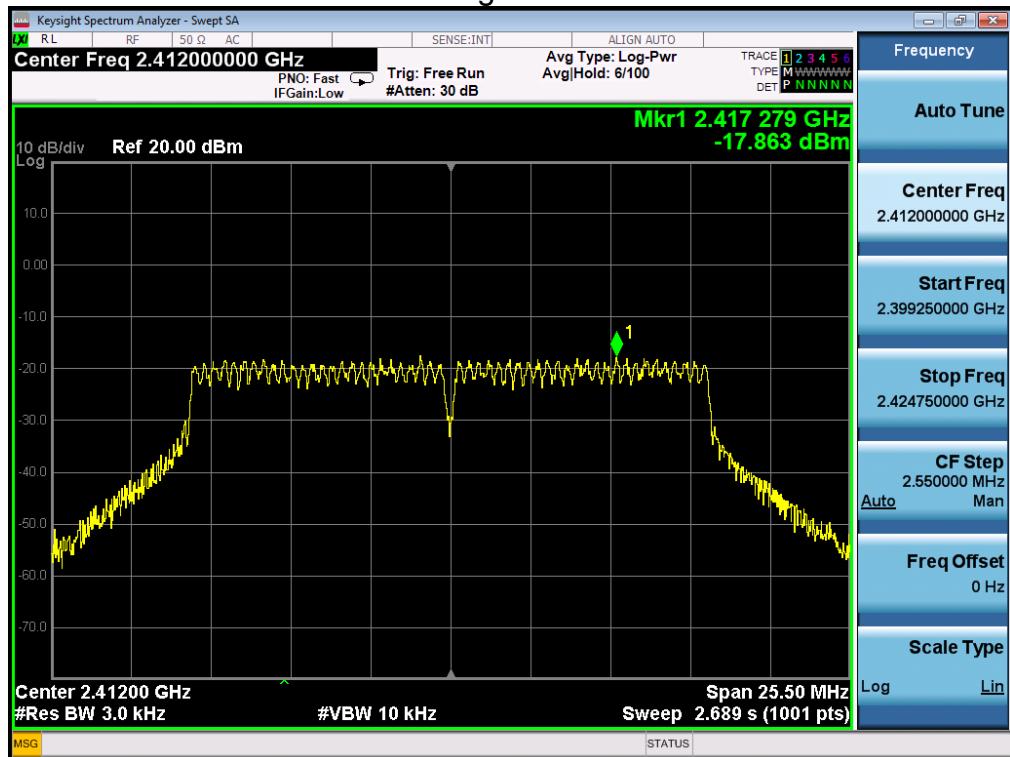
802.11b 2437MHz



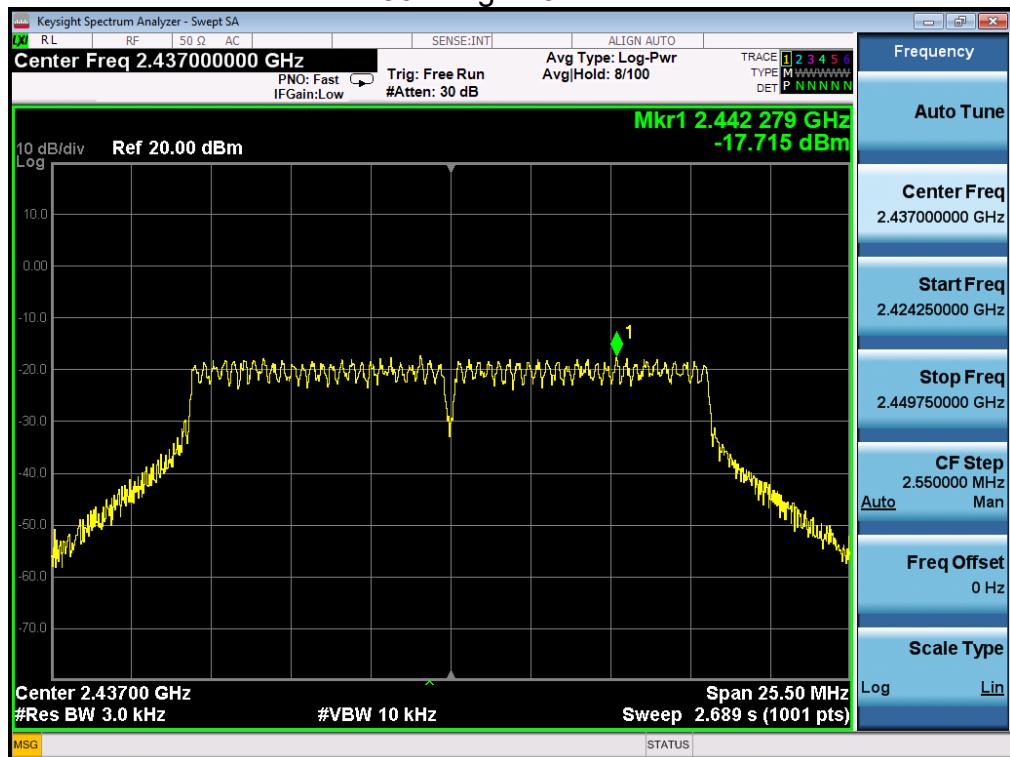
## 802.11b 2462MHz



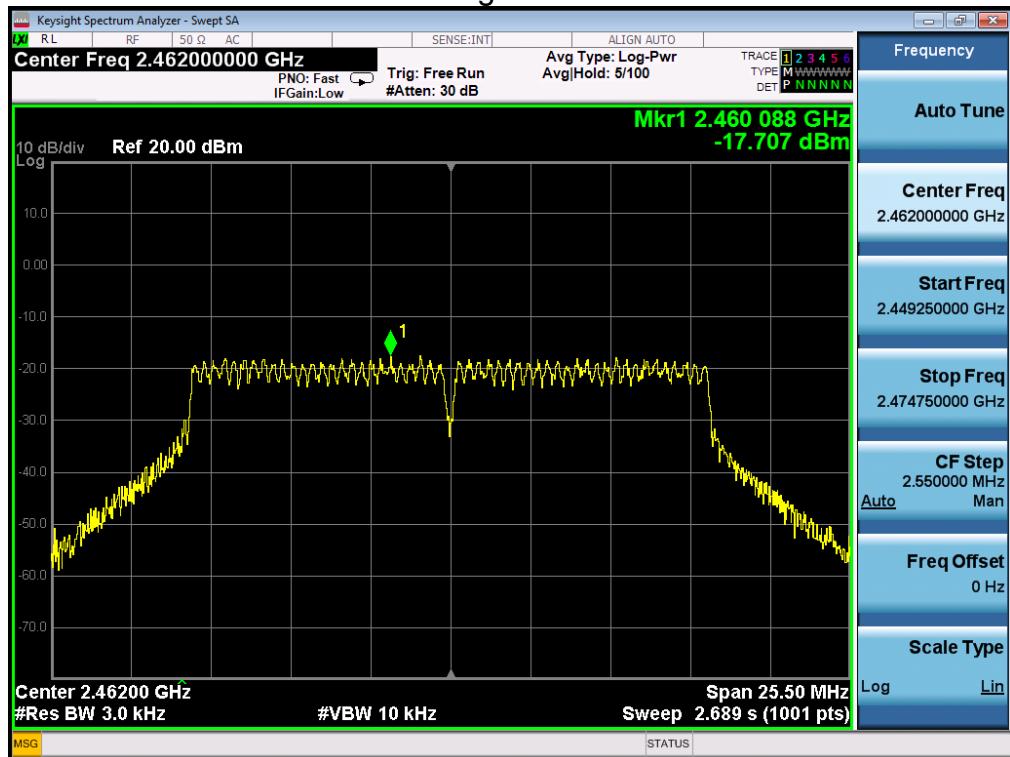
## 802.11g 2412MHz



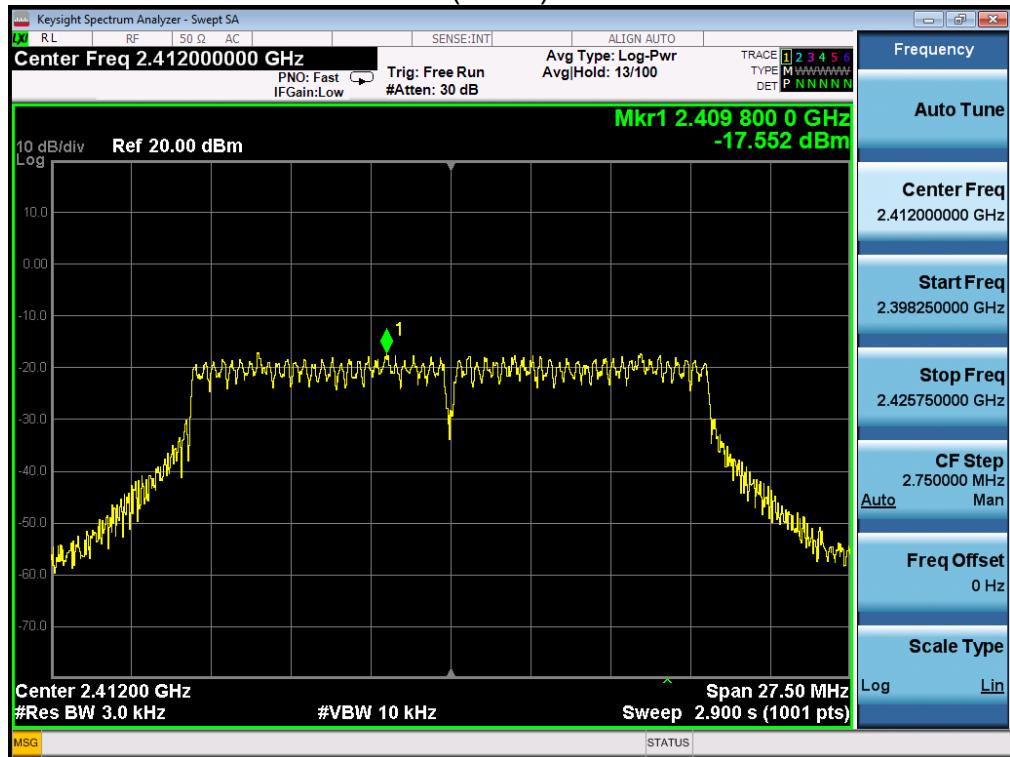
## 802.11g 2437MHz



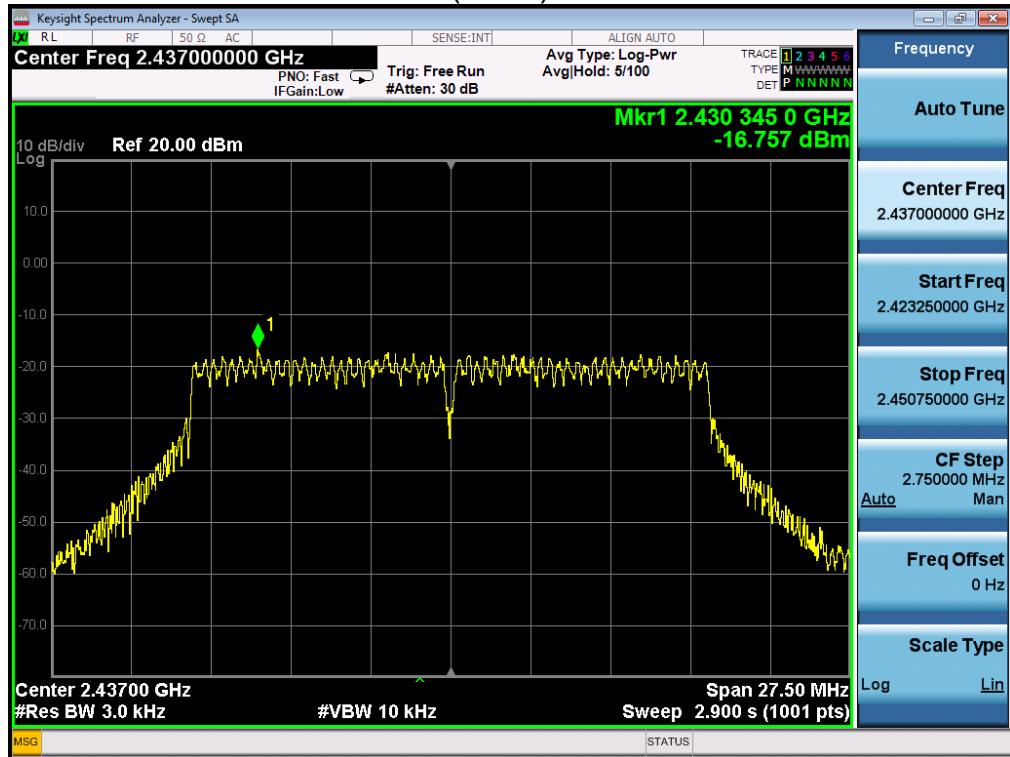
## 802.11g 2462MHz



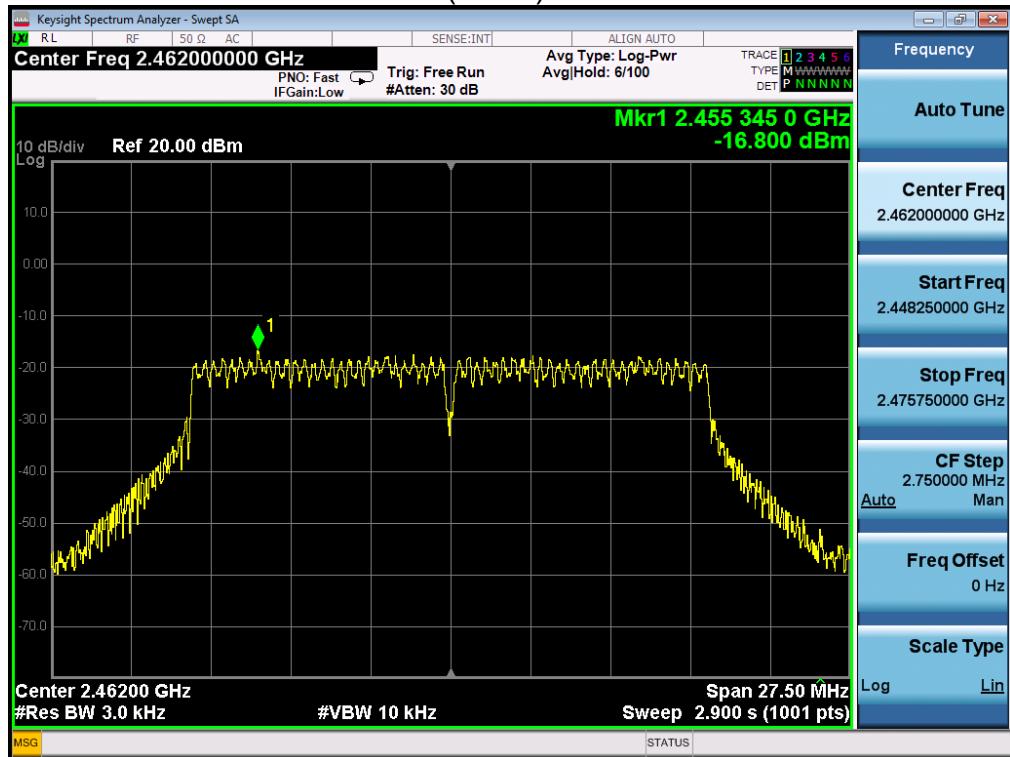
## 802.11n (HT20) 2412MHz



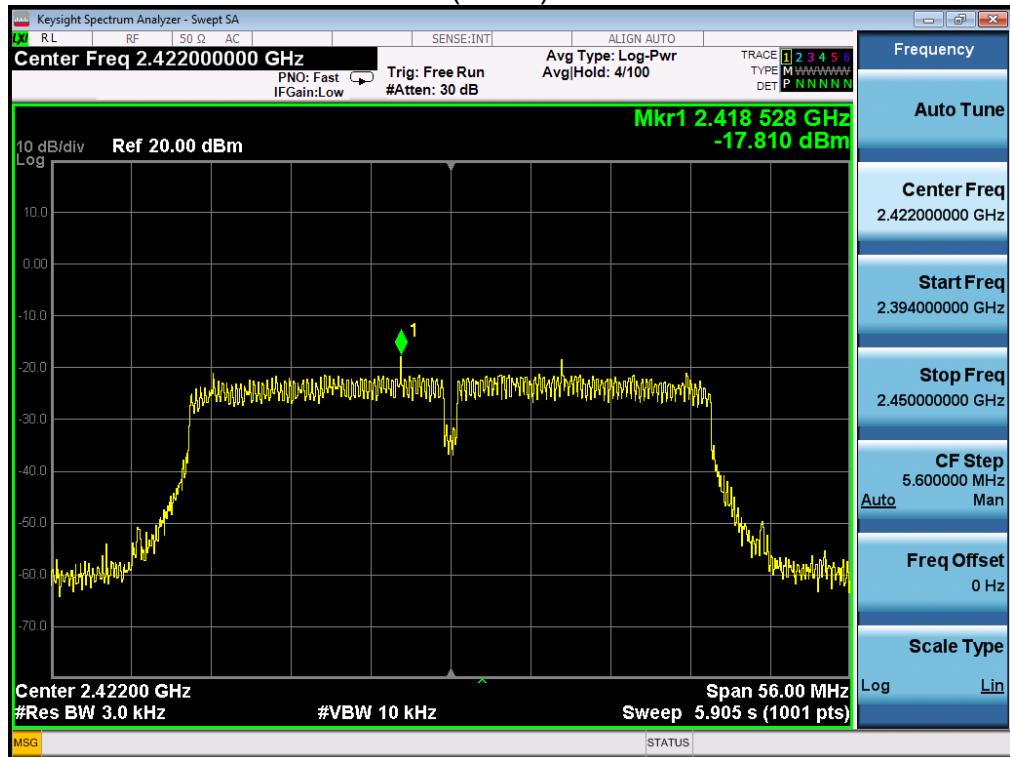
## 802.11n (HT20) 2437MHz



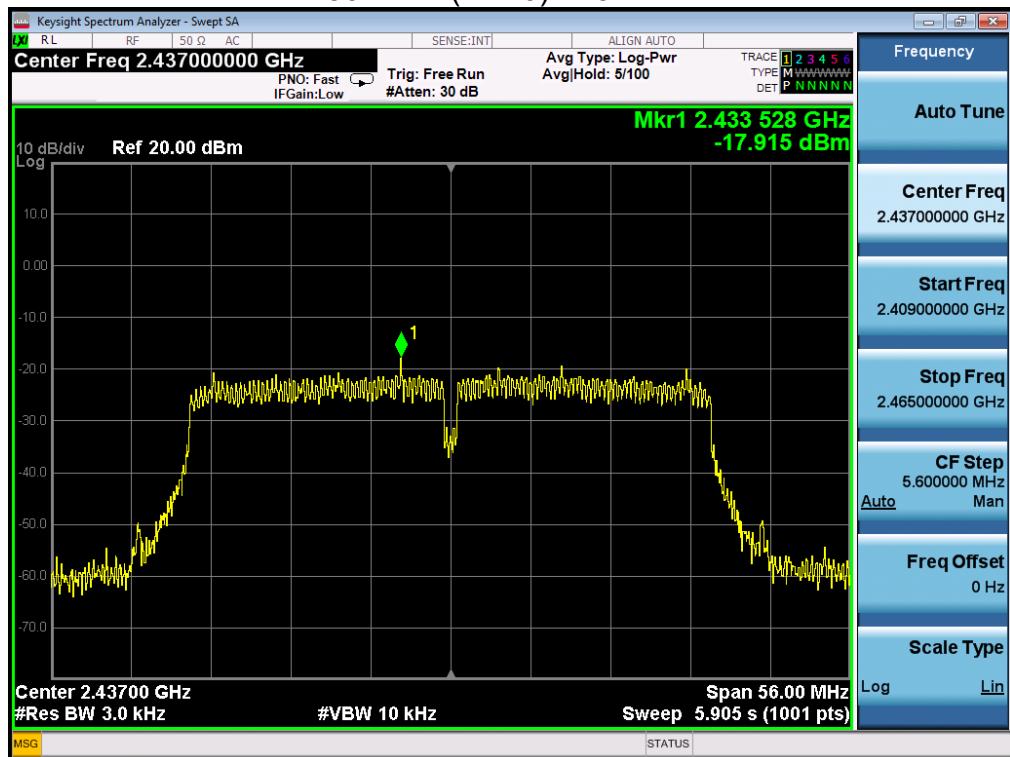
## 802.11n(HT20) 2462MHz



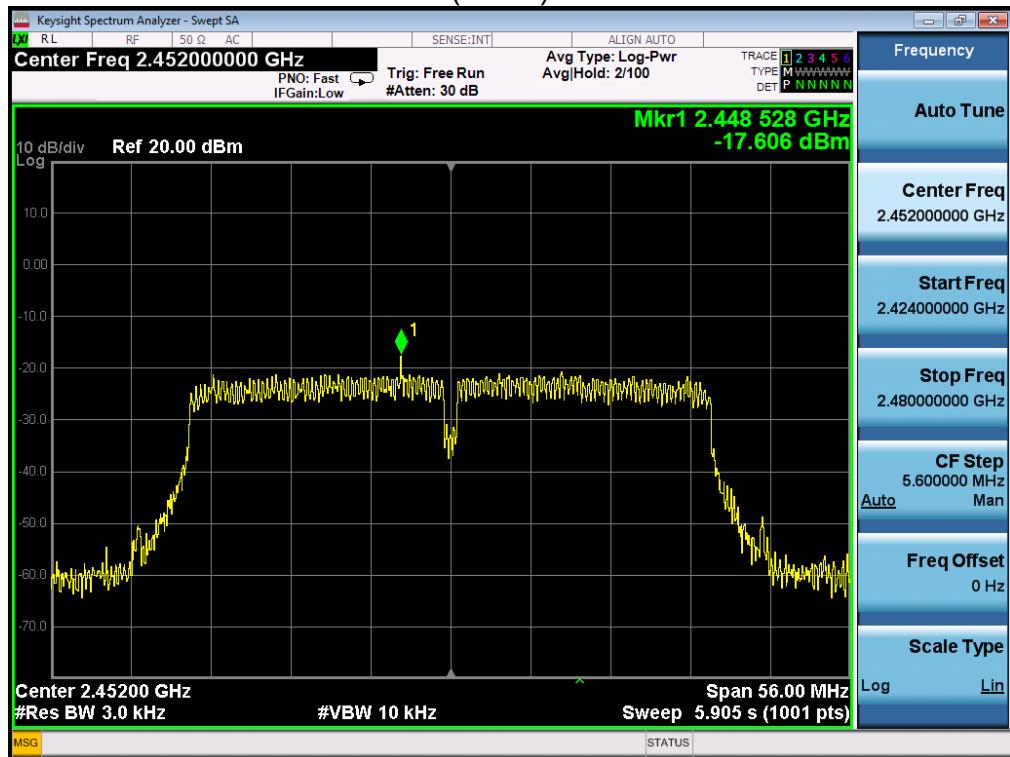
## 802.11n (HT40) 2422MHz



## 802.11n (HT40) 2437MHz



## 802.11n (HT40) 2452MHz



**B Antenna**

802.11b 2412MHz



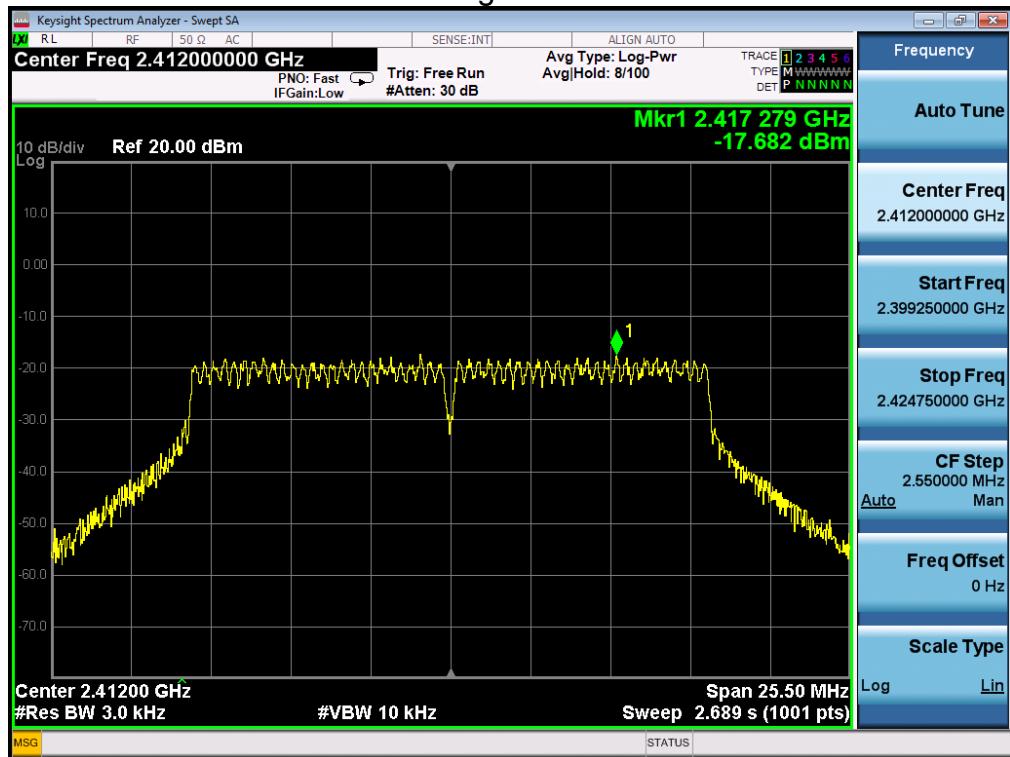
802.11b 2437MHz



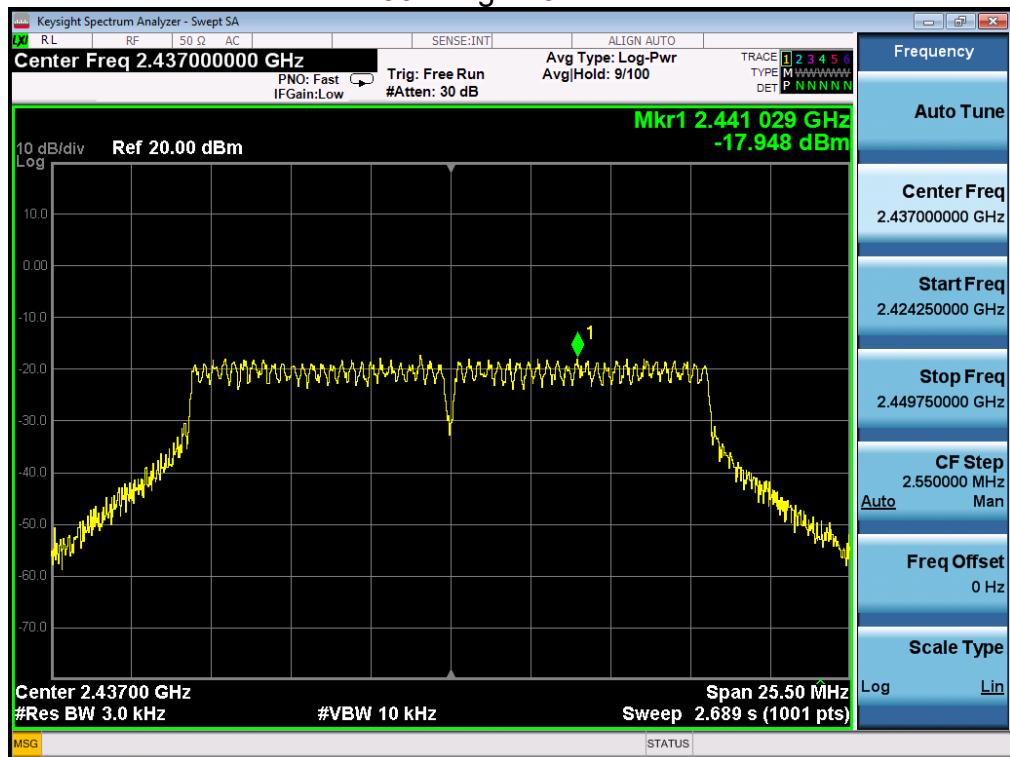
## 802.11b 2462MHz



## 802.11g 2412MHz



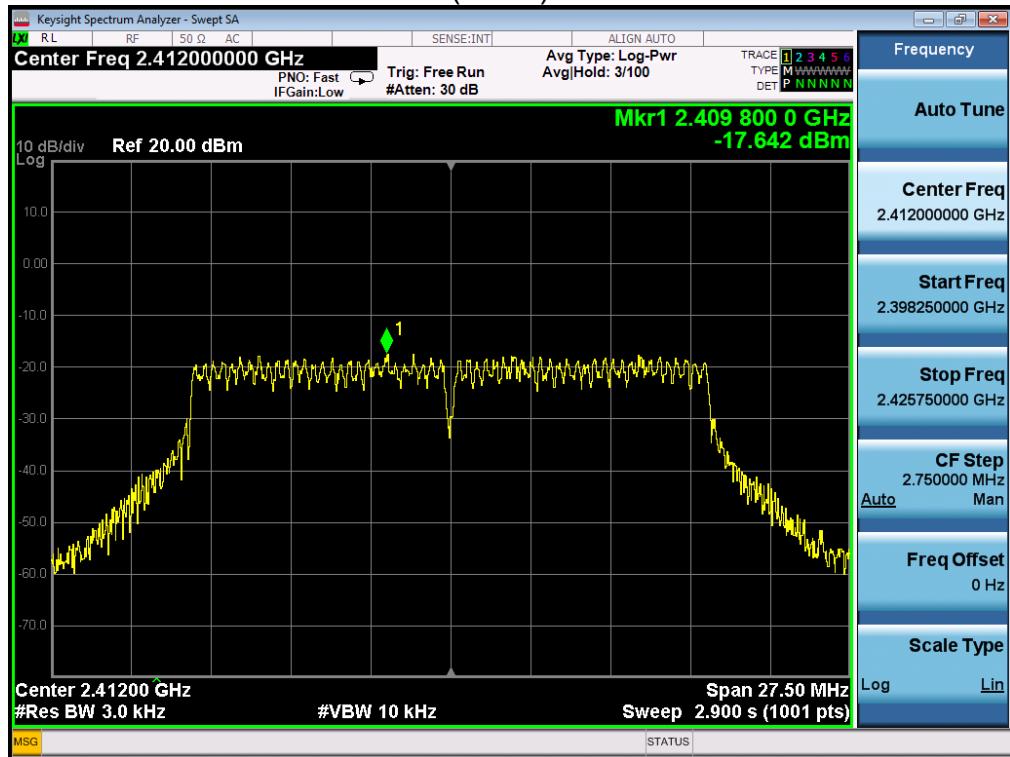
## 802.11g 2437MHz



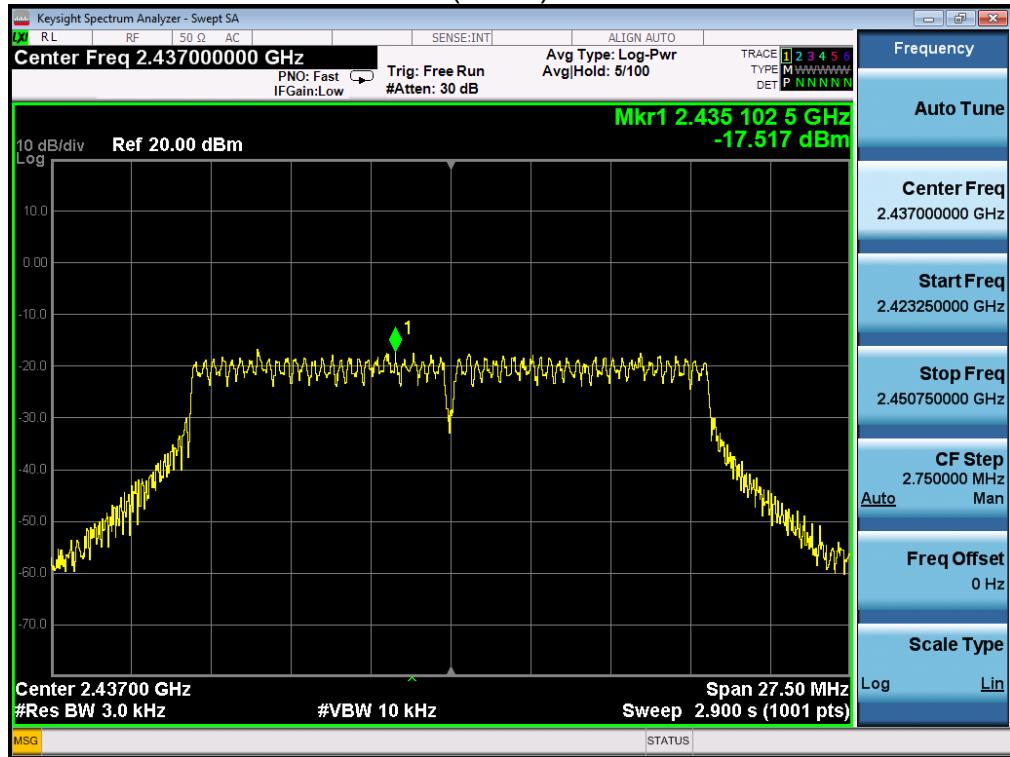
## 802.11g 2462MHz



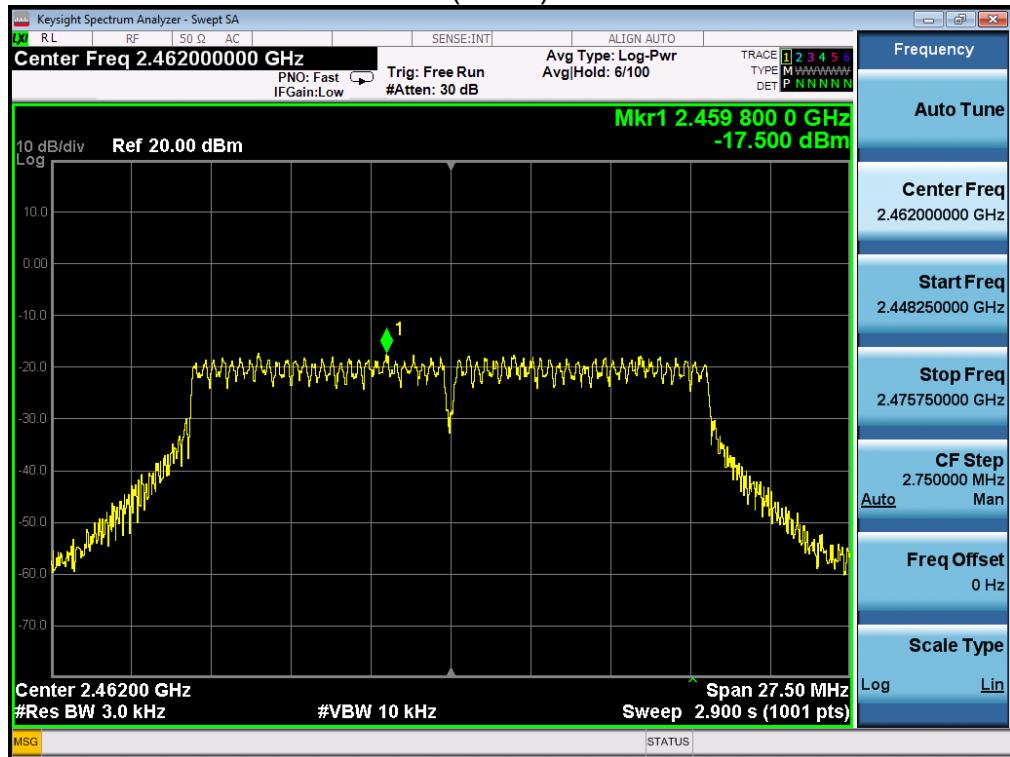
## 802.11n (HT20) 2412MHz



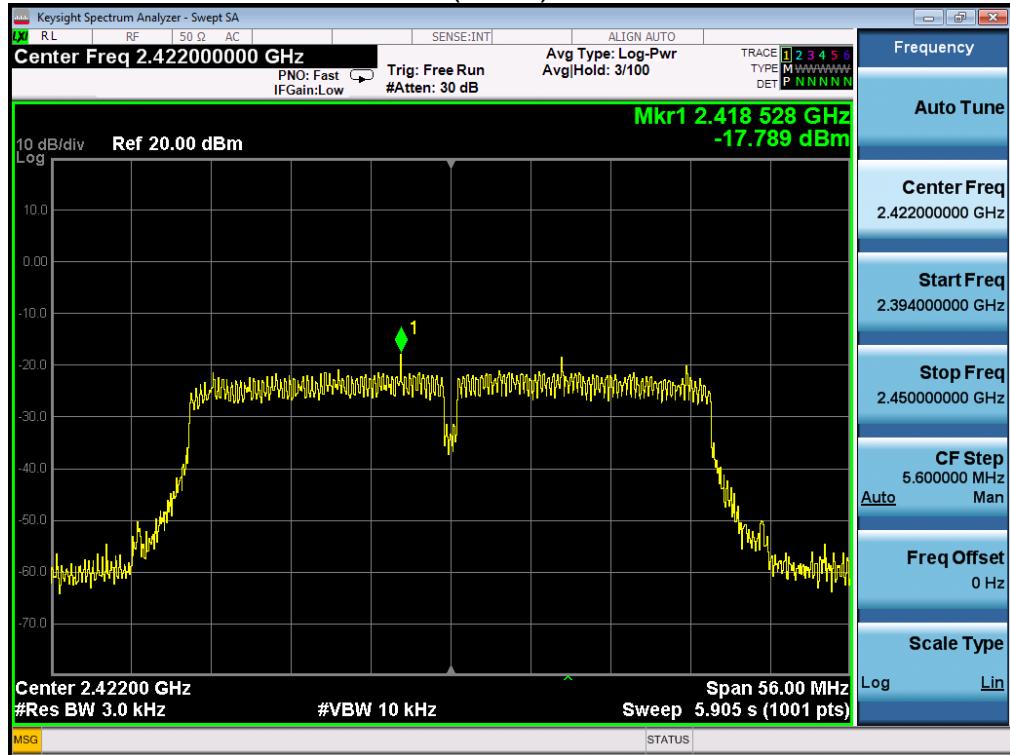
## 802.11n (HT20) 2437MHz



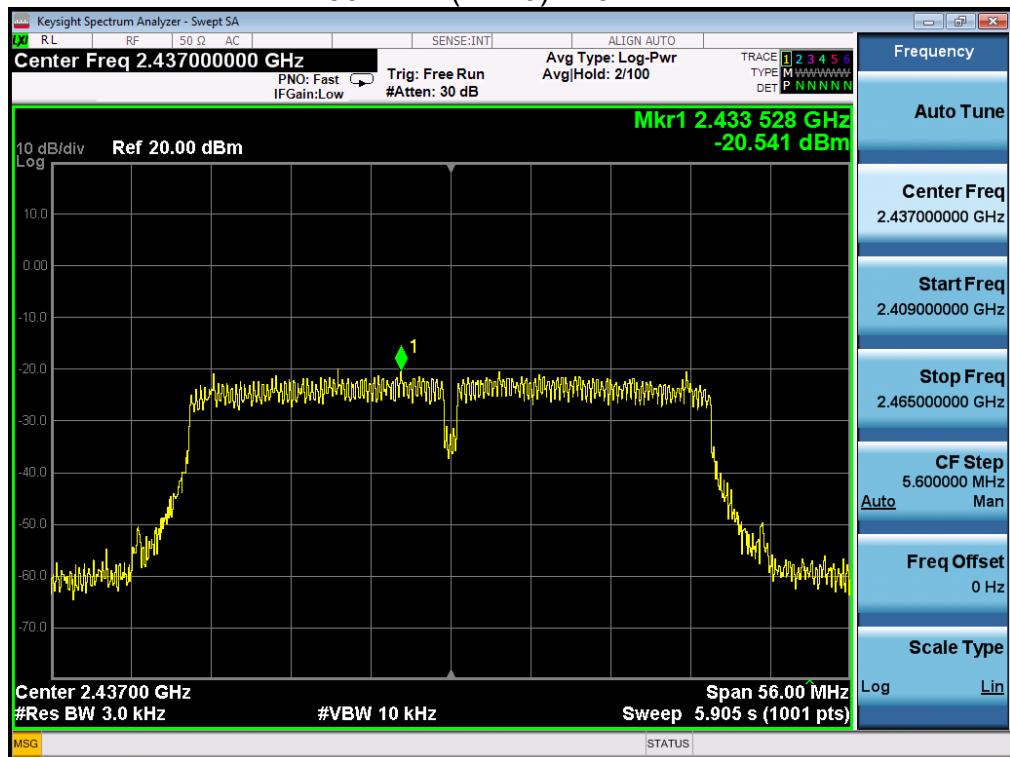
## 802.11n (HT20) 2462MHz



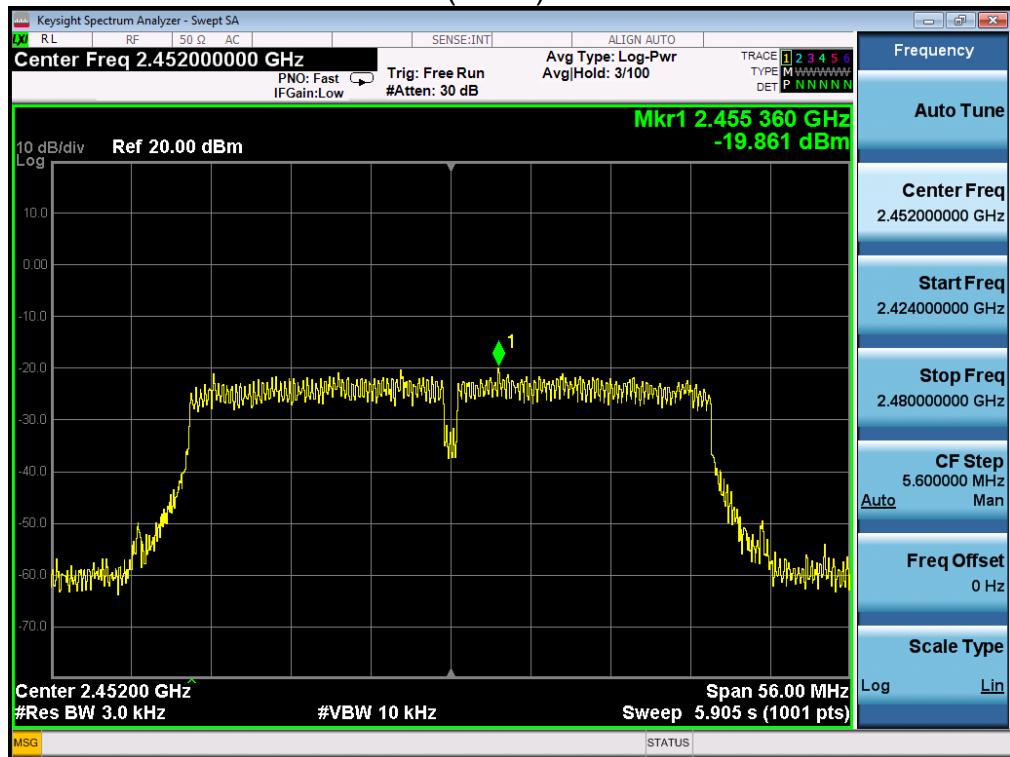
## 802.11n (HT40) 2422MHz



## 802.11n (HT40) 2437MHz



## 802.11n(HT40) 2452MHz



## 10. ANTENNA REQUIREMENTS

### 10.1. Limits

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### 10.2. Result

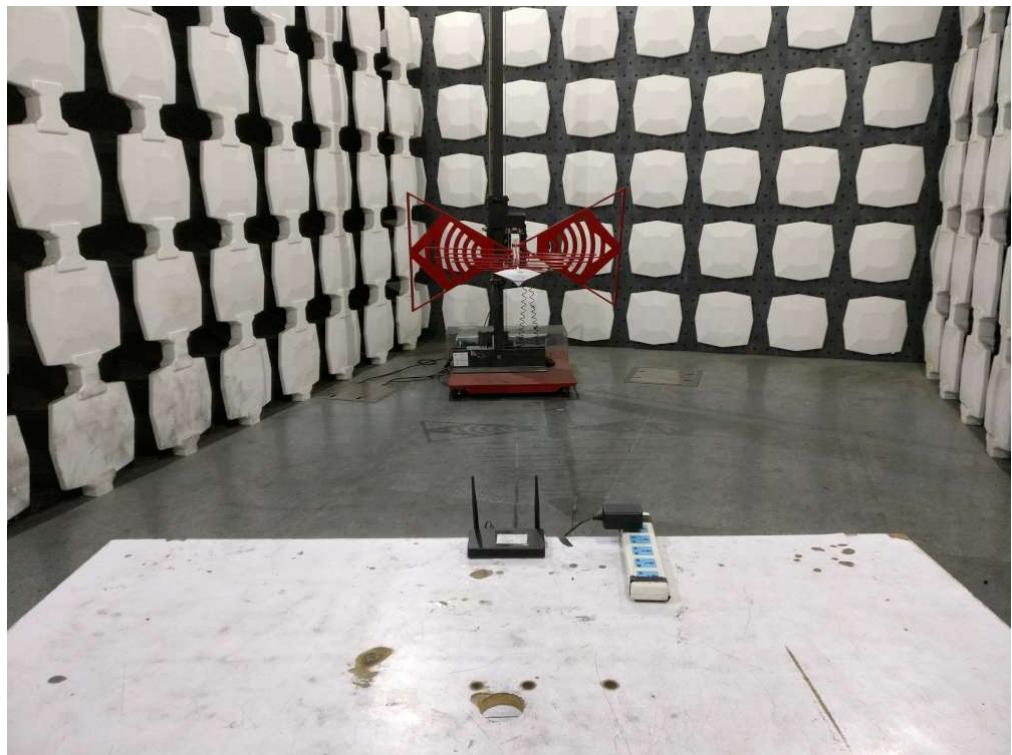
The antennas used for this product is external antenna(Cable antenna type) and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 3.0dBi.

## 11. PHOTOGRAPHS OF TEST SET-UP

### Conducted Emission

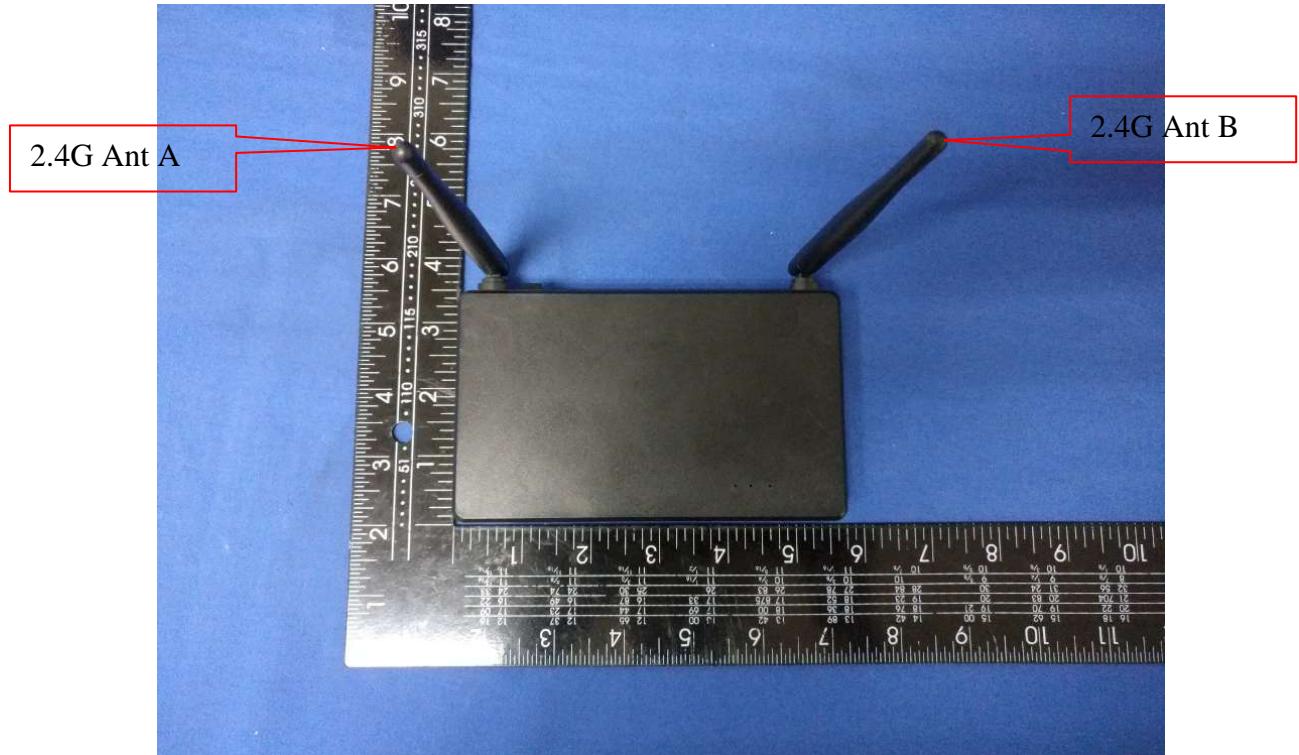


## Radiated Emission Test



## 12. PHOTOGRAPHS OF THE EUT

G201RX



## G200RX



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