

# FCC TEST REPORT (WIFI 2.4G)

for

NEXXT SOLUTIONS

Kronos 750-AC Universal Range Extender

Model Number: AEIEL755U1

FCC ID: X4YKRNS750

Prepared for : NEXXT SOLUTIONS

Address : 3505 N.W 107<sup>th</sup> AVE. MIAMI FLORIDA 33178 U.S.A

Prepared by : Keyway Testing Technology Co., Ltd.

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Report No. : TR17060277-E-001

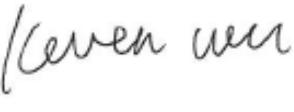
Date of Test : Jul. 3~11, 2017

Date of Report : Jul. 11, 2017

## TABLE OF CONTENTS

	Page
<b>Test Report Declaration</b>	<b>Page</b>
<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
<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>29</b>
5.1. Limits .....	29
5.2. Test setup .....	29
5.3. Test Procedure .....	30
<b>6. BANDWIDTH TEST .....</b>	<b>40</b>
6.1. Limits .....	40
6.2. Test Procedure .....	40
<b>7. OUTPUT POWER TEST .....</b>	<b>46</b>
7.1. Limits .....	46
7.2. Test setup .....	46
7.3. Test result.....	46
<b>8. DUTY CYCLE.....</b>	<b>47</b>
8.1. Test Procedure .....	47
8.2. Test Setup .....	47
8.3. Test Result.....	47
<b>9. POWER SPECTRAL DENSITY TEST.....</b>	<b>52</b>
9.1. Limits .....	52
9.2. Test setup .....	52
9.3. Test result.....	52
<b>10. ANTENNA REQUIREMENTS .....</b>	<b>65</b>
10.1. Limits .....	65
10.2. Result .....	65
<b>11. PHOTOGRAPHS OF TEST SET-UP .....</b>	<b>66</b>
<b>12. PHOTOGRAPHS OF THE EUT .....</b>	<b>68</b>

# Keyway Testing Technology Co., Ltd.

<b>Applicant:</b>	NEXXT SOLUTIONS		
<b>Address:</b>	3505 N.W 107 <sup>th</sup> AVE. MIAMI FLORIDA 33178 U.S.A		
<b>Manufacturer:</b>	YICHEN (SHENZHEN) TECHNOLOGY CO., LTD		
<b>Address:</b>	1-4/F, NO.6 Yashen Industrial Factory, No.8 Chengxin Road, Baolong Industrial City, Baolong Community, Longgang Street, Longgang District, Shenzhen, China		
<b>Factor:</b>	YICHEN (SHENZHEN) TECHNOLOGY CO., LTD		
<b>Address:</b>	1-4/F, NO.6 Yashen Industrial Factory, No.8 Chengxin Road, Baolong Industrial City, Baolong Community, Longgang Street, Longgang District, Shenzhen, China		
<b>E.U.T:</b>	Kronos 750-AC Universal Range Extender		
<b>Model Number:</b>	AEIEL755U1		
<b>Trade Name:</b>	NEXXT	<b>Serial No.:</b>	-----
<b>Date of Receipt:</b>	Jun. 30, 2017	<b>Date of Test:</b>	Jul. 3~11, 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: Jul. 11, 2017</b>			
Tested by:	Reviewed by:	Approved by:	
			
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	15.207	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:	Kronos 750-AC Universal Range Extender
Model No.:	AEIEL755U1
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); 7 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:	PCB Antenna*2
Antenna gain:	3.2dBi
Power supply:	AC 100-240V, 50/60Hz, 0.3A

## 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. 09,17	Apr. 09,18
Artificial Mains Network	Rohde&Schwarz	ENV216	101315	Apr. 09,17	Apr. 09,18
RF Cable	FUJIKURA	3D-2W	944 Cable	Apr. 09,17	Apr. 09,18

### 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. 09,17	Apr. 09,18
Spectrum Analyzer	Agilent	E4411B	MY4511304	Apr. 08,17	Apr. 08,18
3m Semi-anechoic Chamber	ETS-LINDGREEN	966	KW01	Apr. 23,17	Apr. 23,18
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. 09,17	Apr. 09,18
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: Kronos 750-AC Universal Range Extender*)

#### 3.3. Test Software

Final Test Mode	Description
Test Software	Ralink QA Tool

#### 3.4. Special Accessories and Auxiliary Equipment

Notebook

Manufacturer: Lenovo

M/N: Lenovo G475

S/N: GB14477457

## 4. EMISSION TEST RESULTS

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

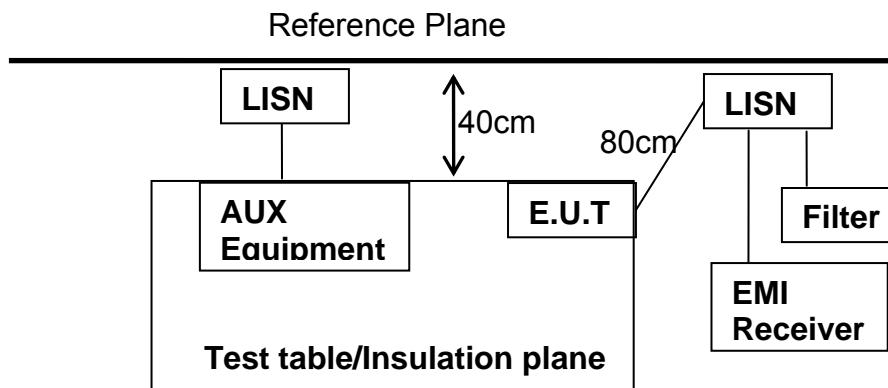
#### 4.1.1. Limit 15.209 limits

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.

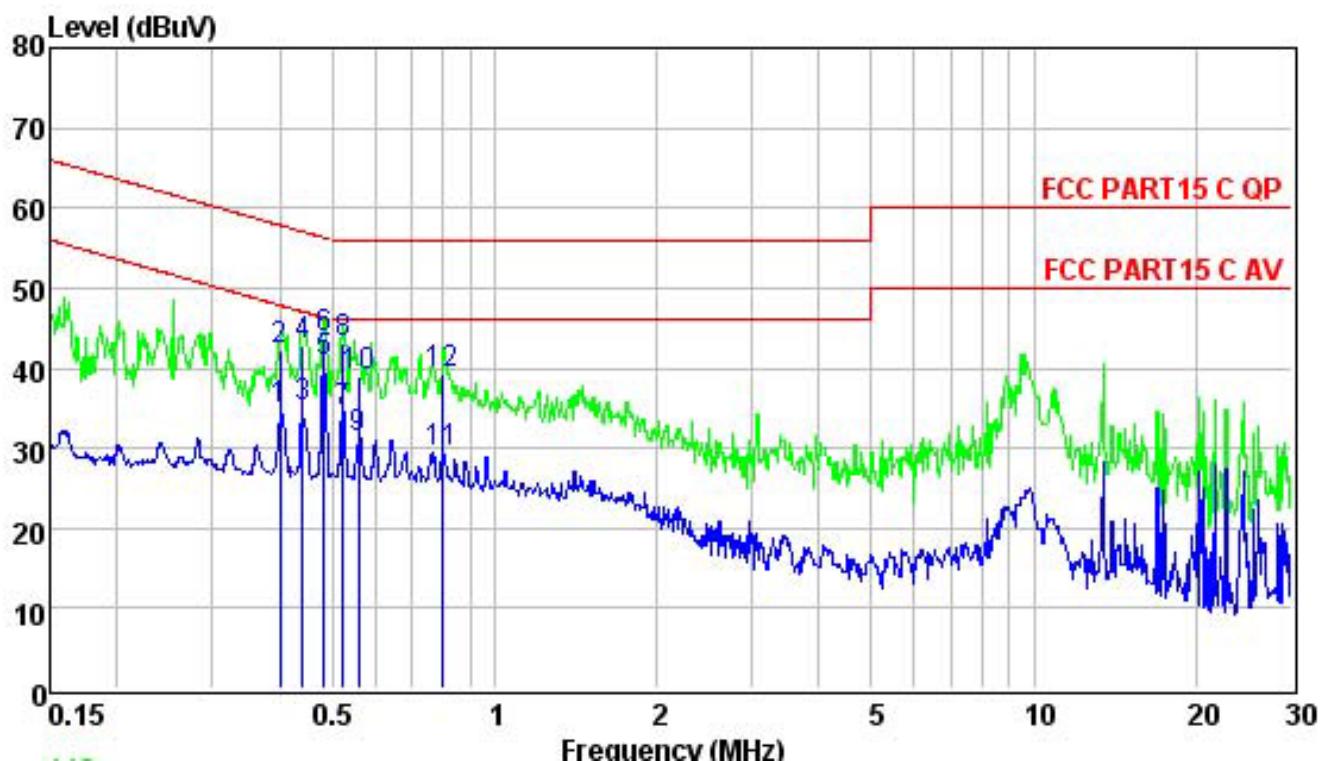


Remark: E.U.T. :Equipment Under Test

LISN: Line Impedance Stabilization Network

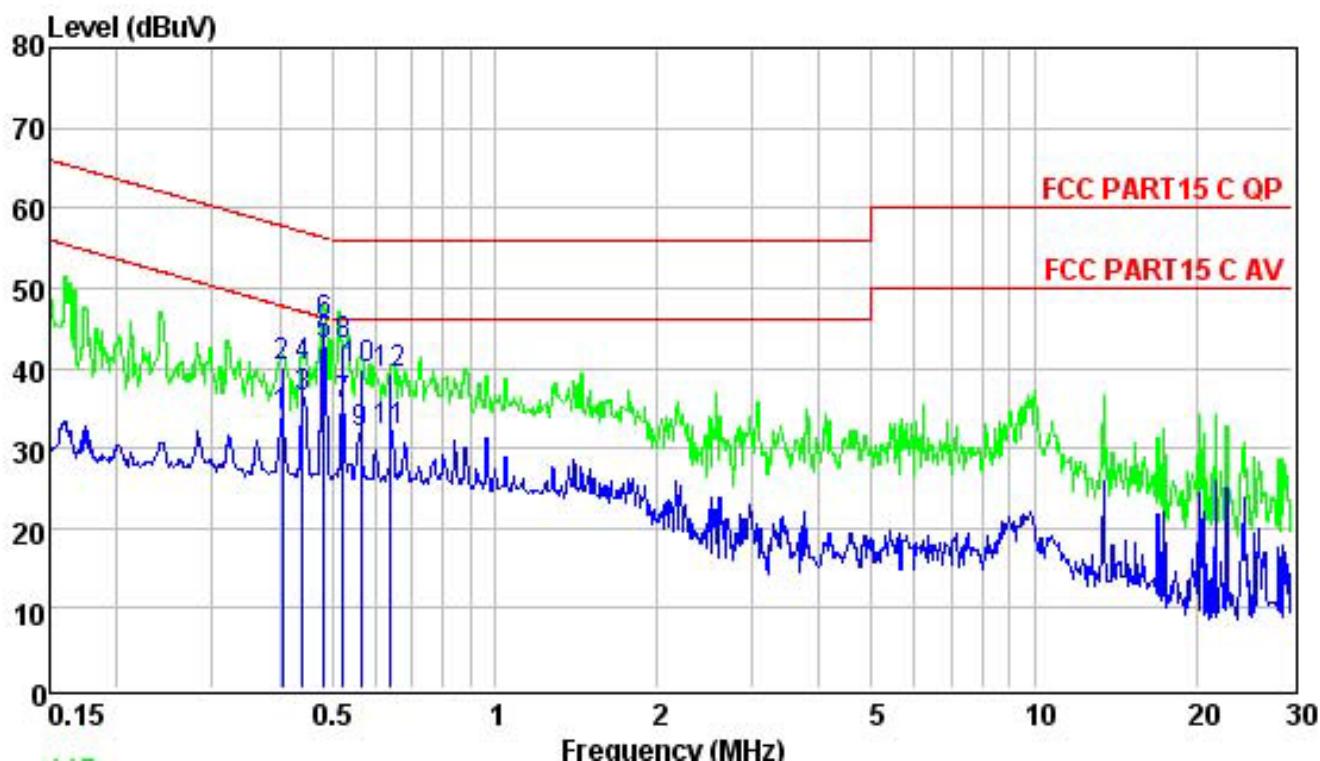
Test table height: 0.8m.

EUT :	Kronos 750-AC Universal Range Extender	Model Name :	AEIEL755U1
Temperature :	26°C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 5



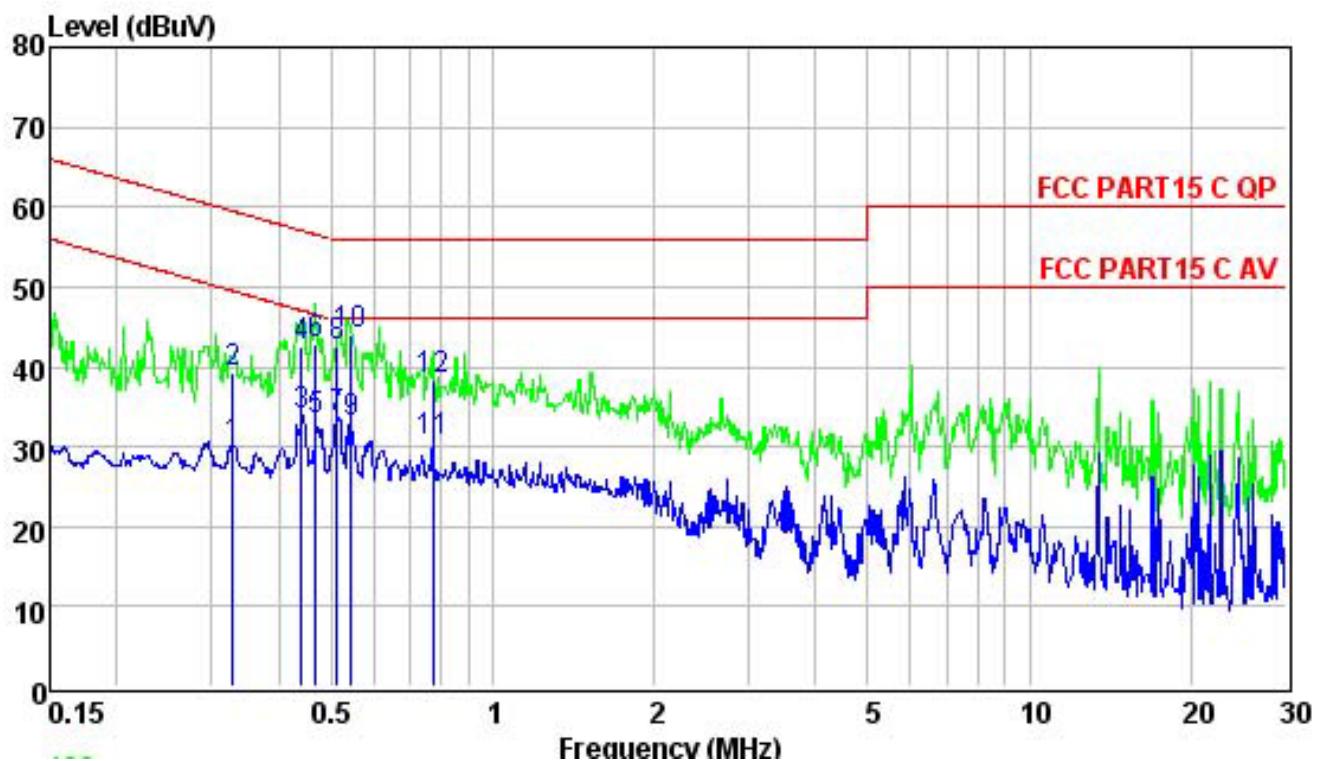
Freq	Level	Limit		Over Line Limit	Remark
		MHz	dBuV	dBuV	dB
1	0.400	34.84	47.86	-13.02	Average
2	0.400	42.30	57.86	-15.56	QP
3	0.442	35.09	47.02	-11.93	Average
4	0.442	42.80	57.02	-14.22	QP
5	0.484	40.70	46.27	-5.57	Average
6	0.484	43.80	56.27	-12.47	QP
7	0.524	34.57	46.00	-11.43	Average
8	0.524	43.20	56.00	-12.80	QP
9	0.561	31.22	46.00	-14.78	Average
10	0.561	39.10	56.00	-16.90	QP
11	0.804	29.52	46.00	-16.48	Average
12	0.804	39.20	56.00	-16.80	QP

EUT :	Kronos 750-AC Universal Range Extender	Model Name :	AEIEL755U1
Temperature :	26°C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 5



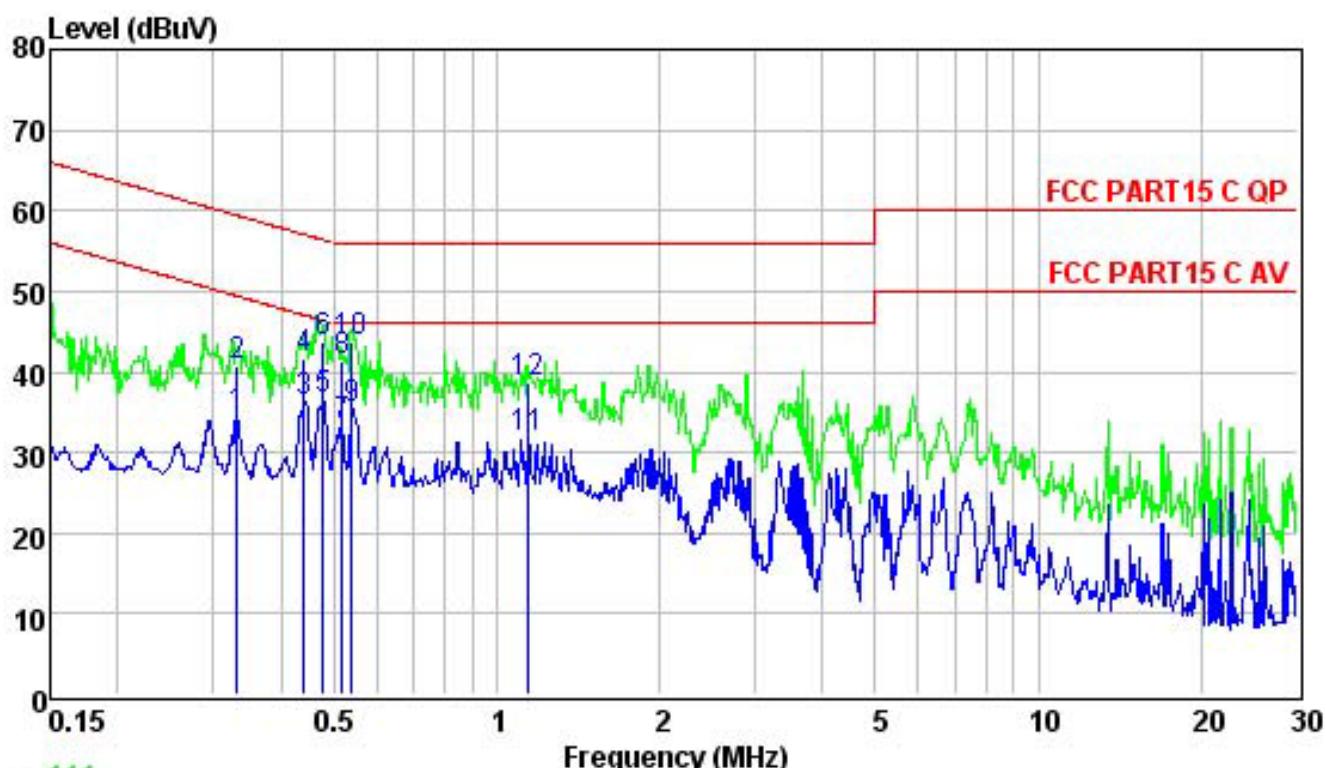
Freq	Level	Limit		Over Line Limit	Remark
		MHz	dBuV	dBuV	dB
1	0.404	33.79	47.77	-13.98	Average
2	0.404	40.20	57.77	-17.57	QP
3	0.442	36.21	47.02	-10.81	Average
4	0.442	40.10	57.02	-16.92	QP
5	0.484	42.80	46.27	-3.47	Average
6	0.484	45.60	56.27	-10.67	QP
7	0.524	35.30	46.00	-10.70	Average
8	0.524	42.90	56.00	-13.10	QP
9	0.564	31.77	46.00	-14.23	Average
10	0.564	39.80	56.00	-16.20	QP
11	0.641	32.06	46.00	-13.94	Average
12	0.641	39.30	56.00	-16.70	QP

EUT :	Kronos 750-AC Universal Range Extender	Model Name :	AEIEL755U1
Temperature :	26°C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	AC 240V/60Hz	Test Mode :	Mode 5



Freq	Level	Limit		Over Line Limit	Remark
		MHz	dBuV		
1	0.329	30.18	49.49	-19.31	Average
2	0.329	39.20	59.49	-20.29	QP
3	0.442	33.83	47.02	-13.19	Average
4	0.442	42.60	57.02	-14.42	QP
5	0.469	33.42	46.54	-13.12	Average
6	0.469	42.90	56.54	-13.64	QP
7	0.513	33.58	46.00	-12.42	Average
8	0.513	42.50	56.00	-13.50	QP
9	0.546	32.90	46.00	-13.10	Average
10	0.546	43.90	56.00	-12.10	QP
11	0.775	30.56	46.00	-15.44	Average
12	0.775	38.50	56.00	-17.50	QP

EUT :	Kronos 750-AC Universal Range Extender	Model Name :	AEIEL755U1
Temperature :	26°C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	AC 240V/60Hz	Test Mode :	Mode 5



Freq	Level	Limit		Over Line Limit	Remark
		MHz	dBuV		
1	0.332	34.43	49.40	-14.97	Average
2	0.332	40.70	59.40	-18.70	QP
3	0.442	36.40	47.02	-10.62	Average
4	0.442	41.60	57.02	-15.42	QP
5	0.479	36.50	46.36	-9.86	Average
6	0.479	43.60	56.36	-12.76	QP
7	0.518	33.45	46.00	-12.55	Average
8	0.518	41.30	56.00	-14.70	QP
9	0.541	35.33	46.00	-10.67	Average
10	0.541	43.80	56.00	-12.20	QP
11	1.141	31.73	46.00	-14.27	Average
12	1.141	38.60	56.00	-17.40	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.

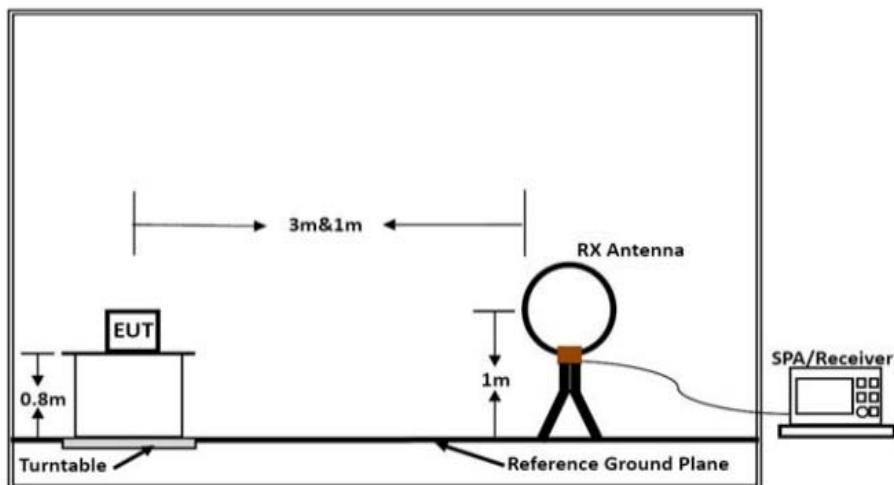
The bandwidth of the EMI test receiver is set at 120kHz for frequency range from 30MHz to 1000 MHz.

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.

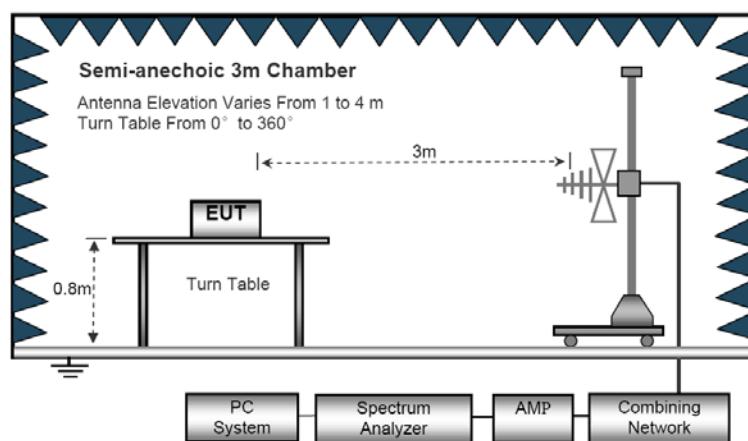
The frequency range from 30MHz to 10<sup>th</sup> harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

- 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).

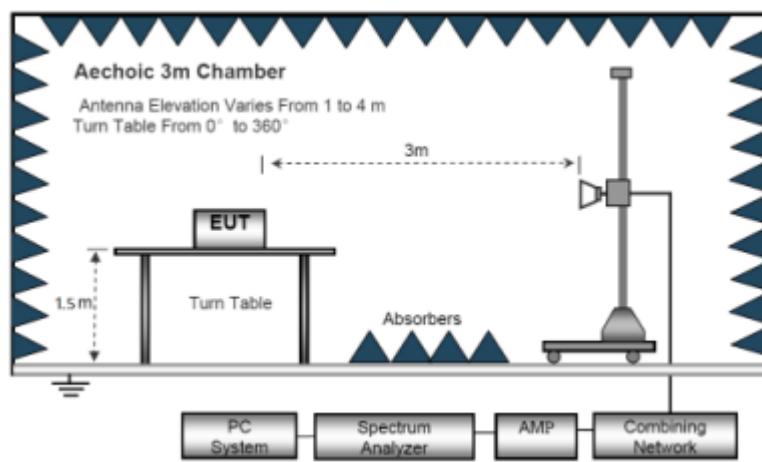
## Radiated Emission Test-Up Below 30MHz



## Below 1GHz



## Above 1GHz



EUT :	Kronos 750-AC Universal Range Extender	Model Name :	AEIEL755U1
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010hPa	Test Mode :	TX
Test Voltage :	AC 120V/60Hz		

**Below 30MHz**

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

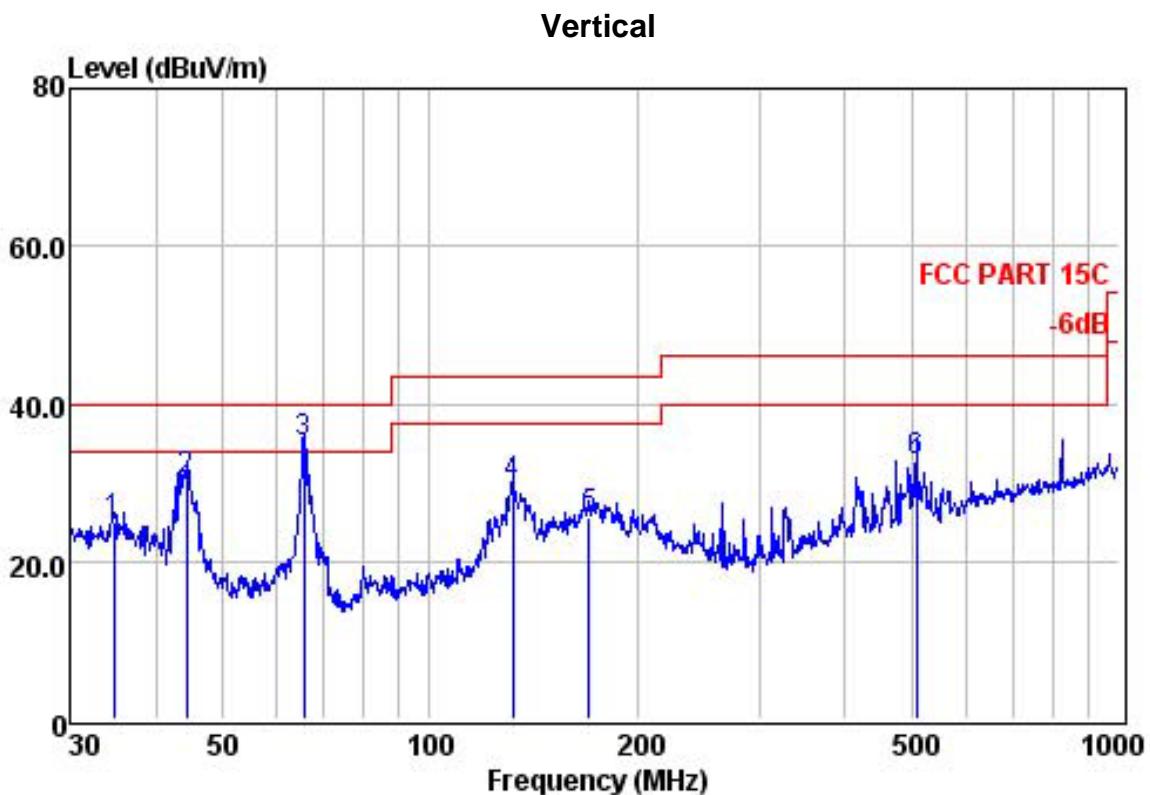
**Note:**

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

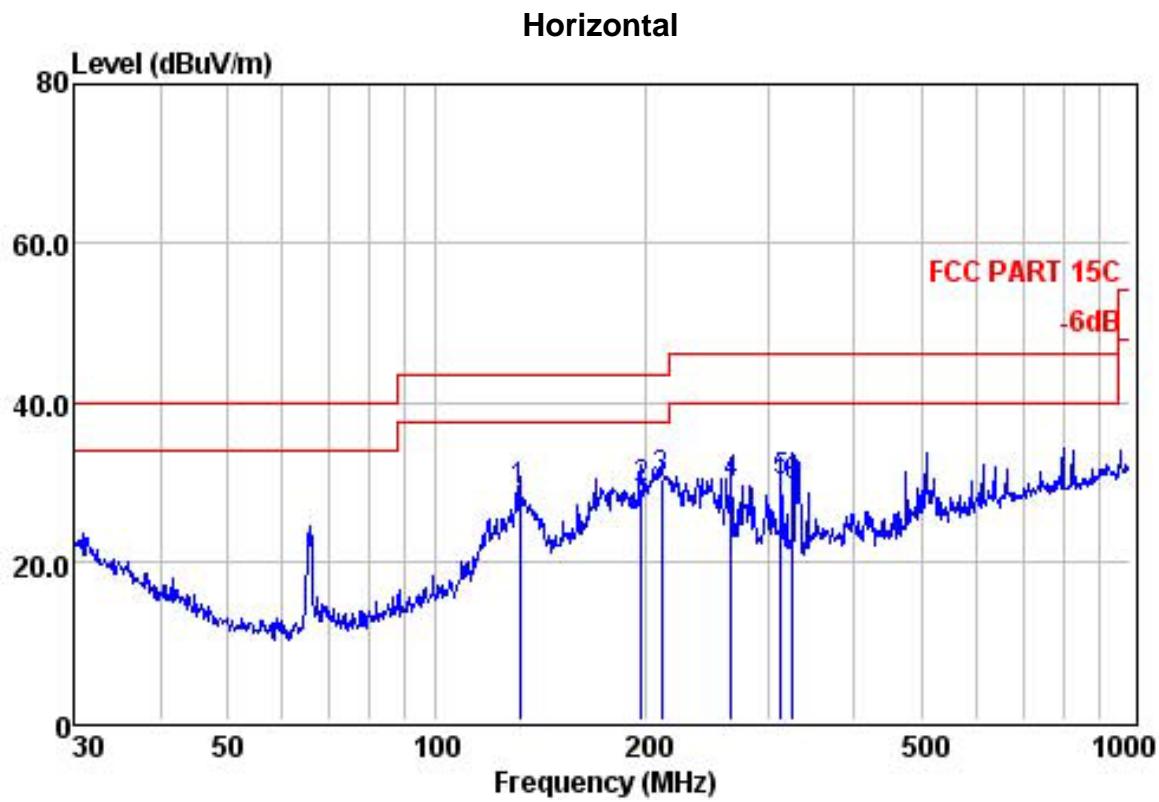
Distance extrapolation factor = $40 \log (\text{specific distance/test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

<b>Below 1GHz</b>			
EUT :	Kronos 750-AC Universal Range Extender	Model Name :	AEIEL755U1
Temperature :	20°C	Relative Humidity :	48%
Pressure :	1010hPa	Test Mode :	Mode 1 TX Channel 1
Test Voltage :	AC 120V/60Hz		



Freq	Read	Cable	Antenna	Limit		Over	Remark
	Level	Loss	Factor	Level	Line	Limit	
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	
1	34.76	8.84	0.23	15.99	25.06	40.00	-14.94 QP
2	44.28	19.06	0.13	11.15	30.34	40.00	-9.66 QP
3	65.57	27.53	0.14	7.41	35.08	40.00	-4.92 QP
4	131.76	21.12	0.22	8.32	29.66	43.50	-13.84 QP
5	170.19	15.28	0.23	10.11	25.62	43.50	-17.88 QP
6	508.26	12.60	1.18	18.87	32.65	46.00	-13.35 QP



Freq	Read	Cable	Antenna	Limit		Over	Remark
	Level	Loss	Factor	Level	Line	Limit	
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	131.76	20.21	0.22	8.32	28.75	43.50	-14.75 QP
2	197.89	18.14	0.31	10.81	29.26	43.50	-14.24 QP
3	211.53	18.49	0.37	11.55	30.41	43.50	-13.09 QP
4	266.61	16.37	0.55	12.97	29.89	46.00	-16.11 QP
5	314.38	15.12	0.68	14.20	30.00	46.00	-16.00 QP
6	326.74	14.29	0.72	14.57	29.58	46.00	-16.42 QP

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

2. Over Limit= Absolute Level – Limit;

3. Mode 1(TX Channel 1) is the worst mode, and only the worst case is presented in the report .

Above 1GHz				
EUT :	Kronos 750-AC Universal Range Extender		Model Name :	AEIEL755U1
Temperature :	20°C		Relative Humidity :	48%
Pressure :	1010hPa		Test Mode :	Mode 1
Test Voltage :	AC 120V/60Hz			

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>802.11b TX-2412</b>									
V	4824	30.92	31.99	12.01	27.50	47.42	54	-6.58	Average
V	4824	41.86	31.99	12.01	27.50	58.36	74	-15.64	Peak
V	7236	36.76	25.31	16.61	27.95	50.73	74	-23.27	Peak
H	4824	30.13	31.99	12.01	27.50	46.63	54	-7.37	Average
H	4824	43.75	31.99	12.01	27.50	60.25	74	-13.75	Peak
H	7236	38.52	25.31	16.61	27.95	52.49	74	-21.51	Peak
<b>802.11b TX-2437</b>									
V	4874	31.85	32.11	12.14	27.53	48.57	54	-5.43	Average
V	4874	41.77	32.11	12.14	27.53	58.49	74	-15.51	Peak
V	7311	36.54	24.32	16.62	27.96	49.52	74	-24.48	Peak
H	4874	30.83	32.11	12.14	27.53	47.55	54	-6.45	Average
H	4874	40.83	32.11	12.14	27.53	57.55	74	-16.45	Peak
H	7311	37.59	24.32	16.62	27.96	50.57	74	-23.43	Peak
<b>802.11b TX-2462</b>									
V	4924	30.76	32.23	12.28	27.56	47.71	54	-6.29	Average
V	4924	40.48	32.23	12.28	27.56	57.43	74	-16.57	Peak
V	7386	36.55	24.36	16.62	27.98	49.55	74	-24.45	Peak
H	4924	30.54	32.23	12.28	27.56	47.49	54	-6.51	Average
H	4924	41.53	32.23	12.28	27.56	58.48	74	-15.52	Peak
H	7386	38.57	24.36	16.62	27.98	51.57	74	-22.43	Peak

Note: 1.“802.11b” mode is the worst mode.

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

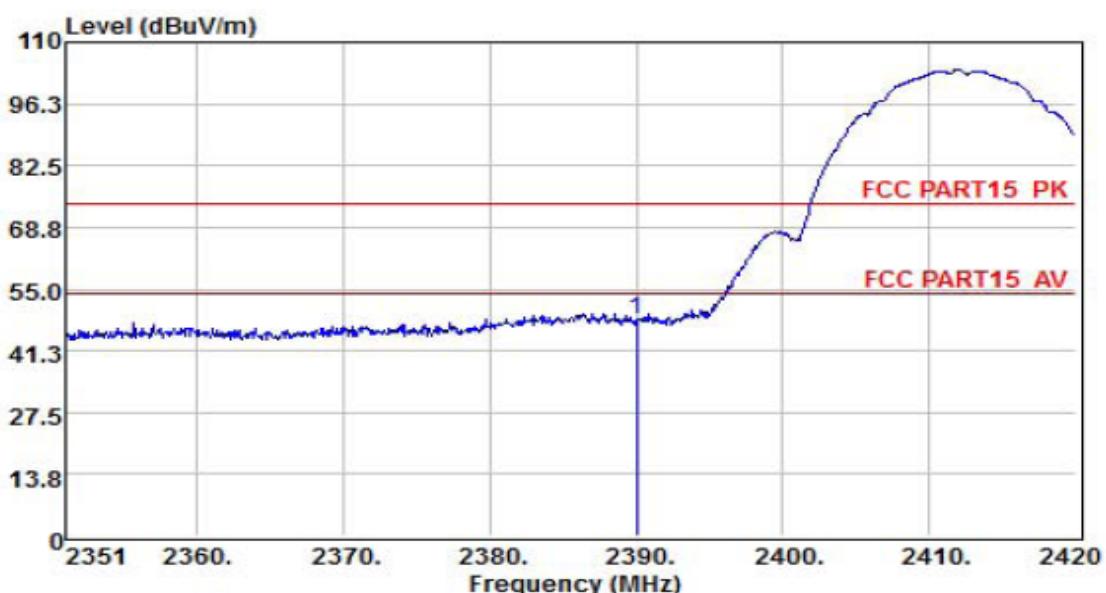
3.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.

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

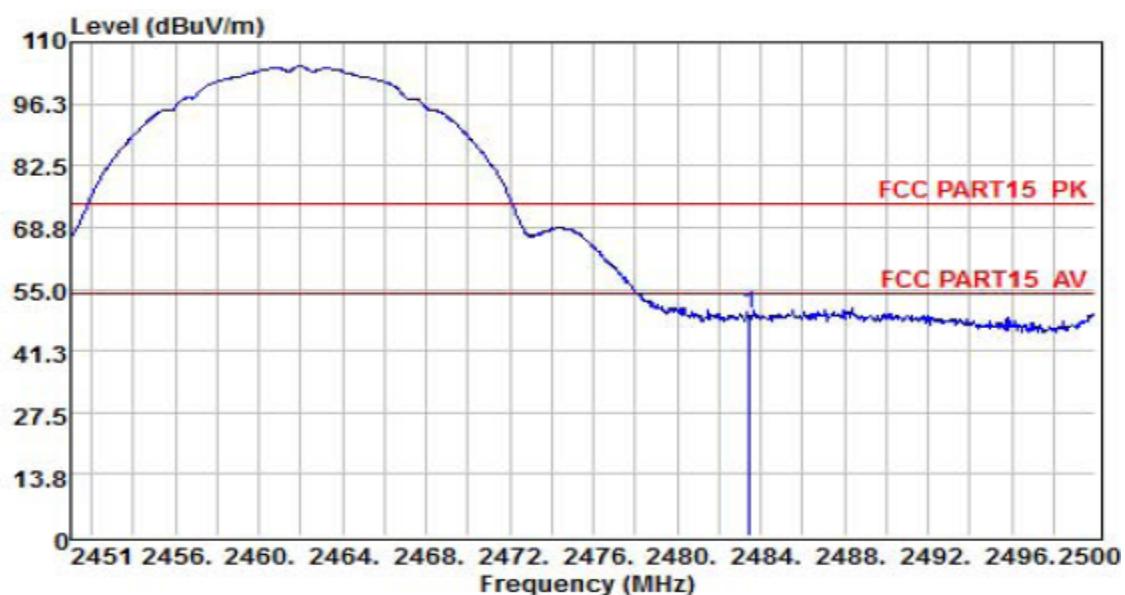
All the modulation modes have been tested and all other emissions more than 20dB below the limit, the worst result was report as below:

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</b>									
V	3264	30.13	30.26	9.96	26.63	43.72	74	-30.28	Pk
H	3264	33.18	30.26	9.96	26.63	46.77	74	-27.23	PK
V	3336	32.34	30.33	9.96	26.66	45.97	74	-28.03	Pk
H	3336	32.59	30.33	9.96	26.66	46.22	74	-27.78	PK
V	4100	32.72	31.64	10.61	27.06	47.91	74	-26.09	Pk
H	4100	32.68	31.64	10.61	27.06	47.87	74	-26.13	PK
V	11764	31.54	26.64	17.32	28.98	46.52	74	-27.48	Pk
H	11764	33.69	26.64	17.32	28.98	48.67	74	-25.33	PK
V	17732	32.17	26.27	22.01	30.39	50.06	74	-23.94	Pk
H	17732	32.28	26.27	22.01	30.39	50.17	74	-23.83	PK
<b>802.11g</b>									
V	3264	33.48	30.26	9.96	26.63	47.07	74	-26.93	Pk
H	3264	33.39	30.26	9.96	26.63	46.98	74	-27.02	PK
V	3336	33.28	30.33	9.96	26.66	46.91	74	-27.09	Pk
H	3336	32.48	30.33	9.96	26.66	46.11	74	-27.89	PK
V	4100	33.27	31.64	10.61	27.06	48.46	74	-25.54	Pk
H	4100	33.65	31.64	10.61	27.06	48.84	74	-25.16	PK
V	11764	32.54	26.64	17.32	28.98	47.52	74	-26.48	Pk
H	11764	32.68	26.64	17.32	28.98	47.66	74	-26.34	PK
V	17732	31.44	26.27	22.01	30.39	49.33	74	-24.67	Pk
H	17732	31.36	26.27	22.01	30.39	49.25	74	-24.75	PK
<b>802.11n(HT20)</b>									
V	3264	31.58	30.26	9.96	26.63	45.17	74	-28.83	Pk
H	3264	31.32	30.26	9.96	26.63	44.91	74	-29.09	PK
V	3336	32.78	30.33	9.96	26.66	46.41	74	-27.59	Pk
H	3336	31.35	30.33	9.96	26.66	44.98	74	-29.02	PK
V	4100	33.68	31.64	10.61	27.06	48.87	74	-25.13	Pk
H	4100	33.72	31.64	10.61	27.06	48.91	74	-25.09	PK
V	11764	32.79	26.64	17.32	28.98	47.77	74	-26.23	Pk
H	11764	31.49	26.64	17.32	28.98	46.47	74	-27.53	PK
V	17732	33.38	26.27	22.01	30.39	51.27	74	-22.73	Pk
H	17732	33.17	26.27	22.01	30.39	51.06	74	-22.94	PK
<b>802.11n(HT40)</b>									
V	3264	31.54	30.26	9.96	26.63	45.13	74	-28.87	Pk
H	3264	30.58	30.26	9.96	26.63	44.17	74	-29.83	PK
V	3336	31.38	30.33	9.96	26.66	45.01	74	-28.99	Pk
H	3336	31.68	30.33	9.96	26.66	45.31	74	-28.69	PK
V	4100	33.63	31.64	10.61	27.06	48.82	74	-25.18	Pk
H	4100	31.37	31.64	10.61	27.06	46.56	74	-27.44	PK
V	11764	32.54	26.64	17.32	28.98	47.52	74	-26.48	Pk
H	11764	32.31	26.64	17.32	28.98	47.29	74	-26.71	PK
V	17732	30.18	26.27	22.01	30.39	48.07	74	-25.93	Pk
H	17732	30.38	26.27	22.01	30.39	48.27	74	-25.73	PK

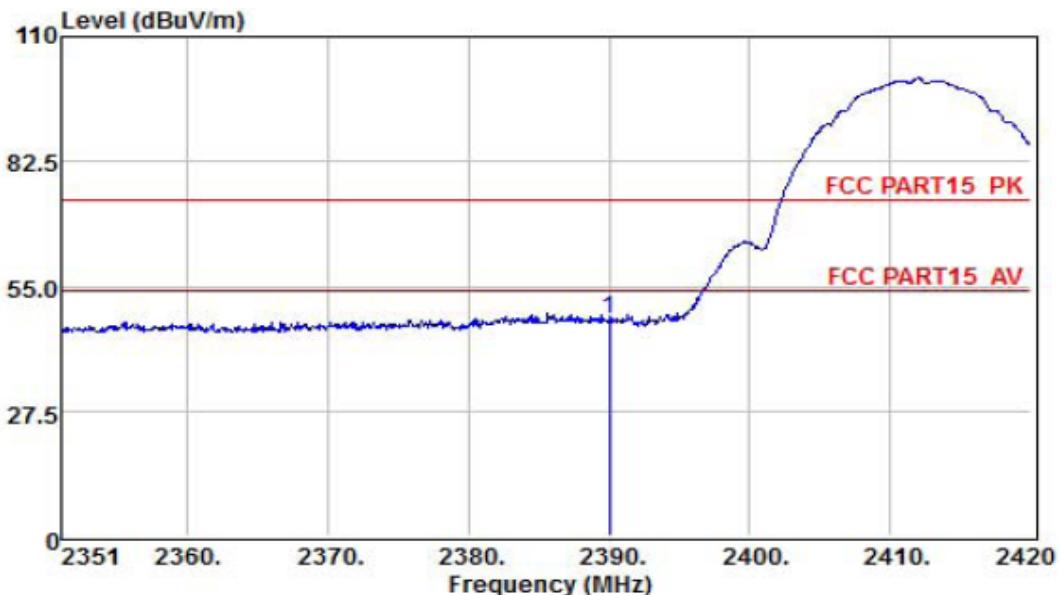
If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

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

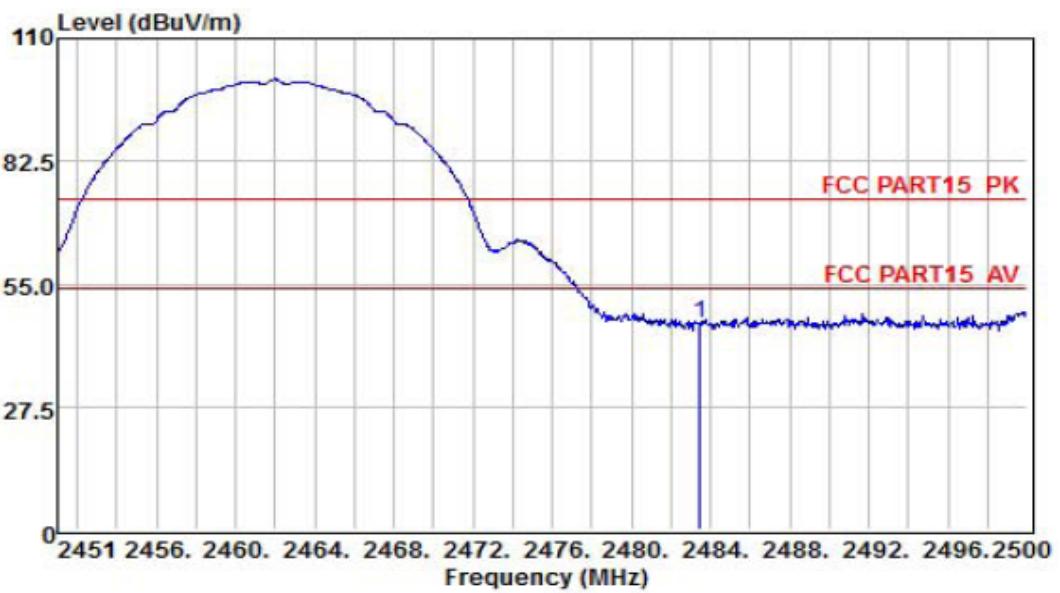
	ReadAntenna Freq	Level Factor	Cable Loss Factor	Preamp Level	Limit Line	Over Line Limit	Remark	
	MHz	dB <sub>UV</sub>	dB/m	dB	dB	dB <sub>UV</sub> /m	dB <sub>UV</sub> /m	dB
1	2390.00	42.52	28.72	3.36	26.32	48.28	74.00	-25.72 Peak



	ReadAntenna Freq	Level Factor	Cable Loss Factor	Preamp Level	Limit Line	Over Line Limit	Remark	
	MHz	dB <sub>UV</sub>	dB/m	dB	dB	dB <sub>UV</sub> /m	dB <sub>UV</sub> /m	dB
1	2483.50	43.58	28.79	3.48	26.34	49.51	74.00	-24.49 Peak

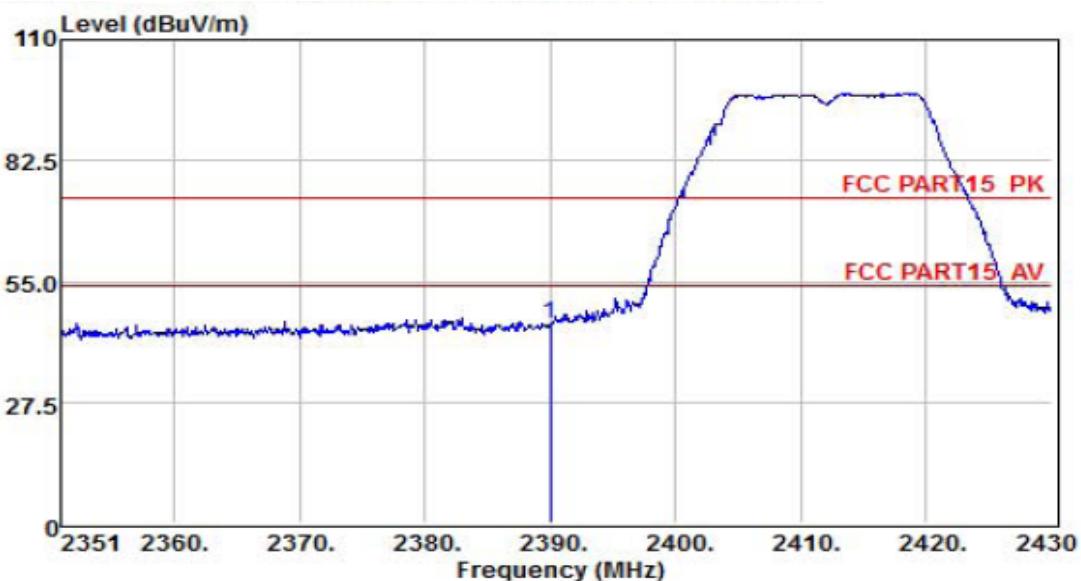
**802.11b - Horizontal**

Freq	ReadAntenna		Cable		Preamp	Limit	Over	Line	Limit	Remark
	MHz	Level	Factor	Loss						
1	2390.00	41.18	28.72	3.36	26.32	46.94	74.00	-27.06	Peak	

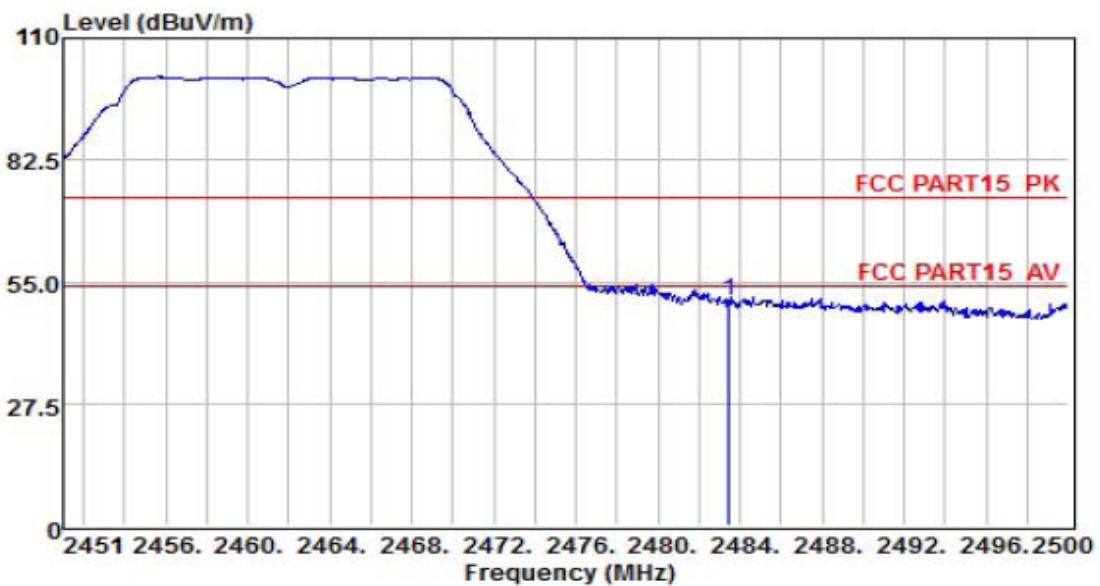


Freq	ReadAntenna		Cable		Preamp	Limit	Over	Line	Limit	Remark
	MHz	Level	Factor	Loss						
1	2483.50	40.26	28.79	3.48	26.34	46.19	74.00	-27.81	Peak	

## 802.11g - Vertical

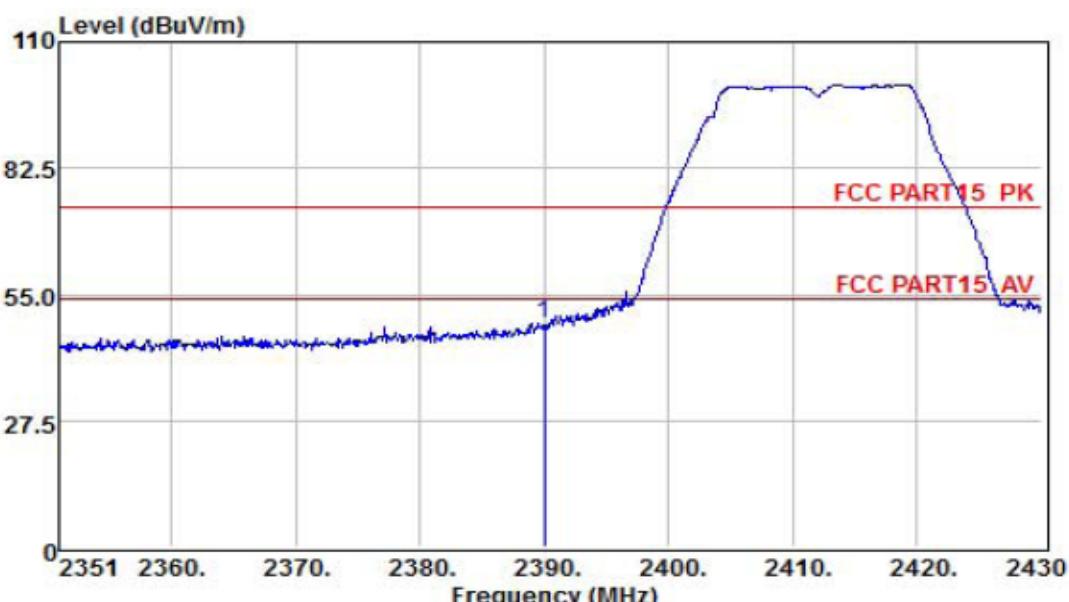


	ReadAntenna Freq	Level Factor	Cable Loss Factor	Preamp Factor	Limit Level	Over Line Limit	Over Limit Remark	
	MHz	dB <sub>uV</sub>	dB/m	dB	dB	dB <sub>uV/m</sub>	dB <sub>uV/m</sub>	dB
1	2483.50	44.88	28.79	3.48	26.34	50.81	74.00	-23.19 Peak

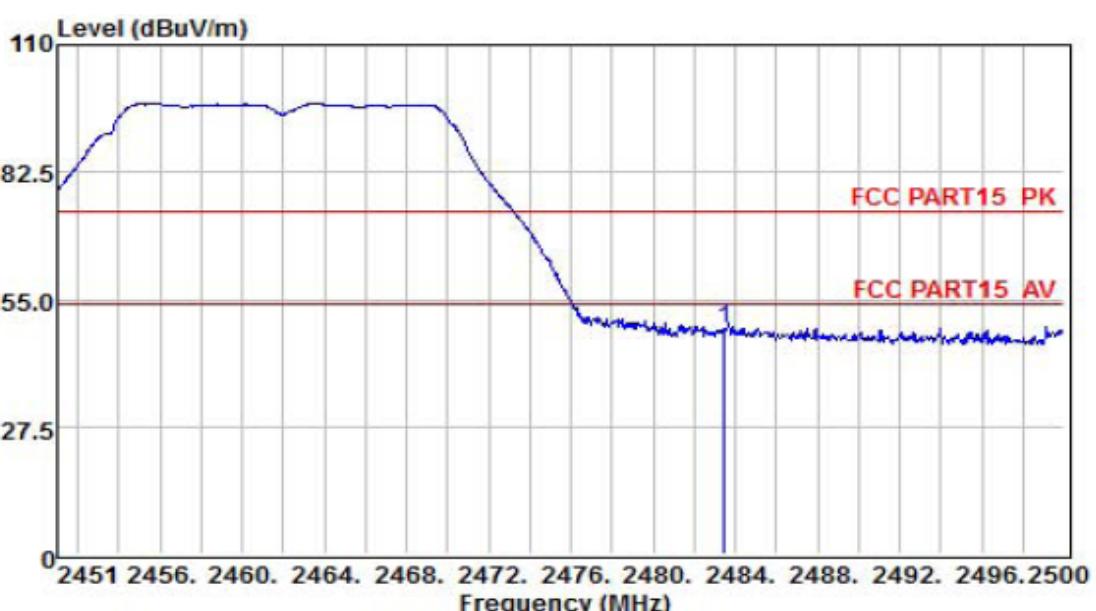


	ReadAntenna Freq	Level Factor	Cable Loss Factor	Preamp Factor	Limit Level	Over Line Limit	Over Limit Remark	
	MHz	dB <sub>uV</sub>	dB/m	dB	dB	dB <sub>uV/m</sub>	dB <sub>uV/m</sub>	dB
1	2390.00	39.53	28.72	3.36	26.32	45.29	74.00	-28.71 Peak

## 802.11g - Horizontal

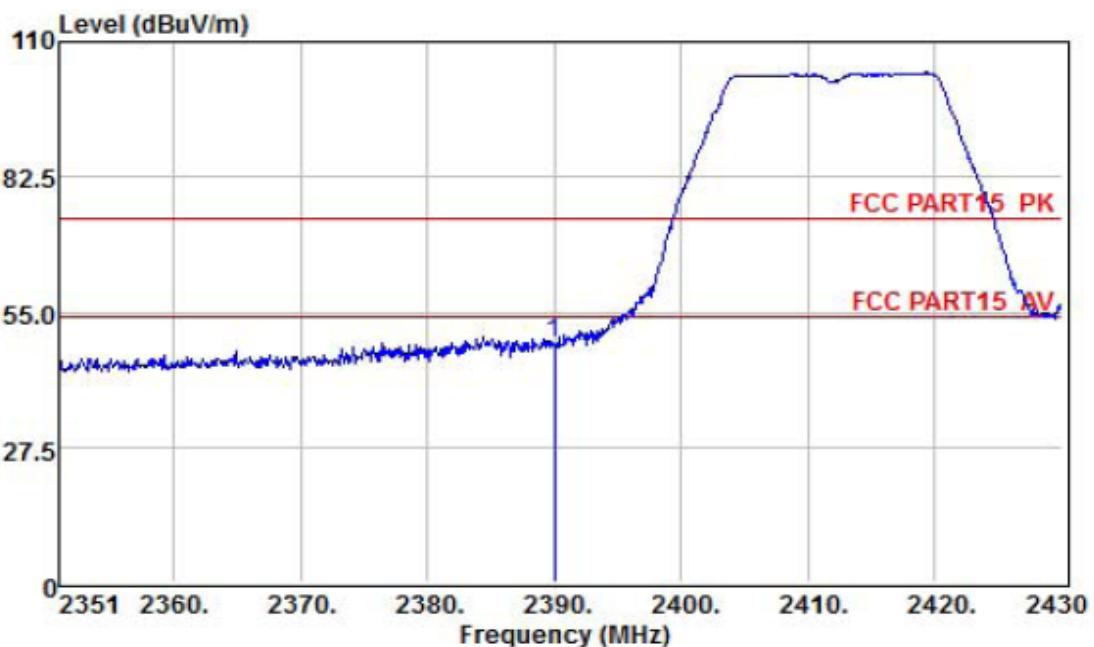


	Read	Antenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
L	2483.50	42.66	28.79	3.48	26.34	48.59	74.00	-25.41 Peak

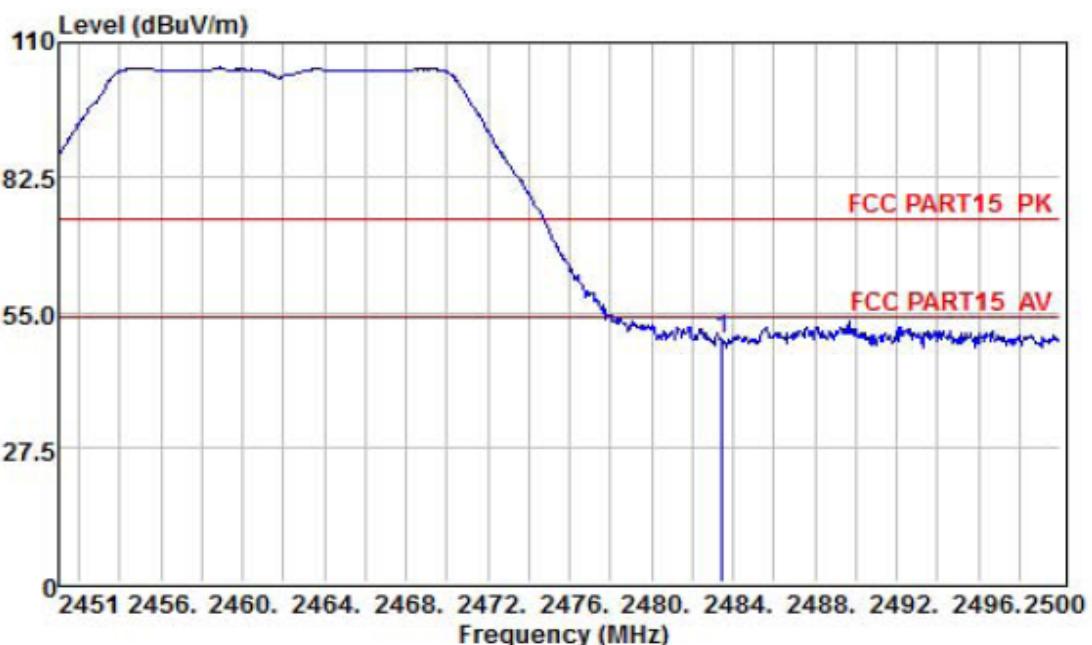


	Read	Antenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2390.00	41.78	28.72	3.36	26.32	47.54	74.00	-26.46 Peak

## 802.11n(HT20) - Vertical

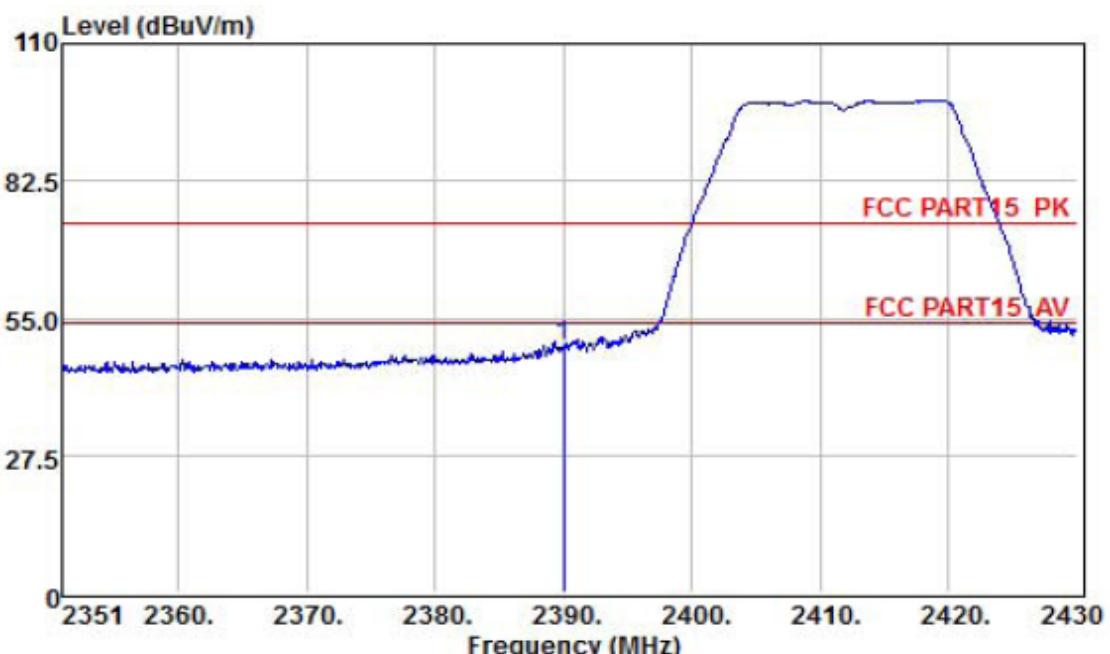


	ReadAntenna Freq	Level Factor	Cable Loss Factor	Preamplifier Level	Limit Level	Line Limit	Over Limit	Remark
	MHz	dB <sub>UV</sub>	dB/m	dB	dB	dB <sub>UV</sub> /m	dB <sub>UV</sub> /m	dB
1	2390.00	42.93	28.72	3.36	26.32	48.69	74.00	-25.31 Peak

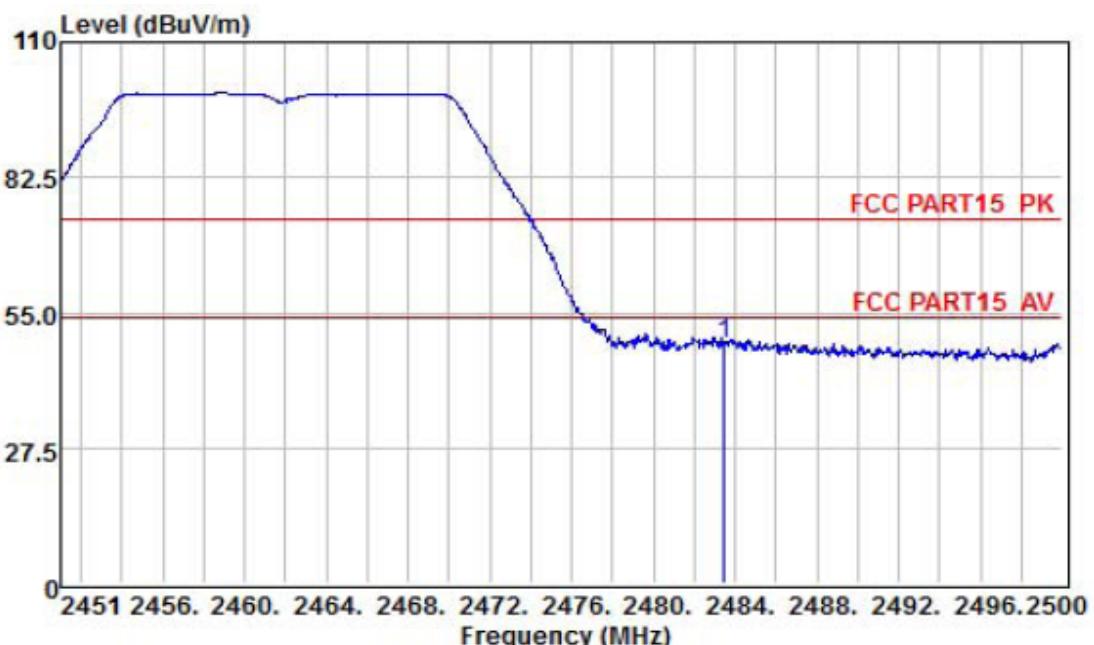


	ReadAntenna Freq	Level Factor	Cable Loss Factor	Preamplifier Level	Limit Level	Line Limit	Over Limit	Remark
	MHz	dB <sub>UV</sub>	dB/m	dB	dB	dB <sub>UV</sub> /m	dB <sub>UV</sub> /m	dB
1	2483.50	43.27	28.79	3.48	26.34	49.20	74.00	-24.80 Peak

## 802.11n(HT20) - Horizontal

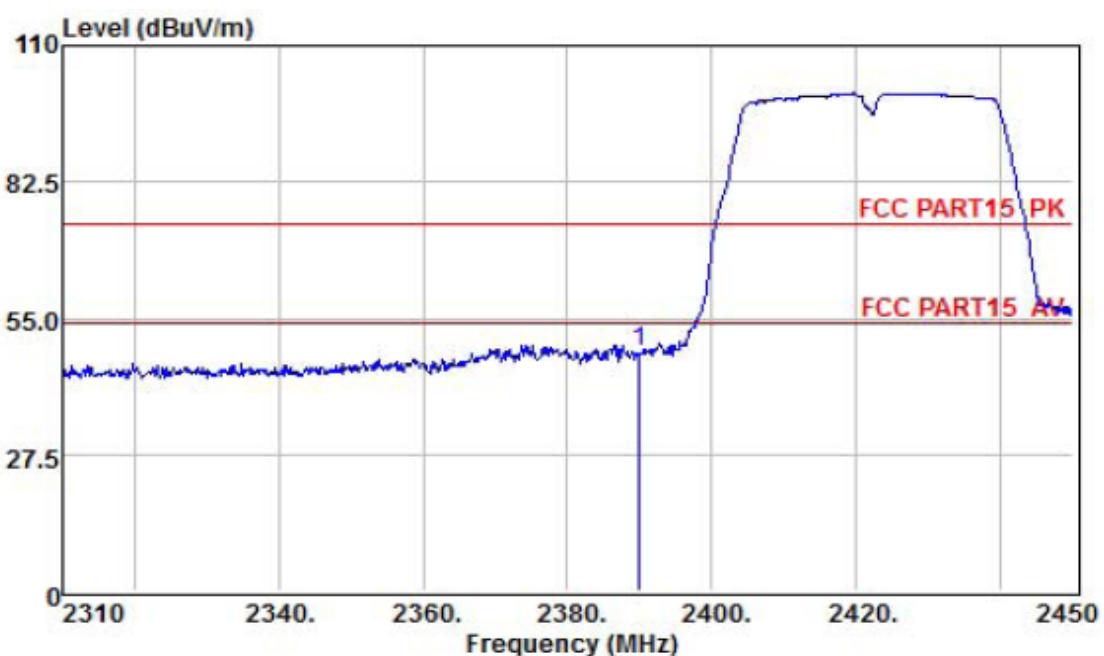


	ReadAntenna Freq	Level Factor	Cable Loss Factor	Preamplifier Level	Limit Level	Over Line Limit	Over Limit Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2390.00	43.55	28.72	3.36	26.32	49.31	74.00	-24.69 Peak

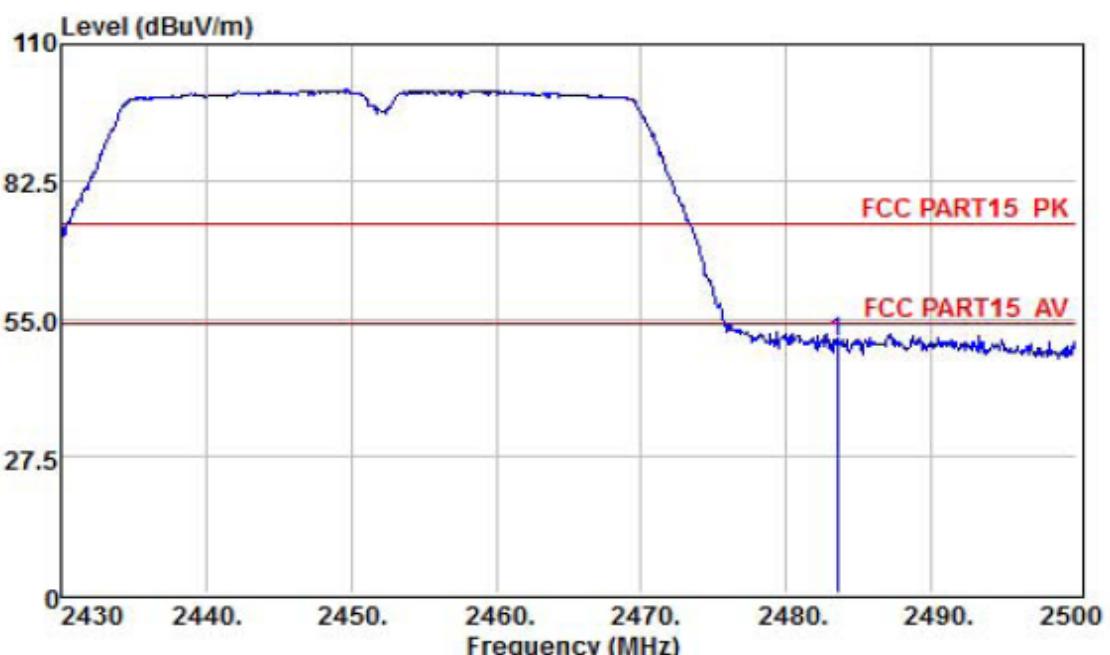


	ReadAntenna Freq	Level Factor	Cable Loss Factor	Preamplifier Level	Limit Level	Over Line Limit	Over Limit Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.50	42.72	28.79	3.48	26.34	48.65	74.00	-25.35 Peak

## 802.11n(HT40) - Vertical

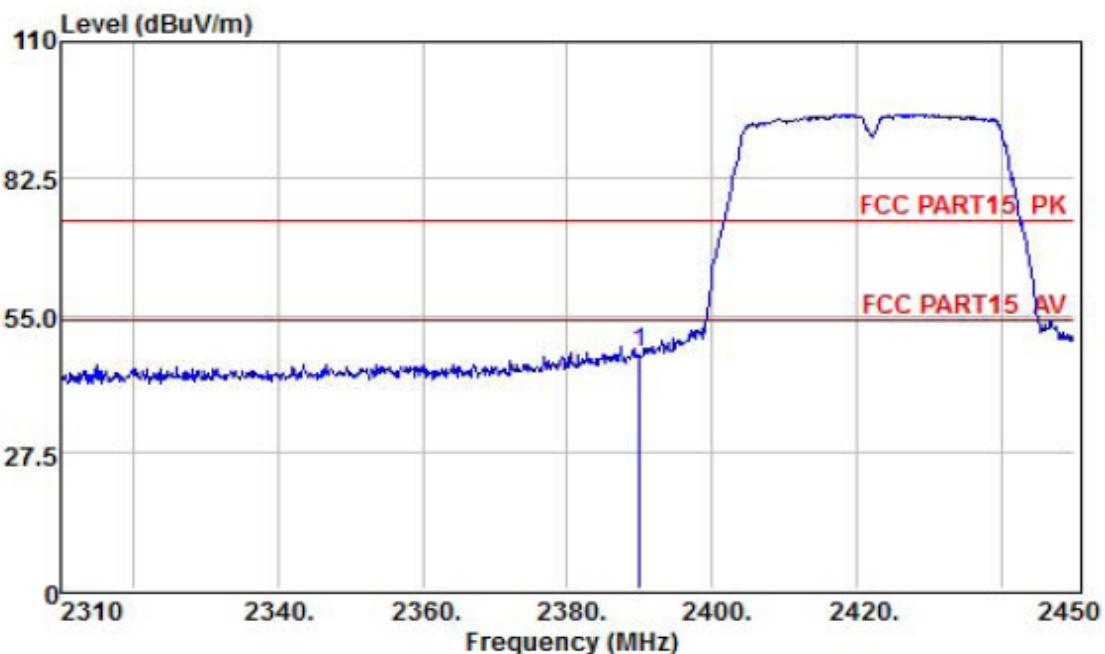


	ReadAntenna Freq	Level Factor MHz	Cable Loss Factor dB	Preamp dB	Limit Level dB <sub>UV</sub> /m	Line Limit dB <sub>UV</sub> /m	Over Limit dB	Remark
1	2390.00	41.35	28.72	3.36	26.32	47.11	74.00	-26.89 Peak

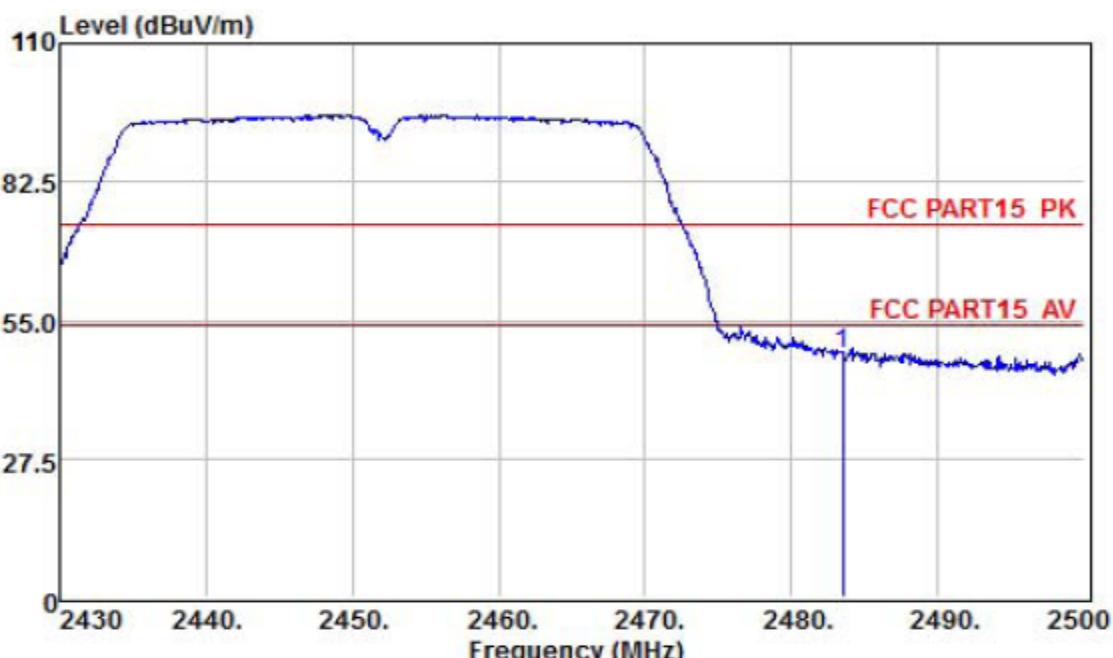


	ReadAntenna Freq	Level Factor MHz	Cable Loss Factor dB	Preamp dB	Limit Level dB <sub>UV</sub> /m	Line Limit dB <sub>UV</sub> /m	Over Limit dB	Remark
1	2483.50	44.37	28.79	3.48	26.34	50.30	74.00	-23.70 Peak

## 802.11n(HT40) - Horizontal



	ReadAntenna Freq	Level Level Factor	Cable Loss Factor	Preamp Factor	Limit Level	Line Level	Over Limit	Remark
	MHz	dB <sub>BuV</sub>	dB/m	dB	dB	dB <sub>BuV/m</sub>	dB <sub>BuV/m</sub>	dB
1	2390.00	41.53	28.72	3.36	26.32	47.29	74.00	-26.71 Peak



	ReadAntenna Freq	Level Level Factor	Cable Loss Factor	Preamp Factor	Limit Level	Line Level	Over Limit	Remark
	MHz	dB <sub>BuV</sub>	dB/m	dB	dB	dB <sub>BuV/m</sub>	dB <sub>BuV/m</sub>	dB
1	2483.50	42.14	28.79	3.48	26.34	48.07	74.00	-25.93 Peak

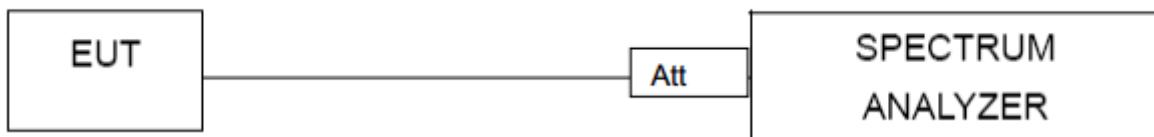
## 5. BAND EDGE COMPLIANCE TEST

### 5.1. Limits

According to 15.247(d)

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.

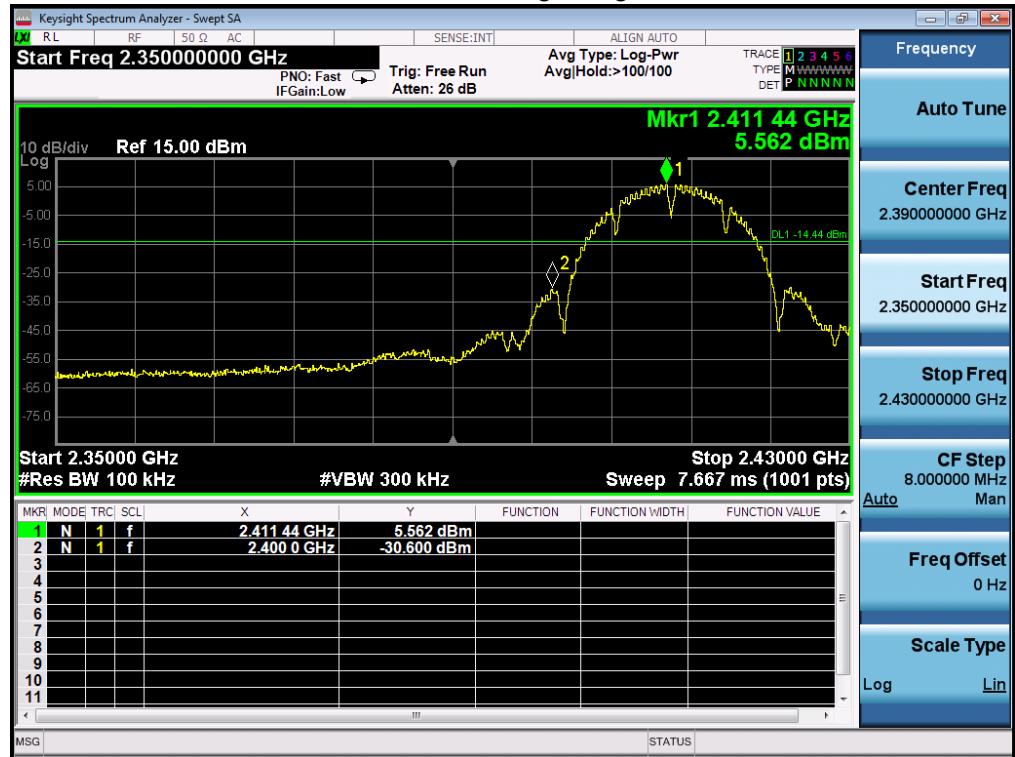
**Conduction band-edge**

<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	36.55	20	Pass
2483.5	60.91	20	Pass
802.11g mode			
2400	30.74	20	Pass
2483.5	44.51	20	Pass
802.11n-HT20 mode			
2400	31.55	20	Pass
2483.5	41.58	20	Pass
802.11n-HT40 mode			
2400	30.03	20	Pass
2483.5	37.39	20	Pass

## A Antenna

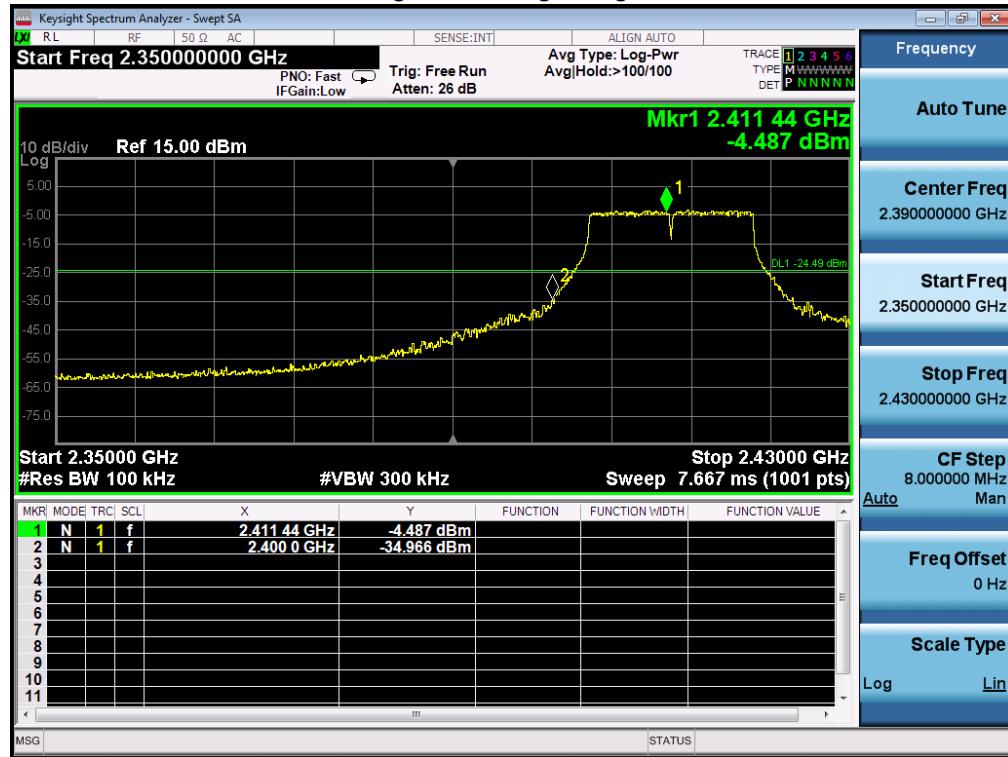
802.11b: Band Edge, Right Side



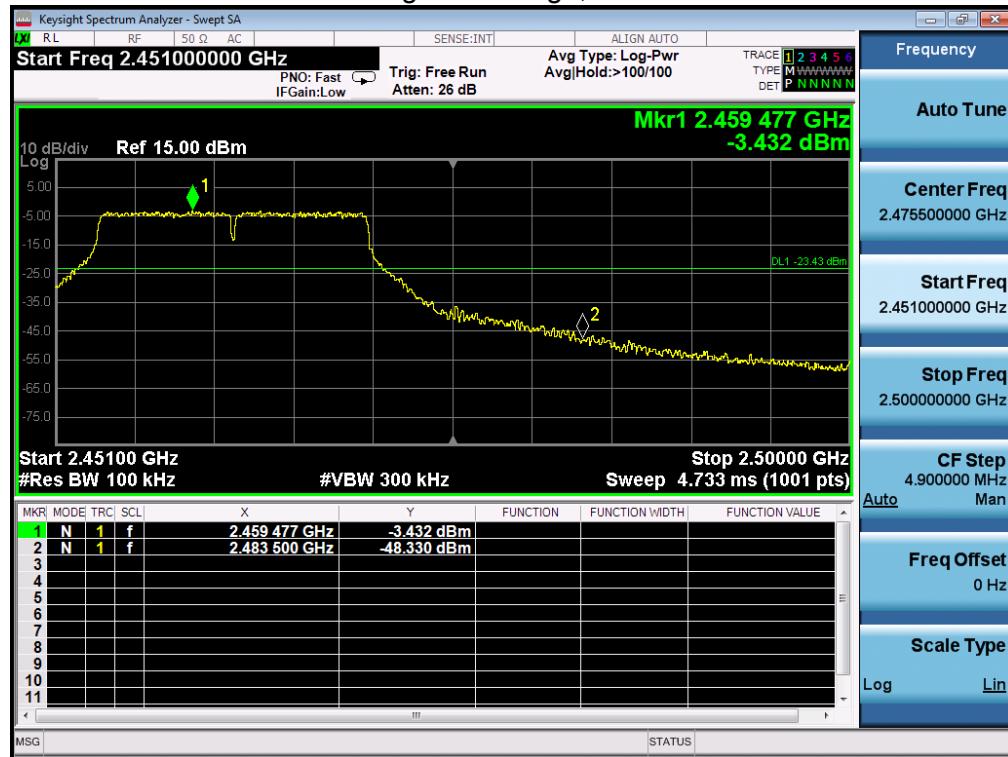
802.11b: Band Edge, Left Side



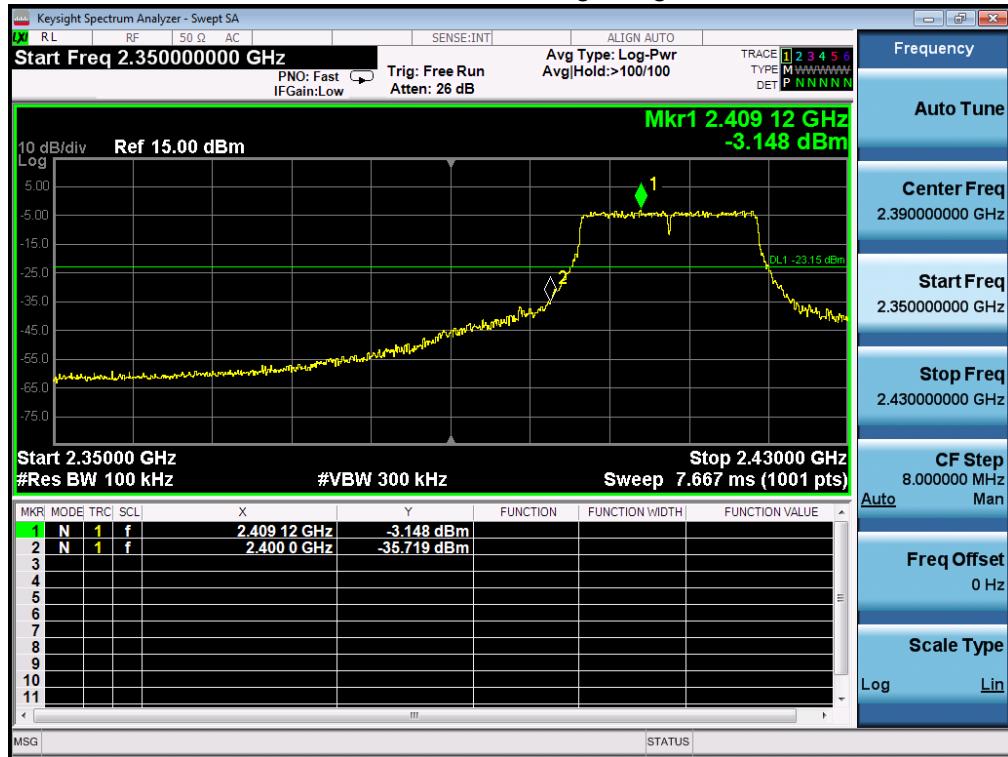
## 802.11g: Band Edge, Right Side



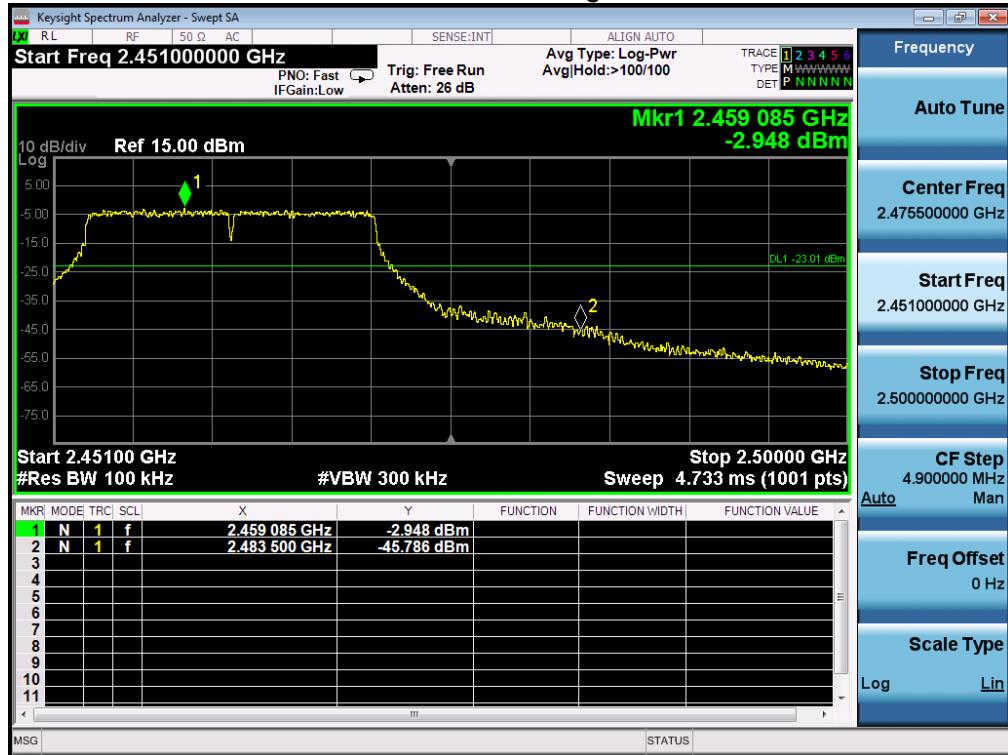
## 802.11g: Band Edge, Left Side



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



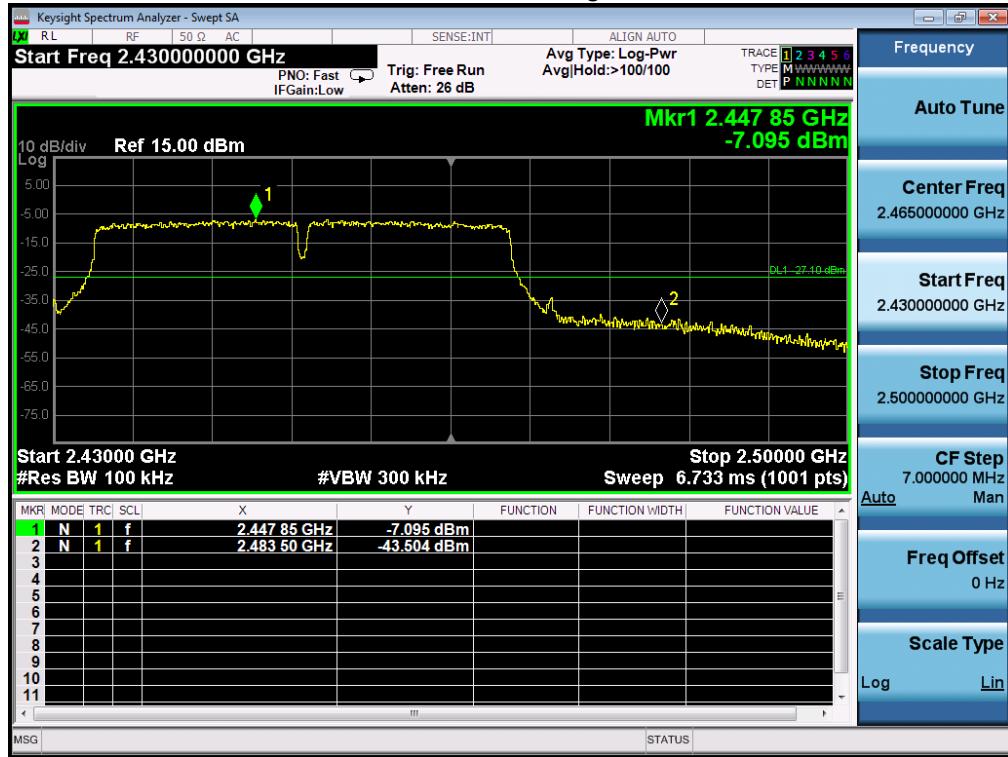
## 802.11n-HT20: Band Edge, Left Side



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



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



## B Antenna

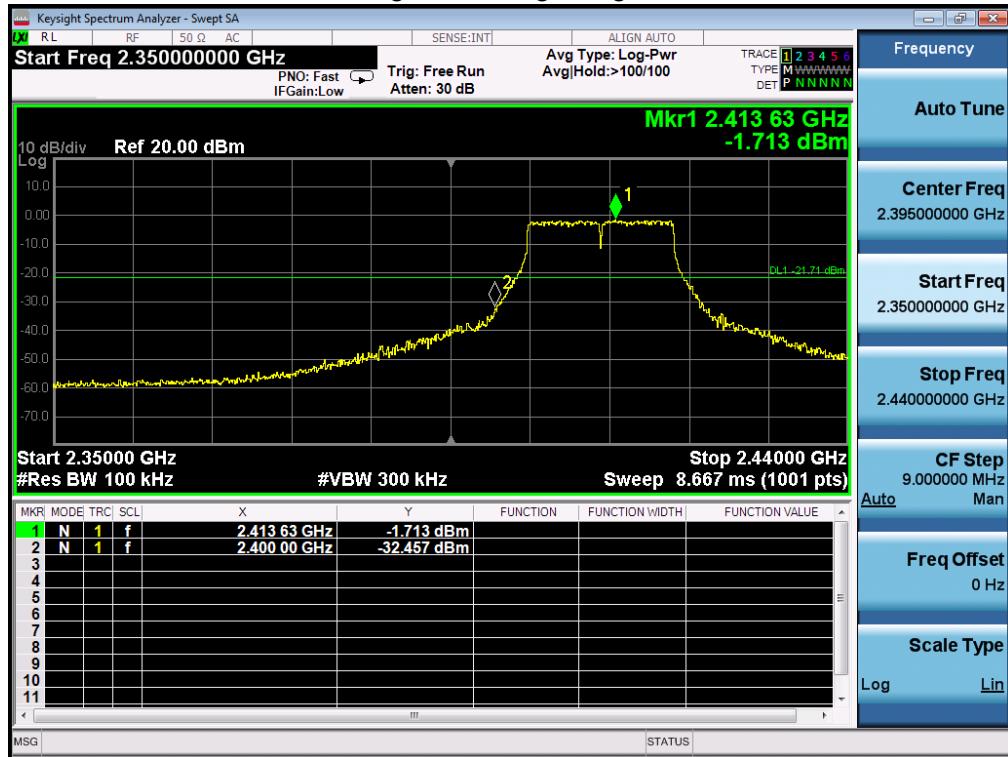
802.11b: Band Edge, Right Side



802.11b: Band Edge, Left Side



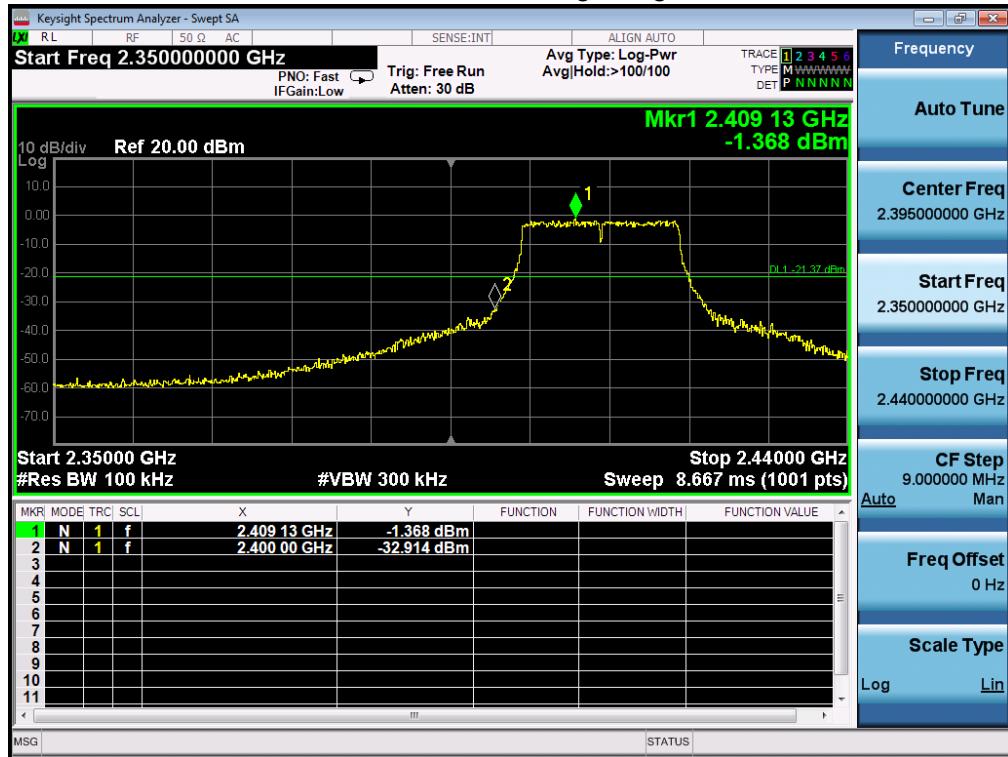
## 802.11g: Band Edge, Right Side



## 802.11g: Band Edge, Left Side



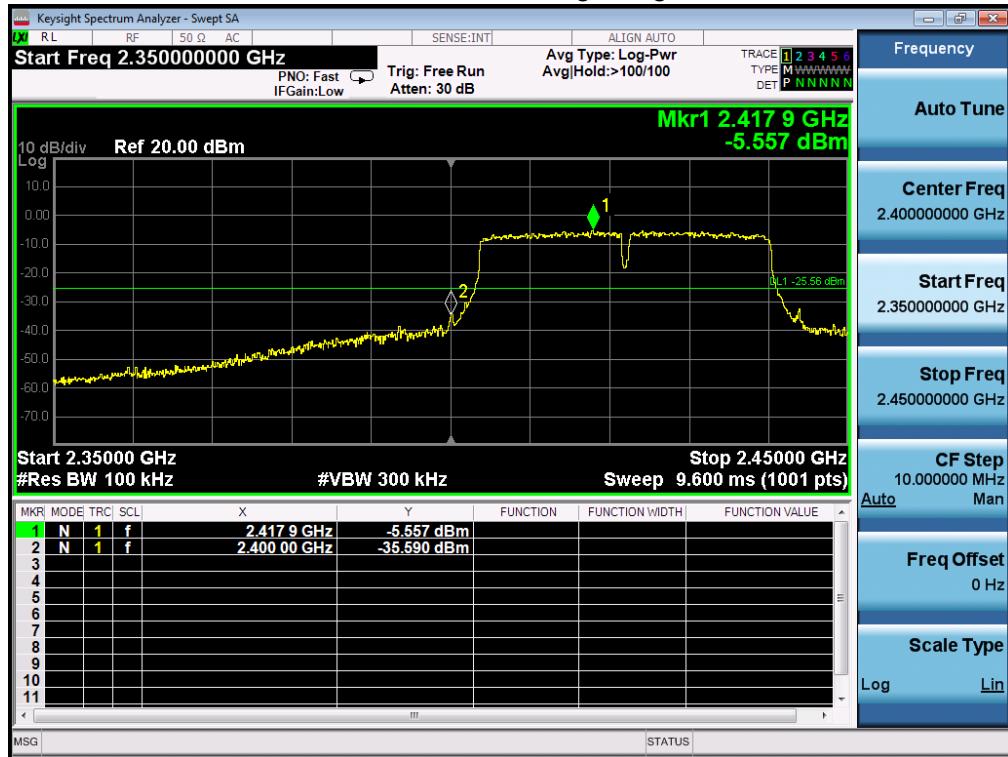
## 802.11n-HT20: Band Edge, Right Side



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



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



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

