

# FCC Part 15C

## Measurement and Test Report

For

**Telepire Digital Technology (Shenzhen) Ltd.**

**Room 1102, Block B, Jialinhaotin Building, No.2201 Shennan Road, Futian**

**District, Shenzhen, China**

**FCC ID: YZ4MOFI-ALL**

<b>Report Concerns:</b> Original Report	<b>Equipment Type:</b> Wireless Router
<b>Model:</b>	<u>Mofi-01</u>
<b>Report No.:</b>	<u>STR11028047I</u>
<b>Test Date:</b>	<u>2011-02-17 to 2011-03-02</u>
<b>Issue Date:</b>	<u>2011-03-03</u>
<b>Tested By:</b>	<u>Seven Song / Engineer</u> <i>Seven Song</i>
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<b>Approved &amp; Authorized By:</b>	<u>Jandy so / PSQ Manager</u> <i>Jandyso</i>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

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## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: Telepire Digital Technology (Shenzhen) Ltd.  
Address of applicant: Room 1102, Block B, Jialinhaotin Building, No.2201  
Shennan Road, Futian District, Shenzhen, China

Manufacturer: Telepire Digital Technology (Shenzhen) Ltd.  
Address of manufacturer: Room 1102, Block B, Jialinhaotin Building, No.2201  
Shennan Road, Futian District, Shenzhen, China

#### General Description of E.U.T

Items	Description
EUT Description:	Wireless Router
Trade Name:	Telempire
Model No.:	Mofi-01
Add Models:	Mofi-02, Mofi-03, Mofi-04, Mofi-05
Rated Voltage:	DC 5V/Battery 3.7V
RF Output Power	Max. 13.67dBm
Antenna Gain:	2.5 dBi
Frequency range:	2412MHz~2462MHz for 802.11b/g/n(HT20) 2422MHz~2452MHz for 802.11n(HT40)
Number of channels:	11 for 802.11b/g/n(HT20) 7 for 802.11n(HT40)
Channel Separation:	5MHz
Type of Antenna:	Integral Antenna
Size:	11.0X6.5X1.4cm

*Note: The test data is gathered from a production sample, provided by the manufacture. The others models listed in the report have different appearance only of Mofi-01 without circuit and electronic construction changed, declared by the manufacturer.*

### 1.2 Test Standards

The following report is prepared on behalf of the Telepire Digital Technology (Shenzhen) Ltd. in accordance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

### 1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted with Low Channel, Middle Channel and High Channel, accordingly in reference to the Operating Instructions.

### 1.4 Test Facility

- **FCC – Registration No.: 994117**

SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.

- **Industry Canada (IC) Registration No.: 7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

- **CNAS Registration No.: L4062**

Shenzhen SEM.Test Electronics Service Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C (518101)

### 1.5 EUT Exercise Software

The EUT exercise program used during the testing was designed to exercise the system components.

### 1.6 Accessories Equipment List and Details

Description	Manufacturer	Model	Serial Number
Display	Dell	170SC	CN-00V538-64180-065-OX95
PC	Lenovo	M2620V	11S30001652001037880BP
Keyboard	Dell	SK8115	CN-ODJ331-71616-06A-01Q4
Mouse	Dell	MOC5UQ	N/A

### 1.7 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/ Without Core
RJ45 Cable	0.8	Shielded	Without Core

## 2. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§ 15.203; § 15.247(c)(1)(i)	Antenna Requirement	Compliant
§ 15.207	Conducted Emission	Compliant
§ 15.247(e)	Power Spectral Density	Compliant
§ 15.247(a)(2)	6 dB Bandwidth	Compliant
§ 15.247(b)(3)	Power Output	Compliant
§ 15.209(a)(d)	Radiated Emission	Compliant
§ 15.247(d)	Band edge	Compliant

### 3. CONDUCTED EMISSIONS

#### 3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is  $\pm 2.88$  dB.

#### 3.2 Test Equipment List and Details

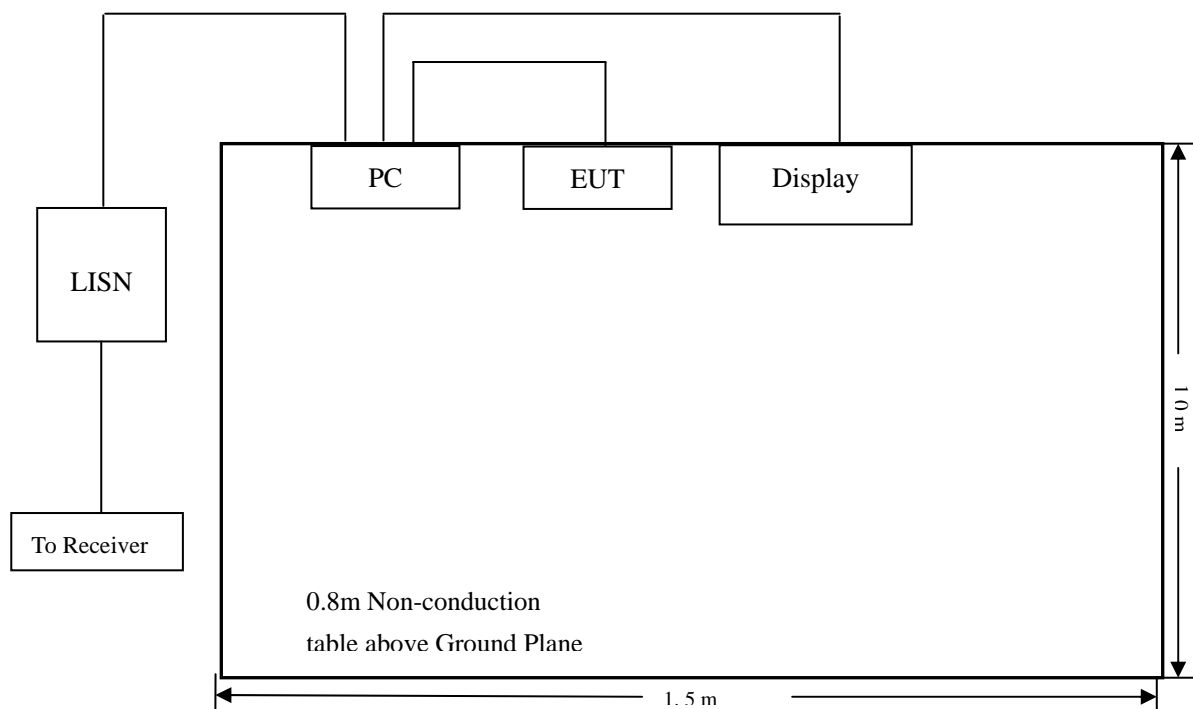
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2010-12-20	2011-12-19
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2010-12-20	2011-12-19
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2010-12-20	2011-12-19

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

#### 3.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

#### 3.4 Basic Test Setup Block Diagram



### 3.5 Environmental Conditions

Temperature:	20° C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

### 3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC 15.207 Conducted margin for a Class B device, with the *worst* margin reading of:

**-4.8 dB $\mu$ V at 0.15 MHz in the Neutral QP Detector, 0.15-30MHz**

### 3.7 Conducted Emissions Test Data

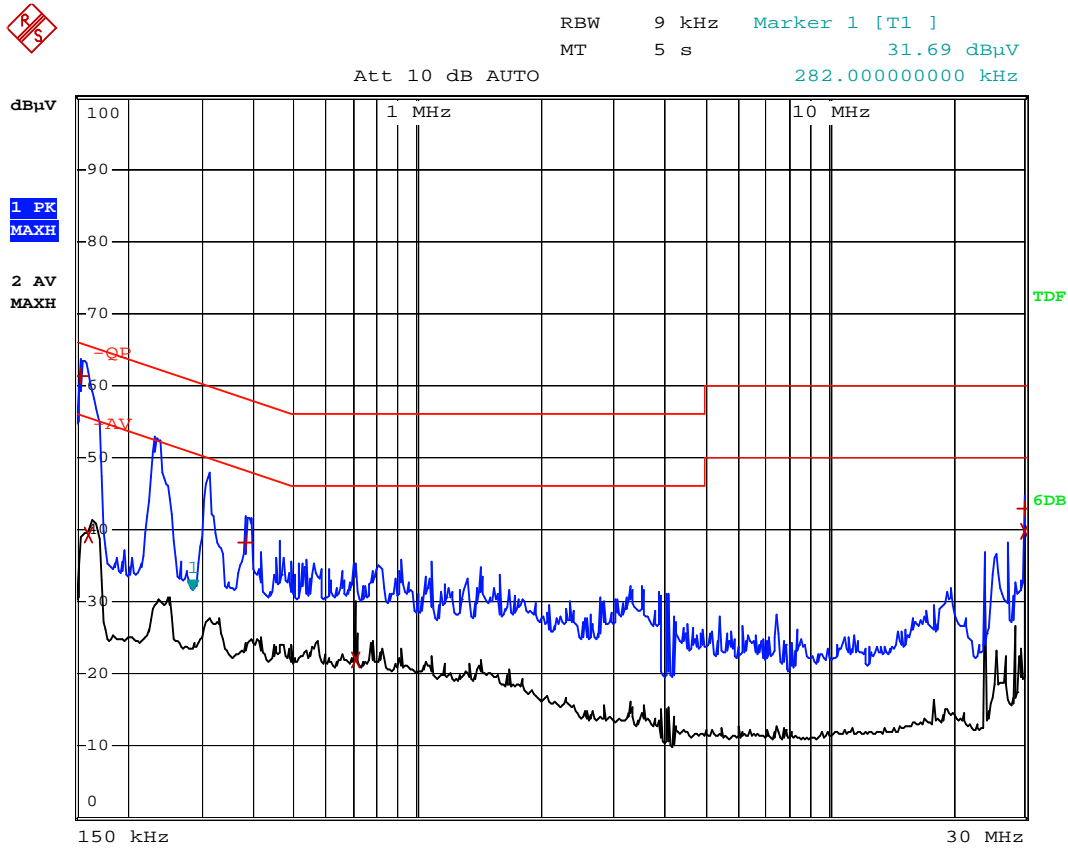
LINE CONDUCTED EMISSIONS				FCC 15.207	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dB $\mu$ V	QP/Ave/Pk	Line/Neutral	dB $\mu$ V	dB
0.15	61.2	QP	Neutral	66	-4.8
0.15	58.1	QP	Line	66	-8.0
29.98	39.8	AV	Neutral	50	-10.2
23.98	38.2	AV	Line	50	-11.8
0.16	39.3	AV	Neutral	55.46	-16.2
29.98	43.0	QP	Neutral	60	-17.0
0.16	35.4	AV	Line	55.46	-20.0
0.38	38.2	QP	Neutral	58.28	-20.1
0.24	31.1	AV	Line	52.1	-21.0
0.38	36.8	QP	Line	58.28	-21.4
0.71	21.9	AV	Neutral	46	-24.1





Plot of Conducted Emissions Test Data

Conducted Disturbance  
EUT: Wireless Router  
M/N: Mofi-01  
Operating Condition: Transmitting & Charging  
Test Specification: L  
Comment: AC 120V/60Hz/USB 5V



## **4. §15.203 - ANTENNA REQUIREMENT**

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### **4.1 Standard Applicable**

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

### **4.2 Test Result**

This product has an integral antenna, fulfill the requirement of this section.

## 5. POWER SPECTRAL DENSITY

### 5.1 Standard Applicable

According to 15.247(a)(1)(iii), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### 5.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2010-12-20	2011-12-19
Attenuator	ATTEN	ATS100-4-20	/	2010-12-20	2011-12-19

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

### 5.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. Set the spectrum analyzer as RBW, VBW=3KHz, Span = 300kHz.
4. Repeat above procedures until all frequency measured was complete.

### 5.4 Environmental Conditions

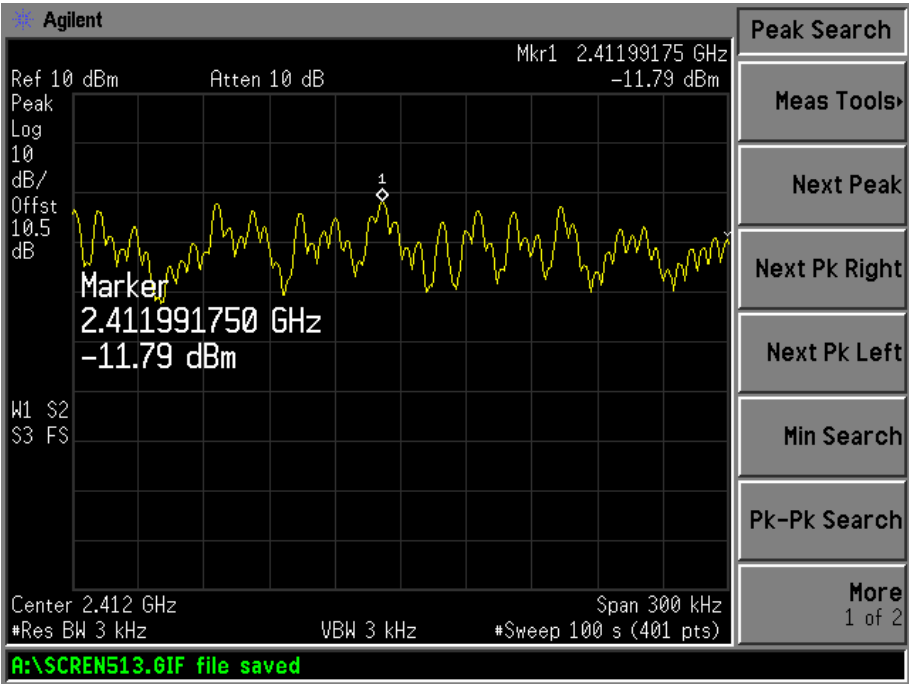
Temperature:	20° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

## 5.5 Summary of Test Results/Plots

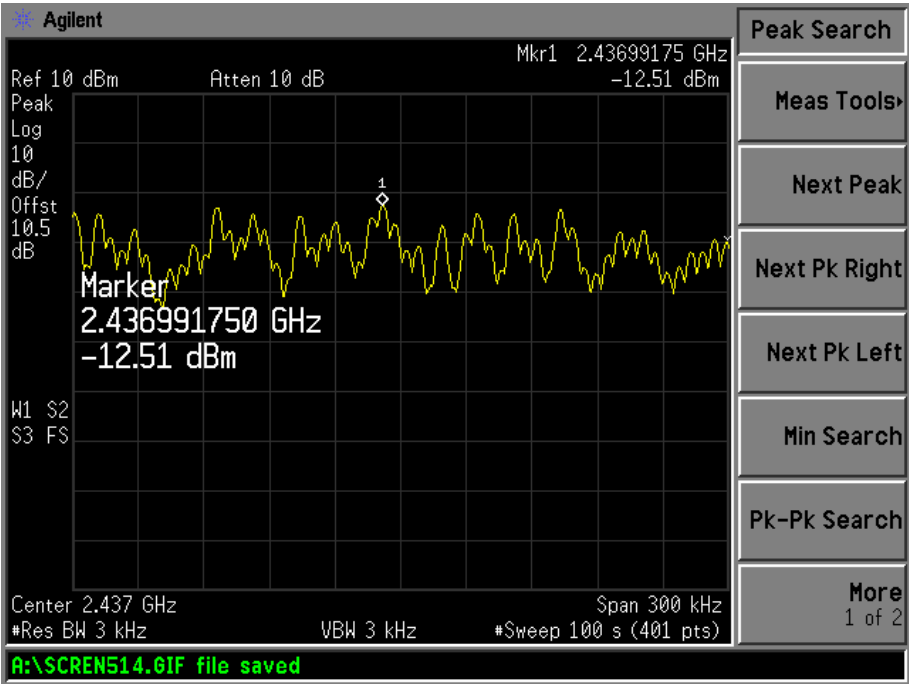
Test mode	Test channel	Reading dBm/3kHz	Limit dBm/3kHz
802.11b	Low channel (2412MHz)	-11.79	8
	Middle channel (2437MHz)	-12.51	8
	High channel (2462MHz)	-10.86	8
802.11g	Low channel (2412MHz)	-17.85	8
	Middle channel (2437MHz)	-19.05	8
	High channel (2462MHz)	-18.25	8
802.11n-HT20	Low channel (2412MHz)	-17.85	8
	Middle channel (2437MHz)	-18.72	8
	High channel (2462MHz)	-18.42	8
802.11n-HT40	Low channel (2422MHz)	-22.49	8
	Middle channel (2437MHz)	-21.24	8
	High channel (2452MHz)	-22.49	8

For 802.11b

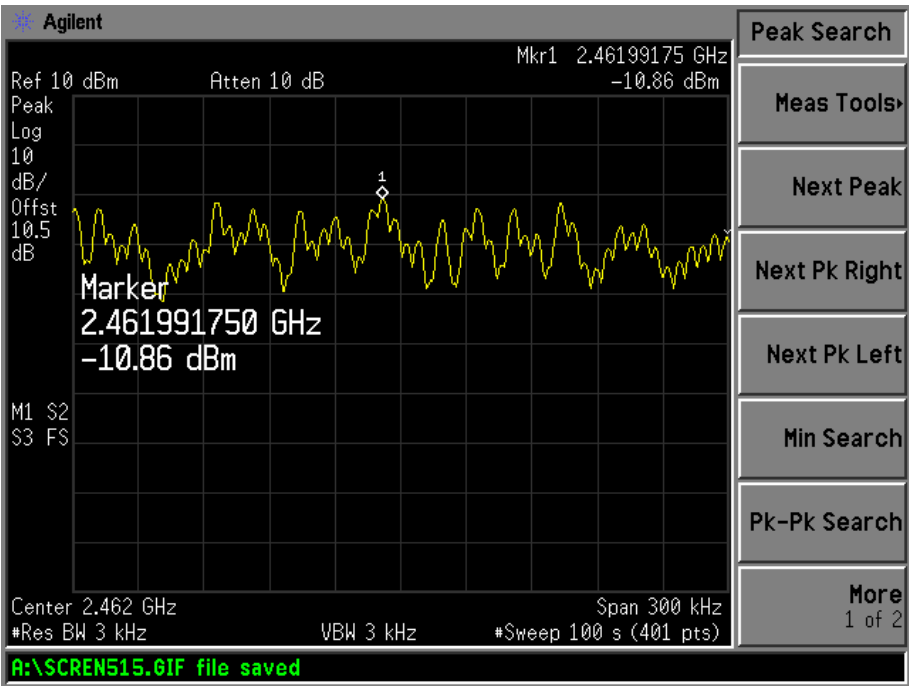
Low Channel:



Middle Channel:

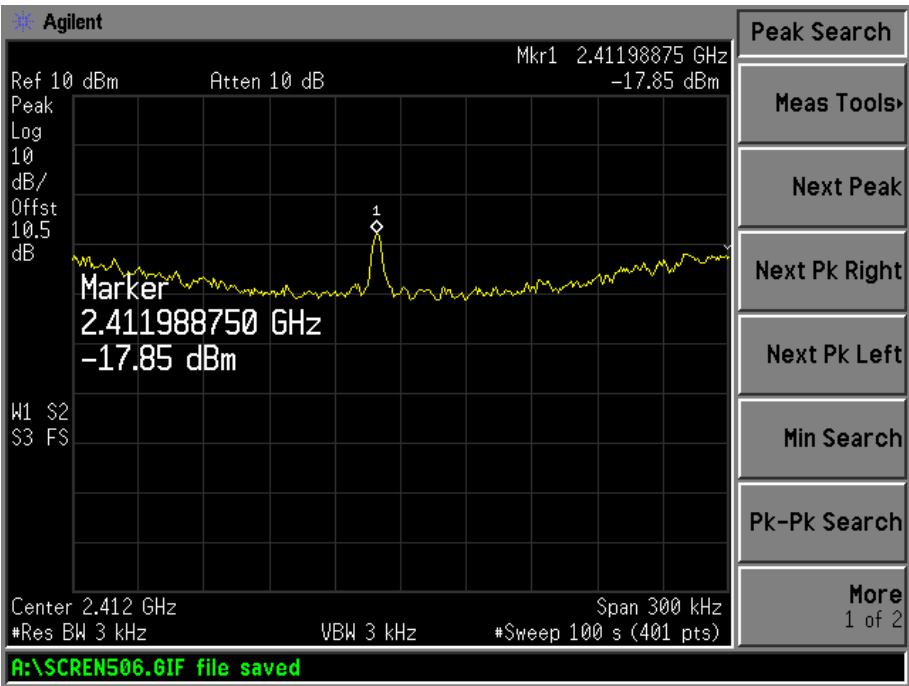


High Channel:

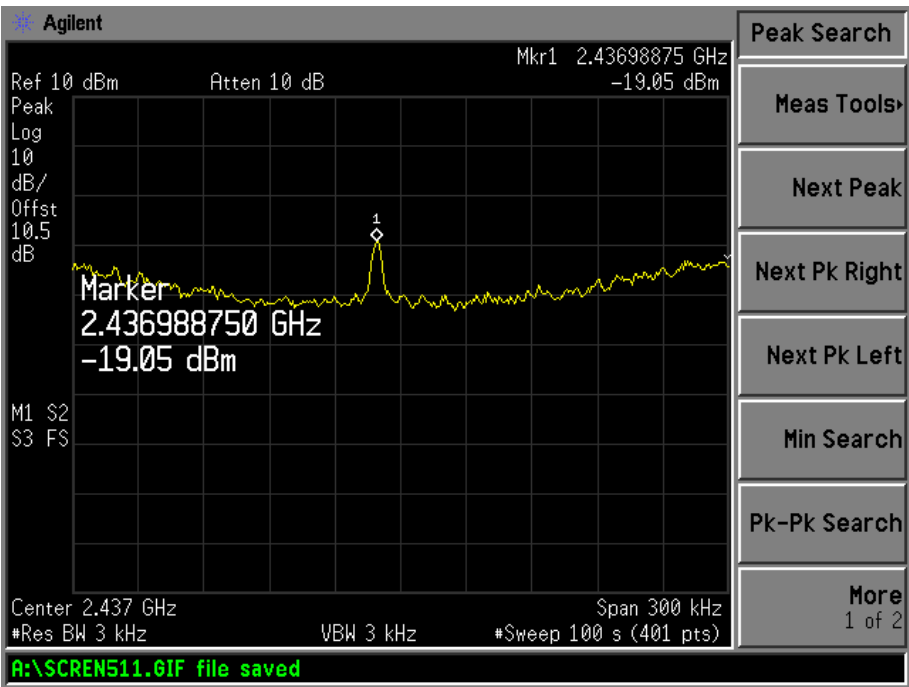


For 802.11g

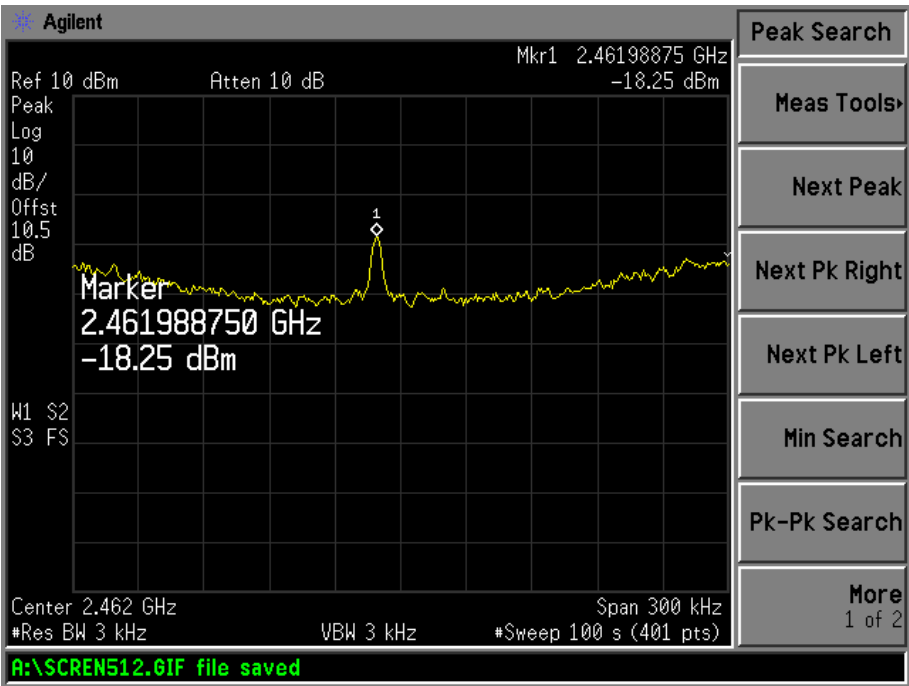
Low Channel:



Middle Channel:

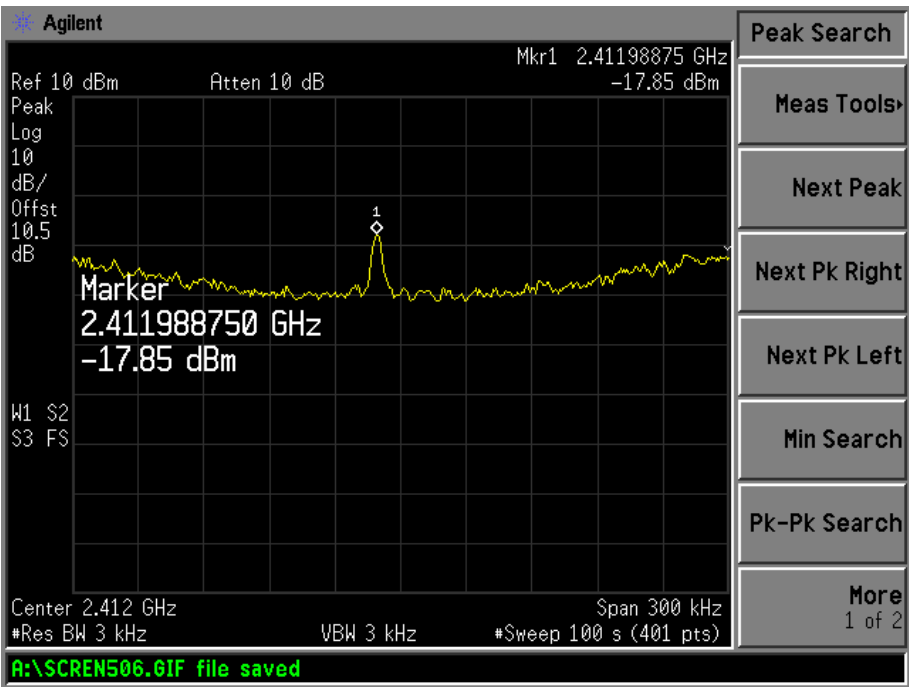


High Channel:

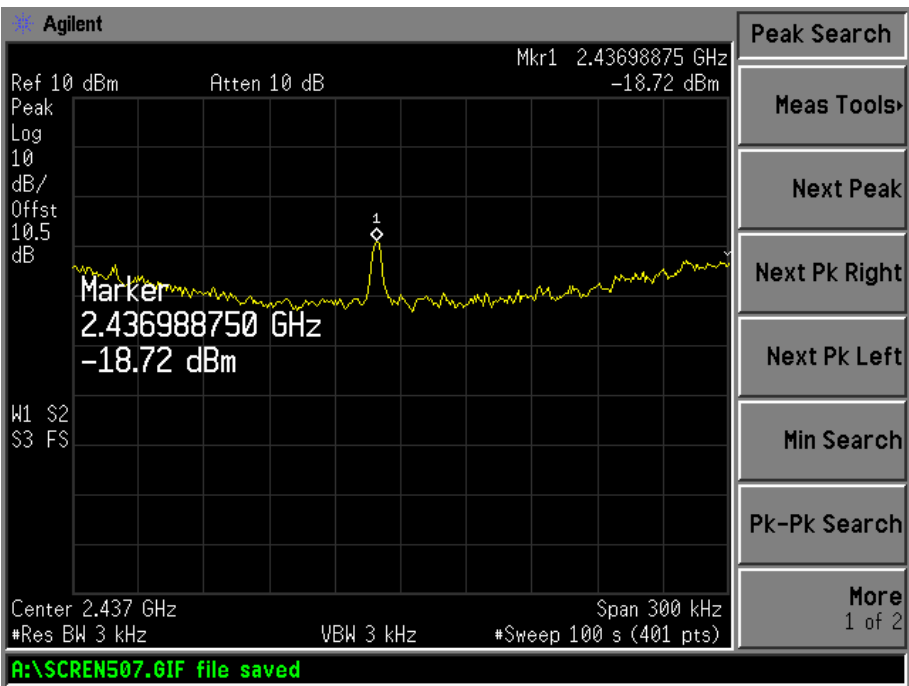


For 802.11n-HT20

Low Channel:

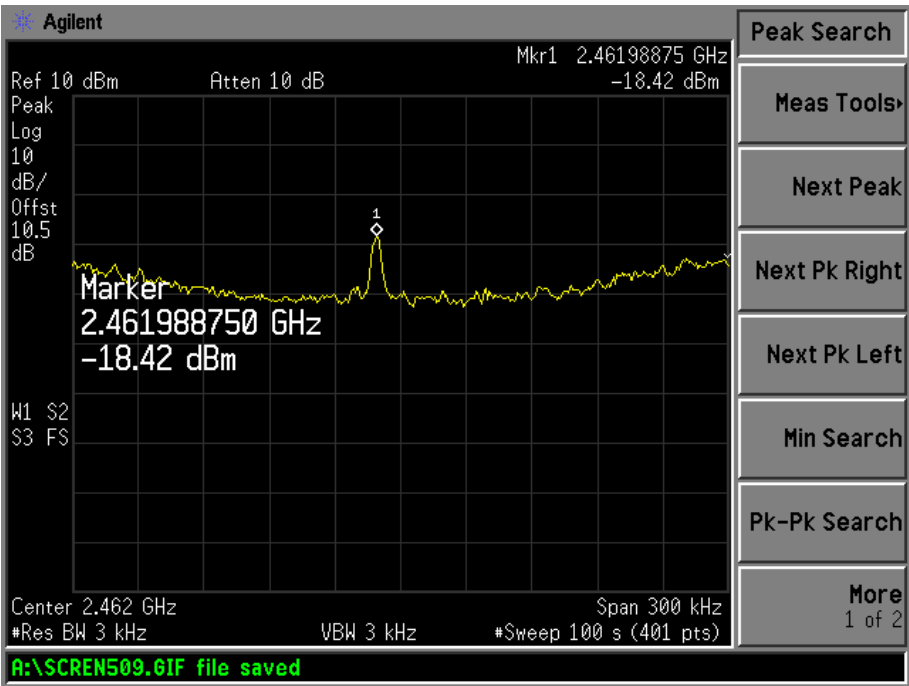


Middle Channel:



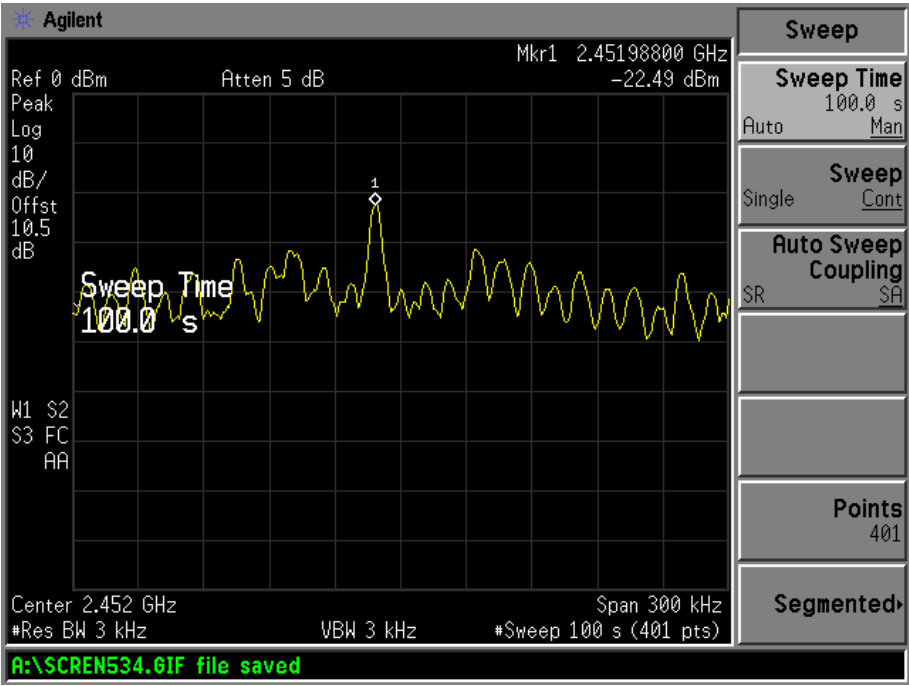


High Channel:

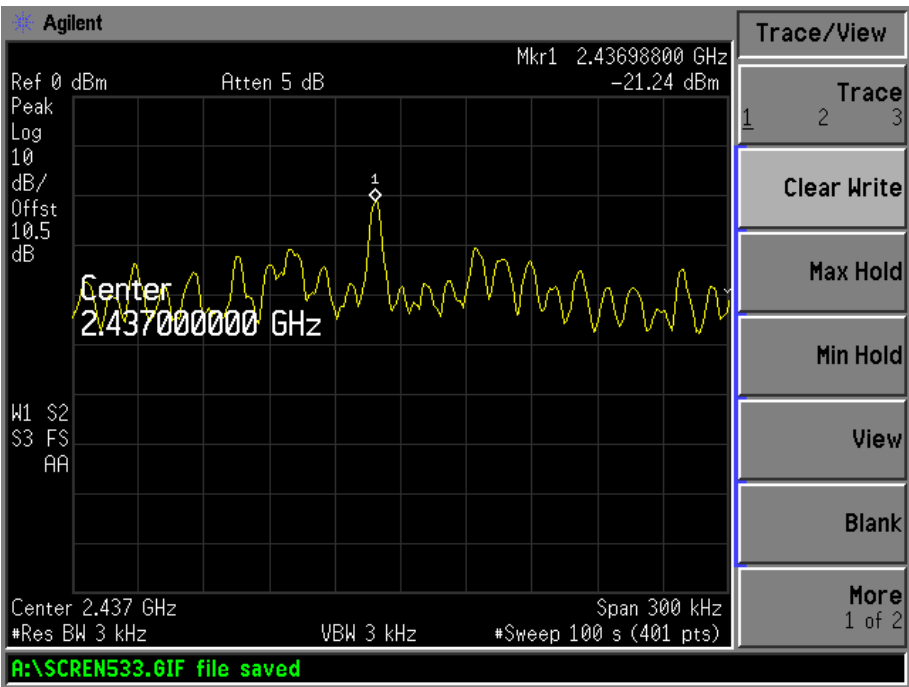


For 802.11n-HT40

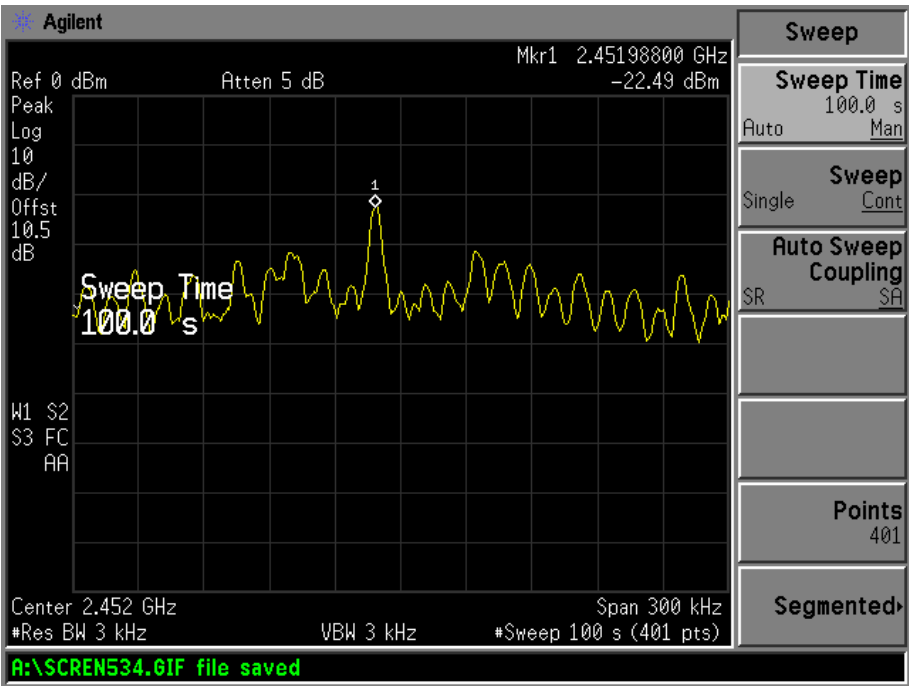
Low Channel:



Middle Channel:



High Channel:



## 6. 6-dB BANDWIDTH

### 6.1 Standard Applicable

According to 15.247(a)(2). Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

### 6.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2010-12-20	2011-12-19
Attenuator	ATTEN	ATS100-4-20	/	2010-12-20	2011-12-19

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

### 6.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. The spectrum analyzer as RBW=100KHz (1 % of Bandwidth.), Sweep=auto
4. Mark the peak frequency and –6dB (upper and lower) frequency.

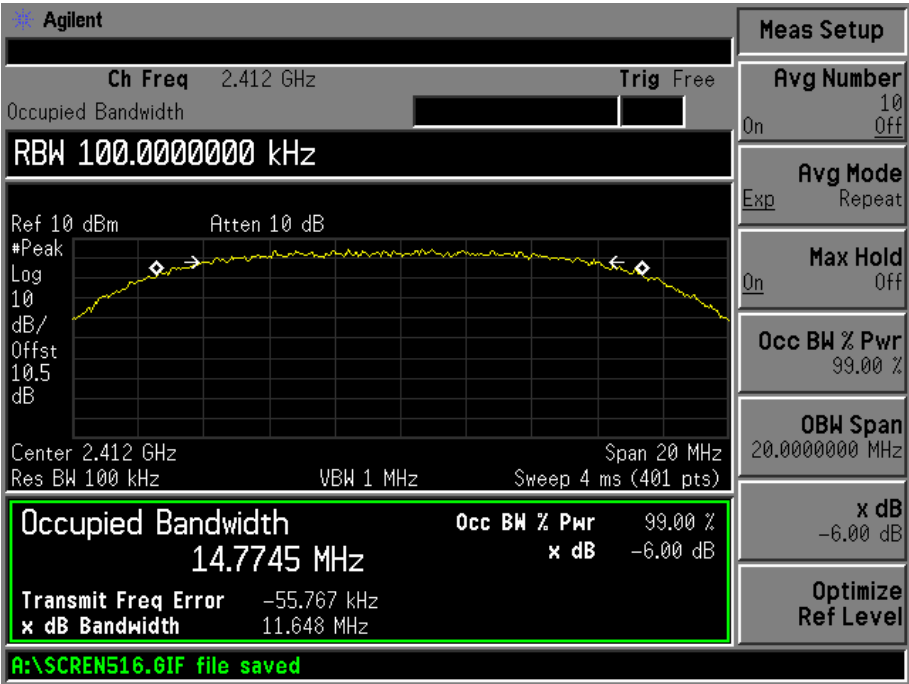
### 6.4 Environmental Conditions

Temperature:	24° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

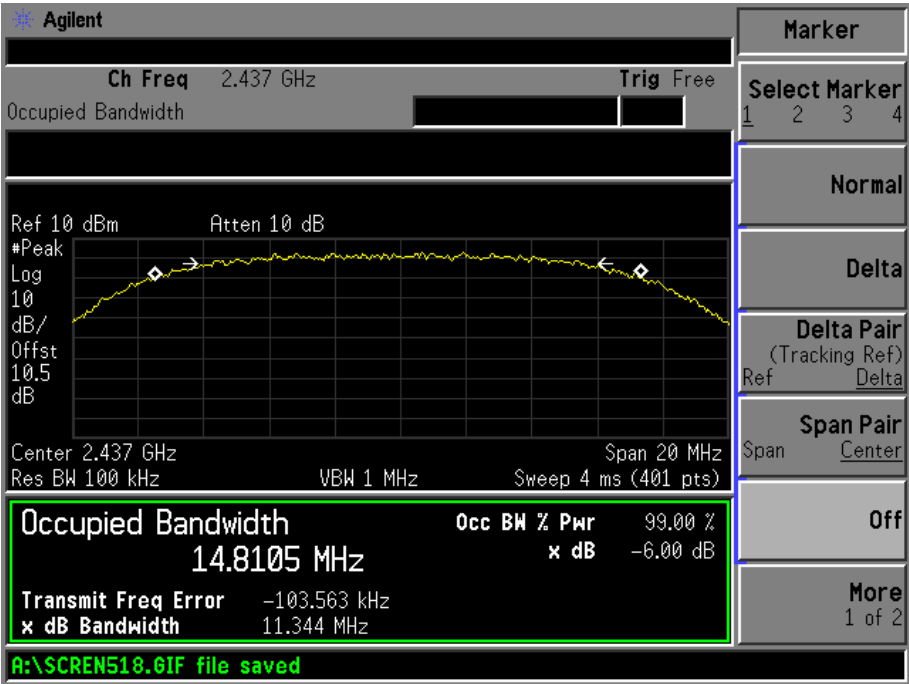
## 6.5 Summary of Test Results/Plots

Test mode	Frequency MHz	6 dB Bandwidth kHz	Limit kHz
802.11b	2412	11648	500
	2437	11344	500
	2462	11636	500
802.11g	2412	16502	500
	2437	16452	500
	2462	16493	500
802.11n-HT20	2412	16474	500
	2437	16467	500
	2462	16450	500
802.11n-HT40	2422	36320	500
	2437	36339	500
	2452	36031	500

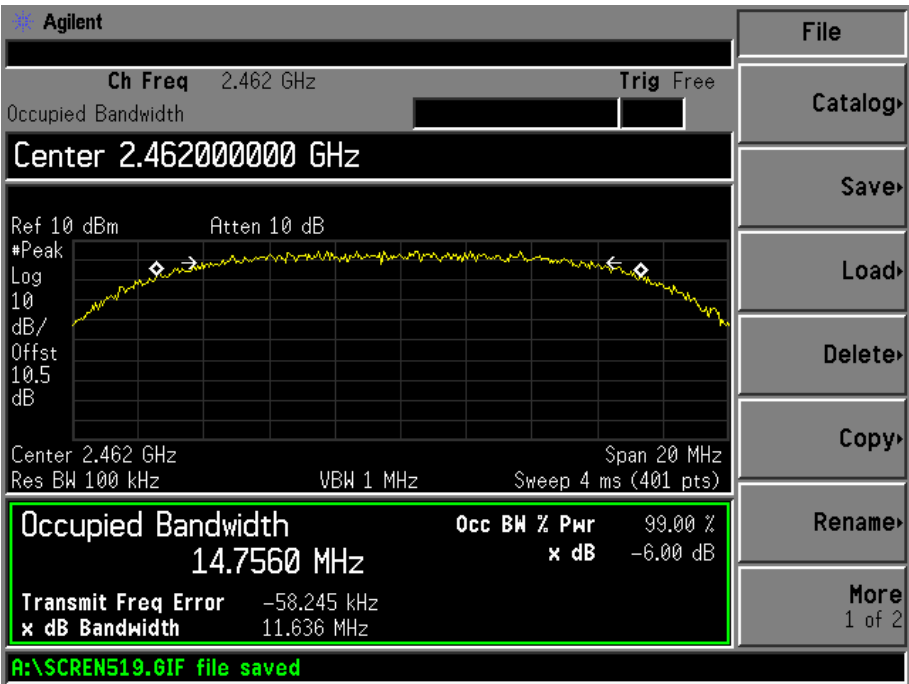
For 802.11b  
Low Channel:



Mid Channel:

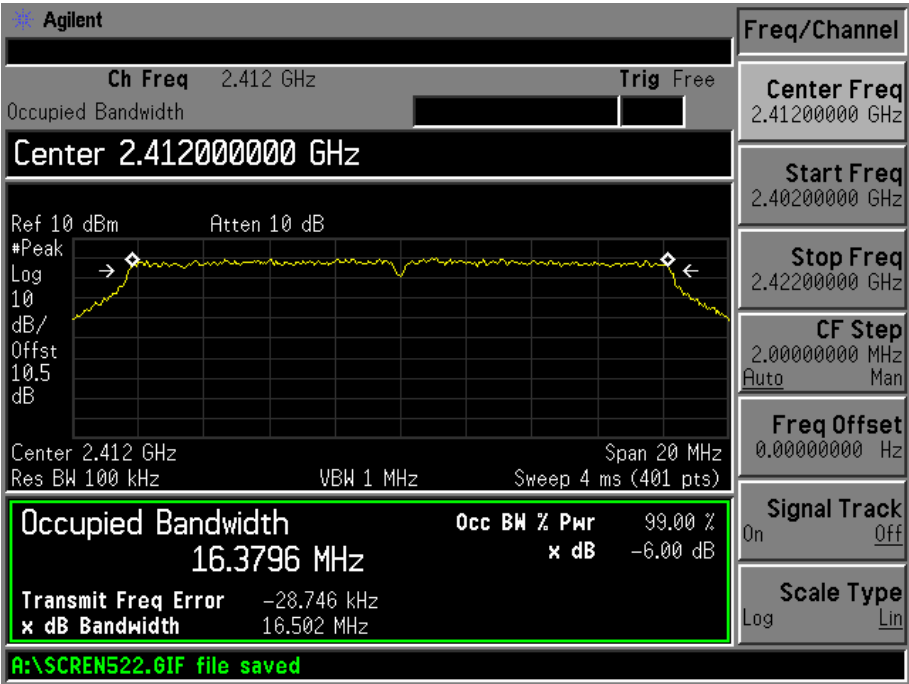


High Channel:

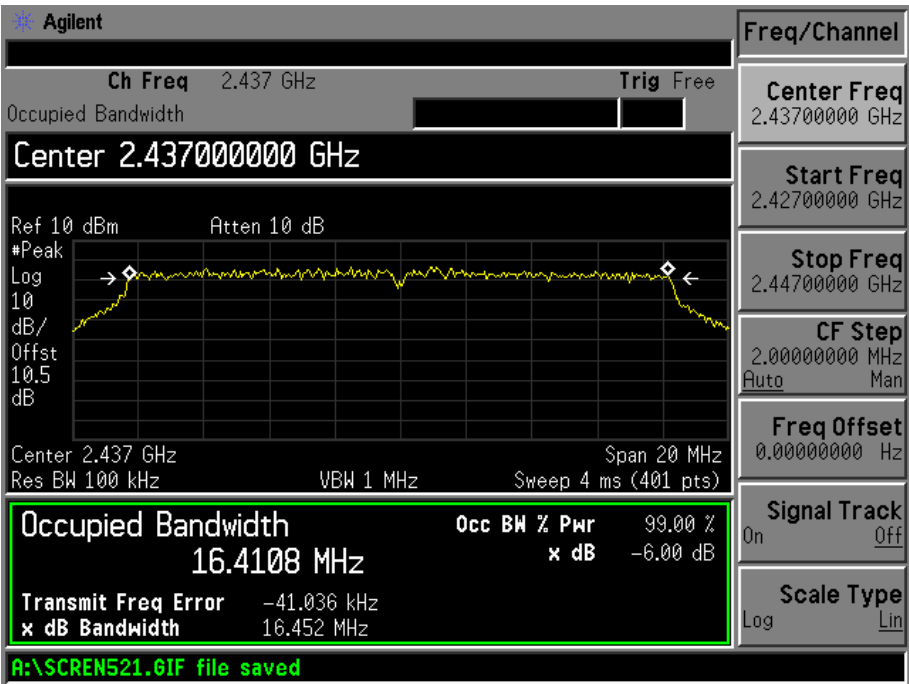


For 802.11g

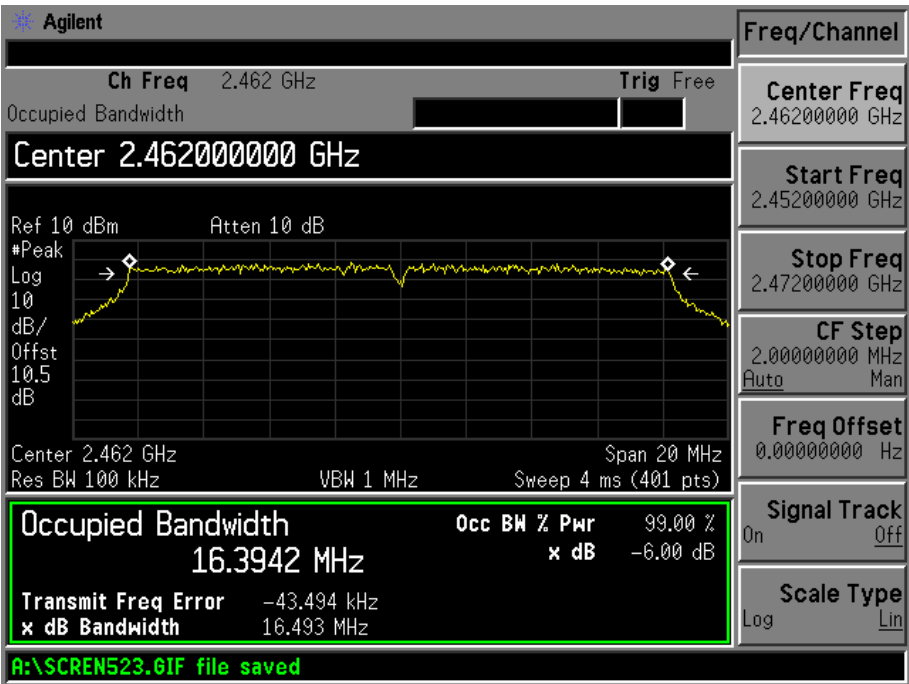
Low Channel:



Mid Channel:

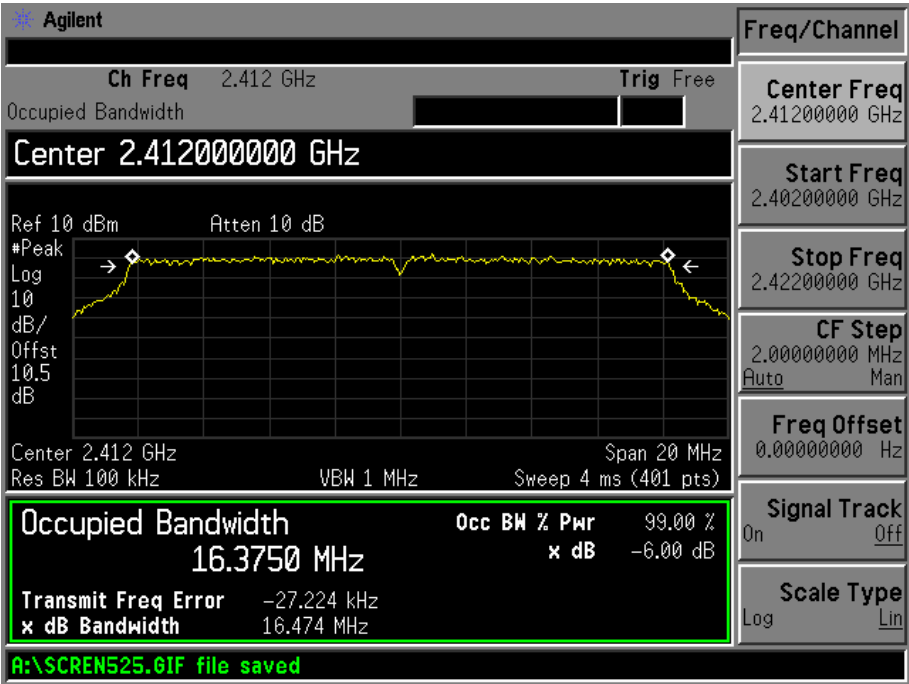


High Channel:

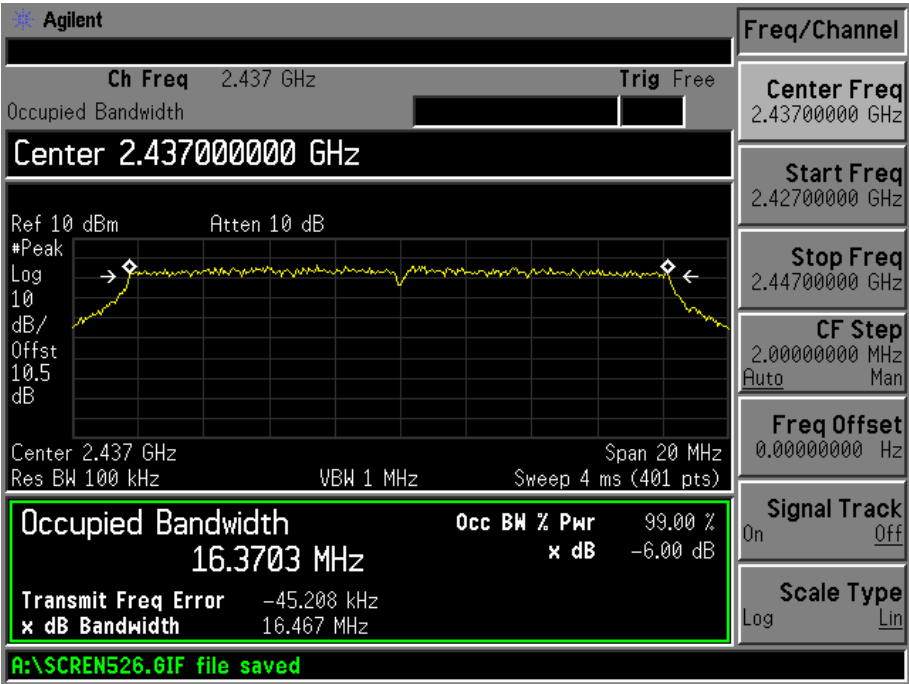


For 802.11n-HT20

Low Channel:

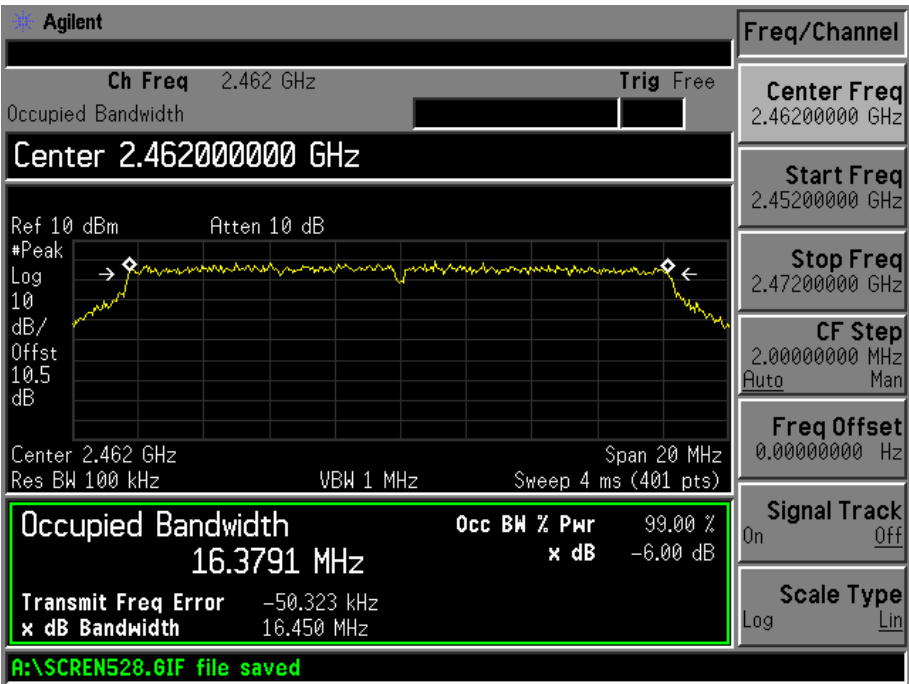


Mid Channel:



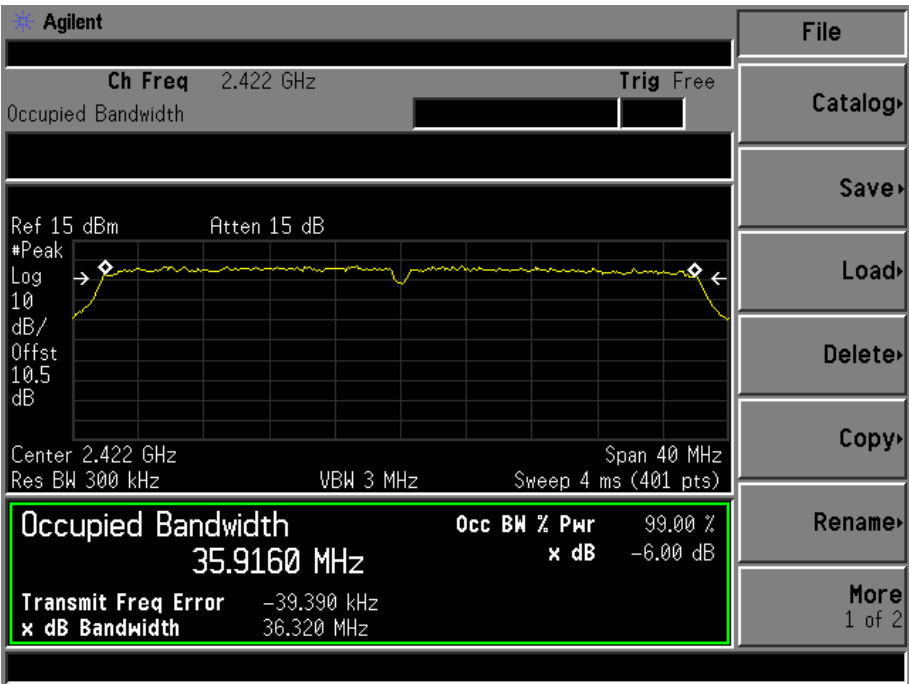


High Channel:

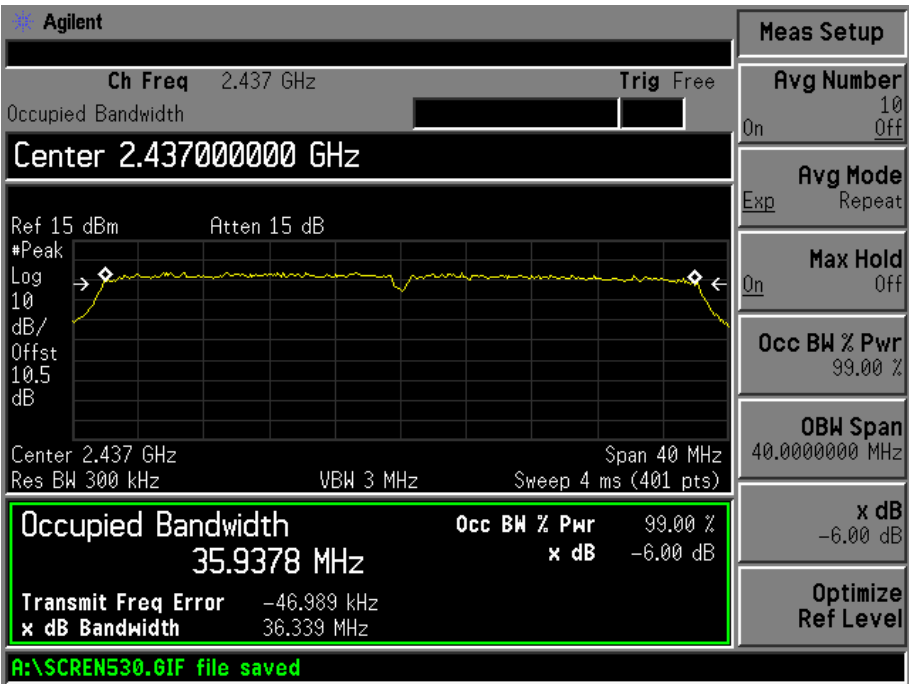


For 802.11n-HT40

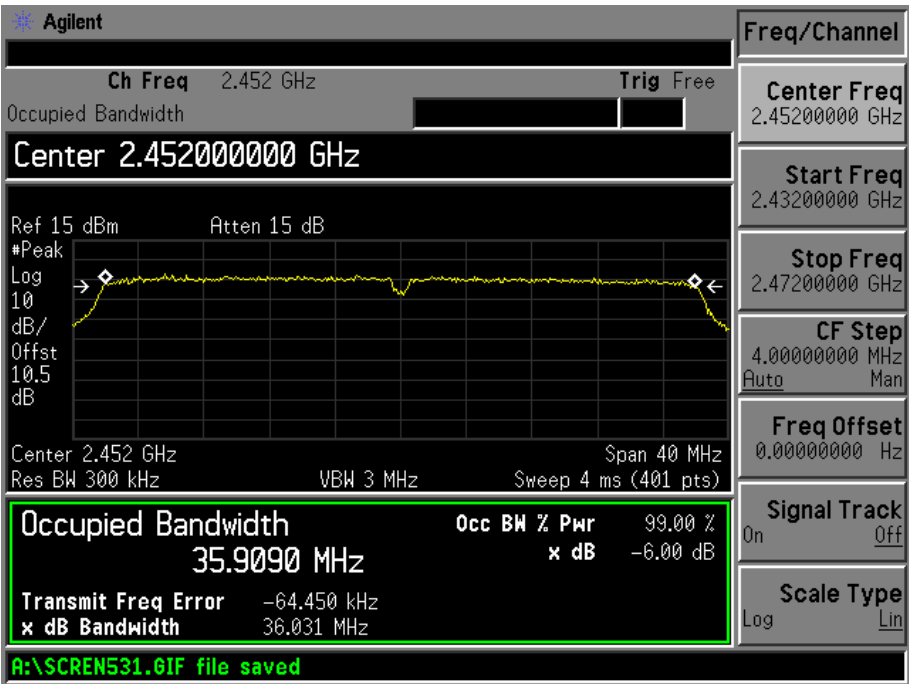
Low Channel:



Mid Channel:



High Channel:



## 7. POWER OUTPUT

### 7.1 Standard Applicable

According to 15.247(b)(3). For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

### 7.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2010-12-20	2011-12-19
Attenuator	ATTEN	ATS100-4-20	/	2010-12-20	2011-12-19

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

### 7.3 Test Procedure

According to section 15.247(b)-power output of the KDB-558074 (2005), the method #1 of the power output option2 was used, the following is the measurement procedure.

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW  $\geq$  3 MHz.
3. Set the video filter to 3 MHz.
4. Use sample detector mode if bin width (i.e., span/number of points in spectrum display)  $<$  0.5 RBW. Otherwise use peak detector mode.
5. Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep. If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to “free run”.
6. Trace average 100 traces in power averaging mode.
7. Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer’s band power measurement function with band limits set equal to the EBW band edges.

### 7.4 Environmental Conditions

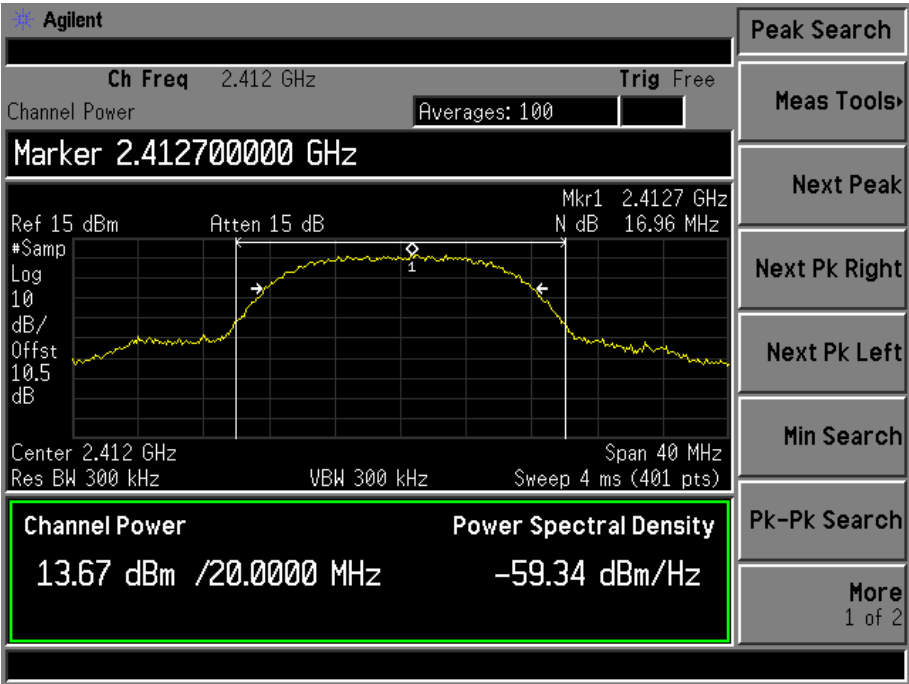
Temperature:	21° C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

## 7.5 Summary of Test Results/Plots

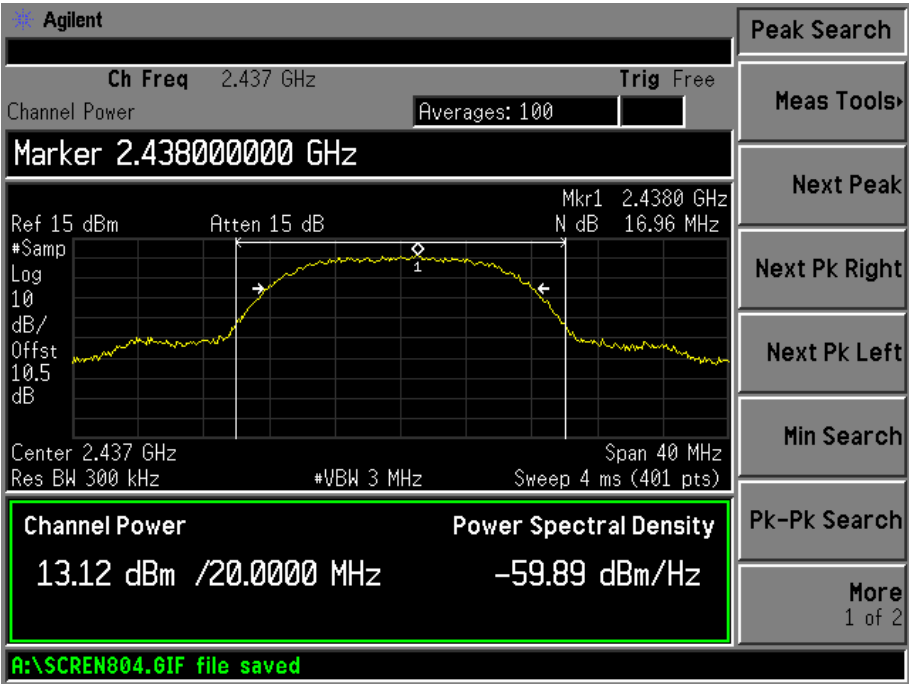
Test mode	Frequency MHz	Reading dBm	Output power W	Limit W
802.11b (1M_Short)	2412	13.67	23.2809	1
	2437	13.12	20.5116	1
	2462	13.32	21.4783	1
802.11b (1M_Long)	2412	13.51	22.4388	1
	2437	13.35	21.6272	1
	2462	13.34	21.5774	1
802.11b (11M_Short)	2412	13.51	22.4388	1
	2437	13.34	21.5774	1
	2462	13.31	21.4289	1
802.11b (11M_Long)	2412	13.46	22.1820	1
	2437	13.35	21.6272	1
	2462	13.47	22.4388	1
802.11g (6M)	2412	13.38	0.0218	1
	2437	12.08	0.0161	1
	2462	12.08	0.0161	1
802.11g (54M)	2412	13.34	0.0216	1
	2437	11.98	0.0158	1
	2462	12.14	0.0164	1
802.11n-HT20	2412	13.01	0.0200	1
	2437	12.27	0.0169	1
	2462	12.14	0.0164	1
802.11n-HT40	2422	12.89	0.0195	1
	2437	12.09	0.0162	1
	2452	11.68	0.0147	1

For 802.11b\_1M Long rate

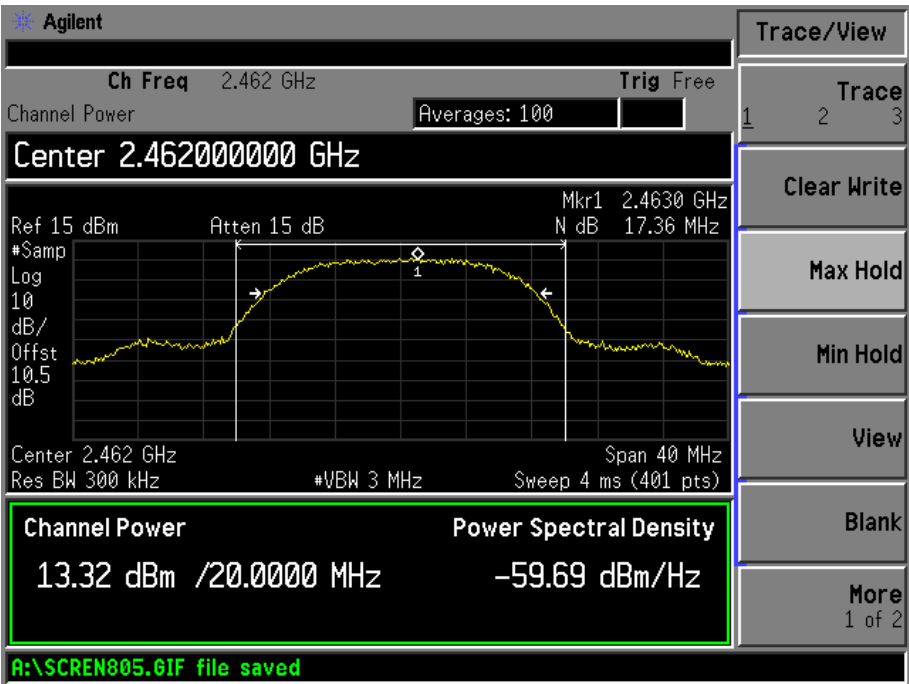
Low Channel:



Middle Channel:

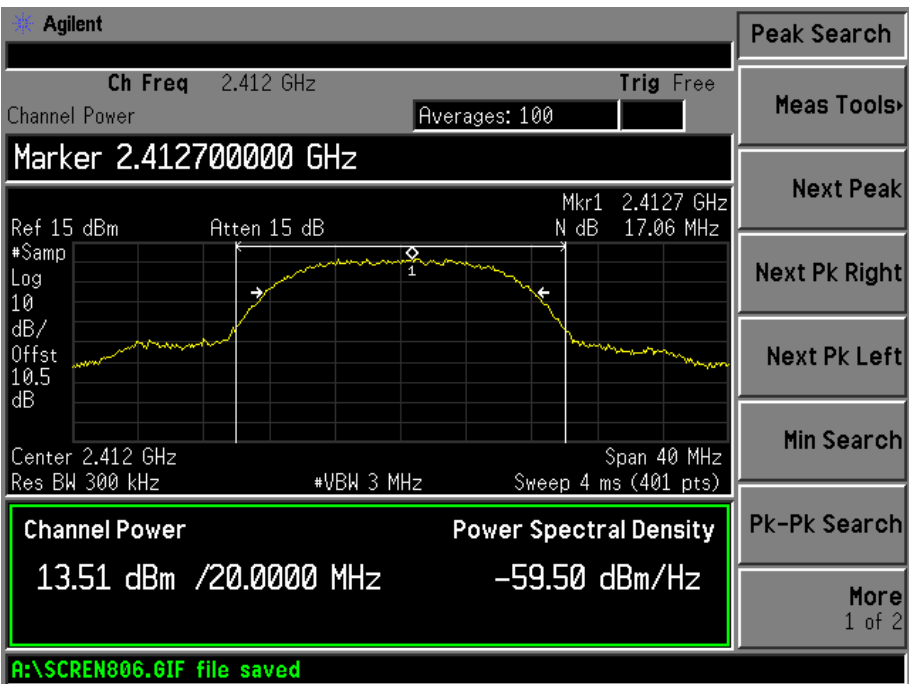


High Channel:

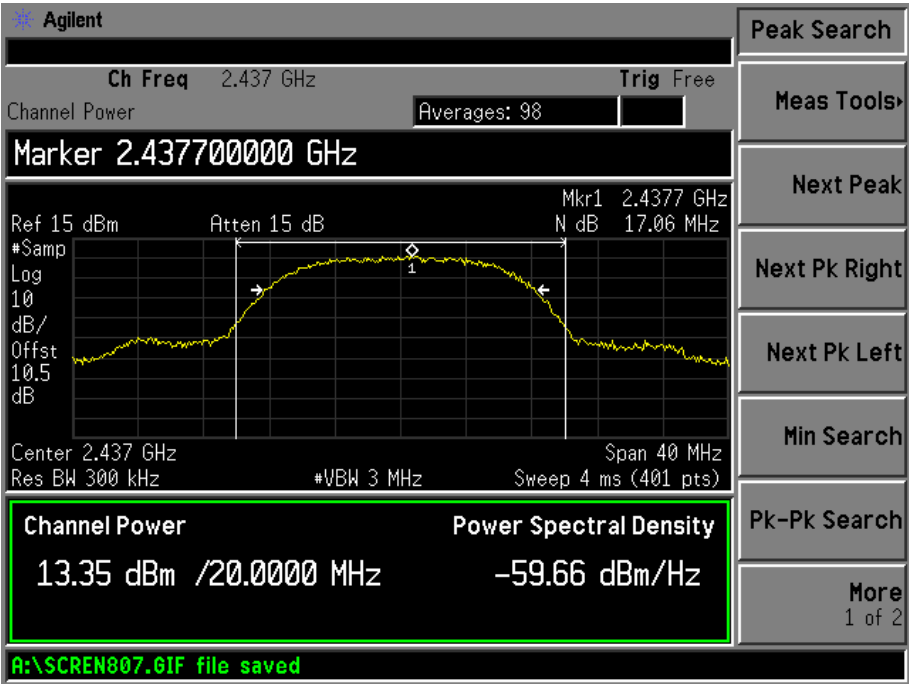


For 802.11b\_1M Short rate

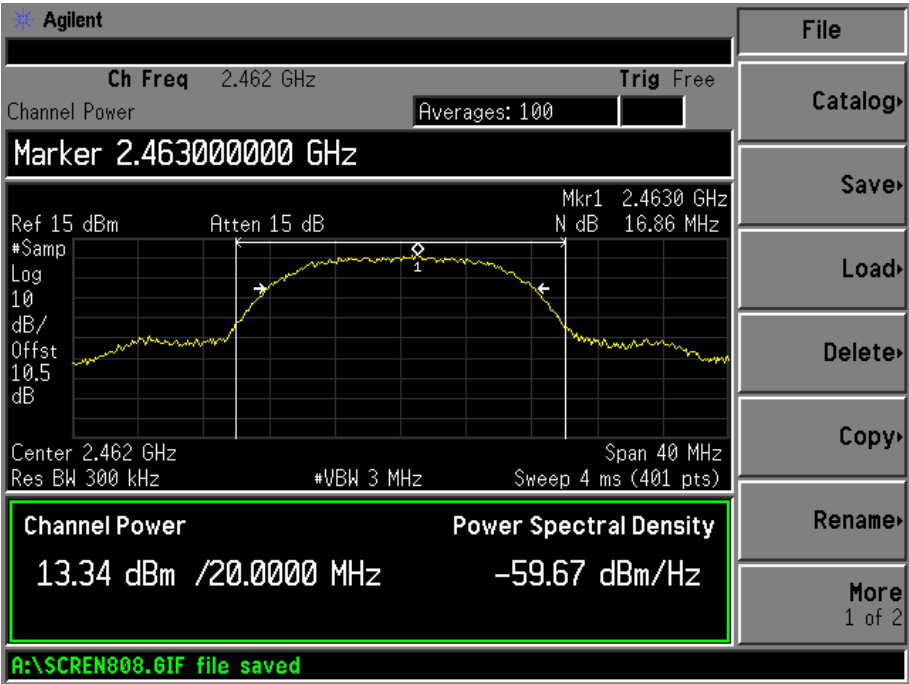
Low Channel:



Middle Channel:

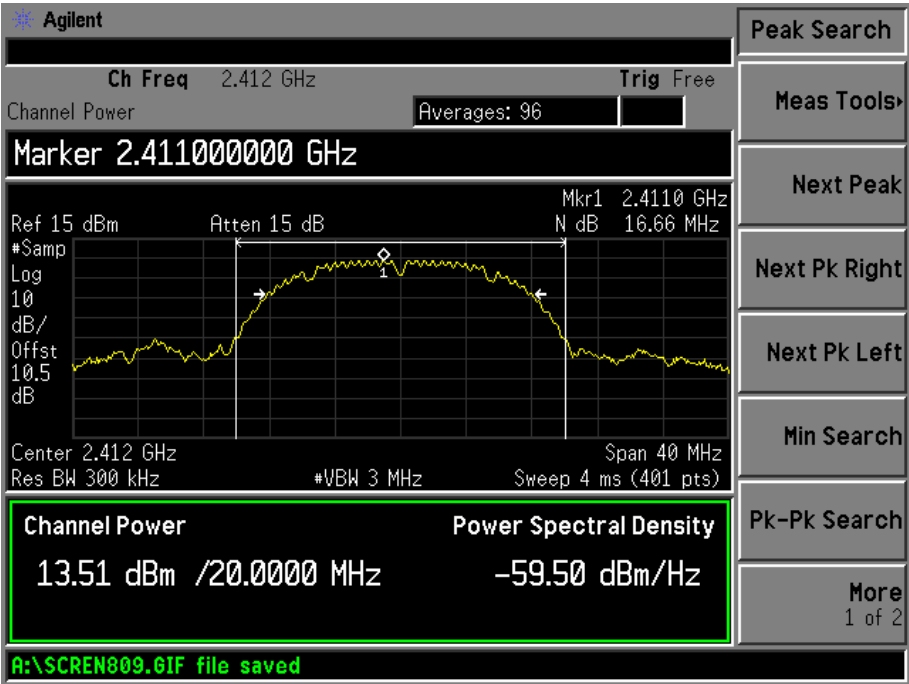


High Channel:

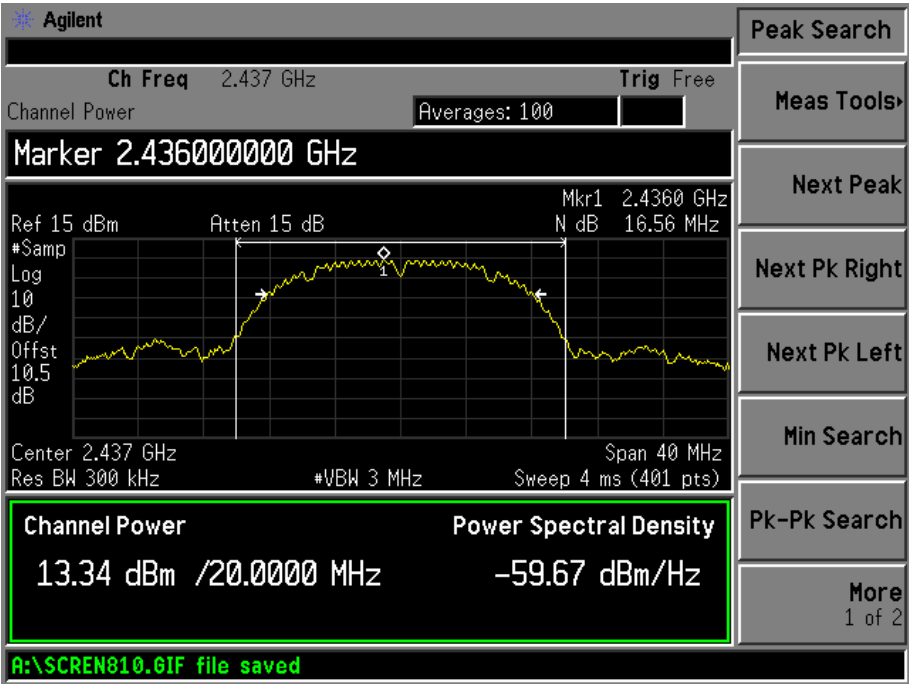


For 802.11b\_11M Long rate

Low Channel:

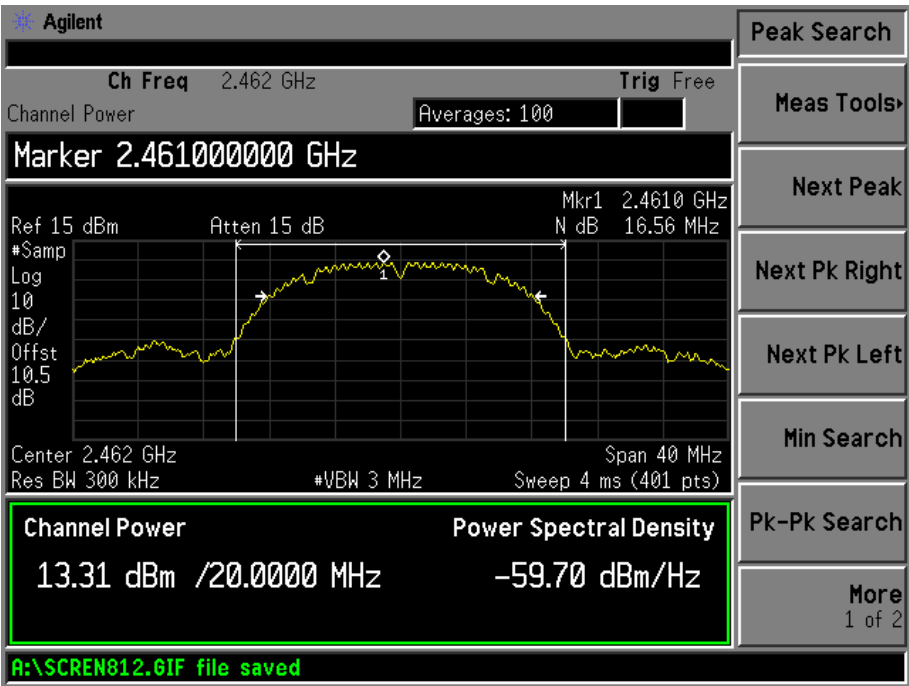


Middle Channel:



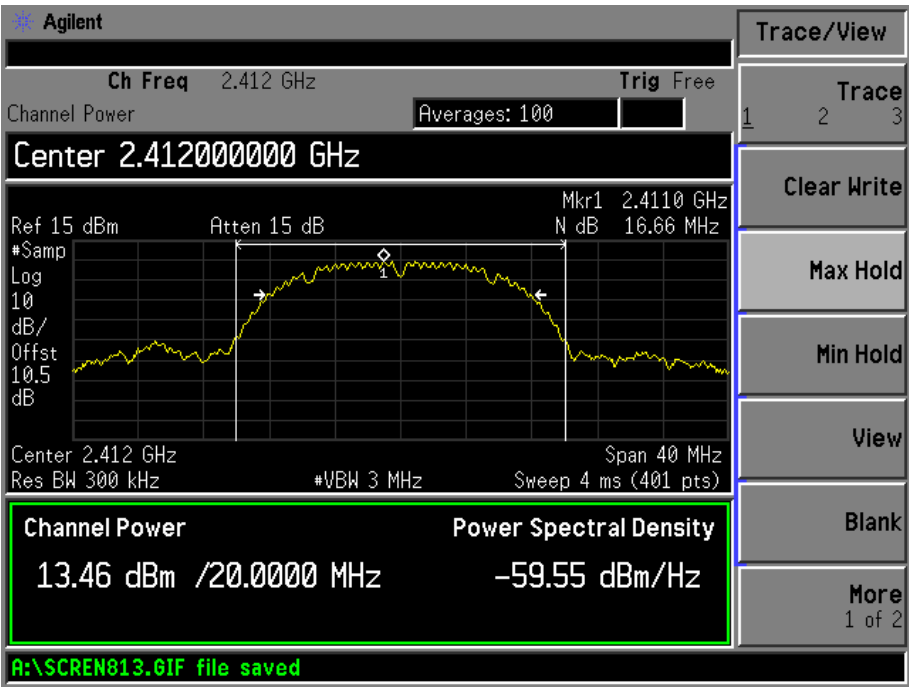


High Channel:

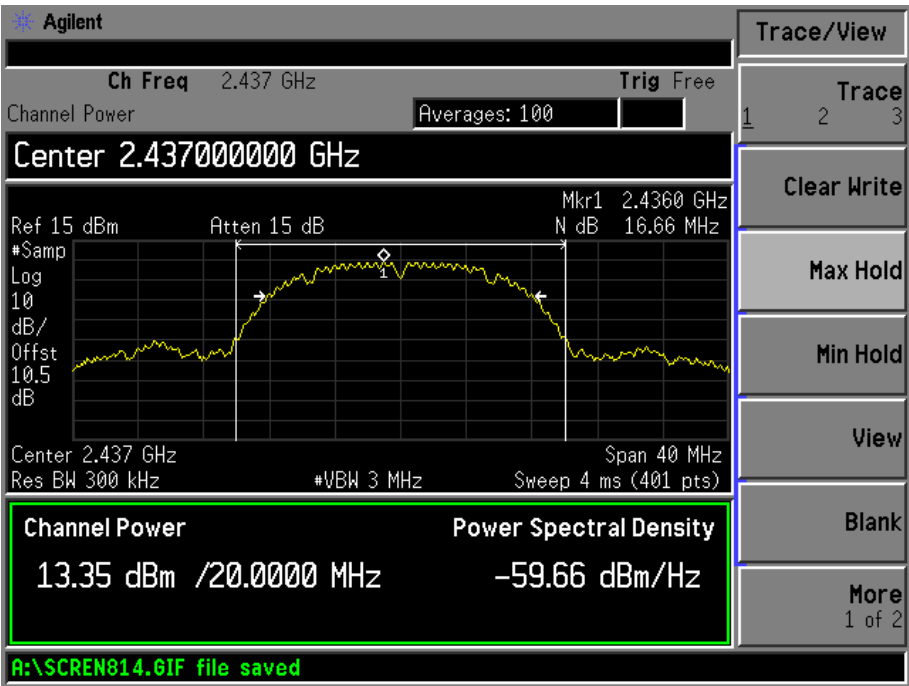


For 802.11b\_11M Short rate

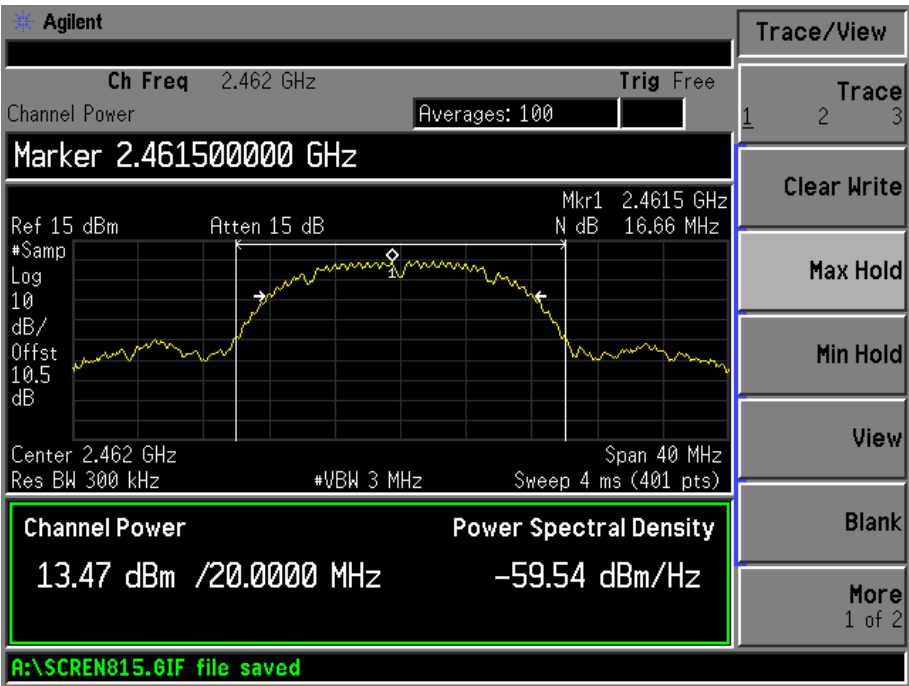
Low Channel:



Middle Channel:

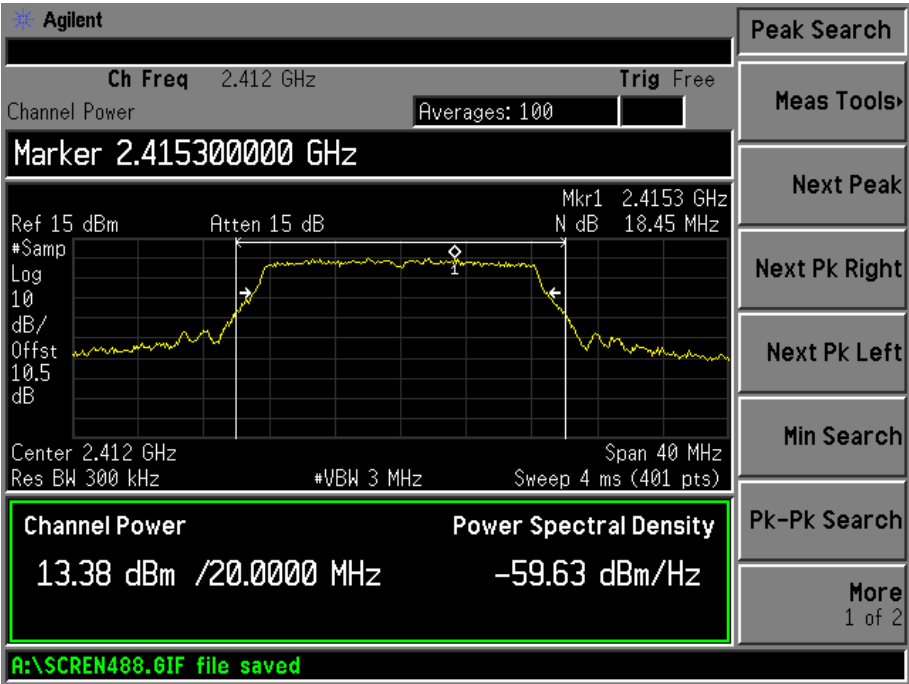


High Channel:

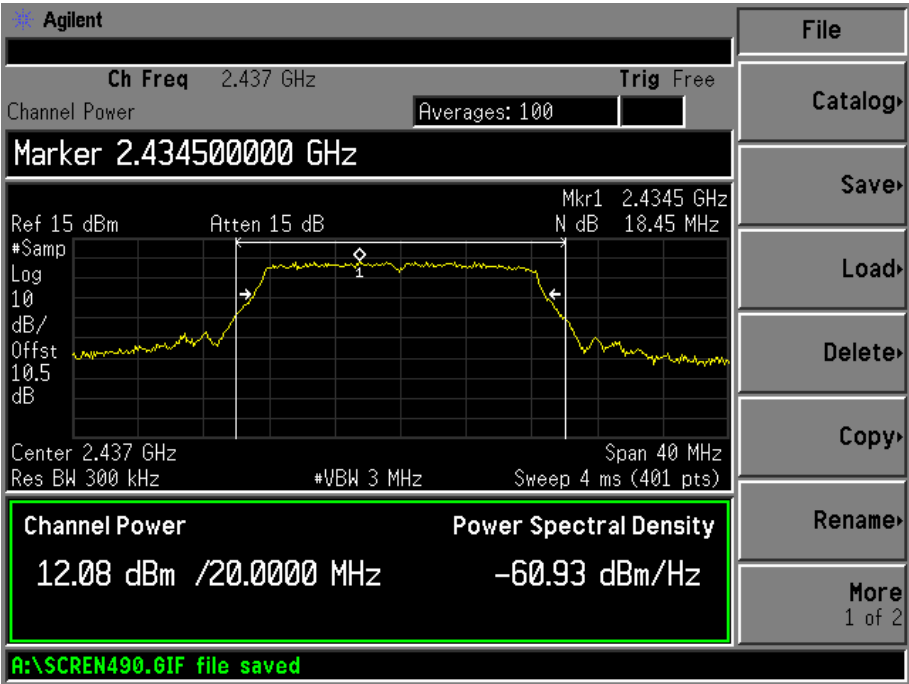


For 802.11g\_6M rate

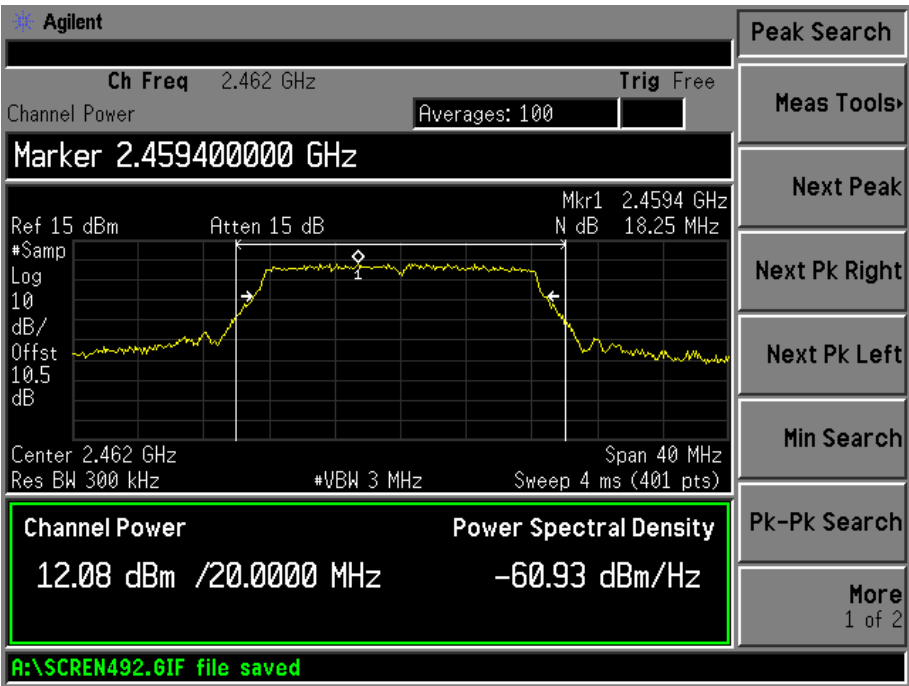
Low Channel:



Middle Channel:

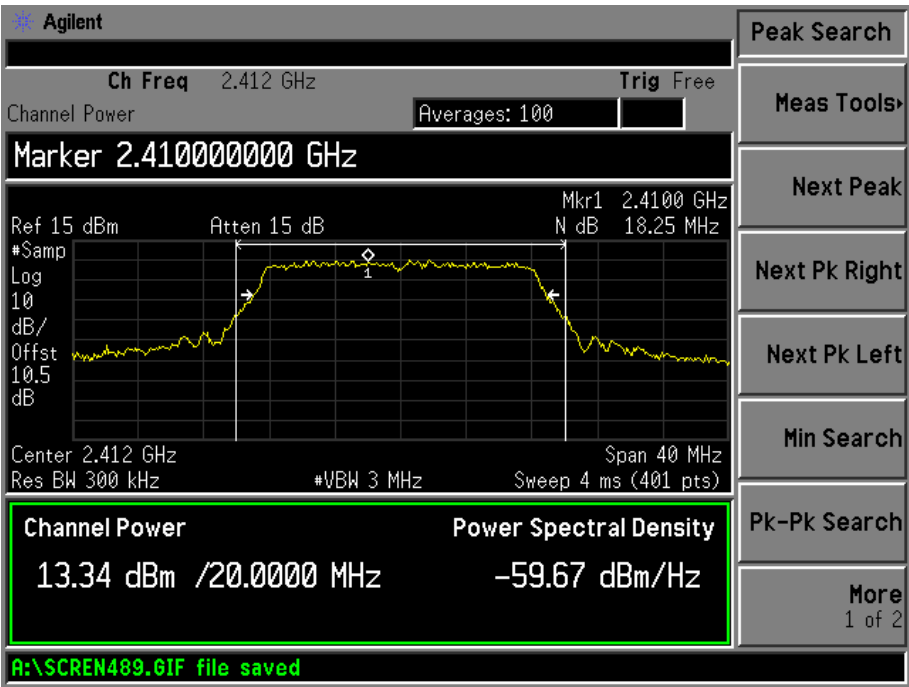


High Channel:

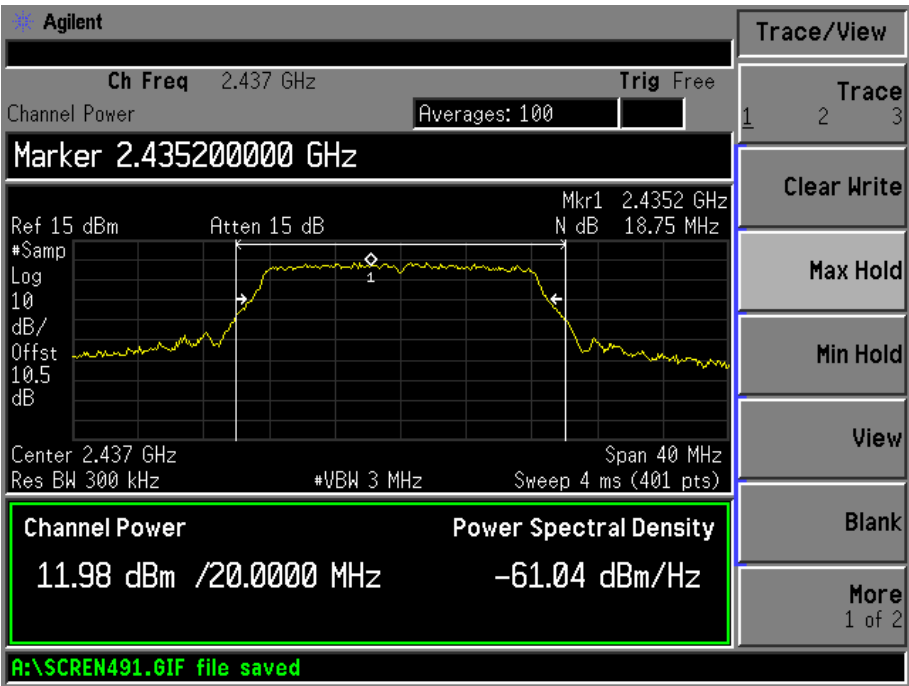


For 802.11g\_54M rate

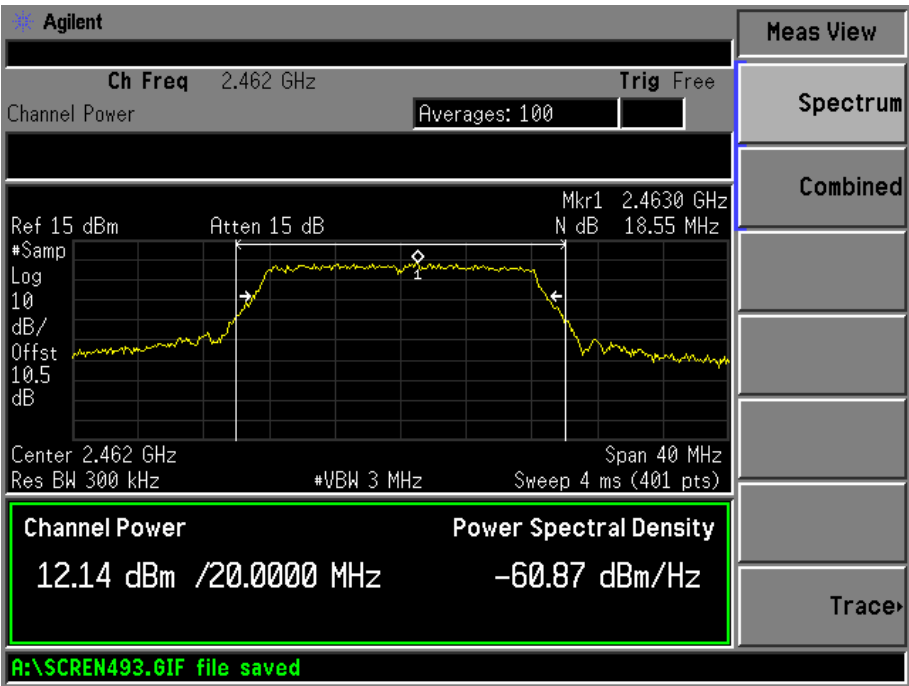
Low Channel:



Middle Channel:

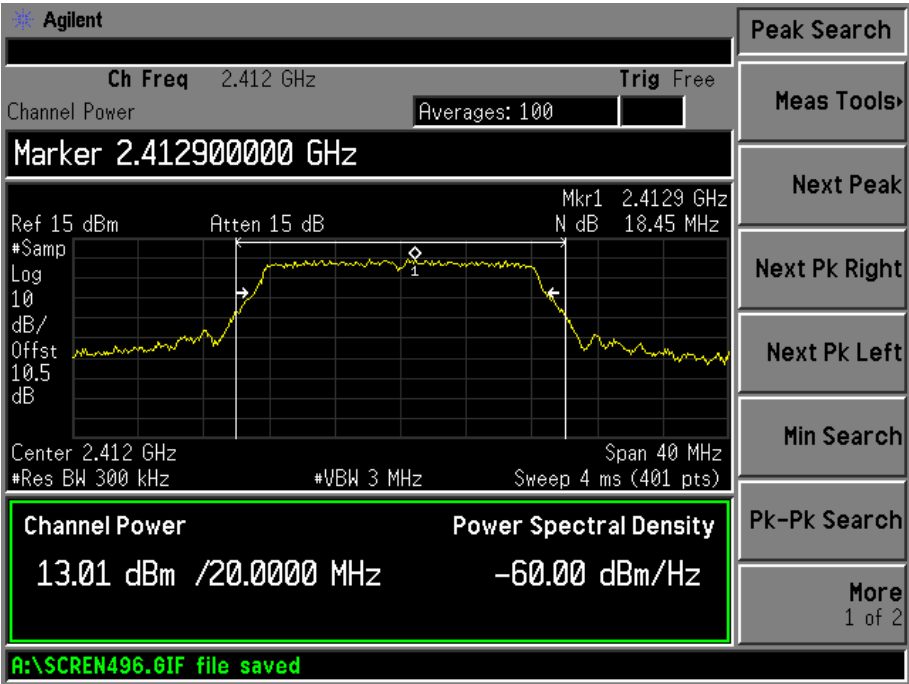


High Channel:

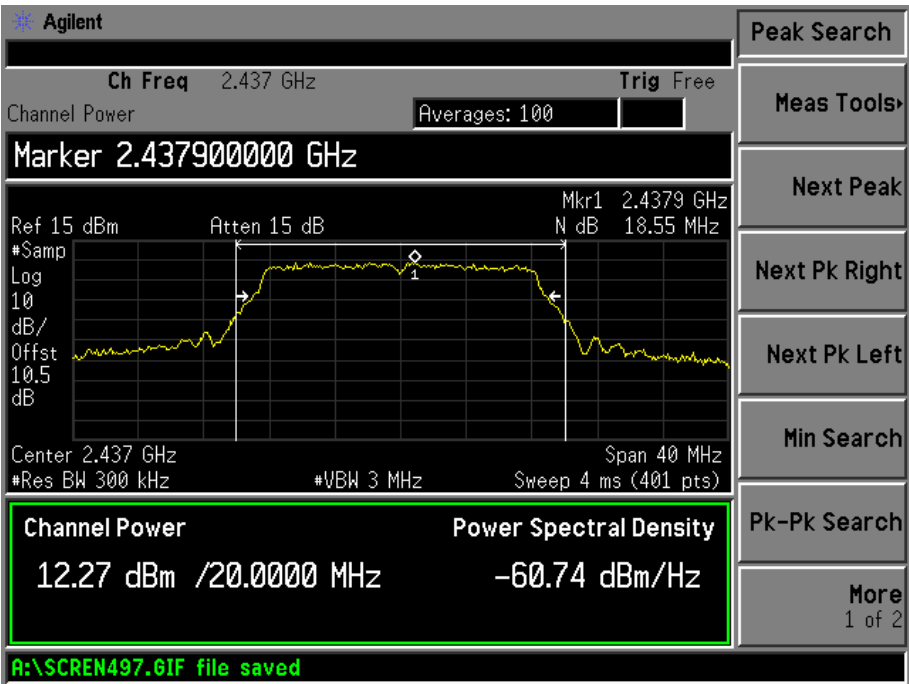


For 802.11n-HT20

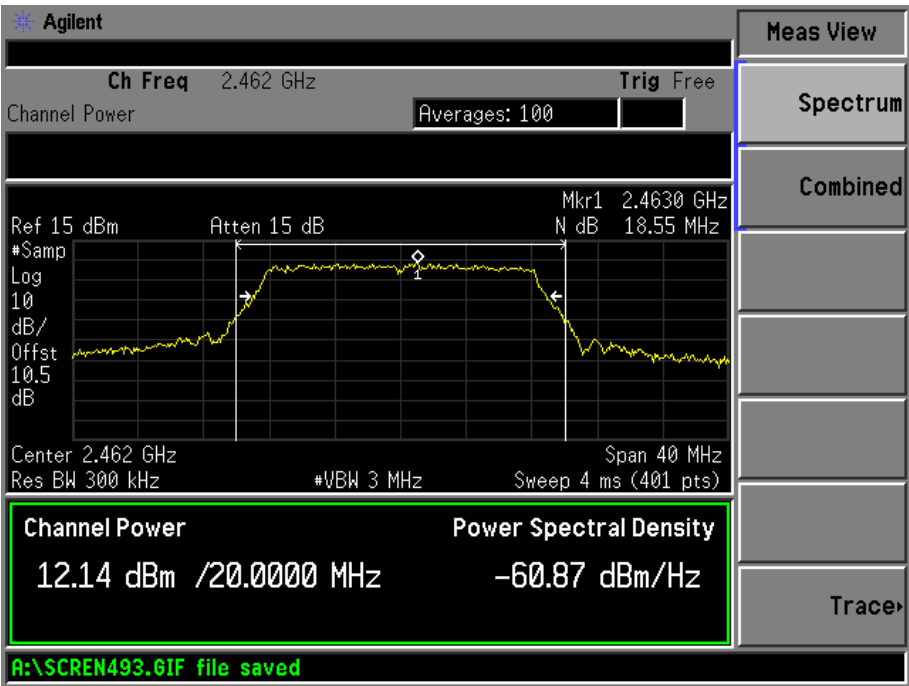
Low Channel:



Middle Channel:

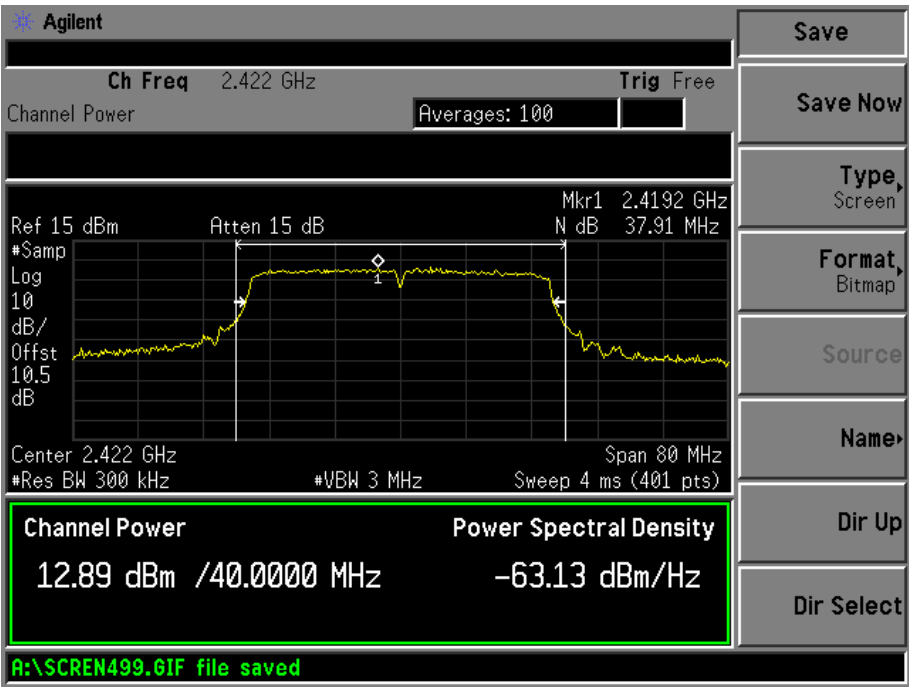


High Channel:

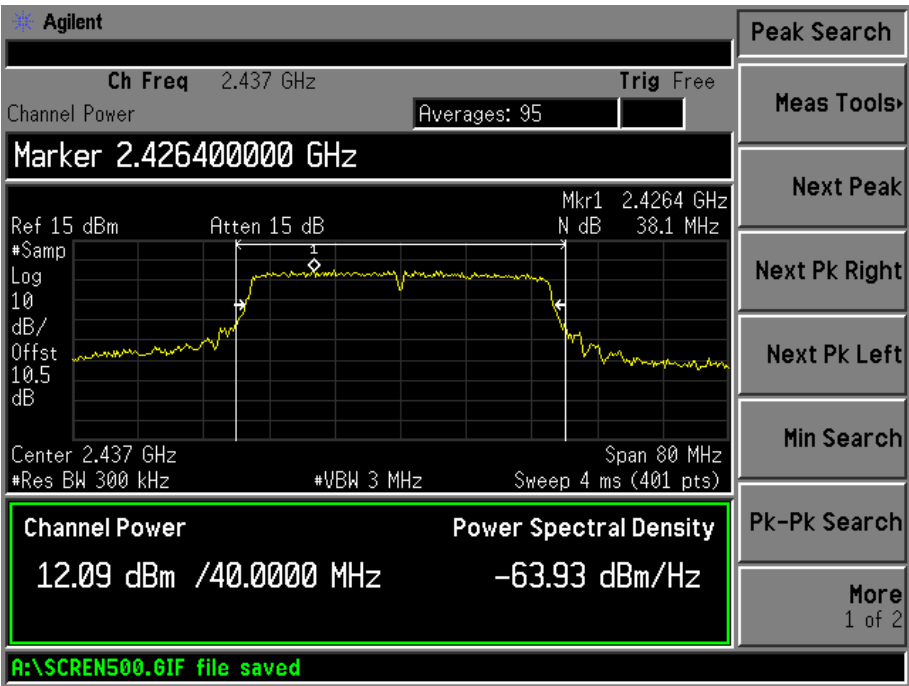


For 802.11n-HT40

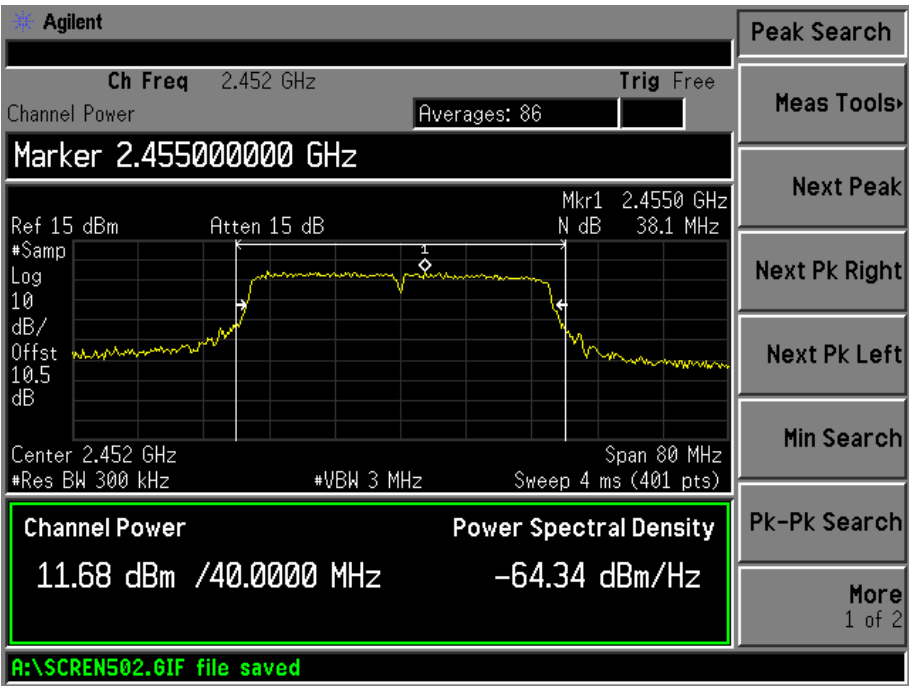
Low Channel:



Middle Channel:



High Channel:





## 8. FIELD STRENGTH OF SPURIOUS EMISSIONS

### 8.1 Measurement Uncertainty

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is  $\pm 5.10$  dB.

### 8.2 Standard Applicable

According to §15.247(c), 15.205 15.209(b) & 15.35 (b), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Section 15.209:

30 - 88 MHz 40 dBuV/m @3M

88 -216 MHz 43.5 dBuV/m @3M

216 -960 MHz 46 dBuV/m @3M

Above 960 MHz 54dBuV/m @3M

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

Emissions that fall in the restricted bands (15.205) must be less than 54dBuV/m otherwise the spurious and harmonics must be attenuated by at least 20dB.

### 8.3 Test Equipment List and Details

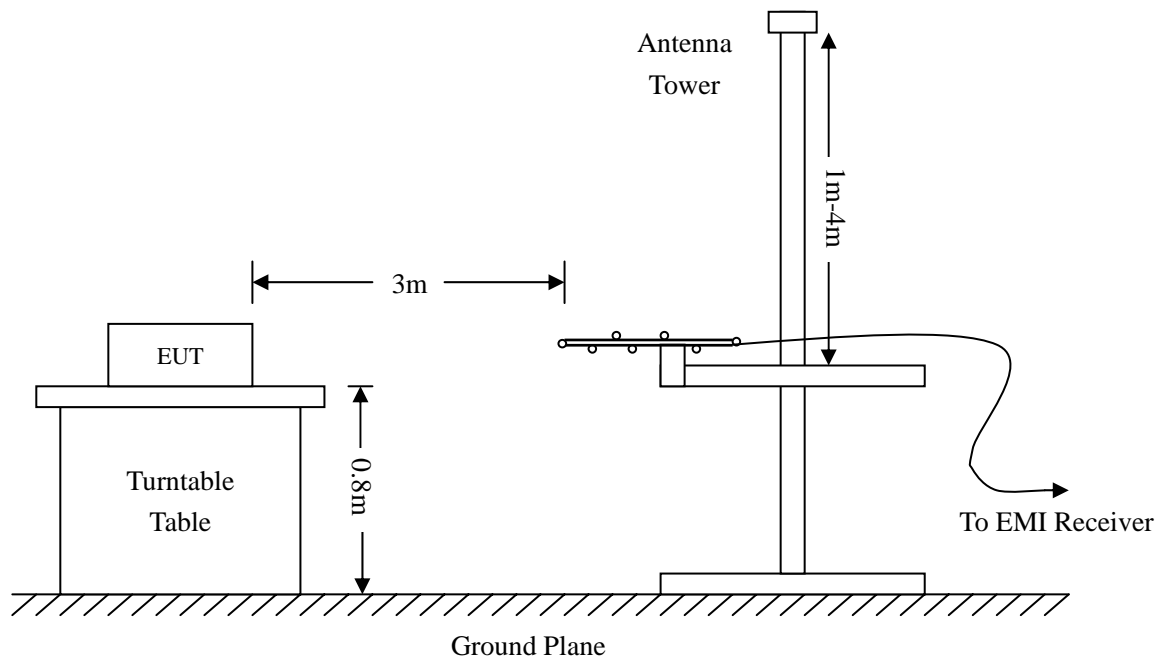
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2010-12-20	2011-12-19
EMI Test Receiver	R&S	ESVB	825471/005	2010-12-20	2011-12-19
Positioning Controller	C&C	CC-C-1F	N/A	2010-12-20	2011-12-19
RF Switch	EM	EMSW18	SW060023	2010-12-20	2011-12-19
Pre-amplifier	Agilent	8447F	3113A06717	2010-12-20	2011-12-19
Pre-amplifier	Compliance Direction	PAP-0118	24002	2010-12-20	2011-12-19
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2011-01-09	2012-01-08
Horn Antenna	ETS	3117	00086197	2011-01-09	2012-01-08

### 8.4 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



## 8.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

## 8.6 Environmental Conditions

Temperature:	22° C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

## 8.7 Summary of Test Results/Plots

According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst margin of:

**-1.02 dBμV at 168.4138MHz in the Horizontal polarization, Transmitting 802.11b Low Channel test mode with, 30 MHz to 25 GHz, 3Meters**

*Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.*

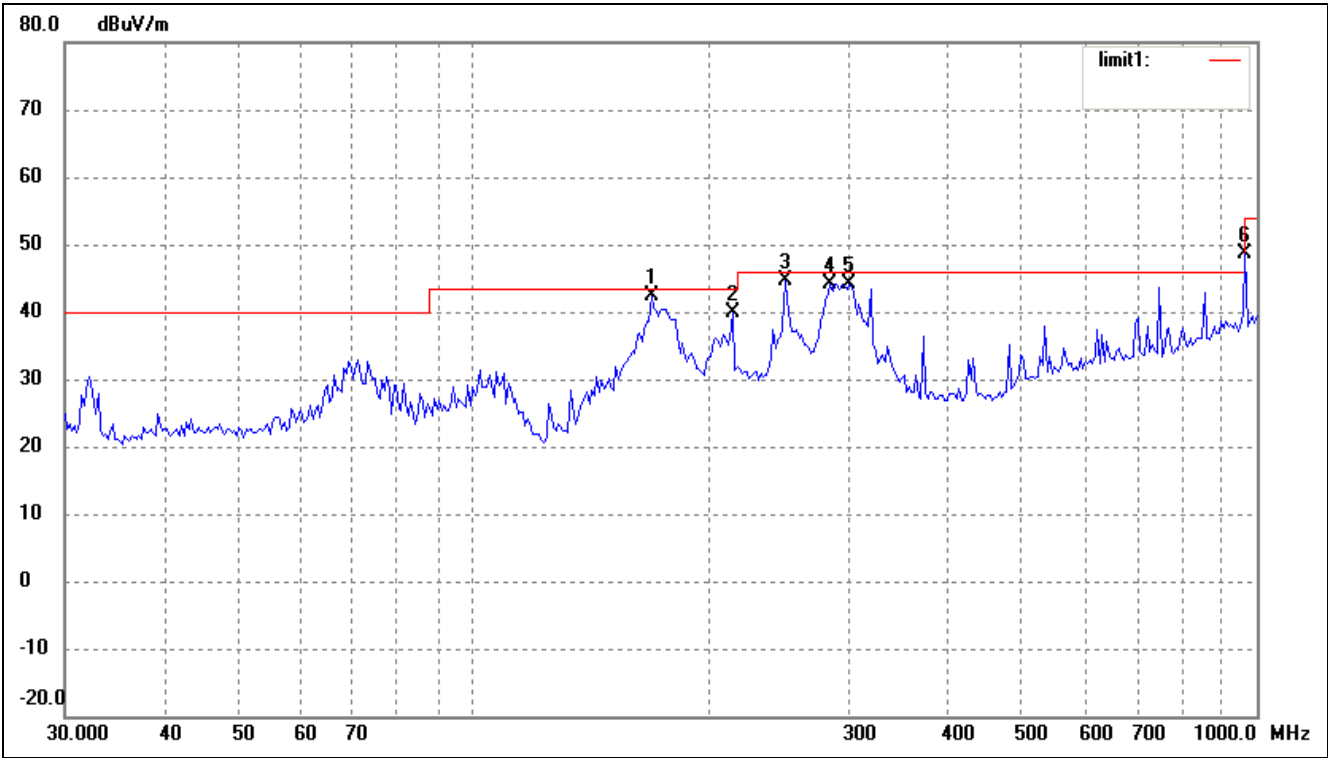
Test Result/Plots:

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11b) Low Channel

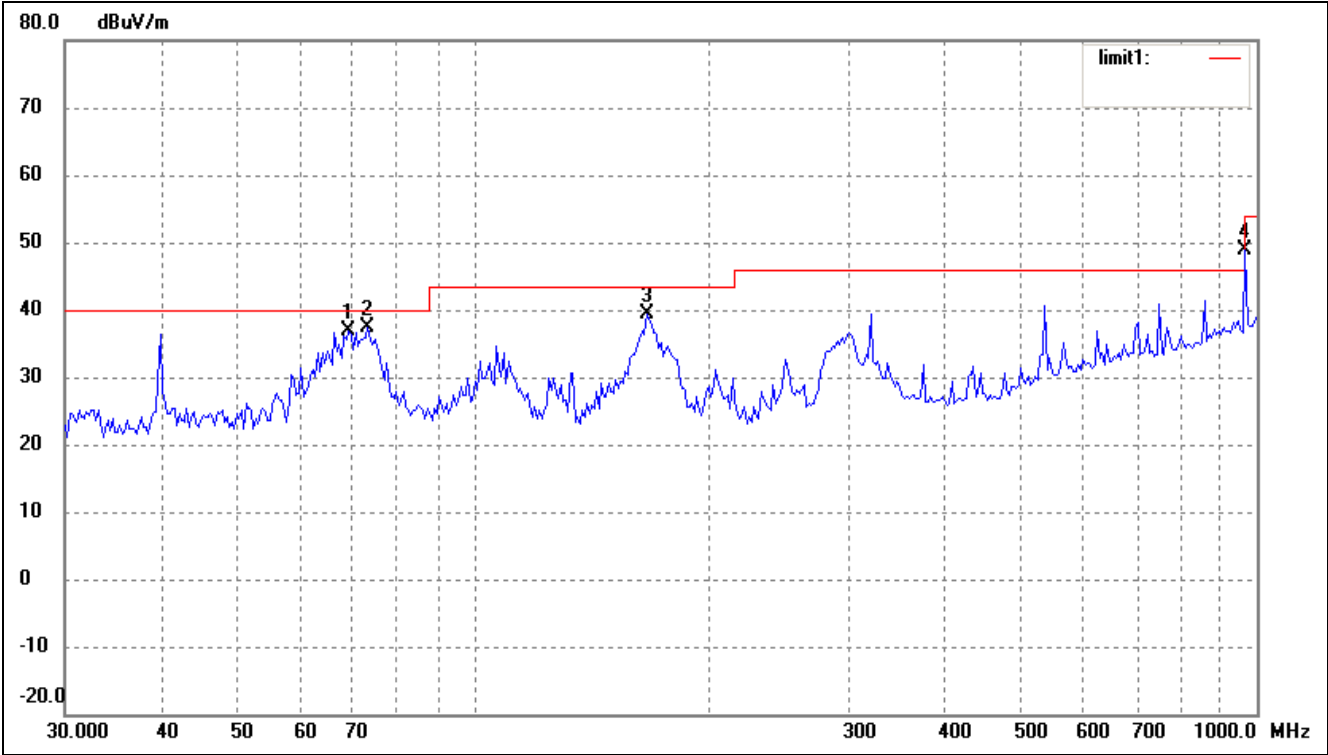
Comment:

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	168.4138	37.64	4.84	42.48	43.50	-1.02	64	100	QP
2	213.7634	32.78	7.06	39.84	43.50	-3.66	157	200	QP
3	249.4250	35.98	8.68	44.66	46.00	-1.34	226	100	QP
4	284.9767	34.65	9.58	44.23	46.00	-1.77	130	100	QP
5	301.4224	34.24	9.78	44.02	46.00	-1.98	100	100	QP
6	965.5421	26.53	22.10	48.63	54.00	-5.37	203	100	QP

Vertical



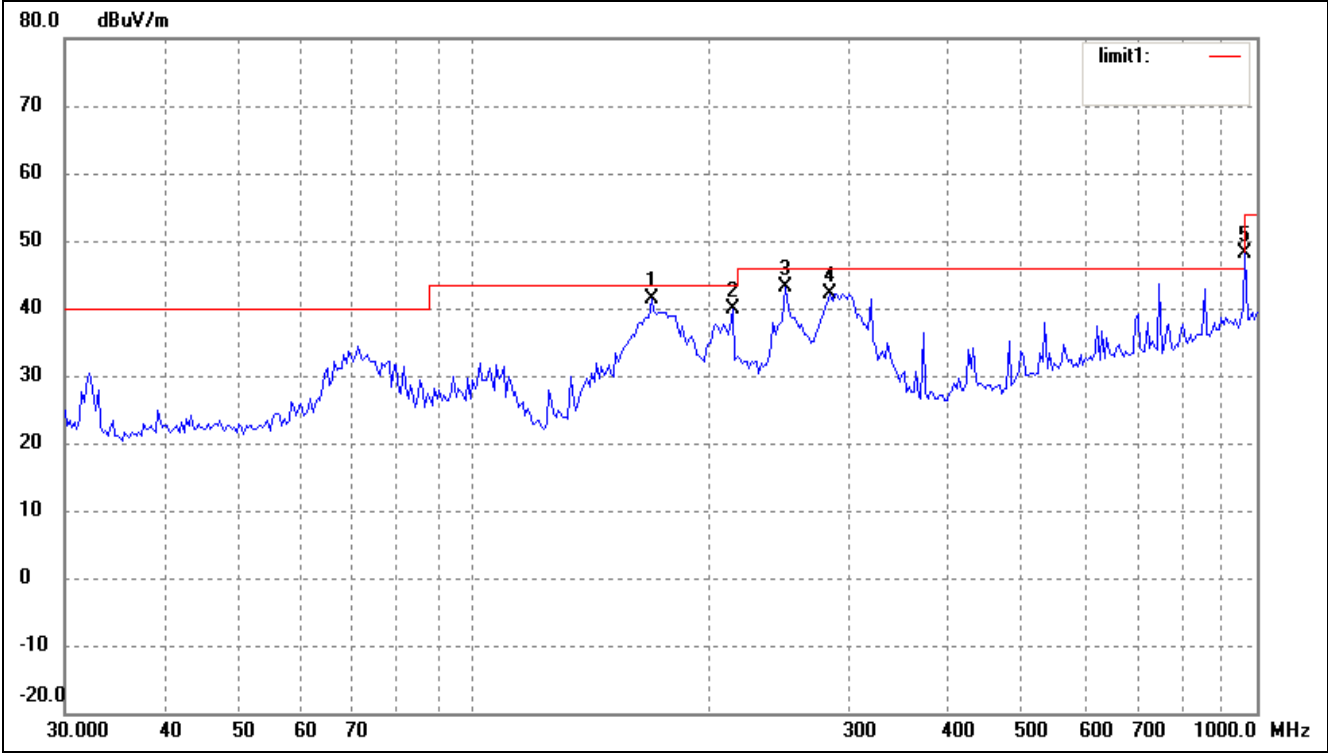
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	69.1141	32.87	3.95	36.82	40.00	-3.18	312	100	QP
2	73.1025	34.14	3.13	37.27	40.00	-2.73	29	100	QP
3	166.0680	34.51	4.75	39.26	43.50	-4.24	167	100	QP
4	965.5421	26.78	22.10	48.88	54.00	-5.12	150	100	QP

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11b) Middle Channel

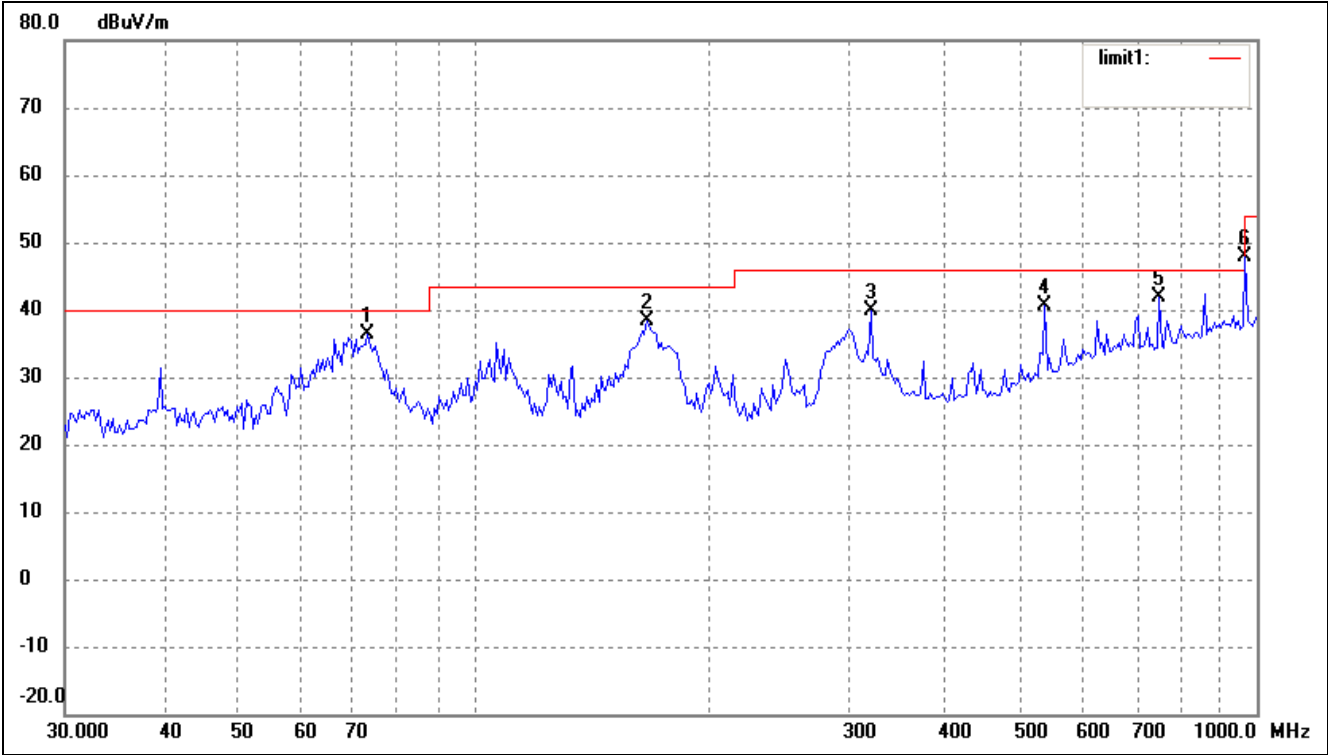
Comment:

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	168.4138	36.64	4.84	41.48	43.50	-2.02	114	100	QP
2	213.7632	32.78	7.06	39.84	43.50	-3.66	83	100	QP
3	249.4250	34.48	8.68	43.16	46.00	-2.84	167	100	QP
4	284.9766	32.65	9.58	42.23	46.00	-3.77	260	100	QP
5	965.5421	26.03	22.10	48.13	54.00	-5.87	120	100	QP

Vertical



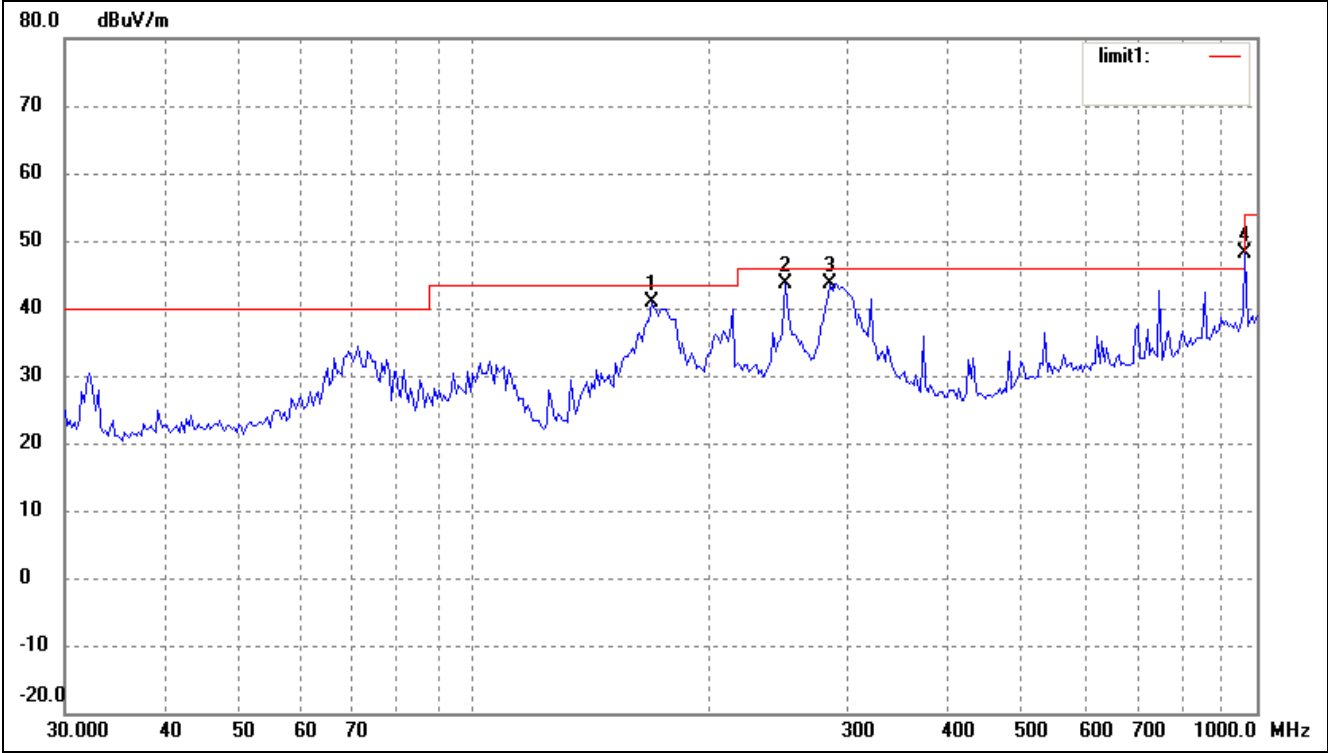
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	73.1025	33.14	3.13	36.27	40.00	-3.73	261	100	QP
2	166.0680	33.51	4.75	38.26	43.50	-5.24	157	100	QP
3	321.0606	29.85	10.01	39.86	46.00	-6.14	228	200	Peak
4	535.7073	25.45	15.21	40.66	46.00	-5.34	210	200	QP
5	750.1082	23.51	18.26	41.77	46.00	-4.23	52	100	QP
6	965.5421	25.78	22.10	47.88	54.00	-6.12	83	100	Peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11b) High Channel

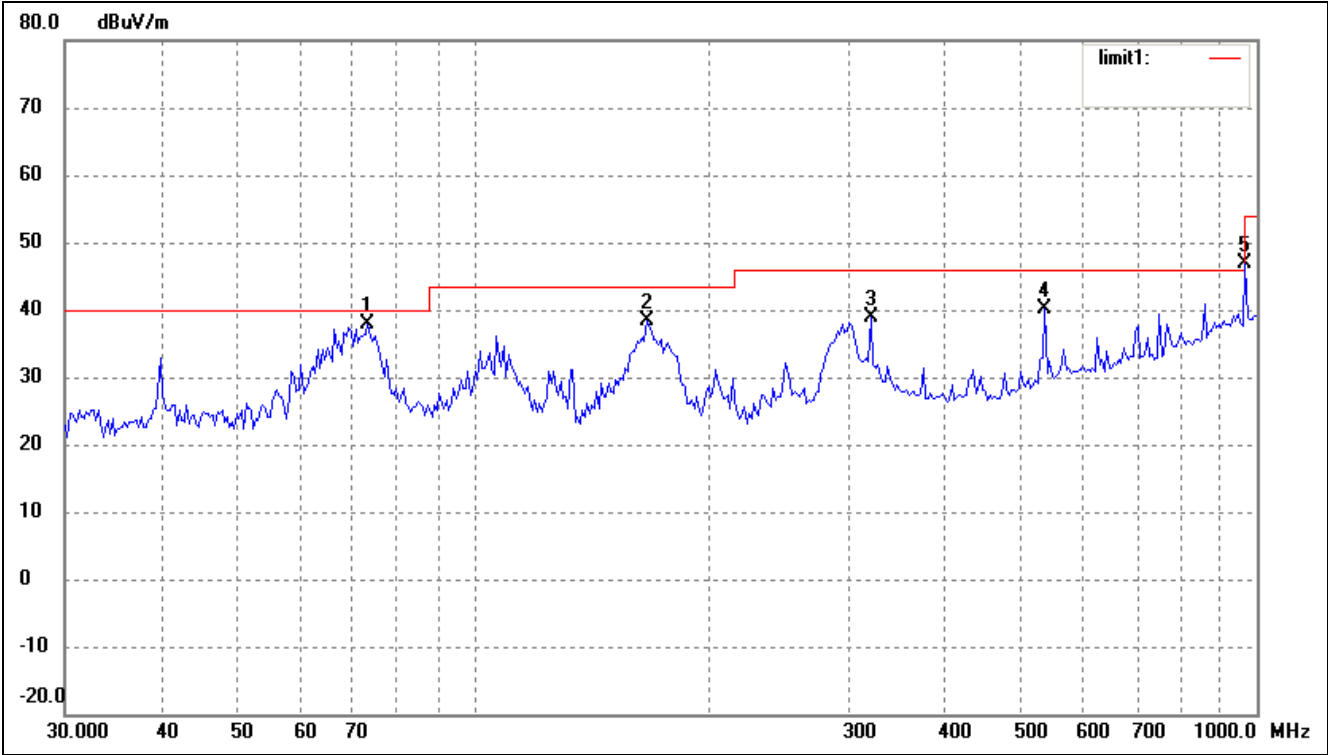
Comment:

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	168.4138	36.14	4.84	40.98	43.50	-2.52	36	200	QP
2	249.4250	34.98	8.68	43.66	46.00	-2.34	221	200	QP
3	284.9766	34.15	9.58	43.73	46.00	-2.27	136	200	QP
4	965.5421	26.03	22.10	48.13	54.00	-5.87	58	200	QP

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	73.1025	34.64	3.13	37.77	40.00	-2.23	165	200	QP
2	166.0680	33.51	4.75	38.26	43.50	-5.24	225	100	QP
3	321.0606	28.85	10.01	38.86	46.00	-7.14	186	100	Peak
4	535.7073	24.95	15.21	40.16	46.00	-5.84	231	100	QP
5	965.5421	24.78	22.10	46.88	54.00	-7.12	100	200	Peak

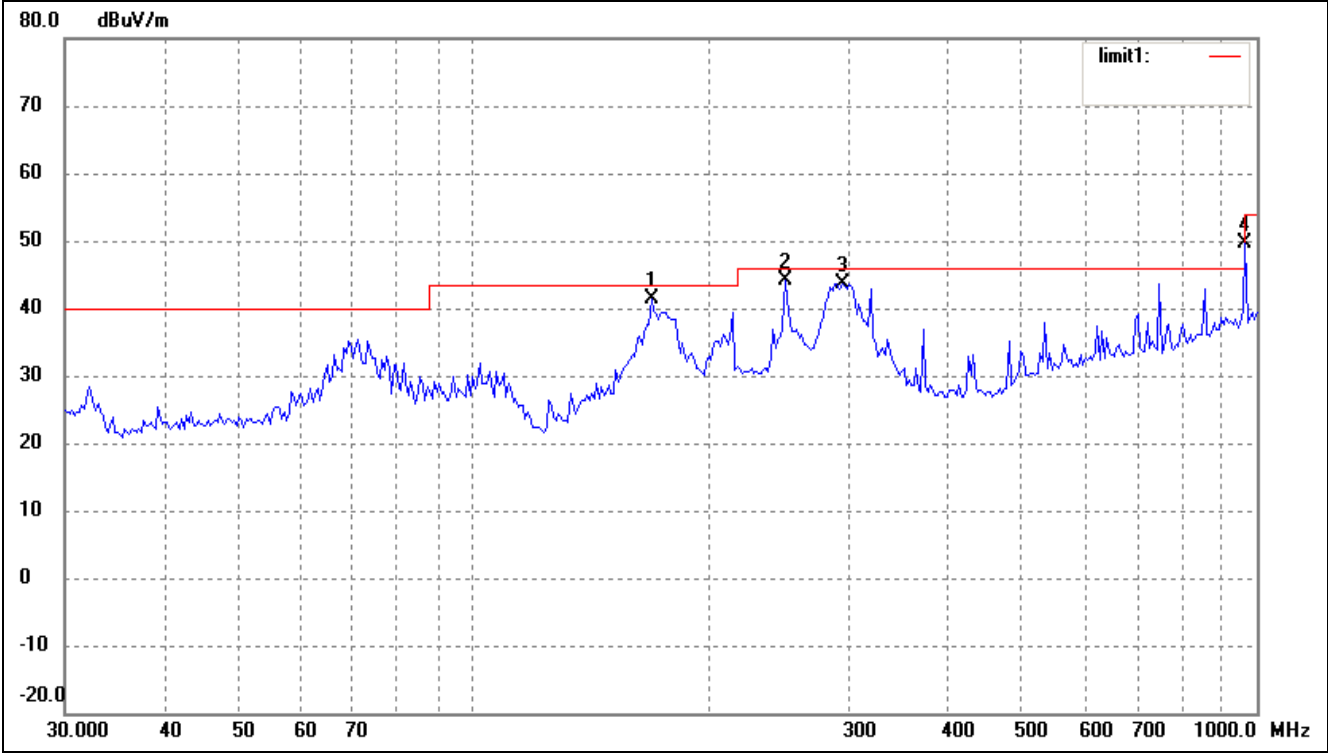


Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11g) Low Channel

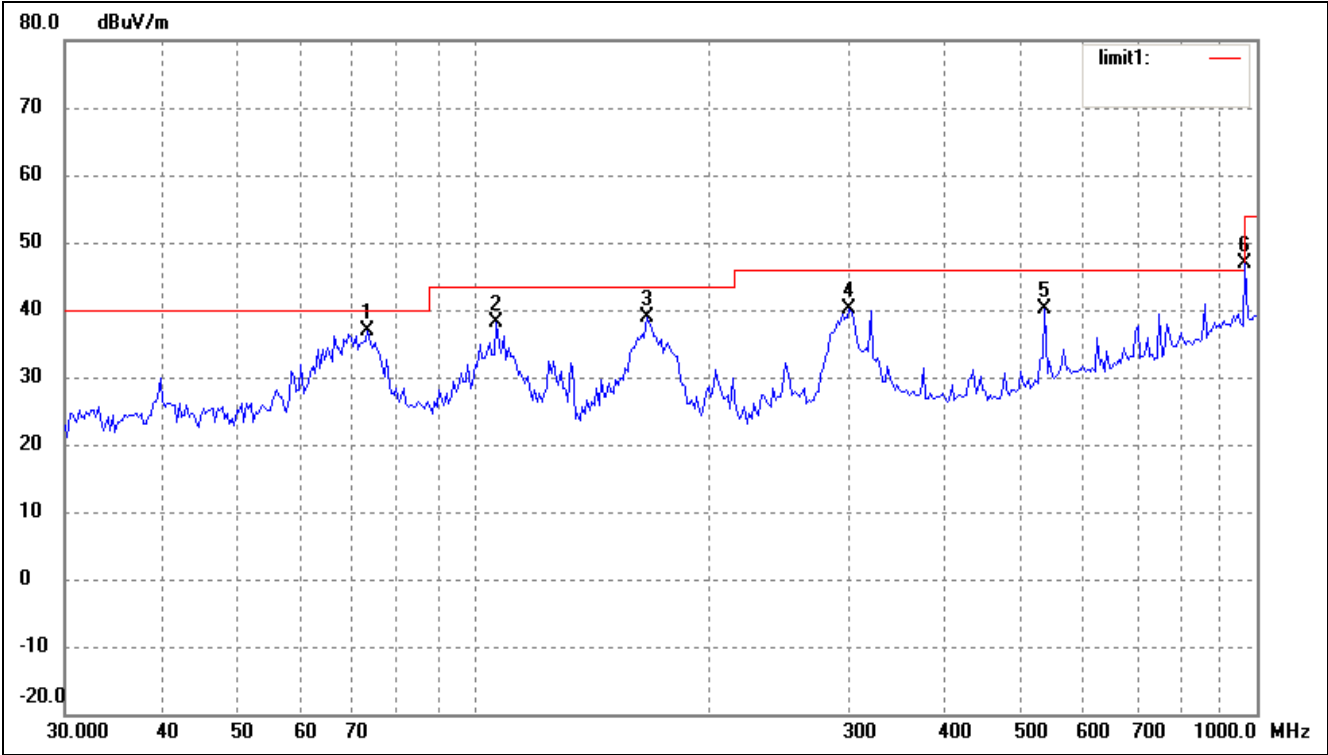
Comment:

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (° )	Height (cm)	Remark
1	168.4138	36.64	4.84	41.48	43.50	-2.02	241	100	QP
2	249.4250	35.48	8.68	44.16	46.00	-1.84	167	100	QP
3	295.1469	34.01	9.71	43.72	46.00	-2.28	22	200	QP
4	965.5421	27.53	22.10	49.63	54.00	-4.37	30	100	QP

Vertical



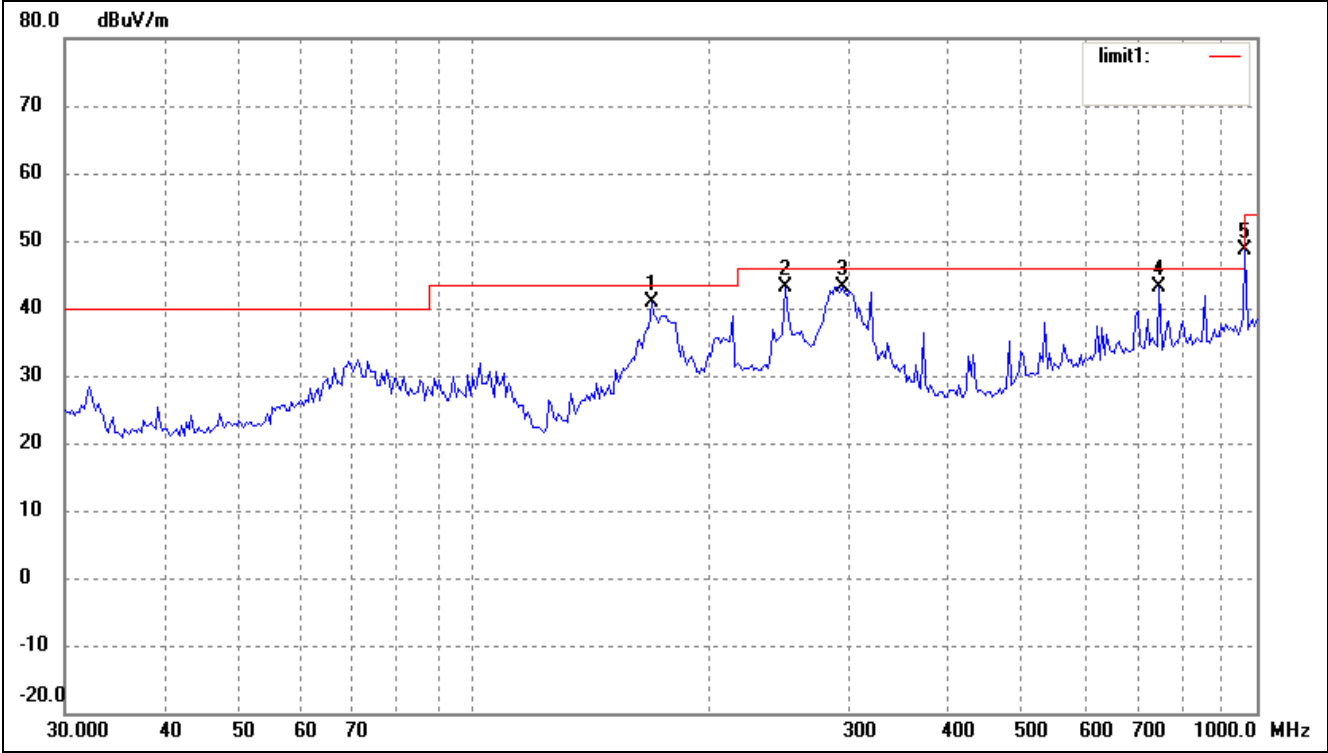
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	73.1025	33.64	3.13	36.77	40.00	-3.23	264	100	QP
2	106.7587	30.22	7.86	38.08	43.50	-5.42	132	100	QP
3	166.0680	34.01	4.75	38.76	43.50	-4.74	200	200	QP
4	301.4223	30.30	9.78	40.08	46.00	-5.92	360	200	QP
5	535.7073	24.95	15.21	40.16	46.00	-5.84	221	200	QP
6	965.5421	24.78	22.10	46.88	54.00	-7.12	178	200	Peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11g) Middle Channel

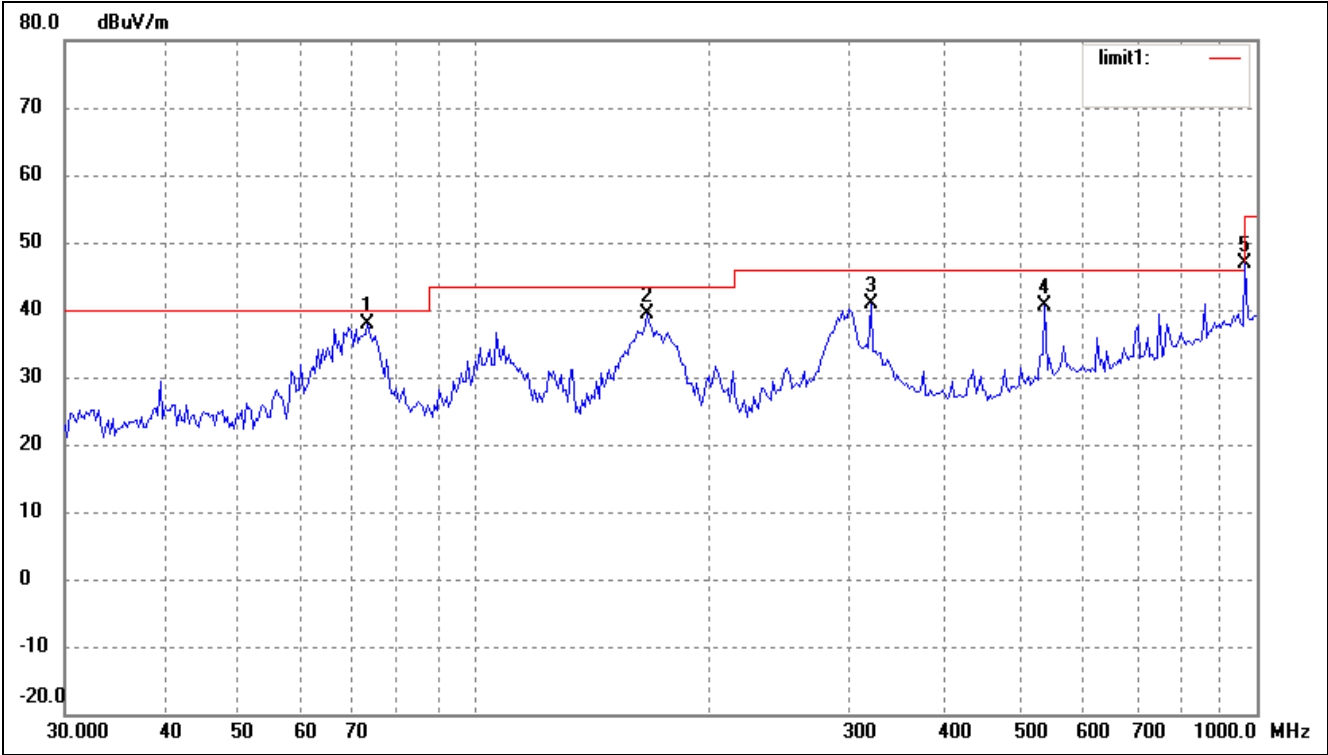
Comment:

Horizontal



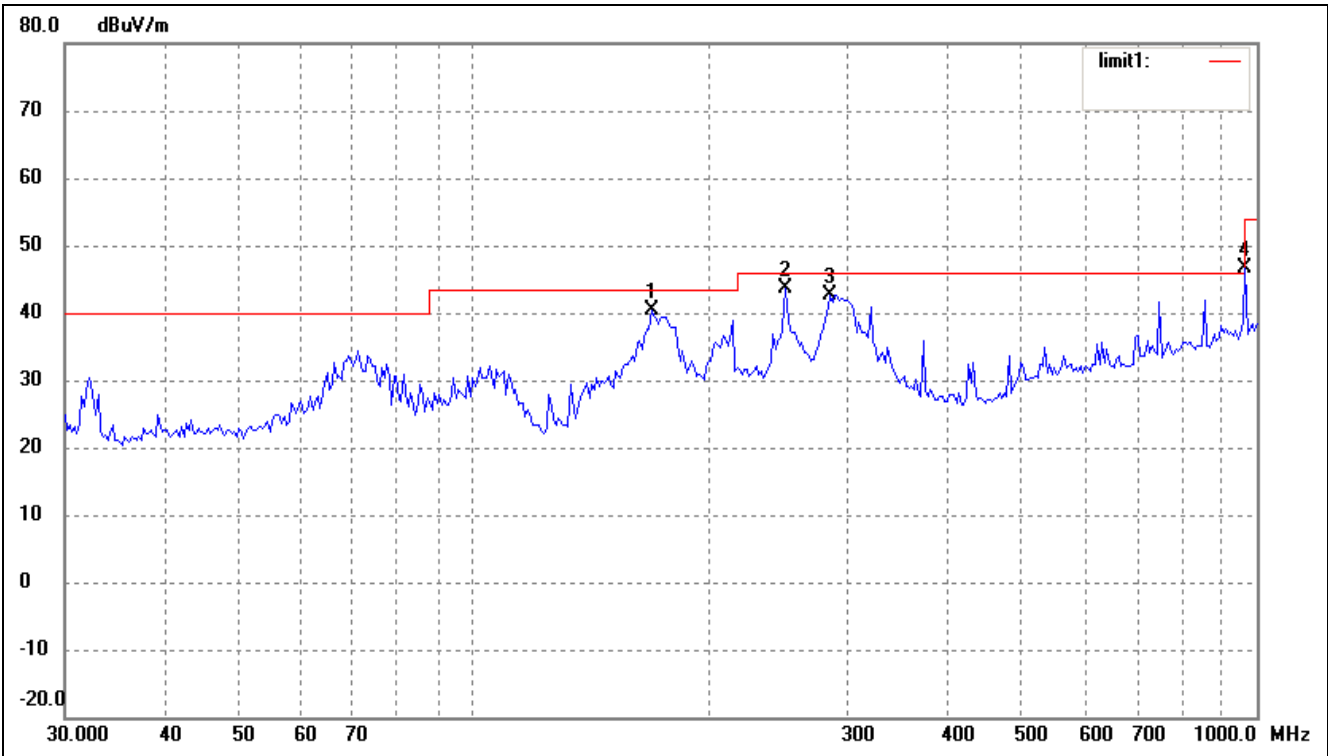
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	168.4138	36.14	4.84	40.98	43.50	-2.52	336	100	QP
2	249.4250	34.48	8.68	43.16	46.00	-2.84	168	200	QP
3	295.1469	33.51	9.71	43.22	46.00	-2.78	45	200	QP
4	750.1082	24.92	18.26	43.18	46.00	-2.82	129	100	QP
5	965.5421	26.53	22.10	48.63	54.00	-5.37	320	200	QP

Vertical



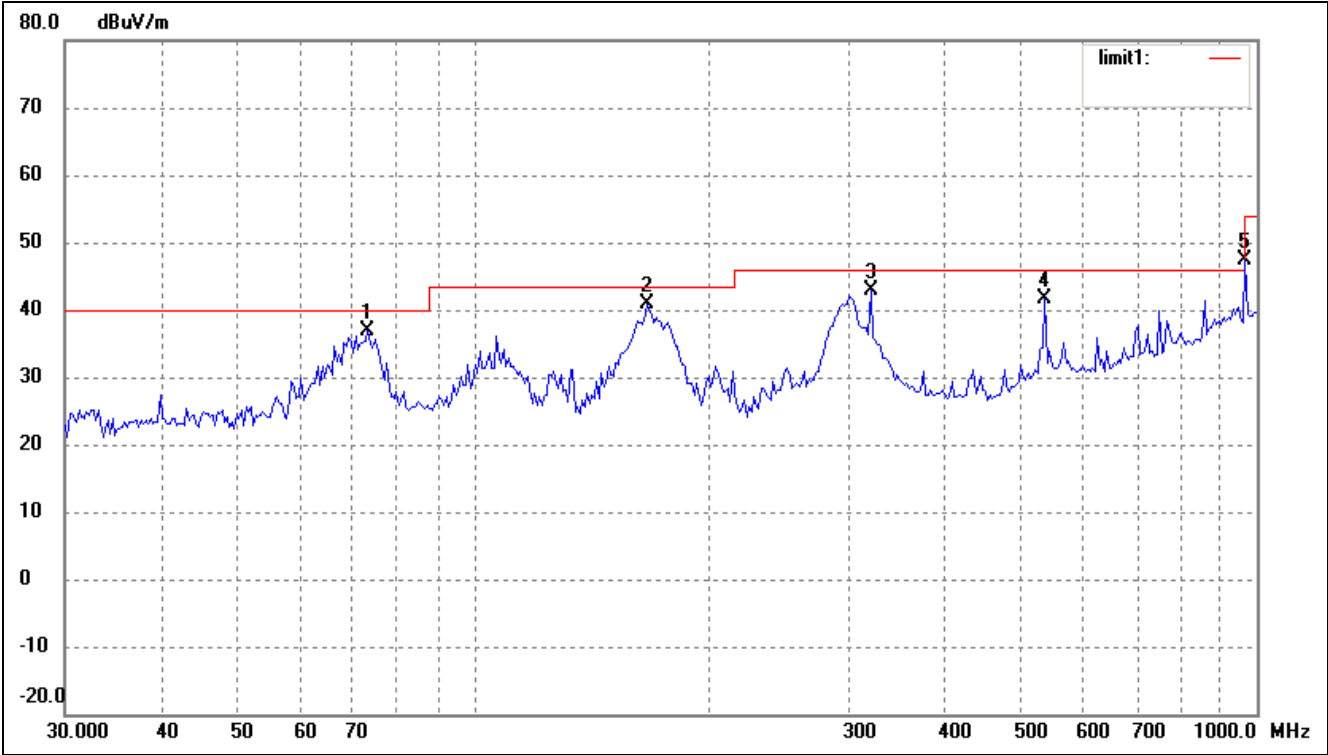
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	73.1025	34.64	3.13	37.77	40.00	-2.23	62	100	QP
2	166.0680	34.51	4.75	39.26	43.50	-4.24	224	200	QP
3	321.0606	30.85	10.01	40.86	46.00	-5.14	197	200	QP
4	535.7073	25.45	15.21	40.66	46.00	-5.34	350	200	QP
5	965.5421	24.78	22.10	46.88	54.00	-7.12	120	100	QP

Spurious Emission From 30 MHz to 1 GHz  
Test mode: Transmitting (802.11g) High Channel  
Comment:  
Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	168.4138	35.65	4.83	40.48	43.50	-3.02	62	100	QP
2	249.4250	34.98	8.68	43.66	46.00	-2.34	185	100	QP
3	284.9766	33.15	9.58	42.73	46.00	-3.27	254	100	QP
4	965.5421	24.53	22.10	46.63	54.00	-7.37	100	100	QP

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	73.1025	33.64	3.13	36.77	40.00	-3.23	246	100	QP
2	166.0680	36.01	4.75	40.76	43.50	-2.74	296	100	QP
3	321.0606	32.85	10.01	42.86	46.00	-3.14	155	200	QP
4	535.7073	26.45	15.21	41.66	46.00	-4.34	220	200	QP
5	965.5421	25.28	22.10	47.38	54.00	-6.62	360	200	QP

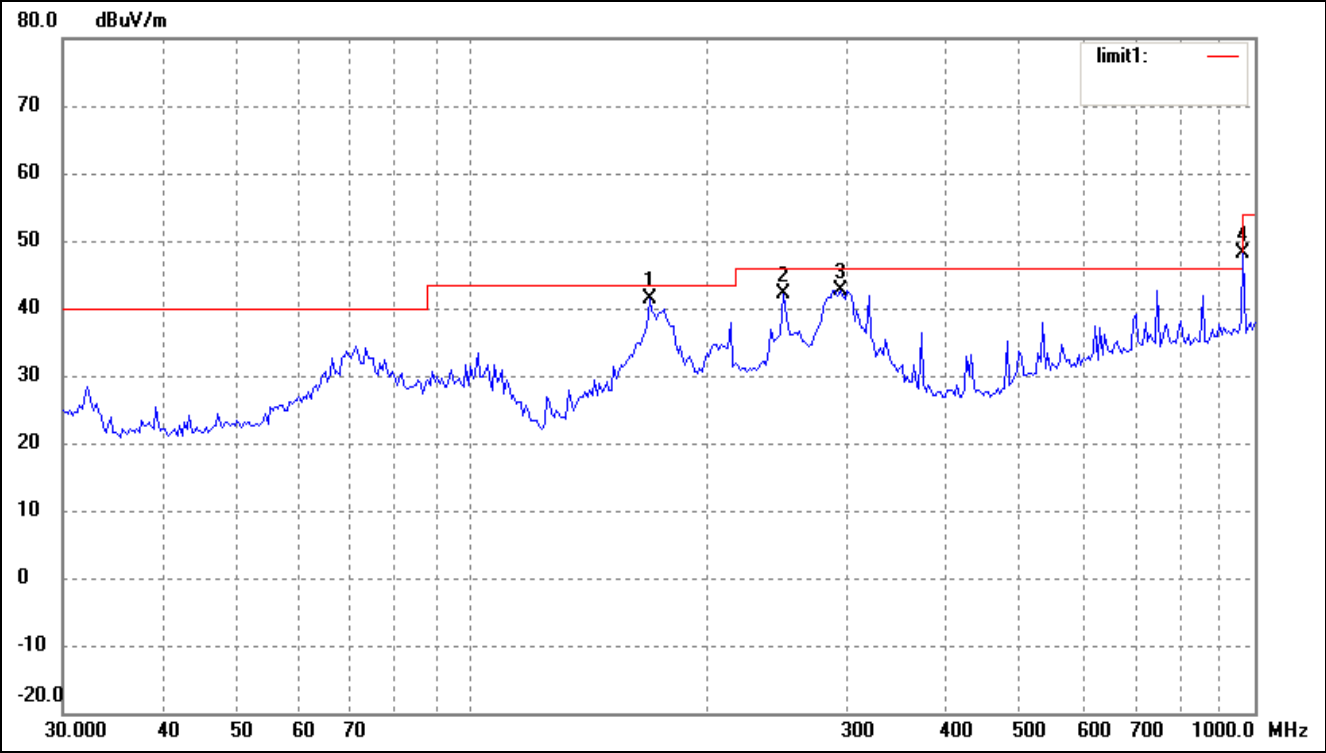
Test Result/Plots:

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT20) Low Channel

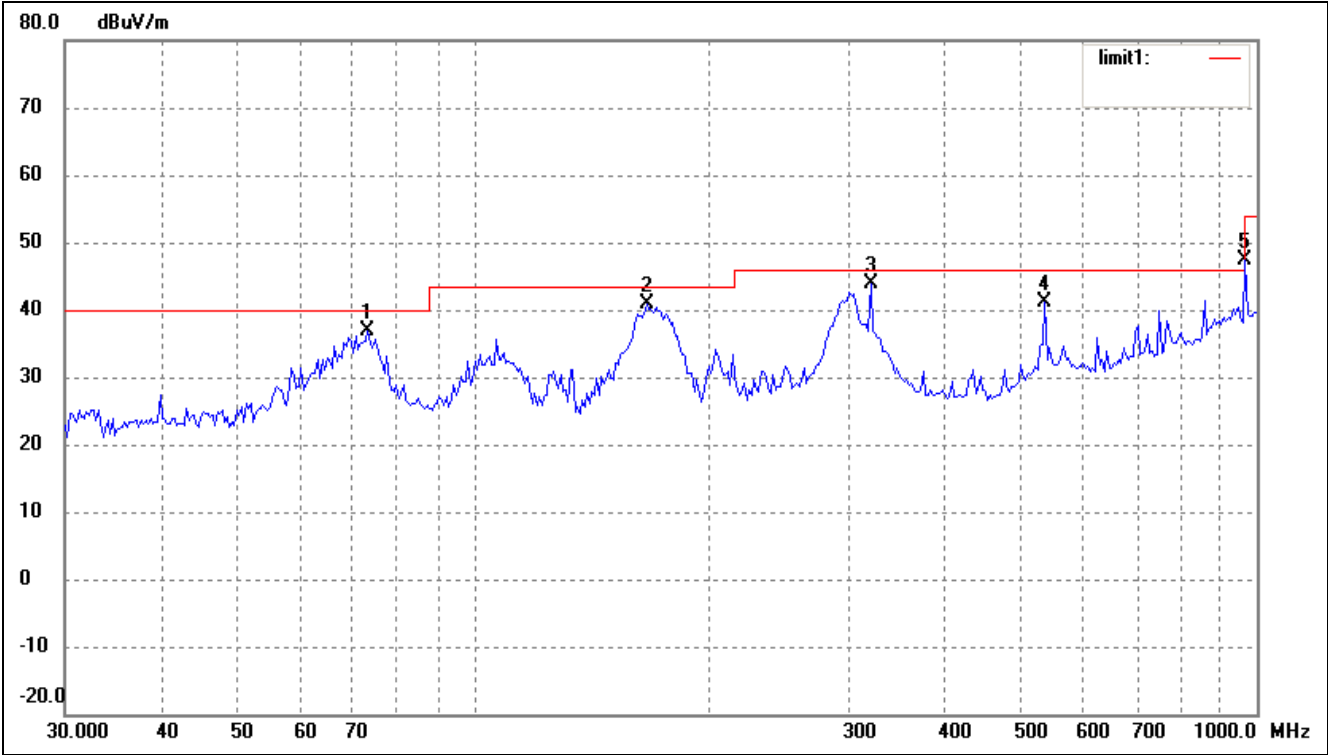
Comment:

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	168.4138	36.65	4.83	41.48	43.50	-2.02	360	200	QP
2	249.4250	33.48	8.68	42.16	46.00	-3.84	252	200	QP
3	295.1469	33.01	9.71	42.72	46.00	-3.28	187	200	QP
4	965.5421	26.03	22.10	48.13	54.00	-5.87	64	200	QP

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	73.1025	33.64	3.13	36.77	40.00	-3.23	131	100	QP
2	166.0680	36.01	4.75	40.76	43.50	-2.74	227	200	QP
3	321.0606	33.85	10.01	43.86	46.00	-2.14	160	100	QP
4	535.7073	25.95	15.21	41.16	46.00	-4.84	220	200	QP
5	965.5421	25.28	22.10	47.38	54.00	-6.62	63	200	QP

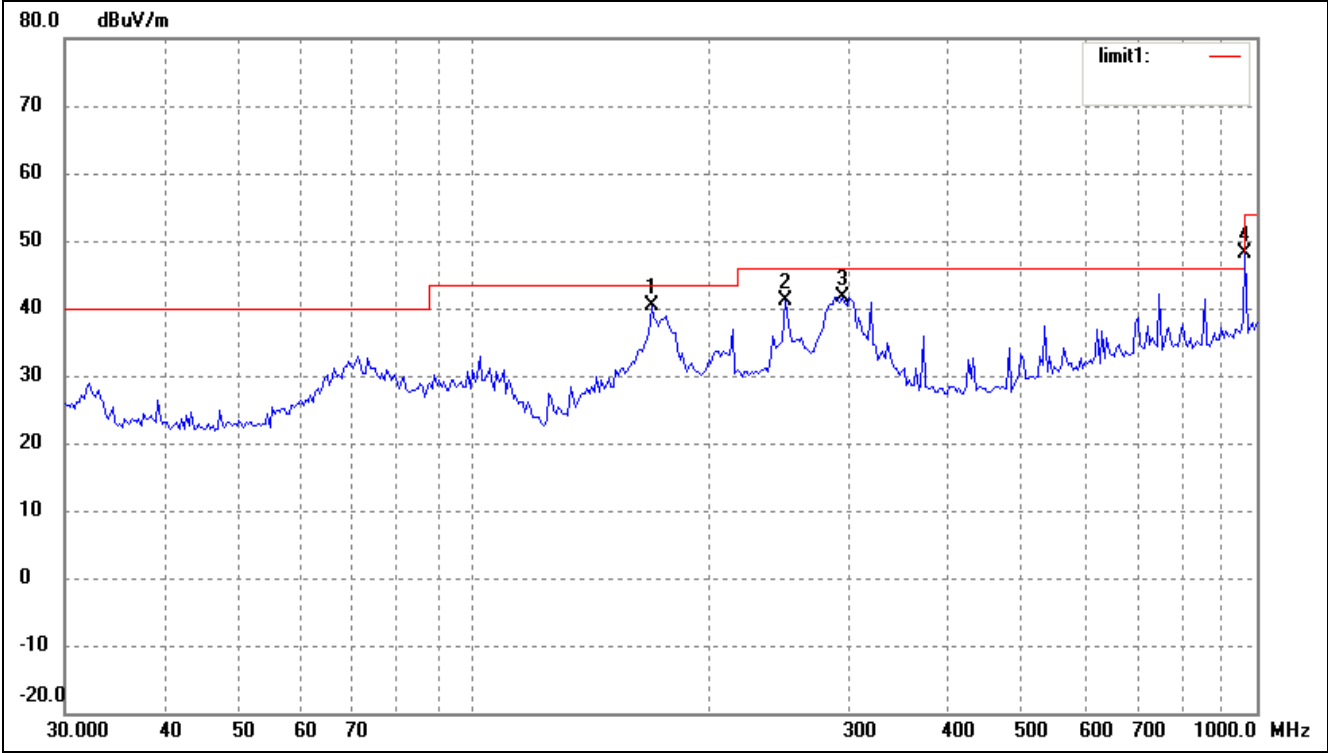


Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n- HT20) Middle Channel

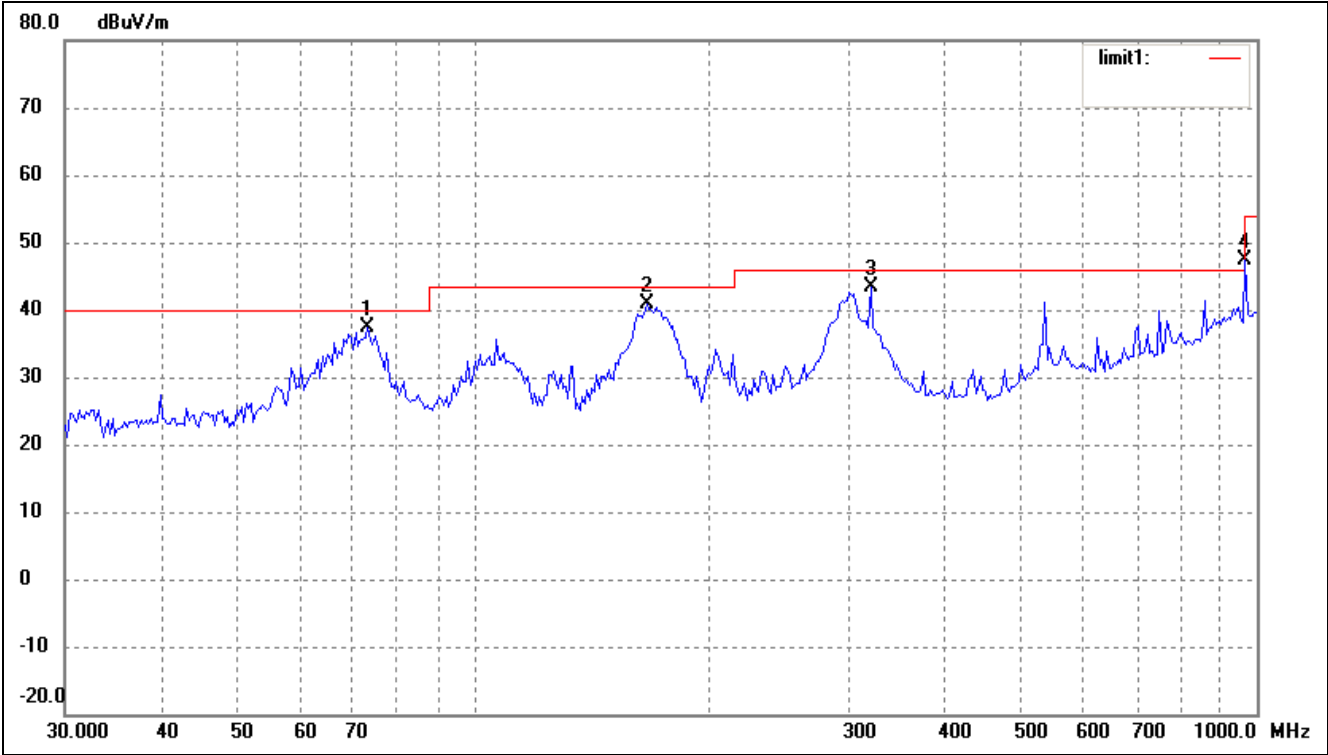
Comment:

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	168.4138	35.65	4.83	40.48	43.50	-3.02	234	100	QP
2	249.4250	32.48	8.68	41.16	46.00	-4.84	156	100	QP
3	295.1469	32.01	9.71	41.72	46.00	-4.28	207	100	QP
4	965.5421	26.03	22.10	48.13	54.00	-5.87	144	200	QP

Vertical



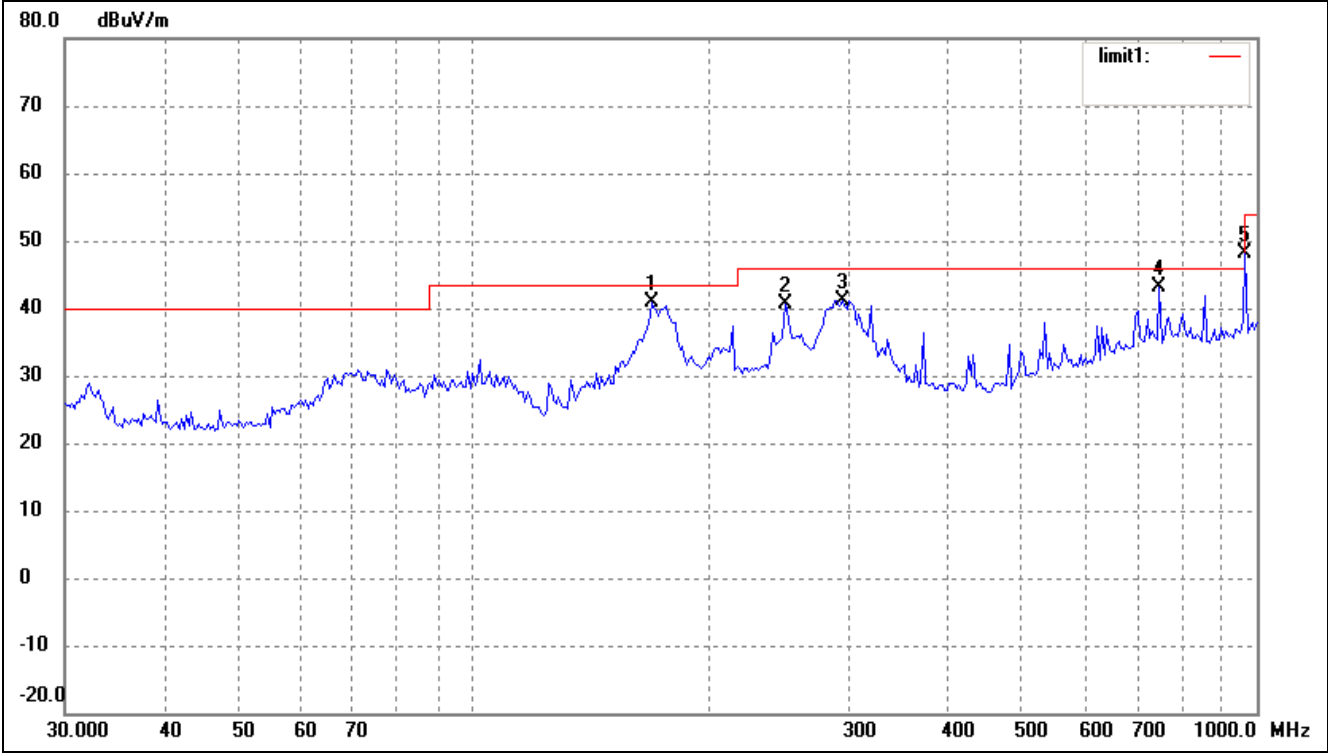
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	73.1025	34.14	3.13	37.27	40.00	-2.73	332	100	QP
2	166.0680	36.01	4.75	40.76	43.50	-2.74	102	200	QP
3	321.0606	33.35	10.01	43.36	46.00	-2.64	52	100	QP
4	965.5421	25.28	22.10	47.38	54.00	-6.62	267	100	QP

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n- HT20) High Channel

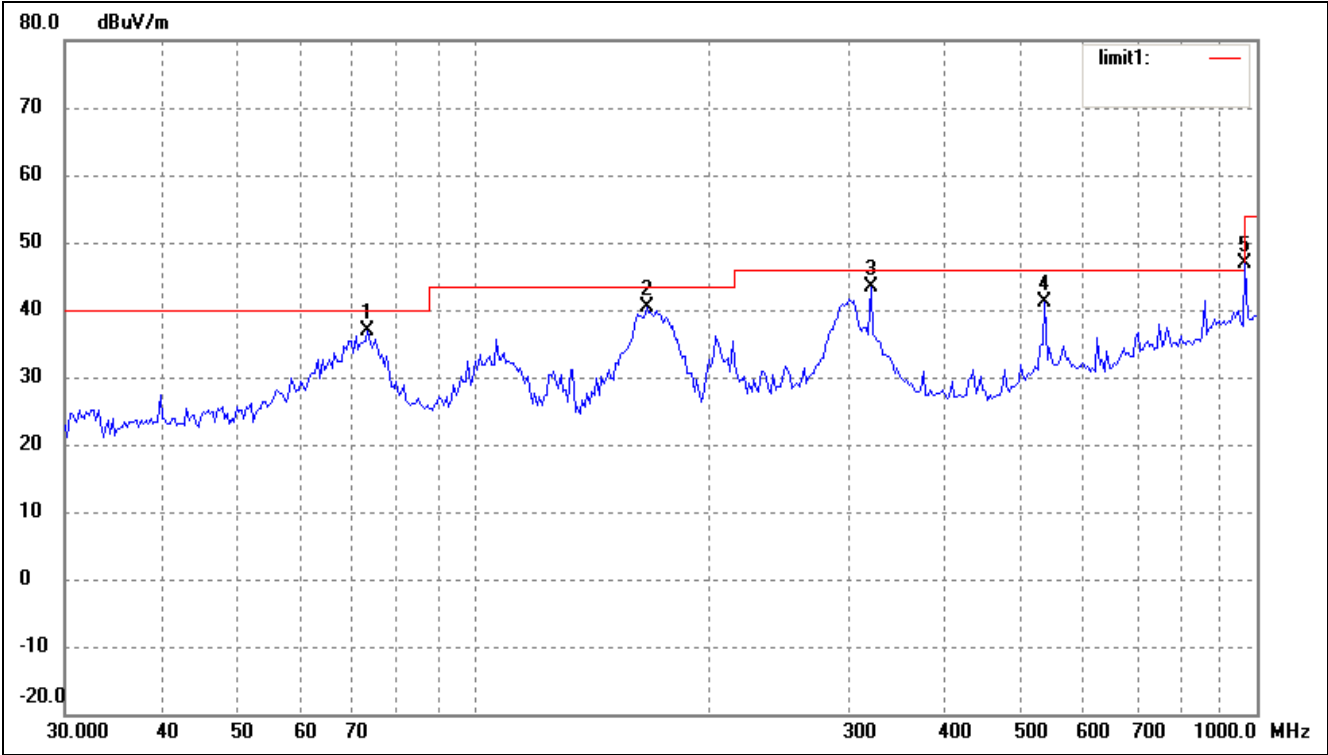
Comment:

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	168.4138	36.15	4.83	40.98	43.50	-2.52	360	100	QP
2	249.4250	31.98	8.68	40.66	46.00	-5.34	278	100	QP
3	295.1469	31.51	9.71	41.22	46.00	-4.78	61	200	QP
4	750.1082	24.92	18.26	43.18	46.00	-2.82	164	100	QP
5	965.5421	26.03	22.10	48.13	54.00	-5.87	112	100	QP

Vertical



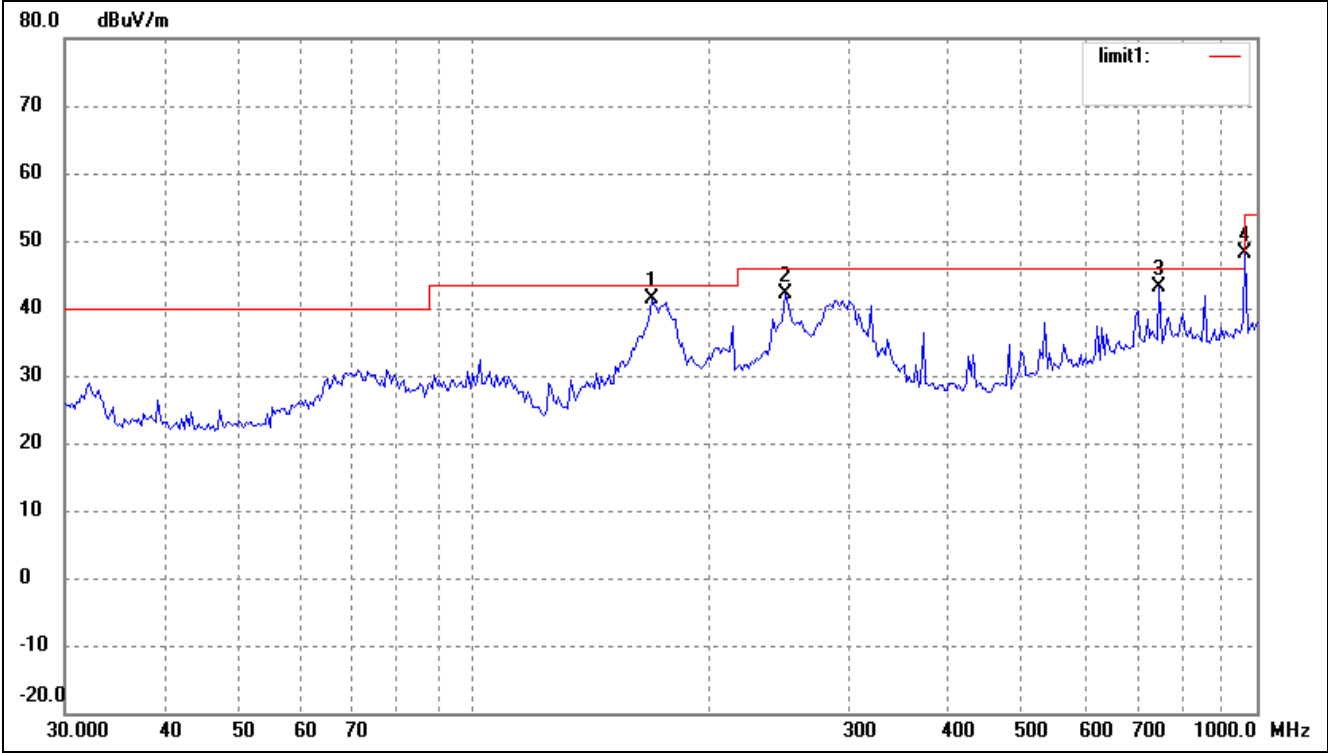
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	73.1025	33.64	3.13	36.77	40.00	-3.23	137	100	QP
2	166.0680	35.51	4.75	40.26	43.50	-3.24	227	200	QP
3	321.0606	33.35	10.01	43.36	46.00	-2.64	154	200	QP
4	535.7073	25.95	15.21	41.16	46.00	-4.84	62	200	QP
5	965.5421	24.78	22.10	46.88	54.00	-7.12	20	200	QP

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n- HT40) Low Channel

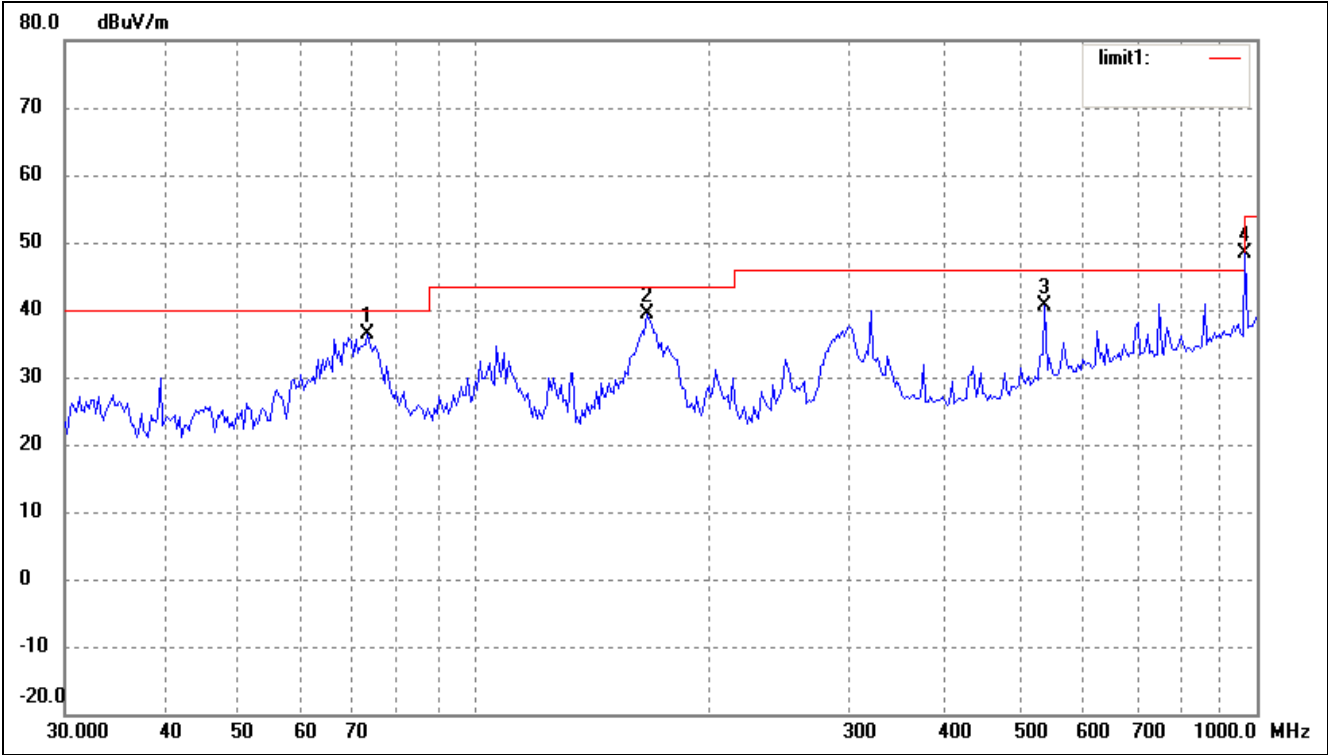
Comment:

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (° )	Height (cm)	Remark
1	168.4138	36.65	4.83	41.48	43.50	-2.02	244	100	QP
2	249.4250	33.48	8.68	42.16	46.00	-3.84	151	100	QP
3	750.1082	24.92	18.26	43.18	46.00	-2.82	130	200	QP
4	965.5421	26.03	22.10	48.13	54.00	-5.87	220	100	QP

Vertical



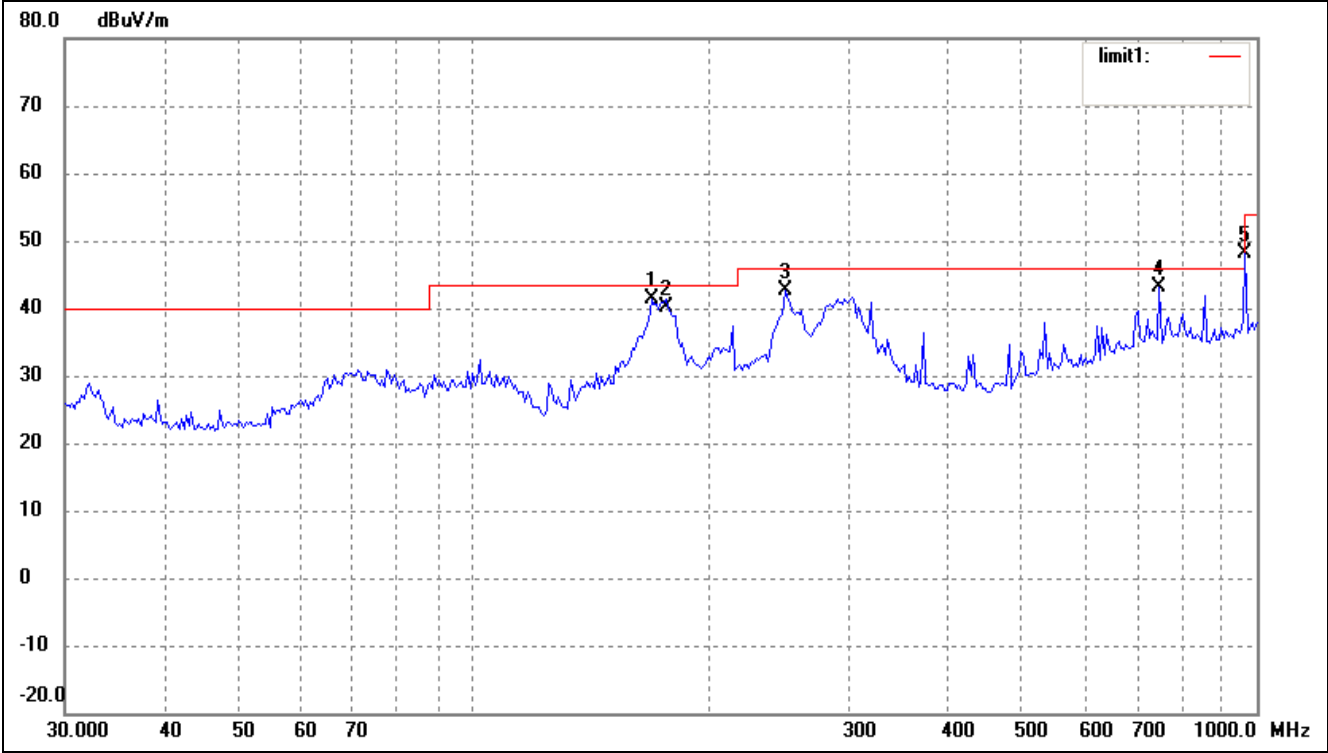
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	73.1025	33.14	3.13	36.27	40.00	-3.73	338	100	QP
2	166.0680	34.51	4.75	39.26	43.50	-4.24	254	200	QP
3	535.7073	25.45	15.21	40.66	46.00	-5.34	102	100	QP
4	965.5421	26.28	22.10	48.38	54.00	-5.62	110	100	QP

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n- HT40) Middle Channel

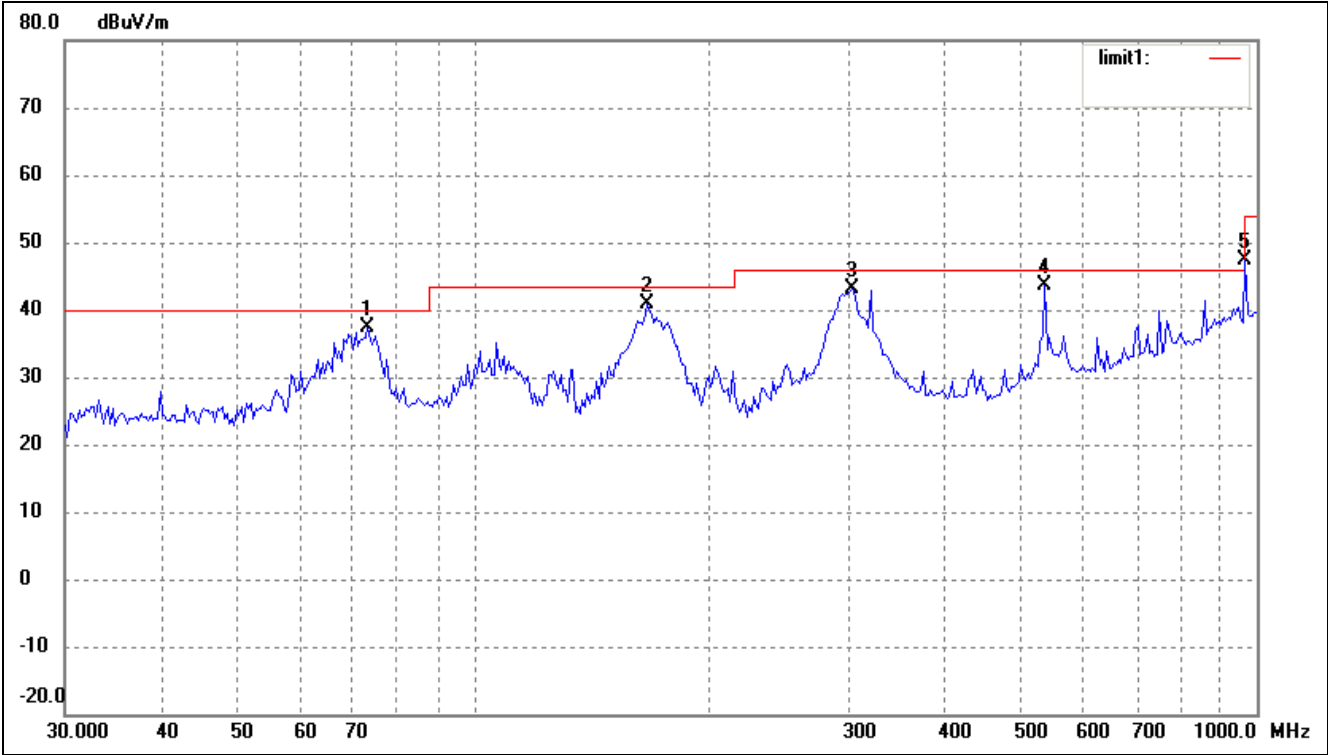
Comment:

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	168.4138	36.65	4.83	41.48	43.50	-2.02	337	100	QP
2	176.8874	34.76	5.41	40.17	43.50	-3.33	254	100	QP
3	249.4250	33.98	8.68	42.66	46.00	-3.34	134	200	QP
4	750.1082	24.92	18.26	43.18	46.00	-2.82	120	100	QP
5	965.5421	26.03	22.10	48.13	54.00	-5.87	283	100	QP

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	73.1025	34.14	3.13	37.27	40.00	-2.73	120	100	QP
2	166.0680	36.01	4.75	40.76	43.50	-2.74	110	100	QP
3	303.5437	33.44	9.81	43.25	46.00	-2.75	134	200	QP
4	535.7073	28.45	15.21	43.66	46.00	-2.34	157	100	QP
5	965.5421	25.28	22.10	47.38	54.00	-6.62	226	100	QP

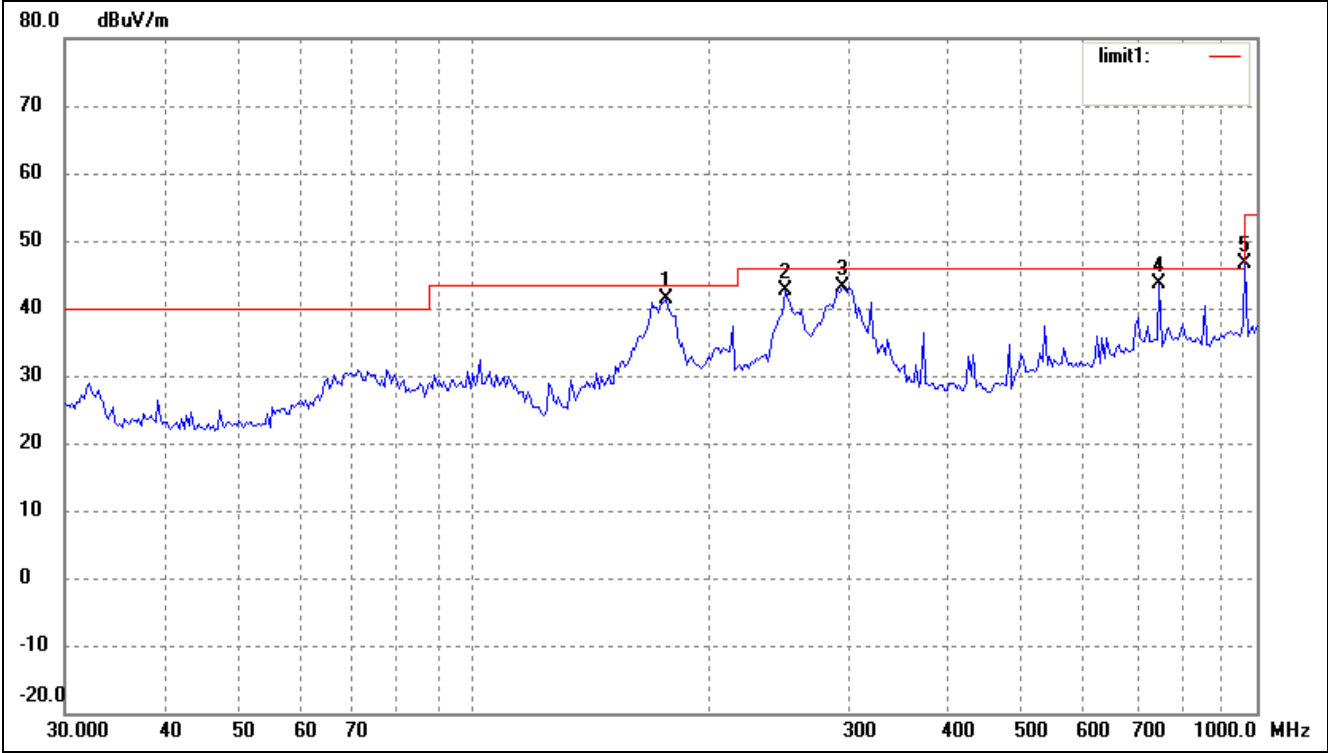


Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11 n- HT40) High Channel

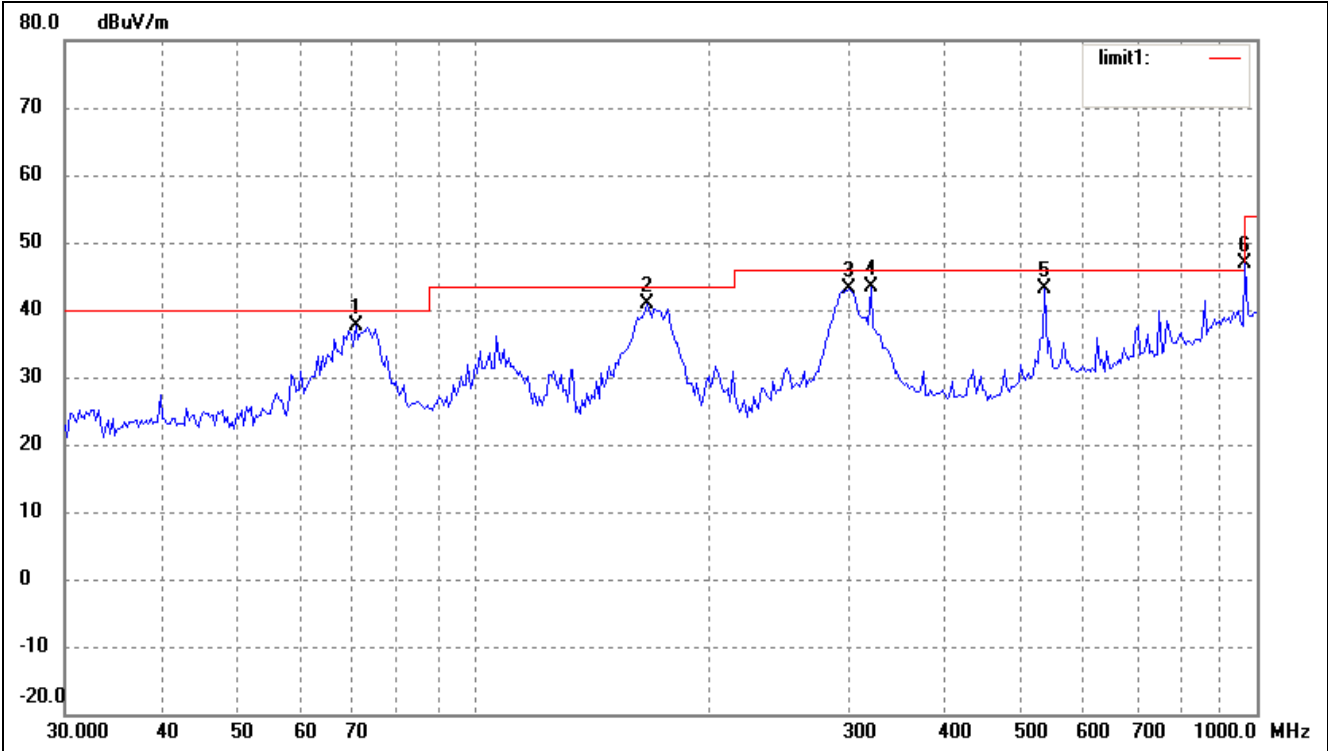
Comment:

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	175.6516	35.97	5.32	41.29	43.50	-2.21	52	100	QP
2	249.4250	33.98	8.68	42.66	46.00	-3.34	32	100	QP
3	295.1469	33.51	9.71	43.22	46.00	-2.78	175	200	QP
4	750.1082	25.42	18.26	43.68	46.00	-2.32	268	100	QP
5	965.5421	24.53	22.10	46.63	54.00	-7.37	101	100	QP

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(° )	(cm)	
1	70.5836	34.03	3.52	37.55	40.00	-2.45	236	100	QP
2	166.0680	36.01	4.75	40.76	43.50	-2.74	152	100	QP
3	301.4223	33.30	9.78	43.08	46.00	-2.92	360	200	QP
4	321.0606	33.35	10.01	43.36	46.00	-2.64	198	100	QP
5	535.7073	27.95	15.21	43.16	46.00	-2.84	25	100	QP
6	965.5421	24.78	22.10	46.88	54.00	-7.12	145	200	QP

*Spurious Emission above 1GHz**Test Mode: Transmitting (802.11b)*

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (1G to 25GHz)										
4824.0	PK	46.3	20	V	34.1	5.2	33.0	52.6	74	-21.4
4824.0	PK	44.0	136	H	34.1	5.2	33.0	50.3	74	-23.7
7236.0	PK	40.4	229	V	37.4	6.1	33.5	50.4	74	-23.6
7236.0	PK	37.6	275	H	37.4	6.1	33.5	47.6	74	-26.4
4824.0	AV	44.0	270	V	34.1	5.2	33.0	50.3	54	-3.7
4824.0	AV	42.3	90	H	34.1	5.2	33.0	48.6	54	-5.4
7236.0	AV	37.5	45	V	37.4	6.1	33.5	47.5	54	-6.5
7236.0	AV	35.0	60	H	37.4	6.1	33.5	45.0	54	-9.0
Middle Channel (1G to 25GHz)										
4874.0	PK	45.4	45	V	34.1	5.2	33.0	51.7	74	-22.3
4874.0	PK	42.3	270	H	34.1	5.2	33.0	48.6	74	-25.4
7311.0	PK	40.6	20	V	37.4	6.1	33.5	50.6	74	-23.4
7311.0	PK	38.3	275	H	37.4	6.1	33.5	48.3	74	-25.7
4874.0	AV	43.2	270	V	34.1	5.2	33.0	49.5	54	-4.5
4874.0	AV	41.5	90	H	34.1	5.2	33.0	47.8	54	-6.2
7311.0	AV	38.7	60	V	37.4	6.1	33.5	48.7	54	-5.3
7311.0	AV	36.6	45	H	37.4	6.1	33.5	46.6	54	-7.4
High Channel (1G to 25GHz)										
4924.0	PK	46.0	270	V	34.1	5.2	33.0	52.3	74	-21.7
4924.0	PK	43.2	45	H	34.1	5.2	33.0	49.5	74	-24.5
7386.0	PK	40.4	180	V	37.4	6.1	33.5	50.4	74	-23.6
7386.0	PK	36.9	45	H	37.4	6.1	33.5	46.9	74	-27.1
4924.0	AV	43.5	90	V	34.1	5.2	33.0	49.8	54	-4.2
4924.0	AV	39.8	270	H	34.1	5.2	33.0	46.1	54	-7.9
7386.0	AV	38.7	60	V	37.4	6.1	33.5	48.7	54	-5.3
7386.0	AV	35.5	60	H	37.4	6.1	33.5	45.5	54	-8.5

*Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which above 5<sup>th</sup> Harmonics is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.*

*Spurious Emission Above 1GHz**Test Mode: Transmitting (802.11g)*

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (1G to 25GHz)										
4824.0	PK	47.4	90	V	34.1	5.2	33.0	53.7	74	-20.3
4824.0	PK	43.9	270	H	34.1	5.2	33.0	50.2	74	-23.8
7236.0	PK	41.5	180	V	37.4	6.1	33.5	51.5	74	-22.5
7236.0	PK	38.7	45	H	37.4	6.1	33.5	48.7	74	-25.3
4824.0	AV	44.1	270	V	34.1	5.2	33.0	50.4	54	-3.6
4824.0	AV	42.5	90	H	34.1	5.2	33.0	48.8	54	-5.2
7236.0	AV	39.3	45	V	37.4	6.1	33.5	49.3	54	-4.7
7236.0	AV	36.8	60	H	37.4	6.1	33.5	46.8	54	-7.2
Middle Channel (1G to 25GHz)										
4874.0	PK	45.9	45	V	34.1	5.2	33.0	52.2	74	-21.8
4874.0	PK	42.8	270	H	34.1	5.2	33.0	49.1	74	-24.9
7311.0	PK	40.5	45	V	37.4	6.1	33.5	50.5	74	-23.5
7311.0	PK	36.8	180	H	37.4	6.1	33.5	46.8	74	-27.2
4874.0	AV	43.3	270	V	34.1	5.2	33.0	49.6	54	-4.4
4874.0	AV	40.9	90	H	34.1	5.2	33.0	47.2	54	-6.8
7311.0	AV	38.8	60	V	37.4	6.1	33.5	48.8	54	-5.2
7311.0	AV	36.6	45	H	37.4	6.1	33.5	46.6	54	-7.4
High Channel (1G to 25GHz)										
4924.0	PK	44.9	270	V	34.1	5.2	33.0	51.2	74	-22.8
4924.0	PK	42.1	45	H	34.1	5.2	33.0	48.4	74	-25.6
7386.0	PK	39.3	180	V	37.4	6.1	33.5	49.3	74	-24.7
7386.0	PK	36.1	45	H	37.4	6.1	33.5	46.1	74	-27.9
4924.0	AV	41.4	90	V	34.1	5.2	33.0	47.7	54	-6.3
4924.0	AV	39.0	270	H	34.1	5.2	33.0	45.3	54	-8.7
7386.0	AV	36.0	60	V	37.4	6.1	33.5	46.0	54	-8.0
7386.0	AV	35.8	60	H	37.4	6.1	33.5	45.8	54	-8.2

*Spurious Emission above 1GHz**Test Mode: Transmitting (802.11n-HT20)*

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (1G to 25GHz)										
4824.0	PK	43.3	20	V	34.1	5.2	33.0	49.6	74	-24.4
4824.0	PK	40.5	136	H	34.1	5.2	33.0	46.8	74	-27.2
7236.0	PK	38.8	229	V	37.4	6.1	33.5	48.8	74	-25.2
7236.0	PK	36.5	275	H	37.4	6.1	33.5	46.5	74	-27.5
4824.0	AV	41.2	270	V	34.1	5.2	33.0	47.5	54	-6.5
4824.0	AV	39.9	90	H	34.1	5.2	33.0	46.2	54	-7.8
7236.0	AV	36.8	45	V	37.4	6.1	33.5	46.8	54	-7.2
7236.0	AV	35.7	60	H	37.4	6.1	33.5	45.7	54	-8.3
Middle Channel (1G to 25GHz)										
4874.0	PK	44.0	45	V	34.1	5.2	33.0	50.3	74	-23.7
4874.0	PK	42.2	270	H	34.1	5.2	33.0	48.5	74	-25.5
7311.0	PK	38.6	20	V	37.4	6.1	33.5	48.6	74	-25.4
7311.0	PK	36.3	275	H	37.4	6.1	33.5	46.3	74	-27.7
4874.0	AV	41.8	270	V	34.1	5.2	33.0	48.1	54	-5.9
4874.0	AV	40.3	90	H	34.1	5.2	33.0	46.6	54	-7.4
7311.0	AV	37.7	60	V	37.4	6.1	33.5	47.7	54	-6.3
7311.0	AV	35.2	45	H	37.4	6.1	33.5	45.2	54	-8.8
High Channel (1G to 25GHz)										
4924.0	PK	44.7	270	V	34.1	5.2	33.0	51.0	74	-23.0
4924.0	PK	43.3	45	H	34.1	5.2	33.0	49.6	74	-24.4
7386.0	PK	39.5	180	V	37.4	6.1	33.5	49.5	74	-24.5
7386.0	PK	37.3	45	H	37.4	6.1	33.5	47.3	74	-26.7
4924.0	AV	43.0	90	V	34.1	5.2	33.0	49.3	54	-4.7
4924.0	AV	41.9	270	H	34.1	5.2	33.0	48.2	54	-5.8
7386.0	AV	37.8	60	V	37.4	6.1	33.5	47.8	54	-6.2
7386.0	AV	36.6	60	H	37.4	6.1	33.5	46.6	54	-7.4

*Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which above 5<sup>th</sup> Harmonics is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.*

*Spurious Emission above 1GHz**Test Mode: Transmitting (802.11n-HT40)*

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (1G to 25GHz)										
4844.0	PK	46.3	90	V	34.1	5.2	33.0	52.6	74	-21.4
4844.0	PK	44.2	270	H	34.1	5.2	33.0	50.5	74	-23.5
7266.0	PK	40.3	180	V	37.4	6.1	33.5	50.3	74	-23.7
7266.0	PK	37.5	45	H	37.4	6.1	33.5	47.5	74	-26.5
4844.0	AV	43.9	270	V	34.1	5.2	33.0	50.2	54	-3.8
4844.0	AV	42.5	90	H	34.1	5.2	33.0	48.8	54	-5.2
7266.0	AV	38.4	45	V	37.4	6.1	33.5	48.4	54	-5.6
7266.0	AV	36.9	60	H	37.4	6.1	33.5	46.9	54	-7.1
Middle Channel (1G to 25GHz)										
4874.0	PK	45.2	45	V	34.1	5.2	33.0	51.5	74	-22.5
4874.0	PK	43.4	270	H	34.1	5.2	33.0	49.7	74	-24.3
7311.0	PK	39.4	45	V	37.4	6.1	33.5	49.4	74	-24.6
7311.0	PK	37.6	180	H	37.4	6.1	33.5	47.6	74	-26.4
4874.0	AV	43.2	270	V	34.1	5.2	33.0	49.5	54	-4.5
4874.0	AV	40.3	90	H	34.1	5.2	33.0	46.6	54	-7.4
7311.0	AV	38.8	60	V	37.4	6.1	33.5	48.8	54	-5.2
7311.0	AV	36.7	45	H	37.4	6.1	33.5	46.7	54	-7.3
High Channel (1G to 25GHz)										
4904.0	PK	44.1	270	V	34.1	5.2	33.0	50.4	74	-23.6
4904.0	PK	42.2	45	H	34.1	5.2	33.0	48.5	74	-25.5
7356.0	PK	38.4	180	V	37.4	6.1	33.5	48.4	74	-25.6
7356.0	PK	36.5	45	H	37.4	6.1	33.5	46.5	74	-27.5
4904.0	AV	42.1	90	V	34.1	5.2	33.0	48.4	54	-5.6
4904.0	AV	40.4	270	H	34.1	5.2	33.0	46.7	54	-7.3
7356.0	AV	37.0	60	V	37.4	6.1	33.5	47.0	54	-7.0
7356.0	AV	36.8	60	H	37.4	6.1	33.5	46.8	54	-7.2

*Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which above 5<sup>th</sup> Harmonics is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.*

## 9. OUT OF BAND EMISSIONS

### 9.1 Standard Applicable

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.

### 9.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2010-12-20	2011-12-19
EMI Test Receiver	R&S	ESVB	825471/005	2010-12-20	2011-12-19
Positioning Controller	C&C	CC-C-1F	N/A	2010-12-20	2011-12-19
RF Switch	EM	EMSW18	SW060023	2010-12-20	2011-12-19
Pre-amplifier	Agilent	8447F	3113A06717	2010-12-20	2011-12-19
Pre-amplifier	Compliance Direction	PAP-0118	24002	2010-12-20	2011-12-19
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2011-01-09	2012-01-08
Horn Antenna	ETS	3117	00086197	2011-01-09	2012-01-08

### 9.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW, VBW=100KHz, Span=50MHz, Sweep = auto
3. Set the Lowest and Highest Transmitting Channel, observed the outside band of 2400MHz to 2438.5MHz, then mark the higher-level emission for comparing with the FCC rules.

### 9.4 Environmental Conditions

Temperature:	21° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

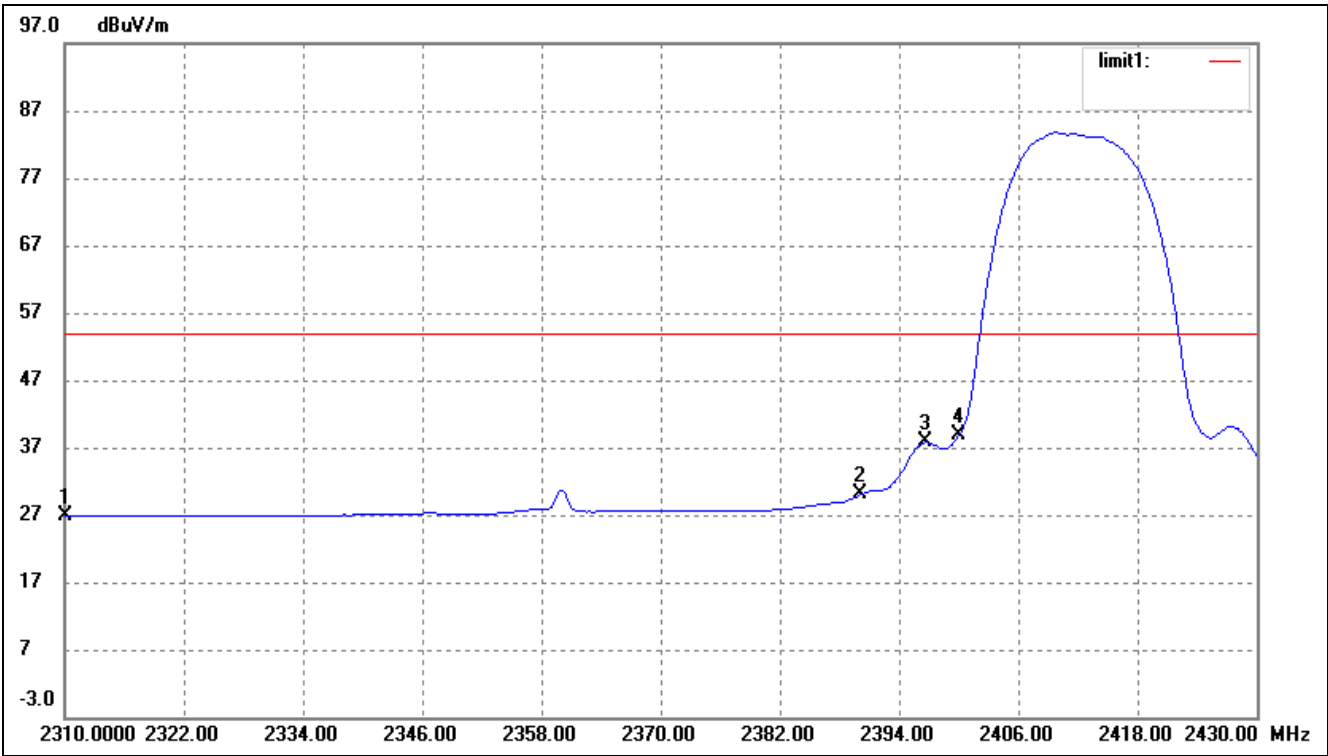
## 9.5 Summary of Test Results/Plots

Test mode	Frequency MHz	Limit dBuV /dB	Result
802.11b	2310.00	<54dBuV	Pass
	2396.64	<54dBuV	Pass
	2390.00	<54dBuV	Pass
	2400.00	<54dBuV	Pass
	2483.50	<54dBuV	Pass
	2500.00	<54dBuV	Pass
802.11g	2310.00	<54dBuV	Pass
	2390.00	<54dBuV	Pass
	2400.00	<54dBuV	Pass
	2483.50	<54dBuV	Pass
	2500.00	<54dBuV	Pass
802.11n-HT20	2310.00	<54dBuV	Pass
	2390.00	<54dBuV	Pass
	2400.00	<54dBuV	Pass
	2483.50	<54dBuV	Pass
	2500.00	<54dBuV	Pass
802.11n-HR40	2310.00	<54dBuV	Pass
	2390.00	<54dBuV	Pass
	2400.00	<54dBuV	Pass
	2483.50	<54dBuV	Pass
	2500.00	<54dBuV	Pass



For 802.11b

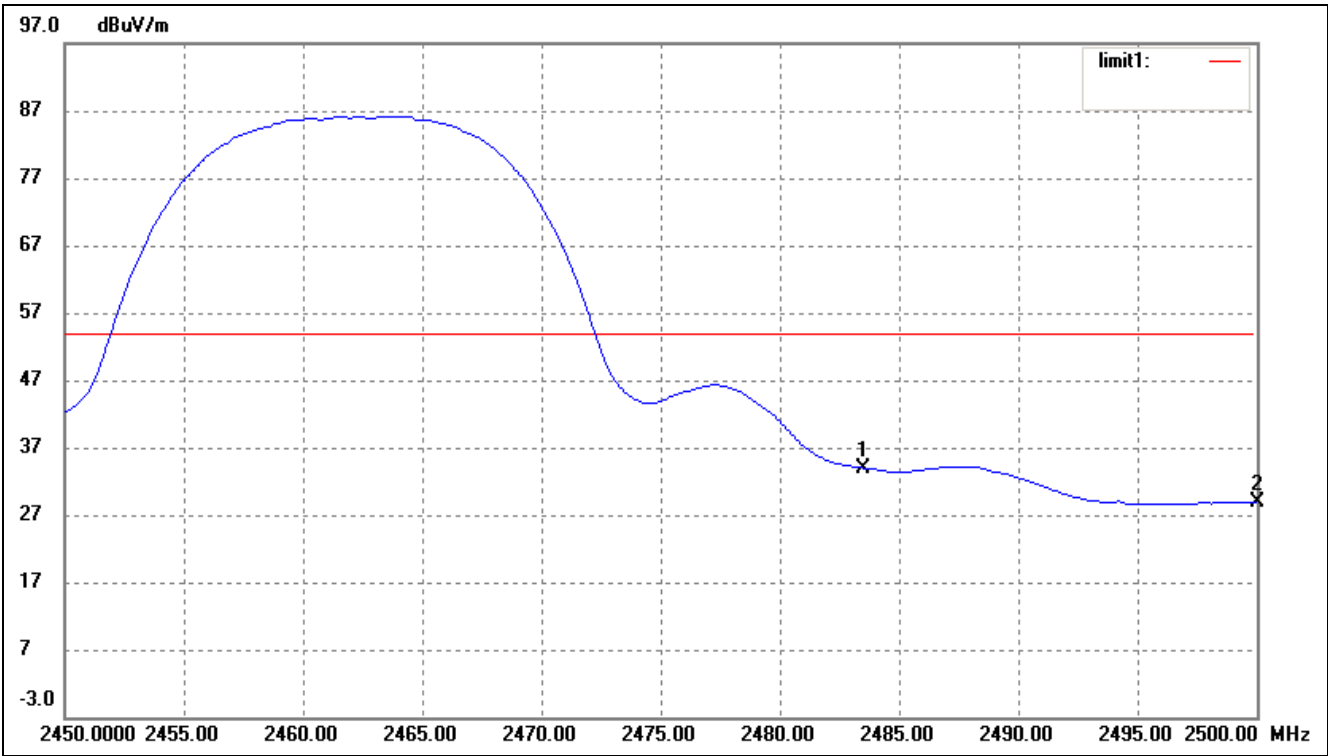
Lowest Bandedge



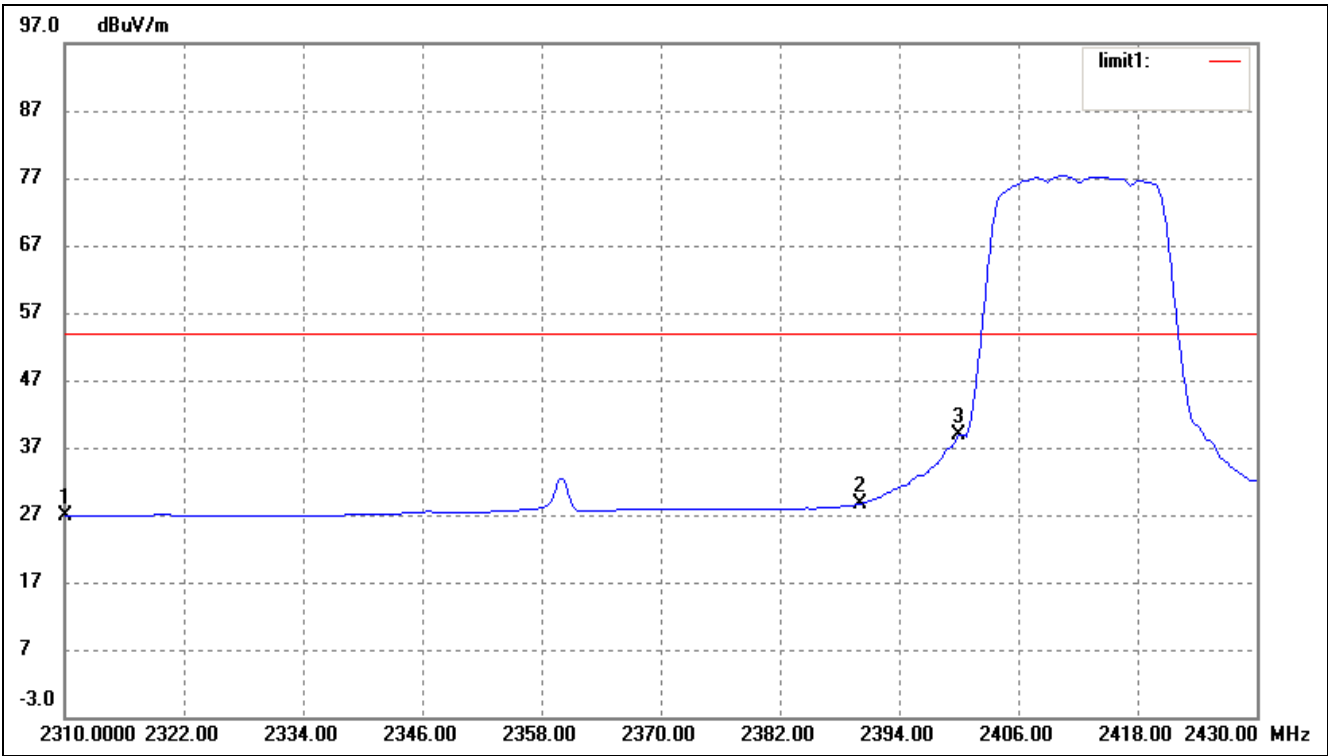
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	2310.000	31.46	-4.65	26.81	54.00	-27.19	25	100	Ave
	2310.000	38.27	-4.65	33.62	74.00	-40.38	25	100	peak
2	2390.000	34.51	-4.46	30.05	54.00	-23.95	25	100	Ave
	2390.000	41.96	-4.46	37.50	74.00	-36.5	25	100	peak
3	2396.640	42.20	-4.44	37.76	54.00	-16.24	25	100	Ave
	2396.640	48.28	-4.44	43.84	74.00	-30.16	25	100	peak
4	2400.000	43.26	-4.43	38.83	54.00	-15.17	25	100	Ave
	2400.000	46.78	-4.43	42.35	74.00	-31.65	25	100	peak

For 802.11b

Highest Bandedge

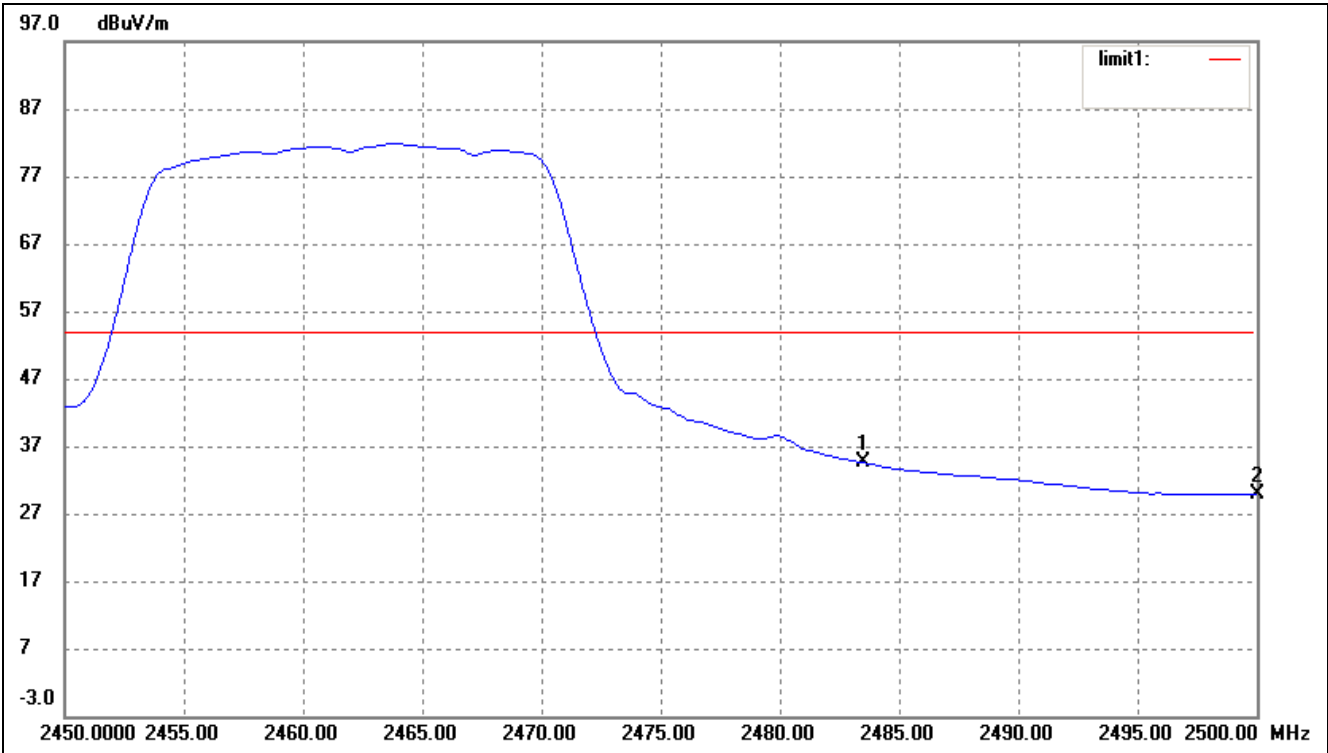


For 802.11g  
Lowest Bandedge



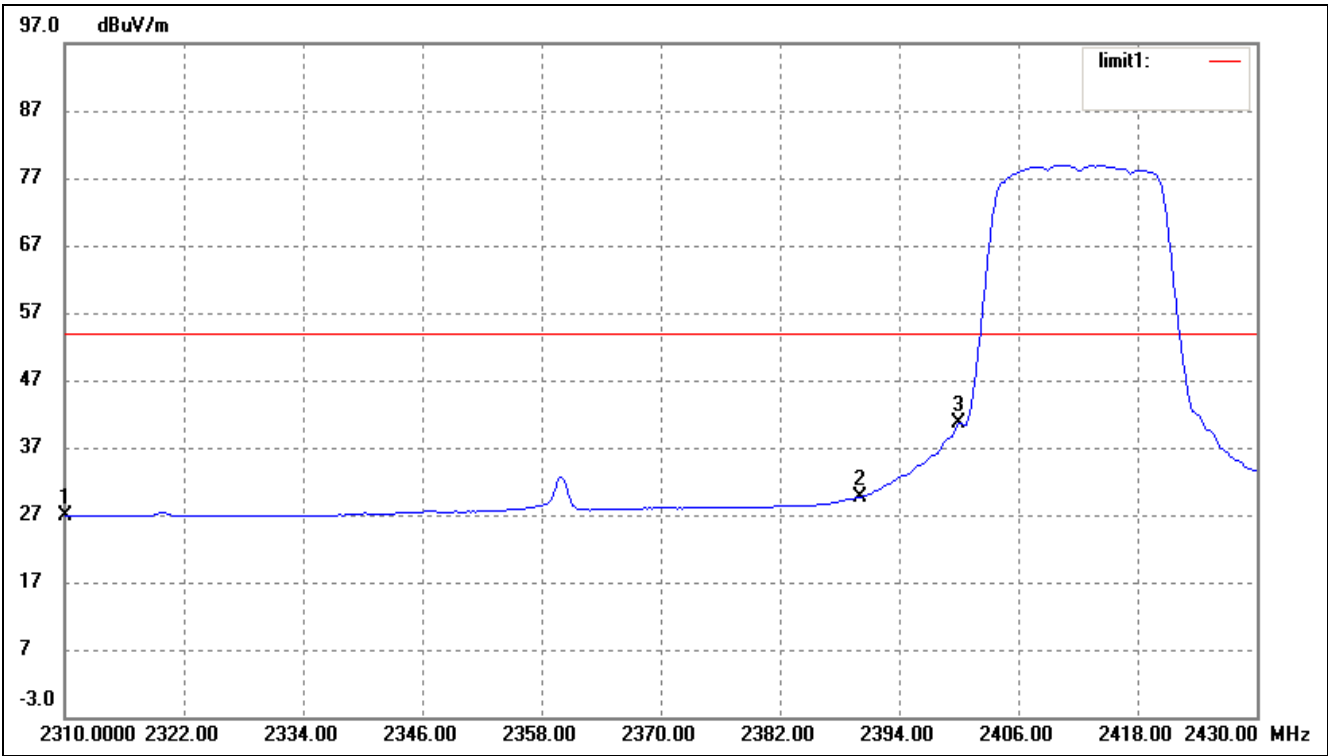
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	2310.000	31.50	-4.65	26.85	54.00	-27.15	178	100	Ave
	2310.000	38.30	-4.65	33.65	74.00	-40.35	178	100	peak
2	2390.000	33.18	-4.46	28.72	54.00	-25.28	178	100	Ave
	2390.000	38.67	-4.46	34.21	74.00	-39.79	178	100	peak
3	2400.000	43.26	-4.43	38.83	54.00	-15.17	178	100	Ave
	2400.000	49.35	-4.43	44.92	74.00	-29.08	178	100	peak

Highest Bandedge



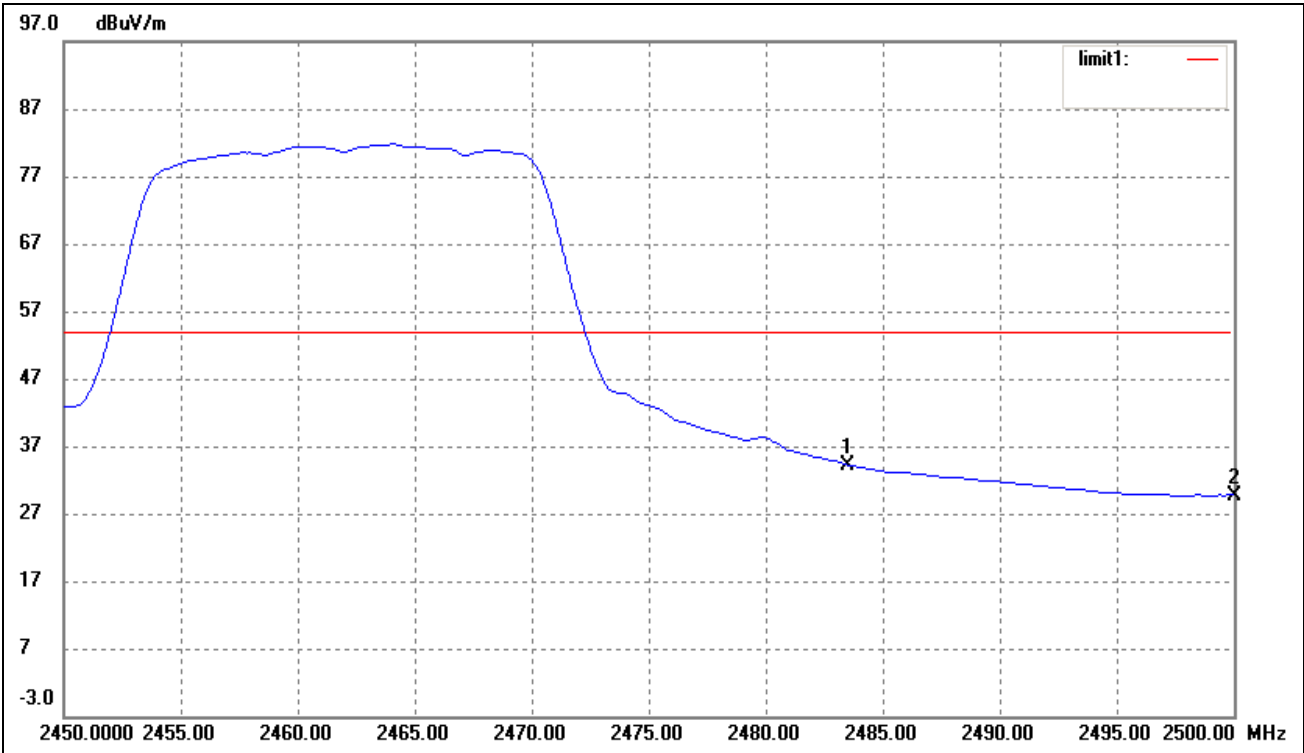
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	2483.500	38.75	-4.23	34.52	54.00	-19.48	285	100	Ave
	2483.500	44.46	-4.23	40.23	74.00	-33.77	285	100	peak
2	2500.000	34.02	-4.18	29.84	54.00	-24.16	285	100	Ave
	2500.000	38.84	-4.18	34.66	74.00	-39.34	285	100	peak

For 802.11n-HT20  
Lowest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	2310.000	31.49	-4.65	26.84	54.00	-27.16	20	100	Ave
	2310.000	37.01	-4.65	32.36	74.00	-41.64	20	100	peak
2	2390.000	34.13	-4.46	29.67	54.00	-24.33	20	100	Ave
	2390.000	38.00	-4.46	33.54	74.00	-40.46	20	100	peak
3	2400.000	44.95	-4.43	40.52	54.00	-13.48	20	100	Ave
	2400.000	50.95	-4.43	46.52	74.00	-27.48	20	100	peak

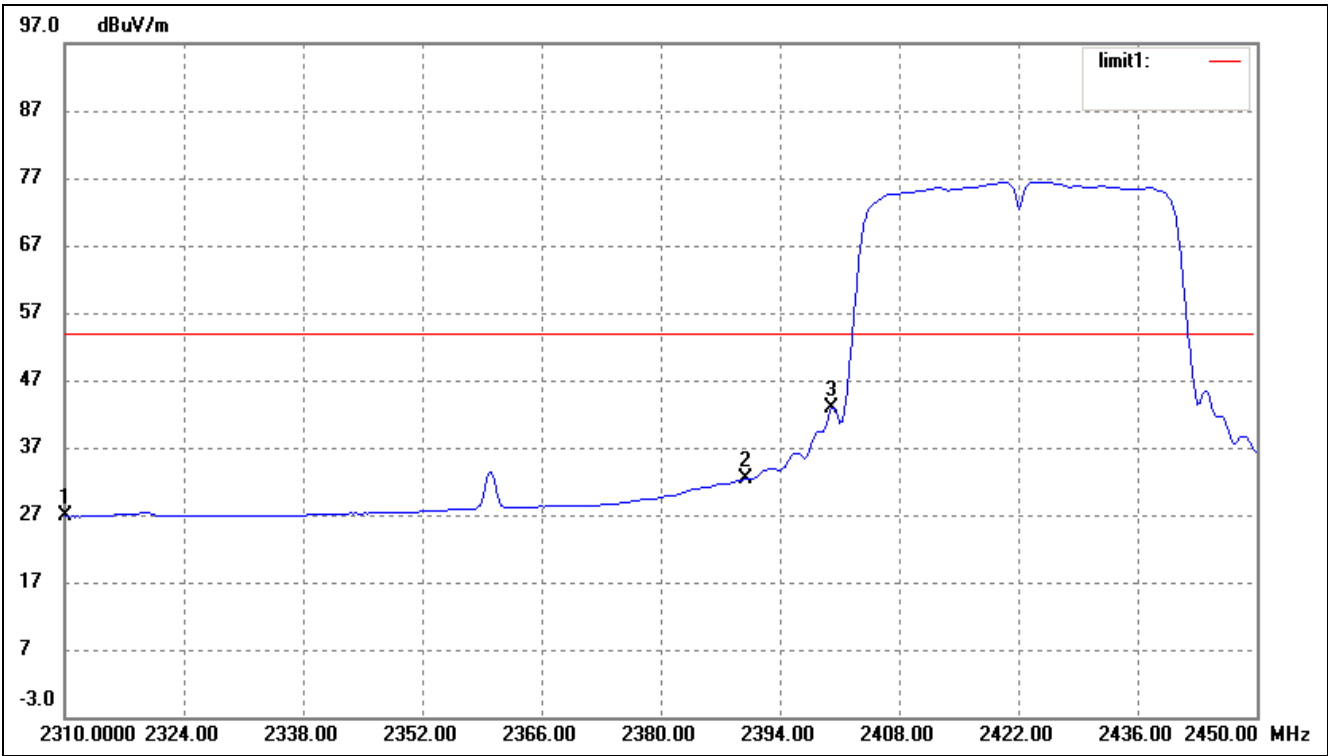
Highest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	2483.500	38.43	-4.23	34.20	54.00	-19.8	176	100	peak
	2483.500	44.35	-4.23	40.12	74.00	-33.88	176	100	Ave
2	2500.000	33.92	-4.18	29.74	54.00	-24.26	176	100	peak
	2500.000	43.83	-4.18	39.65	74.00	-34.35	176	100	Ave

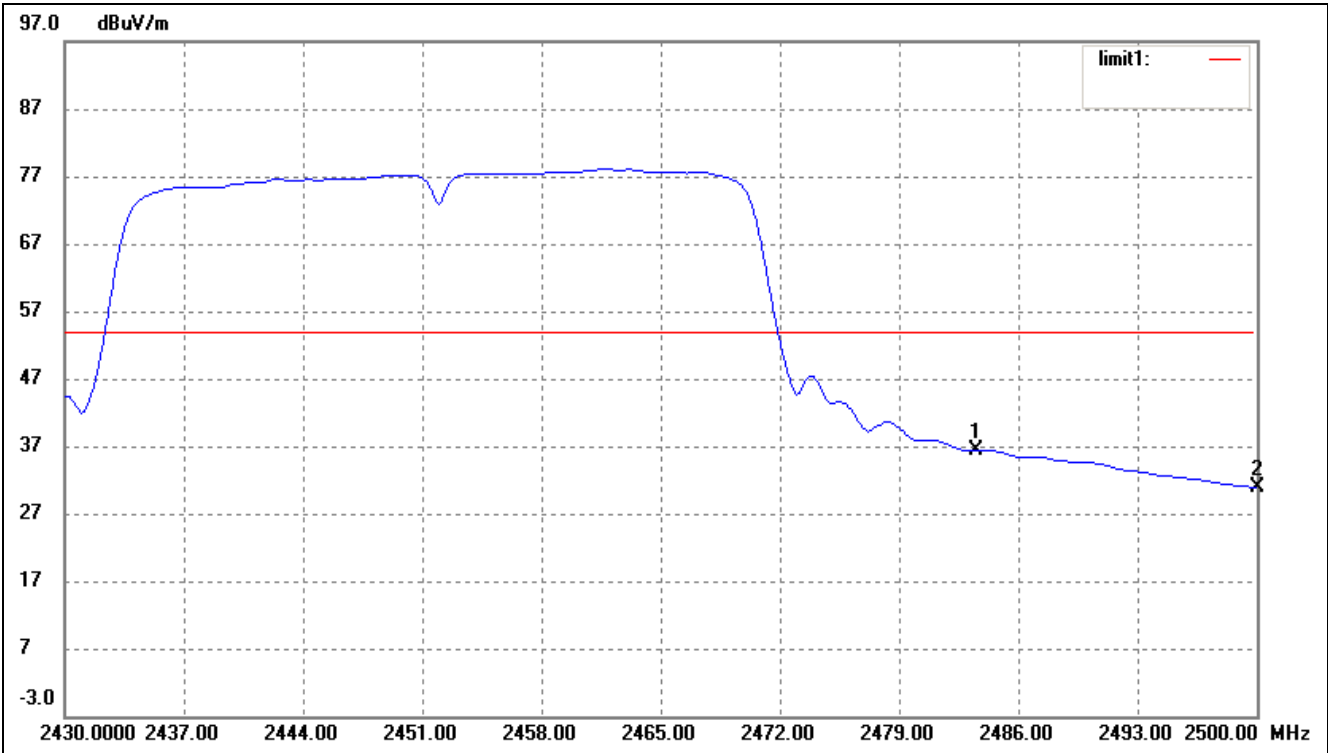
For 802.11n-HT40

Lowest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	2310.000	31.41	-4.65	26.76	54.00	-27.24	28	100	Ave
	2310.000	37.50	-4.65	32.85	74.00	-41.15	28	100	peak
2	2390.000	36.80	-4.46	32.34	54.00	-21.66	28	100	Ave
	2390.000	43.58	-4.46	39.12	74.00	-34.88	28	100	peak
3	2400.000	47.39	-4.43	42.96	54.00	-11.04	28	100	Ave
	2400.000	53.21	-4.43	48.78	74.00	-25.22	28	100	peak

Highest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	2483.500	40.68	-4.23	36.45	54.00	-17.55	276	100	Ave
	2483.500	46.87	-4.23	42.64	74.00	-31.36	276	100	peak
2	2500.000	34.99	-4.18	30.81	54.00	-23.19	276	100	Ave
	2500.000	41.20	-4.18	37.02	74.00	-36.98	276	100	peak

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