

RADIO TEST REPORT

For

GBOX Technology Co., Ltd.

WiBOX

Model No.: WiBOX

Prepared for : GBOX Technology Co., Ltd.  
Address : 3F., No. 38, Ln. 305, Sec. 1, Xinnan Rd., Lujhu Township, Taoyuan County 338, Taiwan

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.  
Address : 1F., Xingyuan Industrial Park, Tongda Road, Bao'an Blvd., Bao'an District, Shenzhen, Guangdong, China

Date of receipt of test sample : June 25, 2012  
Number of tested samples : 1  
Serial number : Prototype  
Date of Test : June 25, 2012 – July 24, 2012  
Date of Report : July 27, 2012

**RADIO TEST REPORT**  
**FCC CFR 47 PART 15 C(15.247)**

**Report Reference No. .... : LCS120625149TF**

Date of Issue ..... : July 27, 2012

**Testing Laboratory Name ..... : Shenzhen LCS Compliance Testing Laboratory Ltd.**

Address ..... : 1F., Xingyuan Industrial Park, Tongda Road, Bao'an Blvd.,  
Bao'an District, Shenzhen, Guangdong, China

Testing Location/ Procedure..... : Full application of Harmonised standards   
Partial application of Harmonised standards   
Other standard testing method

**Applicant's Name..... : GBOX Technology Co., Ltd.**

Address ..... : 3F., No. 38, Ln. 305, Sec. 1, Xinnan Rd., Lujhu Township,  
Taoyuan County 338, Taiwan

**Test Specification**

Standard ..... : FCC CFR 47 PART 15 Subpart C: 2011, ANSI C63.4-2003

**Test Report Form No..... : LCSEMC-1.0**

TRF Originator ..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF ..... : Dated 2011-03

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**Test Item Description. .... : WiBOX**

Trade Mark ..... : GBOX

Manufacturer..... : GBOX Technology Co., Ltd.

Model/ Type reference..... : WiBOX

Ratings ..... : DC 3.7V, Current: 450mA  
Conneted to PC Input AC 120V/60Hz

Result ..... : **Positive**

**Compiled by:**

*Ada Liang*

**Supervised by:**

*Vito Cao*

**Approved by:**

*Gavin Liang*

Ada Liang / File administrators

Vito Cao/ Technique principal

Gavin Liang/ Manager

# RADIO -- TEST REPORT

<b>Test Report No. : LCS120625149TF</b>	<u>July 27, 2012</u> Date of issue
---	---------------------------------------

Type / Model..... : WiBOX  EUT..... : WiBOX
<b>Applicant..... : GBOX Technology Co., Ltd.</b> Address..... : 3F., No. 38, Ln. 305, Sec. 1, Xinnan Rd., Lujhu Township, Taoyuan County 338, Taiwan Telephone..... : / Fax..... : /
<b>Manufacturer..... : GBOX Technology Co., Ltd.</b> Address..... : 3F., No. 38, Ln. 305, Sec. 1, Xinnan Rd., Lujhu Township, Taoyuan County 338, Taiwan Telephone..... : / Fax..... : /
<b>Factory..... : GBOX Technology Co., Ltd.</b> Address..... : 3F., No. 38, Ln. 305, Sec. 1, Xinnan Rd., Lujhu Township, Taoyuan County 338, Taiwan Telephone..... : / Fax..... : /

<b>Test Result:</b> <span style="float: right;"><b>Positive</b></span>
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The test report merely corresponds to the test sample.  
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

EUT : WiBOX

Model Number : WiBOX

Power Supply : DC 3.7V, Current: 450mA  
 Conneted to PC Input AC 120V/60Hz

Frequency Range : 2412.00-2462.00MHz, (Channel Number: 11, Channel  
 Frequency=2412+5(K-1), K=1, 2, 3 .....11)

Modulation Technology : IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK)  
 IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)  
 IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM,  
 QPSK,BPSK)

Antenna Gain : 2.0dBi

### 1.2. Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate
Lenovo	Notebook	Lenovo B470	WB05067151	DoC

### 1.3. External I/O Cable

Cable Description	Length (M)	From/Port	To
N/A	N/A	N/A	N/A

### 1.4. Description of Test Facility

#### Site Description

EMC Lab. : Accredited by CNAS, June 04, 2010

The Certificate Registration Number. is L4595.

Accredited by FCC, July 14, 2011

The Certificate Registration Number. is 899208.

Accredited by Industry Canada, May. 02, 2011

The Certificate Registration Number. is 9642A-1

## 1.5. Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

## 1.6. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Radiation Uncertainty	30MHz~200MHz	$\pm 2.96\text{dB}$	(1)
	200MHz~1000MHz	$\pm 3.10\text{dB}$	(1)
	1GHz~26.5GHz	$\pm 3.80\text{dB}$	(1)
Conduction Uncertainty	150kHz~30MHz	$\pm 1.63\text{dB}$	(1)
Power disturbance	30MHz~300MHz	$\pm 1.60\text{dB}$	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

## 1.7. Description Of Test Modes

The EUT has been tested under operating condition.

Worst-case mode and channel used for 150kHz-30 MHz power line conducted emissions was the mode and channel with the highest output power, that was determined to be 802.11g mode, mid channel.

Worst-case mode and channel used for 9kHz-1000 MHz radiated and power line conducted emissions was the mode and channel with the highest output power, that was determined to be 802.11g mode, mid channel.

Worst-Case data rates were utilized from preliminary testing of the Chipset, worst-case data rates used during the testing are as follows:

802.11b Mode : 11 Mbps, DSSS.

802.11g Mode : 54 Mbps, OFDM.

802.11n Mode HT20: 54Mbps, OFDM.

802.11n Mode HT40: 150Mbps, OFDM.

## 2. 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 radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen LCS Compliance Testing Laboratory Ltd..

### 2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

### 2.2. EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to FCC's request, Test Procedure KDB558074 is required to be used for this kind of FCC 15.247 digital modulation device.

According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.205, 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

### 2.3. General Test Procedures

#### 2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

#### 2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4

### 3. SYSTEM TEST CONFIGURATION

#### 3.1. Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

#### 3.2. EUT Exercise Software

N/A.

#### 3.3. Special Accessories

N/A.

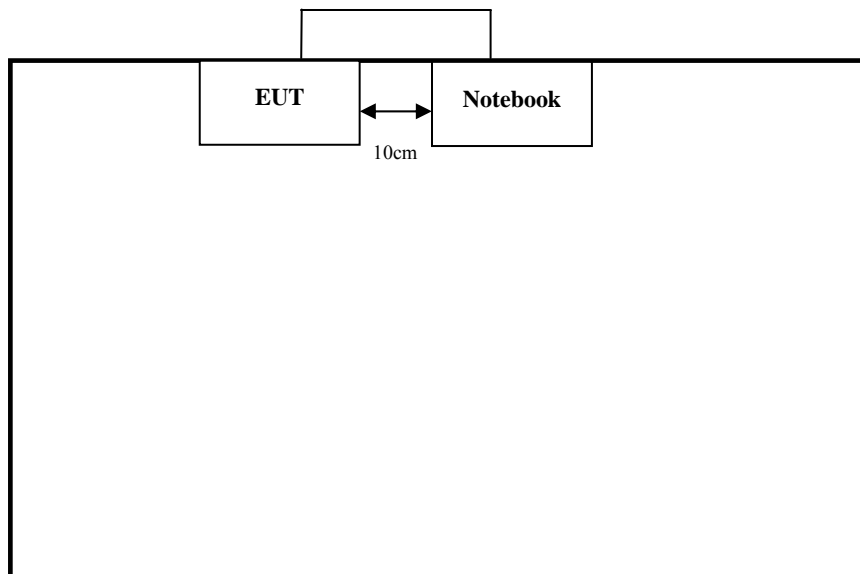
#### 3.4. Block Diagram/Schematics

Please refer to the report.

#### 3.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

#### 3.6. Block Diagram of Test Setup





## 4. SUMMARY OF TEST RESULTS

Applied Standard: 47 CFR FCC Part 15 Subpart C		
FCC Rules	Description of Test	Result
§15.247(b)	Maximum Conducted Output Power	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.247(a)(2)	6dB Bandwidth	Compliant
§15.247(a)	Occupied Bandwidth	Compliant
§15.209, §15.247(d)	Radiated and Conducted Spurious Emissions	Compliant
§15.205	Emissions at Restricted Band	Compliant
§15.207(a)	Conducted Emissions	Compliant
§15.203	Antenna Requirements	Compliant
§15.247(i)§2.1093	RF Exposure	Compliant

## 5. TEST RESULT

### 5.1. Maximum Conducted Output Power Measurement

#### 5.1.1. Standard Applicable

According to §15.247(b): For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

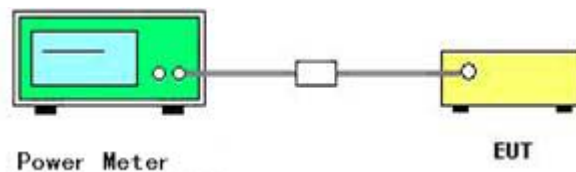
#### 5.1.2. Measuring Instruments and Setting

Please refer to section 6 of equipments list in this report. The following table is the setting of the power meter.

#### 5.1.3. Test Procedures

- The transmitter output (antenna port) was connected to the power meter.
- Detector= Peak.

#### 5.1.4. Test Setup Layout



#### 5.1.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

#### 5.1.6. Test Result of Maximum Conducted Output Power

Temperature	25°C	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g,n

802.11b

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412	10.43	30	Complies
6	2437	10.86	30	Complies
11	2462	10.08	30	Complies

## 802.11g

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412	10.34	30	Complies
6	2437	10.43	30	Complies
11	2462	10.31	30	Complies

## 802.11n HT20

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412	10.15	30	Complies
6	2437	10.39	30	Complies
11	2462	10.37	30	Complies

## 802.11n HT40

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2422	10.32	30	Complies
6	2437	10.18	30	Complies
11	2452	10.26	30	Complies

## 5.2. Power Spectral Density Measurement

### 5.2.1. Standard Applicable

According to §15.247(e): 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.

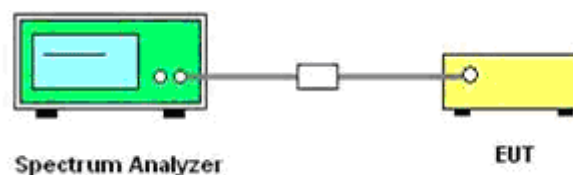
### 5.2.2. Measuring Instruments and Setting

Please refer to section 6 of equipments list in this report. The following table is the setting of Spectrum Analyzer.

### 5.2.3. Test Procedures

1. The transmitter was connected directly to a Spectrum Analyzer through a directional couple.
2. The power was monitored at the coupler port with a Spectrum Analyzer. The power level was set to the maximum level.
3. Set the RBW = 100 kHz.
4. Set the VBW  $\geq$  300 kHz.
5. Set the span to a value that is 5-30 % greater than the EBW.
6. Detector = peak.
7. Sweep time = auto couple.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

### 5.2.4. Test Setup Layout



### 5.2.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

## 5.2.6. Test Result of Power Spectral Density

Temperature	25°C	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g,n

## 802.11b

Channel	Frequency	Power Density (dBm)	BWCF (dB)	Max. Limit (dBm)	Result
1	2412	-2.59	-15.2	8	Complies
6	2437	-1.97	-15.2	8	Complies
11	2462	-1.89	-15.2	8	Complies

## 802.11g

Channel	Frequency	Power Density (dBm)	BWCF (dB)	Max. Limit (dBm)	Result
1	2412	-7.55	-15.2	8	Complies
6	2437	-8.53	-15.2	8	Complies
11	2462	-8.58	-15.2	8	Complies

## 802.11n HT20

Channel	Frequency	Power Density (dBm)	BWCF (dB)	Max. Limit (dBm)	Result
1	2412	-8.24	-15.2	8	Complies
6	2437	-8.94	-15.2	8	Complies
11	2462	-8.83	-15.2	8	Complies

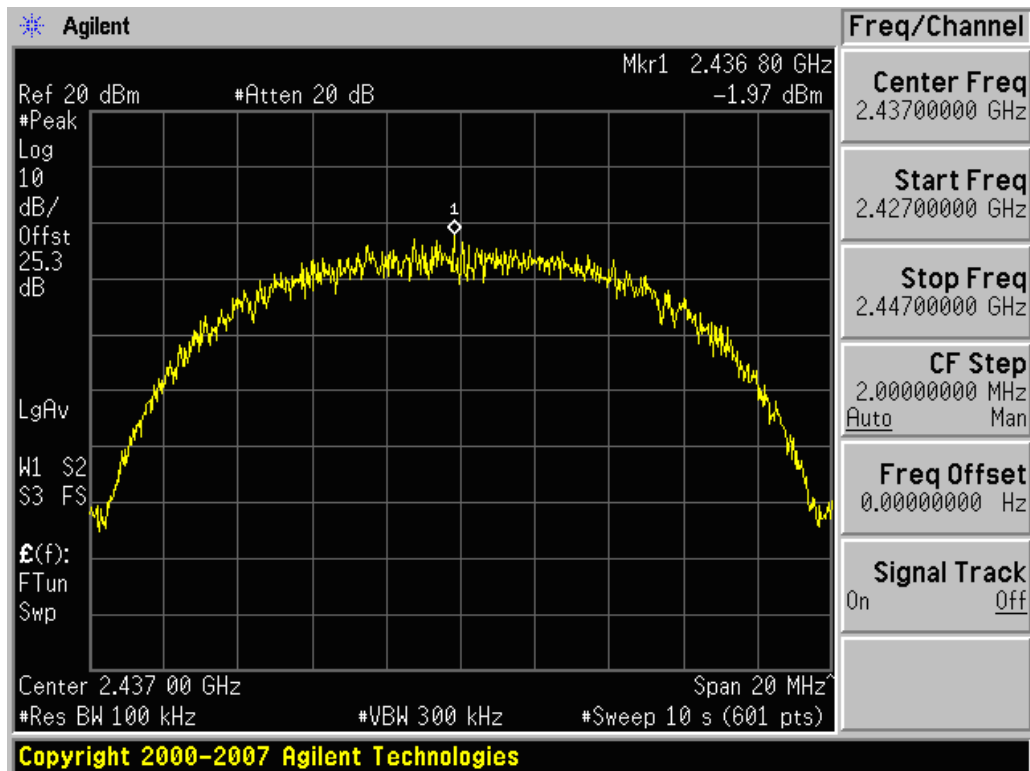
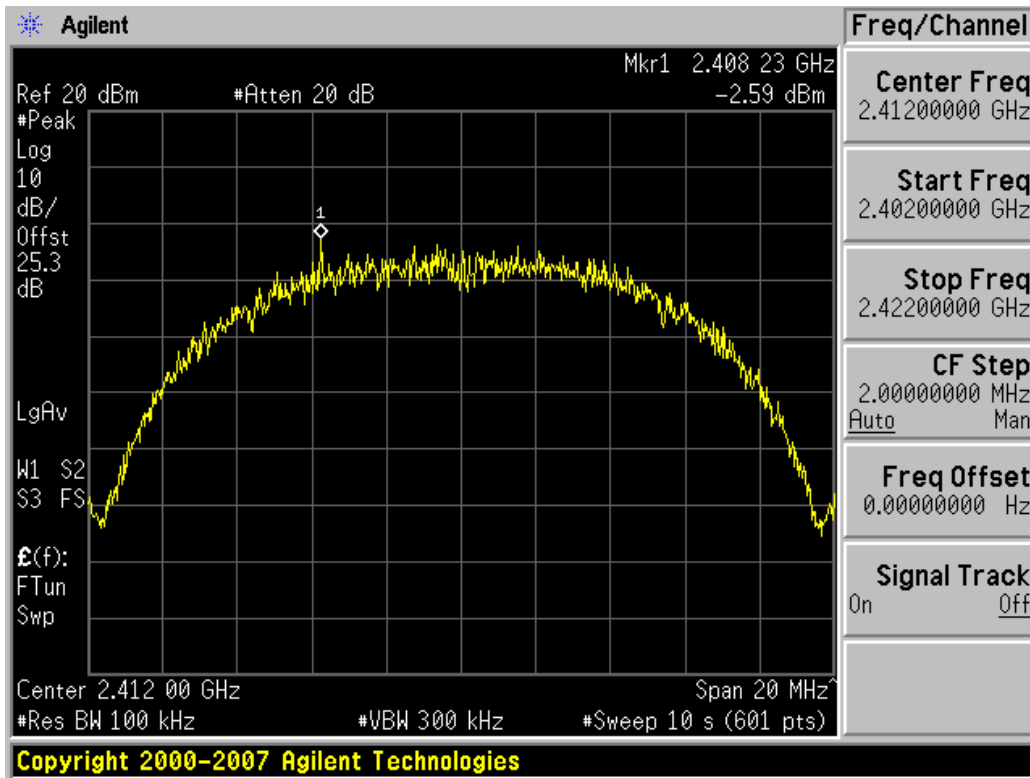
## 802.11n HT40

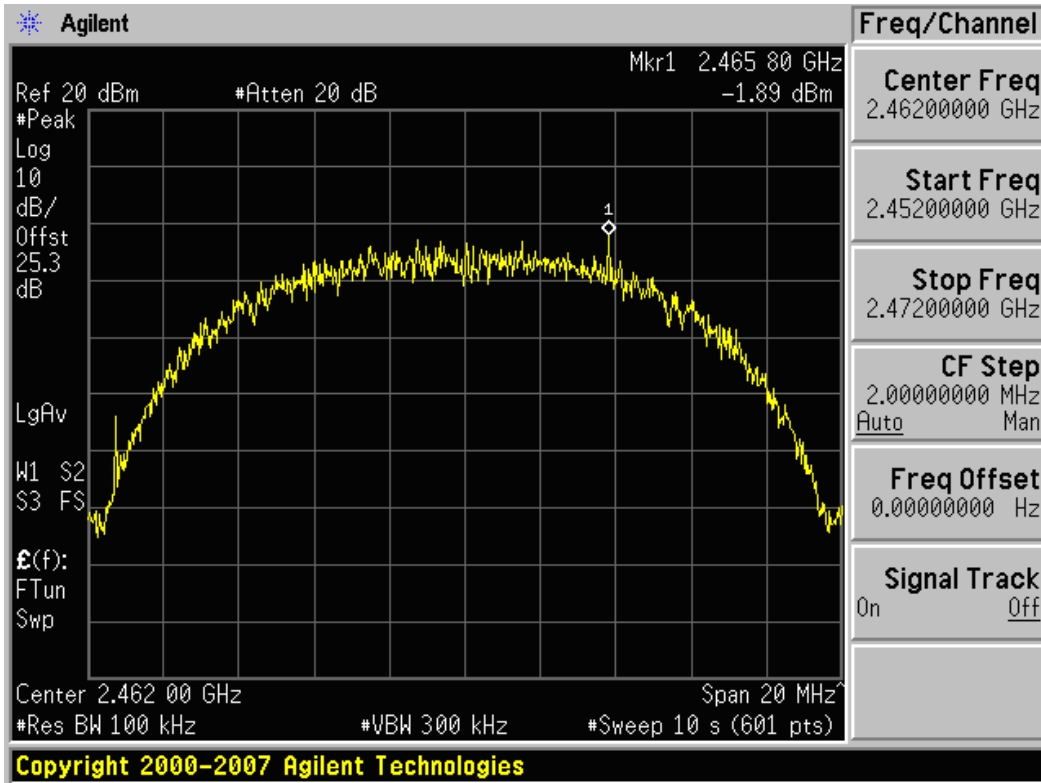
Channel	Frequency	Power Density (dBm)	BWCF (dB)	Max. Limit (dBm)	Result
1	2422	-10.89	-15.2	8	Complies
6	2437	-10.74	-15.2	8	Complies
11	2452	-15.77	-15.2	8	Complies

Note: Power Spectral Density = Power Density + BWCF ≤ 8 dBm

802.11b channel power density

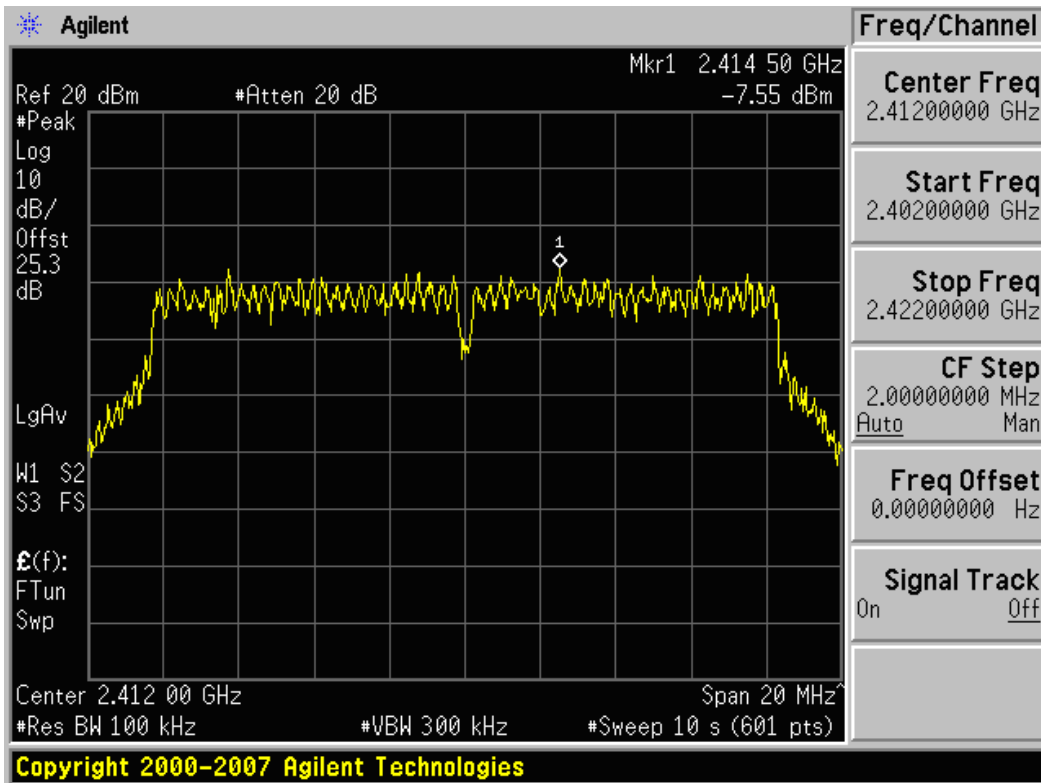
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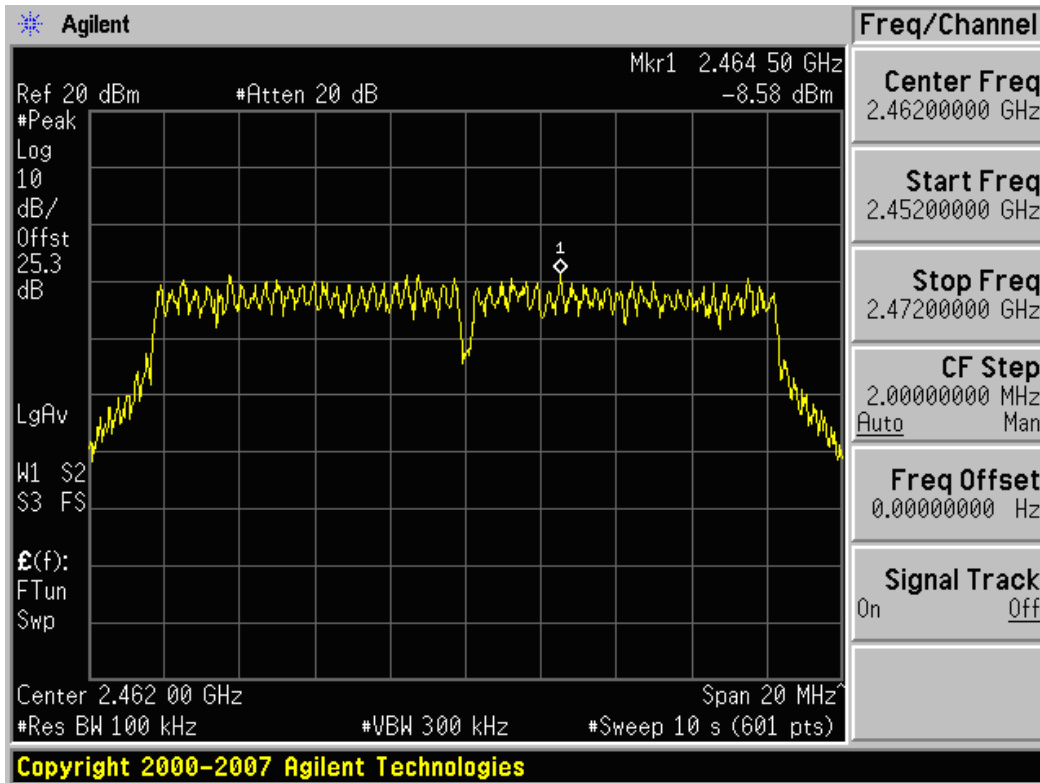
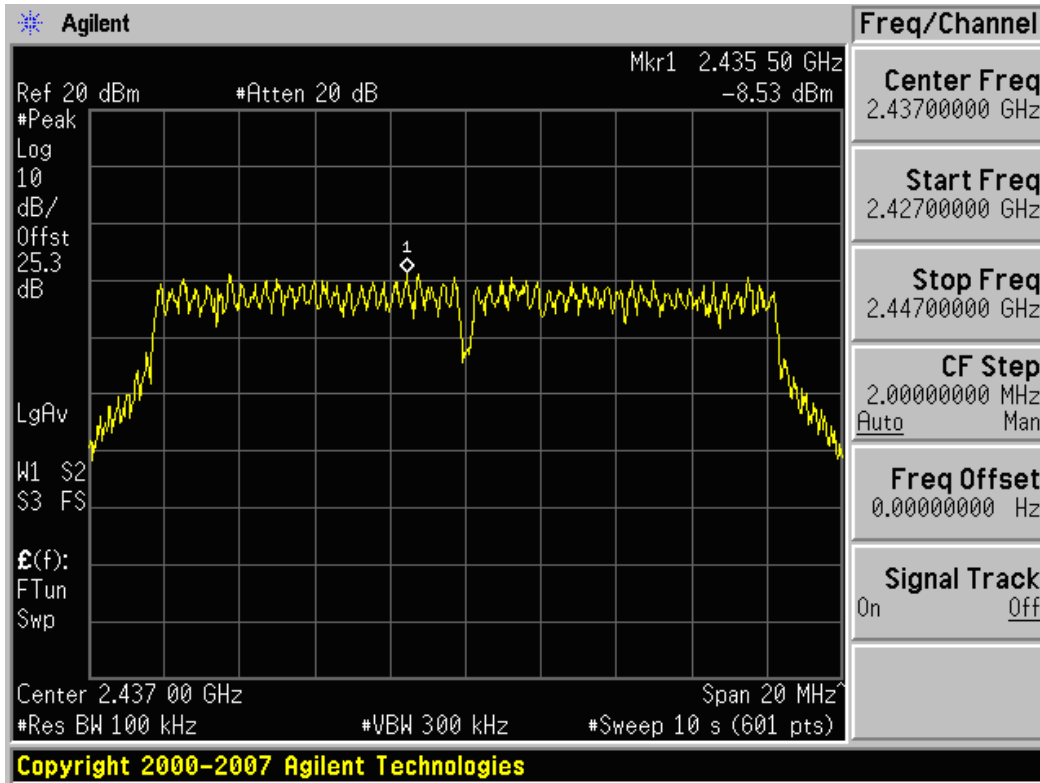




802.11g channel power density

Date: June 30, 2012

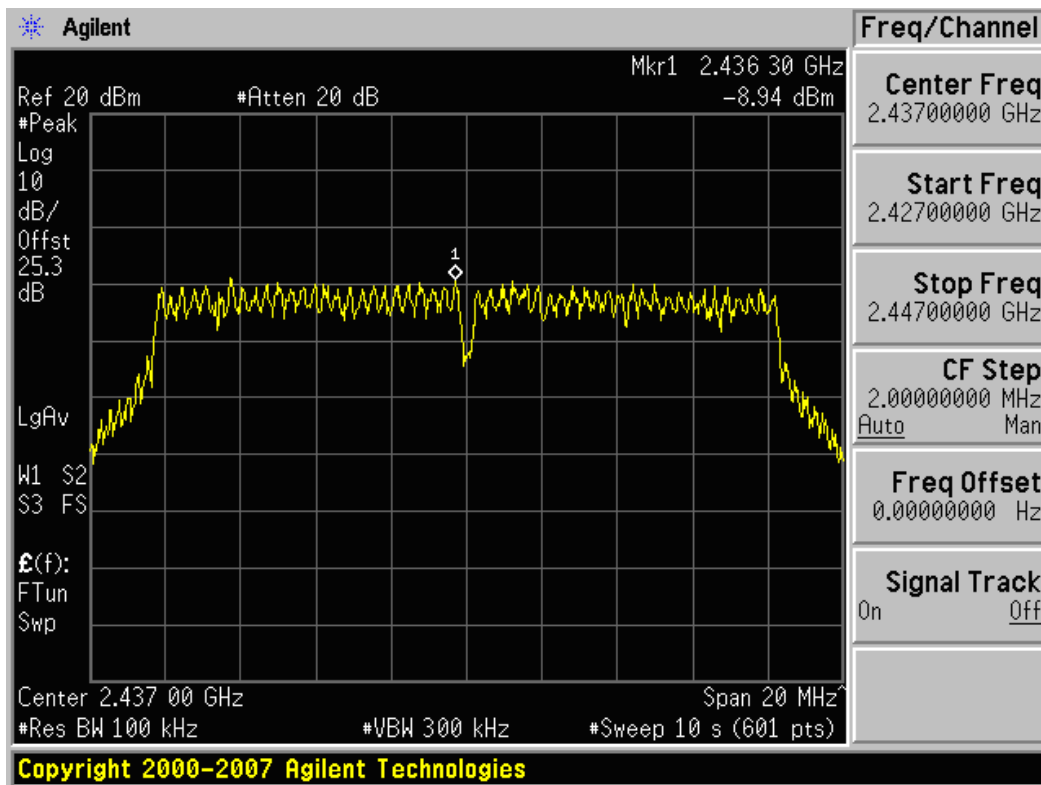
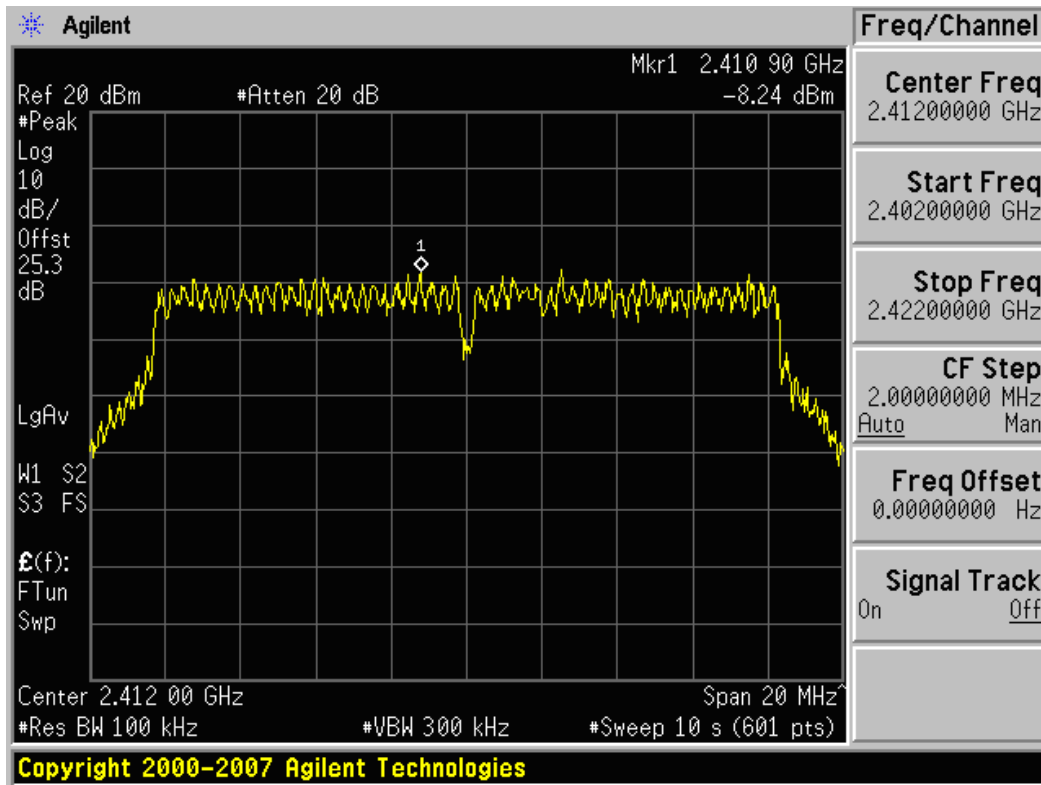


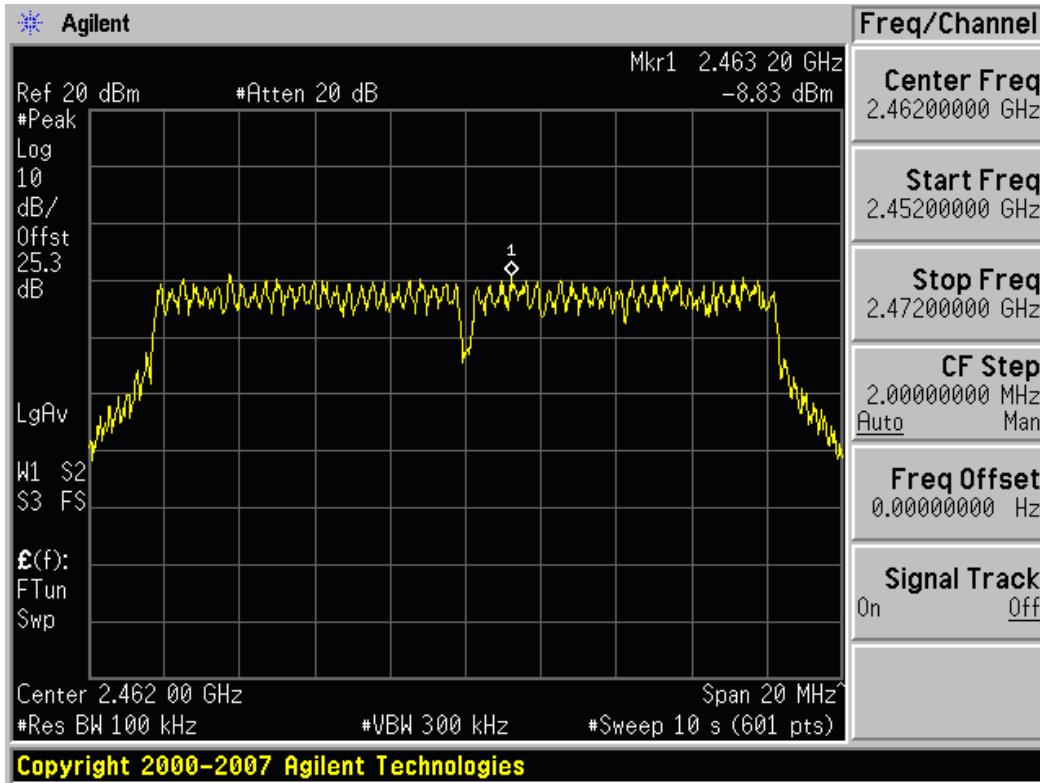




802.11n HT20 channel power density

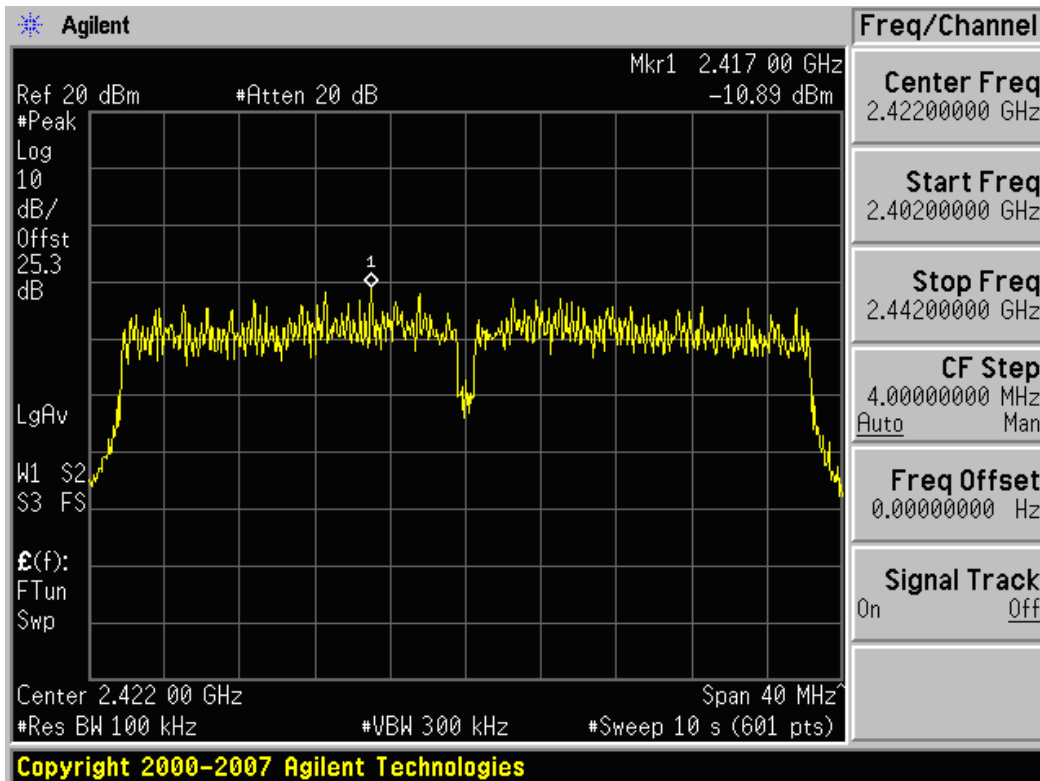
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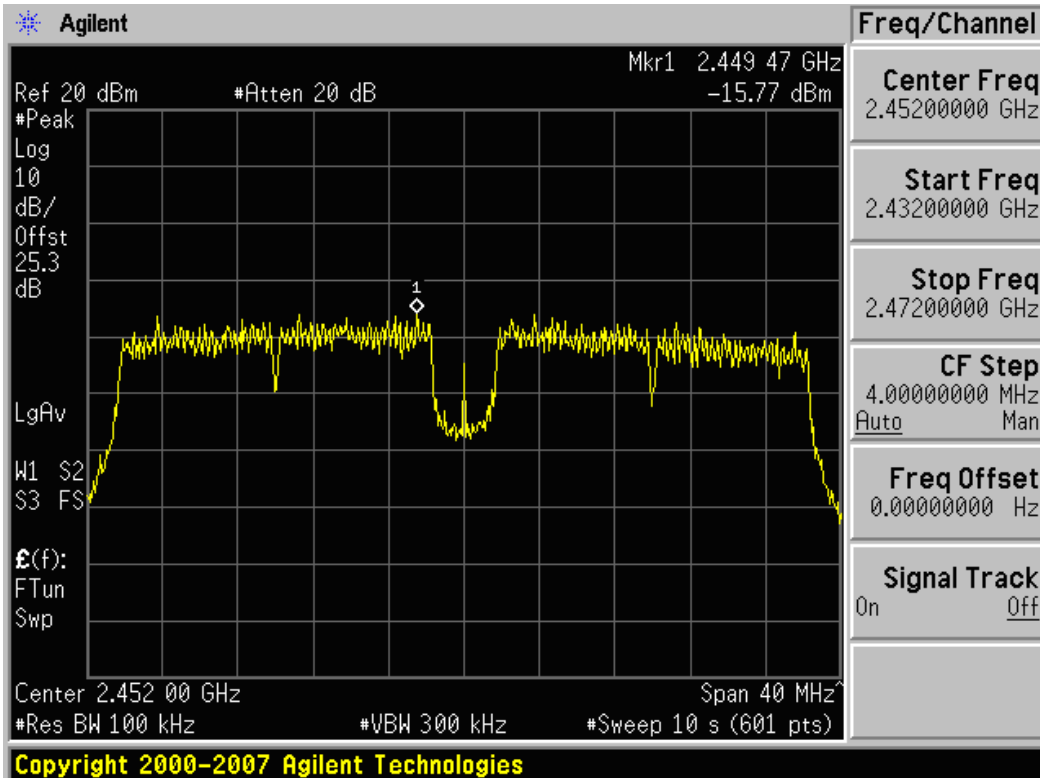
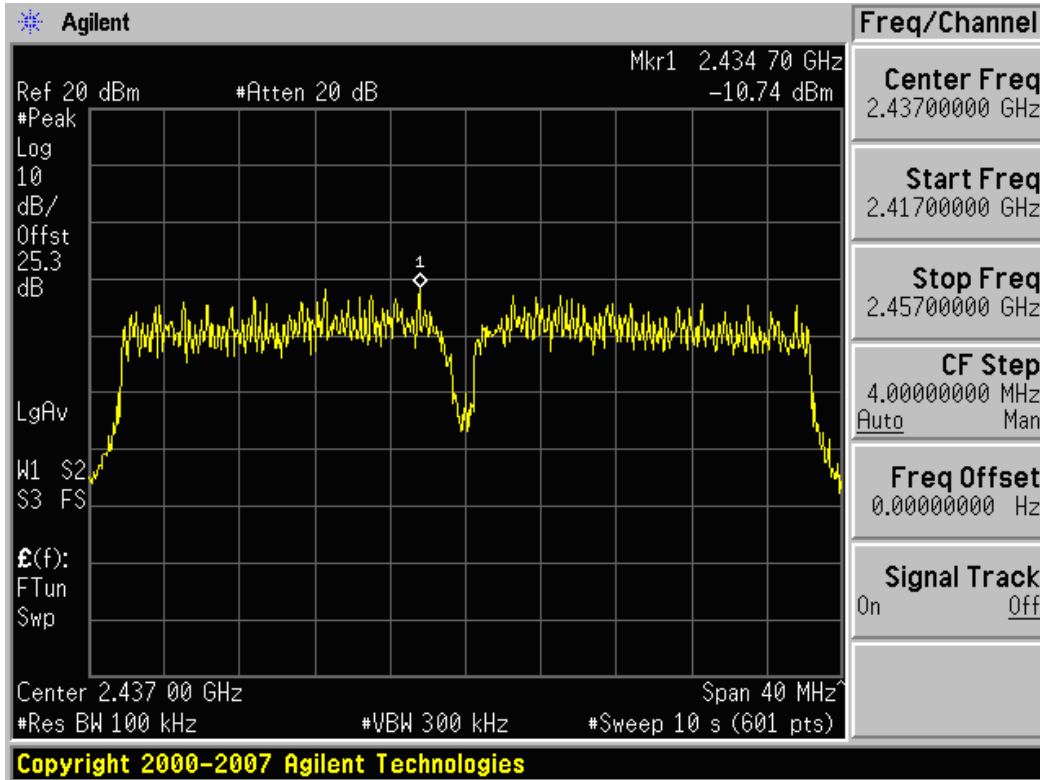




802.11n HT40 channel power density

Date: June 30, 2012





### 5.3. 6 dB Spectrum Bandwidth Measurement

#### 5.3.1. Standard Applicable

According to §15.247(a)(2): For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

#### 5.3.2. Measuring Instruments and Setting

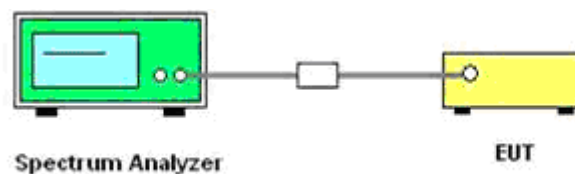
Please refer to section 6 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> RBW
Detector	Peak
Trace	Max Hold
Sweep Time	100ms

#### 5.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 100 kHz and the video bandwidth of 300 kHz were used.
3. Measured the spectrum width with power higher than 6dB below carrier.

#### 5.3.4. Test Setup Layout



#### 5.3.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

#### 5.3.6. Test Result of 6dB Spectrum Bandwidth

Temperature	25°C	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g,n

## 802.11b

Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Result
1	2412	10.0	500	Complies
6	2437	10.0	500	Complies
11	2462	9.0	500	Complies

## 802.11g

Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Result
1	2412	16.33	500	Complies
6	2437	16.30	500	Complies
11	2462	16.31	500	Complies

## 802.11n HT20

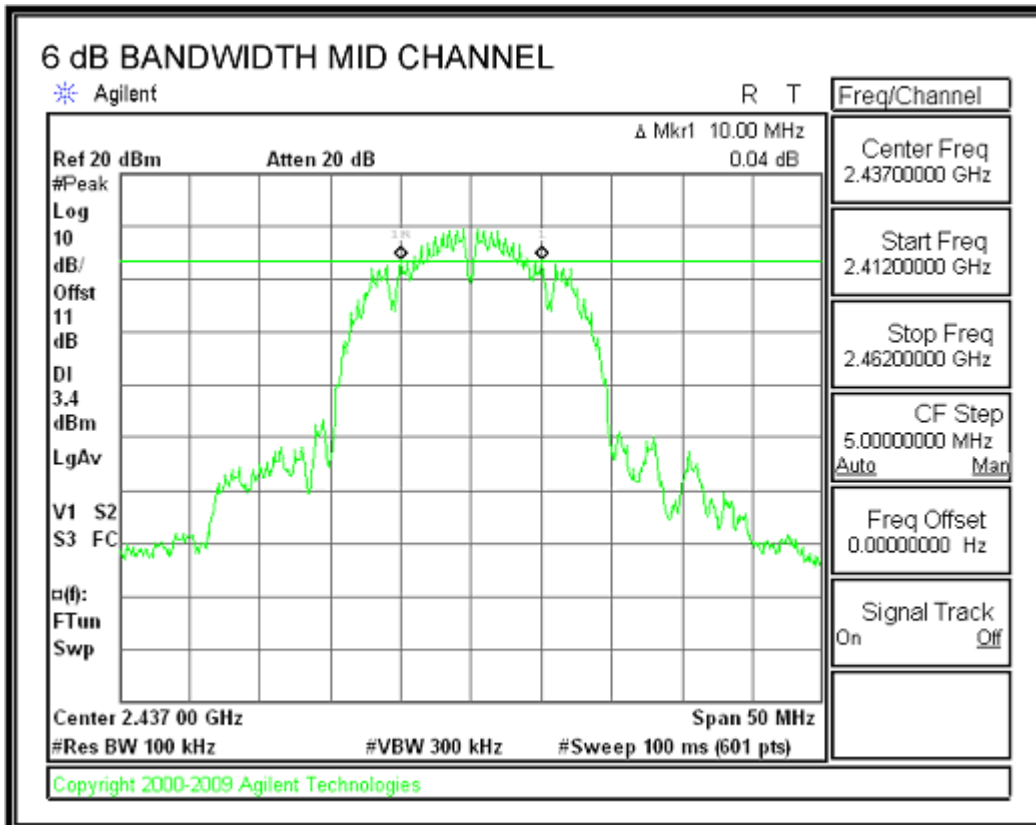
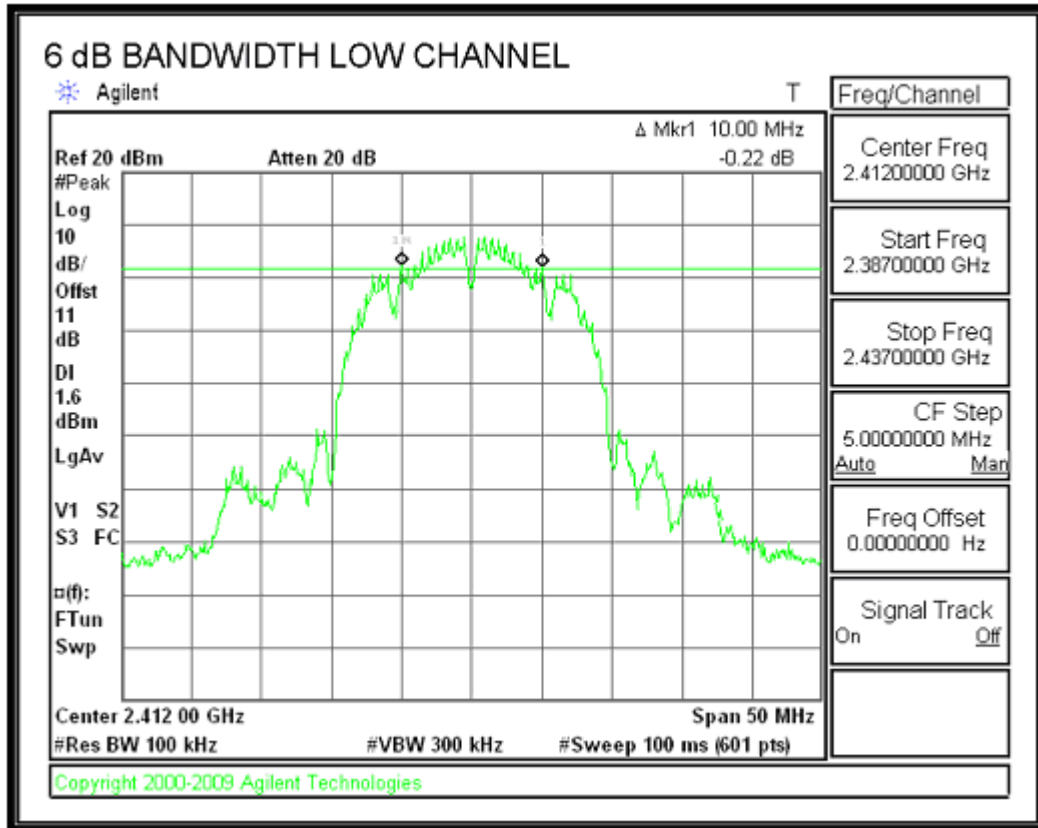
Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Result
1	2412	17.08	500	Complies
6	2437	16.92	500	Complies
11	2462	17.25	500	Complies

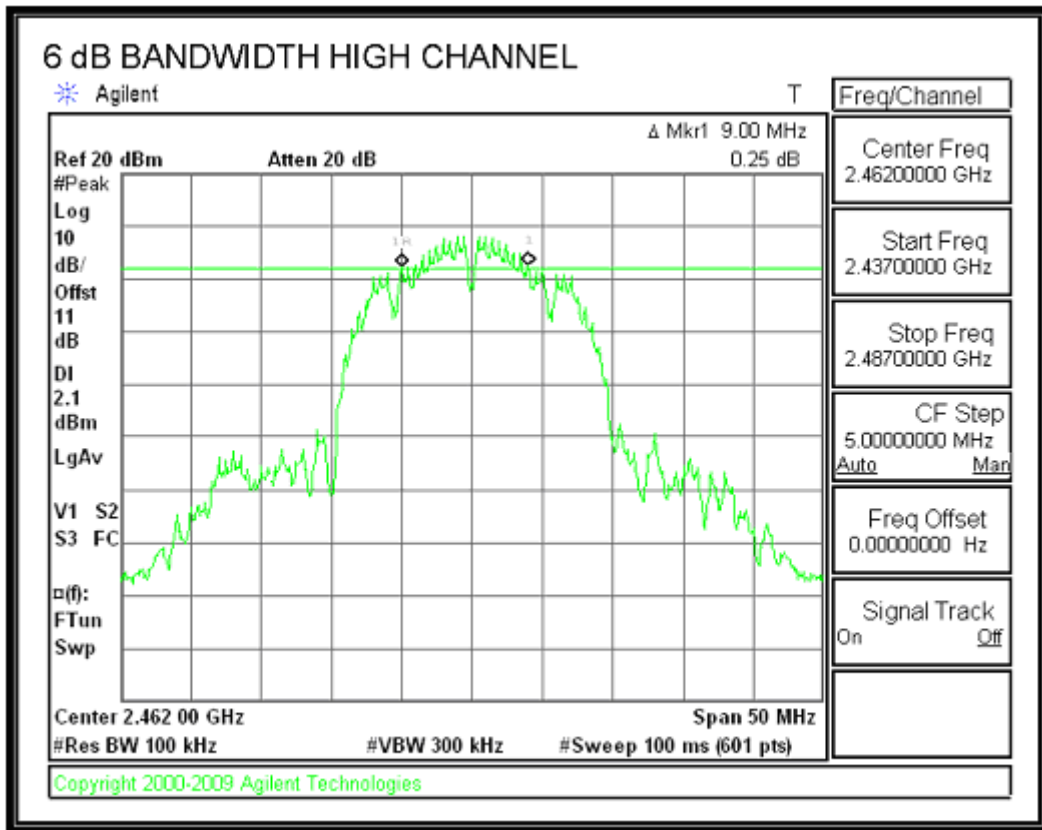
## 802.11n HT40

Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Result
1	2422	35.33	500	Complies
6	2437	35.60	500	Complies
11	2452	35.47	500	Complies

802.11b channel, 6dB bandwidth

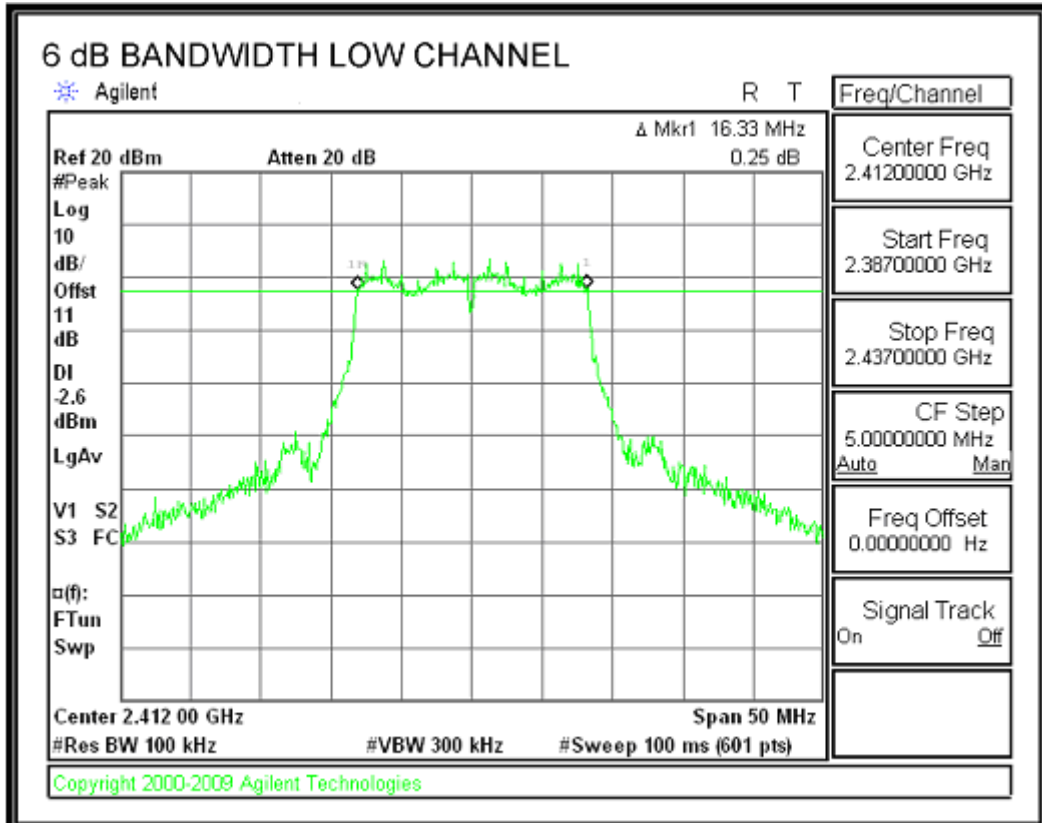
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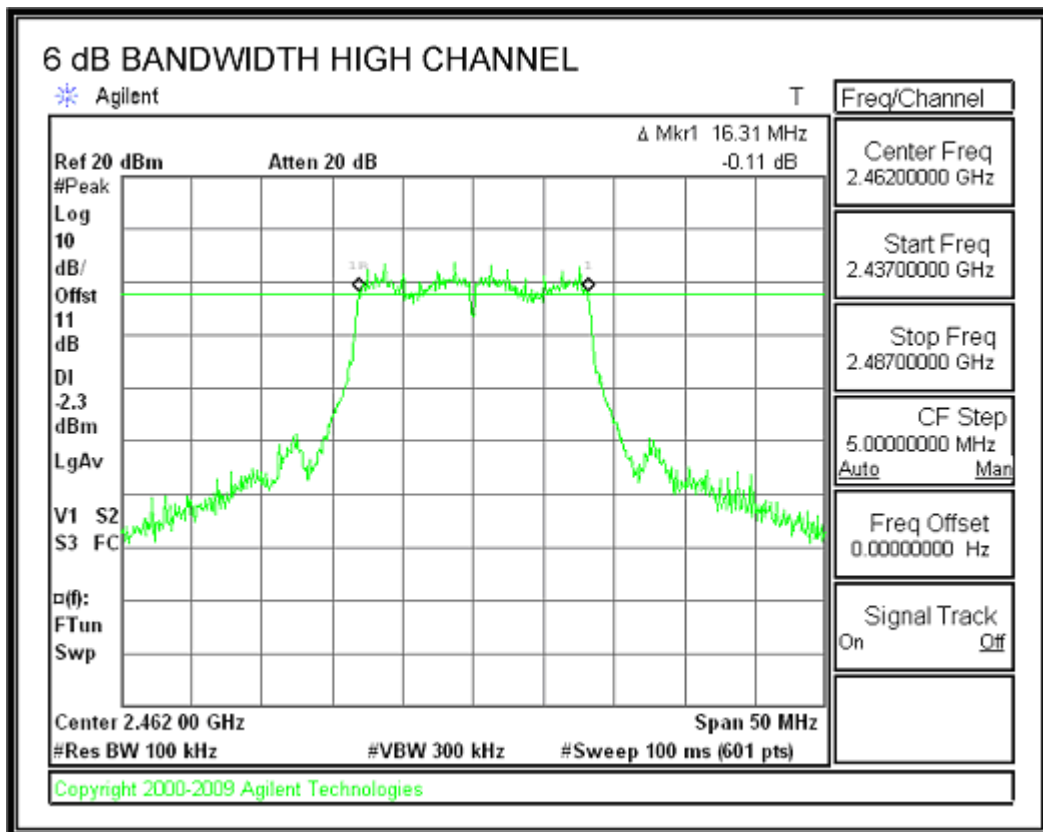
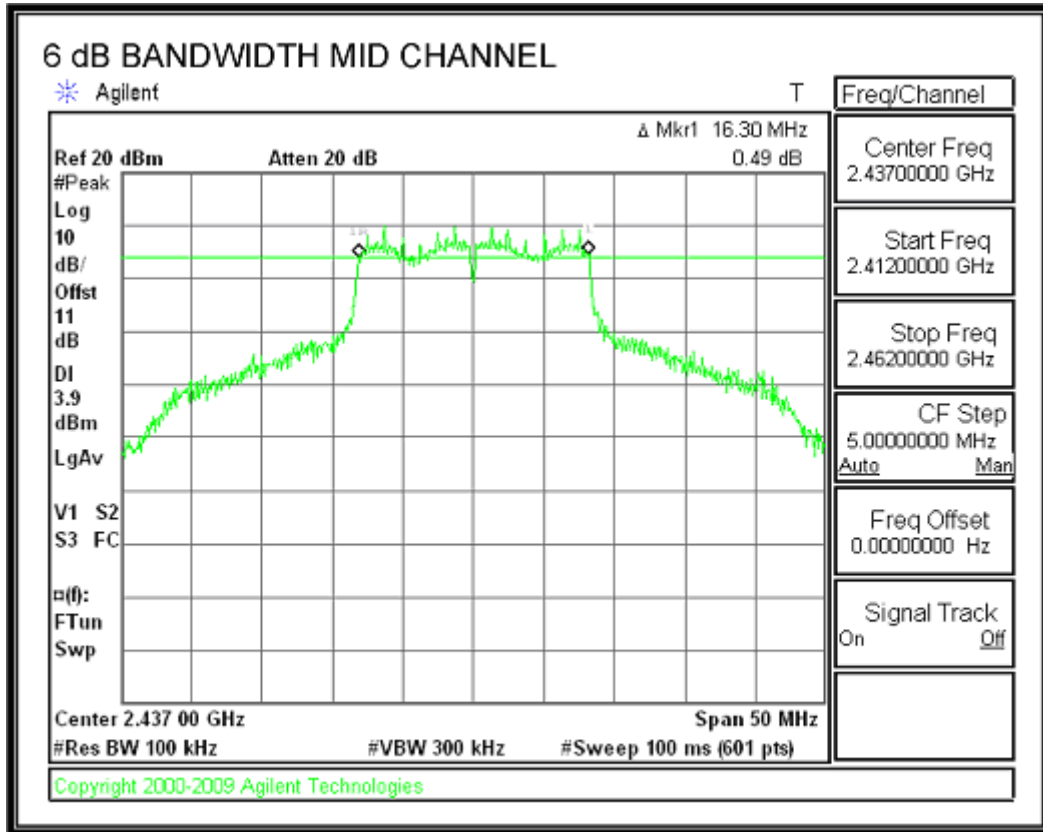




802.11g channel, 6dB bandwidth

Date: June 30, 2012

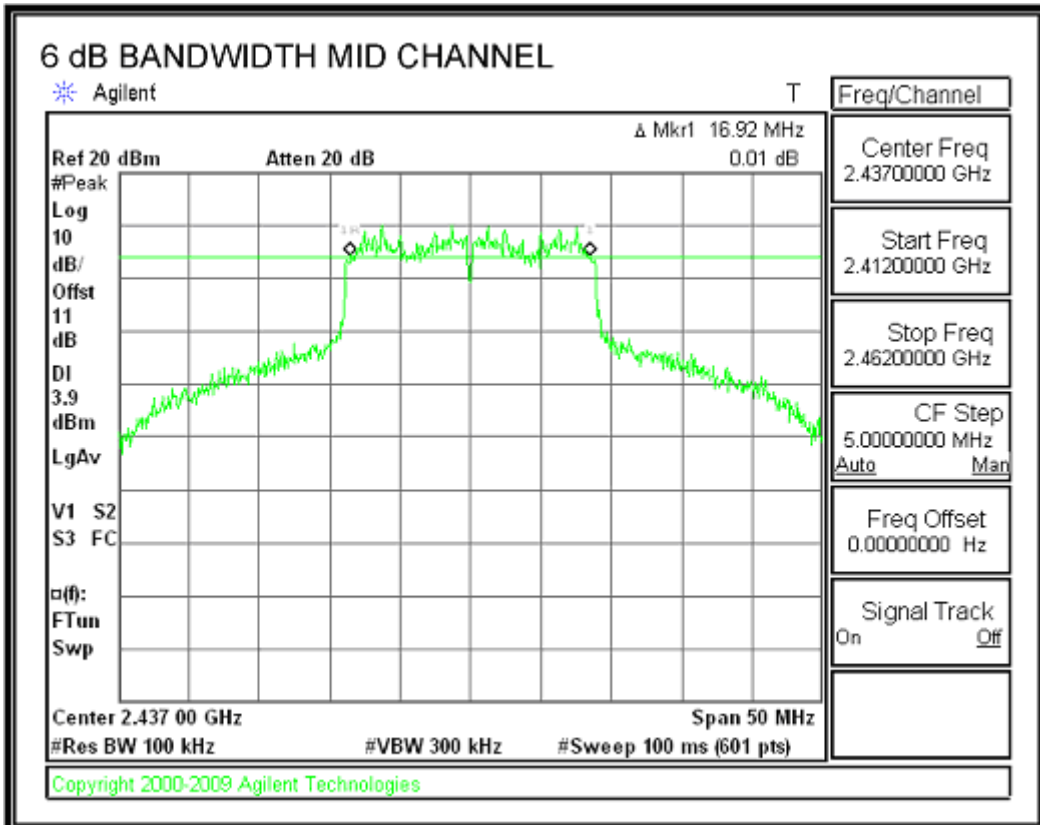
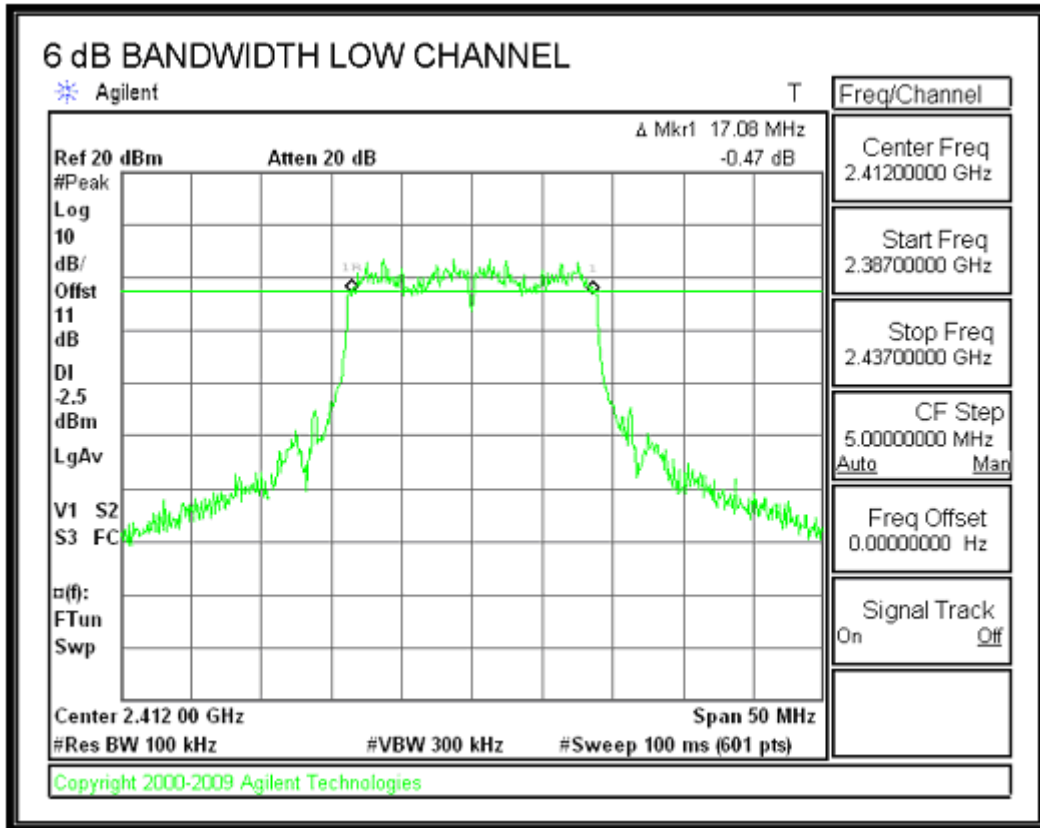


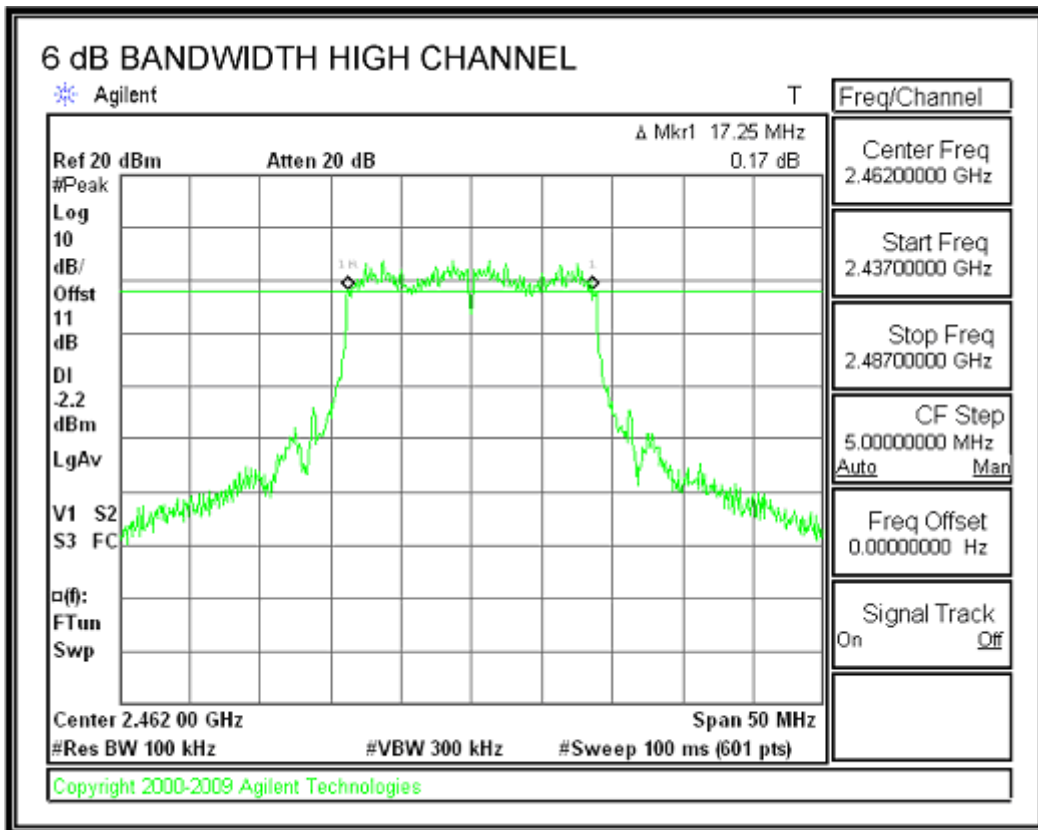




802.11n HT20 channel, 6dB bandwidth

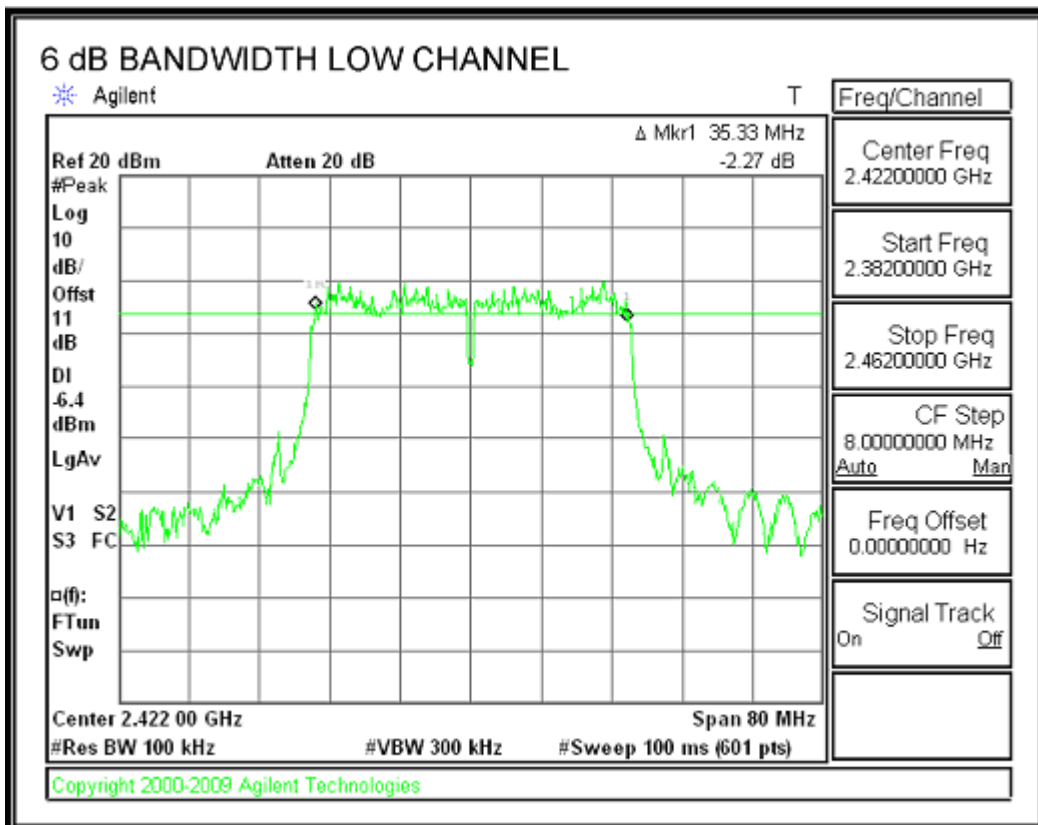
Date: June 30, 2012

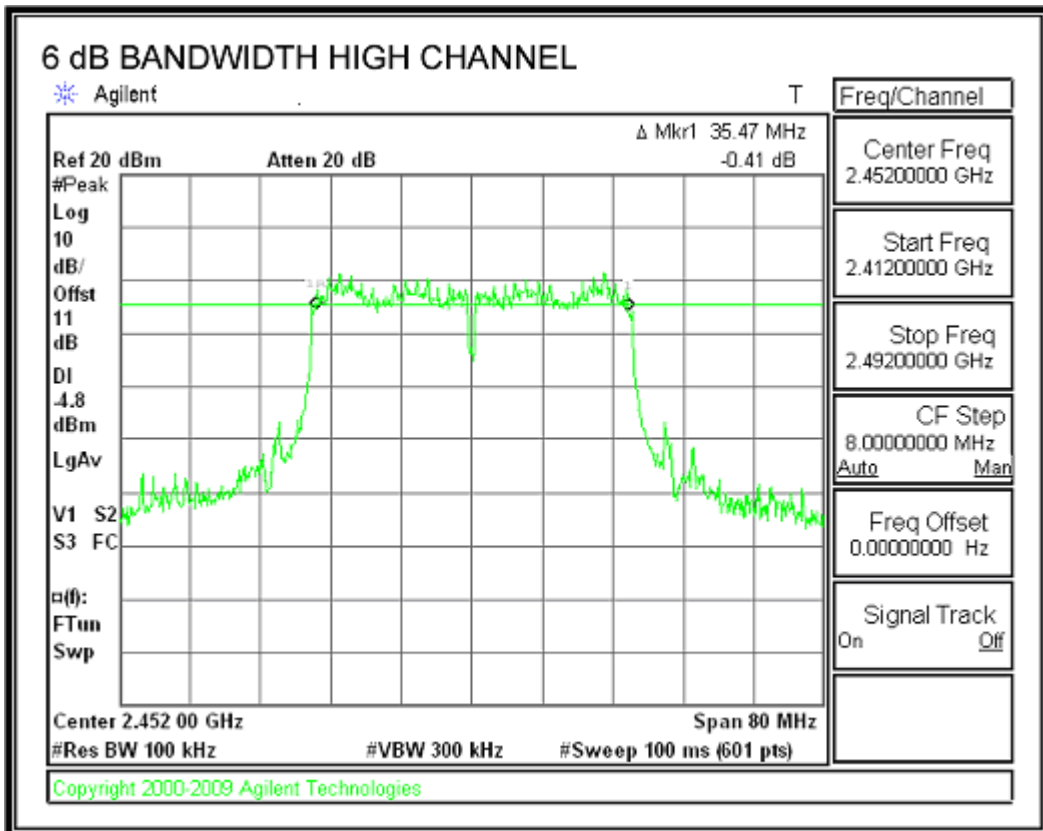
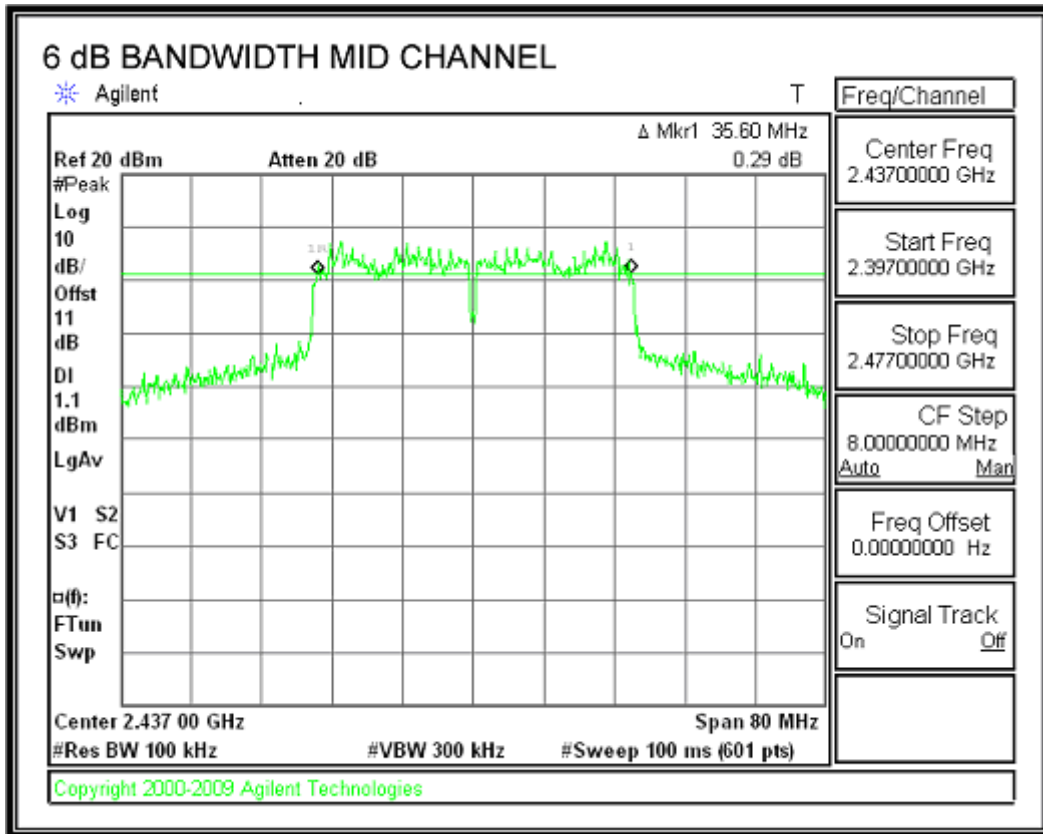




802.11n HT40 channel, 6dB bandwidth

Date: June 30, 2012





## 5.4. Occupied Bandwidth

### 5.4.1. Standard Applicable

According to §15.247(a): Operation under the provisions of this section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:

For systems using digital modulation techniques, the EUT may operate in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz.

### 5.4.2. Measuring Instruments and Setting

Please refer to section 6 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

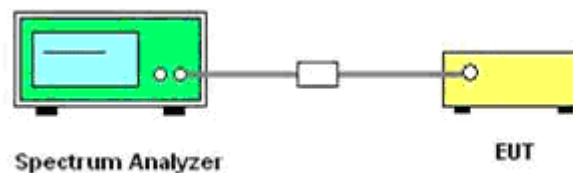
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> RBW
RBW	1% to 3% of the band
VBW	3 times the RBW
Detector	Peak
Trace	Max Hold
Sweep Time	100ms

## 5

### 5.4.3. Test Procedures

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth measurement function is utilized.

### 5.4.4. Test Setup Layout



### 5.4.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

## 5.4.6. Test Result of 99% Occupied Bandwidth.

Temperature	25°C	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g,n

## 802.11b

Channel	Frequency	99% OBW (MHz)	26dB BW (MHz)
1	2412	15.46	18.39
6	2437	15.63	18.39
11	2462	15.61	18.45

## 802.11g

Channel	Frequency	99% OBW (MHz)	26dB BW (MHz)
1	2412	16.36	18.64
6	2437	16.81	18.45
11	2462	16.49	18.38

## 802.11n HT20

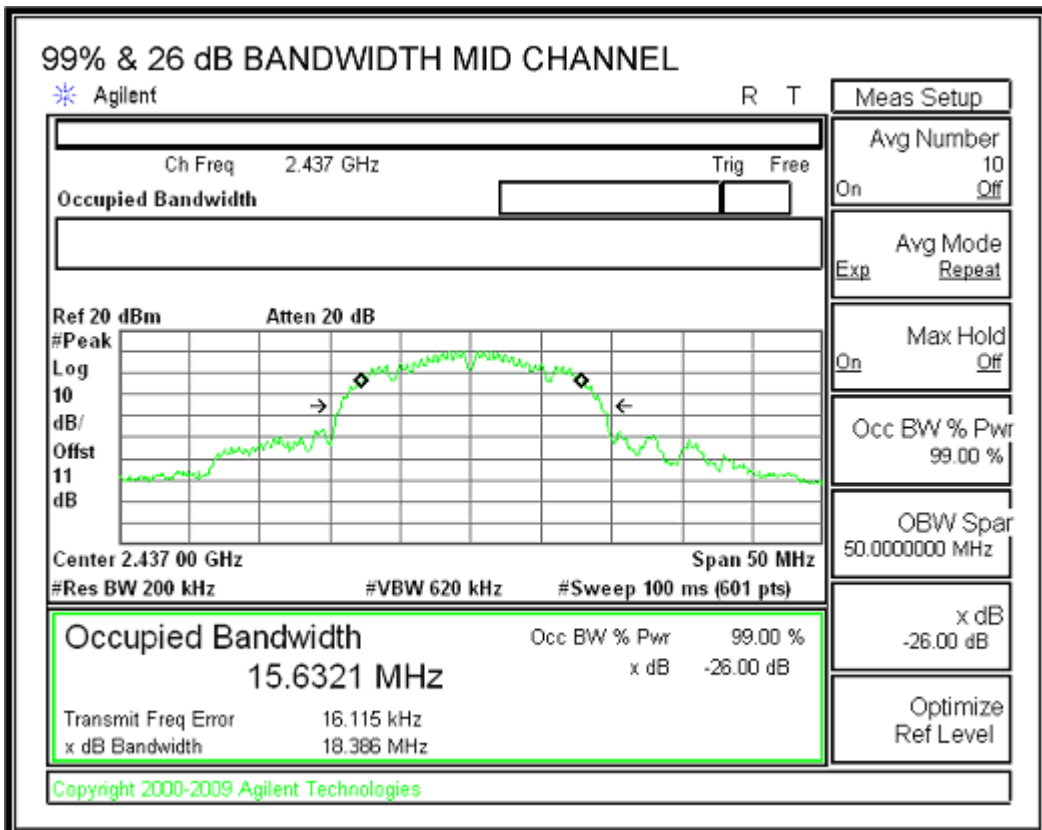
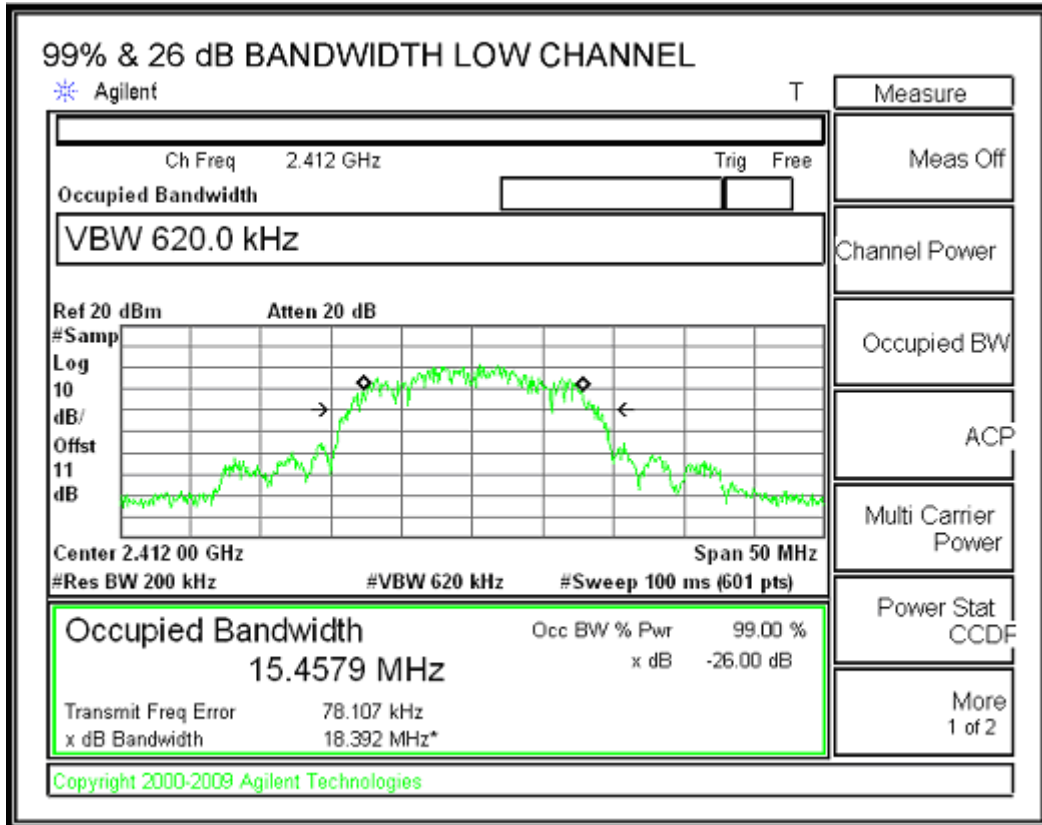
Channel	Frequency	99% OBW (MHz)	26dB BW (MHz)
1	2412	17.48	18.59
6	2437	17.49	28.95
11	2462	17.43	18.30

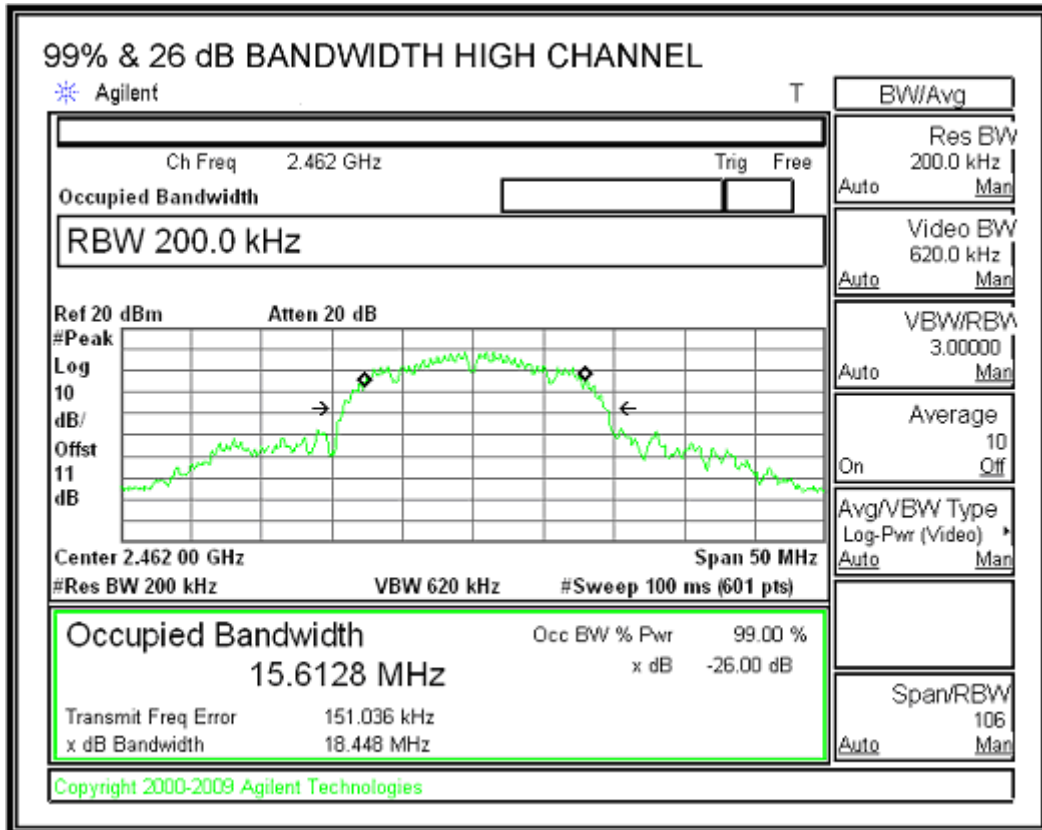
## 802.11n HT40

Channel	Frequency	99% OBW (MHz)	26dB BW (MHz)
1	2422	35.85	38.20
6	2437	36.29	74.18
11	2452	35.51	38.76

802.11b channel, 99% Occupied Bandwidth.

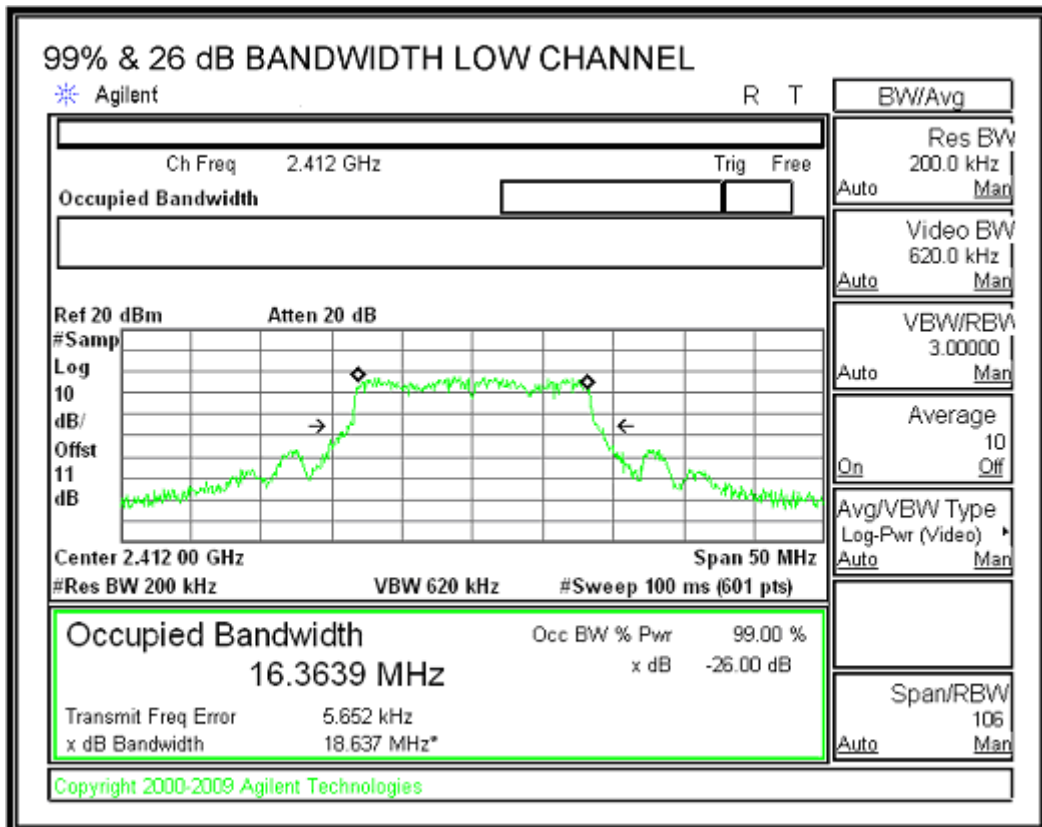
Date: June 30, 2012

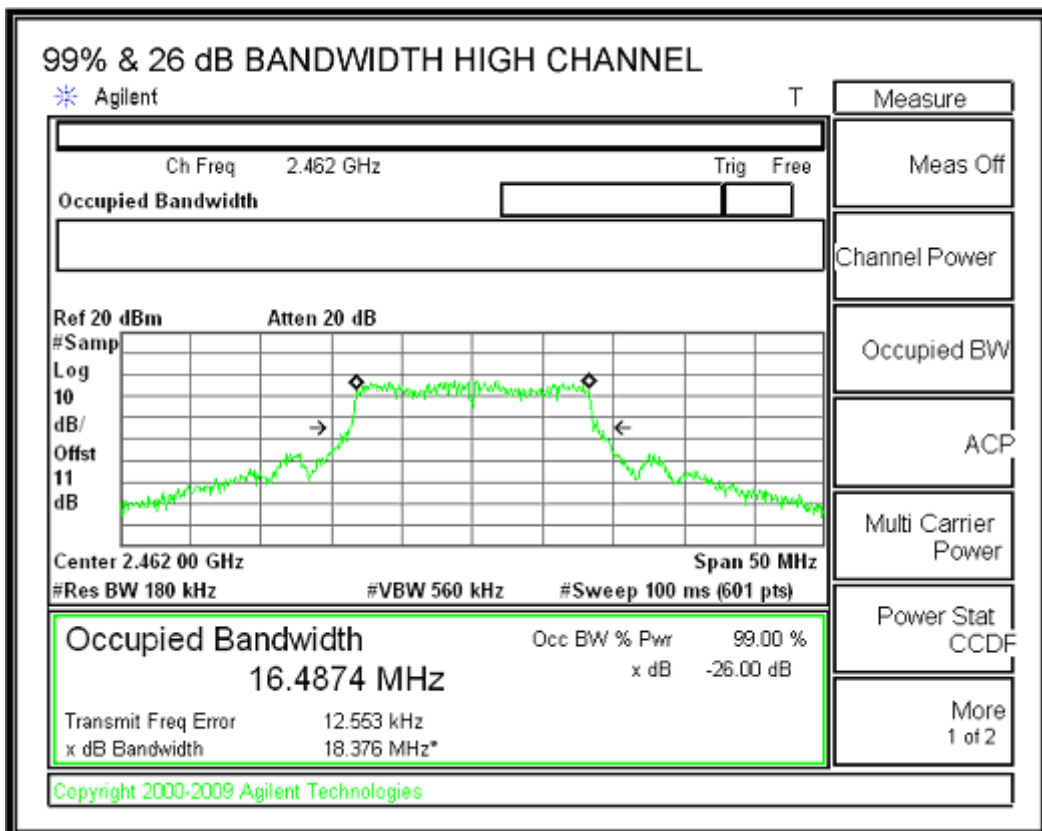
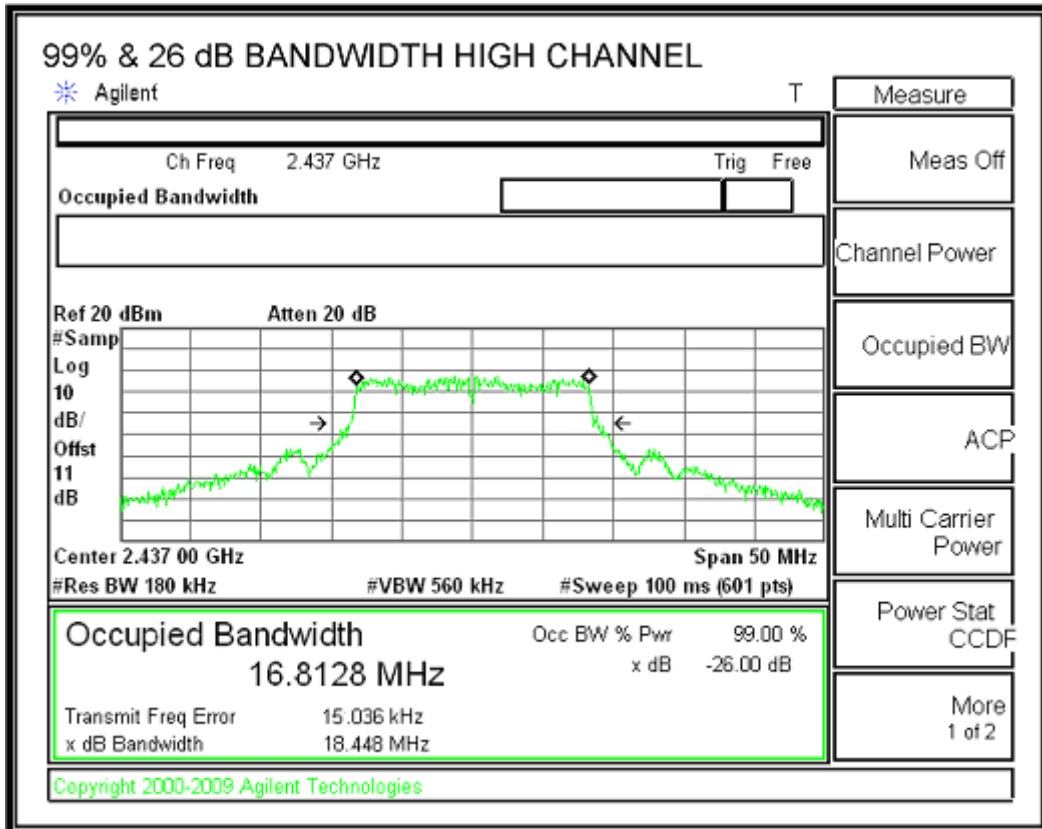




802.11g channel, 99% Occupied Bandwidth.

Date: June 30, 2012

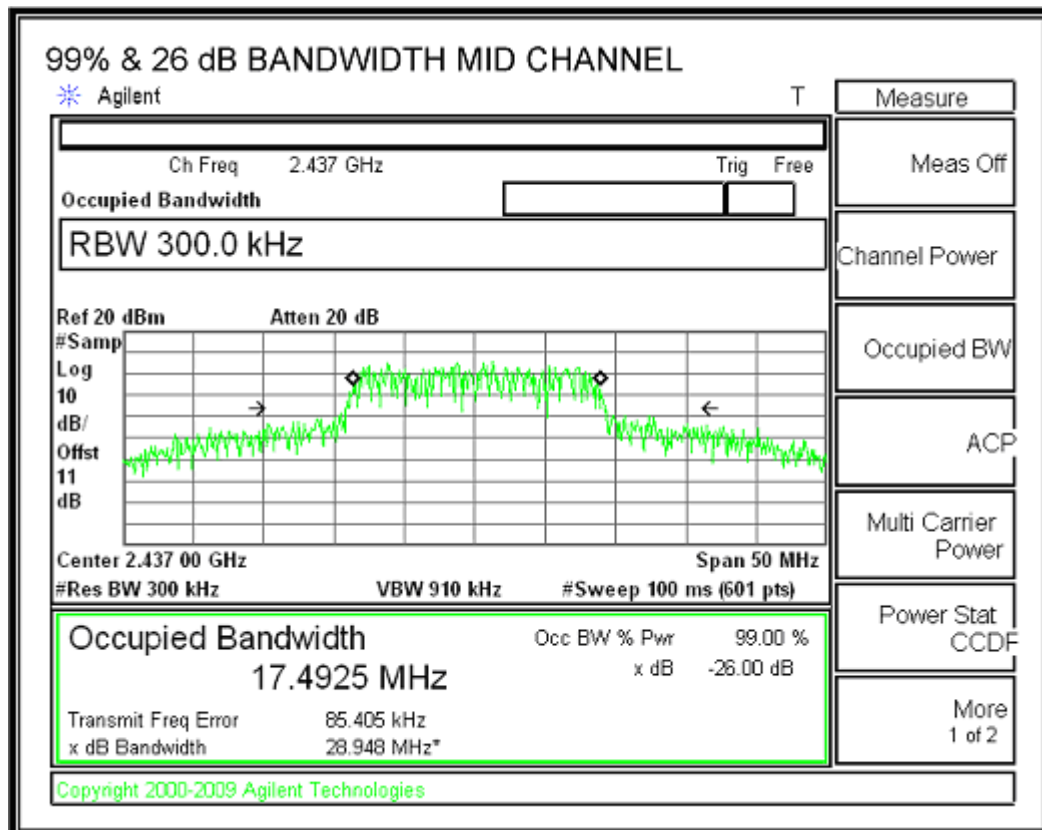
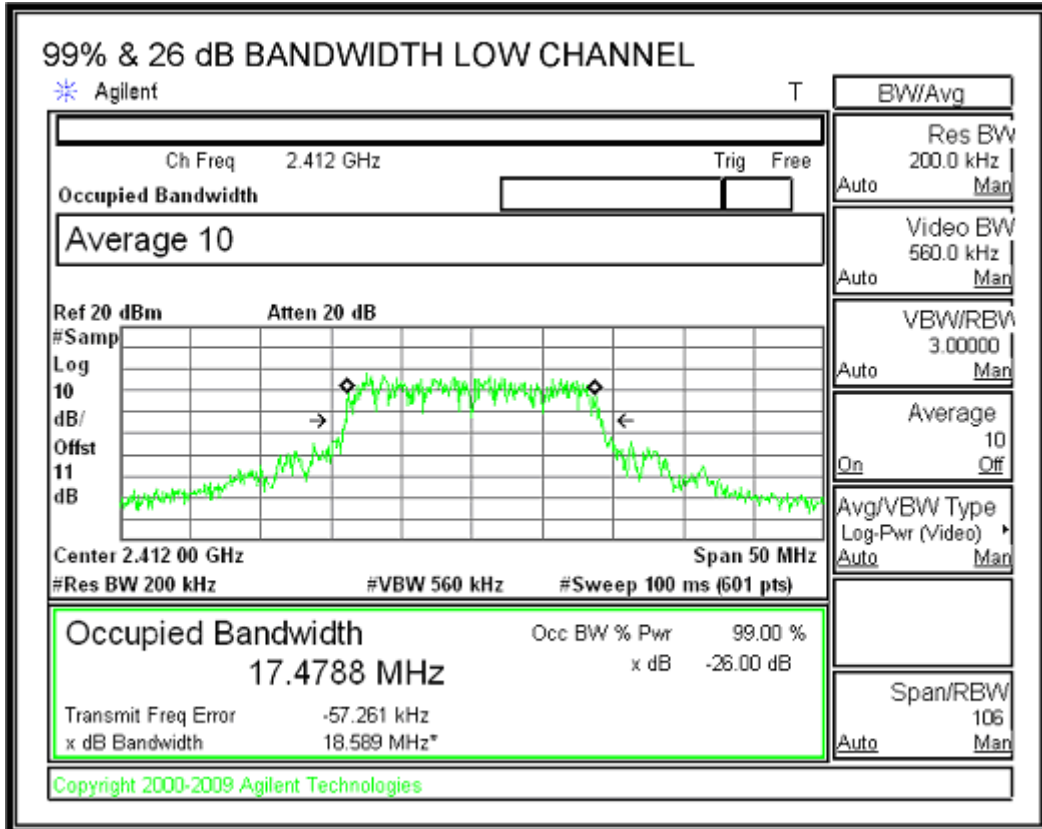


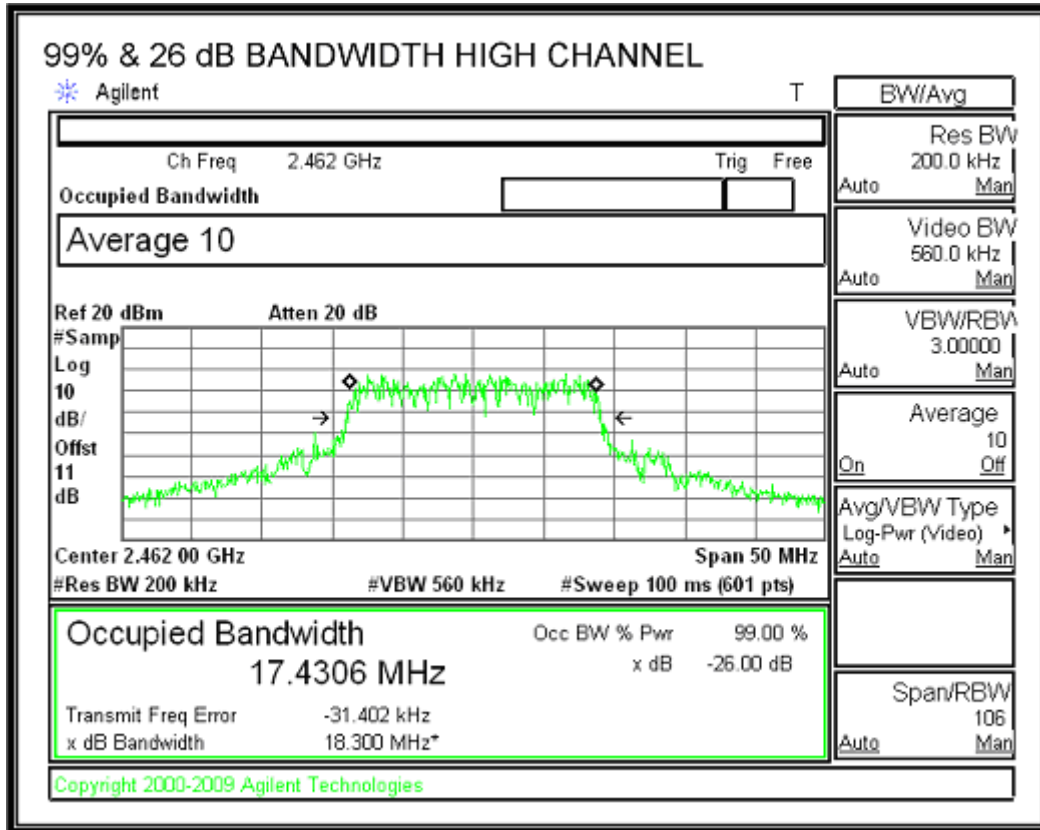




802.11n HT20 channel, 99% Occupied Bandwidth.

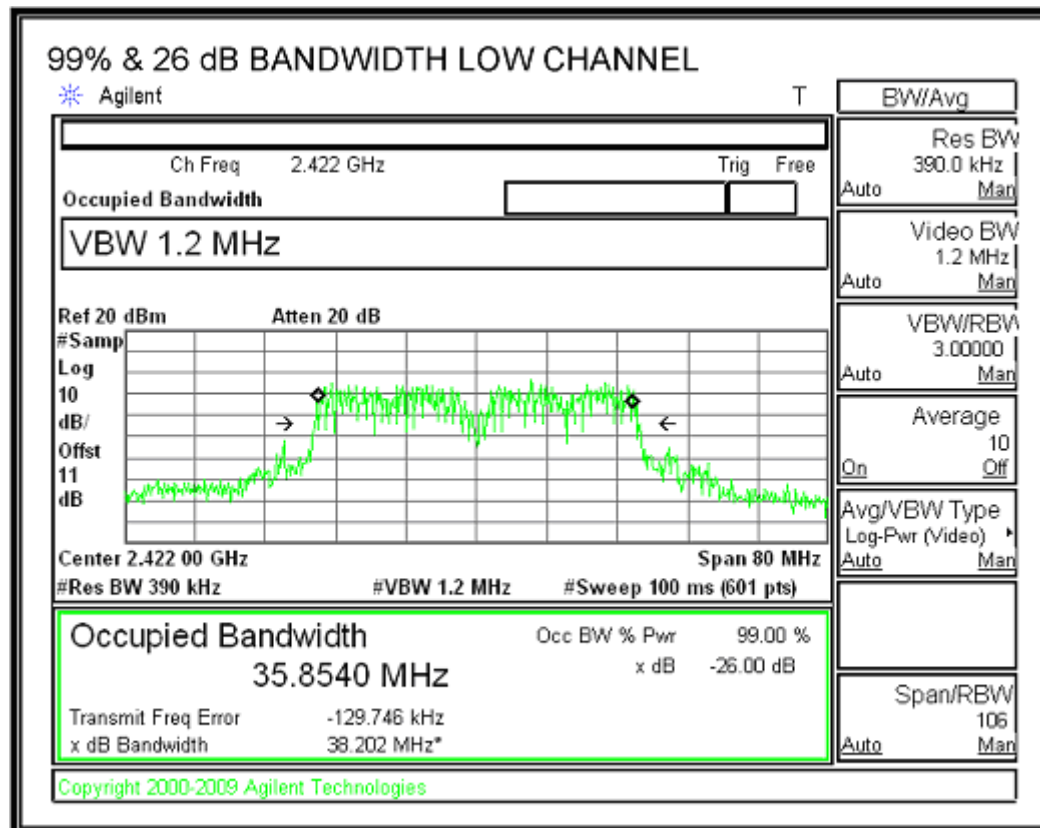
Date: June 30, 2012

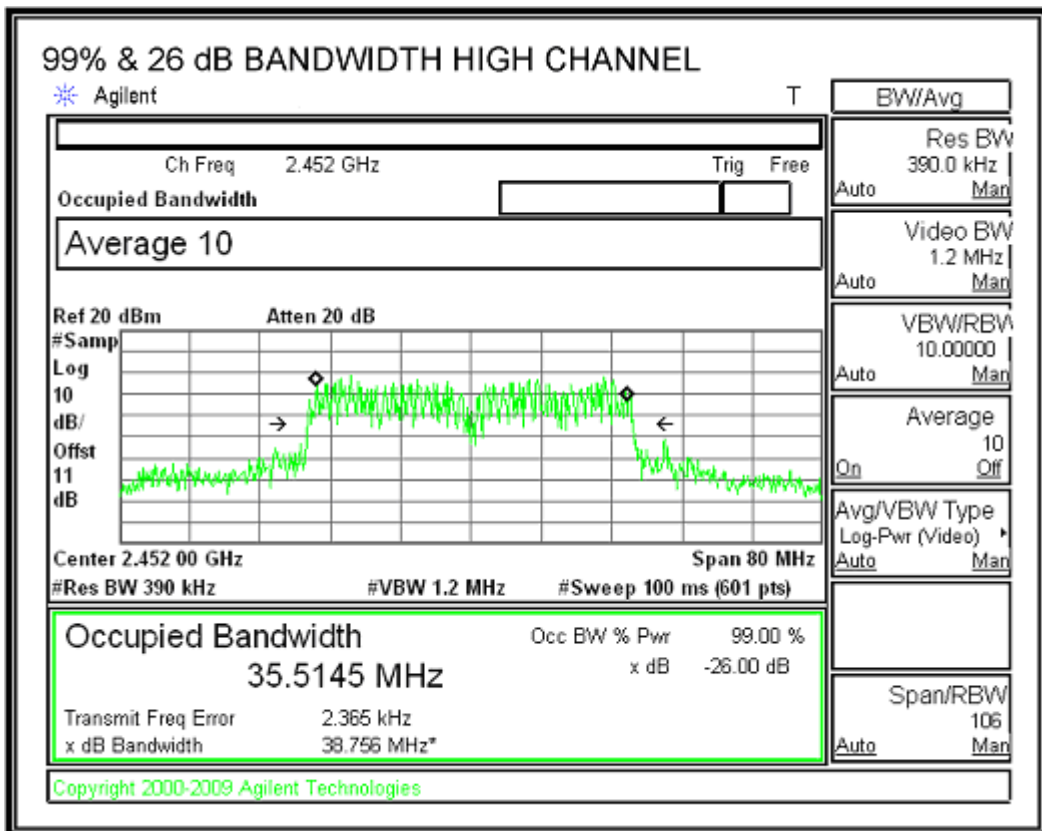
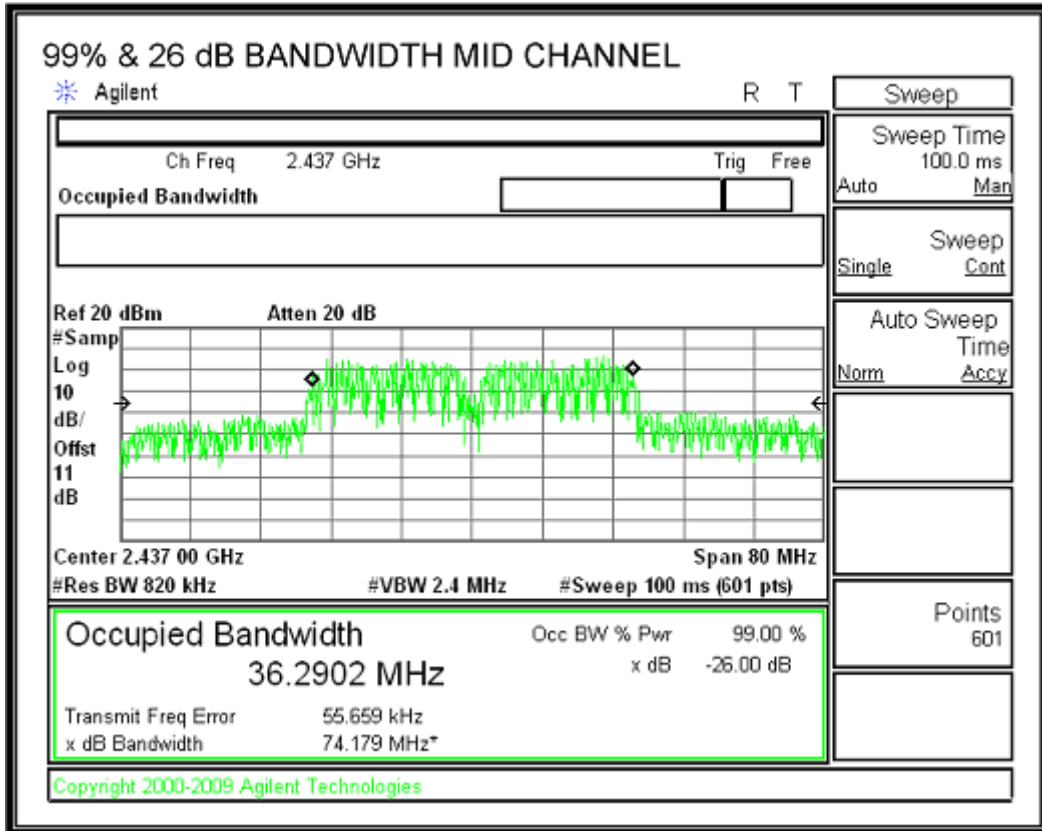




802.11n HT40 channel, 99% Occupied Bandwidth.

Date: June 30, 2012





## 5.5. Radiated Emissions Measurement

### 5.5.1. Standard Applicable

According to §15.247 (d): 20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies(MHz)	Field Strength(micorvolts/meter)	Measurement Distance(meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

### 5.5.2. Measuring Instruments and Setting

Please refer to section 6 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average

Spectrum Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 100kHz for QP

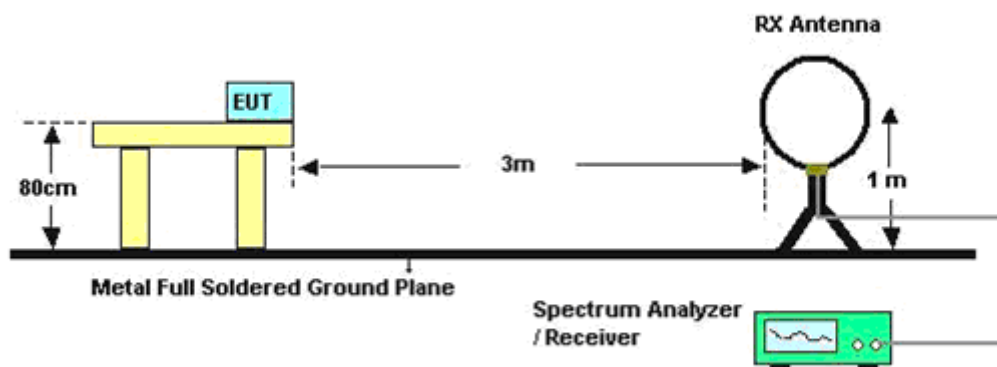
### 5.5.3. Test Procedures

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading

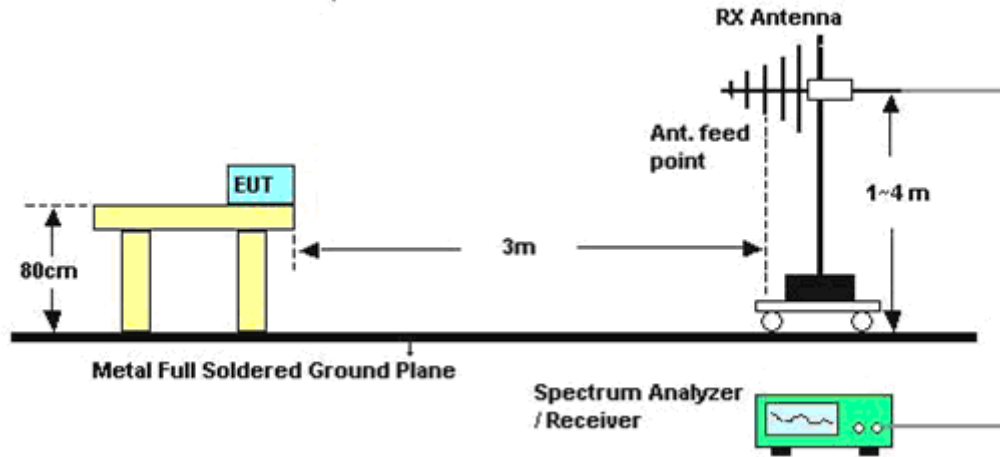
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

#### 5.5.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor =  $20 \log(\text{specific distance [3m]} / \text{test distance [1.5m]})$  (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

5.5.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.5.6. Results of Radiated Emissions (9kHz~30MHz)

Temperature	25°C	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g,n

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Over Limit (dBuV)	Remark
-	-	-	-	See Note

Note:

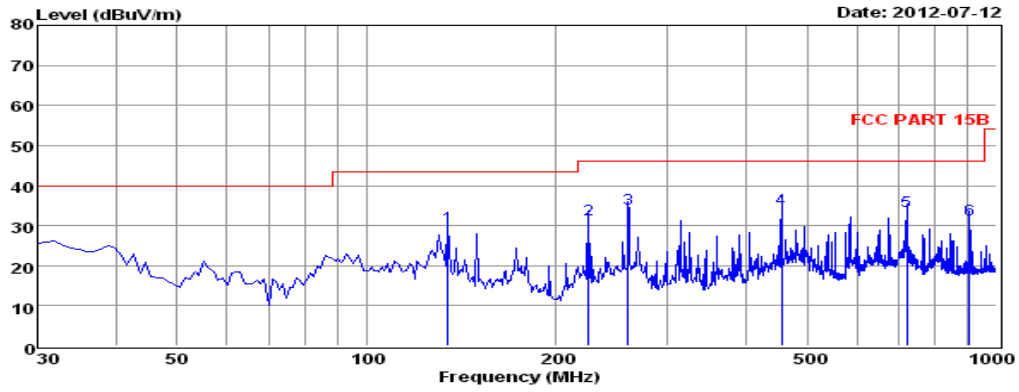
The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

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

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

5.5.7. Results of Radiated Emissions (30MHz~1GHz)

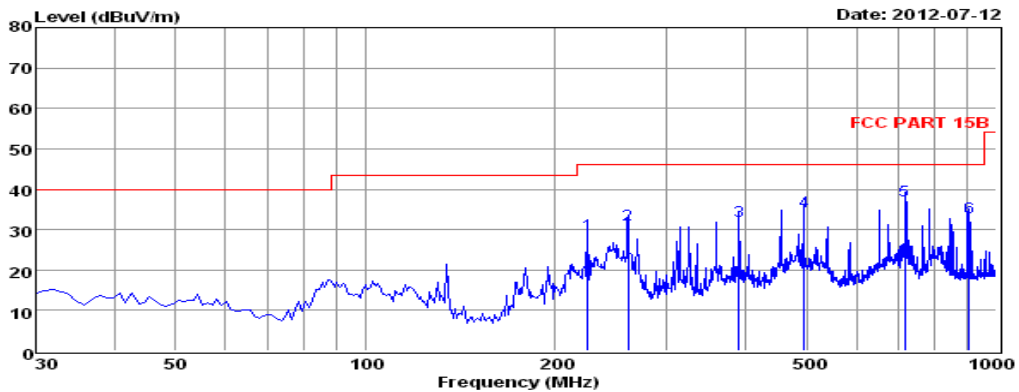
Temperature	25°C	Humidity	60%
Test Engineer	Vito Cao	Configurations	Normal Link



Env. / Ins: 24°C/56%  
 EUT: WiBOX  
 M/N: WiBOX  
 Power Rating: DC 3.7V From PC Input AC 120V/60Hz  
 Test Mode: ON  
 Operator: FOX  
 Memo:  
 pol: VERTICAL

Freq.	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1 134.76	50.48	0.74	8.58	30.20	29.60	43.50	-13.90	QP
2 224.97	49.51	0.89	11.42	30.19	31.63	46.00	-14.37	QP
3 259.89	51.21	1.01	12.05	30.17	34.10	46.00	-11.90	QP
4 455.83	47.16	1.39	15.58	30.07	34.06	46.00	-11.94	QP
5 720.64	42.85	1.63	19.07	30.06	33.49	46.00	-12.51	QP
6 906.88	38.47	2.03	21.13	30.12	31.51	46.00	-14.49	QP

Note: 1. All readings are Quasi-peak values.  
 2. Measured = Reading + Antenna Factor + Cable Loss - Amp Factor.  
 3. The emission levels that are 20dB below the official limit are not reported.



Env. / Ins: 24°C/56%  
 EUT: WiBOX  
 M/N: WiBOX  
 Power Rating: DC 3.7V From PC Input AC 120V/60Hz  
 Test Mode: ON  
 Operator: FOX  
 Memo:  
 pol: HORIZONTAL

Freq.	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1 224.97	46.60	0.89	11.42	30.19	28.72	46.00	-17.28	QP
2 260.86	48.33	0.96	12.08	30.17	31.20	46.00	-14.80	QP
3 390.84	46.25	1.17	14.84	30.10	32.16	46.00	-13.84	QP
4 495.60	46.62	1.34	16.47	30.05	34.38	46.00	-11.62	QP
5 716.76	46.62	1.69	19.02	30.06	37.27	46.00	-8.73	QP
6 906.88	40.05	2.03	21.13	30.12	33.09	46.00	-12.91	QP

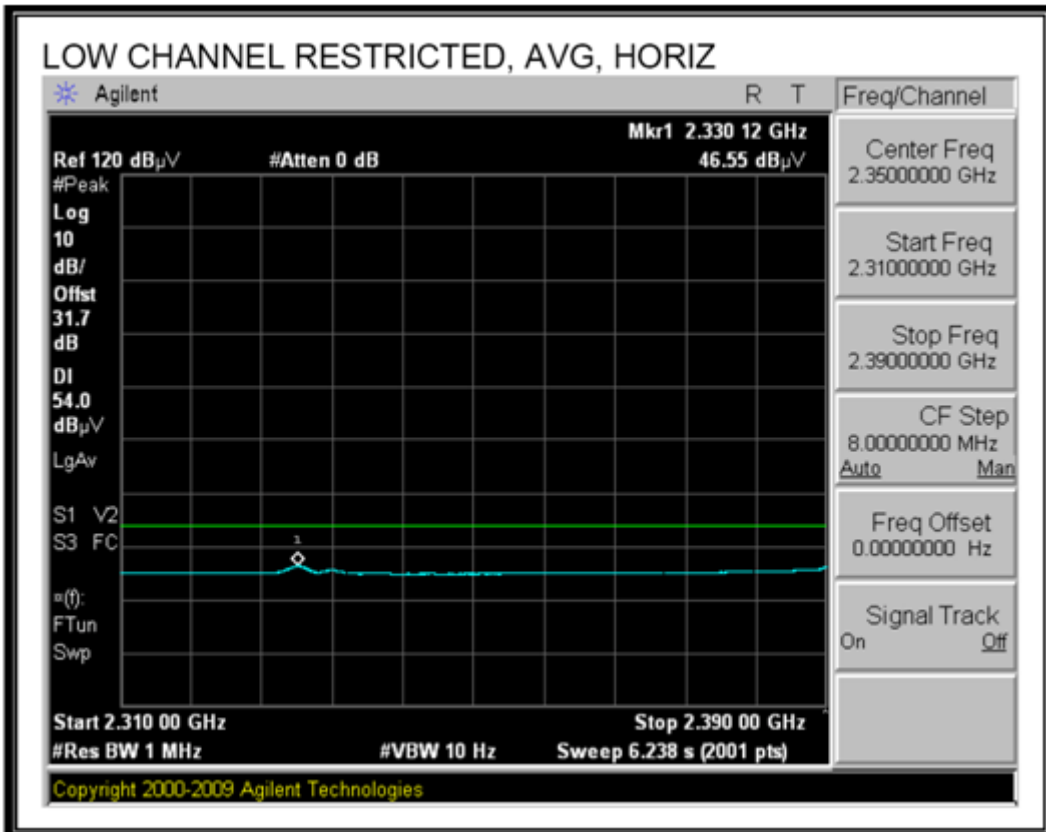
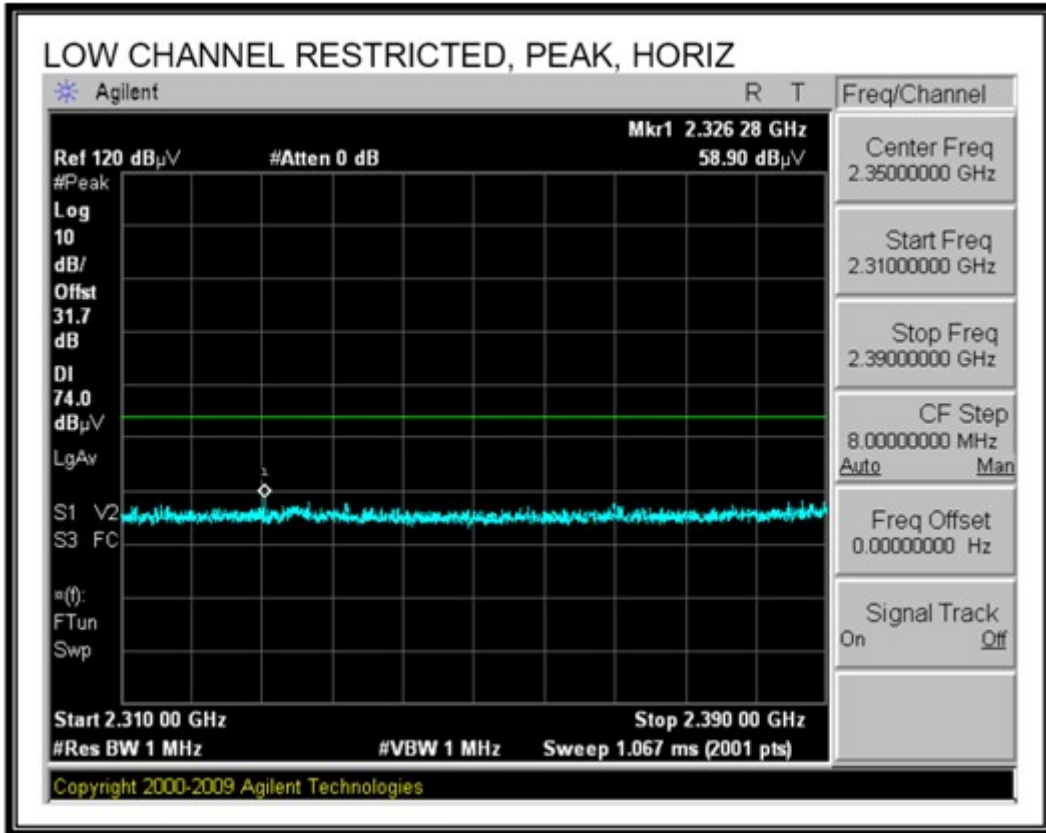
Note: 1. All readings are Quasi-peak values.  
 2. Measured = Reading + Antenna Factor + Cable Loss - Amp Factor.  
 3. The emission levels that are 20dB below the official limit are not reported.

Note:  
 Pre-scan all mode and recorded the worst case results in this report (802.11g Channel 6).  
 Emission level (dBuV/m) = 20 log Emission level (uV/m).  
 Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

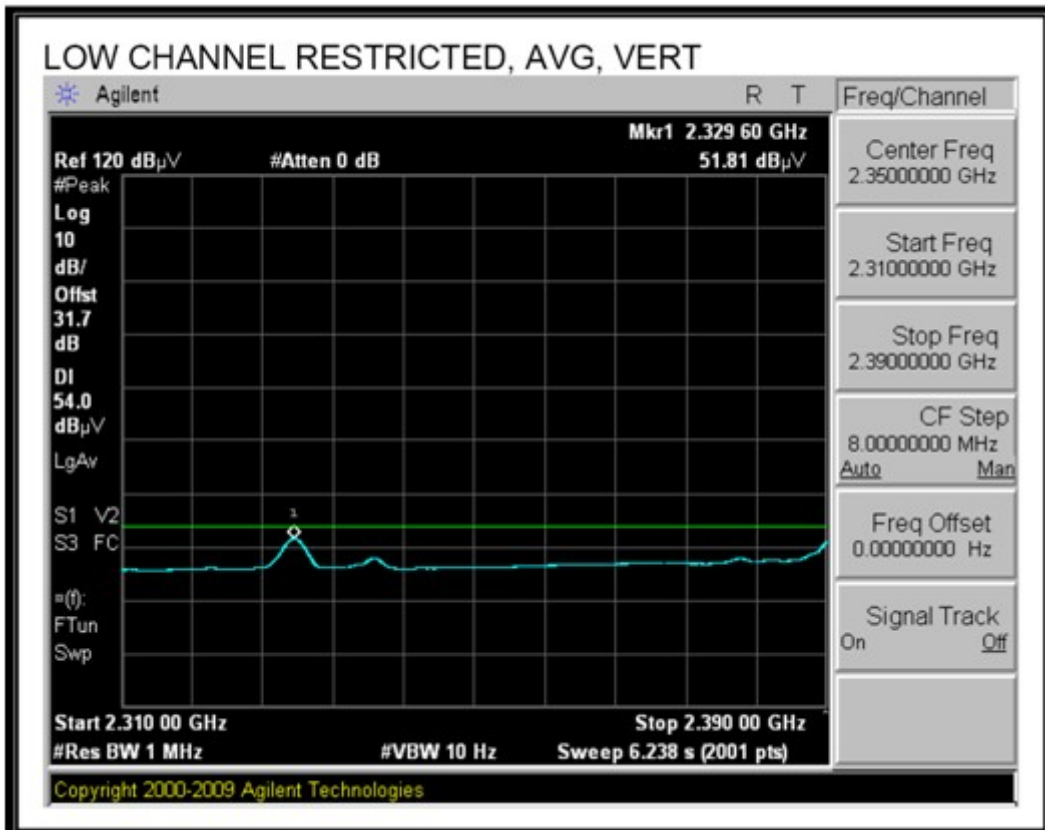
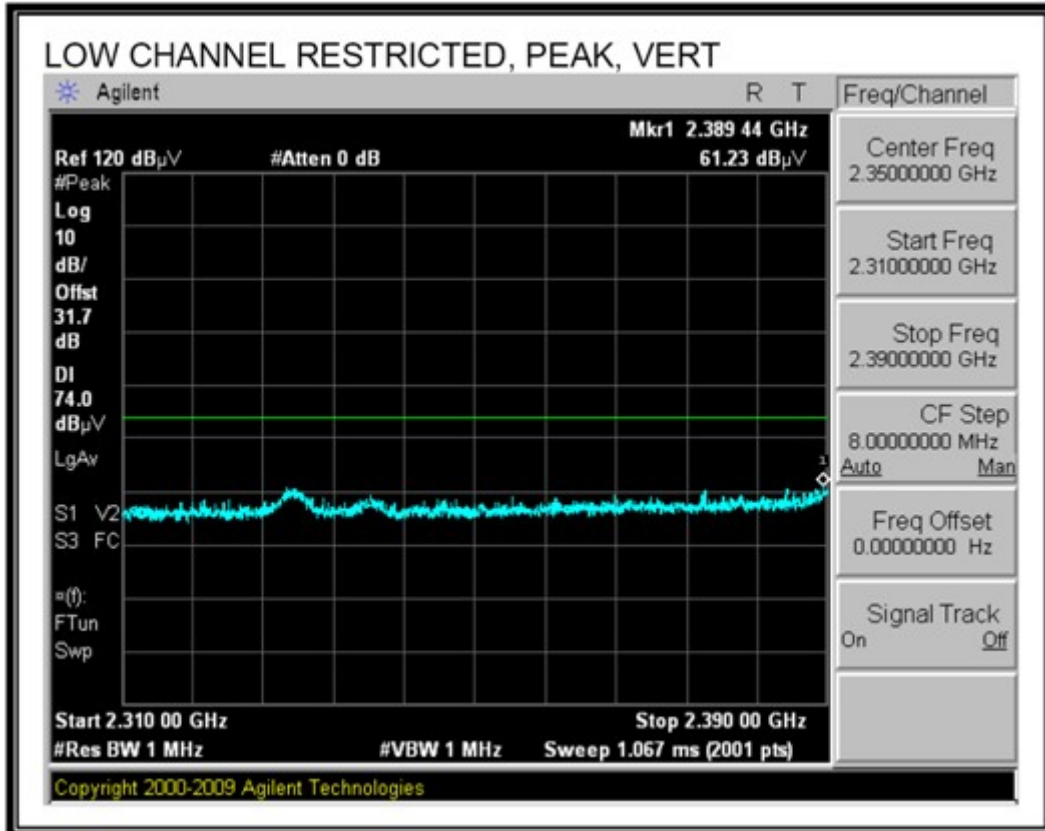
5.5.8. Results for Restricted Band

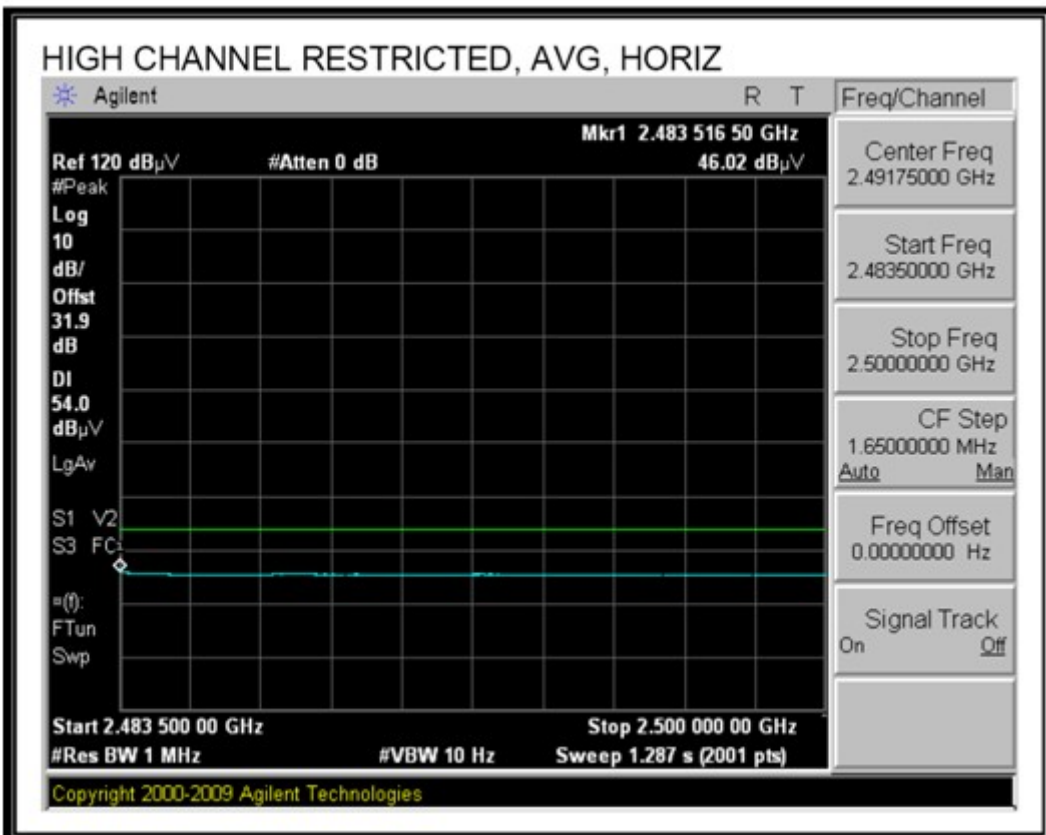
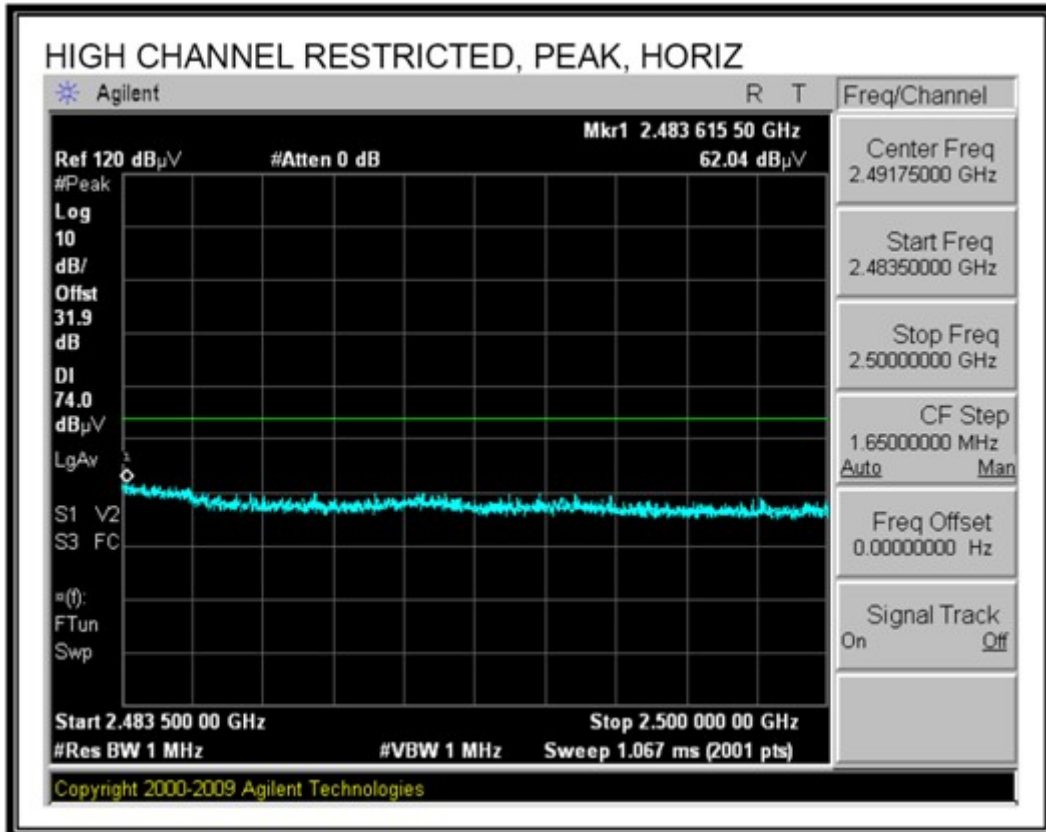
802.11b restricted band

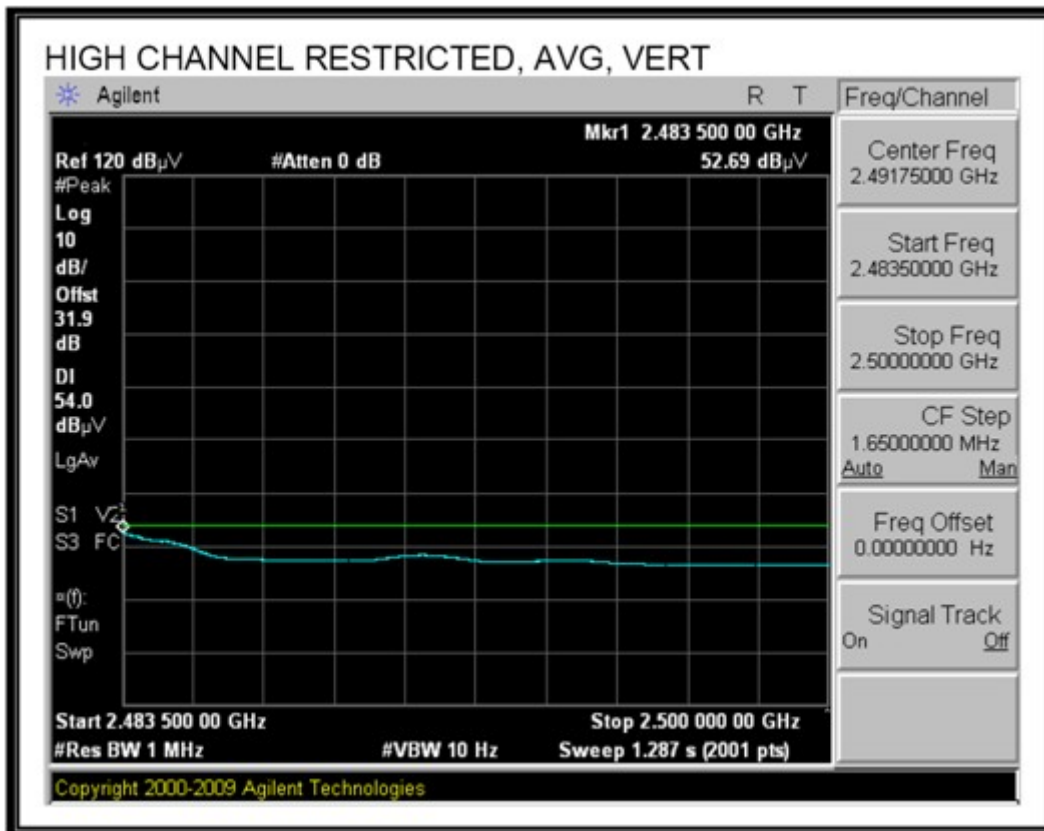
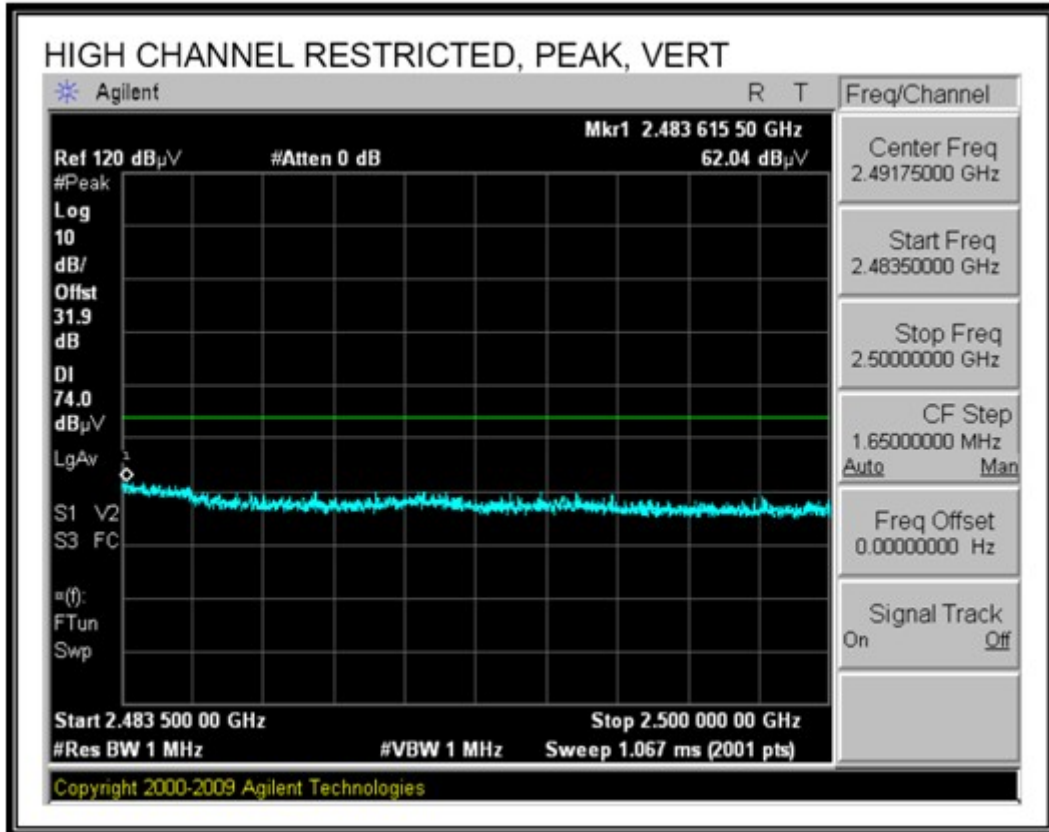
Date: June 30, 2012





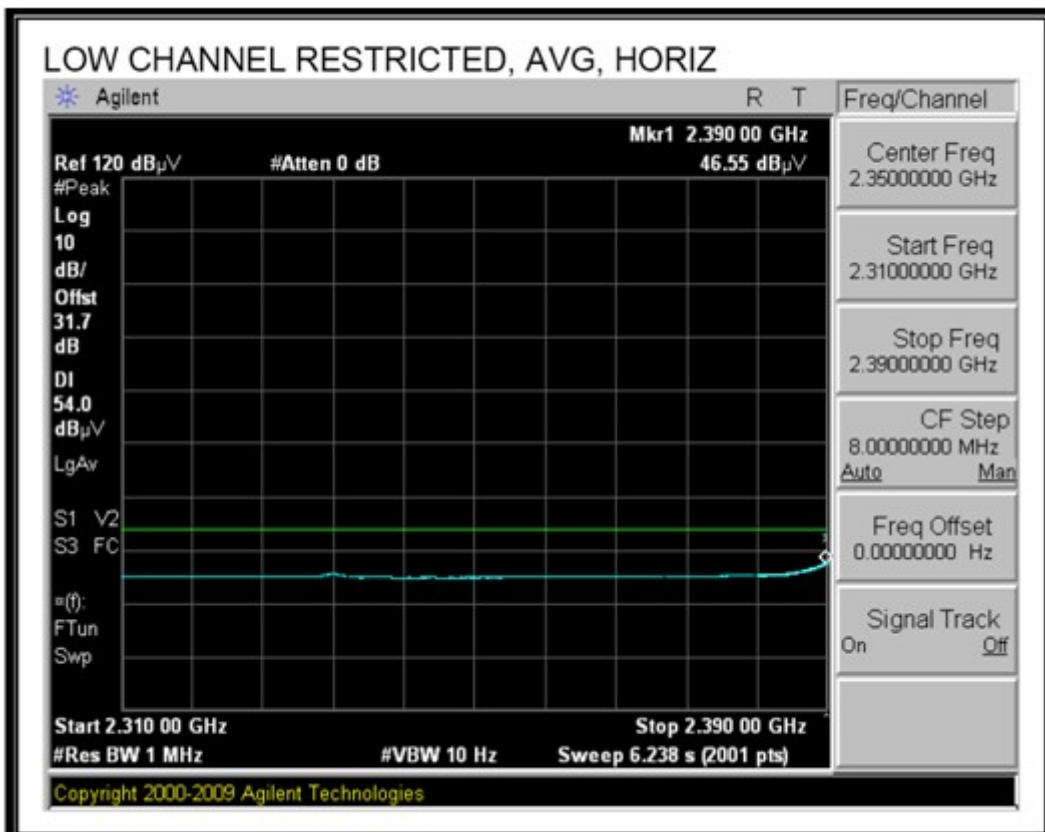
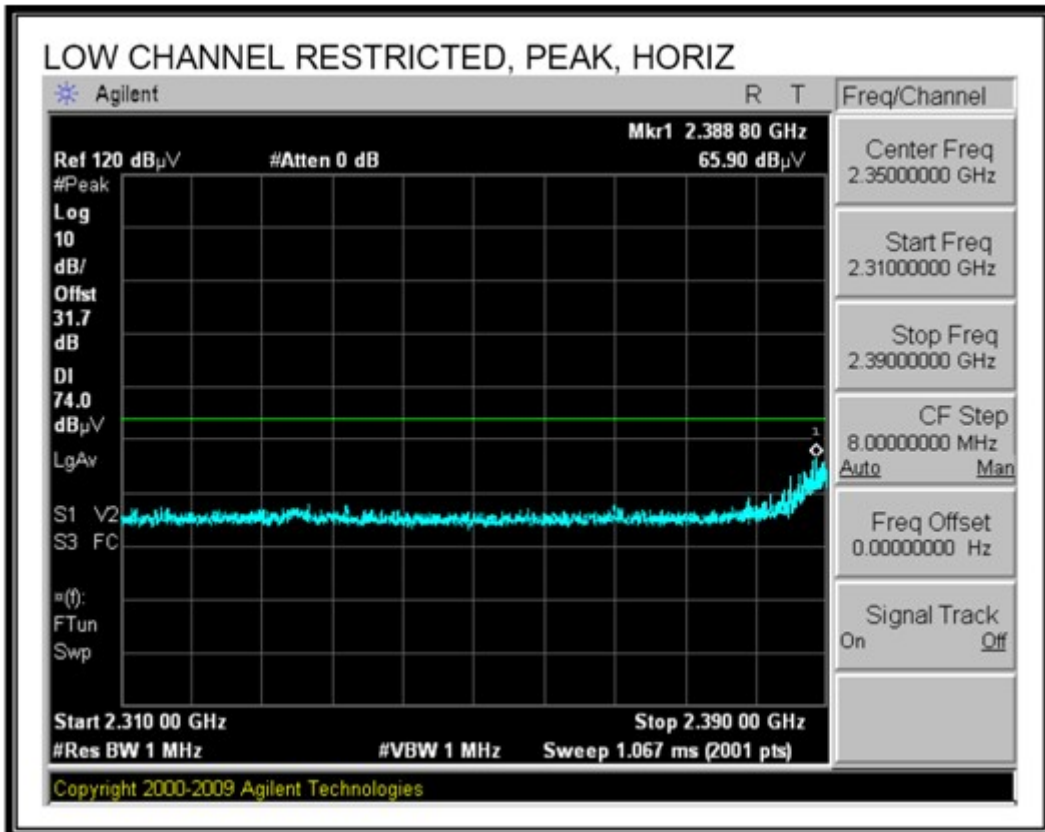


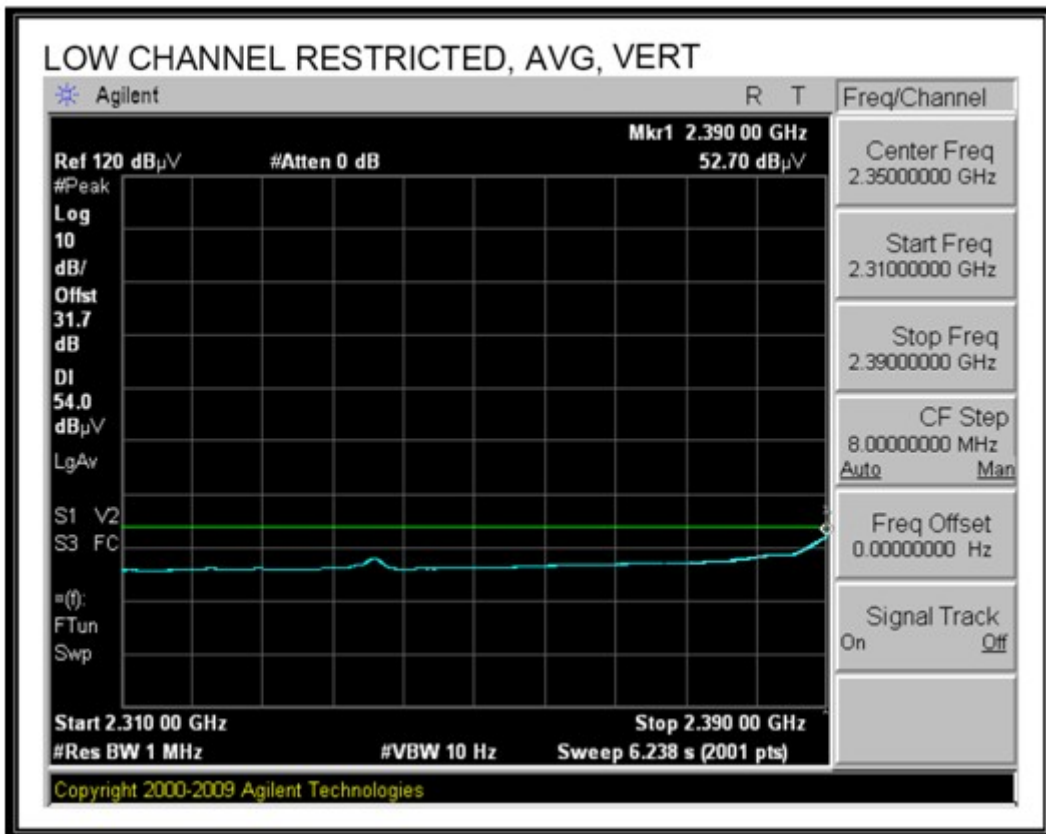
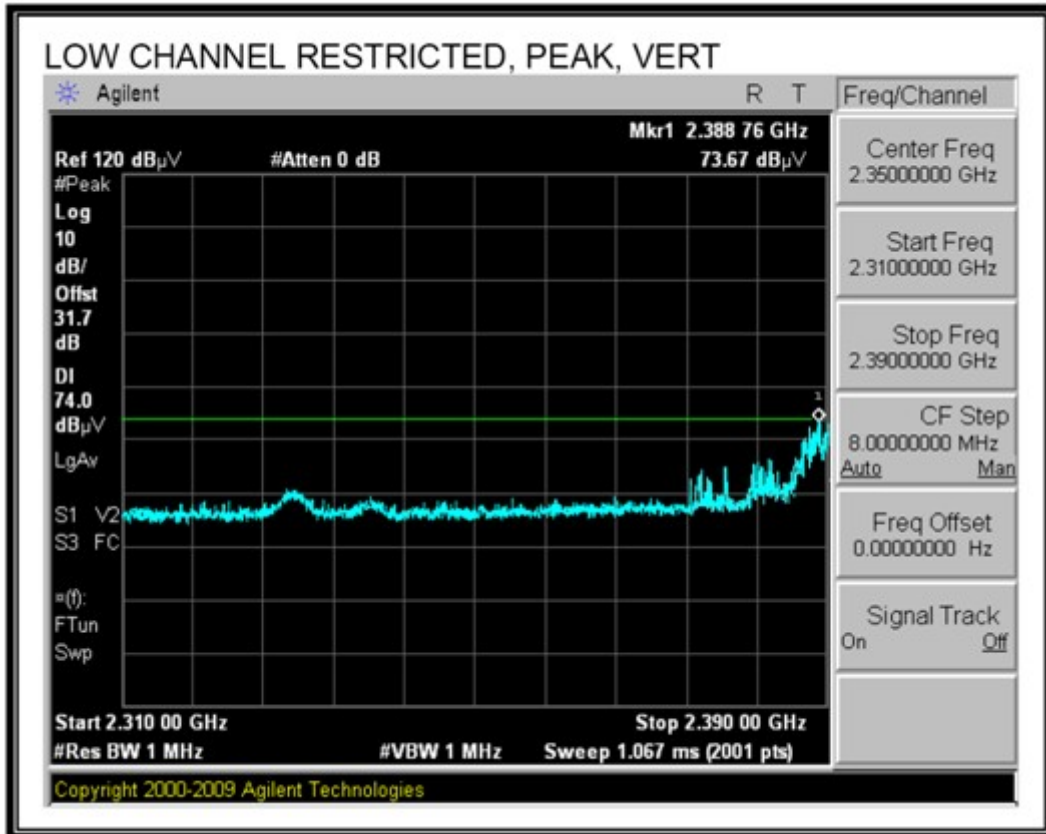




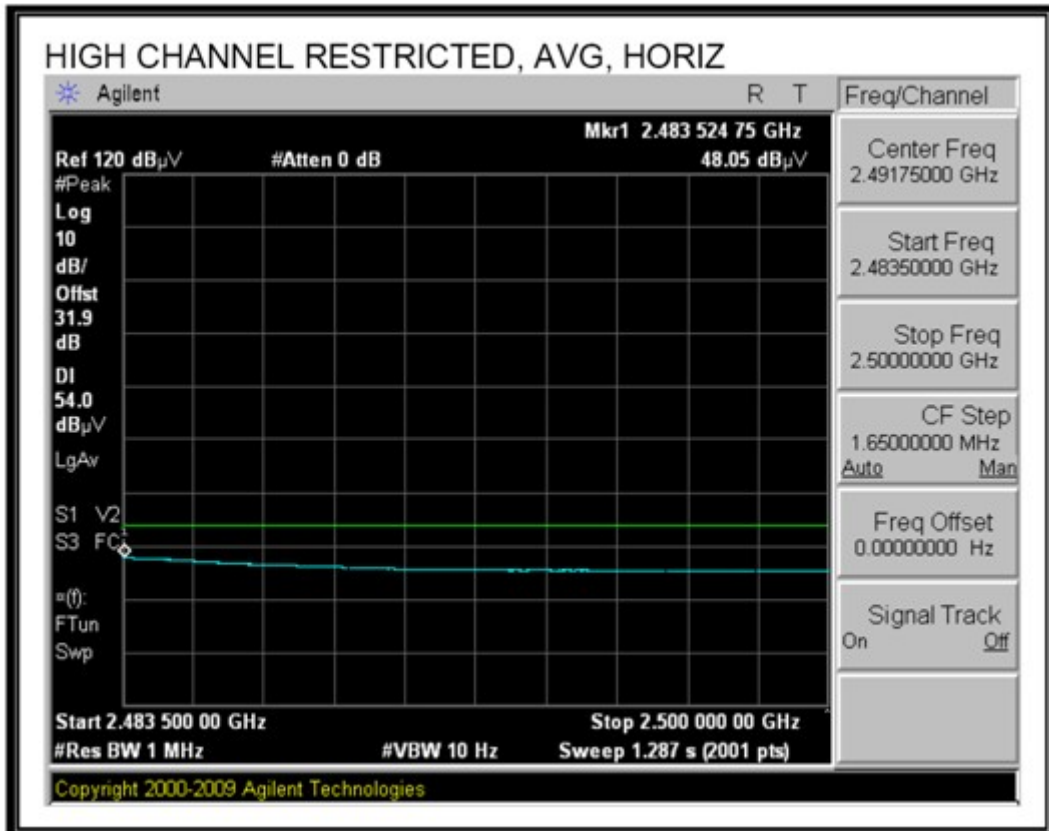
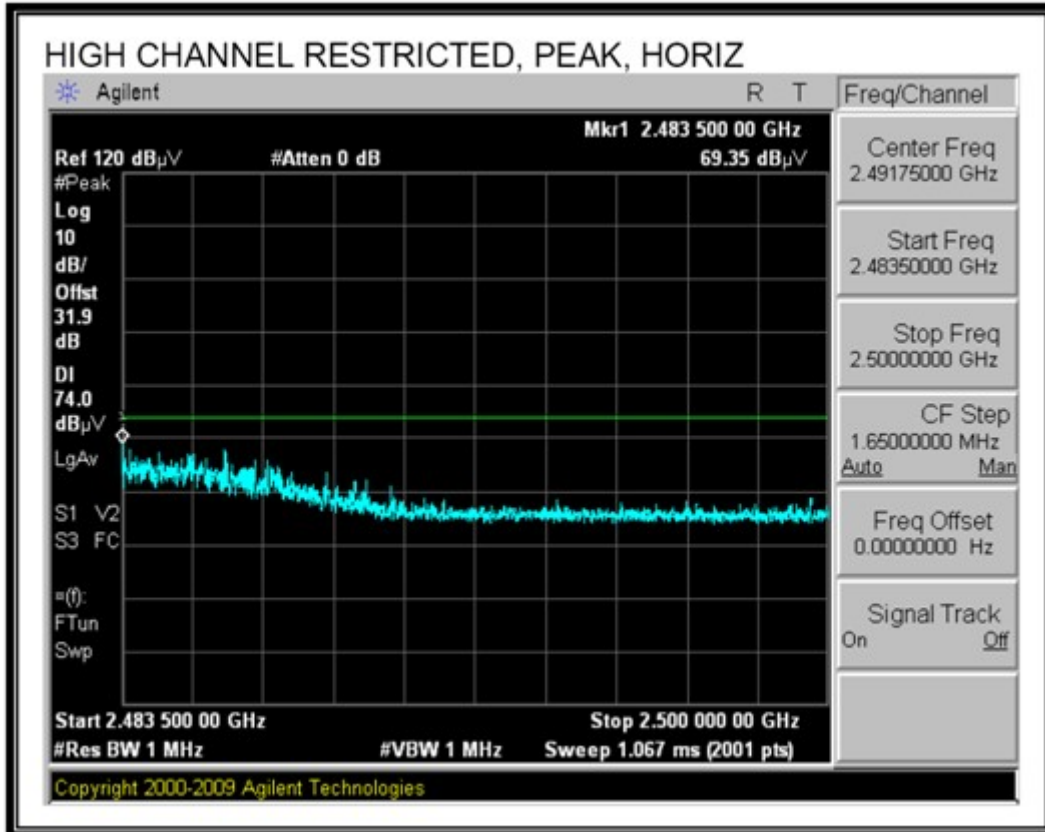
802.11g restricted band

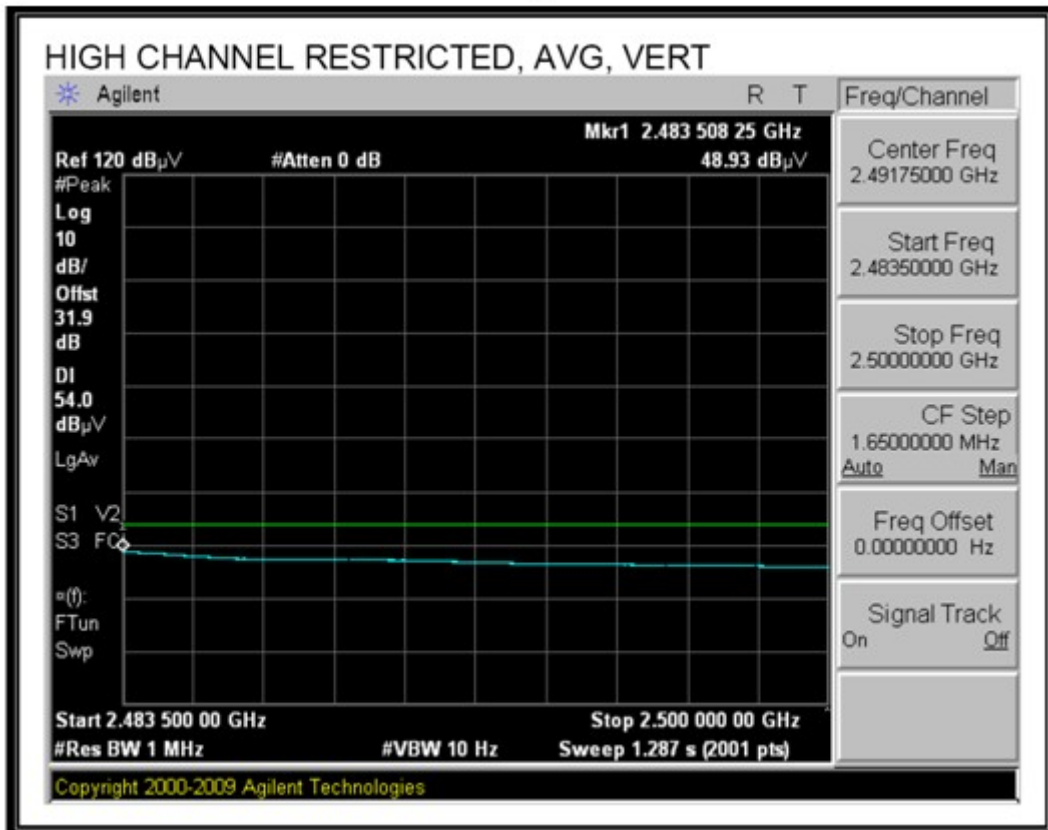
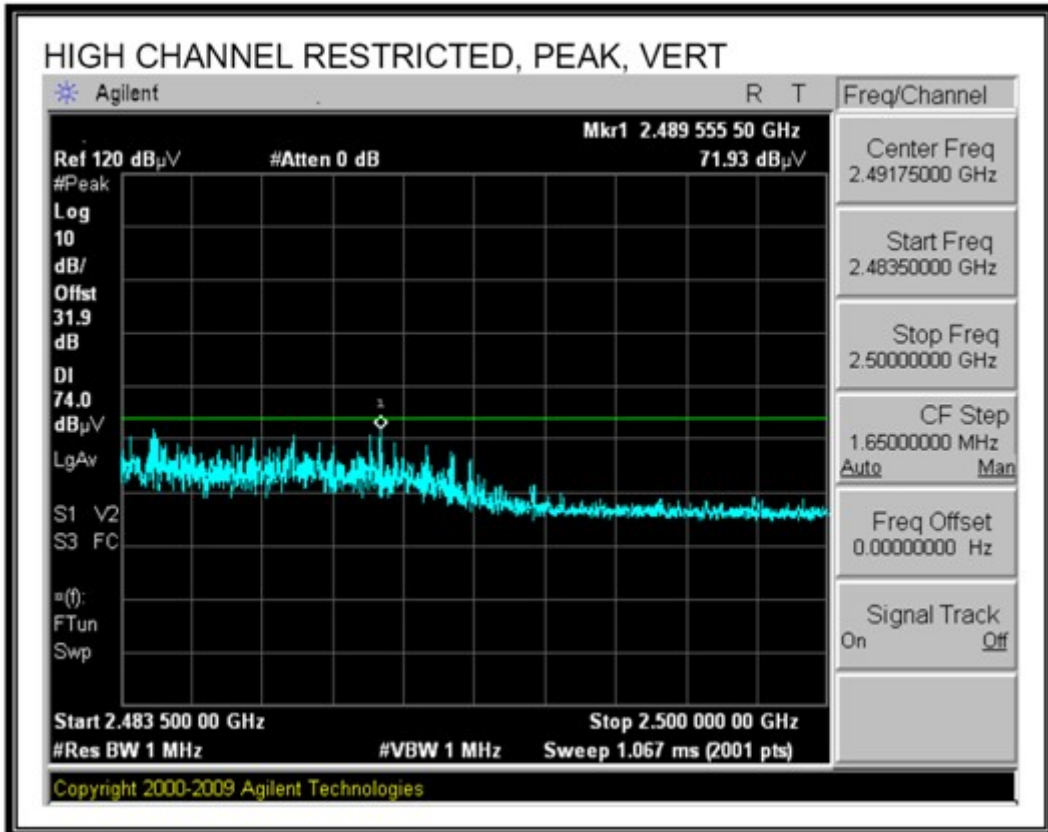
Date: June 30, 2012





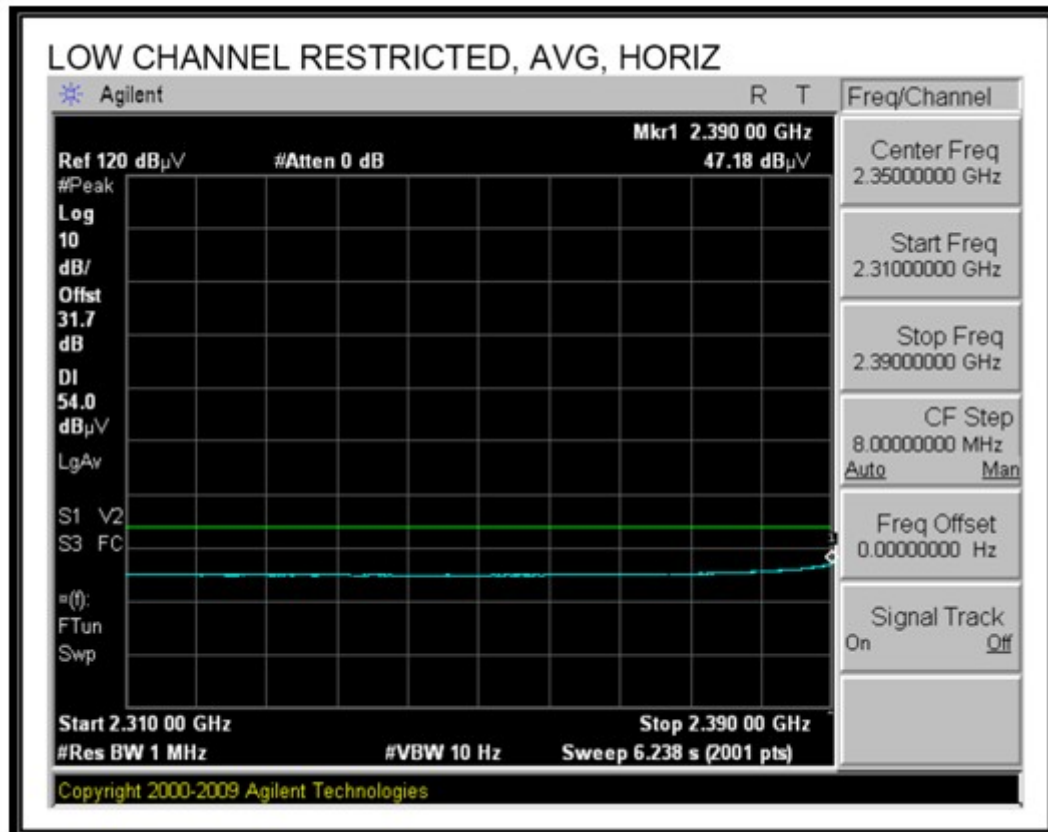
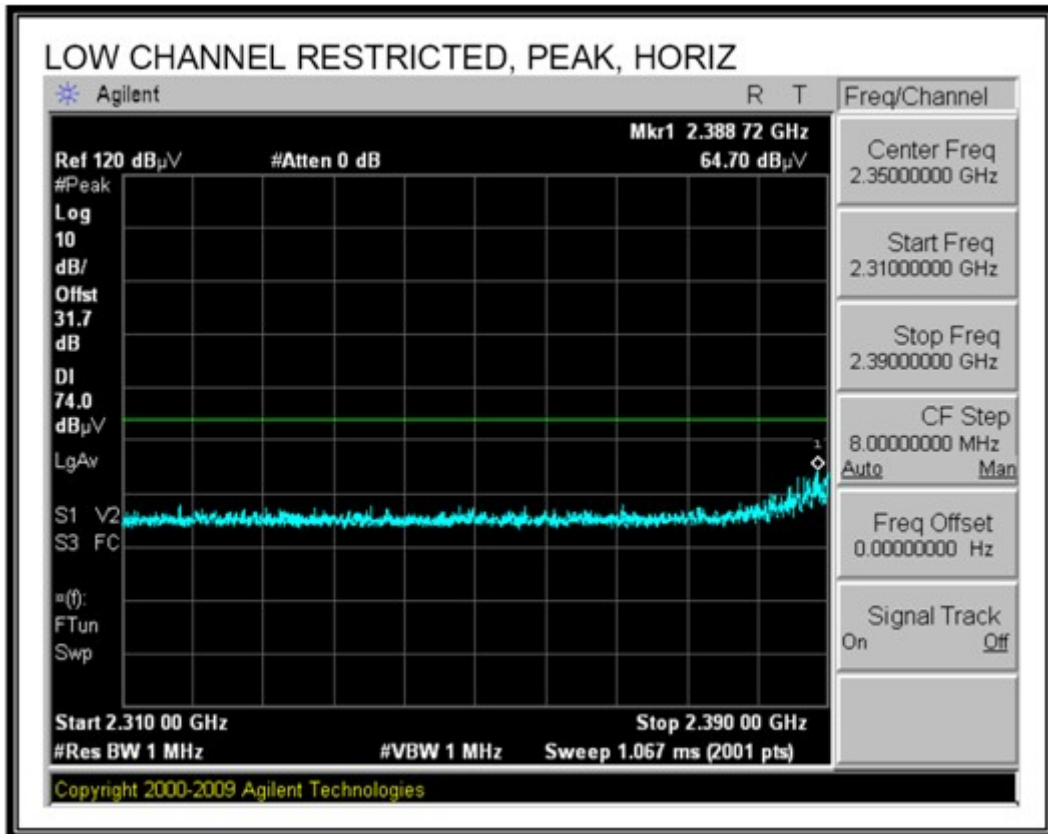




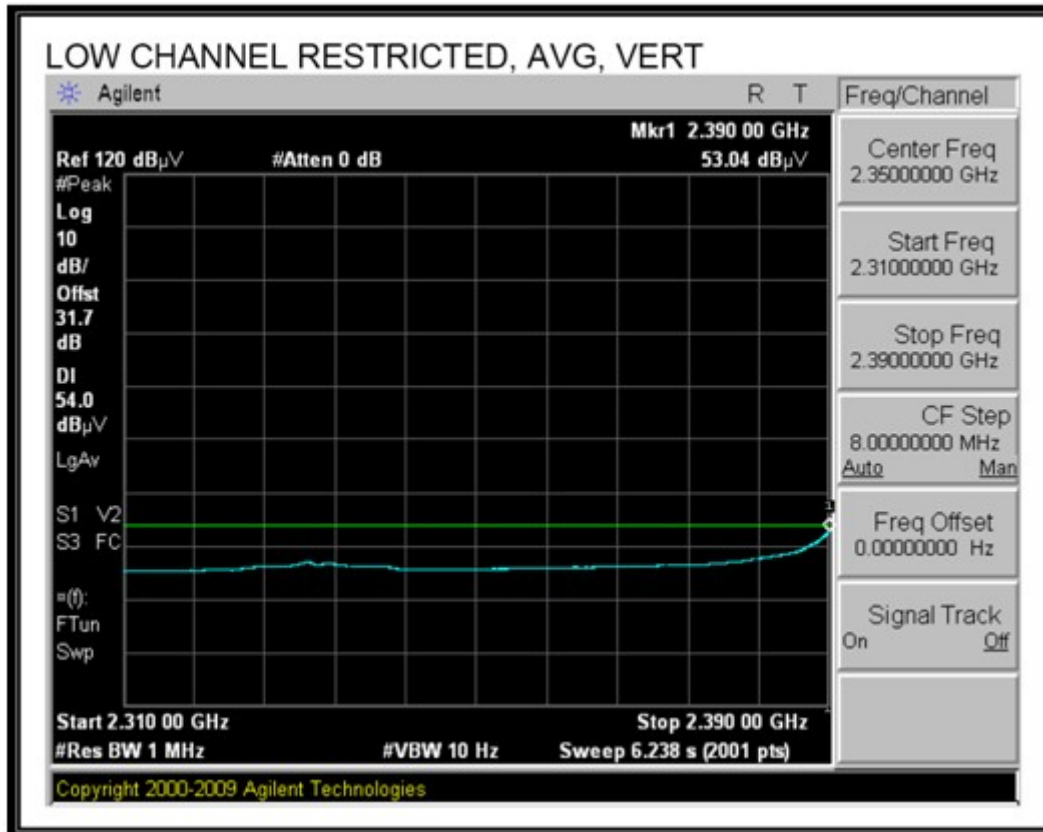
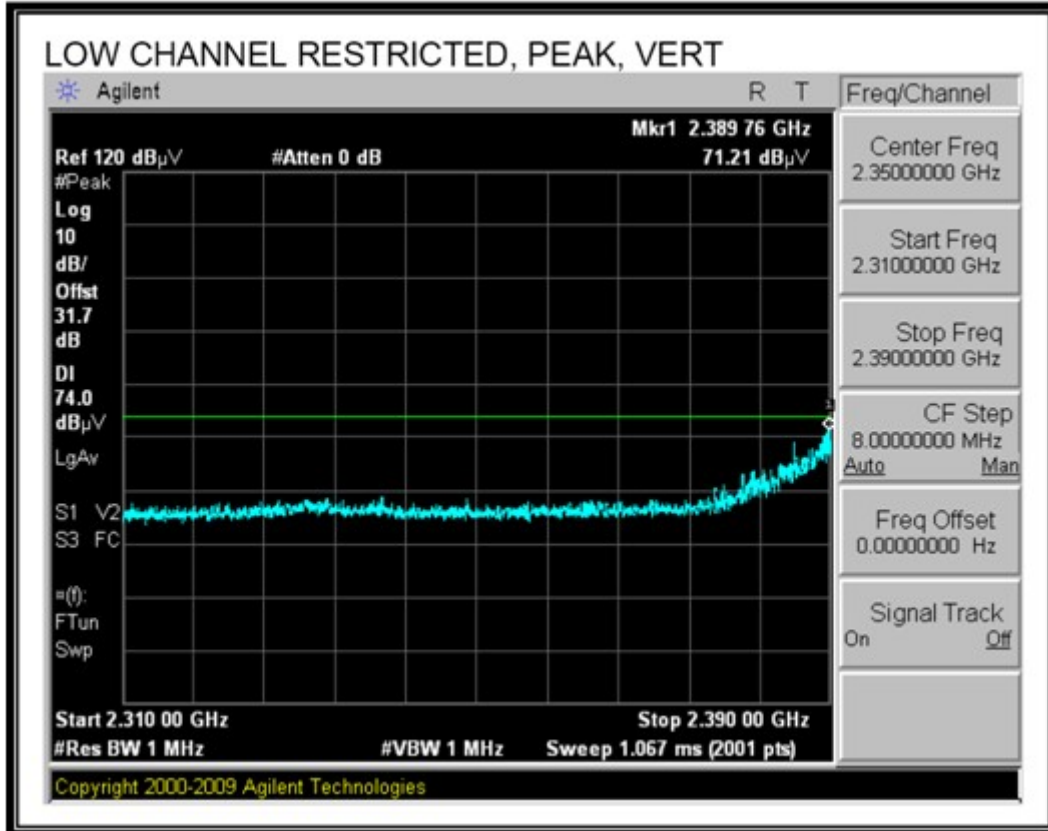


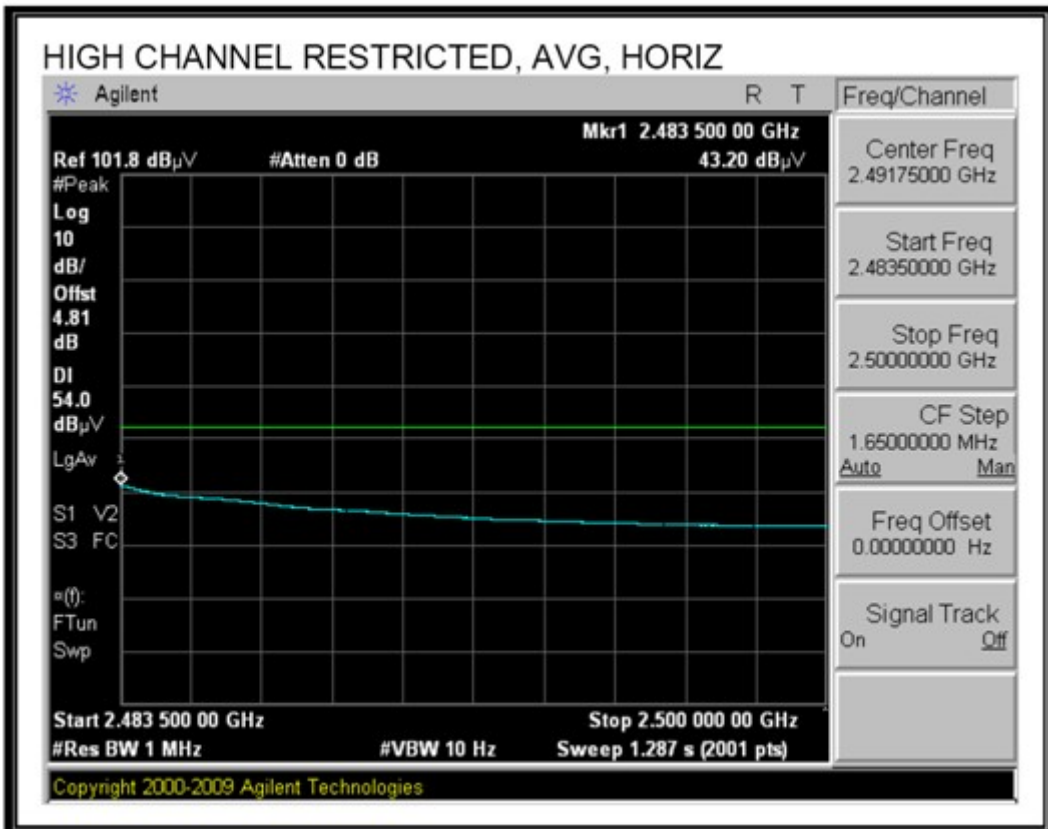
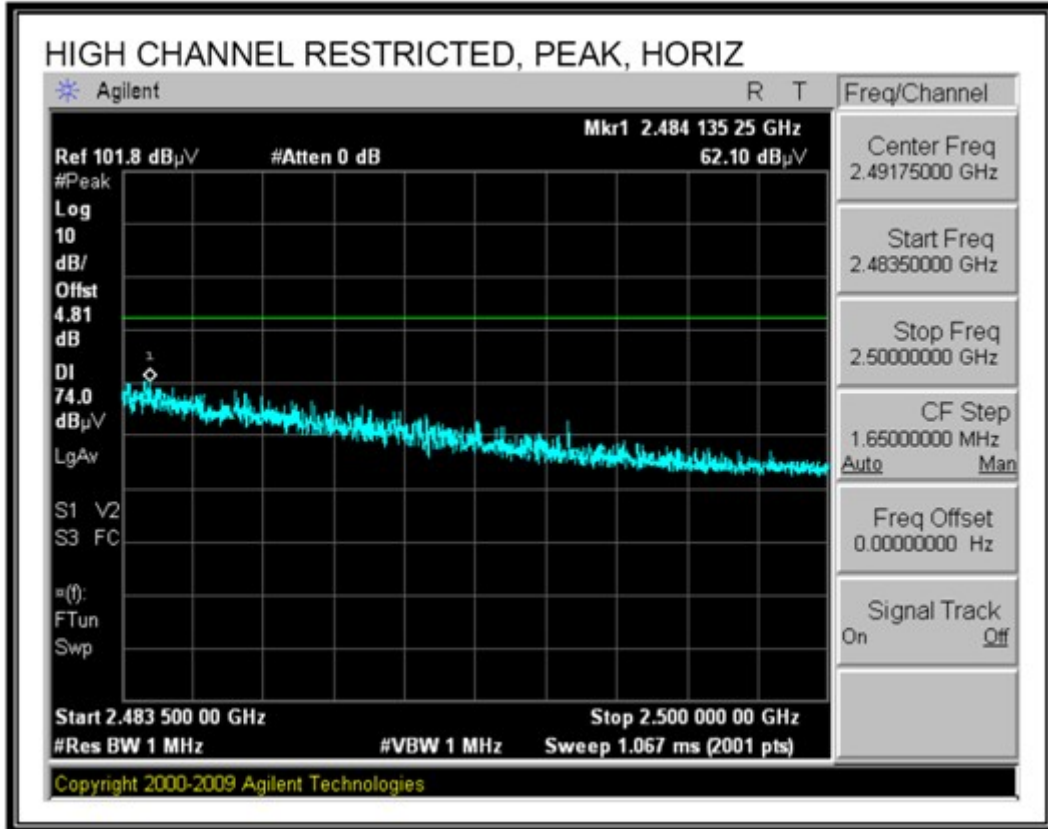
802.11n HT20 restricted band

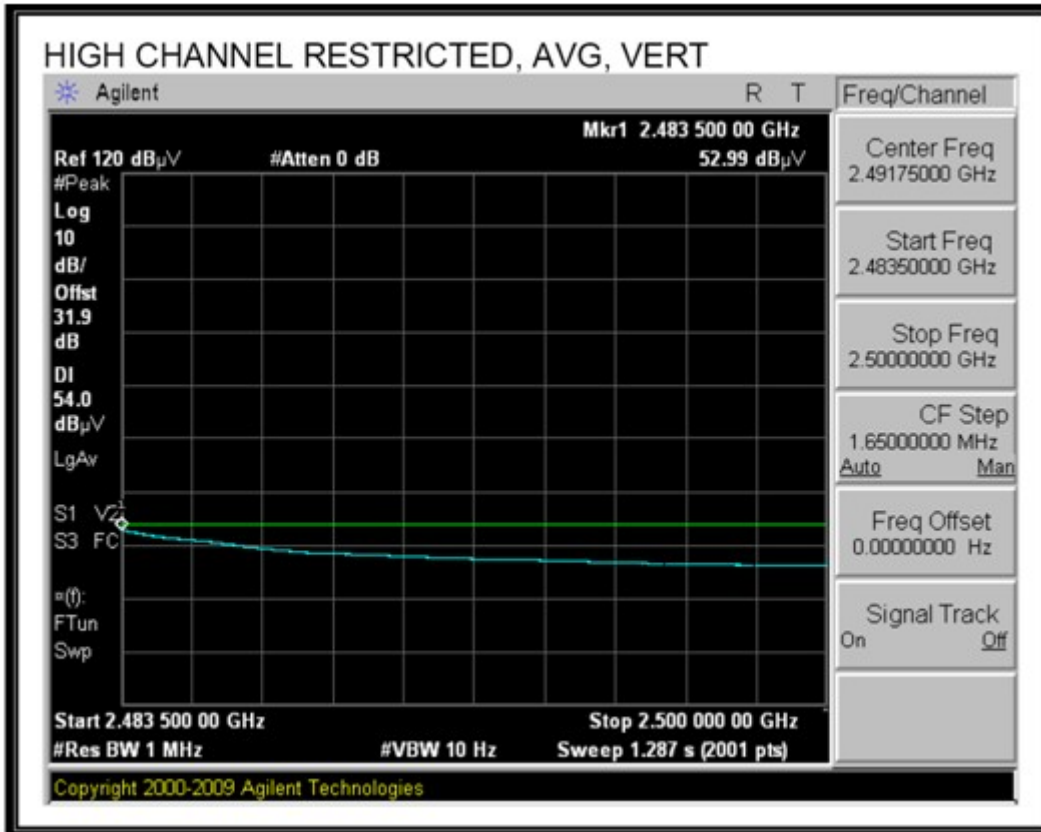
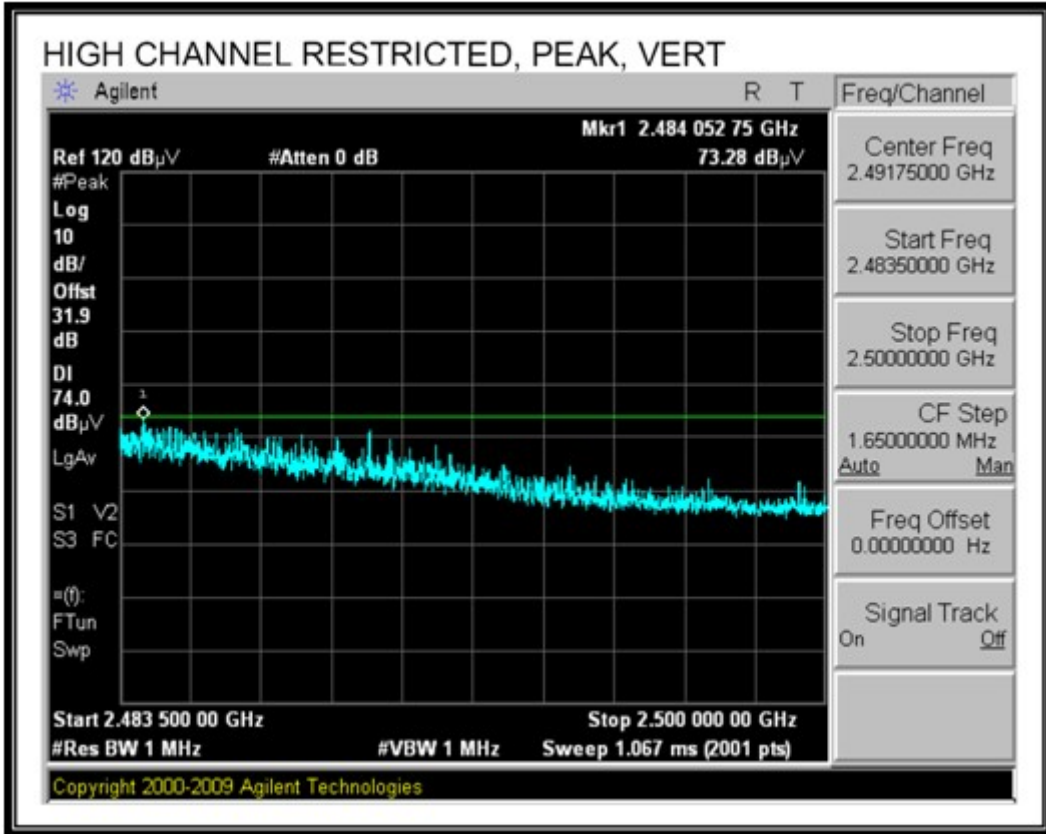
Date: June 30, 2012





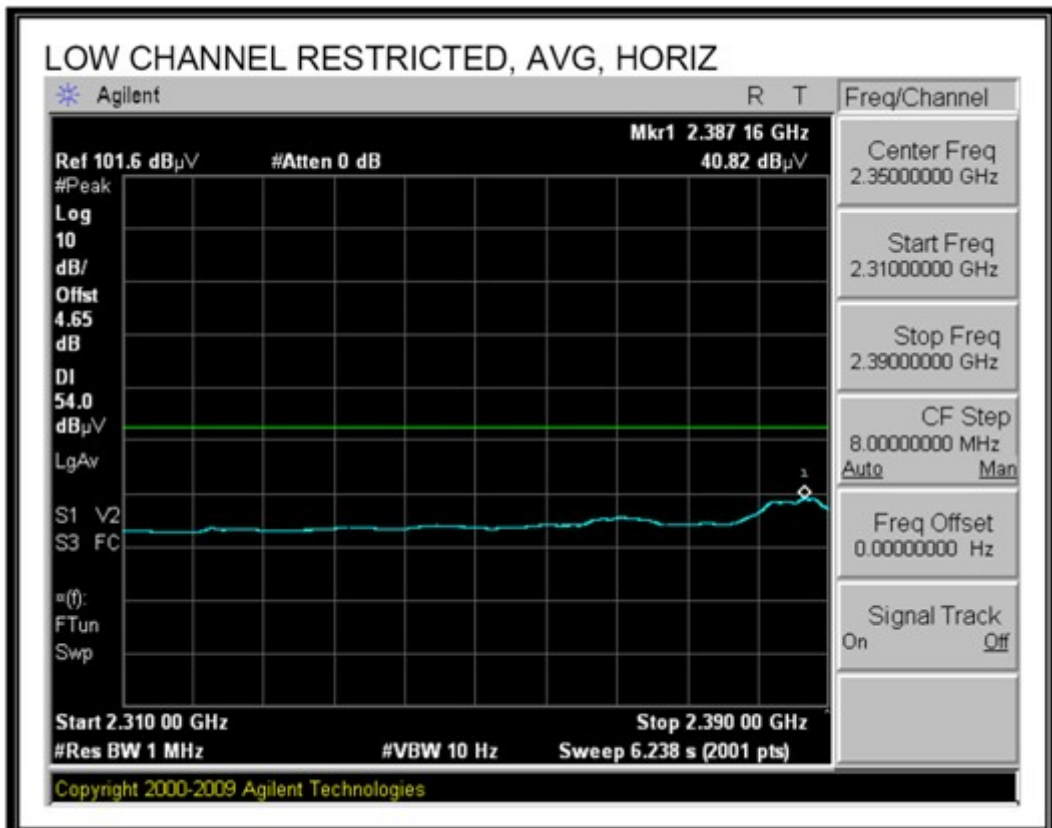
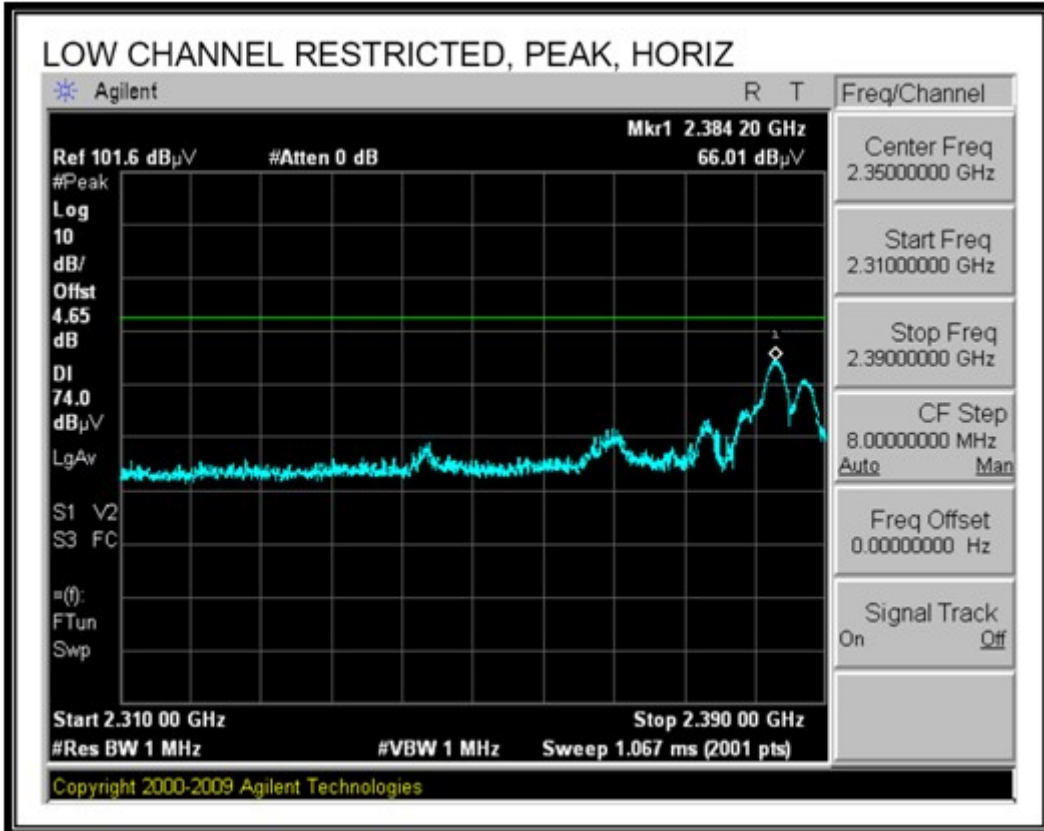


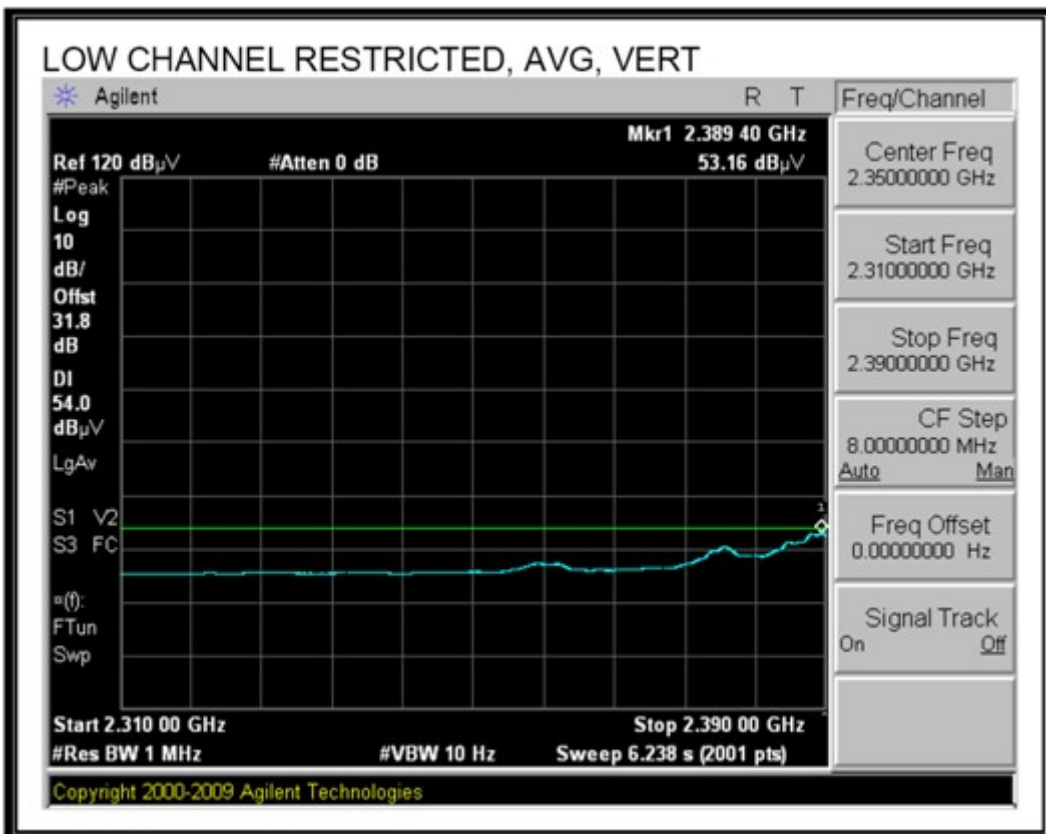
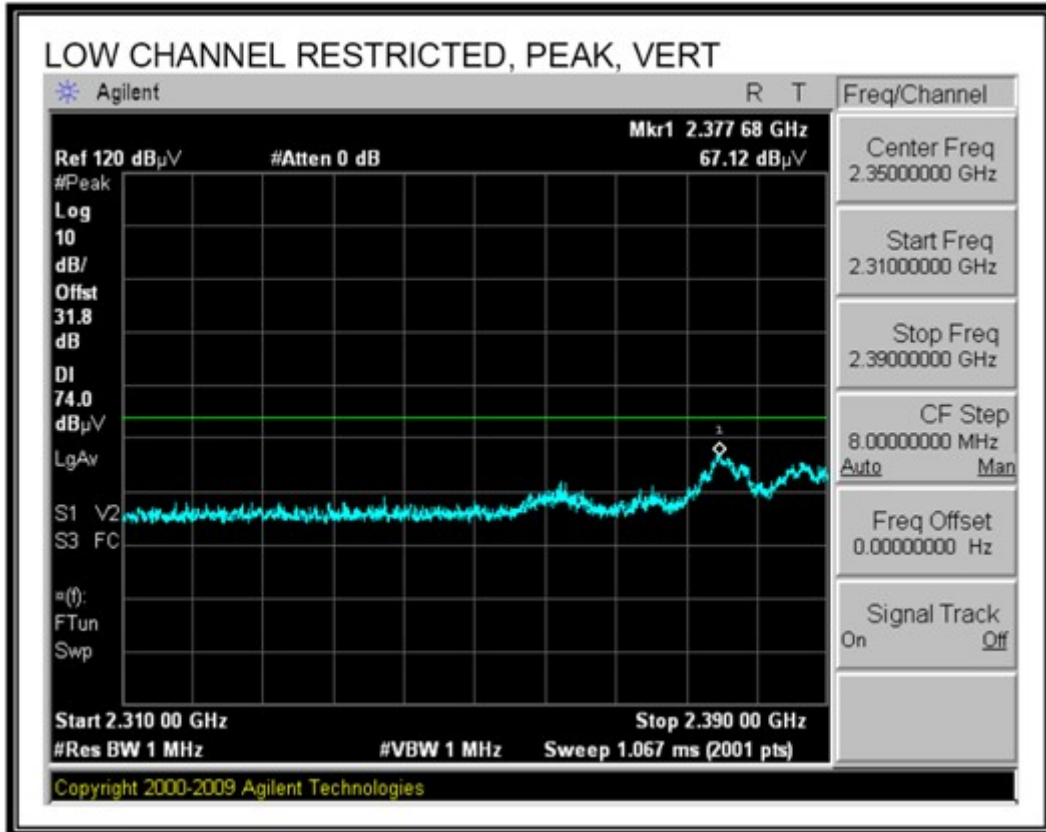




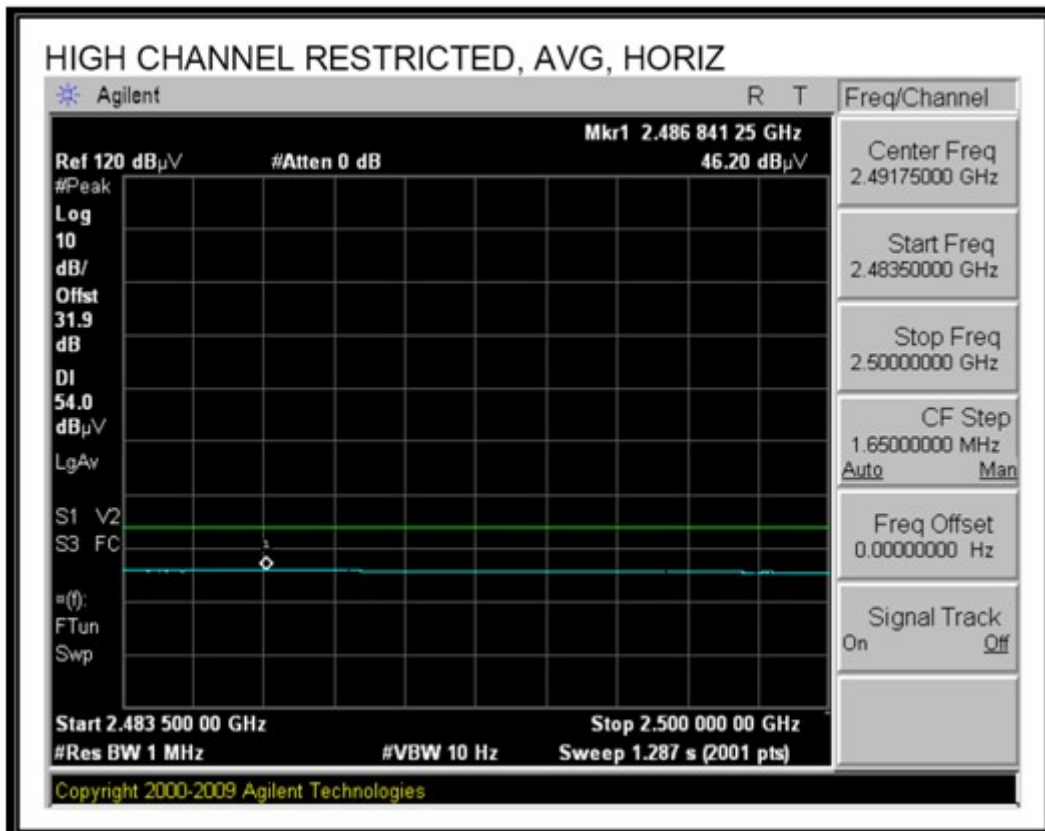
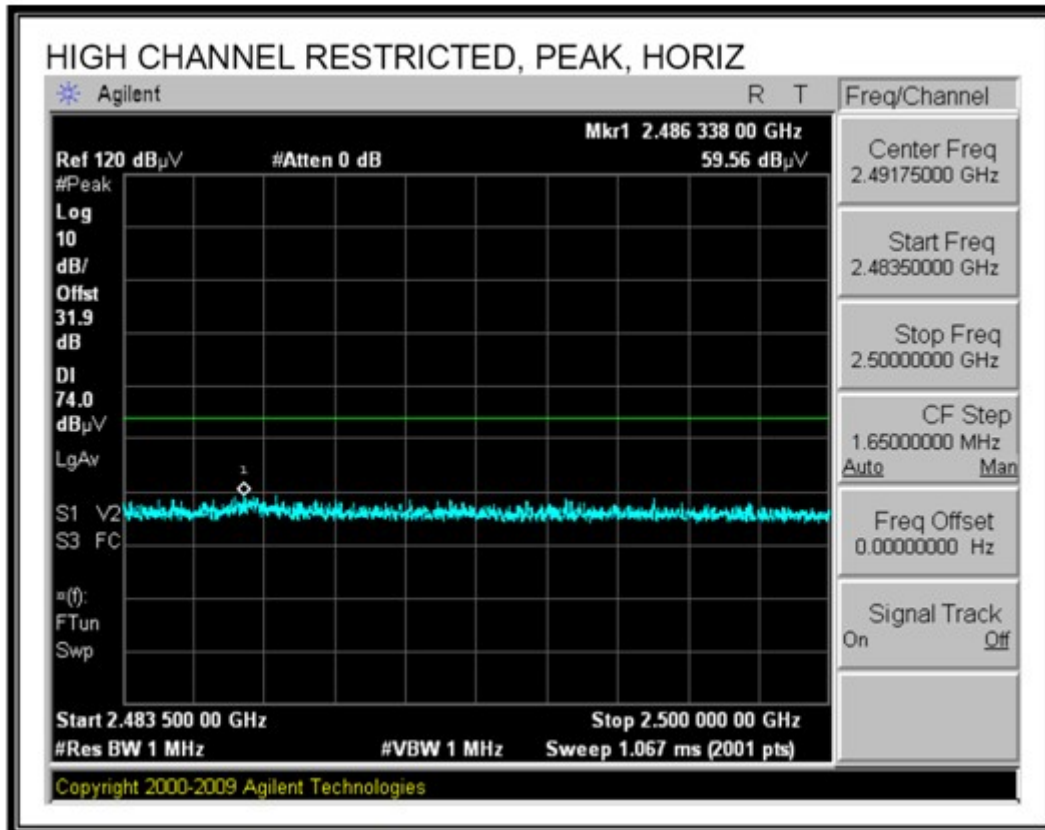
802.11n HT40 restricted band

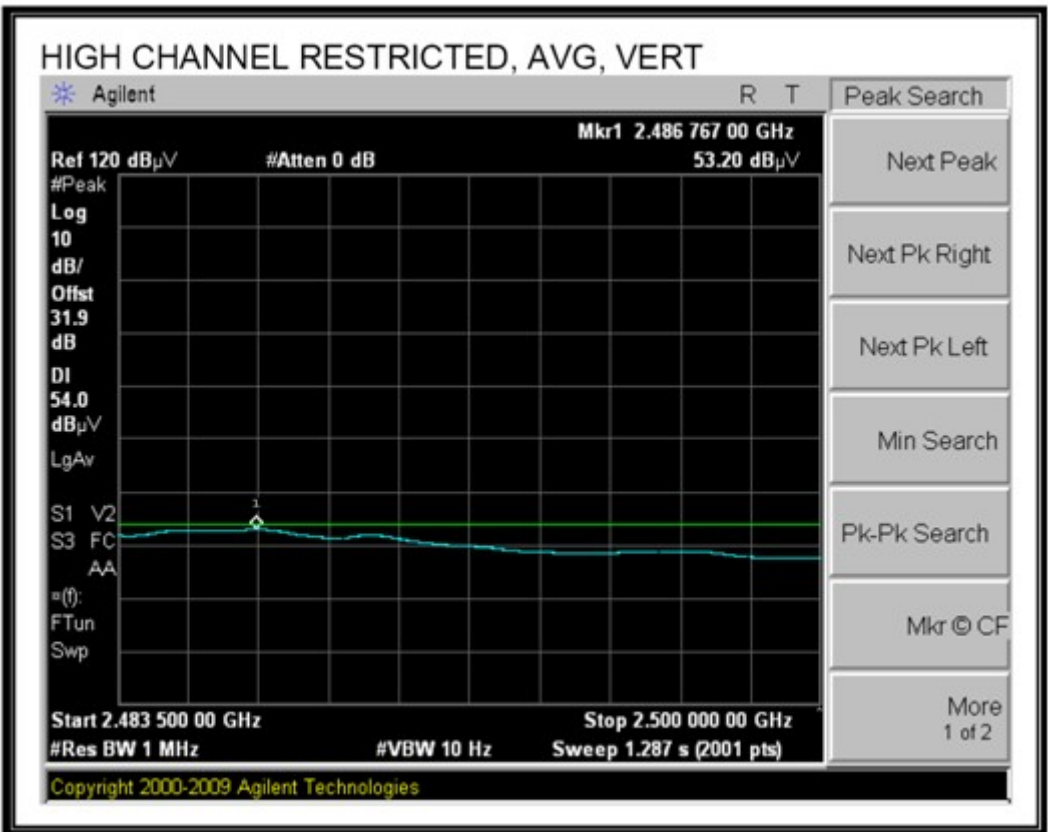
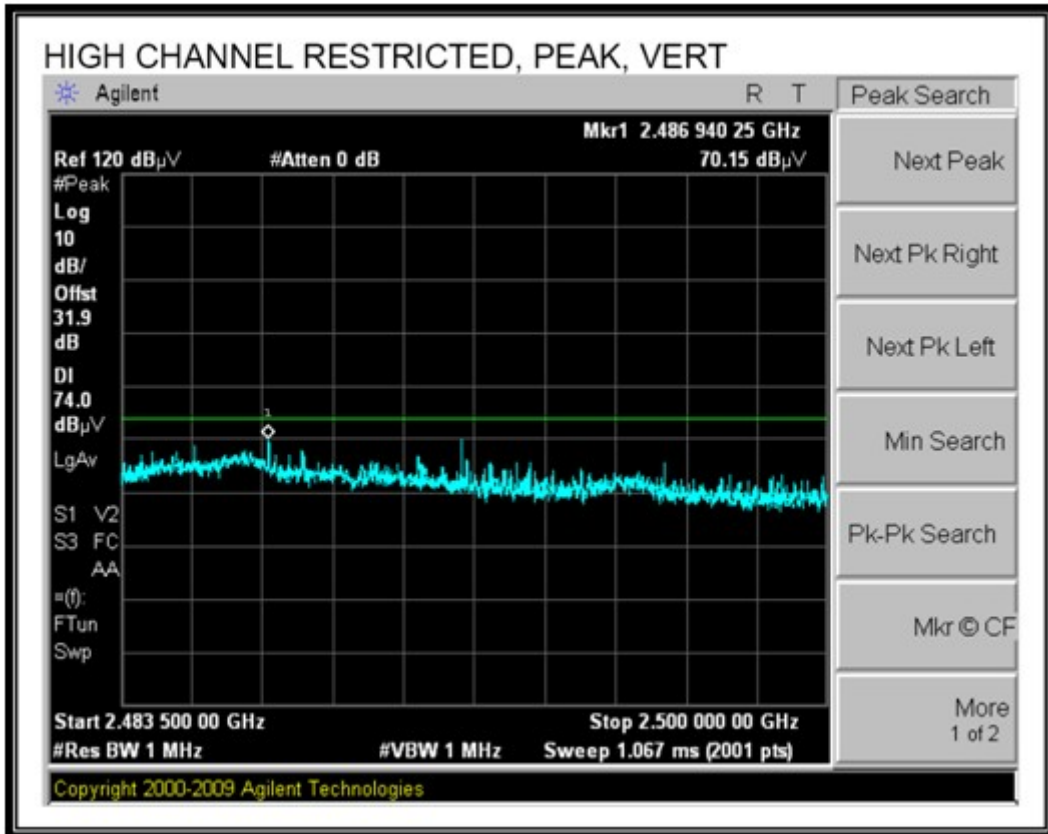
Date: June 30, 2012











## 5.5.9. Results for Radiated Emissions (1GHz~10th Harmonic)

802.11b

Channel 1

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
4824.12	47.67	45.71	33.06	35.04	3.94	74	-26.33	Peak	Horizontal
4824.23	39.21	37.25	33.06	35.04	3.94	54	-14.79	Average	Horizontal
4824.12	48.24	46.28	33.06	35.04	3.94	74	-25.76	Peak	Vertical
4824.25	40.12	38.16	33.06	35.04	3.94	54	-13.88	Average	Vertical

Channel 6

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
4874.65	47.86	45.89	33.16	35.15	3.96	74	-26.14	Peak	Horizontal
4874.65	36.09	34.12	33.16	35.15	3.96	54	-17.91	Average	Horizontal
4874.65	46.28	44.31	33.16	35.15	3.96	74	-27.72	Peak	Vertical
4874.65	35.76	33.79	33.16	35.15	3.96	54	-18.24	Average	Vertical

Channel 11

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
4924.37	46.36	44.26	33.26	35.14	3.98	74	-27.64	Peak	Horizontal
4924.37	34.78	32.68	33.26	35.14	3.98	54	-19.22	Average	Horizontal
4924.37	45.27	43.17	33.26	35.14	3.98	74	-28.73	Peak	Vertical
4924.37	34.05	31.95	33.26	35.14	3.98	54	-19.95	Average	Vertical



802.11g

Channel 1

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
4824.75	47.33	45.37	33.06	35.04	3.94	74	-26.67	Peak	Horizontal
4824.96	37.58	35.62	33.06	35.04	3.94	54	-16.42	Average	Horizontal
4824.75	46.70	44.74	33.06	35.04	3.94	74	-27.3	Peak	Vertical
4824.96	35.65	33.69	33.06	35.04	3.94	54	-18.35	Average	Vertical

Channel 6

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
4874.38	48.25	46.28	33.16	35.15	3.96	74	-25.75	Peak	Horizontal
4874.38	40.13	38.16	33.16	35.15	3.96	54	-13.87	Average	Horizontal
4874.38	47.74	45.77	33.16	35.15	3.96	74	-26.26	Peak	Vertical
4874.38	41.42	39.45	33.16	35.15	3.96	54	-12.58	Average	Vertical

Channel 11

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
4924.85	50.82	48.72	33.26	35.14	3.98	74	-23.18	Peak	Horizontal
4924.85	41.28	39.18	33.26	35.14	3.98	54	-12.72	Average	Horizontal
4924.85	48.32	46.22	33.26	35.14	3.98	74	-25.68	Peak	Vertical
4924.85	42.39	40.29	33.26	35.14	3.98	54	-11.61	Average	Vertical

## 802.11n HT20

## Channel 1

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
4824.75	45.33	43.23	33.06	35.04	3.94	74	-28.67	Peak	Horizontal
4824.96	35.84	33.74	33.06	35.04	3.94	54	-18.16	Average	Horizontal
4824.75	44.29	42.19	33.06	35.04	3.94	74	-29.71	Peak	Vertical
4824.96	34.63	32.53	33.06	35.04	3.94	54	-19.37	Average	Vertical

## Channel 6

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
4874.42	46.8	44.7	33.16	35.15	3.96	74	-27.2	Peak	Horizontal
4874.42	36.29	34.19	33.16	35.15	3.96	54	-17.71	Average	Horizontal
4874.42	45.33	43.23	33.16	35.15	3.96	74	-28.67	Peak	Vertical
4874.42	35.66	33.56	33.16	35.15	3.96	54	-18.34	Average	Vertical

## Channel 11

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
4924.68	49.61	47.51	33.26	35.14	3.98	74	-24.39	Peak	Horizontal
4924.68	40.34	38.24	33.26	35.14	3.98	54	-13.66	Average	Horizontal
4924.68	47.88	45.78	33.26	35.14	3.98	74	-26.12	Peak	Vertical
4924.68	41.93	39.83	33.26	35.14	3.98	54	-12.07	Average	Vertical

## 802.11n HT40

## Channel 1

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
4844.46	44.14	42.18	33.06	35.04	3.94	74	-29.86	Peak	Horizontal
4844.46	37.3	35.34	33.06	35.04	3.94	54	-16.7	Average	Horizontal
4844.46	42.45	40.49	33.06	35.04	3.94	74	-31.55	Peak	Vertical
4844.46	35.67	33.71	33.06	35.04	3.94	54	-18.33	Average	Vertical

## Channel 6

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
4874.29	47.73	45.76	33.16	35.15	3.96	74	-26.27	Peak	Horizontal
4874.29	37.36	35.39	33.16	35.15	3.96	54	-16.64	Average	Horizontal
4874.29	46.15	44.18	33.16	35.15	3.96	74	-27.85	Peak	Vertical
4874.29	35.44	33.47	33.16	35.15	3.96	54	-18.56	Average	Vertical

## Channel 11

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
4844.29	50.52	48.42	33.26	35.14	3.98	74	-23.48	Peak	Horizontal
4844.29	41.01	38.91	33.26	35.14	3.98	54	-12.99	Average	Horizontal
4904.54	47.36	45.26	33.26	35.14	3.98	74	-26.64	Peak	Vertical
4904.54	41.47	39.37	33.26	35.14	3.98	54	-12.53	Average	Vertical

**Notes:**

1. Measuring frequencies from 9k~10th harmonic (ex. 26GHz), No emission found between lowest internal used/generated frequency to 30 MHz.
2. Radiated emissions measured in frequency range from 9k~10th harmonic (ex. 26GHz) were made with an instrument using Peak detector mode.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

## 5.6. Conducted Spurious Emissions

### 5.6.1. Standard Applicable

According to §15.247 (d): Output power was measured based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

### 5.6.2. Measuring Instruments and Setting

Please refer to section 6 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Detector	Peak
Attenuation	Auto
RB / VB (Emission in restricted band)	100KHz/300KHz
RB / VB (Emission in non-restricted band)	100KHz/300KHz

### 5.6.3. Test Procedures

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

Preliminary tests on individual chains, and on all chains with a combiner, were performed. The worst-case configuration was with a combiner, therefore final test were performed with all chains feeding a combiner.

### 5.6.4. Test Setup Layout

This test setup layout is the same as that shown in section 5.4.4.

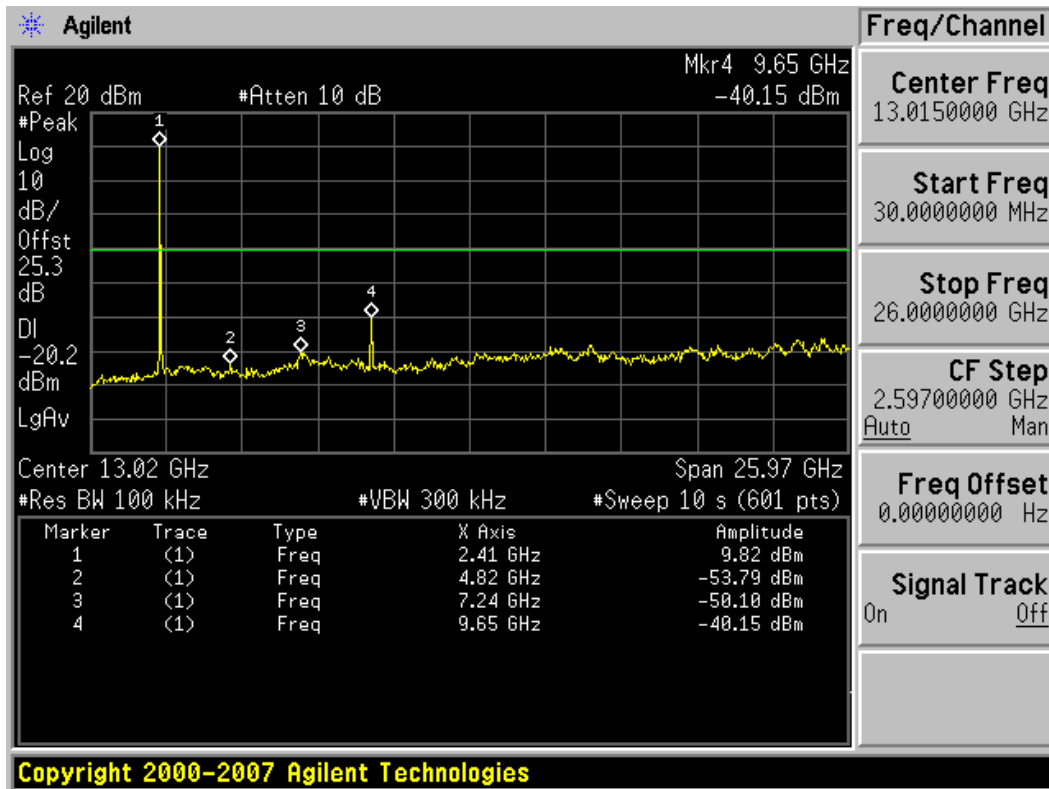
### 5.6.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

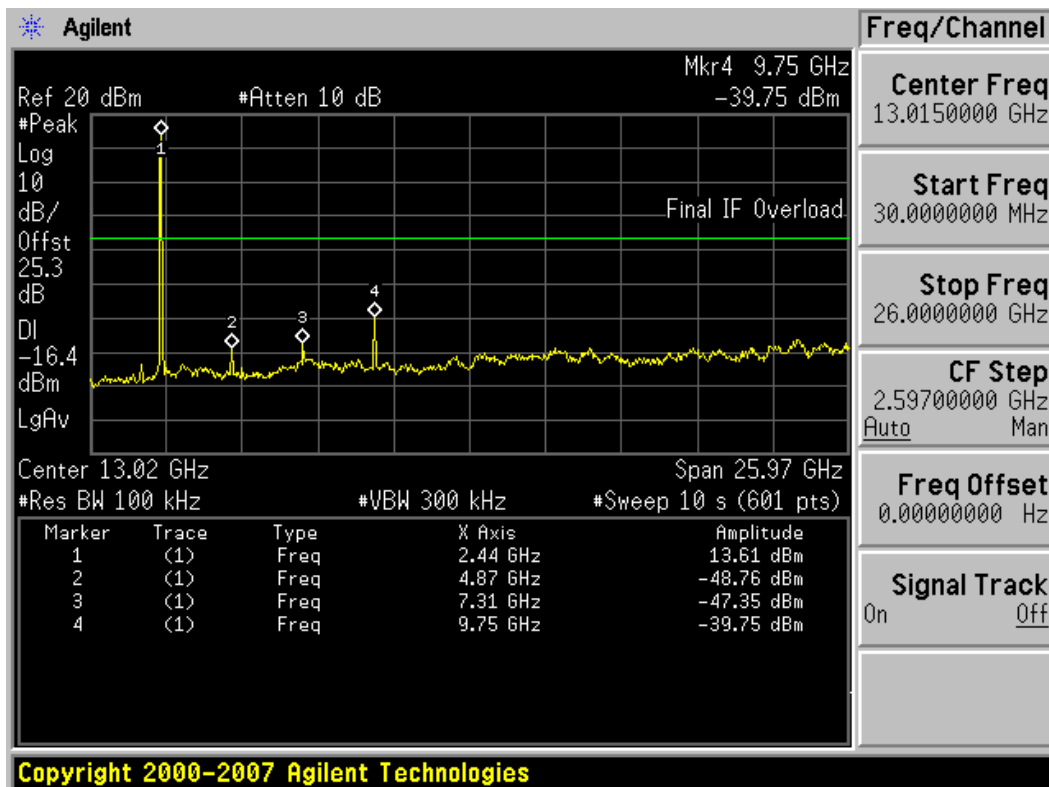
### 5.6.6. Test Results of Conducted Spurious Emissions

802.11b

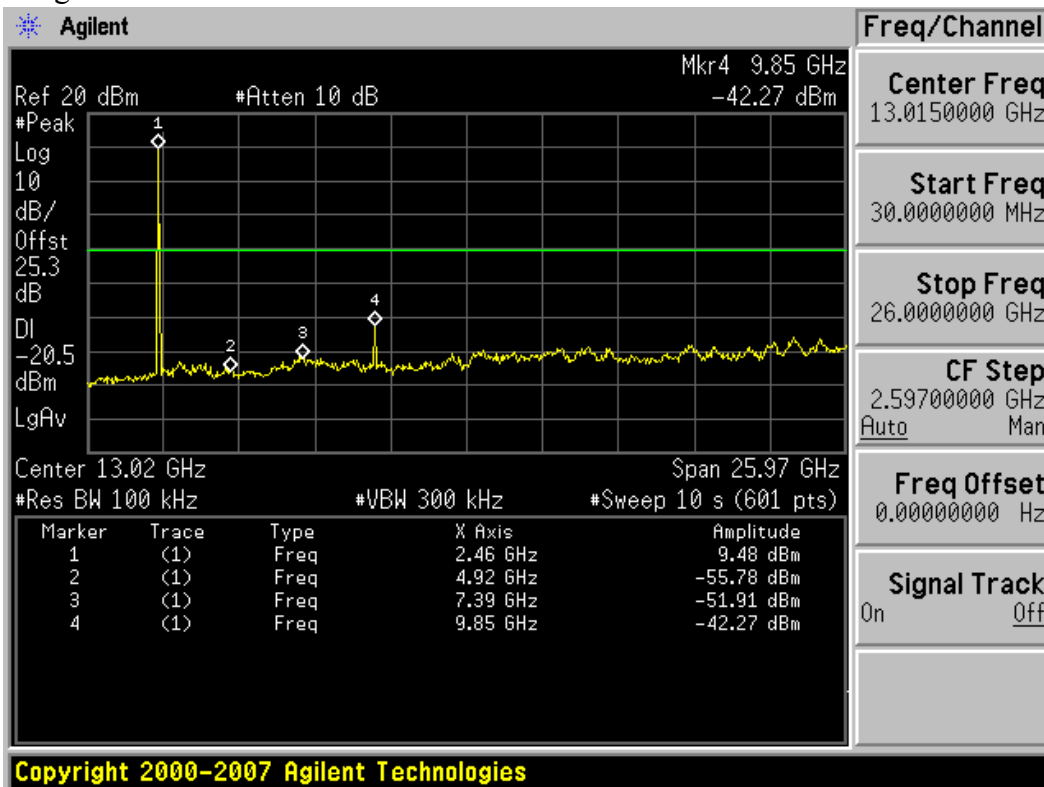
Low Channel



MiddleChannel

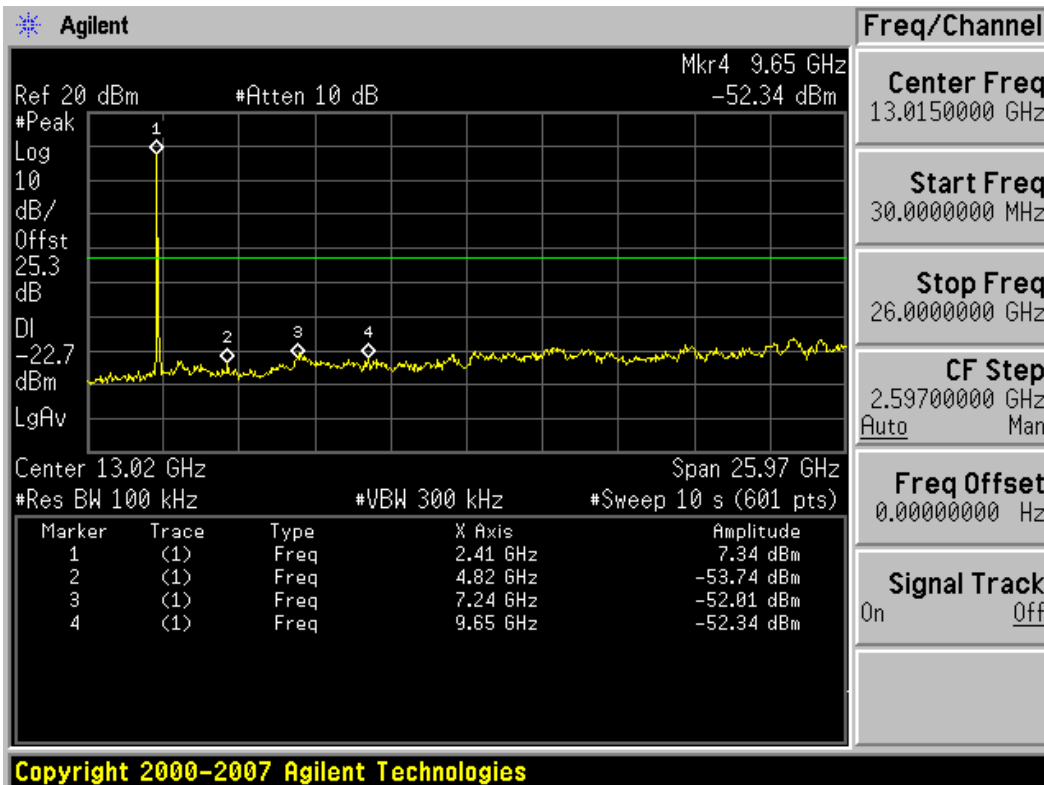


High Channel

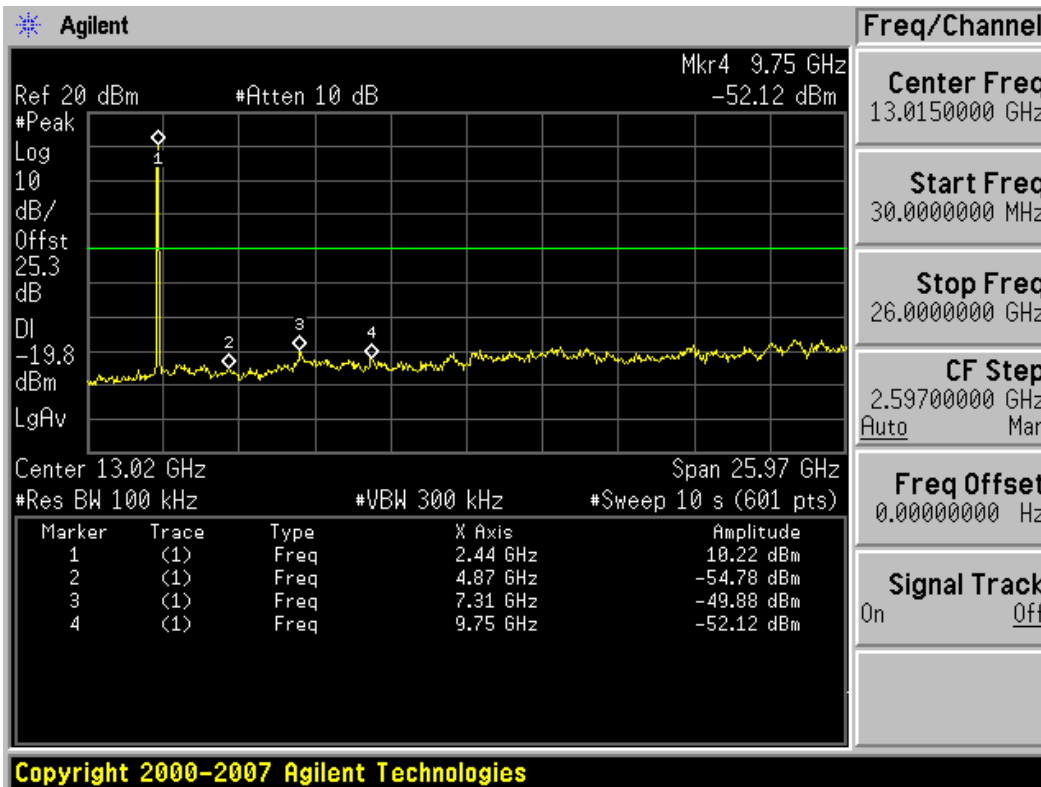


802.11g

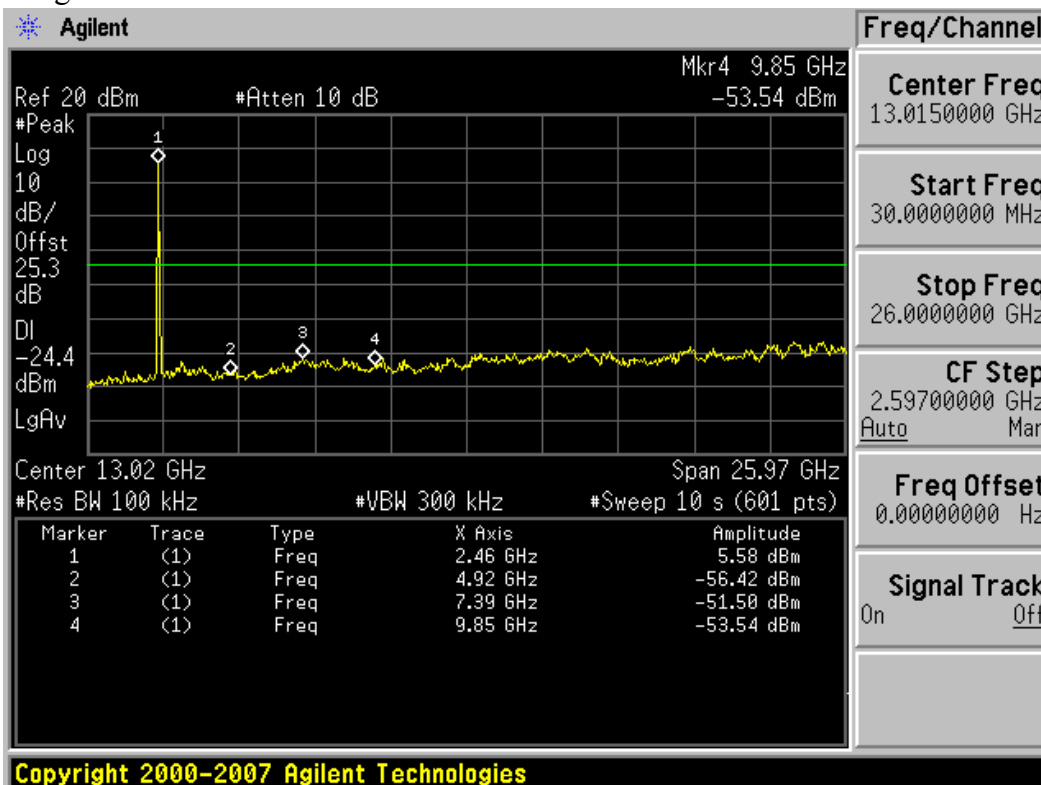
Low Channel



Middle Channel

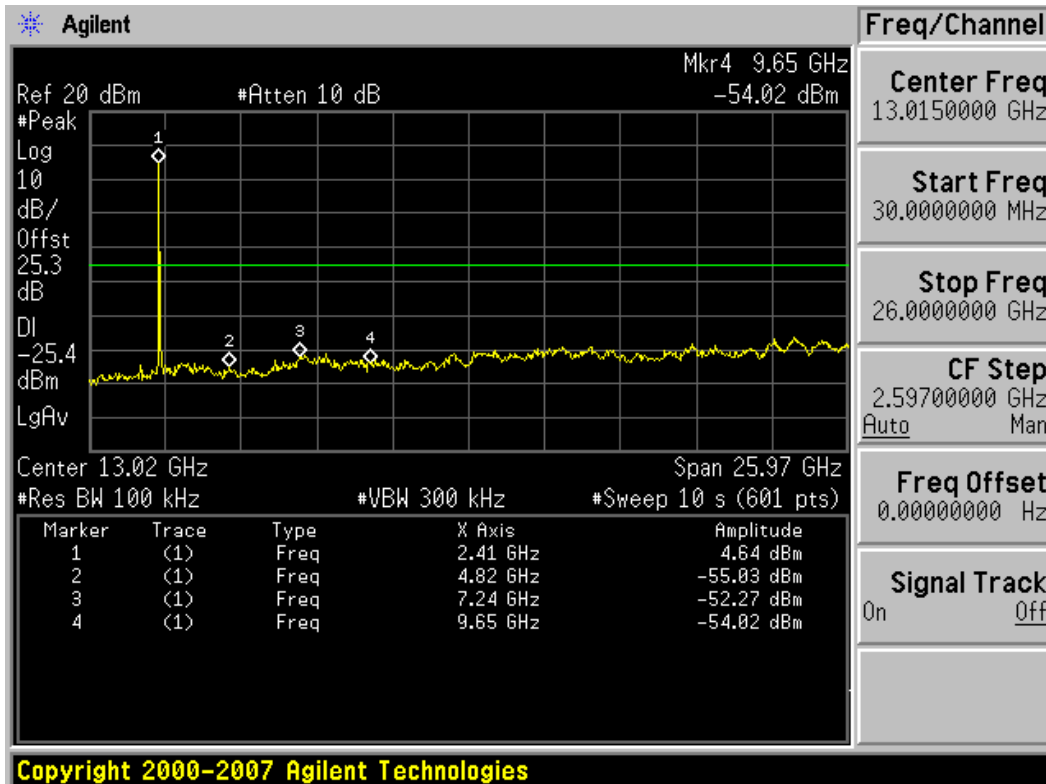


High Channel

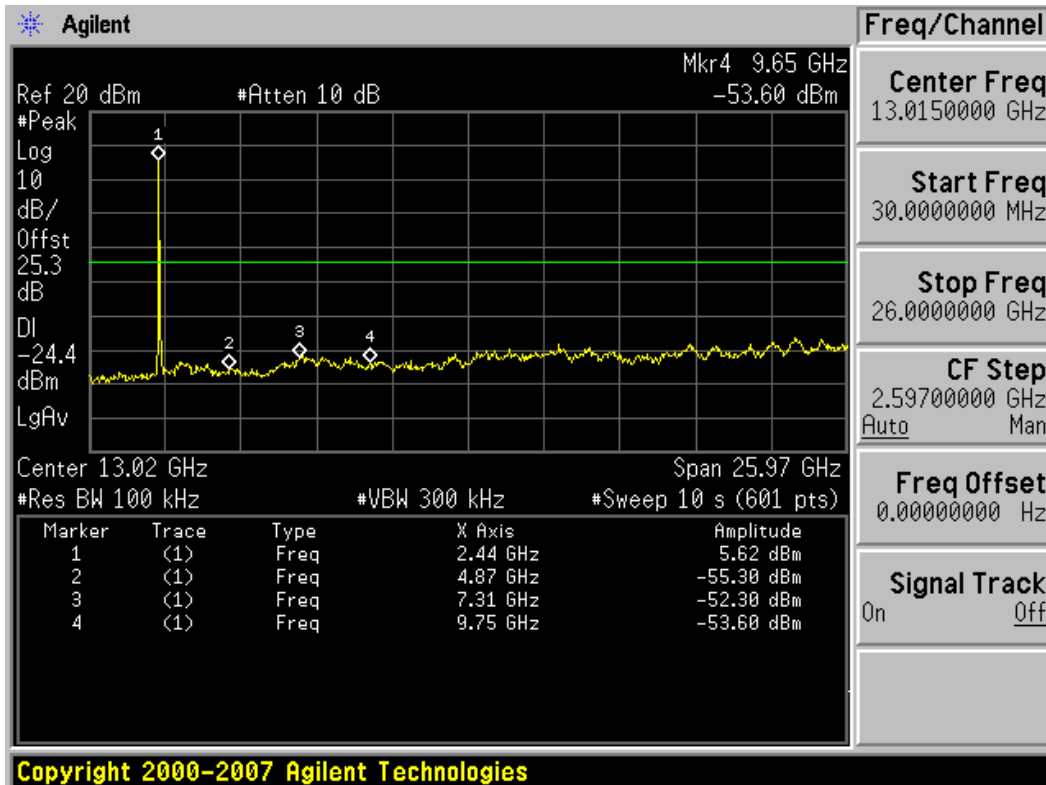


802.11n HT20

Low Channel

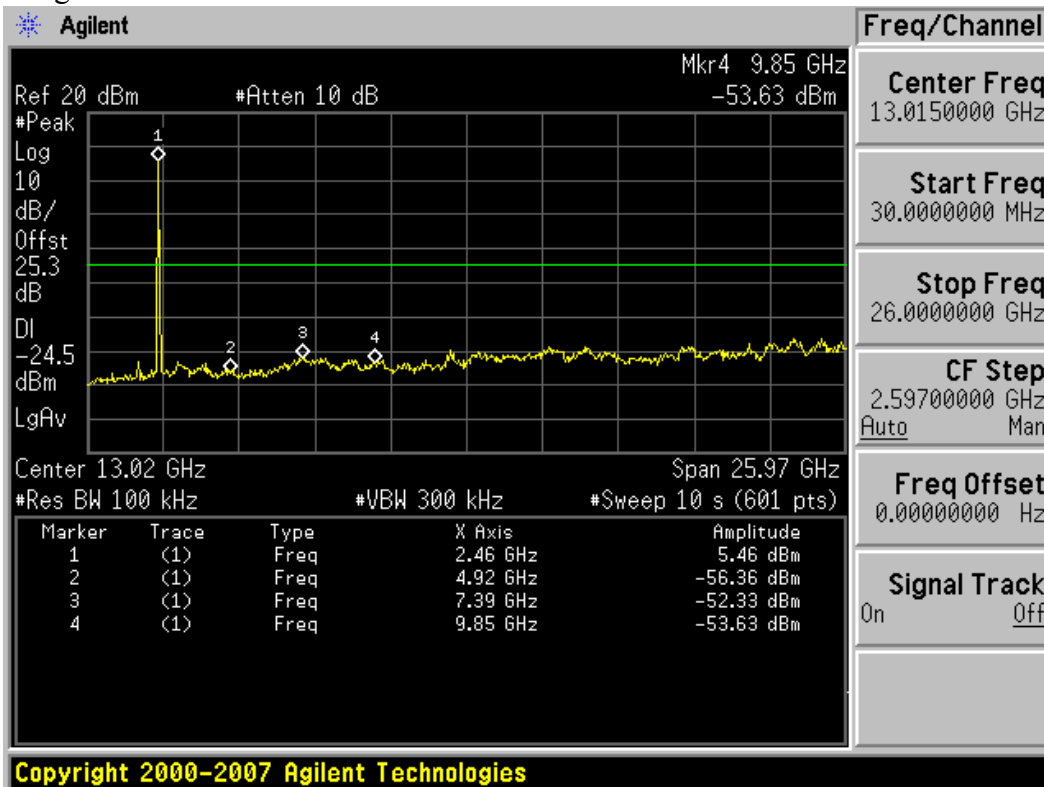


Middle Channel



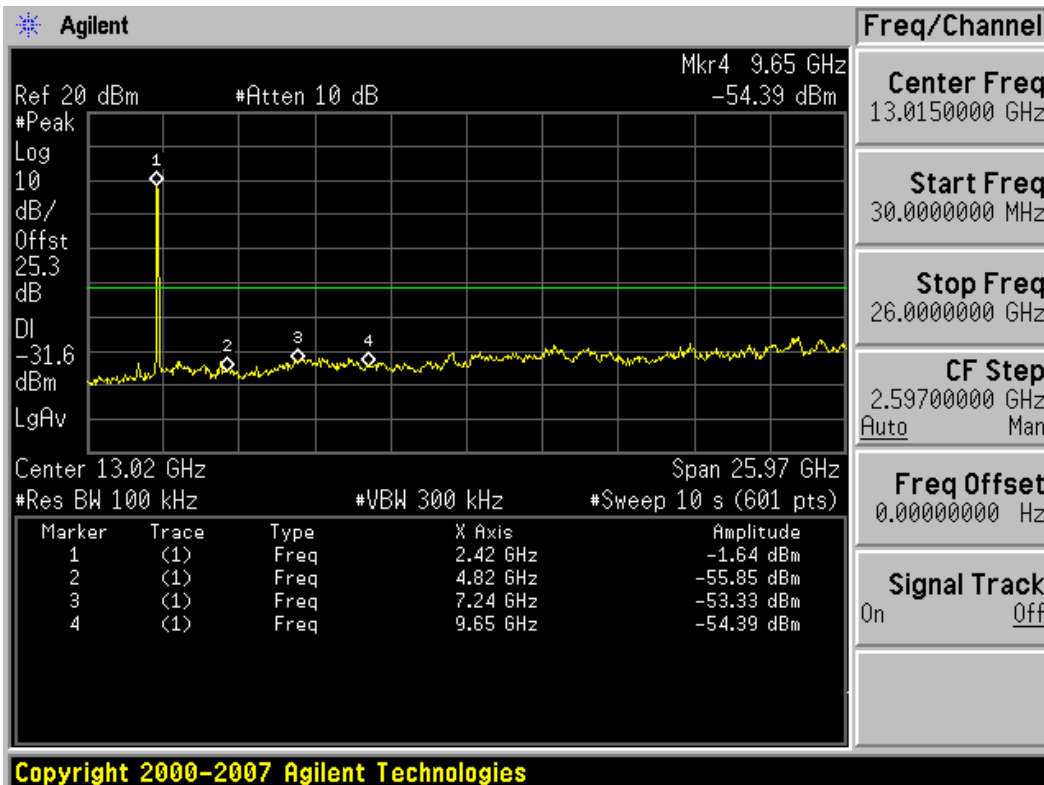


High Channel

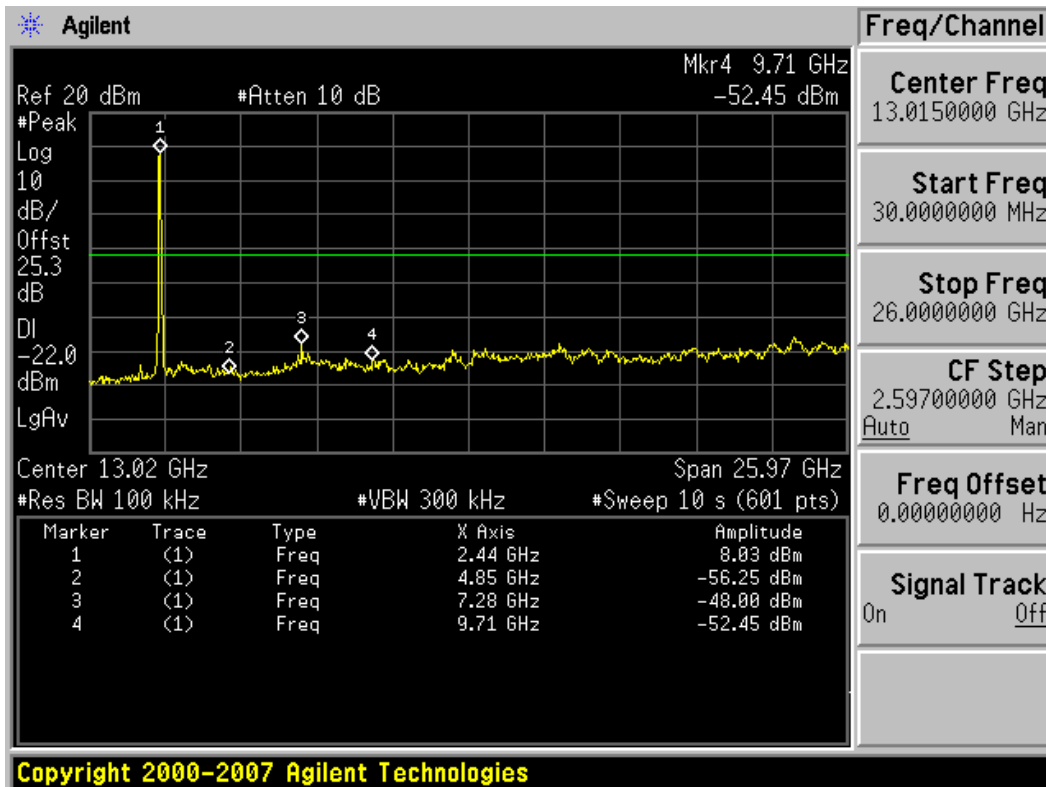


802.11n HT40

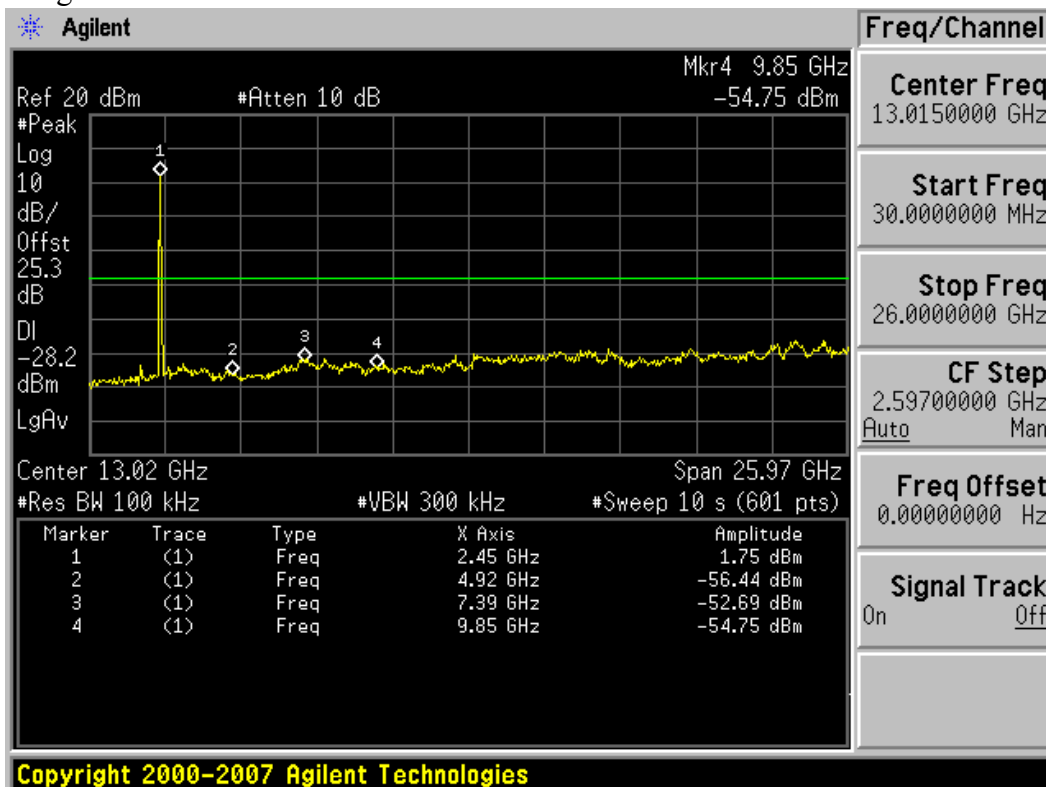
Low Channel



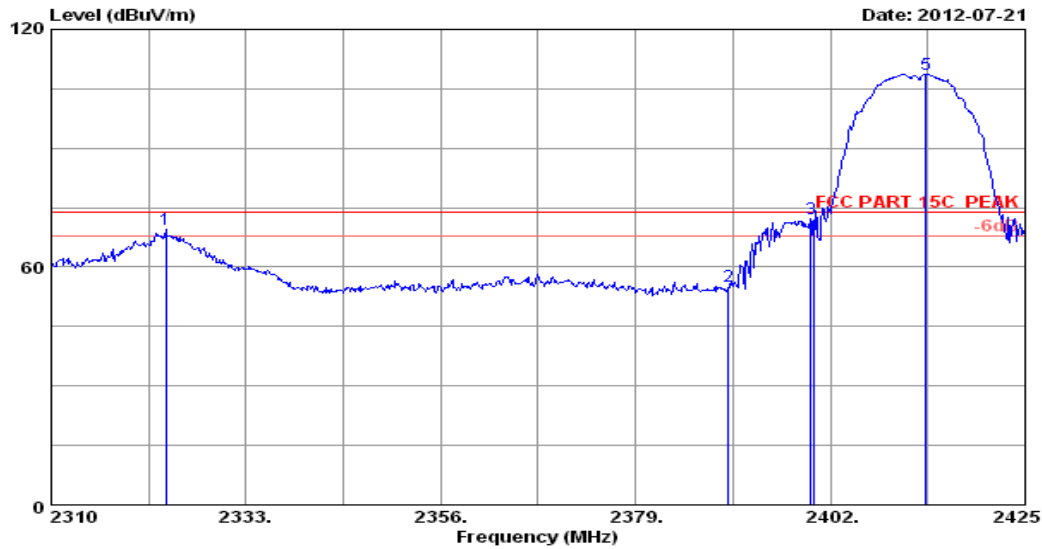
Middle Channel



High Channel



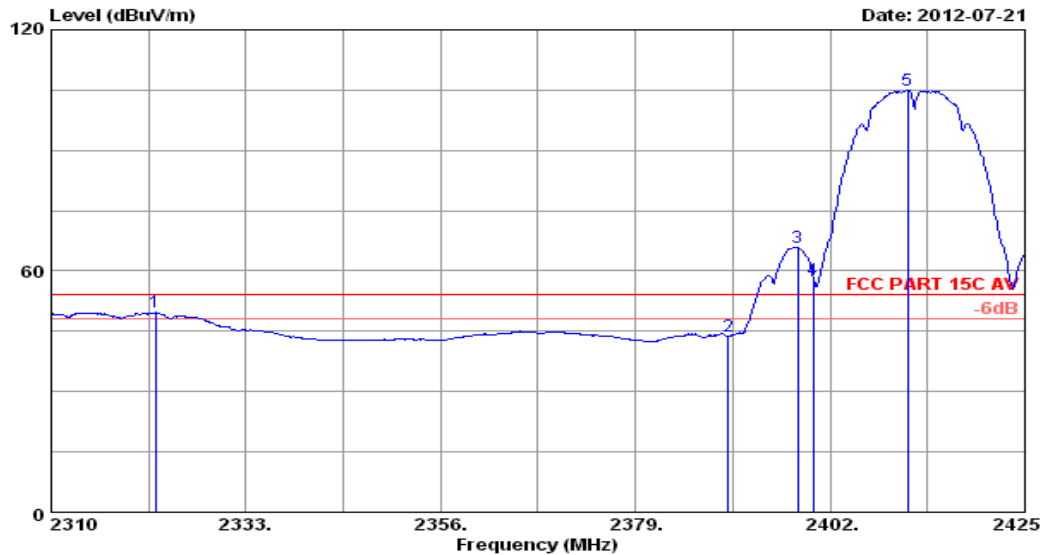
5.6.7. Test Results of Band Edge Emissions  
802.11b Low Channel



Site no. : RF Chamber Data no. : 3  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2323.570	27.86	5.89	34.43	70.09	69.41	74.00	4.59	Peak
2	2390.000	27.96	6.01	34.44	55.52	55.05	74.00	18.95	Peak
3	2399.700	27.96	6.01	34.44	72.74	72.27	74.00	1.73	Peak
4	2400.000	27.96	6.01	34.44	68.17	67.70	74.00	6.30	Peak
5	2413.270	27.98	6.03	34.44	109.02	108.59	74.00	-34.59	Peak

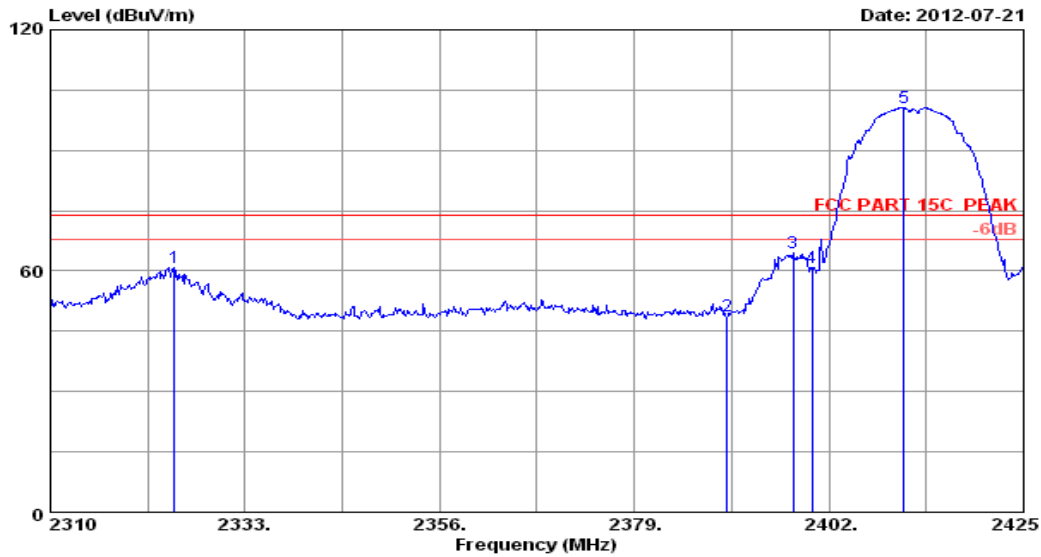
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 4  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2322.305	27.86	5.89	34.43	50.42	49.74	54.00	4.26	Average
2	2390.000	27.96	6.01	34.44	44.38	43.91	54.00	10.09	Average
3	2398.205	27.96	6.01	34.44	66.41	65.94	54.00	-11.94	Average
4	2400.000	27.96	6.01	34.44	58.19	57.72	54.00	-3.72	Average
5	2411.200	27.98	6.03	34.44	105.36	104.93	54.00	-50.93	Average

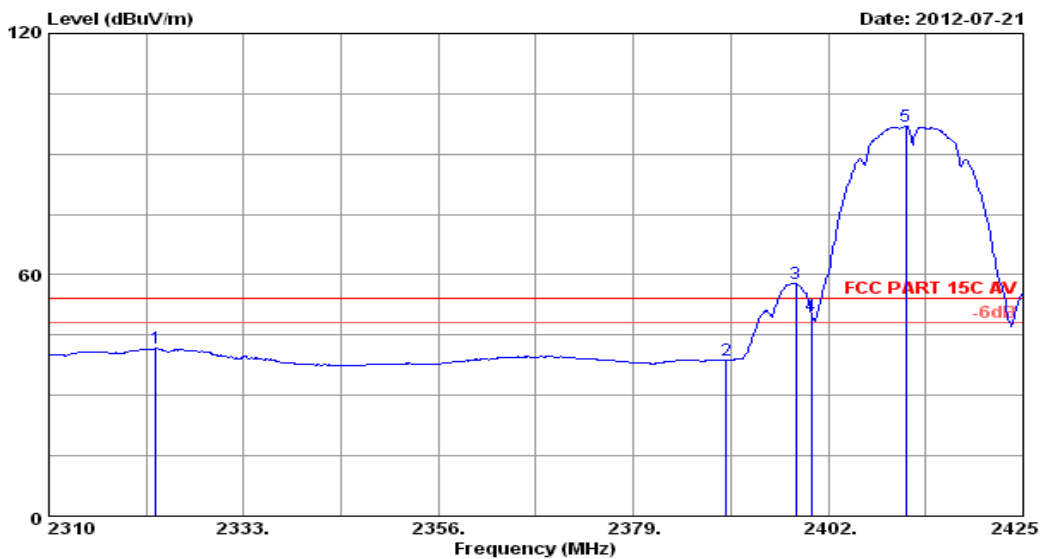
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 5  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2324.605	27.86	5.89	34.43	61.63	60.95	74.00	13.05	Peak
2	2390.000	27.96	6.01	34.44	49.41	48.94	74.00	25.06	Peak
3	2397.745	27.96	6.01	34.44	64.84	64.37	74.00	9.63	Peak
4	2400.000	27.96	6.01	34.44	61.31	60.84	74.00	13.16	Peak
5	2410.855	27.98	6.03	34.44	100.97	100.54	74.00	-26.54	Peak

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

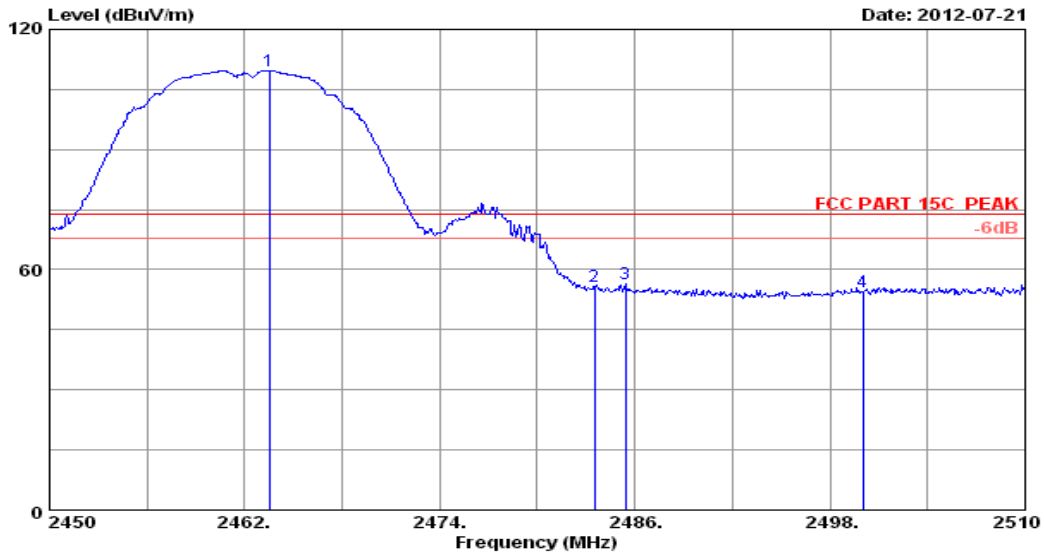


Site no. : RF Chamber Data no. : 6  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2322.650	27.86	5.89	34.43	42.35	41.67	54.00	12.33	Average
2	2390.000	27.96	6.01	34.44	39.17	38.70	54.00	15.30	Average
3	2398.205	27.96	6.01	34.44	58.38	57.91	54.00	-3.91	Average
4	2400.000	27.96	6.01	34.44	50.33	49.86	54.00	4.14	Average
5	2411.200	27.98	6.03	34.44	97.33	96.90	54.00	-42.90	Average

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

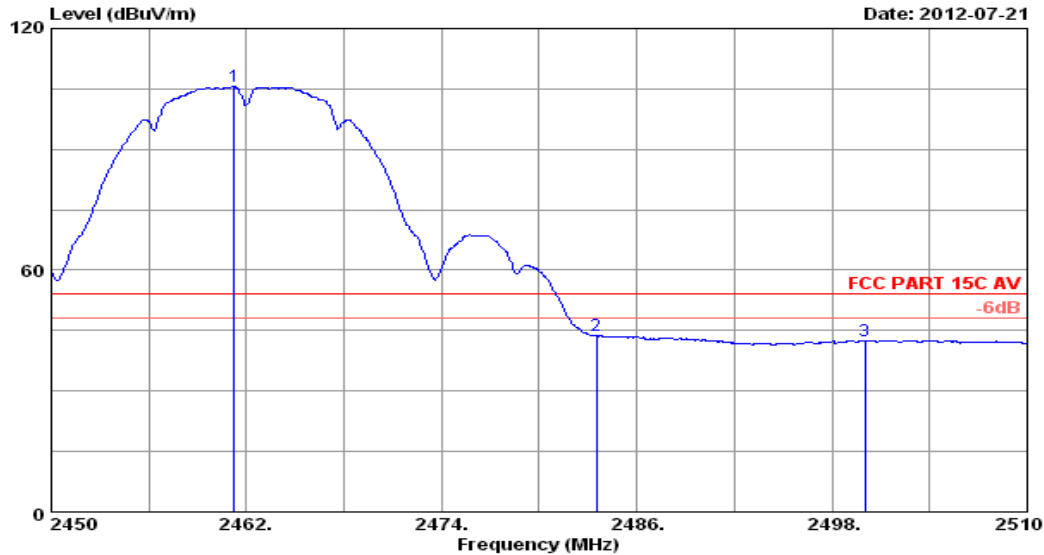
802.11b High Channel



Site no. : RF Chamber Data no. : 23  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Ant. Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2463.500	28.05	6.12	34.45	109.93	109.65	74.00	-35.65	Peak
2	2483.500	28.08	6.15	34.45	55.88	55.66	74.00	18.34	Peak
3	2485.400	28.08	6.15	34.45	56.83	56.61	74.00	17.39	Peak
4	2500.000	28.10	6.18	34.45	54.64	54.47	74.00	19.53	Peak

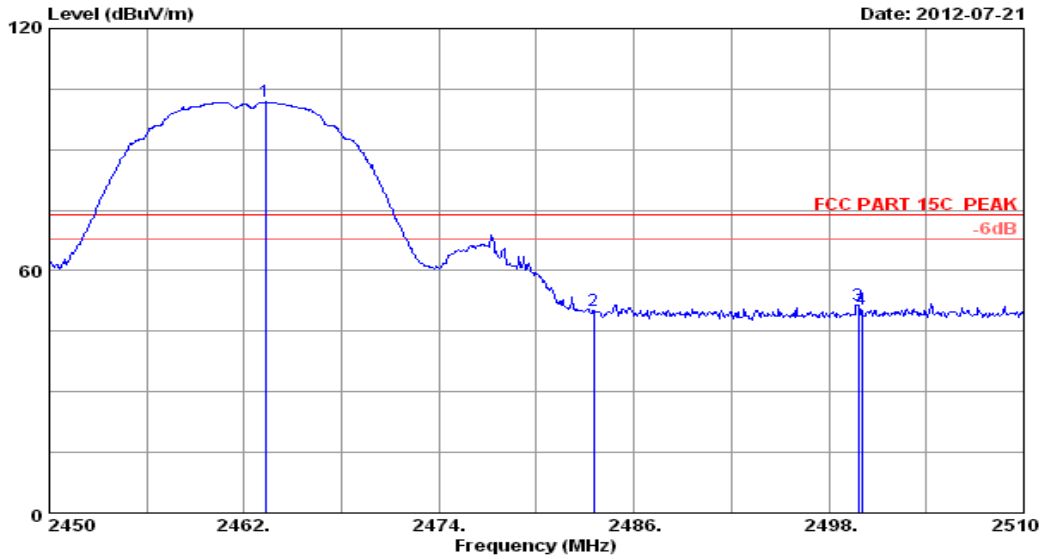
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 24  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Ant. Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2461.220	28.05	6.12	34.44	105.82	105.55	54.00	-51.55	Average
2	2483.500	28.08	6.15	34.45	43.96	43.74	54.00	10.26	Average
3	2500.000	28.10	6.18	34.45	42.60	42.43	54.00	11.57	Average

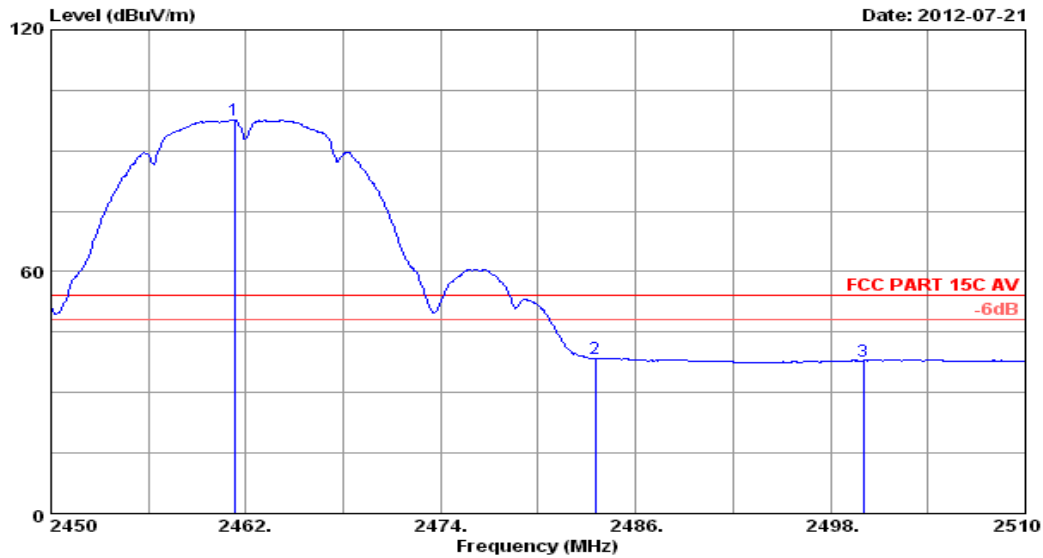
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 25  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2463.320	28.05	6.12	34.45	102.07	101.79	74.00	-27.79	Peak
2	2483.500	28.08	6.15	34.45	50.41	50.19	74.00	23.81	Peak
3	2499.800	28.10	6.18	34.45	51.67	51.50	74.00	22.50	Peak
4	2500.000	28.10	6.18	34.45	50.53	50.36	74.00	23.64	Peak

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

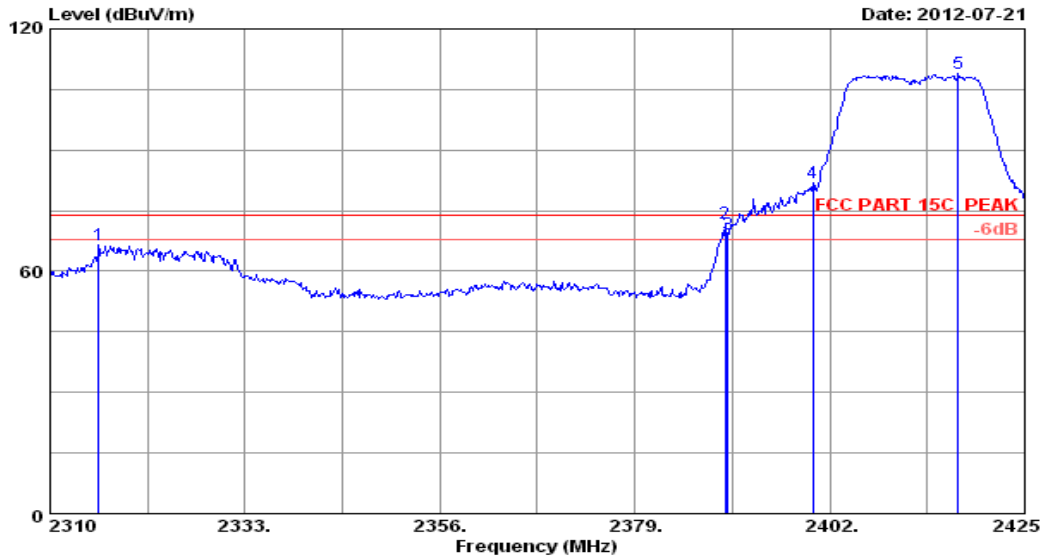


Site no. : RF Chamber Data no. : 26  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2461.280	28.05	6.12	34.44	98.04	97.77	54.00	-43.77	Average
2	2483.500	28.08	6.15	34.45	38.64	38.42	54.00	15.58	Average
3	2500.000	28.10	6.18	34.45	38.05	37.88	54.00	16.12	Average

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

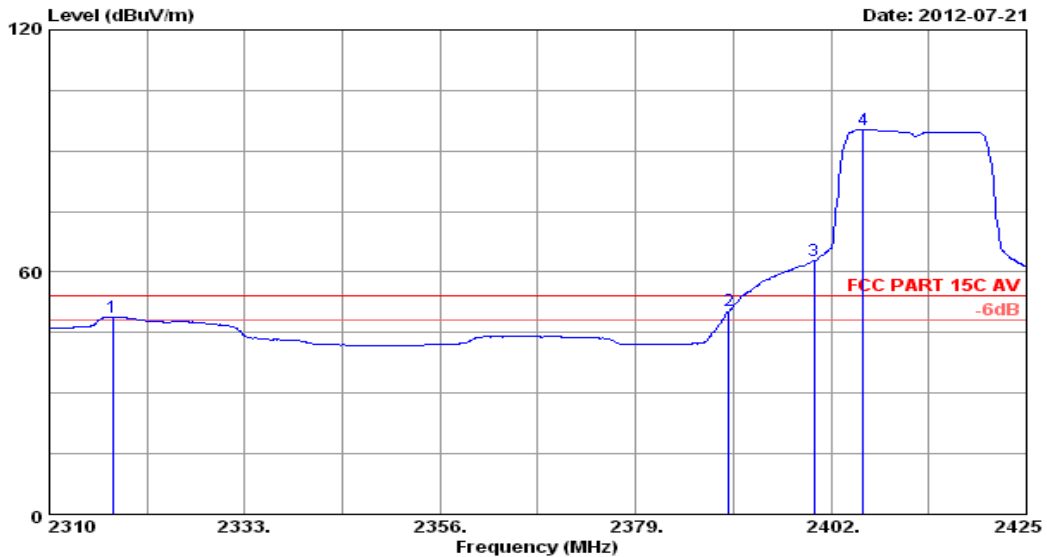
802.11g Low Channel



Site no. : RF Chamber Data no. : 27  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23°C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2315.750	27.83	5.89	34.43	67.12	66.41	74.00	7.59	Peak
2	2389.695	27.96	6.01	34.44	72.36	71.89	74.00	2.11	Peak
3	2390.000	27.96	6.01	34.44	69.76	69.29	74.00	4.71	Peak
4	2400.000	27.96	6.01	34.44	82.47	82.00	74.00	-8.00	Peak
5	2417.180	27.98	6.03	34.44	109.39	108.96	74.00	-34.96	Peak

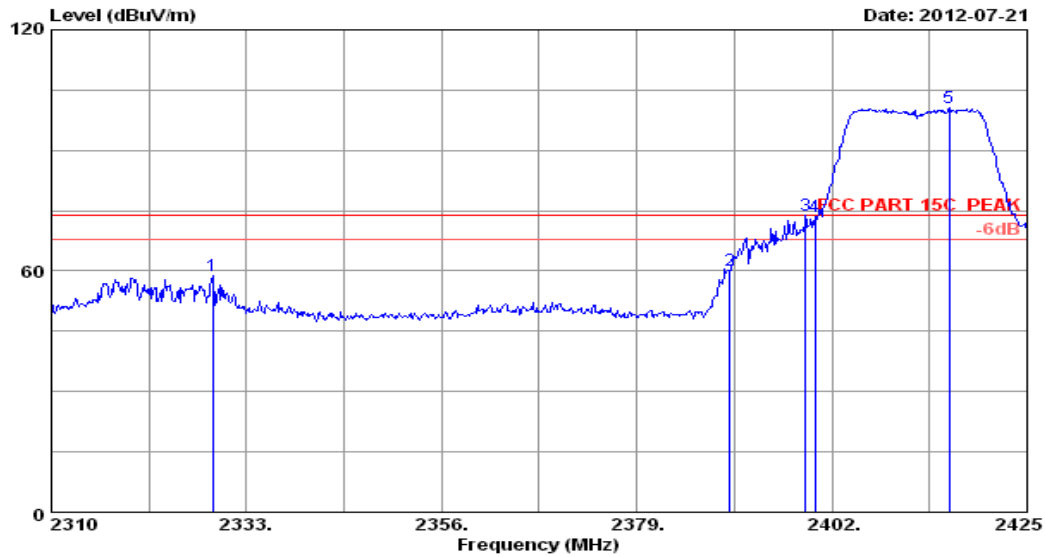
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 28  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23°C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2317.475	27.83	5.89	34.43	49.61	48.90	54.00	5.10	Average
2	2390.000	27.96	6.01	34.44	50.94	50.47	54.00	3.53	Average
3	2400.000	27.96	6.01	34.44	63.25	62.78	54.00	-8.78	Average
4	2405.795	27.98	6.03	34.44	95.73	95.30	54.00	-41.30	Average

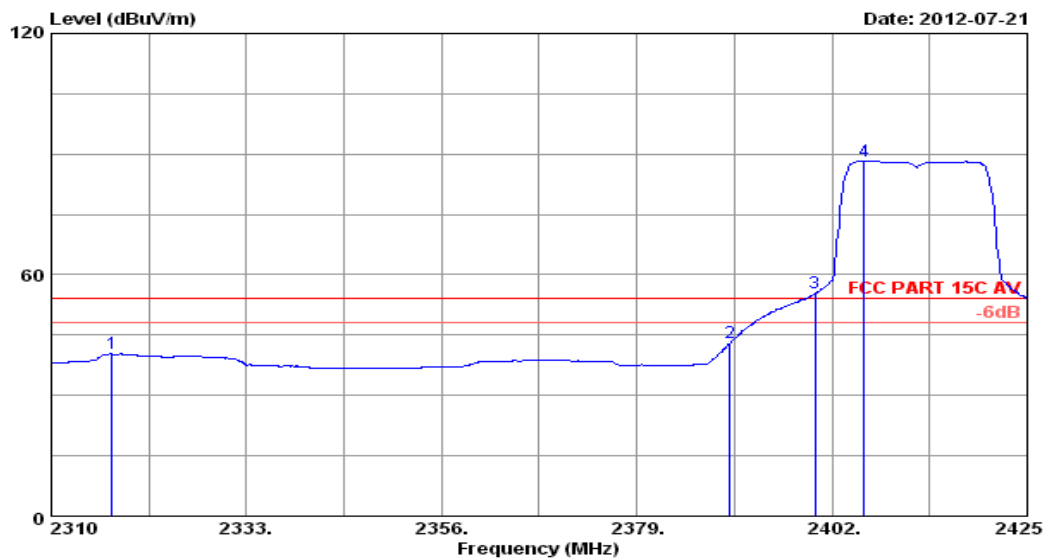
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 29  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23°C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2328.975	27.86	5.89	34.43	59.41	58.73	74.00	15.27	Peak
2	2390.000	27.96	6.01	34.44	60.58	60.11	74.00	13.89	Peak
3	2398.895	27.96	6.01	34.44	74.42	73.95	74.00	0.05	Peak
4	2400.000	27.96	6.01	34.44	73.96	73.49	74.00	0.51	Peak
5	2415.800	27.98	6.03	34.44	101.02	100.59	74.00	-26.59	Peak

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



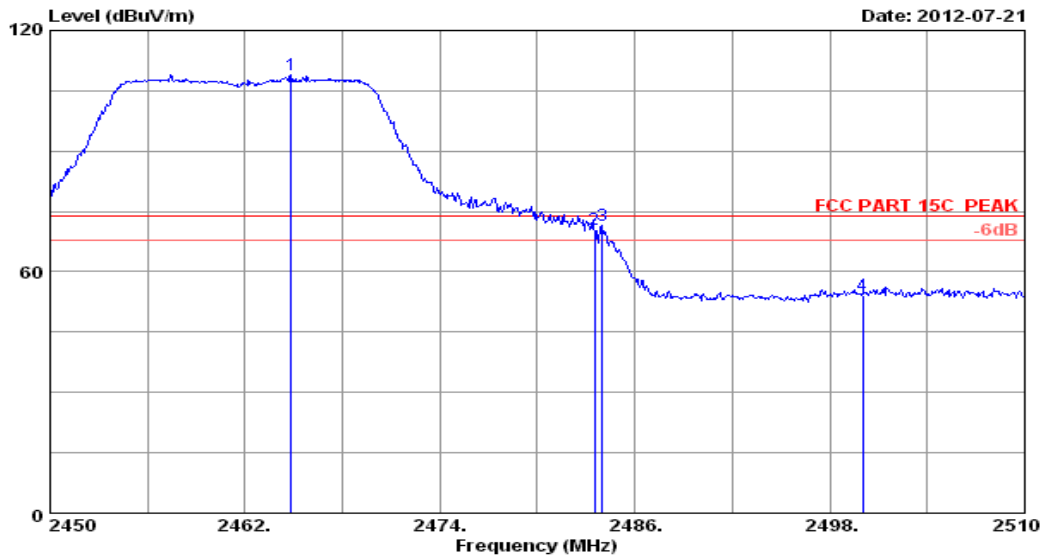
Site no. : RF Chamber Data no. : 30  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23°C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2317.130	27.83	5.89	34.43	41.02	40.31	54.00	13.69	Average
2	2390.000	27.96	6.01	34.44	43.59	43.12	54.00	10.88	Average
3	2400.000	27.96	6.01	34.44	55.81	55.34	54.00	-1.34	Average
4	2405.795	27.98	6.03	34.44	88.70	88.27	54.00	-34.27	Average

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



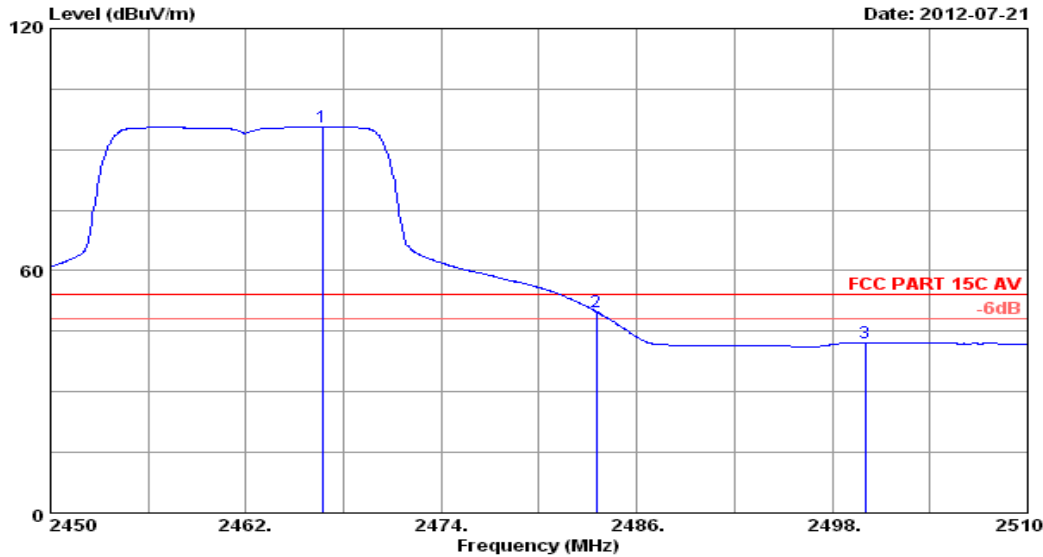
802.11g High Channel



Site no. : RF Chamber Data no. : 47  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Ant. Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2464.820	28.05	6.12	34.45	109.39	109.11	74.00	-35.11	Peak
2	2483.500	28.08	6.15	34.45	70.70	70.48	74.00	3.52	Peak
3	2484.020	28.08	6.15	34.45	71.64	71.42	74.00	2.58	Peak
4	2500.000	28.10	6.18	34.45	54.30	54.13	74.00	19.87	Peak

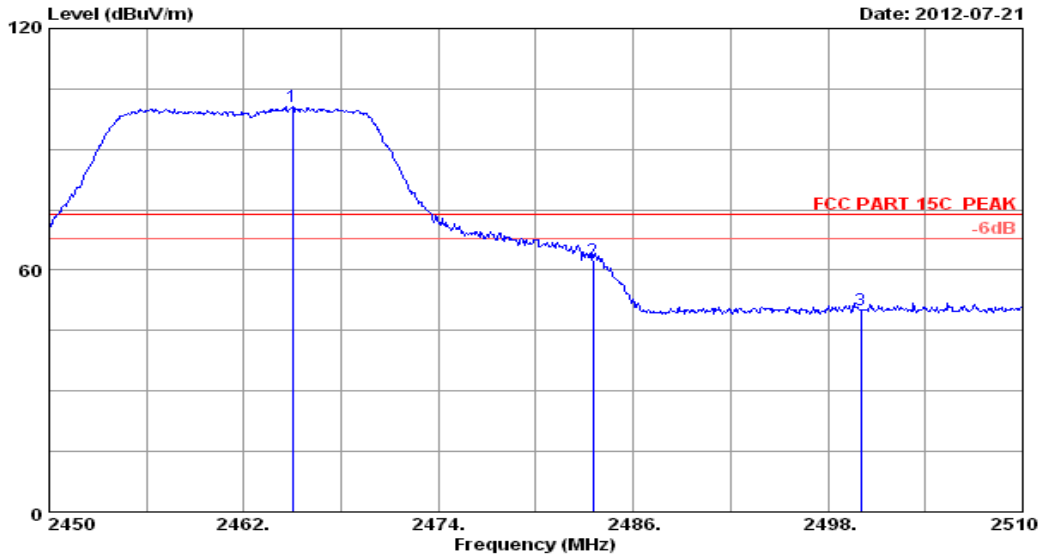
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 48  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Ant. Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2466.680	28.05	6.12	34.45	96.00	95.72	54.00	-41.72	Average
2	2483.500	28.08	6.15	34.45	50.18	49.96	54.00	4.04	Average
3	2500.000	28.10	6.18	34.45	42.43	42.26	54.00	11.74	Average

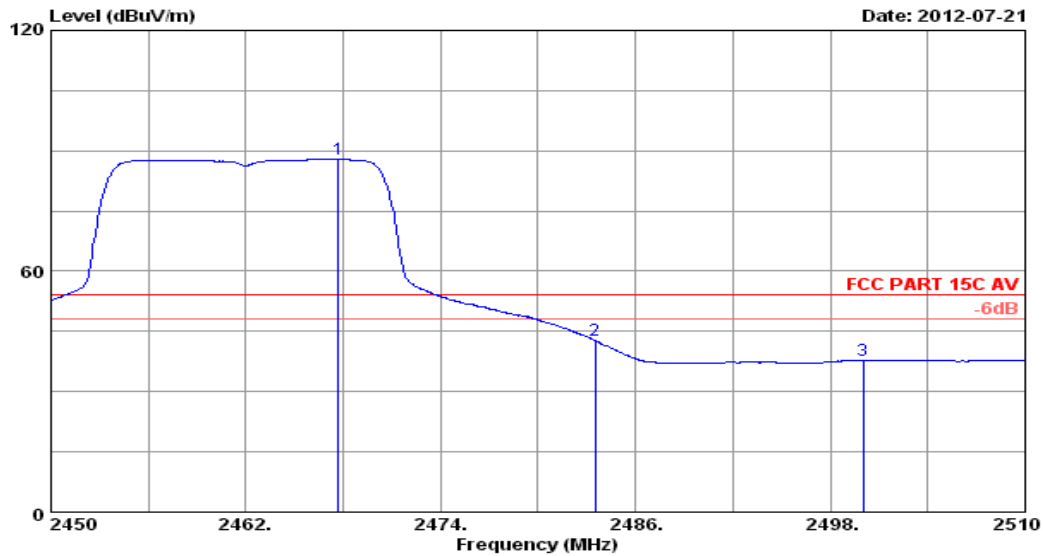
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 49  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2465.000	28.05	6.12	34.45	100.97	100.69	74.00	-26.69	Peak
2	2483.500	28.08	6.15	34.45	62.88	62.66	74.00	11.34	Peak
3	2500.000	28.10	6.18	34.45	50.19	50.02	74.00	23.98	Peak

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

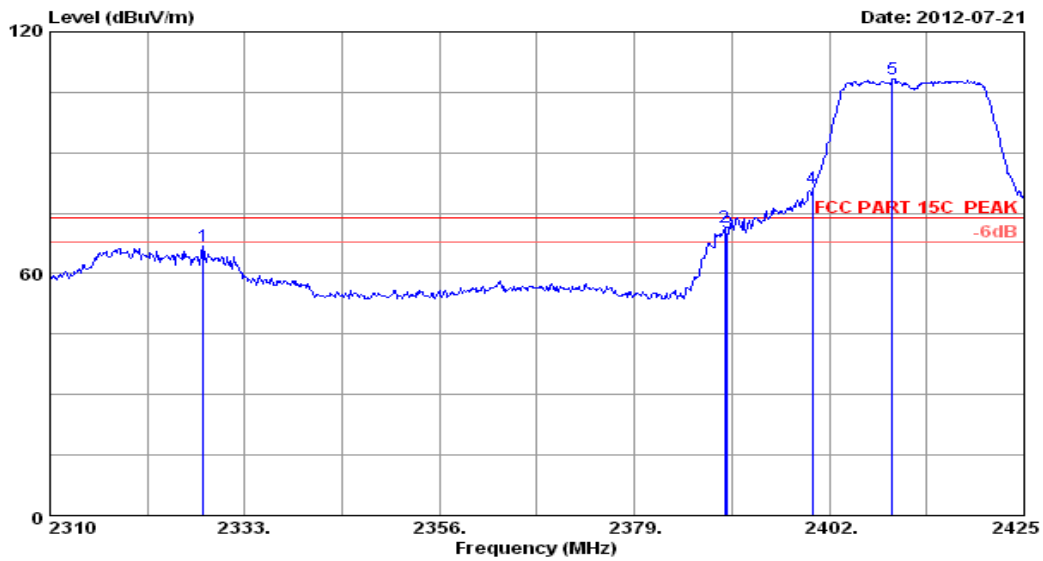


Site no. : RF Chamber Data no. : 50  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2467.700	28.05	6.12	34.45	88.16	87.88	54.00	-33.88	Average
2	2483.500	28.08	6.15	34.45	43.03	42.81	54.00	11.19	Average
3	2500.000	28.10	6.18	34.45	37.86	37.69	54.00	16.31	Average

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

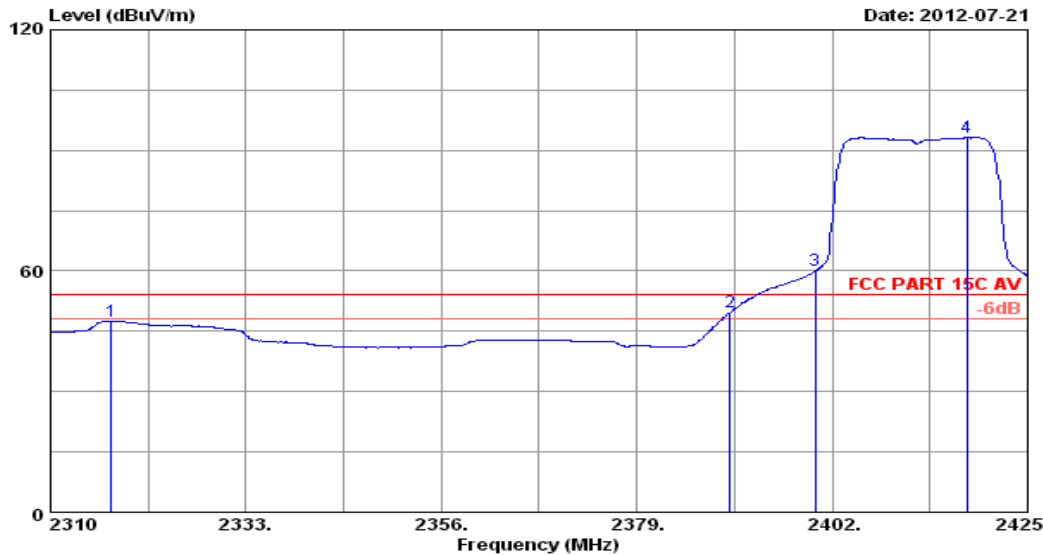
802.11n HT20 Low Channel



Site no. : RF Chamber Data no. : 73  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2328.055	27.86	5.89	34.43	67.55	66.87	74.00	7.13	Peak
2	2389.695	27.96	6.01	34.44	71.96	71.49	74.00	2.51	Peak
3	2390.000	27.96	6.01	34.44	70.69	70.22	74.00	3.78	Peak
4	2400.000	27.96	6.01	34.44	81.67	81.20	74.00	-7.20	Peak
5	2409.475	27.98	6.03	34.44	108.69	108.26	74.00	-34.26	Peak

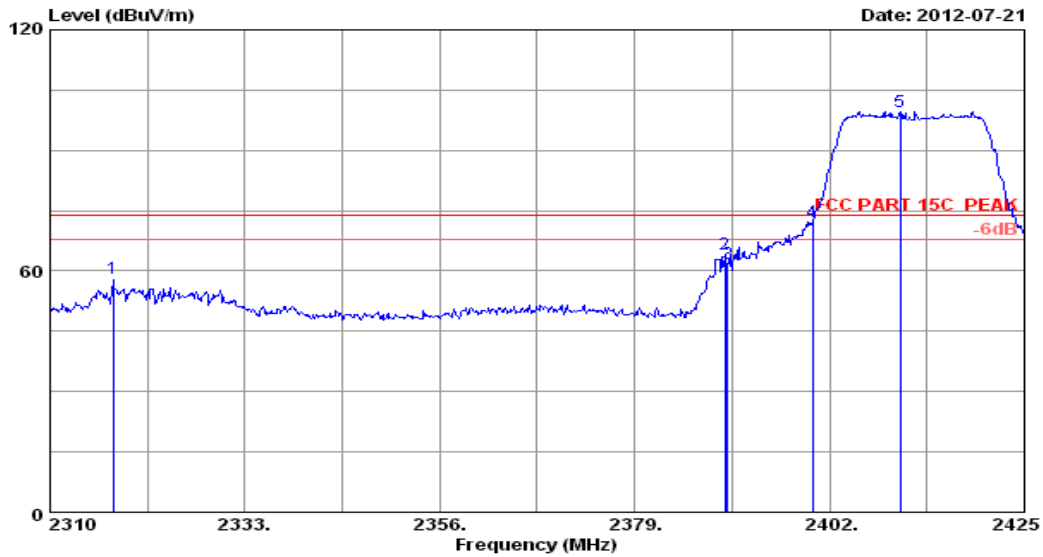
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 74  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2317.130	27.83	5.89	34.43	48.16	47.45	54.00	6.55	Average
2	2390.000	27.96	6.01	34.44	50.27	49.80	54.00	4.20	Average
3	2400.000	27.96	6.01	34.44	60.56	60.09	54.00	-6.09	Average
4	2417.870	27.98	6.03	34.44	93.59	93.16	54.00	-39.16	Average

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

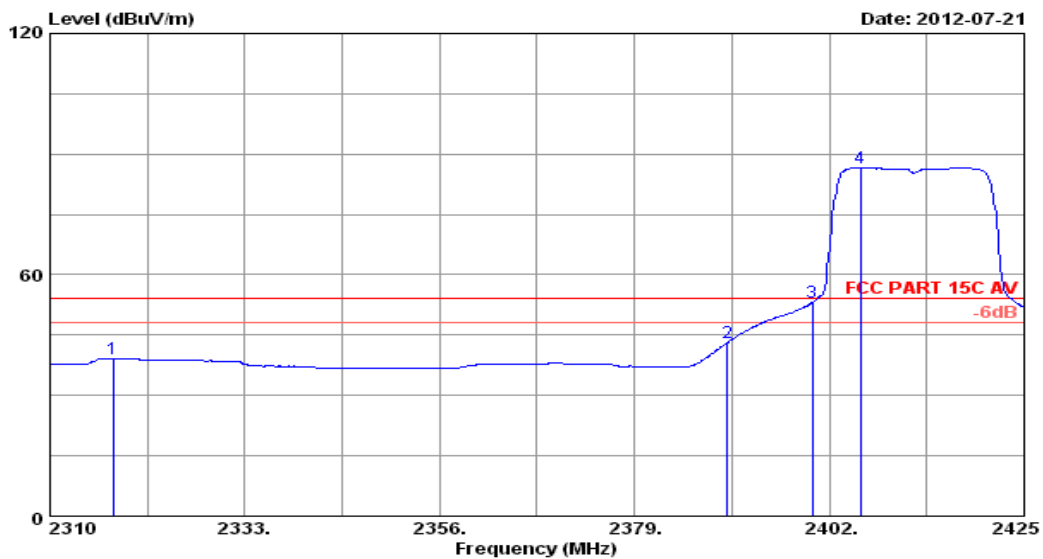


Site no. : RF Chamber Data no. : 76  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2317.475	27.83	5.89	34.43	58.82	58.11	74.00	15.89	Peak
2	2389.695	27.96	6.01	34.44	64.62	64.15	74.00	9.85	Peak
3	2390.000	27.96	6.01	34.44	62.20	61.73	74.00	12.27	Peak
4	2400.000	27.96	6.01	34.44	72.79	72.32	74.00	1.68	Peak
5	2410.395	27.98	6.03	34.44	100.12	99.69	74.00	-25.69	Peak

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



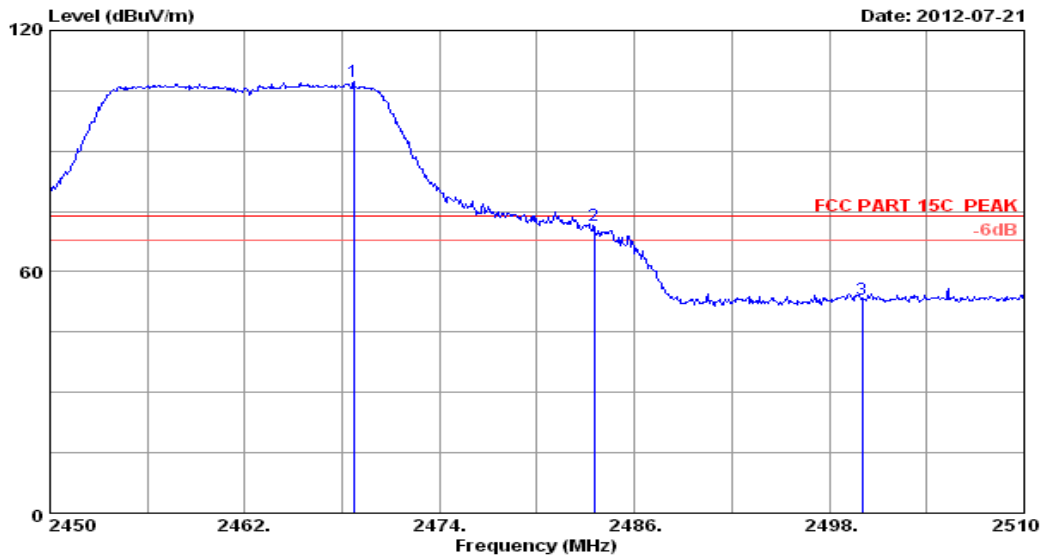
Site no. : RF Chamber Data no. : 75  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2317.475	27.83	5.89	34.43	39.96	39.25	54.00	14.75	Average
2	2390.000	27.96	6.01	34.44	43.67	43.20	54.00	10.80	Average
3	2400.000	27.96	6.01	34.44	53.75	53.28	54.00	0.72	Average
4	2405.680	27.98	6.03	34.44	87.09	86.66	54.00	-32.66	Average

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

802.11n HT20 High Channel



Site no. : RF Chamber Data no. : 53  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23°C/54% Engineer : Leo-Li

	Ant. Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2468.720	28.05	6.12	34.45	107.56	107.28	74.00	-33.28	Peak
2	2483.500	28.08	6.15	34.45	71.60	71.38	74.00	2.62	Peak
3	2500.000	28.10	6.18	34.45	53.23	53.06	74.00	20.94	Peak

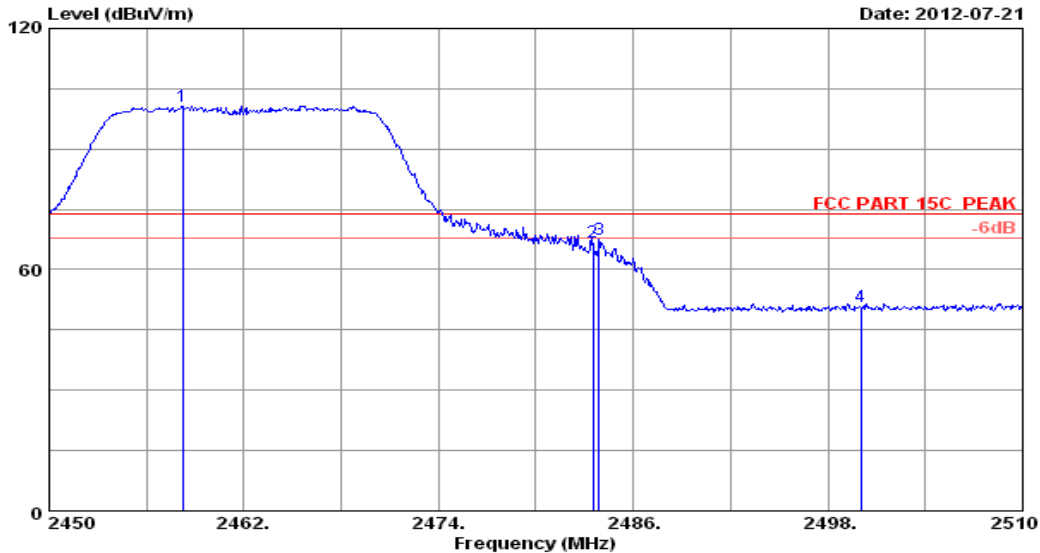
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 54  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23°C/54% Engineer : Leo-Li

	Ant. Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2467.100	28.05	6.12	34.45	94.52	94.24	54.00	-40.24	Average
2	2483.500	28.08	6.15	34.45	51.26	51.04	54.00	2.96	Average
3	2500.000	28.10	6.18	34.45	41.47	41.30	54.00	12.70	Average

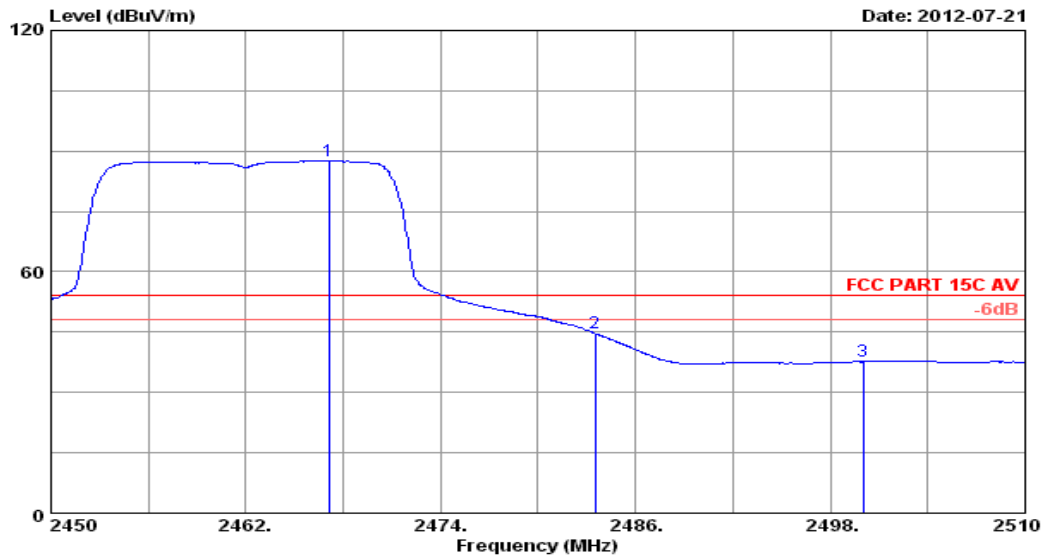
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 55  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23°C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2458.220	28.05	6.12	34.44	100.97	100.70	74.00	-26.70	Peak
2	2483.500	28.08	6.15	34.45	67.14	66.92	74.00	7.08	Peak
3	2483.900	28.08	6.15	34.45	67.60	67.38	74.00	6.62	Peak
4	2500.000	28.10	6.18	34.45	51.10	50.93	74.00	23.07	Peak

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

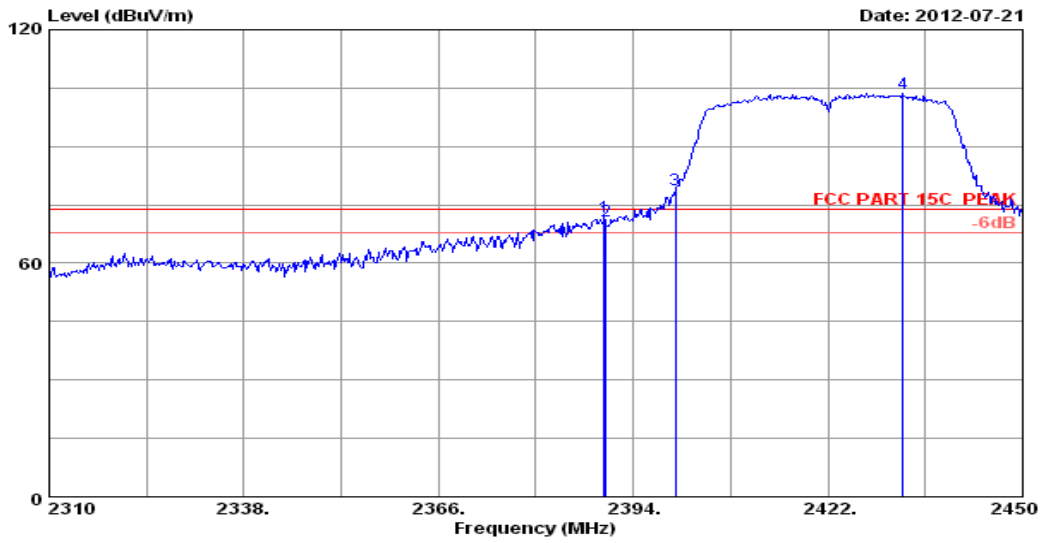


Site no. : RF Chamber Data no. : 56  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23°C/54% Engineer : Leo-Li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2467.100	28.05	6.12	34.45	87.78	87.50	54.00	-33.50	Average
2	2483.500	28.08	6.15	34.45	44.91	44.69	54.00	9.31	Average
3	2500.000	28.10	6.18	34.45	37.80	37.63	54.00	16.37	Average

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

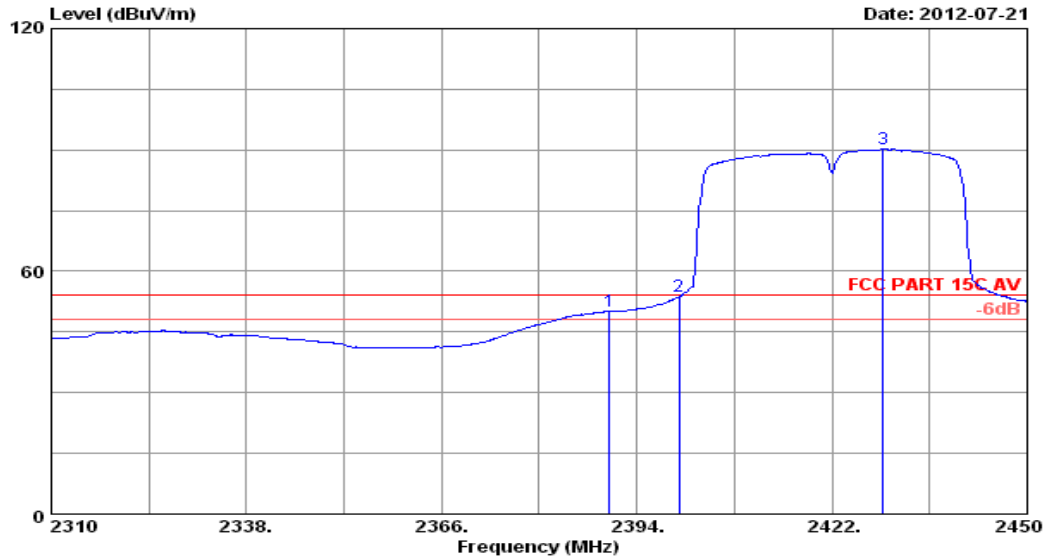
802.11n HT40 Low Channel



Site no. : RF Chamber Data no. : 79  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li  
 EUT : 150Mbps Wireless N Access Piont

	Ant. Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2389.800	27.96	6.01	34.44	72.20	71.73	74.00	2.27	Peak
2	2390.000	27.96	6.01	34.44	71.35	70.88	74.00	3.12	Peak
3	2400.000	27.96	6.01	34.44	79.28	78.81	74.00	-4.81	Peak
4	2432.780	28.00	6.06	34.44	103.95	103.57	74.00	-29.57	Peak

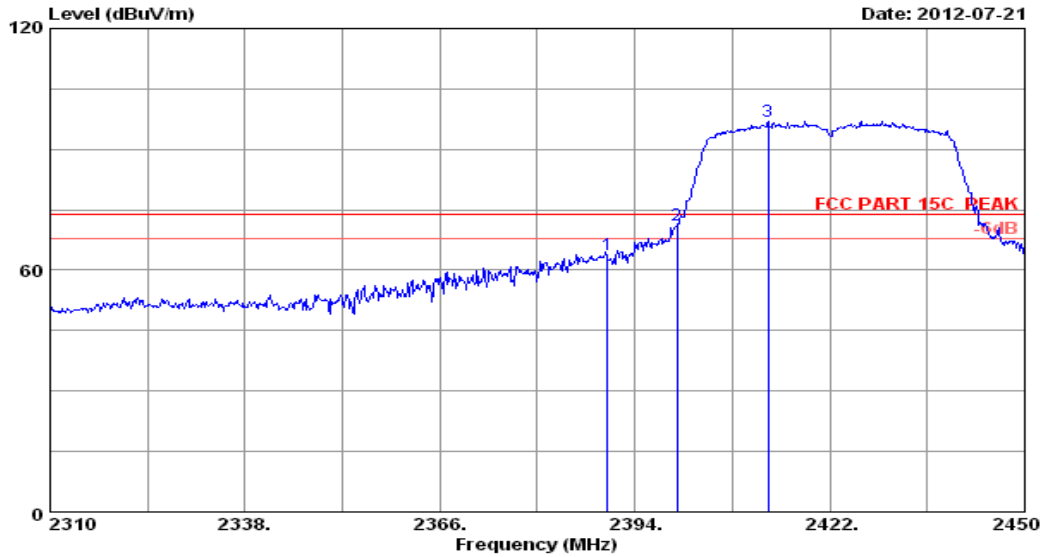
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 80  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Ant. Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	27.96	6.01	34.44	50.51	50.04	54.00	3.96	Average
2	2400.000	27.96	6.01	34.44	54.23	53.76	54.00	0.24	Average
3	2429.280	28.00	6.06	34.44	90.53	90.15	54.00	-36.15	Average

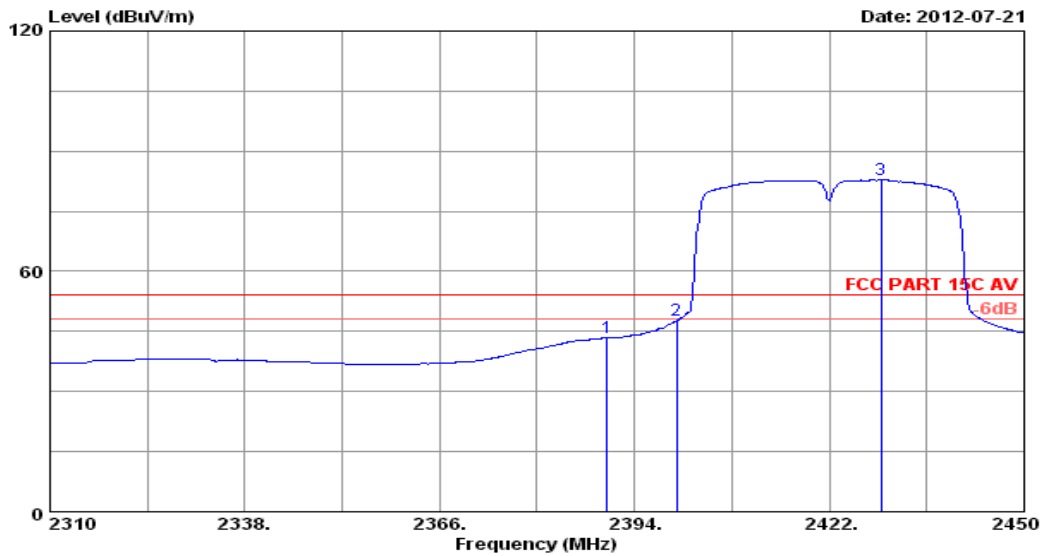
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 82  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23°C/54% Engineer : Leo-Li

	Ant. Freq. (MHz)	Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	27.96	6.01	34.44	64.17	63.70	74.00	10.30	Peak
2	2400.000	27.96	6.01	34.44	71.70	71.23	74.00	2.77	Peak
3	2413.180	27.98	6.03	34.44	97.46	97.03	74.00	-23.03	Peak

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



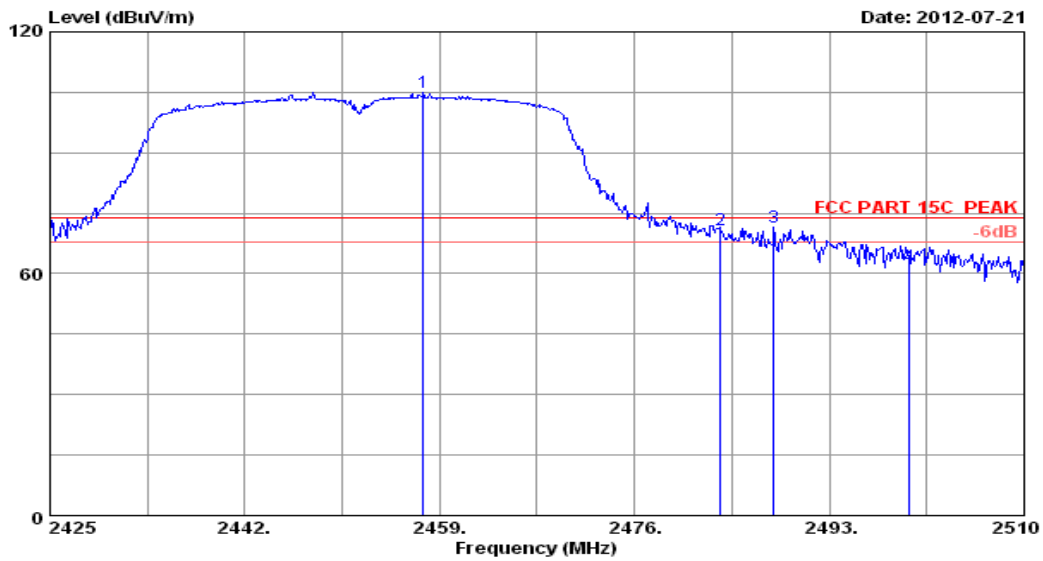
Site no. : RF Chamber Data no. : 81  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23°C/54% Engineer : Leo-Li

	Ant. Freq. (MHz)	Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	27.96	6.01	34.44	43.87	43.40	54.00	10.60	Average
2	2400.000	27.96	6.01	34.44	48.19	47.72	54.00	6.28	Average
3	2429.420	28.00	6.06	34.44	83.24	82.86	54.00	-28.86	Average

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



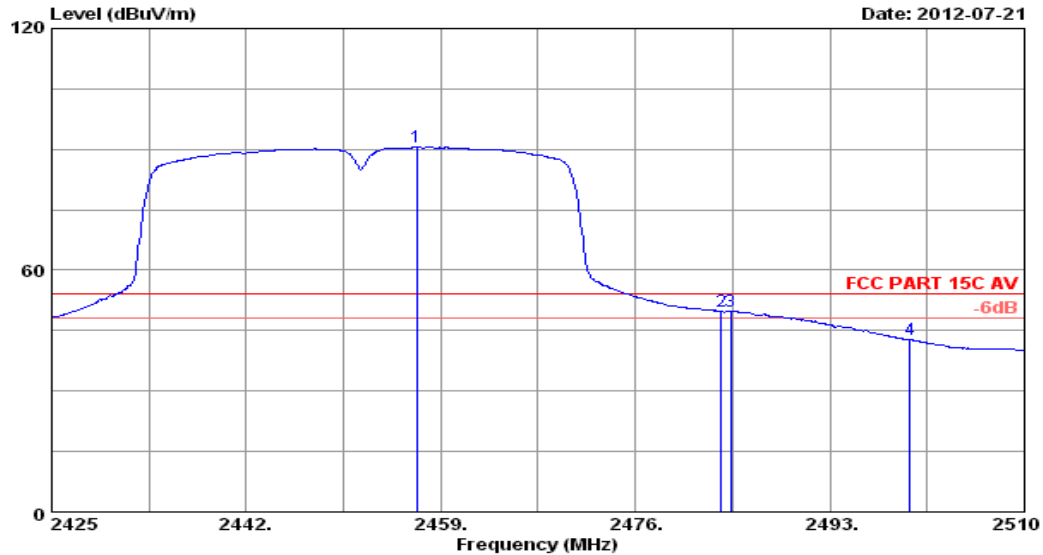
802.11n HT40 High Channel



Site no. : RF Chamber Data no. : 99  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23°C/54% Engineer : Leo-Li

	Ant. Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2457.555	28.05	6.12	34.44	105.17	104.90	74.00	-30.90	Peak
2	2483.500	28.08	6.15	34.45	71.22	71.00	74.00	3.00	Peak
3	2488.155	28.10	6.15	34.45	71.57	71.37	74.00	2.63	Peak
4	2500.000	28.10	6.18	34.45	62.13	61.96	74.00	12.04	Peak

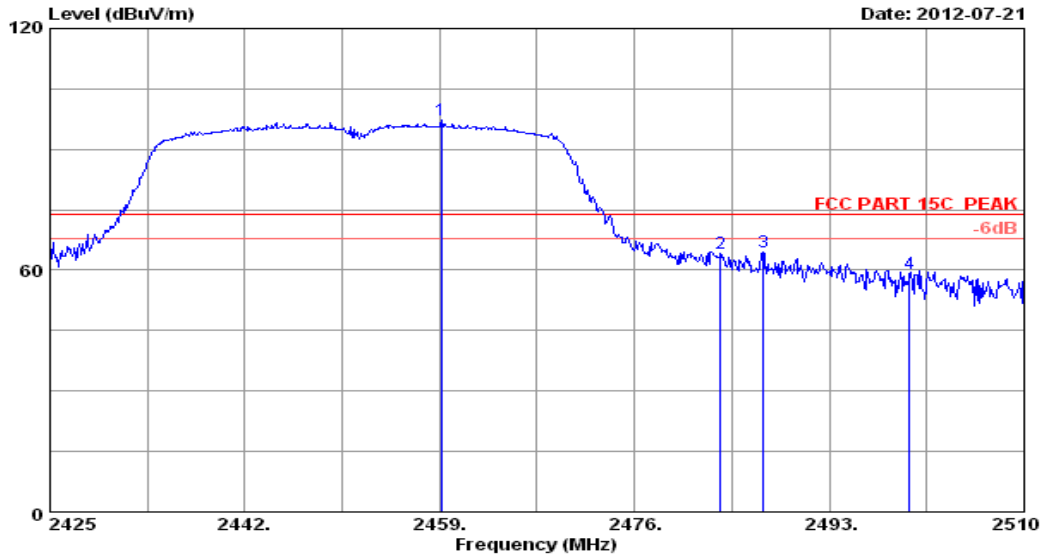
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 100  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23°C/54% Engineer : Leo-Li

	Ant. Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2456.875	28.05	6.12	34.44	90.85	90.58	54.00	-36.58	Average
2	2483.500	28.08	6.15	34.45	50.07	49.85	54.00	4.15	Average
3	2484.330	28.08	6.15	34.45	50.17	49.95	54.00	4.05	Average
4	2500.000	28.10	6.18	34.45	42.98	42.81	54.00	11.19	Average

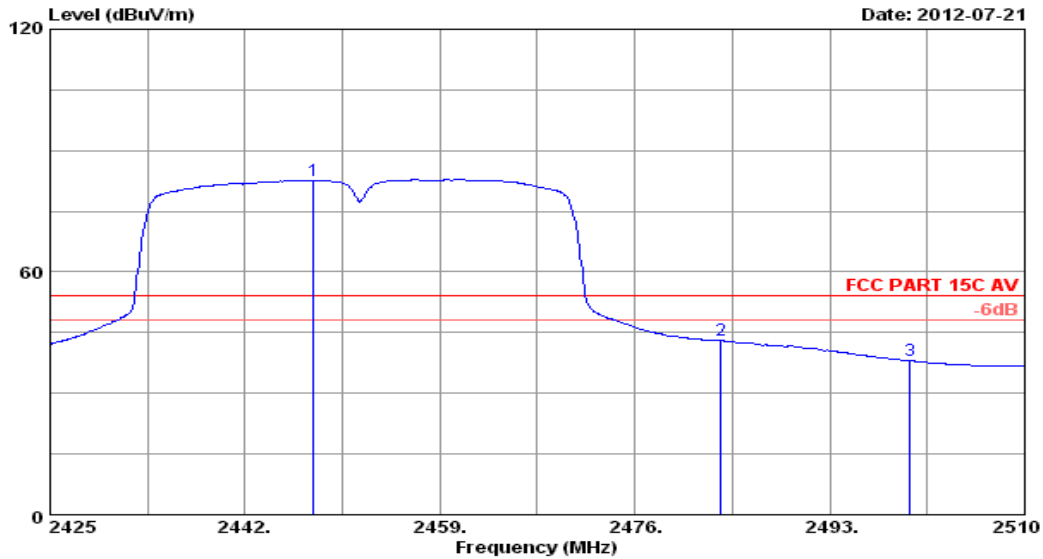
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 102  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	28.05	6.12	34.44	97.60	97.33	74.00	-23.33	Peak
2	28.08	6.15	34.45	64.44	64.22	74.00	9.78	Peak
3	28.08	6.15	34.45	64.83	64.61	74.00	9.39	Peak
4	28.10	6.18	34.45	59.23	59.06	74.00	14.94	Peak

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 101  
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23\*C/54% Engineer : Leo-Li

	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	28.03	6.09	34.44	82.95	82.63	54.00	-28.63	Average
2	28.08	6.15	34.45	43.25	43.03	54.00	10.97	Average
3	28.10	6.18	34.45	38.24	38.07	54.00	15.93	Average

Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

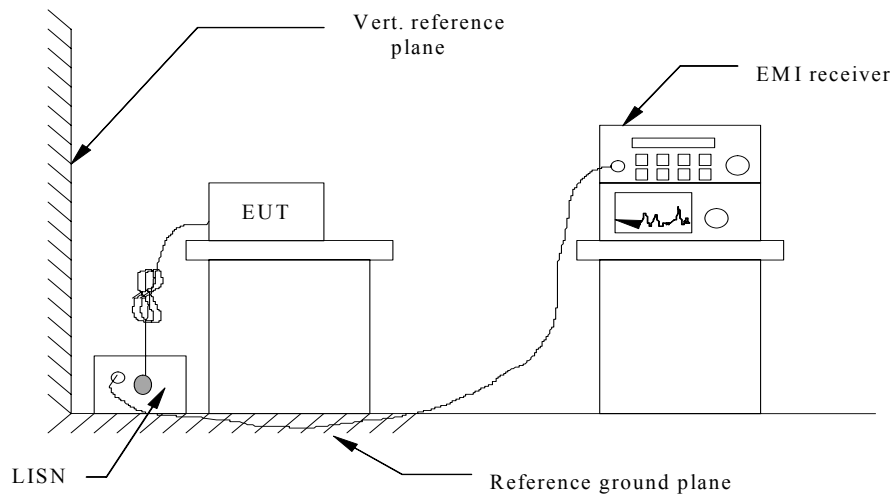
## 5.7. Power line conducted emissions

### 5.7.1 Standard Applicable

According to §15.207 (a): For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

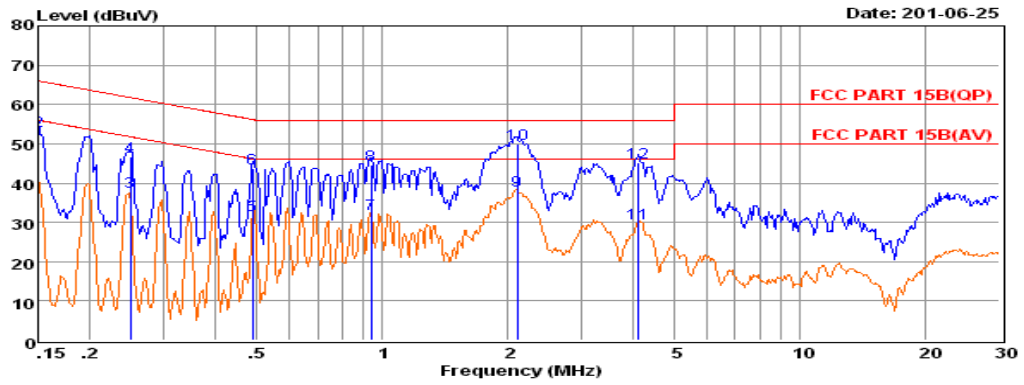
### 5.7.2 Block Diagram of Test Setup



### 5.7.3 Test Results

PASS.

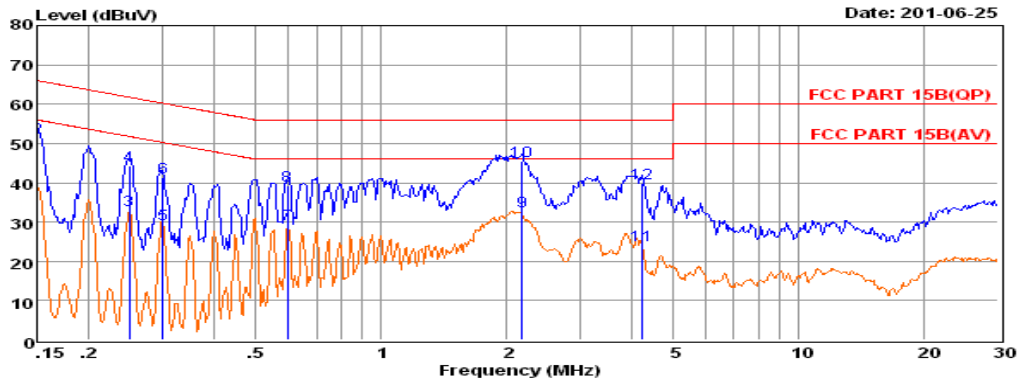
The test data please refer to following page.



Env. Ins: 24\*/56%  
 EUT: WiBOX  
 M/N: WiBOX  
 Power Rating: DC 3.7V from PC Iput AC 120V/60Hz  
 Test Mode: On  
 Operator: fox  
 Memo:  
 Pol: NEUTRAL

Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.15	30.55	9.70	0.02	40.27	56.00	-15.73 Average
2	0.15	43.45	9.70	0.02	53.17	66.00	-12.83 QP
3	0.25	28.22	9.60	0.03	37.85	51.78	-13.93 Average
4	0.25	36.92	9.60	0.03	46.55	61.78	-15.23 QP
5	0.49	22.13	9.62	0.04	31.79	46.19	-14.40 Average
6	0.49	33.91	9.62	0.04	43.57	56.19	-12.62 QP
7	0.94	22.46	9.63	0.05	32.14	46.00	-13.86 Average
8	0.94	34.84	9.63	0.05	44.52	56.00	-11.48 QP
9	2.11	28.44	9.63	0.05	38.12	46.00	-7.88 Average
10	2.11	40.15	9.63	0.05	49.83	56.00	-6.17 QP
11	4.11	19.97	9.65	0.06	29.68	46.00	-16.32 Average
12	4.11	35.50	9.65	0.06	45.21	56.00	-10.79 QP

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.  
 2. The emission levels that are 20dB below the official limit are not reported.



Env. Ins: 24\*/56%  
 EUT: WiBOX  
 M/N: WiBOX  
 Power Rating: DC 3.7V from PC Iput AC 120V/60Hz  
 Test Mode: On  
 Operator: fox  
 Memo:  
 Pol: LINE

Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.15	29.11	9.57	0.02	38.70	56.00	-17.30 Average
2	0.15	41.71	9.57	0.02	51.30	66.00	-14.70 QP
3	0.25	23.36	9.63	0.03	33.02	51.78	-18.76 Average
4	0.25	34.53	9.63	0.03	44.19	61.78	-17.59 QP
5	0.30	19.87	9.63	0.03	29.53	50.24	-20.71 Average
6	0.30	31.58	9.63	0.03	41.24	60.24	-19.00 QP
7	0.60	19.77	9.63	0.04	29.44	46.00	-16.56 Average
8	0.60	29.58	9.63	0.04	39.25	56.00	-16.75 QP
9	2.18	22.99	9.64	0.05	32.68	46.00	-13.32 Average
10	2.18	35.70	9.64	0.05	45.39	56.00	-10.61 QP
11	4.20	14.38	9.65	0.06	24.09	46.00	-21.91 Average
12	4.20	30.24	9.65	0.06	39.95	56.00	-16.05 QP

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.  
 2. The emission levels that are 20dB below the official limit are not reported.

## 5.8. Antenna Requirements

### 5.8.1. Standard Applicable

According to § 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.

### 5.8.2. Antenna Connector Construction

The directional gains of antenna used for transmitting is 2.0dBi, and the antenna connector is de-signed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

### 5.8.3. Results: Compliance.

## 5.9. Deviation to test specifications

[ NONE ]

## 6. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal Date	Due Date
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	June 18,2012	June 17,2013
LISN	MESS Tec	NNB-2/16Z	99079	9KHz-30MHz	June 18,2012	June 17,2013
LISN (Support Unit)	EMCO	3819/2NM	9703-1839	9KHz-30MHz	June 18,2012	June 17,2013
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9KHz-30MHz	June 29,2012	June 28,2013
ISN	SCHAFFNER	ISN ST08	21653	9KHz-30MHz	June 18,2012	June 17,2013
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30M-1GHz 3m	June 18,2012	June 17,2013
Amplifier	SCHAFFNER	COA9231A	18667	9kHz-2GHz	June 18,2012	June 17,2013
Amplifier	Agilent	8449B	3008A02120	1GHz-26.5GHz	June 18,2012	June 17,2013
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5GHz-40GHz	June 18,2012	June 17,2013
Spectrum Analyzer	Agilent	E4446A	MY41440289	9k-26.5GHz	June 18,2012	June 17,2013
Spectrum Analyzer	Agilent	E4407B	MY41440292	9k-26.5GHz	June 18,2012	June 17,2013
Loop Antenna	R&S	HFH2-Z2	860004/001	9k-30MHz	July 07,2012	July 06,2013
By-log Antenna	SCHAFFNER	CBL 6112D	22237	30MHz-1GHz	July 07,2012	July 06,2013
Horn Antenna	EMCO	3115	4580	1GHz-18GHz	July 07,2012	July 06,2013
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz-40GHz	July 07,2012	July 06,2013
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz-1GHz	June 29,2012	June 28,2013
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz-40GHz	June 29,2012	June 28,2013
Spectrum Meter	R&S	FSP 30	100023	9kHz-30GHz	June 25,2012	June 24,2013
Power Meter	R&S	NRVS	100444	DC-40GHz	June 25,2012	June 24,2013
Power Sensor	R&S	NRV-Z51	100458	DC-30GHz	June 18,2012	June 17,2013
Power Sensor	R&S	NRV-Z32	10057	30MHz-6GHz	June 18,2012	June 17,2013
AC Power Source	HPC	HPA-500E	HPA-9100024	AC 0~300V	June 25,2012	June 24,2013
DC power Source	GW	GPC-6030D	C671845	DC 1V-60V	June 25,2012	June 24,2013
Temp. and Humidity	Giant Force	GTH-225-20-S	MAB0103-00	N/A	June 18,2012	June 17,2013
RF CABLE-1m	JYE Bao	RG142	CB034-1m	20MHz-7GHz	June 29,2012	June 28,2013
RF CABLE-2m	JYE Bao	RG142	CB)35-2m	20MHz-1GHz	June 29,2012	June 28,2013
Vector signal Generator	R&S	SMU200A	102098	100kHz~6GHz	June 25,2012	June 24,2013
Signal Generator	R&S	SMR40	10016	10MHz~40GHz	June 25,2012	June 24,2013
Oscilloscope	Tektonix	TDS380	B016197	400MHz/2GRS	June 18,2012	June 17,2013

## 7. MANUFACTURER/ APPROVAL HOLDER DECLARATION

The following identical model(s):

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Belong to the tested device:

Product description : WiBOX

Model name : WiBOX

No additional models were tested.

-----THE END OF REPORT-----