



FCC PART 15, SUBPART C  
IC RSS-210, ISSUE 8, DECEMBER 2010



TEST AND MEASUREMENT REPORT

For

**NVIDIA Corporation**

2701 San Tomas Expressway, Santa Clara, CA 95050, USA

**FCC ID: VOB-P1761W**  
**IC: 7361A-P1761W**

<b>Report Type:</b> Original Report		<b>Product Type:</b> 802.11a/b/g/n WLAN+BT Combo Radio Tablet PC
<b>Prepared By</b>	Cipher Chu Test Engineer	
<b>Report Number</b>	R1405121-247 DTS Rev B	
<b>Report Date</b>	2014-07-11	
<b>Reviewed By</b>	Suhaila Khushazad Engineering Manager	
	Bay Area Compliance Laboratories Corp. 1274 Anvilwood Avenue, Sunnyvale, CA 94089, USA Tel: (408) 732-9162 Fax: (408) 732-9164	

**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by A2LA\*, NIST, or any agency of the Federal Government.

\* This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "\*" (80-2)

## TABLE OF CONTENTS

<b>1</b>	<b>General Description.....</b>	<b>5</b>
1.1	Product Description for Equipment Under Test (EUT) .....	5
1.2	Mechanical Description of EUT .....	5
1.3	Objective.....	5
1.4	Related Submittal(s)/Grant(s) .....	5
1.5	Test Methodology .....	5
1.6	Measurement Uncertainty .....	5
1.7	Test Facility .....	6
<b>2</b>	<b>System Test Configuration.....</b>	<b>7</b>
2.1	Justification.....	7
2.2	EUT Exercise Software.....	7
2.3	Equipment Modifications.....	7
2.4	Local Support Equipment .....	7
2.5	EUT Internal Configuration Details.....	7
2.6	Power Supply and Line Filters.....	7
2.7	Interface Ports and Cabling.....	8
<b>3</b>	<b>Summary of Test Results .....</b>	<b>9</b>
<b>4</b>	<b>FCC §15.247(i), §2.1093 &amp; IC RSS-102 – RF Exposure.....</b>	<b>10</b>
4.1	Applicable Standard.....	10
4.2	Test Result .....	10
<b>5</b>	<b>FCC §15.203 &amp; IC RSS-Gen §7.1.2 – Antenna Requirements .....</b>	<b>11</b>
5.1	Applicable Standard.....	11
5.2	Antenna Description .....	11
<b>6</b>	<b>FCC §15.207 &amp; IC RSS-Gen §7.2.4 – AC Line Conducted Emissions.....</b>	<b>12</b>
6.1	Applicable Standards .....	12
6.2	Test Setup .....	12
6.3	Test Procedure .....	12
6.4	Test Setup Block Diagram .....	13
6.5	Corrected Amplitude & Margin Calculation.....	13
6.6	Test Equipment List and Details.....	14
6.7	Test Environmental Conditions .....	14
6.8	Summary of Test Results .....	14
6.9	Conducted Emissions Test Plots and Data.....	15
<b>7</b>	<b>FCC §2.1051, §15.247(d) &amp; IC RSS-210 §A8.5 – Spurious Emissions at Antenna Terminals.....</b>	<b>17</b>
7.1	Applicable Standards .....	17
7.2	Measurement Procedure.....	17
7.3	Test Equipment List and Details.....	17
7.4	Test Environmental Conditions .....	17
7.5	Test Results.....	17
<b>8</b>	<b>FCC §15.205, §15.209 &amp; §15.247(d) &amp; IC RSS-210 §A8.5 – Spurious Radiated Emissions .....</b>	<b>36</b>
8.1	Applicable Standards .....	36
8.2	Test Setup .....	37
8.3	Test Procedure .....	37
8.4	Corrected Amplitude & Margin Calculation.....	38
8.5	Test Equipment List and Details.....	38
8.6	Test Environmental Conditions .....	38
8.7	Summary of Test Results .....	39
8.8	Radiated Emissions Test Data and Plots.....	40
<b>9</b>	<b>FCC§15.247(a)(2) &amp; IC RSS-210 §A8.2 – 6 dB &amp; 99% Emission Bandwidth .....</b>	<b>55</b>
9.1	Applicable Standards .....	55

9.2	Measurement Procedure.....	55
9.3	Test Equipment List and Details.....	55
9.4	Test Environmental Conditions .....	55
9.5	Test Results.....	56
<b>10</b>	<b>FCC §15.247(b) &amp; IC RSS-210 §A8.4 – Peak Output Power Measurement .....</b>	<b>69</b>
10.1	Applicable Standards .....	69
10.2	Measurement Procedure.....	69
10.3	Test Equipment List and Details.....	69
10.4	Test Environmental Conditions .....	69
10.5	Test Results.....	70
<b>11</b>	<b>FCC §15.247(d) &amp; IC RSS-210 §A8.5 – 100 kHz Bandwidth of Band Edges.....</b>	<b>72</b>
11.1	Applicable Standards .....	72
11.2	Measurement Procedure.....	72
11.3	Test Equipment List and Details.....	72
11.4	Test Environmental Conditions .....	72
11.5	Test Results.....	73
<b>12</b>	<b>FCC §15.247(e) &amp; IC RSS-210 §A8.2 (b) – Power Spectral Density .....</b>	<b>80</b>
12.1	Applicable Standards .....	80
12.2	Measurement Procedure.....	80
12.3	Test Equipment List and Details.....	80
12.4	Test Environmental Conditions .....	80
12.5	Test Results.....	81
<b>13</b>	<b>Exhibit A – FCC &amp; IC Equipment Labeling Requirements .....</b>	<b>93</b>
13.1	FCC ID Label Requirements .....	93
13.2	IC Label Requirements .....	93
13.3	FCC ID & IC Label Contents and Location.....	94
<b>14</b>	<b>Exhibit B – Test Setup Photographs .....</b>	<b>95</b>
14.1	Radiated Emission below 1 GHz Front View at 3 Meters .....	95
14.2	Radiated Emission below 1 GHz Rear View at 3 Meters .....	95
14.3	Radiated Emission above 1 GHz Front View at 3 Meters .....	96
14.4	Radiated Emission above 1 GHz Rear View at 3 Meters .....	96
14.5	AC Line Conducted Emission Front View .....	97
14.6	AC Line Conducted Emission Side View.....	97
<b>15</b>	<b>Exhibit C – EUT Photographs.....</b>	<b>98</b>
3.1	EUT – Front View .....	98
3.2	EUT – Rear View .....	98
3.3	EUT – Right Side View .....	99
3.4	EUT – Left Side View .....	99
3.5	EUT – Top View.....	100
3.6	EUT – Bottom View .....	100
3.7	EUT – Open Case View.....	101
3.8	EUT – Open Case View-camera removed .....	101
3.9	EUT – Open Case View- PCB Board removed .....	102
3.10	EUT – PCB Board top view.....	102
3.11	EUT – PCB Board back view .....	103
3.12	EUT – battery view.....	103
3.13	EUT – AC/DC Adapter.....	104

**DOCUMENT REVISION HISTORY**

<b>Revision Number</b>	<b>Report Number</b>	<b>Description of Revision</b>	<b>Date of Revision</b>
0	R1405121-247 DTS	Original Report	2014-06-16
1	R1405121-247 DTS Rev A	Revised Report	2014-07-10
2	R1405121-247 DTS Rev B	Revised Report per client's comments	2014-07-11

## 1 General Description

---

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

This test and measurement report has been compiled on behalf of NVIDIA Corporation, and their product, FCC ID: VOB-P1761W, IC: 7361A-P1761W, model number: P1761W, which henceforth is referred to as the EUT (Equipment Under Test), The EUT is a Tablet PC operates in 2.4 GHz and 5 GHz bands.

### 1.2 Mechanical Description of EUT

The EUT measures approximately 218 mm (L) x 123 mm (W) x 8 mm (H) and weighs approximately 350 g.

*The data gathered are from a typical production sample provided by the manufacturer with serial number: 0411414000303*

### 1.3 Objective

This report is prepared on behalf of *NVIDIA Corporation* in accordance with Part 2, Subpart J, and Part 15, Subparts B and C of the Federal Communication Commission's rules and IC RSS-210 Issue 8, Dec 2010.

The objective is to determine compliance with FCC Part 15.247 and IC RSS-210 rules for Output Power, Antenna Requirements, AC Line Conducted Emissions, 6 dB Bandwidth, power spectral density, 100 kHz Bandwidth of Band Edges Measurement, Spurious Emissions, Conducted and Radiated Spurious Emissions.

### 1.4 Related Submittal(s)/Grant(s)

DSS, NII grants with FCC ID: VOB-P1761W and IC: 7361A-P1761W

### 1.5 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.4-2009, 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.

### 1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR16-4-2:2011, The Treatment of Uncertainty in EMC Measurements, the values ranging from  $\pm 2.0$  dB for Conducted Emissions tests and  $\pm 4.0$  dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL Corp.

## 1.7 Test Facility

Bay area compliance Laboratories Corp. (BACL) is:

1- An independent Commercial Test Laboratory accredited to **ISO 17025:2005** by **A2LA**, in the fields of: Electromagnetic Compatibility & Telecommunications covering Emissions, Immunity, Radio, RF Exposure, Safety and Telecom. This includes NEBS (Network Equipment Building System), Wireless RF, Telecommunications Terminal Equipment (TTE); Network Equipment; Information Technology Equipment (ITE); Medical Electrical Equipment; Industrial, Commercial, and Medical Test Equipment; Professional Audio and Video Equipment; Electronic (Digital) Products; Industrial and Scientific Instruments; Cabled Distribution Systems and Energy Efficiency Lighting.

2- An ENERGY STAR Recognized Laboratory, for the LM80 Testing, a wide variety of Luminaires and Computers.

3- A NIST Designated Phase-I and Phase-II CAB including: ACMA (Australian Communication and Media Authority), BSMI (Bureau of Standards, Metrology and Inspection of Taiwan), IDA (Infocomm Development Authority of Singapore), IC (Industry Canada), Korea (Ministry of Communications Radio Research Laboratory), NCC (Formerly DGT; Directorate General of Telecommunication of Chinese Taipei) OFTA (Office of the Telecommunications Authority of Hong Kong), Vietnam, VCCI - Voluntary Control Council for Interference of Japan and a designated EU CAB (Conformity Assessment Body) (Notified Body) for the EMC and R&TTE Directives.

4- A Product Certification Body accredited to **ISO Guide 65:1996** by **A2LA** to certify:

2. Radio Standards Specifications (RSS) in the Category I Equipment Standards List and All Broadcasting Technical Standards (BETS) in Category I Equipment Standards List for Industry Canada.

3. Radio Communication Equipment for Singapore.

4. Radio Equipment Specifications, GMDSS Marine Radio Equipment Specifications, and Fixed Network Equipment Specifications for Hong Kong.

5. Japan MIC Telecommunication Business Law (A1, A2) and Radio Law (B1, B2 and B3).

6. Audio/Video, Battery Charging Systems, Computers, Displays, Enterprise Servers, Imaging Equipment, Set-Top Boxes, Telephony, Televisions, Ceiling Fans, CFLs (Including GU24s), Decorative Light Strings, Integral LED Lamps, Luminaires, Residential Ventilating Fans.

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

The test site at BACL Corp. has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997, and Article 8 of the VCCI regulations on December 25, 1997. The test site also complies with the test methods and procedures set forth in CISPR 22:2008 §10.4 for measurements below 1 GHz and §10.6 for measurements above 1 GHz as well as ANSI C63.4-2009, ANSI C63.4-2009, TIA/EIA-603 & CISPR 24:2010.

The Federal Communications Commission and Voluntary Control Council for Interference have the reports on file and they are listed under FCC registration number: 90464 and VCCI Registration No.: A-0027. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL Corp. is an American Association for Laboratory Accreditation (A2LA) accredited laboratory (Lab Code 3297-02). The current scope of accreditations can be found at

<http://www.a2la.org/scopepdf/3297-02.pdf?CFID=1132286&CFTOKEN=e42a3240dac3f6ba-6DE17DCB-1851-9E57-477422F667031258&jsessionid=8430d44f1f47cf2996124343c704b367816b>

## 2 System Test Configuration

### 2.1 Justification

The EUT was configured for testing according to ANSI C63.4-2009.

The EUT was tested in a testing mode to represent worst-case results during the final qualification test.

The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the average power, peak power and PPSD across all data rates bandwidths, and modulations.

### 2.2 EUT Exercise Software

The software “Android Debug Bridge version 1.0.31” is provided by customer. The EUT exercise program used during testing was designed to exercise the system components.

### 2.3 Equipment Modifications

No modifications were made to the EUT.

### 2.4 Local Support Equipment

Manufacturer	Description	Model No.	Serial No.
DELL	Monitor	U2410f FP63	-
-	Headset	-	-

### 2.5 EUT Internal Configuration Details

Manufacturer	Description	Type	Serial Number
NVIDIA	Main PCB Board	P1761	-
Yuko	Battery	027-0021-000	-

### 2.6 Power Supply and Line Filters

Manufacturer	Description	Model	Part Number
NVIDIA Corporation	Power Adapter	Switching Power Adapter	SPA011AU5W2

2.7 Interface Ports and Cabling

Cable Description	Length (m)	To	From
HDMI	>1.0	Monitor	EUT
USB Cable	1.5	Laptop	EUT



### 3 Summary of Test Results

Results reported relate only to the product tested.

FCC & IC Rules	Description of Test	Results
FCC §15.247(i), §2.1093 IC RSS-102	RF Exposure	Compliant
FCC §15.203 IC RSS-Gen §7.1.2	Antenna Requirement	Compliant
FCC §15.207(a) IC RSS-Gen §7.2.4	AC Line Conducted Emissions	Compliant
FCC §15.247 (d) IC RSS-210 §A8.5	Spurious Emissions at Antenna Port	Compliant
FCC §15.205 IC RSS-210 §2.2	Restricted Bands	Compliant
FCC §15.209, §15.247 (d) IC RSS-210 §A8.5	Radiated Spurious Emissions	Compliant
FCC §15.247(a)(2) IC RSS-210 §A8.2	6 dB Emission Bandwidth	Compliant
FCC §15.247(b)(3) IC RSS-210 §A8.4	Maximum Peak Output Power	Compliant
FCC §15.247(d) IC RSS-210 §A8.5	100 kHz Bandwidth of Frequency Band Edge	Compliant
FCC §15.247(e) IC RSS-210 §A8.2(b)	Power Spectral Density	Compliant

## **4 FCC §15.247(i), §2.1093 & IC RSS-102 – RF Exposure**

---

### **4.1 Applicable Standard**

FCC §2.1093, §15.247(i) and IC RSS-102

### **4.2 Test Result**

Compliance, please refer to the SAR report: R1405121-SAR.

## 5 FCC §15.203 & IC RSS-Gen §7.1.2 – Antenna Requirements

### 5.1 Applicable Standard

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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to FCC §15.247 (b) (4), if transmitting antennas of directional gain greater than 6 dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to IC RSS-Gen §7.1.2: Transmitter Antenna

A transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest-gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type and having equal or lesser gain as an antenna that had been successfully tested for certification with the transmitter, will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter.

When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power before using the power limits specified in RSS-210 or RSS-310 for devices of RF output powers of 10 mW or less. For devices of output powers greater than 10 mW, except devices subject to RSS-210 Annex 8 (Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands) or RSS-210 Annex 9 (Local Area Network Devices), the total antenna gain shall be added to the measured RF output power before using the specified power limits. For devices subject to RSS-210 Annex 8 or Annex 9, the antenna gain shall not be added.

### 5.2 Antenna Description

Antenna Location	Antenna Gain (dBi) @ 2.4 GHz
Wi-Fi 0	1.8
Wi-Fi 1	3.0

The Highest Gain is 3.0 dBi, and the antenna consists of non-standard (UFL) connectors; Antenna gain that exceeds 6 dBi was added to RF measurement therefore, it complies with the antenna requirement. Please refer to the internal photos.

## 6 FCC §15.207 & IC RSS-Gen §7.2.4 – AC Line Conducted Emissions

### 6.1 Applicable Standards

As per FCC §15.207 and IC RSS-Gen §7.2.4 Conducted limits:

For an intentional radiator that 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 the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 <sup>Note</sup>	56 to 46 <sup>Note</sup>
0.5-5	56	46
5-30	60	50

*Note: Decreases with the logarithm of the frequency.*

### 6.2 Test Setup

The measurement was performed at shield room, using the setup per ANSI C63.4-2009 measurement procedure. The specification used was FCC §15.207 and IC RSS-Gen §7.2.4 limits.

External I/O cables were draped along the edge of the test table and bundle when necessary.

The AC/DC power adapter of the EUT was connected with LISN-1 which provided 120 V / 60 Hz AC power.

### 6.3 Test Procedure

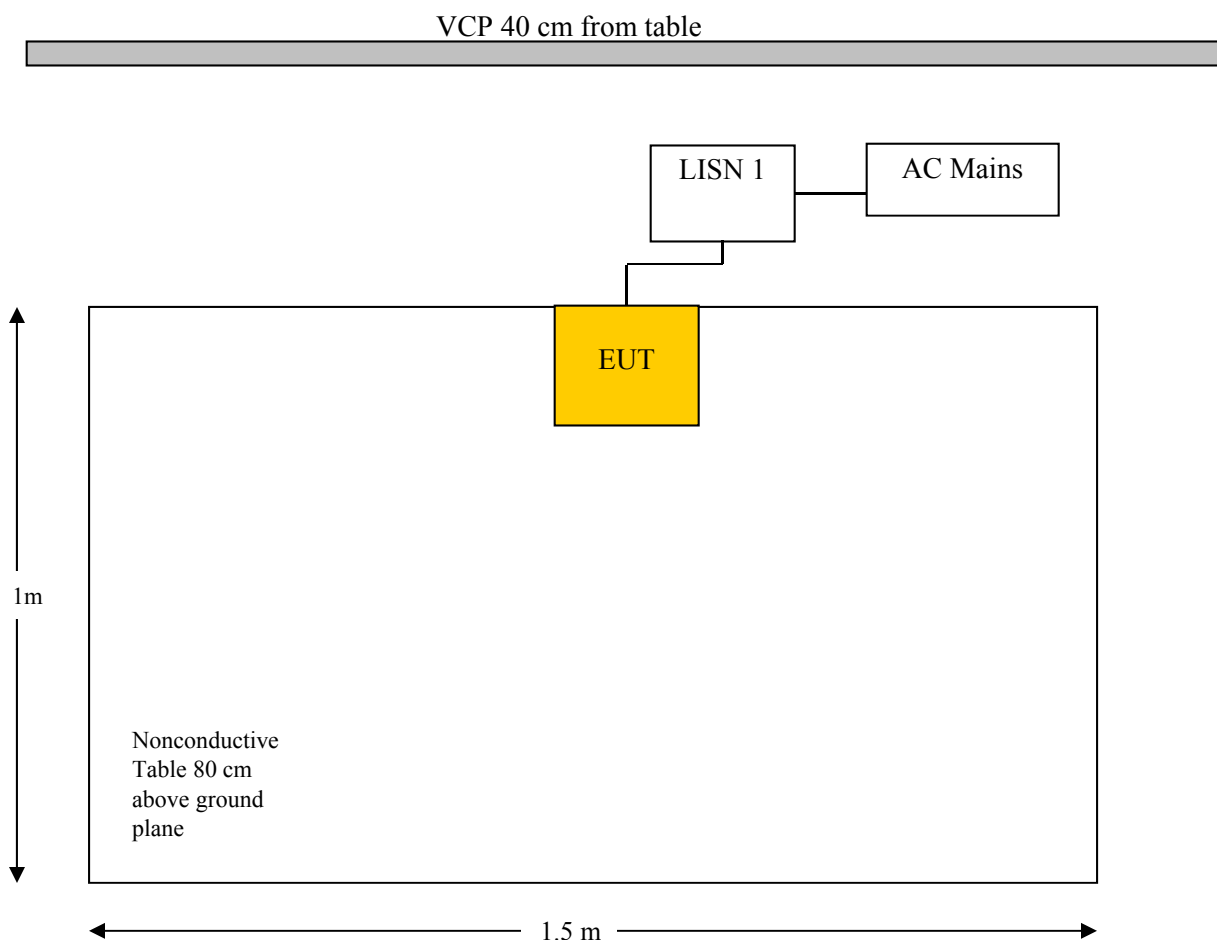
During the conducted emissions test, the power cord of the EUT host system was connected to the mains outlet of the LISN-1 and the power cord of the support equipment was connected to LISN-2.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the peak detection mode, quasi-peak and average. Quasi-Peak readings are distinguished with a “QP.” Average readings are distinguished with an “Ave”.

## 6.4 Test Setup Block Diagram

### AC/DC Adaptor:



## 6.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Cable Loss (CL), the Attenuator Factor (Atten) to indicated Amplitude (Ai) reading. The basic equation is as follows:

$$CA = Ai + CL + Atten$$

For example, a corrected amplitude of 46.2 dBuV = Indicated Reading (32.5 dBuV) + Cable Loss (3.7 dB) + Attenuator (10 dB)

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

## 6.6 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2013-09-28	1 year
Solar Electronics	LISN	9252-50-R-24-N	511205	2013-06-25	1 year
TTE	Filter, High Pass	H962-150k-50-21378	K7133	2014-01-30	1 year

**Statement of Traceability:** *BACL Corp.* attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

## 6.7 Test Environmental Conditions

Temperature:	22-24° C
Relative Humidity:	40-41 %
ATM Pressure:	103.1-104.1 KPa

The testing was performed by Cipher Chu on 2014-05-14 to 2014-05-23 in 5m chamber3.

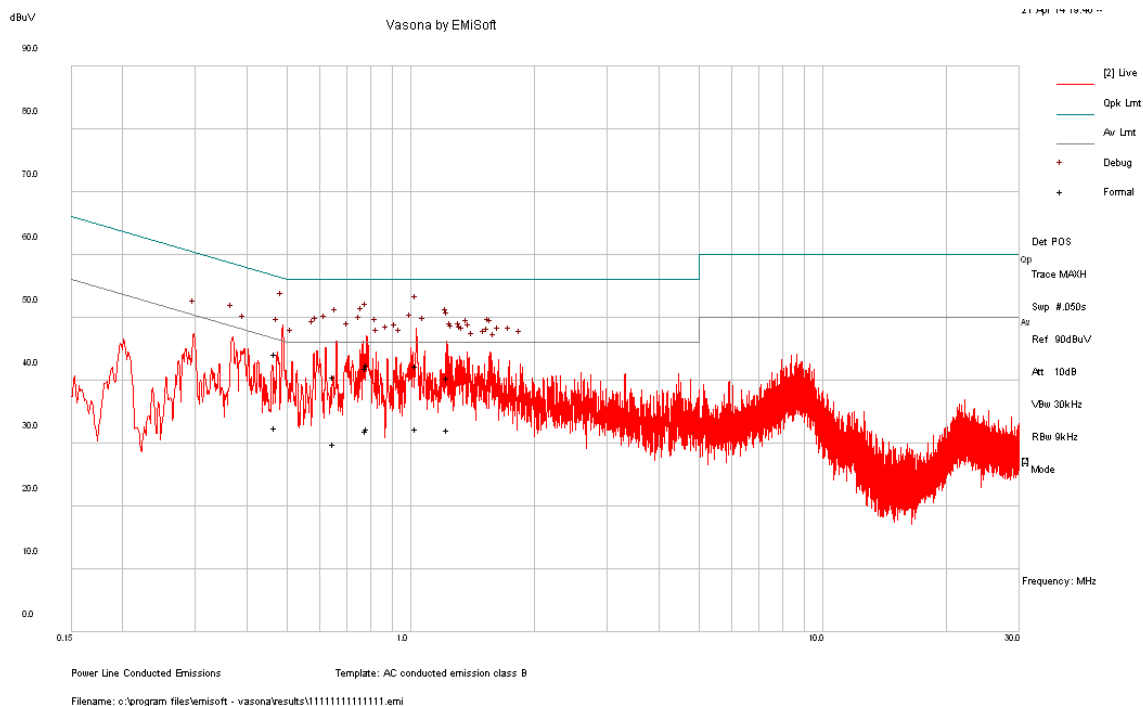
## 6.8 Summary of Test Results

According to the recorded data in following table, the EUT complied with the FCC 15C and IC RSS 210 standard's conducted emissions limits, with the margin reading of:

### 2.4 GHz Band

Connection: AC/DC adapter connected to 120 V/60 Hz, AC			
Margin (dB)	Frequency (MHz)	Conductor Mode (Line/Neutral)	Range (MHz)
-12.09	1.378296	Neutral	0.15-30

## 2.4 GHz Band



Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.470574	44.3	Line	56.5	-12.20	QP
0.786771	42.45	Line	56	-13.55	QP
1.033323	42.34	Line	56	-13.66	QP
0.77988	42.06	Line	56	-13.94	QP
0.65076	40.55	Line	56	-15.45	QP
1.231464	40.42	Line	56	-15.58	QP

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
1.033323	32.42	Line	46	-13.58	Ave.
0.786771	32.26	Line	46	-13.74	Ave.
1.231464	32.18	Line	46	-13.82	Ave.
0.470574	32.58	Line	46.5	-13.92	Ave.
0.77988	31.98	Line	46	-14.02	Ave.
0.65076	29.89	Line	46	-16.11	Ave.

[illegible]

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.373047	46.23	Neutral	58.43	-12.20	QP
0.541152	42.96	Neutral	56	-13.04	QP
0.75009	41.68	Neutral	56	-14.32	QP
0.796683	41.43	Neutral	56	-14.57	QP
1.378296	40.95	Neutral	56	-15.05	QP
1.564611	39.77	Neutral	56	-16.23	QP

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
1.378296	33.91	Neutral	46	-12.09	Ave.
0.796683	33.69	Neutral	46	-12.31	Ave.
1.564611	33.35	Neutral	46	-12.65	Ave.
0.373047	35.67	Neutral	48.43	-12.77	Ave.
0.541152	32.32	Neutral	46	-13.68	Ave.
0.75009	31.16	Neutral	46	-14.84	Ave.



## 7 FCC §2.1051, §15.247(d) & IC RSS-210 §A8.5 – Spurious Emissions at Antenna Terminals

### 7.1 Applicable Standards

For FCC §15.247(d) and IC RSS-210 §A8.5 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.

### 7.2 Measurement Procedure

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

### 7.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	MY44303352	2013-10-16	1 year

*Statement of Traceability: BACL Corp. attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.*

### 7.4 Test Environmental Conditions

Temperature:	22-24° C
Relative Humidity:	40-41%
ATM Pressure:	103.1-104.1 KPa

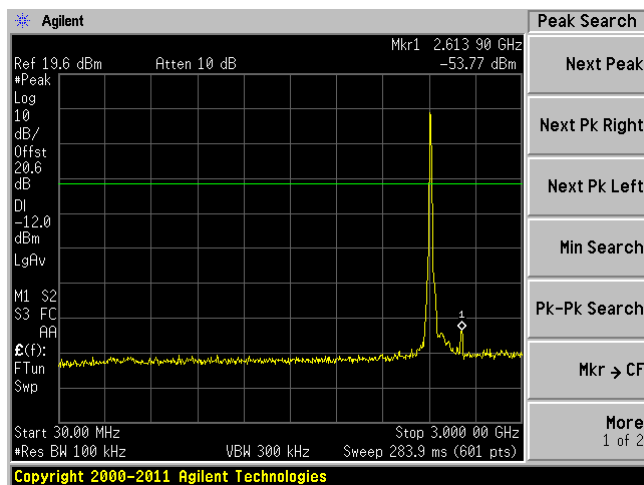
*The testing was performed by Cipher Chu on 2014-05-14 to 2014-05-23 at RF site.*

### 7.5 Test Results

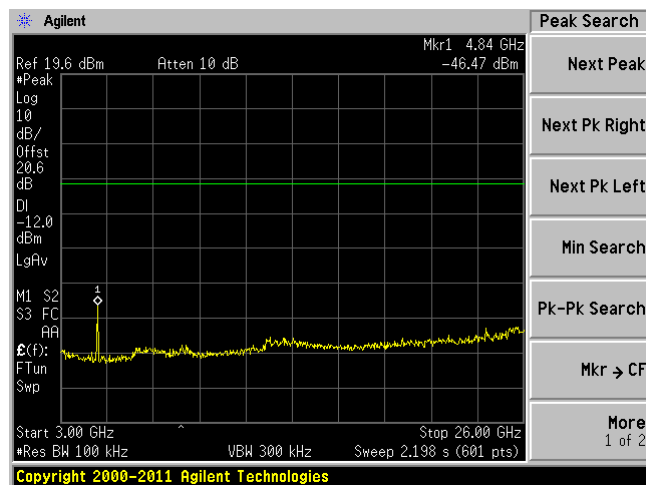
Please refer to following plots of spurious emissions.

**802.11b, Low Channel, 2412 MHz**

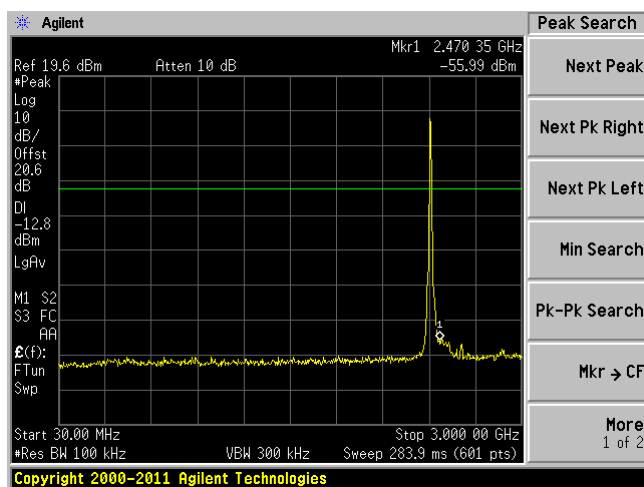
Chain 0, Plot: 30 MHz – 3 GHz



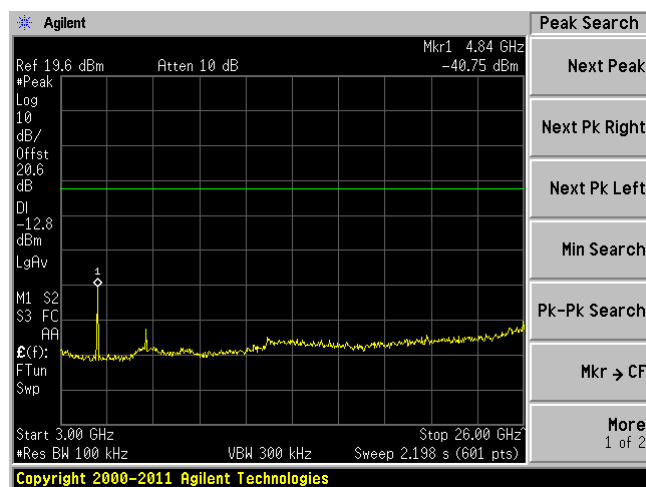
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

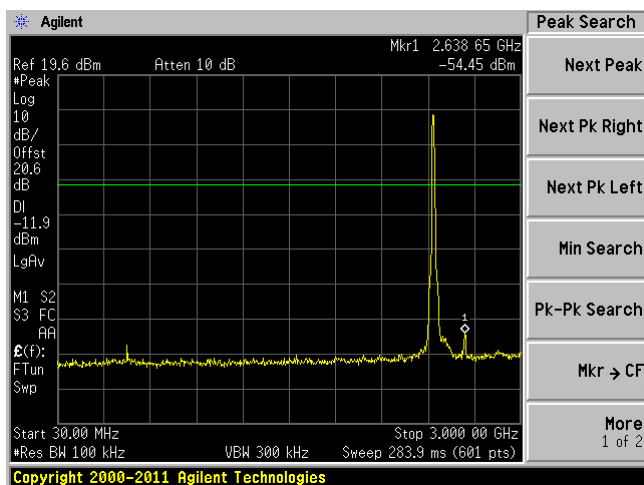


Chain 1, Plot: 3 GHz – 26 GHz

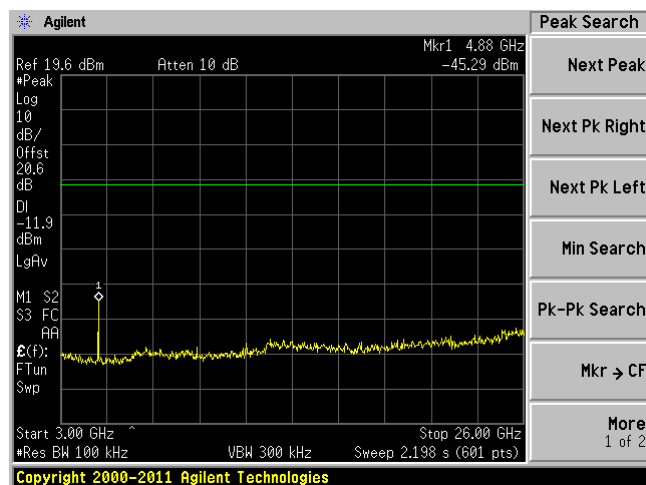


**802.11b, Middle Channel, 2437 MHz**

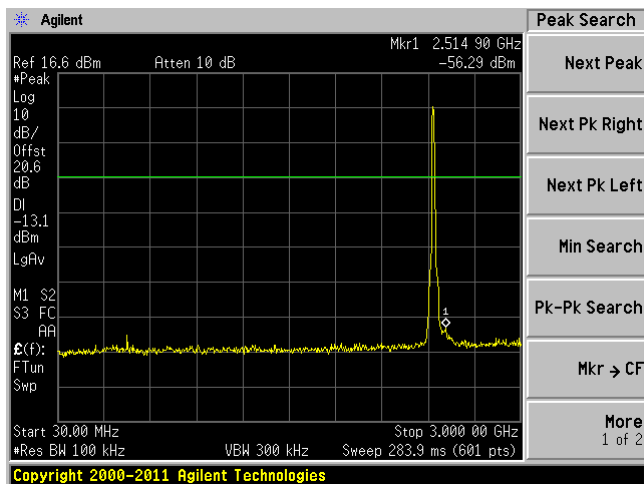
Chain 0, Plot: 30 MHz – 3 GHz



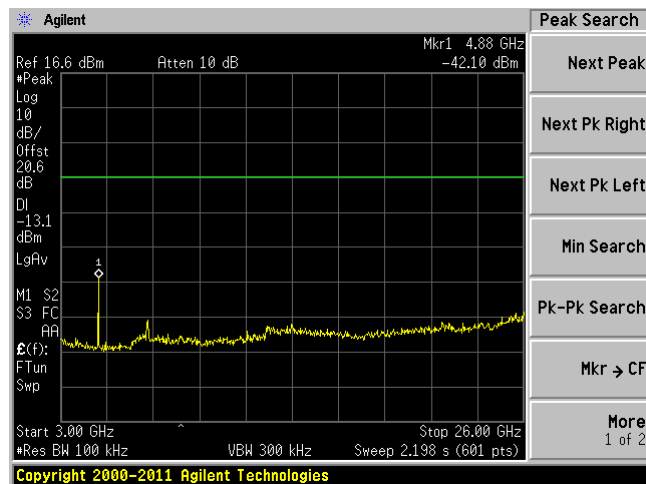
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

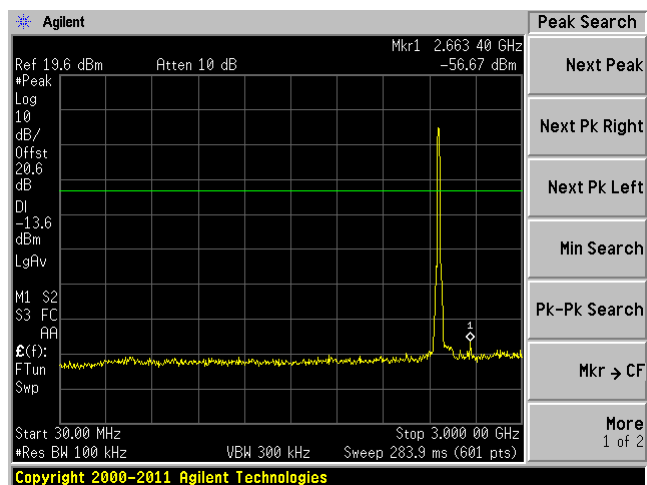


Chain 1, Plot: 3 GHz – 26 GHz

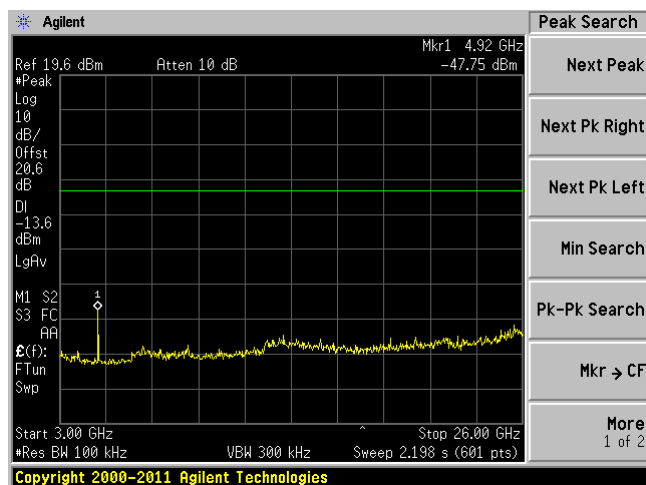


**802.11b, High Channel, 2462 MHz**

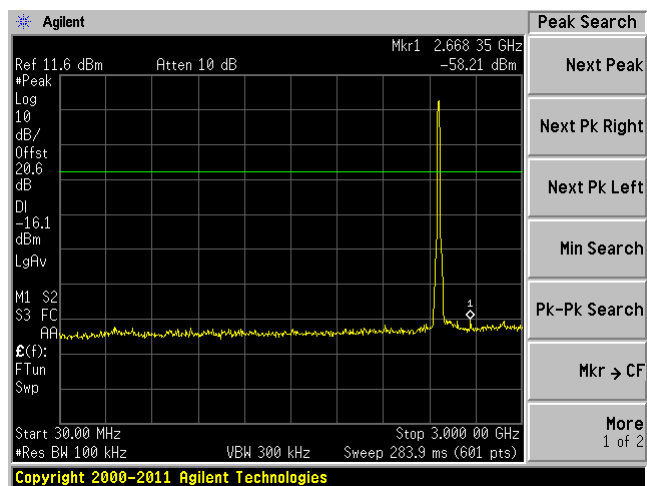
Chain 0, Plot: 30 MHz – 3 GHz



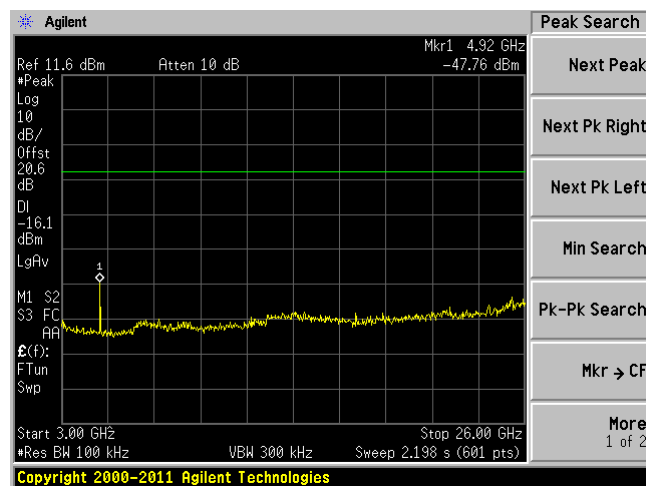
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

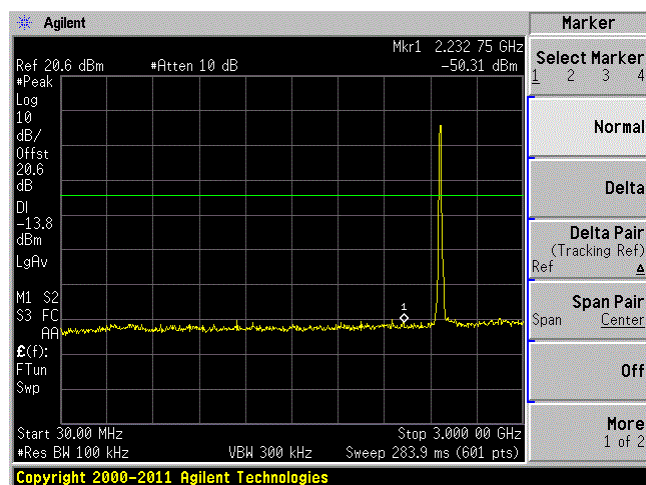


Chain 1, Plot: 3 GHz – 26 GHz

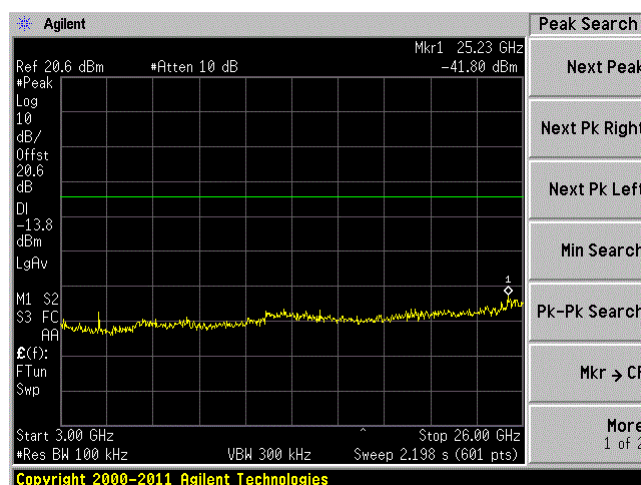


## 802.11b, Channel 12, 2467 MHz

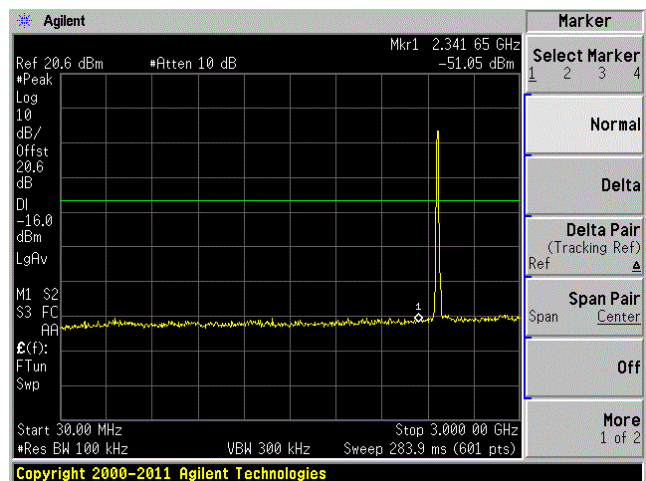
Chain 0, Plot: 30 MHz – 3 GHz



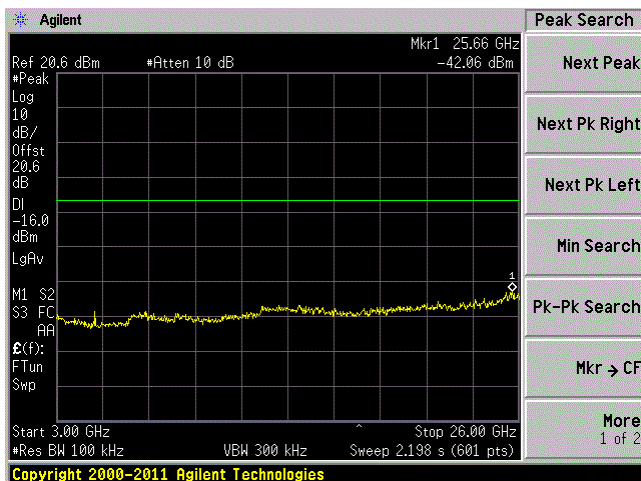
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

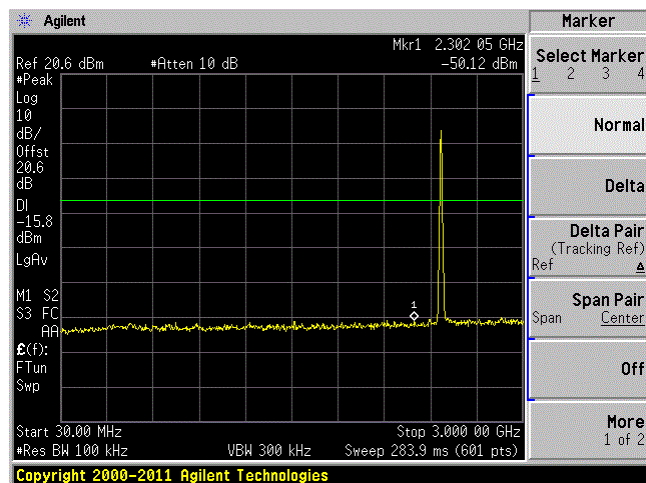


Chain 1, Plot: 3 GHz – 26 GHz

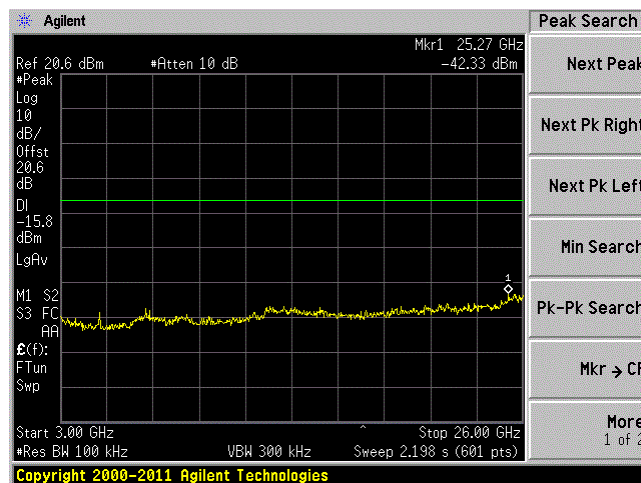


## 802.11b, Channel 13, 2472 MHz

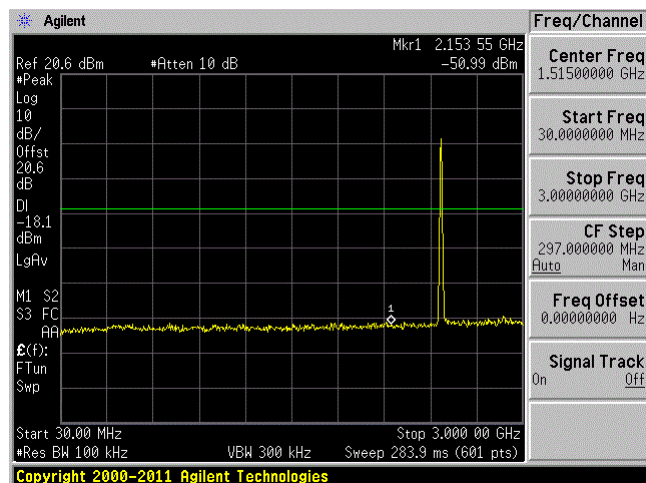
Chain 0, Plot: 30 MHz – 3 GHz



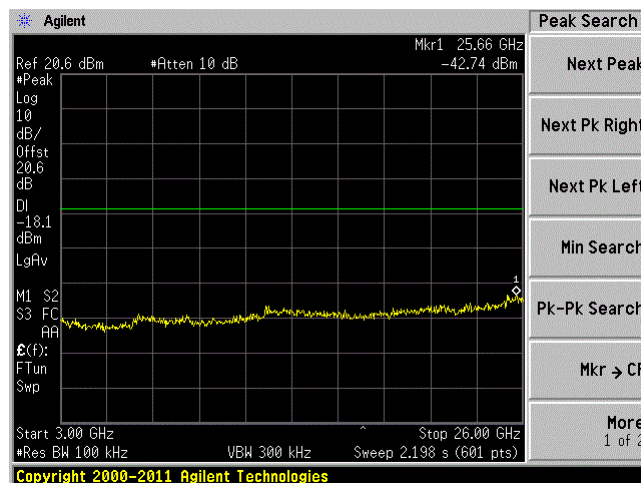
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

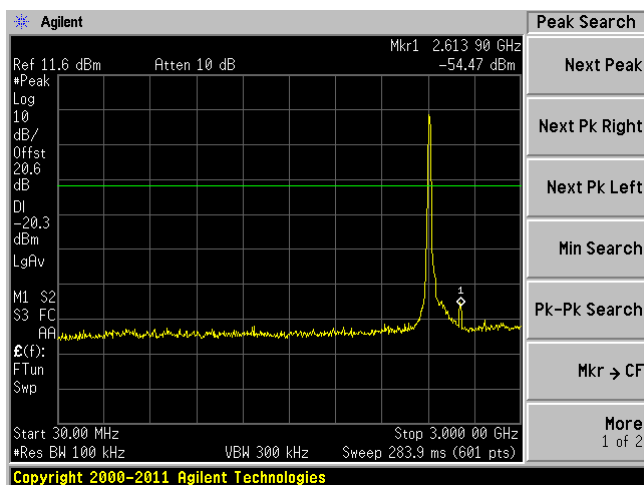


Chain 1, Plot: 3 GHz – 26 GHz

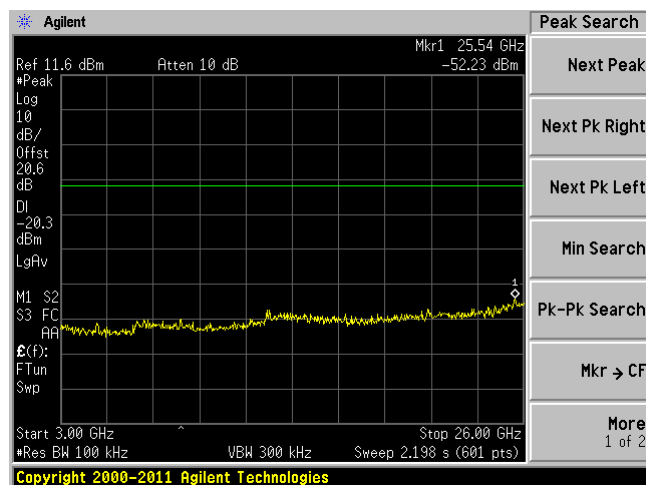


**802.11g, Low Channel 2412 MHz**

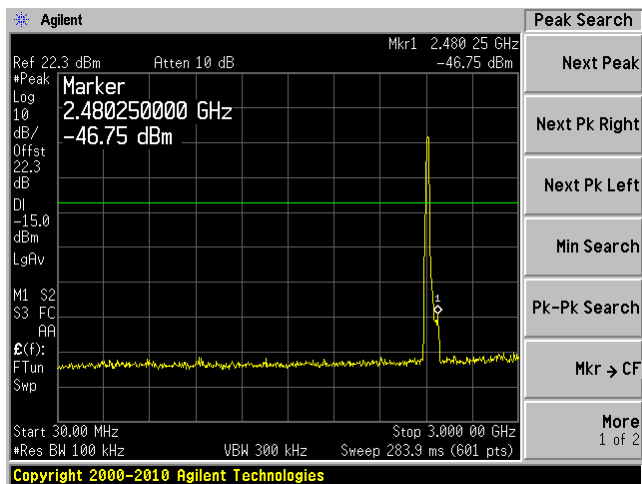
Chain 0, Plot: 30 MHz – 3 GHz



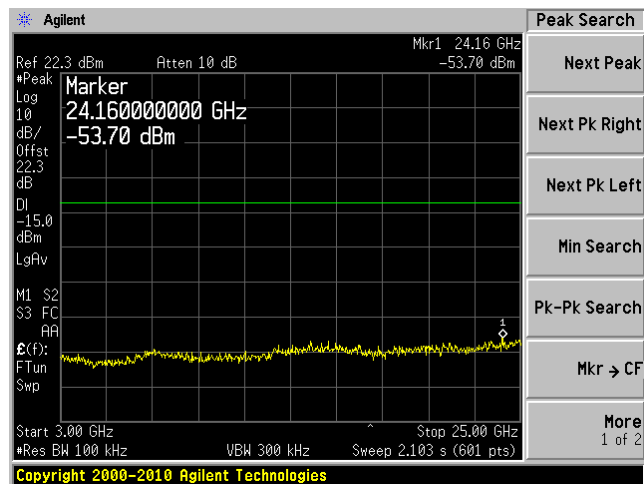
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

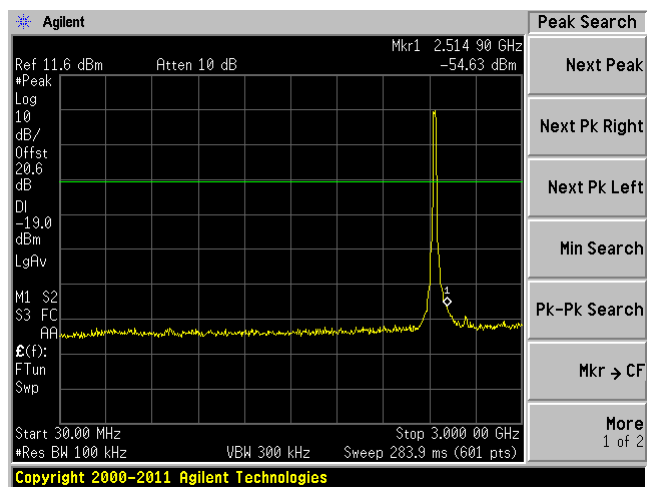


Chain 1, Plot: 3 GHz – 26 GHz

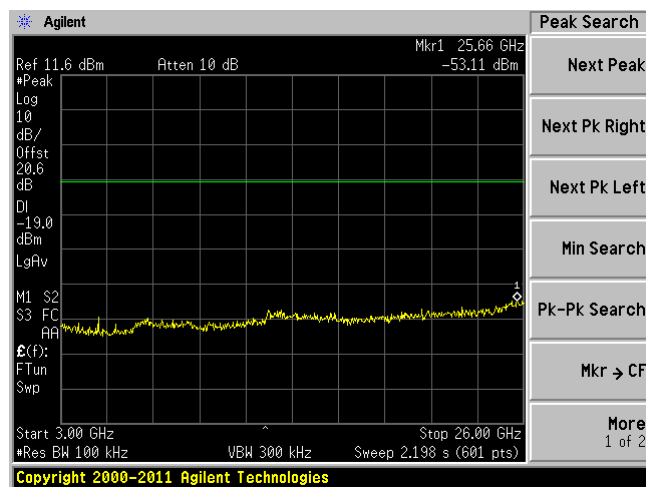


**802.11g, Middle Channel 2437 MHz**

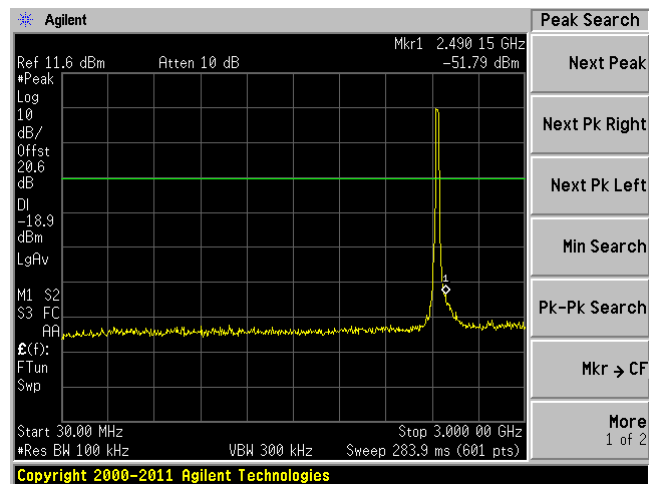
Chain 0, Plot: 30 MHz – 3 GHz



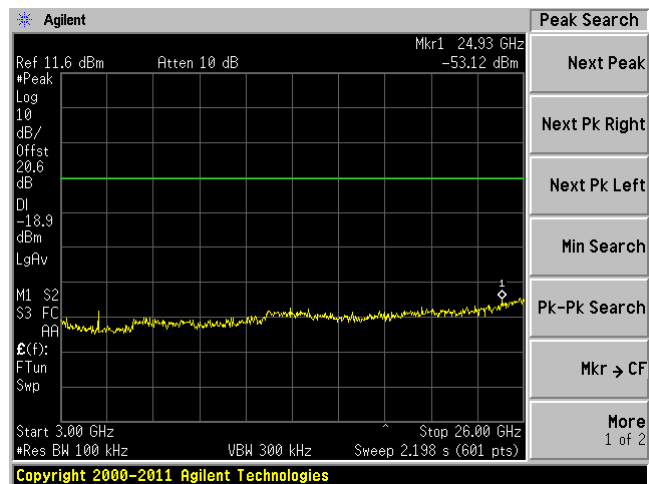
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz



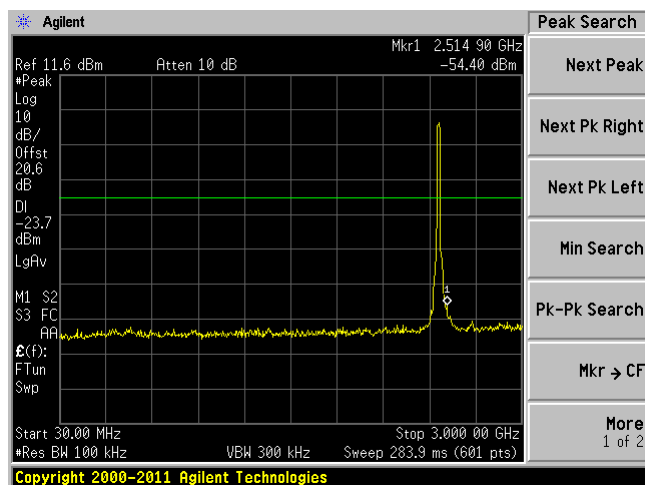
Chain 1, Plot: 3 GHz – 26 GHz



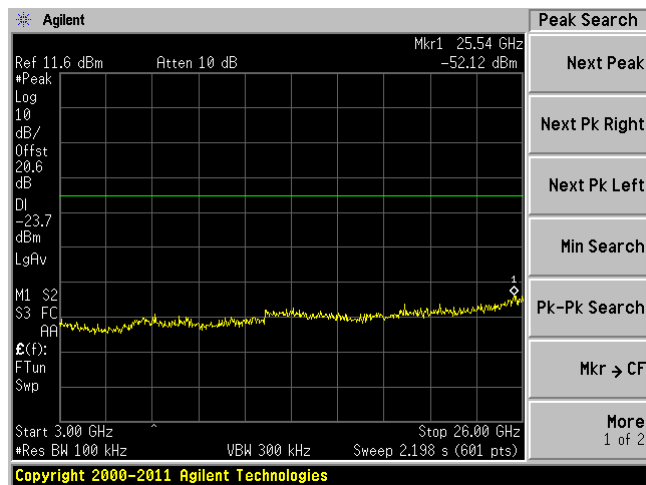


**802.11g, High Channel 2462 MHz**

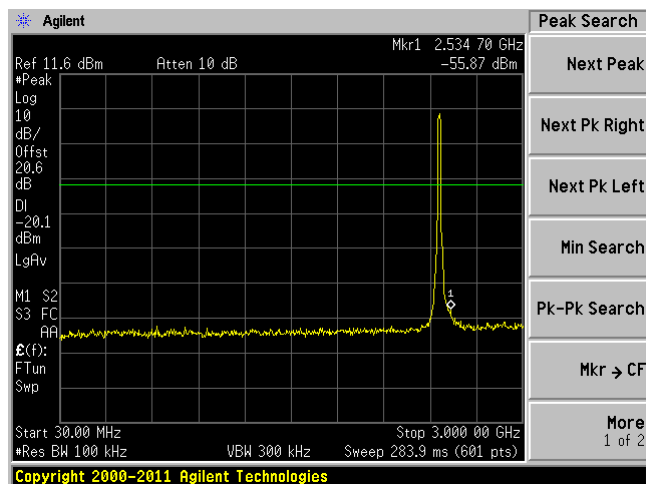
Chain 0, Plot: 30 MHz – 3 GHz



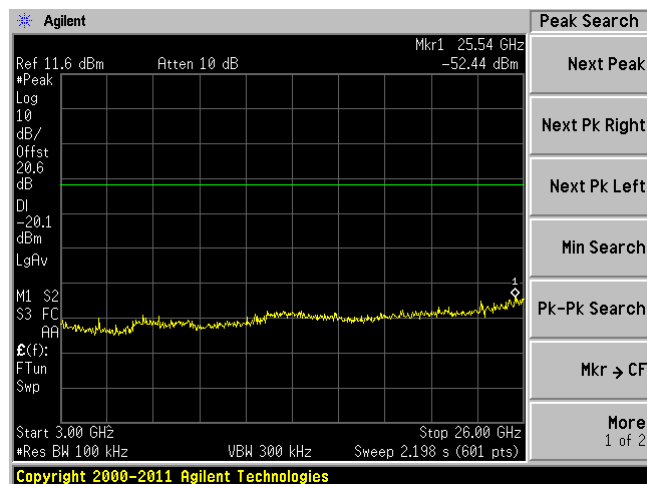
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

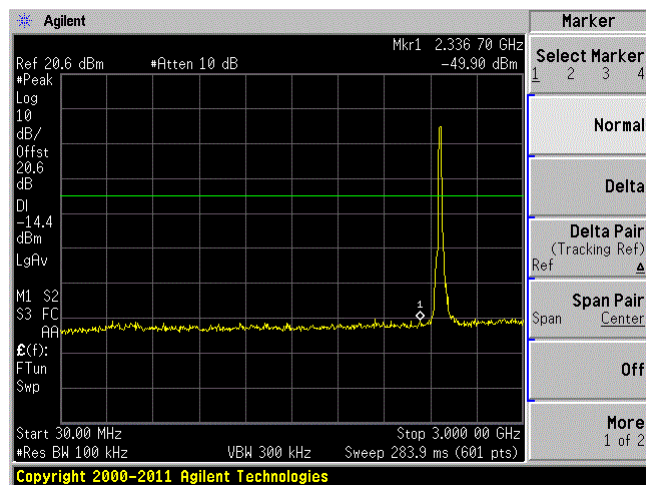


Chain 1, Plot: 3 GHz – 26 GHz

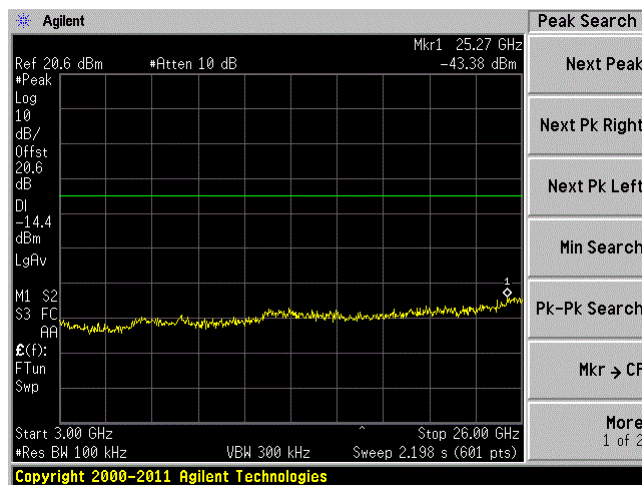


**802.11g, Channel 12, 2467 MHz**

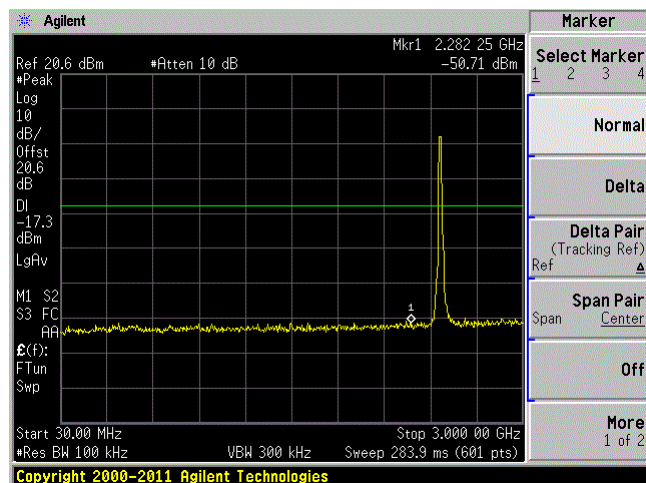
Chain 0, Plot: 30 MHz – 3 GHz



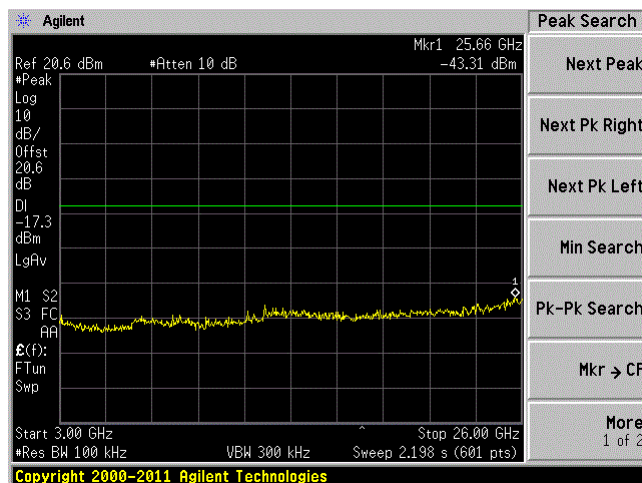
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

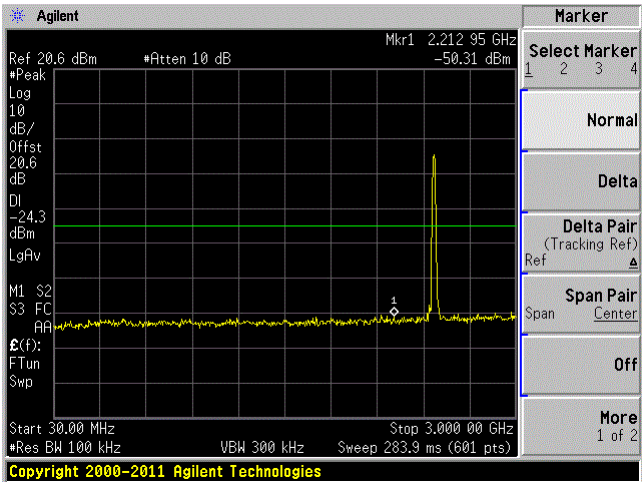


Chain 1, Plot: 3 GHz – 26 GHz

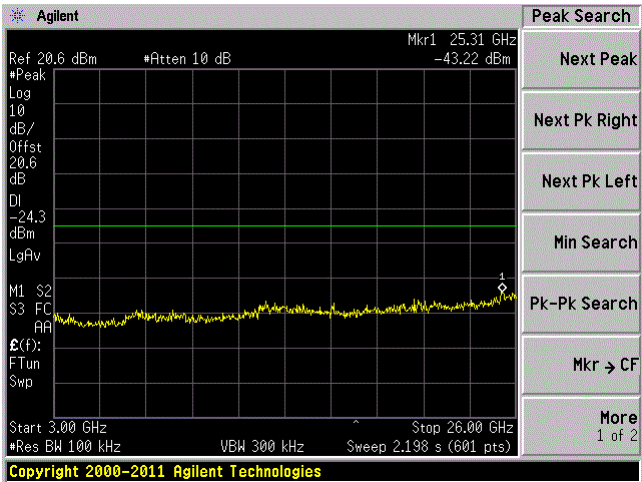


802.11g, Channel 13, 2472 MHz

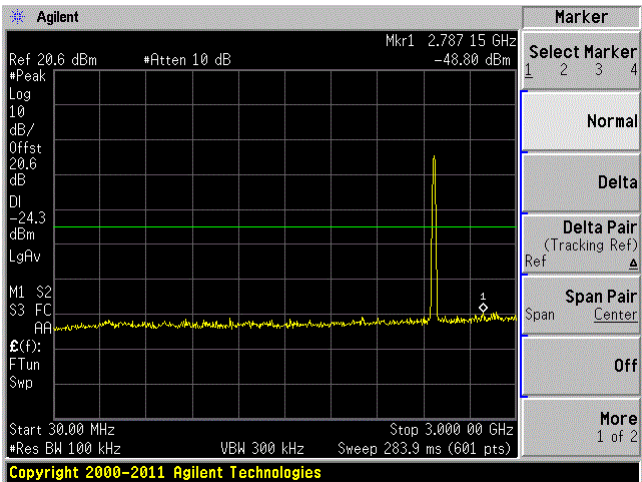
Chain 0, Plot: 30 MHz – 3 GHz



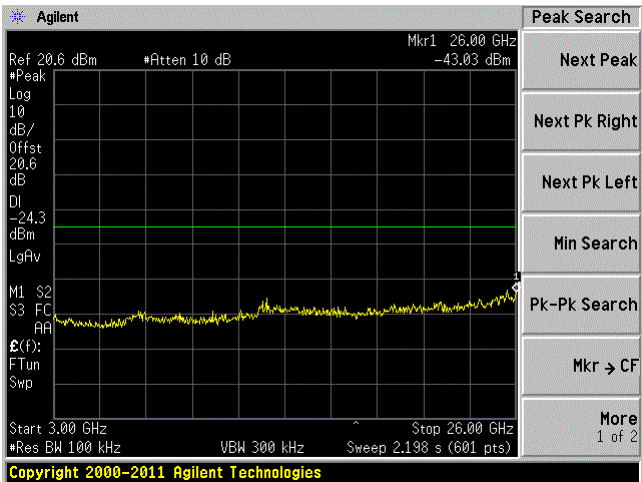
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

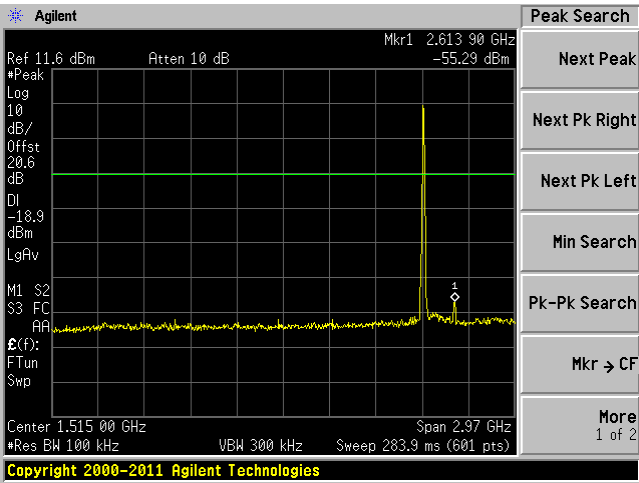


Chain 1, Plot: 3 GHz – 26 GHz

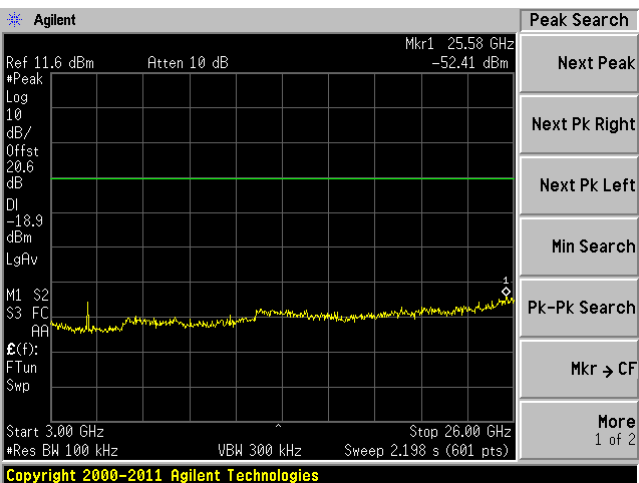


802.11n HT20, Low Channel 2412 MHz

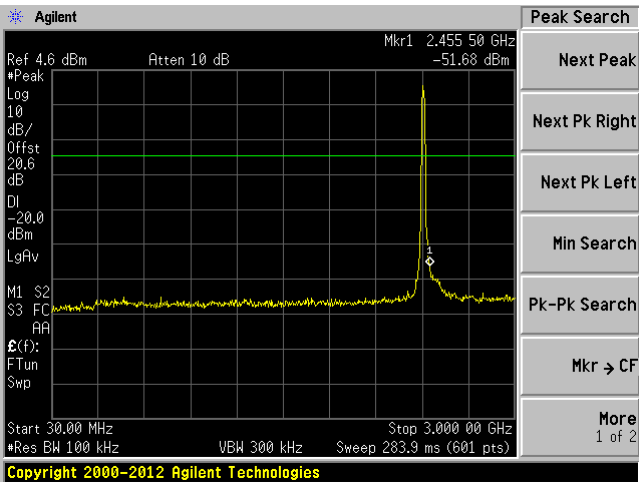
Chain 0, Plot: 30 MHz – 3 GHz



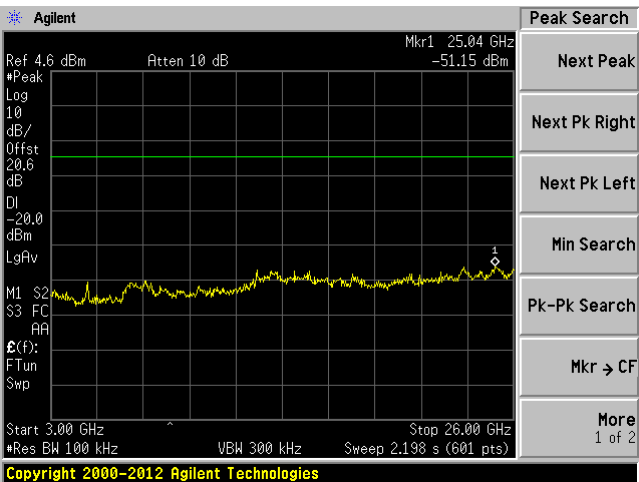
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

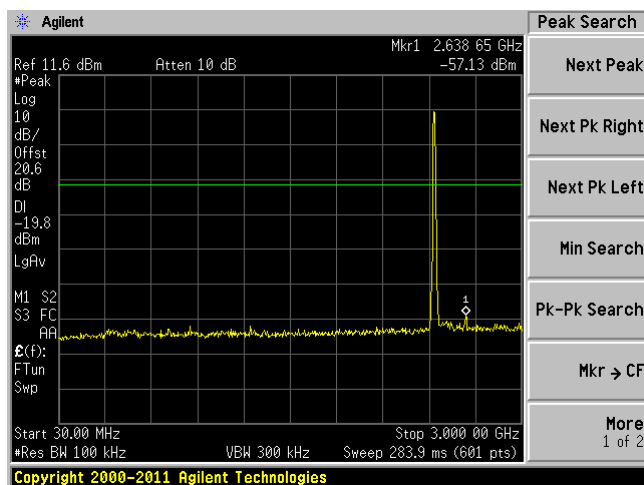


Chain 1, Plot: 3 GHz – 26 GHz

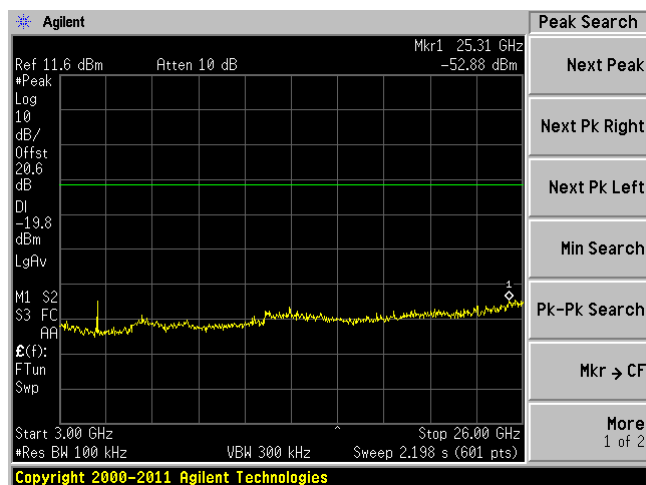


**802.11n HT20, Middle Channel 2437 MHz**

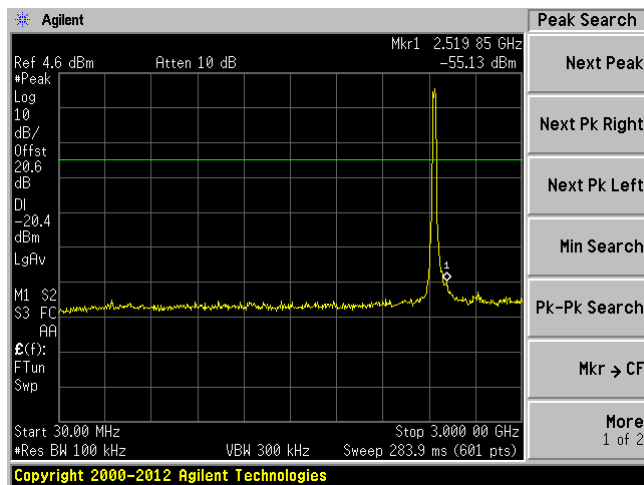
Chain 0, Plot: 30 MHz – 3 GHz



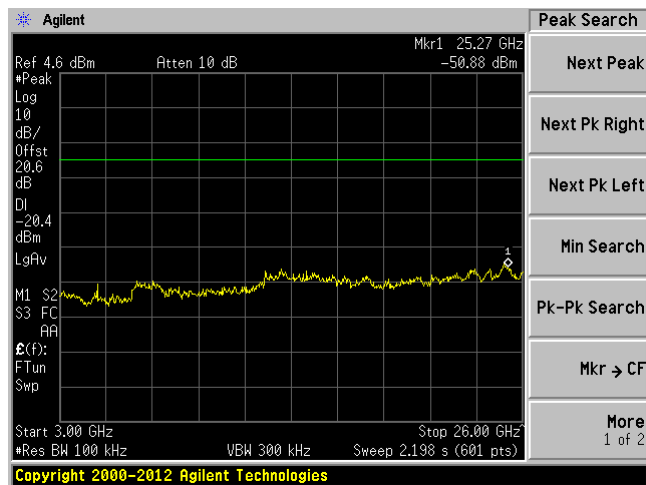
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

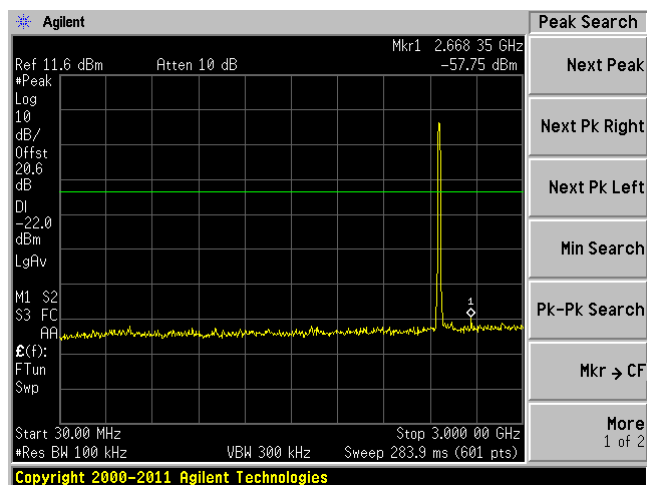


Chain 1, Plot: 3 GHz – 26 GHz

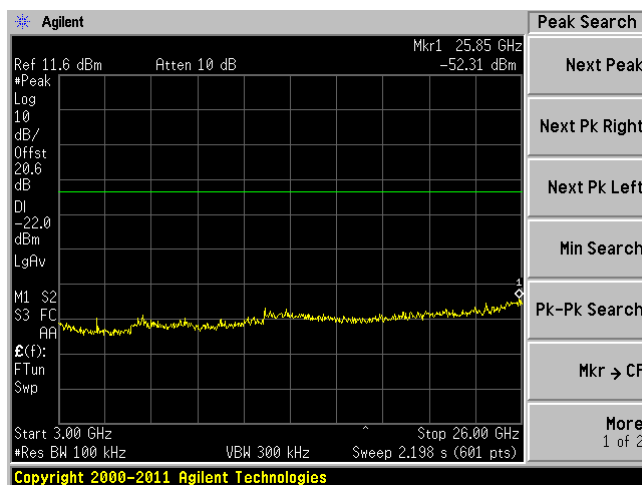


**802.11n HT20, High Channel 2462 MHz**

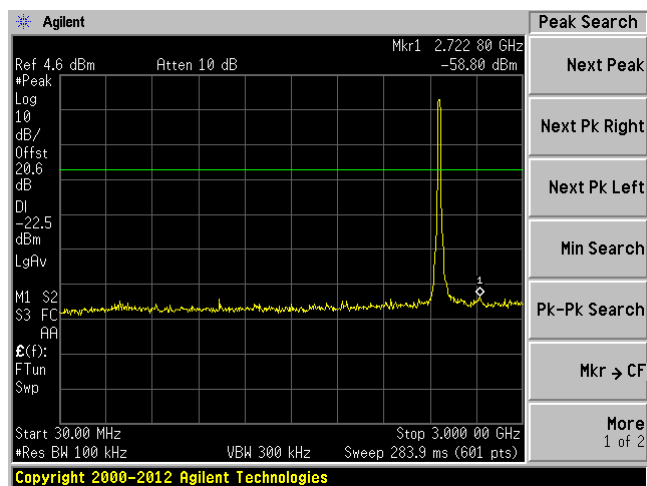
Chain 0, Plot: 30 MHz – 3 GHz



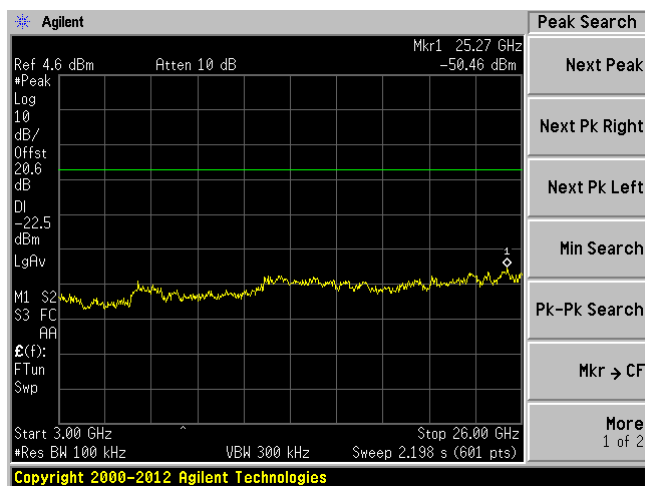
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

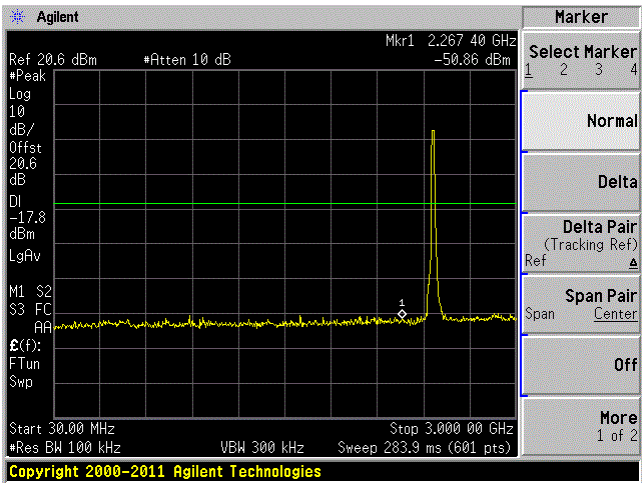


Chain 1, Plot: 3 GHz – 26 GHz

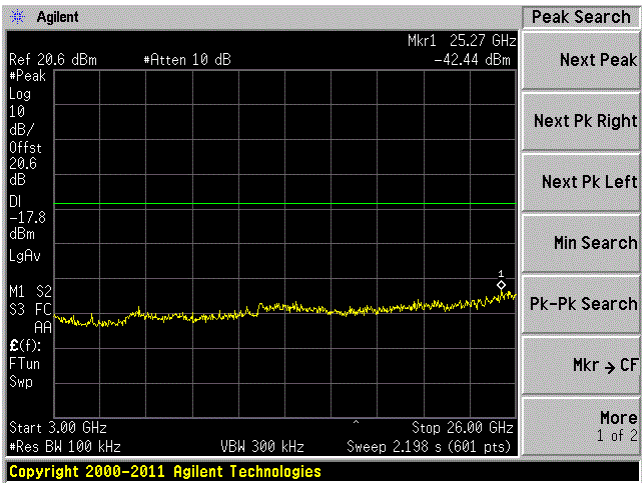


802.11n HT20, Channel 12, 2467 MHz

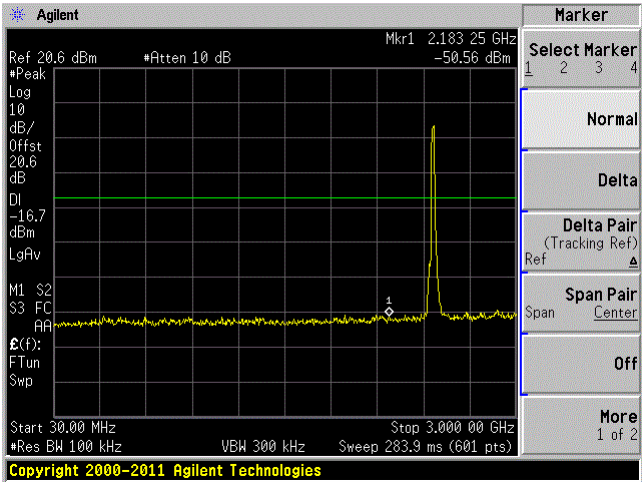
Chain 0, Plot: 30 MHz – 3 GHz



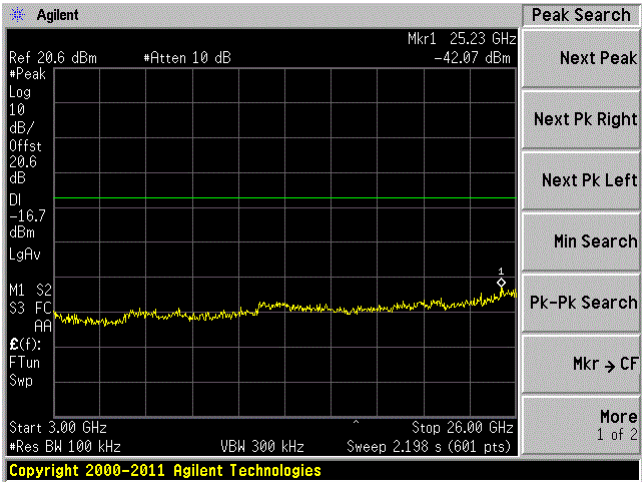
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

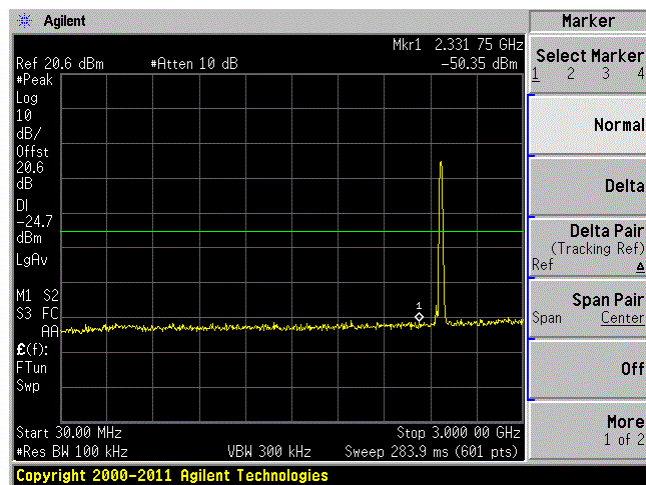


Chain 1, Plot: 3 GHz – 26 GHz

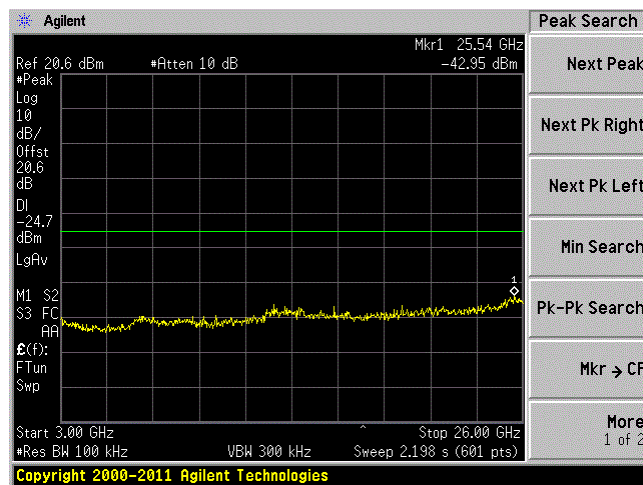


**802.11n HT20, Channel 13, 2472 MHz**

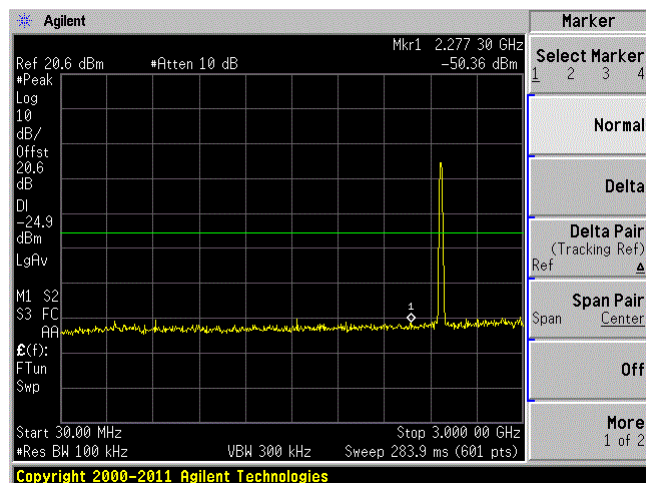
Chain 0, Plot: 30 MHz – 3 GHz



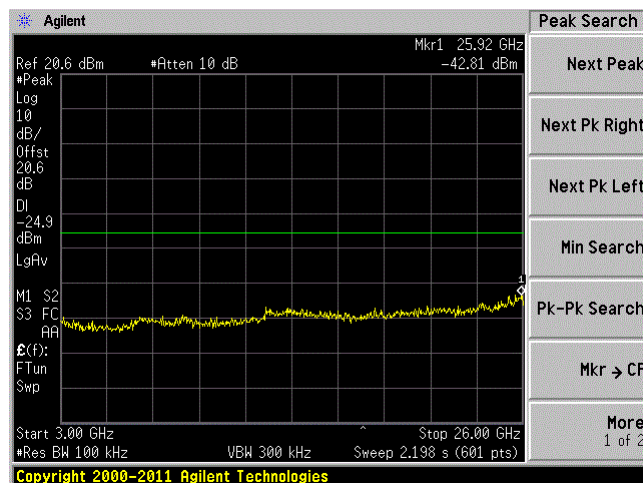
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz



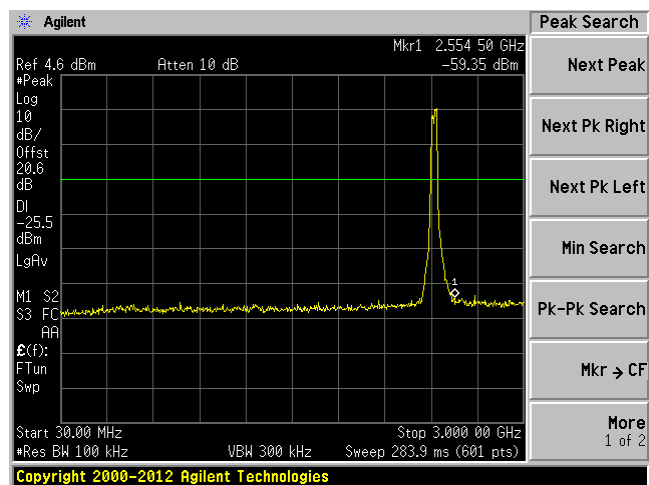
Chain 1, Plot: 3 GHz – 26 GHz



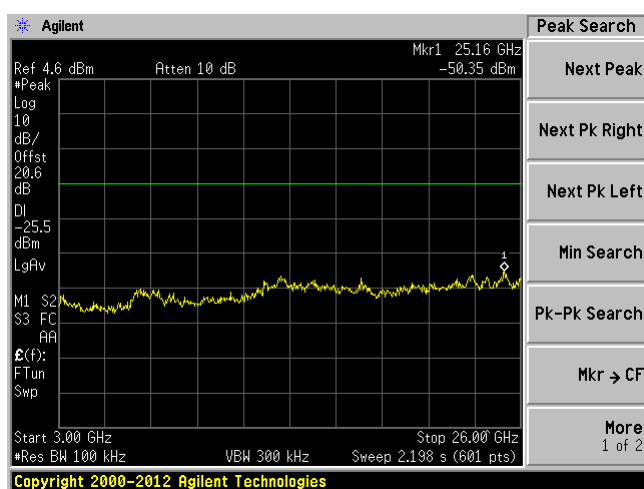


**802.11n HT40, Low Channel 2422 MHz**

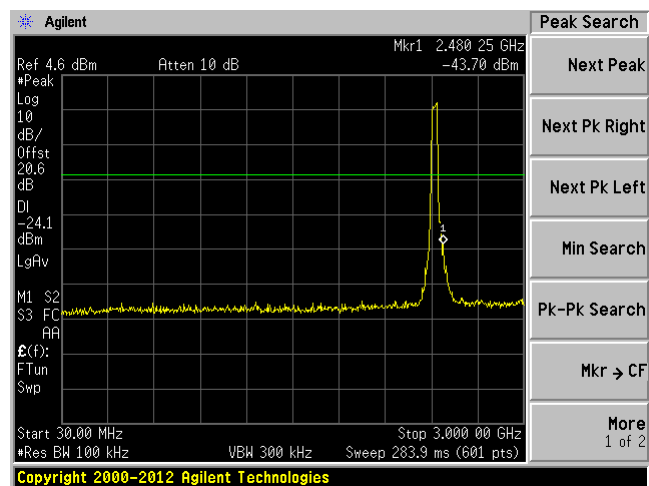
Chain 0, Plot: 30 MHz – 3 GHz



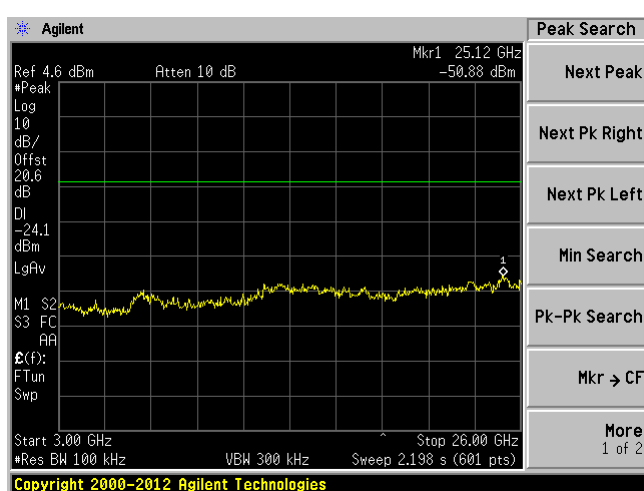
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

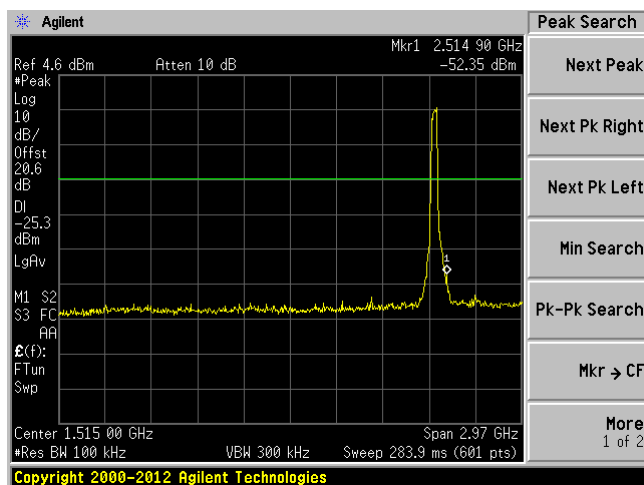


Chain 1, Plot: 3 GHz – 26 GHz

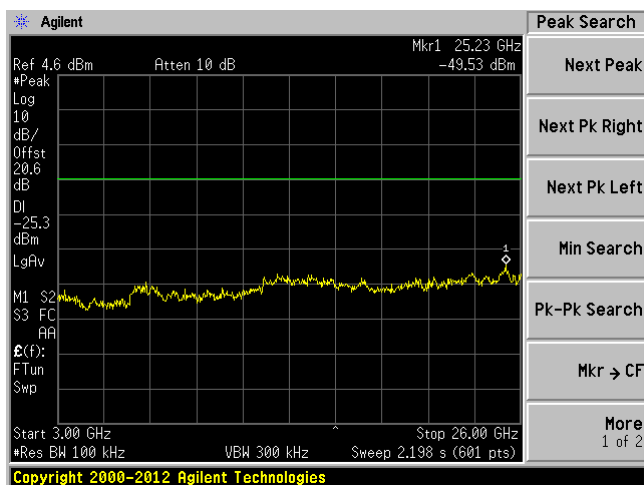


**802.11n HT40, Middle Channel 2437 MHz**

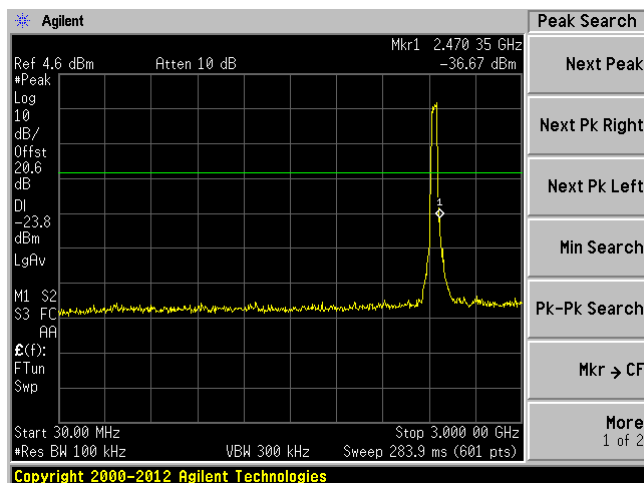
Chain 0, Plot: 30 MHz – 3 GHz



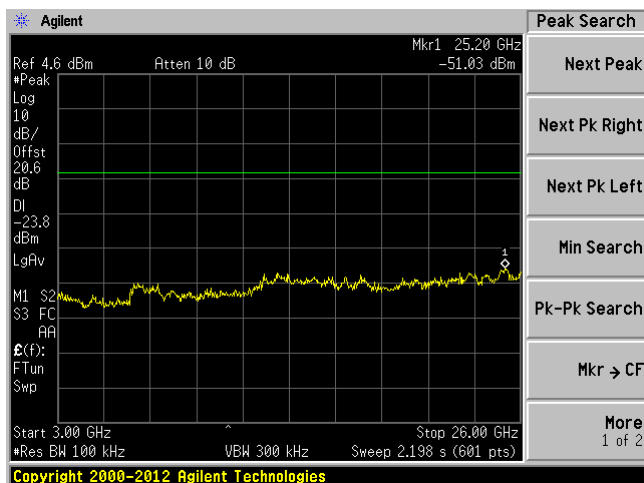
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz

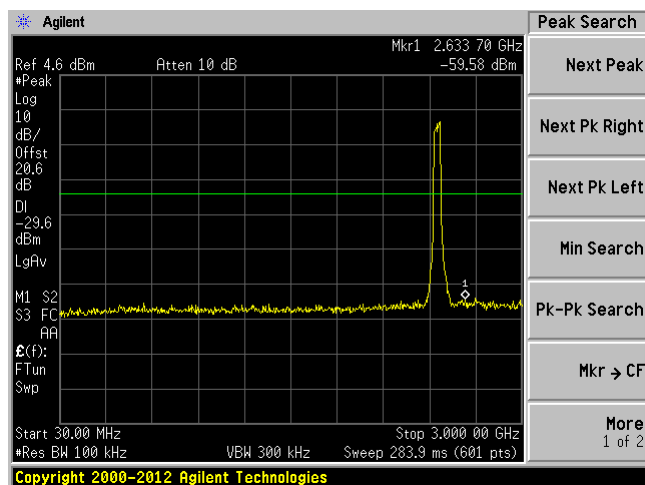


Chain 1, Plot: 3 GHz – 26 GHz

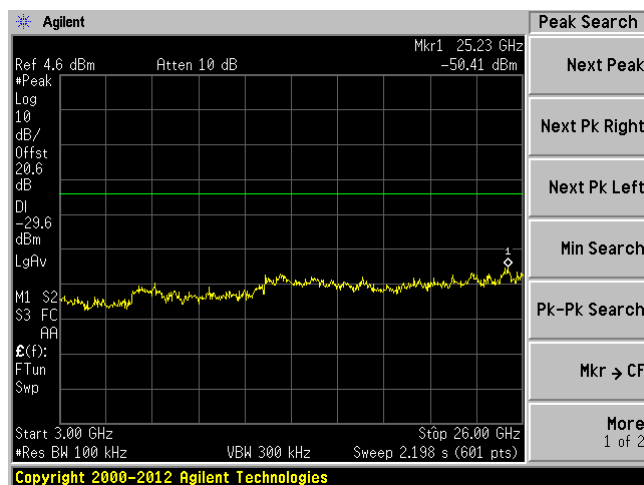


**802.11n HT40, High Channel 2452 MHz**

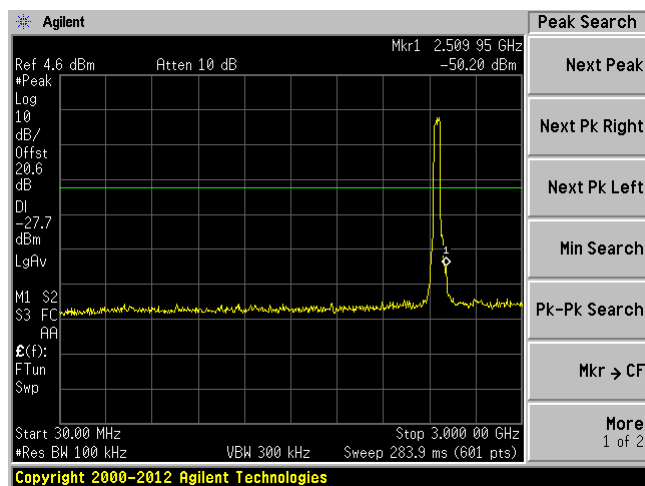
Chain 0, Plot: 30 MHz – 3 GHz



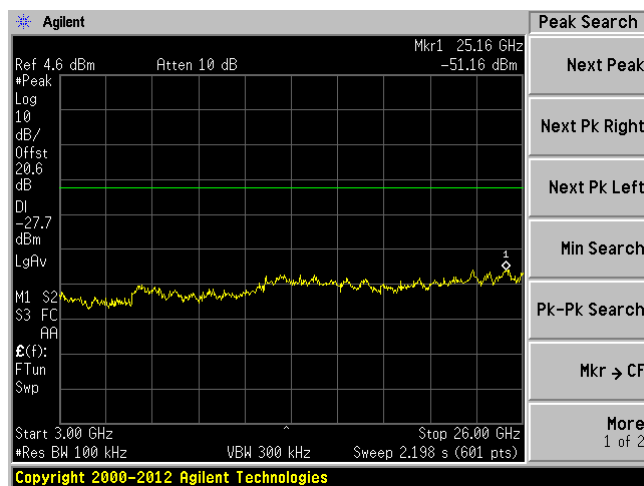
Chain 0, Plot: 3 GHz – 26 GHz



Chain 1, Plot: 30 MHz – 3 GHz



Chain 1, Plot: 3 GHz – 26 GHz



## 8 FCC §15.205, §15.209 & §15.247(d) & IC RSS-210 §A8.5 – Spurious Radiated Emissions

### 8.1 Applicable Standards

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz.

As per FCC §15.209(a) and RSS-210: Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (micro volts/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

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	960 – 1240	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	1300 – 1427	5.35 – 5.46
2.1735 – 2.1905	25.5 – 25.67	1435 – 1626.5	7.25 – 7.75
4.125 – 4.128	37.5 – 38.25	1645.5 – 1646.5	8.025 – 8.5
4.17725 – 4.17775	73 – 74.6	1660 – 1710	9.0 – 9.2
4.20725 – 4.20775	74.8 – 75.2	1718.8 – 1722.2	9.3 – 9.5
6.215 – 6.218	108 – 121.94	2200 – 2300	10.6 – 12.7
6.26775 – 6.26825	123 – 138	2310 – 2390	13.25 – 13.4
6.31175 – 6.31225	149.9 – 150.05	2483.5 – 2500	14.47 – 14.5
8.291 – 8.294	156.52475 – 156.52525	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.7 – 156.9	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	162.0125 – 167.17	3.332 – 3.339	22.01 – 23.12
8.41425 – 8.41475	167.72 – 173.2	3.3458 – 3.358	23.6 – 24.0
12.29 – 12.293	240 – 285	3.600 – 4.400	31.2 – 31.8
12.51975 – 12.52025	322 – 335.4		36.43 – 36.5
12.57675 – 12.57725	399.9 – 410		Above 38.6
13.36 – 13.41	608 – 614		

As per FCC §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

As per IC RSS-210 A8.5 Out-of-band Emissions, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section A8.4 (4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

## 8.2 Test Setup

The radiated emissions tests were performed in the 5-meter Chamber, using the setup in accordance with ANSI C63.4-2009. The specification used was the FCC 15 Subpart C and IC RSS-210 limits.

The spacing between the peripherals was 3 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

## 8.3 Test Procedure

For the radiated emissions test, the EUT host, and all support equipment power cords was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 meter, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

The spectrum analyzer or receiver is set as:

Below 1000 MHz:

$$\text{RBW} = 100 \text{ kHz} / \text{VBW} = 300 \text{ kHz} / \text{Sweep} = \text{Auto}$$

Above 1000 MHz:

- (1) Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto
- (2) Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

## 8.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) to indicated Amplitude (Ai) reading. The basic equation is as follows:

$$CA = Ai + AF + CL + Atten - Ga$$

For example, a corrected amplitude of 40.3 dBuV/m = Indicated Reading (32.5 dBuV) + Antenna Factor (+23.5dB) + Cable Loss (3.7 dB) + Attenuator (10 dB) - Amplifier Gain (29.4 dB)

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

## 8.5 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2013-09-28	1 year
Agilent	Spectrum Analyzer	E4440A	MY4430335 2	2013-10-16	1 year
Sunol Science Corp	System Controller	SC99V	011003-1	N/R	N/R
Sunol Science Corp	Combination Antenna	JB3	A020106-3	2013-09-18	1 year
EMCO	Horn Antenna	3115	9511-4627	2013-10-17	1 year
Hewlett Packard	Pre-amplifier	8447D	2944A10187	2013-08-08	1 year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2013-07-09	1 year

**Statement of Traceability:** *BACL attests that all calibrations have been performed per the A2LA requirements, traceable to NIST.*

## 8.6 Test Environmental Conditions

<b>Temperature:</b>	22-24° C
<b>Relative Humidity:</b>	40-41 %
<b>ATM Pressure:</b>	103.1-104.1 KPa

*The testing was performed by Cipher Chu on 2014-05-14 to 2014-05-23 in 5m chamber3.*

## 8.7 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC Title 47, Part 15C and IC RSS-210 standard's radiated emissions limits, and had the worst margin of:

### 30-1000 MHz:

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel
-7.24	128.444	Vertical	802.11b mode middle Channel

### 1 – 25 GHz:

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel
-0.106	2483.5	Vertical	802.11n g mode High Channel

Please refer to the following table and plots for specific test result details





## 2) 1–25 GHz

## 2.4 GHz Band, 802.11b mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 2412 MHz											
2412	77.06	150	100	V	28.341	2.94	0	108.341	-	-	Peak
2412	76.98	50	100	H	28.341	2.94	0	108.261	-	-	Peak
2412	73.59	150	100	V	28.341	2.94	0	104.871	-	-	Ave
2412	73.42	50	100	H	28.341	2.94	0	104.701	-	-	Ave
2390	31.04	150	100	V	28.341	2.87	0	62.251	74	-11.749	Peak
2390	31.12	50	100	H	28.341	2.87	0	62.331	74	-11.669	Peak
2390	21.25	150	100	V	28.341	2.87	0	52.461	54	-1.539	Ave
2390	20.52	50	100	H	28.341	2.87	0	51.731	54	-2.269	Ave
4824	54.82	151	100	V	32.752	4.06	36.5	55.132	74	-18.868	Peak
4824	54.43	49	100	H	32.752	4.06	36.5	54.742	74	-19.258	Peak
4824	51.06	151	100	V	32.752	4.06	36.5	51.372	54	-2.628	Ave
4824	50.97	49	100	H	32.752	4.06	36.5	51.282	54	-2.718	Ave
7236	44.57	0	100	V	36.463	4.93	36.7	49.263	88.341	-39.078	Peak
7236	44.71	0	100	H	36.463	4.93	36.7	49.403	88.261	-38.858	Peak
7236	29.89	0	100	V	36.463	4.93	36.7	34.583	84.871	-50.288	Ave
7236	29.42	0	100	H	36.463	4.93	36.7	34.113	84.701	-50.588	Ave
9648	43.66	0	100	V	37.248	5.82	36.9	49.828	88.341	-38.513	Peak
9648	43.18	0	100	H	37.248	5.82	36.9	49.348	88.261	-38.913	Peak
9648	28.55	0	100	V	37.248	5.82	36.9	34.718	84.871	-50.153	Ave
9648	29.13	0	100	H	37.248	5.82	36.9	35.298	84.701	-49.403	Ave
Middle Channel 2437 MHz											
2437	80.28	145	103	V	28.707	2.94	0	111.927	-	-	Peak
2437	81.94	51	120	H	28.707	2.94	0	113.587	-	-	Peak
2437	71.69	145	103	V	28.707	2.94	0	103.337	-	-	Ave
2437	73.33	51	120	H	28.707	2.94	0	104.977	-	-	Ave
4874	55.09	151	106	V	32.752	4.06	36.5	55.402	74	-18.598	Peak
4874	54.19	54	121	H	32.752	4.06	36.5	54.502	74	-19.498	Peak
4874	51.04	151	106	V	32.752	4.06	36.5	51.352	54	-2.648	Ave
4874	51.04	51	121	H	32.752	4.06	36.5	51.352	54	-2.648	Ave
7311	43.78	0	100	V	36.463	4.93	36.7	48.473	74	-25.527	Peak
7311	43.95	0	100	H	36.463	4.93	36.7	48.643	74	-25.357	Peak
7311	28.45	0	100	V	36.463	4.93	36.7	33.143	54	-20.857	Ave
7311	28.43	0	100	H	36.463	4.93	36.7	33.123	54	-20.877	Ave
9748	42.24	0	100	V	37.248	5.82	36.9	48.408	91.927	-43.519	Peak
9748	42.26	0	100	H	37.248	5.82	36.9	48.428	93.587	-45.159	Peak
9748	27.18	0	100	V	37.248	5.82	36.9	33.348	83.337	-49.989	Ave
9748	27.18	0	100	H	37.248	5.82	36.9	33.348	84.977	-51.629	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
High Channel 2462 MHz											
2462	73.77	150	100	V	28.707	2.94	0	105.417	-	-	Peak
2462	74.47	50	100	H	28.707	2.94	0	106.117	-	-	Peak
2462	70.34	150	100	V	28.707	2.94	0	101.987	-	-	Ave
2462	70.96	50	100	H	28.707	2.94	0	102.607	-	-	Ave
2483.5	30.56	150	100	V	28.944	3.01	0	62.514	74	-11.486	Peak
2483.5	30.75	50	100	H	28.944	3.01	0	62.704	74	-11.296	Peak
2483.5	21.43	150	100	V	28.944	3.01	0	53.384	54	-0.616	Ave
2483.5	21.64	50	100	H	28.944	3.01	0	53.594	54	-0.406	Ave
4924	48.83	147	100	V	32.752	4.06	36.5	49.142	74	-24.858	Peak
4924	49.23	47	100	H	32.752	4.06	36.5	49.542	74	-24.458	Peak
4924	45.75	147	100	V	32.752	4.06	36.5	46.062	54	-7.938	Ave
4924	45.88	47	100	H	32.752	4.06	36.5	46.192	54	-7.808	Ave
7386	42.93	0	100	V	36.463	4.93	36.7	47.623	74	-26.377	Peak
7386	43.61	0	100	H	36.463	4.93	36.7	48.303	74	-25.697	Peak
7386	28.06	0	100	V	36.463	4.93	36.7	32.753	54	-21.247	Ave
7386	28.48	0	100	H	36.463	4.93	36.7	33.173	54	-20.827	Ave
9848	52.83	0	100	V	37.248	5.82	36.9	58.998	85.417	-26.419	Peak
9848	51.92	0	100	H	37.248	5.82	36.9	58.088	86.117	-28.029	Peak
9848	36.12	0	100	V	37.248	5.82	36.9	42.288	81.987	-39.699	Ave
9848	35.66	0	100	H	37.248	5.82	36.9	41.828	82.607	-40.779	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Channel 12, 2467 MHz											
2467	70.18	232	100	V	28.707	2.94	0	101.827	-	-	Peak
2467	72.72	112	100	H	28.707	2.94	0	104.367	-	-	Peak
2467	66.76	232	100	V	28.707	2.94	0	98.407	-	-	Ave
2467	69.3	112	100	H	28.707	2.94	0	100.947	-	-	Ave
2483.5	29.67	232	100	V	28.944	3.01	0	61.624	74	-12.376	Peak
2483.5	30.59	112	100	H	28.944	3.01	0	62.544	74	-11.456	Peak
2483.5	18.54	232	100	V	28.944	3.01	0	50.494	54	-3.506	Ave
2483.5	20.59	112	100	H	28.944	3.01	0	52.544	54	-1.456	Ave
4934	48.83	0	100	V	32.752	4.06	36.5	49.142	74	-24.858	Peak
4934	49.23	0	100	H	32.752	4.06	36.5	49.542	74	-24.458	Peak
4934	45.75	0	100	V	32.752	4.06	36.5	46.062	54	-7.938	Ave
4934	45.88	0	100	H	32.752	4.06	36.5	46.192	54	-7.808	Ave
7401	42.93	0	100	V	36.463	4.93	36.7	47.623	74	-26.377	Peak
7401	43.61	0	100	H	36.463	4.93	36.7	48.303	74	-25.697	Peak
7401	28.06	0	100	V	36.463	4.93	36.7	32.753	54	-21.247	Ave
7401	28.48	0	100	H	36.463	4.93	36.7	33.173	54	-20.827	Ave
9868	52.83	0	100	V	37.248	5.82	36.9	58.998	81.827	-22.829	Peak
9868	51.92	0	100	H	37.248	5.82	36.9	58.088	84.367	-26.279	Peak
9868	36.12	0	100	V	37.248	5.82	36.9	42.288	78.407	-36.119	Ave
9868	35.66	0	100	H	37.248	5.82	36.9	41.828	80.947	-39.119	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Channel 13, 2472 MHz											
2472	67.2	232	100	V	28.707	2.94	0	98.847	-	-	Peak
2472	69.65	112	100	H	28.707	2.94	0	101.297	-	-	Peak
2472	63.77	232	100	V	28.707	2.94	0	95.417	-	-	Ave
2472	66.39	112	100	H	28.707	2.94	0	98.037	-	-	Ave
2483.5	29.06	232	100	V	28.944	3.01	0	61.014	74	-12.986	Peak
2483.5	30.45	112	100	H	28.944	3.01	0	62.404	74	-11.596	Peak
2483.5	19.34	232	100	V	28.944	3.01	0	51.294	54	-2.706	Ave
2483.5	21.84	112	100	H	28.944	3.01	0	53.794	54	-0.206	Ave
4944	48.8	0	100	V	32.752	4.06	36.5	49.112	74	-24.888	Peak
4944	49.2	0	100	H	32.752	4.06	36.5	49.512	74	-24.488	Peak
4944	45.72	0	100	V	32.752	4.06	36.5	46.032	54	-7.968	Ave
4944	45.85	0	100	H	32.752	4.06	36.5	46.162	54	-7.838	Ave
7416	42.9	0	100	V	36.463	4.93	36.7	47.593	74	-26.407	Peak
7416	43.58	0	100	H	36.463	4.93	36.7	48.273	74	-25.727	Peak
7416	28.03	0	100	V	36.463	4.93	36.7	32.723	54	-21.277	Ave
7416	28.45	0	100	H	36.463	4.93	36.7	33.143	54	-20.857	Ave
9888	52.8	0	100	V	37.248	5.82	36.9	58.968	78.847	-19.879	Peak
9888	51.89	0	100	H	37.248	5.82	36.9	58.058	81.297	-23.239	Peak
9888	36.09	0	100	V	37.248	5.82	36.9	42.258	75.417	-33.159	Ave
9888	35.63	0	100	H	37.248	5.82	36.9	41.798	78.037	-36.239	Ave

## 2.4 GHz Band, 802.11g mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 2412 MHz											
2412	76.95	206	102	V	28.707	2.94	0	108.597	-	-	Peak
2412	76.19	135	106	H	28.707	2.94	0	107.837	-	-	Peak
2412	64.61	206	102	V	28.707	2.94	0	96.257	-	-	Ave
2412	64.13	135	106	H	28.707	2.94	0	95.777	-	-	Ave
2390	41.3	206	100	V	28.707	2.87	0	72.877	74	-1.123	Peak
2390	41.15	135	103	H	28.707	2.87	0	72.727	74	-1.273	Peak
2390	18.15	206	100	V	28.707	2.87	0	49.727	54	-4.273	Ave
2390	17.8	135	103	H	28.707	2.87	0	49.377	54	-4.623	Ave
4824	52.45	150	100	V	32.752	4.06	36.5	52.762	74	-21.238	Peak
4824	48.43	50	100	H	32.752	4.06	36.5	48.742	74	-25.258	Peak
4824	36.06	150	100	V	32.752	4.06	36.5	36.372	54	-17.628	Ave
4824	34.04	50	100	H	32.752	4.06	36.5	34.352	54	-19.648	Ave
7236	55.56	0	100	V	36.463	4.93	36.7	60.253	88.597	-28.344	Peak
7236	55.72	0	100	H	36.463	4.93	36.7	60.413	87.837	-27.424	Peak
7236	40.51	0	100	V	36.463	4.93	36.7	45.203	76.257	-31.054	Ave
7236	40.49	0	100	H	36.463	4.93	36.7	45.183	75.777	-30.594	Ave
9648	53.96	0	100	V	37.248	5.82	36.9	60.128	88.597	-28.469	Peak
9648	53.73	0	100	H	37.248	5.82	36.9	59.898	87.837	-27.939	Peak
9648	38.83	0	100	V	37.248	5.82	36.9	44.998	76.257	-31.259	Ave
9648	38.77	0	100	H	37.248	5.82	36.9	44.938	75.777	-30.839	Ave
Middle Channel 2437 MHz											
2437	78.97	151	102	V	28.707	2.94	0	110.617	-	-	Peak
2437	75.29	50	105	H	28.707	2.94	0	106.937	-	-	Peak
2437	63.02	151	102	V	28.707	2.94	0	94.667	-	-	Ave
2437	59.63	50	105	H	28.707	2.94	0	91.277	-	-	Ave
4874	49.81	151	100	V	32.752	4.06	36.5	50.122	74	-23.878	Peak
4874	52.2	50	100	H	32.752	4.06	36.5	52.512	74	-21.488	Peak
4874	37.07	151	100	V	32.752	4.06	36.5	37.382	54	-16.618	Ave
4874	39.56	50	100	H	32.752	4.06	36.5	39.872	54	-14.128	Ave
7311	42.47	0	100	V	36.463	4.93	36.7	47.163	74	-26.837	Peak
7311	42.71	0	100	H	36.463	4.93	36.7	47.403	74	-26.597	Peak
7311	27.67	0	100	V	36.463	4.93	36.7	32.363	54	-21.637	Ave
7311	27.64	0	100	H	36.463	4.93	36.7	32.333	54	-21.667	Ave
9748	43.24	0	100	V	37.248	5.82	36.9	49.408	90.617	-41.209	Peak
9748	43.47	0	100	H	37.248	5.82	36.9	49.638	86.937	-37.299	Peak
9748	28.37	0	100	V	37.248	5.82	36.9	34.538	74.667	-40.129	Ave
9748	28.38	0	100	H	37.248	5.82	36.9	34.548	71.277	-36.729	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
High Channel 2462 MHz											
2462	75.36	206	107	V	28.707	2.94	0	107.007	-	-	Peak
2462	74.58	135	100	H	28.707	2.94	0	106.227	-	-	Peak
2462	63.34	206	107	V	28.707	2.94	0	94.987	-	-	Ave
2462	62.85	135	100	H	28.707	2.94	0	94.497	-	-	Ave
2483.5	42.01	206	106	V	28.944	2.94	0	73.894	74	-0.106	Peak
2483.5	41.83	135	100	H	28.944	2.94	0	73.714	74	-0.286	Peak
2483.5	20.29	206	106	V	28.944	2.94	0	52.174	54	-1.826	Ave
2483.5	19.02	135	100	H	28.944	2.94	0	50.904	54	-3.096	Ave
4924	51.04	153	100	V	32.752	4.06	36.5	51.352	74	-22.648	Peak
4924	48.53	53	100	H	32.752	4.06	36.5	48.842	74	-25.158	Peak
4924	36.85	153	100	V	32.752	4.06	36.5	37.162	54	-16.838	Ave
4924	34.67	53	100	H	32.752	4.06	36.5	34.982	54	-19.018	Ave
7386	39.84	0	100	V	36.463	4.93	36.7	44.533	74	-29.467	Peak
7386	39.16	0	100	H	36.463	4.93	36.7	43.853	74	-30.147	Peak
7386	24.86	0	100	V	36.463	4.93	36.7	29.553	54	-24.447	Ave
7386	24.82	0	100	H	36.463	4.93	36.7	29.513	54	-24.487	Ave
9848	50.6	0	100	V	37.248	5.82	36.9	56.768	87.007	-30.239	Peak
9848	50.83	0	100	H	37.248	5.82	36.9	56.998	86.227	-29.229	Peak
9848	35.73	0	100	V	37.248	5.82	36.9	41.898	74.987	-33.089	Ave
9848	35.74	0	100	H	37.248	5.82	36.9	41.908	74.497	-32.589	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Channel 12, 2467 MHz, measured at 3 meters											
2467	71.09	154	100	V	28.707	2.94	0	102.737	-	-	Peak
2467	70.54	58	100	H	28.707	2.94	0	102.187	-	-	Peak
2467	58.88	154	100	V	28.707	2.94	0	90.527	-	-	Ave
2467	57.72	58	100	H	28.707	2.94	0	89.367	-	-	Ave
2483.5	40.76	154	100	V	28.944	3.01	0	72.714	74	-1.286	Peak
2483.5	39.37	58	100	H	28.944	3.01	0	71.324	74	-2.676	Peak
2483.5	17.78	154	100	V	28.944	3.01	0	49.734	54	-4.266	Ave
2483.5	17.03	58	100	H	28.944	3.01	0	48.984	54	-5.016	Ave
4934	51.1	0	100	V	32.752	4.06	36.5	51.412	74	-22.588	Peak
4934	48.59	0	100	H	32.752	4.06	36.5	48.902	74	-25.098	Peak
4934	36.91	0	100	V	32.752	4.06	36.5	37.222	54	-16.778	Ave
4934	34.73	0	100	H	32.752	4.06	36.5	35.042	54	-18.958	Ave
7401	39.9	0	100	V	36.463	4.93	36.7	44.593	74	-29.407	Peak
7401	39.22	0	100	H	36.463	4.93	36.7	43.913	74	-30.087	Peak
7401	24.92	0	100	V	36.463	4.93	36.7	29.613	54	-24.387	Ave
7401	24.88	0	100	H	36.463	4.93	36.7	29.573	54	-24.427	Ave
9868	50.66	0	100	V	37.248	5.82	36.9	56.828	82.737	-25.909	Peak
9868	50.89	0	100	H	37.248	5.82	36.9	57.058	82.187	-25.129	Peak
9868	35.79	0	100	V	37.248	5.82	36.9	41.958	70.527	-28.569	Ave
9868	35.8	0	100	H	37.248	5.82	36.9	41.968	69.367	-27.399	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Channel 13, 2472 MHz											
2472	64.37	154	100	V	28.707	2.94	0	96.017	-	-	Peak
2472	62.95	58	100	H	28.707	2.94	0	94.597	-	-	Peak
2472	52.11	154	100	V	28.707	2.94	0	83.757	-	-	Ave
2472	51.34	58	100	H	28.707	2.94	0	82.987	-	-	Ave
2483.5	34.72	154	100	V	28.944	3.01	0	66.674	74	-7.326	Peak
2483.5	34.96	58	100	H	28.944	3.01	0	66.914	74	-7.086	Peak
2483.5	17.84	154	100	V	28.944	3.01	0	49.794	54	-4.206	Ave
2483.5	16.97	58	100	H	28.944	3.01	0	48.924	54	-5.076	Ave
4944	50.9	0	100	V	32.752	4.06	36.5	51.212	74	-22.788	Peak
4944	48.39	0	100	H	32.752	4.06	36.5	48.702	74	-25.298	Peak
4944	36.71	0	100	V	32.752	4.06	36.5	37.022	54	-16.978	Ave
4944	34.53	0	100	H	32.752	4.06	36.5	34.842	54	-19.158	Ave
7416	39.7	0	100	V	36.463	4.93	36.7	44.393	74	-29.607	Peak
7416	39.02	0	100	H	36.463	4.93	36.7	43.713	74	-30.287	Peak
7416	24.72	0	100	V	36.463	4.93	36.7	29.413	54	-24.587	Ave
7416	24.68	0	100	H	36.463	4.93	36.7	29.373	54	-24.627	Ave
9888	50.46	0	100	V	37.248	5.82	36.9	56.628	76.017	-19.389	Peak
9888	50.69	0	100	H	37.248	5.82	36.9	56.858	74.597	-17.739	Peak
9888	35.59	0	100	V	37.248	5.82	36.9	41.758	63.757	-21.999	Ave
9888	35.6	0	100	H	37.248	5.82	36.9	41.768	62.987	-21.219	Ave



## 2.4 GHz Band, 802.11n HT20 mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 2412 MHz											
2412	75.29	209	107	V	28.707	2.94	0	106.937	-	-	Peak
2412	75.61	49	100	H	28.707	2.94	0	107.257	-	-	Peak
2412	62.69	209	107	V	28.707	2.94	0	94.337	-	-	Ave
2412	64.39	49	100	H	28.707	2.94	0	96.037	-	-	Ave
2390	40.23	209	107	V	28.707	2.87	0	71.807	74	-2.193	Peak
2390	40.62	49	100	H	28.707	2.87	0	72.197	74	-1.803	Peak
2390	16.91	209	107	V	28.707	2.87	0	48.487	54	-5.513	Ave
2390	18.81	49	100	H	28.707	2.87	0	50.387	54	-3.613	Ave
4824	53.91	160	107	V	32.752	4.06	36.5	54.222	74	-19.778	Peak
4824	52.47	55	100	H	32.752	4.06	36.5	52.782	74	-21.218	Peak
4824	39.23	160	107	V	32.752	4.06	36.5	39.542	54	-14.458	Ave
4824	36.87	55	100	H	32.752	4.06	36.5	37.182	54	-16.818	Ave
7236	50.45	0	100	V	36.463	4.93	36.7	55.143	86.937	-31.794	Peak
7236	50.58	0	100	H	36.463	4.93	36.7	55.273	87.257	-31.984	Peak
7236	35.45	0	100	V	36.463	4.93	36.7	40.143	74.337	-34.194	Ave
7236	35.42	0	100	H	36.463	4.93	36.7	40.113	76.037	-35.924	Ave
9648	48.69	0	100	V	37.248	5.82	36.9	54.858	86.937	-32.079	Peak
9648	48.55	0	100	H	37.248	5.82	36.9	54.718	87.257	-32.539	Peak
9648	33.73	0	100	V	37.248	5.82	36.9	39.898	74.337	-34.439	Ave
9648	33.59	0	100	H	37.248	5.82	36.9	39.758	76.037	-36.279	Ave
Middle Channel 2437 MHz											
2437	76.03	151	107	V	28.707	2.94	0	107.677	-	-	Peak
2437	77.97	49	100	H	28.707	2.94	0	109.617	-	-	Peak
2437	64.23	151	107	V	28.707	2.94	0	95.877	-	-	Ave
2437	65.96	49	100	H	28.707	2.94	0	97.607	-	-	Ave
4874	51.89	153	107	V	32.752	4.06	36.5	52.202	74	-21.798	Peak
4874	52.06	50	100	H	32.752	4.06	36.5	52.372	74	-21.628	Peak
4874	36.21	153	107	V	32.752	4.06	36.5	36.522	54	-17.478	Ave
4874	36.46	50	100	H	32.752	4.06	36.5	36.772	54	-17.228	Ave
7311	45.61	0	100	V	36.463	4.93	36.7	50.303	74	-23.697	Peak
7311	45.85	0	100	H	36.463	4.93	36.7	50.543	74	-23.457	Peak
7311	28.76	0	100	V	36.463	4.93	36.7	33.453	54	-20.547	Ave
7311	28.79	0	100	H	36.463	4.93	36.7	33.483	54	-20.517	Ave
9748	44.01	0	100	V	37.248	5.82	36.9	50.178	87.677	-37.499	Peak
9748	43.84	0	100	H	37.248	5.82	36.9	50.008	89.617	-39.609	Peak
9748	29.248	0	100	V	37.248	5.82	36.9	35.416	75.877	-40.461	Ave
9748	29.29	0	100	H	37.248	5.82	36.9	35.458	77.607	-42.149	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
High Channel 2462 MHz											
2462	72.55	216	100	V	28.707	2.94	0	104.197	-	-	Peak
2462	72.97	49	102	H	28.707	2.94	0	104.617	-	-	Peak
2462	59.88	216	100	V	28.707	2.94	0	91.527	-	-	Ave
2462	61.35	49	102	H	28.707	2.94	0	92.997	-	-	Ave
2483.5	39.95	209	107	V	28.944	2.94	0	71.834	74	-2.166	Peak
2483.5	41.94	49	100	H	28.944	2.94	0	73.824	74	-0.176	Peak
2483.5	18.08	209	107	V	28.944	2.94	0	49.964	54	-4.036	Ave
2483.5	17	49	100	H	28.944	2.94	0	48.884	54	-5.116	Ave
4924	52.71	151	107	V	32.752	4.06	36.5	53.022	74	-20.978	Peak
4924	50.6	55	100	H	32.752	4.06	36.5	50.912	74	-23.088	Peak
4924	39.52	151	107	V	32.752	4.06	36.5	39.832	54	-14.168	Ave
4924	37.61	55	100	H	32.752	4.06	36.5	37.922	54	-16.078	Ave
7386	43.87	0	100	V	36.463	4.93	36.7	48.563	74	-25.437	Peak
7386	44.02	0	100	H	36.463	4.93	36.7	48.713	74	-25.287	Peak
7386	29.05	0	100	V	36.463	4.93	36.7	33.743	54	-20.257	Ave
7386	29.07	0	100	H	36.463	4.93	36.7	33.763	54	-20.237	Ave
9848	47.4	0	100	V	37.248	5.82	36.9	53.568	84.197	-30.629	Peak
9848	47.23	0	100	H	37.248	5.82	36.9	53.398	84.617	-31.219	Peak
9848	32.638	0	100	V	37.248	5.82	36.9	38.806	71.527	-32.721	Ave
9848	32.68	0	100	H	37.248	5.82	36.9	38.848	72.997	-34.149	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Channel 12, 2467 MHz											
2467	70.23	231	100	V	28.707	2.94	0	101.877	-	-	Peak
2467	71.8	112	100	H	28.707	2.94	0	103.447	-	-	Peak
2467	57.94	231	100	V	28.707	2.94	0	89.587	-	-	Ave
2467	60.02	112	100	H	28.707	2.94	0	91.667	-	-	Ave
2483.5	34.75	231	100	V	28.944	3.01	0	66.704	74	-7.296	Peak
2483.5	37.06	112	100	H	28.944	3.01	0	69.014	74	-4.986	Peak
2483.5	20.11	231	100	V	28.944	3.01	0	52.064	54	-1.936	Ave
2483.5	21.84	112	100	H	28.944	3.01	0	53.794	54	-0.206	Ave
4934	52.41	0	100	V	32.752	4.06	36.5	52.722	74	-21.278	Peak
4934	50.3	0	100	H	32.752	4.06	36.5	50.612	74	-23.388	Peak
4934	39.22	0	100	V	32.752	4.06	36.5	39.532	54	-14.468	Ave
4934	37.31	0	100	H	32.752	4.06	36.5	37.622	54	-16.378	Ave
7401	43.57	0	100	V	36.463	4.93	36.7	48.263	74	-25.737	Peak
7401	43.72	0	100	H	36.463	4.93	36.7	48.413	74	-25.587	Peak
7401	28.75	0	100	V	36.463	4.93	36.7	33.443	54	-20.557	Ave
7401	28.77	0	100	H	36.463	4.93	36.7	33.463	54	-20.537	Ave
9868	47.1	0	100	V	37.248	5.82	36.9	53.268	81.877	-28.609	Peak
9868	46.93	0	100	H	37.248	5.82	36.9	53.098	83.447	-30.349	Peak
9868	32.338	0	100	V	37.248	5.82	36.9	38.506	69.587	-31.081	Ave
9868	32.38	0	100	H	37.248	5.82	36.9	38.548	71.667	-33.119	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Channel 13, 2472 MHz											
2472	52.25	155	100	V	28.707	2.94	0	83.897	-	-	Peak
2472	53.25	59	100	H	28.707	2.94	0	84.897	-	-	Peak
2472	40.6	155	100	V	28.707	2.94	0	72.247	-	-	Ave
2472	42.29	59	100	H	28.707	2.94	0	73.937	-	-	Ave
2483.5	28.14	155	100	V	28.944	3.01	0	60.094	74	-13.906	Peak
2483.5	28.02	59	100	H	28.944	3.01	0	59.974	74	-14.026	Peak
2483.5	15.99	155	100	V	28.944	3.01	0	47.944	54	-6.056	Ave
2483.5	15.8	59	100	H	28.944	3.01	0	47.754	54	-6.246	Ave
4944	52.11	0	100	V	32.752	4.06	36.5	52.422	74	-21.578	Peak
4944	50.1	0	100	H	32.752	4.06	36.5	50.412	74	-23.588	Peak
4944	38.92	0	100	V	32.752	4.06	36.5	39.232	54	-14.768	Ave
4944	37.01	0	100	H	32.752	4.06	36.5	37.322	54	-16.678	Ave
7416	43.27	0	100	V	36.463	4.93	36.7	47.963	74	-26.037	Peak
7416	43.42	0	100	H	36.463	4.93	36.7	48.113	74	-25.887	Peak
7416	28.45	0	100	V	36.463	4.93	36.7	33.143	54	-20.857	Ave
7416	28.47	0	100	H	36.463	4.93	36.7	33.163	54	-20.837	Ave
9888	46.8	0	100	V	37.248	5.82	36.9	52.968	63.897	-10.929	Peak
9888	46.63	0	100	H	37.248	5.82	36.9	52.798	64.897	-12.099	Peak
9888	32.038	0	100	V	37.248	5.82	36.9	38.206	52.247	-14.041	Ave
9888	32.08	0	100	H	37.248	5.82	36.9	38.248	53.937	-15.689	Ave

## 2.4 GHz Band, 802.11n HT40 mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 2422 MHz											
2422	70.49	216	117	V	28.707	2.94	0	102.137	-	-	Peak
2422	71.46	49	103	H	28.707	2.94	0	103.107	-	-	Peak
2422	57.95	216	117	V	28.707	2.94	0	89.597	-	-	Ave
2422	59.56	49	103	H	28.707	2.94	0	91.207	-	-	Ave
2390	40.32	216	107	V	28.707	2.87	0	71.897	74	-2.103	Peak
2390	41.44	49	100	H	28.707	2.87	0	73.017	74	-0.983	Peak
2390	19.28	216	107	V	28.707	2.87	0	50.857	54	-3.143	Ave
2390	21.04	49	100	H	28.707	2.87	0	52.617	54	-1.383	Ave
4844	53.49	160	107	V	32.752	4.06	36.5	53.802	74	-20.198	Peak
4844	52.32	55	100	H	32.752	4.06	36.5	52.632	74	-21.368	Peak
4844	36.84	160	107	V	32.752	4.06	36.5	37.152	54	-16.848	Ave
4844	35.15	55	100	H	32.752	4.06	36.5	35.462	54	-18.538	Ave
7266	44.35	0	100	V	36.463	4.93	36.7	49.043	74	-24.957	Peak
7266	43.97	0	100	H	36.463	4.93	36.7	48.663	74	-25.337	Peak
7266	29.64	0	100	V	36.463	4.93	36.7	34.333	54	-19.667	Ave
7266	28.99	0	100	H	36.463	4.93	36.7	33.683	54	-20.317	Ave
9688	42.45	0	100	V	37.248	5.82	36.9	48.618	82.137	-33.519	Peak
9688	42.22	0	100	H	37.248	5.82	36.9	48.388	83.107	-34.719	Peak
9688	28.04	0	100	V	37.248	5.82	36.9	34.208	69.597	-35.389	Ave
9688	28.02	0	100	H	37.248	5.82	36.9	34.188	71.207	-37.019	Ave
Middle Channel 2437 MHz											
2437	77.12	147	107	V	28.707	2.94	0	108.767	-	-	Peak
2437	78.22	52	100	H	28.707	2.94	0	109.867	-	-	Peak
2437	67.33	147	107	V	28.707	2.94	0	98.977	-	-	Ave
2437	67.96	52	100	H	28.707	2.94	0	99.607	-	-	Ave
4874	53.35	153	107	V	32.752	4.06	36.5	53.662	74	-20.338	Peak
4874	49.99	54	100	H	32.752	4.06	36.5	50.302	74	-23.698	Peak
4874	36.93	153	107	V	32.752	4.06	36.5	37.242	54	-16.758	Ave
4874	38.23	54	100	H	32.752	4.06	36.5	38.542	54	-15.458	Ave
7311	44.07	0	100	V	36.463	4.93	36.7	48.763	74	-25.237	Peak
7311	44.45	0	100	H	36.463	4.93	36.7	49.143	74	-24.857	Peak
7311	29.66	0	100	V	36.463	4.93	36.7	34.353	54	-19.647	Ave
7311	29.69	0	100	H	36.463	4.93	36.7	34.383	54	-19.617	Ave
9748	43.4	0	100	V	37.248	5.82	36.9	49.568	88.767	-39.199	Peak
9748	43.34	0	100	H	37.248	5.82	36.9	49.508	89.867	-40.359	Peak
9748	28.2	0	100	V	37.248	5.82	36.9	34.368	78.977	-44.609	Ave
9748	28.23	0	100	H	37.248	5.82	36.9	34.398	79.607	-45.209	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
High Channel 2452 MHz											
2452	66.87	216	107	V	28.707	2.94	0	98.517	-	-	Peak
2452	68.17	49	127	H	28.707	2.94	0	99.817	-	-	Peak
2452	54.07	216	107	V	28.707	2.94	0	85.717	-	-	Ave
2452	55.74	49	127	H	28.707	2.94	0	87.387	-	-	Ave
2483.5	40.44	216	107	V	28.944	3.01	0	72.394	74	-1.606	Peak
2483.5	41.9	49	100	H	28.944	3.01	0	73.854	74	-0.146	Peak
2483.5	19.29	216	107	V	28.944	3.01	0	51.244	54	-2.756	Ave
2483.5	18.01	49	100	H	28.944	3.01	0	49.964	54	-4.036	Ave
4904	52.18	153	107	V	32.752	4.06	36.5	52.492	74	-21.508	Peak
4904	50.1	50	103	H	32.752	4.06	36.5	50.412	74	-23.588	Peak
4904	37.13	153	107	V	32.752	4.06	36.5	37.442	54	-16.558	Ave
4904	35.35	50	103	H	32.752	4.06	36.5	35.662	54	-18.338	Ave
7356	44.08	0	100	V	36.463	4.93	36.7	48.773	74	-25.227	Peak
7356	44.61	0	100	H	36.463	4.93	36.7	49.303	74	-24.697	Peak
7356	29.9	0	100	V	36.463	4.93	36.7	34.593	54	-19.407	Ave
7356	29.82	0	100	H	36.463	4.93	36.7	34.513	54	-19.487	Ave
9808	43.47	0	100	V	37.248	5.82	36.9	49.638	78.517	-28.879	Peak
9808	43.62	0	100	H	37.248	5.82	36.9	49.788	79.817	-30.029	Peak
9808	28.29	0	100	V	37.248	5.82	36.9	34.458	65.717	-31.259	Ave
9808	28.11	0	100	H	37.248	5.82	36.9	34.278	67.387	-33.109	Ave

## 9 FCC§15.247(a)(2) & IC RSS-210 §A8.2 – 6 dB & 99% Emission Bandwidth

### 9.1 Applicable Standards

According to FCC §15.247(a)(2) and IC RSS-210 A8.2 (a), 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

### 9.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emissions bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

### 9.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4446A	US44300386	2013-09-29	1 year

**Statement of Traceability:** *BACL Corp.* attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

### 9.4 Test Environmental Conditions

Temperature:	22-24° C
Relative Humidity:	40-41 %
ATM Pressure:	103.1-104.1 KPa

The testing was performed by Cipher Chu on 2014-05-14 to 2014-05-23 at RF site.

## 9.5 Test Results

802.11 b mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) Tx 0	6 dB Emission Bandwidth (MHz) Tx 1	99% Occupied Bandwidth (MHz) Tx 0	99% Occupied Bandwidth (MHz) Tx 1	Limit (MHz)	Results
Low	2412	8.130	8.586	10.4482	10.2561	> 0.5	Compliant
Middle	2437	8.090	8.148	10.8829	10.3236	> 0.5	Compliant
High	2462	8.582	8.571	10.7091	10.3006	> 0.5	Compliant
CH 12	2467	7.668	8.592	10.3313	10.3440	> 0.5	Compliant
CH 13	2472	8.118	8.068	10.2967	10.2870	> 0.5	Compliant

802.11 g mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) Tx 0	6 dB Emission Bandwidth (MHz) Tx 1	99% Occupied Bandwidth (MHz) Tx 0	99% Occupied Bandwidth (MHz) Tx 1	Limit (MHz)	Results
Low	2412	15.933	16.021	15.454	16.3029	> 0.5	Compliant
Middle	2437	15.436	16.044	15.481	16.3029	> 0.5	Compliant
High	2462	15.526	16.352	14.958	16.3024	> 0.5	Compliant
CH 12	2467	15.722	15.350	16.2982	16.3138	> 0.5	Compliant
CH 13	2472	15.696	15.354	16.3086	16.2957	> 0.5	Compliant

802.11n HT20 mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) Tx 0	6 dB Emission Bandwidth (MHz) Tx 1	99% Occupied Bandwidth (MHz) Tx 0	99% Occupied Bandwidth (MHz) Tx 1	Limit (MHz)	Results
Low	2412	16.805	15.948	17.4551	17.4669	> 0.5	Compliant
Middle	2437	16.415	15.970	17.4527	17.4578	> 0.5	Compliant
High	2462	15.759	15.693	17.4614	17.4465	> 0.5	Compliant
CH 12	2467	16.314	16.341	17.4508	17.4425	> 0.5	Compliant
CH 13	2472	16.787	16.774	17.4531	17.4592	> 0.5	Compliant



802.11n HT40 mode:

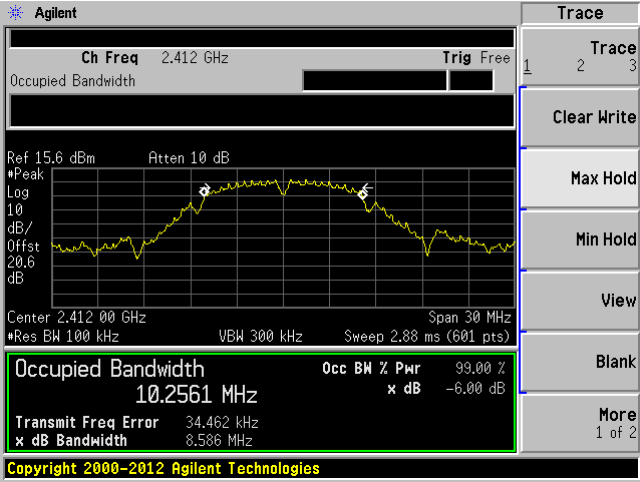
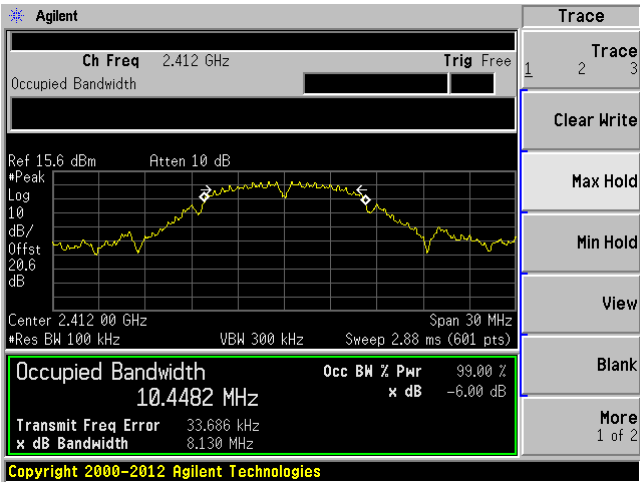
Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) Tx 0	6 dB Emission Bandwidth (MHz) Tx 1	99% Occupied Bandwidth (MHz) Tx 0	99% Occupied Bandwidth (MHz) Tx 1	Limit (MHz)	Results
Low	2422	35.886	36.004	36.1402	36.0865	> 0.5	Compliant
Middle	2437	35.890	36.021	36.1183	36.1090	> 0.5	Compliant
High	2452	35.895	35.893	36.0929	36.0901	> 0.5	Compliant

Please refer to the following plots for detailed test results

802.11b mode

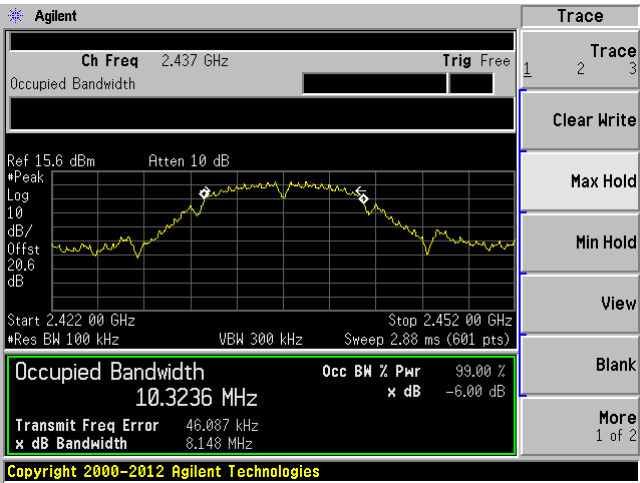
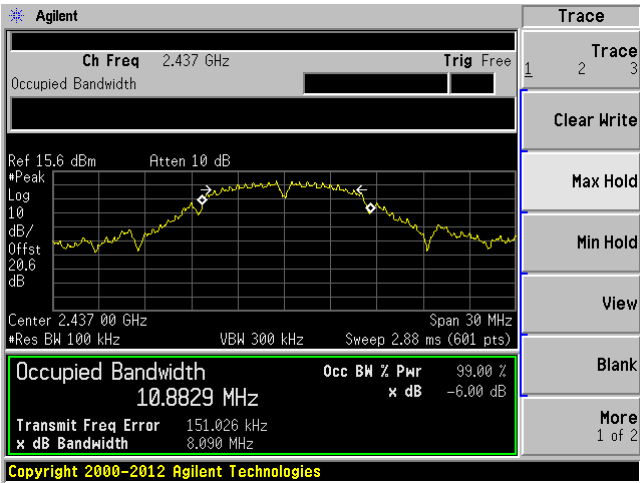
Low channel: 2412 MHz Chain 0

Low channel: 2412 MHz Chain 1

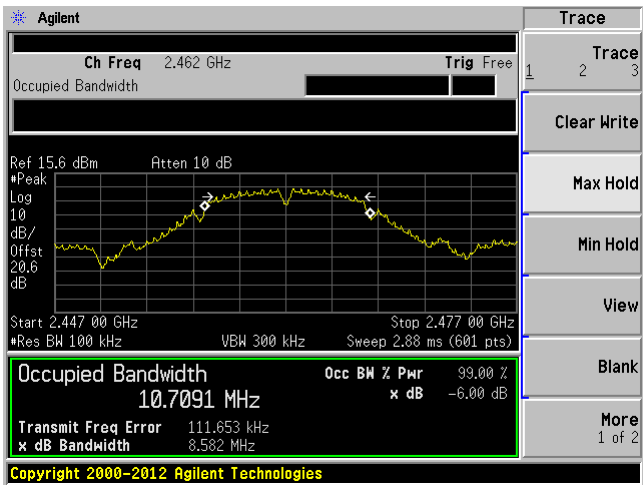


Middle channel: 2437 MHz Chain 0

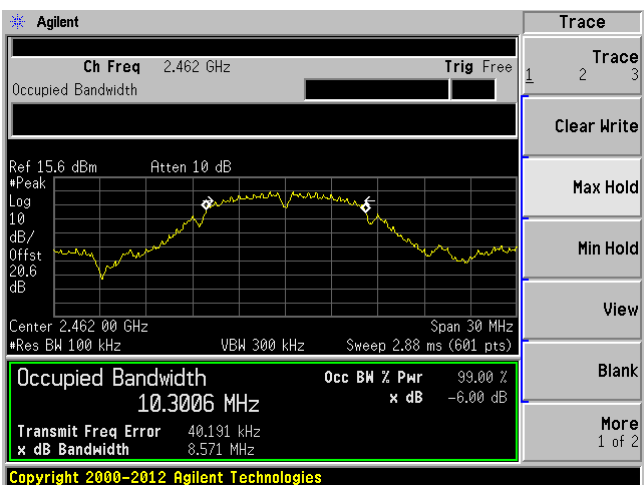
Middle channel: 2437 MHz Chain 1



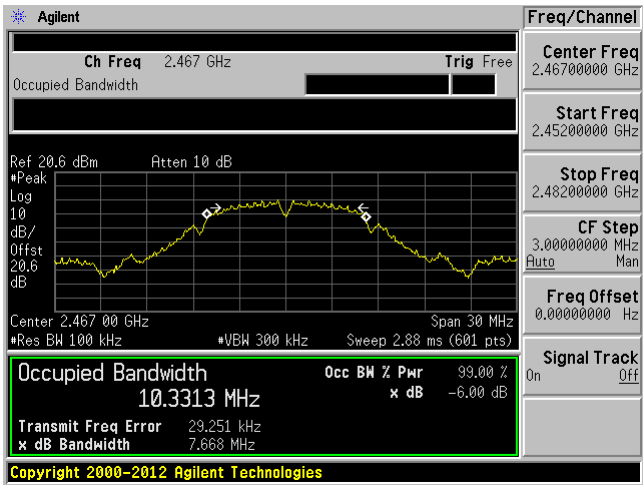
High channel: 2462 MHz Chain 0



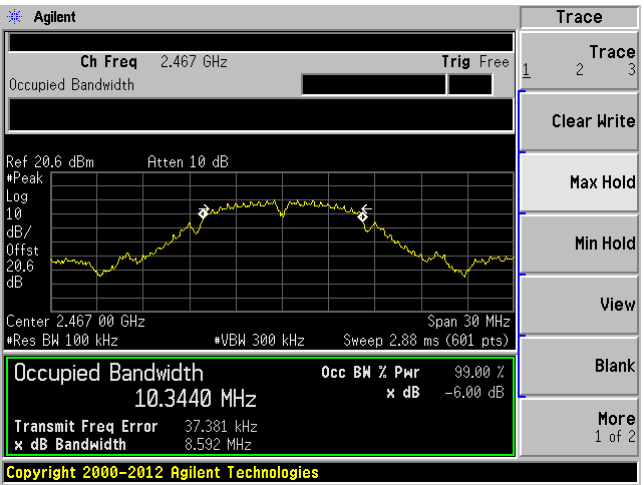
High channel: 2462 MHz Chain 1



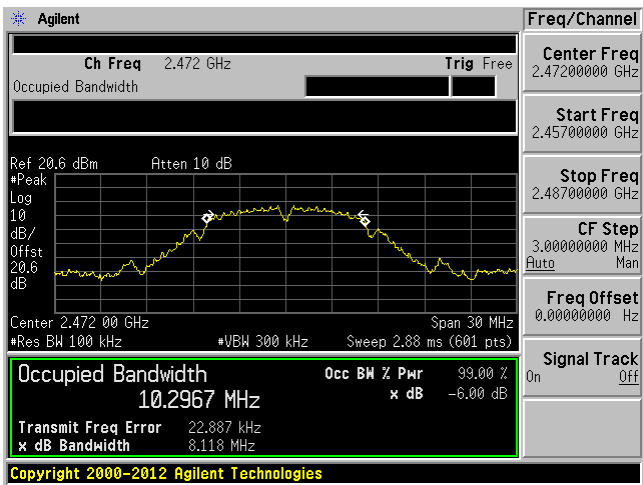
Channel 12: 2467 MHz Chain 0



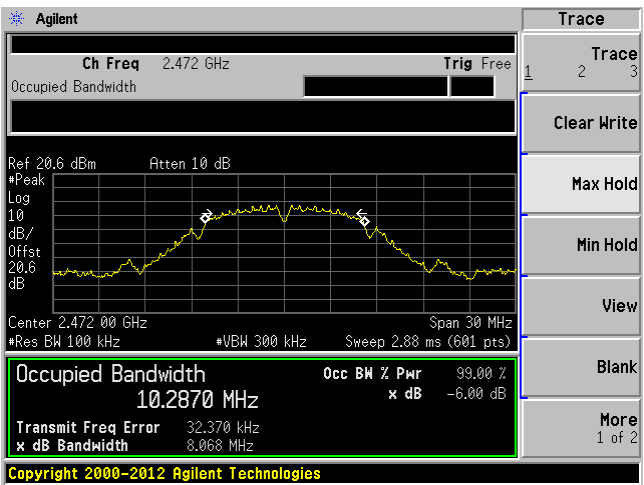
Channel 12: 2467 MHz Chain 1



Channel 13: 2472 MHz Chain 0

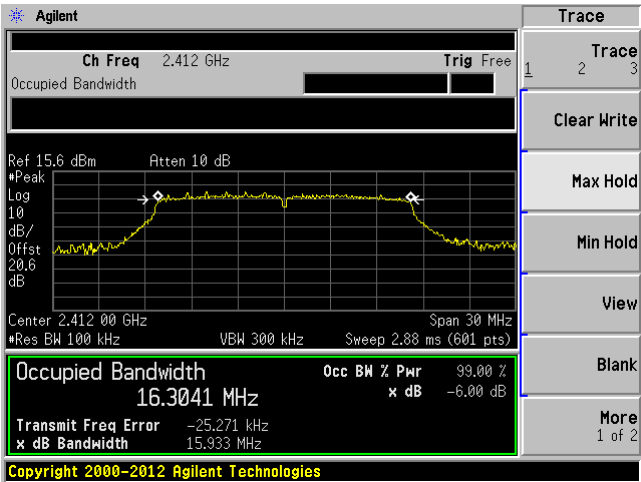


Channel 13: 2472 MHz Chain 1

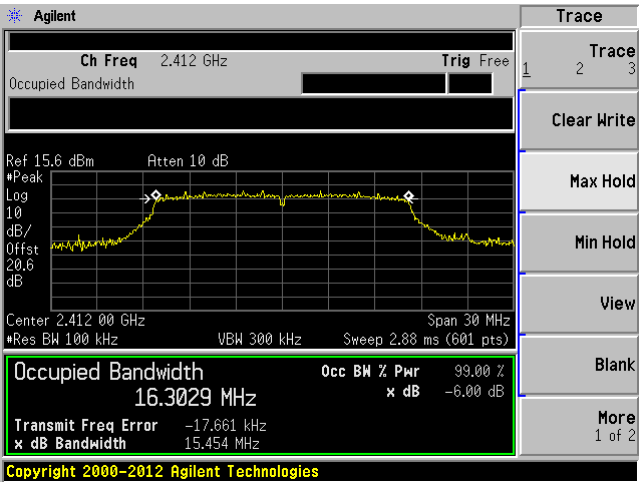


802.11g mode

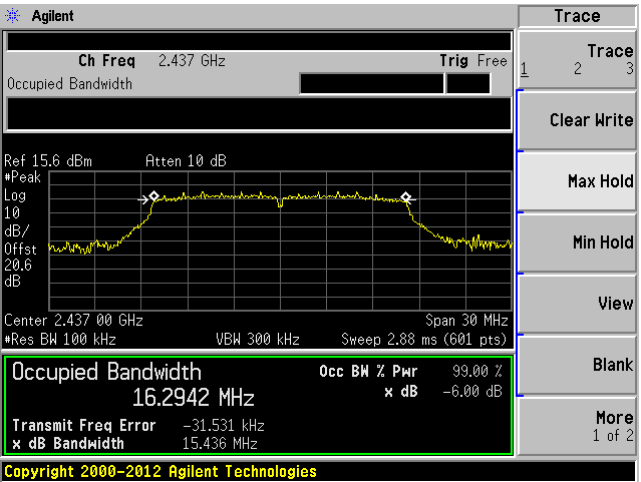
Low channel: 2412 MHz Chain 0



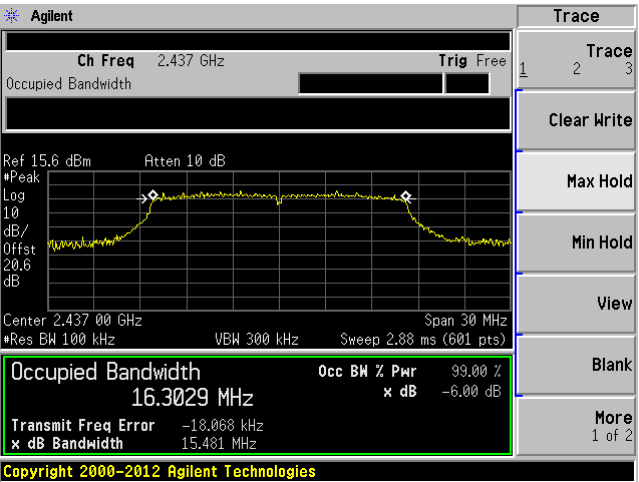
Low channel: 2412 MHz Chain 1



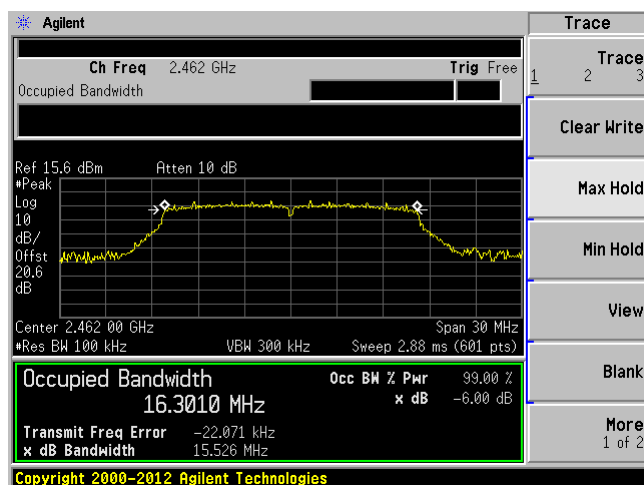
Middle channel: 2437 MHz Chain 0



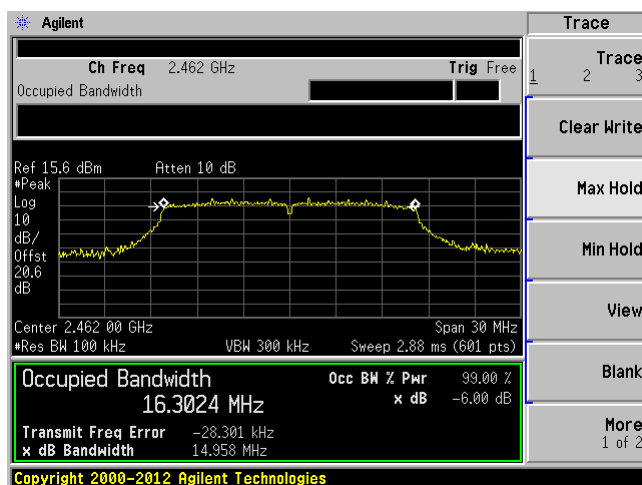
Middle channel: 2437 MHz Chain 1



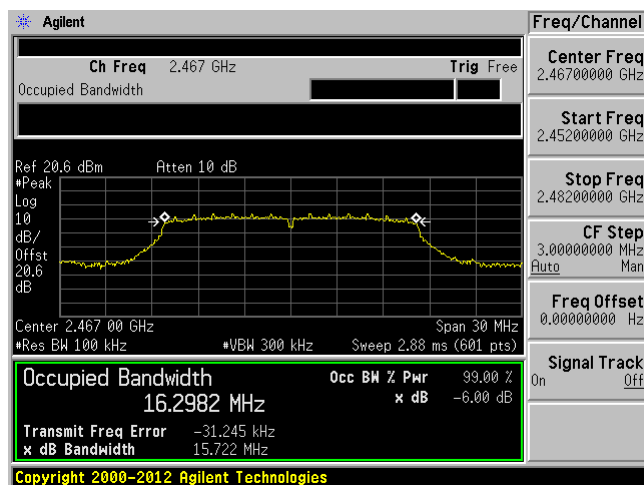
High channel: 2462 MHz Chain 0



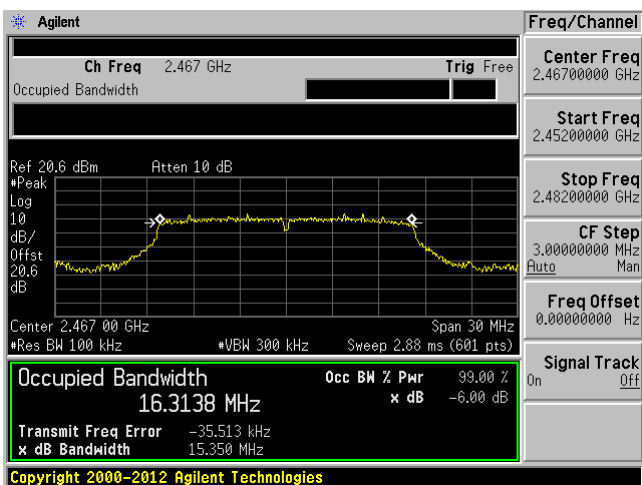
High channel: 2462 MHz Chain 1



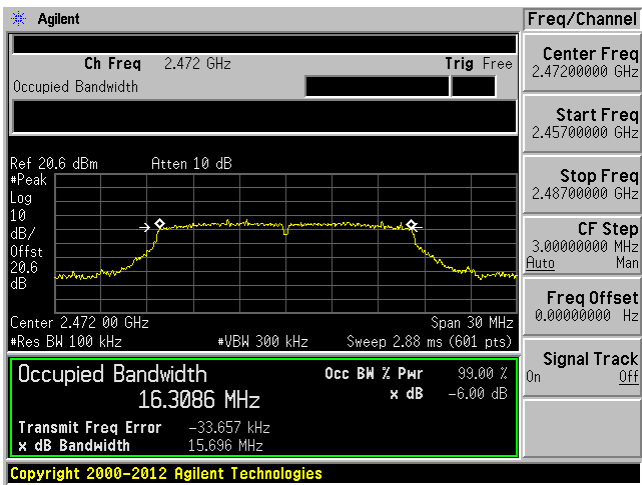
Channel 12: 2467 MHz Chain 0



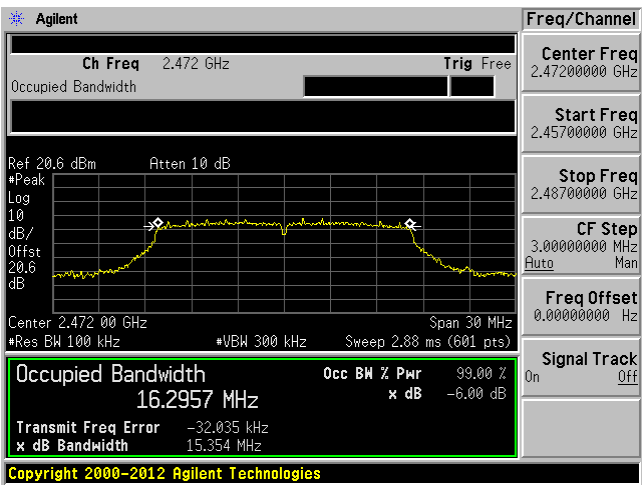
Channel 12: 2467 MHz Chain 1



Channel 13: 2472 MHz Chain 0

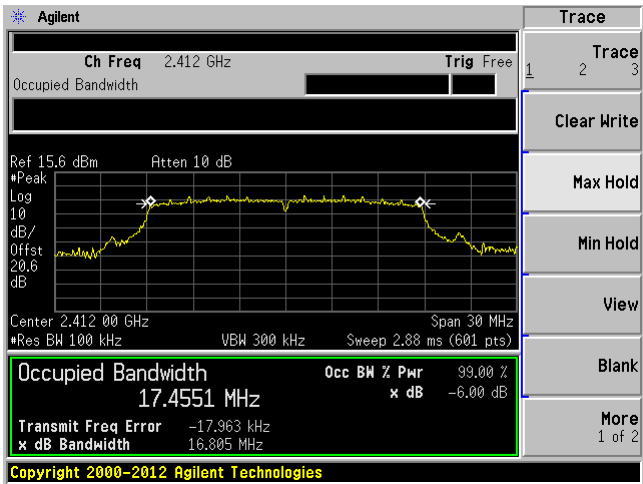


Channel 13: 2472 MHz Chain 1

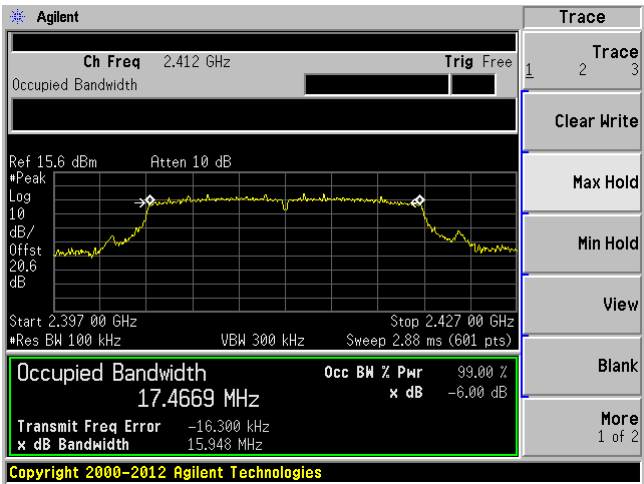


802.11n HT20 mode

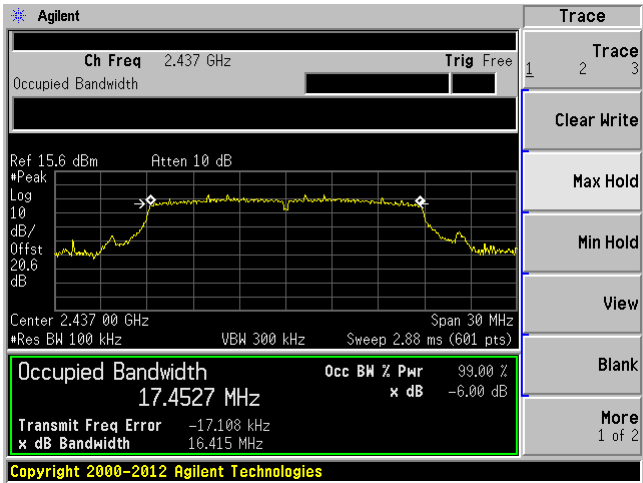
Low channel: 2412 MHz Chain 0



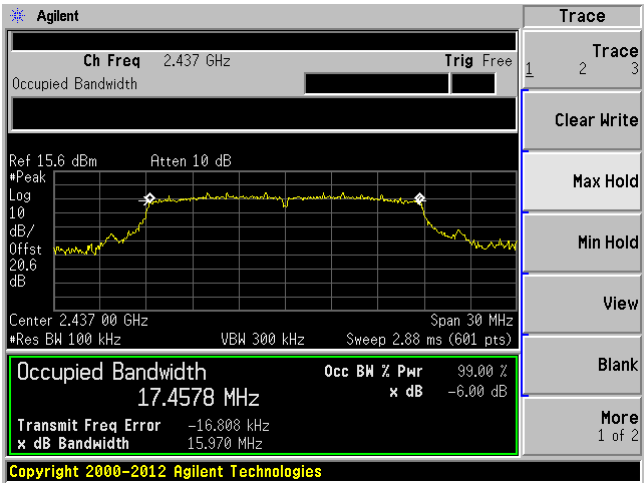
Low channel: 2412 MHz Chain 1



Middle channel: 2437 MHz Chain 0

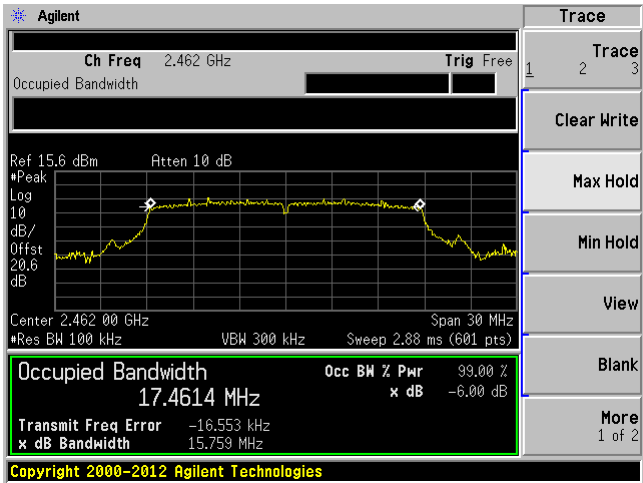


Middle channel: 2437 MHz Chain 1

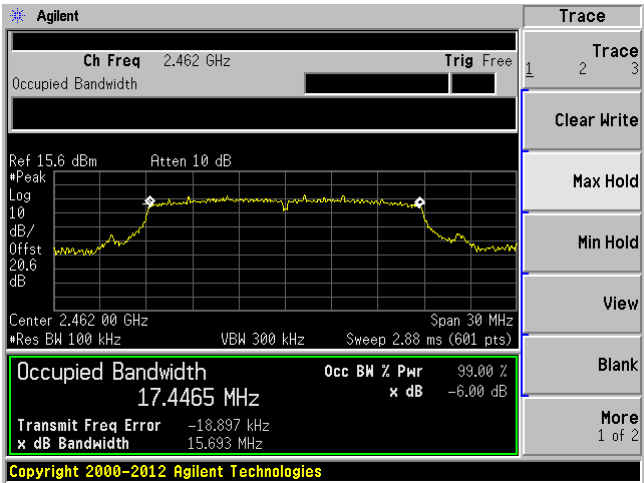




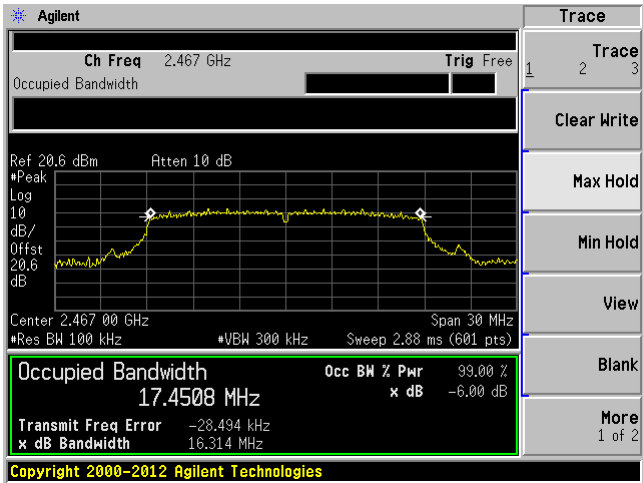
High channel: 2462 MHz Chain 0



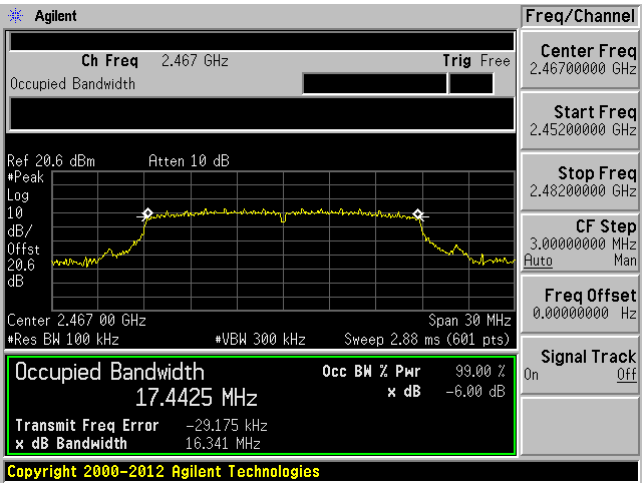
High channel: 2462 MHz Chain 1



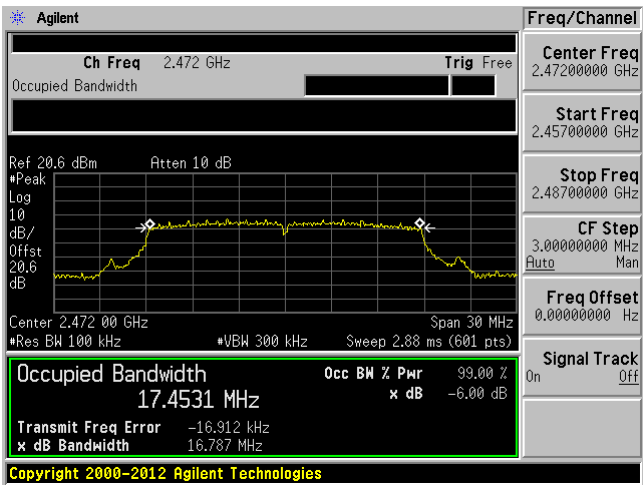
Channel 12: 2467 MHz Chain 0



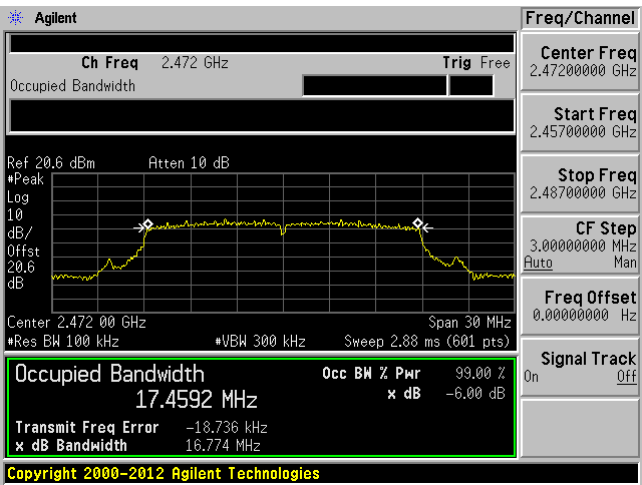
Channel 12: 2467 MHz Chain 1



Channel 13: 2472 MHz Chain 0

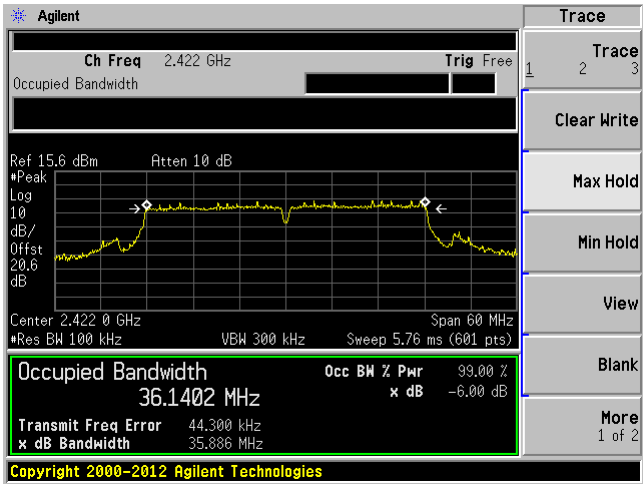


Channel 13: 2472 MHz Chain 1

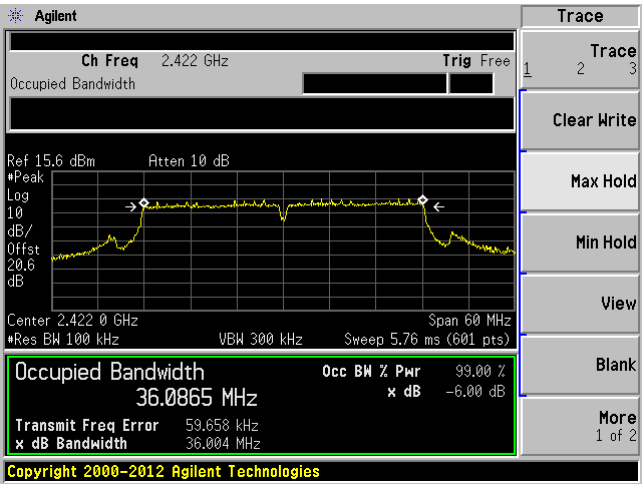


802.11n HT40 mode

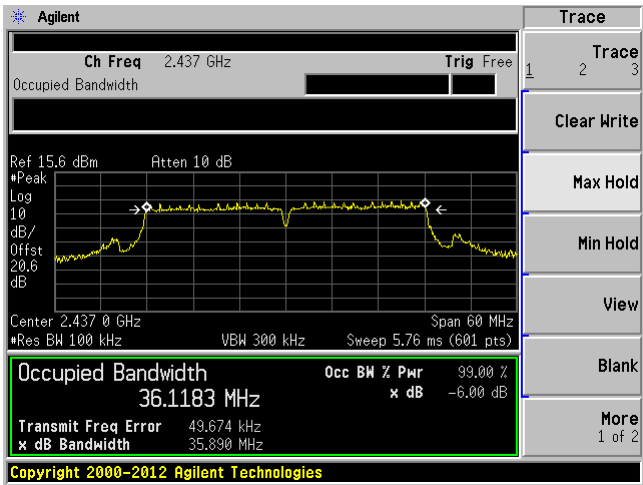
Low channel: 2422 MHz Chain 0



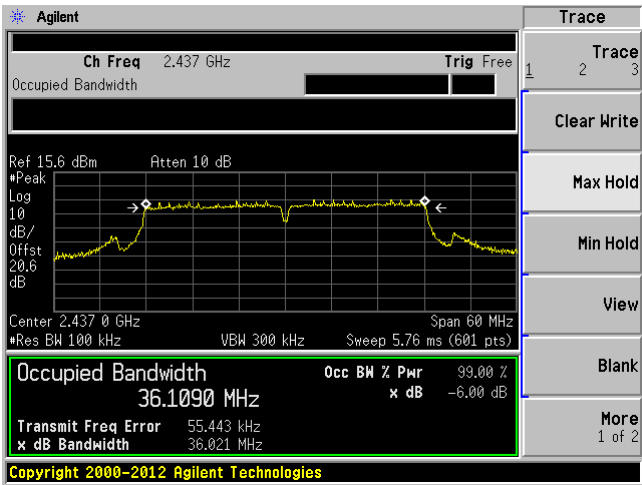
Low channel: 2422 MHz Chain 1



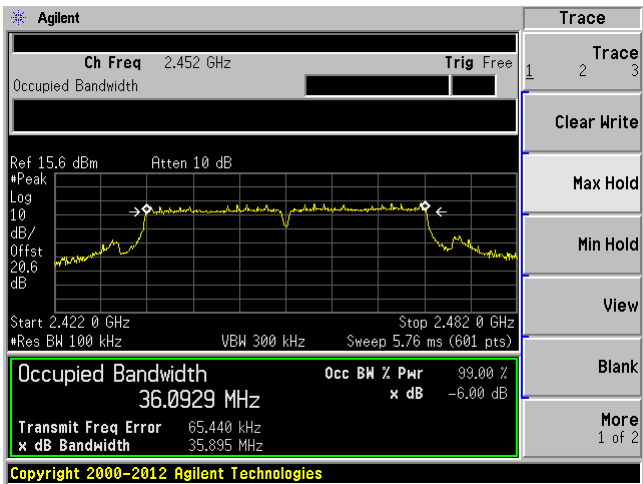
Middle channel: 2437 MHz Chain 0



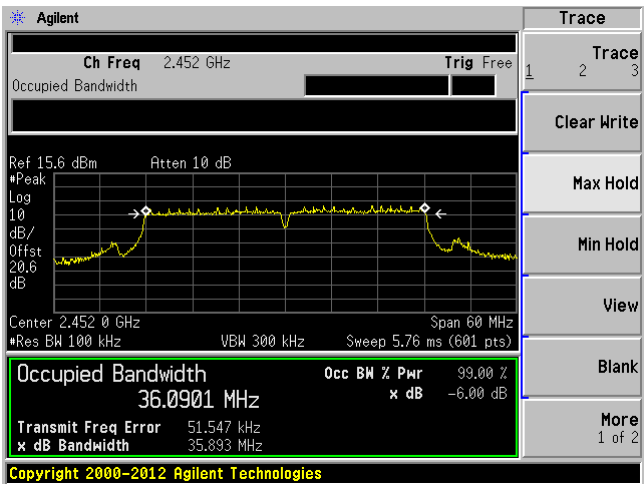
Middle channel: 2437 MHz Chain 1



High channel: 2452 MHz Chain 0



High channel: 2452 MHz Chain 1



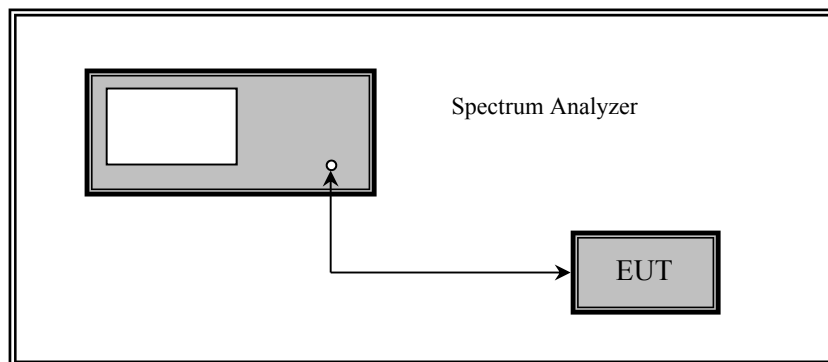
## 10 FCC §15.247(b) & IC RSS-210 §A8.4 – Peak Output Power Measurement

### 10.1 Applicable Standards

According to FCC §15.247(b) and IC RSS-210 §A8.4 (4) for systems using digital modulation in the 902~928 MHz, 2400~2483.5 MHz, and 5725~5850 MHz bands: 1 Watt.

### 10.2 Measurement Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to a spectrum analyzer.
3. Add a correction factor to the display.



### 10.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4446A	US44300386	2013-09-29	1 year

**Statement of Traceability:** *BACL Corp.* attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

### 10.4 Test Environmental Conditions

Temperature:	22-24° C
Relative Humidity:	40-41%
ATM Pressure:	103.1-104.1 KPa

The testing was performed by CIPHER Chu on 2014-05-14 to 2014-05-23 at RF site.

## 10.5 Test Results

### Peak Output Power

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Limit (dBm)
802.11b mode				
Low	2412	14.34	14.92	30
Middle	2437	14.43	15.77	30
High	2462	14.6	15.55	30
CH 12	2467	11.78	13.28	30
CH 13	2472	8.96	11.68	30
802.11g mode				
Low	2412	18.65	19.38	30
Middle	2437	18.84	19.81	30
High	2462	15.4	18.84	30
CH 12	2467	13.02	15.24	30
CH 13	2472	7.68	7.70	30

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Total Power (dBm)	Limit (dBm)
802.11n HT20 mode					
Low	2412	17.46	18.92	21.26	30
Middle	2437	17.67	19.04	21.42	30
High	2462	15.31	17.25	19.40	30
CH 12	2467	14.13	14.07	17.11	30
CH 13	2472	7.97	8.00	10.99	30
802.11n HT40 mode					
Low	2422	16.21	17.70	20.03	30
Middle	2437	16.39	17.87	20.20	30
High	2452	12.52	13.79	16.21	30

## Average Output Power

Channel	Frequency (MHz)	Ave TX Chain 0 Power (dBm)	Ave TX Chain 1 Power (dBm)	Limit (dBm)
802.11b mode				
Low	2412	11.45	12.63	30
Middle	2437	11.73	12.88	30
High	2462	11.56	12.67	30
CH 12	2467	8.89	10.36	30
CH 13	2472	6.08	8.79	30
802.11g mode				
Low	2412	10.79	11.48	30
Middle	2437	10.75	11.92	30
High	2462	7.84	10.97	30
CH 12	2467	5.05	7.27	30
CH 13	2472	-0.26	-0.25	30

Channel	Frequency (MHz)	Ave TX Chain 0 Power (dBm)	Ave TX Chain 1 Power (dBm)	Ave Total Power (dBm)	Limit (dBm)
802.11n HT20 mode					
Low	2412	9.43	10.94	13.26	30
Middle	2437	9.63	11.20	13.50	30
High	2462	7.32	9.12	11.32	30
CH 12	2467	5.44	5.42	8.44	30
CH 13	2472	-0.70	-0.69	2.32	30
802.11n HT40 mode					
Low	2422	8.07	9.57	11.89	30
Middle	2437	8.09	9.70	11.98	30
High	2452	4.50	5.99	8.32	30

## 11 FCC §15.247(d) & IC RSS-210 §A8.5 – 100 kHz Bandwidth of Band Edges

### 11.1 Applicable Standards

According to FCC §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum 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. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emissions limits specified in §15.209(a) see §15.205(c).

According to IC Rss-210 §A8.5, in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required.

### 11.2 Measurement Procedure

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

### 11.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4446A	US44300386	2013-09-29	1 year

**Statement of Traceability:** *BACL Corp.* attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

### 11.4 Test Environmental Conditions

<b>Temperature:</b>	22-24° C
<b>Relative Humidity:</b>	40-41%
<b>ATM Pressure:</b>	103.1-104.1 KPa

*The testing was performed by Cipher Chu on 2014-05-14 to 2014-05-23 at RF site.*

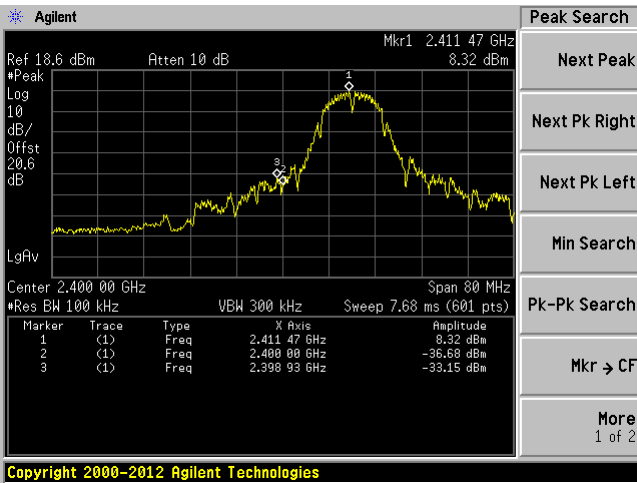


11.5 Test Results

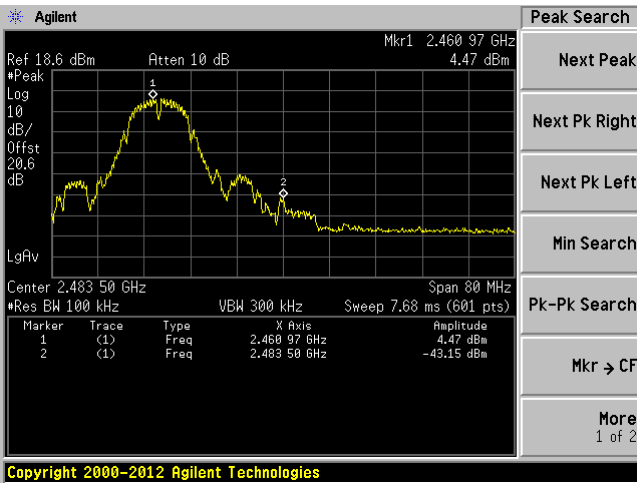
Please refer to following pages for plots of band edge.

802.11b mode

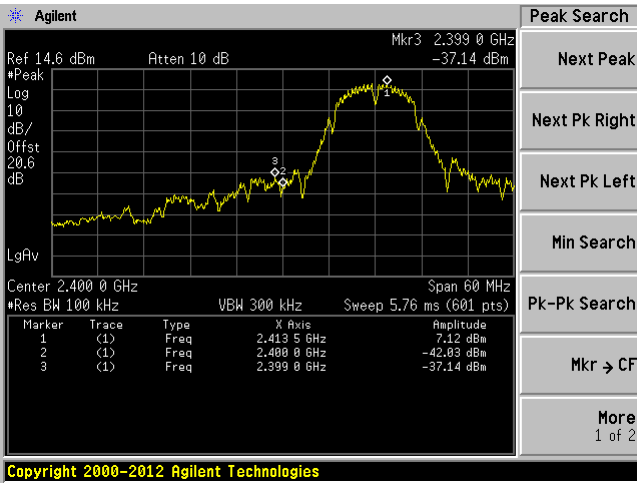
802.11b, Chain 0 Low Band Edge



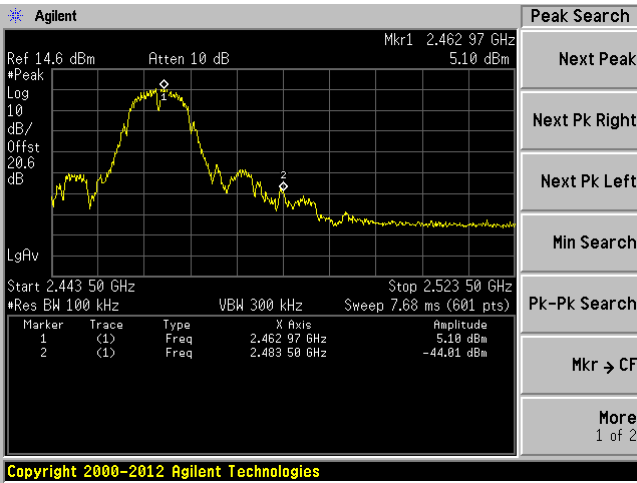
802.11b, Chain 1 Low Band Edge



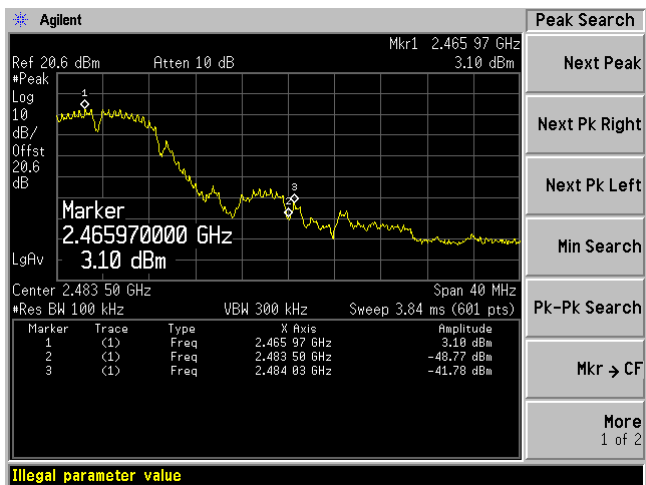
802.11b, Chain 0 High Band Edge



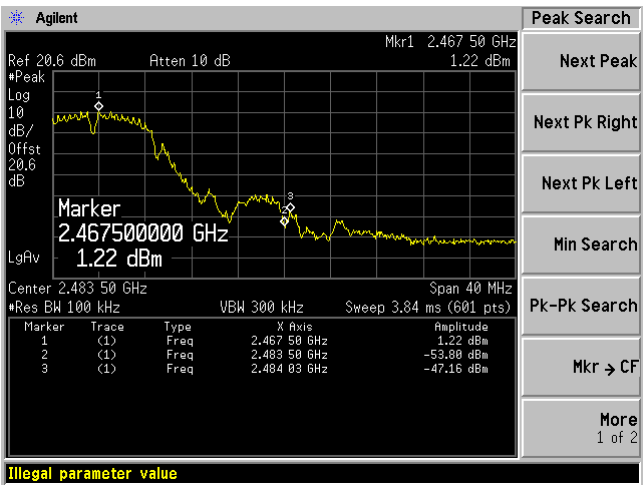
802.11b, Chain 1 High Band Edge



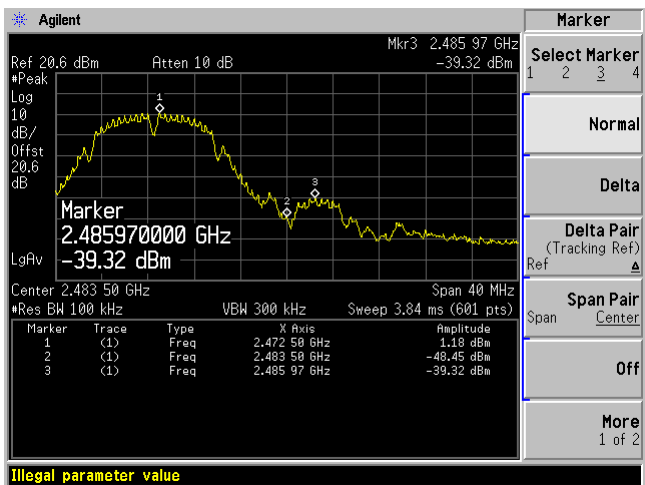
802.11b, Chain 0 channel 12 Band Edge



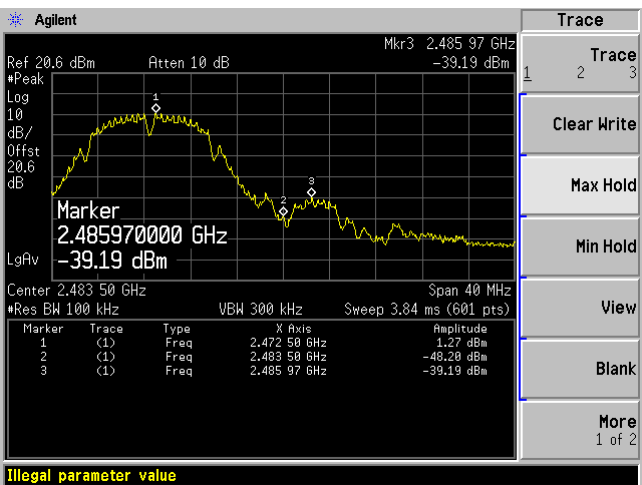
802.11b, Chain 1 channel 12 Band Edge



802.11b, Chain 0 channel 13 Band Edge

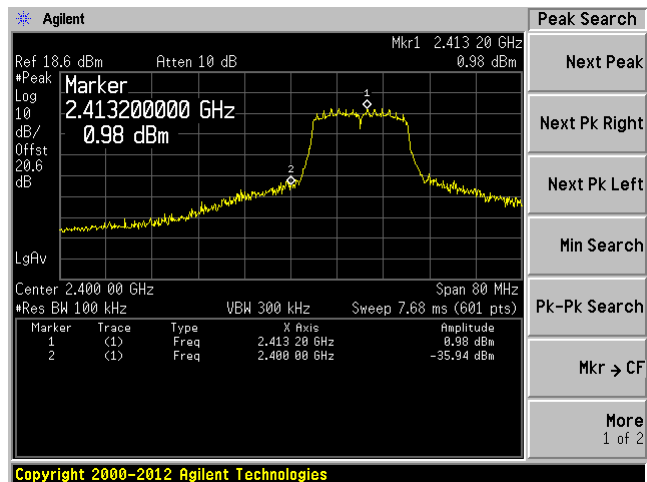


802.11b, Chain 1 channel 13 Band Edge

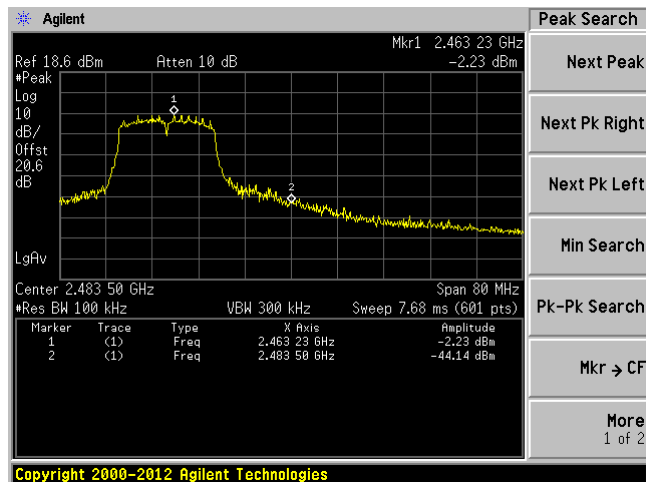


## 802.11g mode

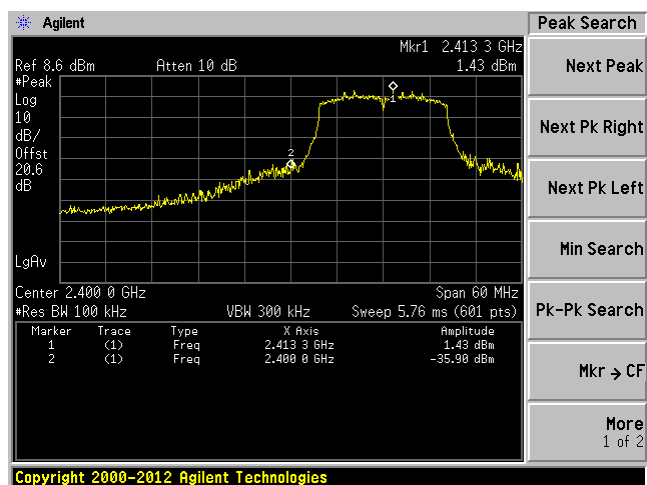
802.11g, Chain 0 Low Band Edge



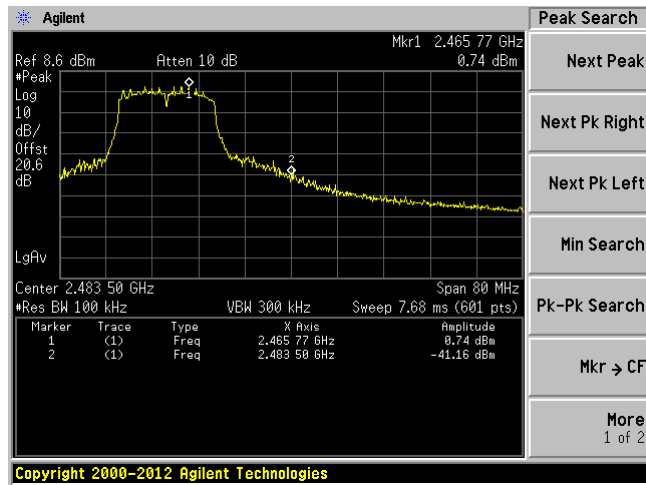
802.11g, Chain 1 Low Band Edge



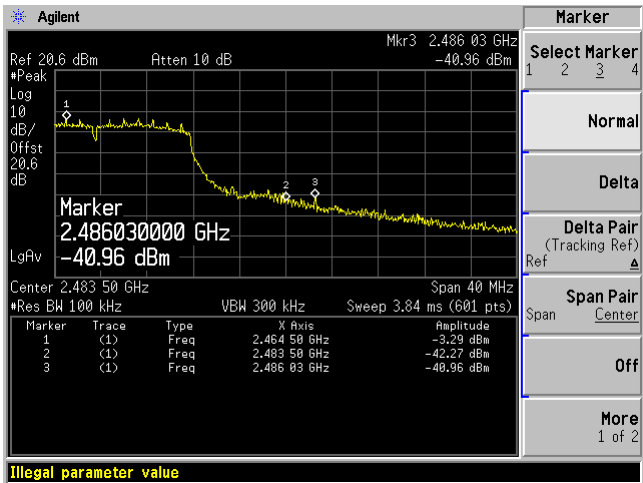
802.11g, Chain 0 High Band Edge



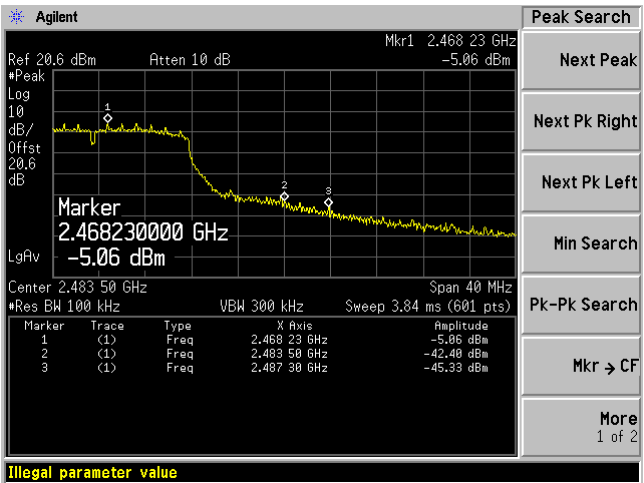
802.11g, Chain 1 High Band Edge



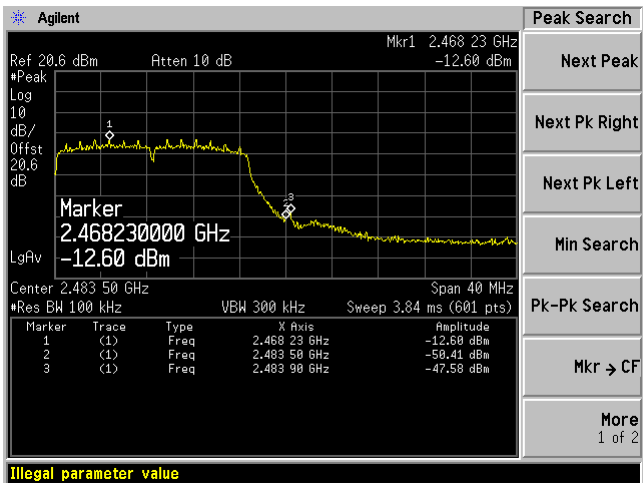
802.11g, Chain 0 channel 12 Band Edge



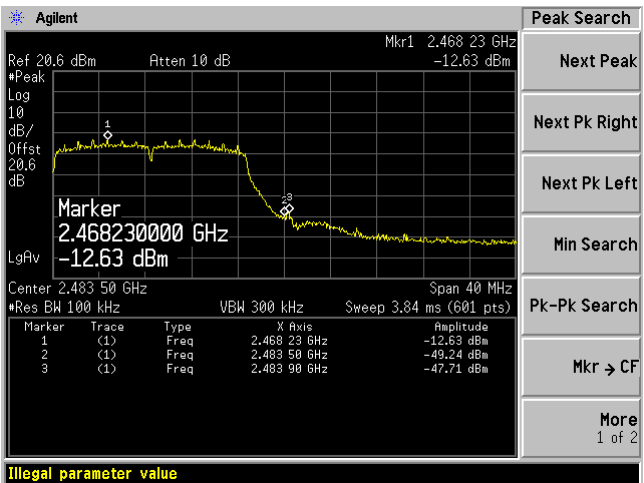
802.11g, Chain 1 channel 12 Band Edge



802.11g, Chain 0 channel 13 Band Edge

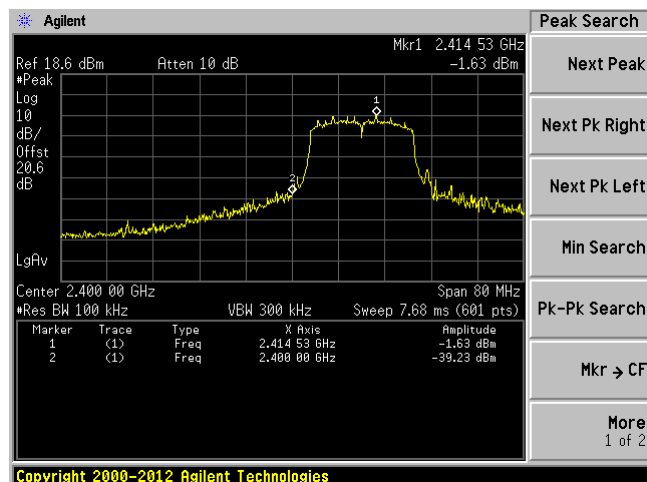


802.11g, Chain 1 channel 13 Band Edge

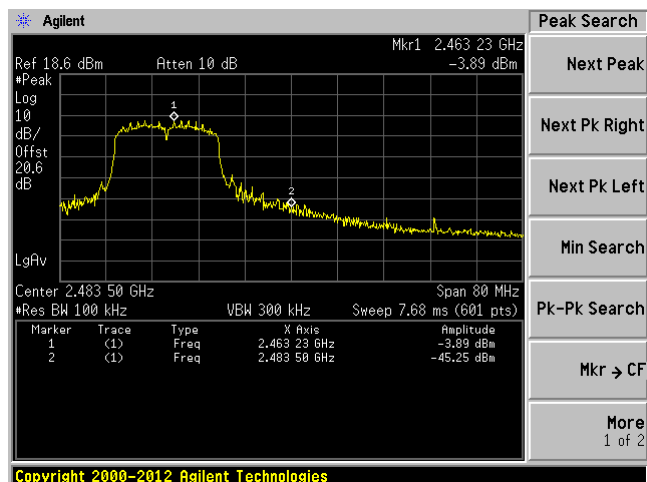


**802.11n HT20 mode**

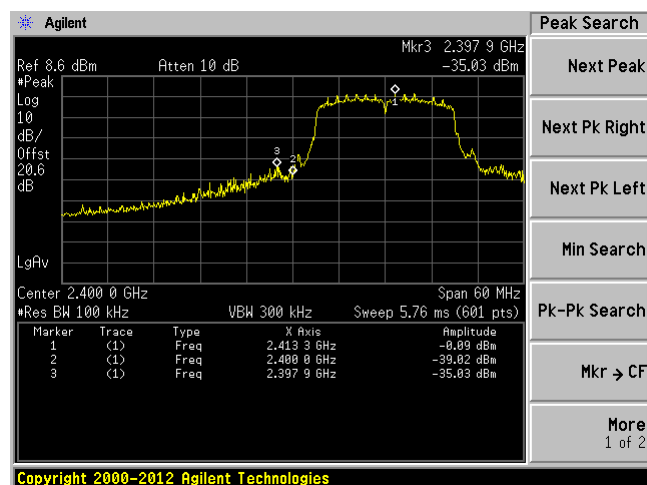
802.11n HT20, Chain 0 Low Band Edge



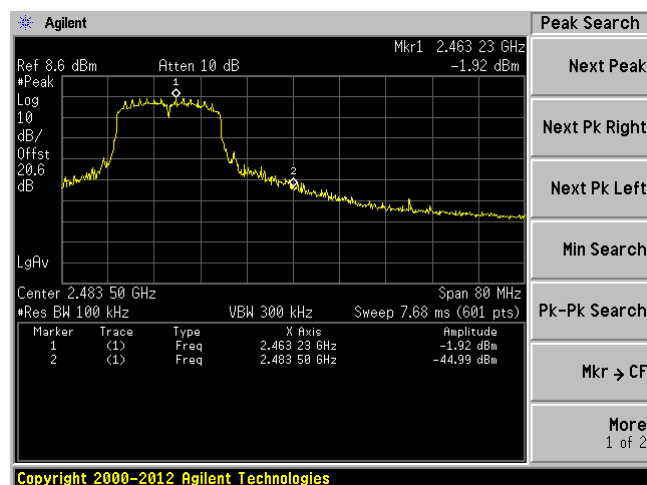
802.11n HT20, Chain 1 Low Band Edge



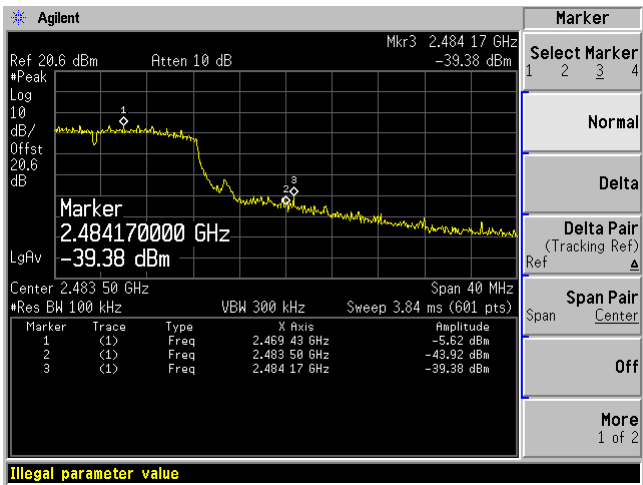
802.11n HT20, Chain 0 High Band Edge



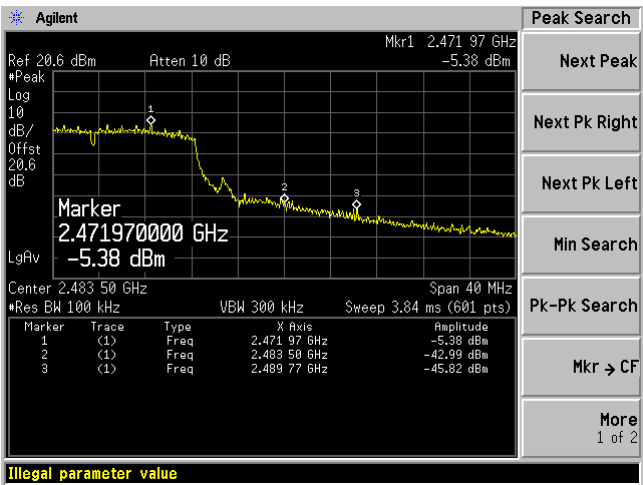
802.11n HT20, Chain 1 High Band Edge



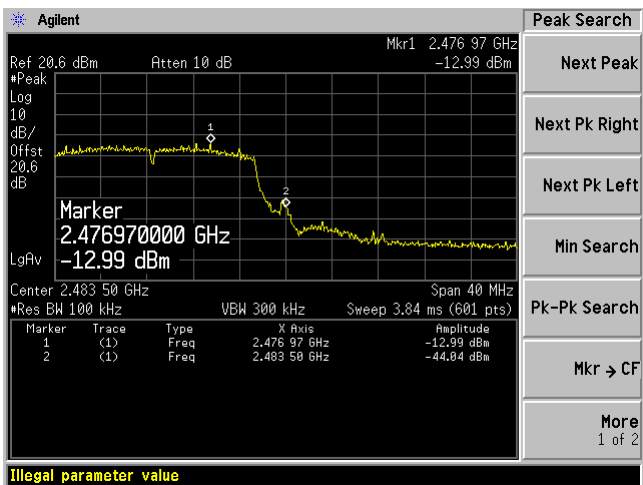
802.11n HT20, Chain 0 channel 12 Band Edge



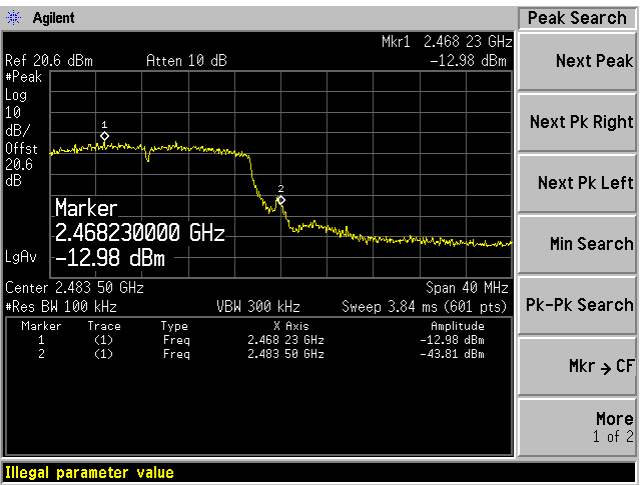
802.11n HT20, Chain 1 channel 12 Band Edge



802.11n HT20, Chain 0 channel 13 Band Edge

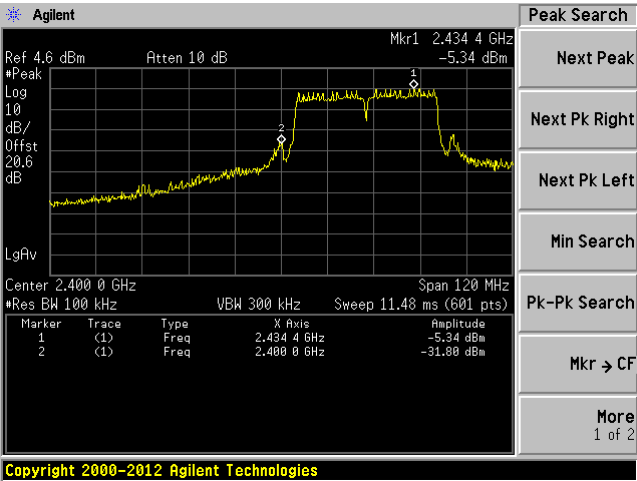


802.11n HT20, Chain 1 channel 13 Band Edge

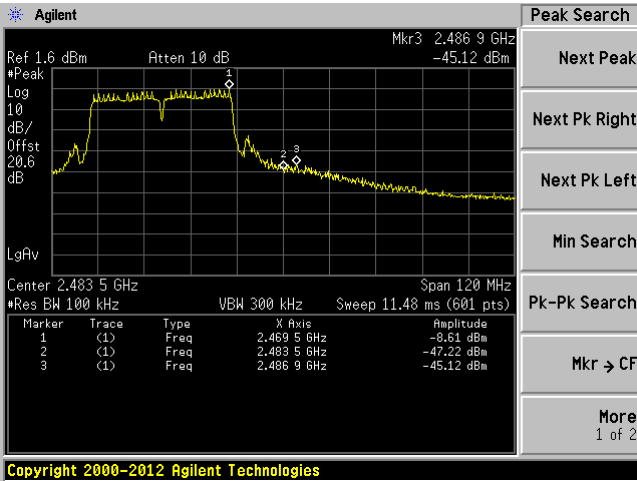


802.11n HT40 mode

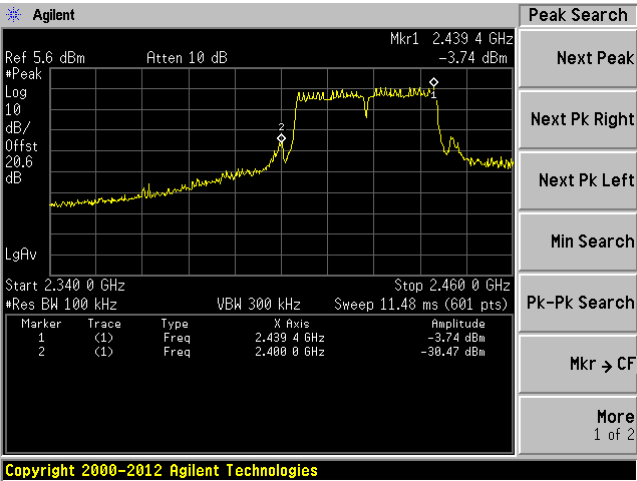
802.11n HT40, Chain 0 Low Band Edge



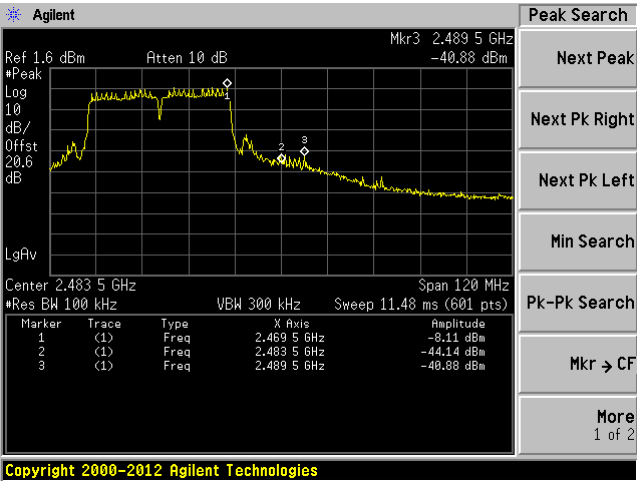
802.11n HT40, Chain 1 Low Band Edge



802.11n HT40, Chain 0 High Band Edge



802.11n HT40, Chain 1 High Band Edge



## 12 FCC §15.247(e) & IC RSS-210 §A8.2 (b) – Power Spectral Density

### 12.1 Applicable Standards

According to FCC §15.247(e) and RSS-210 §A8.2 (b), 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.

### 12.2 Measurement Procedure

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

### 12.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4446A	US44300386	2013-09-29	1 year

**Statement of Traceability:** *BACL Corp.* attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

### 12.4 Test Environmental Conditions

Temperature:	22-24° C
Relative Humidity:	40-41 %
ATM Pressure:	103.1-104.1 KPa

The testing was performed by Cipher Chu on 2014-05-14 to 2014-05-23 at RF site.



## 12.5 Test Results

### 802.11b mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	MAX PSD (dBm)	Limit (dBm)
Low	2412	-9.54	-7.11	-7.11	8
Middle	2437	-8.99	-6.57	-6.57	8
High	2462	-9.03	-9.16	-9.03	8
12	2467	-10.58	-14.65	-10.58	8
13	2472	-12.63	-16.74	-12.63	8

### 802.11 g mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	MAX PSD (dBm)	Limit (dBm)
Low	2412	-14.91	-13.54	-13.54	8
Middle	2437	-15.08	-12.12	-12.12	8
High	2462	-16.39	-14.84	-14.84	8
12	2467	-16.49	-19.15	-16.49	8
13	2472	-27.17	-26.39	-26.39	8

### 802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)
Low	2412	-13.6	-14.47	-11.00	8
Middle	2437	-15.84	-13.27	-11.36	8
High	2462	-17.27	-16.18	-13.68	8
12	2467	-20.02	-19.14	-16.55	8
13	2472	-27.21	-27.58	-24.38	8

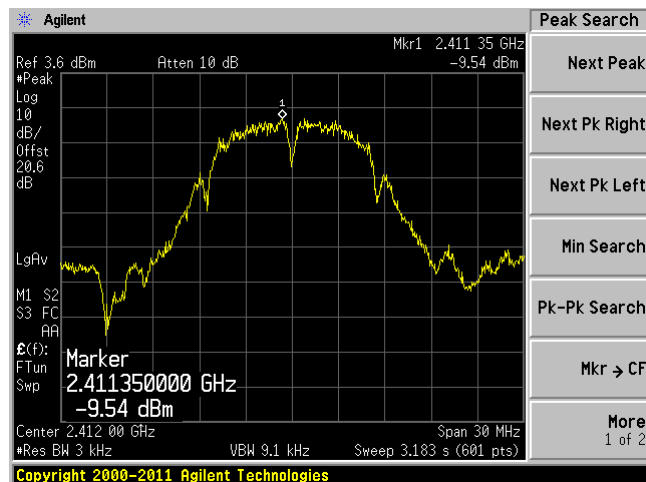
### 802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)
Low	2422	-21.05	-18.7	-16.71	8
Middle	2437	-20.38	-18.15	-16.11	8
High	2452	-23.55	-21.83	-19.60	8

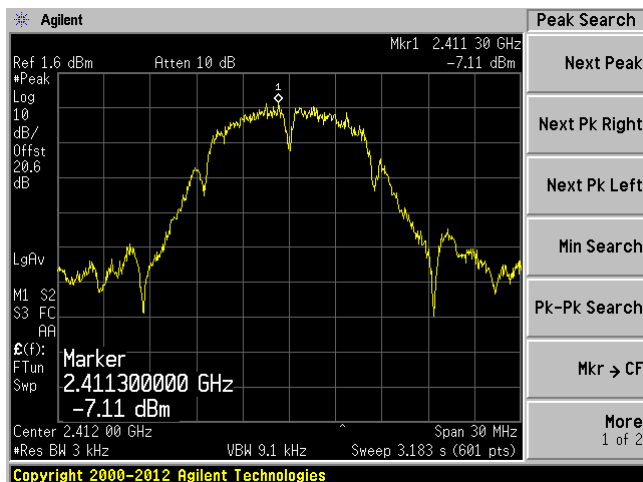
Please refer to the following plots for detailed test results:

## 802.11b mode

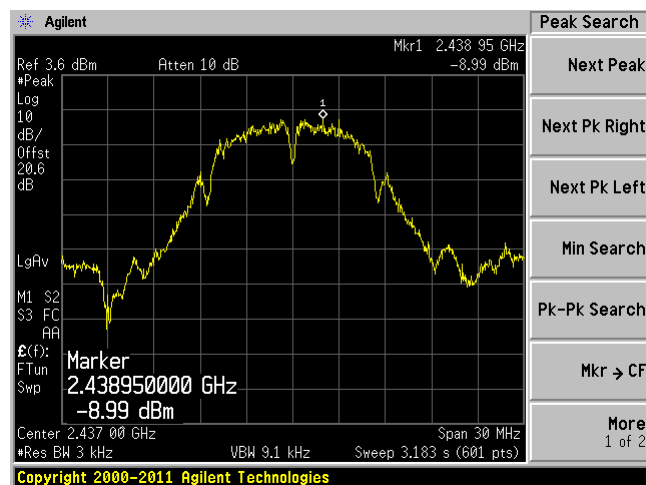
Low channel Chain 0: 2412 MHz



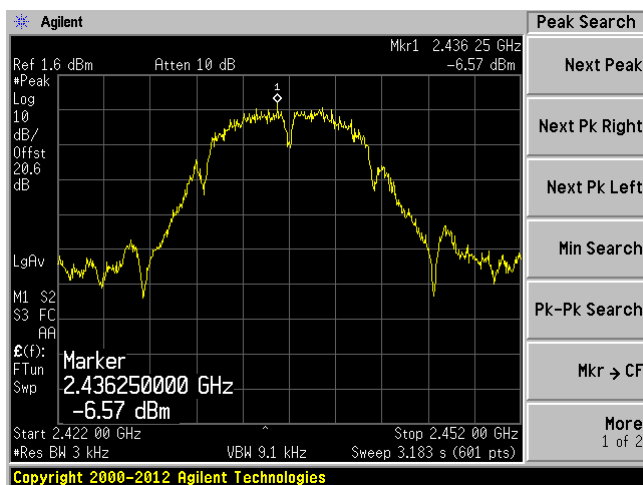
Low channel Chain 1: 2412 MHz



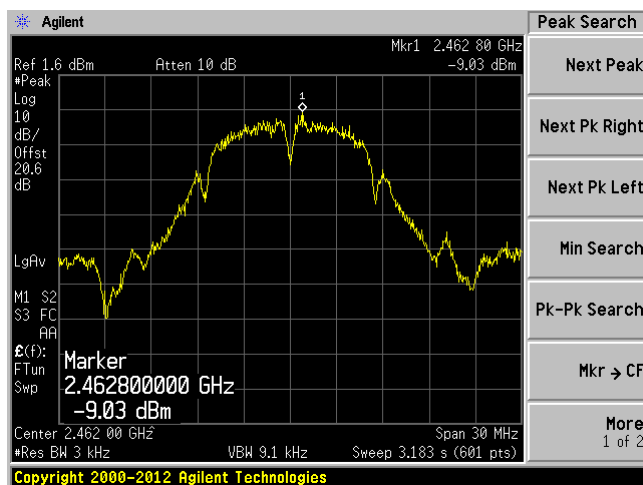
Middle channel Chain 0: 2437 MHz



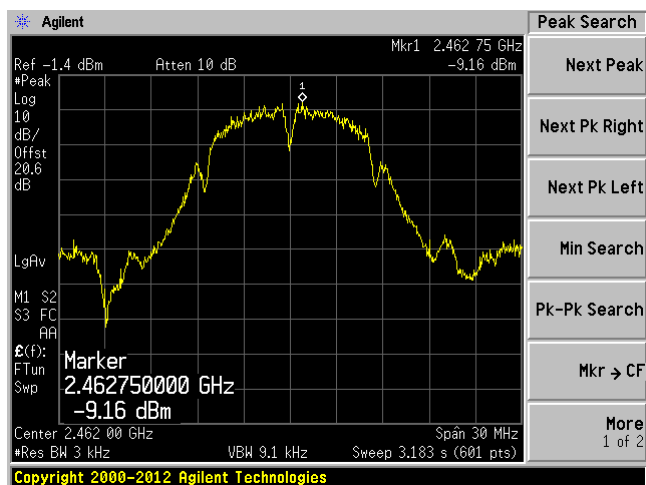
Middle channel Chain 1: 2437 MHz



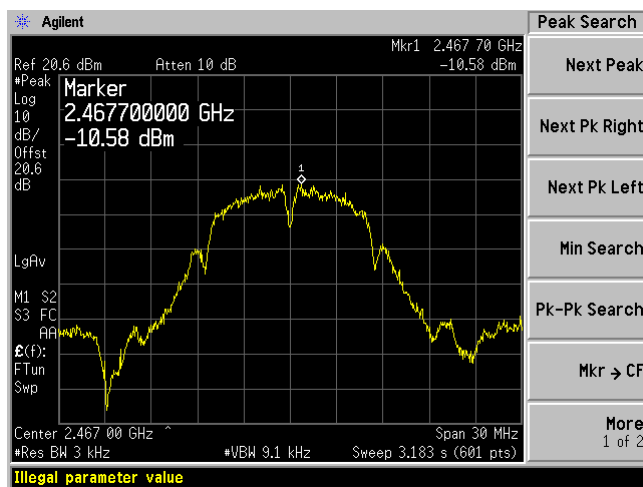
High channel Chain 0: 2462 MHz



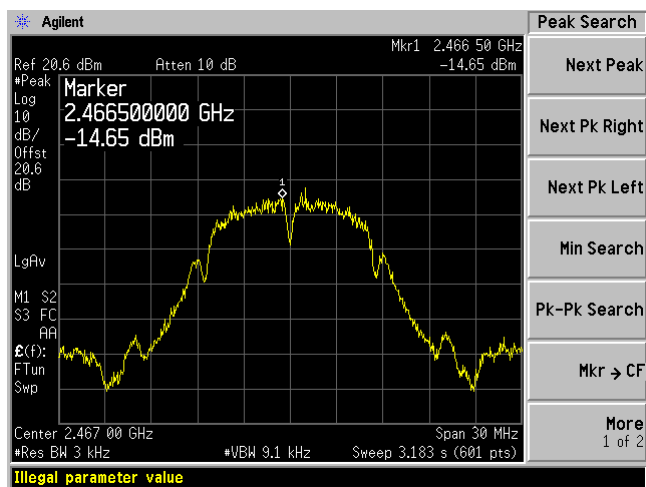
High channel Chain 1: 2462 MHz



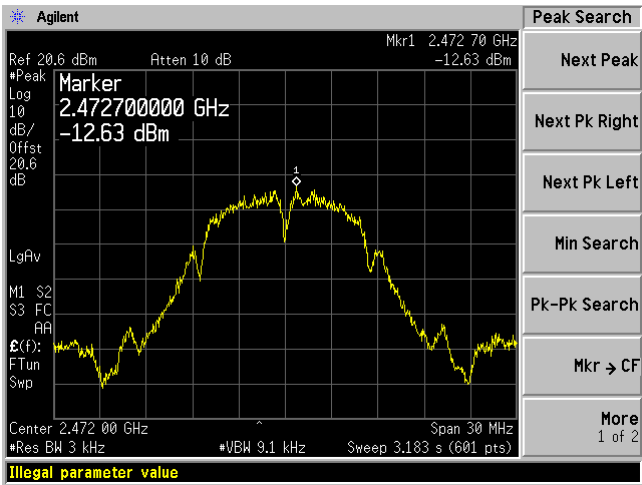
12 Channel Chain 0: 2467 MHz



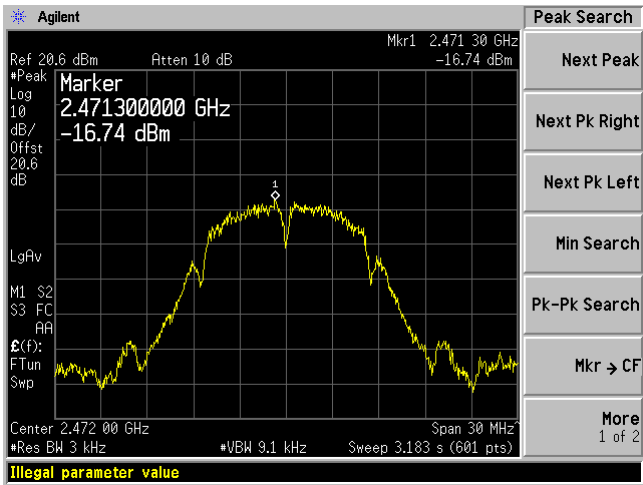
12 channel Chain 1: 2467 MHz



13 channel Chain 0: 2472 MHz

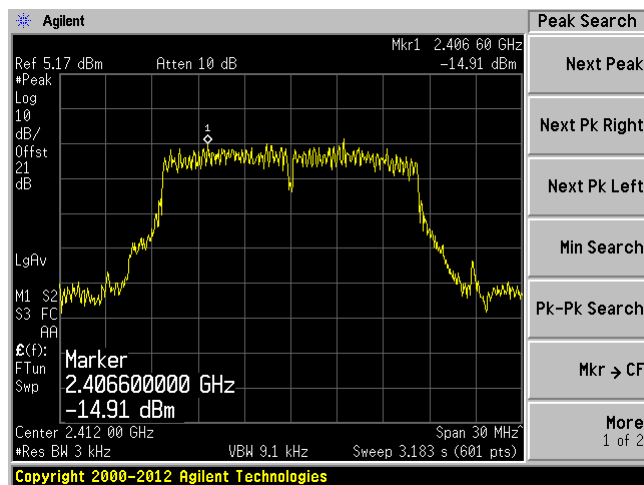


13 channel Chain 1: 2472 MHz

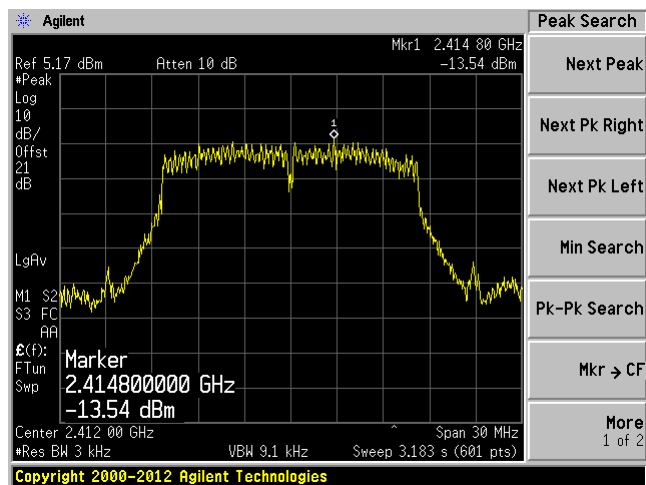


**802.11g mode**

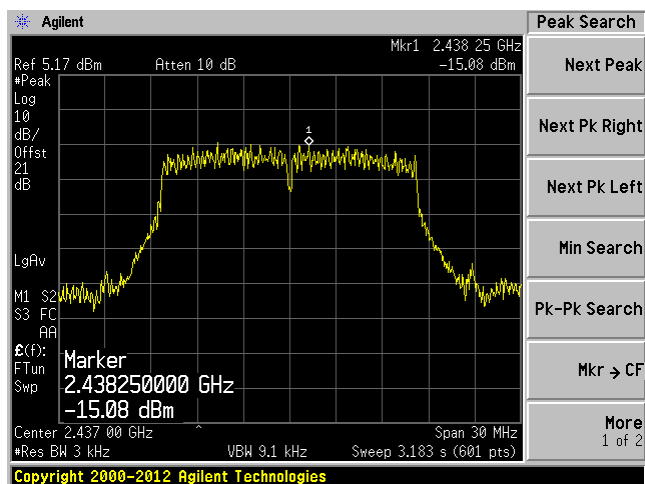
Low channel Chain 0: 2412 MHz



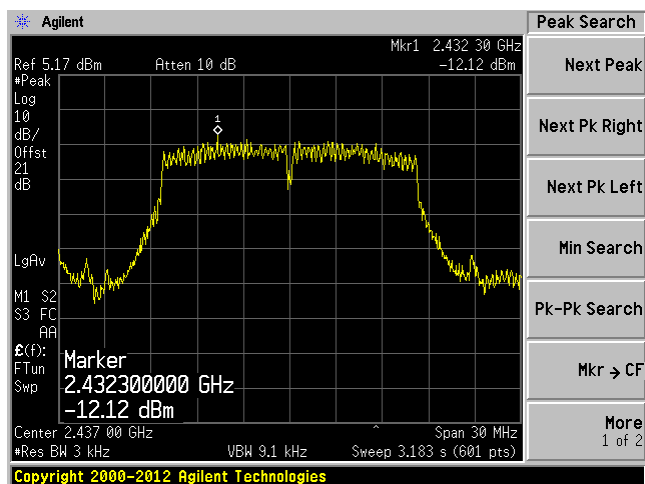
Low channel Chain 1: 2412 MHz



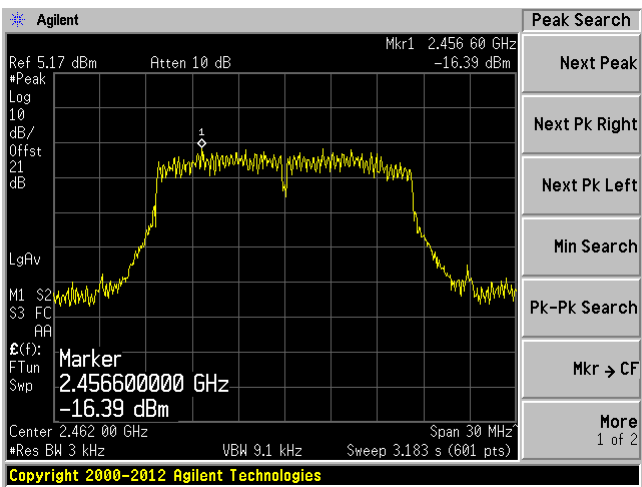
Middle channel Chain 0: 2437 MHz



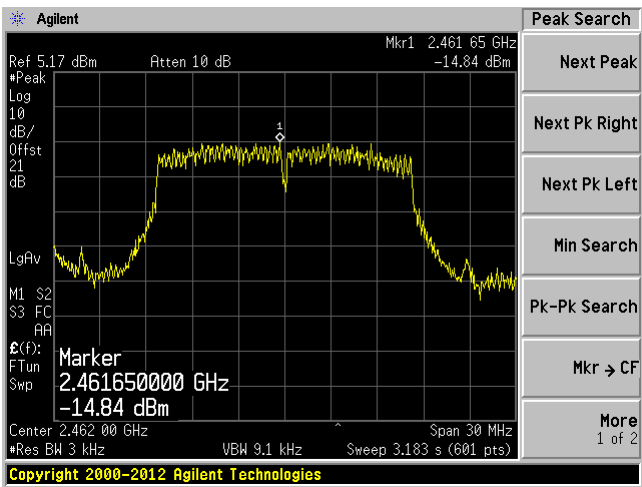
Middle channel Chain 1: 2437 MHz



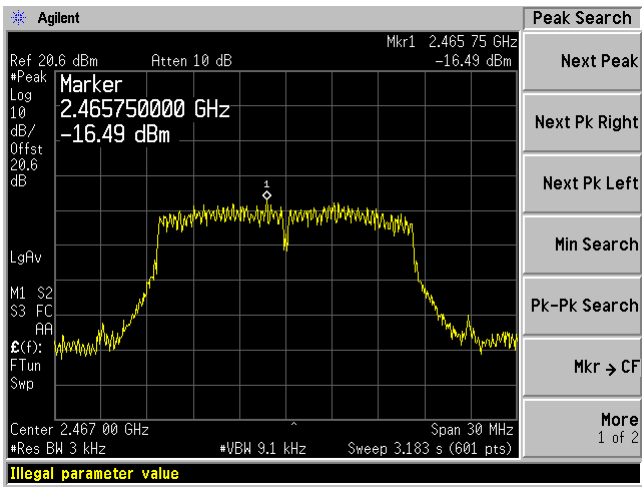
High channel Chain 0: 2462 MHz



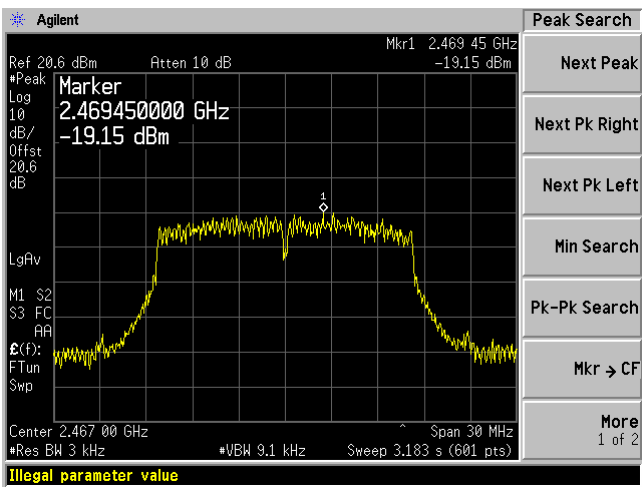
High channel Chain 1: 2462 MHz



12 Channel Chain 0: 2467 MHz

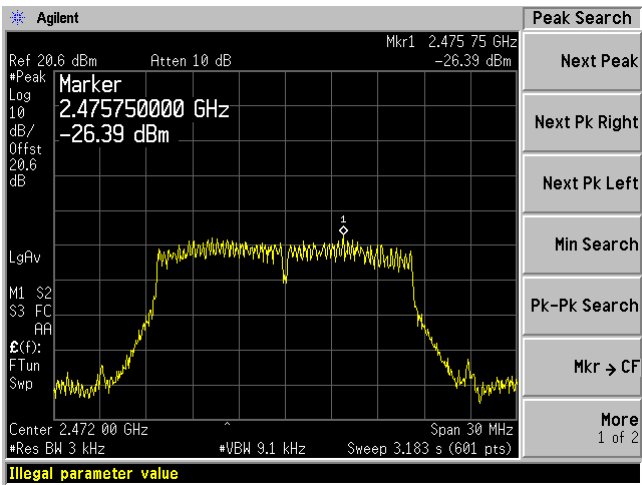
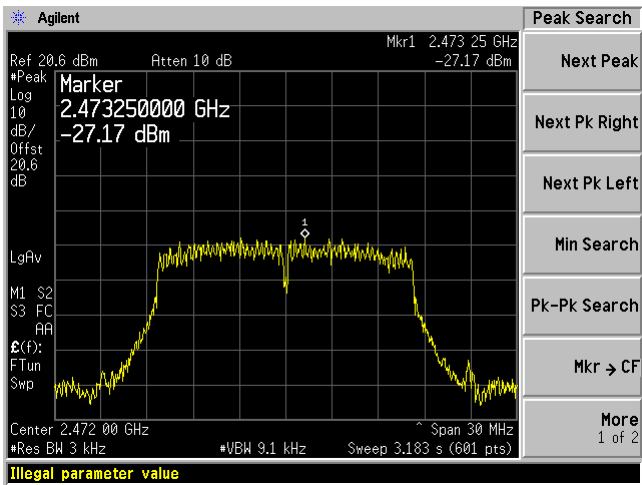


12 channel Chain 1: 2467 MHz



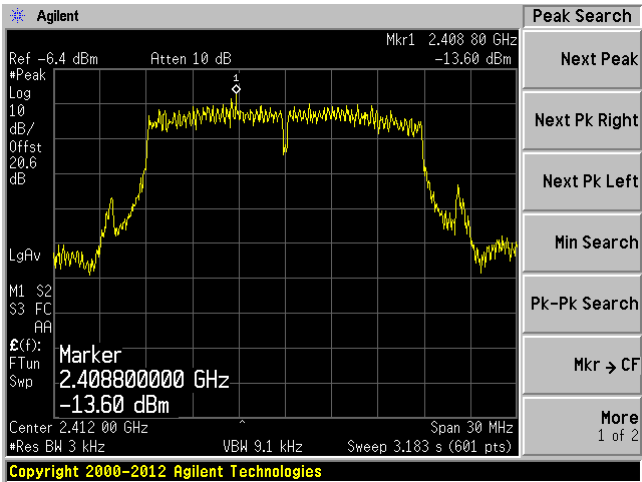
13 Channel Chain 0: 2467 MHz

13 channel Chain 1: 2467 MHz

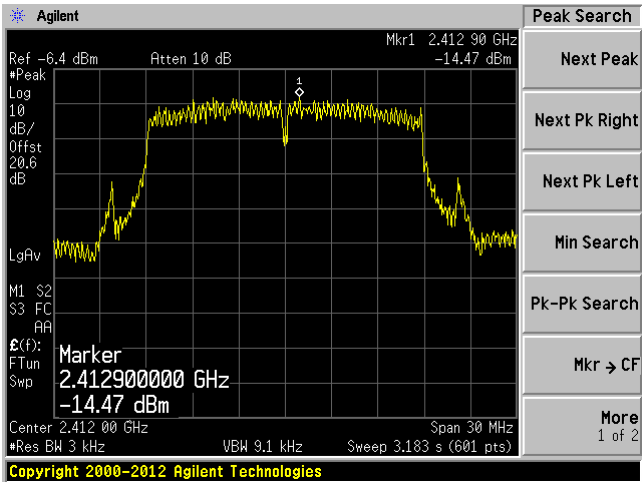


802.11n HT20 mode

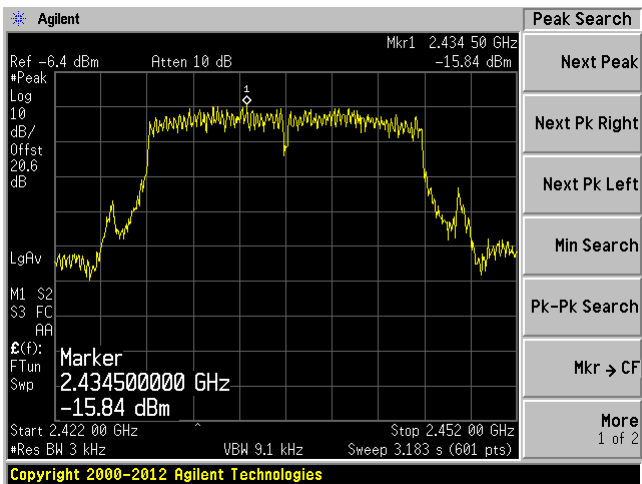
Low channel Chain 0: 2412 MHz



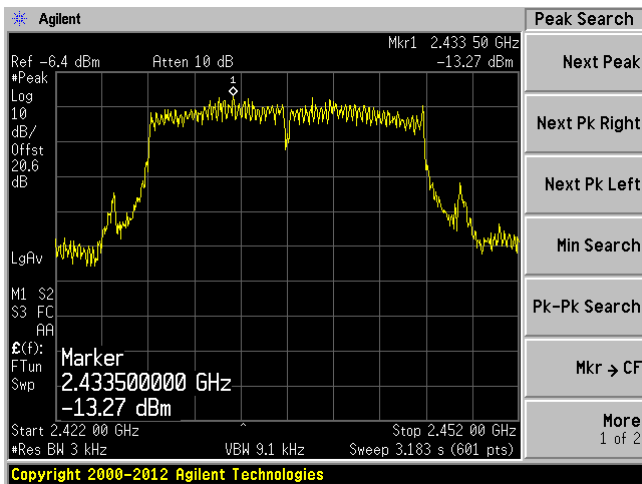
Low channel Chain 1: 2412 MHz



Middle channel Chain 0: 2437 MHz

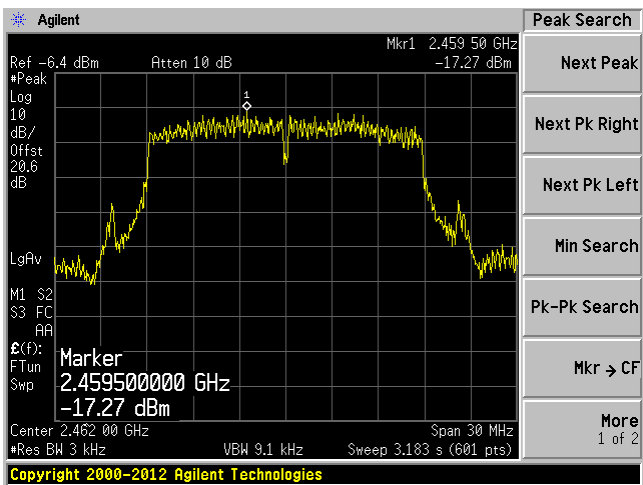


Middle channel Chain 1: 2437 MHz

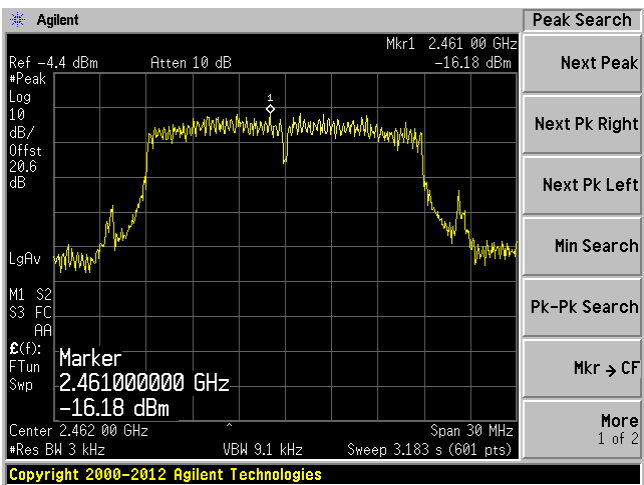




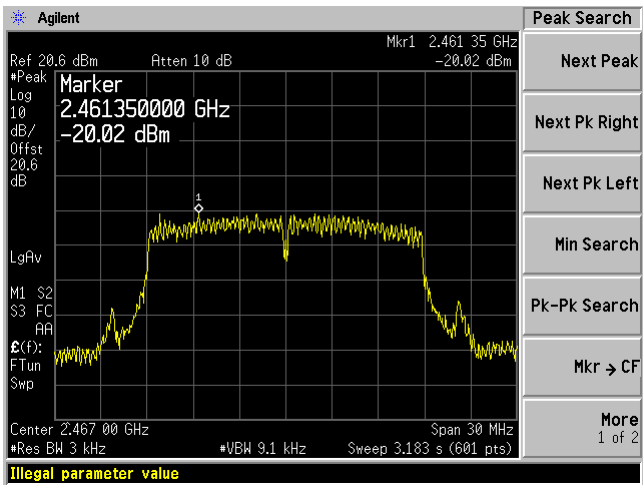
High channel Chain 0: 2462 MHz



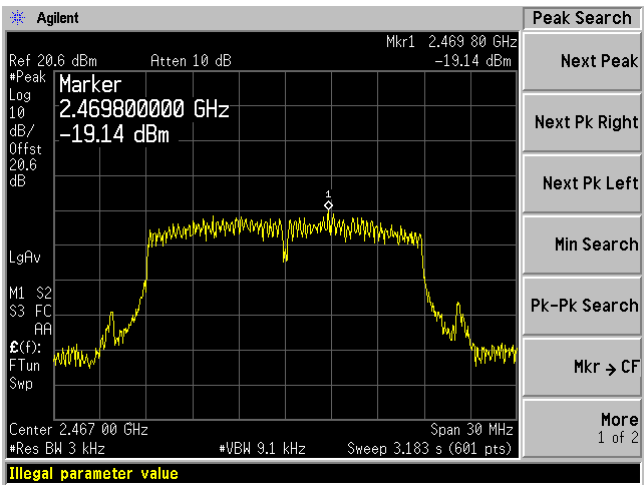
High channel Chain 1: 2462 MHz



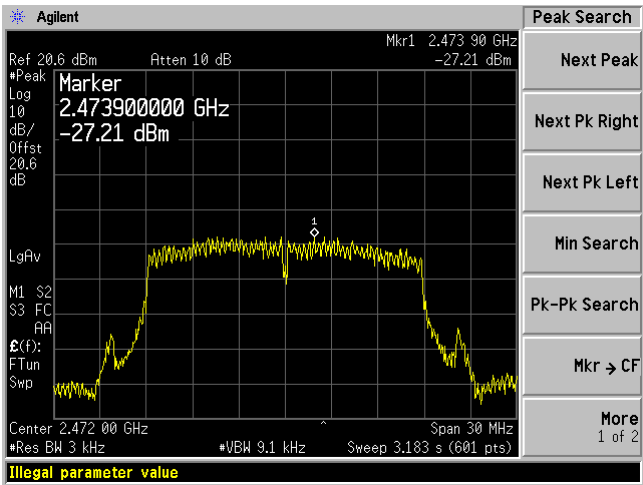
12 Channel Chain 0: 2467 MHz



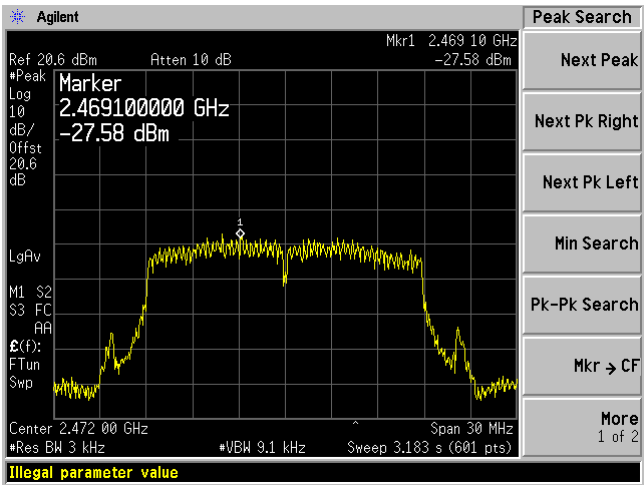
12 channel Chain 1: 2467 MHz



13 Channel Chain 0: 2467 MHz

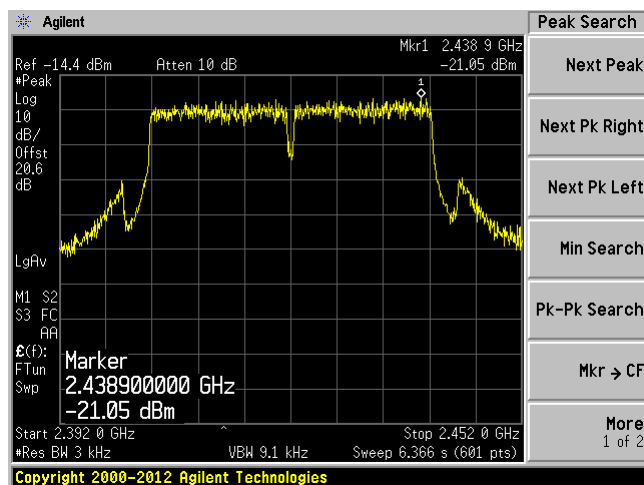


13 channel Chain 1: 2467 MHz

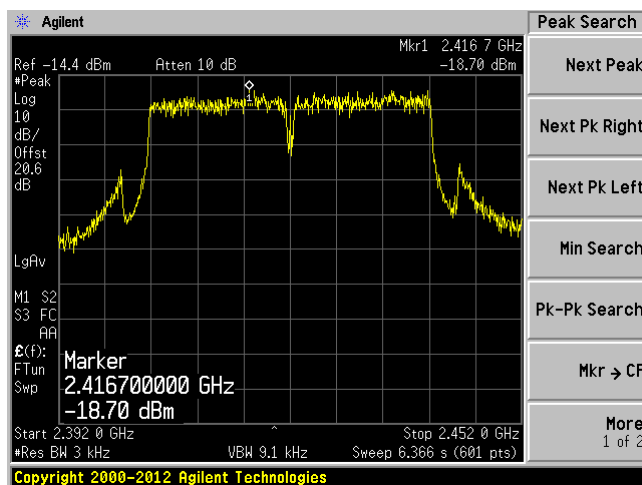


**802.11n HT40 mode**

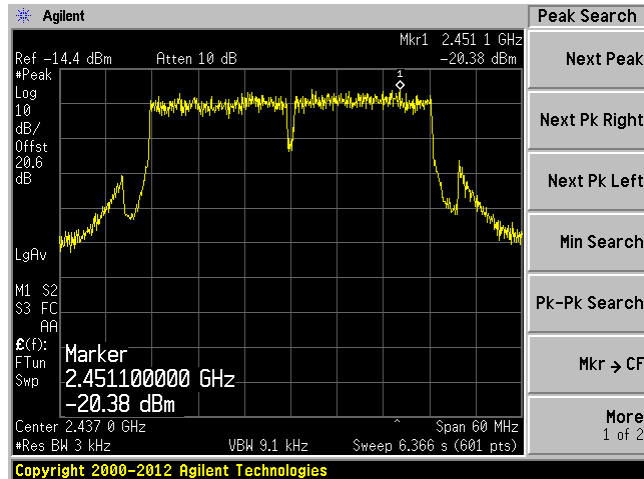
Low channel Chain 0: 2422 MHz



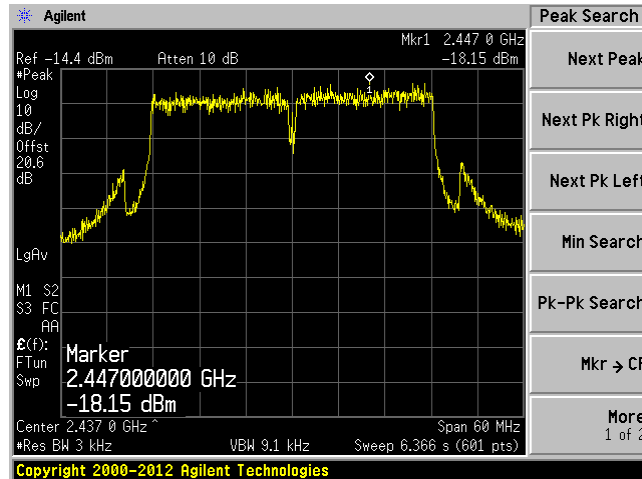
Low channel Chain 1: 2422 MHz



Middle channel Chain 0: 2437 MHz



Middle channel Chain 1: 2437 MHz



High channel Chain 0: 2452 MHz

High channel Chain 1: 2452 MHz

