



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

TEST AND MEASUREMENT REPORT

For

Ruckus Wireless, Inc.

350 West Java Drive,

Sunnyvale, CA 94089, USA

FCC ID: S9GZF7372E
IC: 5912A-ZF7372E

Report Type: Original Report	Product Type: 802.11 a/b/g/n Wireless Access Point
Prepared By: <u>Lionel Lara</u> 	
Report Number: <u>R1303042-247</u>	
Report Date: <u>2013-04-23</u>	
Reviewed By: <u>Quinn Jiang</u>  <u>Test Engineer</u>	
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 "*" (BAC-2)

TABLE OF CONTENTS

1 General Description.....	6
1.1 Product Description for Equipment Under Test (EUT)	6
1.2 Mechanical Description of EUT	6
1.3 Objective.....	6
1.4 Related Submittal(s)/Grant(s)	6
1.5 Test Methodology	6
1.6 Measurement Uncertainty	6
1.7 Test Facility	7
2 System Test Configuration.....	8
2.1 Justification	8
2.2 EUT Exercise Software.....	8
2.3 Special Equipment	8
2.4 Equipment Modifications.....	8
2.5 Local Support Equipment	8
2.6 EUT Internal Configuration Details.....	8
2.7 Interface Ports and Cables	8
2.8 Power Supply List and Details.....	9
3 Summary of Test Results	10
4 FCC §15.247 (i), §2.1091 & IC RSS-102 – RF Exposure.....	11
4.1 Applicable Standard.....	11
4.2 MPE Prediction.....	12
4.3 MPE Results	12
5 FCC §15.203 & IC RSS-Gen §7.1.2 – Antenna Requirements	14
5.1 Applicable Standard.....	14
5.2 Antenna List.....	14
6 FCC §15.207 & IC RSS-Gen §7.2.4 – AC Line Conducted Emissions.....	15
6.1 Applicable Standards	15
6.2 Test Setup	15
6.3 Test Procedure	15
6.4 Test Setup Block Diagram	16
6.5 Corrected Amplitude & Margin Calculation.....	17
6.6 Test Equipment List and Details.....	18
6.7 Test Environmental Conditions	18
6.8 Summary of Test Results	18
6.9 Conducted Emissions Test Plots and Data	19
7 FCC §2.1051, §15.247(d) & IC RSS-210 §A8.5 – Spurious Emissions at Antenna Terminals.....	23
7.1 Applicable Standard.....	23
7.2 Measurement Procedure.....	23
7.3 Test Equipment List and Details.....	23
7.4 Test Environmental Conditions	23
7.5 Test Results.....	23
8 FCC §15.205, §15.209 & §15.247(d) & IC RSS-210 §A8.5 – Spurious Radiated Emissions	44
8.1 Applicable Standard.....	44
8.2 Test Setup	45
8.3 Test Procedure	45
8.4 Corrected Amplitude & Margin Calculation.....	46
8.5 Test Equipment List and Details.....	46
8.6 Test Environmental Conditions	46

8.7	Summary of Test Results	47
8.8	Radiated Emissions Test Data and Plots.....	48
9	FCC §15.247(a)(2) & IC RSS-210 §A8.2 – 6 dB & 99% Emission Bandwidth	84
9.1	Applicable Standard.....	84
9.2	Measurement Procedure.....	84
9.3	Test Equipment List and Details.....	84
9.4	Test Environmental Conditions	84
9.5	Test Results.....	85
10	FCC §15.247(b) & IC RSS-210 §A8.4 – Peak Output Power Measurement	97
10.1	Applicable Standard.....	97
10.2	Measurement Procedure.....	97
10.3	Test Equipment List and Details.....	97
10.4	Test Environmental Conditions	97
10.5	Test Results.....	98
11	FCC §15.247(d) & IC RSS-210 §A8.5 – 100 kHz Bandwidth of Band Edges.....	112
11.1	Applicable Standard.....	112
11.2	Measurement Procedure.....	112
11.3	Test Equipment List and Details.....	112
11.4	Test Environmental Conditions	112
11.5	Test Results.....	113
12	FCC §15.247(e) & IC RSS-210 §A8.2 (b) – Power Spectral Density	120
12.1	Applicable Standard.....	120
12.2	Measurement Procedure.....	120
12.3	Test Equipment List and Details.....	120
12.4	Test Environmental Conditions	120
12.5	Test Results.....	121
13	IC RSS-210 §2.3 & RSS-Gen §6.1 – Receiver Spurious Radiated Emissions.....	135
13.1	Applicable Standard.....	135
13.2	EUT Setup	135
13.3	Test Procedure	135
13.4	Corrected Amplitude & Margin Calculation.....	135
13.5	Test Equipment Lists and Details	136
13.6	Test Environmental Conditions	136
13.7	Summary of Test Results	136
13.8	Test Results and Plots	137
14	Exhibit A – FCC & IC Equipment Labeling Requirements	141
14.1	FCC ID Label Requirements	141
14.2	IC Label Requirements	141
14.3	FCC ID & IC Label Contents and Location.....	142
15	Exhibit B – Test Setup Photographs	143
15.1	Conducted Emissions - AC/DC Adapter Powered Front View	143
15.2	Conducted Emissions AC/DC Adapter Powered Side View	143
15.3	Conducted Emissions POE Powered Front View	144
15.4	Conducted Emissions POE Powered Side View.....	144
15.5	Radiated Emission Front View (Dipole Antennas).....	145
15.6	Radiated Emission below 1 GHz Rear View (Dipole Antennas).....	145
15.7	Radiated Emission above 1 GHz Rear View (Dipole Antennas).....	146
15.8	Radiated Emission Front View (Patch Antenna)	146
15.9	Radiated Emission below 1 GHz Rear View (Patch Antenna)	147
15.10	Radiated Emission above 1 GHz Rear View (Patch Antenna)	147
16	Exhibit C – EUT Photographs.....	148
16.1	EUT – Top View.....	148
16.2	EUT – Front View	148
16.3	EUT – Left Side View	149
16.4	EUT – Right Side View	149
16.5	EUT – Rear Side View	150

16.6 EUT – Bottom Side View 150

16.7 EUT – Open Chassis..... 151

16.8 EUT – Motherboard Component Top View 151

16.9 EUT – Motherboard Solder Bottom View with Shield..... 152

16.10 EUT – Motherboard Solder Bottom View without Shield 152

16.11 EUT – AC/DC Adapter 153

16.12 EUT – POE View 153

16.13 EUT – Dipole Antennas 154

16.14 EUT – Patch Antenna..... 154

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1303042-247	Original Report	2013-04-23

1 General Description

1.1 Product Description for Equipment Under Test (EUT)

This test and measurement report was prepared on behalf of *Ruckus Wireless, Inc.*, and their product model: *ZoneFlex 7372E* with FCC ID: *S9GZF7372E*, IC: *5912A-ZF7372E* or the “EUT” as referred to in this report. The EUT is a 2x2 MIMO 802.11 a/b/g/n WLAN Access Point.

1.2 Mechanical Description of EUT

The EUT measures approximately 160 cm (L) x 160 cm (W) x 35 cm (H) and weighs 334.5g.

The test data gathered are from typical production sample, serial number: 093 and 141 provided by the manufacturer

1.3 Objective

This report is prepared on behalf of *Ruckus Wireless, Inc.* in accordance with Part 2, Subpart J, and Part 15, Subparts B and C of the Federal Communication Commissions 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, 6 dB Bandwidth, and power spectral density, 100 kHz Bandwidth of Band Edges Measurement, Spurious Emissions, Conducted and Radiated Spurious Emissions.

1.4 Related Submittal(s)/Grant(s)

FCC Part 15.407 UNII with FCC ID: *S9GZF7372E*, IC: *5912A-ZF7372E*

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 CISPR16-4-2:2007, The Treatment of Uncertainty in EMC Measurements, the values ranging from ± 2.0 dB for Conducted Emissions tests and ± 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

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 C63.4-2003, 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 test utility used was St Bernard Art, was provided by Ruckus Wireless Inc., and was verified Lionel Lara to comply with the standard requirements being tested against.

2.3 Special Equipment

There were no special accessories which were required, included, or intended for use with the EUT during these tests.

2.4 Equipment Modifications

No modifications were made to the EUT.

2.5 Local Support Equipment

Manufacturer	Description	Model	Serial Number
DELL	Laptop	Latitude E5420	-

2.6 EUT Internal Configuration Details

Manufacturer	Description	Model	Serial Number
Ruckus	Motherboard	St. Bernard ASM 120 11214 001 REV A	7115110152012CN02E

2.7 Interface Ports and Cables

Cable Description	Length (m)	To	From
RF Cable	<1.0	PSA	EUT
RJ 45 Cable	<1.0	Laptop	EUT

2.8 Power Supply List and Details

Manufacturer	Description	Model	Part Number
Ruckus	Switching Adapter	ADS-18C-12N 12018GPCU	740-64129-011
Ruckus	POE	NPE-5818	740-64157-001
Ruckus	POE Switch-Mode Power Supply	8A-201WU48	740-64125-010

3 Summary of Test Results

Results reported relate only to the product tested.

FCC & IC Rules	Description of Test	Results
FCC §15.247(i), §2.1091 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
IC RSS-210 §2.3 & RSS-Gen §6.1	Receiver Spurious Emission	Compliant

4 FCC §15.247 (i), §2.1091 & IC RSS-102 – RF Exposure

4.1 Applicable Standard

According to FCC §15.247(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	* (100)	30
1.34-30	824/f	2.19/f	* (180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

Before equipment certification is granted, the procedure of IC RSS-102 must be followed concerning the exposure of humans to RF fields.

According to IC RSS-102 Issue 2 section 4.1, RF limits used for general public will be applied to the EUT.

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Time Averaging (min)
0.003 - 1	280	2.19	-	6
1 - 10	280 / f	2.19 / f	-	6
10 - 30	28	2.19 / f	-	6
30 – 300	28	0.073	2*	6
300 – 1 500	1.585 f ^{0.5}	0.0042 f ^{0.5}	f / 150	6
1 500 – 15 000	61.4	0.163	10	6
15 000 – 150 000	61.4	0.163	10	616000 / f ^{1.2}
150 000- 300 000	0.158 f ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁵ f	616000 / f ^{1.2}

Note: f is frequency in MHz

* = Power density limit is applicable at frequencies greater than 100 MHz

4.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

4.3 MPE Results

Dipole Antennas:

2.4 GHz band:

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>23.64</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>231.21</u>
<u>Prediction distance (cm):</u>	<u>20</u>
<u>Prediction frequency (MHz):</u>	<u>2412</u>
<u>Maximum Antenna Gain, typical (dBi):</u>	<u>2</u>
<u>Maximum Antenna Gain (numeric):</u>	<u>1.58</u>
<u>Power density of prediction frequency at 20.0 cm (mW/cm²):</u>	<u>0.073</u>
<u>Power density of prediction frequency at 20.0 cm (W/m²):</u>	<u>0.73</u>
<u>MPE limit for uncontrolled exposure at prediction frequency (mW/cm²):</u>	<u>1.0</u>
<u>MPE limit for uncontrolled exposure at prediction frequency (W/m²):</u>	<u>10</u>

5.8 GHz band:

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>19.95</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>98.86</u>
<u>Prediction distance (cm):</u>	<u>20</u>
<u>Prediction frequency (MHz):</u>	<u>5785</u>
<u>Maximum Antenna Gain, typical (dBi):</u>	<u>3.6</u>
<u>Maximum Antenna Gain (numeric):</u>	<u>2.29</u>
<u>Power density of prediction frequency at 20.0 cm (mW/cm²):</u>	<u>0.045</u>
<u>Power density of prediction frequency at 20.0 cm (W/m²):</u>	<u>0.45</u>
<u>MPE limit for uncontrolled exposure at prediction frequency (mW/cm²):</u>	<u>1.0</u>
<u>MPE limit for uncontrolled exposure at prediction frequency (W/m²):</u>	<u>10</u>

Patch Antenna:

2.4 GHz band:

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>23.64</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>231.21</u>
<u>Prediction distance (cm):</u>	<u>20</u>
<u>Prediction frequency (MHz):</u>	<u>2412</u>
<u>Maximum Antenna Gain, typical (dBi):</u>	<u>5</u>
<u>Maximum Antenna Gain (numeric):</u>	<u>3.16</u>
<u>Power density of prediction frequency at 20.0 cm (mW/cm²):</u>	<u>0.145</u>
<u>Power density of prediction frequency at 20.0 cm (W/m²):</u>	<u>1.45</u>
<u>MPE limit for uncontrolled exposure at prediction frequency (mW/cm²):</u>	<u>1.0</u>
<u>MPE limit for uncontrolled exposure at prediction frequency (W/m²):</u>	<u>10</u>

5.8 GHz band:

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>19.95</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>98.86</u>
<u>Prediction distance (cm):</u>	<u>20</u>
<u>Prediction frequency (MHz):</u>	<u>5785</u>
<u>Maximum Antenna Gain, typical (dBi):</u>	<u>5</u>
<u>Maximum Antenna Gain (numeric):</u>	<u>3.16</u>
<u>Power density of prediction frequency at 20.0 cm (mW/cm²):</u>	<u>0.062</u>
<u>Power density of prediction frequency at 20.0 cm (W/m²):</u>	<u>0.62</u>
<u>MPE limit for uncontrolled exposure at prediction frequency (mW/cm²):</u>	<u>1.0</u>
<u>MPE limit for uncontrolled exposure at prediction frequency (W/m²):</u>	<u>10</u>

The device is compliant with the requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 20 cm is 0.145 mW/cm² (1.45W/m²).

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 List

Manufacturers	Models/Name	Antenna Gain (dBi) @ 2.4 GHz
Laird Technologies, Inc.	WTS2450-RPSMA/ MAF94110	2.0
Mars Antennas & RF Systems Ltd.	MA-WE2458-2H	2 X 5 dBi

Manufacturers	Models/Name	Antenna Gain (dBi) @ 5.8 GHz
Laird Technologies, Inc.	WTS2450-RPSMA/ MAF94110	3.6
Mars Antennas & RF Systems Ltd.	MA-WE2458-2H	2 X 5 dBi

Note: The power setting was controlled by manufacturer with different antenna configuration. The power setting of the different antenna will be set with the corresponded value and no more than the level reported.

The dipole antennas and patch antenna consist of SMA connectors with less than 6 dBi gain; 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 μ 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 *	56 to 46 *
0.5-5	56	46
5-30	60	50

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

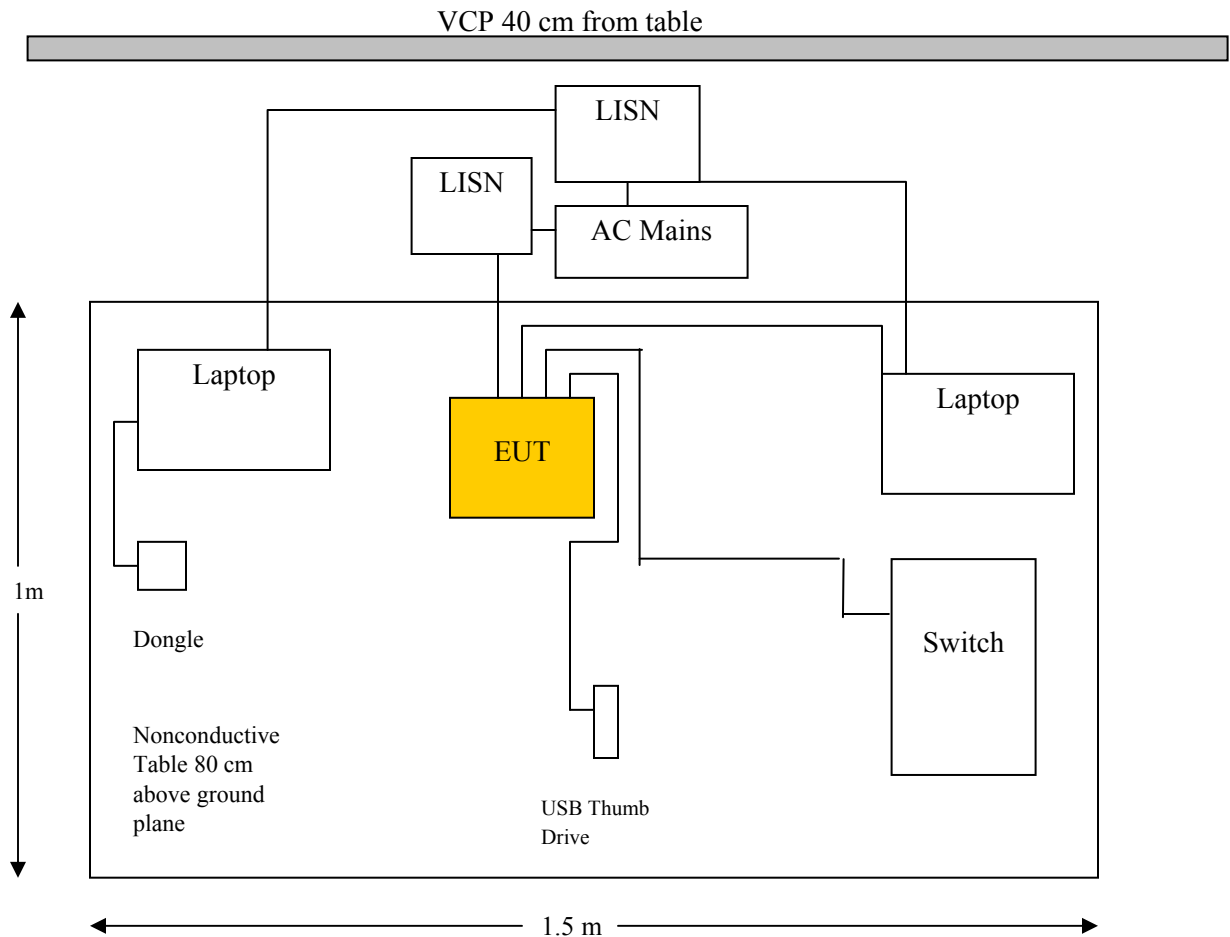
During the conducted emissions test, the power cord of the EUT host system was connected to the mains outlet of the LISN-2.

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”.

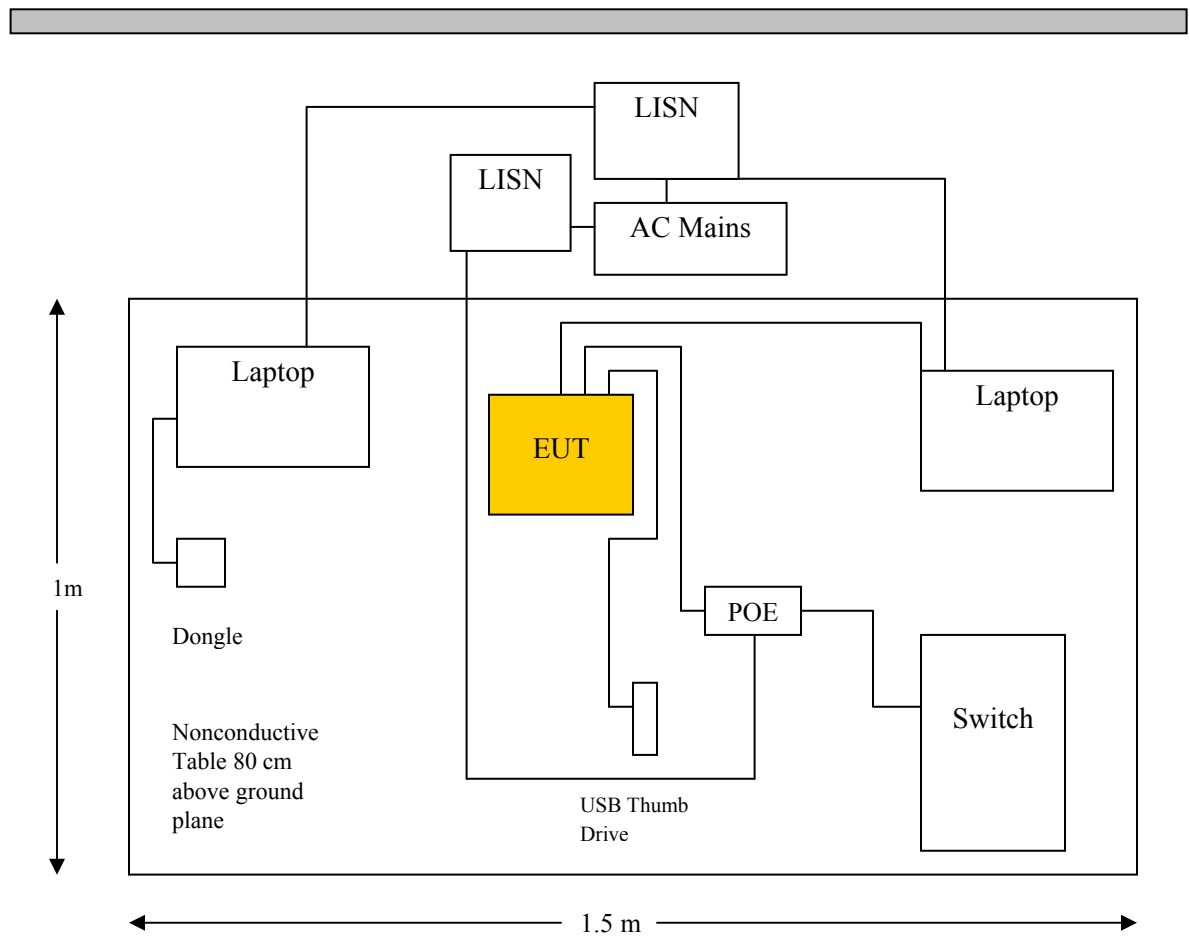
6.4 Test Setup Block Diagram

AC/DC Adaptor:



POE

VCP 40 cm from table

**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:

$$CA = A_i + CL + \text{Atten}$$

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	100044	2012-04-18	1 year
Solar Electronics	LISN	9252-R-24-BNC	511205	2012-06-25	1 year
TTE	Filter, High Pass	H9962-150K-50- 21378	K7133	2012-05-30	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:	21 °C
Relative Humidity:	51%
ATM Pressure:	101.42 kPa

The testing was performed by Bryan Smith on 2012-09-27 in 5 m chamber 2.

6.8 Summary of Test Results

According to the recorded data in following table, the EUT complied with the FCC standard's conducted emissions limits, with the margin reading of:

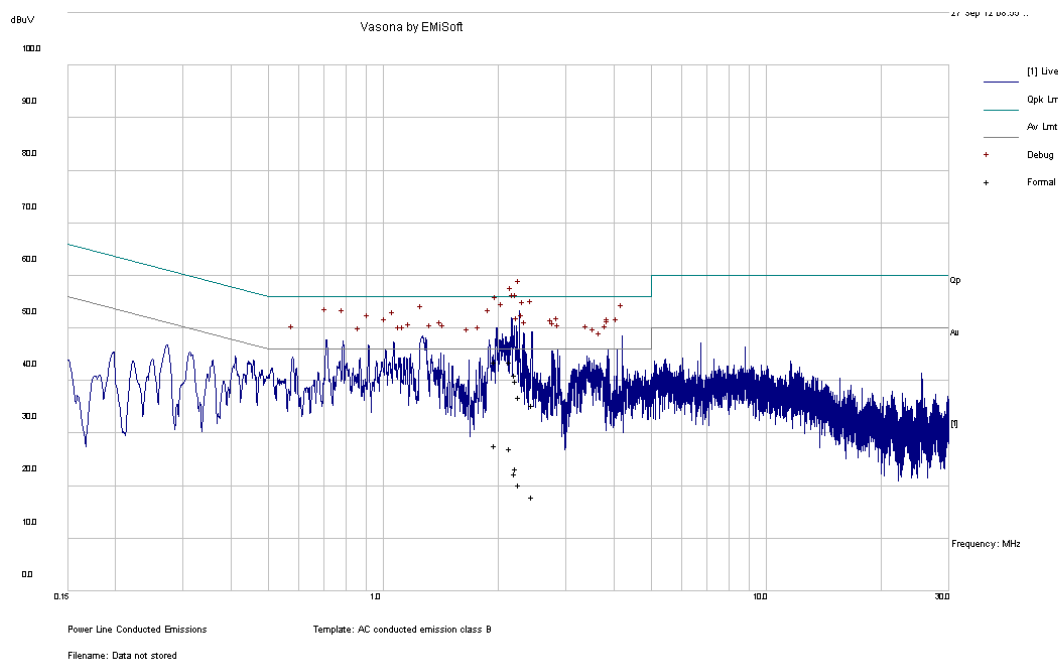
Transmitting Mode: Worst case with both 2.4 GHz and 5 GHz operating:

Connection: AC/DC adapter connected to 120 V/60 Hz, AC			
Margin (dB)	Frequency (MHz)	Conductor Mode (Line/Neutral)	Range (MHz)
-10.10	2.033856	Neutral	0.15-30

6.9 Conducted Emissions Test Plots and Data

Transmitting Mode: Worst case with both 2.4 GHz and 5 GHz operating:

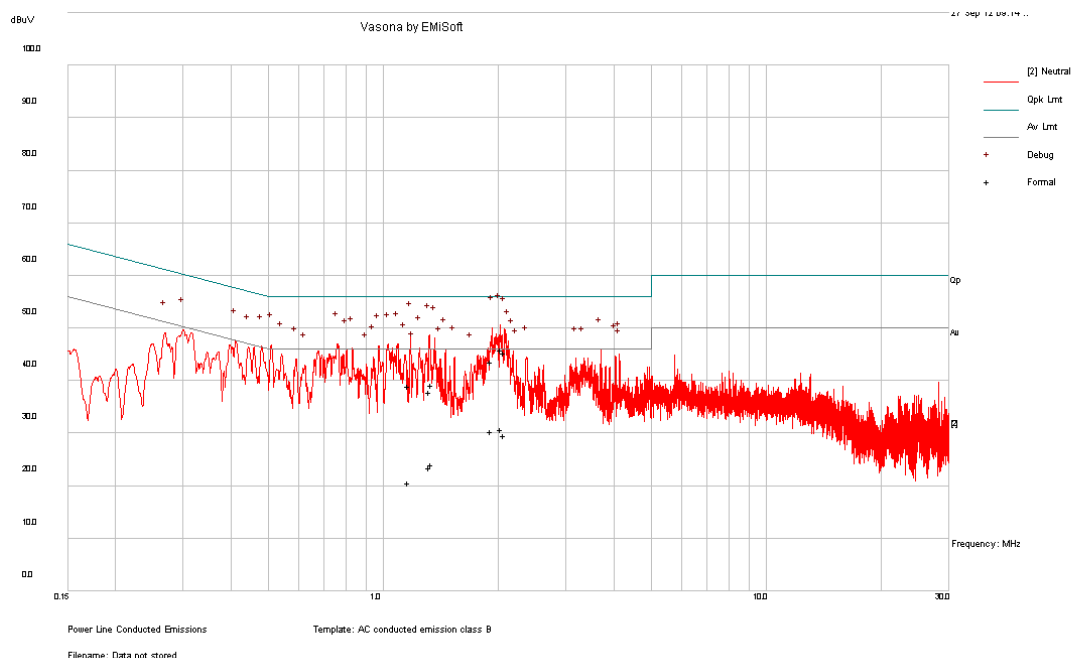
120 V, 60 Hz – Line, AC/DC Adaptor



Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
2.14583	43.66	Line	56	-12.34	QP
1.961336	43.55	Line	56	-12.45	QP
2.2109	41.09	Line	56	-14.91	QP
2.224376	40.04	Line	56	-15.96	QP
2.272382	36.93	Line	56	-19.07	QP
2.42981	34.75	Line	56	-21.25	QP

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
1.961336	28.18	Line	46	-17.82	Ave.
2.14583	27.08	Line	46	-18.92	Ave.
2.224376	23.21	Line	46	-22.79	Ave.
2.2109	22.26	Line	46	-23.74	Ave.
2.272382	20.26	Line	46	-25.74	Ave.
2.42981	16.59	Line	46	-29.41	Ave.

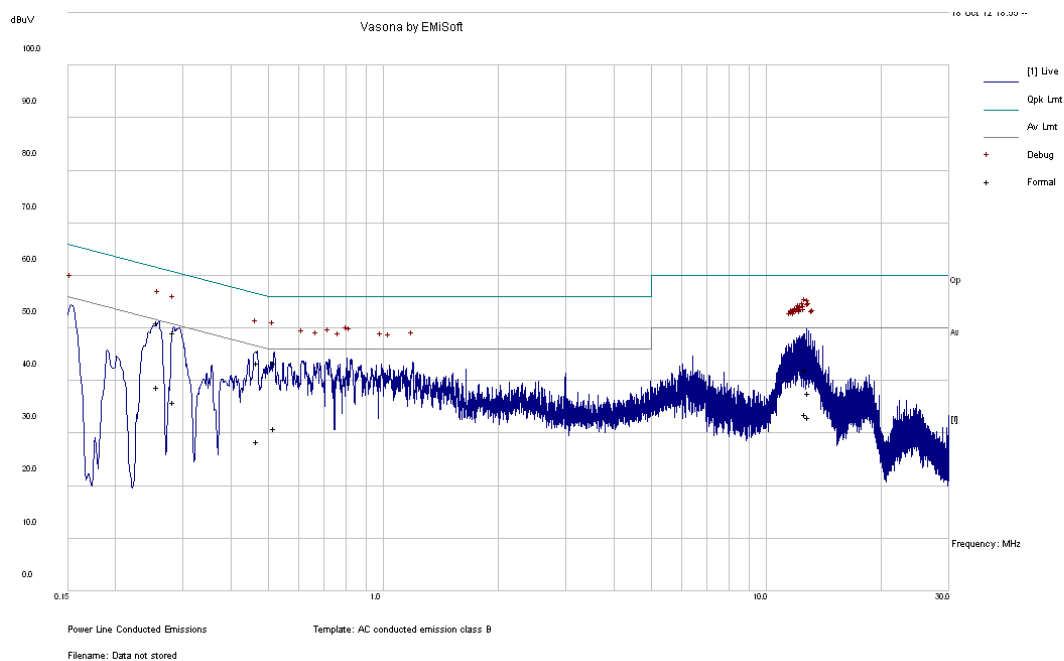
120 V, 60 Hz – Neutral, AC/DC Adaptor



Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
2.033856	45.9	Neutral	56	-10.10	QP
2.069532	45.25	Neutral	56	-10.75	QP
1.913054	43.57	Neutral	56	-12.43	QP
1.342622	39.21	Neutral	56	-16.79	QP
1.168757	39.01	Neutral	56	-16.99	QP
1.324043	37.93	Neutral	56	-18.07	QP

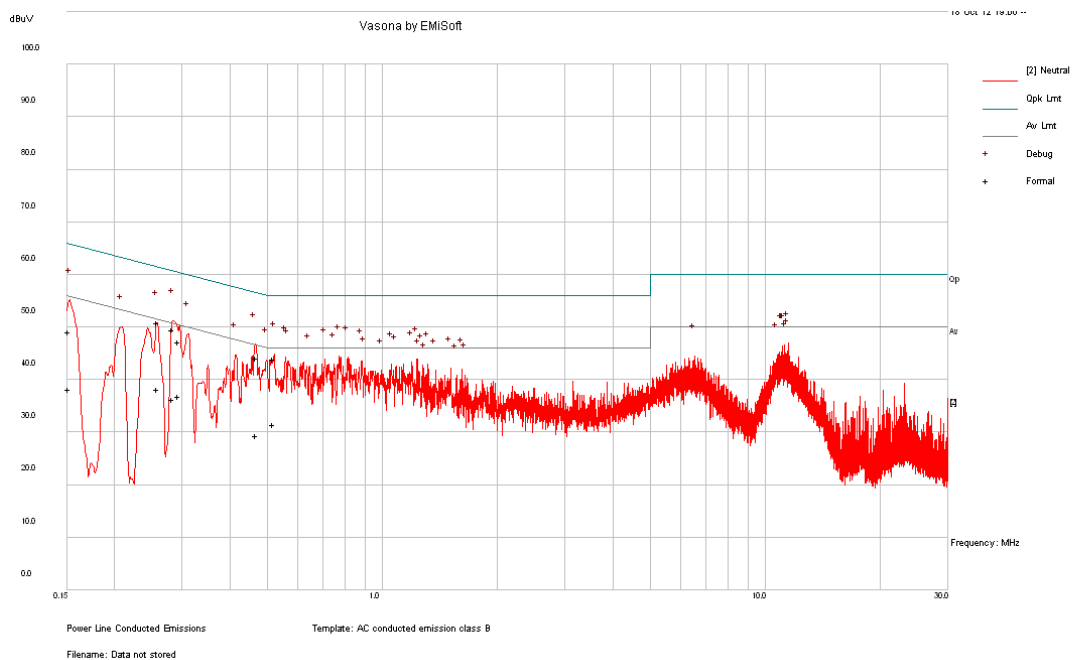
Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
2.033856	30.74	Neutral	46	-15.26	Ave.
1.913054	30.3	Neutral	46	-15.70	Ave.
2.069532	29.64	Neutral	46	-16.36	Ave.
1.342622	24.12	Neutral	46	-21.88	Ave.
1.324043	23.38	Neutral	46	-22.62	Ave.
1.168757	20.62	Neutral	46	-25.38	Ave.

120 V, 60 Hz – Line, POE



Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.258441	51.1	Line	61.48	-10.38	QP
0.283167	49.13	Line	60.72	-11.59	QP
0.519939	43.43	Line	56	-12.57	QP
0.468858	43.39	Line	56.53	-13.15	QP
12.69896	41.97	Line	60	-18.03	QP
12.89667	37.71	Line	60	-22.29	QP

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.258441	38.73	Line	51.48	-12.75	Ave.
0.283167	36.02	Line	50.72	-14.70	Ave.
0.519939	31.03	Line	46	-14.97	Ave.
12.69896	33.58	Line	50	-16.42	Ave.
12.89667	33.06	Line	50	-16.94	Ave.
0.468858	28.48	Line	46.53	-18.05	Ave.

120 V, 60 Hz – Neutral, POE

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.259128	50.95	Neutral	61.46	-10.51	QP
0.283362	49.59	Neutral	60.72	-11.13	QP
0.520359	43.88	Neutral	56	-12.12	QP
0.468399	44.21	Neutral	56.54	-12.34	QP
0.294582	47.32	Neutral	60.39	-13.07	QP
0.152043	49.2	Neutral	65.89	-16.68	QP

Frequency (MHz)	Corrected Amplitude (dBμV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)	Detector (QP/Ave.)
0.259128	38.19	Neutral	51.46	-13.27	Ave.
0.294582	36.98	Neutral	50.39	-13.42	Ave.
0.283362	36.33	Neutral	50.72	-14.39	Ave.
0.520359	31.56	Neutral	46	-14.44	Ave.
0.468399	29.42	Neutral	46.54	-17.12	Ave.
0.152043	38.23	Neutral	55.89	-17.65	Ave.

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

7.1 Applicable Standard

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	US42221851	2012-02-28	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:	42-45 %
ATM Pressure:	101-102kPa

The testing was performed by Jeffrey Wu from 2012-10-1 to 2012-10-15 at RF site.

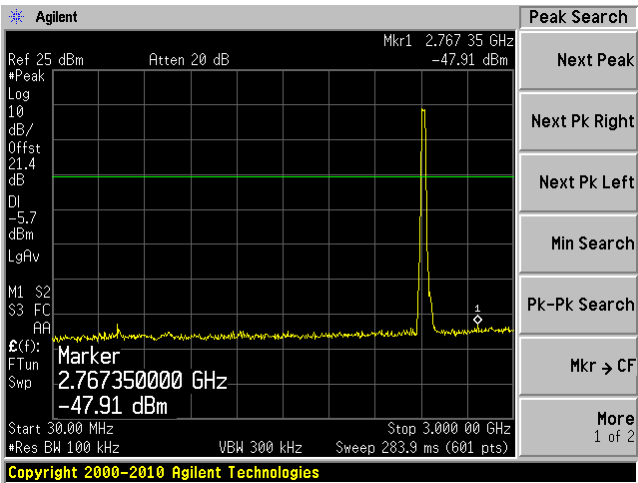
7.5 Test Results

Please refer to following plots of spurious emissions.

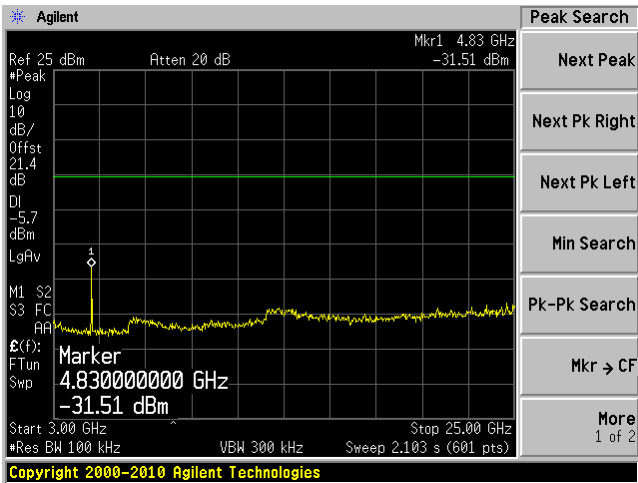
2400-2483.5 MHz

802.11b, Low Channel, 2412 MHz

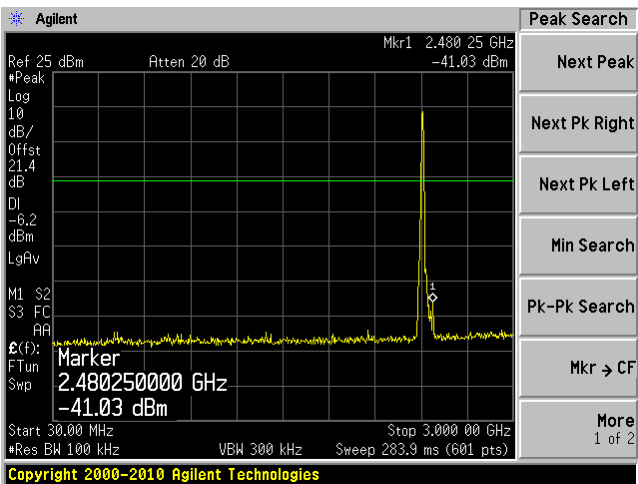
Chain J0, Plot: 30 MHz – 3 GHz



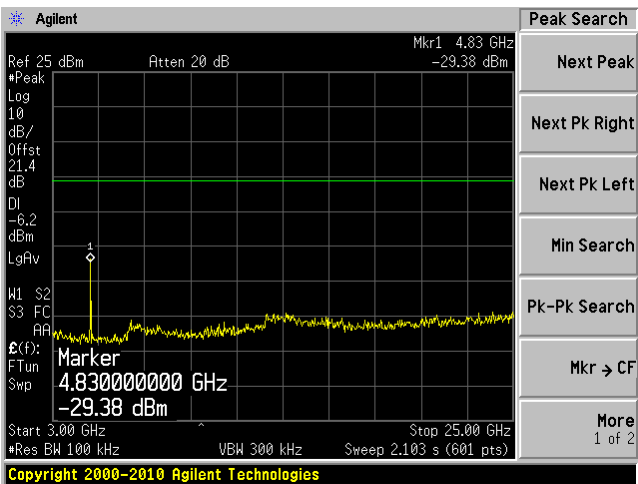
Chain J0, Plot: 3 GHz – 25 GHz



Chain J1, Plot: 30 MHz – 3 GHz

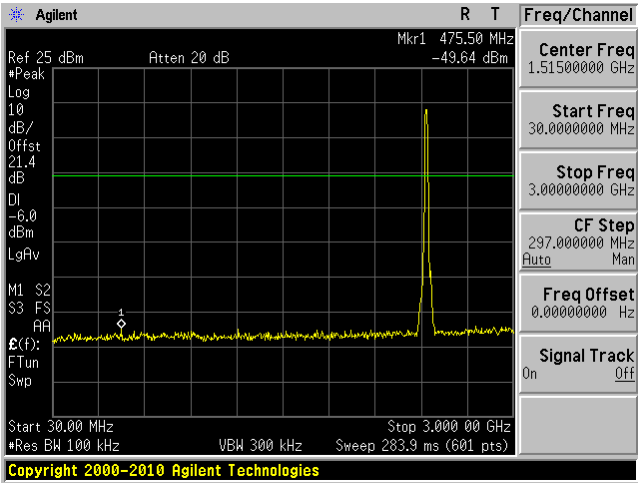


Chain J1, Plot: 3 GHz – 25 GHz

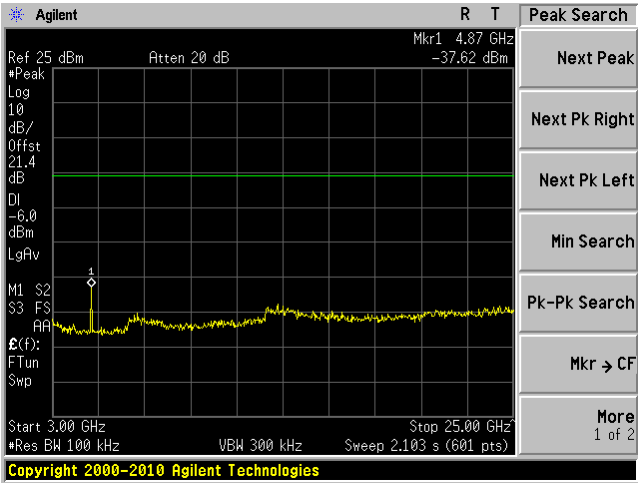


802.11b, Middle Channel, 2437 MHz

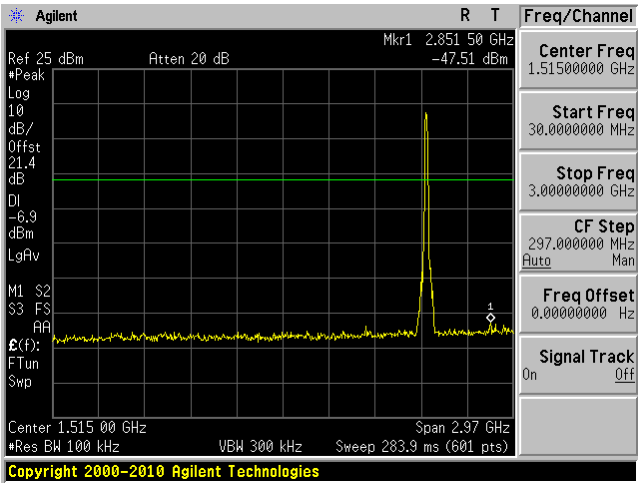
Chain J0, Plot: 30 MHz – 3 GHz



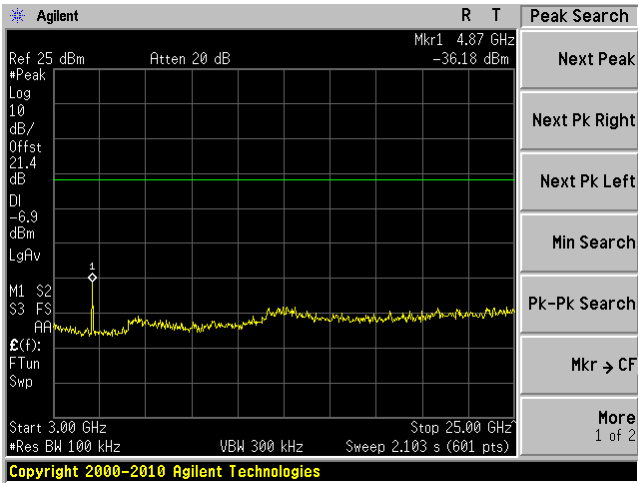
Chain J0, Plot: 3 GHz – 25 GHz



Chain J1, Plot: 30 MHz – 3 GHz

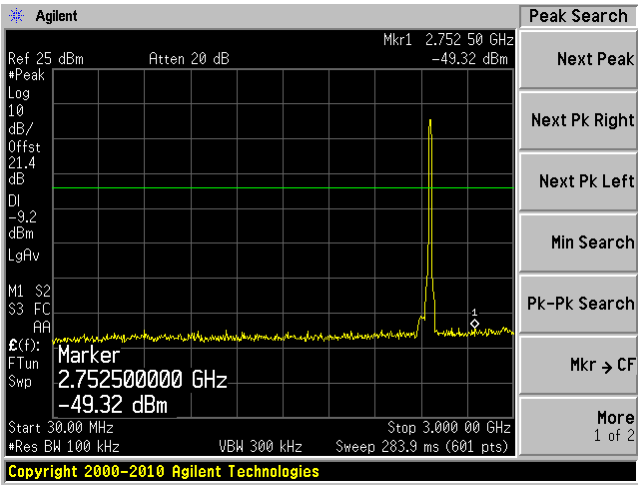


Chain J1, Plot: 3 GHz – 25 GHz

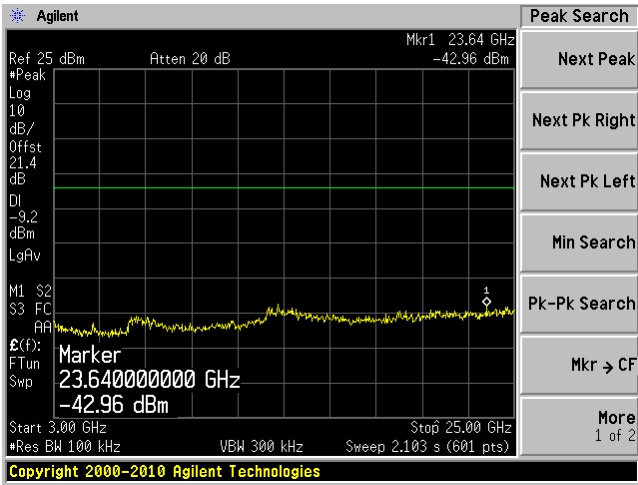


802.11b, High Channel, 2462 MHz

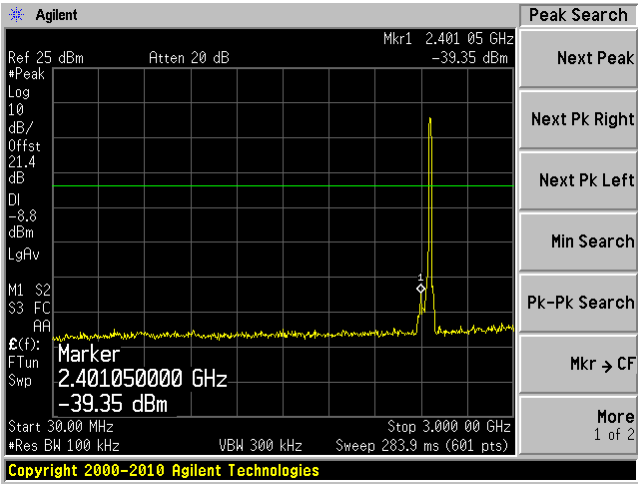
Chain J0, Plot: 30 MHz – 3 GHz



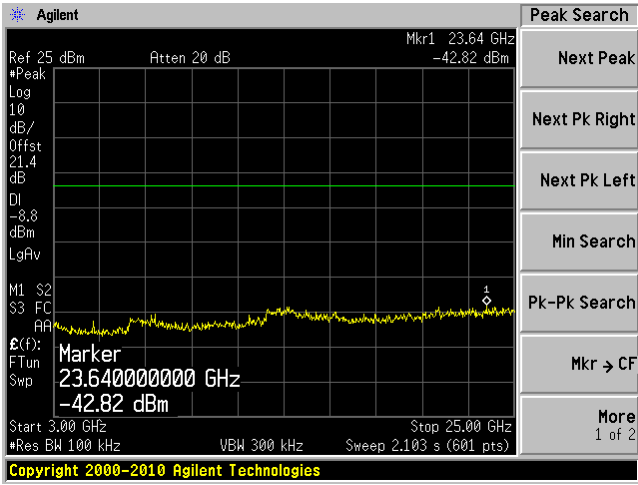
Chain J0, Plot: 3 GHz – 25 GHz



Chain J1, Plot: 30 MHz – 3 GHz

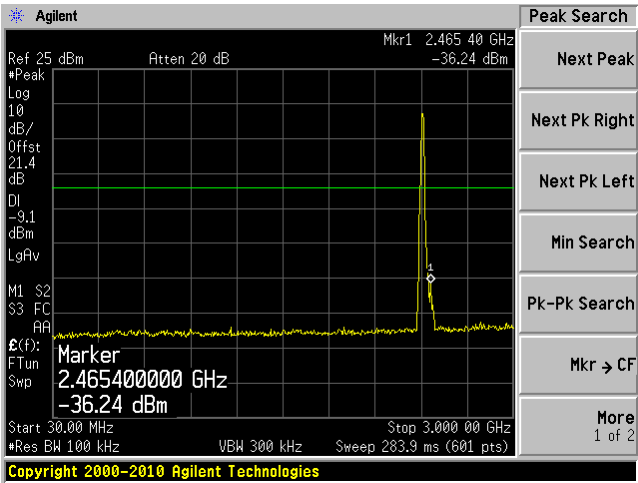


Chain J1, Plot: 3 GHz – 25 GHz

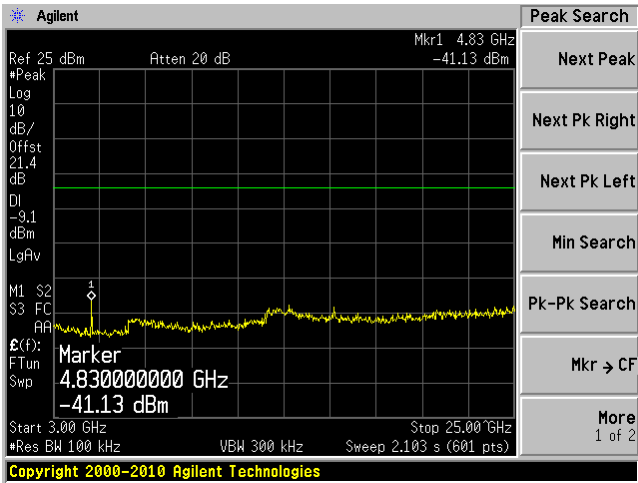


802.11g, Low Channel 2412 MHz

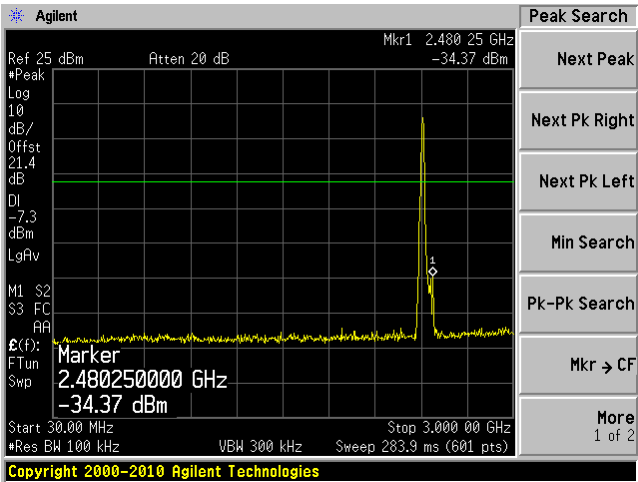
Chain J0, Plot: 30 MHz – 3 GHz



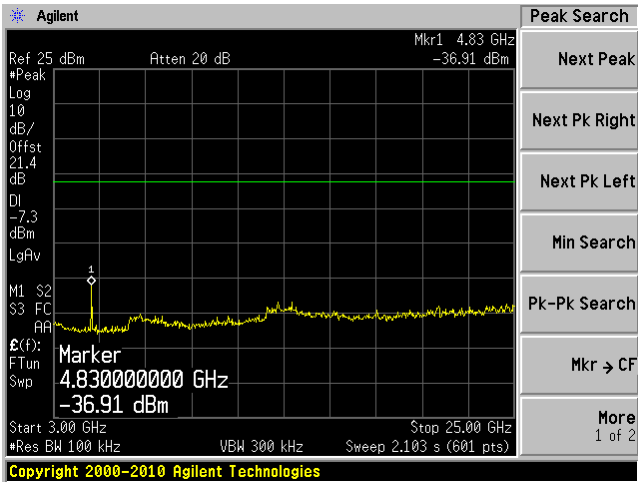
Chain J0, Plot: 3 GHz – 25 GHz



Chain J1, Plot: 30 MHz – 3 GHz

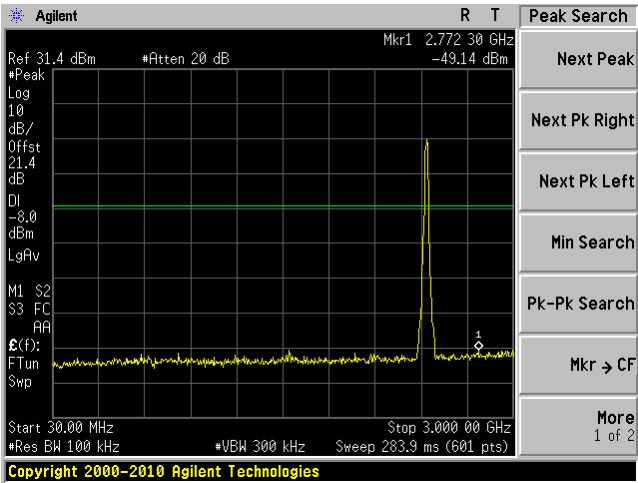


Chain J1, Plot: 3 GHz – 25 GHz

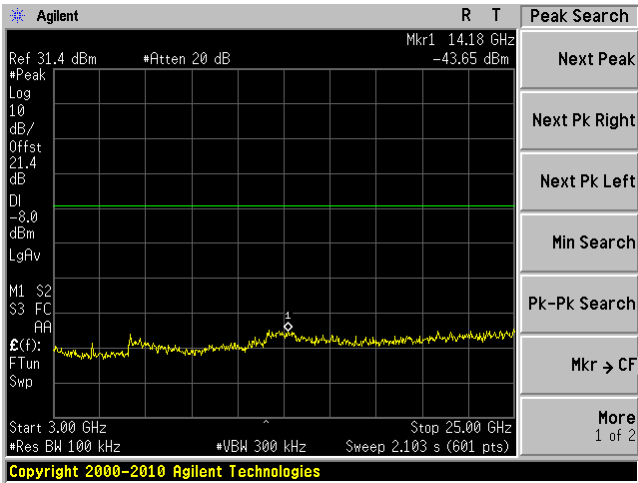


802.11g, Middle Channel 2437 MHz

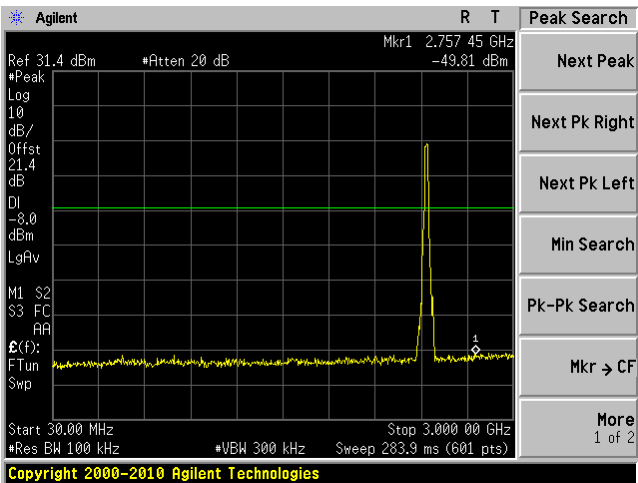
Chain J0, Plot: 30 MHz – 3 GHz



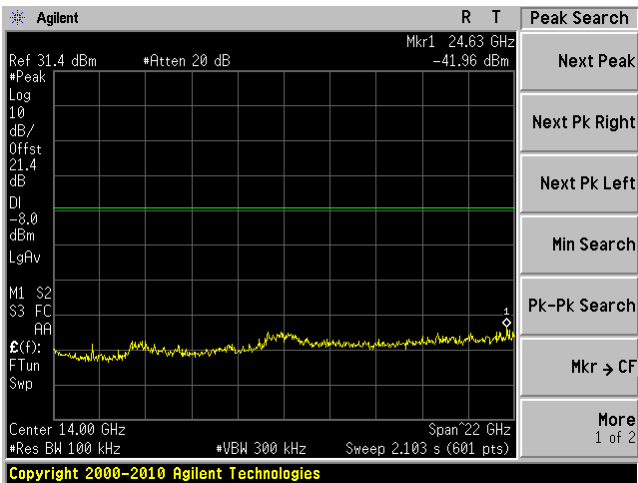
Chain J0, Plot: 3 GHz – 25 GHz



Chain J1, Plot: 30 MHz – 3 GHz

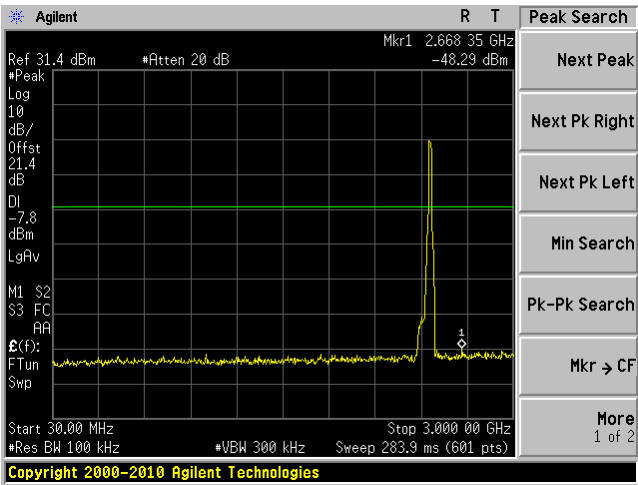


Chain J1, Plot: 3 GHz – 25 GHz

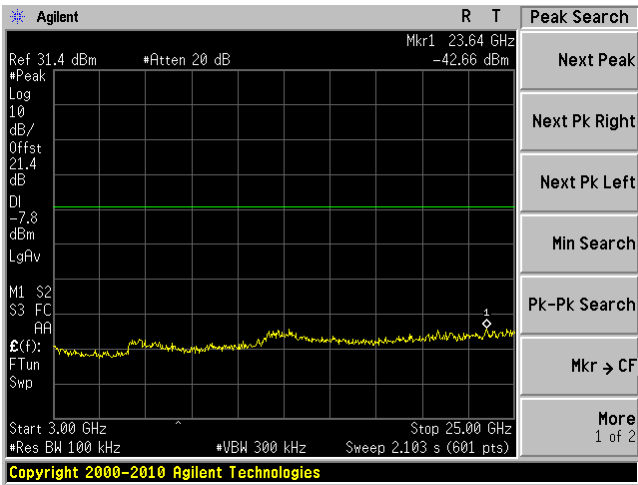


802.11g, High Channel 2462 MHz

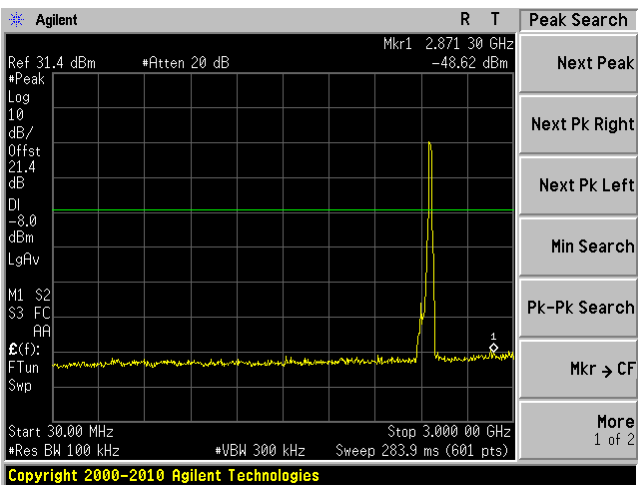
Chain J0, Plot: 30 MHz – 3 GHz



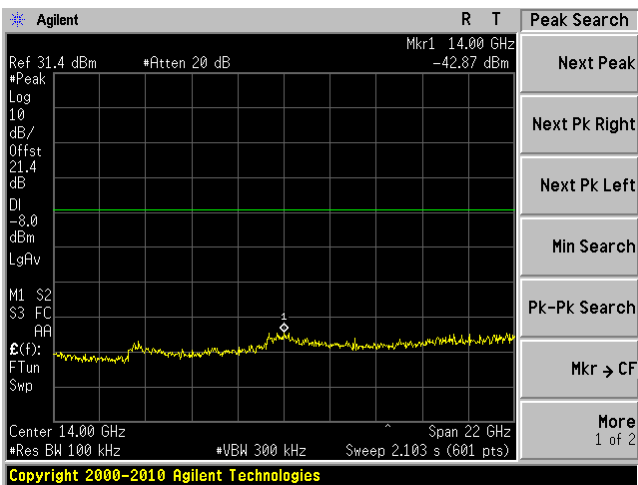
Chain J0, Plot: 3 GHz – 25 GHz



Chain J1, Plot: 30 MHz – 3 GHz

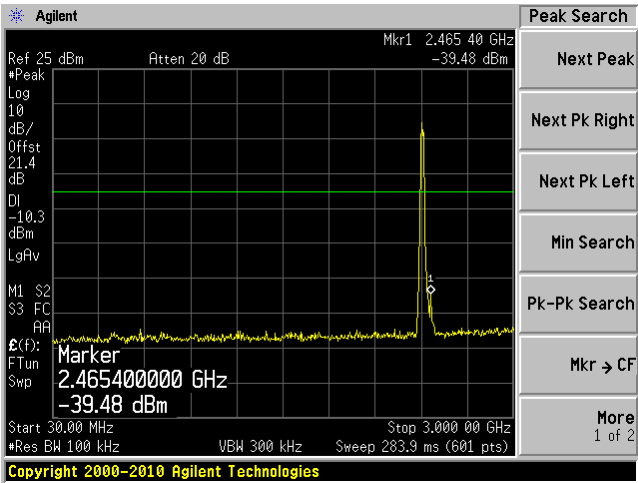


Chain J1, Plot: 3 GHz – 25 GHz

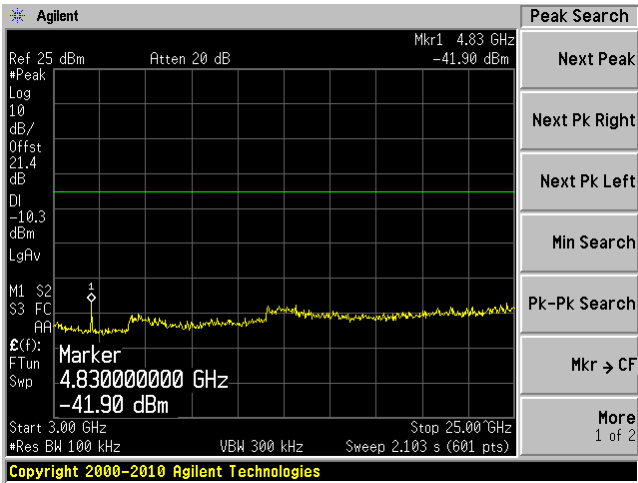


802.11n HT20, Low Channel 2412 MHz

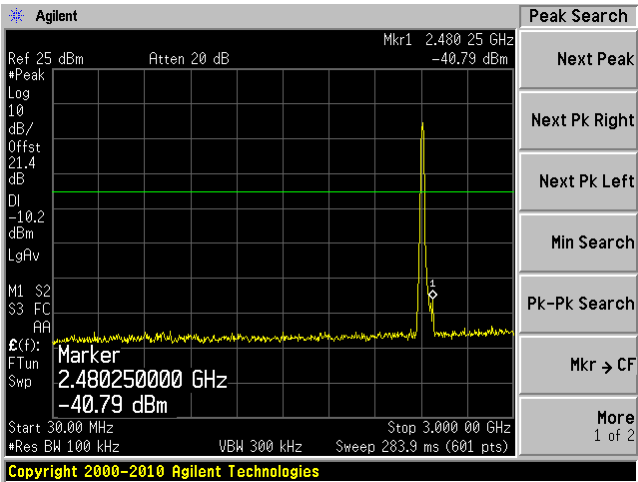
Chain J0, Plot: 30 MHz – 3 GHz



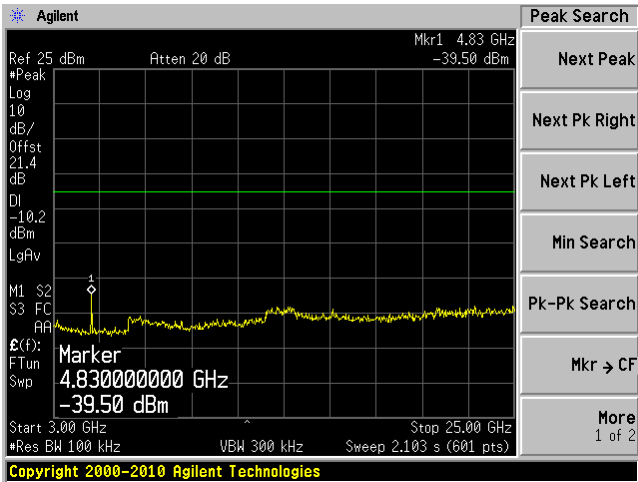
Chain J0, Plot: 3 GHz – 25 GHz



Chain J1, Plot: 30 MHz – 3 GHz

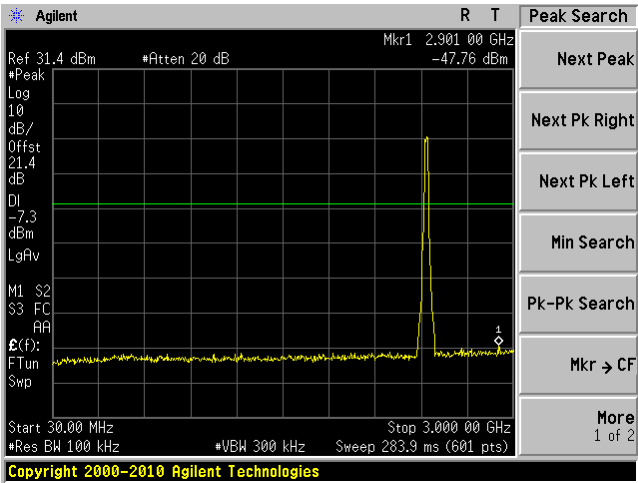


Chain J1, Plot: 3 GHz – 25 GHz

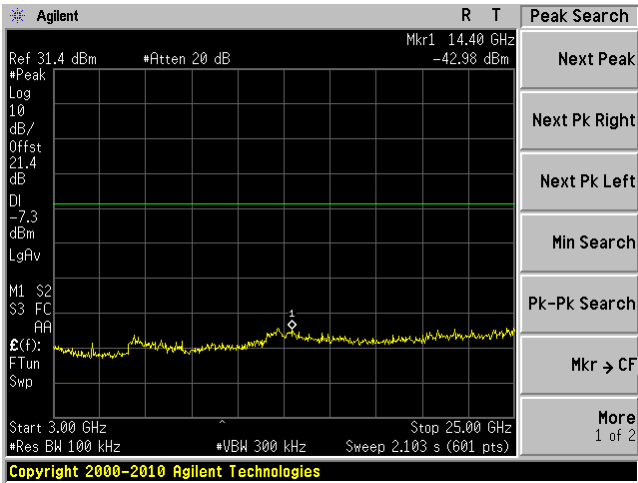


802.11n HT20, Middle Channel 2437 MHz

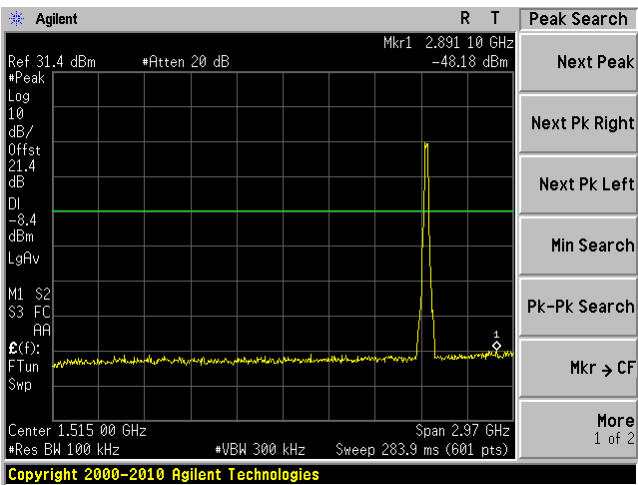
Chain J0, Plot: 30 MHz – 3 GHz



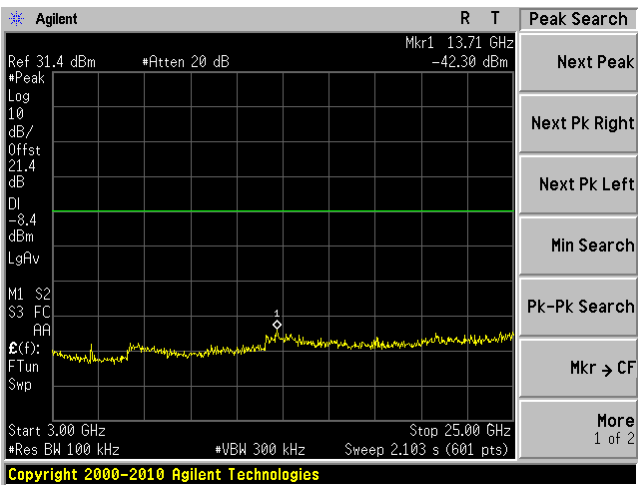
Chain J0, Plot: 3 GHz – 25 GHz



Chain J1, Plot: 30 MHz – 3 GHz

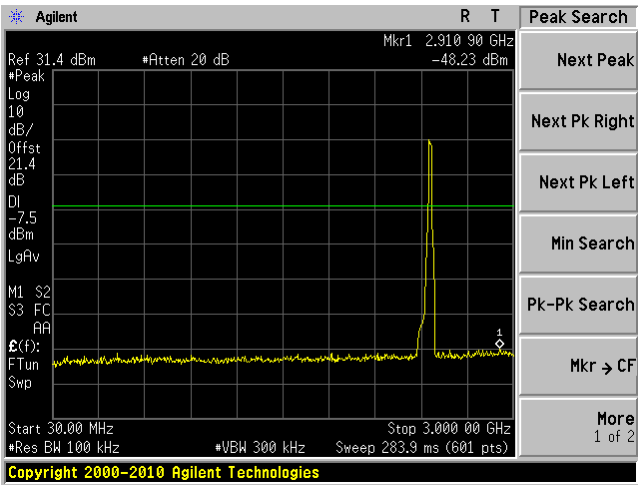


Chain J1, Plot: 3 GHz – 25 GHz

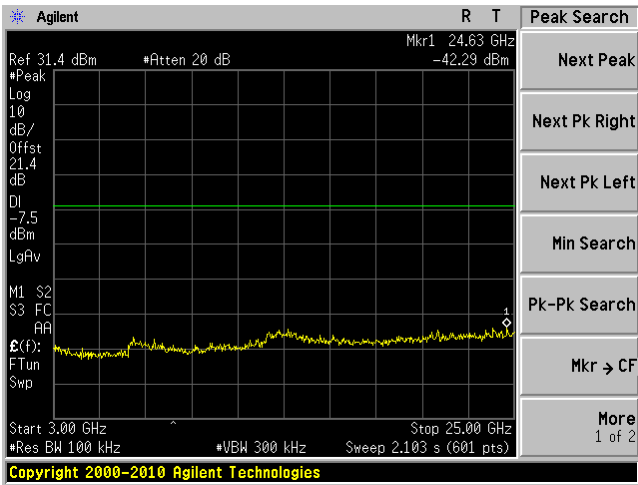


802.11n HT20, High Channel 2462 MHz

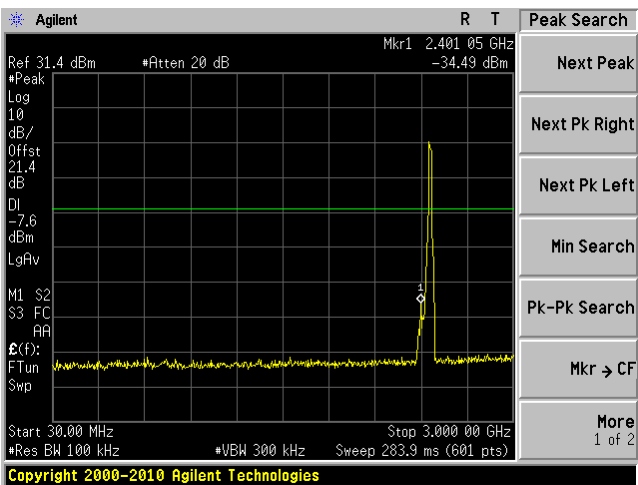
Chain J0, Plot: 30 MHz – 3 GHz



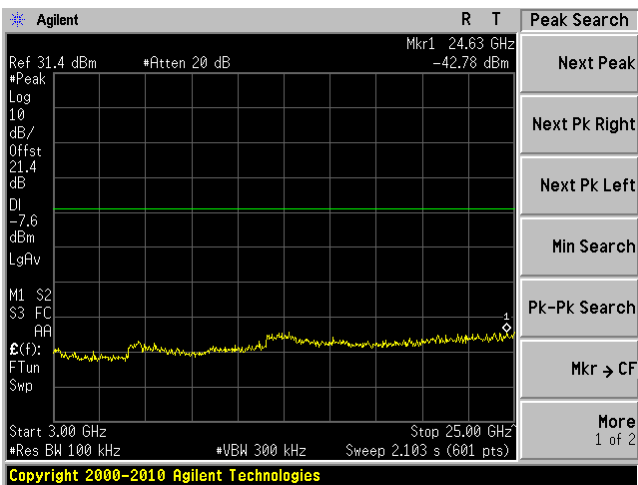
Chain J0, Plot: 3 GHz – 25 GHz



Chain J1, Plot: 30 MHz – 3 GHz

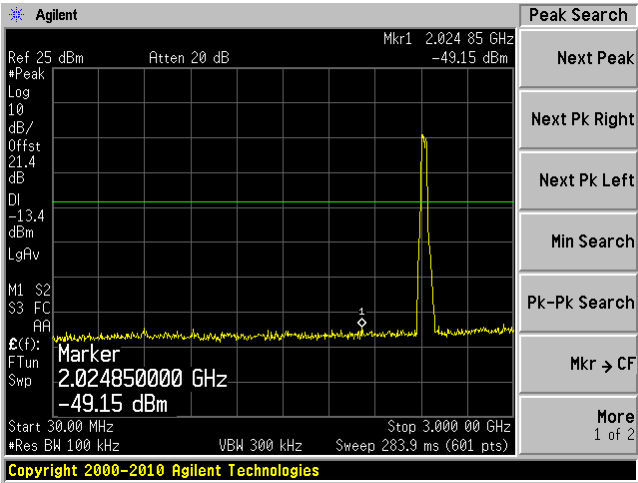


Chain J1, Plot: 3 GHz – 25 GHz

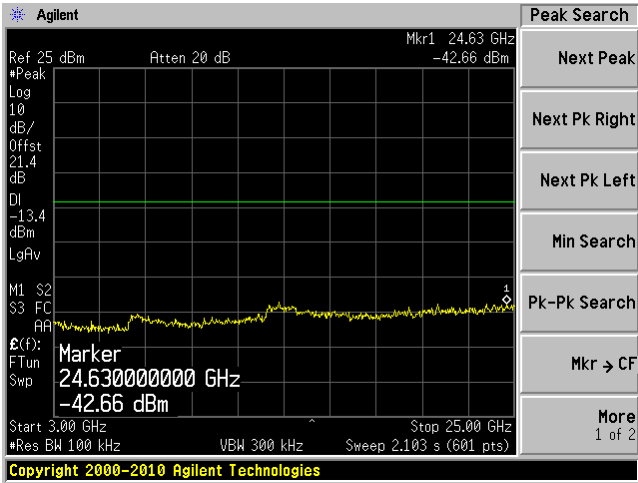


802.11n HT40, Low Channel 2422 MHz

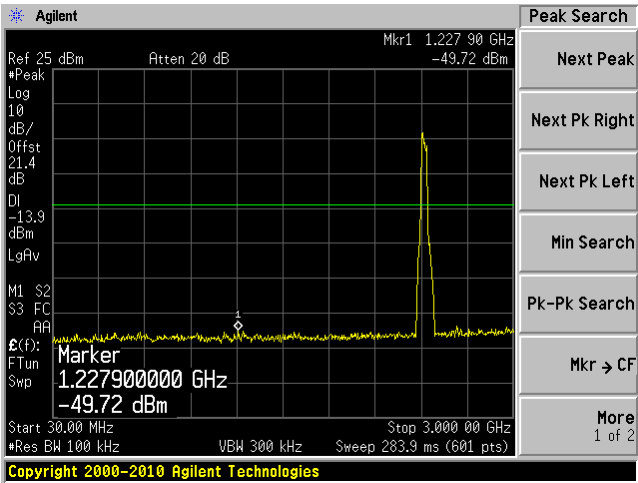
Chain J0, Plot: 30 MHz – 3 GHz



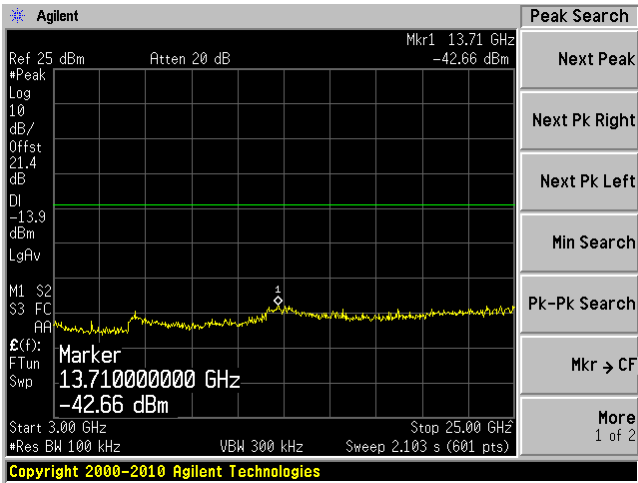
Chain J0, Plot: 3 GHz – 25 GHz



Chain J1, Plot: 30 MHz – 3 GHz

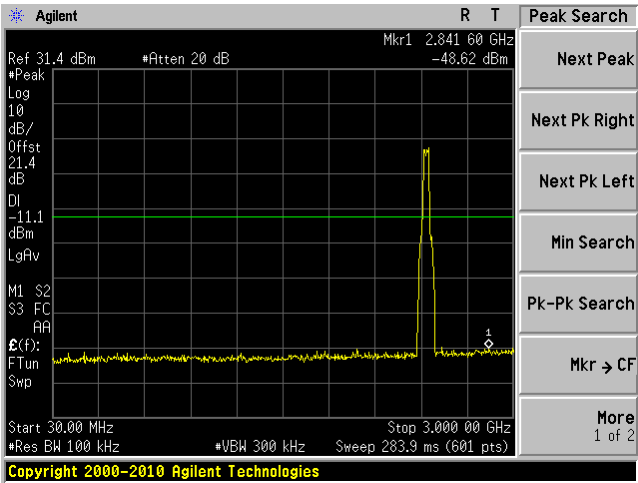


Chain J1, Plot: 3 GHz – 25 GHz

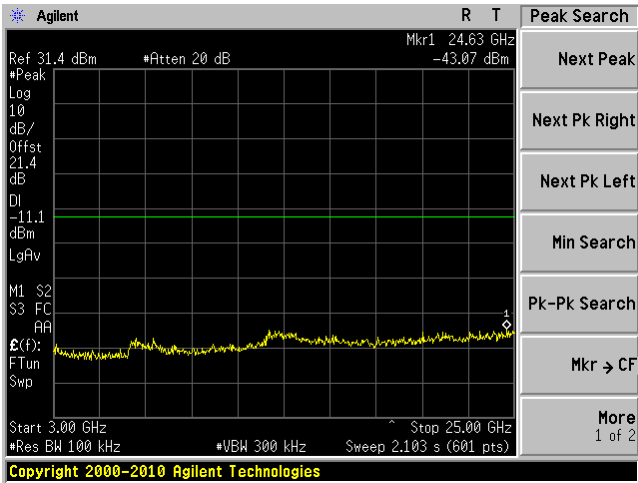


802.11n HT40, Middle Channel 2437 MHz

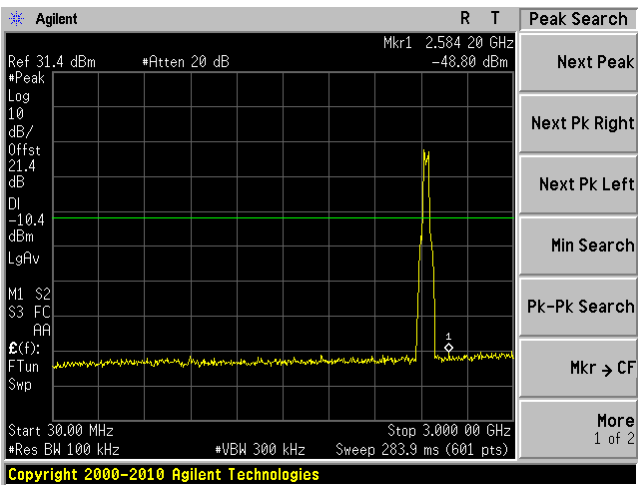
Chain J0, Plot: 30 MHz – 3 GHz



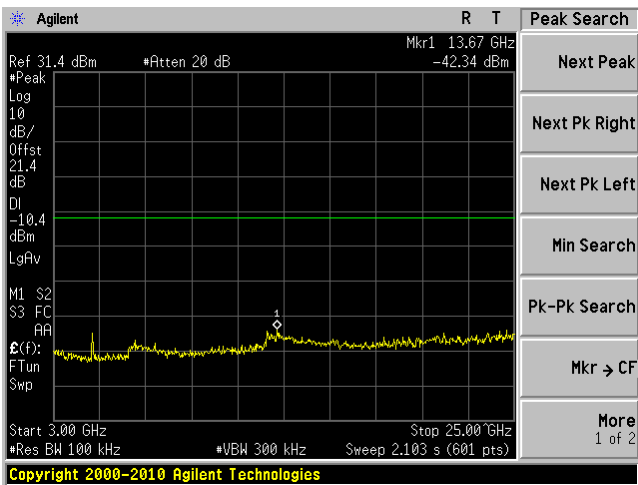
Chain J0, Plot: 3 GHz – 25 GHz



Chain J1, Plot: 30 MHz – 3 GHz

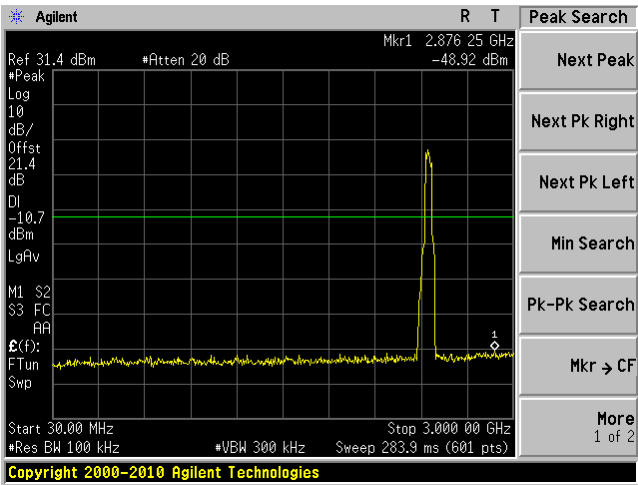


Chain J1, Plot: 3 GHz – 25 GHz

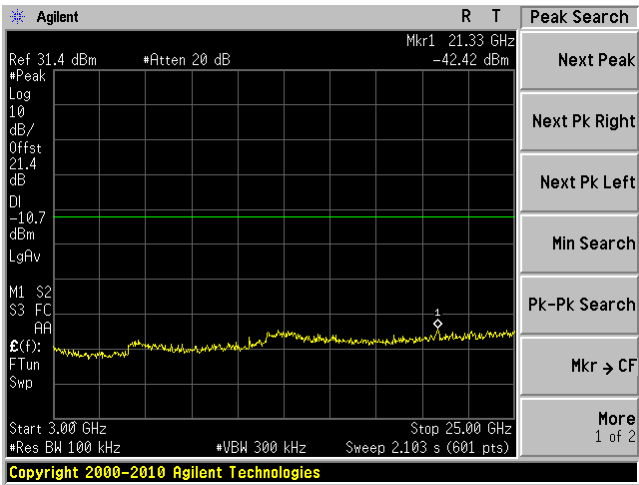


802.11n HT40, High Channel 2452 MHz

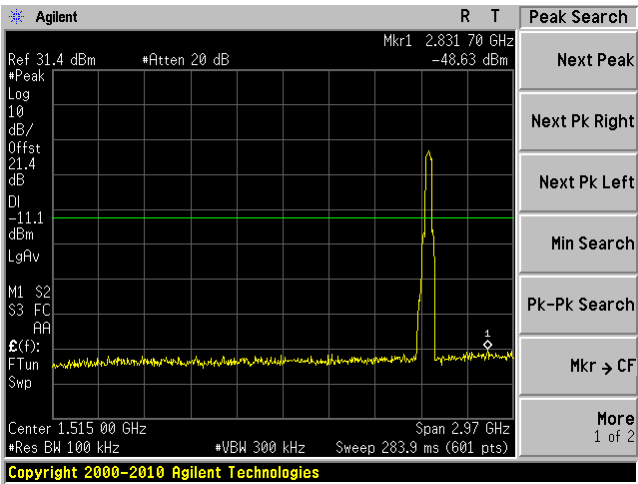
Chain J0, Plot: 30 MHz – 3 GHz



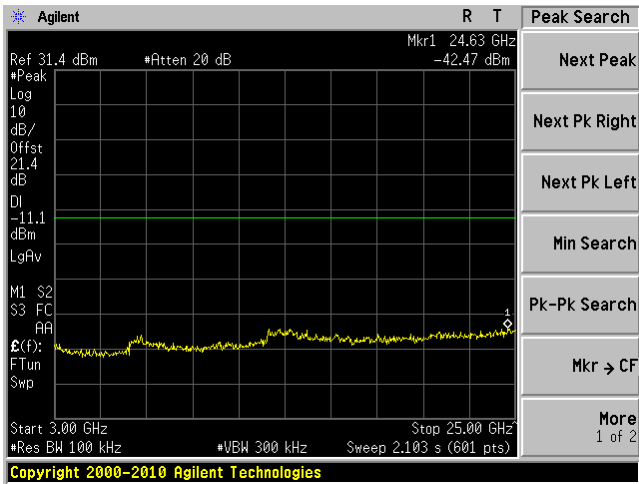
Chain J0, Plot: 3 GHz – 25 GHz



Chain J1, Plot: 30 MHz – 3 GHz



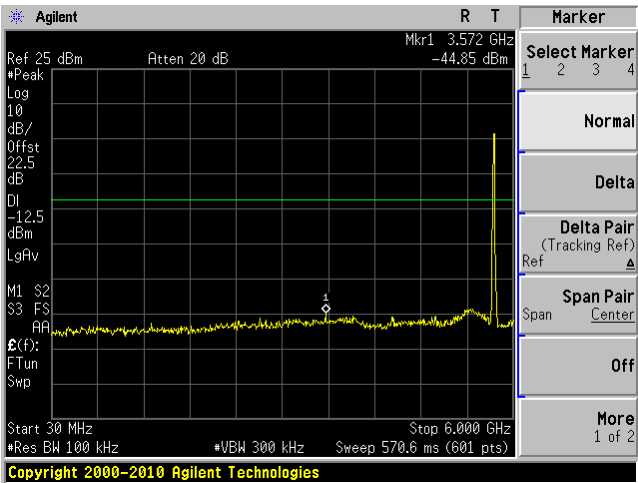
Chain J1, Plot: 3 GHz – 25 GHz



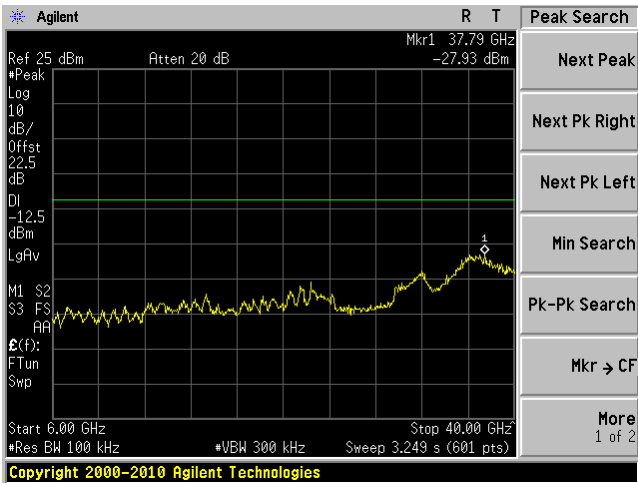
5725-5845 MHz

802.11a, Low Channel 5745 MHz

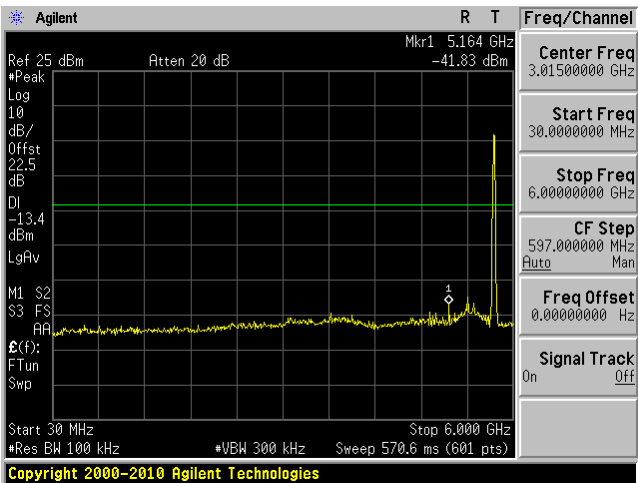
Chain J0, Plot: 30 MHz – 6 GHz



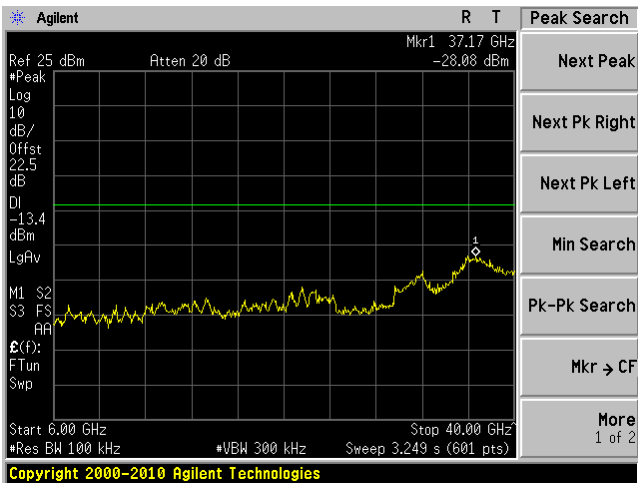
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

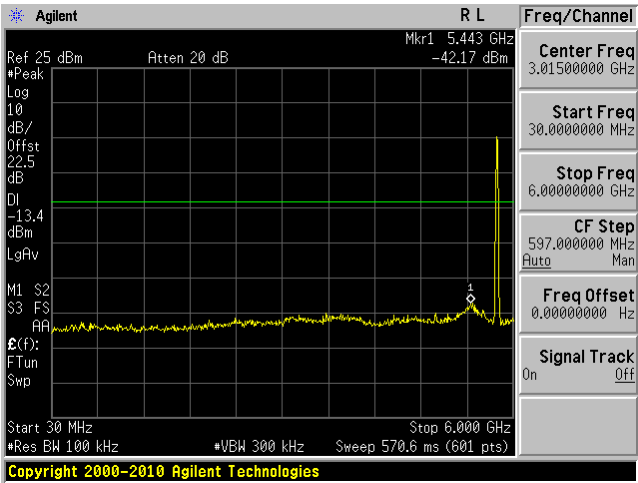


Chain J1, Plot: 6 GHz – 40 GHz

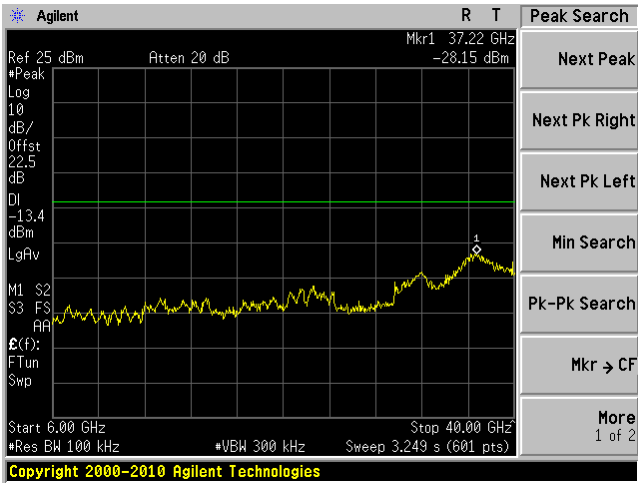


802.11a, Middle Channel 5785 MHz

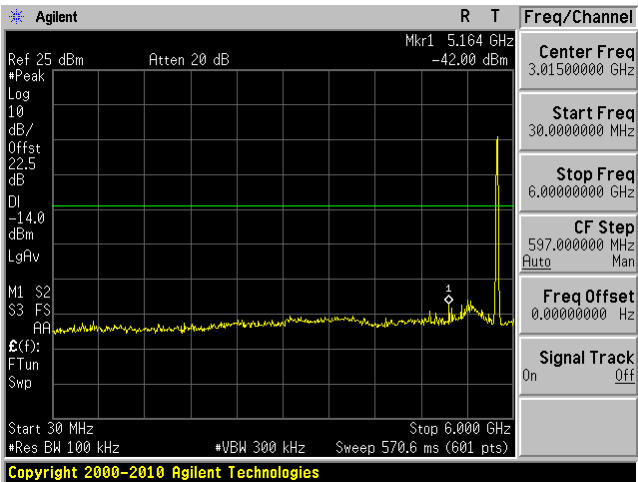
Chain J0, Plot: 30 MHz – 6 GHz



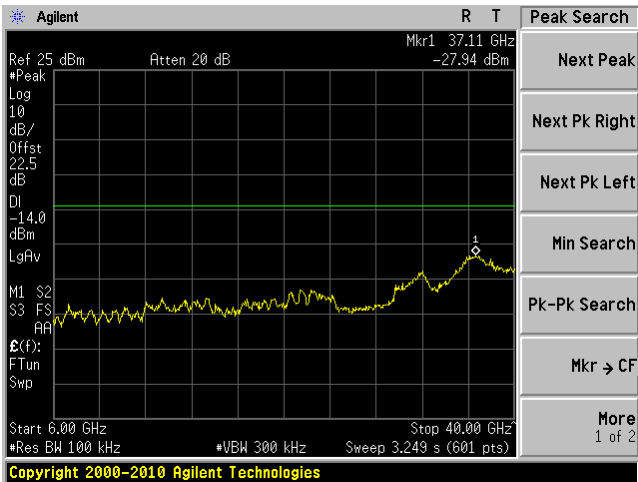
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

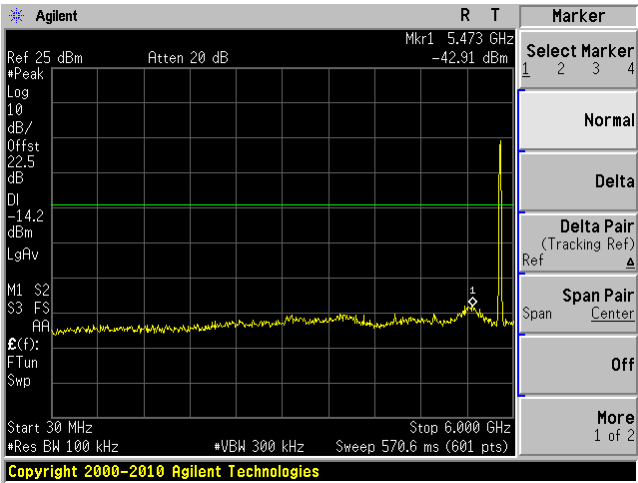


Chain J1, Plot: 6 GHz – 40 GHz

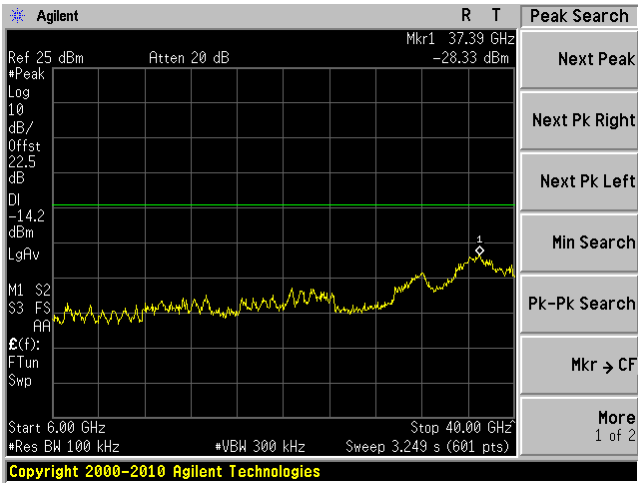


802.11a, High Channel 5825 MHz

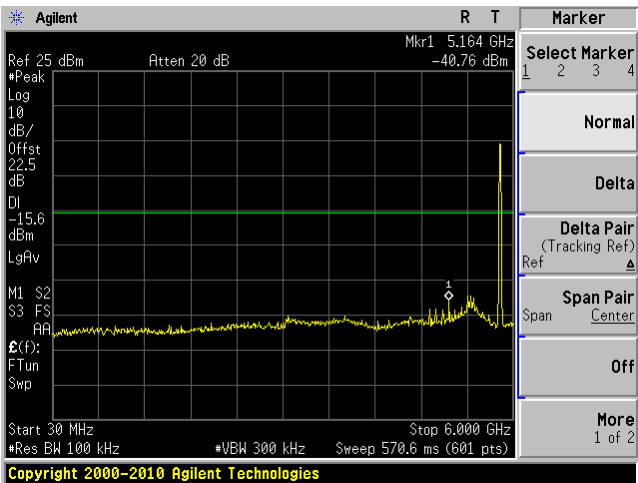
Chain J0, Plot: 30 MHz – 6 GHz



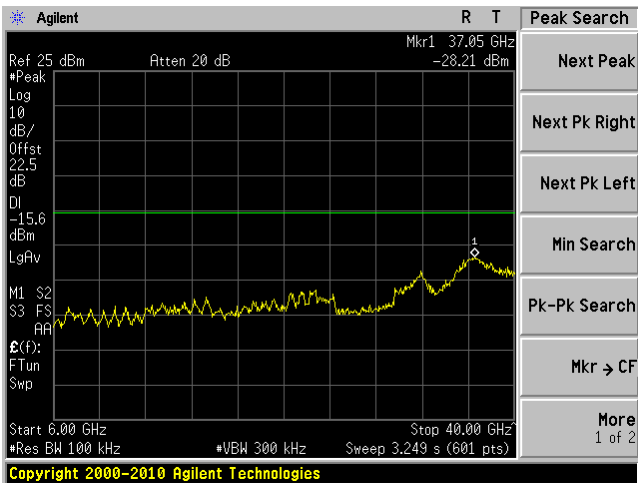
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

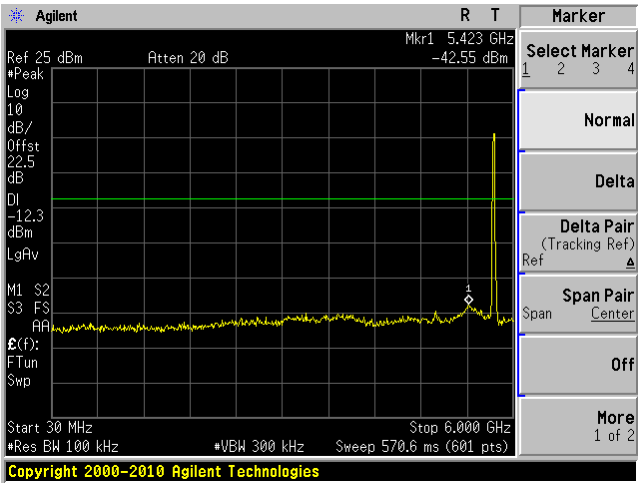


Chain J1, Plot: 6 GHz – 40 GHz

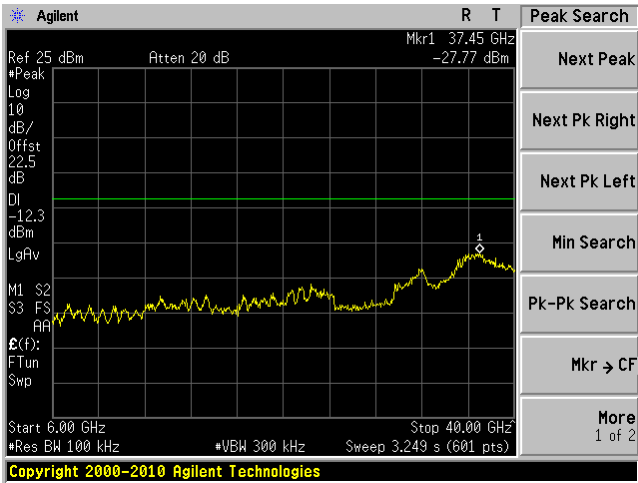


802.11n HT20, Low Channel 5745 MHz

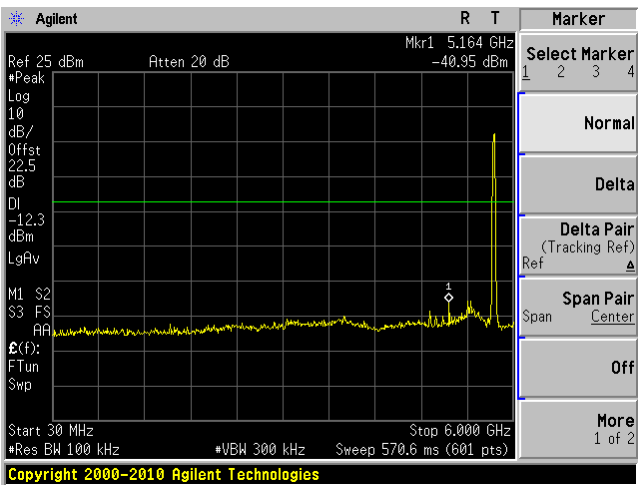
Chain J0, Plot: 30 MHz – 6 GHz



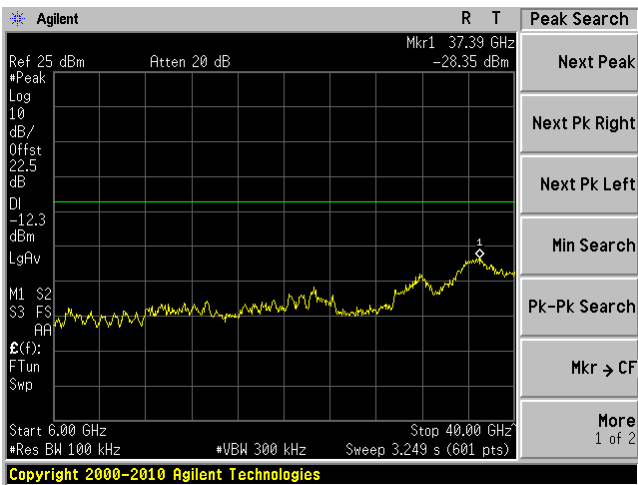
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

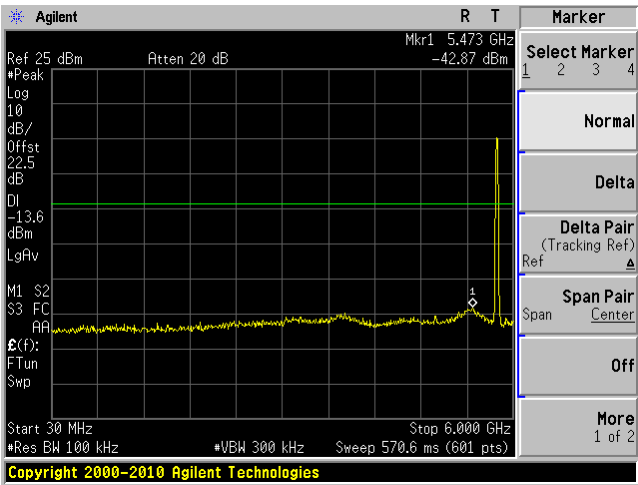


Chain J1, Plot: 6 GHz – 40 GHz

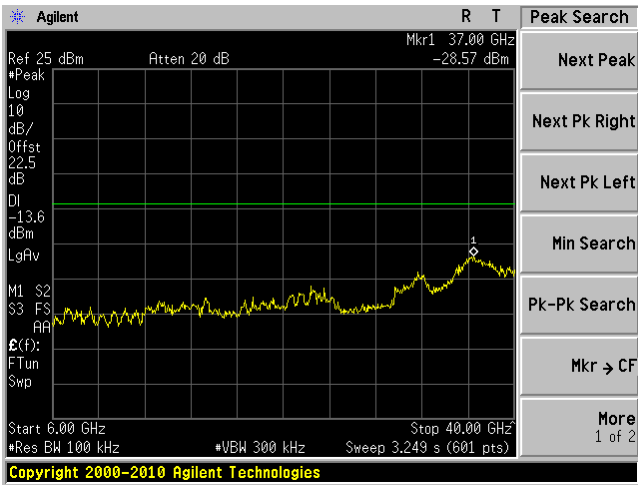


802.11n HT20, Middle Channel 5785 MHz

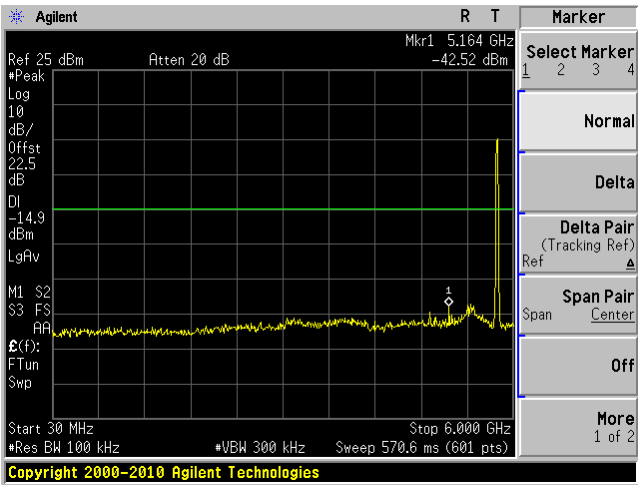
Chain J0, Plot: 30 MHz – 6 GHz



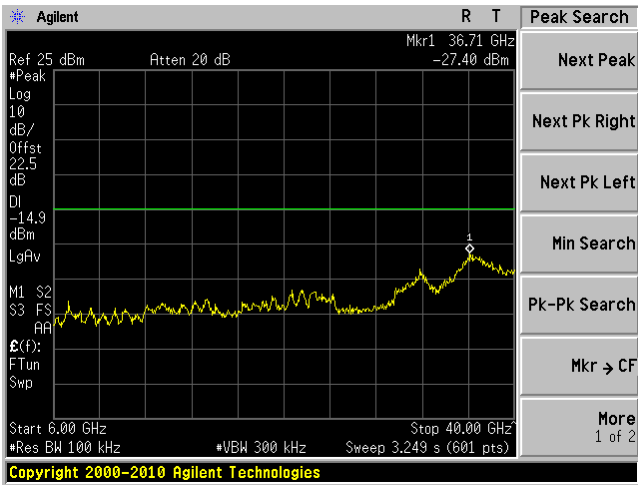
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

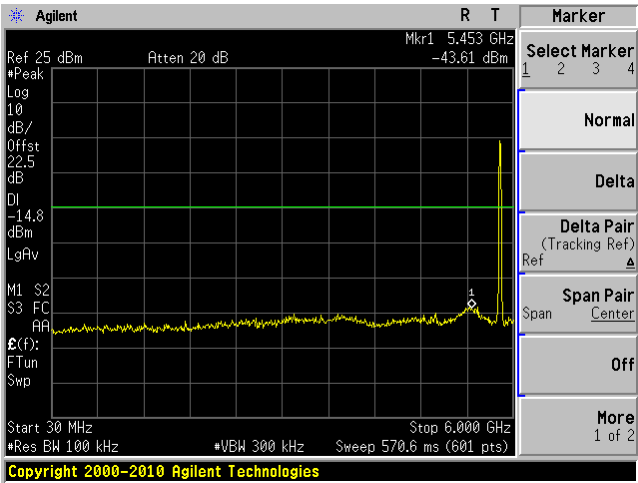


Chain J1, Plot: 6 GHz – 40 GHz

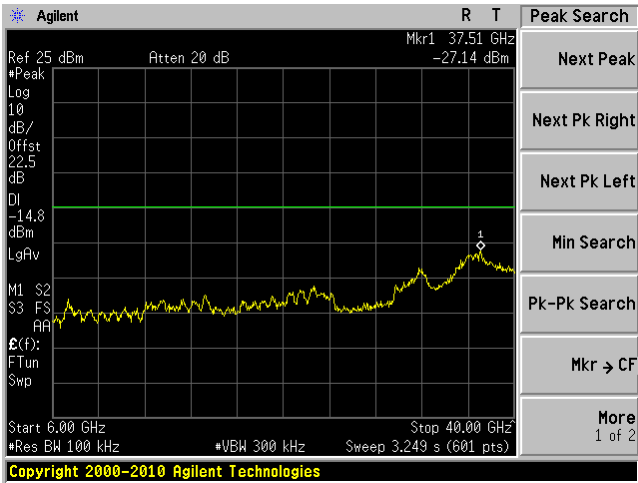


802.11n HT20, High Channel 5825 MHz

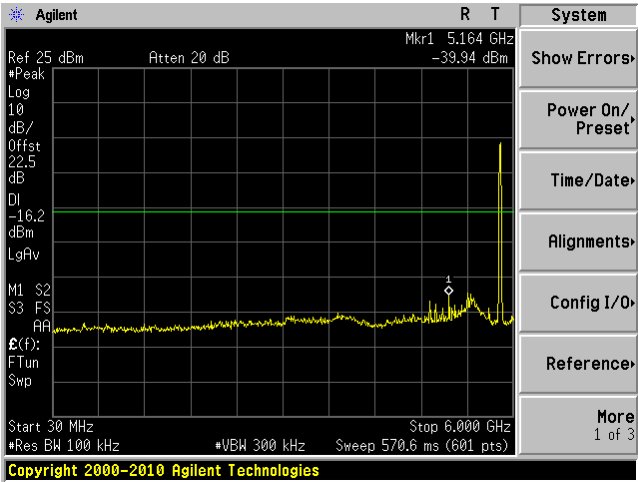
Chain J0, Plot: 30 MHz – 6 GHz



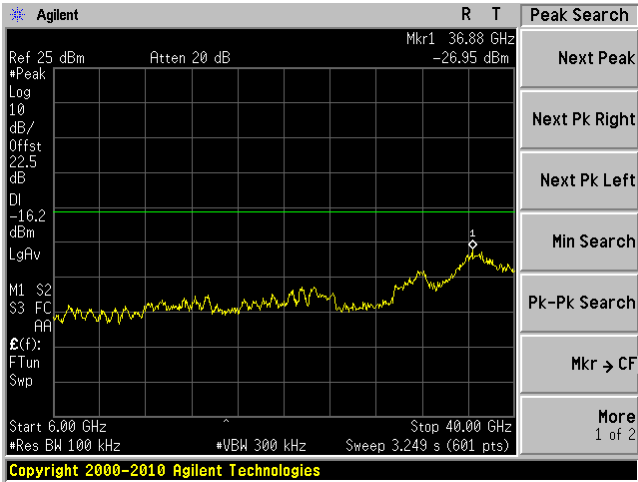
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

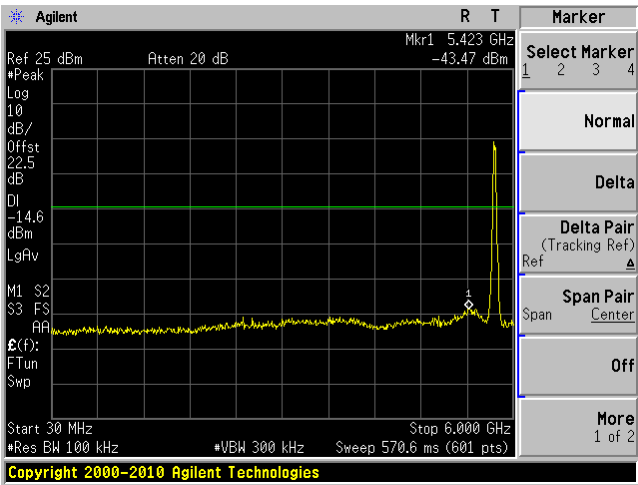


Chain J1, Plot: 6 GHz – 40 GHz

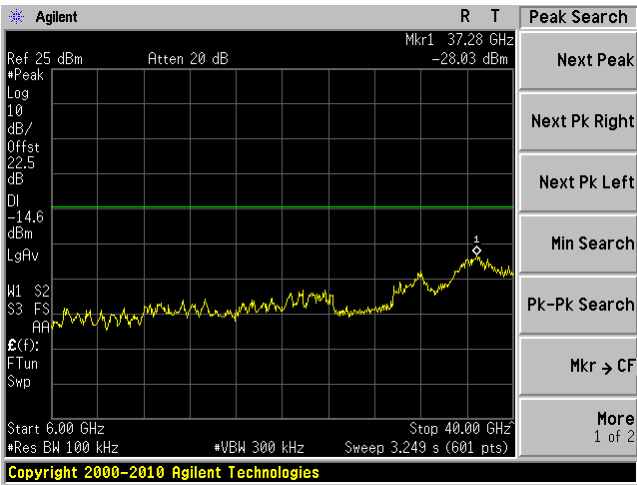


802.11n HT40, Low Channel 5755 MHz

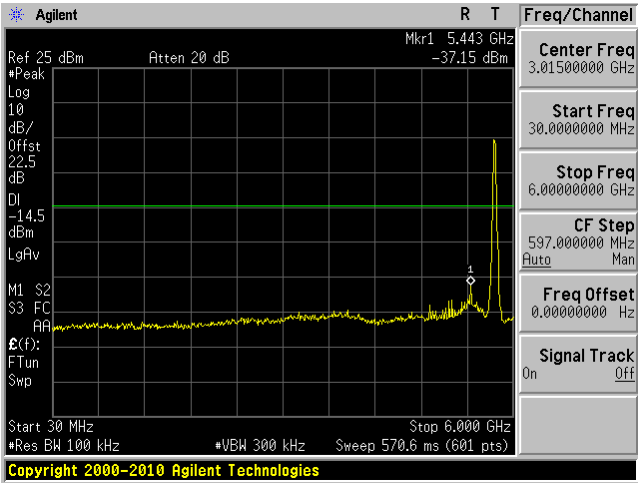
Chain J0, Plot: 30 MHz – 6 GHz



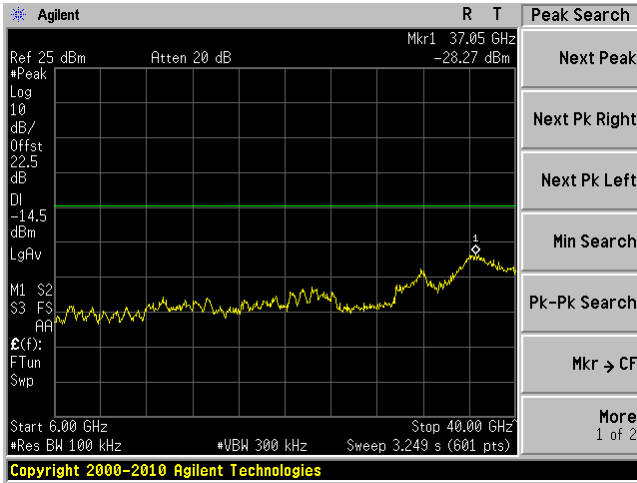
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

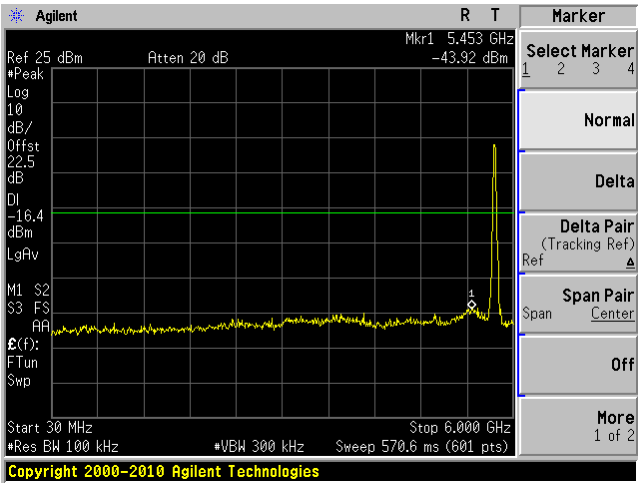


Chain J1, Plot: 6 GHz – 40 GHz

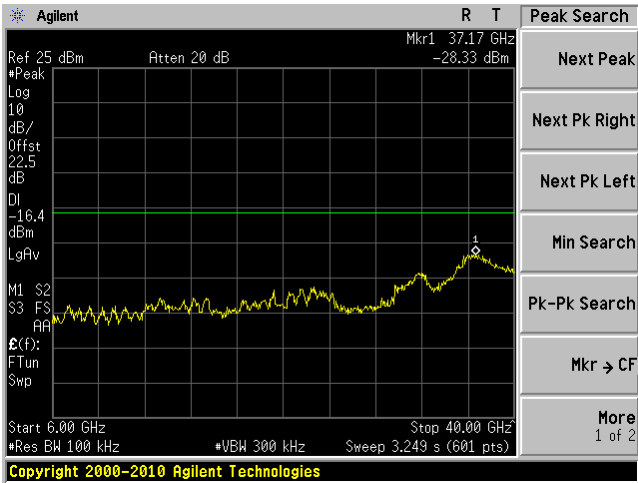


802.11n HT40, High Channel 5795 MHz

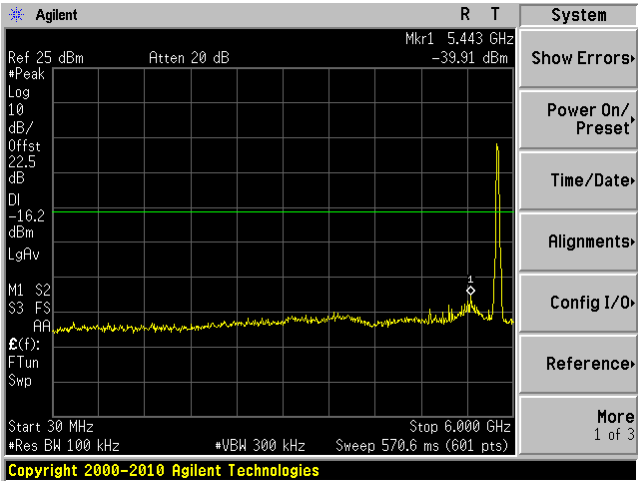
Chain J0, Plot: 30 MHz – 6 GHz



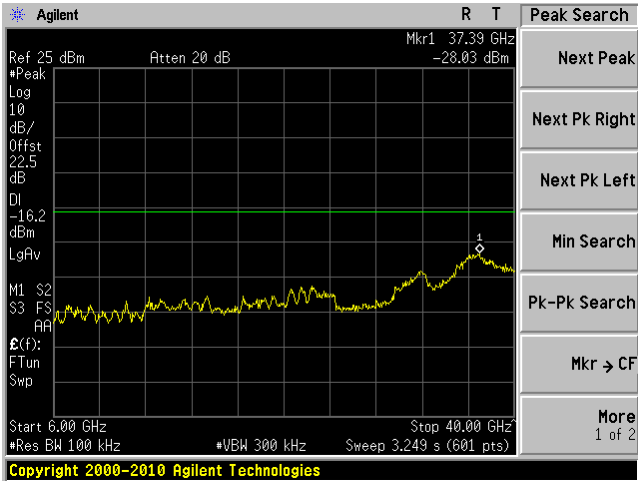
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz



Chain J1, Plot: 6 GHz – 40 GHz



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

8.1 Applicable Standard

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:

RBW = 100 kHz / VBW = 300 kHz / Sweep = 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
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	N/R
Sunol Science Corp	Combination Antenna	JB3	A020106-2	2012-08-15	1 year
Hewlett Packard	Pre-amplifier	8447D	2944A06639	2012-06-09	1 year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2012-05-09	1 year
Agilent	Spectrum Analyzer	E4440A	MY44303352	2012-10-16	1 year
EMCO	Horn Antenna	3115	9511-4627	2012-10-17	1 year
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100338	2012-09-19	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

Temperature:	18-22 °C
Relative Humidity:	45-48 %
ATM Pressure:	101-102 kPa

The testing was performed by Lionel Lara from 2013-03-05 to 2013-04-12 at 5 meter 3.

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:

2.4 GHz Band

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel, Antenna
-4.51	57.81025	Vertical	802.11n HT40, Middle, Patch

5.8 GHz Band

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel, Antenna
-4.92	499.997	Horizontal	802.11a, Middle, Patch

1 – 25 GHz:

2.4 GHz Band

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel, Antenna
-0.60	2390	Horizontal	802.11n HT20, Low, Patch

1-40 GHz:

5.8 GHz Band

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel, Antenna
-7.51	17475	Vertical	802.11a, High, Patch

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

8.8 Radiated Emissions Test Data and Plots

1) 30 MHz – 1 GHz, Measured at 3 meters, Dipole Antennas

2.4 GHz Band, Dipole Antennas, Quasi-Peak Measurements

802.11b mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
499.965	33.85	163	H	271	46	-12.15
374.985	28.23	99	H	333	46	-17.77
57.014	33.38	233	V	185	40	-6.62

802.11g mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
499.965	34	166	H	271	46	-12.00
374.986	28.44	100	H	335	46	-17.56
57.015	33.31	232	V	185	40	-6.69

802.11n HT20 mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
499.965	33.79	163	H	272	46	-12.21
374.987	28.38	99	H	333	46	-17.62
57.016	33.27	235	V	185	40	-6.73

802.11n HT40 mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
499.965	33.9	165	H	271	46	-12.10
374.987	28.61	100	H	335	46	-17.39
57.016	33.29	235	V	185	40	-6.71

Note: Only digital emissions present from 30MHz to 1GHz, therefore only the middle channel was tested.

5.8 GHz Band, Dipole Antennas, Quasi-Peak Measurements

802.11a mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
499.965	33.79	165	H	272	46	-12.21
374.99	28.59	99	H	332	46	-17.41
57.02	32.85	234	V	235	40	-7.15

802.11n HT20 mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
499.965	33.80	165	H	272	46	-12.20
374.99	28.52	99	H	332	46	-17.48
57.02	32.96	234	V	235	40	-7.04

802.11n HT40 mode, Low Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
499.965	33.76	165	H	272	46	-12.24
374.99	28.62	99	H	332	46	-17.38
57.02	32.98	234	V	235	40	-7.02

Note: Only digital emissions present from 30MHz to 1GHz, therefore only one channel was tested per modulation.

2) 1–25 GHz, Measured at 3 meters, Dipole Antennas

2.4 GHz Band, Dipole Antennas

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, measured at 3 meters											
2412	78.94	289	124	V	28.67	2.94	0	110.55	Fund.	-	Peak
2412	69.73	44	108	H	28.67	2.94	0	101.34	Fund.	-	Peak
2412	75.87	289	124	V	28.67	2.94	0	107.48	Fund.	-	Ave
2412	66.9	44	108	H	28.67	2.94	0	98.51	Fund.	-	Ave
4824	32.49	0	100	V	33.08	4.06	27.7	41.93	74	-32.07	Peak
4824	32.49	0	100	H	33.08	4.06	27.7	41.93	74	-32.07	Peak
4824	17.46	0	100	V	33.08	4.06	27.7	26.9	54	-27.1	Ave
4824	17.46	0	100	H	33.08	4.06	27.7	26.9	54	-27.1	Ave
7236	32.46	0	100	V	35.93	4.93	27.58	45.74	74	-28.26	Peak
7236	32.46	0	100	H	35.93	4.93	27.58	45.74	74	-28.26	Peak
7236	17.83	0	100	V	35.93	4.93	27.58	31.11	54	-22.89	Ave
7236	17.83	0	100	H	35.93	4.93	27.58	31.11	54	-22.89	Ave
9648	30.72	0	100	V	37.95	5.82	27.06	47.43	74	-26.57	Peak
9648	30.72	0	100	H	37.95	5.82	27.06	47.43	74	-26.57	Peak
9648	16.09	0	100	V	37.95	5.82	27.06	32.8	54	-21.2	Ave
9648	16.09	0	100	H	37.95	5.82	27.06	32.8	54	-21.2	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	79.08	71	130	V	28.67	2.94	0	110.69	Fund.	-	Peak
2437	67.91	324	100	H	28.67	2.94	0	99.52	Fund.	-	Peak
2437	75.7	71	130	V	28.67	2.94	0	107.31	Fund.	-	Ave
2437	64.56	324	100	H	28.67	2.94	0	96.17	Fund.	-	Ave
4874	32.31	0	100	V	33.33	4.1	27.76	41.98	74	-32.02	Peak
4874	32.31	0	100	H	33.33	4.1	27.76	41.98	74	-32.02	Peak
4874	17.72	0	100	V	33.33	4.1	27.76	27.39	54	-26.61	Ave
4874	17.72	0	100	H	33.33	4.1	27.76	27.39	54	-26.61	Ave
7311	31.88	0	100	V	36.36	4.88	27.51	45.61	74	-28.39	Peak
7311	31.88	0	100	H	36.36	4.88	27.51	45.61	74	-28.39	Peak
7311	17.75	0	100	V	36.36	4.88	27.51	31.48	54	-22.52	Ave
7311	17.75	0	100	H	36.36	4.88	27.51	31.48	54	-22.52	Ave
9748	31.16	0	100	V	38.06	5.74	26.98	47.98	74	-26.02	Peak
9748	31.16	0	100	H	38.06	5.74	26.98	47.98	74	-26.02	Peak
9748	16.35	0	100	V	38.06	5.74	26.98	33.17	54	-20.83	Ave
9748	16.35	0	100	H	38.06	5.74	26.98	33.17	54	-20.83	Ave

Note: All emissions are at noise floor level.

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, measured at 3 meters											
2462	79.72	289	119	V	29.3	3.01	0	112.03	Fund.	-	Peak
2462	70.83	313	123	H	29.3	3.01	0	103.14	Fund.	-	Peak
2462	76.58	289	119	V	29.3	3.01	0	108.89	Fund.	-	Ave
2462	67.47	313	123	H	29.3	3.01	0	99.78	Fund.	-	Ave
4924	32.16	0	100	V	33.33	4.1	27.75	41.84	74	-32.16	Peak
4924	32.16	0	100	H	33.33	4.1	27.75	41.84	74	-32.16	Peak
4924	17.65	0	100	V	33.33	4.1	27.75	27.33	54	-26.67	Ave
4924	17.65	0	100	H	33.33	4.1	27.75	27.33	54	-26.67	Ave
7386	31.99	0	100	V	36.51	4.89	27.51	45.88	74	-28.12	Peak
7386	31.99	0	100	H	36.51	4.89	27.51	45.88	74	-28.12	Peak
7386	17.76	0	100	V	36.51	4.89	27.51	31.65	54	-22.35	Ave
7386	17.76	0	100	H	36.51	4.89	27.51	31.65	54	-22.35	Ave
9848	31.04	0	100	V	38.29	5.77	26.98	48.12	74	-25.88	Peak
9848	31.04	0	100	H	38.29	5.77	26.98	48.12	74	-25.88	Peak
9848	16.29	0	100	V	38.29	5.77	26.98	33.37	54	-20.63	Ave
9848	16.29	0	100	H	38.29	5.77	26.98	33.37	54	-20.63	Ave

Note: All emissions are at noise floor level.

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, measured at 3 meters											
2412	82.07	68	100	V	28.67	2.94	0	113.68	Fund.	-	Peak
2412	74.75	44	106	H	28.67	2.94	0	106.36	Fund.	-	Peak
2412	70.59	68	100	V	28.67	2.94	0	102.2	Fund.	-	Ave
2412	63.5	44	106	H	28.67	2.94	0	95.11	Fund.	-	Ave
4824	32.73	0	100	V	33.08	4.06	27.7	42.17	74	-31.83	Peak
4824	32.73	0	100	H	33.08	4.06	27.7	42.17	74	-31.83	Peak
4824	17.95	0	100	V	33.08	4.06	27.7	27.39	54	-26.61	Ave
4824	17.95	0	100	H	33.08	4.06	27.7	27.39	54	-26.61	Ave
7236	32.33	0	100	V	35.93	4.93	27.58	45.61	74	-28.39	Peak
7236	32.33	0	100	H	35.93	4.93	27.58	45.61	74	-28.39	Peak
7236	17.88	0	100	V	35.93	4.93	27.58	31.16	54	-22.84	Ave
7236	17.88	0	100	H	35.93	4.93	27.58	31.16	54	-22.84	Ave
9648	30.4	0	100	V	37.95	5.82	27.06	47.11	74	-26.89	Peak
9648	30.4	0	100	H	37.95	5.82	27.06	47.11	74	-26.89	Peak
9648	16.12	0	100	V	37.95	5.82	27.06	32.83	54	-21.17	Ave
9648	16.12	0	100	H	37.95	5.82	27.06	32.83	54	-21.17	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	83.22	72	133	V	28.67	2.94	0	114.83	Fund.	-	Peak
2437	73.87	323	100	H	28.67	2.94	0	105.48	Fund.	-	Peak
2437	71.85	72	133	V	28.67	2.94	0	103.46	Fund.	-	Ave
2437	62.4	323	100	H	28.67	2.94	0	94.01	Fund.	-	Ave
4874	32.61	0	100	V	33.33	4.1	27.76	42.28	74	-31.72	Peak
4874	32.61	0	100	H	33.33	4.1	27.76	42.28	74	-31.72	Peak
4874	17.95	0	100	V	33.33	4.1	27.76	27.62	54	-26.38	Ave
4874	17.95	0	100	H	33.33	4.1	27.76	27.62	54	-26.38	Ave
7311	32.3	0	100	V	36.36	4.88	27.51	46.03	74	-27.97	Peak
7311	32.3	0	100	H	36.36	4.88	27.51	46.03	74	-27.97	Peak
7311	17.85	0	100	V	36.36	4.88	27.51	31.58	54	-22.42	Ave
7311	17.85	0	100	H	36.36	4.88	27.51	31.58	54	-22.42	Ave
9748	30.62	0	100	V	38.06	5.74	26.98	47.44	74	-26.56	Peak
9748	30.62	0	100	H	38.06	5.74	26.98	47.44	74	-26.56	Peak
9748	16.4	0	100	V	38.06	5.74	26.98	33.22	54	-20.78	Ave
9748	16.4	0	100	H	38.06	5.74	26.98	33.22	54	-20.78	Ave

Note: All emissions are at noise floor level.

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, measured at 3 meters											
2462	81.4	289	100	V	29.3	3.01	0	113.71	Fund.	-	Peak
2462	72.65	312	121	H	29.3	3.01	0	104.96	Fund.	-	Peak
2462	69.93	289	100	V	29.3	3.01	0	102.24	Fund.	-	Ave
2462	61.26	312	121	H	29.3	3.01	0	93.57	Fund.	-	Ave
4924	32.49	0	100	V	33.33	4.1	27.75	42.17	74	-31.83	Peak
4924	32.49	0	100	H	33.33	4.1	27.75	42.17	74	-31.83	Peak
4924	17.93	0	100	V	33.33	4.1	27.75	27.61	54	-26.39	Ave
4924	17.93	0	100	H	33.33	4.1	27.75	27.61	54	-26.39	Ave
7386	32.38	0	100	V	36.51	4.89	27.51	46.27	74	-27.73	Peak
7386	32.38	0	100	H	36.51	4.89	27.51	46.27	74	-27.73	Peak
7386	17.96	0	100	V	36.51	4.89	27.51	31.85	54	-22.15	Ave
7386	17.96	0	100	H	36.51	4.89	27.51	31.85	54	-22.15	Ave
9848	30.56	0	100	V	38.29	5.77	26.98	47.64	74	-26.36	Peak
9848	30.56	0	100	H	38.29	5.77	26.98	47.64	74	-26.36	Peak
9848	16.38	0	100	V	38.29	5.77	26.98	33.46	54	-20.54	Ave
9848	16.38	0	100	H	38.29	5.77	26.98	33.46	54	-20.54	Ave

Note: All emissions are at noise floor level.

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, measured at 3 meters											
2412	81.49	67	100	V	28.67	2.94	0	113.1	Fund.	-	Peak
2412	73.69	44	108	H	28.67	2.94	0	105.3	Fund.	-	Peak
2412	69.58	67	100	V	28.67	2.94	0	101.19	Fund.	-	Ave
2412	62.03	44	108	H	28.67	2.94	0	93.64	Fund.	-	Ave
4824	32.25	0	100	V	33.08	4.06	27.7	41.69	74	-32.31	Peak
4824	32.25	0	100	H	33.08	4.06	27.7	41.69	74	-32.31	Peak
4824	17.98	0	100	V	33.08	4.06	27.7	27.42	54	-26.58	Ave
4824	17.98	0	100	H	33.08	4.06	27.7	27.42	54	-26.58	Ave
7236	32.21	0	100	V	35.93	4.93	27.58	45.49	74	-28.51	Peak
7236	32.21	0	100	H	35.93	4.93	27.58	45.49	74	-28.51	Peak
7236	18	0	100	V	35.93	4.93	27.58	31.28	54	-22.72	Ave
7236	18	0	100	H	35.93	4.93	27.58	31.28	54	-22.72	Ave
9648	30.79	0	100	V	37.95	5.82	27.06	47.5	74	-26.5	Peak
9648	30.79	0	100	H	37.95	5.82	27.06	47.5	74	-26.5	Peak
9648	16.43	0	100	V	37.95	5.82	27.06	33.14	54	-20.86	Ave
9648	16.43	0	100	H	37.95	5.82	27.06	33.14	54	-20.86	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	84.08	72	129	V	28.67	2.94	0	115.69	Fund.	-	Peak
2437	73.93	323	100	H	28.67	2.94	0	105.54	Fund.	-	Peak
2437	72.14	72	129	V	28.67	2.94	0	103.75	Fund.	-	Ave
2437	62.21	323	100	H	28.67	2.94	0	93.82	Fund.	-	Ave
4874	32.47	0	100	V	33.33	4.1	27.76	42.14	74	-31.86	Peak
4874	32.47	0	100	H	33.33	4.1	27.76	42.14	74	-31.86	Peak
4874	17.91	0	100	V	33.33	4.1	27.76	27.58	54	-26.42	Ave
4874	17.91	0	100	H	33.33	4.1	27.76	27.58	54	-26.42	Ave
7311	32.21	0	100	V	36.36	4.88	27.51	45.94	74	-28.06	Peak
7311	32.21	0	100	H	36.36	4.88	27.51	45.94	74	-28.06	Peak
7311	17.83	0	100	V	36.36	4.88	27.51	31.56	54	-22.44	Ave
7311	17.83	0	100	H	36.36	4.88	27.51	31.56	54	-22.44	Ave
9748	30.74	0	100	V	38.06	5.74	26.98	47.56	74	-26.44	Peak
9748	30.74	0	100	H	38.06	5.74	26.98	47.56	74	-26.44	Peak
9748	16.19	0	100	V	38.06	5.74	26.98	33.01	54	-20.99	Ave
9748	16.19	0	100	H	38.06	5.74	26.98	33.01	54	-20.99	Ave

Note: All emissions are at noise floor level.

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, measured at 3 meters											
2462	82.71	289	130	V	29.3	3.01	0	115.02	Fund.	-	Peak
2462	71.43	105	100	H	29.3	3.01	0	103.74	Fund.	-	Peak
2462	71.01	289	130	V	29.3	3.01	0	103.32	Fund.	-	Ave
2462	60.43	105	100	H	29.3	3.01	0	92.74	Fund.	-	Ave
4924	32.36	0	100	V	33.33	4.1	27.75	42.04	74	-31.96	Peak
4924	32.36	0	100	H	33.33	4.1	27.75	42.04	74	-31.96	Peak
4924	17.97	0	100	V	33.33	4.1	27.75	27.65	54	-26.35	Ave
4924	17.97	0	100	H	33.33	4.1	27.75	27.65	54	-26.35	Ave
7386	32.37	0	100	V	36.51	4.89	27.51	46.26	74	-27.74	Peak
7386	32.37	0	100	H	36.51	4.89	27.51	46.26	74	-27.74	Peak
7386	17.93	0	100	V	36.51	4.89	27.51	31.82	54	-22.18	Ave
7386	17.93	0	100	H	36.51	4.89	27.51	31.82	54	-22.18	Ave
9848	30.69	0	100	V	38.29	5.77	26.98	47.77	74	-26.23	Peak
9848	30.69	0	100	H	38.29	5.77	26.98	47.77	74	-26.23	Peak
9848	16.18	0	100	V	38.29	5.77	26.98	33.26	54	-20.74	Ave
9848	16.18	0	100	H	38.29	5.77	26.98	33.26	54	-20.74	Ave

Note: All emissions are at noise floor level.

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, measured at 3 meters											
2422	75.12	68	100	V	28.67	2.94	0	106.73	Fund.	-	Peak
2422	67.9	44	100	H	28.67	2.94	0	99.51	Fund.	-	Peak
2422	63.96	68	100	V	28.67	2.94	0	95.57	Fund.	-	Ave
2422	56.55	44	100	H	28.67	2.94	0	88.16	Fund.	-	Ave
4844	32.76	0	100	V	33.08	4.06	27.7	42.2	74	-31.8	Peak
4844	32.76	0	100	H	33.08	4.06	27.7	42.2	74	-31.8	Peak
4844	17.99	0	100	V	33.08	4.06	27.7	27.43	54	-26.57	Ave
4844	17.99	0	100	H	33.08	4.06	27.7	27.43	54	-26.57	Ave
7266	32.85	0	100	V	35.93	4.93	27.58	46.13	74	-27.87	Peak
7266	32.85	0	100	H	35.93	4.93	27.58	46.13	74	-27.87	Peak
7266	17.92	0	100	V	35.93	4.93	27.58	31.2	54	-22.8	Ave
7266	17.92	0	100	H	35.93	4.93	27.58	31.2	54	-22.8	Ave
9688	30.98	0	100	V	37.95	5.82	27.06	47.69	74	-26.31	Peak
9688	30.98	0	100	H	37.95	5.82	27.06	47.69	74	-26.31	Peak
9688	16.47	0	100	V	37.95	5.82	27.06	33.18	54	-20.82	Ave
9688	16.47	0	100	H	37.95	5.82	27.06	33.18	54	-20.82	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	80.06	71	134	V	28.67	2.94	0	111.67	Fund.	-	Peak
2437	71.46	323	100	H	28.67	2.94	0	103.07	Fund.	-	Peak
2437	68.44	71	134	V	28.67	2.94	0	100.05	Fund.	-	Ave
2437	59.67	323	100	H	28.67	2.94	0	91.28	Fund.	-	Ave
4874	33.15	0	100	V	33.33	4.1	27.76	42.82	74	-31.18	Peak
4874	33.15	0	100	H	33.33	4.1	27.76	42.82	74	-31.18	Peak
4874	18.22	0	100	V	33.33	4.1	27.76	27.89	54	-26.11	Ave
4874	18.22	0	100	H	33.33	4.1	27.76	27.89	54	-26.11	Ave
7311	32.41	0	100	V	36.36	4.88	27.51	46.14	74	-27.86	Peak
7311	32.41	0	100	H	36.36	4.88	27.51	46.14	74	-27.86	Peak
7311	17.89	0	100	V	36.36	4.88	27.51	31.62	54	-22.38	Ave
7311	17.89	0	100	H	36.36	4.88	27.51	31.62	54	-22.38	Ave
9748	31.12	0	100	V	38.06	5.74	26.98	47.94	74	-26.06	Peak
9748	31.12	0	100	H	38.06	5.74	26.98	47.94	74	-26.06	Peak
9748	16.48	0	100	V	38.06	5.74	26.98	33.3	54	-20.7	Ave
9748	16.48	0	100	H	38.06	5.74	26.98	33.3	54	-20.7	Ave

Note: All emissions are at noise floor level.

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)	
Middle Channel 2452 MHz, measured at 3 meters											
2452	77.17	289	130	V	29.3	3.01	0	109.48	Fund.	-	Peak
2452	66.06	313	120	H	29.3	3.01	0	98.37	Fund.	-	Peak
2452	65.16	289	130	V	29.3	3.01	0	97.47	Fund.	-	Ave
2452	54.38	313	120	H	29.3	3.01	0	86.69	Fund.	-	Ave
4904	32.99	0	100	V	33.33	4.1	27.75	42.67	74	-31.33	Peak
4904	32.99	0	100	H	33.33	4.1	27.75	42.67	74	-31.33	Peak
4904	18.14	0	100	V	33.33	4.1	27.75	27.82	54	-26.18	Ave
4904	18.14	0	100	H	33.33	4.1	27.75	27.82	54	-26.18	Ave
7356	32.46	0	100	V	36.51	4.89	27.51	46.35	74	-27.65	Peak
7356	32.46	0	100	H	36.51	4.89	27.51	46.35	74	-27.65	Peak
7356	17.97	0	100	V	36.51	4.89	27.51	31.86	54	-22.14	Ave
7356	17.97	0	100	H	36.51	4.89	27.51	31.86	54	-22.14	Ave
9808	31.11	0	100	V	38.29	5.77	26.98	48.19	74	-25.81	Peak
9808	31.11	0	100	H	38.29	5.77	26.98	48.19	74	-25.81	Peak
9808	16.46	0	100	V	38.29	5.77	26.98	33.54	54	-20.46	Ave
9808	16.46	0	100	H	38.29	5.77	26.98	33.54	54	-20.46	Ave

Note: All emissions are at noise floor level.

3) 1–40 GHz, Measured at 3 meters, Dipole Antennas

5.8 GHz Band, Dipole Antennas

802.11a 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 5745 MHz, measured at 3 meters											
5745	69.69	139	119	V	34.39	4.62	0	108.7	Fund.	-	Peak
5745	63.99	293	145	H	34.39	4.62	0	103	Fund.	-	Peak
5745	58.61	139	119	V	34.39	4.62	0	97.62	Fund.	-	Ave
5745	52.66	293	145	H	34.39	4.62	0	91.67	Fund.	-	Ave
11490	30.92	0	100	V	39.05	6.2	26.94	49.23	74	-24.77	Peak
11490	30.92	0	100	H	39.05	6.2	26.94	49.23	74	-24.77	Peak
11490	16.51	0	100	V	39.05	6.2	26.94	34.82	54	-19.18	Ave
11490	16.51	0	100	H	39.05	6.2	26.94	34.82	54	-19.18	Ave
17235	32.48	0	100	V	43.23	7.4	25.93	57.18	74	-16.82	Peak
17235	32.48	0	100	H	43.23	7.4	25.93	57.18	74	-16.82	Peak
17235	17.42	0	100	V	43.23	7.4	25.93	42.12	54	-11.88	Ave
17235	17.42	0	100	H	43.23	7.4	25.93	42.12	54	-11.88	Ave
22980	32.29	0	100	V	35.4	9.74	34.81	42.62	74	-31.38	Peak
22980	32.29	0	100	H	35.4	9.74	34.81	42.62	74	-31.38	Peak
22980	17.48	0	100	V	35.4	9.74	34.81	27.81	54	-26.19	Ave
22980	17.48	0	100	H	35.4	9.74	34.81	27.81	54	-26.19	Ave

Note: All emissions are at noise floor level.

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)	
Middle Channel 5785 MHz, measured at 3 meters											
5785	69.02	236	111	V	34.35	4.72	0	108.09	Fund.	-	Peak
5785	64.73	293	144	H	34.35	4.72	0	103.8	Fund.	-	Peak
5785	58.44	236	111	V	34.35	4.72	0	97.51	Fund.	-	Ave
5785	53.13	293	144	H	34.35	4.72	0	92.2	Fund.	-	Ave
11570	31.52	0	100	V	39.2	6.2	26.99	49.93	74	-24.07	Peak
11570	31.52	0	100	H	39.2	6.2	26.99	49.93	74	-24.07	Peak
11570	18.09	0	100	V	39.2	6.2	26.99	36.5	54	-17.5	Ave
11570	18.09	0	100	H	39.2	6.2	26.99	36.5	54	-17.5	Ave
17355	31.74	0	100	V	45.31	8.45	25.84	59.66	74	-14.34	Peak
17355	31.74	0	100	H	45.31	8.45	25.84	59.66	74	-14.34	Peak
17355	16.95	0	100	V	45.31	8.45	25.84	44.87	54	-9.13	Ave
17355	16.95	0	100	H	45.31	8.45	25.84	44.87	54	-9.13	Ave
23140	32.5	0	100	V	35.3	9.88	34.71	42.97	74	-31.03	Peak
23140	32.5	0	100	H	35.3	9.88	34.71	42.97	74	-31.03	Peak
23140	17.92	0	100	V	35.3	9.88	34.71	28.39	54	-25.61	Ave
23140	17.92	0	100	H	35.3	9.88	34.71	28.39	54	-25.61	Ave

Note: All emissions are at noise floor level.

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 5825 MHz, measured at 3 meters											
5825	68.33	222	111	V	34.35	4.72	0	107.4	Fund.	-	Peak
5825	61.39	290	151	H	34.35	4.72	0	100.46	Fund.	-	Peak
5825	56.82	222	111	V	34.35	4.72	0	95.89	Fund.	-	Ave
5825	49.78	290	151	H	34.35	4.72	0	88.85	Fund.	-	Ave
11650	31.71	0	100	V	39.31	6.2	27	50.22	74	-23.78	Peak
11650	31.71	0	100	H	39.31	6.2	27	50.22	74	-23.78	Peak
11650	18.17	0	100	V	39.31	6.2	27	36.68	54	-17.32	Ave
11650	18.17	0	100	H	39.31	6.2	27	36.68	54	-17.32	Ave
17475	31.69	0	100	V	46.78	8.49	25.79	61.17	74	-12.83	Peak
17475	31.69	0	100	H	46.78	8.49	25.79	61.17	74	-12.83	Peak
17475	16.9	0	100	V	46.78	8.49	25.79	46.38	54	-7.62	Ave
17475	16.9	0	100	H	46.78	8.49	25.79	46.38	54	-7.62	Ave
23300	32.55	0	100	V	35.2	9.74	34.74	42.75	74	-31.25	Peak
23300	32.55	0	100	H	35.2	9.74	34.74	42.75	74	-31.25	Peak
23300	17.93	0	100	V	35.2	9.74	34.74	28.13	54	-25.87	Ave
23300	17.93	0	100	H	35.2	9.74	34.74	28.13	54	-25.87	Ave

Note: All emissions are at noise floor level.

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 5745 MHz, measured at 3 meters											
5745	70.87	233	100	V	34.39	4.62	0	109.88	Fund.	-	Peak
5745	62.09	287	143	H	34.39	4.62	0	101.1	Fund.	-	Peak
5745	59.26	233	100	V	34.39	4.62	0	98.27	Fund.	-	Ave
5745	50.78	287	143	H	34.39	4.62	0	89.79	Fund.	-	Ave
11490	31.09	0	100	V	39.05	6.2	26.94	49.4	74	-24.6	Peak
11490	31.09	0	100	H	39.05	6.2	26.94	49.4	74	-24.6	Peak
11490	16.57	0	100	V	39.05	6.2	26.94	34.88	54	-19.12	Ave
11490	16.57	0	100	H	39.05	6.2	26.94	34.88	54	-19.12	Ave
17235	32.06	0	100	V	43.23	7.4	25.93	56.76	74	-17.24	Peak
17235	32.06	0	100	H	43.23	7.4	25.93	56.76	74	-17.24	Peak
17235	17.45	0	100	V	43.23	7.4	25.93	42.15	54	-11.85	Ave
17235	17.45	0	100	H	43.23	7.4	25.93	42.15	54	-11.85	Ave
22980	32.01	0	100	V	35.4	9.74	34.81	42.34	74	-31.66	Peak
22980	32.01	0	100	H	35.4	9.74	34.81	42.34	74	-31.66	Peak
22980	17.52	0	100	V	35.4	9.74	34.81	27.85	54	-26.15	Ave
22980	17.52	0	100	H	35.4	9.74	34.81	27.85	54	-26.15	Ave

Note: All emissions are at noise floor level.

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)	
Middle Channel 5785 MHz, measured at 3 meters											
5785	69.83	226	100	V	34.35	4.72	0	108.9	Fund.	-	Peak
5785	60.66	278	124	H	34.35	4.72	0	99.73	Fund.	-	Peak
5785	58.51	226	100	V	34.35	4.72	0	97.58	Fund.	-	Ave
5785	49.76	278	124	H	34.35	4.72	0	88.83	Fund.	-	Ave
11570	32.68	0	100	V	39.2	6.2	26.99	51.09	74	-22.91	Peak
11570	32.68	0	100	H	39.2	6.2	26.99	51.09	74	-22.91	Peak
11570	18.41	0	100	V	39.2	6.2	26.99	36.82	54	-17.18	Ave
11570	18.41	0	100	H	39.2	6.2	26.99	36.82	54	-17.18	Ave
17355	31.61	0	100	V	45.31	8.45	25.84	59.53	74	-14.47	Peak
17355	31.61	0	100	H	45.31	8.45	25.84	59.53	74	-14.47	Peak
17355	16.98	0	100	V	45.31	8.45	25.84	44.9	54	-9.1	Ave
17355	16.98	0	100	H	45.31	8.45	25.84	44.9	54	-9.1	Ave
23140	32.72	0	100	V	35.3	9.88	34.71	43.19	74	-30.81	Peak
23140	32.72	0	100	H	35.3	9.88	34.71	43.19	74	-30.81	Peak
23140	17.91	0	100	V	35.3	9.88	34.71	28.38	54	-25.62	Ave
23140	17.91	0	100	H	35.3	9.88	34.71	28.38	54	-25.62	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 5825 MHz, measured at 3 meters											
5825	67.68	235	100	V	34.35	4.72	0	106.75	Fund.	-	Peak
5825	63.72	299	151	H	34.35	4.72	0	102.79	Fund.	-	Peak
5825	56.55	235	100	V	34.35	4.72	0	95.62	Fund.	-	Ave
5825	52.09	299	151	H	34.35	4.72	0	91.16	Fund.	-	Ave
11650	32.62	0	100	V	39.31	6.2	27	51.13	74	-22.87	Peak
11650	32.62	0	100	H	39.31	6.2	27	51.13	74	-22.87	Peak
11650	18.39	0	100	V	39.31	6.2	27	36.9	54	-17.1	Ave
11650	18.39	0	100	H	39.31	6.2	27	36.9	54	-17.1	Ave
17475	31.5	0	100	V	46.78	8.49	25.79	60.98	74	-13.02	Peak
17475	31.5	0	100	H	46.78	8.49	25.79	60.98	74	-13.02	Peak
17475	16.94	0	100	V	46.78	8.49	25.79	46.42	54	-7.58	Ave
17475	16.94	0	100	H	46.78	8.49	25.79	46.42	54	-7.58	Ave
23300	32.68	0	100	V	35.2	9.74	34.74	42.88	74	-31.12	Peak
23300	32.68	0	100	H	35.2	9.74	34.74	42.88	74	-31.12	Peak
23300	17.97	0	100	V	35.2	9.74	34.74	28.17	54	-25.83	Ave
23300	17.97	0	100	H	35.2	9.74	34.74	28.17	54	-25.83	Ave

Note: All emissions are at noise floor level.

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 5755 MHz, measured at 3 meters											
5755	67.8	233	100	V	34.35	4.72	0	106.87	Fund.	-	Peak
5755	60.09	328	149	H	34.35	4.72	0	99.16	Fund.	-	Peak
5755	55.4	233	100	V	34.35	4.72	0	94.47	Fund.	-	Ave
5755	49.23	328	149	H	34.35	4.72	0	88.3	Fund.	-	Ave
11510	32.86	0	100	V	39.05	6.2	26.94	51.17	74	-22.83	Peak
11510	32.86	0	100	H	39.05	6.2	26.94	51.17	74	-22.83	Peak
11510	17.49	0	100	V	39.05	6.2	26.94	35.8	54	-18.2	Ave
11510	17.49	0	100	H	39.05	6.2	26.94	35.8	54	-18.2	Ave
17265	31.47	0	100	V	43.23	7.4	25.93	56.17	74	-17.83	Peak
17265	31.47	0	100	H	43.23	7.4	25.93	56.17	74	-17.83	Peak
17265	16.81	0	100	V	43.23	7.4	25.93	41.51	54	-12.49	Ave
17265	16.81	0	100	H	43.23	7.4	25.93	41.51	54	-12.49	Ave
23020	33.59	0	100	V	35.2	9.74	34.74	43.79	74	-30.21	Peak
23020	33.59	0	100	H	35.2	9.74	34.74	43.79	74	-30.21	Peak
23020	18.06	0	100	V	35.2	9.74	34.74	28.26	54	-25.74	Ave
23020	18.06	0	100	H	35.2	9.74	34.74	28.26	54	-25.74	Ave

Note: All emissions are at noise floor level.

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 5795 MHz, measured at 3 meters											
5795	66.46	247	123	V	34.35	4.72	0	105.53	Fund.	-	Peak
5795	61.75	330	148	H	34.35	4.72	0	100.82	Fund.	-	Peak
5795	55.23	247	123	V	34.35	4.72	0	94.3	Fund.	-	Ave
5795	49.9	330	148	H	34.35	4.72	0	88.97	Fund.	-	Ave
11590	32.8	0	100	V	39.31	6.2	27	51.31	74	-22.69	Peak
11590	32.8	0	100	H	39.31	6.2	27	51.31	74	-22.69	Peak
11590	17.47	0	100	V	39.31	6.2	27	35.98	54	-18.02	Ave
11590	17.47	0	100	H	39.31	6.2	27	35.98	54	-18.02	Ave
17385	31.59	0	100	V	46.78	8.49	25.79	61.07	74	-12.93	Peak
17385	31.59	0	100	H	46.78	8.49	25.79	61.07	74	-12.93	Peak
17385	16.86	0	100	V	46.78	8.49	25.79	46.34	54	-7.66	Ave
17385	16.86	0	100	H	46.78	8.49	25.79	46.34	54	-7.66	Ave
23180	33.52	0	100	V	35.4	9.74	34.81	43.85	74	-30.15	Peak
23180	33.52	0	100	H	35.4	9.74	34.81	43.85	74	-30.15	Peak
23180	18.03	0	100	V	35.4	9.74	34.81	28.36	54	-25.64	Ave
23180	18.03	0	100	H	35.4	9.74	34.81	28.36	54	-25.64	Ave

Note: All emissions are at noise floor level.

4) Restricted Band Edges, Dipole Antennas

2.4GHz 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, measured at 3 meters											
2390	33.5	289	124	V	28.67	2.94	0	65.11	74	-8.89	Peak
2390	28.85	44	108	H	28.67	2.94	0	60.46	74	-13.54	Peak
2390	17.56	289	124	V	28.67	2.94	0	49.17	54	-4.83	Ave
2390	15.05	44	108	H	28.67	2.94	0	46.66	54	-7.34	Ave
High Channel 2462 MHz, measured at 3 meters											
2483.5	37.56	289	119	V	29.3	3.01	0	69.87	74	-4.13	Peak
2483.5	31.35	313	123	H	29.3	3.01	0	63.66	74	-10.34	Peak
2483.5	16.56	289	119	V	29.3	3.01	0	48.87	54	-5.13	Ave
2483.5	14.68	313	123	H	29.3	3.01	0	46.99	54	-7.01	Ave

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, measured at 3 meters											
2388	37.29	68	100	V	28.67	2.94	0	68.9	74	-5.1	Peak
2388	32.49	44	106	H	28.67	2.94	0	64.1	74	-9.9	Peak
2388	20.8	68	100	V	28.67	2.94	0	52.41	54	-1.59	Ave
2388	16.79	44	106	H	28.67	2.94	0	48.4	54	-5.6	Ave
High Channel 2462 MHz, measured at 3 meters											
2485	38.86	289	100	V	29.3	3.01	0	71.17	74	-2.83	Peak
2485	32.22	312	121	H	29.3	3.01	0	64.53	74	-9.47	Peak
2485	20.91	289	100	V	29.3	3.01	0	53.22	54	-0.78	Ave
2485	16.26	312	121	H	29.3	3.01	0	48.57	54	-5.43	Ave

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, measured at 3 meters											
2390	34.18	67	100	V	28.67	2.94	0	65.79	74	-8.21	Peak
2390	30.05	44	108	H	28.67	2.94	0	61.66	74	-12.34	Peak
2390	18.54	67	100	V	28.67	2.94	0	50.15	54	-3.85	Ave
2390	15.53	44	108	H	28.67	2.94	0	47.14	54	-6.86	Ave
High Channel 2462 MHz, measured at 3 meters											
2483.5	38.86	289	130	V	29.3	3.01	0	71.17	74	-2.83	Peak
2483.5	30.05	105	100	H	29.3	3.01	0	62.36	74	-11.64	Peak
2483.5	19.76	289	130	V	29.3	3.01	0	52.07	54	-1.93	Ave
2483.5	15.54	105	100	H	29.3	3.01	0	47.85	54	-6.15	Ave

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, measured at 3 meters											
2390	38.36	68	100	V	28.67	2.94	0	69.97	74	-4.03	Peak
2390	32.1	44	100	H	28.67	2.94	0	63.71	74	-10.29	Peak
2390	20.62	68	100	V	28.67	2.94	0	52.23	54	-1.77	Ave
2390	16.63	44	100	H	28.67	2.94	0	48.24	54	-5.76	Ave
High Channel 2452 MHz, measured at 3 meters											
2483.5	38.23	289	130	V	29.3	3.01	0	70.54	74	-3.46	Peak
2483.5	30.64	313	120	H	29.3	3.01	0	62.95	74	-11.05	Peak
2483.5	19.74	289	130	V	29.3	3.01	0	52.05	54	-1.95	Ave
2483.5	16.31	313	120	H	29.3	3.01	0	48.62	54	-5.38	Ave

5) Co-Location, Dipole Antennas**Worst Case:** 2.4 GHz 802.11b: 2412 MHz, 5.8 GHz 802.11a: 5745 MHz

30-1000 MHz:

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)
499.967	33.90	165	H	272	46	-12.10
374.981	28.13	100	H	331	46	-17.87
57.022	33.26	230	V	185	40	-6.74

Above 1 GHz:

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)	
4824	41.17	99	100	V	33.46	4.06	27.7	50.99	74	-23.01	Peak
4824	29.01	99	100	V	33.46	4.06	27.7	38.83	54	-15.17	Ave

6) 30 MHz – 1 GHz, Measured at 3 meters, Patch Antenna**2.4 GHz Band, Patch Antenna, Quasi-Peak Measurements**

802.11b mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
48.996	31.05	112	V	121	40	-8.95
499.9998	41.25	192	H	274	46	-4.75
375.0005	39.15	99	H	85	46	-6.85

802.11g mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
54.1625	34.58	99	V	100	40	-5.42
500.012	40.39	177	H	266	46	-5.61
374.99	37.85	99	H	76	46	-8.15

802.11n HT20 mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
45.86525	31.22	103	V	137	40	-8.78
499.998	40.2	205	H	295	46	-5.8
375.003	37.68	105	H	81	46	-8.32

802.11n HT40 mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
57.81025	35.49	196	V	169	40	-4.51
500.0133	40.4	168	H	278	46	-5.6
374.9998	38.16	99	H	91	46	-7.84

Note: Only digital emissions present from 30MHz to 1GHz, therefore only one channel was tested per modulation.

5.8 GHz Band, Patch Antenna, Quasi-Peak Measurements

802.11a mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
46.627	30.2	128	V	332	40	-9.8
499.997	41.08	164	H	277	46	-4.92
374.989	34.99	99	V	331	46	-11.01

802.11n HT20 mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
46.628	30.48	125	V	332	40	-9.52
499.997	41.01	166	H	278	46	-4.99
374.989	34.98	99	V	331	46	-11.02

802.11n HT40 mode, Low Channel

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
46.628	30.54	125	V	332	40	-9.46
499.997	40.85	164	H	278	46	-5.15
374.99	34.96	100	V	330	46	-11.04

Note: Only digital emissions present from 30MHz to 1GHz, therefore only one channel was tested per modulation.

7) 1-25 GHz, Measured at 3 meters, Patch Antenna**2.4 GHz Band, Patch Antenna**

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, measured at 3 meters											
2412	80.52	40	136	V	28.67	2.94	0	112.13	Fund.	-	Peak
2412	82.34	8	137	H	28.67	2.94	0	113.95	Fund.	-	Peak
2412	76.63	40	136	V	28.67	2.94	0	108.24	Fund.	-	Ave
2412	80.24	8	137	H	28.67	2.94	0	111.85	Fund.	-	Ave
4824	32.99	0	100	V	33.08	4.06	27.7	42.43	74	-31.57	Peak
4824	32.99	0	100	H	33.08	4.06	27.7	42.43	74	-31.57	Peak
4824	17.44	0	100	V	33.08	4.06	27.7	26.88	54	-27.12	Ave
4824	17.44	0	100	H	33.08	4.06	27.7	26.88	54	-27.12	Ave
7236	32.31	0	100	V	35.93	4.93	27.58	45.59	74	-28.41	Peak
7236	32.31	0	100	H	35.93	4.93	27.58	45.59	74	-28.41	Peak
7236	17.78	0	100	V	35.93	4.93	27.58	31.06	54	-22.94	Ave
7236	17.78	0	100	H	35.93	4.93	27.58	31.06	54	-22.94	Ave
9648	30.56	0	100	V	37.95	5.82	27.06	47.27	74	-26.73	Peak
9648	30.56	0	100	H	37.95	5.82	27.06	47.27	74	-26.73	Peak
9648	16.07	0	100	V	37.95	5.82	27.06	32.78	54	-21.22	Ave
9648	16.07	0	100	H	37.95	5.82	27.06	32.78	54	-21.22	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	78.93	320	134	V	28.67	2.94	0	110.54	Fund.	-	Peak
2437	81.13	0	136	H	28.67	2.94	0	112.74	Fund.	-	Peak
2437	75.34	320	134	V	28.67	2.94	0	106.95	Fund.	-	Ave
2437	77.83	0	136	H	28.67	2.94	0	109.44	Fund.	-	Ave
4874	32.69	0	100	V	33.33	4.1	27.76	42.36	74	-31.64	Peak
4874	32.69	0	100	H	33.33	4.1	27.76	42.36	74	-31.64	Peak
4874	17.95	0	100	V	33.33	4.1	27.76	27.62	54	-26.38	Ave
4874	17.95	0	100	H	33.33	4.1	27.76	27.62	54	-26.38	Ave
7311	32.22	0	100	V	36.36	4.88	27.51	45.95	74	-28.05	Peak
7311	32.22	0	100	H	36.36	4.88	27.51	45.95	74	-28.05	Peak
7311	17.8	0	100	V	36.36	4.88	27.51	31.53	54	-22.47	Ave
7311	17.78	0	100	H	36.36	4.88	27.51	31.51	54	-22.49	Ave
9748	30.56	0	100	V	38.06	5.74	26.98	47.38	74	-26.62	Peak
9748	30.56	0	100	H	38.06	5.74	26.98	47.38	74	-26.62	Peak
9748	16.21	0	100	V	38.06	5.74	26.98	33.03	54	-20.97	Ave
9748	16.21	0	100	H	38.06	5.74	26.98	33.03	54	-20.97	Ave

Note: All emissions are at noise floor level.

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, measured at 3 meters											
2462	79.25	38	130	V	29.3	3.01	0	111.56	Fund.	-	Peak
2462	81.04	3	137	H	29.3	3.01	0	113.35	Fund.	-	Peak
2462	75.94	38	130	V	29.3	3.01	0	108.25	Fund.	-	Ave
2462	77.6	3	137	H	29.3	3.01	0	109.91	Fund.	-	Ave
4924	32.74	0	100	V	33.33	4.1	27.75	42.42	74	-31.58	Peak
4924	32.74	0	100	H	33.33	4.1	27.75	42.42	74	-31.58	Peak
4924	17.98	0	100	V	33.33	4.1	27.75	27.66	54	-26.34	Ave
4924	17.98	0	100	H	33.33	4.1	27.75	27.66	54	-26.34	Ave
7386	32.09	0	100	V	36.51	4.89	27.51	45.98	74	-28.02	Peak
7386	32.09	0	100	H	36.51	4.89	27.51	45.98	74	-28.02	Peak
7386	17.73	0	100	V	36.51	4.89	27.51	31.62	54	-22.38	Ave
7386	17.73	0	100	H	36.51	4.89	27.51	31.62	54	-22.38	Ave
9848	30.65	0	100	V	38.29	5.77	26.98	47.73	74	-26.27	Peak
9848	30.65	0	100	H	38.29	5.77	26.98	47.73	74	-26.27	Peak
9848	16.26	0	100	V	38.29	5.77	26.98	33.34	54	-20.66	Ave
9848	16.26	0	100	H	38.29	5.77	26.98	33.34	54	-20.66	Ave

Note: All emissions are at noise floor level.

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, measured at 3 meters											
2412	82.47	0	136	V	28.67	2.94	0	114.08	Fund.	-	Peak
2412	83.89	18	136	H	28.67	2.94	0	115.5	Fund.	-	Peak
2412	70.95	0	136	V	28.67	2.94	0	102.56	Fund.	-	Ave
2412	72.36	18	136	H	28.67	2.94	0	103.97	Fund.	-	Ave
4824	32.63	0	100	V	33.08	4.06	27.7	42.07	74	-31.93	Peak
4824	32.63	0	100	H	33.08	4.06	27.7	42.07	74	-31.93	Peak
4824	17.94	0	100	V	33.08	4.06	27.7	27.38	54	-26.62	Ave
4824	17.94	0	100	H	33.08	4.06	27.7	27.38	54	-26.62	Ave
7236	32.39	0	100	V	35.93	4.93	27.58	45.67	74	-28.33	Peak
7236	32.39	0	100	H	35.93	4.93	27.58	45.67	74	-28.33	Peak
7236	17.83	0	100	V	35.93	4.93	27.58	31.11	54	-22.89	Ave
7236	17.83	0	100	H	35.93	4.93	27.58	31.11	54	-22.89	Ave
9648	30.35	0	100	V	37.95	5.82	27.06	47.06	74	-26.94	Peak
9648	30.35	0	100	H	37.95	5.82	27.06	47.06	74	-26.94	Peak
9648	16.11	0	100	V	37.95	5.82	27.06	32.82	54	-21.18	Ave
9648	16.11	0	100	H	37.95	5.82	27.06	32.82	54	-21.18	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	83.12	320	135	V	28.67	2.94	0	114.73	Fund.	-	Peak
2437	85.6	0	134	H	28.67	2.94	0	117.21	Fund.	-	Peak
2437	71.82	320	135	V	28.67	2.94	0	103.43	Fund.	-	Ave
2437	74.23	0	134	H	28.67	2.94	0	105.84	Fund.	-	Ave
4874	32.91	0	100	V	33.33	4.1	27.76	42.58	74	-31.42	Peak
4874	32.91	0	100	H	33.33	4.1	27.76	42.58	74	-31.42	Peak
4874	18.18	0	100	V	33.33	4.1	27.76	27.85	54	-26.15	Ave
4874	18.18	0	100	H	33.33	4.1	27.76	27.85	54	-26.15	Ave
7311	31.88	0	100	V	36.36	4.88	27.51	45.61	74	-28.39	Peak
7311	31.88	0	100	H	36.36	4.88	27.51	45.61	74	-28.39	Peak
7311	17.67	0	100	V	36.36	4.88	27.51	31.4	54	-22.6	Ave
7311	17.67	0	100	H	36.36	4.88	27.51	31.4	54	-22.6	Ave
9748	31.16	0	100	V	38.06	5.74	26.98	47.98	74	-26.02	Peak
9748	31.16	0	100	H	38.06	5.74	26.98	47.98	74	-26.02	Peak
9748	16.27	0	100	V	38.06	5.74	26.98	33.09	54	-20.91	Ave
9748	16.27	0	100	H	38.06	5.74	26.98	33.09	54	-20.91	Ave

Note: All emissions are at noise floor level.

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, measured at 3 meters											
2462	81.08	0	143	V	29.3	3.01	0	113.39	Fund.	-	Peak
2462	82.63	21	133	H	29.3	3.01	0	114.94	Fund.	-	Peak
2462	69.62	0	143	V	29.3	3.01	0	101.93	Fund.	-	Ave
2462	71.6	21	133	H	29.3	3.01	0	103.91	Fund.	-	Ave
4924	32.83	0	100	V	33.33	4.1	27.75	42.51	74	-31.49	Peak
4924	32.83	0	100	H	33.33	4.1	27.75	42.51	74	-31.49	Peak
4924	18.17	0	100	V	33.33	4.1	27.75	27.85	54	-26.15	Ave
4924	18.17	0	100	H	33.33	4.1	27.75	27.85	54	-26.15	Ave
7386	31.98	0	100	V	36.51	4.89	27.51	45.87	74	-28.13	Peak
7386	31.98	0	100	H	36.51	4.89	27.51	45.87	74	-28.13	Peak
7386	17.73	0	100	V	36.51	4.89	27.51	31.62	54	-22.38	Ave
7386	17.73	0	100	H	36.51	4.89	27.51	31.62	54	-22.38	Ave
9848	31.11	0	100	V	38.29	5.77	26.98	48.19	74	-25.81	Peak
9848	31.11	0	100	H	38.29	5.77	26.98	48.19	74	-25.81	Peak
9848	16.26	0	100	V	38.29	5.77	26.98	33.34	54	-20.66	Ave
9848	16.26	0	100	H	38.29	5.77	26.98	33.34	54	-20.66	Ave

Note: All emissions are at noise floor level.

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, measured at 3 meters											
2412	81.75	317	121	V	28.67	2.94	0	113.36	Fund.	-	Peak
2412	84.81	19	134	H	28.67	2.94	0	116.42	Fund.	-	Peak
2412	70.23	317	121	V	28.67	2.94	0	101.84	Fund.	-	Ave
2412	73.06	19	134	H	28.67	2.94	0	104.67	Fund.	-	Ave
4824	32.28	0	100	V	33.08	4.06	27.7	41.72	74	-32.28	Peak
4824	32.28	0	100	H	33.08	4.06	27.7	41.72	74	-32.28	Peak
4824	17.99	0	100	V	33.08	4.06	27.7	27.43	54	-26.57	Ave
4824	17.99	0	100	H	33.08	4.06	27.7	27.43	54	-26.57	Ave
7236	32.71	0	100	V	35.93	4.93	27.58	45.99	74	-28.01	Peak
7236	32.71	0	100	H	35.93	4.93	27.58	45.99	74	-28.01	Peak
7236	17.91	0	100	V	35.93	4.93	27.58	31.19	54	-22.81	Ave
7236	17.91	0	100	H	35.93	4.93	27.58	31.19	54	-22.81	Ave
9648	30.83	0	100	V	37.95	5.82	27.06	47.54	74	-26.46	Peak
9648	30.83	0	100	H	37.95	5.82	27.06	47.54	74	-26.46	Peak
9648	16.19	0	100	V	37.95	5.82	27.06	32.9	54	-21.1	Ave
9648	16.19	0	100	H	37.95	5.82	27.06	32.9	54	-21.1	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	82.1	318	134	V	28.67	2.94	0	113.71	Fund.	-	Peak
2437	85.84	0	138	H	28.67	2.94	0	117.45	Fund.	-	Peak
2437	71.32	318	134	V	28.67	2.94	0	102.93	Fund.	-	Ave
2437	73.95	0	138	H	28.67	2.94	0	105.56	Fund.	-	Ave
4874	32.87	0	100	V	33.33	4.1	27.76	42.54	74	-31.46	Peak
4874	32.87	0	100	H	33.33	4.1	27.76	42.54	74	-31.46	Peak
4874	18.26	0	100	V	33.33	4.1	27.76	27.93	54	-26.07	Ave
4874	18.26	0	100	H	33.33	4.1	27.76	27.93	54	-26.07	Ave
7311	32.39	0	100	V	36.36	4.88	27.51	46.12	74	-27.88	Peak
7311	32.39	0	100	H	36.36	4.88	27.51	46.12	74	-27.88	Peak
7311	17.92	0	100	V	36.36	4.88	27.51	31.65	54	-22.35	Ave
7311	17.92	0	100	H	36.36	4.88	27.51	31.65	54	-22.35	Ave
9748	30.73	0	100	V	38.06	5.74	26.98	47.55	74	-26.45	Peak
9748	30.73	0	100	H	38.06	5.74	26.98	47.55	74	-26.45	Peak
9748	16.39	0	100	V	38.06	5.74	26.98	33.21	54	-20.79	Ave
9748	16.39	0	100	H	38.06	5.74	26.98	33.21	54	-20.79	Ave

Note: All emissions are at noise floor level.

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, measured at 3 meters											
2462	83.28	321	132	V	29.3	3.01	0	115.59	Fund.	-	Peak
2462	84.38	0	133	H	29.3	3.01	0	116.69	Fund.	-	Peak
2462	71.65	321	132	V	29.3	3.01	0	103.96	Fund.	-	Ave
2462	73.79	0	133	H	29.3	3.01	0	106.1	Fund.	-	Ave
4924	32.91	0	100	V	33.33	4.1	27.75	42.59	74	-31.41	Peak
4924	32.91	0	100	H	33.33	4.1	27.75	42.59	74	-31.41	Peak
4924	18.28	0	100	V	33.33	4.1	27.75	27.96	54	-26.04	Ave
4924	18.28	0	100	H	33.33	4.1	27.75	27.96	54	-26.04	Ave
7386	32.26	0	100	V	36.51	4.89	27.51	46.15	74	-27.85	Peak
7386	32.26	0	100	H	36.51	4.89	27.51	46.15	74	-27.85	Peak
7386	17.89	0	100	V	36.51	4.89	27.51	31.78	54	-22.22	Ave
7386	17.89	0	100	H	36.51	4.89	27.51	31.78	54	-22.22	Ave
9848	30.62	0	100	V	38.29	5.77	26.98	47.7	74	-26.3	Peak
9848	30.62	0	100	H	38.29	5.77	26.98	47.7	74	-26.3	Peak
9848	16.36	0	100	V	38.29	5.77	26.98	33.44	54	-20.56	Ave
9848	16.36	0	100	H	38.29	5.77	26.98	33.44	54	-20.56	Ave

Note: All emissions are at noise floor level.

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, measured at 3 meters											
2422	73.3	319	115	V	28.67	2.94	0	104.91	Fund.	-	Peak
2422	75.76	15	134	H	28.67	2.94	0	107.37	Fund.	-	Peak
2422	61.66	319	115	V	28.67	2.94	0	93.27	Fund.	-	Ave
2422	64.2	15	134	H	28.67	2.94	0	95.81	Fund.	-	Ave
4844	32.84	0	100	V	33.08	4.06	27.7	42.28	74	-31.72	Peak
4844	32.84	0	100	H	33.08	4.06	27.7	42.28	74	-31.72	Peak
4844	17.98	0	100	V	33.08	4.06	27.7	27.42	54	-26.58	Ave
4844	17.98	0	100	H	33.08	4.06	27.7	27.42	54	-26.58	Ave
7266	32.89	0	100	V	35.93	4.93	27.58	46.17	74	-27.83	Peak
7266	32.89	0	100	H	35.93	4.93	27.58	46.17	74	-27.83	Peak
7266	17.96	0	100	V	35.93	4.93	27.58	31.24	54	-22.76	Ave
7266	17.96	0	100	H	35.93	4.93	27.58	31.24	54	-22.76	Ave
9688	30.68	0	100	V	37.95	5.82	27.06	47.39	74	-26.61	Peak
9688	30.68	0	100	H	37.95	5.82	27.06	47.39	74	-26.61	Peak
9688	16.48	0	100	V	37.95	5.82	27.06	33.19	54	-20.81	Ave
9688	16.48	0	100	H	37.95	5.82	27.06	33.19	54	-20.81	Ave
Middle Channel 2437 MHz, measured at 3 meters											
2437	83.37	0	129	V	28.67	2.94	0	114.98	Fund.	-	Peak
2437	81.74	32	125	H	28.67	2.94	0	113.35	Fund.	-	Peak
2437	70.95	0	129	V	28.67	2.94	0	102.56	Fund.	-	Ave
2437	69.91	32	125	H	28.67	2.94	0	101.52	Fund.	-	Ave
4874	32.76	0	100	V	33.33	4.1	27.76	42.43	74	-31.57	Peak
4874	32.76	0	100	H	33.33	4.1	27.76	42.43	74	-31.57	Peak
4874	18.21	0	100	V	33.33	4.1	27.76	27.88	54	-26.12	Ave
4874	18.21	0	100	H	33.33	4.1	27.76	27.88	54	-26.12	Ave
7311	32.42	0	100	V	36.36	4.88	27.51	46.15	74	-27.85	Peak
7311	32.42	0	100	H	36.36	4.88	27.51	46.15	74	-27.85	Peak
7311	17.95	0	100	V	36.36	4.88	27.51	31.68	54	-22.32	Ave
7311	17.95	0	100	H	36.36	4.88	27.51	31.68	54	-22.32	Ave
9748	31.33	0	100	V	38.06	5.74	26.98	48.15	74	-25.85	Peak
9748	31.33	0	100	H	38.06	5.74	26.98	48.15	74	-25.85	Peak
9748	16.56	0	100	V	38.06	5.74	26.98	33.38	54	-20.62	Ave
9748	16.56	0	100	H	38.06	5.74	26.98	33.38	54	-20.62	Ave

Note: All emissions are at noise floor level.

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)	
Middle Channel 2452 MHz, measured at 3 meters											
2452	74.96	354	119	V	29.3	3.01	0	107.27	Fund.	-	Peak
2452	76.77	20	132	H	29.3	3.01	0	109.08	Fund.	-	Peak
2452	63.05	354	119	V	29.3	3.01	0	95.36	Fund.	-	Ave
2452	64.61	20	132	H	29.3	3.01	0	96.92	Fund.	-	Ave
2452	74.96	354	119	V	29.3	3.01	0	107.27	Fund.	-	Peak
4904	32.94	0	100	V	33.33	4.1	27.75	42.62	74	-31.38	Peak
4904	32.94	0	100	H	33.33	4.1	27.75	42.62	74	-31.38	Peak
4904	18.17	0	100	V	33.33	4.1	27.75	27.85	54	-26.15	Ave
4904	18.17	0	100	H	33.33	4.1	27.75	27.85	54	-26.15	Ave
7356	32.38	0	100	V	36.51	4.89	27.51	46.27	74	-27.73	Peak
7356	32.38	0	100	H	36.51	4.89	27.51	46.27	74	-27.73	Peak
7356	17.93	0	100	V	36.51	4.89	27.51	31.82	54	-22.18	Ave
7356	17.93	0	100	H	36.51	4.89	27.51	31.82	54	-22.18	Ave
9808	31.19	0	100	V	38.29	5.77	26.98	48.27	74	-25.73	Peak
9808	31.19	0	100	H	38.29	5.77	26.98	48.27	74	-25.73	Peak
9808	16.49	0	100	V	38.29	5.77	26.98	33.57	54	-20.43	Ave
9808	16.49	0	100	V	38.29	5.77	26.98	33.57	54	-20.43	Ave

Note: All emissions are at noise floor level.

8) 1–40 GHz, Measured at 3 meters, Patch Antenna

5.8 GHz Band, Patch Antenna

802.11a 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 5745 MHz, measured at 3 meters											
5745	70.18	12	115	V	34.39	4.62	0	109.19	Fund.	-	Peak
5745	72.51	0	100	H	34.39	4.62	0	111.52	Fund.	-	Peak
5745	58.58	12	115	V	34.39	4.62	0	97.59	Fund.	-	Ave
5745	61.15	0	100	H	34.39	4.62	0	100.16	Fund.	-	Ave
11490	32.61	0	100	V	39.05	6.2	26.94	50.92	74	-23.08	Peak
11490	32.61	0	100	H	39.05	6.2	26.94	50.92	74	-23.08	Peak
11490	16.18	0	100	V	39.05	6.2	26.94	34.49	54	-19.51	Ave
11490	16.18	0	100	H	39.05	6.2	26.94	34.49	54	-19.51	Ave
17235	31.55	0	100	V	43.23	7.4	25.93	56.25	74	-17.75	Peak
17235	31.55	0	100	H	43.23	7.4	25.93	56.25	74	-17.75	Peak
17235	17.08	0	100	V	43.23	7.4	25.93	41.78	54	-12.22	Ave
17235	17.08	0	100	H	43.23	7.4	25.93	41.78	54	-12.22	Ave
22980	31.41	0	100	V	35.4	9.74	34.81	41.74	74	-32.26	Peak
22980	31.41	0	100	H	35.4	9.74	34.81	41.74	74	-32.26	Peak
22980	17.29	0	100	V	35.4	9.74	34.81	27.62	54	-26.38	Ave
22980	17.29	0	100	H	35.4	9.74	34.81	27.62	54	-26.38	Ave

Note: All emissions are at noise floor level.

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)	
Middle Channel 5785 MHz, measured at 3 meters											
5785	71.74	352	100	V	34.35	4.72	0	110.81	Fund.	-	Peak
5785	74.63	0	100	H	34.35	4.72	0	113.7	Fund.	-	Peak
5785	60.55	352	100	V	34.35	4.72	0	99.62	Fund.	-	Ave
5785	63.15	0	100	H	34.35	4.72	0	102.22	Fund.	-	Ave
11570	31.55	0	100	V	39.2	6.2	26.99	49.96	74	-24.04	Peak
11570	31.55	0	100	H	39.2	6.2	26.99	49.96	74	-24.04	Peak
11570	18.15	0	100	V	39.2	6.2	26.99	36.56	54	-17.44	Ave
11570	18.15	0	100	H	39.2	6.2	26.99	36.56	54	-17.44	Ave
17355	31.7	0	100	V	45.31	8.45	25.84	59.62	74	-14.38	Peak
17355	31.7	0	100	H	45.31	8.45	25.84	59.62	74	-14.38	Peak
17355	16.87	0	100	V	45.31	8.45	25.84	44.79	54	-9.21	Ave
17355	16.87	0	100	H	45.31	8.45	25.84	44.79	54	-9.21	Ave
23140	33.12	0	100	V	35.3	9.88	34.71	43.59	74	-30.41	Peak
23140	33.12	0	100	H	35.3	9.88	34.71	43.59	74	-30.41	Peak
23140	18.05	0	100	V	35.3	9.88	34.71	28.52	54	-25.48	Ave
23140	18.05	0	100	H	35.3	9.88	34.71	28.52	54	-25.48	Ave

Note: All emissions are at noise floor level.

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 5825 MHz, measured at 3 meters											
5825	72.28	19	100	V	34.35	4.72	0	111.35	Fund.	-	Peak
5825	73.6	2	100	H	34.35	4.72	0	112.67	Fund.	-	Peak
5825	60.83	19	100	V	34.35	4.72	0	99.9	Fund.	-	Ave
5825	62.23	2	100	H	34.35	4.72	0	101.3	Fund.	-	Ave
11650	31.66	0	100	V	39.31	6.2	27	50.17	74	-23.83	Peak
11650	31.66	0	100	H	39.31	6.2	27	50.17	74	-23.83	Peak
11650	16.14	0	100	V	39.31	6.2	27	34.65	54	-19.35	Ave
11650	16.14	0	100	H	39.31	6.2	27	34.65	54	-19.35	Ave
17475	31.42	0	100	V	46.78	8.49	25.79	60.9	74	-13.1	Peak
17475	31.42	0	100	H	46.78	8.49	25.79	60.9	74	-13.1	Peak
17475	17.01	0	100	V	46.78	8.49	25.79	46.49	54	-7.51	Ave
17475	17.01	0	100	H	46.78	8.49	25.79	46.49	54	-7.51	Ave
23300	31.78	0	100	V	35.2	9.74	34.74	41.98	74	-32.02	Peak
23300	31.78	0	100	H	35.2	9.74	34.74	41.98	74	-32.02	Peak
23300	17.42	0	100	V	35.2	9.74	34.74	27.62	54	-26.38	Ave
23300	17.42	0	100	H	35.2	9.74	34.74	27.62	54	-26.38	Ave

Note: All emissions are at noise floor level.

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 5745 MHz, measured at 3 meters											
5745	71.33	351	105	V	34.39	4.62	0	110.34	Fund.	-	Peak
5745	73.56	0	100	H	34.39	4.62	0	112.57	Fund.	-	Peak
5745	60.06	351	105	V	34.39	4.62	0	99.07	Fund.	-	Ave
5745	61.99	0	100	H	34.39	4.62	0	101	Fund.	-	Ave
11490	32.54	0	100	V	39.05	6.2	26.94	50.85	74	-23.15	Peak
11490	32.54	0	100	H	39.05	6.2	26.94	50.85	74	-23.15	Peak
11490	18.33	0	100	V	39.05	6.2	26.94	36.64	54	-17.36	Ave
11490	18.33	0	100	H	39.05	6.2	26.94	36.64	54	-17.36	Ave
17235	31.68	0	100	V	43.23	7.4	25.93	56.38	74	-17.62	Peak
17235	31.68	0	100	H	43.23	7.4	25.93	56.38	74	-17.62	Peak
17235	17.06	0	100	V	43.23	7.4	25.93	41.76	54	-12.24	Ave
17235	17.06	0	100	H	43.23	7.4	25.93	41.76	54	-12.24	Ave
22980	32.73	0	100	V	35.4	9.74	34.81	43.06	74	-30.94	Peak
22980	32.73	0	100	H	35.4	9.74	34.81	43.06	74	-30.94	Peak
22980	17.85	0	100	V	35.4	9.74	34.81	28.18	54	-25.82	Ave
22980	17.85	0	100	H	35.4	9.74	34.81	28.18	54	-25.82	Ave

Note: All emissions are at noise floor level.

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)	
Middle Channel 5785 MHz, measured at 3 meters											
5785	72.72	20	102	V	34.35	4.72	0	111.79	Fund.	-	Peak
5785	74.62	7	100	H	34.35	4.72	0	113.69	Fund.	-	Peak
5785	61.36	20	102	V	34.35	4.72	0	100.43	Fund.	-	Ave
5785	63.28	7	100	H	34.35	4.72	0	102.35	Fund.	-	Ave
11570	32.51	0	100	V	39.2	6.2	26.99	50.92	74	-23.08	Peak
11570	32.51	0	100	H	39.2	6.2	26.99	50.92	74	-23.08	Peak
11570	18.34	0	100	V	39.2	6.2	26.99	36.75	54	-17.25	Ave
11570	18.34	0	100	H	39.2	6.2	26.99	36.75	54	-17.25	Ave
17355	31.65	0	100	V	45.31	8.45	25.84	59.57	74	-14.43	Peak
17355	31.65	0	100	H	45.31	8.45	25.84	59.57	74	-14.43	Peak
17355	16.99	0	100	V	45.31	8.45	25.84	44.91	54	-9.09	Ave
17355	16.99	0	100	H	45.31	8.45	25.84	44.91	54	-9.09	Ave
23140	32.54	0	100	V	35.3	9.88	34.71	43.01	74	-30.99	Peak
23140	32.54	0	100	H	35.3	9.88	34.71	43.01	74	-30.99	Peak
23140	17.77	0	100	V	35.3	9.88	34.71	28.24	54	-25.76	Ave
23140	17.77	0	100	H	35.3	9.88	34.71	28.24	54	-25.76	Ave

Note: All emissions are at noise floor level.

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 5825 MHz, measured at 3 meters											
5825	71.76	359	100	V	34.35	4.72	0	110.83	Fund.	-	Peak
5825	73.6	0	100	H	34.35	4.72	0	112.67	Fund.	-	Peak
5825	60.4	359	100	V	34.35	4.72	0	99.47	Fund.	-	Ave
5825	61.93	0	100	H	34.35	4.72	0	101	Fund.	-	Ave
11650	32.79	0	100	V	39.31	6.2	27	51.3	74	-22.7	Peak
11650	32.79	0	100	H	39.31	6.2	27	51.3	74	-22.7	Peak
11650	18.48	0	100	V	39.31	6.2	27	36.99	54	-17.01	Ave
11650	18.48	0	100	H	39.31	6.2	27	36.99	54	-17.01	Ave
17475	31.36	0	100	V	46.78	8.49	25.79	60.84	74	-13.16	Peak
17475	31.36	0	100	H	46.78	8.49	25.79	60.84	74	-13.16	Peak
17475	16.72	0	100	V	46.78	8.49	25.79	46.2	54	-7.8	Ave
17475	16.72	0	100	H	46.78	8.49	25.79	46.2	54	-7.8	Ave
23300	32.88	0	100	V	35.2	9.74	34.74	43.08	74	-30.92	Peak
23300	32.88	0	100	H	35.2	9.74	34.74	43.08	74	-30.92	Peak
23300	17.97	0	100	V	35.2	9.74	34.74	28.17	54	-25.83	Ave
23300	17.97	0	100	H	35.2	9.74	34.74	28.17	54	-25.83	Ave

Note: All emissions are at noise floor level.

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 5755 MHz, measured at 3 meters											
5755	68.13	14	114	V	34.35	4.72	0	107.2	Fund.	-	Peak
5755	70.7	0	100	H	34.35	4.72	0	109.77	Fund.	-	Peak
5755	56.5	14	114	V	34.35	4.72	0	95.57	Fund.	-	Ave
5755	58.97	0	100	H	34.35	4.72	0	98.04	Fund.	-	Ave
11590	32.63	0	100	V	39.31	6.2	27	51.14	74	-22.86	Peak
11590	32.63	0	100	H	39.31	6.2	27	51.14	74	-22.86	Peak
11590	17.37	0	100	V	39.31	6.2	27	35.88	54	-18.12	Ave
11590	17.37	0	100	H	39.31	6.2	27	35.88	54	-18.12	Ave
17385	31.55	0	100	V	46.78	8.49	25.79	61.03	74	-12.97	Peak
17385	31.55	0	100	H	46.78	8.49	25.79	61.03	74	-12.97	Peak
17385	16.86	0	100	V	46.78	8.49	25.79	46.34	54	-7.66	Ave
17385	16.86	0	100	H	46.78	8.49	25.79	46.34	54	-7.66	Ave
23180	33.42	0	100	V	35.4	9.74	34.81	43.75	74	-30.25	Peak
23180	33.42	0	100	H	35.4	9.74	34.81	43.75	74	-30.25	Peak
23180	17.93	0	100	V	35.4	9.74	34.81	28.26	54	-25.74	Ave
23180	17.93	0	100	H	35.4	9.74	34.81	28.26	54	-25.74	Ave

Note: All emissions are at noise floor level.

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 5795 MHz, measured at 3 meters											
5795	69.32	17	100	V	34.35	4.72	0	108.39	Fund.	-	Peak
5795	72.36	6	100	H	34.35	4.72	0	111.43	Fund.	-	Peak
5795	57.76	17	100	V	34.35	4.72	0	96.83	Fund.	-	Ave
5795	60.31	6	100	H	34.35	4.72	0	99.38	Fund.	-	Ave
11510	32.88	0	100	V	39.05	6.2	26.94	51.19	74	-22.81	Peak
11510	32.88	0	100	H	39.05	6.2	26.94	51.19	74	-22.81	Peak
11510	17.34	0	100	V	39.05	6.2	26.94	35.65	54	-18.35	Ave
11510	17.34	0	100	H	39.05	6.2	26.94	35.65	54	-18.35	Ave
17265	31.63	0	100	V	43.23	7.4	25.93	56.33	74	-17.67	Peak
17265	31.63	0	100	H	43.23	7.4	25.93	56.33	74	-17.67	Peak
17265	16.92	0	100	V	43.23	7.4	25.93	41.62	54	-12.38	Ave
17265	16.92	0	100	H	43.23	7.4	25.93	41.62	54	-12.38	Ave
23020	33.25	0	100	V	35.2	9.74	34.74	43.45	74	-30.55	Peak
23020	33.25	0	100	H	35.2	9.74	34.74	43.45	74	-30.55	Peak
23020	17.61	0	100	V	35.2	9.74	34.74	27.81	54	-26.19	Ave
23020	17.61	0	100	H	35.2	9.74	34.74	27.81	54	-26.19	Ave

Note: All emissions are at noise floor level.

9) Restricted Band Edges, Patch Antenna

2.4GHz 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, measured at 3 meters											
2390	33.25	40	136	V	28.67	2.94	0	64.86	74	-9.14	Peak
2390	35.16	8	137	H	28.67	2.94	0	66.77	74	-7.23	Peak
2390	18.08	40	136	V	28.67	2.94	0	49.69	54	-4.31	Ave
2390	19.45	8	137	H	28.67	2.94	0	51.06	54	-2.94	Ave
High Channel 2462 MHz, measured at 3 meters											
2483.5	37.45	38	130	V	29.3	3.01	0	69.76	74	-4.24	Peak
2483.5	38.6	3	137	H	29.3	3.01	0	70.91	74	-3.09	Peak
2483.5	16.02	38	130	V	29.3	3.01	0	48.33	54	-5.67	Ave
2483.5	16.91	3	137	H	29.3	3.01	0	49.22	54	-4.78	Ave

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, measured at 3 meters											
2388	36.47	0	136	V	28.67	2.94	0	68.08	74	-5.92	Peak
2388	40.28	18	136	H	28.67	2.94	0	71.89	74	-2.11	Peak
2388	19.12	0	136	V	28.67	2.94	0	50.73	54	-3.27	Ave
2388	21.28	18	136	H	28.67	2.94	0	52.89	54	-1.11	Ave
High Channel 2462 MHz, measured at 3 meters											
2485	37.08	0	143	V	29.3	3.01	0	69.39	74	-4.61	Peak
2485	39.58	21	133	H	29.3	3.01	0	71.89	74	-2.11	Peak
2485	18.02	0	143	V	29.3	3.01	0	50.33	54	-3.67	Ave
2485	18.44	21	133	H	29.3	3.01	0	50.75	54	-3.25	Ave

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, measured at 3 meters											
2390	38.85	317	121	V	28.67	2.94	0	70.46	74	-3.54	Peak
2390	38.75	19	134	H	28.67	2.94	0	70.36	74	-3.64	Peak
2390	20.76	317	121	V	28.67	2.94	0	52.37	54	-1.63	Ave
2390	21.79	19	134	H	28.67	2.94	0	53.4	54	-0.60	Ave
High Channel 2462 MHz, measured at 3 meters											
2483.5	38.52	321	132	V	29.3	3.01	0	70.83	74	-3.17	Peak
2483.5	40.93	0	133	H	29.3	3.01	0	73.24	74	-0.76	Peak
2483.5	19.6	321	132	V	29.3	3.01	0	51.91	54	-2.09	Ave
2483.5	20.14	0	133	H	29.3	3.01	0	52.45	54	-1.55	Ave

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, measured at 3 meters											
2390	36.06	319	115	V	28.67	2.94	0	67.67	74	-6.33	Peak
2390	39.01	15	134	H	28.67	2.94	0	70.62	74	-3.38	Peak
2390	18.89	319	115	V	28.67	2.94	0	50.5	54	-3.5	Ave
2390	21.29	15	134	H	28.67	2.94	0	52.9	54	-1.1	Ave
High Channel 2452 MHz, measured at 3 meters											
2483.5	37.99	354	119	V	29.3	3.01	0	70.3	74	-3.7	Peak
2483.5	40.06	20	132	H	29.3	3.01	0	72.37	74	-1.63	Peak
2483.5	19.42	354	119	V	29.3	3.01	0	51.73	54	-2.27	Ave
2483.5	20.63	20	132	H	29.3	3.01	0	52.94	54	-1.06	Ave

10) Co-Location, Patch Antenna**Worst Case:** 2.4 GHz 802.11b: 2412 MHz, 5.8 GHz 802.11a: 5745 MHz

30-1000 MHz:

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB μ V/m)	Margin (dB)
46.63	30.83	128	V	333	40	-9.17
499.997	36.86	166	H	275	46	-9.14
374.992	32.01	100	V	360	46	-13.99

Above 1 GHz:

Frequency (MHz)	S.A. Reading (dB μ V)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dB μ V/m)	Margin (dB)	
4824	41.89	21	100	V	33.46	4.06	27.7	51.71	74	-22.29	Peak
4824	42.61	0	100	H	33.46	4.06	27.7	52.43	74	-21.57	Peak
4824	30.05	21	100	V	33.46	4.06	27.7	39.87	54	-14.13	Ave
4824	31.53	0	100	H	33.46	4.06	27.7	41.35	54	-12.65	Ave

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

9.1 Applicable Standard

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	E4440A	US42221851	2012-02-28	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:	42-45 %
ATM Pressure:	101-102kPa

The testing was performed by Jeffrey Wu from 2012-10-1 to 2012-10-15 at RF site.

9.5 Test Results

2.4 GHz Band:

802.11 b mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	Limit (MHz)	Results
Low	2412	10.270	10.234	14.1541	13.9893	> 0.5	Compliant
Middle	2437	10.270	10.294	14.2316	14.3068	> 0.5	Compliant
High	2462	10.276	9.789	14.0865	13.6506	> 0.5	Compliant

802.11 g mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	Limit (MHz)	Results
Low	2412	16.387	16.458	17.5407	17.4876	> 0.5	Compliant
Middle	2437	16.353	16.531	17.4202	17.3512	> 0.5	Compliant
High	2462	16.430	16.208	17.3855	17.0534	> 0.5	Compliant

802.11n HT20 mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	Limit (MHz)	Results
Low	2412	17.626	17.539	17.9835	17.8928	> 0.5	Compliant
Middle	2437	17.717	17.717	18.4758	18.9046	> 0.5	Compliant
High	2462	17.641	17.291	18.5182	18.0182	> 0.5	Compliant

802.11n HT40 mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	Limit (MHz)	Results
Low	2422	36.401	36.301	37.0076	36.6185	> 0.5	Compliant
Middle	2437	36.433	36.625	37.0820	37.8683	> 0.5	Compliant
High	2452	36.027	36.330	36.8823	37.0819	> 0.5	Compliant

5.8 GHz Band:

802.11a mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	Limit (MHz)	Results
Low	5745	16.436	16.534	16.9806	16.9460	> 0.5	Compliant
Middle	5785	16.504	16.442	16.9566	16.8343	> 0.5	Compliant
High	5825	16.458	16.459	16.9632	16.8578	> 0.5	Compliant

802.11n HT20 mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	Limit (MHz)	Results
Low	5745	17.755	17.570	18.0949	18.0513	> 0.5	Compliant
Middle	5785	17.666	17.644	18.0845	18.1206	> 0.5	Compliant
High	5825	17.674	17.664	17.9698	17.9800	> 0.5	Compliant

802.11n HT40 mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	Limit (MHz)	Results
Low	5755	36.395	36.622	36.9226	36.9512	> 0.5	Compliant
High	5795	36.713	36.730	36.9310	36.9074	> 0.5	Compliant

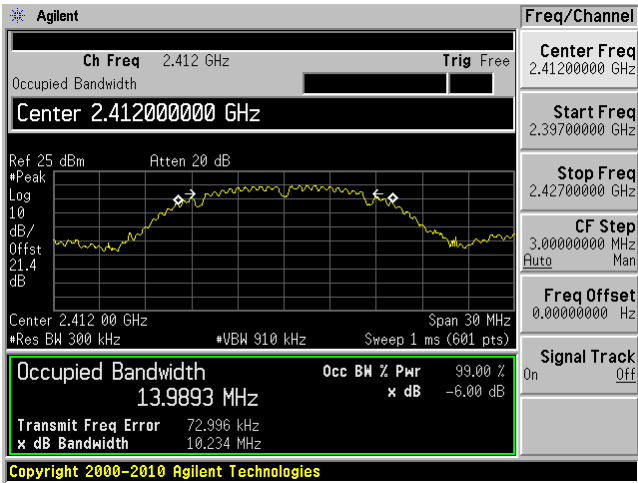
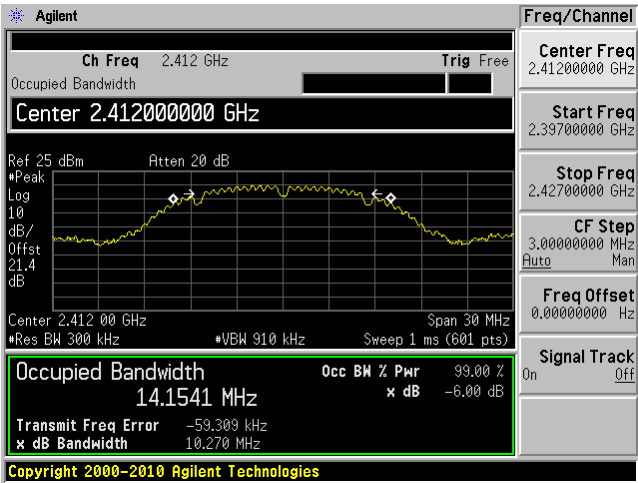
Please refer to the following plots for detailed test results

2.4 GHz Band

802.11b mode

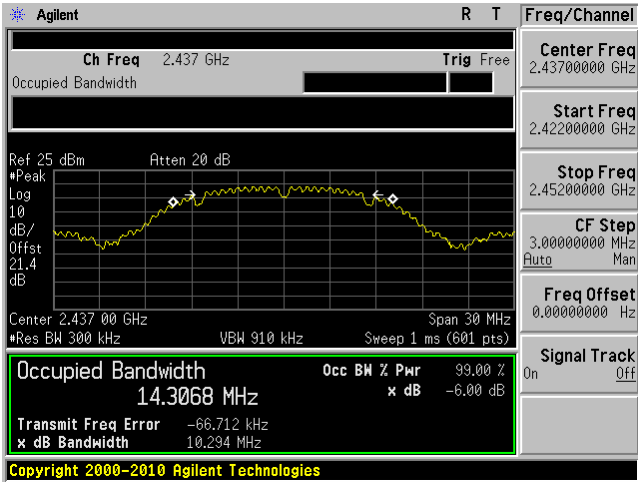
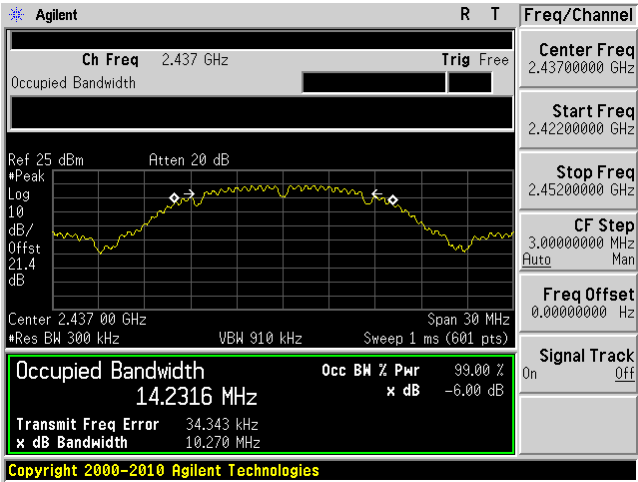
Low channel: 2412 MHz Chain J0

Low channel: 2412 MHz Chain J1

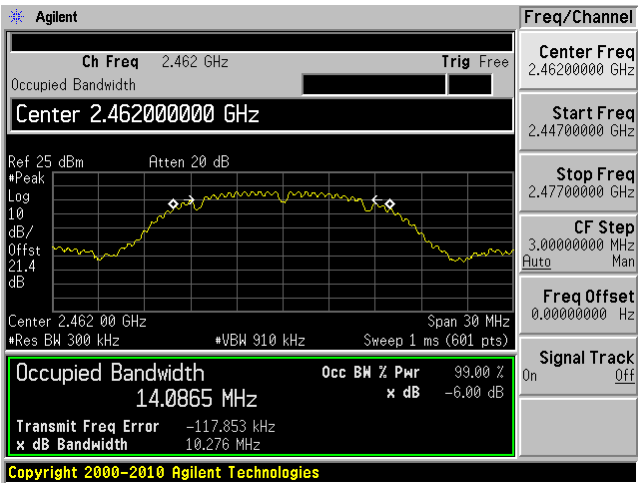


Middle channel: 2437 MHz Chain J0

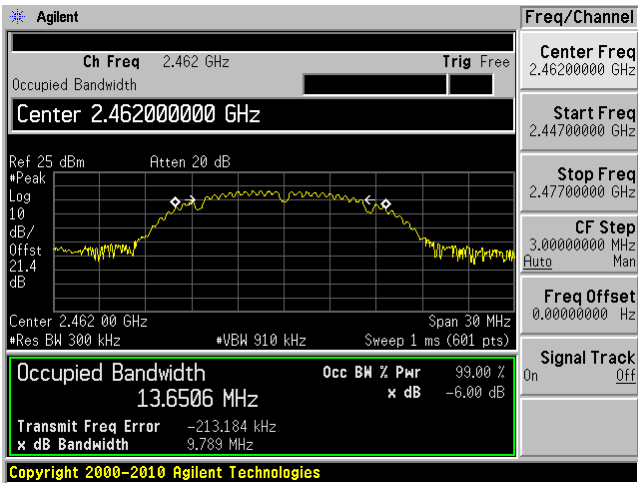
Middle channel: 2437 MHz Chain J1



High channel: 2462 MHz Chain J0

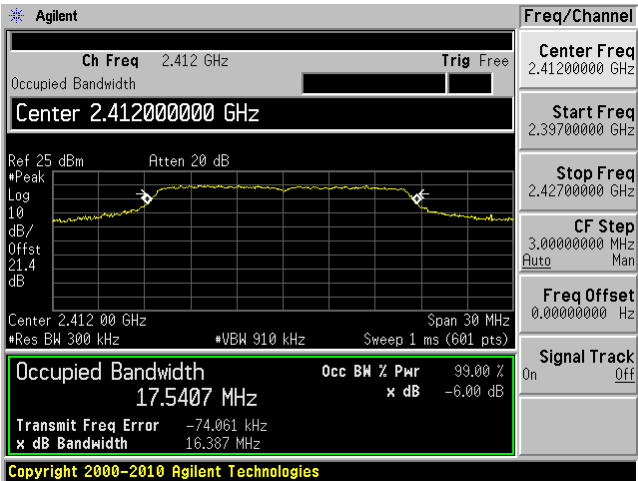


High channel: 2462 MHz Chain J1

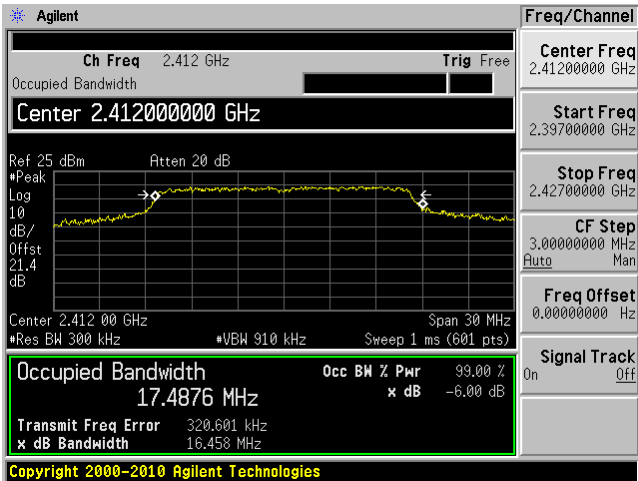


802.11g mode

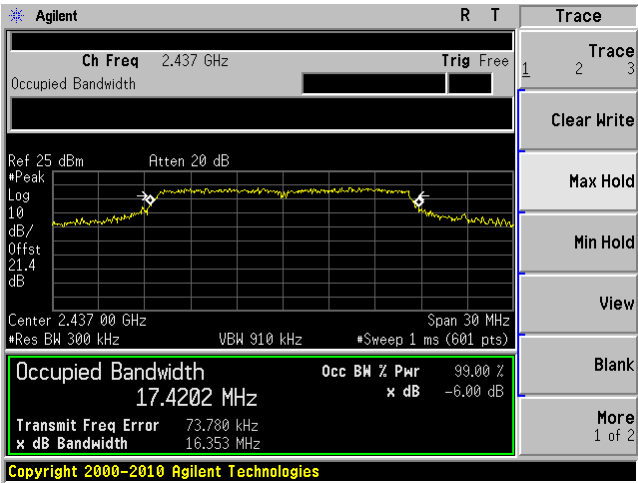
Low channel: 2412 MHz Chain J0



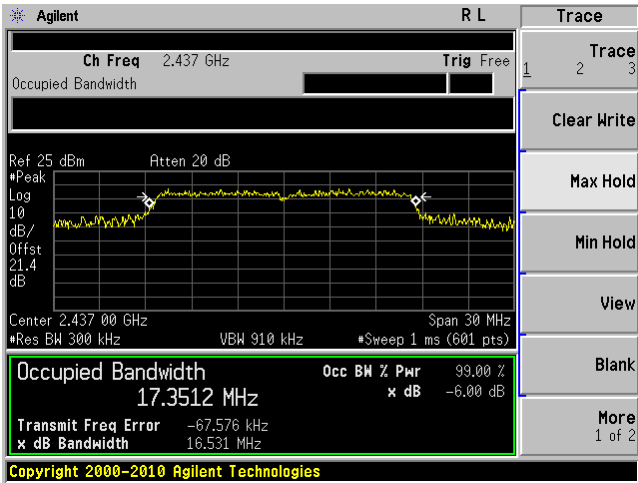
Low channel: 2412 MHz Chain J1



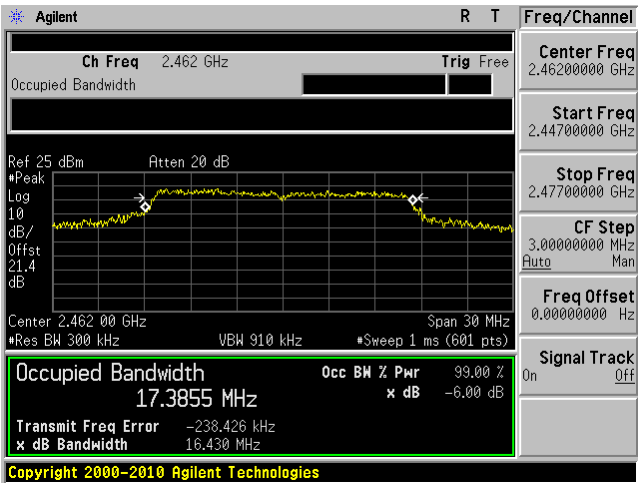
Middle channel: 2437 MHz Chain J0



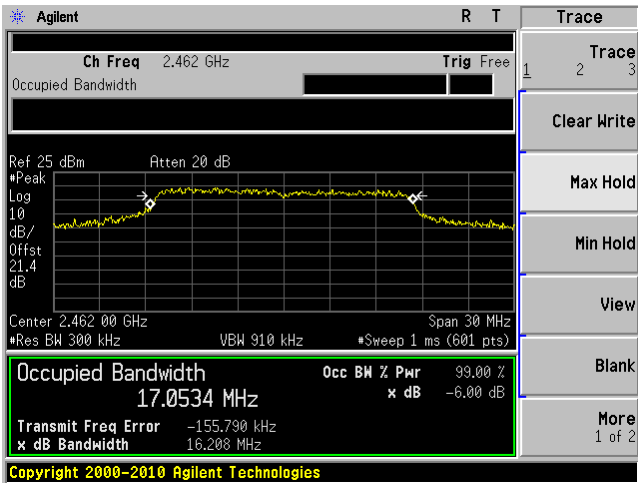
Middle channel: 2437 MHz Chain J1



High channel: 2462 MHz Chain J0

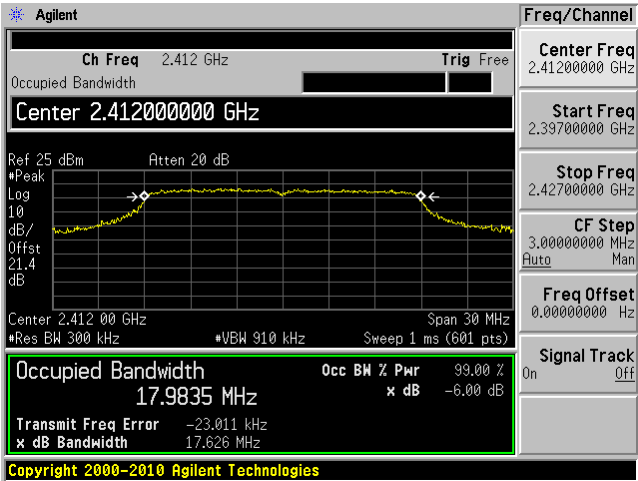


High channel: 2462 MHz Chain J1

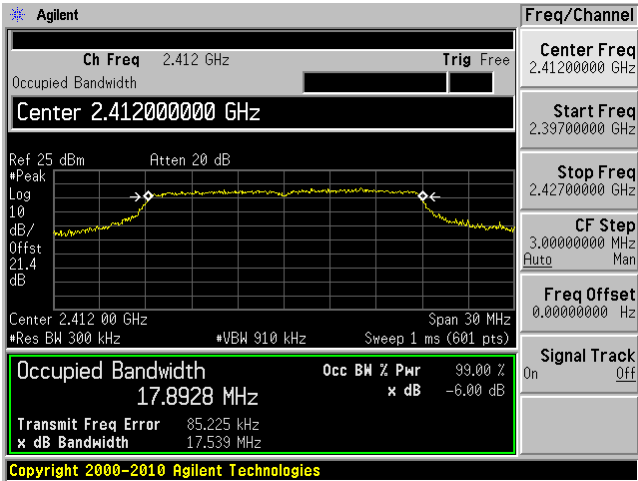


802.11n HT20 mode

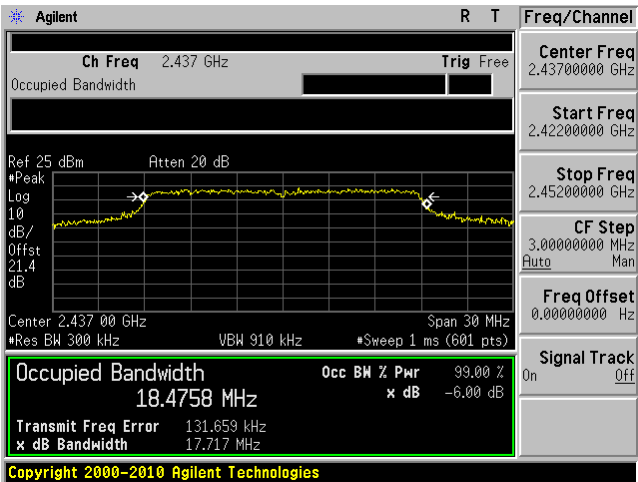
Low channel: 2412 MHz Chain J0



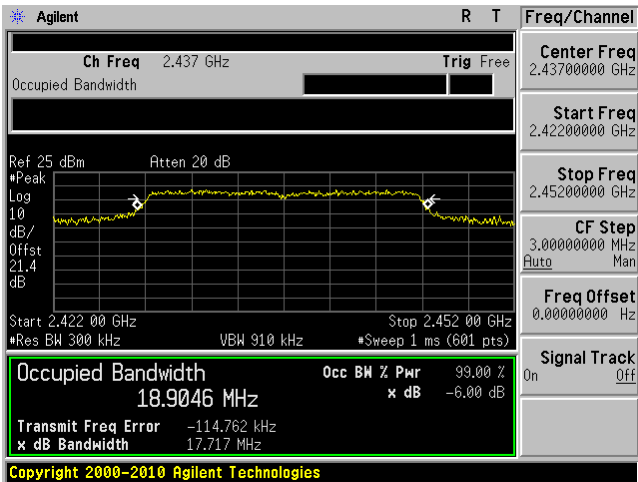
Low channel: 2412 MHz Chain J1



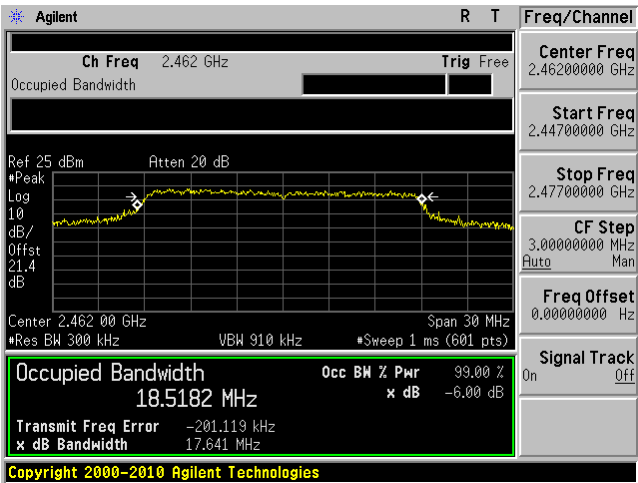
Middle channel: 2437 MHz Chain J0



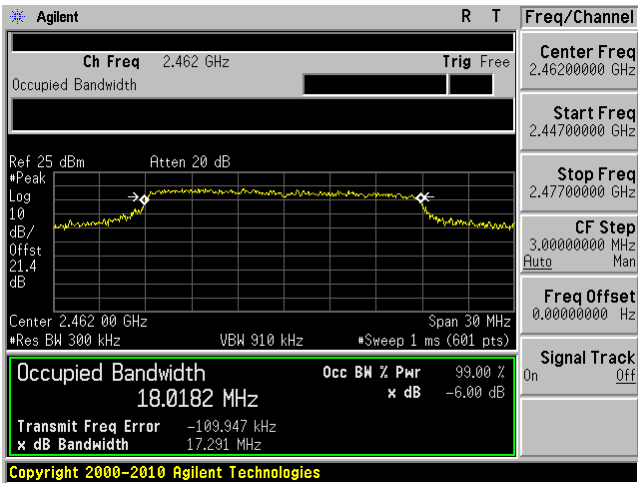
Middle channel: 2437 MHz Chain J1



High channel: 2462 MHz Chain J0

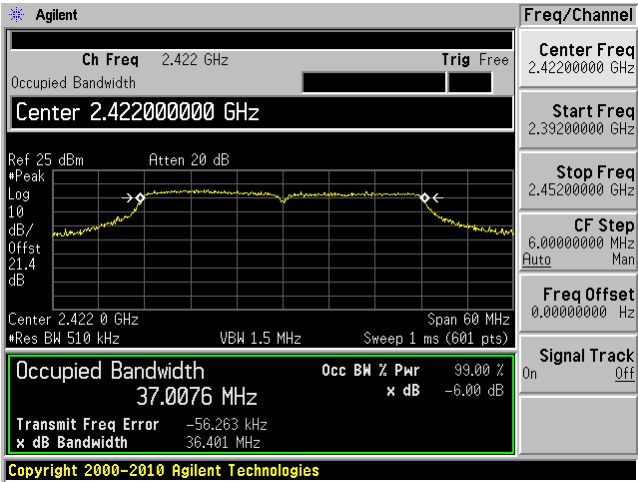


High channel: 2462 MHz Chain J1

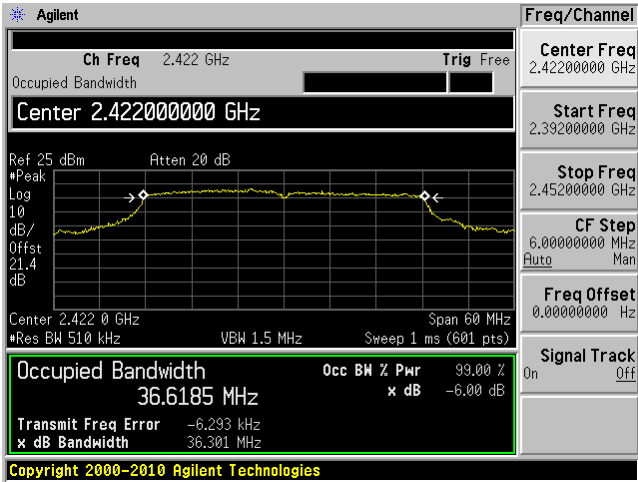


802.11n HT40 mode

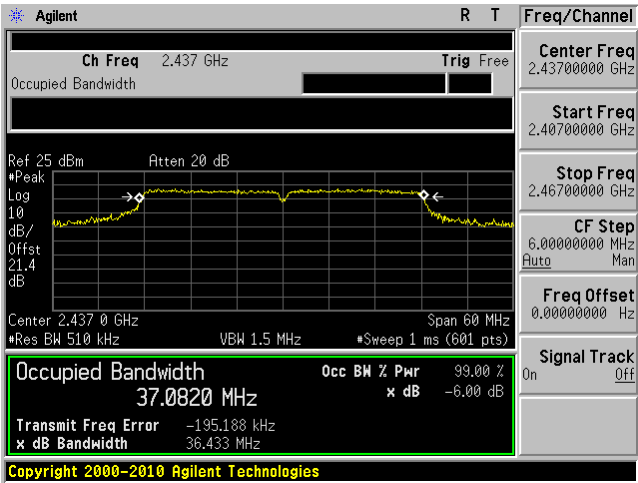
Low channel: 2422 MHz Chain J0



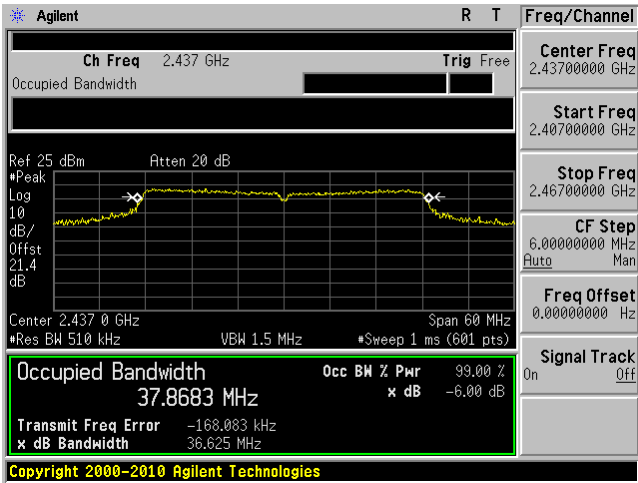
Low channel: 2422 MHz Chain J1



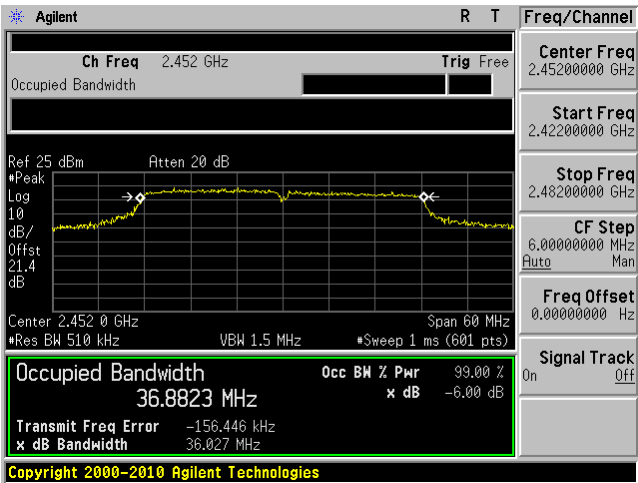
Middle channel: 2437 MHz Chain J0



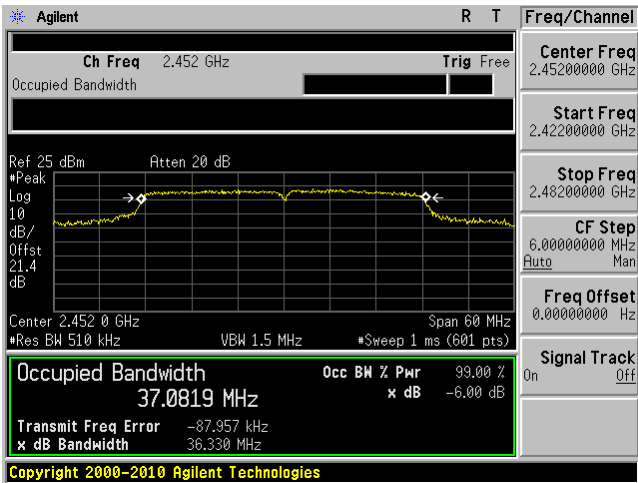
Middle channel: 2437 MHz Chain J1



High channel: 2452 MHz Chain J0



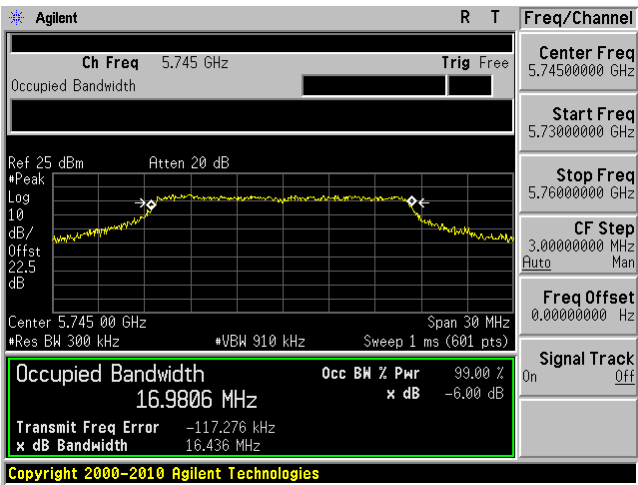
High channel: 2452 MHz Chain J1



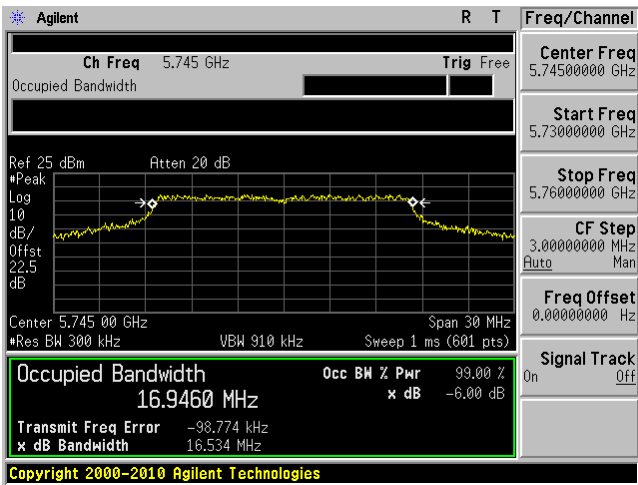
5.8 GHz Band

802.11a mode

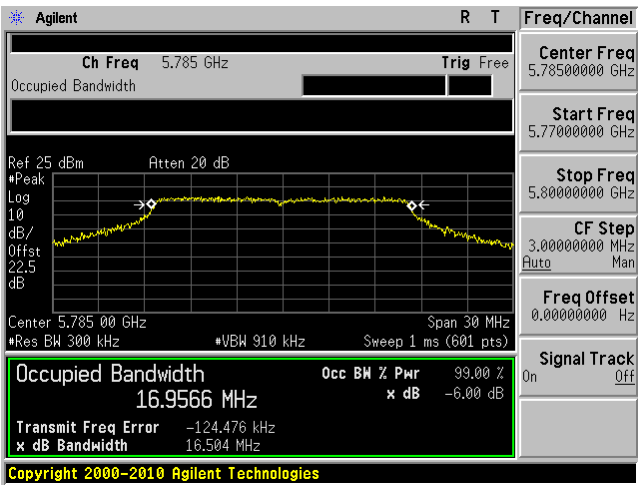
Low channel: 5745 MHz Chain J0



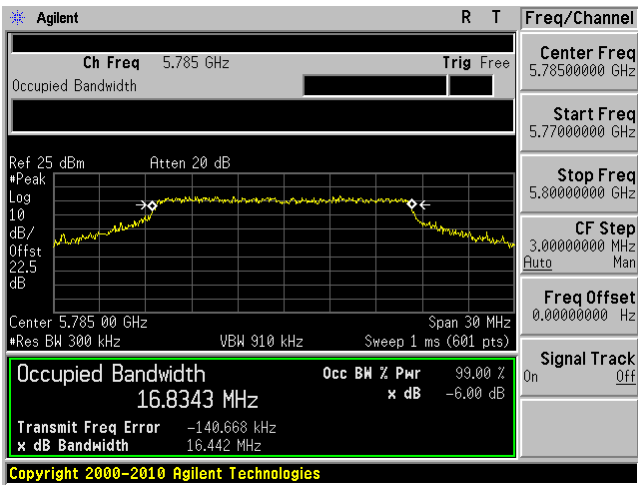
Low channel: 5745 MHz Chain J1



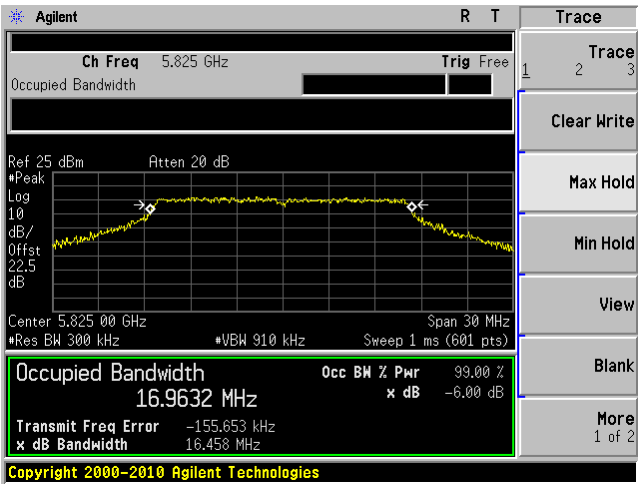
Middle channel: 5785 MHz Chain J0



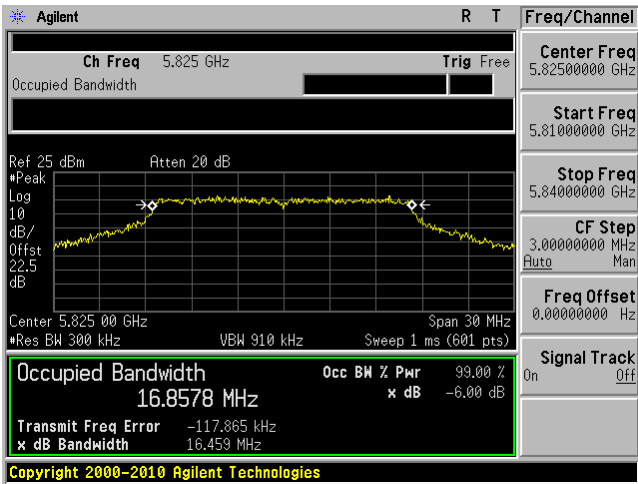
Middle channel: 5785 MHz Chain J1



High channel: 5825 MHz Chain J0

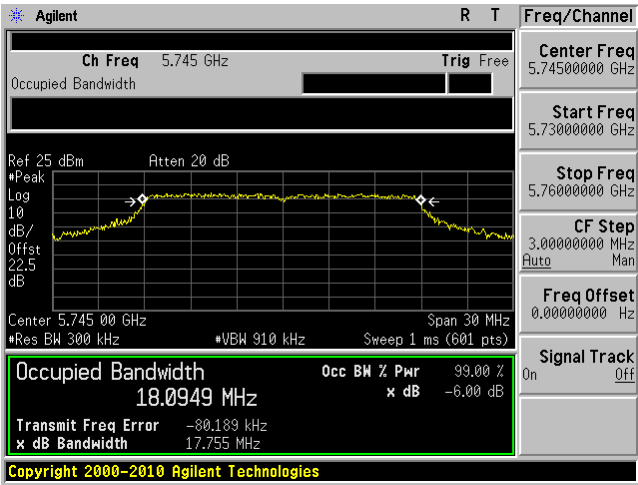


High channel: 5825 MHz Chain J1

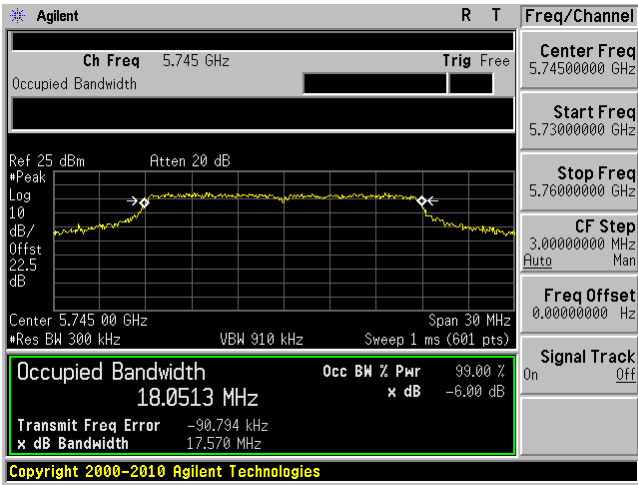


802.11n HT20 mode

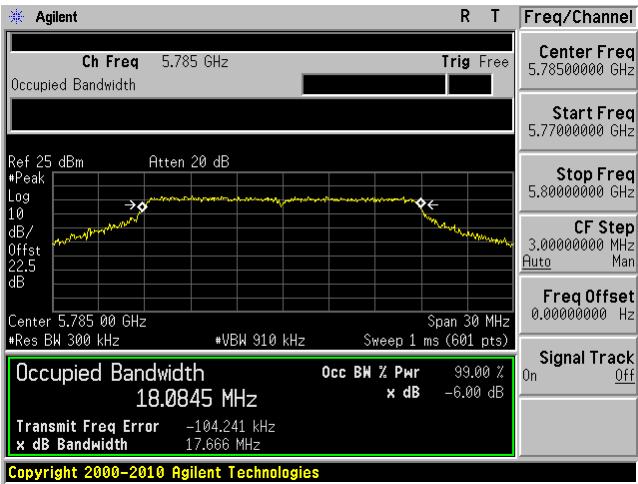
Low channel: 5745 MHz Chain J0



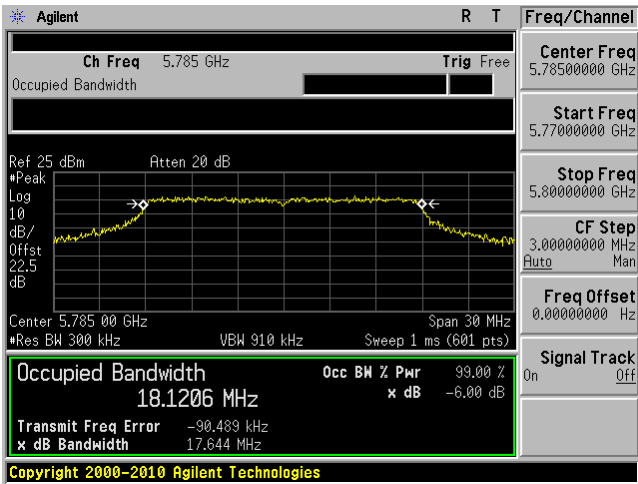
Low channel: 5745 MHz Chain J1



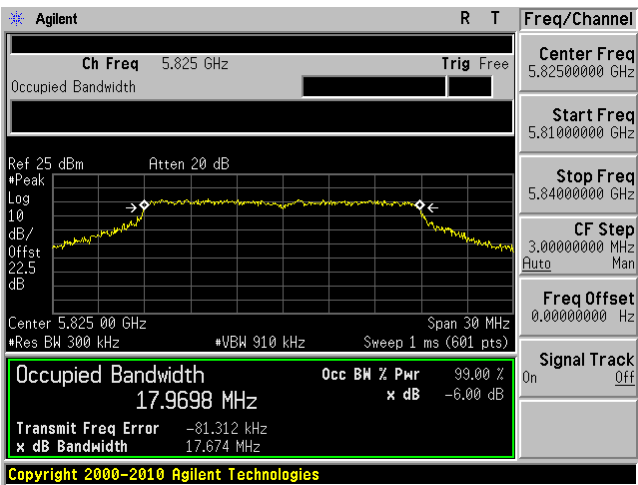
Middle channel: 5785 MHz Chain J0



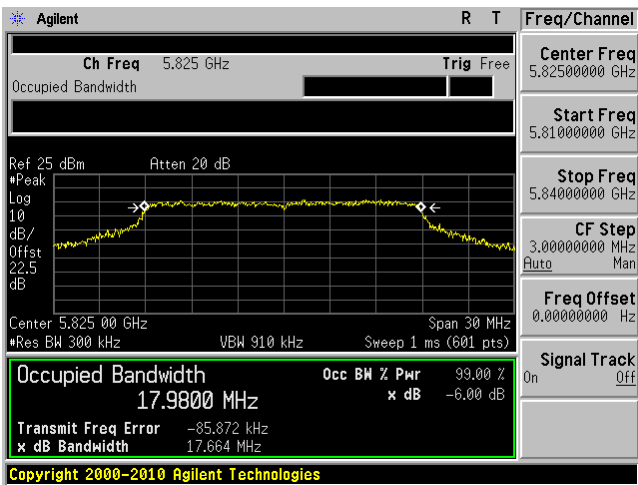
Middle channel: 5785 MHz Chain J1



High channel: 5825 MHz Chain J0

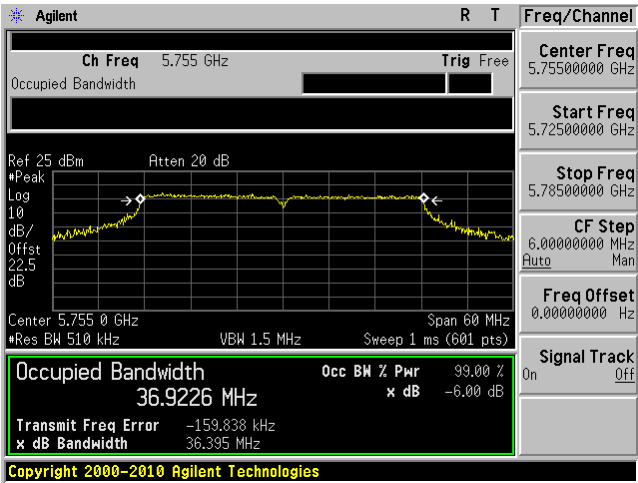


High channel: 5825 MHz Chain J1

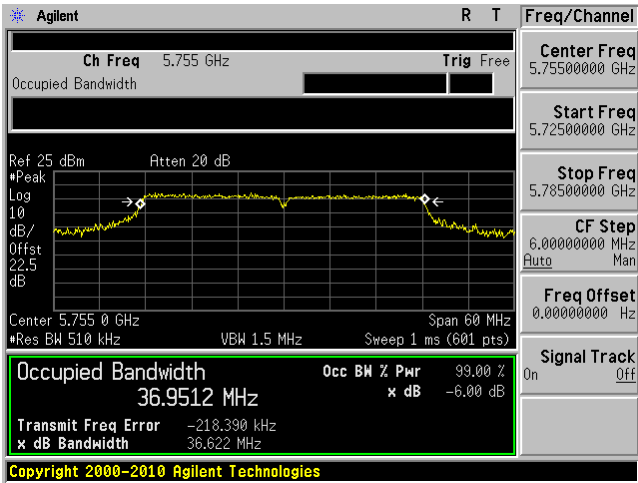


802.11n HT40 mode

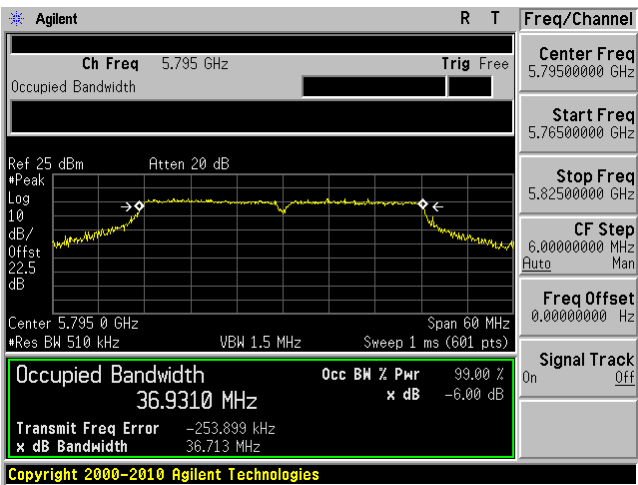
Low channel: 5755 MHz Chain J0



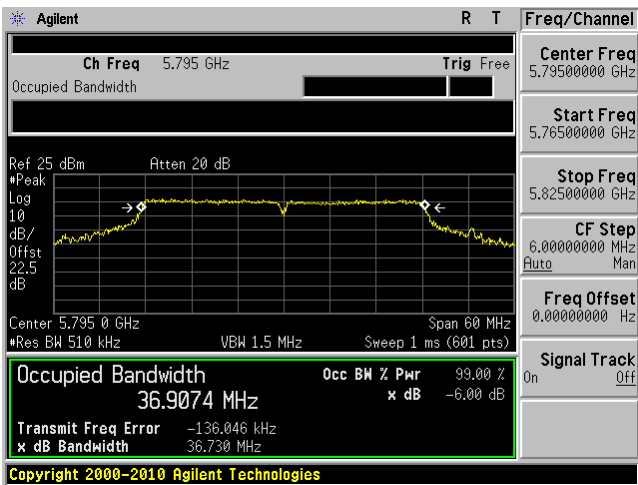
Low channel: 5755 MHz Chain J1



High channel: 5795 MHz Chain J0



High channel: 5795 MHz Chain J1



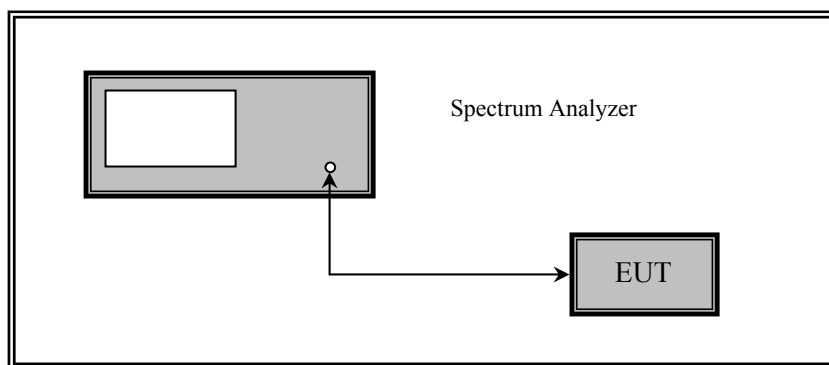
10 FCC §15.247(b) & IC RSS-210 §A8.4 – Peak Output Power Measurement

10.1 Applicable Standard

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	E4440A	MY44303352	2012-10-16	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:	21 °C
Relative Humidity:	43 %
ATM Pressure:	101.3kPa

The testing was performed by Lionel Lara from 2013-04-10 at the RF site.

10.5 Test Results

2.4 GHz, Dipole Antennas

Mode	Frequency (MHz)	Output Power J0 (dBm)	Output Power J1 (dBm)	Output Power Combined (dBm)	Limit (dBm)	Margin (dB)	Software Power Setting
802.11b	2412	20.34	20.90	23.64	30	-6.36	target
	2437	20.10	18.99	22.59	30	-7.41	target
	2462	20.62	19.98	23.32	30	-6.68	target
802.11g	2412	20.11	19.76	22.95	30	-7.05	22
	2437	20.87	20.00	23.47	30	-6.53	target
	2462	19.05	19.36	22.22	30	-7.78	21
802.11n HT20	2412	20.66	20.50	23.59	30	-6.41	target
	2437	20.29	19.84	23.08	30	-6.92	target
	2462	20.21	20.30	23.27	30	-6.73	target
802.11n HT40	2422	18.83	18.02	21.45	30	-8.55	21
	2437	20.86	19.83	23.39	30	-6.61	target
	2452	18.83	18.12	21.50	30	-8.5	21

5.8 GHz Band, Dipole Antennas

Mode	Frequency (MHz)	Output Power J0 (dBm)	Output Power J1 (dBm)	Output Power Combined (dBm)	Limit (dBm)	Margin (dB)	Software Power Setting
802.11a	5745	15.50	16.20	18.87	30	-11.13	target
	5785	15.32	16.42	18.92	30	-11.08	target
	5825	15.15	15.56	18.37	30	-11.63	target
802.11n HT20	5745	16.70	16.93	19.83	30	-10.17	target
	5785	16.84	17.04	19.95	30	-10.05	target
	5825	15.71	16.27	19.01	30	-10.99	target
802.11n HT40	5755	16.08	16.86	19.50	30	-10.5	target
	5795	16.07	16.76	19.44	30	-10.56	target

2.4 GHz, Patch Antenna

Mode	Frequency (MHz)	Output Power J0 (dBm)	Output Power J1 (dBm)	Output Power Combined (dBm)	Limit (dBm)	Margin (dB)	Software Power Setting
802.11b	2412	20.34	20.90	23.64	30	-6.36	target
	2437	20.10	18.99	22.59	30	-7.41	target
	2462	20.62	19.98	23.32	30	-6.68	target
802.11g	2412	19.31	18.47	21.92	30	-8.08	21
	2437	20.87	20.00	23.47	30	-6.53	target
	2462	19.05	19.36	22.22	30	-7.78	21
802.11n HT20	2412	19.13	19.34	22.25	30	-7.75	21.5
	2437	20.29	19.84	23.08	30	-6.92	target
	2462	20.21	20.30	23.27	30	-6.73	target
802.11n HT40	2422	14.48	13.78	17.15	30	-12.85	16
	2437	20.86	19.83	23.39	30	-6.61	target
	2452	16.16	15.18	18.71	30	-11.29	18

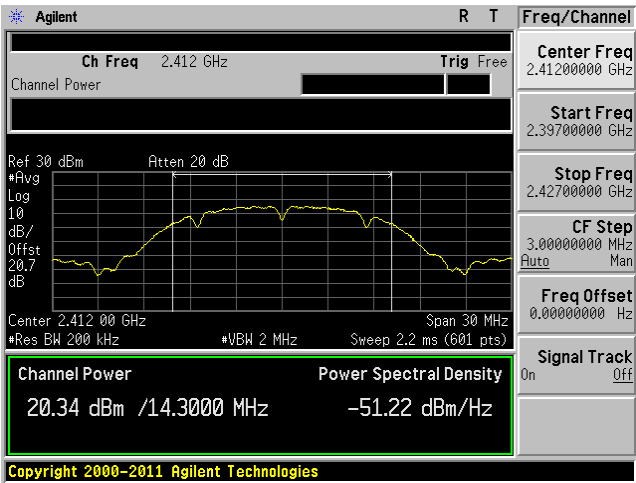
5.8 GHz Band, Patch Antenna

Mode	Frequency (MHz)	Output Power J0 (dBm)	Output Power J1 (dBm)	Output Power Combined (dBm)	Limit (dBm)	Margin (dB)	Software Power Setting
802.11a	5745	15.50	16.20	18.87	30	-11.13	target
	5785	15.32	16.42	18.92	30	-11.08	target
	5825	15.15	15.56	18.37	30	-11.63	target
802.11n HT20	5745	16.70	16.93	19.83	30	-10.17	target
	5785	16.84	17.04	19.95	30	-10.05	target
	5825	15.71	16.27	19.01	30	-10.99	target
802.11n HT40	5755	16.08	16.86	19.50	30	-10.5	target
	5795	16.07	16.76	19.44	30	-10.56	target

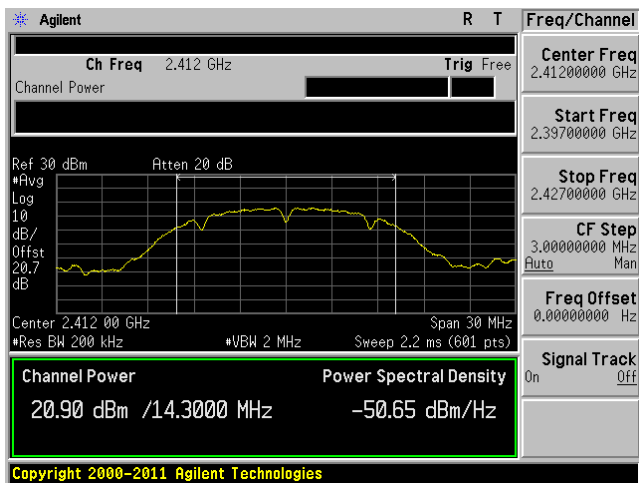
2.4 GHz Band, Dipole Antennas

802.11b mode

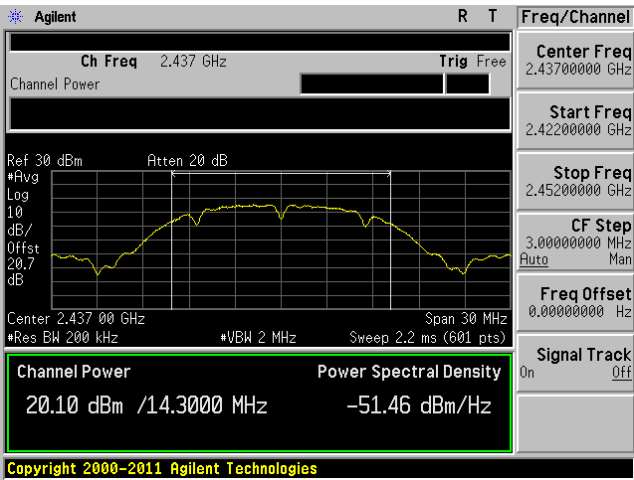
Low channel: 2412 MHz Chain J0



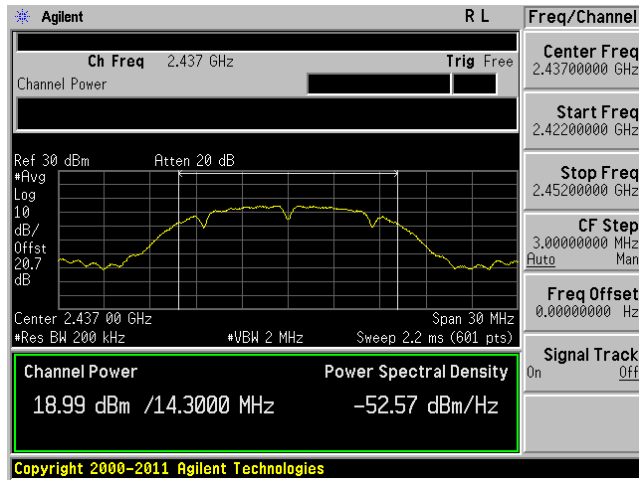
Low channel: 2412 MHz Chain J1



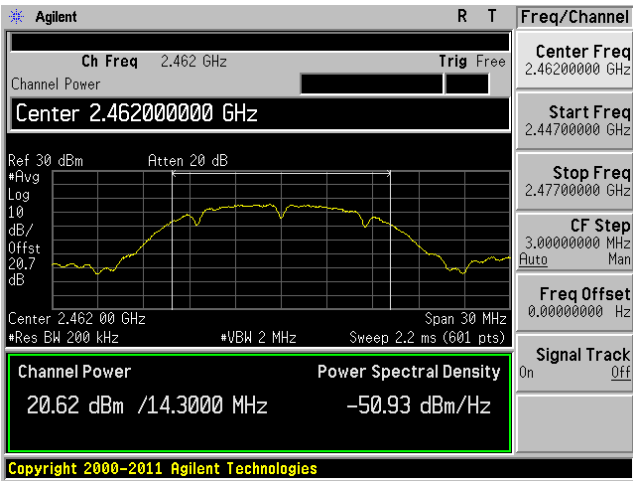
Middle channel: 2437 MHz Chain J0



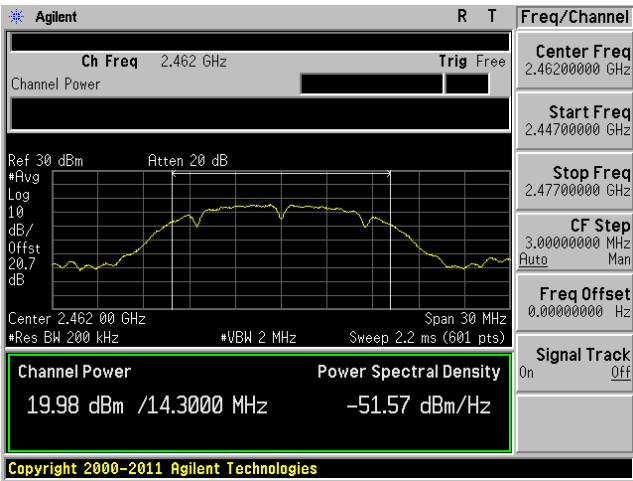
Middle channel: 2437 MHz Chain J1



High channel: 2462 MHz Chain J0

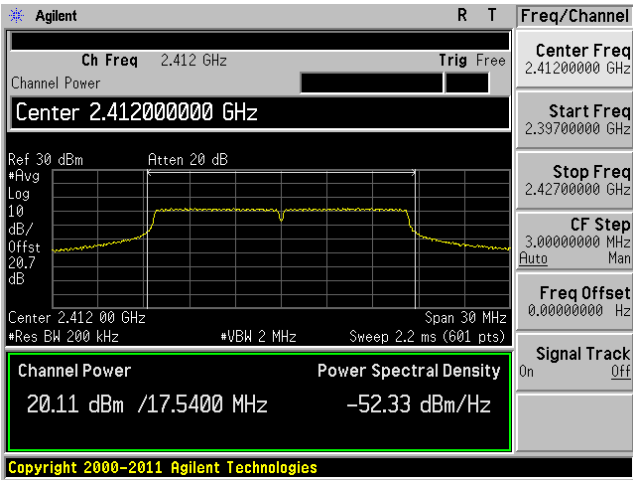


Middle channel: 2462 MHz Chain J1

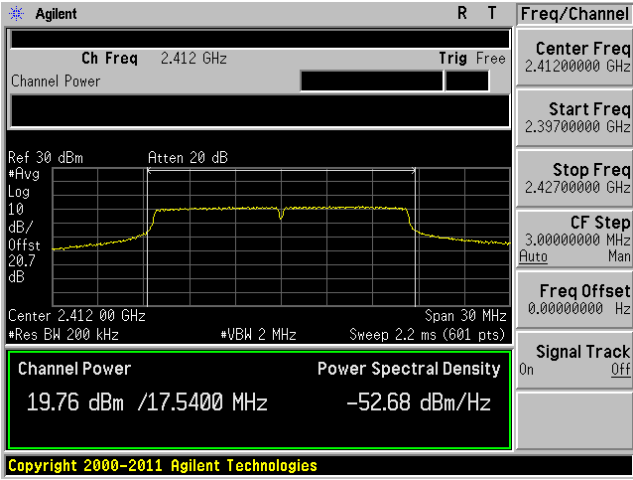


802.11g mode

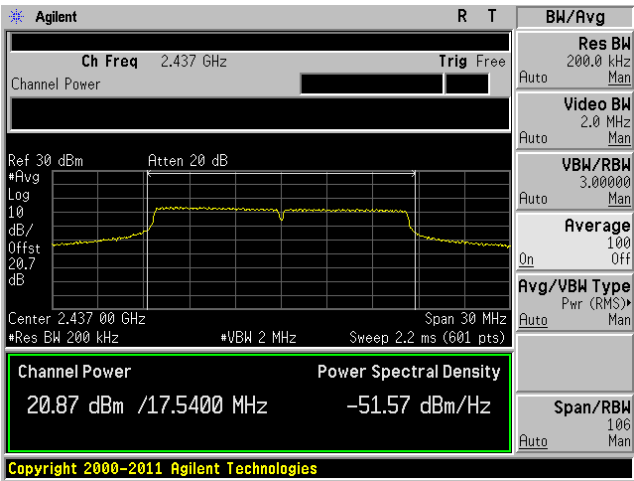
Low channel: 2412 MHz Chain J0



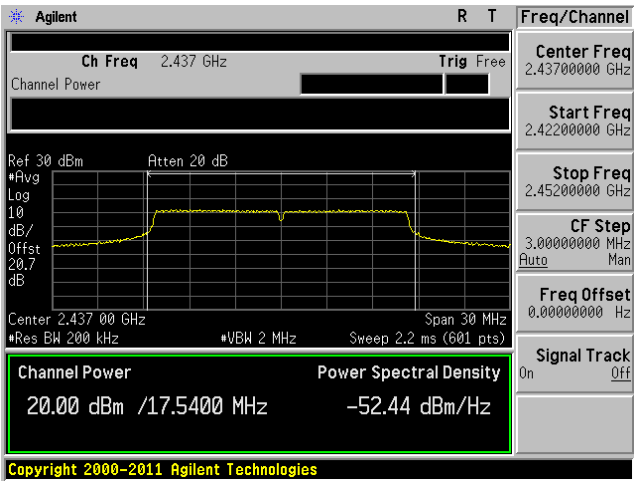
Low channel: 2412 MHz Chain J1



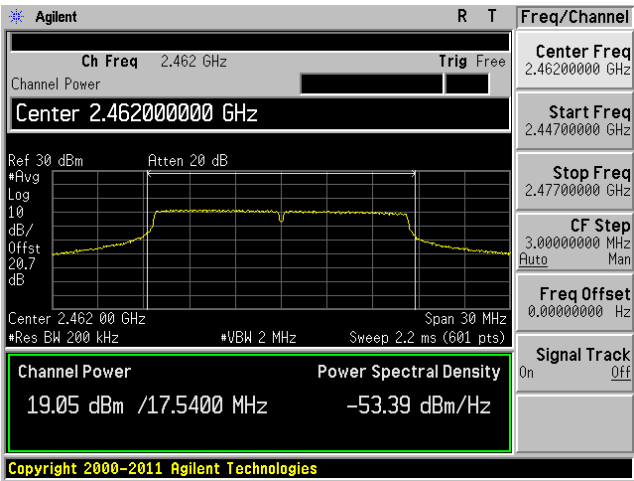
Middle channel: 2437 MHz Chain J0



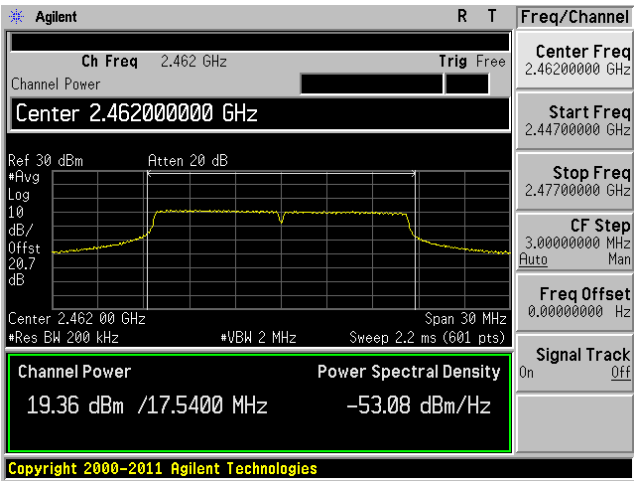
Middle channel: 2437 MHz Chain J1



High channel: 2462 MHz Chain J0

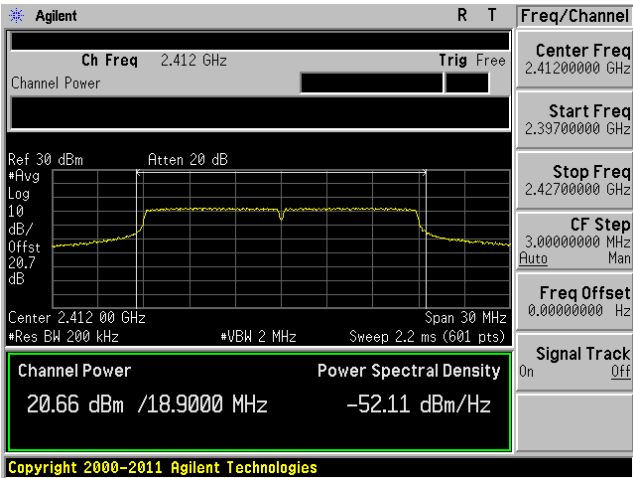


Middle channel: 2462 MHz Chain J1

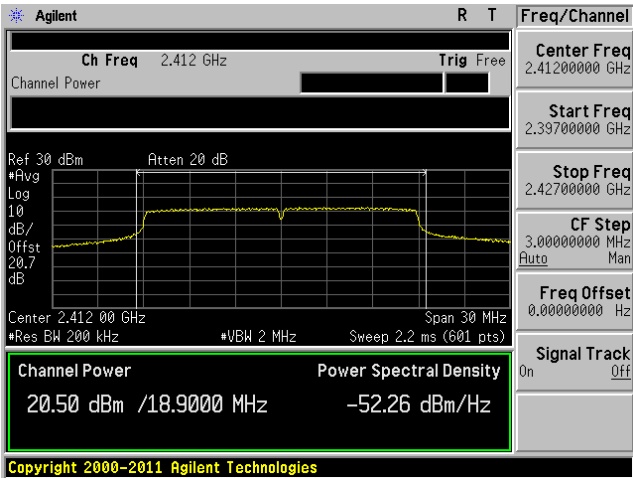


802.11n HT20 mode

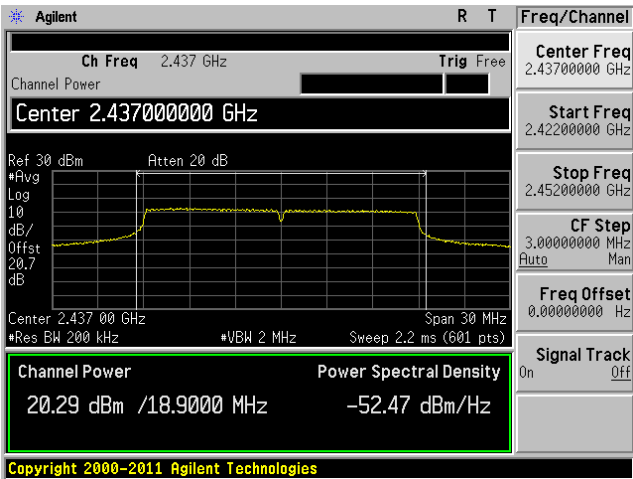
Low channel: 2412 MHz Chain J0



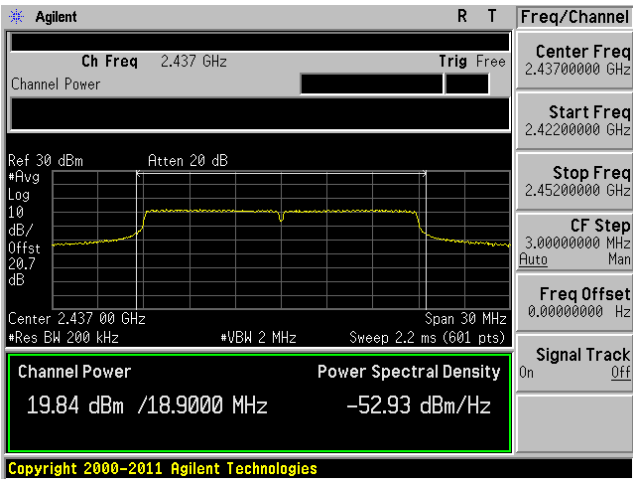
Low channel: 2412 MHz Chain J1



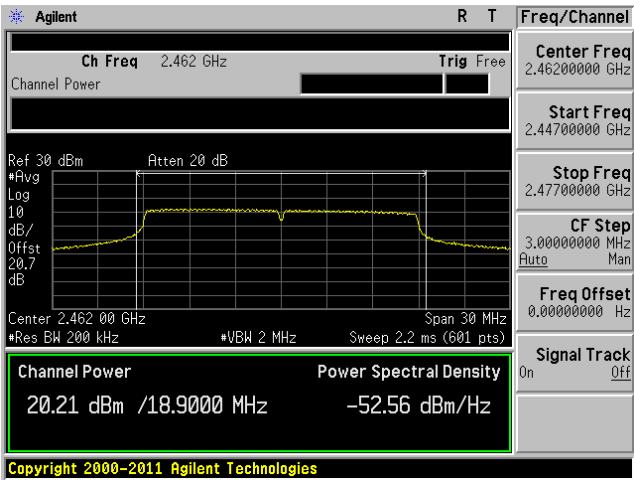
Middle channel: 2437 MHz Chain J0



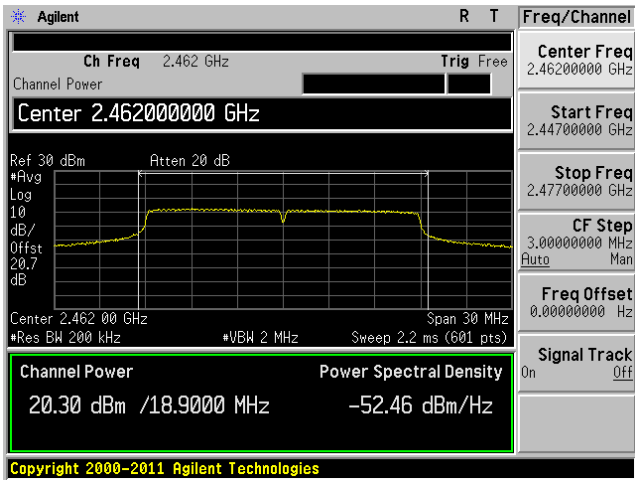
Middle channel: 2437 MHz Chain J1



High channel: 2462 MHz Chain J0

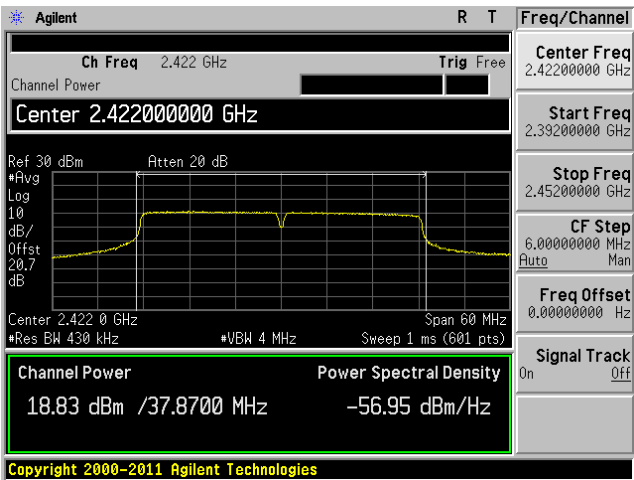


Middle channel: 2462 MHz Chain J1

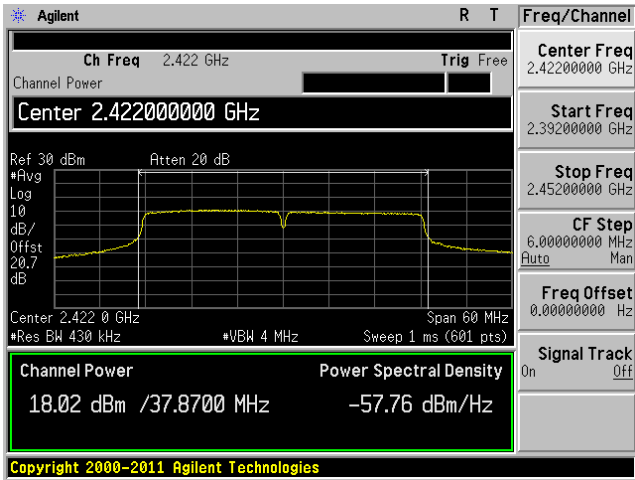


802.11n HT40 mode

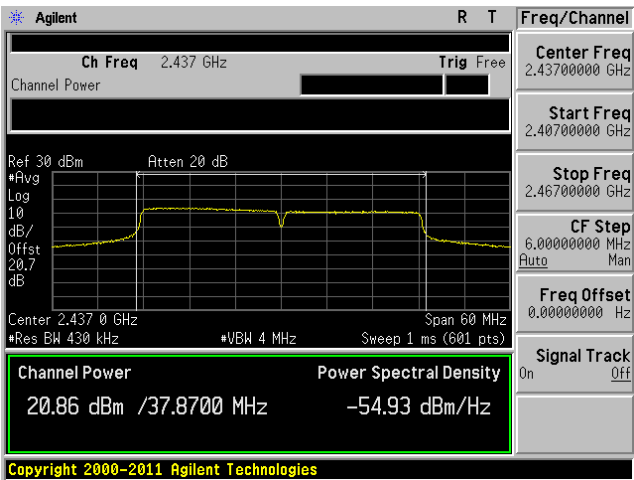
Low channel: 2422 MHz Chain J0



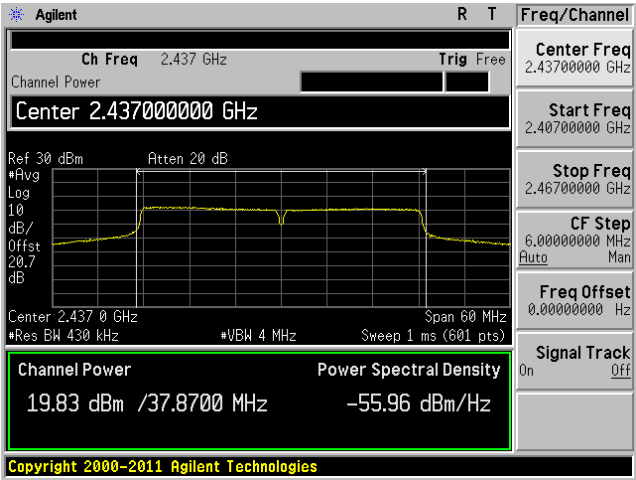
Low channel: 2422 MHz Chain J1



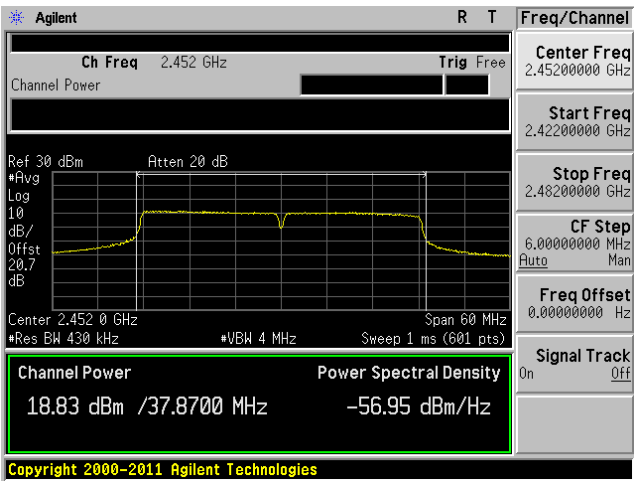
Middle channel: 2437 MHz Chain J0



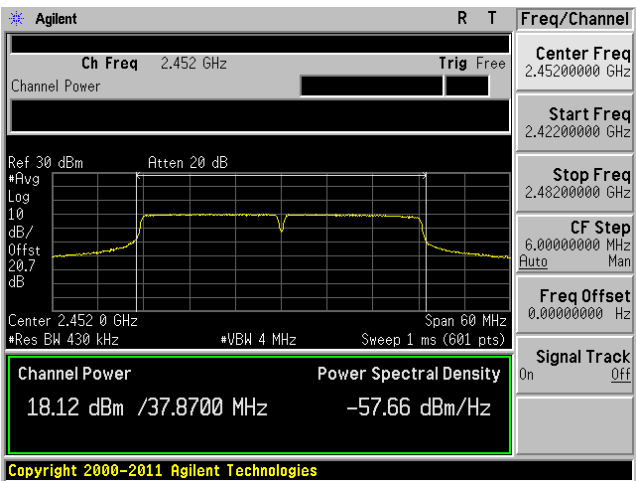
Middle channel: 2437 MHz Chain J1



High channel: 2452 MHz Chain J0



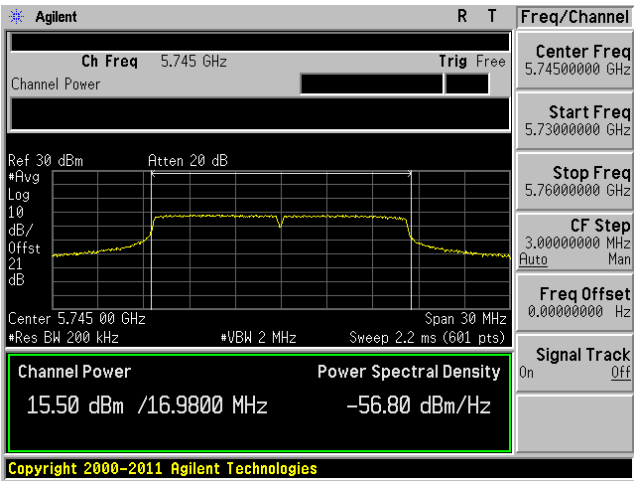
Middle channel: 2452 MHz Chain J1



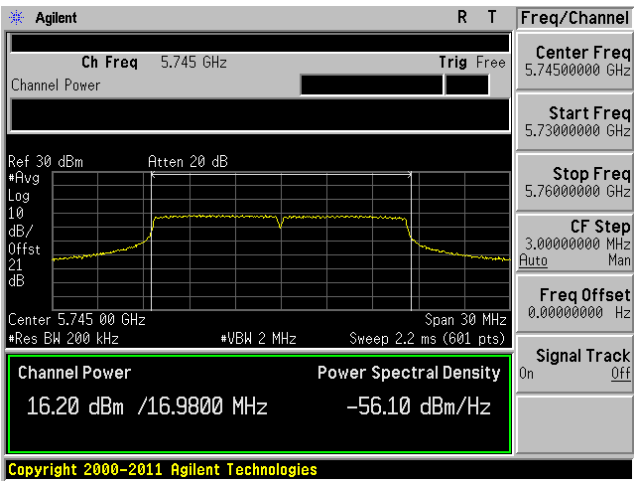
5.8 GHz Band, Dipole Antennas

802.11a mode

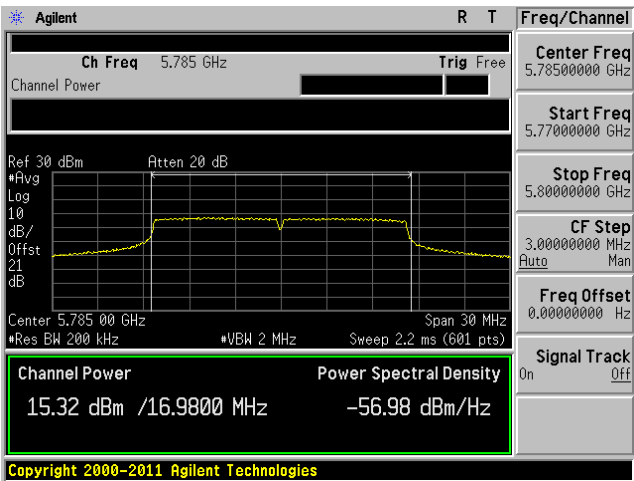
Low channel: 5745 MHz Chain J0



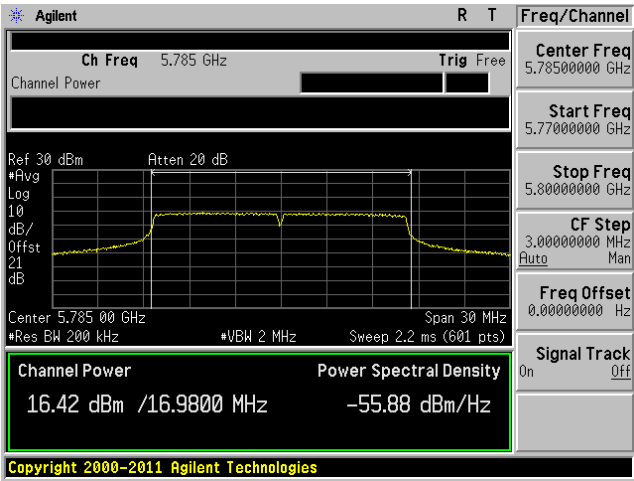
Low channel: 5745 MHz Chain J1



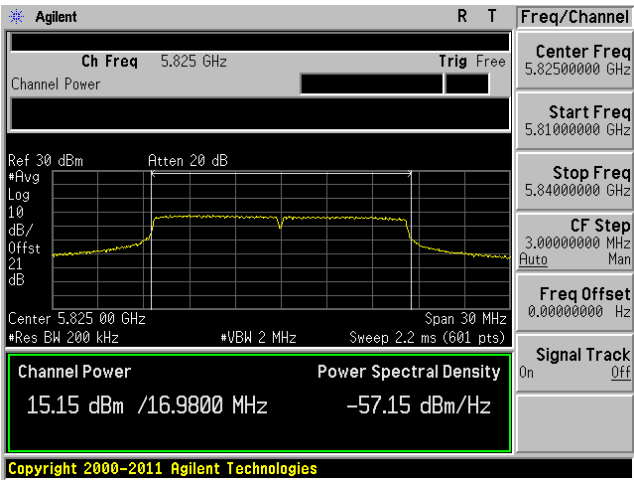
Middle channel: 5785 MHz Chain J0



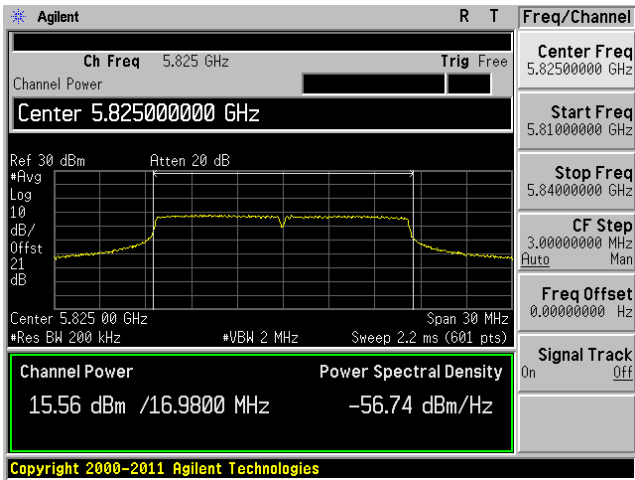
Middle channel: 5785 MHz Chain J1



High channel: 5825 MHz Chain J0

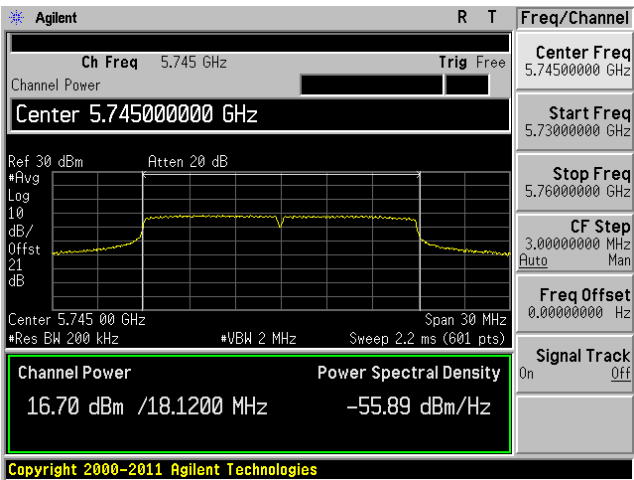


Middle channel: 5825 MHz Chain J1

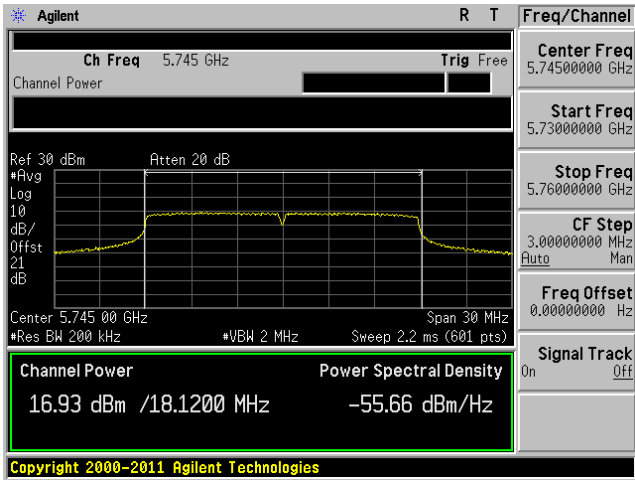


802.11n HT20 mode

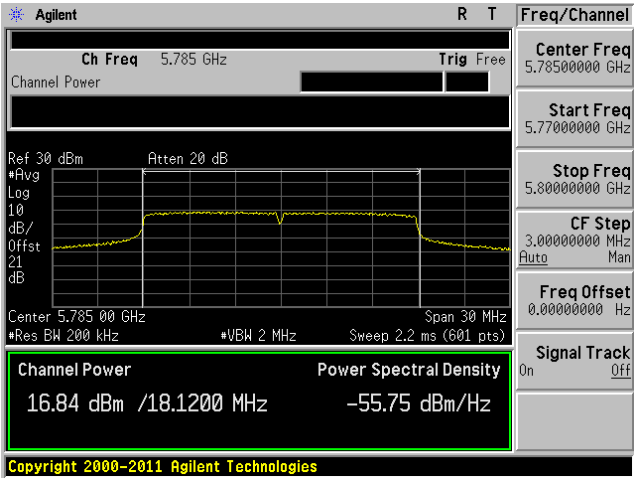
Low channel: 5745 MHz Chain J0



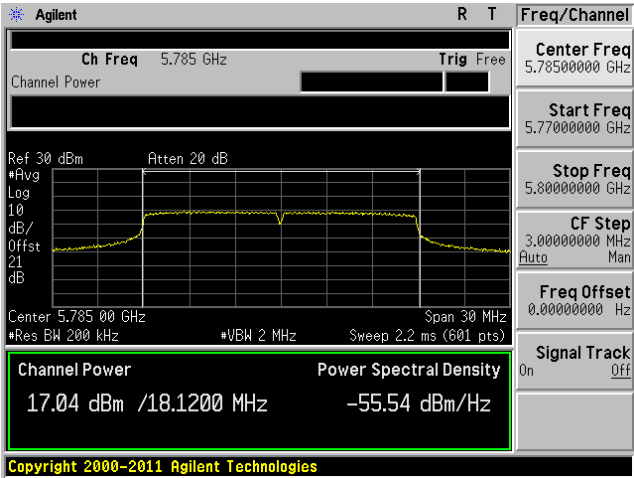
Low channel: 5745 MHz Chain J1



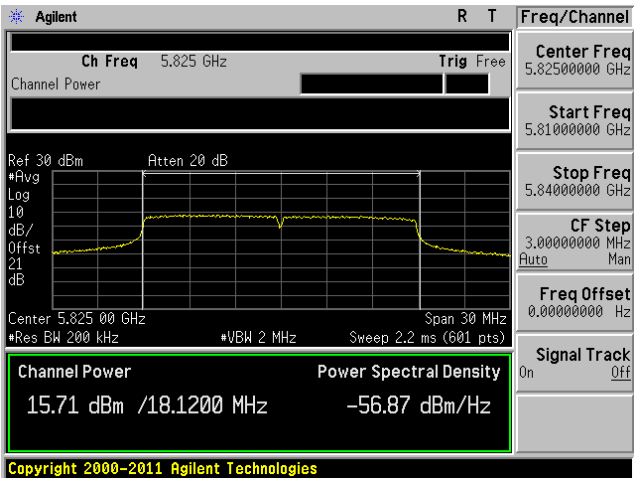
Middle channel: 5785 MHz Chain J0



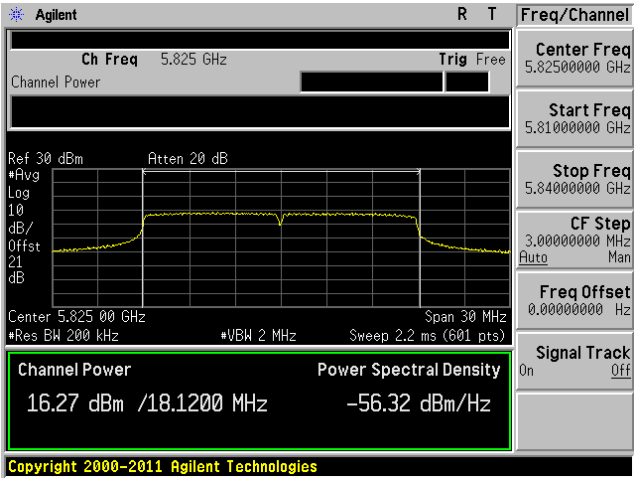
Middle channel: 5785 MHz Chain J1



High channel: 5825 MHz Chain J0

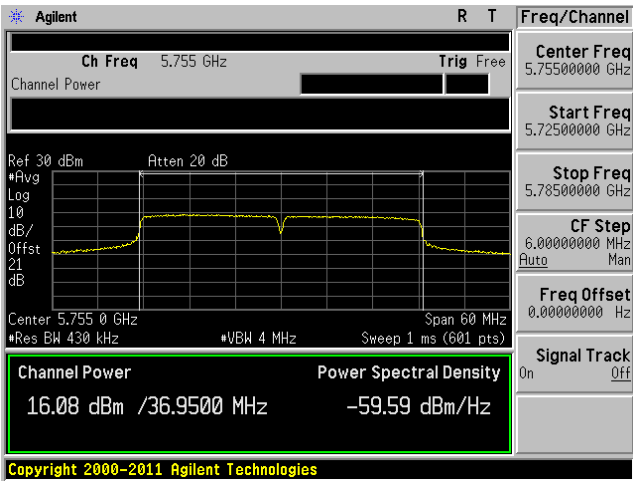


Middle channel: 5825 MHz Chain J1

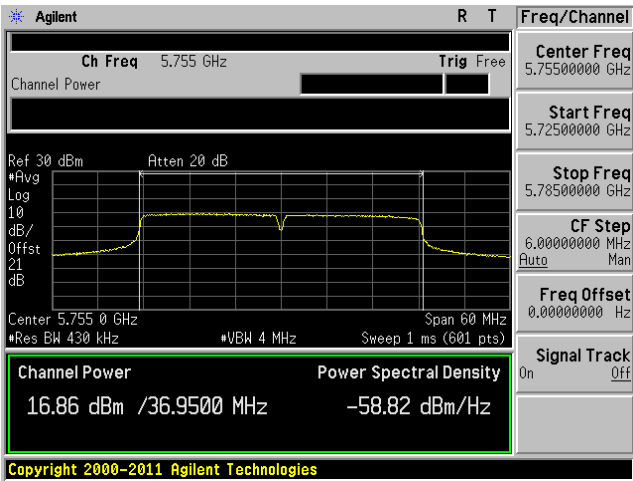


802.11n HT40 mode

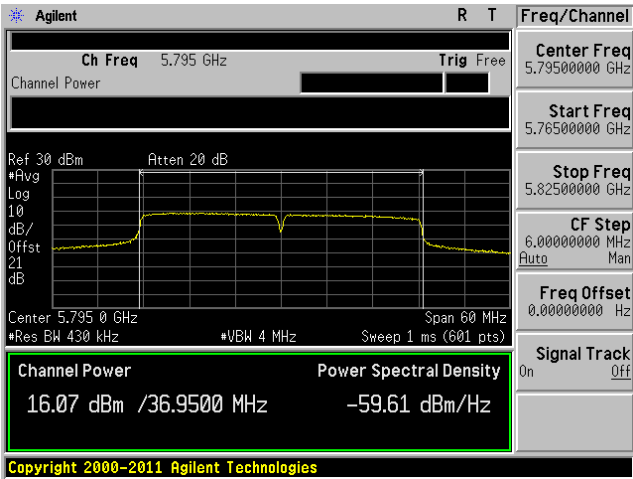
Low channel: 5755 MHz Chain J0



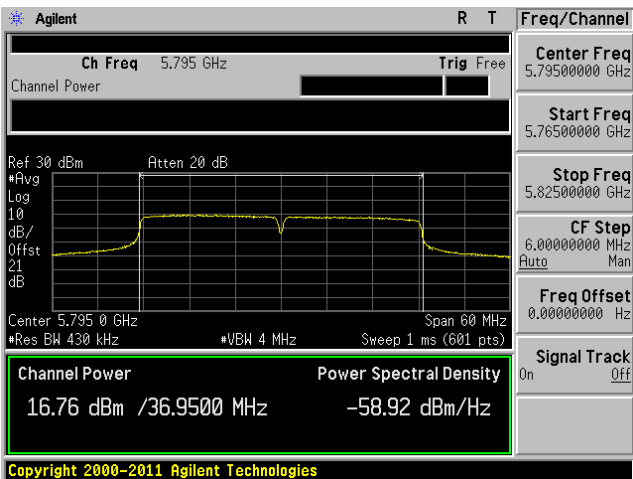
Low channel: 5755 MHz Chain J1



High channel: 5795 MHz Chain J0



Middle channel: 575 MHz Chain J1



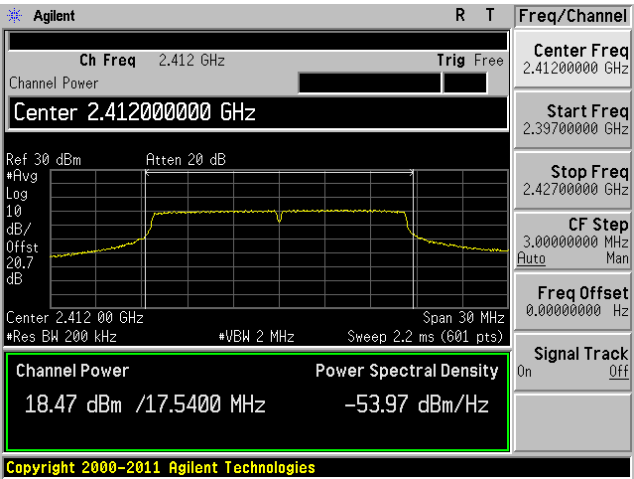
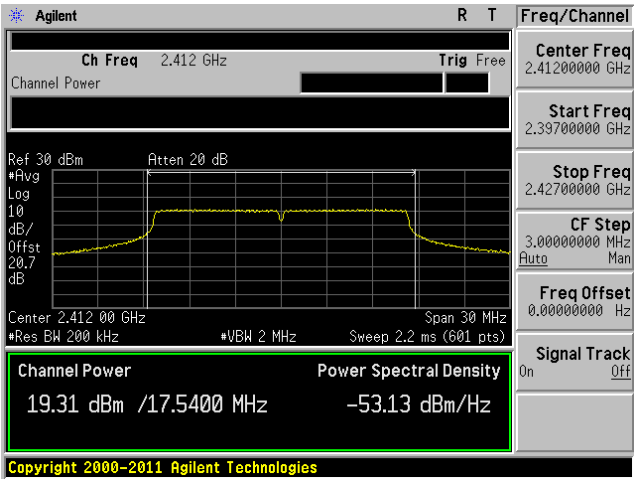
2.4 GHz Band, Patch Antenna

(Note: Only the channels with different software setting will be included for the patch antenna. For all other channels refer to the dipole antennas section)

802.11g mode

Low channel: 2412 MHz Chain J0

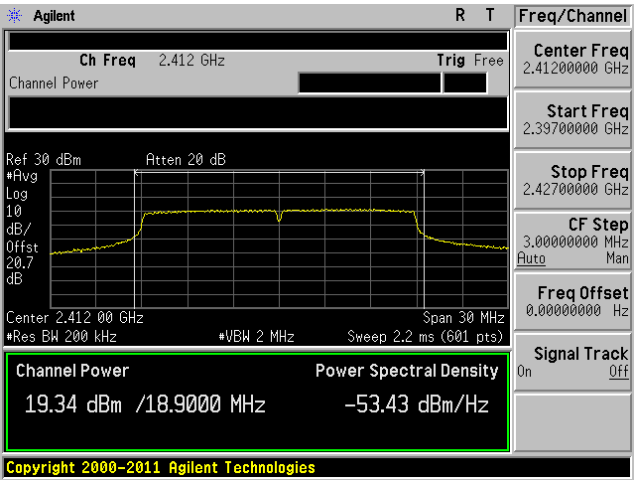
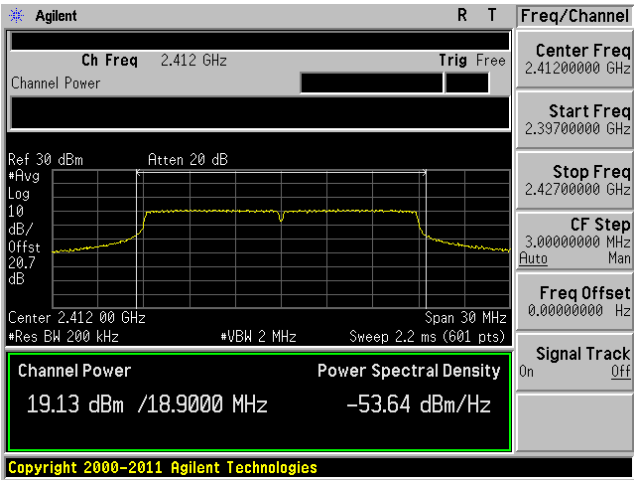
Low channel: 2412 MHz Chain J1



802.11n HT20 mode

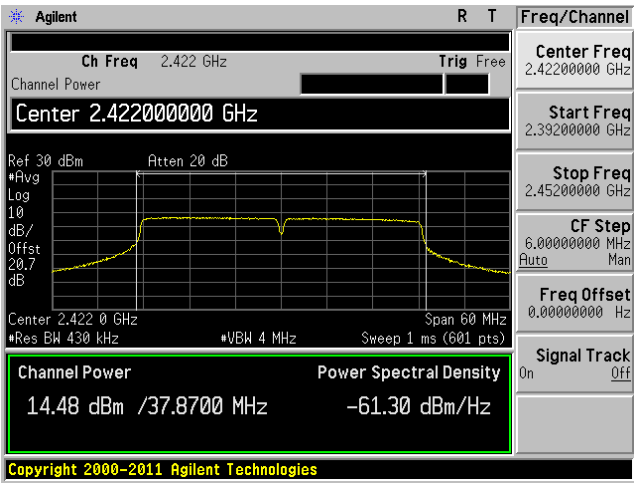
Low channel: 2412 MHz Chain J0

Low channel: 2412 MHz Chain J1

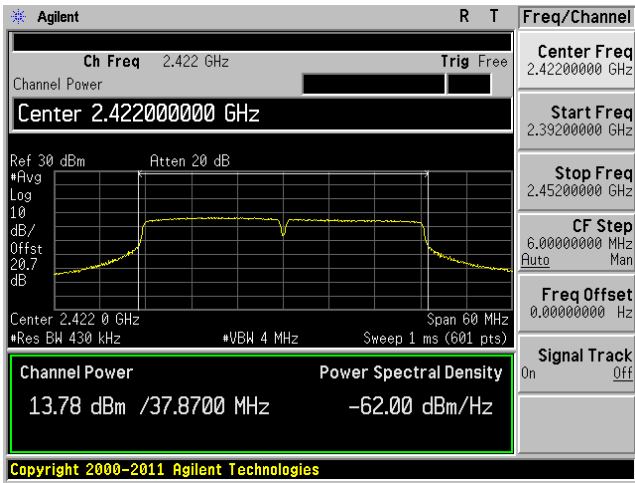


802.11n HT40 mode

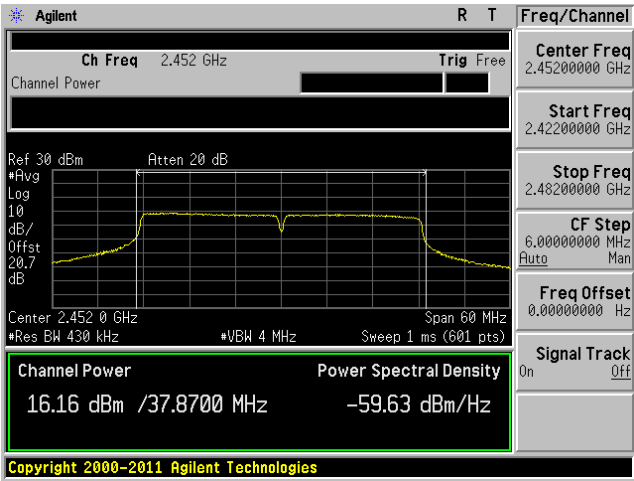
Low channel: 2422 MHz Chain J0



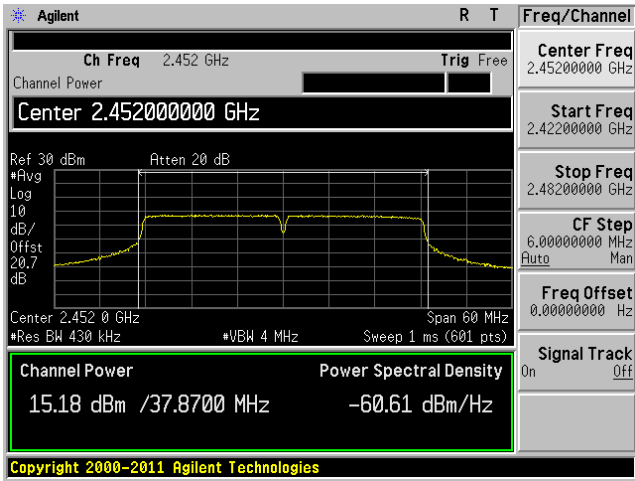
Low channel: 2422 MHz Chain J1



High channel: 2452 MHz Chain J0



High channel: 2452 MHz Chain J1



5.8 GHz Band, Patch Antenna

(Note: The power settings of 5.8GHz with patch antenna are the same as dipole antennas. Please refer to the dipole antennas section)

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

11.1 Applicable Standard

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	E4440A	US42221851	2012-02-28	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

Temperature:	22-24 °C
Relative Humidity:	42-45 %
ATM Pressure:	101-102kPa

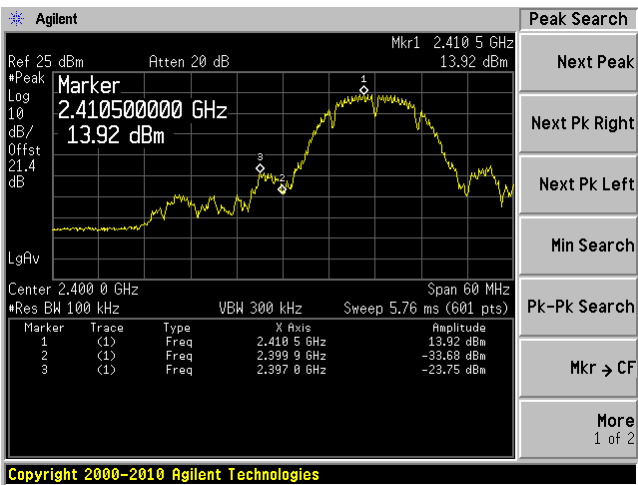
The testing was performed by Jeffrey Wu from 2012-10-1 to 2012-10-15 at RF site.

11.5 Test Results

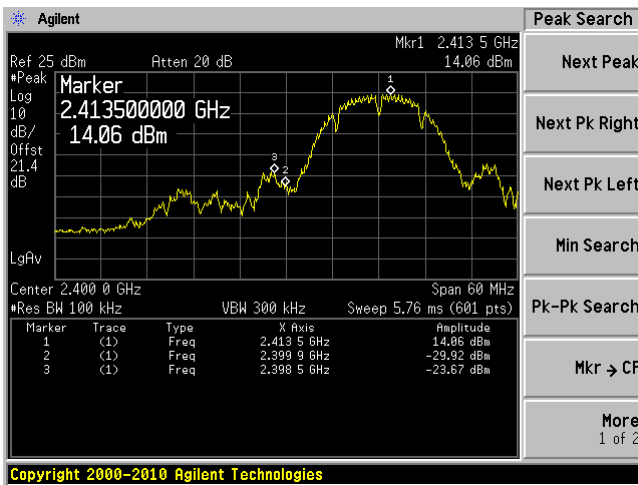
Please refer to following pages for plots of band edge.

2.4 GHz Band

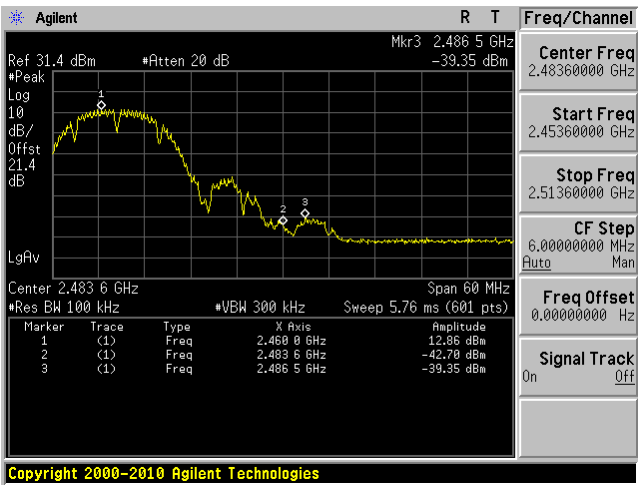
802.11b, Chain J0 Low Band Edge



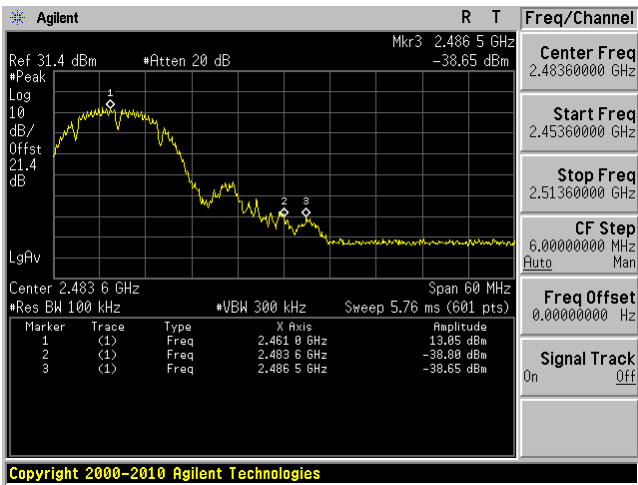
802.11b, Chain J1 Low Band Edge



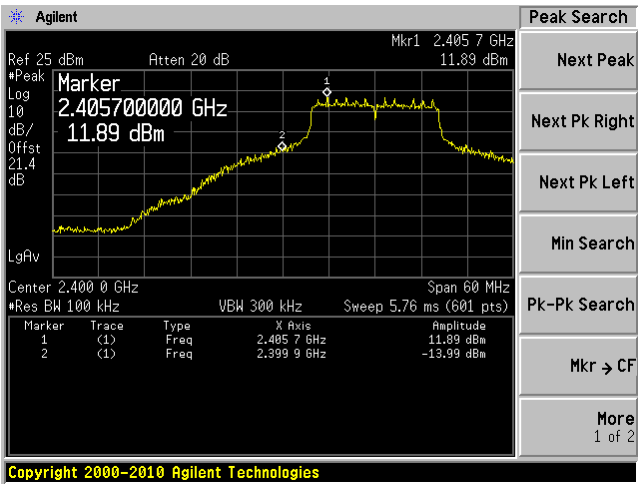
802.11b, Chain J0 High Band Edge



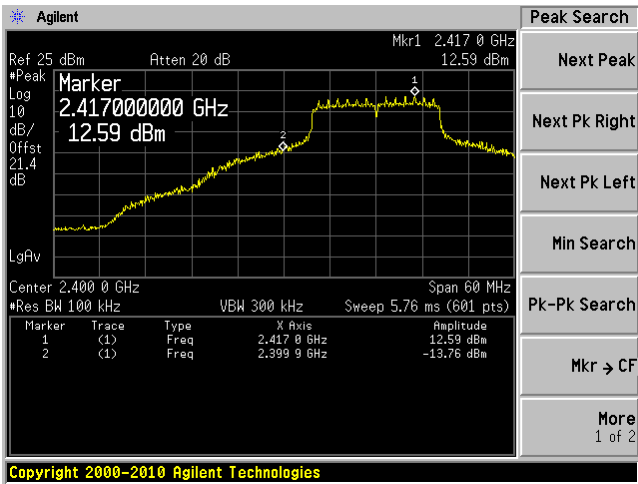
802.11b, Chain J1 High Band Edge



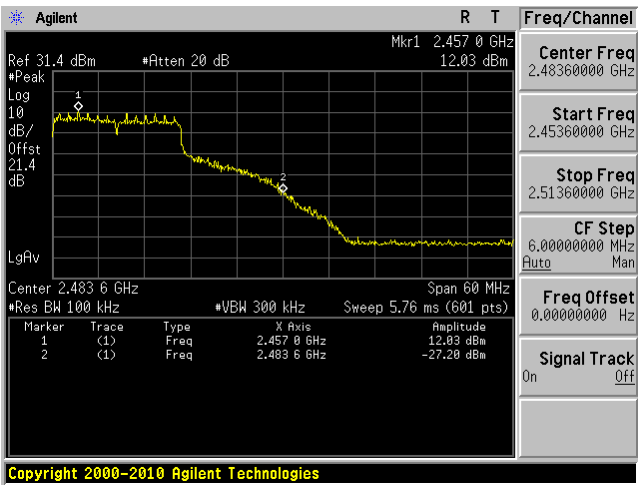
802.11g, Chain J0 Low Band Edge



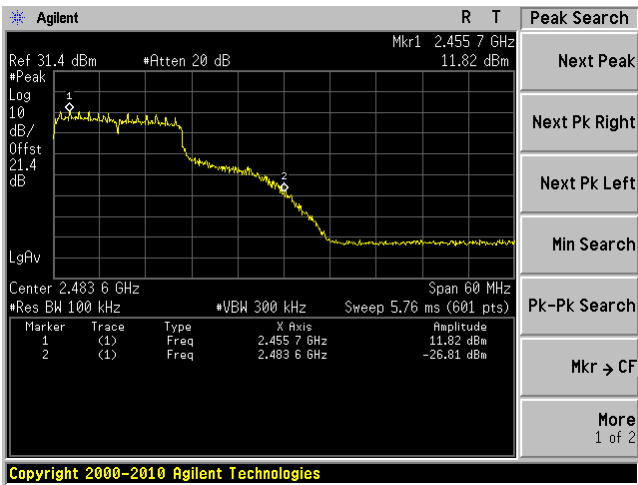
802.11g, Chain J1 Low Band Edge



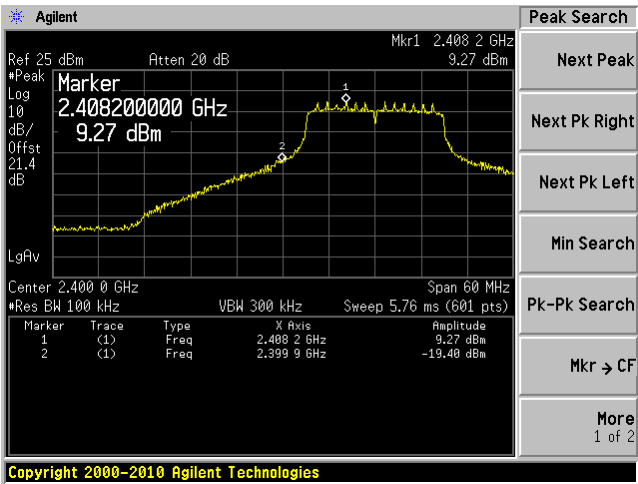
802.11g, Chain J0 High Band Edge



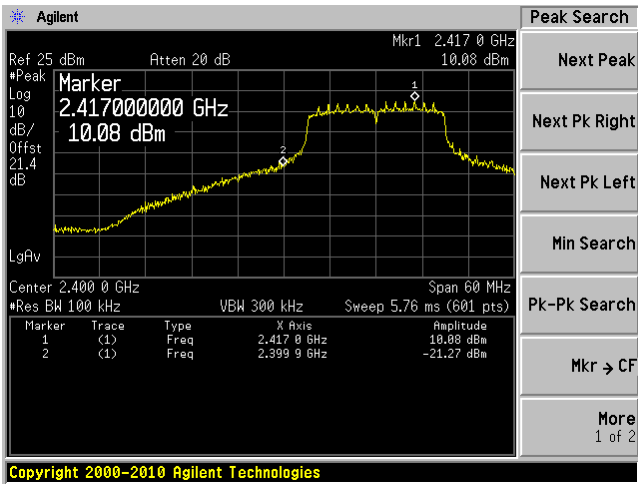
802.11g, Chain J1 High Band Edge



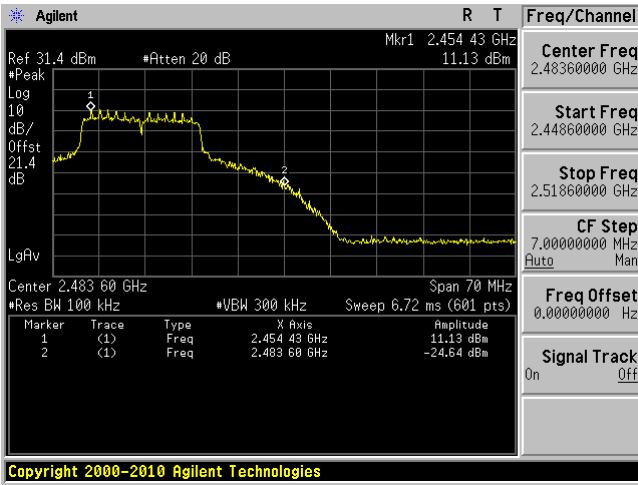
802.11n HT20, Chain J0 Low Band Edge



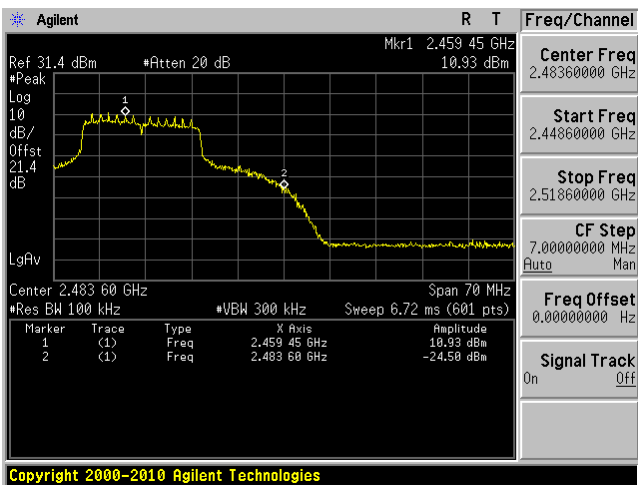
802.11n HT20, Chain J1 Low Band Edge



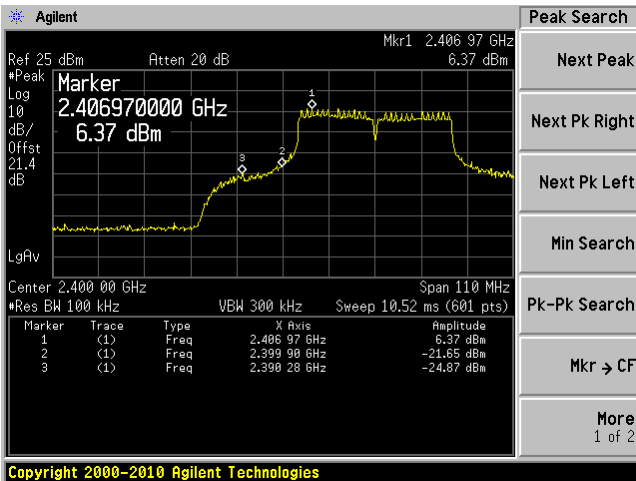
802.11n HT20, Chain J0 High Band Edge



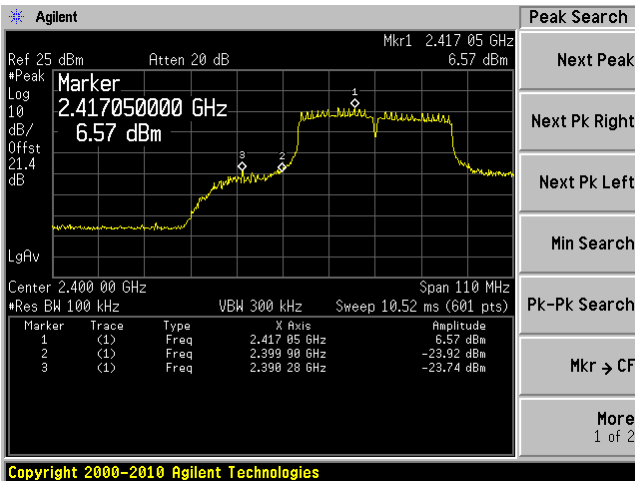
802.11n HT20, Chain J1 High Band Edge



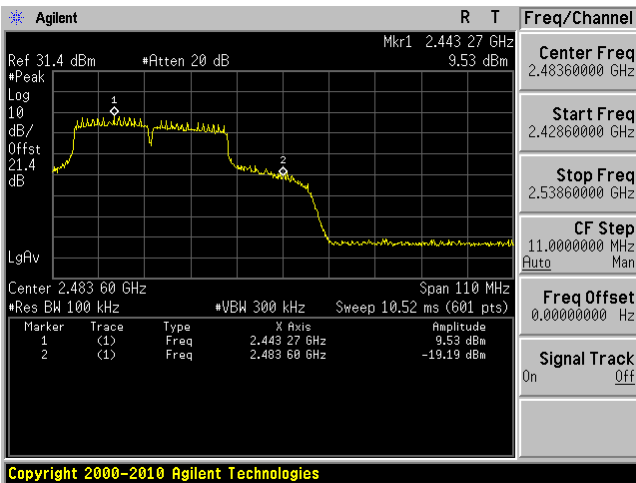
802.11n HT40, Chain J0 Low Band Edge



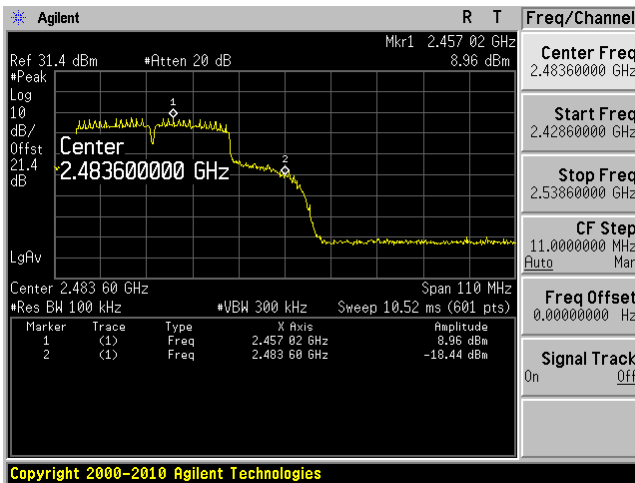
802.11n HT40, Chain J1 Low Band Edge



802.11n HT40, Chain J0 High Band Edge

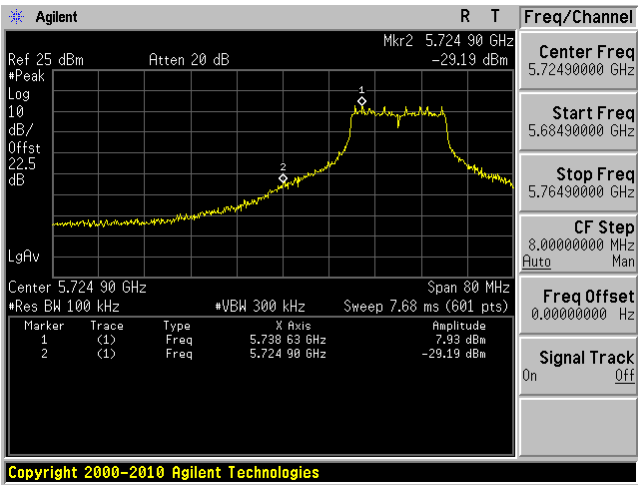


802.11n HT40, Chain J1 High Band Edge

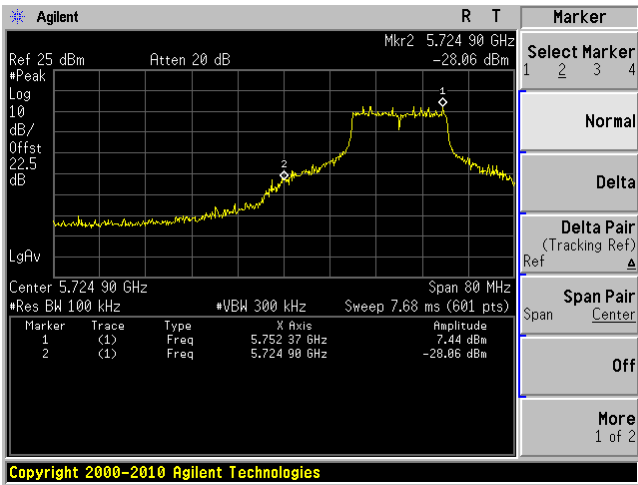


5.8 GHz Band

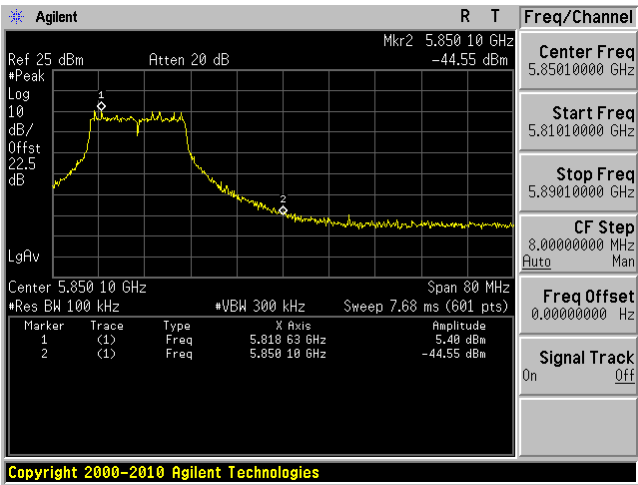
802.11a, Chain J0 Low Band Edge



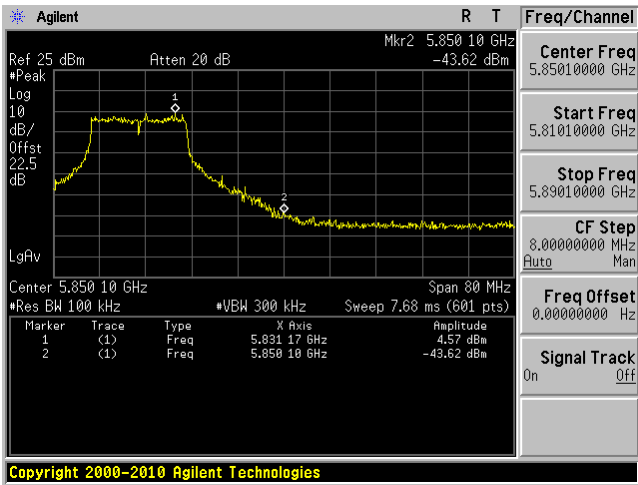
802.11a, Chain J1 Low Band Edge



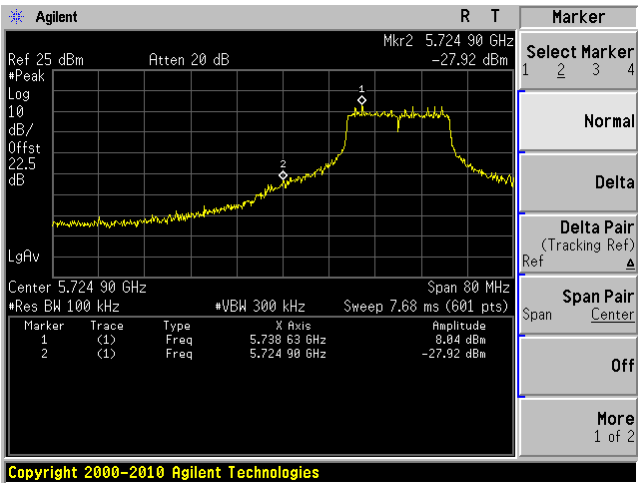
802.11a, Chain J0 High Band Edge



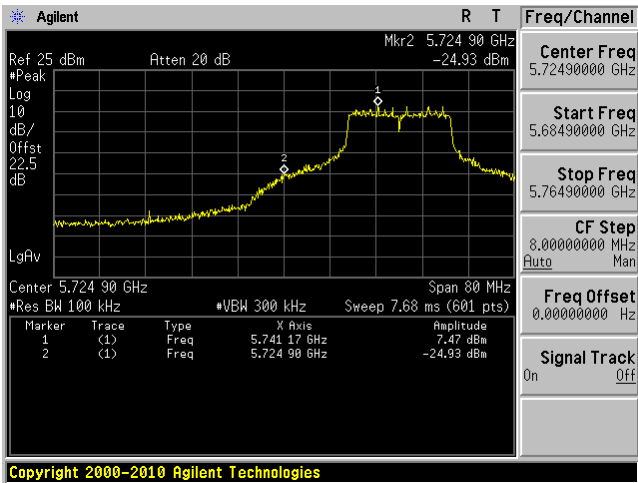
802.11a, Chain J1 High Band Edge



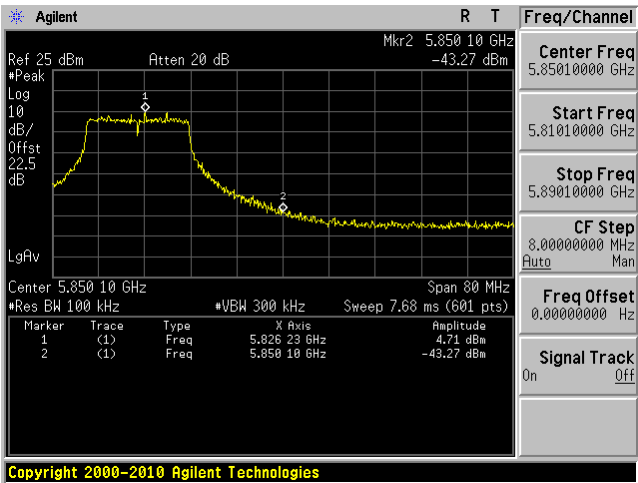
802.11n HT20, Chain J0 Low Band Edge



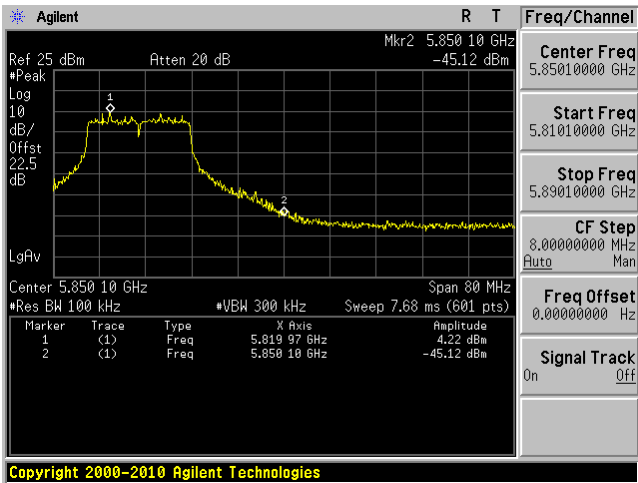
802.11n HT20, Chain J1 Low Band Edge



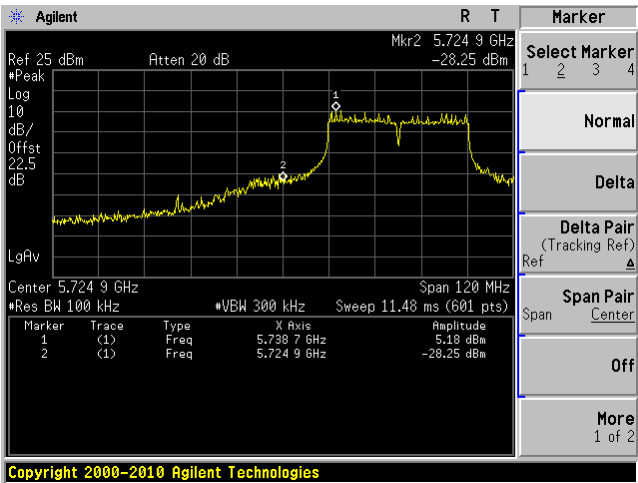
802.11n HT20, Chain J0 High Band Edge



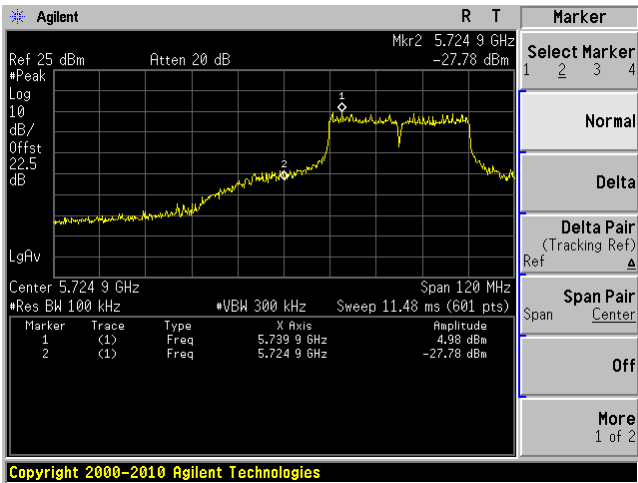
802.11n HT20, Chain J1 High Band Edge



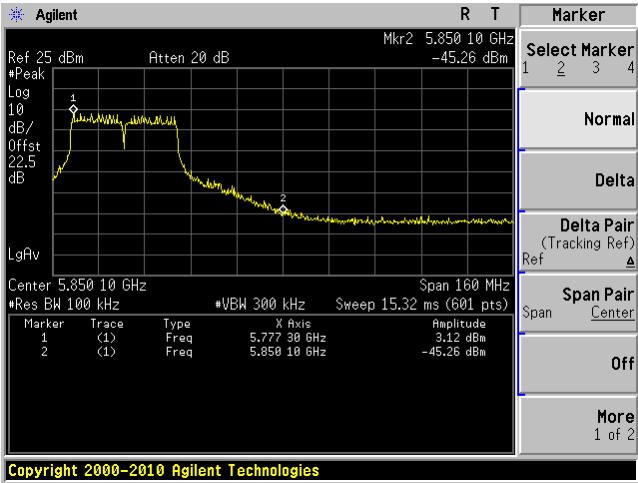
802.11n HT40, Chain J0 Low Band Edge



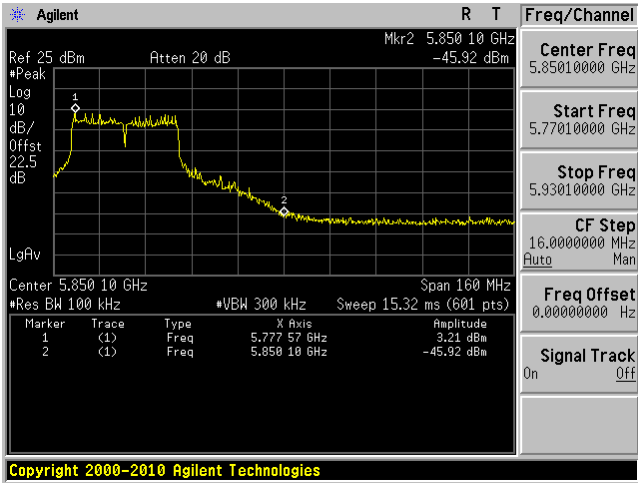
802.11n HT40, Chain J1 Low Band Edge



802.11n HT40, Chain J0 High Band Edge



802.11n HT40, Chain J1 High Band Edge



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

12.1 Applicable Standard

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. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 100 kHz.
3. Set the VBW $\geq$ 300 kHz.
4. Set the span to 5-30 % greater than the EBW.
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 power level in any 100 kHz band segment within the fundamental EBW.
10. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3\text{ kHz}/100\text{ kHz} = -15.2\text{ dB})$.
11. The resulting peak PSD level must be $\leq 8\text{ dBm}$.

12.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	MY44303352	2012-10-16	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:	23 °C
Relative Humidity:	45 %
ATM Pressure:	101.7kPa

The testing was performed by Lionel Lara from 2013-04-11 at the RF site.

12.5 Test Results

2.4 GHz Band, Dipole Antennas

Mode	Frequency (MHz)	PSD J0 (dBm/100kHz)	PSD J1 (dBm/100kHz)	PSD Combined (dBm/100kHz)	Limit (dBm/3kHz)	Software Power Setting
802.11b	2412	2.868	2.417	5.66	8	target
	2437	2.699	1.171	5.01	8	target
	2462	2.933	1.740	5.39	8	target
802.11g	2412	-0.837	-0.474	2.36	8	22
	2437	0.712	-0.863	3.01	8	target
	2462	-1.111	-1.875	1.53	8	21
802.11n HT20	2412	-0.557	-0.141	2.67	8	target
	2437	0.288	-0.841	2.77	8	target
	2462	-0.358	-0.083	2.79	8	target
802.11n HT40	2422	-5.063	-4.991	-2.02	8	21
	2437	-2.419	-3.074	0.28	8	target
	2452	-4.716	-5.375	-2.02	8	21

5.8 GHz Band, Dipole Antennas

Mode	Frequency (MHz)	PSD J0 (dBm/100kHz)	PSD J1 (dBm/100kHz)	PSD Combined (dBm/100kHz)	Limit (dBm/3kHz)	Software Power Setting
802.11a	5745	-3.985	-4.294	-1.13	8	target
	5785	-3.682	-3.905	-0.78	8	target
	5825	-4.673	-4.692	-1.67	8	target
802.11n HT20	5745	-4.572	-3.866	-1.19	8	target
	5785	-4.389	-3.311	-0.81	8	target
	5825	-5.091	-4.449	-1.75	8	target
802.11n HT40	5755	-7.955	-7.587	-4.76	8	target
	5795	-7.506	-7.205	-4.34	8	target

2.4 GHz Band, Patch Antenna

Mode	Frequency (MHz)	PSD J0 (dBm/100kHz)	PSD J1 (dBm/100kHz)	PSD Combined (dBm/100kHz)	Limit (dBm/3kHz)	Software Power Setting
802.11b	2412	2.868	2.417	5.66	8	target
	2437	2.699	1.171	5.01	8	target
	2462	2.933	1.740	5.39	8	target
802.11g	2412	-1.540	-2.105	1.20	8	21
	2437	0.712	-0.863	3.01	8	target
	2462	-1.111	-1.875	1.53	8	21
802.11n HT20	2412	-1.608	-1.522	1.45	8	21.5
	2437	0.288	-0.841	2.77	8	target
	2462	-0.358	-0.083	2.79	8	target
802.11n HT40	2422	-9.745	-9.200	-6.45	8	16
	2437	-2.419	-3.074	0.28	8	target
	2452	-7.267	-8.526	-4.84	8	18

5.8 GHz Band, Patch Antenna

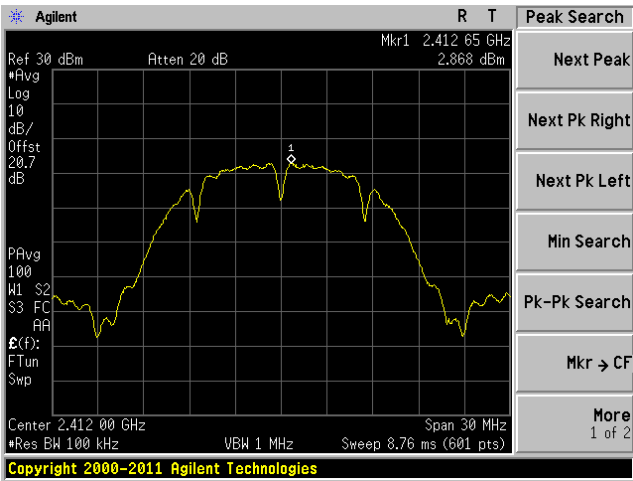
Mode	Frequency (MHz)	PSD J0 (dBm/100kHz)	PSD J1 (dBm/100kHz)	PSD Combined (dBm/100kHz)	Limit (dBm/3kHz)	Software Power Setting
802.11a	5745	-3.985	-4.294	-1.13	8	target
	5785	-3.682	-3.905	-0.78	8	target
	5825	-4.673	-4.692	-1.67	8	target
802.11n HT20	5745	-4.572	-3.866	-1.19	8	target
	5785	-4.389	-3.311	-0.81	8	target
	5825	-5.091	-4.449	-1.75	8	target
802.11n HT40	5755	-7.955	-7.587	-4.76	8	target
	5795	-7.506	-7.205	-4.34	8	target

Please refer to the following plots for detailed test results:

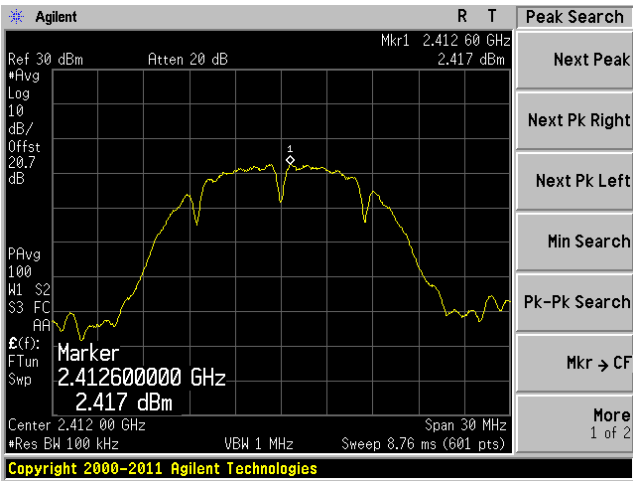
2.4 GHz Band, Dipole Antennas

802.11b mode

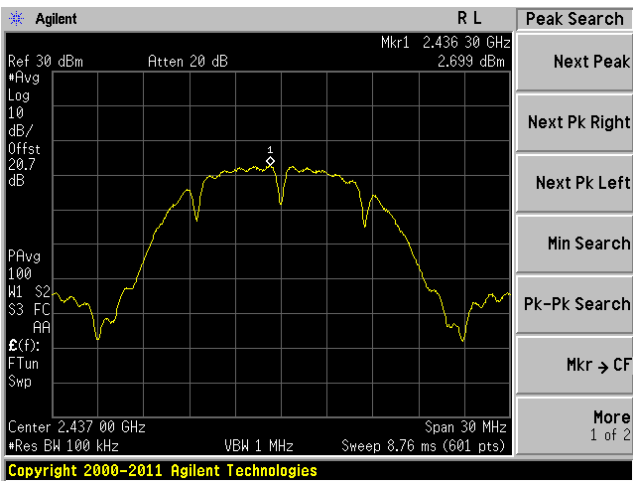
Low channel J0: 2412 MHz



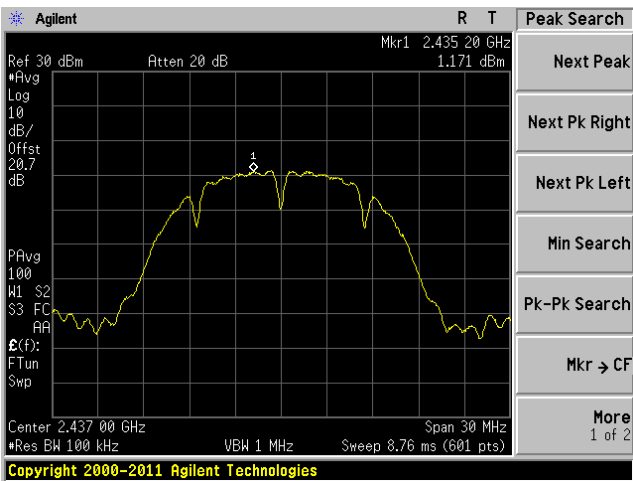
Low channel J1: 2412 MHz



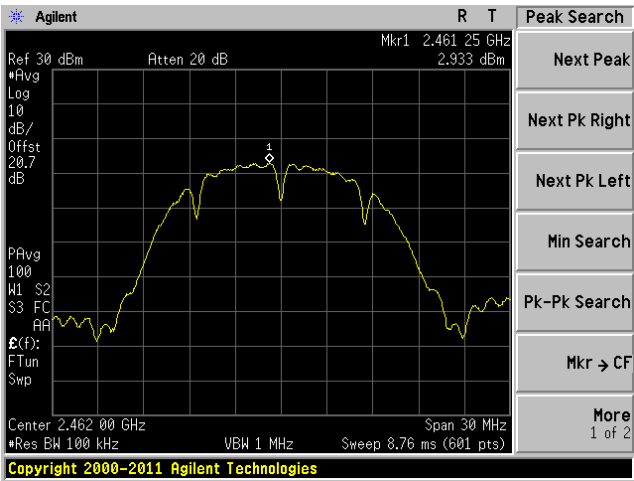
Middle channel J0: 2437 MHz



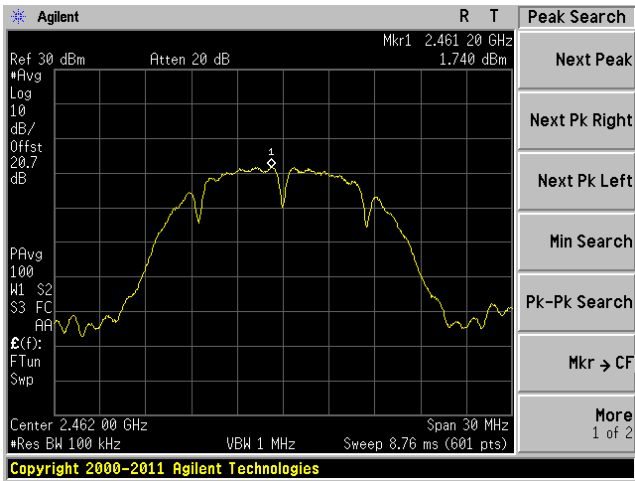
Middle channel J1: 2437 MHz



High channel J0: 2462 MHz

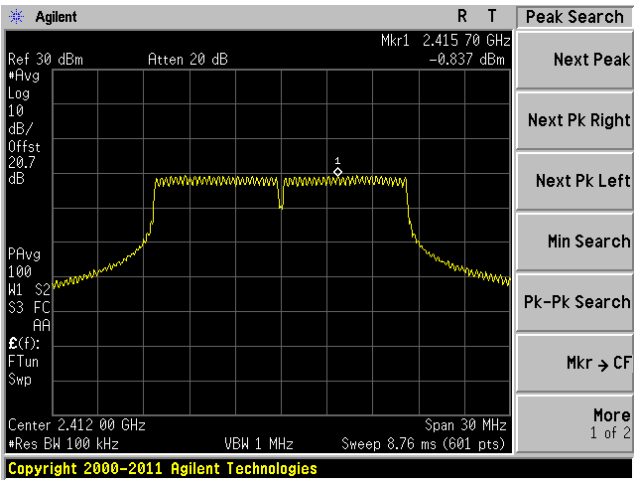


High channel J1: 2462 MHz

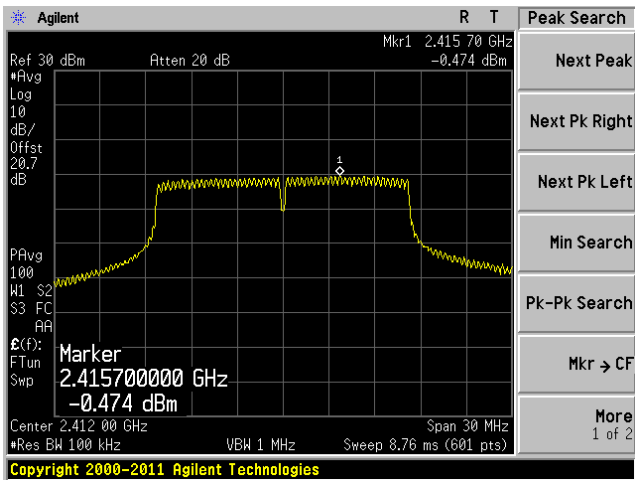


802.11g mode

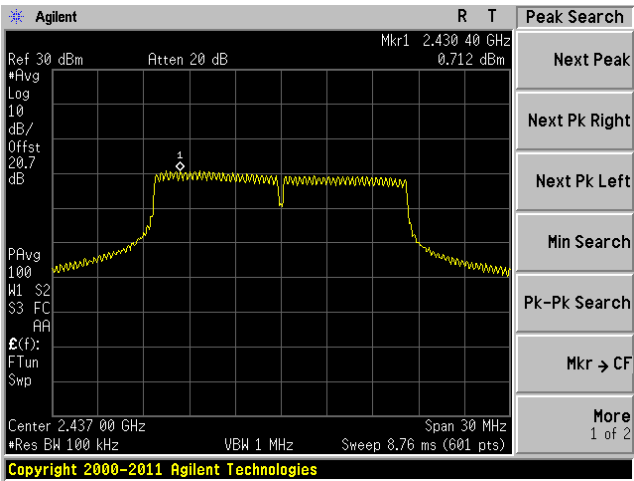
Low channel J0: 2412 MHz



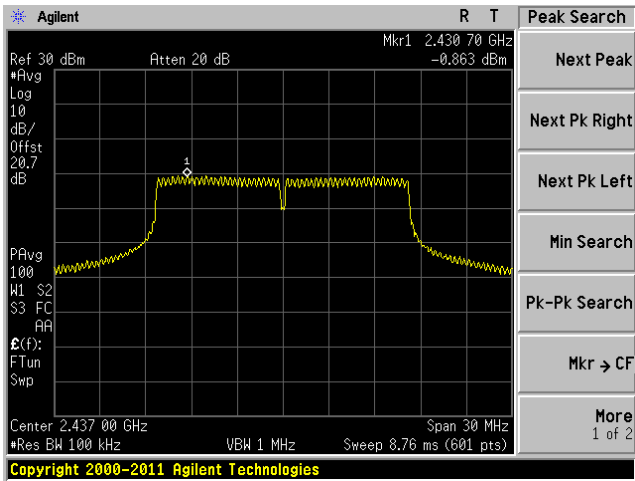
Low channel J1: 2412 MHz



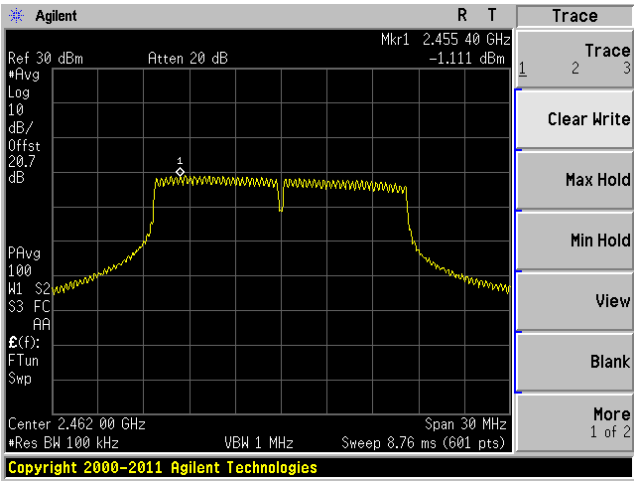
Middle channel J0: 2437 MHz



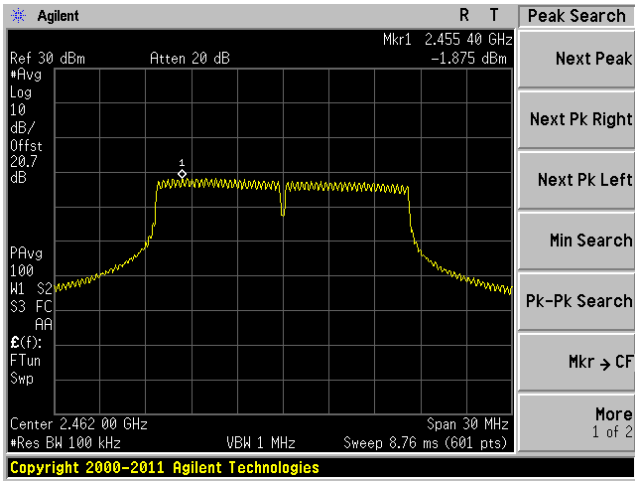
Middle channel J1: 2437 MHz



High channel J0: 2462 MHz

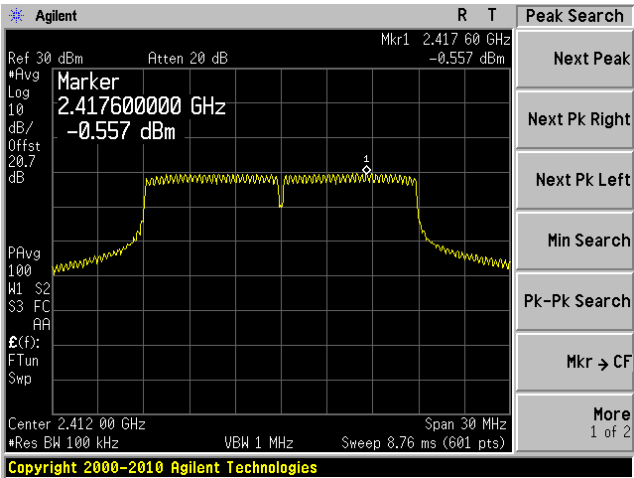


High channel J1: 2462 MHz

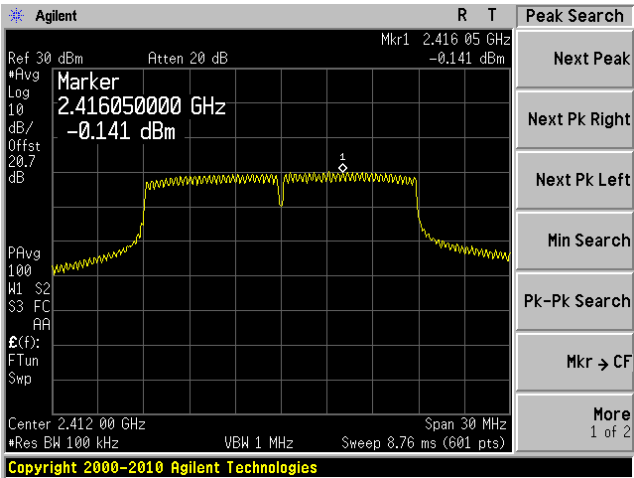


802.11n HT20 mode

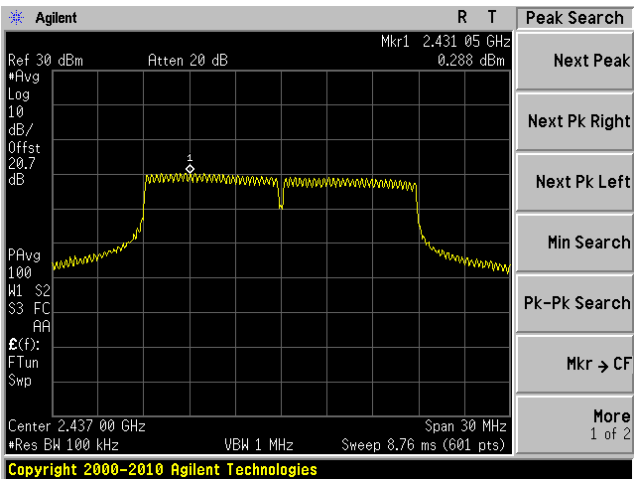
Low channel J0: 2412 MHz



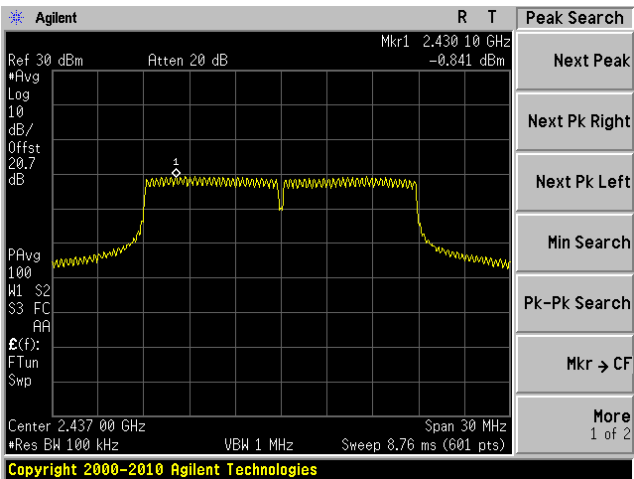
Low channel J1: 2412 MHz



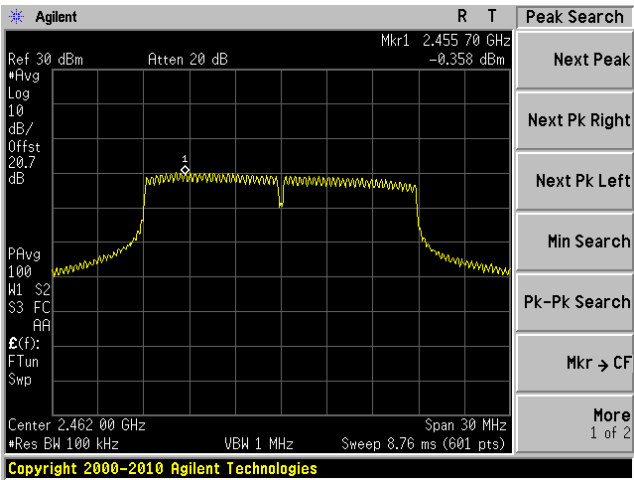
Middle channel J0: 2437 MHz



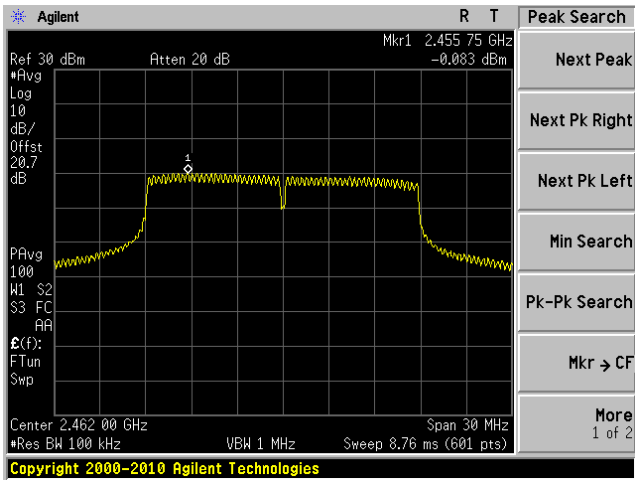
Middle channel J1: 2437 MHz



High channel J0: 2462 MHz

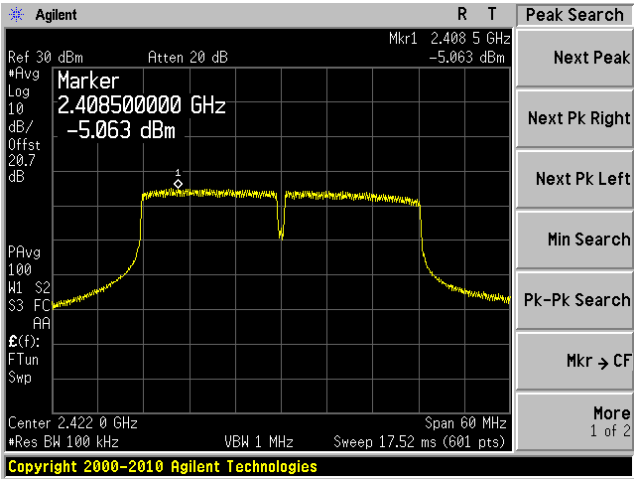


High channel J1: 2462 MHz

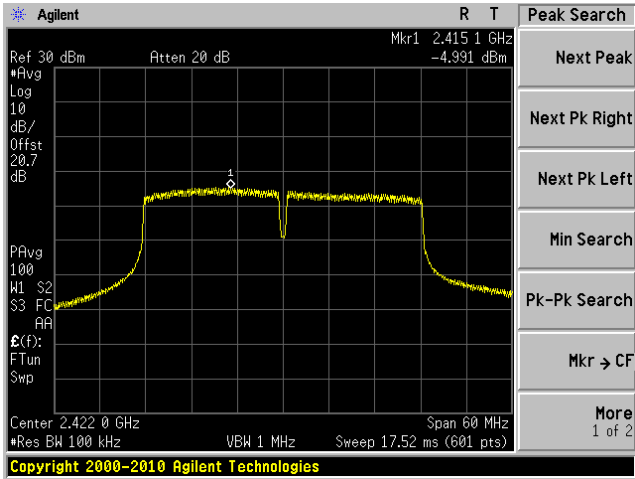


802.11n HT40 mode

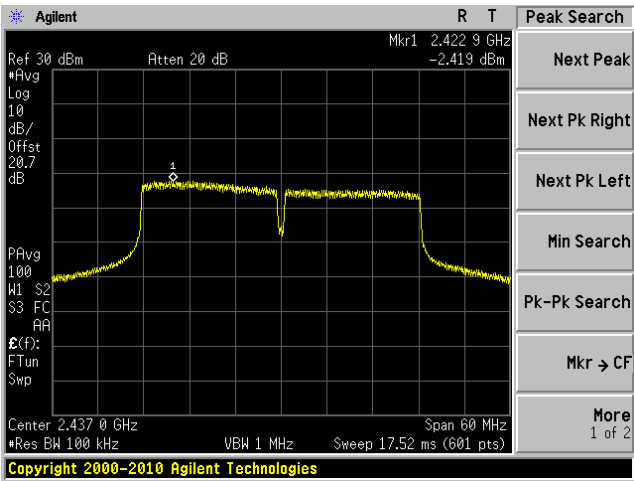
Low channel J0: 2422 MHz



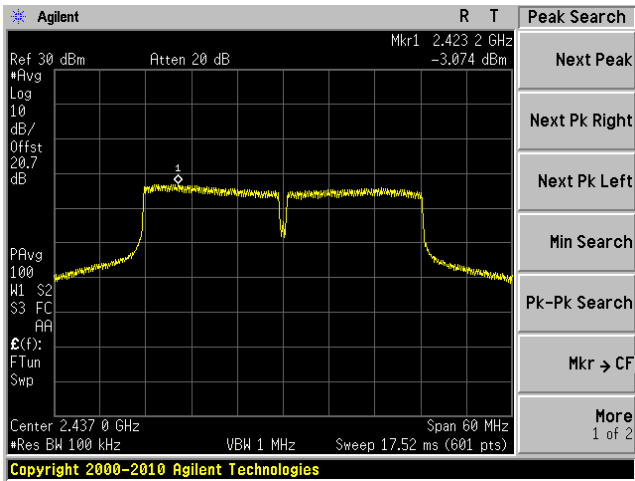
Low channel J1: 2422 MHz



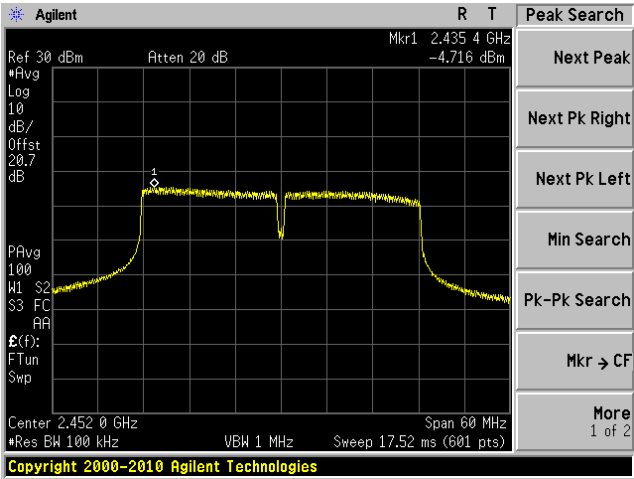
Middle channel J0: 2437 MHz



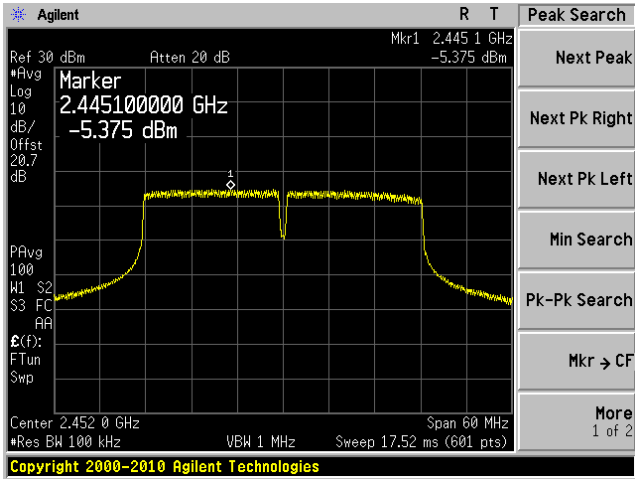
Middle channel J1: 2437 MHz



High channel J0: 2452 MHz



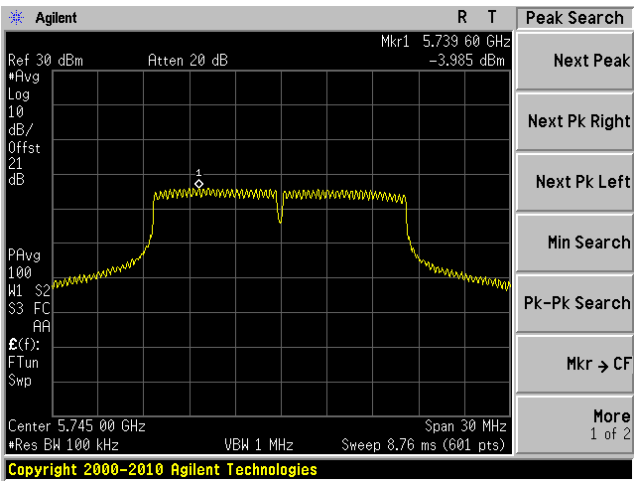
High channel J1: 2452 MHz



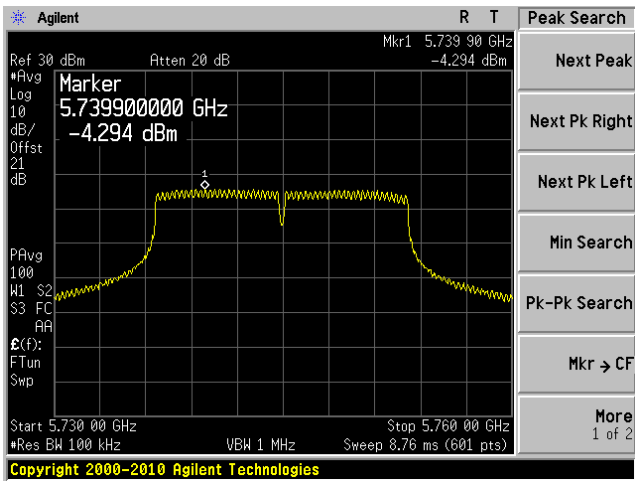
5.8 GHz Band, Dipole Antennas

802.11a mode

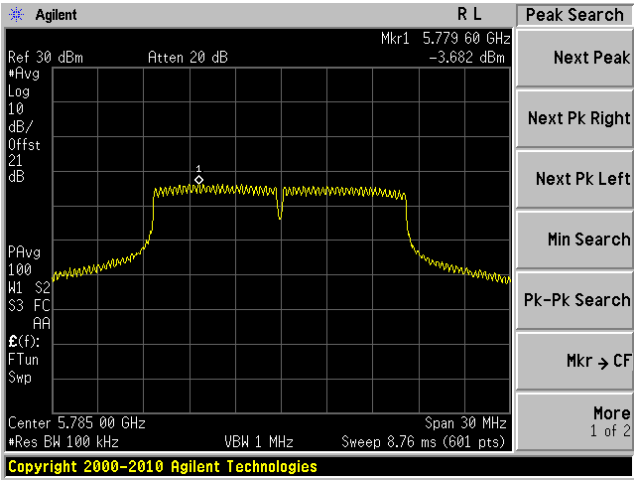
Low channel J0: 5745 MHz



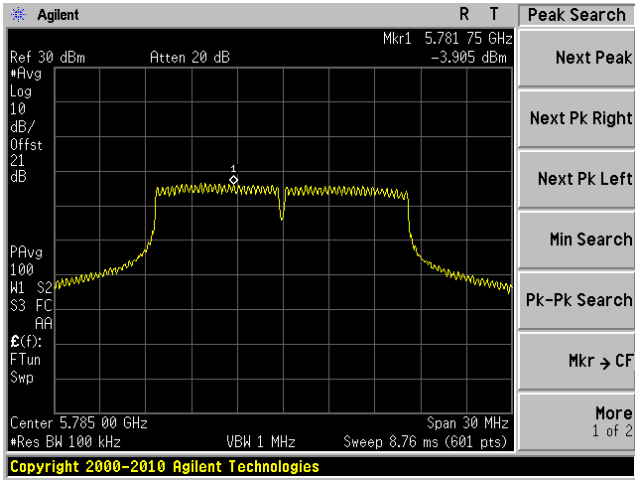
Low channel J1: 5745 MHz



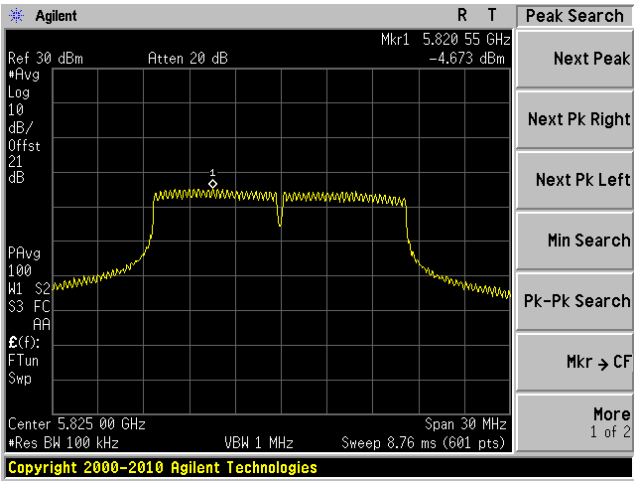
Middle channel J0: 5785 MHz



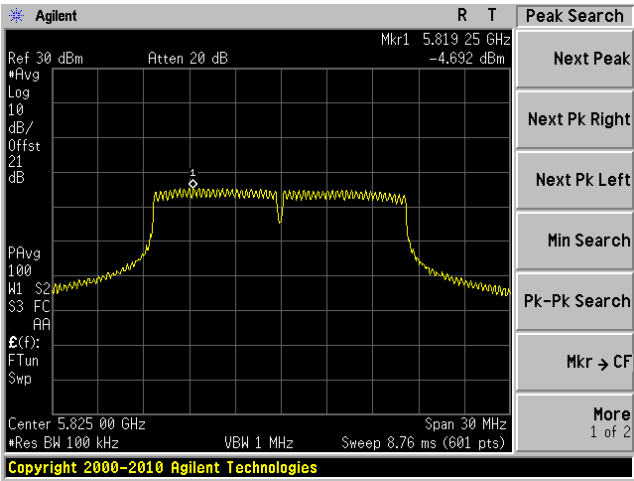
Middle channel J1: 5785 MHz



High channel J0: 5825 MHz

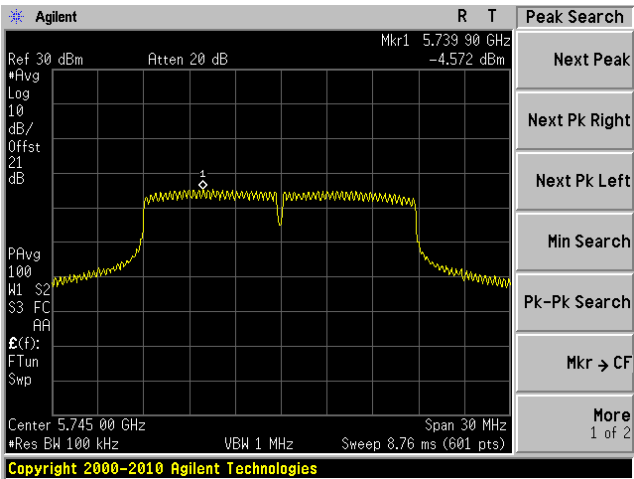


High channel J1: 5825 MHz

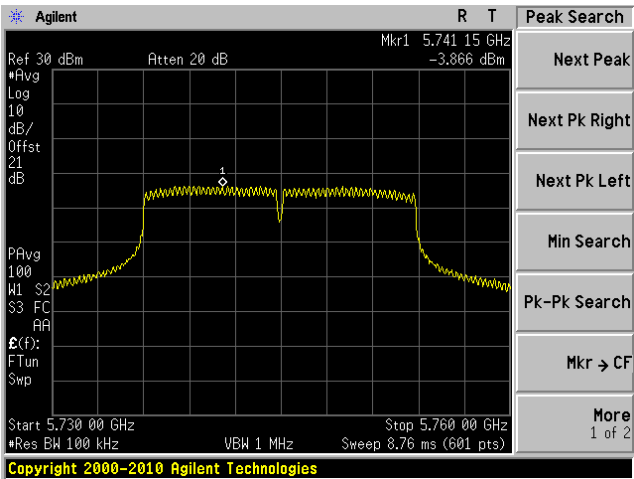


802.11n HT20 mode

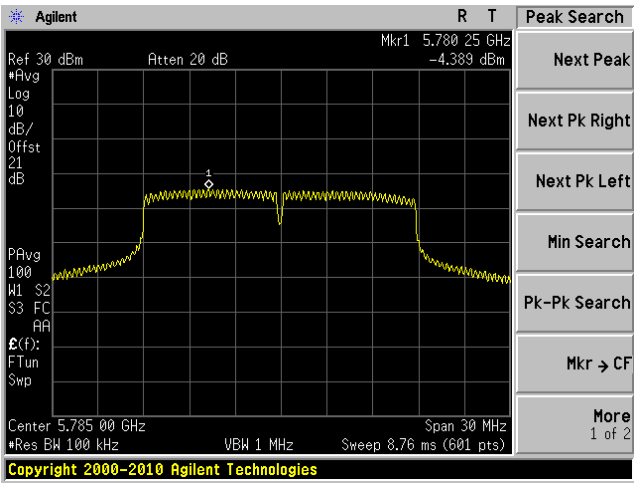
Low channel J0: 5745 MHz



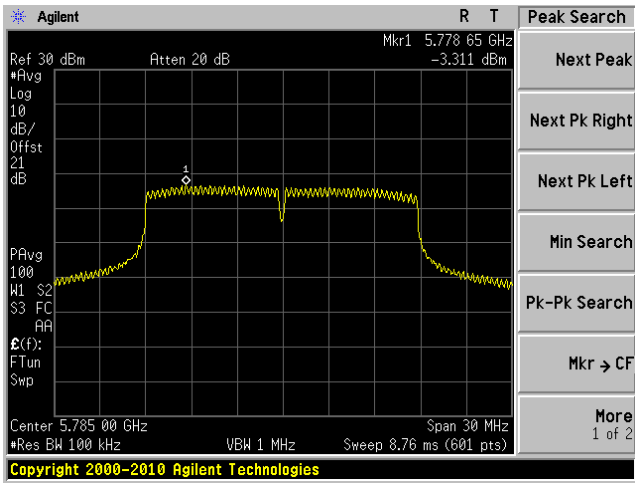
Low channel J1: 5745 MHz



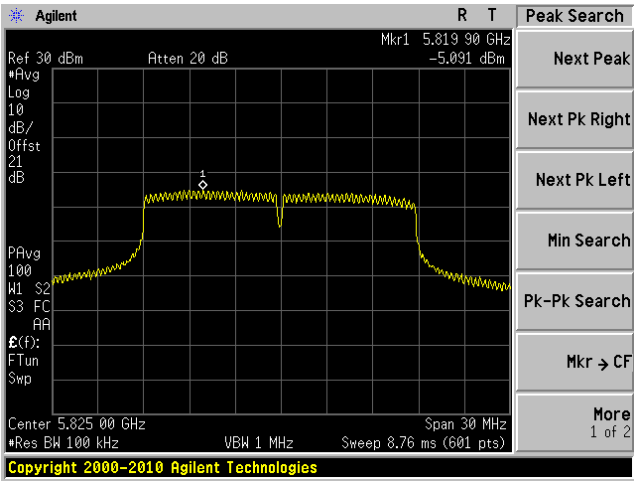
Middle channel J0: 5785 MHz



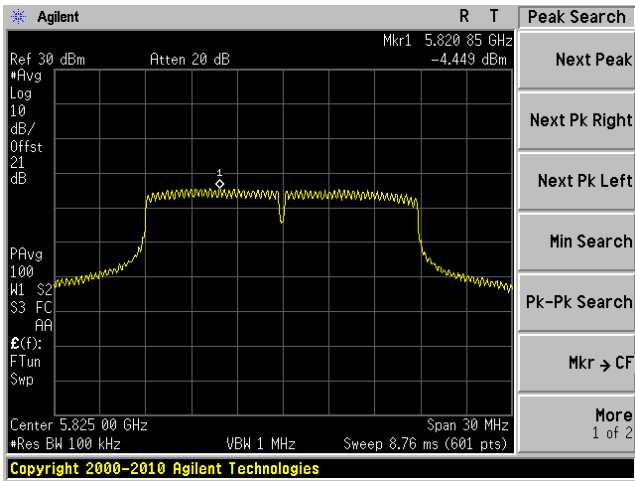
Middle channel J1: 5785 MHz



High channel J0: 5825 MHz

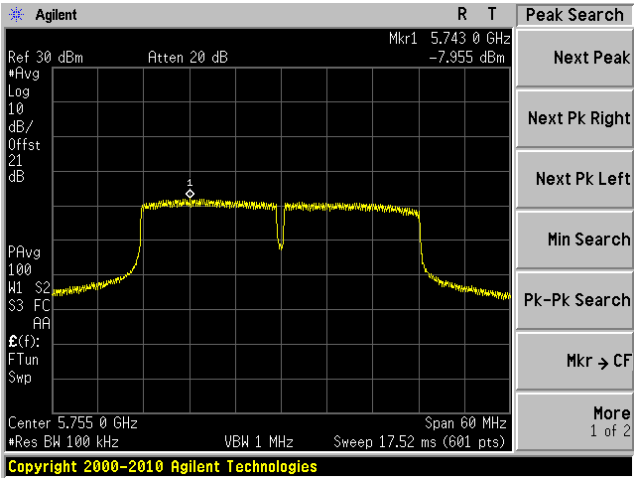


High channel J1: 5825 MHz

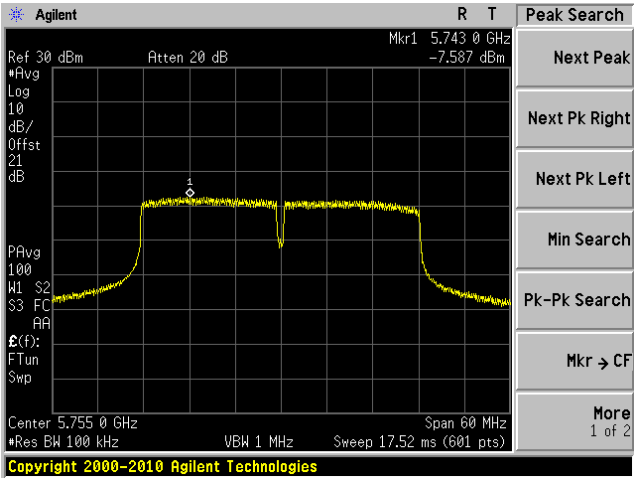


802.11n HT40 mode

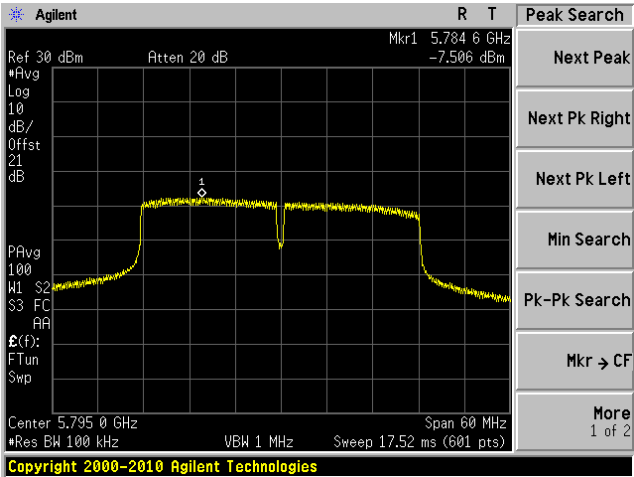
Low channel J0: 5755 MHz



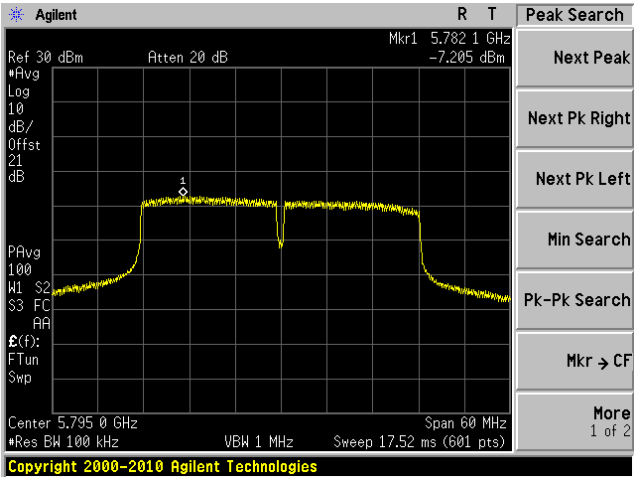
Low channel J1: 5755 MHz



High channel J0: 5795 MHz



High channel J1: 5795 MHz



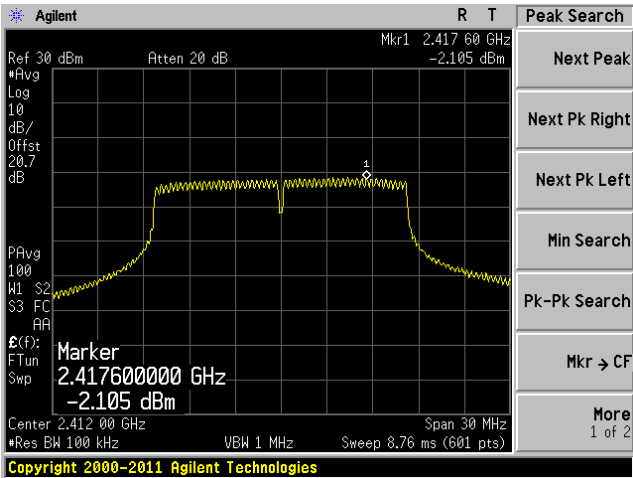
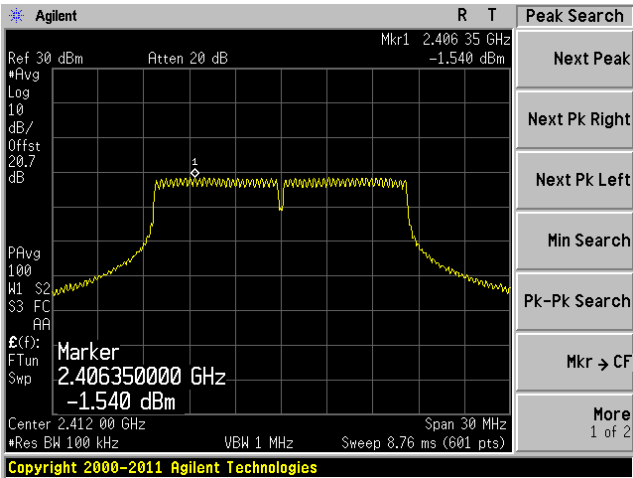
2.4 GHz Band, Patch Antenna

(Note: Only the channels with different software setting will be included for the patch antenna. For all other channels refer to the dipole antennas section)

802.11g mode

Low channel: 2412 MHz Chain J0

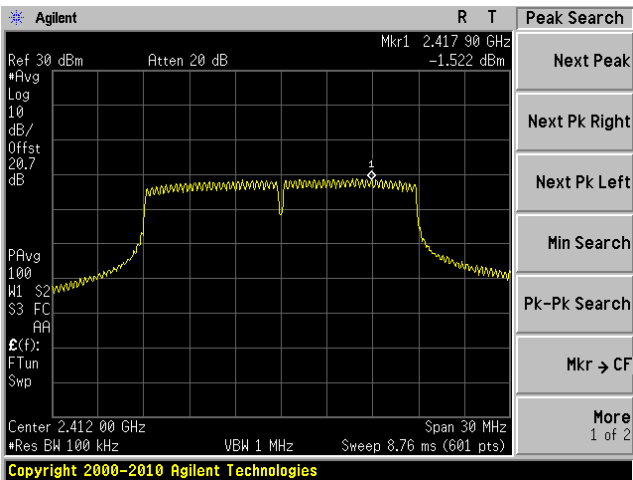
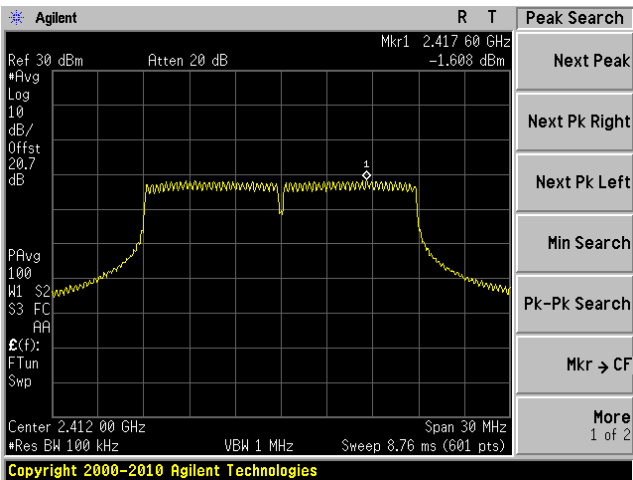
Low channel: 2412 MHz Chain J1



802.11n HT20 mode

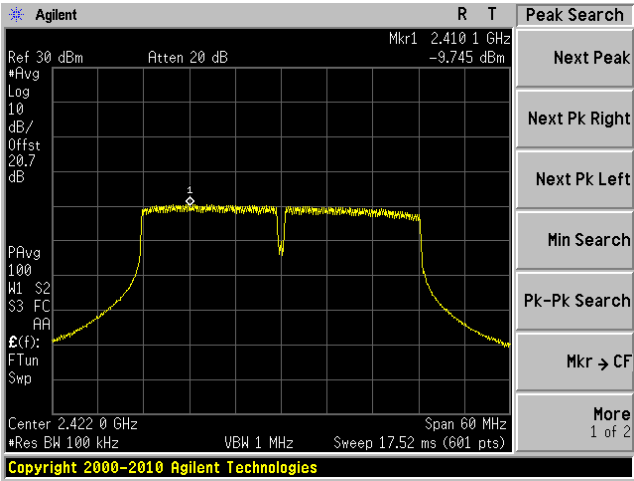
Low channel: 2412 MHz Chain J0

Low channel: 2412 MHz Chain J1

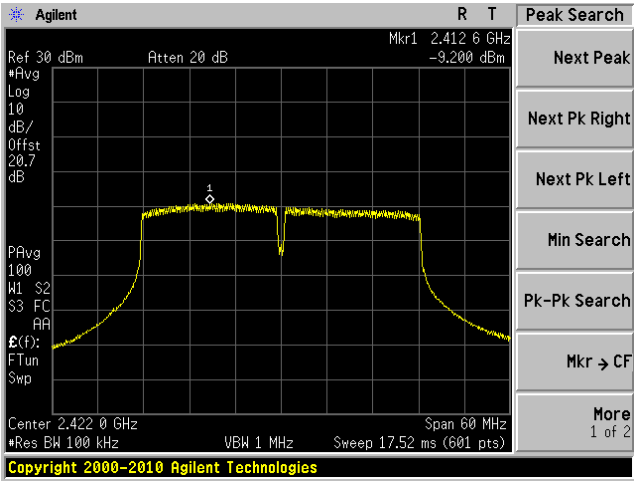


802.11n HT40 mode

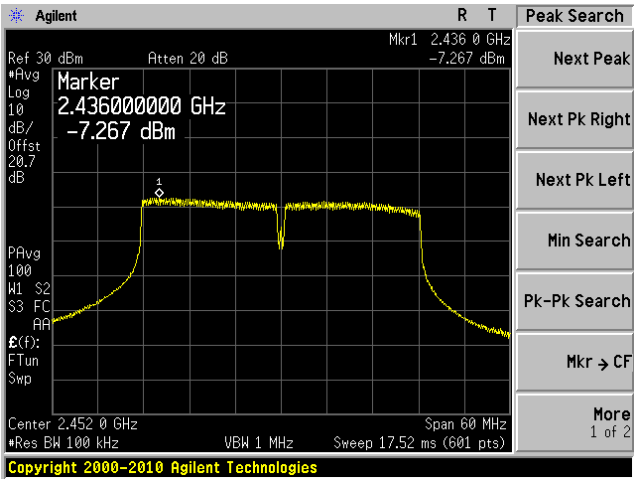
Low channel: 2422 MHz Chain J0



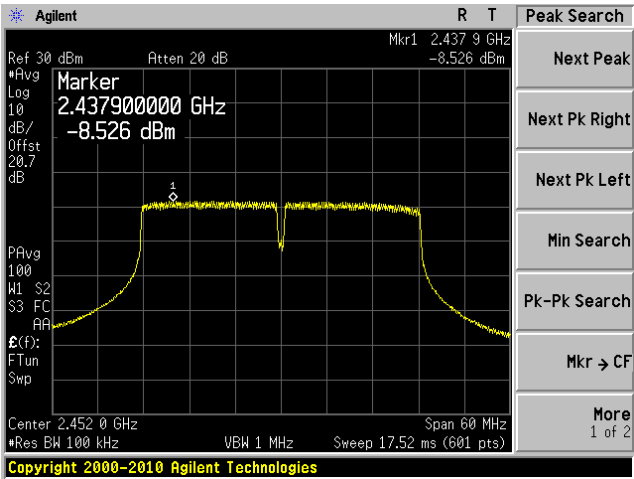
Low channel: 2422 MHz Chain J1



High channel: 2452 MHz Chain J0



High channel: 2452 MHz Chain J1



5.8 GHz Band, Patch Antenna

(Note: The power settings of 5.8GHz with patch antenna are the same as dipole antennas. Please refer to the dipole antennas section)

13 IC RSS-210 §2.3 & RSS-Gen §6.1 – Receiver Spurious Radiated Emissions

13.1 Applicable Standard

According to IC RSS-Gen §6.1, spurious emissions from receivers shall not exceed the radiated limits shown in the table below.

Table 2: General Field Strength Limits for Transmitters and Receivers at Frequencies above 30 MHz

Frequency (MHz)	Field Strength Microvolts/m at 3 meters
30-88	100
88-216	150
216-960	200
Above 960	500

13.2 EUT Setup

The radiated emissions tests were performed in the 3 meter chamber, using the setup in accordance with ANSI C63.4-2009.

13.3 Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations.

All data were recorded in the peak detection mode. Quasi-peak readings was performed only when an emissions was found to be marginal (within -4 dB of specification limits), and are distinguished with a "QP" in the data table.

13.4 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:

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

13.5 Test Equipment Lists and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	N/R
Sunol Science Corp	Combination Antenna	JB3	A020106-2	2012-08-15	1 year
Hewlett Packard	Pre-amplifier	8447D	2944A06639	2012-06-09	1 year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2012-05-09	1 year
Agilent	Spectrum Analyzer	E4440A	MY44303352	2012-10-16	1 year
EMCO	Horn Antenna	3115	9511-4627	2012-10-17	1 year
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100338	2012-09-19	1 year

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

13.6 Test Environmental Conditions

Temperature:	18-22 °C
Relative Humidity:	45-48 %
ATM Pressure:	101-102 kPa

The testing was performed by Lionel Lara from 2013-03-05 to 2013-04-12 at 5 meter 3.

13.7 Summary of Test Results

According to the test data, the EUT complied with the with the RSS-210, with the closest margins from the limit listed below:

Mode: Receiving			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz), Antenna
-0.88	56.0212	Vertical	30-18000, Dipole

Note: Both 2.4 GHz and 5 GHz radios were under receiver mode.

13.8 Test Results and Plots

1) 30-1000 MHz, Measured at 3 meters, Dipole Antennas

With AC/DC Adaptor

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (QP/Ave.)
56.0212	39.12	136	V	41	40	-0.88	QP
50.548	38.61	100	V	173	40	-1.39	QP
108.65	26.75	170	V	238	43.5	-16.75	QP
499.997	32.88	100	H	155	46	-13.12	QP
64.862	27.84	115	V	95	40	-12.16	QP
225.019	33.55	100	H	181	46	-12.45	QP

With POE

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (QP/Ave.)
374.9826	42.91	100	H	203	46	-3.09	QP
50.6616	33.16	122	V	88	40	-6.84	QP
64.25883	22.75	125	V	321	40	-17.25	QP
81.03622	22.81	100	V	212	40	-17.19	QP
499.9964	33.35	103	V	196	46	-12.65	QP
875.5281	21.76	256	H	82	46	-24.24	QP

2) Above 1 GHz Measured at 3 meters, Dipole Antennas

With AC/DC Adaptor

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
2465.96	45.69	39	100	V	29.3	3.01	27.76	50.24	74	-23.76	Peak
2465.96	44.38	1	100	H	29.3	3.01	27.76	48.93	74	-25.07	Peak
2465.96	30.52	39	100	V	29.3	3.01	27.76	35.07	54	-18.93	Ave
2465.96	26.49	1	100	H	29.3	3.01	27.76	31.04	54	-22.96	Ave

With POE

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
2458.9	49.41	0	100	V	29.3	3.01	27.76	53.96	74	-20.04	Peak
2458.9	42.33	117	100	H	29.3	3.01	27.76	46.88	74	-27.12	Peak
2458.9	29.26	0	100	V	29.3	3.01	27.76	33.81	54	-20.19	Ave
2458.9	24.89	117	100	H	29.3	3.01	27.76	29.44	54	-24.56	Ave
1125	40.45	139	100	V	25	1.88	27.11	40.22	74	-33.78	Peak
1125	42.61	325	100	H	25	1.88	27.11	42.38	74	-31.62	Peak
1125	28.83	139	100	V	25	1.88	27.11	28.6	54	-25.4	Ave
1125	32.76	325	100	H	25	1.88	27.11	32.53	54	-21.47	Ave

3) 30-1000 MHz, Measured at 3 meters, Patch Antenna

With AC/DC Adaptor

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (QP/Ave.)
56.0035	39.06	134	V	42	40	-0.94	QP
50.436	37.78	103	V	171	40	-2.22	QP
108.81	26.86	174	V	234	43.5	-16.64	QP
499.99	32.73	99	H	163	46	-13.27	QP
64.782	28.01	112	V	92	40	-11.99	QP
225.0023	33.52	100	H	182	46	-12.48	QP

With POE

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (QP/Ave.)
374.9878	42.72	99	H	204	46	-3.28	QP
50.61125	33.82	125	V	85	40	-6.18	QP
64.25675	22.72	124	V	321	40	-17.28	QP
81.0395	22.77	100	V	211	40	-17.23	QP
499.9818	33.41	108	V	194	46	-12.59	QP
875.5098	21.81	261	H	78	46	-24.19	QP

4) Above 1 GHz Measured at 3 meters, Patch Antenna

With AC/DC Adaptor

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
2465.96	45.71	39	100	V	29.3	3.01	27.76	50.26	74	-23.74	Peak
2465.96	44.39	1	100	H	29.3	3.01	27.76	48.94	74	-25.06	Peak
2465.96	30.45	39	100	V	29.3	3.01	27.76	35.00	54	-19.00	Ave
2465.96	26.46	1	100	H	29.3	3.01	27.76	31.01	54	-22.99	Ave

With POE

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
2458.9	49.35	0	100	V	29.3	3.01	27.76	53.9	74	-20.1	Peak
2458.9	42.55	117	100	H	29.3	3.01	27.76	47.1	74	-26.9	Peak
2458.9	29.18	0	100	V	29.3	3.01	27.76	33.73	54	-20.27	Ave
2458.9	24.97	117	100	H	29.3	3.01	27.76	29.52	54	-24.48	Ave
1125	40.42	139	100	V	25	1.88	27.11	40.19	74	-33.81	Peak
1125	42.57	325	100	H	25	1.88	27.11	42.34	74	-31.66	Peak
1125	28.82	139	100	V	25	1.88	27.11	28.59	54	-25.41	Ave
1125	32.72	325	100	H	25	1.88	27.11	32.49	54	-21.51	Ave