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: S9GSC8800
IC: 5912A-SC8800

Report Type:	**Product Type:**
Original Report	802.11 a/b/g/n Wireless Access Point

Prepared By	Bo Li
Report Number	R1212101-247
Report Date	2013-06-06
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1212101-247	Original Report	2013-06-06

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: *SmartCell 8800* with FCC ID: S9GSC8800, IC: 5912A-SC8800 or the "EUT" as referred to in this report. The EUT is a 3x3 MIMO 802.11 a/b/g/n WLAN Access Point.

1.2 Mechanical Description of EUT

The EUT measures approximately 38.5 cm (L) x 30.5 cm (W) x 12 cm (H) and weighs 7.15 kg.

The test data gathered are from typical production sample, serial number: R1212101-01 assigned by BACL.

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, AC Line Conducted Emissions, 6 dB Bandwidth, power spectral density, 100 kHz Bandwidth of Band Edges Measurement, Spurious Emissions, Conducted and Radiated Spurious Emissions.

1.4 Related Submittal(s)/Grant(s)

FCC Part 15.407 NII with FCC ID: S9GSC8800, IC: 5912A-SC8800

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 CISPR16-4-2:2003, The Treatment of Uncertainty in EMC Measurements, the values ranging from $\pm$2.0 dB for Conducted Emissions tests and $\pm$4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL Corp.

1.7 Test Facility

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 *Cyprus ART* was provided by Ruckus Wireless Inc., and was verified Bo Li to comply with the standard requirements being tested against.

2.3 Special Equipment

There were no special accessories were required, included, or intended for use with 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
Lenovo	Laptop	Ideapad U310	-

2.6 EUT Internal Configuration Details

Manufacturer	Description	Type	Serial Number
Ruckus	PCA, Mother Board, Cyprus2	PCA	120-11190-001 rev 7.1
Ruckus	PCA, Interface Board v2, Cyprus2	PCA	120-11252-001 rev 2.0
Ruckus	Assembly, Power Supply	Sub-Assembly	705-60316-001 rev A
Ruckus	Antenna, GPS, 1575.42 MHz,	Antenna	730-63110-002 rev A
Ruckus	Assembly, Antenna, Thunderbolt3, Cyrpus	Sub-Assembly	705-60287-001 rev A
Ruckus	Radome, Cyprus, Gray	Plastic Component	700-60255-002 rev A1
Ruckus	Mounting Plate, Antenna, Cyprus, Gray	Hardware-Metal	701-60690-002 rev B1
Ruckus	Housing, Base, Cyprus, Gray	Hardware-Metal	701-60692-002 rev B1

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	Power Supply cord	-	-
Ruckus	POE Power Adapter	740-64217-001	-

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 4 section 4.2, 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	$0.158\ f^{0.5}$	$4.21 \times 10^{-4}\ f^{0.5}$	$6.67 \times 10^{-5}\ f$	$616000 / f^{1.2}$

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

2.4 GHz band:

Maximum peak output power at antenna input terminal (dBm):	29.84
Maximum peak output power at antenna input terminal (mW):	963.829
Prediction distance (cm):	20
Prediction frequency (MHz):	2437
Maximum Antenna Gain, typical (dBi):	6.0
Maximum Antenna Gain (numeric):	3.981072
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.763361
Power density of prediction frequency at 20.0 cm (W/m^2):	7.63361
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

5.8 GH band:

Maximum peak output power at antenna input terminal (dBm):	26.28
Maximum peak output power at antenna input terminal (mW):	424.6196
Prediction distance (cm):	20
Prediction frequency (MHz):	5745
Maximum Antenna Gain, typical (dBi):	8.0
Maximum Antenna Gain (numeric):	6.309573
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.533004
Power density of prediction frequency at 20.0 cm (W/m^2):	5.33004
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

The device is compliant with the requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 20 cm is 0.763361 mW/cm^2 (7.63361 $W/m^{2)}$) for 2.4 GHz and 0.533004 mW/cm^2 (5.33004 W/m^2) for 5.8GHz. Limit is 1.0 mW/cm^2 (10 W/m^2).

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) 2400 -2483.5 MHz
Ruckus	TBolt3	6.0

Manufacturers	Models/Name	Antenna Gain (dBi) 5150 – 5875 MHz
Ruckus	TBolt3	8.0

The antenna consists of non-standard (UFL) connectors with less 6 and 8 dBi gain; Antenna gain that exceeds 6 dBi was added to RF measurement therefore, it complies with the antenna requirement. Please refer to the internal photos.

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

6.1 Applicable Standards

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

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/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

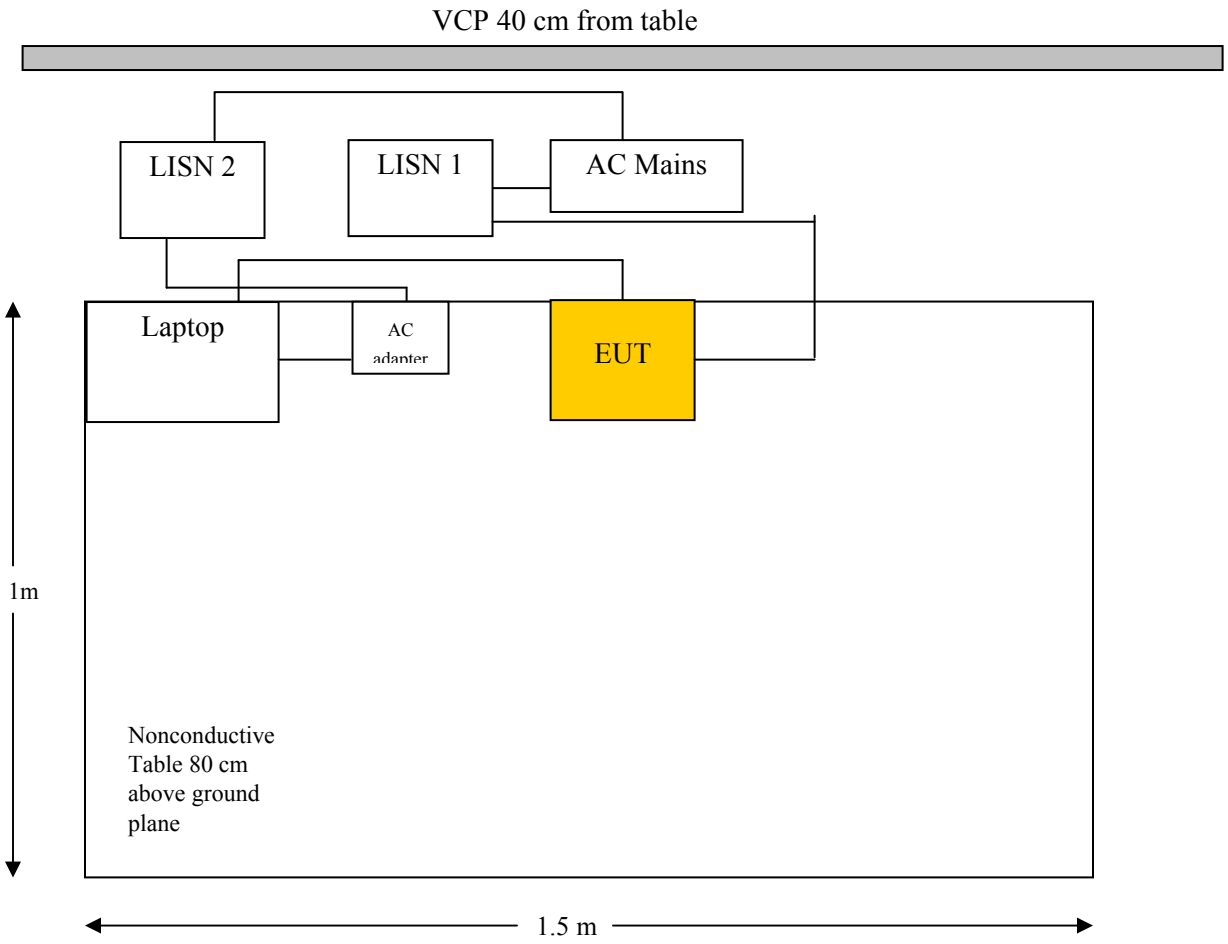
During the conducted emissions test, the power cord of the EUT host system was connected to the mains outlet of the LISN-1 and the power cord of the support equipment was connected to LISN-2.

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

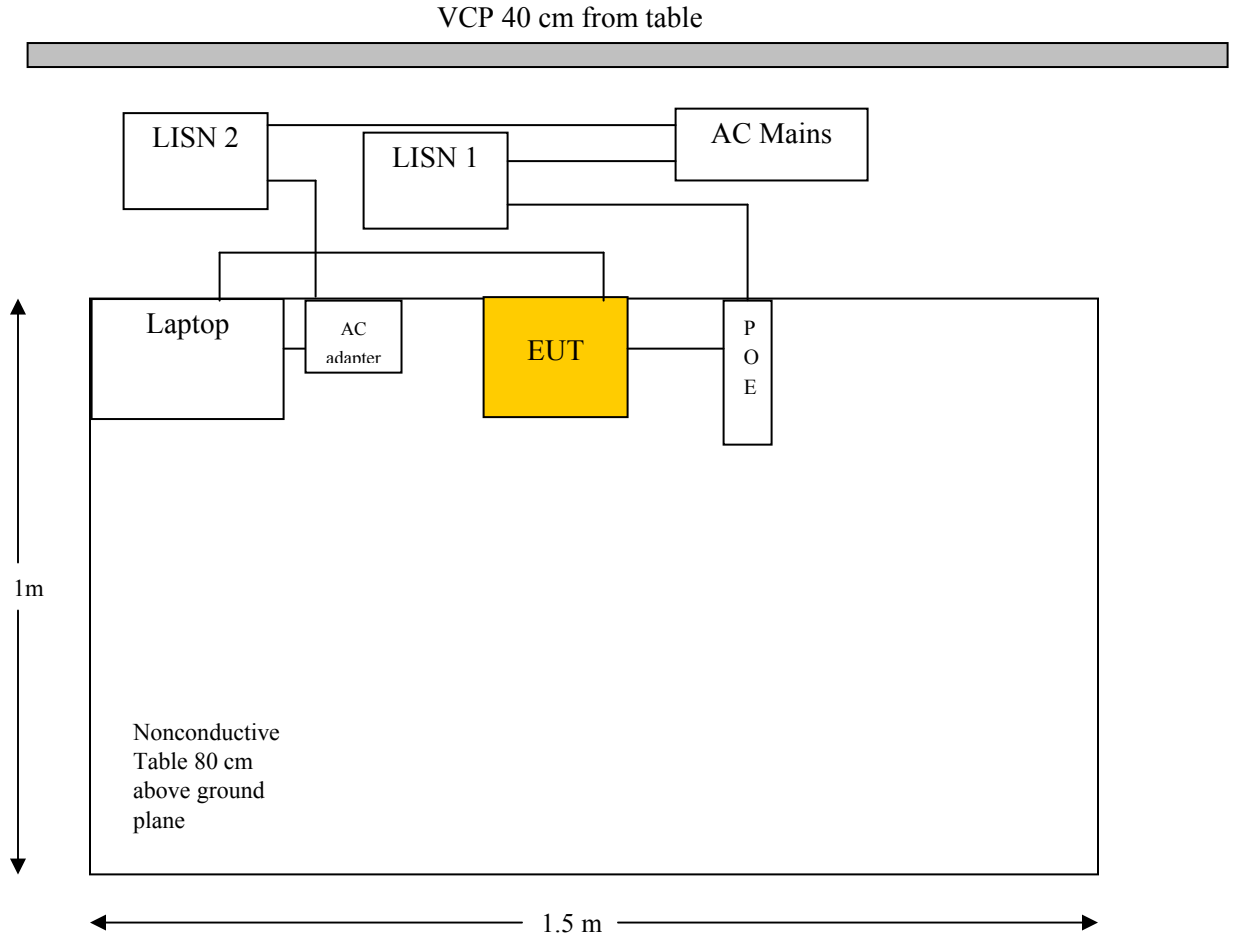
All data was recorded in the peak detection mode, quasi-peak and average. Quasi-Peak readings are distinguished with a “QP.” Average readings are distinguished with an “Ave”.

6.4 Test Setup Block Diagram

AC/DC cord**:**



POE



6.5 Corrected Amplitude & Margin Calculation

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

CA = Ai + CL + Atten

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

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

Margin = Corrected Amplitude - Limit

6.6 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2013-03-28	1 year
Solar Electronics	LISN 1	9252-50-R-24-N	511205	2012-06-25	1 year
Solar Electronics	LISN 2	9252-50-R-24-N	511213	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 ºC
Relative Humidity:	51%
ATM Pressure:	101.42 kPa

The testing was performed by Bo Li on 2013-03-29 in 5 m chamber 3.

6.8 Summary of Test Results

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

2.4 GHz

Connection: AC/DC Cord connected to 120 V/60 Hz, AC			
Margin (dB)	**Frequency (MHz)**	**Conductor Mode (Line/Neutral)**	**Range (MHz)**
-1.48	4.97225	Neutral	0.15-30

Connection: AC/DC adapter of POE connected to 120 V/60 Hz, AC			
Margin (dB)	**Frequency (MHz)**	**Conductor Mode (Line/Neutral)**	**Range (MHz)**
-4.40	0.350991	Line	0.15-30

5.8 GHz

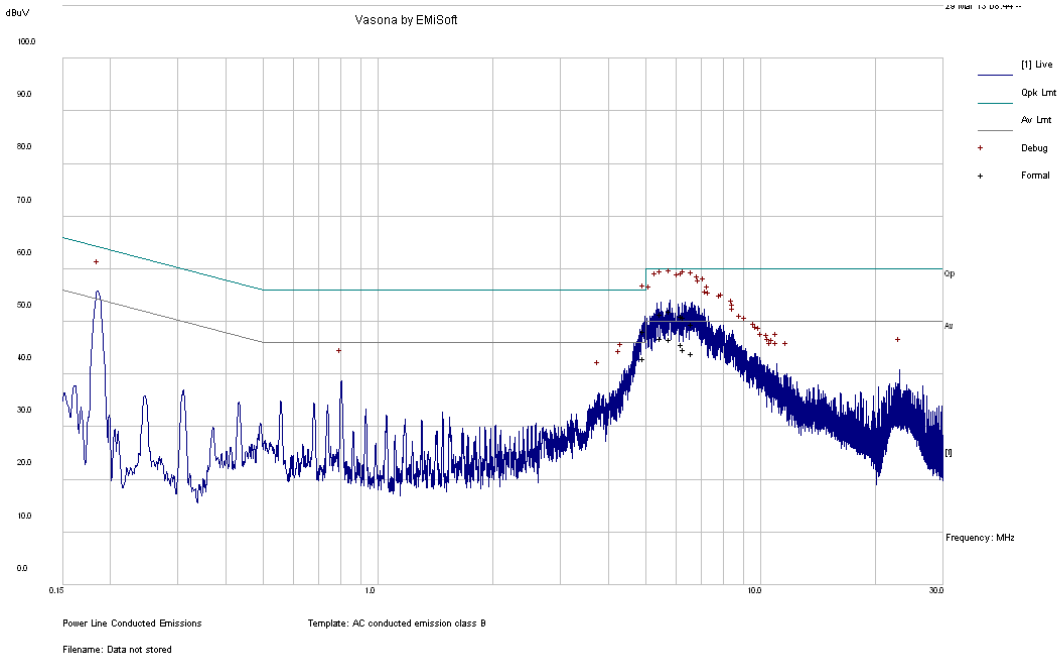
Connection: AC/DC Cord connected to 120 V/60 Hz, AC			
Margin (dB)	**Frequency (MHz)**	**Conductor Mode (Line/Neutral)**	**Range (MHz)**
-6.54	2.181772	Neutral	0.15-30

Connection: AC/DC adapter of POE connected to 120 V/60 Hz, AC			
Margin (dB)	**Frequency (MHz)**	**Conductor Mode (Line/Neutral)**	**Range (MHz)**
-2.79	0.349635	Line	0.15-30

6.9 Conducted Emissions Test Plots and Data

2.4 GHz

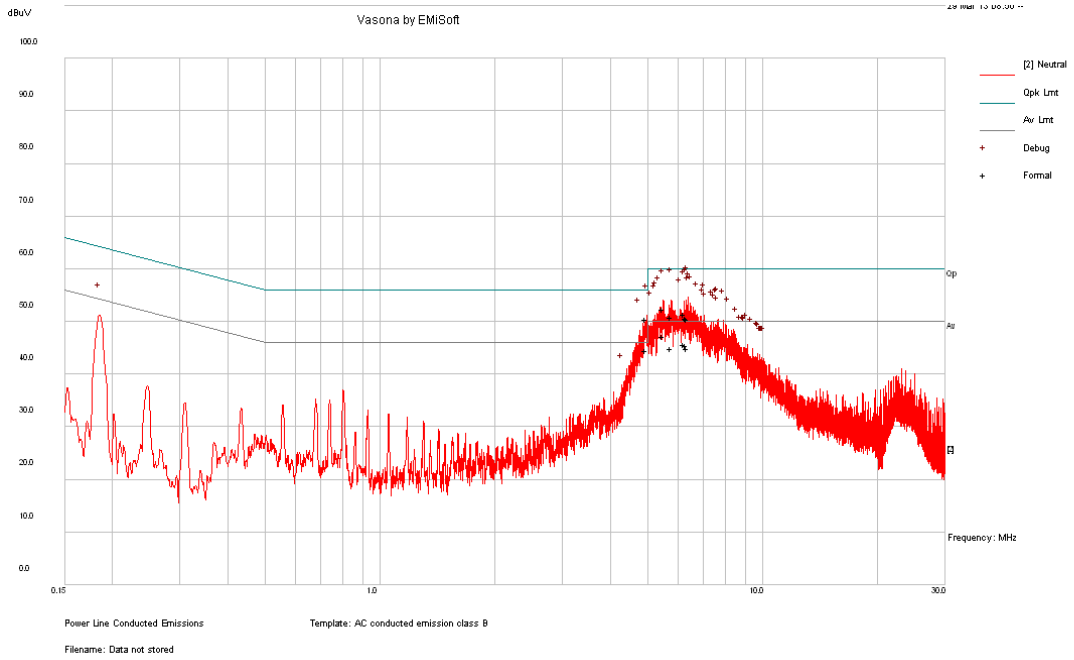
120 V, 60 Hz – Line, AC/DC Cord



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
4.974224	48.17	Line	56	-7.83	QP
5.794007	52.02	Line	60	-7.98	QP
5.497763	51.48	Line	60	-8.52	QP
6.335237	50.86	Line	60	-9.14	QP
6.634421	49.47	Line	60	-10.53	QP
6.241976	50.98	Line	60	-9.02	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
4.974224	43.01	Line	46	-2.99	Ave.
5.794007	46.57	Line	50	-3.43	Ave.
5.497763	46.78	Line	50	-3.22	Ave.
6.335237	44.82	Line	50	-5.18	Ave.
6.634421	43.99	Line	50	-6.01	Ave.
6.241976	45.74	Line	50	-4.26	Ave.

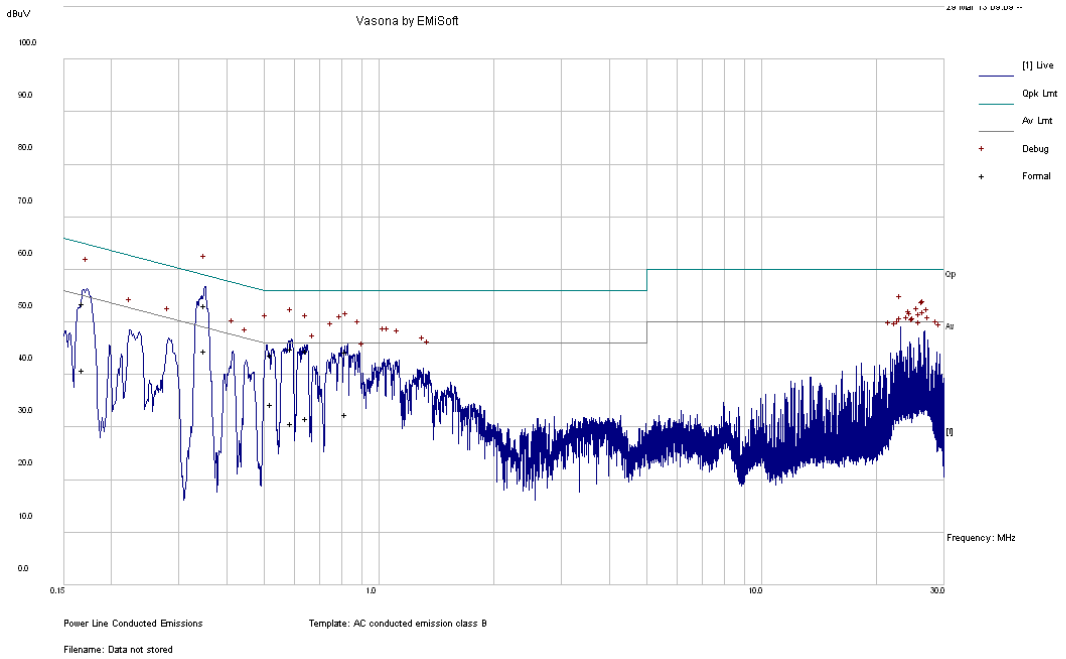
120 V, 60 Hz – Neutral, AC/DC Cord



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
4.97225	50.44	Neutral	56	-5.56	QP
6.365033	50.59	Neutral	60	-9.41	QP
6.307781	50.62	Neutral	60	-9.38	QP
5.78198	50.85	Neutral	60	-9.15	QP
5.497661	52.5	Neutral	60	-7.5	QP
6.241079	51.43	Neutral	60	-8.57	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
4.97225	44.52	Neutral	46	-1.48	Ave.
6.365033	44.84	Neutral	50	-5.16	Ave.
6.307781	45.49	Neutral	50	-4.51	Ave.
5.78198	44.96	Neutral	50	-5.04	Ave.
5.497661	47.3	Neutral	50	-2.7	Ave.
6.241079	45.66	Neutral	50	-4.34	Ave.

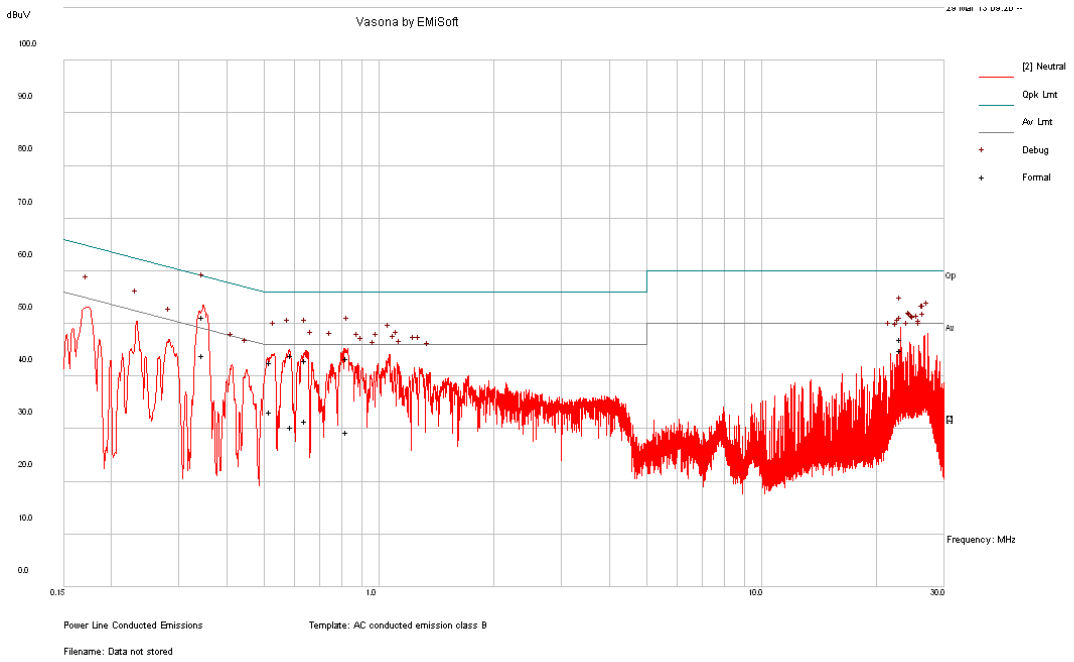
120 V, 60 Hz – Line, POE



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.350991	53.22	Line	58.94	-5.72	QP
0.168234	53.47	Line	65.05	-11.57	QP
0.592353	44.85	Line	56	-11.15	QP
0.821922	44.31	Line	56	-11.69	QP
0.524256	43.81	Line	56	-12.19	QP
0.648333	44.48	Line	56	-11.52	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.350991	44.54	Line	48.94	-4.4	Ave.
0.168234	40.9	Line	55.05	-14.15	Ave.
0.592353	30.75	Line	46	-15.25	Ave.
0.821922	32.52	Line	46	-13.48	Ave.
0.524256	34.45	Line	46	-11.55	Ave.
0.648333	31.71	Line	46	-14.29	Ave.

120 V, 60 Hz – Neutral, POE

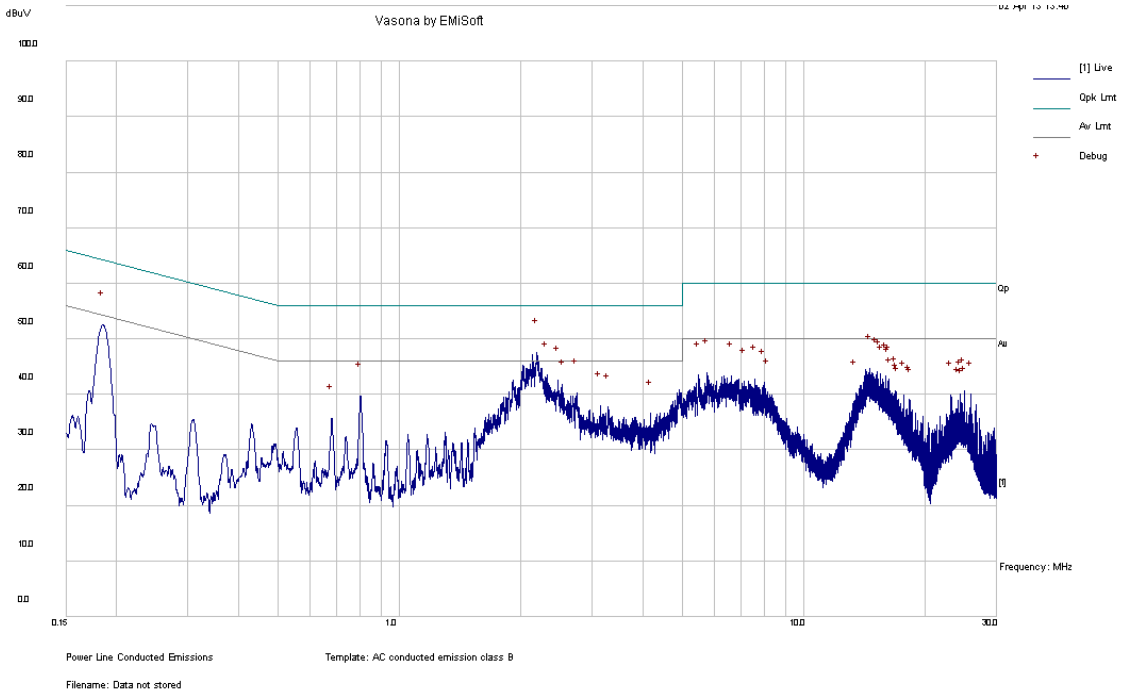


Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.346302	51.32	Neutral	59.05	-7.73	QP
0.827409	43.37	Neutral	56	-12.63	QP
23.128795	47	Neutral	60	-13	QP
0.59073	43.91	Neutral	56	-12.09	QP
0.644277	42.97	Neutral	56	-13.03	QP
0.520092	42.66	Neutral	56	-13.34	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.346302	43.95	Neutral	49.05	-5.1	Ave.
0.827409	29.41	Neutral	46	-16.59	Ave.
23.128795	44.85	Neutral	50	-5.15	Ave.
0.59073	30.44	Neutral	46	-15.56	Ave.
0.644277	31.55	Neutral	46	-14.45	Ave.
0.520092	33.16	Neutral	46	-12.84	Ave.

5.8 GHz

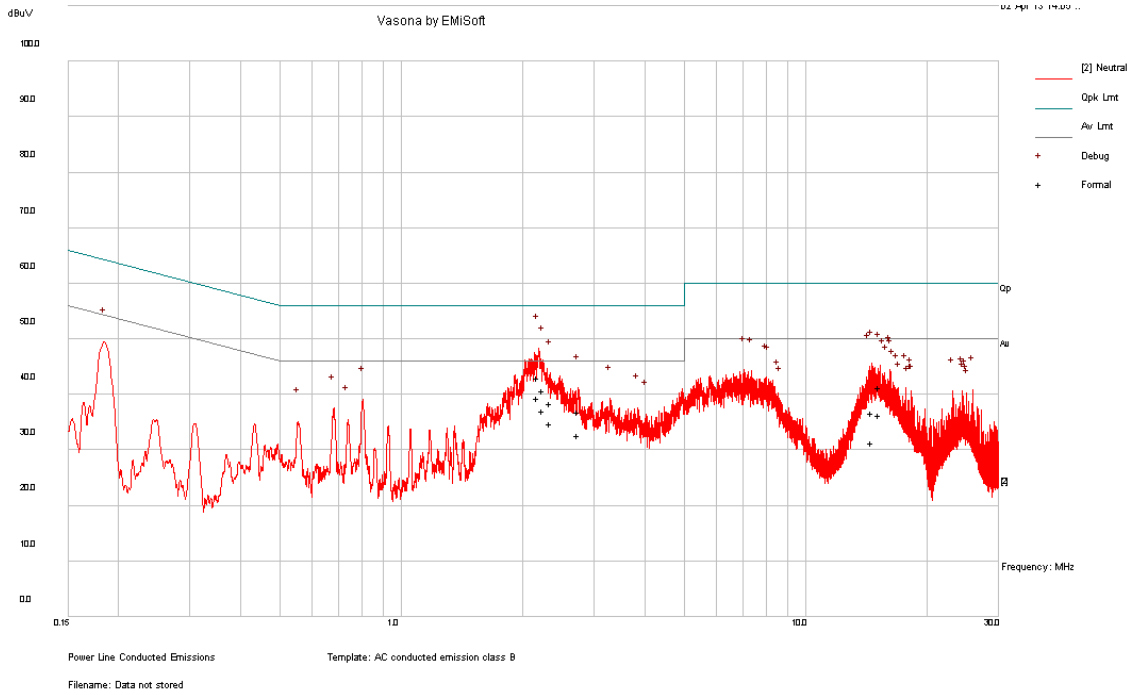
120 V, 60 Hz – Line, AC/DC Cord



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
2.18104	41.85	Line	56	-14.15	QP
0.184539	51.3	Line	64.28	-12.98	QP
2.31458	38.52	Line	56	-17.48	QP
2.459606	35.63	Line	56	-20.37	QP
14.584421	36.98	Line	60	-23.02	QP
2.741454	35.26	Line	56	-20.74	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
2.18104	38.28	Line	46	-7.72	Ave.
0.184539	45.78	Line	54.28	-8.5	Ave.
2.31458	34.75	Line	46	-11.25	Ave.
2.459606	31.81	Line	46	-14.19	Ave.
14.584421	31.06	Line	50	-18.94	Ave.
2.741454	31.16	Line	46	-14.84	Ave.

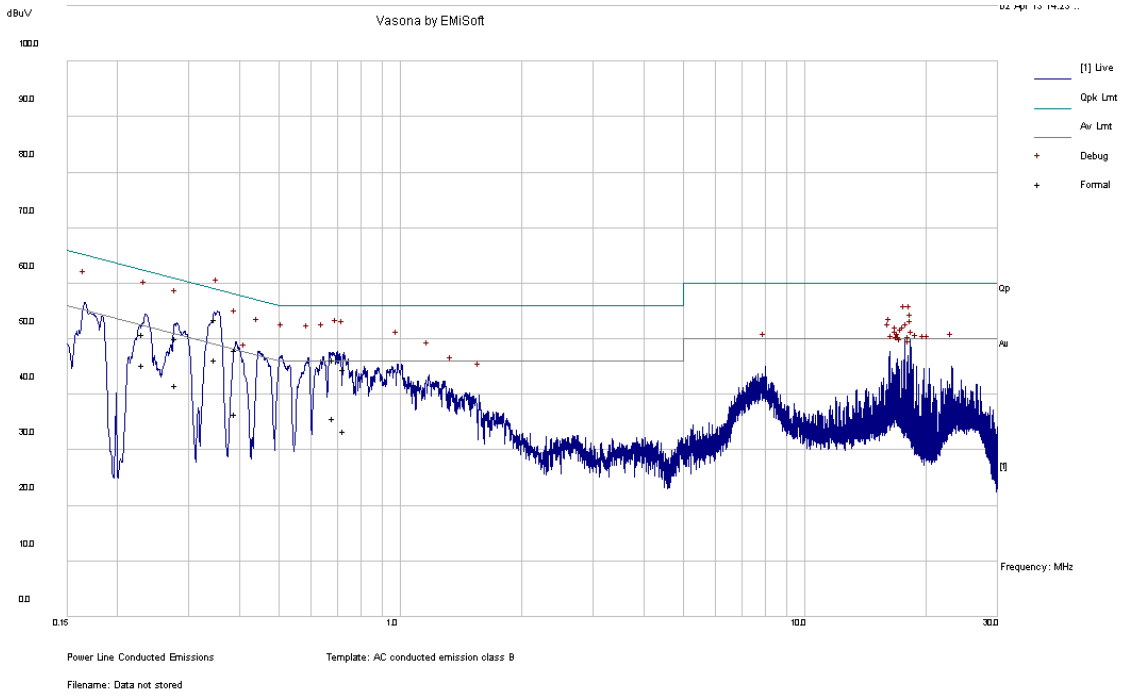
120 V, 60 Hz – Neutral, AC/DC Cord



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
2.181772	42.95	Neutral	56	-13.05	QP
2.243066	40.69	Neutral	56	-15.31	QP
2.335658	38.43	Neutral	56	-17.57	QP
14.571438	36.7	Neutral	60	-23.3	QP
15.25089	41.2	Neutral	60	-18.8	QP
2.741088	36.88	Neutral	56	-19.12	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
2.181772	39.46	Neutral	46	-6.54	Ave.
2.243066	37.15	Neutral	46	-8.85	Ave.
2.335658	34.82	Neutral	46	-11.18	Ave.
14.571438	31.34	Neutral	50	-18.66	Ave.
15.25089	36.37	Neutral	50	-13.63	Ave.
2.741088	32.73	Neutral	46	-13.27	Ave.

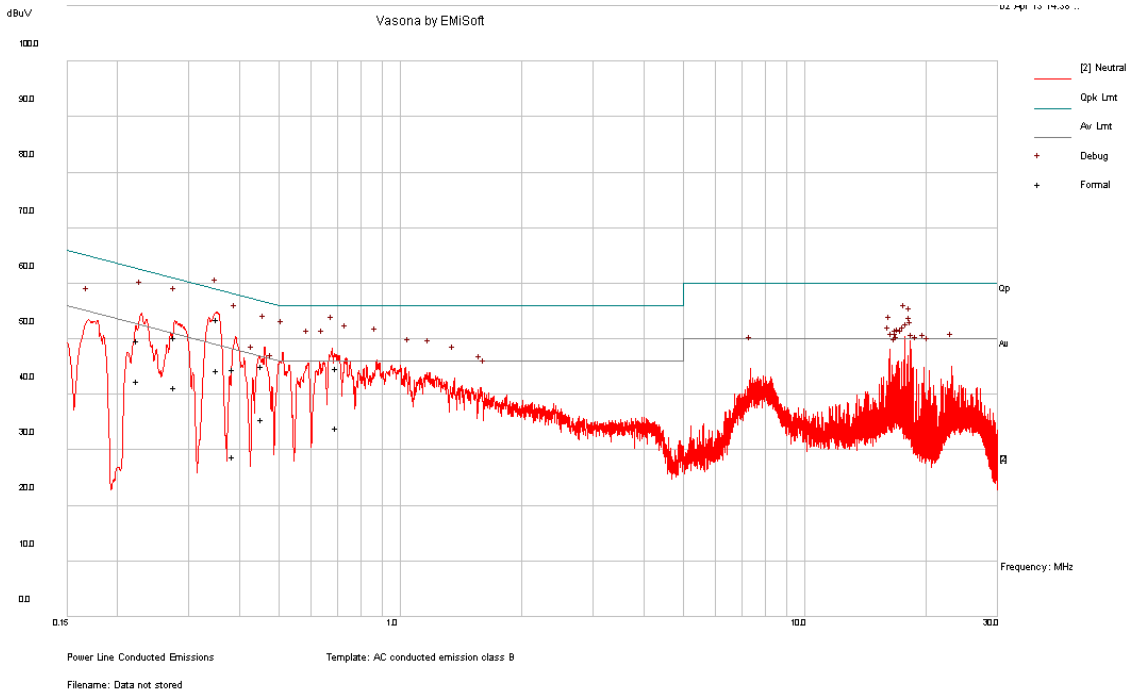
120 V, 60 Hz – Line, POE



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.349635	53.59	Line	58.97	-5.38	QP
0.230999	50.84	Line	62.41	-11.57	QP
0.278517	50.18	Line	60.86	-10.68	QP
0.683361	46.19	Line	56	-9.81	QP
0.724892	44.55	Line	56	-11.45	QP
0.39107	47.98	Line	58.04	-10.06	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.349635	46.18	Line	48.97	-2.79	Ave.
0.230999	45.33	Line	52.41	-7.08	Ave.
0.278517	41.67	Line	50.86	-9.19	Ave.
0.683361	35.67	Line	46	-10.33	Ave.
0.724892	33.4	Line	46	-12.6	Ave.
0.39107	36.42	Line	48.04	-11.62	Ave.

120 V, 60 Hz – Neutral, POE



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.352736	53.57	Neutral	58.9	-5.33	QP
0.277718	50.32	Neutral	60.88	-10.57	QP
0.385872	44.54	Neutral	58.15	-13.62	QP
0.69455	44.8	Neutral	56	-11.20	QP
0.223799	49.7	Neutral	62.68	-12.98	QP
0.454565	45.04	Neutral	56.79	-11.75	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.352736	44.44	Neutral	48.9	-4.46	Ave.
0.277718	41.28	Neutral	50.88	-9.60	Ave.
0.385872	28.81	Neutral	48.15	-19.35	Ave.
0.69455	33.95	Neutral	46	-12.05	Ave.
0.223799	42.37	Neutral	52.68	-10.30	Ave.
0.454565	35.61	Neutral	46.79	-11.18	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 30 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	E4446A	US44300386	2012-09-29	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 Bo Li from 2013-2-1 and 2012-2-22 at RF site.

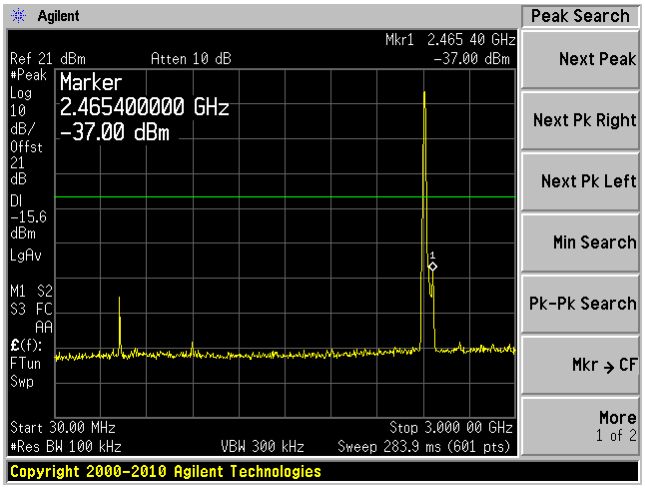
7.5 Test Results

Please refer to following plots of spurious emissions.

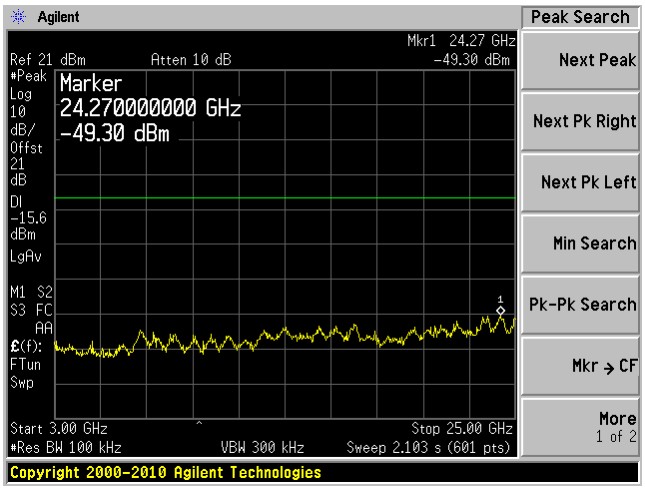
2400-2483.5 MHz

802.11b, Low Channel, 2412 MHz

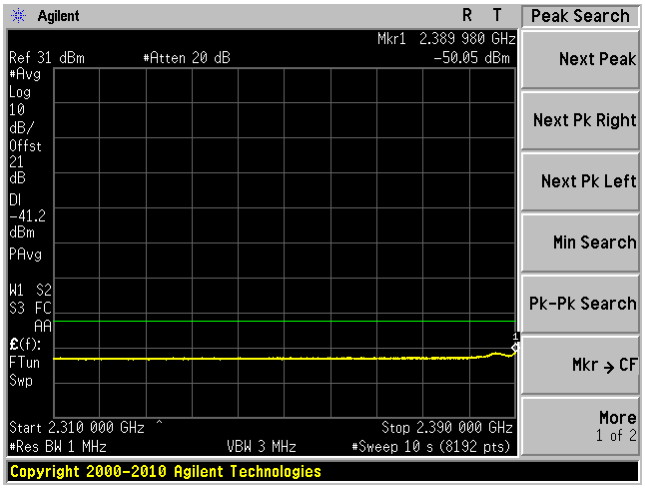
Chain J0, Plot: 30 MHz – 3 GHz



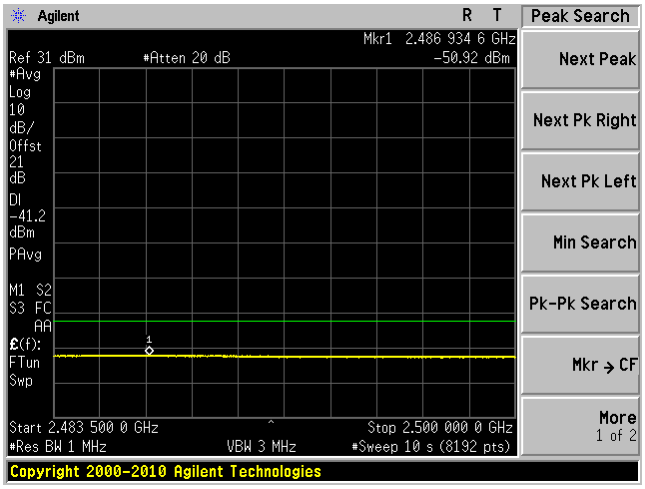
Chain J0, Plot: 3 GHz – 25 GHz



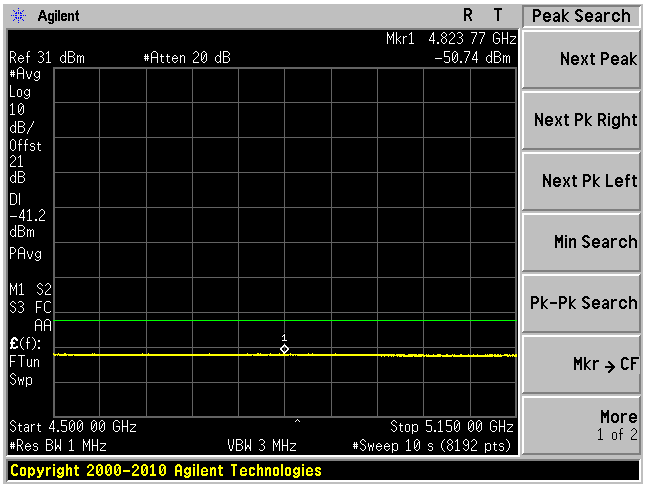
Chain J0, Plot: 2310 MHz – 2390 MHz



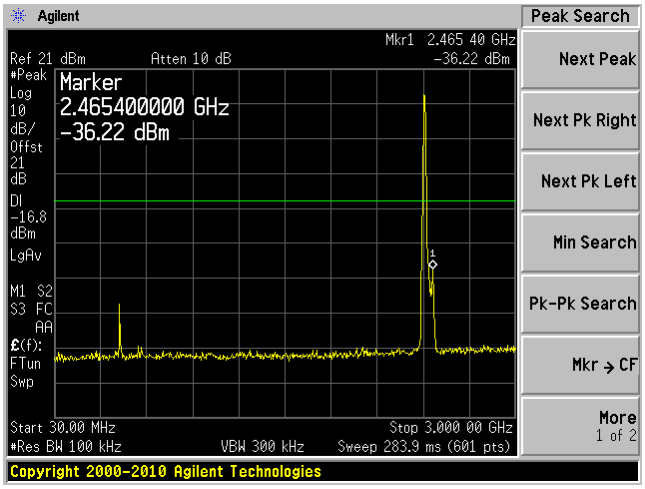
Chain J0, Plot: 2483.5MHz – 2500 MHz



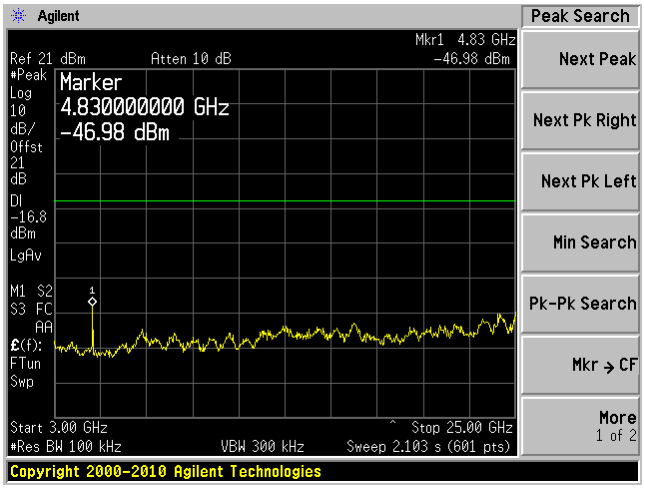
Chain J0, Plot: 4500 MHz – 5150 MHz



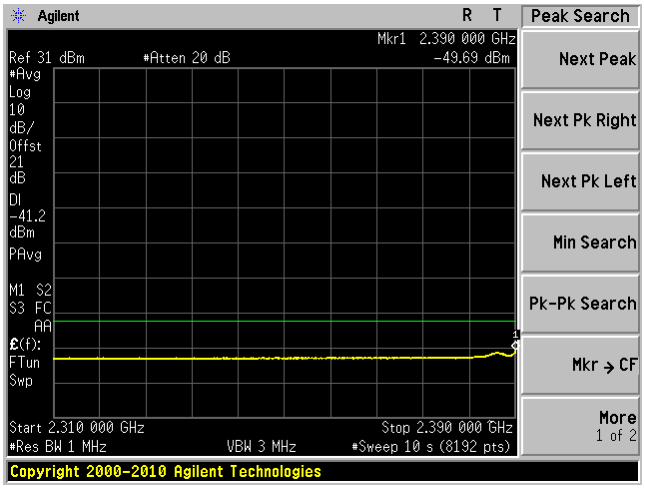
Chain J1, Plot: 30 MHz – 3 GHz



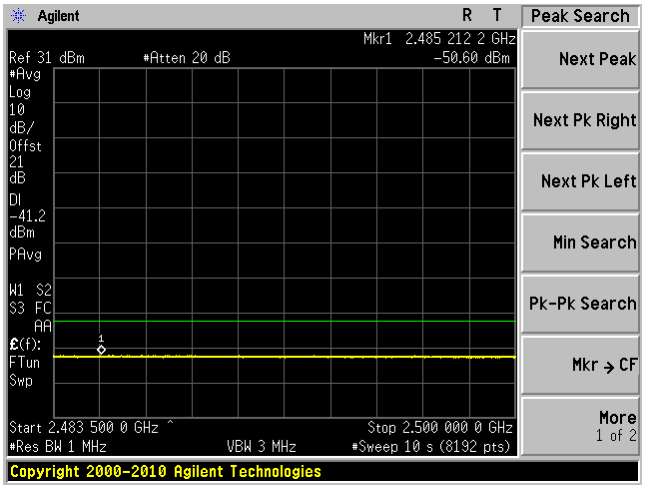
Chain J1, Plot: 3 GHz – 25 GHz



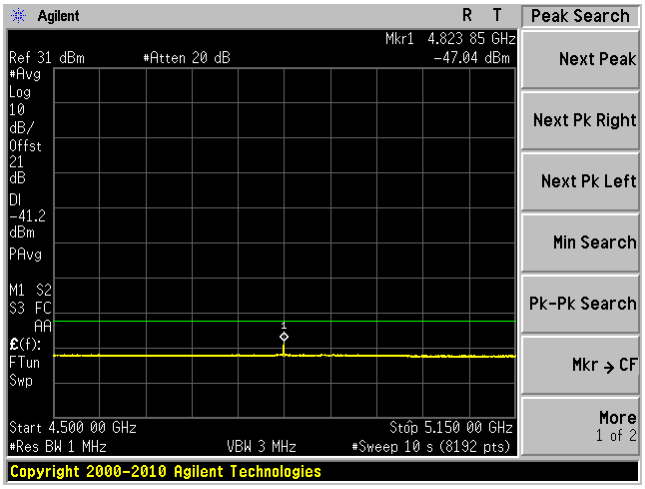
Chain J1, Plot: 2310 MHz – 2390 MHz



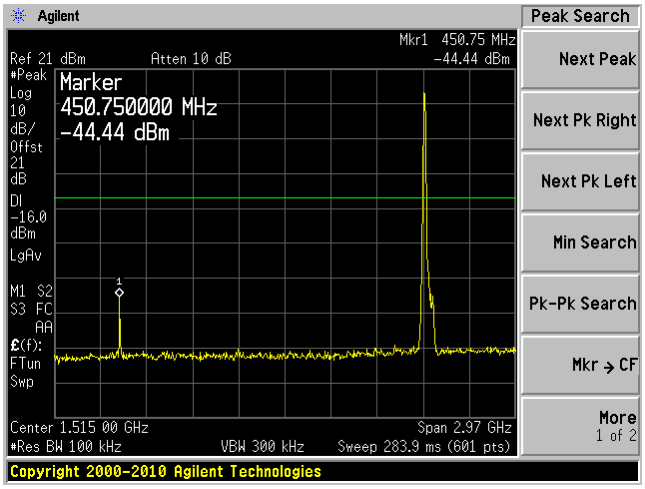
Chain J1, Plot: 2483.5MHz – 2500 MHz



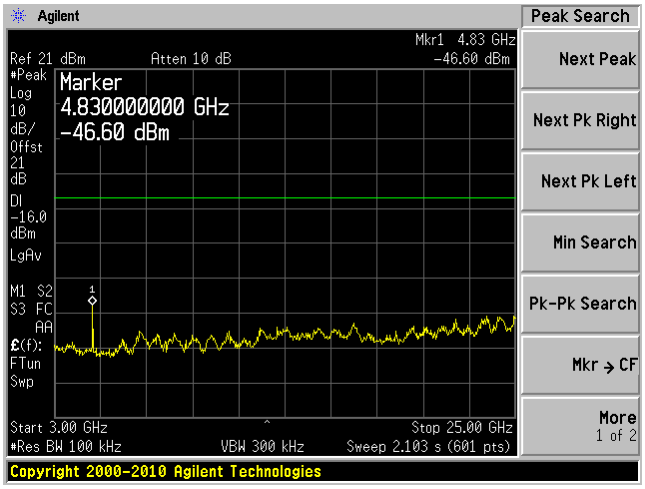
Chain J1, Plot: 4500 MHz – 5150 MHz



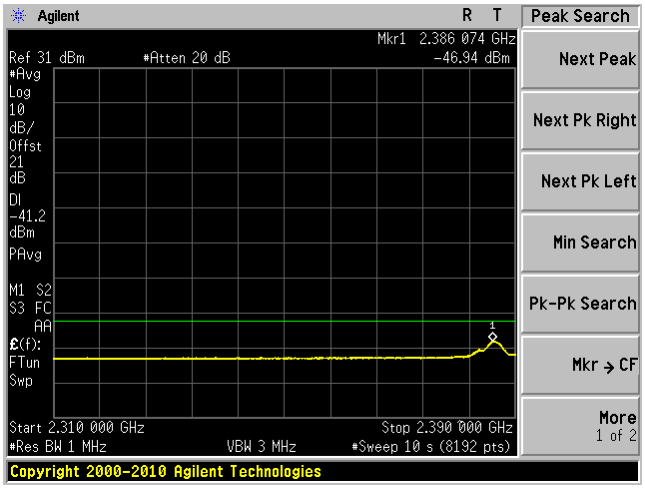
Chain J2, Plot: 30 MHz – 3 GHz



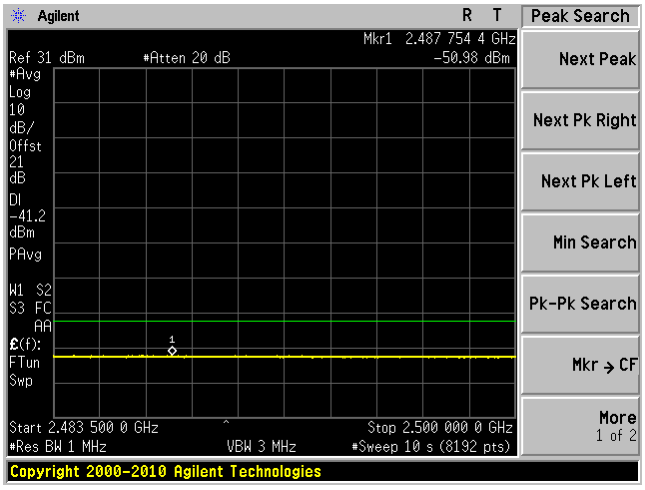
Chain J2, Plot: 3 GHz – 25 GHz



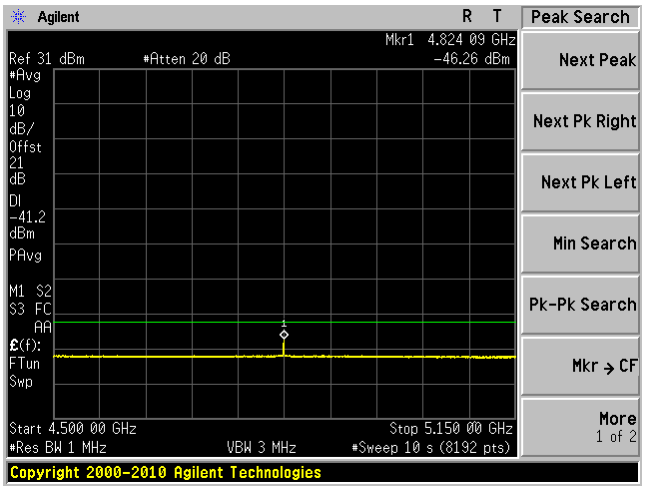
Chain J2, Plot: 2310 MHz – 2390 MHz



Chain J2, Plot: 2483.5MHz – 2500 MHz

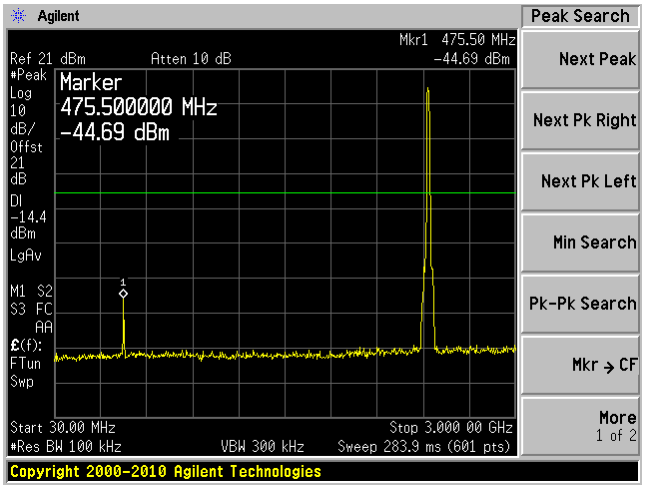


Chain J2, Plot: 4500 MHz – 5150 MHz

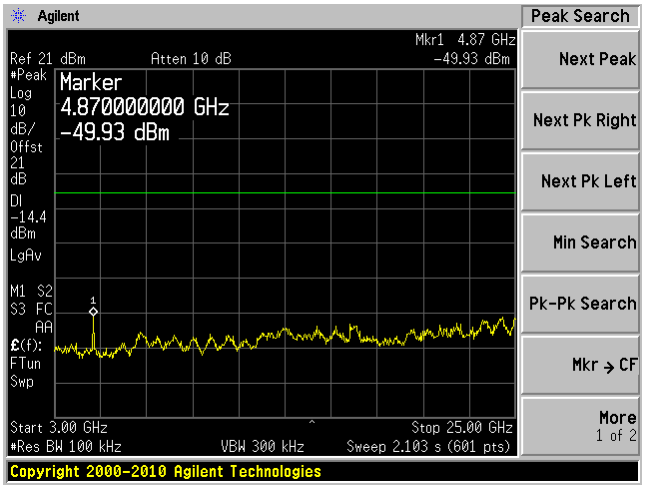


802.11b, Middle Channel, 2437 MHz

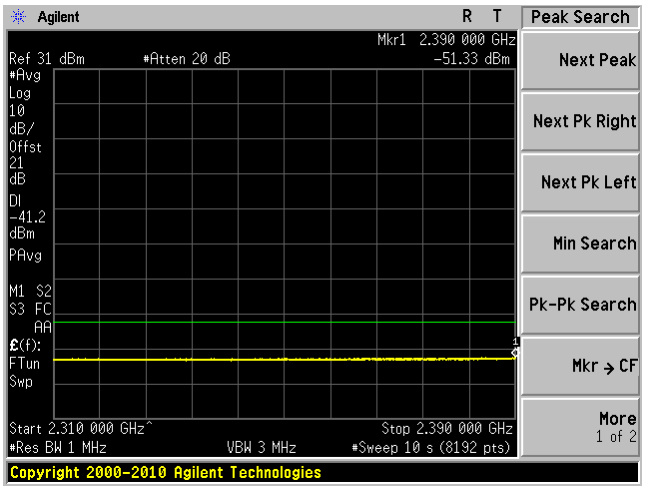
Chain J0, Plot: 30 MHz – 3 GHz



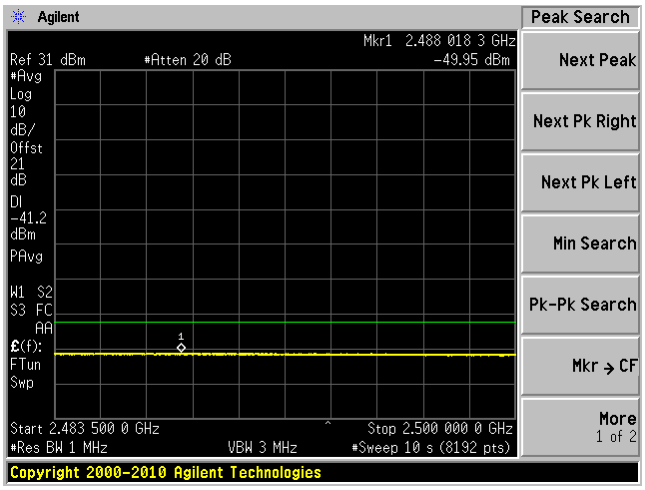
Chain J0, Plot: 3 GHz – 25 GHz



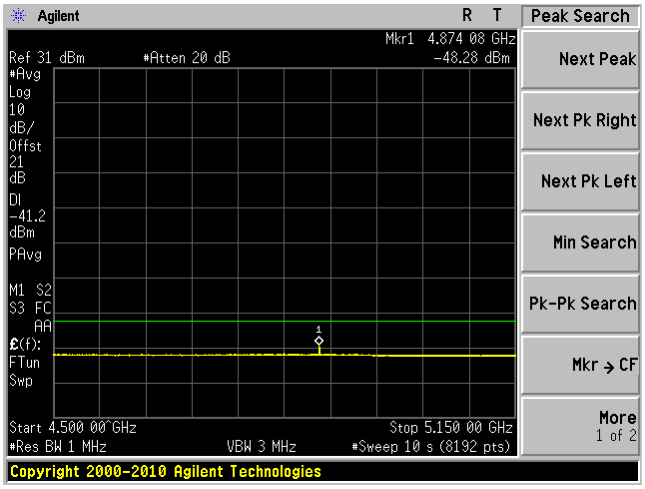
Chain J0, Plot: 2310 MHz – 2390 MHz



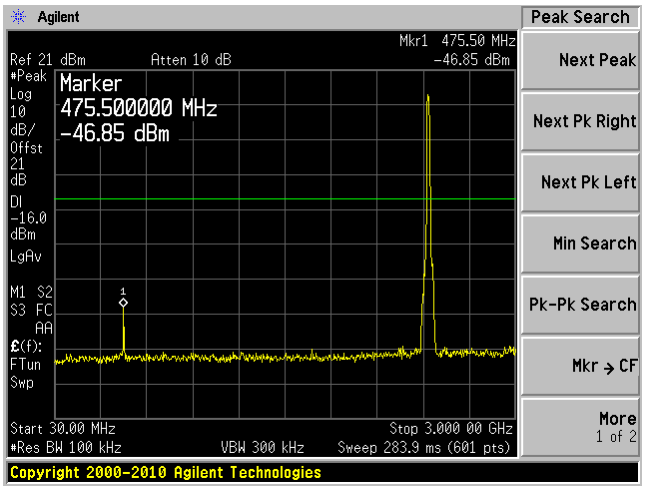
Chain J0, Plot: 2483.5MHz – 2500 MHz



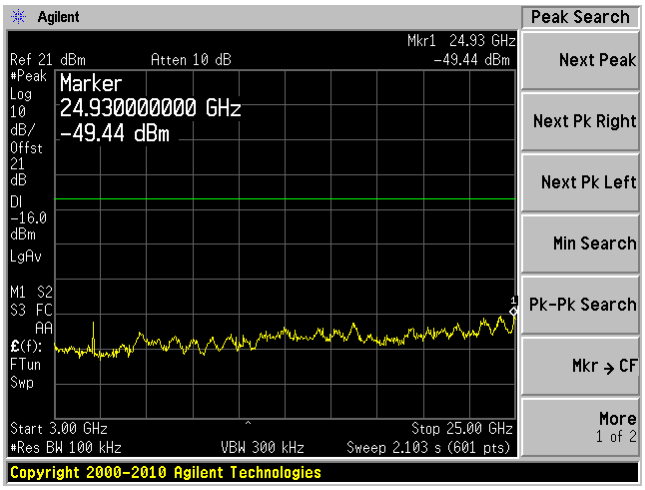
Chain J0, Plot: 4500 MHz – 5150 MHz



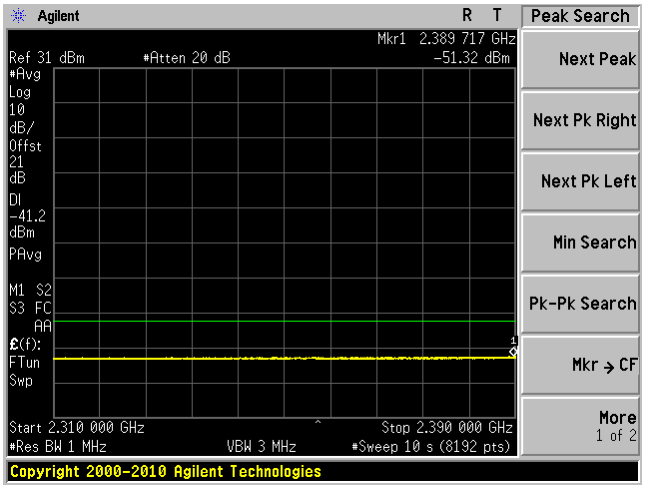
Chain J1, Plot: 30 MHz – 3 GHz



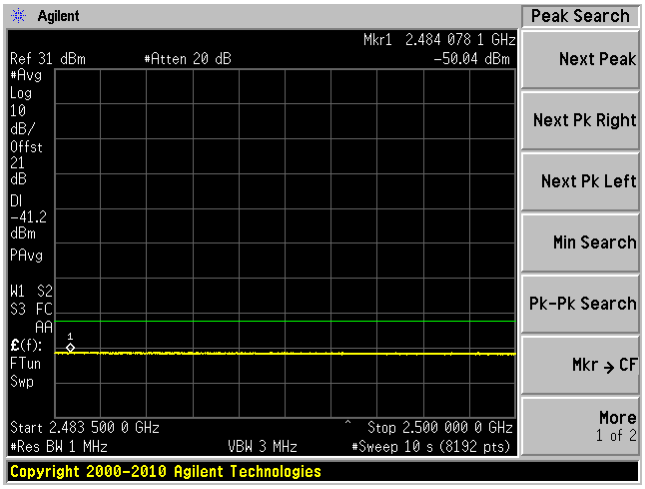
Chain J1, Plot: 3 GHz – 25 GHz



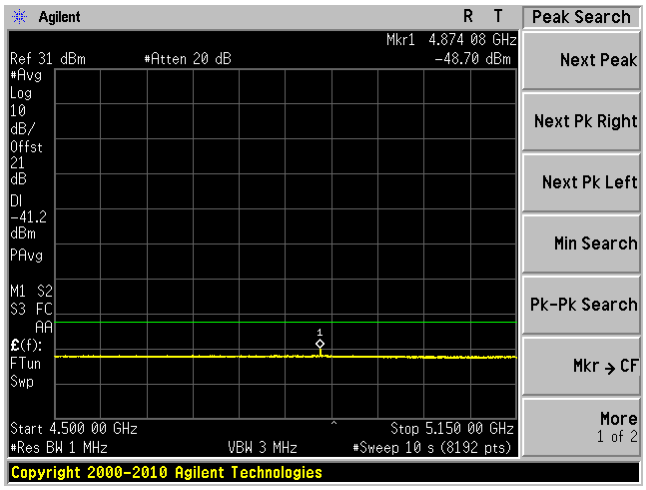
Chain J1, Plot: 2310 MHz – 2390 MHz



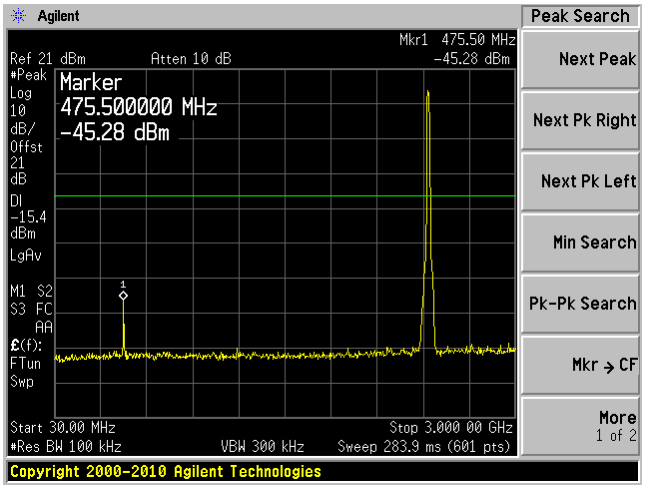
Chain J1, Plot: 2483.5MHz – 2500 MHz



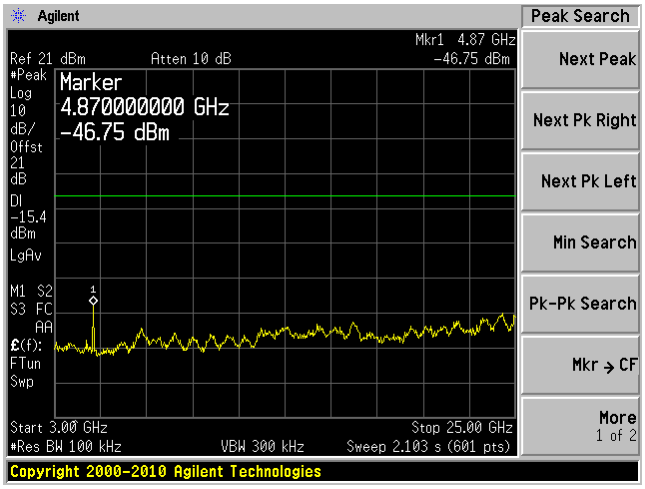
Chain J0, Plot: 4500 MHz – 5150 MHz



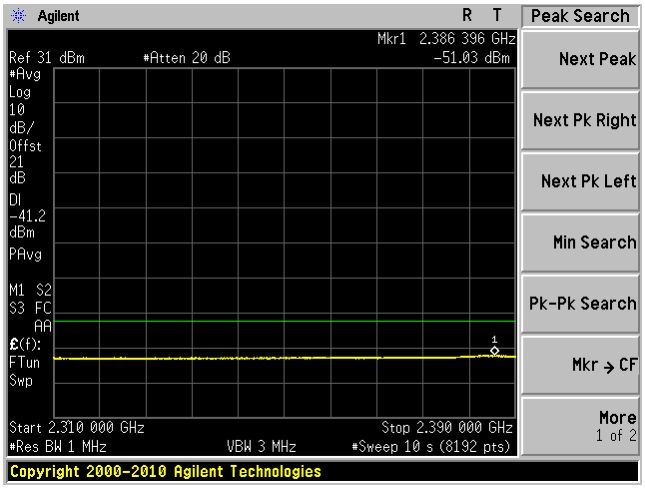
Chain J2, Plot: 30 MHz – 3 GHz



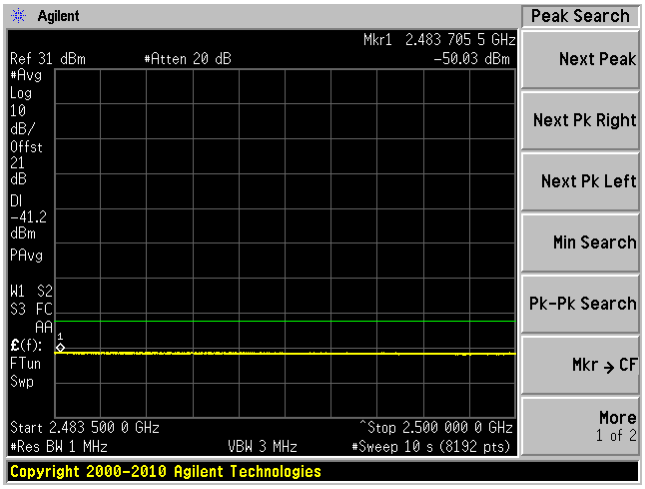
Chain J2, Plot: 3 GHz – 25 GHz



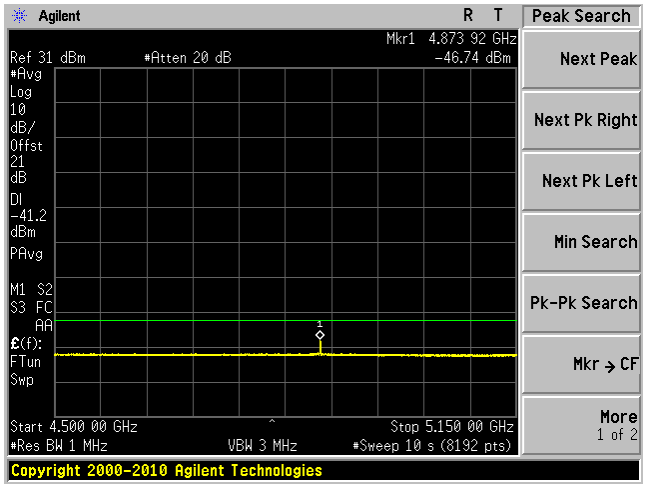
Chain J2, Plot: 2310 MHz – 2390 MHz



Chain J2, Plot: 2483.5MHz – 2500 MHz

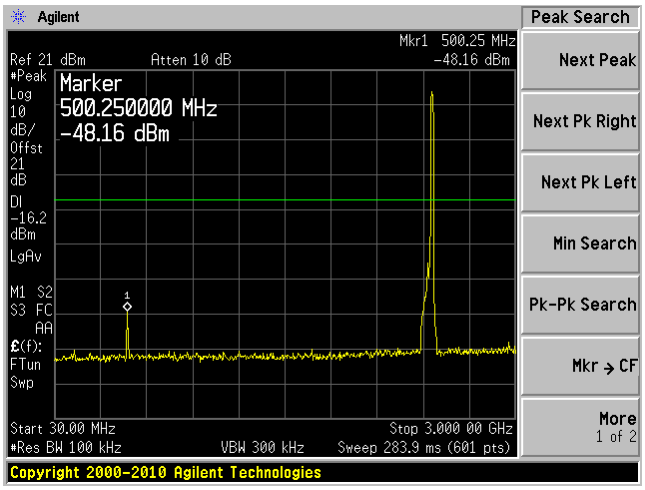


Chain J2, Plot: 4500 MHz – 5150 MHz

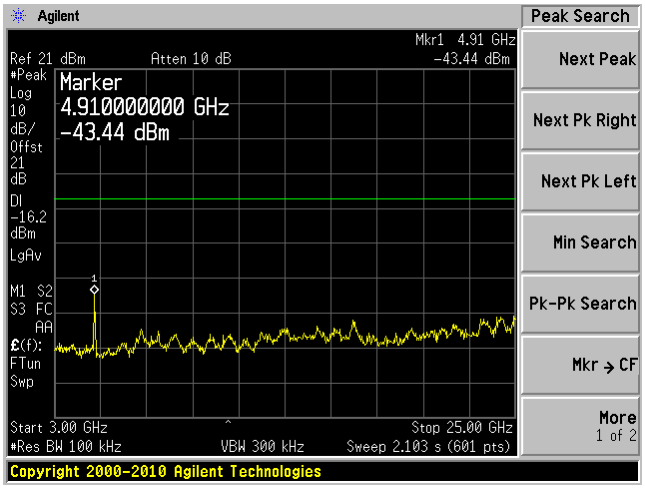


802.11b, High Channel, 2462 MHz

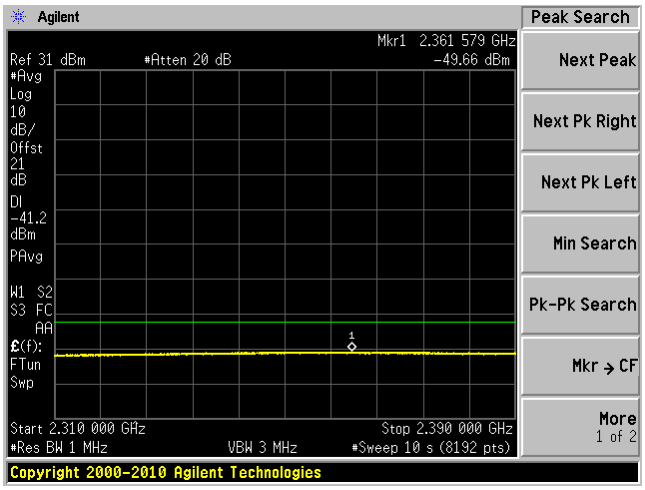
Chain J0, Plot: 30 MHz – 3 GHz



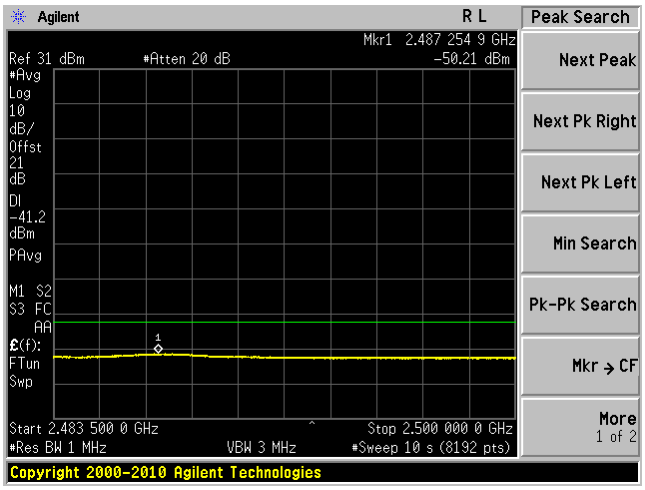
Chain J0, Plot: 3 GHz – 25 GHz



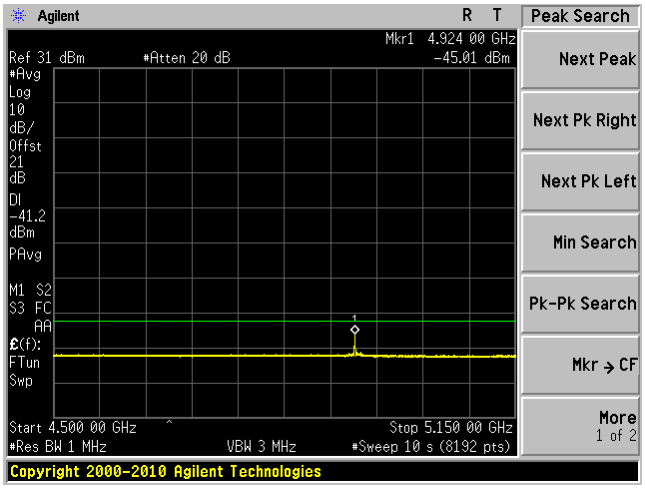
Chain J0, Plot: 2310 MHz – 2390 MHz



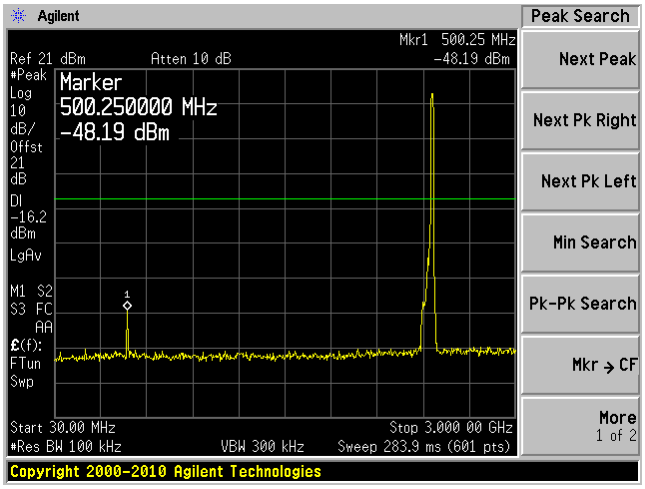
Chain J0, Plot: 2483.5MHz – 2500 MHz



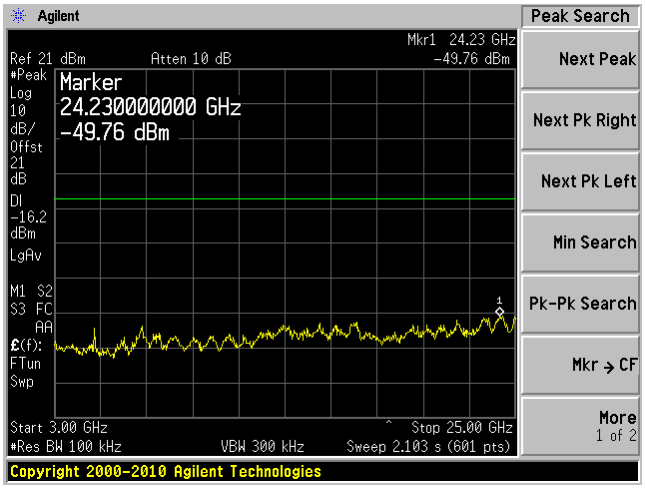
Chain J0, Plot: 4500 MHz – 5150 MHz



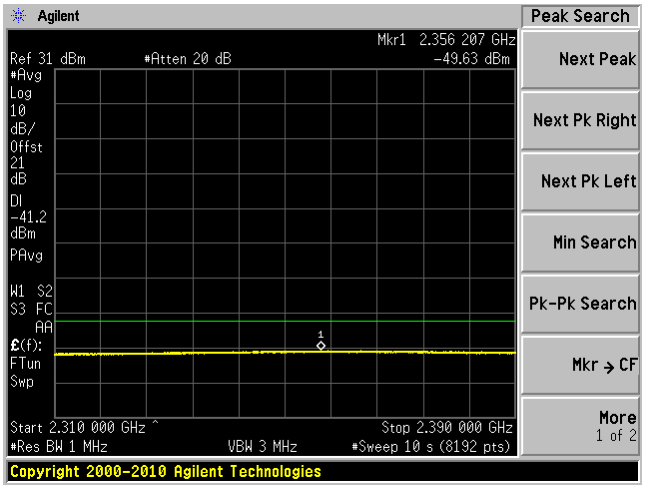
Chain J1, Plot: 30 MHz – 3 GHz



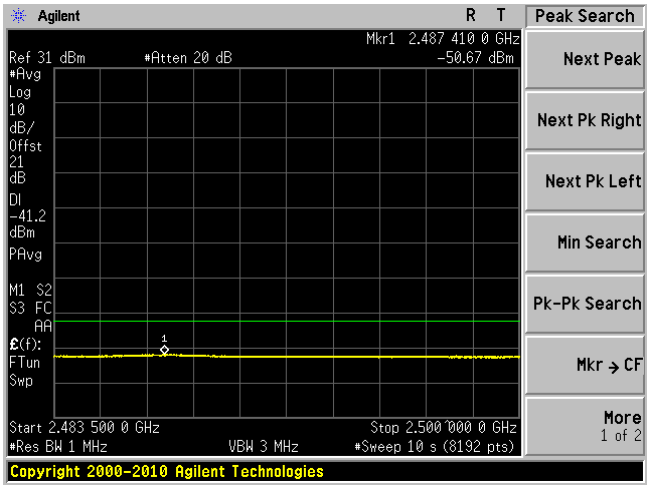
Chain J1, Plot: 3 GHz – 25 GHz



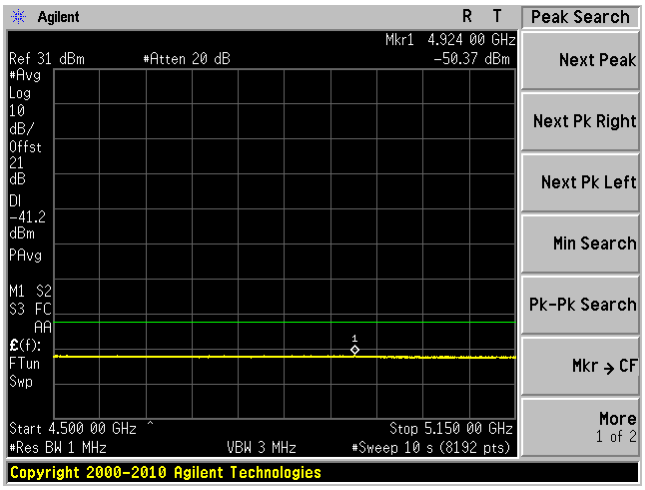
Chain J1, Plot: 2310 MHz – 2390 MHz



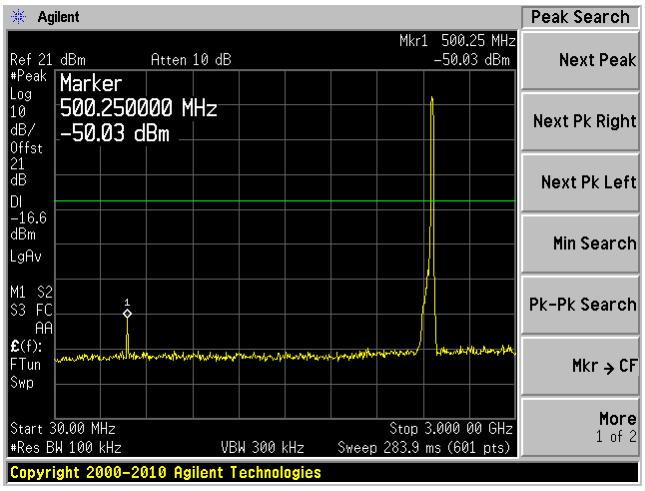
Chain J1, Plot: 2483.5MHz – 2500 MHz



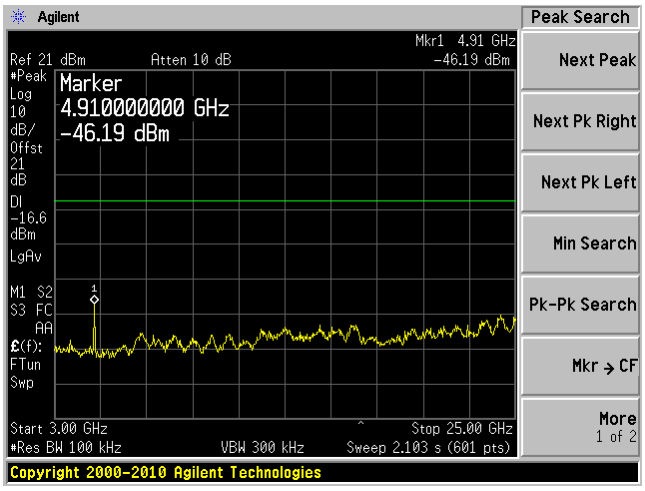
Chain J1, Plot: 4500 MHz – 5150 MHz



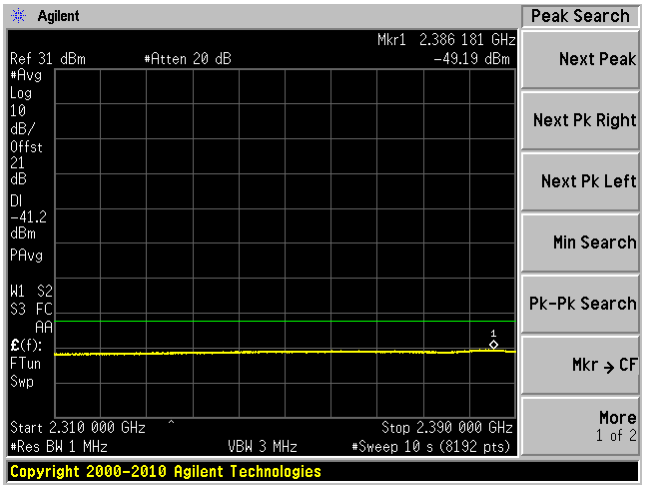
Chain J2, Plot: 30 MHz – 3 GHz



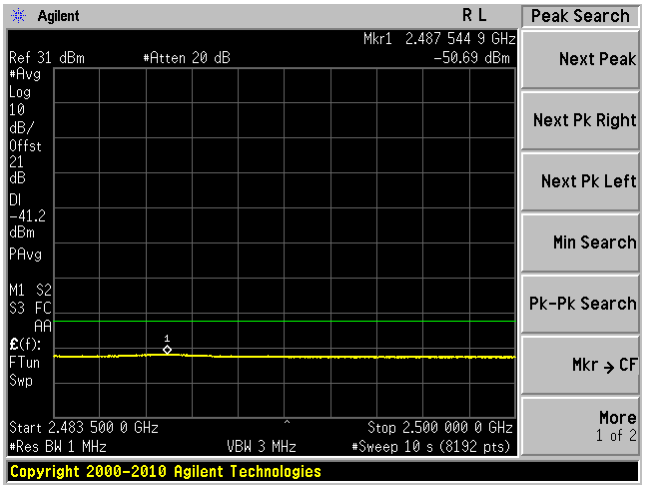
Chain J2, Plot: 3 GHz – 25 GHz



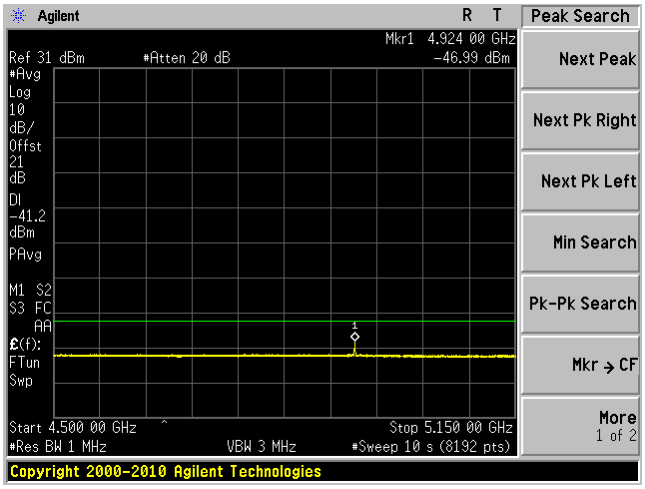
Chain J2, Plot: 2310 MHz – 2390 MHz



Chain J2, Plot: 2483.5MHz – 2500 MHz

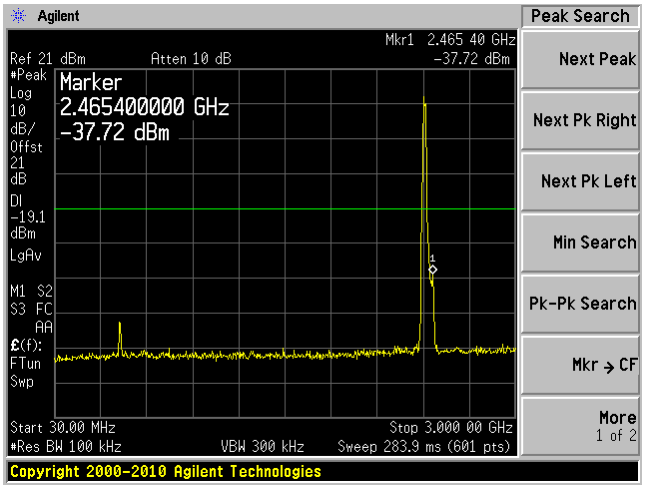


Chain J2, Plot: 4500 MHz – 5150 MHz

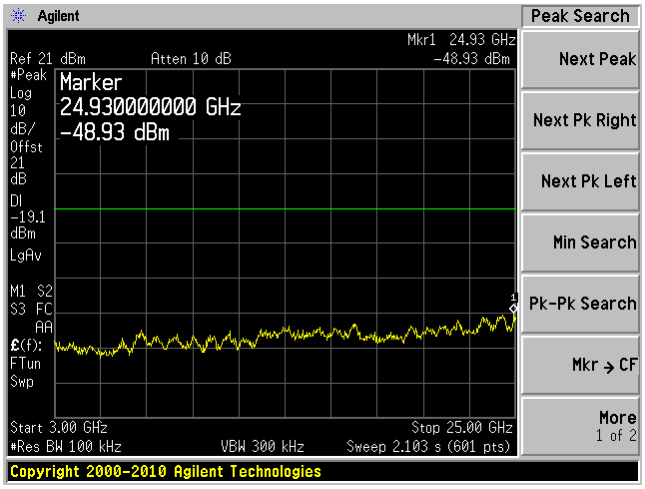


802.11g, Low Channel 2412 MHz

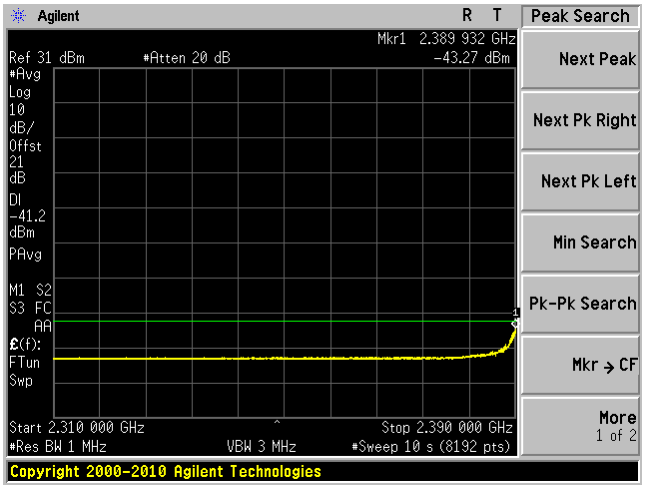
Chain J0, Plot: 30 MHz – 3 GHz



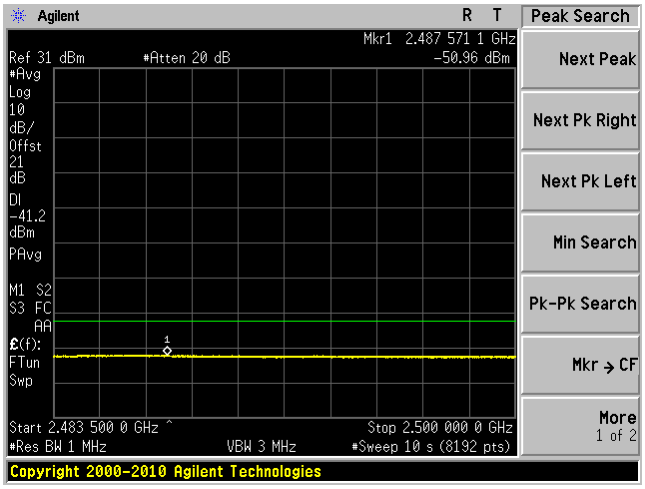
Chain J0, Plot: 3 GHz – 25 GHz



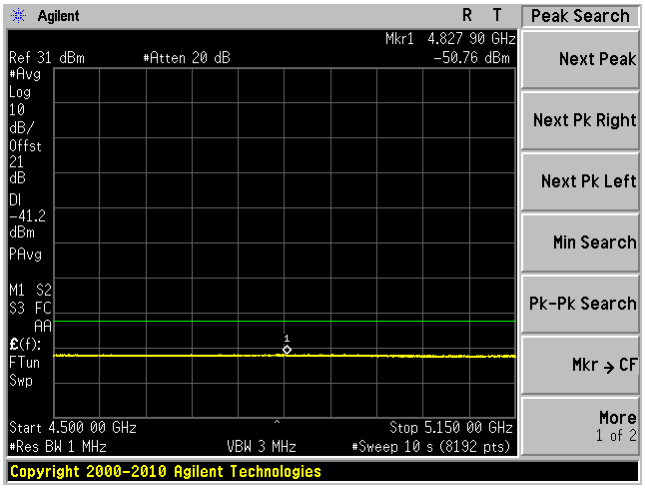
Chain J0, Plot: 2310 MHz – 2390 MHz



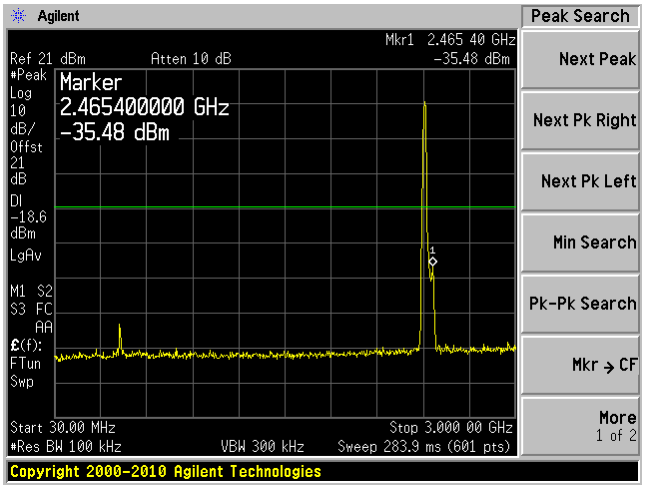
Chain J0, Plot: 2483.5MHz – 2500 MHz



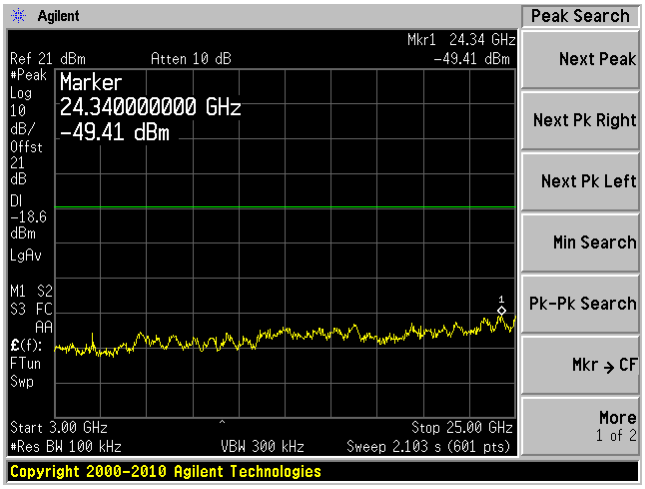
Chain J0, Plot: 4500 MHz – 5150 MHz



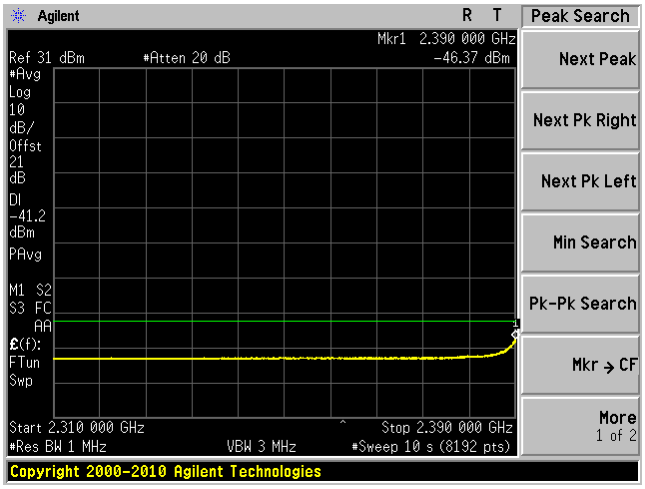
Chain J1, Plot: 30 MHz – 3 GHz



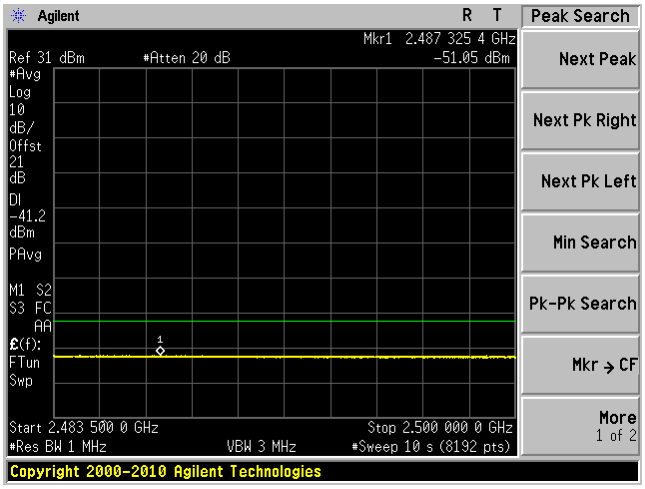
Chain J1, Plot: 3 GHz – 25 GHz



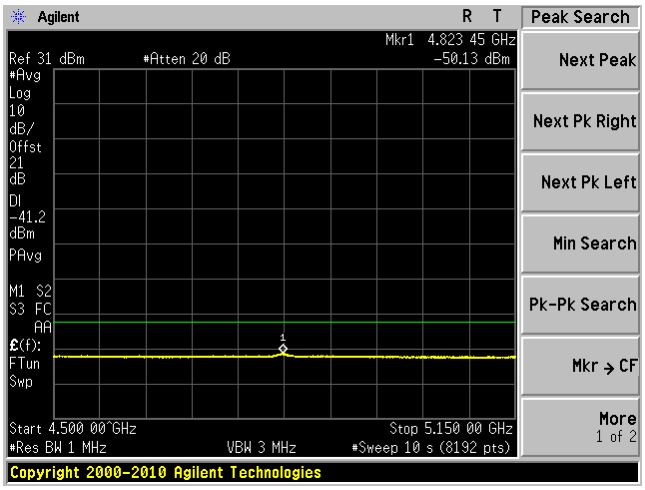
Chain J1, Plot: 2310 MHz – 2390 MHz



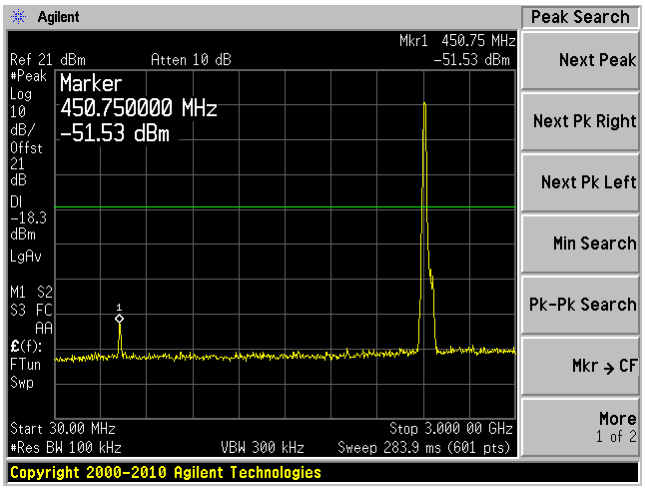
Chain J1, Plot: 2483.5MHz – 2500 MHz



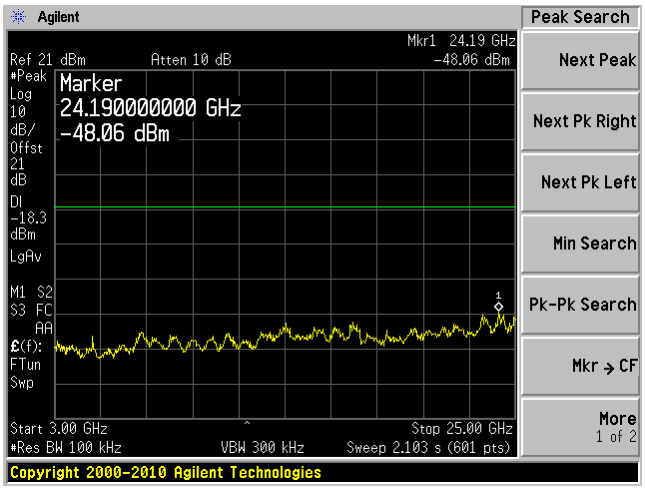
Chain J1, Plot: 4500 MHz – 5150 MHz



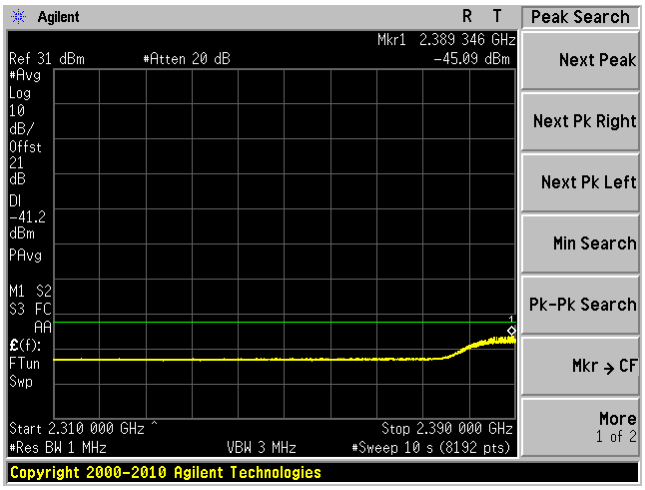
Chain J2, Plot: 30 MHz – 3 GHz



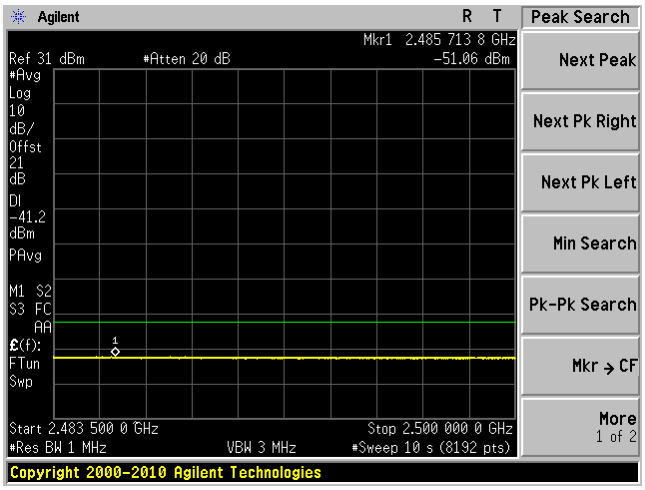
Chain J2, Plot: 3 GHz – 25 GHz



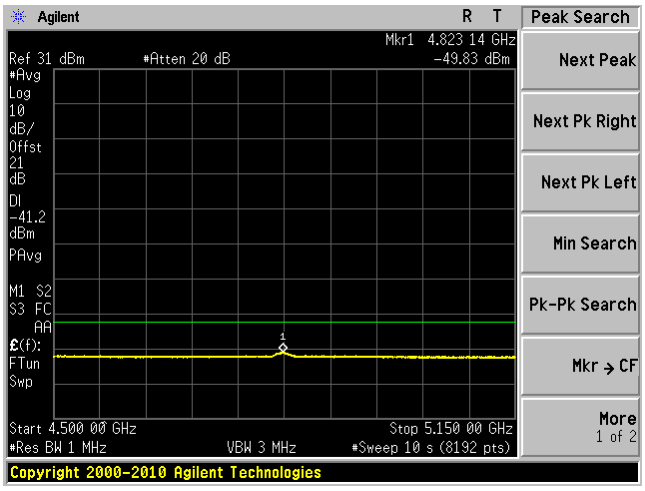
Chain J2, Plot: 2310 MHz – 2390 MHz



Chain J2, Plot: 2483.5MHz – 2500 MHz

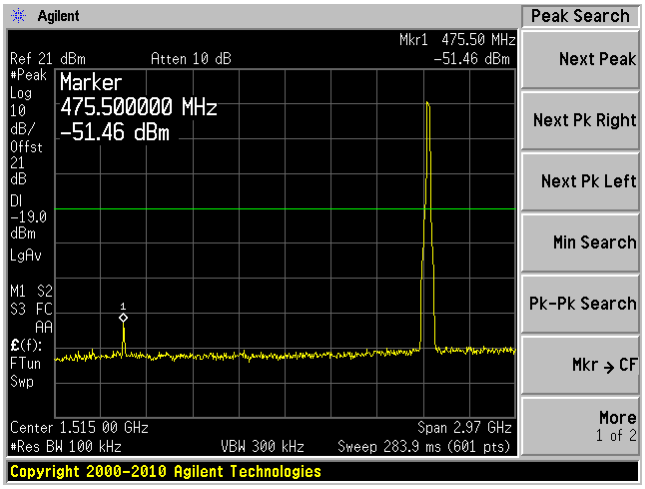


Chain J2, Plot: 4500 MHz – 5150 MHz

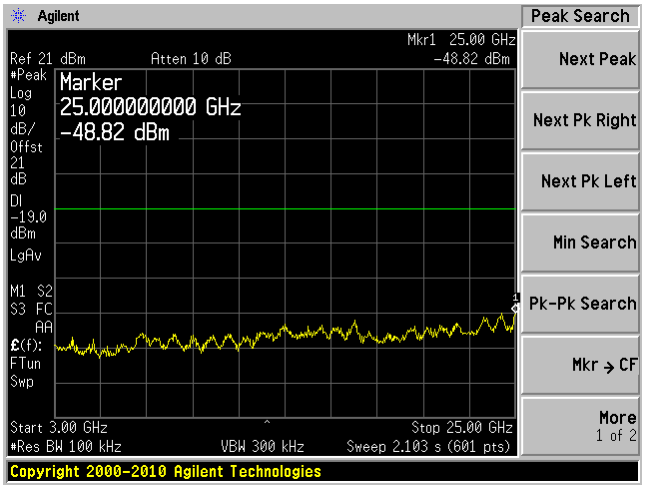


802.11g, Middle Channel 2437 MHz

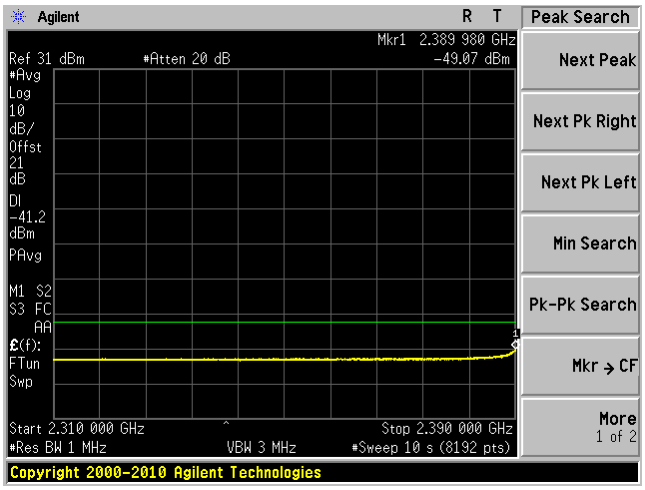
Chain J0, Plot: 30 MHz – 3 GHz



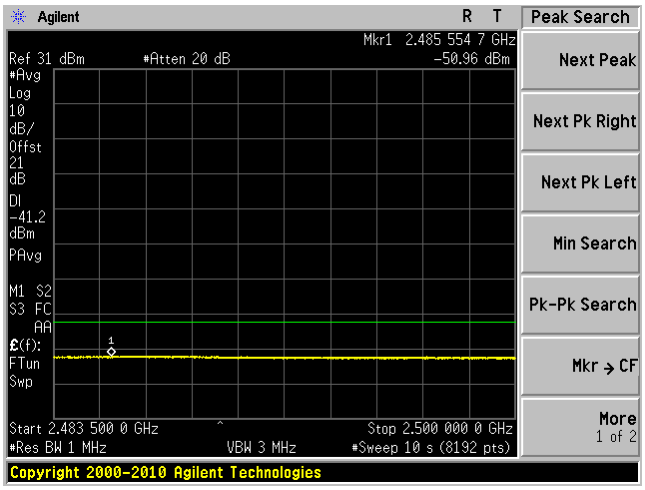
Chain J0, Plot: 3 GHz – 25 GHz



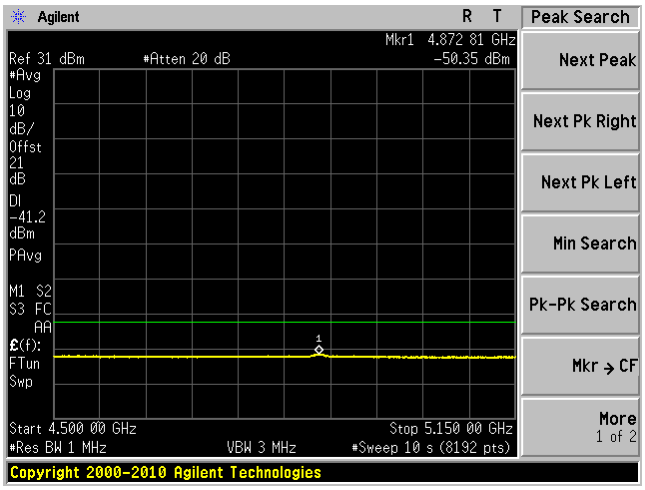
Chain J0, Plot: 2310 MHz – 2390 MHz



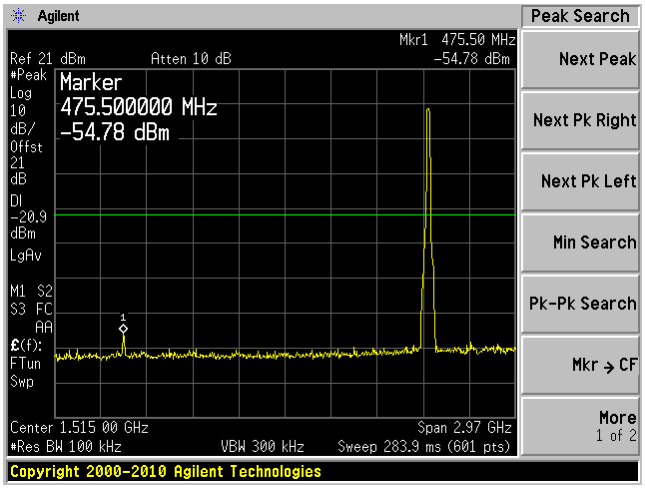
Chain J0, Plot: 2483.5MHz – 2500 MHz



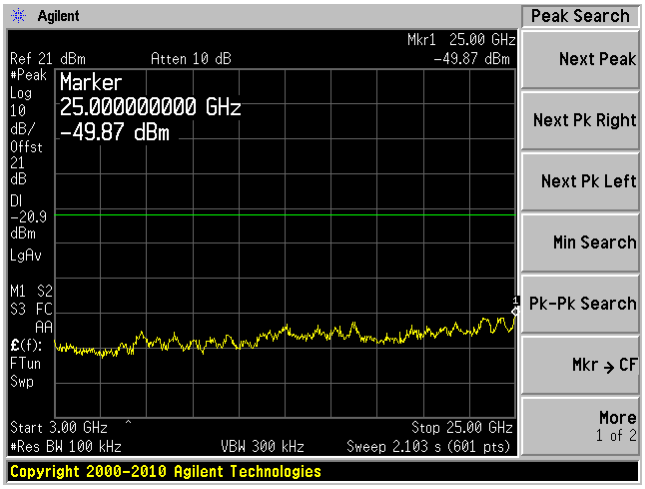
Chain J0, Plot: 4500 MHz – 5150 MHz



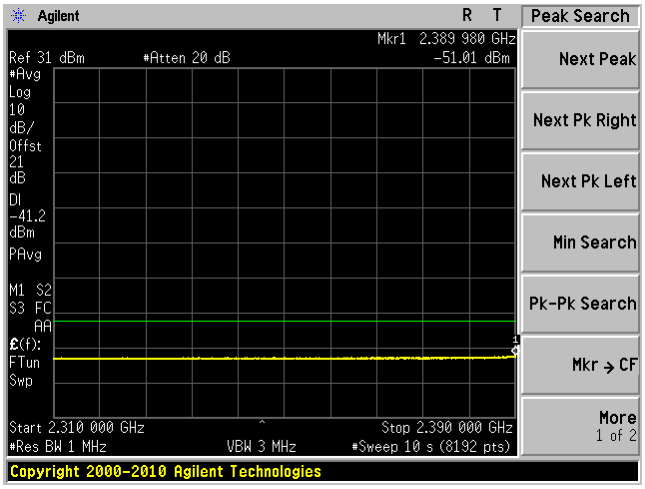
Chain J1, Plot: 30 MHz – 3 GHz



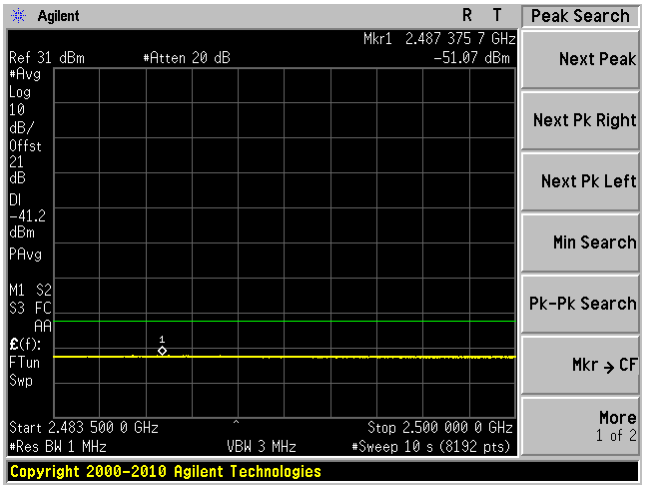
Chain J1, Plot: 3 GHz – 25 GHz



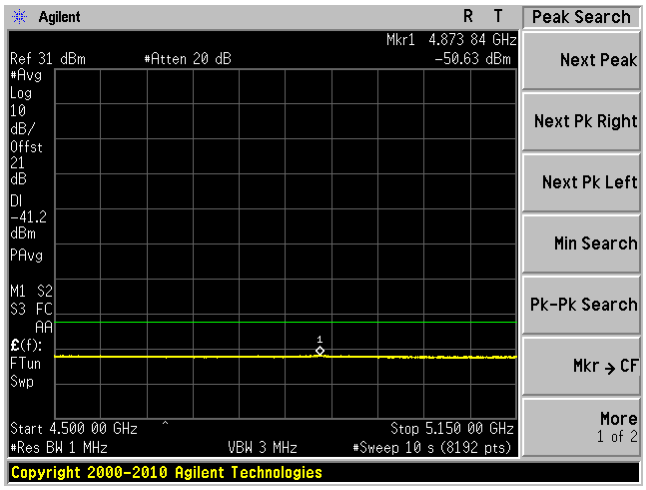
Chain J1, Plot: 2310 MHz – 2390 MHz



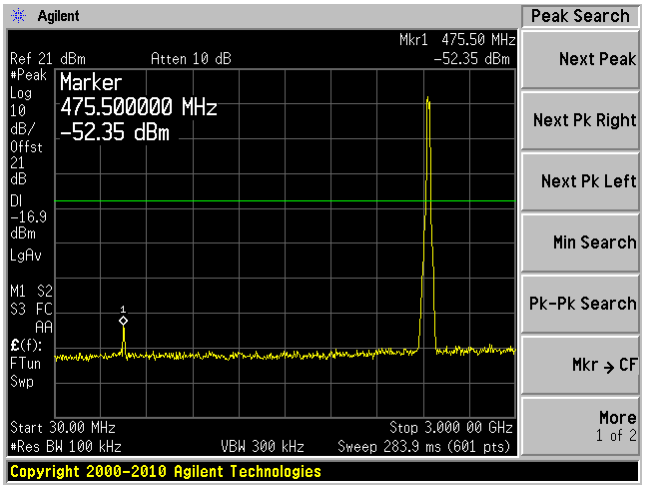
Chain J1, Plot: 2483.5MHz – 2500 MHz



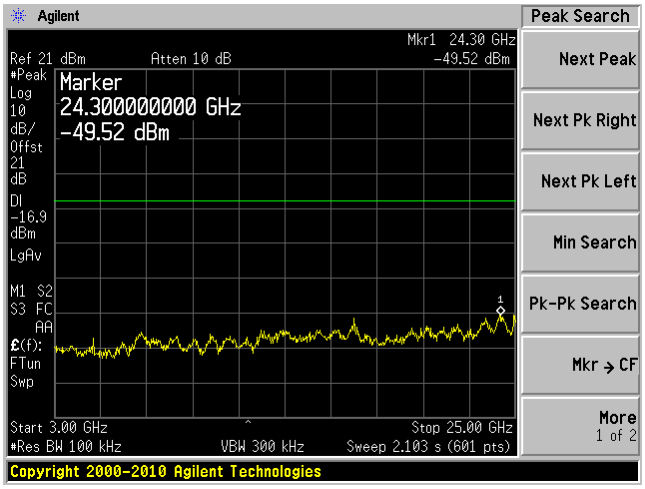
Chain J1, Plot: 4500 MHz – 5150 MHz



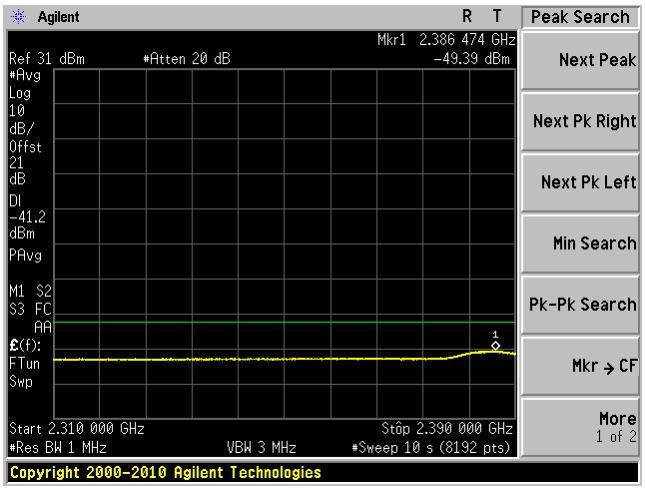
Chain J2, Plot: 30 MHz – 3 GHz



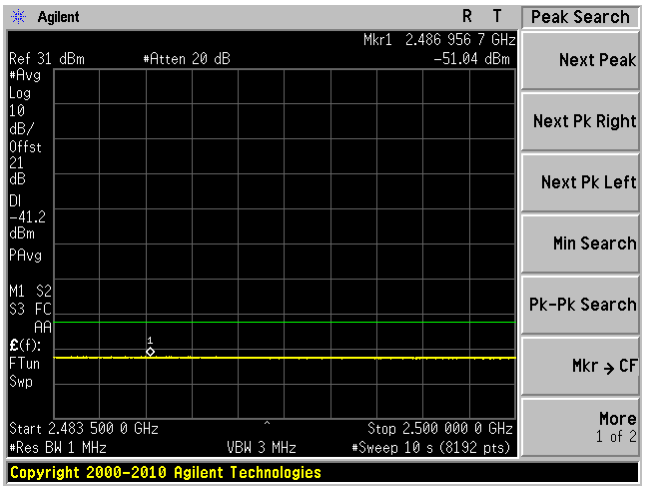
Chain J2, Plot: 3 GHz – 25 GHz



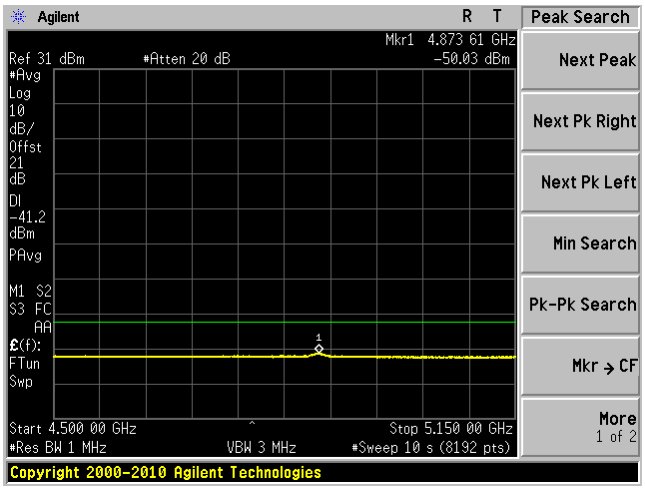
Chain J2, Plot: 2310 MHz – 2390 MHz



Chain J2, Plot: 2483.5MHz – 2500 MHz

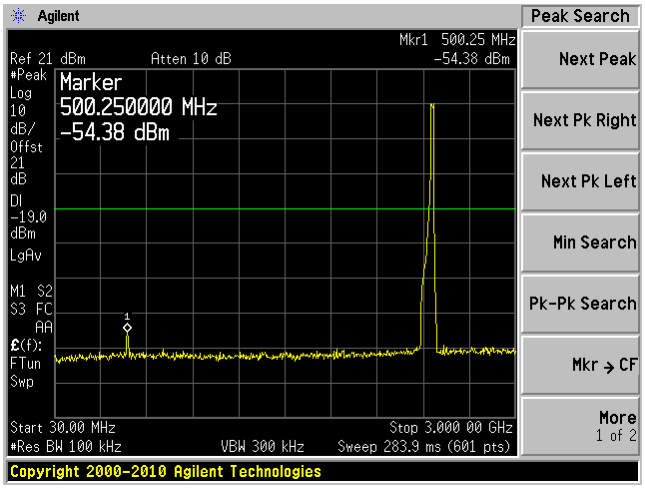


Chain J2, Plot: 4500 MHz – 5150 MHz

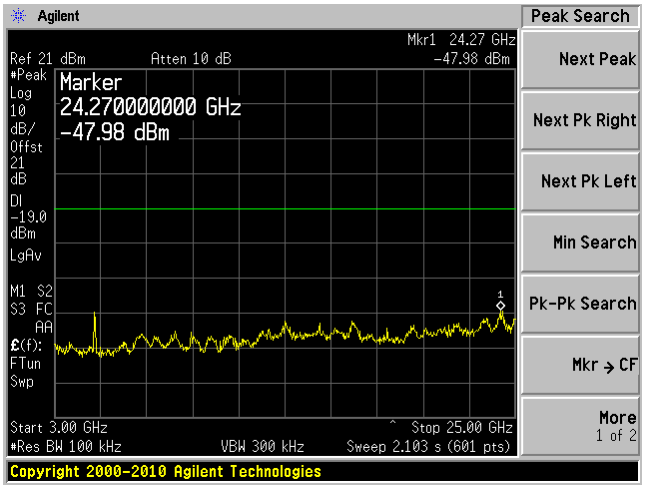


802.11g, High Channel 2462 MHz

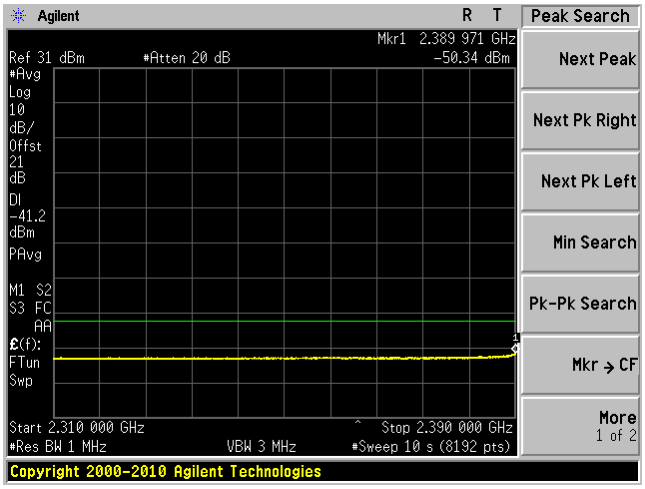
Chain J0, Plot: 30 MHz – 3 GHz



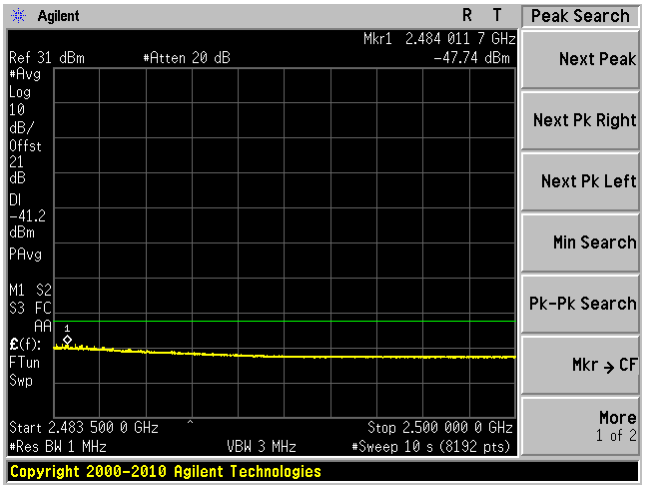
Chain J0, Plot: 3 GHz – 25 GHz



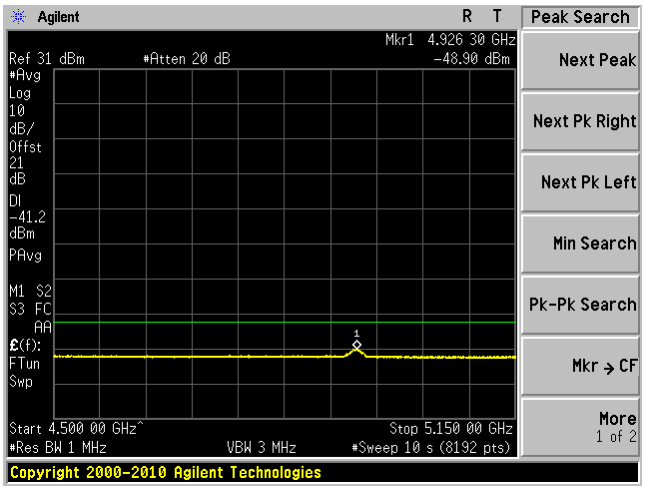
Chain J0, Plot: 2310 MHz – 2390 MHz



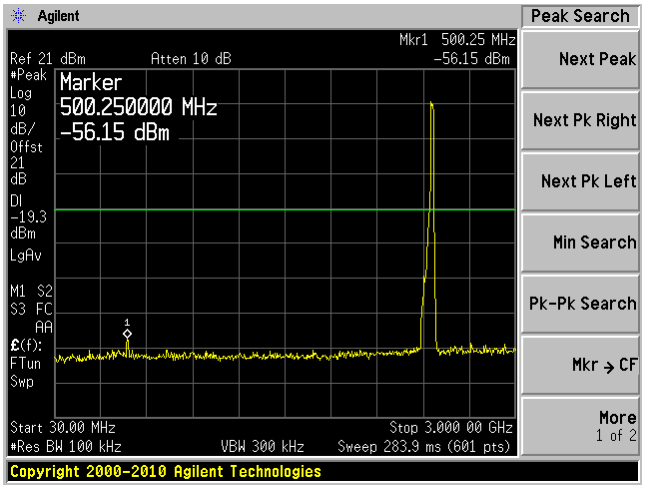
Chain J0, Plot: 2483.5MHz – 2500 MHz



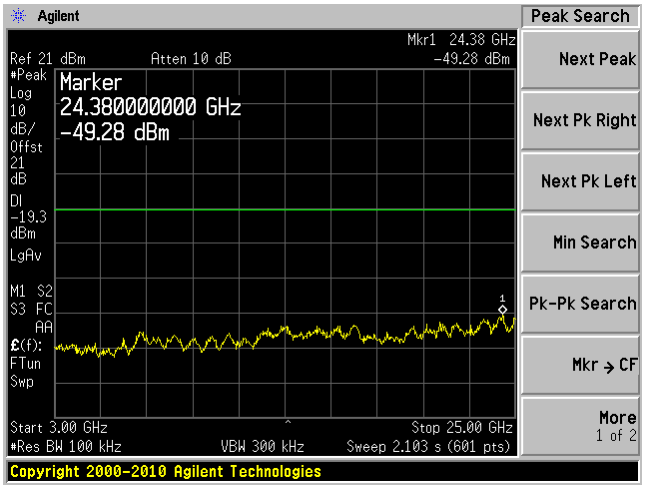
Chain J0, Plot: 4500 MHz – 5150 MHz



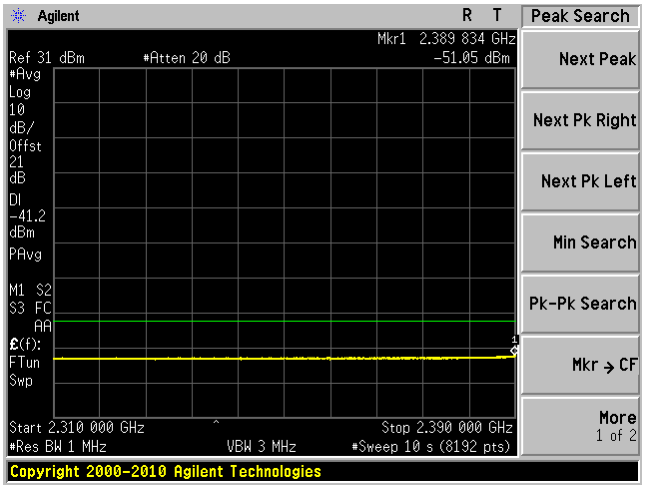
Chain J1, Plot: 30 MHz – 3 GHz



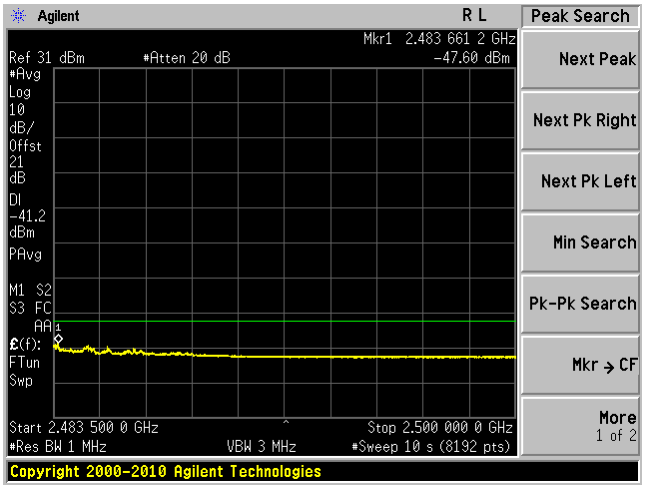
Chain J1, Plot: 3 GHz – 25 GHz



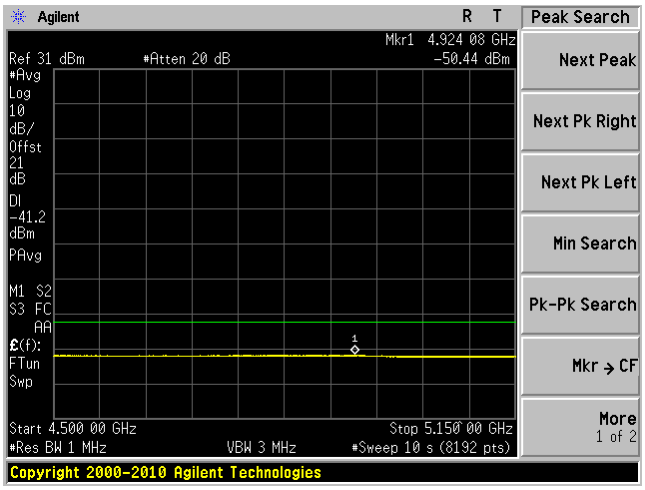
Chain J1, Plot: 2310 MHz – 2390 MHz



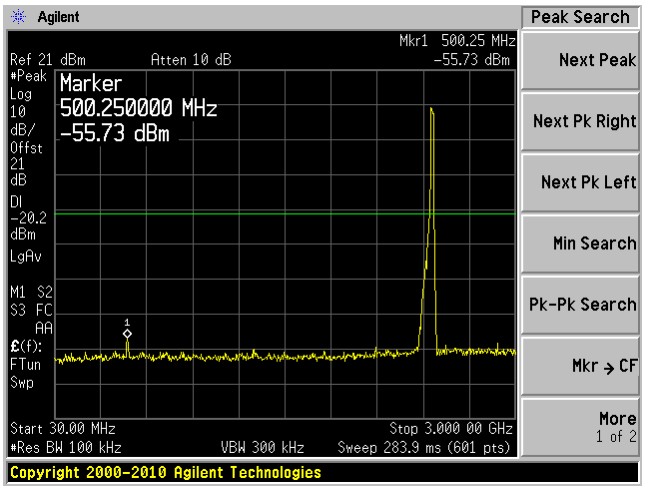
Chain J1, Plot: 2483.5MHz – 2500 MHz



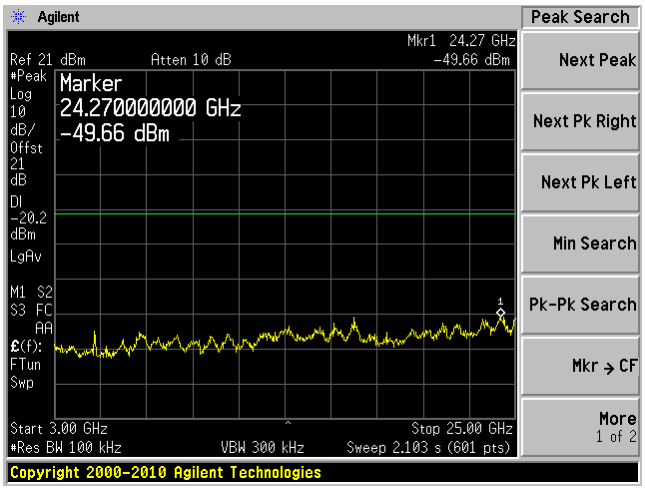
Chain J1, Plot: 4500 MHz – 5150 MHz



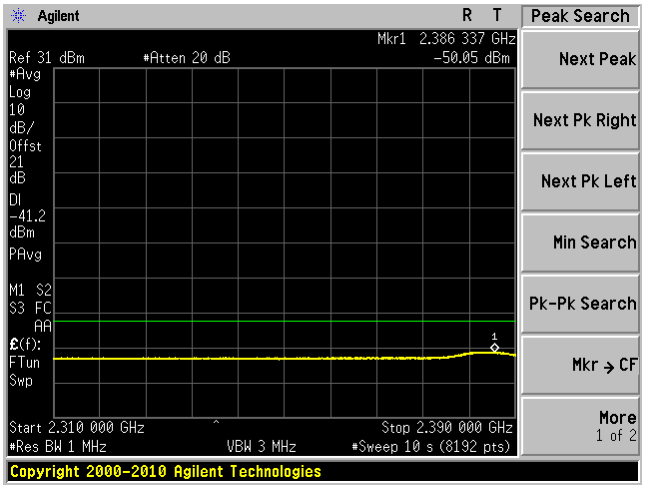
Chain J2, Plot: 30 MHz – 3 GHz



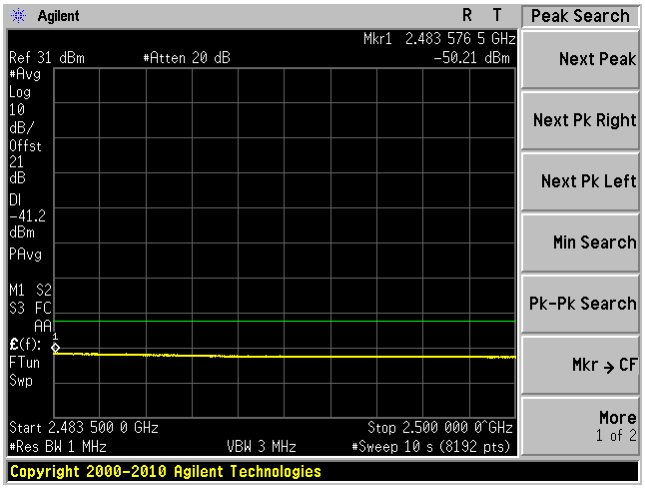
Chain J2, Plot: 3 GHz – 25 GHz



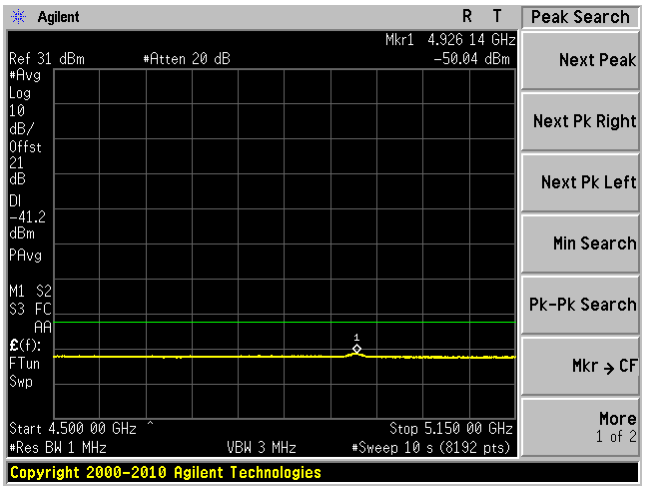
Chain J2, Plot: 2310 MHz – 2390 MHz



Chain J2, Plot: 2483.5MHz – 2500 MHz

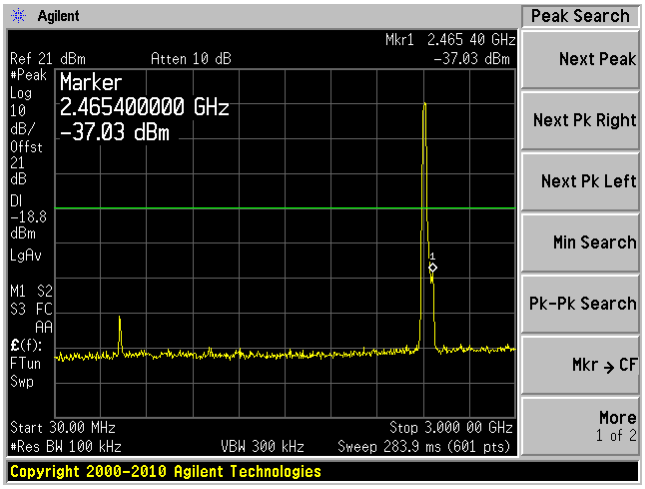


Chain J2, Plot: 4500 MHz – 5150 MHz

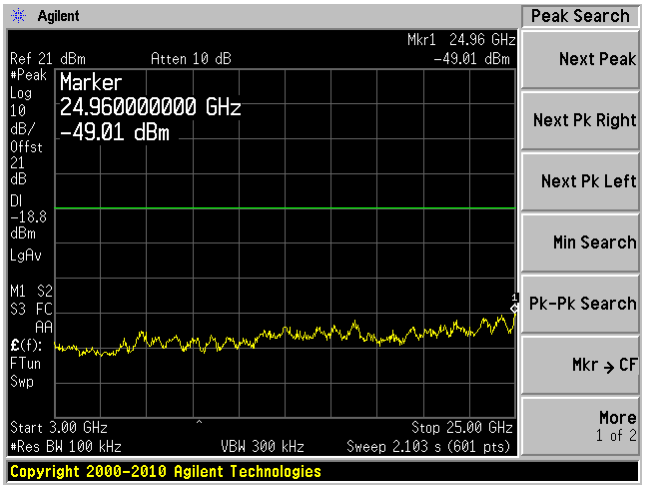


802.11n HT20, Low Channel 2412 MHz

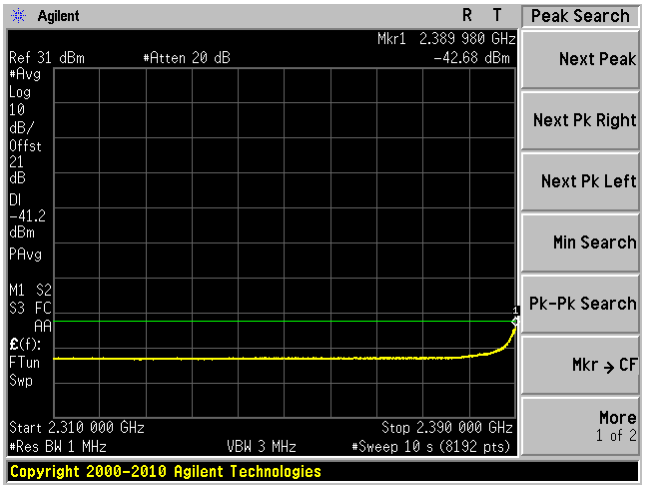
Chain J0, Plot: 30 MHz – 3 GHz



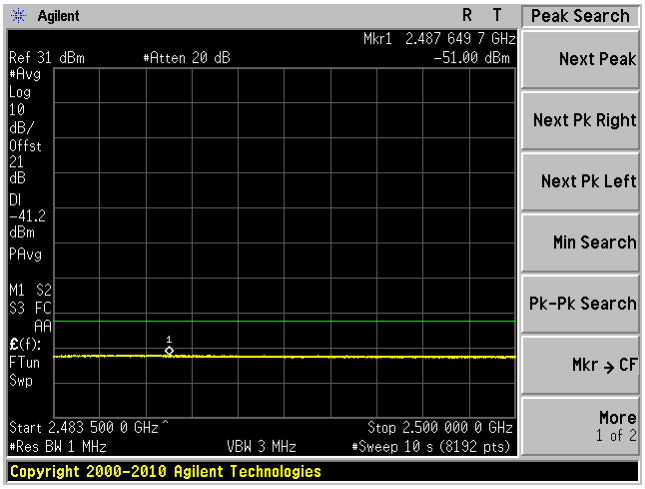
Chain J0, Plot: 3 GHz – 25 GHz



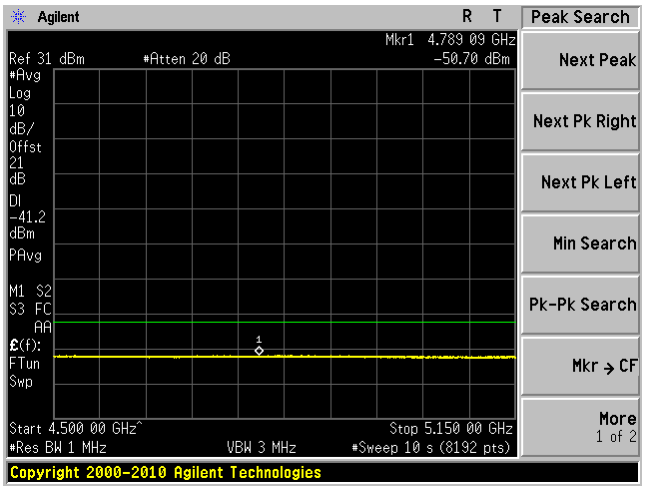
Chain J0, Plot: 2310 MHz – 2390 MHz



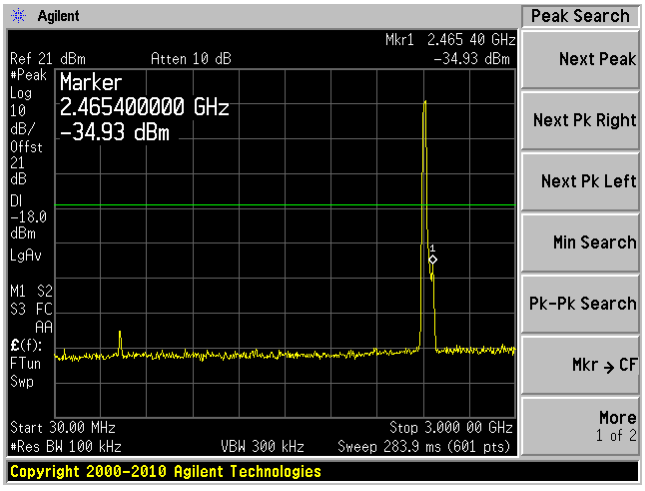
Chain J0, Plot: 2483.5MHz – 2500 MHz



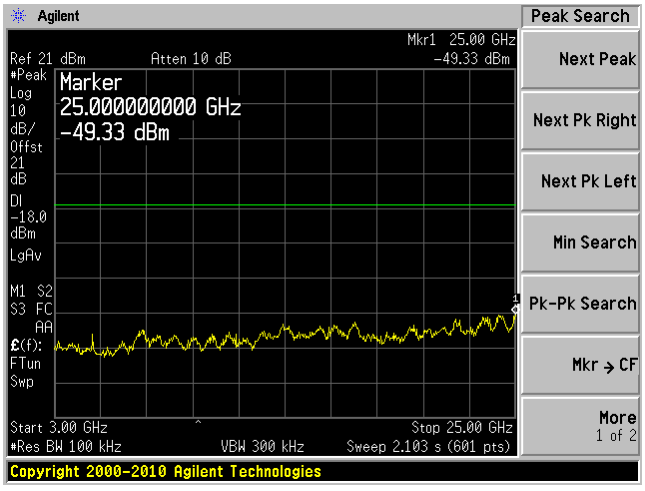
Chain J0, Plot: 4500 MHz – 5150 MHz



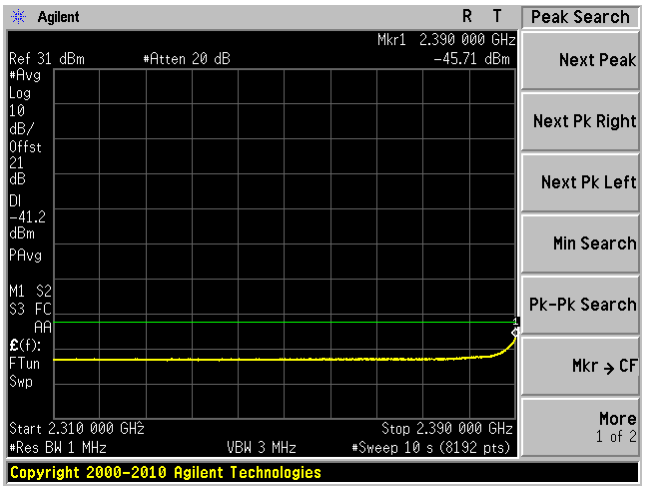
Chain J1, Plot: 30 MHz – 3 GHz



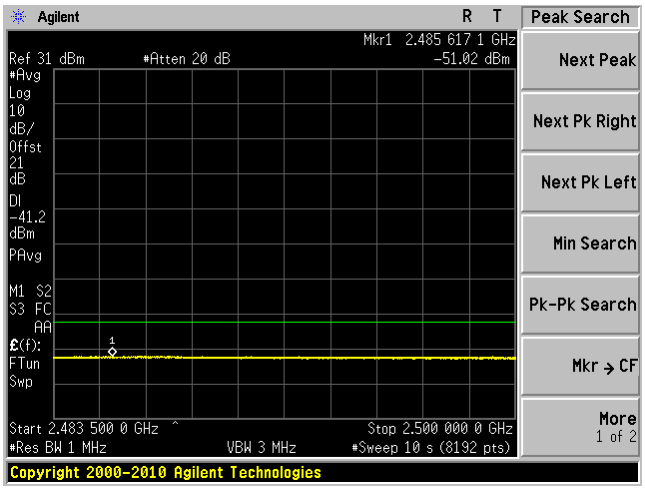
Chain J1, Plot: 3 GHz – 25 GHz



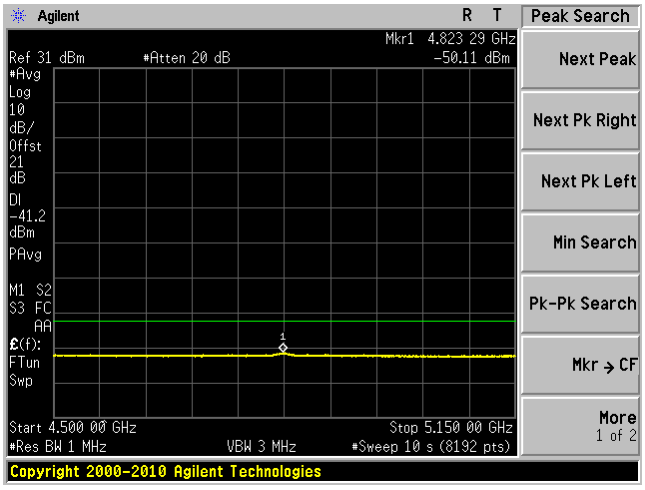
Chain J1, Plot: 2310 MHz – 2390 MHz



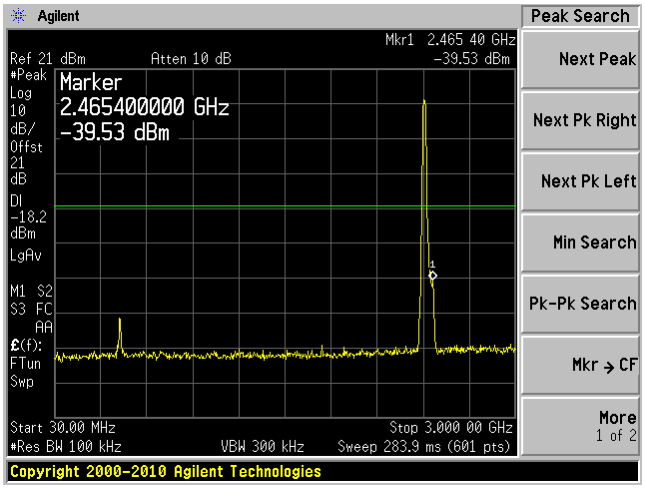
Chain J1, Plot: 2483.5MHz – 2500 MHz



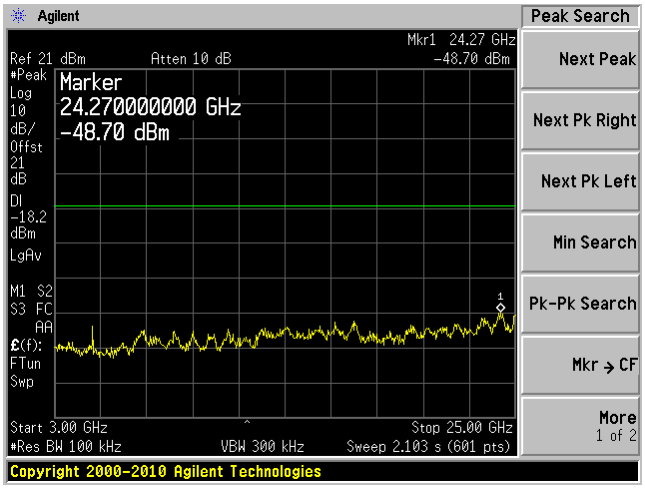
Chain J1, Plot: 4500 MHz – 5150 MHz



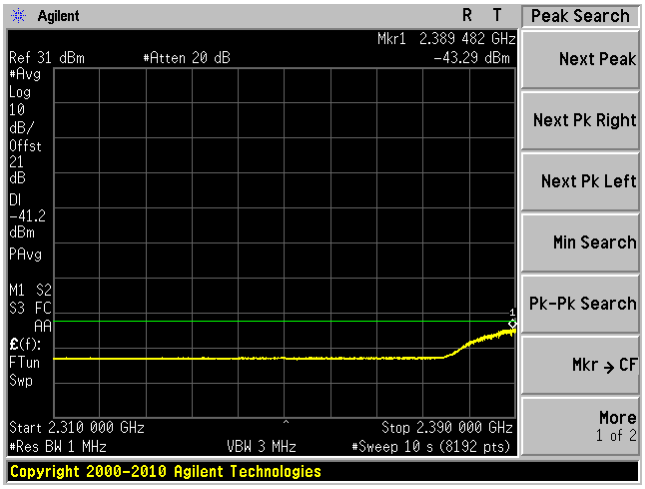
Chain J2, Plot: 30 MHz – 3 GHz



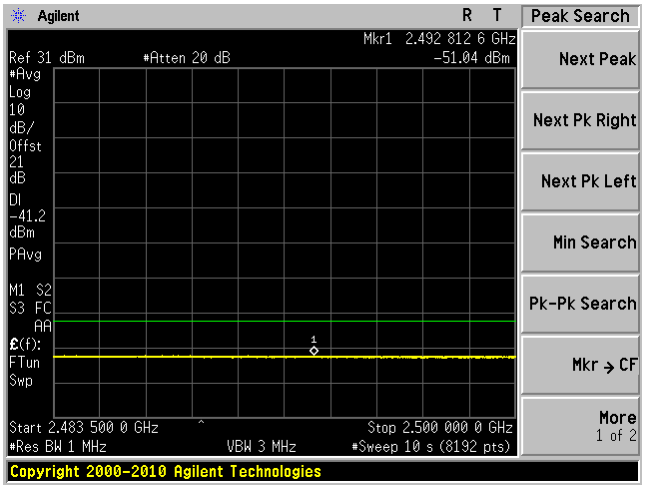
Chain J2, Plot: 3 GHz – 25 GHz



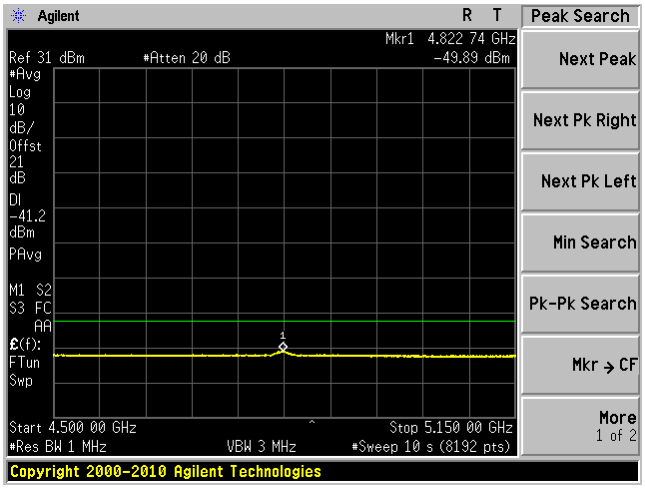
Chain J2, Plot: 2310 MHz – 2390 MHz



Chain J2, Plot: 2483.5MHz – 2500 MHz

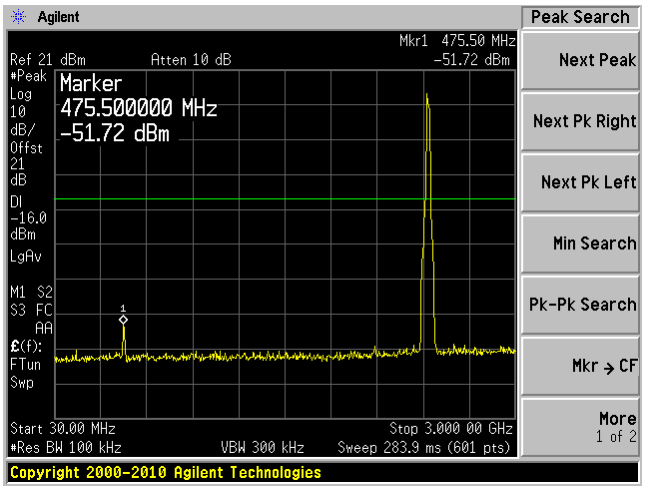


Chain J2, Plot: 4500 MHz – 5150 MHz

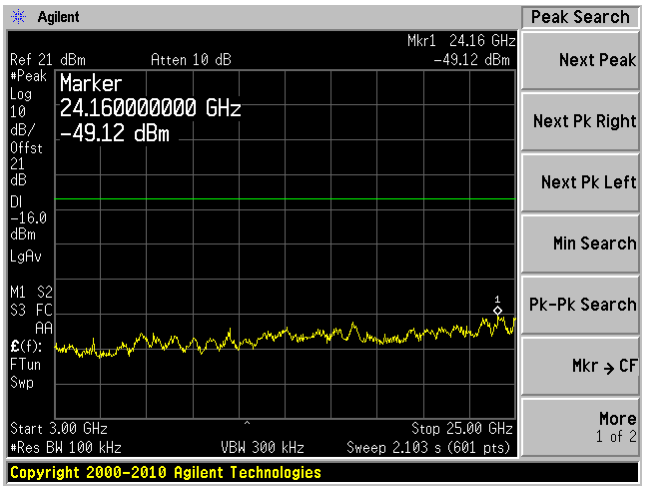


802.11n HT20, Middle Channel 2437 MHz

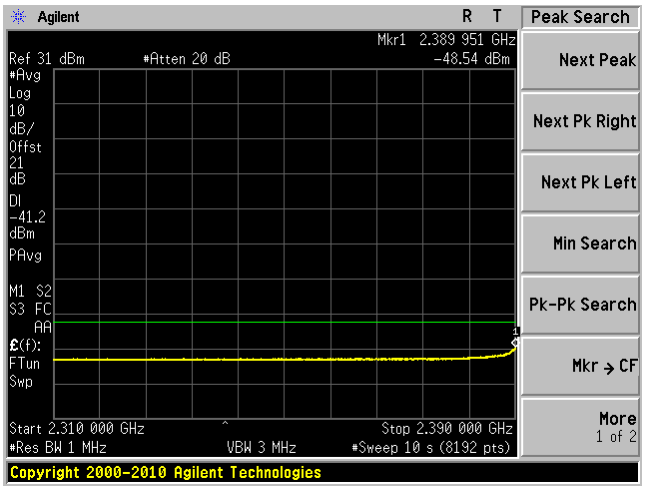
Chain J0, Plot: 30 MHz – 3 GHz



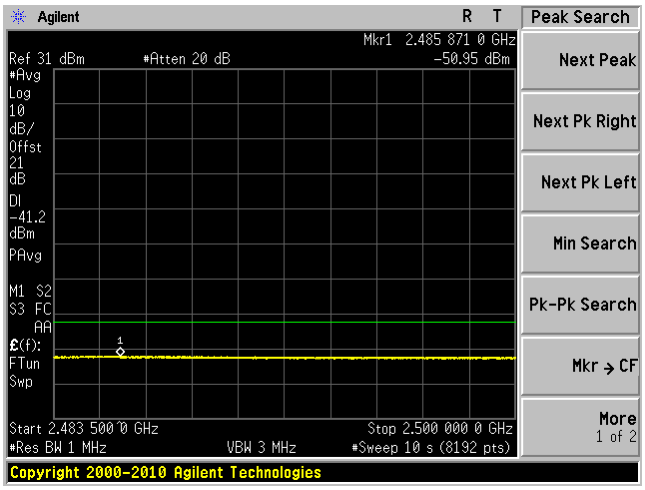
Chain J0, Plot: 3 GHz – 25 GHz



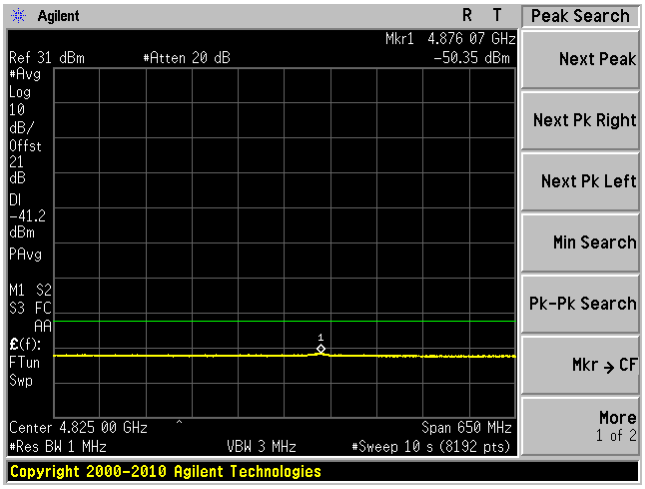
Chain J0, Plot: 2310 MHz – 2390 MHz



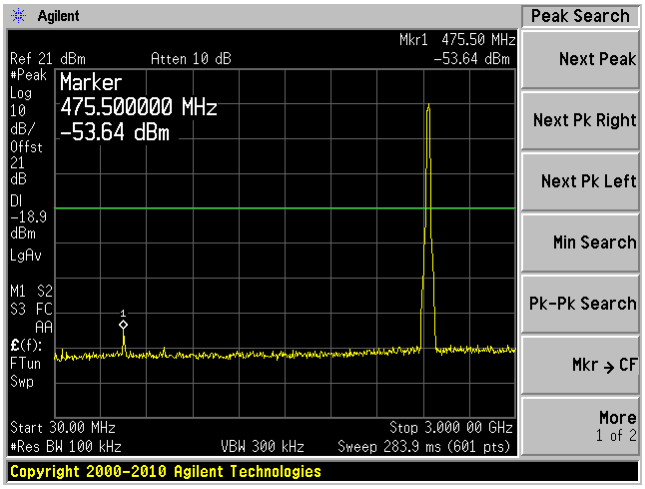
Chain J0, Plot: 2483.5MHz – 2500 MHz



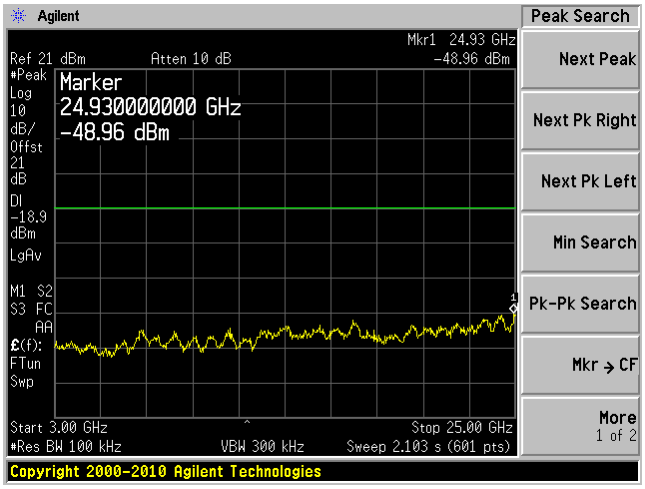
Chain J0, Plot: 4500 MHz – 5150 MHz



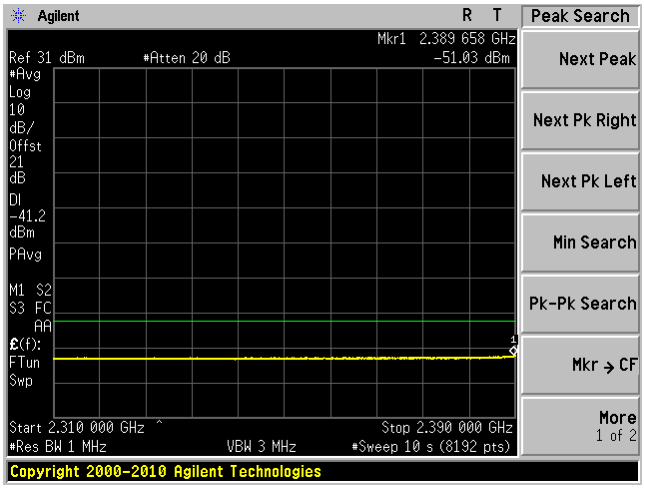
Chain J1, Plot: 30 MHz – 3 GHz



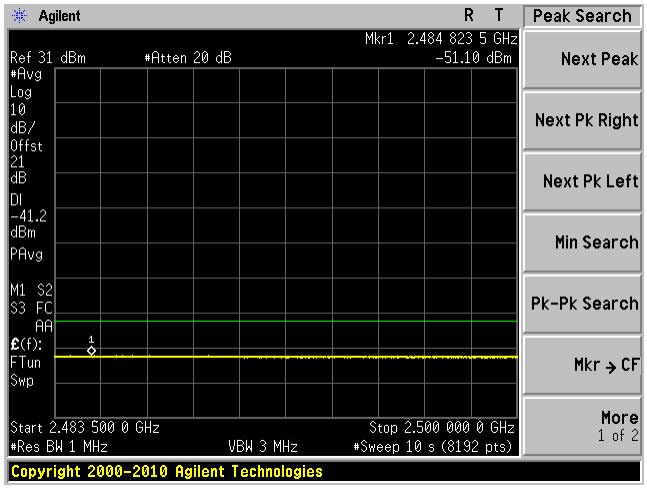
Chain J1, Plot: 3 GHz – 25 GHz



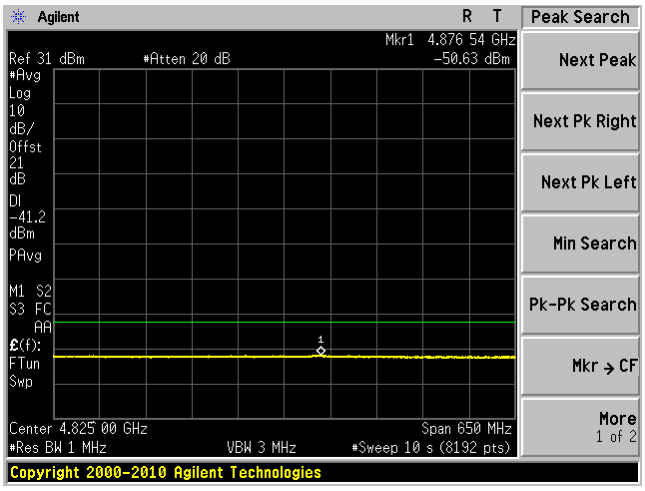
Chain J1, Plot: 2310 MHz – 2390 MHz



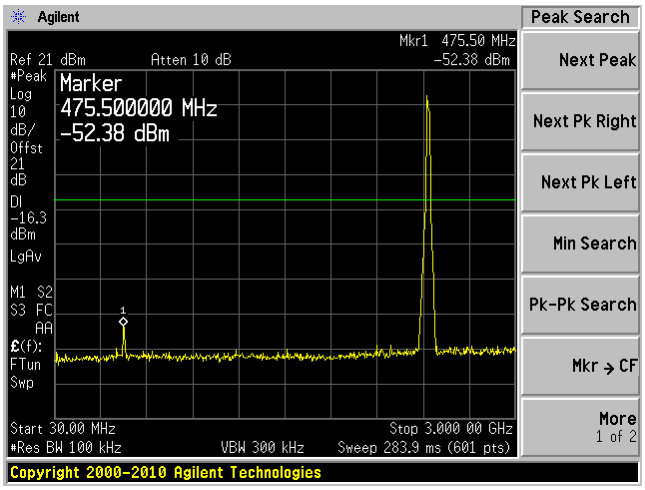
Chain J1, Plot: 2483.5MHz – 2500 MHz



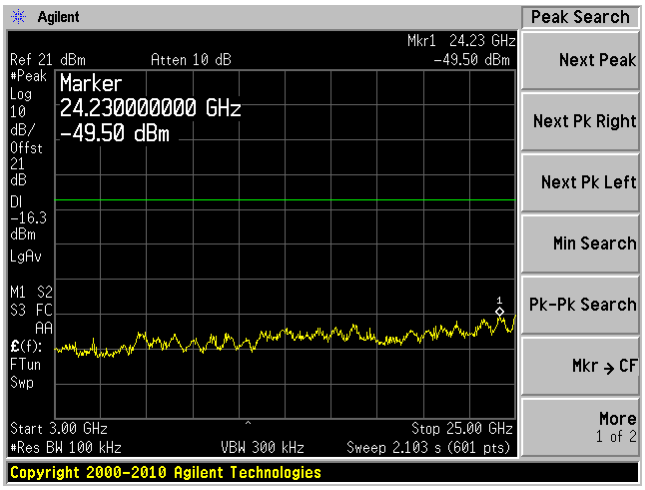
Chain J1, Plot: 4500 MHz – 5150 MHz



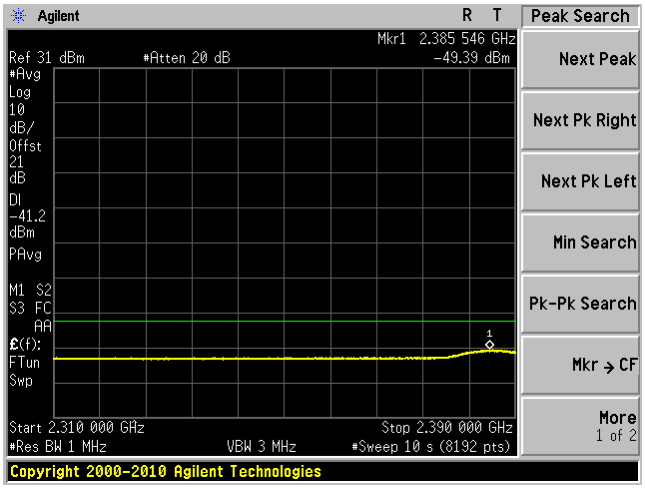
Chain J2, Plot: 30 MHz – 3 GHz



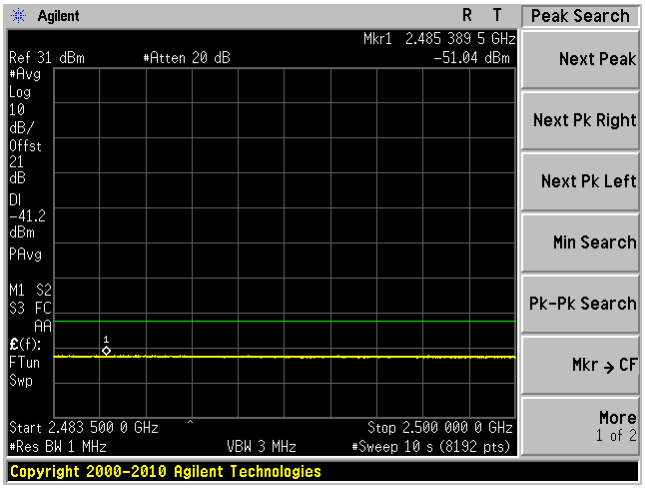
Chain J2, Plot: 3 GHz – 25 GHz



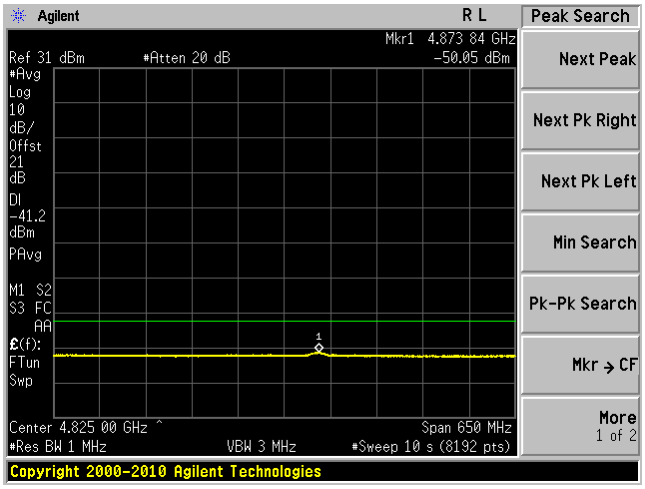
Chain J2, Plot: 2310 MHz – 2390 MHz



Chain J2, Plot: 2483.5MHz – 2500 MHz

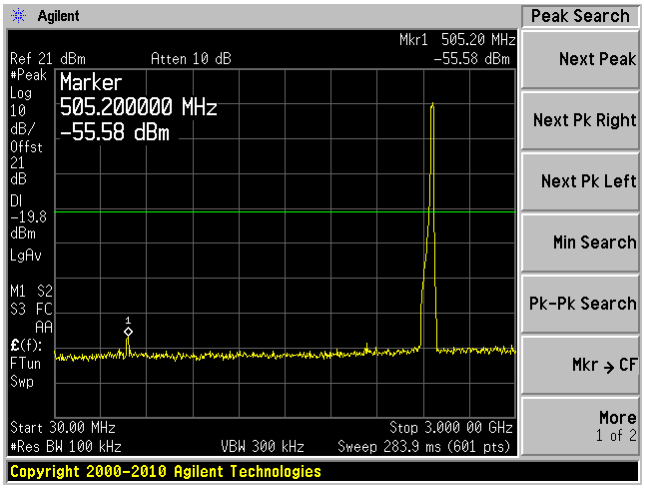


Chain J2, Plot: 4500 MHz – 5150 MHz

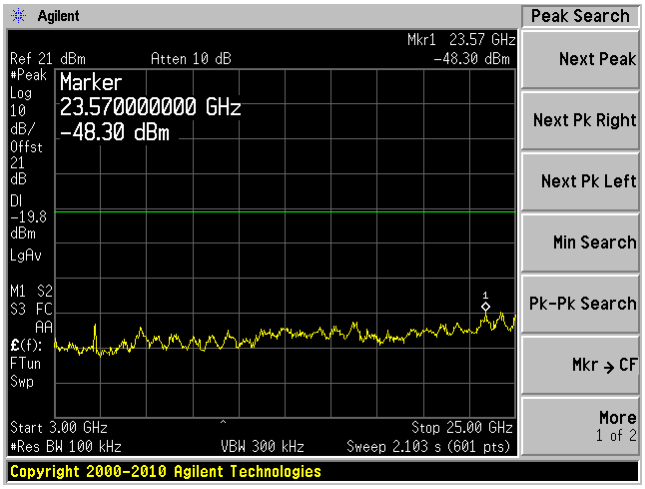


802.11n HT20, High Channel 2462 MHz

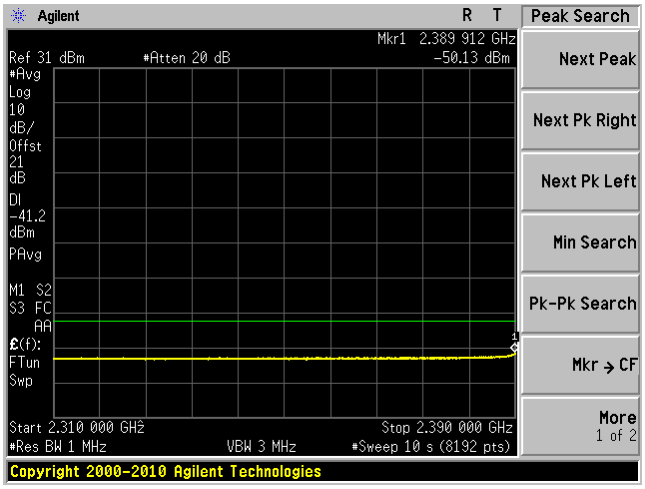
Chain J0, Plot: 30 MHz – 3 GHz



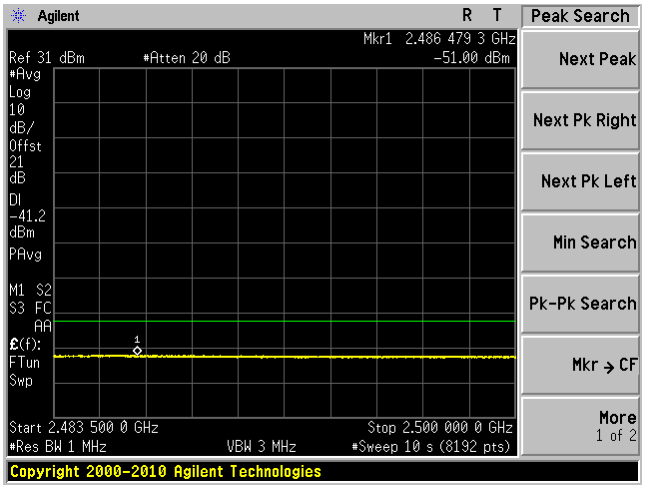
Chain J0, Plot: 3 GHz – 25 GHz



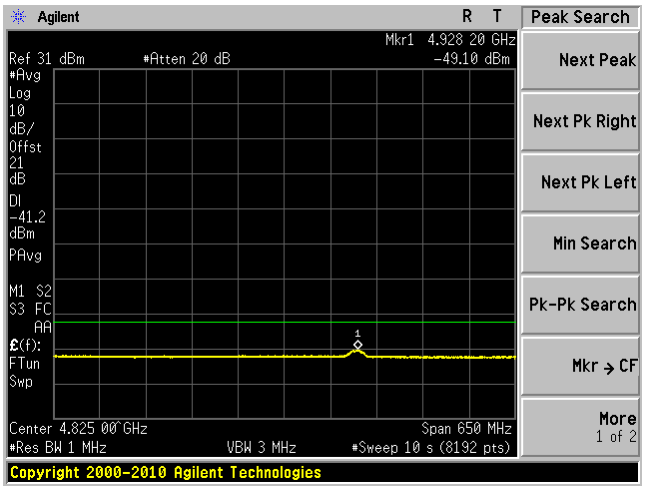
Chain J0, Plot: 2310 MHz – 2390 MHz



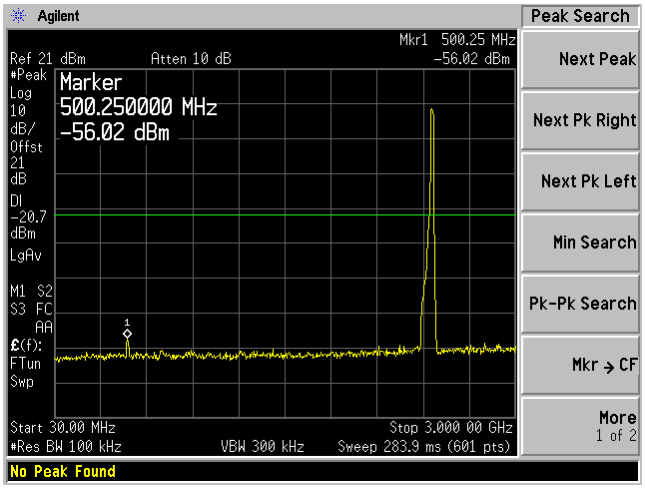
Chain J0, Plot: 2483.5MHz – 2500 MHz



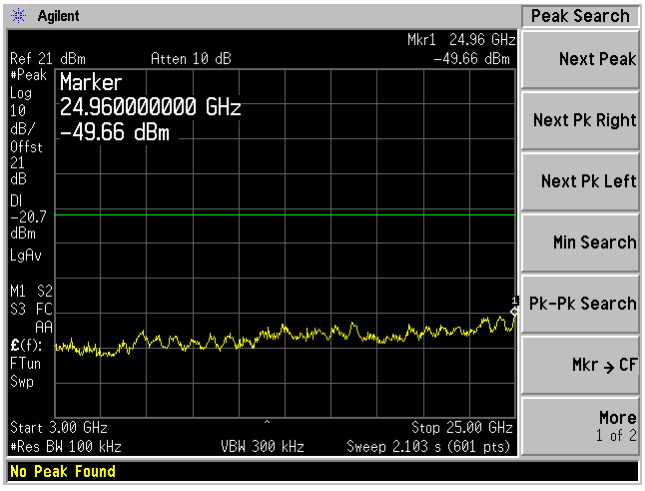
Chain J0, Plot: 4500 MHz – 5150 MHz



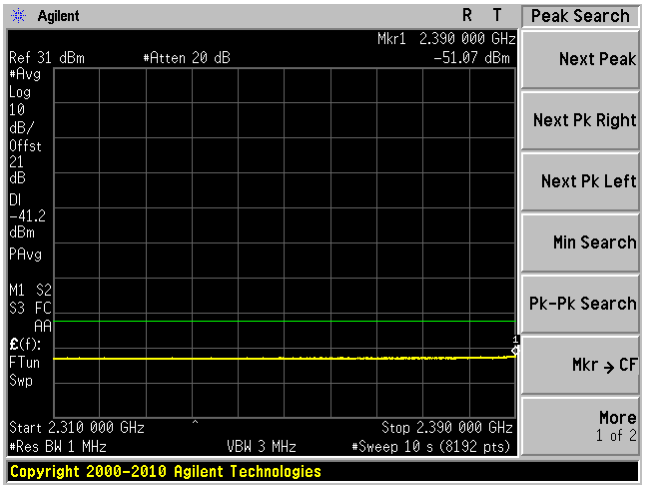
Chain J1, Plot: 30 MHz – 3 GHz



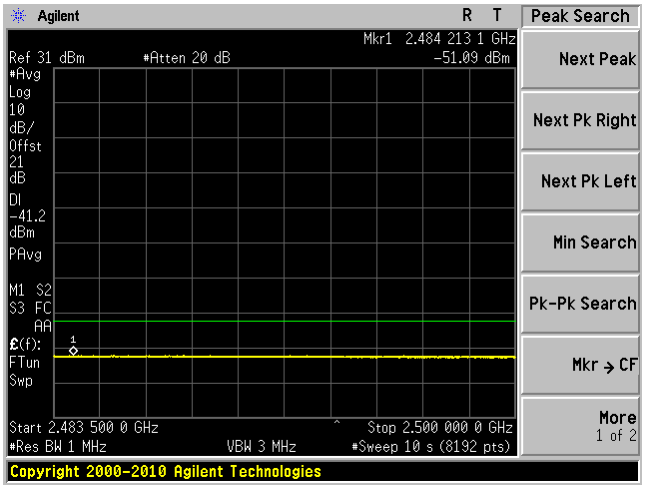
Chain J1, Plot: 3 GHz – 25 GHz



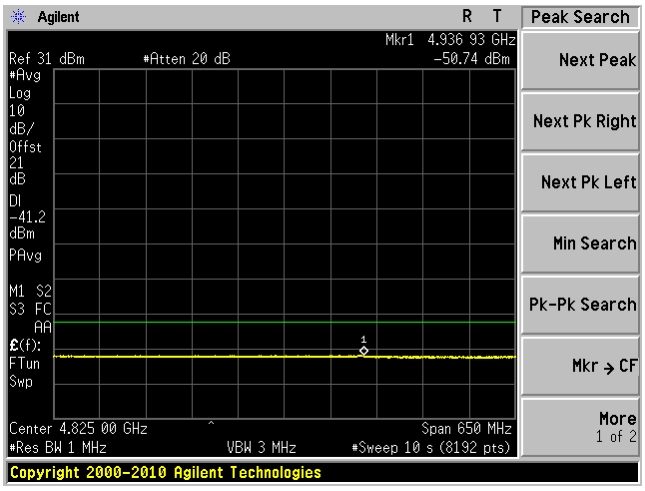
Chain J1, Plot: 2310 MHz – 2390 MHz



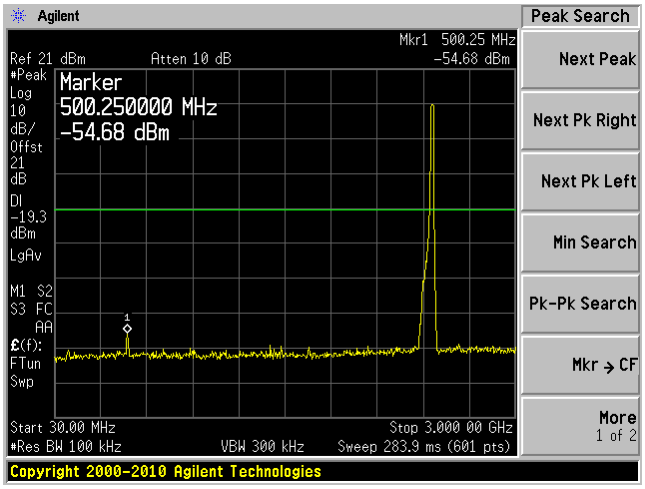
Chain J1, Plot: 2483.5MHz – 2500 MHz



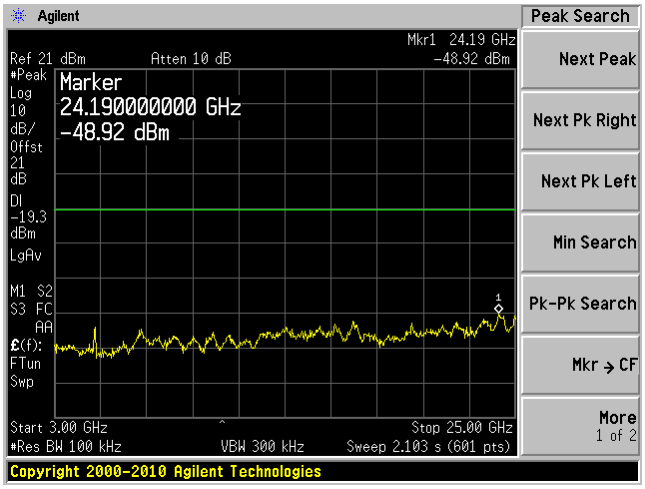
Chain J1, Plot: 4500 MHz – 5150 MHz



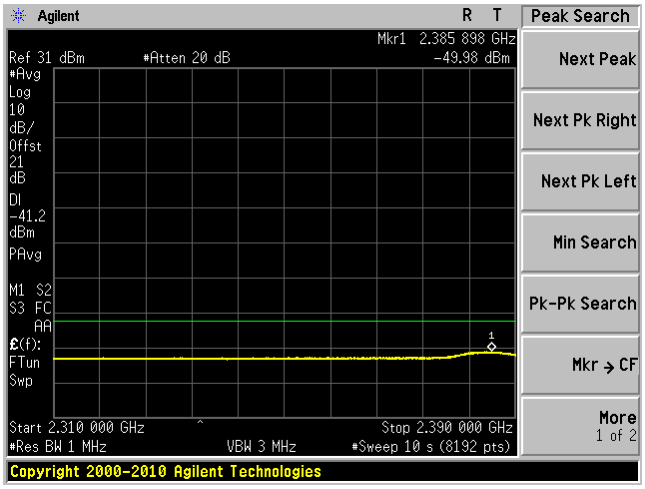
Chain J2, Plot: 30 MHz – 3 GHz



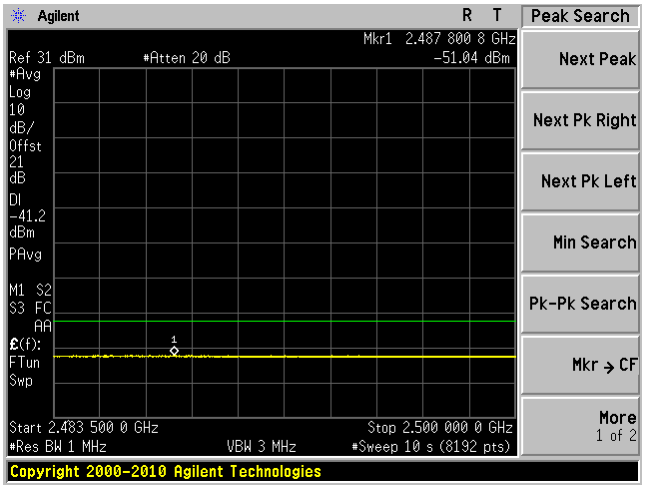
Chain J2, Plot: 3 GHz – 25 GHz



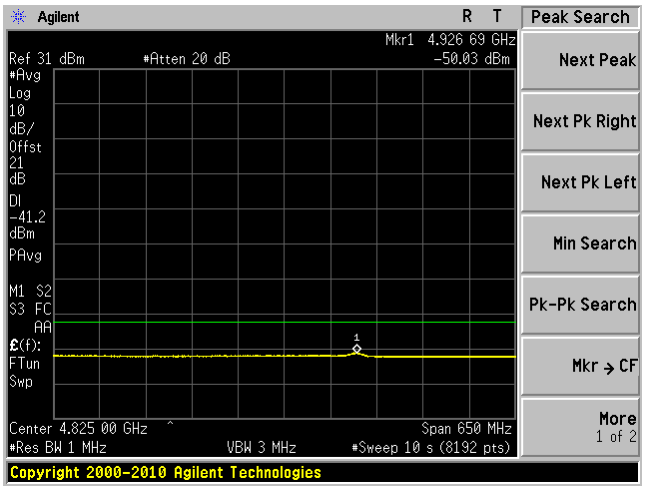
Chain J2, Plot: 2310 MHz – 2390 MHz



Chain J2, Plot: 2483.5MHz – 2500 MHz

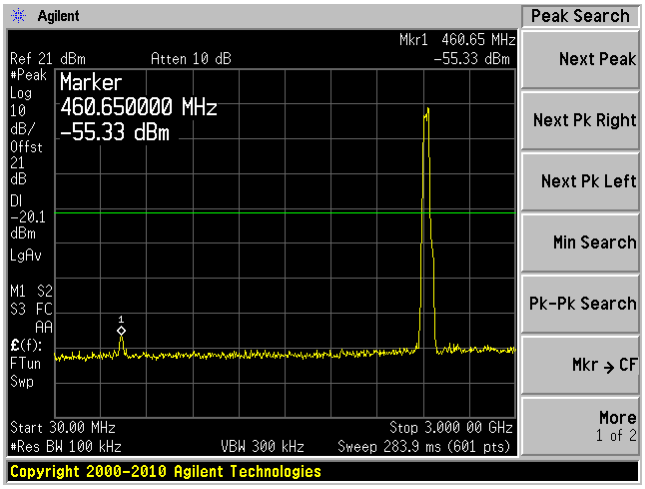


Chain J2, Plot: 4500 MHz – 5150 MHz

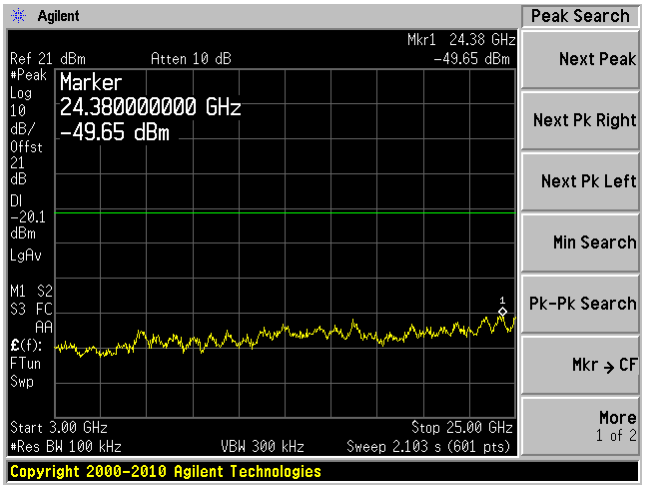


802.11n HT40, Low Channel 2422 MHz

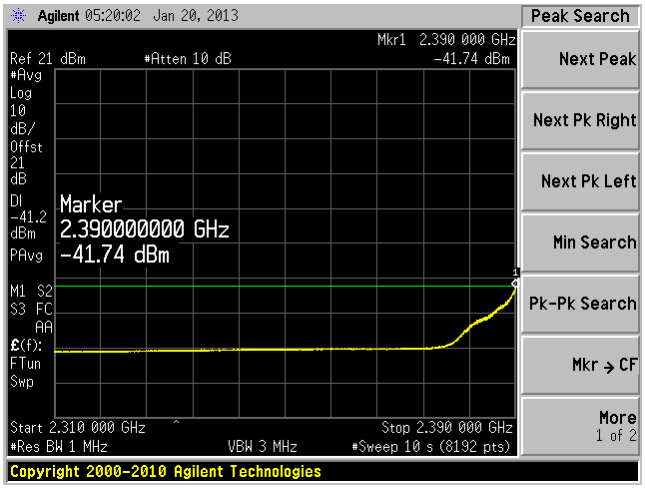
Chain J0, Plot: 30 MHz – 3 GHz



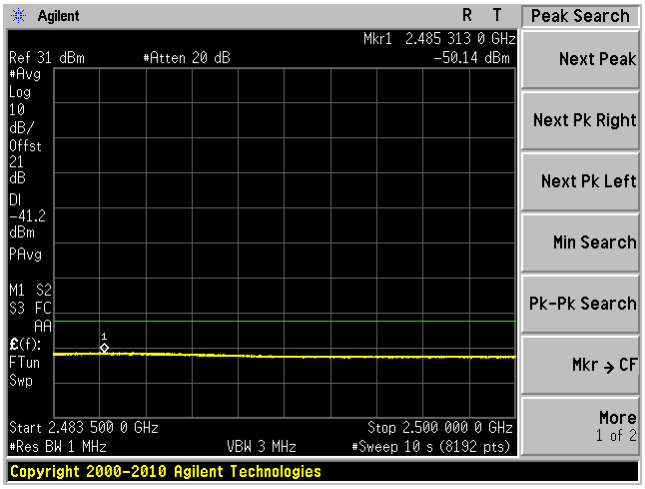
Chain J0, Plot: 3 GHz – 25 GHz



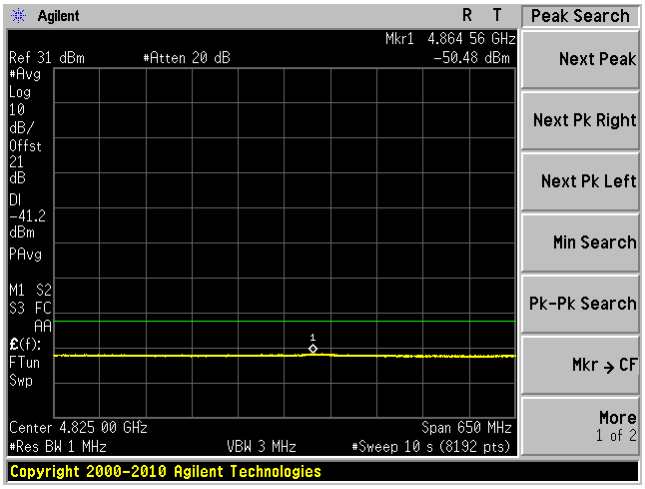
Chain J0, Plot: 2310 MHz – 2390 MHz



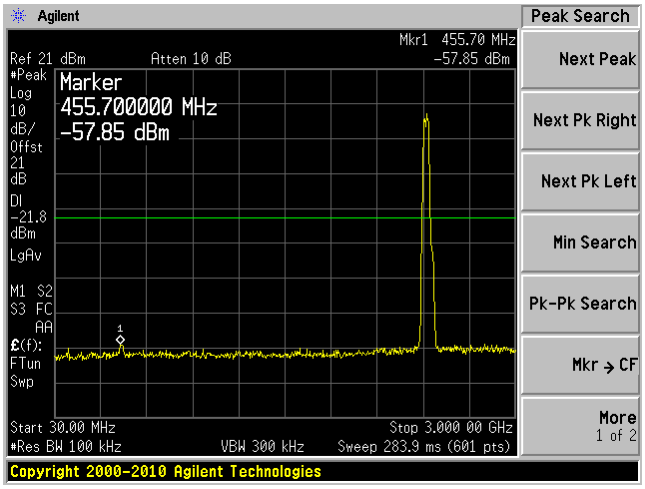
Chain J0, Plot: 2483.5MHz – 2500 MHz



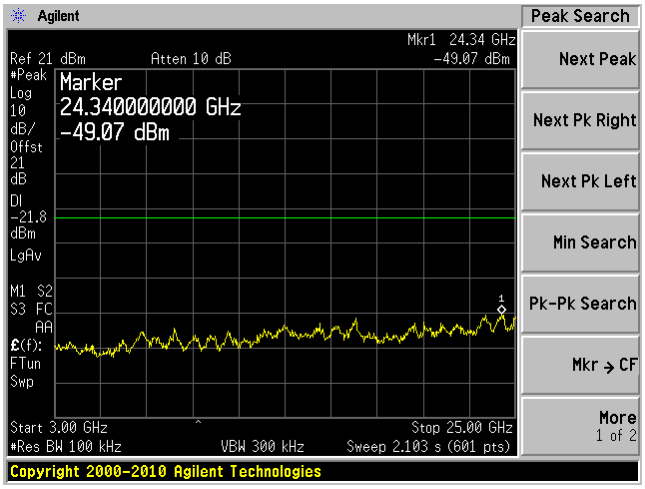
Chain J0, Plot: 4500 MHz – 5150 MHz



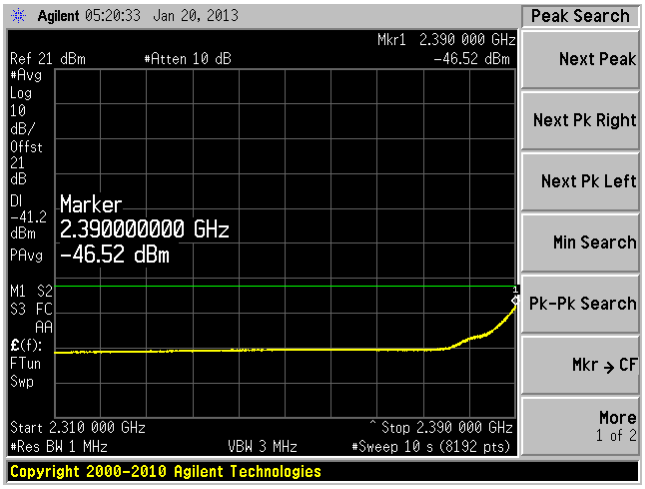
Chain J1, Plot: 30 MHz – 3 GHz



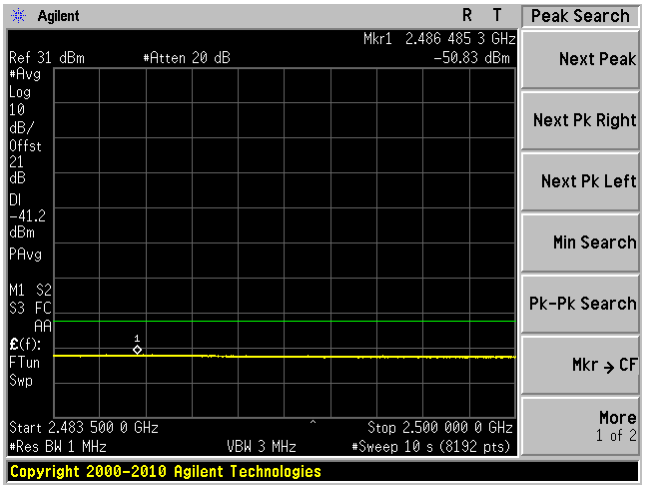
Chain J1, Plot: 3 GHz – 25 GHz



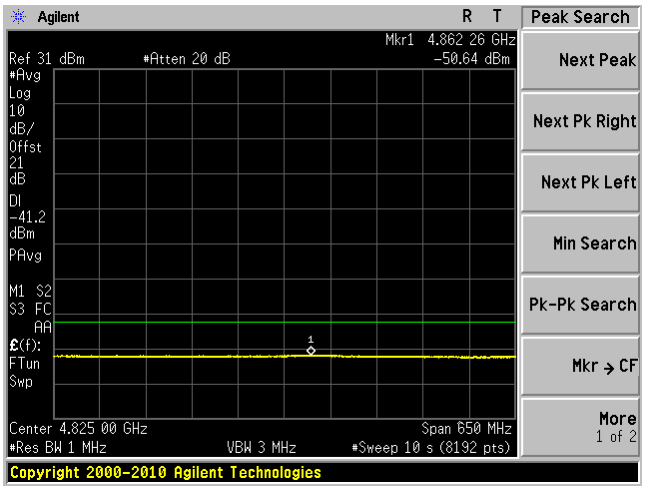
Chain J1, Plot: 2310 MHz – 2390 MHz



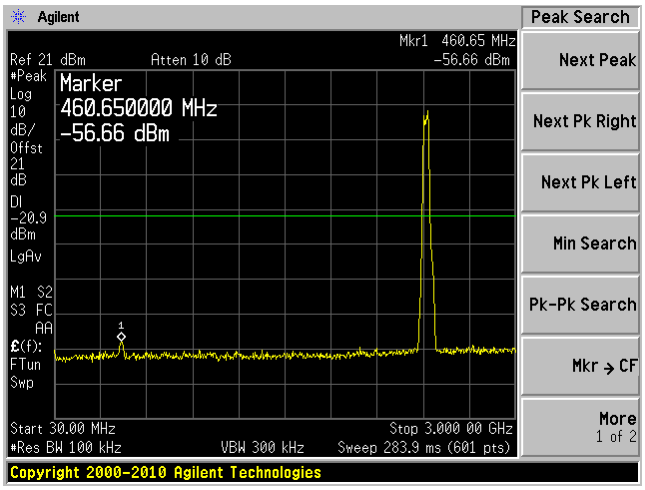
Chain J1, Plot: 2483.5MHz – 2500 MHz



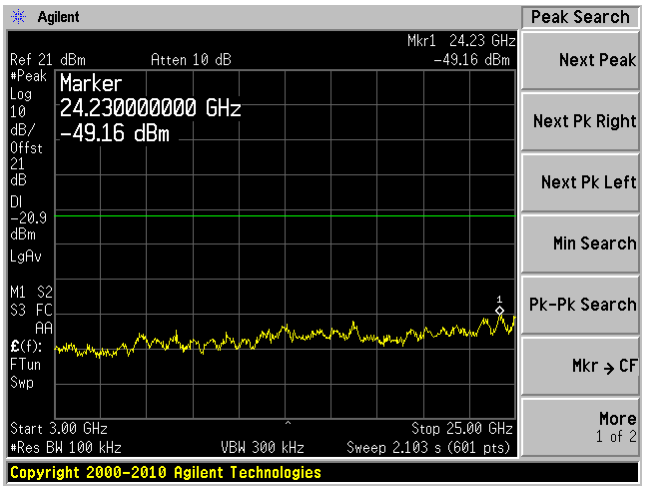
Chain J1, Plot: 4500 MHz – 5150 MHz



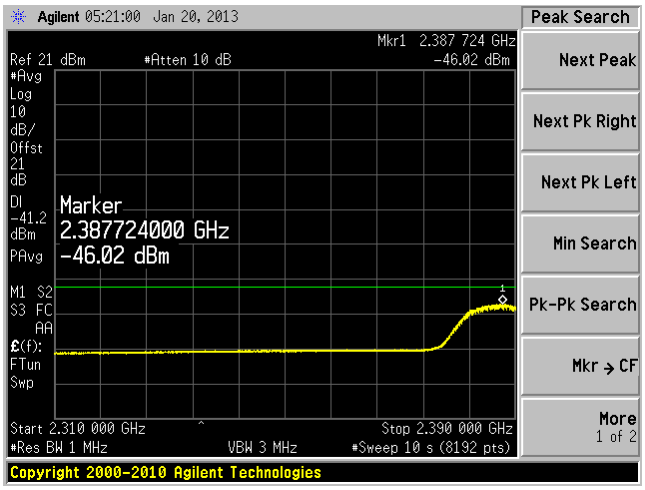
Chain J2, Plot: 30 MHz – 3 GHz



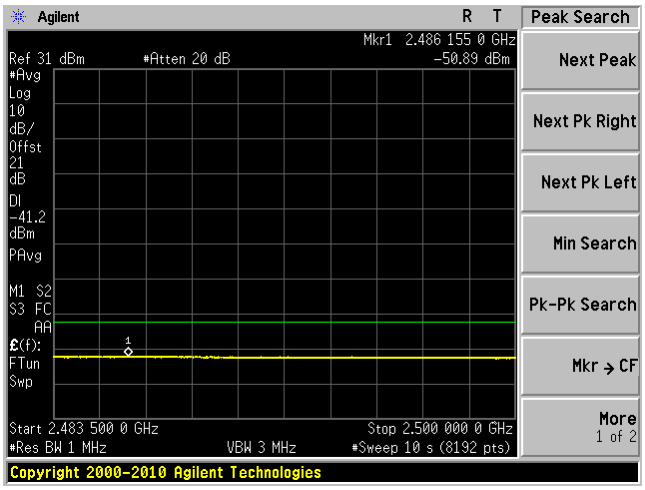
Chain J2, Plot: 3 GHz – 25 GHz



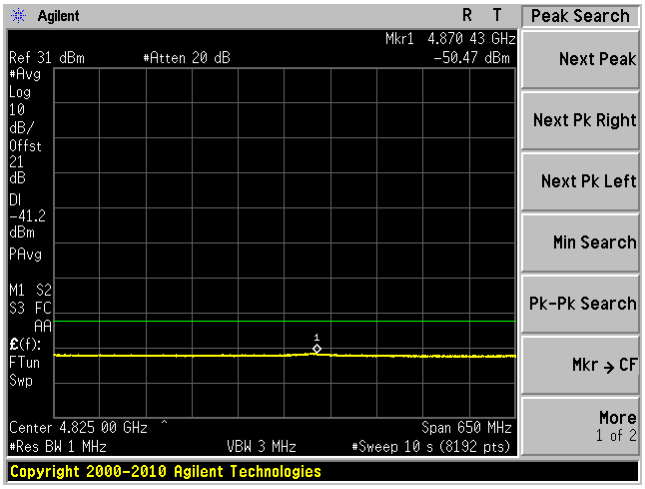
Chain J2, Plot: 2310 MHz – 2390 MHz



Chain J2, Plot: 2483.5MHz – 2500 MHz

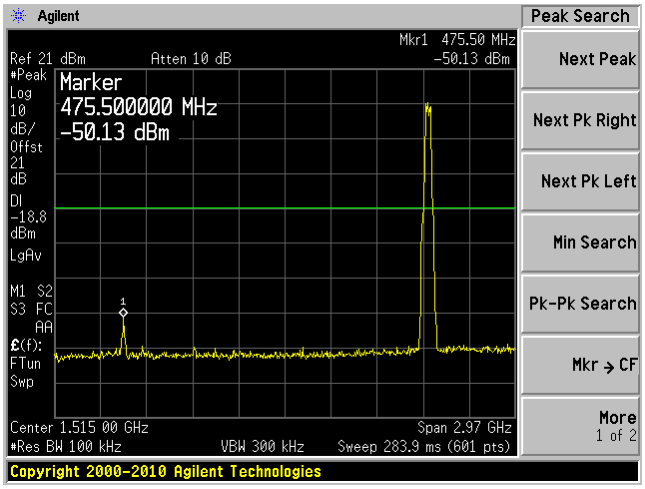


Chain J2, Plot: 4500 MHz – 5150 MHz

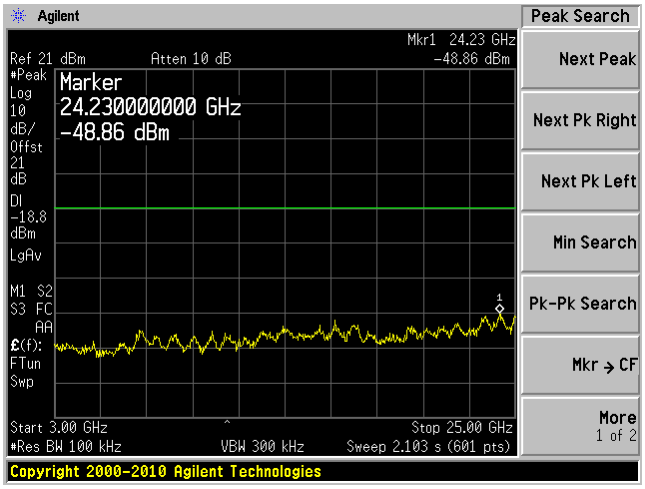


802.11n HT40, Middle Channel 2437 MHz

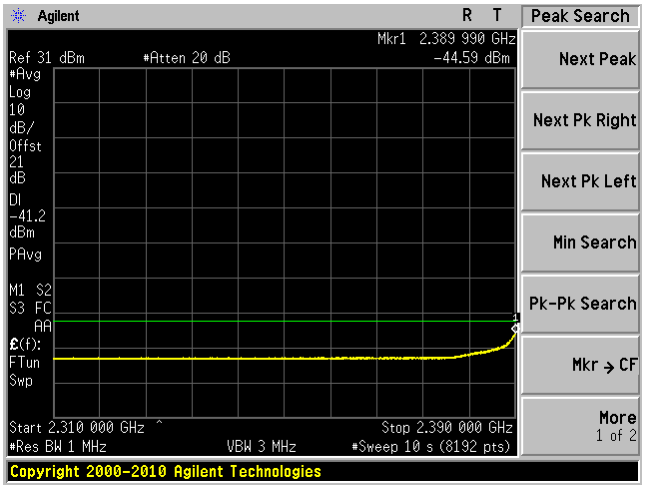
Chain J0, Plot: 30 MHz – 3 GHz



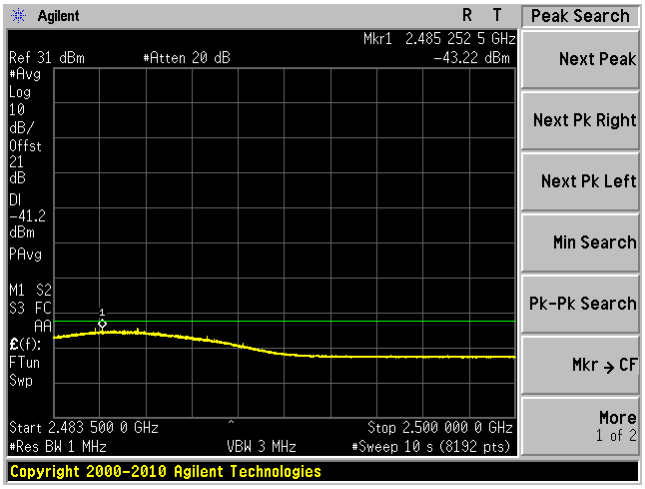
Chain J0, Plot: 3 GHz – 25 GHz



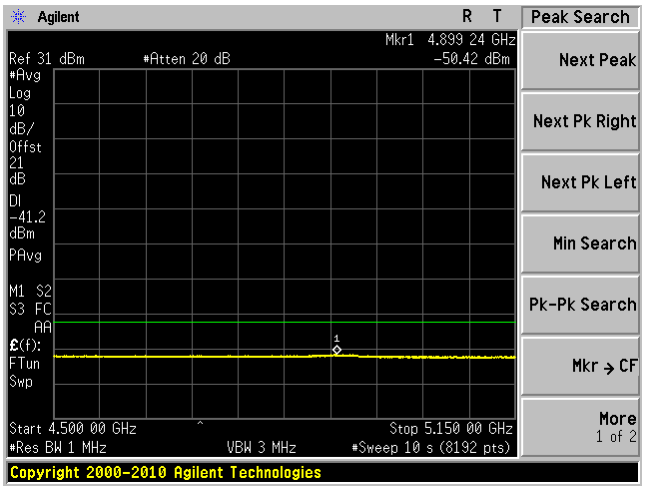
Chain J0, Plot: 2310 MHz – 2390 MHz



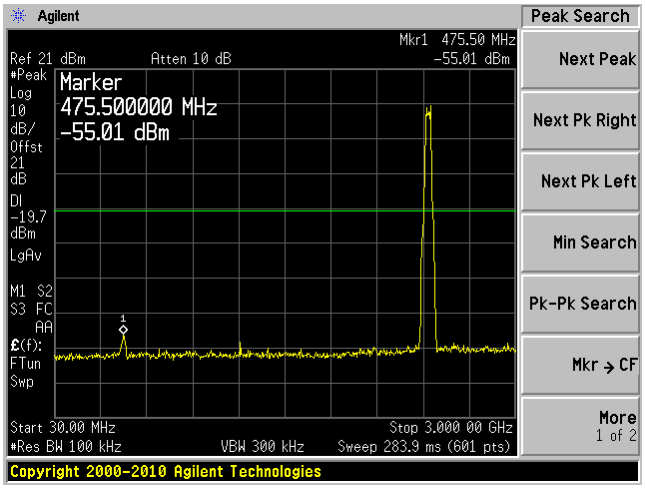
Chain J0, Plot: 2483.5MHz – 2500 MHz



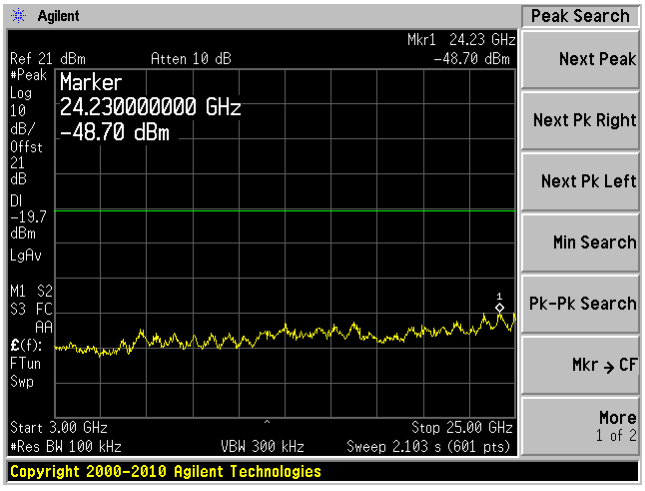
Chain J0, Plot: 4500 MHz – 5150 MHz



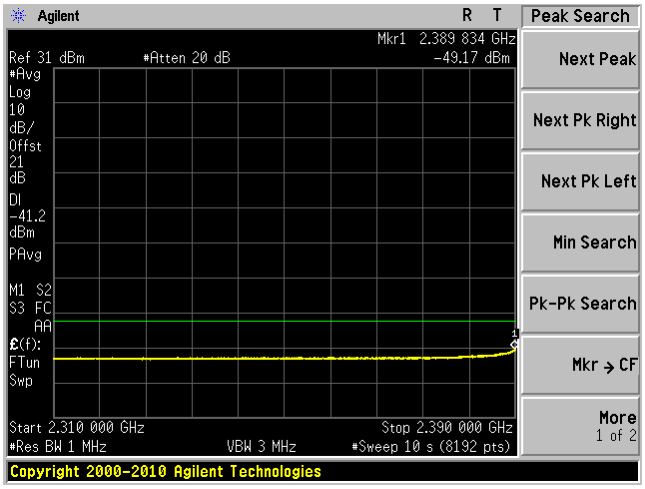
Chain J1, Plot: 30 MHz – 3 GHz



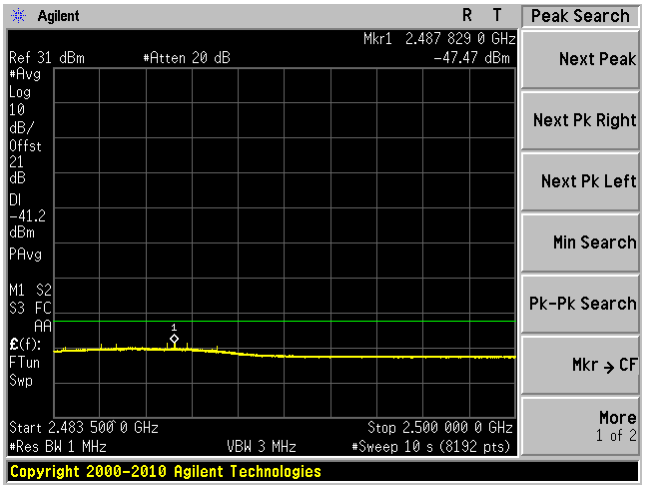
Chain J1, Plot: 3 GHz – 25 GHz



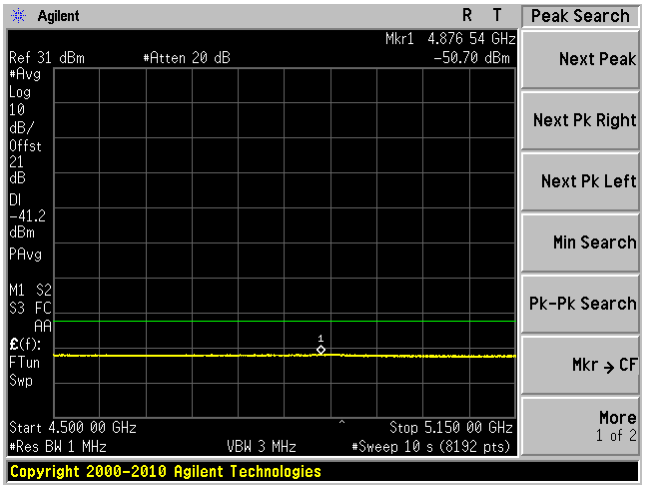
Chain J1, Plot: 2310 MHz – 2390 MHz



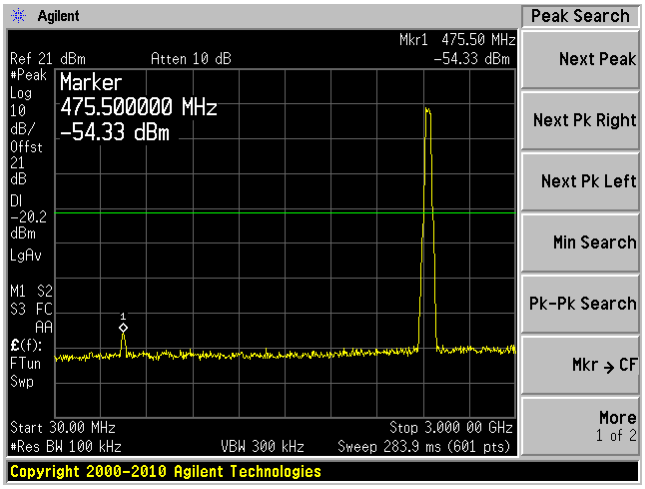
Chain J1, Plot: 2483.5MHz – 2500 MHz



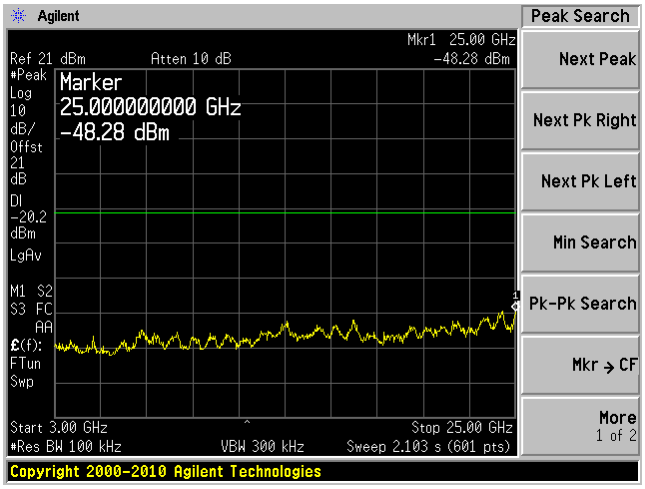
Chain J1, Plot: 4500 MHz – 5150 MHz



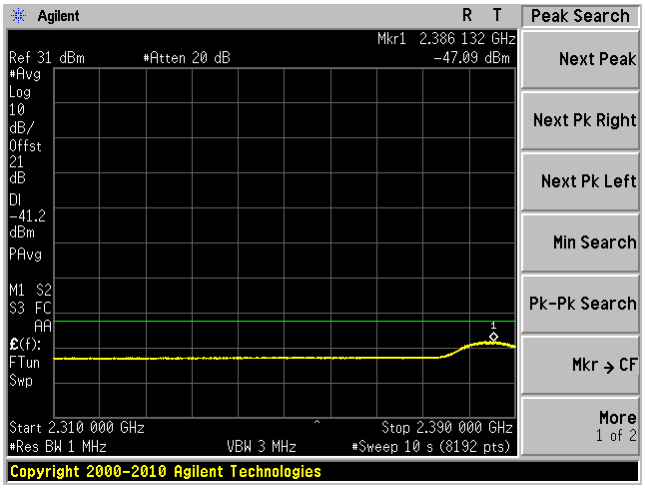
Chain J2, Plot: 30 MHz – 3 GHz



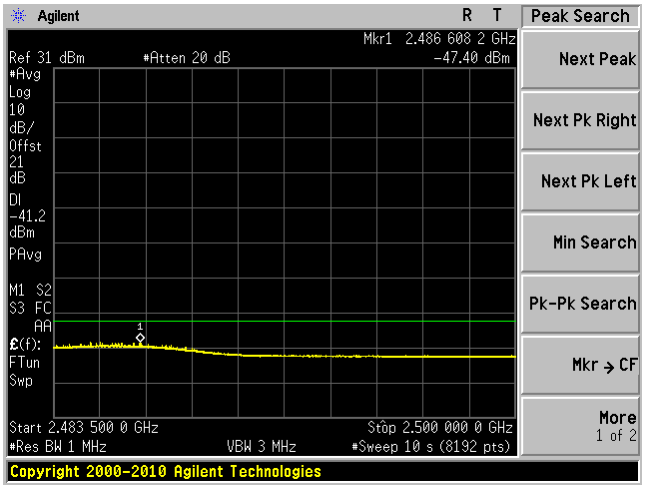
Chain J2, Plot: 3 GHz – 25 GHz



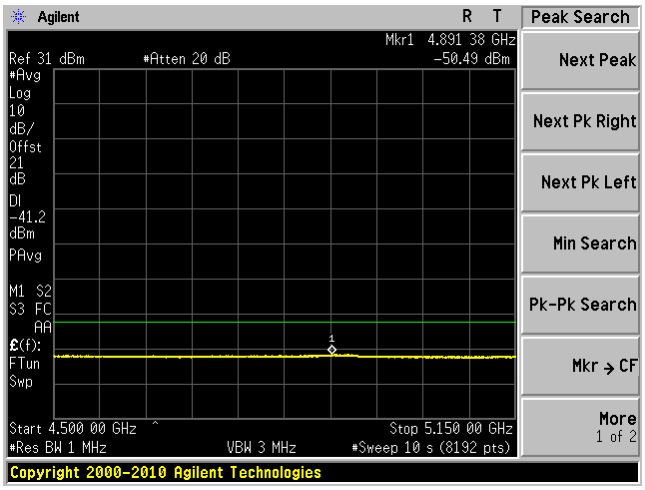
Chain J2, Plot: 2310 MHz – 2390 MHz



Chain J2, Plot: 2483.5MHz – 2500 MHz

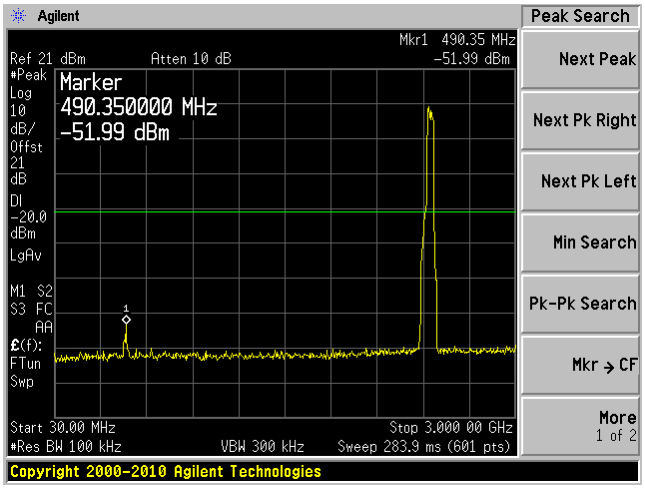


Chain J2, Plot: 4500 MHz – 5150 MHz

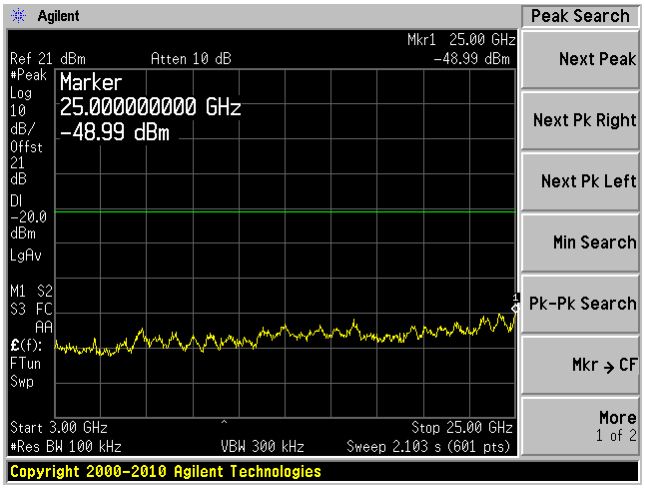


802.11n HT40, High Channel 2452 MHz

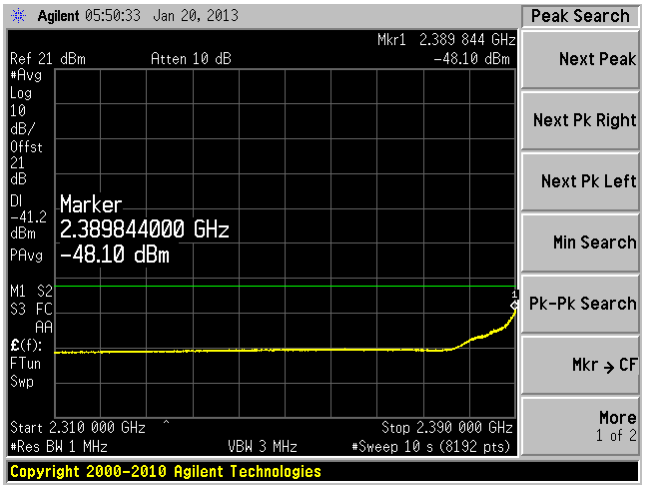
Chain J0, Plot: 30 MHz – 3 GHz



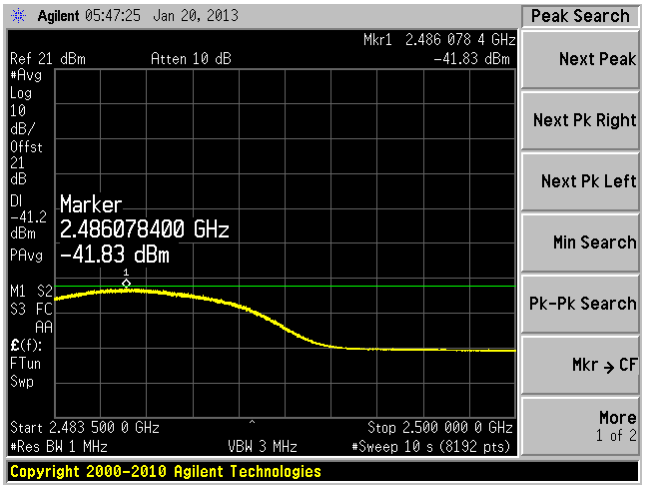
Chain J0, Plot: 3 GHz – 25 GHz



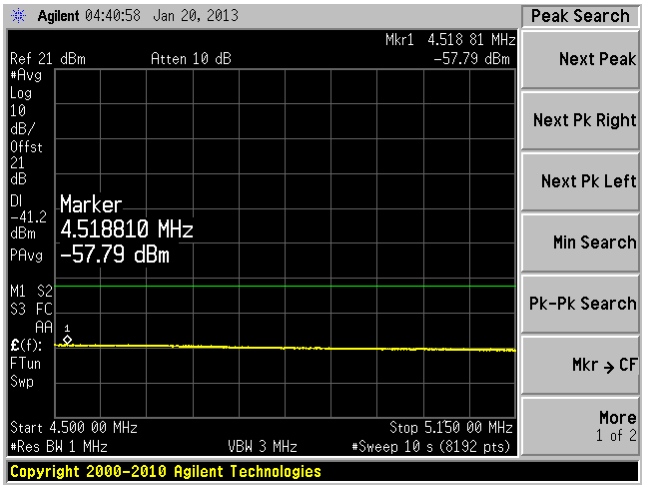
Chain J0, Plot: 2310 MHz – 2390 MHz



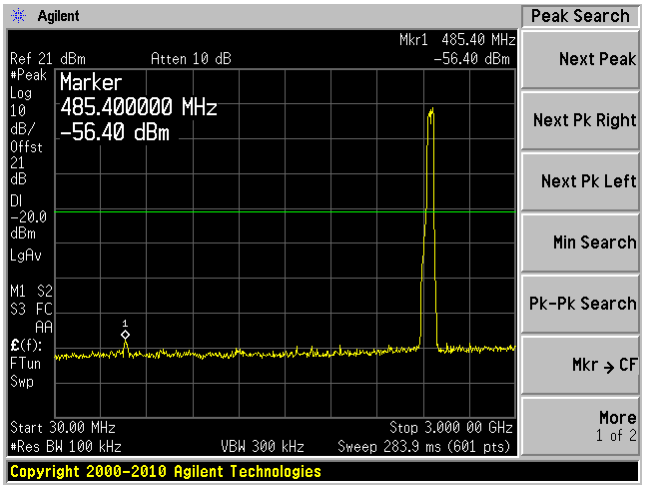
Chain J0, Plot: 2483.5MHz – 2500 MHz



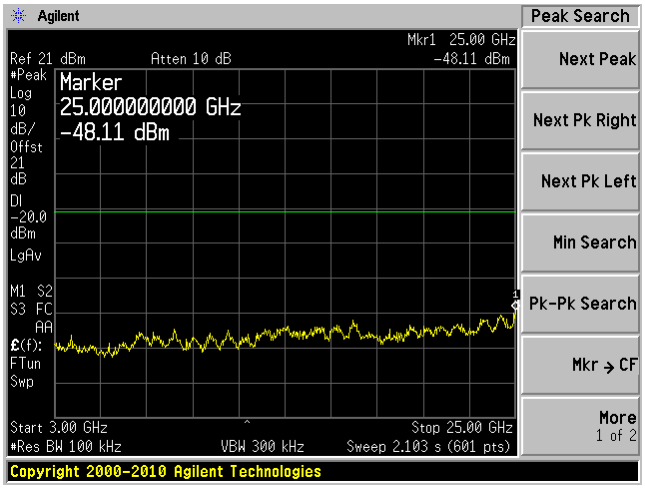
Chain J0, Plot: 4500 MHz – 5150 MHz



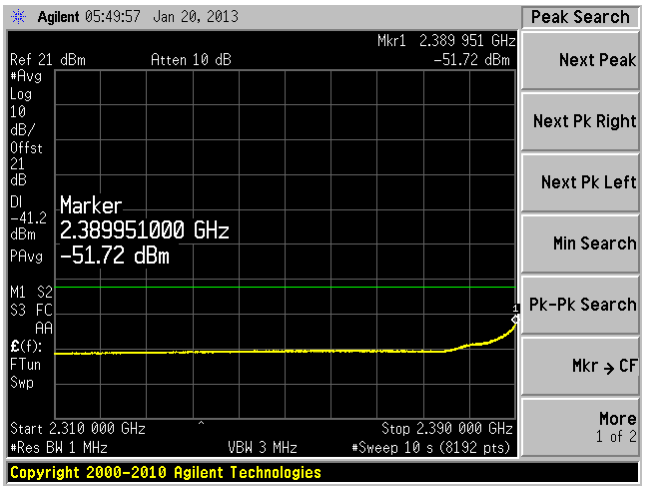
Chain J1, Plot: 30 MHz – 3 GHz



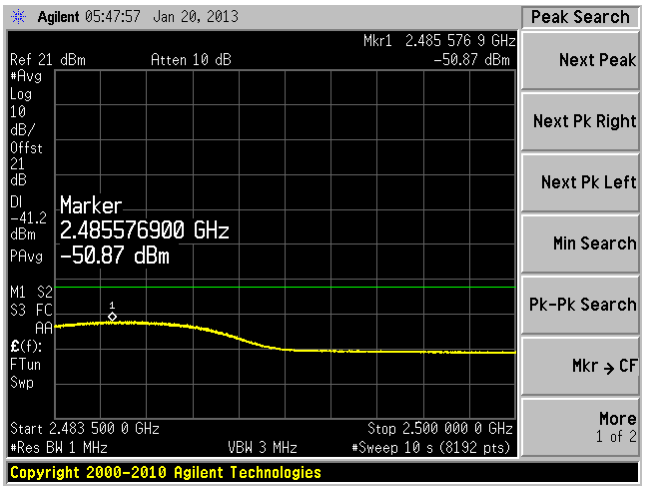
Chain J1, Plot: 3 GHz – 25 GHz



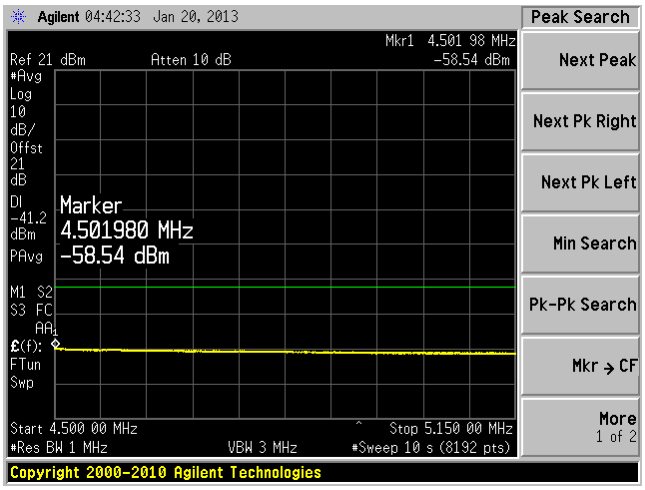
Chain J1, Plot: 2310 MHz – 2390 MHz



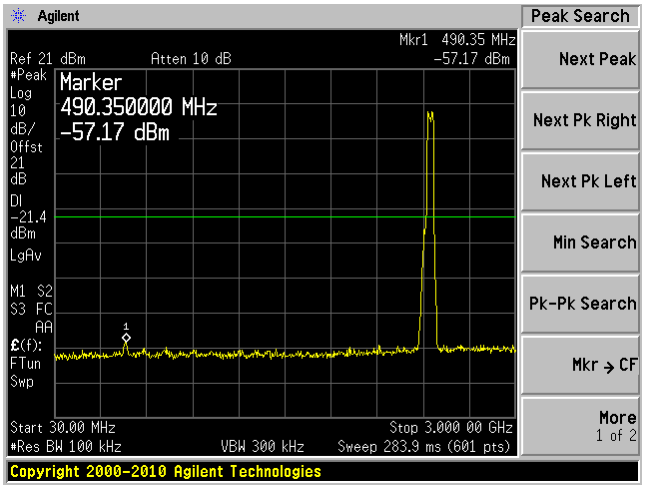
Chain J1, Plot: 2483.5MHz – 2500 MHz



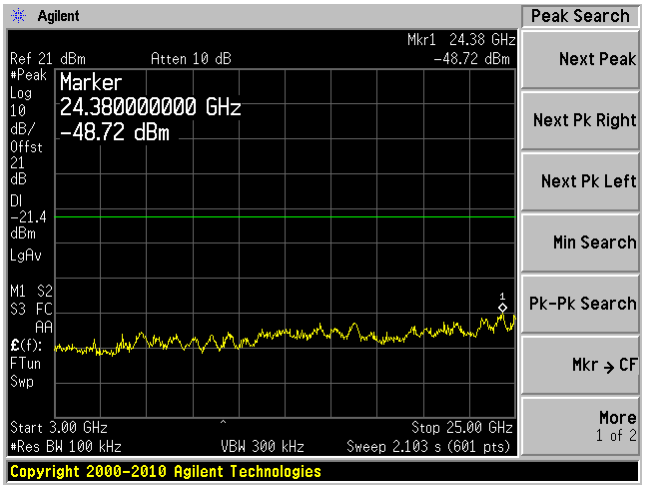
Chain J1, Plot: 4500 MHz – 5150 MHz



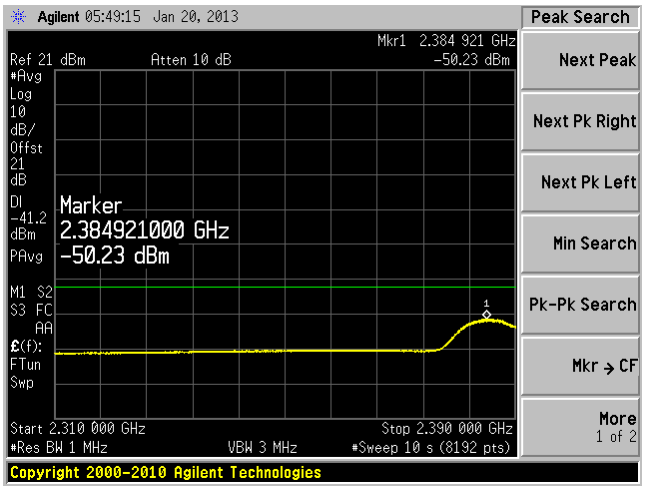
Chain J2, Plot: 30 MHz – 3 GHz



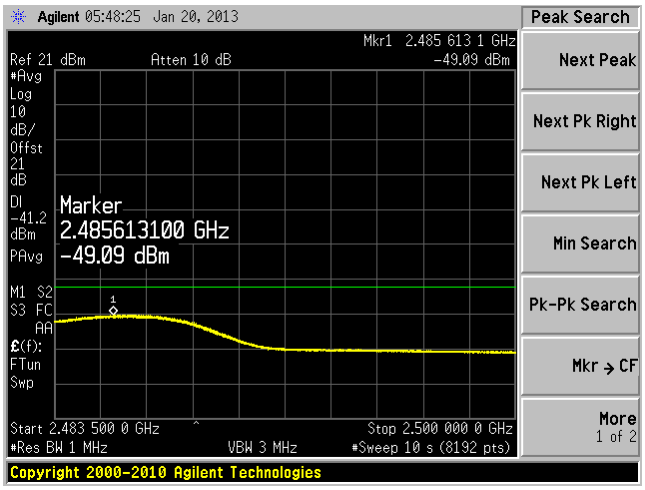
Chain J2, Plot: 3 GHz – 25 GHz



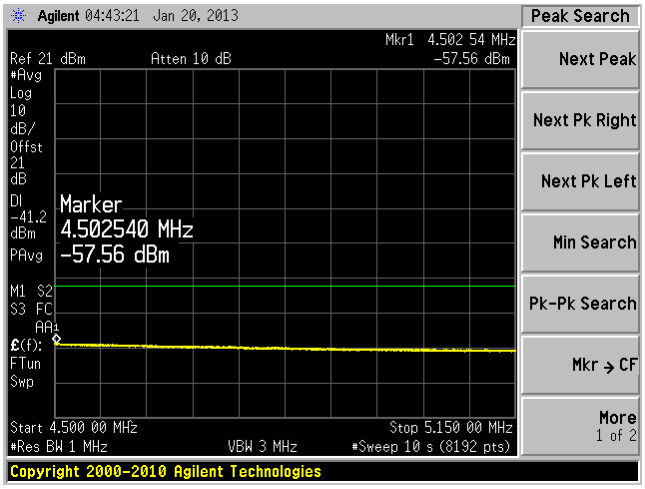
Chain J2, Plot: 2310 MHz – 2390 MHz



Chain J2, Plot: 2483.5MHz – 2500 MHz



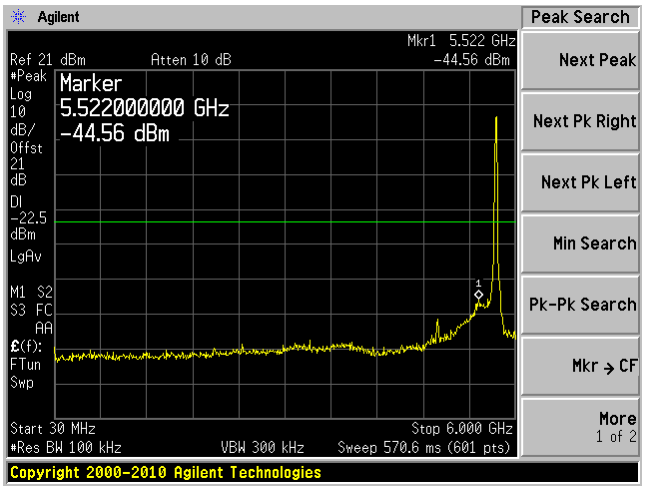
Chain J2, Plot: 4500 MHz – 5150 MHz



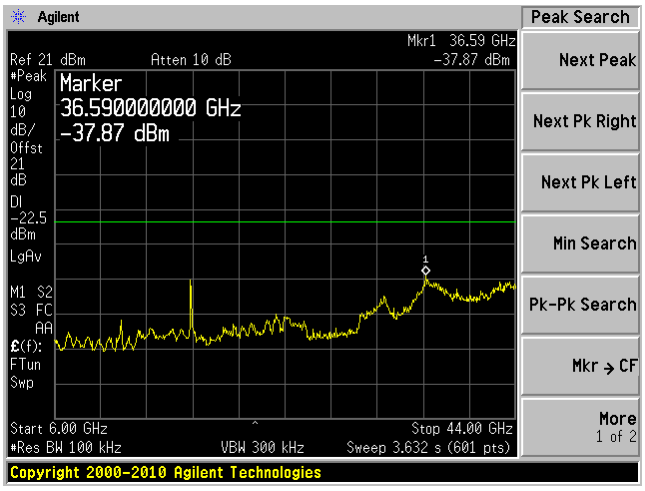
5725-5845 MHz

802.11a, Low Channel 5745 MHz

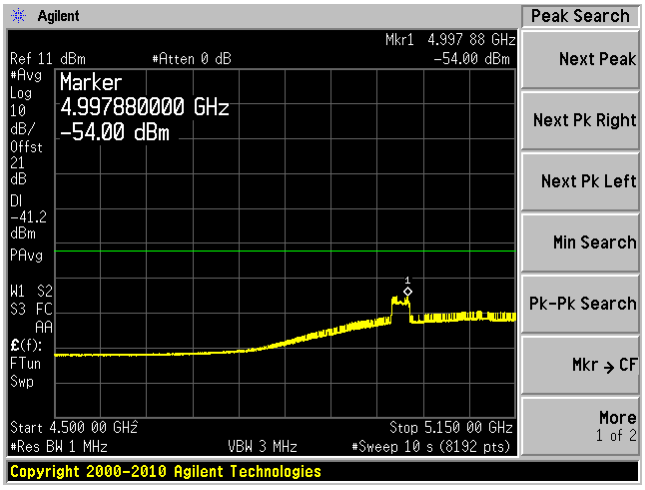
Chain J0, Plot: 30 MHz – 6 GHz



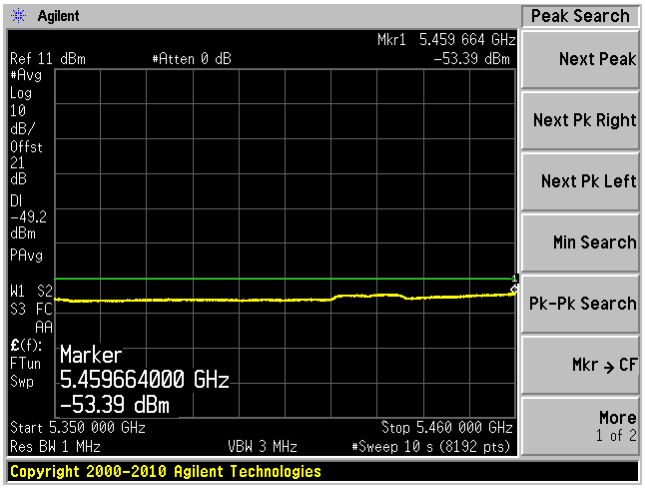
Chain J0, Plot: 6 GHz – 40 GHz



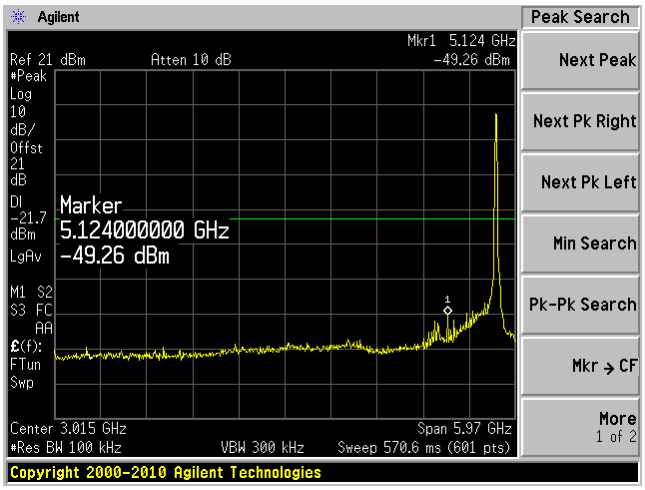
Chain J0, Plot: 4500 MHz – 5150 MHz



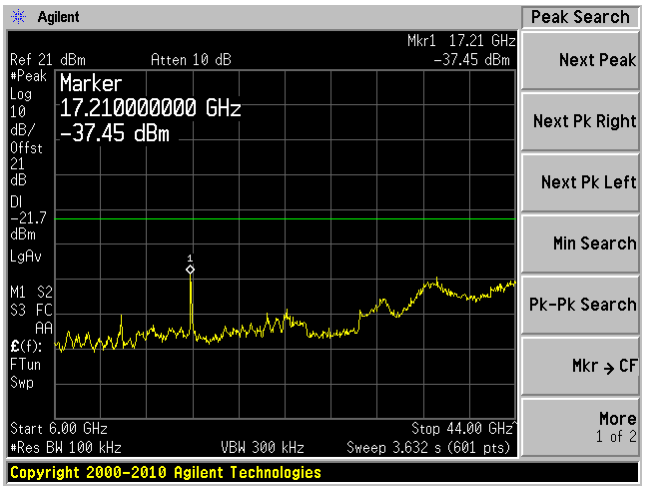
Chain J0, Plot: 5350MHz – 5460 MHz



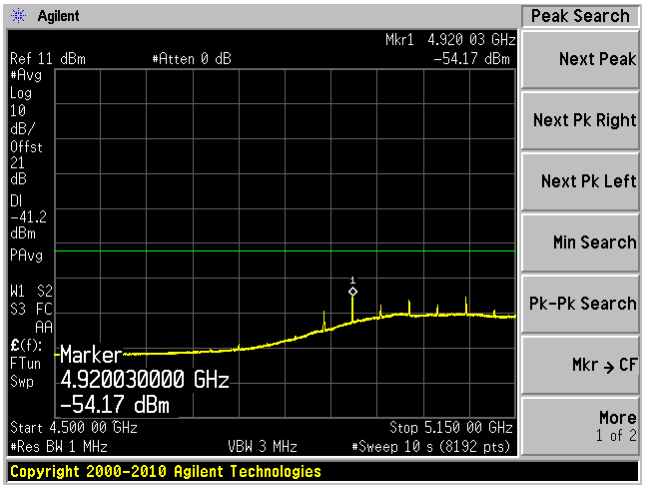
Chain J1, Plot: 30 MHz – 6 GHz



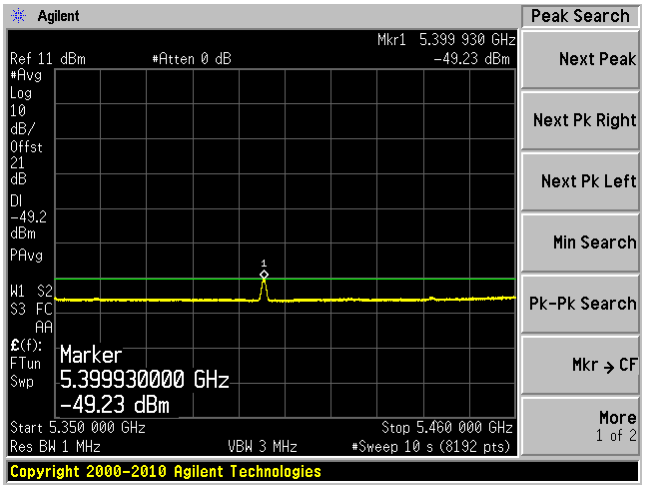
Chain J1, Plot: 6 GHz – 40 GHz



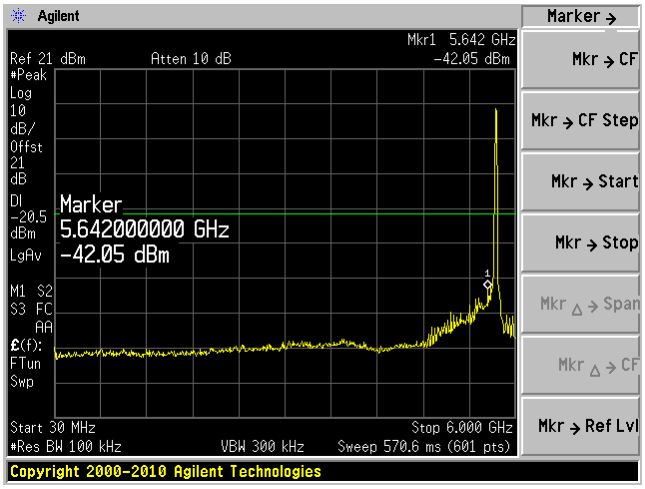
Chain J1, Plot: 4500 MHz – 5150 MHz



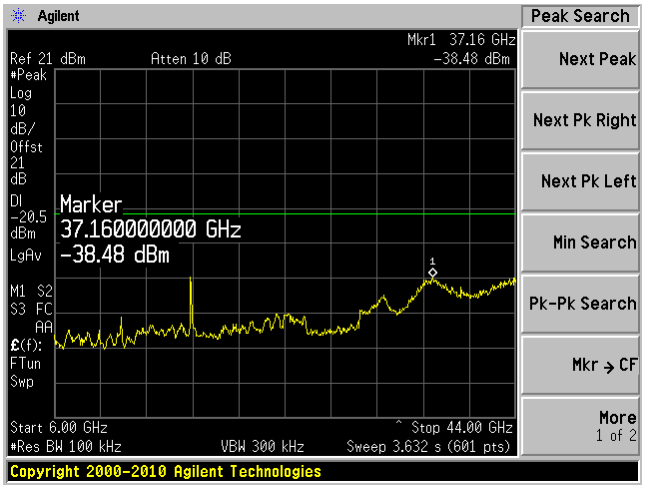
Chain J1, Plot: 5350MHz – 5460 MHz



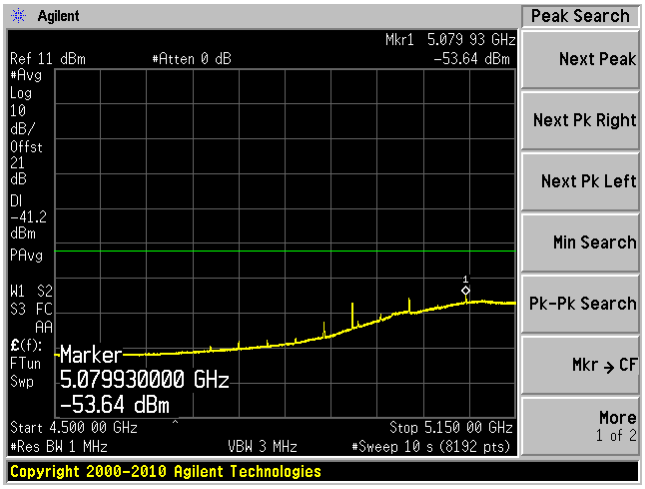
Chain J2, Plot: 30 MHz – 6 GHz



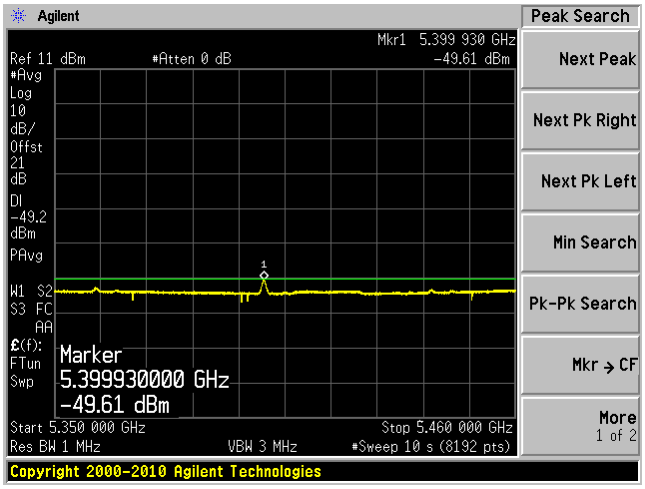
Chain J2, Plot: 6 GHz – 40 GHz



Chain J2, Plot: 4500 MHz – 5150 MHz

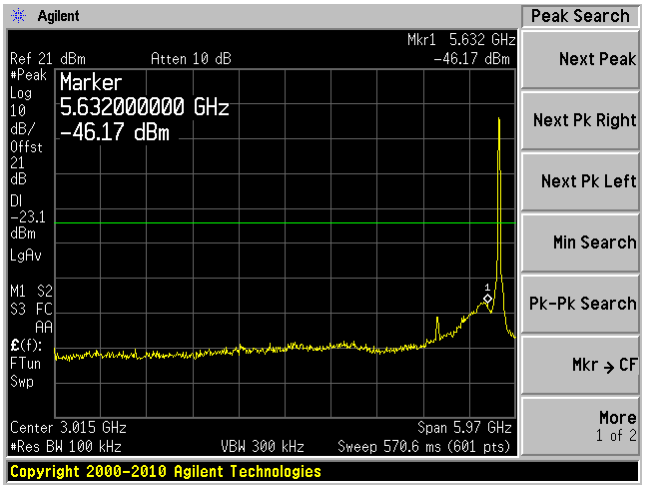


Chain J2, Plot: 5350MHz – 5460 MHz

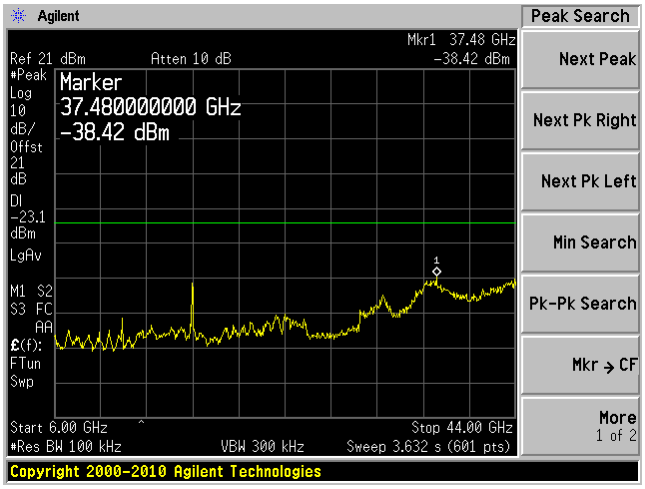


802.11a, Middle Channel 5785 MHz

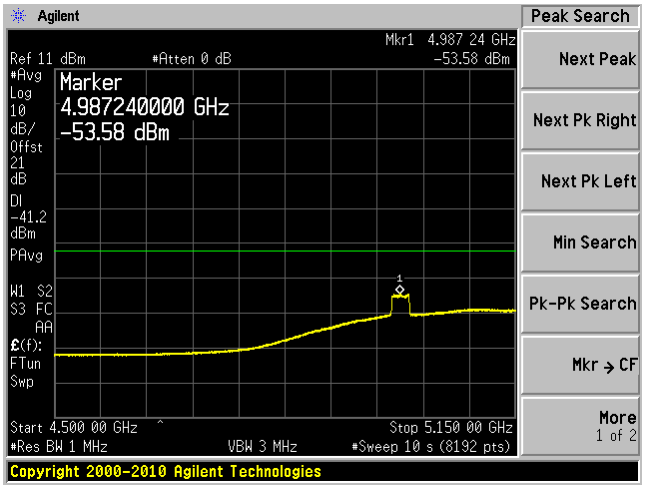
Chain J0, Plot: 30 MHz – 6 GHz



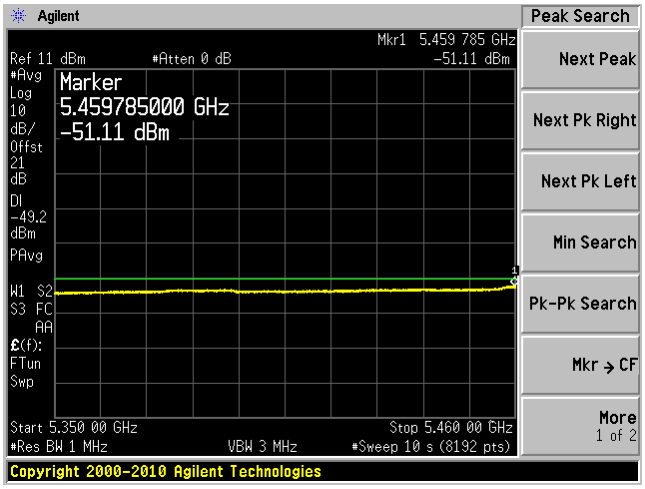
Chain J0, Plot: 6 GHz – 40 GHz



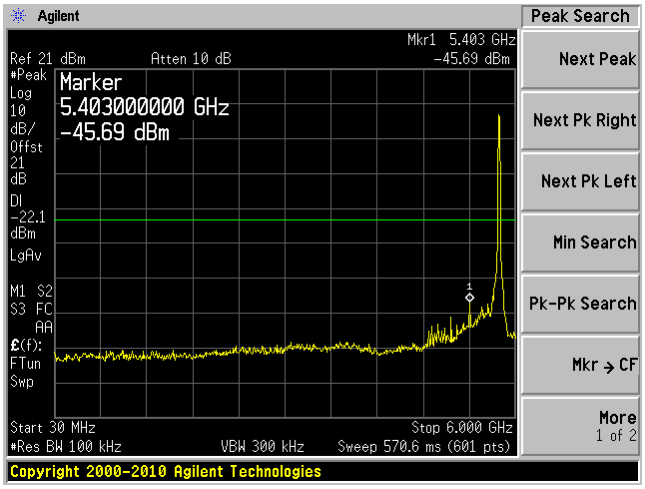
Chain J0, Plot: 4500 MHz – 5150 MHz



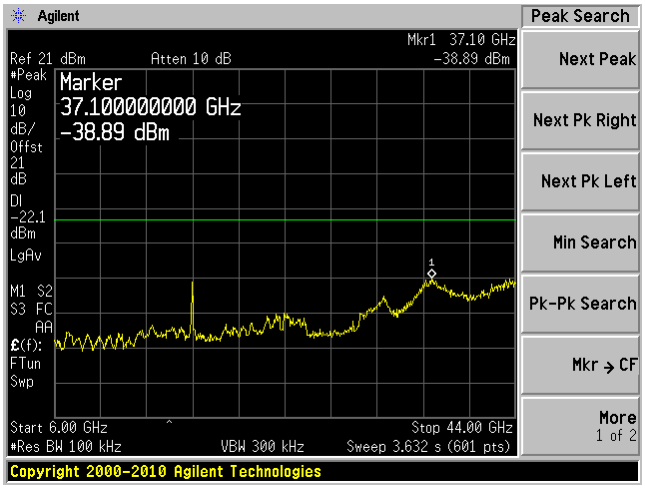
Chain J0, Plot: 5350MHz – 5460 MHz



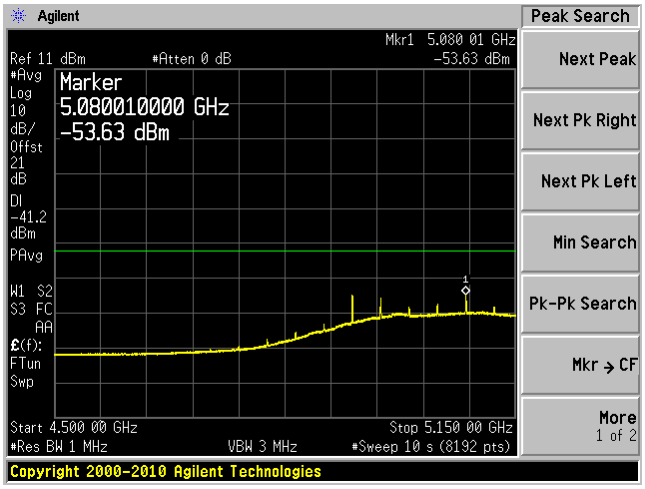
Chain J1, Plot: 30 MHz – 6 GHz



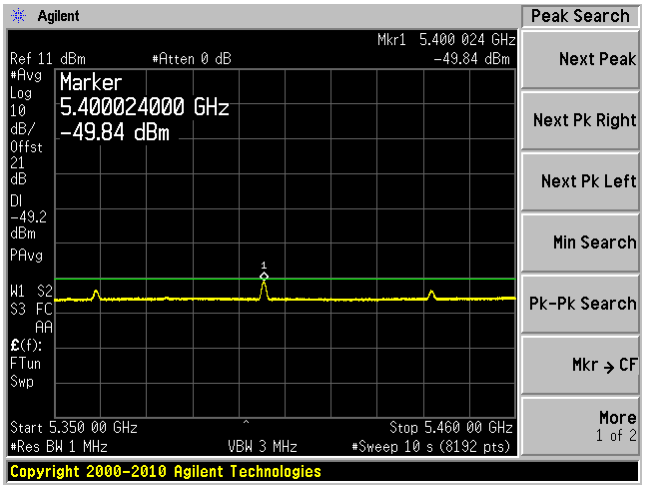
Chain J1, Plot: 6 GHz – 40 GHz



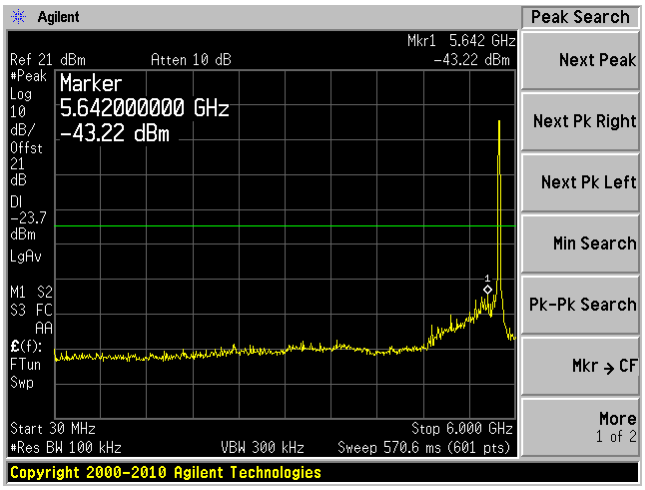
Chain J1, Plot: 4500 MHz – 5150 MHz



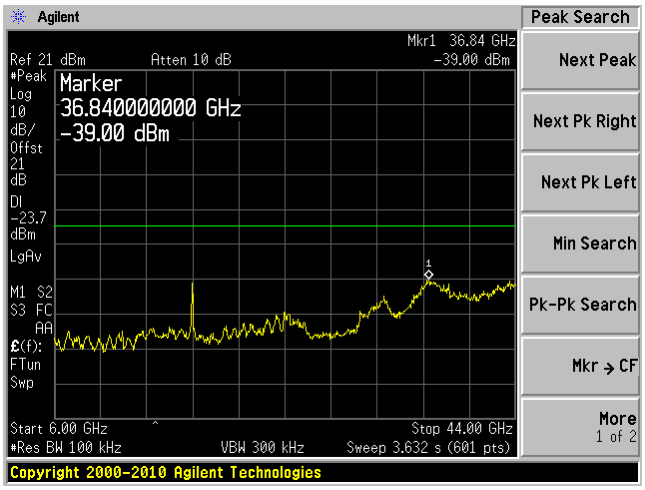
Chain J1, Plot: 5350MHz – 5460 MHz



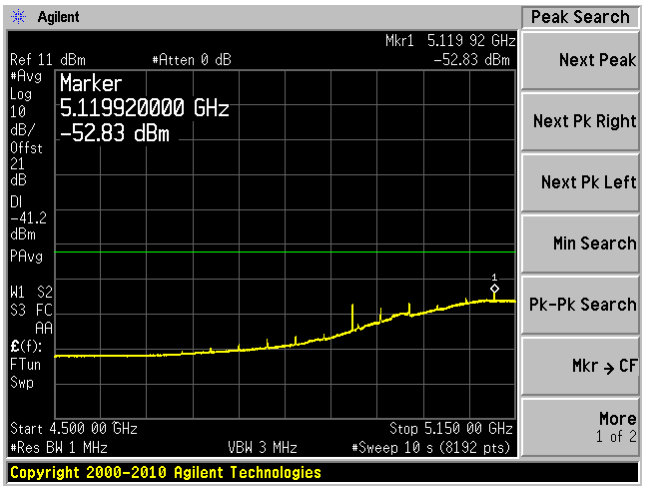
Chain J2, Plot: 30 MHz – 6 GHz



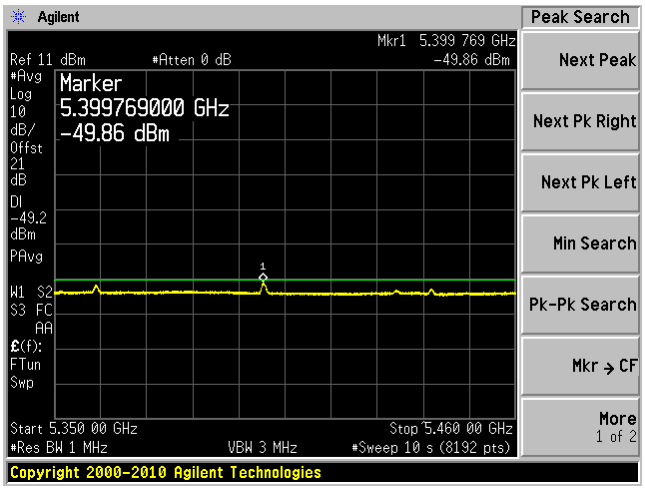
Chain J2, Plot: 6 GHz – 40 GHz



Chain J2, Plot: 4500 MHz – 5150 MHz

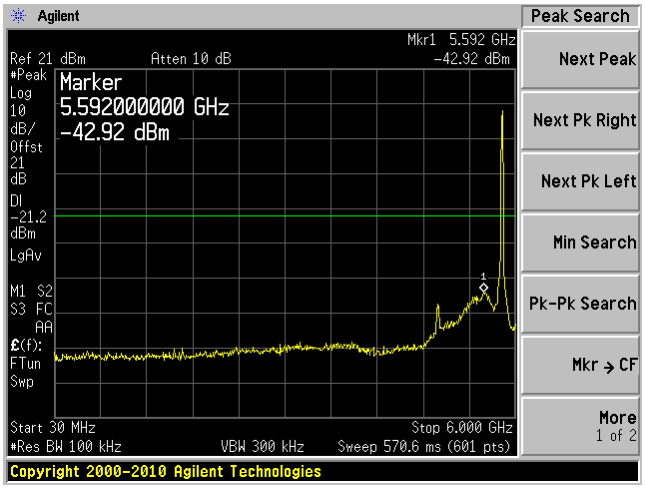


Chain J2, Plot: 5350MHz – 5460 MHz

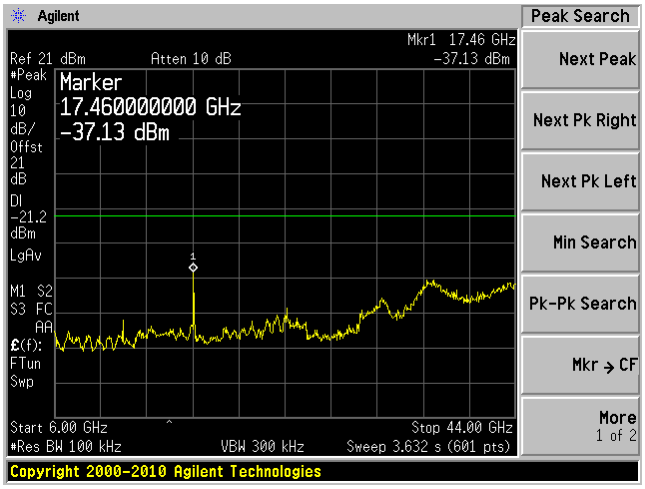


802.11a, High Channel 5825 MHz

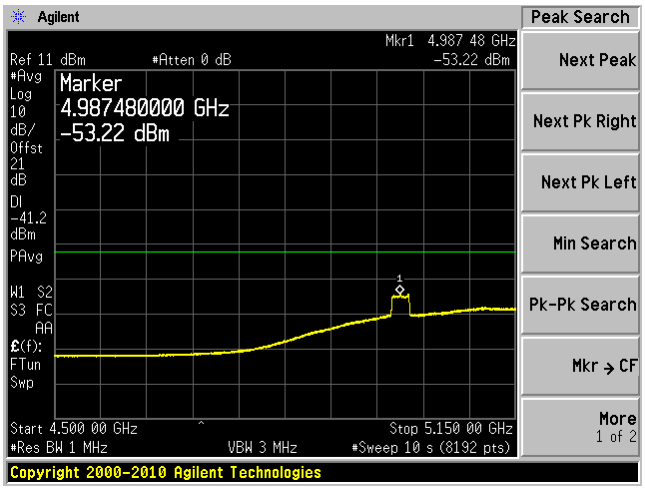
Chain J0, Plot: 30 MHz – 6 GHz



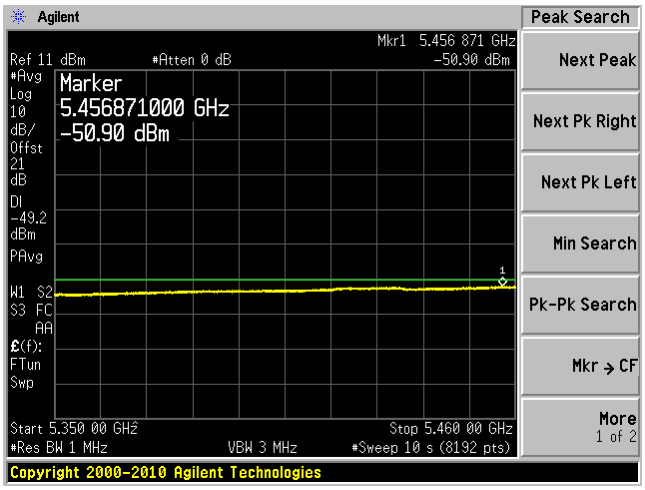
Chain J0, Plot: 6 GHz – 40 GHz



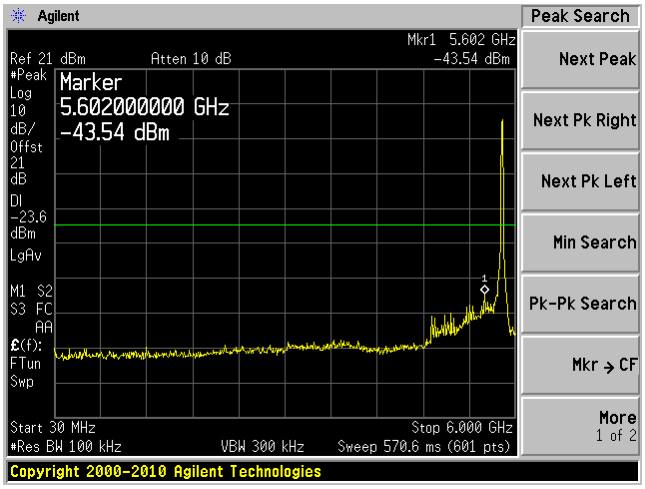
Chain J0, Plot: 4500 MHz – 5150 MHz



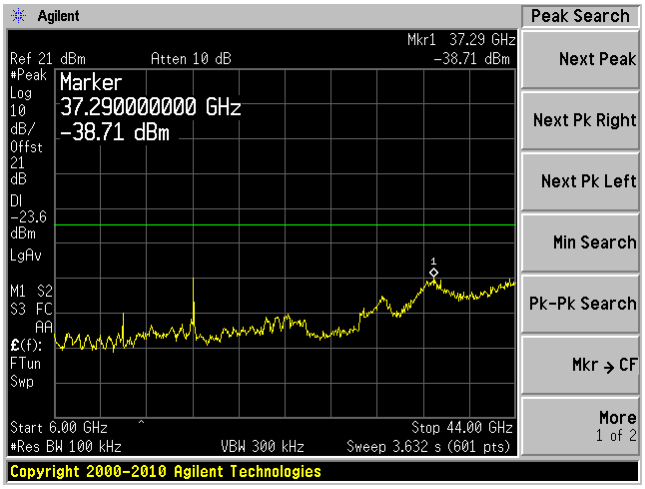
Chain J0, Plot: 5350MHz – 5460 MHz



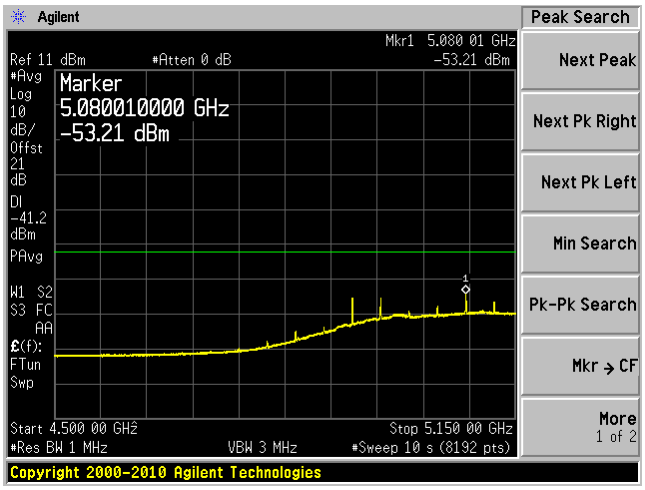
Chain J1, Plot: 30 MHz – 6 GHz



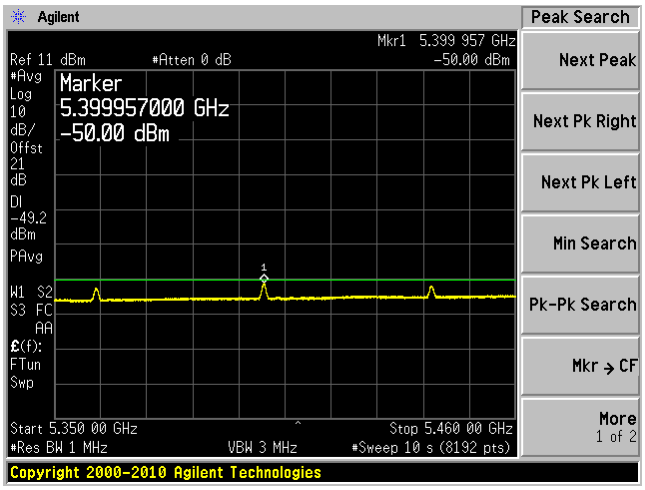
Chain J1, Plot: 6 GHz – 40 GHz



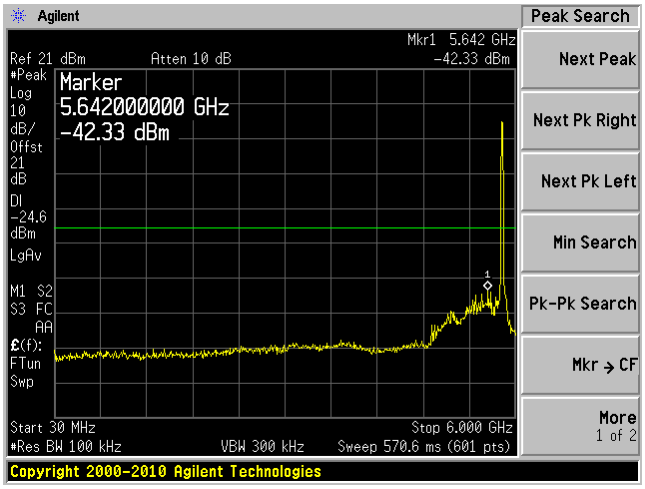
Chain J1, Plot: 4500 MHz – 5150 MHz



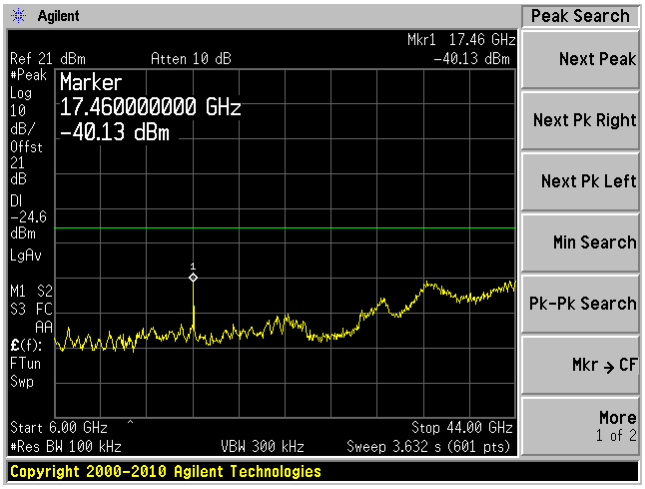
Chain J1, Plot: 5350MHz – 5460 MHz



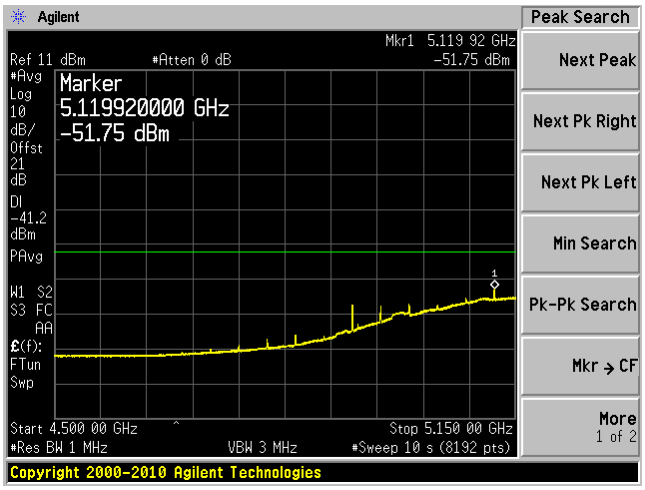
Chain J2, Plot: 30 MHz – 6 GHz



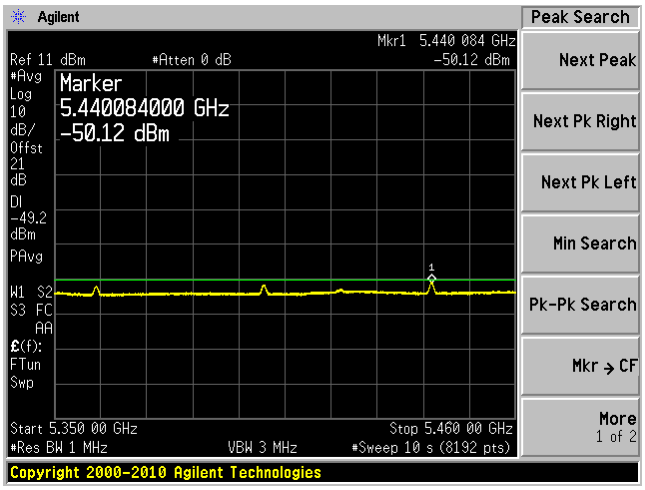
Chain J2, Plot: 6 GHz – 40 GHz



Chain J2, Plot: 4500 MHz – 5150 MHz

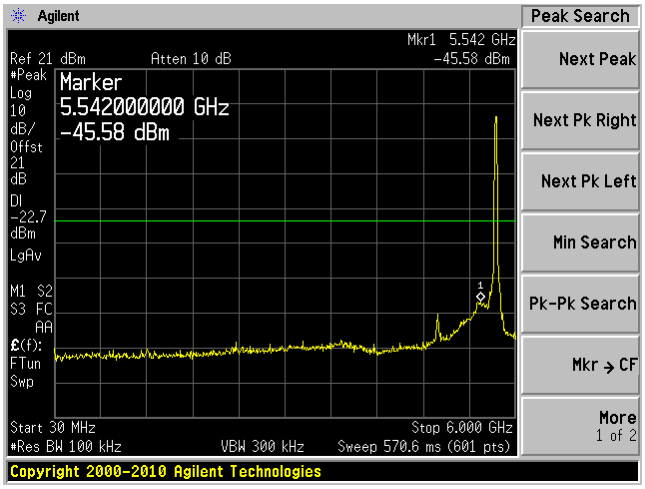


Chain J2, Plot: 5350MHz – 5460 MHz

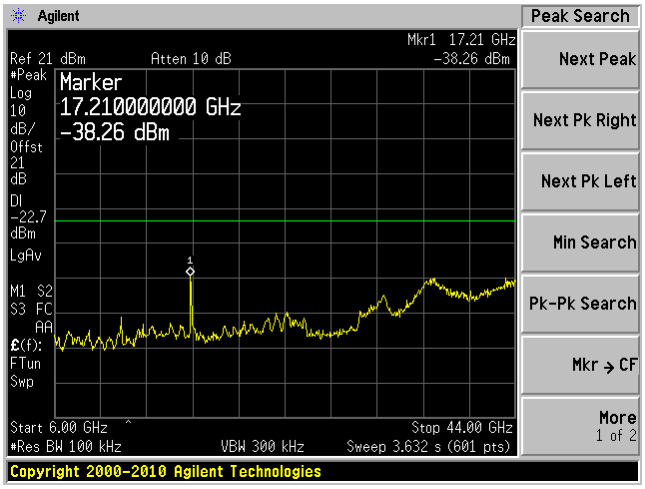


802.11n HT20, Low Channel 5745 MHz

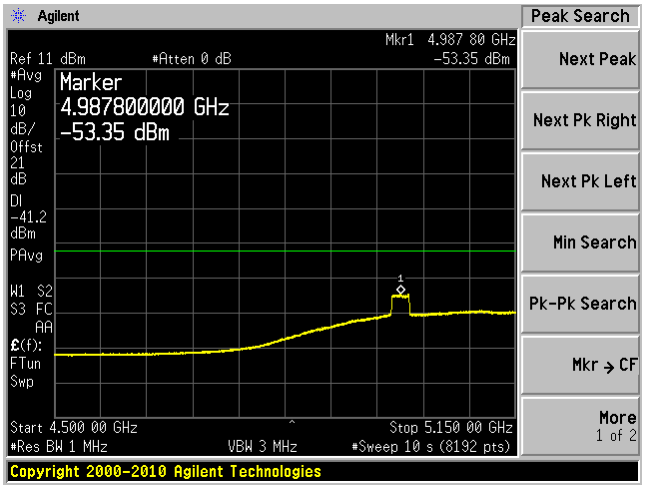
Chain J0, Plot: 30 MHz – 6 GHz



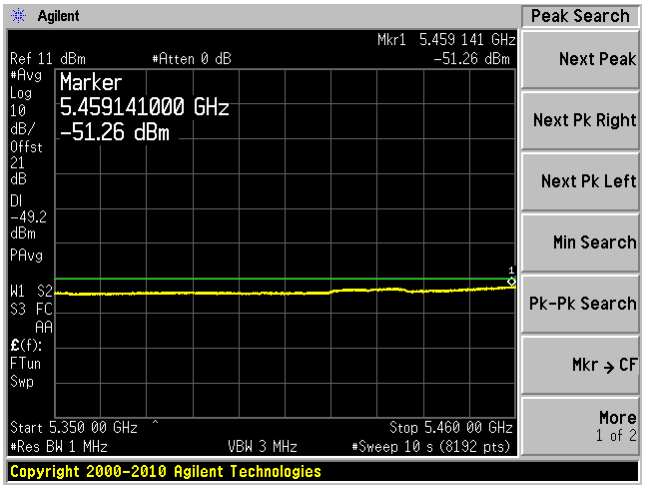
Chain J0, Plot: 6 GHz – 40 GHz



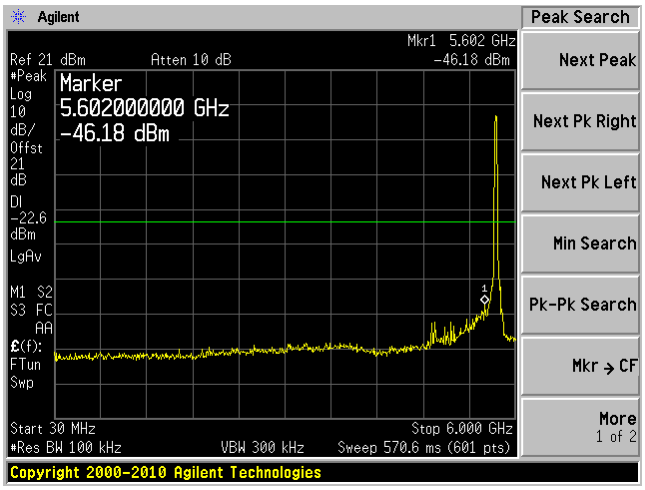
Chain J0, Plot: 4500 MHz – 5150 MHz



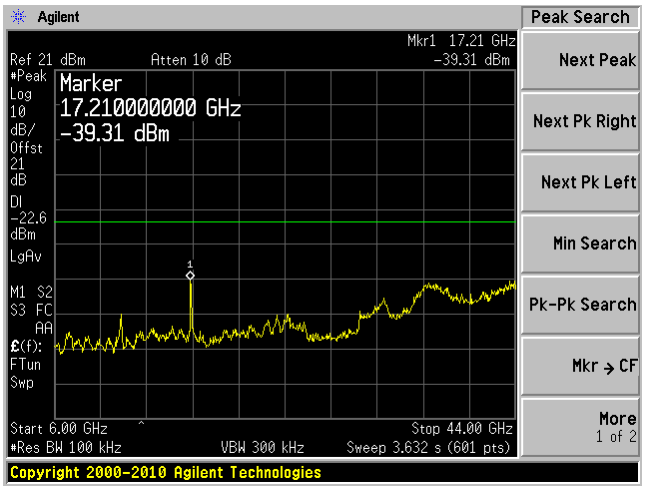
Chain J0, Plot: 5350MHz – 5460 MHz



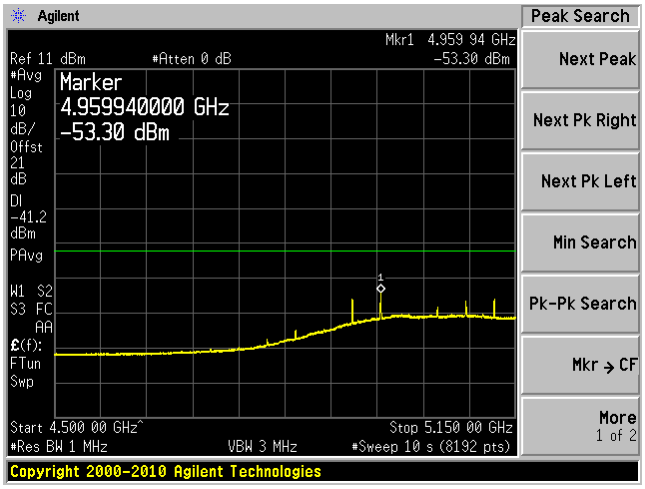
Chain J1, Plot: 30 MHz – 6 GHz



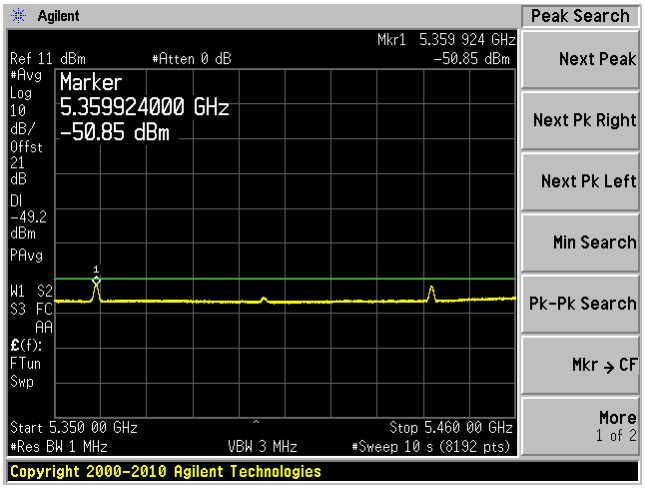
Chain J1, Plot: 6 GHz – 40 GHz



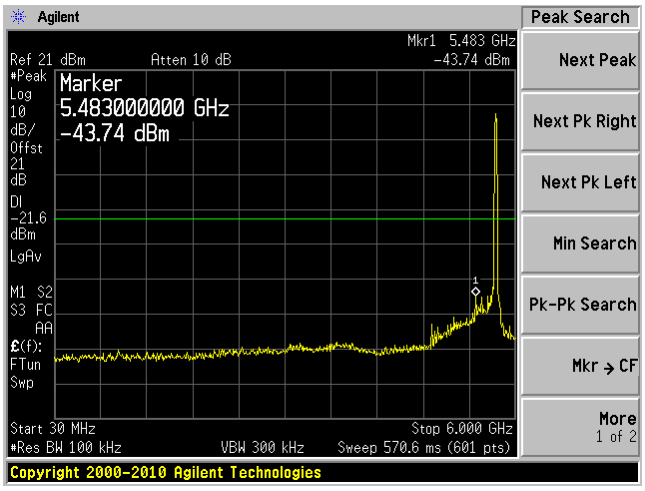
Chain J1, Plot: 4500 MHz – 5150 MHz



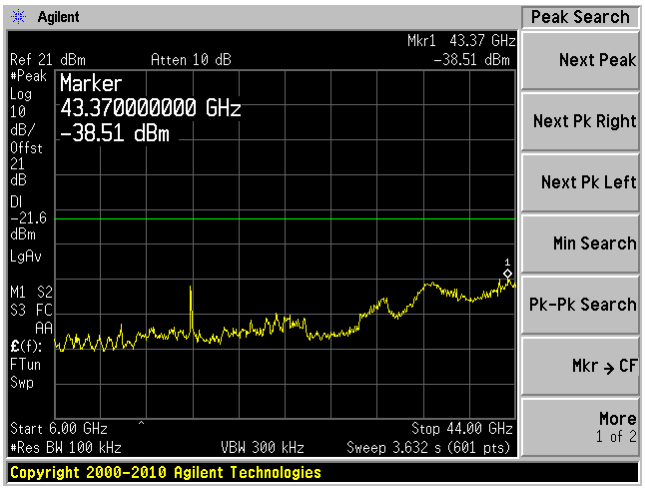
Chain J1, Plot: 5350MHz – 5460 MHz



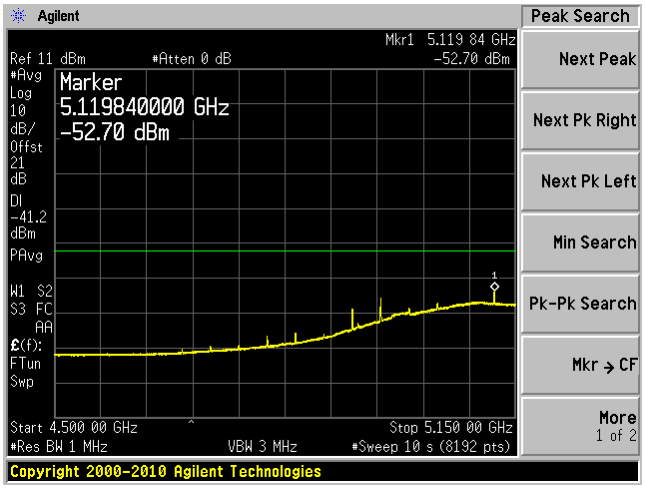
Chain J2, Plot: 30 MHz – 6 GHz



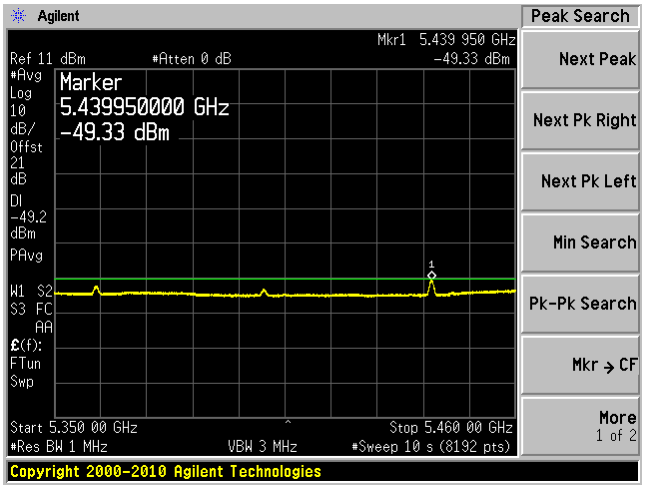
Chain J2, Plot: 6 GHz – 40 GHz



Chain J2, Plot: 4500 MHz – 5150 MHz

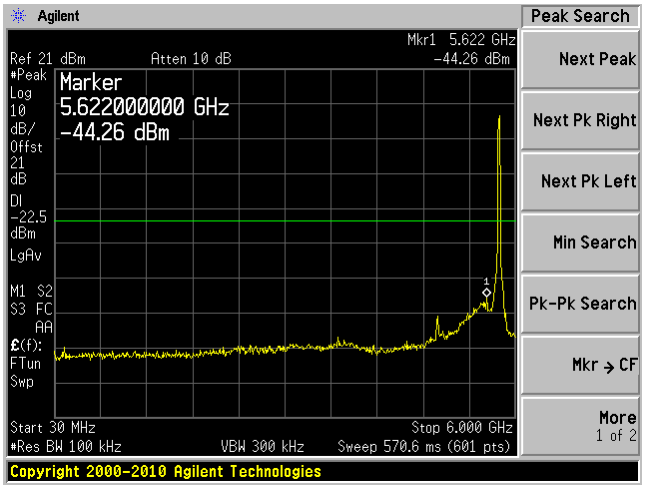


Chain J2, Plot: 5350MHz – 5460 MHz

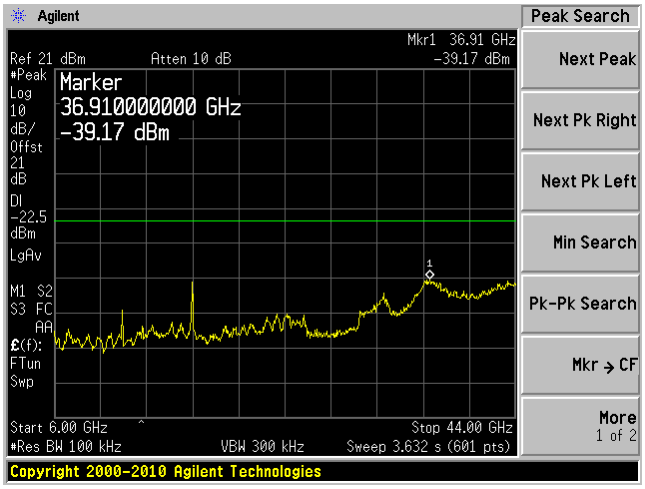


802.11n HT20, Middle Channel 5785 MHz

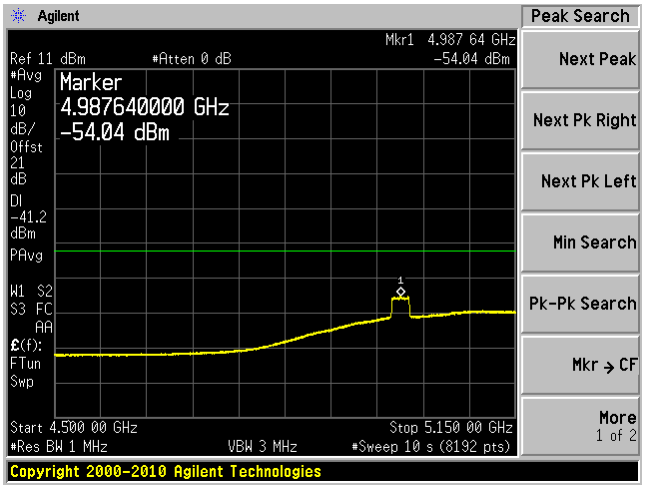
Chain J0, Plot: 30 MHz – 6 GHz



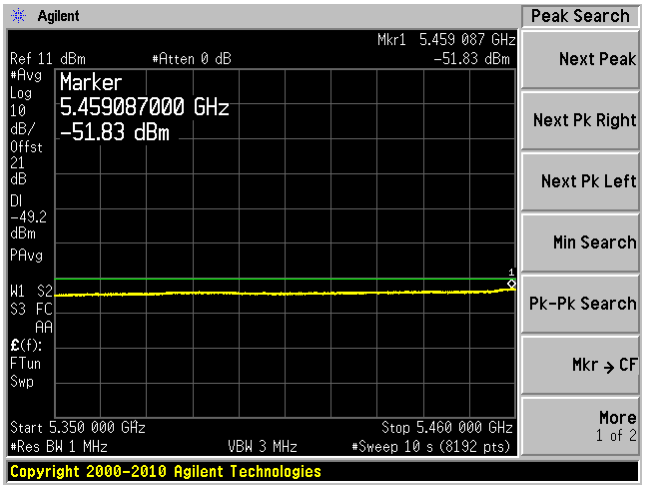
Chain J0, Plot: 6 GHz – 40 GHz



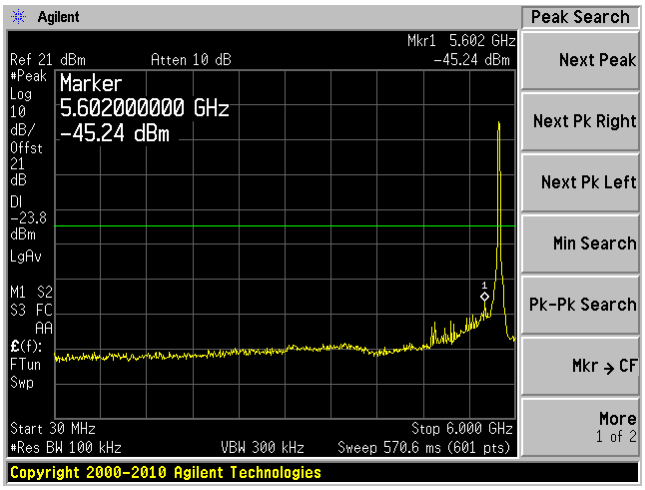
Chain J0, Plot: 4500 MHz – 5150 MHz



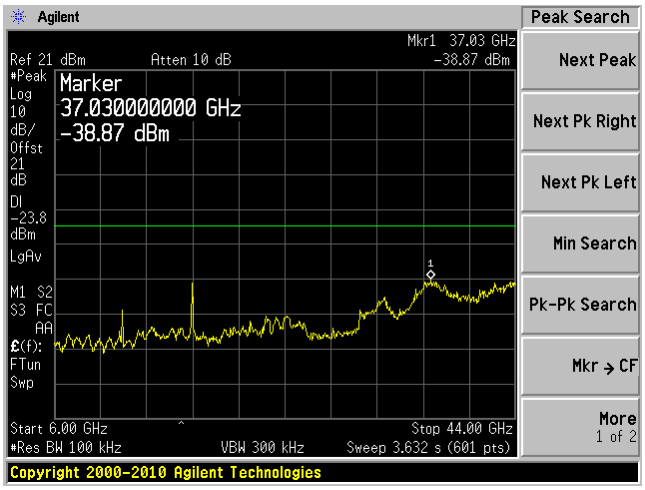
Chain J0, Plot: 5350MHz – 5460 MHz



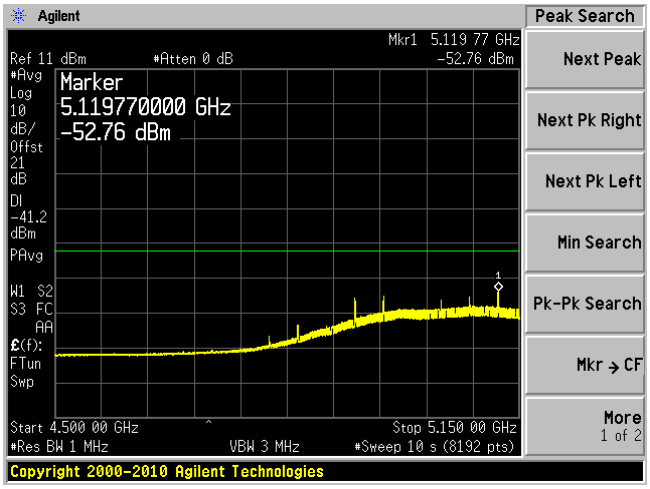
Chain J1, Plot: 30 MHz – 6 GHz



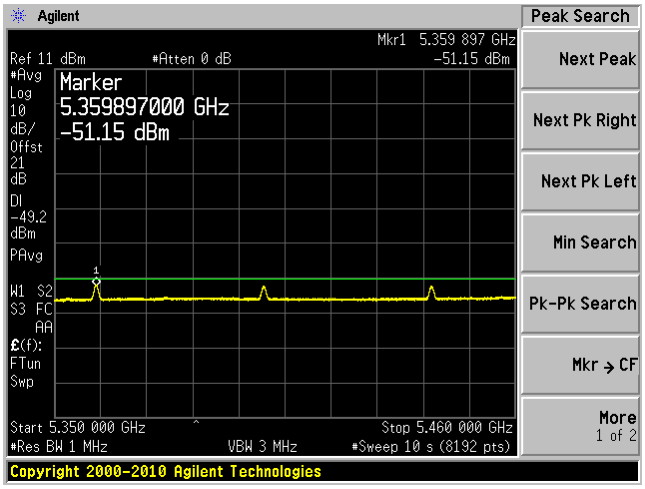
Chain J1, Plot: 6 GHz – 40 GHz



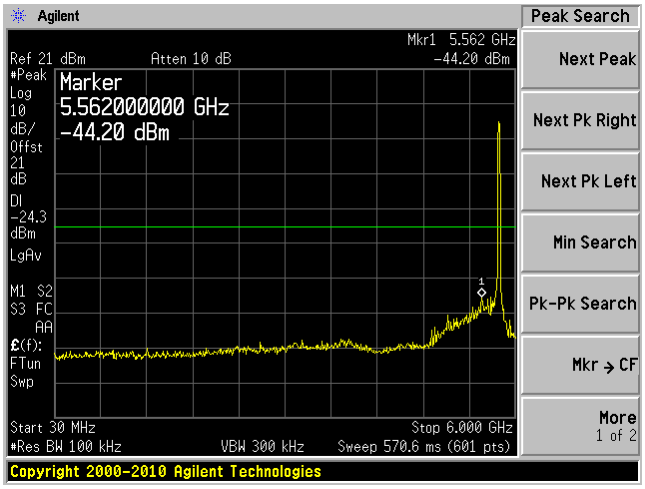
Chain J1, Plot: 4500 MHz – 5150 MHz



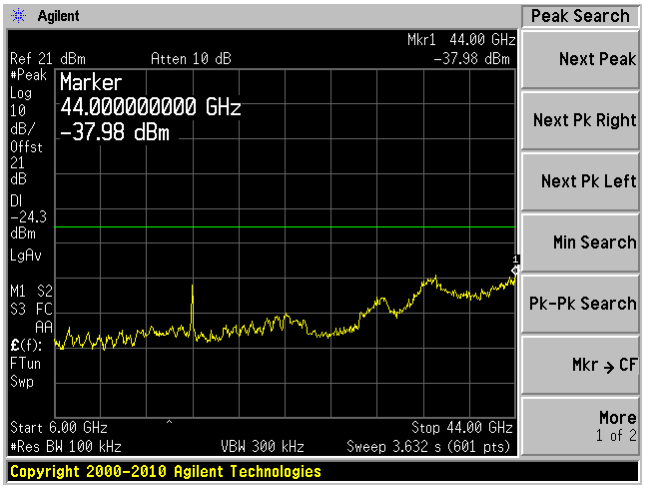
Chain J1, Plot: 5350MHz – 5460 MHz



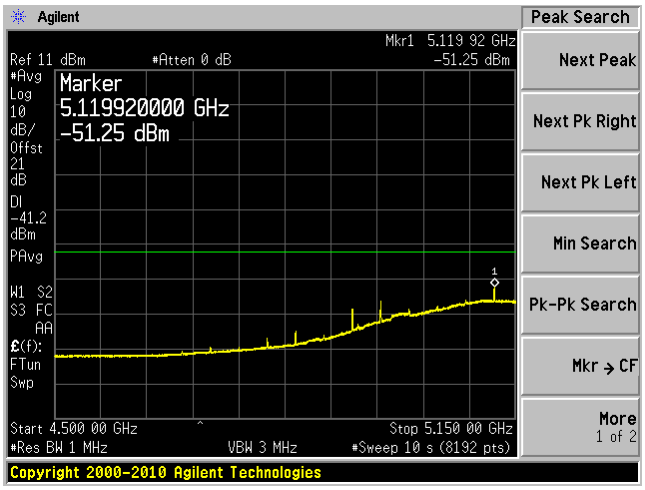
Chain J2, Plot: 30 MHz – 6 GHz



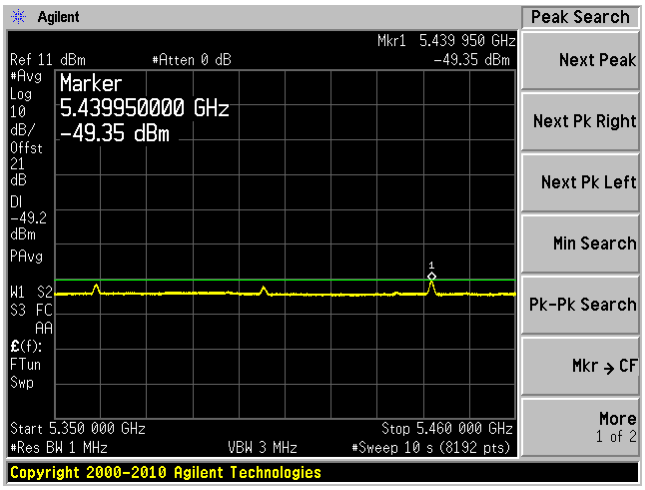
Chain J2, Plot: 6 GHz – 40 GHz



Chain J2, Plot: 4500 MHz – 5150 MHz

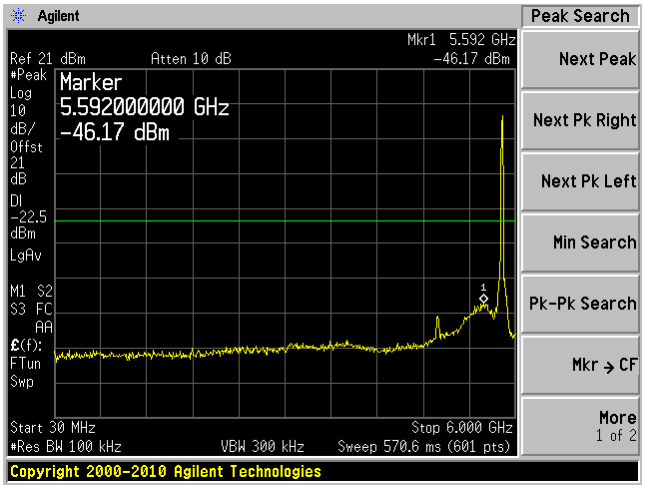


Chain J2, Plot: 5350MHz – 5460 MHz

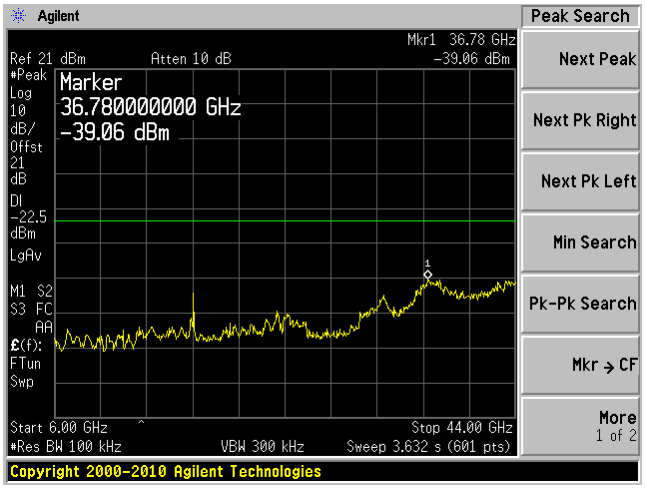


802.11n HT20, High Channel 5825 MHz

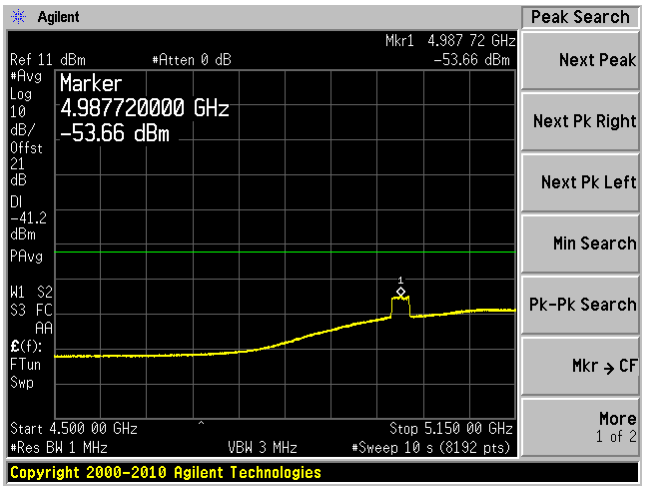
Chain J0, Plot: 30 MHz – 6 GHz



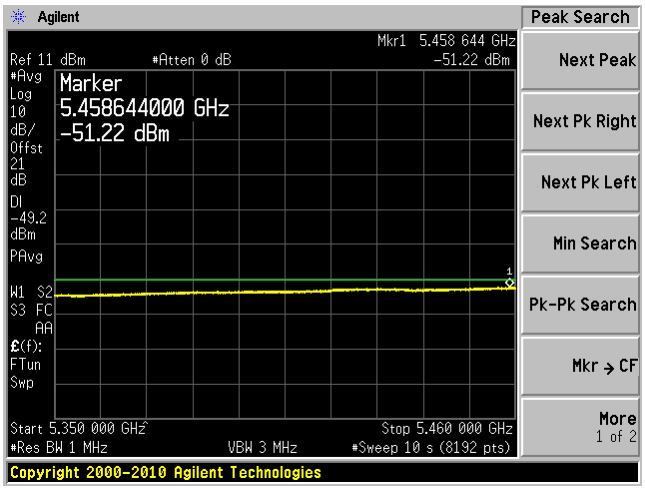
Chain J0, Plot: 6 GHz – 40 GHz



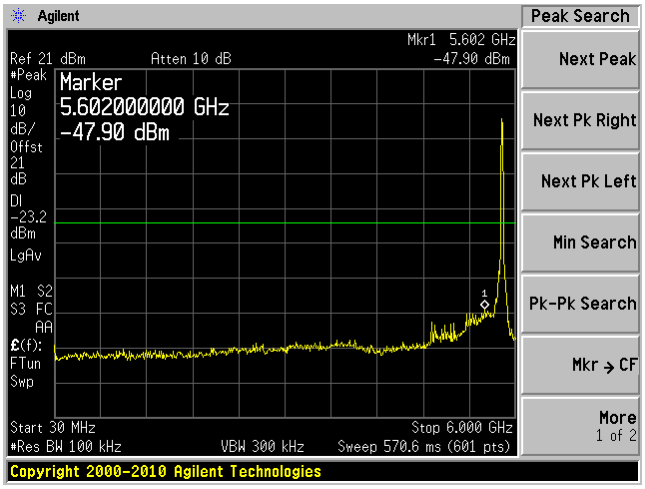
Chain J0, Plot: 4500 MHz – 5150 MHz



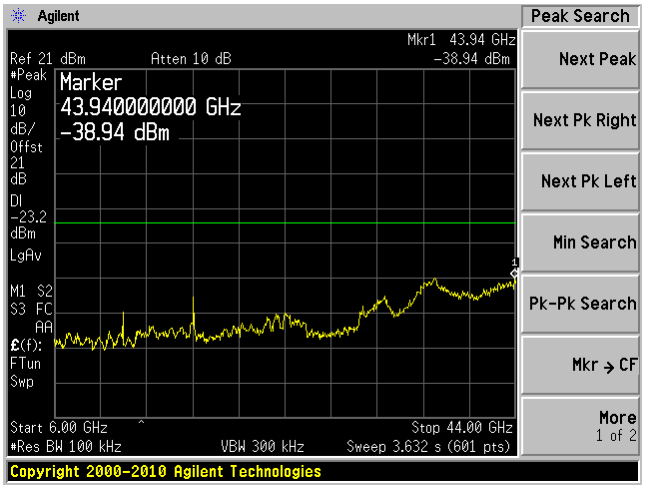
Chain J0, Plot: 5350MHz – 5460 MHz



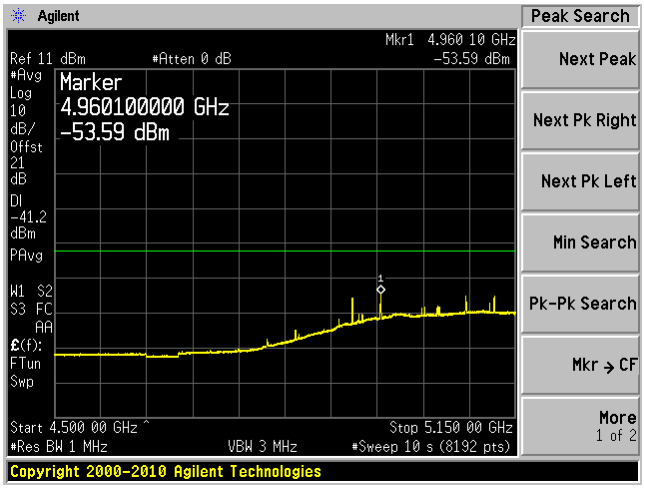
Chain J1, Plot: 30 MHz – 6 GHz



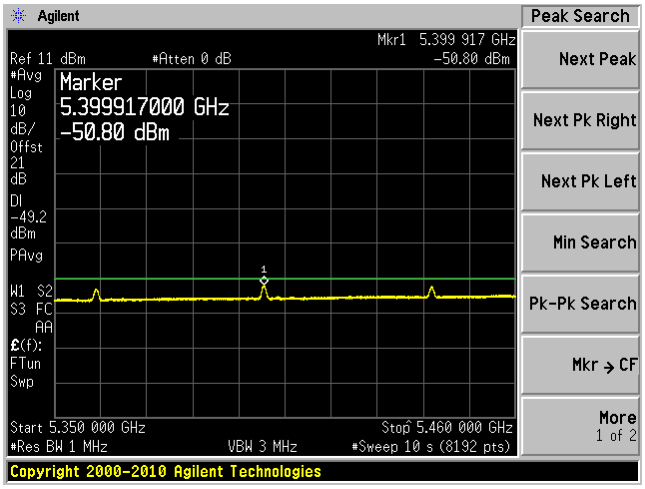
Chain J1, Plot: 6 GHz – 40 GHz



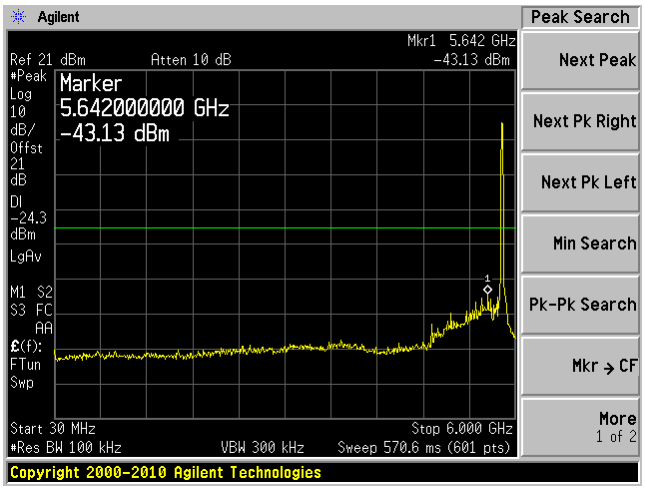
Chain J1, Plot: 4500 MHz – 5150 MHz



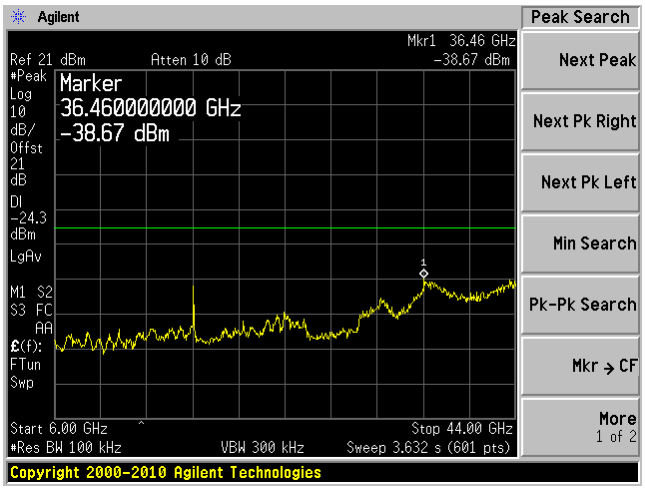
Chain J1, Plot: 5350MHz – 5460 MHz



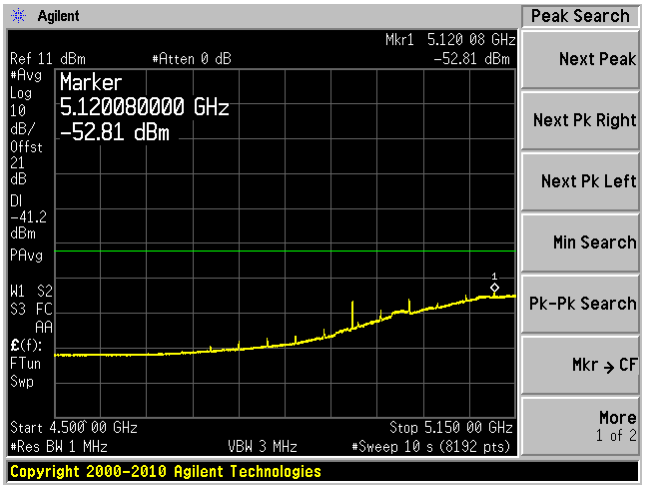
Chain J2, Plot: 30 MHz – 6 GHz



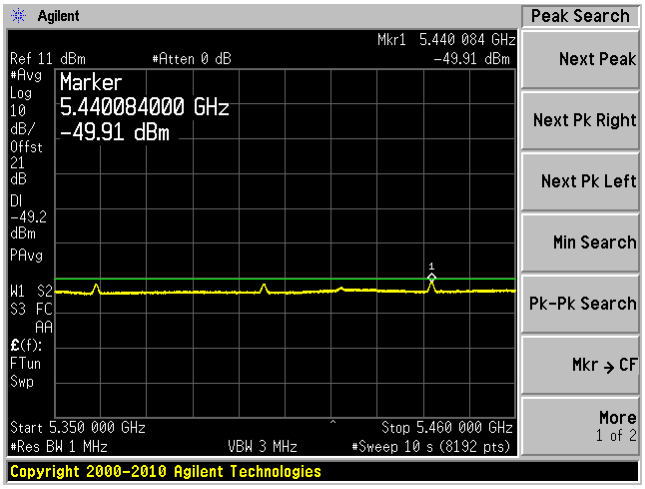
Chain J2, Plot: 6 GHz – 40 GHz



Chain J2, Plot: 4500 MHz – 5150 MHz

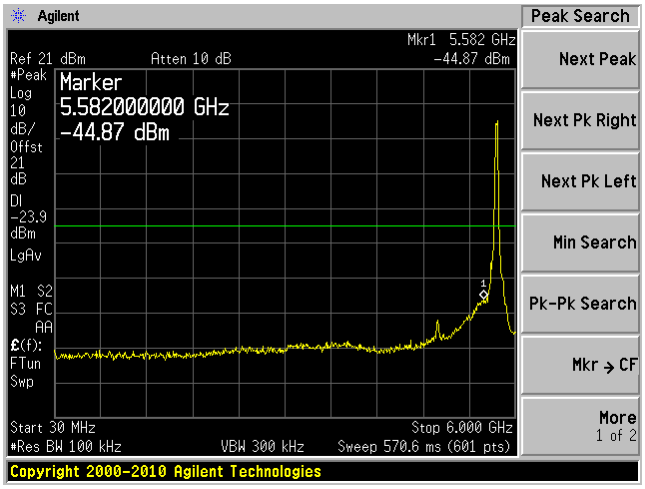


Chain J2, Plot: 5350MHz – 5460 MHz

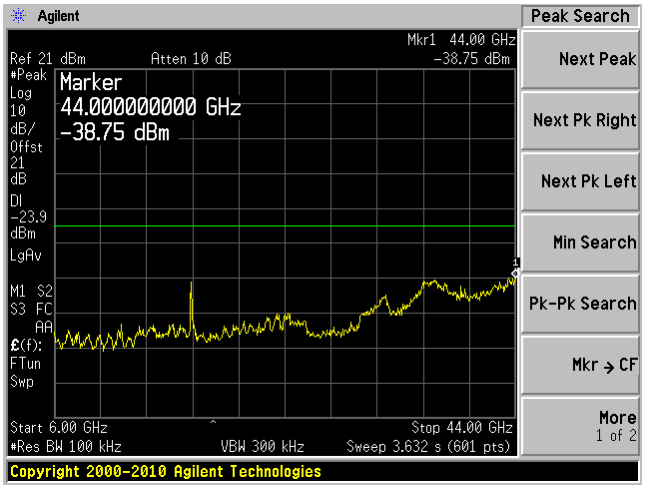


802.11n HT40, Low Channel 5755 MHz

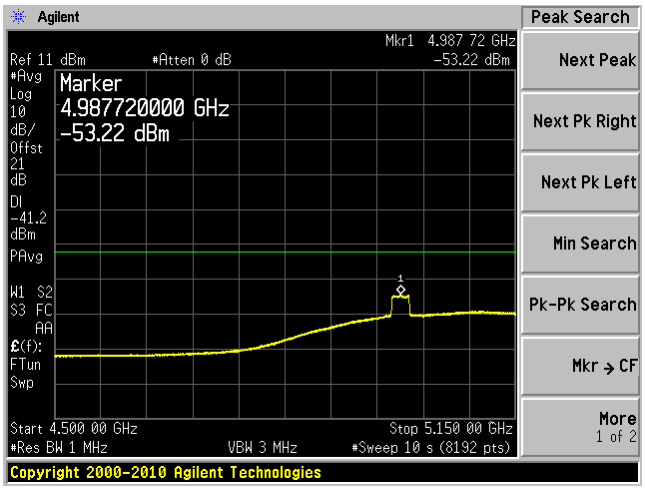
Chain J0, Plot: 30 MHz – 6 GHz



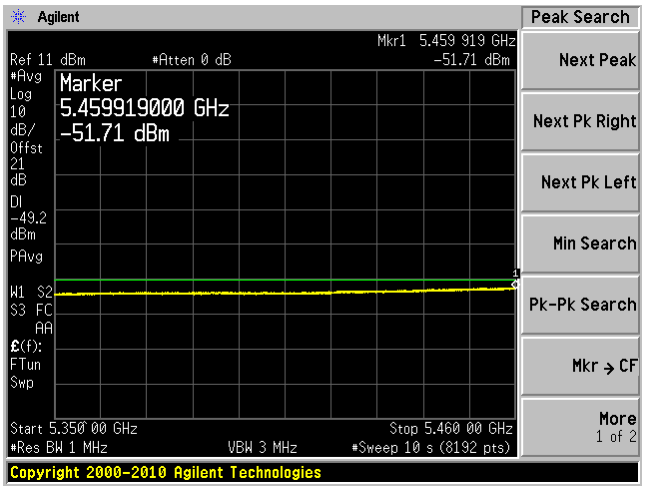
Chain J0, Plot: 6 GHz – 40 GHz



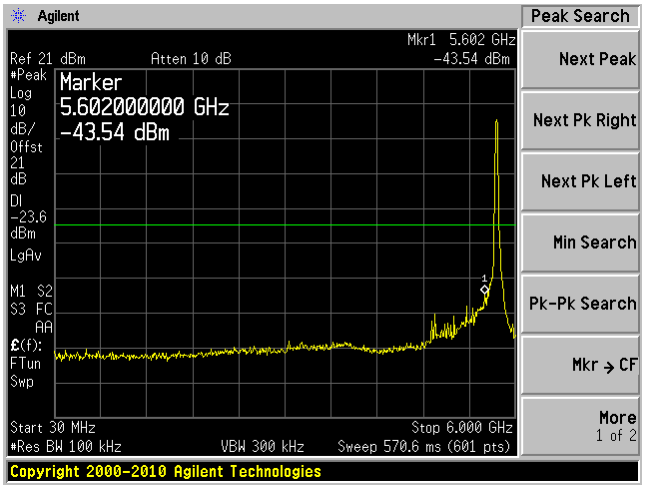
Chain J0, Plot: 4500 MHz – 5150 MHz



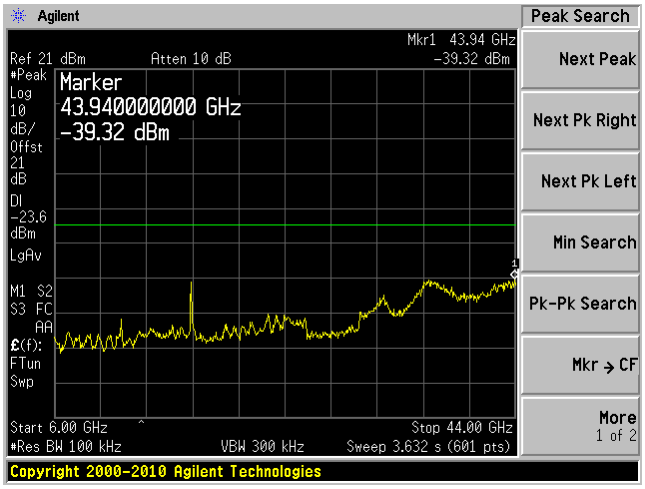
Chain J0, Plot: 5350MHz – 5460 MHz



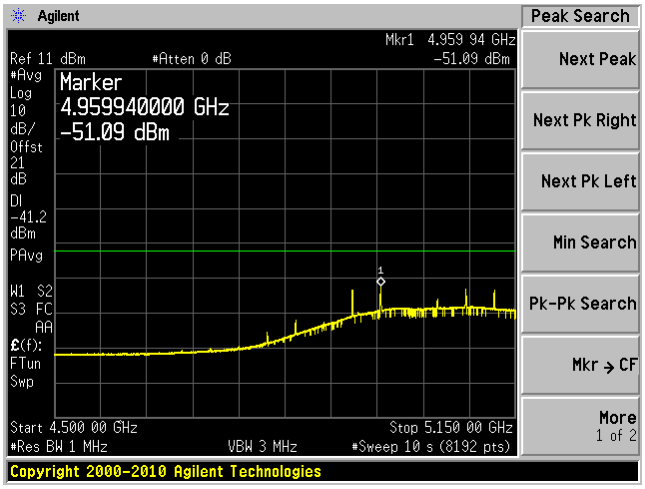
Chain J1, Plot: 30 MHz – 6 GHz



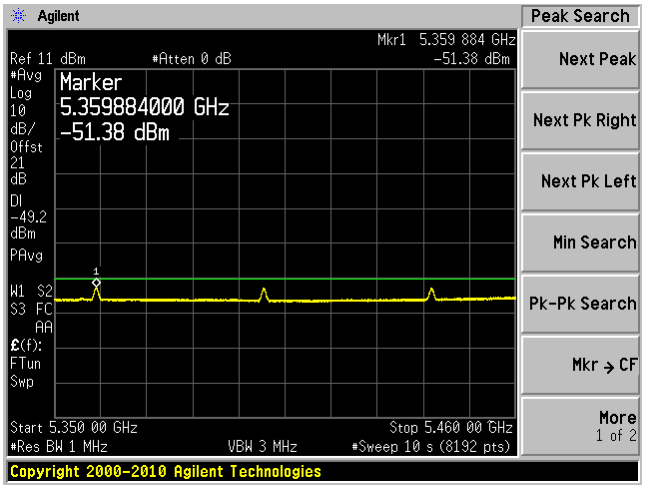
Chain J1, Plot: 6 GHz – 40 GHz



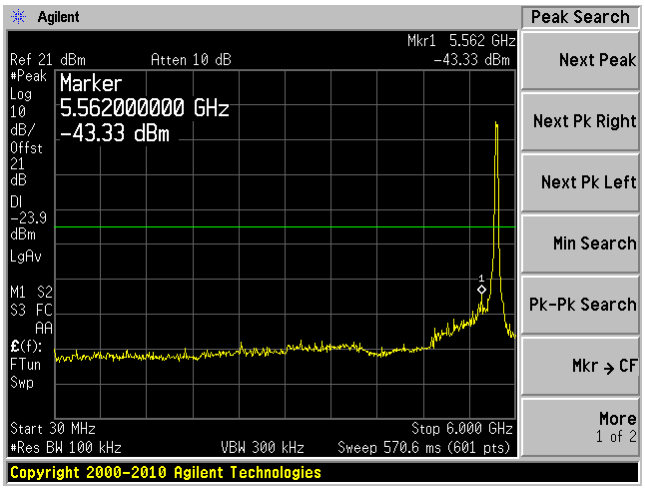
Chain J1, Plot: 4500 MHz – 5150 MHz



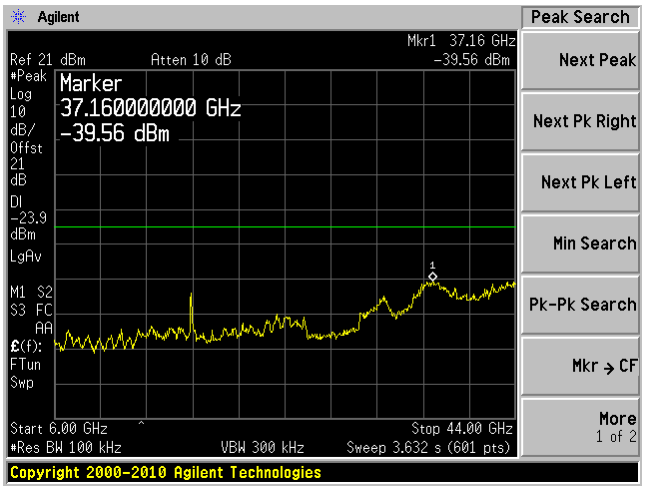
Chain J1, Plot: 5350MHz – 5460 MHz



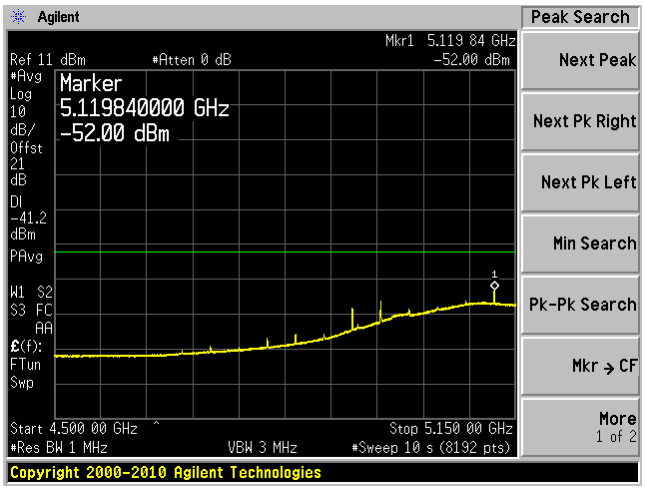
Chain J2, Plot: 30 MHz – 6 GHz



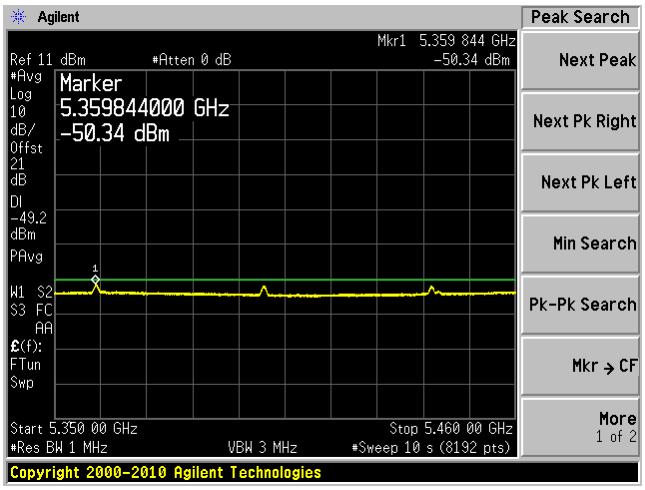
Chain J2, Plot: 6 GHz – 40 GHz



Chain J2, Plot: 4500 MHz – 5150 MHz

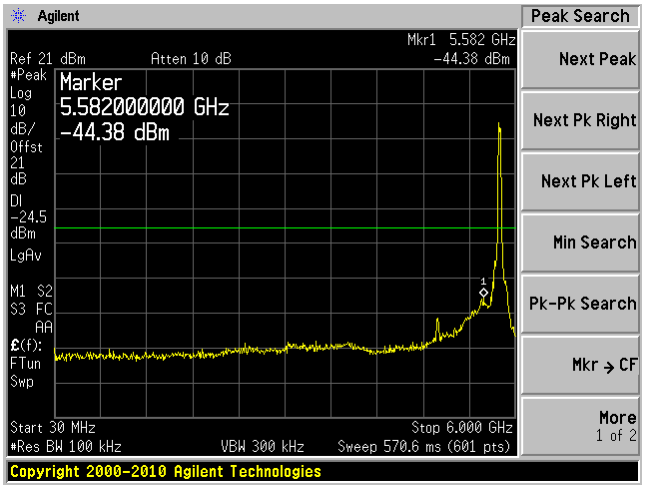


Chain J2, Plot: 5350MHz – 5460 MHz

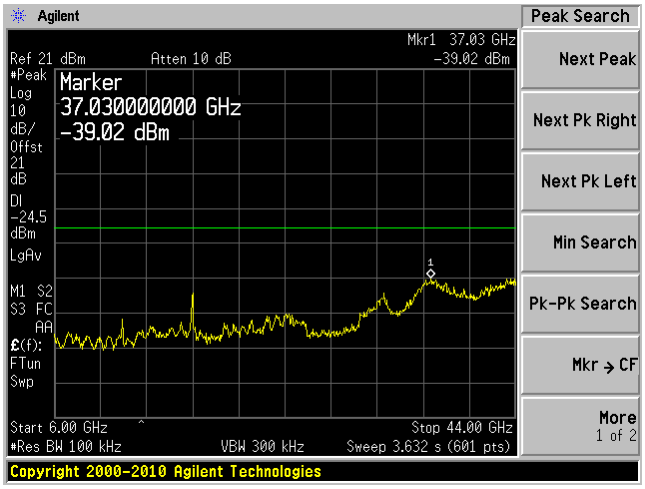


802.11n HT40, High Channel 5795 MHz

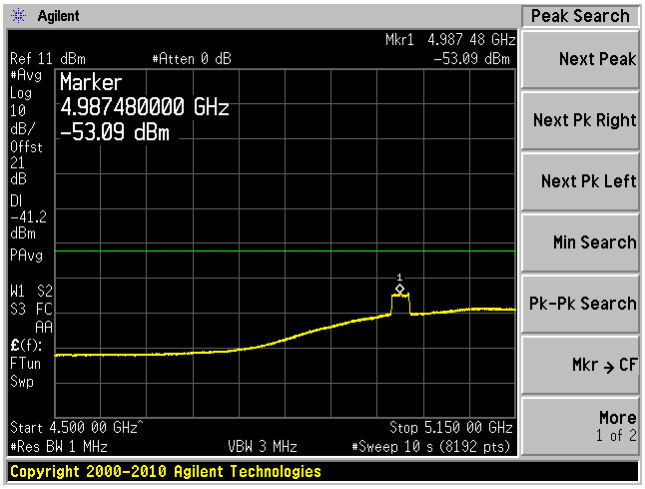
Chain J0, Plot: 30 MHz – 6 GHz



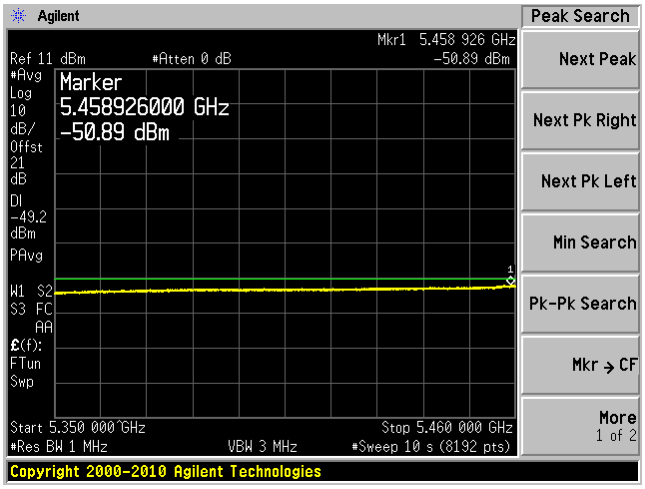
Chain J0, Plot: 6 GHz – 40 GHz



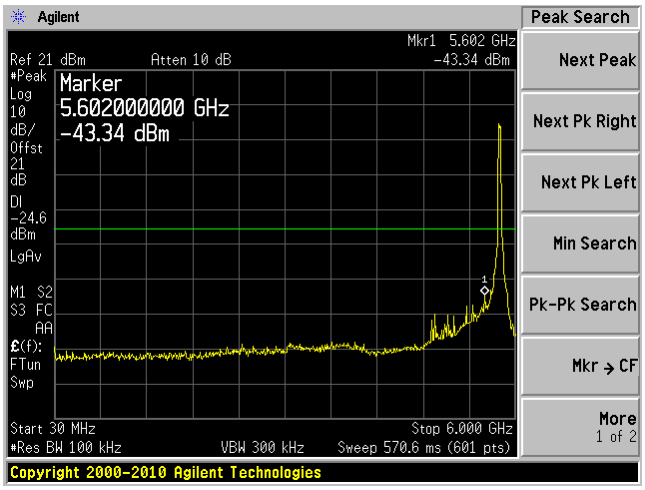
Chain J0, Plot: 4500 MHz – 5150 MHz



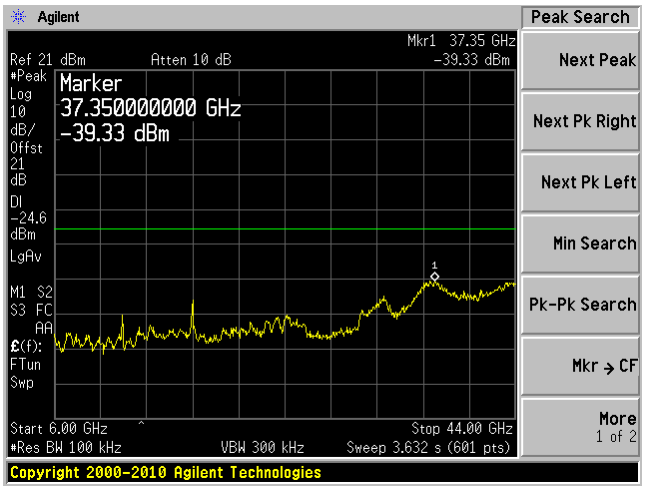
Chain J0, Plot: 5350MHz – 5460 MHz



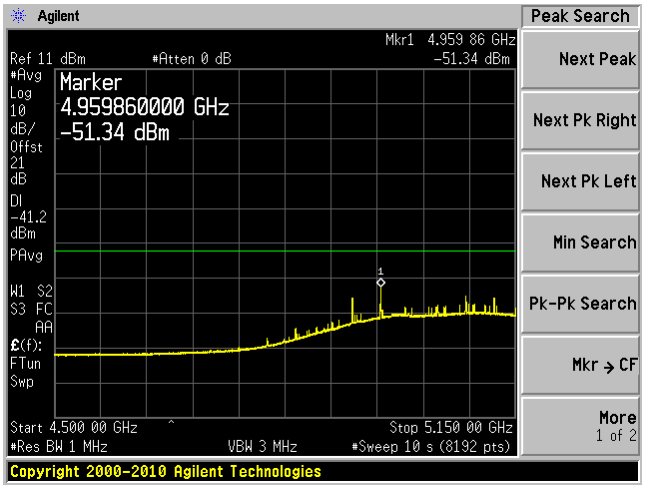
Chain J1, Plot: 30 MHz – 6 GHz



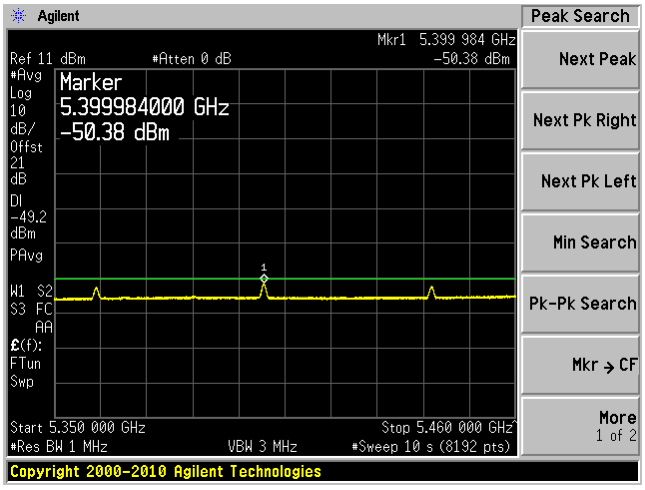
Chain J1, Plot: 6 GHz – 40 GH



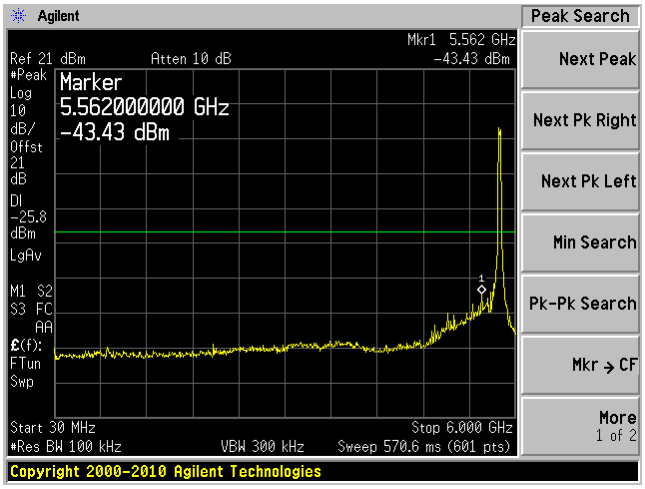
Chain J1, Plot: 4500 MHz – 5150 MHz



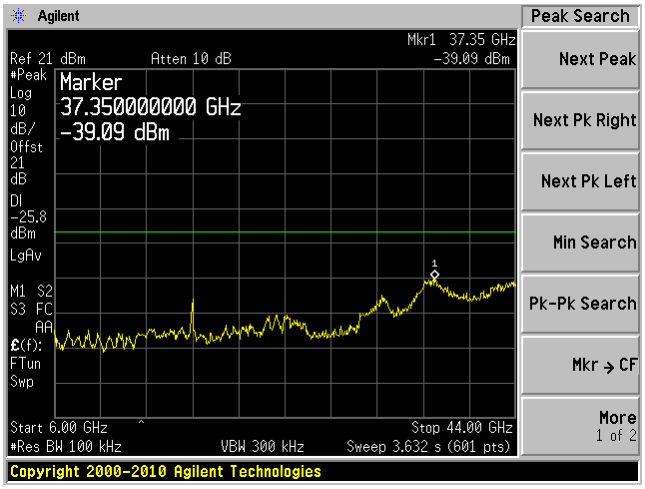
Chain J1, Plot: 5350MHz – 5460 MHz



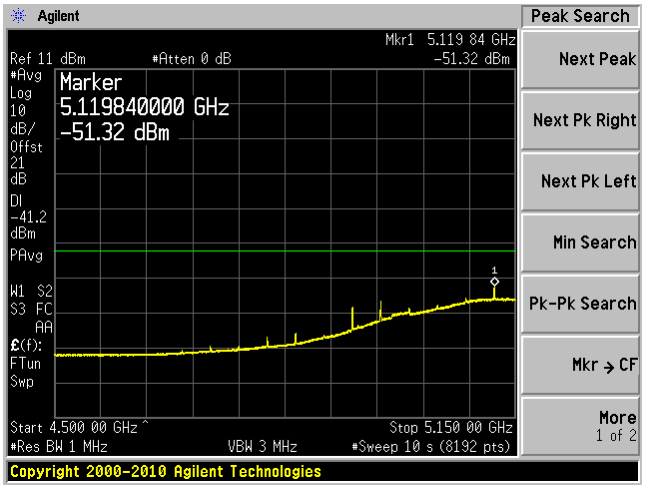
Chain J2, Plot: 30 MHz – 6 GHz



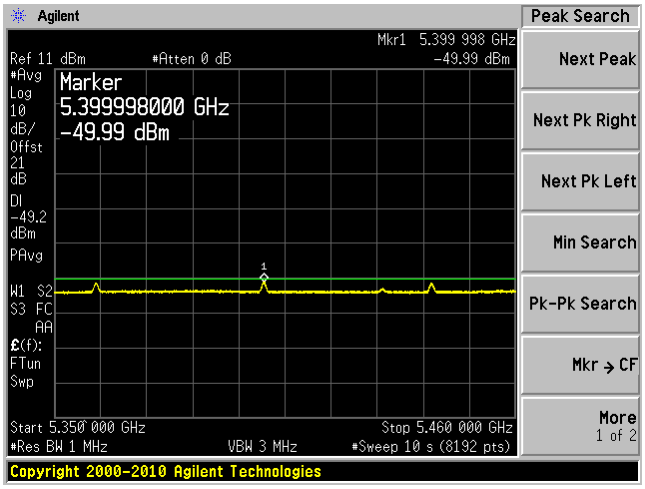
Chain J2, Plot: 6 GHz – 40 GHz



Chain J2, Plot: 4500 MHz – 5150 MHz



Chain J2, Plot: 5350MHz – 5460 MHz



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:

Margin = Corrected Amplitude - 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	A020106-3	2012-06-18	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	E4446A	US44300386	2012-09-29	1 year
EMCO	Horn Antenna	3315	9511-4627	2012-10-17	1 year
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2013-03-28	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:	21-24°C
Relative Humidity:	43-46%
ATM Pressure:	101-103kPa

The testing was performed by Bo Li from 2013-2-15 to 2013-3-15 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**
-10.18	264.96475	Horizontal	802.11 ht40 mode High Channel

5.8 GHz Band

Mode:Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Mode, Channel**
-10.39	120.84825	Horizontal	802.11n HT40 mode High Channel

1 – 25 GHz:

2.4 GHz Band

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Mode, Channel**
-3.263	4924	Horizontal	802.11 b mode High Channel

1-40 GHz:

5.8 GHz Band

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Mode, Channel**
-2.589	17355	Vertical	802.11 HT20 mode Middle Channel

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

Note: Radiated emissions were performed on 802.11b/g/n HT20, 802.11a, 802.11n HT40. Between 802.11 a/g/n HT20, worst case was measured. Measurements were performed using 50 ohm termination.

8.8 Radiated Emissions Test Data and Plots

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

2.4 GHz Band, Quasi-Peak Measurements

802.11b mode, Low Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
121.21575	30.48	158	H	53	43.5	-13.02
169.295	30.13	220	H	325	43.5	-13.37
126.87225	29.92	205	H	360	43.5	-13.58
172.90475	30.97	221	H	43	43.5	-12.53
982.299	22.69	238	V	78	54	-31.31

802.11b mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
120.577	29	369	H	170	43.5	-14.50
169.90625	30.13	99	H	360	43.5	-13.37
125.0295	27.24	268	H	42	43.5	-16.26
967.715	23.15	303	H	287	54	-30.85

802.11b mode, High Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
120.401	31.1	189	H	10	43.5	-12.40
108.783	33.29	152	H	308	43.5	-10.21
249.4625	32.42	99	H	7	46	-13.58
992.5125	23.23	99	V	319	54	-30.77

802.11g mode, Low Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
120.037	31.9	271	H	15	43.5	-11.60
164.67175	32.7	229	H	14	43.5	-10.80
126.95	28.56	327	H	0	43.5	-14.94
961.828	22.89	236	V	273	54	-31.11

802.11g mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
120.279	28.67	280	H	289	43.5	-14.83
166.62	33.18	174	H	29	43.5	-10.32
108.785	32.36	307	H	329	43.5	-11.14
249.45975	30.18	175	H	339	46	-15.82
991.3095	23.08	350	V	295	54	-30.92

802.11g mode, High Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
120.76125	29.54	99	H	180	43.5	-13.96
168.8885	30.19	202	H	270	43.5	-13.31
126.11025	28.48	281	H	352	43.5	-15.02
249.46475	32.64	103	H	360	46	-13.36
988.48725	23.13	324	H	88	54	-30.87

802.11n HT40 mode, Low Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
120.414	29.58	154	H	288	43.5	-13.92
168.5245	31.02	100	H	24	43.5	-12.48
265.64	35.79	109	H	331	46	-10.21

802.11n HT40 mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
120.414	29.01	122	H	333	43.5	-14.49
168.5245	30.64	148	H	23	43.5	-12.86
108.80025	32.24	207	H	344	43.5	-11.26
265.64	35.71	106	H	328	46	-10.29
987.2415	23.43	99	H	233	54	-30.57

802.11n HT40 mode, High Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
120.43	30.85	329	H	196	43.5	-12.65
169.70725	29.34	109	H	342	43.5	-14.16
264.96475	35.82	103	H	313	46	-10.18

5.8 GHz Band, Quasi-Peak Measurements

802.11a mode, Low Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
120.39125	26.61	396	H	309	43.5	-16.89
169.57625	26.25	360	H	28	43.5	-17.25
948.4655	23.42	99	H	48	46	-22.58
250.126	31.72	128	H	343	46	-14.28

802.11a mode, Middle Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
169.12775	26.98	135	H	208	43.5	-16.52
120.6085	27.51	185	H	209	43.5	-15.99
266.6765	34.02	107	H	308	46	-11.98
990.60125	23.13	359	H	347	54	-30.87

802.11a mode, High Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
121.85775	27.08	262	H	24	43.5	-16.42
265.69775	34.89	99	H	322	46	-11.11
169.962	22.68	207	H	279	43.5	-20.82
124.13475	22.19	111	H	210	43.5	-21.31
989.2815	23.18	138	V	254	54	-30.82

802.11n HT40 mode, Low Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
120.792	26.76	248	H	55	43.5	-16.74
168.95925	27.5	280	H	4	43.5	-16.00
250.48425	34.61	100	H	357	46	-11.39
990.0875	23.13	331	H	120	54	-30.87

802.11 n HT40 mode, High Channel

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
120.84825	33.11	185	H	258	43.5	-10.39
217.8475	33.15	124	H	341	46	-12.85
168.95425	30.4	260	H	299	43.5	-13.10
960.061	24.06	288	V	219	54	-29.94

2) 1–25 GHz, Measured at 3 meters

2.4 GH 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											
4824	36.03	284	116	V	33.097	4.56	27.7	45.987	74	-28.013	Peak
4824	37.08	65	100	H	33.097	4.56	27.7	47.037	74	-26.963	Peak
4824	28.97	284	116	V	33.097	4.56	27.7	38.927	54	-15.073	Ave
4824	31.42	65	100	H	33.097	4.56	27.7	41.377	54	-12.623	Ave
7236	32.76	0	100	V	35.928	5.49	27.58	46.598	74	-27.402	Peak
7236	32.45	0	100	H	35.928	5.49	27.58	46.288	74	-27.712	Peak
7236	18.21	0	100	V	35.928	5.49	27.58	32.048	54	-21.952	Ave
7236	18.06	0	100	H	35.928	5.49	27.58	31.898	54	-22.102	Ave
9648	31.33	0	100	V	37.954	6.54	27.06	48.764	74	-25.236	Peak
9648	31.96	0	100	H	37.954	6.54	27.06	49.394	74	-24.606	Peak
9648	16.62	0	100	V	37.954	6.54	27.06	34.054	54	-19.946	Ave
9648	16.67	0	100	H	37.954	6.54	27.06	34.104	54	-19.896	Ave
Middle Channel 2437 MHz, measured at 3 meters											
4874	37.33	5	100	V	33.327	4.54	27.76	47.437	74	-26.563	Peak
4874	39.24	296	128	H	33.327	4.54	27.76	49.347	74	-24.653	Peak
4874	32.05	5	100	V	33.327	4.54	27.76	42.157	54	-11.843	Ave
4874	35.79	296	128	H	33.327	4.54	27.76	45.897	54	-8.103	Ave
7311	33.17	0	100	V	36.369	5.57	27.51	47.599	74	-26.401	Peak
7311	33.12	0	100	H	36.369	5.57	27.51	47.549	74	-26.451	Peak
7311	18.54	0	100	V	36.369	5.57	27.51	32.969	54	-21.031	Ave
7311	18.34	0	100	H	36.369	5.57	27.51	32.769	54	-21.231	Ave
9748	31.29	0	100	V	38.087	6.62	26.98	49.017	74	-24.983	Peak
9748	31.44	0	100	H	38.087	6.62	26.98	49.167	74	-24.833	Peak
9748	16.87	0	100	V	38.087	6.62	26.98	34.597	54	-19.403	Ave
9748	18.49	0	100	H	38.087	6.62	26.98	36.217	54	-17.783	Ave

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2462 MHz, measured at 3 meters											
4924	41.19	340	100	V	33.327	4.52	27.75	51.287	74	-22.713	Peak
4924	44.73	87	100	H	33.327	4.52	27.75	54.827	74	-19.173	Peak
4924	36.81	340	100	V	33.327	4.52	27.75	46.907	54	-7.093	Ave
4924	40.64	87	100	H	33.327	4.52	27.75	50.737	54	-3.263	Ave
7386	33.46	0	100	V	36.565	5.62	27.51	48.135	74	-25.865	Peak
7386	34.15	0	100	H	36.565	5.62	27.51	48.825	74	-25.175	Peak
7386	19.24	0	100	V	36.565	5.62	27.51	33.915	54	-20.085	Ave
7386	19.1	0	100	H	36.565	5.62	27.51	33.775	54	-20.225	Ave
9848	31.19	0	100	V	38.287	6.55	26.98	49.047	74	-24.953	Peak
9848	31.69	0	100	H	38.287	6.55	26.98	49.547	74	-24.453	Peak
9848	16.62	0	100	V	38.287	6.55	26.98	34.477	54	-19.523	Ave
9848	17.27	0	100	H	38.287	6.55	26.98	35.127	54	-18.873	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											
4824	36.83	261	141	V	33.097	4.56	27.7	46.787	74	-27.213	Peak
4824	38.63	60	100	H	33.097	4.56	27.7	48.587	74	-25.413	Peak
4824	22.1	261	141	V	33.097	4.56	27.7	32.057	54	-21.943	Ave
4824	23.89	60	100	H	33.097	4.56	27.7	33.847	54	-20.153	Ave
7236	32.76	0	100	V	35.928	5.49	27.58	46.598	74	-27.402	Peak
7236	35.09	67	100	H	35.928	5.49	27.58	48.928	74	-25.072	Peak
7236	18.13	0	100	V	35.928	5.49	27.58	31.968	54	-22.032	Ave
7236	20.71	67	100	H	35.928	5.49	27.58	34.548	54	-19.452	Ave
9648	31.54	0	100	V	37.954	6.54	27.06	48.974	74	-25.026	Peak
9648	31.58	0	100	H	37.954	6.54	27.06	49.014	74	-24.986	Peak
9648	16.58	0	100	V	37.954	6.54	27.06	34.014	54	-19.986	Ave
9648	16.52	0	100	H	37.954	6.54	27.06	33.954	54	-20.046	Ave
Middle Channel 2437 MHz, measured at 3 meters											
4874	36.24	252	100	V	33.327	4.54	27.76	46.347	74	-27.653	Peak
4874	36.73	327	100	H	33.327	4.54	27.76	46.837	74	-27.163	Peak
4874	21.38	252	100	V	33.327	4.54	27.76	31.487	54	-22.513	Ave
4874	22.28	327	100	H	33.327	4.54	27.76	32.387	54	-21.613	Ave
7311	33.01	0	100	V	36.369	5.57	27.51	47.439	74	-26.561	Peak
7311	33.18	0	100	H	36.369	5.57	27.51	47.609	74	-26.391	Peak
7311	18.36	0	100	V	36.369	5.57	27.51	32.789	54	-21.211	Ave
7311	17.997	0	100	H	36.369	5.57	27.51	32.426	54	-21.574	Ave
9748	31.38	0	100	V	38.087	6.62	26.98	49.107	74	-24.893	Peak
9748	31.12	0	100	H	38.087	6.62	26.98	48.847	74	-25.153	Peak
9748	16.68	0	100	V	38.087	6.62	26.98	34.407	54	-19.593	Ave
9748	16.66	0	100	H	38.087	6.62	26.98	34.387	54	-19.613	Ave

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2462 MHz, measured at 3 meters											
4924	40.49	5	100	V	33.327	4.52	27.75	50.587	74	-23.413	Peak
4924	44.12	87	100	H	33.327	4.52	27.75	54.217	74	-19.783	Peak
4924	25.7	5	100	V	33.327	4.52	27.75	35.797	54	-18.203	Ave
4924	29.48	87	100	H	33.327	4.52	27.75	39.577	54	-14.423	Ave
7386	37.8	273	100	V	36.565	5.62	27.51	52.475	74	-21.525	Peak
7386	38.42	87	124	H	36.565	5.62	27.51	53.095	74	-20.905	Peak
7386	21.77	273	100	V	36.565	5.62	27.51	36.445	54	-17.555	Ave
7386	22.7	87	124	H	36.565	5.62	27.51	37.375	54	-16.625	Ave
9848	31.29	0	100	V	38.287	6.55	26.98	49.147	74	-24.853	Peak
9848	31.44	0	100	H	38.287	6.55	26.98	49.297	74	-24.703	Peak
9848	16.51	0	100	V	38.287	6.55	26.98	34.367	54	-19.633	Ave
9848	16.46	0	100	H	38.287	6.55	26.98	34.317	54	-19.683	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											
4824	36	287	100	V	33.097	4.56	27.7	45.957	74	-28.043	Peak
4824	38.76	27	100	H	33.097	4.56	27.7	48.717	74	-25.283	Peak
4824	20.87	287	100	V	33.097	4.56	27.7	30.827	54	-23.173	Ave
4824	23.51	27	100	H	33.097	4.56	27.7	33.467	54	-20.533	Ave
7236	33.03	0	100	V	35.928	5.49	27.58	46.868	74	-27.132	Peak
7236	34.22	0	100	H	35.928	5.49	27.58	48.058	74	-25.942	Peak
7236	18.84	0	100	V	35.928	5.49	27.58	32.678	54	-21.322	Ave
7236	18.21	0	100	H	35.928	5.49	27.58	32.048	54	-21.952	Ave
9648	31.66	0	100	V	37.954	6.54	27.06	49.094	74	-24.906	Peak
9648	31.92	0	100	H	37.954	6.54	27.06	49.354	74	-24.646	Peak
9648	16.65	0	100	V	37.954	6.54	27.06	34.084	54	-19.916	Ave
9648	16.65	0	100	H	37.954	6.54	27.06	34.084	54	-19.916	Ave
Middle Channel 2437 MHz, measured at 3 meters											
4874	38.07	261	100	V	33.327	4.54	27.76	48.177	74	-25.823	Peak
4874	36.75	326	100	H	33.327	4.54	27.76	46.857	74	-27.143	Peak
4874	22.16	261	100	V	33.327	4.54	27.76	32.267	54	-21.733	Ave
4874	22.37	326	100	H	33.327	4.54	27.76	32.477	54	-21.523	Ave
7311	33.11	0	100	V	36.369	5.57	27.51	47.539	74	-26.461	Peak
7311	33.16	0	100	H	36.369	5.57	27.51	47.589	74	-26.411	Peak
7311	18.55	0	100	V	36.369	5.57	27.51	32.979	54	-21.021	Ave
7311	18.36	0	100	H	36.369	5.57	27.51	32.789	54	-21.211	Ave
9748	31.6	0	100	V	38.087	6.62	26.98	49.327	74	-24.673	Peak
9748	31.5	0	100	H	38.087	6.62	26.98	49.227	74	-24.773	Peak
9748	16.73	0	100	V	38.087	6.62	26.98	34.457	54	-19.543	Ave
9748	16.74	0	100	H	38.087	6.62	26.98	34.467	54	-19.533	Ave

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2462 MHz, measured at 3 meters											
4924	42.82	335	110	V	33.327	4.52	27.75	52.917	74	-21.083	Peak
4924	44.64	85	100	H	33.327	4.52	27.75	54.737	74	-19.263	Peak
4924	27.82	335	110	V	33.327	4.52	27.75	37.917	54	-16.083	Ave
4924	29.5	85	100	H	33.327	4.52	27.75	39.597	54	-14.403	Ave
7386	38.05	276	110	V	36.565	5.62	27.51	52.725	74	-21.275	Peak
7386	38.78	49	100	H	36.565	5.62	27.51	53.455	74	-20.545	Peak
7386	21.19	276	100	V	36.565	5.62	27.51	35.865	54	-18.135	Ave
7386	22.35	49	100	H	36.565	5.62	27.51	37.025	54	-16.975	Ave
9848	31.57	0	100	V	38.287	6.55	26.98	49.427	74	-24.573	Peak
9848	31.31	0	100	H	38.287	6.55	26.98	49.167	74	-24.833	Peak
9848	16.44	0	100	V	38.287	6.55	26.98	34.297	54	-19.703	Ave
9848	16.59	0	100	H	38.287	6.55	26.98	34.447	54	-19.553	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											
4844	32.34	0	100	V	33.097	4.56	27.7	42.297	74	-31.703	Peak
4844	33.67	0	100	H	33.097	4.56	27.7	43.627	74	-30.373	Peak
4844	17.82	0	100	V	33.097	4.56	27.7	27.777	54	-26.223	Ave
4844	19	0	100	H	33.097	4.56	27.7	28.957	54	-25.043	Ave
7266	33.09	0	100	V	35.928	5.49	27.56	46.948	74	-27.052	Peak
7266	32.7	0	100	H	35.928	5.49	27.56	46.558	74	-27.442	Peak
7266	18.12	0	100	V	35.928	5.49	27.56	31.978	54	-22.022	Ave
7266	18.14	0	100	H	35.928	5.49	27.56	31.998	54	-22.002	Ave
9688	32.36	0	100	V	37.954	6.54	26.98	49.874	74	-24.126	Peak
9688	31.38	0	100	H	37.954	6.54	26.98	48.894	74	-25.106	Peak
9688	16.61	0	100	V	37.954	6.54	26.98	34.124	54	-19.876	Ave
9688	16.58	0	100	H	37.954	6.54	26.98	34.094	54	-19.906	Ave
Middle Channel 2437 MHz, measured at 3 meters											
4874	34.88	262	100	V	33.327	4.54	27.76	44.987	74	-29.013	Peak
4874	36.42	297	120	H	33.327	4.54	27.76	46.527	74	-27.473	Peak
4874	20.65	262	100	V	33.327	4.54	27.76	30.757	54	-23.243	Ave
4874	22.92	297	120	H	33.327	4.54	27.76	33.027	54	-20.973	Ave
7311	32.75	0	100	V	36.369	5.57	27.51	47.179	74	-26.821	Peak
7311	33.59	0	100	H	36.369	5.57	27.51	48.019	74	-25.981	Peak
7311	18.86	0	100	V	36.369	5.57	27.51	33.289	54	-20.711	Ave
7311	18.6	0	100	H	36.369	5.57	27.51	33.029	54	-20.971	Ave
9748	31.03	0	100	V	38.087	6.62	26.98	48.757	74	-25.243	Peak
9748	31.12	0	100	H	38.087	6.62	26.98	48.847	74	-25.153	Peak
9748	16.67	0	100	V	38.087	6.62	26.98	34.397	54	-19.603	Ave
9748	16.66	0	100	H	38.087	6.62	26.98	34.387	54	-19.613	Ave

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2452 MHz, measured at 3 meters											
4904	37.37	5	100	V	33.327	4.52	27.67	47.547	74	-26.453	Peak
4904	37.44	88	100	H	33.327	4.52	27.67	47.617	74	-26.383	Peak
4904	22.4	5	100	V	33.327	4.52	27.67	32.577	54	-21.423	Ave
4904	22.92	88	100	H	33.327	4.52	27.67	33.097	54	-20.903	Ave
7356	33.07	0	100	V	36.565	5.62	27.57	47.685	74	-26.315	Peak
7356	35.52	50	100	H	36.565	5.62	27.57	50.135	74	-23.865	Peak
7356	18.87	0	100	V	36.565	5.62	27.57	33.485	54	-20.515	Ave
7356	20.8	50	100	H	36.565	5.62	27.57	35.415	54	-18.585	Ave
9808	30.75	0	100	V	38.287	6.55	27.02	48.567	74	-25.433	Peak
9808	30.8	0	100	H	38.287	6.55	27.02	48.617	74	-25.383	Peak
9808	16.51	0	100	V	38.287	6.55	27.02	34.327	54	-19.673	Ave
9808	16.51	0	100	H	38.287	6.55	27.02	34.327	54	-19.673	Ave

3) 1–40 GHz, Measured at 3 meters

5.8 GHz Band

802.11a mode, Low Channel

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											
11490	40.72	184	100	V	39.047	7.6	26.94	60.427	74	-13.573	Peak
11490	38.84	235	100	H	39.047	7.6	26.94	58.547	74	-15.453	Peak
11490	25.24	184	100	V	39.047	7.6	26.94	44.947	54	-9.053	Ave
11490	23.86	235	100	H	39.047	7.6	26.94	43.567	54	-10.433	Ave
17235	36.1	135	100	V	43.239	8.63	25.93	62.039	74	-11.961	Peak
17235	38.09	260	104	H	43.239	8.63	25.93	64.029	74	-9.971	Peak
17235	20.39	135	100	V	43.239	8.63	25.93	46.329	54	-7.671	Ave
17235	20.22	206	104	H	43.239	8.63	25.93	46.159	54	-7.841	Ave
22980	32.43	0	100	V	35.2	10.07	34.74	42.96	74	-31.04	Peak
22980	32.46	0	100	H	35.2	10.07	34.74	42.99	74	-31.01	Peak
22980	17.76	0	100	V	35.2	10.07	34.74	28.29	54	-25.71	Ave
22980	17.74	0	100	H	35.2	10.07	34.74	28.27	54	-25.73	Ave

802.11a mode, Middle Channel

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											
11570	39.26	160	100	V	39.203	7.69	26.99	59.163	74	-14.837	Peak
11570	37.63	203	143	H	39.203	7.69	26.99	57.533	74	-16.467	Peak
11570	24.02	160	100	V	39.203	7.69	26.99	43.923	54	-10.077	Ave
11570	23.88	203	143	H	39.203	7.69	26.99	43.783	54	-10.217	Ave
17355	31.83	0	100	V	45.311	8.64	25.84	59.941	74	-14.059	Peak
17355	32.52	0	100	H	45.311	8.64	25.84	60.631	74	-13.369	Peak
17355	16.83	0	100	V	45.311	8.64	25.84	44.941	54	-9.059	Ave
17355	16.96	0	100	H	45.311	8.64	25.84	45.071	54	-8.929	Ave
23140	33.06	0	100	V	35.2	10.23	34.74	43.75	74	-30.25	Peak
23140	32.86	0	100	H	35.2	10.23	34.74	43.55	74	-30.45	Peak
23140	18.07	0	100	V	35.2	10.23	34.74	28.76	54	-25.24	Ave
23140	18.1	0	100	H	35.2	10.23	34.74	28.79	54	-25.21	Ave

802.11a mode, High Channel

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											
11650	40.19	160	100	V	39.203	7.78	27	60.173	74	-13.827	Peak
11650	39.09	242	100	H	39.203	7.78	27	59.073	74	-14.927	Peak
11650	25.72	160	100	V	39.203	7.78	27	45.703	54	-8.297	Ave
11650	23.9	242	100	H	39.203	7.78	27	43.883	54	-10.117	Ave
17475	32.85	0	100	V	46.782	8.74	25.79	62.582	74	-11.418	Peak
17475	33.78	128	164	H	46.782	8.74	25.79	63.512	74	-10.488	Peak
17475	17.03	0	100	V	46.782	8.74	25.79	46.762	54	-7.238	Ave
17475	19.63	128	164	H	46.782	8.74	25.79	49.362	54	-4.638	Ave
23300	32.77	0	100	V	35.2	10.13	34.74	43.36	74	-30.64	Peak
23300	32.31	0	100	H	35.2	10.13	34.74	42.9	74	-31.1	Peak
23300	17.89	0	100	V	35.2	10.13	34.74	28.48	54	-25.52	Ave
23300	17.9	0	100	H	35.2	10.13	34.74	28.49	54	-25.51	Ave

802.11n HT20 mode, Low Channel

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											
11490	38.91	148	100	V	39.047	7.6	26.94	58.617	74	-15.383	Peak
11490	37.63	235	100	H	39.047	7.6	26.94	57.337	74	-16.663	Peak
11490	24.73	148	100	V	39.047	7.6	26.94	44.437	54	-9.563	Ave
11490	22.64	235	100	H	39.047	7.6	26.94	42.347	54	-11.653	Ave
17235	34.54	274	100	V	43.239	8.63	25.93	60.479	74	-13.521	Peak
17235	38.99	132	129	H	43.239	8.63	25.93	64.929	74	-9.071	Peak
17235	18.97	274	100	V	43.239	8.63	25.93	44.909	54	-9.091	Ave
17235	21.47	132	129	H	43.239	8.63	25.93	47.409	54	-6.591	Ave
22980	31.73	0	100	V	35.2	10.07	34.74	42.26	74	-31.74	Peak
22980	32.38	0	100	H	35.2	10.07	34.74	42.91	74	-31.09	Peak
22980	17.4	0	100	V	35.2	10.07	34.74	27.93	54	-26.07	Ave
22980	17.34	0	100	H	35.2	10.07	34.74	27.87	54	-26.13	Ave

802.11n HT20 mode, Middle Channel

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											
11570	38.09	189	100	V	39.203	7.69	26.99	57.993	74	-16.007	Peak
11570	36.74	187	128	H	39.203	7.69	26.99	56.643	74	-17.357	Peak
11570	23.05	189	100	V	39.203	7.69	26.99	42.953	54	-11.047	Ave
11570	22.05	187	128	H	39.203	7.69	26.99	41.953	54	-12.047	Ave
17355	38.56	187	100	V	45.311	8.64	25.84	66.671	74	-7.329	Peak
17355	36.68	202	100	H	45.311	8.64	25.84	64.791	74	-9.209	Peak
17355	23.3	187	100	V	45.311	8.64	25.84	51.411	54	-2.589	Ave
17355	22.78	202	100	H	45.311	8.64	25.84	50.891	54	-3.109	Ave
23140	31.65	0	100	V	35.2	10.23	34.74	42.34	74	-31.66	Peak
23140	33.22	0	100	H	35.2	10.23	34.74	43.91	74	-30.09	Peak
23140	16.87	0	100	V	35.2	10.23	34.74	27.56	54	-26.44	Ave
23140	16.93	0	100	H	35.2	10.23	34.74	27.62	54	-26.38	Ave

802.11n HT 20mode, High Channel

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											
11650	36.76	188	100	V	39.203	7.78	27	56.743	74	-17.257	Peak
11650	38.68	203	100	H	39.203	7.78	27	58.663	74	-15.337	Peak
11650	22.36	188	100	V	39.203	7.78	27	42.343	54	-11.657	Ave
11650	24.45	203	100	H	39.203	7.78	27	44.433	54	-9.567	Ave
17475	32.86	0	100	V	46.782	8.74	25.79	62.592	74	-11.408	Peak
17475	33.03	0	100	H	46.782	8.74	25.79	62.762	74	-11.238	Peak
17475	16.93	0	100	V	46.782	8.74	25.79	46.662	54	-7.338	Ave
17475	17.05	0	100	H	46.782	8.74	25.79	46.782	54	-7.218	Ave
23300	32.59	0	100	V	35.2	10.13	34.74	43.18	74	-30.82	Peak
23300	32.56	0	100	H	35.2	10.13	34.74	43.15	74	-30.85	Peak
23300	17.88	0	100	V	35.2	10.13	34.74	28.47	54	-25.53	Ave
23300	17.91	0	100	H	35.2	10.13	34.74	28.5	54	-25.5	Ave

802.11n HT40 mode, Low Channel

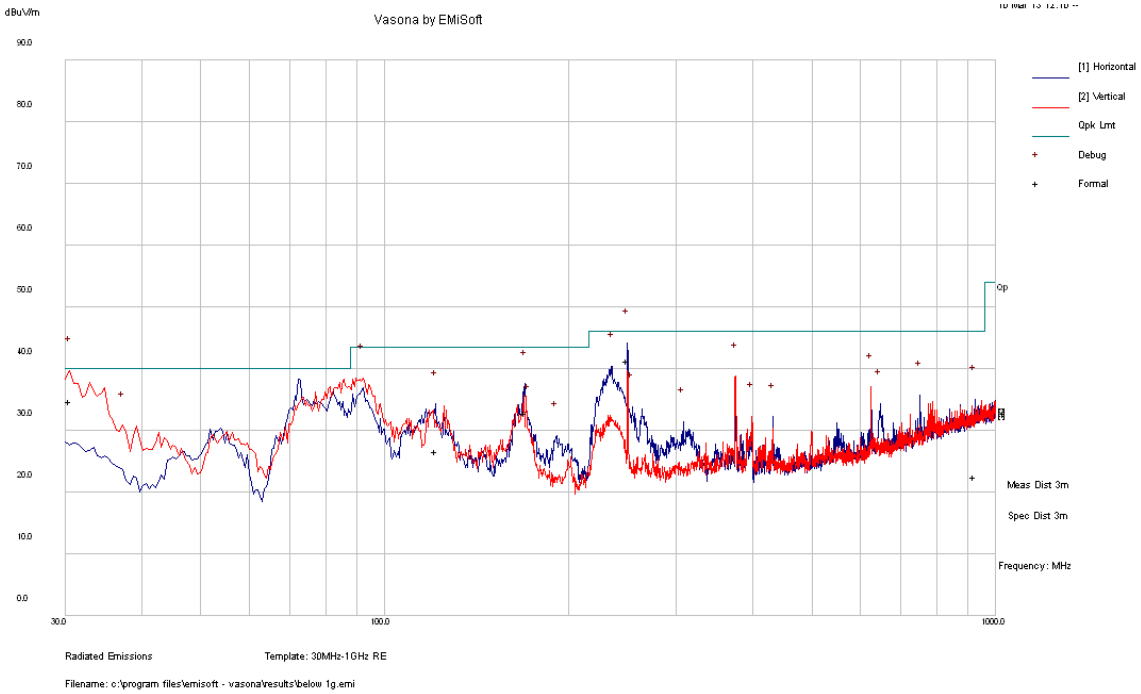
Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5755 MHz, measured at 3 meters											
11510	36.71	148	100	V	39.047	7.6	26.99	56.367	74	-17.633	Peak
11510	34.53	111	100	H	39.047	7.6	26.99	54.187	74	-19.813	Peak
11510	22.9	148	100	V	39.047	7.6	26.99	42.557	54	-11.443	Ave
11510	20.65	111	100	H	39.047	7.6	26.99	40.307	54	-13.693	Ave
17265	31.89	0	100	V	43.239	8.63	25.94	57.819	74	-16.181	Peak
17265	32.45	0	100	H	43.239	8.63	25.94	58.379	74	-15.621	Peak
17265	17.37	0	100	V	43.239	8.63	25.94	43.299	54	-10.701	Ave
17265	17.7	0	100	H	43.239	8.63	25.94	43.629	54	-10.371	Ave
23020	31.33	0	100	V	35.2	10.07	34.74	41.86	74	-32.14	Peak
23020	31.9	0	100	H	35.2	10.07	34.74	42.43	74	-31.57	Peak
23020	17.33	0	100	V	35.2	10.07	34.74	27.86	54	-26.14	Ave
23020	17.33	0	100	H	35.2	10.07	34.74	27.86	54	-26.14	Ave

802.11n HT40 mode, High Channel

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											
11590	35.77	160	100	V	39.203	7.69	26.99	55.673	74	-18.327	Peak
11590	36.04	203	141	H	39.203	7.69	26.99	55.943	74	-18.057	Peak
11590	21.37	160	100	V	39.203	7.69	26.99	41.273	54	-12.727	Ave
11590	22.26	203	141	H	39.203	7.69	26.99	42.163	54	-11.837	Ave
17385	31.27	0	100	V	45.311	8.64	25.86	59.361	74	-14.639	Peak
17385	31.19	0	100	H	45.311	8.64	25.86	59.281	74	-14.719	Peak
17385	16.78	0	100	V	45.311	8.64	25.86	44.871	54	-9.129	Ave
17385	16.78	0	100	H	45.311	8.64	25.86	44.871	54	-9.129	Ave
23180	32.81	0	100	V	35.2	10.23	34.74	43.5	74	-30.5	Peak
23180	32.23	0	100	H	35.2	10.23	34.74	42.92	74	-31.08	Peak
23180	17.88	0	100	V	35.2	10.23	34.74	28.57	54	-25.43	Ave
23180	17.86	0	100	H	35.2	10.23	34.74	28.55	54	-25.45	Ave

4) Co-Location

2.4 GHz b mode Middle channel & 5.8 GHz 802.11n HT40 Low channel



30-1000 MHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
30.4925	34.81	121	V	15	40	-5.19
249.955	41.37	99	H	17	46	-4.63
169.6445	32.93	106	H	281	43.5	-10.57
121.1825	26.69	119	H	0	43.5	-16.81
923.562	22.53	384	H	59	46	-23.47

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	42.9	116	112	V	32.7	4.56	27.70	52.471	74	-21.529	Peak
4824	46.71	144	156	H	32.7	4.56	27.70	56.281	74	-17.719	Peak
4824	29.5	116	112	V	32.7	4.56	27.70	39.071	54	-14.929	Ave
4824	32.87	144	156	H	32.7	4.56	27.70	42.441	54	-11.559	Ave
7236	37.04	274	146	V	36.2	5.49	27.6	51.196	74	-22.804	Peak
7236	40.47	271	151	H	36.2	5.49	27.6	54.626	74	-19.374	Peak
7236	28.68	274	146	V	36.2	5.49	27.6	42.836	54	-11.164	Ave
7236	33.76	271	151	H	36.2	5.49	27.6	47.916	54	-6.084	Ave
11487	40.45	131	141	V	39.4	7.59	26.94	60.508	74	-13.492	Peak
11487	46.82	117	140	H	39.4	7.59	26.94	66.878	74	-7.122	Peak
11487	23.62	131	141	V	39.4	7.59	26.94	43.678	54	-10.322	Ave
11487	28.32	117	140	H	39.4	7.59	26.94	48.378	54	-5.622	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	E4446A	US44300386	2012-09-29	1 year

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

9.4 Test Environmental Conditions

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

The testing was performed by Bo Li from 2013-2-1 and 2012-2-22 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	6 dB Emission Bandwidth (MHz) J2	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J2	Limit (MHz)	Results
Low	2412	10.136	10.106	10.116	13.799	14.0007	13.7326	> 0.5	Compliant
Middle	2437	10.118	10.124	9.686	13.6367	13.8867	13.7189	> 0.5	Compliant
High	2462	9.162	10.12	9.6	13.4034	13.4883	13.6621	> 0.5	Compliant

802.11 g mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	6 dB Emission Bandwidth (MHz) J2	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J2	Limit (MHz)	Results
Low	2412	16.47	16.406	16.43	16.5286	16.507	16.4584	> 0.5	Compliant
Middle	2437	16.411	16.43	15.982	16.6008	16.5233	16.4842	> 0.5	Compliant
High	2462	15.724	16.395	15.816	16.5346	16.4448	16.466	> 0.5	Compliant

802.11n HT20 mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	6 dB Emission Bandwidth (MHz) J2	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J2	Limit (MHz)	Results
Low	2412	17.637	17.405	17.358	17.7042	17.7209	17.6616	> 0.5	Compliant
Middle	2437	17.64	17.667	17.403	17.75	17.6794	17.6798	> 0.5	Compliant
High	2462	16.34	16.981	16.417	17.6607	17.635	17.6728	> 0.5	Compliant

802.11n HT40 mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	6 dB Emission Bandwidth (MHz) J2	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J2	Limit (MHz)	Results
Low	2422	35.891	34.575	36.059	36.1874	36.2053	36.1419	> 0.5	Compliant
Middle	2437	36.149	36.42	36.022	36.2779	36.2556	36.2349	> 0.5	Compliant
High	2452	35.828	35.836	33.298	36.197	36.2132	36.1933	> 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	6 dB Emission Bandwidth (MHz) J2	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J2	Limit (MHz)	Results
Low	5745	16.485	16.418	16.43	16.4596	16.4554	16.4098	> 0.5	Compliant
Middle	5785	16.532	16.527	16.412	16.4563	16.4845	16.4336	> 0.5	Compliant
High	5825	16.466	16.408	16.46	16.4708	16.4427	16.4174	> 0.5	Compliant

802.11n HT20 mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	6 dB Emission Bandwidth (MHz) J2	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J2	Limit (MHz)	Results
Low	5745	17.623	17.707	17.617	17.6128	17.6507	17.6034	> 0.5	Compliant
Middle	5785	17.385	17.23	16.971	17.6288	17.5737	17.5677	> 0.5	Compliant
High	5825	17.788	17.667	17.643	17.6793	17.7095	17.5959	> 0.5	Compliant

802.11n HT40 mode:

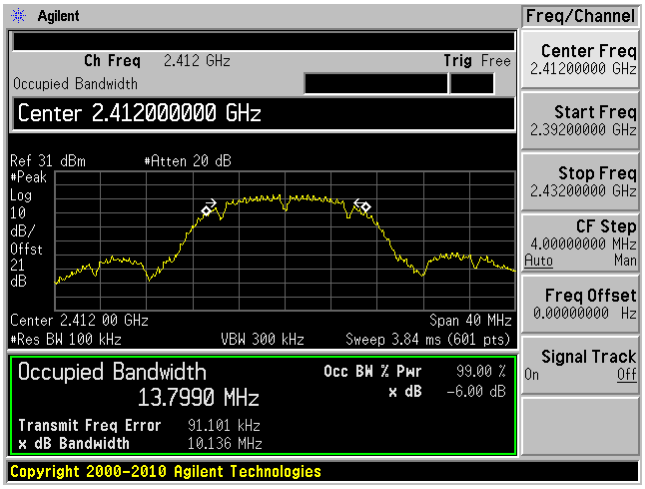
Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	6 dB Emission Bandwidth (MHz) J2	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J2	Limit (MHz)	Results
Low	5755	36.308	35.817	36.074	36.0363	36.1010	36.0863	> 0.5	Compliant
High	5795	36.081	35.732	35.803	36.1013	35.9598	36.0073	> 0.5	Compliant

Please refer to the following plots for detailed test results

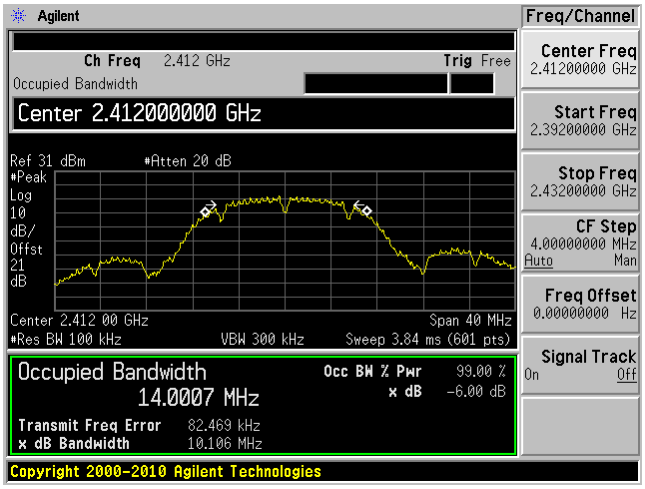
2.4 GHz Band

802.11b mode

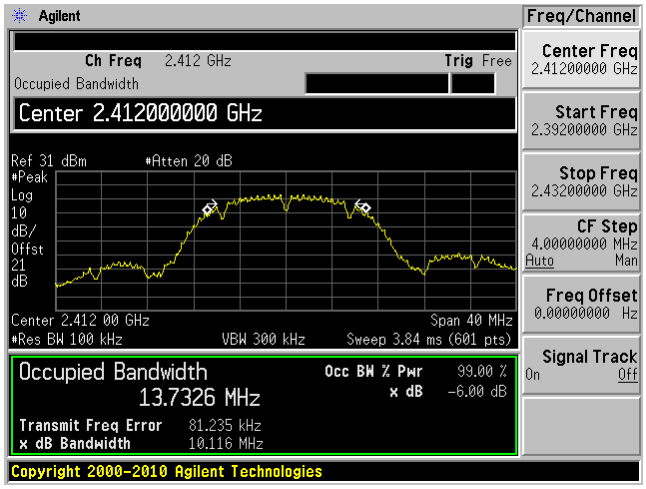
Low channel: 2412 MHz Chain J0



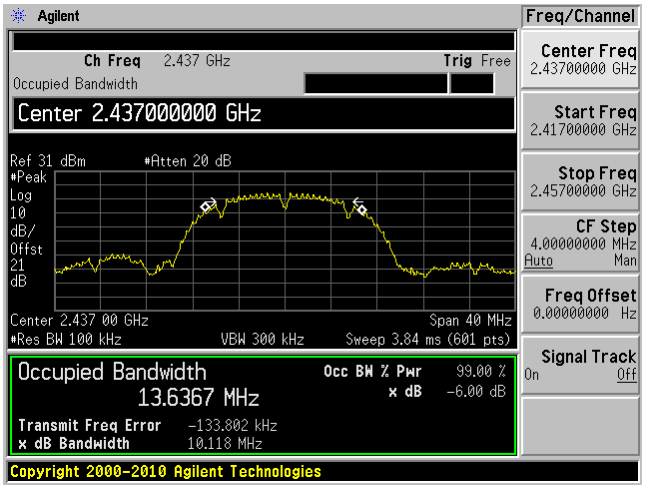
Low channel: 2412 MHz Chain J1



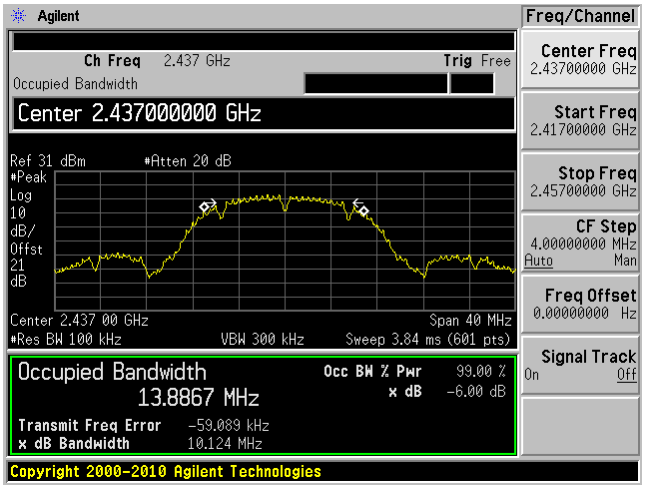
Low channel: 2412 MHz Chain J2



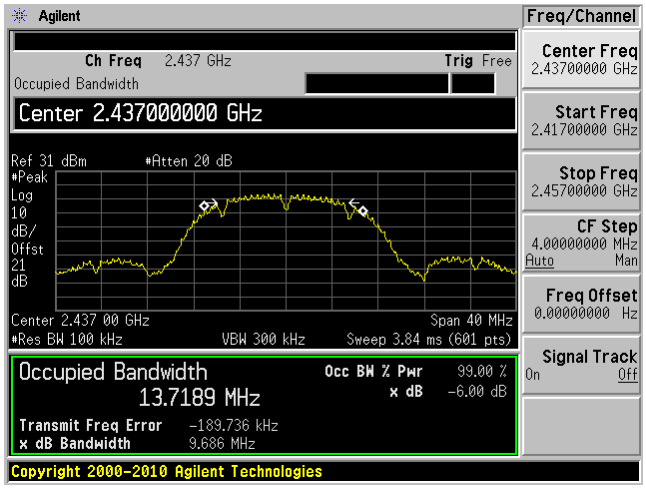
Middle channel: 2437 MHz Chain J0



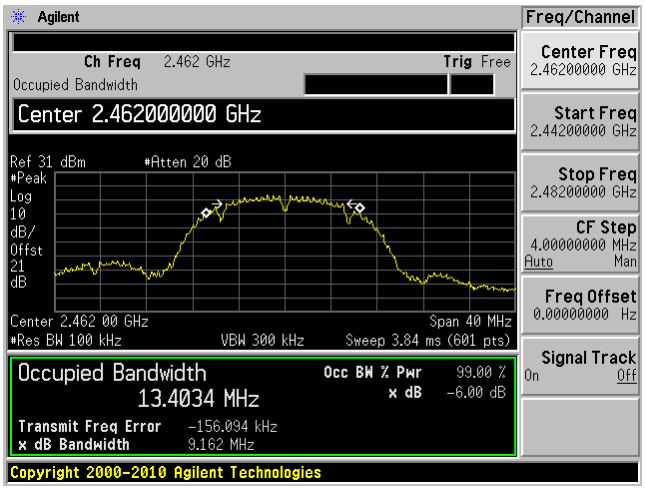
Middle channel: 2437 MHz Chain J1



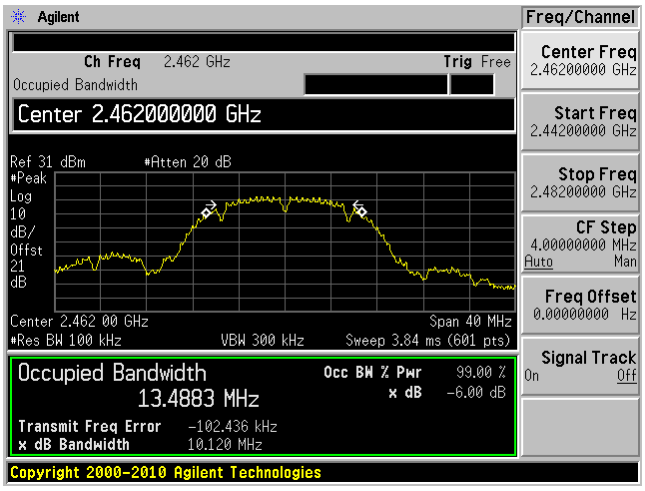
Middle channel: 2437 MHz Chain J2



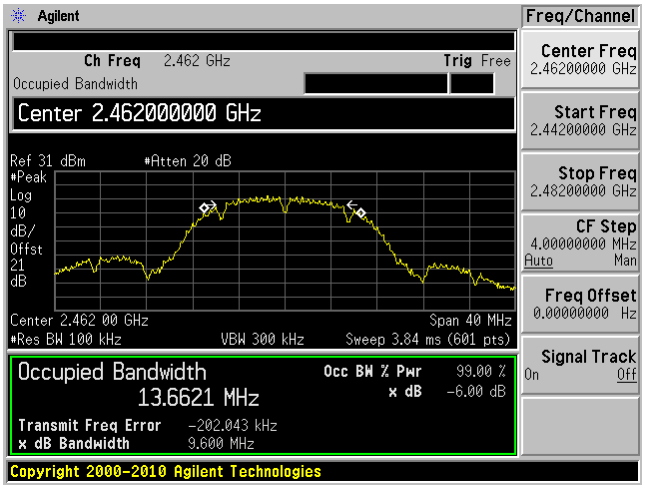
High channel: 2462 MHz Chain J0



High channel: 2462 MHz Chain J1

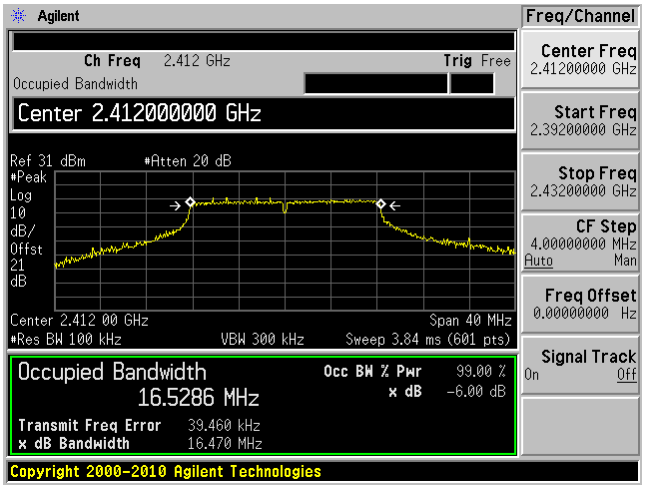


High channel: 2462 MHz Chain J2

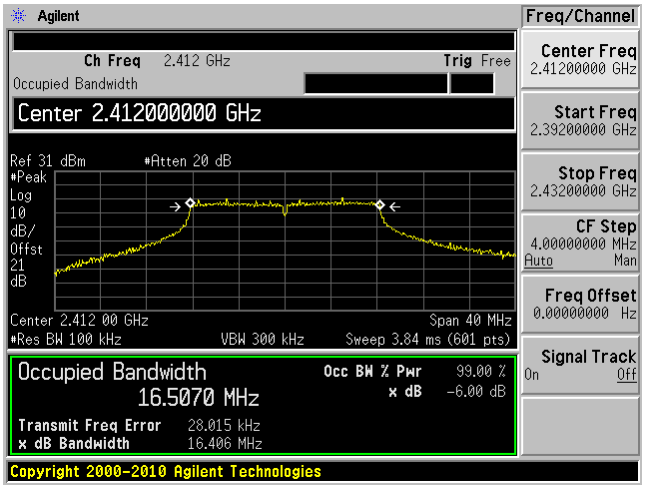


802.11g mode

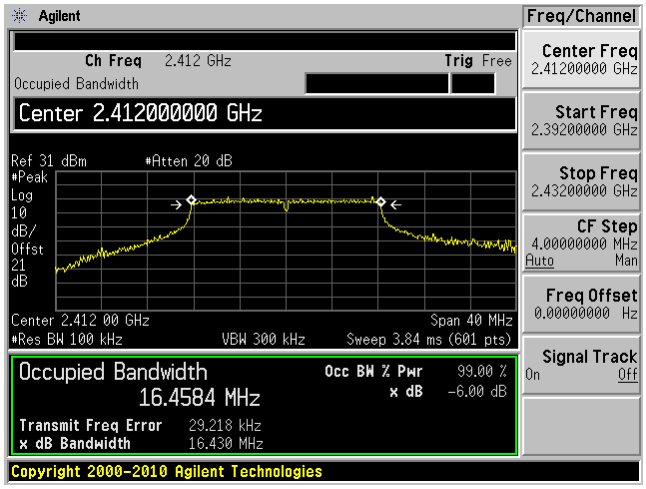
Low channel: 2412 MHz Chain J0



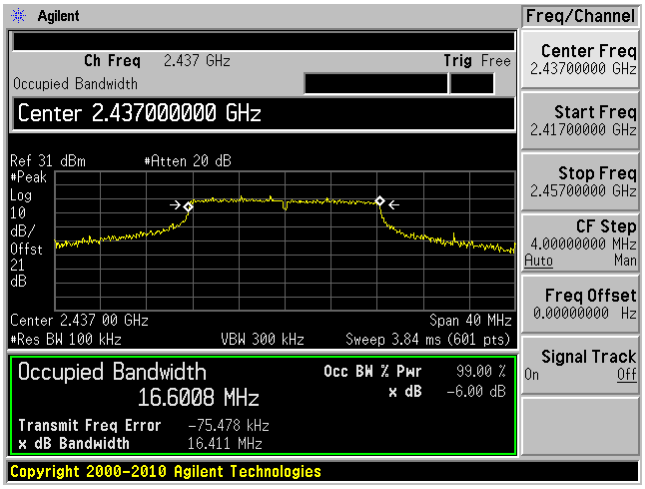
Low channel: 2412 MHz Chain J1



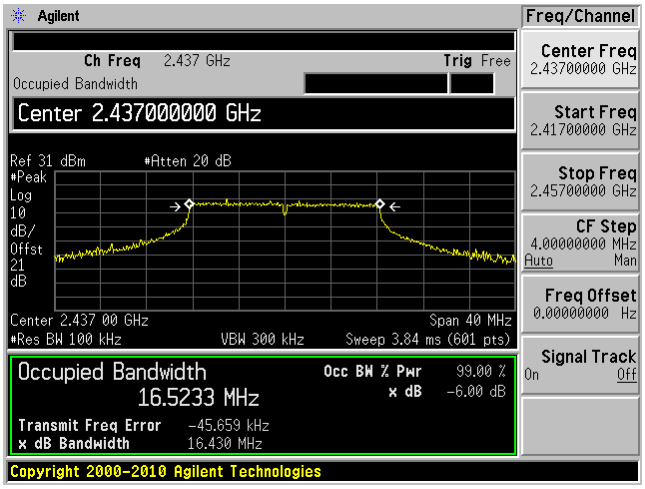
Low channel: 2412 MHz Chain J2



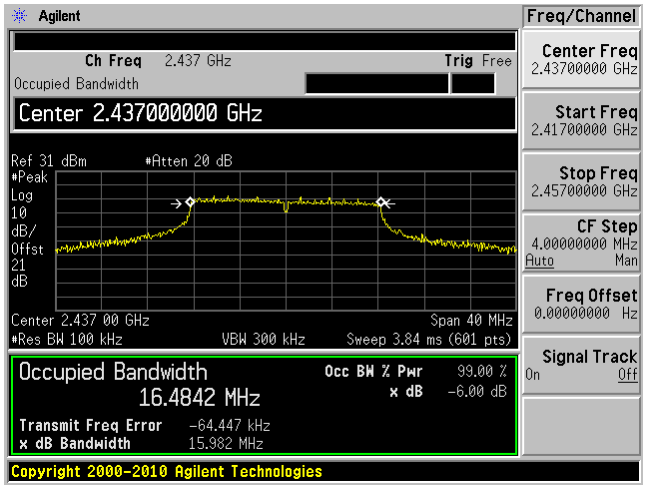
Middle channel: 2437 MHz Chain J0



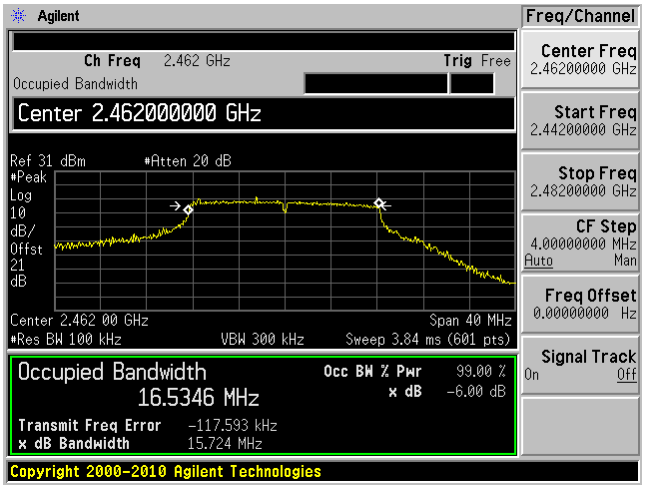
Middle channel: 2437 MHz Chain J1



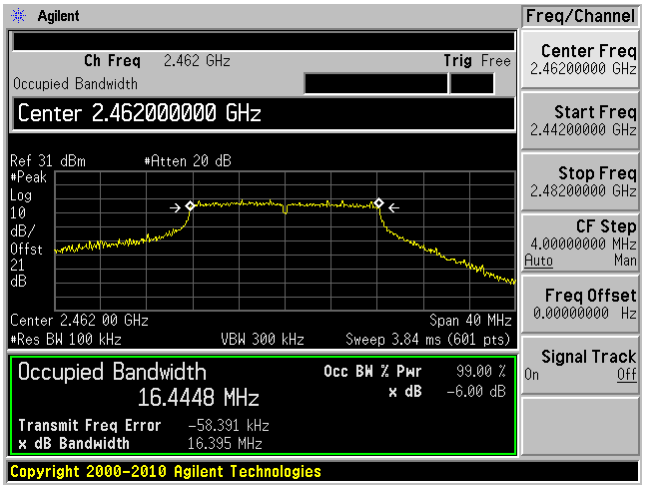
Middle channel: 2437 MHz Chain J2



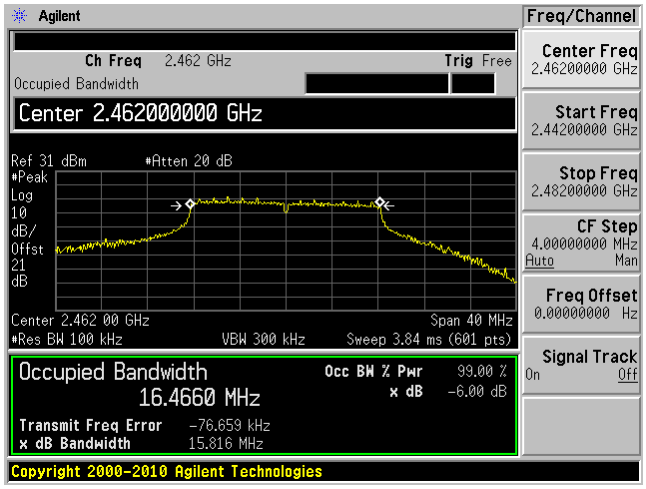
High channel: 2462 MHz Chain J0



High channel: 2462 MHz Chain J1

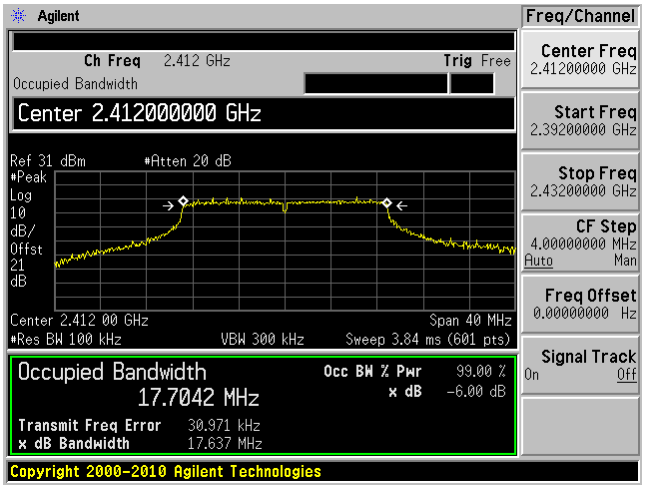


High channel: 2462 MHz Chain J2

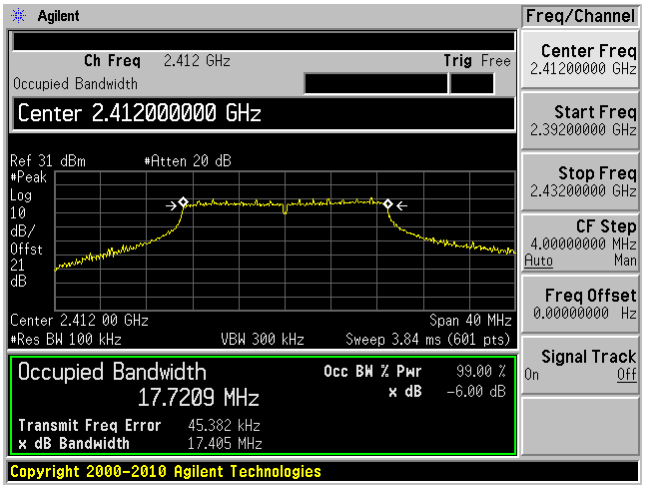


802.11n HT20 mode

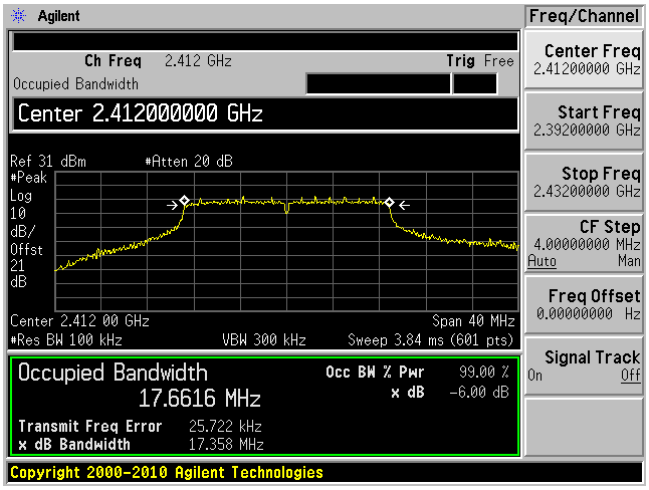
Low channel: 2412 MHz Chain J0



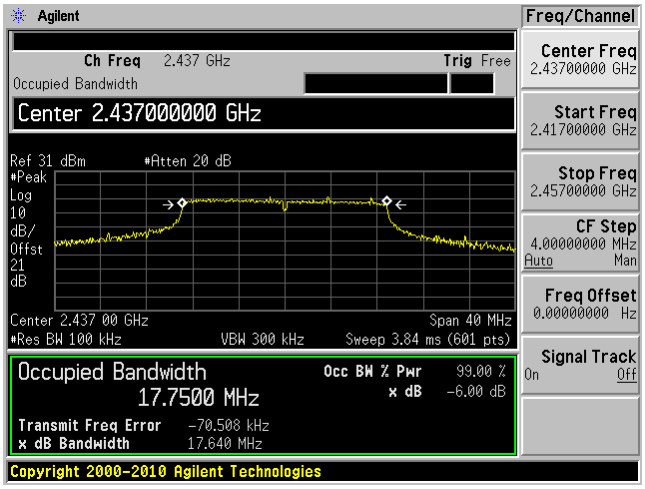
Low channel: 2412 MHz Chain J1



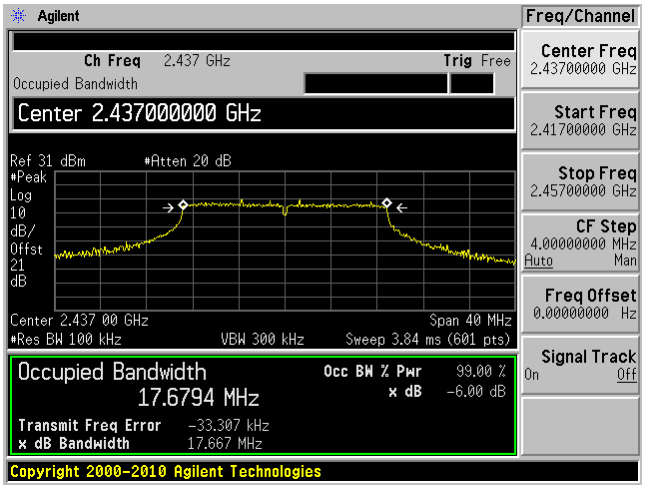
Low channel: 2412 MHz Chain J0



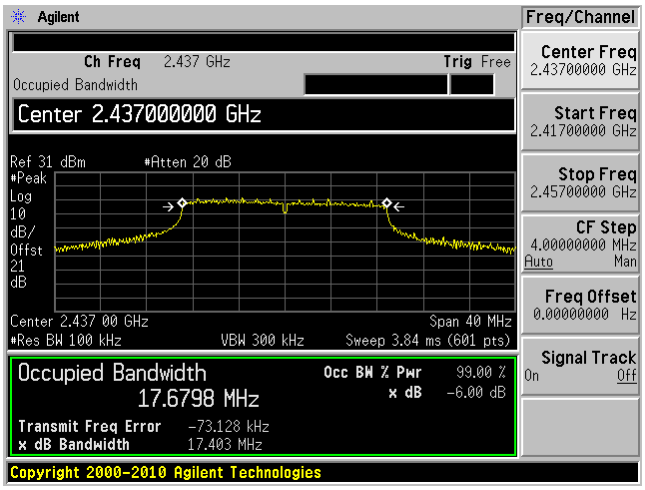
Middle channel: 2437 MHz Chain J0



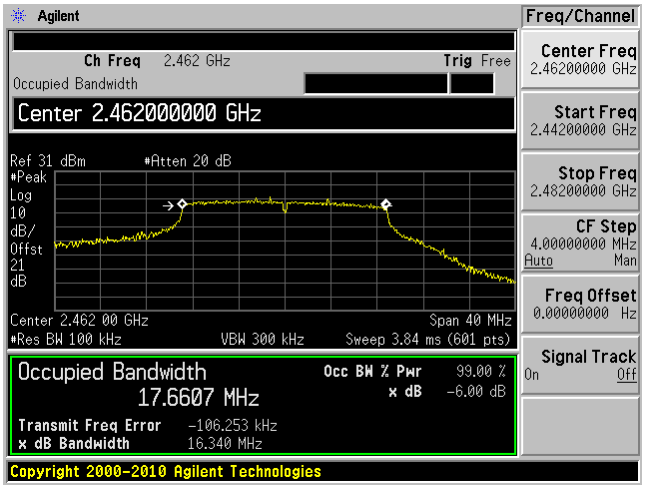
Middle channel: 2437 MHz Chain J1



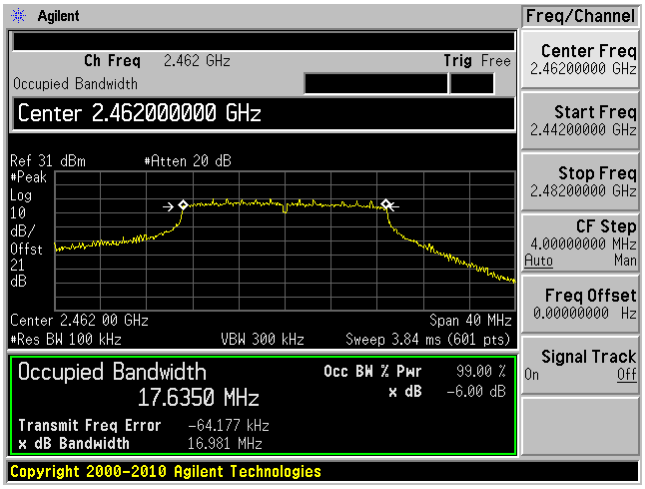
Middle channel: 2437 MHz Chain J2



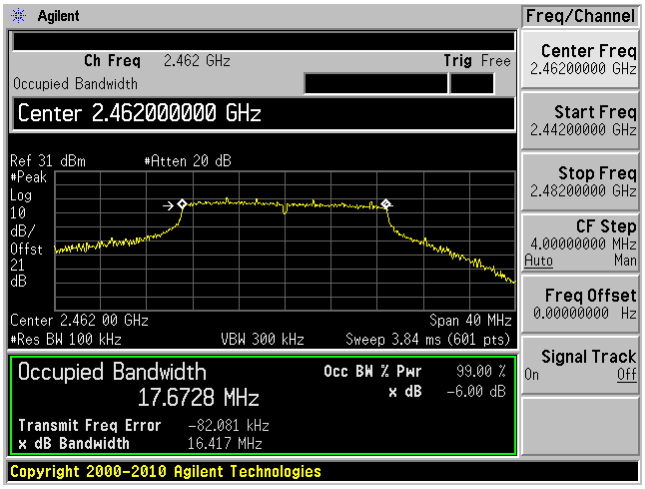
High channel: 2462 MHz Chain J0



High channel: 2462 MHz Chain J1

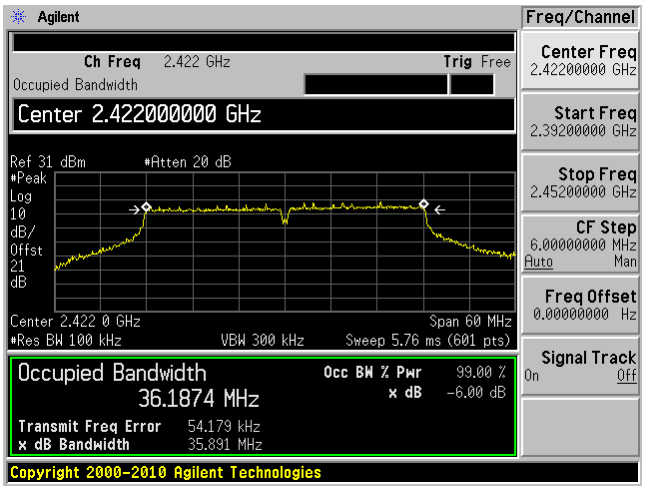


High channel: 2462 MHz Chain J2

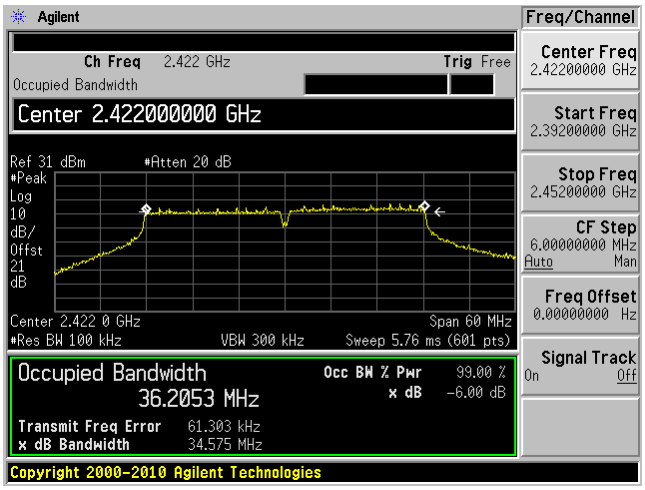


802.11n HT40 mode

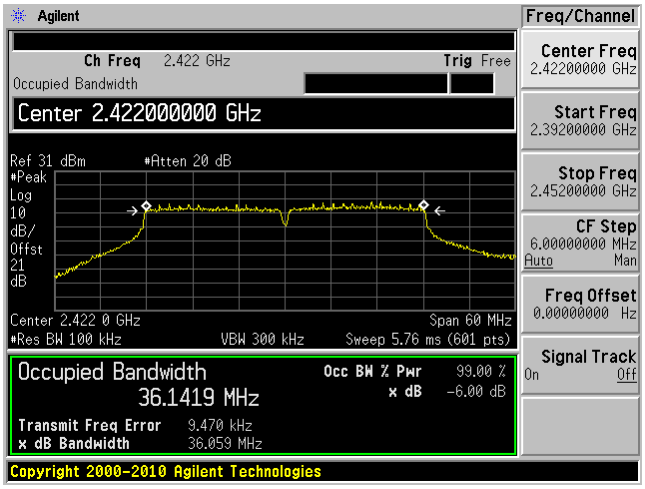
Low channel: 2422 MHz Chain J0



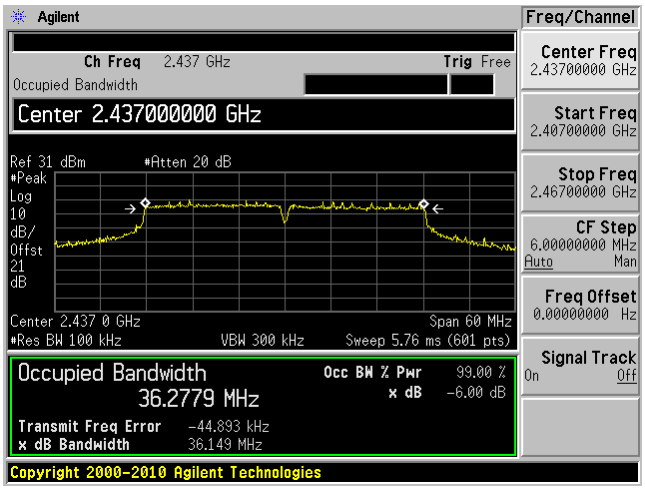
Low channel: 2422 MHz Chain J1



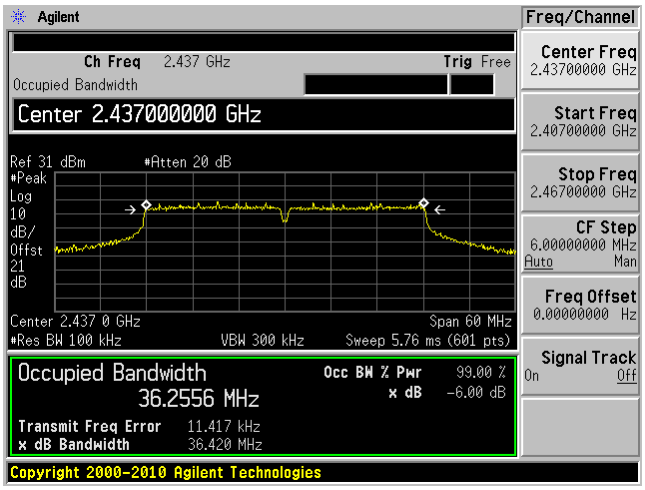
Low channel: 2422 MHz Chain J2



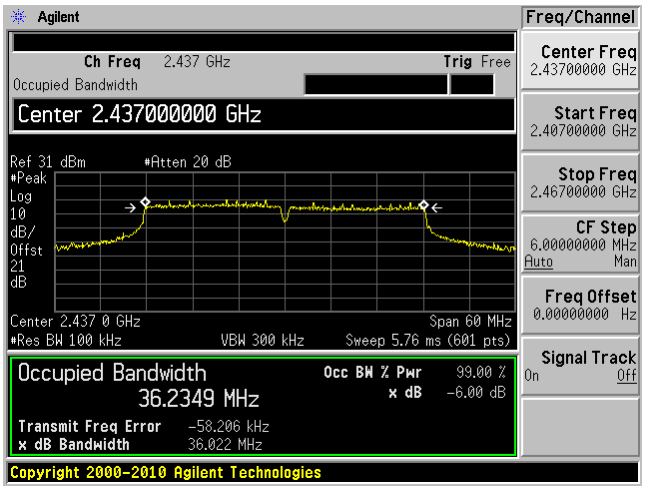
Middle channel: 2437 MHz Chain J0



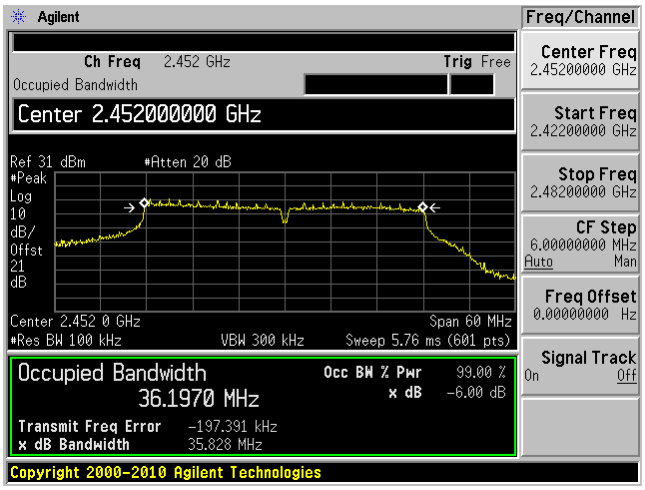
Middle channel: 2437 MHz Chain J1



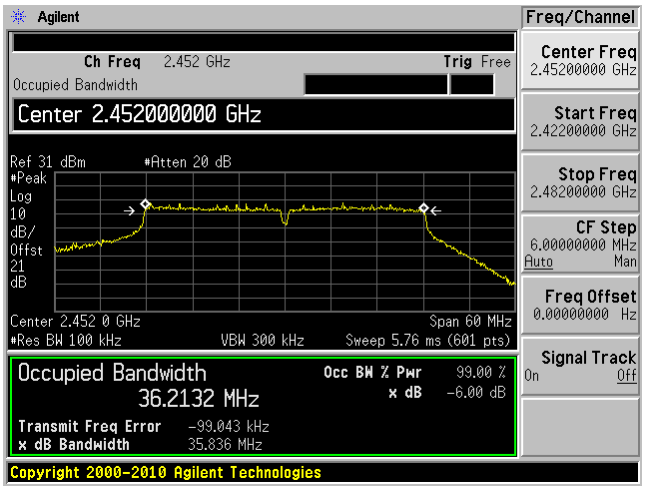
Middle channel: 2437 MHz Chain J2



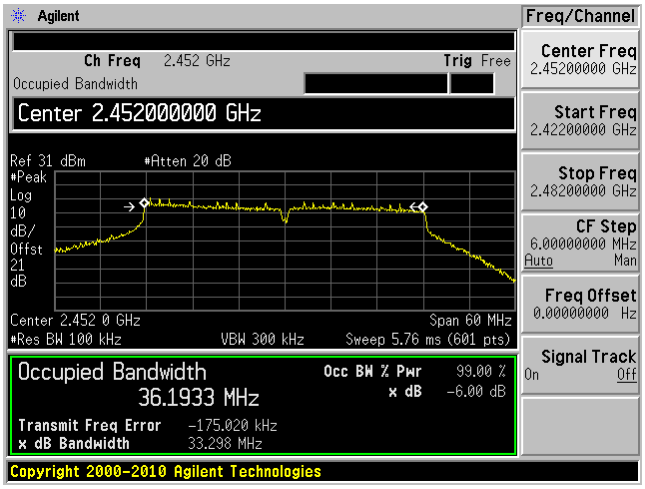
High channel: 2452 MHz Chain J0



High channel: 2452 MHz Chain J1



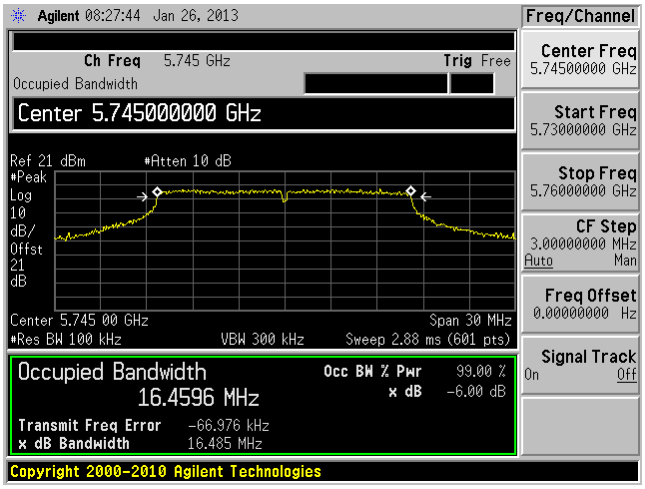
High channel: 2452 MHz Chain J2



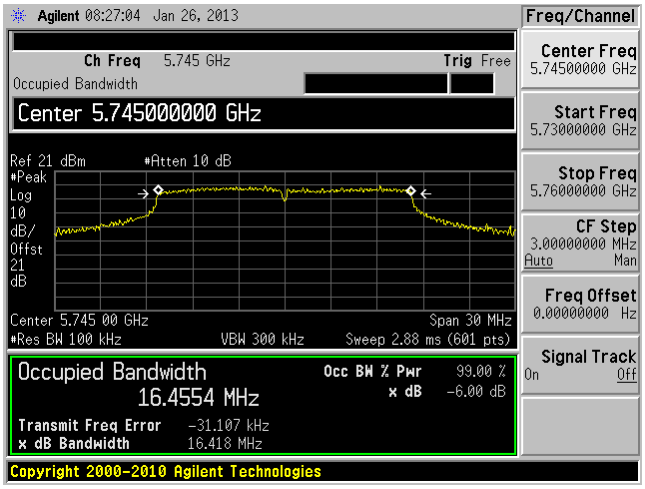
5.8 GHz Band:

802.11a mode

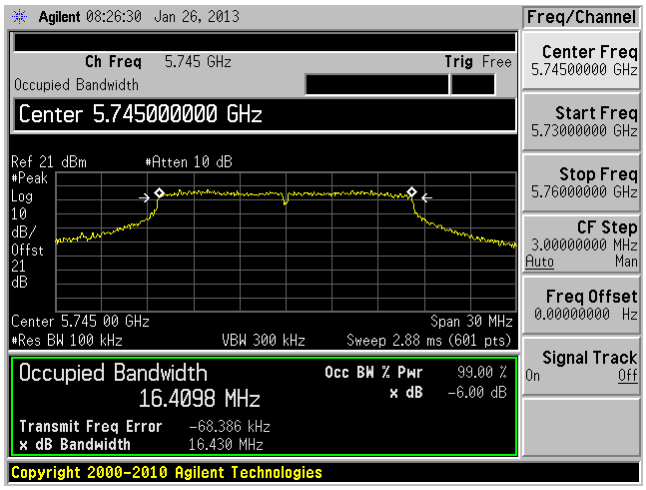
Low channel: 5745 MHz Chain J0



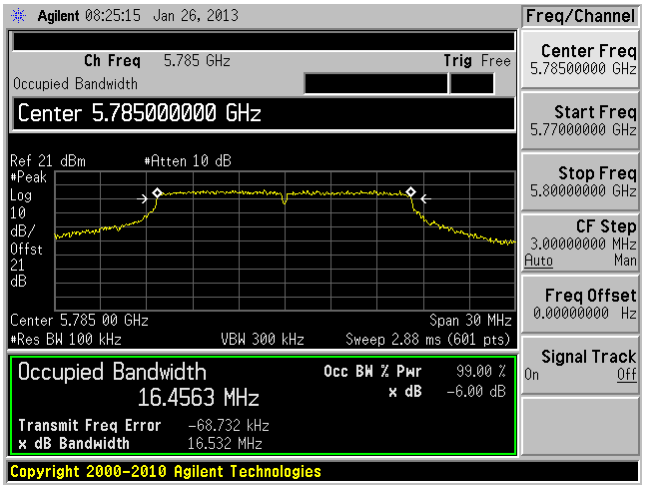
Low channel: 5745 MHz Chain J1



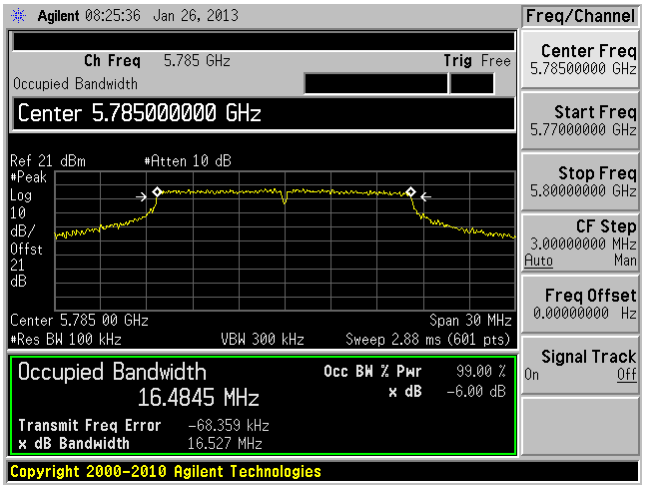
Low channel: 5745 MHz Chain J0



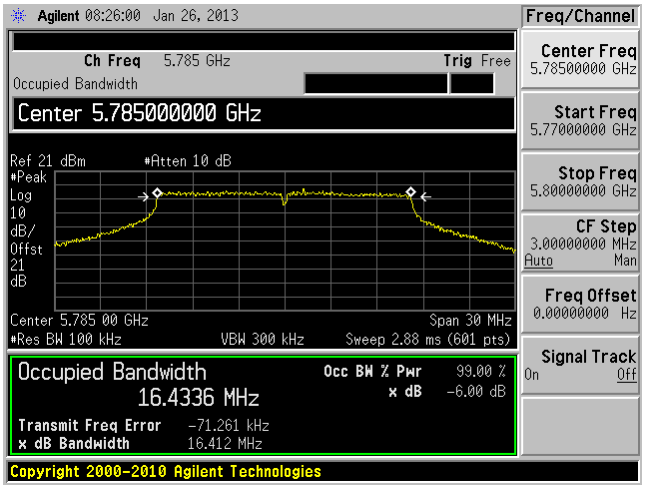
Middle channel: 5785 MHz Chain J0



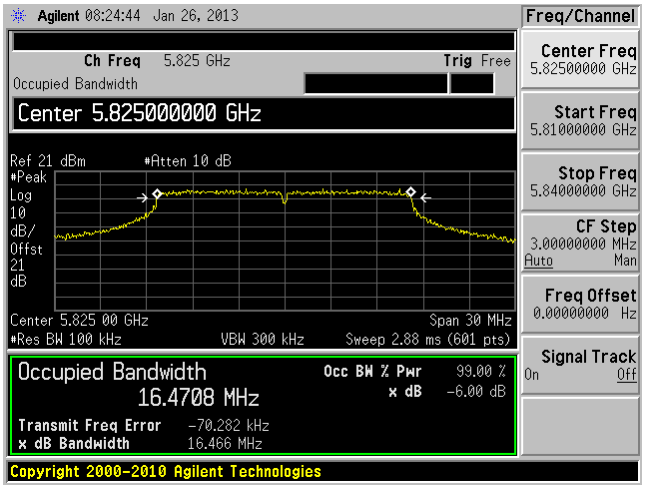
Middle channel: 5785 MHz Chain J1



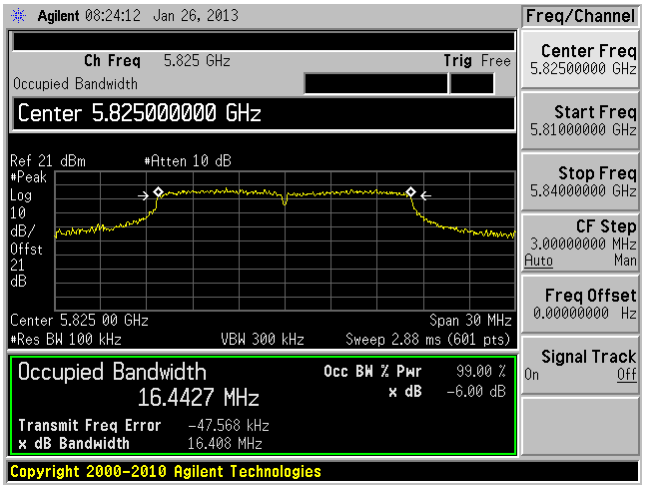
Middle channel: 5785 MHz Chain J2



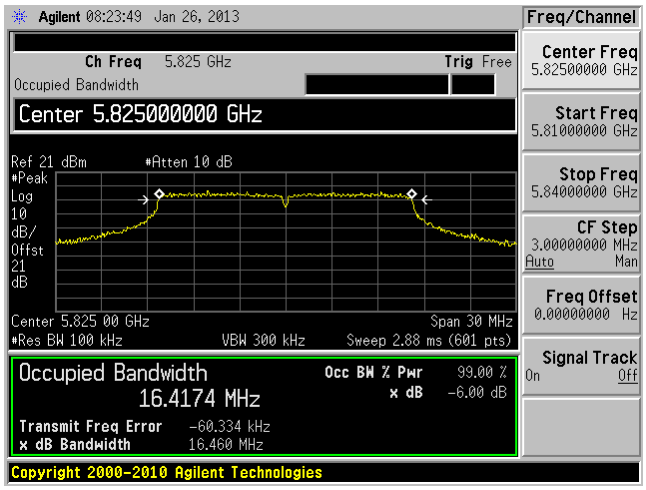
High channel: 5825 MHz Chain J0



High channel: 5825 MHz Chain J1

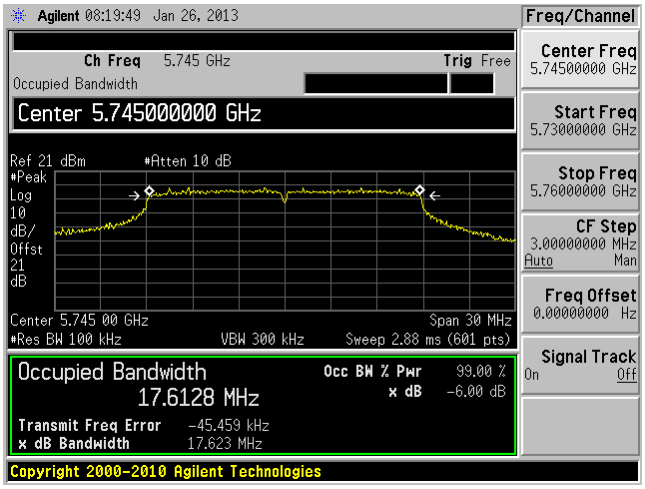


High channel: 5825 MHz Chain J2

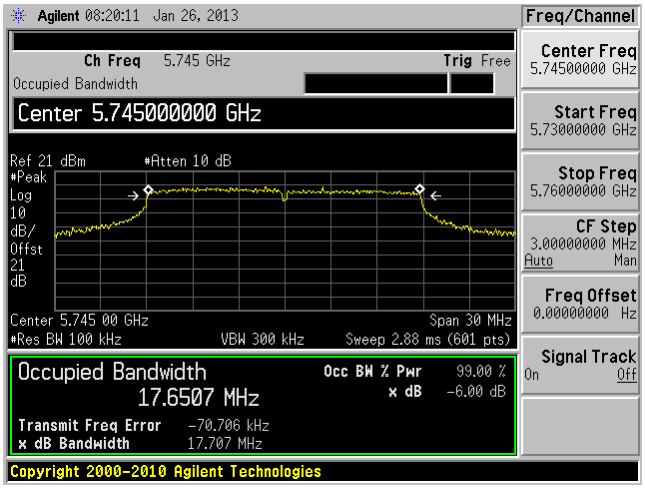


802.11n HT20 mode

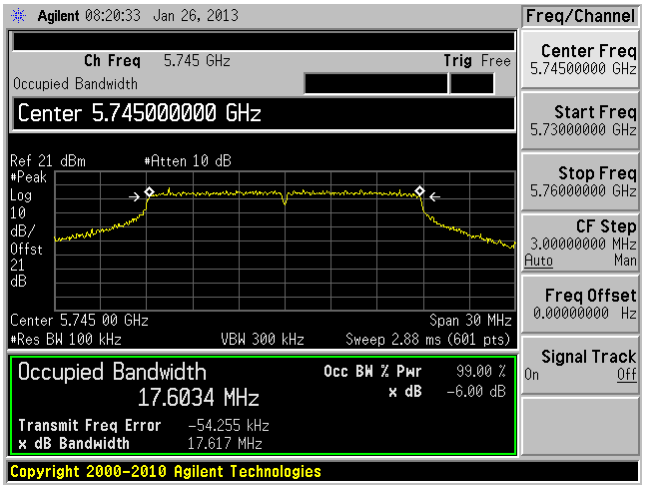
Low channel: 5745 MHz Chain J0



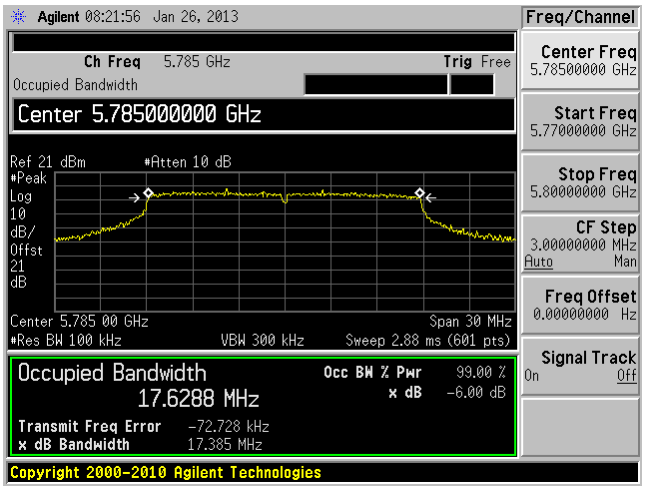
Low channel: 5745 MHz Chain J1



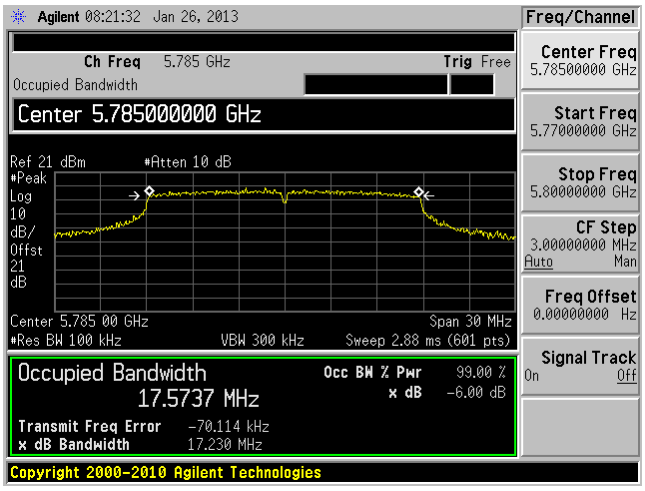
Low channel: 5745 MHz Chain J2



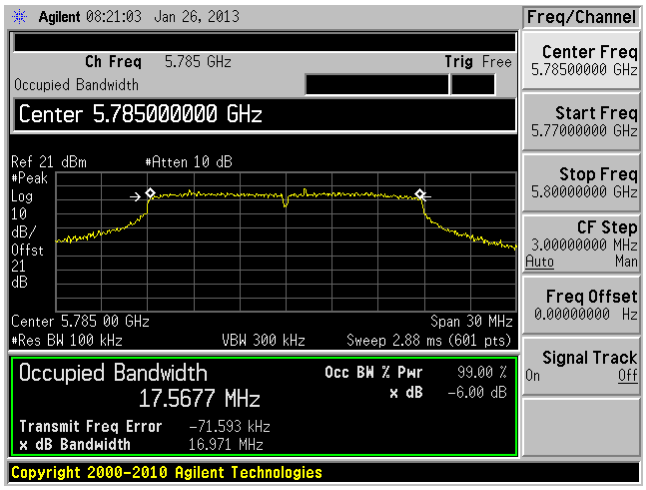
Middle channel: 5785 MHz Chain J0



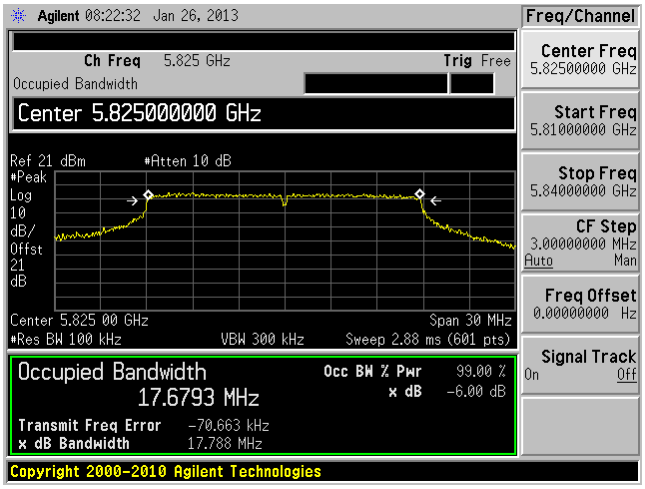
Middle channel: 5785 MHz Chain J1



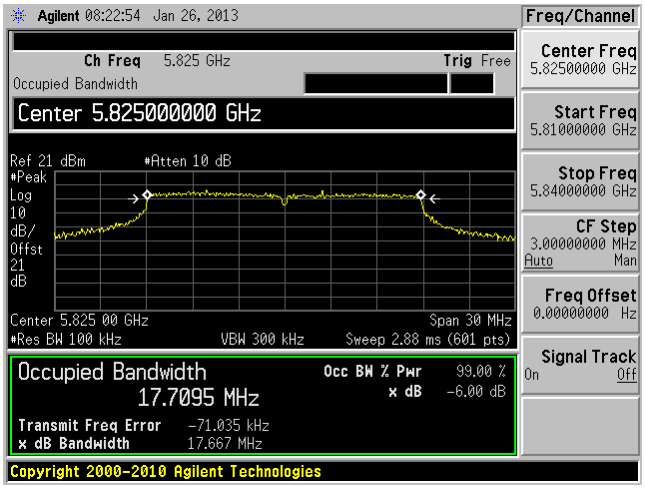
Middle channel: 5785 MHz Chain J2



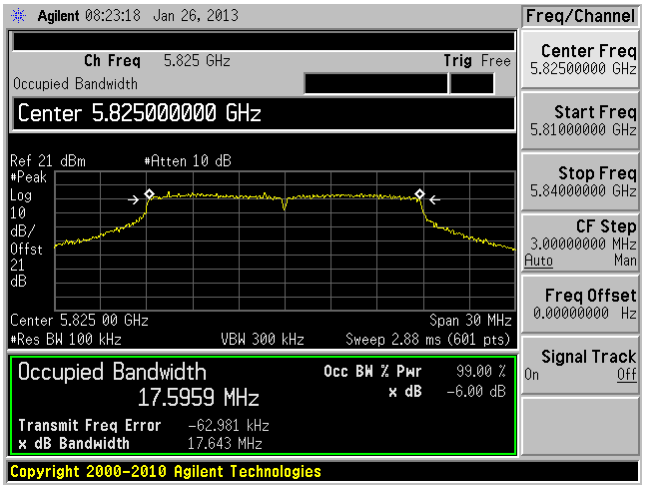
High channel: 5825 MHz Chain J0



High channel: 5825 MHz Chain J1

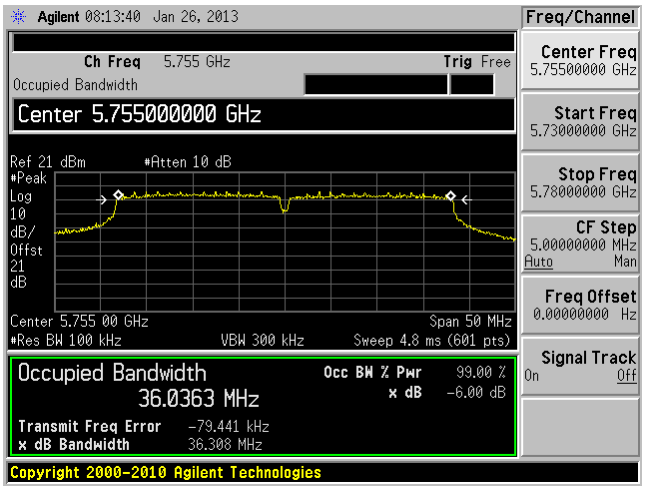


High channel: 5825 MHz Chain J2

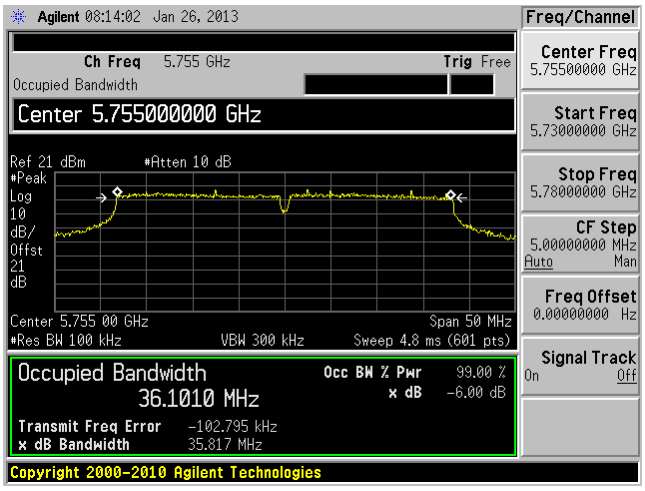


802.11n HT40 mode

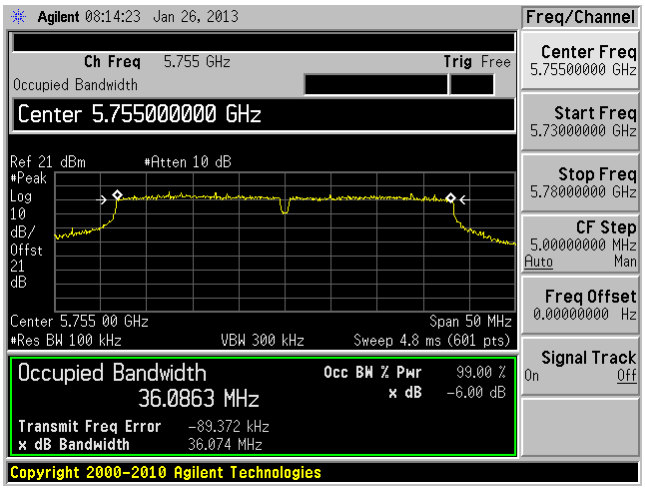
Low channel: 5755 MHz Chain J0



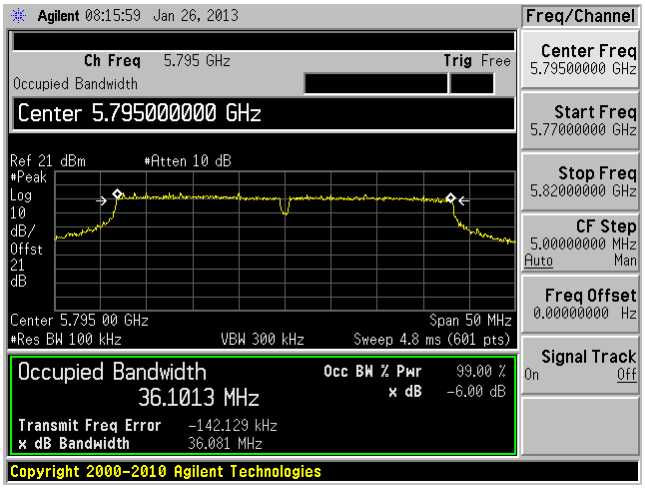
Low channel: 5755 MHz Chain J1



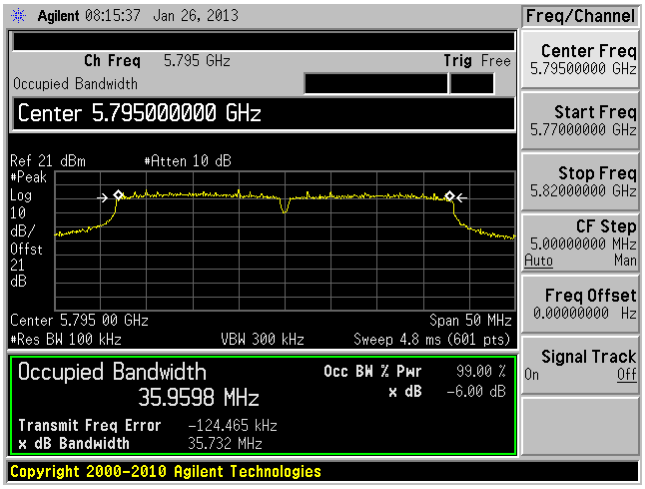
Low channel: 5755 MHz Chain J2



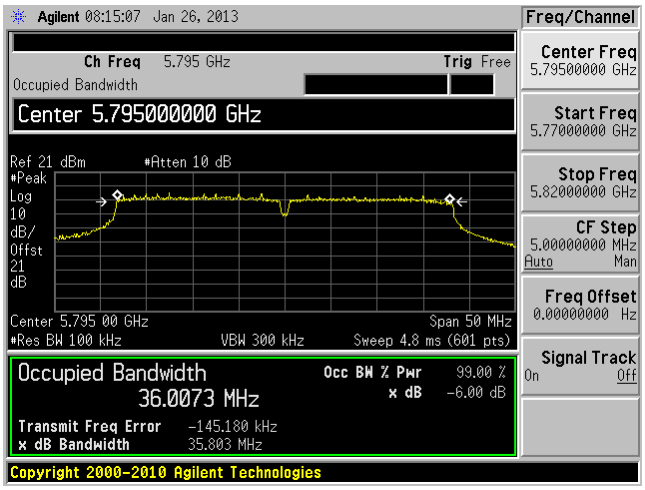
High channel: 5795 MHz Chain J0



High channel: 5795 MHz Chain J1



High channel: 5795 MHz Chain J2



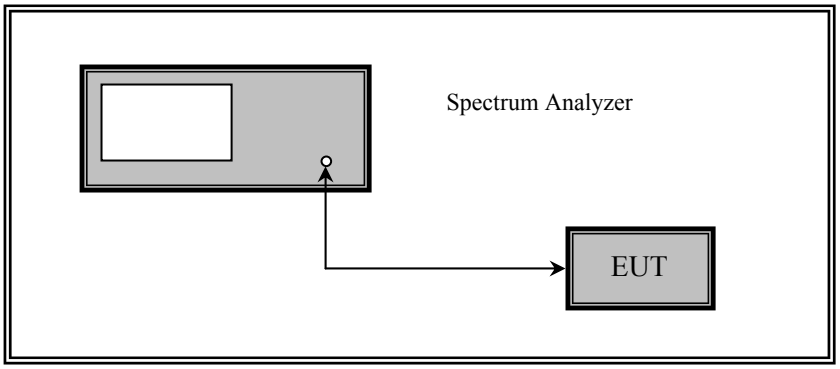
10 FCC §15.247(b) & IC RSS-210 §A8.4 – Peak Output Power Measurement

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	E4446A	US44300386	2012-09-29	1 year

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

10.4 Test Environmental Conditions

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

The testing was performed by Bo Li from 2013-2-1 and 2013-2-22 at RF site.

10.5 Test Results

2.4 GHz

802.11b mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	2412	24.58	23.61	24.54	29.04	30	-0.96	25
Middle	2437	25.87	23.79	25.3	29.84	30	-0.16	25
High	2462	24.61	23.68	23.54	28.74	30	-1.26	25

802.11g mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	2412	25.57	23.45	24.86	29.48	30	-0.52	25
Middle	2437	25.5	23.73	24.69	29.47	30	-0.53	24.5
High	2462	24.94	23.84	23.98	29.05	30	-0.95	25

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	2412	25.51	23.48	24.84	29.46	30	-0.54	25
Middle	2437	25.07	23.73	24.38	29.2	30	-0.80	24.5
High	2462	24.79	23.76	24.05	28.99	30	-1.01	25

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	2422	23.95	22.5	23.11	28	30	-2.00	22.5
Middle	2437	25.4	24.42	25.3	29.83	30	-0.17	25
High	2452	25.3	24.35	24.4	29.48	30	-0.52	25

5.8 GHz Band:

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5745	21.15	22.35	20.88	26.28	28	-1.72	23
Middle	5785	21.64	21.54	19.77	25.84	28	-2.16	22
High	5825	18.9	19.7	18.67	23.88	28	-4.12	20.5

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5745	21.22	22.36	20.69	26.25	28	-1.75	23
Middle	5785	20.74	20.07	19.84	25	28	-3.00	22
High	5825	18.77	19.54	18.48	23.72	28	-4.28	20

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5755	21.64	22.64	21.02	26.59	28	-1.41	23.5
High	5795	20.42	20.78	19.67	25.09	28	-2.91	22

Note: The antenna gain of 5.8 GHz is 8 dBi; therefore, the output power limit is reduced by 2 dB.

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	E4446A	US44300386	2012-09-29	1 year

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

11.4 Test Environmental Conditions

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

The testing was performed by Bo Li from 2013-2-1 and 2012-2-22 at RF site.

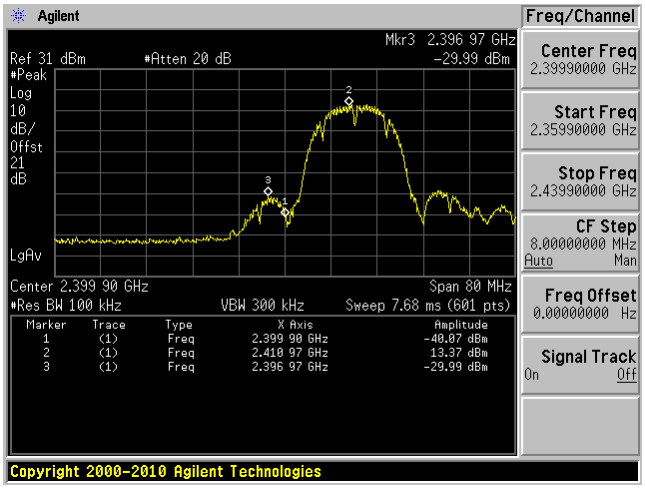
11.5 Test Results

Please refer to following pages for plots of band edge.

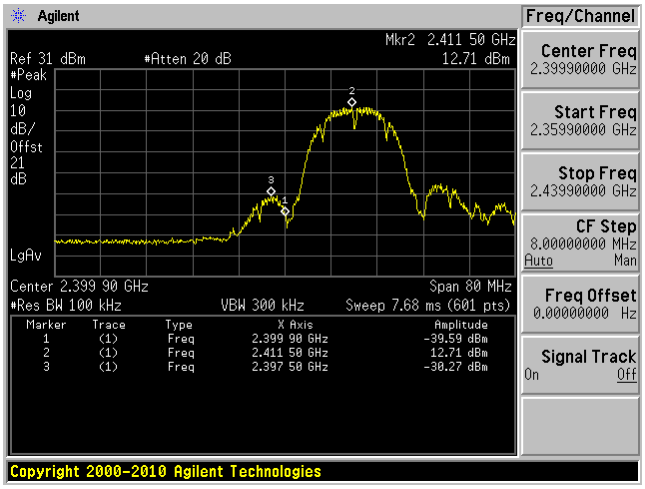
2.4 GHz Band

802.11b mode

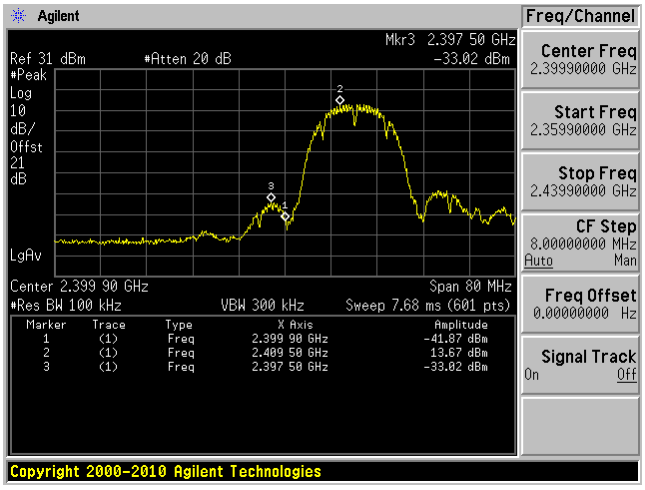
802.11b, Chain J0 Low Band Edge



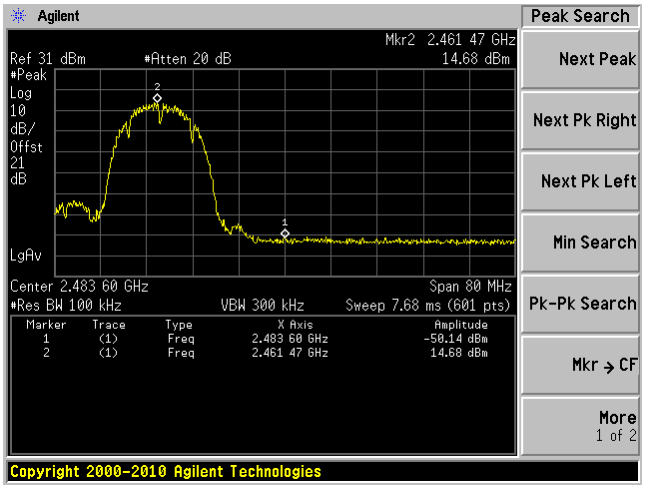
802.11b, Chain J1 Low Band Edge



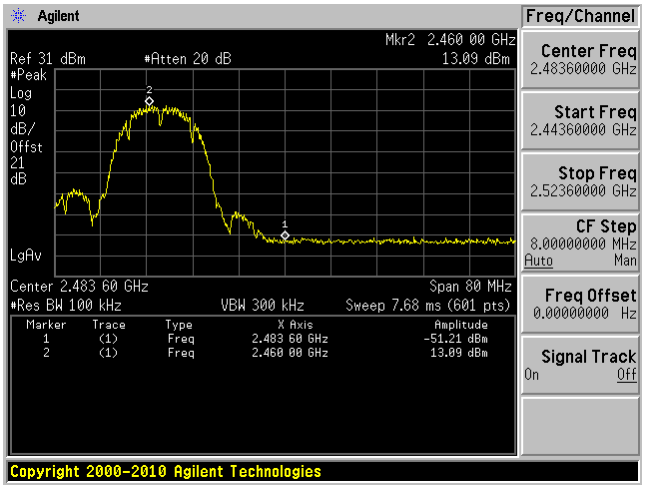
802.11b, Chain J2 Low Band Edge



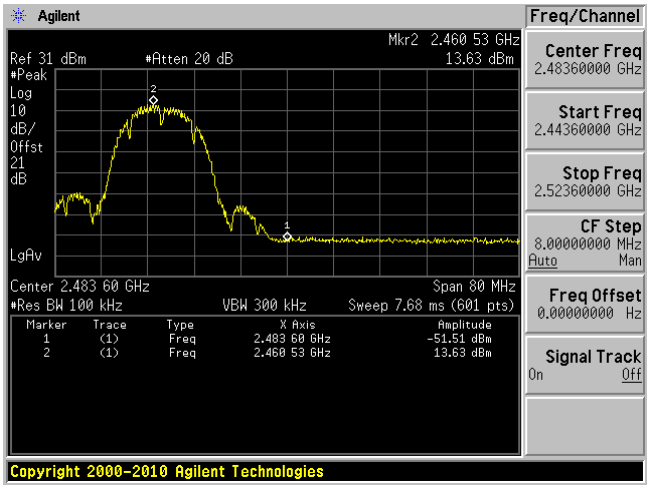
802.11b, Chain J0 High Band Edge



802.11b, Chain J1 High Band Edge

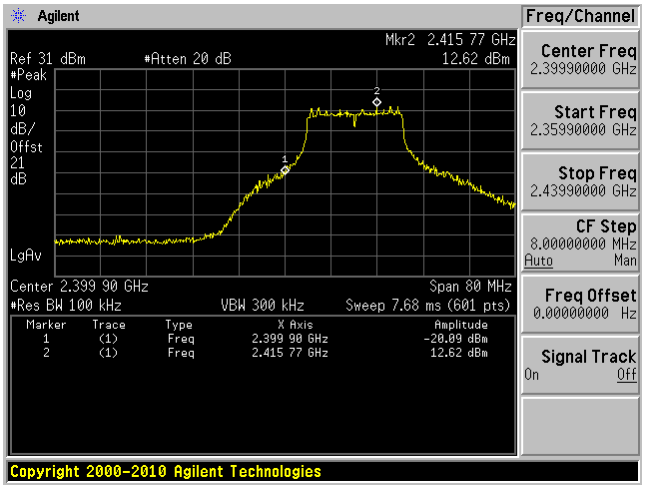


802.11b, Chain J2 High Band Edge

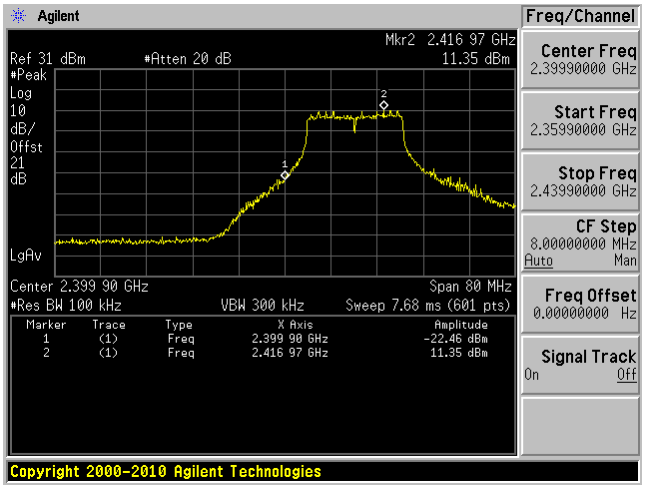


802.11g mode

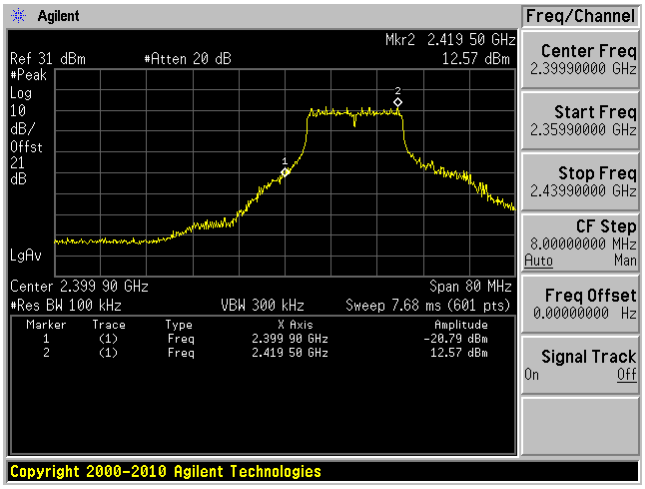
802.11g, Chain J0 Low Band Edge



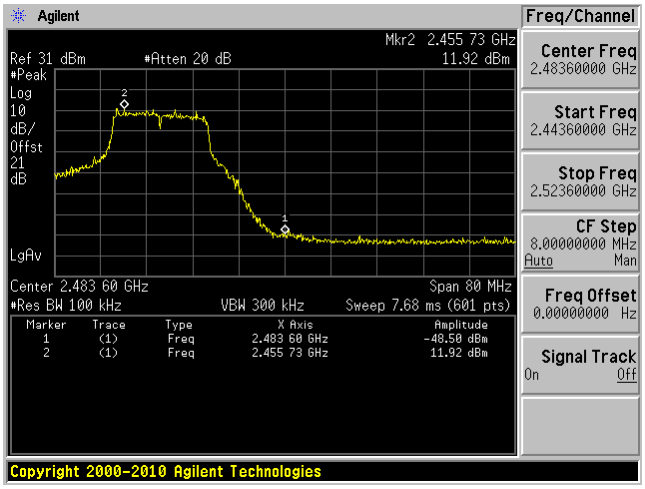
802.11g, Chain J1 Low Band Edge



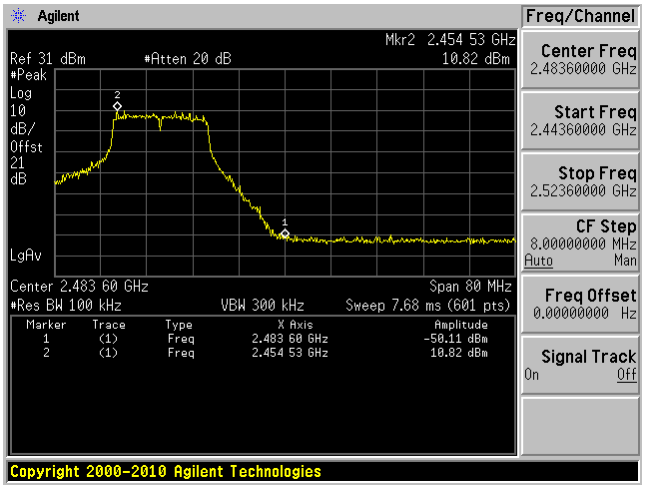
802.11g, Chain J2 Low Band Edge



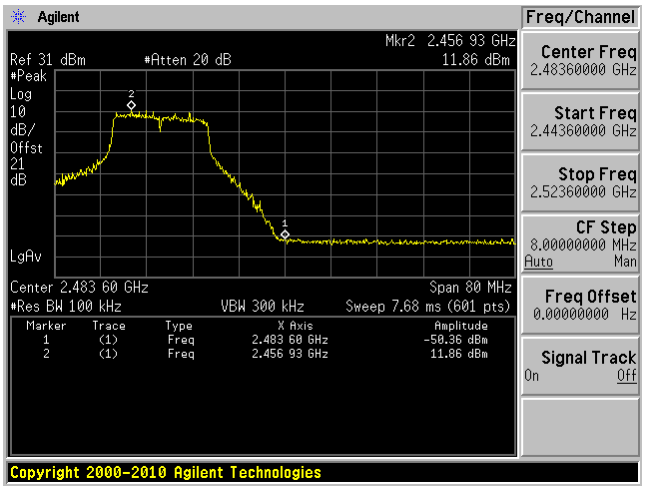
802.11g, Chain J0 High Band Edge



802.11g, Chain J1 High Band Edge

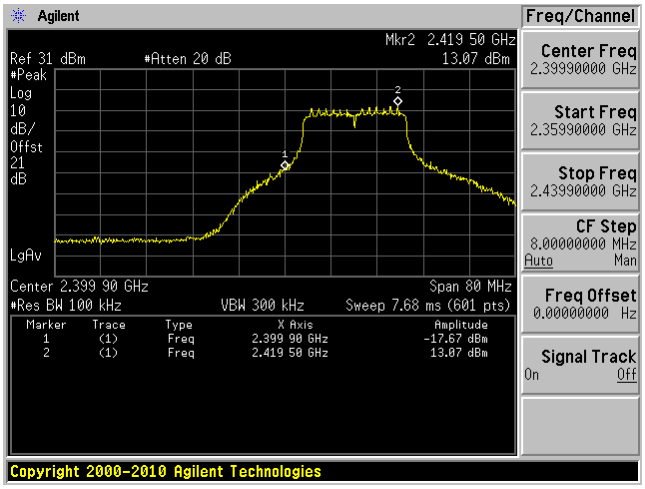


802.11g, Chain J2 High Band Edge

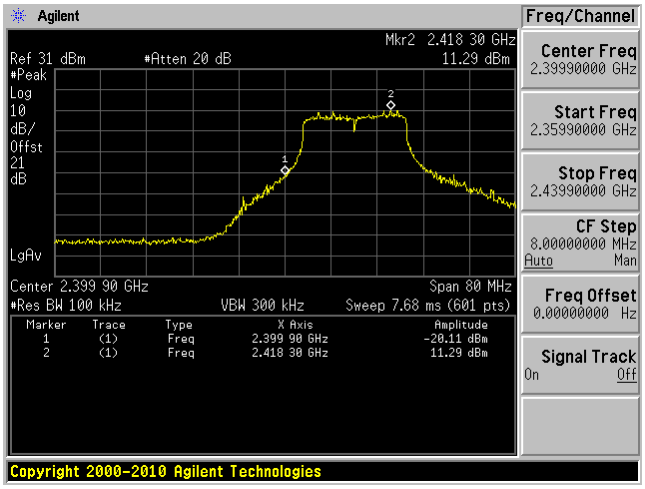


802.11n HT20 mode

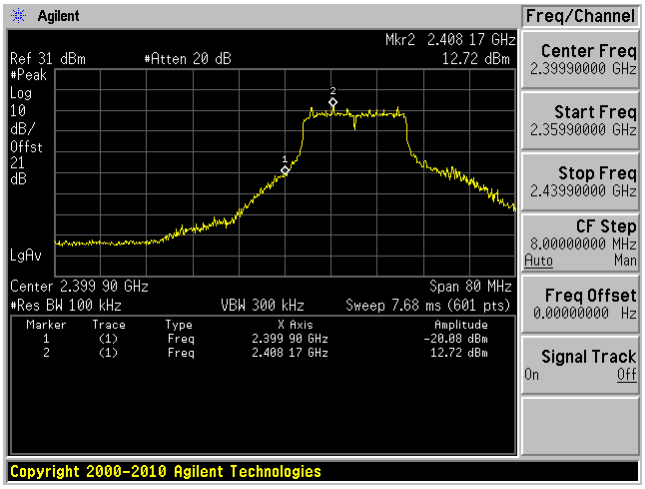
802.11n HT20, Chain J0 Low Band Edge



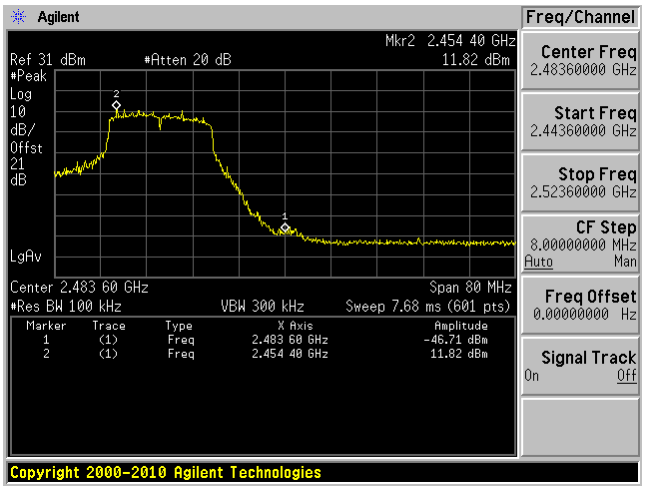
802.11n HT20, Chain J1 Low Band Edge



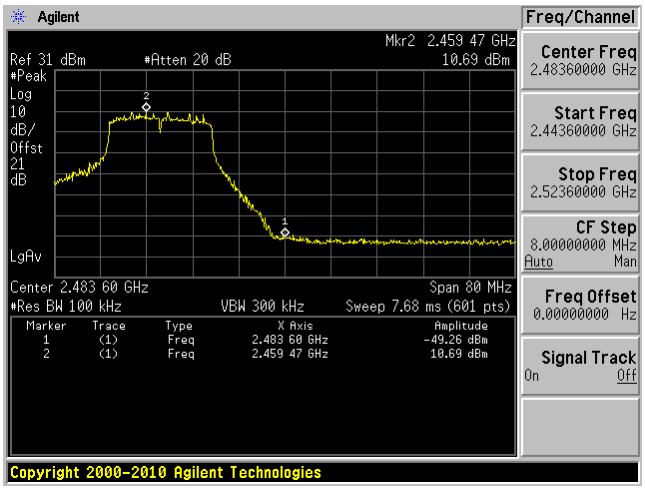
802.11n HT20, Chain J2 Low Band Edge



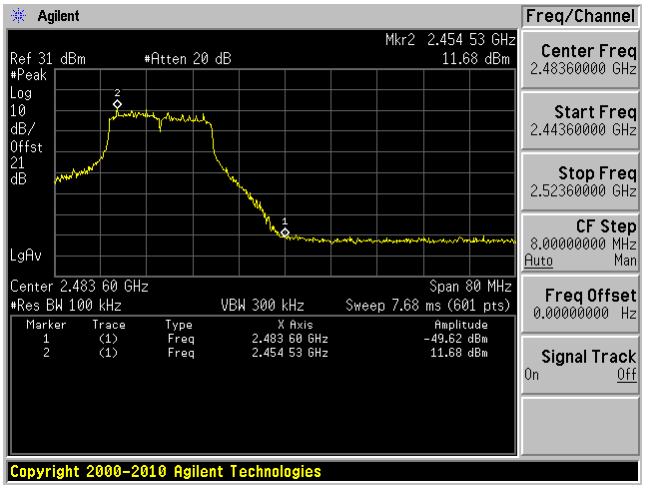
802.11n HT20, Chain J0 High Band Edge



802.11n HT20, Chain J1 High Band Edge

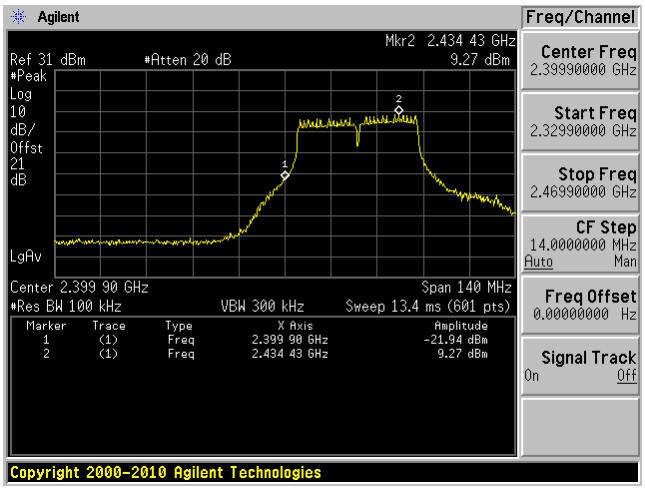


802.11n HT20, Chain J2 High Band Edge

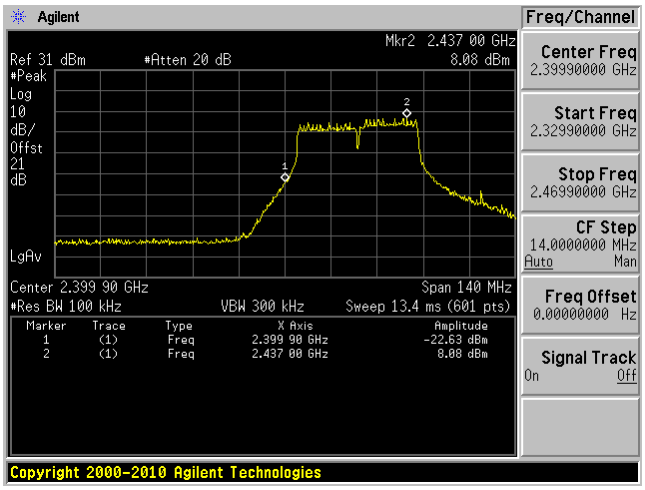


802.11n HT40 mode

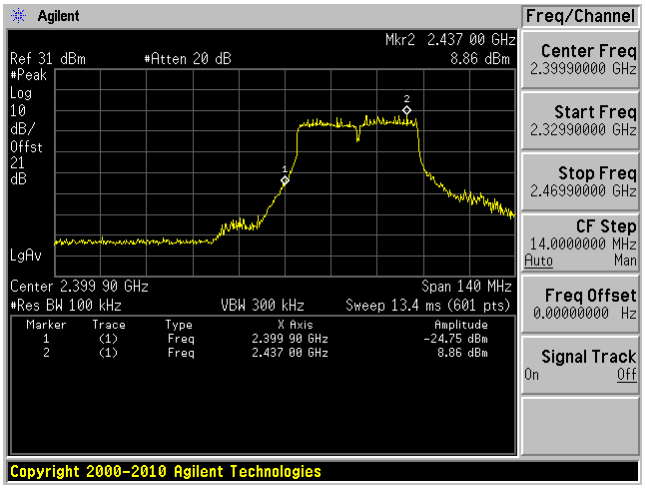
802.11n HT40, Chain J0 Low Band Edge



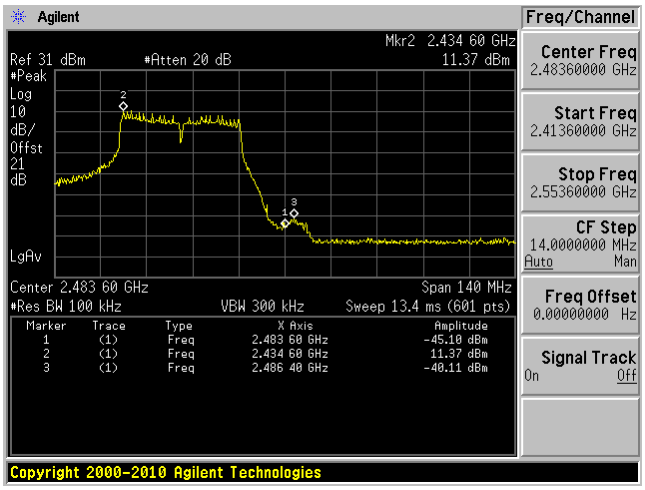
802.11n HT40, Chain J1 Low Band Edge



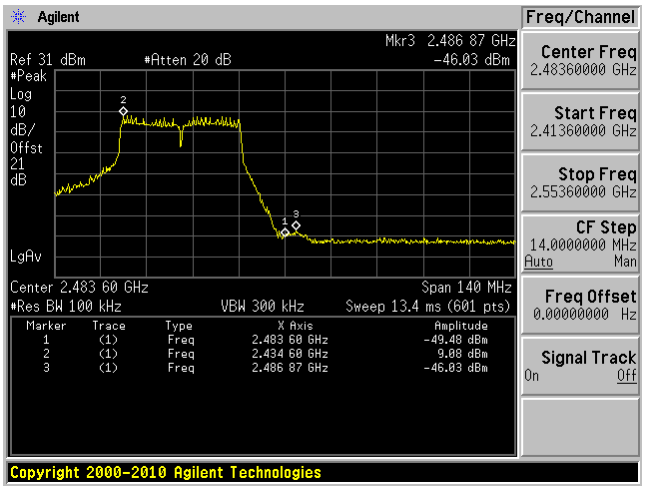
802.11n HT40, Chain J2 Low Band Edge



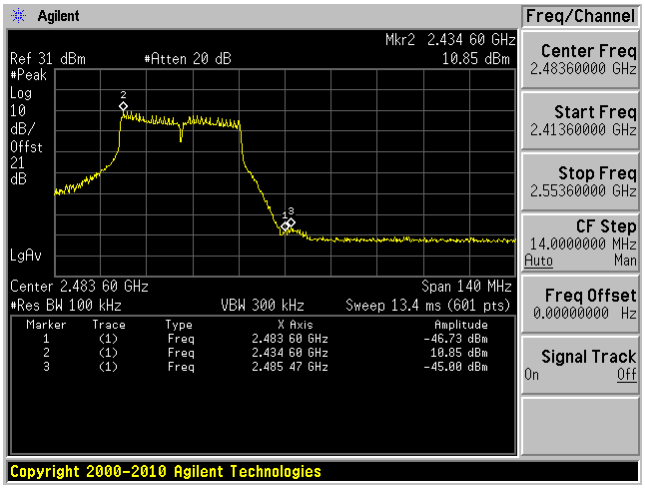
802.11n HT40, Chain J0 High Band Edge



802.11n HT40, Chain J1 High Band Edge



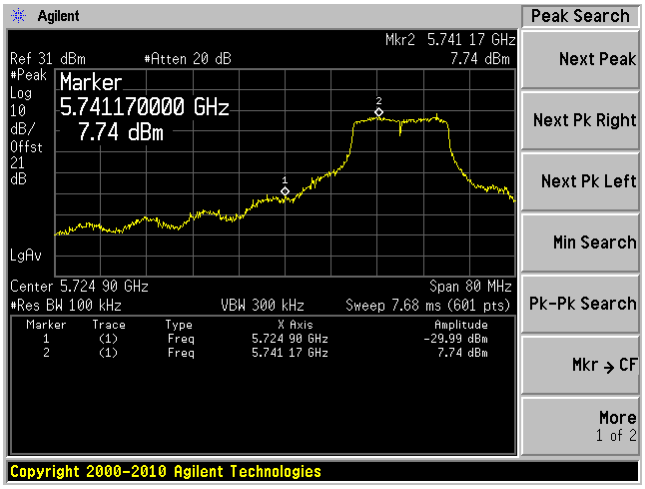
802.11n HT40, Chain J2 High Band Edge



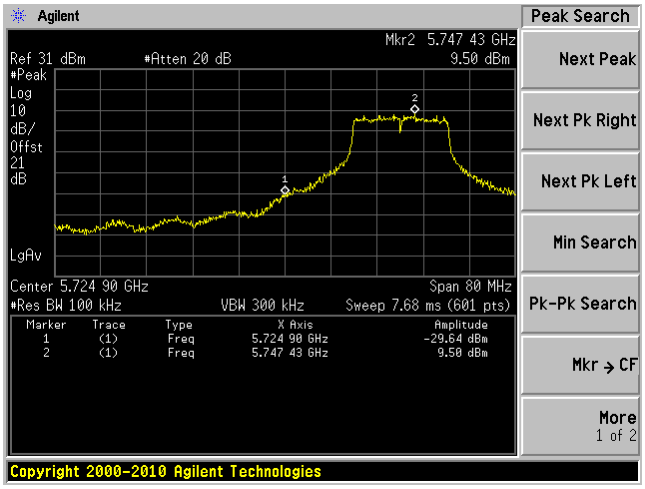
5.8 GHz Band

802.11a mode

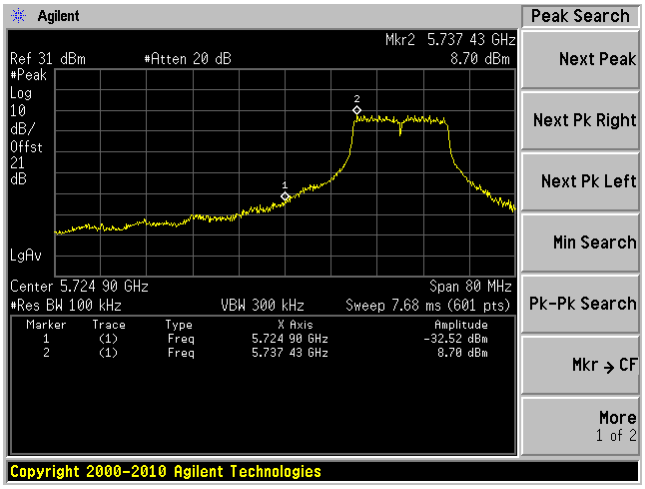
802.11a, Chain J0 Low Band Edge



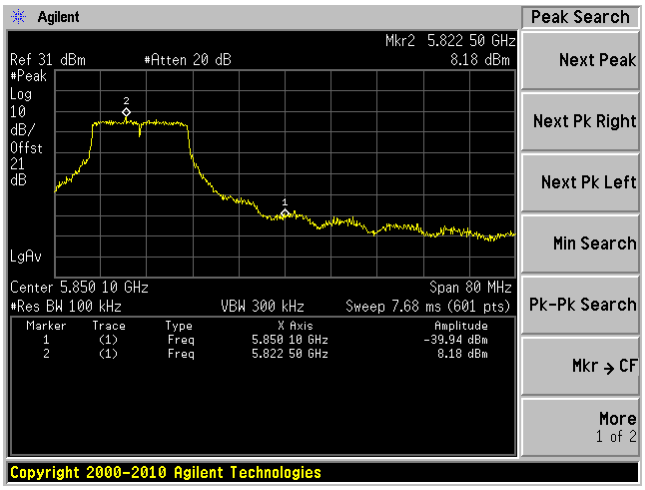
802.11a, Chain J1 Low Band Edge



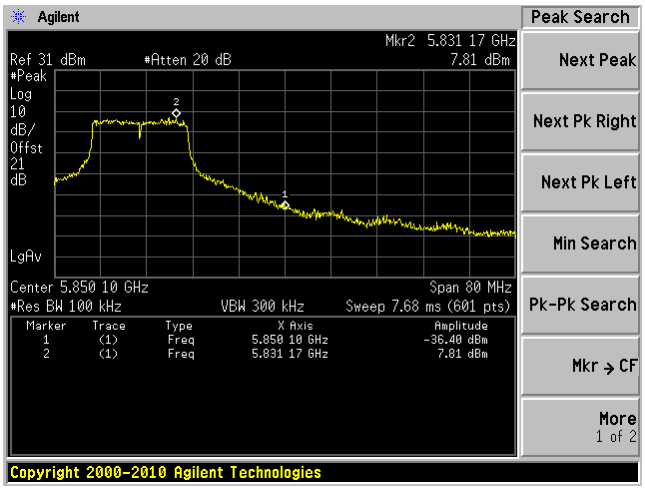
802.11a, Chain J2 Low Band Edge



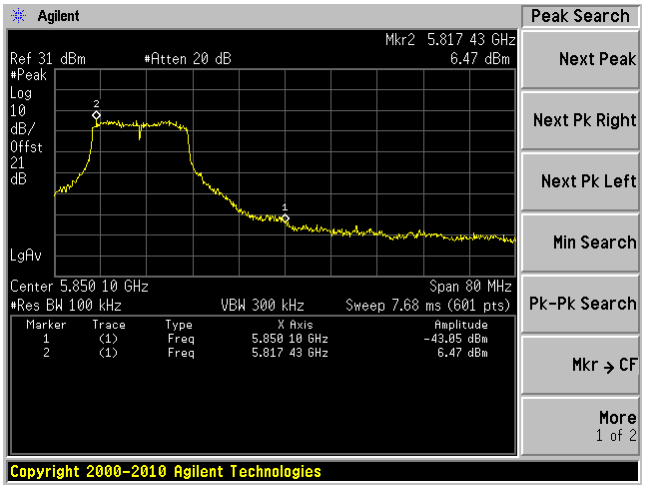
802.11a, Chain J0 High Band Edge



802.11a, Chain J1 High Band Edge

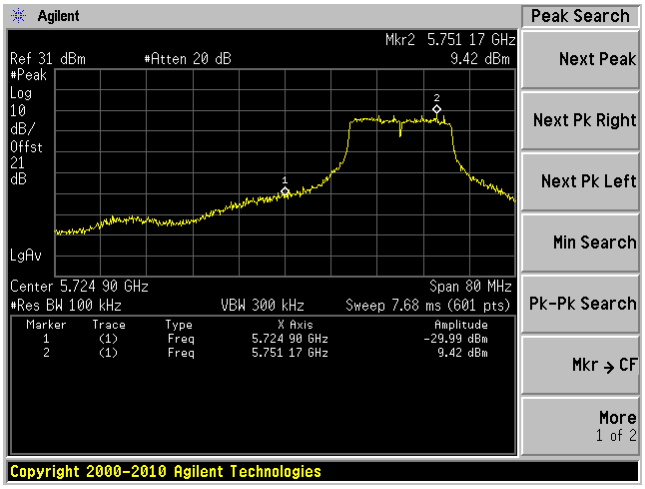


802.11a, Chain J2 High Band Edge

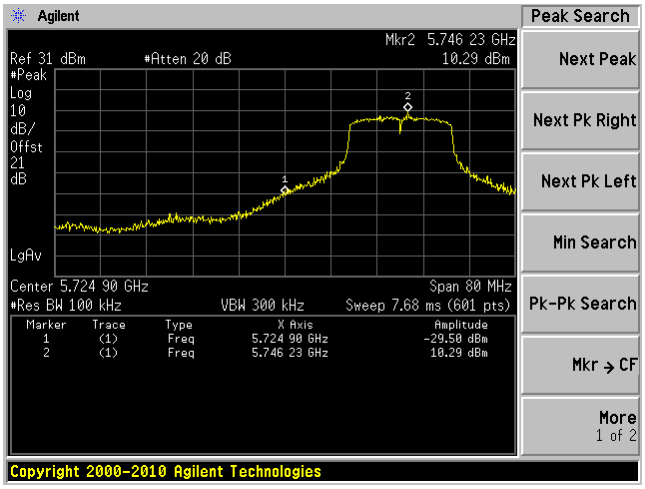


802.11n HT20 mode

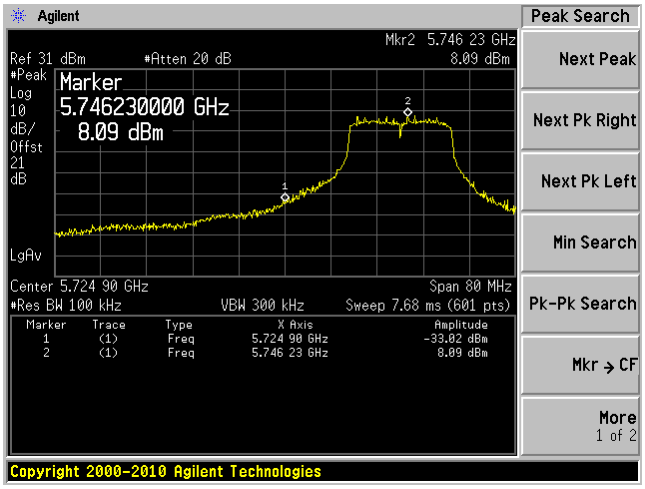
802.11n HT20, Chain J0 Low Band Edge



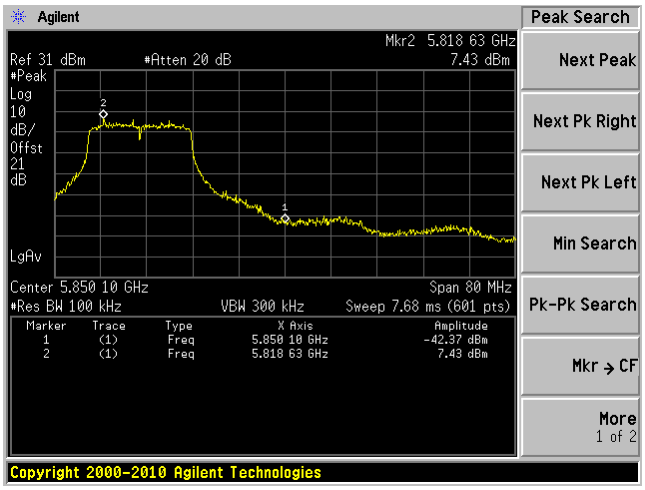
802.11n HT20, Chain J1 Low Band Edge



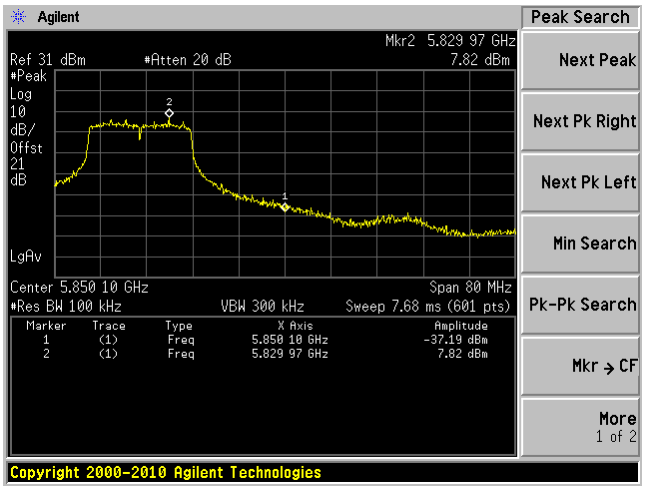
802.11n HT20, Chain J2 Low Band Edge



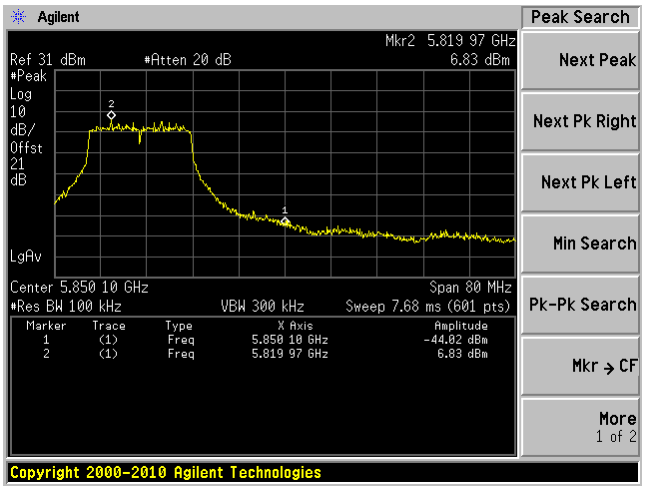
802.11n HT20, Chain J0 High Band Edge



802.11n HT20, Chain J1 High Band Edge

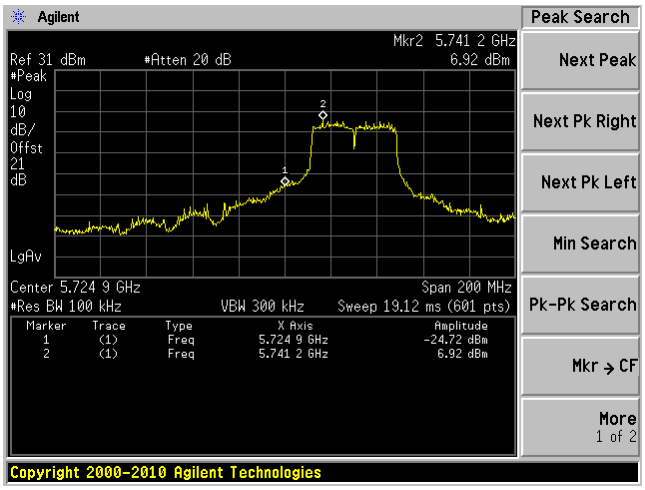


802.11n HT20, Chain J2 High Band Edge

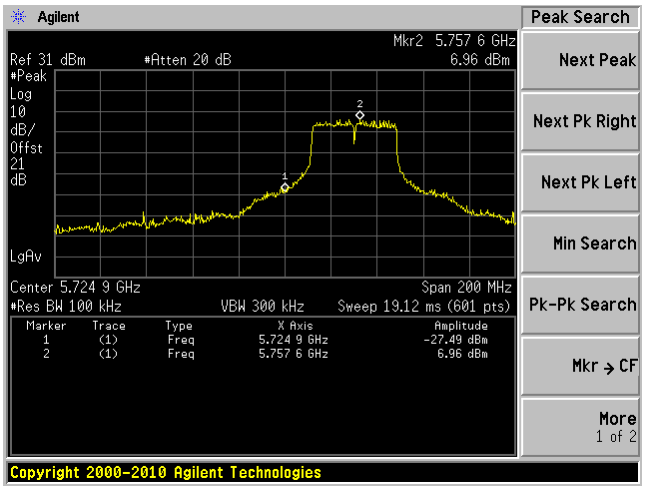


802.11n HT40 mode

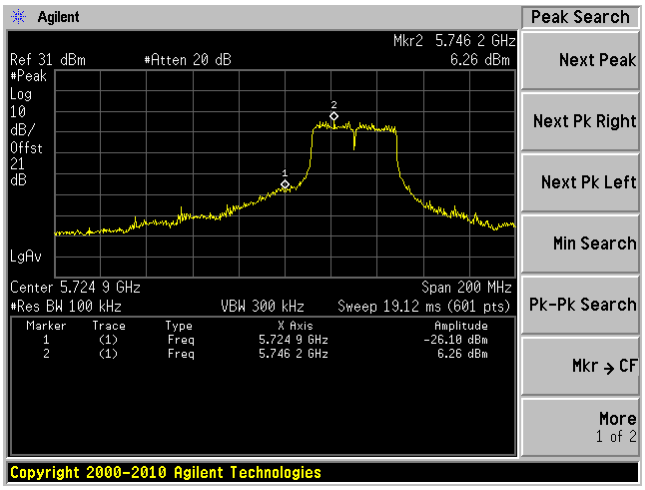
802.11n HT40, Chain J0 Low Band Edge



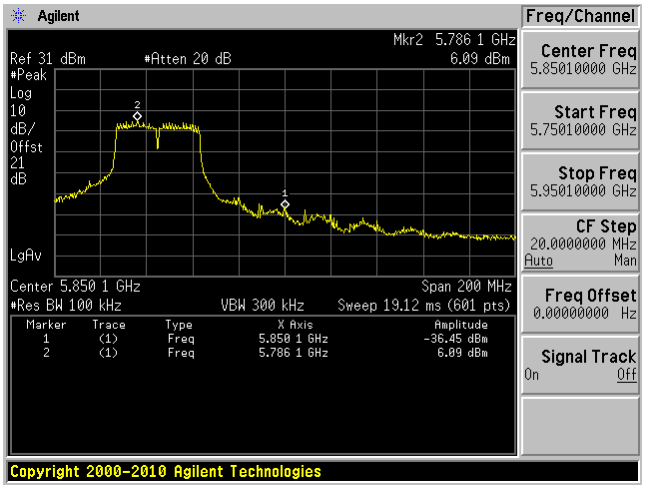
802.11n HT40, Chain J1 Low Band Edge



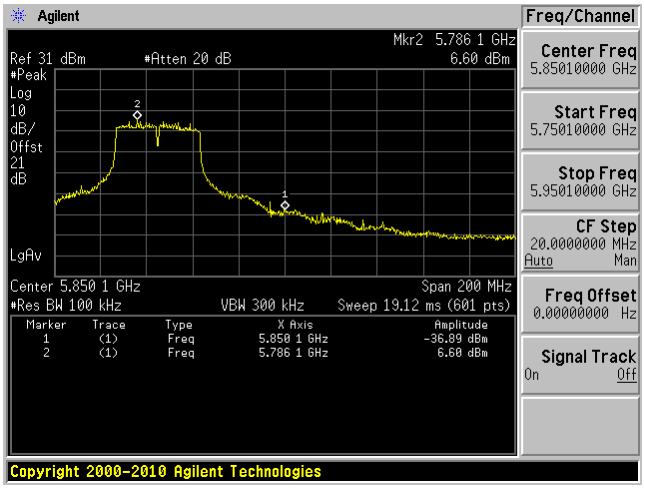
802.11n HT40, Chain J2 Low Band Edge



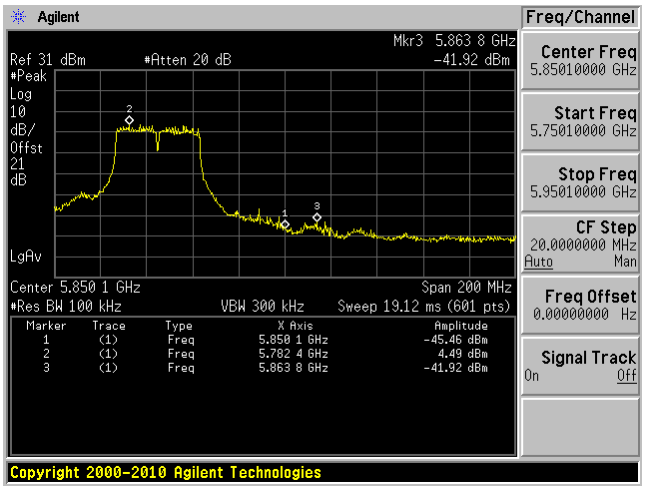
802.11n HT40, Chain J0 High Band Edge



802.11n HT40, Chain J1 High Band Edge



802.11n HT40, Chain J2 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. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

12.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4446A	US44300386	2012-09-29	1 year

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

12.4 Test Environmental Conditions

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

The testing was performed by Bo Li from 2013-2-1 and 2012-2-22 at RF site.

12.5 Test Results

2.4 GHz Band

802.11b mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	0.98	0.28	0.63	5.41	8	-2.59
Middle	2437	1.97	0.84	1.82	6.34	8	-1.66
High	2462	0.97	0.6	0.85	5.58	8	-2.42

802.11 g mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	0.95	-1.36	0.67	4.97	8	-3.03
Middle	2437	0.88	-0.42	0.32	5.06	8	-2.94
High	2462	-0.01	-0.91	-0.46	4.33	8	-3.67

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	0.35	-0.85	0.37	4.76	8	-3.24
Middle	2437	0.32	-1.71	-0.19	4.33	8	-3.67
High	2462	-1.37	-1.67	0.3	3.95	8	-4.05

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2422	-4.5	-5.92	-4.91	-0.3	8	-8.3
Middle	2437	-2.5	-3.76	-2.56	1.87	8	-6.13
High	2452	-1.54	-3.9	-3.35	1.96	8	-6.04

5.8 GHz Band

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-1.97	-0.86	-2.97	2.92	6	-3.08
Middle	5785	-3.42	-3.82	-4.58	0.86	6	-5.14
High	5825	-4.12	-4.07	-3.07	1.05	6	-4.95

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-3.65	-2.7	-3.77	1.42	6	-4.58
Middle	5785	-4.94	-3.7	-4.51	0.42	6	-5.58
High	5825	-5.52	-4.49	-4.82	-0.15	6	-6.15

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	5755	-5.75	-4.54	-6.12	-0.65	6	-6.65
High	5795	-6.94	-6.67	-7.62	-2.29	6	-8.29

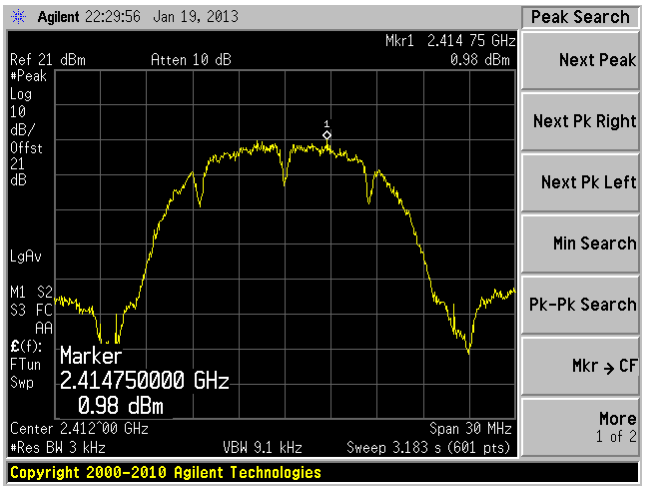
Note: The antenna gain of 5.8GHz is 8 dBi; therefore, the output power limit is reduced by 2 dB.

Please refer to the following plots for detailed test results:

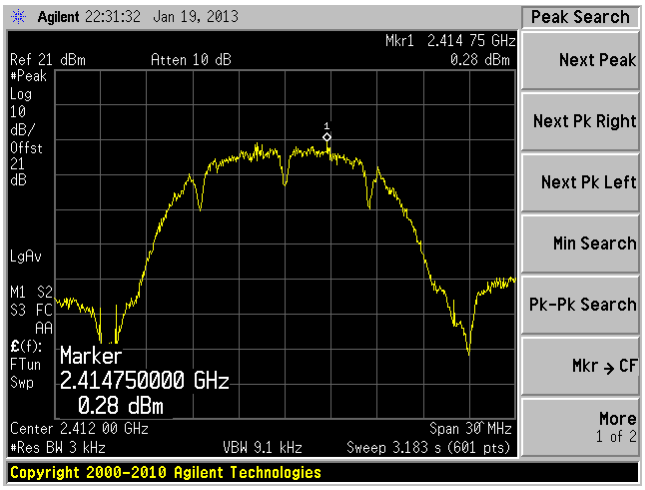
2.4 GHz Band

802.11b mode

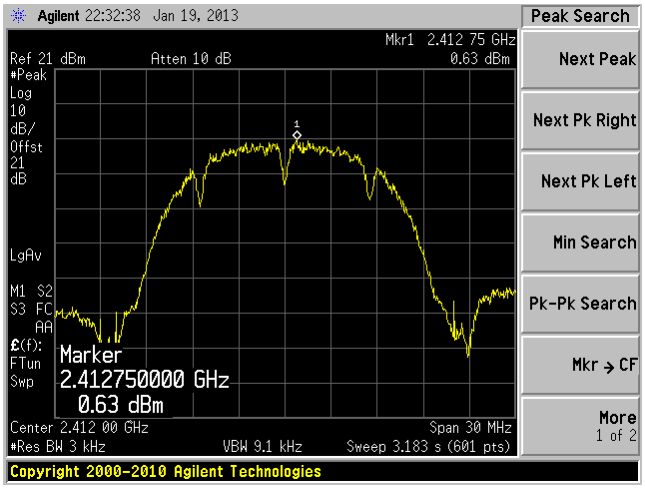
Low channel J0: 2412 MHz



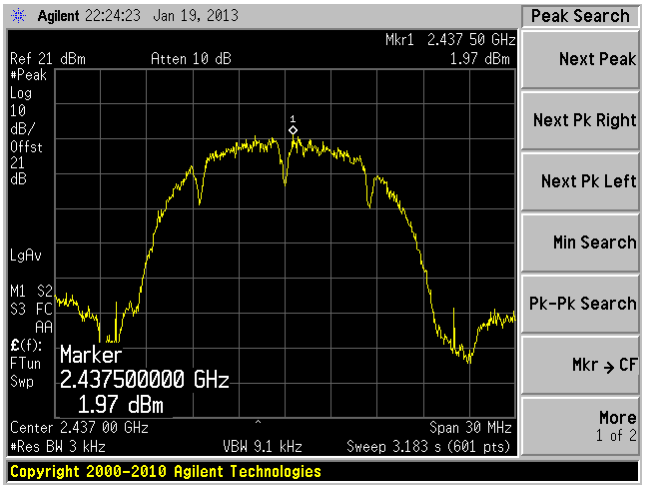
Low channel J1: 2412 MH



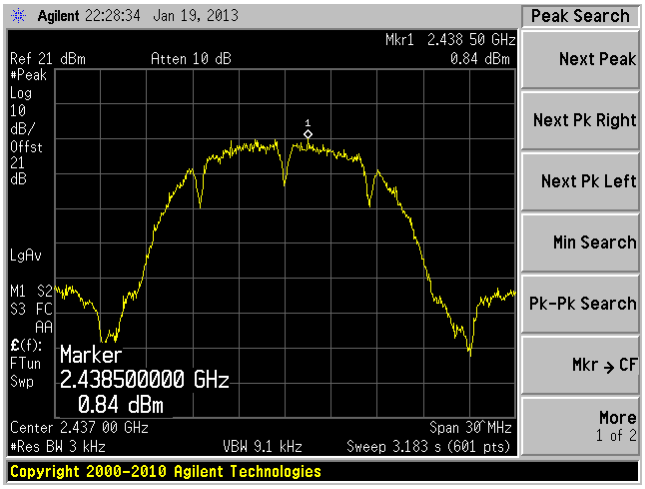
Low channel J2: 2412 MHz



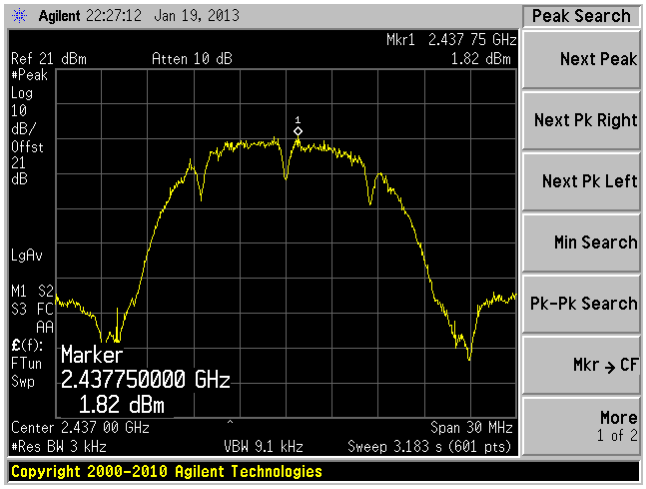
Middle channel J0: 2437 MHz



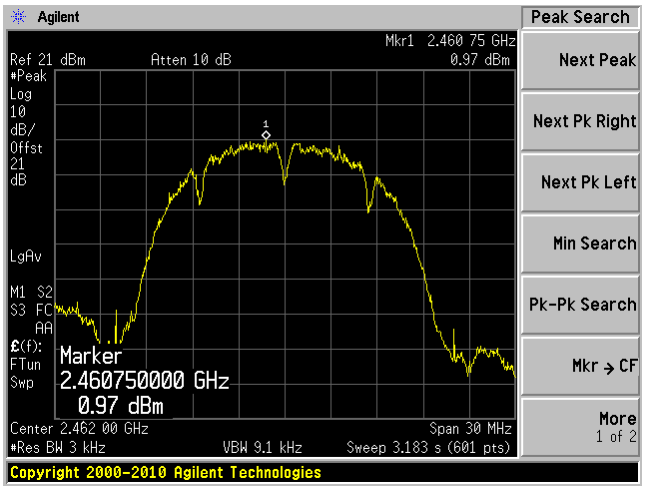
Middle channel J1: 2437 MHz



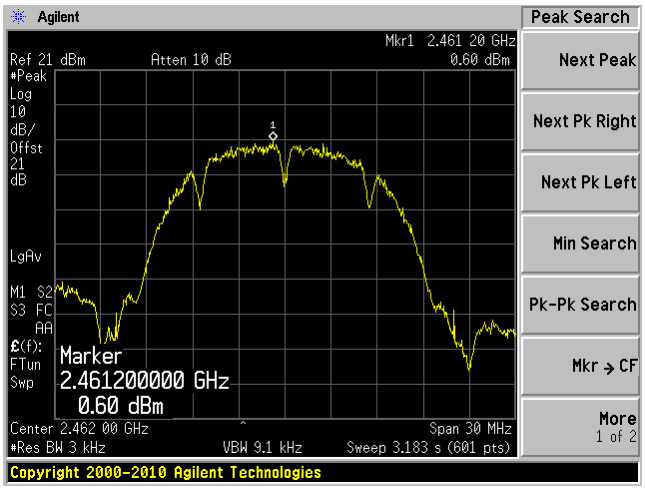
Middle channel J2: 2437 MHz



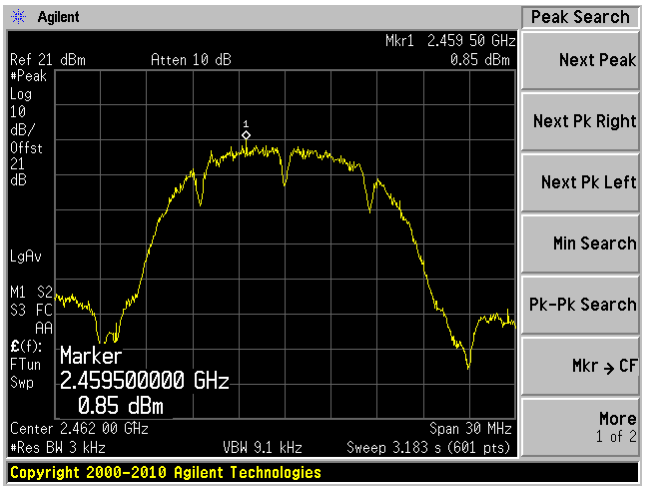
High channel J0: 2462 MHz



High channel J1: 2462 MHz

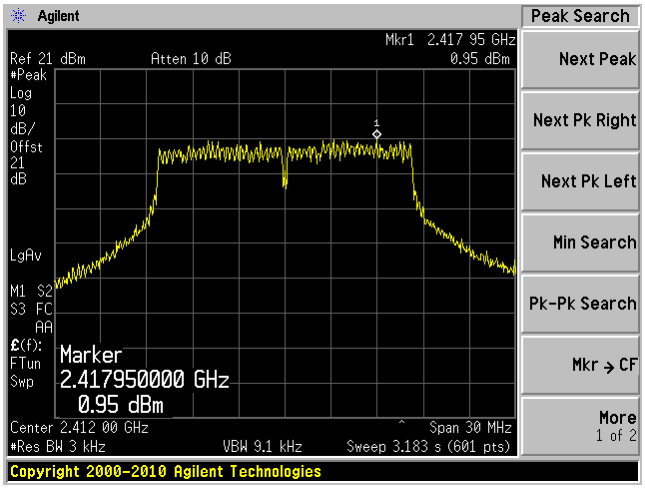


High channel J2: 2462 MHz

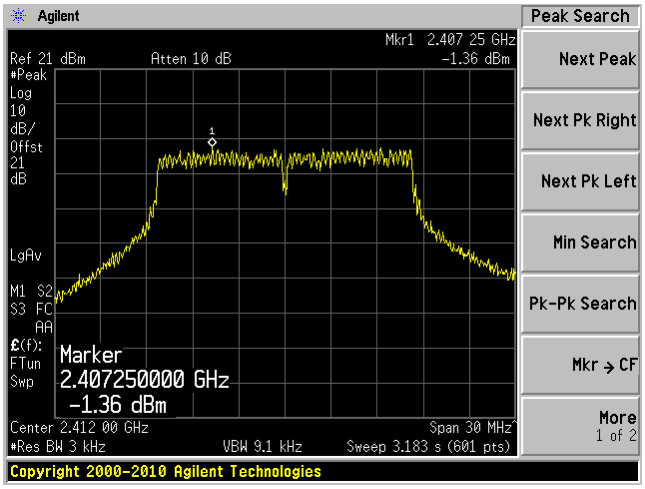


802.11g mode

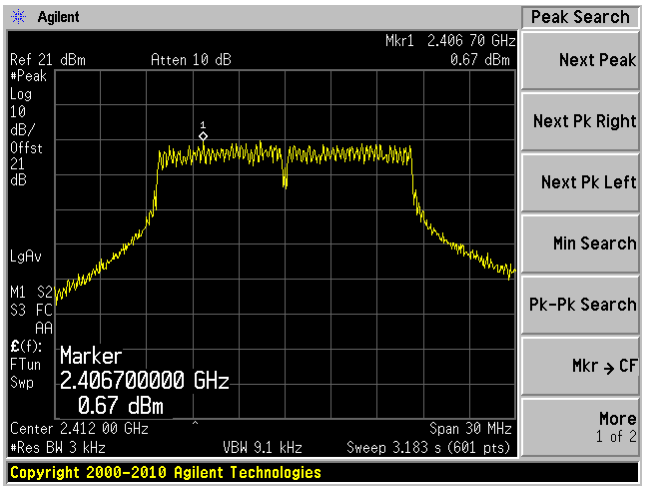
Low channel J0: 2412 MHz



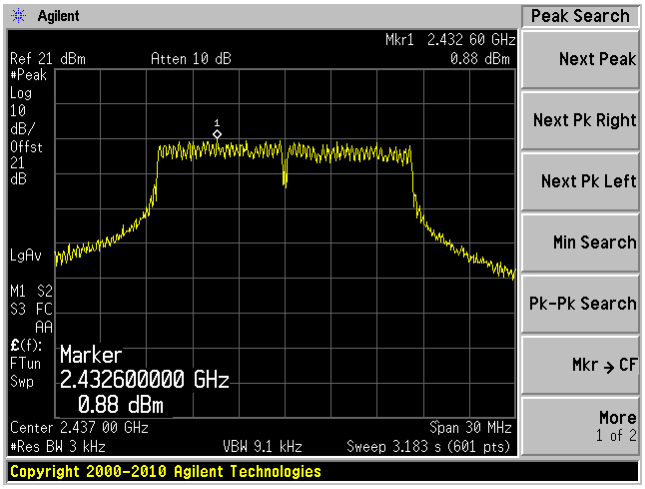
Low channel J1: 2412 MHz



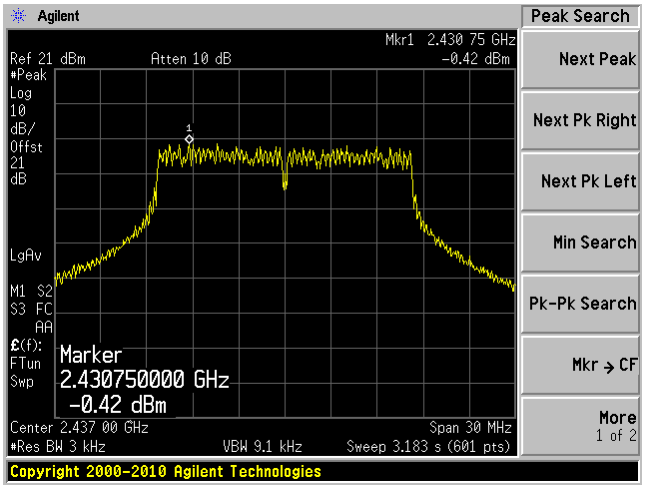
Low channel J2: 2412 MHz



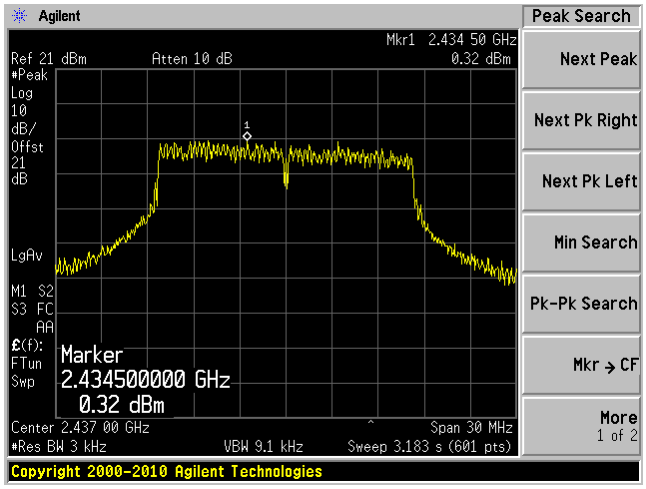
Middle channel J0: 2437 MHz



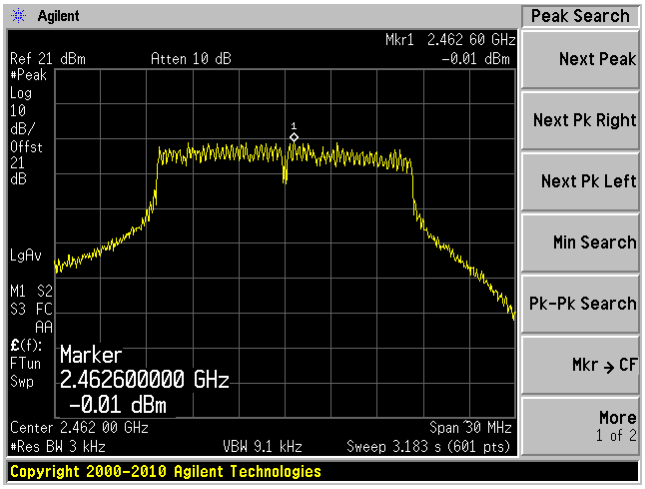
Middle channel J1: 2437 MHz



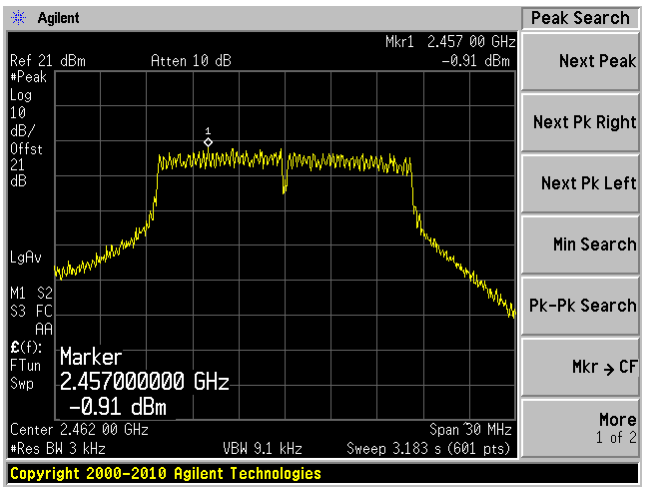
Middle channel J2: 2437 MHz



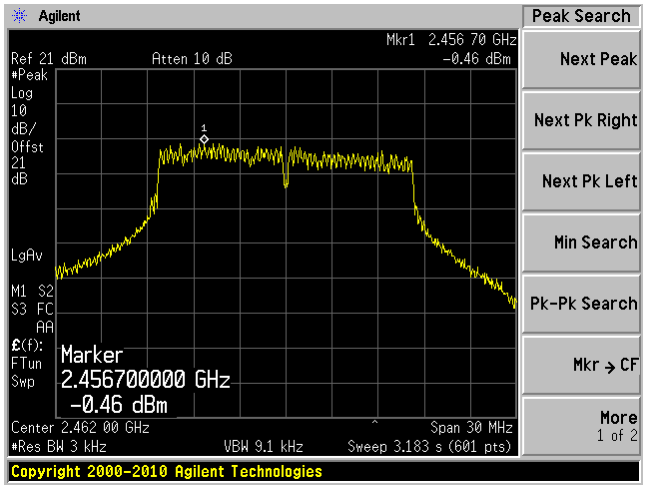
High channel J0: 2462 MHz



High channel J1: 2462 MHz

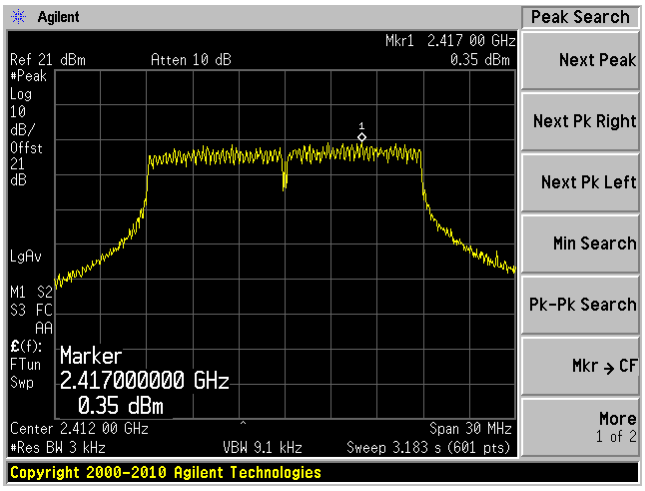


High channel J2: 2462 MHz

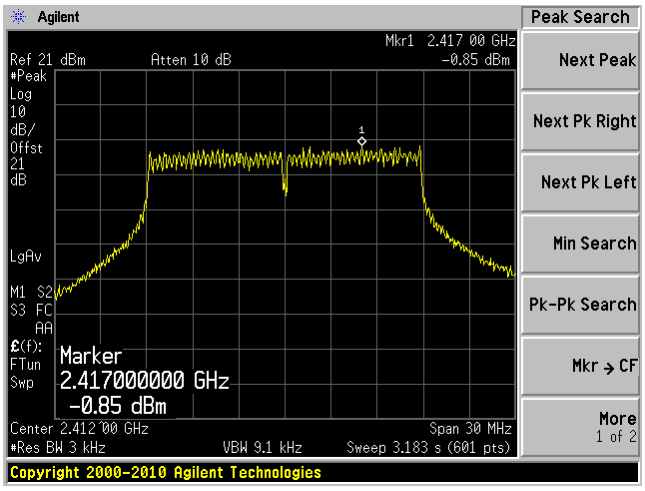


802.11n HT20 mode

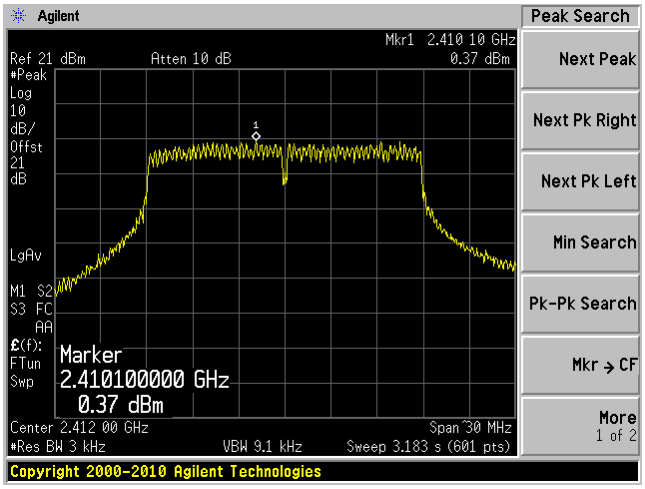
Low channel J0: 2412 MHz



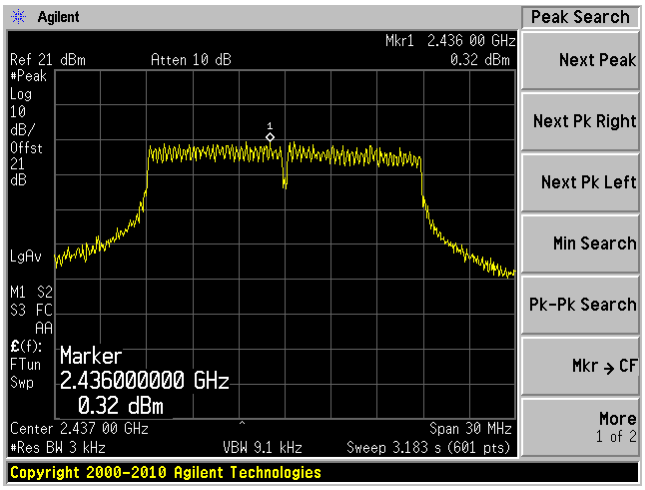
Low channel J1: 2412 MHz



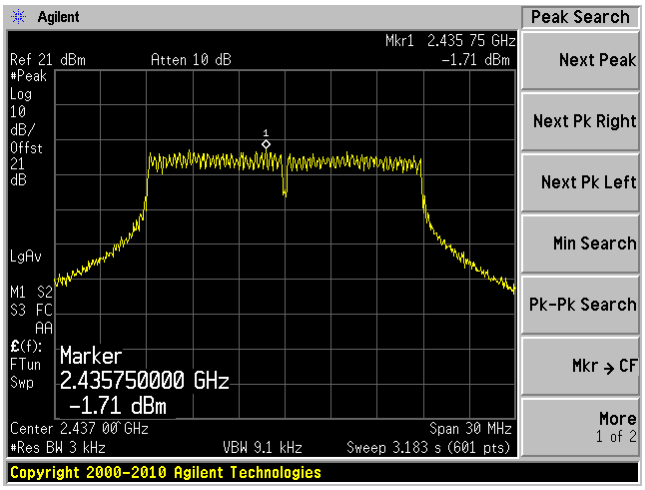
Low channel J2: 2412 MHz



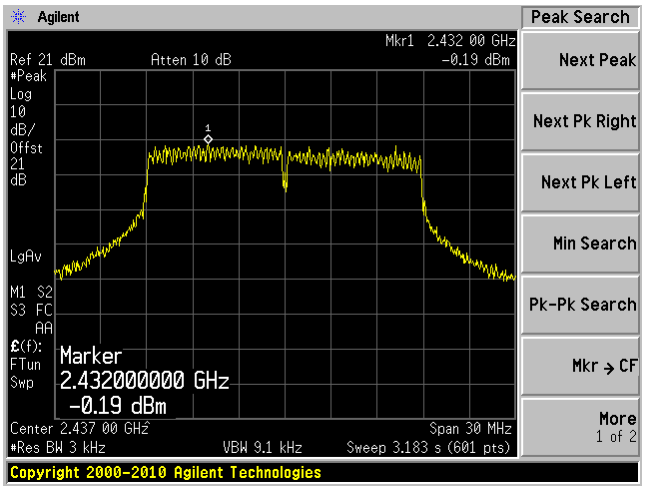
Middle channel J0: 2437 MHz



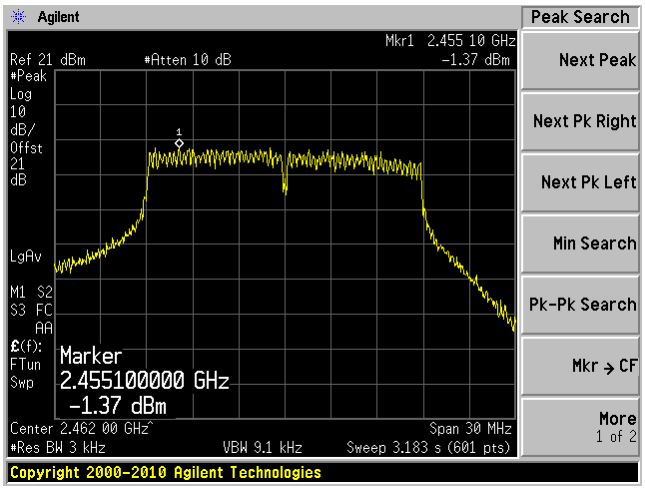
Middle channel J1: 2437 MHz



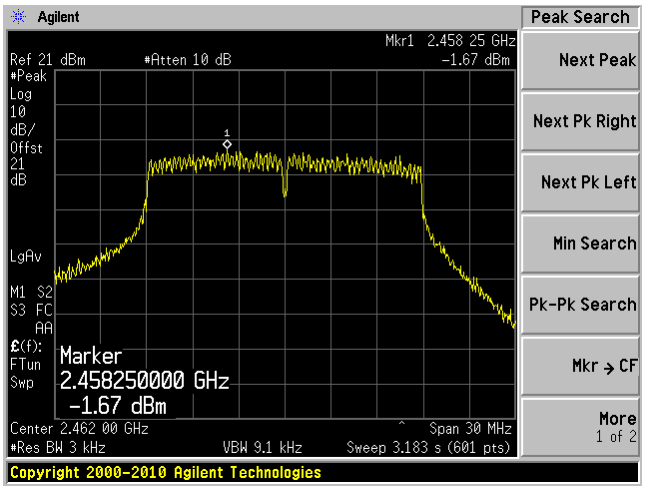
Middle channel J2: 2437 MHz



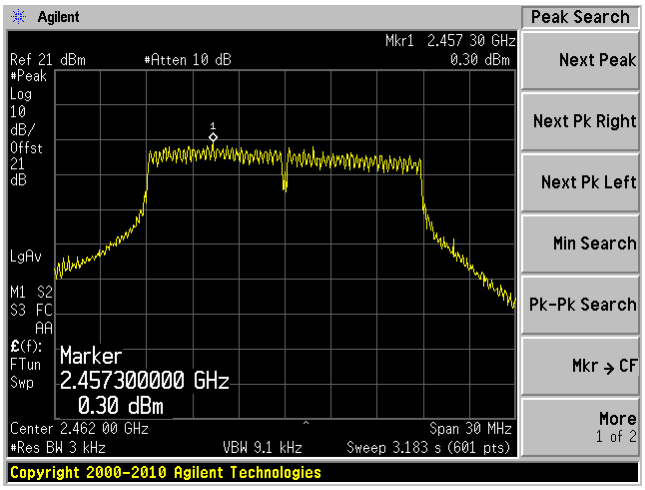
High channel J0: 2462 MHz



High channel J1: 2462 MHz

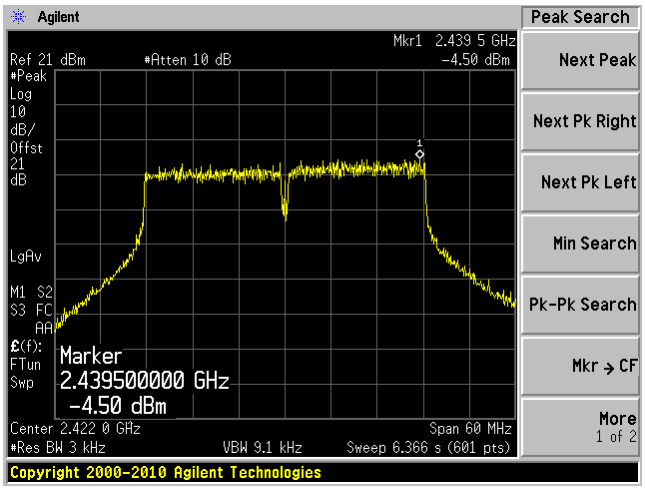


High channel J2: 2462 MHz

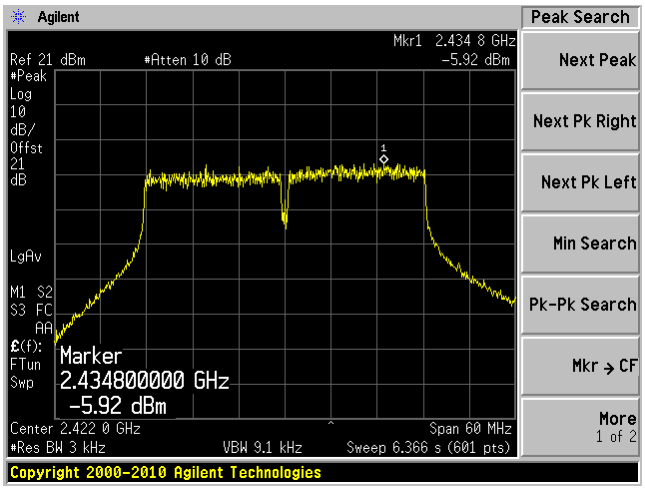


802.11n HT40 mode

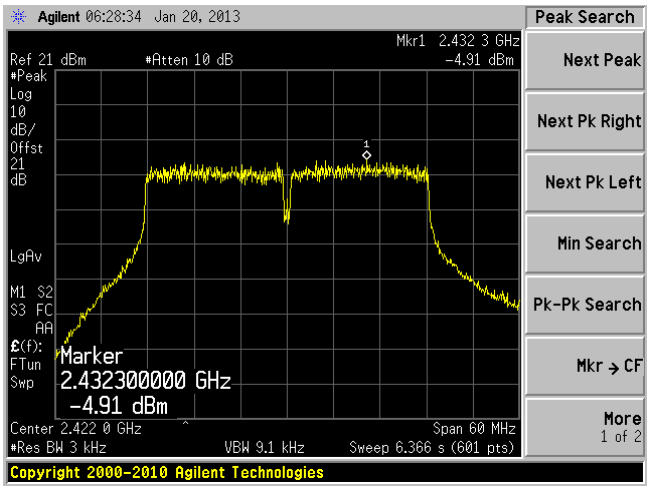
Low channel J0: 2422 MHz



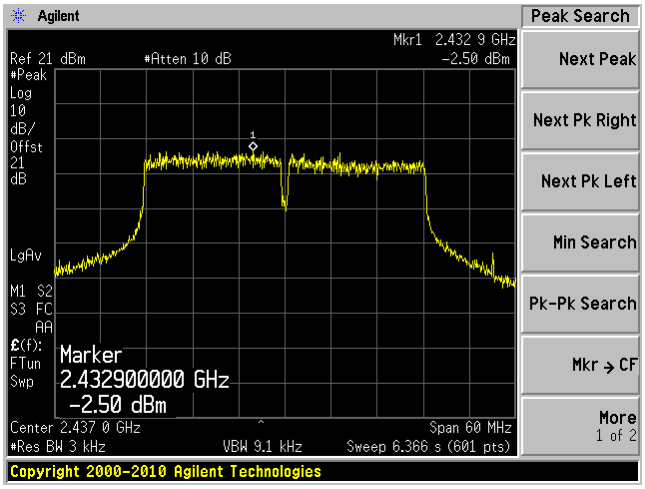
Low channel J1: 2422 MHz



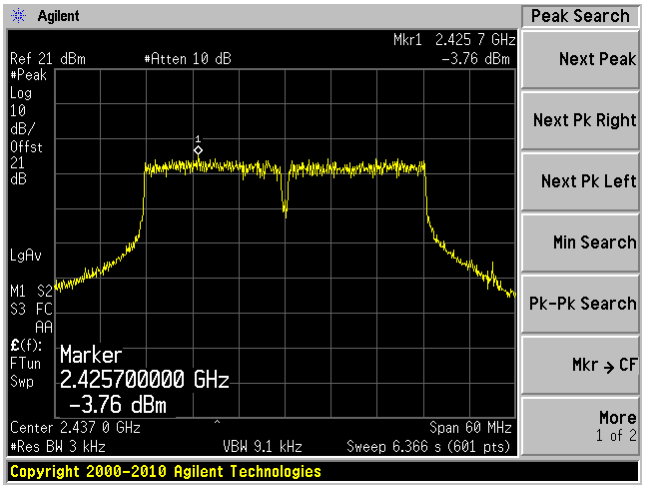
Low channel J2: 2422 MHz



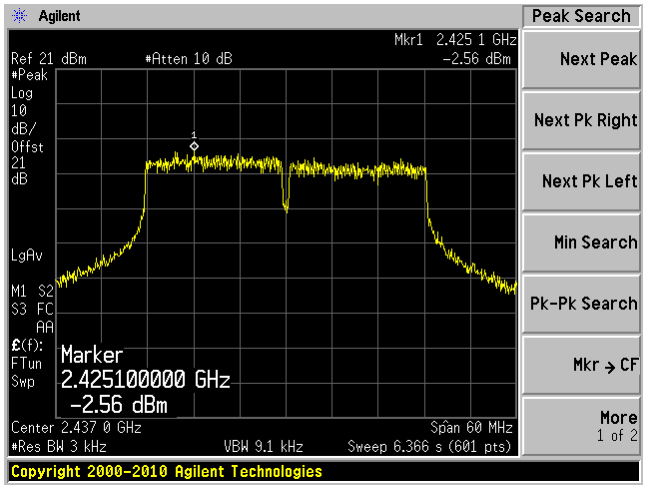
Middle channel J0: 2437 MHz



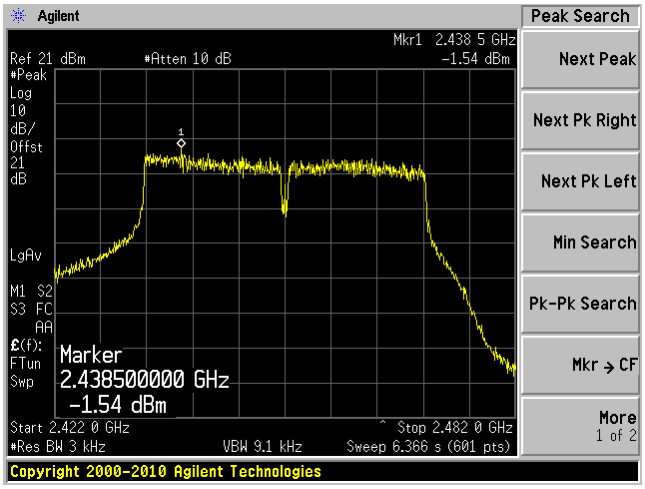
Middle channel J1: 2437 MHz



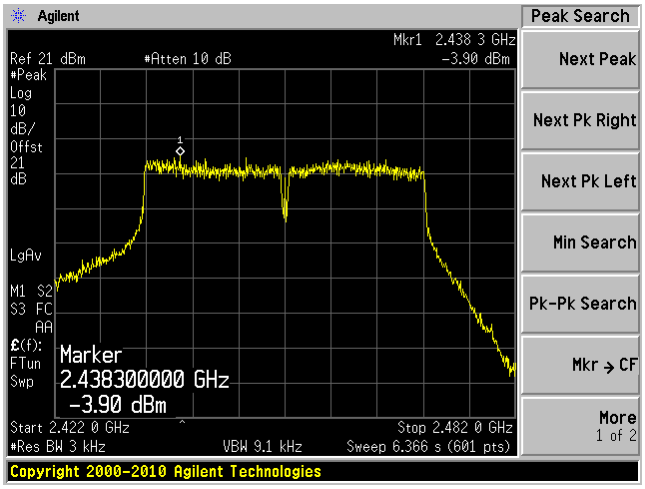
Middle channel J2: 2437 MHz



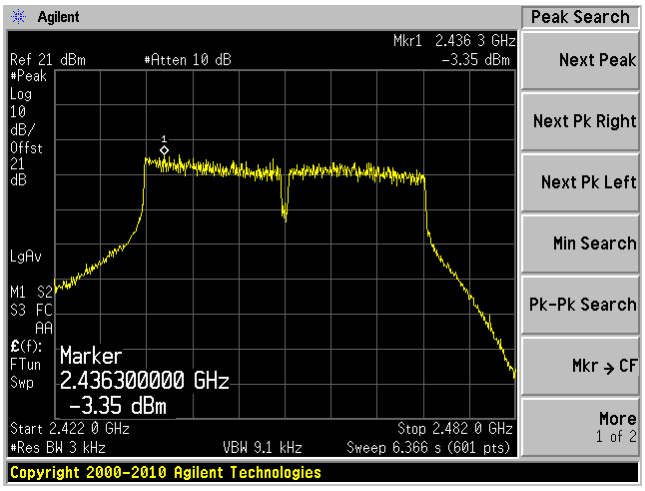
High channel J0: 2452 MHz



High channel J1: 2452 MHz



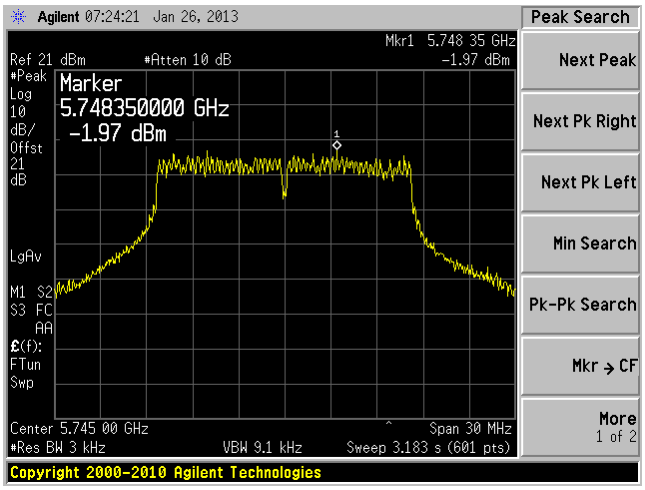
High channel J2: 2452 MHz



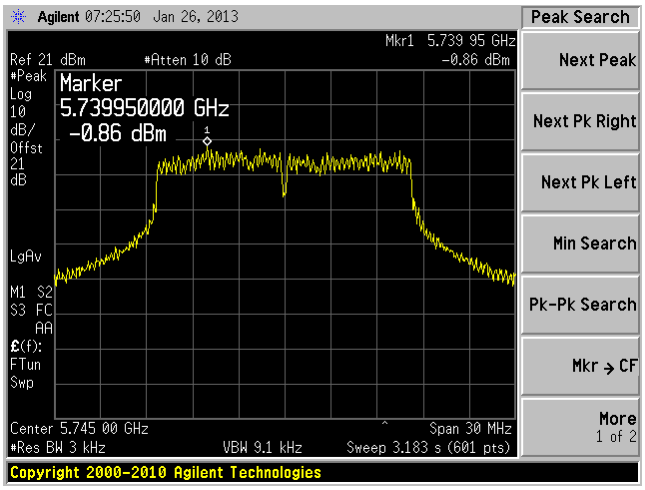
5.8 GHz Band

802.11a mode

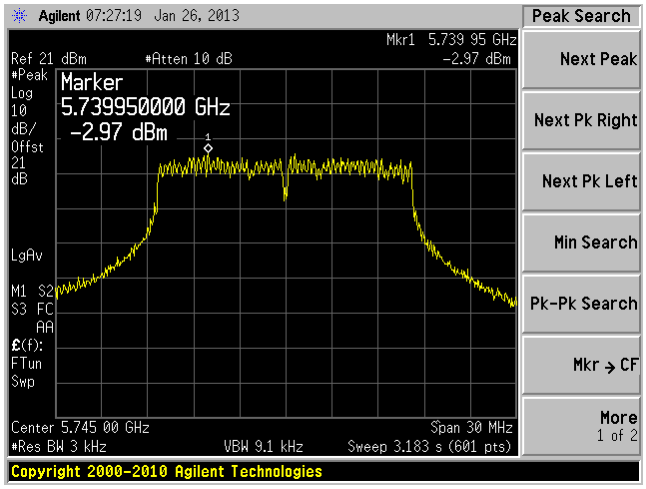
Low channel J0: 5745 MHz



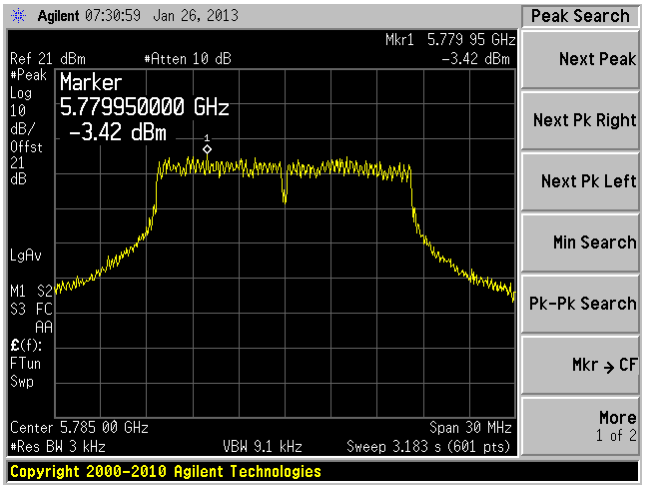
Low channel J1: 5745 MHz



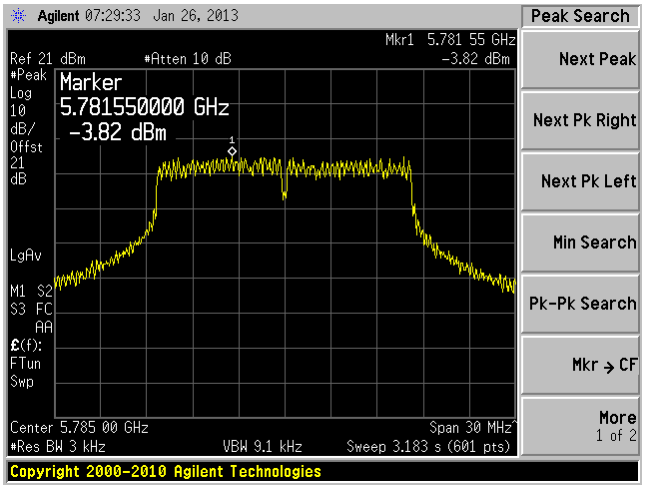
Low channel J2: 5745 MHz



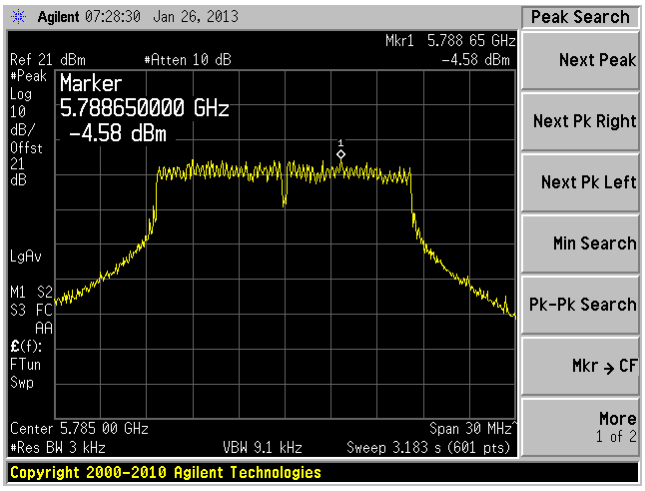
Middle channel J0: 5785 MHz



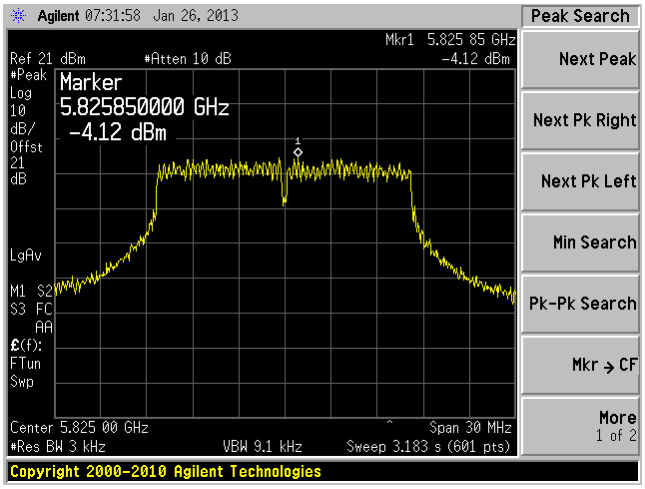
Middle channel J1: 5785 MHz



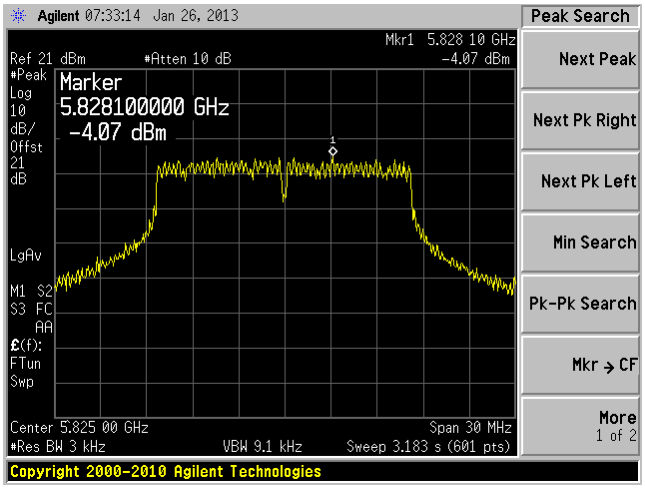
Middle channel J2: 5785 MHz



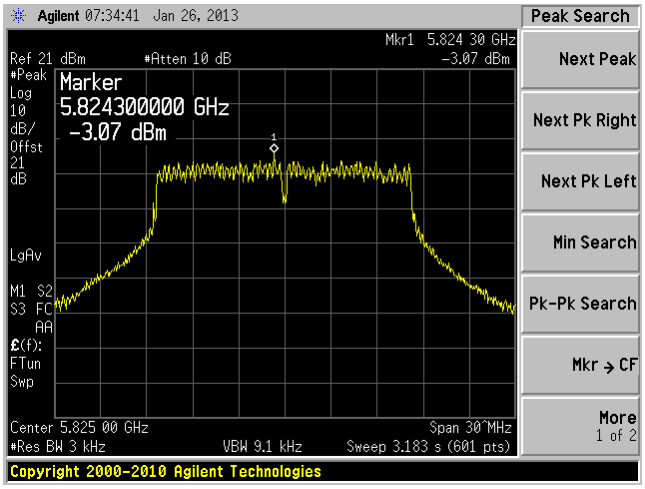
High channel J0: 5825 MHz



High channel J1: 5825 MHz

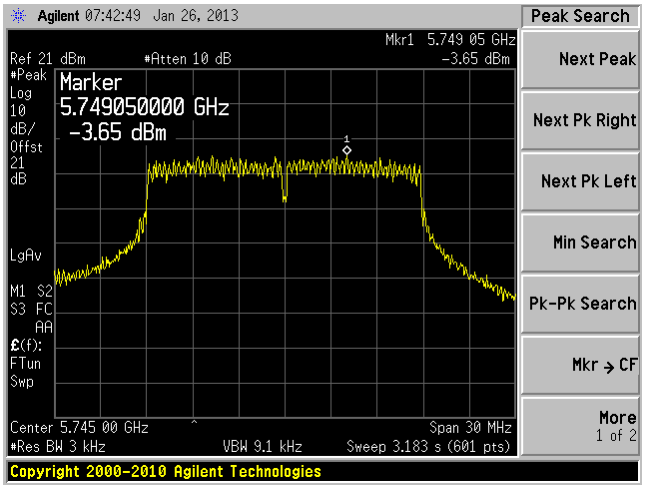


High channel J2: 5825 MHz

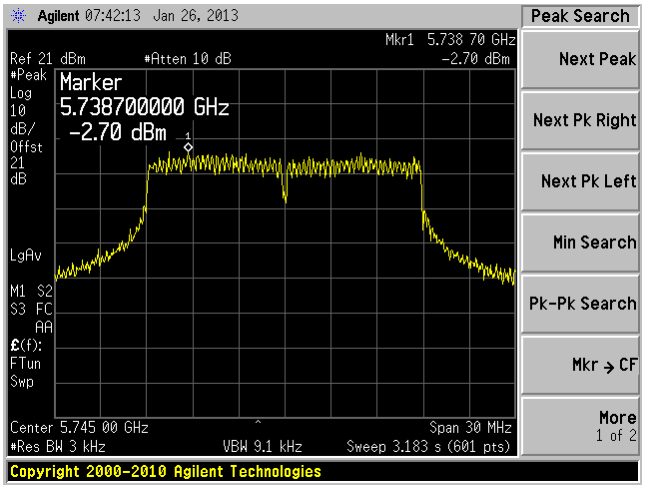


802.11n HT20 mode

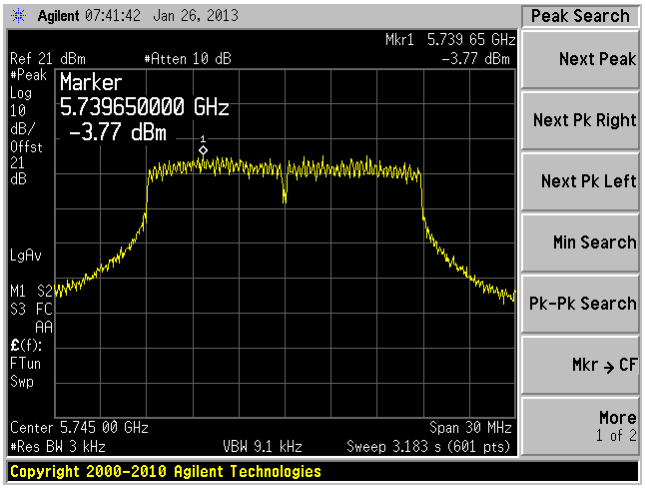
Low channel J0: 5745 MHz



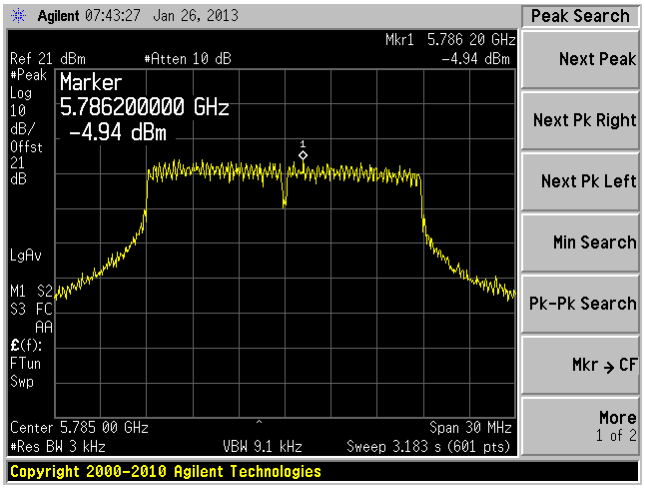
Low channel J1: 5745 MHz



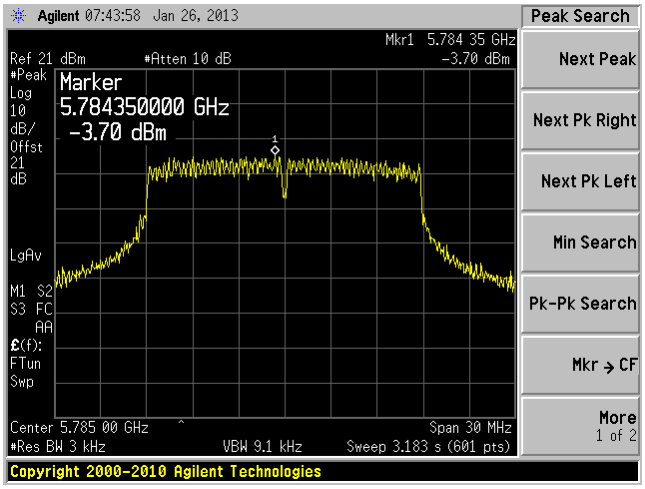
Low channel J2: 5745 MHz



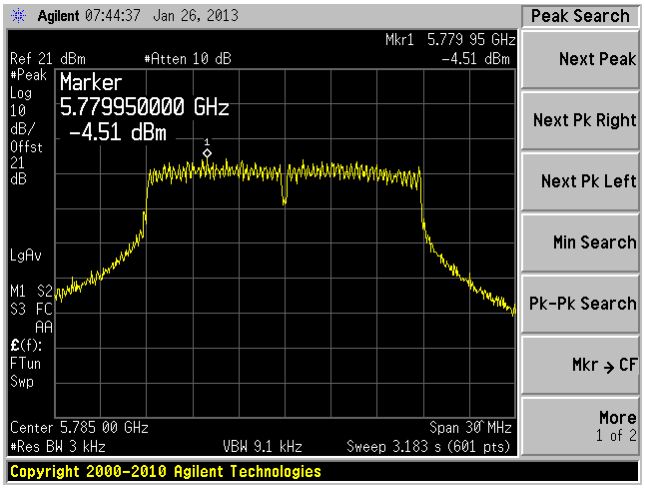
Middle channel J0: 5785 MHz



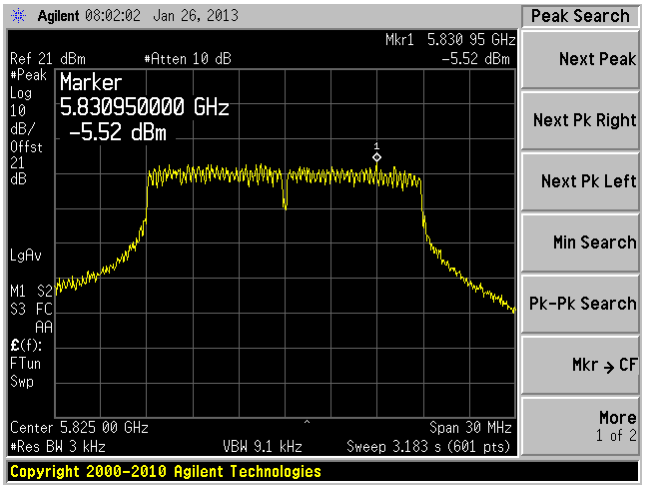
Middle channel J1: 5785 MHz



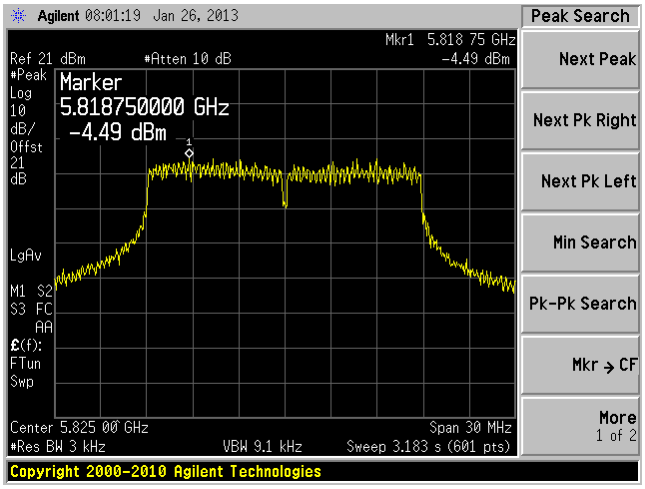
Middle channel J2: 5785 MHz



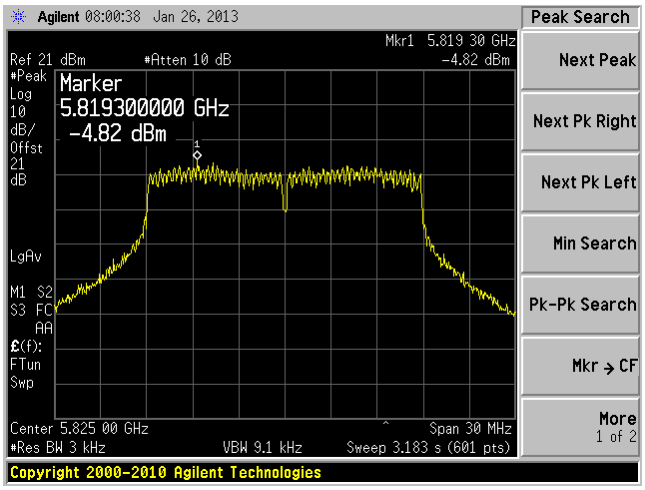
High channel J0: 5825 MHz



High channel J1: 5825 MHz

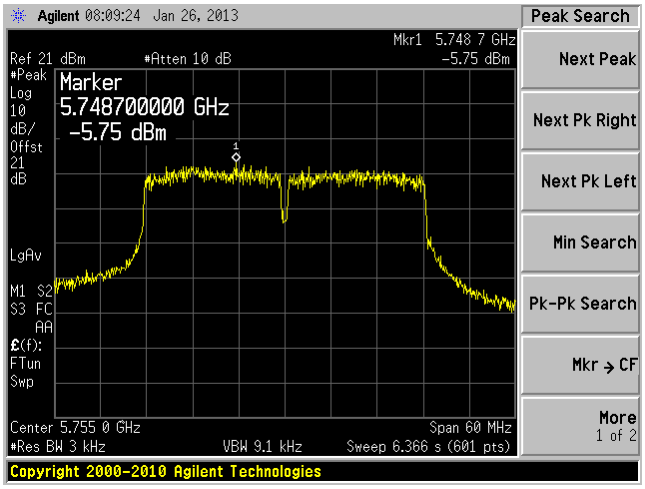


High channel J2: 5825 MHz

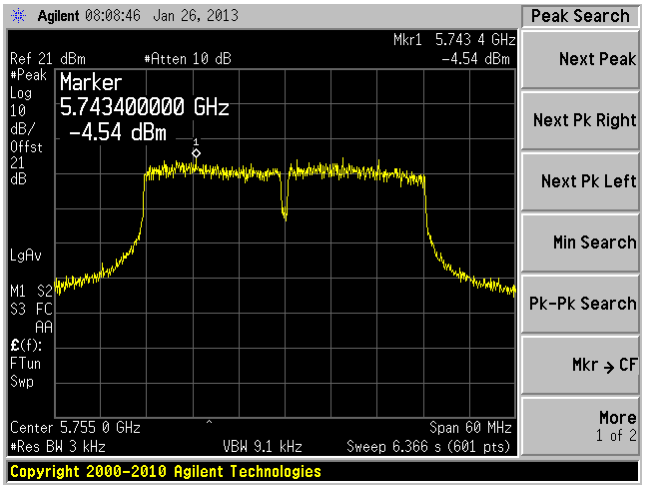


802.11n HT40 mode

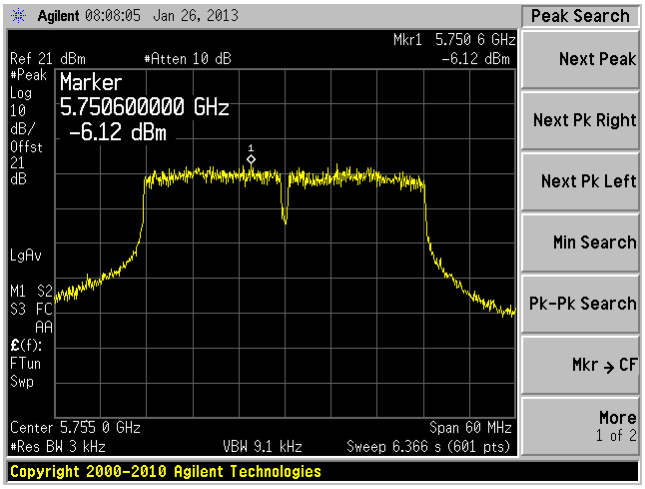
Low channel J0: 5755 MHz



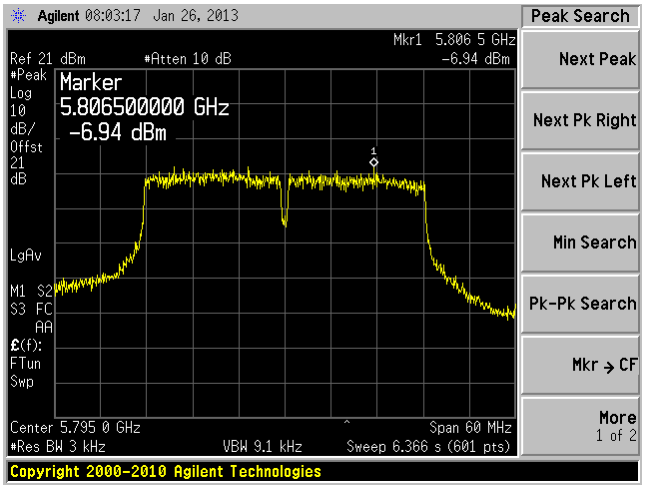
Low channel J1: 5755 MHz



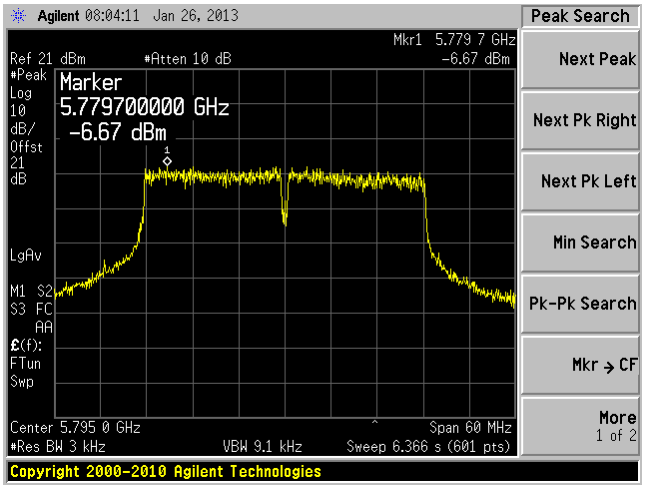
Low channel J2: 5755 MHz



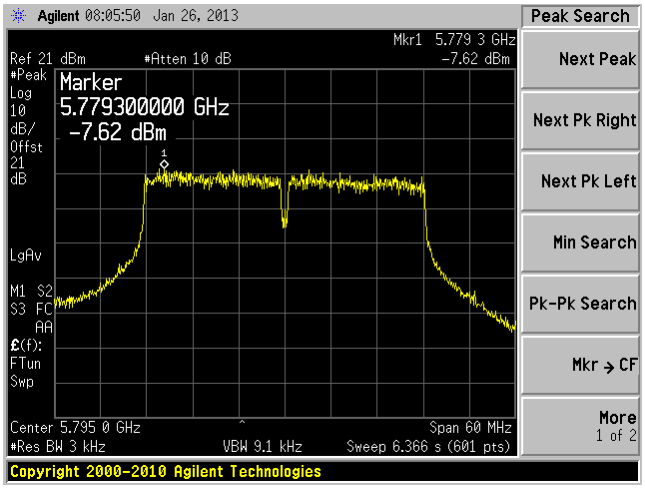
High channel J0: 5795 MHz



High channel J1: 5795 MHz



High channel J2: 5795 MHz



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:

$$Margin = Corrected\ Amplitude - Limit$$

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	A020106-3	2012-06-18	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	E4446A	US44300386	2012-09-29	1 year
EMCO	Horn Antenna	3315	9511-4627	2012-10-17	1 year
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2013-03-28	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:	21-24°C
Relative Humidity:	43-46%
ATM Pressure:	101-103kPa

The testing was performed by Bo Li from 2013-2-15 to 2013-3-15 at 5 meter 3.

13.7 Summary of Test Results

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

30-1000 MHz:

2.4 GHz band

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-4.10	120.50225	Horizontal	30-1000

5.8 GHz band

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-2.18	168.7445	Horizontal	30-1000

Above 1 GHz

2.4 GHz band

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-21.12	1592	Horizontal	1000-18000

5.8 GHz band

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-21.29	1592	Horizontal	1000-18000

13.8 Test Results

1) 30-1000 MHz, Measured at 3 meters

2.4 GHz Band

With AC/DC cord

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Detector (QP/Ave.)
120.50225	39.4	286	H	342	43.5	-4.1	QP
72.50375	29.89	249	V	122	40	-10.11	QP
168.35025	34.89	100	H	182	43.5	-8.61	QP
241.3955	39.31	108	H	7	46	-6.69	QP
124.905	35.15	268	H	328	43.5	-8.35	QP
172.5815	31.78	140	H	119	43.5	-11.72	QP
994.02775	22.98	285	H	155	54	-31.02	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.)
169.11475	36.85	342	H	318	43.5	-6.65	QP
121.0465	36.27	157	V	181	43.5	-7.23	QP
172.00425	34.71	172	H	360	43.5	-8.79	QP
274.93	32.71	99	H	278	46	-13.29	QP
978.66875	19.05	370	H	149	54	-34.95	QP

5.8 GHz Band

With AC/DC cord

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Detector (QP/Ave.)
34.58725	31.76	172	V	286	40	-8.24	QP
120.39275	30.56	365	H	148	43.5	-12.94	QP
249.521	39.38	118	H	334	46	-6.62	QP
125.2515	34.77	255	H	321	43.5	-8.73	QP
168.68	29.62	100	V	127	43.5	-13.88	QP
993.4375	23.03	296	V	166	54	-30.97	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.)
168.7445	41.32	260	H	349	43.5	-2.18	QP
72.4335	27.46	316	V	40	40	-12.54	QP
119.9435	34.1	164	V	251	43.5	-9.4	QP
229.68425	38.2	109	H	42	46	-7.8	QP
172.29125	34.42	146	H	347	43.5	-9.08	QP
268.69725	33.98	107	H	289	46	-12.02	QP
249.98425	31.47	149	H	144	46	-14.53	QP
975.77475	19.2	99	V	6	54	-34.8	QP

2) Above 1 GHz Measured at 3 meters

2.4 GHz Band

With AC/DC cord

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
1592	26.33	119	V	205	54	-27.67	Ave
1592	26.96	100	H	87	54	-27.04	Ave
1592	52.79	119	V	205	74	-21.21	Peak
1592	52.88	100	H	87	74	-21.12	Peak
1098	22.34	100	V	195	54	-31.66	Ave
1098	22.37	111	H	73	54	-31.63	Ave
1098	46.04	100	V	195	74	-27.96	Peak
1098	50.17	111	H	73	74	-23.83	Peak

With POE

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
1592	26.21	100	V	212	54	-27.79	Ave
1592	26.7	100	H	88	54	-27.3	Ave
1592	47.79	100	V	212	74	-26.21	Peak
1592	46.88	100	H	88	74	-27.12	Peak
1972	25.57	100	V	113	54	-28.43	Ave
1972	25.69	109	H	28	54	-28.31	Ave
1972	47.3	100	V	113	74	-26.7	Peak
1972	45.34	109	H	28	74	-28.66	Peak

5.8 GHz Band

With AC/DC cord

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
1592	27.29	115	V	211	54	-26.71	Ave
1592	26.82	100	H	77	54	-27.18	Ave
1592	52.46	115	V	211	74	-21.54	Peak
1592	52.71	100	H	77	74	-21.29	Peak
1098	22.85	100	V	191	54	-31.15	Ave
1098	22.72	100	H	80	54	-31.28	Ave
1098	45.9	100	V	191	74	-28.1	Peak
1098	51.76	100	H	80	74	-22.24	Peak

With POE

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
1592	26.4	102	V	205	54	-27.6	Ave
1592	25.86	100	H	88	54	-28.14	Ave
1592	48.27	102	V	205	74	-25.73	Peak
1592	48.04	100	H	88	74	-25.96	Peak
1972	25.67	100	V	113	54	-28.33	Ave
1972	25.01	117	H	20	54	-28.99	Ave
1972	47.8	100	V	113	74	-26.2	Peak
1972	46.45	117	H	20	74	-27.55	Peak