FCC PART 15.407
TEST AND MEASUREMENT REPORT

For

Ruckus Wireless, Inc.

350 West Java Drive,

Sunnyvale, CA 94089, USA

FCC ID: S9GR500

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

Prepared By: Chen Ge

Report Number: R1403241-407W5356 Rev A

Report Date: 2014-12-02

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1403241-407 W5356	Class II Permissive Change	2014-10-08
1	R1403241-407W5356 Rev A	Revised Report	2014-12-02

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: *R500, FCC ID: S9GR500* or the "EUT" as referred to in this report. The EUT is a dual band 2x2 MIMO 802.11 a/b/g/n/ac RLAN Access Point. Model Xclaim Xi-3 was declared electrically identical to the Ruckus R500 by Ruckus Wireless, Inc. Please see attached Exhibit D for Declaration of Similarities. The model tested was R500.

1.2 Mechanical Description of EUT

The EUT measures approximately 160 mm (L) x 160 mm (W) x 35 mm (H) and weighs approximately 400 g.

The data gathered are from a typical production sample provided by the manufacturer with serial number assigned by BACL: R1403241

1.3 Objective

This report is prepared on behalf of *Ruckus Wireless, Inc*., in accordance with FCC CFR47 §15.407.

The objective is to determine compliance with FCC Part 15.407 for Output Power, Antenna Requirements, AC Line Conducted Emissions, Bandwidth, power spectral density, Band Edges Measurement, Spurious Emissions, Conducted and Radiated Spurious Emissions.

This is the Class II permissive change application of the device. The difference from the original device is that the frequency band: 5250-5350MHz, 5470-5725MHz were added without the hardware changes.

For the changes made to the device, all items were performed for adding frequency band.

1.4 Related Submittal(s)/Grant(s)

R1403241-407

1.5 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.6 Measurement Uncertainty

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

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

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.7 Test Facility

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

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

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

4- A Product Certification Body accredited to **ISO Guide 65: 1996** by **A2LA** to certify:
.
2. Radio Standards Specifications (RSS) in the Category I Equipment Standards List and All Broadcasting Technical Standards (BETS) in Category I Equipment Standards List for Industry Canada.
3. Radio Communication Equipment for Singapore.
4. Radio Equipment Specifications, GMDSS Marine Radio Equipment Specifications, and Fixed Network Equipment Specifications for Hong Kong.
5. Japan MIC Telecommunication Business Law (A1, A2) and Radio Law (B1, B2 and B3).
6. Audio/Video, Battery Charging Systems, Computers, Displays, Enterprise Servers, Imaging Equipment, Set-Top Boxes, Telephony, Televisions, Ceiling Fans, CFLs (Including GU24s),Decorative Light Strings, Integral LED Lamps, Luminaires, Residential Ventilating Fans.

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

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

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

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

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

2 EUT 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 art2_ver_4_9_802_1_CS_Bin_AP135 provided by Ruckus Wireless Inc., and was verified by *Chen Ge* to comply with the standard requirements being tested against.

2.3 Equipment Modifications

No modifications were made to the EUT.

2.4 Local Support Equipment

Manufacturer	Description	Model	Serial Number
Ruckus	Passive POE Adaptor	NPE-5818	740-64157-001
Ruckus	48V DC PoE Adaptor	PA1024-4HUB	740-64125-010
Ruckus	12V DC Power Adaptor	HK-AD-120A100-US	740-64190-011
Lenovo	Laptop	Ideapad U310	QB04927703

2.5 EUT Internal Configuration Details

Manufacturer	Description	Model	Serial Number
Ruckus	Main Board	ASM 120-11267-001 rev. 3.1	RUK03752

2.6 Interface Ports and Cables

Cable Description	Length (m)	From	To
RJ45	1m	DC Adaptor/POE	EUT
RJ45	1m	Laptop	DC Adaptor/POE

2.7 Power Supply List and Details

Manufacturer	Description	Model	Part Number
Ruckus	Passive POE Adaptor	NPE-5818	740-64157-001
Ruckus	48V DC PoE Adaptor	PA1024-4HUB	740-64125-010
Ruckus	12V DC Power Adaptor	HK-AD-120A100-US	740-64190-011

3 Summary of Test Results

FCC Rules	Description of Test	Result
§2.1091, §15.407(f)	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.207	AC Power Line Conducted Emissions	Compliant
§15.209(a), 15.407(b)	Spurious Radiated Emissions	Compliant
§15.407(a)	Emission Bandwidth	Compliant
§407(a)	Maximun Output Power Measurement	Compliant
§15.407(b)	Band Edges	Compliant
§15.407(a)	Power Spectral Density	Compliant
§15.407(b)	Spurious Emissions at Antenna Terminals	Compliant
§15.407(h)	Dynamic Frequency Selection (DFS)	Compliant*

Compliant*: Please refer to BACL DFS report No.: R1403241-DFS

4 FCC §2.1091 & §15.407(f) - RF Exposure

4.1 Applicable Standard

According to FCC §15.407(f) 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

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

5250-5350 MHz

Maximum peak output power at antenna input terminal (dBm):	22.82
Maximum peak output power at antenna input terminal (mW):	191.42
Prediction distance (cm):	20
Prediction frequency (MHz):	5270
Maximum Antenna Gain, typical (dBi):	3
Maximum Antenna Gain (numeric):	1.99
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.0759
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0

5470-5725 MHz

Maximum peak output power at antenna input terminal (dBm):	22.12
Maximum peak output power at antenna input terminal (mW):	162.92
Prediction distance (cm):	20
Prediction frequency (MHz):	5690
Maximum Antenna Gain, typical (dBi):	3
Maximum Antenna Gain (numeric):	1.99
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.0646
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0

The EUT has two radios which is alloed to transmission simulataneouslly.

2.4 GHz band:

Maximum peak output power at antenna input terminal (dBm):	23.12
Maximum peak output power at antenna input terminal (mW):	205.11
Prediction distance (cm):	20
Prediction frequency (MHz):	2437
Maximum Antenna Gain, typical (dBi):	1.0
Maximum Antenna Gain (numeric):	1.258
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.0513
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0

The sum of the MPE for all simultaneous transmitting antennas incorporated in the host device is less than 1.0 mW/cm^2 limit for the uncontrolled exposure environment at 20 cm distance.

5 FCC §15.203 – 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.

5.2 Antenna Description

Manufacturers	Antenna Type/Pattern	Antenna Gain (dBi) @ 5 GHz
Ruckus	Omni	3.0

The antenna consists of non-standard (UFL) connectors with less 6 dBi gain; therefore, it complies with the antenna requirement. Please refer to the internal photos.

6 FCC §15.207 - AC Power Line Conducted Emissions

6.1 Applicable Standards

As per FCC §15.207 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 Note 1	56 to 46 Note 1
0.5-5	56	46
5-30	60	50

Note 1 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 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

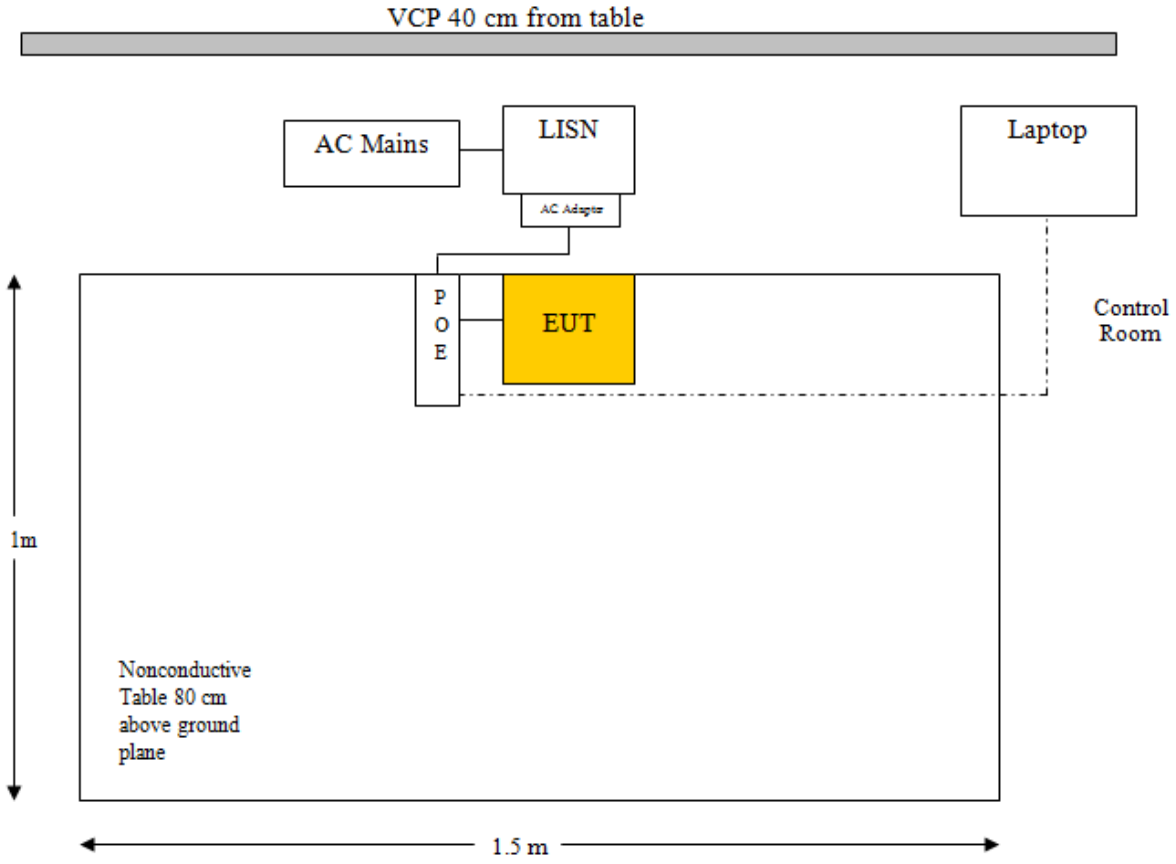
During the conducted emissions test, the power cord of the EUT host system was connected to the mains outlet of the LISN-1 and the power cord of the support equipment was connected to LISN-2.

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

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	2013-09-28	1 year
Solar Electronics	LISN	9252-50-R-24-N	511205	2014-06-25	1 year
TTE	Filter, High Pass	H962-150K-50-21378	K7133	2013-07-30	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:	25º C
Relative Humidity:	41 %
ATM Pressure:	101.1-101.2 kPa

The testing was performed by Chen Ge on 2014-07-07 in 5m chamber3.

6.8 Summary of Test Results

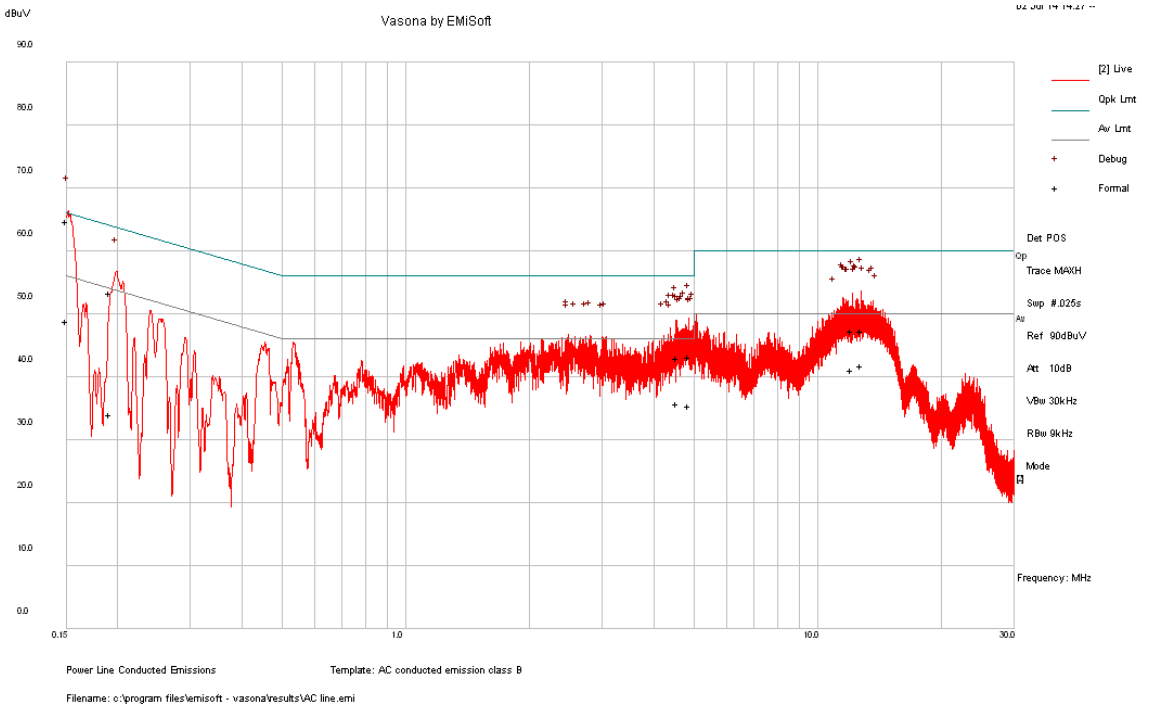
According to the recorded data in following table, the EUT complied with the FCC Part 15 standard's conducted emissions limits, with the margin reading of:

Connection: AC/DC adapter connected to 120 V/60 Hz, AC			
Margin (dB)	**Frequency (MHz)**	**Conductor Mode (Line/Neutral)**	**Range (MHz)**
-0.49	0.1505	Neutral	0.15-30

6.9 Conducted Emissions Test Plots and Data

POE:

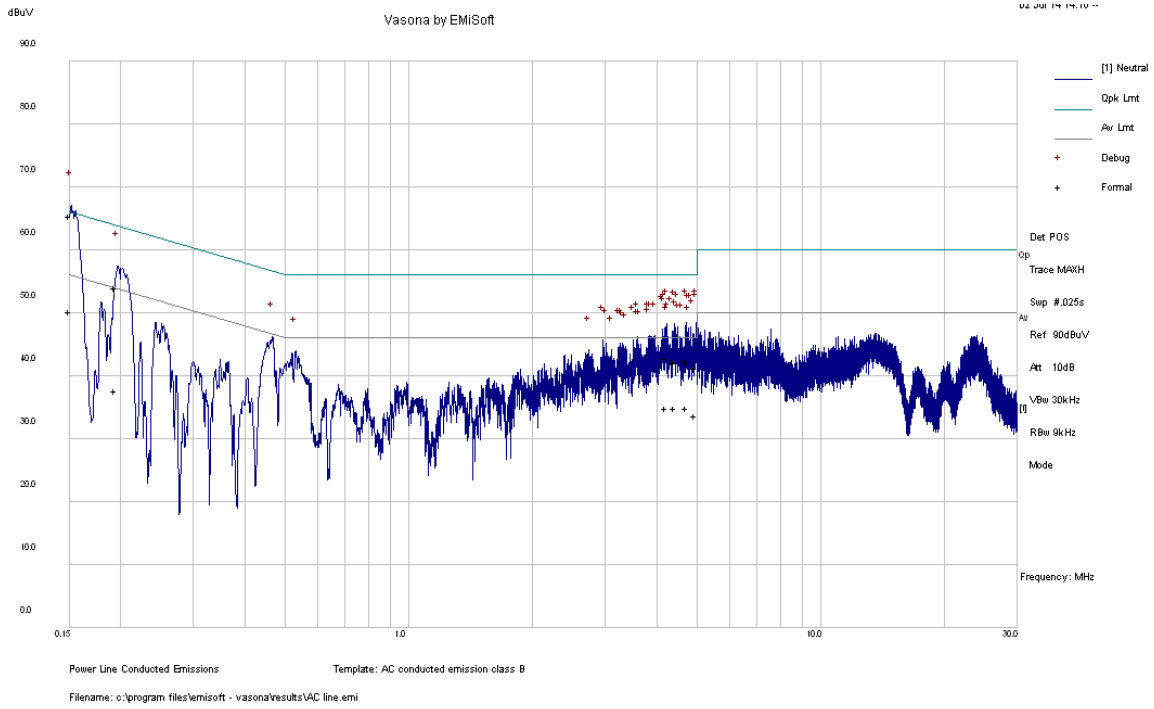
120 V, 60 Hz – Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.150032	64.8	Line	66	-1.2	QP
12.76115	47.33	Line	60	-12.67	QP
4.877971	43.28	Line	56	-12.72	QP
12.12168	47.27	Line	60	-12.73	QP
0.191963	53.3	Line	63.95	-10.65	QP
4.544114	43	Line	56	-13	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.150032	48.96	Line	56	-7.04	Ave.
12.76115	41.74	Line	50	-8.26	Ave.
4.877971	35.47	Line	46	-10.53	Ave.
12.12168	41.07	Line	50	-8.93	Ave.
0.191963	34.05	Line	53.95	-19.9	Ave.
4.544114	35.71	Line	46	-10.29	Ave.

120 V, 60 Hz – Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.1505	65.48	Neutral	65.97	-0.49	QP
0.194094	54.01	Neutral	63.86	-9.85	QP
4.963619	41.26	Neutral	56	-14.74	QP
4.733461	42.4	Neutral	56	-13.6	QP
4.222255	42.89	Neutral	56	-13.11	QP
4.413713	42.11	Neutral	56	-13.89	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.1505	50.19	Neutral	55.97	-5.78	Ave.
0.194094	37.6	Neutral	53.86	-16.26	Ave.
4.963619	33.68	Neutral	46	-12.32	Ave.
4.733461	34.88	Neutral	46	-11.12	Ave.
4.222255	35	Neutral	46	-11	Ave.
4.413713	34.86	Neutral	46	-11.14	Ave.

7 FCC §15.209, §15.407(b) - Spurious Radiated Emissions

7.1 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.

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 Note 1	3
88 - 216	150 Note 1	3
216 - 960	200 Note 1	3
Above 960	500	3

Note 1: 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 Part 15.407 (b)

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

7.2 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 15C/15E limits.

The spacing between the peripherals was 10 centimeters.

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

7.3 Test Procedure

For the radiated emissions test, the EUT host, and all support equipment power cords were 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

7.4 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 for Class A. The equation for margin calculation is as follows:

Margin = Corrected Amplitude - Limit

7.5 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	2013-07-18	1 year
Hewlett Packard	Pre-amplifier	8447D	2944A06639	2013-08-09	1 year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2013-08-09	1 year
Agilent	Spectrum Analyzer	E4446A	US44300386	2013-09-29	1 year
EMCO	Horn Antenna	3315	9511-4627	2013-10-17	1 year
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2013-09-28	1 year

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

7.6 Test Environmental Conditions

Temperature:	21-24 ºC
Relative Humidity:	40-46 %
ATM Pressure:	102.1-104.3 kPa

The testing was performed by Chen Ge on 2014-07-07 to 2014-07-10 at 5 meter 3.

7.7 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC Part 15.205, 15.209 and 15.407 standard's radiated emissions limits, and had the worst margin of:

30 MHz-1 GHz

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-2.22	37.68	Vertical	30 MHz - 1 GHz

1 GHz-40 GHz

5250-5350 MHz

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-8.49	15570	Horizontal	Above 1 GHz

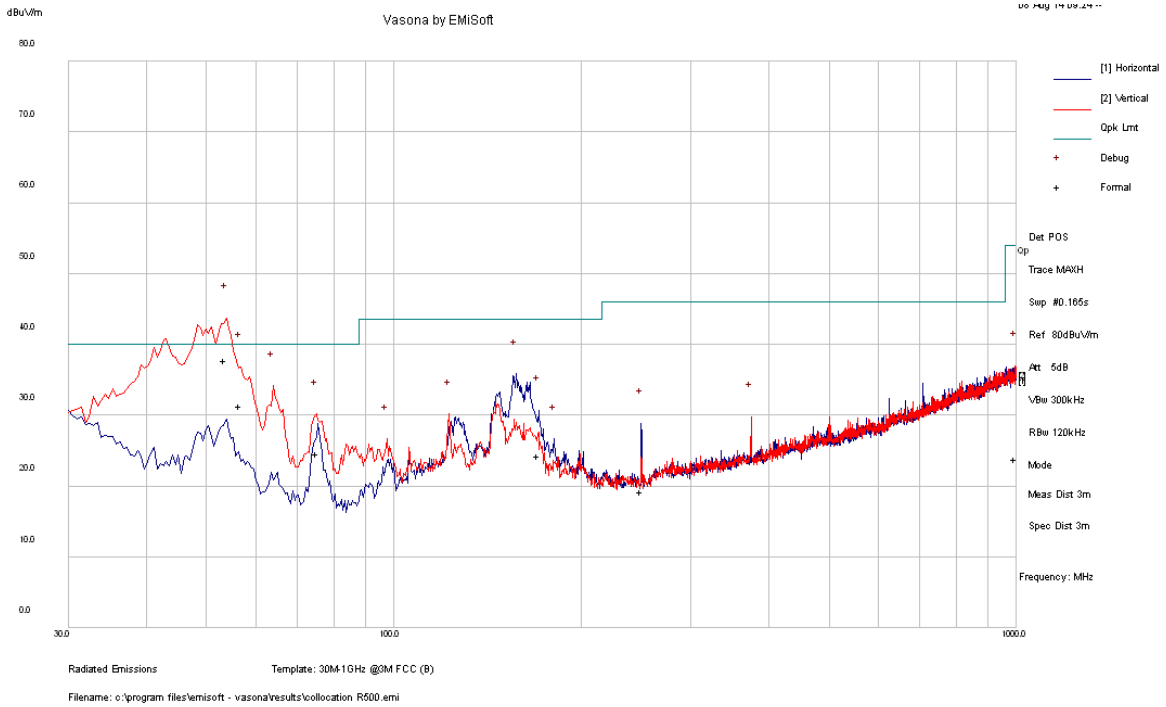
5470-5725 MHz

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-3.881	17010	Horizontal	Above 1 GHz

7.8 Radiated Emissions Test Result Data

1) 30 MHz – 1 GHz

2.4 GHz and 5 GHz Co-Lacation



Frequency MHz	Cord. Reading (dBµV/m)	Measurement Type	Antenna Polarity (H/V)	Antenna Height (cm)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
53.5995	37.78	QP	V	110	263	40	-2.22
56.67525	31.29	QP	V	111	246	40	-8.71
75.209	24.67	QP	V	179	333	40	-15.33
170.4068	24.37	QP	H	170	234	43.5	-19.13
994.134	23.76	QP	V	197	333	54	-30.24

2) 1–40 GHz

5.3 GHz Band

802.11a Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5260 MHz, measured at 3 meters											
10520	48.23	0	100	V	38.343	7	34.49	59.083	74	-14.917	Peak
10520	47.89	0	100	H	38.343	7	34.49	58.743	74	-15.257	Peak
10520	31.89	0	100	V	38.343	7	34.49	42.743	54	-11.257	Ave
10520	33.17	0	100	H	38.343	7	34.49	44.023	54	-9.977	Ave
15780	47.5	0	100	V	37.928	8.35	34.61	59.168	74	-14.832	Peak
15780	47.39	0	100	H	37.928	8.35	34.61	59.058	74	-14.942	Peak
15780	31.76	0	100	V	37.928	8.35	34.61	43.428	54	-10.572	Ave
15780	31.98	0	100	H	37.928	8.35	34.61	43.648	54	-10.352	Ave
21040	47.5	0	100	V	34.6	9.79	34	57.89	74	-16.11	Peak
21040	47.39	0	100	H	34.6	9.79	34	57.78	74	-16.22	Peak
21040	32.58	0	100	V	34.6	9.79	34	42.97	54	-11.03	Ave
21040	32.88	0	100	H	34.6	9.79	34	43.27	54	-10.73	Ave
Middle Channel 5280 MHz, measured at 3 meters											
10560	45.57	0	100	V	38.418	7.07	34.49	56.568	74	-17.432	Peak
10560	45.45	0	100	H	38.418	7.07	34.49	56.448	74	-17.552	Peak
10560	31.62	0	100	V	38.418	7.07	34.49	42.618	54	-11.382	Ave
10560	31.44	0	100	H	38.418	7.07	34.49	42.438	54	-11.562	Ave
15840	47.36	0	100	V	37.914	8.38	34.61	59.044	74	-14.956	Peak
15840	47.61	0	100	H	37.914	8.38	34.61	59.294	74	-14.706	Peak
15840	32.46	0	100	V	37.914	8.38	34.61	44.144	54	-9.856	Ave
15840	32.42	0	100	H	37.914	8.38	34.61	44.104	54	-9.896	Ave
21120	47.02	0	100	V	34.6	9.8	34	57.42	74	-16.58	Peak
21120	47.06	0	100	H	34.6	9.8	34	57.46	74	-16.54	Peak
21120	32.8	0	100	V	34.6	9.8	34	43.2	54	-10.8	Ave
21120	32.69	0	100	H	34.6	9.8	34	43.09	54	-10.91	Ave
High Channel 5320 MHz, measured at 3 meters											
10640	47.11	0	100	V	38.418	7.07	34.49	58.108	74	-15.892	Peak
10640	46.56	0	100	H	38.418	7.07	34.49	57.558	74	-16.442	Peak
10640	34.02	0	100	V	38.418	7.07	34.49	45.018	54	-8.982	Ave
10640	34.14	0	100	H	38.418	7.07	34.49	45.138	54	-8.862	Ave
15960	48.95	0	100	V	37.902	8.39	34.61	60.632	74	-13.368	Peak
15960	47.62	0	100	H	37.902	8.39	34.61	59.302	74	-14.698	Peak
15960	33.23	0	100	V	37.902	8.39	34.61	44.912	54	-9.088	Ave
15960	32.96	0	100	H	37.902	8.39	34.61	44.642	54	-9.358	Ave
21280	47.83	0	100	V	34.6	9.79	34	58.22	74	-15.78	Peak
21280	48.47	0	100	H	34.6	9.79	34	58.86	74	-15.14	Peak
21280	33.76	0	100	V	34.6	9.79	34	44.15	54	-9.85	Ave
21280	33.92	0	100	H	34.6	9.79	34	44.31	54	-9.69	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		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5260 MHz, measured at 3 meters											
10520	44.05	0	100	V	38.343	7	34.49	54.903	74	-19.097	Peak
10520	44.29	0	100	H	38.343	7	34.49	55.143	74	-18.857	Peak
10520	29.78	0	100	V	38.343	7	34.49	40.633	54	-13.367	Ave
10520	29.97	0	100	H	38.343	7	34.49	40.823	54	-13.177	Ave
15780	45.99	0	100	V	37.928	8.35	34.61	57.658	74	-16.342	Peak
15780	45.82	0	100	H	37.928	8.35	34.61	57.488	74	-16.512	Peak
15780	31.03	0	100	V	37.928	8.35	34.61	42.698	54	-11.302	Ave
15780	31.19	0	100	H	37.928	8.35	34.61	42.858	54	-11.142	Ave
21040	47.04	0	100	V	34.6	9.79	34	57.43	74	-16.57	Peak
21040	47.66	0	100	H	34.6	9.79	34	58.05	74	-15.95	Peak
21040	32.43	0	100	V	34.6	9.79	34	42.82	54	-11.18	Ave
21040	32.74	0	100	H	34.6	9.79	34	43.13	54	-10.87	Ave
Middle Channel 5280 MHz, measured at 3 meters											
10560	46.69	0	100	V	38.418	7.07	34.49	57.688	74	-16.312	Peak
10560	46.72	0	100	H	38.418	7.07	34.49	57.718	74	-16.282	Peak
10560	31.7	0	100	V	38.418	7.07	34.49	42.698	54	-11.302	Ave
10560	32.16	0	100	H	38.418	7.07	34.49	43.158	54	-10.842	Ave
15840	48.15	0	100	V	37.914	8.38	34.61	59.834	74	-14.166	Peak
15840	48.52	0	100	H	37.914	8.38	34.61	60.204	74	-13.796	Peak
15840	33.3	0	100	V	37.914	8.38	34.61	44.984	54	-9.016	Ave
15840	33.19	0	100	H	37.914	8.38	34.61	44.874	54	-9.126	Ave
21120	49.29	0	100	V	34.6	9.8	34	59.69	74	-14.31	Peak
21120	49.15	0	100	H	34.6	9.8	34	59.55	74	-14.45	Peak
21120	34.39	0	100	V	34.6	9.8	34	44.79	54	-9.21	Ave
21120	34.35	0	100	H	34.6	9.8	34	44.75	54	-9.25	Ave
High Channel 5320 MHz, measured at 3 meters											
10640	46.44	0	100	V	38.418	7.07	34.49	57.438	74	-16.562	Peak
10640	46.53	0	100	H	38.418	7.07	34.49	57.528	74	-16.472	Peak
10640	31.82	0	100	V	38.418	7.07	34.49	42.818	54	-11.182	Ave
10640	32.04	0	100	H	38.418	7.07	34.49	43.038	54	-10.962	Ave
15960	47.55	0	100	V	37.902	8.39	34.61	59.232	74	-14.768	Peak
15960	47.9	0	100	H	37.902	8.39	34.61	59.582	74	-14.418	Peak
15960	33.34	0	100	V	37.902	8.39	34.61	45.022	54	-8.978	Ave
15960	33.43	0	100	H	37.902	8.39	34.61	45.112	54	-8.888	Ave
21280	49.12	0	100	V	34.6	9.79	34	59.51	74	-14.49	Peak
21280	49.94	0	100	H	34.6	9.79	34	60.33	74	-13.67	Peak
21280	34.45	0	100	V	34.6	9.79	34	44.84	54	-9.16	Ave
21280	34.5	0	100	H	34.6	9.79	34	44.89	54	-9.11	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		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5270 MHz, measured at 3 meters											
10540	48.02	0	100	V	38.343	7.05	34.49	58.923	74	-15.077	Peak
10540	48.59	0	100	H	38.343	7.05	34.49	59.493	74	-14.507	Peak
10540	32.82	0	100	V	38.343	7.05	34.49	43.723	54	-10.277	Ave
10540	32.89	0	100	H	38.343	7.05	34.49	43.793	54	-10.207	Ave
15810	48.02	0	100	V	37.928	8.35	34.61	59.688	74	-14.312	Peak
15810	48.99	0	100	H	37.928	8.35	34.61	60.658	74	-13.342	Peak
15810	33.23	0	100	V	37.928	8.35	34.61	44.898	54	-9.102	Ave
15810	33.21	0	100	H	37.928	8.35	34.61	44.878	54	-9.122	Ave
21080	50.32	0	100	V	34.6	9.84	34	60.76	74	-13.24	Peak
21080	49.98	0	100	H	34.6	9.84	34	60.42	74	-13.58	Peak
21080	34.98	0	100	V	34.6	9.84	34	45.42	54	-8.58	Ave
21080	35.04	0	100	H	34.6	9.84	34	45.48	54	-8.52	Ave
High Channel 5310 MHz, measured at 3 meters											
10620	46.93	0	100	V	38.418	7.07	34.49	57.928	74	-16.072	Peak
10620	47.25	0	100	H	38.418	7.07	34.49	58.248	74	-15.752	Peak
10620	32.04	0	100	V	38.418	7.07	34.49	43.038	54	-10.962	Ave
10620	32	0	100	H	38.418	7.07	34.49	42.998	54	-11.002	Ave
15930	47.24	0	100	V	37.914	8.38	34.61	58.924	74	-15.076	Peak
15930	47.16	0	100	H	37.914	8.38	34.61	58.844	74	-15.156	Peak
15930	31.94	0	100	V	37.914	8.38	34.61	43.624	54	-10.376	Ave
15930	32.08	0	100	H	37.914	8.38	34.61	43.764	54	-10.236	Ave
21240	49.59	0	100	V	34.6	9.79	34	59.98	74	-14.02	Peak
21240	49.49	0	100	H	34.6	9.79	34	59.88	74	-14.12	Peak
21240	34.84	0	100	V	34.6	9.79	34	45.23	54	-8.77	Ave
21240	34.94	0	100	H	34.6	9.79	34	45.33	54	-8.67	Ave

802.11ac- VHT80 mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
5290 MHz, measured at 3 meters											
10580	46.56	0	100	V	38.343	7.05	34.49	57.463	74	-16.537	Peak
10580	47.13	0	100	H	38.343	7.05	34.49	58.033	74	-15.967	Peak
10580	32.37	0	100	V	38.343	7.05	34.49	43.273	54	-10.727	Ave
10580	32.18	0	100	H	38.343	7.05	34.49	43.083	54	-10.917	Ave
15870	47.84	0	100	V	37.928	8.35	34.61	59.508	74	-14.492	Peak
15870	47.47	0	100	H	37.928	8.35	34.61	59.138	74	-14.862	Peak
15870	32.55	0	100	V	37.928	8.35	34.61	44.218	54	-9.782	Ave
15870	32.36	0	100	H	37.928	8.35	34.61	44.028	54	-9.972	Ave
21160	50.03	0	100	V	34.6	9.84	34	60.47	74	-13.53	Peak
21160	49.94	0	100	H	34.6	9.84	34	60.38	74	-13.62	Peak
21160	34.95	0	100	V	34.6	9.84	34	45.39	54	-8.61	Ave
21160	35.07	0	100	H	34.6	9.84	34	45.51	54	-8.49	Ave

5.6 GHz Band

802.11a mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
11000	46.76	0	100	V	38.382	7.36	34.05	58.452	74	-15.548	Peak
11000	47	0	100	H	38.382	7.36	34.05	58.692	74	-15.308	Peak
11000	32.31	0	100	V	38.382	7.36	34.05	44.002	54	-9.998	Ave
11000	32.29	0	100	H	38.382	7.36	34.05	43.982	54	-10.018	Ave
16500	48.52	0	100	V	38.768	8.5	34.64	61.148	74	-12.852	Peak
16500	48.38	0	100	H	38.768	8.5	34.64	61.008	74	-12.992	Peak
16500	33.85	0	100	V	38.768	8.5	34.64	46.478	54	-7.522	Ave
16500	33.89	0	100	H	38.768	8.5	34.64	46.518	54	-7.482	Ave
22000	48.99	0	100	V	34.9	9.94	34.69	59.14	74	-14.86	Peak
22000	49.42	0	100	H	34.9	9.94	34.69	59.57	74	-14.43	Peak
22000	34.84	0	100	V	34.9	9.94	34.69	44.99	54	-9.01	Ave
22000	34.9	0	100	H	34.9	9.94	34.69	45.05	54	-8.95	Ave
Middle Channel 5580 MHz, measured at 3 meters											
11160	44.97	0	100	V	38.511	7.52	34.05	56.951	74	-17.049	Peak
11160	45.18	0	100	H	38.511	7.52	34.05	57.161	74	-16.839	Peak
11160	30.82	0	100	V	38.511	7.52	34.05	42.801	54	-11.199	Ave
11160	30.9	0	100	H	38.511	7.52	34.05	42.881	54	-11.119	Ave
16740	47.5	0	100	V	39.94	8.63	34.64	61.43	74	-12.57	Peak
16740	47.2	0	100	H	39.94	8.63	34.64	61.13	74	-12.87	Peak
16740	32.82	0	100	V	39.94	8.63	34.64	46.75	54	-7.25	Ave
16740	32.9	0	100	H	39.94	8.63	34.64	46.83	54	-7.17	Ave
22320	47.2	0	100	V	34.9	9.92	34.69	57.33	74	-16.67	Peak
22320	48	0	100	H	34.9	9.92	34.69	58.13	74	-15.87	Peak
22320	33.24	0	100	V	34.9	9.92	34.69	43.37	54	-10.63	Ave
22320	33.14	0	100	H	34.9	9.92	34.69	43.27	54	-10.73	Ave
High Channel 5700 MHz, measured at 3 meters											
11400	46.58	0	100	V	38.882	7.57	34.05	58.982	74	-15.018	Peak
11400	46.85	0	100	H	38.882	7.57	34.05	59.252	74	-14.748	Peak
11400	32.87	0	100	V	38.882	7.57	34.05	45.272	54	-8.728	Ave
11400	32.98	0	100	H	38.882	7.57	34.05	45.382	54	-8.618	Ave
17100	48.32	0	100	V	42.637	8.66	34.64	64.977	74	-9.023	Peak
17100	48.21	0	100	H	42.637	8.66	34.64	64.867	74	-9.133	Peak
17100	33.54	0	100	V	42.637	8.66	34.64	50.197	54	-3.803	Ave
17100	33.62	0	100	H	42.637	8.66	34.64	50.277	54	-3.723	Ave
22800	48.59	0	100	V	34.9	10.17	34.69	58.97	74	-15.03	Peak
22800	48.42	0	100	H	34.9	10.17	34.69	58.8	74	-15.2	Peak
22800	33.65	0	100	V	34.9	10.17	34.69	44.03	54	-9.97	Ave
22800	33.34	0	100	H	34.9	10.17	34.69	43.72	54	-10.28	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		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
11000	47.21	0	100	V	38.382	7.36	34.05	58.902	74	-15.098	Peak
11000	47.04	0	100	H	38.382	7.36	34.05	58.732	74	-15.268	Peak
11000	32.87	0	100	V	38.382	7.36	34.05	44.562	54	-9.438	Ave
11000	32.31	0	100	H	38.382	7.36	34.05	44.002	54	-9.998	Ave
16500	48.16	0	100	V	38.768	8.5	34.64	60.788	74	-13.212	Peak
16500	47.48	0	100	H	38.768	8.5	34.64	60.108	74	-13.892	Peak
16500	33.88	0	100	V	38.768	8.5	34.64	46.508	54	-7.492	Ave
16500	33.47	0	100	H	38.768	8.5	34.64	46.098	54	-7.902	Ave
22000	48.72	0	100	V	34.9	9.94	34.69	58.87	74	-15.13	Peak
22000	48.84	0	100	H	34.9	9.94	34.69	58.99	74	-15.01	Peak
22000	34.93	0	100	V	34.9	9.94	34.69	45.08	54	-8.92	Ave
22000	34.5	0	100	H	34.9	9.94	34.69	44.65	54	-9.35	Ave
Middle Channel 5580 MHz, measured at 3 meters											
11160	46.14	0	100	V	38.511	7.52	34.05	58.121	74	-15.879	Peak
11160	46.27	0	100	H	38.511	7.52	34.05	58.251	74	-15.749	Peak
11160	31.83	0	100	V	38.511	7.52	34.05	43.811	54	-10.189	Ave
11160	32.17	0	100	H	38.511	7.52	34.05	44.151	54	-9.849	Ave
16740	48.49	0	100	V	39.94	8.63	34.64	62.42	74	-11.58	Peak
16740	48.85	0	100	H	39.94	8.63	34.64	62.78	74	-11.22	Peak
16740	34.08	0	100	V	39.94	8.63	34.64	48.01	54	-5.99	Ave
16740	33.9	0	100	H	39.94	8.63	34.64	47.83	54	-6.17	Ave
22320	48.18	0	100	V	34.9	9.92	34.69	58.31	74	-15.69	Peak
22320	49.29	0	100	H	34.9	9.92	34.69	59.42	74	-14.58	Peak
22320	34.36	0	100	V	34.9	9.92	34.69	44.49	54	-9.51	Ave
22320	34.14	0	100	H	34.9	9.92	34.69	44.27	54	-9.73	Ave
High Channel 5700 MHz, measured at 3 meters											
11400	46.99	0	100	V	38.882	7.57	34.05	59.392	74	-14.608	Peak
11400	47.25	0	100	H	38.882	7.57	34.05	59.652	74	-14.348	Peak
11400	33.31	0	100	V	38.882	7.57	34.05	45.712	54	-8.288	Ave
11400	33.44	0	100	H	38.882	7.57	34.05	45.842	54	-8.158	Ave
17100	48.16	0	100	V	42.637	8.66	34.64	64.817	74	-9.183	Peak
17100	48.42	0	100	H	42.637	8.66	34.64	65.077	74	-8.923	Peak
17100	33.69	0	100	V	42.637	8.66	34.64	50.347	54	-3.653	Ave
17100	33.92	0	100	H	42.637	8.66	34.64	50.577	54	-3.423	Ave
22800	48.74	0	100	V	34.9	10.17	34.69	59.12	74	-14.88	Peak
22800	49.06	0	100	H	34.9	10.17	34.69	59.44	74	-14.56	Peak
22800	33.56	0	100	V	34.9	10.17	34.69	43.94	54	-10.06	Ave
22800	33.73	0	100	H	34.9	10.17	34.69	44.11	54	-9.89	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		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5510 MHz, measured at 3 meters											
11020	46.82	0	100	V	38.382	7.36	34.05	58.512	74	-15.488	Peak
11020	46.81	0	100	H	38.382	7.36	34.05	58.502	74	-15.498	Peak
11020	32.2	0	100	V	38.382	7.36	34.05	43.892	54	-10.108	Ave
11020	32.16	0	100	H	38.382	7.36	34.05	43.852	54	-10.148	Ave
16530	46.4	0	100	V	38.768	8.5	34.64	59.028	74	-14.972	Peak
16530	46.31	0	100	H	38.768	8.5	34.64	58.938	74	-15.062	Peak
16530	32.21	0	100	V	38.768	8.5	34.64	44.838	54	-9.162	Ave
16530	32.32	0	100	H	38.768	8.5	34.64	44.948	54	-9.052	Ave
22040	47.37	0	100	V	34.9	9.76	34.69	57.34	74	-16.66	Peak
22040	47.5	0	100	H	34.9	9.76	34.69	57.47	74	-16.53	Peak
22040	32.88	0	100	V	34.9	9.76	34.69	42.85	54	-11.15	Ave
22040	33.19	0	100	H	34.9	9.76	34.69	43.16	54	-10.84	Ave
Middle Channel 5550 MHz, measured at 3 meters											
11100	46.27	0	100	V	38.511	7.39	34.05	58.121	74	-15.879	Peak
11100	46.33	0	100	H	38.511	7.39	34.05	58.181	74	-15.819	Peak
11100	32.19	0	100	V	38.511	7.39	34.05	44.041	54	-9.959	Ave
11100	32.31	0	100	H	38.511	7.39	34.05	44.161	54	-9.839	Ave
16650	48.58	0	100	V	39.256	8.55	34.64	61.746	74	-12.254	Peak
16650	48.49	0	100	H	39.256	8.55	34.64	61.656	74	-12.344	Peak
16650	34.3	0	100	V	39.256	8.55	34.64	47.466	54	-6.534	Ave
16650	33.9	0	100	H	39.256	8.55	34.64	47.066	54	-6.934	Ave
22200	48.31	0	100	V	35	9.91	34.69	58.53	74	-15.47	Peak
22200	48.15	0	100	H	35	9.91	34.69	58.37	74	-15.63	Peak
22200	34.21	0	100	V	35	9.91	34.69	44.43	54	-9.57	Ave
22200	34.46	0	100	H	35	9.91	34.69	44.68	54	-9.32	Ave
High Channel 5670 MHz, measured at 3 meters											
11340	47.13	0	100	V	38.844	7.52	34.05	59.444	74	-14.556	Peak
11340	47.29	0	100	H	38.844	7.52	34.05	59.604	74	-14.396	Peak
11340	33.33	0	100	V	38.844	7.52	34.05	45.644	54	-8.356	Peak
11340	33.12	0	100	H	38.844	7.52	34.05	45.434	54	-8.566	Peak
17010	48.6	0	100	V	41.889	8.61	34.64	64.459	74	-9.541	Peak
17010	48.18	0	100	H	41.889	8.61	34.64	64.039	74	-9.961	Peak
17010	33.92	0	100	V	41.889	8.61	34.64	49.779	54	-4.221	Ave
17010	34.26	0	100	H	41.889	8.61	34.64	50.119	54	-3.881	Ave
22680	48.46	0	100	V	34.9	10.07	34.69	58.74	74	-15.26	Peak
22680	48.64	0	100	H	34.9	10.07	34.69	58.92	74	-15.08	Peak
22680	33.88	0	100	V	34.9	10.07	34.69	44.16	54	-9.84	Ave
22680	34.55	0	100	H	34.9	10.07	34.69	44.83	54	-9.17	Ave

802.11ac-VHT80 mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5530 MHz, measured at 3 meters											
11020	46.99	0	100	V	38.382	7.36	34.05	58.682	74	-15.318	Peak
11020	46.81	0	100	H	38.382	7.36	34.05	58.502	74	-15.498	Peak
11020	32.27	0	100	V	38.382	7.36	34.05	43.962	54	-10.038	Ave
11020	32.37	0	100	H	38.382	7.36	34.05	44.062	54	-9.938	Ave
16530	48.44	0	100	V	38.768	8.5	34.64	61.068	74	-12.932	Peak
16530	48.69	0	100	H	38.768	8.5	34.64	61.318	74	-12.682	Peak
16530	34.7	0	100	V	38.768	8.5	34.64	47.328	54	-6.672	Ave
16530	34.63	0	100	H	38.768	8.5	34.64	47.258	54	-6.742	Ave
22040	48.43	0	100	V	34.9	9.76	34.69	58.4	74	-15.6	Peak
22040	48.16	0	100	H	34.9	9.76	34.69	58.13	74	-15.87	Peak
22040	34.9	0	100	V	34.9	9.76	34.69	44.87	54	-9.13	Ave
22040	34.7	0	100	H	34.9	9.76	34.69	44.67	54	-9.33	Ave
Middle Channel 5610 MHz, measured at 3 meters											
11220	46.52	0	100	V	38.382	7.36	34.05	58.212	74	-15.788	Peak
11220	46.34	0	100	H	38.382	7.36	34.05	58.032	74	-15.968	Peak
11220	31.95	0	100	V	38.382	7.36	34.05	43.642	54	-10.358	Ave
11220	32.05	0	100	H	38.382	7.36	34.05	43.742	54	-10.258	Ave
16830	47.96	0	100	V	38.768	8.5	34.64	60.588	74	-13.412	Peak
16830	48.2	0	100	H	38.768	8.5	34.64	60.828	74	-13.172	Peak
16830	34.35	0	100	V	38.768	8.5	34.64	46.978	54	-7.022	Ave
16830	34.28	0	100	H	38.768	8.5	34.64	46.908	54	-7.092	Ave
22440	47.95	0	100	V	34.9	9.76	34.69	57.92	74	-16.08	Peak
22440	47.68	0	100	H	34.9	9.76	34.69	57.65	74	-16.35	Peak
22440	34.55	0	100	V	34.9	9.76	34.69	44.52	54	-9.48	Ave
22440	34.35	0	100	H	34.9	9.76	34.69	44.32	54	-9.68	Ave
High Channel 5690 MHz, measured at 3 meters											
11380	47.45	0	100	V	38.382	7.36	34.05	59.142	74	-14.858	Peak
11380	47.27	0	100	H	38.382	7.36	34.05	58.962	74	-15.038	Peak
11380	32.59	0	100	V	38.382	7.36	34.05	44.282	54	-9.718	Ave
11380	32.69	0	100	H	38.382	7.36	34.05	44.382	54	-9.618	Ave
17070	48.92	0	100	V	38.768	8.5	34.64	61.548	74	-12.452	Peak
17070	49.16	0	100	H	38.768	8.5	34.64	61.788	74	-12.212	Peak
17070	35.04	0	100	V	38.768	8.5	34.64	47.668	54	-6.332	Ave
17070	34.97	0	100	H	38.768	8.5	34.64	47.598	54	-6.402	Ave
22760	48.91	0	100	V	34.9	9.76	34.69	58.88	74	-15.12	Peak
22760	48.63	0	100	H	34.9	9.76	34.69	58.6	74	-15.4	Peak
22760	35.24	0	100	V	34.9	9.76	34.69	45.21	54	-8.79	Ave
22760	35.04	0	100	H	34.9	9.76	34.69	45.01	54	-8.99	Ave

8 FCC §15.407(a) – Emission Bandwidth

8.1 Applicable Standards

FCC §15.407(a)

8.2 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 26 dB from the reference level. Record the frequency difference as the emissions bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

8.3 Test Equipment List and Details

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

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

8.4 Test Environmental Conditions

Temperature:	21-24 ºC
Relative Humidity:	40-43 %
ATM Pressure:	102.1-103.6 kPa

The testing was performed by Chen Ge on 2014-07-28 to 2014-07-29 at RF site.

8.5 Test Results

5.3 GHz Band:

Radio Mode	Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)
802.11a	Chain J0			
	Low	5260	21.975	16.5167
	Middle	5280	20.419	16.5296
	High	5320	20.618	16.5739
	Chain J1			
	Low	5260	21.486	16.5492
	Middle	5280	20.889	16.5681
	High	5320	20.812	16.5160
802.11n-HT20 mode	Chain J0			
	Low	5260	21.374	17.7071
	Middle	5280	21.900	17.7598
	High	5320	21.946	17.7520
	Chain J1			
	Low	5260	21.659	17.6585
	Middle	5280	22.112	17.7563
	High	5320	22.267	17.7117
802.11n-HT40 mode	Chain J0			
	Low	5270	42.550	36.2527
	High	5310	41.931	36.2679
	Chain J1			
	Low	5270	43.703	36.2840
	High	5310	42.527	36.2926
802.11ac 80 mode	Chain J0			
	-	5290	88.030	75.7423
	Chain J1			
	-	5290	89.732	75.9311

5.6 GHz Band:

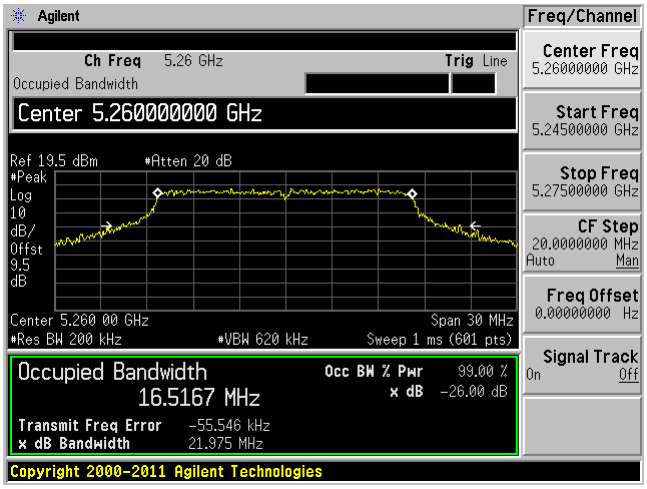
Radio Mode	Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)
802.11a	Chain J0			
	Low	5500	20.877	16.5461
	Middle	5580	20.914	16.5641
	High	5700	20.631	16.5580
	Chain J1			
	Low	5500	20.674	16.4994
	Middle	5580	20.768	16.5173
	High	5700	20.927	16.5637
802.11n-HT20 mode	Chain J0			
	Low	5500	21.233	17.7243
	Middle	5580	21.554	17.7004
	High	5700	22.101	17.7584
	Chain J1			
	Low	5500	22.103	17.7561
	Middle	5580	21.104	17.6578
	High	5700	21.603	17.7578
802.11n-HT40 mode	Chain J0			
	Low	5510	43.259	36.2176
	Middle	5550	42.043	36.3078
	High	5670	43.145	36.2569
	Chain J1			
	Low	5510	43.034	36.1996
	Middle	5550	43.397	36.2841
	High	5670	41.809	36.2537
802.11ac 80 mode	Chain J0			
	Low	5530	85.412	75.6461
	Middle	5610	81.661	75.5945
	High	5690	88.476	75.7659
	Chain J1			
	Low	5530	87.125	75.8759
	Middle	5610	84.858	75.6702
	High	5690	87.081	75.8264

Please refer to the following plots

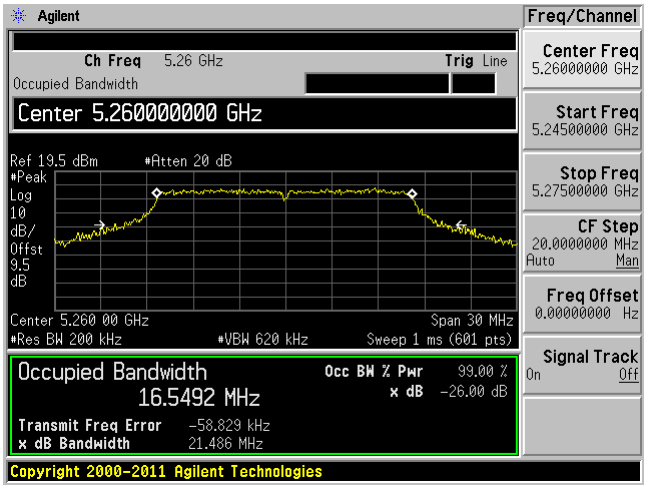
5250-5350 MHz

802.11a mode

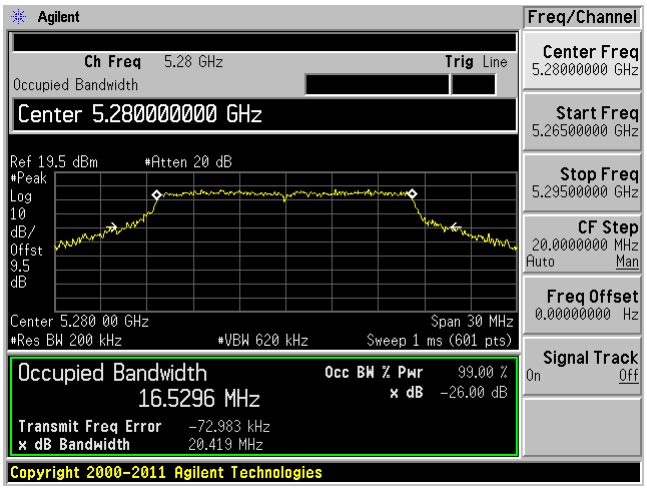
802.11a mode, 5260 MHz, Chain J0



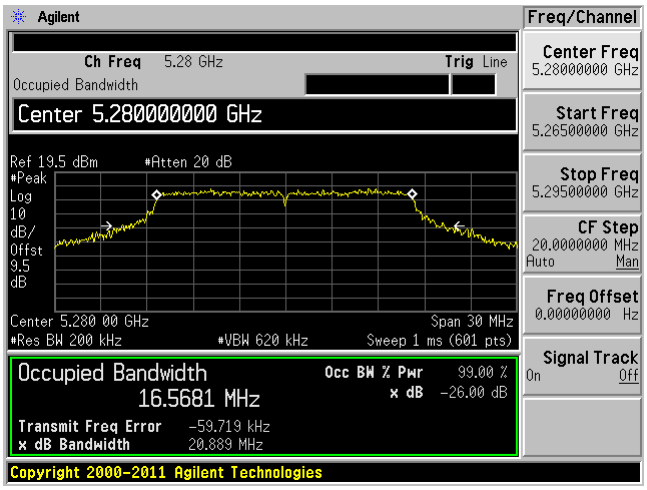
802.11a mode, 5260 MHz, Chain J1



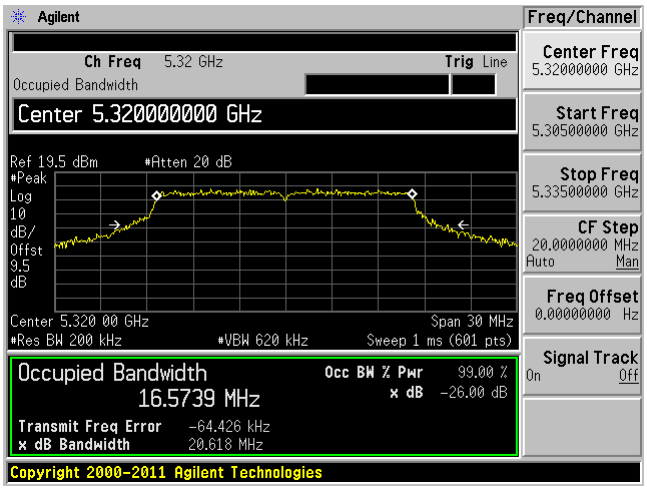
802.11a mode, 5280 MHz, Chain J0



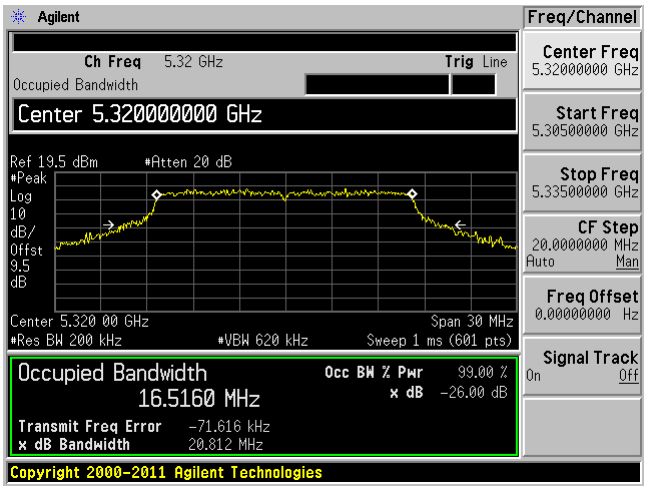
802.11a mode, 5280 MHz, Chain J1



802.11a mode, 5320 MHz, Chain J0

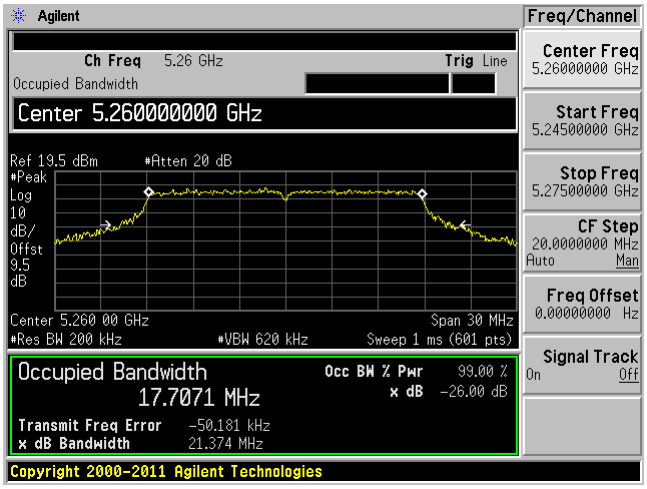


802.11a mode, 5320 MHz, Chain J1

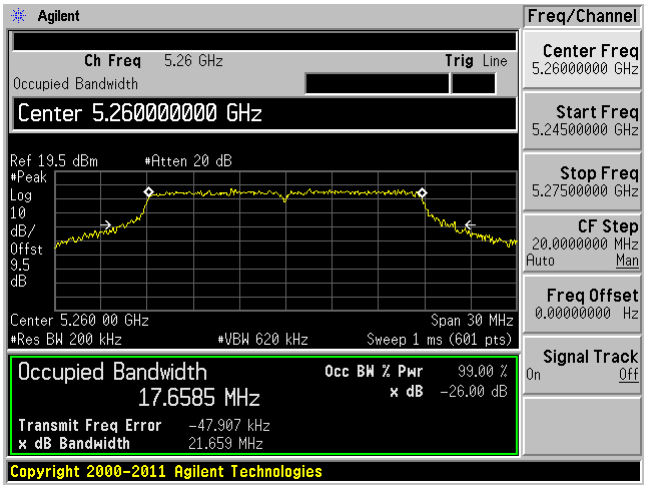


802.11n-HT-20 mode

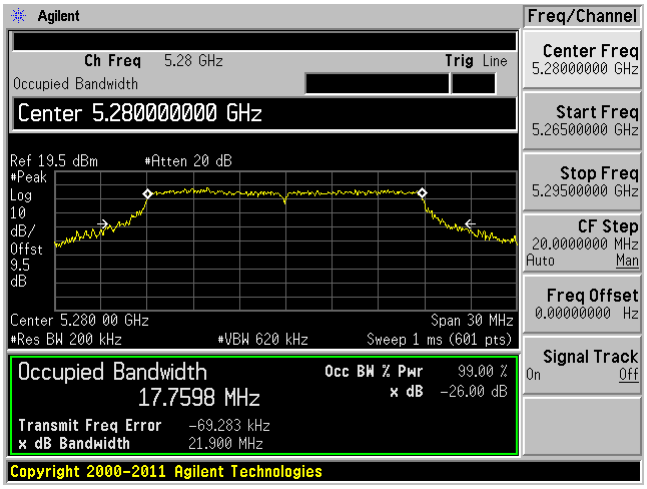
802.11n-HT20 mode, 5260 MHz, Chain J0



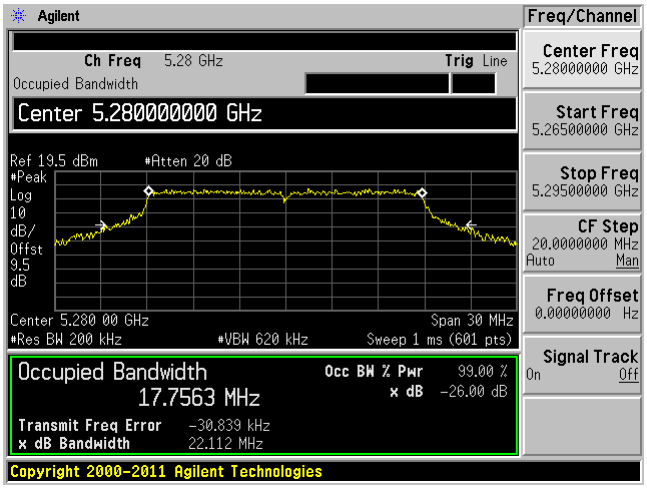
802.11n-HT20 mode, 5260 MHz, Chain J1



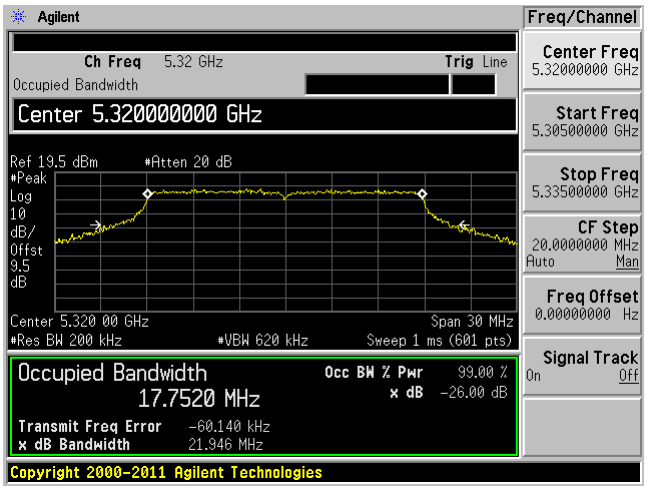
802.11n-HT20 mode, 5280 MHz, Chain J0



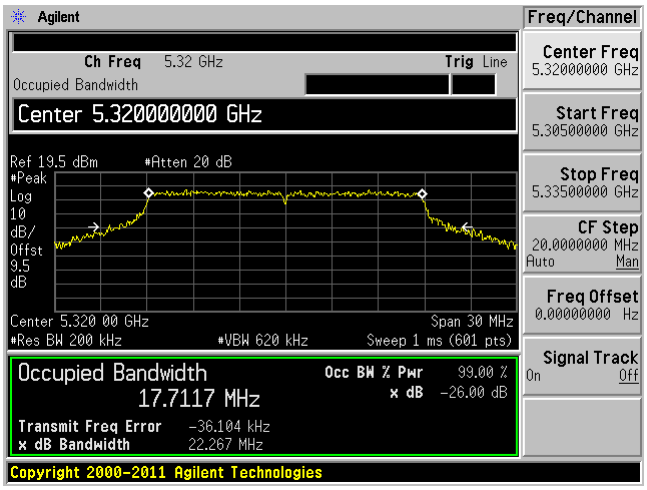
802.11n-HT20 mode, 5280 MHz, Chain J1



802.11n-HT20 mode, 5320 MHz, Chain J0

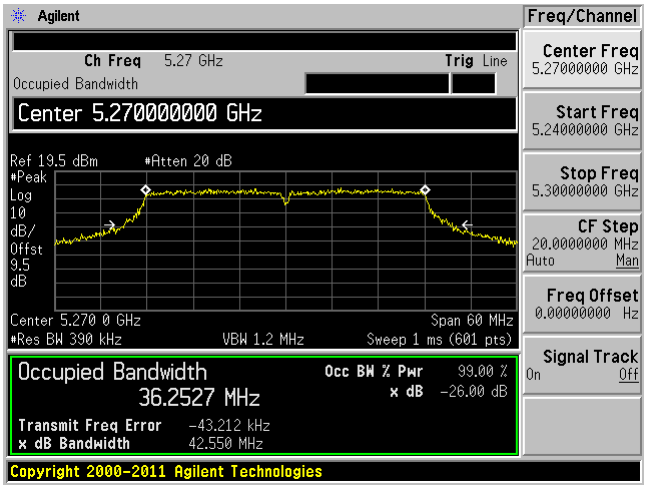


802.11n-HT20 mode, 5320 MHz, Chain J1

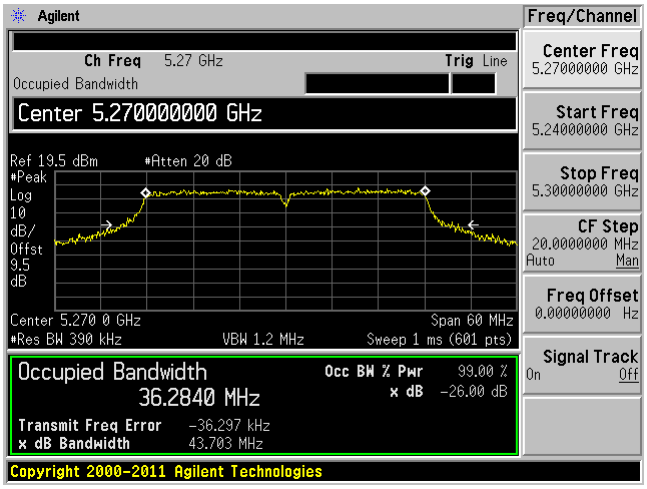


802.11n-HT-40 mode

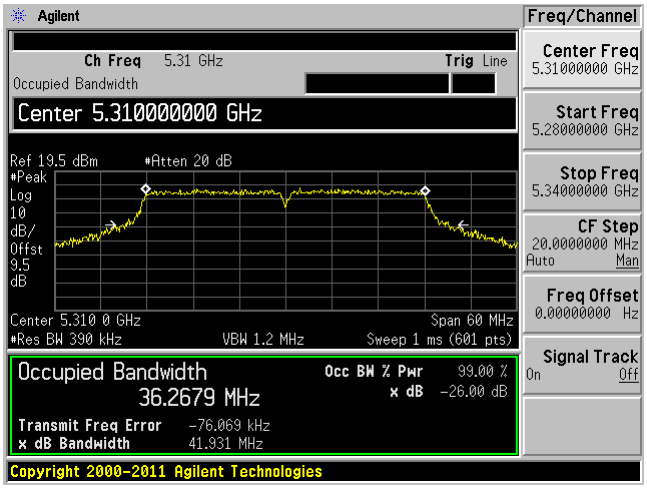
802.11n-HT40 mode, 5270 MHz, Chain J0



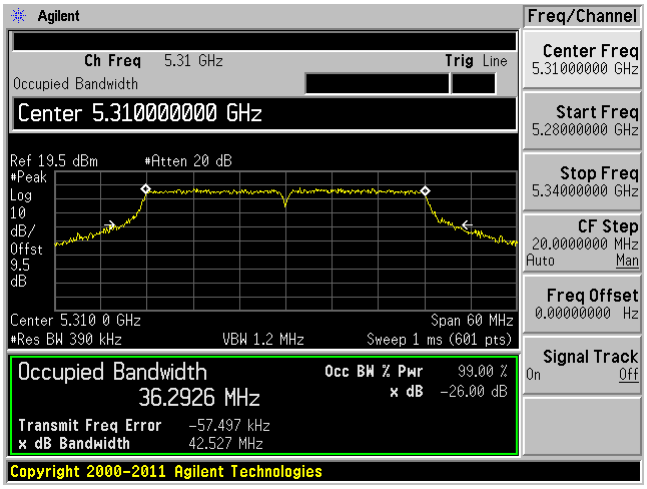
802.11n-HT40 mode, 5270 MHz, Chain J1



802.11n-HT40 mode, 5310 MHz, Chain J0

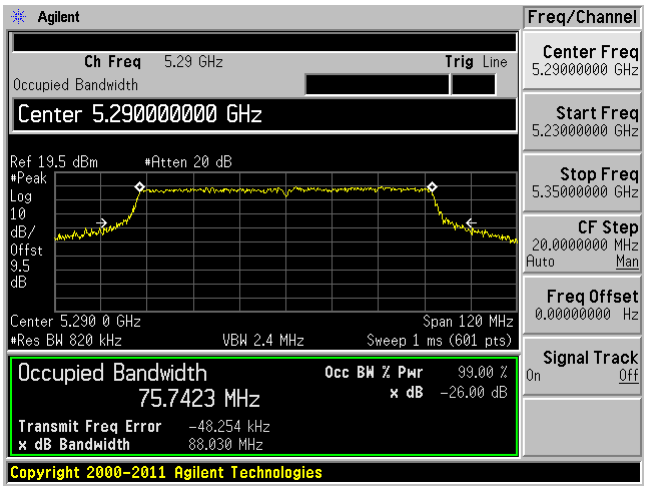


802.11n-HT40 mode, 5310 MHz, Chain J1

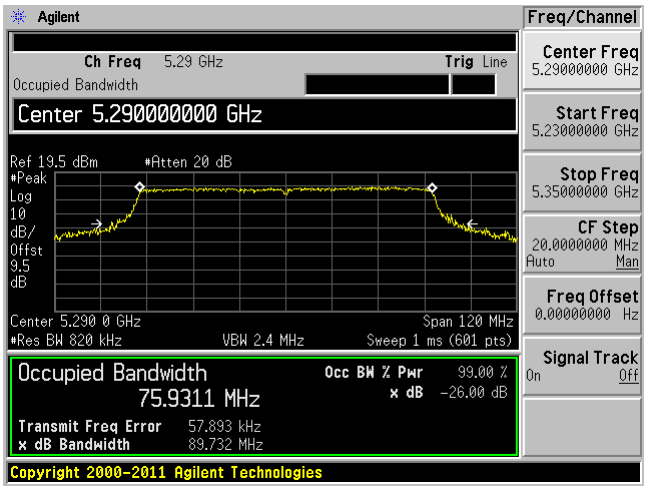


802.11ac 80 mode

802.11ac-80 mode, 5290 MHz, Chain J0



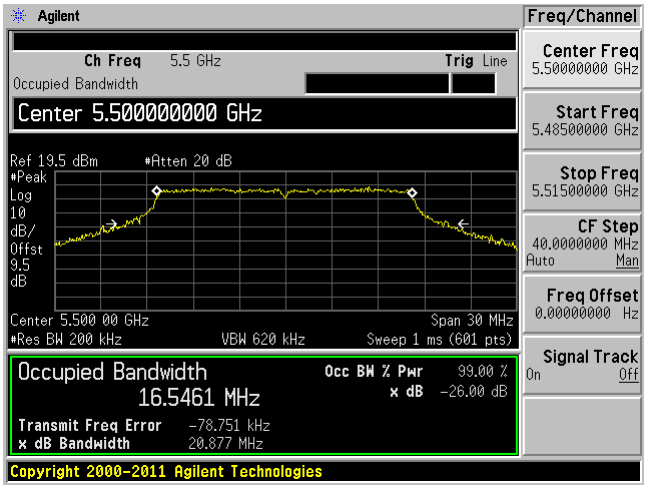
802.11ac-80 mode, 5290 MHz, Chain J1



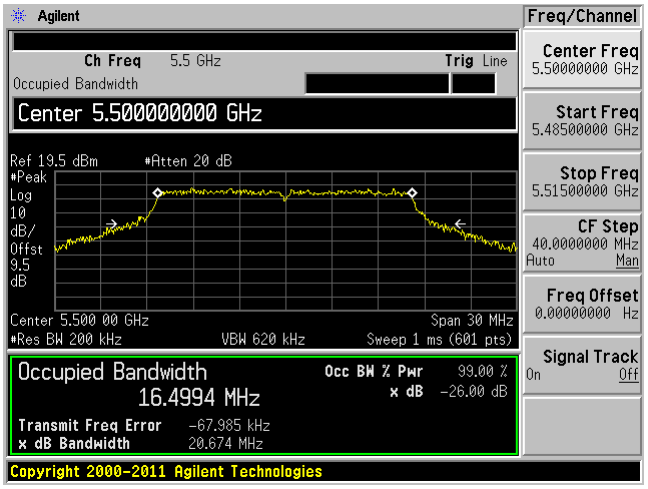
5470-5725 MHz

802.11a mode

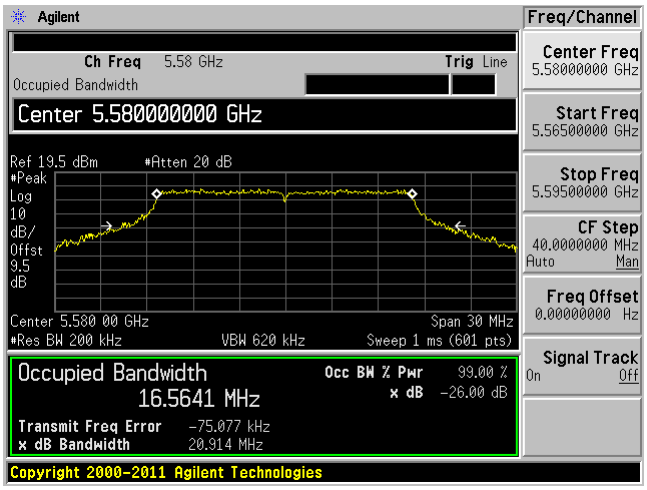
802.11a mode, 5550 MHz, Chain J0



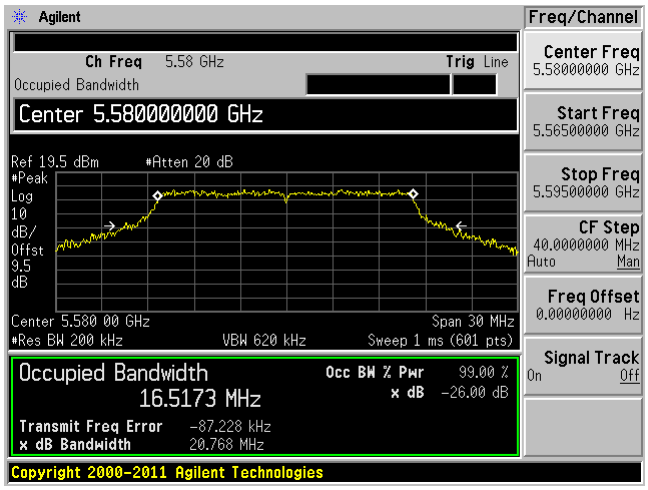
802.11a mode, 5550 MHz, Chain J1



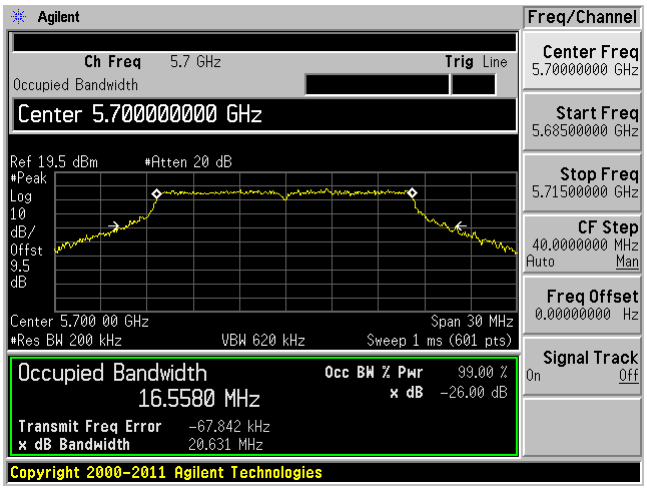
802.11a mode, 5580 MHz, Chain J0



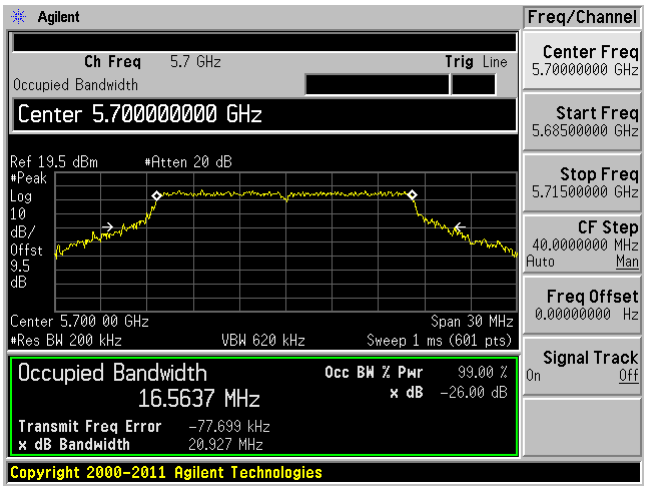
802.11a mode, 5580 MHz, Chain J1



802.11a mode, 5700 MHz, Chain J0

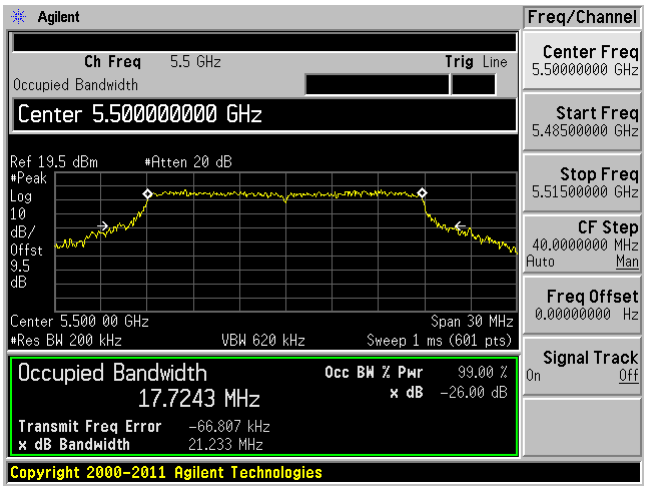


802.11a mode, 5700 MHz, Chain J1

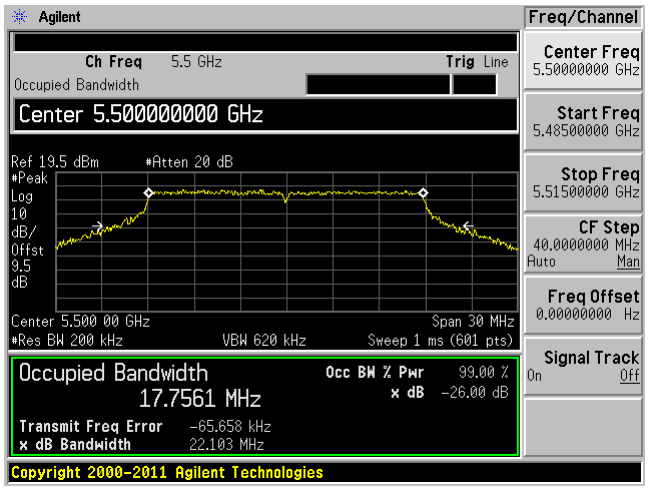


802.11n-HT-20 mode

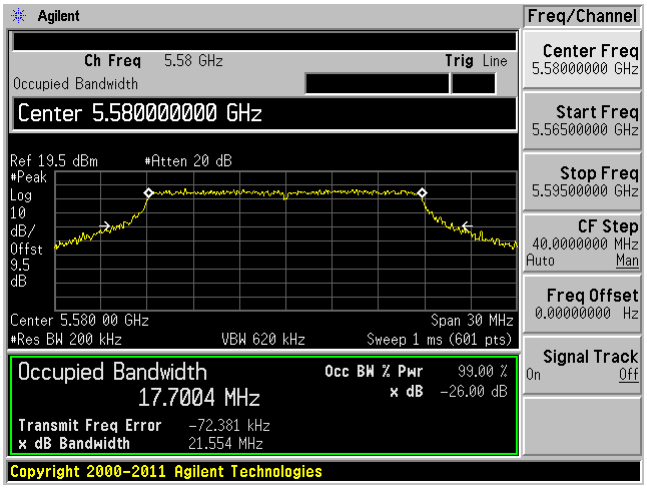
802.11n-HT20 mode, 5500 MHz, Chain J0



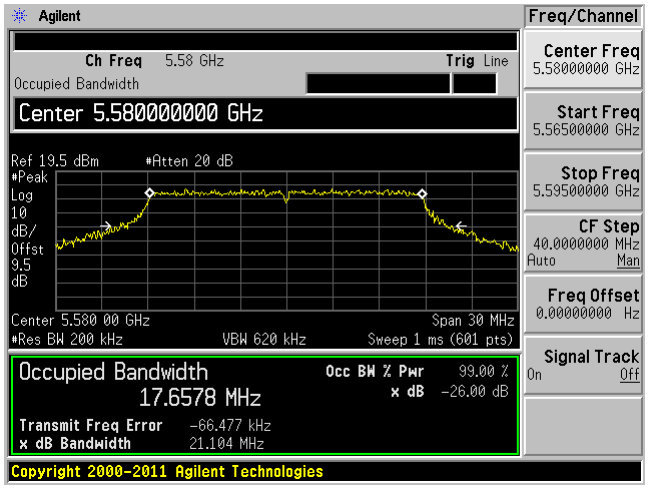
802.11n-HT20 mode, 5500 MHz, Chain J1



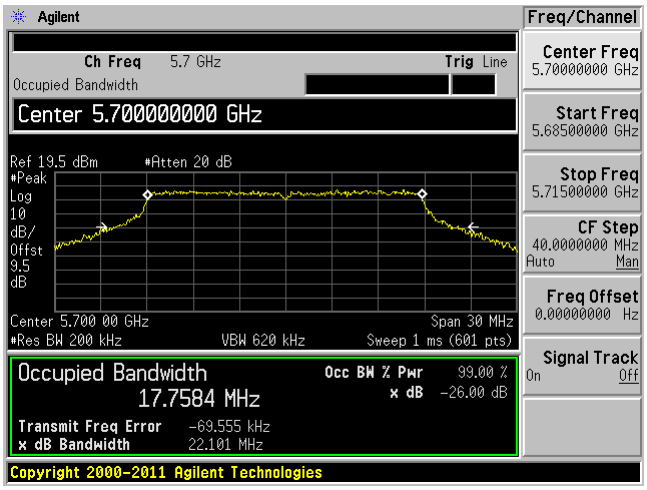
802.11n-HT20 mode, 5580 MHz, Chain J0



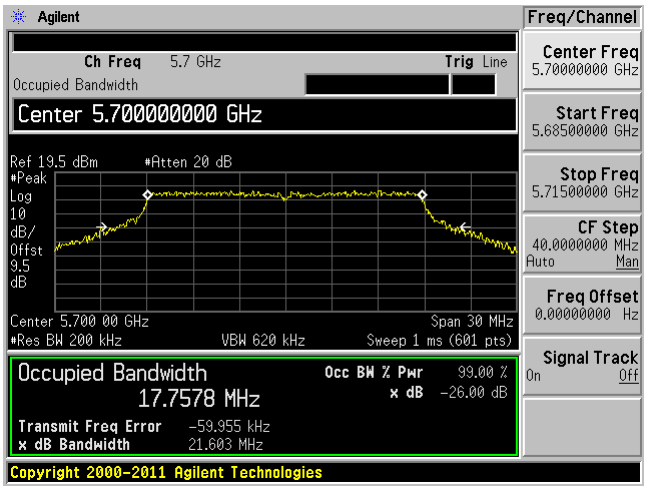
802.11n-HT20 mode, 5580 MHz, Chain J1



802.11n-HT20 mode, 5700 MHz, Chain J0

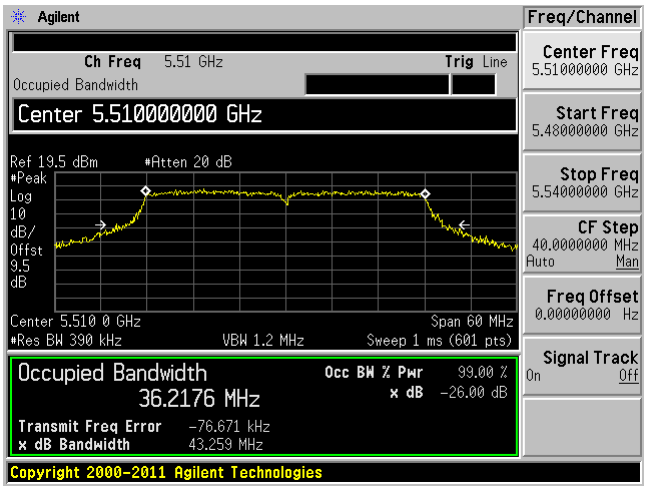


802.11n-HT20 mode, 5700 MHz, Chain J1

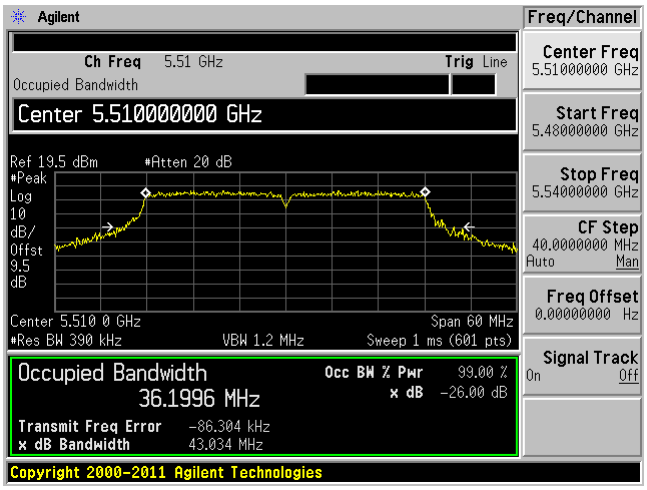


802.11n-HT-40 mode

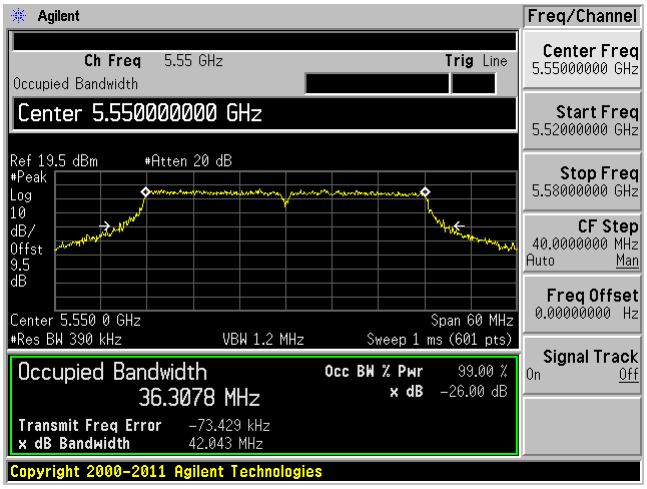
802.11n-HT40 mode, 5510 MHz, Chain J0



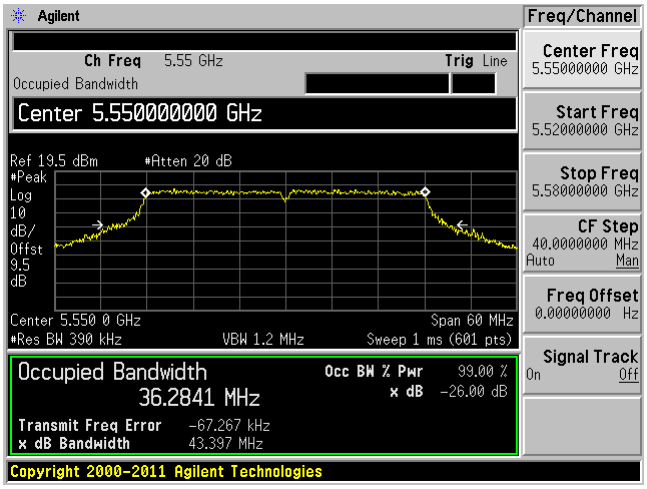
802.11n-HT40 mode, 5510 MHz, Chain J1



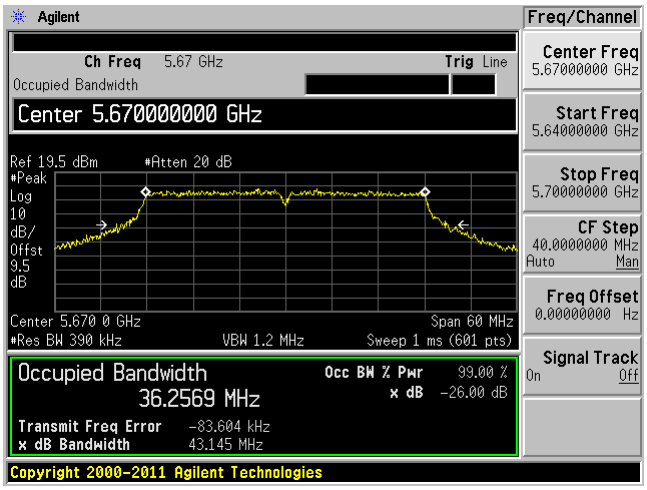
802.11n-HT40 mode, 5550 MHz, Chain J0



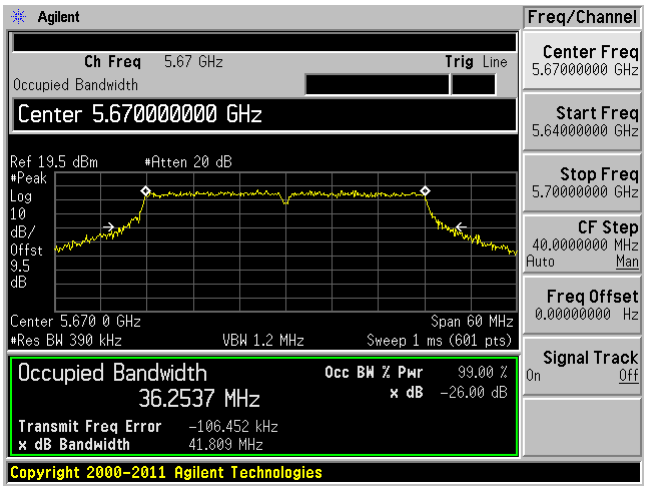
802.11n-HT40 mode, 5550 MHz, Chain J1



802.11n-HT40 mode, 5670 MHz, Chain J0

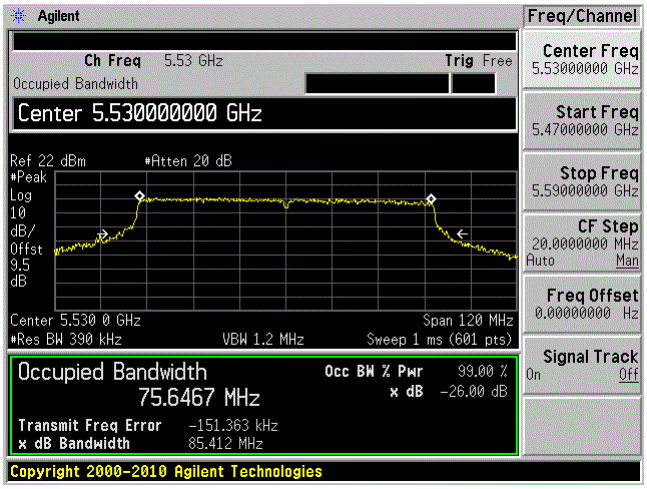


802.11n-HT40 mode, 5670 MHz, Chain J1

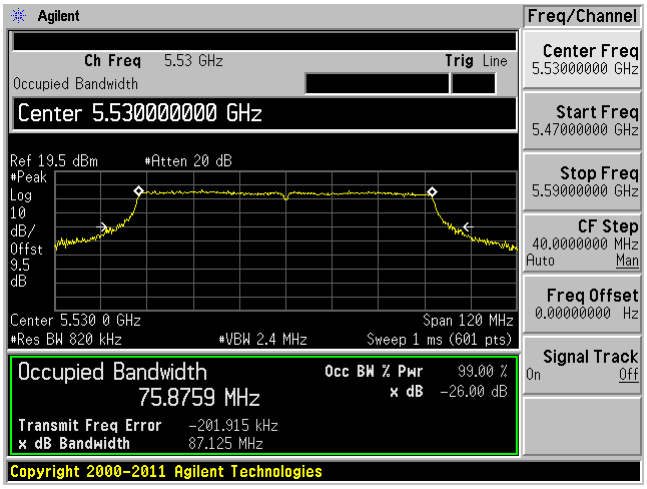


802.11ac 80 mode

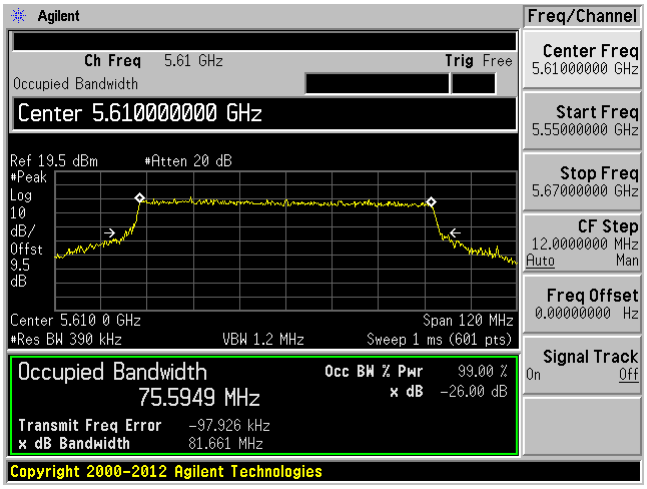
802.11ac-80 mode, 5530 MHz, Chain J0



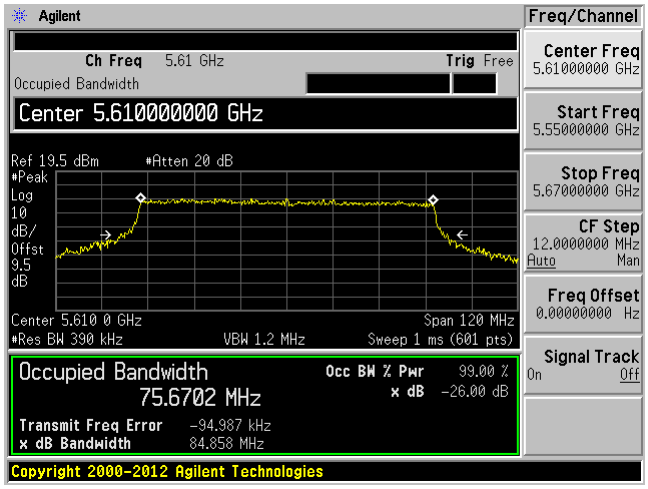
802.11ac-80 mode, 5530 MHz, Chain J1



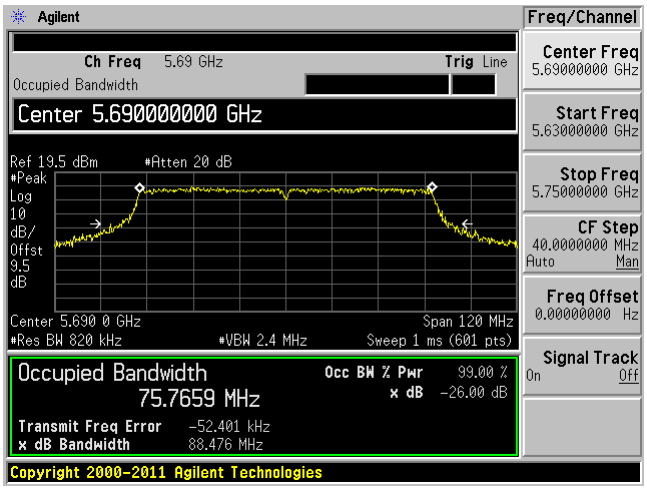
802.11ac-80 mode, 5610 MHz, Chain J0



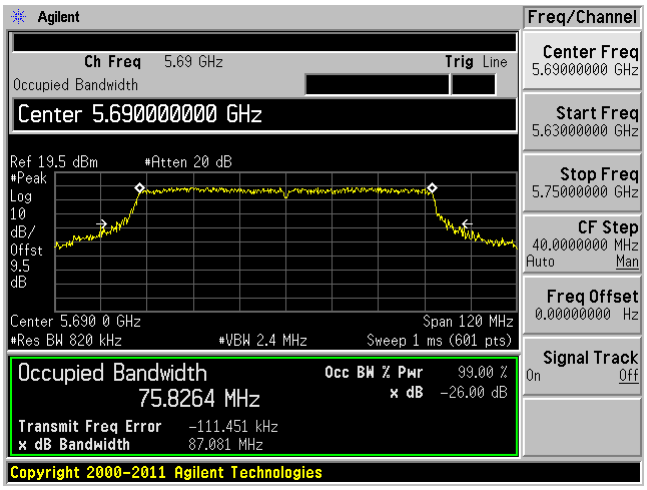
802.11ac-80 mode, 5610 MHz, Chain J1



802.11ac-80 mode, 5690 MHz, Chain J0



802.11ac-80 mode, 5690 MHz, Chain J1



9 FCC §407(a) – Maximum Conducted Output Power

9.1 Applicable Standards

According to FCC §15.407(a)

(1) For the band 5.15-5.25 GHz.

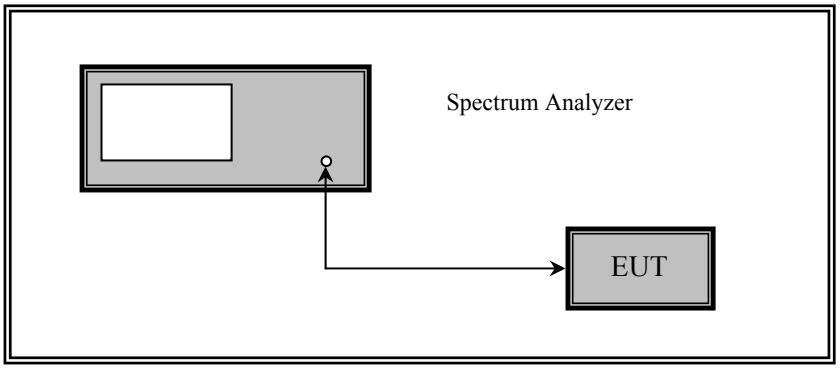
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

9.2 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.



Test measurements are base on FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORAMTION INFRASTRUCTURE (U-NII) DEVICES.

9.3 Test Equipment List and Details

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

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

9.4 Test Environmental Conditions

Temperature:	21-24 ºC
Relative Humidity:	40-43 %
ATM Pressure:	102.1-103.6 kPa

The testing was performed by Chen Ge on 2014-07-28 to 2014-07-29 at RF site.

9.5 Test Results

5250-5350 MHz Band

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	18.04	18.56	21.32	24	-2.68	18
Middle	5280	18.19	18.66	21.44	24	-2.56	18
High	5320	18.16	18.64	21.42	24	-2.58	18

802.11n-HT20 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	18.54	19.06	21.82	24	-2.18	18.5
Middle	5280	18.58	18.95	21.78	24	-2.22	18.5
High	5320	18.57	19.04	21.82	24	-2.18	18.5

802.11n-HT40 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5270	19.53	20.07	22.82	24	-1.18	20
High	5310	18.63	19.13	21.90	24	-2.10	19

802.11ac-80 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
-	5290	14.16	14.6	17.40	24	-6.60	15

5470-5725 MHz Band

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5500	18.53	18.88	21.72	24	-2.28	18
Middle	5580	18.38	18.89	21.65	24	-2.35	18
High	5700	18.35	18.59	21.48	24	-2.52	18

802.11n-HT20 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5500	18.36	18.93	21.66	24	-2.34	18
Middle	5580	18.27	18.83	21.57	24	-2.43	18
High	5700	18.23	18.54	21.40	24	-2.60	18

802.11n-HT40 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5510	18.23	18.71	21.49	24	-2.51	19
Middle	5550	18.34	18.87	21.62	24	-2.38	19
High	5670	18.62	19.05	21.85	24	-2.15	19

802.11ac-80 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5530	18.42	18.86	21.66	24	-2.34	19
Middle	5610	18.35	18.98	21.68	24	-2.32	19
High	5690	18.90	19.31	22.12	24	-1.88	19

10 FCC §15.407(b) - Out of Band Emissions

10.1 Applicable Standard

According to FCC §15.407(b)

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

10.2 Measurement Procedure

The measurements are base on FCC KDB 789033 D01 General UNII Test Procedures v01r03: Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices section H: Unwanted emissions measurement

10.3 Test Equipment List and Details

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

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

10.4 Test Environmental Conditions

Temperature:	21-24 ºC
Relative Humidity:	40-43 %
ATM Pressure:	102.1-103.6 kPa

The testing was performed by Chen Ge on 2014-07-28 to 2014-07-29 at RF site.

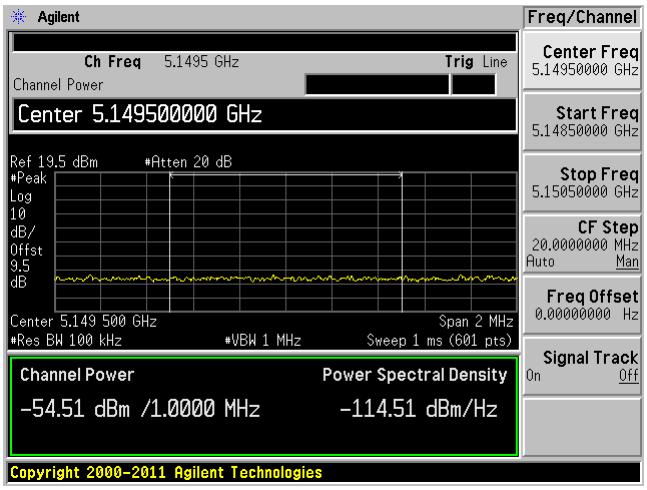
10.5 Test Results

Note: All plots have at least 3.0 dBi margins for the antenna gain.

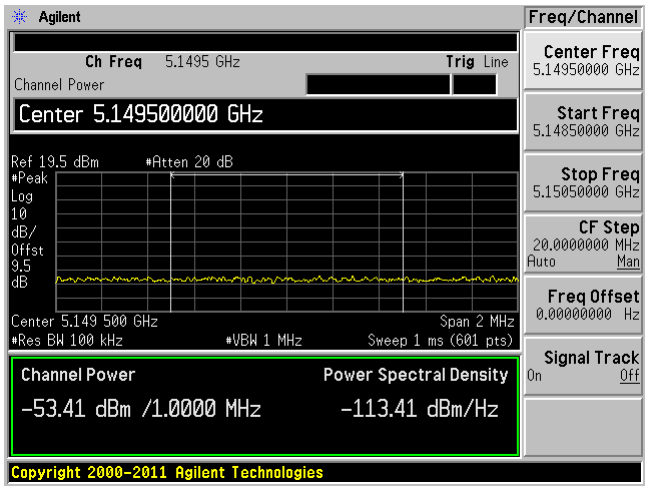
5.3 GHz Band

802.11a, Low Channel, 5260 MHz

Chain 0

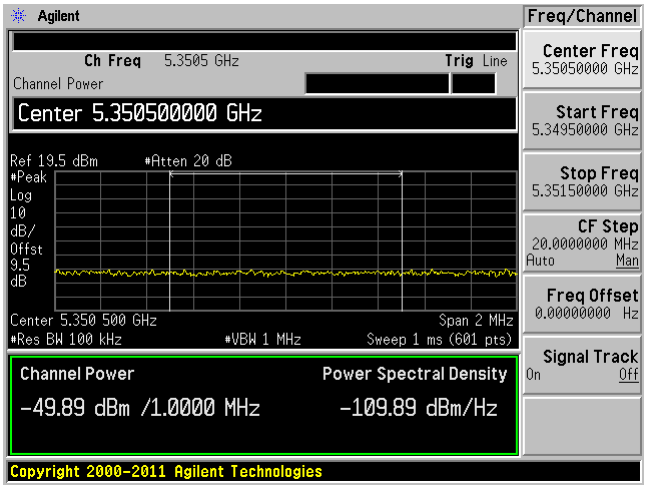


Chain 1

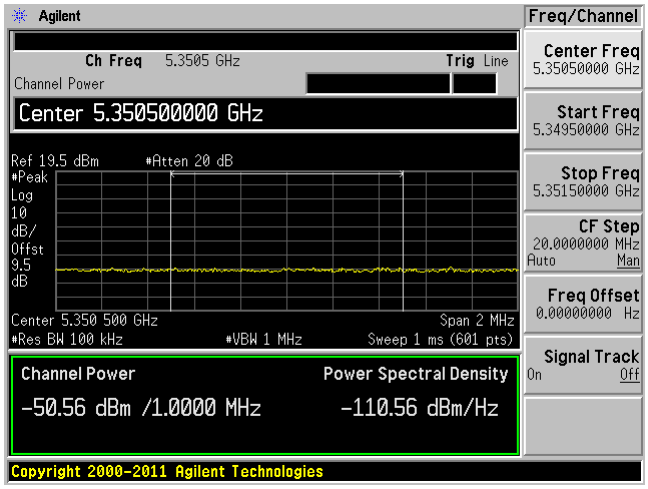


802.11a, High Channel, 5320 MHz

Chain 0

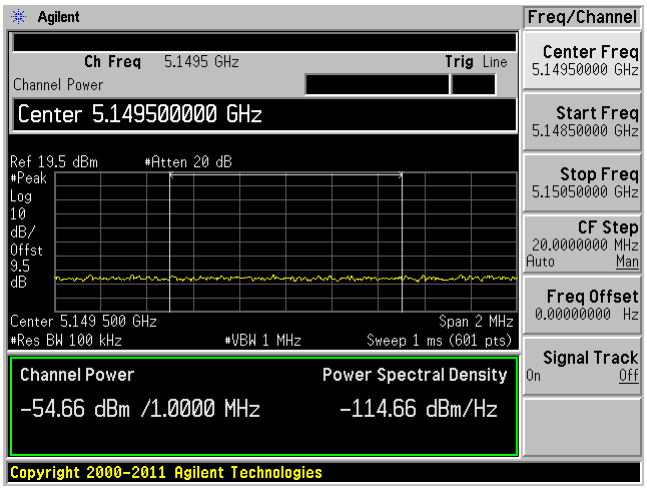


Chain 1

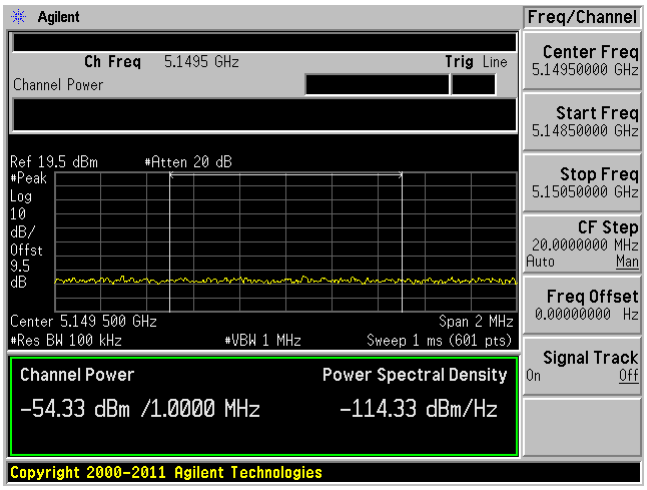


802.11n-HT 20, Low Channel 5260 MHz

Chain 0

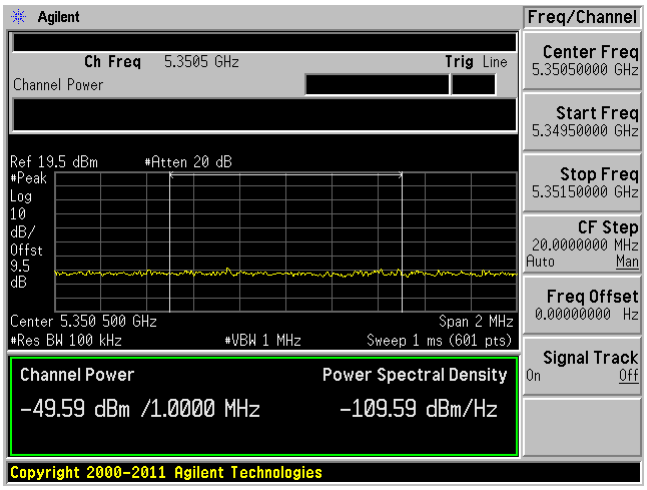


Chain 1

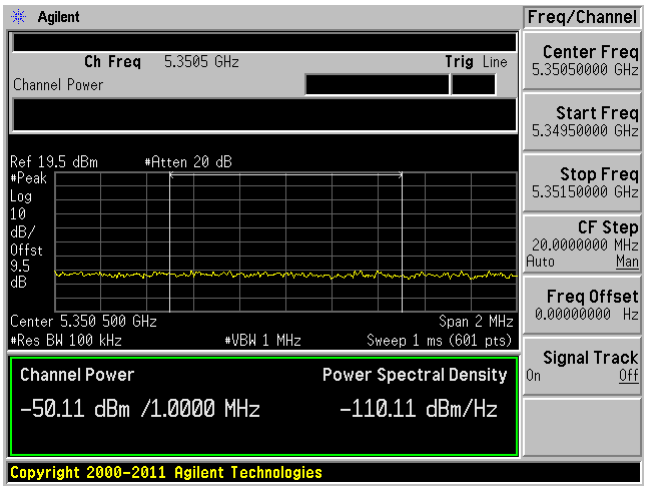


802.11n-HT20, High Channel, 5320 MHz

Chain 0

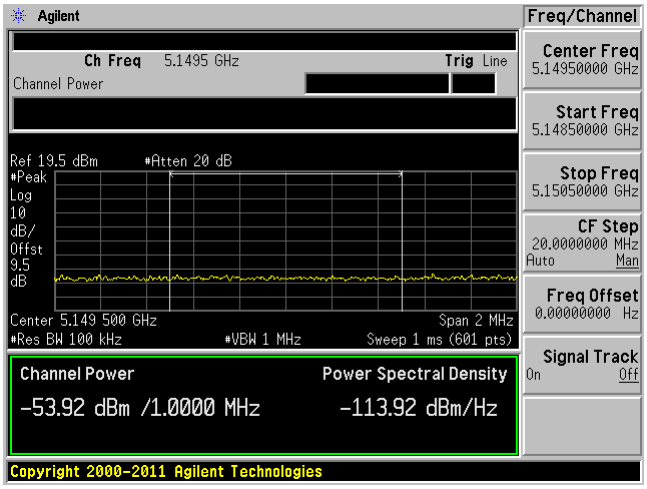


Chain 1

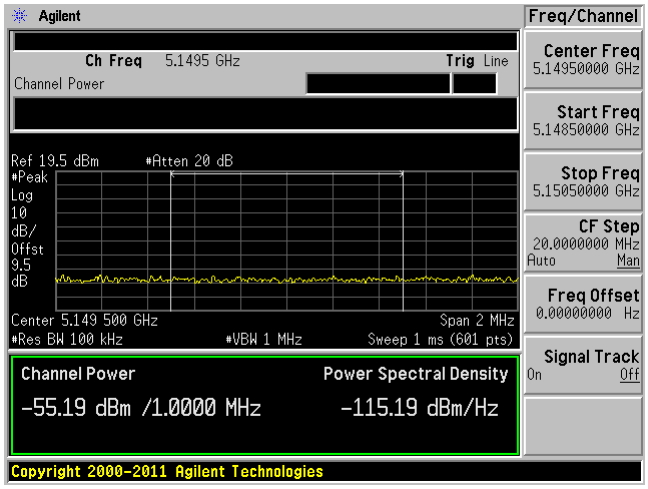


802.11n-HT40, Low Channel 5270 MHz

Chain 0

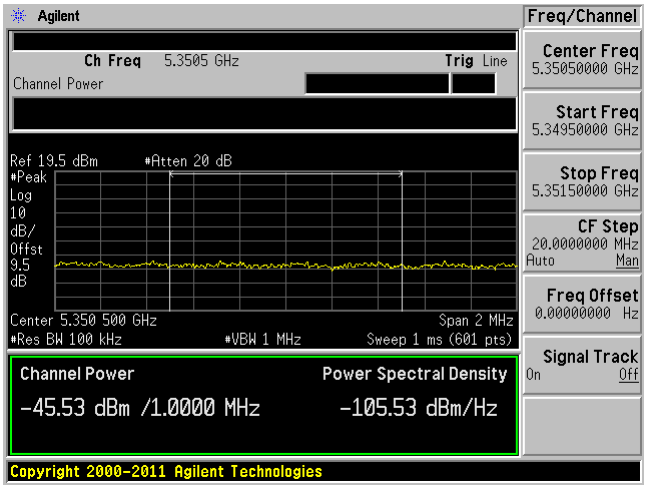


Chain 1

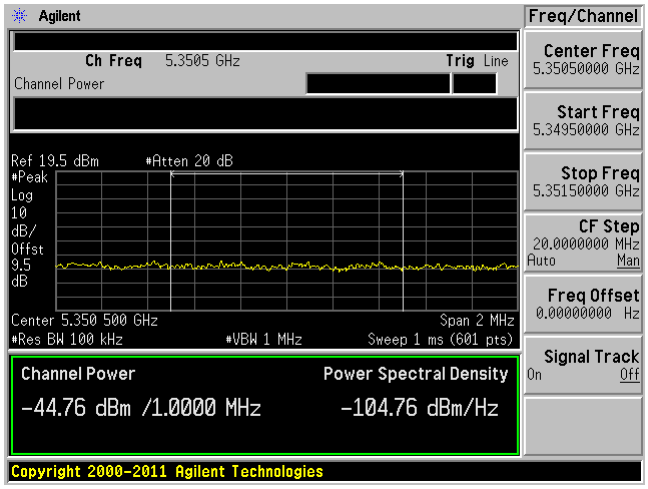


802.11n-HT40, High Channel 5310 MHz

Chain 0

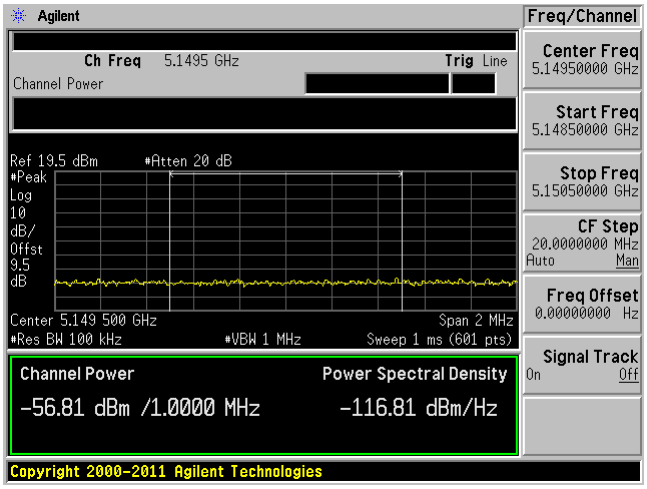


Chain 1

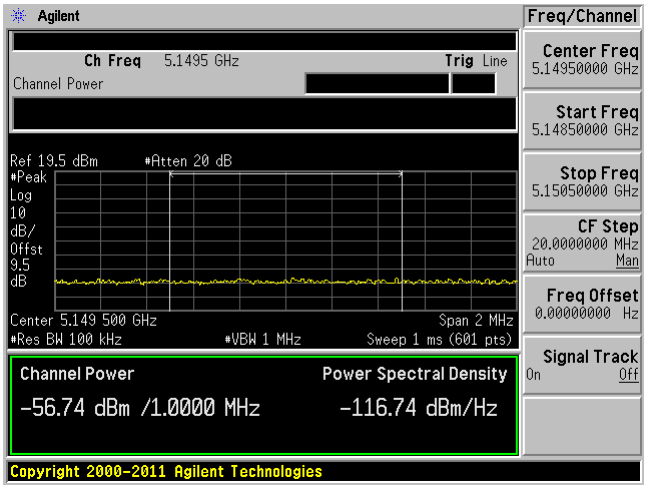


802.11ac-VHT80, Channel 5290 MHz Lower Band Edge at 5150MHz

Chain 0

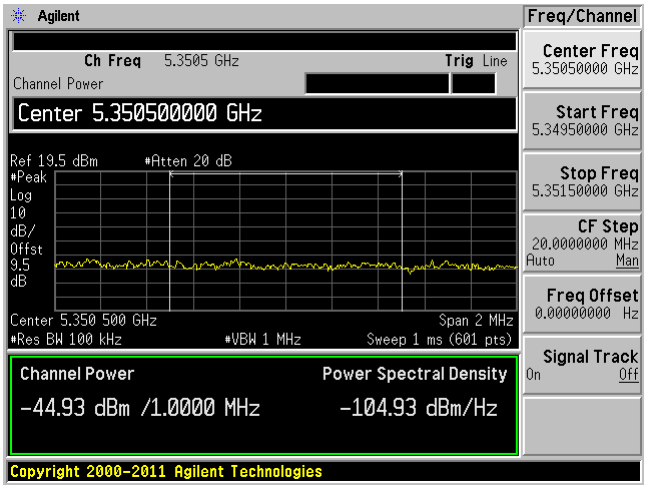


Chain 1

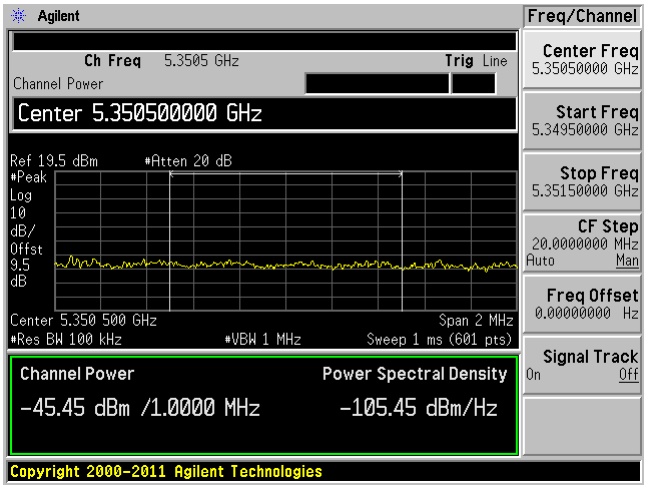


802.11ac-VHT80, Channel 5290 MHz Higher Band Edge at 5350 MHz

Chain 0



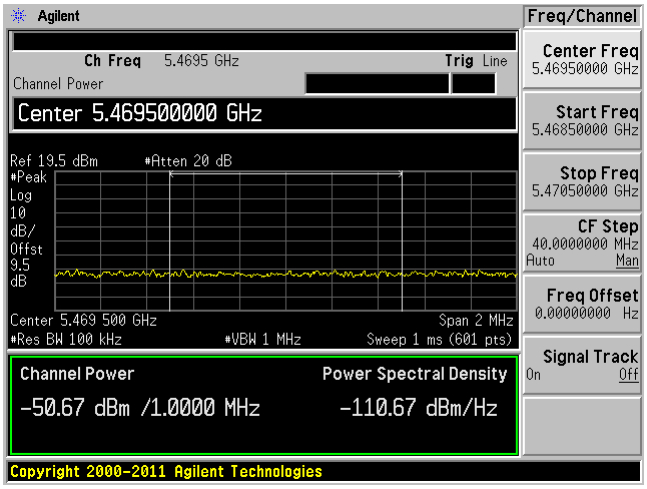
Chain 1



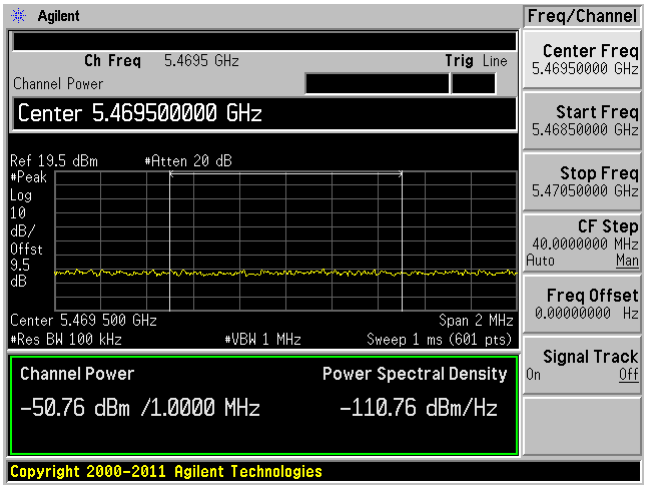
5.6 GHz Band

802.11a, Low Channel, 5500 MHz

Chain 0

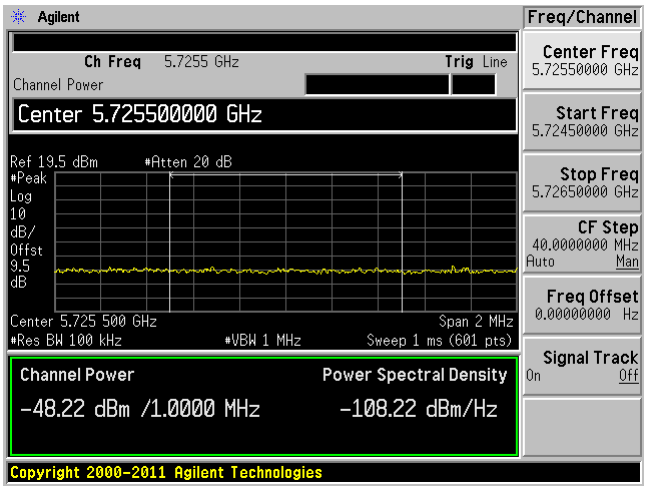


Chain 1

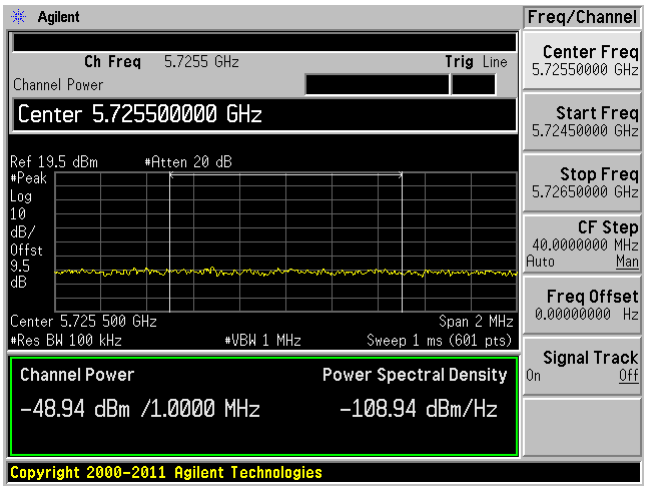


802.11a, High Channel, 5700 MHz

Chain 0

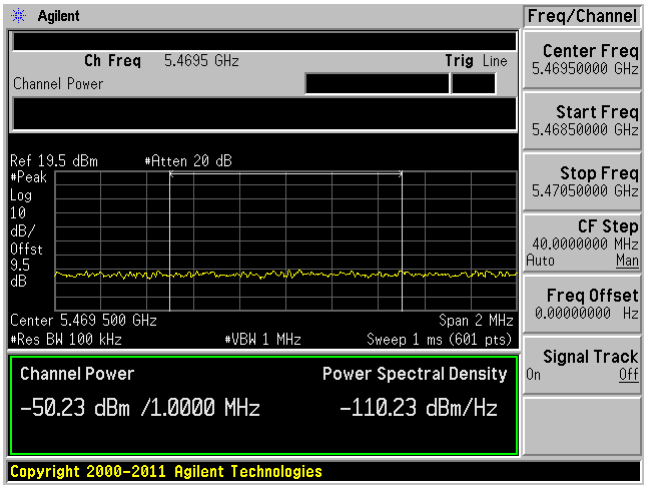


Chain 1

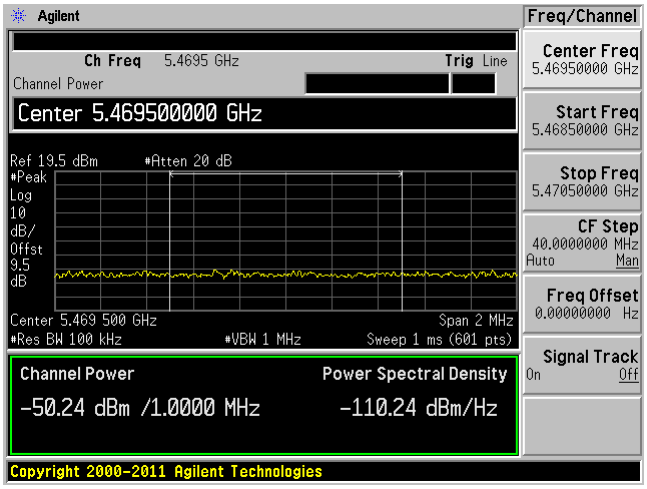


802.11n-HT 20, Low Channel 5500 MHz

Chain 0

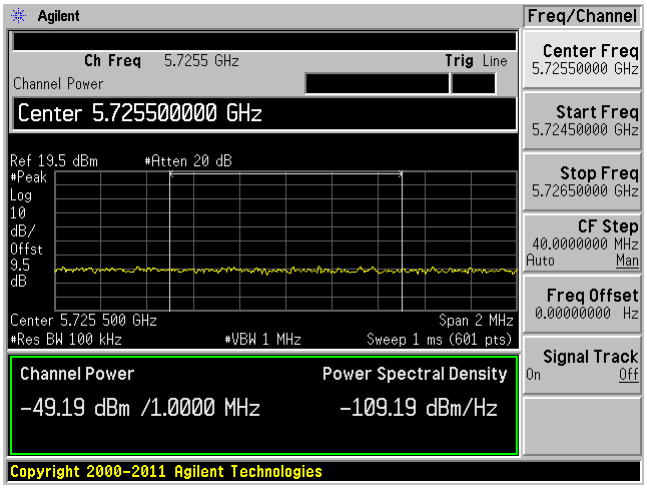


Chain 1

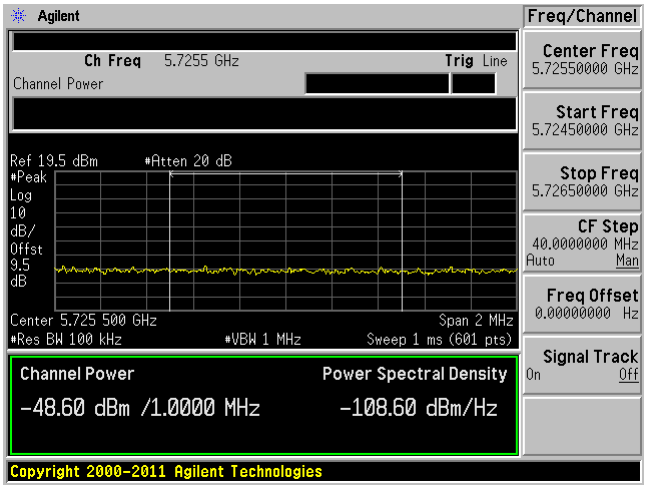


802.11n-HT20, High Channel 5700 MHz

Chain 0

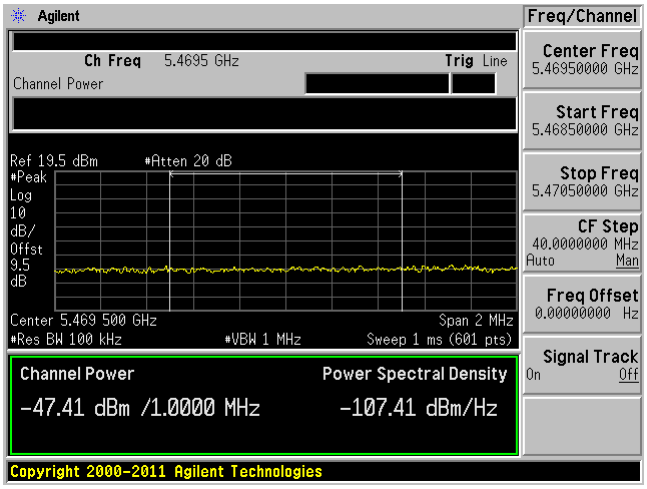


Chain 1

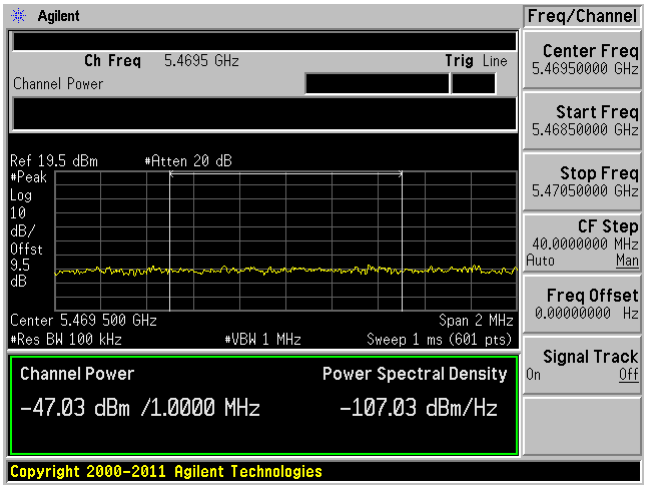


802.11n-HT40, Low Channel 5510 MHz

Chain 0

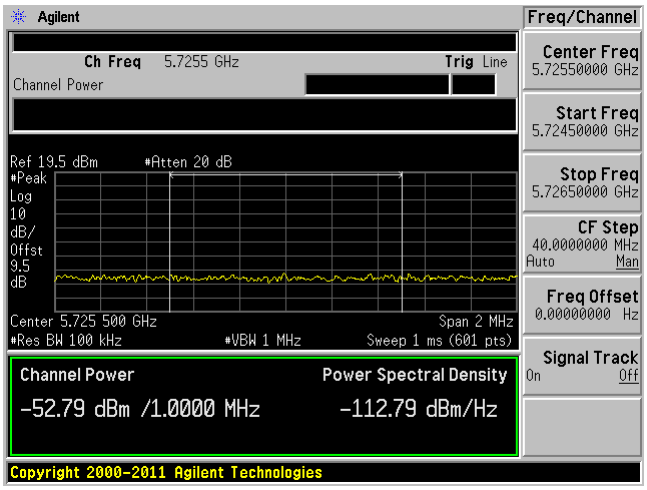


Chain 1

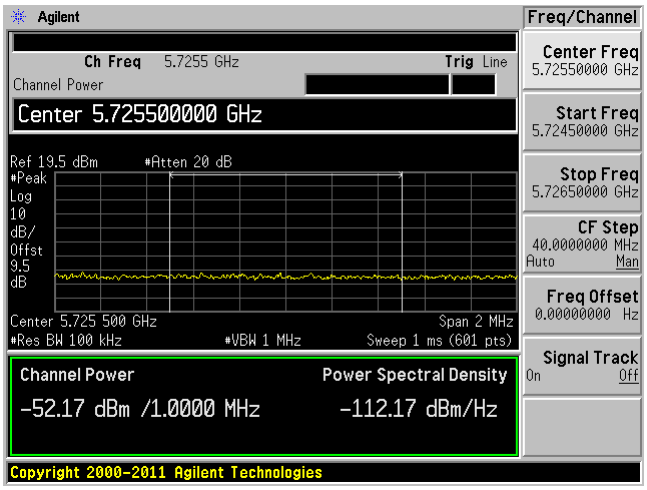


802.11n-HT40, High Channel 5670 MHz

Chain 0

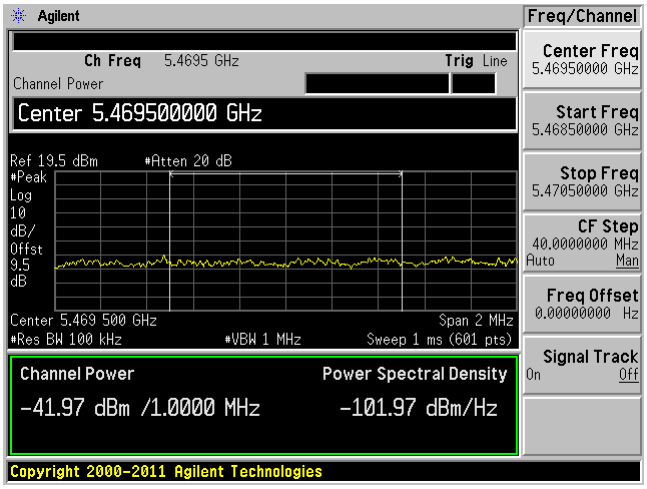


Chain 1

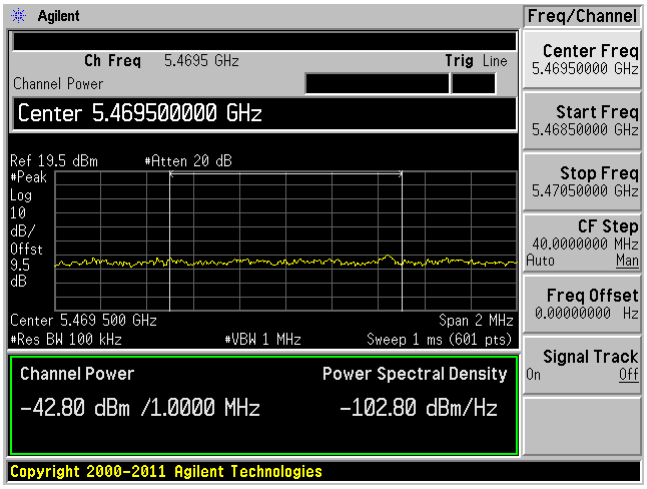


802.11ac-VHT80, Low Channel 5530 MHz

Chain 0

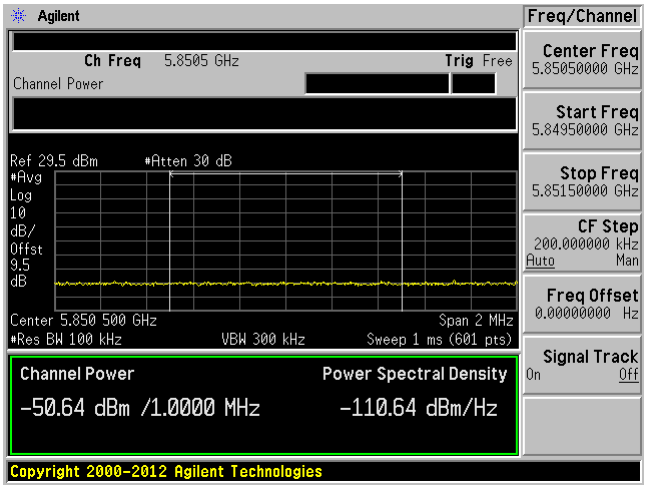


Chain 1

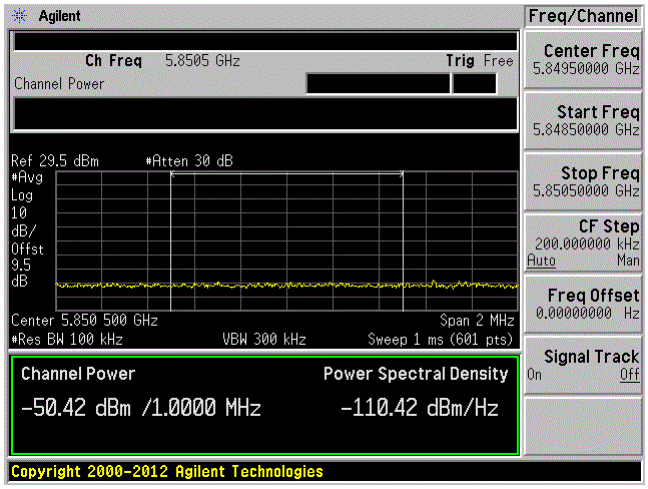


802.11ac-VHT80, High Channel 5690 MHz

Chain 0



Chain 1



11 FCC §15.407(b) - Spurious Emissions at Antenna Ports

11.1 Applicable Standards

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz. For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz. For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz. For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

11.2 Measurement Procedure

Procedure for Unwanted Emissions Measurements below 1000 MHz.
a) Follow the requirements in section G)3), “General Requirements for Unwanted Emissions Measurements”.
b) Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.

Procedures for Average Unwanted Emissions Measurements above 1000 MHz.
a) Follow the requirements in section G)3), “General Requirements for Unwanted Emissions Measurements”.
b) Average emission levels shall be measured using one of the following two methods.
c) Method AD (Average Detection): Primary method
(i) RBW = 1 MHz.
(ii) VBW ≥ 3 MHz.
(iii) Detector = RMS, if span/(# of points in sweep) ≤ RBW/2. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, the detector mode shall be set to peak.
(iv) Averaging type = power (i.e., RMS)

• As an alternative, the detector and averaging type may be set for linear voltage averaging. Some analyzers require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.
(v) Sweep time = auto.
(vi) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, the number of traces shall be increased by a factor of 1/x, where x is the duty cycle. For example, with 50 percent duty cycle, at least 200 traces should be averaged.
(vii) If tests are performed with the EUT transmitting at a duty cycle less than 98 percent, a correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
• If power averaging (RMS) mode was used in step (iv) above, the correction factor is10 log(1/x), where x is the duty cycle. For example, if the transmit duty cycle was 50 percent, then 3 dB must be added to the measured emission levels.
• If linear voltage averaging mode was used in step (iv) above, the correction factor is 20 log(1/x), where x is the duty cycle. For example, if the transmit duty cycle was 50 percent, then 6 dB must be added to the measured emission levels.
Add a correction factor (antenna gain+Attenuator loss+cable loss) to the display.

11.3 Test Equipment List and Details

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

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

11.4 Test Environmental Conditions

Temperature:	21-24 ºC
Relative Humidity:	40-43 %
ATM Pressure:	102.1-103.6 kPa

The testing was performed by Chen Ge on 2014-07-28 to 2014-07-29 at RF site.

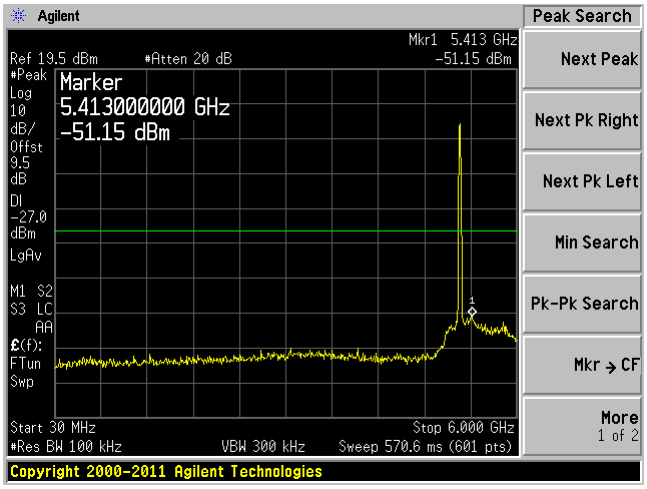
11.5 Test Results

Please refer to following plots of spurious emissions.

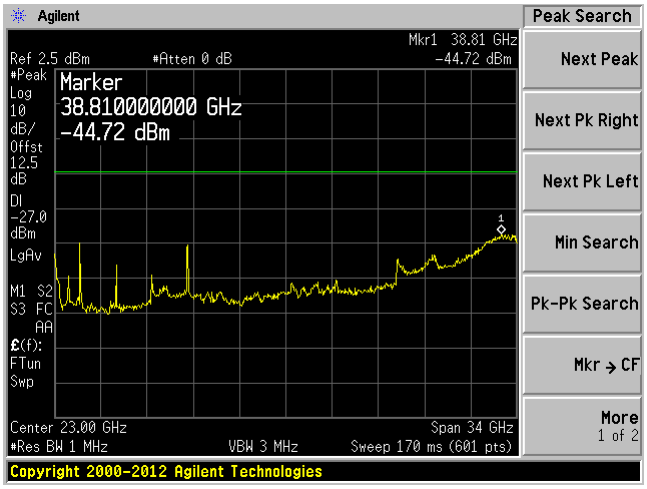
5.3 GHz Band

802.11a, Low Channel, 5260 MHz

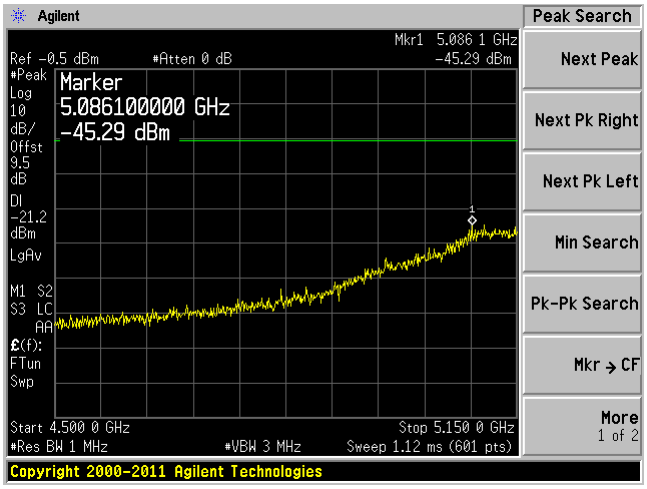
Chain J0, Plot: 30 MHz – 6 GHz



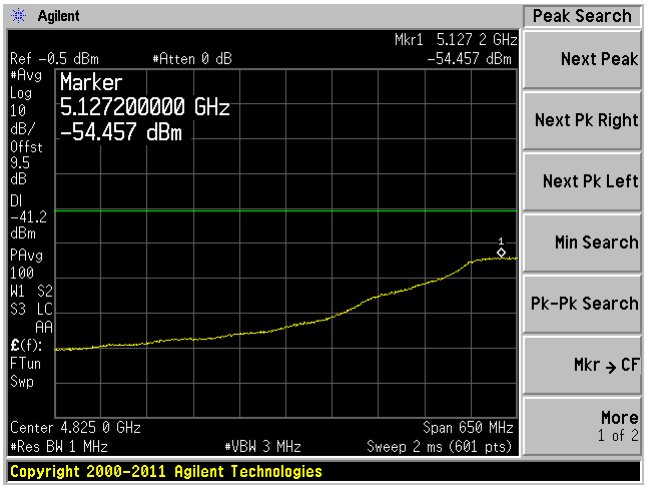
Chain J0, Plot: 6 GHz – 40 GHz



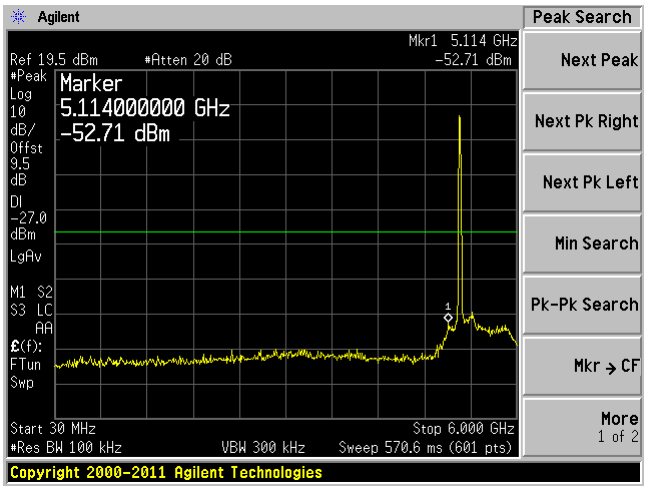
Chain J0, Plot: 4500 MHz – 5150 MHz-Peak



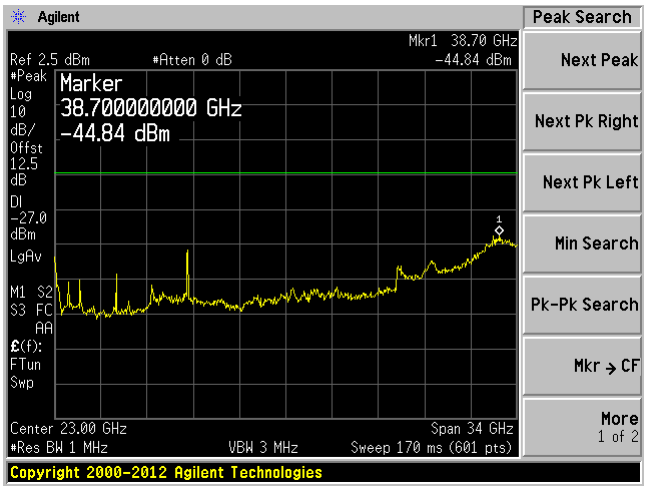
Chain J0, Plot: 5350MHz – 5460 MHz-Peak



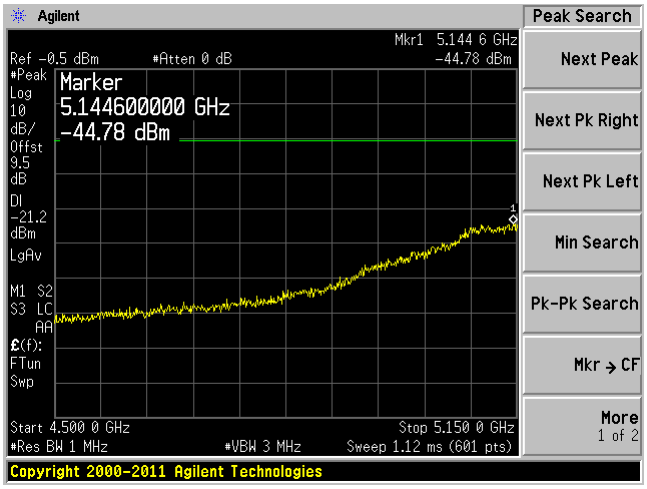
Chain J1, Plot: 30 MHz – 6 GHz



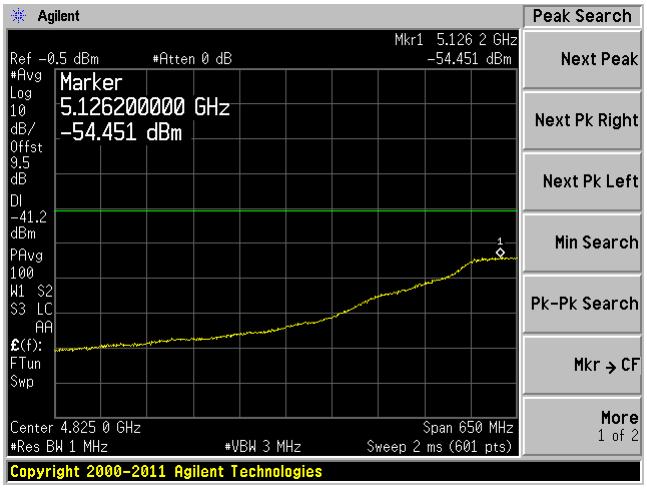
Chain J1, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 4500 MHz – 5150 MHz-Peak

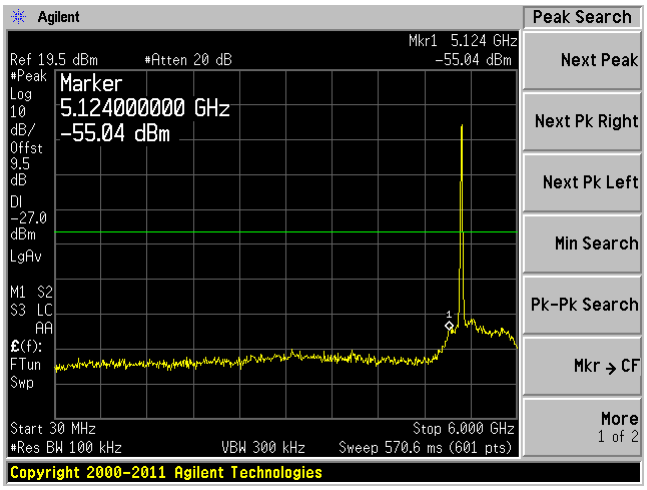


Chain J1, Plot: 4500 MHz – 5150 MHz-Ave

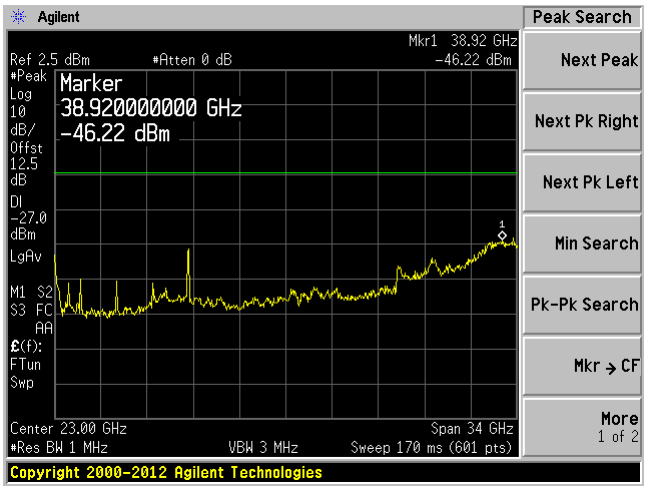


802.11a, Middle Channel, 5280 MHz

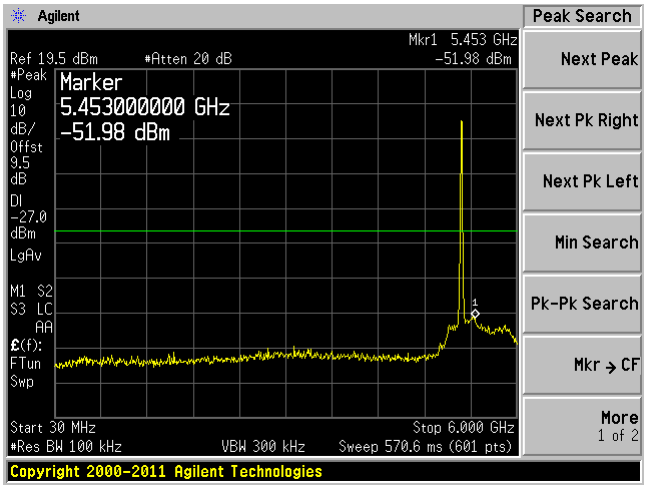
Chain J0, Plot: 30 MHz – 6 GHz



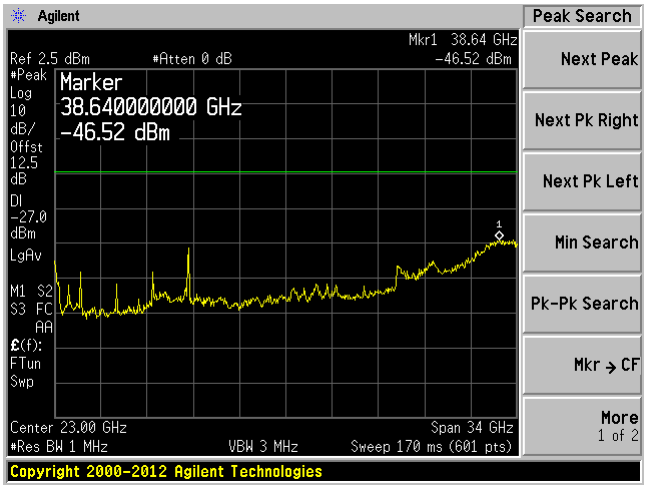
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

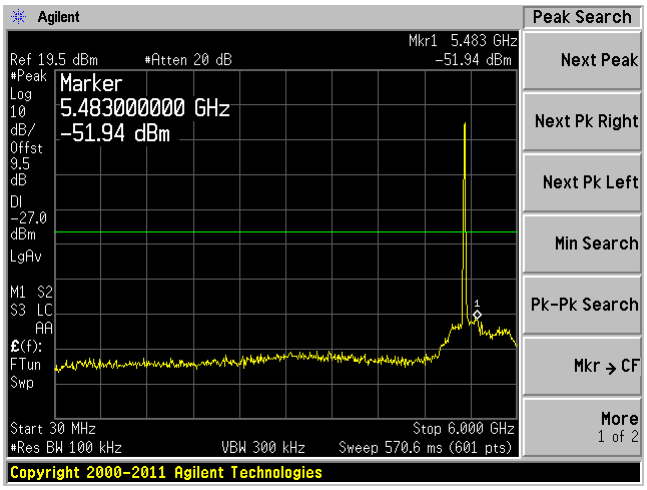


Chain J1, Plot: 6 GHz – 40 GHz

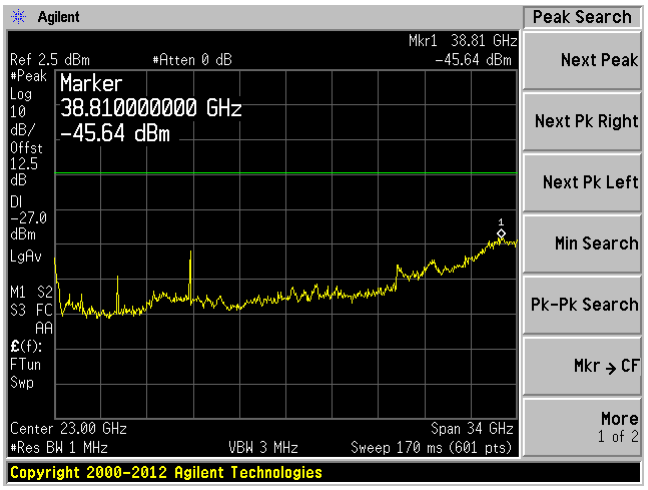


802.11a, High Channel, 5320 MHz

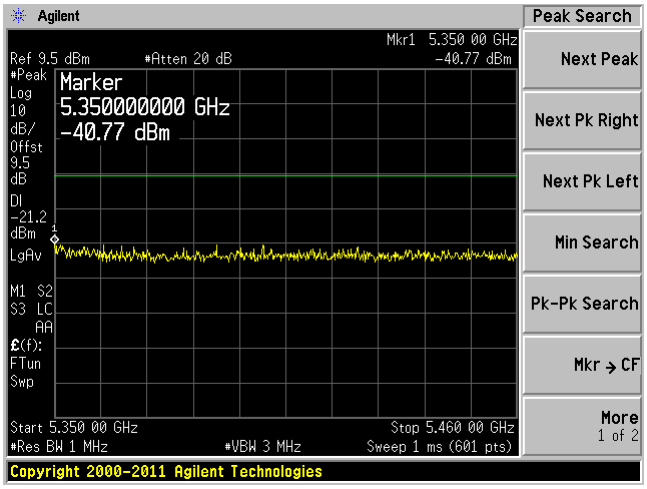
Chain J0, Plot: 30 MHz – 6 GHz



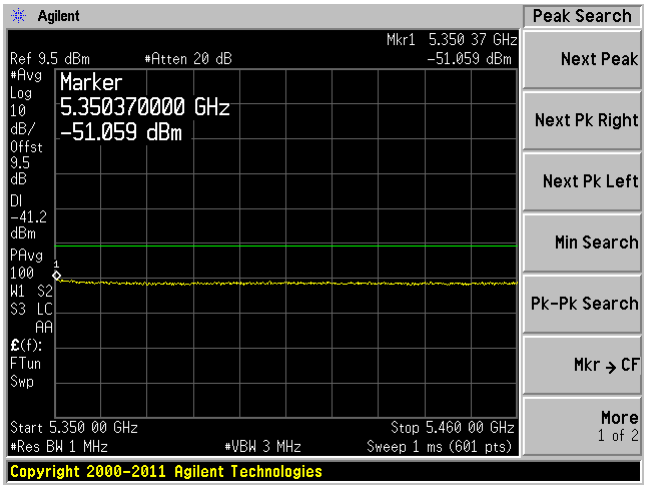
Chain J0, Plot: 6 GHz – 40 GHz



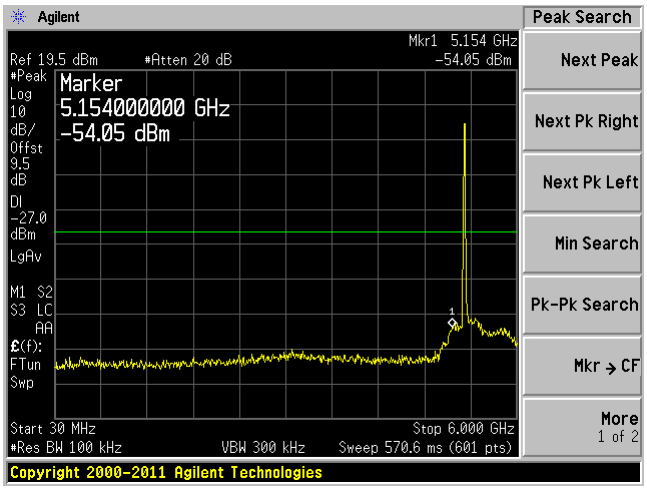
Chain J0, Plot: 5350MHz – 5460 MHz-Peak



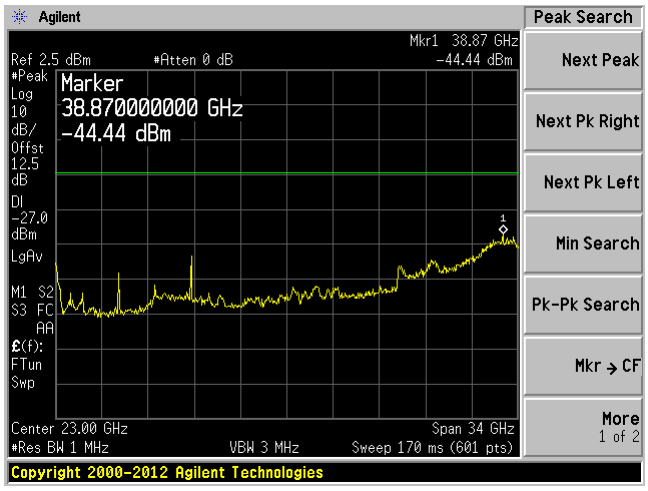
Chain J0, Plot: 5350MHz – 5460 MHz-Ave



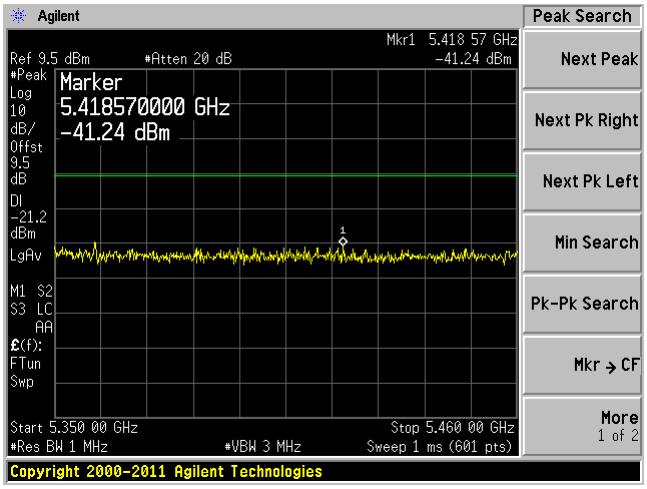
Chain J1, Plot: 30 MHz – 6 GHz



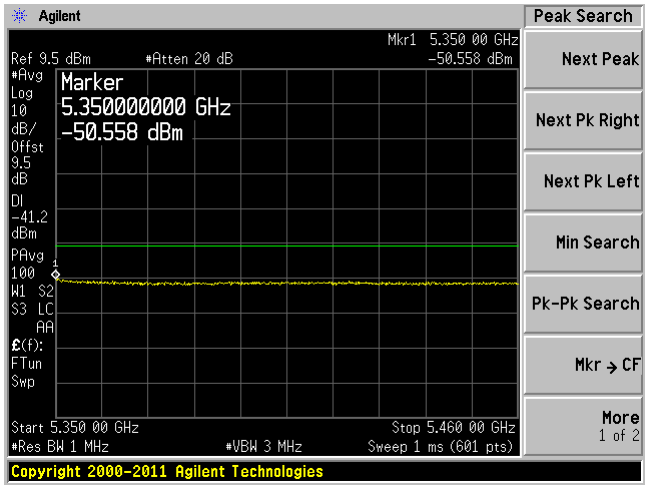
Chain J1, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 5350MHz – 5460 MHz-Ave

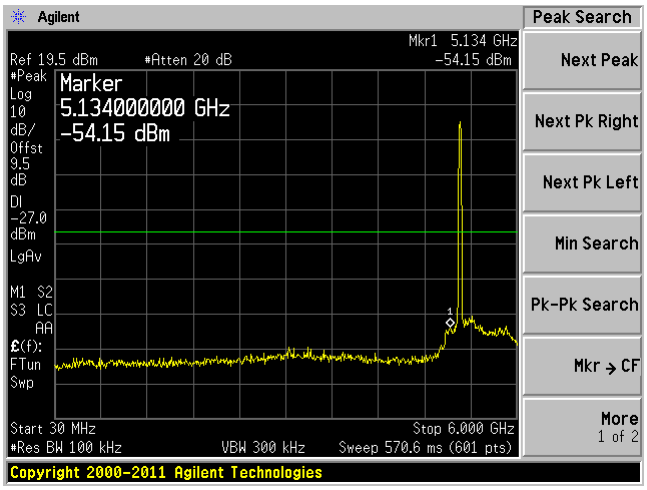


Chain J1, Plot: 5350MHz – 5460 MHz-Ave

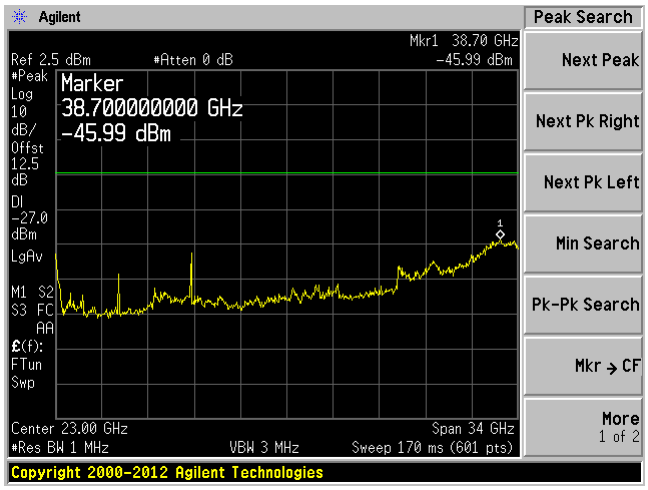


802.11n-HT 20, Low Channel 5260 MHz

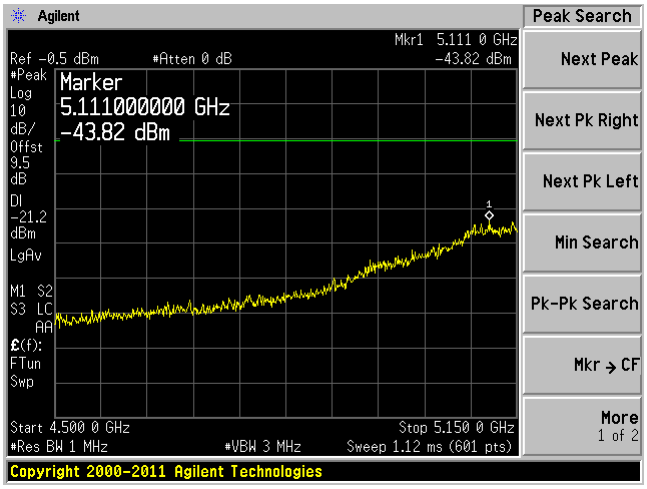
Chain J0, Plot: 30 MHz – 6 GHz



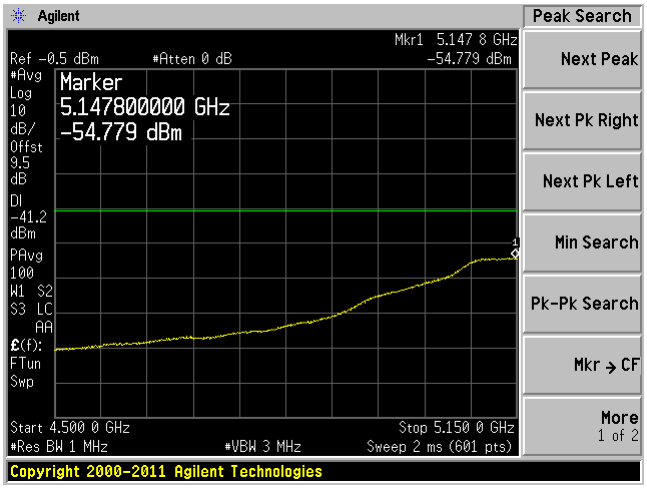
Chain J0, Plot: 6 GHz – 40 GHz



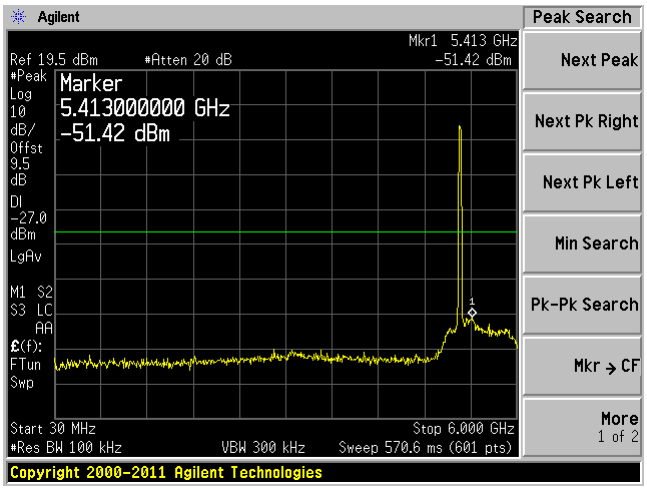
Chain J0, Plot: 4500 MHz – 5150 MHz-Peak



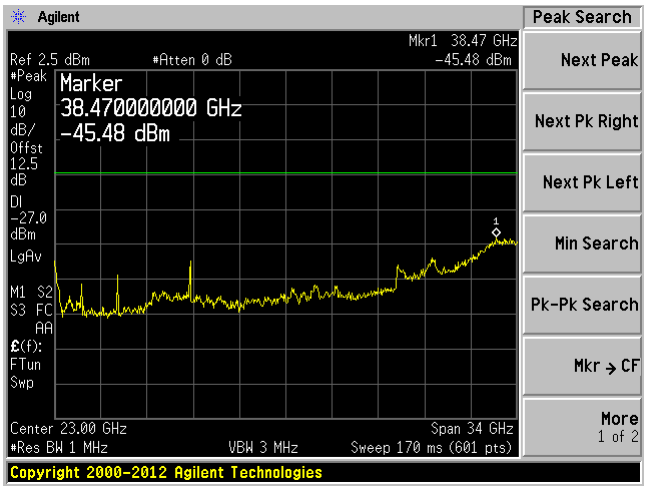
Chain J0, Plot: 4500 MHz – 5150 MHz-Ave



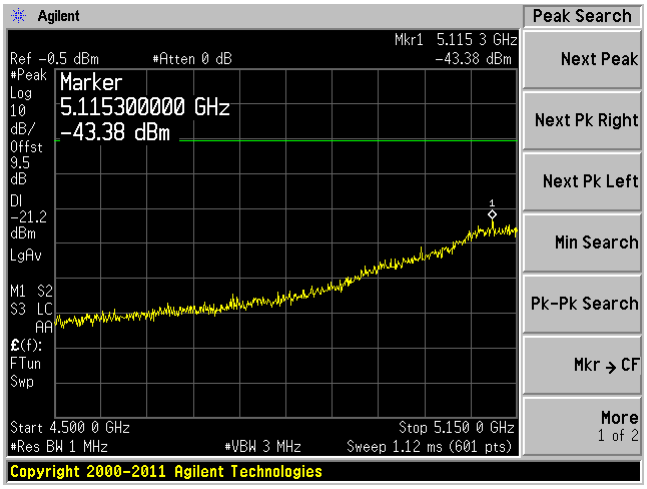
Chain J1, Plot: 30 MHz – 6 GHz



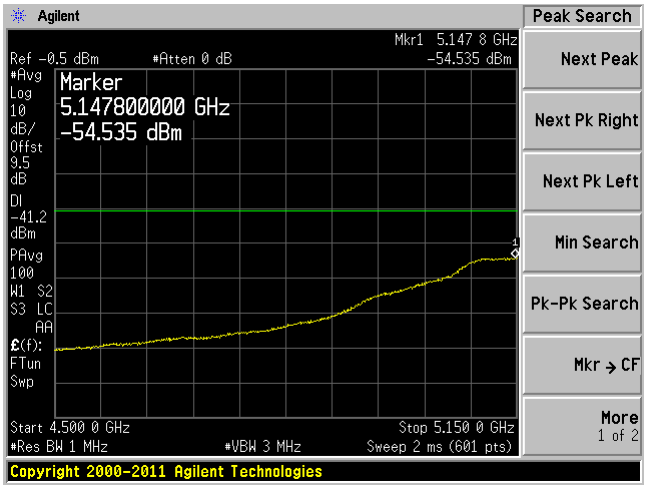
Chain J1, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 4500 MHz – 5150 MHz-Peak

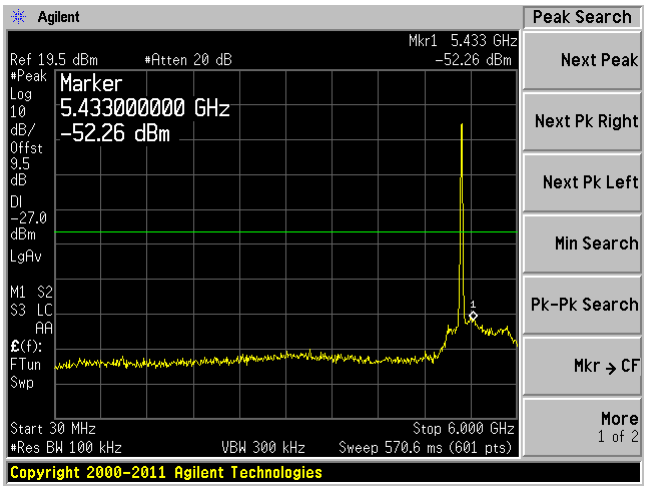


Chain J1, Plot: 4500 MHz – 5150 MHz-Ave

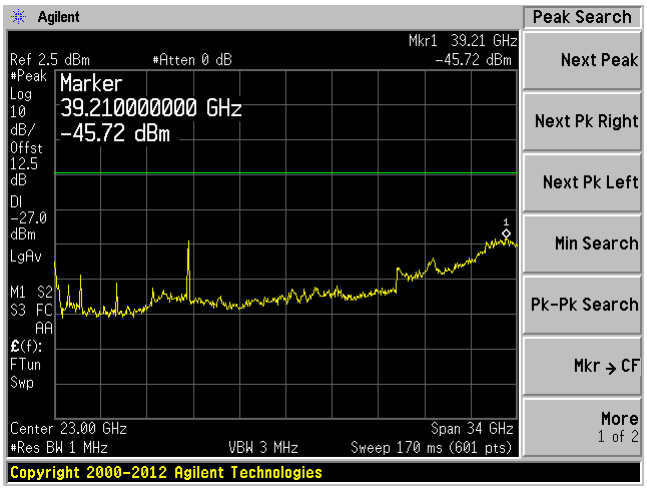


802.11n-HT20, Middle Channel 5280 MHz

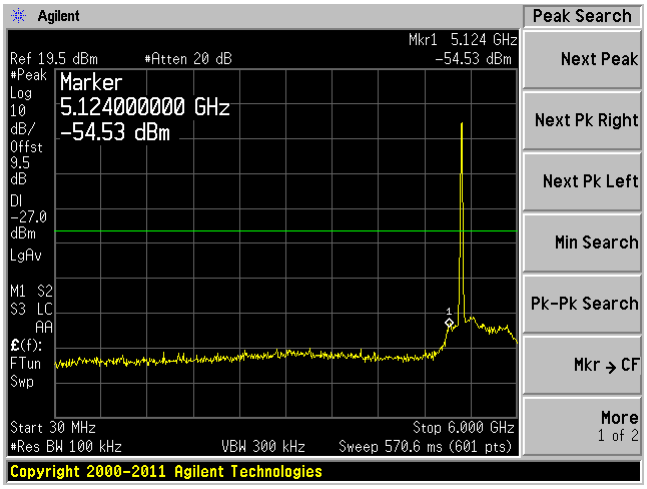
Chain J0, Plot: 30 MHz – 6 GHz



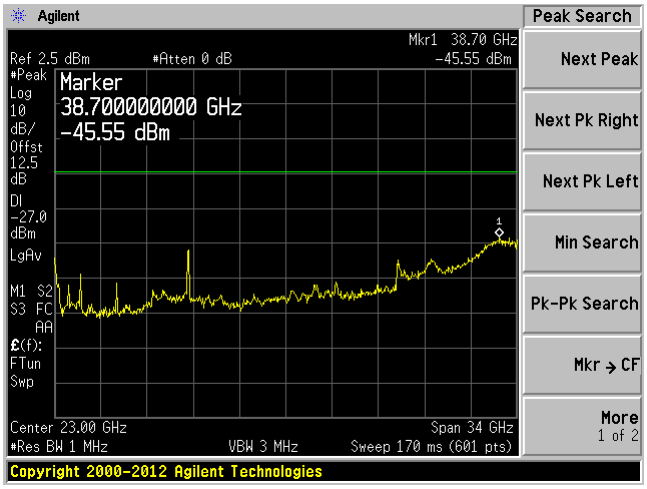
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

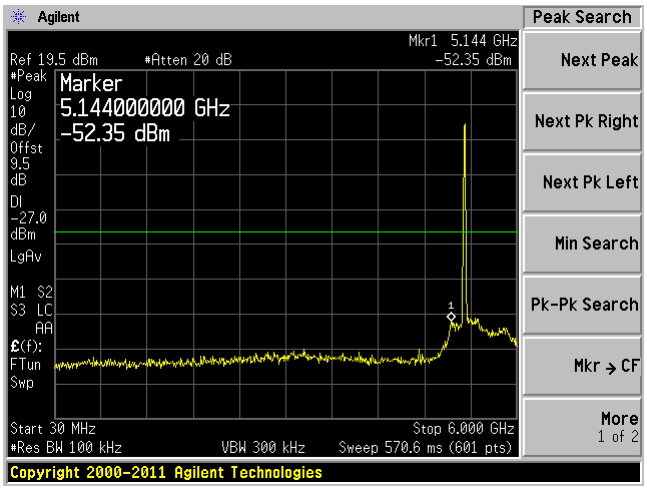


Chain J1, Plot: 6 GHz – 40 GHz

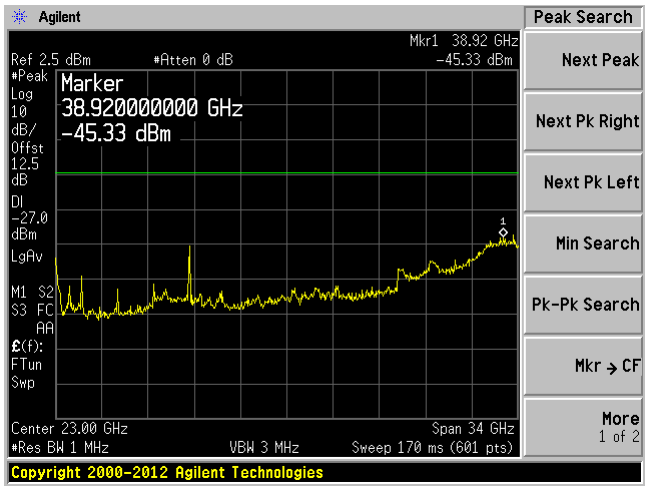


802.11n-HT20, High Channel, 5320 MHz

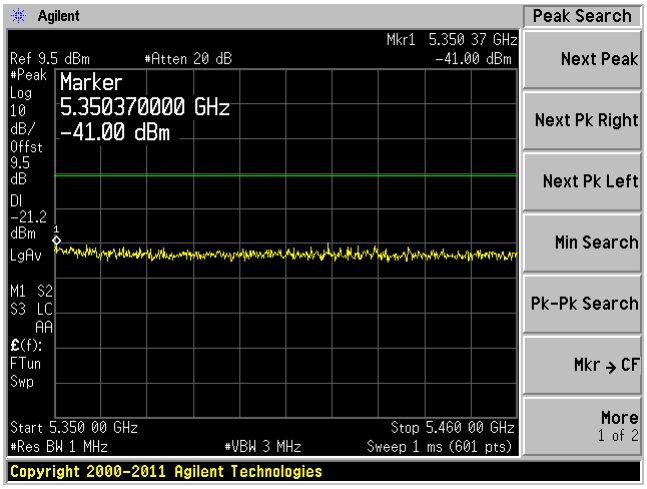
Chain J0, Plot: 30 MHz – 6 GHz



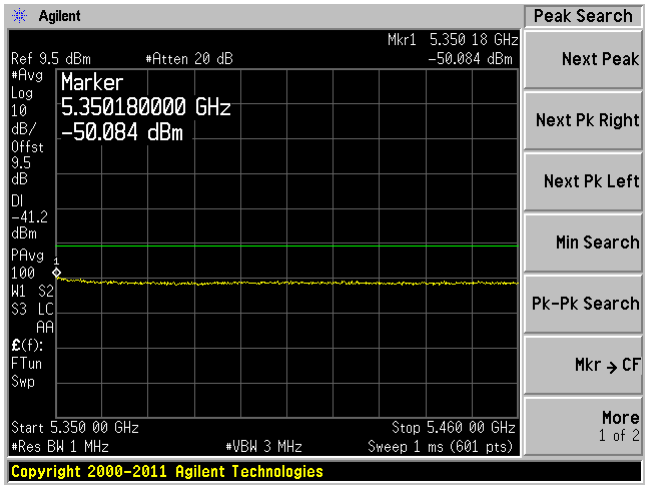
Chain J0, Plot: 6 GHz – 40 GHz



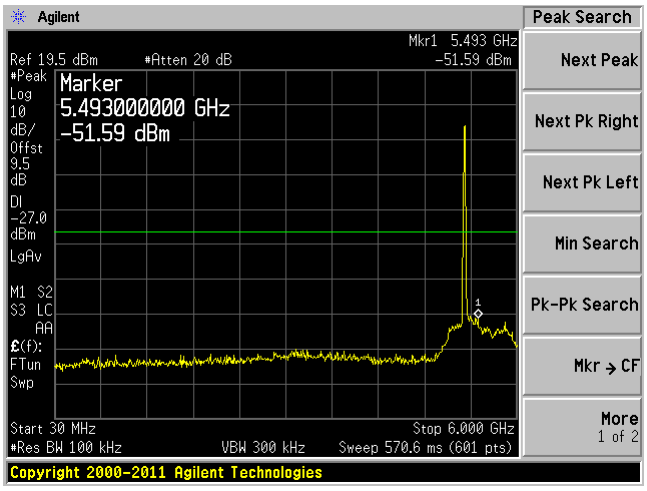
Chain J0, Plot: 5350MHz – 5460 MHz-Peak



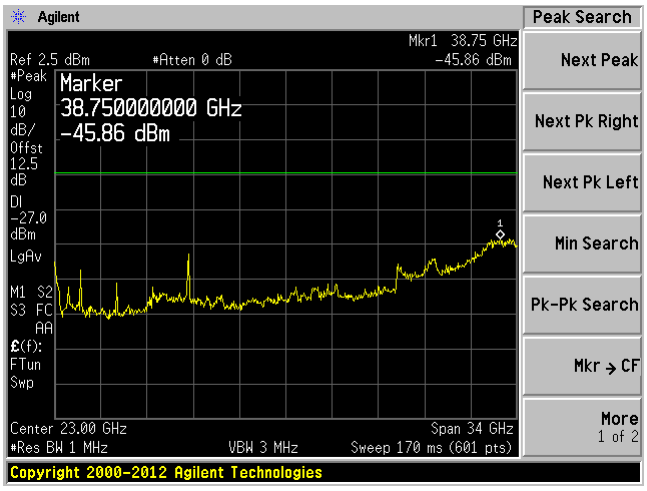
Chain J0, Plot: 5350MHz – 5460 MHz-Ave



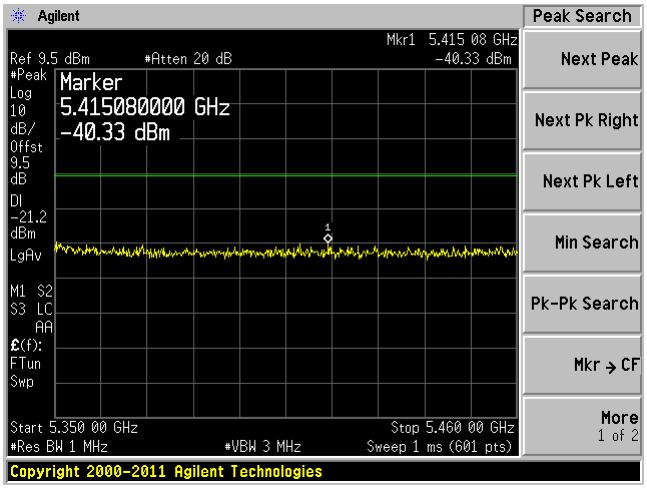
Chain J1, Plot: 30 MHz – 6 GHz



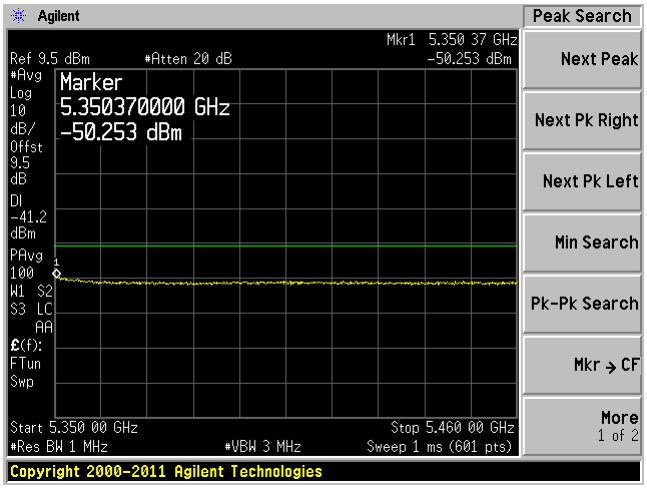
Chain J1, Plot: 6 GHz - 40 GHz



Chain J1, Plot: 5350MHz – 5460 MHz-Peak

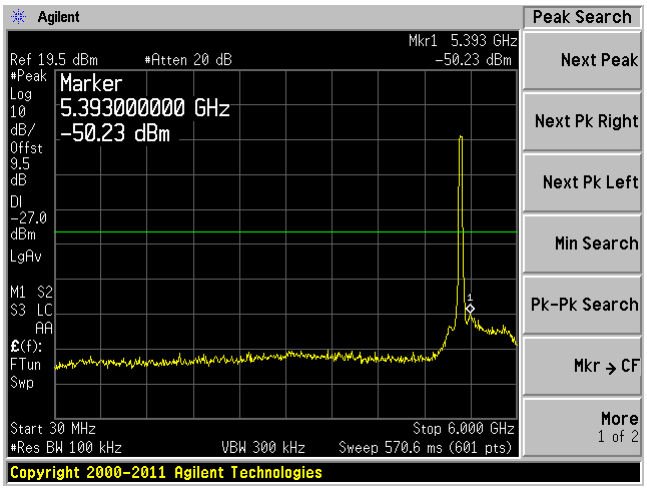


Chain J1, Plot: 5350MHz – 5460 MHz-Peak

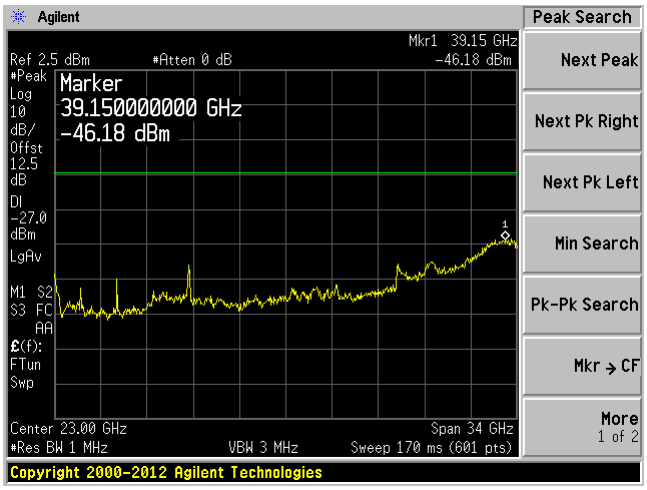


802.11n-HT40, Low Channel 5270 MHz

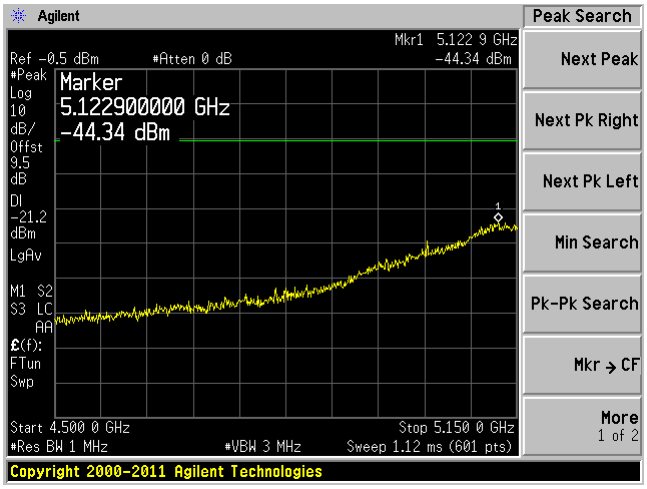
Chain J0, Plot: 30 MHz – 6 GHz



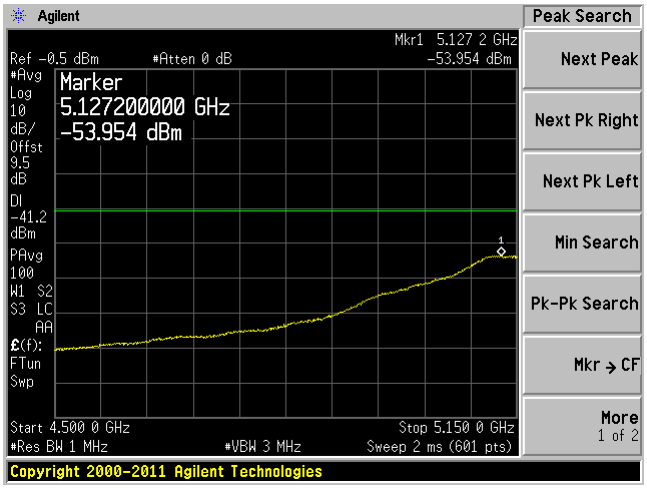
Chain J0, Plot: 6 GHz – 40 GHz



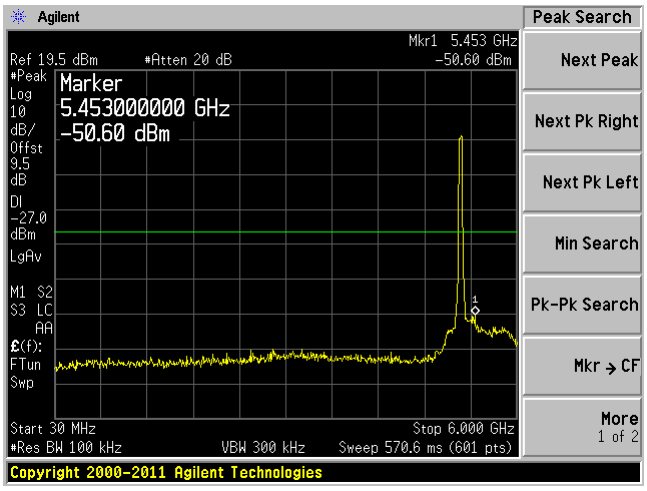
Chain J0, Plot: 4500 MHz – 5150 MHz-Peak



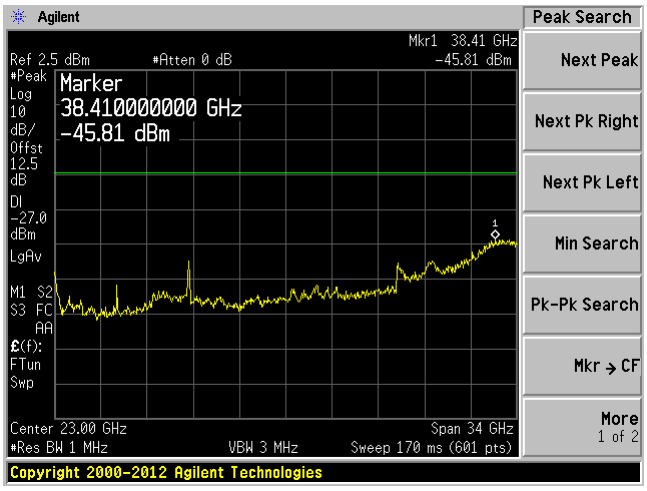
Chain J0, Plot: 4500 MHz – 5150 MHz-Ave



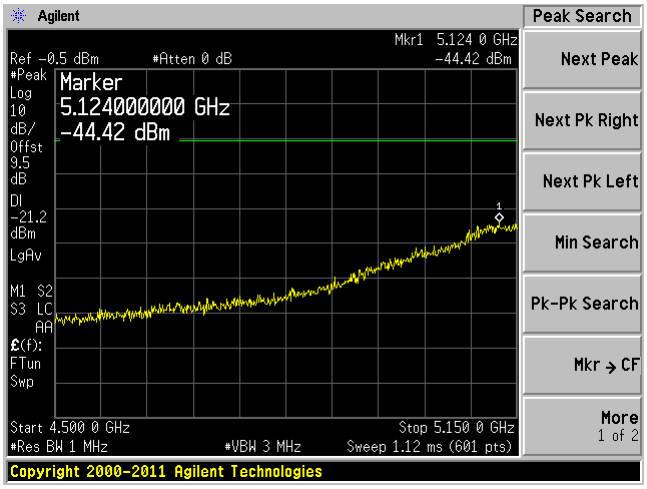
Chain J1, Plot: 30 MHz – 6 GHz



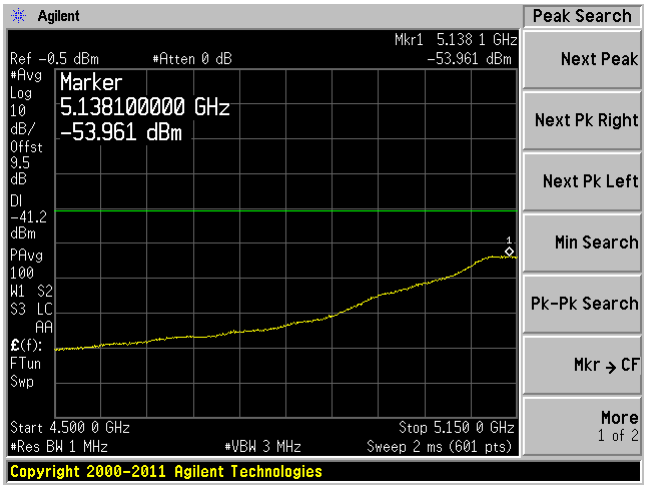
Chain J1, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 4500 MHz – 5150 MHz-Peak

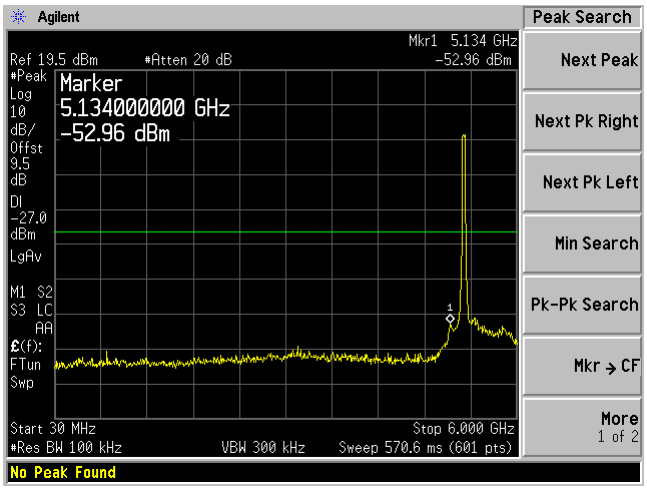


Chain J1, Plot: 4500 MHz – 5150 MHz-Ave

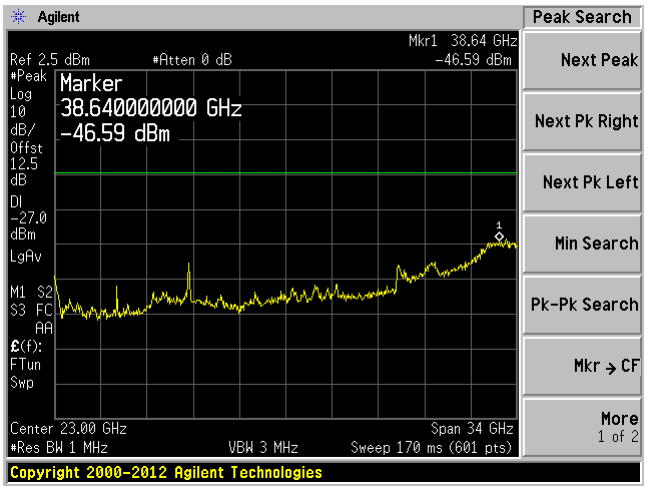


802.11n-HT40, High Channel 5310 MHz

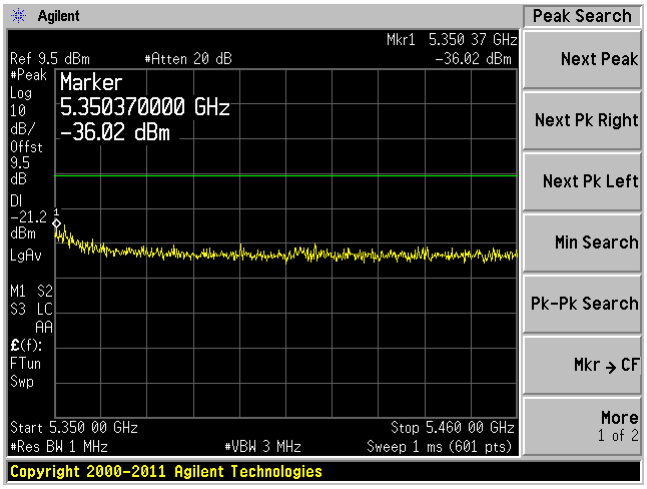
Chain J0, Plot: 30 MHz – 6 GHz



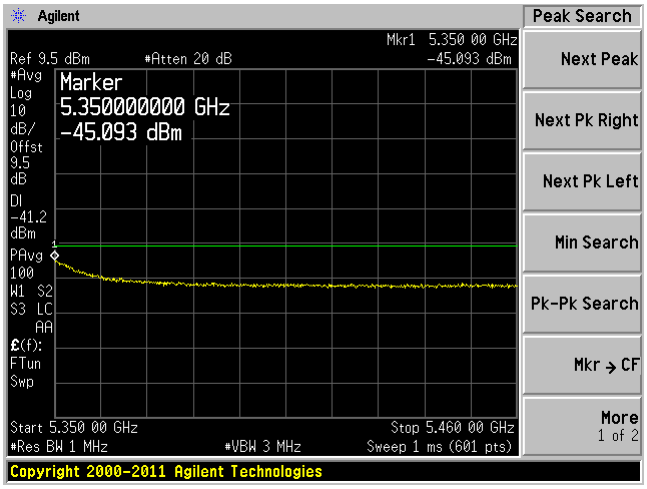
Chain J0, Plot: 6 GHz – 40 GHz



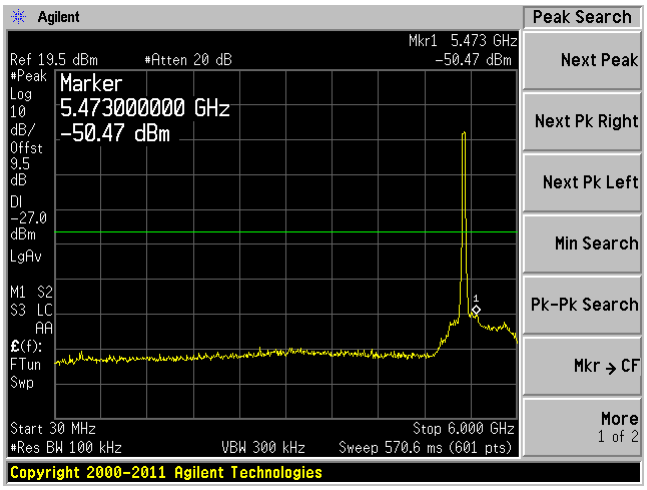
Chain J0, Plot: 5350MHz – 5460 MHz-Peak



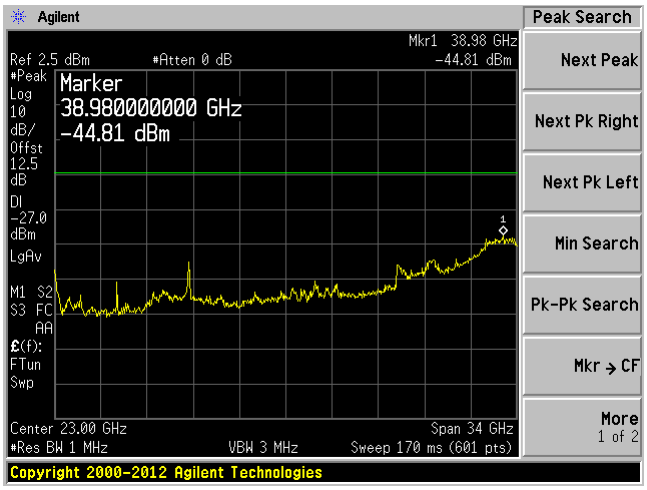
Chain J0, Plot: 5350MHz – 5460 MHz-Ave



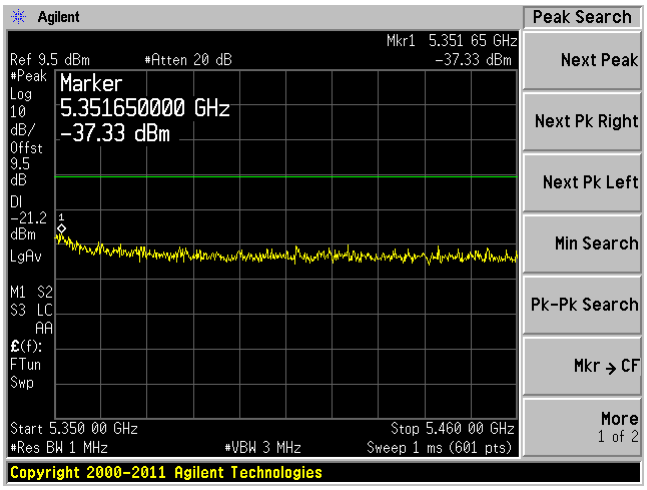
Chain J1, Plot: 30 MHz – 6 GHz



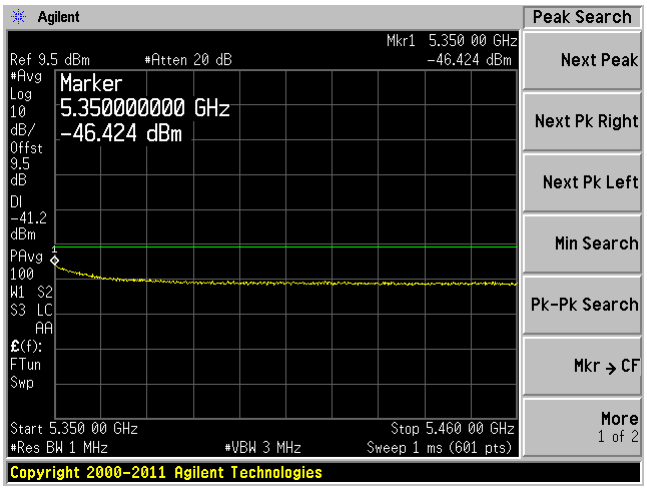
Chain J1, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 5350MHz – 5460 MHz-Peak

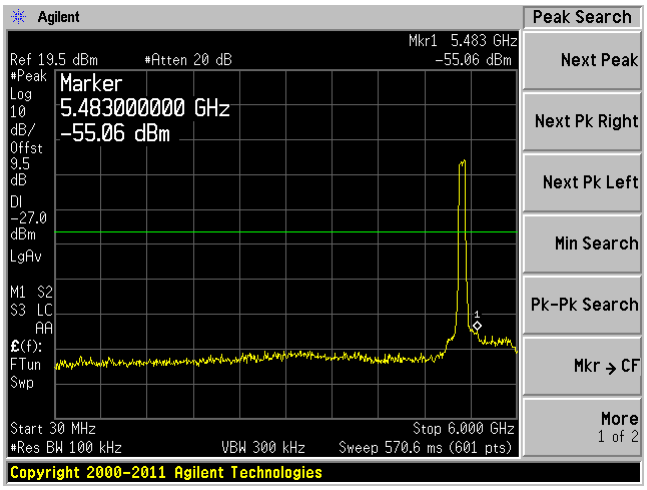


Chain J1, Plot: 5350MHz – 5460 MHz-Ave

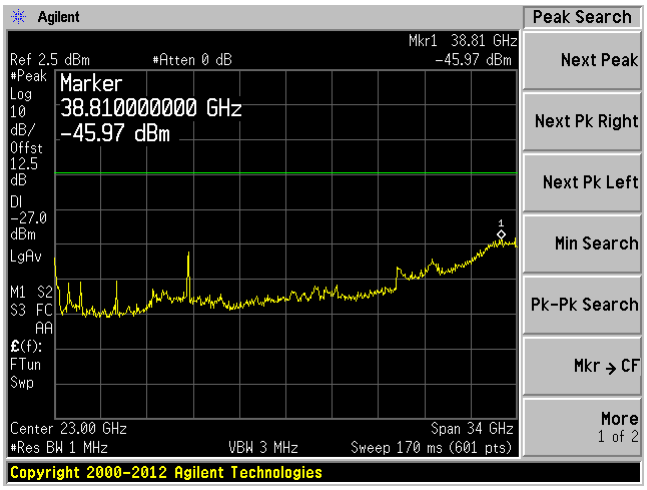


802.11ac-VHT80, Channel 5290 MHz

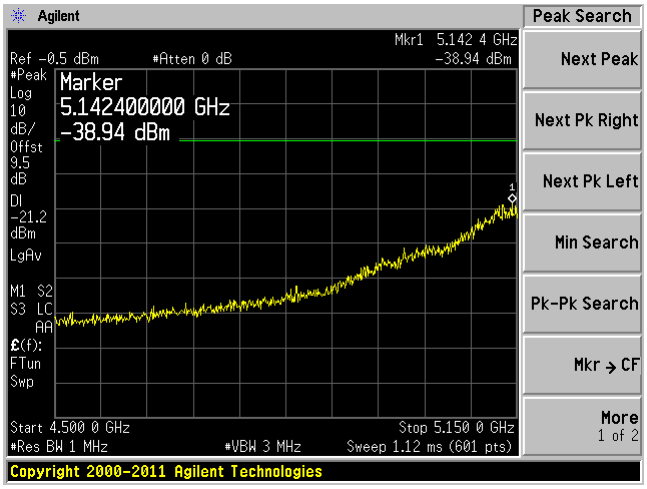
Chain J0, Plot: 30 MHz – 6 GHz



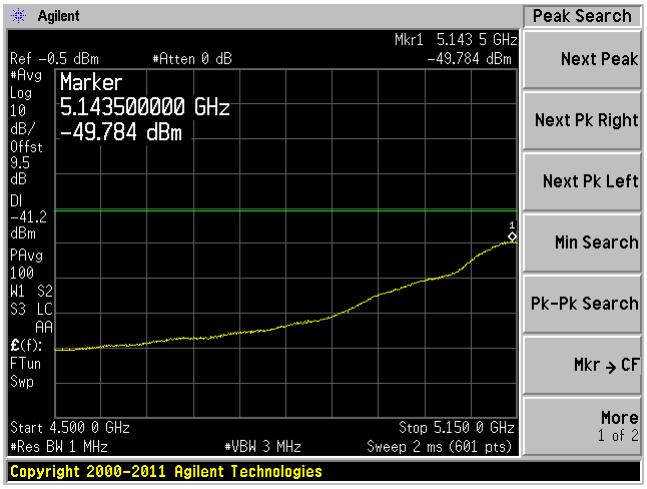
Chain J0, Plot: 6 GHz – 40 GHz



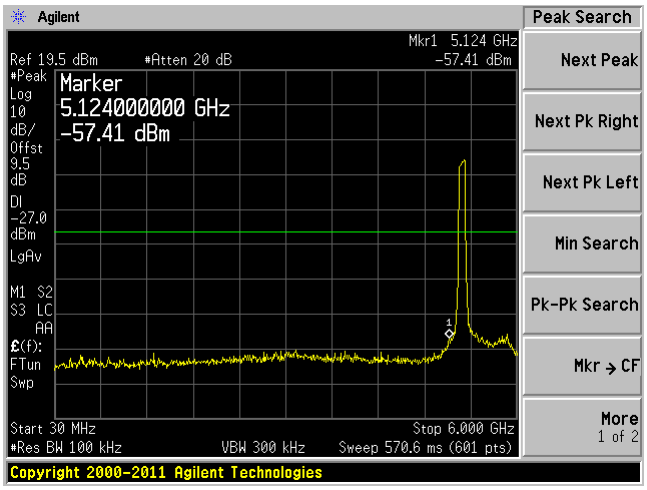
Chain J0, Plot: 4500MHz – 5150 MHz-Peak



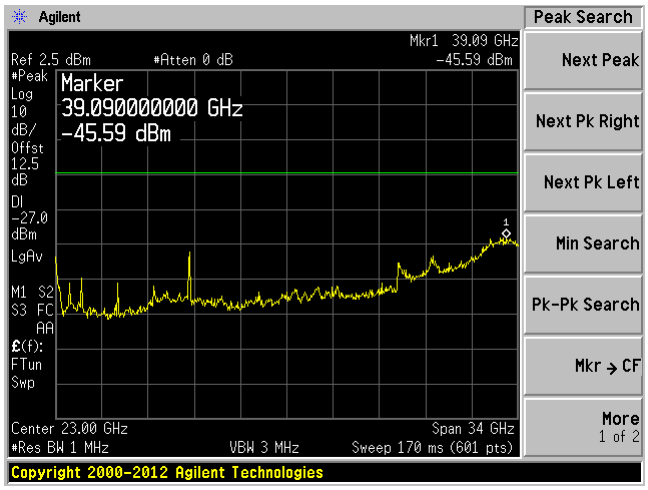
Chain J0, Plot: 4500MHz – 5150 MHz-Ave



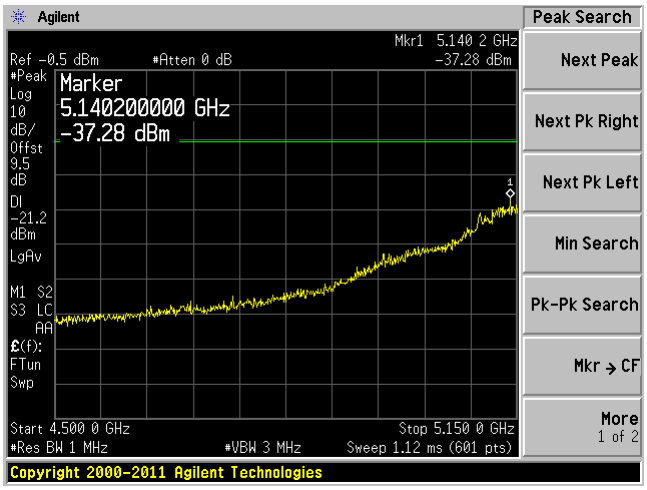
Chain J1, Plot: 30 MHz – 6 GHz



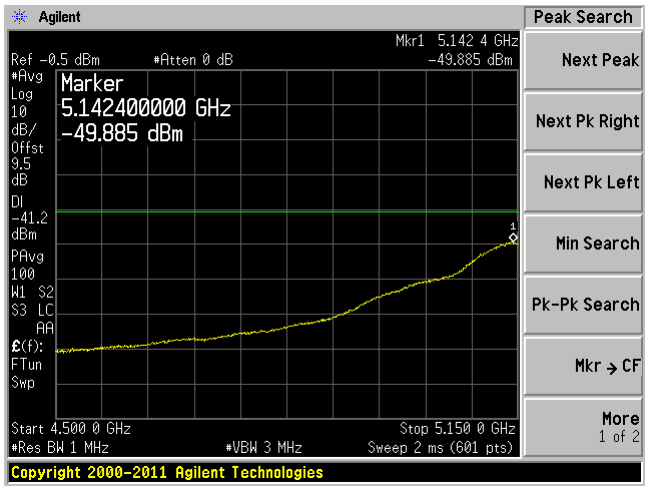
Chain J1, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 4500MHz – 5150 MHz-Peak



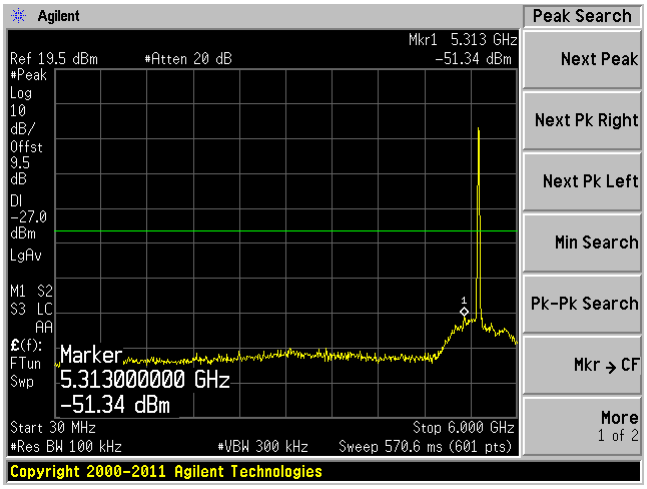
Chain J1, Plot: 4500MHz – 5150 MHz-Ave



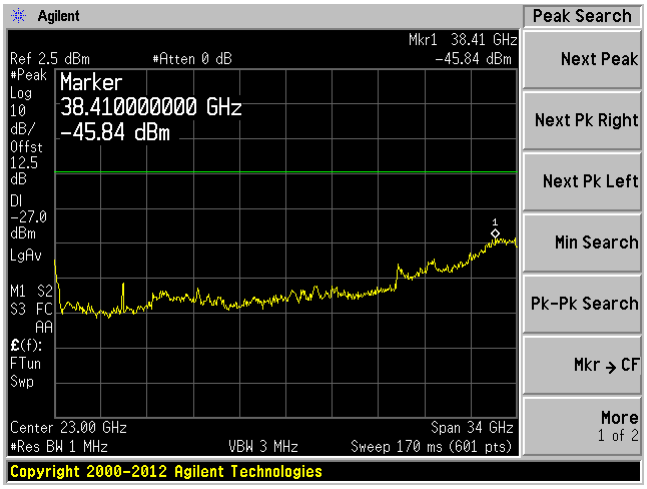
5470-5725 MHz Band

802.11a, Low Channel, 5500 MHz

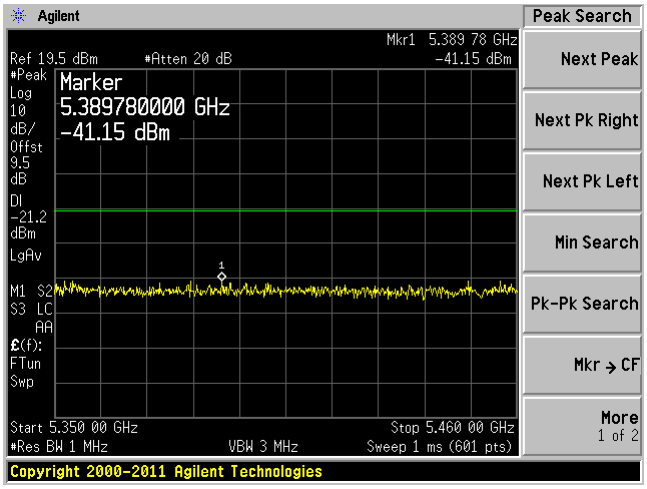
Chain J0, Plot: 30 MHz – 6 GHz



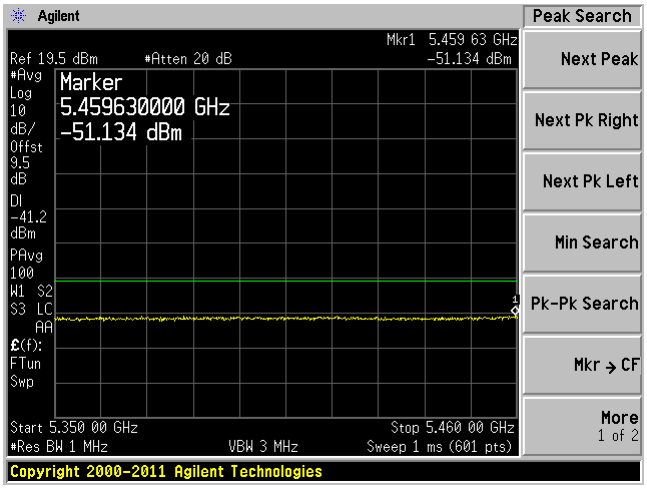
Chain J0, Plot: 6 GHz – 40 GHz



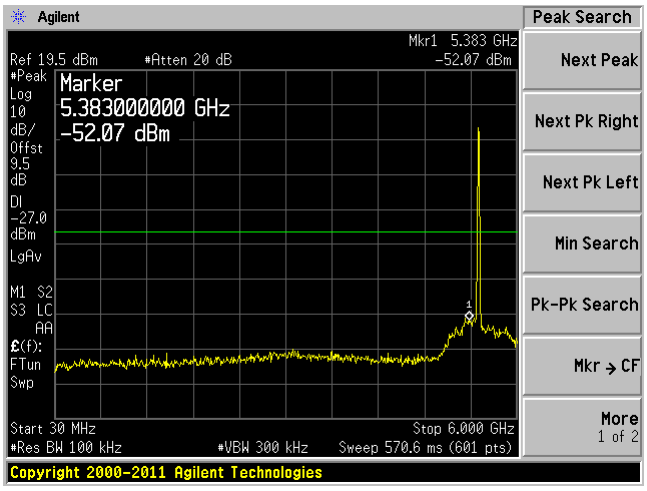
Chain J0, Plot: 5350MHz – 5460 MHz-Peak



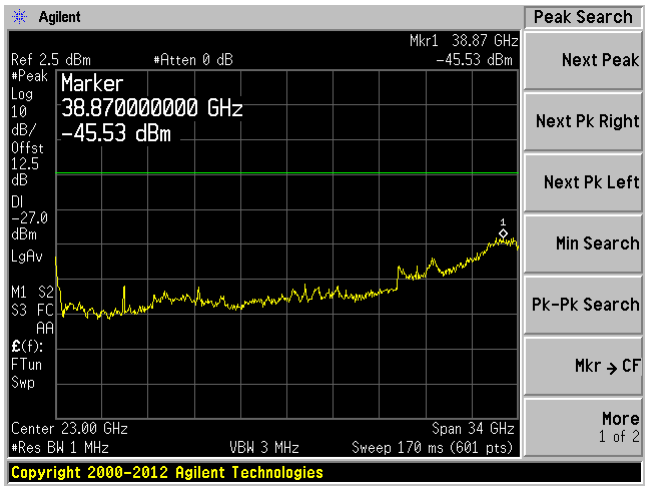
Chain J0, Plot: 5350MHz – 5460 MHz-Ave



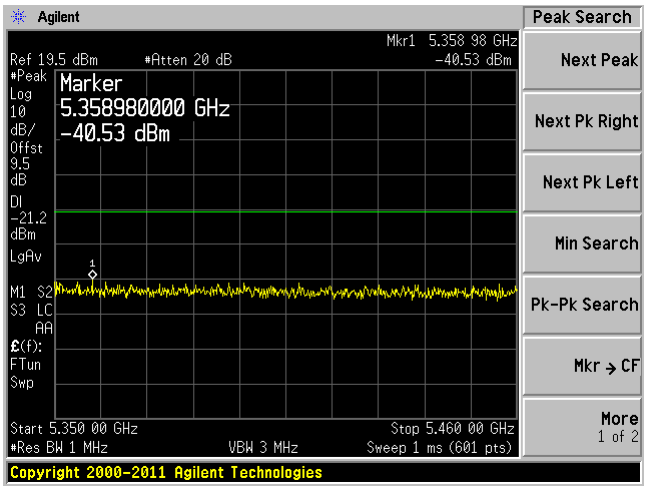
Chain J1, Plot: 30 MHz – 6 GHz



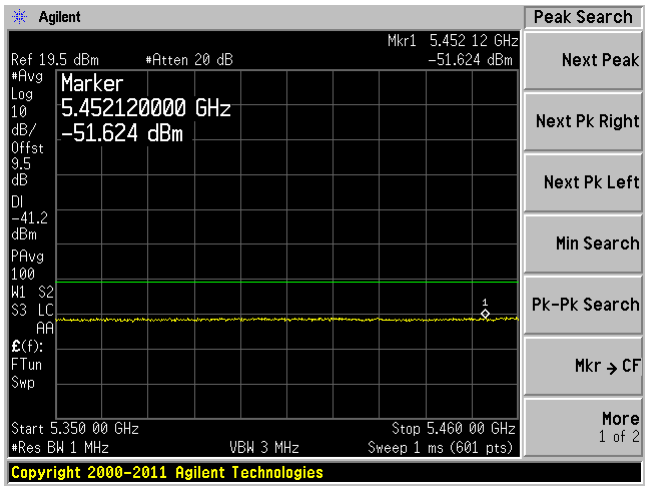
Chain J1, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 5350MHz – 5460 MHz-Peak

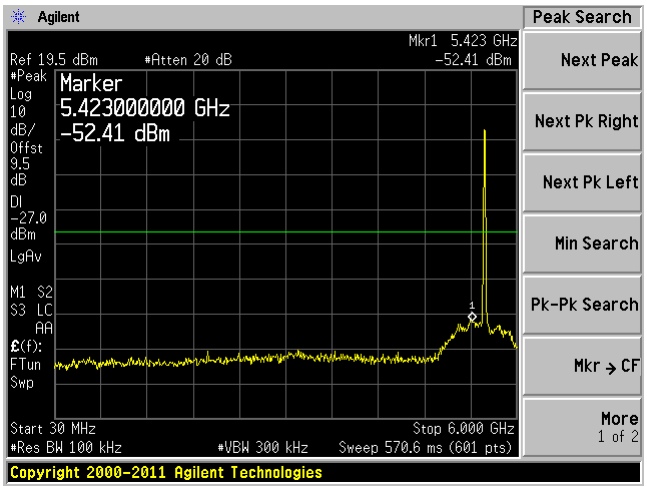


Chain J1, Plot: 5350MHz – 5460 MHz-Ave

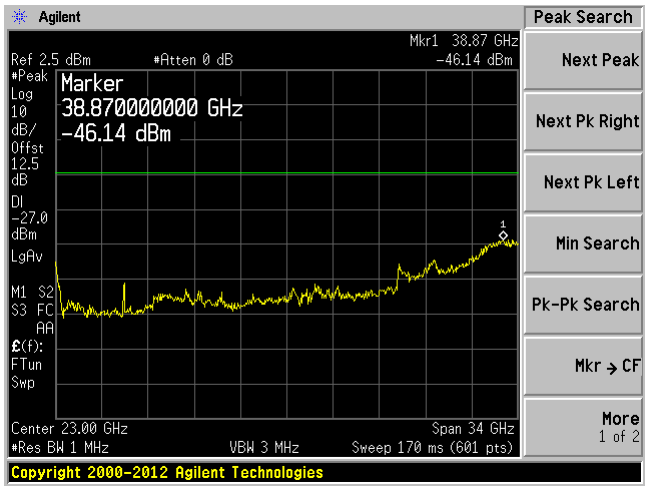


802.11a, Middle Channel, 5580 MHz

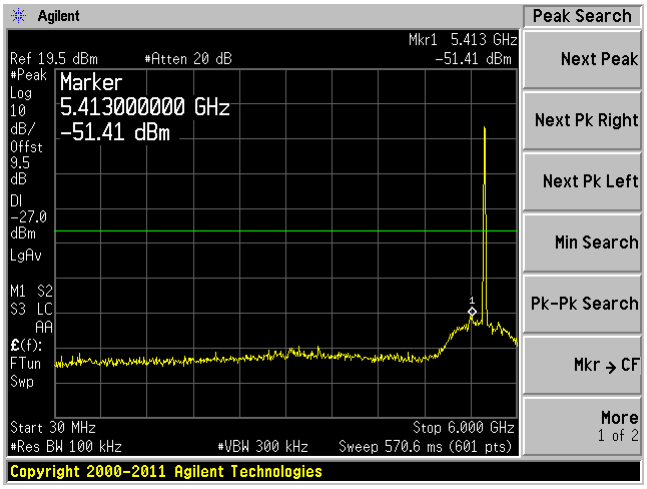
Chain J0, Plot: 30 MHz – 6 GHz



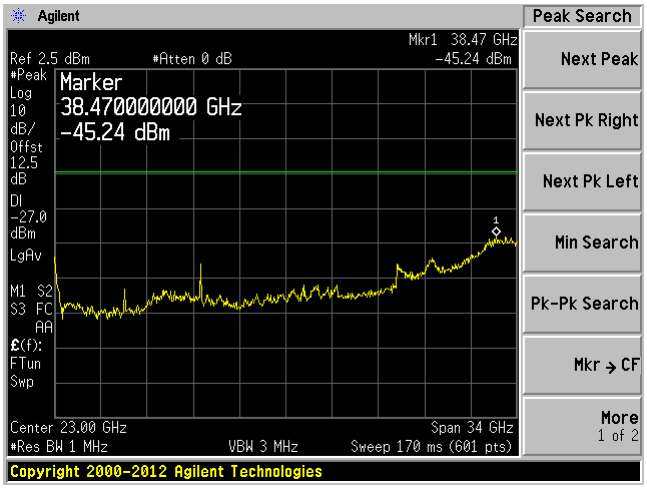
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

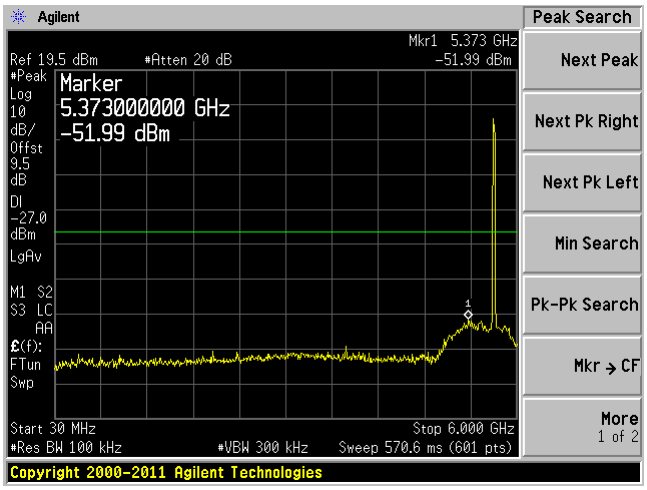


Chain J1, Plot: 6 GHz – 40 GHz

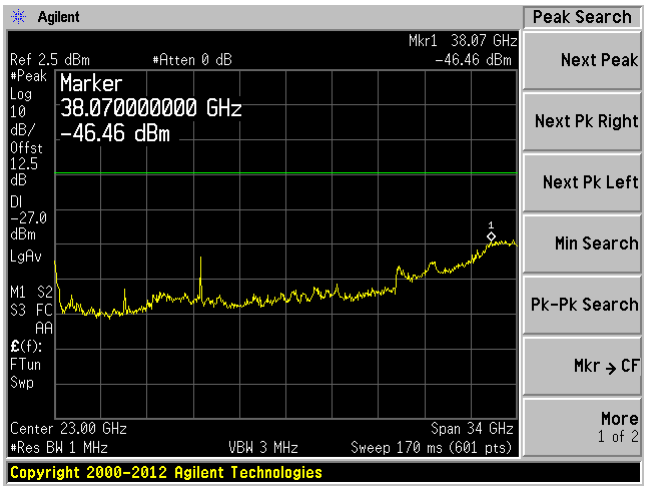


802.11a, High Channel, 5700 MHz

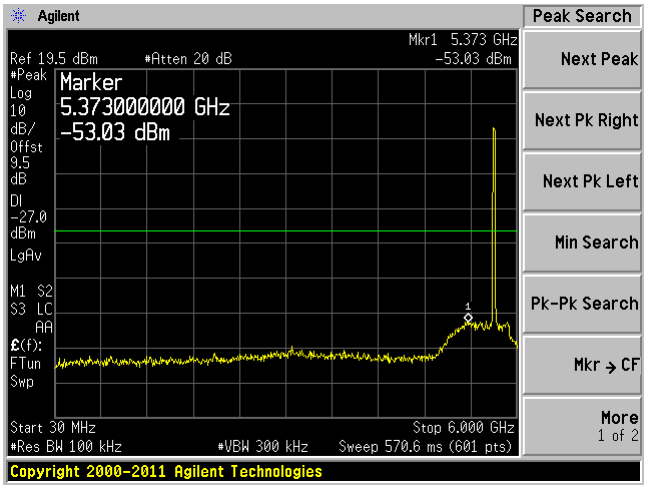
Chain J0, Plot: 30 MHz – 6 GHz



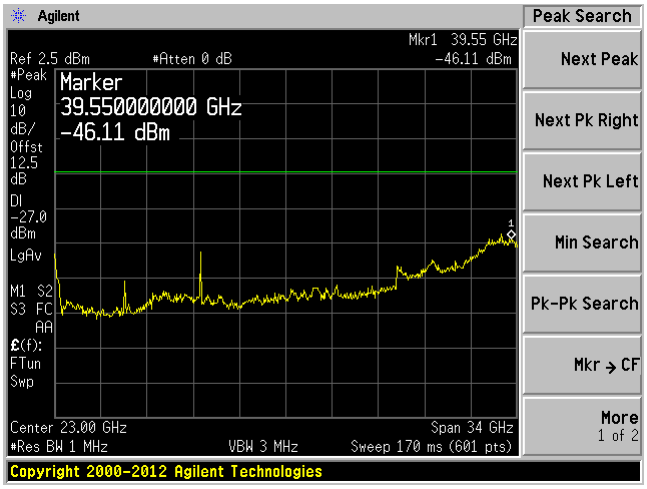
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

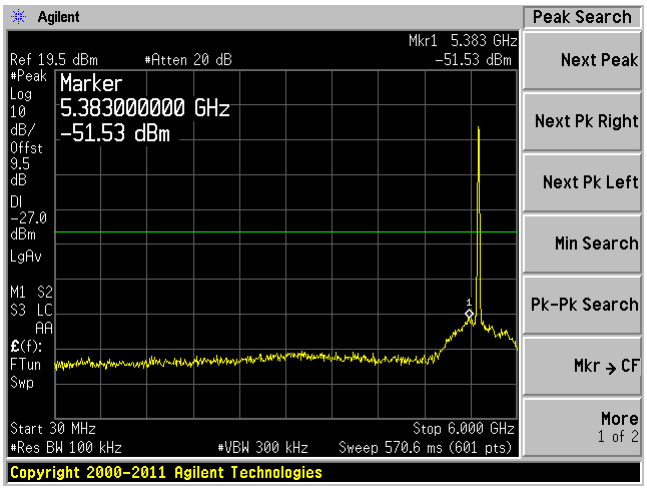


Chain J1, Plot: 6 GHz – 40 GHz

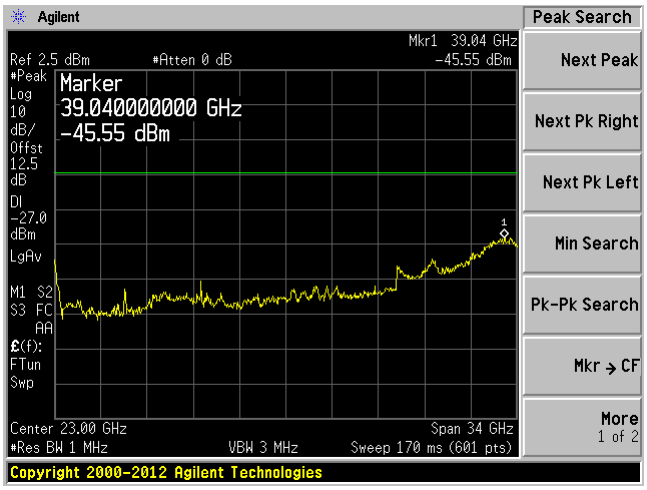


802.11n-HT 20, Low Channel 5500 MHz

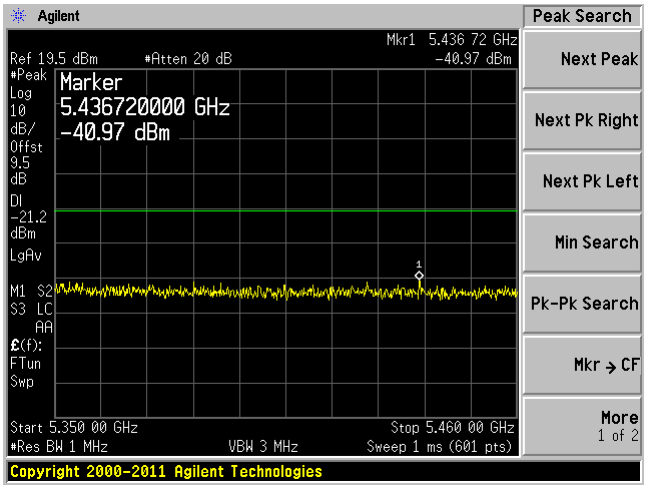
Chain J0, Plot: 30 MHz – 6 GHz



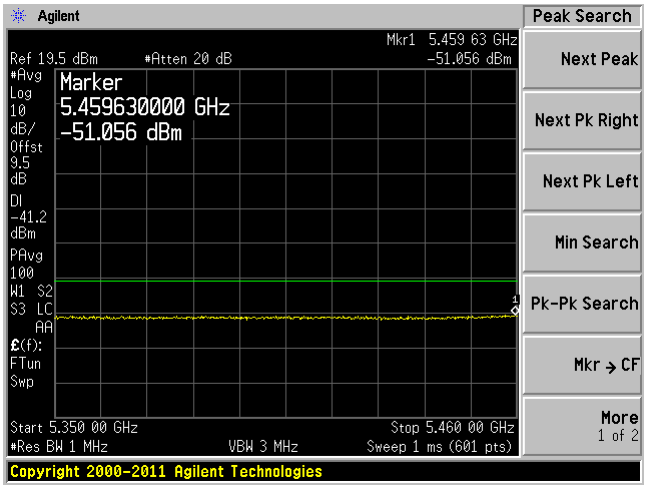
Chain J0, Plot: 6 GHz – 40 GHz



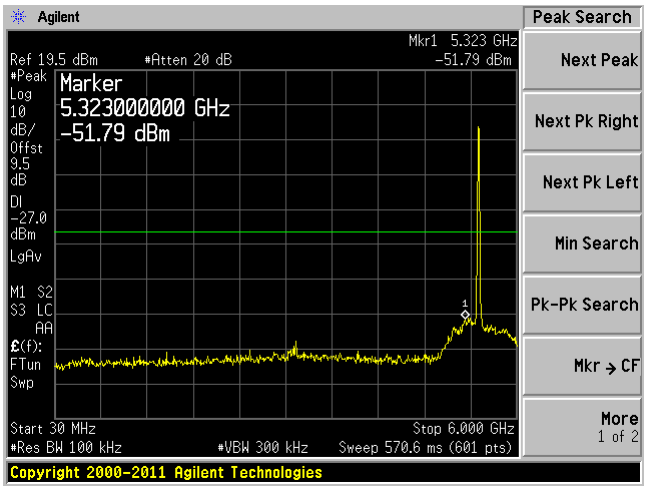
Chain J0, Plot: 5350MHz – 5460 MHz-Peak



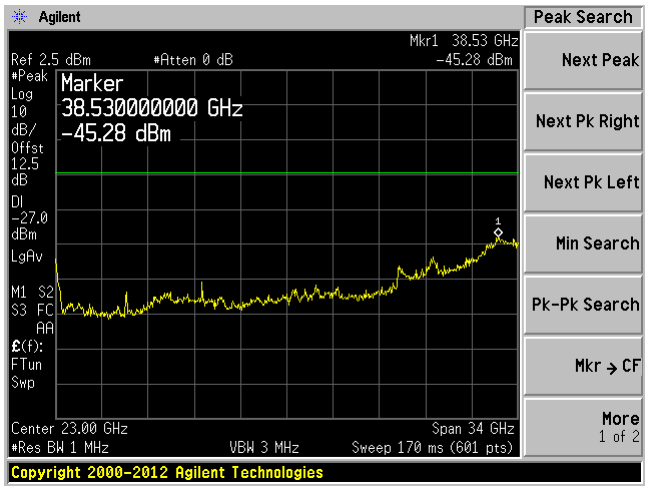
Chain J0, Plot: 5350MHz – 5460 MHz-Ave



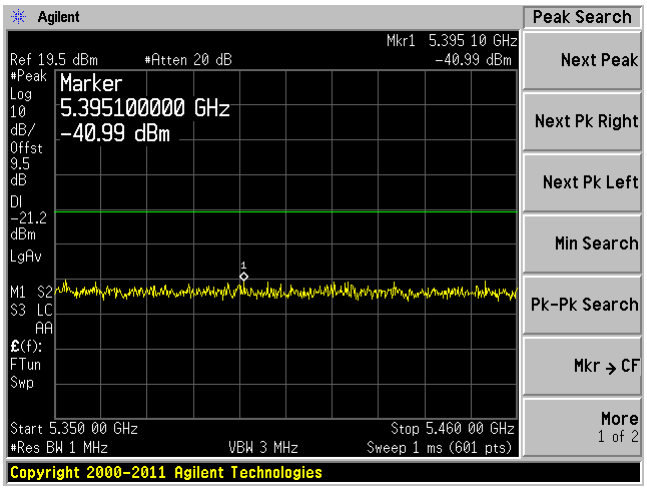
Chain J1, Plot: 30 MHz – 6 GHz



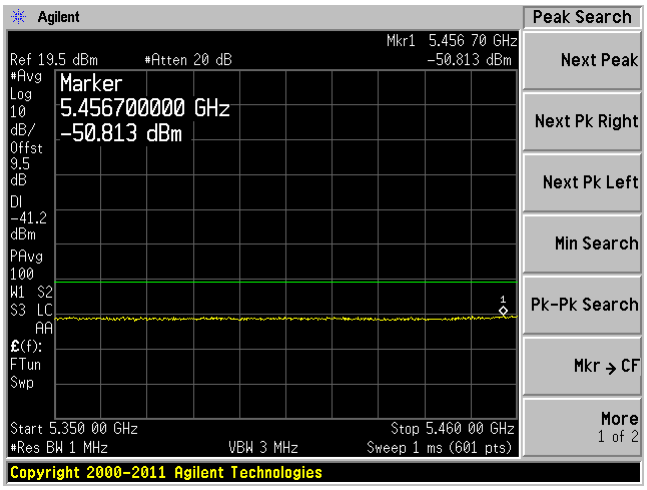
Chain J1, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 5350MHz – 5460 MHz-Peak

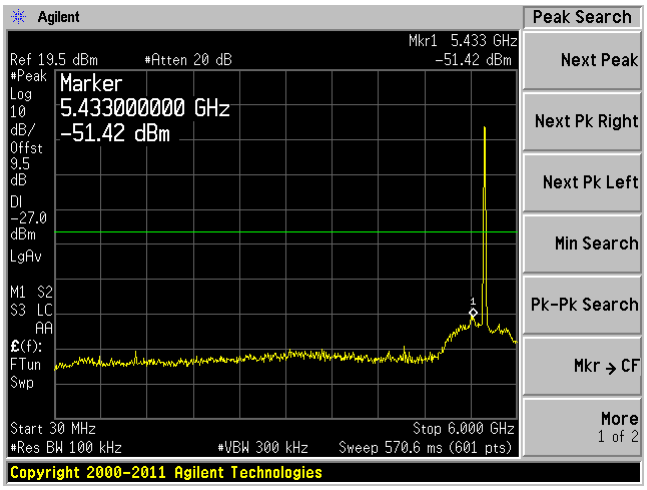


Chain J1, Plot: 5350MHz – 5460 MHz-Ave

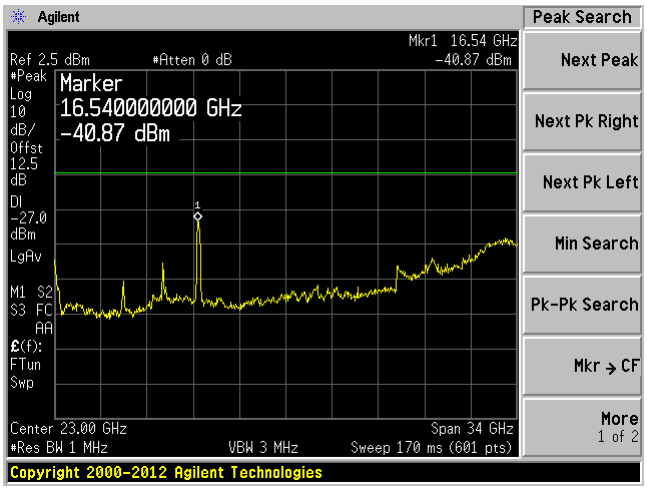


802.11n-HT20, Middle Channel 5580 MHz

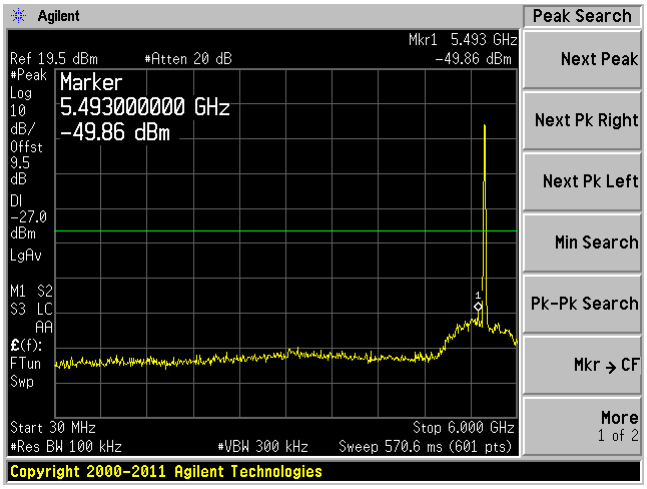
Chain J0, Plot: 30 MHz – 6 GHz



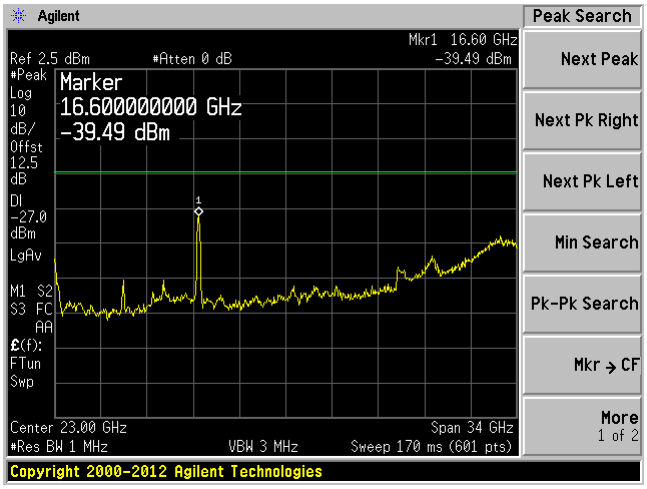
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

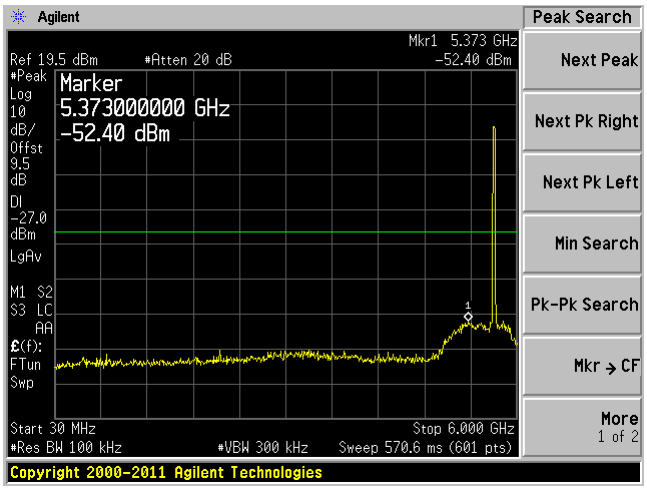


Chain J1, Plot: 6 GHz – 40 GHz

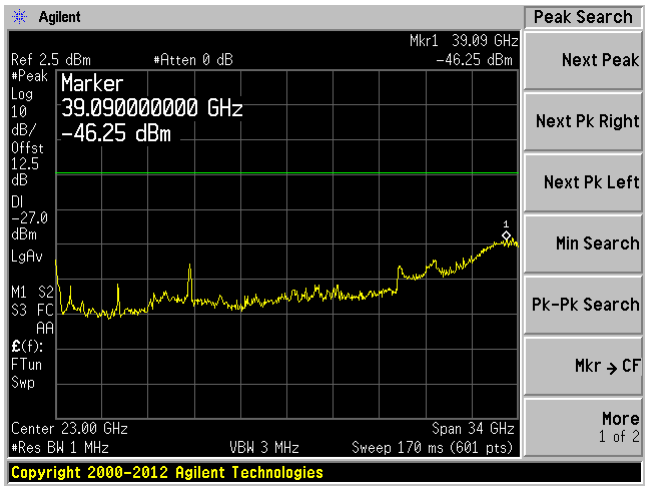


802.11n-HT20, High Channel 5700 MHz

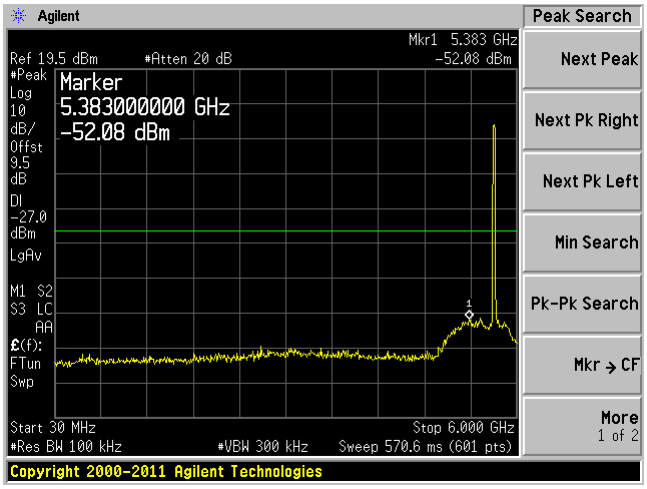
Chain J0, Plot: 30 MHz – 6 GHz



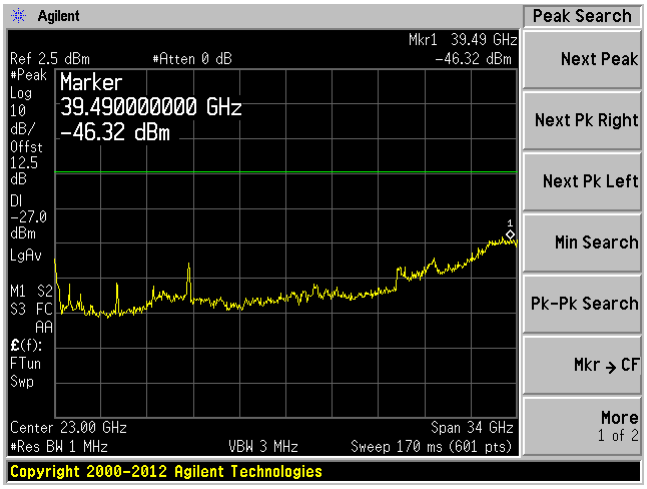
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

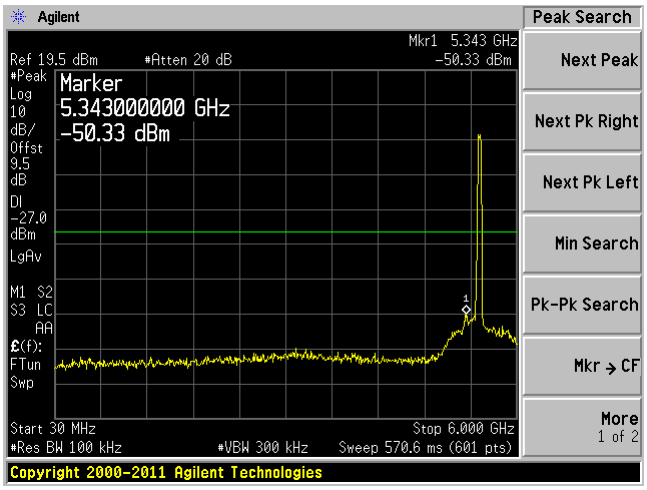


Chain J1, Plot: 6 GHz – 40 GHz

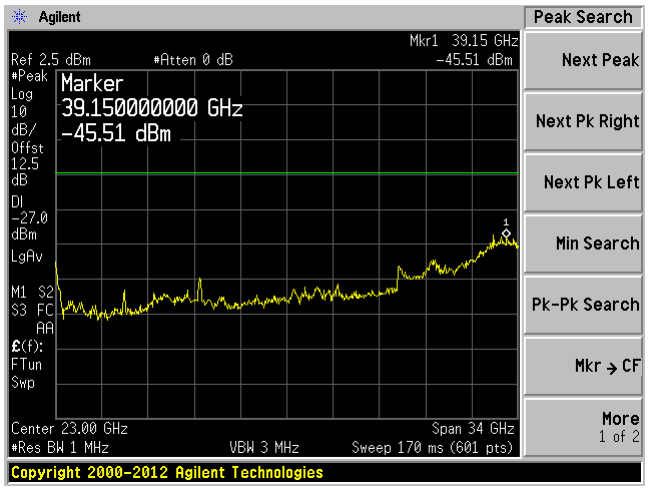


802.11n-HT40, Low Channel 5510 MHz

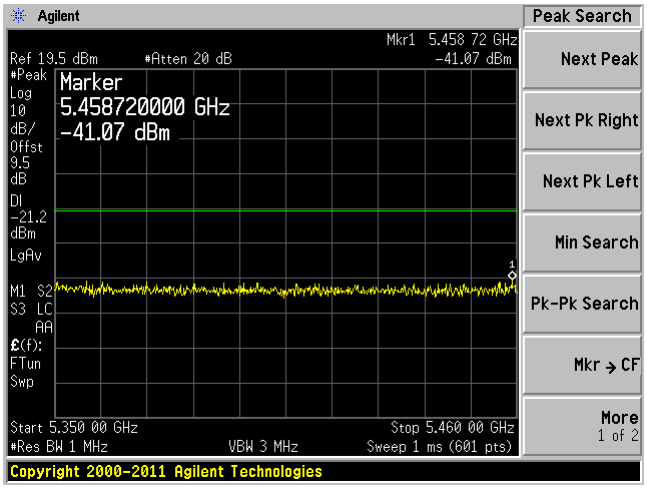
Chain J0, Plot: 30 MHz – 6 GHz



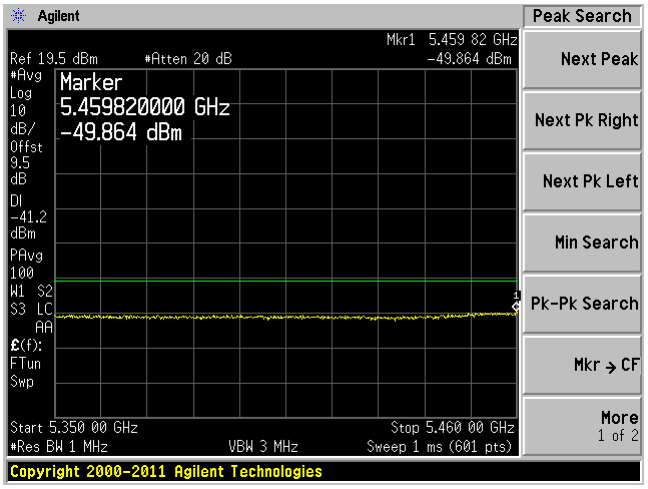
Chain J0, Plot: 6 GHz – 40 GHz



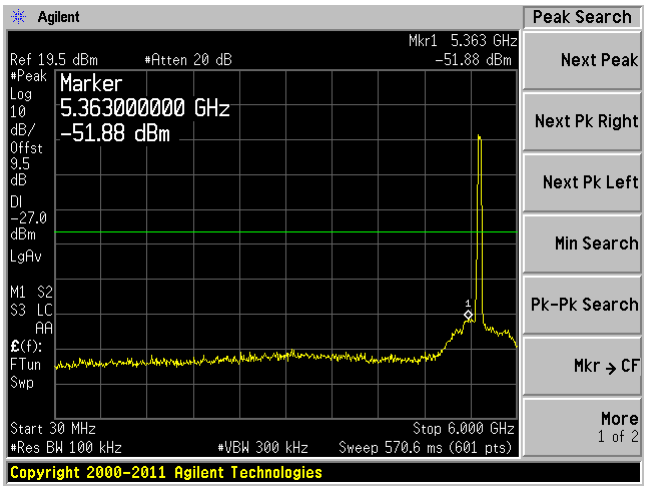
Chain J0, Plot: 5350MHz – 5460 MHz-Peak



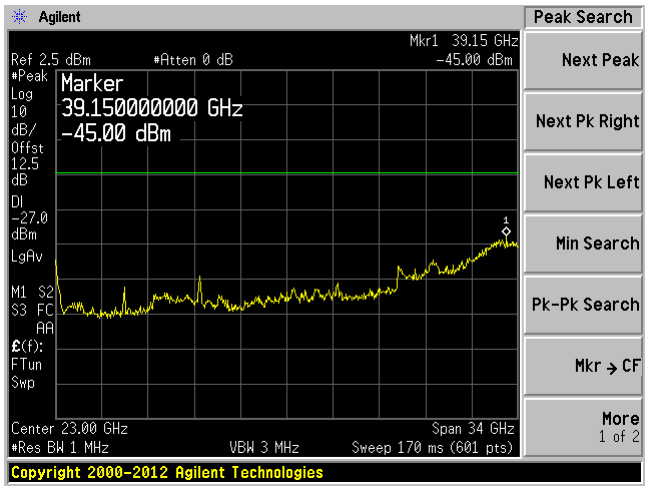
Chain J0, Plot: 5350MHz – 5460 MHz-Ave



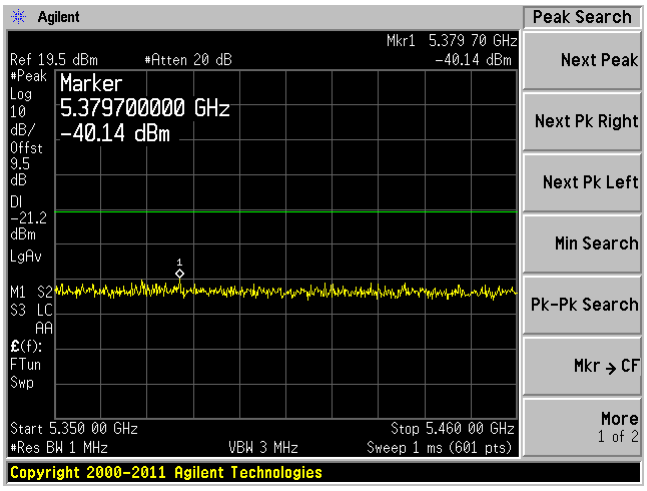
Chain J1, Plot: 30 MHz – 6 GHz



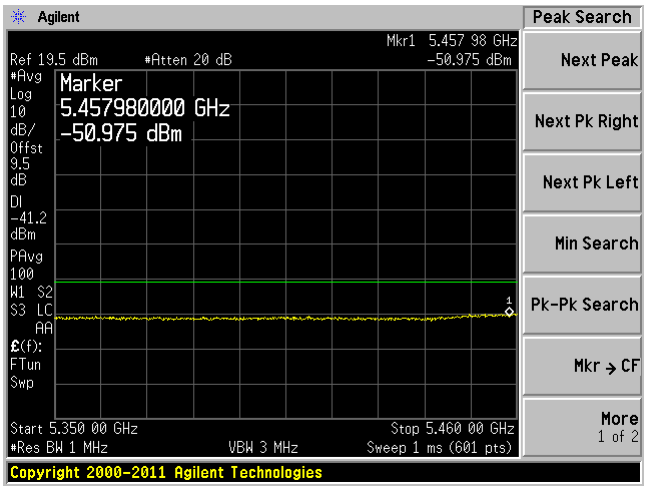
Chain J1, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 5350MHz – 5460 MHz-Peak

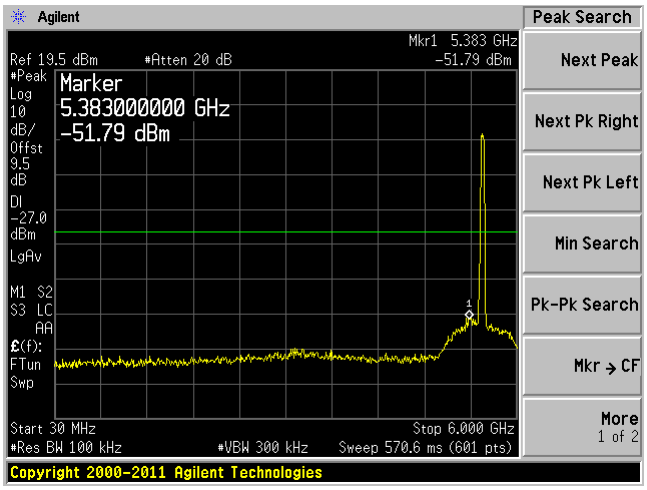


Chain J1, Plot: 5350MHz – 5460 MHz-Ave

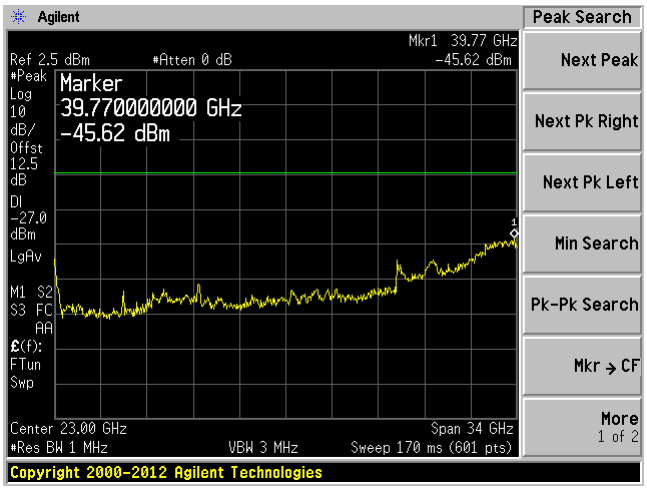


802.11n-HT40, Middle Channel 5550 MHz

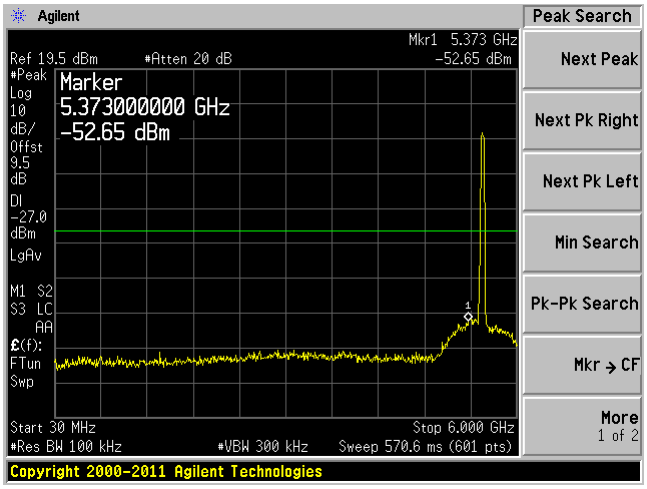
Chain J0, Plot: 30 MHz – 6 GHz



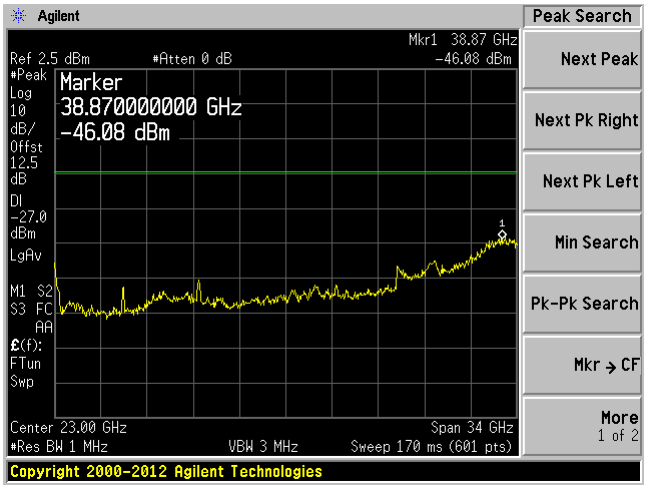
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

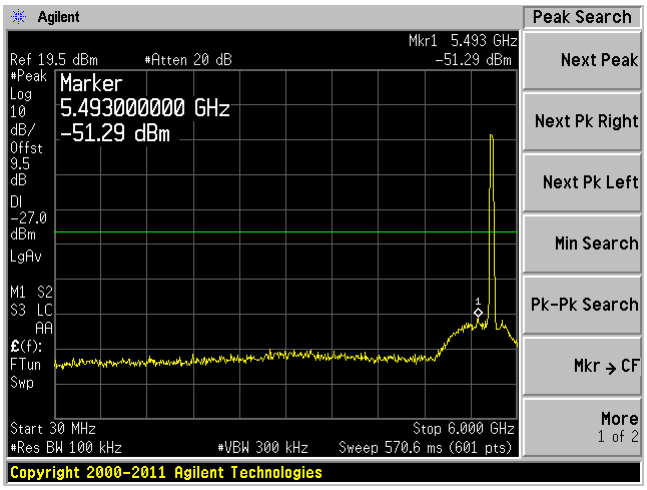


Chain J1, Plot: 6 GHz – 40 GHz

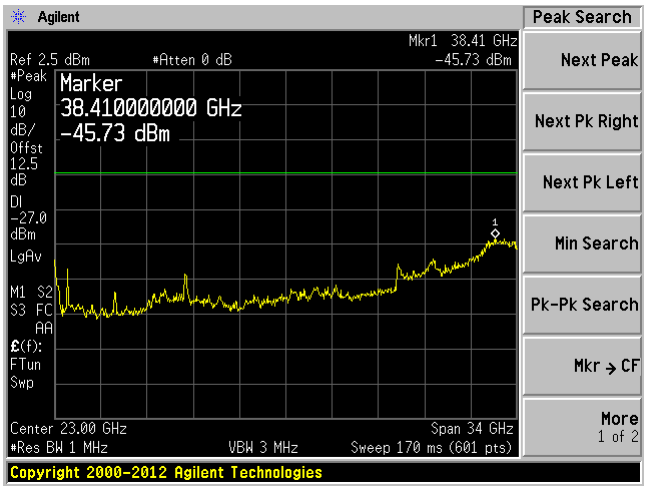


802.11n-HT40, High Channel 5670 MHz

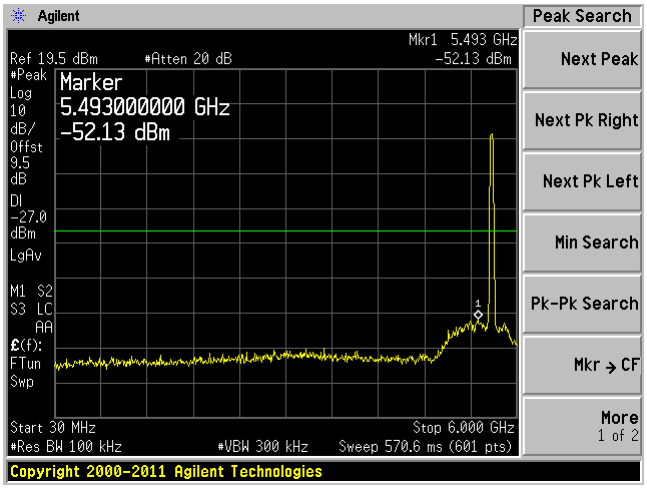
Chain J0, Plot: 30 MHz – 6 GHz



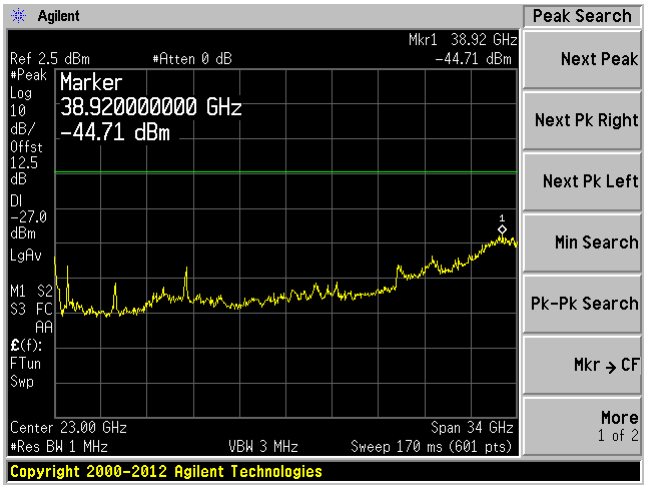
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

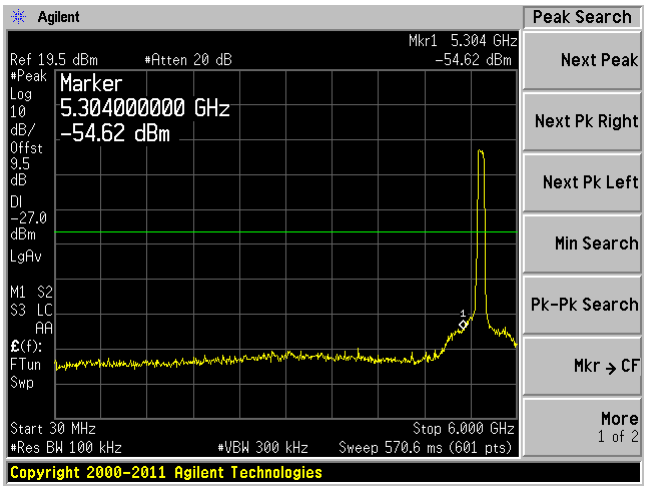


Chain J1, Plot: 6 GHz – 40 GHz

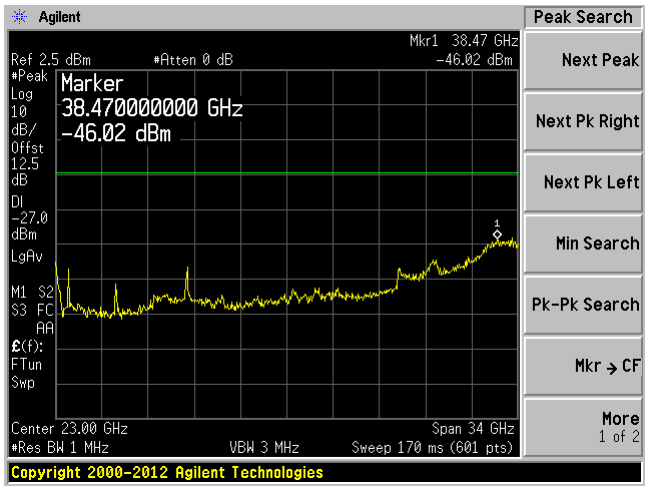


802.11ac-80, Low Channel 5530 MHz

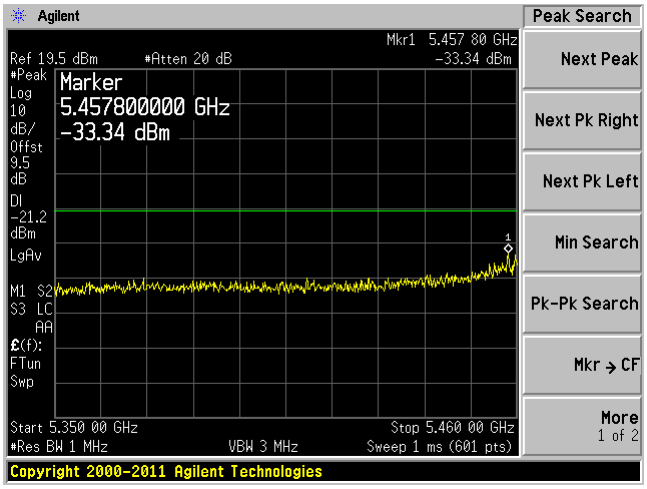
Chain J0, Plot: 30 MHz – 6 GHz



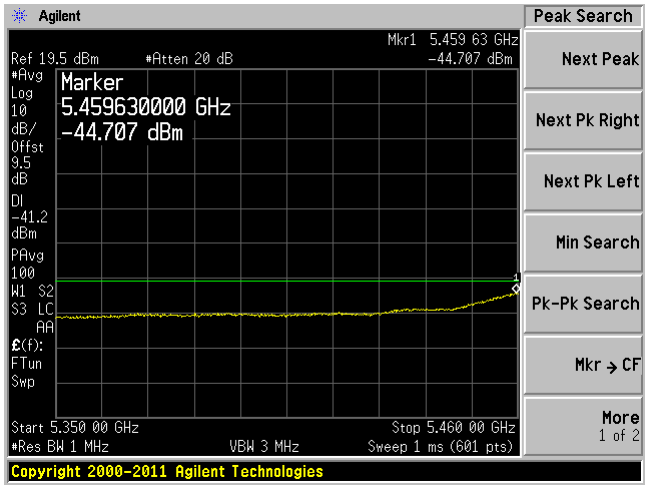
Chain J0, Plot: 6 GHz – 40 GHz



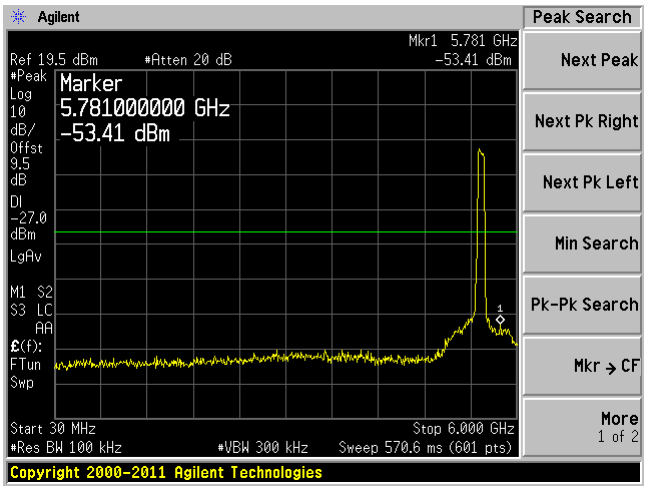
Chain J0, Plot: 5350MHz – 5460 MHz-Peak



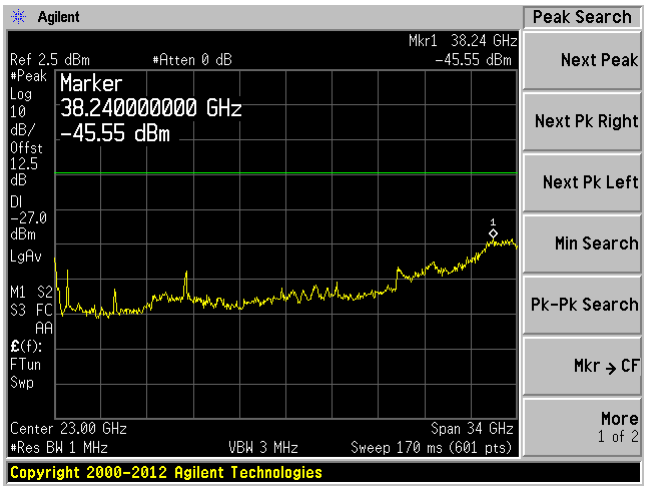
Chain J0, Plot: 5350MHz – 5460 MHz-Ave



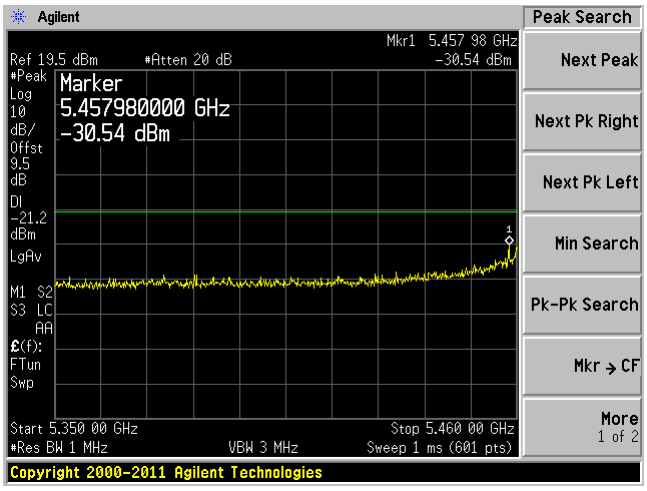
Chain J1, Plot: 30 MHz – 6 GHz



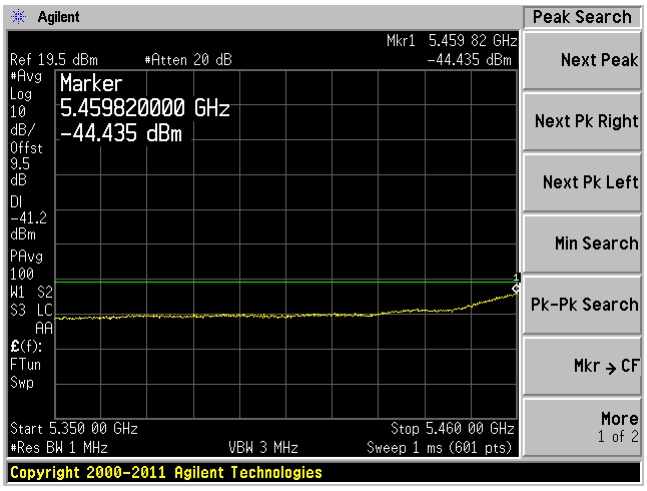
Chain J1, Plot: 6 GHz – 40 GHz



Chain J0, Plot: 5350MHz – 5460 MHz-Peak

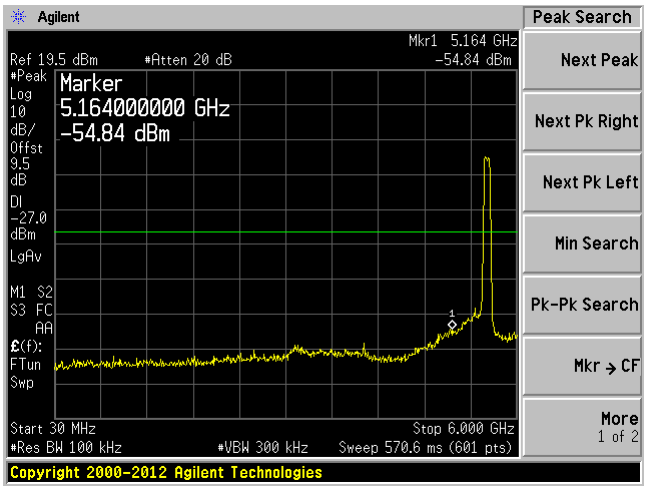


Chain J0, Plot: 5350MHz – 5460 MHz-Ave

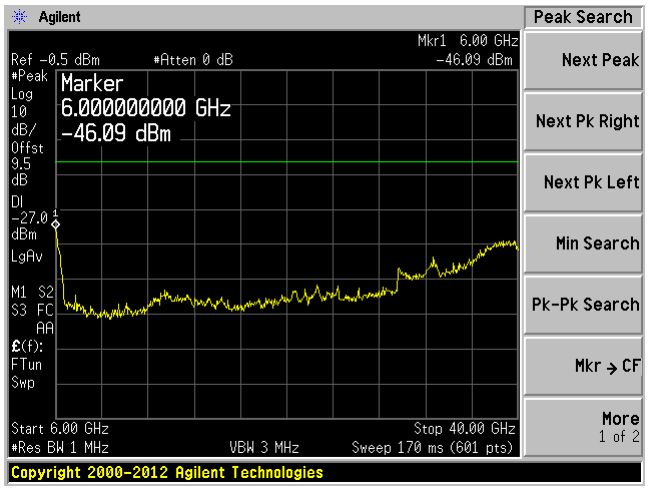


802.11ac-80, Middle Channel 5610 MHz

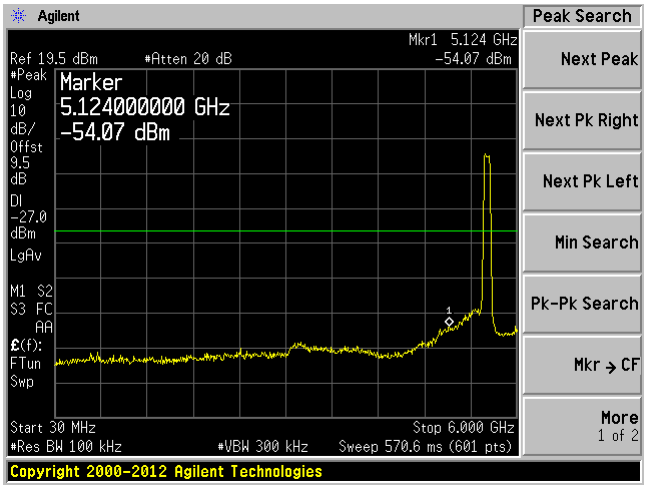
Chain J0, Plot: 30 MHz – 6 GHz



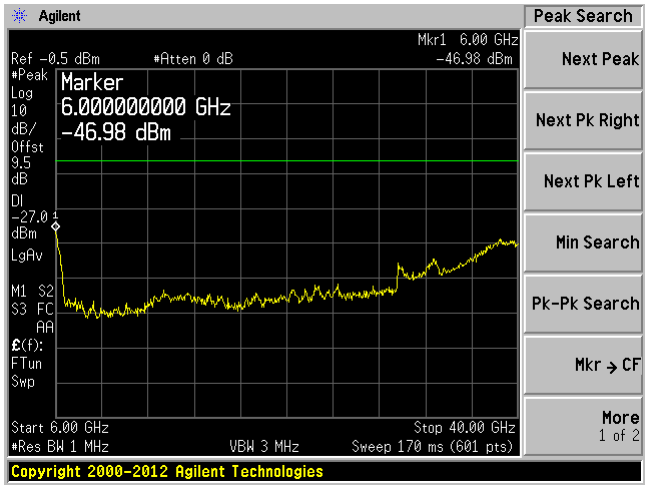
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz

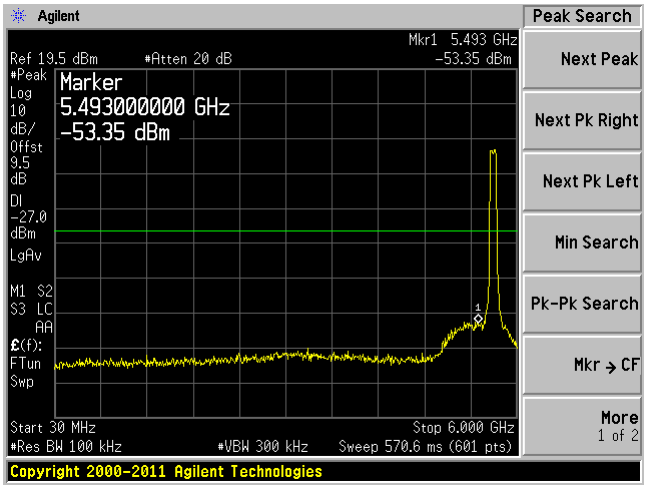


Chain J1, Plot: 6 GHz – 40 GHz

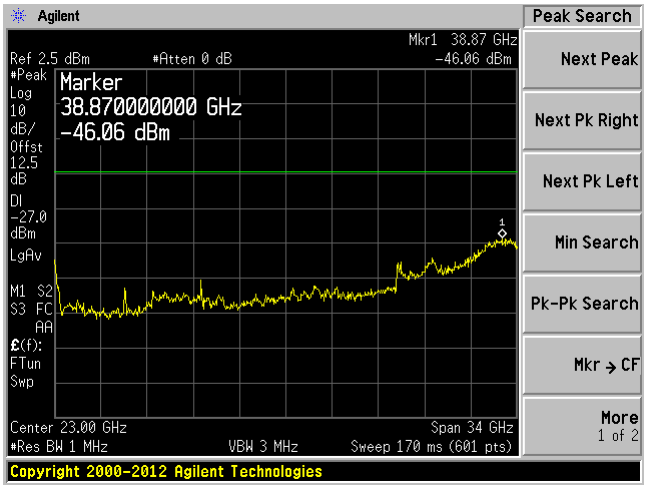


802.11ac-80, High Channel 5690 MHz

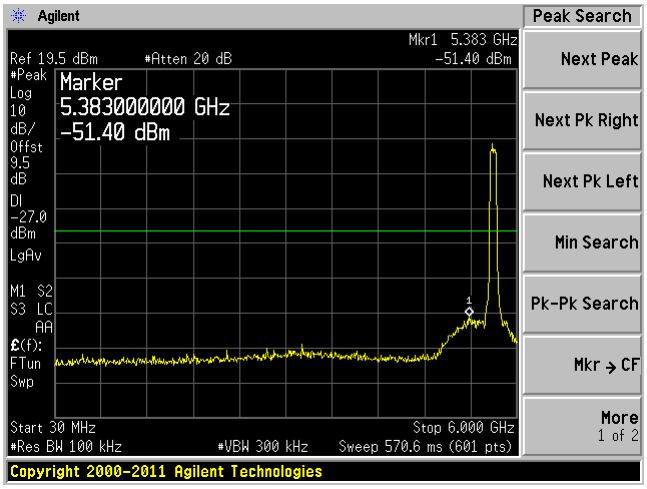
Chain J0, Plot: 30 MHz – 6 GHz



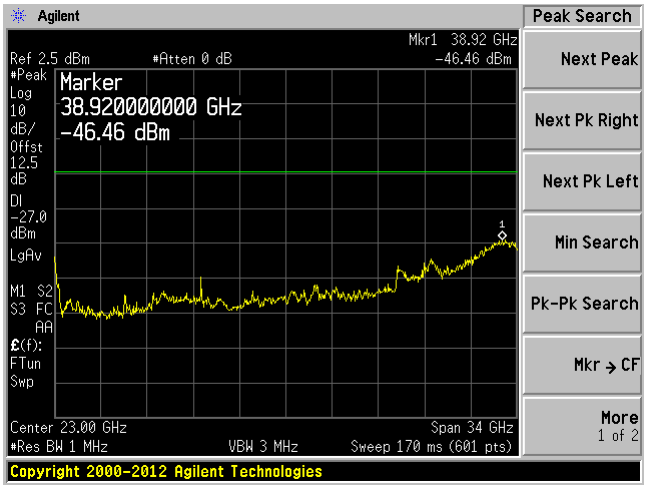
Chain J0, Plot: 6 GHz – 40 GHz



Chain J1, Plot: 30 MHz – 6 GHz



Chain J1, Plot: 6 GHz – 40 GHz



12 FCC §15.407(a) - Power Spectral Density

12.1 Applicable Standards

According to FCC §15.407(a)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

12.2 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.

Test measurements are base on FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORAMTION INFRASTRUCTURE (U-NII) DEVICES.

12.3 Test Equipment List and Details

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

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

12.4 Test Environmental Conditions

Temperature:	21-24 ºC
Relative Humidity:	40-43 %
ATM Pressure:	102.1-103.6 kPa

The testing was performed by Chen Ge on 2014-07-28 to 2014-07-29 at RF site.

12.5 Test Results

5250-5350 MHz

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	6.686	6.979	9.85	11	-1.15	18
Middle	5280	6.578	6.891	9.75	11	-1.25	18
High	5320	6.614	6.838	9.74	11	-1.26	18

802.11n-HT20 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	6.721	6.944	9.84	11	-1.16	18.5
Middle	5280	6.806	6.968	9.90	11	-1.10	18.5
High	5320	6.619	6.704	9.67	11	-1.33	18.5

802.11n-HT40 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5270	4.555	4.914	7.75	11	-3.25	20
High	5310	4.085	4.563	7.34	11	-3.66	19

802.11ac-80 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
-	5290	-3.289	-2.777	-0.02	11	-11.02	15

5470-5725 MHz

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5550	7.038	7.099	10.08	11	-0.92	18
Middle	5580	7.133	7.25	10.20	11	-0.80	18
High	5700	7.036	7.148	10.10	11	-0.90	18

802.11n-HT20 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5500	6.219	6.611	9.42	11	-1.58	18
Middle	5580	6.629	6.884	9.77	11	-1.23	18
High	5700	6.562	6.82	9.70	11	-1.30	18

802.11n-HT40 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5510	3.599	3.927	6.78	11	-4.22	19
Middle	5550	3.792	4.003	6.91	11	-4.09	19
High	5670	4.362	4.475	7.43	11	-3.57	19

802.11ac-80 mode

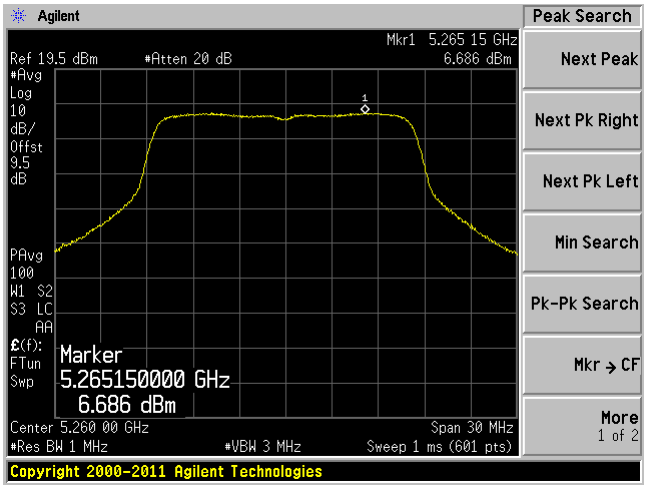
Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5530	0.597	0.951	3.79	11	-7.21	19
Middle	5610	0.861	0.930	3.90	11	-7.10	19
High	5690	0.938	1.039	4.00	11	-7.00	19

Please refer to the following plots.

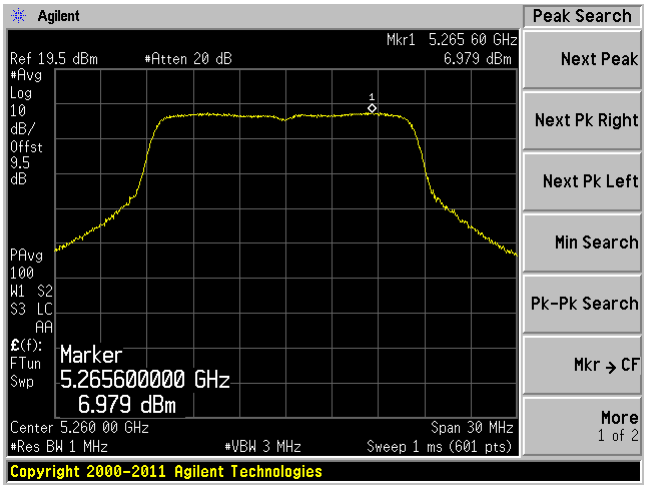
5.3 GHz Band

802.11a, Low Channel, 5260 MHz

Chain 0

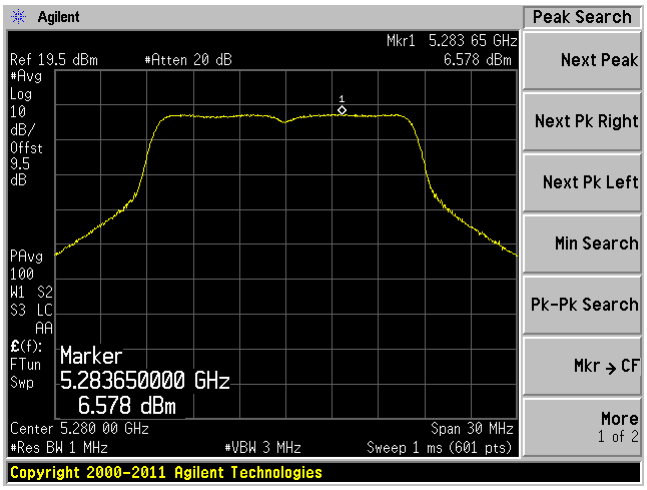


Chain 1

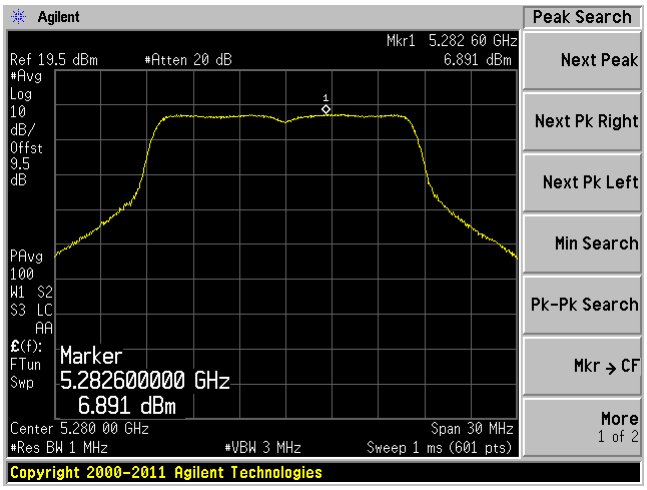


802.11a, Middle Channel, 5280 MHz

Chain 0

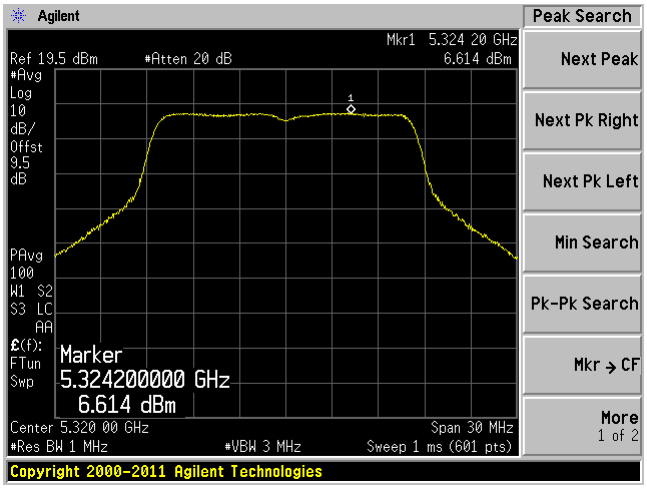


Chain 1

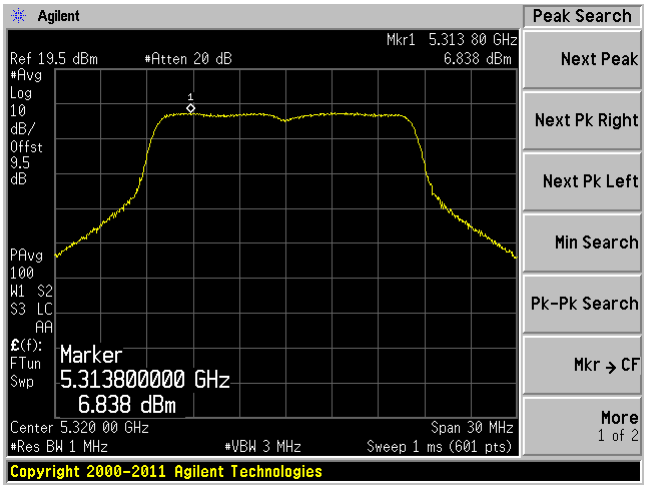


802.11a, High Channel, 5320 MHz

Chain 0

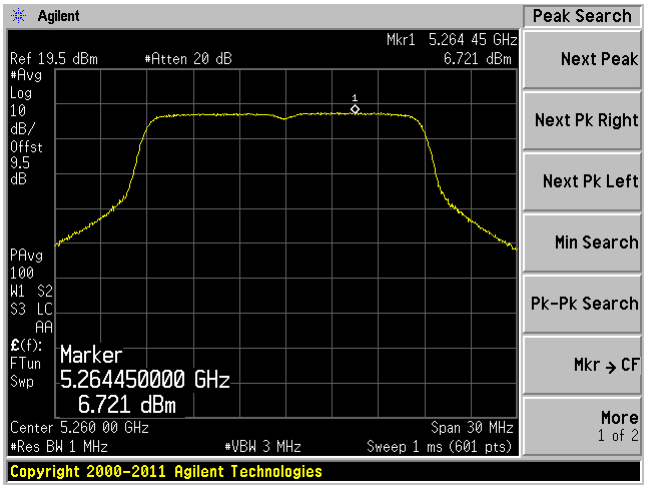


Chain 1

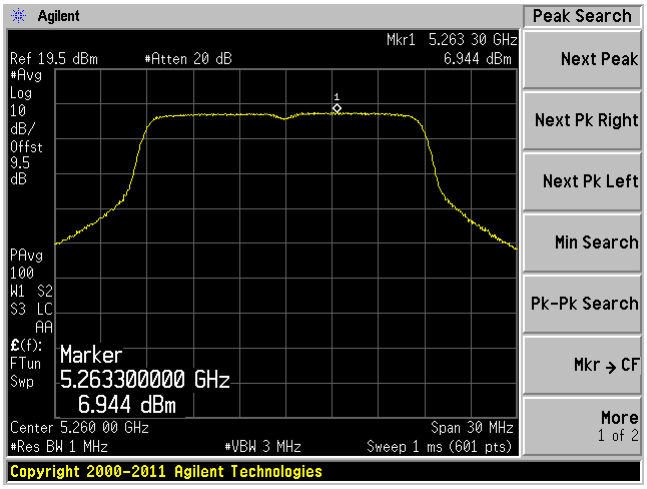


802.11n-HT 20, Low Channel 5260 MHz

Chain 0

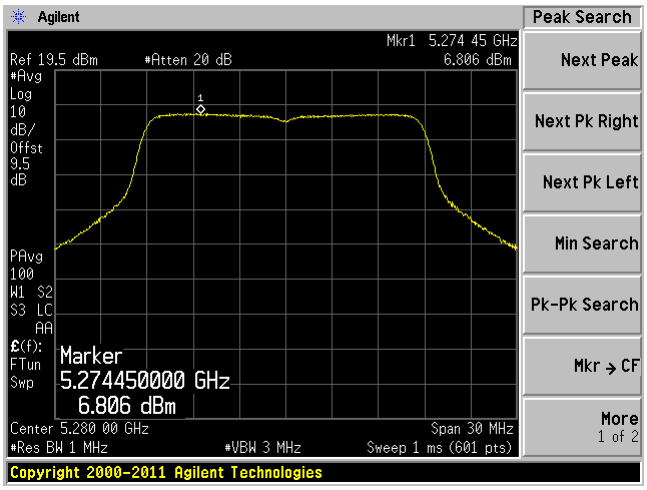


Chain 1

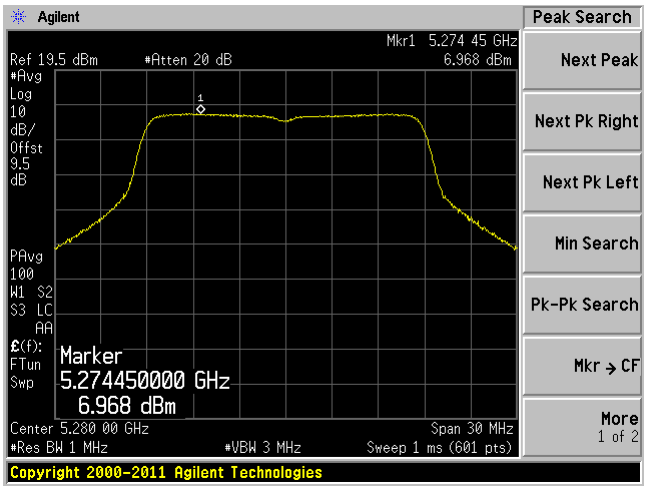


802.11n-HT20, Middle Channel 5280 MHz

Chain 0

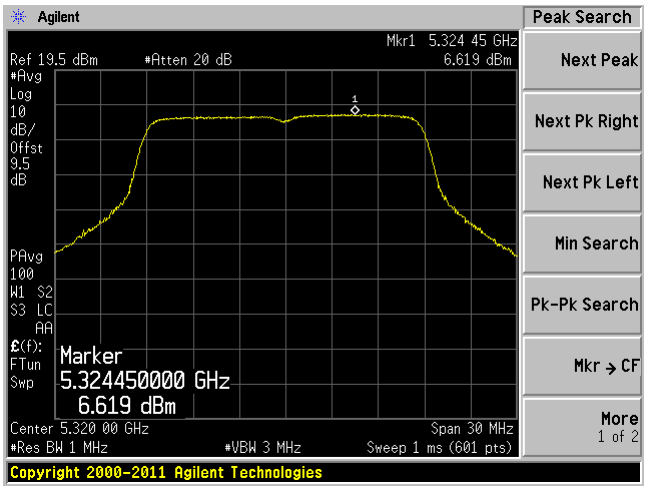


Chain 1

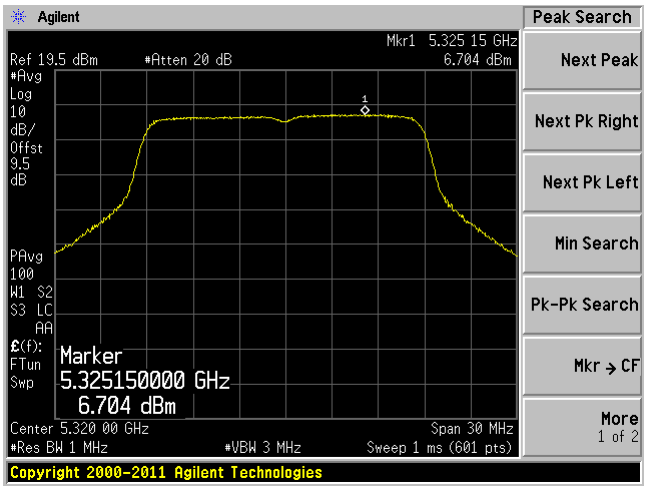


802.11n-HT20, High Channel, 5320 MHz

Chain 0

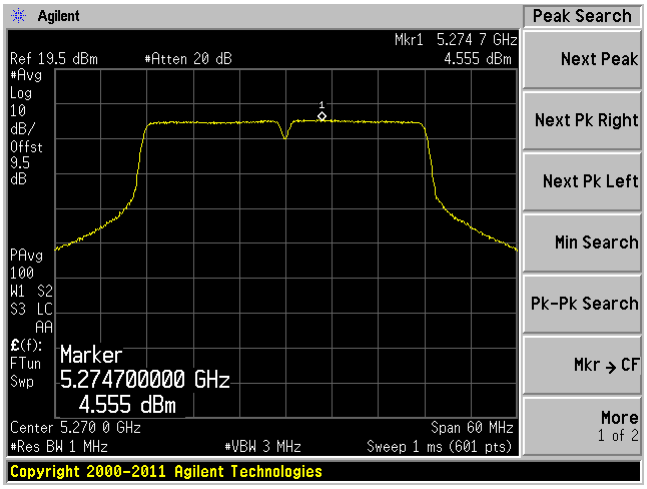


Chain 1

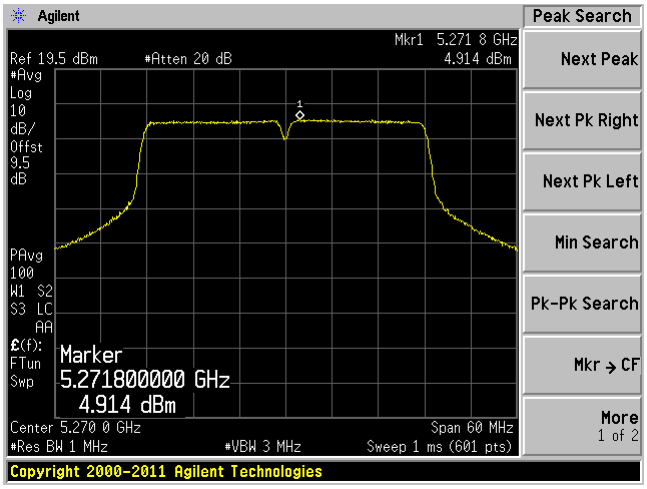


802.11n-HT40, Low Channel 5270 MHz

Chain 0

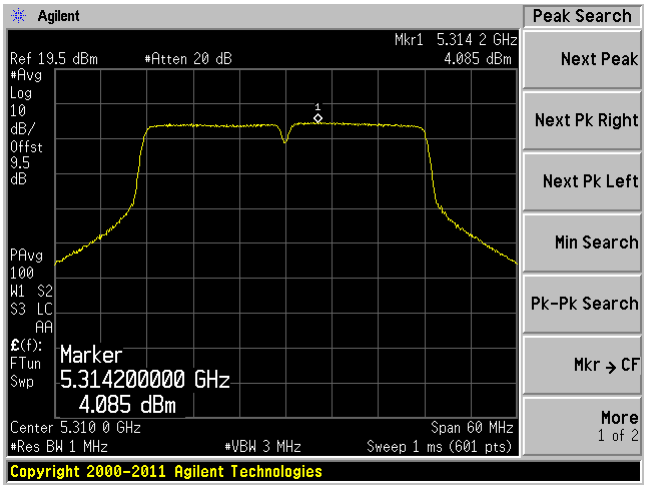


Chain 1

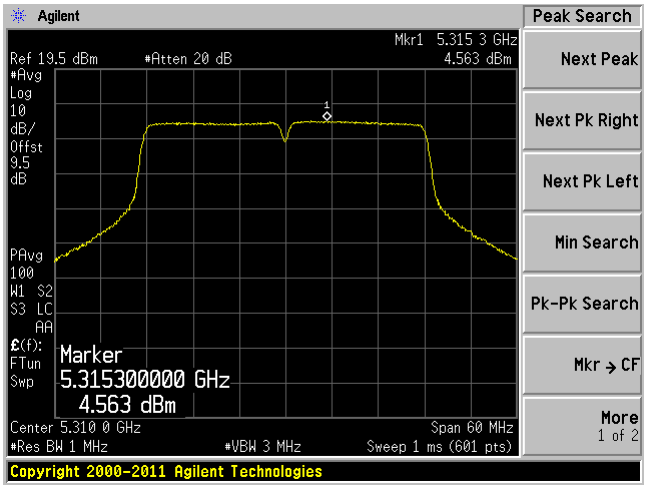


802.11n-HT40, High Channel 5310 MHz

Chain 0

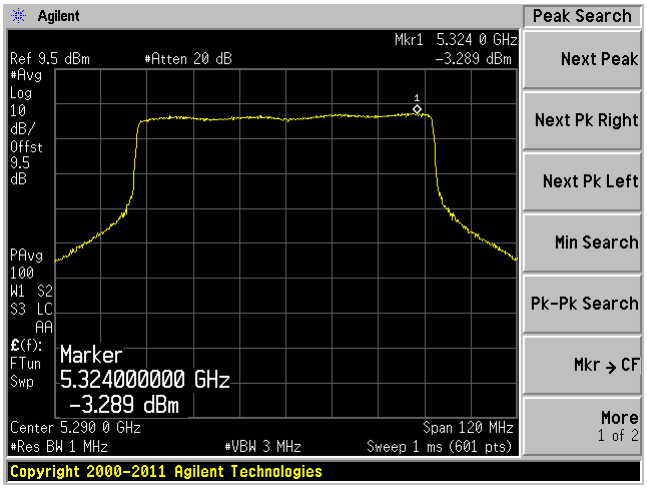


Chain 1

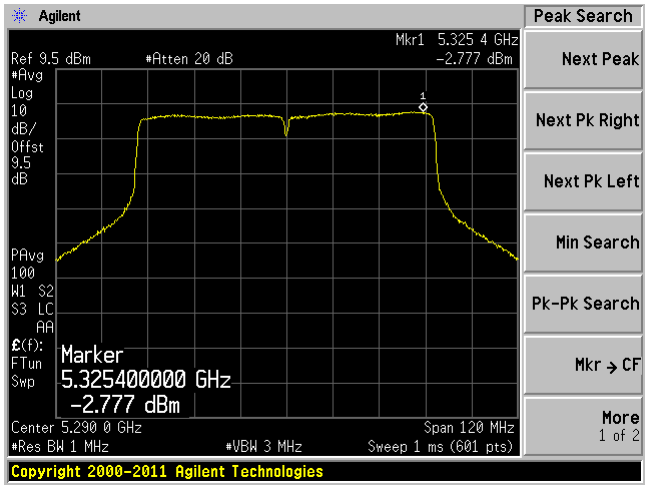


802.11ac-VHT80, High Channel 5290 MHz

Chain 0



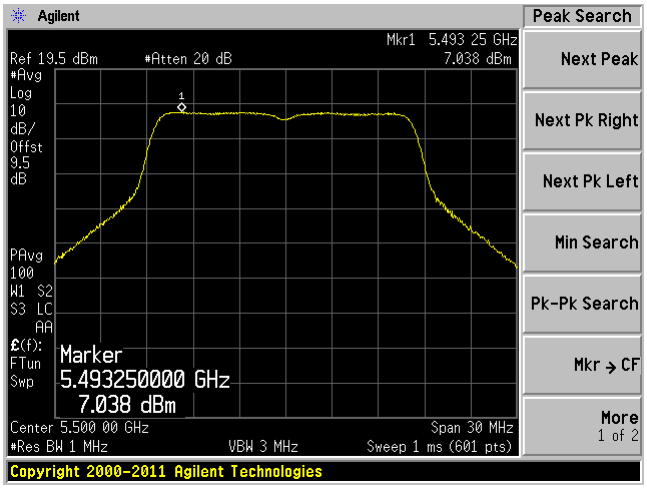
Chain 1



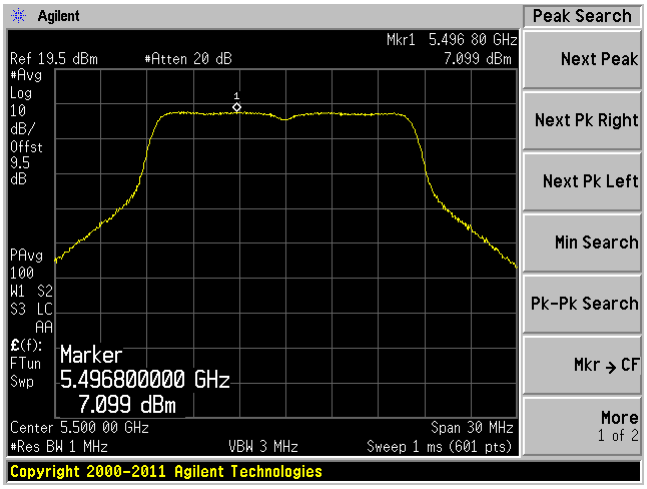
5.6 GHz Band

802.11a, Low Channel, 5500 MHz

Chain 0

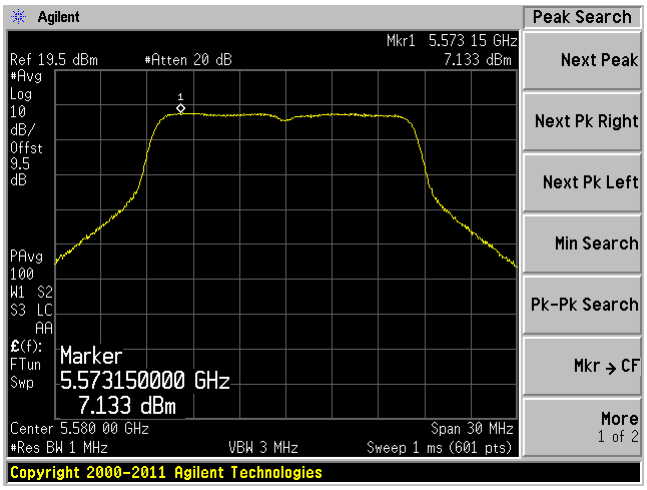


Chain 1

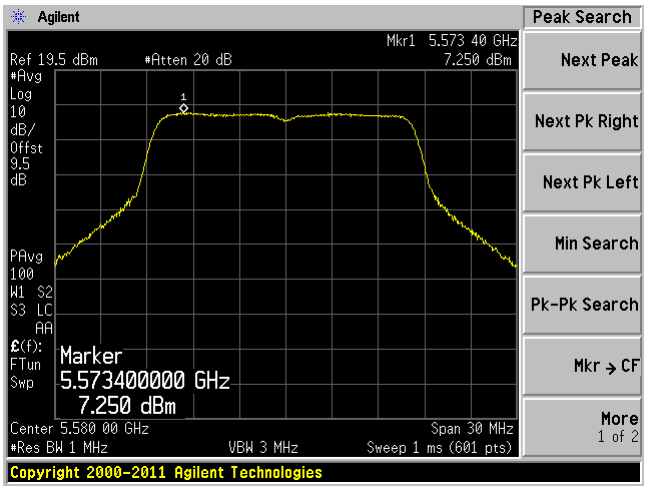


802.11a, Middle Channel, 5580 MHz

Chain 0

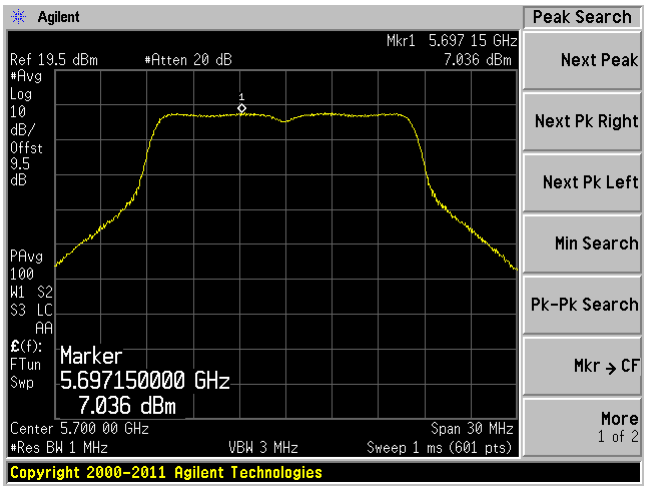


Chain 1

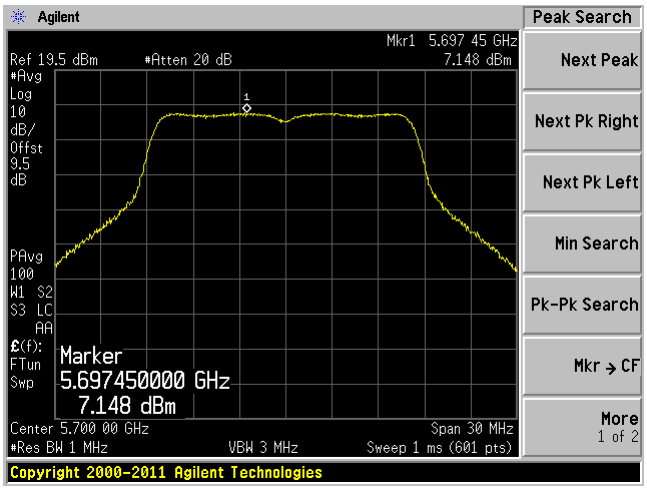


802.11a, High Channel, 5700 MHz

Chain 0

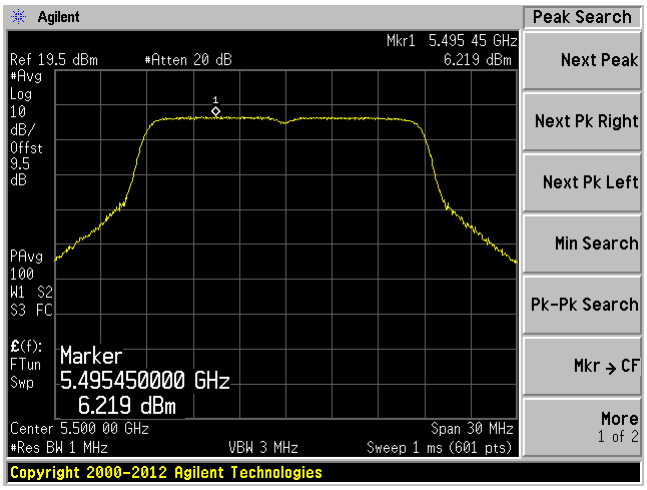


Chain 1

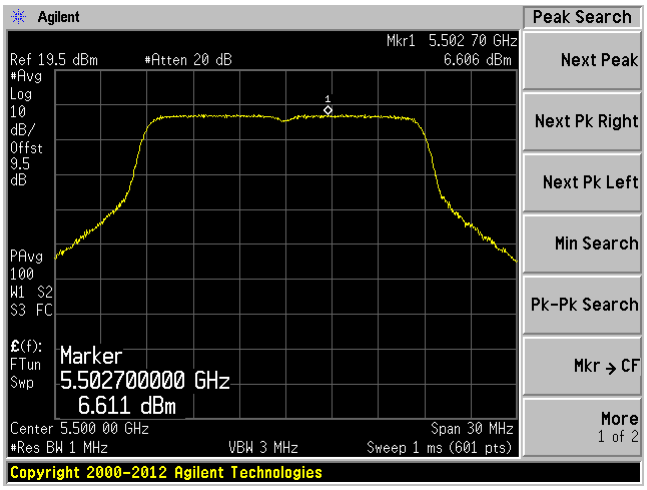


802.11n-HT 20, Low Channel 5500 MHz

Chain 0

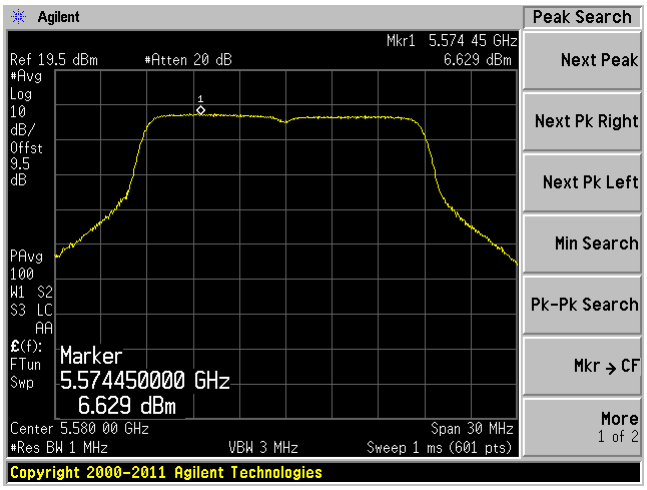


Chain 1

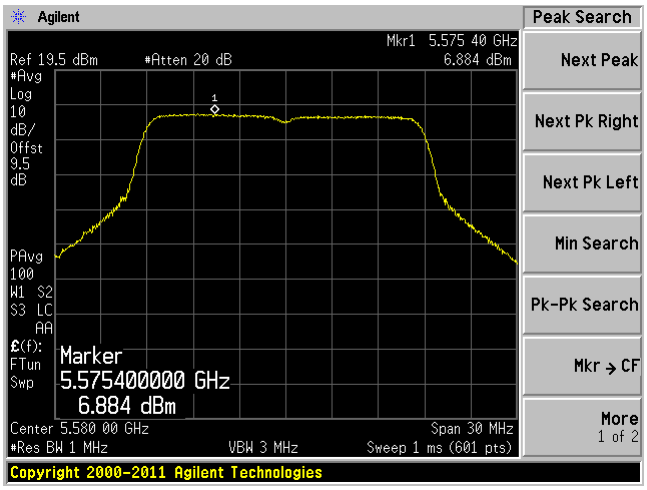


802.11n-HT20, Middle Channel 5580 MHz

Chain 0

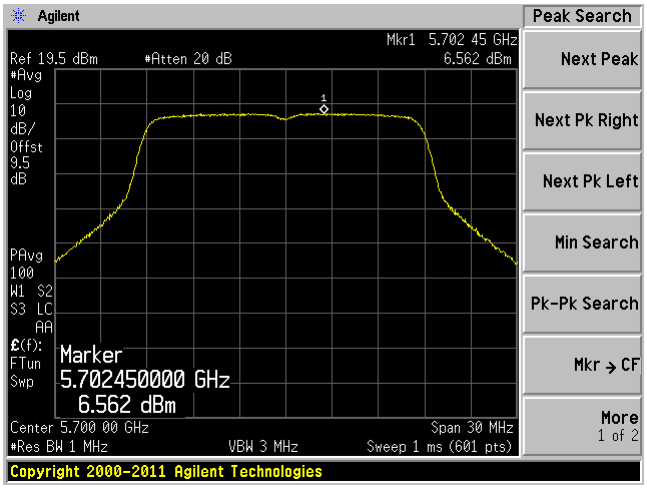


Chain 1

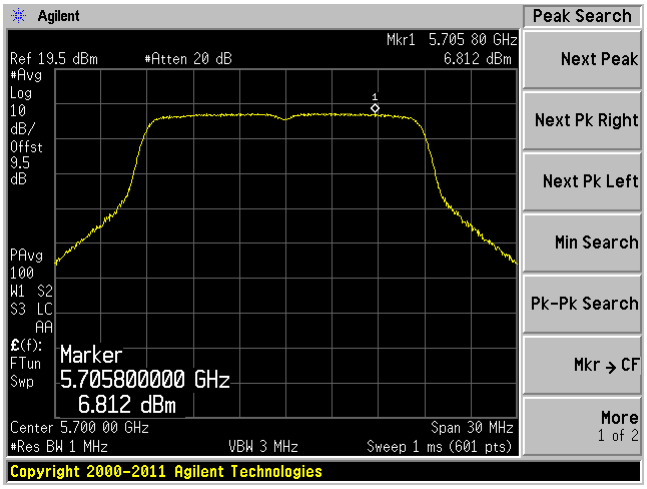


802.11n-HT20, High Channel 5700 MHz

Chain 0

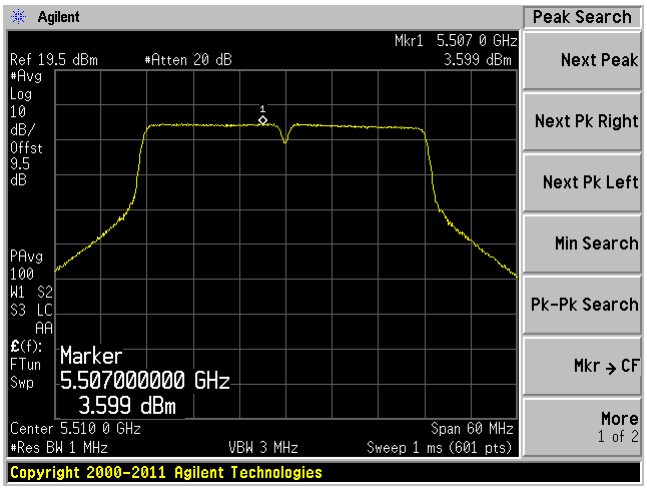


Chain 1

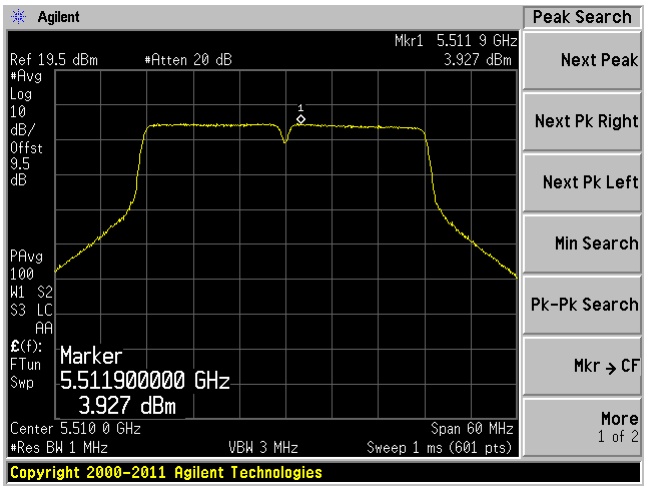


802.11n-HT40, Low Channel 5510 MHz

Chain 0

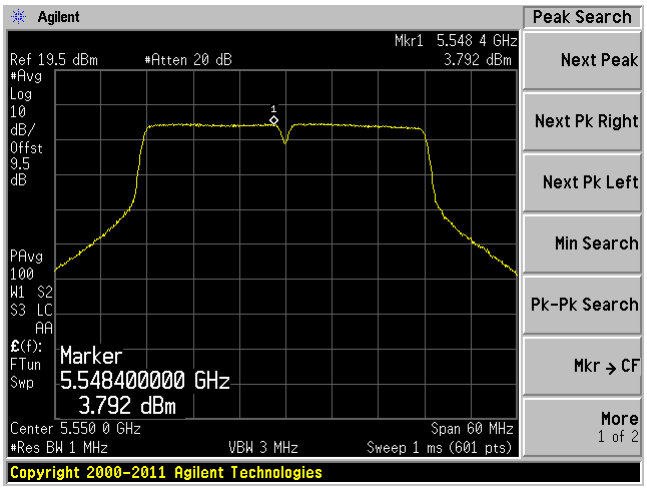


Chain 1

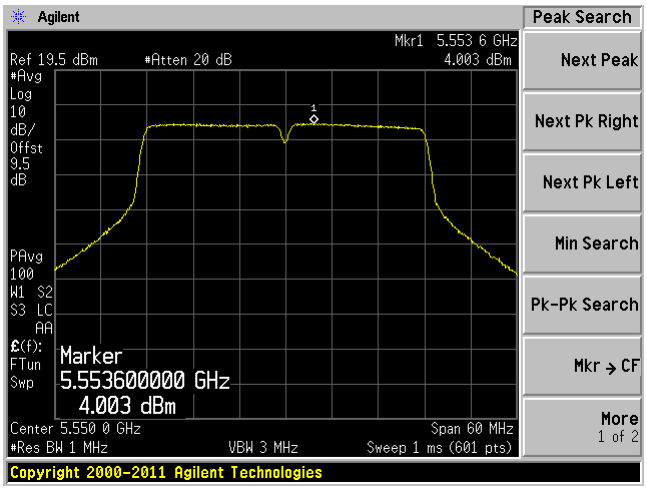


802.11n-HT40, Middle Channel 5550 MHz

Chain 0

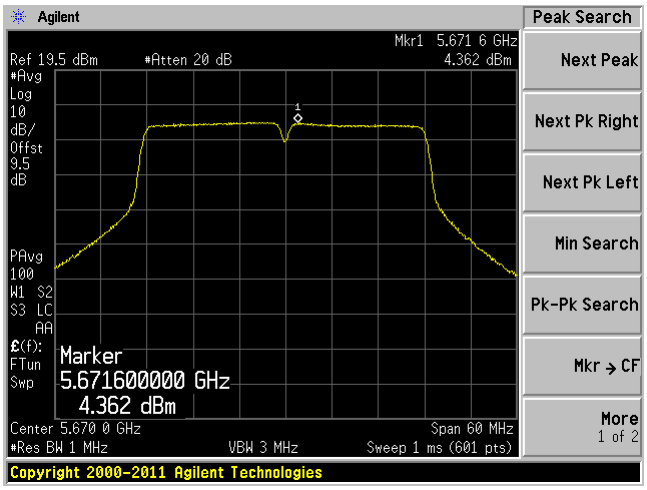


Chain 1

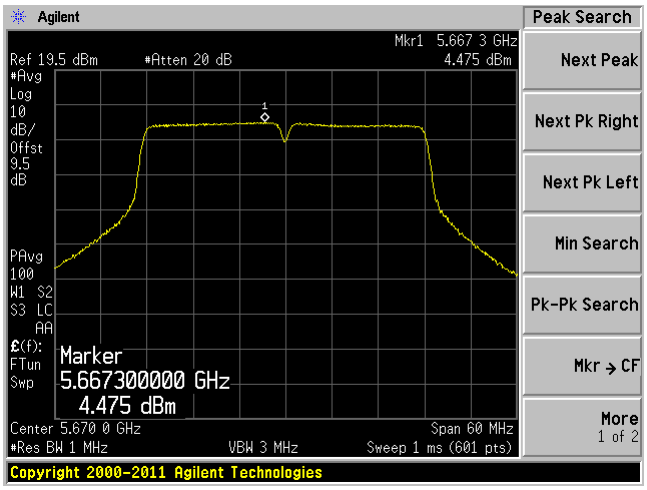


802.11n-HT40, High Channel 5670 MHz

Chain 0

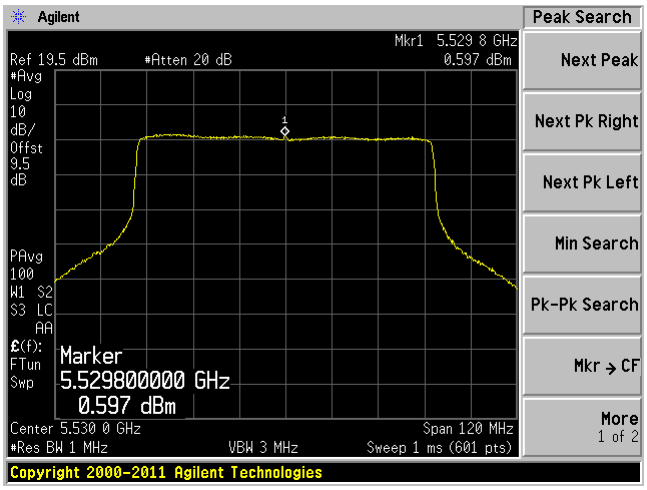


Chain 1

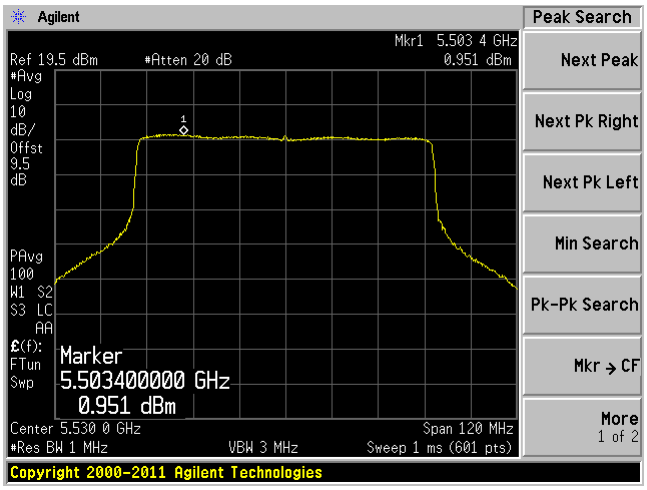


802.11ac-VHT80, 5530 MHz

Chain 0

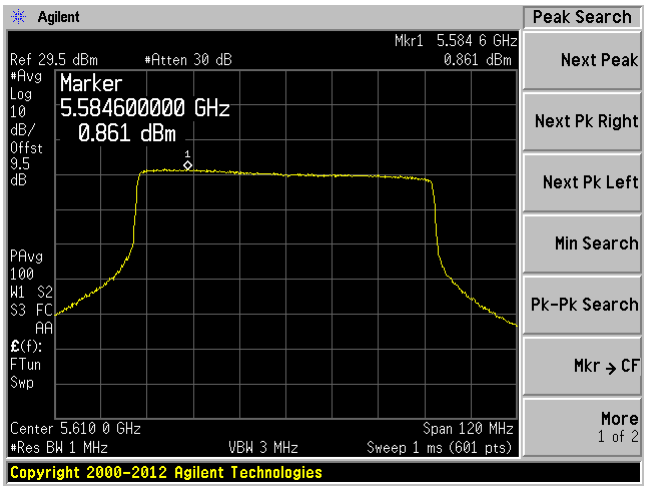


Chain 1

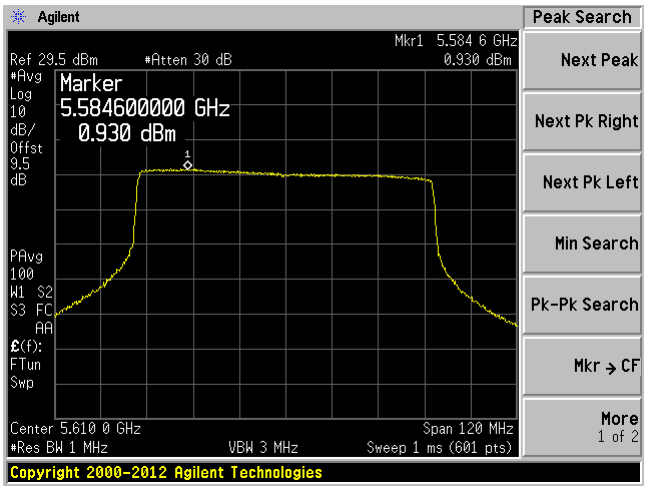


802.11ac-VHT80, 5610 MHz

Chain 0

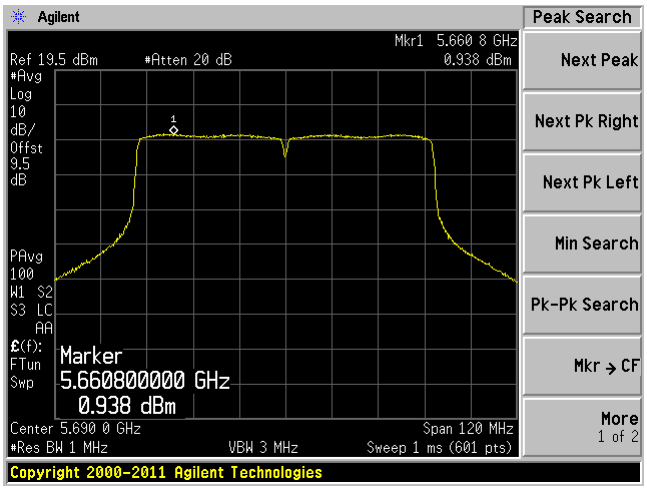


Chain 1



802.11ac-VHT80, 5690 MHz

Chain 0



Chain 1