FCC PART 15.407
TEST AND MEASUREMENT REPORT

For

NVIDIA Corporation

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

FCC ID: VOB-P1761W

Report Type: Original Report	**Product Type:** 802.11a/b/g/n WLAN+BT Combo Radio Tablet PC	
Prepared By	Cipher Chu	
Report Number	R1405121-407 Rev A	
Report Date	2014-07-10	
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1405121-407	Original Report	2014-06-16
1	R1405121-407 Rev A	Revised Report	2014-07-10

1 General Description

1.1 Product Description for Equipment under Test (EUT)

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

1.2 Mechanical Description of EUT

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

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

1.3 Objective

This report is prepared on behalf of *NVIDIA Corporation, in* accordance with 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.

1.4 Related Submittal(s)/Grant(s)

N/A.

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

2.3 Equipment Modifications

No modifications were made to the EUT.

2.4 Local Support Equipment

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

2.5 EUT Internal Configuration Details

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

2.6 Power Supply and Line Filters

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

2.7 Interface Ports and Cabling

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

3 Summary of Test Results

FCC Rules	Description of Test	Result
FCC §15.407(f), §2.1093	RF Exposure	Compliant*
FCC §15.203	Antenna Requirement	Compliant
FCC §15.207	AC Power Line Conducted Emissions	Compliant
FCC §15.209(a), 15.407(b)	Spurious Radiated Emissions	Compliant
FCC §15.407(a)	Emission Bandwidth	Compliant
FCC §407(a)	Peak Output Power Measurement	Compliant
FCC §2.1051, §15.407(b)	Band Edges	Compliant
FCC §15.407(a)	Power Spectral Density	Compliant
FCC §2.1051, §15.407(b)	Spurious Emissions at Antenna Terminals	Compliant
FCC §15.407(h)	Dynamic Frequency Selection (DFS).	Compliant**

Compliant*: Please refer to BACL SAR report No.: R1405121-SAR
Compliant**: Please refer to BACL DFS report No.: R1405121-DFS

4 FCC §15.203 – Antenna Requirements

4.1 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.

4.2 Antenna Description

Antenna Location	Antenna Gain (dBi) @ 5.2 GHz	Antenna Gain (dBi) @ 5.3 GHz	Antenna Gain (dBi) @ 5.6 GHz	Antenna Gain (dBi) @ 5.8 GHz
WiFi 0	3.7	3.7	3.5	5.1
WiFi 1	2.0	2.0	3.5	2.4
Correlated Directional Gain	5.90	5.90	6.5	6.86

The antenna type is integral antenna; it complies with the antenna requirement. Please refer to the internal photos.

5 FCC §15.207 - AC Power Line Conducted Emissions

5.1 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.

5.2 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.

5.3 Test Procedure

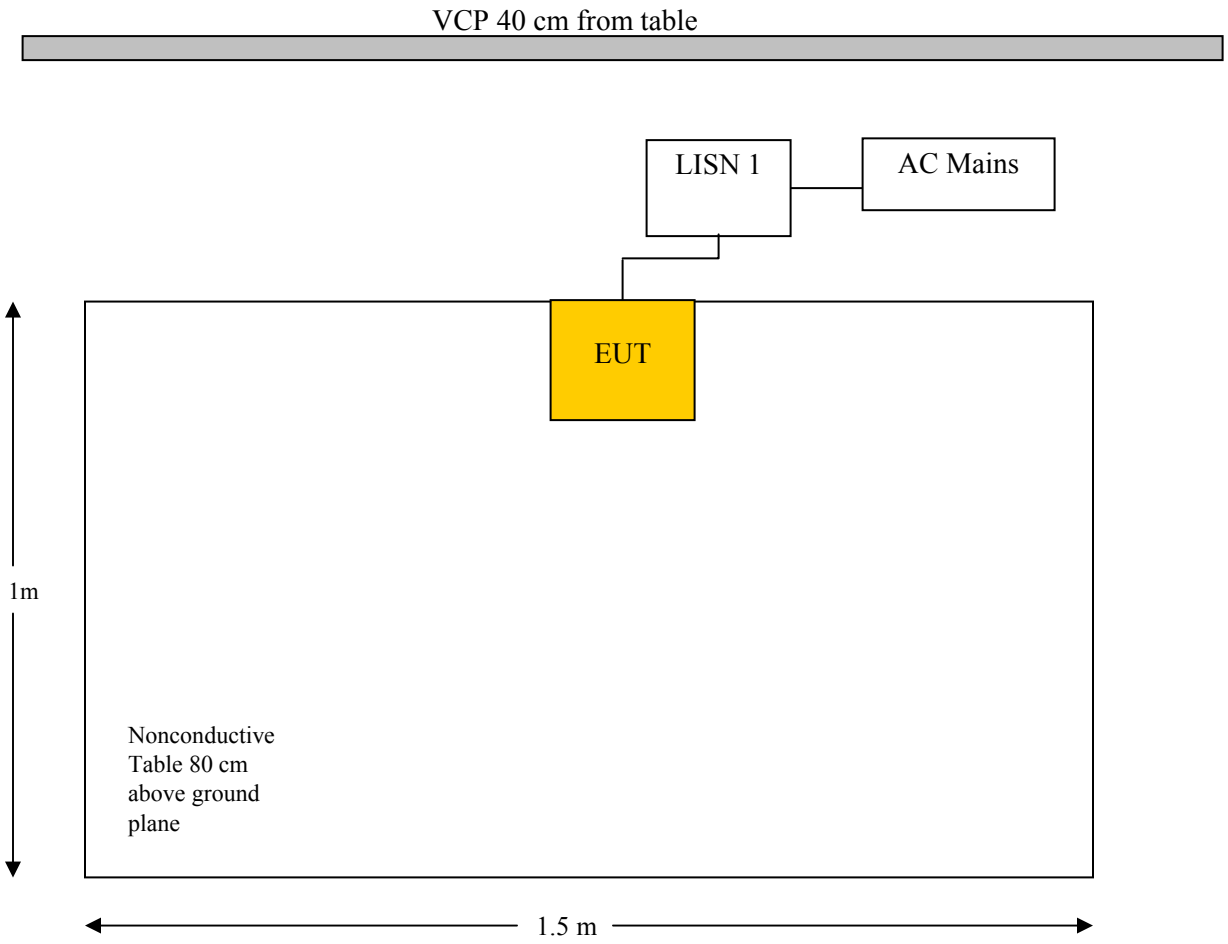
During the conducted emissions test, the power cord of the EUT host system was connected to the mains outlet of the LISN-1 and the power cord of the support equipment was connected to LISN-2.

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”.

5.4 Test Setup Block Diagram

AC/DC Adaptor:



5.5 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

5.6 Test Equipment List and Details

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

5.7 Test Environmental Conditions

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

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

5.8 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:

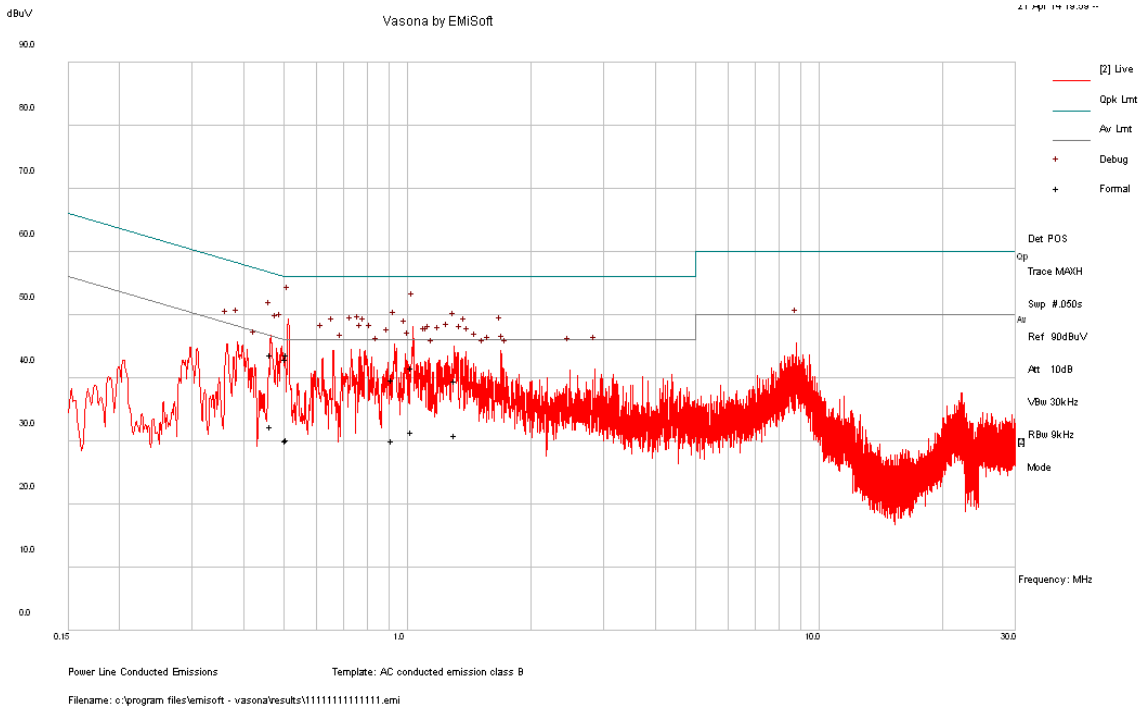
5 GHz Band

Connection: AC/DC adapter connected to 120 V/60 Hz, AC			
Margin (dB)	**Frequency (MHz)**	**Conductor Mode (Line/Neutral)**	**Range (MHz)**
-12.31	0.510111	Line	0.15-30

5.9 Conducted Emissions Test Plots and Data

Transmitting with 5G Band:

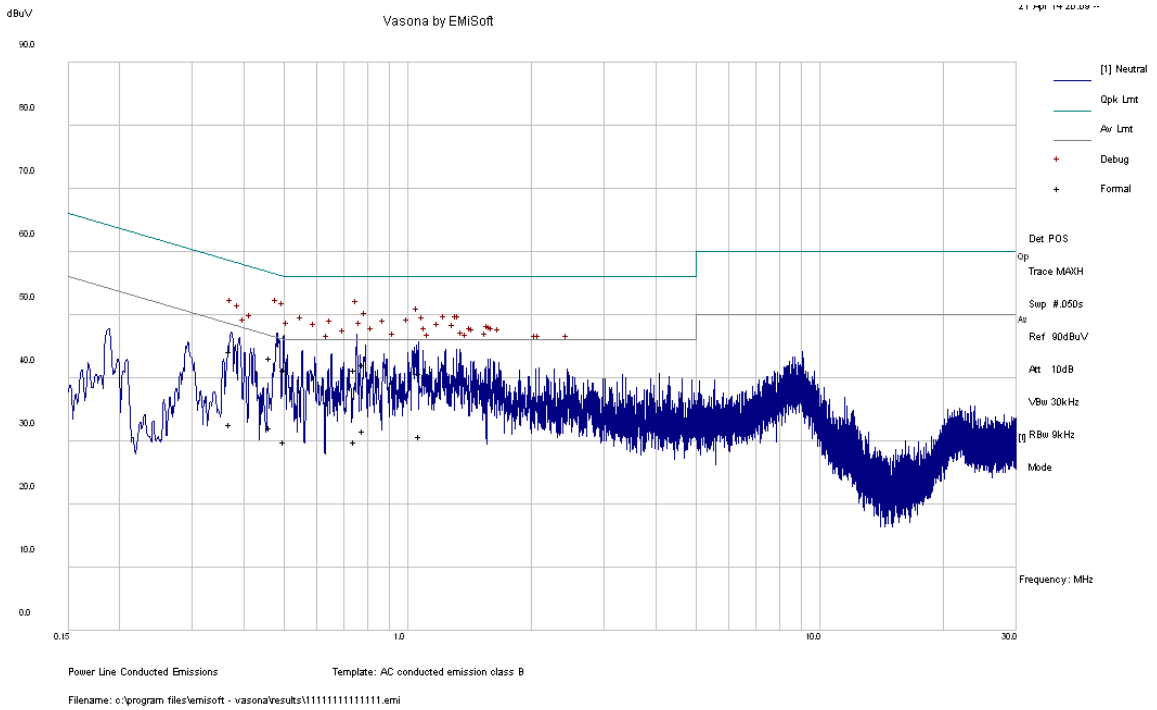
120 V, 60 Hz – Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.510111	43.69	Line	56	-12.31	QP
0.467301	43.78	Line	56.56	-12.78	QP
0.50679	42.98	Line	56	-13.02	QP
1.028445	41.7	Line	56	-14.30	QP
0.917604	39.69	Line	56	-16.31	QP
1.306857	39.53	Line	56	-16.47	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.467301	32.33	Line	46.56	-14.24	Ave.
1.028445	31.5	Line	46	-14.50	Ave.
1.306857	30.94	Line	46	-15.06	Ave.
0.510111	30.19	Line	46	-15.81	Ave.
0.50679	30.1	Line	46	-15.90	Ave.
0.917604	30.06	Line	46	-15.94	Ave.

120 V, 60 Hz – Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.465012	43.27	Neutral	56.6	-13.33	QP
0.779799	42.17	Neutral	56	-13.83	QP
0.369963	44.29	Neutral	58.5	-14.22	QP
0.745773	41.32	Neutral	56	-14.68	QP
0.502017	41.28	Neutral	56	-14.72	QP
1.073499	40.77	Neutral	56	-15.23	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.779799	31.67	Neutral	46	-14.33	Ave.
0.465012	32.11	Neutral	46.6	-14.49	Ave.
1.073499	30.8	Neutral	46	-15.20	Ave.
0.369963	32.65	Neutral	48.5	-15.85	Ave.
0.502017	29.96	Neutral	46	-16.04	Ave.
0.745773	29.92	Neutral	46	-16.08	Ave.

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

6.1 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.

6.2 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.

6.3 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

6.4 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

6.5 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.*

6.6 Test Environmental Conditions

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

The testing was performed by Cipher Chu on 2014-05-14 to 2014-05-23 at 5 meter 3.
Note: the EUT was tested in the worst case orientation (flat).

6.7 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

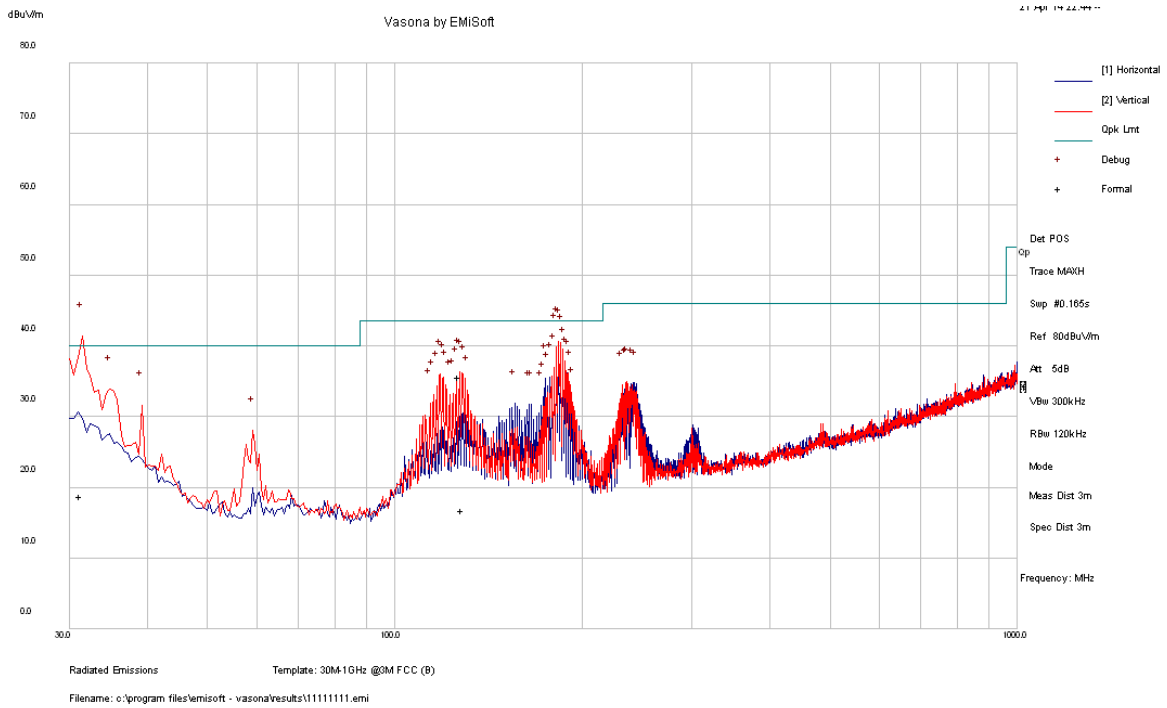
Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-7.81	126.932	Vertical	30MHz-1GHz

1 GHz-40 GHz

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-0.73	5350	Horizontal	1 GHz-40 GHz

6.8 Radiated Emissions Test Result Data

1) 30 MHz – 1 GHz



Frequency MHz	Cord. Reading (dBµV/m)	Measurement Type	Antenna Polarity (H/V)	Antenna Height (cm)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
126.932	35.69	QP	V	98	26	43.5	-7.81
31.2095	18.7	QP	V	98	343	40	-21.30
128.189	16.71	QP	V	203	27	43.5	-26.79

2) 1–40 GHz

5.2 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 5180 MHz											
5180	69.83	75	100	V	33.605	4.52	0	107.955	N/A	N/A	Peak
5180	72.7	61	100	H	33.605	4.52	0	110.825	N/A	N/A	Peak
5180	57.42	75	100	V	33.605	4.52	0	95.545	N/A	N/A	Ave
5180	59.95	61	100	H	33.605	4.52	0	98.075	N/A	N/A	Ave
5150	28.68	75	100	V	33.605	4.52	0	66.805	68.2	-1.395	Peak
5150	28.13	61	100	H	33.605	4.52	0	66.255	68.2	-1.945	Peak
5150	14.79	75	100	V	33.605	4.52	0	52.915	54	-1.085	Ave
5150	14.77	61	100	H	33.605	4.52	0	52.895	54	-1.105	Ave
10360	35.85	0	100	V	37.651	6.14	36.3	43.341	68.2	-24.859	Peak
10360	35.7	0	100	H	37.651	6.14	36.3	43.191	68.2	-25.009	Peak
15540	34.82	0	100	V	34.568	7.47	34	42.858	68.2	-25.342	Peak
15540	35.32	0	100	H	34.568	7.47	34	43.358	68.2	-24.842	Peak
15540	21.25	0	100	V	34.568	7.47	34	29.288	54	-24.712	Ave
15540	21.21	0	100	H	34.568	7.47	34	29.248	54	-24.752	Ave
20720	34.81	0	100	V	49.9	9.28	32.5	61.49	68.2	-6.71	Peak
20720	34.83	0	100	H	49.9	9.28	32.5	61.51	68.2	-6.69	Peak
20720	20.6	0	100	V	49.9	9.28	32.5	47.28	54	-6.72	Ave
20720	20.58	0	100	H	49.9	9.28	32.5	47.26	54	-6.74	Ave
Middle Channel 5200 MHz											
5200	71.57	80	100	V	33.605	4.52	0	109.695	N/A	N/A	Peak
5200	74.68	63	100	H	33.605	4.52	0	112.805	N/A	N/A	Peak
5200	60.37	80	100	V	33.605	4.52	0	98.495	N/A	N/A	Ave
5200	62.59	63	100	H	33.605	4.52	0	100.715	N/A	N/A	Ave
10400	36.77	0	100	V	37.651	6.14	36.3	44.261	68.2	-23.939	Peak
10400	36.69	0	100	H	37.651	6.14	36.3	44.181	68.2	-24.019	Peak
15600	36.17	0	100	V	34.568	7.47	34	44.208	68.2	-23.992	Peak
15600	36.28	0	100	H	34.568	7.47	34	44.318	68.2	-23.882	Peak
15600	22.08	0	100	V	34.568	7.47	34	30.118	54	-23.882	Ave
15600	22.09	0	100	H	34.568	7.47	34	30.128	54	-23.872	Ave
20800	35.65	0	100	V	49.9	9.28	32.5	62.33	68.2	-5.87	Peak
20800	35.71	0	100	H	49.9	9.28	32.5	62.39	68.2	-5.81	Peak
20800	21.48	0	100	V	49.9	9.28	32.5	48.16	54	-5.84	Ave
20800	21.47	0	100	H	49.9	9.28	32.5	48.15	54	-5.85	Ave

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)	
High Channel 5240 MHz											
5240	69.53	75	100	V	33.605	4.52	0	107.655	N/A	N/A	Peak
5240	71.5	61	100	H	33.605	4.52	0	109.625	N/A	N/A	Peak
5240	57.94	75	100	V	33.605	4.52	0	96.065	N/A	N/A	Ave
5240	59.36	61	100	H	33.605	4.52	0	97.485	N/A	N/A	Ave
10480	36.58	0	100	V	37.651	6.14	36.3	44.071	68.2	-24.129	Peak
10480	36.65	0	100	H	37.651	6.14	36.3	44.141	68.2	-24.059	Peak
15720	36.29	0	100	V	34.568	7.47	34	44.328	68.2	-23.872	Peak
15720	36.22	0	100	H	34.568	7.47	34	44.258	68.2	-23.942	Peak
15720	22.1	0	100	V	34.568	7.47	34	30.138	54	-23.862	Ave
15720	22.09	0	100	H	34.568	7.47	34	30.128	54	-23.872	Ave
20960	35.65	0	100	V	49.9	9.28	32.5	62.33	68.2	-5.87	Peak
20960	35.51	0	100	H	49.9	9.28	32.5	62.19	68.2	-6.01	Peak
20960	21.48	0	100	V	49.9	9.28	32.5	48.16	54	-5.84	Ave
20960	21.47	0	100	H	49.9	9.28	32.5	48.15	54	-5.85	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 5180 MHz											
5180	66.53	75	100	V	33.605	4.52	0	104.655	N/A	N/A	Peak
5180	71.36	68	100	H	33.605	4.52	0	109.485	N/A	N/A	Peak
5180	55.31	75	100	V	33.605	4.52	0	93.435	N/A	N/A	Ave
5180	59.17	68	100	H	33.605	4.52	0	97.295	N/A	N/A	Ave
5150	28.62	75	100	V	33.605	4.52	0	66.745	68.2	-1.455	Peak
5150	28.73	68	100	H	33.605	4.52	0	66.855	68.2	-1.345	Peak
5150	14.77	75	100	V	33.605	4.52	0	52.895	54	-1.105	Ave
5150	14.81	68	100	H	33.605	4.52	0	52.935	54	-1.065	Ave
10360	35.21	0	100	V	37.651	6.14	36.3	42.701	68.2	-25.499	Peak
10360	35.46	0	100	H	37.651	6.14	36.3	42.951	68.2	-25.249	Peak
15540	35.4	0	100	V	34.568	7.47	34	43.438	68.2	-24.762	Peak
15540	35.33	0	100	H	34.568	7.47	34	43.368	68.2	-24.832	Peak
15540	21.16	0	100	V	34.568	7.47	34	29.198	54	-24.802	Ave
15540	21.12	0	100	H	34.568	7.47	34	29.158	54	-24.842	Ave
20720	34.8	0	100	V	49.9	9.28	32.5	61.48	68.2	-6.72	Peak
20720	34.4	0	100	H	49.9	9.28	32.5	61.08	68.2	-7.12	Peak
20720	20.49	0	100	V	49.9	9.28	32.5	47.17	54	-6.83	Ave
20720	20.46	0	100	H	49.9	9.28	32.5	47.14	54	-6.86	Ave
Middle Channel 5200 MHz											
5200	66.75	79	100	V	33.605	4.52	0	104.875	N/A	N/A	Peak
5200	69.02	62	100	H	33.605	4.52	0	107.145	N/A	N/A	Peak
5200	48.76	79	100	V	33.605	4.52	0	86.885	N/A	N/A	Ave
5200	52.16	62	100	H	33.605	4.52	0	90.285	N/A	N/A	Ave
10400	36.07	0	100	V	37.651	6.14	36.3	43.561	68.2	-24.639	Peak
10400	35.97	0	100	H	37.651	6.14	36.3	43.461	68.2	-24.739	Peak
15600	34.75	0	100	V	34.568	7.47	34	42.788	68.2	-25.412	Peak
15600	35.71	0	100	H	34.568	7.47	34	43.748	68.2	-24.452	Peak
15600	21.47	0	100	V	34.568	7.47	34	29.508	54	-24.492	Ave
15600	21.46	0	100	H	34.568	7.47	34	29.498	54	-24.502	Ave
20800	34.99	0	100	V	49.9	9.28	32.5	61.67	68.2	-6.53	Peak
20800	35.06	0	100	H	49.9	9.28	32.5	61.74	68.2	-6.46	Peak
20800	20.84	0	100	V	49.9	9.28	32.5	47.52	54	-6.48	Ave
20800	20.82	0	100	H	49.9	9.28	32.5	47.5	54	-6.5	Ave

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)	
High Channel 5240 MHz											
5240	66.32	75	100	V	33.605	4.52	0	104.445	N/A	N/A	Peak
5240	71.68	68	100	H	33.605	4.52	0	109.805	N/A	N/A	Peak
5240	55.77	75	100	V	33.605	4.52	0	93.895	N/A	N/A	Ave
5240	59.6	68	100	H	33.605	4.52	0	97.725	N/A	N/A	Ave
10480	36.29	0	100	V	37.651	6.14	36.3	43.781	68.2	-24.419	Peak
10480	36.06	0	100	H	37.651	6.14	36.3	43.551	68.2	-24.649	Peak
15720	34.88	0	100	V	34.568	7.47	34	42.918	68.2	-25.282	Peak
15720	35.74	0	100	H	34.568	7.47	34	43.778	68.2	-24.422	Peak
15720	21.54	0	100	V	34.568	7.47	34	29.578	54	-24.422	Ave
15720	21.58	0	100	H	34.568	7.47	34	29.618	54	-24.382	Ave
20960	35.1	0	100	V	49.9	9.28	32.5	61.78	68.2	-6.42	Peak
20960	35.17	0	100	H	49.9	9.28	32.5	61.85	68.2	-6.35	Peak
20960	20.95	0	100	V	49.9	9.28	32.5	47.63	54	-6.37	Ave
20960	20.93	0	100	H	49.9	9.28	32.5	47.61	54	-6.39	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 5190 MHz											
5190	62.51	75	100	V	33.605	4.52	0	100.635	N/A	N/A	Peak
5190	68.25	68	100	H	33.605	4.52	0	106.375	N/A	N/A	Peak
5190	50.58	75	100	V	33.605	4.52	0	88.705	N/A	N/A	Ave
5190	55.9	68	100	H	33.605	4.52	0	94.025	N/A	N/A	Ave
5150	28.77	75	100	V	33.605	4.52	0	66.895	68.2	-1.305	Peak
5150	28.96	68	100	H	33.605	4.52	0	67.085	68.2	-1.115	Peak
5150	14.83	75	100	V	33.605	4.52	0	52.955	54	-1.045	Ave
5150	14.89	68	100	H	33.605	4.52	0	53.015	54	-0.985	Ave
10380	35.85	0	100	V	37.651	6.14	36.3	43.341	68.2	-24.859	Peak
10380	35.83	0	100	H	37.651	6.14	36.3	43.321	68.2	-24.879	Peak
15570	35.35	0	100	V	34.568	7.47	34	43.388	68.2	-24.812	Peak
15570	35.33	0	100	H	34.568	7.47	34	43.368	68.2	-24.832	Peak
15570	21.28	0	100	V	34.568	7.47	34	29.318	54	-24.682	Ave
15570	21.27	0	100	H	34.568	7.47	34	29.308	54	-24.692	Ave
20760	34.93	0	100	V	49.9	9.28	32.5	61.61	68.2	-6.59	Peak
20760	34.61	0	100	H	49.9	9.28	32.5	61.29	68.2	-6.91	Peak
20760	20.71	0	100	V	49.9	9.28	32.5	47.39	54	-6.61	Ave
20760	20.7	0	100	H	49.9	9.28	32.5	47.38	54	-6.62	Ave
High Channel 5230 MHz											
5230	62.33	75	100	V	33.605	4.52	0	100.455	N/A	N/A	Peak
5230	68.72	68	100	H	33.605	4.52	0	106.845	N/A	N/A	Peak
5230	51.4	75	100	V	33.605	4.52	0	89.525	N/A	N/A	Ave
5230	55.93	68	100	H	33.605	4.52	0	94.055	N/A	N/A	Ave
10460	36.48	0	100	V	37.651	6.14	36.3	43.971	68.2	-24.229	Peak
10460	36.12	0	100	H	37.651	6.14	36.3	43.611	68.2	-24.589	Peak
15690	35.92	0	100	V	34.568	7.47	34	43.958	68.2	-24.242	Peak
15690	35.83	0	100	H	34.568	7.47	34	43.868	68.2	-24.332	Peak
15690	21.69	0	100	V	34.568	7.47	34	29.728	54	-24.272	Ave
15690	21.67	0	100	H	34.568	7.47	34	29.708	54	-24.292	Ave
20920	35.3	0	100	V	49.9	9.28	32.5	61.98	68.2	-6.22	Peak
20920	34.98	0	100	H	49.9	9.28	32.5	61.66	68.2	-6.54	Peak
20920	21.08	0	100	V	49.9	9.28	32.5	47.76	54	-6.24	Ave
20920	21.07	0	100	H	49.9	9.28	32.5	47.75	54	-6.25	Ave

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											
5260	69.66	73	103	V	33.83	4.59	0	108.08	N/A	N/A	Peak
5260	72.44	56	110	H	33.83	4.59	0	110.86	N/A	N/A	Peak
5260	57.76	73	103	V	33.83	4.59	0	96.18	N/A	N/A	Ave
5260	60.33	56	110	H	33.83	4.59	0	98.75	N/A	N/A	Ave
10520	31.37	0	100	V	38.07	6.14	36.1	39.48	68.2	-28.72	Peak
10520	31.37	0	100	H	38.07	6.14	36.1	39.48	68.2	-28.72	Peak
15780	33.28	0	100	V	37.88	7.71	33.8	45.07	68.2	-23.13	Peak
15780	33.28	0	100	H	37.88	7.71	33.8	45.07	68.2	-23.13	Peak
15780	18.63	0	100	V	37.88	7.71	33.8	30.42	54	-23.58	Ave
15780	18.63	0	100	H	37.88	7.71	33.8	30.42	54	-23.58	Ave
21040	32.14	0	100	V	49.68	9.36	32.5	58.68	68.2	-9.52	Peak
21040	32.14	0	100	H	49.68	9.36	32.5	58.68	68.2	-9.52	Peak
21040	17.61	0	100	V	49.68	9.36	32.5	44.15	54	-9.85	Ave
21040	17.61	0	100	H	49.68	9.36	32.5	44.15	54	-9.85	Ave
Middle Channel 5280 MHz											
5280	69.38	74	102	V	33.83	4.59	0	107.8	N/A	N/A	Peak
5280	72.06	59	108	H	33.83	4.59	0	110.48	N/A	N/A	Peak
5280	57.5	74	102	V	33.83	4.59	0	95.92	N/A	N/A	Ave
5280	60.21	59	108	H	33.83	4.59	0	98.63	N/A	N/A	Ave
10560	31.76	0	100	V	38.07	6.14	36.1	39.87	68.2	-28.33	Peak
10560	31.76	0	100	H	38.07	6.14	36.1	39.87	68.2	-28.33	Peak
15840	33.52	0	100	V	37.88	7.71	33.8	45.31	68.2	-22.89	Peak
15840	33.52	0	100	H	37.88	7.71	33.8	45.31	68.2	-22.89	Peak
15840	18.4	0	100	V	37.88	7.71	33.8	30.19	54	-23.81	Ave
15840	18.4	0	100	H	37.88	7.71	33.8	30.19	54	-23.81	Ave
21120	32.99	0	100	V	49.68	9.36	32.5	59.53	68.2	-8.67	Peak
21120	32.99	0	100	H	49.68	9.36	32.5	59.53	68.2	-8.67	Peak
21120	18.2	0	100	V	49.68	9.36	32.5	44.74	54	-9.26	Ave
21120	18.2	0	100	H	49.68	9.36	32.5	44.74	54	-9.26	Ave

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)	
High Channel 5320 MHz											
5320	67.57	54	100	V	33.83	4.59	0	105.99	N/A	N/A	Peak
5320	71.59	75	100	H	33.83	4.59	0	110.01	N/A	N/A	Peak
5320	55.65	54	100	V	33.83	4.59	0	94.07	N/A	N/A	Ave
5320	58.77	75	100	H	33.83	4.59	0	97.19	N/A	N/A	Ave
5350	27.41	54	135	V	33.83	4.59	0	65.83	68.2	-2.37	Peak
5350	28.83	75	120	H	33.83	4.59	0	67.25	68.2	-0.95	Peak
5350	12.15	54	135	V	33.83	4.59	0	50.57	54	-3.43	Ave
5350	14.85	75	120	H	33.83	4.59	0	53.27	54	-0.73	Ave
10640	31.68	0	100	V	38.07	6.14	36.1	39.79	68.2	-28.41	Peak
10640	31.68	0	100	H	38.07	6.14	36.1	39.79	68.2	-28.41	Peak
10640	16.61	0	100	V	38.07	6.14	36.1	24.72	54	-29.28	Ave
10640	16.61	0	100	H	38.07	6.14	36.1	24.72	54	-29.28	Ave
15960	33.41	0	100	V	37.88	7.71	33.8	45.2	68.2	-23	Peak
15960	33.41	0	100	H	37.88	7.71	33.8	45.2	68.2	-23	Peak
15960	18.38	0	100	V	37.88	7.71	33.8	30.17	54	-23.83	Ave
15960	18.38	0	100	H	37.88	7.71	33.8	30.17	54	-23.83	Ave
21280	32.93	0	100	V	49.68	9.36	32.5	59.47	68.2	-8.73	Peak
21280	32.93	0	100	H	49.68	9.36	32.5	59.47	68.2	-8.73	Peak
21280	18.19	0	100	V	49.68	9.36	32.5	44.73	54	-9.27	Ave
21280	18.19	0	100	H	49.68	9.36	32.5	44.73	54	-9.27	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											
5260	65.73	74	102	V	33.83	4.59	0	104.15	N/A	N/A	Peak
5260	68.47	355	110	H	33.83	4.59	0	106.89	N/A	N/A	Peak
5260	54.34	74	102	V	33.83	4.59	0	92.76	N/A	N/A	Ave
5260	56.79	355	110	H	33.83	4.59	0	95.21	N/A	N/A	Ave
10520	31.41	0	100	V	38.07	6.14	36.1	39.52	68.2	-28.68	Peak
10520	31.41	0	100	H	38.07	6.14	36.1	39.52	68.2	-28.68	Peak
15780	33.43	0	100	V	37.88	7.71	33.8	45.22	68.2	-22.98	Peak
15780	33.43	0	100	H	37.88	7.71	33.8	45.22	68.2	-22.98	Peak
15780	18.33	0	100	V	37.88	7.71	33.8	30.12	54	-23.88	Ave
15780	18.33	0	100	H	37.88	7.71	33.8	30.12	54	-23.88	Ave
21040	32.16	0	100	V	49.68	9.36	32.5	58.7	68.2	-9.5	Peak
21040	32.16	0	100	H	49.68	9.36	32.5	58.7	68.2	-9.5	Peak
21040	17.56	0	100	V	49.68	9.36	32.5	44.1	54	-9.9	Ave
21040	17.56	0	100	H	49.68	9.36	32.5	44.1	54	-9.9	Ave
Middle Channel 5280 MHz											
5280	65.54	74	100	V	33.83	4.59	0	103.96	N/A	N/A	Peak
5280	68.02	56	111	H	33.83	4.59	0	106.44	N/A	N/A	Peak
5280	54.28	74	100	V	33.83	4.59	0	92.7	N/A	N/A	Ave
5280	56.61	56	111	H	33.83	4.59	0	95.03	N/A	N/A	Ave
10560	31.82	0	100	V	38.07	6.14	36.1	39.93	68.2	-28.27	Peak
10560	31.82	0	100	H	38.07	6.14	36.1	39.93	68.2	-28.27	Peak
15840	33.44	0	100	V	37.88	7.71	33.8	45.23	68.2	-22.97	Peak
15840	33.44	0	100	H	37.88	7.71	33.8	45.23	68.2	-22.97	Peak
15840	18.38	0	100	V	37.88	7.71	33.8	30.17	54	-23.83	Ave
15840	18.38	0	100	H	37.88	7.71	33.8	30.17	54	-23.83	Ave
21120	32.71	0	100	V	49.68	9.36	32.5	59.25	68.2	-8.95	Peak
21120	32.71	0	100	H	49.68	9.36	32.5	59.25	68.2	-8.95	Peak
21120	18.12	0	100	V	49.68	9.36	32.5	44.66	54	-9.34	Ave
21120	18.12	0	100	H	49.68	9.36	32.5	44.66	54	-9.34	Ave

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)	
High Channel 5320 MHz											
5320	64.12	54	100	V	33.83	4.59	0	102.54	N/A	N/A	Peak
5320	66.49	75	100	H	33.83	4.59	0	104.91	N/A	N/A	Peak
5320	54.37	54	100	V	33.83	4.59	0	92.79	N/A	N/A	Ave
5320	55.97	75	100	H	33.83	4.59	0	94.39	N/A	N/A	Ave
5350	26.87	54	135	V	33.83	4.56	0	65.26	68.2	-2.94	Peak
5350	27.64	75	120	H	33.83	4.56	0	66.03	68.2	-2.17	Peak
5350	12.03	54	135	V	33.83	4.56	0	50.42	54	-3.58	Ave
5350	12.85	75	120	H	33.83	4.56	0	51.24	54	-2.76	Ave
10640	31.64	0	100	V	38.07	6.14	36.1	39.75	68.2	-28.45	Peak
10640	31.64	0	100	H	38.07	6.14	36.1	39.75	68.2	-28.45	Peak
10640	16.57	0	100	V	38.07	6.14	36.1	24.68	54	-29.32	Ave
10640	16.57	0	100	H	38.07	6.14	36.1	24.68	54	-29.32	Ave
15960	33.37	0	100	V	37.88	7.71	33.8	45.16	68.2	-23.04	Peak
15960	33.37	0	100	H	37.88	7.71	33.8	45.16	68.2	-23.04	Peak
15960	18.34	0	100	V	37.88	7.71	33.8	30.13	54	-23.87	Ave
15960	18.34	0	100	H	37.88	7.71	33.8	30.13	54	-23.87	Ave
21280	32.89	0	100	V	49.68	9.36	32.5	59.43	68.2	-8.77	Peak
21280	32.89	0	100	H	49.68	9.36	32.5	59.43	68.2	-8.77	Peak
21280	18.15	0	100	V	49.68	9.36	32.5	44.69	54	-9.31	Ave
21280	18.15	0	100	H	49.68	9.36	32.5	44.69	54	-9.31	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											
5270	62.53	73	103	V	33.83	4.59	0	100.95	N/A	N/A	Peak
5270	64.74	55	106	H	33.83	4.59	0	103.16	N/A	N/A	Peak
5270	52.82	73	103	V	33.83	4.59	0	91.24	N/A	N/A	Ave
5270	53.76	55	106	H	33.83	4.59	0	92.18	N/A	N/A	Ave
10540	31.49	0	100	V	38.07	6.14	36.1	39.6	68.2	-28.6	Peak
10540	31.49	0	100	H	38.07	6.14	36.1	39.6	68.2	-28.6	Peak
15810	33.43	0	100	V	37.88	7.71	33.8	45.22	68.2	-22.98	Peak
15810	33.43	0	100	H	37.88	7.71	33.8	45.22	68.2	-22.98	Peak
15810	18.39	0	100	V	37.88	7.71	33.8	30.18	54	-23.82	Ave
15810	18.39	0	100	H	37.88	7.71	33.8	30.18	54	-23.82	Ave
21080	32.82	0	100	V	49.68	9.36	32.5	59.36	68.2	-8.84	Peak
21080	32.82	0	100	H	49.68	9.36	32.5	59.36	68.2	-8.84	Peak
21080	18.13	0	100	V	49.68	9.36	32.5	44.67	54	-9.33	Ave
21080	18.13	0	100	H	49.68	9.36	32.5	44.67	54	-9.33	Ave
High Channel 5310 MHz											
5310	62.84	94	100	V	33.83	4.59	0	101.26	N/A	N/A	Peak
5310	64.15	75	100	H	33.83	4.59	0	102.57	N/A	N/A	Peak
5310	52.22	94	100	V	33.83	4.59	0	90.64	N/A	N/A	Ave
5310	53.43	75	100	H	33.83	4.59	0	91.85	N/A	N/A	Ave
5350	26.31	54	135	V	33.83	4.59	0	64.73	68.2	-3.47	Peak
5350	26.68	75	120	H	33.83	4.59	0	65.1	68.2	-3.1	Peak
5350	12.34	54	135	V	33.83	4.59	0	50.76	54	-3.24	Ave
5350	13.78	75	120	H	33.83	4.59	0	52.2	54	-1.8	Ave
10620	31.2	0	100	V	38.07	6.14	36.1	39.31	68.2	-28.89	Peak
10620	31.2	0	100	H	38.07	6.14	36.1	39.31	68.2	-28.89	Peak
10620	16.61	0	100	V	38.07	6.14	36.1	24.72	54	-29.28	Ave
10620	16.61	0	100	H	38.07	6.14	36.1	24.72	54	-29.28	Ave
15930	33.21	0	100	V	37.88	7.71	33.8	45	68.2	-23.2	Peak
15930	33.21	0	100	H	37.88	7.71	33.8	45	68.2	-23.2	Peak
15930	18.47	0	100	V	37.88	7.71	33.8	30.26	54	-23.74	Ave
15930	18.47	0	100	H	37.88	7.71	33.8	30.26	54	-23.74	Ave
21240	32.7	0	100	V	49.68	9.36	32.5	59.24	68.2	-8.96	Peak
21240	32.7	0	100	H	49.68	9.36	32.5	59.24	68.2	-8.96	Peak
21240	18.25	0	100	V	49.68	9.36	32.5	44.79	54	-9.21	Ave
21240	18.25	0	100	H	49.68	9.36	32.5	44.79	54	-9.21	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											
5500	66.88	70	113	V	33.83	4.59	0	105.3	N/A	N/A	Peak
5500	68.41	56	110	H	33.83	4.59	0	106.83	N/A	N/A	Peak
5500	58.85	70	113	V	33.83	4.59	0	97.27	N/A	N/A	Ave
5500	59.77	56	110	H	33.83	4.59	0	98.19	N/A	N/A	Ave
5460	27.6	53	132	V	33.83	4.59	0	66.02	68.2	-2.18	Peak
5460	27.85	75	118	H	33.83	4.59	0	66.27	68.2	-1.93	Peak
5460	13.28	53	132	V	33.83	4.59	0	51.7	54	-2.3	Ave
5460	13.4	75	118	H	33.83	4.59	0	51.82	54	-2.18	Ave
11000	30.82	0	100	V	38.07	6.14	36.1	38.93	68.2	-29.27	Peak
11000	30.82	0	100	H	38.07	6.14	36.1	38.93	68.2	-29.27	Peak
11000	16.54	0	100	V	38.07	6.14	36.1	24.65	54	-29.35	Ave
11000	16.54	0	100	H	38.07	6.14	36.1	24.65	54	-29.35	Ave
16500	33.26	0	100	V	37.88	7.71	33.8	45.05	68.2	-23.15	Peak
16500	33.26	0	100	H	37.88	7.71	33.8	45.05	68.2	-23.15	Peak
22000	31.12	0	100	V	49.68	9.36	32.5	57.66	68.2	-10.54	Peak
22000	31.12	0	100	H	49.68	9.36	32.5	57.66	68.2	-10.54	Peak
Middle Channel 5580 MHz											
5580	66.82	73	102	V	33.83	4.59	0	105.24	N/A	N/A	Peak
5580	68.67	56	108	H	33.83	4.59	0	107.09	N/A	N/A	Peak
5580	58.21	73	102	V	33.83	4.59	0	96.63	N/A	N/A	Ave
5580	59.4	56	108	H	33.83	4.59	0	97.82	N/A	N/A	Ave
11160	31.52	0	100	V	38.07	6.14	36.1	39.63	68.2	-28.57	Peak
11160	31.52	0	100	H	38.07	6.14	36.1	39.63	68.2	-28.57	Peak
11160	16.77	0	100	V	38.07	6.14	36.1	24.88	54	-29.12	Ave
11160	16.77	0	100	H	38.07	6.14	36.1	24.88	54	-29.12	Ave
16740	32.59	0	100	V	37.88	7.71	33.8	44.38	68.2	-23.82	Peak
16740	32.59	0	100	H	37.88	7.71	33.8	44.38	68.2	-23.82	Peak
22320	32.22	0	100	V	49.68	9.36	32.5	58.76	68.2	-9.44	Peak
22320	32.22	0	100	H	49.68	9.36	32.5	58.76	68.2	-9.44	Peak
22320	17.51	0	100	V	49.68	9.36	32.5	44.05	54	-9.95	Ave
22320	17.51	0	100	H	49.68	9.36	32.5	44.05	54	-9.95	Ave

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)	
High Channel 5700 MHz											
5700	66.58	54	100	V	33.83	4.59	0	105	N/A	N/A	Peak
5700	68.43	77	100	H	33.83	4.59	0	106.85	N/A	N/A	Peak
5700	58.37	54	100	V	33.83	4.59	0	96.79	N/A	N/A	Ave
5700	59.66	77	100	H	33.83	4.59	0	98.08	N/A	N/A	Ave
11400	31.18	0	100	V	38.07	6.14	36.1	39.29	68.2	-28.91	Peak
11400	31.18	0	100	H	38.07	6.14	36.1	39.29	68.2	-28.91	Peak
11400	16.65	0	100	V	38.07	6.14	36.1	24.76	54	-29.24	Ave
11400	16.65	0	100	H	38.07	6.14	36.1	24.76	54	-29.24	Ave
17100	32.67	0	100	V	37.88	7.71	33.8	44.46	68.2	-23.74	Peak
17100	32.67	0	100	H	37.88	7.71	33.8	44.46	68.2	-23.74	Peak
22800	32.18	0	100	V	49.68	9.36	32.5	58.72	68.2	-9.48	Peak
22800	32.18	0	100	H	49.68	9.36	32.5	58.72	68.2	-9.48	Peak
22800	17.29	0	100	V	49.68	9.36	32.5	43.83	54	-10.17	Ave
22800	17.29	0	100	H	49.68	9.36	32.5	43.83	54	-10.17	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											
5500	63.52	72	104	V	33.83	4.59	0	101.94	N/A	N/A	Peak
5500	65.18	55	110	H	33.83	4.59	0	103.6	N/A	N/A	Peak
5500	56.82	72	104	V	33.83	4.59	0	95.24	N/A	N/A	Ave
5500	57.61	55	110	H	33.83	4.59	0	96.03	N/A	N/A	Ave
5460	28.57	54	134	V	33.83	4.59	0	66.99	68.2	-1.21	Peak
5460	27.43	74	121	H	33.83	4.59	0	65.85	68.2	-2.35	Peak
5460	12.74	74	134	V	33.83	4.59	0	51.16	54	-2.84	Ave
5460	12.76	75	121	H	33.83	4.59	0	51.18	54	-2.82	Ave
11000	31.76	0	100	V	38.07	6.14	36.1	39.87	68.2	-28.33	Peak
11000	31.76	0	100	H	38.07	6.14	36.1	39.87	68.2	-28.33	Peak
11000	16.77	0	100	V	38.07	6.14	36.1	24.88	54	-29.12	Ave
11000	16.77	0	100	H	38.07	6.14	36.1	24.88	54	-29.12	Ave
16500	33.12	0	100	V	37.88	7.71	33.8	44.91	68.2	-23.29	Peak
16500	33.12	0	100	H	37.88	7.71	33.8	44.91	68.2	-23.29	Peak
22000	30.74	0	100	V	49.68	9.36	32.5	57.28	68.2	-10.92	Peak
22000	30.74	0	100	H	49.68	9.36	32.5	57.28	68.2	-10.92	Peak
Middle Channel 5580 MHz											
5580	64.32	71	100	V	33.83	4.59	0	102.74	N/A	N/A	Peak
5580	66.67	55	111	H	33.83	4.59	0	105.09	N/A	N/A	Peak
5580	57.03	71	100	V	33.83	4.59	0	95.45	N/A	N/A	Ave
5580	58.11	55	111	H	33.83	4.59	0	96.53	N/A	N/A	Ave
11160	31.39	0	100	V	38.07	6.14	36.1	39.5	68.2	-28.7	Peak
11160	31.39	0	100	H	38.07	6.14	36.1	39.5	68.2	-28.7	Peak
11160	16.62	0	100	V	38.07	6.14	36.1	24.73	54	-29.27	Ave
11160	16.62	0	100	H	38.07	6.14	36.1	24.73	54	-29.27	Ave
16740	31.55	0	100	V	37.88	7.71	33.8	44.34	68.2	-23.86	Peak
16740	31.55	0	100	H	37.88	7.71	33.8	44.34	68.2	-23.86	Peak
22320	32.06	0	100	V	49.68	9.36	32.5	58.6	68.2	-9.6	Peak
22320	32.06	0	100	H	49.68	9.36	32.5	58.6	68.2	-9.6	Peak
22320	17.24	0	100	V	49.68	9.36	32.5	43.78	54	-10.22	Ave
22320	17.24	0	100	H	49.68	9.36	32.5	43.78	54	-10.22	Ave

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)	
High Channel 5700 MHz											
5700	63.44	53	100	V	33.83	4.59	0	101.86	N/A	N/A	Peak
5700	65.78	70	100	H	33.83	4.59	0	104.2	N/A	N/A	Peak
5700	56.17	53	100	V	33.83	4.59	0	94.59	N/A	N/A	Ave
5700	57.39	70	100	H	33.83	4.59	0	95.81	N/A	N/A	Ave
11400	31.66	0	100	V	38.07	6.14	36.1	39.77	68.2	-28.43	Peak
11400	31.66	0	100	H	38.07	6.14	36.1	39.77	68.2	-28.43	Peak
11400	16.71	0	100	V	38.07	6.14	36.1	24.82	54	-29.18	Ave
11400	16.71	0	100	H	38.07	6.14	36.1	24.82	54	-29.18	Ave
17100	32.55	0	100	V	37.88	7.71	33.8	44.34	68.2	-23.86	Peak
17100	32.55	0	100	H	37.88	7.71	33.8	44.34	68.2	-23.86	Peak
22800	32.22	0	100	V	49.68	9.36	32.5	58.76	68.2	-9.44	Peak
22800	32.22	0	100	H	49.68	9.36	32.5	58.76	68.2	-9.44	Peak
22800	17.28	0	100	V	49.68	9.36	32.5	43.82	54	-10.18	Ave
22800	17.28	0	100	H	49.68	9.36	32.5	43.82	54	-10.18	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											
5510	62.68	73	103	V	33.83	4.59	0	101.1	N/A	N/A	Peak
5510	64.48	55	106	H	33.83	4.59	0	102.9	N/A	N/A	Peak
5510	56.34	73	103	V	33.83	4.59	0	94.76	N/A	N/A	Ave
5510	57.17	55	106	H	33.83	4.59	0	95.59	N/A	N/A	Ave
5460	27.73	54	135	V	33.83	4.59	0	66.15	68.2	-2.05	Peak
5460	28.14	75	120	H	33.83	4.59	0	66.56	68.2	-1.64	Peak
5460	13.72	54	135	V	33.83	4.59	0	52.14	54	-1.86	Ave
5460	13.71	75	120	H	33.83	4.59	0	52.13	54	-1.87	Ave
11020	31.72	0	100	V	38.07	6.14	36.1	39.83	68.2	-28.37	Peak
11020	31.72	0	100	H	38.07	6.14	36.1	39.83	68.2	-28.37	Peak
11020	16.95	0	100	V	38.07	6.14	36.1	25.06	54	-28.94	Ave
11020	16.95	0	100	H	38.07	6.14	36.1	25.06	54	-28.94	Ave
16530	32.88	0	100	V	37.88	7.71	33.8	44.67	68.2	-23.53	Peak
16530	32.88	0	100	H	37.88	7.71	33.8	44.67	68.2	-23.53	Peak
22040	31.17	0	100	V	49.68	9.36	32.5	57.71	68.2	-10.49	Peak
22040	31.17	0	100	H	49.68	9.36	32.5	57.71	68.2	-10.49	Peak
22040	16.64	0	100	V	49.68	9.36	32.5	43.18	54	-10.82	Ave
22040	16.64	0	100	H	49.68	9.36	32.5	43.18	54	-10.82	Ave
Middle Channel 5550 MHz											
5550	63.16	70	103	V	33.83	4.59	0	101.58	N/A	N/A	Peak
5550	65.83	50	106	H	33.83	4.59	0	104.25	N/A	N/A	Peak
5550	57.52	70	103	V	33.83	4.59	0	95.94	N/A	N/A	Ave
5550	56.48	50	106	H	33.83	4.59	0	94.9	N/A	N/A	Ave
11100	31.13	0	100	V	38.07	6.14	36.1	39.24	68.2	-28.96	Peak
11100	31.13	0	100	H	38.07	6.14	36.1	39.24	68.2	-28.96	Peak
11100	16.64	0	100	V	38.07	6.14	36.1	24.75	54	-29.25	Ave
11100	16.64	0	100	H	38.07	6.14	36.1	24.75	54	-29.25	Ave
16650	32.71	0	100	V	37.88	7.71	33.8	44.5	68.2	-23.7	Peak
16650	32.71	0	100	H	37.88	7.71	33.8	44.5	68.2	-23.7	Peak
22200	32.16	0	100	V	49.68	9.36	32.5	58.7	68.2	-9.5	Peak
22200	32.16	0	100	H	49.68	9.36	32.5	58.7	68.2	-9.5	Peak
22200	17.42	0	100	V	49.68	9.36	32.5	43.96	54	-10.04	Ave
22200	17.42	0	100	H	49.68	9.36	32.5	43.96	54	-10.04	Ave

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)	
High Channel 5670 MHz											
5670	62.73	76	100	V	33.83	4.59	0	101.15	N/A	N/A	Peak
5670	64.66	53	100	H	33.83	4.59	0	103.08	N/A	N/A	Peak
5670	56.64	76	100	V	33.83	4.59	0	95.06	N/A	N/A	Ave
5670	57.38	53	100	H	33.83	4.59	0	95.8	N/A	N/A	Ave
11340	31.2	0	100	V	38.07	6.14	36.1	39.31	68.2	-28.89	Peak
11340	31.2	0	100	H	38.07	6.14	36.1	39.31	68.2	-28.89	Peak
11340	16.61	0	100	V	38.07	6.14	36.1	24.72	54	-29.28	Ave
11340	16.61	0	100	H	38.07	6.14	36.1	24.72	54	-29.28	Ave
17010	33.21	0	100	V	37.88	7.71	33.8	45	68.2	-23.2	Peak
17010	33.21	0	100	H	37.88	7.71	33.8	45	68.2	-23.2	Peak
22680	32.7	0	100	V	49.68	9.36	32.5	59.24	68.2	-8.96	Peak
22680	32.7	0	100	H	49.68	9.36	32.5	59.24	68.2	-8.96	Peak
22680	18.25	0	100	V	49.68	9.36	32.5	44.79	54	-9.21	Ave
22680	18.25	0	100	H	49.68	9.36	32.5	44.79	54	-9.21	Ave

5.8 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 5745 MHz											
5745	71.73	79	100	V	33.959	4.85	0	110.539	N/A	N/A	Peak
5745	72.41	53	140	H	33.959	4.85	0	111.219	N/A	N/A	Peak
5745	57.67	79	100	V	33.959	4.85	0	96.479	N/A	N/A	Ave
5745	56.06	53	140	H	33.959	4.85	0	94.869	N/A	N/A	Ave
11490	39.1	0	100	V	39.332	7.6	34.8	51.232	68.2	-16.968	Peak
11490	38.79	0	100	H	39.332	7.6	34.8	50.922	68.2	-17.278	Peak
11490	23.49	0	100	V	39.332	7.6	34.8	35.622	54	-18.378	Ave
11490	23.52	0	100	H	39.332	7.6	34.8	35.652	54	-18.348	Ave
17235	38.69	0	100	V	46.45	8.63	33.4	60.37	68.2	-7.83	Peak
17235	38.71	0	100	H	46.45	8.63	33.4	60.39	68.2	-7.81	Peak
22980	38.7	0	100	V	49.9	10.07	31.9	66.77	68.2	-1.43	Peak
22980	38.54	0	100	H	49.9	10.07	31.9	66.61	68.2	-1.59	Peak
22980	21.81	0	100	V	49.9	10.07	31.9	49.88	54	-4.12	Ave
22980	21.82	0	100	H	49.9	10.07	31.9	49.89	54	-4.11	Ave
Middle Channel 5785 MHz											
5785	73.66	77	100	V	34.054	4.82	0	112.534	N/A	N/A	Peak
5785	75.08	51	137	H	34.054	4.82	0	113.954	N/A	N/A	Peak
5785	58.97	77	100	V	34.054	4.82	0	97.844	N/A	N/A	Ave
5785	59.13	51	137	H	34.054	4.82	0	98.004	N/A	N/A	Ave
11570	35.67	0	100	V	39.332	7.69	34.8	47.892	68.2	-20.308	Peak
11570	35.59	0	100	H	39.332	7.69	34.8	47.812	68.2	-20.388	Peak
11570	20.82	0	100	V	39.332	7.69	34.8	33.042	54	-20.958	Ave
11570	20.83	0	100	H	39.332	7.69	34.8	33.052	54	-20.948	Ave
17355	36.7	0	100	V	46.45	8.64	33.4	58.39	68.2	-9.81	Peak
17355	36.15	0	100	H	46.45	8.64	33.4	57.84	68.2	-10.36	Peak
23140	36.92	0	100	V	49.9	10.23	31.9	65.15	68.2	-3.05	Peak
23140	36.84	0	100	H	49.9	10.23	31.9	65.07	68.2	-3.13	Peak

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)	
High Channel 5825 MHz											
5825	72.72	78	100	V	34.054	4.87	0	111.644	N/A	N/A	Peak
5825	74.81	52	134	H	34.054	4.87	0	113.734	N/A	N/A	Peak
5825	58.13	78	100	V	34.054	4.87	0	97.054	N/A	N/A	Ave
5825	59.87	52	134	H	34.054	4.87	0	98.794	N/A	N/A	Ave
11650	34.94	0	100	V	39.332	7.78	34.8	47.252	68.2	-20.948	Peak
11650	34.97	0	100	H	39.332	7.78	34.8	47.282	68.2	-20.918	Peak
11650	20.57	0	100	V	39.332	7.78	34.8	32.882	54	-21.118	Ave
11650	20.51	0	100	H	39.332	7.78	34.8	32.822	54	-21.178	Ave
17475	35.03	0	100	V	46.45	8.74	33.4	56.82	68.2	-11.38	Peak
17475	35.05	0	100	H	46.45	8.74	33.4	56.84	68.2	-11.36	Peak
23300	36.38	0	100	V	49.9	10.13	31.9	64.51	68.2	-3.69	Peak
23300	36.43	0	100	H	49.9	10.13	31.9	64.56	68.2	-3.64	Peak

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 5745 MHz											
5745	70.54	63	100	V	33.959	4.85	0	109.349	N/A	N/A	Peak
5745	72.56	51	137	H	33.959	4.85	0	111.369	N/A	N/A	Peak
5745	55.77	63	100	V	33.959	4.85	0	94.579	N/A	N/A	Ave
5745	56.61	51	137	H	33.959	4.85	0	95.419	N/A	N/A	Ave
11490	36.07	0	100	V	39.332	7.6	34.8	48.202	68.2	-19.998	Peak
11490	35.89	0	100	H	39.332	7.6	34.8	48.022	68.2	-20.178	Peak
11490	20.28	0	100	V	39.332	7.6	34.8	32.412	54	-21.588	Ave
11490	20.49	0	100	H	39.332	7.6	34.8	32.622	54	-21.378	Ave
17235	35.74	0	100	V	46.45	8.63	33.4	57.42	68.2	-10.78	Peak
17235	35.66	0	100	H	46.45	8.63	33.4	57.34	68.2	-10.86	Peak
22980	36.63	0	100	V	49.9	10.07	31.9	64.7	68.2	-3.5	Peak
22980	36.47	0	100	H	49.9	10.07	31.9	64.54	68.2	-3.66	Peak
22980	21.77	0	100	V	49.9	10.07	31.9	49.84	54	-4.16	Ave
22980	21.78	0	100	H	49.9	10.07	31.9	49.85	54	-4.15	Ave
Middle Channel 5785 MHz											
5785	70.86	76	100	V	34.054	4.82	0	109.734	N/A	N/A	Peak
5785	72.92	50	135	H	34.054	4.82	0	111.794	N/A	N/A	Peak
5785	55.83	76	100	V	34.054	4.82	0	94.704	N/A	N/A	Ave
5785	57.01	50	135	H	34.054	4.82	0	95.884	N/A	N/A	Ave
11570	35.7	0	100	V	39.332	7.69	34.8	47.922	68.2	-20.278	Peak
11570	35.75	0	100	H	39.332	7.69	34.8	47.972	68.2	-20.228	Peak
11570	20.96	0	100	V	39.332	7.69	34.8	33.182	54	-20.818	Ave
11570	20.86	0	100	H	39.332	7.69	34.8	33.082	54	-20.918	Ave
17355	36.82	0	100	V	46.45	8.64	33.4	58.51	68.2	-9.69	Peak
17355	36.19	0	100	H	46.45	8.64	33.4	57.88	68.2	-10.32	Peak
23140	36.99	0	100	V	49.9	10.23	31.9	65.22	68.2	-2.98	Peak
23140	36.89	0	100	H	49.9	10.23	31.9	65.12	68.2	-3.08	Peak

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)	
High Channel 5825 MHz											
5825	70.48	75	100	V	34.054	4.87	0	109.404	N/A	N/A	Peak
5825	72.17	52	136	H	34.054	4.87	0	111.094	N/A	N/A	Peak
5825	55.37	75	100	V	34.054	4.87	0	94.294	N/A	N/A	Ave
5825	56.98	52	136	H	34.054	4.87	0	95.904	N/A	N/A	Ave
11650	35.57	0	100	V	39.332	7.78	34.8	47.882	68.2	-20.318	Peak
11650	35.64	0	100	H	39.332	7.78	34.8	47.952	68.2	-20.248	Peak
11650	21.31	0	100	V	39.332	7.78	34.8	33.622	54	-20.378	Ave
11650	20.78	0	100	H	39.332	7.78	34.8	33.092	54	-20.908	Ave
17475	35.67	0	100	V	46.45	8.74	33.4	57.46	68.2	-10.74	Peak
17475	35.81	0	100	H	46.45	8.74	33.4	57.6	68.2	-10.6	Peak
23300	37	0	100	V	49.9	10.13	31.9	65.13	68.2	-3.07	Peak
23300	37.05	0	100	H	49.9	10.13	31.9	65.18	68.2	-3.02	Peak

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 5755 MHz, measured at 3 meters											
5755	70.77	79	100	V	33.959	4.85	0	109.579	N/A	N/A	Peak
5755	68.34	53	140	H	33.959	4.85	0	107.149	N/A	N/A	Peak
5755	54.73	79	100	V	33.959	4.85	0	93.539	N/A	N/A	Ave
5755	52.64	53	140	H	33.959	4.85	0	91.449	N/A	N/A	Ave
11510	34.61	0	100	V	39.332	7.6	34.8	46.742	68.2	-21.458	Peak
11510	34.78	0	100	H	39.332	7.6	34.8	46.912	68.2	-21.288	Peak
11510	20.24	0	100	V	39.332	7.6	34.8	32.372	54	-21.628	Ave
11510	20.23	0	100	H	39.332	7.6	34.8	32.362	54	-21.638	Ave
17265	35.54	0	100	V	46.45	8.63	33.4	57.22	68.2	-10.98	Peak
17265	35.28	0	100	H	46.45	8.63	33.4	56.96	68.2	-11.24	Peak
23020	36.41	0	100	V	49.9	10.07	31.9	64.48	68.2	-3.72	Peak
23020	36.32	0	100	H	49.9	10.07	31.9	64.39	68.2	-3.81	Peak
23020	21.58	0	100	V	49.9	10.07	31.9	49.65	54	-4.35	Ave
23020	21.58	0	100	H	49.9	10.07	31.9	49.65	54	-4.35	Ave
High Channel 5795 MHz, measured at 3 meters											
5795	70.89	78	100	V	34.054	4.87	0	109.814	N/A	N/A	Peak
5795	69.75	52	134	H	34.054	4.87	0	108.674	N/A	N/A	Peak
5795	51.65	78	100	V	34.054	4.87	0	90.574	N/A	N/A	Ave
5795	51.34	52	134	H	34.054	4.87	0	90.264	N/A	N/A	Ave
11590	36.89	0	100	V	39.332	7.78	34.8	49.202	68.2	-18.998	Peak
11590	37.36	0	100	H	39.332	7.78	34.8	49.672	68.2	-18.528	Peak
11590	21.94	0	100	V	39.332	7.78	34.8	34.252	54	-19.748	Ave
11590	22.47	0	100	H	39.332	7.78	34.8	34.782	54	-19.218	Ave
17385	38.5	0	100	V	46.45	8.74	33.4	60.29	68.2	-7.91	Peak
17385	36.42	0	100	H	46.45	8.74	33.4	58.21	68.2	-9.99	Peak
23180	37.46	0	100	V	49.9	10.13	31.9	65.59	68.2	-2.61	Peak
23180	37.92	0	100	H	49.9	10.13	31.9	66.05	68.2	-2.15	Peak

7 FCC §15.407(a) –Emission Bandwidth

7.1 Applicable Standards

FCC §15.407(a)

7.2 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.

7.3 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.*

7.4 Test Environmental Conditions

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

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

7.5 Test Results

5.2 GHz Band:

802.11a mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz) Tx0	26 dB Emission Bandwidth (MHz) Tx1	99% Emission Bandwidth (MHz) Tx0	99% Emission Bandwidth (MHz) Tx1	Results
Low	5180	19.927	19.720	16.3858	16.3764	Compliant
Middle	5200	19.626	19.411	16.3735	16.4225	Compliant
High	5240	19.857	19.910	16.4290	16.4087	Compliant

802.11n HT20 mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz) Tx0	26 dB Emission Bandwidth (MHz) Tx1	99% Emission Bandwidth (MHz) Tx0	99% Emission Bandwidth (MHz) Tx1	Results
Low	5180	20.237	19.844	17.4100	17.4067	Compliant
Middle	5200	20.274	20.005	17.4251	17.4166	Compliant
High	5240	20.330	20.080	17.4284	17.4538	Compliant

802.11n HT40 mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz) Tx0	26 dB Emission Bandwidth (MHz) Tx1	99% Emission Bandwidth (MHz) Tx0	99% Emission Bandwidth (MHz) Tx1	Results
Low	5190	45.315	44.646	36.2201	36.1858	Compliant
High	5230	45.225	44.675	36.2770	36.2017	Compliant

5.3 GHz Band:

802.11a mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)
Chain 0			
Low	5260	19.524	16.4211
Middle	5280	19.605	16.4383
High	5320	19.617	16.4124
Chain 1			
Low	5260	19.593	16.3872
Middle	5280	19.542	16.3908
High	5320	19.775	16.3747

802.11n-HT20 mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)
Chain 0			
Low	5260	20.333	17.4375
Middle	5280	20.295	17.4366
High	5320	20.341	17.4034
Chain 1			
Low	5260	19.602	17.4508
Middle	5280	19.767	17.3882
High	5320	19.844	17.3921

802.11n-HT40 mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)
Chain 0			
Low	5270	45.120	36.3129
High	5310	45.284	36.2402
Chain 1			
Low	5270	45.302	36.2902
High	5310	44.811	36.2905

5.6 GHz Band:

802.11a mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)
Chain 0			
Low	5500	19.677	16.4208
Middle	5580	19.548	16.4097
High	5700	19.327	16.3956
Chain 1			
Low	5500	19.493	16.3863
Middle	5580	19.449	16.3897
High	5700	19.458	16.3992

802.11n-HT20 mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)
Chain 0			
Low	5500	20.421	17.4560
Middle	5580	20.155	17.4281
High	5700	20.026	17.4053
Chain 1			
Low	5500	19.816	17.4342
Middle	5580	19.911	17.4362
High	5700	19.515	17.3847

802.11n-HT40 mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)
Chain 0			
Low	5510	45.951	36.4378
Middle	5550	45.464	36.4117
High	5670	45.398	36.3798
Chain 1			
Low	5510	44.647	36.2970
Middle	5550	45.147	36.3201
High	5670	45.289	36.3268

5.8 GHz Band:

802.11a mode

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) Tx0	6 dB Emission Bandwidth (MHz) Tx1	99% Emission Bandwidth (MHz) Tx0	99% Emission Bandwidth (MHz) Tx1	Limit (MHz)	Results
Low	5745	14.688	15.457	16.3036	16.2756	> 0.5	Compliant
Middle	5785	15.505	14.573	16.2894	16.2874	> 0.5	Compliant
High	5825	14.835	15.974	16.2756	16.2863	> 0.5	Compliant

802.11n HT20 mode

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) Tx0	6 dB Emission Bandwidth (MHz) Tx1	99% Emission Bandwidth (MHz) Tx0	99% Emission Bandwidth (MHz) Tx1	Limit (MHz)	Results
Low	5745	15.443	14.701	16.3071	16.3007	> 0.5	Compliant
Middle	5785	15.351	15.108	16.2787	16.2856	> 0.5	Compliant
High	5825	15.696	14.357	16.2947	16.303	> 0.5	Compliant

802.11n HT40 mode

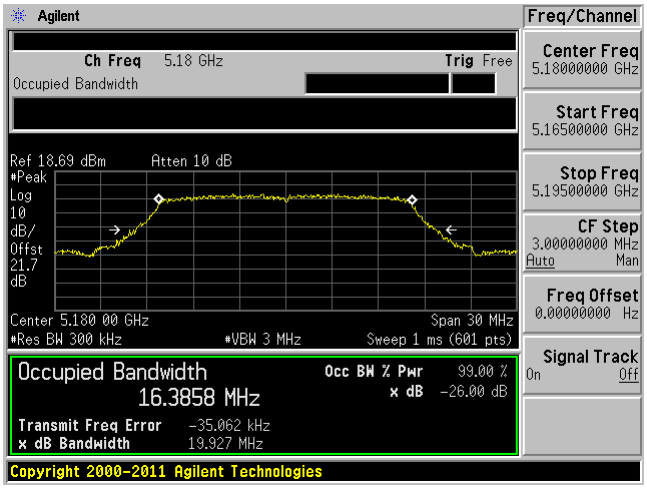
Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) Tx0	6 dB Emission Bandwidth (MHz) Tx1	99% Emission Bandwidth (MHz) Tx0	99% Emission Bandwidth (MHz) Tx1	Limit (MHz)	Results
Low	5755	36.061	36.087	36.1209	36.1516	> 0.5	Compliant
High	5795	36.38	36.031	36.165	36.1545	> 0.5	Compliant

Please refer to the following plots.

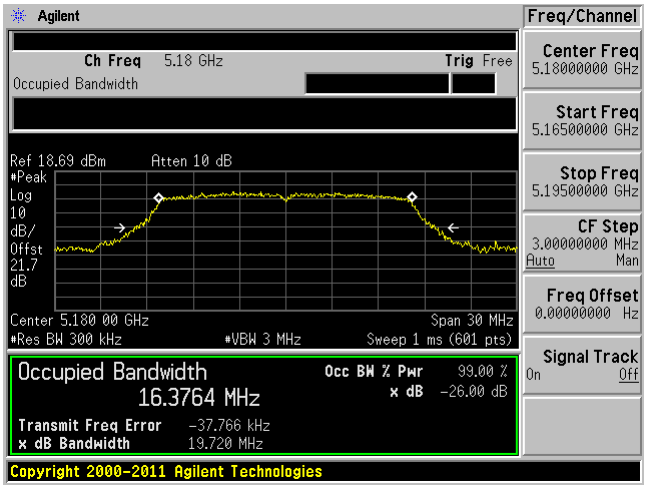
5.2 GHz Band

802.11a mode

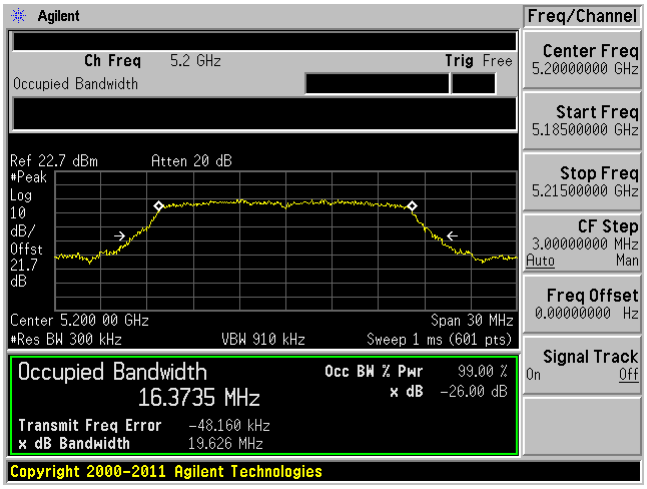
Low channel: 5180 MHz Chain 0



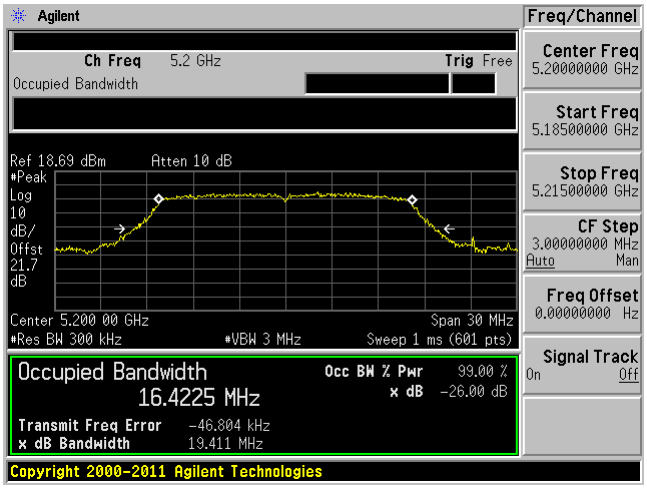
Low channel: 5180 MHz Chain 1



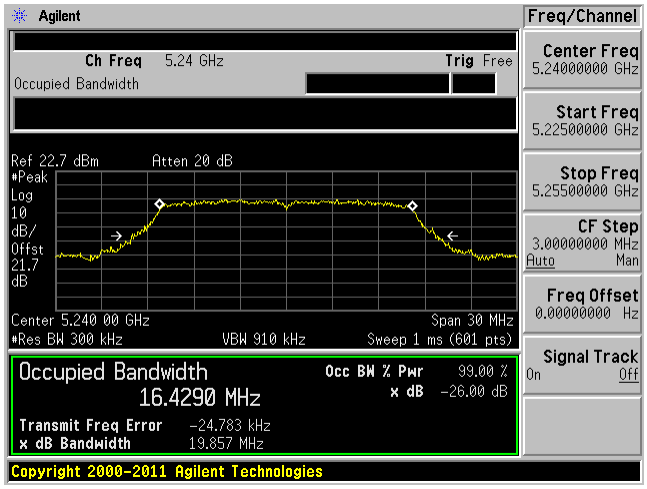
Middle channel: 5200 MHz Chain 0



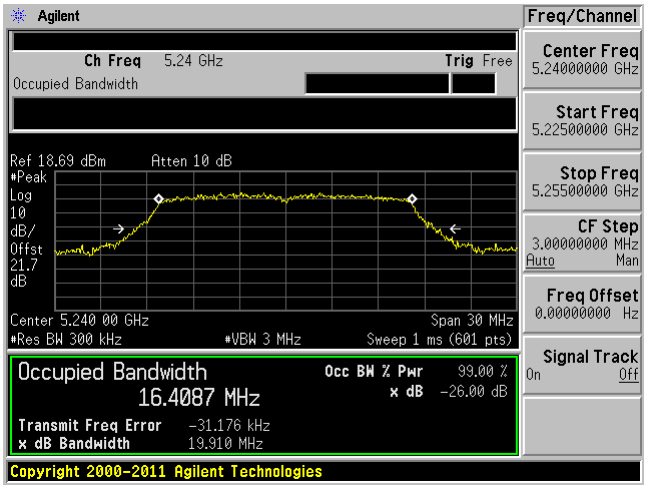
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

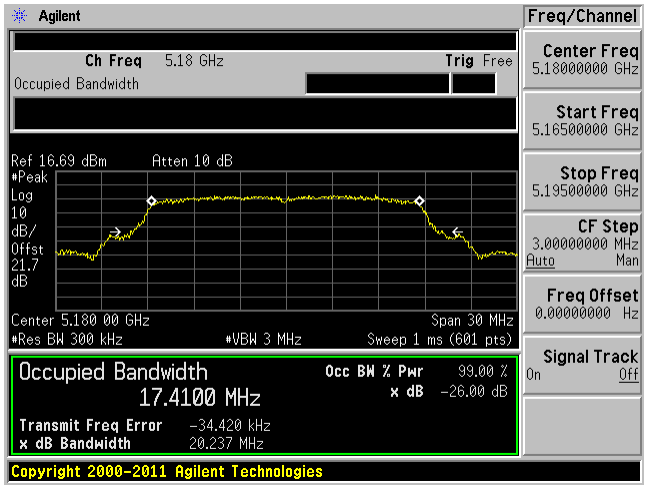


High channel: 5240 MHz Chain 1

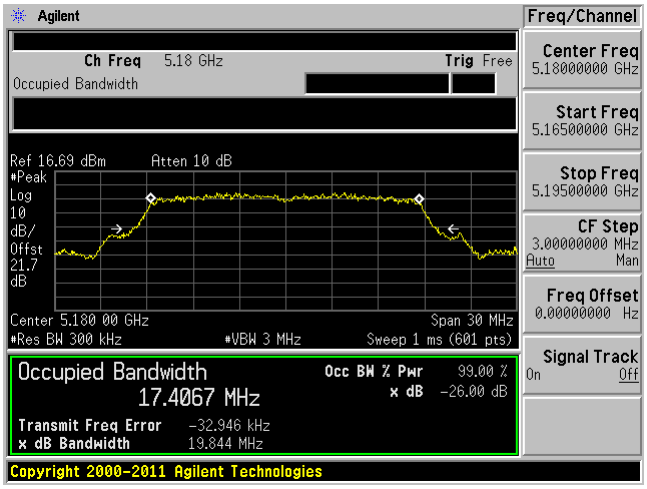


802.11n HT20 mode

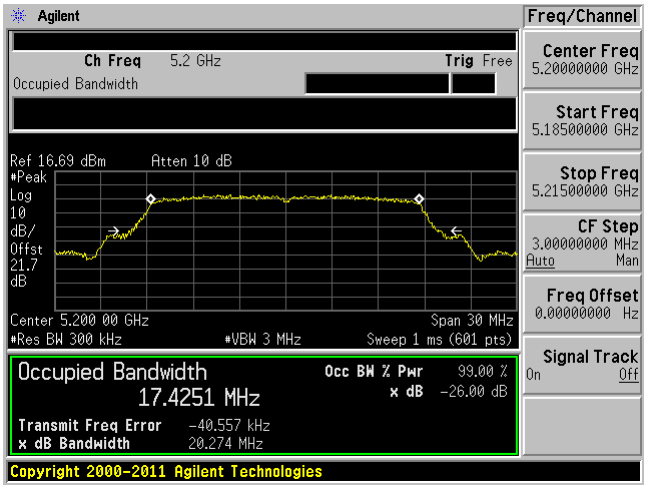
Low channel: 5180 MHz Chain 0



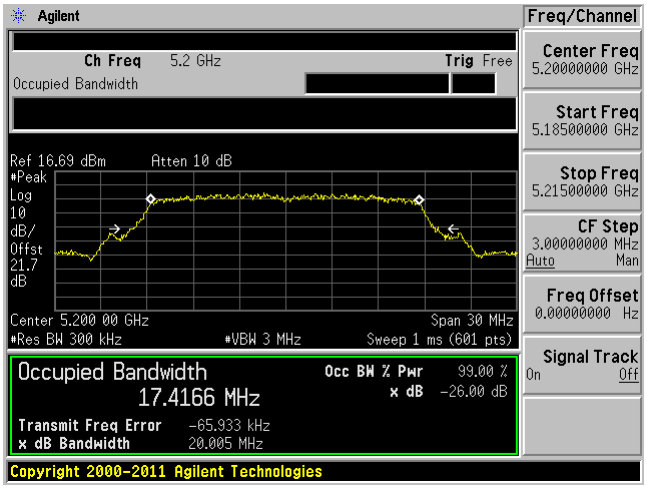
Low channel: 5180 MHz Chain 1



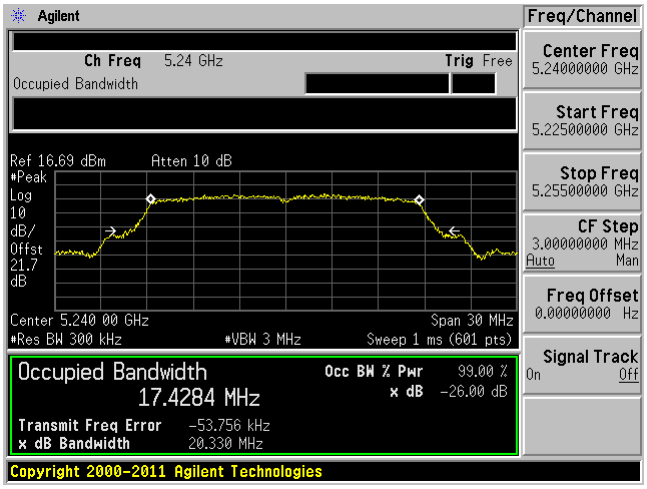
Middle channel: 5200 MHz Chain 0



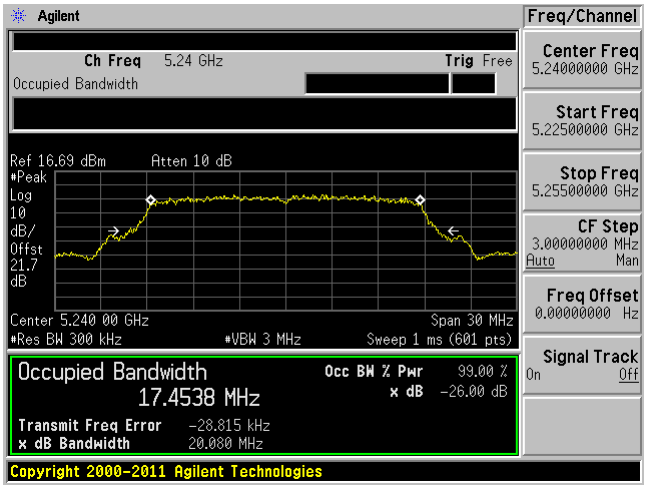
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

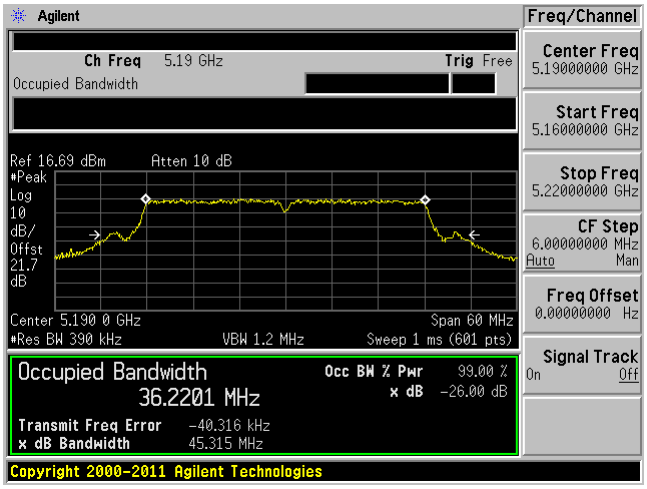


High channel: 5240 MHz Chain 1

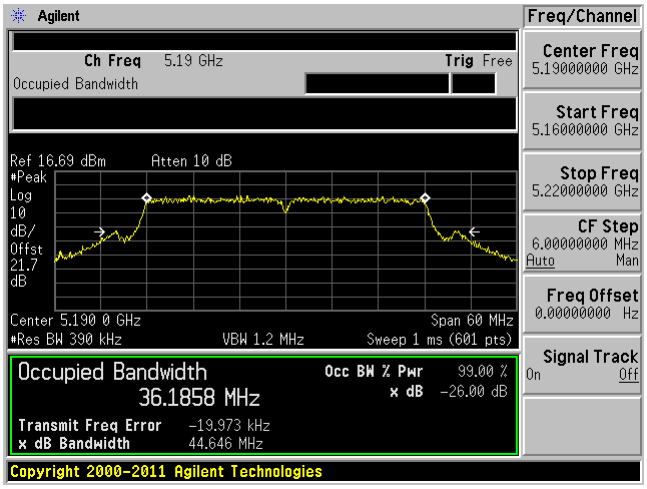


802.11n HT40 mode

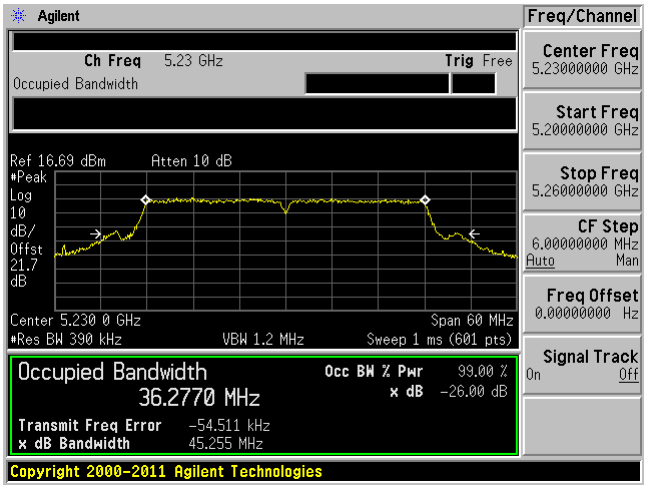
Low channel: 5190 MHz Chain 0



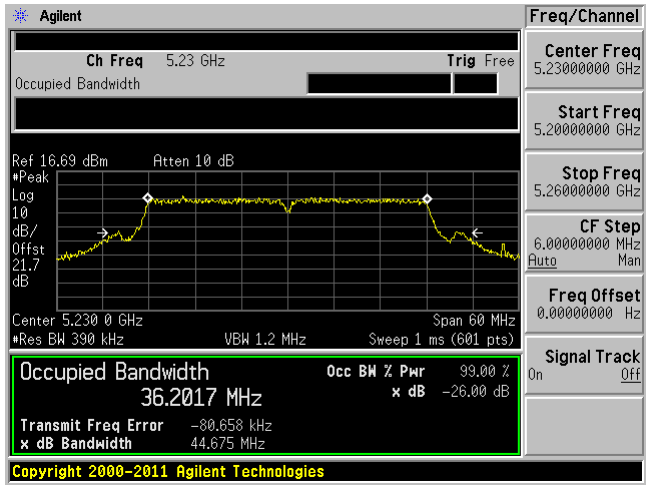
Low channel: 5190 MHz Chain 1



High channel: 5230 MHz Chain 0



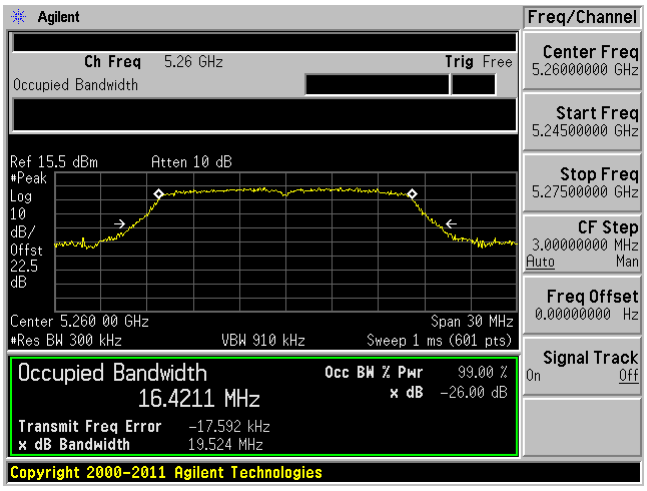
High channel: 5230 MHz Chain 1



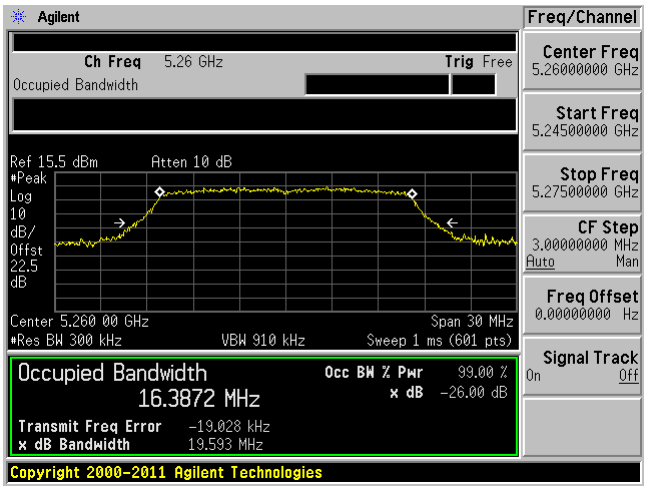
5.3 GHz Band

802.11a mode

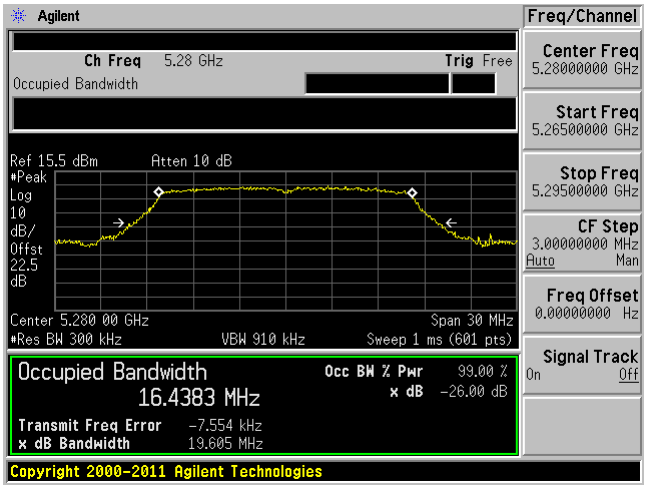
802.11a mode, 5260 MHz, Chain 0



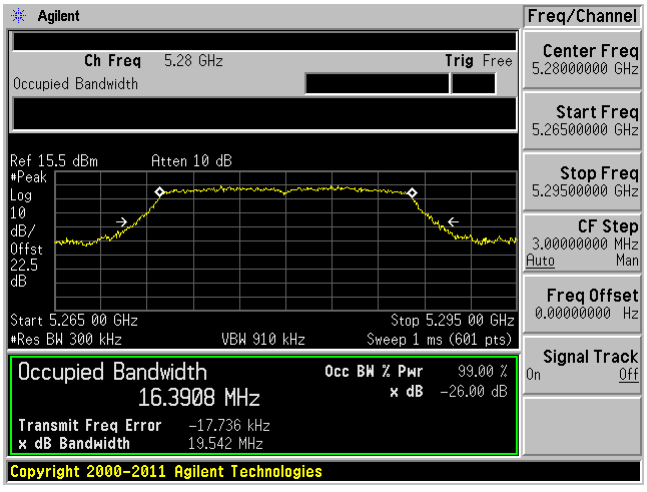
802.11a mode, 5260 MHz, Chain 1



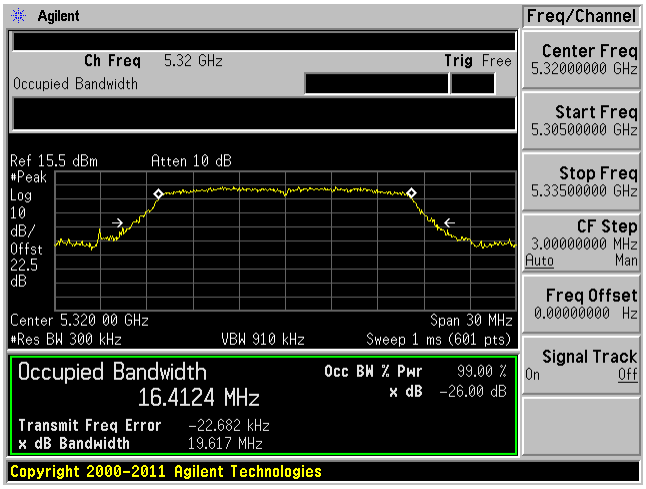
802.11a mode, 5280 MHz, Chain 0



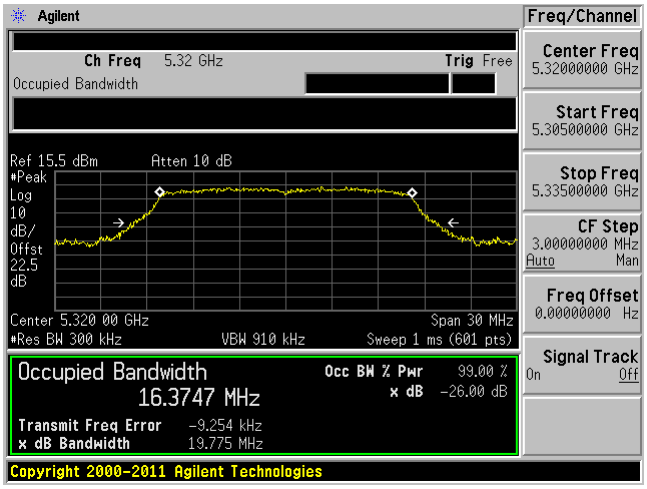
802.11a mode, 5280 MHz, Chain 1



802.11a mode, 5320 MHz, Chain 0

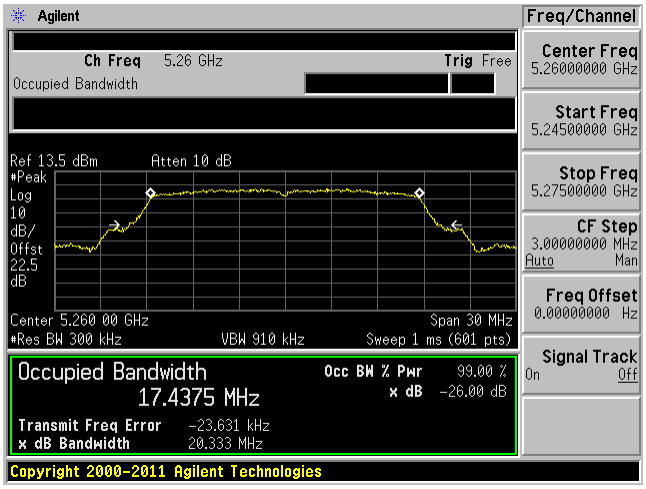


802.11a mode, 5320 MHz, Chain 1

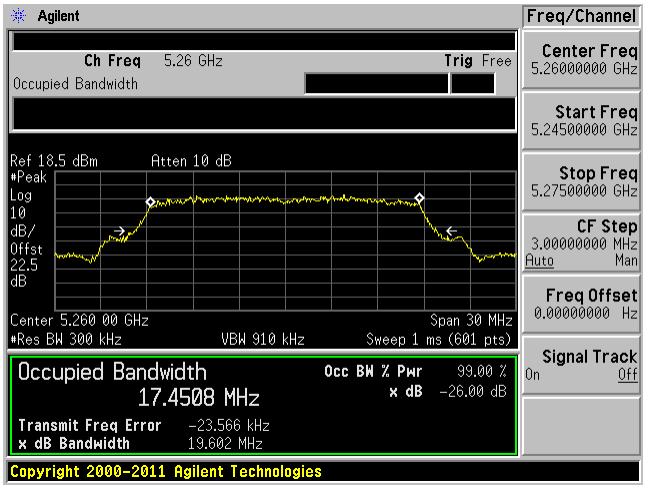


802.11n HT20 mode

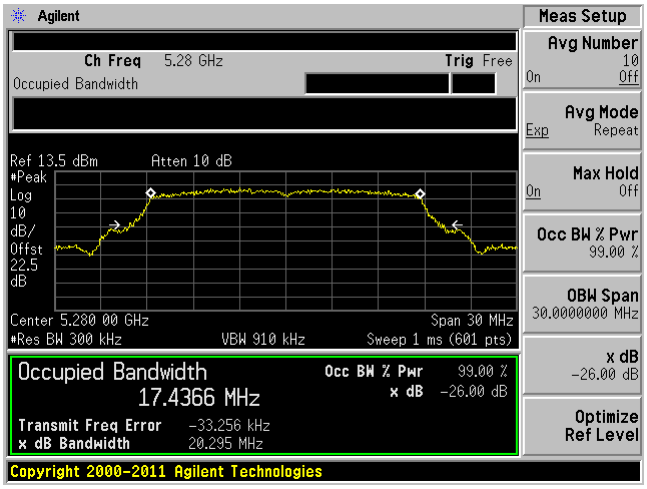
802.11n-HT20 mode, 5260 MHz, Chain 0



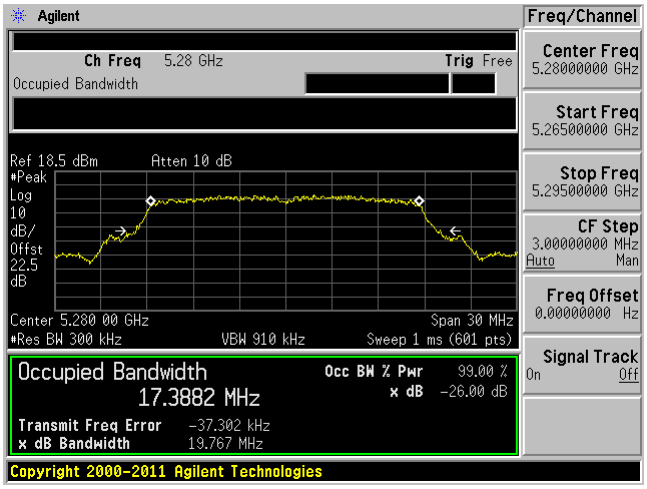
802.11n-HT20 mode, 5260 MHz, Chain 1



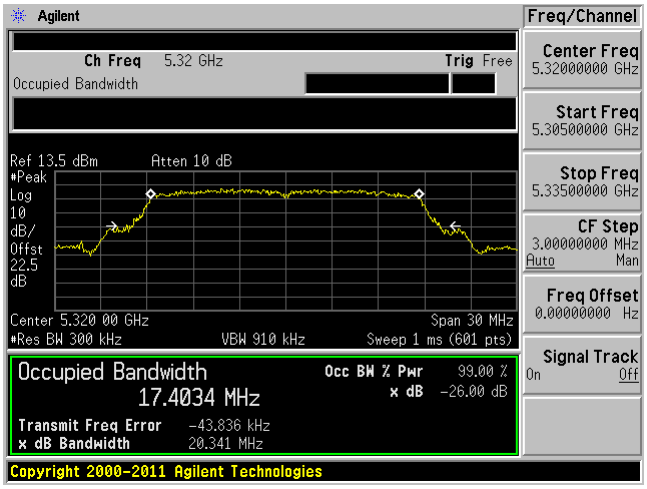
802.11n-HT20 mode, 5280 MHz, Chain 0



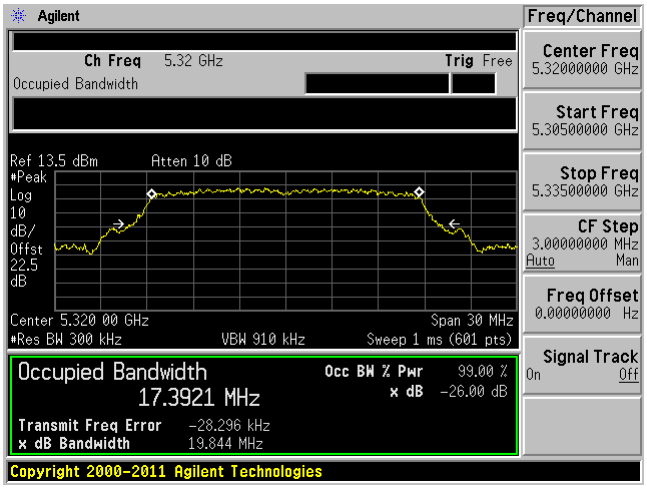
802.11n-HT20 mode, 5280 MHz, Chain 1



802.11n-HT20 mode, 5320 MHz, Chain 0

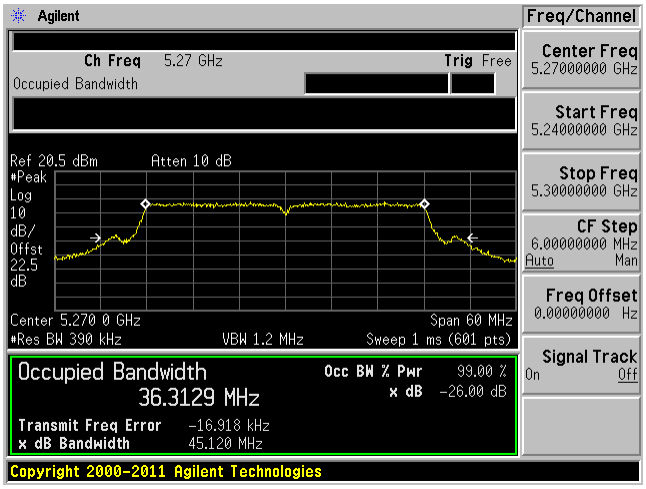


802.11n-HT20 mode, 5320 MHz, Chain 1

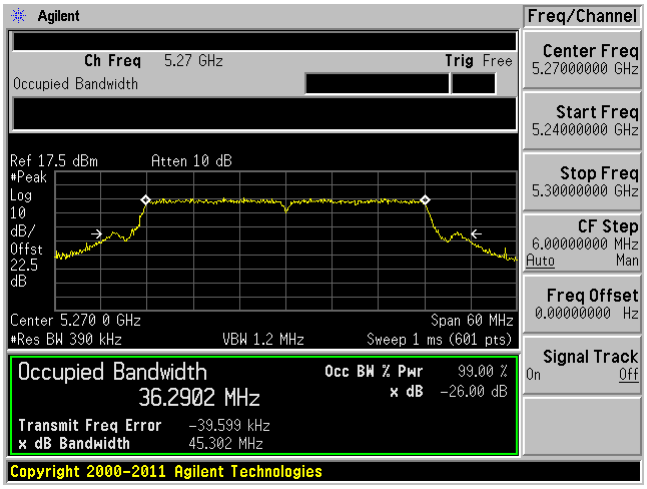


802.11n HT40 mode

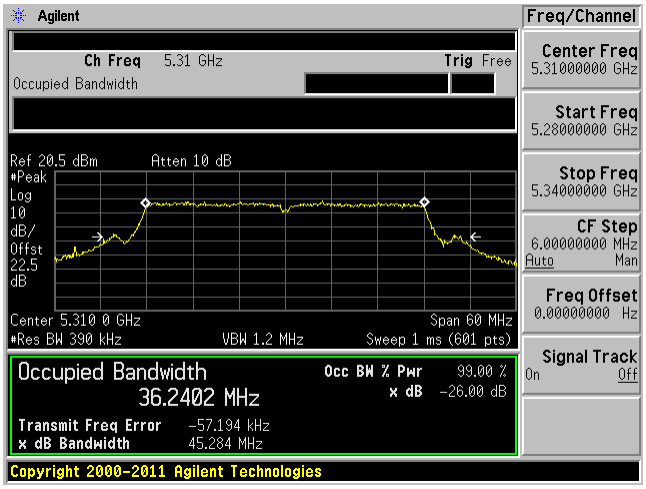
802.11n-HT40 mode, 5270 MHz, Chain 0



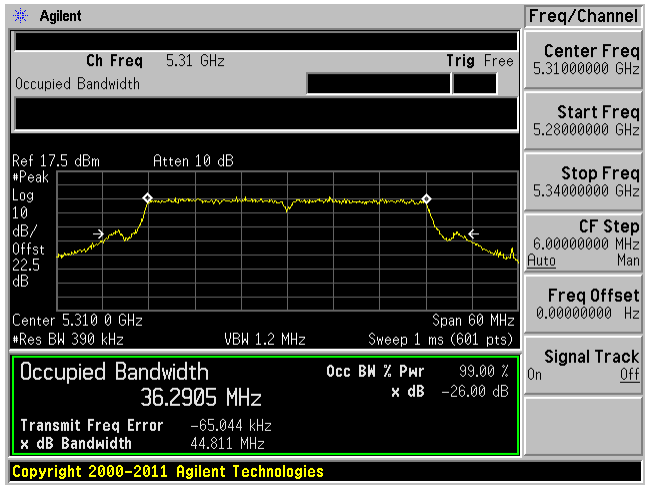
802.11n-HT40 mode, 5270 MHz, Chain 1



802.11n-HT40 mode, 5310 MHz, Chain 0



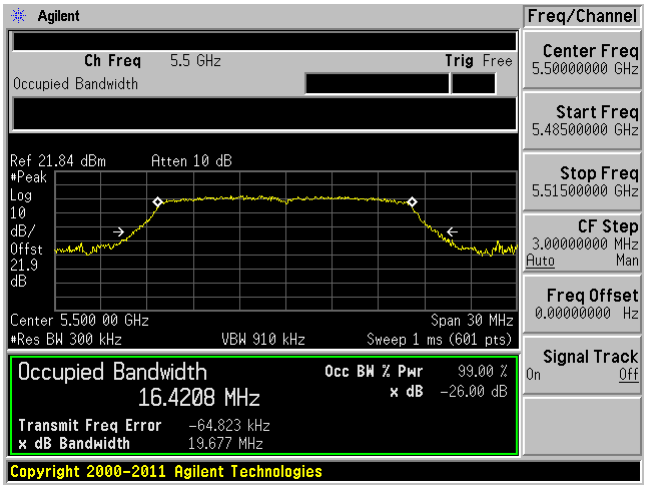
802.11n-HT40 mode, 5310 MHz, Chain 1



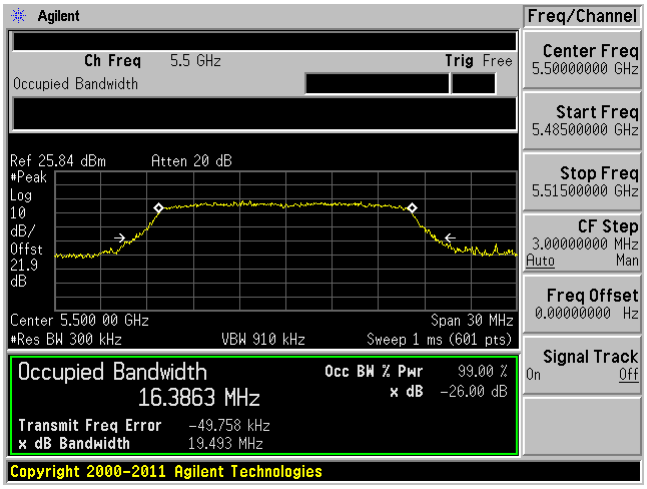
5.6 GHz Band

802.11a mode

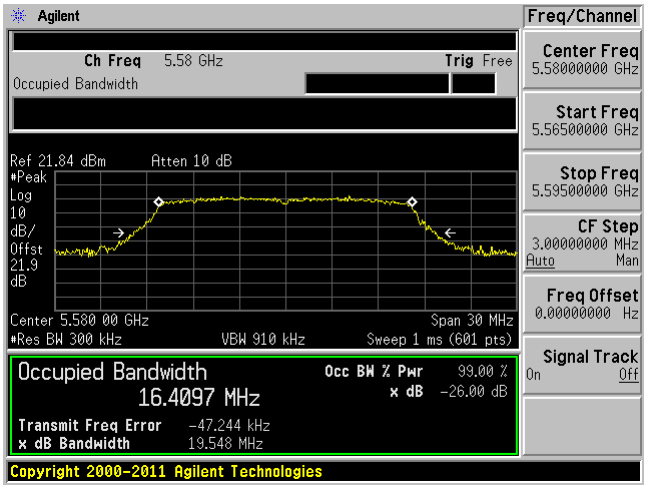
802.11a mode, 5550 MHz, Chain 0



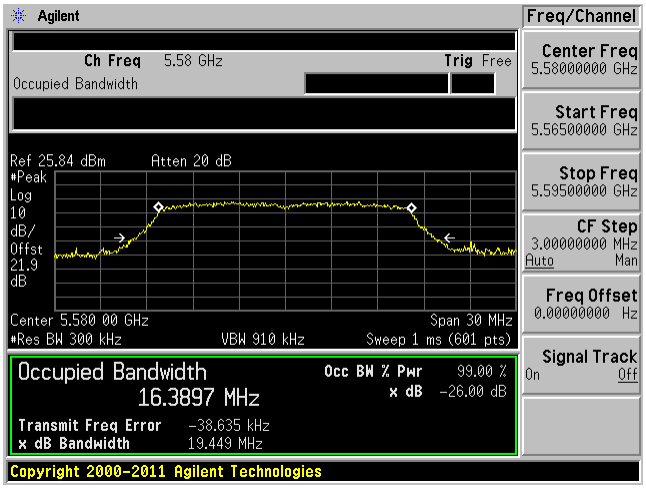
802.11a mode, 5550 MHz, Chain 1



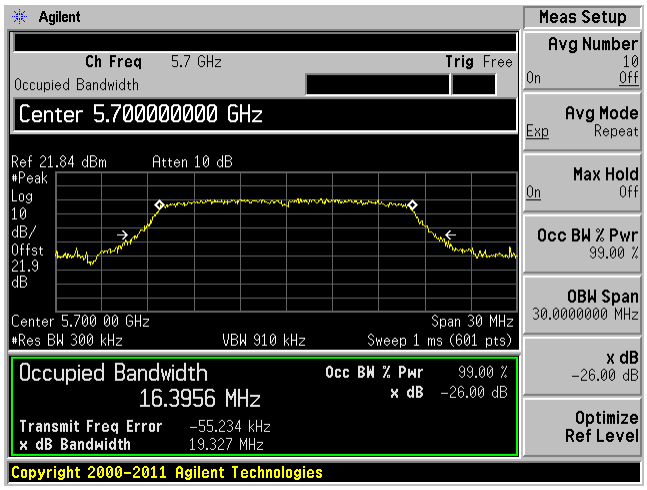
802.11a mode, 5580 MHz, Chain 0



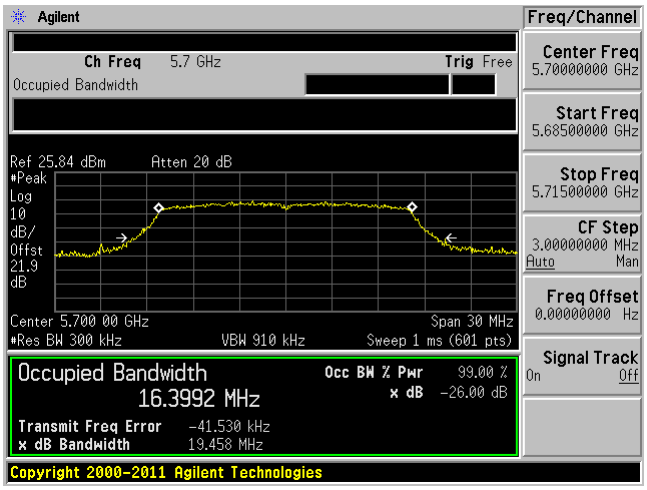
802.11a mode, 5580 MHz, Chain 1



802.11a mode, 5700 MHz, Chain 0

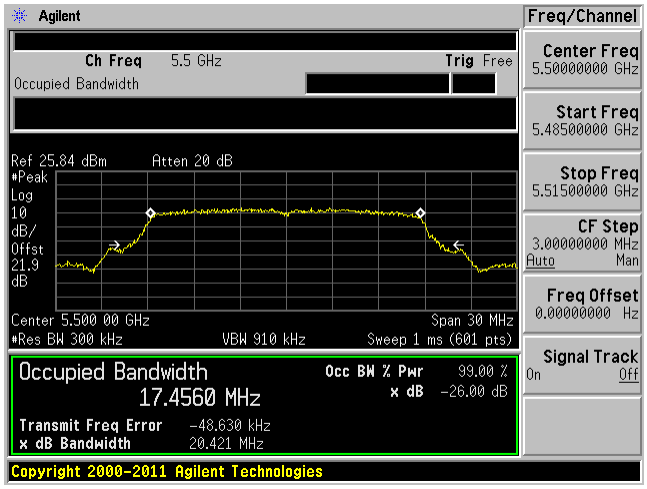


802.11a mode, 5700 MHz, Chain 1

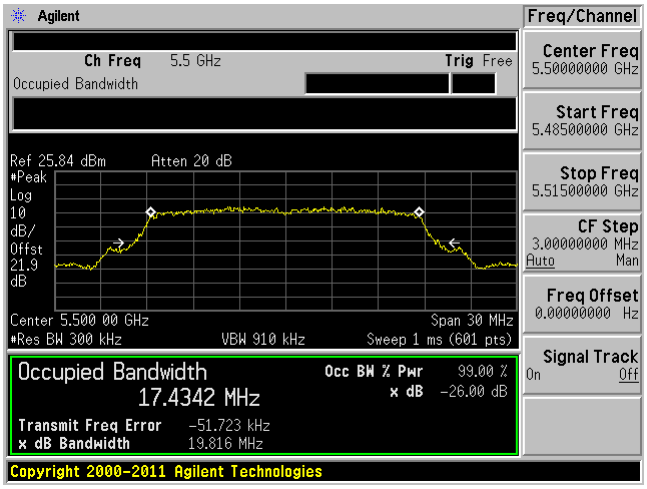


802.11n HT20 mode

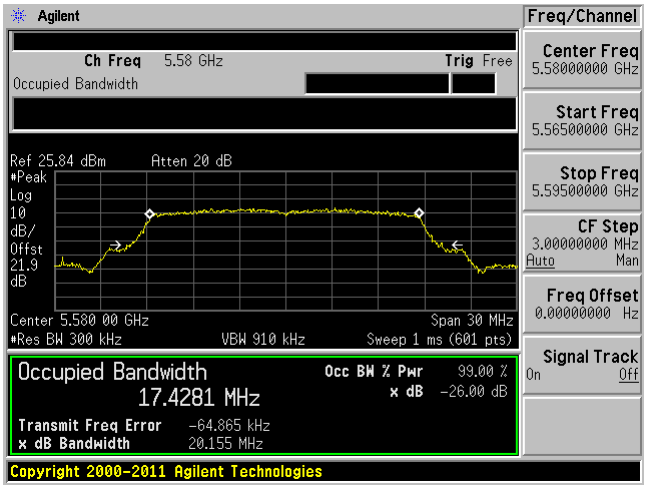
802.11n-HT20 mode, 5500 MHz, Chain 0



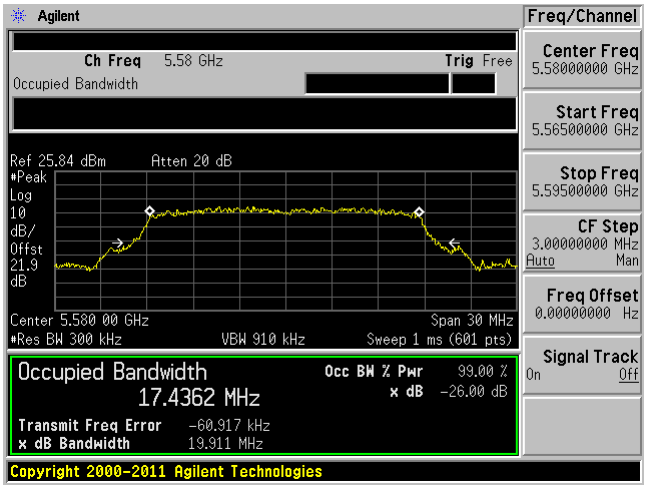
802.11n-HT20 mode, 5500 MHz, Chain 1



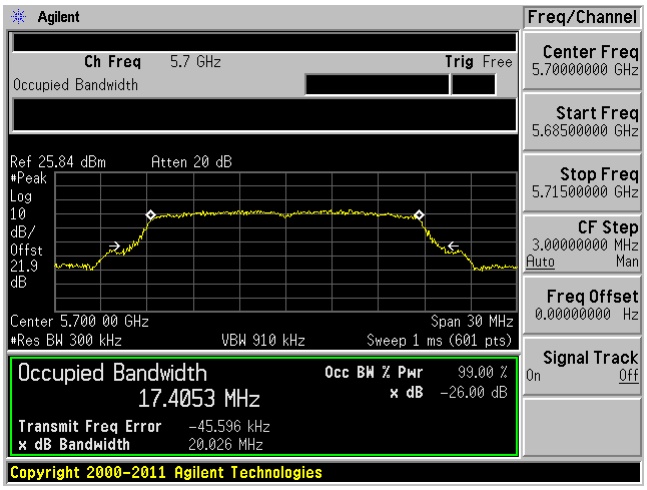
802.11n-HT20 mode, 5580 MHz, Chain 0



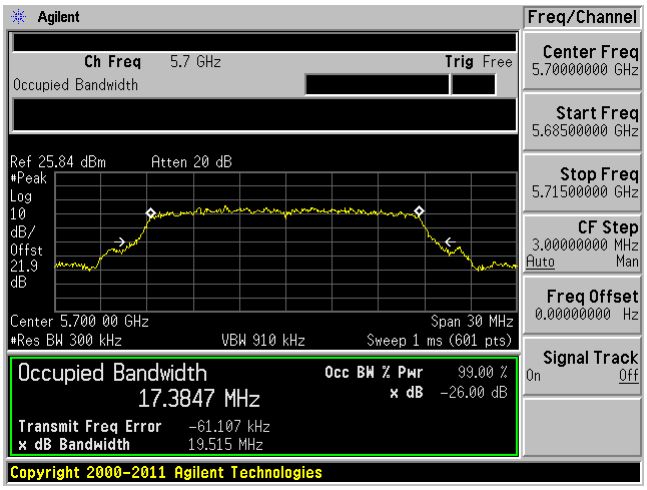
802.11n-HT20 mode, 5580 MHz, Chain 1



802.11n-HT20 mode, 5700 MHz, Chain 0

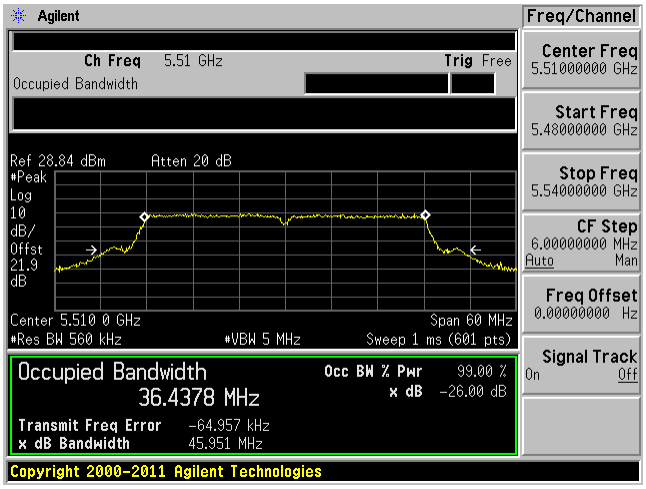


802.11n-HT20 mode, 5700 MHz, Chain 1

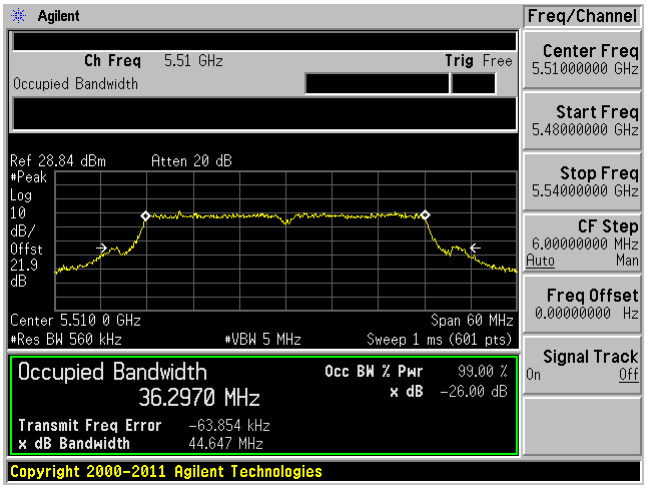


802.11n HT40 mode

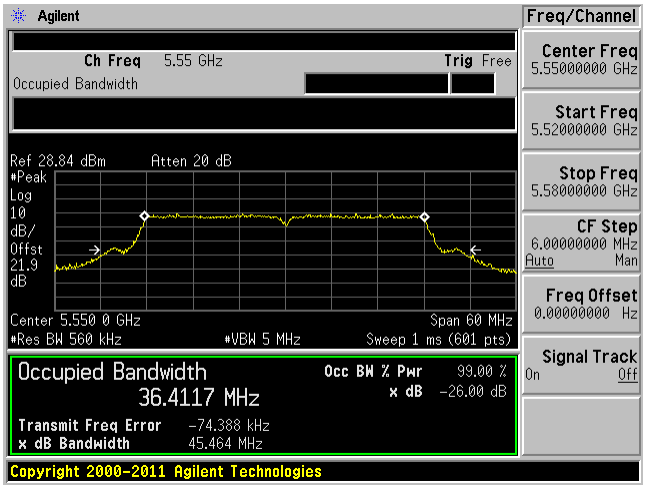
802.11n-HT40 mode, 5510 MHz, Chain 0



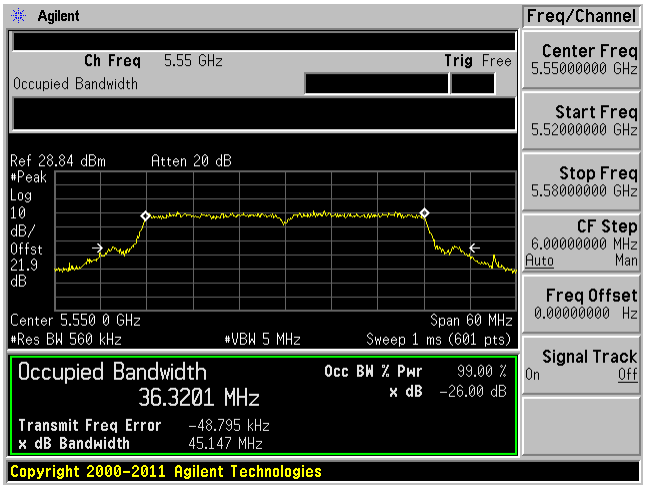
802.11n-HT40 mode, 5510 MHz, Chain 1



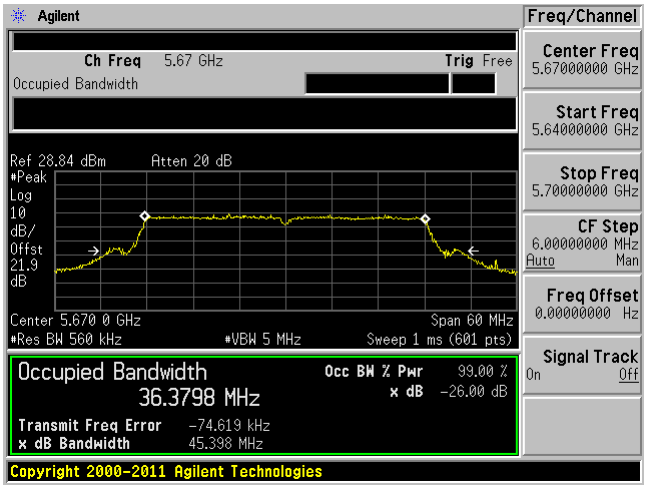
802.11n-HT40 mode, 5550 MHz, Chain 0



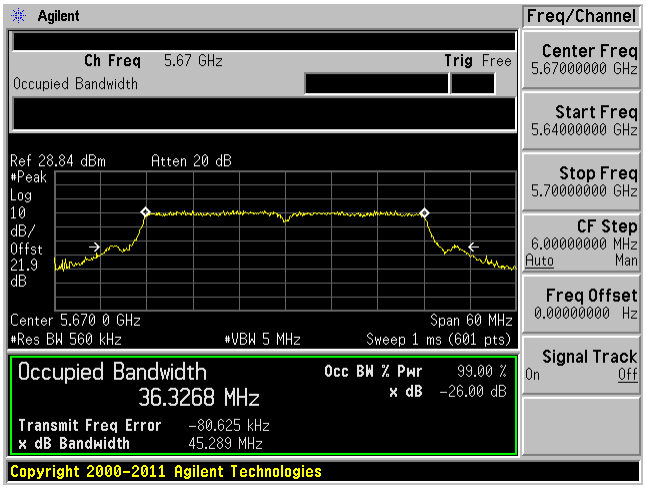
802.11n-HT40 mode, 5550 MHz, Chain 1



802.11n-HT40 mode, 5670 MHz, Chain 0



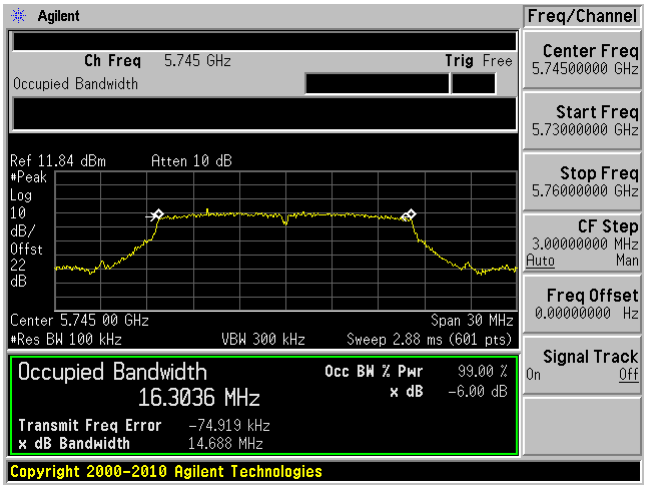
802.11n-HT40 mode, 5670 MHz, Chain 1



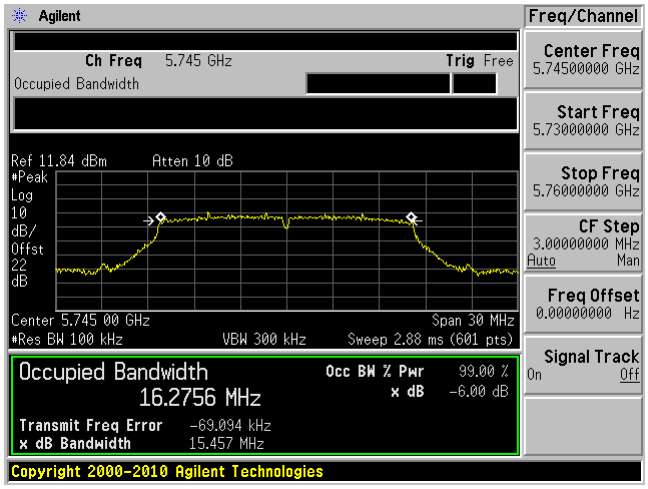
5.8 GHz Band

802.11a mode

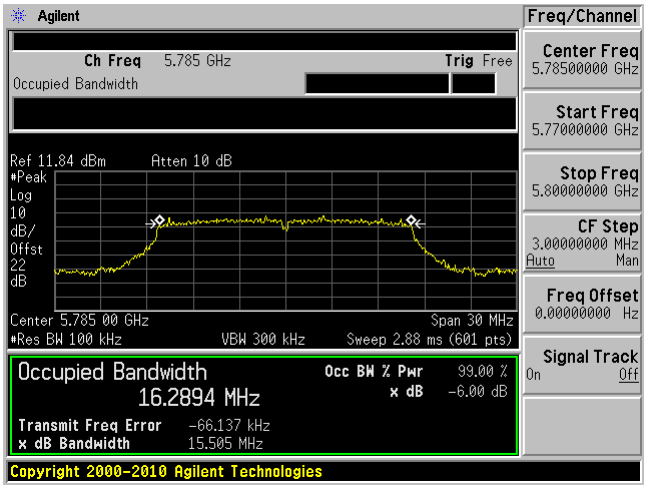
Low channel: 5745 MHz Chain 0



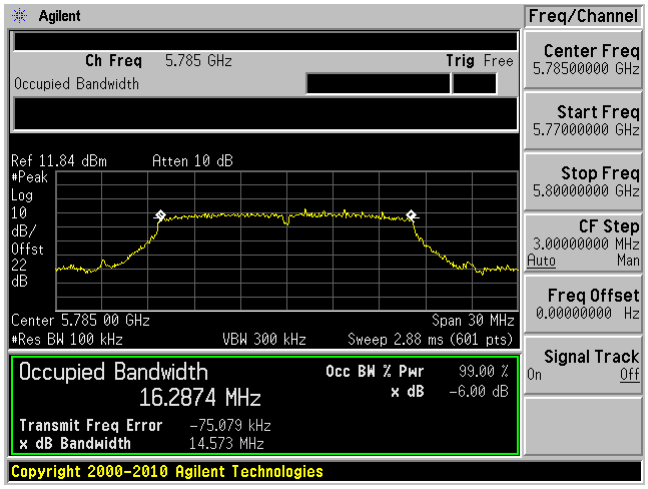
Low channel: 5745 MHz Chain 1



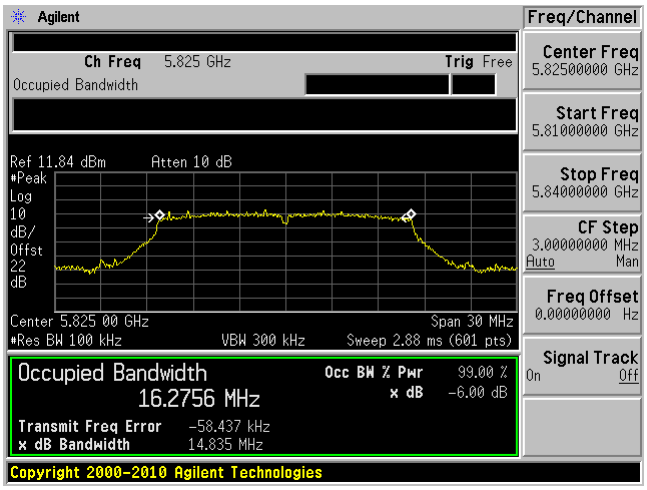
Middle channel: 5785 MHz Chain 0



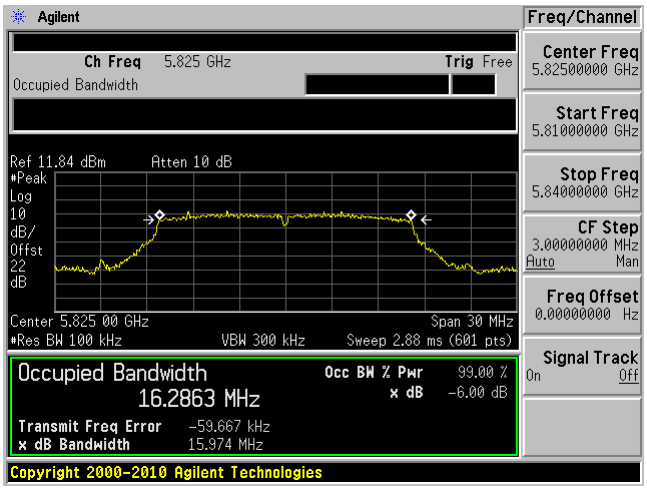
Middle channel: 5785 MHz Chain 1



High channel: 5825 MHz Chain 0

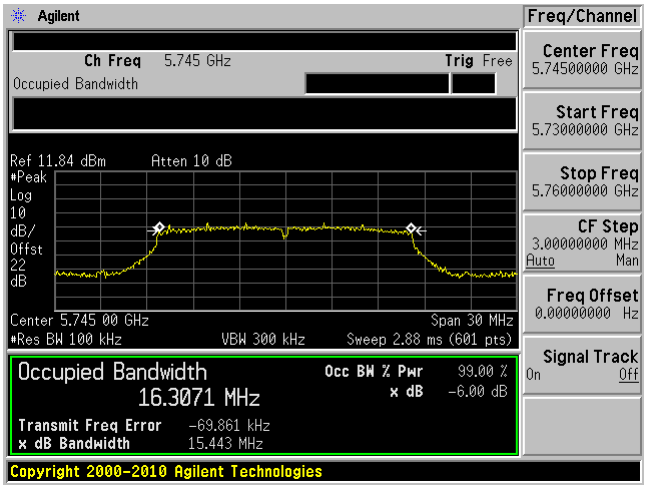


High channel: 5825 MHz Chain 1

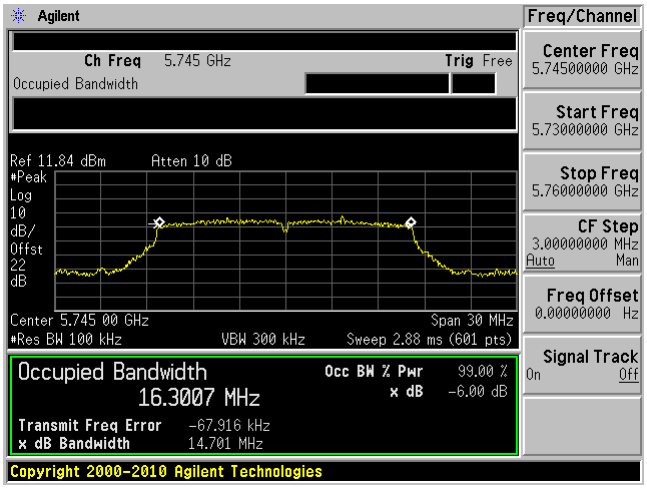


802.11n HT20 mode

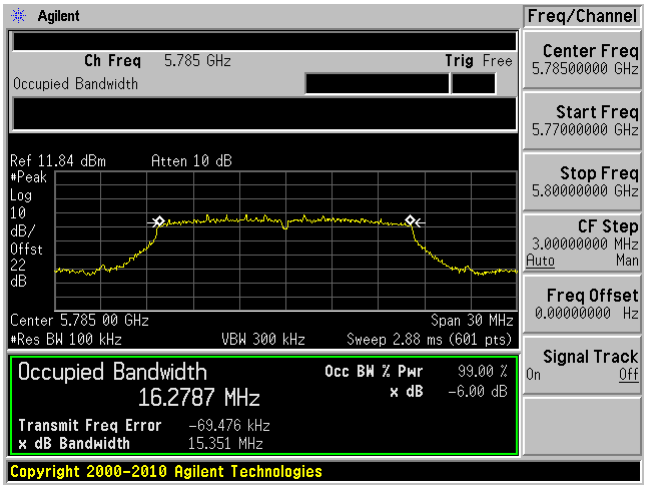
Low channel: 5745 MHz Chain 0



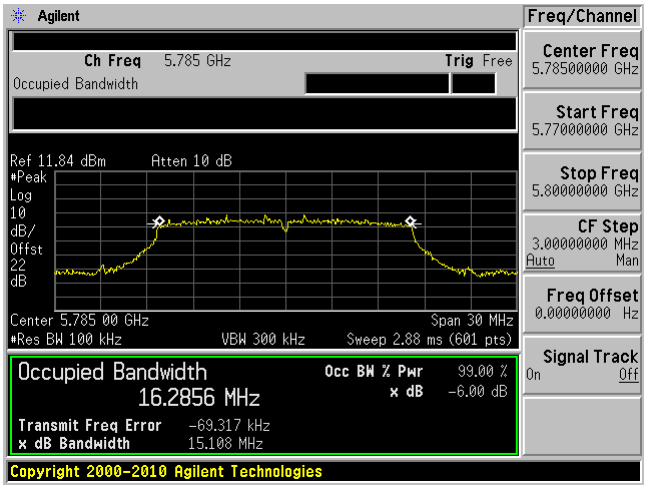
Low channel: 5745 MHz Chain 1



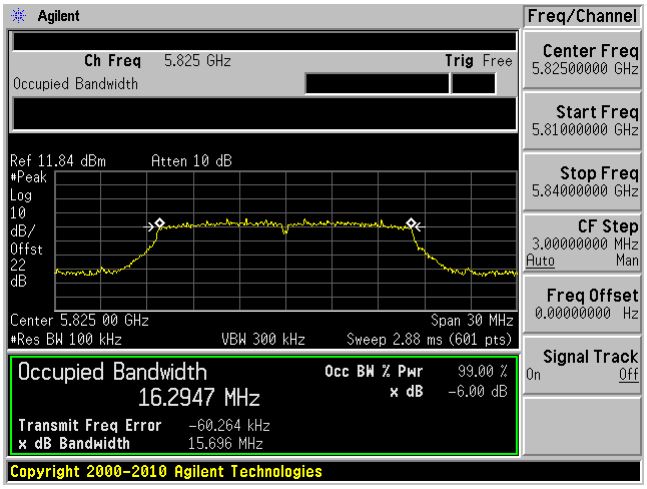
Middle channel: 5785 MHz Chain 0



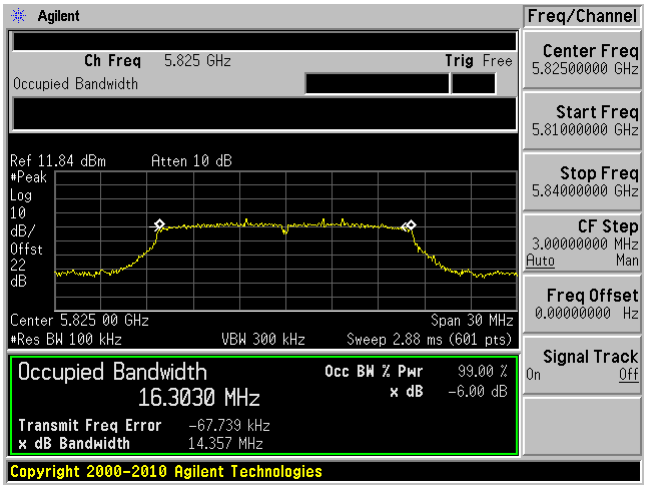
Middle channel: 5785 MHz Chain 1



High channel: 5825 MHz Chain 0

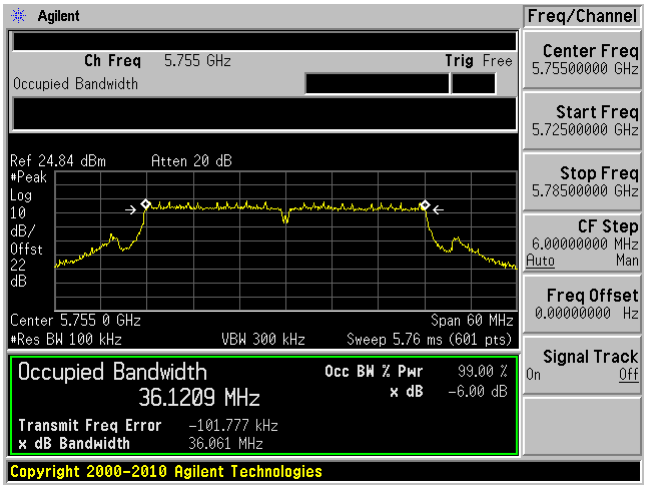


High channel: 5825 MHz Chain 1

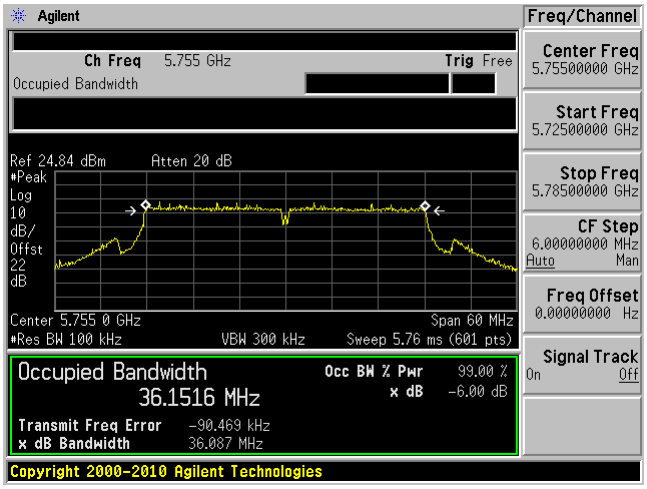


802.11n HT40 mode

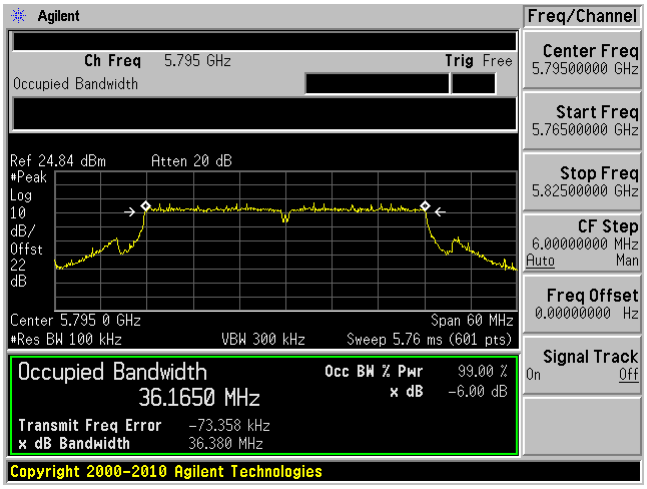
Low channel: 5755 MHz Chain 0



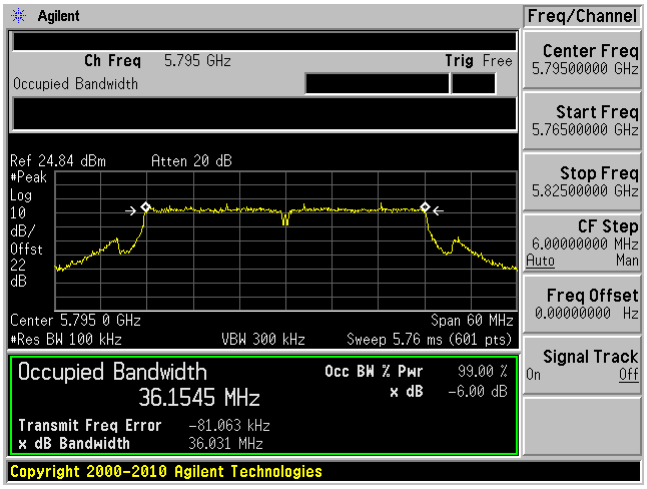
Low channel: 5755 MHz Chain 1



High channel: 5795 MHz Chain 0



High channel: 5795 MHz Chain 1



8 FCC §407(a) - Peak Output Power Measurement

8.1 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).

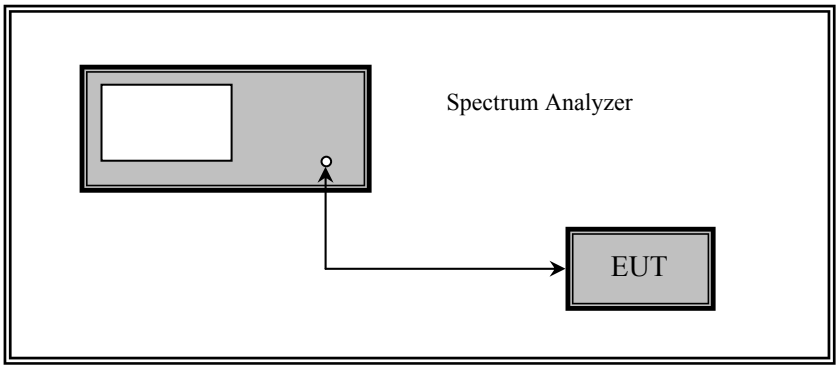
(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz 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.

8.2 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.



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

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

8.5 Test Results

Peak Output Power

5.2 GHz Band:

802.11a mode

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Max Power (dBm)	Limit (dBm)
Low	5180	15.59	15.58	15.59	24
Middle	5200	15.27	15.13	15.27	24
High	5240	15.87	15.85	15.87	24

802.11n HT20 mode

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Total Power (dBm)	Limit (dBm)
Low	5180	14.8	15.48	18.16	24
Middle	5200	14.92	15.62	18.29	24
High	5240	14.86	15.61	18.26	24

802.11n HT40 mode

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Total Power (dBm)	Limit (dBm)
Low	5190	15.47	15.34	18.42	24
High	5230	15.53	15.72	18.64	24

5.3 GHz Band:

802.11a mode

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Max Power (dBm)	Limit (dBm)
Low	5260	14.64	15.79	15.79	24
Middle	5280	14.49	15.07	15.07	24
High	5320	14.09	15.29	15.29	24

802.11n-HT20 mode

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Total Power (dBm)	Limit (dBm)
Low	5260	14.08	14.75	17.44	24
Middle	5280	14.38	14.66	17.53	24
High	5320	14.68	14.67	17.69	24

802.11n-HT40 mode

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Total Power (dBm)	Limit (dBm)
Low	5270	14.17	14.88	17.55	24
High	5310	13.85	14.76	17.34	24

5.6 GHz Band :

802.11a mode

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Max Power (dBm)	Limit (dBm)
Low	5500	17.23	17.64	17.64	24
Middle	5580	17.75	17.66	17.75	24
High	5700	17.71	17.37	17.71	24

802.11n-HT20 mode

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Total Power (dBm)	Limit (dBm)
Low	5500	16.13	17.51	19.88	23.5
Middle	5580	15.54	17.49	19.63	23.5
High	5700	15.80	18.11	20.12	23.5

802.11n-HT40 mode

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Total Power (dBm)	Limit (dBm)
Low	5510	15.54	16.45	19.03	23.5
Middle	5550	15.68	16.66	19.21	23.5
High	5670	14.90	16.94	19.05	23.5

Note: the correlated directional Gain is 6.5 dBi in 5470-5725 MHz band, the power limit was breduced by 0.5 dB for MIMO transmitting system (802.11n).

5.8 GHz Band:

802.11a mode

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Max Power (dBm)	Limit (dBm)
Low	5745	18.54	18.99	18.99	30
Middle	5785	18.95	18.97	18.97	30
High	5825	18.63	18.23	18.63	30

802.11n HT20 mode

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Total Power (dBm)	Limit (dBm)
Low	5745	17.23	19.43	21.48	29.14
Middle	5785	17.39	19.24	21.42	29.14
High	5825	17.36	19.12	21.34	29.14

802.11n HT40 mode

Channel	Frequency (MHz)	Peak TX Chain 0 Power (dBm)	Peak TX Chain 1 Power (dBm)	Peak Total Power (dBm)	Limit (dBm)
Low	5755	17.38	19.15	21.36	29.14
High	5795	17.77	19.19	21.55	29.14

Note: the correlated directional Gain is 6.86 dBi in 5725-5850 MHz band, the power limit was breduced by 0.86 dB for MIMO transmitting system (802.11n).

Average Power

5.2 GHz Band:

802.11a mode

Channel	Frequency (MHz)	AVG TX Chain 0 Power (dBm)	AVG TX Chain 1 Power (dBm)	AVG Max Power (dBm)	Limit (dBm)
Low	5180	7.61	7.42	7.61	24
Middle	5200	7.26	7.14	7.26	24
High	5240	7.89	7.44	7.44	24

802.11n HT20 mode

Channel	Frequency (MHz)	AVG TX Chain 0 Power (dBm)	AVG TX Chain 1 Power (dBm)	AVG Total Power (dBm)	Limit (dBm)
Low	5180	6.82	6.84	9.84	24
Middle	5200	6.93	6.93	9.94	24
High	5240	6.86	6.95	9.92	24

802.11n HT40 mode

Channel	Frequency (MHz)	AVG TX Chain 0 Power (dBm)	AVG TX Chain 1 Power (dBm)	AVG Total Power (dBm)	Limit (dBm)
Low	5190	6.70	6.60	9.66	24
High	5230	6.79	6.95	9.88	24

5.3 GHz Band:

802.11a mode

Channel	Frequency (MHz)	AVG TX Chain 0 Power (dBm)	AVG TX Chain 1 Power (dBm)	AVG Max Power (dBm)	Limit (dBm)
Low	5260	6.79	7.98	7.11	24
Middle	5280	6.64	7.97	7.08	24
High	5320	6.11	7.33	7.33	24

802.11n-HT20 mode

Channel	Frequency (MHz)	AVG TX Chain 0 Power (dBm)	AVG TX Chain 1 Power (dBm)	AVG Total Power (dBm)	Limit (dBm)
Low	5260	6.05	7.05	9.59	24
Middle	5280	6.38	6.97	9.70	24
High	5320	6.01	6.98	9.53	24

802.11n-HT40 mode

Channel	Frequency (MHz)	AVG TX Chain 0 Power (dBm)	AVG TX Chain 1 Power (dBm)	AVG Total Power (dBm)	Limit (dBm)
Low	5270	6.05	6.39	9.23	24
High	5310	5.55	6.60	9.12	24

5.6 GHz Band :

802.11a mode

Channel	Frequency (MHz)	AVG TX Chain 0 Power (dBm)	AVG TX Chain 1 Power (dBm)	AVG Max Power (dBm)	Limit (dBm)
Low	5500	9.25	9.5	9.5	24
Middle	5580	9.88	9.78	9.58	24
High	5700	9.52	9.75	9.52	24

802.11n-HT20 mode

Channel	Frequency (MHz)	AVG TX Chain 0 Power (dBm)	AVG TX Chain 1 Power (dBm)	AVG Total Power (dBm)	Limit (dBm)
Low	5500	8.15	8.83	11.51	23.5
Middle	5580	7.54	8.82	11.24	23.5
High	5700	7.81	8.98	11.44	23.5

802.11n-HT40 mode

Channel	Frequency (MHz)	AVG TX Chain 0 Power (dBm)	AVG TX Chain 1 Power (dBm)	AVG Total Power (dBm)	Limit (dBm)
Low	5510	7.98	8.10	11.05	23.5
Middle	5550	7.70	8.16	10.95	23.5
High	5670	7.35	8.52	10.98	23.5

Note: the correlated directional Gain is 6.5 dBi in 5470-5725 MHz band, the power limit was breduced by 0.5 dB for MIMO transmitting system (802.11n).

5.8 GHz Band:

802.11a mode

Channel	Frequency (MHz)	AVG TX Chain 0 Power (dBm)	AVG TX Chain 1 Power (dBm)	AVG Max Power (dBm)	Limit (dBm)
Low	5745	10.56	10.93	10.83	30
Middle	5785	10.65	10.95	10.62	30
High	5825	10.62	10.36	10.65	30

802.11n HT20 mode

Channel	Frequency (MHz)	AVG TX Chain 0 Power (dBm)	AVG TX Chain 1 Power (dBm)	AVG Total Power (dBm)	Limit (dBm)
Low	5745	9.26	10.74	13.07	29.14
Middle	5785	9.39	10.59	13.04	29.14
High	5825	9.38	10.49	12.98	29.14

802.11n HT40 mode

Channel	Frequency (MHz)	AVG TX Chain 0 Power (dBm)	AVG TX Chain 1 Power (dBm)	AVG Total Power (dBm)	Limit (dBm)
Low	5755	9.25	10.42	12.88	29.14
High	5795	9.66	10.63	13.18	29.14

Note: the correlated directional Gain is 6.86 dBi in 5725-5850 MHz band, the power limit was breduced by 0.86 dB for MIMO transmitting system (802.11n).

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

9.1 Applicable Standards

According to FCC §15.407(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: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.

9.2 Measurement Procedure

Add a correction factor (antenna gain+ Attenuator loss+cable loss) to the display.

Integration Method

1. For peak emissions measurements, follow the procedures described in section H)5), “Procedures for Peak Unwanted Emissions Measurements above 1000 MHz”, except for the following changes:

- Set RBW = 100 kHz
- Set VBW = 3 · RBW
- Perform a band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured. CAUTION: You must ensure that the spectrum analyzer or EMI receiver is set for peak-detection and max-hold for this measurement.

2. For average emissions measurements, follow the procedures described in section H)6), “Procedures for Average Unwanted Emissions Measurements above 1000 MHz”, except for the following changes:

- Set RBW = 100 kHz
- Set VBW = 3xRBW
- Perform a band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured.

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

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

9.5 Test Results

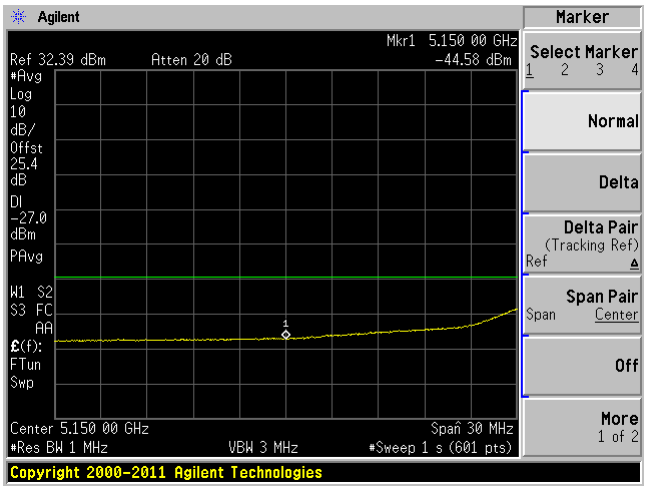
Please refer to following pages for plots of band edge

Note: the offset include the attenuation, cable loss and the maximum antenna gain. And the magin between limit line and the emission covers other requirements in the KDB 789033.

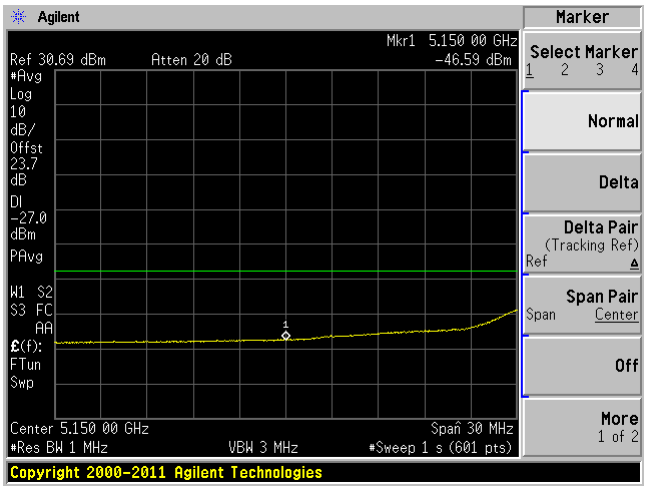
5.2 GHz Band

802.11a mode

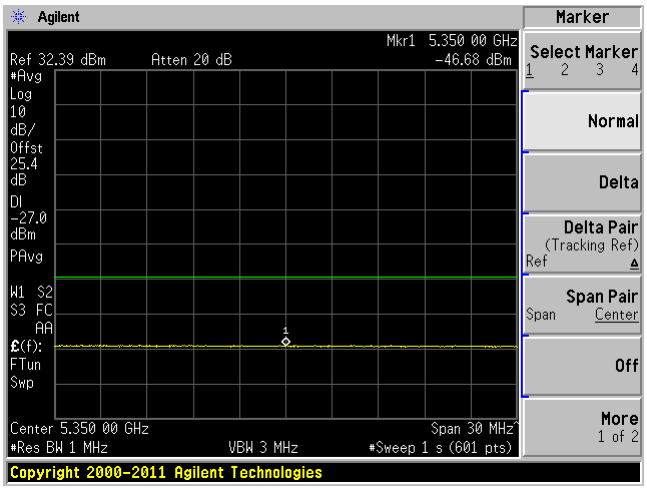
Low channel: 5180 MHz Chain 0



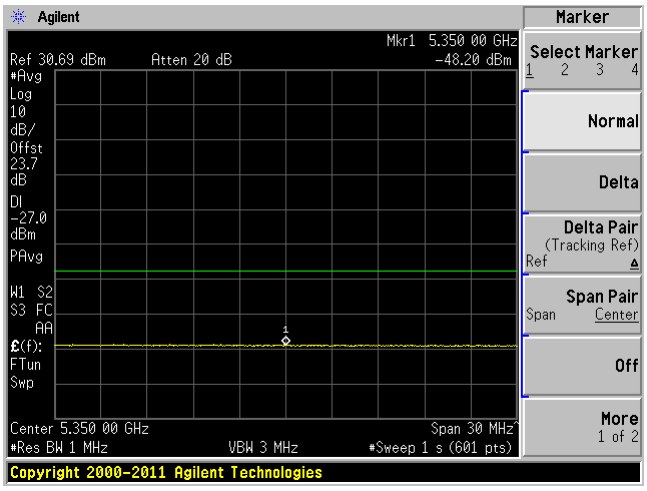
Low channel: 5180 MHz Chain 1



High channel: 5240 MHz Chain 0

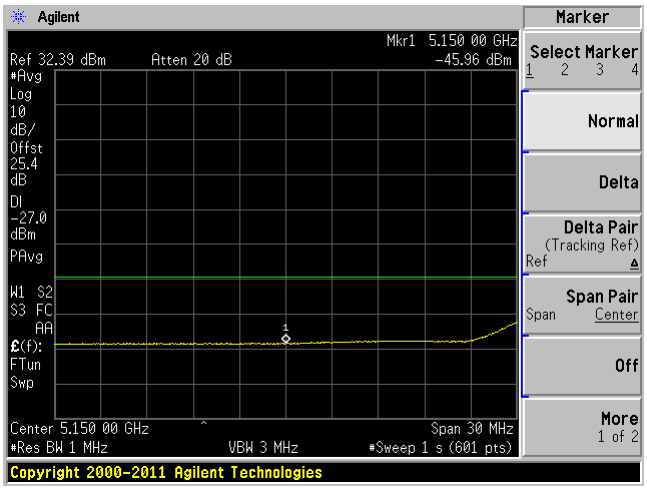


High channel: 5240 MHz Chain 1

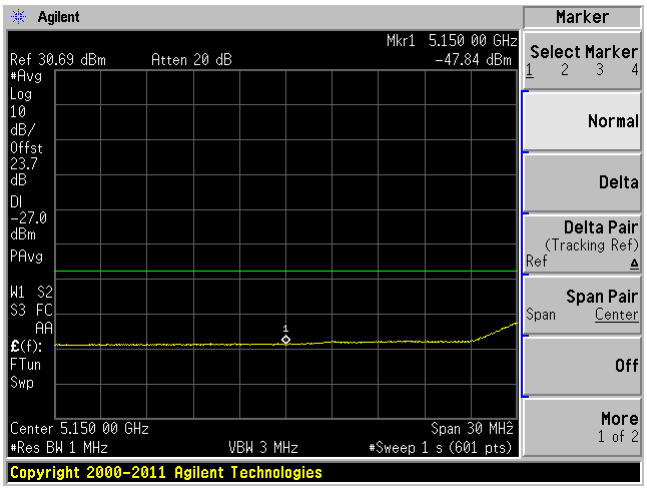


802.11n HT20 mode

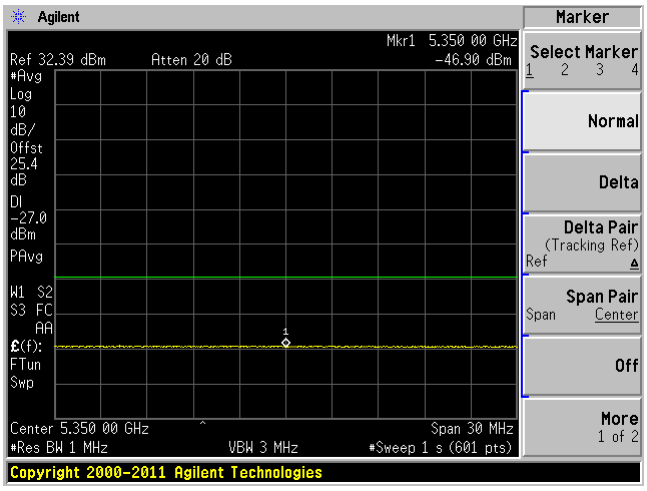
Low channel: 5180 MHz Chain 0



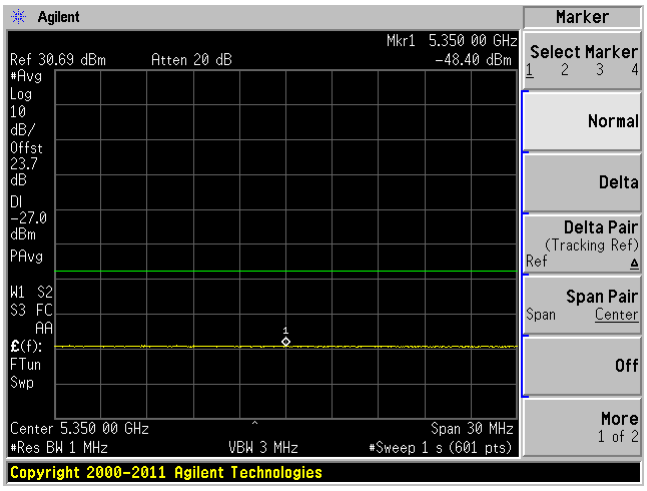
Low channel: 5180 MHz Chain 1



High channel: 5240 MHz Chain 0

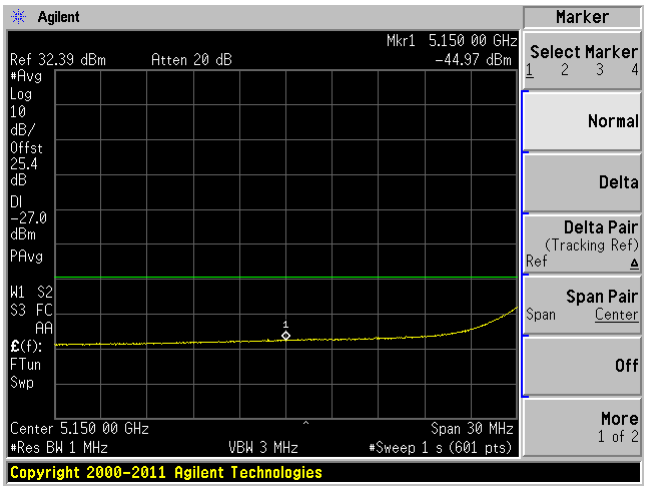


High channel: 5240 MHz Chain 1

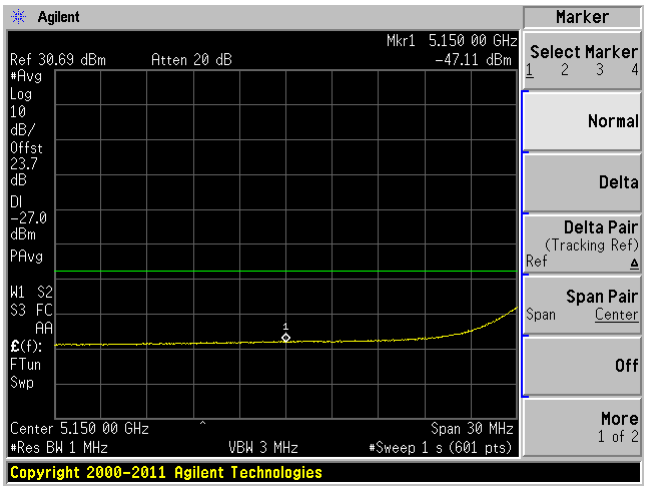


802.11n HT40 mode

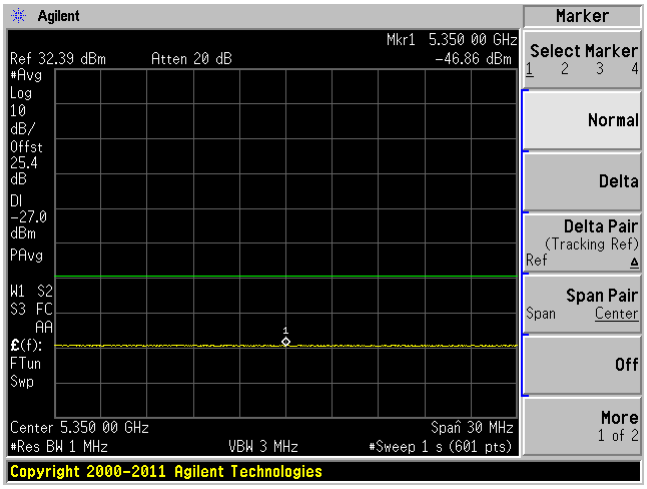
Low channel: 5190 MHz Chain 0



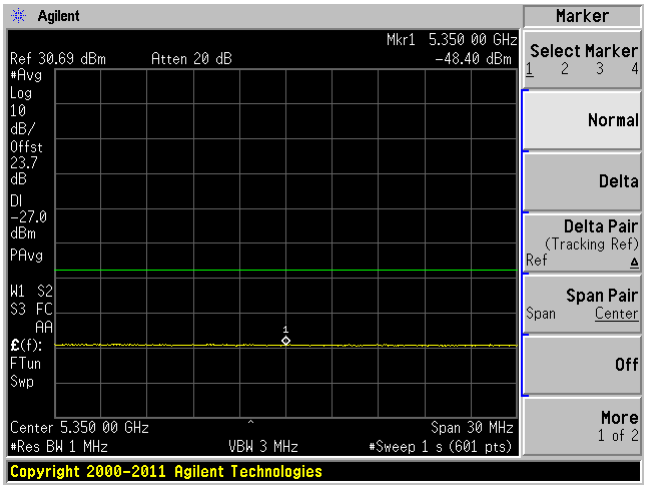
Low channel: 5190 MHz Chain 1



High channel: 5230 MHz Chain 0



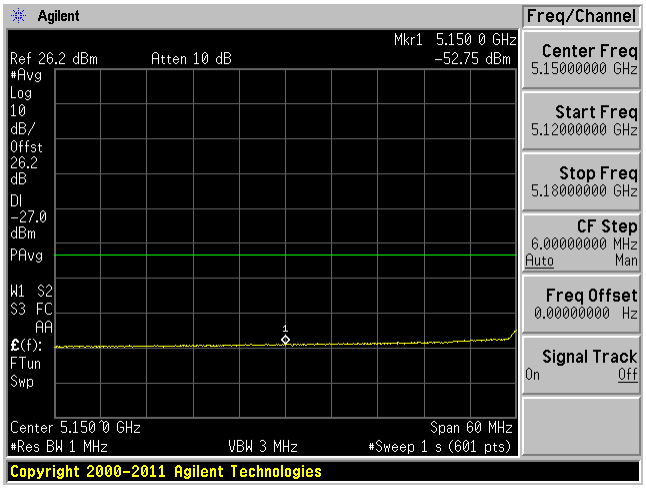
High channel: 5230 MHz Chain 1



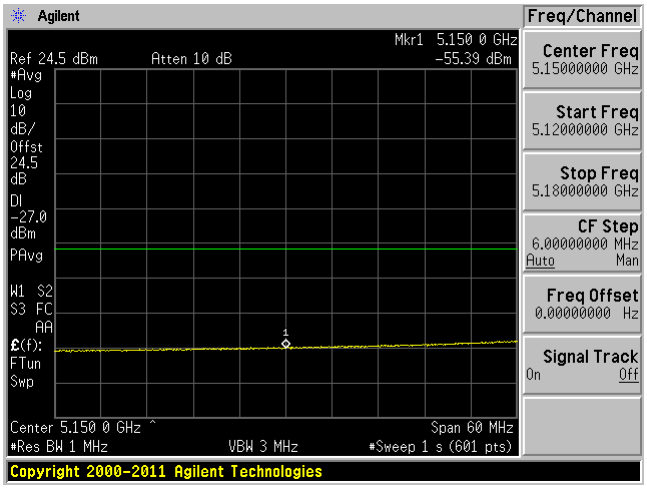
5.3 GHz Band

802.11a mode

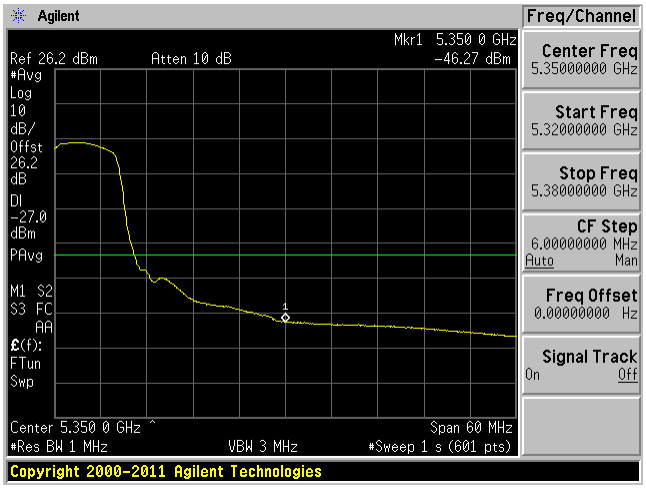
802.11a mode, 5260 MHz, Chain 0



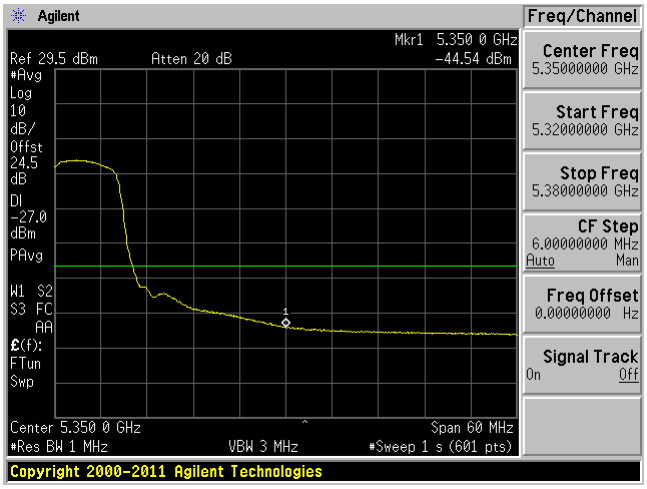
802.11a mode, 5260 MHz, Chain 1



802.11a mode, 5320 MHz, Chain 0

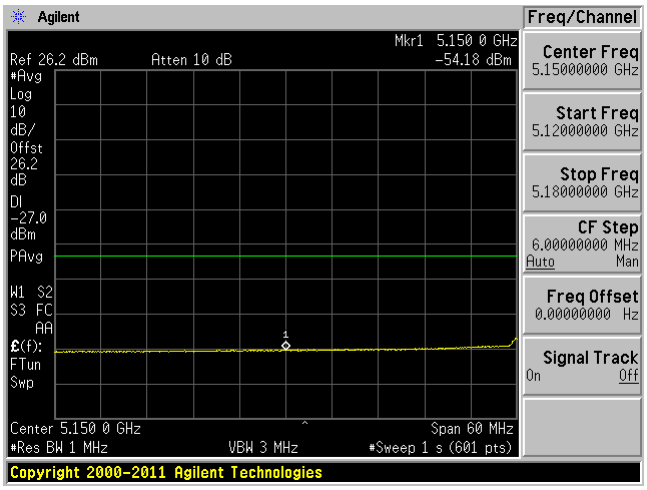


802.11a mode, 5320 MHz, Chain 1

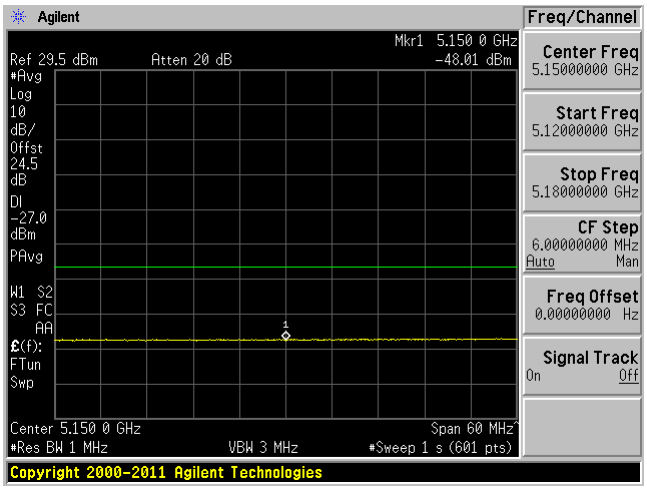


802.11n HT20 mode

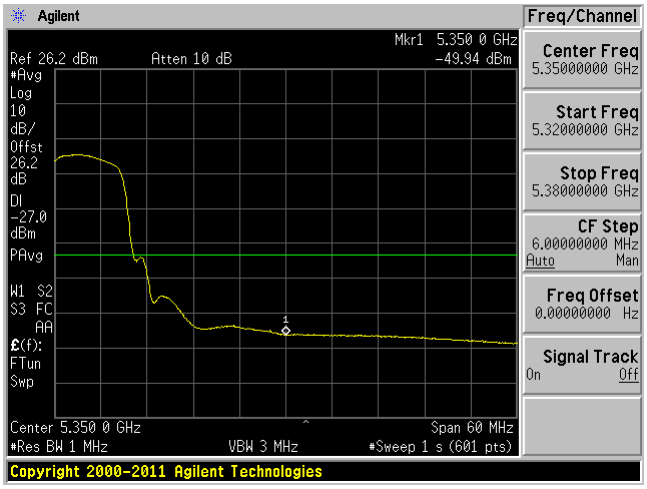
802.11n-HT20 mode, 5260 MHz, Chain 0



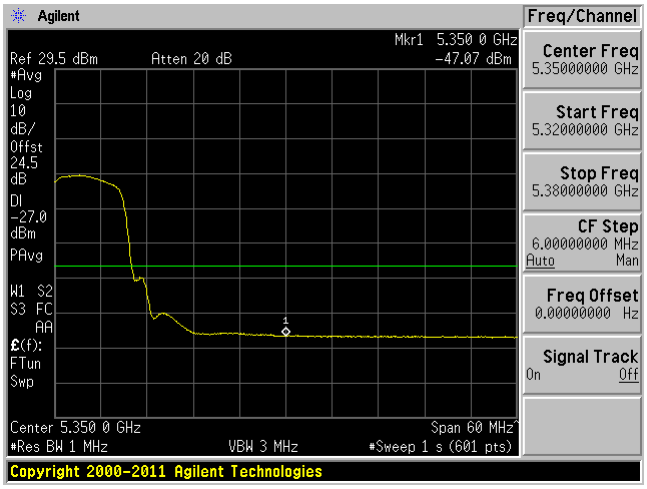
802.11n-HT20 mode, 5260 MHz, Chain 1



802.11n-HT20 mode, 5320 MHz, Chain 0

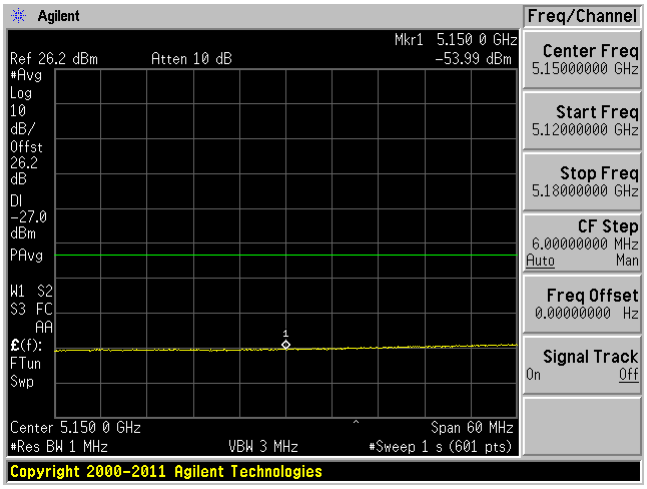


802.11n-HT20 mode, 5320 MHz, Chain 1

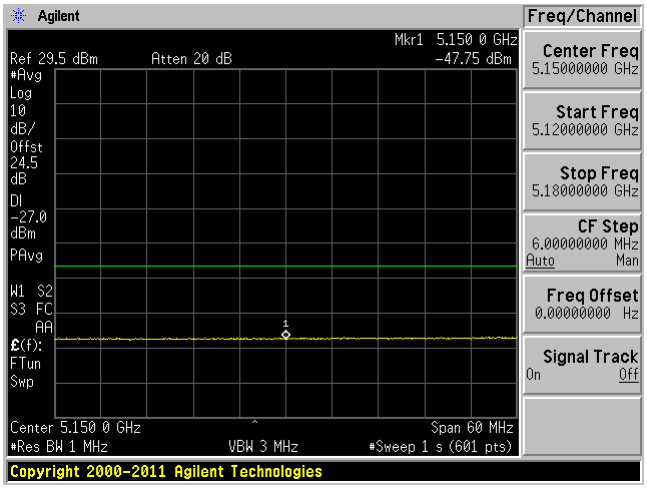


802.11n HT40 mode

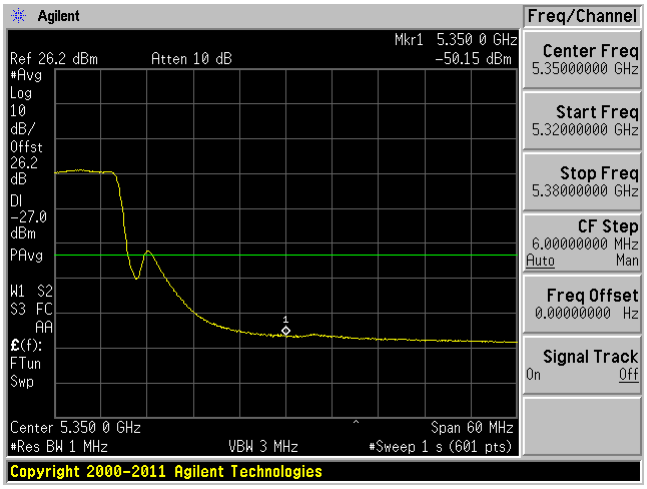
802.11n-HT40 mode, 5270 MHz, Chain 0



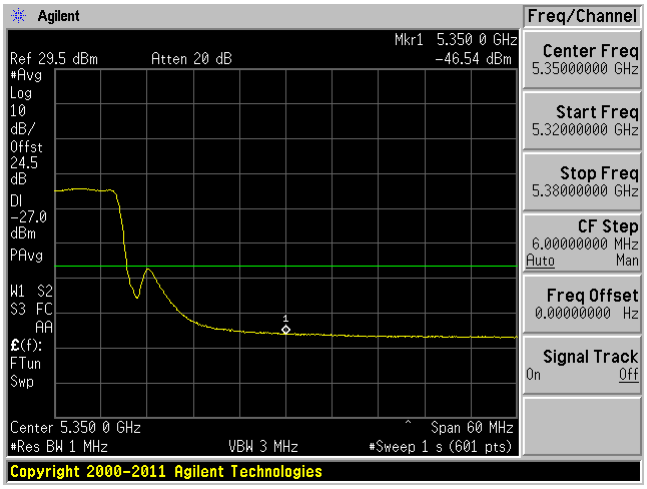
802.11n-HT40 mode, 5270 MHz, Chain 1



802.11n-HT40 mode, 5310 MHz, Chain 0



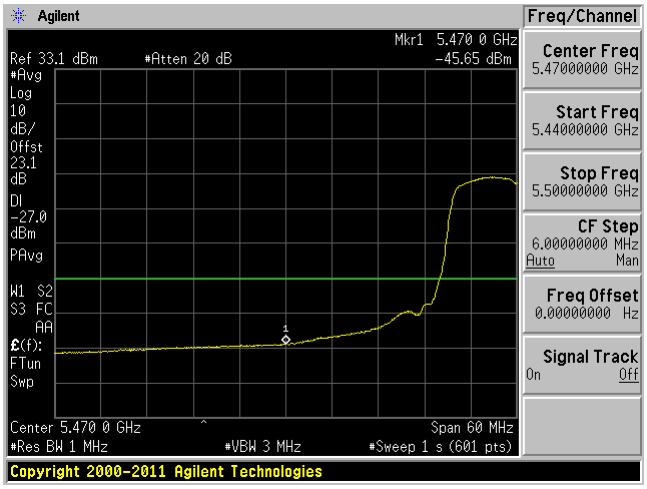
802.11n-HT40 mode, 5310 MHz, Chain 1



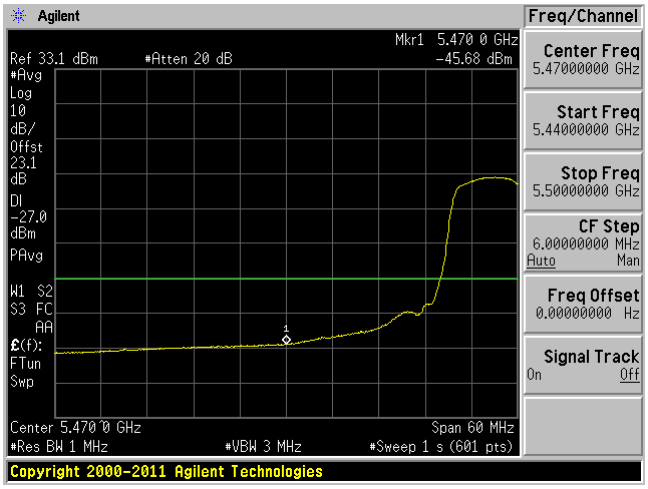
5.6 GHz Band

802.11a mode

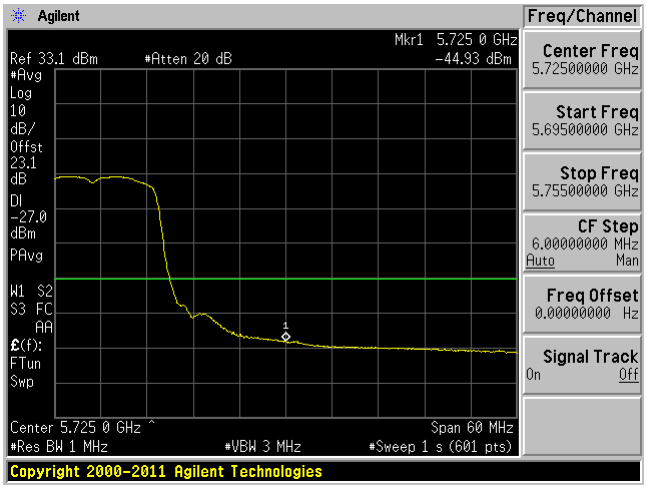
802.11a mode, 5550 MHz, Chain 0



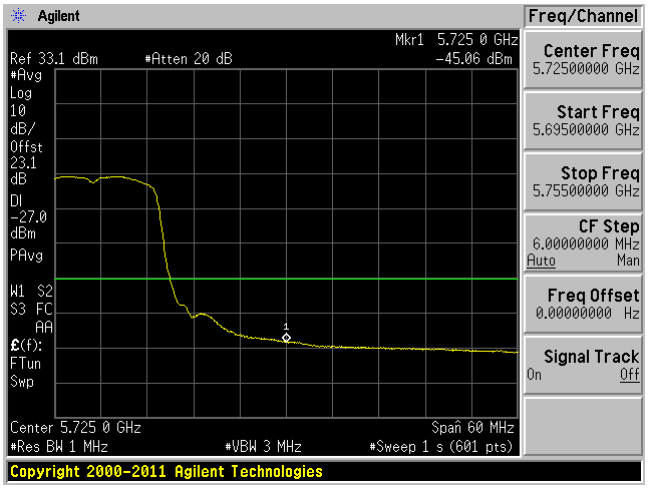
802.11a mode, 5550 MHz, Chain 1



802.11a mode, 5700 MHz, Chain 0

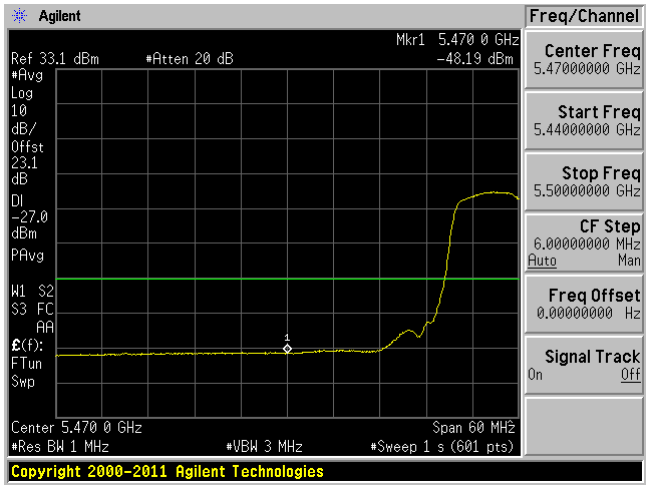


802.11a mode, 5700 MHz, Chain 1

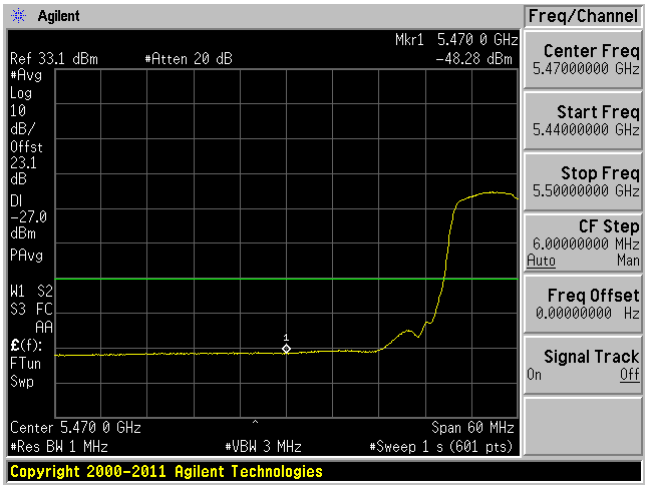


802.11n HT20 mode

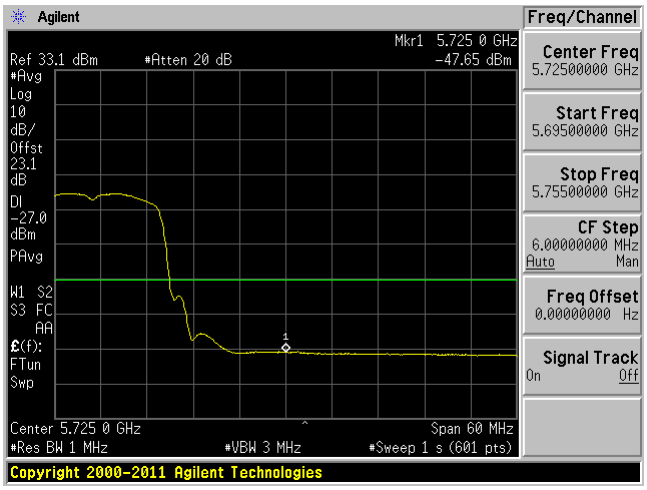
802.11n-HT20 mode, 5500 MHz, Chain 0



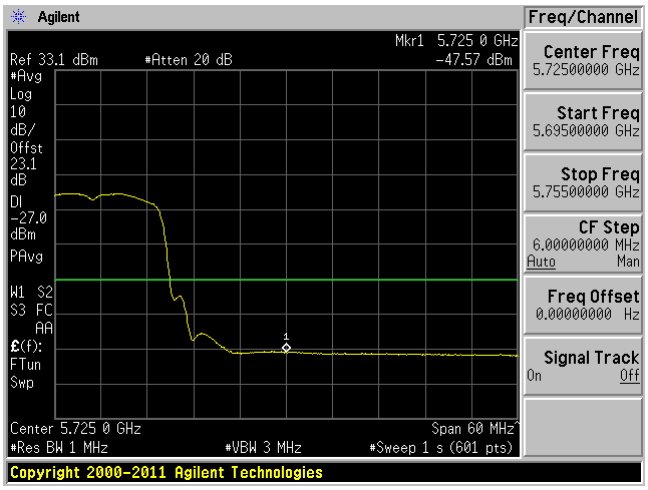
802.11n-HT20 mode, 5500 MHz, Chain 1



802.11n-HT20 mode, 5700 MHz, Chain 0

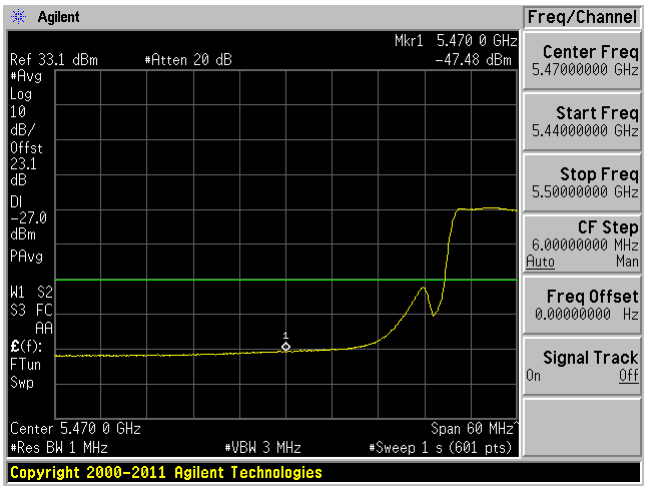


802.11n-HT20 mode, 5700 MHz, Chain 1

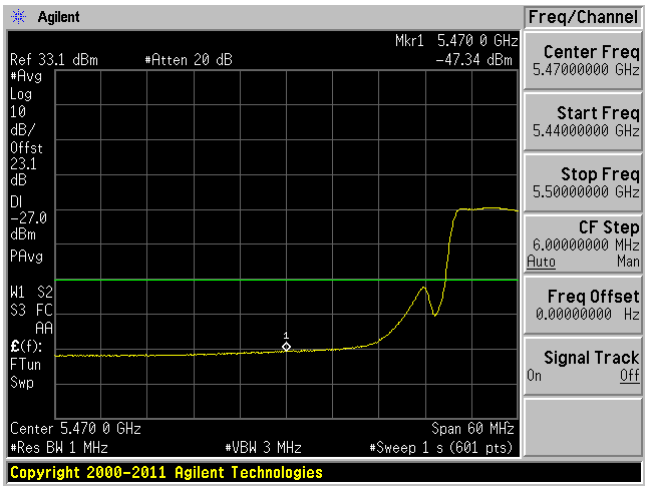


802.11n HT40 mode

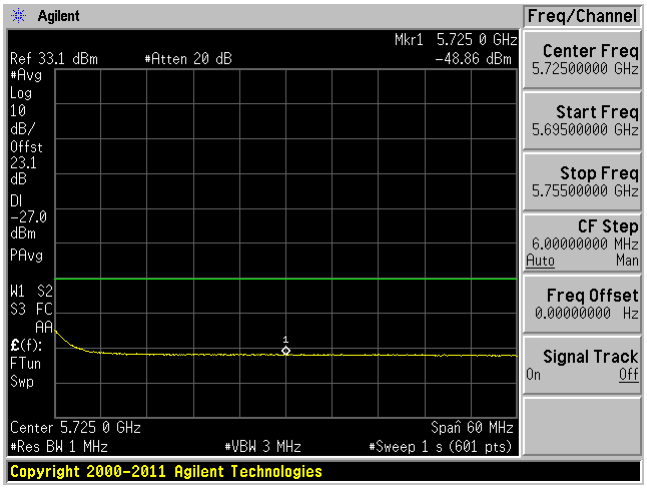
802.11n-HT40 mode, 5510 MHz, Chain 0



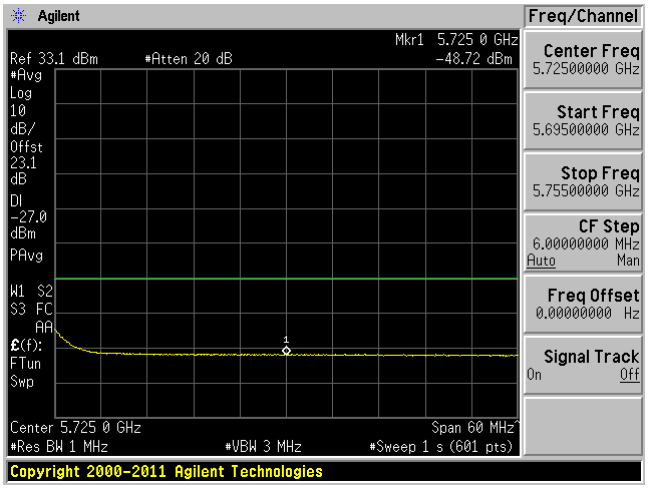
802.11n-HT40 mode, 5510 MHz, Chain 1



802.11n-HT40 mode, 5670 MHz, Chain 0



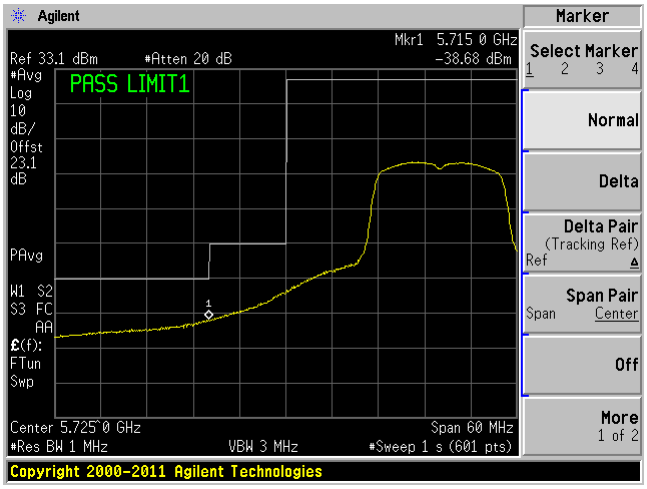
802.11n-HT40 mode, 5670 MHz, Chain 1



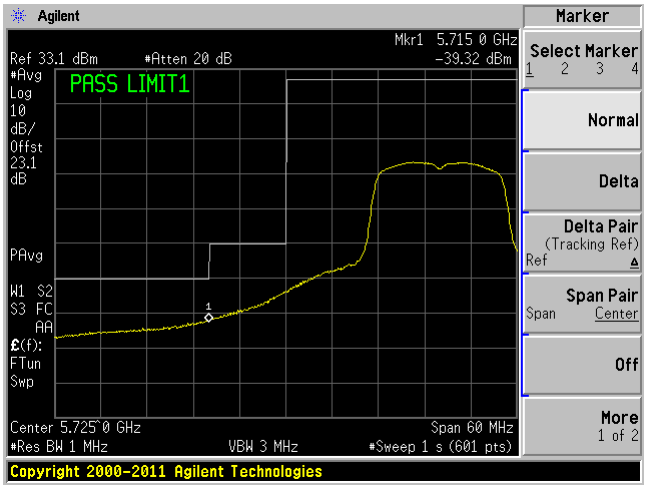
5.8 GHz Band

802.11a mode

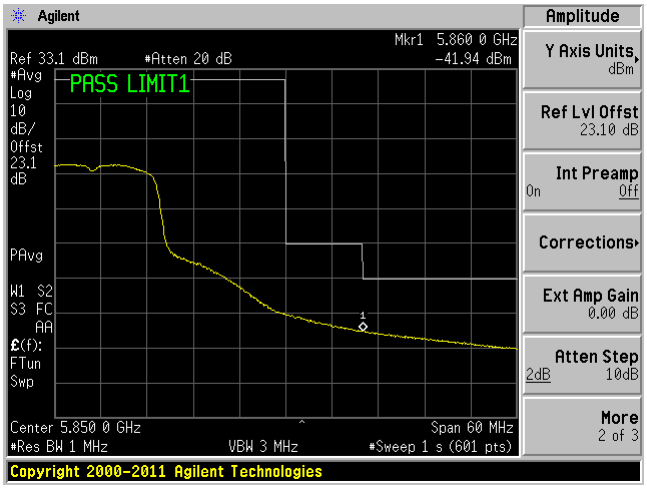
Low channel: 5745 MHz Chain 0



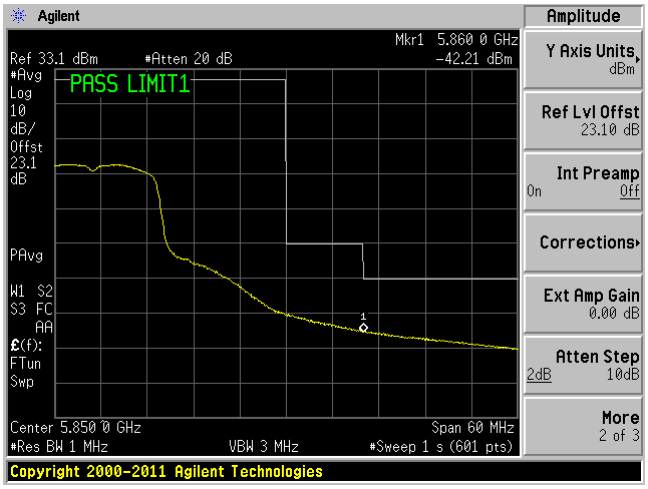
Low channel: 5745 MHz Chain 1



High channel: 5825 MHz Chain 0

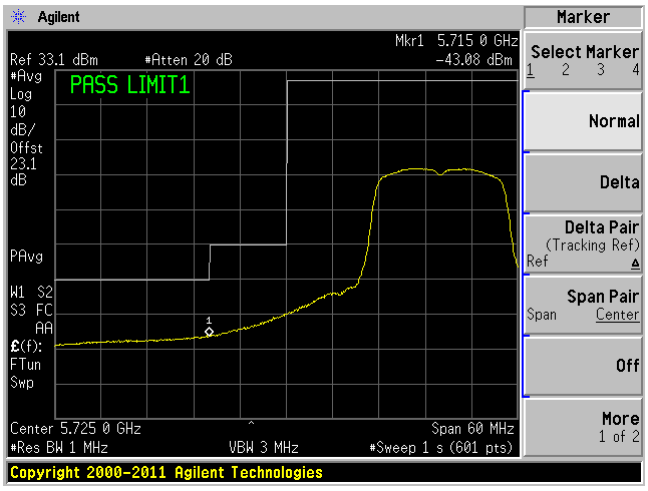


High channel: 5825 MHz Chain 1

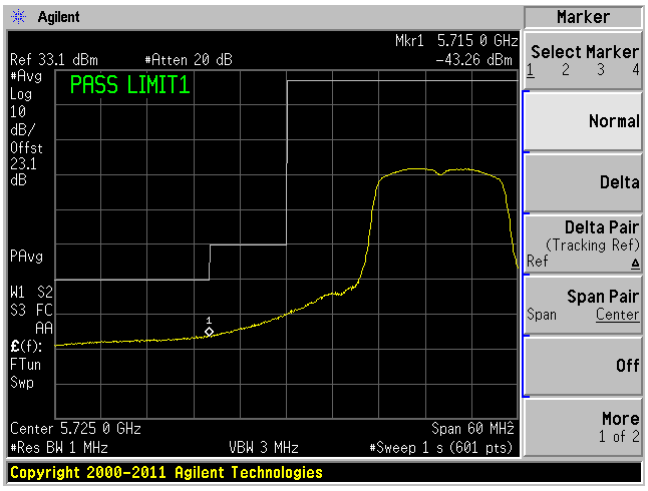


802.11n HT20 mode

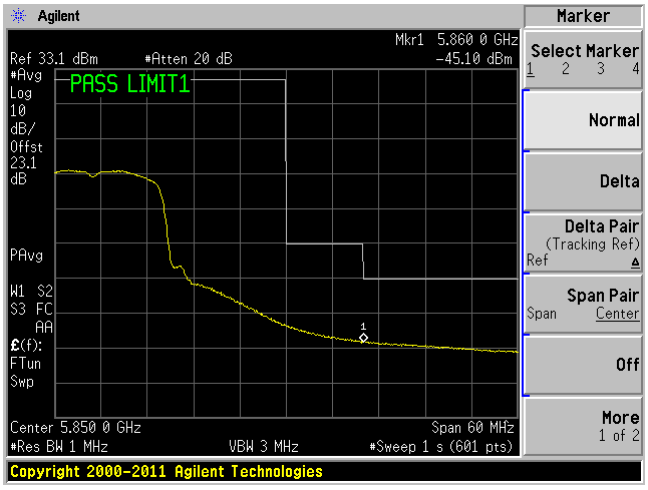
Low channel: 5745 MHz Chain 0



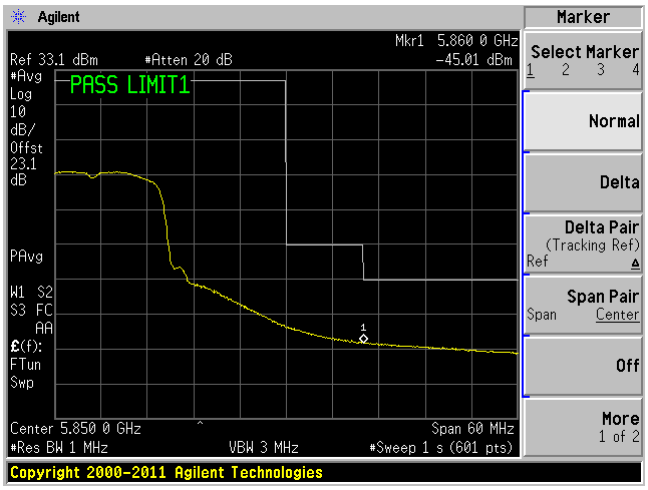
Low channel: 5745 MHz Chain 1



High channel: 5825 MHz Chain 0

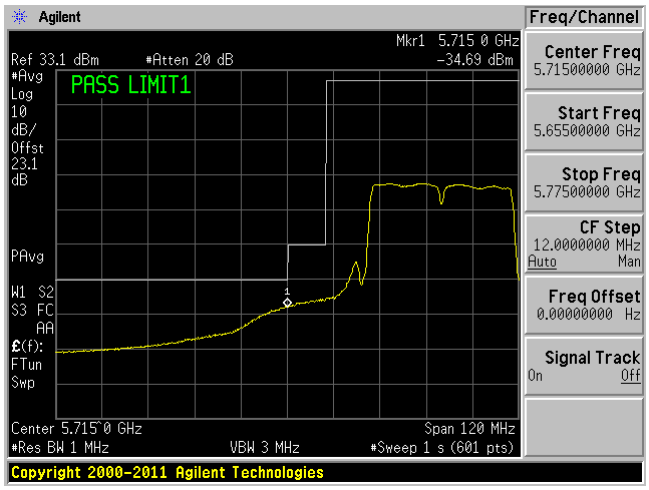


High channel: 5825 MHz Chain 1

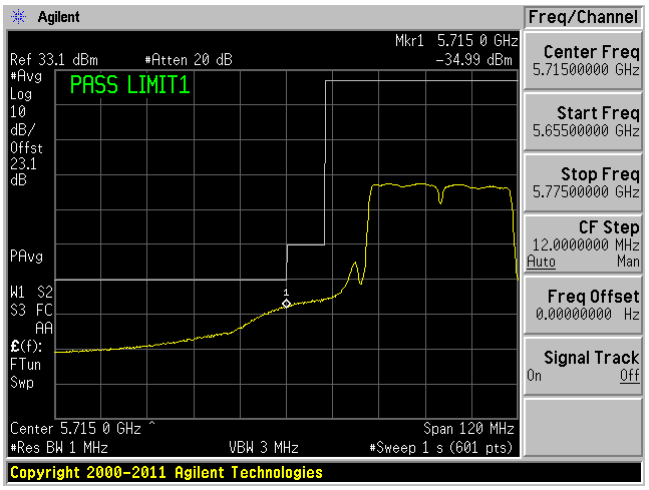


802.11n HT40 mode

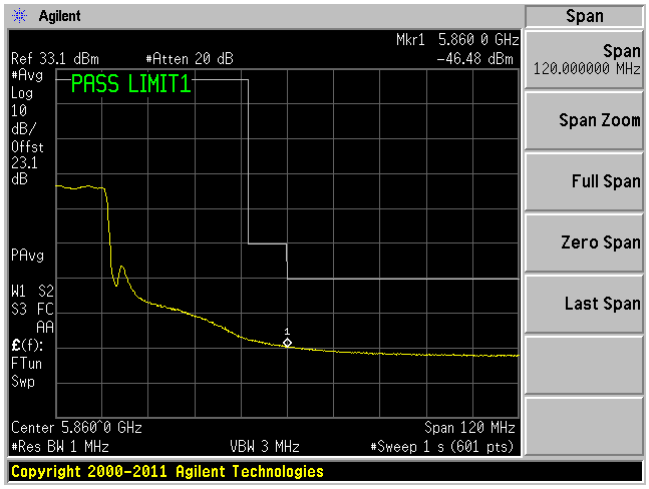
Low channel: 5755 MHz Chain 0



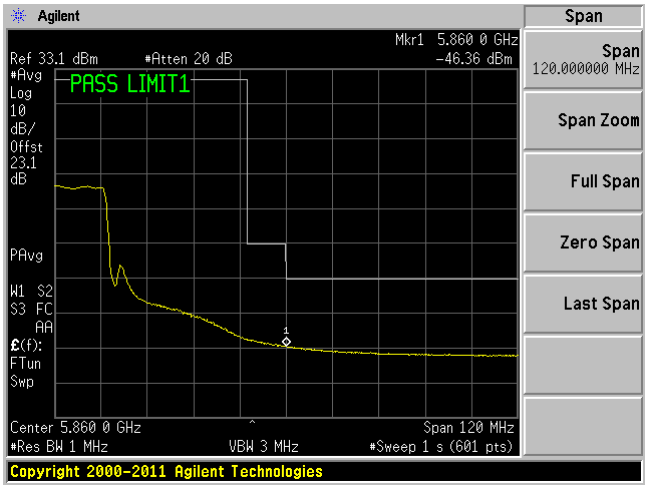
Low channel: 5755 MHz Chain 1



High channel: 5795 MHz Chain 0



High channel: 5795 MHz Chain 1



10 FCC §15.407(b) - Spurious Emissions at Antenna Terminals

10.1 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.

10.2 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.

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

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

10.5 Test Results

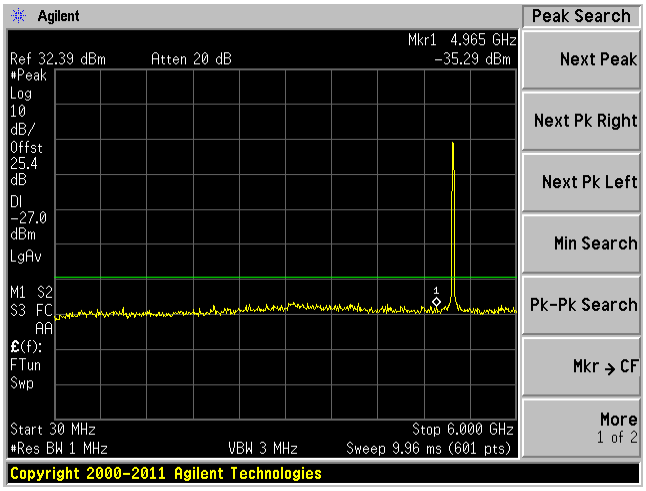
Please refer to following plots of spurious emissions.

Note: the offset include the attenuation, cable loss and the maximum antenna gain. And the magin between limit line and the emission covers other requirements in the KDB 789033. For the 30M-1GHz, the additional 4.7dB should be added in the emission.

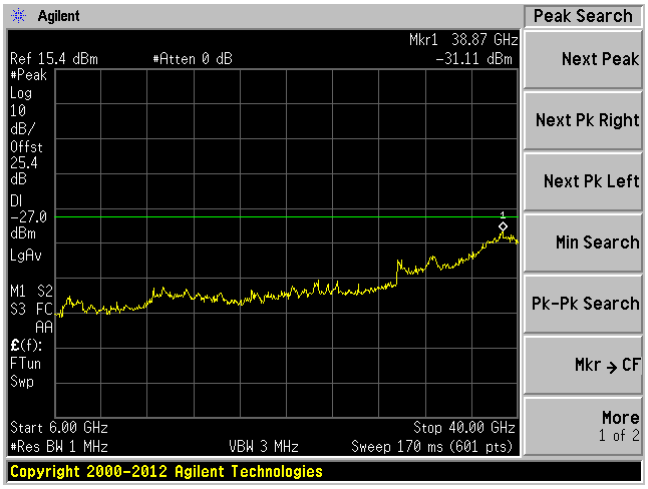
5.2 GHz Band

802.11a, Low Channel, 5180 MHz

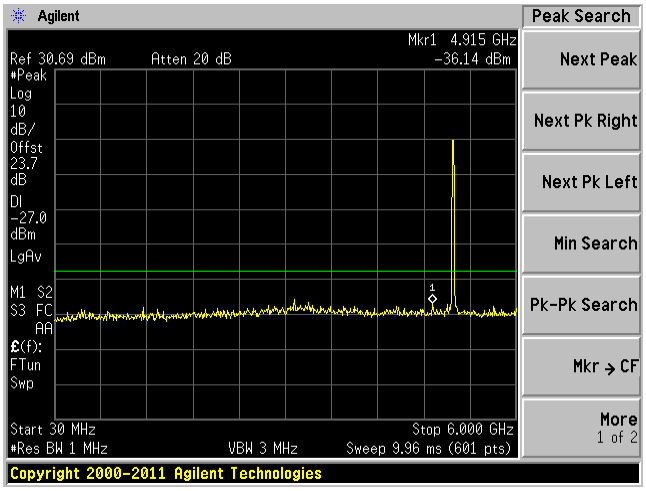
Chain 0, Plot: 30 MHz – 6 GHz



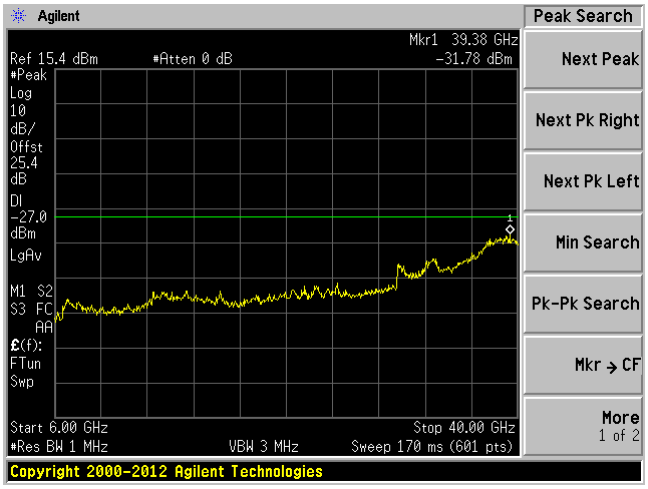
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

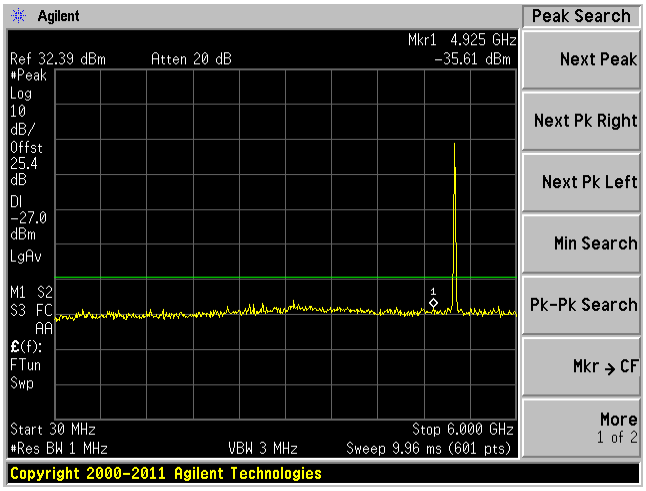


Chain 1, Plot: 6 GHz – 40 GHz

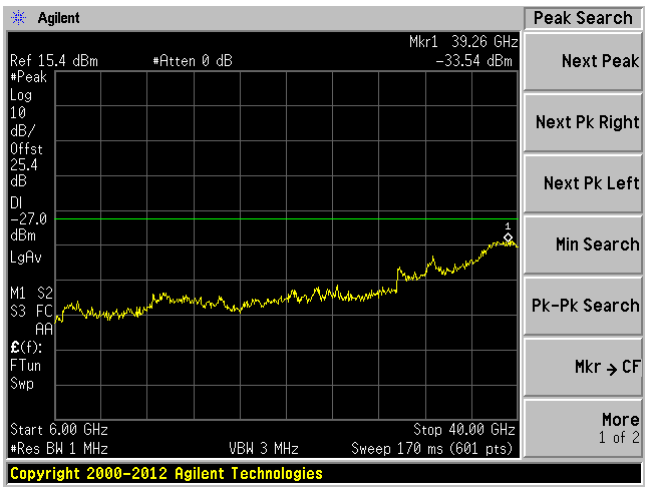


802.11a, Middle Channel, 5200 MHz

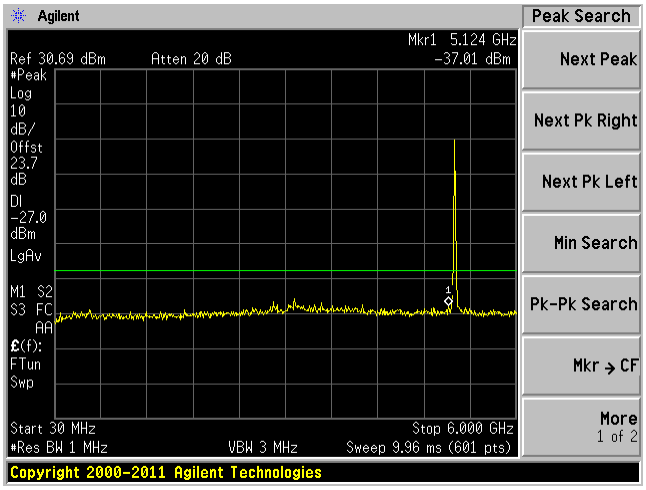
Chain 0, Plot: 30 MHz – 6 GHz



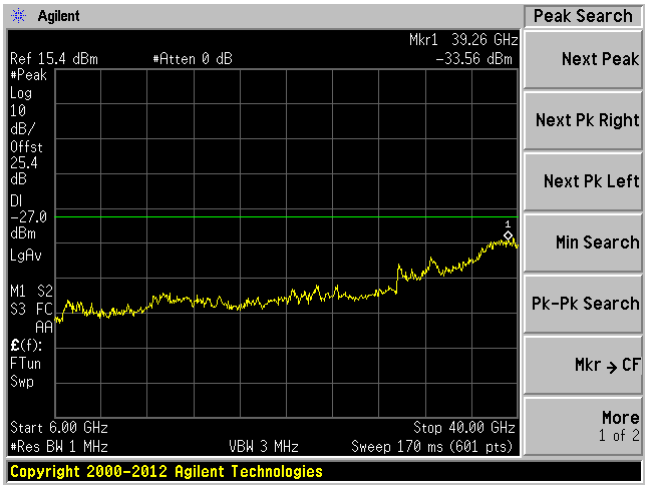
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

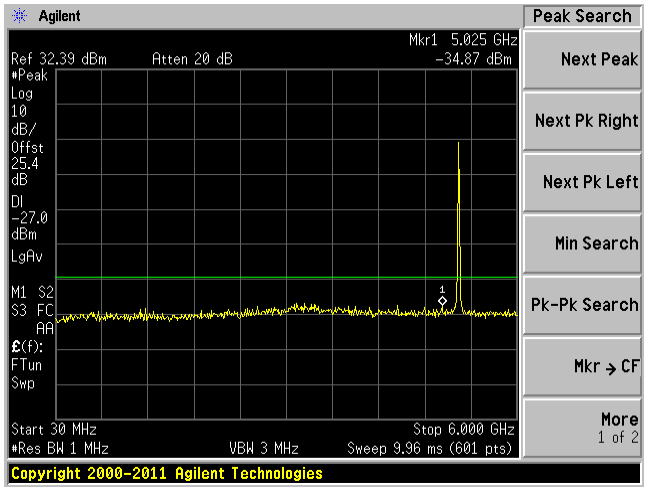


Chain 1, Plot: 6 GHz – 40 GHz

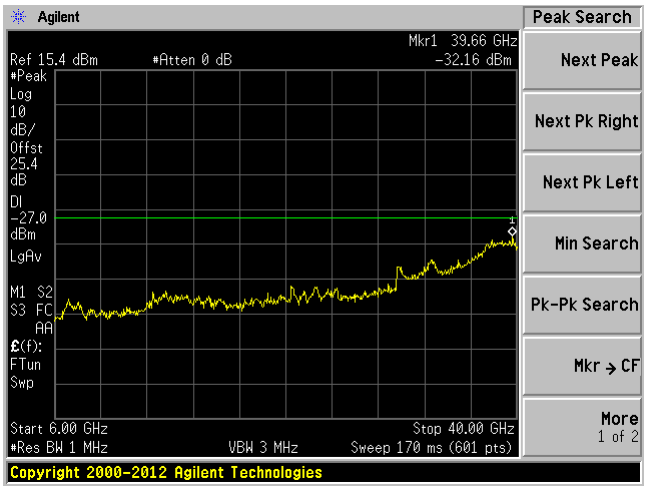


802.11a, High Channel, 5240 MHz

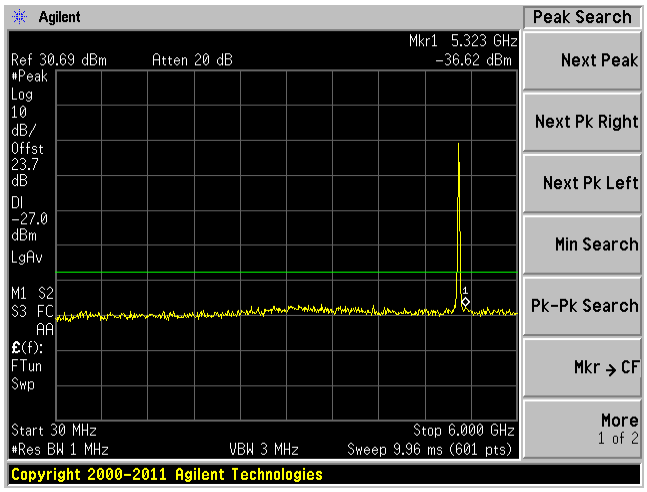
Chain 0, Plot: 30 MHz – 6 GHz



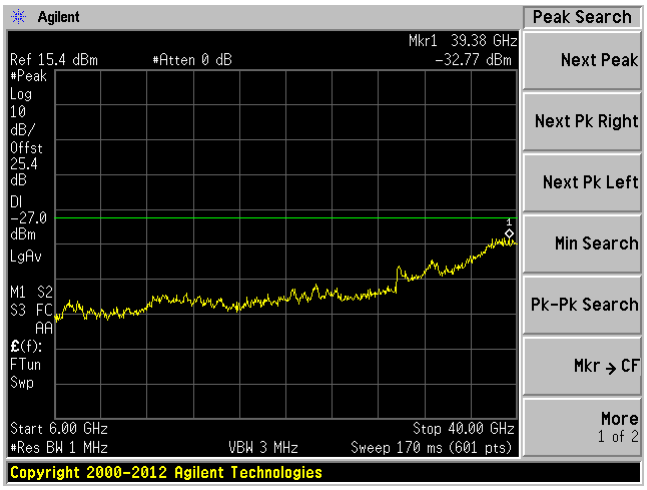
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

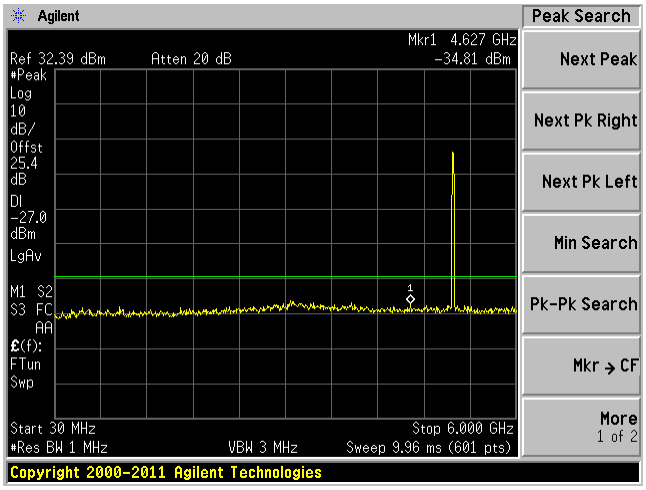


Chain 1, Plot: 6 GHz – 40 GHz

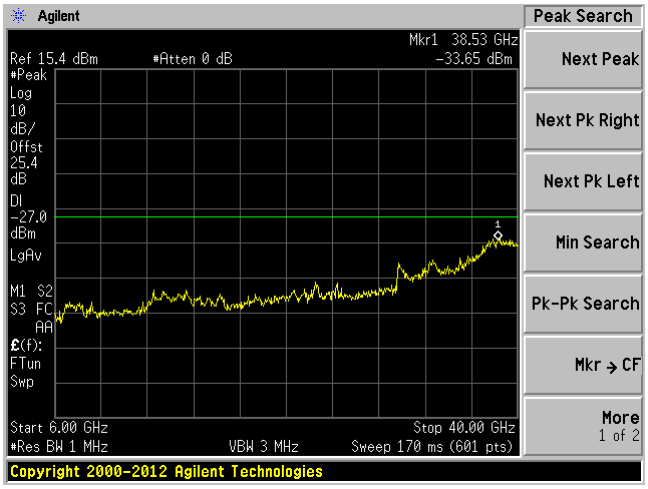


802.11n HT 20, Low Channel 5180 MHz

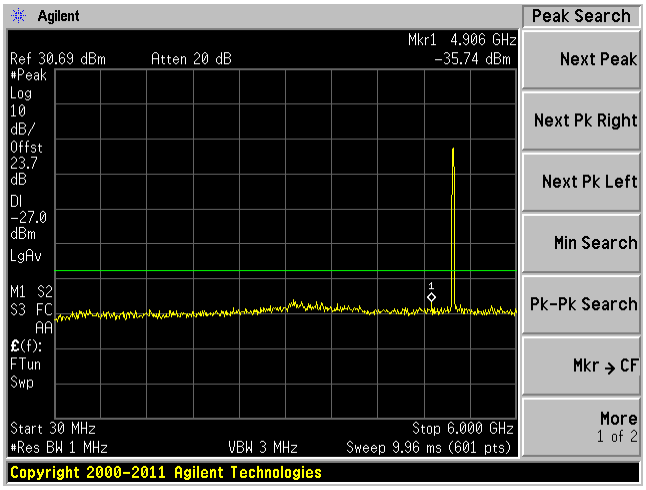
Chain 0, Plot: 30 MHz – 6 GHz



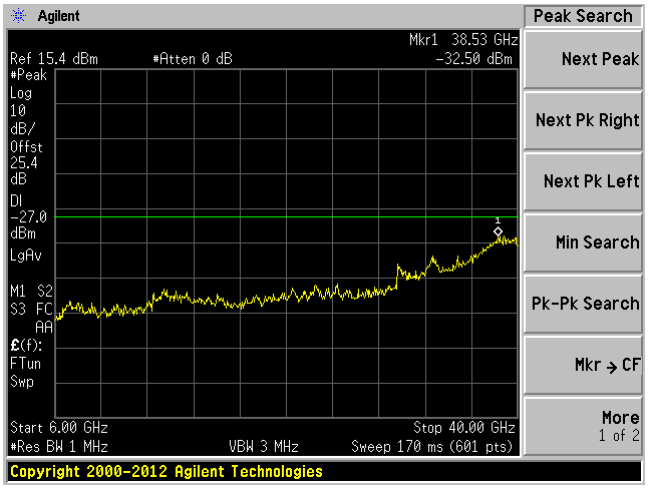
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

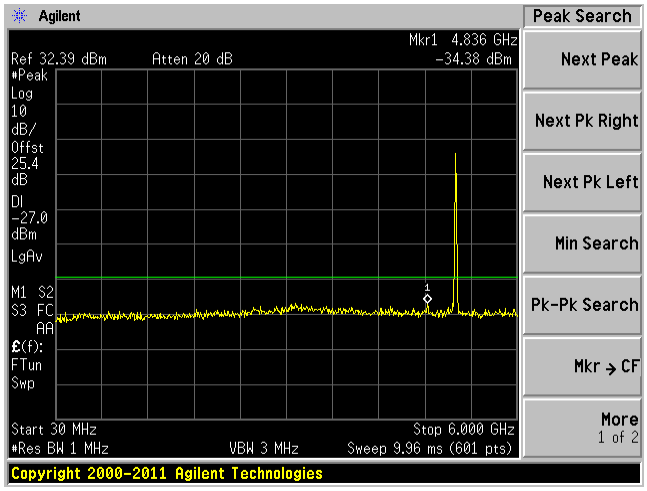


Chain 1, Plot: 6 GHz – 40 GHz

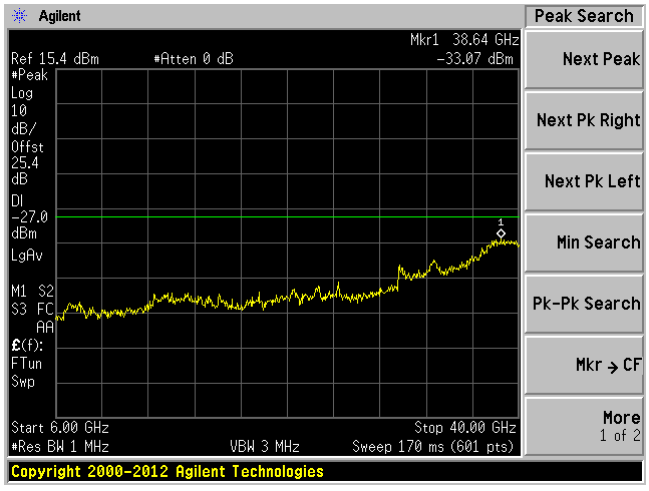


802.11n HT20, Middle Channel 5200 MHz

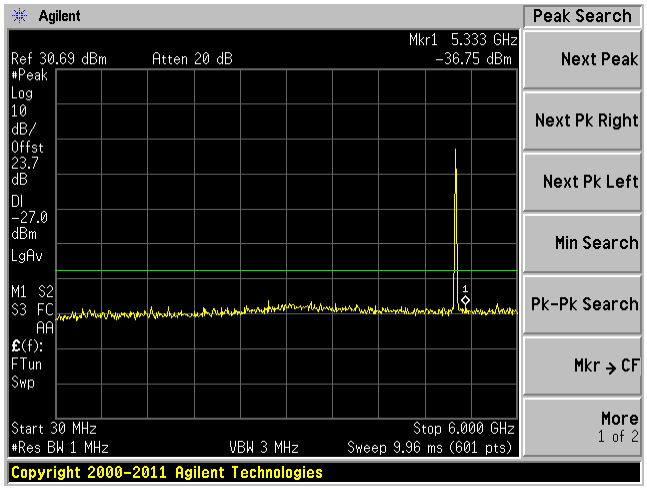
Chain 0, Plot: 30 MHz – 6 GHz



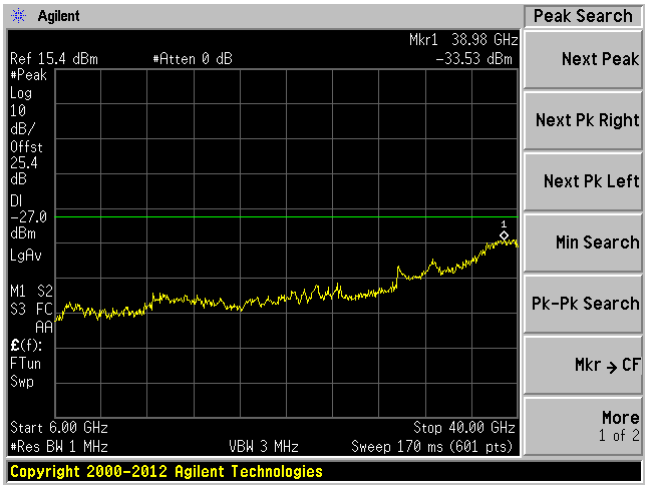
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

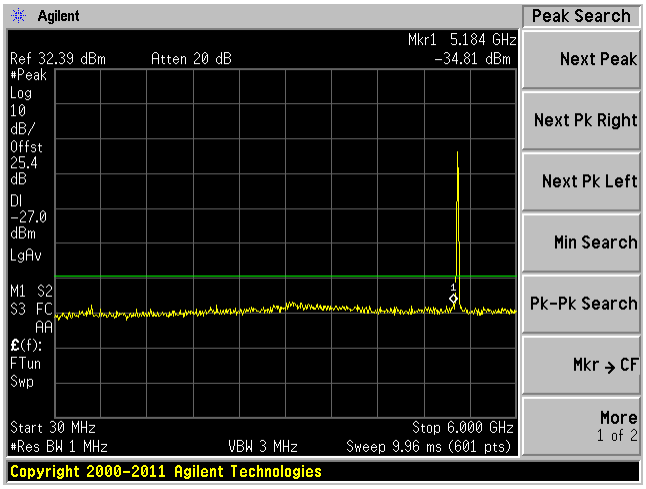


Chain 1, Plot: 6 GHz – 40 GHz

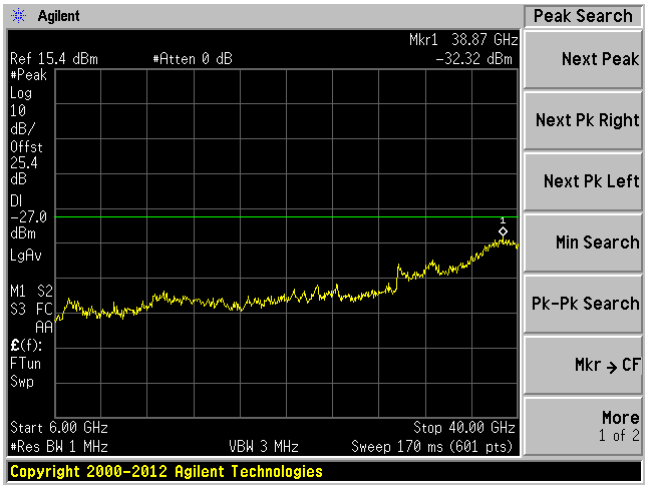


802.11n HT 20, High Channel 5240 MHz

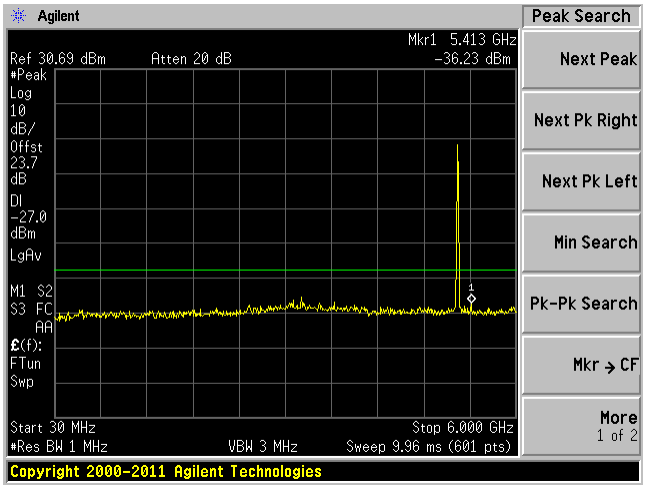
Chain 0, Plot: 30 MHz – 6 GHz



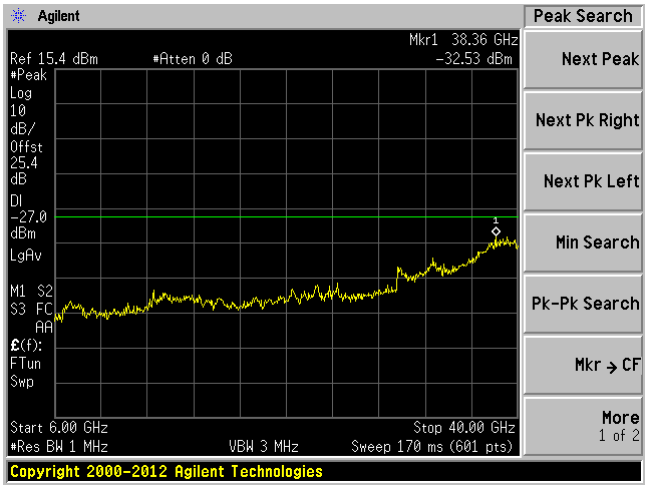
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

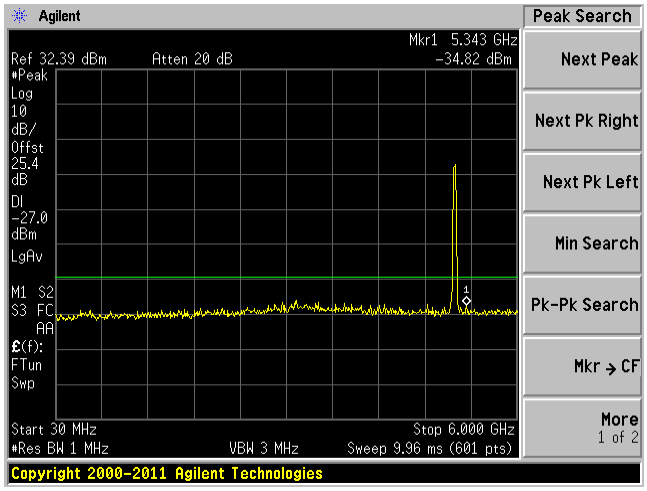


Chain 1, Plot: 6 GHz – 40 GHz

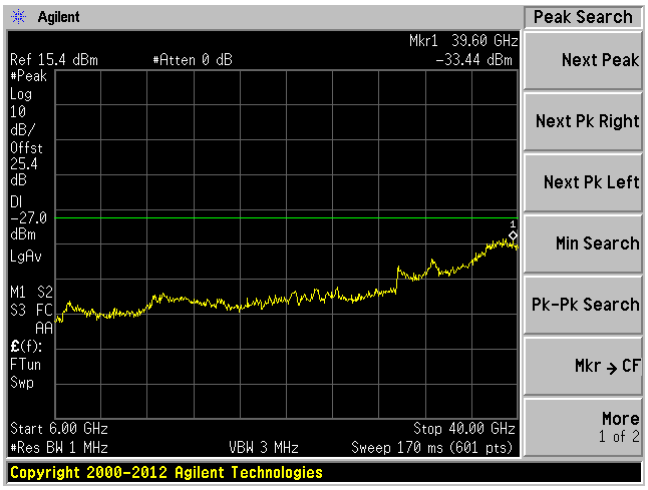


802.11n HT40, Low Channel 5190 MHz

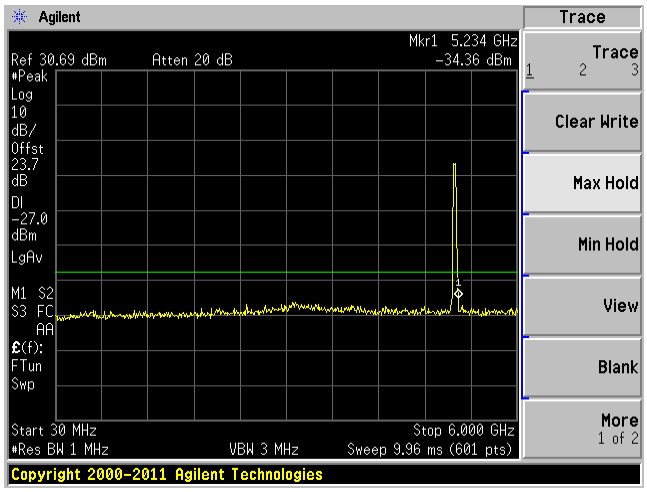
Chain 0, Plot: 30 MHz – 6 GHz



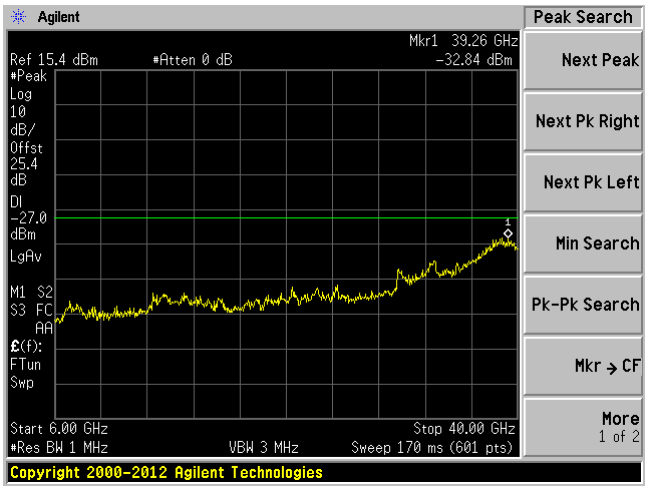
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

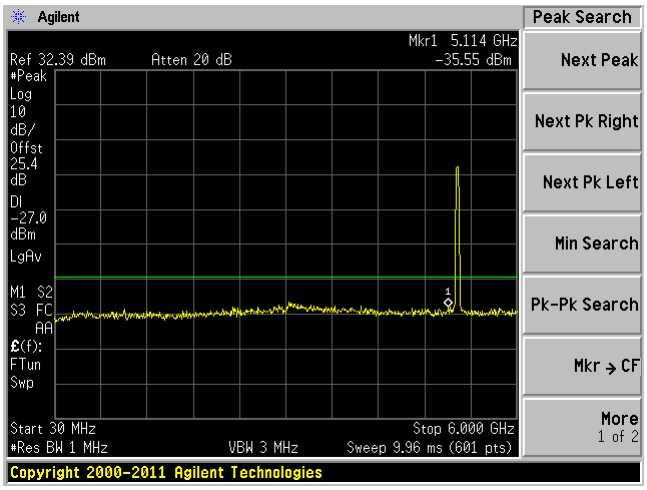


Chain 1, Plot: 6 GHz – 40 GHz

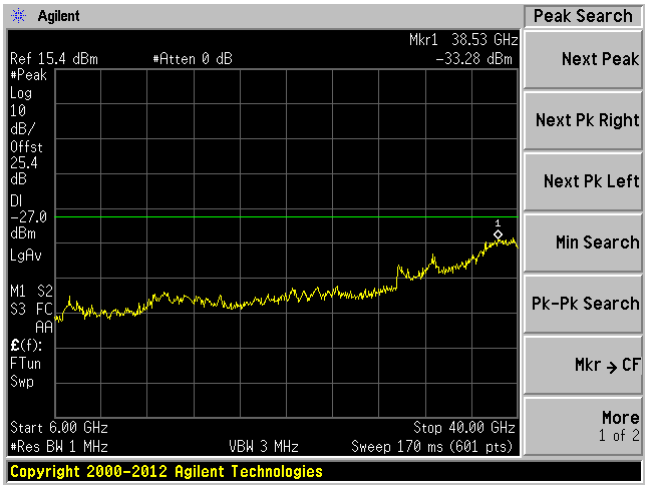


802.11n HT40, High Channel 5230 MHz

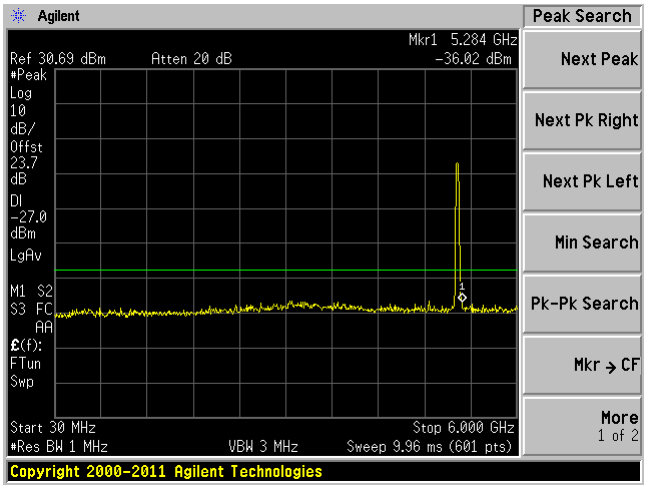
Chain 0, Plot: 30 MHz – 6 GHz



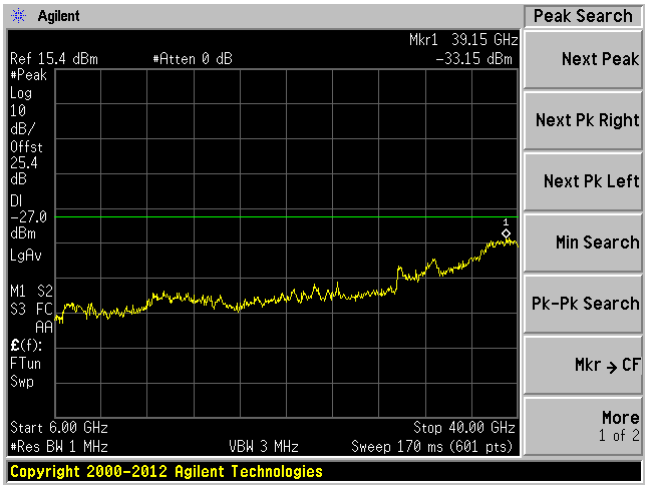
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz



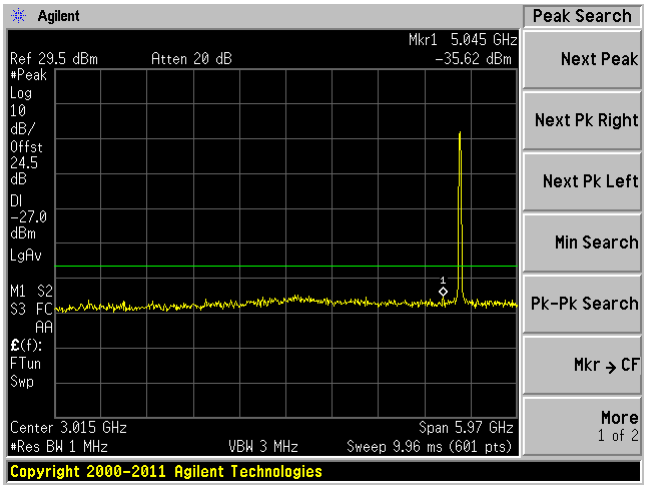
Chain 1, Plot: 6 GHz – 40 GHz



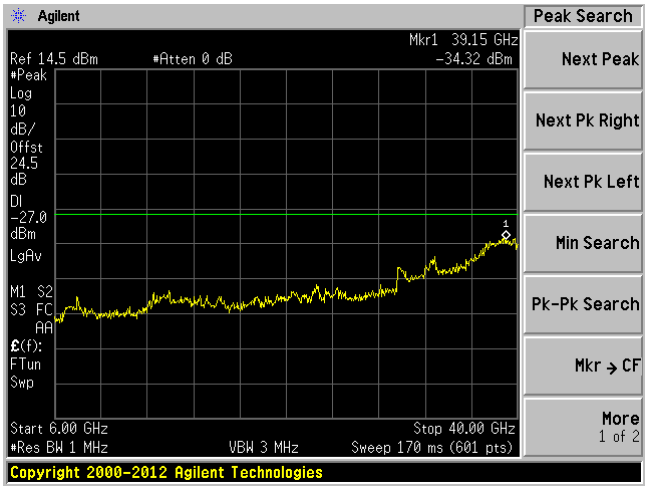
5.3 GHz Band

802.11a, Low Channel, 5260 MHz

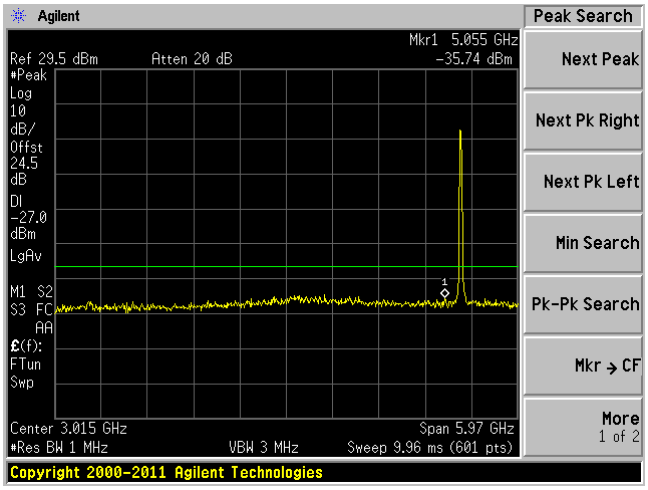
Chain 0, Plot: 30 MHz – 6 GHz



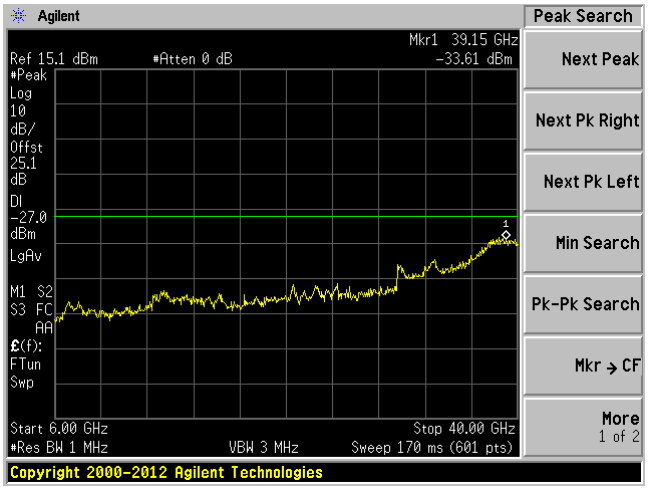
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

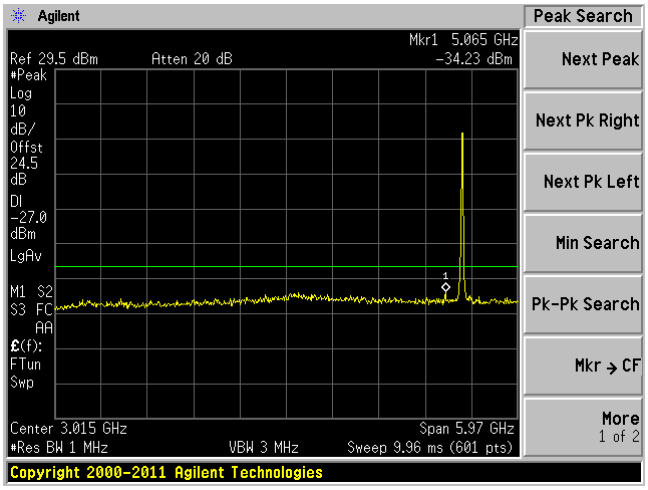


Chain 1, Plot: 6 GHz – 40 GHz

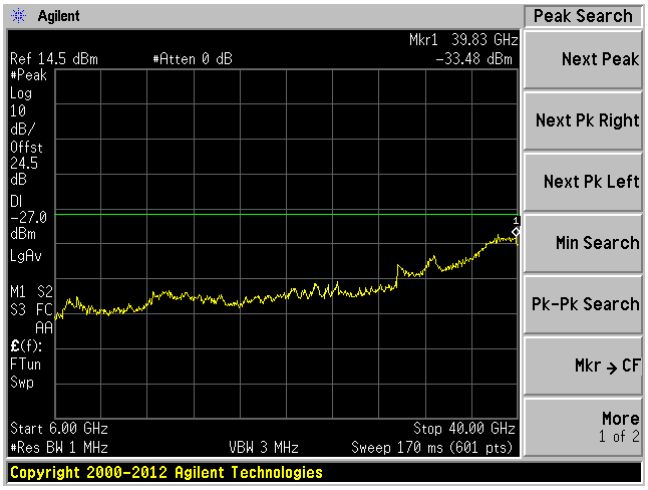


802.11a, Middle Channel, 5280 MHz

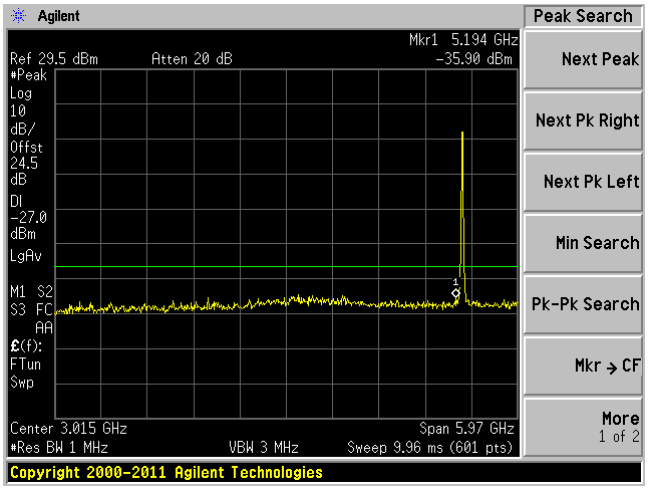
Chain 0, Plot: 30 MHz – 6 GHz



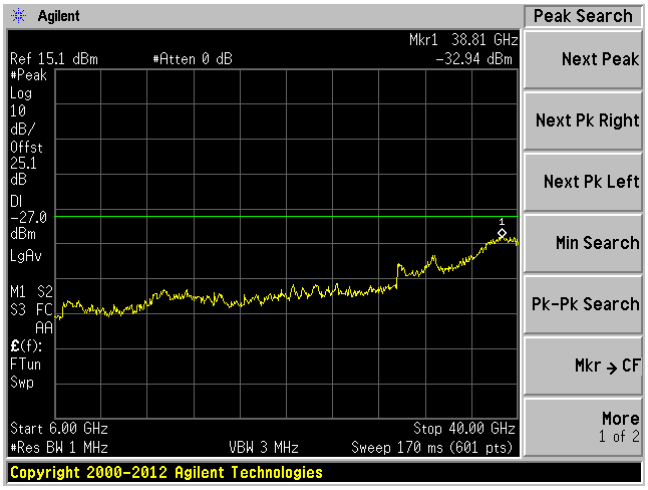
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

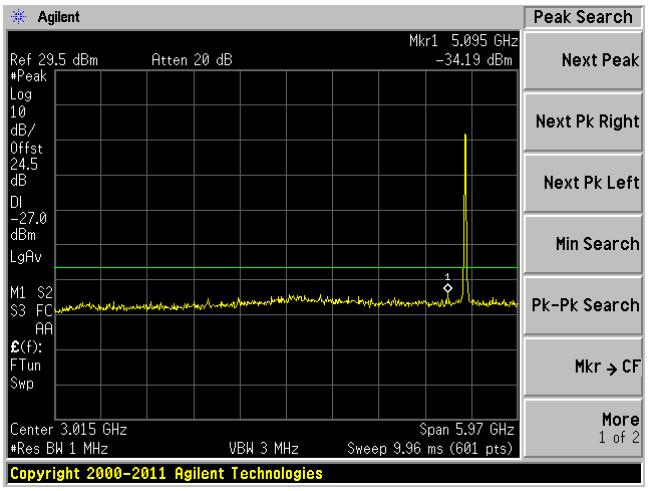


Chain 1, Plot: 6 GHz – 40 GHz

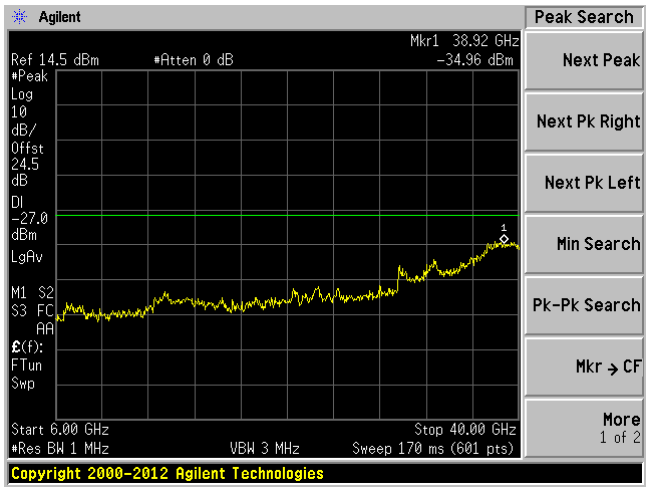


802.11a, High Channel, 5320 MHz

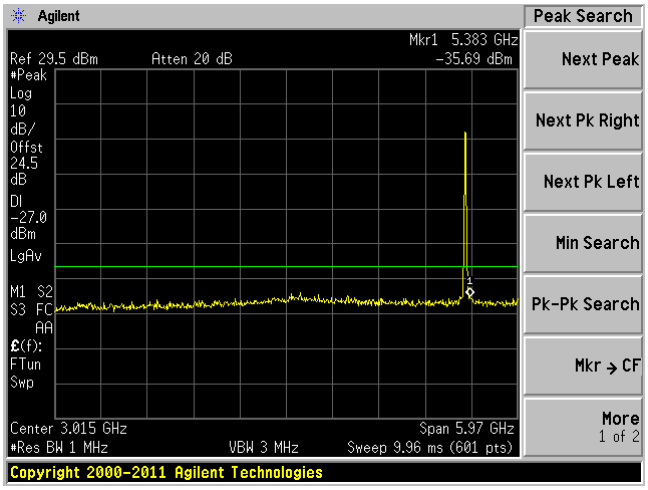
Chain 0, Plot: 30 MHz – 6 GHz



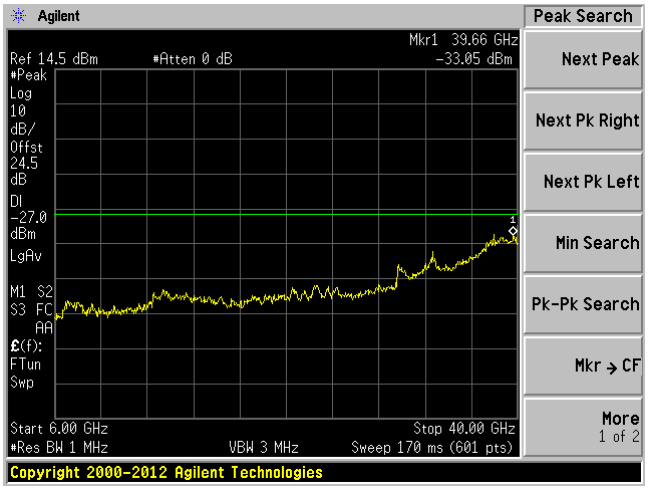
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

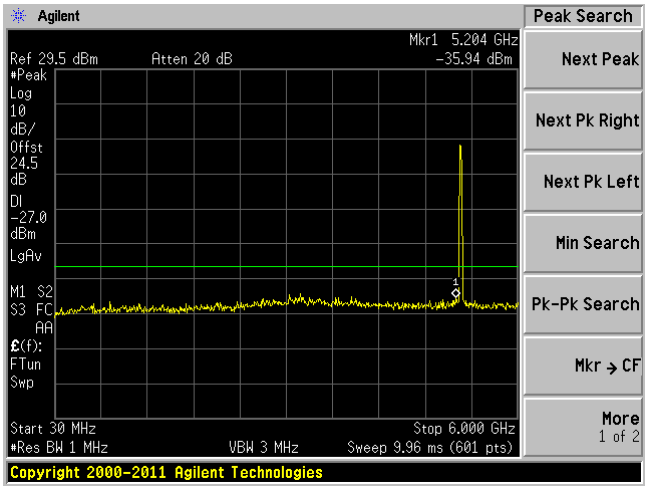


Chain 1, Plot: 6 GHz – 40 GHz

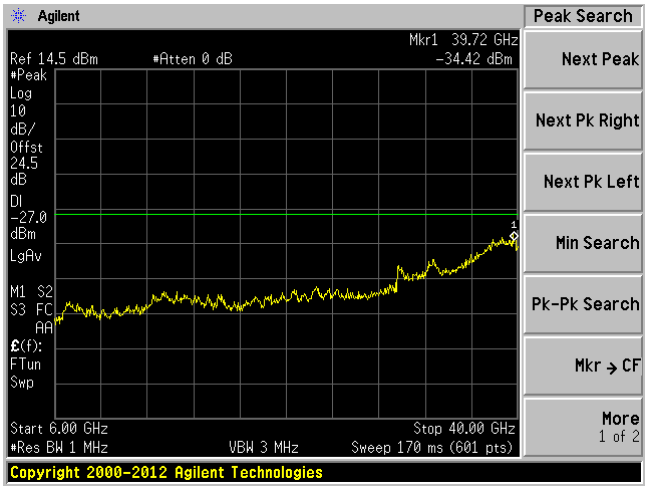


802.11n-HT 20, Low Channel 5260 MHz

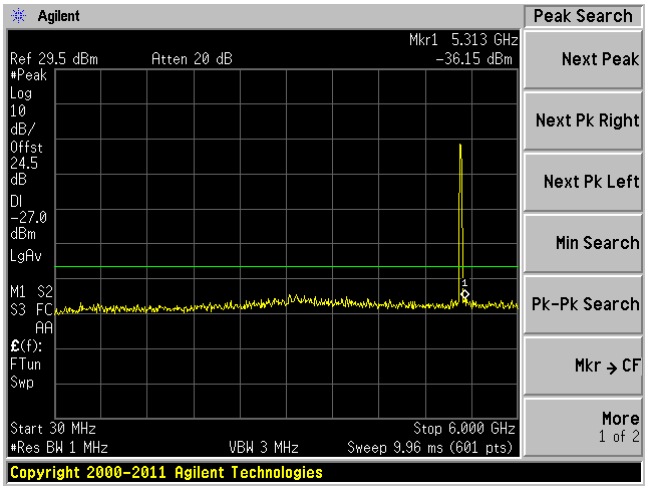
Chain 0, Plot: 30 MHz – 6 GHz



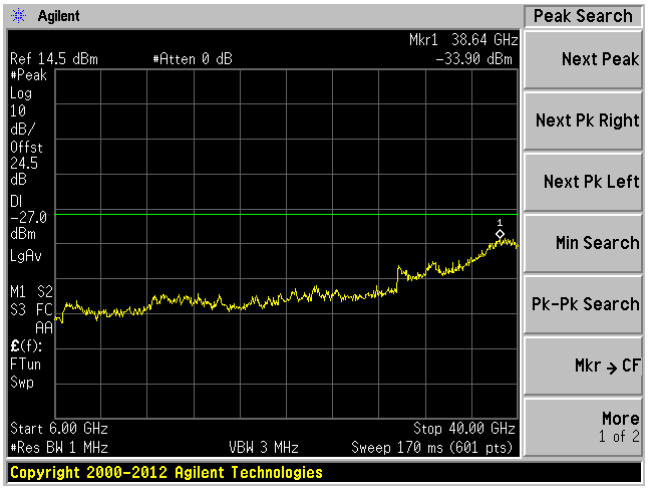
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

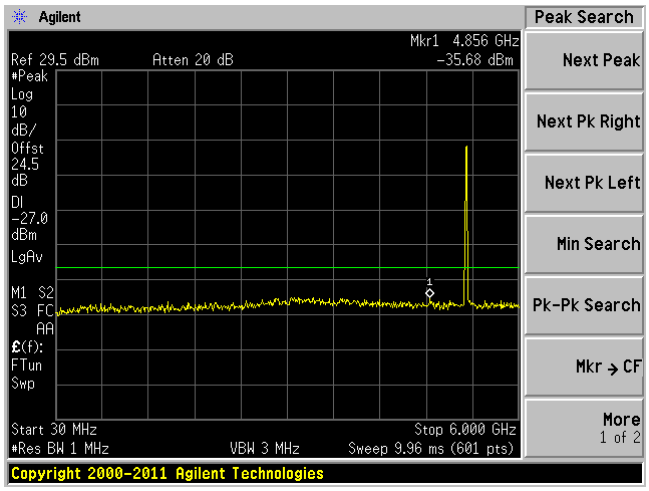


Chain 1, Plot: 6 GHz – 40 GHz

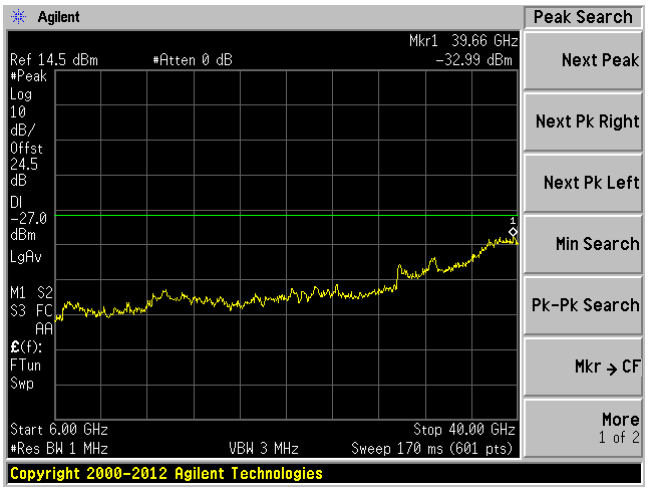


802.11n-HT20, Middle Channel 5280 MHz

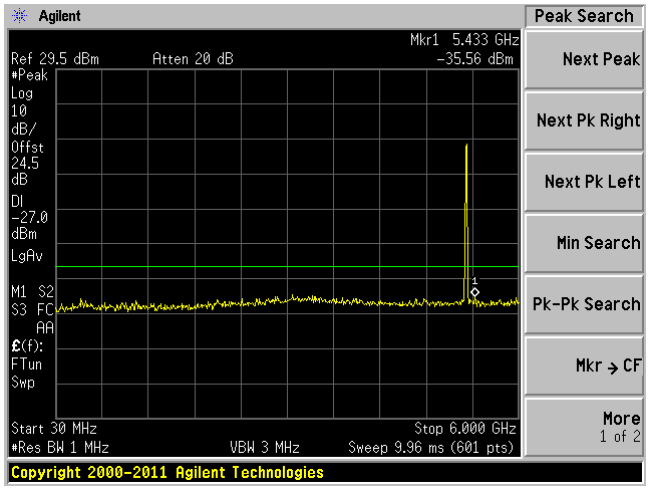
Chain 0, Plot: 30 MHz – 6 GHz



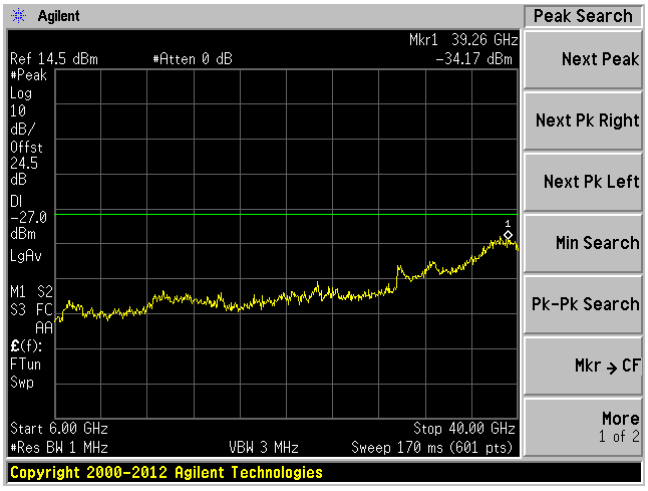
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

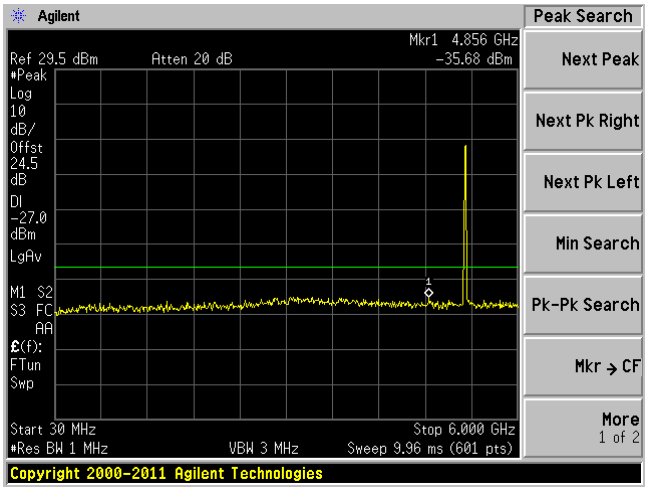


Chain 1, Plot: 6 GHz – 40 GHz

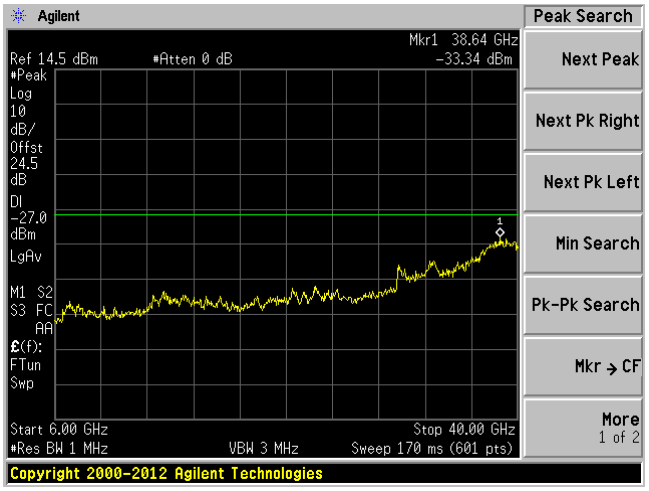


802.11n-HT20, High Channel, 5320 MHz

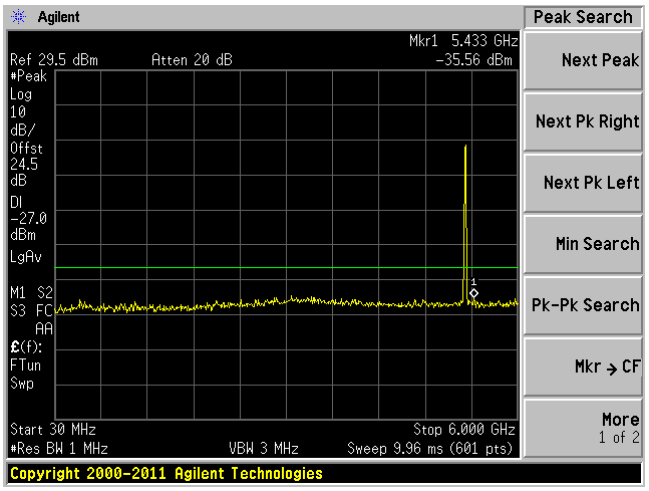
Chain 0, Plot: 30 MHz – 6 GHz



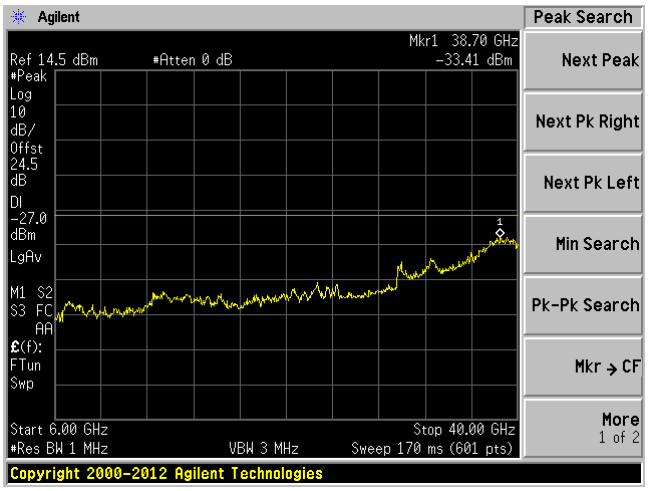
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

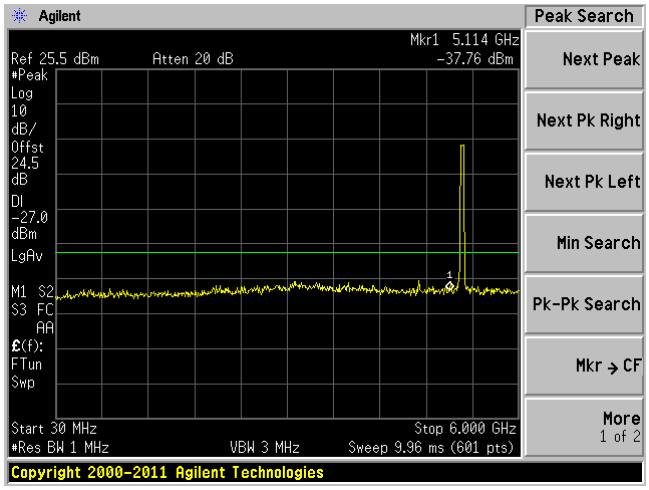


Chain 1, Plot: 6 GHz – 40 GHz

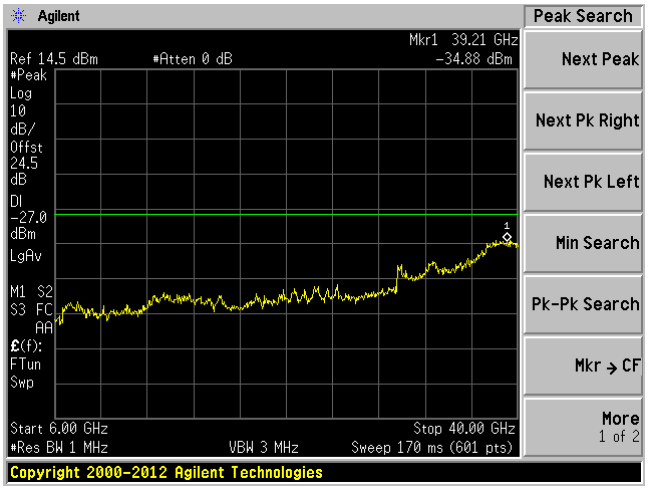


802.11n-HT40, Low Channel 5270 MHz

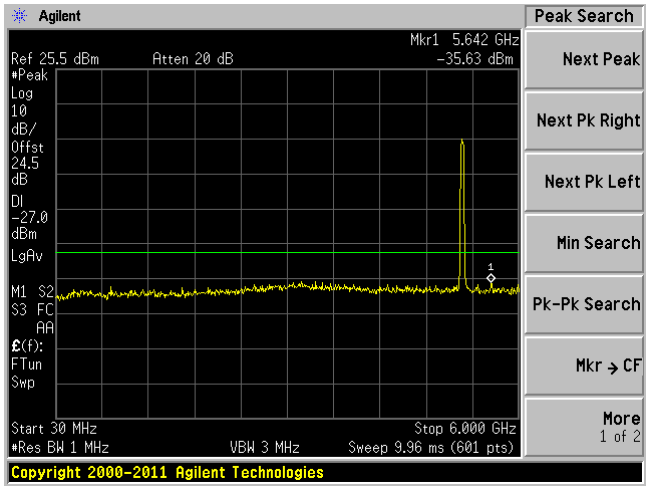
Chain 0, Plot: 30 MHz – 6 GHz



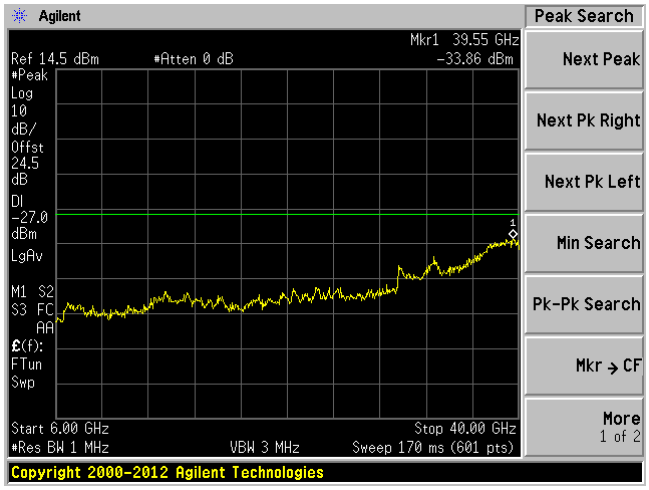
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

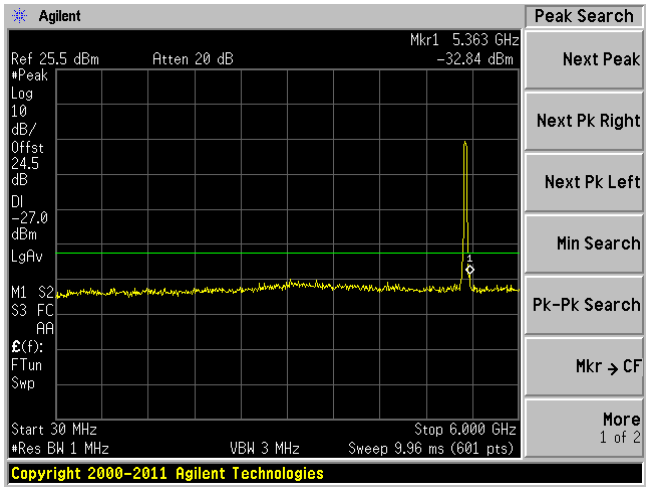


Chain 1, Plot: 6 GHz – 40 GHz

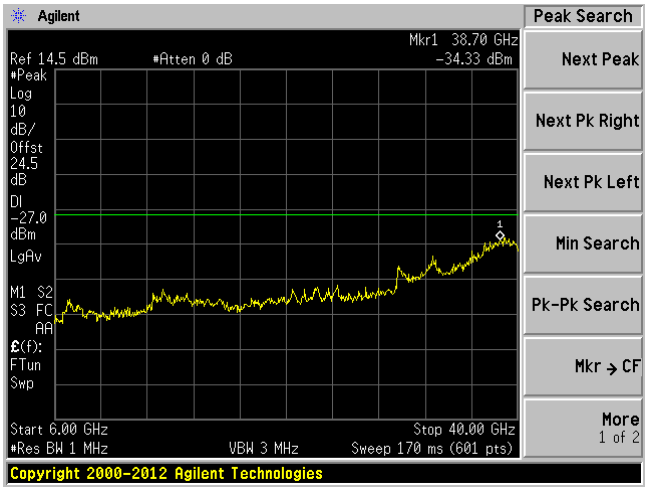


802.11n-HT40, High Channel 5310 MHz

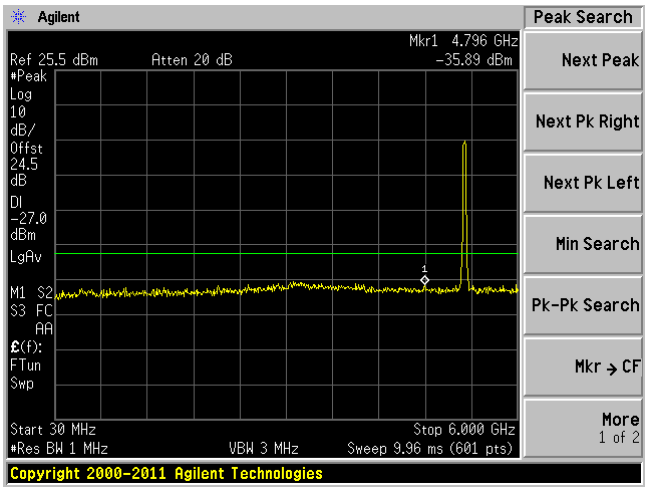
Chain 0, Plot: 30 MHz – 6 GHz



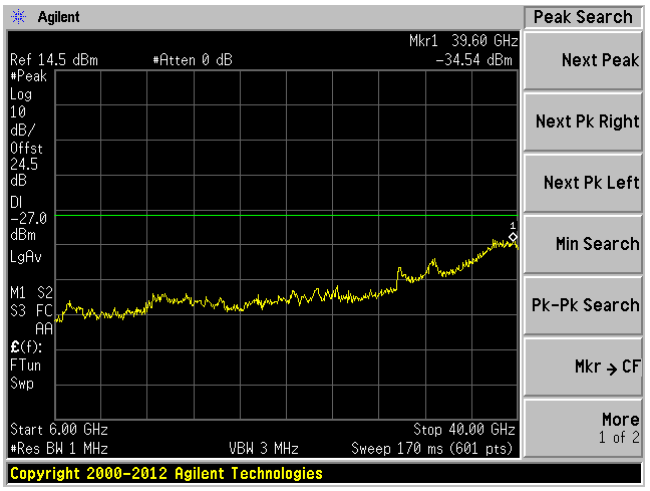
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz



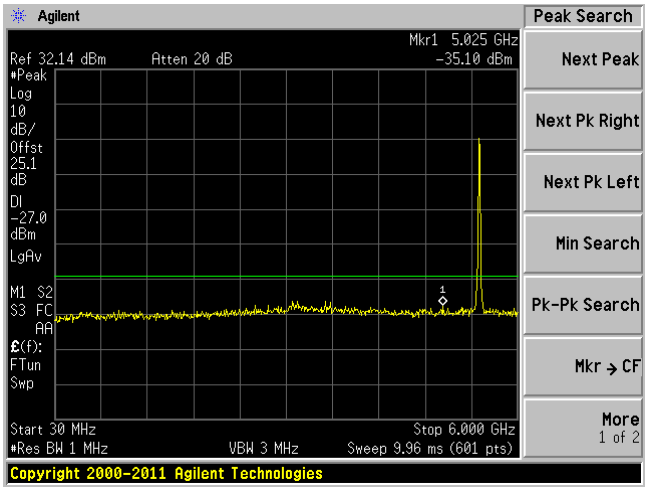
Chain 1, Plot: 6 GHz – 40 GHz



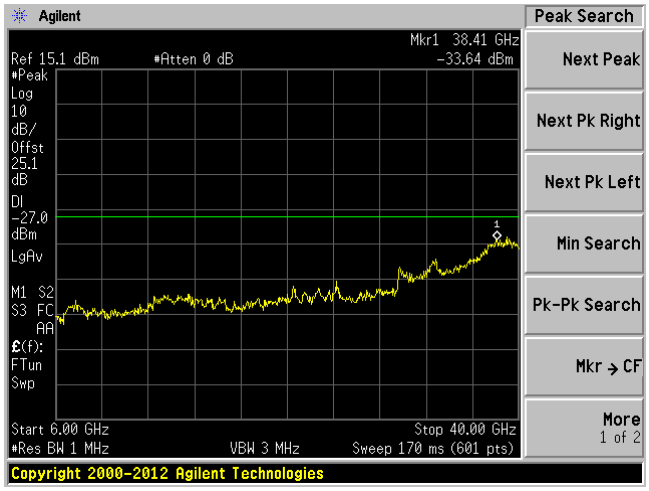
5.6 GHz Band

802.11a, Low Channel, 5500 MHz

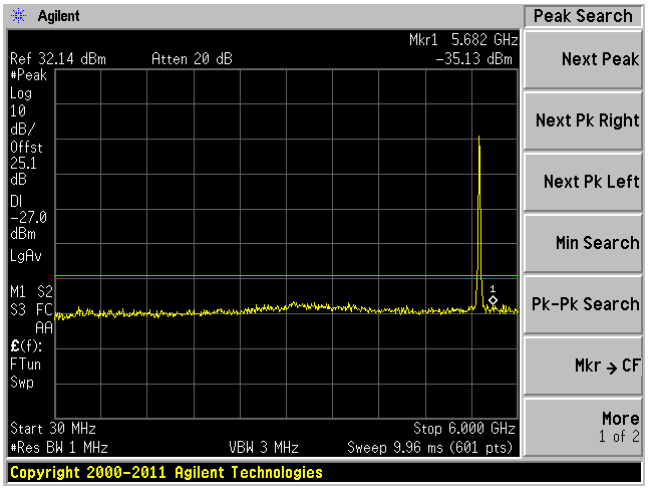
Chain 0, Plot: 30 MHz – 6 GHz



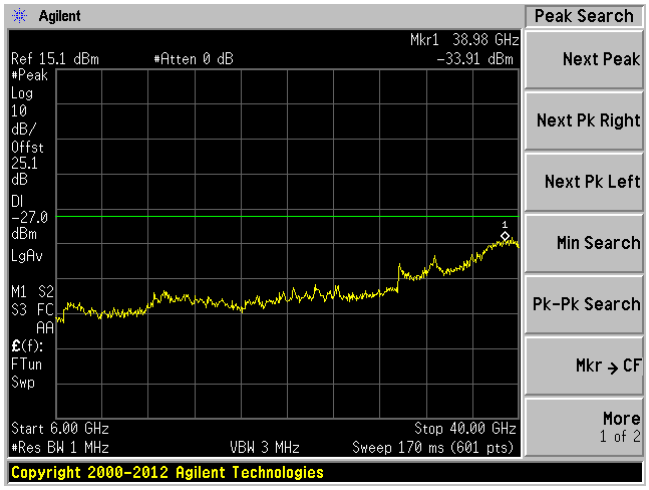
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

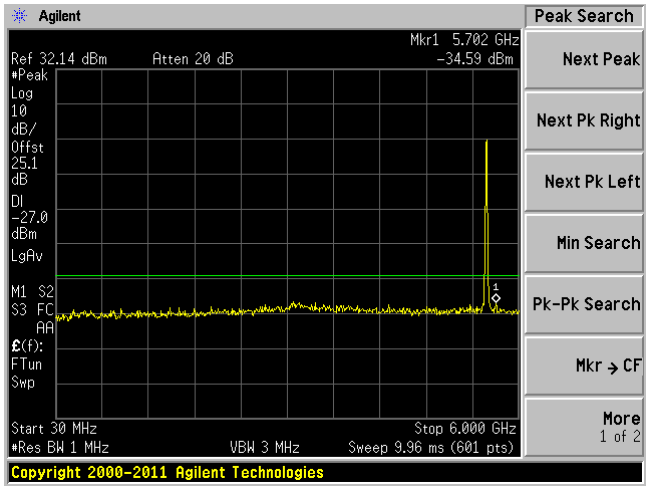


Chain 1, Plot: 6 GHz – 40 GHz

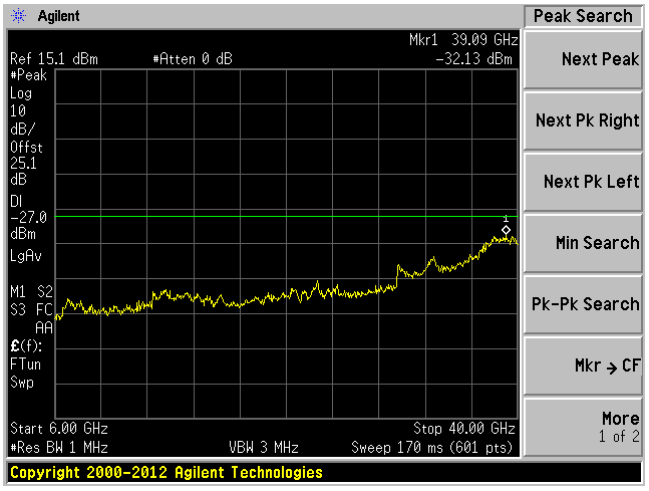


802.11a, Middle Channel, 5580 MHz

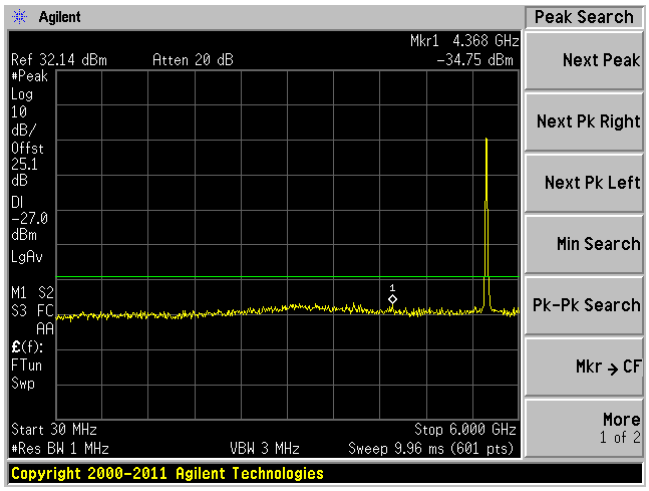
Chain 0, Plot: 30 MHz – 6 GHz



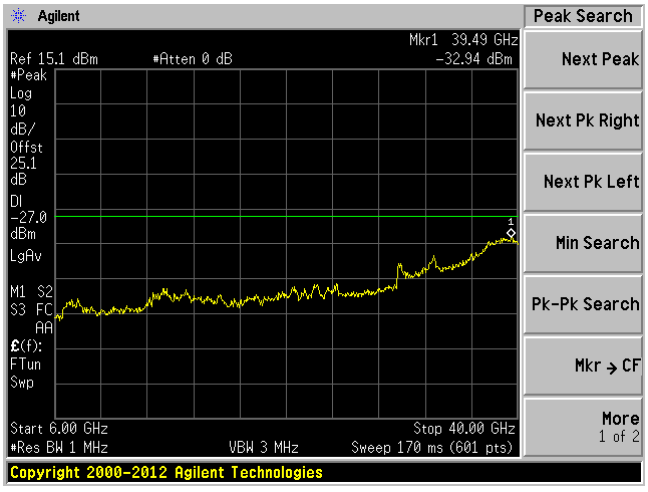
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

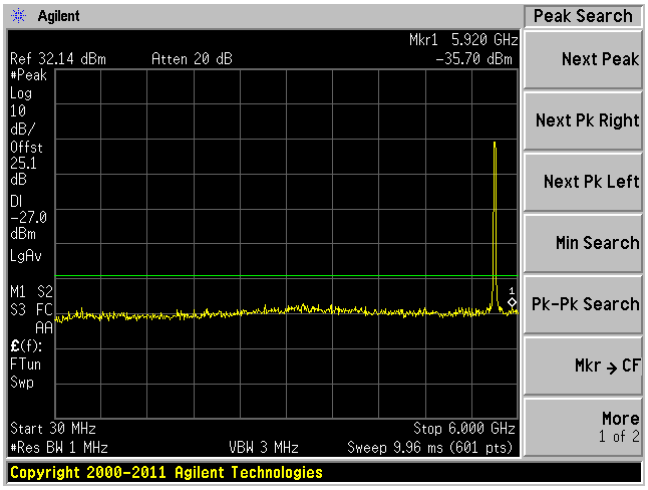


Chain 1, Plot: 6 GHz – 40 GHz

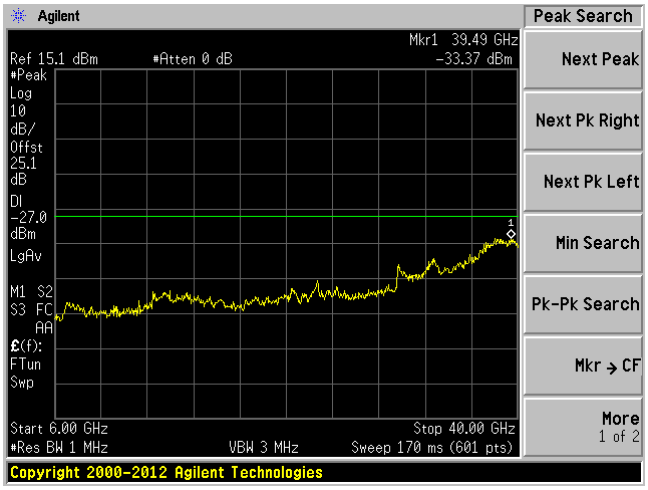


802.11a, High Channel, 5700 MHz

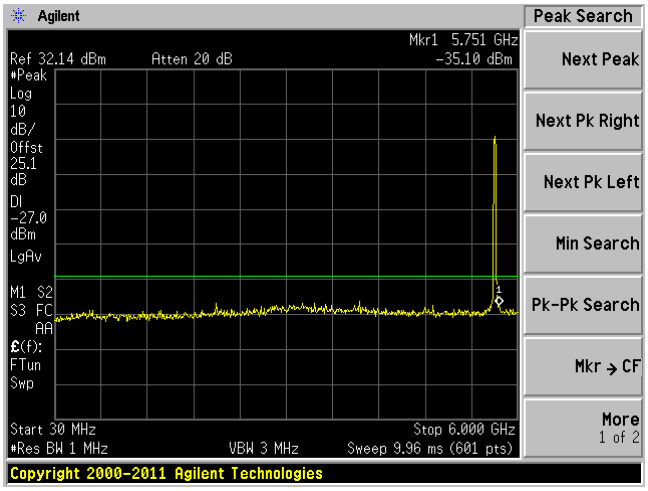
Chain 0, Plot: 30 MHz – 6 GHz



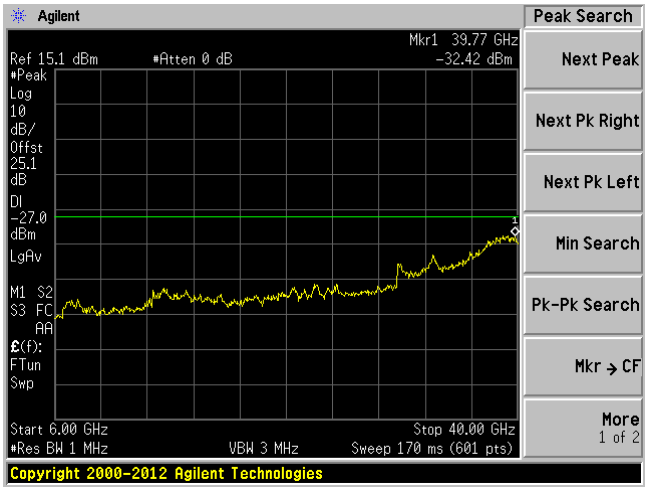
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

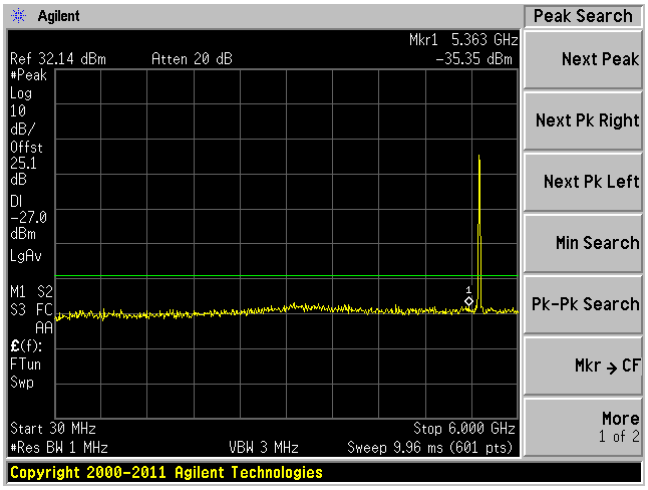


Chain 1, Plot: 6 GHz – 40 GHz

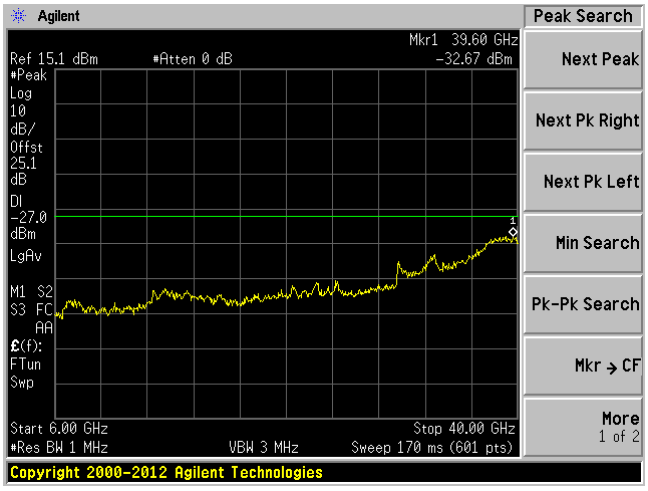


802.11n-HT 20, Low Channel 5500 MHz

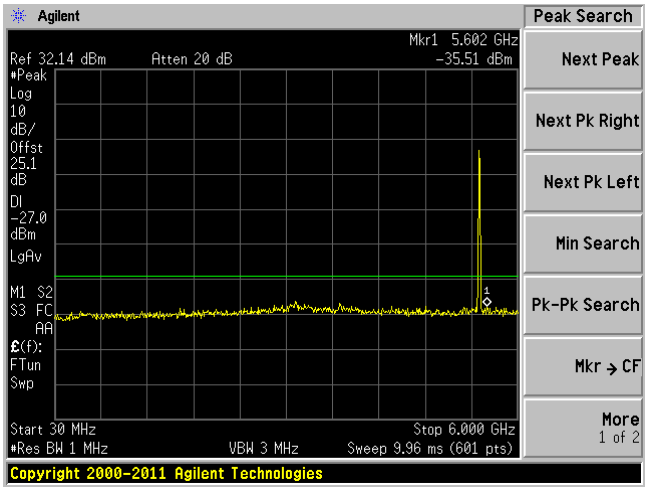
Chain 0, Plot: 30 MHz – 6 GHz



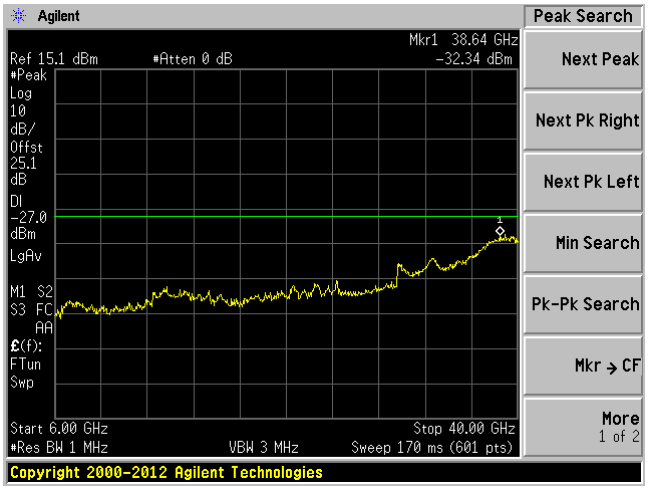
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

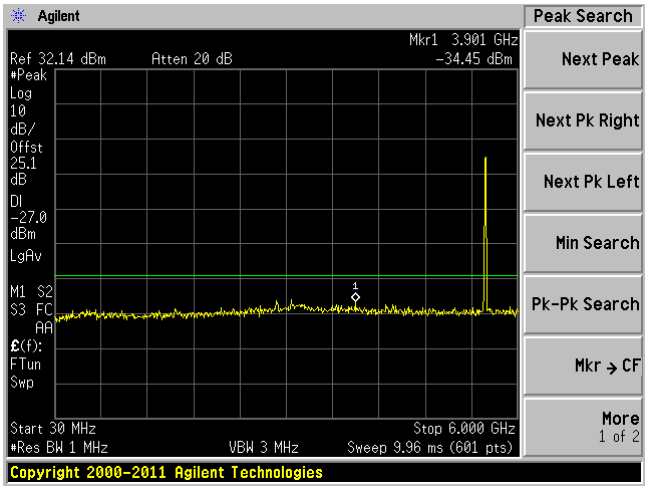


Chain 1, Plot: 6 GHz – 40 GHz

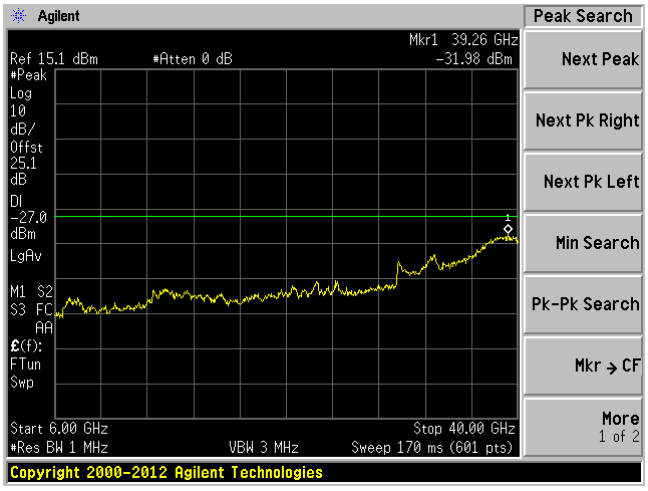


802.11n-HT20, Middle Channel 5580 MHz

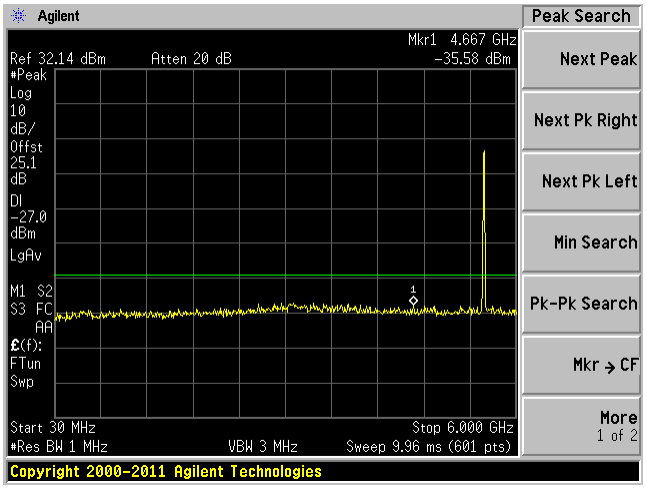
Chain 0, Plot: 30 MHz – 6 GHz



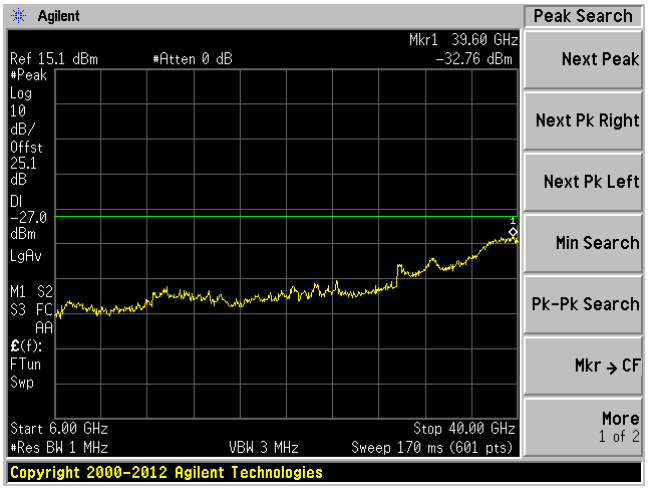
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

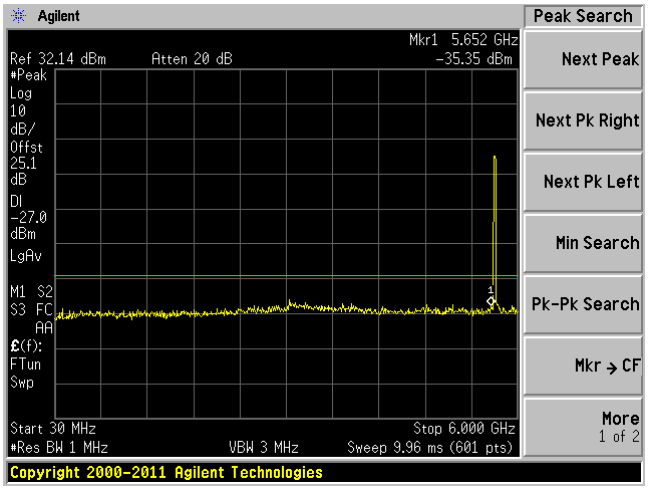


Chain 1, Plot: 6 GHz – 40 GHz

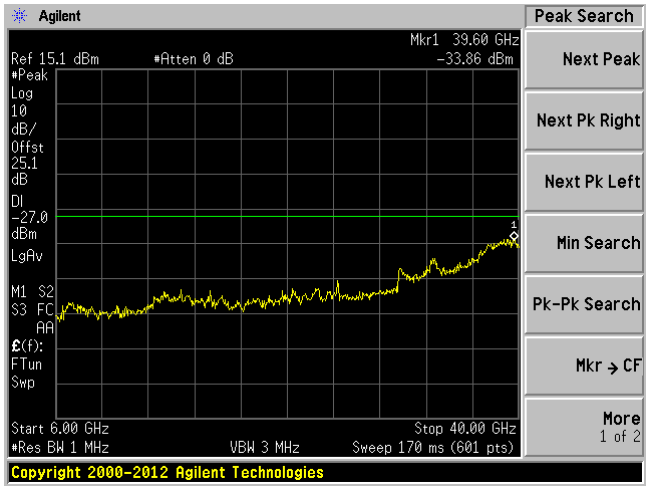


802.11n-HT20, High Channel 5700 MHz

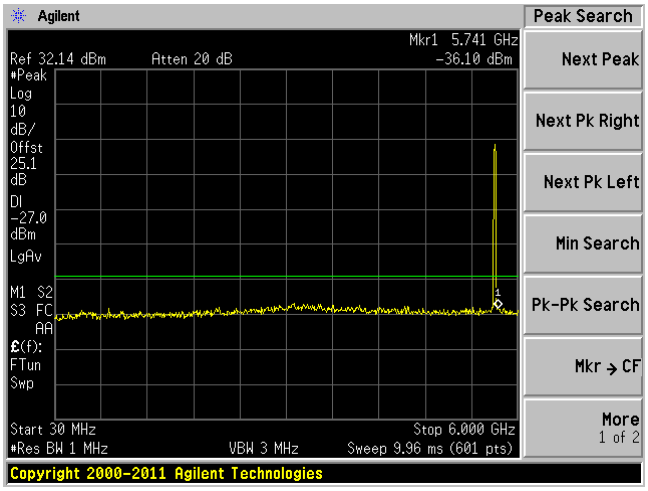
Chain 0, Plot: 30 MHz – 6 GHz



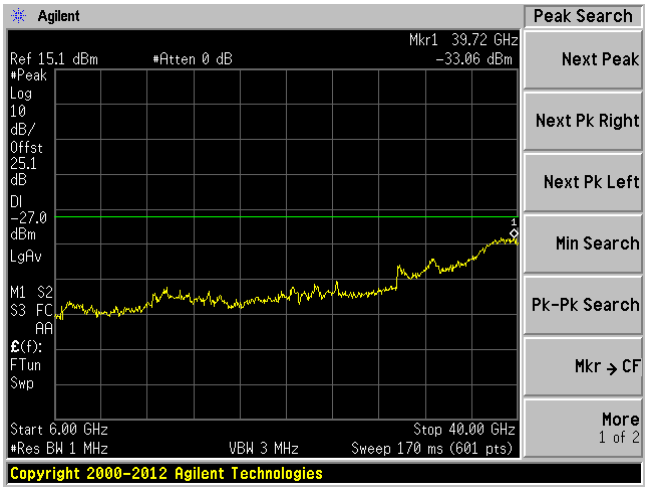
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

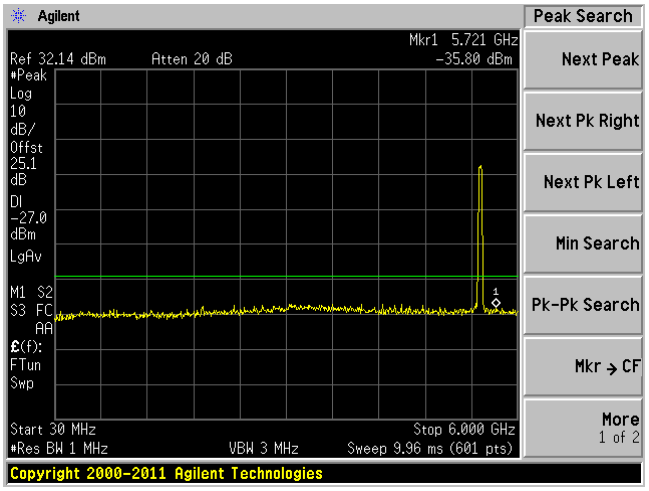


Chain 1, Plot: 6 GHz – 40 GHz

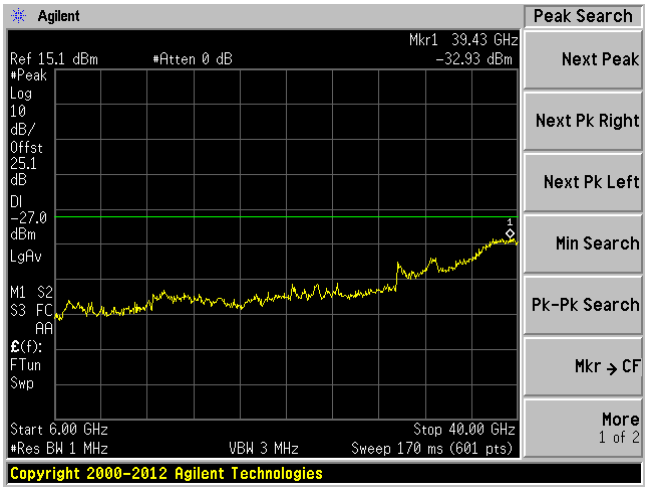


802.11n-HT40, Low Channel 5510 MHz

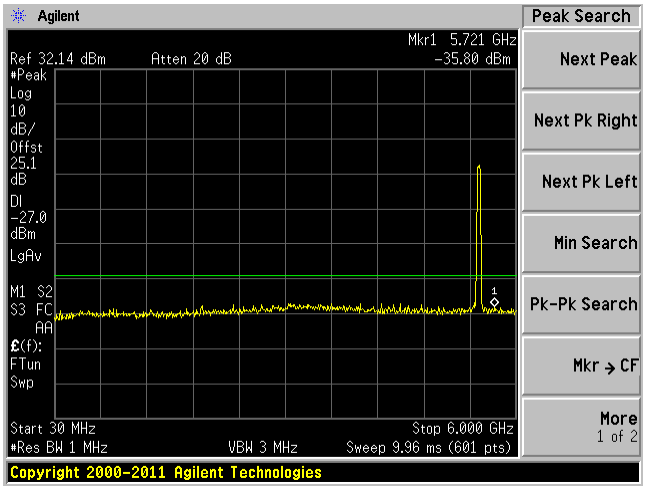
Chain 0, Plot: 30 MHz – 6 GHz



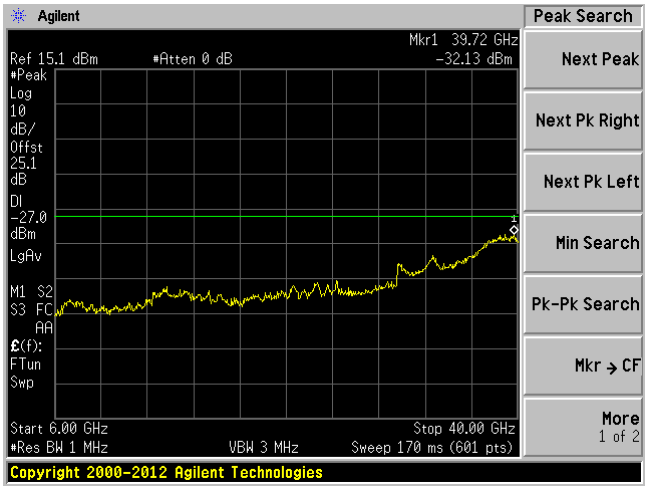
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

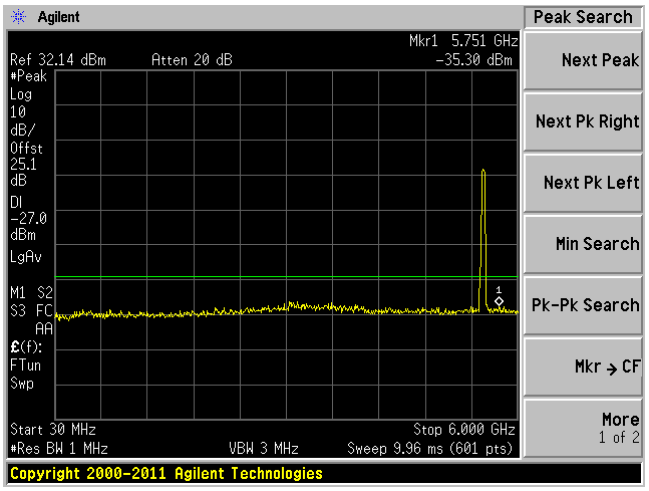


Chain 1, Plot: 6 GHz – 40 GHz

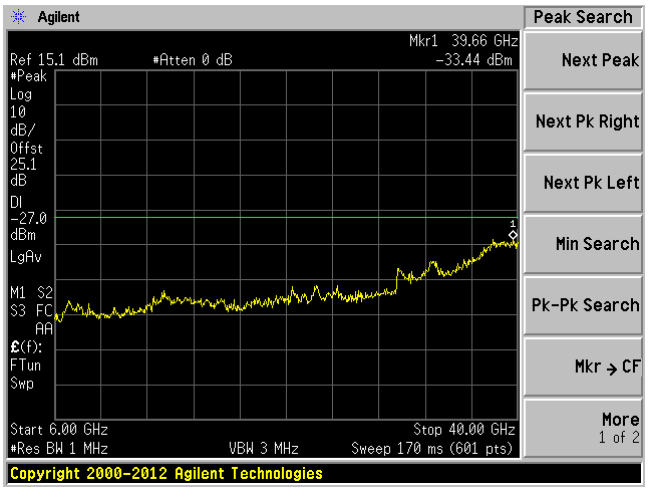


802.11n-HT40, Middle Channel 5550 MHz

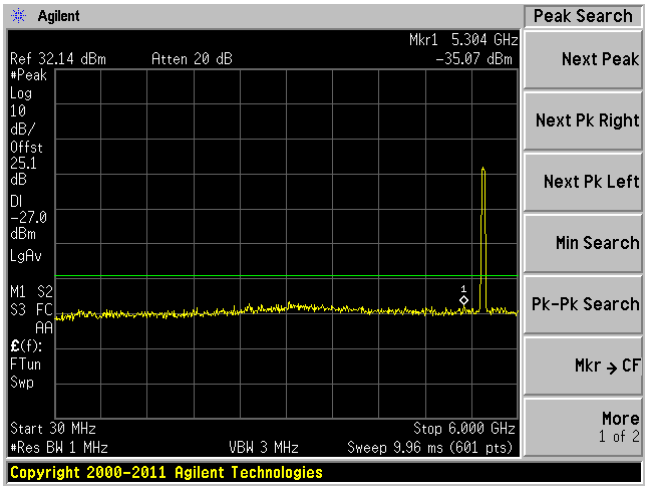
Chain 0, Plot: 30 MHz – 6 GHz



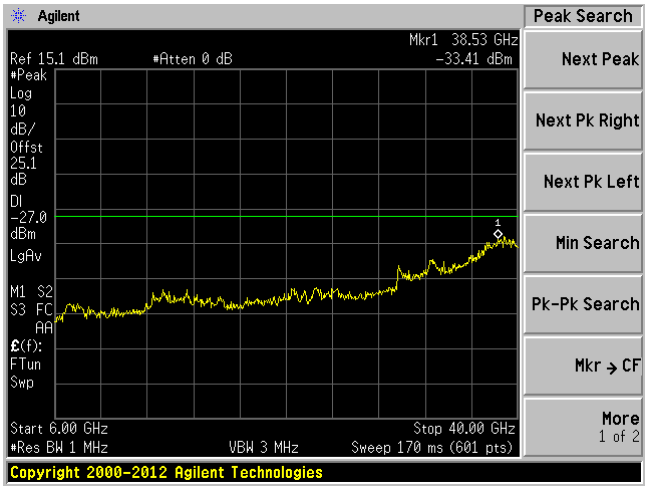
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

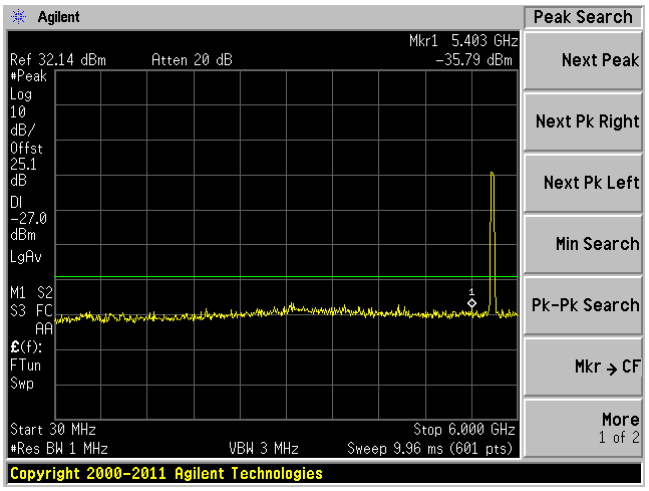


Chain 1, Plot: 6 GHz – 40 GHz

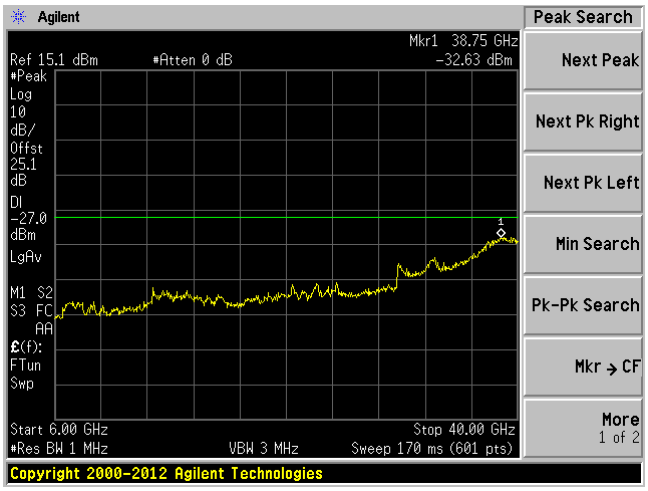


802.11n-HT40, High Channel 5670 MHz

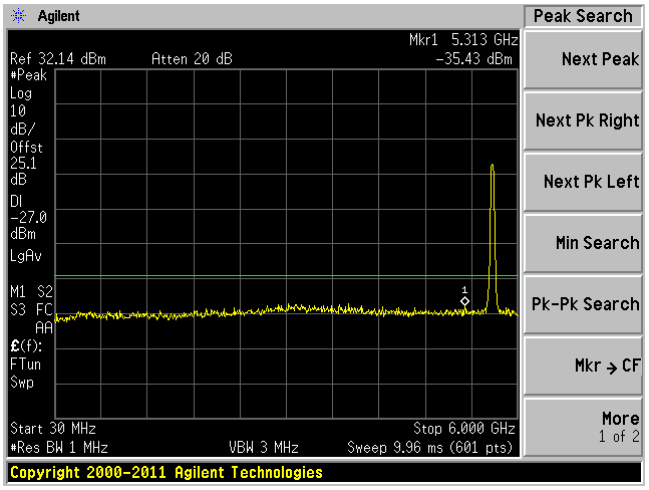
Chain 0, Plot: 30 MHz – 6 GHz



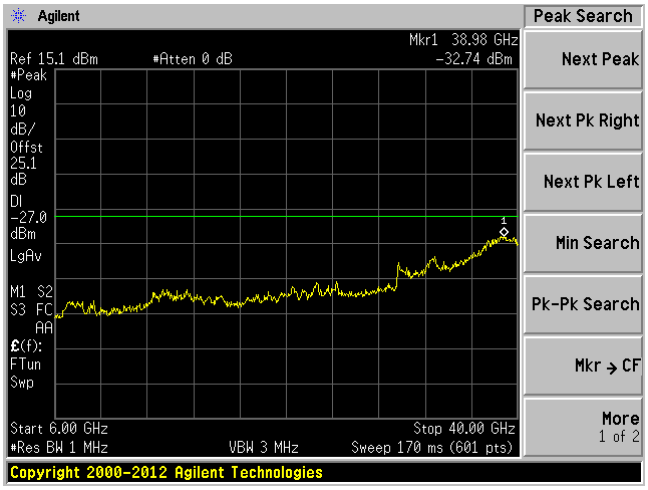
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz



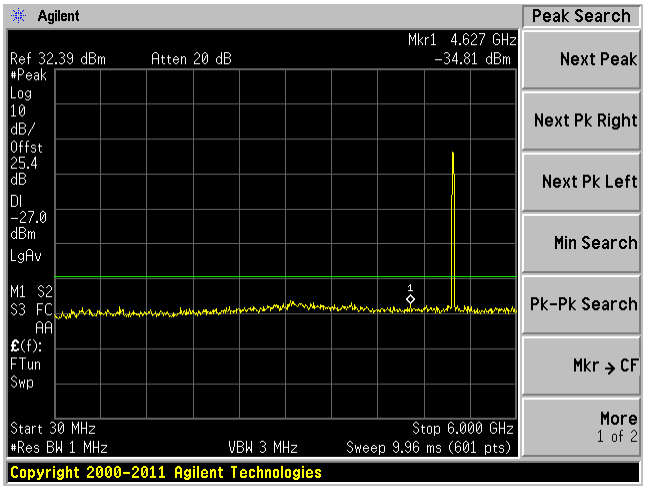
Chain 1, Plot: 6 GHz – 40 GHz



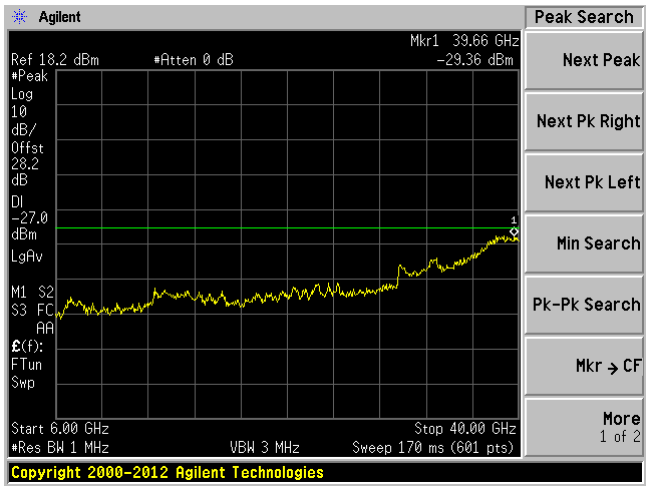
5.8 GHz Band

802.11a, Low Channel, 5745 MHz

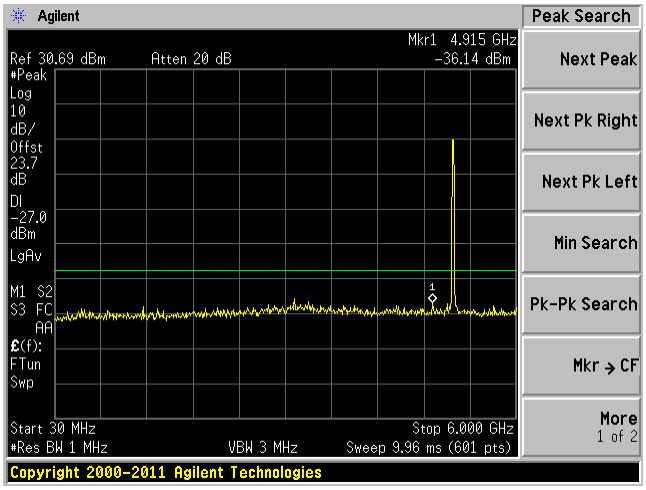
Chain 0, Plot: 30 MHz – 6 GHz



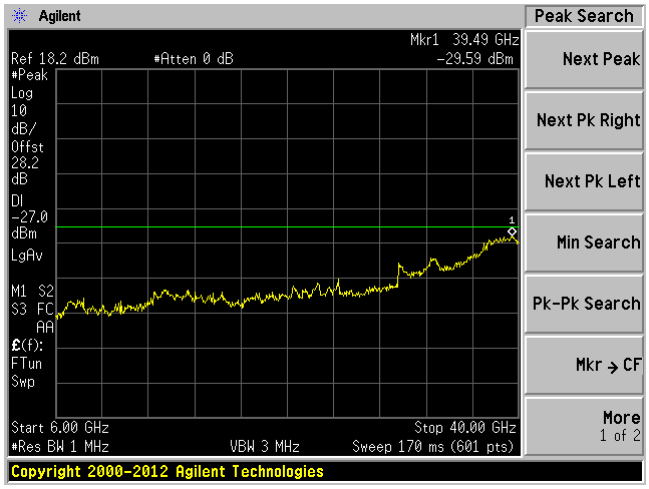
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

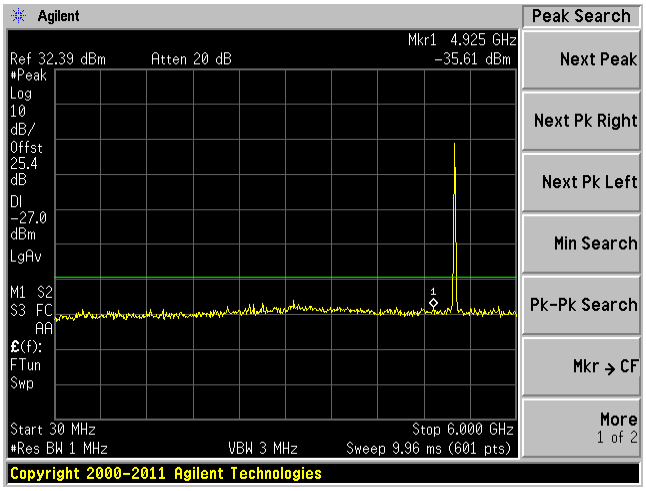


Chain 1, Plot: 6 GHz – 40 GHz

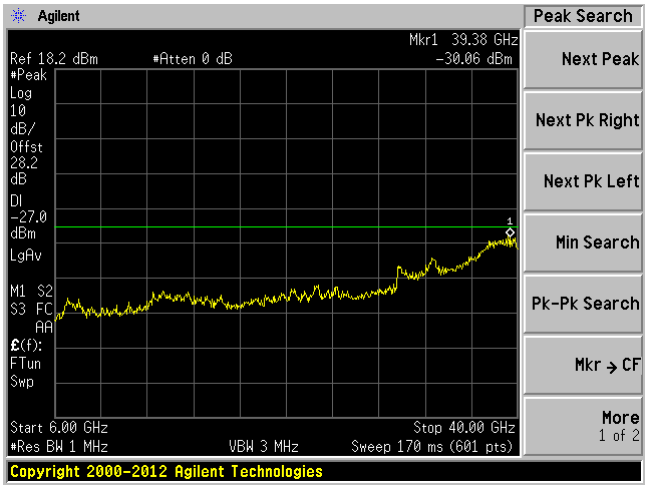


802.11a, Middle Channel, 5785 MHz

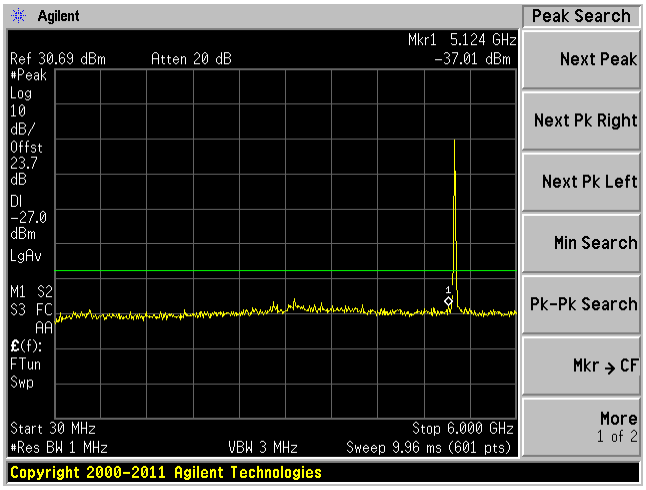
Chain 0, Plot: 30 MHz – 6 GHz



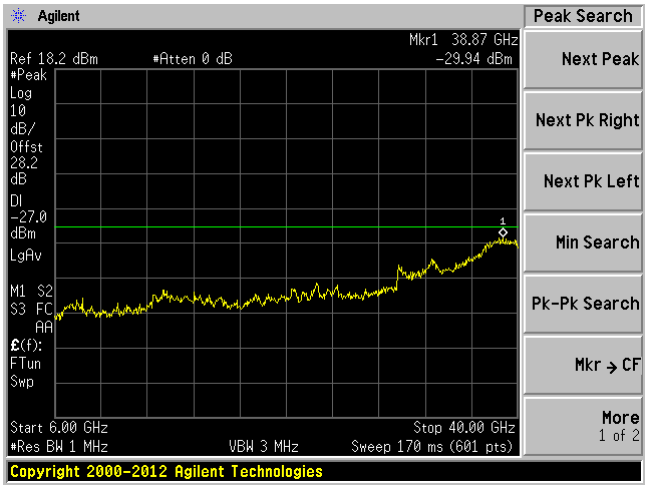
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

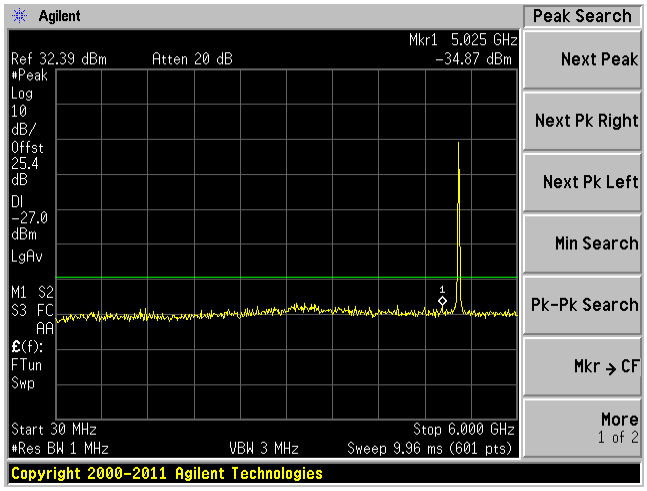


Chain 1, Plot: 6 GHz – 40 GHz

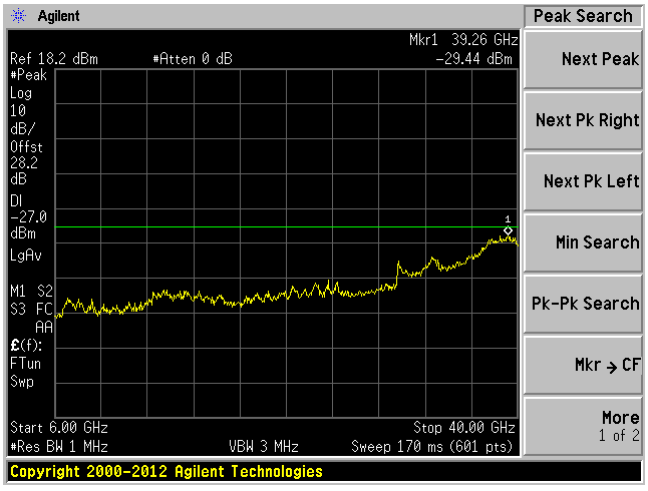


802.11a, High Channel, 5825 MHz

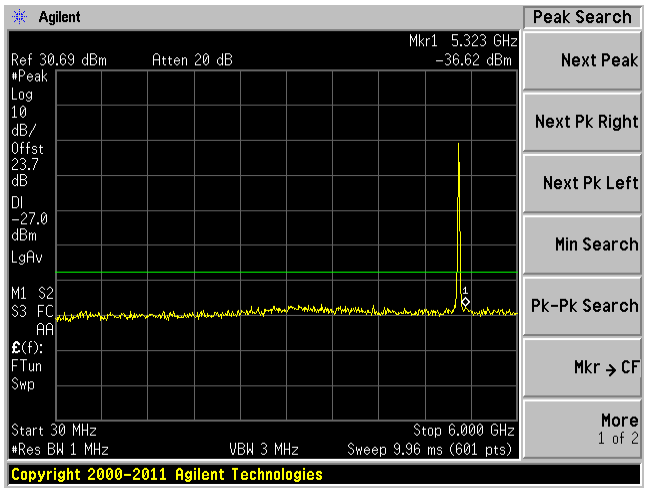
Chain 0, Plot: 30 MHz – 6 GHz



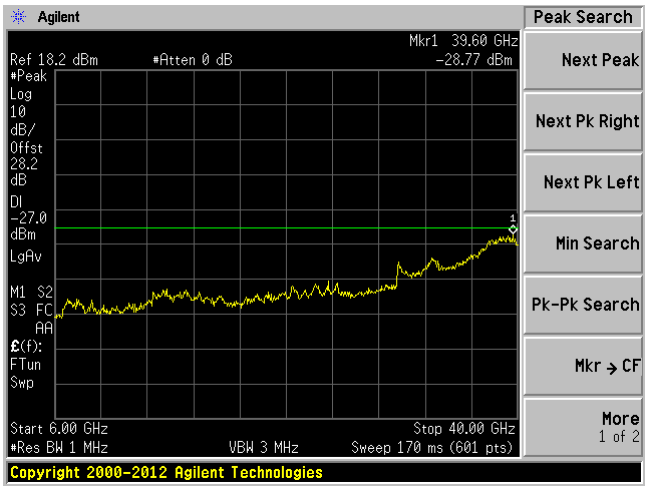
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

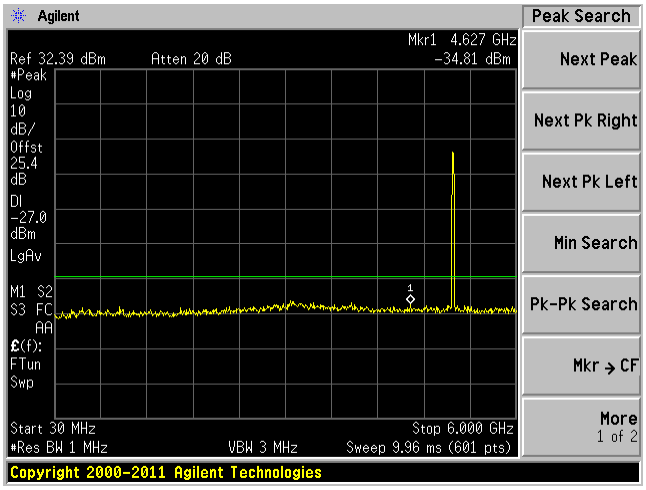


Chain 1, Plot: 6 GHz – 40 GHz

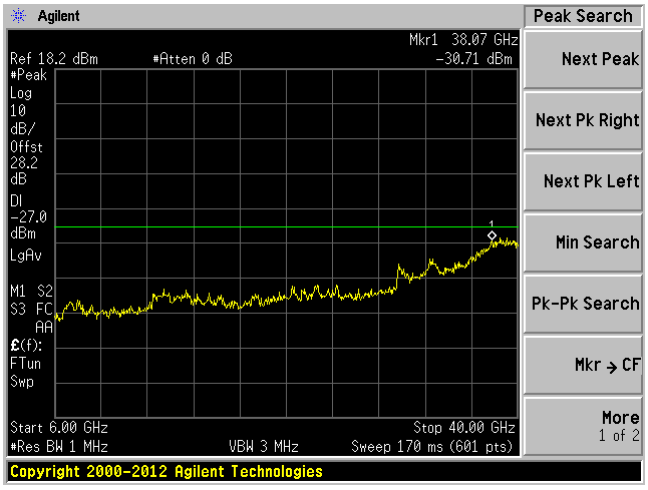


802.11n HT 20, Low Channel 5745 MHz

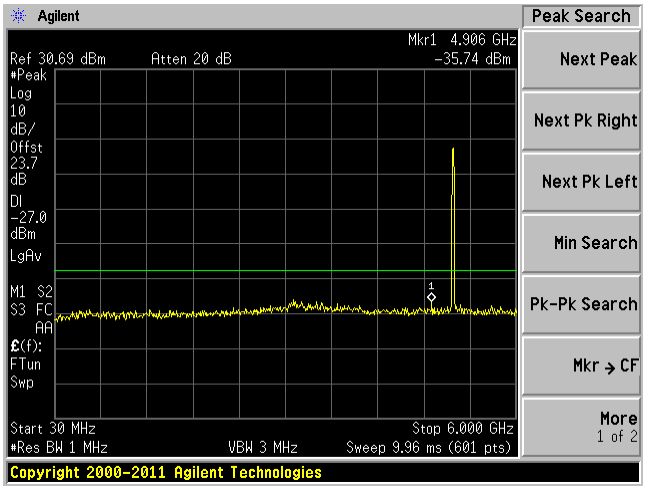
Chain 0, Plot: 30 MHz – 6 GHz



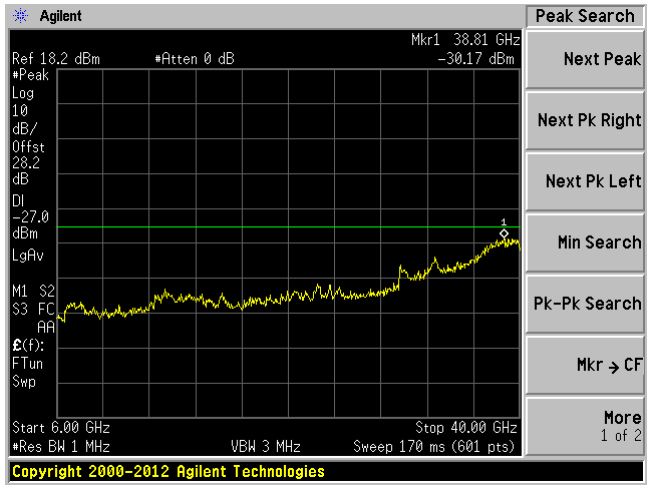
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

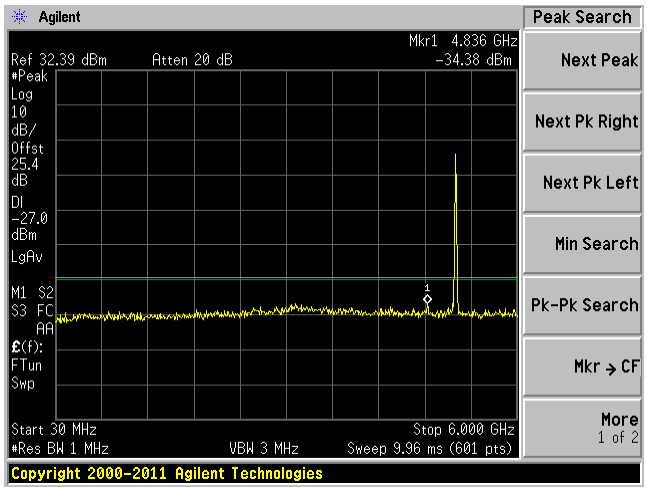


Chain 1, Plot: 6 GHz – 40 GHz

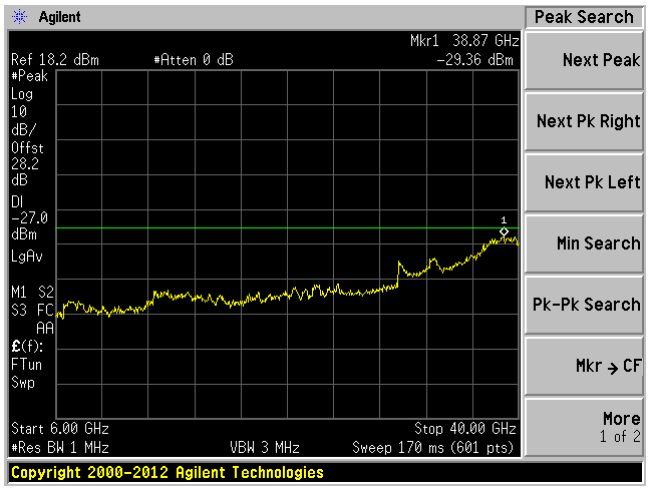


802.11n HT20, Middle Channel 5785 MHz

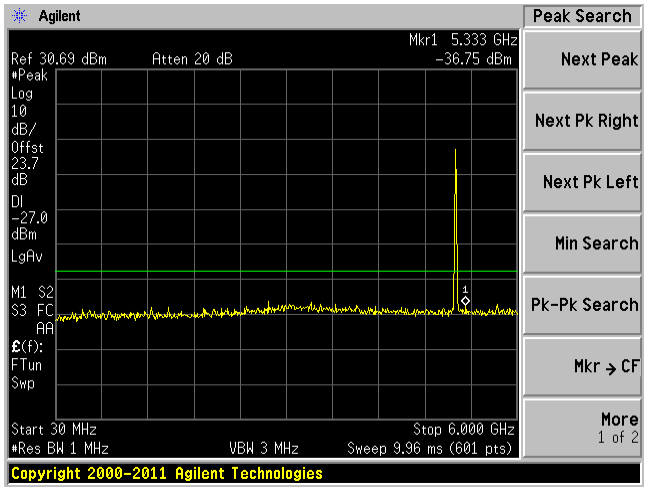
Chain 0, Plot: 30 MHz – 6 GHz



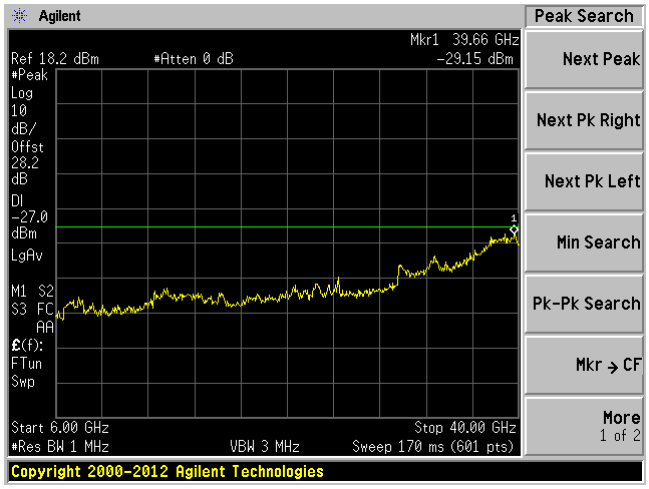
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

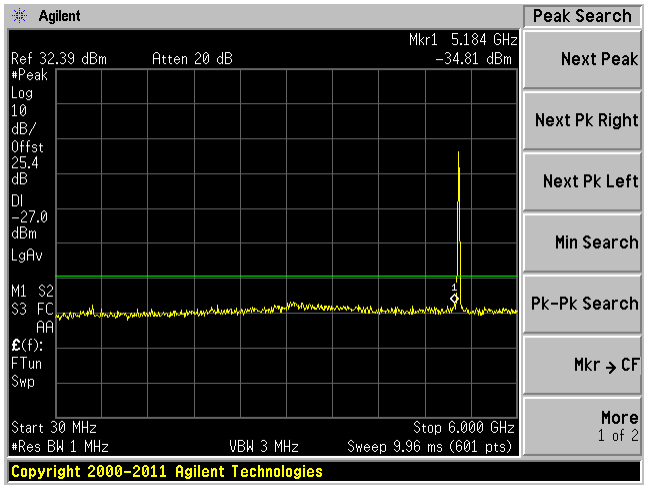


Chain 1, Plot: 6 GHz – 40 GHz

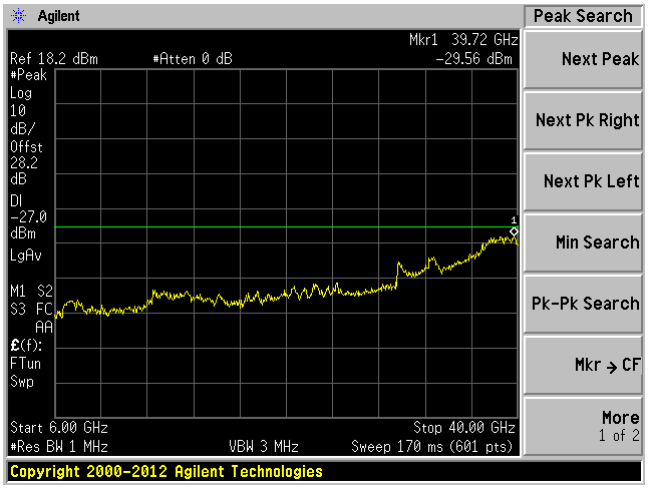


802.11n HT 20, High Channel 5825 MHz

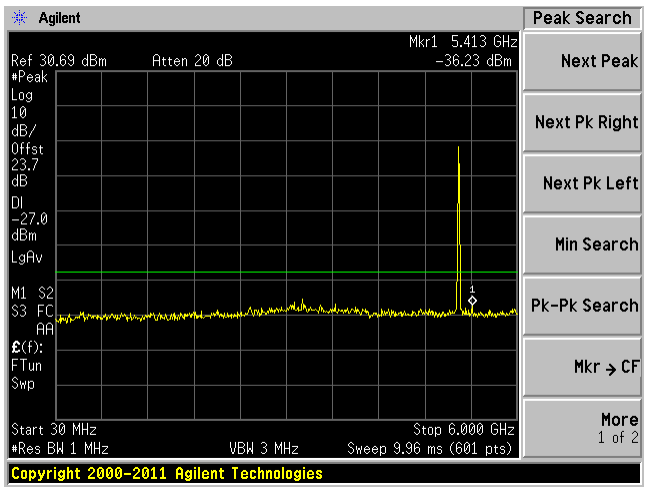
Chain 0, Plot: 30 MHz – 6 GHz



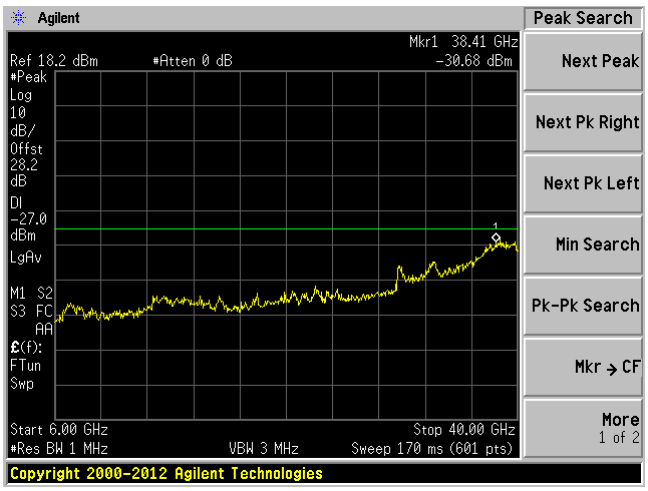
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

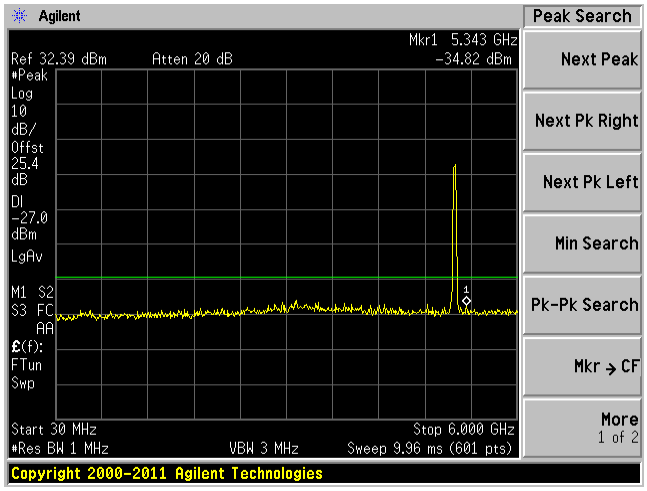


Chain 1, Plot: 6 GHz – 40 GHz

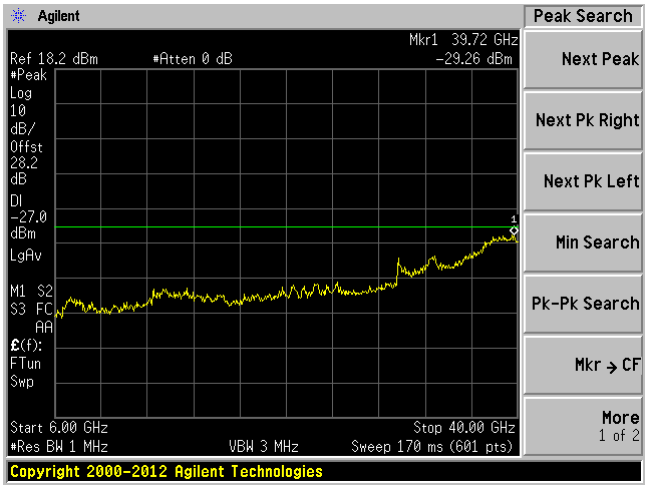


802.11n HT40, Low Channel 5755 MHz

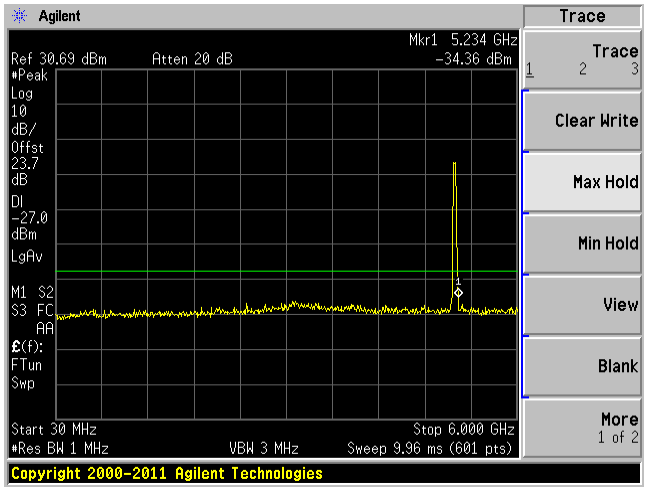
Chain 0, Plot: 30 MHz – 6 GHz



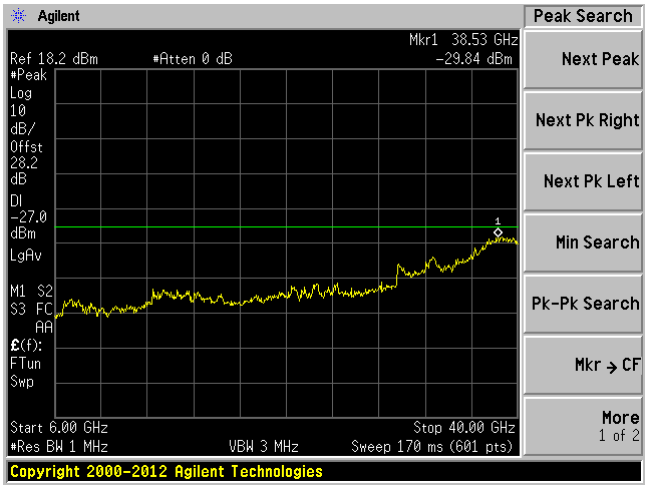
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

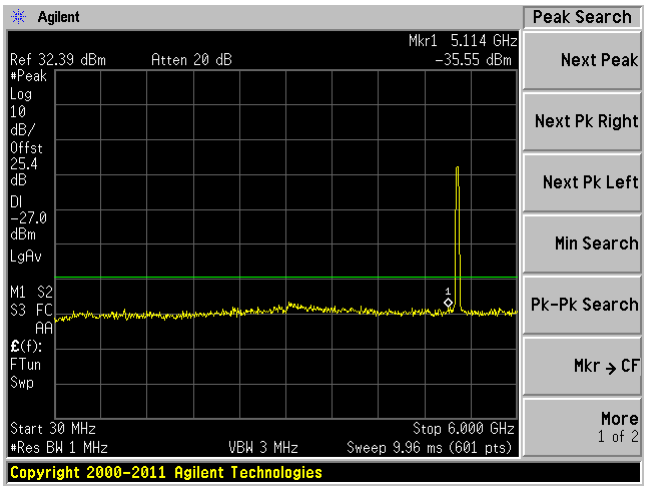


Chain 1, Plot: 6 GHz – 40 GHz

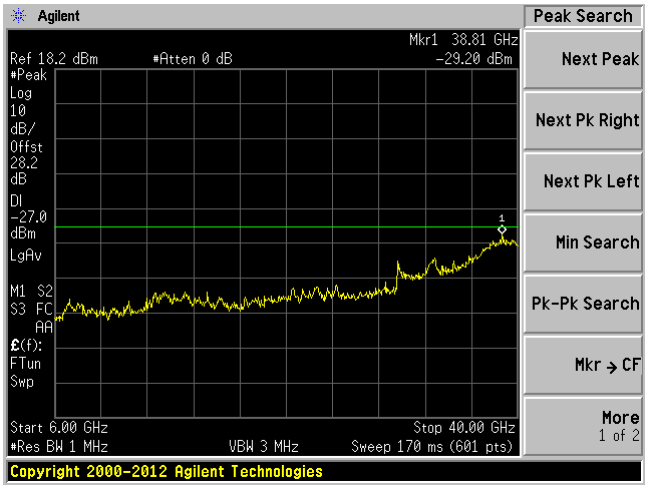


802.11n HT40, High Channel 5795 MHz

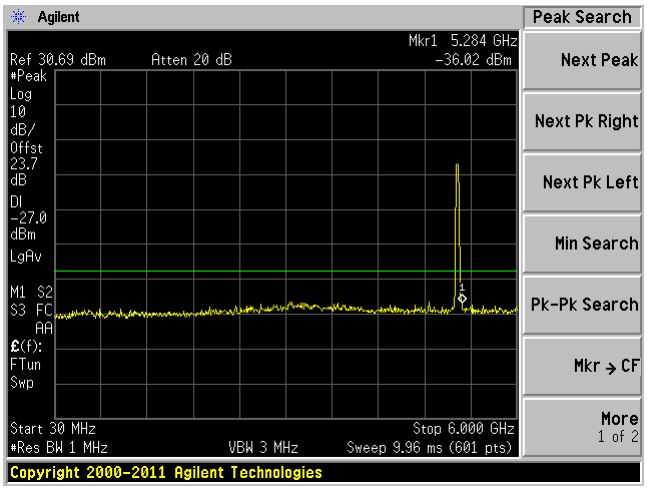
Chain 0, Plot: 30 MHz – 6 GHz



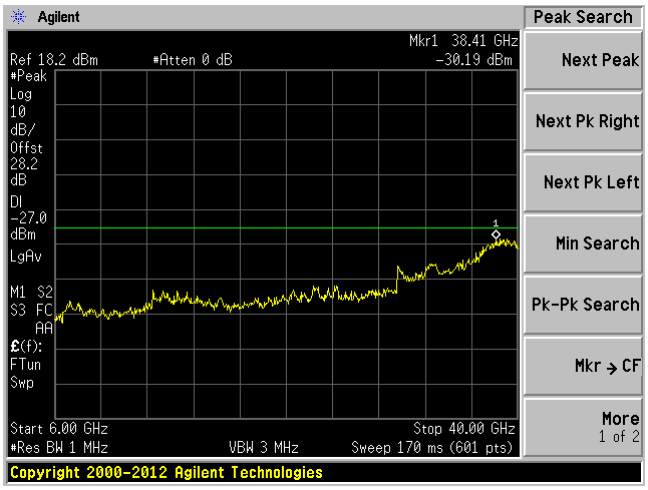
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz



Chain 1, Plot: 6 GHz – 40 GHz



11 FCC §15.407(a) - Power Spectral Density

11.1 Applicable Standards

According to FCC §15.407(a)(1)

(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..

According to FCC §15.407(a)(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.

According to FCC §15.407(a)(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.

11.2 Measurement Procedure

(i) Set span to encompass the entire emission bandwidth (EBW) of the signal.
(ii) Set RBW = 1 MHz.
(iii) Set VBW ≥ 3 MHz.
(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
(v) Sweep time = auto.
(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run".
(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
(ix) Compute power by integrating the spectrum across the 26 dB EBW of the signal using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges. If the spectrum analyzer does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW of the spectrum.

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

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

11.5 Test Results

5.2 GHz Band

802.11a mode

Channel	Frequency (MHz)	TX Chain 0 Power (dBm)	TX Chain 1 Power (dBm)	MAX Power (dBm)	Limit (dBm)
Low	5180	0.091	0.620	0.620	11
Middle	5200	0.200	0.470	0.470	11
High	5240	0.436	0.261	0.436	11

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain 0 Power (dBm)	TX Chain 1 Power (dBm)	Total Power (dBm)	Limit (dBm)
Low	5180	-4.495	-5.642	-2.020	11
Middle	5200	-4.416	-4.968	-1.673	11
High	5240	-4.568	-5.136	-1.832	11

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain 0 Power (dBm)	TX Chain 1 Power (dBm)	Total Power (dBm)	Limit (dBm)
Low	5190	-8.683	-9.262	-5.953	11
High	5230	-8.446	-9.097	-5.749	11

5.3 GHz Band

802.11a mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	Max PSD (dBm)	Limit (dBm)
Low	5260	1.481	2.089	2.089	11
Middle	5280	1.153	2.122	2.122	11
High	5320	1.227	1.427	1.427	11

802.11n-HT20 mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)
Low	5260	-4.152	-4.829	-1.467	11
Middle	5280	-4.551	-4.967	-1.744	11
High	5320	-4.399	-4.755	-1.563	11

802.11n-HT40 mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)
Low	5270	-8.216	-8.623	-5.404	11
High	5310	-8.630	-9.066	-5.832	11

5.6 GHz Band

802.11a mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	Max PSD (dBm)	Limit (dBm)
Low	5550	2.488	2.63	2.63	11
Middle	5580	2.227	2.244	2.227	11
High	5700	2.239	2.472	2.472	11

802.11n-HT20 mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)
Low	5500	-3.578	-2.297	0.120	10.5
Middle	5580	-4.149	-2.080	0.018	10.5
High	5700	-3.428	-0.716	1.147	10.5

802.11n-HT40 mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)
Low	5510	-6.007	-6.112	-3.05	10.5
Middle	5550	-6.113	-5.963	-3.03	10.5
High	5670	-8.278	-8.176	-5.22	10.5

Note: the correlated directional Gain is 6.50 dBi in 5470-5725 MHz band, the power limit was breduced by 0.5 dB for MIMO transmitting system (802.11n).

5.8 GHz Band

802.11a mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	MAX PSD (dBm)	Limit (dBm)
Low	5745	4.2	3.739	4.2	30
Middle	5785	3.331	3.603	3.603	30
High	5825	3.105	3.341	3.341	30

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)
Low	5745	-3.771	-2.760	-0.226	29.14
Middle	5785	-3.161	-2.326	0.287	29.14
High	5825	-3.478	-2.600	-0.007	29.14

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm)	TX Chain 1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)
Low	5755	-7.318	-6.083	-3.646	29.14
High	5795	-7.362	-6.242	-3.756	29.14

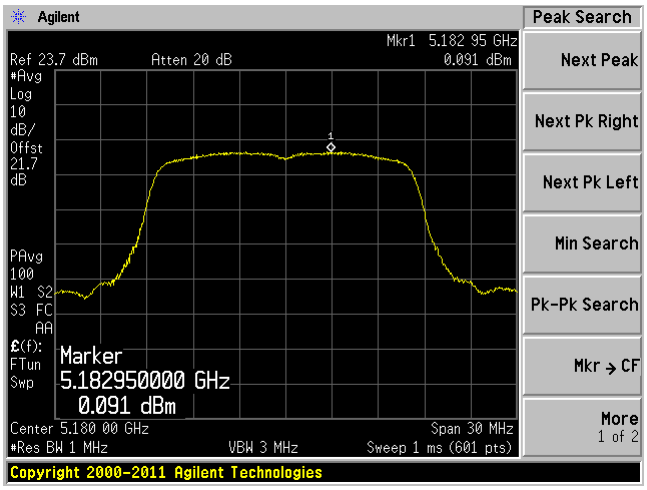
Note: the correlated directional Gain is 6.86 dBi in 5725-5850 MHz band, the power limit was breduced by 0.86 dB for MIMO transmitting system (802.11n).

Please refer to the following plots.

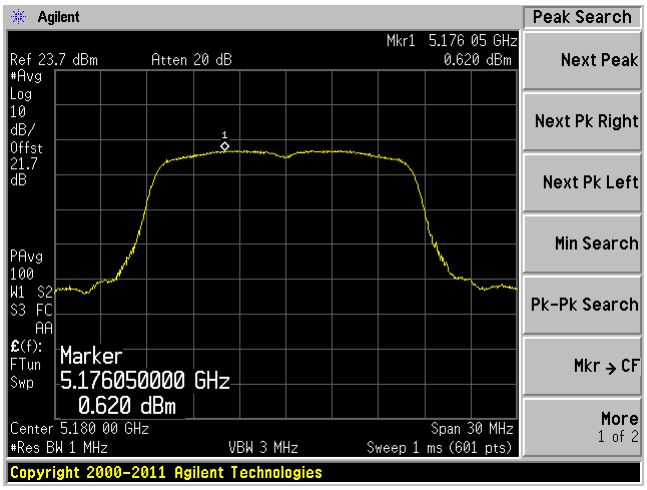
5.2 GHz Band

802.11a mode

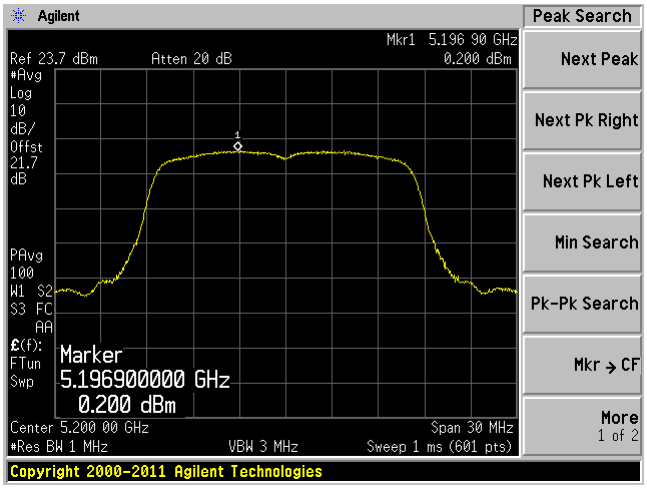
Low channel: 5180 MHz Chain 0



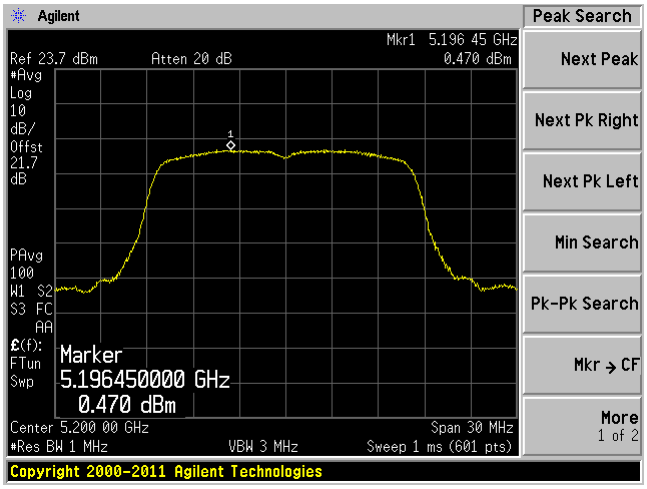
Low channel: 5180 MHz Chain 1



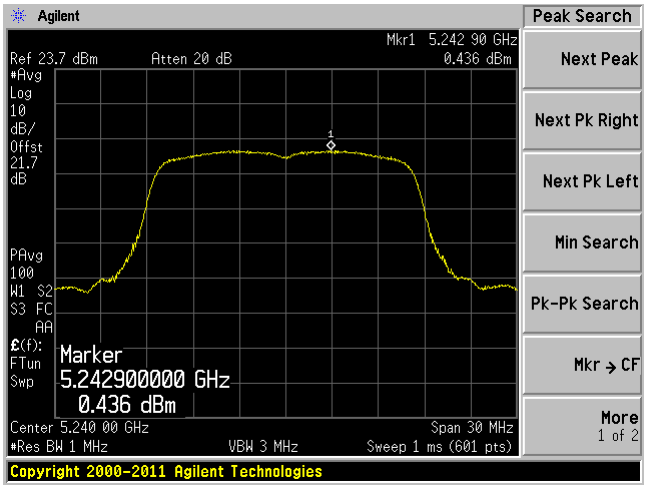
Middle channel: 5200 MHz Chain 0



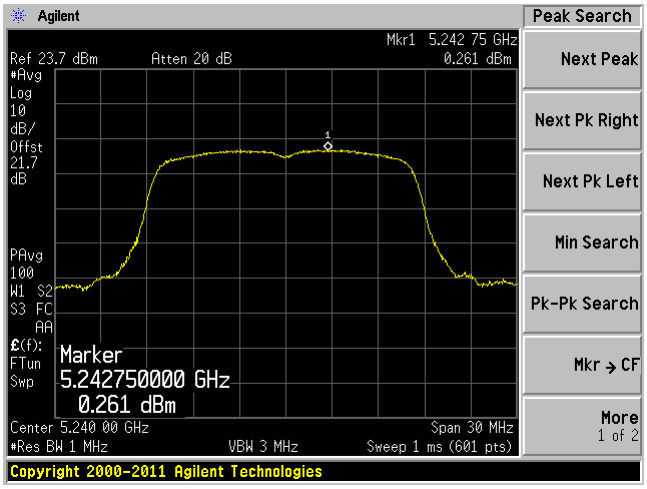
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

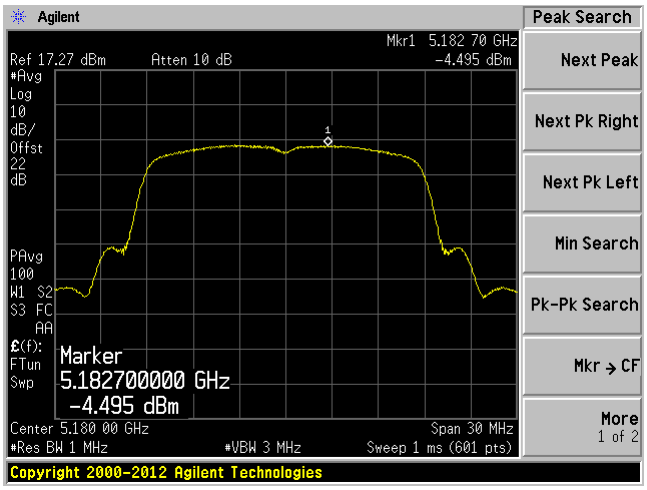


High channel: 5240 MHz Chain 1

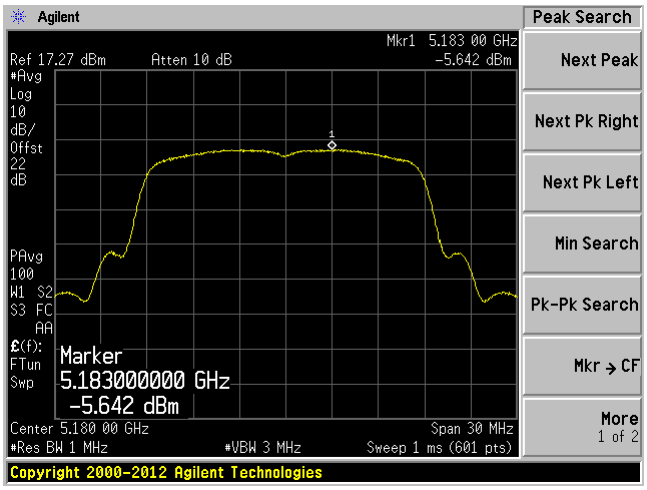


802.11HT20 mode

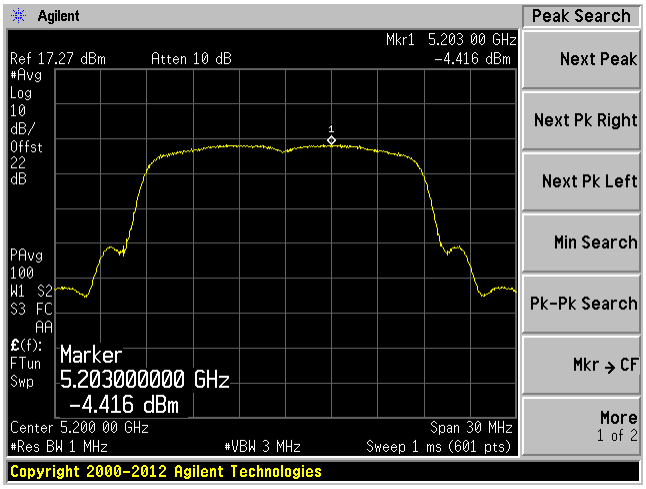
Low channel: 5180 MHz Chain 0



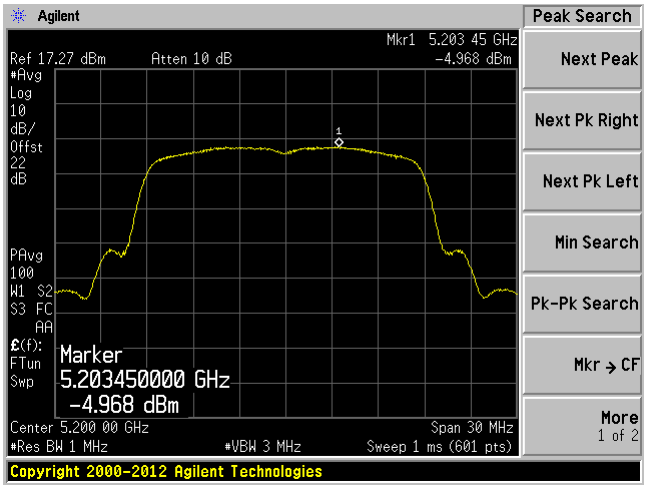
Low channel: 5180 MHz Chain 1



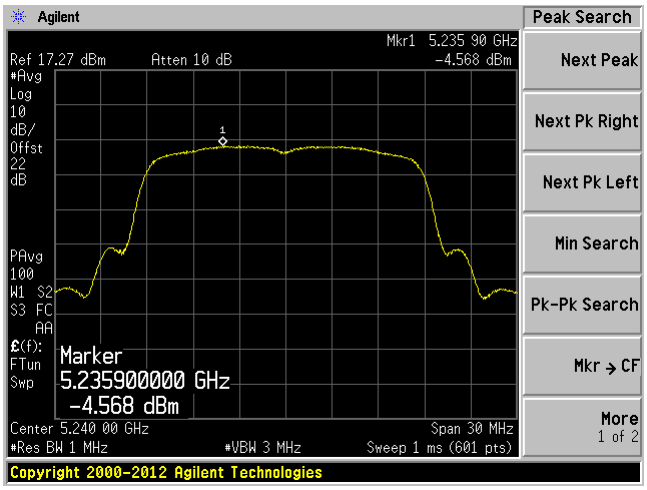
Middle channel: 5200 MHz Chain 0



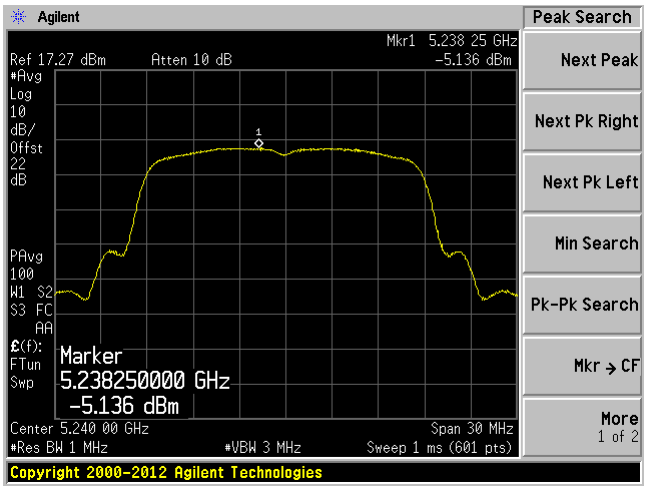
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

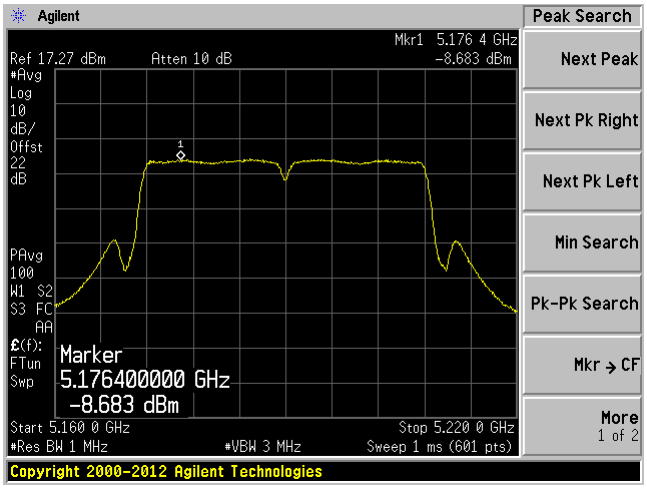


High channel: 5240 MHz Chain 1

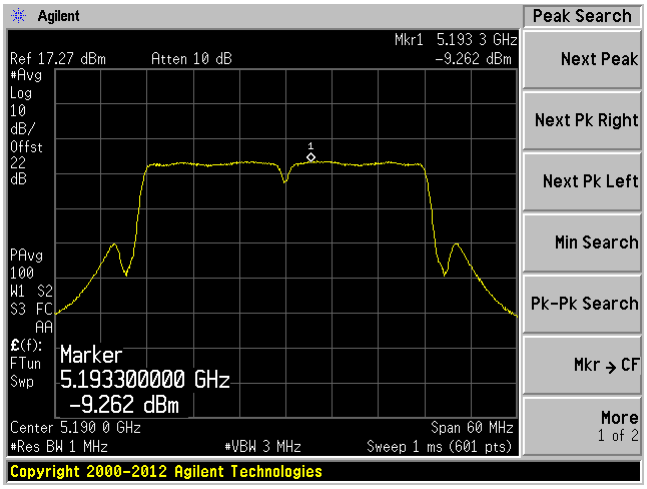


802.11n HT40 mode

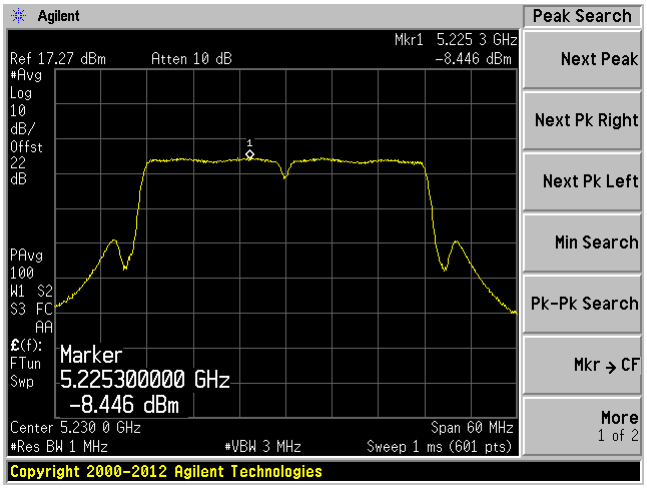
Low channel: 5190 MHz Chain 0



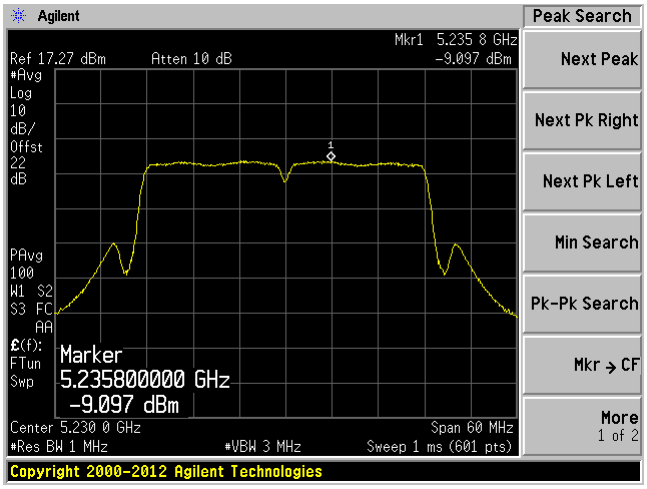
Low channel: 5190 MHz Chain 1



High channel: 5230 MHz Chain 0



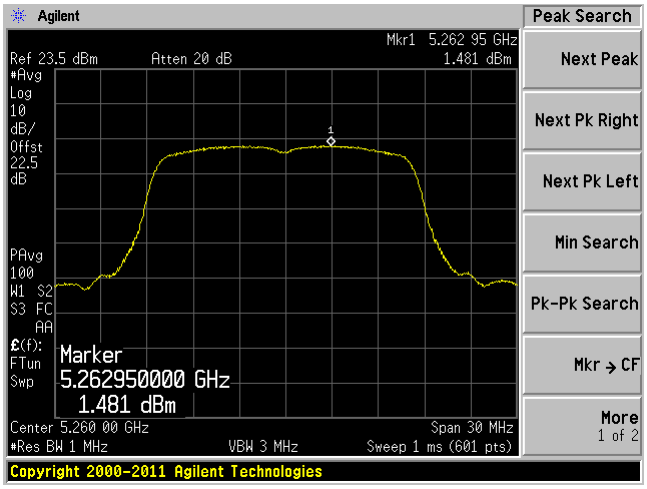
High channel: 5230 MHz Chain 1



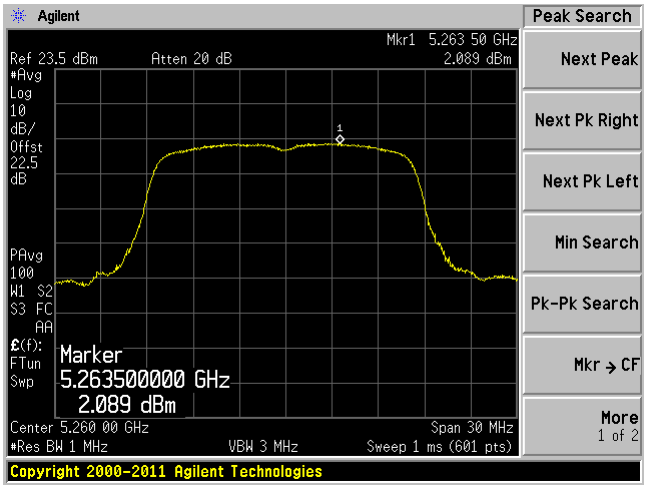
5.3 GHz Band

802.11a mode

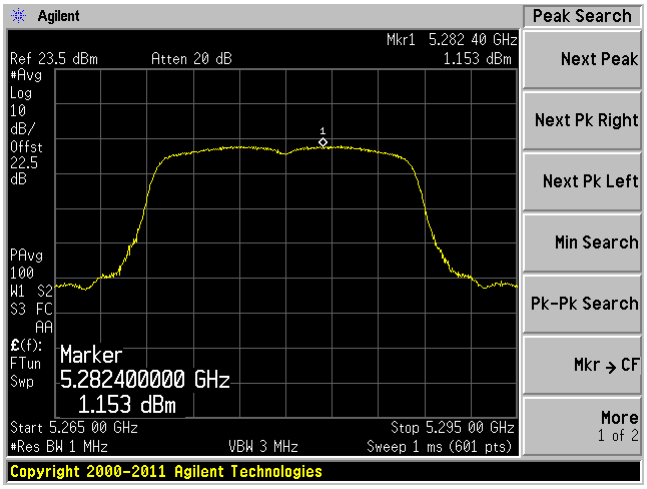
802.11a mode, 5260 MHz, Chain J0



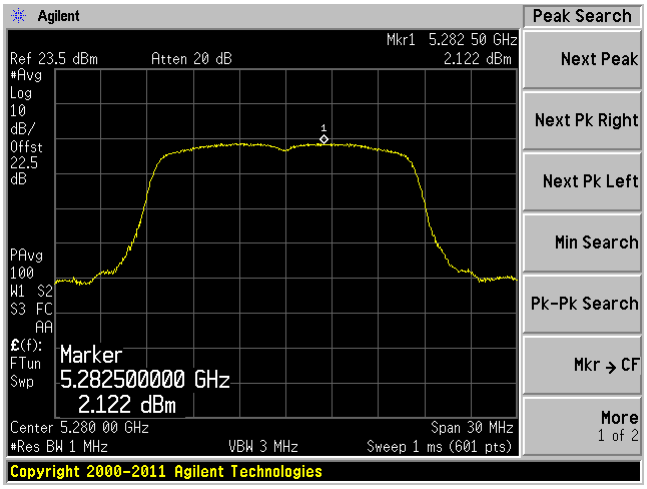
802.11a mode, 5260 MHz, Chain J1



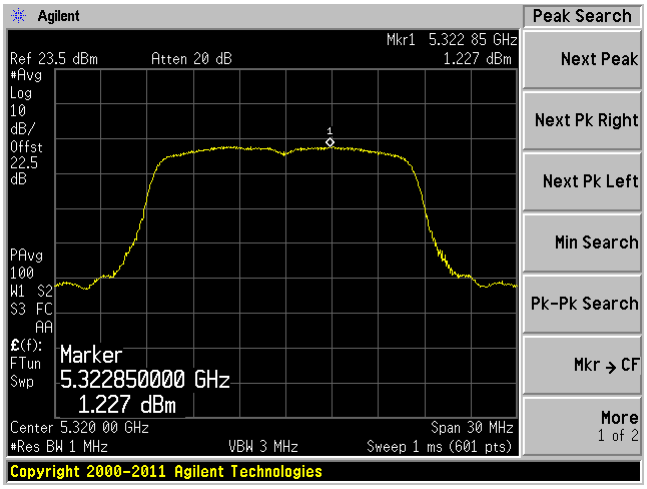
802.11a mode, 5280 MHz, Chain J0



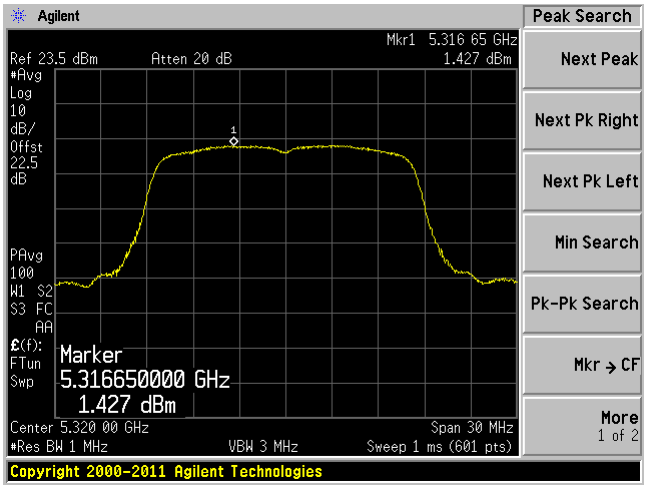
802.11a mode, 5280 MHz, Chain J1



802.11a mode, 5320 MHz, Chain 0

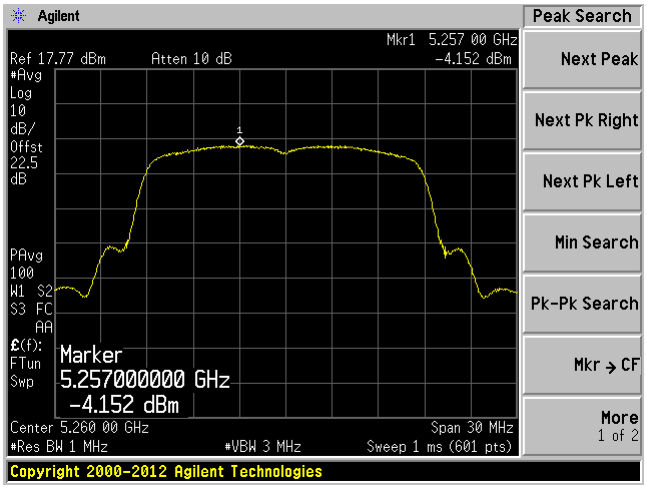


802.11a mode, 5320 MHz, Chain 1

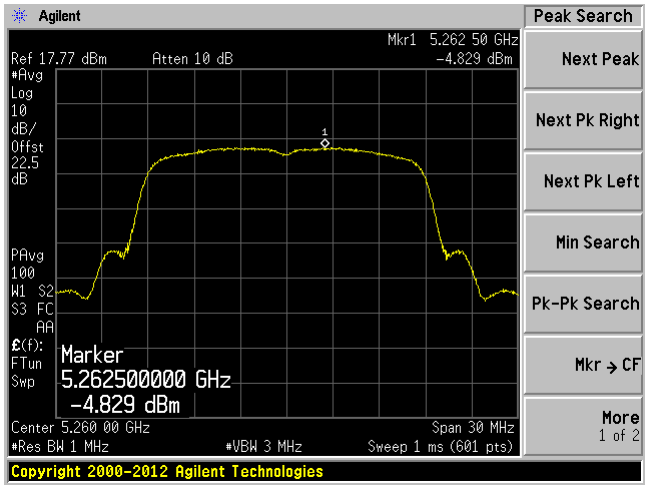


802.11n HT20 mode

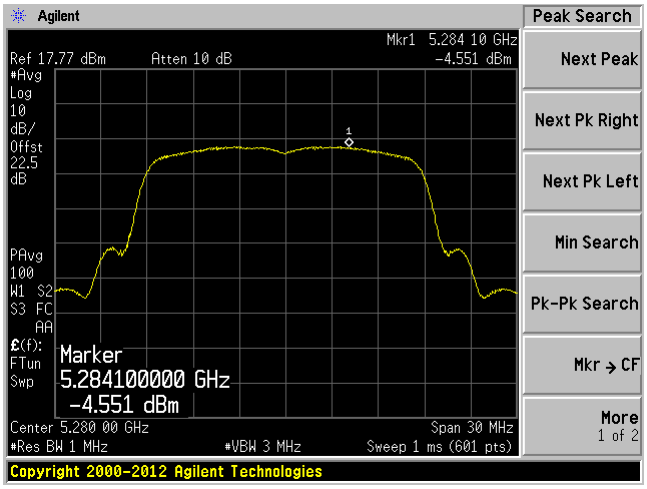
802.11n-HT20 mode, 5260 MHz, Chain 0



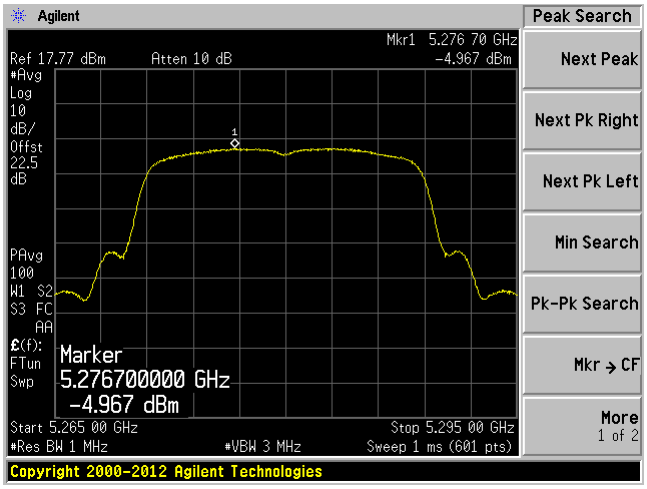
802.11n-HT20 mode, 5260 MHz, Chain 1



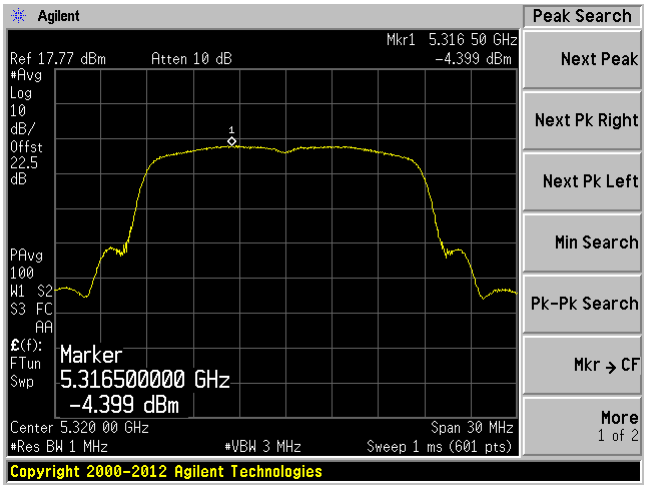
802.11n-HT20 mode, 5280 MHz, Chain 0



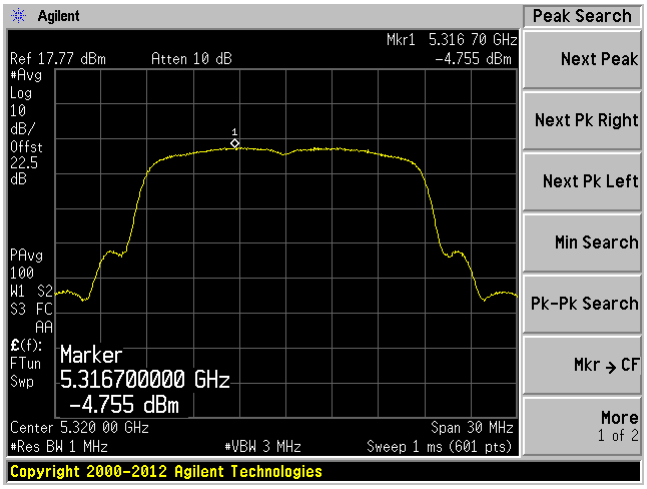
802.11n-HT20 mode, 5280 MHz, Chain 1



802.11n-HT20 mode, 5320 MHz, Chain 0

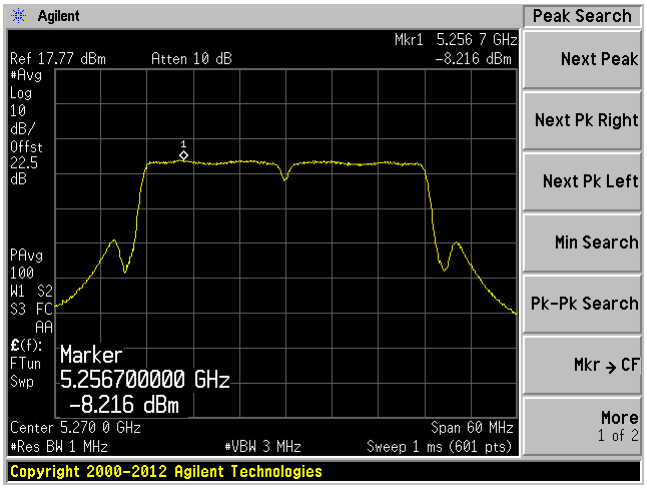


802.11n-HT20 mode, 5320 MHz, Chain 1

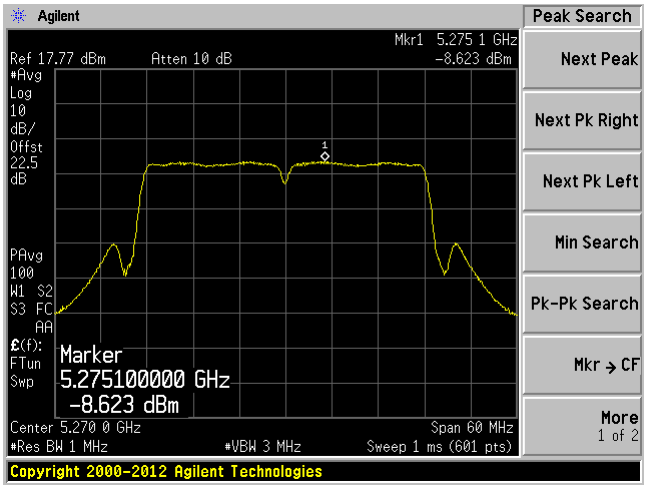


802.11n HT40 mode

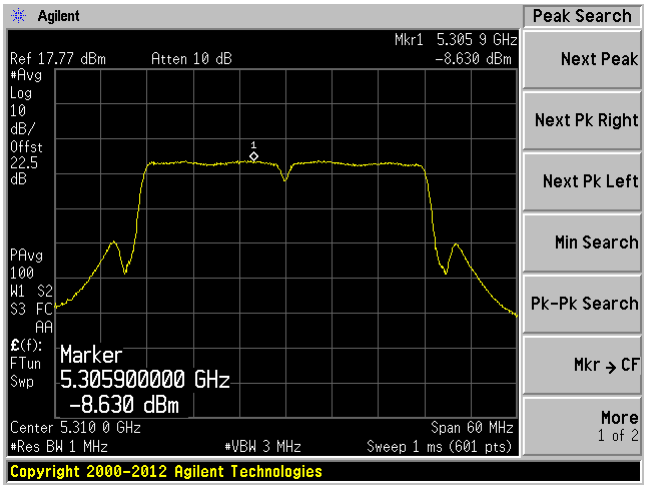
802.11n-HT40 mode, 5270 MHz, Chain 0



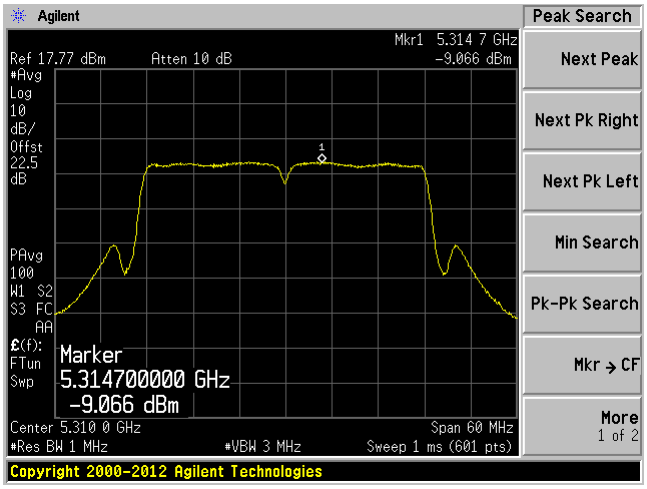
802.11n-HT40 mode, 5270 MHz, Chain 1



802.11n-HT40 mode, 5310 MHz, Chain 0



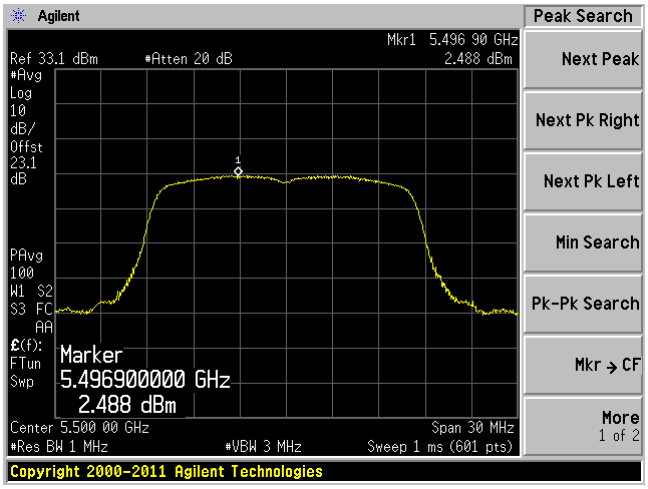
802.11n-HT40 mode, 5310 MHz, Chain 1



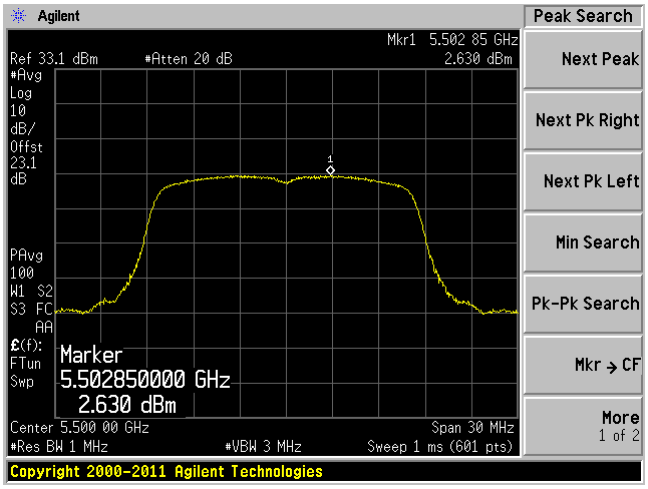
5.6 GHz Band

802.11a mode

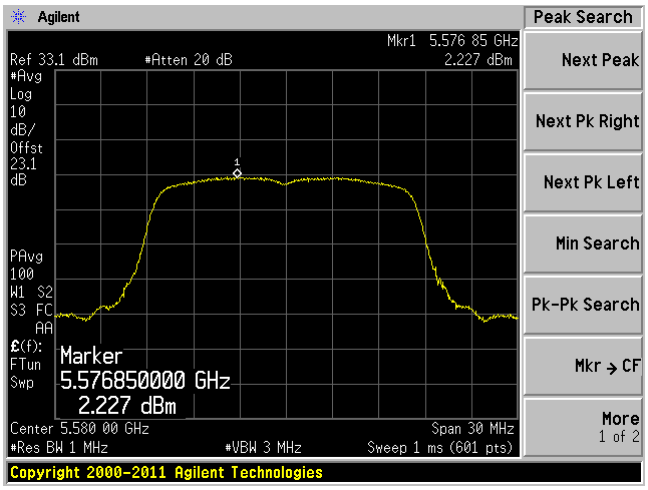
802.11a mode, 5550 MHz, Chain 0



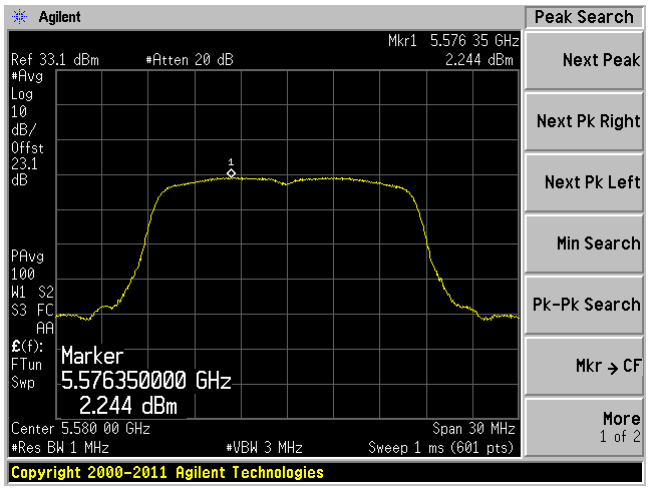
802.11a mode, 5550 MHz, Chain 1



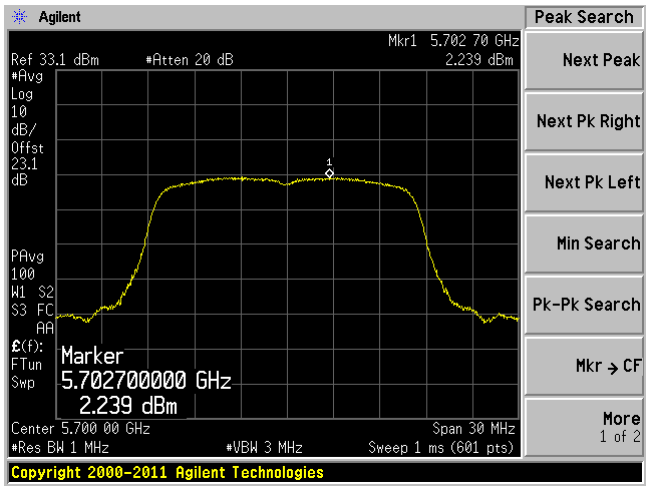
802.11a mode, 5580 MHz, Chain 0



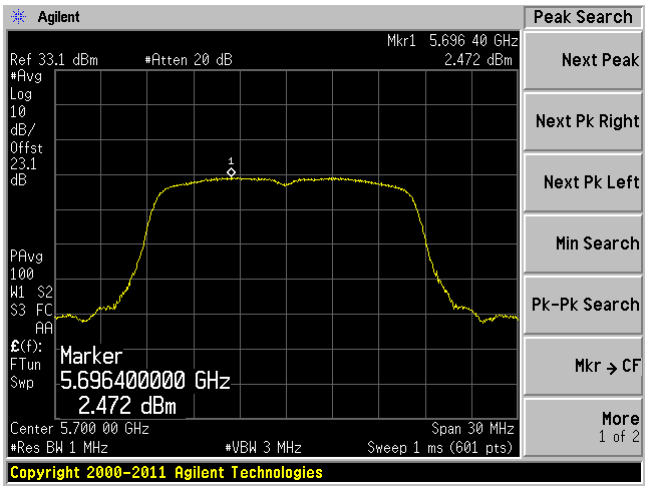
802.11a mode, 5580 MHz, Chain 1



802.11a mode, 5700 MHz, Chain 0

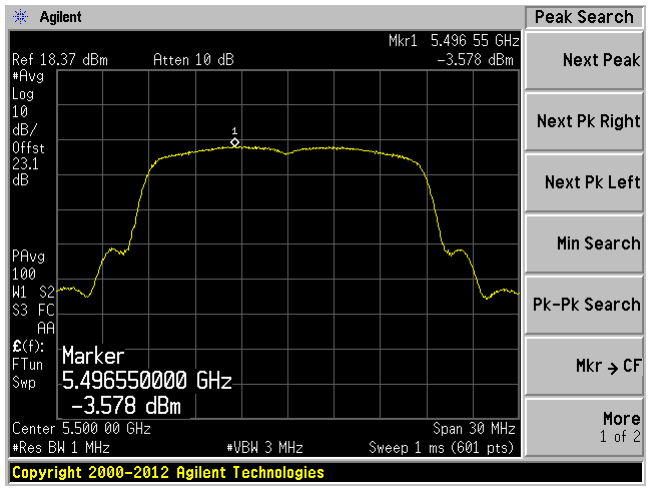


802.11a mode, 5700 MHz, Chain 1

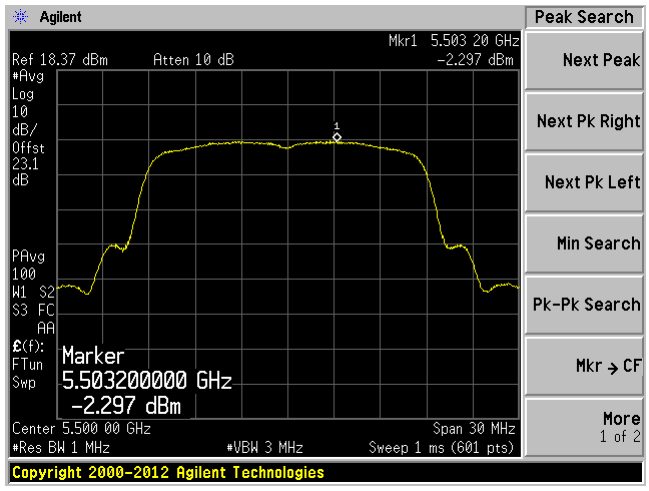


802.11n HT20 mode

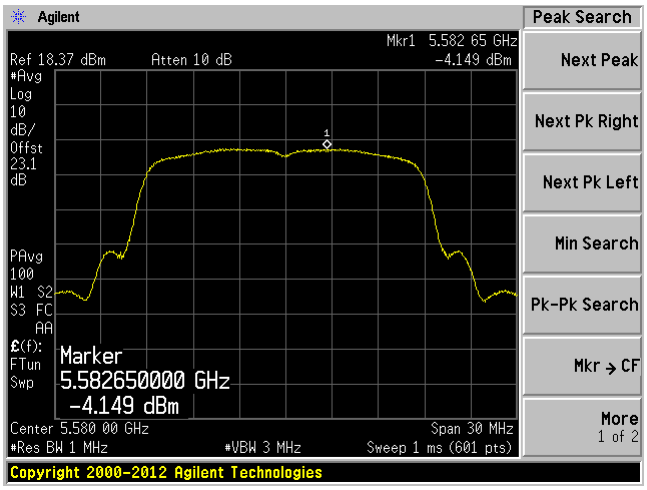
802.11n-HT20 mode, 5500 MHz, Chain 0



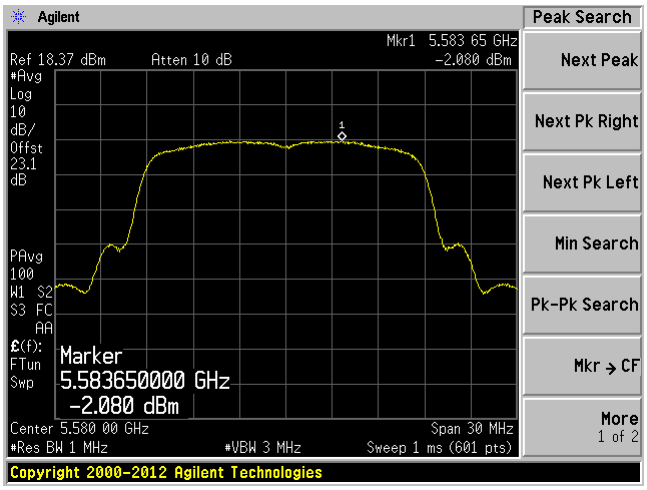
802.11n-HT20 mode, 5500 MHz, Chain 1



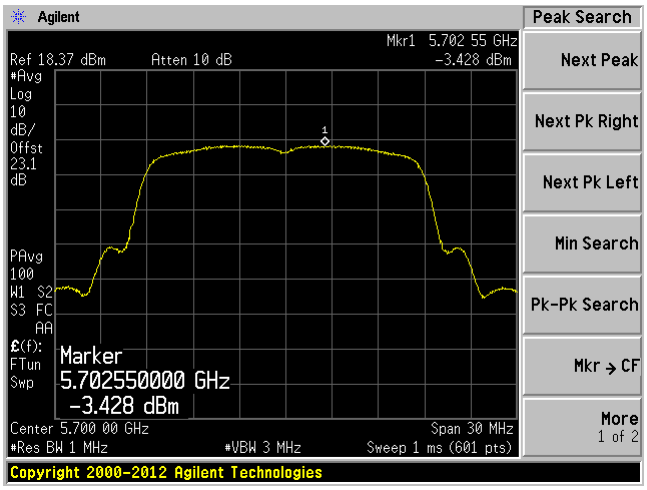
802.11n-HT20 mode, 5580 MHz, Chain 0



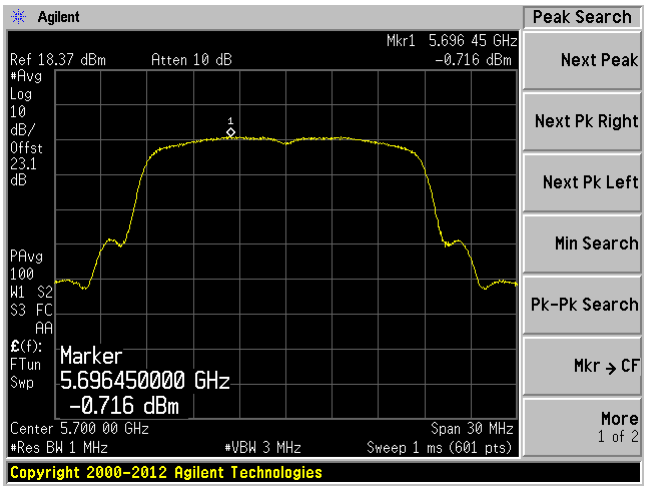
802.11n-HT20 mode, 5580 MHz, Chain 1



802.11n-HT20 mode, 5700 MHz, Chain 0

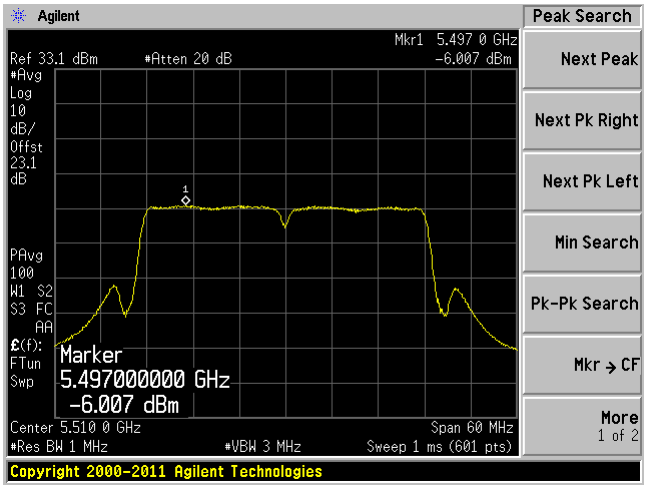


802.11n-HT20 mode, 5700 MHz, Chain 1

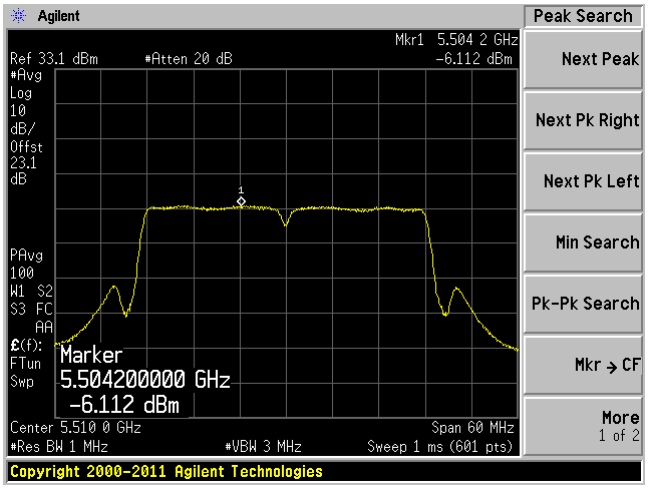


802.11n HT40 mode

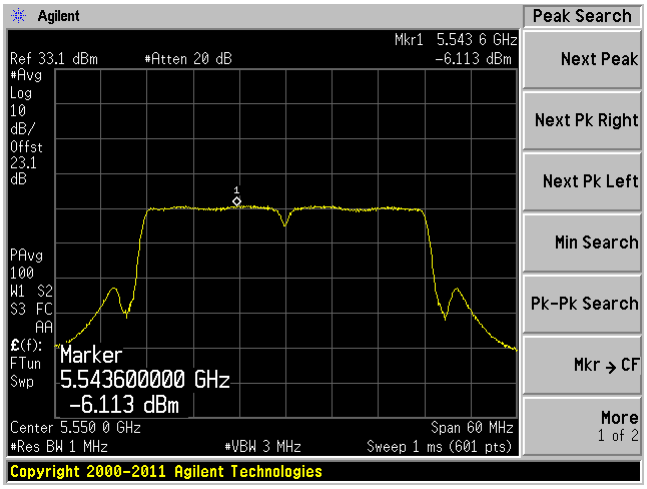
802.11n-HT40 mode, 5510 MHz, Chain 0



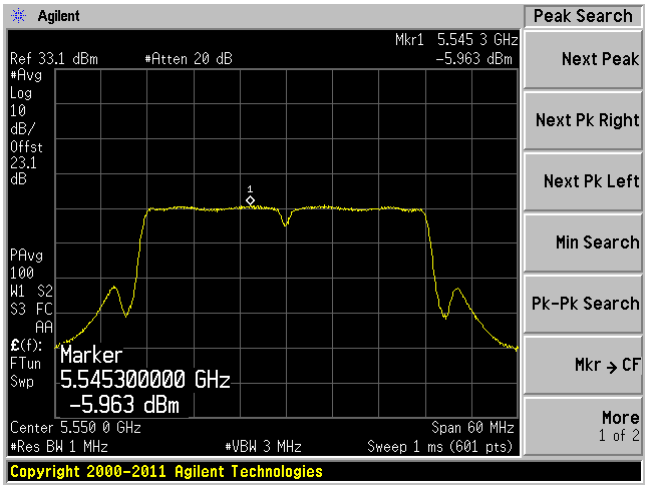
802.11n-HT40 mode, 5510 MHz, Chain 1



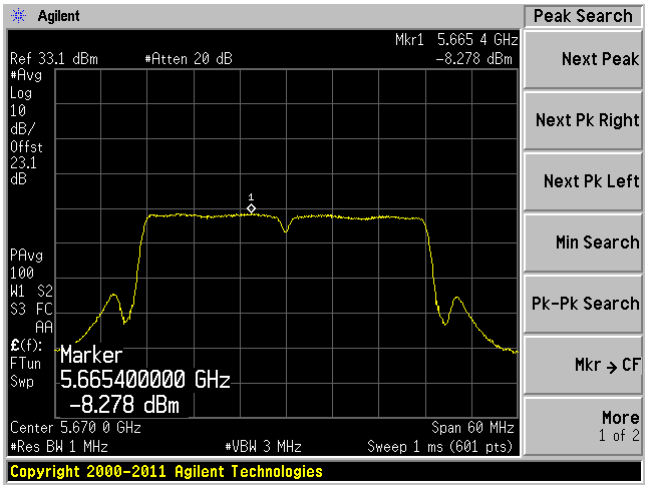
802.11n-HT40 mode, 5550 MHz, Chain 0



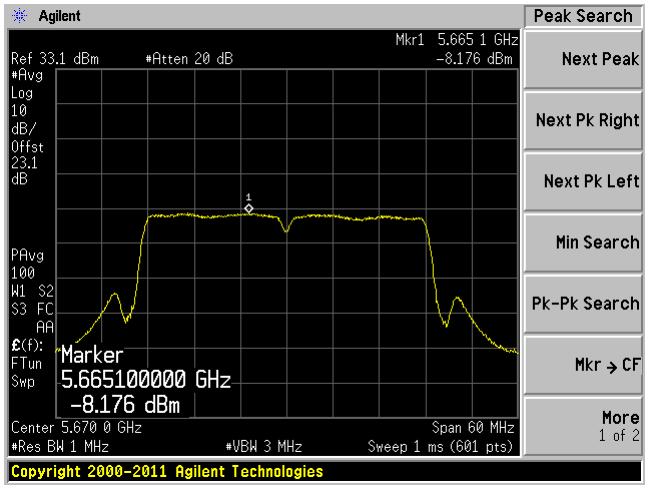
802.11n-HT40 mode, 5550 MHz, Chain 1



802.11n-HT40 mode, 5670 MHz, Chain 0



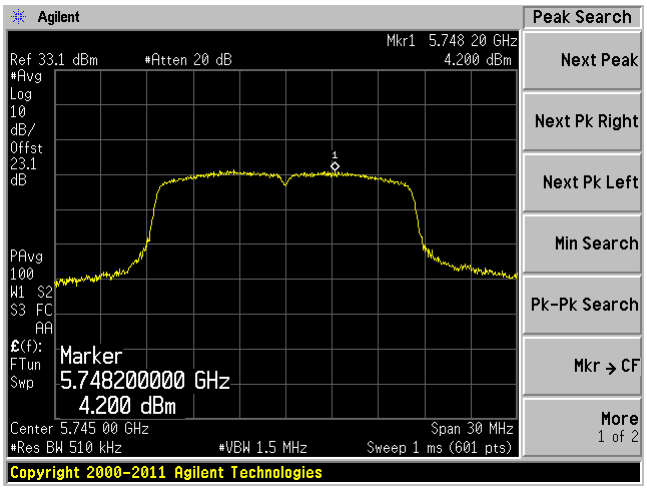
802.11n-HT40 mode, 5670 MHz, Chain 1



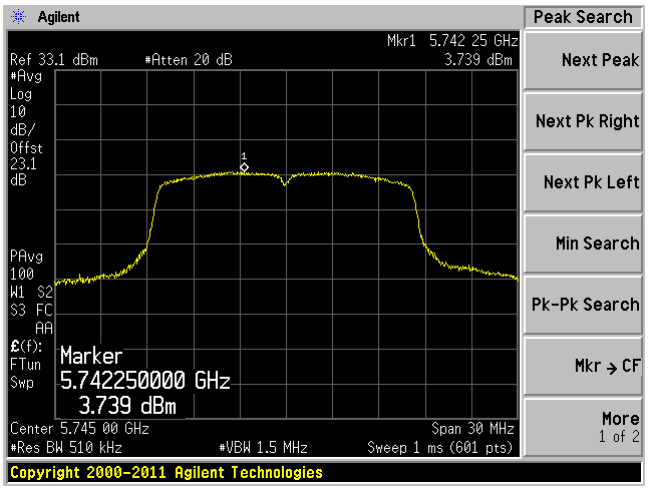
5.8 GHz Band

802.11a mode

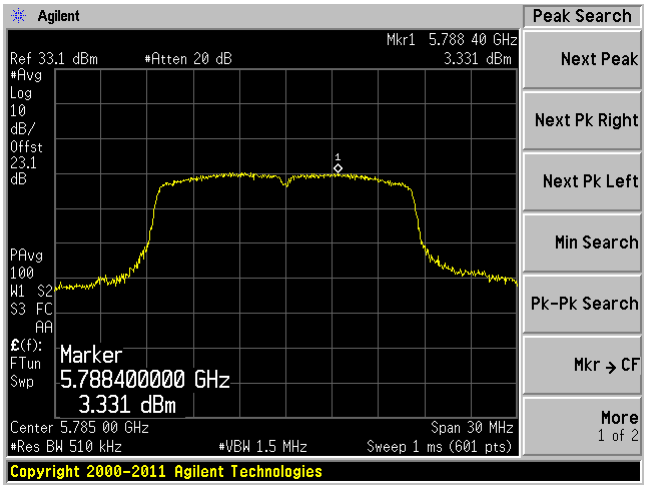
Low channel: 5745 MHz Chain 0



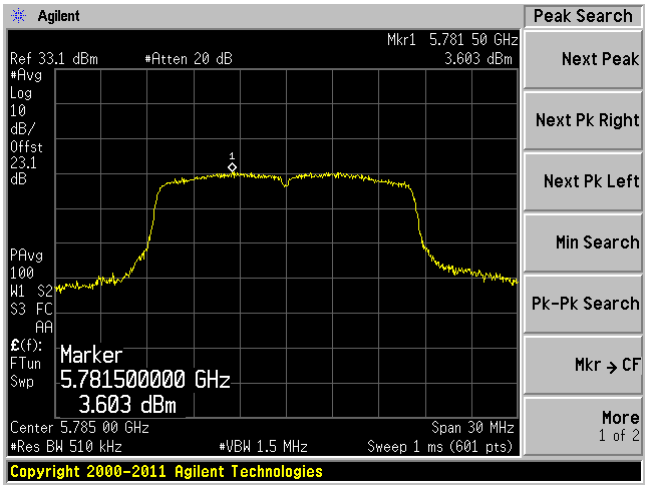
Low channel: 5745 MHz Chain 1



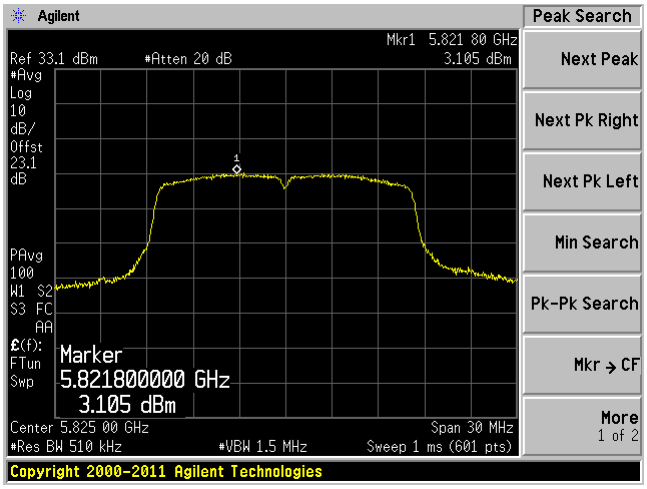
Middle channel: 5785 MHz Chain 0



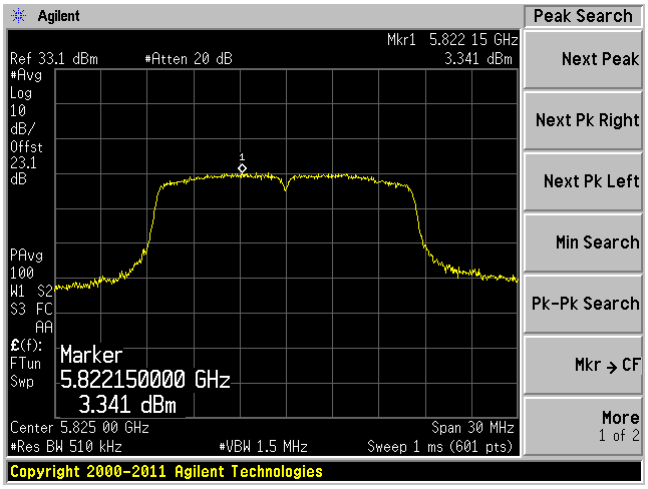
Middle channel: 5785 MHz Chain 1



High channel: 5825 MHz Chain 0

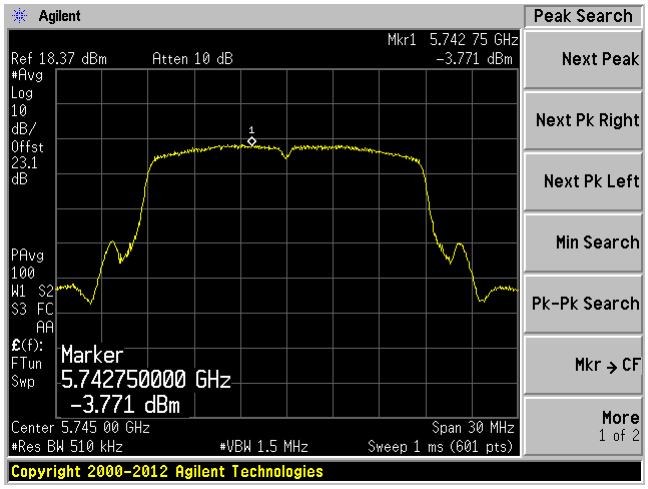


High channel: 5825 MHz Chain 1

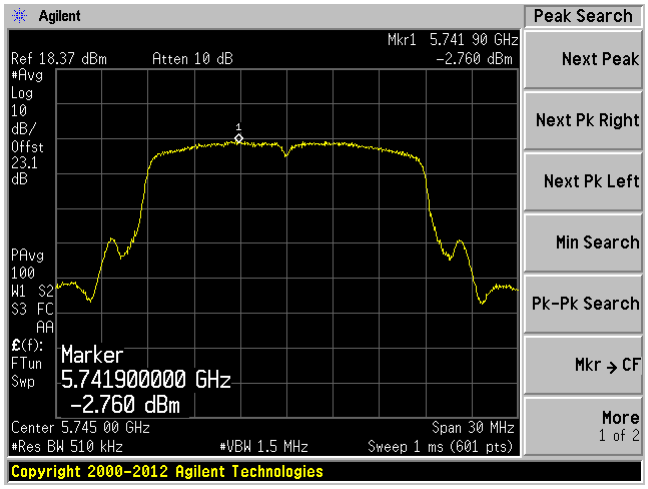


802.11HT20 mode

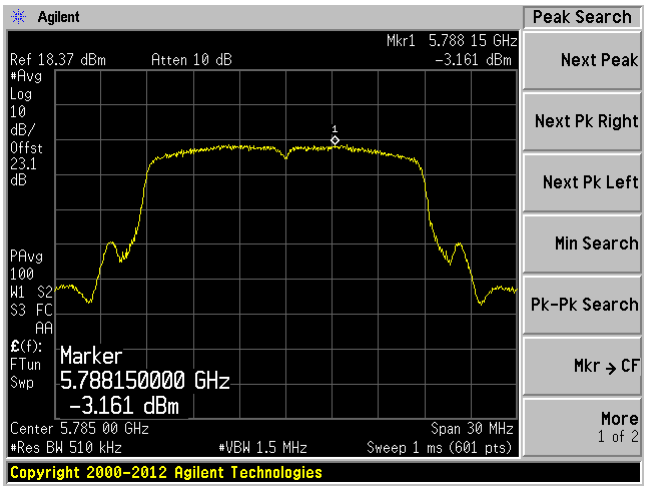
Low channel: 5745 MHz Chain 0



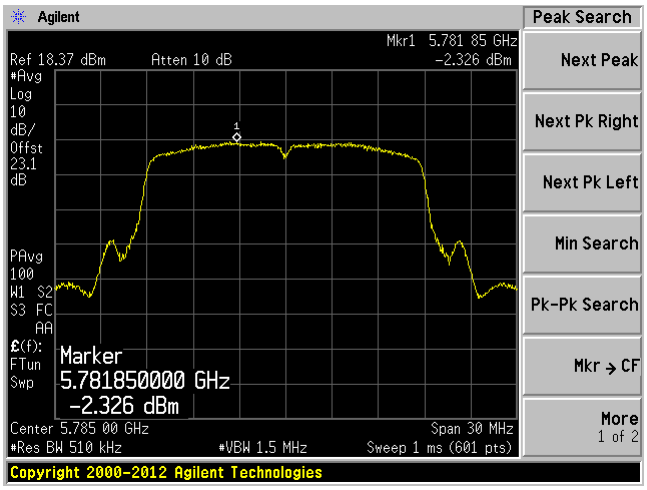
Low channel: 5745 MHz Chain 1



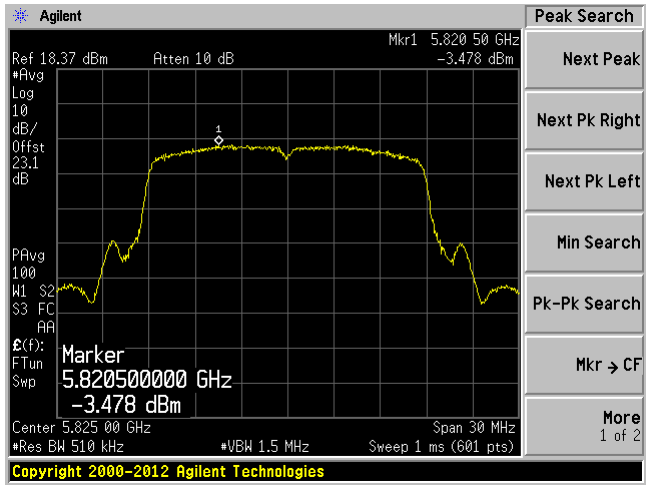
Middle channel: 5785 MHz Chain 0



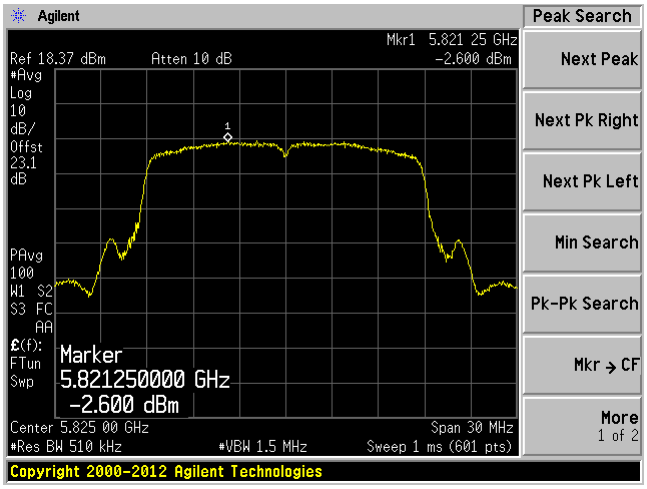
Middle channel: 5785 MHz Chain 1



High channel: 5825 MHz Chain 0

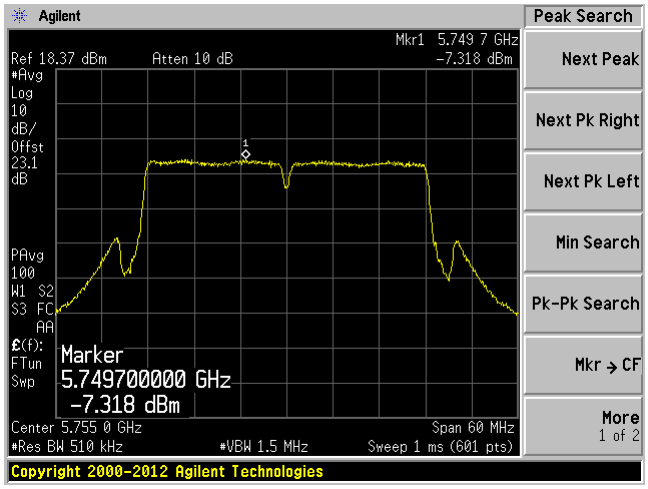


High channel: 5825 MHz Chain 1

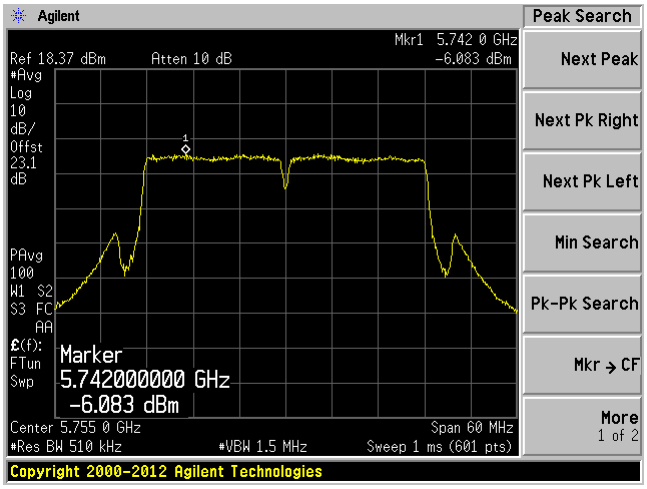


802.11n HT40 mode

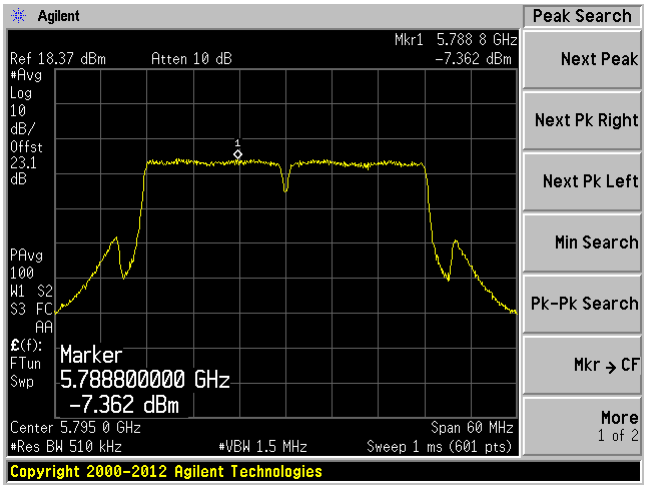
Low channel: 5755 MHz Chain 0



Low channel: 5755 MHz Chain 1



High channel: 5795 MHz Chain 0



High channel: 5795 MHz Chain 1