FCC PART 15.407

TEST AND MEASUREMENT REPORT

For

NVIDIA Corporation

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

FCC ID: VOB-P1761WX

Report Type:	**Product Type:**
Original Report	802.11a/b/g/n WLAN+BT Combo Radio Tablet

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Report Number:	R1410015-407 W52W58 Rev A
Report Date:	2014-12-08
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TABLE OF CONTENTS

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1410015-407 W52W58	Original Report	2014-12-04
1	R1410015-407 W52W58 Rev A	Revised Report with updated power data	2014-12-08

1 General Description

1.1 Product Description for Equipment under Test (EUT)

This test and measurement report was prepared on behalf of *NVIDIA Corporation* and their product FCC ID: VOB-P1761WX, Model: P1761W or the "EUT" as referred to in this report. The EUT is a Tablet which 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 test data gathered are from typical production sample, serial number: R140015-1 assigned by BACL

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)

D+FCC ID: VOB-P1761W.

1.5 Test Methodology

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

1.6 Measurement Uncertainty

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

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

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 and KDB-789033 D02 General UNII Test Procedures New Rules v01

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

N/A

2.3 Special Equipment

N/A

2.4 Equipment Modifications

No modifications were made to the EUT.

2.5 Local Support Equipment

Manufacturer	Description	Model No.	Serial No.
Lenovo	Laptop	G560-0679	CB08585694
DELL	Monitor	U2410f FP63	-
-	Headset	-	-

2.6 EUT Internal Configuration Details

Manufacturer	Description	Type	Serial Number
NVIDIA	Main PCB Board	P1761	-
Yuko	Battery	YOKU 3574152	AR14060940006167

2.7 Power Supply and Line Filters

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

2.8 Interface Ports and Cabling

Cable Description	Length (m)	To	From
RF Cable	<1.0	PSA	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).	Note[1]

Note: Compliant*: Please refer to BACL SAR report No.: R1410015-FCC SAR
Note[1] : Manufacturer blocked the DFS bands .
Note: 802.11a/b/g Wi-Fi Ant 1 data share with FCC ID: VOB-P1761W.

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) @ 5.8 GHz
Wi-Fi 0	3.7	5.1
Wi-Fi 1	2.0	2.4
Correlated Directional Gain	5.90	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.

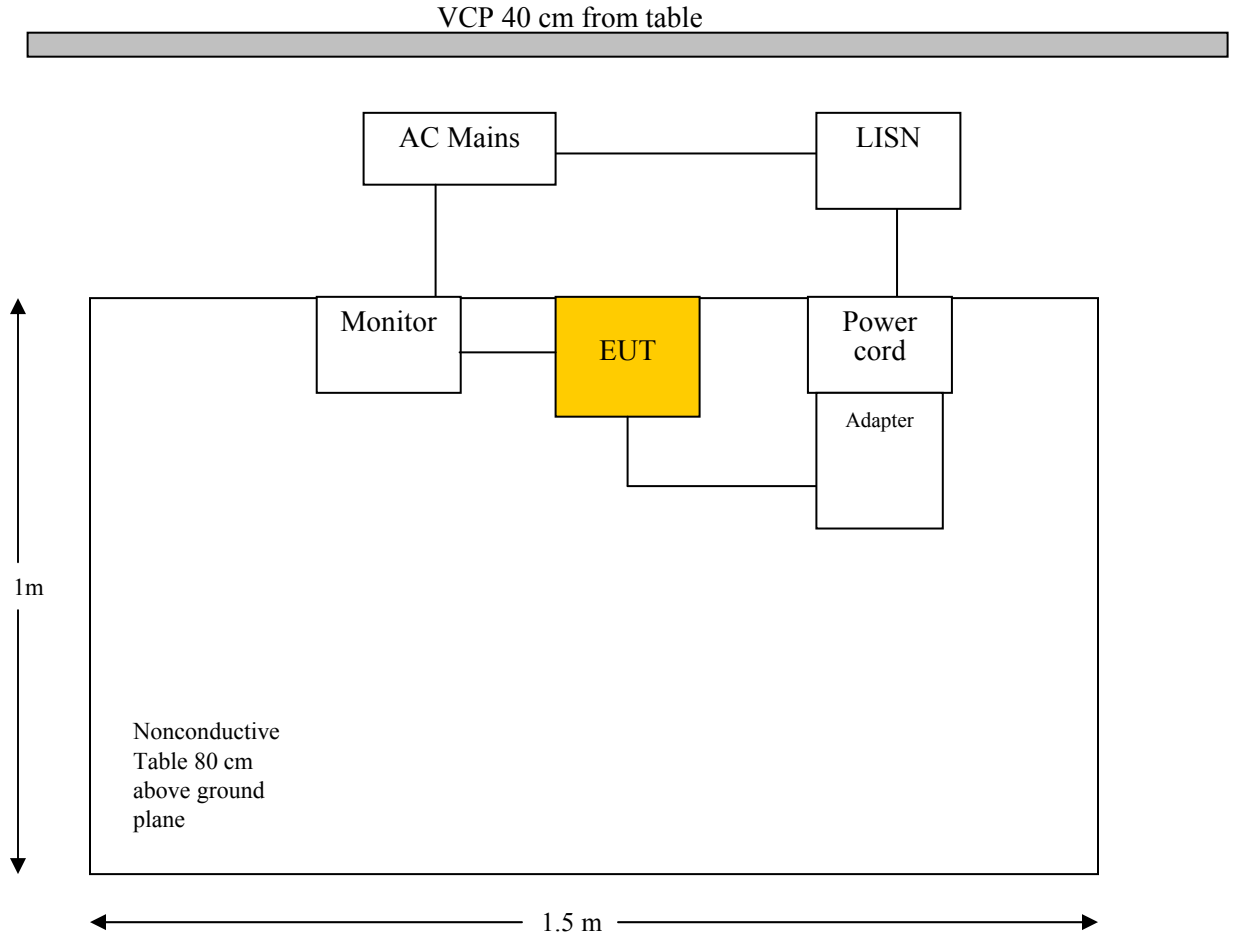
5.3 Test Procedure

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



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

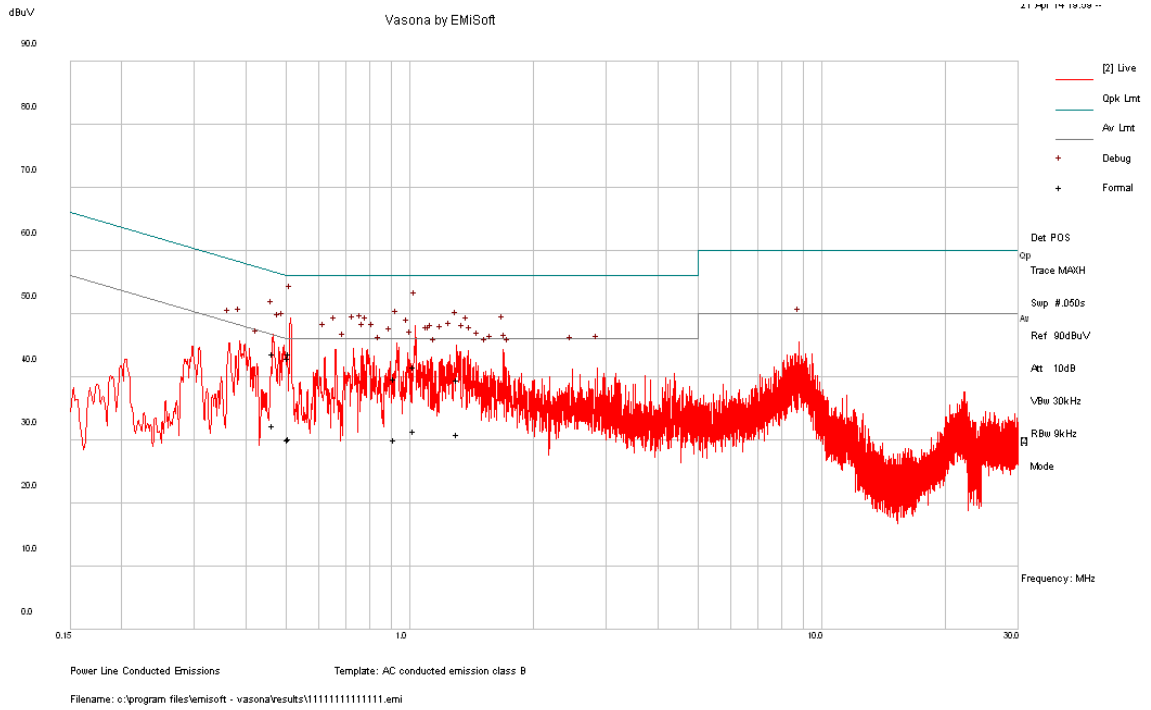
According to the recorded data in following table, the EUT complied with the FCC Part 15.207 conducted emissions limits, with the margin reading of:

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

5.9 Conducted Emissions Test Plots and Data

Transmitting with 5 GHz Band:

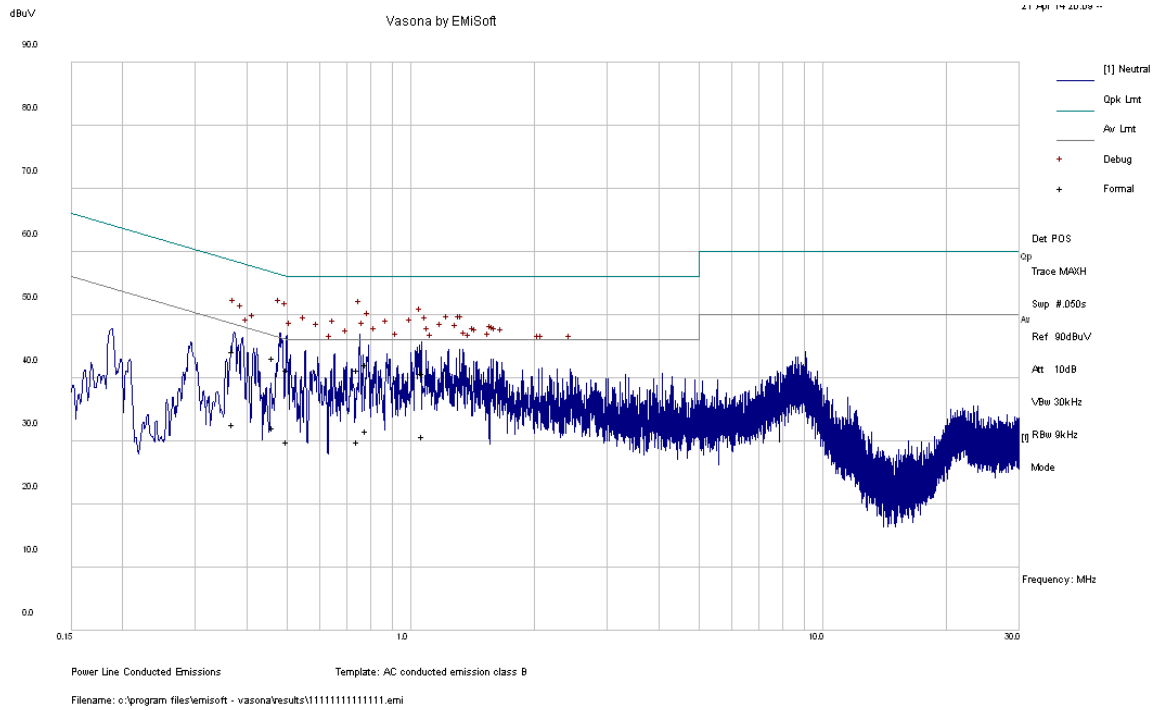
120 V, 60 Hz – Line



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.

(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	2014-07-24	1 year
Hewlett Packard	Pre-amplifier 1-26.5 GHz	8447D	2944A06639	2014-04-26	1 year
Agilent	Spectrum Analyzer	E4440A	MY44303352	2013-11-07	1 year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2014-08-10	1 year
EMCO	Horn Antenna	3315	9511-4627	2013-10-17	1 year
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2013-10-28	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 Rui Zhou on 2014-10-03 in 5 m chamber 3.

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

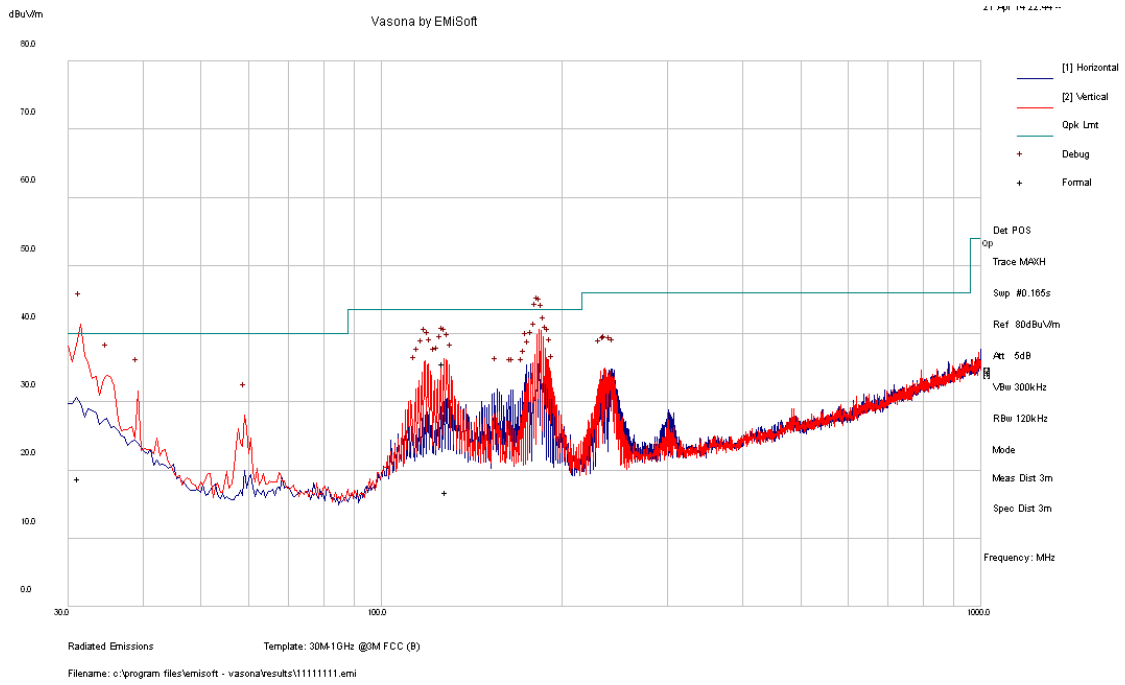
Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range**
-7.81	126.932	Vertical	30 MHz - 1 GHz

1 - 40 GHz

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range**
-0.04	5150	Horizontal	1 GHz - 40 GHz

6.8 Radiated Emissions Test Result Data

1) 30 MHz – 1 GHz



Worst-case:

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

W52 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, measured at 3 meters											
5180	71.07	310	100	V	34.33	2.82	0	108.22	N/A	N/A	Peak
5180	74.45	16	100	H	34.33	2.82	0	111.6	N/A	N/A	Peak
5180	58.91	310	100	V	34.33	2.82	0	96.06	N/A	N/A	Ave
5180	61.82	16	100	H	34.33	2.82	0	98.97	N/A	N/A	Ave
5150	32.78	310	100	V	34.1	2.78	0	69.66	74	-4.34	Peak
5150	35.75	16	100	H	34.1	2.78	0	72.63	74	-1.37	Peak
5150	14.97	310	100	V	34.1	2.78	0	51.85	54	-2.15	Ave
5150	16.56	16	100	H	34.1	2.78	0	53.44	54	-0.56	Ave
10360	45.93	0	100	V	38.1	4.08	33.87	54.24	91.6	-37.36	Peak
10360	45.32	0	100	H	38.1	4.08	33.87	53.63	91.6	-37.97	Peak
10360	33.01	0	100	V	38.1	4.08	33.87	41.32	68.97	-27.65	Ave
10360	32.98	0	100	H	38.1	4.08	33.87	41.29	68.97	-27.68	Ave
15540	46.5	0	100	V	38.54	3.93	33.82	55.15	91.6	-36.45	Peak
15540	45.58	0	100	H	38.54	3.93	33.82	54.23	91.6	-37.37	Peak
15540	33.38	0	100	V	38.54	3.93	33.82	42.03	68.97	-26.94	Ave
15540	33.33	0	100	H	38.54	3.93	33.82	41.98	68.97	-26.99	Ave
20720	46.18	0	100	V	34.41	5.72	34.79	51.52	91.6	-40.08	Peak
20720	45.9	0	100	H	34.41	5.72	34.79	51.24	91.6	-40.36	Peak
20720	33.78	0	100	V	34.41	5.72	34.79	39.12	68.97	-29.85	Ave
20720	33.77	0	100	H	34.41	5.72	34.79	39.11	68.97	-29.86	Ave
Middle Channel 5200 MHz, measured at 3 meters											
5200	67.09	225	100	V	34.33	2.82	0	104.24	N/A	N/A	Peak
5200	71.57	308	100	H	34.33	2.82	0	108.72	N/A	N/A	Peak
5200	56.72	225	100	V	34.33	2.82	0	93.87	N/A	N/A	Ave
5200	60.3	308	100	H	34.33	2.82	0	97.45	N/A	N/A	Ave
10400	45.36	0	100	V	38.845	4.07	33.87	54.405	88.72	-34.315	Peak
10400	44.76	0	100	H	38.845	4.07	33.87	53.805	88.72	-34.915	Peak
10400	33.22	0	100	V	38.845	4.07	33.87	42.265	67.45	-25.185	Ave
10400	33.15	0	100	H	38.845	4.07	33.87	42.195	67.45	-25.255	Ave
15600	45.47	0	100	V	38.59	3.94	33.82	54.18	88.72	-34.54	Peak
15600	45.14	0	100	H	38.59	3.94	33.82	53.85	88.72	-34.87	Peak
15600	33.2	0	100	V	38.59	3.94	33.82	41.91	67.45	-25.54	Ave
15600	33.21	0	100	H	38.59	3.94	33.82	41.92	67.45	-25.53	Ave
20800	45.36	0	100	V	34.41	5.78	34.74	50.81	88.72	-37.91	Peak
20800	45.41	0	100	H	34.41	5.78	34.74	50.86	88.72	-37.86	Peak
20800	33.22	0	100	V	34.41	5.78	34.74	38.67	67.45	-28.78	Ave
20800	33.01	0	100	H	34.41	5.78	34.74	38.46	67.45	-28.99	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, measured at 3 meters											
5240	69.71	307	100	V	34.33	2.82	0	106.86	N/A	N/A	Peak
5240	73.99	11	100	H	34.33	2.82	0	111.14	N/A	N/A	Peak
5240	58.71	307	100	V	34.33	2.82	0	95.86	N/A	N/A	Ave
5240	61.63	11	100	H	34.33	2.82	0	98.78	N/A	N/A	Ave
5150	25.63	307	100	V	34.35	2.78	0	62.76	74	-11.24	Peak
5150	27.05	11	100	H	34.35	2.78	0	64.18	74	-9.82	Peak
5150	12.87	307	100	V	34.35	2.78	0	50	54	-4	Ave
5150	13.19	11	100	H	34.35	2.78	0	50.32	54	-3.68	Ave
10480	45.61	0	100	V	38.55	4.09	34.71	53.54	91.14	-37.6	Peak
10480	45.73	0	100	H	38.55	4.09	34.71	53.66	91.14	-37.48	Peak
10480	32.75	0	100	V	38.55	4.09	34.71	40.68	68.78	-28.1	Ave
10480	32.69	0	100	H	38.55	4.09	34.71	40.62	68.78	-28.16	Ave
15720	44.59	0	100	V	38.61	5.17	33.78	54.59	91.14	-36.55	Peak
15720	44.07	0	100	H	38.61	3.93	33.78	52.83	91.14	-38.31	Peak
15720	32.37	0	100	V	38.61	3.93	33.78	41.13	68.78	-27.65	Ave
15720	32.29	0	100	H	38.61	3.93	33.78	41.05	68.78	-27.73	Ave
20960	44.78	0	100	V	34.41	5.78	34.71	50.26	91.14	-40.88	Peak
20960	44.82	0	100	H	34.41	5.78	34.71	50.3	91.14	-40.84	Peak
20960	32.62	0	100	V	34.41	5.78	34.71	38.1	68.78	-30.68	Ave
20960	32.61	0	100	H	34.41	5.78	34.71	38.09	68.78	-30.69	Ave

802.11n-HT20 mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5180 MHz, measured at 3 meters											
5180	67.66	318	100	V	34.33	5.13	0	107.12	N/A	N/A	Peak
5180	71.19	325	100	H	34.33	5.13	0	110.65	N/A	N/A	Peak
5180	57.42	318	100	V	34.33	5.13	0	96.88	N/A	N/A	Ave
5180	61.05	325	100	H	34.33	5.13	0	100.51	N/A	N/A	Ave
5150	25.18	318	100	V	34.1	5.03	0	64.31	74	-9.69	Peak
5150	26.59	325	100	H	34.1	5.03	0	65.72	74	-8.28	Peak
5150	13.23	318	100	V	34.1	5.03	0	52.36	54	-1.64	Ave
5150	14.18	325	100	H	34.1	5.03	0	53.31	54	-0.69	Ave
10360	45.18	0	100	V	38.1	4.08	33.87	53.49	90.65	-37.16	Peak
10360	45.91	0	100	H	38.1	4.08	33.87	54.22	90.65	-36.43	Peak
10360	32.98	0	100	V	38.1	4.08	33.87	41.29	70.51	-29.22	Ave
10360	33.24	0	100	H	38.1	4.08	33.87	41.55	70.51	-28.96	Ave
15540	45.71	0	100	V	38.54	3.93	33.82	54.36	90.65	-36.29	Peak
15540	45.95	0	100	H	38.54	3.93	33.82	54.6	90.65	-36.05	Peak
15540	32.78	0	100	V	38.54	3.93	33.82	41.43	70.51	-29.08	Ave
15540	33.21	0	100	H	38.54	3.93	33.82	41.86	70.51	-28.65	Ave
20720	46.95	0	100	V	34.41	5.72	34.79	52.29	90.65	-38.36	Peak
20720	47.38	0	100	H	34.41	5.72	34.79	52.72	90.65	-37.93	Peak
20720	34.77	0	100	V	34.41	5.72	34.79	40.11	70.51	-30.4	Ave
20720	35.01	0	100	H	34.41	5.72	34.79	40.35	70.51	-30.16	Ave
Middle Channel 5200 MHz, measured at 3 meters											
5200	65.42	310	100	V	34.33	5.13	0	104.88	N/A	N/A	Peak
5200	71.62	325	100	H	34.33	5.13	0	111.08	N/A	N/A	Peak
5200	53.7	310	100	V	34.33	5.13	0	93.16	N/A	N/A	Ave
5200	61.55	325	100	H	34.33	5.13	0	101.01	N/A	N/A	Ave
10400	45.11	0	100	V	38.845	4.07	33.87	54.155	91.08	-36.925	Peak
10400	45.49	0	100	H	38.845	4.07	33.87	54.535	91.08	-36.545	Peak
10400	32.78	0	100	V	38.845	4.07	33.87	41.825	71.01	-29.185	Ave
10400	33.45	0	100	H	38.845	4.07	33.87	42.495	71.01	-28.515	Ave
15600	46.85	0	100	V	38.59	3.94	33.82	55.56	91.08	-35.52	Peak
15600	47.11	0	100	H	38.59	3.94	33.82	55.82	91.08	-35.26	Peak
15600	33.83	0	100	V	38.59	3.94	33.82	42.54	71.01	-28.47	Ave
15600	34.01	0	100	H	38.59	3.94	33.82	42.72	71.01	-28.29	Ave
20800	45.63	0	100	V	34.41	5.78	34.74	51.08	91.08	-40	Peak
20800	46.25	0	100	H	34.41	5.78	34.74	51.7	91.08	-39.38	Peak
20800	33.42	0	100	V	34.41	5.78	34.74	38.87	71.01	-32.14	Ave
20800	33.89	0	100	H	34.41	5.78	34.74	39.34	71.01	-31.67	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, measured at 3 meters											
5240	71.27	317	100	V	34.33	2.82	0	108.42	N/A	N/A	Peak
5240	75.75	324	100	H	34.33	2.82	0	112.9	N/A	N/A	Peak
5240	60.64	317	100	V	34.33	2.82	0	97.79	N/A	N/A	Ave
5240	64.89	324	100	H	34.33	2.82	0	102.04	N/A	N/A	Ave
5150	25.79	317	100	V	34.35	2.78	0	62.92	74	-11.08	Peak
5150	26.23	324	100	H	34.35	2.78	0	63.36	74	-10.64	Peak
5150	12.31	317	100	V	34.35	2.78	0	49.44	54	-4.56	Ave
5150	13.04	324	100	H	34.35	2.78	0	50.17	54	-3.83	Ave
10480	46.49	0	100	V	38.55	4.09	34.71	54.42	92.9	-38.48	Peak
10480	46.13	0	100	H	38.55	4.09	34.71	54.06	92.9	-38.84	Peak
10480	33.48	0	100	V	38.55	4.09	34.71	41.41	72.04	-30.63	Ave
10480	33.65	0	100	H	38.55	4.09	34.71	41.58	72.04	-30.46	Ave
15720	46.74	0	100	V	38.61	5.17	33.78	56.74	92.9	-36.16	Peak
15720	44.64	0	100	H	38.61	3.93	33.78	53.4	92.9	-39.5	Peak
15720	33.15	0	100	V	38.61	3.93	33.78	41.91	72.04	-30.13	Ave
15720	32.64	0	100	H	38.61	3.93	33.78	41.4	72.04	-30.64	Ave
20960	45.39	0	100	V	34.41	5.78	34.71	50.87	92.9	-42.03	Peak
20960	45.77	0	100	H	34.41	5.78	34.71	51.25	92.9	-41.65	Peak
20960	33.39	0	100	V	34.41	5.78	34.71	38.87	72.04	-33.17	Ave
20960	33.52	0	100	H	34.41	5.78	34.71	39	72.04	-33.04	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, measured at 3 meters											
5190	63.37	272	100	V	34.33	5.13	0	102.83	N/A	N/A	Peak
5190	65.76	2	100	H	34.33	5.13	0	105.22	N/A	N/A	Peak
5190	50.98	272	100	V	34.33	5.13	0	90.44	N/A	N/A	Ave
5190	53.36	2	100	H	34.33	5.13	0	92.82	N/A	N/A	Ave
5150	29.84	272	100	V	33.3	5.03	0	68.17	74	-5.83	Peak
5150	31.51	2	100	H	33.3	5.03	0	69.84	74	-4.16	Peak
5150	14.07	272	100	V	33.3	5.03	0	52.4	54	-1.6	Ave
5150	15.63	2	100	H	33.3	5.03	0	53.96	54	-0.04	Ave
10380	46.38	0	100	V	38.1	4.09	33.87	54.7	85.22	-30.52	Peak
10380	46.14	0	100	H	38.1	4.09	33.87	54.46	85.22	-30.76	Peak
10380	33.63	0	100	V	38.1	4.09	33.87	41.95	62.82	-20.87	Ave
10380	33.52	0	100	H	38.1	4.09	33.87	41.84	62.82	-20.98	Ave
15570	46.82	0	100	V	38.54	3.95	33.82	55.49	85.22	-29.73	Peak
15570	44.91	0	100	H	38.54	3.95	33.82	53.58	85.22	-31.64	Peak
15570	32.99	0	100	V	38.54	3.95	33.82	41.66	62.82	-21.16	Ave
15570	32.68	0	100	H	38.54	3.95	33.82	41.35	62.82	-21.47	Ave
20760	45.79	0	100	V	34.41	5.72	34.79	51.13	85.22	-34.09	Peak
20760	45.09	0	100	H	34.41	5.72	34.79	50.43	85.22	-34.79	Peak
20760	33.46	0	100	V	34.41	5.72	34.79	38.8	62.82	-24.02	Ave
20760	33.33	0	100	H	34.41	5.72	34.79	38.67	62.82	-24.15	Ave
High Channel 5230 MHz, measured at 3 meters											
5230	67.53	272	100	V	34.33	2.83	0	104.69	N/A	N/A	Peak
5230	69.21	357	100	H	34.33	2.83	0	106.37	N/A	N/A	Peak
5230	54.34	272	100	V	34.33	2.83	0	91.5	N/A	N/A	Ave
5230	55.27	357	100	H	34.33	2.83	0	92.43	N/A	N/A	Ave
10460	45.48	0	100	V	38.55	4.11	34.71	53.43	86.37	-32.94	Peak
10460	44.5	0	100	H	38.55	4.11	34.71	52.45	86.37	-33.92	Peak
10460	32.39	0	100	V	38.55	4.11	34.71	40.34	62.43	-22.09	Ave
10460	32.44	0	100	H	38.55	4.11	34.71	40.39	62.43	-22.04	Ave
15690	46.18	0	100	V	38.61	3.96	33.78	54.97	86.37	-31.4	Peak
15690	46.25	0	100	H	38.61	3.96	33.78	55.04	86.37	-31.33	Peak
15690	33.77	0	100	V	38.61	3.96	33.78	42.56	62.43	-19.87	Ave
15690	33.98	0	100	H	38.61	3.96	33.78	42.77	62.43	-19.66	Ave
20920	46.57	0	100	V	34.41	5.78	34.71	52.05	86.37	-34.32	Peak
20920	46.71	0	100	H	34.41	5.78	34.71	52.19	86.37	-34.18	Peak
20920	34.1	0	100	V	34.41	5.78	34.71	39.58	62.43	-22.85	Ave
20920	34.21	0	100	H	34.41	5.78	34.71	39.69	62.43	-22.74	Ave

W58 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, measured at 3 meters											
5745	68.26	353	100	V	33.9	4.62	0	106.78	N/A	N/A	Peak
5745	67.37	331	100	H	33.9	4.62	0	105.89	N/A	N/A	Peak
5745	55.92	353	100	V	33.9	4.62	0	94.44	N/A	N/A	Peak
5745	54.79	331	100	H	33.9	4.62	0	93.31	N/A	N/A	Peak
5460	25.4	353	100	V	33.7	4.6	0	63.7	74	-10.3	Peak
5460	24.91	331	100	H	33.7	4.6	0	63.21	74	-10.79	Peak
5460	13.43	353	100	V	33.7	4.6	0	51.73	54	-2.27	Ave
5460	13.42	331	100	H	33.7	4.6	0	51.72	54	-2.28	Ave
11490	46.14	0	100	V	39.1	6.2	33.87	57.57	86.78	-29.21	Peak
11490	44.9	0	100	H	39.1	6.2	33.87	56.33	86.78	-30.45	Peak
11490	34.1	0	100	V	39.1	6.2	33.87	45.53	64.44	-18.91	Ave
11490	33.67	0	100	H	39.1	6.2	33.87	45.1	64.44	-19.34	Ave
17235	46.12	0	100	V	46.3	8.3	33.82	66.9	86.78	-19.88	Peak
17235	44.99	0	100	H	46.3	8.3	33.82	65.77	86.78	-21.01	Peak
17235	32.62	0	100	V	46.3	8.3	33.82	53.4	64.44	-11.04	Ave
17235	32.86	0	100	H	46.3	8.3	33.82	53.64	64.44	-10.8	Ave
22980	44.38	0	100	V	35.22	9.7	34.79	54.51	86.78	-32.27	Peak
22980	45.15	0	100	H	35.22	9.7	34.79	55.28	86.78	-31.5	Peak
22980	32.85	0	100	V	35.22	9.7	34.79	42.98	64.44	-21.46	Ave
22980	32.91	0	100	H	35.22	9.7	34.79	43.04	64.44	-21.4	Ave
Middle Channel 5785 MHz, measured at 3 meters											
5785	64.01	20	100	V	34.1	4.7	0	102.81	N/A	N/A	Peak
5785	70.21	342	100	H	34.1	4.7	0	109.01	N/A	N/A	Peak
5785	53.52	20	100	V	34.1	4.7	0	92.32	N/A	N/A	Peak
5785	58.44	342	100	H	34.1	4.7	0	97.24	N/A	N/A	Peak
11570	44.58	0	100	V	39.4	6.2	33.87	56.31	89.01	-32.7	Peak
11570	44.62	0	100	H	39.4	6.2	33.87	56.35	89.01	-32.66	Peak
11570	32.34	0	100	V	39.4	6.2	33.87	44.07	67.24	-23.17	Ave
11570	32.63	0	100	H	39.4	6.2	33.87	44.36	67.24	-22.88	Ave
17355	44.82	0	100	V	48.3	8.4	33.82	67.7	89.01	-21.31	Peak
17355	45.29	0	100	H	48.3	8.4	33.82	68.17	89.01	-20.84	Peak
17355	33.78	0	100	V	48.3	8.4	33.82	56.66	67.24	-10.58	Ave
17355	33.56	0	100	H	48.3	8.4	33.82	56.44	67.24	-10.8	Ave
23140	46.34	0	100	V	35.27	9.4	34.74	56.27	89.01	-32.74	Peak
23140	45.67	0	100	H	35.27	9.4	34.74	55.6	89.01	-33.41	Peak
23140	33.59	0	100	V	35.27	9.4	34.74	43.52	67.24	-23.72	Ave
23140	33.11	0	100	H	35.27	9.4	34.74	43.04	67.24	-24.2	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 5825 MHz, measured at 3 meters											
5825	67.36	0	100	V	34.01	4.7	0	106.07	N/A	N/A	Peak
5825	68.39	351	100	H	34.01	4.7	0	107.1	N/A	N/A	Peak
5825	55.51	0	100	V	34.01	4.7	0	94.22	N/A	N/A	Peak
5825	57.87	351	100	H	34.01	4.7	0	96.58	N/A	N/A	Peak
11650	45.5	0	100	V	39.4	6.2	34.27	56.83	87.1	-30.27	Peak
11650	45.03	0	100	H	39.4	6.2	34.27	56.36	87.1	-30.74	Peak
11650	33.53	0	100	V	39.4	6.2	34.27	44.86	66.58	-21.72	Ave
11650	33.96	0	100	H	39.4	6.2	34.27	45.29	66.58	-21.29	Ave
17475	44.8	0	100	V	52.05	8.4	33.78	71.47	87.1	-15.63	Peak
17475	44.6	0	100	H	52.05	8.4	33.78	71.27	87.1	-15.83	Peak
17475	32.45	0	100	V	52.05	8.4	33.78	59.12	66.58	-7.46	Ave
17475	32.27	0	100	H	52.05	8.4	33.78	58.94	66.58	-7.64	Ave
23300	44.65	0	100	V	35.3	9.7	34.71	54.94	87.1	-32.16	Peak
23300	44.8	0	100	H	35.3	9.7	34.71	55.09	87.1	-32.01	Peak
23300	32.38	0	100	V	35.3	9.7	34.71	42.67	66.58	-23.91	Ave
23300	32.83	0	100	H	35.3	9.7	34.71	43.12	66.58	-23.46	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 5745 MHz, measured at 3 meters											
5745	68.11	314	100	V	33.9	4.62	0	106.63	N/A	N/A	Peak
5745	73.07	32	100	H	33.9	4.62	0	111.59	N/A	N/A	Peak
5745	57.52	314	100	V	33.9	4.62	0	96.04	N/A	N/A	Ave
5745	61.61	32	100	H	33.9	4.62	0	100.13	N/A	N/A	Ave
5460	25.08	314	100	V	33.7	4.6	0	63.38	74	-10.62	Peak
5460	25.67	32	100	H	33.7	4.6	0	63.97	74	-10.03	Peak
5460	12.57	314	100	V	33.7	4.6	0	50.87	54	-3.13	Ave
5460	12.55	32	100	H	33.7	4.6	0	50.85	54	-3.15	Ave
11490	45.22	0	100	V	39.1	6.2	33.87	56.65	91.59	-34.94	Peak
11490	44.49	0	100	H	39.1	6.2	33.87	55.92	91.59	-35.67	Peak
11490	32.91	0	100	V	39.1	6.2	33.87	44.34	70.13	-25.79	Ave
11490	32.34	0	100	H	39.1	6.2	33.87	43.77	70.13	-26.36	Ave
17235	46.14	0	100	V	46.3	8.3	33.82	66.92	91.59	-24.67	Peak
17235	45.68	0	100	H	46.3	8.3	33.82	66.46	91.59	-25.13	Peak
17235	33.95	0	100	V	46.3	8.3	33.82	54.73	70.13	-15.40	Ave
17235	34.15	0	100	H	46.3	8.3	33.82	54.93	70.13	-15.20	Ave
22980	46.07	0	100	V	35.22	9.7	34.79	56.20	91.59	-35.39	Peak
22980	46.02	0	100	H	35.22	9.7	34.79	56.15	91.59	-35.44	Peak
22980	34.06	0	100	V	35.22	9.7	34.79	44.19	70.13	-25.94	Ave
22980	33.19	0	100	H	35.22	9.7	34.79	43.32	70.13	-26.81	Ave
Middle Channel 5785 MHz, measured at 3 meters											
5785	68.42	317	100	V	34.1	4.7	0	107.22	N/A	N/A	Peak
5785	72.83	31	100	H	34.1	4.7	0	111.63	N/A	N/A	Peak
5785	56.72	317	100	V	34.1	4.7	0	95.52	N/A	N/A	Ave
5785	61.59	31	100	H	34.1	4.7	0	100.39	N/A	N/A	Ave
11570	45.86	0	100	V	39.4	6.2	33.87	57.59	91.63	-34.04	Peak
11570	45.38	0	100	H	39.4	6.2	33.87	57.11	91.63	-34.52	Peak
11570	33.81	0	100	V	39.4	6.2	33.87	45.54	70.39	-24.85	Ave
11570	34.01	0	100	H	39.4	6.2	33.87	45.74	70.39	-24.65	Ave
17355	46	0	100	V	48.3	8.4	33.82	68.88	91.63	-22.75	Peak
17355	45.2	0	100	H	48.3	8.4	33.82	68.08	91.63	-23.55	Peak
17355	32.25	0	100	V	48.3	8.4	33.82	55.13	70.39	-15.26	Ave
17355	33.17	0	100	H	48.3	8.4	33.82	56.05	70.39	-14.34	Ave
23140	44.68	0	100	V	35.27	9.4	34.74	54.61	91.63	-37.02	Peak
23140	44.74	0	100	H	35.27	9.4	34.74	54.67	91.63	-36.96	Peak
23140	32.63	0	100	V	35.27	9.4	34.74	42.56	70.39	-27.83	Ave
23140	32.67	0	100	H	35.27	9.4	34.74	42.6	70.39	-27.79	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 5825 MHz, measured at 3 meters											
5825	68.28	322	100	V	34.01	4.7	0	106.99	N/A	N/A	Peak
5825	70.6	350	100	H	34.01	4.7	0	109.31	N/A	N/A	Peak
5825	58.09	322	100	V	34.01	4.7	0	96.8	N/A	N/A	Ave
5825	60.66	350	100	H	34.01	4.7	0	99.37	N/A	N/A	Ave
11650	44.86	0	100	V	39.4	6.2	34.27	56.19	89.31	-33.12	Peak
11650	44.14	0	100	H	39.4	6.2	34.27	55.47	89.31	-33.84	Peak
11650	32.63	0	100	V	39.4	6.2	34.27	43.96	69.37	-25.41	Ave
11650	32.29	0	100	H	39.4	6.2	34.27	43.62	69.37	-25.75	Ave
17475	44.94	0	100	V	52.05	8.4	33.78	71.61	89.31	-17.7	Peak
17475	45.08	0	100	H	52.05	8.4	33.78	71.75	89.31	-17.56	Peak
17475	34.15	0	100	V	52.05	8.4	33.78	60.82	69.37	-8.55	Ave
17475	33.25	0	100	H	52.05	8.4	33.78	59.92	69.37	-9.45	Ave
23300	46.04	0	100	V	35.3	9.7	34.71	56.33	89.31	-32.98	Peak
23300	46.08	0	100	H	35.3	9.7	34.71	56.37	89.31	-32.94	Peak
23300	33.81	0	100	V	35.3	9.7	34.71	44.1	69.37	-25.27	Ave
23300	33.35	0	100	H	35.3	9.7	34.71	43.64	69.37	-25.73	Ave
11650	44.86	0	100	V	39.4	6.2	34.27	56.19	89.31	-33.12	Peak
11650	44.14	0	100	H	39.4	6.2	34.27	55.47	89.31	-33.84	Peak
11650	32.63	0	100	V	39.4	6.2	34.27	43.96	69.37	-25.41	Ave
11650	32.29	0	100	H	39.4	6.2	34.27	43.62	69.37	-25.75	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 5755 MHz, measured at 3 meters											
5755	65.83	303	100	V	33.9	2.89	0	102.62	N/A	N/A	Peak
5755	68.51	342	100	H	33.9	2.89	0	105.3	N/A	N/A	Peak
5755	53.74	303	100	V	33.9	2.89	0	90.53	N/A	N/A	Ave
5755	56.02	342	100	H	33.9	2.89	0	92.81	N/A	N/A	Ave
5460	26.43	302	100	V	33.7	2.89	0	63.02	74	-10.98	Peak
5460	26.63	342	100	H	33.7	2.89	0	63.22	74	-10.78	Peak
5460	12.91	302	100	V	33.7	2.89	0	49.5	54	-4.5	Ave
5460	13.53	342	100	H	33.7	2.89	0	50.12	54	-3.88	Ave
11510	46.26	0	100	V	39.1	4.07	33.87	55.56	85.3	-29.74	Peak
11510	45.7	0	100	H	39.1	4.07	33.87	55.00	85.3	-30.30	Peak
11510	33.91	0	100	V	39.1	4.07	33.87	43.21	62.81	-19.60	Ave
11510	33.58	0	100	H	39.1	4.07	33.87	42.88	62.81	-19.93	Ave
17265	45.53	0	100	V	48.3	5.17	33.82	65.18	85.3	-20.12	Peak
17265	46.07	0	100	H	48.3	5.17	33.82	65.72	85.3	-19.58	Peak
17265	33.06	0	100	V	48.3	5.17	33.82	52.71	62.81	-10.10	Ave
17265	32.51	0	100	H	48.3	5.17	33.82	52.16	62.81	-10.65	Ave
23020	44.65	0	100	V	35.21	6.04	34.79	51.11	85.3	-34.19	Peak
23020	45.2	0	100	H	35.21	6.04	34.79	51.66	85.3	-33.64	Peak
23020	32.96	0	100	V	35.21	6.04	34.79	39.42	62.81	-23.39	Ave
23020	32.33	0	100	H	35.21	6.04	34.79	38.79	62.81	-24.02	Ave
High Channel 5795 MHz, measured at 3 meters											
5795	67.46	302	100	V	34.01	3.25	0	104.72	N/A	N/A	Peak
5795	69.36	349	100	H	34.01	3.25	0	106.62	N/A	N/A	Peak
5795	52.97	302	100	V	34.01	3.25	0	90.23	N/A	N/A	Ave
5795	57.18	349	100	H	34.01	3.25	0	94.44	N/A	N/A	Ave
11590	44.46	0	100	V	39.4	4.07	34.27	53.66	86.62	-32.96	Peak
11590	43.82	0	100	H	39.4	4.07	34.27	53.02	86.62	-33.6	Peak
11590	32.53	0	100	V	39.4	4.07	34.27	41.73	64.44	-22.71	Ave
11590	32.72	0	100	H	39.4	4.07	34.27	41.92	64.44	-22.52	Ave
17385	45.41	0	100	V	50.5	5.17	33.78	67.3	86.62	-19.32	Peak
17385	44.21	0	100	H	50.5	5.17	33.78	66.1	86.62	-20.52	Peak
17385	33.34	0	100	V	50.5	5.17	33.78	55.23	64.44	-9.21	Ave
17385	33.91	0	100	H	50.5	5.17	33.78	55.8	64.44	-8.64	Ave
23180	46.07	0	100	V	35.27	6.04	34.71	52.67	86.62	-33.95	Peak
23180	45.62	0	100	H	35.27	6.04	34.71	52.22	86.62	-34.4	Peak
23180	33.48	0	100	V	35.27	6.04	34.71	40.08	64.44	-24.36	Ave
23180	33.69	0	100	H	35.27	6.04	34.71	40.29	64.44	-24.15	Ave

7 FCC §15.407(e) – Emission Bandwidth

7.1 Applicable Standards

FCC §15.407(a)

7.2 Measurement Procedure

The measurements are base on FCC KDB 789033 D01 General UNII Test Procedures v01r03: Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices section C: Emission bandwidth and section D: 99 Percent Occupied Bandwidth

7.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	MY44303352	2013-11-07	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:	22-24 ºC
Relative Humidity:	40-41 %
ATM Pressure:	103.1-104.1 KPa

The testing was performed by Rui Zhou from 2014-10-03 and 2014-10-07 at RF site.

7.5 Test Results

W52 Band:

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz) J0	26 dB Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1
802.11a mode					
Low	5180	19.35	19.72	16.3288	16.3764
Middle	5200	19.198	19.411	16.3163	16.4225
High	5240	19.343	19.91	16.3237	16.4087
802.11n-HT20 mode					
Low	5180	20.175	19.705	17.4546	17.4355
Middle	5200	19.791	19.727	17.3999	17.4314
High	5240	19.795	19.466	17.3812	17.4406
802.11n-HT40 mode					
Low	5190	44.545	45.34	36.2452	36.2418
High	5230	45.652	45.019	36.3322	36.2183

W58 Band:

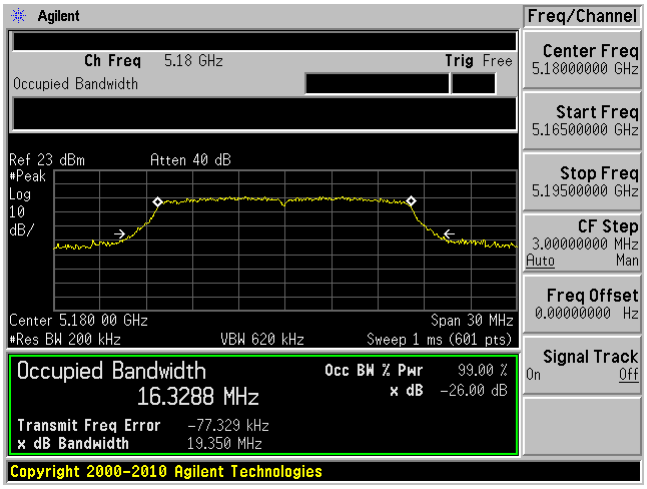
Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz) J0	6 dB Emission Bandwidth (MHz) J1	99% Emission Bandwidth (MHz) J0	99% Emission Bandwidth (MHz) J1	Results
802.11a mode						
Low	5745	14.488	15.457	16.2775	16.2756	Compliant
Middle	5785	14.67	14.573	16.2884	16.2874	Compliant
High	5825	16.357	15.974	16.2852	16.2863	Compliant
802.11n-HT20 mode						
Low	5745	15.07	16.547	17.4596	17.3977	Compliant
Middle	5785	14.37	16.503	17.4428	17.6	Compliant
High	5825	15.059	16.386	17.4369	17.4095	Compliant
802.11n-HT40 mode						
Low	5755	36.35	36.328	36.19	36.2123	Compliant
High	5795	36.393	36.326	36.2039	36.0683	Compliant

Please refer to the following plots.

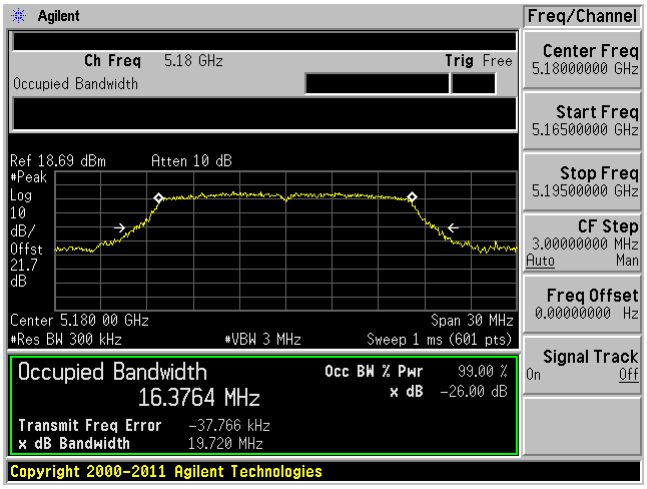
5.2 GHz Band

802.11a mode

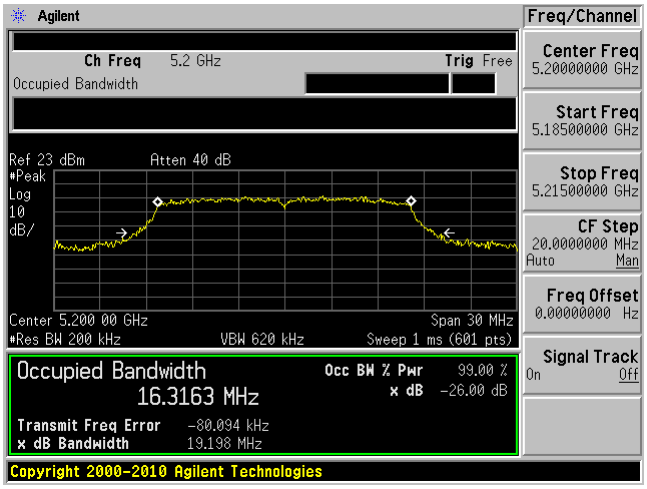
Low channel: 5180 MHz Chain 0



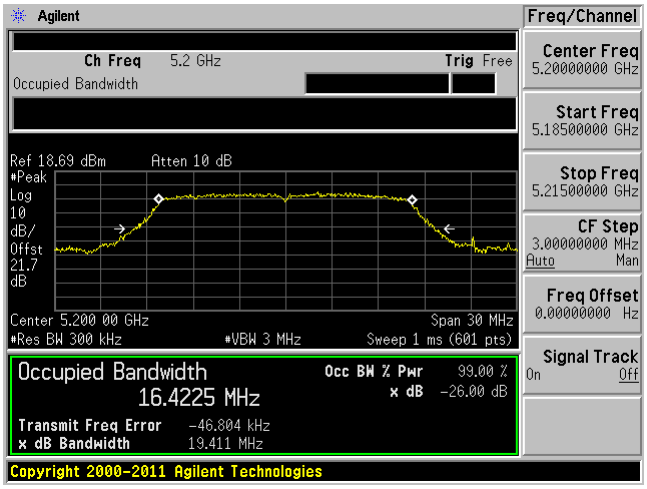
Low channel: 5180 MHz Chain 1



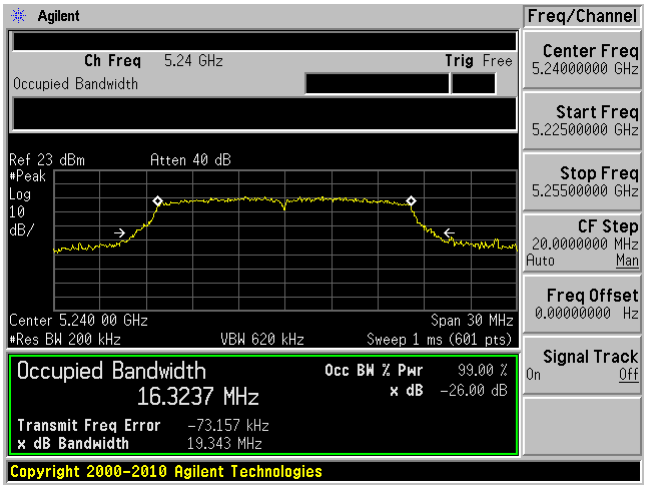
Middle channel: 5200 MHz Chain 0



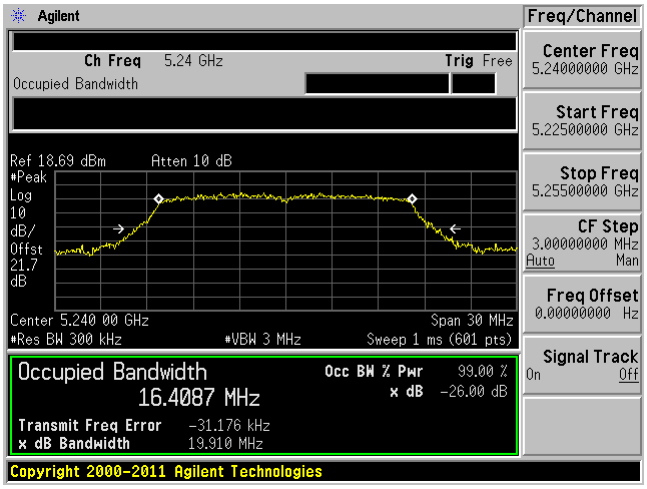
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

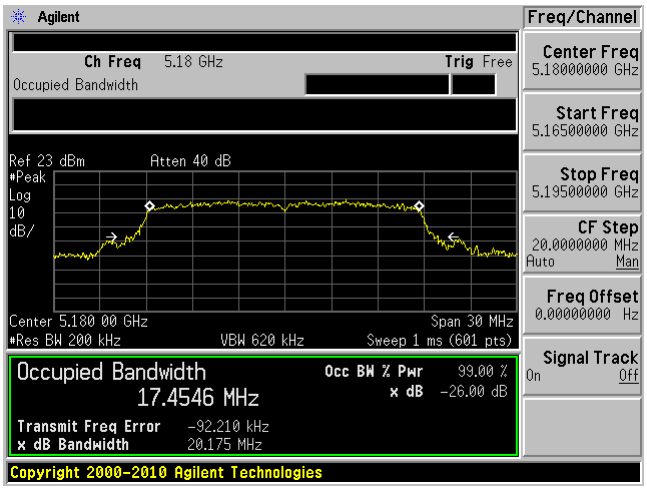


High channel: 5240 MHz Chain 1

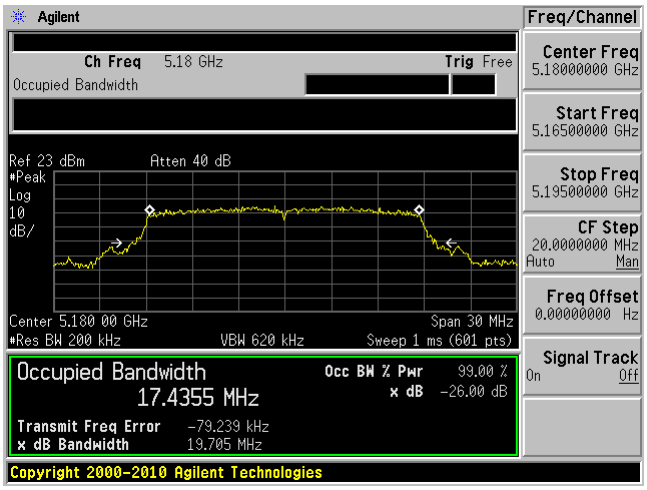


802.11n-HT20 mode

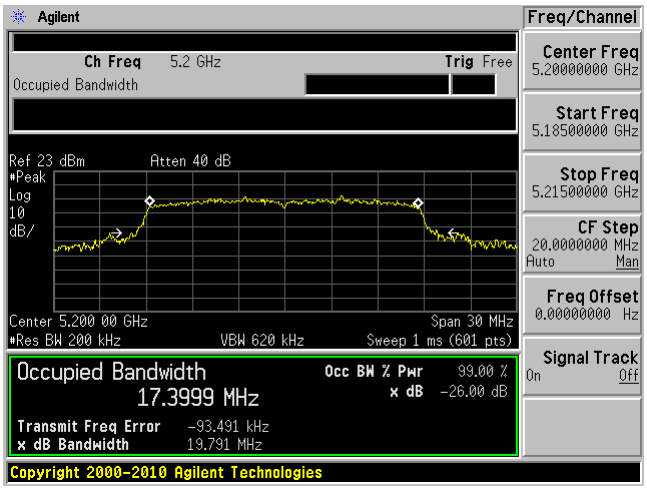
Low channel: 5180 MHz Chain 0



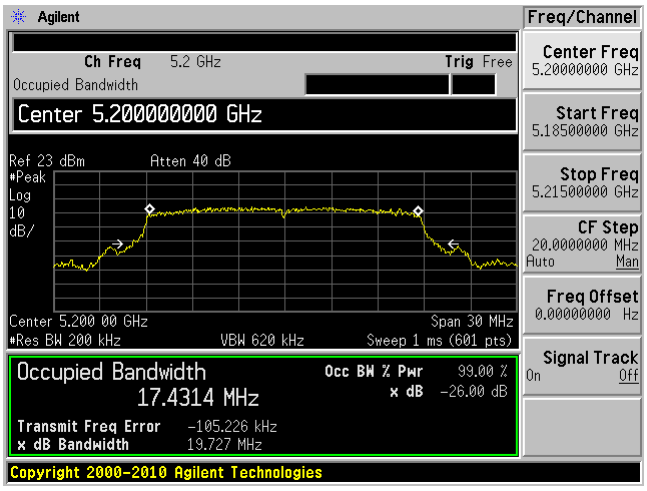
Low channel: 5180 MHz Chain 1



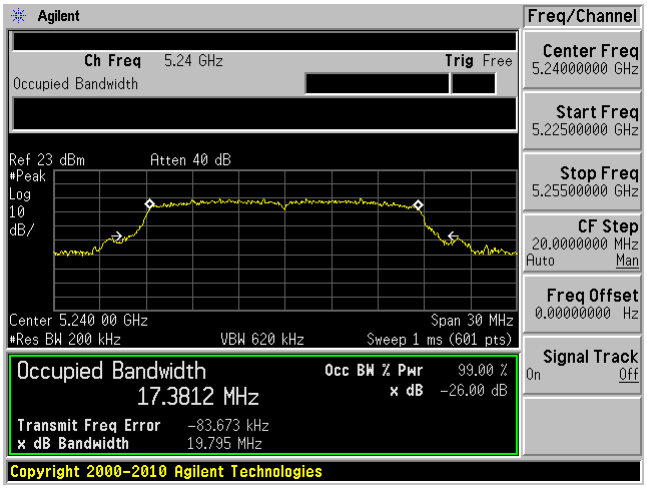
Middle channel: 5200 MHz Chain 0



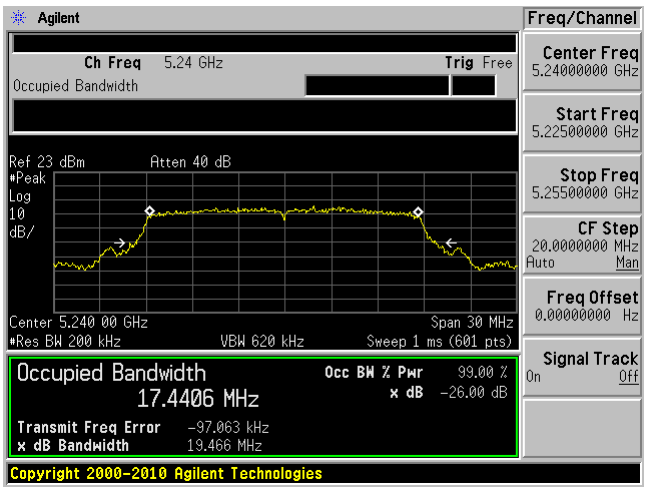
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

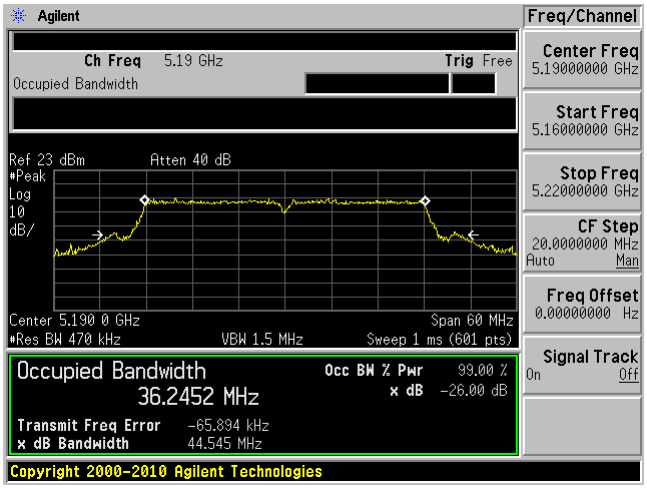


High channel: 5240 MHz Chain 1

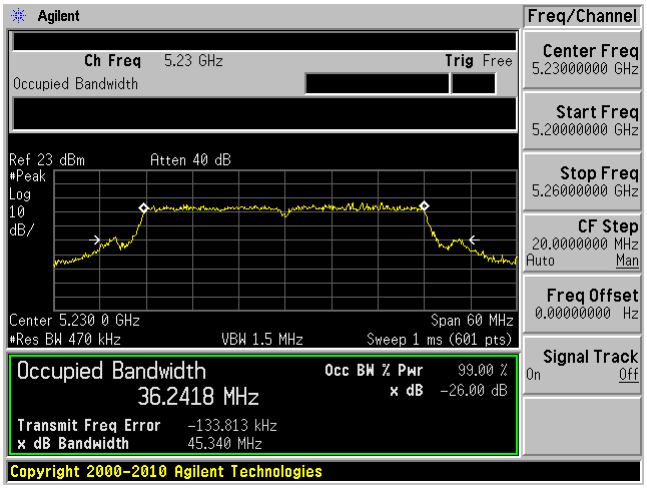


802.11n-HT40 mode

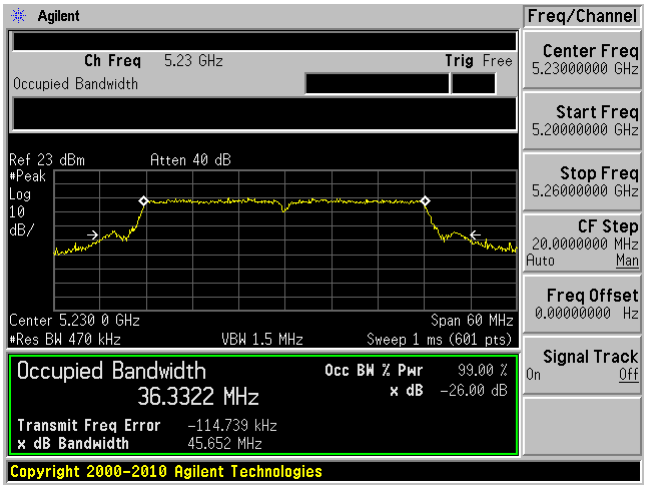
Low channel: 5190 MHz Chain 0



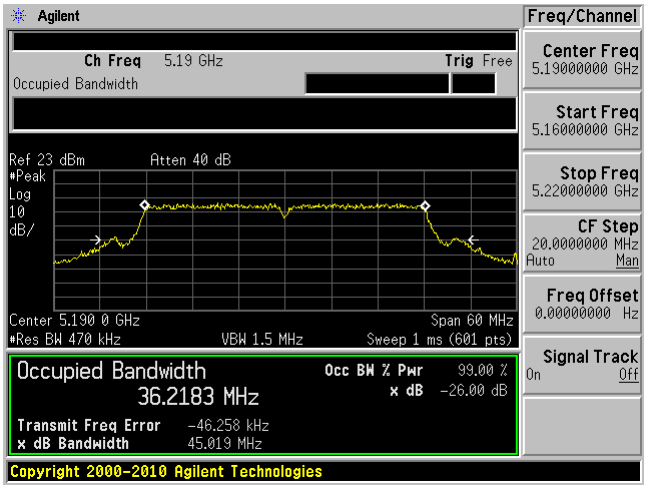
Low channel: 5190 MHz Chain 1



High channel: 5230 MHz Chain 0



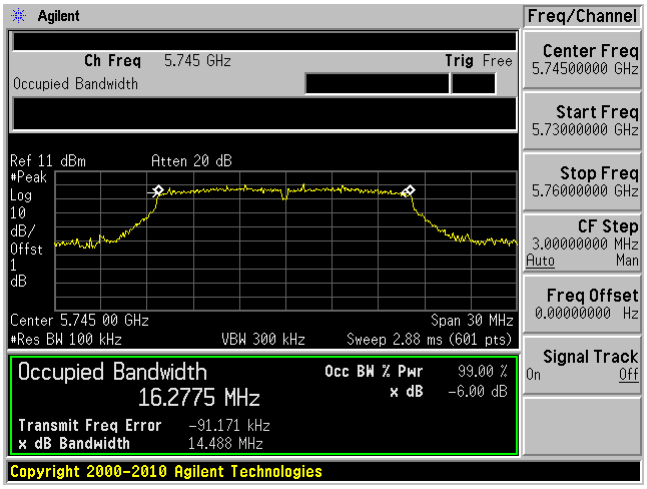
High channel: 5230 MHz Chain 1



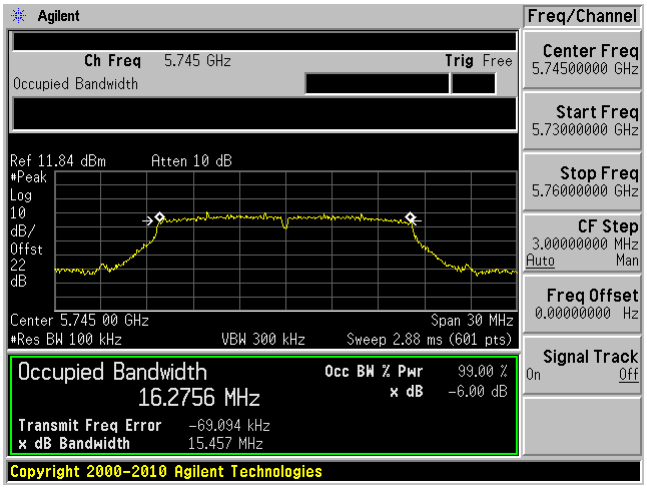
W58 Band:

802.11a, Low Channel, 5745 MHz

Chain 0

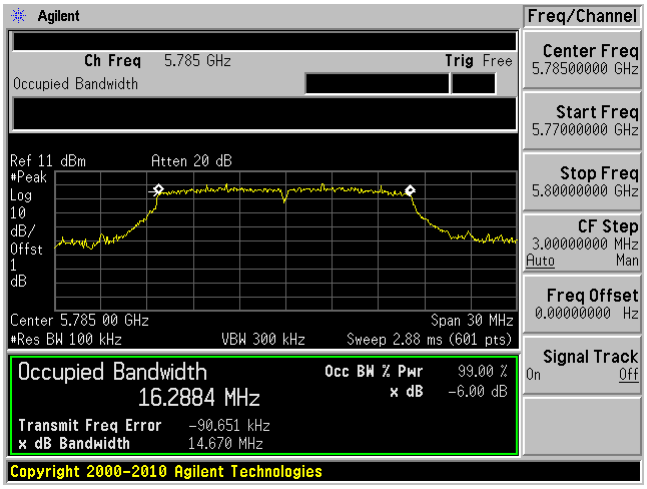


Chain 1

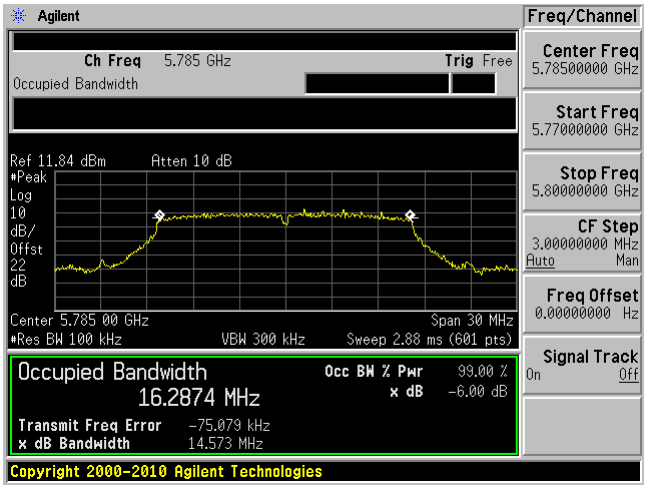


802.11a, Middle Channel, 5785 MHz

Chain 0

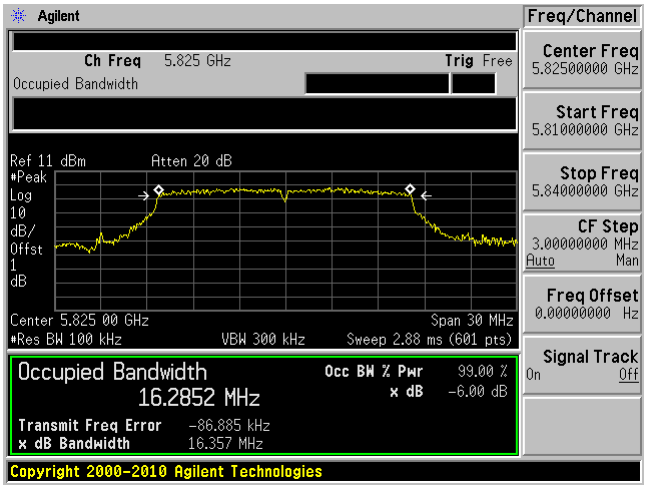


Chain 1

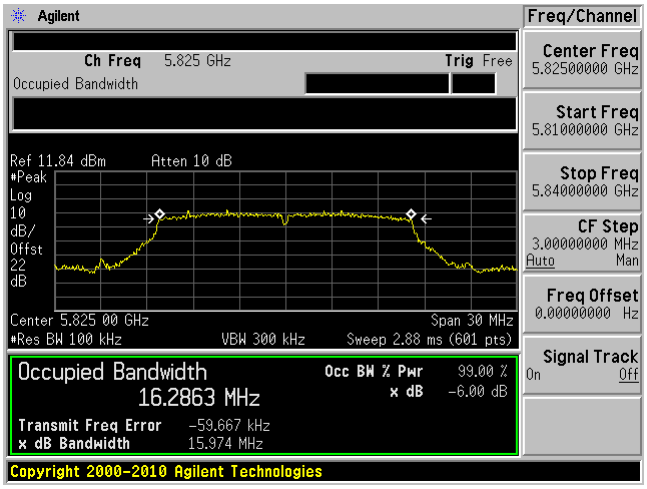


802.11a, High Channel, 5825 MHz

Chain 0

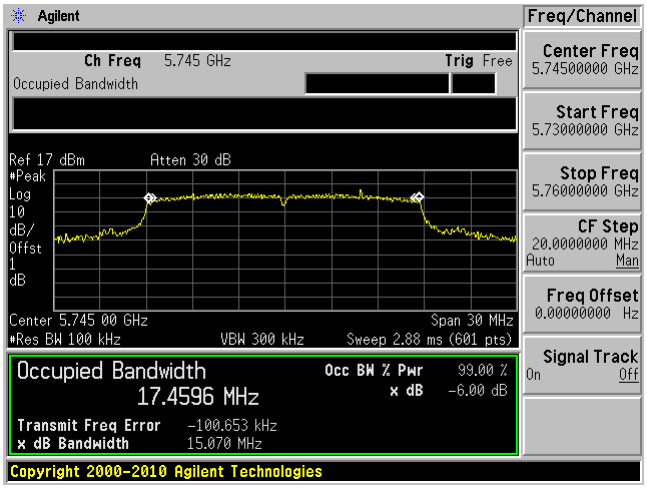


Chain 1

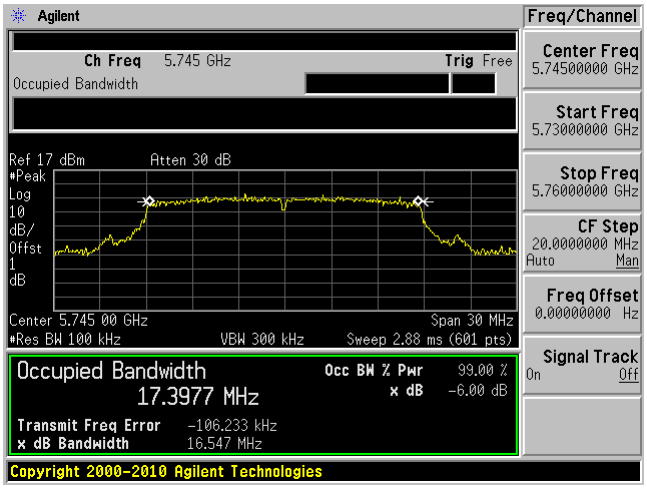


802.11n-HT20, Low Channel 5745 MHz

Chain 0

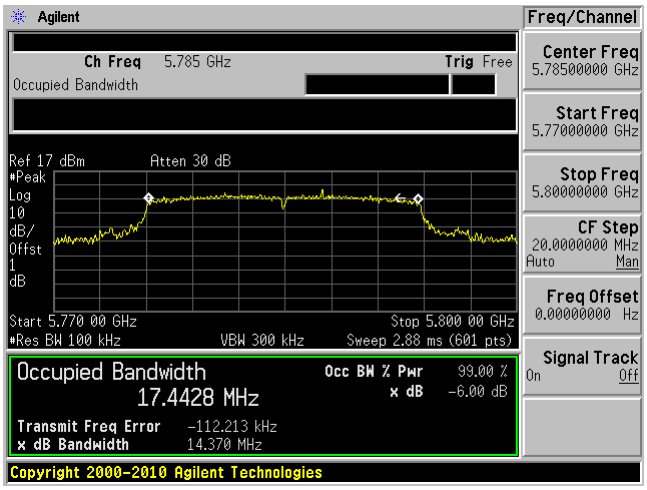


Chain 1

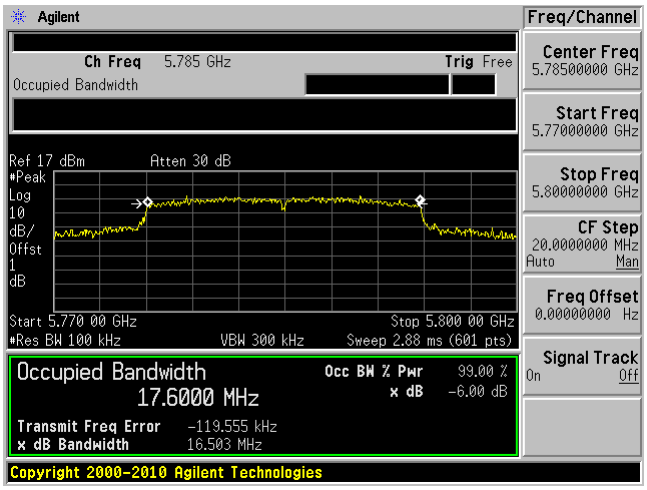


802.11n-HT20, Middle Channel 5785 MHz

Chain 0

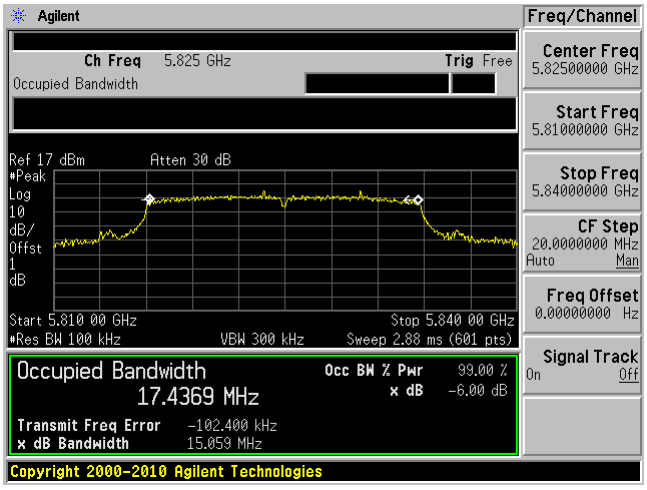


Chain 1

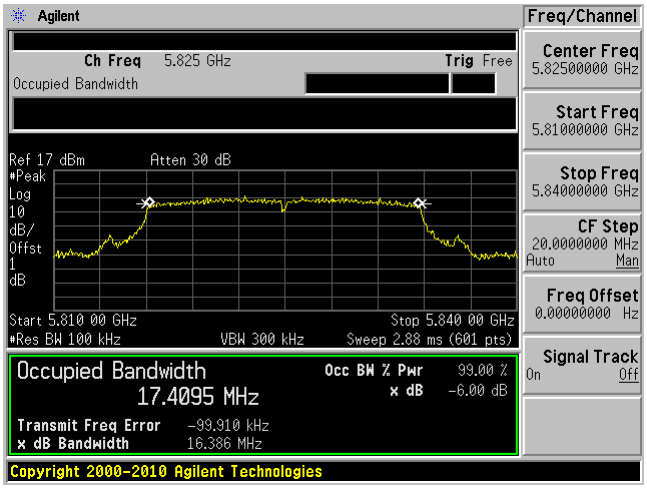


802.11n-HT20, High Channel, 5825 MHz

Chain 0

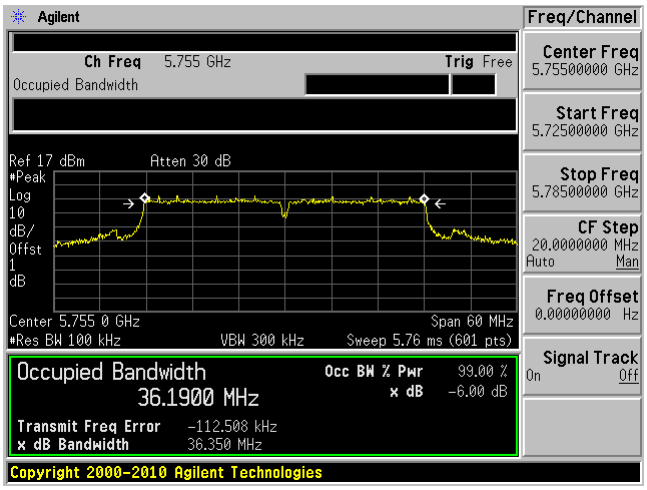


Chain 1

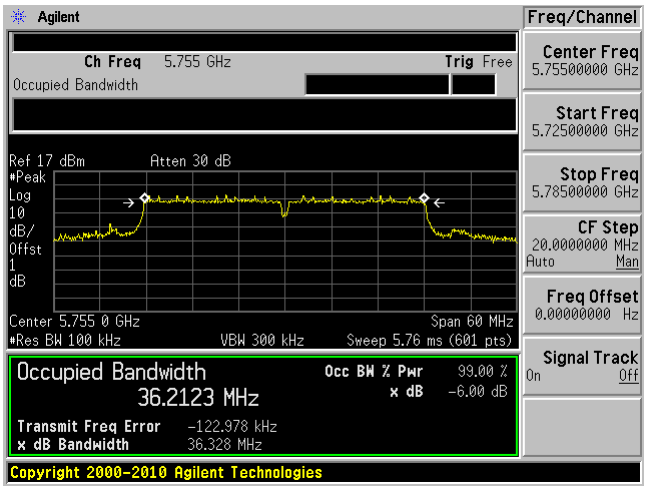


802.11n-HT40, Low Channel 5755 MHz

Chain 0

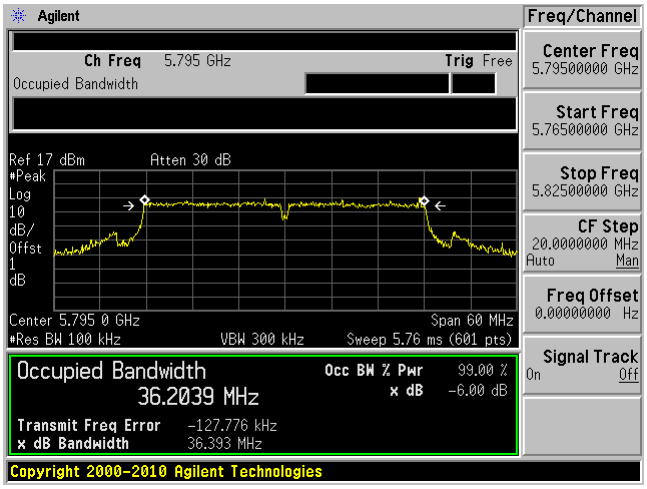


Chain 1

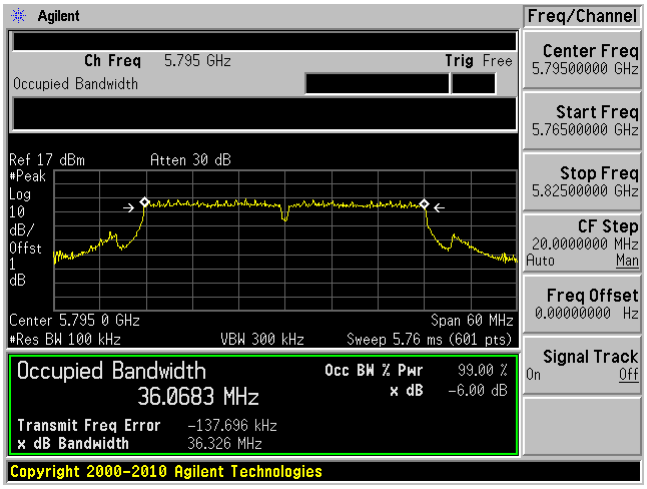


802.11n-HT40, High Channel 5795 MHz

Chain 0



Chain 1



8 FCC §407(a) – Conducted Output Power

8.1 Applicable Standards

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.

8.2 Measurement Procedure

Test measurements are base on FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORAMTION INFRASTRUCTURE (U-NII) DEVICES PART 15, SUBPART E

8.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	MY44303352	2013-11-07	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 Rui Zhou from 2014-10-03 and 2014-10-07 at RF site.

8.5 Test Results

Average Output Power

W52 Band

Channel	Frequency (MHz)	Conducted Average Output Power (dBm)		MaxOutput Power (dBm)	Limit (dBm)	Result	Power Setting
		Chain J0	Chain J1				
802.11a mode							
Low	5180	14.94	7.42	14.94	24	Pass	60
Middle	5200	15	7.14	15	24	Pass	60
High	5240	15.2	7.44	15.2	24	Pass	60

Channel	Frequency (MHz)	Conducted Average Output Power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
		Chain J0	Chain J1				
802.11n-HT20 mode							
Low	5180	14.03	9.81	15.42	24	Pass	62/44
Middle	5200	15.66	9.73	16.65	24	Pass	64/44
High	5240	14.1	9.71	15.45	24	Pass	62/44
802.11n-HT40 mode							
Low	5190	10.63	9.22	12.99	24	Pass	54 /44
High	5230	13.67	9.26	15.01	24	Pass	66 /44

W58 Band

Channel	Frequency (MHz)	Conducted Average Output Power (dBm)		MaxOutput Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
		Chain J0	Chain J1				
802.11a mode							
Low	5745	13.76	10.93	13.76	29	Pass	54
Middle	5785	13.72	10.95	13.72	29	Pass	54
High	5825	12.51	10.36	12.51	29	Pass	50

Channel	Frequency (MHz)	Conducted Average Output Power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
		Chain J0	Chain J1				
802.11n-HT20 mode							
Low	5745	14.05	11.59	16.00	29	Pass	62/52
Middle	5785	13.77	11.88	15.94	29	Pass	62/52
High	5825	12.85	10.25	14.75	29	Pass	58/48
802.11n-HT40 mode							
Low	5755	12.34	10.85	14.67	29	Pass	56/52
High	5795	11.86	9.74	13.94	29	Pass	54/48

Peak Output Power

W52 Band

Channel	Frequency (MHz)	Conducted Peak Output Power (dBm)		MaxOutput Power (dBm)	Limit (dBm)	Result	Power Setting
		Chain J0	Chain J1				
802.11a mode							
Low	5180	22.75	15.58	22.75	24	Pass	60
Middle	5200	22.89	15.13	22.89	24	Pass	60
High	5240	22.85	15.85	22.85	24	Pass	60

Channel	Frequency (MHz)	Conducted Peak Output Power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
		Chain J0	Chain J1				
802.11n-HT20 mode							
Low	5180	22.46	18.54	23.94	24	Pass	62/44
Middle	5200	22.57	18.27	23.94	24	Pass	64/44
High	5240	22.13	18.85	23.80	24	Pass	62/44
802.11n-HT40 mode							
Low	5190	18.89	17.52	21.27	24	Pass	54 /44
High	5230	21.79	17.33	23.12	24	Pass	66 /44

W58 Band

Channel	Frequency (MHz)	Conducted Peak Output Power (dBm)		MaxOutput Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
		Chain J0	Chain J1				
802.11a mode							
Low	5745	21.89	18.99	21.89	29	Pass	54
Middle	5785	21.47	18.97	21.47	29	Pass	54
High	5825	20.62	18.23	20.62	29	Pass	50

Channel	Frequency (MHz)	Conducted Peak Output Power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
		Chain J0	Chain J1				
802.11n-HT20 mode							
Low	5745	22.01	19.69	24.01	29	Pass	62/52
Middle	5785	21.84	19.91	23.99	29	Pass	62/52
High	5825	20.96	18.31	22.84	29	Pass	58/48
802.11n-HT40 mode							
Low	5755	20.38	18.92	22.72	29	Pass	56/52
High	5795	19.96	17.57	21.94	29	Pass	54/48

Note: the correlated directional Gain is 6.86 dBi in 5725-5850 MHz band, the power limit was be reduced by 1 dB.

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

9.1 Applicable Standard

According to FCC §15.407(b)

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 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in the 5.15–5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm/MHz in the 5.15–5.25 GHz band. 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 EIRP 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

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	E4440A	MY44303352	2013-11-07	1 year

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

9.4 Test Environmental Conditions

Temperature:	21 °C
Relative Humidity:	43 %
ATM Pressure:	101-102 kPa

The testing was performed by Rui Zhou from 2014-10-03 and 2014-10-07 at RF site.

Please refer to the following plots.

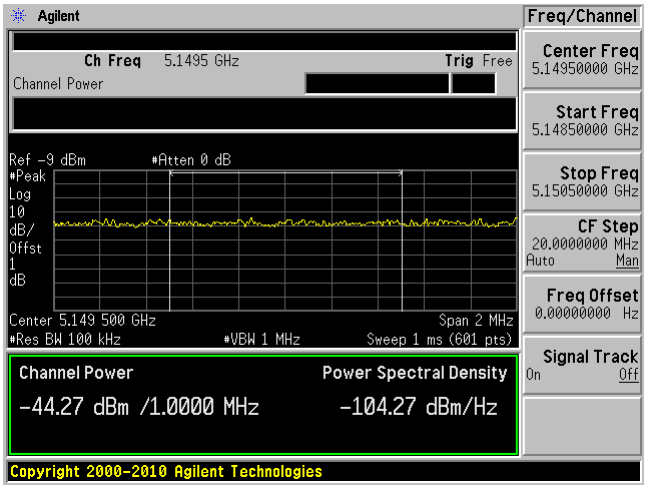
Note: the offset include the attenuation, cable loss and the magin between limit line and the emission covers antenna gain and other requirements in the KDB 789033.

9.5 Test Results

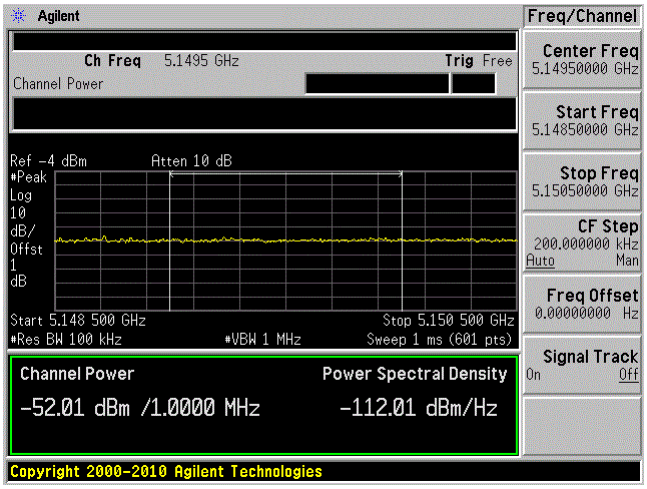
(1) Band Edge Measurement, W52 Band

802.11a mode

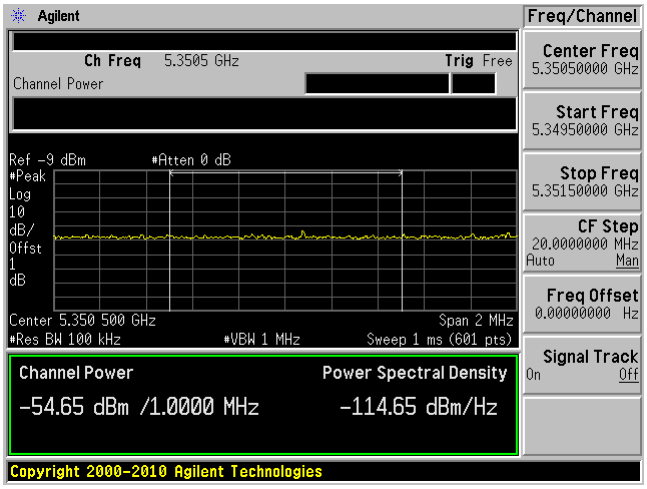
Low channel: 5180 MHz Chain 0



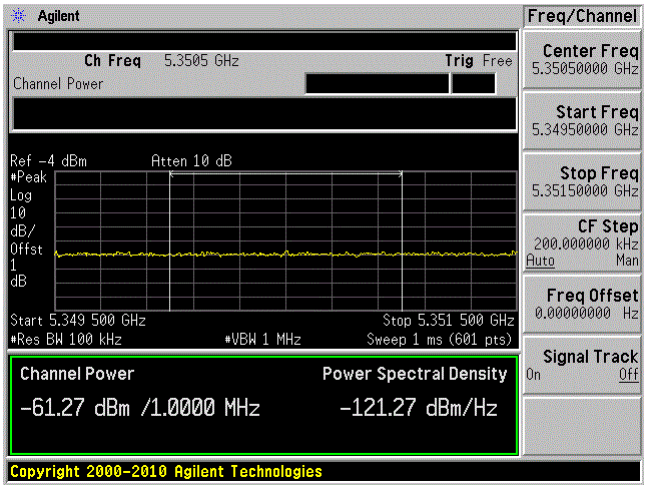
Low channel: 5180 MHz Chain 1



High channel: 5240 MHz Chain 0

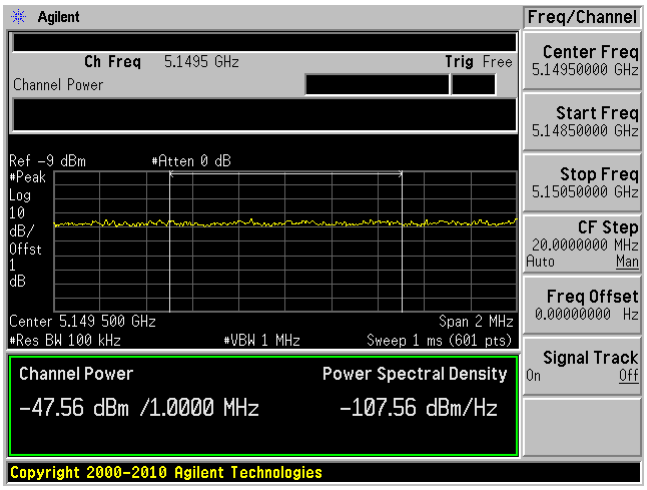


High channel: 5240 MHz Chain 1

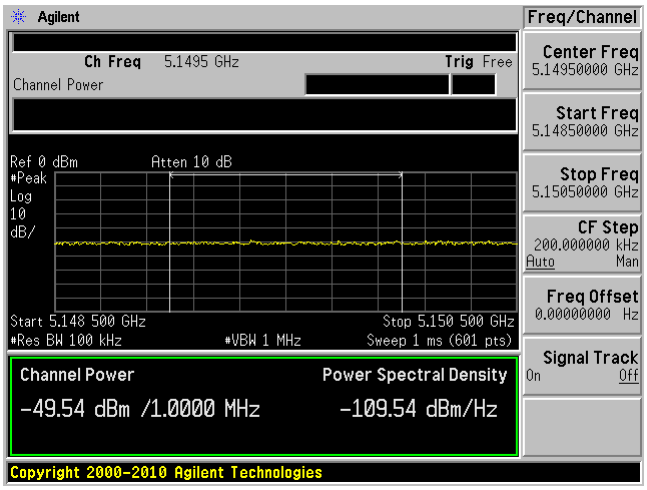


802.11n-HT20 mode

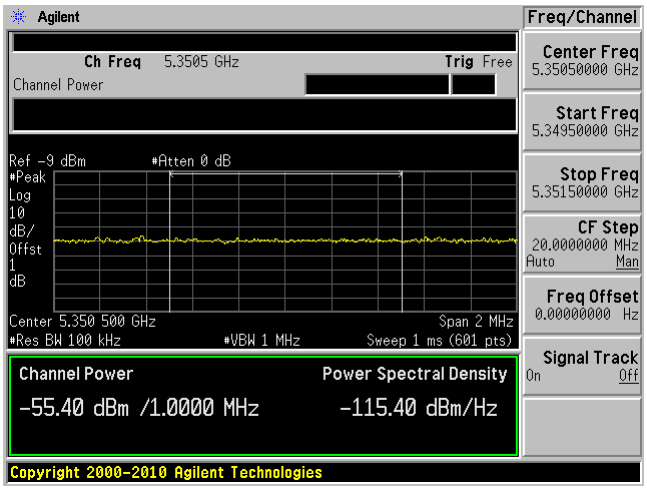
Low channel: 5180 MHz Chain 0



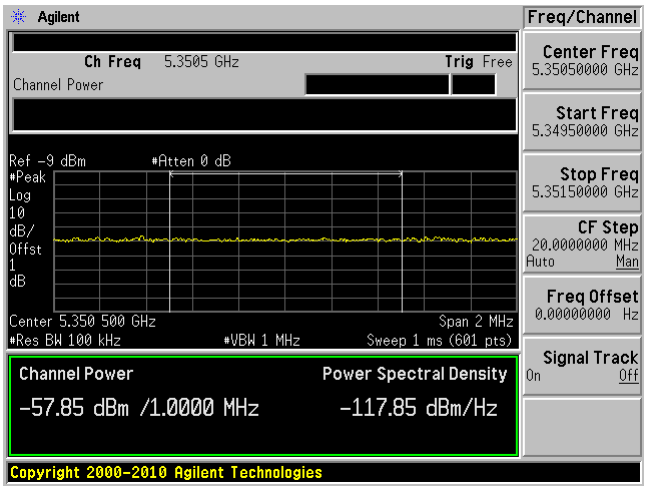
Low channel: 5180 MHz Chain 1



High channel: 5240 MHz Chain 0

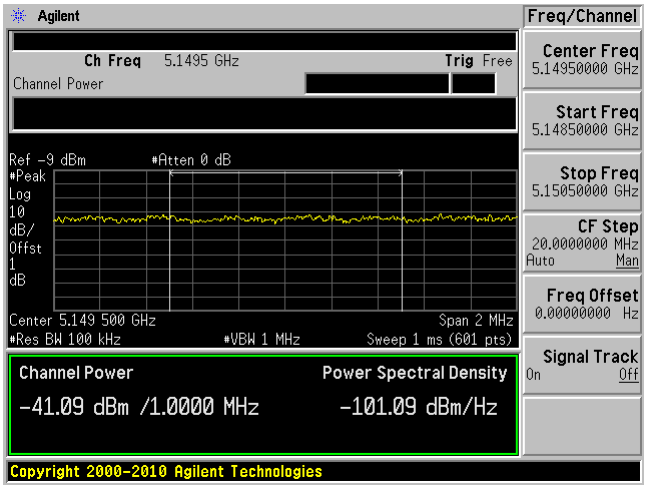


High channel: 5240 MHz Chain 1

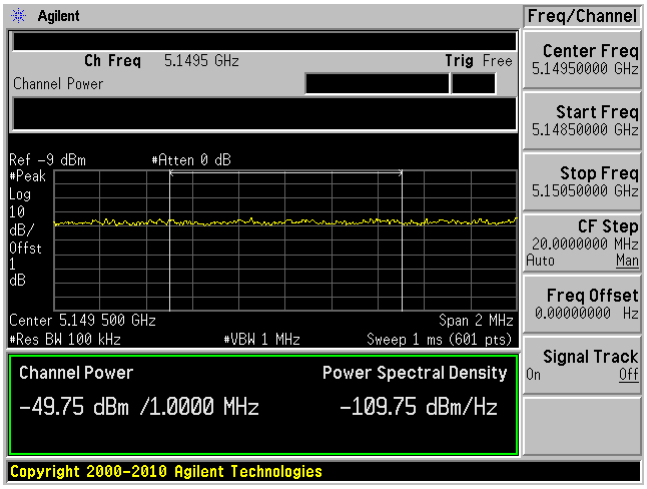


802.11n-HT40 mode

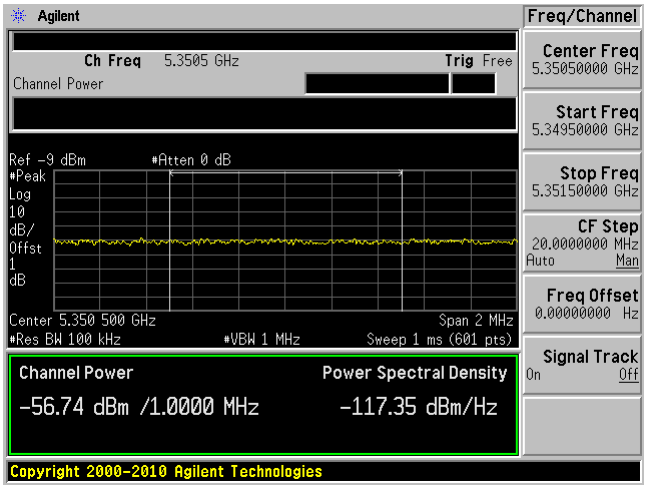
Low channel: 5190 MHz Chain 0



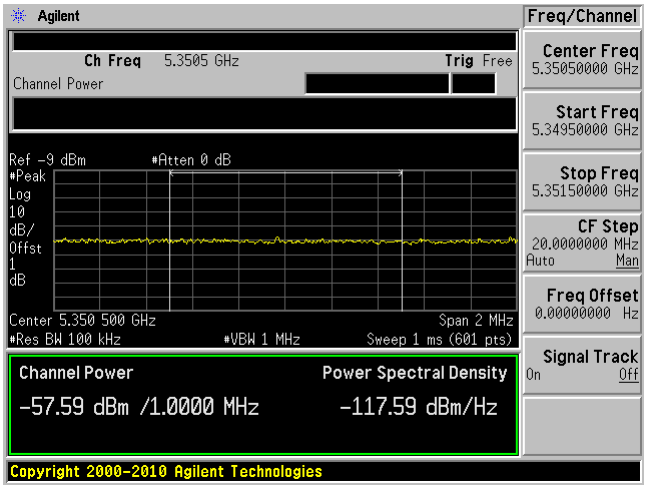
Low channel: 5190 MHz Chain 1



High channel: 5230 MHz Chain 0



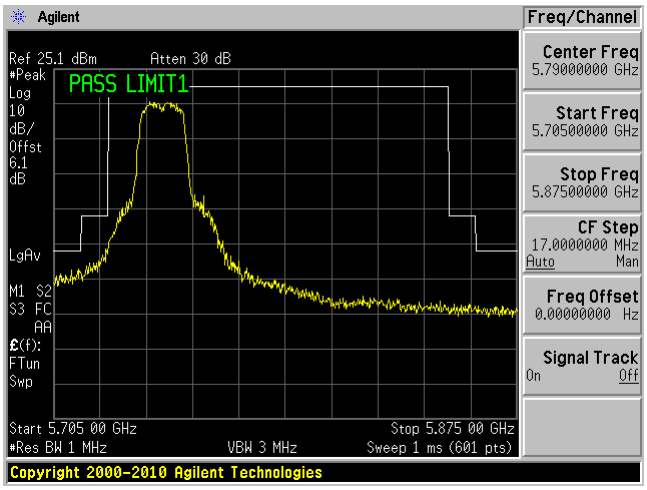
High channel: 5230 MHz Chain 1



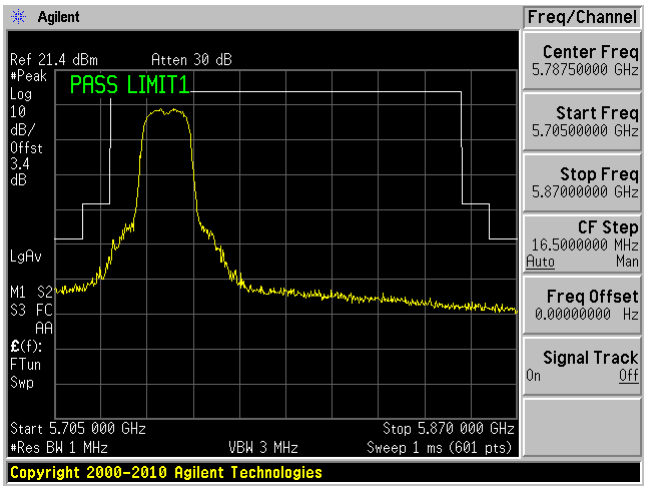
(2) 10 MHz Band Edge Emission Mask for W58 Band:

802.11a, Low Channel, 5745 MHz

Chain 0

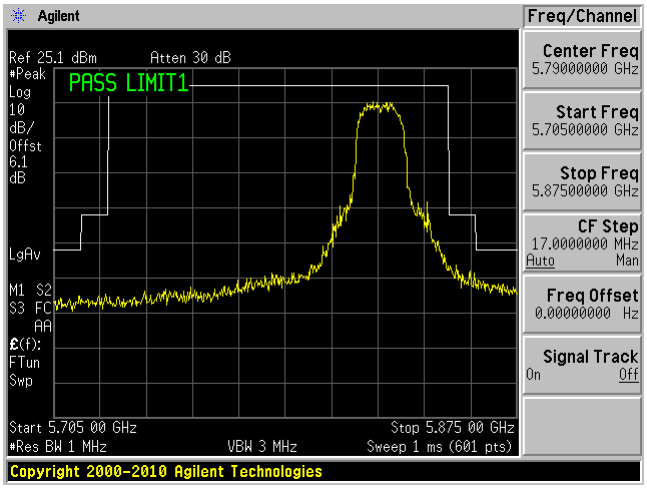


Chain 1

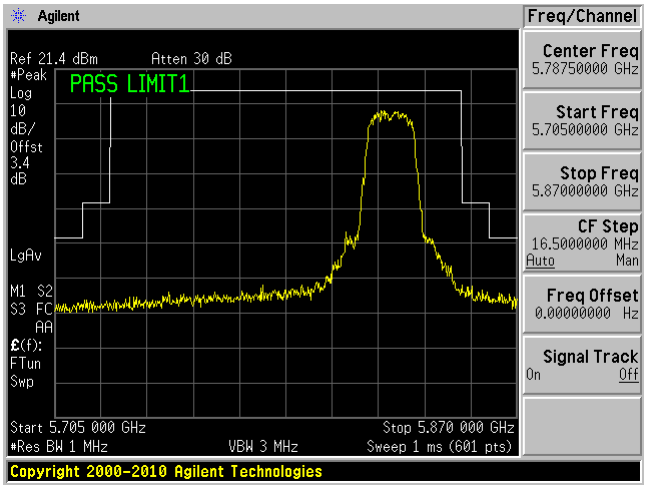


802.11a, High Channel, 5825 MHz

Chain 0

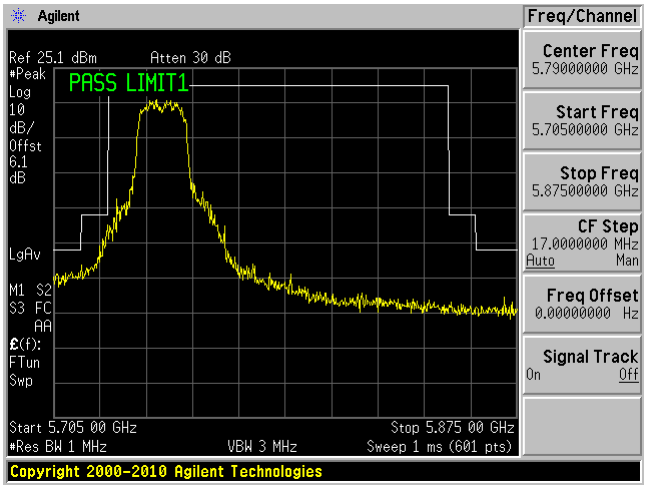


Chain 1

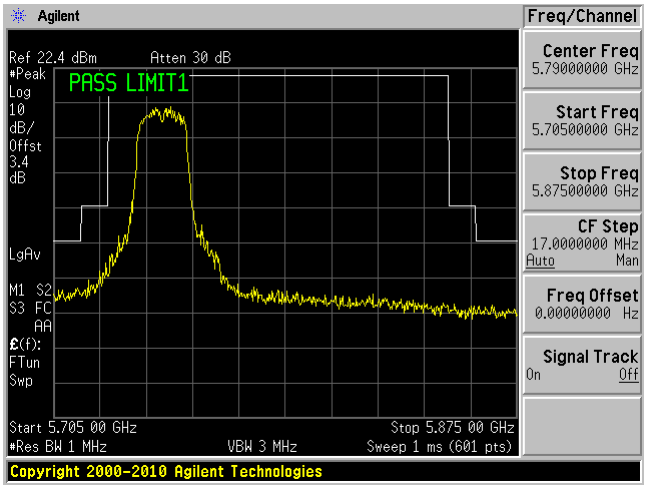


802.11n-HT20, Low Channel 5745 MHz

Chain 0

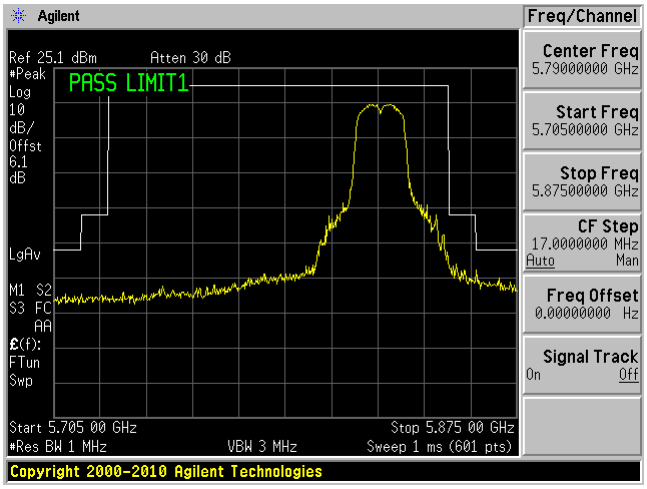


Chain 1

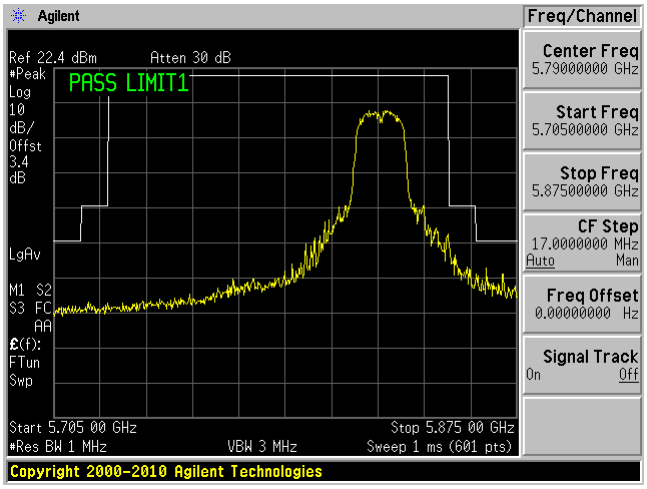


802.11n-HT20, High Channel, 5825 MHz

Chain 0

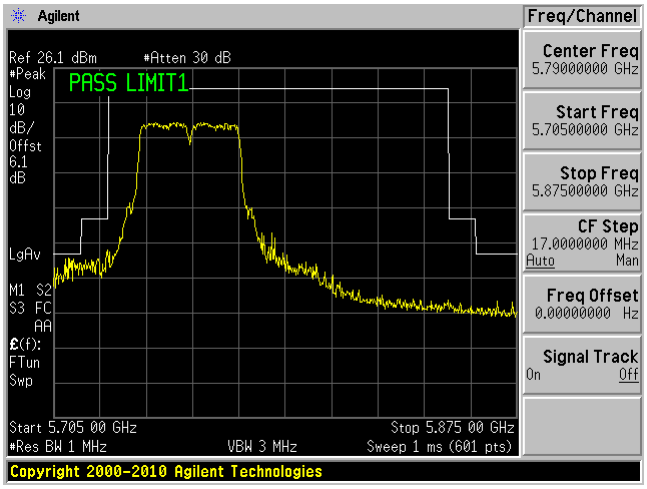


Chain 1

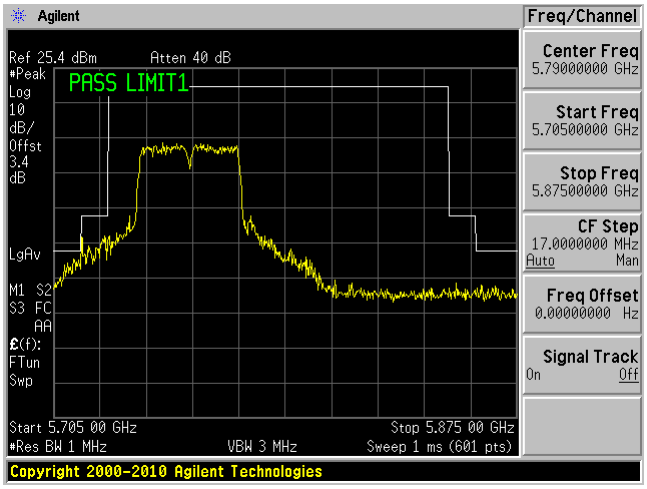


802.11n-HT40, Low Channel 5755 MHz

Chain 0

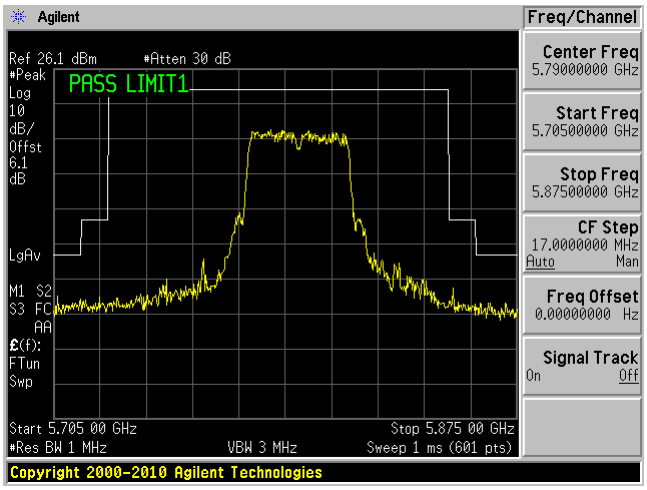


Chain 1

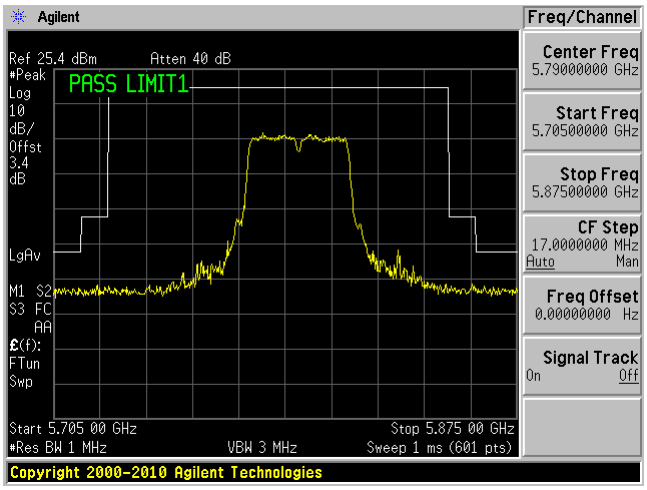


802.11n-HT40, High Channel 5795 MHz

Chain 0



Chain 1



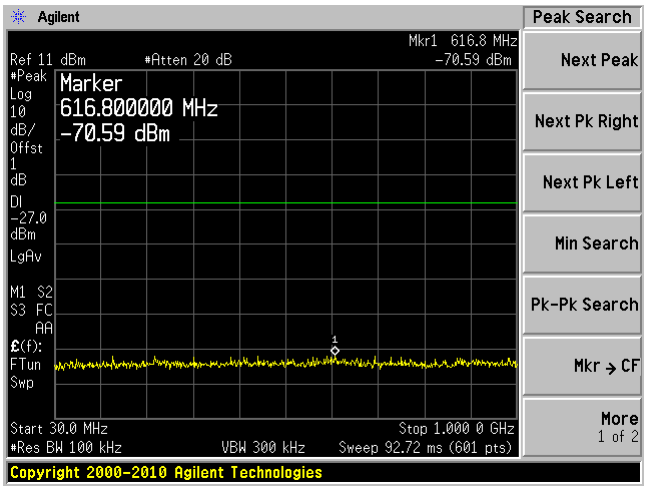
(3) Spurious Emissions at Antenna Port (30 MHz-40 GHz)

Note: The offset include the attenuation, cable loss. And the magin between limit line and the emission covers the antenna gain. In 5.2 GHz band: For spurious emission in 30 MHz-1 GHz, the margin covers antenna gain and also 10 dBi correction factor as use 100kHz resolution bandwidth with -27dBm/MHz e.i.r.p limit.

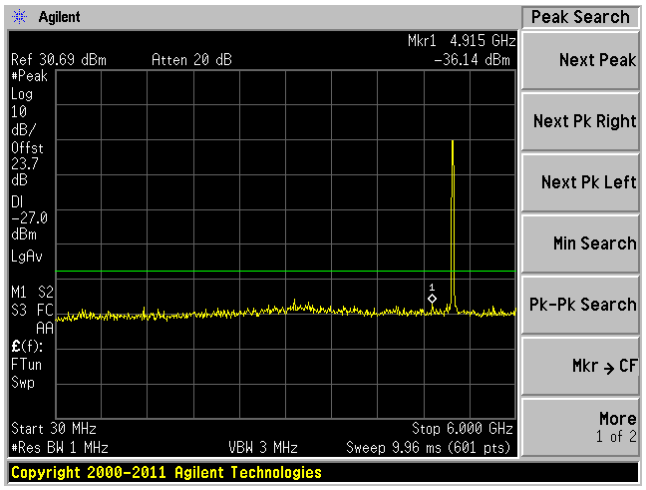
5.2 GHz Band

802.11a, Low Channel, 5180 MHz

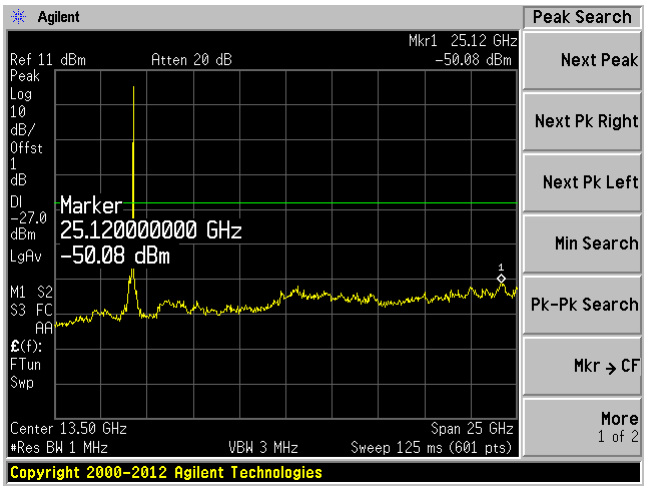
Chain 0, Plot: 30 MHz – 1 GHz



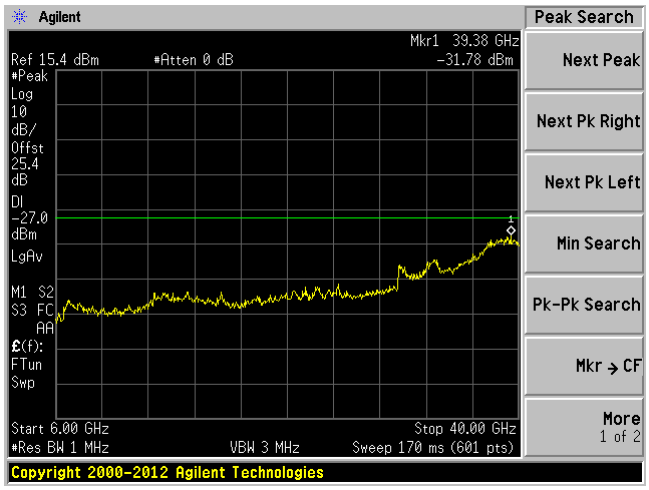
Chain 1, Plot: 30 MHz – 6 GHz



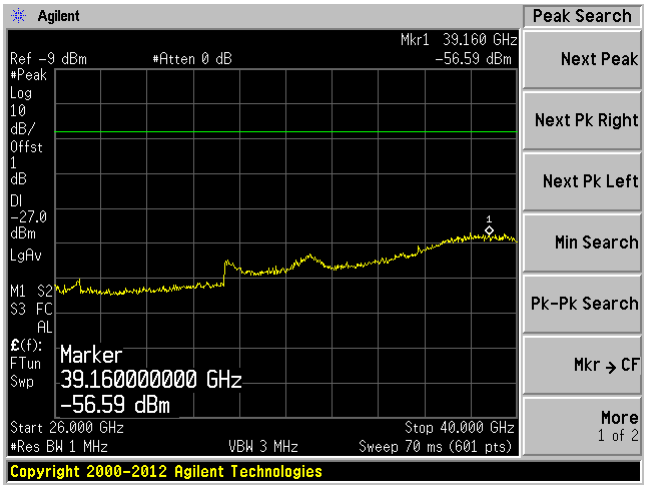
Chain 0, Plot: 1 GHz –26 GHz



Chain 1, Plot: 6 GHz – 40 GHz

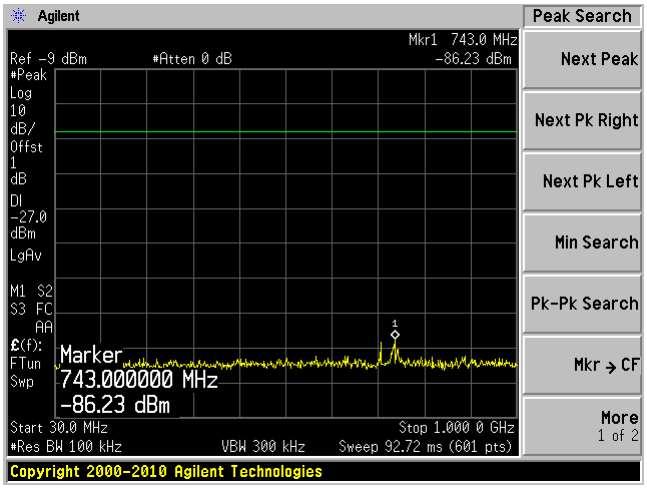


Chain 0, Plot: 26 GHz –40 GHz

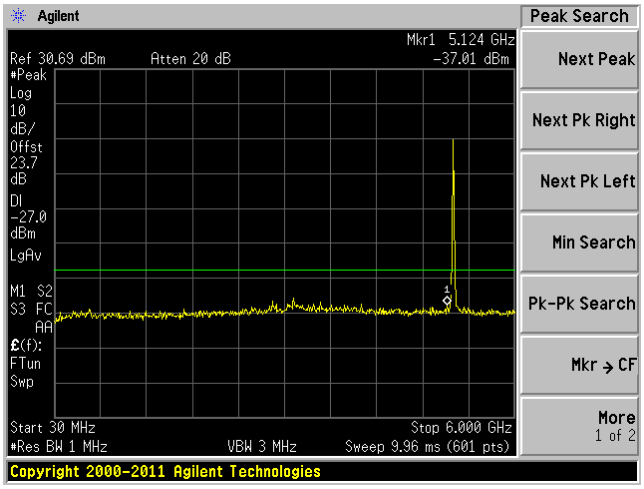


802.11a, Middle Channel, 5200 MHz

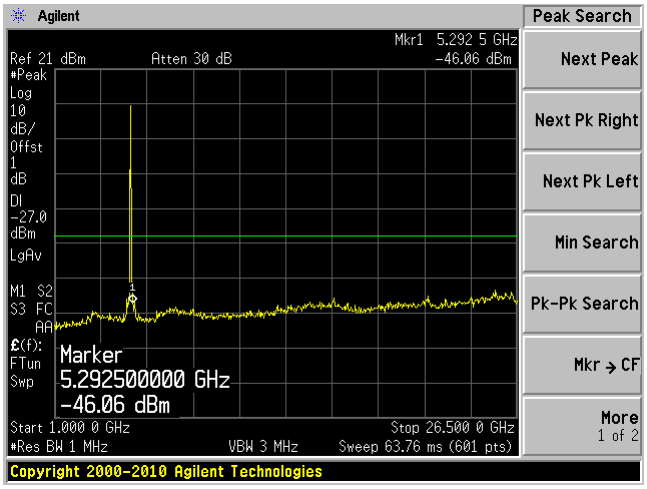
Chain 0, Plot: 30 MHz – 1 GHz



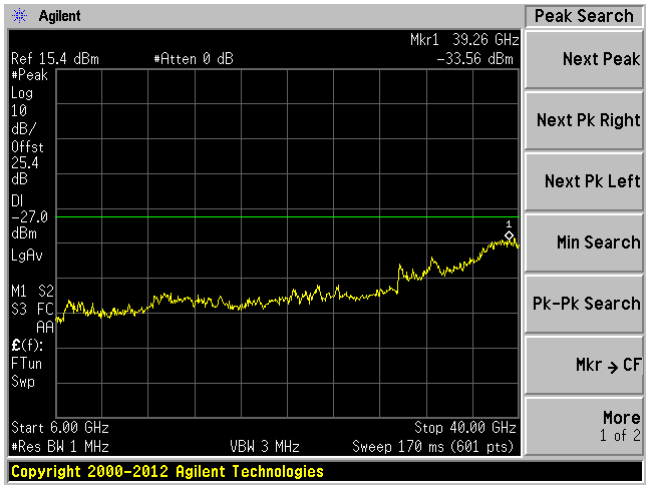
Chain 1, Plot: 30 MHz – 6 GHz



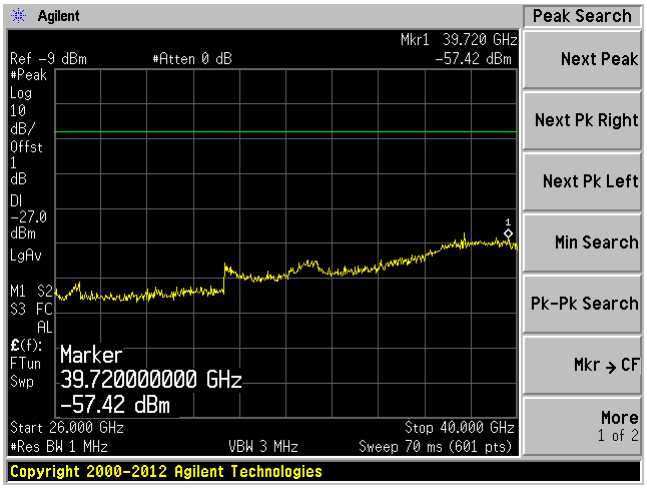
Chain 0, Plot: 1 GHz –26 GHz



Chain 1, Plot: 6 GHz – 40 GHz

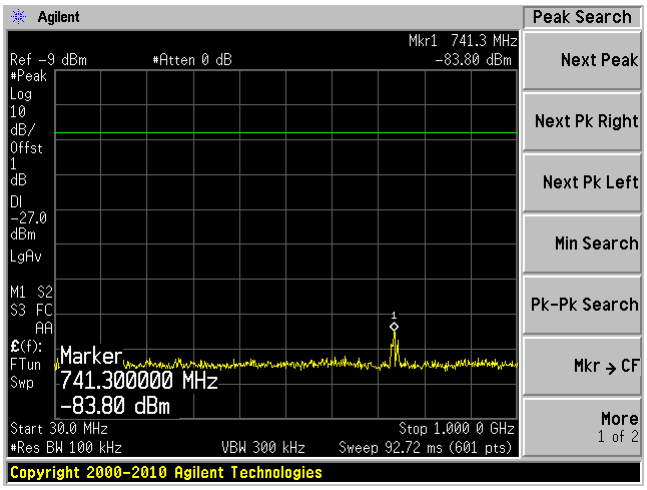


Chain 0, Plot: 26 GHz –40 GHz

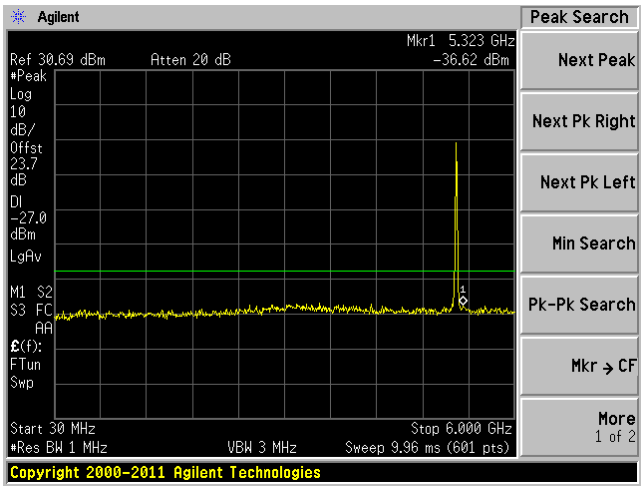


802.11a, High Channel, 5240 MHz

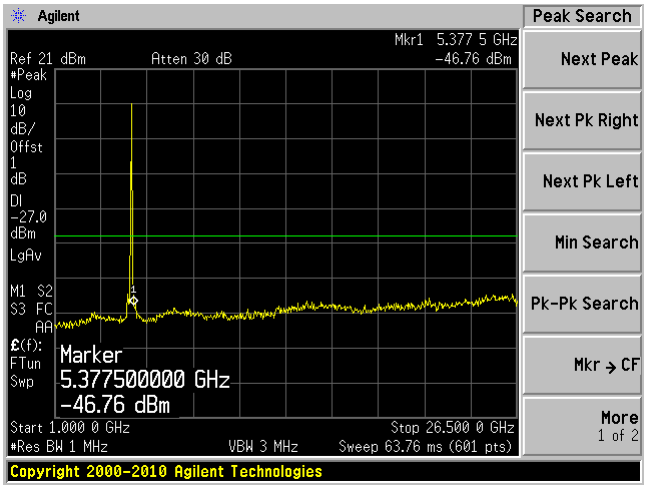
Chain 0, Plot: 30 MHz – 1 GHz



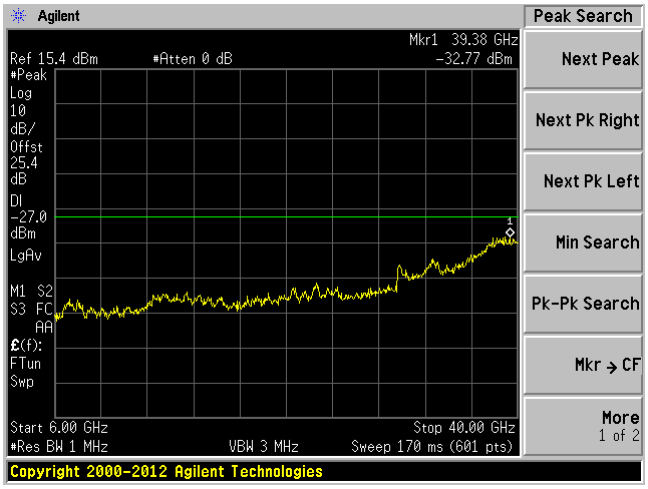
Chain 1, Plot: 30 MHz – 6 GHz



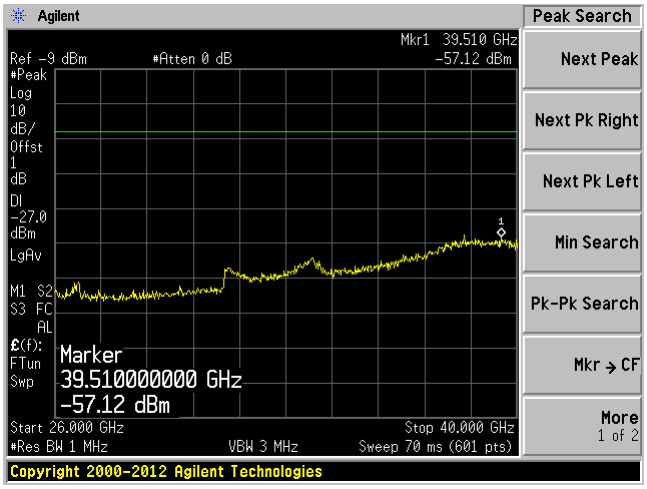
Chain 0, Plot: 1 GHz –26 GHz



Chain 1, Plot: 6 GHz – 40 GHz

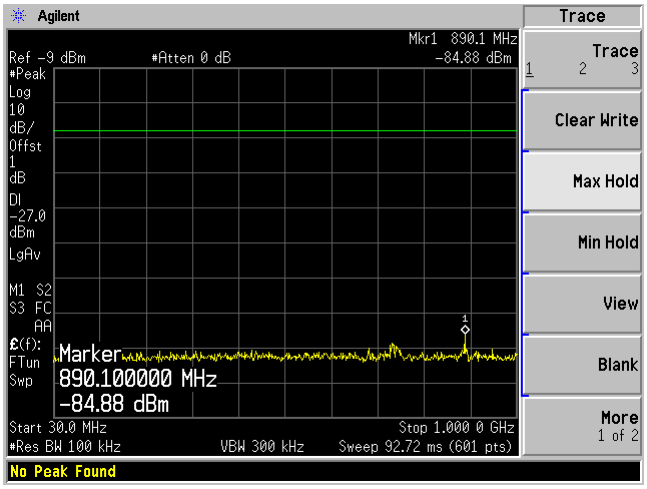


Chain 0, Plot: 26 GHz –40 GHz

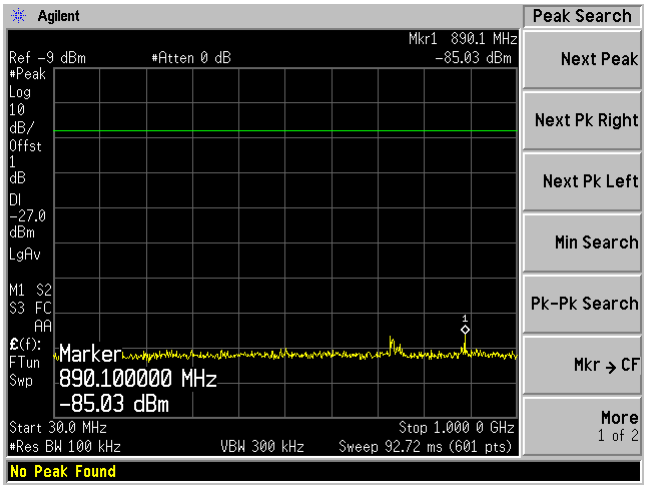


802.11n-HT20, Low Channel 5180 MHz

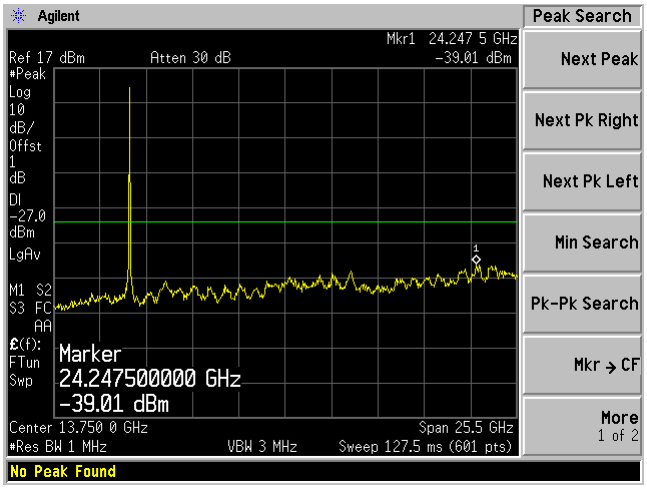
Chain 0, Plot: 30 MHz – 1 GHz



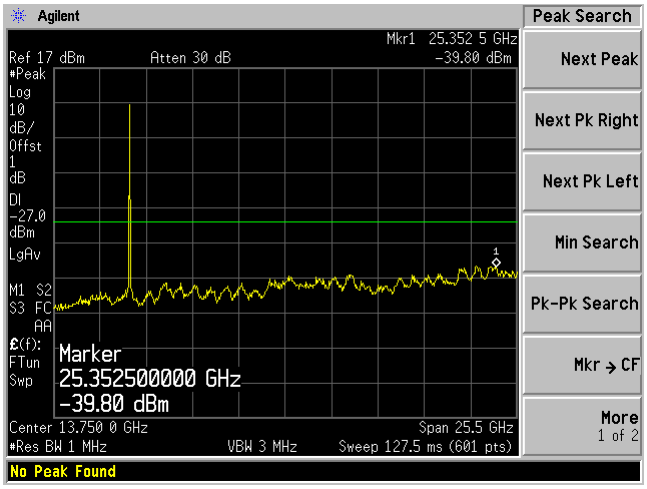
Chain 1, Plot: 30 MHz – 1 GHz



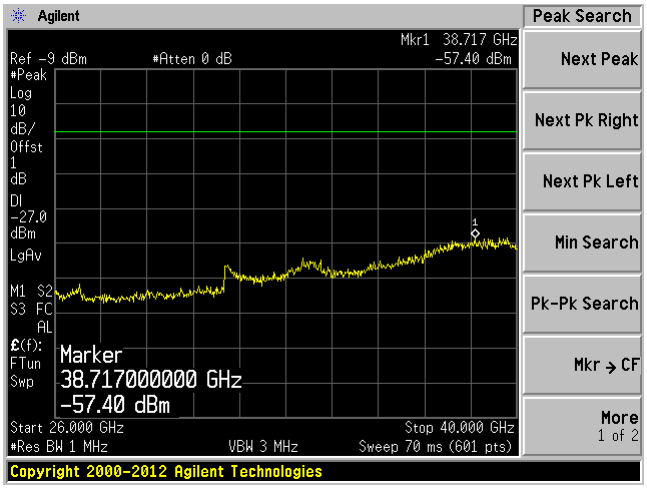
Chain 0, Plot: 1 GHz –26 GHz



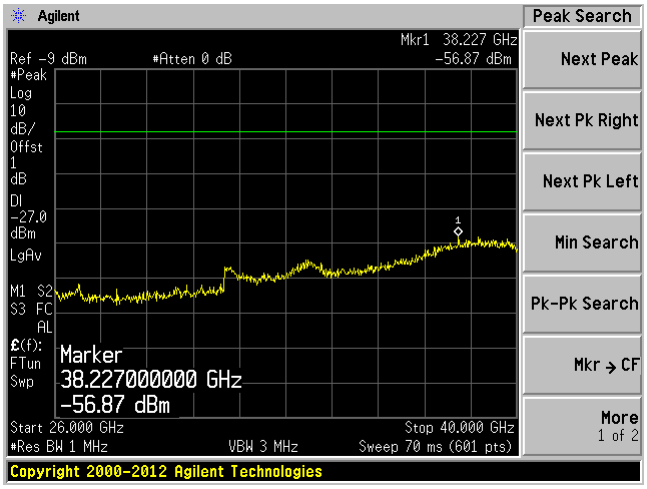
Chain 1, Plot: 1 GHz – 26 GHz



Chain 0, Plot: 26 GHz –40 GHz

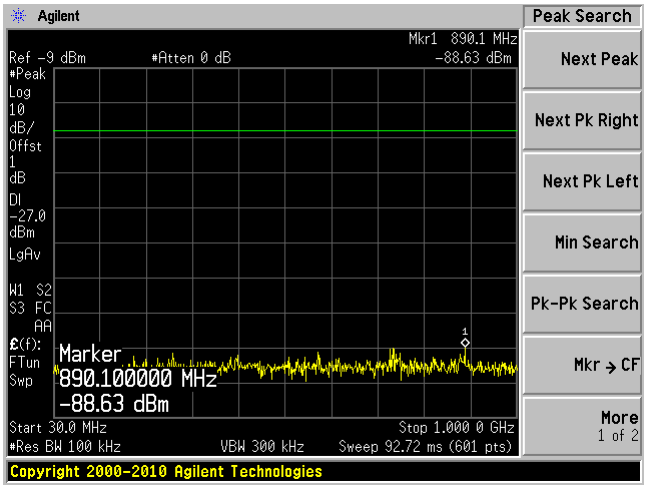


Chain 1, Plot: 26 GHz – 40 GHz

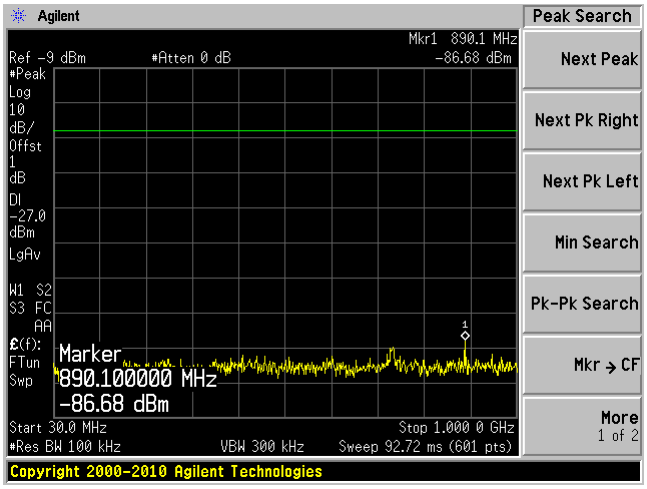


802.11n-HT20, Middle Channel 5200 MHz

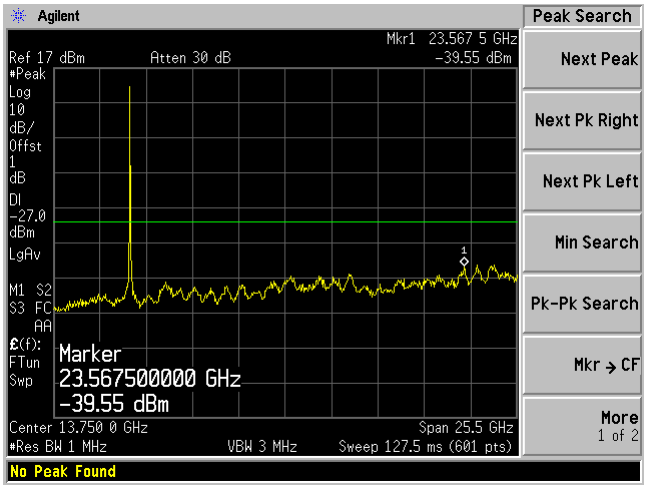
Chain 0, Plot: 30 MHz – 1 GHz



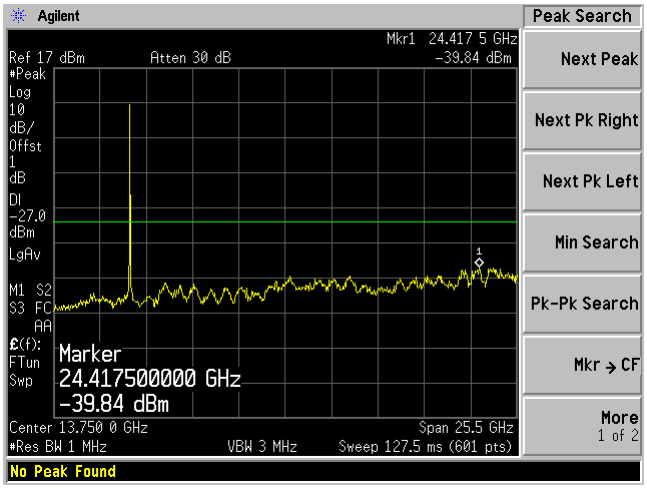
Chain 1, Plot: 30 MHz – 1 GHz



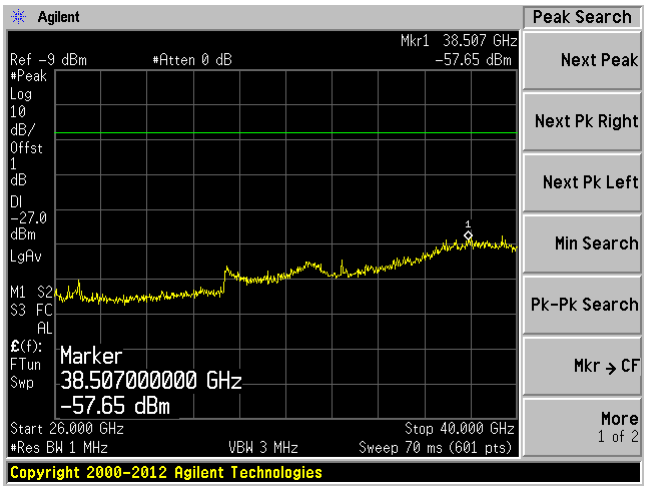
Chain 0, Plot: 1 GHz –26 GHz



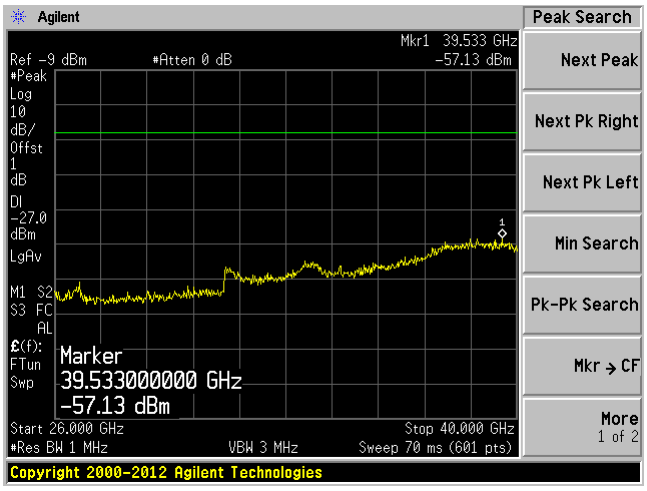
Chain 1, Plot: 1 GHz – 26 GHz



Chain 0, Plot: 26 GHz –40 GHz

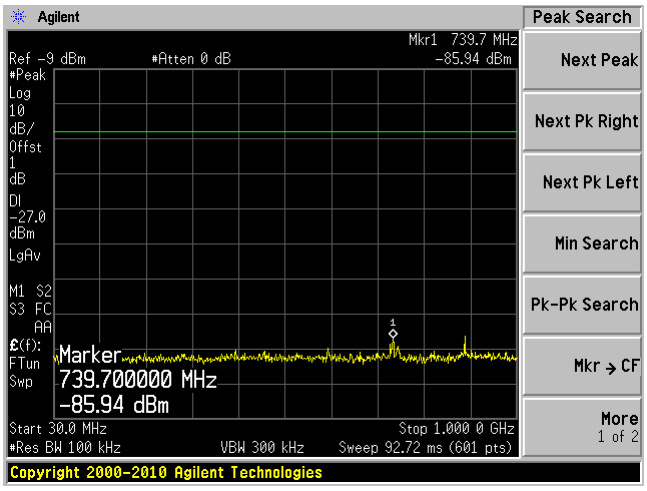


Chain 1, Plot: 26 GHz – 40 GHz

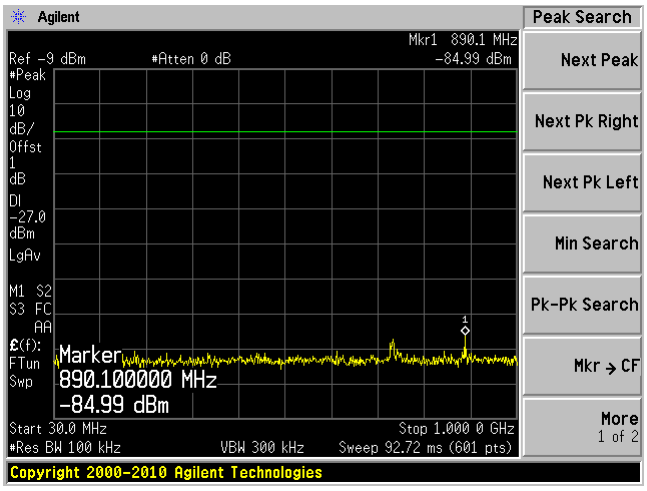


802.11n-HT 20, High Channel 5240 MHz

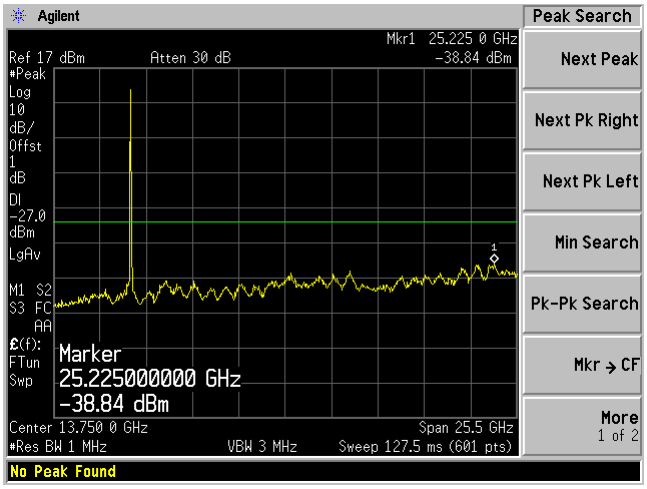
Chain 0, Plot: 30 MHz – 1 GHz



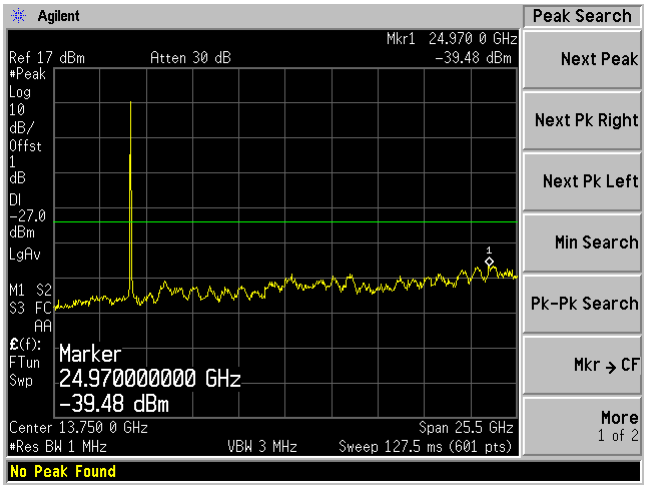
Chain 1, Plot: 30 MHz – 1 GHz



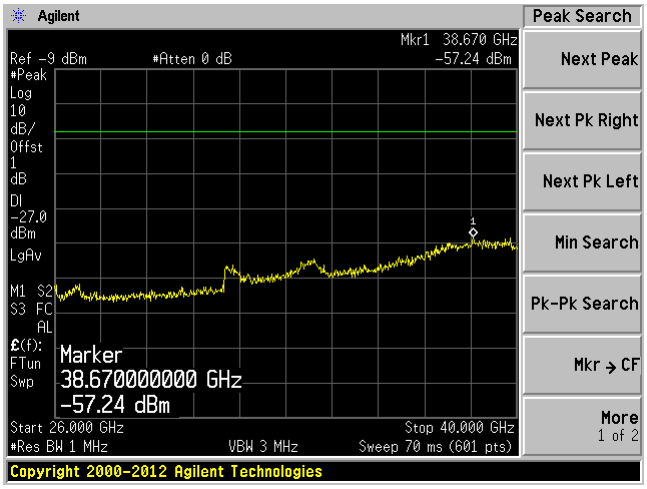
Chain 0, Plot: 1 GHz –26 GHz



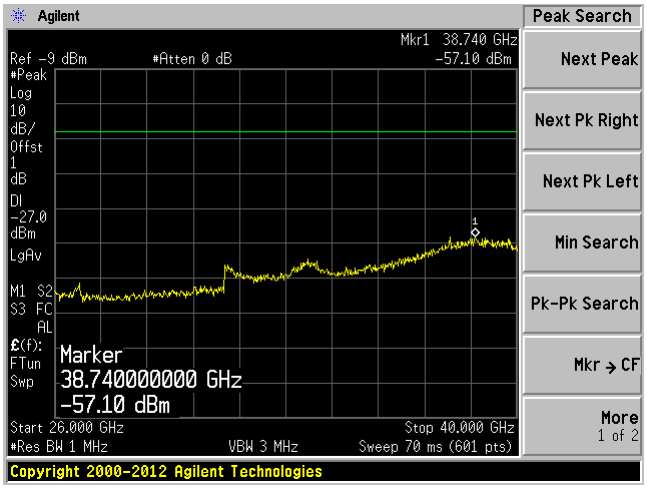
Chain 1, Plot: 1 GHz – 26 GHz



Chain 0, Plot: 26 GHz –40 GHz

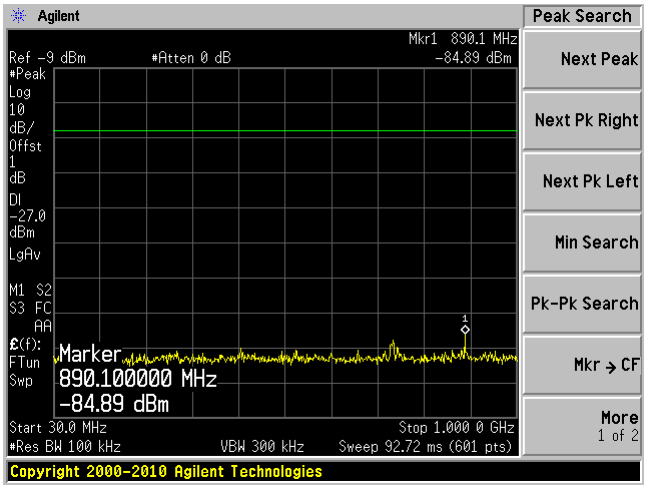


Chain 1, Plot: 26 GHz – 40 GHz

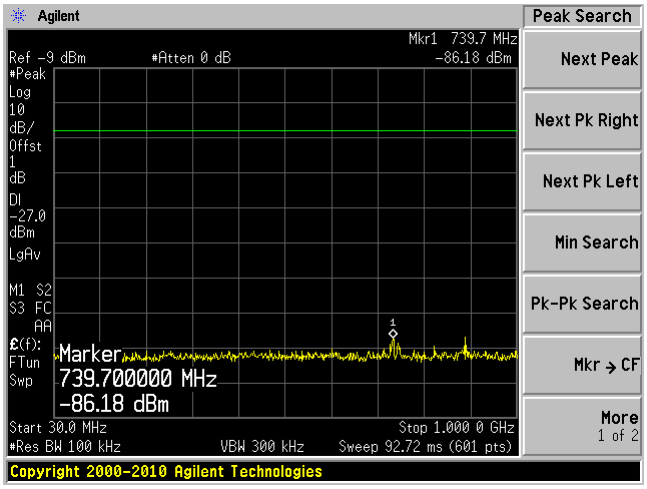


802.11n-HT40, Low Channel 5190 MHz

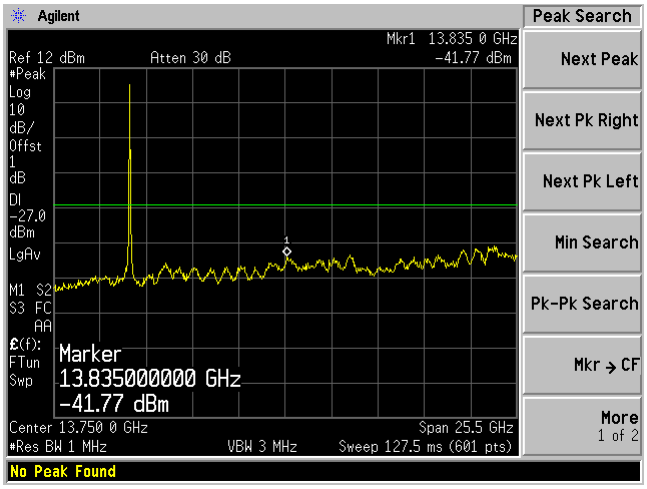
Chain 0, Plot: 30 MHz – 1 GHz



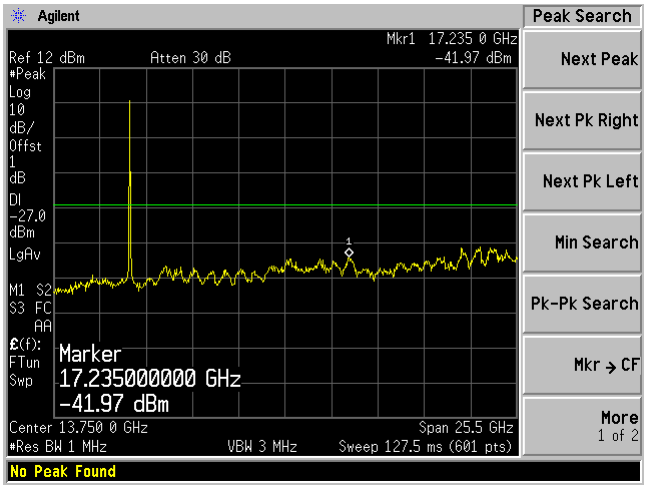
Chain 1, Plot: 30 MHz – 1 GHz



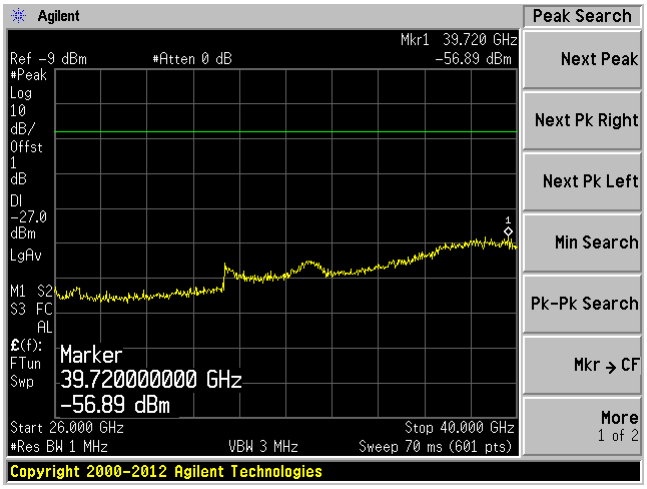
Chain 0, Plot: 1 GHz –26 GHz



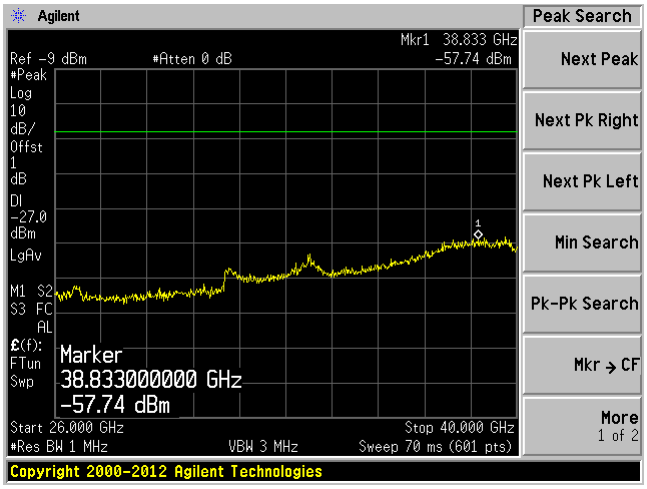
Chain 1, Plot: 1 GHz – 26 GHz



Chain 0, Plot: 26 GHz –40 GHz

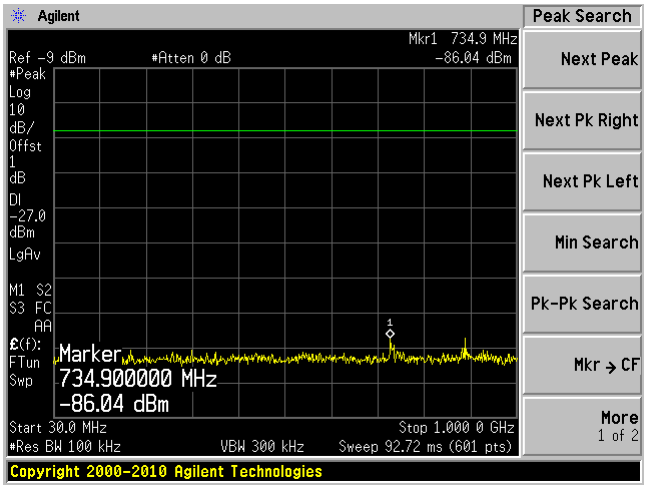


Chain 1, Plot: 26 GHz – 40 GHz

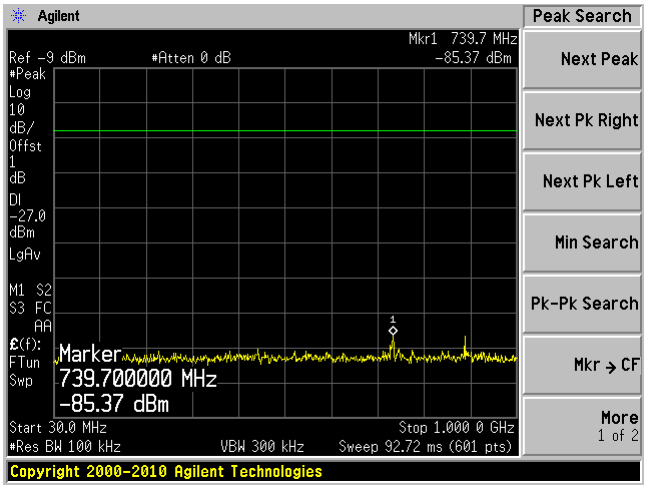


802.11n-HT40, High Channel 5230 MHz

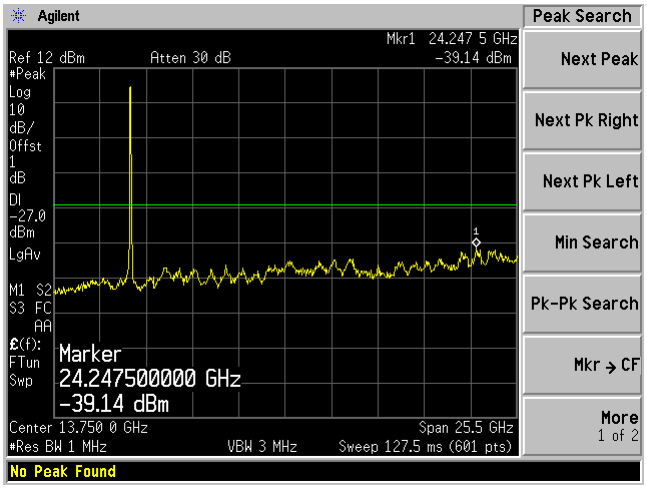
Chain 0, Plot: 30 MHz – 1 GHz



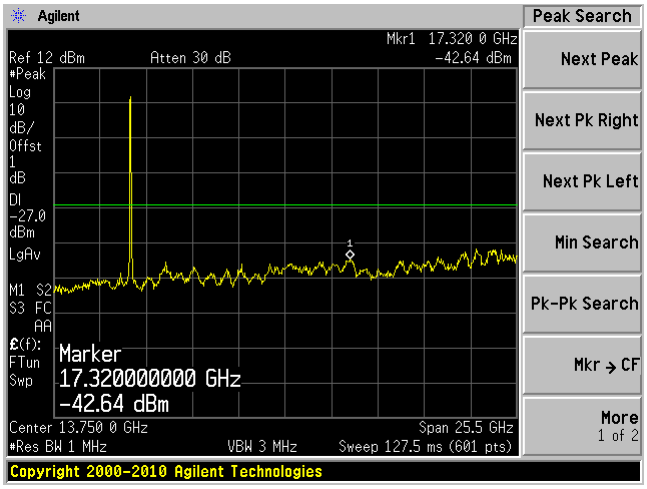
Chain 1, Plot: 30 MHz – 1 GHz



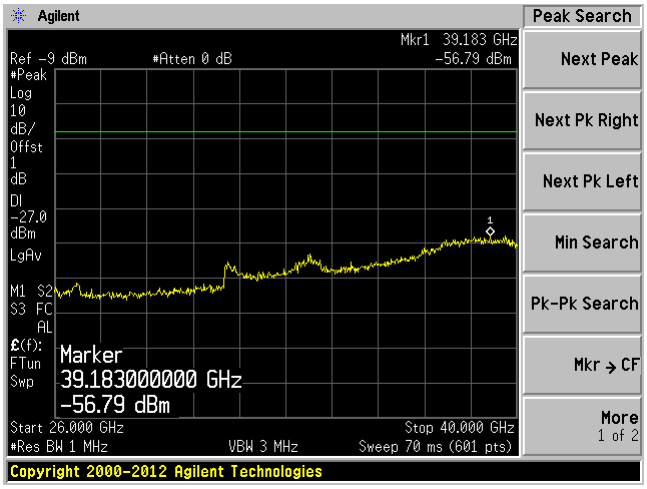
Chain 0, Plot: 1 GHz –26 GHz



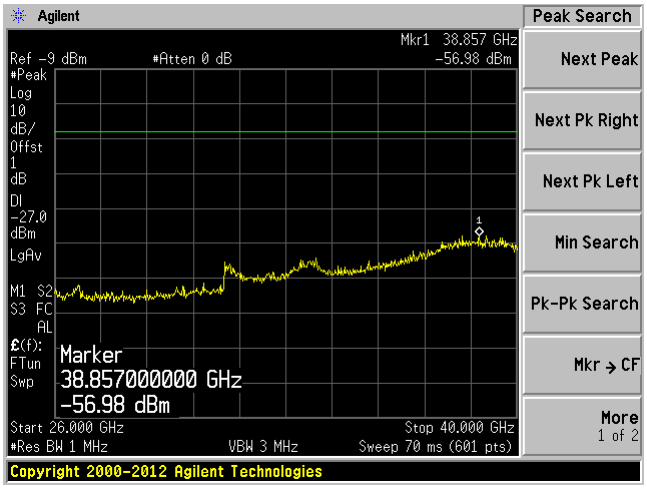
Chain 1, Plot: 1 GHz – 26 GHz



Chain 0, Plot: 26 GHz –40 GHz



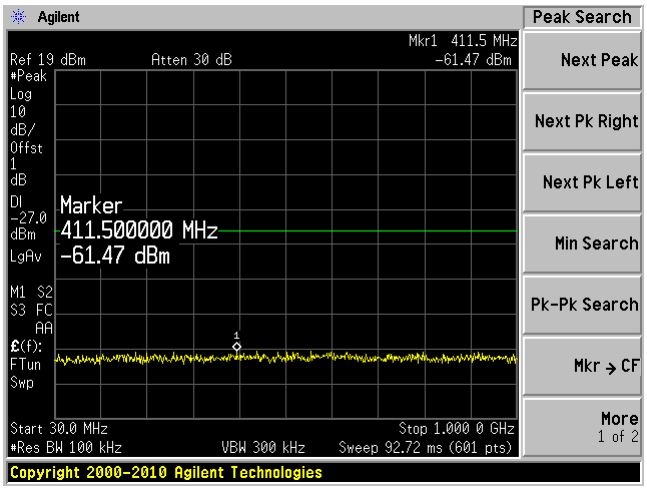
Chain 1, Plot: 26 GHz – 40 GHz



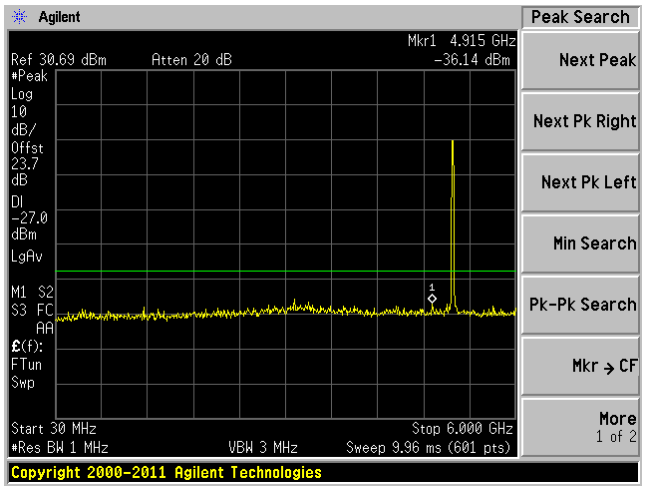
5.8 GHz Band

802.11a Mode Low Channel 5745 MHz

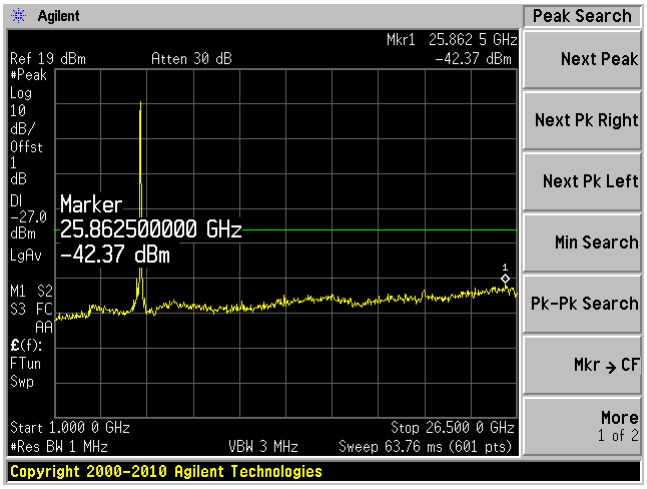
Chain 0, Plot: 30 MHz – 1 GHz



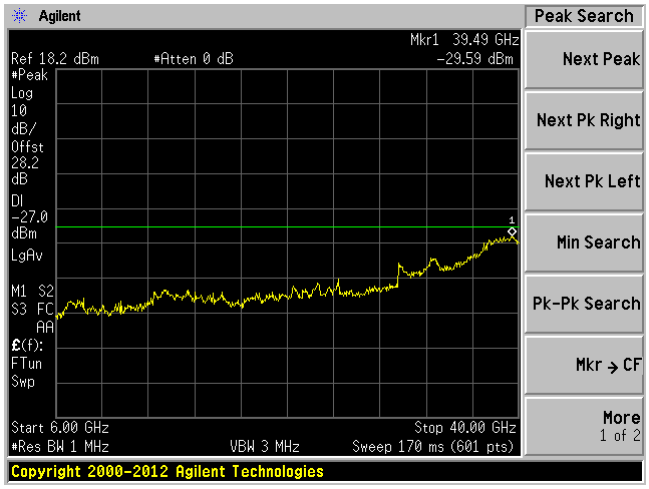
Chain 1, Plot: 30 MHz – 6 GHz



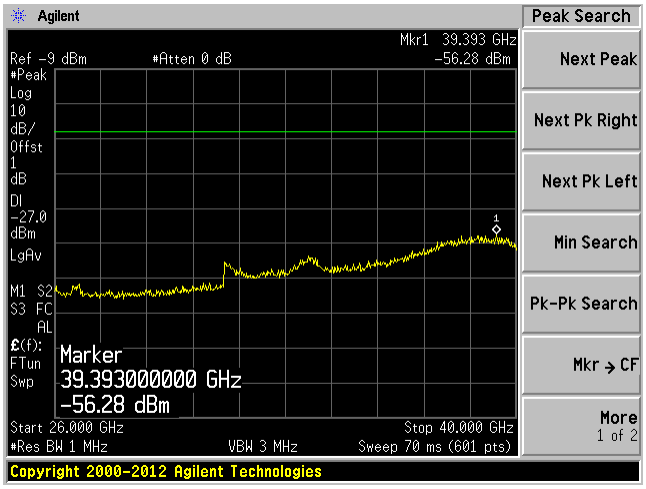
Chain 0, Plot: 1 GHz –26 GHz



Chain 1, Plot: 6 GHz – 40 GHz

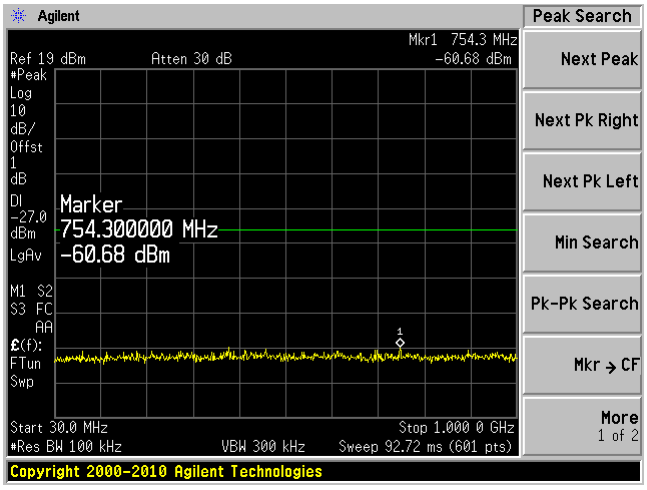


Chain 0, Plot: 26 GHz –40 GHz

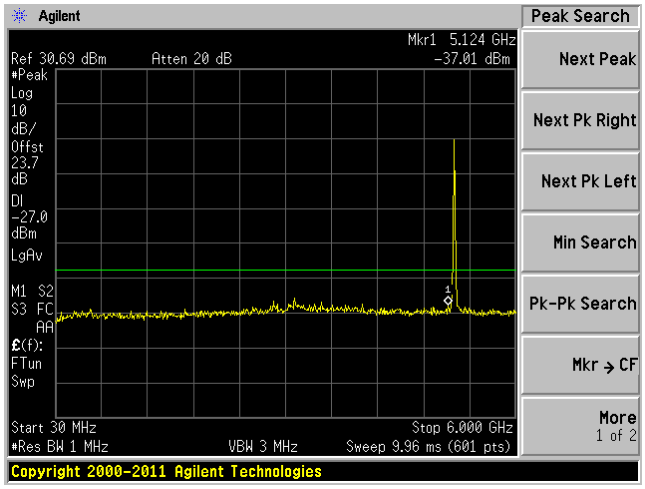


802.11a Mode Mid Channel 5785 MHz

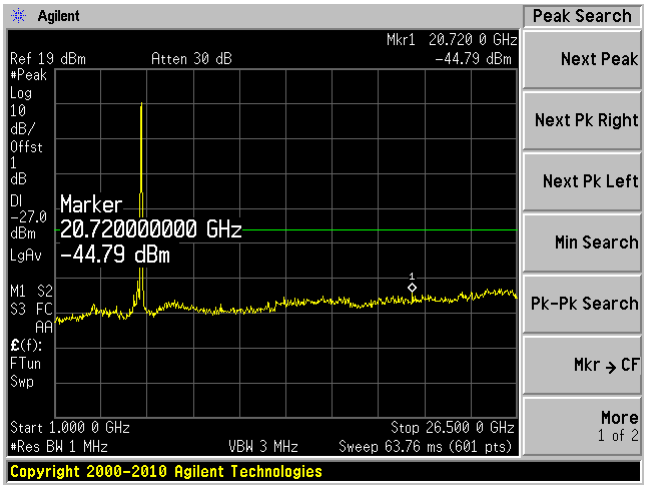
Chain 0, Plot: 30 MHz – 1 GHz



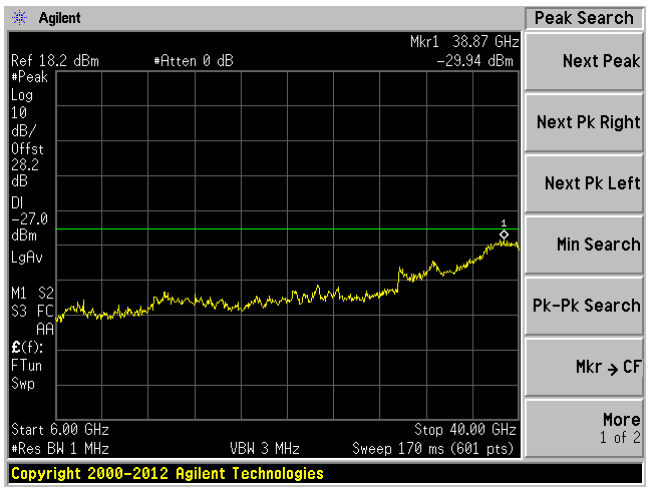
Chain 1, Plot: 30 MHz – 6 GHz



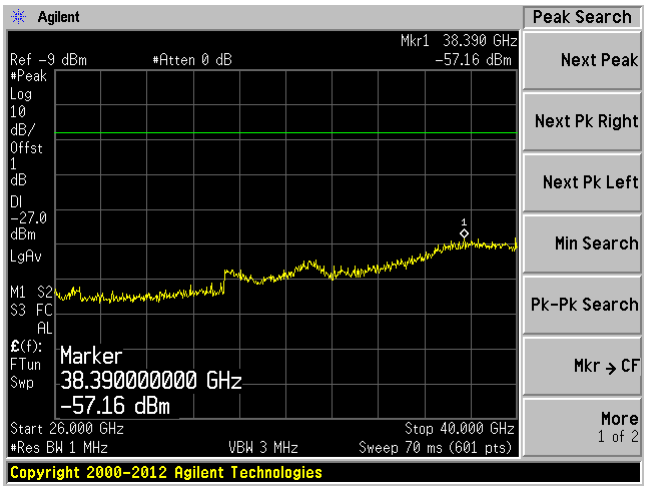
Chain 0, Plot: 1 GHz –26 GHz



Chain 1, Plot: 6 GHz – 40 GHz

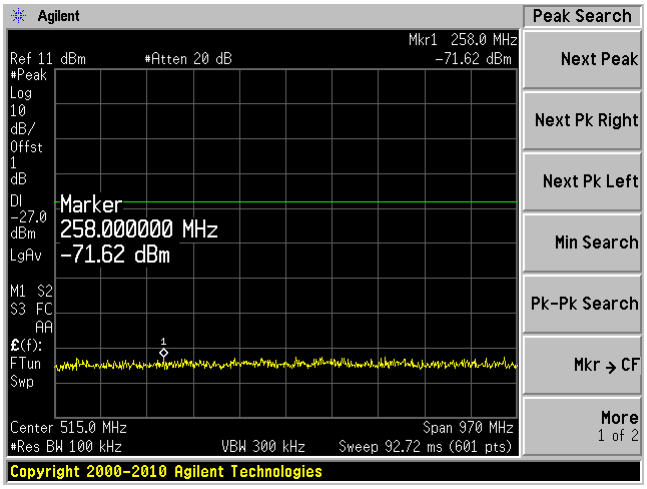


Chain 0, Plot: 26 GHz –40 GHz

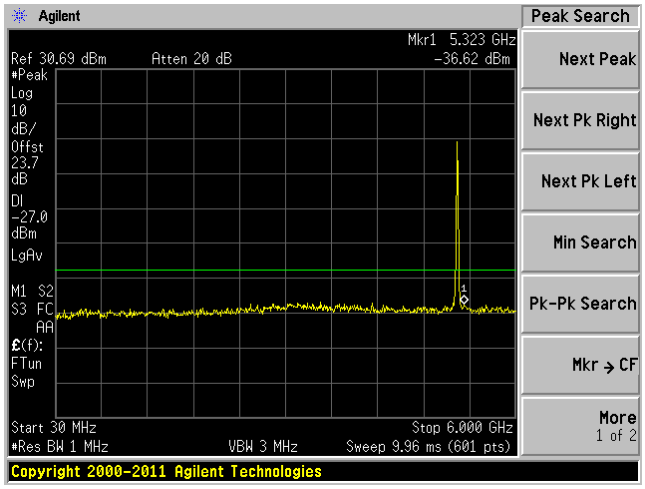


802.11a Mode High Channel 5825 MHz

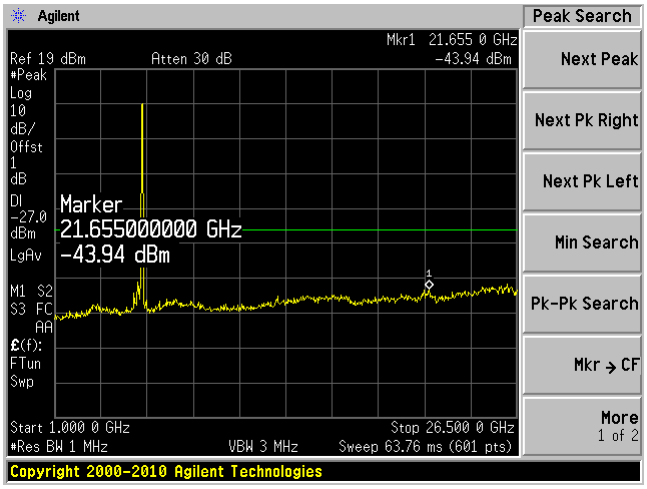
Chain 0, Plot: 30 MHz – 1 GHz



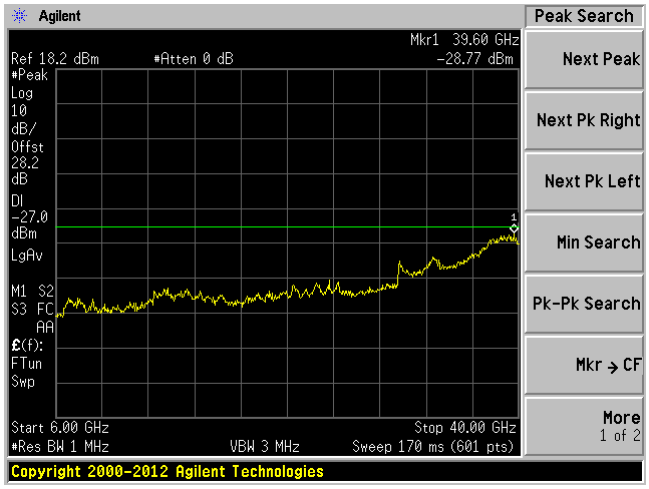
Chain 1, Plot: 30 MHz – 6 GHz



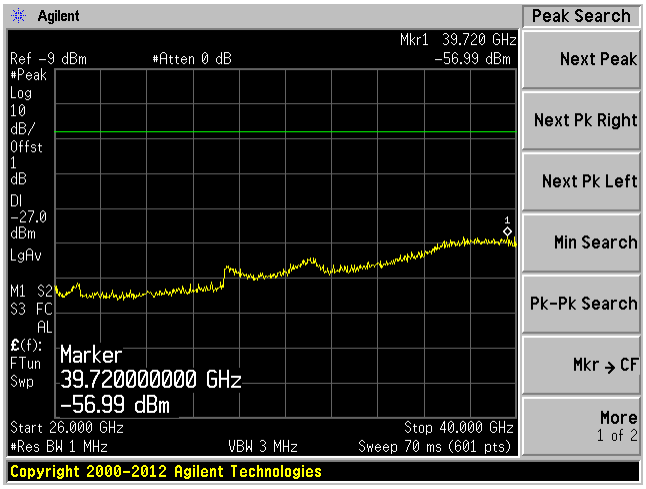
Chain 0, Plot: 1 GHz –26 GHz



Chain 1, Plot: 6 GHz – 40 GHz

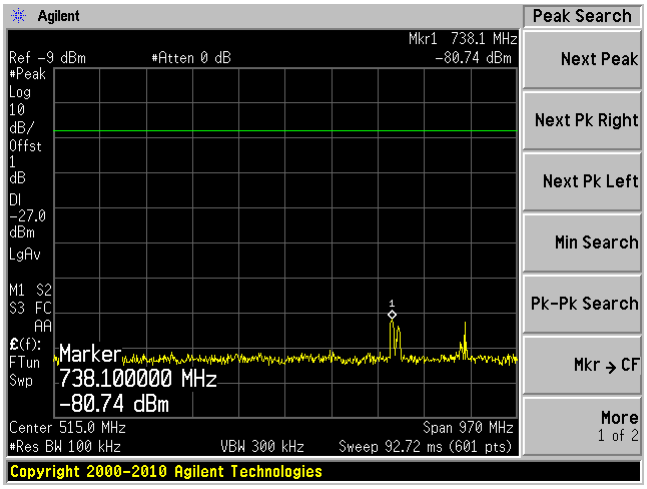


Chain 0, Plot: 26 GHz –40 GHz

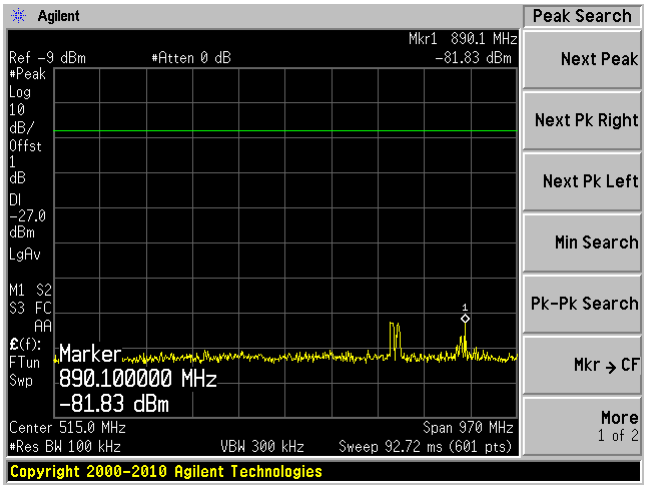


802.11n-HT20 Mode Low Channel 5745 MHz

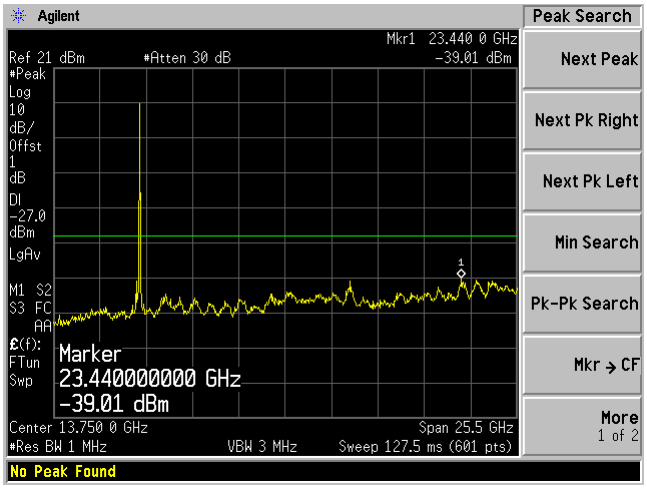
Chain 0, Plot: 30 MHz – 1 GHz



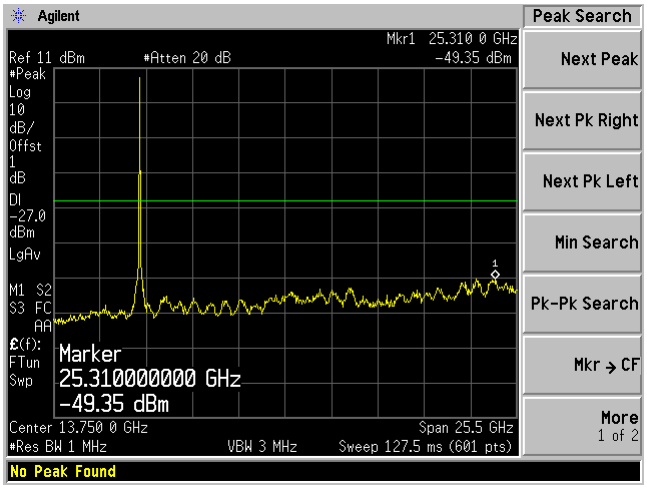
Chain 1, Plot: 30 MHz – 1 GHz



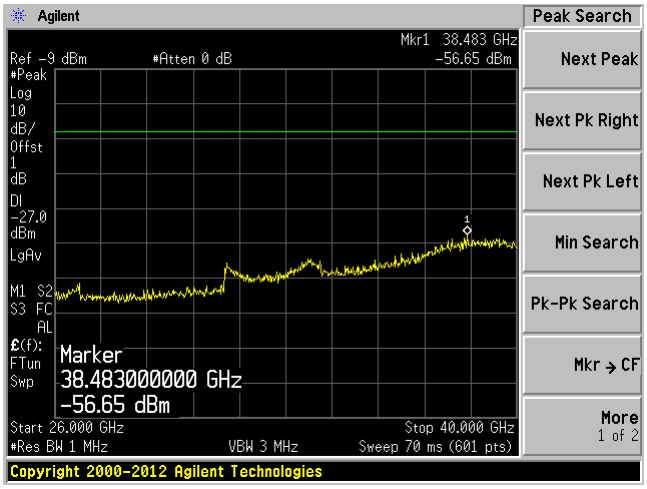
Chain 0, Plot: 1 GHz –26 GHz



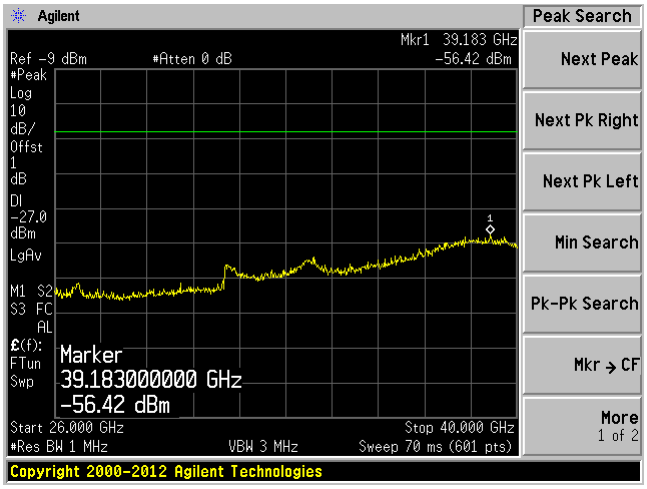
Chain 1, Plot: 1 GHz – 26 GHz



Chain 0, Plot: 26 GHz –40 GHz

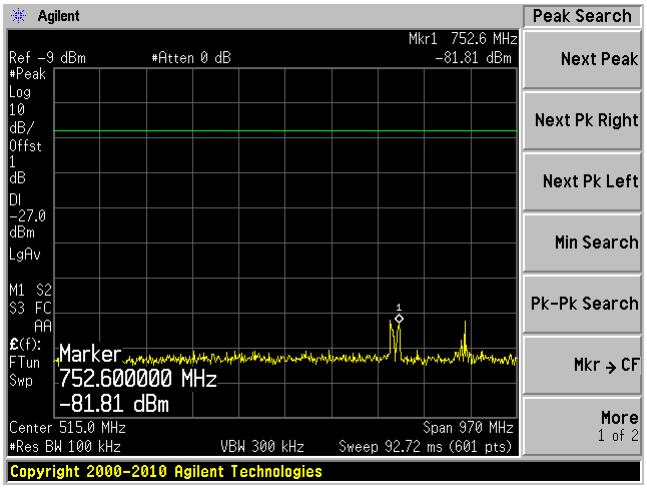


Chain 1, Plot: 26 GHz – 40 GHz

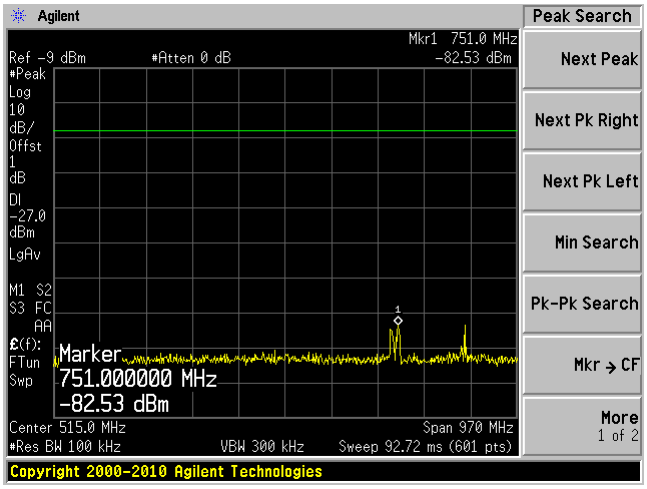


802.11n-HT20 Mode Mid Channel 5785 MHz

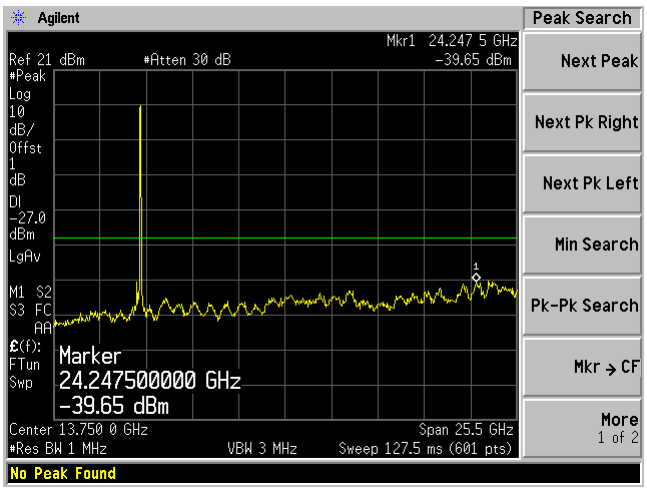
Chain 0, Plot: 30 MHz – 1 GHz



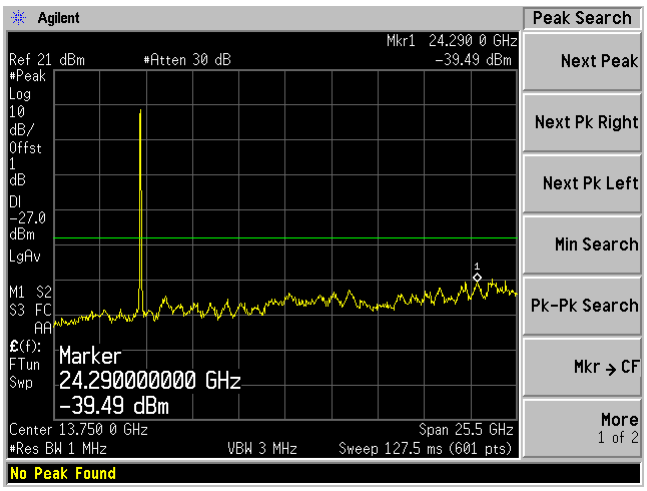
Chain 1, Plot: 30 MHz – 1 GHz



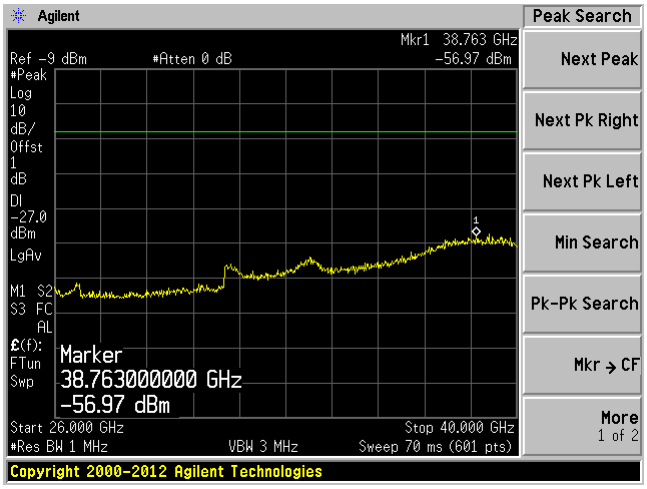
Chain 0, Plot: 1 GHz –26 GHz



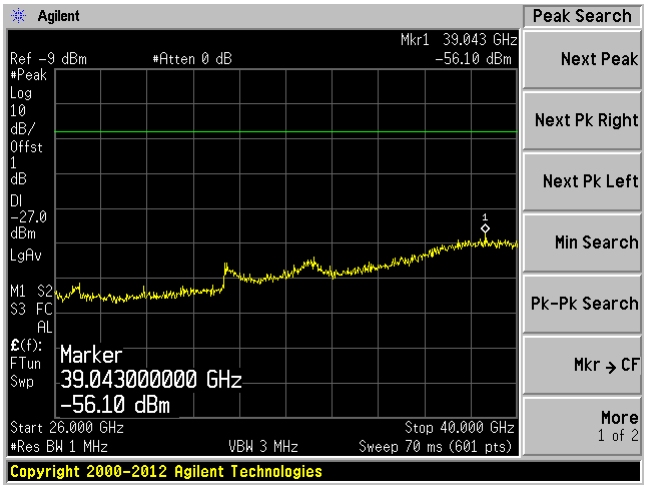
Chain 1, Plot: 1 GHz – 26 GHz



Chain 0, Plot: 26 GHz –40 GHz

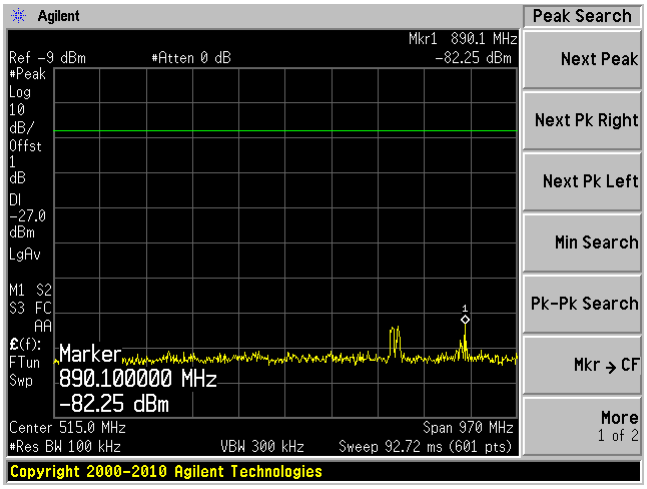


Chain 1, Plot: 26 GHz – 40 GHz

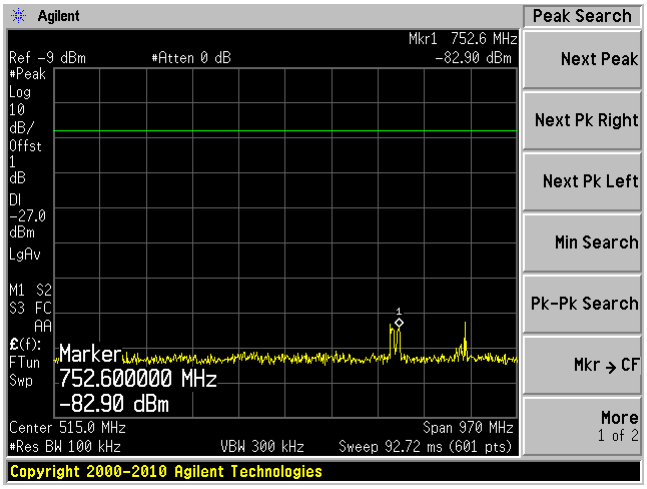


802.11n-HT20 Mode High Channel 5825 MHz

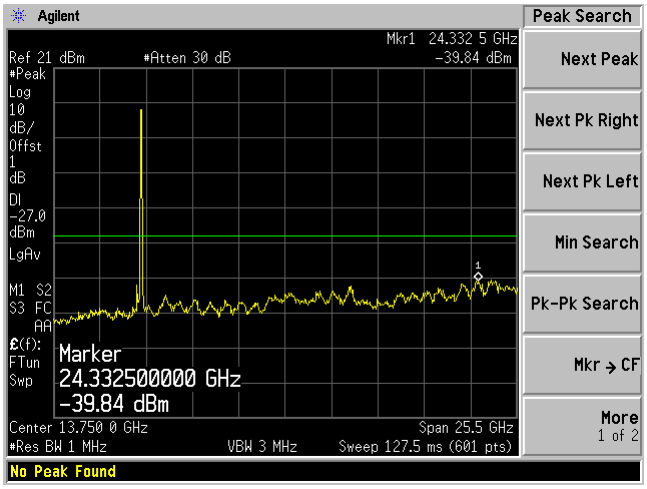
Chain 0, Plot: 30 MHz – 1 GHz



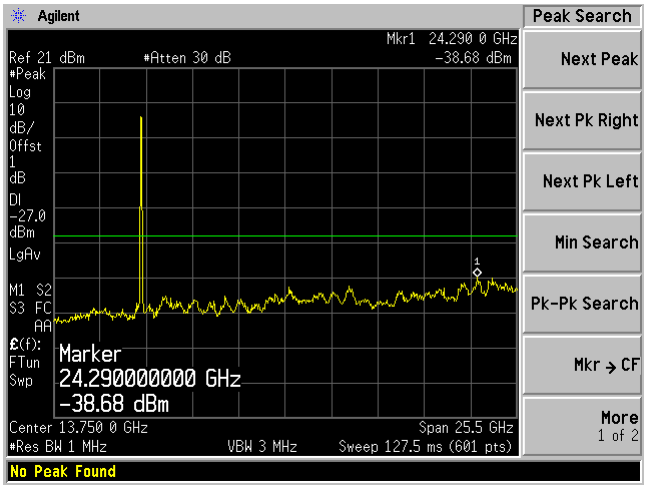
Chain 1, Plot: 30 MHz – 1 GHz



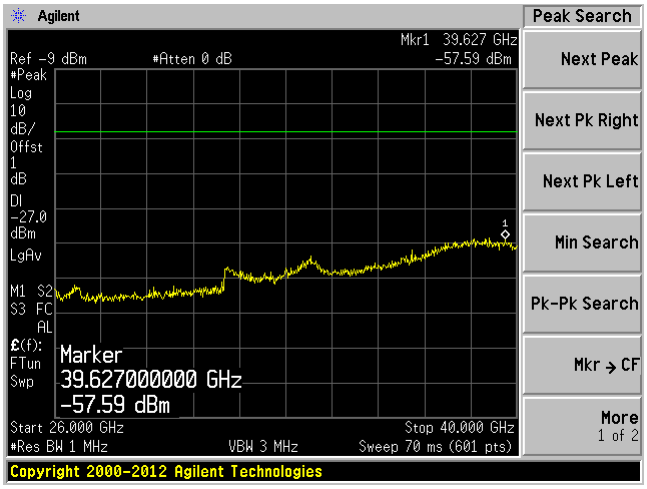
Chain 0, Plot: 1 GHz –26 GHz



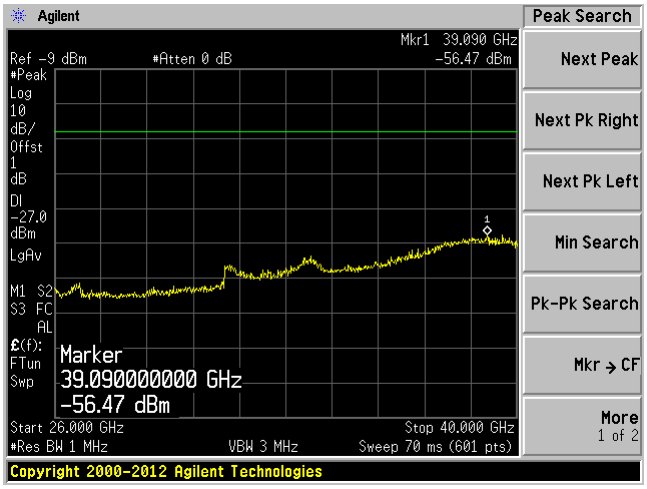
Chain 1, Plot: 1 GHz – 26 GHz



Chain 0, Plot: 26 GHz –40 GHz

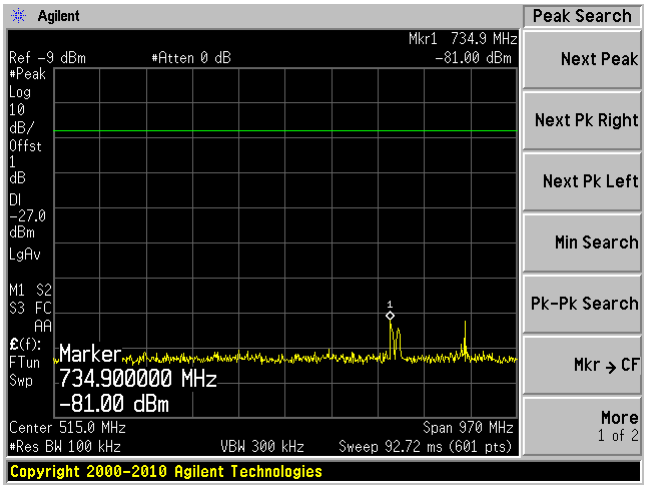


Chain 1, Plot: 26 GHz – 40 GHz

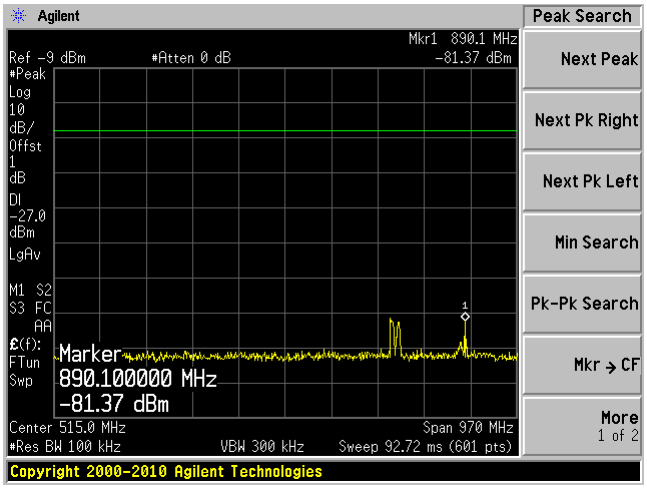


802.11n-HT40 Mode Low Channel 5755 MHz

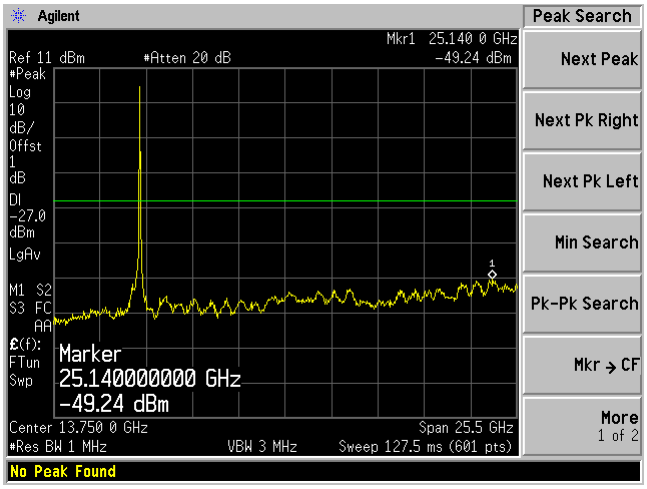
Chain 0, Plot: 30 MHz – 1 GHz



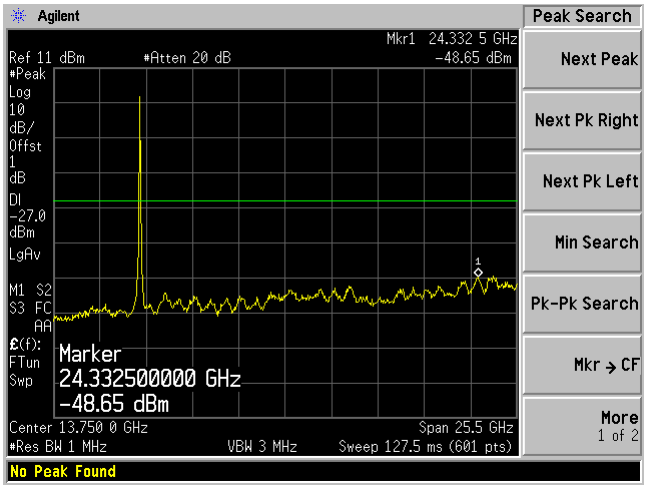
Chain 1, Plot: 30 MHz – 1 GHz



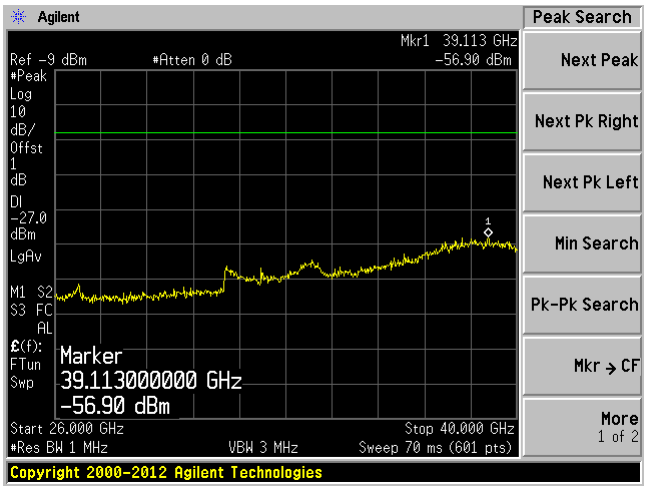
Chain 0, Plot: 1 GHz –26 GHz



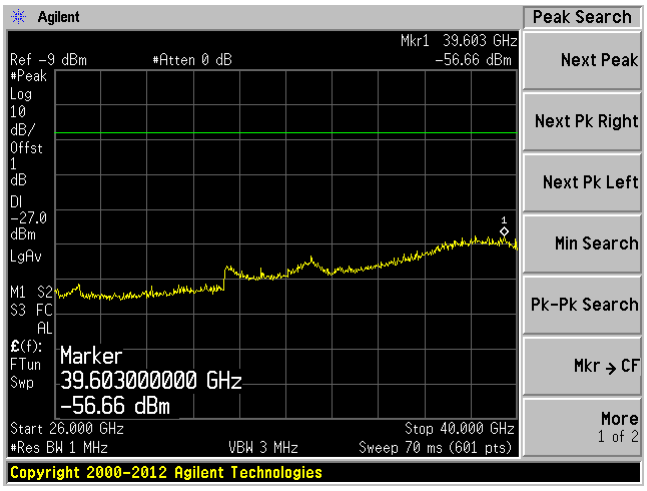
Chain 1, Plot: 1 GHz – 26 GHz



Chain 0, Plot: 26 GHz –40 GHz

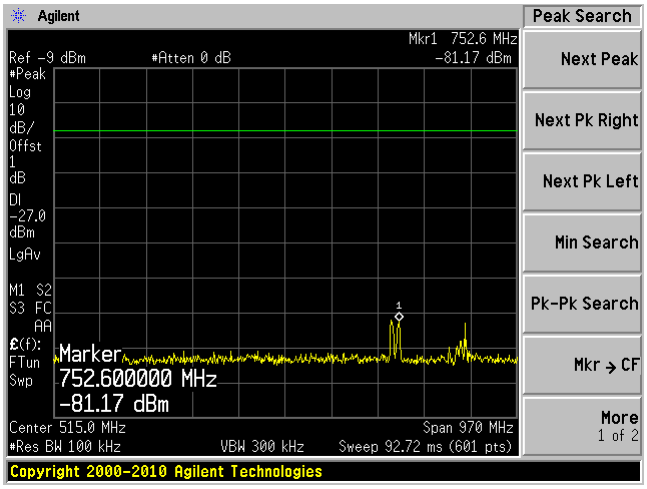


Chain 1, Plot: 26 GHz – 40 GHz

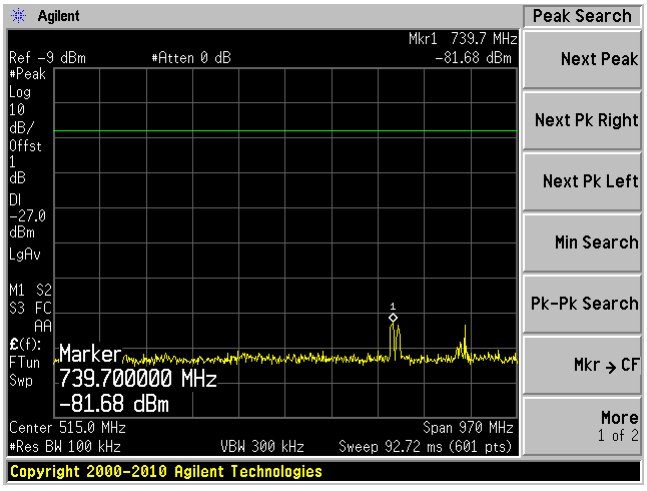


802.11n-HT40 Mode High Channel 5795 MHz

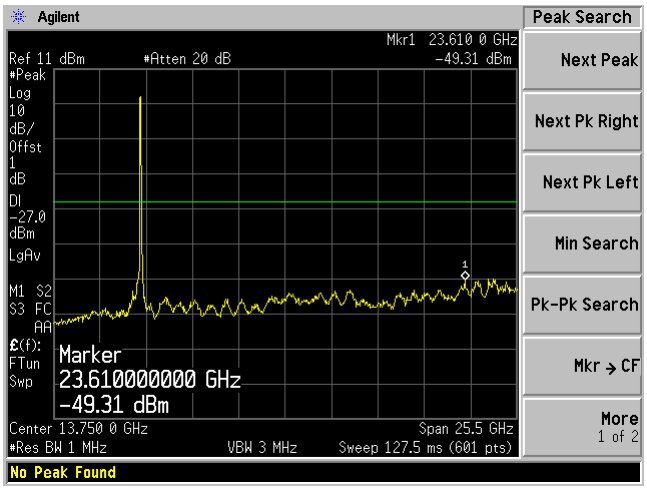
Chain 0, Plot: 30 MHz – 1 GHz



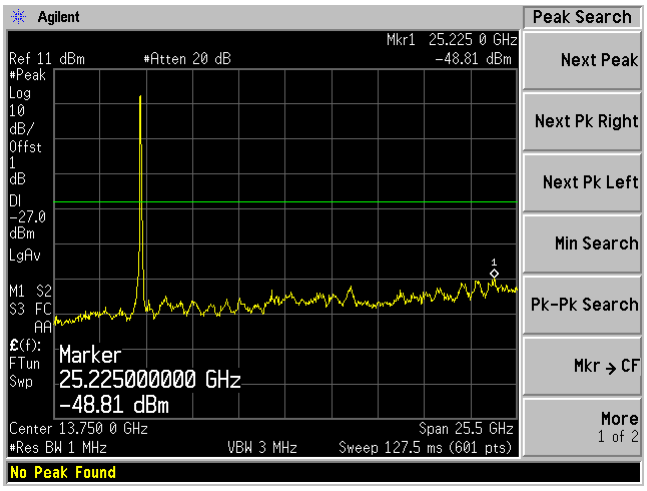
Chain 1, Plot: 30 MHz – 1 GHz



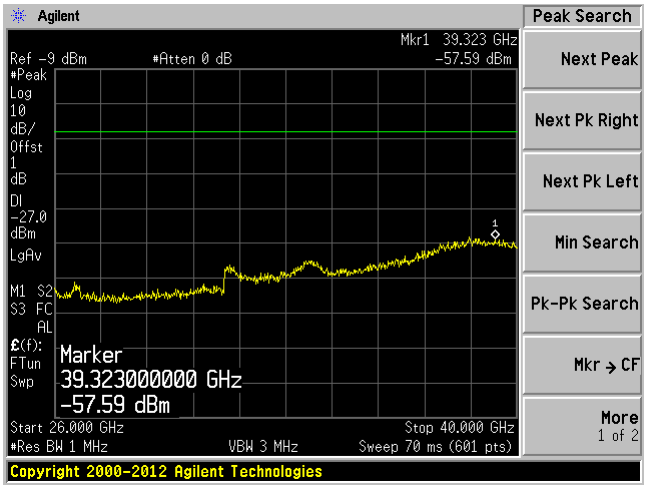
Chain 0, Plot: 1 GHz –26 GHz



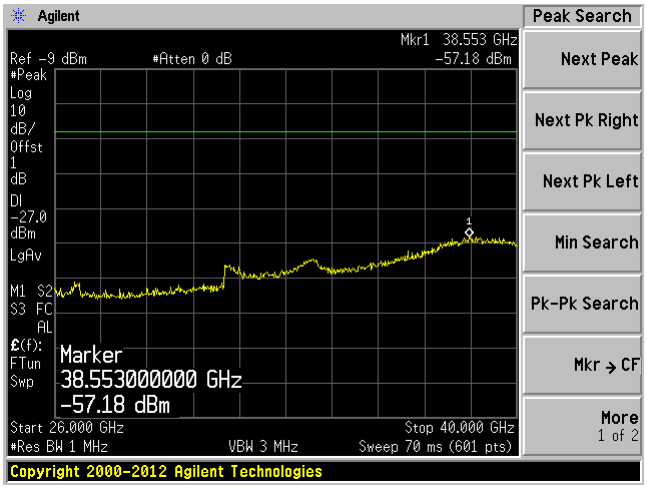
Chain 1, Plot: 1 GHz – 26 GHz



Chain 0, Plot: 26 GHz –40 GHz



Chain 1, Plot: 26 GHz – 40 GHz



10 FCC §15.407(a) - Power Spectral Density

10.1 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..

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.

10.2 Measurement Procedure

The measurements are base on FCC KDB 789033 D01 General UNII Test Procedures v01r03: Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices section F:
Peak power spectral density (PPSD)

10.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	MY44303352	2013-11-07	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:	22-24 ºC
Relative Humidity:	40-41 %
ATM Pressure:	103.1-104.1 KPa

The testing was performed by Rui Zhou from 2014-10-03 and 2014-10-07 at RF site.

Note: The PSA's RBW=100kHz and a 10*log(5) factor is added to compare the limit as 30dBm/500kHz for W58 Band.

10.5 Test Results

5.2 GHz Band

802.11a mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm/MHz)	TX Chain 1 PSD (dBm/MHz)	MAX PSD (dBm/MHz)	Limit (dBm/MHz)
Low	5180	3.931	0.620	3.931	17
Middle	5200	4.326	0.470	4.326	17
High	5240	4.305	0.261	4.305	17

802.11n-HT20 mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm/MHz)	TX Chain 1 PSD (dBm/MHz)	Total PSD (dBm/MHz)	Limit (dBm/MHz)
Low	5180	2.995	-0.999	4.45	17
Middle	5200	4.935	-1.149	5.89	17
High	5240	2.92	-1.037	4.39	17

802.11n-HT40 mode

Channel	Frequency (MHz)	TX Chain 0 PSD (dBm/MHz)	TX Chain 1 PSD (dBm/MHz)	PSD (dBm/MHz)	Limit (dBm/MHz)
Low	5190	-3.607	-5.355	-1.38	17
High	5230	-0.731	-4.882	0.68	17

5.8 GHz Band

802.11a mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/100kHz)	Chain 1 PSD (dBm/100kHz)	Factor (dBi)	Max PSD (dBm/500kHz)	Limit (dBm/500kHz)
Low	5745	-7.282	-8.911	6.99	-0.2923	30
Middle	5785	-6.818	-8.85	6.99	0.1717	30
High	5825	-7.122	-9.256	6.99	-0.1323	30

802.11n-HT20 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/100kHz)	Chain 1 PSD (dBm/100kHz)	Factor (dBi)	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)
Low	5745	-5.672	-8.511	6.99	3.14	29
Middle	5785	-5.647	-8.299	6.99	3.23	29
High	5825	-7.073	-9.761	6.99	1.79	29

802.11n-HT40 mode

Channel	Frequency (MHz)	Chain 0 PSD (dBm/100kHz)	Chain 1 PSD (dBm/100kHz)	Factor (dBi)	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)
Low	5755	-11.361	-12.591	6.99	-1.93	29
High	5795	-12.137	-13.705	6.99	-2.85	29

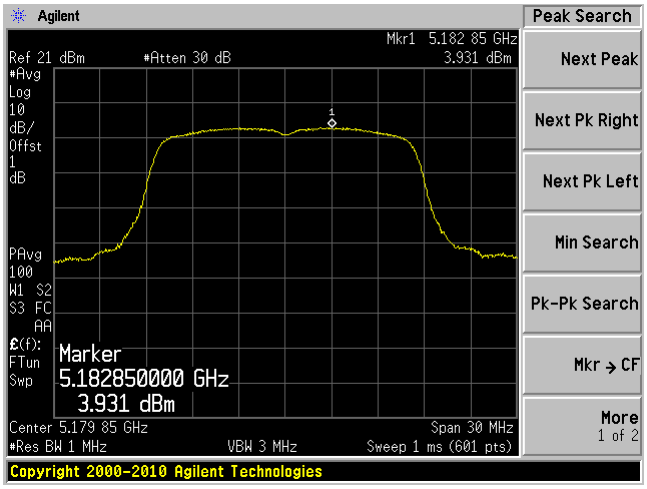
Note: the correlated directional Gain is 6.86 dBi in 5725-5850 MHz band. The power limit was reduced by 1 dB for MIMO transmitting system (802.11n) according to 15.407.

Please refer to the following plots.

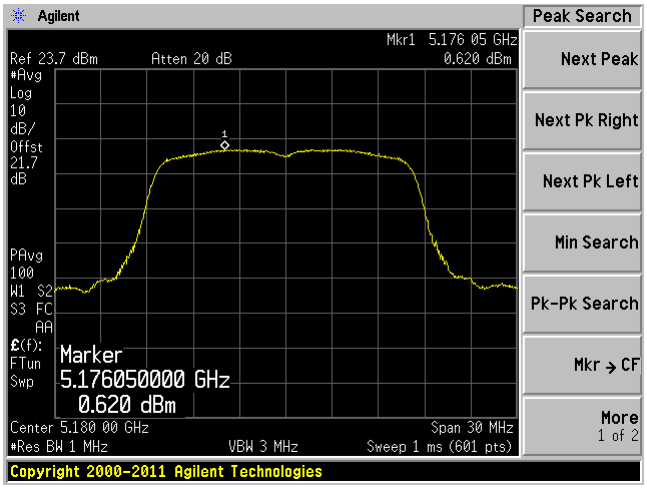
5.2 GHz Band

802.11a mode

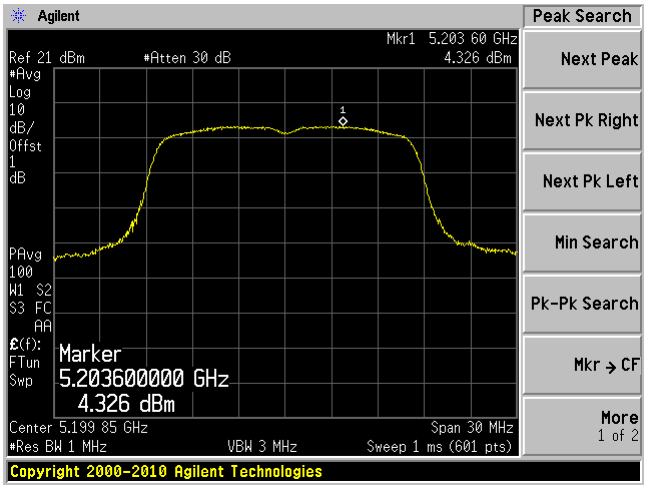
Low channel: 5180 MHz Chain 0



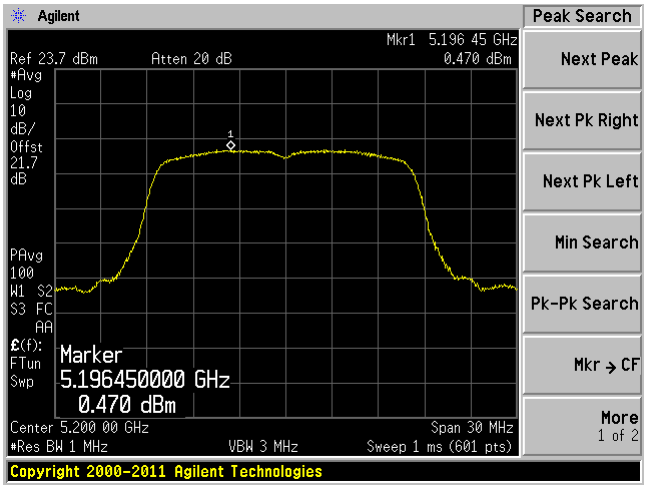
Low channel: 5180 MHz Chain 1



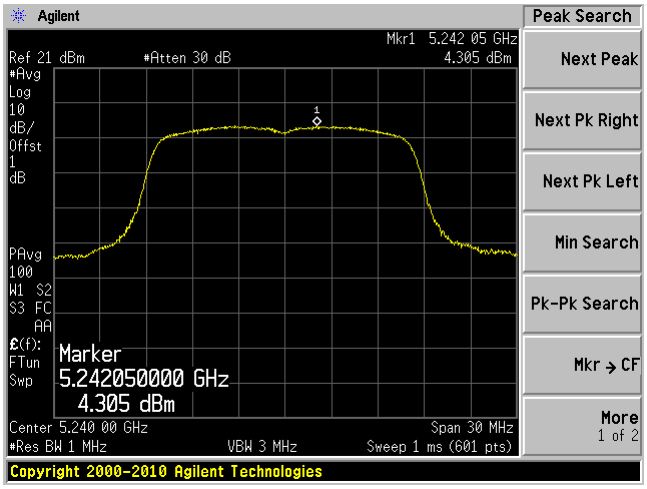
Middle channel: 5200 MHz Chain 0



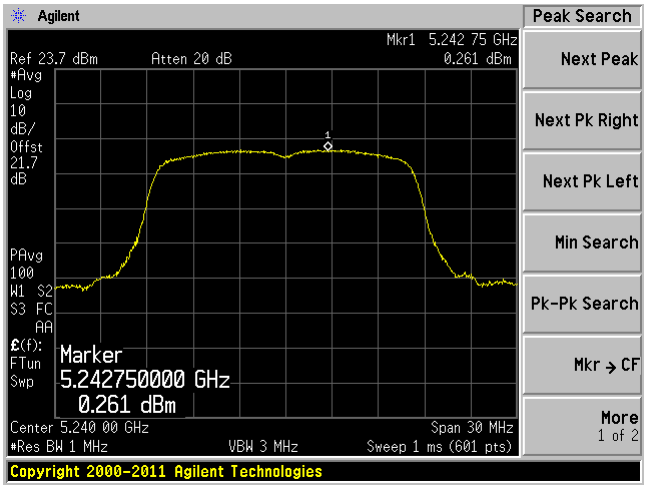
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

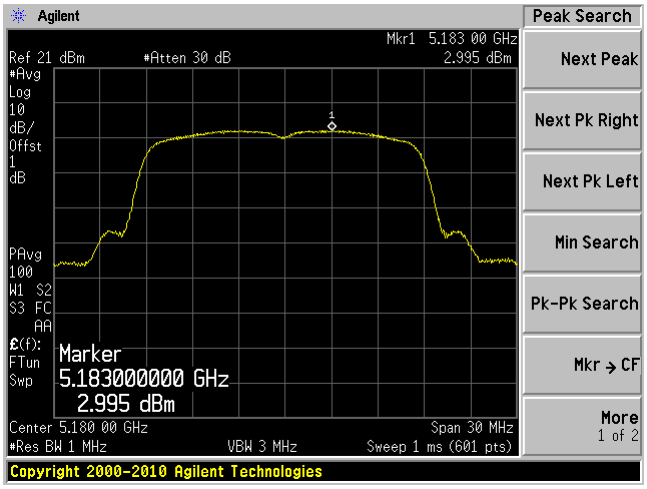


High channel: 5240 MHz Chain 1

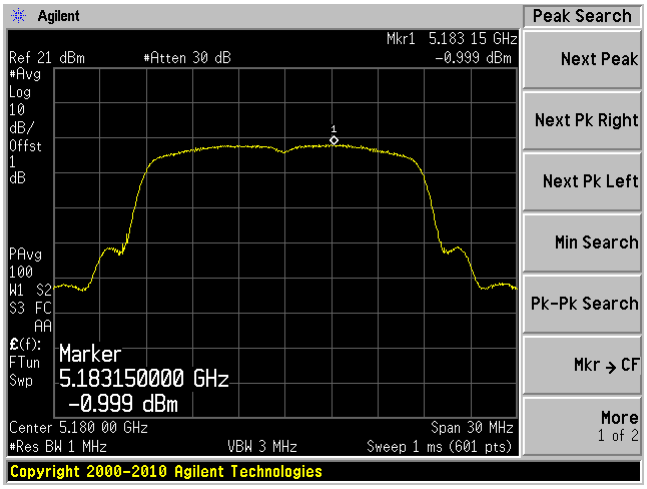


802.11n-HT20 mode

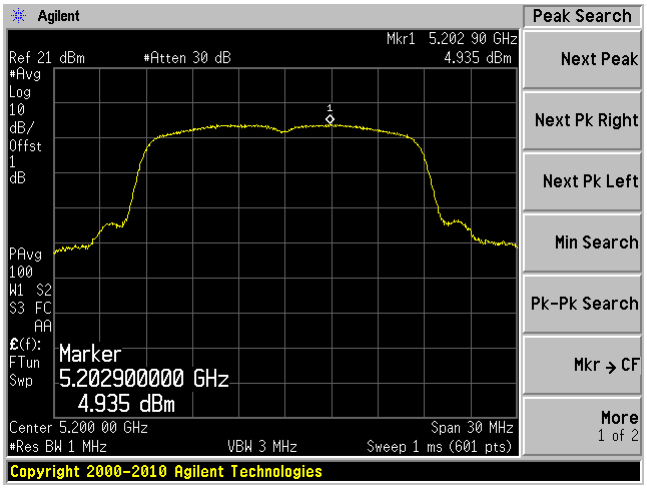
Low channel: 5180 MHz Chain 0



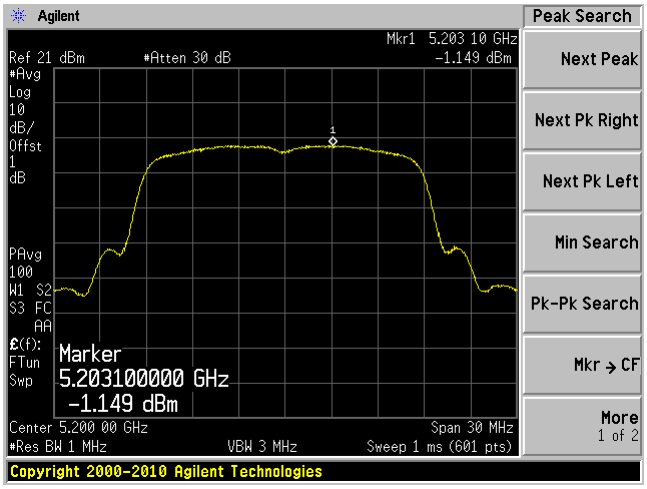
Low channel: 5180 MHz Chain 1



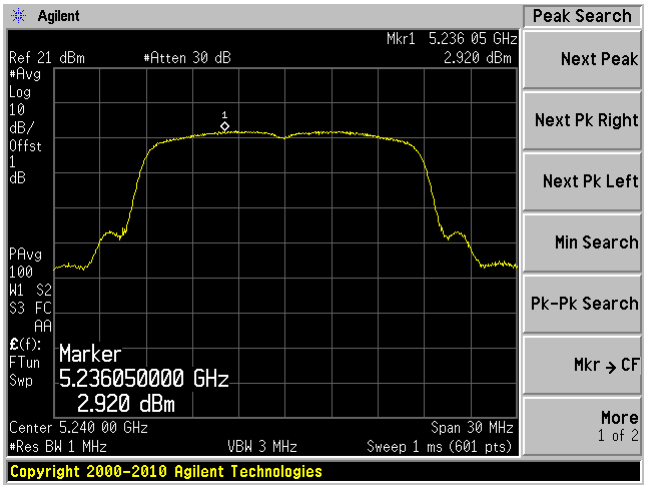
Middle channel: 5200 MHz Chain 0



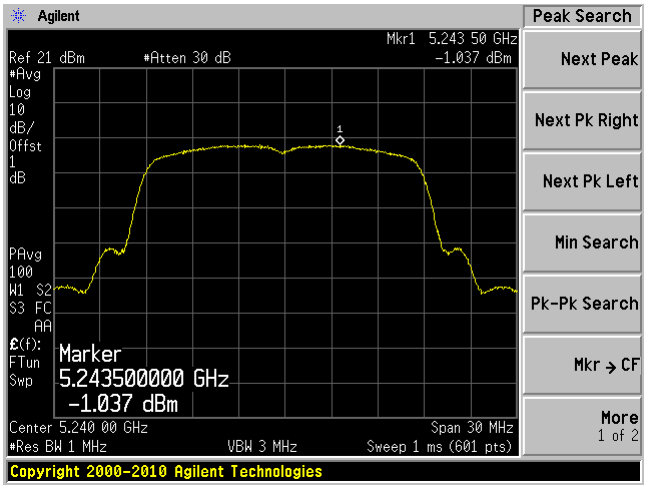
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

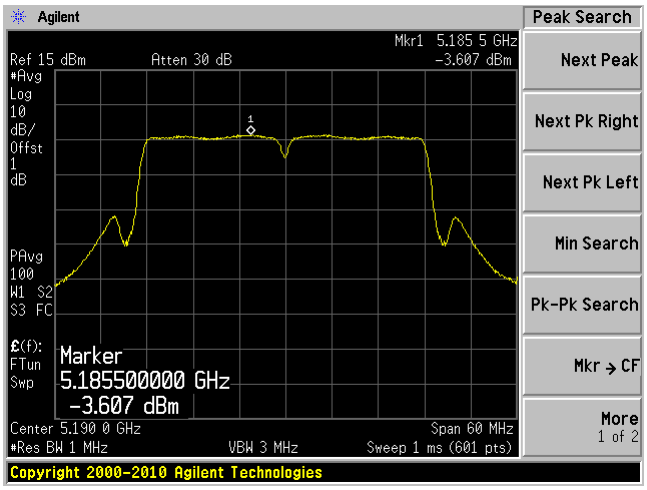


High channel: 5240 MHz Chain 1

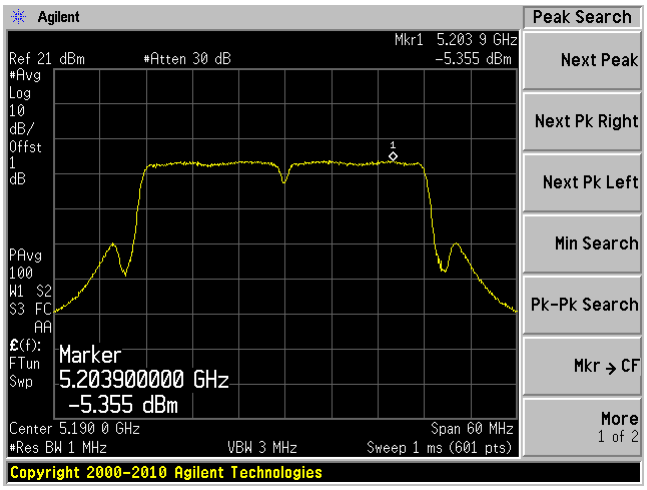


802.11n-HT40 mode

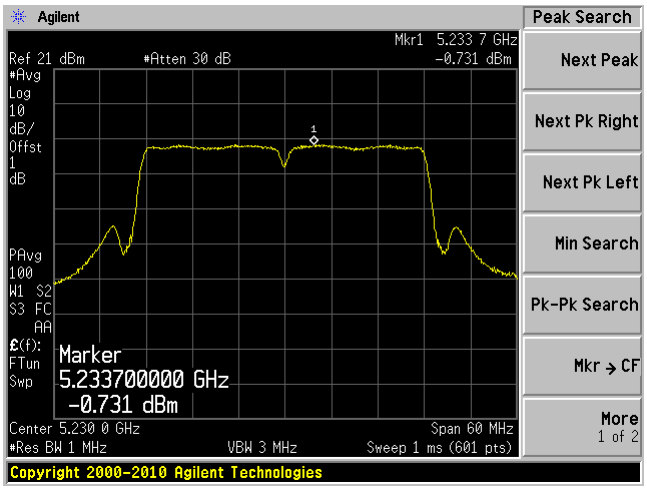
Low channel: 5190 MHz Chain 0



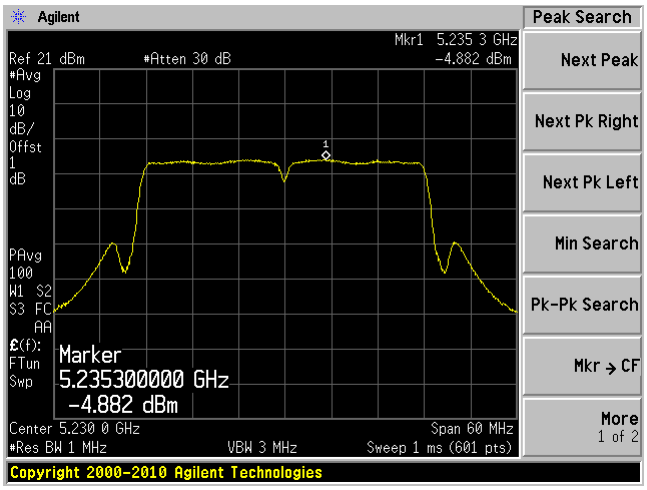
Low channel: 5190 MHz Chain 1



High channel: 5230 MHz Chain 0



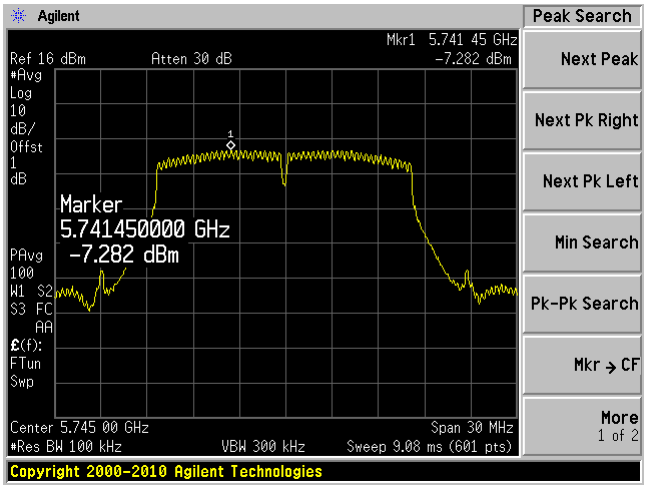
High channel: 5230 MHz Chain 1



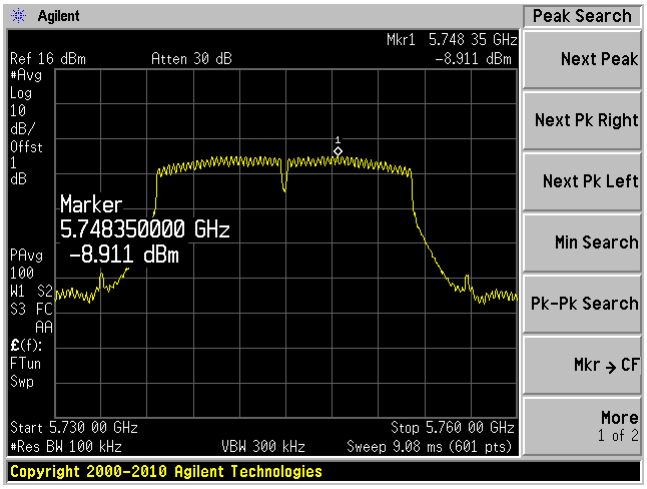
5.8 GHz Band

802.11a, Low Channel, 5745 MHz

Chain 0

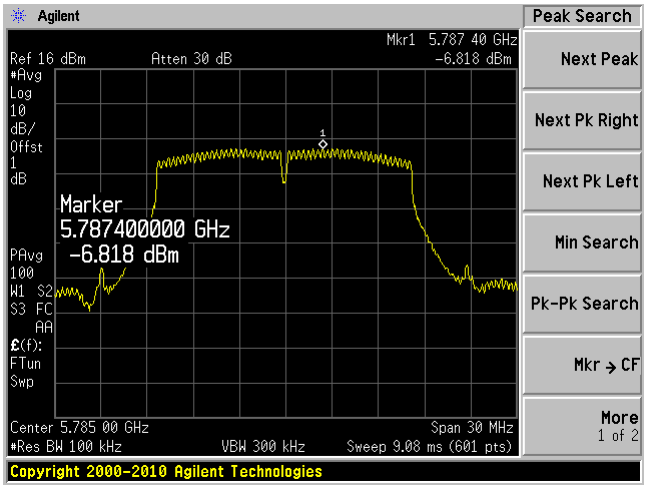


Chain 1

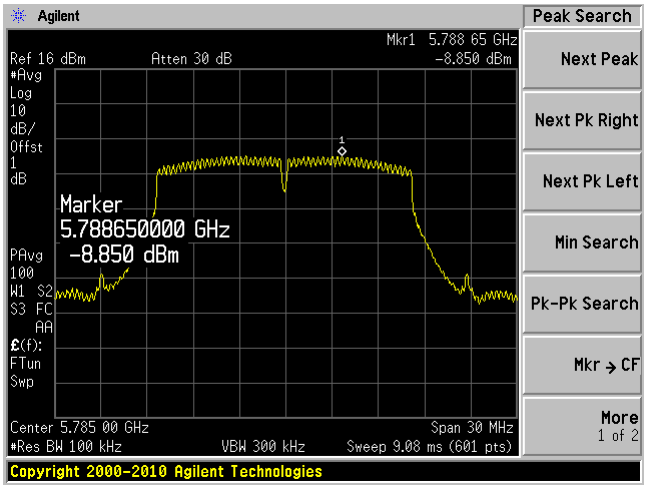


802.11a, Middle Channel, 5785 MHz

Chain 0

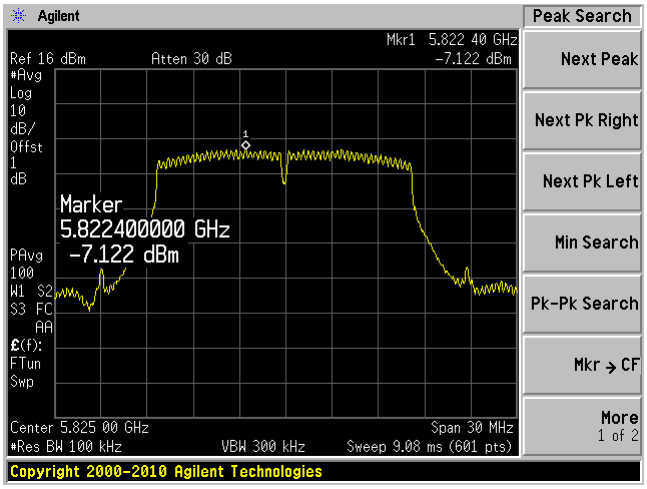


Chain 1

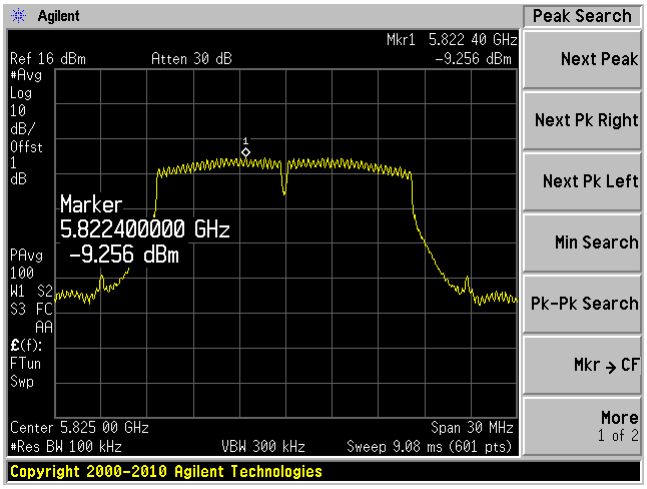


802.11a, High Channel, 5825 MHz

Chain 0

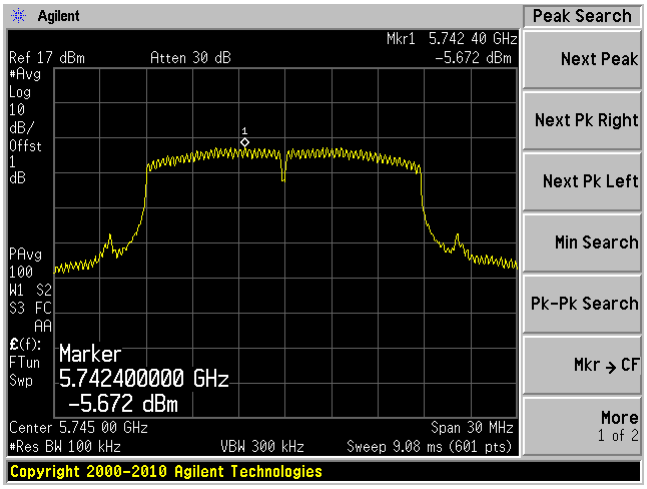


Chain 1

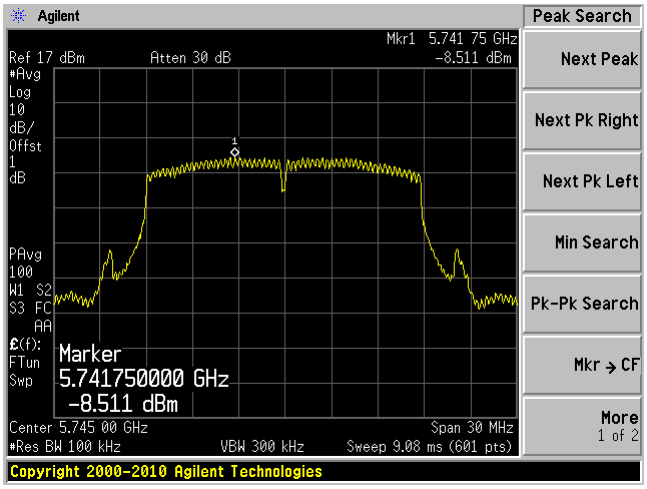


802.11n-HT 20, Low Channel 5745 MHz

Chain 0

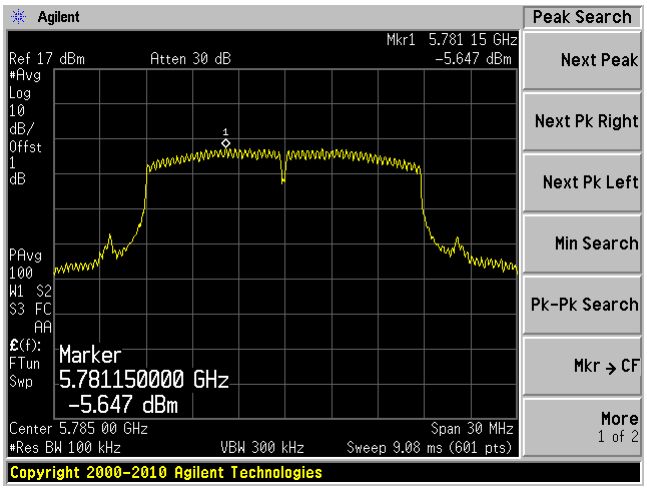


Chain 1

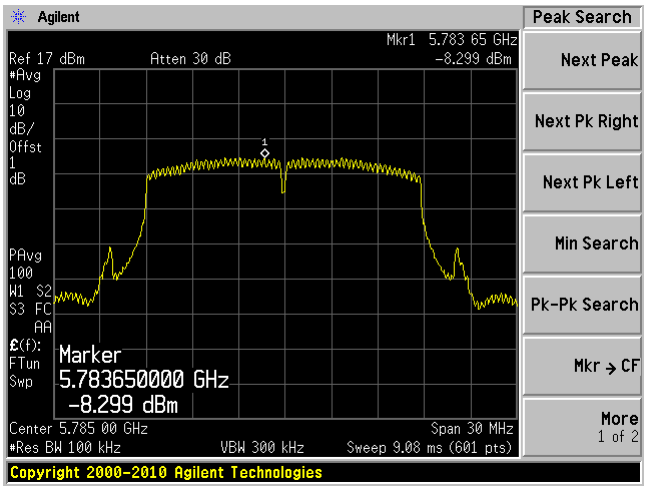


802.11n-HT20, Middle Channel 5785 MHz

Chain 0

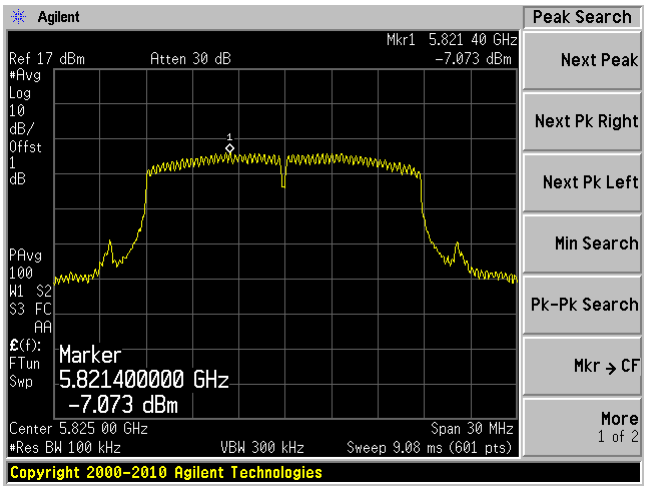


Chain 1

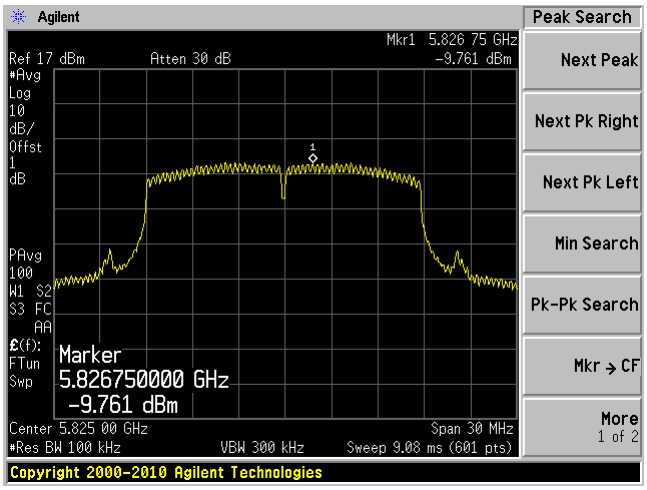


802.11n-HT20, High Channel, 5825 MHz

Chain 0

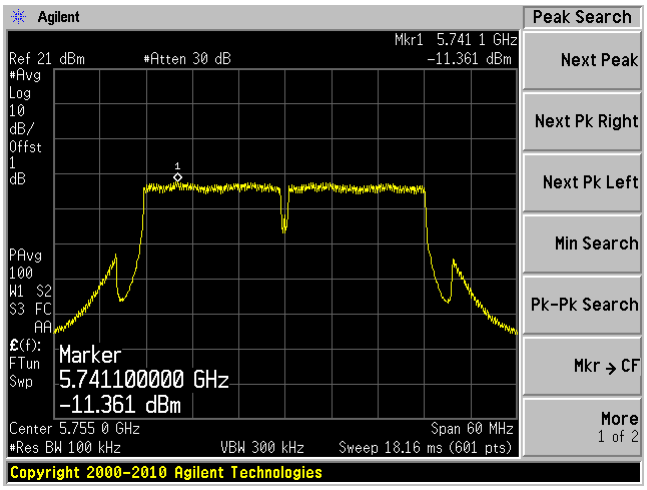


Chain 1

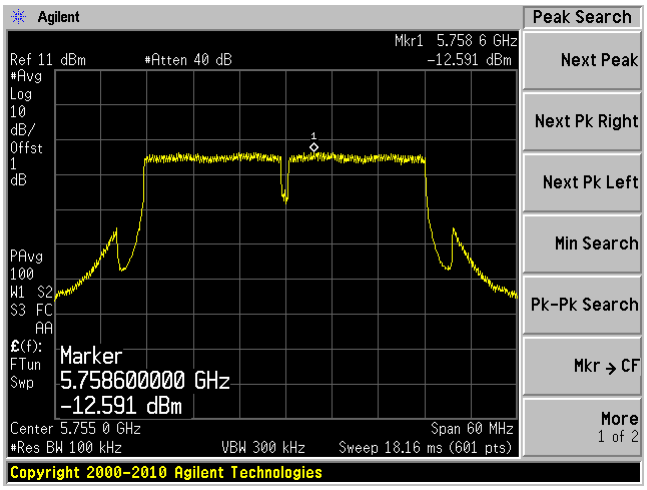


802.11n-HT40, Low Channel 5755 MHz

Chain 0

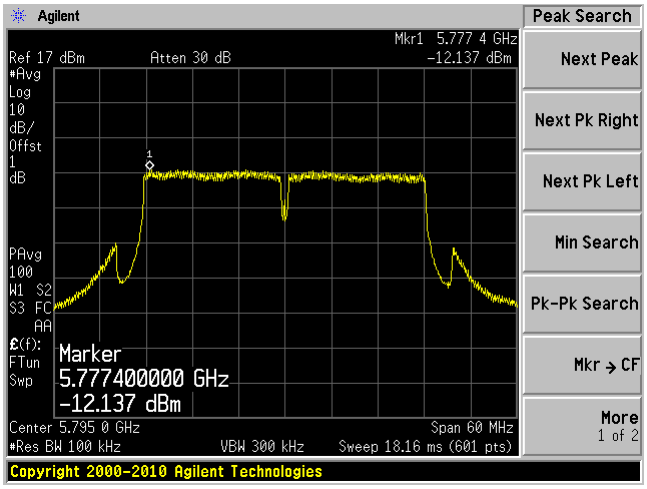


Chain 1



802.11n-HT40, High Channel 5795 MHz

Chain 0



Chain 1