FCC PART 15.407
IC RSS-210, ISSUE 8, DEC 2010
TEST AND MEASUREMENT REPORT

For

Ruckus Wireless, Inc.

350 West Java Drive,

Sunnyvale, CA 94089, USA

FCC ID: S9GZF7372E
IC: 5912A-ZF7372E

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

Test Engineers:	Lionel Lara
Report Number:	R1303042-407 W5356
Report Date:	2013-06-25
Reviewed By:	Quinn Jiang Test Engineer

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1303042-407 W5356	CIIPC Original Report	2013-06-25

1 General Description

1.1 Product Description for Equipment under Test (EUT)

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

1.2 Mechanical Description of EUT

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

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

1.3 Objective

This report is prepared on behalf of *Ruckus Wireless, Inc., in* accordance with FCC CFR47 §15.407 and IC RSS-210 Issue 8, Dec 2010.

This is Class II permissive change report of adding DFS bands (5250-5350 MHz and 5470-5725 MHz). The objective is to determine compliance with FCC/IC rules for Antenna Requirments, AC Line Conducted Emissions, Occupied Bandwidth, Maximum Peak Output Power, Power Spectral Density, Radiated and Conducted Spurious Emissions, and Band Edge.

1.4 Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS with FCC ID: S9GZF7372E, IC: 5912A-ZF7372E

1.5 Test Methodology

FCC CFR 47 Part2, Part15.407 and IC RSS-210 Issue 8, Dec 2010.

1.6 Measurement Uncertainty

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

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

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

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

The test site at BACL Corp. has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997, and Article 8 of the VCCI regulations on December 25, 1997. The test site also complies with the test methods and procedures set forth in CISPR 22:2008 §10.4 for measurements below 1 GHz and §10.6 for measurements above 1 GHz as well as ANSI C63.4-2003, ANSI C63.4-2009, TIA/EIA-603 & CISPR 24:2010.

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

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

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

2 EUT Test Configuration

2.1 Justification

The EUT was configured for testing according to ANSI C63.4-2003.

The EUT was tested in a testing mode to represent worst-case results during the final qualification test.

The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the average power, peak power and PPSD across all data rates bandwidths, and modulations.

2.2 EUT Exercise Software

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

2.3 Equipment Modifications

No modifications were made to the EUT.

2.4 Special Accessories

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

2.5 Local Support Equipment

Manufacturer	Description	Model	Serial Number
DELL	Laptop	Latitude E5420	-

2.6 EUT Internal Configuration

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

2.7 Interface Ports and Cables

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

2.8 Power Supply List and Details

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

3 Summary of Test Results

FCC & IC Rules	Description of Test	Result
FCC §15.407(f), §2.1091 IC RSS-102	RF Exposure	Compliant
FCC §15.203 IC RSS-Gen §7.1.2	Antenna Requirement	Compliant
FCC §15.207 IC RSS-Gen §7.2.4	AC Power Line Conducted Emissions	Compliant
FCC §15.209(a), 15.407(b) IC RSS-210 §A9.2	Spurious Radiated Emissions	Compliant
FCC §15.407(a) IC RSS-210 §A9.2	26 dB and 99% Emission Bandwidth	Compliant
FCC §407(a)(1) IC RSS-210 §A9.2	Peak Output Power Measurement	Compliant
FCC §2.1051, §15.407(b) IC RSS-210 §A9.2	Band Edges	Compliant
FCC §15.407(a)(1) IC RSS-210 §A9.2	Power Spectral Density	Compliant
FCC §15.407(a)(6)	Peak Excursion Ratio	Compliant
IC RSS-210 §2.3 IC RSS-Gen §6	Receiver Spurious Radiated Emissions	Compliant
FCC §2.1051, §15.407(b) IC RSS-210 §A9.2	Spurious Emissions at Antenna Terminals	Compliant
FCC §15.407(h) IC RSS-210 §A9.3	DFS	Note 1

- **Note 1:** *Please refer to DFS report, Report number: R1303042-DFS.*

4 FCC §15.407(f), §2.1091 & IC RSS-102 - RF Exposure

4.1 Applicable Standard

According to FCC §15.407(f) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for General Population/Uncontrolled Exposure

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

f = frequency in MHz
* = Plane-wave equivalent power density

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

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

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

Note: *f* is frequency in MHz
* = Power density limit is applicable at frequencies greater than 100 MHz

4.2 MPE Prediction

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

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

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

4.3 MPE Results

5250-5350 MHz, Dipole Antennas

Maximum peak output power at antenna input terminal (dBm):	21.67
Maximum peak output power at antenna input terminal (mW):	146.89
Prediction distance (cm):	20
Prediction frequency (MHz):	5320
Maximum Antenna Gain, typical (dBi):	3.7
Maximum Antenna Gain (numeric):	2.34
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.068
Power density of prediction frequency at 20.0 cm (W/m^2):	0.68
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

5250-5350 MHz, 5 dBi Patch Antenna

Maximum peak output power at antenna input terminal (dBm):	21.67
Maximum peak output power at antenna input terminal (mW):	146.89
Prediction distance (cm):	20
Prediction frequency (MHz):	5320
Maximum Antenna Gain, typical (dBi):	5
Maximum Antenna Gain (numeric):	3.16
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.092
Power density of prediction frequency at 20.0 cm (W/m^2):	0.92
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

5250-5350 MHz, 7.5 dBi Patch Antenna

Maximum peak output power at antenna input terminal (dBm):	20.99
Maximum peak output power at antenna input terminal (mW):	125.60
Prediction distance (cm):	20
Prediction frequency (MHz):	5270
Maximum Antenna Gain, typical (dBi):	7.5
Maximum Antenna Gain (numeric):	5.62
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.141
Power density of prediction frequency at 20.0 cm (W/m^2):	1.41
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

5470-5725 MHz, Dipole Antennas

Maximum peak output power at antenna input terminal (dBm):	20.77
Maximum peak output power at antenna input terminal (mW):	119.40
Prediction distance (cm):	20
Prediction frequency (MHz):	5500
Maximum Antenna Gain, typical (dBi):	3.6
Maximum Antenna Gain (numeric):	2.29
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.054
Power density of prediction frequency at 20.0 cm (W/m^2):	0.54
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

5470-5725 MHz, 5 dBi Patch Antenna

Maximum peak output power at antenna input terminal (dBm):	20.77
Maximum peak output power at antenna input terminal (mW):	119.40
Prediction distance (cm):	20
Prediction frequency (MHz):	5500
Maximum Antenna Gain, typical (dBi):	5
Maximum Antenna Gain (numeric):	3.16
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.075
Power density of prediction frequency at 20.0 cm (W/m^2):	0.75
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

5470-5725 MHz, 7.5 dBi Patch Antenna

Maximum peak output power at antenna input terminal (dBm):	20.77
Maximum peak output power at antenna input terminal (mW):	119.40
Prediction distance (cm):	20
Prediction frequency (MHz):	5500
Maximum Antenna Gain, typical (dBi):	7.5
Maximum Antenna Gain (numeric):	5.62
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.134
Power density of prediction frequency at 20.0 cm (W/m^2):	1.34
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

The device meets FCC/IC MPE requirement for uncontrolled exposure environment at 20 cm distance.

5 FCC §15.203 & IC RSS-Gen §7.1.2 – Antenna Requirements

5.1 Applicable Standard

According to FCC §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to FCC §15.247 (b)(4), if transmitting antennas of directional gain greater than 6 dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

As per IC RSS-Gen §7.1.2: Transmitter Antenna:

A transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest-gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type and having equal or lesser gain as an antenna that had been successfully tested for certification with the transmitter, will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter.
When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power before using the power limits specified in RSS-210 or RSS-310 for devices of RF output powers of 10 milliwatts or less. For devices of output powers greater than 10 milliwatts, except devices subject to RSS-210 Annex 8 (Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands) or RSS-210 Annex 9 (Local Area Network Devices), the total antenna gain shall be added to the measured RF output power before using the specified power limits. For devices subject to RSS-210 Annex 8 or Annex 9, the antenna gain shall not be added.

5.2 Antenna List

Manufacturers	Models/Name	Antenna Gain (dBi)
Laird Technologies, Inc.	WTS2450-RPSMA/ MAF94110	W53 = 3.7; W56 = 3.6
Mars Antennas & RF Systems Ltd.	Dual Band Small Sector Antenna 120º	2 X 5
Mars Antennas & RF Systems Ltd.	Dual Band Small Sector Antenna 60º	2 X 7.5

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

The dipole antennas and 5 dBi patch antenna consist of SMA connectors with less than 6 dBi gain; therefore, it complies with the antenna requirement. Please refer to the internal photos.

The 7.5 dBi patch antenna consist of N type connectors with greater than 6 dBi gain; therefore, the output power and power spectral density limit shall be reduced by 2 dB to comply with the antenna requirement. Please refer to the internal photos.

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

6.1 Applicable Standards

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

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 Note 1	56 to 46 Note 1
0.5-5	56	46
5-30	60	50

Note 1 Decreases with the logarithm of the frequency.

6.2 Test Setup

The measurement was performed at shield room, using the setup per ANSI C63.4-2003 measurement procedure. The specification used was FCC §15.207 and IC RSS-Gen §7.2.4 limits.

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

The AC/DC power adapter of the test support board was connected with LISN-1 which provided 120 V / 60 Hz AC power.

6.3 Test Procedure

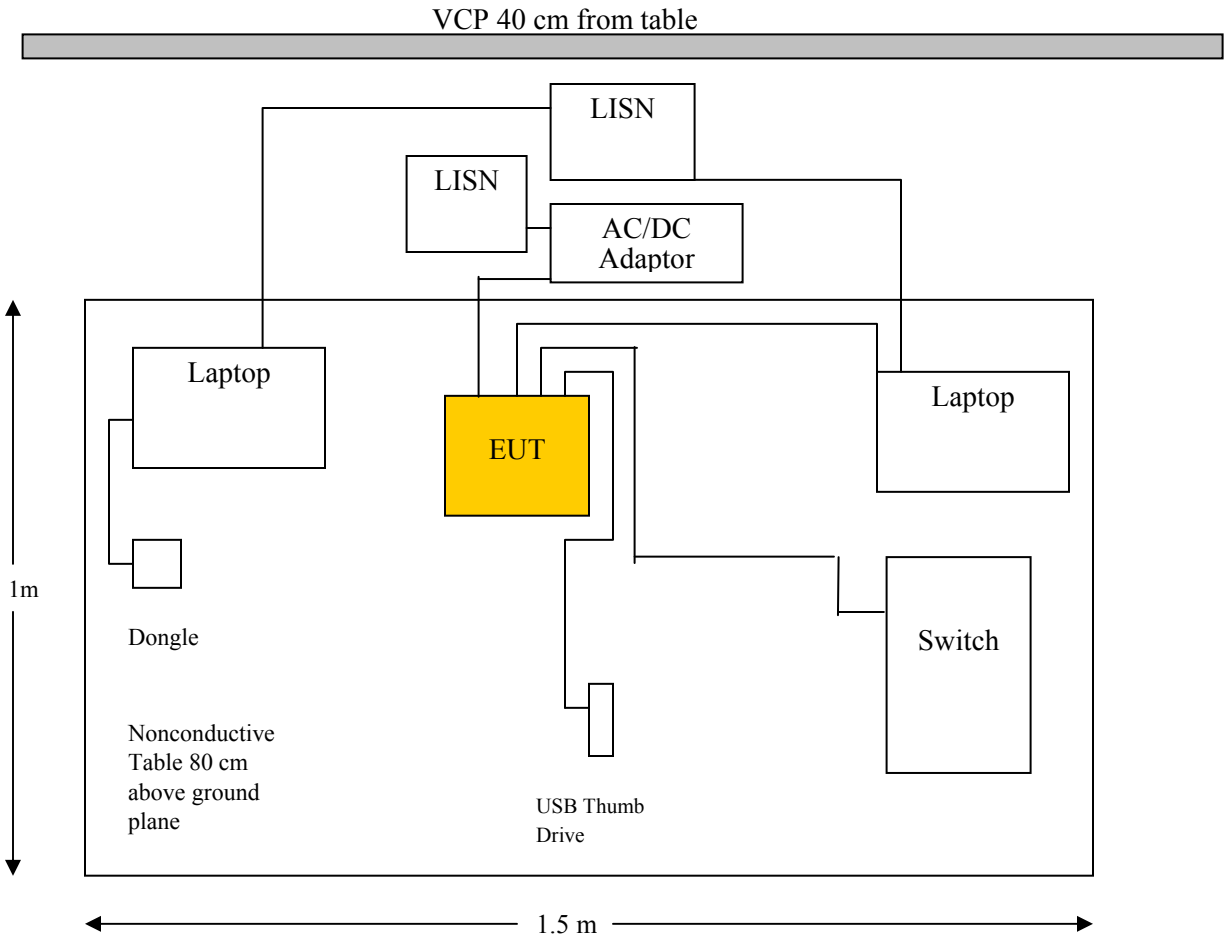
During the conducted emissions test, the power cord of the EUT host system was connected to the mains outlet of the LISN-2.

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

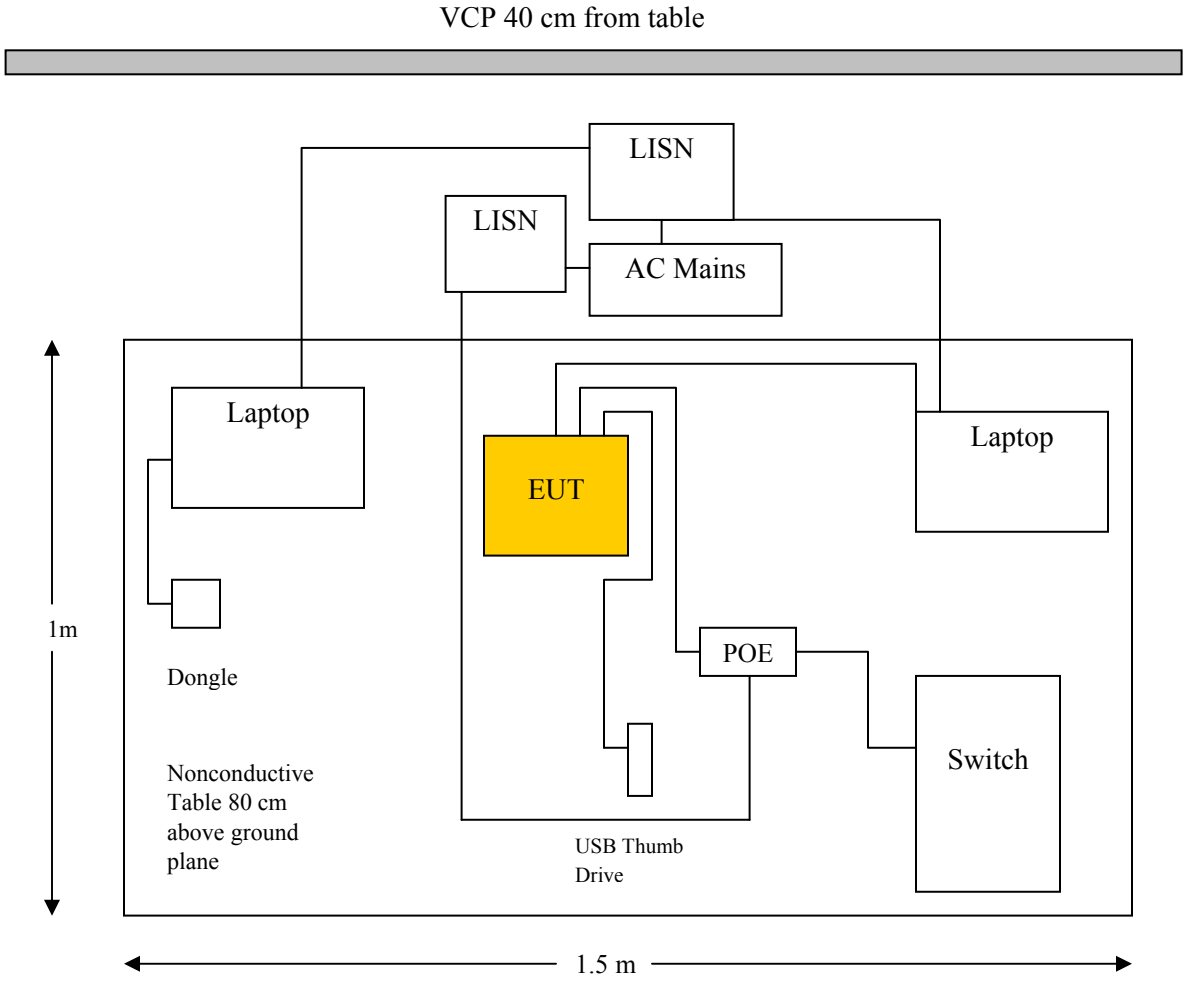
All data was recorded in the peak detection mode, quasi-peak and average. Quasi-Peak readings are distinguished with a “QP.” Average readings are distinguished with an “Ave”.

6.4 Test Setup Block Diagram

AC/DC Adaptor



POE


VCP 40 cm from table
LISN
LISN
AC Mains
Laptop
EUT
Laptop
1m
Dongle
POE
Switch
Nonconductive
Table 80 cm
above ground
plane
USB Thumb
Drive
1.5 m

6.5 Corrected Amplitude & Margin Calculation

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

CA = Ai + AF + CL + Atten – Ga

For example, a corrected amplitude of 40.3 dBuV/m = Indicated Reading (32.5 dBuV) + Antenna Factor (+23.5dB) + Cable Loss (3.7 dB) + Attenuator (10 dB) - Amplifier Gain (29.4 dB)

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

Margin = Corrected Amplitude - Limit

6.6 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100044	2012-04-18	1 year
Solar Electronics	LISN	9252-R-24-BNC	511205	2012-06-25	1 year
TTE	Filter, High Pass	H9962-150K-50-21378	K7133	2012-05-30	1 year

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

6.7 Test Environmental Conditions

Temperature:	21 ºC
Relative Humidity:	51%
ATM Pressure:	101.42 kPa

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

6.8 Summary of Test Results

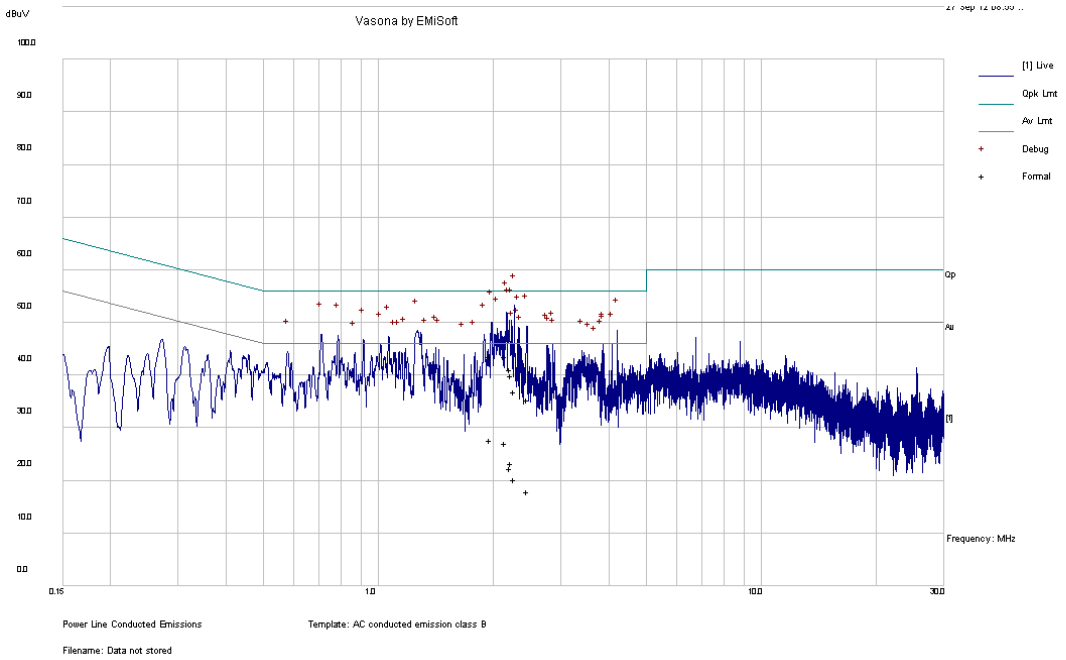
According to the recorded data in following table, the EUT complied with the FCC/IC standard's conducted emissions limits, with the margin reading of:

Connection: 120 V/60 Hz, AC			
Margin (dB)	**Frequency (MHz)**	**Conductor (Line/Neutral)**	**Range (MHz)**
-10.1	2.033856	Neutral	0.15-30

6.9 Conducted Emissions Test Plots and Data

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

120 V, 60 Hz – Line, AC/DC Adaptor



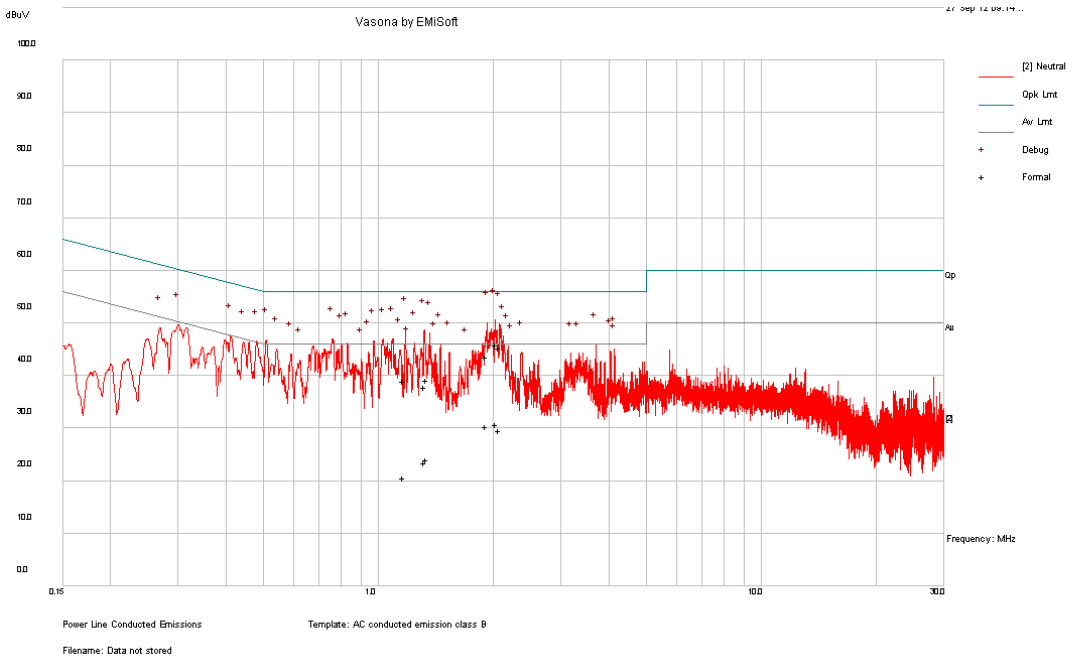
Quasi-Peak Measurements

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

Average Measurements

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

120 V, 60 Hz – Neutral, AC/DC Adaptor



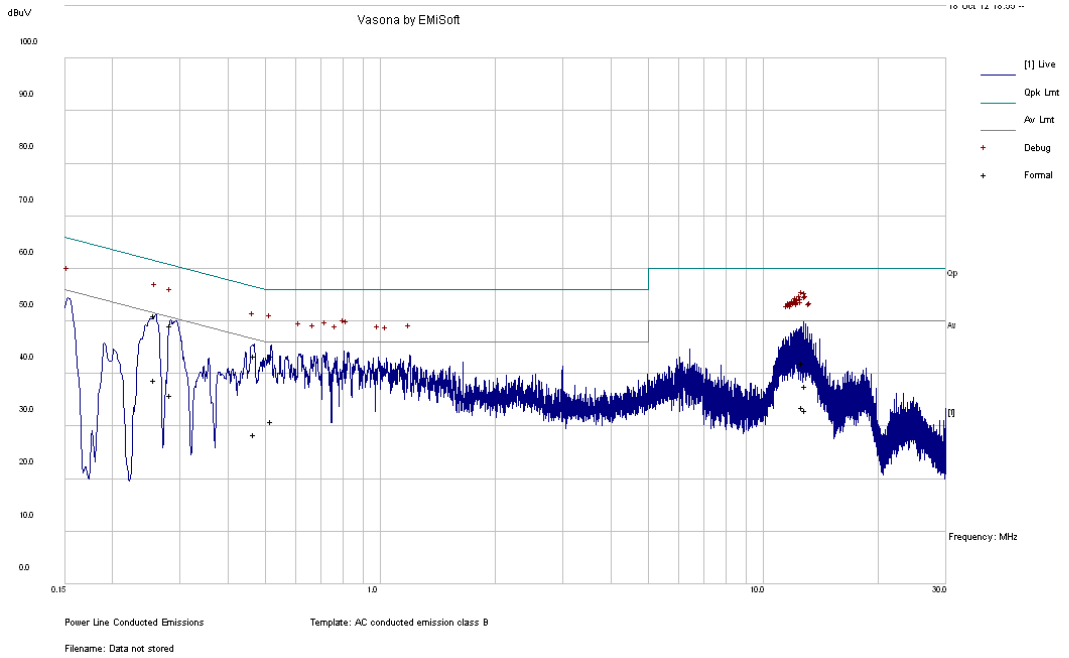
Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)
2.033856	45.9	Neutral	56	-10.1
2.069532	45.25	Neutral	56	-10.75
1.913054	43.57	Neutral	56	-12.43
1.342622	39.21	Neutral	56	-16.79
1.168757	39.01	Neutral	56	-16.99
1.324043	37.93	Neutral	56	-18.07

Average Measurements

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)
2.033856	30.74	Neutral	46	-15.26
1.913054	30.3	Neutral	46	-15.7
2.069532	29.64	Neutral	46	-16.36
1.342622	24.12	Neutral	46	-21.88
1.324043	23.38	Neutral	46	-22.62
1.168757	20.62	Neutral	46	-25.38

120 V, 60 Hz – Line, POE



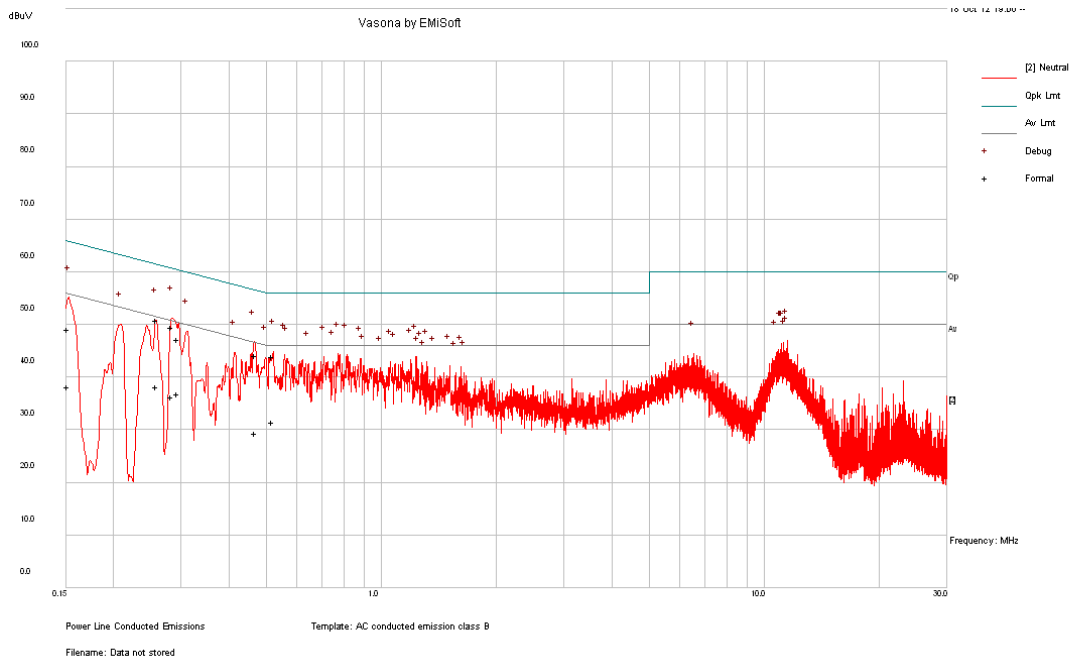
Quasi-Peak Measurements

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

Average Measurements

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)
0.258441	38.73	Line	51.48	-12.75
0.283167	36.02	Line	50.72	-14.7
0.519939	31.03	Line	46	-14.97
12.69896	33.58	Line	50	-16.42
12.89667	33.06	Line	50	-16.94
0.468858	28.48	Line	46.53	-18.05

120 V, 60 Hz – Neutral, POE



Quasi-Peak Measurements

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

Average Measurements

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

7 FCC §15.209, §15.407(b) & IC RSS-210 §A9.2 - Spurious Radiated Emissions

7.1 Applicable Standard

FCC §15.205, §15.209, §15.407 (b).
IC RSS-210, §2.2, §A9.2, RSS-Gen §7.2.2

7.2 Test Setup

The radiated emissions tests were performed in the 5-meter Chamber, using the setup in accordance with ANSI C63.4-2003. The specification used was the FCC 15C/15E and IC RSS-210/RSS-Gen limits.

The spacing between the peripherals was 10 centimeters.

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

7.3 Test Procedure

For the radiated emissions test, the EUT host, and all support equipment power cords was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 meter, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

The spectrum analyzer or receiver is set as:

Below 1000 MHz:

RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000 MHz:

(1) Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto
(2) Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

7.4 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

7.5 Test Equipment List and Details

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

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

7.6 Test Environmental Conditions

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

The testing was performed by Lionel Lara from 2013-03-05 to 2013-04-29 at 5 meter 3.

7.7 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC Part 15, Subpart C, section 15.205, 15.209 and 15.407 & IC RSS-210, RSS-Gen standard's radiated emissions limits, and had the worst margin of:

5250-5350 MHz

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Mode, Channel, Range, Antenna**
-1.47	45.77	Vertical	Co-location, 30-1000 MHz, Patch 7.5 dBi
-0.51	5350	Horizontal	802.11n HT40, High, 1-40GHz, Patch 5 dBi

5470-5725 MHz

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Mode, Channel, Range, Antenna**
-1.41	45.77	Vertical	Co-location, 30-1000 MHz, Patch 7.5 dBi
-0.47	5460	Vertical	802.11n HT40, Low, 1-40GHz, Patch 5 dBi

7.8 Radiated Emissions Test Result Data

1) Radiated Emission at 3 meters, 5250-5350 MHz Band, Dipole Antennas

802.11a Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
499.965	33.71	165	H	272	46	-12.29	QP
374.989	28.48	100	H	332	46	-17.52	QP
57.019	34.03	182	V	236	40	-5.97	QP

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

Above 1 GHz:

802.11a Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5260 MHz, measured at 3 meters											
5260	71.41	73	103	V	34.49	4.59	0	110.49	Fund.	-	Peak
5260	66.06	356	110	H	34.49	4.59	0	105.14	Fund.	-	Peak
5260	60.19	73	103	V	34.49	4.59	0	99.27	Fund.	-	Ave
5260	54.91	356	110	H	34.49	4.59	0	93.99	Fund.	-	Ave
10520	31.33	0	100	V	38.34	7	26.9	49.77	74	-24.23	Peak
10520	31.33	0	100	H	38.34	7	26.9	49.77	74	-24.23	Peak
10520	16.9	0	100	V	38.34	7	26.9	35.34	54	-18.66	Ave
10520	16.9	0	100	H	38.34	7	26.9	35.34	54	-18.66	Ave
15780	33.24	0	100	V	37.93	8.35	26.01	53.51	74	-20.49	Peak
15780	33.24	0	100	H	37.93	8.35	26.01	53.51	74	-20.49	Peak
15780	18.59	0	100	V	37.93	8.35	26.01	38.86	54	-15.14	Ave
15780	18.59	0	100	H	37.93	8.35	26.01	38.86	54	-15.14	Ave
21040	32.1	0	100	V	34.6	9.36	29	47.06	74	-26.94	Peak
21040	32.1	0	100	H	34.6	9.36	29	47.06	74	-26.94	Peak
21040	17.57	0	100	V	34.6	9.36	29	32.53	54	-21.47	Ave
21040	17.57	0	100	H	34.6	9.36	29	32.53	54	-21.47	Ave

Note: All emissions are at noise floor level.

802.11a Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5280 MHz, measured at 3 meters											
5280	71.76	74	102	V	34.49	4.59	0	110.84	Fund.	-	Peak
5280	66.64	359	108	H	34.49	4.59	0	105.72	Fund.	-	Peak
5280	60.81	74	102	V	34.49	4.59	0	99.89	Fund.	-	Ave
5280	55.46	359	108	H	34.49	4.59	0	94.54	Fund.	-	Ave
10560	31.72	0	100	V	38.42	7.05	26.98	50.21	74	-23.79	Peak
10560	31.72	0	100	H	38.42	7.05	26.98	50.21	74	-23.79	Peak
10560	16.55	0	100	V	38.42	7.05	26.98	35.04	54	-18.96	Ave
10560	16.55	0	100	H	38.42	7.05	26.98	35.04	54	-18.96	Ave
15840	33.48	0	100	V	37.93	8.44	26.04	53.81	74	-20.19	Peak
15840	33.48	0	100	H	37.93	8.44	26.04	53.81	74	-20.19	Peak
15840	18.36	0	100	V	37.93	8.44	26.04	38.69	54	-15.31	Ave
15840	18.36	0	100	H	37.93	8.44	26.04	38.69	54	-15.31	Ave
21120	32.95	0	100	V	34.6	9.36	29	47.91	74	-26.09	Peak
21120	32.95	0	100	H	34.6	9.36	29	47.91	74	-26.09	Peak
21120	18.16	0	100	V	34.6	9.36	29	33.12	54	-20.88	Ave
21120	18.16	0	100	H	34.6	9.36	29	33.12	54	-20.88	Ave

Note: All emissions are at noise floor level.

802.11a Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5320 MHz, measured at 3 meters											
5320	73.46	54	100	V	34.49	4.59	0	112.54	Fund.	-	Peak
5320	65.83	75	100	H	34.49	4.59	0	104.91	Fund.	-	Peak
5320	62.08	54	100	V	34.49	4.59	0	101.16	Fund.	-	Ave
5320	55.02	75	100	H	34.49	4.59	0	94.1	Fund.	-	Ave
10640	31.64	0	100	V	38.42	7.07	26.92	50.21	74	-23.79	Peak
10640	31.64	0	100	H	38.42	7.07	26.92	50.21	74	-23.79	Peak
10640	16.57	0	100	V	38.42	7.07	26.92	35.14	54	-18.86	Ave
10640	16.57	0	100	H	38.42	7.07	26.92	35.14	54	-18.86	Ave
15960	33.37	0	100	V	37.87	8.39	26.05	53.58	74	-20.42	Peak
15960	33.37	0	100	H	37.87	8.39	26.05	53.58	74	-20.42	Peak
15960	18.34	0	100	V	37.87	8.39	26.05	38.55	54	-15.45	Ave
15960	18.34	0	100	H	37.87	8.39	26.05	38.55	54	-15.45	Ave
21280	32.89	0	100	V	34.6	9.4	29	47.89	74	-26.11	Peak
21280	32.89	0	100	H	34.6	9.4	29	47.89	74	-26.11	Peak
21280	18.15	0	100	V	34.6	9.4	29	33.15	54	-20.85	Ave
21280	18.15	0	100	H	34.6	9.4	29	33.15	54	-20.85	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
499.965	33.87	165	H	272	46	-12.13	QP
374.99	28.75	99	H	332	46	-17.25	QP
57.02	33.49	234	V	235	40	-6.51	QP

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

Above 1 GHz:

802.11n HT20 Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5260 MHz, measured at 3 meters											
5260	71.29	74	102	V	34.49	4.59	0	110.37	Fund.	-	Peak
5260	66.68	355	110	H	34.49	4.59	0	105.76	Fund.	-	Peak
5260	60.14	74	102	V	34.49	4.59	0	99.22	Fund.	-	Ave
5260	54.52	355	110	H	34.49	4.59	0	93.6	Fund.	-	Ave
10520	31.41	0	100	V	38.34	7	26.9	49.85	74	-24.15	Peak
10520	31.41	0	100	H	38.34	7	26.9	49.85	74	-24.15	Peak
10520	16.8	0	100	V	38.34	7	26.9	35.24	54	-18.76	Ave
10520	16.8	0	100	H	38.34	7	26.9	35.24	54	-18.76	Ave
15780	33.43	0	100	V	37.93	8.35	26.01	53.7	74	-20.3	Peak
15780	33.43	0	100	H	37.93	8.35	26.01	53.7	74	-20.3	Peak
15780	18.33	0	100	V	37.93	8.35	26.01	38.6	54	-15.4	Ave
15780	18.33	0	100	H	37.93	8.35	26.01	38.6	54	-15.4	Ave
21040	32.16	0	100	V	34.6	9.36	29	47.12	74	-26.88	Peak
21040	32.16	0	100	H	34.6	9.36	29	47.12	74	-26.88	Peak
21040	17.56	0	100	V	34.6	9.36	29	32.52	54	-21.48	Ave
21040	17.56	0	100	H	34.6	9.36	29	32.52	54	-21.48	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5280 MHz, measured at 3 meters											
5280	70.74	74	100	V	34.49	4.59	0	109.82	Fund.	-	Peak
5280	65.28	355	111	H	34.49	4.59	0	104.36	Fund.	-	Peak
5280	59.74	74	100	V	34.49	4.59	0	98.82	Fund.	-	Ave
5280	54.19	355	111	H	34.49	4.59	0	93.27	Fund.	-	Ave
10560	31.82	0	100	V	38.42	7.05	26.98	50.31	74	-23.69	Peak
10560	31.82	0	100	H	38.42	7.05	26.98	50.31	74	-23.69	Peak
10560	16.61	0	100	V	38.42	7.05	26.98	35.1	54	-18.9	Ave
10560	16.61	0	100	H	38.42	7.05	26.98	35.1	54	-18.9	Ave
15840	33.44	0	100	V	37.93	8.44	26.04	53.77	74	-20.23	Peak
15840	33.44	0	100	H	37.93	8.44	26.04	53.77	74	-20.23	Peak
15840	18.38	0	100	V	37.93	8.44	26.04	38.71	54	-15.29	Ave
15840	18.38	0	100	H	37.93	8.44	26.04	38.71	54	-15.29	Ave
21120	32.71	0	100	V	34.6	9.36	29	47.67	74	-26.33	Peak
21120	32.71	0	100	H	34.6	9.36	29	47.67	74	-26.33	Peak
21120	18.12	0	100	V	34.6	9.36	29	33.08	54	-20.92	Ave
21120	18.12	0	100	H	34.6	9.36	29	33.08	54	-20.92	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5320 MHz, measured at 3 meters											
5320	71.29	74	102	V	34.49	4.59	0	110.37	Fund.	-	Peak
5320	66.68	355	110	H	34.49	4.59	0	105.76	Fund.	-	Peak
5320	60.14	74	102	V	34.49	4.59	0	99.22	Fund.	-	Ave
5320	54.52	355	110	H	34.49	4.59	0	93.6	Fund.	-	Ave
10640	31.44	0	100	V	38.42	7.07	26.92	50.01	74	-23.99	Peak
10640	31.44	0	100	H	38.42	7.07	26.92	50.01	74	-23.99	Peak
10640	16.62	0	100	V	38.42	7.07	26.92	35.19	54	-18.81	Ave
10640	16.62	0	100	H	38.42	7.07	26.92	35.19	54	-18.81	Ave
15960	32.98	0	100	V	37.87	8.39	26.05	53.19	74	-20.81	Peak
15960	32.98	0	100	H	37.87	8.39	26.05	53.19	74	-20.81	Peak
15960	18.34	0	100	V	37.87	8.39	26.05	38.55	54	-15.45	Ave
15960	18.34	0	100	H	37.87	8.39	26.05	38.55	54	-15.45	Ave
21280	33.31	0	100	V	34.6	9.4	29	48.31	74	-25.69	Peak
21280	33.31	0	100	H	34.6	9.4	29	48.31	74	-25.69	Peak
21280	18.13	0	100	V	34.6	9.4	29	33.13	54	-20.87	Ave
21280	18.13	0	100	H	34.6	9.4	29	33.13	54	-20.87	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
499.965	33.7	165	H	272	46	-12.3	QP
374.99	28.63	99	H	332	46	-17.37	QP
57.02	32.97	234	V	235	40	-7.03	QP

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

Above 1 GHz:

802.11n HT40 Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5270 MHz, measured at 3 meters											
5270	69.4	73	103	V	34.49	4.52	0	108.41	Fund.	-	Peak
5270	63.3	355	106	H	34.49	4.52	0	102.31	Fund.	-	Peak
5270	57.89	73	103	V	34.49	4.52	0	96.9	Fund.	-	Ave
5270	51.6	355	106	H	34.49	4.52	0	90.61	Fund.	-	Ave
10540	31.49	0	100	V	38.34	7	26.9	49.93	74	-24.07	Peak
10540	31.49	0	100	H	38.34	7	26.9	49.93	74	-24.07	Peak
10540	16.44	0	100	V	38.34	7	26.9	34.88	54	-19.12	Ave
10540	16.44	0	100	H	38.34	7	26.9	34.88	54	-19.12	Ave
15810	33.43	0	100	V	37.93	8.35	26.01	53.7	74	-20.3	Peak
15810	33.43	0	100	H	37.93	8.35	26.01	53.7	74	-20.3	Peak
15810	18.39	0	100	V	37.93	8.35	26.01	38.66	54	-15.34	Ave
15810	18.39	0	100	H	37.93	8.35	26.01	38.66	54	-15.34	Ave
21080	32.82	0	100	V	34.6	9.36	29	47.78	74	-26.22	Peak
21080	32.82	0	100	H	34.6	9.36	29	47.78	74	-26.22	Peak
21080	18.13	0	100	V	34.6	9.36	29	33.09	54	-20.91	Ave
21080	18.13	0	100	H	34.6	9.36	29	33.09	54	-20.91	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5310 MHz, measured at 3 meters											
5310	66.58	94	100	V	34.49	4.52	0	105.59	Fund.	-	Peak
5310	61.36	75	100	H	34.49	4.52	0	100.37	Fund.	-	Peak
5310	55.38	94	100	V	34.49	4.52	0	94.39	Fund.	-	Ave
5310	49.78	75	100	H	34.49	4.52	0	88.79	Fund.	-	Ave
10620	31.2	0	100	V	38.42	7.07	26.92	49.77	74	-24.23	Peak
10620	31.2	0	100	H	38.42	7.07	26.92	49.77	74	-24.23	Peak
10620	16.61	0	100	V	38.42	7.07	26.92	35.18	54	-18.82	Ave
10620	16.61	0	100	H	38.42	7.07	26.92	35.18	54	-18.82	Ave
15930	33.21	0	100	V	37.87	8.39	26.05	53.42	74	-20.58	Peak
15930	33.21	0	100	H	37.87	8.39	26.05	53.42	74	-20.58	Peak
15930	18.47	0	100	V	37.87	8.39	26.05	38.68	54	-15.32	Ave
15930	18.47	0	100	H	37.87	8.39	26.05	38.68	54	-15.32	Ave
21240	32.7	0	100	V	34.6	9.4	29	47.7	74	-26.3	Peak
21240	32.7	0	100	H	34.6	9.4	29	47.7	74	-26.3	Peak
21240	18.25	0	100	V	34.6	9.4	29	33.25	54	-20.75	Ave
21240	18.25	0	100	H	34.6	9.4	29	33.25	54	-20.75	Ave

Note: All emissions are at noise floor level.

2) Restricted Band Edges, 5250-5350 MHz Band, Dipole Antennas

802.11a Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5320 MHz, measured at 3 meters											
5350	28.07	54	100	V	34.23	4.6	0	66.9	74	-7.1	Peak
5350	28.59	75	100	H	34.23	4.6	0	67.42	74	-6.58	Peak
5350	14.51	54	100	V	34.23	4.6	0	53.34	54	-0.66	Ave
5350	14.47	75	100	H	34.23	4.6	0	53.3	54	-0.7	Ave

802.11n HT20 Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5320 MHz, measured at 3 meters											
5350	28.39	54	100	V	34.23	4.6	0	67.22	74	-6.78	Peak
5350	28.42	74	100	H	34.23	4.6	0	67.25	74	-6.75	Peak
5350	14.59	54	100	V	34.23	4.6	0	53.42	54	-0.58	Ave
5350	14.45	74	100	H	34.23	4.6	0	53.28	54	-0.72	Ave

802.11n HT40 Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5310 MHz, measured at 3 meters											
5350	28.52	94	100	V	34.23	4.38	0	67.13	74	-6.87	Peak
5350	28.37	75	100	H	34.23	4.38	0	66.98	74	-7.02	Peak
5350	14.77	94	100	V	34.23	4.38	0	53.38	54	-0.62	Ave
5350	14.45	75	100	H	34.23	4.38	0	53.06	54	-0.94	Ave

3) Co-location with 2.4 GHz and 5 GHz, 5250-5350 MHz Band, Dipole Antennas

Worst Case: 2.4 GHz: 802.11b, 2412 MHz; 5.3 GHz: 802.11a, 5260 MHz

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
66.86	33.77	128	V	334	40	-6.23
374.991	34.13	100	V	329	46	-11.87
499.996	34.12	167	H	276	46	-11.88

Above 1 GHz:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
4824	41.46	94	100	V	33.46	4.06	27.7	51.28	74	-22.72	Peak
-[1]	-	-	-	-	-	-	-	-	-	-	-
4824	29.11	94	100	V	33.46	4.06	27.7	38.93	54	-15.07	Ave
-[1]	-	-	-	-	-	-	-	-	-	-	-

Note 1: All other emissions at noise floor level.

4) Radiated Emission at 3 meters, 5470-5725 MHz Band, Dipole Antennas

802.11a Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
499.965	34.09	165	H	272	46	-11.91	QP
374.99	28.46	99	H	332	46	-17.54	QP
57.02	33.03	234	V	235	40	-6.97	QP

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

Above 1 GHz:

802.11a Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
5500	73.37	29	100	V	34.24	4.57	0	112.18	Fund.	-	Peak
5500	65.67	75	100	H	34.24	4.57	0	104.48	Fund.	-	Peak
5500	60.45	29	100	V	34.24	4.57	0	99.26	Fund.	-	Ave
5500	54.49	75	100	H	34.24	4.57	0	93.3	Fund.	-	Ave
11000	30.9	0	100	V	38.38	7.36	26.92	49.72	74	-24.28	Peak
11000	30.9	0	100	H	38.38	7.36	26.92	49.72	74	-24.28	Peak
11000	16.66	0	100	V	38.38	7.36	26.92	35.48	54	-18.52	Ave
11000	16.66	0	100	H	38.38	7.36	26.92	35.48	54	-18.52	Ave
16500	33.15	0	100	V	38.67	8.5	26.1	54.22	74	-19.78	Peak
16500	33.15	0	100	H	38.67	8.5	26.1	54.22	74	-19.78	Peak
16500	17.97	0	100	V	38.67	8.5	26.1	39.04	54	-14.96	Ave
16500	17.97	0	100	H	38.67	8.5	26.1	39.04	54	-14.96	Ave
22000	31.04	0	100	V	34.9	9.55	29.1	46.39	74	-27.61	Peak
22000	31.04	0	100	H	34.9	9.55	29.1	46.39	74	-27.61	Peak
22000	16.71	0	100	V	34.9	9.55	29.1	32.06	54	-21.94	Ave
22000	16.71	0	100	H	34.9	9.55	29.1	32.06	54	-21.94	Ave

Note: All emissions are at noise floor level.

802.11a Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5580 MHz, measured at 3 meters											
5580	69.84	351	100	V	34.24	4.57	0	108.65	Fund.	-	Peak
5580	62.38	2	100	H	34.24	4.57	0	101.19	Fund.	-	Peak
5580	58.2	351	100	V	34.24	4.57	0	97.01	Fund.	-	Ave
5580	50.09	2	100	H	34.24	4.57	0	88.9	Fund.	-	Ave
11160	31.25	0	100	V	38.7	7.52	26.94	50.53	74	-23.47	Peak
11160	31.25	0	100	H	38.7	7.52	26.94	50.53	74	-23.47	Peak
11160	16.63	0	100	V	38.7	7.52	26.94	35.91	54	-18.09	Ave
11160	16.63	0	100	H	38.7	7.52	26.94	35.91	54	-18.09	Ave
16740	32.73	0	100	V	39.84	8.63	26.12	55.08	74	-18.92	Peak
16740	32.73	0	100	H	39.84	8.63	26.12	55.08	74	-18.92	Peak
16740	17.61	0	100	V	39.84	8.63	26.12	39.96	54	-14.04	Ave
16740	17.61	0	100	H	39.84	8.63	26.12	39.96	54	-14.04	Ave
22320	32.12	0	100	V	34.9	9.6	29.1	47.52	74	-26.48	Peak
22320	32.12	0	100	H	34.9	9.6	29.1	47.52	74	-26.48	Peak
22320	17.46	0	100	V	34.9	9.6	29.1	32.86	54	-21.14	Ave
22320	17.46	0	100	H	34.9	9.6	29.1	32.86	54	-21.14	Ave

Note: All emissions are at noise floor level.

802.11a Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5700 MHz, measured at 3 meters											
5700	69.52	355	100	V	34.24	4.57	0	108.33	Fund.	-	Peak
5700	62.06	359	157	H	34.24	4.57	0	100.87	Fund.	-	Peak
5700	57.74	355	100	V	34.24	4.57	0	96.55	Fund.	-	Ave
5700	50.34	359	157	H	34.24	4.57	0	89.15	Fund.	-	Ave
11400	31.2	0	100	V	38.88	7.57	27	50.65	74	-23.35	Peak
11400	31.2	0	100	H	38.88	7.57	27	50.65	74	-23.35	Peak
11400	16.64	0	100	V	38.88	7.57	27	36.09	54	-17.91	Ave
11400	16.64	0	100	H	38.88	7.57	27	36.09	54	-17.91	Ave
17100	32.49	0	100	V	42.64	8.66	26.03	57.76	74	-16.24	Peak
17100	32.49	0	100	H	42.64	8.66	26.03	57.76	74	-16.24	Peak
17100	17.66	0	100	V	42.64	8.66	26.03	42.93	54	-11.07	Ave
17100	17.66	0	100	H	42.64	8.66	26.03	42.93	54	-11.07	Ave
22800	32.03	0	100	V	35.4	9.74	28.9	48.27	74	-25.73	Peak
22800	32.03	0	100	H	35.4	9.74	28.9	48.27	74	-25.73	Peak
22800	17.32	0	100	V	35.4	9.74	28.9	33.56	54	-20.44	Ave
22800	17.32	0	100	H	35.4	9.74	28.9	33.56	54	-20.44	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
499.965	33.86	165	H	272	46	-12.14	QP
374.99	28.63	99	H	332	46	-17.37	QP
57.02	33.09	234	V	235	40	-6.91	QP

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

Above 1 GHz:

802.11n HT20 Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
5500	71.91	41	114	V	34.24	4.57	0	110.72	Fund.	-	Peak
5500	65.21	73	100	H	34.24	4.57	0	104.02	Fund.	-	Peak
5500	60.76	41	114	V	34.24	4.57	0	99.57	Fund.	-	Ave
5500	54.15	73	100	H	34.24	4.57	0	92.96	Fund.	-	Ave
11000	31.62	0	100	V	38.38	7.36	26.92	50.44	74	-23.56	Peak
11000	31.62	0	100	H	38.38	7.36	26.92	50.44	74	-23.56	Peak
11000	16.72	0	100	V	38.38	7.36	26.92	35.54	54	-18.46	Ave
11000	16.72	0	100	H	38.38	7.36	26.92	35.54	54	-18.46	Ave
16500	33.03	0	100	V	38.67	8.5	26.1	54.1	74	-19.9	Peak
16500	33.03	0	100	H	38.67	8.5	26.1	54.1	74	-19.9	Peak
16500	18.03	0	100	V	38.67	8.5	26.1	39.1	54	-14.9	Ave
16500	18.03	0	100	H	38.67	8.5	26.1	39.1	54	-14.9	Ave
22000	30.87	0	100	V	34.9	9.55	29.1	46.22	74	-27.78	Peak
22000	30.87	0	100	H	34.9	9.55	29.1	46.22	74	-27.78	Peak
22000	16.75	0	100	V	34.9	9.55	29.1	32.1	54	-21.9	Ave
22000	16.75	0	100	H	34.9	9.55	29.1	32.1	54	-21.9	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5580 MHz, measured at 3 meters											
5580	70.42	353	100	V	34.24	4.57	0	109.23	Fund.	-	Peak
5580	63.3	359	100	H	34.24	4.57	0	102.11	Fund.	-	Peak
5580	59.06	353	100	V	34.24	4.57	0	97.87	Fund.	-	Ave
5580	51.42	359	100	H	34.24	4.57	0	90.23	Fund.	-	Ave
11160	31.46	0	100	V	38.7	7.52	26.94	50.74	74	-23.26	Peak
11160	31.46	0	100	H	38.7	7.52	26.94	50.74	74	-23.26	Peak
11160	16.71	0	100	V	38.7	7.52	26.94	35.99	54	-18.01	Ave
11160	16.71	0	100	H	38.7	7.52	26.94	35.99	54	-18.01	Ave
16740	31.62	0	100	V	39.84	8.63	26.12	53.97	74	-20.03	Peak
16740	31.62	0	100	H	39.84	8.63	26.12	53.97	74	-20.03	Peak
16740	17.72	0	100	V	39.84	8.63	26.12	40.07	54	-13.93	Ave
16740	17.72	0	100	H	39.84	8.63	26.12	40.07	54	-13.93	Ave
22320	32.16	0	100	V	34.9	9.6	29.1	47.56	74	-26.44	Peak
22320	32.16	0	100	H	34.9	9.6	29.1	47.56	74	-26.44	Peak
22320	17.33	0	100	V	34.9	9.6	29.1	32.73	54	-21.27	Ave
22320	17.33	0	100	H	34.9	9.6	29.1	32.73	54	-21.27	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode, High Channel

Above 1 GHz

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5700 MHz, measured at 3 meters											
5700	70.46	356	110	V	34.24	4.57	0	109.27	Fund.	-	Peak
5700	62.23	359	100	H	34.24	4.57	0	101.04	Fund.	-	Peak
5700	58.46	356	110	V	34.24	4.57	0	97.27	Fund.	-	Ave
5700	51.24	359	100	H	34.24	4.57	0	90.05	Fund.	-	Ave
11400	31.61	0	100	V	38.88	7.57	27	51.06	74	-22.94	Peak
11400	31.61	0	100	H	38.88	7.57	27	51.06	74	-22.94	Peak
11400	16.68	0	100	V	38.88	7.57	27	36.13	54	-17.87	Ave
11400	16.68	0	100	H	38.88	7.57	27	36.13	54	-17.87	Ave
17100	32.61	0	100	V	42.64	8.66	26.03	57.88	74	-16.12	Peak
17100	32.61	0	100	H	42.64	8.66	26.03	57.88	74	-16.12	Peak
17100	17.64	0	100	V	42.64	8.66	26.03	42.91	54	-11.09	Ave
17100	17.64	0	100	H	42.64	8.66	26.03	42.91	54	-11.09	Ave
22800	32.28	0	100	V	35.4	9.74	28.9	48.52	74	-25.48	Peak
22800	32.28	0	100	H	35.4	9.74	28.9	48.52	74	-25.48	Peak
22800	17.3	0	100	V	35.4	9.74	28.9	33.54	54	-20.46	Ave
22800	17.3	0	100	H	35.4	9.74	28.9	33.54	54	-20.46	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
499.965	33.8	165	H	272	46	-12.2	QP
374.99	28.52	99	H	332	46	-17.48	QP
57.02	33.02	234	V	235	40	-6.98	QP

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

Above 1 GHz:

802.11n HT40 Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5510 MHz, measured at 3 meters											
5510	69.09	52	100	V	34.24	4.57	0	107.9	Fund.	-	Peak
5510	63.24	357	104	H	34.24	4.57	0	102.05	Fund.	-	Peak
5510	57.36	52	100	V	34.24	4.57	0	96.17	Fund.	-	Ave
5510	51.64	357	104	H	34.24	4.57	0	90.45	Fund.	-	Ave
11020	31.68	0	100	V	38.38	7.36	26.92	50.5	74	-23.5	Peak
11020	31.68	0	100	H	38.38	7.36	26.92	50.5	74	-23.5	Peak
11020	16.92	0	100	V	38.38	7.36	26.92	35.74	54	-18.26	Ave
11020	16.92	0	100	H	38.38	7.36	26.92	35.74	54	-18.26	Ave
16530	32.74	0	100	V	38.67	8.5	26.1	53.81	74	-20.19	Peak
16530	32.74	0	100	H	38.67	8.5	26.1	53.81	74	-20.19	Peak
16530	18.09	0	100	V	38.67	8.5	26.1	39.16	54	-14.84	Ave
16530	18.09	0	100	H	38.67	8.5	26.1	39.16	54	-14.84	Ave
22040	31.08	0	100	V	34.9	9.55	29.1	46.43	74	-27.57	Peak
22040	31.08	0	100	H	34.9	9.55	29.1	46.43	74	-27.57	Peak
22040	16.58	0	100	V	34.9	9.55	29.1	31.93	54	-22.07	Ave
22040	16.58	0	100	H	34.9	9.55	29.1	31.93	54	-22.07	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5550 MHz, measured at 3 meters											
5550	68.76	13	100	V	34.24	4.57	0	107.57	Fund.	-	Peak
5550	61.76	356	100	H	34.24	4.57	0	100.57	Fund.	-	Peak
5550	56.54	13	100	V	34.24	4.57	0	95.35	Fund.	-	Ave
5550	49.89	356	100	H	34.24	4.57	0	88.7	Fund.	-	Ave
11100	31.33	0	100	V	38.7	7.52	26.94	50.61	74	-23.39	Peak
11100	31.33	0	100	H	38.7	7.52	26.94	50.61	74	-23.39	Peak
11100	16.75	0	100	V	38.7	7.52	26.94	36.03	54	-17.97	Ave
11100	16.75	0	100	H	38.7	7.52	26.94	36.03	54	-17.97	Ave
16650	32.64	0	100	V	39.84	8.63	26.12	54.99	74	-19.01	Peak
16650	32.64	0	100	H	39.84	8.63	26.12	54.99	74	-19.01	Peak
16650	17.69	0	100	V	39.84	8.63	26.12	40.04	54	-13.96	Ave
16650	17.69	0	100	H	39.84	8.63	26.12	40.04	54	-13.96	Ave
22200	32.01	0	100	V	34.9	9.6	29.1	47.41	74	-26.59	Peak
22200	32.01	0	100	H	34.9	9.6	29.1	47.41	74	-26.59	Peak
22200	17.3	0	100	V	34.9	9.6	29.1	32.7	54	-21.3	Ave
22200	17.3	0	100	H	34.9	9.6	29.1	32.7	54	-21.3	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5670 MHz, measured at 3 meters											
5670	66.86	0	109	V	34.24	4.57	0	105.67	Fund.	-	Peak
5670	61.44	328	107	H	34.24	4.57	0	100.25	Fund.	-	Peak
5670	55.87	0	109	V	34.24	4.57	0	94.68	Fund.	-	Ave
5670	49.29	328	107	H	34.24	4.57	0	88.1	Fund.	-	Ave
11340	31.42	0	100	V	38.88	7.57	27	50.87	74	-23.13	Peak
11340	31.42	0	100	H	38.88	7.57	27	50.87	74	-23.13	Peak
11340	16.94	0	100	V	38.88	7.57	27	36.39	54	-17.61	Ave
11340	16.94	0	100	H	38.88	7.57	27	36.39	54	-17.61	Ave
17010	32.64	0	100	V	42.64	8.66	26.03	57.91	74	-16.09	Peak
17010	32.64	0	100	H	42.64	8.66	26.03	57.91	74	-16.09	Peak
17010	17.65	0	100	V	42.64	8.66	26.03	42.92	54	-11.08	Ave
17010	17.65	0	100	H	42.64	8.66	26.03	42.92	54	-11.08	Ave
22680	31.7	0	100	V	35.4	9.74	28.9	47.94	74	-26.06	Peak
22680	31.7	0	100	H	35.4	9.74	28.9	47.94	74	-26.06	Peak
22680	17.14	0	100	V	35.4	9.74	28.9	33.38	54	-20.62	Ave
22680	17.14	0	100	H	35.4	9.74	28.9	33.38	54	-20.62	Ave

Note: All emissions are at noise floor level.

5) Restricted Band Edges, 5470-5725 MHz Band, Dipole Antennas

802.11a Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
5460	28.87	29	100	V	34.24	4.57	0	67.68	74	-6.32	Peak
5460	28.06	75	100	H	34.24	4.57	0	66.87	74	-7.13	Peak
5460	14.61	29	100	V	34.24	4.57	0	53.42	54	-0.58	Ave
5460	14.44	75	100	H	34.24	4.57	0	53.25	54	-0.75	Ave

802.11n HT20 Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
5460	27.81	41	114	V	34.24	4.57	0	66.62	74	-7.38	Peak
5460	28	73	100	H	34.24	4.57	0	66.81	74	-7.19	Peak
5460	14.4	41	114	V	34.24	4.57	0	53.21	54	-0.79	Ave
5460	14.44	73	100	H	34.24	4.57	0	53.25	54	-0.75	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/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5510 MHz, measured at 3 meters											
5460	27	52	100	V	34.24	4.57	0	65.81	74	-8.19	Peak
5460	27.39	357	104	H	34.24	4.57	0	66.2	74	-7.8	Peak
5460	13.17	52	100	V	34.24	4.57	0	51.98	54	-2.02	Ave
5460	12.63	357	104	H	34.24	4.57	0	51.44	54	-2.56	Ave

6) Co-location with 2.4 GHz and 5 GHz, 5470-5725 MHz Band, Dipole Antennas

Worst Case: 2.4 GHz: 802.11b, 2412 MHz; 5.6 GHz: 802.11a, 5700 MHz

30-1000 MHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
66.861	33.97	125	V	335	40	-6.03
374.991	34.25	100	V	329	46	-11.75
499.996	34.05	166	H	274	46	-11.95

Above 1 GHz:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
4824	41.07	93	100	V	33.46	4.06	27.7	50.89	74	-23.11	Peak
-	-	-	-	-	-	-	-	-	-	-	-
4824	28.29	93	100	V	33.46	4.06	27.7	38.11	54	-15.89	Ave
-	-	-	-	-	-	-	-	-	-	-	-

Note 1: All other emissions at noise floor level.

7) Radiated Emission at 3 meters, 5250-5350 MHz Band, 5 dBi Patch Antenna

802.11a Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
55.053	30.49	142	V	90	40	-9.51	QP
499.9963	39.21	186	H	308	46	-6.79	QP
375.017	39.6	99	H	87	46	-6.4	QP

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

Above 1 GHz:

802.11a Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5260 MHz, measured at 3 meters											
5260	71.57	17	108	V	34.71	4.52	0	110.8	Fund.	-	Peak
5260	74.76	3	106	H	34.71	4.52	0	113.99	Fund.	-	Peak
5260	60.34	17	108	V	34.71	4.52	0	99.57	Fund.	-	Ave
5260	62.76	3	106	H	34.71	4.52	0	101.99	Fund.	-	Ave
10520	31.45	0	100	V	38.34	7	26.9	49.89	74	-24.11	Peak
10520	31.45	0	100	H	38.34	7	26.9	49.89	74	-24.11	Peak
10520	17.02	0	100	V	38.34	7	26.9	35.46	54	-18.54	Ave
10520	17.02	0	100	H	38.34	7	26.9	35.46	54	-18.54	Ave
15780	33.44	0	100	V	37.93	8.35	26.01	53.71	74	-20.29	Peak
15780	33.44	0	100	H	37.93	8.35	26.01	53.71	74	-20.29	Peak
15780	18.62	0	100	V	37.93	8.35	26.01	38.89	54	-15.11	Ave
15780	18.62	0	100	H	37.93	8.35	26.01	38.89	54	-15.11	Ave
21040	32.16	0	100	V	34.6	9.36	29	47.12	74	-26.88	Peak
21040	32.16	0	100	H	34.6	9.36	29	47.12	74	-26.88	Peak
21040	17.6	0	100	V	34.6	9.36	29	32.56	54	-21.44	Ave
21040	17.6	0	100	H	34.6	9.36	29	32.56	54	-21.44	Ave

Note: All emissions are at noise floor level.

802.11a Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5280 MHz, measured at 3 meters											
5280	72.43	15	107	V	34.71	4.52	0	111.66	Fund.	-	Peak
5280	74.48	0	108	H	34.71	4.52	0	113.71	Fund.	-	Peak
5280	61.39	15	107	V	34.71	4.52	0	100.62	Fund.	-	Ave
5280	62.72	0	108	H	34.71	4.52	0	101.95	Fund.	-	Ave
10560	31.75	0	100	V	38.42	7.05	26.98	50.24	74	-23.76	Peak
10560	31.75	0	100	H	38.42	7.05	26.98	50.24	74	-23.76	Peak
10560	16.61	0	100	V	38.42	7.05	26.98	35.1	54	-18.9	Ave
10560	16.61	0	100	H	38.42	7.05	26.98	35.1	54	-18.9	Ave
15840	33.52	0	100	V	37.93	8.44	26.04	53.85	74	-20.15	Peak
15840	33.52	0	100	H	37.93	8.44	26.04	53.85	74	-20.15	Peak
15840	18.38	0	100	V	37.93	8.44	26.04	38.71	54	-15.29	Ave
15840	18.38	0	100	H	37.93	8.44	26.04	38.71	54	-15.29	Ave
21120	33.12	0	100	V	34.6	9.36	29	48.08	74	-25.92	Peak
21120	33.12	0	100	H	34.6	9.36	29	48.08	74	-25.92	Peak
21120	18.23	0	100	V	34.6	9.36	29	33.19	54	-20.81	Ave
21120	18.23	0	100	H	34.6	9.36	29	33.19	54	-20.81	Ave

Note: All emissions are at noise floor level.

802.11a Mode, High Channel

Above 1 GHz

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5320 MHz, measured at 3 meters											
5320	72.44	21	100	V	34.49	4.59	0	111.52	Fund.	-	Peak
5320	72.62	0	100	H	34.49	4.59	0	111.7	Fund.	-	Peak
5320	60.32	21	100	V	34.49	4.59	0	99.4	Fund.	-	Ave
5320	60.73	0	100	H	34.49	4.59	0	99.81	Fund.	-	Ave
10640	31.57	0	100	V	38.42	7.07	26.92	50.14	74	-23.86	Peak
10640	31.57	0	100	H	38.42	7.07	26.92	50.14	74	-23.86	Peak
10640	16.55	0	100	V	38.42	7.07	26.92	35.12	54	-18.88	Ave
10640	16.55	0	100	H	38.42	7.07	26.92	35.12	54	-18.88	Ave
15960	33.42	0	100	V	37.87	8.39	26.05	53.63	74	-20.37	Peak
15960	33.42	0	100	H	37.87	8.39	26.05	53.63	74	-20.37	Peak
15960	18.35	0	100	V	37.87	8.39	26.05	38.56	54	-15.44	Ave
15960	18.35	0	100	H	37.87	8.39	26.05	38.56	54	-15.44	Ave
21280	32.84	0	100	V	34.6	9.4	29	47.84	74	-26.16	Peak
21280	32.84	0	100	H	34.6	9.4	29	47.84	74	-26.16	Peak
21280	18.14	0	100	V	34.6	9.4	29	33.14	54	-20.86	Ave
21280	18.14	0	100	H	34.6	9.4	29	33.14	54	-20.86	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
58.404	36.4	138	V	176	40	-3.6	QP
374.9838	40.46	99	H	76	46	-5.54	QP
500.0063	40.34	183	H	271	46	-5.66	QP

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

Above 1 GHz:

802.11n HT20 Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5260 MHz, measured at 3 meters											
5260	72.19	18	103	V	34.71	4.52	0	111.42	Fund.	-	Peak
5260	74.78	3	102	H	34.71	4.52	0	114.01	Fund.	-	Peak
5260	60.64	18	103	V	34.71	4.52	0	99.87	Fund.	-	Ave
5260	63.08	3	102	H	34.71	4.52	0	102.31	Fund.	-	Ave
10520	31.49	0	100	V	38.34	7	26.9	49.93	74	-24.07	Peak
10520	31.49	0	100	H	38.34	7	26.9	49.93	74	-24.07	Peak
10520	16.87	0	100	V	38.34	7	26.9	35.31	54	-18.69	Ave
10520	16.87	0	100	H	38.34	7	26.9	35.31	54	-18.69	Ave
15780	33.15	0	100	V	37.93	8.35	26.01	53.42	74	-20.58	Peak
15780	33.15	0	100	H	37.93	8.35	26.01	53.42	74	-20.58	Peak
15780	18.22	0	100	V	37.93	8.35	26.01	38.49	54	-15.51	Ave
15780	18.22	0	100	H	37.93	8.35	26.01	38.49	54	-15.51	Ave
21040	32.15	0	100	V	34.6	9.36	29	47.11	74	-26.89	Peak
21040	32.15	0	100	H	34.6	9.36	29	47.11	74	-26.89	Peak
21040	17.62	0	100	V	34.6	9.36	29	32.58	54	-21.42	Ave
21040	17.62	0	100	H	34.6	9.36	29	32.58	54	-21.42	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5280 MHz, measured at 3 meters											
5280	73.31	17	105	V	34.71	4.52	0	112.54	Fund.	-	Peak
5280	74.6	3	100	H	34.71	4.52	0	113.83	Fund.	-	Peak
5280	61.96	17	105	V	34.71	4.52	0	101.19	Fund.	-	Ave
5280	63.23	3	100	H	34.71	4.52	0	102.46	Fund.	-	Ave
10560	31.75	0	100	V	38.42	7.05	26.98	50.24	74	-23.76	Peak
10560	31.75	0	100	H	38.42	7.05	26.98	50.24	74	-23.76	Peak
10560	16.57	0	100	V	38.42	7.05	26.98	35.06	54	-18.94	Ave
10560	16.57	0	100	H	38.42	7.05	26.98	35.06	54	-18.94	Ave
15840	33.29	0	100	V	37.93	8.44	26.04	53.62	74	-20.38	Peak
15840	33.29	0	100	H	37.93	8.44	26.04	53.62	74	-20.38	Peak
15840	18.36	0	100	V	37.93	8.44	26.04	38.69	54	-15.31	Ave
15840	18.36	0	100	H	37.93	8.44	26.04	38.69	54	-15.31	Ave
21120	32.72	0	100	V	34.6	9.36	29	47.68	74	-26.32	Peak
21120	32.72	0	100	H	34.6	9.36	29	47.68	74	-26.32	Peak
21120	18.1	0	100	V	34.6	9.36	29	33.06	54	-20.94	Ave
21120	18.1	0	100	H	34.6	9.36	29	33.06	54	-20.94	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5320 MHz, measured at 3 meters											
5320	72.32	19	114	V	34.49	4.59	0	111.4	Fund.	-	Peak
5320	72.51	0	100	H	34.49	4.59	0	111.59	Fund.	-	Peak
5320	61.02	19	114	V	34.49	4.59	0	100.1	Fund.	-	Ave
5320	60.82	0	100	H	34.49	4.59	0	99.9	Fund.	-	Ave
10640	31.36	0	100	V	38.42	7.07	26.92	49.93	74	-24.07	Peak
10640	31.36	0	100	H	38.42	7.07	26.92	49.93	74	-24.07	Peak
10640	16.5	0	100	V	38.42	7.07	26.92	35.07	54	-18.93	Ave
10640	16.5	0	100	H	38.42	7.07	26.92	35.07	54	-18.93	Ave
15960	33.03	0	100	V	37.87	8.39	26.05	53.24	74	-20.76	Peak
15960	33.03	0	100	H	37.87	8.39	26.05	53.24	74	-20.76	Peak
15960	18.37	0	100	V	37.87	8.39	26.05	38.58	54	-15.42	Ave
15960	18.37	0	100	H	37.87	8.39	26.05	38.58	54	-15.42	Ave
21280	33.21	0	100	V	34.6	9.4	29	48.21	74	-25.79	Peak
21280	33.21	0	100	H	34.6	9.4	29	48.21	74	-25.79	Peak
21280	18.08	0	100	V	34.6	9.4	29	33.08	54	-20.92	Ave
21280	18.08	0	100	H	34.6	9.4	29	33.08	54	-20.92	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
52.9605	36.22	119	V	91	40	-3.78	QP
375.012	40.05	99	H	79	46	-5.95	QP
499.9878	39.67	165	H	262	46	-6.33	QP

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

Above 1 GHz:

802.11n HT40 Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5270 MHz, measured at 3 meters											
5270	70.54	16	105	V	34.71	4.52	0	109.77	Fund.	-	Peak
5270	72.23	2	105	H	34.71	4.52	0	111.46	Fund.	-	Peak
5270	59.38	16	105	V	34.71	4.52	0	98.61	Fund.	-	Ave
5270	60.89	2	105	H	34.71	4.52	0	100.12	Fund.	-	Ave
10540	31.62	0	100	V	38.34	7	26.9	50.06	74	-23.94	Peak
10540	31.62	0	100	H	38.34	7	26.9	50.06	74	-23.94	Peak
10540	16.57	0	100	V	38.34	7	26.9	35.01	54	-18.99	Ave
10540	16.57	0	100	H	38.34	7	26.9	35.01	54	-18.99	Ave
15810	33.38	0	100	V	37.93	8.35	26.01	53.65	74	-20.35	Peak
15810	33.38	0	100	H	37.93	8.35	26.01	53.65	74	-20.35	Peak
15810	18.31	0	100	V	37.93	8.35	26.01	38.58	54	-15.42	Ave
15810	18.31	0	100	H	37.93	8.35	26.01	38.58	54	-15.42	Ave
21080	32.87	0	100	V	34.6	9.36	29	47.83	74	-26.17	Peak
21080	32.87	0	100	H	34.6	9.36	29	47.83	74	-26.17	Peak
21080	18.16	0	100	V	34.6	9.36	29	33.12	54	-20.88	Ave
21080	18.16	0	100	H	34.6	9.36	29	33.12	54	-20.88	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5310 MHz, measured at 3 meters											
5310	67.16	17	100	V	34.49	4.52	0	106.17	Fund.	-	Peak
5310	67.67	0	100	H	34.49	4.52	0	106.68	Fund.	-	Peak
5310	56.07	17	100	V	34.49	4.52	0	95.08	Fund.	-	Ave
5310	56.1	0	100	H	34.49	4.52	0	95.11	Fund.	-	Ave
10620	31.28	0	100	V	38.42	7.07	26.92	49.85	74	-24.15	Peak
10620	31.28	0	100	H	38.42	7.07	26.92	49.85	74	-24.15	Peak
10620	16.62	0	100	V	38.42	7.07	26.92	35.19	54	-18.81	Ave
10620	16.62	0	100	H	38.42	7.07	26.92	35.19	54	-18.81	Ave
15930	33.11	0	100	V	37.87	8.39	26.05	53.32	74	-20.68	Peak
15930	33.11	0	100	H	37.87	8.39	26.05	53.32	74	-20.68	Peak
15930	18.49	0	100	V	37.87	8.39	26.05	38.7	54	-15.3	Ave
15930	18.49	0	100	H	37.87	8.39	26.05	38.7	54	-15.3	Ave
21240	32.86	0	100	V	34.6	9.4	29	47.86	74	-26.14	Peak
21240	32.86	0	100	H	34.6	9.4	29	47.86	74	-26.14	Peak
21240	18.22	0	100	V	34.6	9.4	29	33.22	54	-20.78	Ave
21240	18.22	0	100	H	34.6	9.4	29	33.22	54	-20.78	Ave

Note: All emissions are at noise floor level.

8) Restricted Band Edges, 5250-5350 MHz Band, 5 dBi Patch Antenna

802.11a Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5320 MHz, measured at 3 meters											
5351	27.89	21	100	V	34.23	4.6	0	66.72	74	-7.28	Peak
5351	28	0	100	H	34.23	4.6	0	66.83	74	-7.17	Peak
5351	13.93	21	100	V	34.23	4.6	0	52.76	54	-1.24	Ave
5351	14.08	0	100	H	34.23	4.6	0	52.91	54	-1.09	Ave

802.11n HT20 Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5320 MHz, measured at 3 meters											
5351	28	19	114	V	34.23	4.6	0	66.83	74	-7.17	Peak
5351	28.42	0	100	H	34.23	4.6	0	67.25	74	-6.75	Peak
5351	13.78	19	114	V	34.23	4.6	0	52.61	54	-1.39	Ave
5351	14.06	0	100	H	34.23	4.6	0	52.89	54	-1.11	Ave

802.11n HT40 Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5310 MHz, measured at 3 meters											
5350	28.57	17	100	V	34.23	4.38	0	67.18	74	-6.82	Peak
5350	29.57	0	100	H	34.23	4.38	0	68.18	74	-5.82	Peak
5350	14.78	17	100	V	34.23	4.38	0	53.39	54	-0.61	Ave
5350	14.88	0	100	H	34.23	4.38	0	53.49	54	-0.51	Ave

9) Co-location with 2.4 GHz and 5 GHz, 5250-5350 MHz Band, 5 dBi Patch Antenna

Worst Case: 2.4 GHz: 802.11b, 2412 MHz; 5.3 GHz: 802.11a, 5260 MHz

30-1000 MHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
46.629	30.85	127	V	333	40	-9.15
499.997	36.69	165	H	279	46	-9.31
374.991	34.37	99	V	329	46	-11.63

Above 1 GHz:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
4824	41.7	13	100	V	33.46	4.06	27.7	51.52	74	-22.48	Peak
4824	42.14	0	100	H	33.46	4.06	27.7	51.96	74	-22.04	Peak
4824	29.65	13	100	V	33.46	4.06	27.7	39.47	54	-14.53	Ave
4824	31.49	0	100	H	33.46	4.06	27.7	41.31	54	-12.69	Ave

10) Radiated Emission at 3 meters, 5470-5725 MHz Band, 5 dBi Patch Antenna

802.11a Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
57.9095	35.94	174	V	50	40	-4.06	QP
375.0088	39.66	99	H	95	46	-6.34	QP
499.9955	40.29	200	H	272	46	-5.71	QP

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

Above 1 GHz:

802.11a Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
5500	72.84	15	106	V	34.24	4.57	0	111.65	Fund.	-	Peak
5500	74.37	0	105	H	34.24	4.57	0	113.18	Fund.	-	Peak
5500	61.8	15	106	V	34.24	4.57	0	100.61	Fund.	-	Ave
5500	62.7	0	105	H	34.24	4.57	0	101.51	Fund.	-	Ave
11000	30.78	0	100	V	38.38	7.36	26.92	49.6	74	-24.4	Peak
11000	30.78	0	100	H	38.38	7.36	26.92	49.6	74	-24.4	Peak
11000	16.5	0	100	V	38.38	7.36	26.92	35.32	54	-18.68	Ave
11000	16.5	0	100	H	38.38	7.36	26.92	35.32	54	-18.68	Ave
16500	33.21	0	100	V	38.67	8.5	26.1	54.28	74	-19.72	Peak
16500	33.21	0	100	H	38.67	8.5	26.1	54.28	74	-19.72	Peak
16500	17.95	0	100	V	38.67	8.5	26.1	39.02	54	-14.98	Ave
16500	17.95	0	100	H	38.67	8.5	26.1	39.02	54	-14.98	Ave
22000	31.08	0	100	V	34.9	9.55	29.1	46.43	74	-27.57	Peak
22000	31.08	0	100	H	34.9	9.55	29.1	46.43	74	-27.57	Peak
22000	16.62	0	100	V	34.9	9.55	29.1	31.97	54	-22.03	Ave
22000	16.62	0	100	H	34.9	9.55	29.1	31.97	54	-22.03	Ave

Note: All emissions are at noise floor level.

802.11a Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5580 MHz, measured at 3 meters											
5580	71.18	351	100	V	34.71	4.52	0	110.41	Fund.	-	Peak
5580	71.65	2	103	H	34.71	4.52	0	110.88	Fund.	-	Peak
5580	59.58	351	100	V	34.71	4.52	0	98.81	Fund.	-	Ave
5580	60.44	2	103	H	34.71	4.52	0	99.67	Fund.	-	Ave
11160	31.48	0	100	V	38.7	7.52	26.94	50.76	74	-23.24	Peak
11160	31.48	0	100	H	38.7	7.52	26.94	50.76	74	-23.24	Peak
11160	16.73	0	100	V	38.7	7.52	26.94	36.01	54	-17.99	Ave
11160	16.73	0	100	H	38.7	7.52	26.94	36.01	54	-17.99	Ave
16740	32.55	0	100	V	39.84	8.63	26.12	54.9	74	-19.1	Peak
16740	32.55	0	100	H	39.84	8.63	26.12	54.9	74	-19.1	Peak
16740	17.49	0	100	V	39.84	8.63	26.12	39.84	54	-14.16	Ave
16740	17.49	0	100	H	39.84	8.63	26.12	39.84	54	-14.16	Ave
22320	32.18	0	100	V	34.9	9.6	29.1	47.58	74	-26.42	Peak
22320	32.18	0	100	H	34.9	9.6	29.1	47.58	74	-26.42	Peak
22320	17.47	0	100	V	34.9	9.6	29.1	32.87	54	-21.13	Ave
22320	17.47	0	100	H	34.9	9.6	29.1	32.87	54	-21.13	Ave

Note: All emissions are at noise floor level.

802.11a Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5700 MHz, measured at 3 meters											
5700	69.85	11	100	V	34.71	4.52	0	109.08	Fund.	-	Peak
5700	72.59	1	100	H	34.71	4.52	0	111.82	Fund.	-	Peak
5700	58.55	11	100	V	34.71	4.52	0	97.78	Fund.	-	Ave
5700	60.75	1	100	H	34.71	4.52	0	99.98	Fund.	-	Ave
11400	31.14	0	100	V	38.88	7.57	27	50.59	74	-23.41	Peak
11400	31.14	0	100	H	38.88	7.57	27	50.59	74	-23.41	Peak
11400	16.61	0	100	V	38.88	7.57	27	36.06	54	-17.94	Ave
11400	16.61	0	100	H	38.88	7.57	27	36.06	54	-17.94	Ave
17100	32.63	0	100	V	42.64	8.66	26.03	57.9	74	-16.1	Peak
17100	32.63	0	100	H	42.64	8.66	26.03	57.9	74	-16.1	Peak
17100	17.69	0	100	V	42.64	8.66	26.03	42.96	54	-11.04	Ave
17100	17.69	0	100	H	42.64	8.66	26.03	42.96	54	-11.04	Ave
22800	32.14	0	100	V	35.4	9.74	28.9	48.38	74	-25.62	Peak
22800	32.14	0	100	H	35.4	9.74	28.9	48.38	74	-25.62	Peak
22800	17.25	0	100	V	35.4	9.74	28.9	33.49	54	-20.51	Ave
22800	17.25	0	100	H	35.4	9.74	28.9	33.49	54	-20.51	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
57.6975	36.94	139	V	0	40	-3.06	QP
374.9965	40.35	100	H	90	46	-5.65	QP
500.003	40.49	174	H	273	46	-5.51	QP

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

Above 1 GHz:

802.11n HT20 Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
5500	73.12	0	110	V	34.24	4.57	0	111.93	Fund.	-	Peak
5500	73.41	0	103	H	34.24	4.57	0	112.22	Fund.	-	Peak
5500	61.69	0	110	V	34.24	4.57	0	100.5	Fund.	-	Ave
5500	62.17	0	103	H	34.24	4.57	0	100.98	Fund.	-	Ave
11000	31.76	0	100	V	38.38	7.36	26.92	50.58	74	-23.42	Peak
11000	31.76	0	100	H	38.38	7.36	26.92	50.58	74	-23.42	Peak
11000	16.77	0	100	V	38.38	7.36	26.92	35.59	54	-18.41	Ave
11000	16.77	0	100	H	38.38	7.36	26.92	35.59	54	-18.41	Ave
16500	33.12	0	100	V	38.67	8.5	26.1	54.19	74	-19.81	Peak
16500	33.12	0	100	H	38.67	8.5	26.1	54.19	74	-19.81	Peak
16500	18.05	0	100	V	38.67	8.5	26.1	39.12	54	-14.88	Ave
16500	18.05	0	100	H	38.67	8.5	26.1	39.12	54	-14.88	Ave
22000	30.74	0	100	V	34.9	9.55	29.1	46.09	74	-27.91	Peak
22000	30.74	0	100	H	34.9	9.55	29.1	46.09	74	-27.91	Peak
22000	16.7	0	100	V	34.9	9.55	29.1	32.05	54	-21.95	Ave
22000	16.7	0	100	H	34.9	9.55	29.1	32.05	54	-21.95	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5580 MHz, measured at 3 meters											
5580	71.95	354	100	V	34.71	4.52	0	111.18	Fund.	-	Peak
5580	73.99	3	102	H	34.71	4.52	0	113.22	Fund.	-	Peak
5580	60.26	354	100	V	34.71	4.52	0	99.49	Fund.	-	Ave
5580	62.06	3	102	H	34.71	4.52	0	101.29	Fund.	-	Ave
11160	31.39	0	100	V	38.7	7.52	26.94	50.67	74	-23.33	Peak
11160	31.39	0	100	H	38.7	7.52	26.94	50.67	74	-23.33	Peak
11160	16.62	0	100	V	38.7	7.52	26.94	35.9	54	-18.1	Ave
11160	16.62	0	100	H	38.7	7.52	26.94	35.9	54	-18.1	Ave
16740	31.55	0	100	V	39.84	8.63	26.12	53.9	74	-20.1	Peak
16740	31.55	0	100	H	39.84	8.63	26.12	53.9	74	-20.1	Peak
16740	17.68	0	100	V	39.84	8.63	26.12	40.03	54	-13.97	Ave
16740	17.68	0	100	H	39.84	8.63	26.12	40.03	54	-13.97	Ave
22320	32.06	0	100	V	34.9	9.6	29.1	47.46	74	-26.54	Peak
22320	32.06	0	100	H	34.9	9.6	29.1	47.46	74	-26.54	Peak
22320	17.24	0	100	V	34.9	9.6	29.1	32.64	54	-21.36	Ave
22320	17.24	0	100	H	34.9	9.6	29.1	32.64	54	-21.36	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5700 MHz, measured at 3 meters											
5700	71.6	14	116	V	34.71	4.52	0	110.83	Fund.	-	Peak
5700	73.35	3	105	H	34.71	4.52	0	112.58	Fund.	-	Peak
5700	60.26	14	116	V	34.71	4.52	0	99.49	Fund.	-	Ave
5700	61.94	3	105	H	34.71	4.52	0	101.17	Fund.	-	Ave
11400	31.66	0	100	V	38.88	7.57	27	51.11	74	-22.89	Peak
11400	31.66	0	100	H	38.88	7.57	27	51.11	74	-22.89	Peak
11400	16.71	0	100	V	38.88	7.57	27	36.16	54	-17.84	Ave
11400	16.71	0	100	H	38.88	7.57	27	36.16	54	-17.84	Ave
17100	32.55	0	100	V	42.64	8.66	26.03	57.82	74	-16.18	Peak
17100	32.55	0	100	H	42.64	8.66	26.03	57.82	74	-16.18	Peak
17100	17.6	0	100	V	42.64	8.66	26.03	42.87	54	-11.13	Ave
17100	17.6	0	100	H	42.64	8.66	26.03	42.87	54	-11.13	Ave
22800	32.22	0	100	V	35.4	9.74	28.9	48.46	74	-25.54	Peak
22800	32.22	0	100	H	35.4	9.74	28.9	48.46	74	-25.54	Peak
22800	17.28	0	100	V	35.4	9.74	28.9	33.52	54	-20.48	Ave
22800	17.28	0	100	H	35.4	9.74	28.9	33.52	54	-20.48	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
46.62625	30.65	129	V	332	40	-9.35	QP
499.9975	40.98	163	H	276	46	-5.02	QP
374.9888	34.6	100	V	332	46	-11.4	QP

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

Above 1 GHz:

802.11n HT40 Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5510 MHz, measured at 3 meters											
5510	70.03	0	100	V	34.24	4.57	0	108.84	Fund.	-	Peak
5510	71.42	0	102	H	34.24	4.57	0	110.23	Fund.	-	Peak
5510	58.21	0	100	V	34.24	4.57	0	97.02	Fund.	-	Ave
5510	60.21	0	102	H	34.24	4.57	0	99.02	Fund.	-	Ave
11020	31.72	0	100	V	38.38	7.36	26.92	50.54	74	-23.46	Peak
11020	31.72	0	100	H	38.38	7.36	26.92	50.54	74	-23.46	Peak
11020	16.95	0	100	V	38.38	7.36	26.92	35.77	54	-18.23	Ave
11020	16.95	0	100	H	38.38	7.36	26.92	35.77	54	-18.23	Ave
16530	32.88	0	100	V	38.67	8.5	26.1	53.95	74	-20.05	Peak
16530	32.88	0	100	H	38.67	8.5	26.1	53.95	74	-20.05	Peak
16530	18.13	0	100	V	38.67	8.5	26.1	39.2	54	-14.8	Ave
16530	18.13	0	100	H	38.67	8.5	26.1	39.2	54	-14.8	Ave
22040	31.17	0	100	V	34.9	9.55	29.1	46.52	74	-27.48	Peak
22040	31.17	0	100	H	34.9	9.55	29.1	46.52	74	-27.48	Peak
22040	16.64	0	100	V	34.9	9.55	29.1	31.99	54	-22.01	Ave
22040	16.64	0	100	H	34.9	9.55	29.1	31.99	54	-22.01	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5550 MHz, measured at 3 meters											
5550	68.65	6	100	V	34.71	4.52	0	107.88	Fund.	-	Peak
5550	71.62	5	100	H	34.71	4.52	0	110.85	Fund.	-	Peak
5550	57.58	6	100	V	34.71	4.52	0	96.81	Fund.	-	Ave
5550	59.19	5	100	H	34.71	4.52	0	98.42	Fund.	-	Ave
11100	31.13	0	100	V	38.7	7.52	26.94	50.41	74	-23.59	Peak
11100	31.13	0	100	H	38.7	7.52	26.94	50.41	74	-23.59	Peak
11100	16.64	0	100	V	38.7	7.52	26.94	35.92	54	-18.08	Ave
11100	16.64	0	100	H	38.7	7.52	26.94	35.92	54	-18.08	Ave
16650	32.71	0	100	V	39.84	8.63	26.12	55.06	74	-18.94	Peak
16650	32.71	0	100	H	39.84	8.63	26.12	55.06	74	-18.94	Peak
16650	17.7	0	100	V	39.84	8.63	26.12	40.05	54	-13.95	Ave
16650	17.7	0	100	H	39.84	8.63	26.12	40.05	54	-13.95	Ave
22200	32.16	0	100	V	34.9	9.6	29.1	47.56	74	-26.44	Peak
22200	32.16	0	100	H	34.9	9.6	29.1	47.56	74	-26.44	Peak
22200	17.42	0	100	V	34.9	9.6	29.1	32.82	54	-21.18	Ave
22200	17.42	0	100	H	34.9	9.6	29.1	32.82	54	-21.18	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5670 MHz, measured at 3 meters											
5670	68.1	351	100	V	34.71	4.52	0	107.33	Fund.	-	Peak
5670	70.08	2	100	H	34.71	4.52	0	109.31	Fund.	-	Peak
5670	56.66	351	100	V	34.71	4.52	0	95.89	Fund.	-	Ave
5670	57.72	2	100	H	34.71	4.52	0	96.95	Fund.	-	Ave
11340	31.48	0	100	V	38.88	7.57	27	50.93	74	-23.07	Peak
11340	31.48	0	100	H	38.88	7.57	27	50.93	74	-23.07	Peak
11340	16.96	0	100	V	38.88	7.57	27	36.41	54	-17.59	Ave
11340	16.96	0	100	H	38.88	7.57	27	36.41	54	-17.59	Ave
17010	32.75	0	100	V	42.64	8.66	26.03	58.02	74	-15.98	Peak
17010	32.75	0	100	H	42.64	8.66	26.03	58.02	74	-15.98	Peak
17010	17.66	0	100	V	42.64	8.66	26.03	42.93	54	-11.07	Ave
17010	17.66	0	100	H	42.64	8.66	26.03	42.93	54	-11.07	Ave
22680	31.81	0	100	V	35.4	9.74	28.9	48.05	74	-25.95	Peak
22680	31.81	0	100	H	35.4	9.74	28.9	48.05	74	-25.95	Peak
22680	17.22	0	100	V	35.4	9.74	28.9	33.46	54	-20.54	Ave
22680	17.22	0	100	H	35.4	9.74	28.9	33.46	54	-20.54	Ave

Note: All emissions are at noise floor level.

11) Restricted Band Edges, 5470-5725 MHz Band, 5 dBi Patch Antenna

802.11a Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
5460	28.31	15	106	V	34.24	4.57	0	67.12	74	-6.88	Peak
5460	28.19	0	105	H	34.24	4.57	0	67	74	-7	Peak
5460	13.65	15	106	V	34.24	4.57	0	52.46	54	-1.54	Ave
5460	13.83	0	105	H	34.24	4.57	0	52.64	54	-1.36	Ave

802.11n HT20 Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
5460	28.57	0	110	V	34.24	4.57	0	67.38	74	-6.62	Peak
5460	27.43	0	103	H	34.24	4.57	0	66.24	74	-7.76	Peak
5460	13.74	0	110	V	34.24	4.57	0	52.55	54	-1.45	Ave
5460	13.76	0	103	H	34.24	4.57	0	52.57	54	-1.43	Ave

802.11n HT40 Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5510 MHz, measured at 3 meters											
5460	28.7	0	100	V	34.24	4.57	0	67.51	74	-6.49	Peak
5460	29.1	0	102	H	34.24	4.57	0	67.91	74	-6.09	Peak
5460	14.72	0	100	V	34.24	4.57	0	53.53	54	-0.47	Ave
5460	14.71	0	102	H	34.24	4.57	0	53.52	54	-0.48	Ave

12) Co-location with 2.4 GHz and 5 GHz, 5470-5725 MHz Band, 5 dBi Patch Antenna

Worst Case: 2.4 GHz: 802.11b, 2412 MHz; 5.6 GHz: 802.11a, 5700 MHz

30-1000 MHz:

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

Above 1 GHz:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
4824	42.67	22	100	V	33.46	4.06	27.7	52.49	74	-21.51	Peak
4824	43.98	0	100	H	33.46	4.06	27.7	53.8	74	-20.2	Peak
4824	33.45	22	100	V	33.46	4.06	27.7	43.27	54	-10.73	Ave
4824	35.31	0	100	H	33.46	4.06	27.7	45.13	54	-8.87	Ave

13) Radiated Emission at 3 meters, 5250-5350 MHz Band, 7.5 dBi Patch Antenna

802.11a Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
55.62	36.72	119	V	66	40	-3.28	QP
143.982	32.39	106	H	192	43.5	-11.11	QP
249.999	31.39	123	H	237	46	-14.61	QP
500.006	34.73	191	H	177	46	-11.27	QP

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

Above 1 GHz:

802.11a Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5260 MHz, measured at 3 meters											
5260	66.95	32	100	V	34.71	4.6	0	106.26	Fund.	-	Peak
5260	69.31	339	103	H	34.71	4.6	0	108.62	Fund.	-	Peak
5260	55.92	32	100	V	34.71	4.6	0	95.23	Fund.	-	Ave
5260	57.59	339	103	H	34.71	4.6	0	96.9	Fund.	-	Ave
10520	31.6	0	100	V	38.34	7	26.9	50.04	74	-23.96	Peak
10520	31.6	0	100	H	38.34	7	26.9	50.04	74	-23.96	Peak
10520	17.07	0	100	V	38.34	7	26.9	35.51	54	-18.49	Ave
10520	17.07	0	100	H	38.34	7	26.9	35.51	54	-18.49	Ave
15780	32.52	0	100	V	37.93	8.35	26.01	52.79	74	-21.21	Peak
15780	32.52	0	100	H	37.93	8.35	26.01	52.79	74	-21.21	Peak
15780	17.85	0	100	V	37.93	8.35	26.01	38.12	54	-15.88	Ave
15780	17.85	0	100	H	37.93	8.35	26.01	38.12	54	-15.88	Ave
21040	32.62	0	100	V	34.6	9.36	29	47.58	74	-26.42	Peak
21040	32.62	0	100	H	34.6	9.36	29	47.58	74	-26.42	Peak
21040	17.58	0	100	V	34.6	9.36	29	32.54	54	-21.46	Ave
21040	17.58	0	100	H	34.6	9.36	29	32.54	54	-21.46	Ave

Note: All emissions are at noise floor level.

802.11a Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5280 MHz, measured at 3 meters											
5280	67.4	31	100	V	34.71	4.6	0	106.71	Fund.	-	Peak
5280	69.02	341	104	H	34.71	4.6	0	108.33	Fund.	-	Peak
5280	55.86	31	100	V	34.71	4.6	0	95.17	Fund.	-	Ave
5280	57.77	341	104	H	34.71	4.6	0	97.08	Fund.	-	Ave
10560	32.4	0	100	V	38.42	7.05	26.98	50.89	74	-23.11	Peak
10560	32.4	0	100	H	38.42	7.05	26.98	50.89	74	-23.11	Peak
10560	17.04	0	100	V	38.42	7.05	26.98	35.53	54	-18.47	Ave
10560	17.04	0	100	H	38.42	7.05	26.98	35.53	54	-18.47	Ave
15840	32.74	0	100	V	37.93	8.44	26.04	53.07	74	-20.93	Peak
15840	32.74	0	100	H	37.93	8.44	26.04	53.07	74	-20.93	Peak
15840	17.96	0	100	V	37.93	8.44	26.04	38.29	54	-15.71	Ave
15840	17.96	0	100	H	37.93	8.44	26.04	38.29	54	-15.71	Ave
21120	32.41	0	100	V	34.6	9.36	29	47.37	74	-26.63	Peak
21120	32.41	0	100	H	34.6	9.36	29	47.37	74	-26.63	Peak
21120	18.49	0	100	V	34.6	9.36	29	33.45	54	-20.55	Ave
21120	18.49	0	100	H	34.6	9.36	29	33.45	54	-20.55	Ave

Note: All emissions are at noise floor level.

802.11a Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5320 MHz, measured at 3 meters											
5320	68.72	25	108	V	34.49	4.71	0	107.92	Fund.	-	Peak
5320	68.26	23	100	H	34.49	4.71	0	107.46	Fund.	-	Peak
5320	57.38	25	108	V	34.49	4.71	0	96.58	Fund.	-	Ave
5320	56.3	23	100	H	34.49	4.71	0	95.5	Fund.	-	Ave
10640	31.56	0	100	V	38.42	7.07	26.92	50.13	74	-23.87	Peak
10640	31.56	0	100	H	38.42	7.07	26.92	50.13	74	-23.87	Peak
10640	16.79	0	100	V	38.42	7.07	26.92	35.36	54	-18.64	Ave
10640	16.79	0	100	H	38.42	7.07	26.92	35.36	54	-18.64	Ave
15960	32.89	0	100	V	37.87	8.39	26.05	53.1	74	-20.9	Peak
15960	32.89	0	100	H	37.87	8.39	26.05	53.1	74	-20.9	Peak
15960	17.8	0	100	V	37.87	8.39	26.05	38.01	54	-15.99	Ave
15960	17.8	0	100	H	37.87	8.39	26.05	38.01	54	-15.99	Ave
21280	32.98	0	100	V	34.6	9.4	29	47.98	74	-26.02	Peak
21280	32.98	0	100	H	34.6	9.4	29	47.98	74	-26.02	Peak
21280	18.07	0	100	V	34.6	9.4	29	33.07	54	-20.93	Ave
21280	18.07	0	100	H	34.6	9.4	29	33.07	54	-20.93	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
55.621	36.89	117	V	67	40	-3.11	QP
143.982	31.34	104	H	191	43.5	-12.16	QP
249.999	31.36	125	H	236	46	-14.64	QP
500.006	34.77	187	H	178	46	-11.23	QP

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

Above 1 GHz:

802.11n HT20 Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5260 MHz, measured at 3 meters											
5260	69.35	25	106	V	34.71	4.6	0	108.66	Fund.	-	Peak
5260	67.83	23	100	H	34.71	4.6	0	107.14	Fund.	-	Peak
5260	57.95	25	106	V	34.71	4.6	0	97.26	Fund.	-	Ave
5260	56.28	23	100	H	34.71	4.6	0	95.59	Fund.	-	Ave
10520	31.66	0	100	V	38.34	7	26.9	50.1	74	-23.9	Peak
10520	31.66	0	100	H	38.34	7	26.9	50.1	74	-23.9	Peak
10520	16.97	0	100	V	38.34	7	26.9	35.41	54	-18.59	Ave
10520	16.97	0	100	H	38.34	7	26.9	35.41	54	-18.59	Ave
15780	31.98	0	100	V	37.93	8.35	26.01	52.25	74	-21.75	Peak
15780	31.98	0	100	H	37.93	8.35	26.01	52.25	74	-21.75	Peak
15780	17.78	0	100	V	37.93	8.35	26.01	38.05	54	-15.95	Ave
15780	17.78	0	100	H	37.93	8.35	26.01	38.05	54	-15.95	Ave
21040	32.72	0	100	V	34.6	9.36	29	47.68	74	-26.32	Peak
21040	32.72	0	100	H	34.6	9.36	29	47.68	74	-26.32	Peak
21040	17.87	0	100	V	34.6	9.36	29	32.83	54	-21.17	Ave
21040	17.87	0	100	H	34.6	9.36	29	32.83	54	-21.17	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5280 MHz, measured at 3 meters											
5280	68.97	27	104	V	34.71	4.6	0	108.28	Fund.	-	Peak
5280	67.07	20	100	H	34.71	4.6	0	106.38	Fund.	-	Peak
5280	57.52	27	104	V	34.71	4.6	0	96.83	Fund.	-	Ave
5280	56.25	20	100	H	34.71	4.6	0	95.56	Fund.	-	Ave
10560	31.54	0	100	V	38.42	7.05	26.98	50.03	74	-23.97	Peak
10560	31.54	0	100	H	38.42	7.05	26.98	50.03	74	-23.97	Peak
10560	17.04	0	100	V	38.42	7.05	26.98	35.53	54	-18.47	Ave
10560	17.04	0	100	H	38.42	7.05	26.98	35.53	54	-18.47	Ave
15840	32.33	0	100	V	37.93	8.44	26.04	52.66	74	-21.34	Peak
15840	32.33	0	100	H	37.93	8.44	26.04	52.66	74	-21.34	Peak
15840	18.01	0	100	V	37.93	8.44	26.04	38.34	54	-15.66	Ave
15840	18.01	0	100	H	37.93	8.44	26.04	38.34	54	-15.66	Ave
21120	33.65	0	100	V	34.6	9.36	29	48.61	74	-25.39	Peak
21120	33.65	0	100	H	34.6	9.36	29	48.61	74	-25.39	Peak
21120	18.52	0	100	V	34.6	9.36	29	33.48	54	-20.52	Ave
21120	18.52	0	100	H	34.6	9.36	29	33.48	54	-20.52	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5320 MHz, measured at 3 meters											
5320	68.38	26	105	V	34.49	4.71	0	107.58	Fund.	-	Peak
5320	67.65	23	100	H	34.49	4.71	0	106.85	Fund.	-	Peak
5320	57.17	26	105	V	34.49	4.71	0	96.37	Fund.	-	Ave
5320	56.17	23	100	H	34.49	4.71	0	95.37	Fund.	-	Ave
10640	31.56	0	100	V	38.42	7.07	26.92	50.13	74	-23.87	Peak
10640	31.56	0	100	H	38.42	7.07	26.92	50.13	74	-23.87	Peak
10640	16.83	0	100	V	38.42	7.07	26.92	35.4	54	-18.6	Ave
10640	16.83	0	100	H	38.42	7.07	26.92	35.4	54	-18.6	Ave
15960	32.55	0	100	V	37.87	8.39	26.05	52.76	74	-21.24	Peak
15960	32.55	0	100	H	37.87	8.39	26.05	52.76	74	-21.24	Peak
15960	17.82	0	100	V	37.87	8.39	26.05	38.03	54	-15.97	Ave
15960	17.82	0	100	H	37.87	8.39	26.05	38.03	54	-15.97	Ave
21280	32.26	0	100	V	34.6	9.4	29	47.26	74	-26.74	Peak
21280	32.26	0	100	H	34.6	9.4	29	47.26	74	-26.74	Peak
21280	18.04	0	100	V	34.6	9.4	29	33.04	54	-20.96	Ave
21280	18.04	0	100	H	34.6	9.4	29	33.04	54	-20.96	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
55.622	35.03	118	V	68	40	-4.97	QP
143.983	31.52	106	H	192	43.5	-11.98	QP
250	30.77	122	H	235	46	-15.23	QP
500.006	35.22	187	H	177	46	-10.78	QP

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

Above 1 GHz:

802.11n HT40 Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5270 MHz, measured at 3 meters											
5270	67.25	26	106	V	34.71	4.6	0	106.56	Fund.	-	Peak
5270	66.15	25	100	H	34.71	4.6	0	105.46	Fund.	-	Peak
5270	55.42	26	106	V	34.71	4.6	0	94.73	Fund.	-	Ave
5270	53.67	25	100	H	34.71	4.6	0	92.98	Fund.	-	Ave
10540	32.08	0	100	V	38.34	7	26.9	50.52	74	-23.48	Peak
10540	32.08	0	100	H	38.34	7	26.9	50.52	74	-23.48	Peak
10540	17.09	0	100	V	38.34	7	26.9	35.53	54	-18.47	Ave
10540	17.09	0	100	H	38.34	7	26.9	35.53	54	-18.47	Ave
15810	32.66	0	100	V	37.93	8.35	26.01	52.93	74	-21.07	Peak
15810	32.66	0	100	H	37.93	8.35	26.01	52.93	74	-21.07	Peak
15810	17.97	0	100	V	37.93	8.35	26.01	38.24	54	-15.76	Ave
15810	17.97	0	100	H	37.93	8.35	26.01	38.24	54	-15.76	Ave
21080	32.93	0	100	V	34.6	9.36	29	47.89	74	-26.11	Peak
21080	32.93	0	100	H	34.6	9.36	29	47.89	74	-26.11	Peak
21080	18.43	0	100	V	34.6	9.36	29	33.39	54	-20.61	Ave
21080	18.43	0	100	H	34.6	9.36	29	33.39	54	-20.61	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5310 MHz, measured at 3 meters											
5310	65.83	25	107	V	34.49	4.71	0	105.03	Fund.	-	Peak
5310	66	22	100	H	34.49	4.71	0	105.2	Fund.	-	Peak
5310	54.43	25	107	V	34.49	4.71	0	93.63	Fund.	-	Ave
5310	53.8	22	100	H	34.49	4.71	0	93	Fund.	-	Ave
10620	31.71	0	100	V	38.42	7.07	26.92	50.28	74	-23.72	Peak
10620	31.71	0	100	H	38.42	7.07	26.92	50.28	74	-23.72	Peak
10620	16.85	0	100	V	38.42	7.07	26.92	35.42	54	-18.58	Ave
10620	16.85	0	100	H	38.42	7.07	26.92	35.42	54	-18.58	Ave
15930	32.56	0	100	V	37.87	8.39	26.05	52.77	74	-21.23	Peak
15930	32.56	0	100	H	37.87	8.39	26.05	52.77	74	-21.23	Peak
15930	18.12	0	100	V	37.87	8.39	26.05	38.33	54	-15.67	Ave
15930	18.12	0	100	H	37.87	8.39	26.05	38.33	54	-15.67	Ave
21240	33.01	0	100	V	34.6	9.4	29	48.01	74	-25.99	Peak
21240	33.01	0	100	H	34.6	9.4	29	48.01	74	-25.99	Peak
21240	18.32	0	100	V	34.6	9.4	29	33.32	54	-20.68	Ave
21240	18.32	0	100	H	34.6	9.4	29	33.32	54	-20.68	Ave

Note: All emissions are at noise floor level.

14) Restricted Band Edges, 5250-5350 MHz Band, 7.5 dBi Patch Antenna

802.11a Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5320 MHz, measured at 3 meters											
5393	27.64	25	108	V	34.23	4.71	0	66.58	74	-7.42	Peak
5393	28.23	23	100	H	34.23	4.71	0	67.17	74	-6.83	Peak
5393	13.56	25	108	V	34.23	4.71	0	52.5	54	-1.5	Ave
5393	13.46	23	100	H	34.23	4.71	0	52.4	54	-1.6	Ave

802.11n HT20 Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5320 MHz, measured at 3 meters											
5381	28.28	26	105	V	34.23	4.71	0	67.22	74	-6.78	Peak
5381	27.34	23	100	H	34.23	4.71	0	66.28	74	-7.72	Peak
5381	13.5	26	105	V	34.23	4.71	0	52.44	54	-1.56	Ave
5381	13.42	23	100	H	34.23	4.71	0	52.36	54	-1.64	Ave

802.11n HT40 Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5310 MHz, measured at 3 meters											
5350	28.6	25	107	V	34.23	4.71	0	67.54	74	-6.46	Peak
5350	27.51	22	100	H	34.23	4.71	0	66.45	74	-7.55	Peak
5350	13.75	25	107	V	34.23	4.71	0	52.69	54	-1.31	Ave
5350	13.76	22	100	H	34.23	4.71	0	52.7	54	-1.3	Ave

15) Co-location with 2.4 GHz and 5 GHz, 5250-5350 MHz Band, 7.5 dBi Patch Antenna

Worst Case: 2.4 GHz: 802.11b, 2412 MHz; 5.3 GHz: 802.11a, 5260 MHz

30-1000 MHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
45.77	38.53	123	V	117	40	-1.47
146.431	30.7	120	H	294	43.5	-12.8
499.985	34.93	174	H	264	46	-11.07
250.004	32.77	130	H	238	46	-13.23

Above 1 GHz:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
4824	42.16	63	100	V	33.08	4.56	27.7	52.1	74	-21.9	Peak
4824	41.42	21	100	H	33.08	4.56	27.7	51.36	74	-22.64	Peak
4824	36.42	63	100	V	33.08	4.56	27.7	46.36	54	-7.64	Ave
4824	34.26	21	100	H	33.08	4.56	27.7	44.2	54	-9.8	Ave

16) Radiated Emission at 3 meters, 5470-5725 MHz Band, 7.5 dBi Patch Antenna

802.11a Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
55.622	36.86	118	V	68	40	-3.14	QP
143.983	31.14	103	H	191	43.5	-12.36	QP
250	31.38	123	H	234	46	-14.62	QP
500.006	33.13	187	H	175	46	-12.87	QP

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

Above 1 GHz:

802.11a Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
5500	68.69	38	100	V	34.24	4.76	0	107.69	Fund.	-	Peak
5500	64.85	335	160	H	34.24	4.76	0	103.85	Fund.	-	Peak
5500	56.01	38	100	V	34.24	4.76	0	95.01	Fund.	-	Ave
5500	53.97	335	160	H	34.24	4.76	0	92.97	Fund.	-	Ave
11000	31.9	0	100	V	38.38	7.36	26.92	50.72	74	-23.28	Peak
11000	31.9	0	100	H	38.38	7.36	26.92	50.72	74	-23.28	Peak
11000	17.02	0	100	V	38.38	7.36	26.92	35.84	54	-18.16	Ave
11000	17.02	0	100	H	38.38	7.36	26.92	35.84	54	-18.16	Ave
16500	32.32	0	100	V	38.67	8.5	26.1	53.39	74	-20.61	Peak
16500	32.32	0	100	H	38.67	8.5	26.1	53.39	74	-20.61	Peak
16500	17.75	0	100	V	38.67	8.5	26.1	38.82	54	-15.18	Ave
16500	17.75	0	100	H	38.67	8.5	26.1	38.82	54	-15.18	Ave
22000	32.46	0	100	V	34.9	9.55	29.1	47.81	74	-26.19	Peak
22000	32.46	0	100	H	34.9	9.55	29.1	47.81	74	-26.19	Peak
22000	18.22	0	100	V	34.9	9.55	29.1	33.57	54	-20.43	Ave
22000	18.22	0	100	H	34.9	9.55	29.1	33.57	54	-20.43	Ave

Note: All emissions are at noise floor level.

802.11a Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5580 MHz, measured at 3 meters											
5580	66.6	38	100	V	34.71	4.84	0	106.15	Fund.	-	Peak
5580	66.42	359	149	H	34.71	4.84	0	105.97	Fund.	-	Peak
5580	54.1	38	100	V	34.71	4.84	0	93.65	Fund.	-	Ave
5580	55.38	359	149	H	34.71	4.84	0	94.93	Fund.	-	Ave
11160	31.8	0	100	V	38.7	7.52	26.94	51.08	74	-22.92	Peak
11160	31.8	0	100	H	38.7	7.52	26.94	51.08	74	-22.92	Peak
11160	17.05	0	100	V	38.7	7.52	26.94	36.33	54	-17.67	Ave
11160	17.05	0	100	H	38.7	7.52	26.94	36.33	54	-17.67	Ave
16740	31.85	0	100	V	39.84	8.63	26.12	54.2	74	-19.8	Peak
16740	31.85	0	100	H	39.84	8.63	26.12	54.2	74	-19.8	Peak
16740	17.57	0	100	V	39.84	8.63	26.12	39.92	54	-14.08	Ave
16740	17.57	0	100	H	39.84	8.63	26.12	39.92	54	-14.08	Ave
22320	32.39	0	100	V	34.9	9.6	29.1	47.79	74	-26.21	Peak
22320	32.39	0	100	H	34.9	9.6	29.1	47.79	74	-26.21	Peak
22320	18.07	0	100	V	34.9	9.6	29.1	33.47	54	-20.53	Ave
22320	18.07	0	100	H	34.9	9.6	29.1	33.47	54	-20.53	Ave

Note: All emissions are at noise floor level.

802.11a Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5700 MHz, measured at 3 meters											
5700	67.58	359	100	V	34.71	4.85	0	107.14	Fund.	-	Peak
5700	66.29	1	147	H	34.71	4.85	0	105.85	Fund.	-	Peak
5700	56.16	359	100	V	34.71	4.85	0	95.72	Fund.	-	Ave
5700	55.3	1	147	H	34.71	4.85	0	94.86	Fund.	-	Ave
11400	32.05	0	100	V	38.88	7.57	27	51.5	74	-22.5	Peak
11400	32.05	0	100	H	38.88	7.57	27	51.5	74	-22.5	Peak
11400	16.84	0	100	V	38.88	7.57	27	36.29	54	-17.71	Ave
11400	16.84	0	100	H	38.88	7.57	27	36.29	54	-17.71	Ave
17100	32.19	0	100	V	42.64	8.66	26.03	57.46	74	-16.54	Peak
17100	32.19	0	100	H	42.64	8.66	26.03	57.46	74	-16.54	Peak
17100	17.55	0	100	V	42.64	8.66	26.03	42.82	54	-11.18	Ave
17100	17.55	0	100	H	42.64	8.66	26.03	42.82	54	-11.18	Ave
22800	31.94	0	100	V	35.4	9.74	28.9	48.18	74	-25.82	Peak
22800	31.94	0	100	H	35.4	9.74	28.9	48.18	74	-25.82	Peak
22800	17.96	0	100	V	35.4	9.74	28.9	34.2	54	-19.8	Ave
22800	17.96	0	100	H	35.4	9.74	28.9	34.2	54	-19.8	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
55.623	36.73	119	V	66	40	-3.27	QP
143.984	32.73	111	H	192	43.5	-10.77	QP
250.001	31.54	120	H	239	46	-14.46	QP
500.006	35.89	187	H	176	46	-10.11	QP

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

Above 1 GHz:

802.11n HT20 Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
5500	67.6	39	100	V	34.24	4.76	0	106.6	Fund.	-	Peak
5500	66.34	338	151	H	34.24	4.76	0	105.34	Fund.	-	Peak
5500	56.17	39	100	V	34.24	4.76	0	95.17	Fund.	-	Ave
5500	55.22	338	151	H	34.24	4.76	0	94.22	Fund.	-	Ave
11000	32.16	0	100	V	38.38	7.36	26.92	50.98	74	-23.02	Peak
11000	32.16	0	100	H	38.38	7.36	26.92	50.98	74	-23.02	Peak
11000	17.08	0	100	V	38.38	7.36	26.92	35.9	54	-18.1	Ave
11000	17.08	0	100	H	38.38	7.36	26.92	35.9	54	-18.1	Ave
16500	32.35	0	100	V	38.67	8.5	26.1	53.42	74	-20.58	Peak
16500	32.35	0	100	H	38.67	8.5	26.1	53.42	74	-20.58	Peak
16500	17.74	0	100	V	38.67	8.5	26.1	38.81	54	-15.19	Ave
16500	17.74	0	100	H	38.67	8.5	26.1	38.81	54	-15.19	Ave
22000	32.31	0	100	V	34.9	9.55	29.1	47.66	74	-26.34	Peak
22000	32.31	0	100	H	34.9	9.55	29.1	47.66	74	-26.34	Peak
22000	18.2	0	100	V	34.9	9.55	29.1	33.55	54	-20.45	Ave
22000	18.2	0	100	H	34.9	9.55	29.1	33.55	54	-20.45	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5580 MHz, measured at 3 meters											
5580	67.46	36	100	V	34.71	4.84	0	107.01	Fund.	-	Peak
5580	66.64	22	156	H	34.71	4.84	0	106.19	Fund.	-	Peak
5580	56	36	100	V	34.71	4.84	0	95.55	Fund.	-	Ave
5580	55.08	22	156	H	34.71	4.84	0	94.63	Fund.	-	Ave
11160	31.88	0	100	V	38.7	7.52	26.94	51.16	74	-22.84	Peak
11160	31.88	0	100	H	38.7	7.52	26.94	51.16	74	-22.84	Peak
11160	17.11	0	100	V	38.7	7.52	26.94	36.39	54	-17.61	Ave
11160	17.11	0	100	H	38.7	7.52	26.94	36.39	54	-17.61	Ave
16740	31.81	0	100	V	39.84	8.63	26.12	54.16	74	-19.84	Peak
16740	31.81	0	100	H	39.84	8.63	26.12	54.16	74	-19.84	Peak
16740	17.58	0	100	V	39.84	8.63	26.12	39.93	54	-14.07	Ave
16740	17.58	0	100	H	39.84	8.63	26.12	39.93	54	-14.07	Ave
22320	32.44	0	100	V	34.9	9.6	29.1	47.84	74	-26.16	Peak
22320	32.44	0	100	H	34.9	9.6	29.1	47.84	74	-26.16	Peak
22320	18.13	0	100	V	34.9	9.6	29.1	33.53	54	-20.47	Ave
22320	18.13	0	100	H	34.9	9.6	29.1	33.53	54	-20.47	Ave

Note: All emissions are at noise floor level.

802.11n HT20 Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5700 MHz, measured at 3 meters											
5700	69.13	359	100	V	34.71	4.85	0	108.69	Fund.	-	Peak
5700	68.15	1	150	H	34.71	4.85	0	107.71	Fund.	-	Peak
5700	57.36	359	100	V	34.71	4.85	0	96.92	Fund.	-	Ave
5700	56.32	1	150	H	34.71	4.85	0	95.88	Fund.	-	Ave
11400	32.15	0	100	V	38.88	7.57	27	51.6	74	-22.4	Peak
11400	32.15	0	100	H	38.88	7.57	27	51.6	74	-22.4	Peak
11400	16.88	0	100	V	38.88	7.57	27	36.33	54	-17.67	Ave
11400	16.88	0	100	H	38.88	7.57	27	36.33	54	-17.67	Ave
17100	32.34	0	100	V	42.64	8.66	26.03	57.61	74	-16.39	Peak
17100	32.34	0	100	H	42.64	8.66	26.03	57.61	74	-16.39	Peak
17100	17.62	0	100	V	42.64	8.66	26.03	42.89	54	-11.11	Ave
17100	17.62	0	100	H	42.64	8.66	26.03	42.89	54	-11.11	Ave
22800	31.96	0	100	V	35.4	9.74	28.9	48.2	74	-25.8	Peak
22800	31.96	0	100	H	35.4	9.74	28.9	48.2	74	-25.8	Peak
22800	17.91	0	100	V	35.4	9.74	28.9	34.15	54	-19.85	Ave
22800	17.91	0	100	H	35.4	9.74	28.9	34.15	54	-19.85	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode

Below 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
55.623	36.85	119	V	66	40	-3.15	QP
143.984	31.54	115	H	191	43.5	-11.96	QP
250.001	31.66	121	H	238	46	-14.34	QP
500.006	36.25	188	H	177	46	-9.75	QP

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

Above 1 GHz:

802.11n HT40 Mode, Low Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5510 MHz, measured at 3 meters											
5510	65.87	37	100	V	34.24	4.76	0	104.87	Fund.	-	Peak
5510	64.29	1	158	H	34.24	4.76	0	103.29	Fund.	-	Peak
5510	53.67	37	100	V	34.24	4.76	0	92.67	Fund.	-	Ave
5510	53	1	158	H	34.24	4.76	0	92	Fund.	-	Ave
11020	31.33	0	100	V	38.38	7.36	26.92	50.15	74	-23.85	Peak
11020	31.33	0	100	H	38.38	7.36	26.92	50.15	74	-23.85	Peak
11020	16.83	0	100	V	38.38	7.36	26.92	35.65	54	-18.35	Ave
11020	16.83	0	100	H	38.38	7.36	26.92	35.65	54	-18.35	Ave
16530	32.73	0	100	V	38.67	8.5	26.1	53.8	74	-20.2	Peak
16530	32.73	0	100	H	38.67	8.5	26.1	53.8	74	-20.2	Peak
16530	17.72	0	100	V	38.67	8.5	26.1	38.79	54	-15.21	Ave
16530	17.72	0	100	H	38.67	8.5	26.1	38.79	54	-15.21	Ave
22040	32.54	0	100	V	34.9	9.55	29.1	47.89	74	-26.11	Peak
22040	32.54	0	100	H	34.9	9.55	29.1	47.89	74	-26.11	Peak
22040	18.26	0	100	V	34.9	9.55	29.1	33.61	54	-20.39	Ave
22040	18.26	0	100	H	34.9	9.55	29.1	33.61	54	-20.39	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode, Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 5550 MHz, measured at 3 meters											
5550	65.82	37	100	V	34.71	4.84	0	105.37	Fund.	-	Peak
5550	65.69	1	162	H	34.71	4.84	0	105.24	Fund.	-	Peak
5550	54.1	37	100	V	34.71	4.84	0	93.65	Fund.	-	Ave
5550	54.19	1	162	H	34.71	4.84	0	93.74	Fund.	-	Ave
11000	31.99	0	100	V	38.7	7.52	26.94	51.27	74	-22.73	Peak
11000	31.99	0	100	H	38.7	7.52	26.94	51.27	74	-22.73	Peak
11000	16.77	0	100	V	38.7	7.52	26.94	36.05	54	-17.95	Ave
11000	16.77	0	100	H	38.7	7.52	26.94	36.05	54	-17.95	Ave
16500	32.38	0	100	V	39.84	8.63	26.12	54.73	74	-19.27	Peak
16500	32.38	0	100	H	39.84	8.63	26.12	54.73	74	-19.27	Peak
16500	17.65	0	100	V	39.84	8.63	26.12	40	54	-14	Ave
16500	17.65	0	100	H	39.84	8.63	26.12	40	54	-14	Ave
22000	33.25	0	100	V	35	9.6	29.1	48.75	74	-25.25	Peak
22000	33.25	0	100	H	35	9.6	29.1	48.75	74	-25.25	Peak
22000	18.22	0	100	V	35	9.6	29.1	33.72	54	-20.28	Ave
22000	18.22	0	100	H	35	9.6	29.1	33.72	54	-20.28	Ave

Note: All emissions are at noise floor level.

802.11n HT40 Mode, High Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5670 MHz, measured at 3 meters											
5670	63.38	0	100	V	34.71	4.85	0	102.94	Fund.	-	Peak
5670	63	359	156	H	34.71	4.85	0	102.56	Fund.	-	Peak
5670	51.46	0	100	V	34.71	4.85	0	91.02	Fund.	-	Ave
5670	51.82	359	156	H	34.71	4.85	0	91.38	Fund.	-	Ave
11340	32.11	0	100	V	38.88	7.57	27	51.56	74	-22.44	Peak
11340	32.11	0	100	H	38.88	7.57	27	51.56	74	-22.44	Peak
11340	17.04	0	100	V	38.88	7.57	27	36.49	54	-17.51	Ave
11340	17.04	0	100	H	38.88	7.57	27	36.49	54	-17.51	Ave
17010	31.57	0	100	V	42.64	8.66	26.03	56.84	74	-17.16	Peak
17010	31.57	0	100	H	42.64	8.66	26.03	56.84	74	-17.16	Peak
17010	17.26	0	100	V	42.64	8.66	26.03	42.53	54	-11.47	Ave
17010	17.26	0	100	H	42.64	8.66	26.03	42.53	54	-11.47	Ave
22680	32.21	0	100	V	35.4	9.74	29	48.35	74	-25.65	Peak
22680	32.21	0	100	H	35.4	9.74	29	48.35	74	-25.65	Peak
22680	17.57	0	100	V	35.4	9.74	29	33.71	54	-20.29	Ave
22680	17.57	0	100	H	35.4	9.74	29	33.71	54	-20.29	Ave

Note: All emissions are at noise floor level.

17) Restricted Band Edges, 5470-5725 MHz Band, 7.5 dBi Patch Antenna

802.11a Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
5457	27.69	38	100	V	34.24	4.76	0	66.69	74	-7.31	Peak
5457	28.3	335	160	H	34.24	4.76	0	67.3	74	-6.7	Peak
5457	13.72	38	100	V	34.24	4.76	0	52.72	54	-1.28	Ave
5457	13.58	335	160	H	34.24	4.76	0	52.58	54	-1.42	Ave

802.11n HT20 Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
5451	28.49	39	100	V	34.24	4.76	0	67.49	74	-6.51	Peak
5451	27.45	338	151	H	34.24	4.76	0	66.45	74	-7.55	Peak
5451	13.71	39	100	V	34.24	4.76	0	52.71	54	-1.29	Ave
5451	13.67	338	151	H	34.24	4.76	0	52.67	54	-1.33	Ave

802.11n HT40 Mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5510 MHz, measured at 3 meters											
5460	27.77	37	100	V	34.24	4.76	0	66.77	74	-7.23	Peak
5460	27.89	1	158	H	34.24	4.76	0	66.89	74	-7.11	Peak
5460	13.78	37	100	V	34.24	4.76	0	52.78	54	-1.22	Ave
5460	13.73	1	158	H	34.24	4.76	0	52.73	54	-1.27	Ave

18) Co-location with 2.4 GHz and 5 GHz, 5470-5725 MHz Band, 7.5 dBi Patch Antenna

Worst Case: 2.4 GHz: 802.11b, 2412 MHz; 5.6 GHz: 802.11a, 5700 MHz

30-1000 MHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
45.77	38.59	123	V	119	40	-1.41
146.431	30	117	H	293	43.5	-13.5
499.985	34.13	175	H	265	46	-11.87
250.005	32.58	127	H	239	46	-13.42

Above 1 GHz:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
4824	42.42	60	100	V	33.08	4.56	27.7	52.36	74	-21.64	Peak
4824	41.16	21	100	H	33.08	4.56	27.7	51.1	74	-22.9	Peak
4824	37.13	60	100	V	33.08	4.56	27.7	47.07	54	-6.93	Ave
4824	34.57	21	100	H	33.08	4.56	27.7	44.51	54	-9.49	Ave

8 FCC §15.407(a) & IC RSS-210 §A9.2 – 26 dB & 99% Emission Bandwidth

8.1 Applicable Standard

FCC §15.407(a) and IC RSS-210 §A9.2.

8.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 26 dB from the reference level. Record the frequency difference as the emissions bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

8.3 Test Equipment List and Details

Manufacturers	Description	Models	Serial Numbers	Calibration Dates	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	US42221851	2012-02-28	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:	23 °C
Relative Humidity:	43 %
ATM Pressure:	101.3 kPa

The testing was performed by Jeffrey Wu on 2012-10-19 in RF site.

8.5 Test Results

5250-5350 MHz Band

802.11a mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)	Results
Chain J0				
Low	5260	25.381	16.9747	Compliant
Middle	5280	24.333	16.9395	Compliant
High	5320	23.446	16.9126	Compliant
Chain J1				
Low	5260	24.261	17.1046	Compliant
Middle	5280	25.565	17.2105	Compliant
High	5320	24.657	17.0986	Compliant

802.11n HT20 mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)	Results
Chain J0				
Low	5260	24.669	18.0415	Compliant
Middle	5280	25.018	18.0661	Compliant
High	5320	25.037	18.0577	Compliant
Chain J1				
Low	5260	25.116	18.2242	Compliant
Middle	5280	24.884	18.1565	Compliant
High	5320	24.768	18.1477	Compliant

802.11n HT40 mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)	Results
Chain J0				
Low	5270	50.569	37.0269	Compliant
High	5310	51.442	37.0234	Compliant
Chain J1				
Low	5270	55.802	37.4940	Compliant
High	5310	51.484	37.3386	Compliant

5470-5725 MHz Band:

802.11a mode

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)	Results
Chain J0				
Low	5500	28.428	17.0367	Compliant
Middle	5580	25.493	16.9888	Compliant
High	5700	27.854	17.0765	Compliant
Chain J1				
Low	5500	27.683	17.1796	Compliant
Middle	5580	25.982	17.1786	Compliant
High	5700	25.018	17.1417	Compliant

802.11n HT20 mode

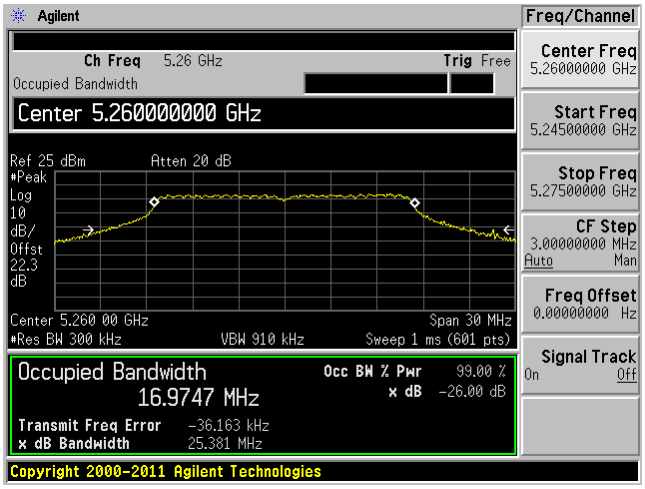
Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)	Results
Chain J0				
Low	5500	28.714	18.4100	Compliant
Middle	5580	27.463	18.1748	Compliant
High	5700	27.504	18.1858	Compliant
Chain J1				
Low	5500	25.439	18.1912	Compliant
Middle	5580	26.585	18.2141	Compliant
High	5700	25.435	18.1722	Compliant

802.11n HT40 mode

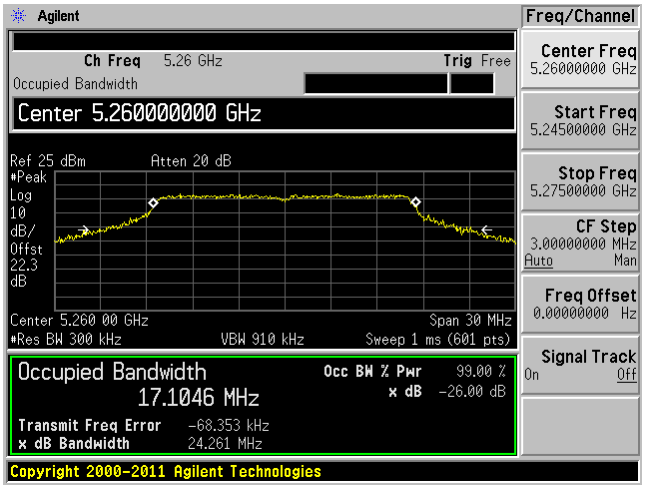
Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)	Results
Chain J0				
Low	5510	56.494	37.1508	Compliant
Middle	5550	54.825	37.1391	Compliant
High	5670	55.101	37.0208	Compliant
Chain J1				
Low	5510	55.804	37.5931	Compliant
Middle	5550	54.161	37.2179	Compliant
High	5670	55.150	37.3251	Compliant

5250-5350 MHz

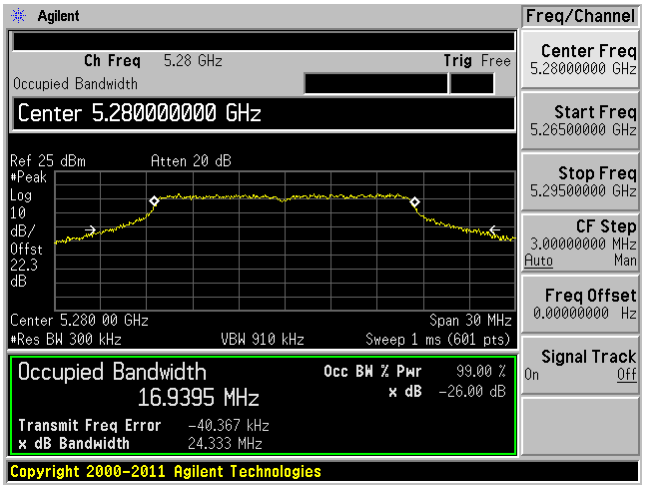
802.11a mode, 5260 MHz, Chain J0



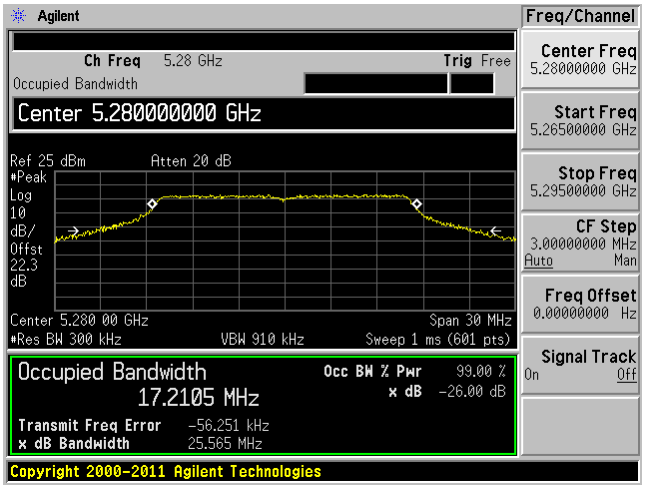
802.11a mode, 5260 MHz, Chain J1



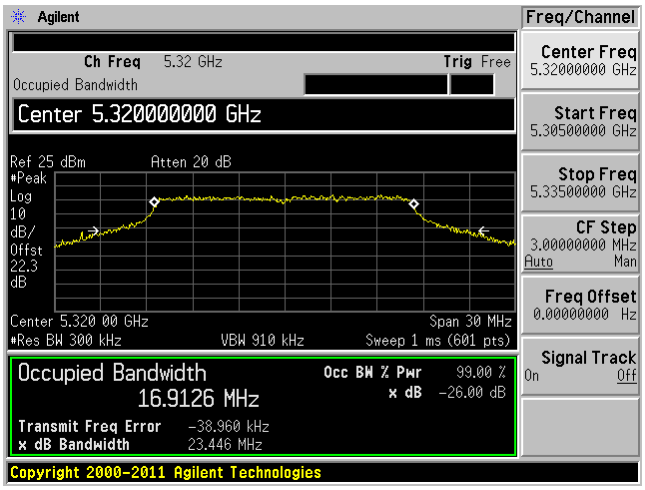
802.11a mode, 5280 MHz, Chain J0



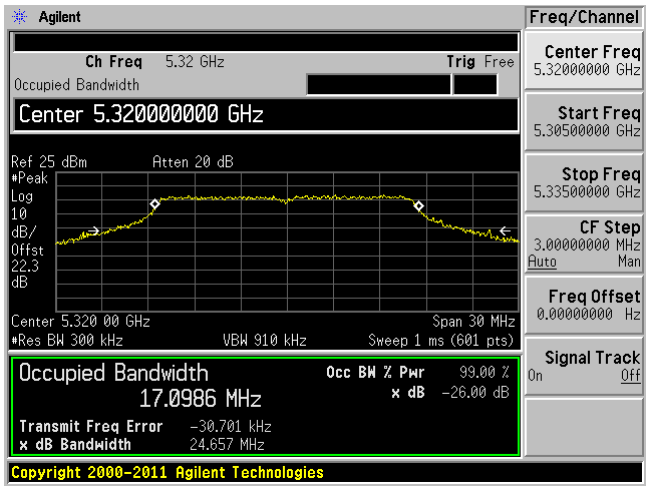
802.11a mode, 5280 MHz, Chain J1



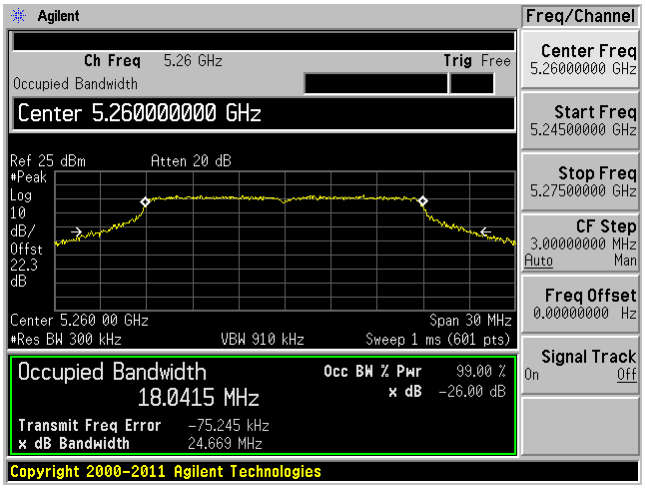
802.11a mode, 5320 MHz, Chain J0



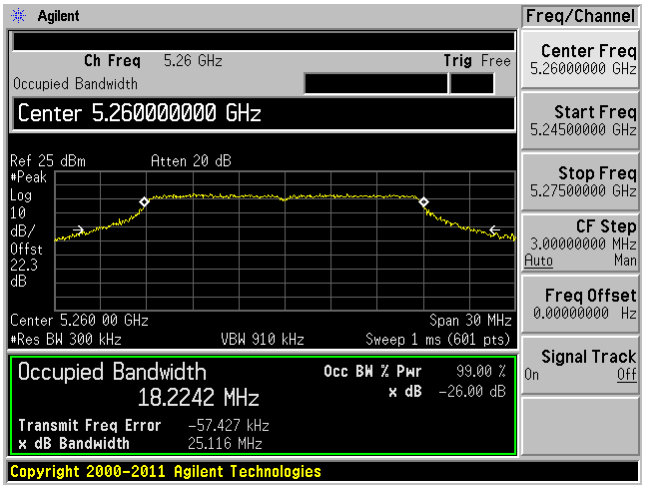
802.11a mode, 5320 MHz, Chain J1



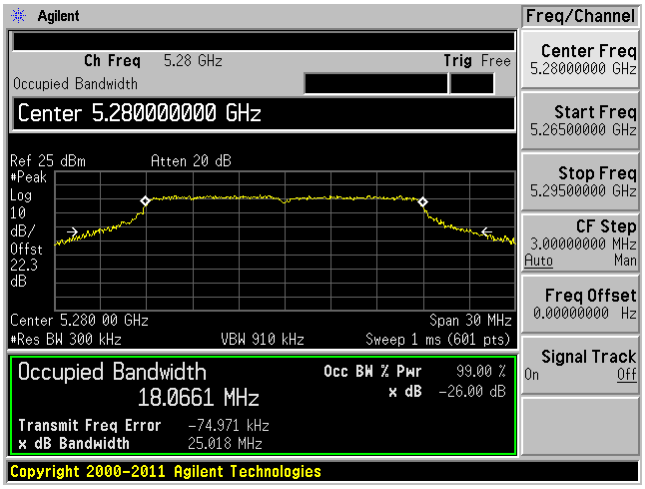
802.11n HT20 mode, 5260 MHz, Chain J0



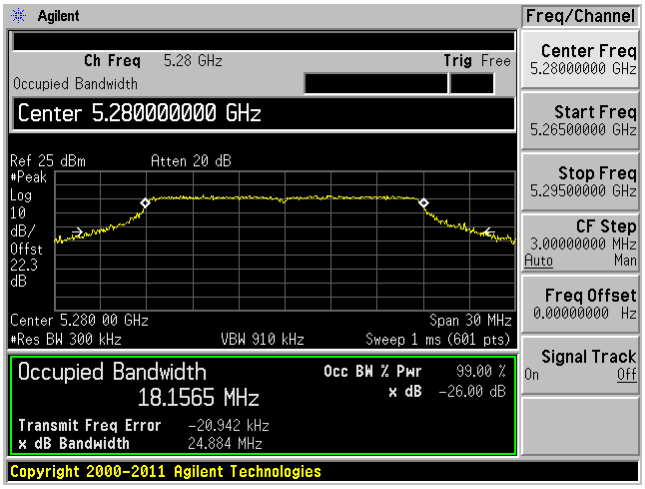
802.11n HT20 mode, 5260 MHz, Chain J1



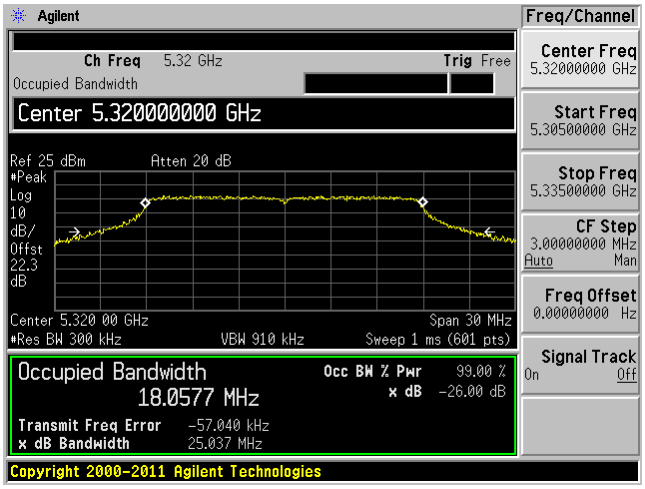
802.11n HT20 mode, 5280 MHz, Chain J0



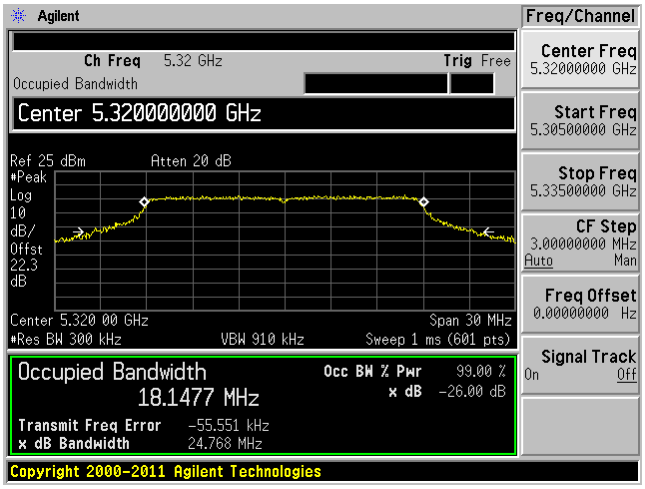
802.11n HT20 mode, 5280 MHz, Chain J1



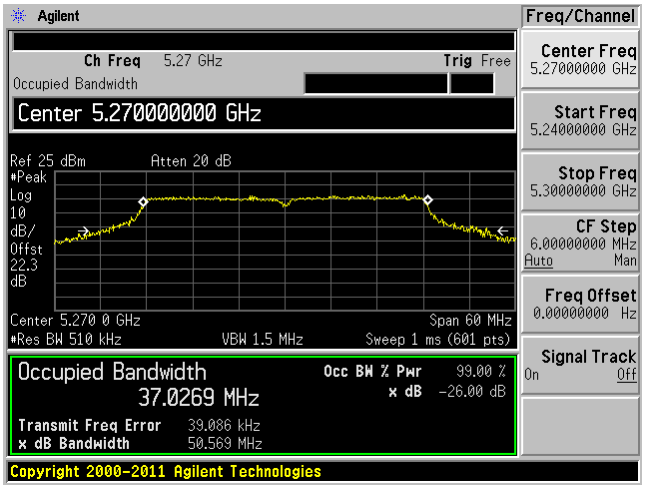
802.11n HT20 mode, 5320 MHz, Chain J0



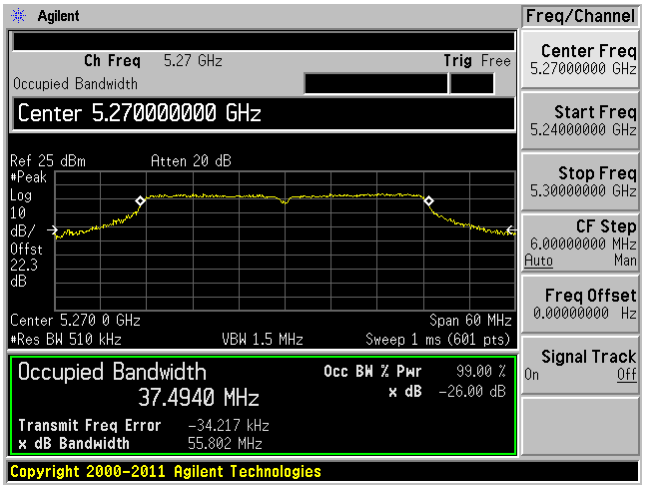
802.11n HT20 mode, 5320 MHz, Chain J1



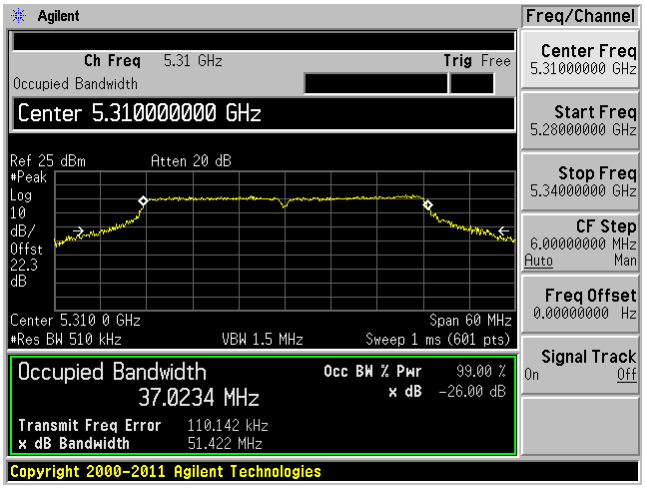
802.11n HT40 mode, 5270 MHz, Chain J0



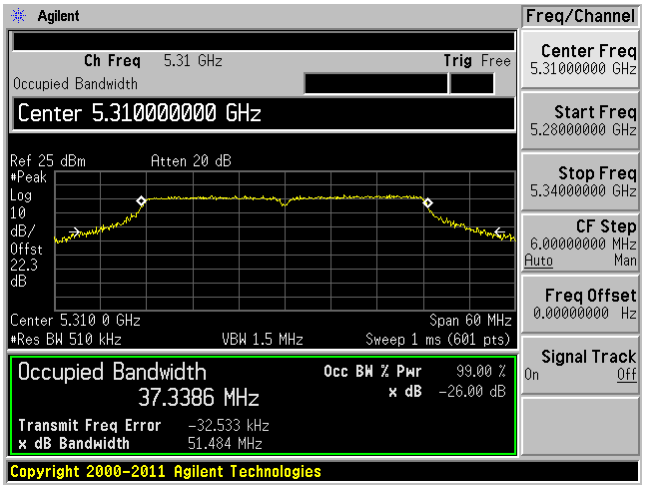
802.11n HT40 mode, 5270 MHz, Chain J1



802.11n HT40 mode, 5310 MHz, Chain J0

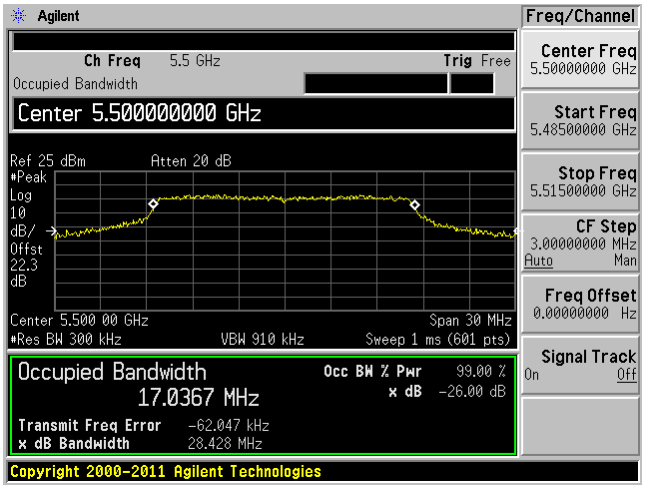


802.11n HT40 mode, 5310 MHz, Chain J1

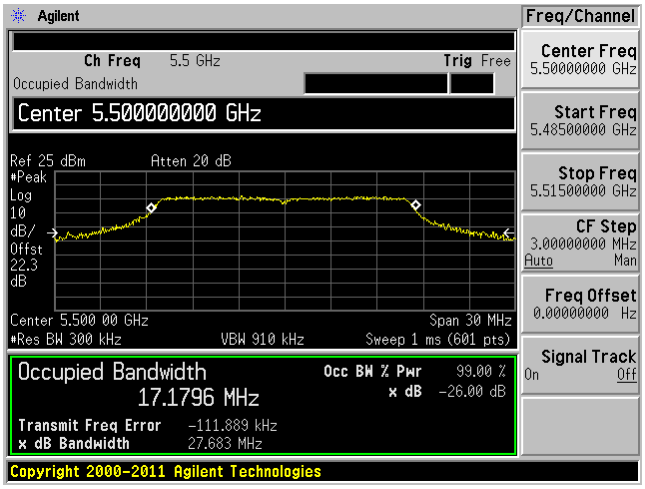


5470-5725 MHz

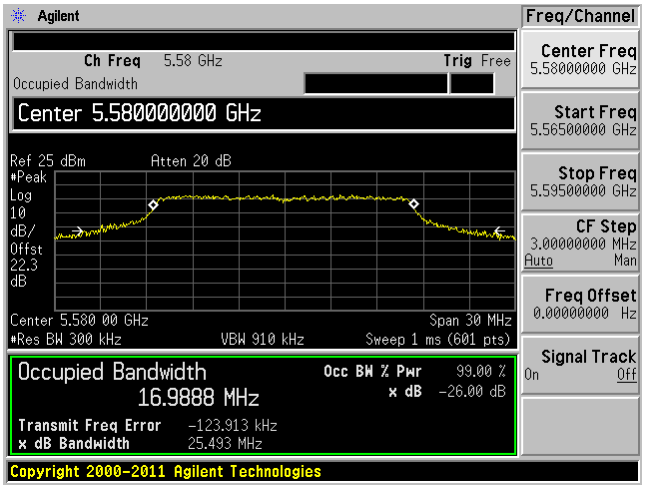
802.11a mode, 5500 MHz, Chain J0



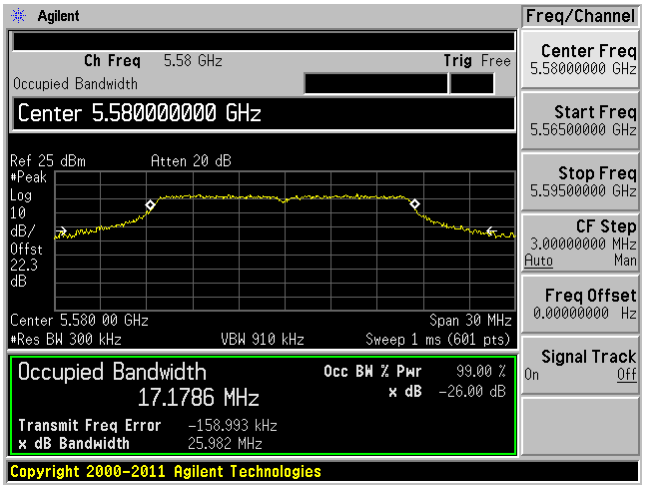
802.11a mode, 5500 MHz, Chain J1



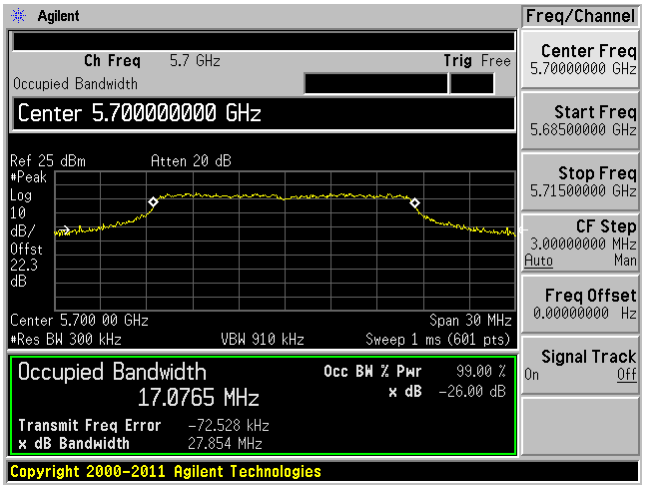
802.11a mode, 5580 MHz, Chain J0



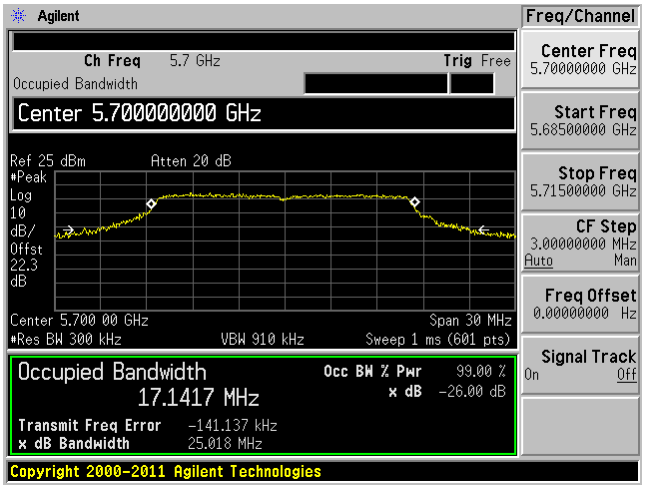
802.11a mode, 5580 MHz, Chain J1



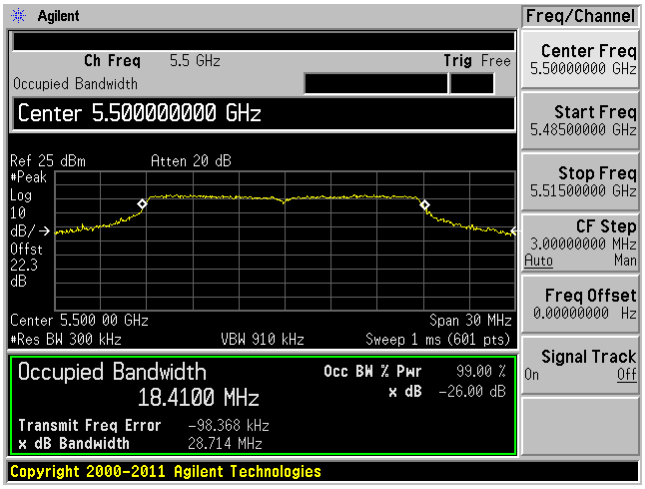
802.11a mode, 5700 MHz, Chain J0



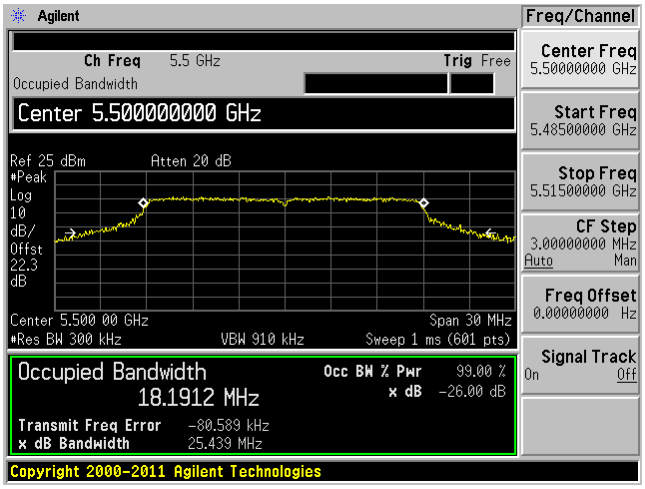
802.11a mode, 5700 MHz, Chain J1



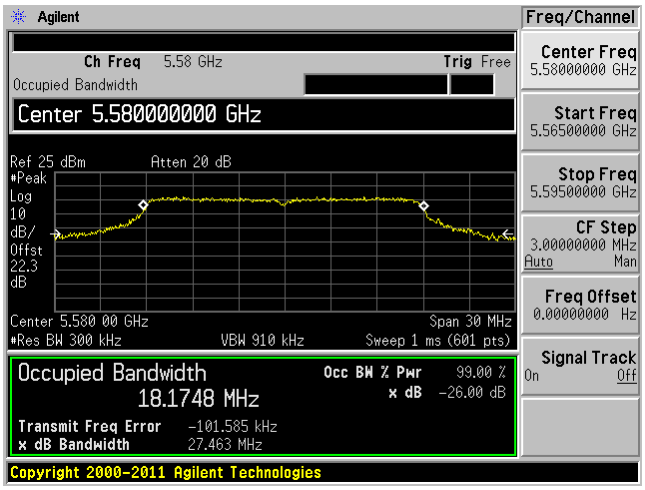
802.11n HT20 mode, 5500 MHz, Chain J0



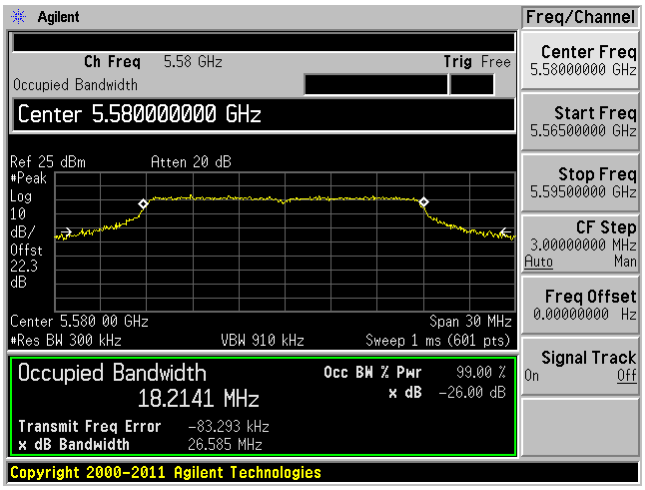
802.11n HT20 mode, 5500 MHz, Chain J1



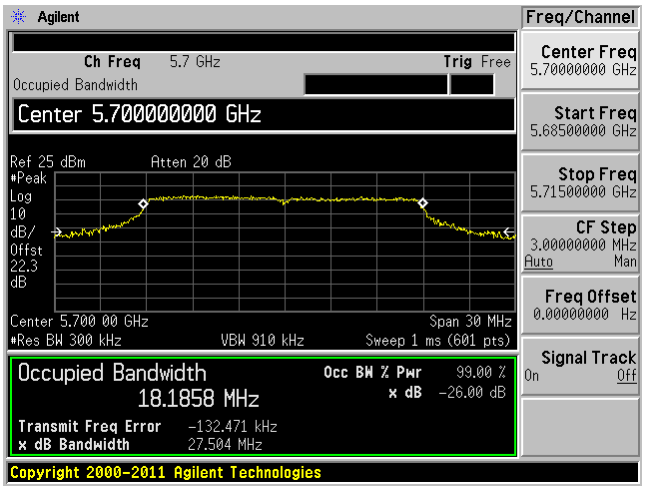
802.11n HT20 mode, 5580 MHz, Chain J0



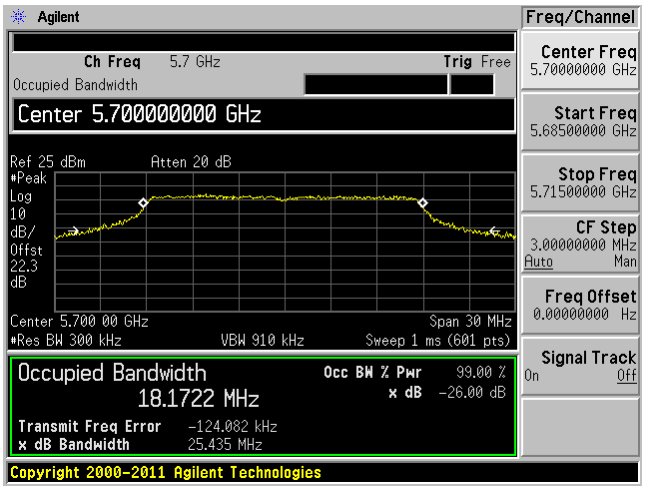
802.11n HT20 mode, 5580 MHz, Chain J1



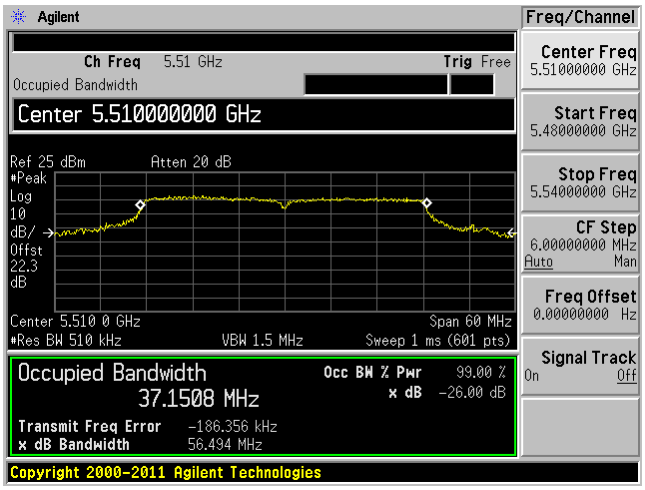
802.11n HT20 mode, 5700 MHz, Chain J0



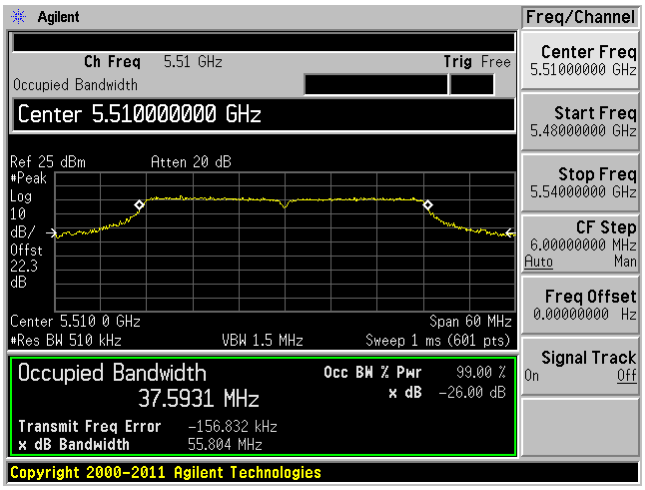
802.11n HT20 mode, 5700 MHz, Chain J1



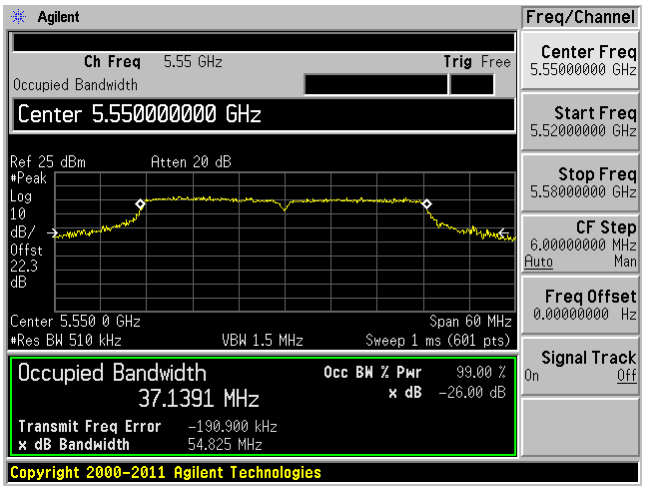
802.11n HT40 mode, 5510 MHz, Chain J0



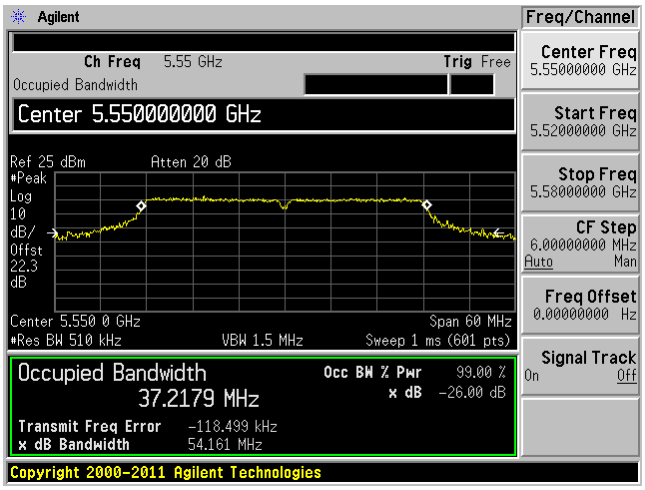
802.11n HT40 mode, 5510 MHz, Chain J1



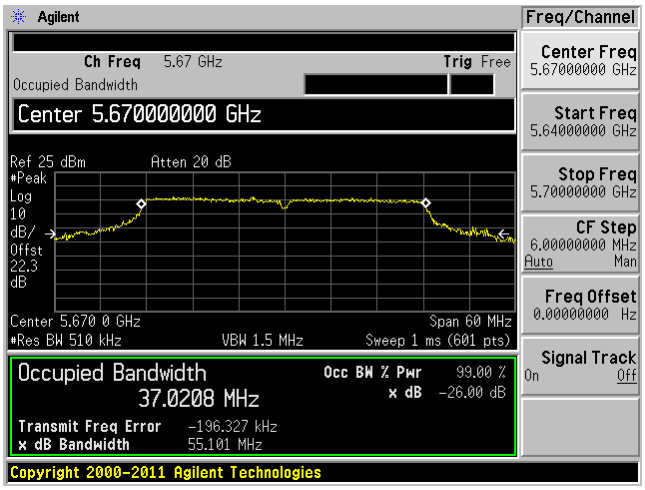
802.11n HT40 mode, 5550 MHz, Chain J0



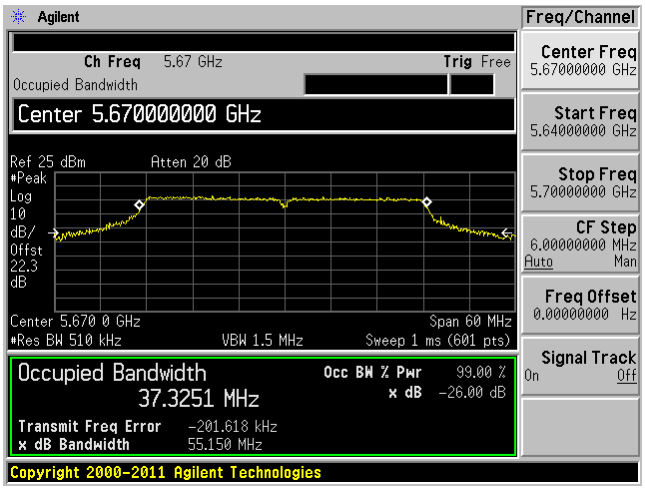
802.11n HT40 mode, 5550 MHz, Chain J1



802.11n HT40 mode, 5670 MHz, Chain J0



802.11n HT40 mode, 5670 MHz, Chain J1



9 FCC §407(a)(1) & IC RSS-210 §A9.2 - Peak Output Power Measurement

9.1 Applicable Standard

According to FCC §15.407(a)(1)

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

According to IC RSS-210 §A9.2:

For the 5.15–5.35 GHz, 5.47-5.6 GHz, and 5.650–5.725 GHz bands, the maximum conducted output power shall not exceed 250 mW or 11 dBm + 10 log B, whichever power is less. The power spectral density shall not exceed 11 dBm in any 1 megahertz band. The maximum e.i.r.p shall not exceed 1.0W or 17 + 10 10B, dbm, whichever is less. B is the 99% emission bandwidth in MHz.

9.2 Measurement Procedure

(i) Set span to encompass the entire emission bandwidth (EBW) of the signal.
(ii) Set RBW = 1 MHz.
(iii) Set VBW ≥ 3 MHz.
(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
(v) Sweep time = auto.
(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run".
(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
(ix) Compute power by integrating the spectrum across the 26 dB EBW of the signal using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges. If the spectrum analyzer does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW of the spectrum.

9.3 Test Equipment List and Details

Manufacturers	Description	Models	Serial Numbers	Calibration Dates	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	MY44303352	2012-10-16	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:	21-23 °C
Relative Humidity:	43-48 %
ATM Pressure:	101.1-101.3 kPa

The testing was performed by Lionel Lara from 2013-04-10 and 2013-04-30 at the RF site.

9.5 Test Results

5250-5350 MHz Band, Dipole Antennas:

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	19.04	17.79	21.47	24	-2.53	target
Middle	5280	18.63	17.70	21.20	24	-2.80	target
High	5320	18.41	18.90	21.67	24	-2.33	target

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	18.43	17.53	21.01	24	-2.99	target
Middle	5280	17.94	17.32	20.65	24	-3.35	target
High	5320	17.70	18.18	20.96	24	-3.04	target

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5270	18.01	17.94	20.99	24	-3.01	target
High	5310	15.27	16.64	19.02	24	-4.98	18

5250-5350 MHz Band, 5 dBi Patch Antenna:

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	19.04	17.79	21.47	24	-2.53	target
Middle	5280	18.63	17.70	21.20	24	-2.80	target
High	5320	18.41	18.90	21.67	24	-2.33	target

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	18.43	17.53	21.01	24	-2.99	target
Middle	5280	17.94	17.32	20.65	24	-3.35	target
High	5320	17.70	18.18	20.96	24	-3.04	target

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5270	18.01	17.94	20.99	24	-3.01	target
High	5310	16.17	17.40	19.84	24	-4.16	19

5250-5350 MHz Band, 7.5 dBi Patch Antenna:

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	17.91	16.72	20.37	22	-1.63	20
Middle	5280	17.47	16.91	20.21	22	-1.79	20
High	5320	17.04	18.06	20.59	22	-1.41	20

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	17.14	16.75	19.96	22	-2.04	20
Middle	5280	17.94	17.32	20.65	22	-1.35	target
High	5320	16.32	18.21	20.38	22	-1.62	20

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5270	18.01	17.94	20.99	22	-1.01	target
High	5310	16.17	17.40	19.84	22	-2.16	19

5470-5725 MHz Band, Dipole Antennas/5 dBi Patch Antenna/7.5 dBi Patch Antenna:

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5500	17.17	18.27	20.77	24/22*	-3.23/ -1.23	target
Middle	5580	16.38	16.95	19.68	24/22*	-4.32/ -2.32	target
High	5700	15.76	16.14	18.96	24/22*	-5.04/ -3.04	target

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5500	16.41	18.12	20.36	24/22*	-3.64/ -1.64	target
Middle	5580	16.49	17.30	19.92	24/22*	-4.08/ -2.08	target
High	5700	15.94	16.65	19.32	24/22*	-4.68/ -2.68	target

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J0 Power (dBm)	TX Chain J1 Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5510	16.92	17.85	20.42	24/22*	-3.58/ -1.58	target
Middle	5550	17.25	17.85	20.57	24/22*	-3.43/ -1.43	target
High	5670	16.35	16.18	19.28	24/22*	-4.72/ -2.72	target

Note: Dipole and patch antennas have the same software settings for every mode and channel, therefore the output at the antenna port is the same.

*Note * : Lower limit applies to the 7.5 dBi patch antenna. Please refer to the antenna requirement section.*

10 FCC §15.407(b) & IC RSS-210 §A9.2 - Out of Band Emissions

10.1 Applicable Standard

According to FCC §15.407(b)

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 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz

According to RSS-210 §A8.5, in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required.

10.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

10.3 Test Equipment List and Details

Manufacturers	Description	Models	Serial Numbers	Calibration Dates	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	US42221851	2012-02-28	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:	24 °C
Relative Humidity:	45 %
ATM Pressure:	101.1 kPa

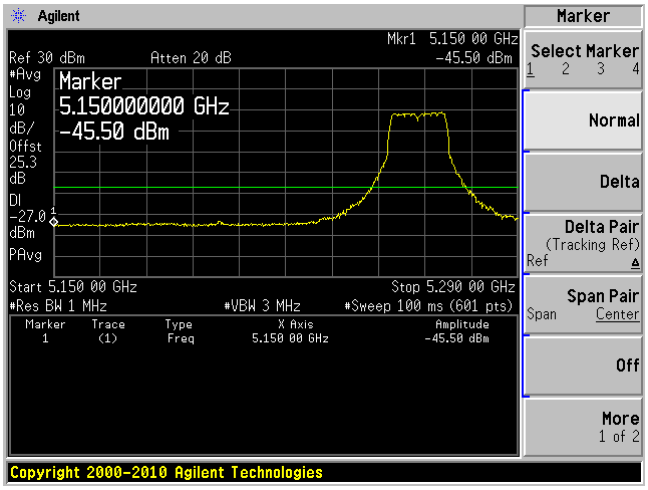
The testing was performed by Jeffrey Wu on 2012-10-22 in RF site.

10.5 Test Results

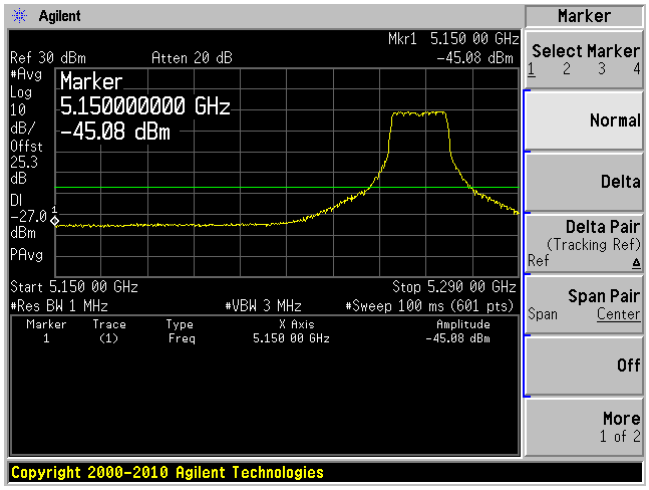
Please refer to following pages for plots of band edge.

5250-5350 MHz Band

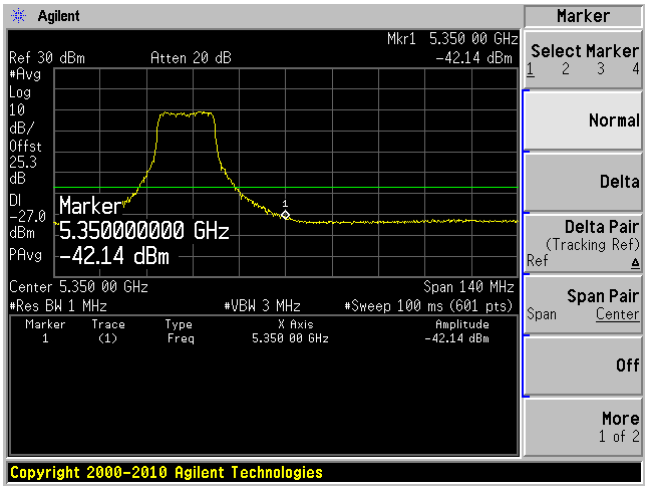
802.11a mode, Lowest Channel, Chain J0



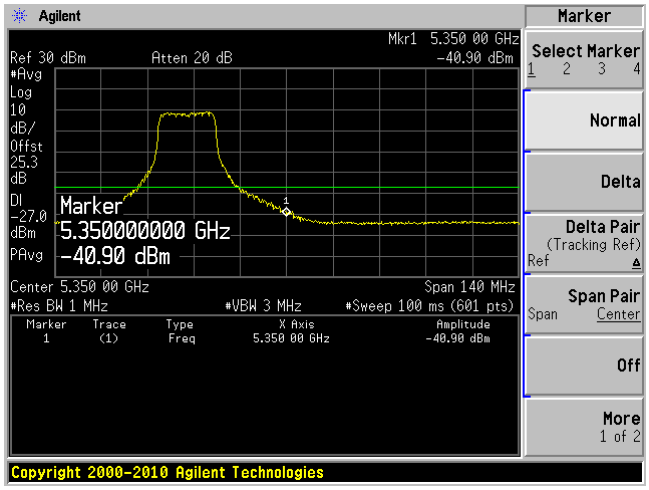
802.11a mode, Lowest Channel, Chain J1



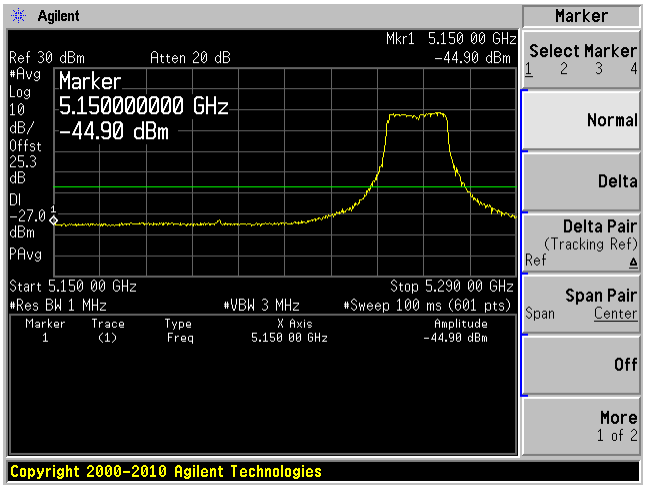
802.11a mode, Highest Channel, Chain J10



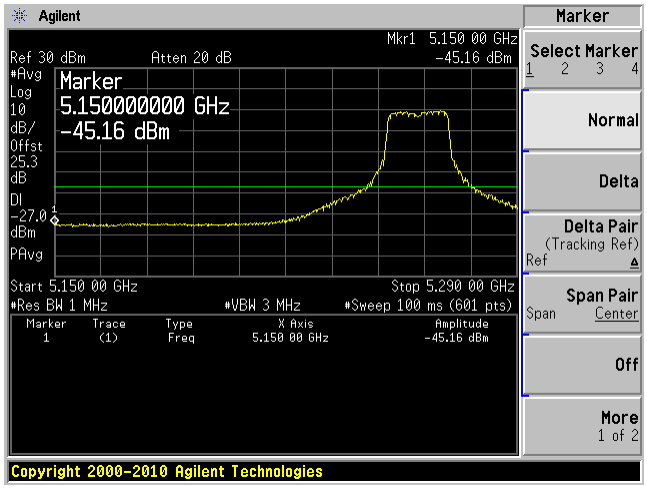
802.11a mode, Highest Channel, Chain J8



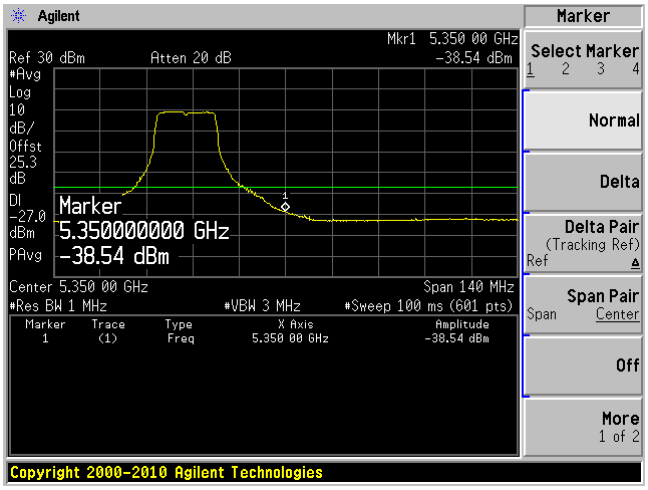
802.11n HT20 mode, Lowest Channel, Chain J0



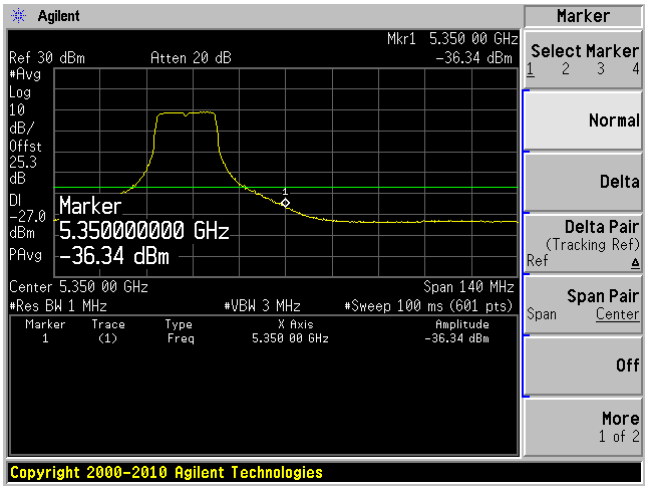
802.11n HT20 mode, Lowest Channel, Chain J1



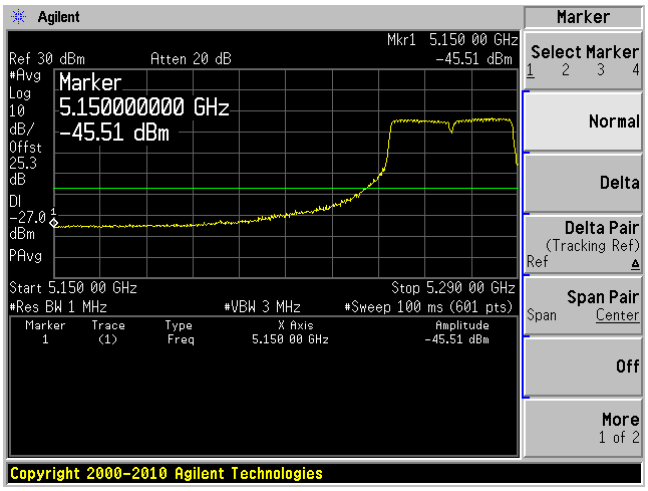
802.11n HT20 mode, Highest Channel, Chain J0



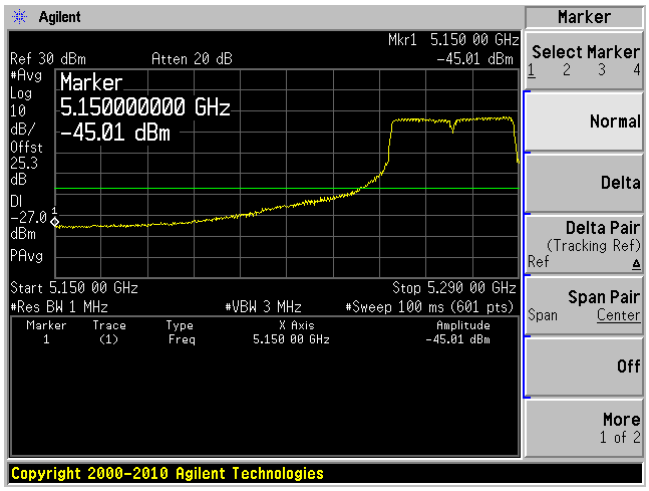
802.11n HT20 mode, Highest Channel, Chain J1



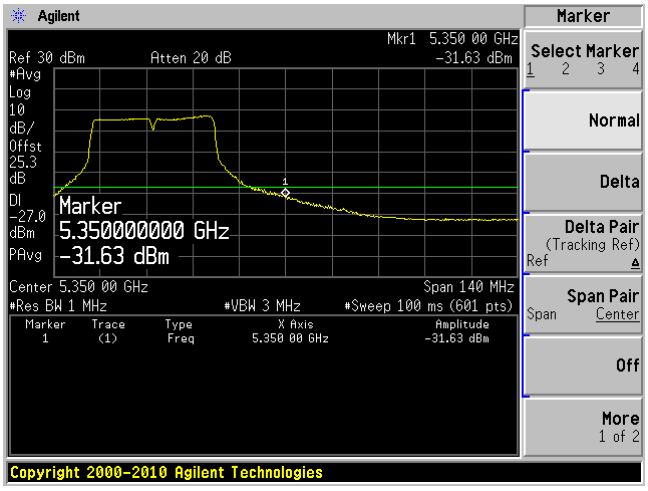
802.11n HT40 mode, Lowest Channel, Chain J0



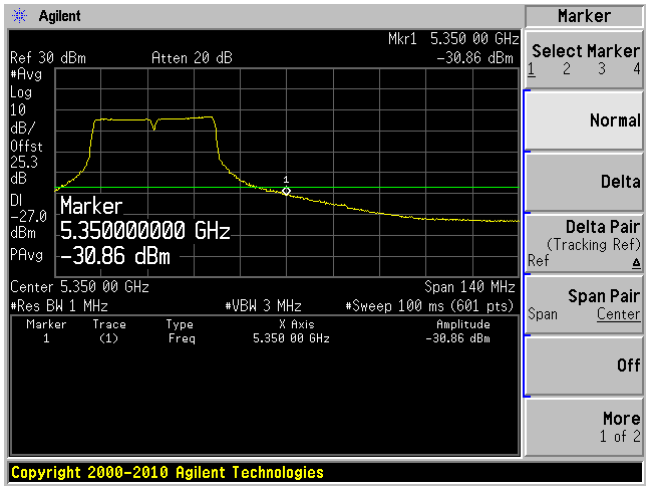
802.11n HT40 mode, Lowest Channel, Chain J1



802.11n HT40 mode, Highest Channel, Chain J0

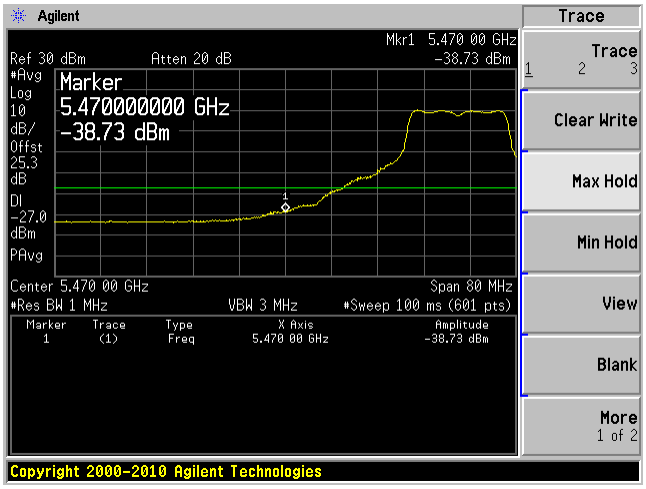


802.11n HT40 mode, Highest Channel, Chain J1

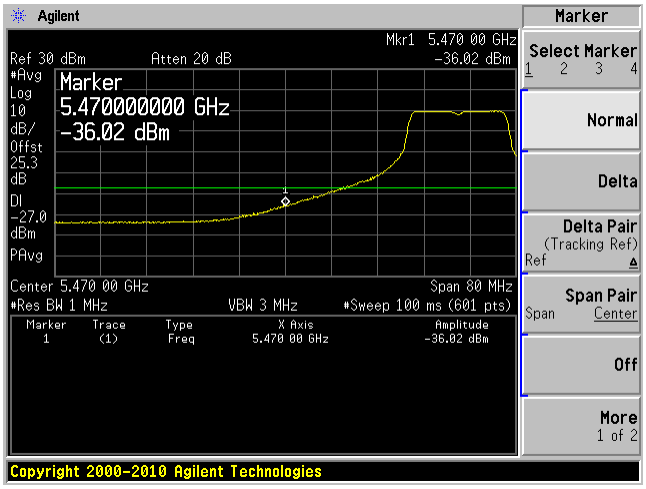


5470-5725 MHz Band

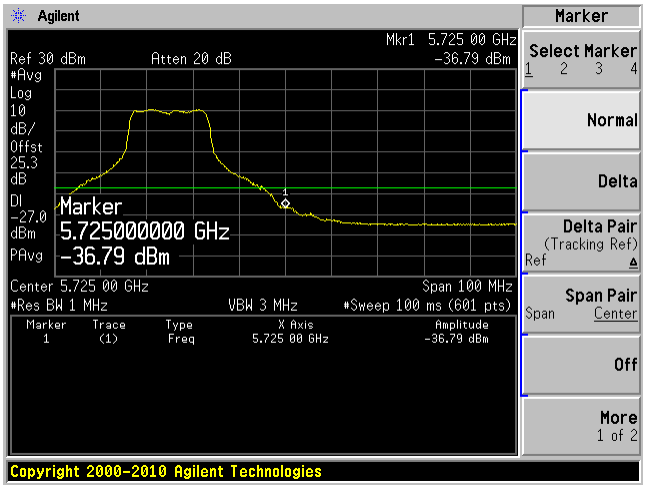
802.11a mode, Lowest Channel, Chain J0



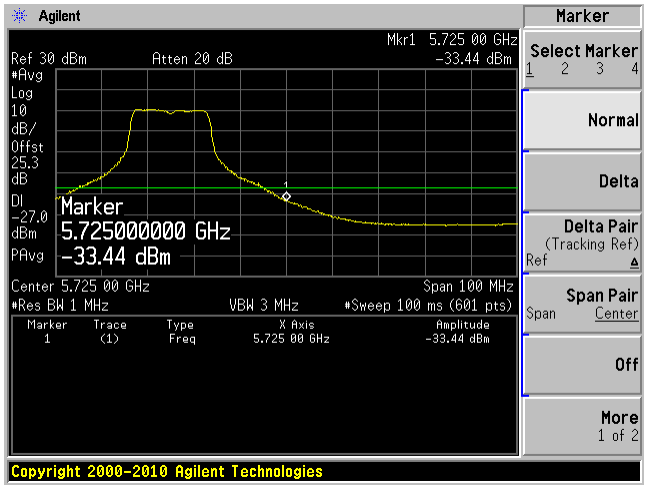
802.11a mode, Lowest Channel, Chain J1



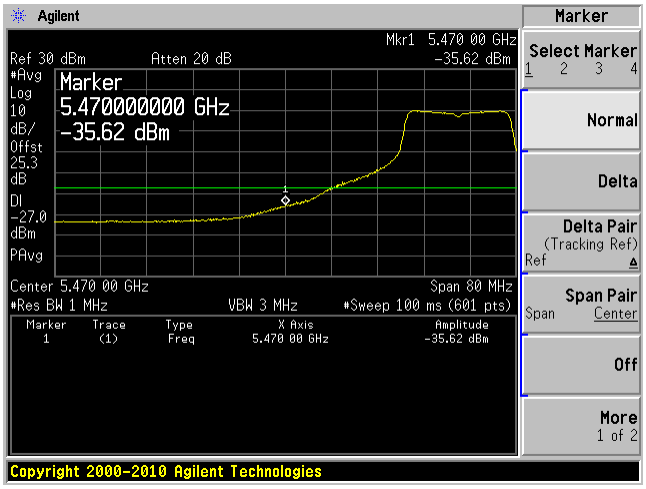
802.11a mode, Highest Channel, Chain J0



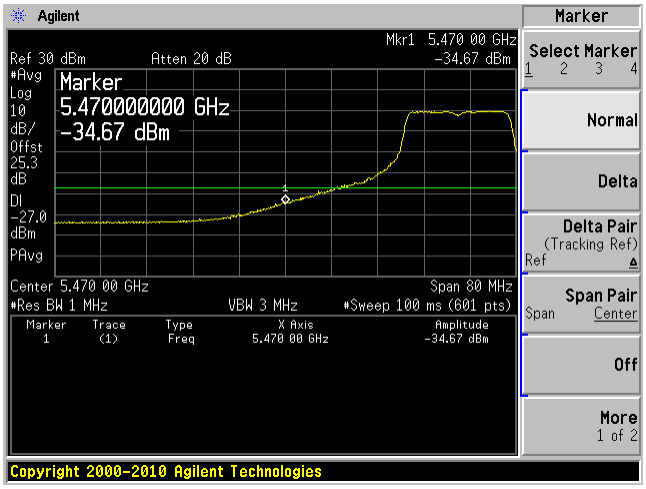
802.11a mode, Highest Channel, Chain J1



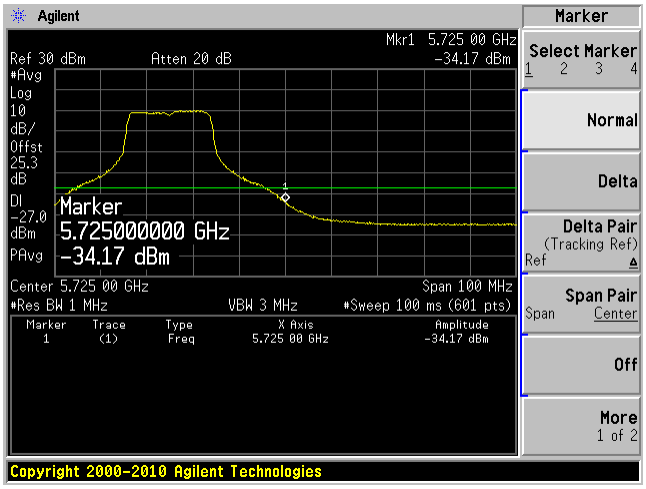
802.11n HT20 mode, Lowest Channel, Chain J0



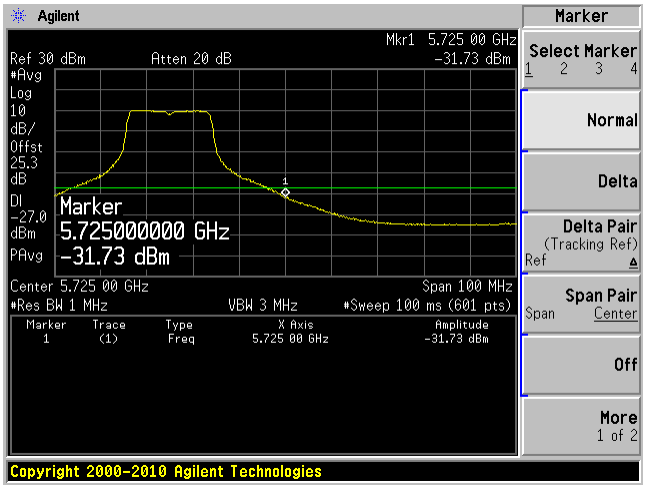
802.11n HT20 mode, Lowest Channel, Chain J1



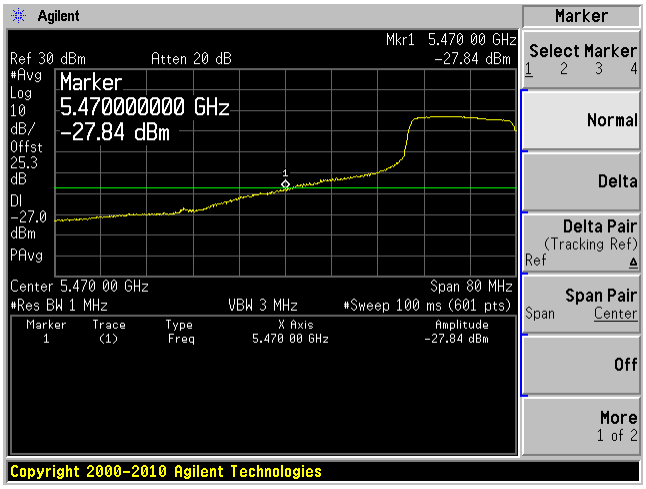
802.11n HT20 mode, Highest Channel, Chain J0



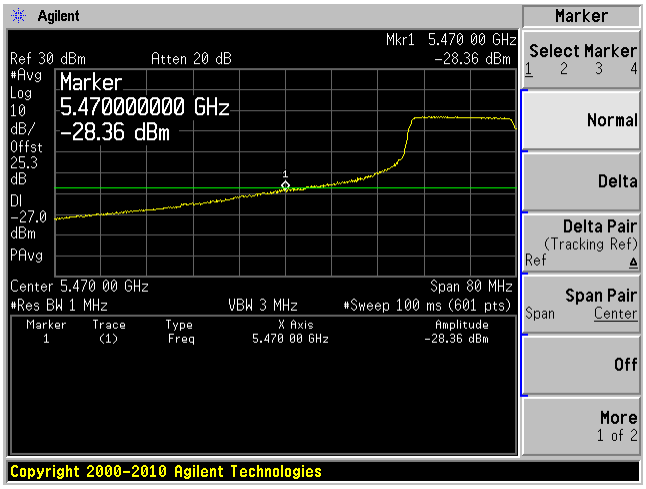
802.11n HT20 mode, Highest Channel, Chain J1



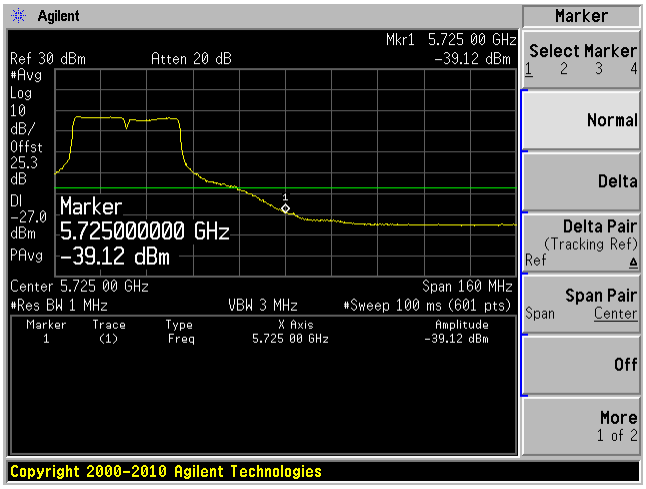
802.11n HT40 mode, Lowest Channel, Chain J0



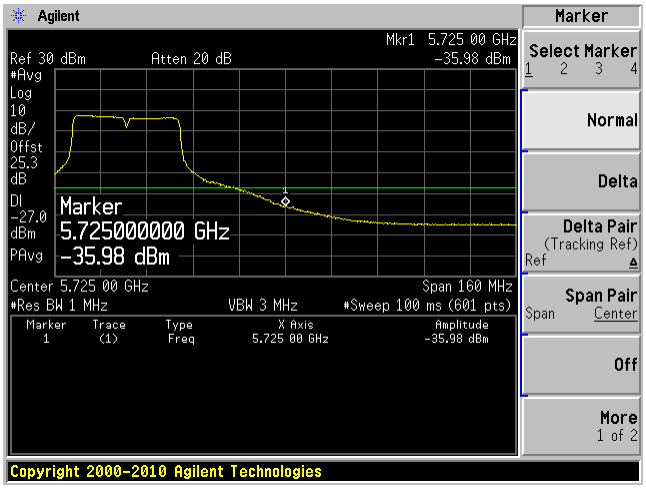
802.11n HT40 mode, Lowest Channel, Chain J1



802.11n HT40 mode, Highest Channel, Chain J0



802.11n HT40 mode, Highest Channel, Chain J1



11 FCC §15.407(a)(1) & IC RSS-210 §A9.2 - Power Spectral Density

11.1 Applicable Standard

According to FCC §15.407(a)(1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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

According to IC RSS-210 §A9.2:

5150-5250 MHz the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

For the 5.25–5.35 GHz, 5.47-5.6 GHz, and 5.650–5.725 GHz bands, the maximum conducted output power shall not exceed 250 mW or 11 dBm + 10 log B, whichever power is less. The power spectral density shall not exceed 11 dBm in any 1 megahertz band. The maximum e.i.r.p shall not exceed 1.0W or 17 + 10 10B, dbm, whichever is less. B is the 99% emission bandwidth in MHz.

11.2 Measurement Procedure

(i) Set span to encompass the entire emission bandwidth (EBW) of the signal.
(ii) Set RBW = 1 MHz.
(iii) Set VBW ≥ 3 MHz.
(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
(v) Sweep time = auto.
(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run".
(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
(ix) Compute power by integrating the spectrum across the 26 dB EBW of the signal using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges. If the spectrum analyzer does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW of the spectrum.

11.3 Test Equipment List and Details

Manufacturers	Description	Models	Serial Numbers	Calibration Dates	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	MY44303352	2012-10-16	1 year

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

11.4 Test Environmental Conditions

Temperature:	21-23 °C
Relative Humidity:	43-48 %
ATM Pressure:	101.1-101.3 kPa

The testing was performed by Lionel Lara from 2013-04-10 and 2013-04-30 at the RF site.

11.5 Test Results

5250-5350 MHz Band, Dipole Antennas:

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	6.920	5.971	9.48	11	-1.52	target
Middle	5280	6.796	5.949	9.40	11	-1.60	target
High	5320	6.290	6.650	9.48	11	-1.52	target

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	6.643	5.830	9.27	11	-1.73	target
Middle	5280	6.204	5.611	8.93	11	-2.07	target
High	5320	5.922	6.738	9.36	11	-1.64	target

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5270	3.656	2.942	6.32	11	-4.68	target
High	5310	1.269	1.328	4.31	11	-6.69	18

5250-5350 MHz Band, 5 dBi Patch Antenna:

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	6.920	5.971	9.48	11	-1.52	target
Middle	5280	6.796	5.949	9.40	11	-1.60	target
High	5320	6.290	6.650	9.48	11	-1.52	target

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	6.643	5.830	9.27	11	-1.73	target
Middle	5280	6.204	5.611	8.93	11	-2.07	target
High	5320	5.922	6.738	9.36	11	-1.64	target

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5270	3.656	2.942	6.32	11	-4.68	target
High	5310	2.045	2.582	5.33	11	-5.67	19

5250-5350 MHz Band, 7.5 dBi Patch Antenna:

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	6.088	5.718	8.92	9	-0.08	20
Middle	5280	5.874	5.951	8.92	9	-0.08	20
High	5320	5.641	6.117	8.90	9	-0.10	20

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5260	5.506	5.261	8.40	9	-0.60	20
Middle	5280	6.204	5.611	8.93	9	-0.07	target
High	5320	4.587	6.256	8.51	9	-0.49	20

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5270	3.656	2.942	6.32	9	-2.68	target
High	5310	2.045	2.582	5.33	9	-3.67	19

5470-5725 MHz, Dipole Antennas/5 dBi Patch Antenna/7.5 dBi Patch Antenna:

802.11a mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5500	4.876	6.207	8.60	11/9*	-2.40/ -0.40	target
Middle	5580	4.008	5.079	7.59	11/9*	-3.41/ -1.41	target
High	5700	3.768	4.820	7.34	11/9*	-3.66/ -1.66	target

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5500	5.521	6.238	8.90	11/9*	-2.10/ -0.10	target
Middle	5580	5.326	5.278	8.31	11/9*	-2.69/ -1.69	target
High	5700	4.887	4.948	7.93	11/9*	-3.07/ -1.07	target

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J0 PSD (dBm)	TX Chain J1 PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	5510	2.315	3.271	5.83	11/9*	-5.17/ -3.17	target
Middle	5550	2.331	3.172	5.78	11/9*	-5.22/ -3.22	target
High	5670	1.590	1.982	4.80	11/9*	-6.20/ -4.20	target

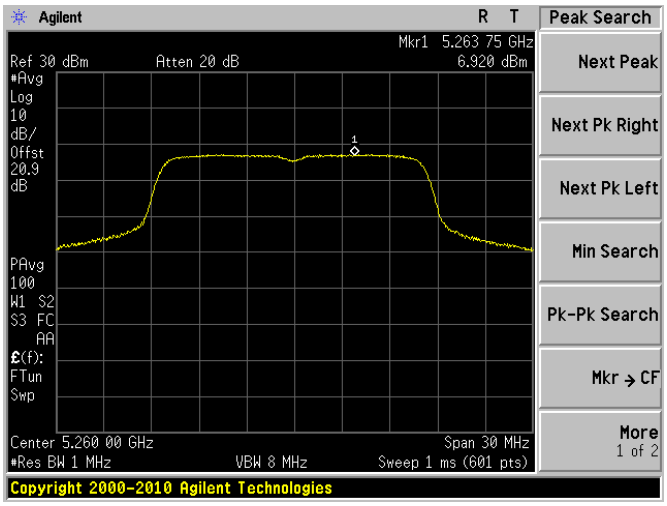
Note: Dipole and patch antennas have the same software settings for every mode and channel, therefore the output at the antenna port is the same.
*Note * : Lower limit applies to the 7.5 dBi patch antenna. Please refer to the antenna requirement section.*

Please refer to the following plots.

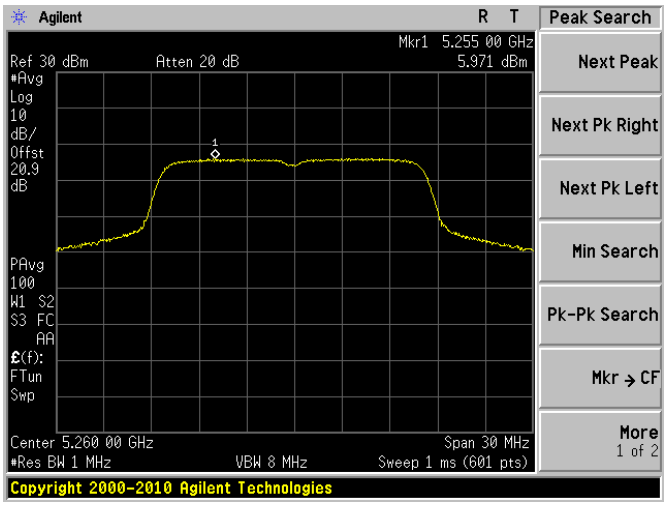
5250-5350 MHz Band, Dipole Antennas

802.11a mode

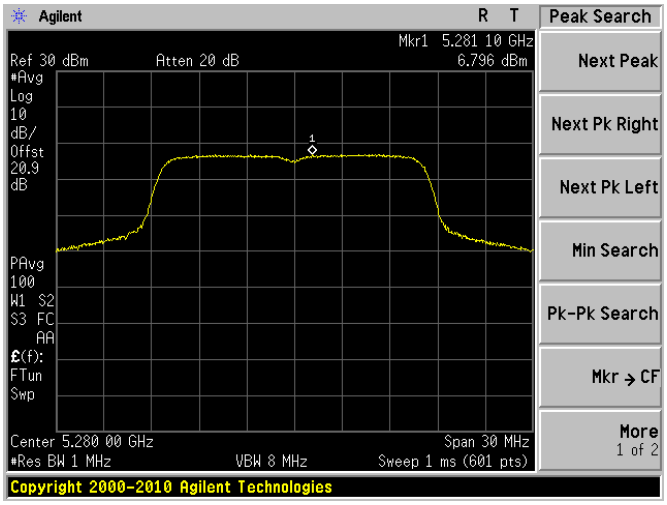
802.11a mode, 5260 MHz, Chain J0



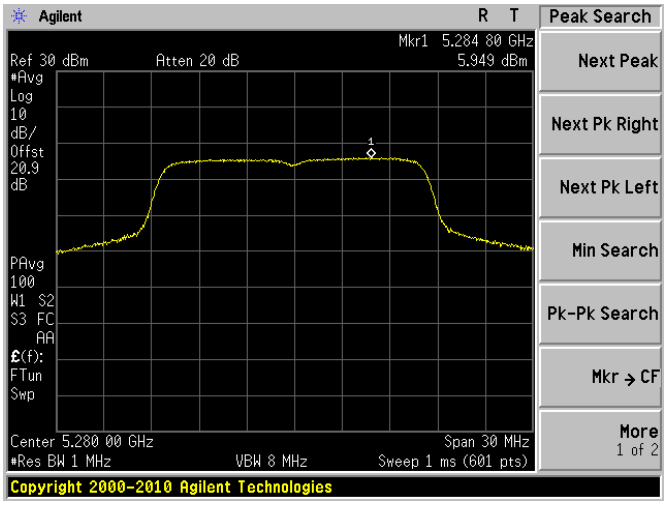
802.11a mode, 5260 MHz, Chain J1



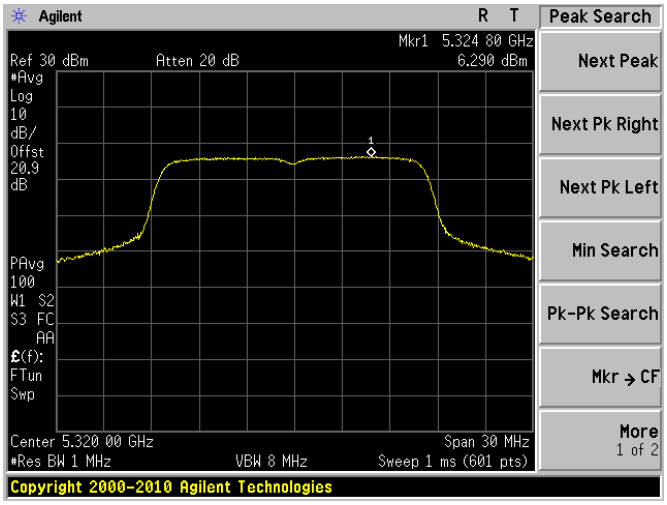
802.11a mode, 5280 MHz, Chain J0



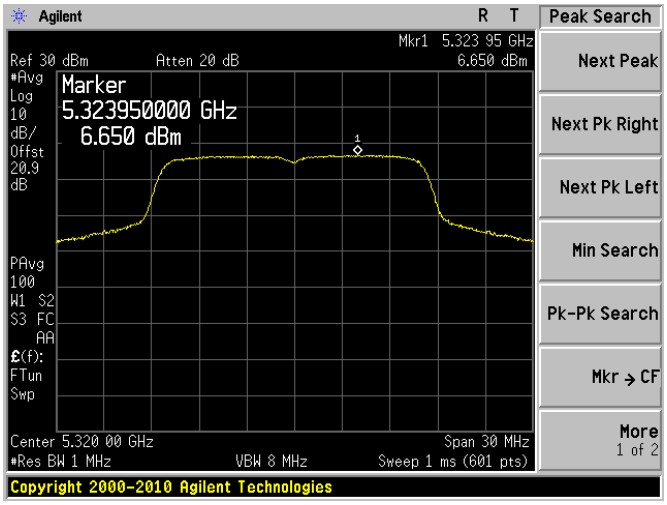
802.11a mode, 5280 MHz, Chain J1



802.11a mode, 5320 MHz, Chain J0

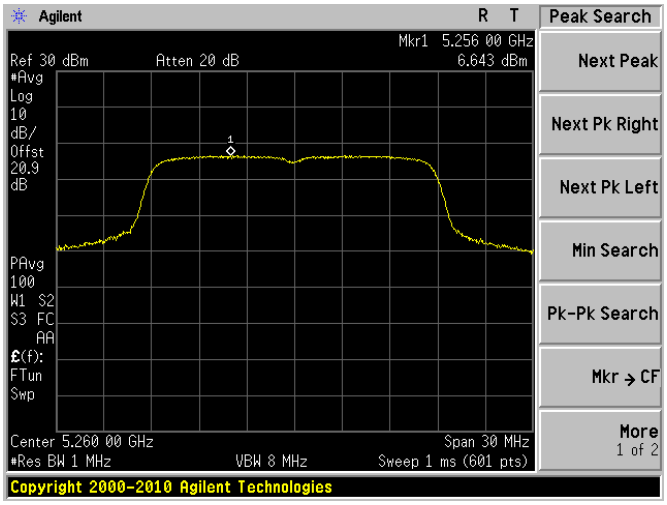


802.11a mode, 5320 MHz, Chain J1

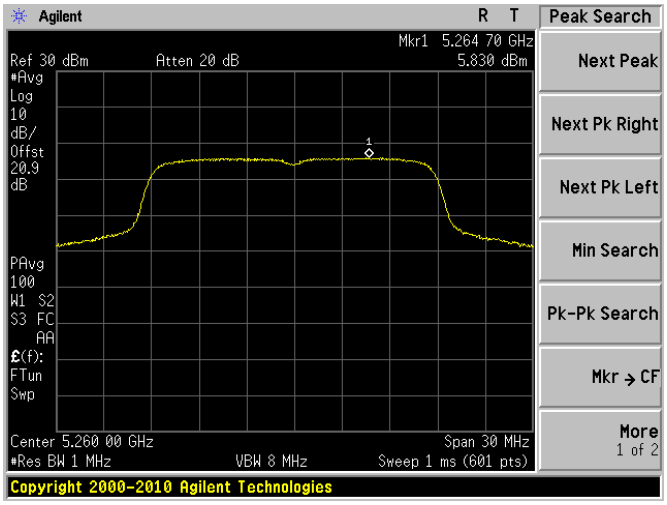


802.11n HT20 mode

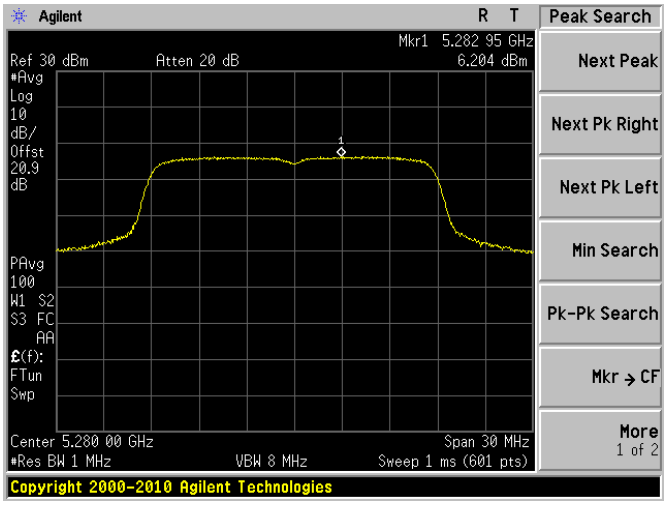
802.11n HT20 mode, 5260 MHz, Chain J0



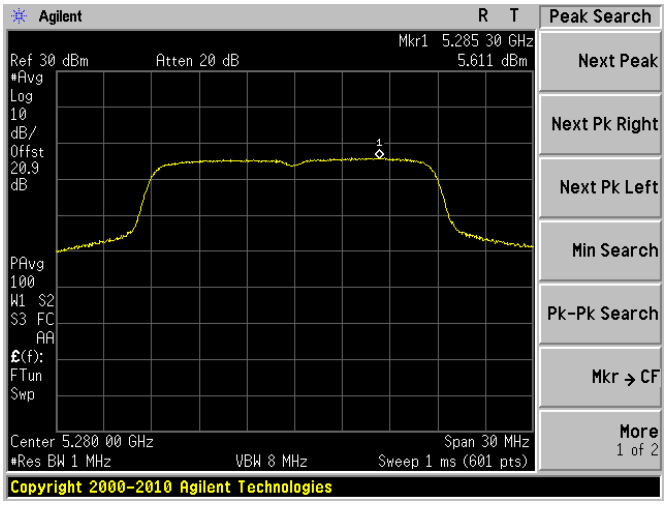
802.11n HT20 mode, 5260 MHz, Chain J1



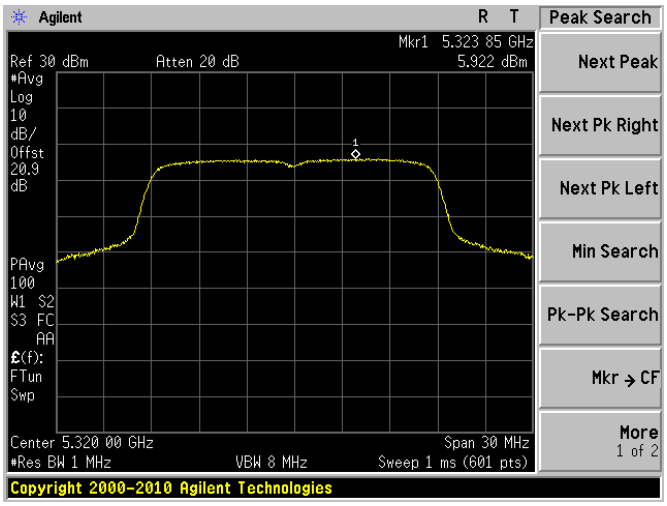
802.11n HT20 mode, 5280 MHz, Chain J0



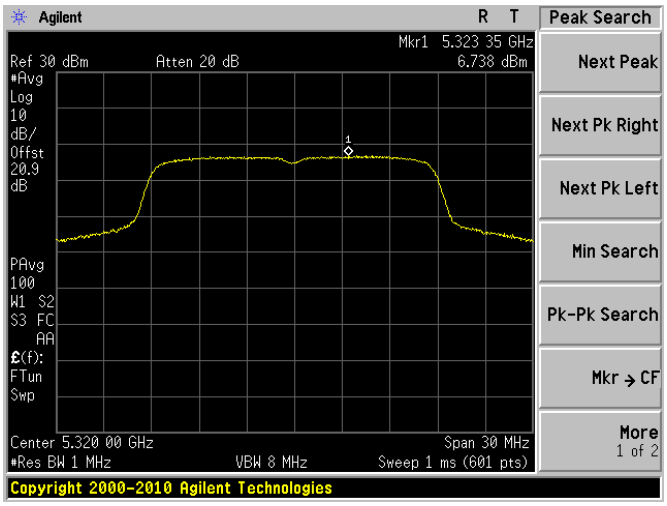
802.11n HT20 mode, 5280 MHz, Chain J1



802.11n HT20 mode, 5320 MHz, Chain J0

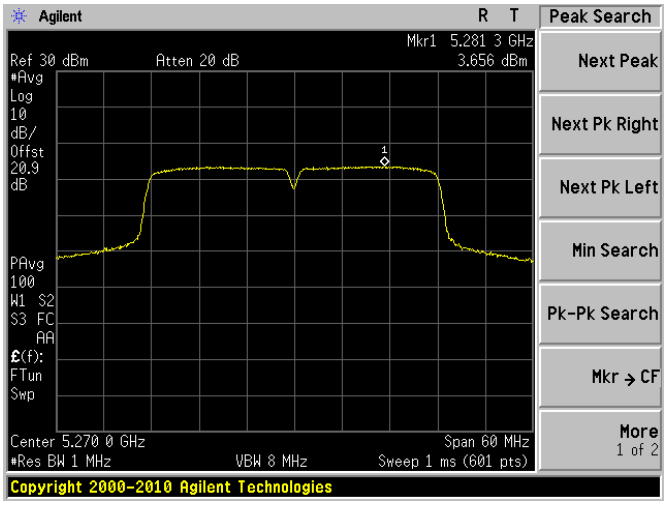


802.11n HT20 mode, 5320 MHz, Chain J1

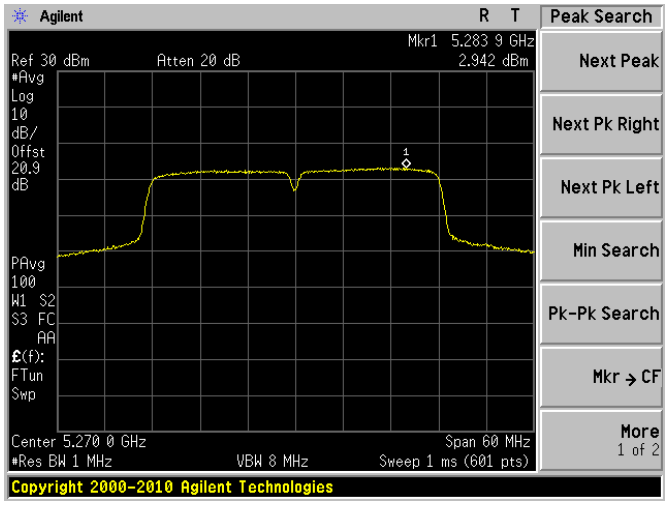


802.11n HT40 mode

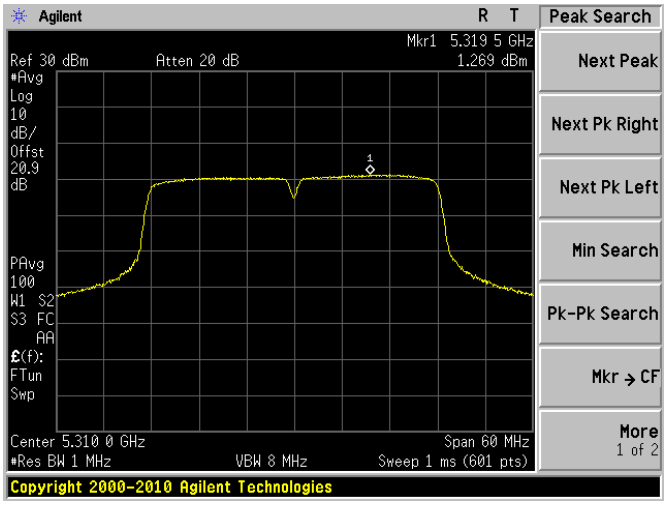
802.11n HT40 mode, 5270 MHz, Chain J0



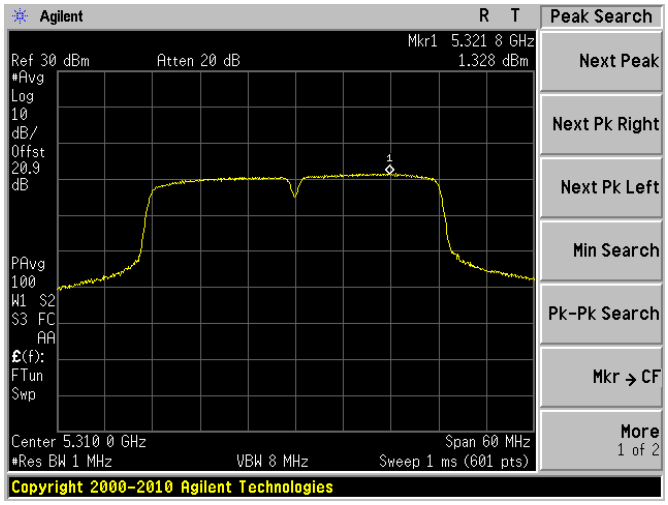
802.11n HT40 mode, 5270 MHz, Chain J1



802.11n HT40 mode, 5310 MHz, Chain J0



802.11n HT40 mode, 5310 MHz, Chain J1

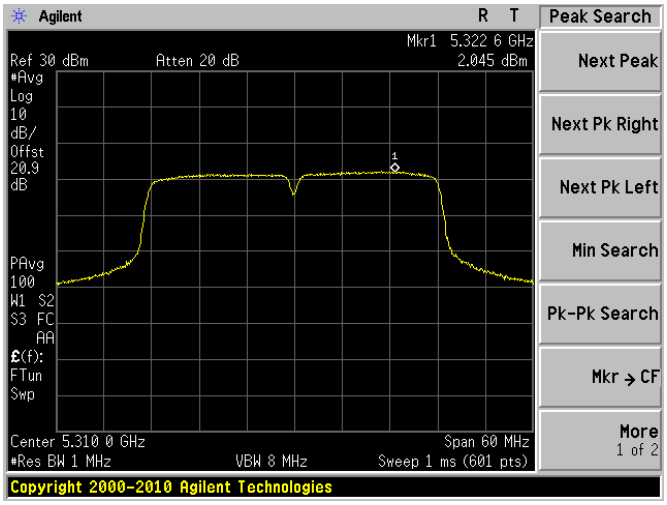


5250-5350 MHz Band, 5 dBi Patch Antenna

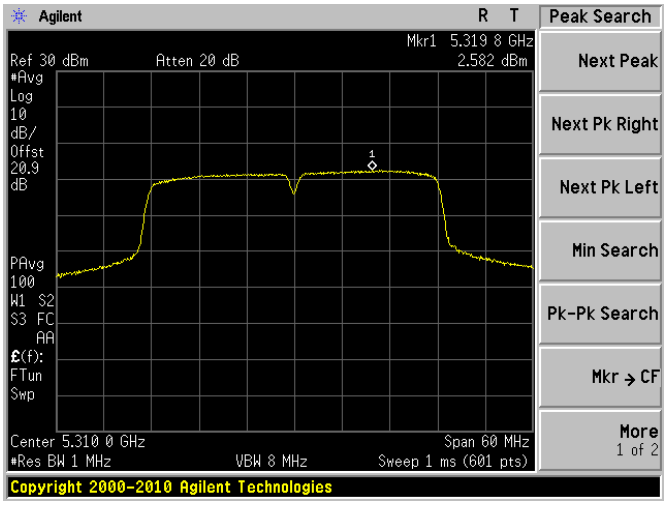
(Note: Only the channels with different software setting will be included for the 5 dBi patch antenna. For all other channels refer to the dipole antennas section)

802.11n HT40 mode

802.11n HT40 mode, 5310 MHz, Chain J0



802.11n HT40 mode, 5310 MHz, Chain J1

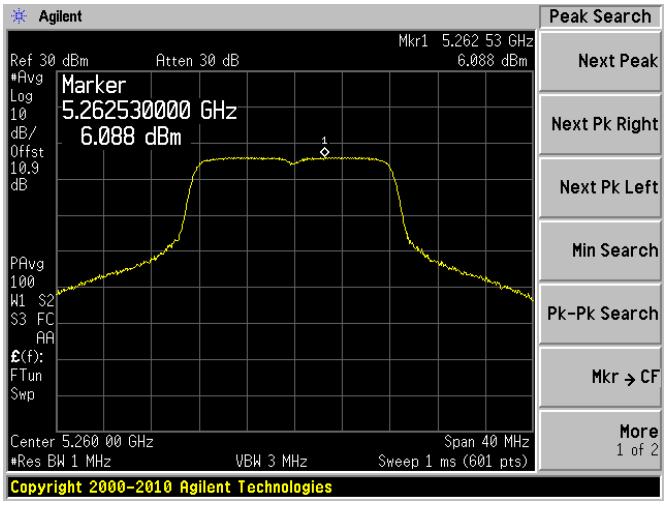


5250-5350 MHz Band, 7.5 dBi Patch Antenna

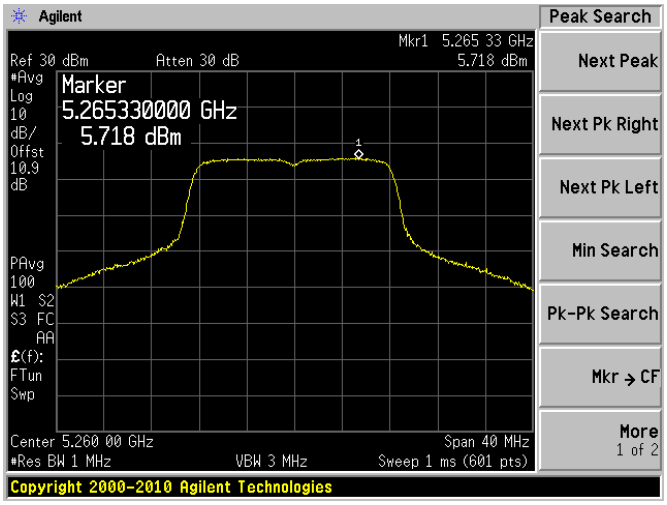
(Note: Only the channels with different software setting will be included for the7.5 dBi patch antenna. For all other channels refer to the dipole antennas section)

802.11a mode

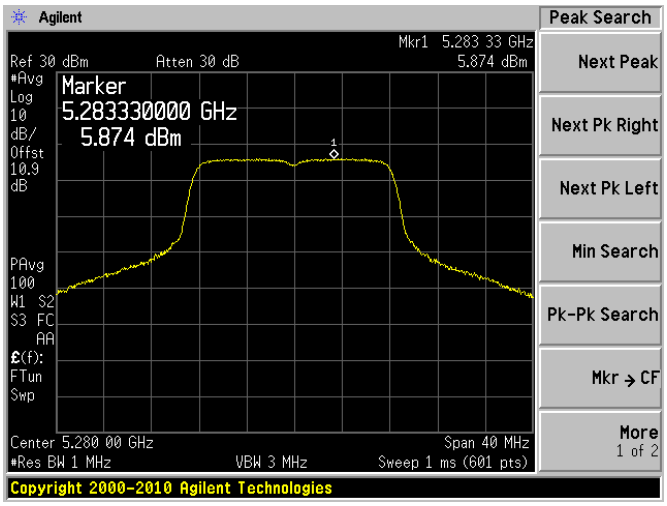
802.11a mode, 5260 MHz, Chain J0



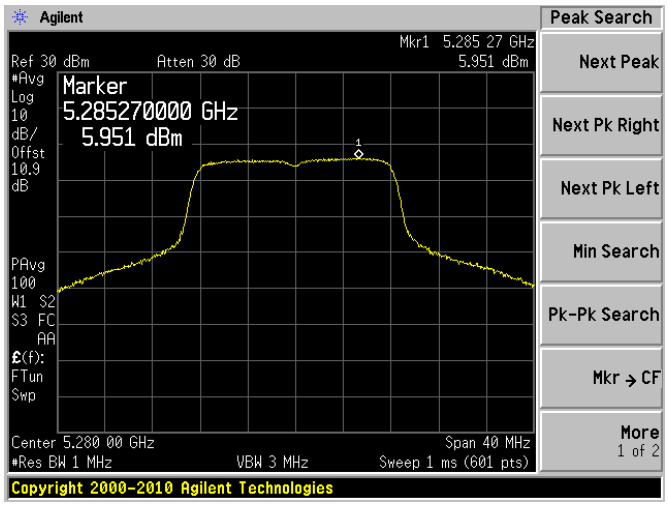
802.11a mode, 5260 MHz, Chain J1



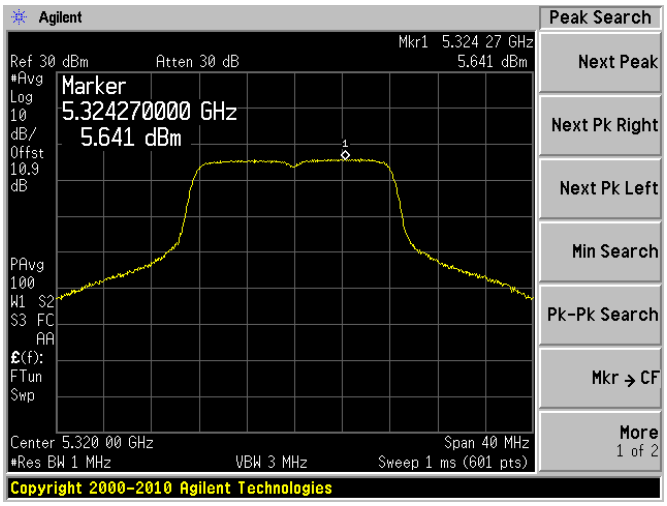
802.11a mode, 5280 MHz, Chain J0



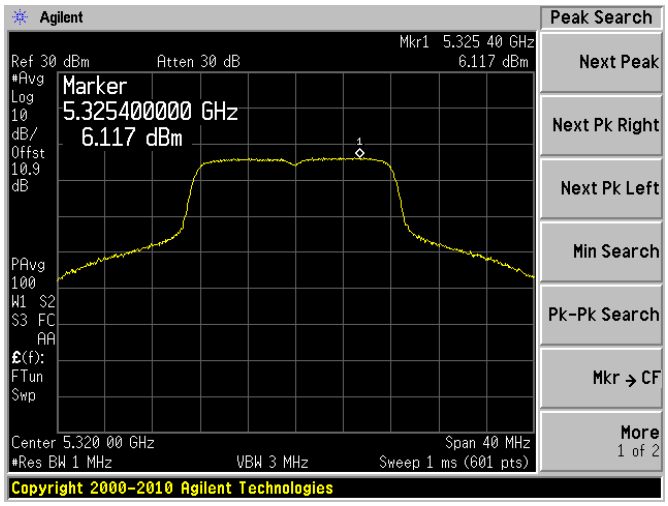
802.11a mode, 5280 MHz, Chain J1



802.11a mode, 5320 MHz, Chain J0

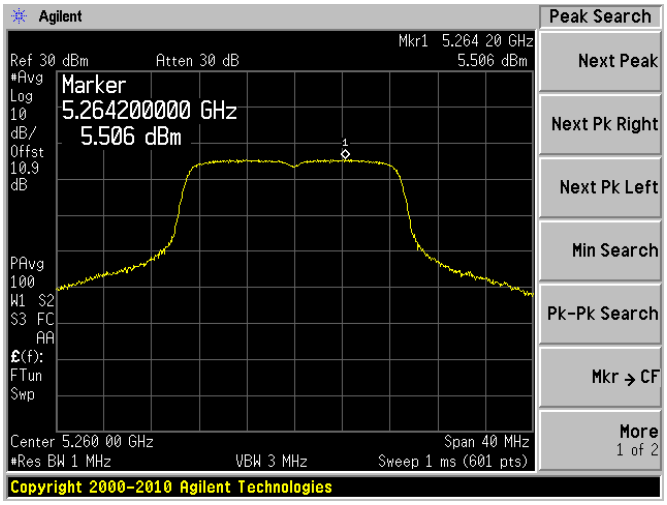


802.11a mode, 5320 MHz, Chain J1

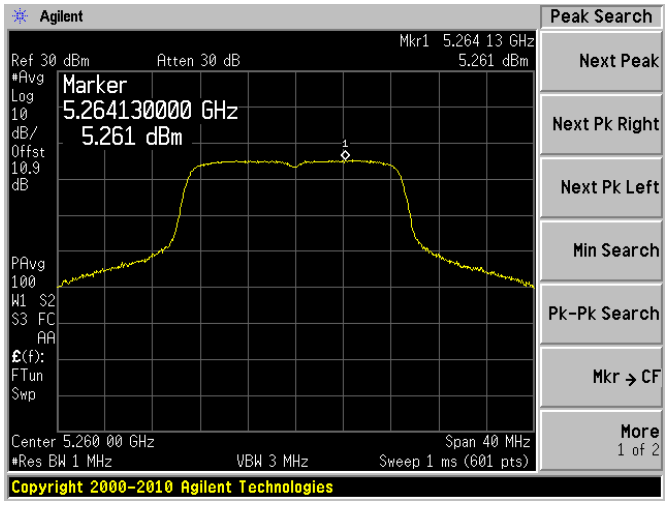


802.11n HT20 mode

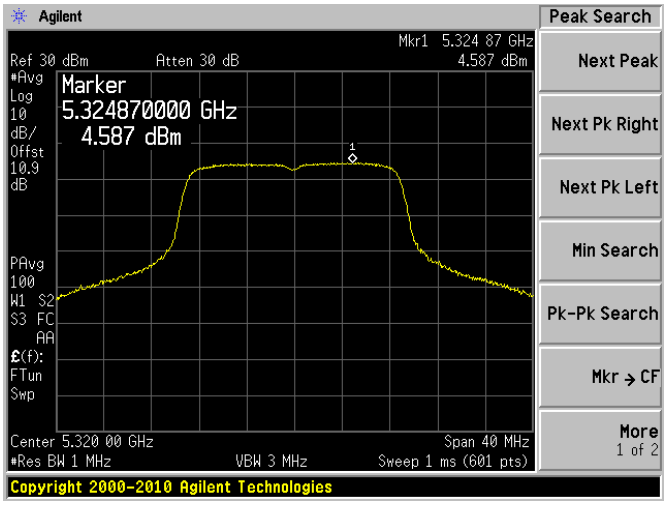
802.11n HT20 mode, 5260 MHz, Chain J0



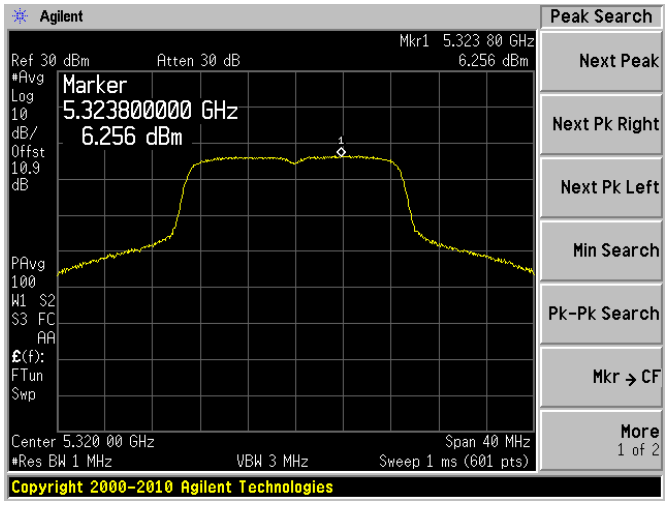
802.11n HT20 mode, 5260 MHz, Chain J1



802.11n HT20 mode, 5320 MHz, Chain J0



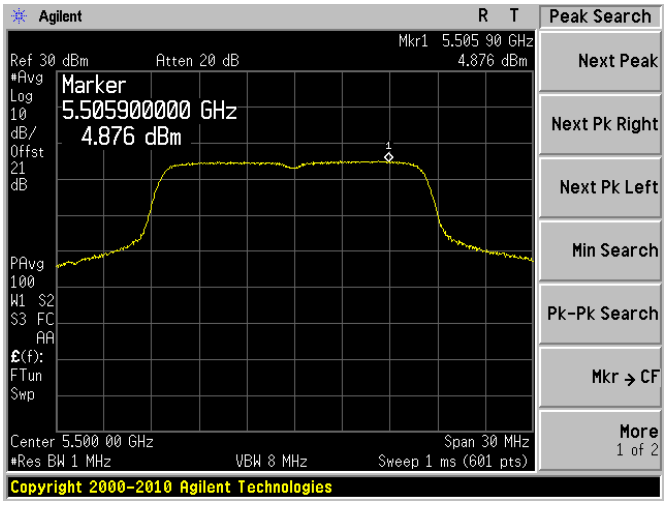
802.11n HT20 mode, 5320 MHz, Chain J1



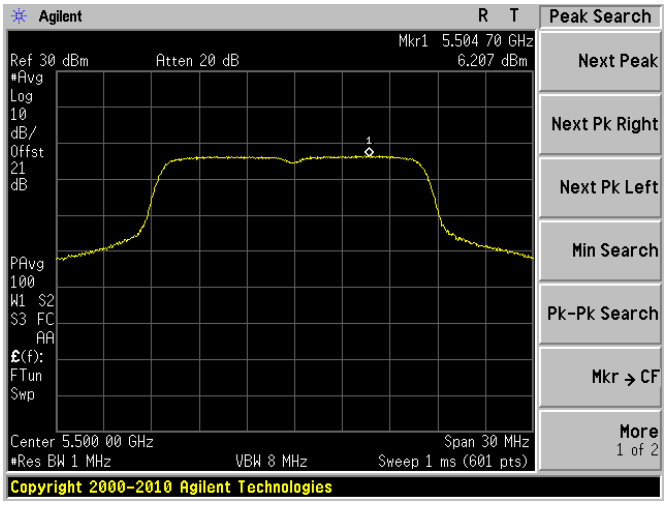
5470-5725 MHz Band, Dipole Antennas

802.11a mode

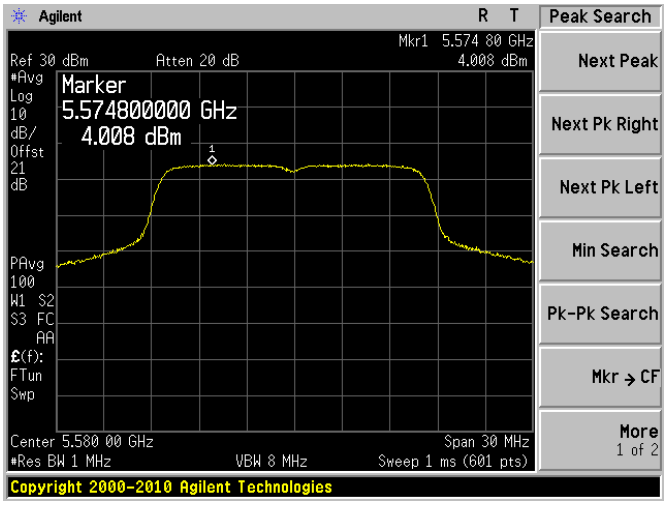
802.11a mode, 5500 MHz, Chain J0



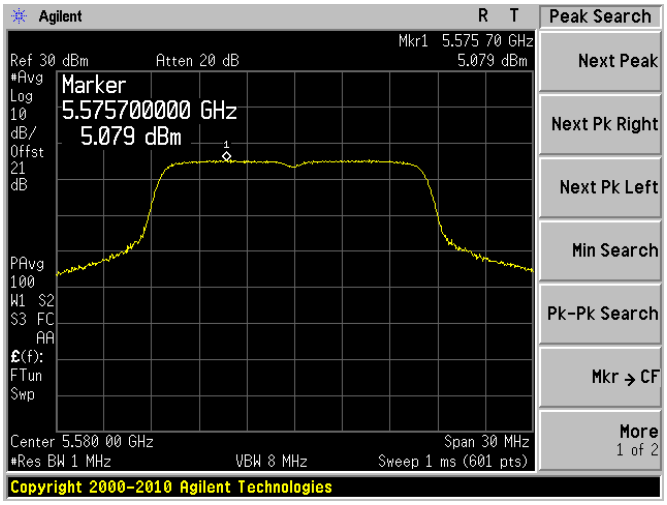
802.11a mode, 5500 MHz, Chain J1



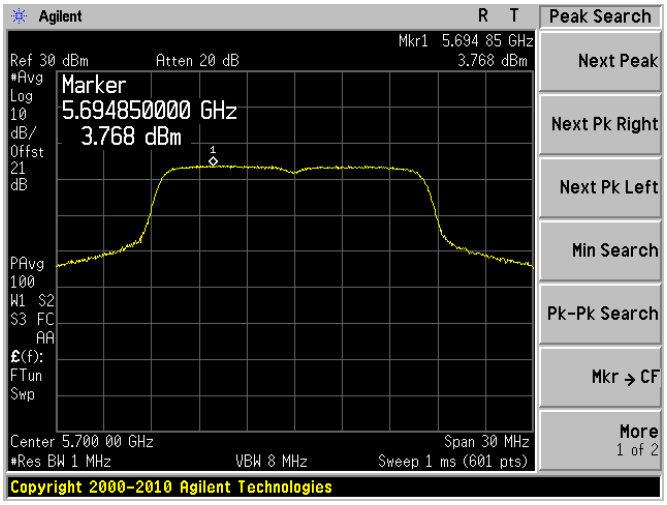
802.11a mode, 5580 MHz, Chain J0



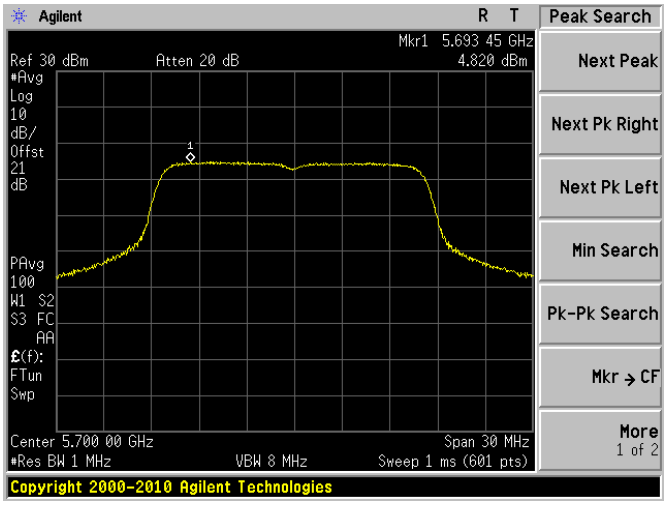
802.11a mode, 5580 MHz, Chain J1



802.11a mode, 5700 MHz, Chain J0

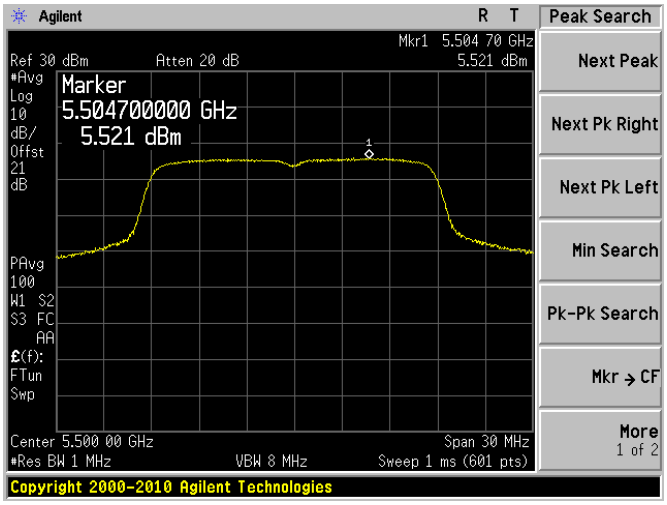


802.11a mode, 5700 MHz, Chain J1

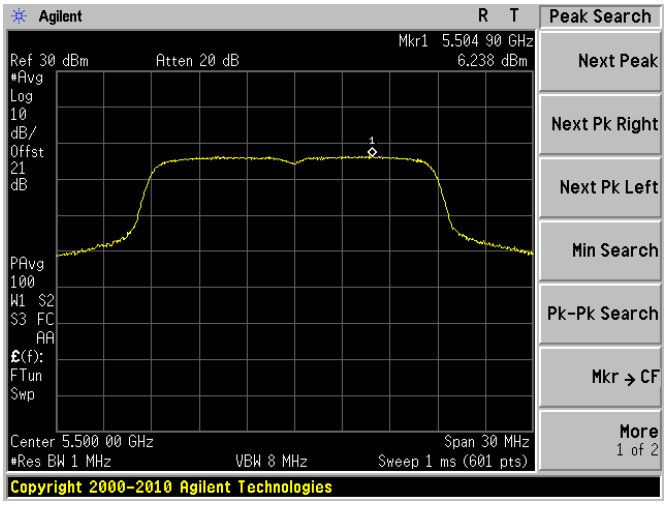


802.11n HT20 mode

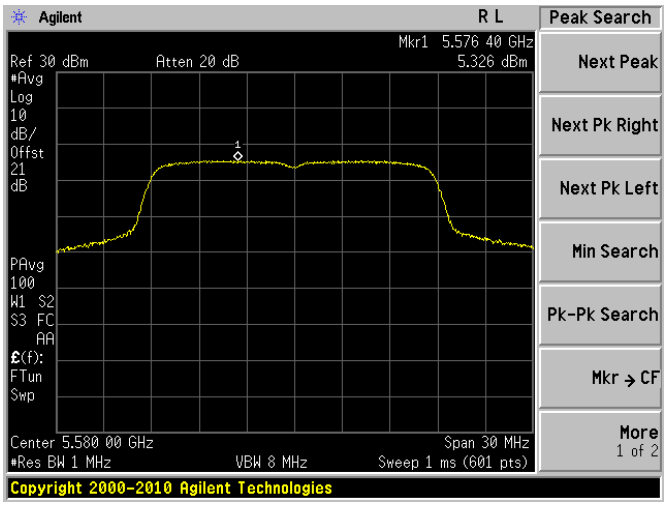
802.11n HT20 mode, 5500 MHz, Chain J0



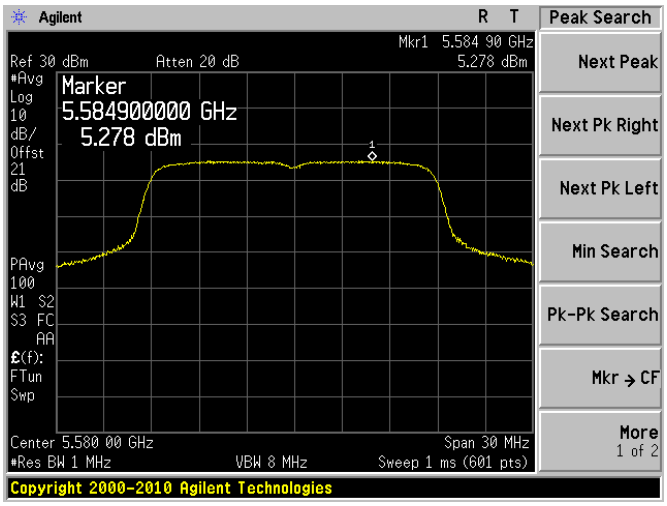
802.11n HT20 mode, 5500 MHz, Chain J1



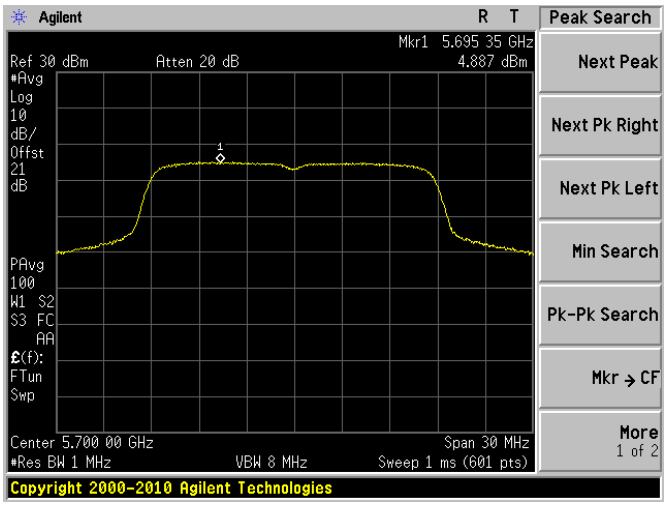
802.11n HT20 mode, 5580 MHz, Chain J0



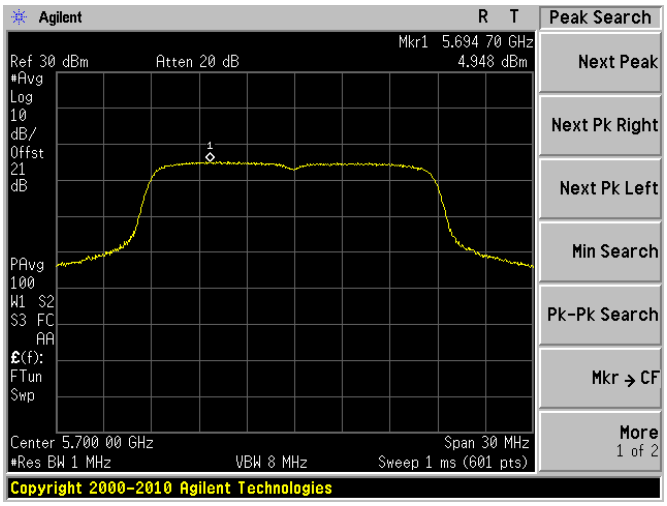
802.11n HT20 mode, 5580 MHz, Chain J1



802.11n HT20 mode, 5700 MHz, Chain J0

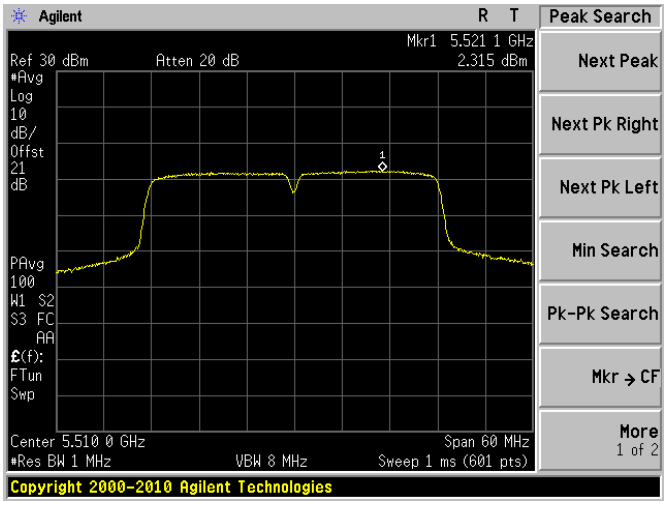


802.11n HT20 mode, 5700 MHz, Chain J1

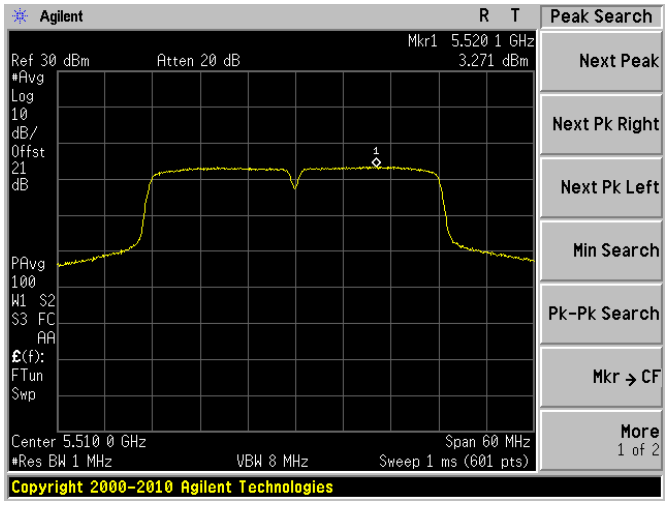


802.11n HT40 mode

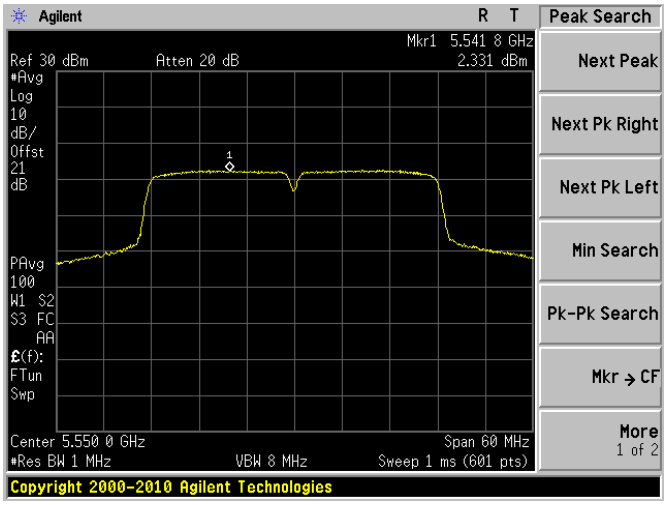
802.11n HT40 mode, 5510 MHz, Chain J0



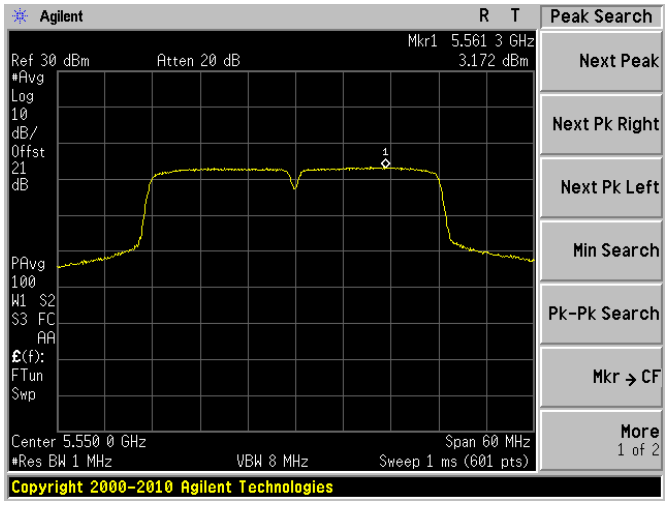
802.11n HT40 mode, 5510 MHz, Chain J1



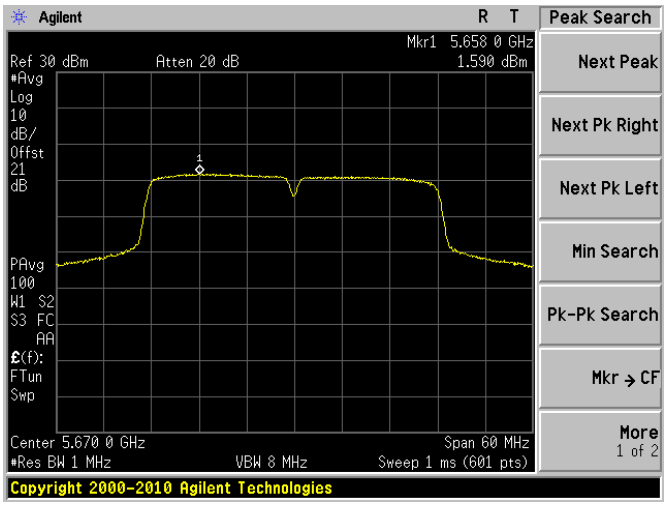
802.11n HT40 mode, 5550 MHz, Chain J0



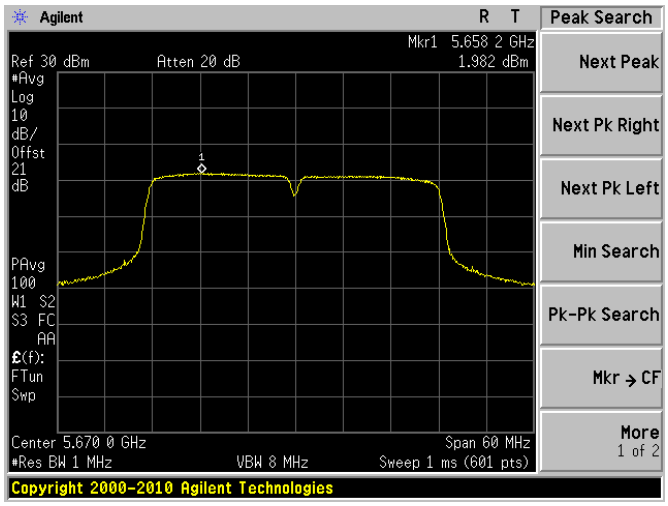
802.11n HT40 mode, 5550 MHz, Chain J1



802.11n HT40 mode, 5670 MHz, Chain J0



802.11n HT40 mode, 5670 MHz, Chain J1



5470-5725 MHz Band, 5 & 7.5 dBi Patch Antenna

(Note: The patch antennas have the same software power setting as the dipole antennas. Please refer to the dipole antennas section for the power spectral density plots)

12 FCC §15.407(a)(6) – Peak Excursion Ratio

12.1 Applicable Standard

According to FCC §15.407(a) (6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

12.2 Test Procedure

Old:
Set the spectrum analyzer span to view the entire emission bandwidth.
The largest difference between the following two traces must be ≤ 13 dB for all frequencies across the emission bandwidth. Submit a plot.

1st Trace:
• Set RBW = 1 MHz, VBW ≥ 3 MHz with peak detector and maxhold settings.

2nd Trace:
• create the 2nd trace using the settings described in the setion "FCC §15.407(a)(1)(2) – CONDUCTED TRANSMITTER OUTPUT POWER".

New:
(i) Set span to encompass the entire emission bandwidth (EBW) of the signal.
(ii) Set RBW = 1 MHz.
(iii) Set VBW ≥ 3 MHz.
(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
(v) Sweep time = auto.
(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run".
(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
(ix) Compute power by integrating the spectrum across the 26 dB EBW of the signal using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges. If the spectrum analyzer does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW of the spectrum.

12.3 Test Equipment List and Details

Manufacturers	Description	Models	Serial Numbers	Calibration Dates	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	US42221851	2012-02-28	1 year

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

12.4 Test Environmental Conditions

Temperature:	24 °C
Relative Humidity:	45 %
ATM Pressure:	101.1kPa

The testing was performed by Jeffrey Wu on 2012-10-22 in RF site.

12.5 Test Results

5250-5350 MHz Band

Channel	Frequency (MHz)	TX Chain J0 PER (dB)	TX Chain J1 PER (dB)	Limit (dB)
802.11a mode				
Low	5260	9.765	9.046	13
Middle	5280	10.659	8.742	
High	5320	8.325	8.340	
802.11n HT20 mode				
Low	5260	9.414	8.653	13
Middle	5280	9.278	9.123	
High	5320	8.770	8.847	
802.11n HT40 mode				
Low	5270	9.657	8.230	13
High	5310	10.070	9.167	

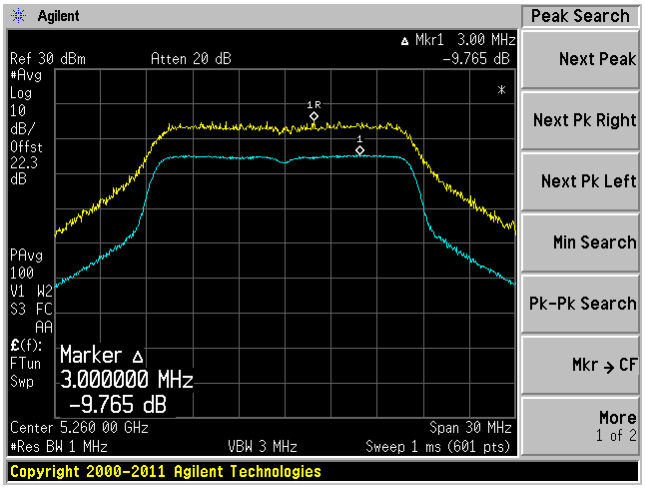
5470-5725 MHz Band

Channel	Frequency (MHz)	TX Chain J10 PER (dB)	TX Chain J8 PER (dB)	Limit (dB)
802.11a mode				
Low	5500	9.356	8.953	13
Middle	5580	8.948	8.305	
High	5700	10.107	8.237	
802.11n HT20 mode				
Low	5500	7.919	8.375	13
Middle	5580	8.261	8.687	
High	5700	8.451	8.802	
802.11n HT40 mode				
Low	5510	8.555	8.653	13
Middle	5550	8.776	8.858	
High	5670	8.606	8.231	

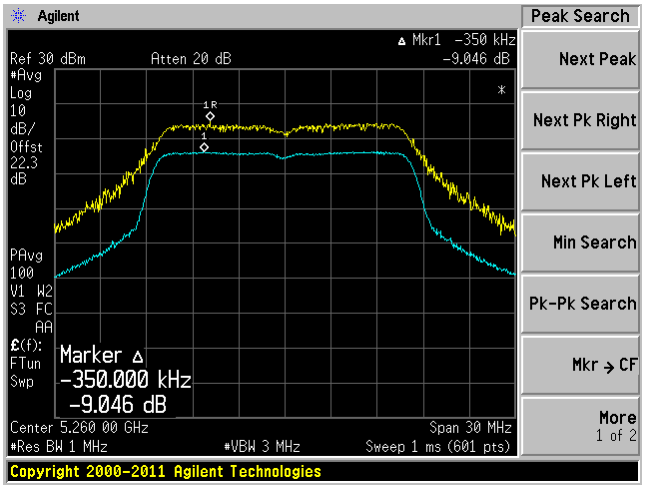
Please refer to the following plots for detailed test results:

5250-5350 MHz Band

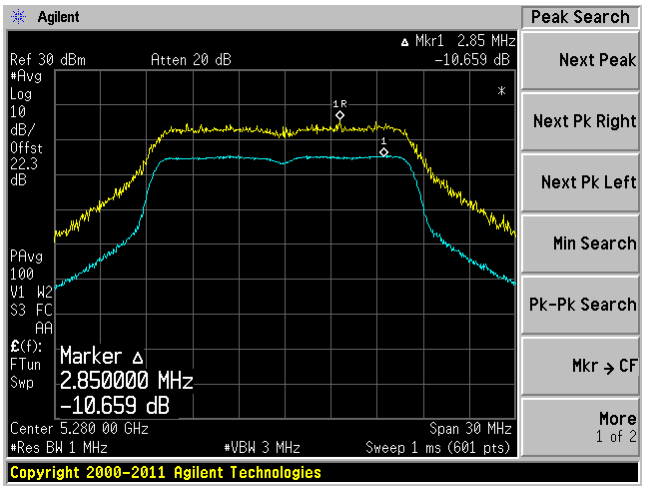
802.11a mode, 5260 MHz, Chain J0



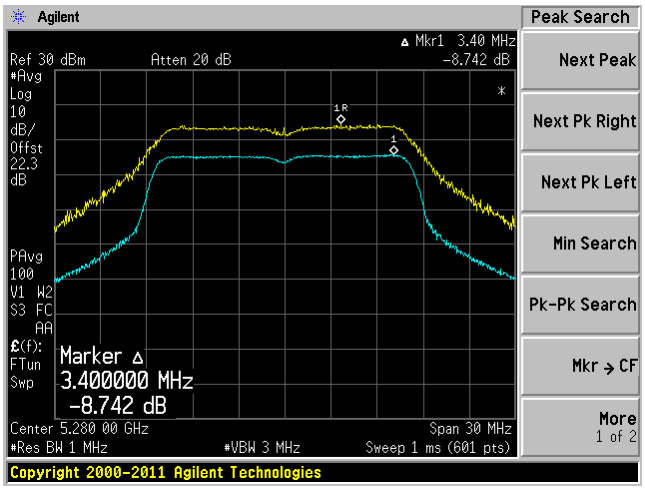
802.11a mode, 5260 MHz, Chain J1



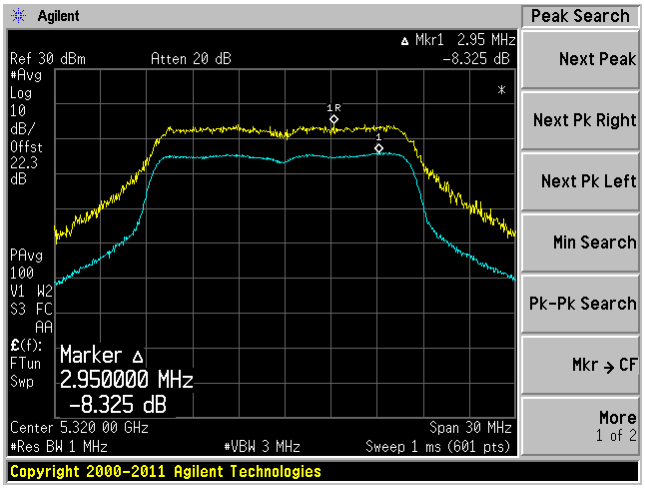
802.11a mode, 5280 MHz, Chain J0



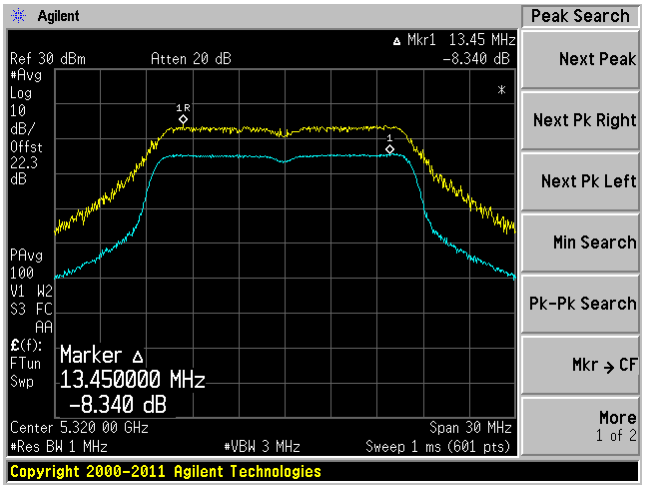
802.11a mode, 5280 MHz, Chain J1



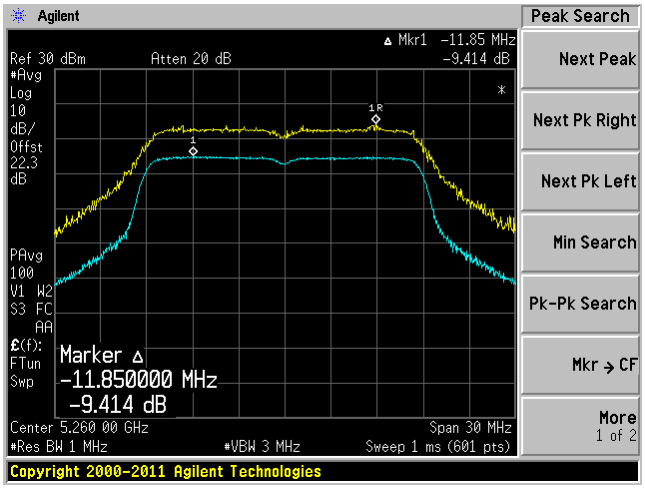
802.11a mode, 5320 MHz, Chain J0



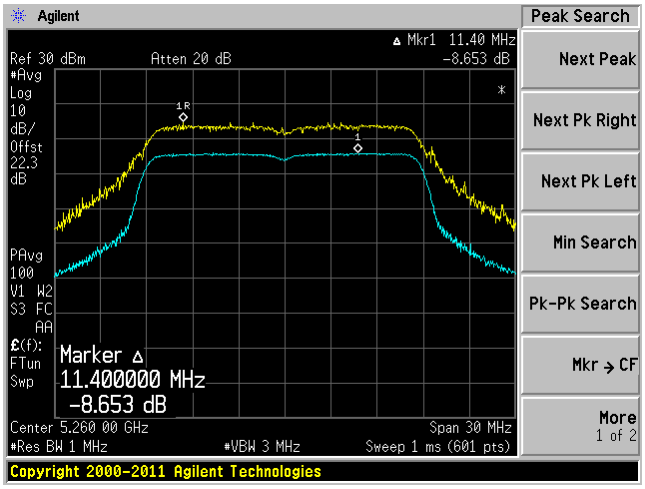
802.11a mode, 5320 MHz, Chain J1



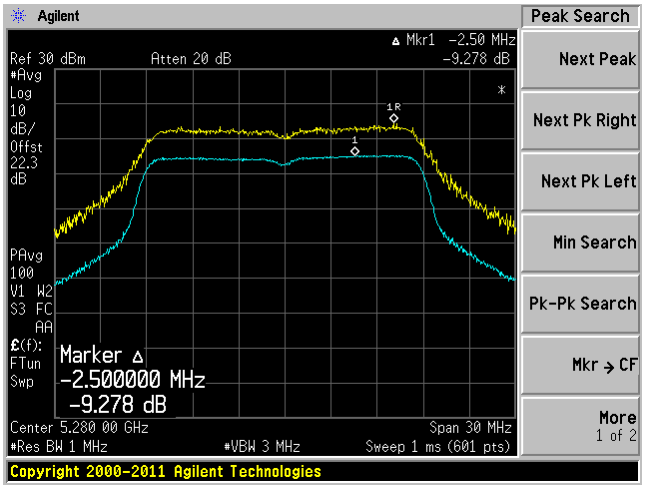
802.11n HT20 mode, 5260 MHz, Chain J0



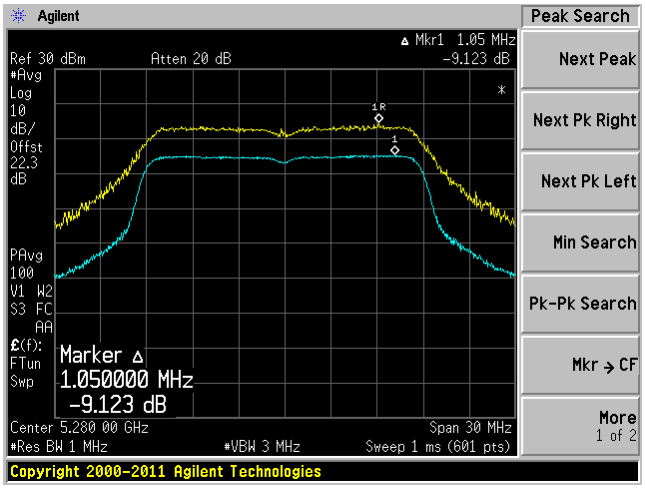
802.11n HT20 mode, 5260 MHz, Chain J1



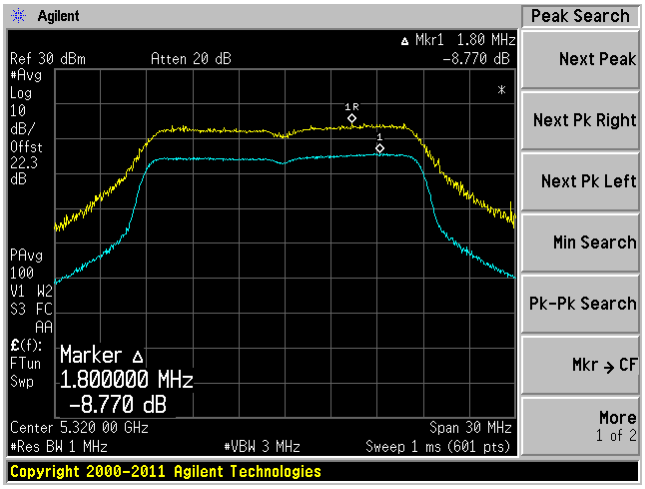
802.11n HT20 mode, 5280 MHz, Chain J0



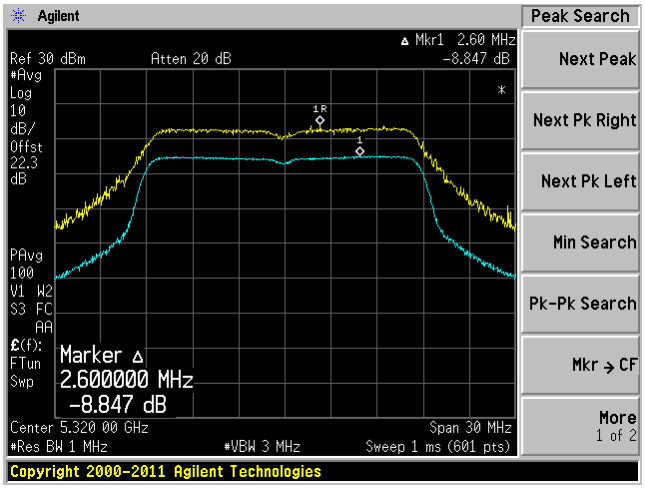
802.11n HT20 mode, 5280 MHz, Chain J1



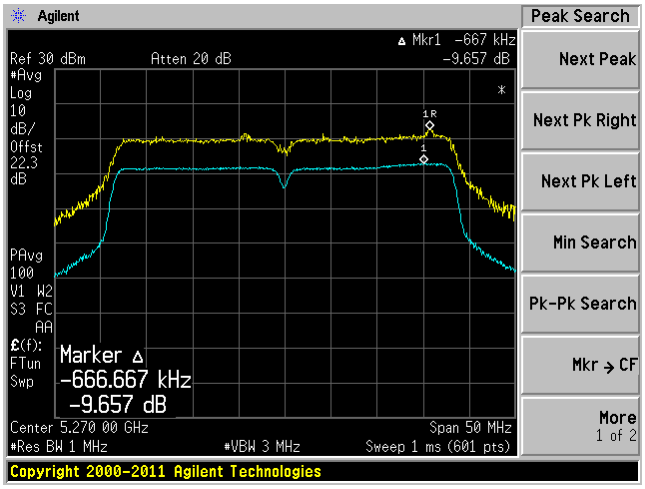
802.11n HT20 mode, 5320 MHz, Chain J0



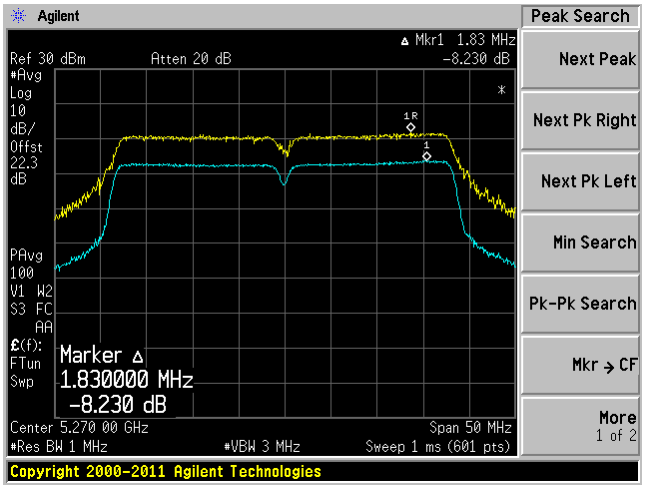
802.11n HT20 mode, 5320 MHz, Chain J1



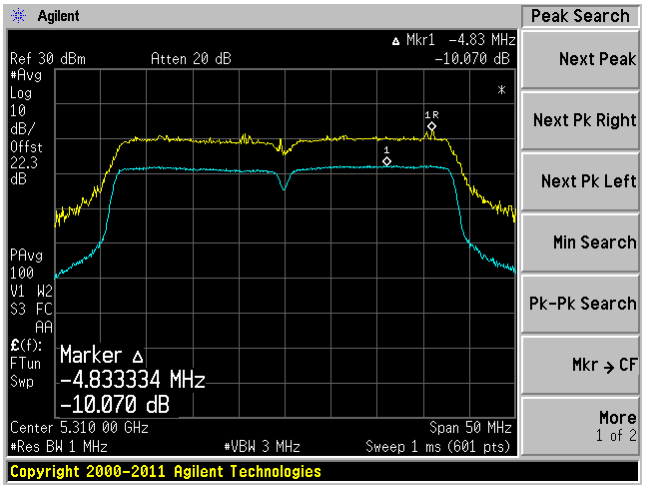
802.11n HT40 mode, 5270 MHz, Chain J0



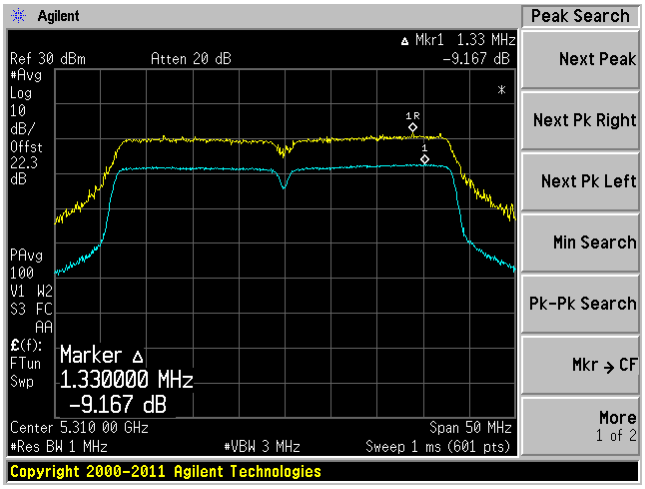
802.11n HT40 mode, 5270 MHz, Chain J1



802.11n HT40 mode, 5310 MHz, Chain J0

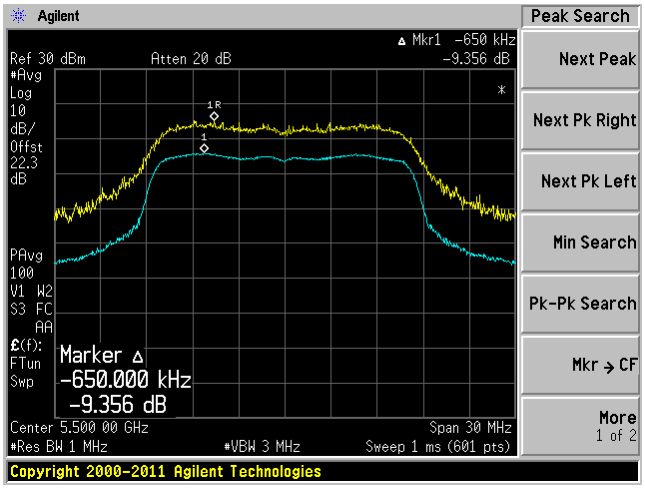


802.11n HT40 mode, 5310 MHz, Chain J1

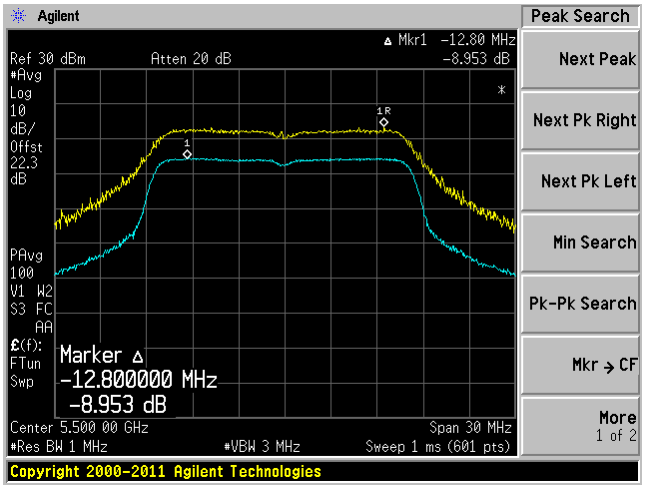


5470-5725 MHz Band

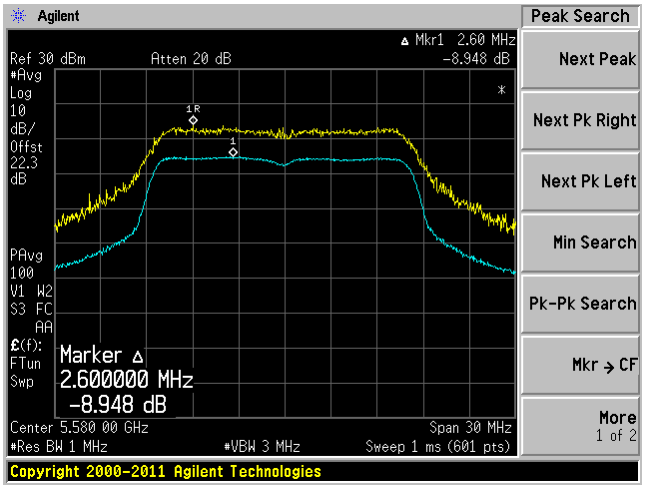
802.11a mode, 5500 MHz, Chain J0



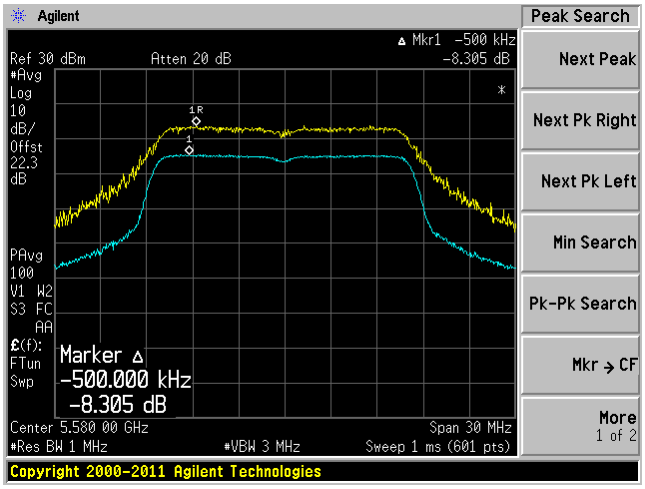
802.11a mode, 5500 MHz, Chain J1



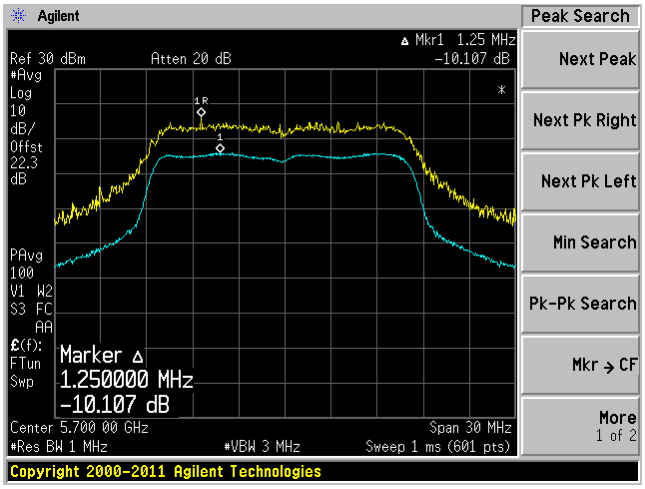
802.11a mode, 5580 MHz, Chain J0



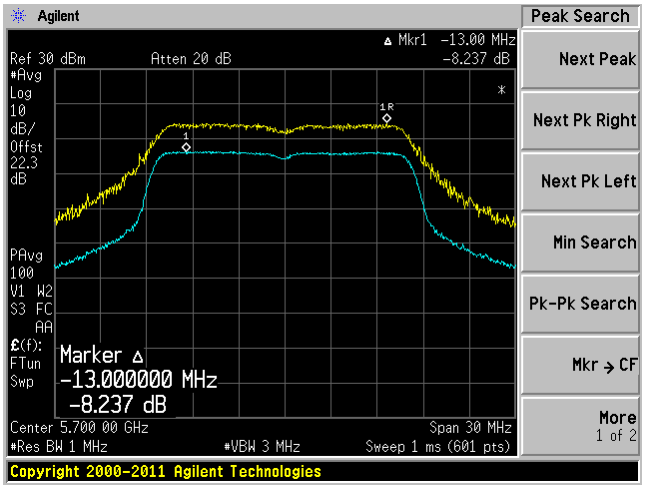
802.11a mode, 5580 MHz, Chain J1



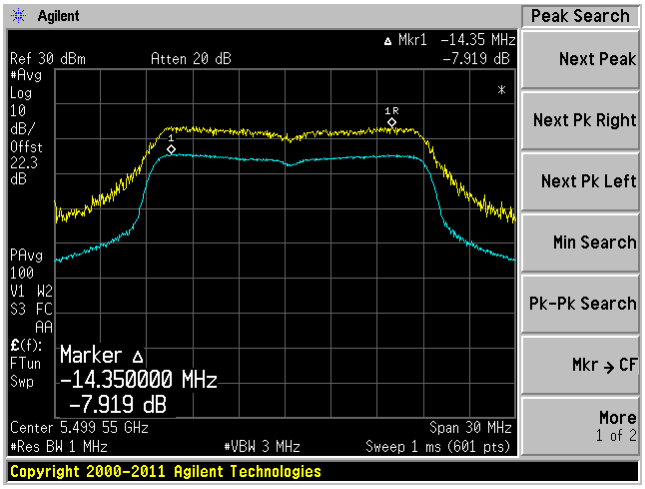
802.11a mode, 5700 MHz, Chain J0



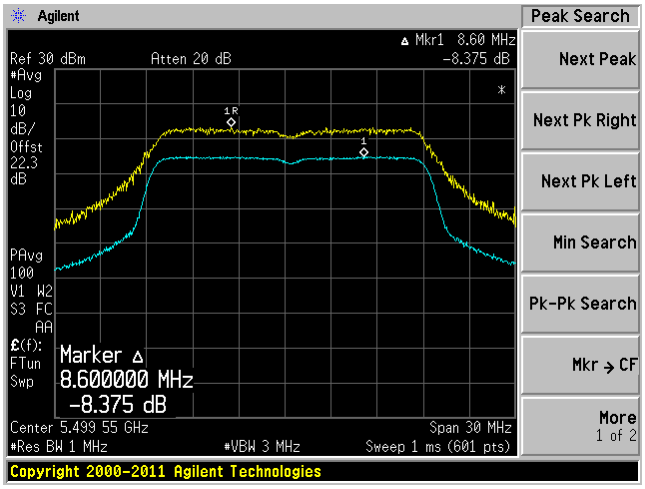
802.11a mode, 5700 MHz, Chain J1



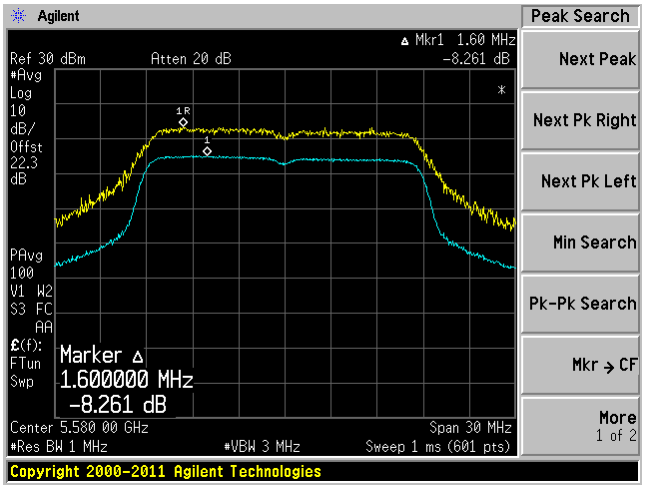
802.11n HT20 mode, 5500 MHz, Chain J0



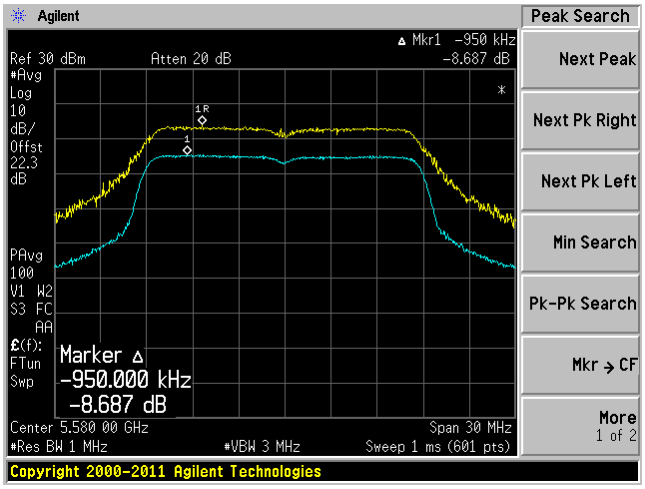
802.11n HT20 mode, 5500 MHz, Chain J1



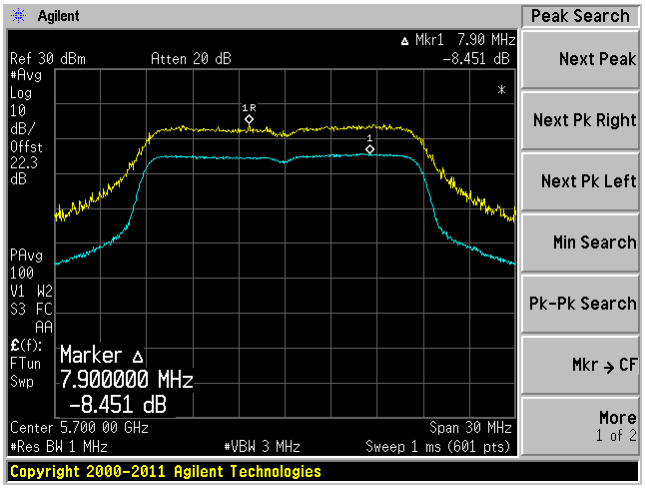
802.11n HT20 mode, 5580 MHz, Chain J0



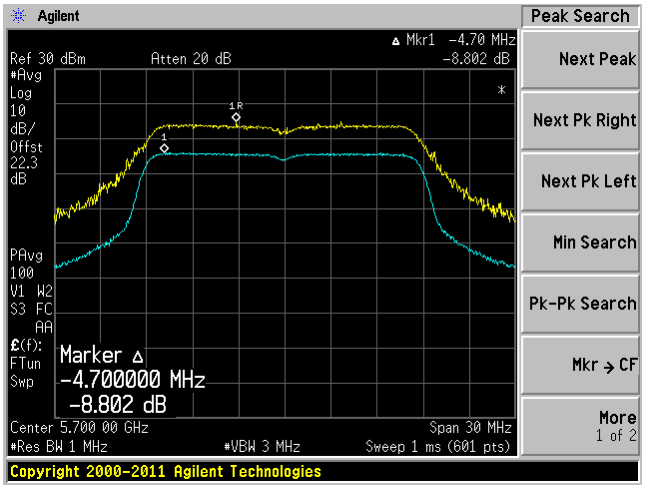
802.11n HT20 mode, 5580 MHz, Chain J1



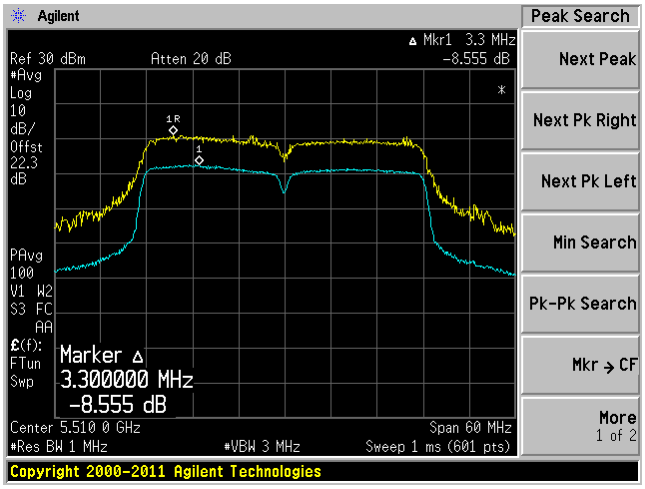
802.11n HT20 mode, 5700 MHz, Chain J0



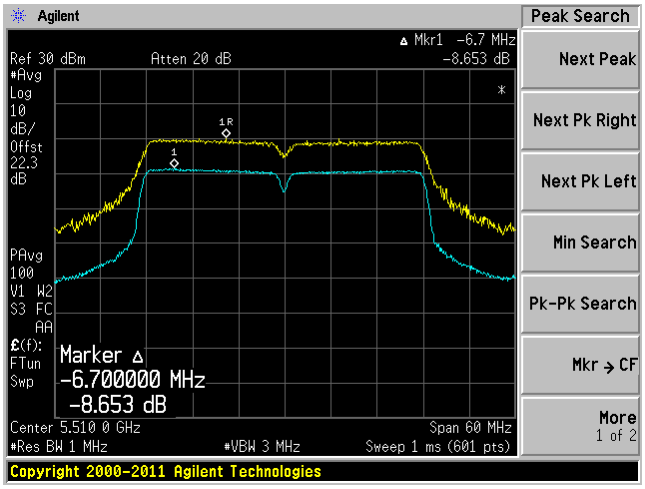
802.11n HT20 mode, 5700 MHz, Chain J1



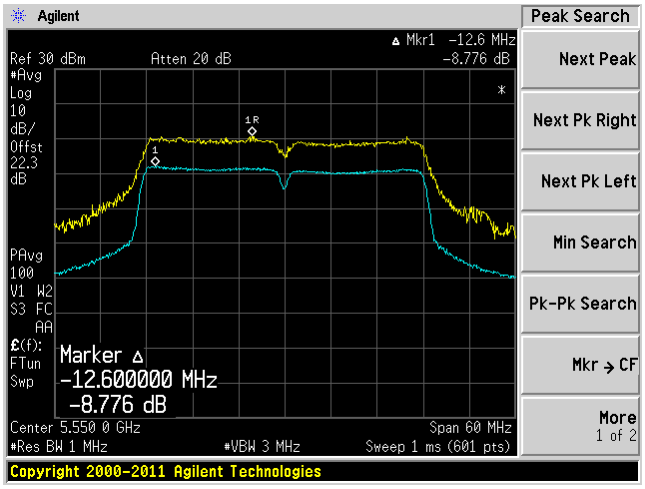
802.11n HT40 mode, 5510 MHz, Chain J0



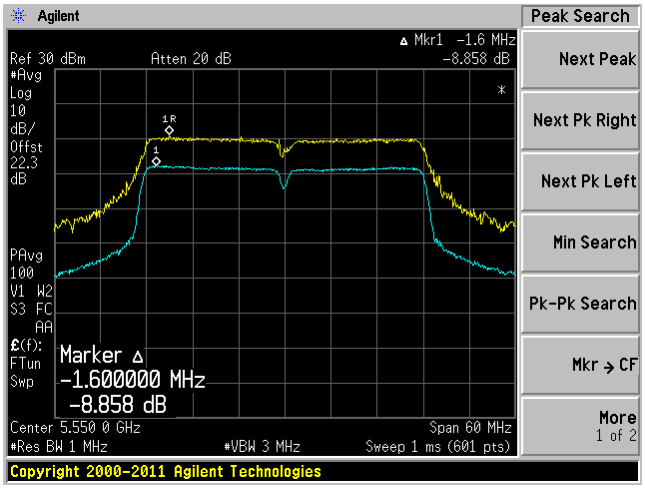
802.11n HT40 mode, 5510 MHz, Chain J1



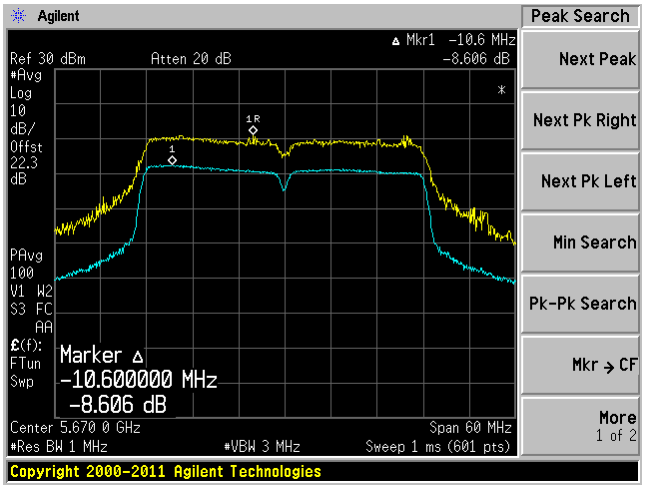
802.11n HT40 mode, 5550 MHz, Chain J0



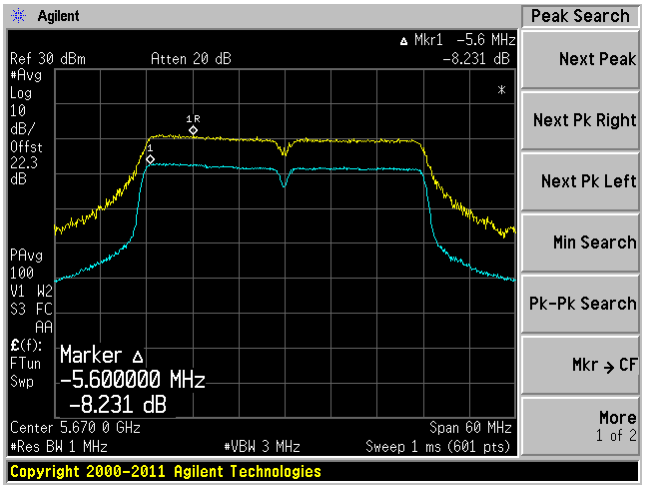
802.11n HT40 mode, 5550 MHz, Chain J1



802.11n HT40 mode, 5670 MHz, Chain J0



802.11n HT40 mode, 5670 MHz, Chain J1



13 IC RSS-210 §2.3 & RSS-Gen §6 - Receiver Spurious Radiated Emissions

13.1 Applicable Standard

According to IC RSS-Gen §4.10, the receiver shall be operated in the normal receive mode near the mid-point of the band over which the receiver is designed to operate.

Unless otherwise specified in the applicable RSS, the radiated emission measurement is the standard measurement method (with the device's antenna in place) to measure receiver spurious emissions.

Radiated emission measurements are to be performed using a calibrated open-area test site.

For either method, the search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is the higher, to at least 3 times the highest tuneable or local oscillator frequency, whichever is the higher, without exceeding 40 GHz.

For emissions below 1 GHz, measurements shall be performed using a CISPR quasi-peak detector and the related measurement bandwidth. As an alternative to CISPR quasi-peak measurement, compliance with the emission limit can be demonstrated using measuring equipment employing a peak detector with the same measurement bandwidth as that for CISPR quasi-peak measurements. Above 1 GHz, measurements shall be performed using an average detector and a resolution bandwidth of 300 kHz to 1 MHz.

According to RSS-Gen §6.1, Table 2, the radiated limit of receiver spurious emissions

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

13.2 EUT Setup

The radiated emissions tests were performed in the 3 meter chamber, using the setup in accordance with ANSI C63.4-2003.

13.3 Test Procedure

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

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

13.4 Corrected Amplitude & Margin Calculation

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

CA = Ai + AF + CL + Atten – Ga

For example, a corrected amplitude of 40.3 dBuV/m = Indicated Reading (32.5 dBuV) + Antenna Factor (+23.5dB) + Cable Loss (3.7 dB) + Attenuator (10 dB) - Amplifier Gain (29.4 dB)

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

Margin = Corrected Amplitude - Limit

13.5 Test Equipment Lists and Details

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

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

13.6 Test Environmental Conditions

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

The testing was performed by Lionel Lara from 2013-03-05 to 2013-04-29 at 5 meter 3.

13.7 Summary of Test Results

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

Unwanted Emissions and Receiving Spurious Emission, (30MHz - 18 GHz):

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-0.88	56.0212	Vertical	30 to 18000

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

13.8 Radiated Emissions Test Result Data

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

With AC/DC Adapter

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

With POE

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

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

With AC/DC Adapter

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

With POE

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

3) 30-1000 MHz, Measured at 3 meters, 5 dBi Patch Antenna

With AC/DC Adapter

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

With POE

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

4) Above 1 GHz Measured at 3 meters, 5 dBi Patch Antenna

With AC/DC Adapter

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

With POE

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

5) 30-1000 MHz, Measured at 3 meters, 7.5 dBi Patch Antenna

With AC/DC Adapter

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Detector (QP/Ave.)
45.768	36.57	122	V	117	40	-3.43	QP
50.993	32.27	141	V	39	40	-7.73	QP
91.71525	37.35	143	V	285	43.5	-6.15	QP
146.4308	32.54	192	H	297	43.5	-10.96	QP
500	36.45	172	H	264	46	-9.55	QP
249.943	29.1	132	H	237	46	-16.9	QP

With POE

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Detector (QP/Ave.)
375.154	42.13	125	V	120	46	-3.87	QP
52.163	32.35	140	V	40	40	-7.65	QP
91.6678	34.95	159	V	269	43.5	-8.55	QP
148.723	33.23	178	H	300	43.5	-10.27	QP
499.986	36.51	170	H	267	46	-9.49	QP
875.0951	29.46	121	H	228	46	-16.54	QP

6) Above 1 GHz Measured at 3 meters, 7.5 dBi Patch Antenna

With AC/DC Adapter

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
-[1]	-	-	-	-	-	-	-	-	-	-	-
-[1]	-	-	-	-	-	-	-	-	-	-	-

Note 1: All emissions at noise floor level.

With POE

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
1125	40.83	145	100	V	25	1.88	27.11	40.6	74	-33.4	Peak
1125	41.65	327	100	H	25	1.88	27.11	41.42	74	-32.58	Peak
1125	28.95	145	100	V	25	1.88	27.11	28.72	54	-25.28	Ave
1125	32.19	327	100	H	25	1.88	27.11	31.96	54	-22.04	Ave

14 FCC §15.407(b) & IC RSS-210 §A9.2 - Spurious Emissions at Antenna Terminals

14.1 Applicable Standard

According to FCC §15.407(b)

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 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz

According to IC RSS-210 §A8.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required.

14.2 Measurement Procedure

Old version:

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1 MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

New version:

Procedure for Unwanted Emissions Measurements below 1000 MHz.

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

Procedures for Average Unwanted Emissions Measurements above 1000 MHz.

a) Follow the requirements in section G)3), “General Requirements for Unwanted Emissions Measurements”.
b) Average emission levels shall be measured using one of the following two methods.
c) Method AD (Average Detection): Primary method
(i) RBW = 1 MHz.
(ii) VBW ≥ 3 MHz.

(iii) Detector = RMS, if span/(# of points in sweep) ≤ RBW/2. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, the detector mode shall be set to peak.
(iv) Averaging type = power (i.e., RMS)

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

14.3 Test Equipment List and Details

Manufacturers	Description	Models	Serial Numbers	Calibration Dates	Calibration Interval
Agilent	Spectrum Analyzer	E4446A	US44300386	2012-09-29	1 year

Statement of Traceability: BACL Corp. *attests that all calibrations have been performed per the A2AL requirements, traceable to the NIST.*

14.4 Test Environmental Conditions

Temperature:	24 °C
Relative Humidity:	45 %
ATM Pressure:	101.1 kPa

The testing was performed by Jeffrey Wu on 2012-10-22 in RF site.

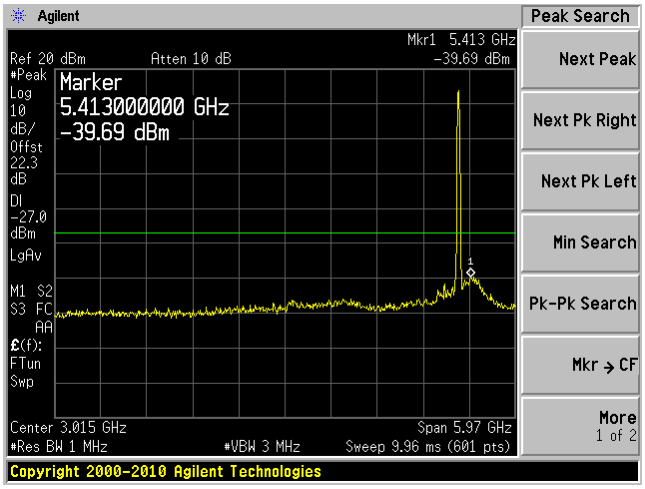
14.5 Test Results

Please refer to following plots of spurious emissions.

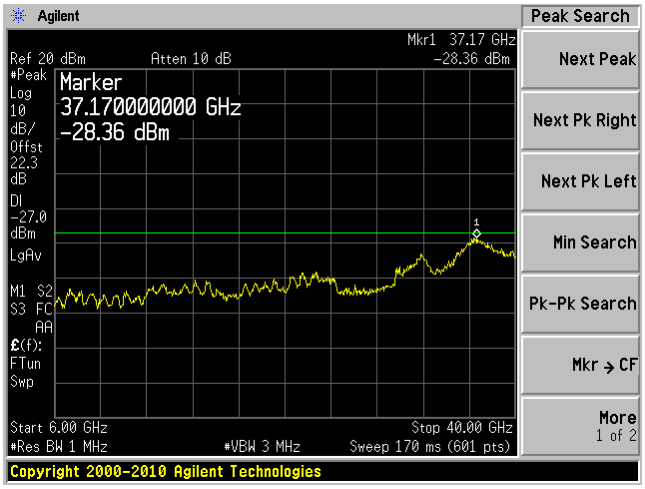
5250-5350 MHz Band

802.11a mode, Low Channel

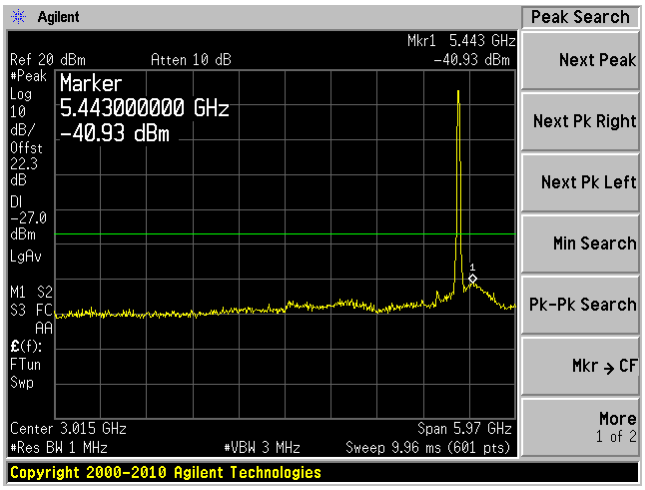
802.11 a mode, 5260 MHz, Chain J0 1



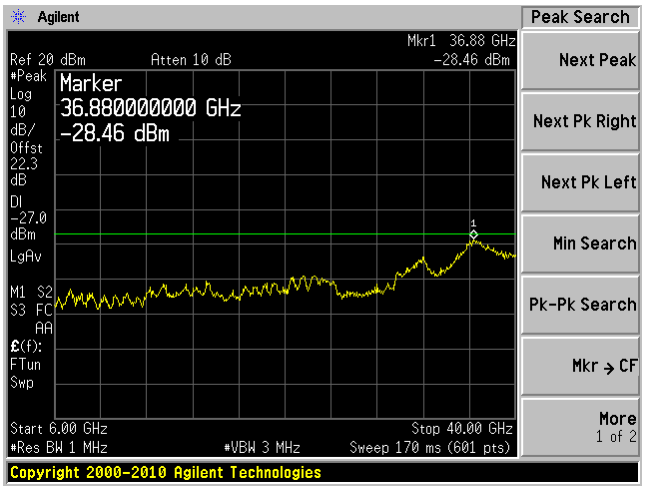
802.11 a mode, 5260 MHz, Chain J0 2



802.11a mode, 5260 MHz, Chain J1 1

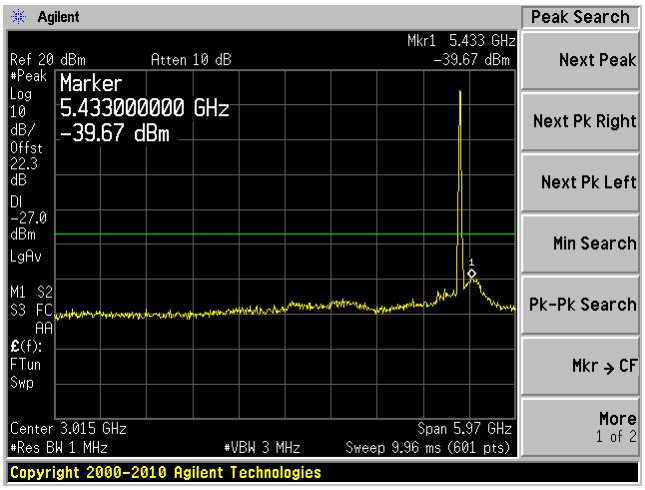


802.11a mode, 5260 MHz, Chain J1 2

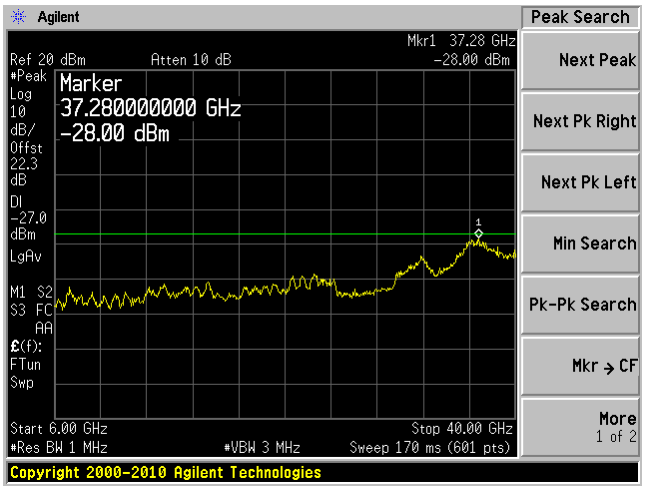


802.11a mode, Middle Channel

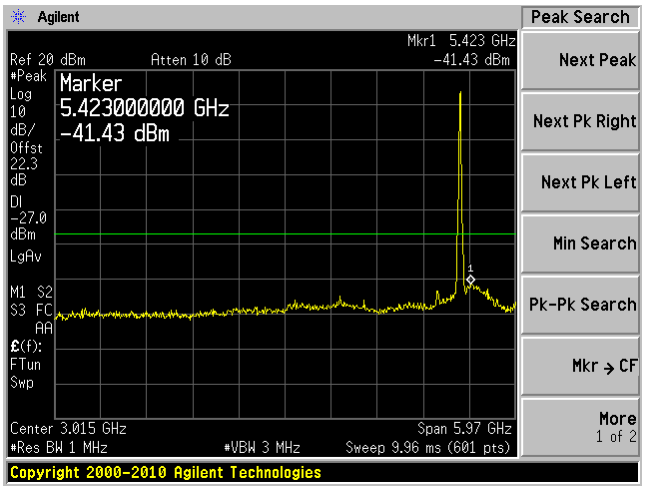
802.11a mode, 5280 MHz, Chain J0 1



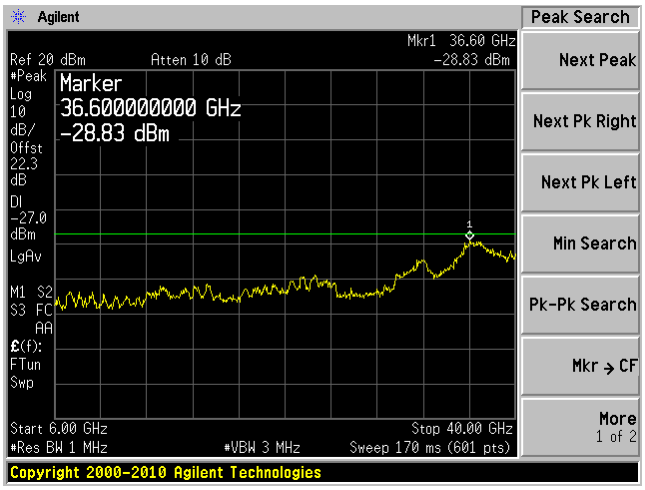
802.11a mode, 5280 MHz, Chain J0 2



802.11a mode, 5280 MHz, Chain J1 1

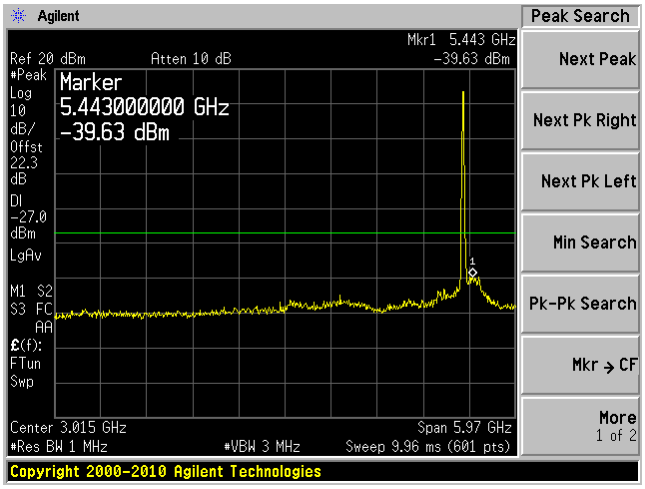


802.11a mode, 5280 MHz, Chain J1 2

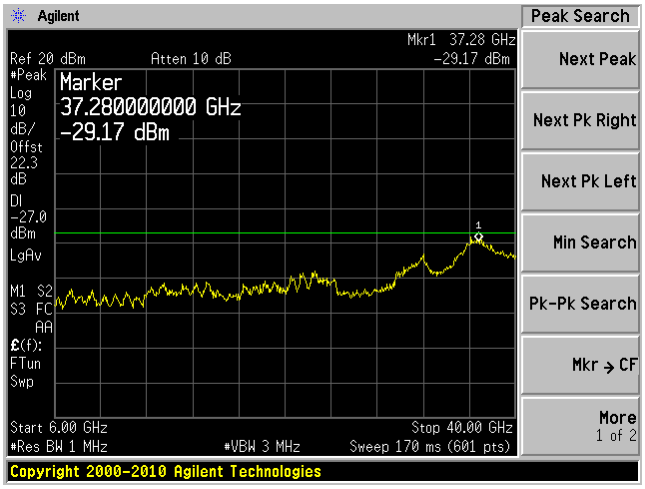


802.11a mode, High Channel

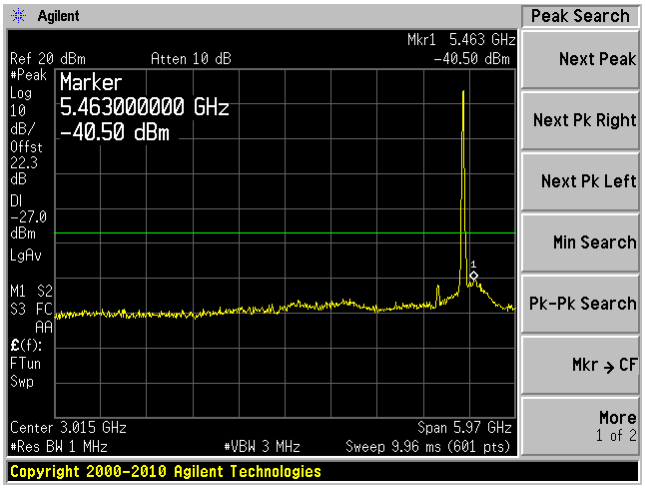
802.11 a mode, 5320 MHz, Chain J0 1



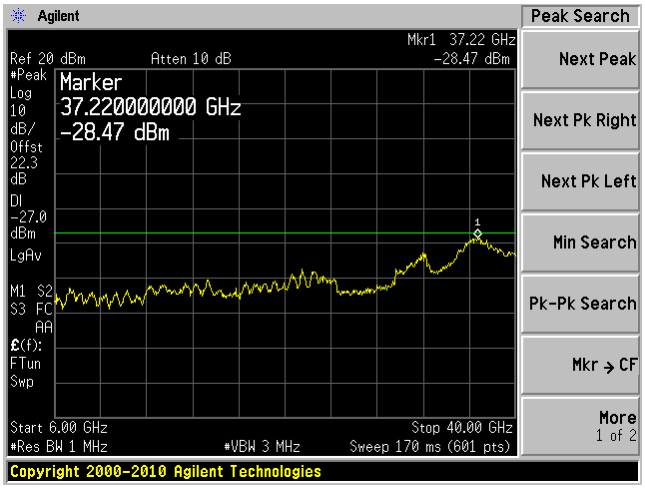
802.11a mode, 5320 MHz, Chain J0 2



802.11a mode, 5320 MHz, Chain J1 1

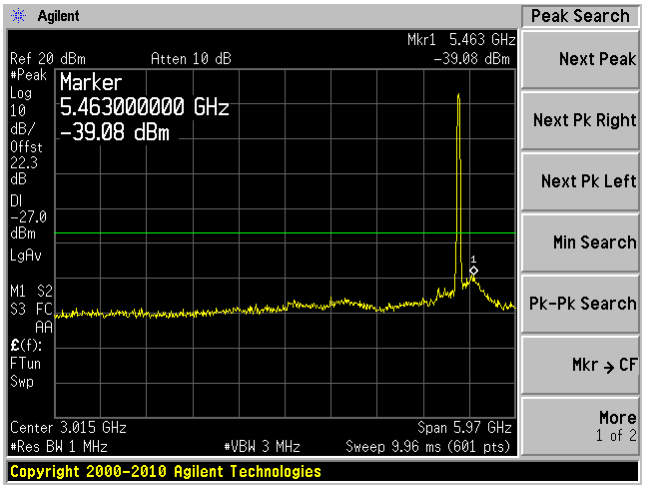


802.11a mode, 5320 MHz, Chain J1 2

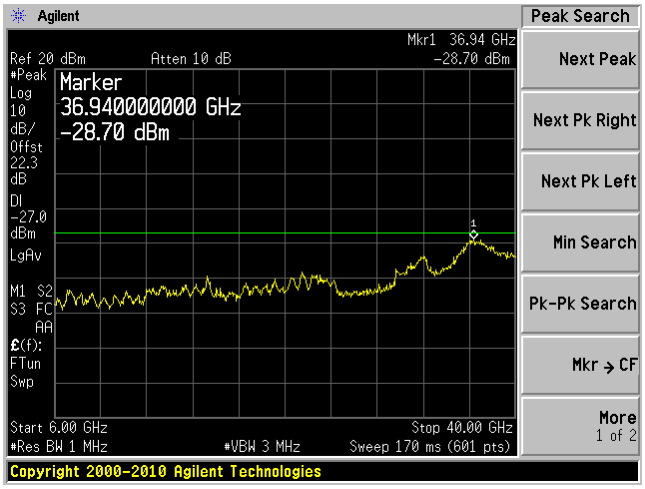


802.11n HT20 mode, Low channel

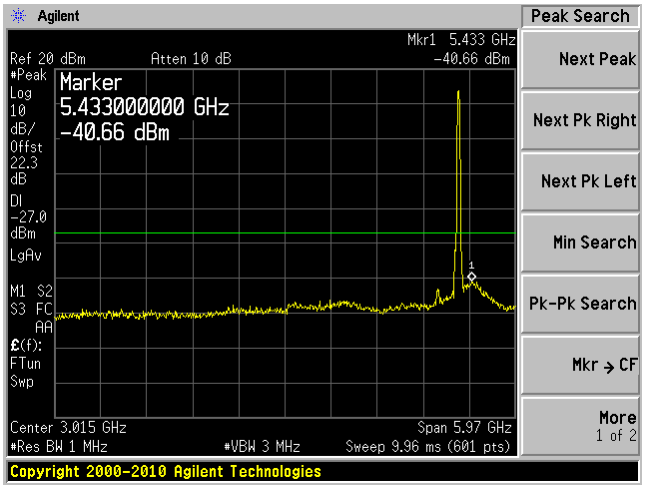
802.11n HT20 mode, 5260 MHz, Chain J0 1



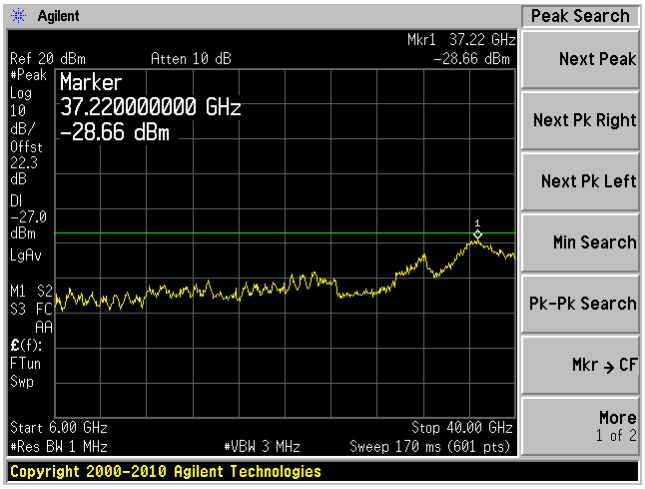
802.11n HT20 mode, 5260 MHz, Chain J0 2



802.11n HT20 mode, 5260 MHz, Chain J1 1

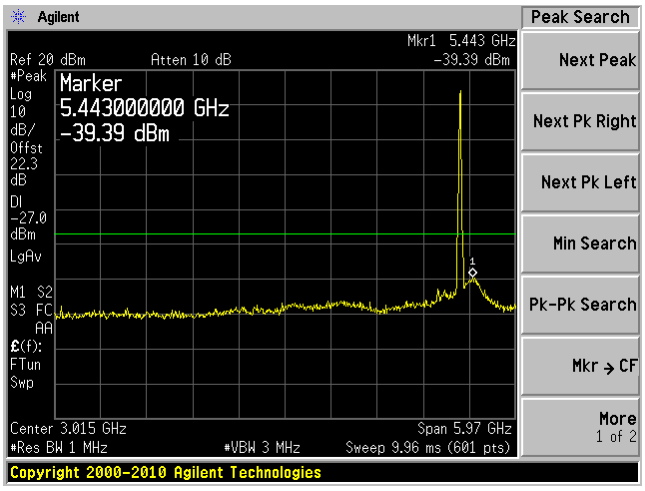


802.11n HT20 mode, 5260 MHz, Chain J1 2

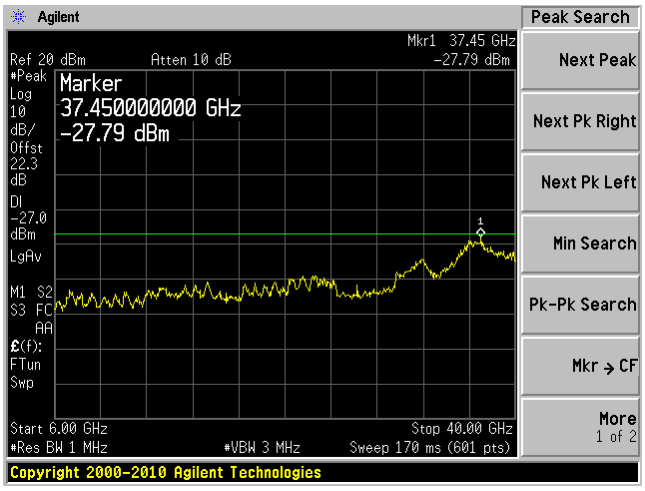


802.11n HT20 mode, Middle Channel

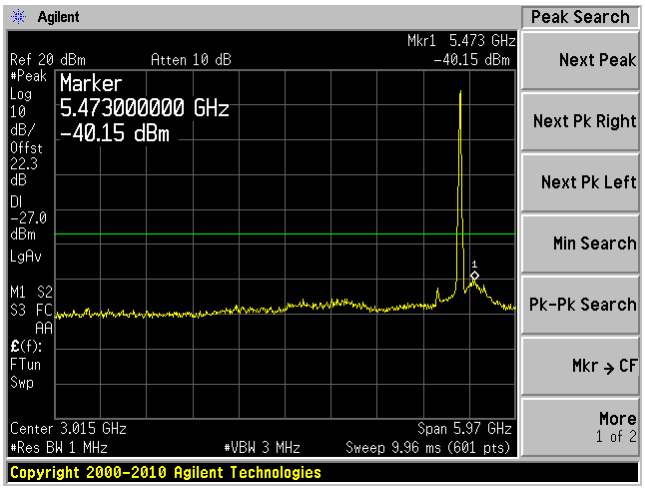
802.11n HT20 mode, 5280 MHz, Chain J0 1



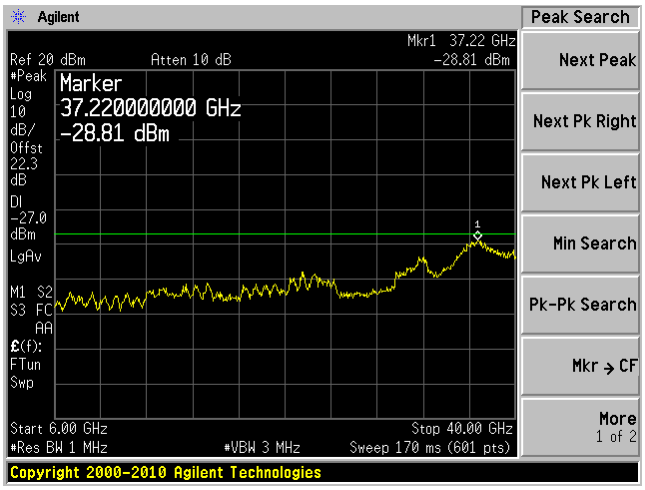
802.11n HT20 mode, 5280 MHz, Chain J0 2



802.11n HT20 mode, 5280 MHz, Chain J1 1

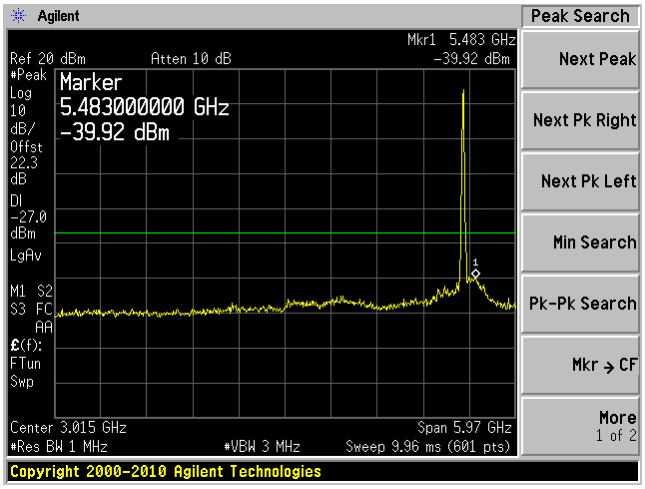


802.11n HT20 mode, 5280 MHz, Chain J1 2

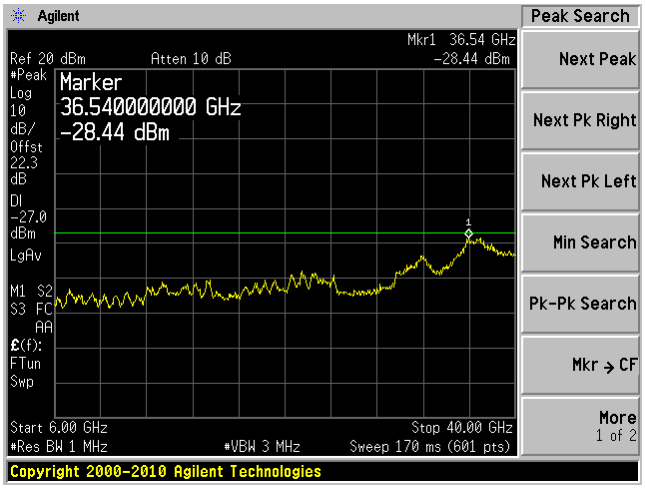


802.11n HT20 mode, High Channel

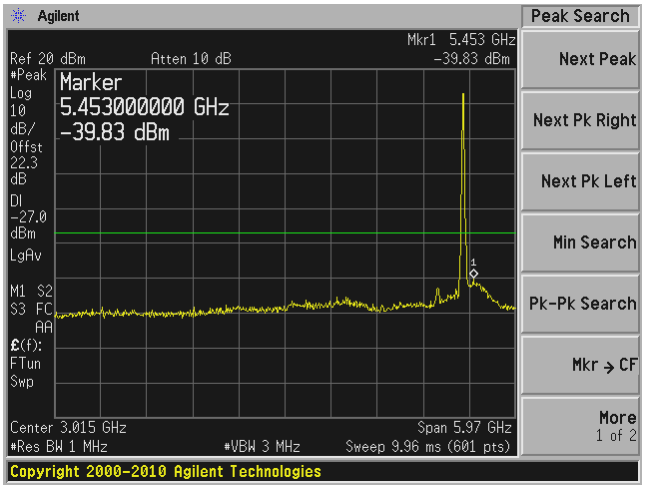
802.11n HT20 mode, 5320 MHz, Chain J0 1



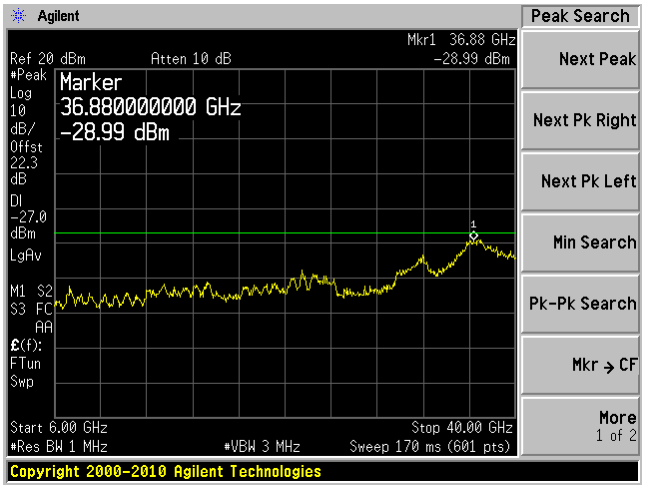
802.11n HT20 mode, 5320 MHz, Chain J0 2



802.11n HT20 mode, 5320 MHz, Chain J1 1

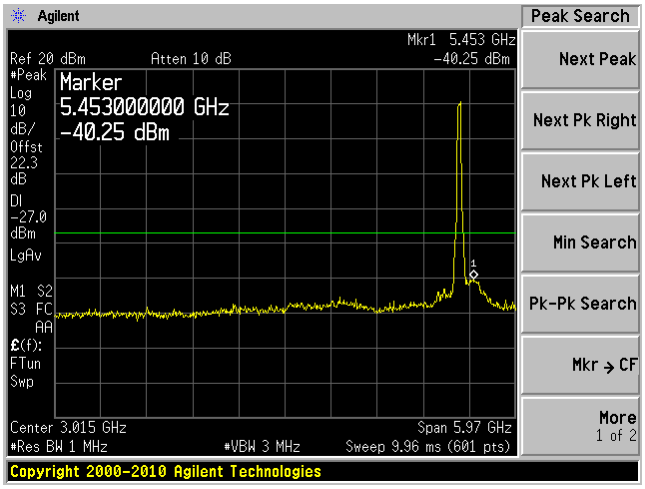


802.11n HT20 mode, 5320 MHz, Chain J1 2

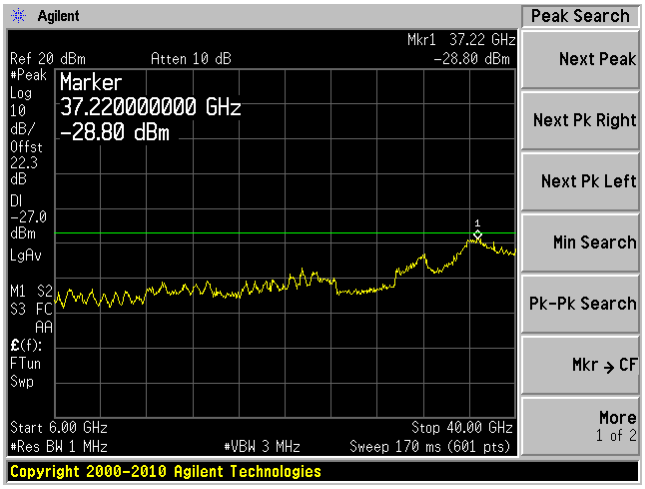


802.11n HT40 mode, Low channel

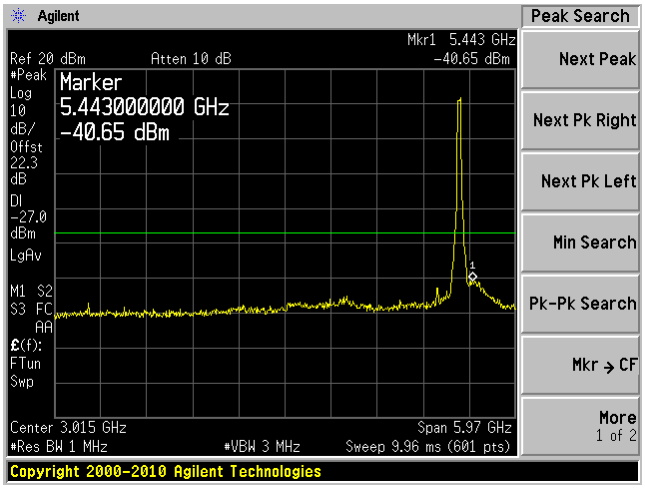
802.11n HT40 mode, 5270 MHz, Chain J0 1



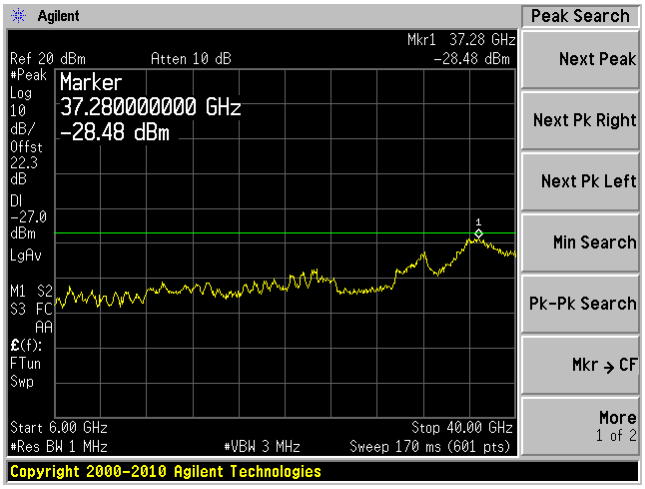
802.11n HT40 mode, 5270 MHz, Chain J0 2



802.11n HT40 mode, 5270 MHz, Chain J1 1

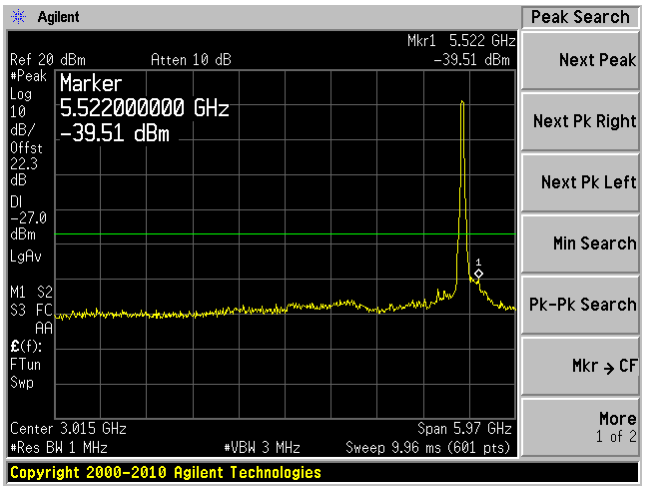


802.11n HT40 mode, 5270 MHz, Chain J1 2

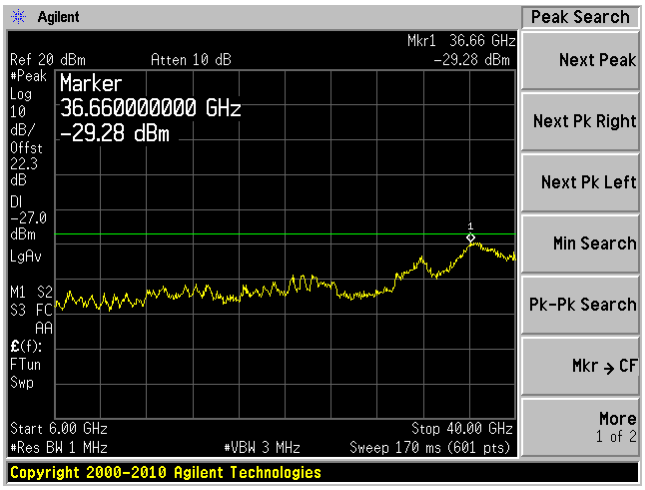


802.11n HT40 mode, High Channel

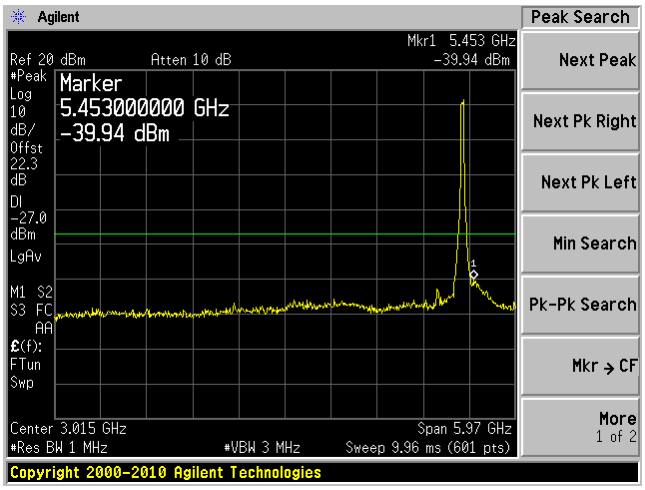
802.11n HT40 mode, 5310 MHz, Chain J0 1



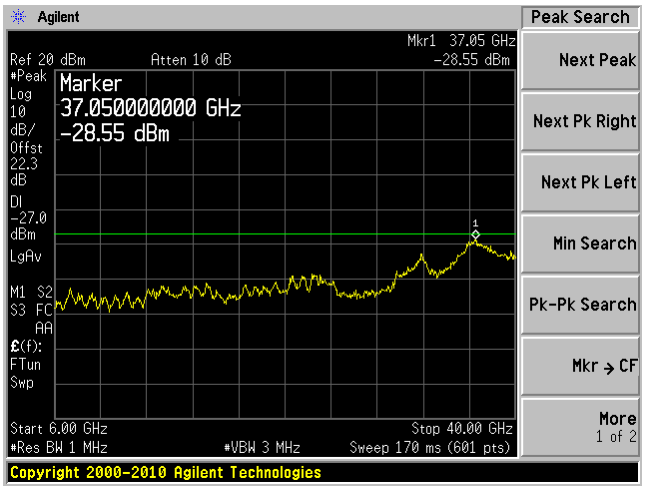
802.11n HT40 mode, 5310 MHz, Chain J0 2



802.11n HT40 mode, 5310 MHz, Chain J1 1



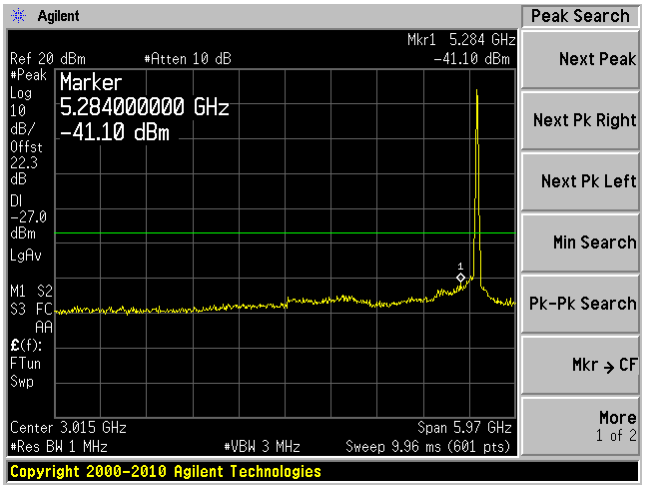
802.11n HT40 mode, 5310 MHz, Chain J1 2



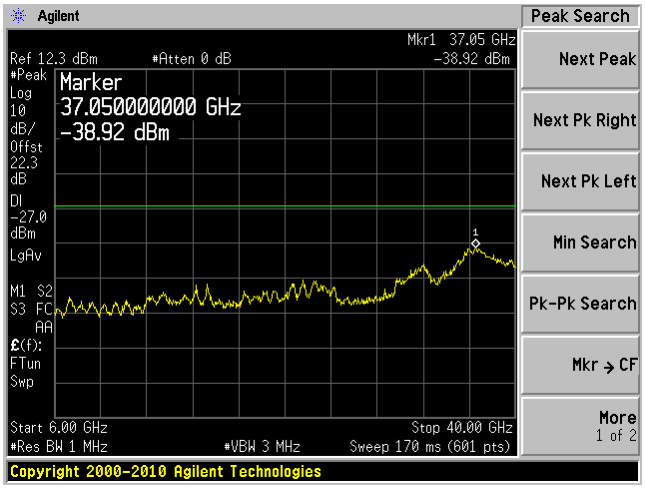
5470-5725 MHz Band

802.11a mode, Low Channel

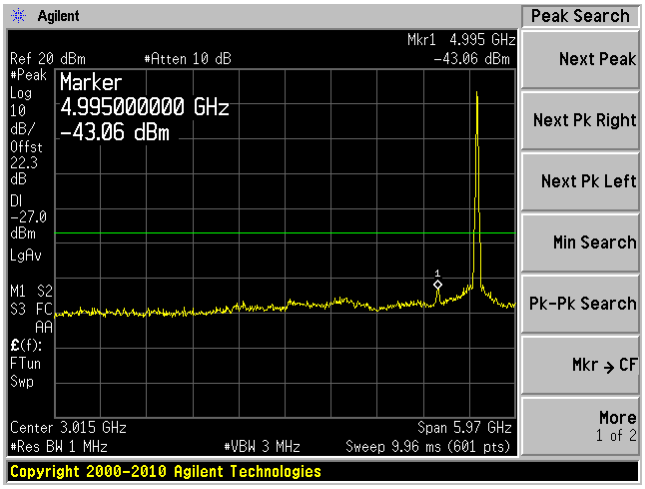
802.11a mode, 5500 MHz, Chain J0 1



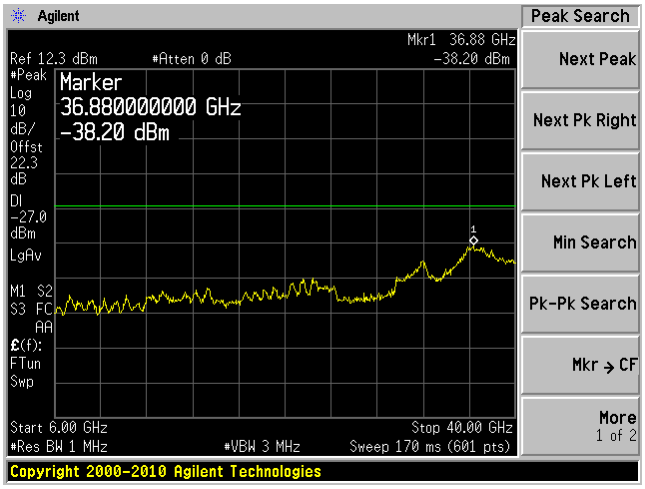
802.11a mode, 5500 MHz, Chain J0 2



802.11a mode, 5500 MHz, Chain J1 1

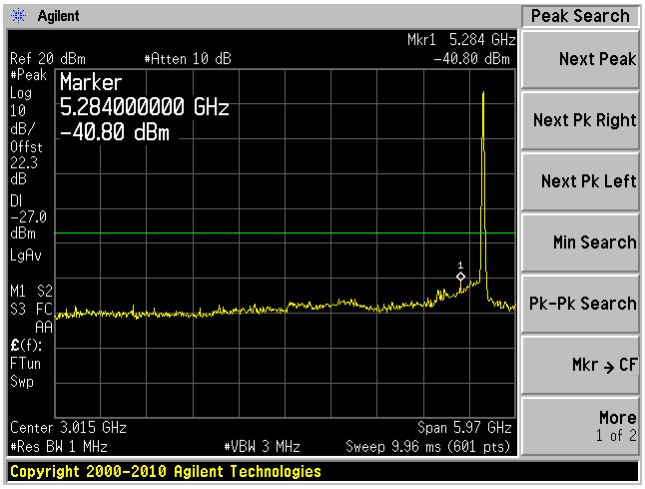


802.11a mode, 5500 MHz, Chain J1 2

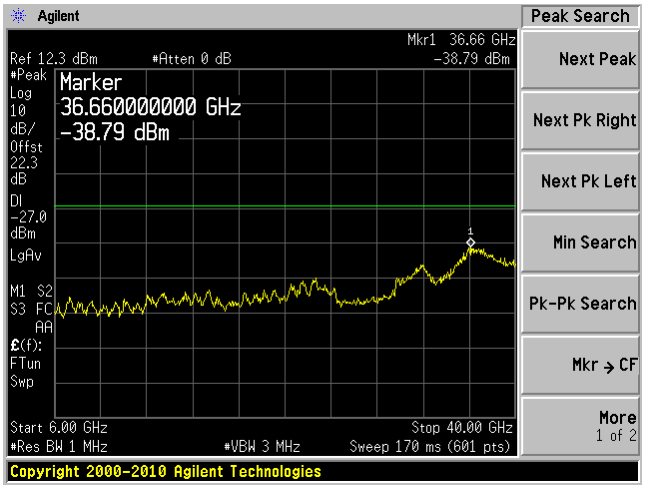


802.11a mode, Middle Channel

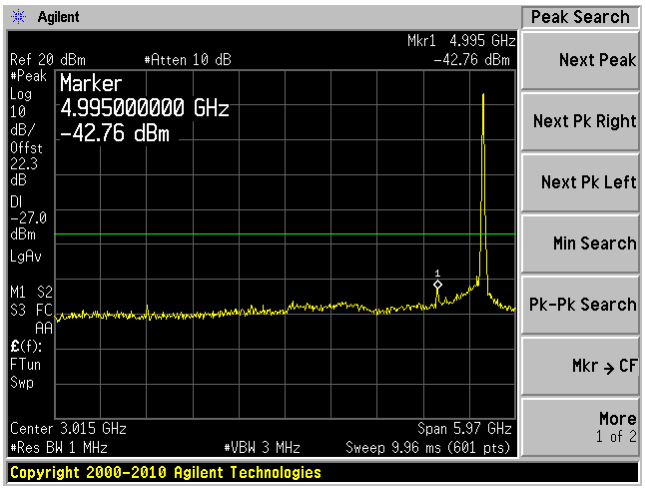
802.11 a mode, 5580 MHz, Chain J0 1



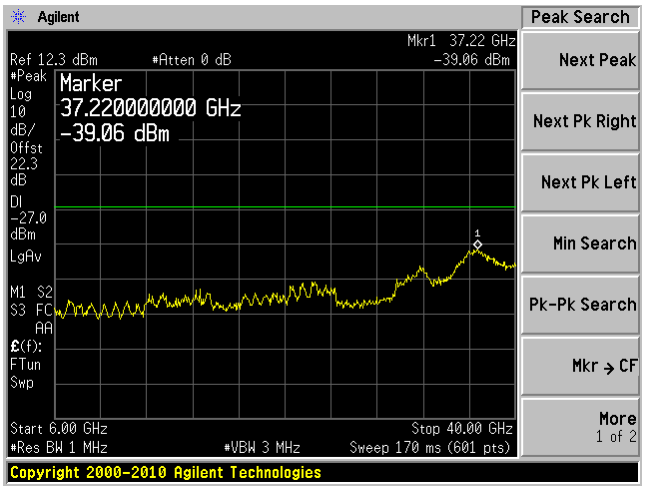
802.11n 20 mode, 5580 MHz, Chain J0 2



802.11a mode, 5580 MHz, Chain J1 1

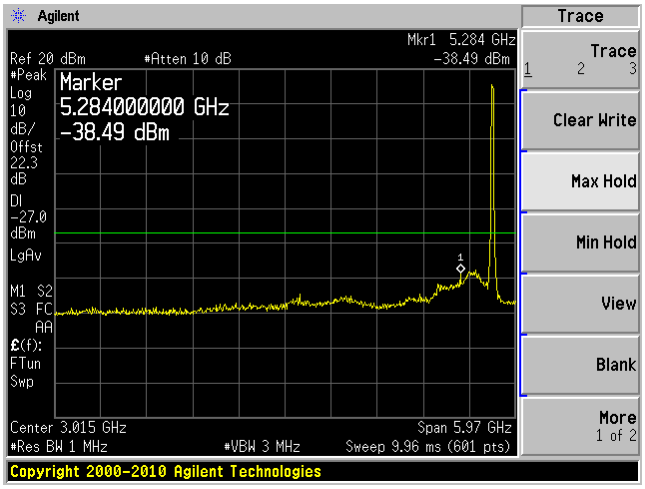


802.11a mode, 5580 MHz, Chain J1 2

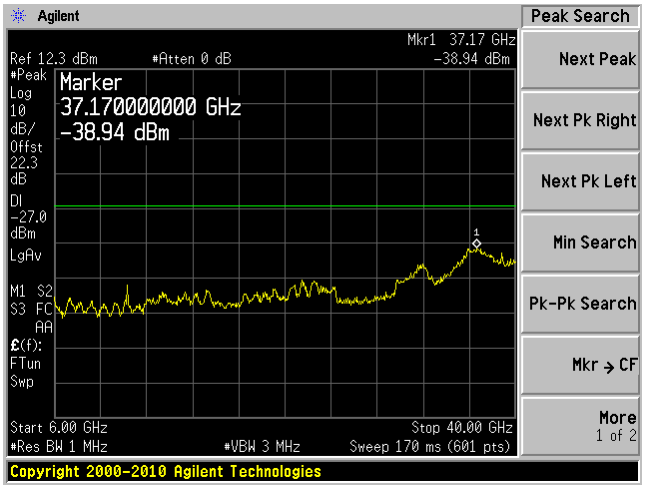


802.11a mode, High Channel

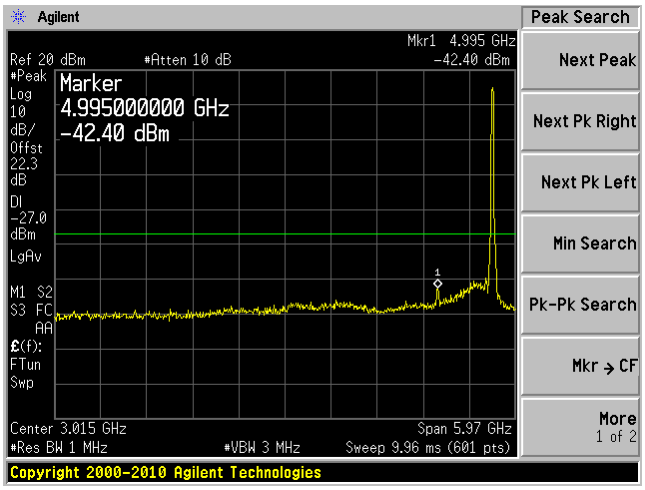
802.11 a mode, 5700 MHz, Chain J0 1



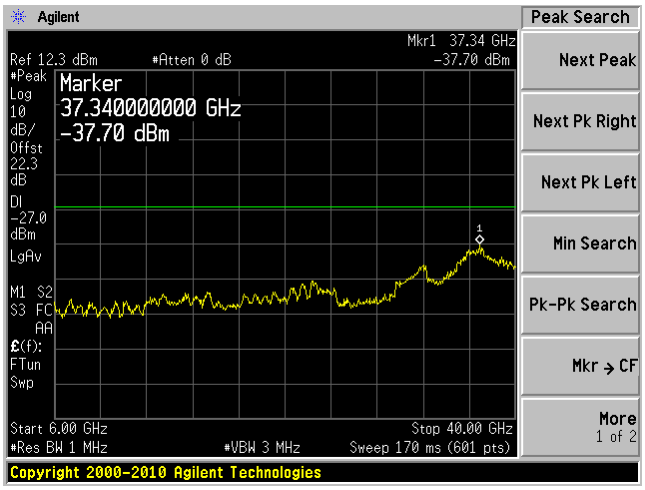
802.11n 20 mode, 5700 MHz, Chain J0 2



802.11a mode, 5700 MHz, Chain J1 1

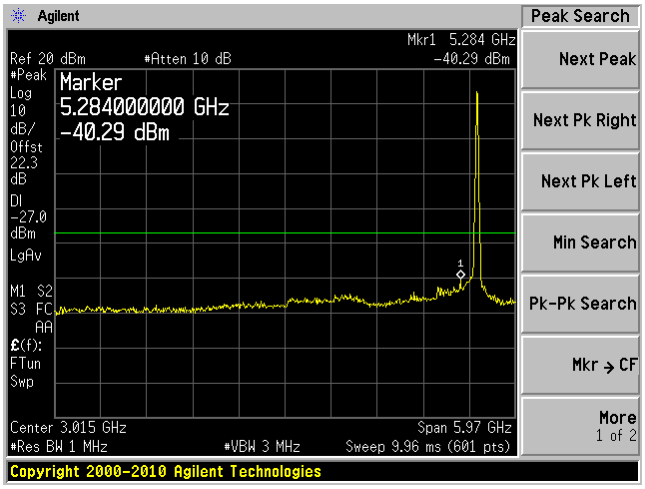


802.11a mode, 5700 MHz, Chain J1 2

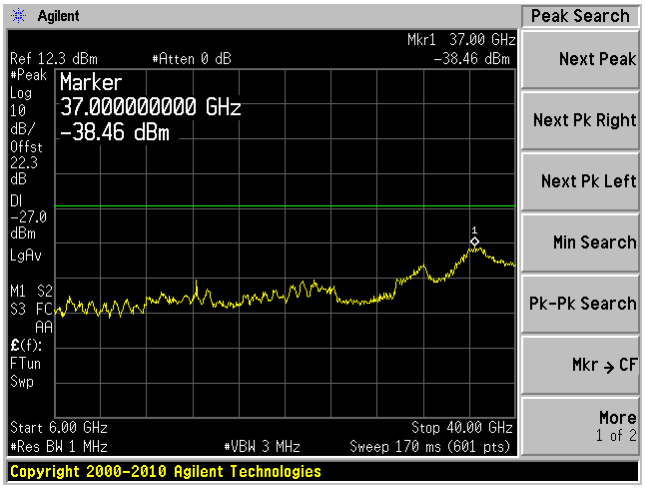


802.11n HT20 mode, Low Channel

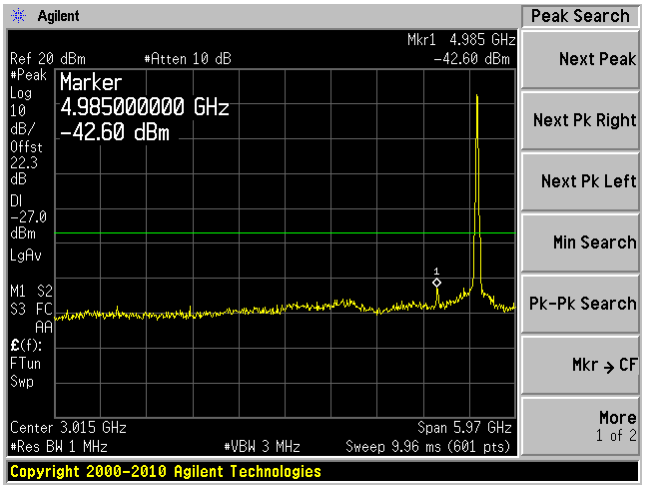
802.11n HT20 mode, 5500 MHz, Chain J0 1



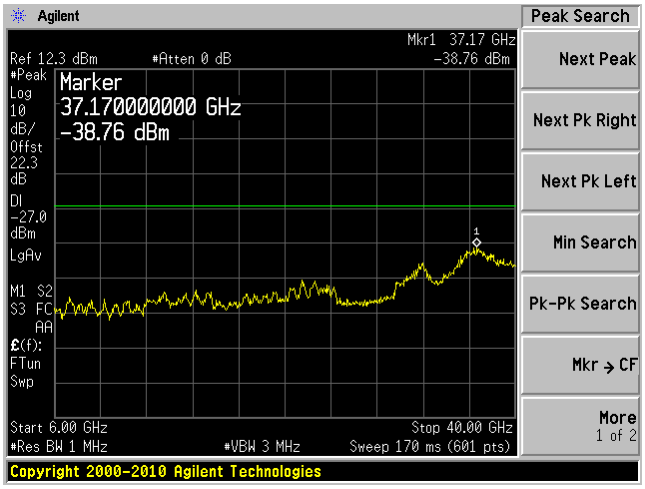
802.11n HT20 mode, 5500 MHz, Chain J0 2



802.11n HT20 mode, 5500 MHz, Chain J1 1

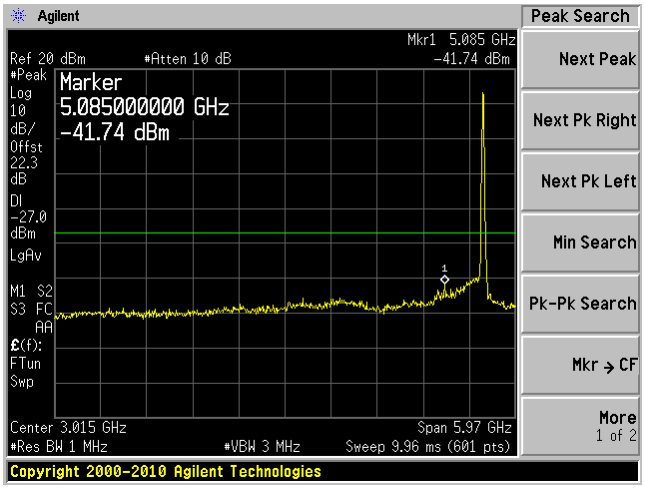


802.11n HT20 mode, 5500 MHz, Chain J1 2

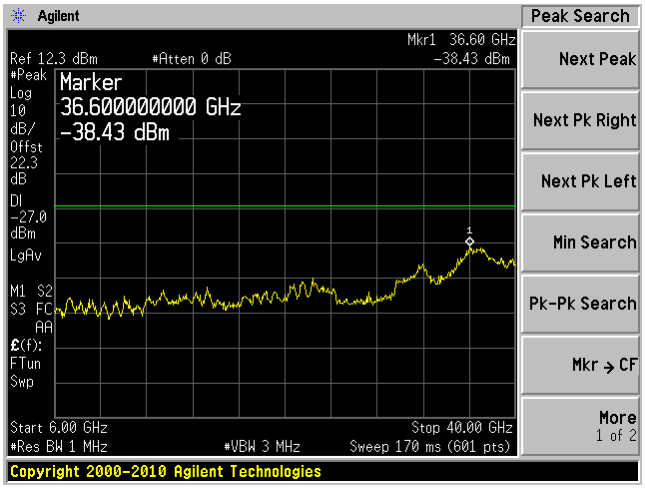


802.11n HT20 mode, Middle Channel

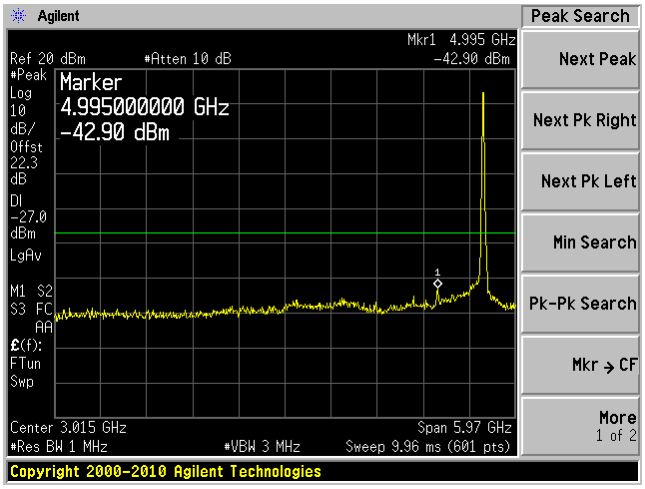
802.11n HT20 mode, 5580 MHz, Chain J0 1



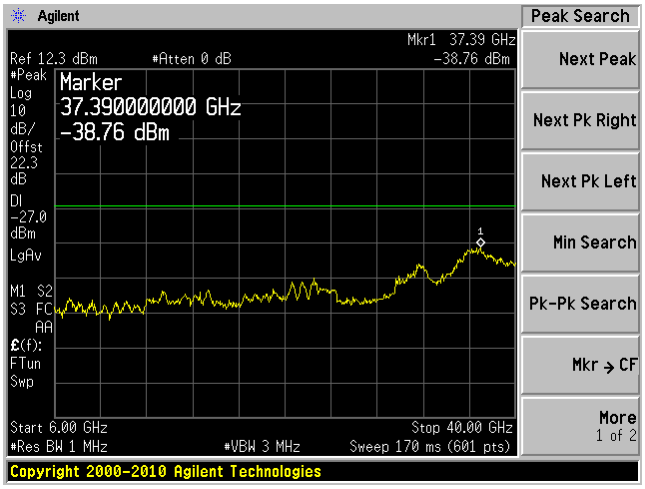
802.11n HT20 mode, 5580 MHz, Chain J0 2



802. 11n HT20 mode, 5580 MHz, Chain J1 1

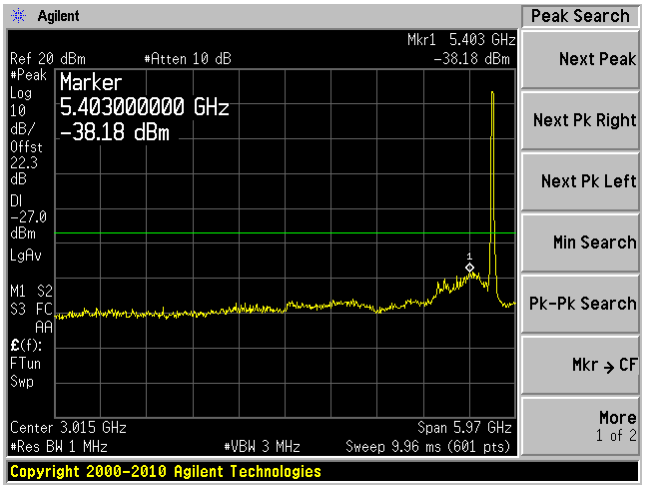


802.11n HT20 mode, 5580 MHz, Chain J1 2

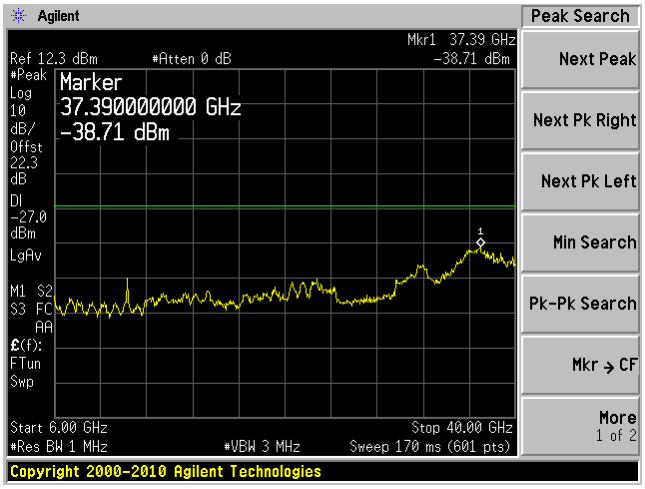


802.11n HT20 mode, High Channel

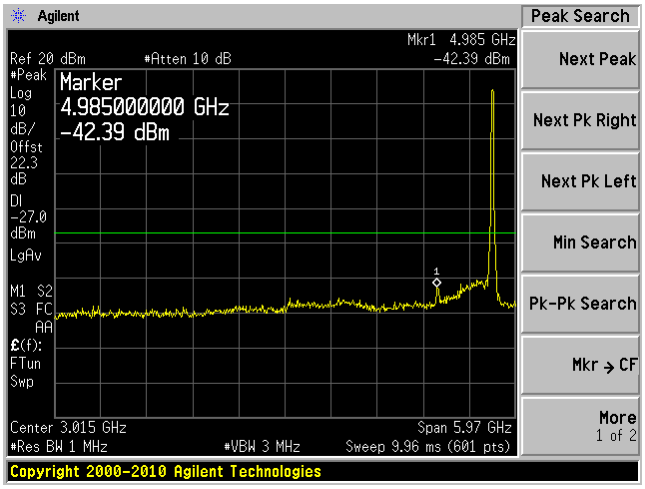
802.11n HT20 mode, 5700 MHz, Chain J0 1



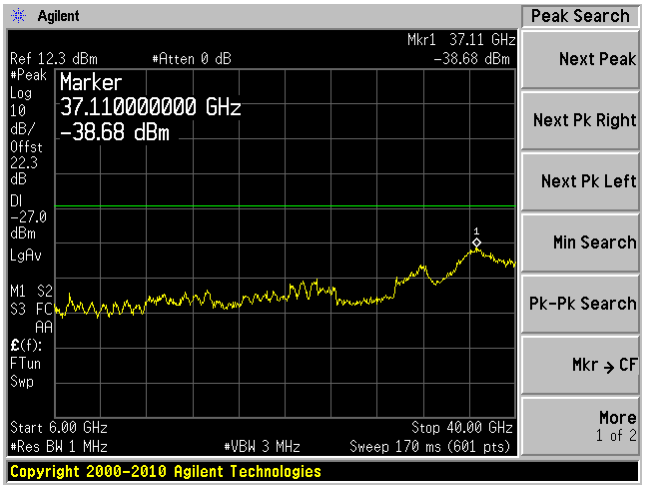
802.11n HT20 mode, 5700 MHz, Chain J0 2



802.11n HT20 mode, 5700 MHz, Chain J1 1

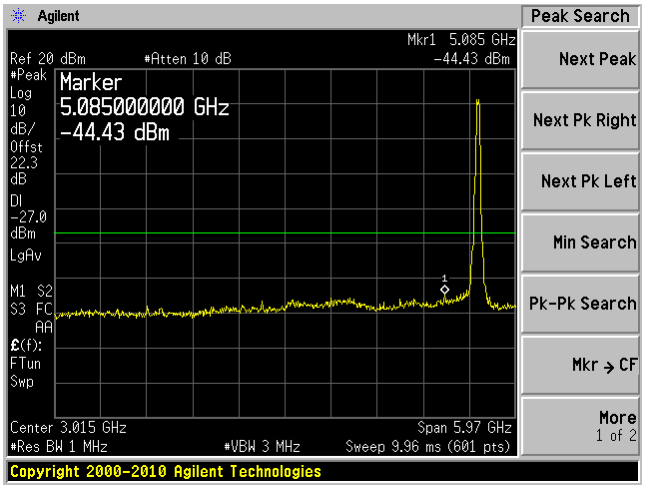


802.11n HT20 mode, 5700 MHz, Chain J1 2

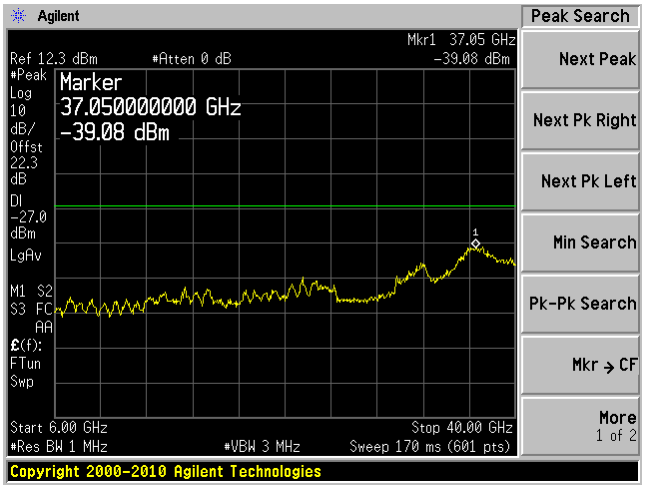


802.11n HT 40 mode, Low Channel

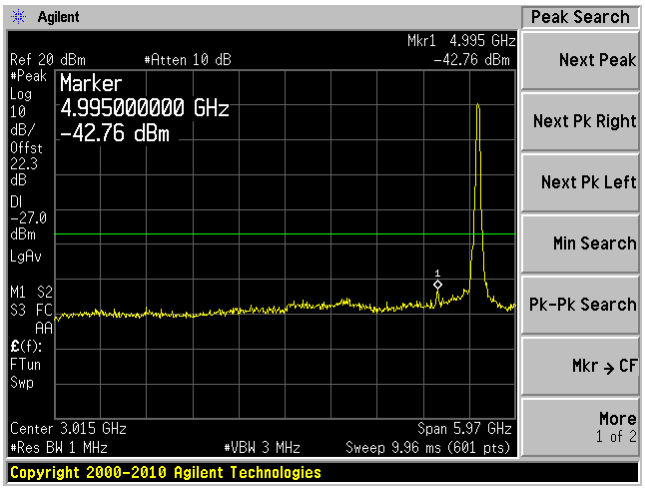
802.11n HT40 mode, 5510 MHz, Chain J0 1



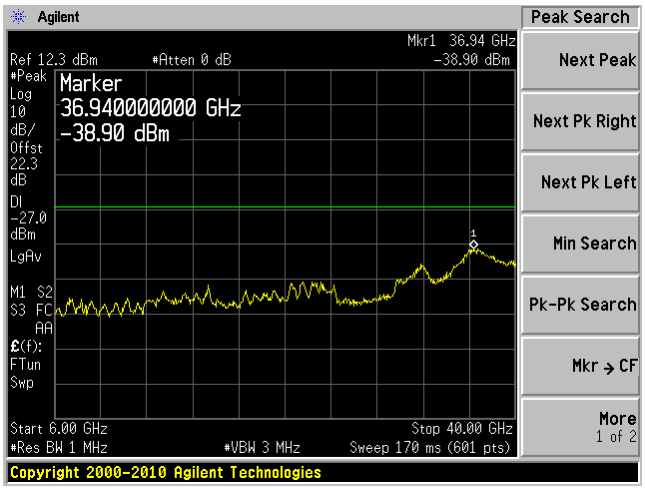
802.11n HT40 mode, 5510 MHz, Chain J0 2



802.11n HT40 mode, 5510 MHz, Chain J1 1

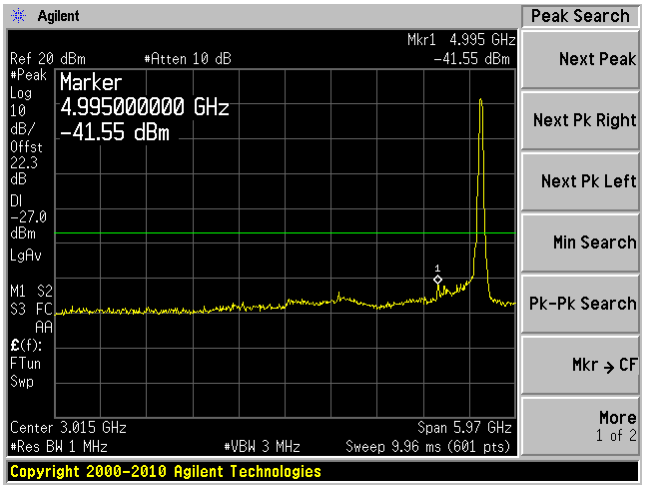


802.11n HT40 mode, 5510 MHz, Chain J1 2

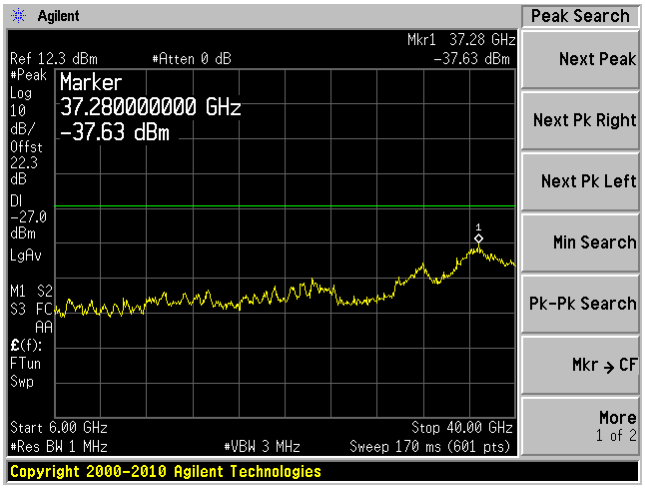


802.11n HT 40 mode, Middle Channel

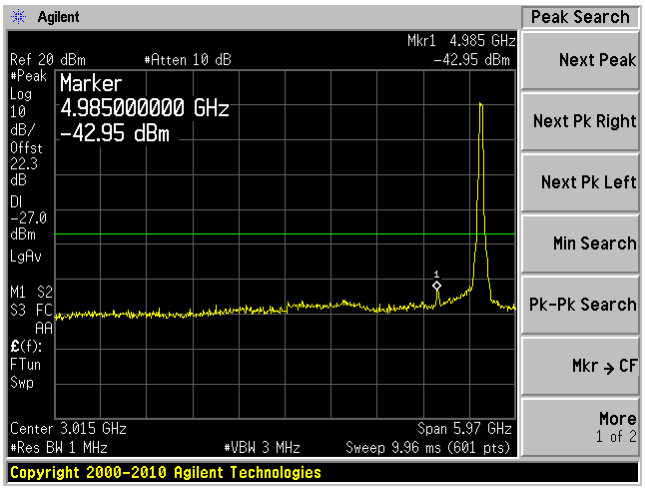
802.11n HT40 mode, 5550 MHz, Chain J0 1



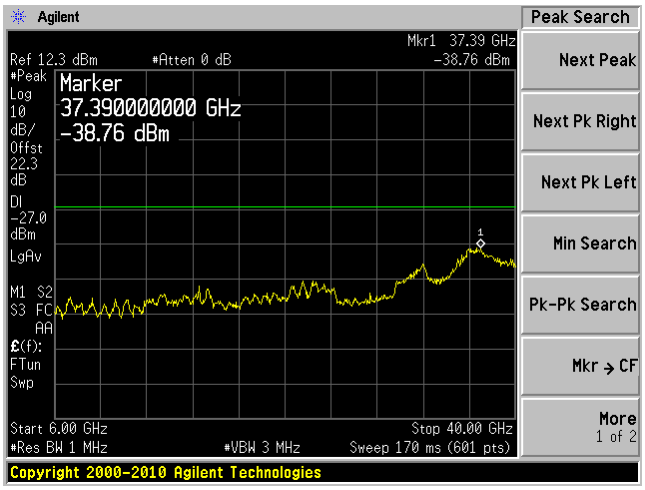
802.11n HT40 mode, 5550 MHz, Chain J0 2



802.11n HT40 mode, 5550 MHz, Chain J1 1

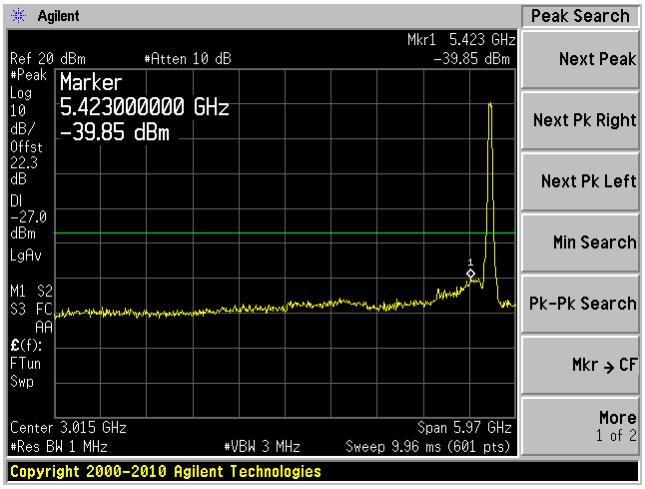


802.11n HT40 mode, 5550 MHz, Chain J1 2

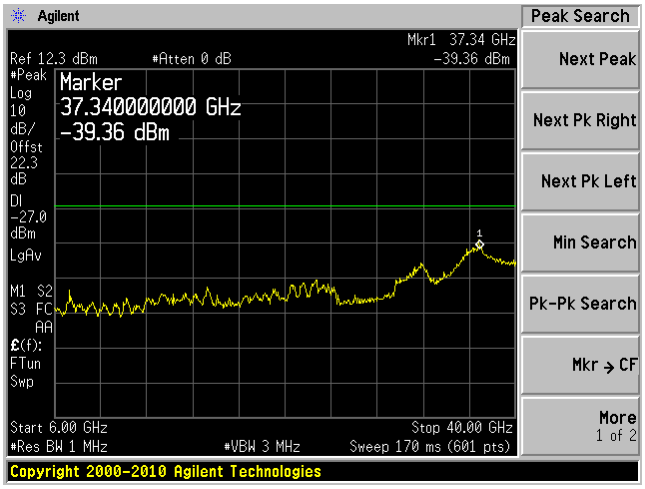


802.11n HT 40 mode, High Channel

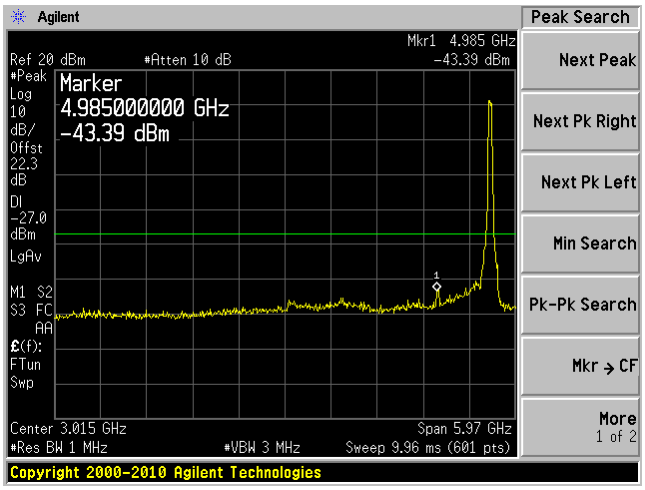
802.11n HT40 mode, 5670 MHz, Chain J0 1



802.11n HT40 mode, 5670 MHz, Chain J0 2



802.11n HT40 mode, 5670 MHz, Chain J1 1



802.11n HT40 mode, 5670 MHz, Chain J1 2