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

For

NVIDIA Corporation

2701 San Tomas Expressway,

Santa Clara, CA 95050, USA

FCC ID: VOB-P2450A
IC: 7361A-P2450A
Model: P2450

Report Type:	**Product Type:**
Original Report	Portable Gaming Device

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Report Number: R1304241-407

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1304241-407	Original Report	2013-05-23

1 General Description

1.1 Product Description for Equipment under Test (EUT)

This test and measurement report has been compiled on behalf of *NVIDIA Corporation,* and their product, FCC ID: VOB-P2450A, IC: 7361A-P2450A, model number: P2450, which henceforth is referred to as the EUT (Equipment Under Test.), The EUT is a portable gaming device operates in 2.4 GHz and 5 GHz bands, the system contains 802.11a/b/g/n and Bluetooth EDR function.

1.2 Mechanical Description of EUT

The EUT measures approximately 160 mm (L) x 135 mm (W) x 55 mm (H) and weighs approximately 585 g.

The data gathered are from a typical production sample provided by the manufacturer with serial number: TRB2-0220

1.3 Objective

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

The objective is to determine compliance with FCC Part 15.407 and IC RSS-210 rules for Output Power, Antenna Requirements, AC Line Conducted Emissions, 26 dB Bandwidth, power spectral density, Band Edges Measurement, Spurious Emissions, Conducted and Radiated Spurious Emissions.

1.4 Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS/DSSI with FCC IC: VOB-P2450A and IC RSS-210 with IC: 7361A-P2450A.

1.5 Test Methodology

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

1.6 Measurement Uncertainty

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

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

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

1.7 Test Facility

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 C63.4-2009.

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

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

2.2 EUT Exercise Software

The software is provided by customer. The EUT exercise program used during testing was designed to exercise the system components.

The EUT had been tested with the following data rate settings:

Radio Mode	Frequency Band	Frequency/Data Rate		
		Low CH (MHz/Mbps)	Mid CH (MHz/Mbps)	High CH (MHz)
802.11a	5.2GHz	5180/6	5200/6	5240/6
802.11n HT20	5.2GHz	5180/MCS0	5200/ MCS0	5240/MCS0
802.11n HT40	5.2GHz	5190/MCS0	-	5230/MCS0

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 No.	Serial No.
Lenovo	Laptop	G560-0679	CB08585694
DELL	Laptop	PP18L	PF329 A03

2.6 EUT Internal Configuration Details

Manufacturer	Description	Type	Serial Number
NVIDIA	Joystick board	Gaming control stick	0511613700054
NVIDIA	Control panel	Button board	0511613600173
Sanyo	Battery	Battery	027-0012-000
NVIDIA	Mother board	Mother Board	0511613500407
Delta Electronics Inc	Fan	Fan	-

2.7 Interface Ports and Cables

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

2.8 Power Supply List and Details

Manufacturer	Description	Model	Part Number
NVIDIA	Power Adapter	P2551	-

3 Summary of Test Results

FCC & IC Rules	Description of Test	Result
FCC §15.407(f), §2.1093 IC RSS-102	RF Exposure	Refer to BACL SAR report No.: R1304241-SAR
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 §4.10	Receiver Spurious Radiated Emissions	Compliant
FCC §2.1051, §15.407(b) IC RSS-210 §A9.2	Spurious Emissions at Antenna Terminals	Compliant

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

4.1 Applicable Standard

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

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.

4.2 Antenna List

Antenna Location	Manufacturers	Models/Name	Antenna Gain (dBi) @ 5 GHz
Top	Amphenol	NV4157-12-005-R-FC	5.04
Right	Amphenol	NV4158-12-005-R-FC	5.18

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

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

5.1 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.

5.2 Test Setup

The measurement was performed at P2450 room, using the setup per ANSI C63.4-2009 measurement procedure. The specification used was FCC §15.207 and IC RSS-Gen §7.2.4 limits.

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

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

5.3 Test Procedure

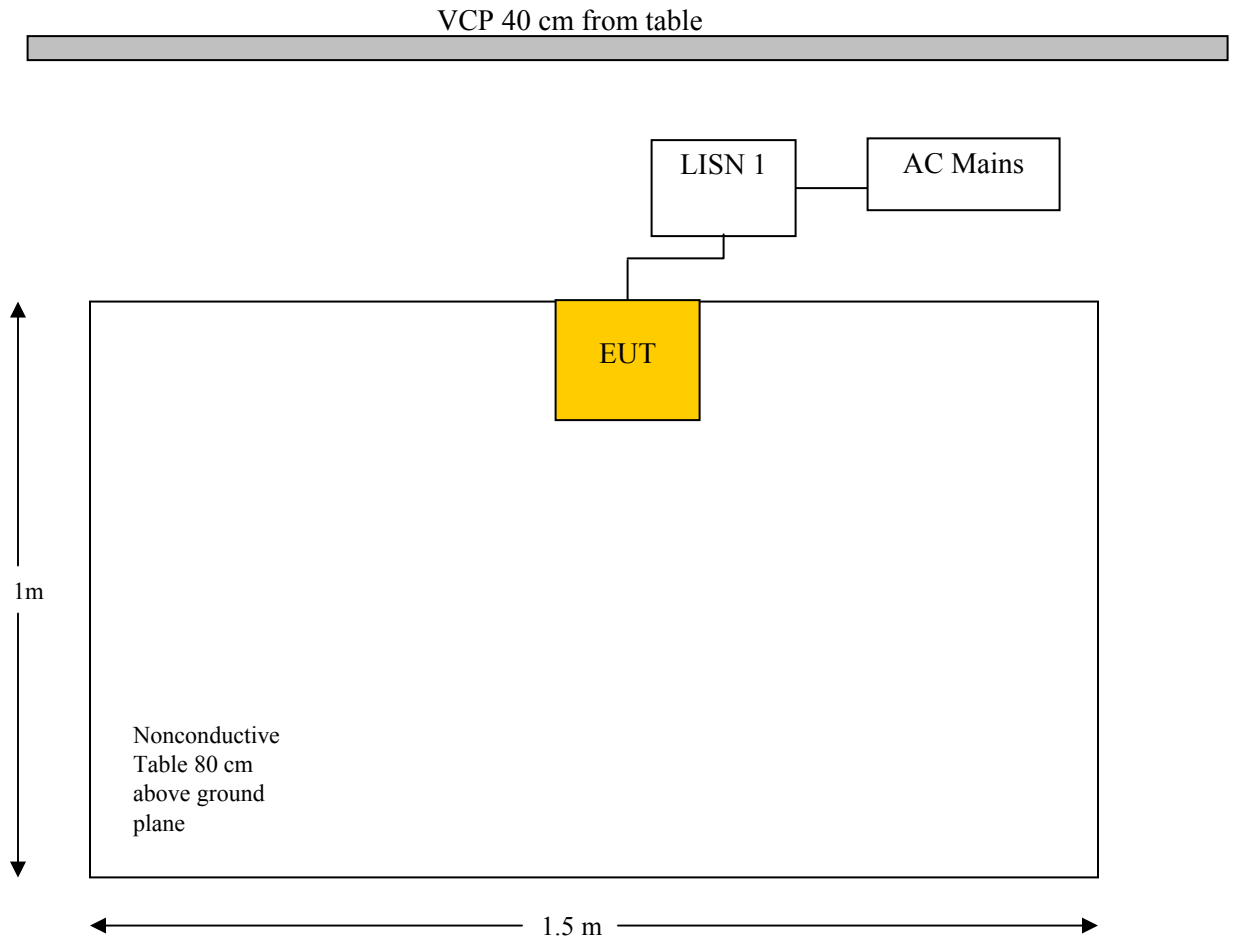
During the conducted emissions test, the power cord of the EUT host system was connected to the mains outlet of the LISN-1 and the power cord of the support equipment was connected to LISN-2.

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

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

5.4 Test Setup Block Diagram

AC/DC Adaptor:



5.5 Corrected Amplitude & Margin Calculation

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

CA = Ai + CL + Atten

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

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

Margin = Corrected Amplitude - Limit

5.6 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2013-03-28	1 year
Solar Electronics	LISN	9252-50-R-24-N	511205	2012-06-25	1 year
TTE	Filter, High Pass	H962-150K-50-21378	K7133	2012-05-30	1 year

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

5.7 Test Environmental Conditions

Temperature:	21 º C
Relative Humidity:	41 %
ATM Pressure:	102.1 kPa

The testing was performed by Bo Li on 2013-05-09 in 5m chamber3.

5.8 Summary of Test Results

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

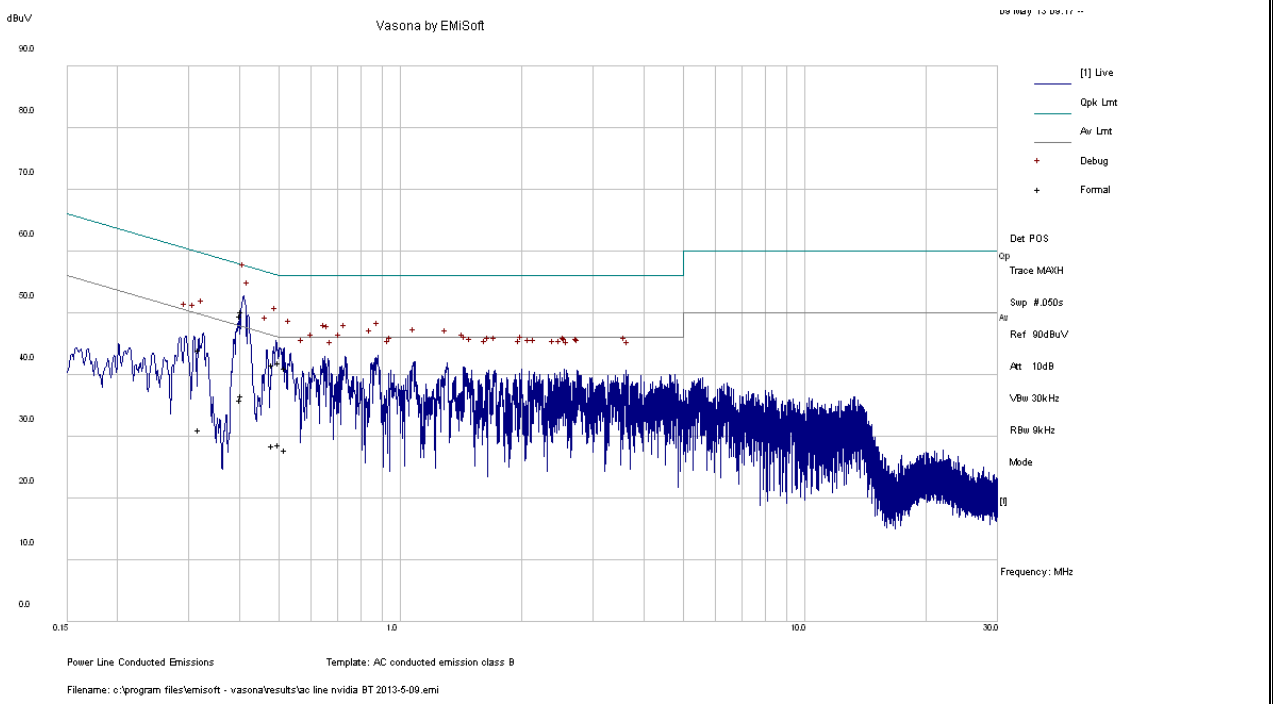
5 GHz Band

Connection: AC/DC adapter connected to 120 V/60 Hz, AC			
Margin (dB)	**Frequency (MHz)**	**Conductor Mode (Line/Neutral)**	**Range (MHz)**
-7.44	0.406206	Line	0.15-30

5.9 Conducted Emissions Test Plots and Data

5 GHz

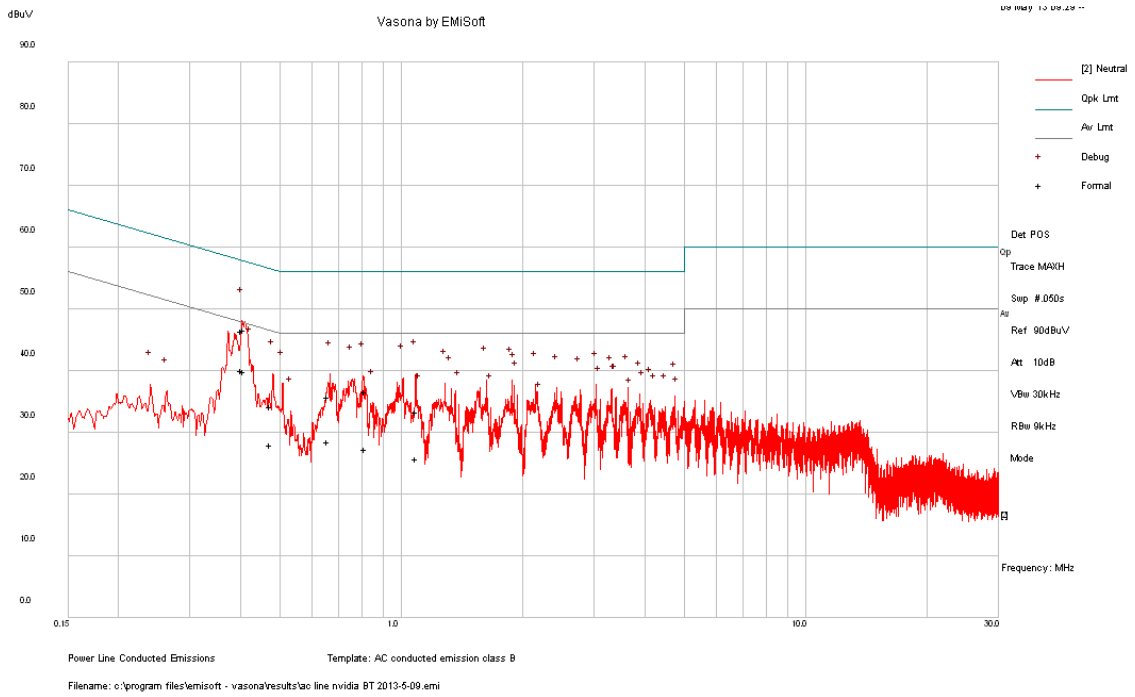
120 V, 60 Hz – Line, AC/DC Adaptor



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.403287	49.66	Line	57.79	-8.12	QP
0.406206	50.29	Line	57.73	-7.44	QP
0.502833	41.95	Line	56	-14.05	QP
0.520068	41.05	Line	56	-14.95	QP
0.483096	41.6	Line	56.29	-14.69	QP
0.318078	44.12	Line	59.76	-15.63	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.403287	35.93	Line	47.79	-11.86	Ave.
0.406206	36.63	Line	47.73	-11.1	Ave.
0.502833	28.68	Line	46	-17.32	Ave.
0.520068	27.93	Line	46	-18.07	Ave.
0.483096	28.46	Line	46.29	-17.83	Ave.
0.318078	31.06	Line	49.76	-18.7	Ave.

120 V, 60 Hz – Neutral, AC/DC Adaptor



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.403653	46.53	Neutral	57.78	-11.25	QP
0.408846	46.69	Neutral	57.67	-10.98	QP
1.092372	33.38	Neutral	56	-22.62	QP
0.659916	35.73	Neutral	56	-20.27	QP
0.474123	34.27	Neutral	56.44	-22.17	QP
0.814152	36.66	Neutral	56	-19.34	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.403653	40.04	Neutral	47.78	-7.74	Ave.
0.408846	39.91	Neutral	47.67	-7.76	Ave.
1.092372	25.73	Neutral	46	-20.27	Ave.
0.659916	28.61	Neutral	46	-17.39	Ave.
0.474123	27.96	Neutral	46.44	-18.48	Ave.
0.814152	27.33	Neutral	46	-18.67	Ave.

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

6.1 Applicable Standard

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz.

As per FCC §15.209(a) and IC RSS-210: Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (micro volts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 Note 1	3
88 - 216	150 Note 1	3
216 - 960	200 Note 1	3
Above 960	500	3

Note 1: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	960 – 1240	4. 5 – 5. 15
0.495 – 0.505	16.69475 – 16.69525	1300 – 1427	5. 35 – 5. 46
2.1735 – 2.1905	25.5 – 25.67	1435 – 1626.5	7.25 – 7.75
4.125 – 4.128	37.5 – 38.25	1645.5 – 1646.5	8.025 – 8.5
4.17725 – 4.17775	73 – 74.6	1660 – 1710	9.0 – 9.2
4.20725 – 4.20775	74.8 – 75.2	1718.8 – 1722.2	9.3 – 9.5
6.215 – 6.218	108 – 121.94	2200 – 2300	10.6 – 12.7
6.26775 – 6.26825	123 – 138	2310 – 2390	13.25 – 13.4
6.31175 – 6.31225	149.9 – 150.05	2483.5 – 2500	14.47 – 14.5
8.291 – 8.294	156.52475 – 156.52525	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.7 – 156.9	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	162.0125 –167.17	3.332 – 3.339	22.01 – 23.12
8.41425 – 8.41475	167.72 – 173.2	3 3458 – 3 358	23.6 – 24.0
12.29 – 12.293	240 – 285	3.600 – 4.400	31.2 – 31.8
12.51975 – 12.52025	322 – 335.4		36.43 – 36.5
12.57675 – 12.57725	399.9 – 410		Above 38.6
13.36 – 13.41	608 – 614		

As per FCC Part 15.407 (b)(1) and IC RSS-210 §A9.2

(1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

6.2 Test Setup

The radiated emissions tests were performed in the 5-meter Chamber, using the setup in accordance with ANSI C63.4-2009. The specification used was the FCC 15C/15E 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.

6.3 Test Procedure

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

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

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

The spectrum analyzer or receiver is set as:

Below 1000 MHz:

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

Above 1000 MHz:

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

6.4 Corrected Amplitude & Margin Calculation

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

CA = Ai + AF + CL + Atten – Ga

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

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

Margin = Corrected Amplitude - Limit

6.5 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	N/R
Sunol Science Corp	Combination Antenna	JB3	A020106-3	2012-06-18	1 year
Hewlett Packard	Pre-amplifier	8447D	2944A06639	2012-06-09	1 year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2012-05-09	1 year
Agilent	Spectrum Analyzer	E4446A	US44300386	2012-09-29	1 year
EMCO	Horn Antenna	3315	9511-4627	2012-10-17	1 year
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2013-03-28	1 year

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

6.6 Test Environmental Conditions

Temperature:	21-25 °C
Relative Humidity:	43-46 %
ATM Pressure:	101-103 kPa

The testing was performed by Bo Li from 2013-5-6 to 2013-5-9 at 5 meter 3 and 5 meter 2.

6.7 Summary of Test Results

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

30 MHz-1 GHz

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-3.83	39.9857	Vertical	30MHz-1GHz

1 GHz-40 GHz

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-0.589	5350	Vertical	1GHz-40GHz

6.8 Radiated Emissions Test Result Data

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

5.2 GHz Band, 802.11a mode

All 30 MHz – 1 GHz spurious are digital, other emissions are on the noise floor level. Report only the worst case data as shown below:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
39.931	33.84	124	V	300	40	-6.16
177.0532	29.74	132	V	155	43.5	-13.76
127.1472	21.44	121	V	144	43.5	-22.06
260.8874	20.86	103	H	330	46	-25.14
310.9778	15.92	104	V	190	46	-30.08

5.2 GHz Band, 802.11n HT20 mode

All 30 MHz – 1 GHz spurious are digital, other emissions are on the noise floor level. Report only the worst case data as shown below:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
39.9421	34.94	130	V	337	40	-5.06
178.0472	30.95	99	V	150	43.5	-12.55
250.375	29.34	99	V	152	46	-16.66
360.7451	32.81	130	V	185	46	-13.19
130.9895	22.07	109	V	266	43.5	-21.43

5.2 GHz Band, 802.11n HT40 mode

All 30 MHz – 1 GHz spurious are digital, other emissions are on the noise floor level. Report only the worst case data as shown below:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
39.9857	36.17	104	V	95	40	-3.83
199.9854	33.88	106	V	42	43.5	-9.62
260.9547	27.81	117	H	303	46	-18.19
311.5744	14.89	193	H	241	46	-31.11
120.5477	22.31	201	H	317	43.5	-21.19

2) 1–40 GHz, Measured at 3 meters

5.2 GHz Band, 802.11a mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5180 MHz, measured at 3 meters											
5180	72.93	39	104	V	34.256	4.55	0	111.736	N/A	N/A	Peak
5180	68.83	331	100	H	34.256	4.55	0	107.636	N/A	N/A	Peak
5180	55.99	39	104	V	34.256	4.55	0	94.796	N/A	N/A	Ave
5180	52.15	331	100	H	34.256	4.55	0	90.956	N/A	N/A	Ave
5150	32.39	0	100	V	33.097	4.42	0	69.907	74	-4.093	Peak
5150	29.59	331	100	H	32.585	4.35	0	66.525	74	-7.475	Peak
5150	15.11	0	100	V	33.097	4.42	0	52.627	54	-1.373	Ave
5150	13.85	331	100	H	32.585	4.35	0	50.785	54	-3.215	Ave
10360	32.68	0	100	V	38.329	7.02	26.98	51.049	74	-22.951	Peak
10360	32.53	0	100	H	38.329	7.02	26.98	50.899	74	-23.101	Peak
10360	17.55	0	100	V	38.329	7.02	26.98	35.919	54	-18.081	Ave
10360	17.6	0	100	H	38.329	7.02	26.98	35.969	54	-18.031	Ave
15540	31.65	0	100	V	38.432	8.38	25.92	52.542	74	-21.458	Peak
15540	32.15	0	100	H	38.432	8.38	25.92	53.042	74	-20.958	Peak
15540	18.08	0	100	V	38.432	8.38	25.92	38.972	54	-15.028	Ave
15540	18.04	0	100	H	38.432	8.38	25.92	38.932	54	-15.068	Ave
20720	31.64	0	100	V	49.9	9.68	29	62.22	74	-11.78	Peak
20720	31.66	0	100	H	49.9	9.68	29	62.24	74	-11.76	Peak
20720	17.43	0	100	V	49.9	9.68	29	48.01	54	-5.99	Ave
20720	17.41	0	100	H	49.9	9.68	29	47.99	54	-6.01	Ave
Middle Channel 5200 MHz, measured at 3 meters											
5200	72.28	42	102	V	34.256	4.55	0	111.086	N/A	N/A	Peak
5200	69.26	335	100	H	34.256	4.55	0	108.066	N/A	N/A	Peak
5200	55.52	42	102	V	34.256	4.55	0	94.326	N/A	N/A	Ave
5200	51.88	335	100	H	34.256	4.55	0	90.686	N/A	N/A	Ave
10400	32.7	0	100	V	38.329	6.99	26.97	51.049	74	-22.951	Peak
10400	32.62	0	100	H	38.329	6.99	26.97	50.969	74	-23.031	Peak
10400	17.6	0	100	V	38.329	6.99	26.97	35.949	54	-18.051	Ave
10400	17.6	0	100	H	38.329	6.99	26.97	35.949	54	-18.051	Ave
15600	32.1	0	100	V	38.325	8.4	25.92	52.905	74	-21.095	Peak
15600	32.21	0	100	H	38.325	8.4	25.92	53.015	74	-20.985	Peak
15600	18.01	0	100	V	38.325	8.4	25.92	38.815	54	-15.185	Ave
15600	18.02	0	100	H	38.325	8.4	25.92	38.825	54	-15.175	Ave
20800	31.58	0	100	V	49.9	9.8	28.9	62.38	74	-11.62	Peak
20800	31.64	0	100	H	49.9	9.8	28.9	62.44	74	-11.56	Peak
20800	17.41	0	100	V	49.9	9.8	28.9	48.21	54	-5.79	Ave
20800	17.4	0	100	H	49.9	9.8	28.9	48.2	54	-5.8	Ave

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5240 MHz, measured at 3 meters											
5240	71.41	328	100	V	34.256	4.6	0	110.266	N/A	N/A	Peak
5240	68.43	59	125	H	34.256	4.6	0	107.286	N/A	N/A	Peak
5240	55.6	328	100	V	34.256	4.6	0	94.456	N/A	N/A	Ave
5240	51.17	59	125	H	34.256	4.6	0	90.026	N/A	N/A	Ave
5452.48	28.08	0	100	V	34.821	4.76	0	67.661	74	-6.339	Peak
5353.48	27.82	0	100	H	34.821	4.71	0	67.351	74	-6.649	Peak
5452.48	13.4	0	100	V	34.821	4.76	0	52.981	54	-1.019	Ave
5353.48	13.53	0	100	H	34.821	4.71	0	53.061	54	-0.939	Ave
10480	32.52	0	100	V	38.343	7	27.83	50.033	74	-23.967	Peak
10480	32.59	0	100	H	38.343	7	27.83	50.103	74	-23.897	Peak
10480	17.61	0	100	V	38.343	7	27.83	35.123	54	-18.877	Ave
10480	17.42	0	100	H	38.343	7	27.83	34.933	54	-19.067	Ave
15720	32.23	0	100	V	38.188	8.38	25.57	53.228	74	-20.772	Peak
15720	32.16	0	100	H	38.188	8.38	25.57	53.158	74	-20.842	Peak
15720	18.04	0	100	V	38.188	8.38	25.57	39.038	54	-14.962	Ave
15720	18.03	0	100	H	38.188	8.38	25.57	39.028	54	-14.972	Ave
20960	31.59	0	100	V	49.9	9.81	29	62.3	74	-11.7	Peak
20960	31.45	0	100	H	49.9	9.81	29	62.16	74	-11.84	Peak
20960	17.42	0	100	V	49.9	9.81	29	48.13	54	-5.87	Ave
20960	17.41	0	100	H	49.9	9.81	29	48.12	54	-5.88	Ave

5.2 GHz Band, 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 5180 MHz, measured at 3 meters											
5180	68.58	35	107	V	34.256	4.55	0	107.386	N/A	N/A	Peak
5180	69.1	58	122	H	34.256	4.55	0	107.906	N/A	N/A	Peak
5180	51.86	35	107	V	34.256	4.55	0	90.666	N/A	N/A	Ave
5180	38.91	58	122	H	34.256	4.55	0	77.716	N/A	N/A	Ave
5150	28.07	0	100	V	34.256	4.56	0	66.886	74	-7.114	Peak
4524.9	27.54	0	100	H	32.547	4.36	0	64.447	74	-9.553	Peak
5150	13.61	0	100	V	34.256	4.56	0	52.426	54	-1.574	Ave
4524.9	13.61	0	100	H	32.547	4.36	0	50.517	54	-3.483	Ave
10360	32.15	0	100	V	38.329	7.02	26.98	50.519	74	-23.481	Peak
10360	32.4	0	100	H	38.329	7.02	26.98	50.769	74	-23.231	Peak
10360	17.57	0	100	V	38.329	7.02	26.98	35.939	54	-18.061	Ave
10360	17.38	0	100	H	38.329	7.02	26.98	35.749	54	-18.251	Ave
15540	32.34	0	100	V	38.432	8.38	25.92	53.232	74	-20.768	Peak
15540	32.27	0	100	H	38.432	8.38	25.92	53.162	74	-20.838	Peak
15540	18.1	0	100	V	38.432	8.38	25.92	38.992	54	-15.008	Ave
15540	18.06	0	100	H	38.432	8.38	25.92	38.952	54	-15.048	Ave
20720	31.74	0	100	V	49.9	9.68	29	62.32	74	-11.68	Peak
20720	31.34	0	100	H	49.9	9.68	29	61.92	74	-12.08	Peak
20720	17.43	0	100	V	49.9	9.68	29	48.01	54	-5.99	Ave
20720	17.4	0	100	H	49.9	9.68	29	47.98	54	-6.02	Ave
Middle Channel 5200 MHz, measured at 3 meters											
5200	66.48	35	107	V	34.256	4.55	0	105.286	N/A	N/A	Peak
5200	65.24	58	122	H	34.256	4.55	0	104.046	N/A	N/A	Peak
5200	49.87	35	107	V	34.256	4.55	0	88.676	N/A	N/A	Ave
5200	35.57	58	122	H	34.256	4.55	0	74.376	N/A	N/A	Ave
10400	32.67	0	100	V	38.329	6.99	26.97	51.019	74	-22.981	Peak
10400	32.57	0	100	H	38.329	6.99	26.97	50.919	74	-23.081	Peak
10400	17.54	0	100	V	38.329	6.99	26.97	35.889	54	-18.111	Ave
10400	17.6	0	100	H	38.329	6.99	26.97	35.949	54	-18.051	Ave
15600	31.35	0	100	V	38.325	8.4	25.92	52.155	74	-21.845	Peak
15600	32.31	0	100	H	38.325	8.4	25.92	53.115	74	-20.885	Peak
15600	18.07	0	100	V	38.325	8.4	25.92	38.875	54	-15.125	Ave
15600	18.067	0	100	H	38.325	8.4	25.92	38.872	54	-15.128	Ave
20800	31.59	0	100	V	49.9	9.8	28.9	62.39	74	-11.61	Peak
20800	31.66	0	100	H	49.9	9.8	28.9	62.46	74	-11.54	Peak
20800	17.44	0	100	V	49.9	9.8	28.9	48.24	54	-5.76	Ave
20800	17.426	0	100	H	49.9	9.8	28.9	48.226	54	-5.774	Ave

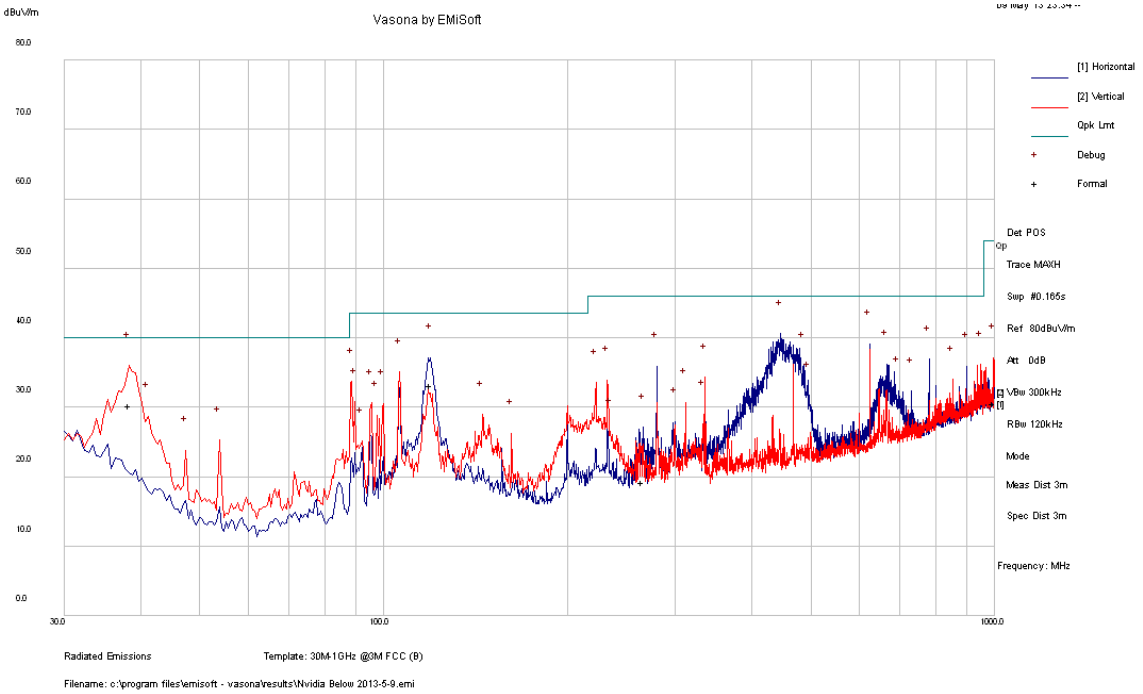
Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 5240 MHz, measured at 3 meters											
5240	65.91	32	100	V	34.256	4.6	0	104.766	N/A	N/A	Peak
5240	64.6	59	116	H	34.256	4.6	0	103.456	N/A	N/A	Peak
5240	48.84	32	100	V	34.256	4.6	0	87.696	N/A	N/A	Ave
5240	48.39	59	116	H	34.256	4.6	0	87.246	N/A	N/A	Ave
5350	27.89	0	100	V	34.821	4.76	0	67.471	74	-6.529	Peak
5350	27.94	0	100	H	34.821	4.76	0	67.521	74	-6.479	Peak
5350	13.83	0	100	V	34.821	4.76	0	53.411	54	-0.589	Ave
5350	13.68	0	100	H	34.821	4.76	0	53.261	54	-0.739	Ave
10480	32.78	0	100	V	38.343	7	27.83	50.293	74	-23.707	Peak
10480	32.55	0	100	H	38.343	7	27.83	50.063	74	-23.937	Peak
10480	17.66	0	100	V	38.343	7	27.83	35.173	54	-18.827	Ave
10480	17.61	0	100	H	38.343	7	27.83	35.123	54	-18.877	Ave
15720	31.37	0	100	V	38.188	8.38	25.57	52.368	74	-21.632	Peak
15720	32.23	0	100	H	38.188	8.38	25.57	53.228	74	-20.772	Peak
15720	18.03	0	100	V	38.188	8.38	25.57	39.028	54	-14.972	Ave
15720	18.07	0	100	H	38.188	8.38	25.57	39.068	54	-14.932	Ave

5.2 GHz Band, 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 5190 MHz, measured at 3 meters											
5190	61.75	280	100	V	34.256	4.55	0	100.556	N/A	N/A	Peak
5190	60.98	16	114	H	34.256	4.55	0	99.786	N/A	N/A	Peak
5190	45.45	280	100	V	34.256	4.55	0	84.256	N/A	N/A	Ave
5190	44.07	16	114	H	34.256	4.55	0	82.876	N/A	N/A	Ave
5150	27.68	0	100	V	34.256	4.56	0	66.496	74	-7.504	Peak
5148.9	27.54	0	100	H	34.256	4.56	0	66.356	74	-7.644	Peak
5150	13.66	0	100	V	34.256	4.56	0	52.476	54	-1.524	Ave
5148.9	13.67	0	100	H	34.256	4.56	0	52.486	54	-1.514	Ave
10380	32.61	0	100	V	38.329	7.02	27.8	50.159	74	-23.841	Peak
10380	32.59	0	100	H	38.329	7.02	27.8	50.139	74	-23.861	Peak
10380	17.56	0	100	V	38.329	7.02	27.8	35.109	54	-18.891	Ave
10380	17.57	0	100	H	38.329	7.02	27.8	35.119	54	-18.881	Ave
15570	32.11	0	100	V	38.325	8.4	25.66	53.175	74	-20.825	Peak
15570	32.09	0	100	H	38.325	8.4	25.66	53.155	74	-20.845	Peak
15570	18.04	0	100	V	38.325	8.4	25.66	39.105	54	-14.895	Ave
15570	18.03	0	100	H	38.325	8.4	25.66	39.095	54	-14.905	Ave
20760	31.69	0	100	V	49.9	9.75	29	62.34	74	-11.66	Peak
20760	31.37	0	100	H	49.9	9.75	29	62.02	74	-11.98	Peak
20760	17.47	0	100	V	49.9	9.75	29	48.12	54	-5.88	Ave
20760	17.46	0	100	H	49.9	9.75	29	48.11	54	-5.89	Ave
High Channel 5230 MHz, measured at 3 meters											
5230	61.44	329	117	V	34.256	4.55	0	100.246	N/A	N/A	Peak
5230	60.28	18	114	H	34.256	4.55	0	99.086	N/A	N/A	Peak
5230	45.13	329	117	V	34.256	4.55	0	83.936	N/A	N/A	Ave
5230	43.78	18	114	H	34.256	4.55	0	82.586	N/A	N/A	Ave
5350	27.95	0	100	V	35	4.76	0	67.71	74	-6.29	Peak
5350	27.88	0	100	H	35	4.76	0	67.64	74	-6.36	Peak
5350	13.46	0	100	V	35	4.76	0	53.22	54	-0.78	Ave
5350	13.57	0	100	H	35	4.76	0	53.33	54	-0.67	Ave
10460	32.87	0	100	V	38.343	6.99	27.83	50.373	74	-23.627	Peak
10460	32.51	0	100	H	38.343	6.99	27.83	50.013	74	-23.987	Peak
10460	17.53	0	100	V	38.343	6.99	27.83	35.033	54	-18.967	Ave
10460	17.61	0	100	H	38.343	6.99	27.83	35.113	54	-18.887	Ave
15690	32.31	0	100	V	38.188	8.44	25.46	53.478	74	-20.522	Peak
15690	32.22	0	100	H	38.188	8.44	25.46	53.388	74	-20.612	Peak
15690	18.08	0	100	V	38.188	8.44	25.46	39.248	54	-14.752	Ave
15690	18.06	0	100	H	38.188	8.44	25.46	39.228	54	-14.772	Ave

3) Co-location

5 GHz Worst Mode & BT Worst Mode



30-1000 MHz:

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
38.403	30.34	114	V	214	40	-9.66
119.45975	33.12	159	H	131	43.5	-10.38
995.97825	30.55	141	V	65	54	-23.45
265.61875	19.28	99	H	290	46	-26.72

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)	
4801.63	38.61	43	100	V	33.097	4.56	27.78	48.487	74	-25.513	Peak
4801.63	36.28	71	100	H	33.097	4.56	27.78	46.157	74	-27.843	Peak
4801.63	29.68	43	100	V	33.097	4.56	27.78	39.557	54	-14.443	Ave
4801.63	27.04	71	100	H	33.097	4.56	27.78	36.917	54	-17.083	Ave
11571.93	45.3	42	100	V	39.159	7.69	26.99	65.159	74	-8.841	Peak
11571.93	40.37	326	116	H	39.159	7.69	26.99	60.229	74	-13.771	Peak
11571.93	28.25	42	100	V	39.159	7.69	26.99	48.109	54	-5.891	Ave
11571.93	24.51	326	116	H	39.159	7.69	26.99	44.369	54	-9.631	Ave

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

7.1 Applicable Standards

FCC §15.407(a) and IC RSS-210 §A9.2.

7.2 Measurement Procedure

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

7.3 Test Equipment List and Details

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

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

7.4 Test Environmental Conditions

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

The testing was performed by Bo Li from 2013-5-6 to 2013-5-9 at RF site.

7.5 Test Results

5.2 GHz Band:

802.11a mode:

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz) Tx0	26 dB Emission Bandwidth (MHz) Tx1	99% Emission Bandwidth (MHz) Tx0	99% Emission Bandwidth (MHz) Tx1	Limit (MHz)	Results
Low	5180	18.484	18.431	16.2867	16.3027	> 0.5	Compliant
Middle	5200	18.299	18.657	16.3172	16.2973	> 0.5	Compliant
High	5240	18.664	18.531	16.256	16.2726	> 0.5	Compliant

802.11n HT20 mode:

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz) Tx0	26 dB Emission Bandwidth (MHz) Tx1	99% Emission Bandwidth (MHz) Tx0	99% Emission Bandwidth (MHz) Tx1	Limit (MHz)	Results
Low	5180	19.543	19.506	17.4317	17.3921	> 0.5	Compliant
Middle	5200	19.798	19.416	17.4032	17.3911	> 0.5	Compliant
High	5240	19.161	19.476	17.4077	17.4004	> 0.5	Compliant

802.11n HT40 mode:

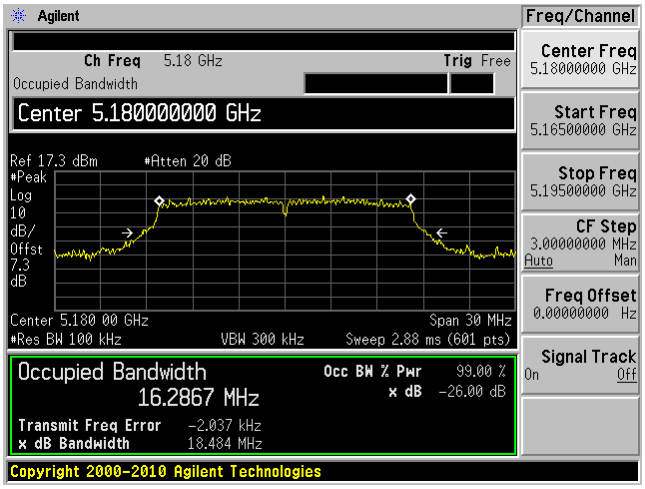
Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz) Tx0	26 dB Emission Bandwidth (MHz) Tx1	99% Emission Bandwidth (MHz) Tx0	99% Emission Bandwidth (MHz) Tx1	Limit (MHz)	Results
Low	5190	45.612	45.501	36.3348	36.1516	> 0.5	Compliant
High	5230	45.974	45.556	36.3546	36.1593	> 0.5	Compliant

Please refer to the following plots.

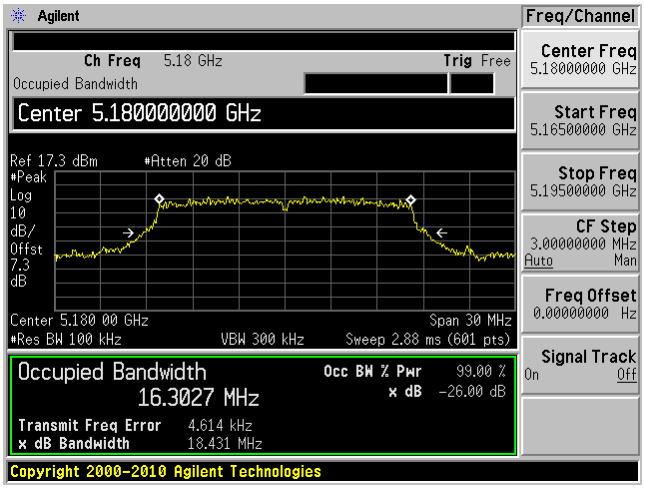
5150-5250 MHz Band

802.11a mode

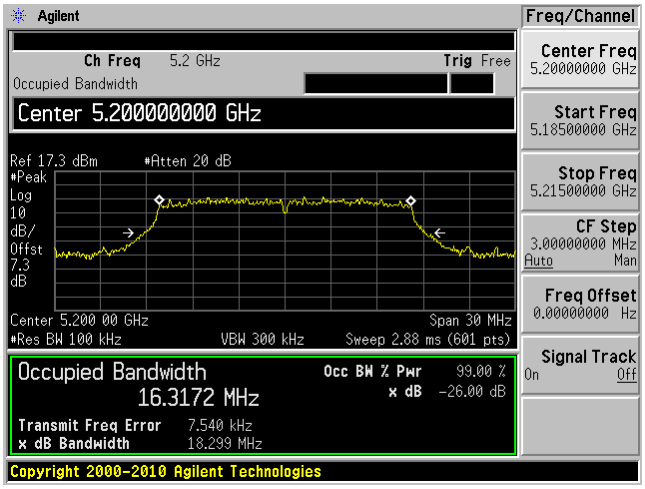
Low channel: 5180 MHz Chain 0



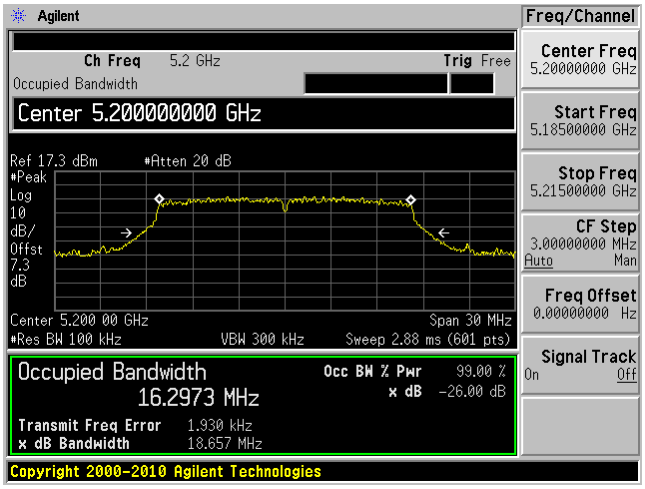
Low channel: 5180 MHz Chain 1



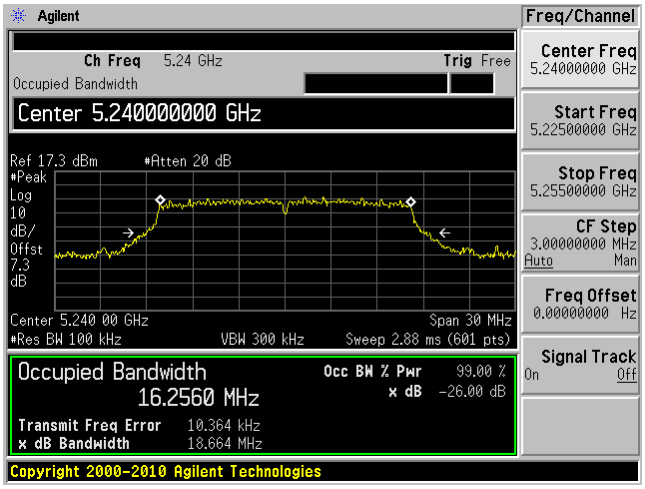
Middle channel: 5200 MHz Chain 0



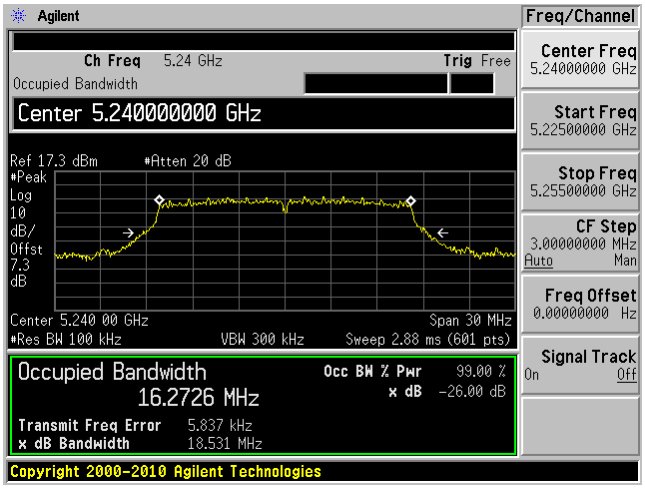
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

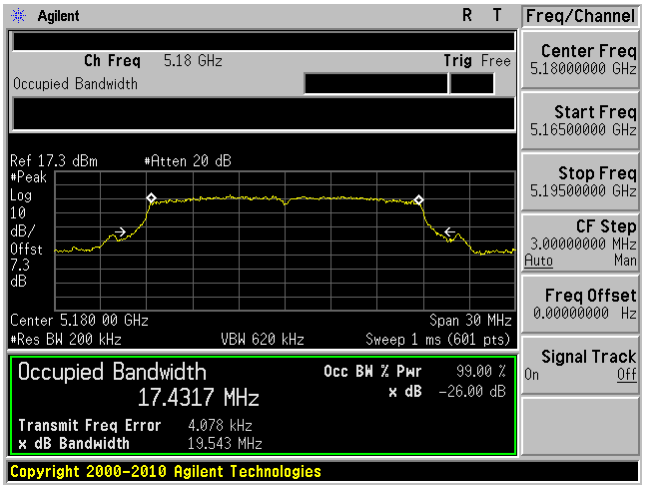


High channel: 5240 MHz Chain 1

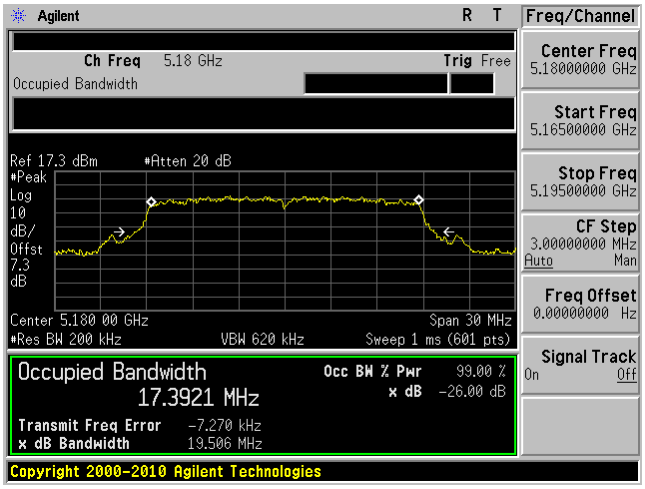


802.11n HT20 mode

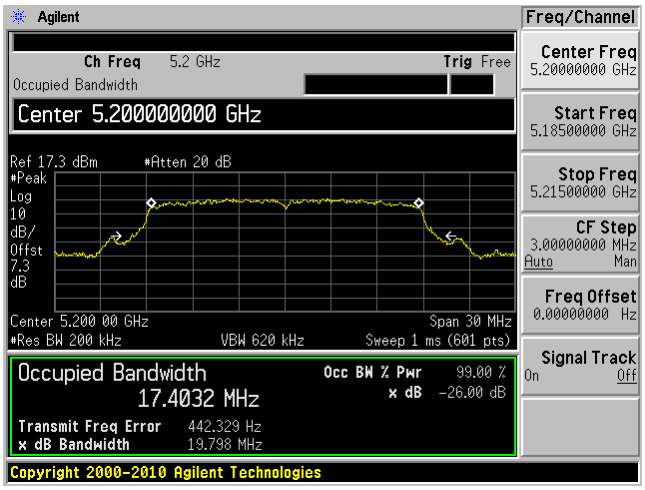
Low channel: 5180 MHz Chain 0



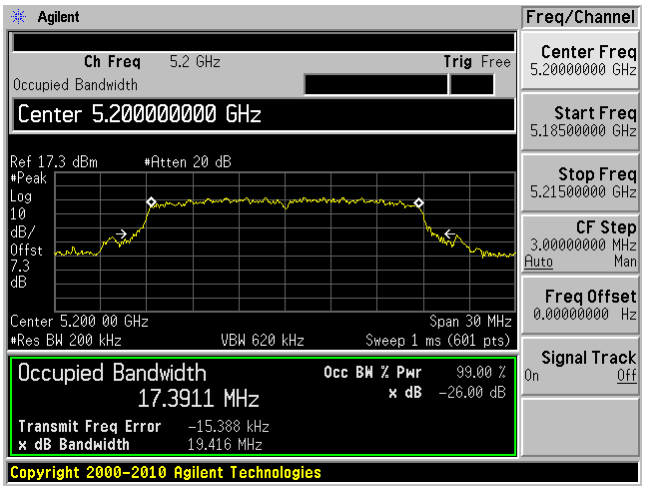
Low channel: 5180 MHz Chain 1



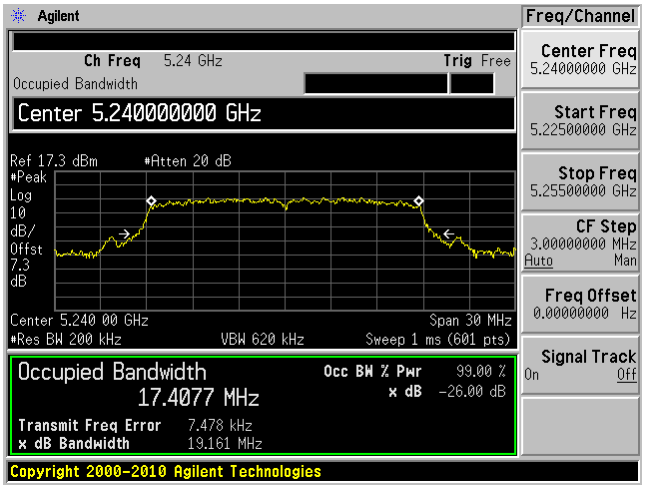
Middle channel: 5200 MHz Chain 0



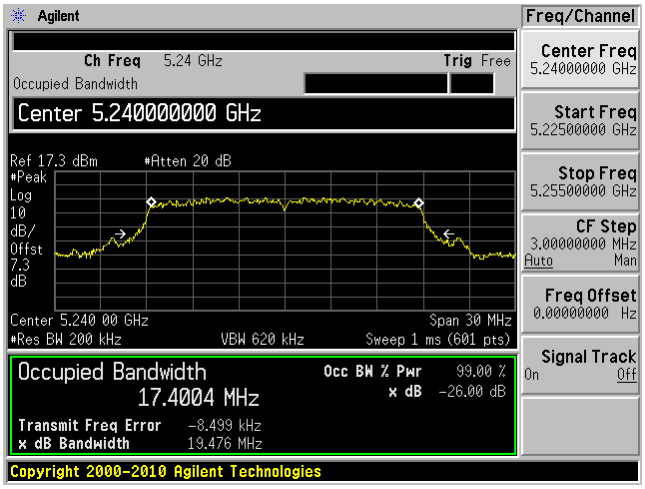
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

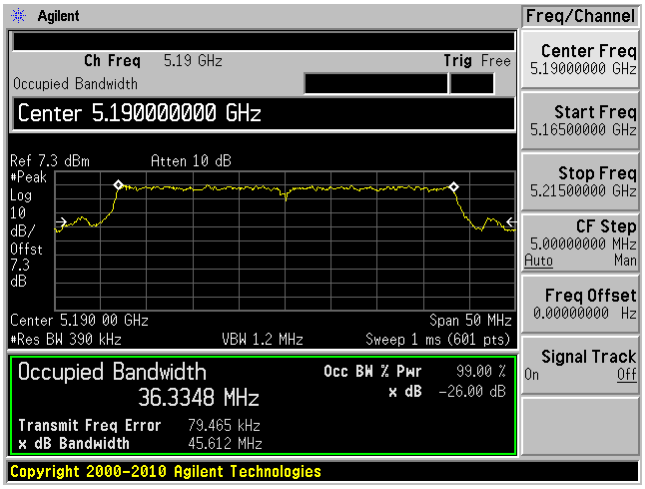


High channel: 5240 MHz Chain 1

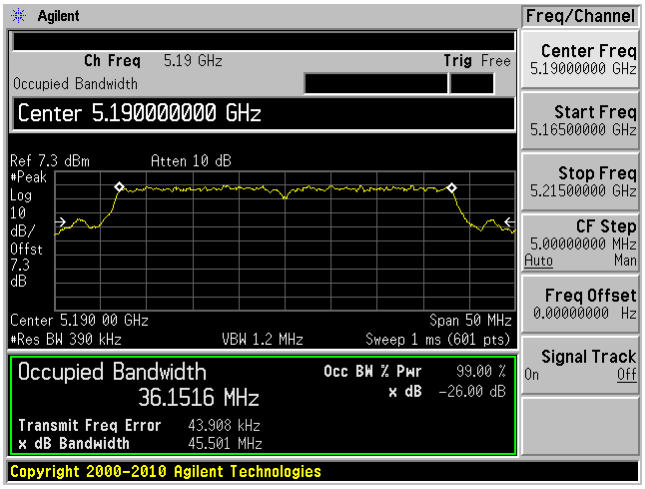


802.11n HT40 mode

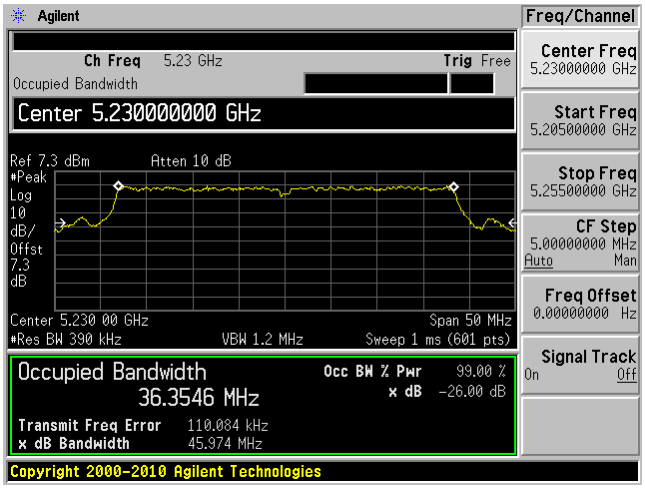
Low channel: 5190 MHz Chain 0



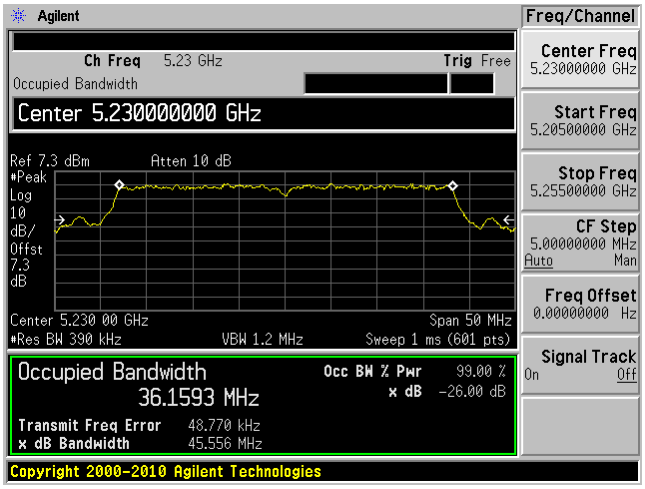
Low channel: 5190 MHz Chain 1



High channel: 5230 MHz Chain 0



High channel: 5230 MHz Chain 1



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

8.1 Applicable Standards

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.

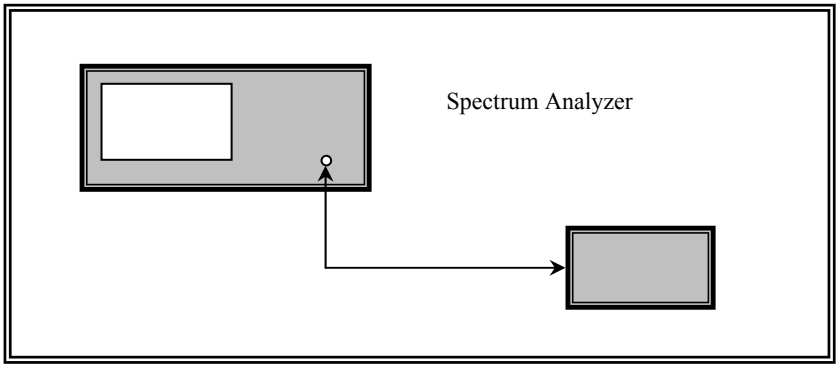
For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm 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:

For the 5.15–5.250 GHz bands, the maximum e.i.r.p shall not exceed 200 mW or 10 + 10 log B, 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.

8.2 Measurement Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to a spectrum analyzer.
3. Add a correction factor to the display.



8.3 Test Equipment List and Details

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

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

8.4 Test Environmental Conditions

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

The testing was performed by Bo Li from 2013-5-6 to 2013-5-9 at RF site.

8.5 Test Results

5150-5250 MHz Band:

802.11a mode

Channel	Frequency (MHz)	TX Chain 0 Power (dBm)	TX Chain 1 Power (dBm)	Max Power (dBm)	Limit (dBm)	Margin (dB)
Low	5180	9.35	9.26	9.35	30	-20.65
Middle	5200	9.28	9.3	9.3	30	-20.7
High	5240	8.73	8.89	8.89	30	-21.11

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain 0 Power (dBm)	TX Chain 1 Power (dBm)	Total Power (mW)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	5180	9.27	9.17	16.71	12.23	30	-17.77
Middle	5200	9.22	9.12	16.52	12.18	30	-17.82
High	5240	8.65	9.1	15.46	11.89	30	-18.11

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain 0 Power (dBm)	TX Chain 1 Power (dBm)	Total Power (mW)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	5190	8.85	8.69	15.07	11.78	30	-18.22
High	5230	8.38	8.7	14.30	11.55	30	-18.45

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

9.1 Applicable Standards

According to FCC §15.407(b)

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an 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.

9.2 Measurement Procedure

Integration Method

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

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

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

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

9.3 Test Equipment List and Details

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

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

9.4 Test Environmental Conditions

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

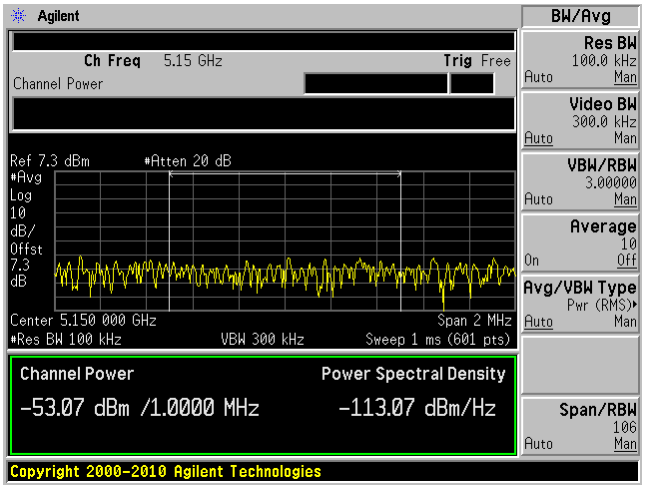
The testing was performed by Bo Li from 2013-5-6 to 2013-5-9 at RF site.

9.5 Test Results

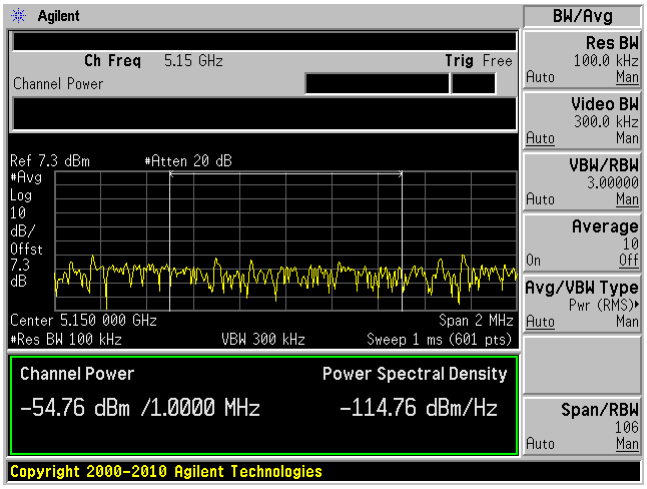
Please refer to following pages for plots of band edge.

802.11a mode

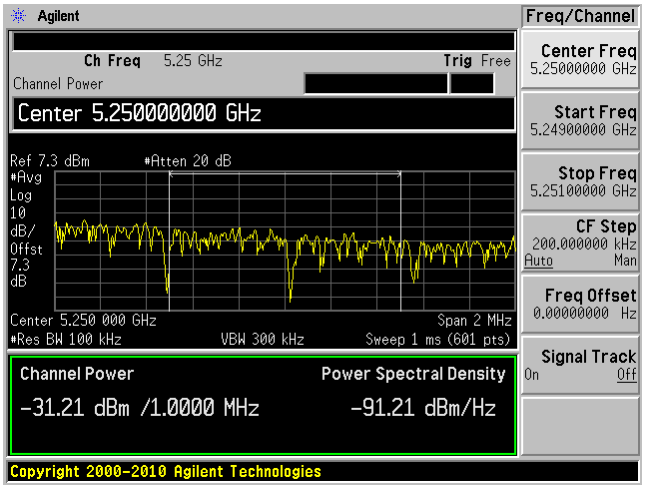
Low channel: 5180 MHz Chain 0



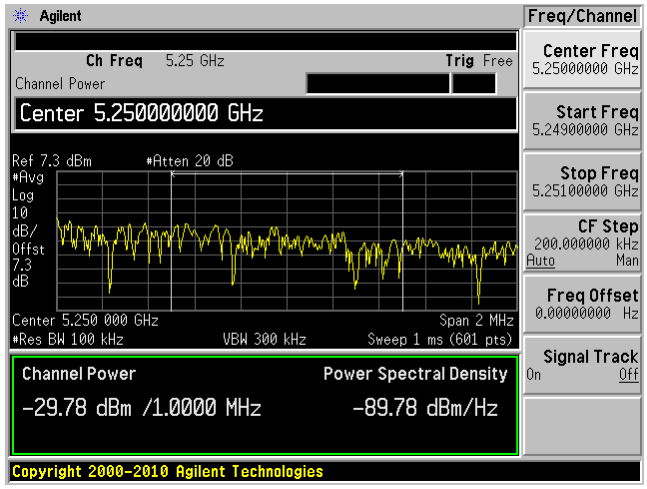
Low channel: 5180 MHz Chain 1



High channel: 5240 MHz Chain 0

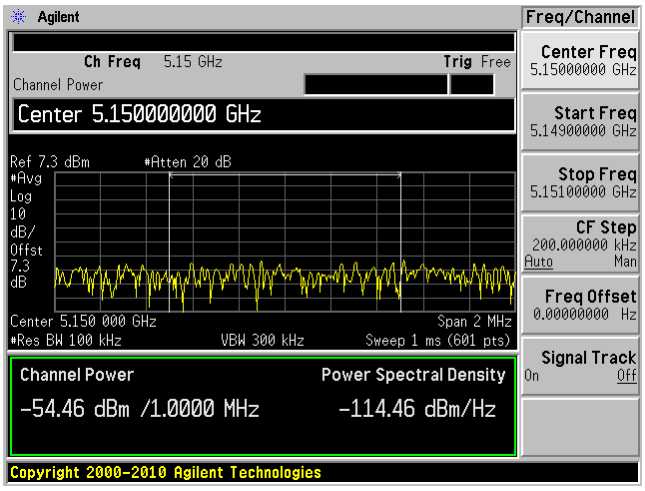


High channel: 5240 MHz Chain 1

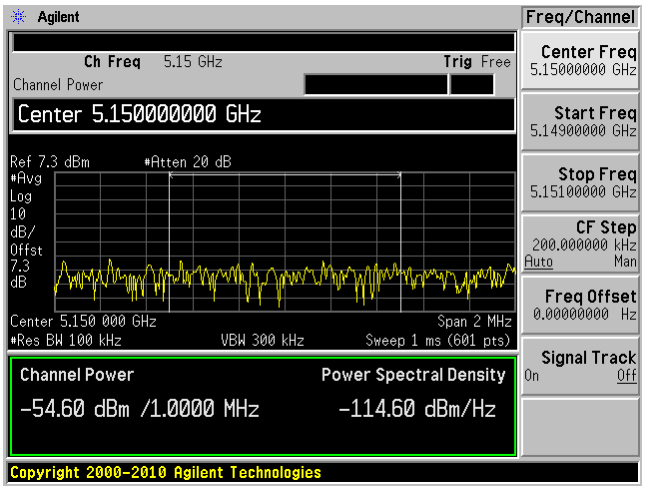


802.11n HT20 mode

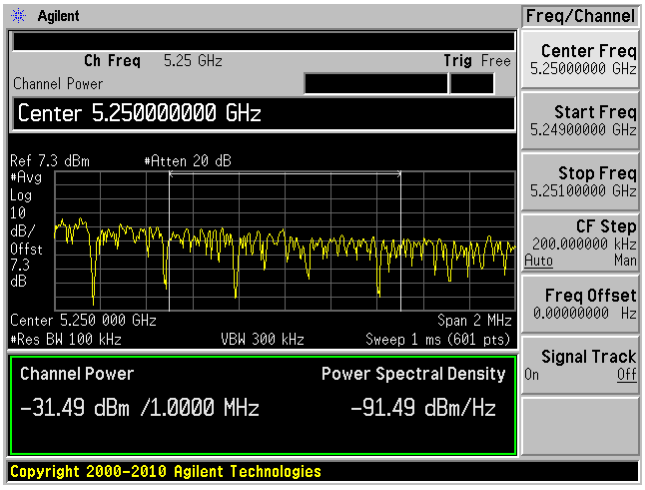
Low channel: 5180 MHz Chain 0



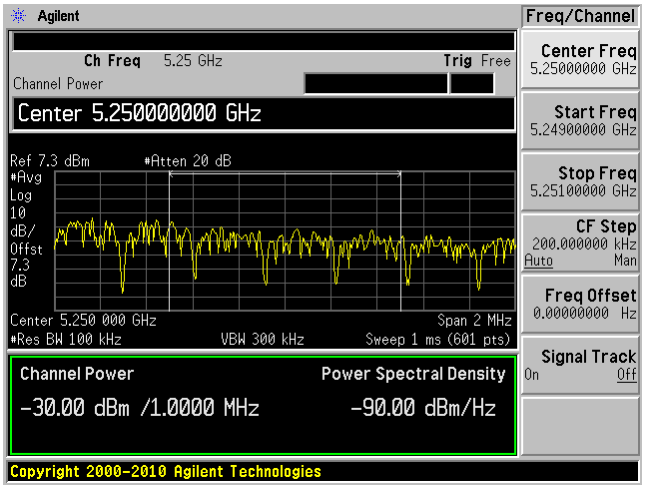
Low channel: 5180 MHz Chain 1



High channel: 5240 MHz Chain 0

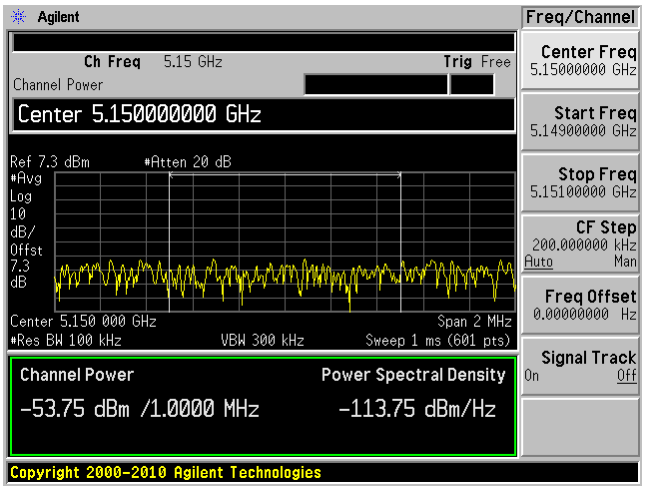


High channel: 5240 MHz Chain 1

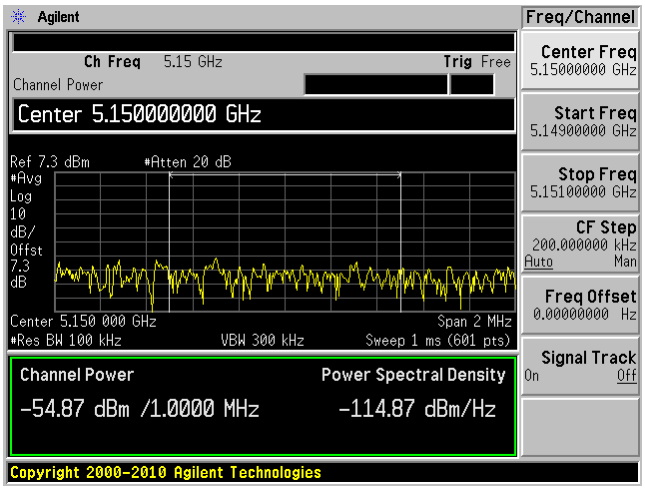


802.11n HT40 mode

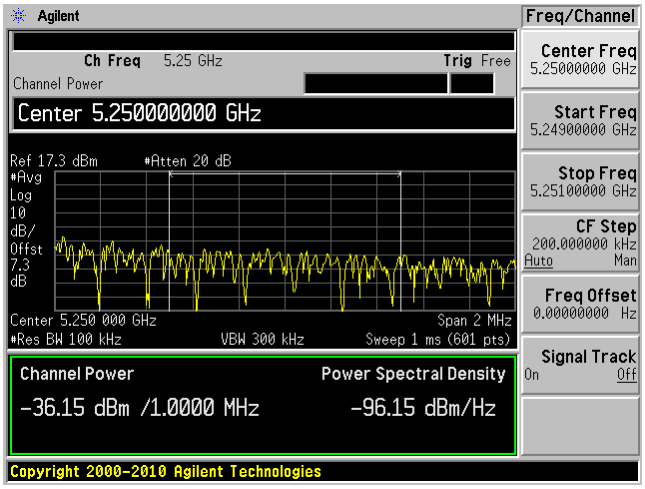
Low channel: 5190 MHz Chain 0



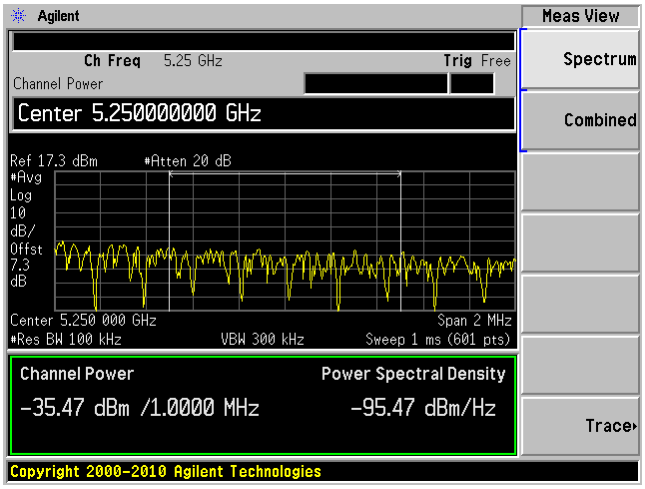
Low channel: 5190 MHz Chain 1



High channel: 5230 MHz Chain 0



High channel: 5230 MHz Chain 1



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

10.1 Applicable Standards

According to FCC §15.407(b), for transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an 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

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.

10.3 Test Equipment List and Details

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

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

10.4 Test Environmental Conditions

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

The testing was performed by Bo Li from 2013-5-6 to 2013-5-9 at RF site.

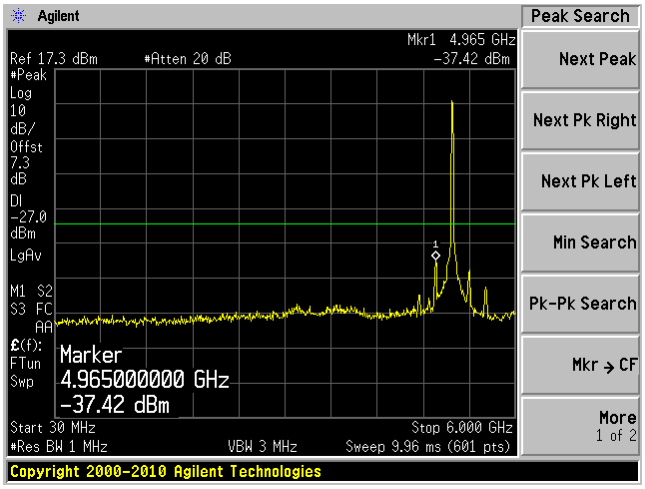
10.5 Test Results

Please refer to following plots of spurious emissions.

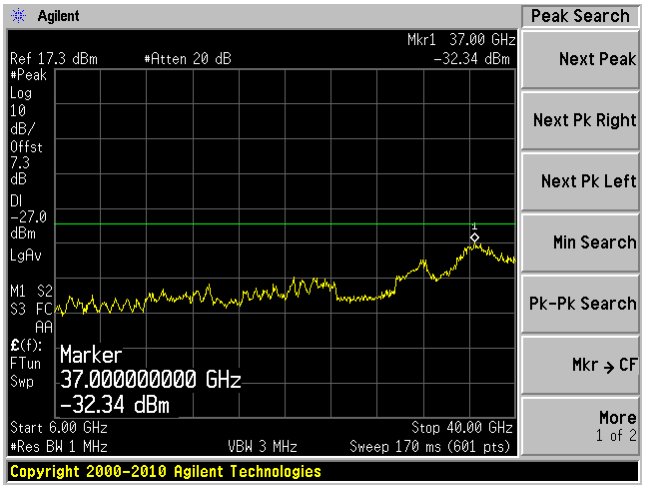
5150-5250 MHz

802.11a, Low Channel, 5180 MHz

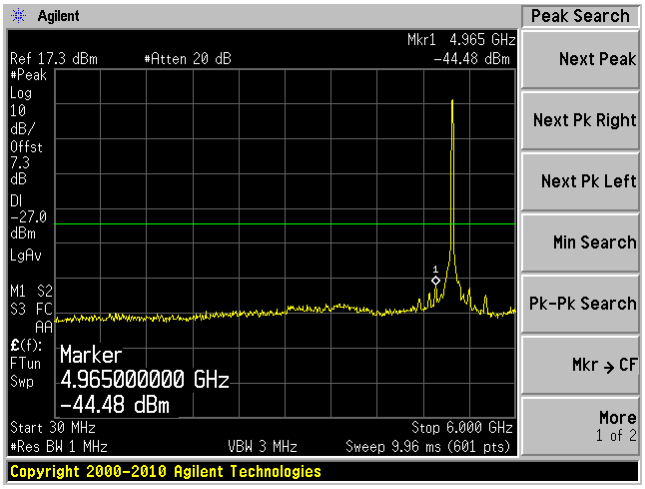
Chain 0, Plot: 30 MHz – 6 GHz



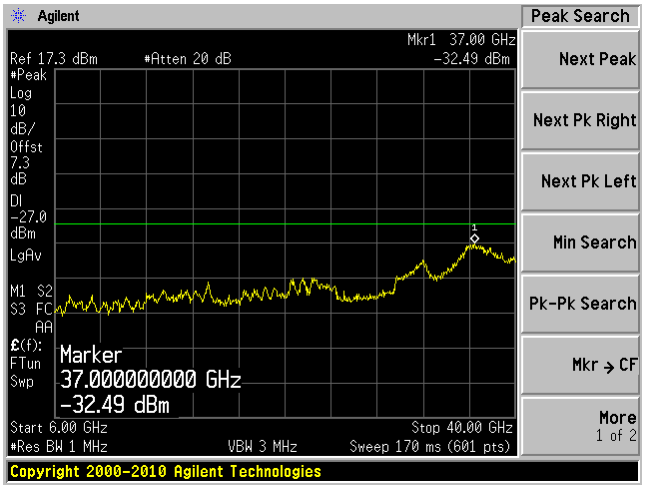
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

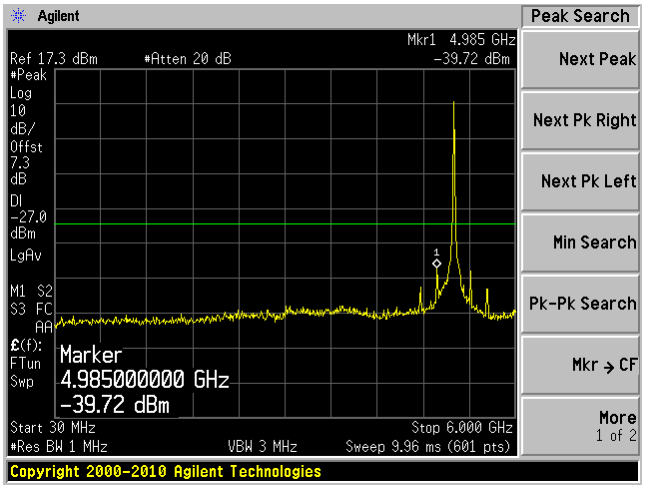


Chain 1, Plot: 6 GHz – 40 GHz

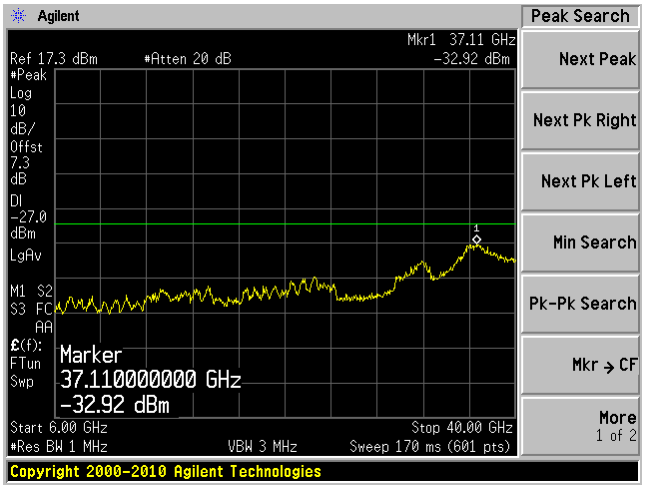


802.11a, Middle Channel, 5200 MHz

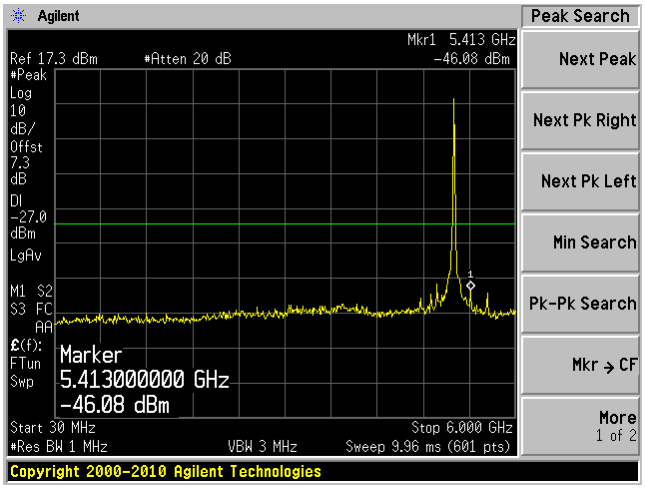
Chain 0, Plot: 30 MHz – 6 GHz



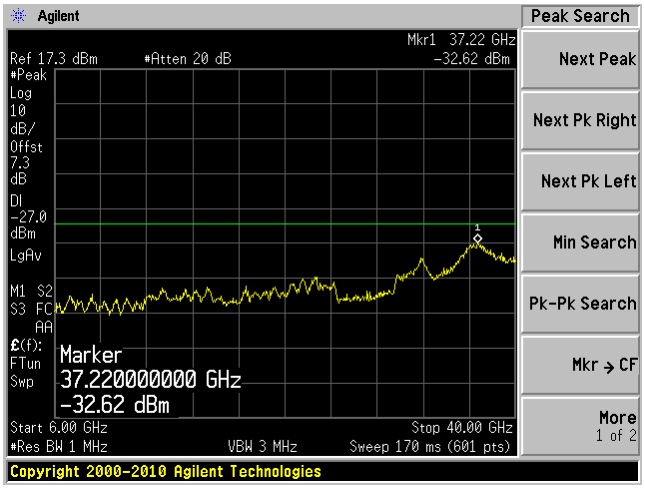
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

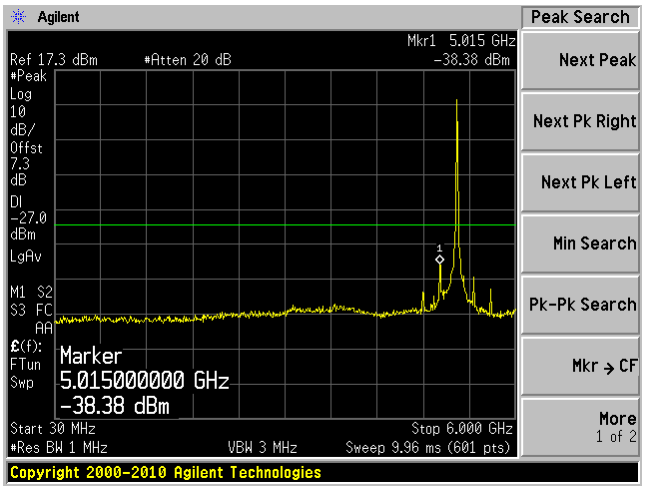


Chain 1, Plot: 6 GHz – 40 GHz

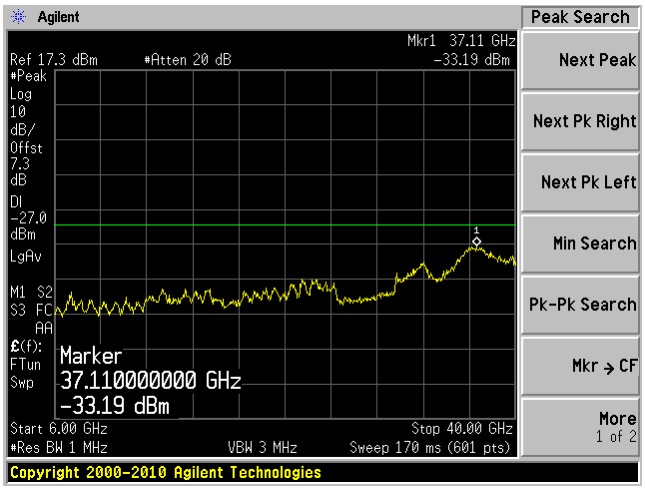


802.11a, High Channel, 5240 MHz

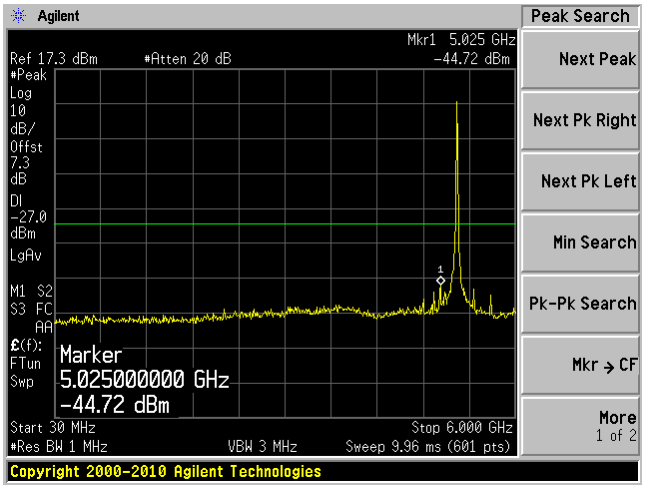
Chain 0, Plot: 30 MHz – 6 GHz



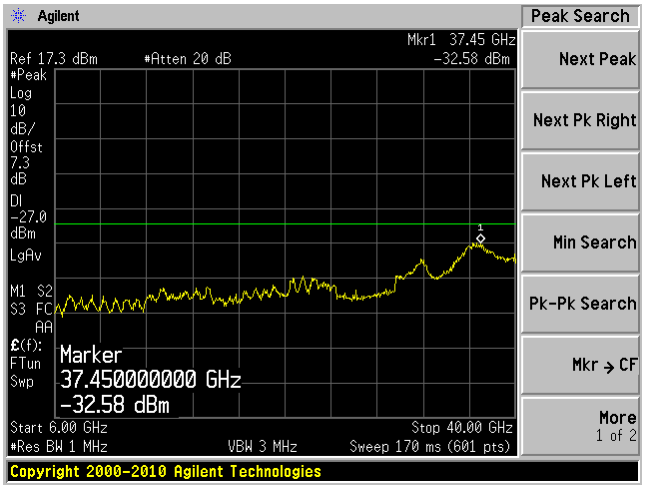
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

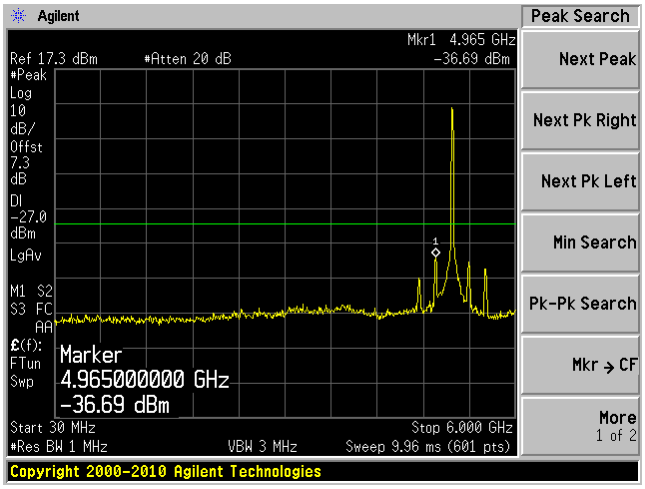


Chain 1, Plot: 6 GHz – 40 GHz

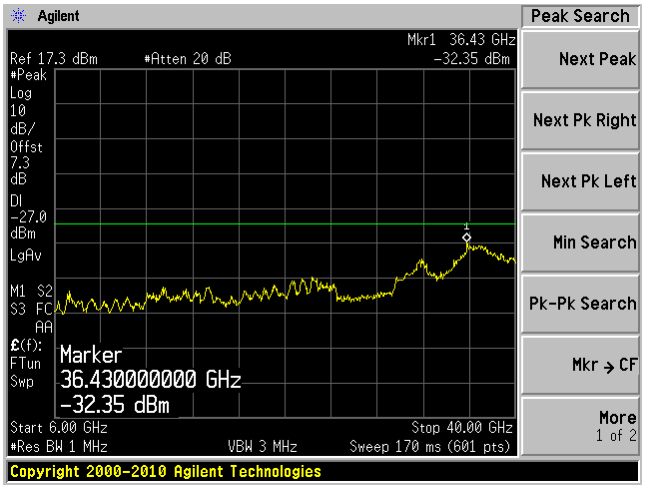


802.11n HT 20, Low Channel 5180 MHz

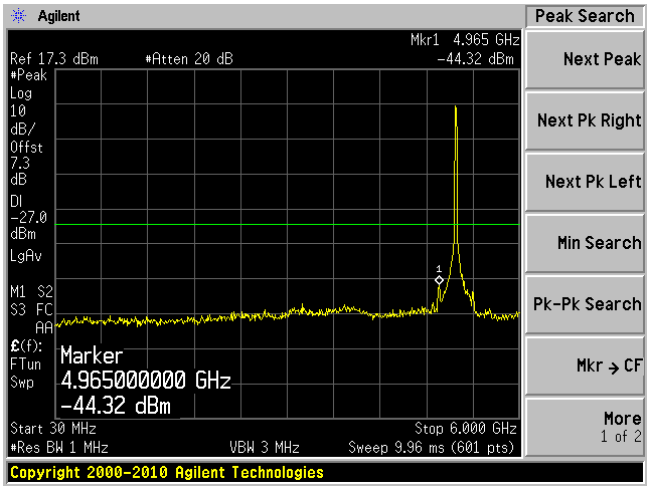
Chain 0, Plot: 30 MHz – 6 GHz



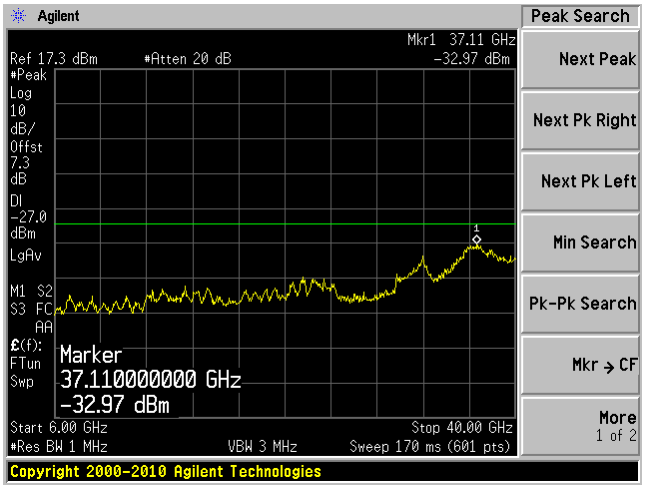
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

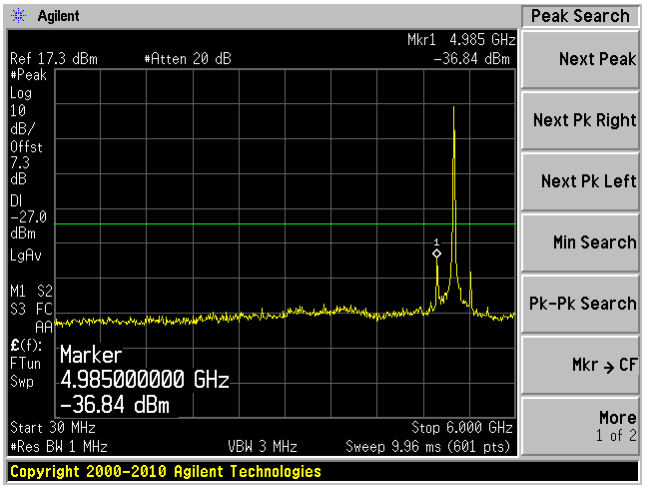


Chain 1, Plot: 6 GHz – 40 GHz

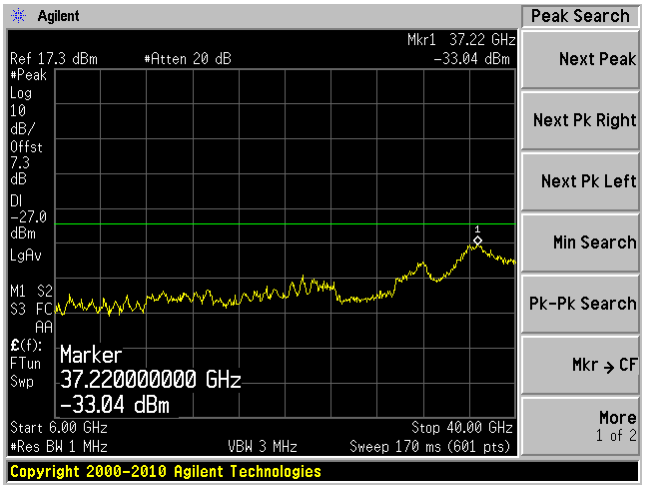


802.11n HT20, Middle Channel 5200 MHz

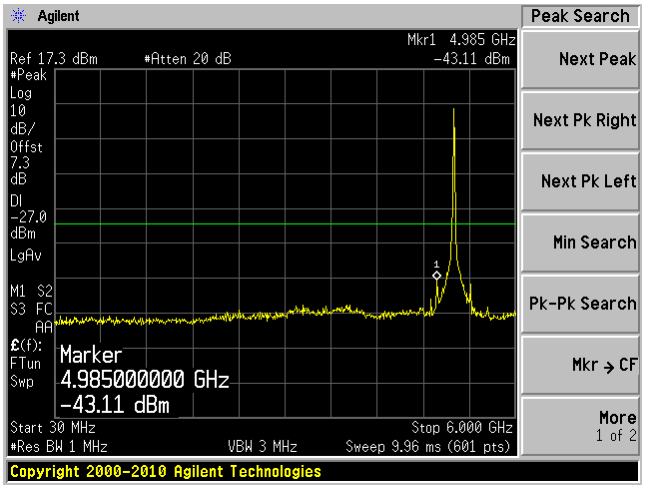
Chain 0, Plot: 30 MHz – 6 GHz



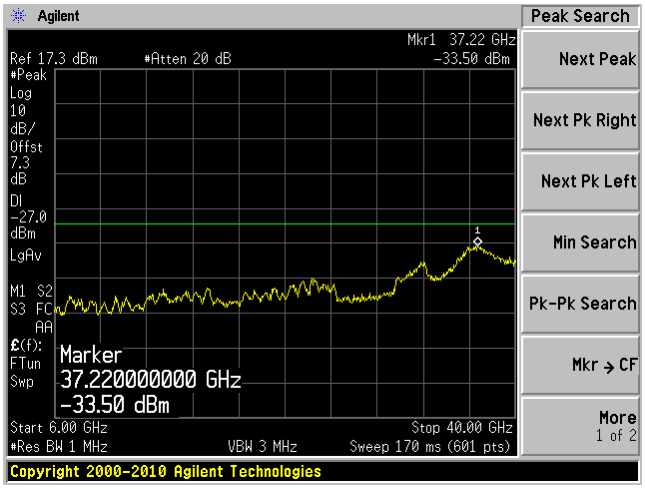
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

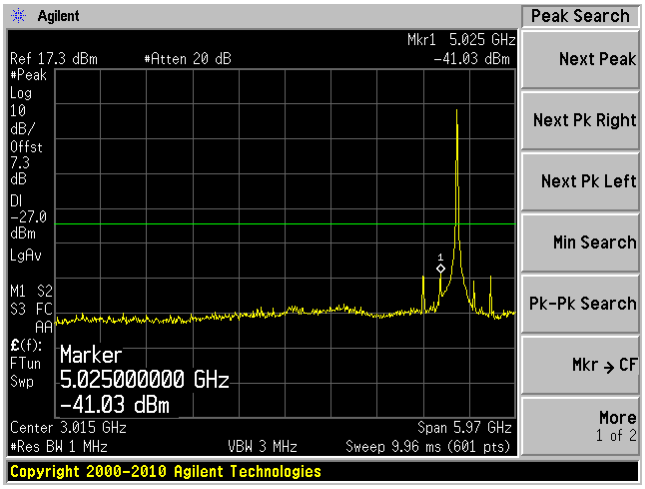


Chain 1, Plot: 6 GHz – 40 GHz

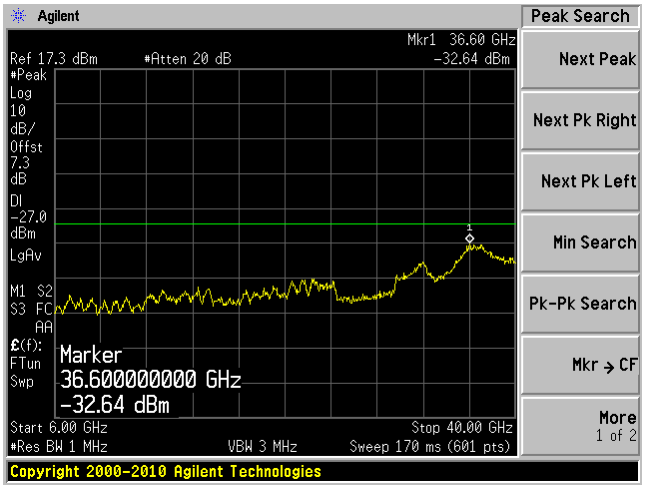


802.11n HT 20, High Channel 5240 MHz

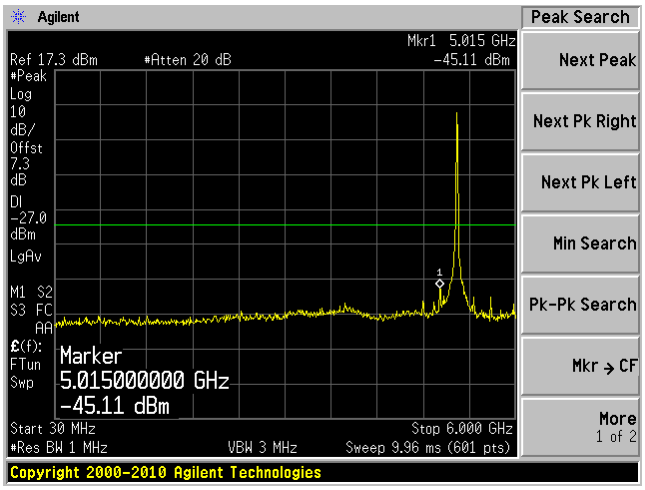
Chain 0, Plot: 30 MHz – 6 GHz



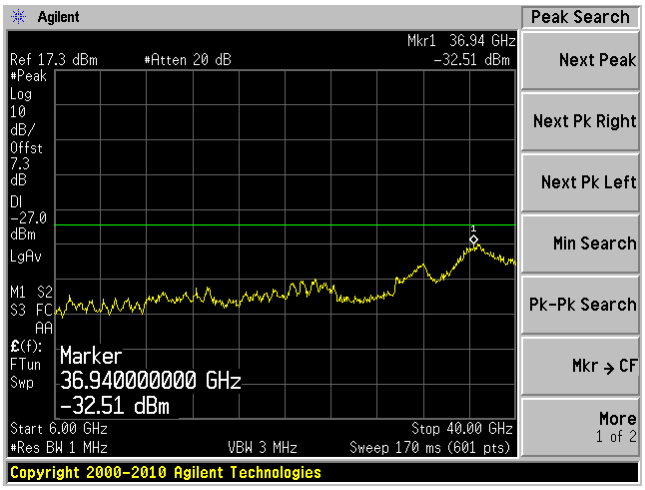
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

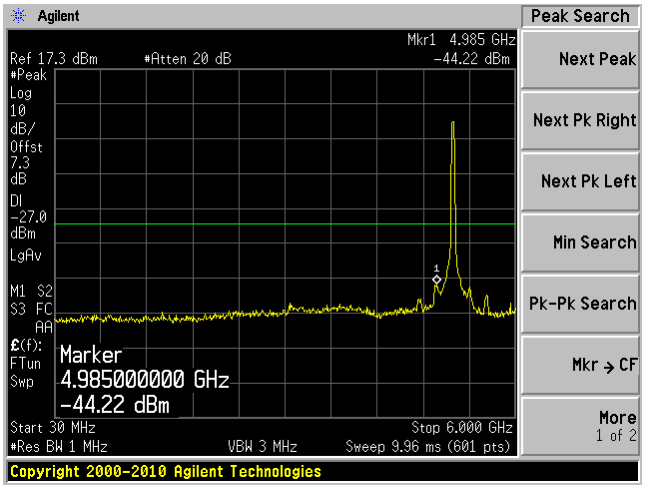


Chain 1, Plot: 6 GHz – 40 GHz

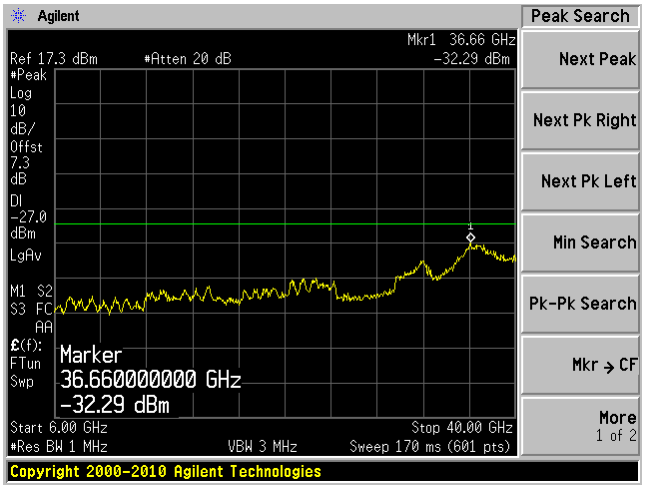


802.11n HT40, Low Channel 5190 MHz

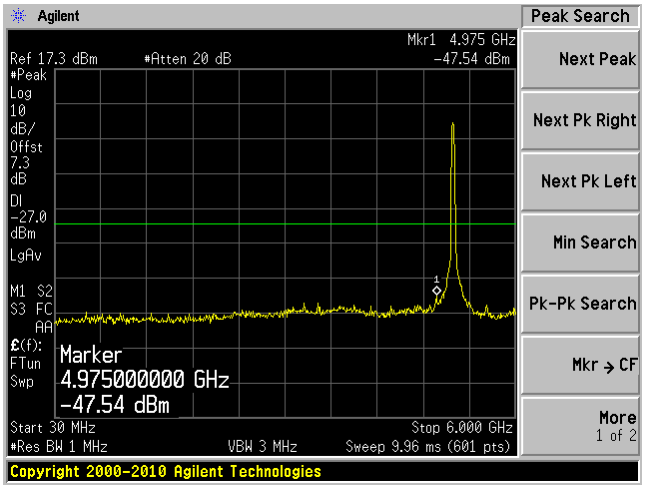
Chain 0, Plot: 30 MHz – 6 GHz



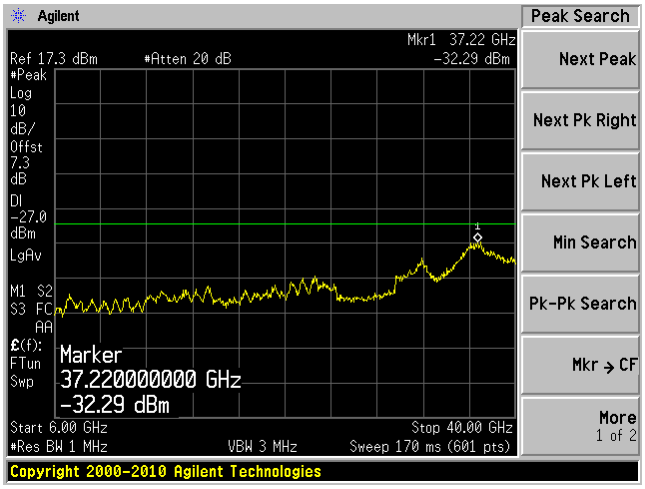
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz

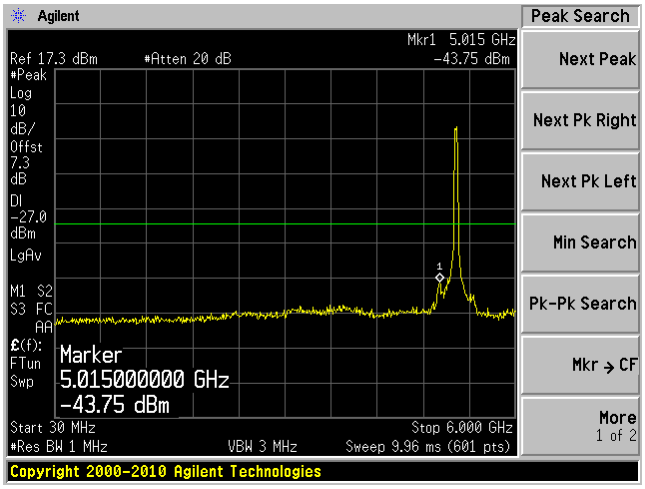


Chain 1, Plot: 6 GHz – 40 GHz

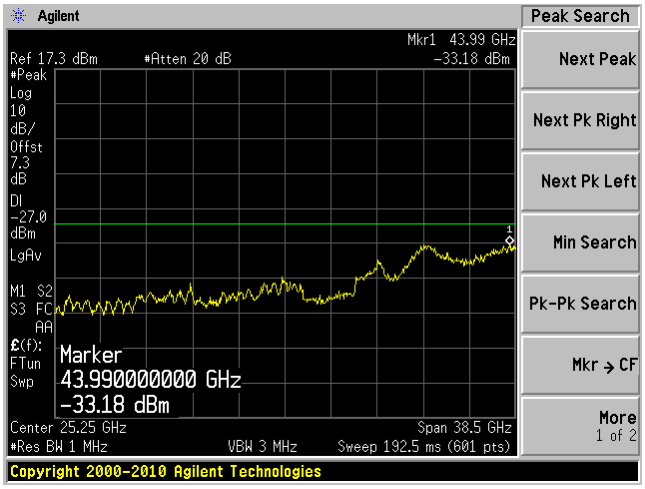


802.11n HT40, High Channel 5230 MHz

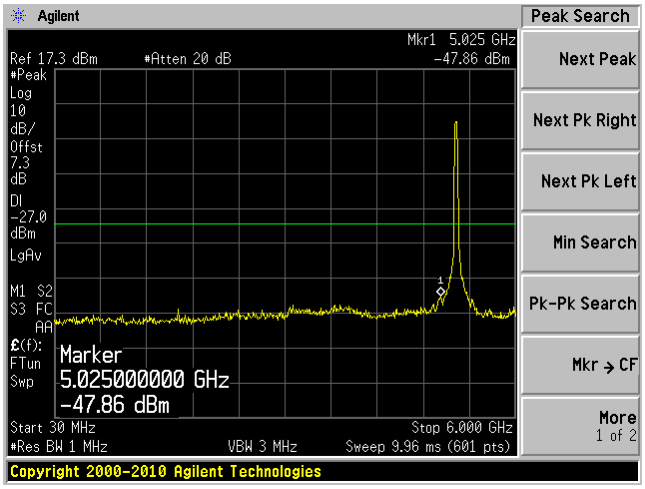
Chain 0, Plot: 30 MHz – 6 GHz



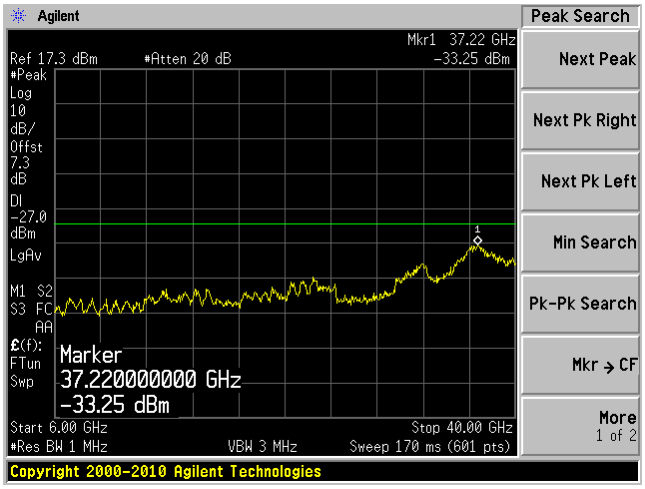
Chain 0, Plot: 6 GHz – 40 GHz



Chain 1, Plot: 30 MHz – 6 GHz



Chain 1, Plot: 6 GHz – 40 GHz



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

11.1 Applicable Standards

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.

According to IC RSS-210 §A9.2:

5150-5250MHz 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 MHz band.

11.2 Measurement Procedure

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

11.3 Test Equipment List and Details

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

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

11.4 Test Environmental Conditions

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

The testing was performed by Bo Li from 2013-5-6 to 2013-5-9 at RF site.

11.5 Test Results

5150-5250 MHz Band

802.11a mode

Channel	Frequency (MHz)	TX Chain 0 Power (dBm)	TX Chain 1 Power (dBm)	MAX Power (dBm)	Limit (dBm)	Margin (dB)
Low	5180	-0.151	-0.503	-0.151	4	-4.151
Middle	5200	-0.19	-0.197	-0.19	4	-4.19
High	5240	-0.482	-0.235	-0.235	4	-4.235

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain 0 Power (dBm)	TX Chain 1 Power (dBm)	Total Power (mW)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	5180	-2.459	-2.038	1.19	0.77	4	-3.23
Middle	5200	-2.956	-2.357	1.09	0.36	4	-3.64
High	5240	-2.993	-1.781	1.17	0.67	4	-3.33

802.11n HT40 mode

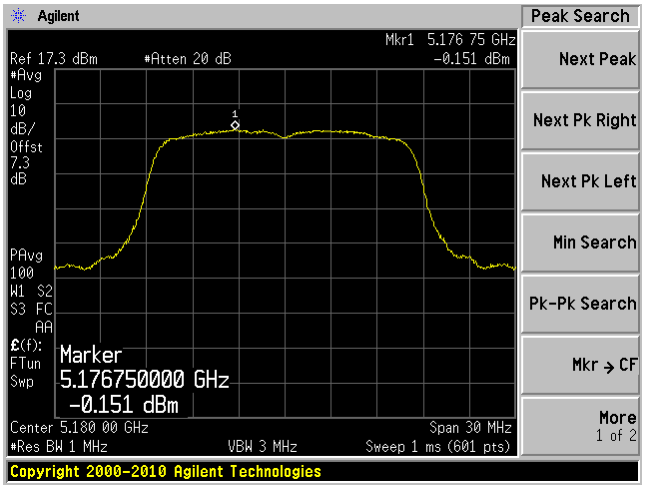
Channel	Frequency (MHz)	TX Chain 0 Power (dBm)	TX Chain J8 Power (dBm)	Total Power (mW)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	5190	-6.27	-6.574	0.46	-3.41	4	-7.41
High	5230	-6.595	-5.976	0.47	-3.26	4	-7.26

Please refer to the following plots.

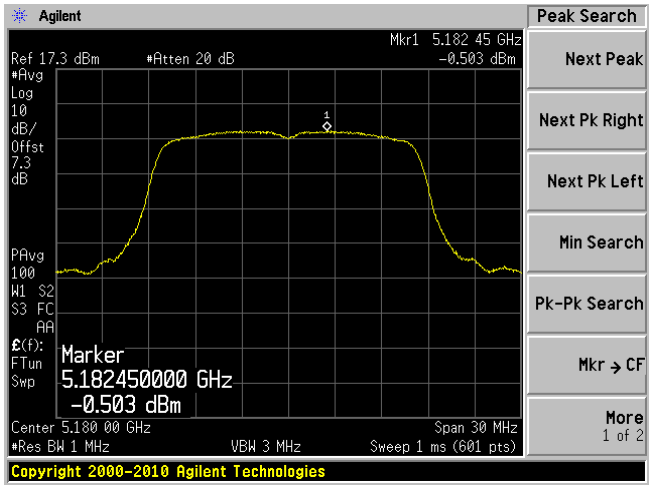
5150-5250 MHz Band

802.11a mode

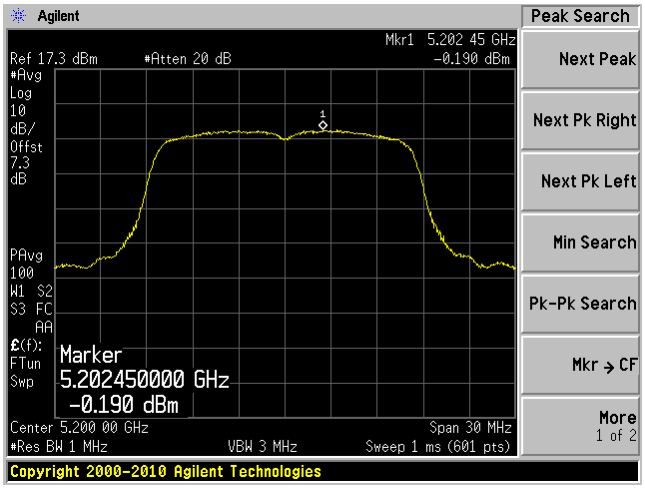
Low channel: 5180 MHz Chain 0



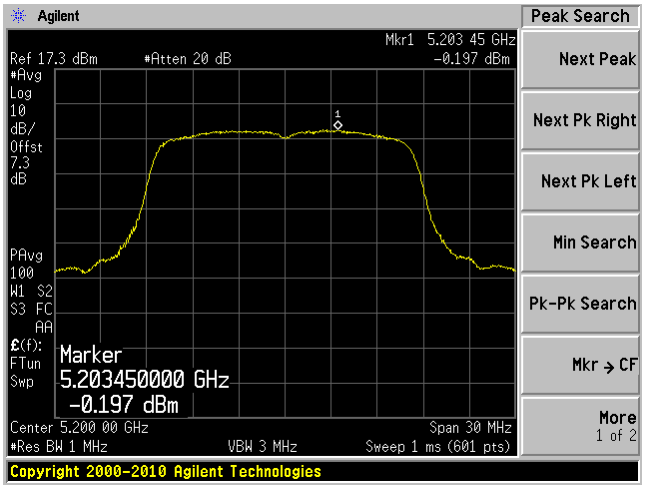
Low channel: 5180 MHz Chain 1



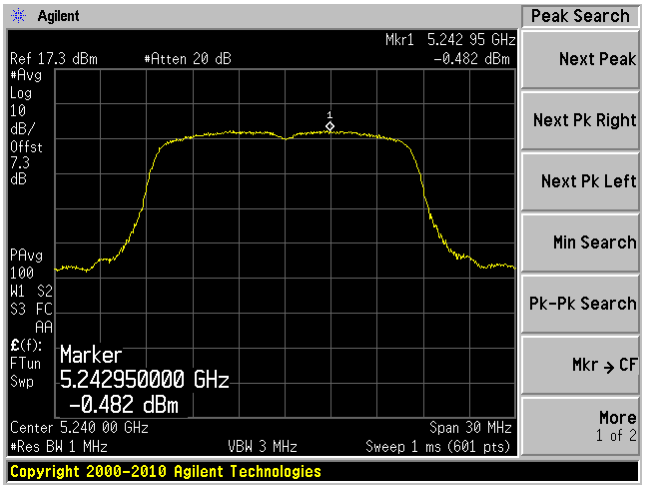
Middle channel: 5200 MHz Chain 0



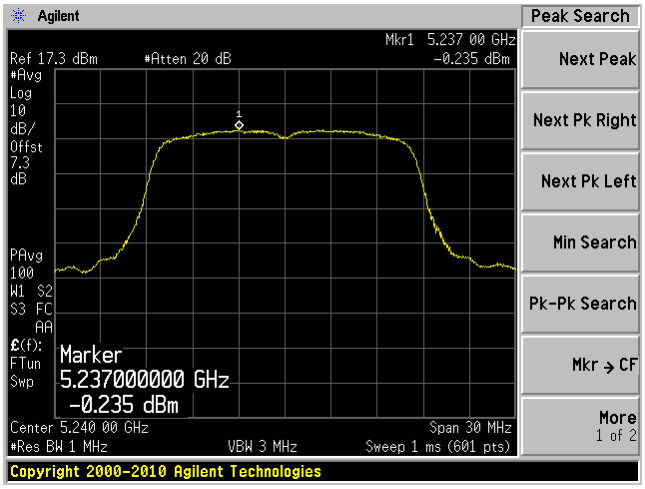
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

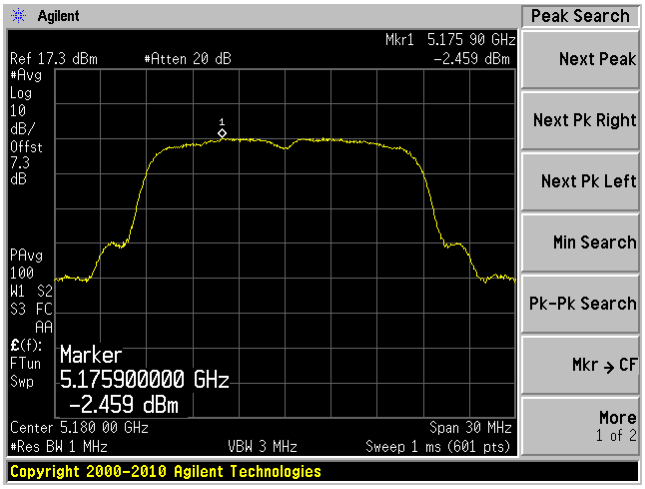


High channel: 5240 MHz Chain 1

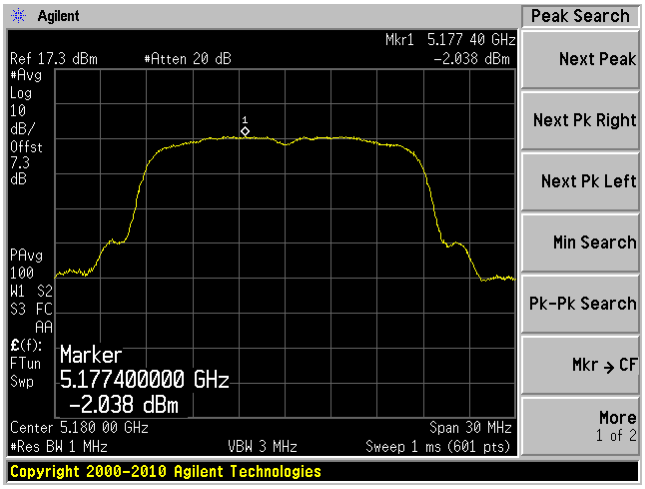


802.11HT20 mode

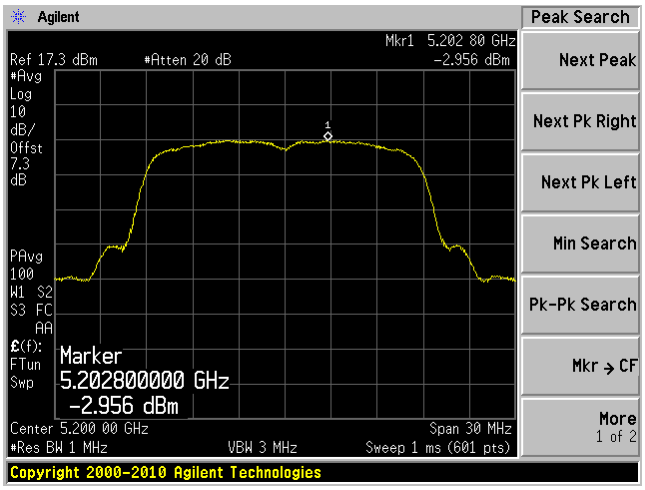
Low channel: 5180 MHz Chain 0



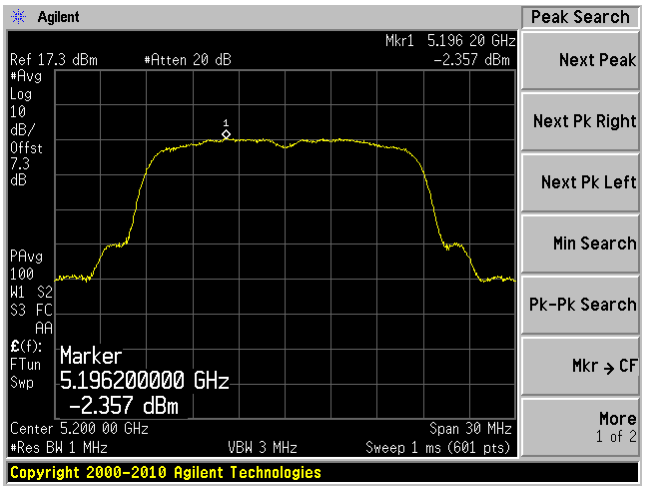
Low channel: 5180 MHz Chain 1



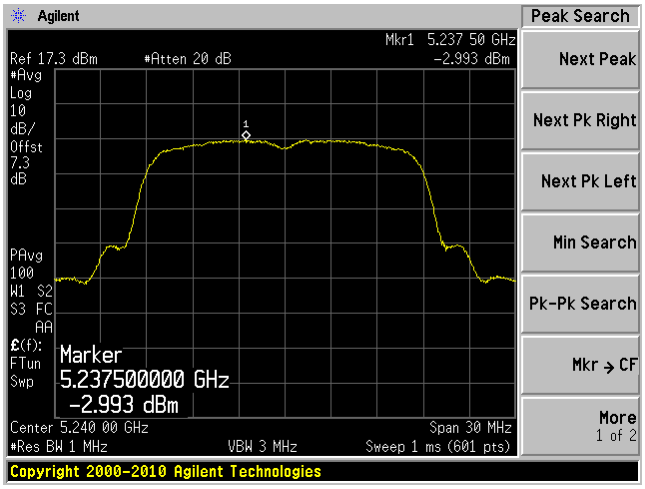
Middle channel: 5200 MHz Chain 0



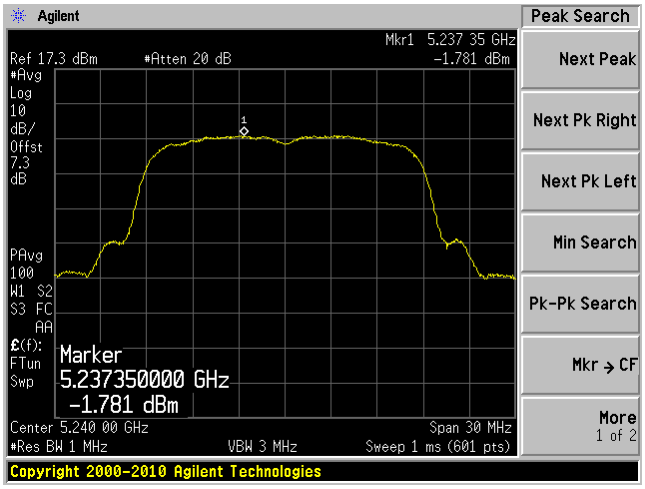
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

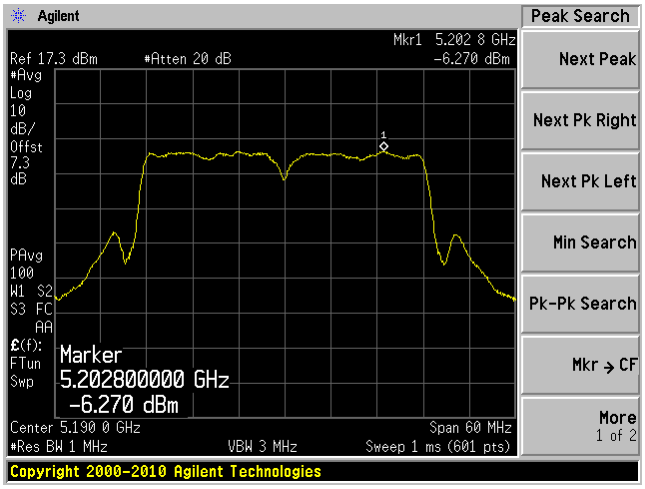


High channel: 5240 MHz Chain 1

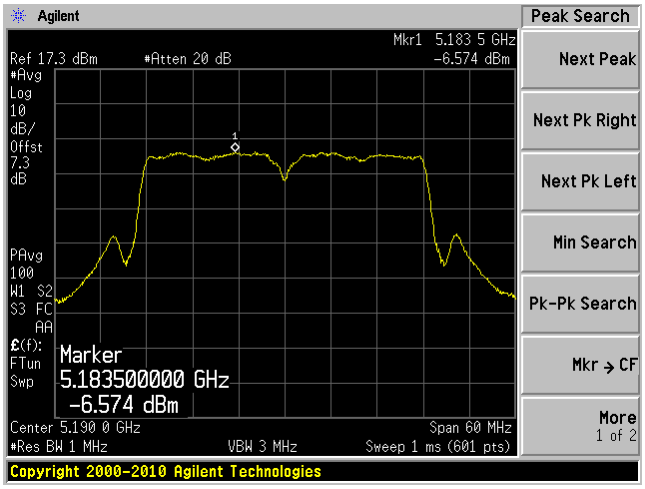


802.11n HT40 mode

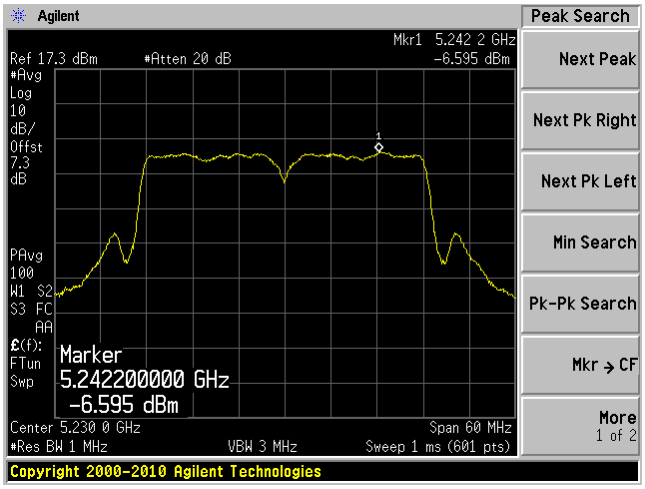
Low channel: 5190 MHz Chain 0



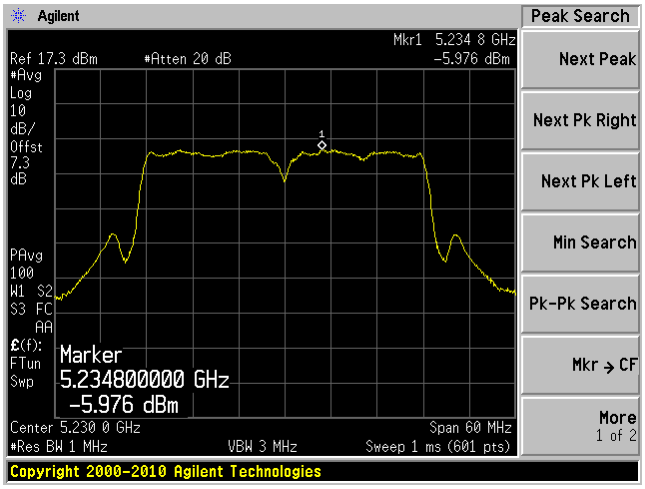
Low channel: 5190 MHz Chain 1



High channel: 5230 MHz Chain 0



High channel: 5230 MHz Chain 1



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

12.1 Applicable Standards

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

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".

12.3 Test Equipment List and Details

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

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

12.4 Test Environmental Conditions

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

The testing was performed by Bo Li from 2013-5-6 to 2013-5-9 at RF site.

12.5 Test Results

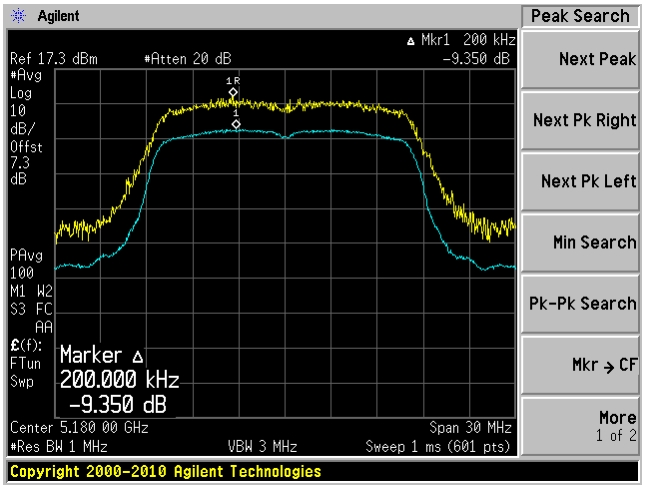
Channel	Frequency (MHz)	TX Chain 0 PER (dB)	TX Chain 1 PER (dB)	Limit (dB)
802.11a mode				
Low	5180	9.35	9.254	13
Middle	5200	9.218	8.633	
High	5240	8.821	8.958	
802.11n HT20 mode				
Low	5180	9.41	9.979	13
Middle	5200	9.278	10.404	
High	5240	10.247	8.729	
802.11n HT40 mode				
Low	5190	8.412	8.605	13
High	5230	8.678	8.527	

Please refer to the following plots for detailed test results:

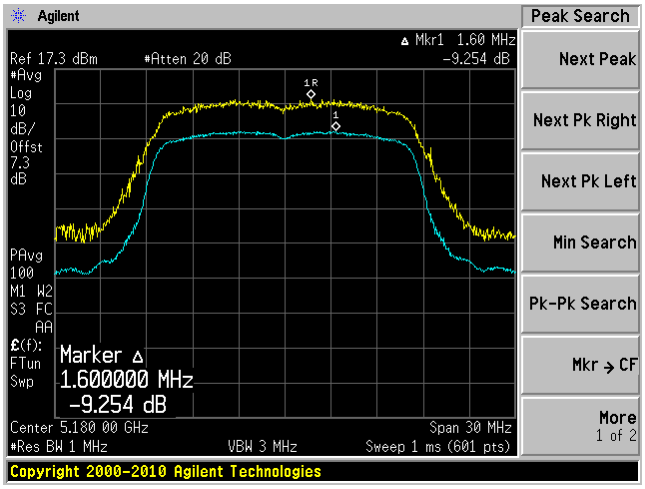
5150-5250 MHz Band

802.11a mode

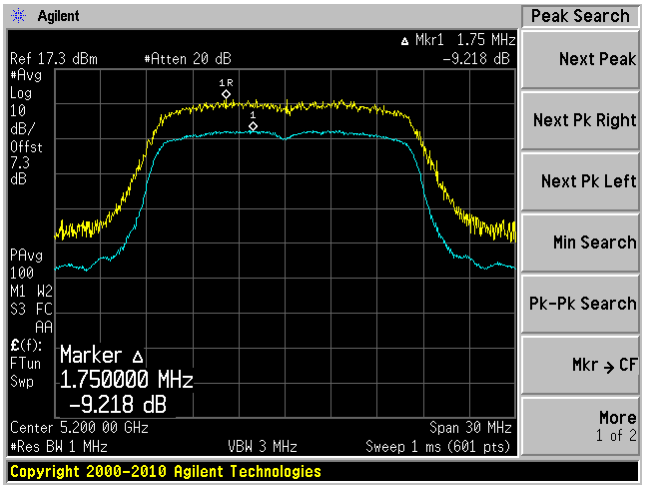
Low channel: 5180 MHz Chain 0



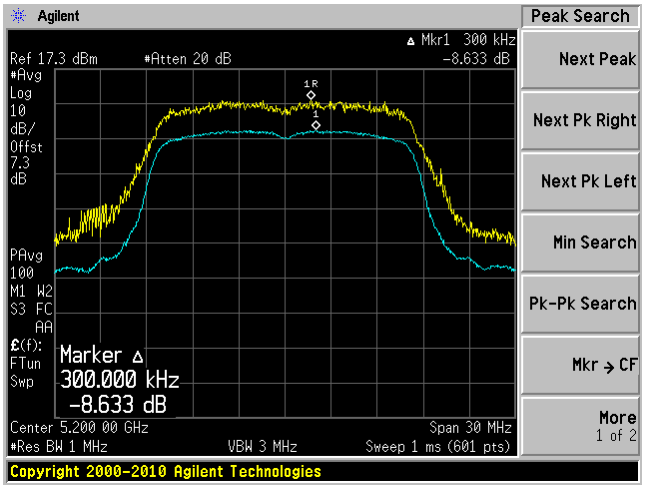
Low channel: 5180 MHz Chain 1



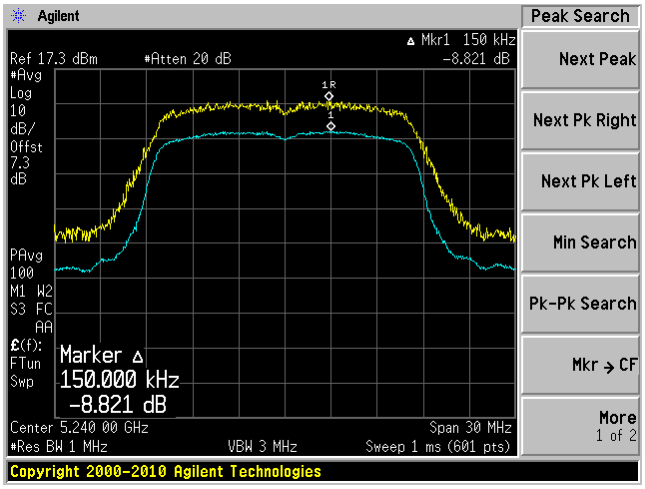
Middle channel: 5200 MHz Chain 0



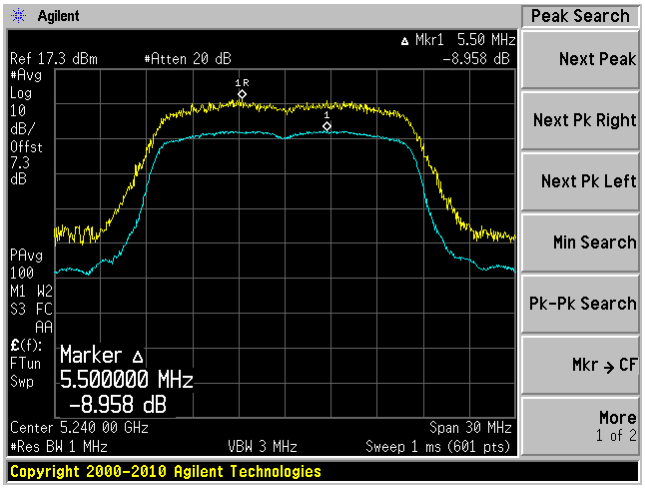
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

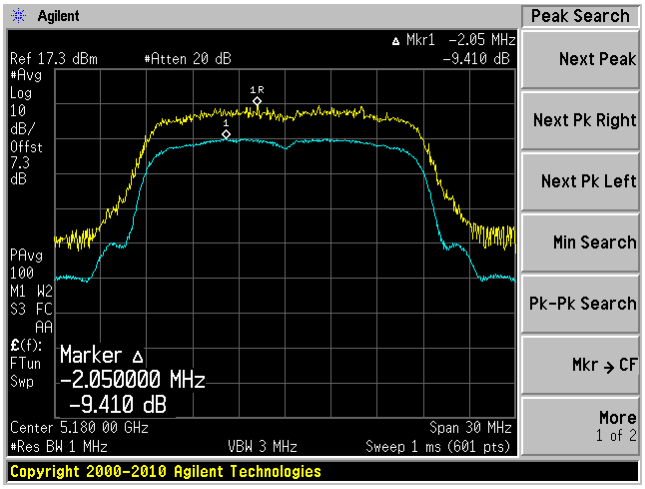


High channel: 5240 MHz Chain 1

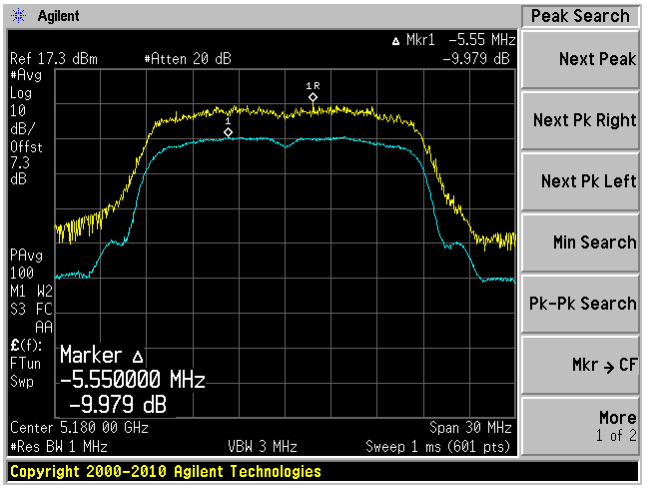


802.11HT20 mode

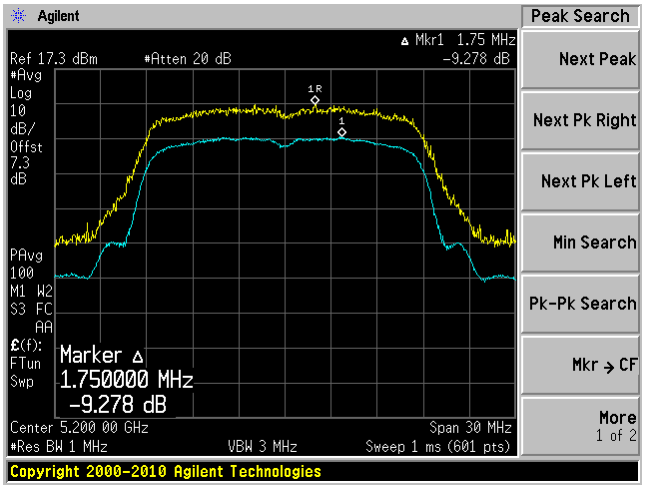
Low channel: 5180 MHz Chain 0



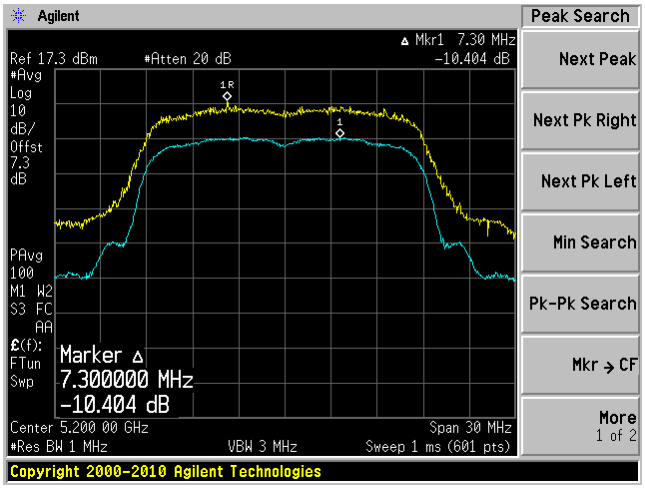
Low channel: 5180 MHz Chain 1



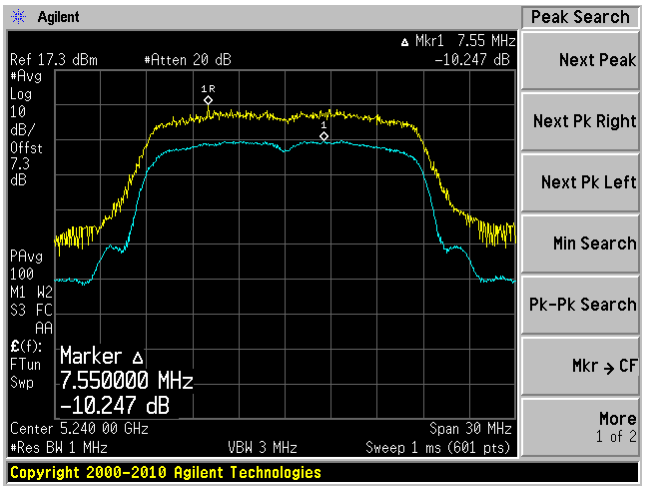
Middle channel: 5200 MHz Chain 0



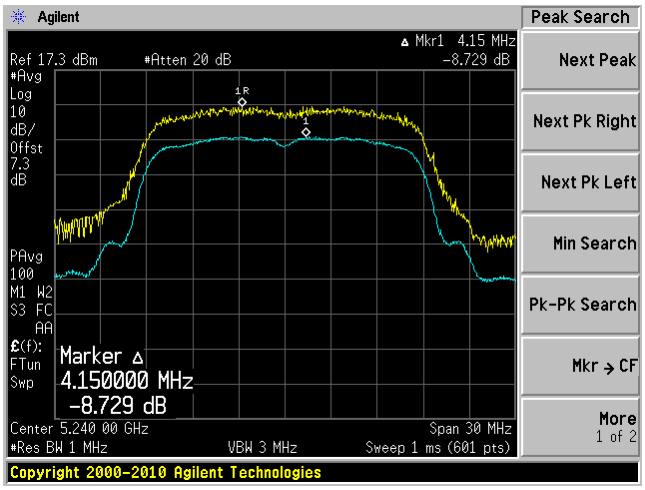
Middle channel: 5200 MHz Chain 1



High channel: 5240 MHz Chain 0

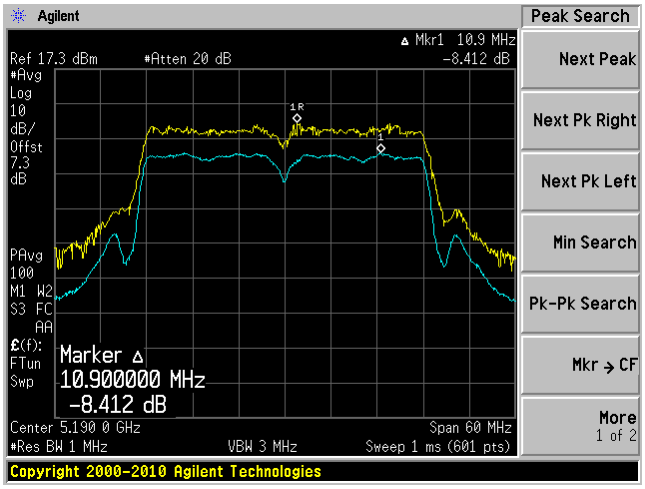


High channel: 5240 MHz Chain 1

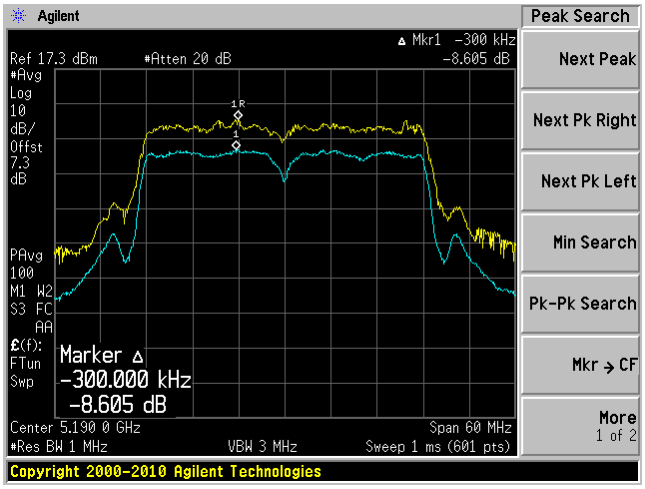


802.11n HT40 mode

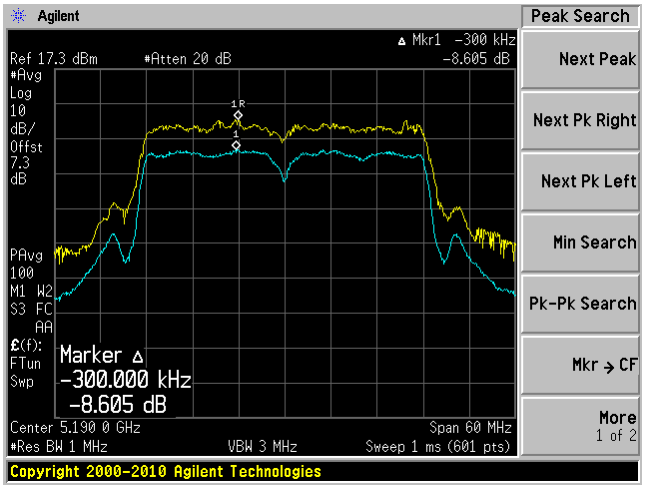
Low channel: 5190 MHz Chain 0



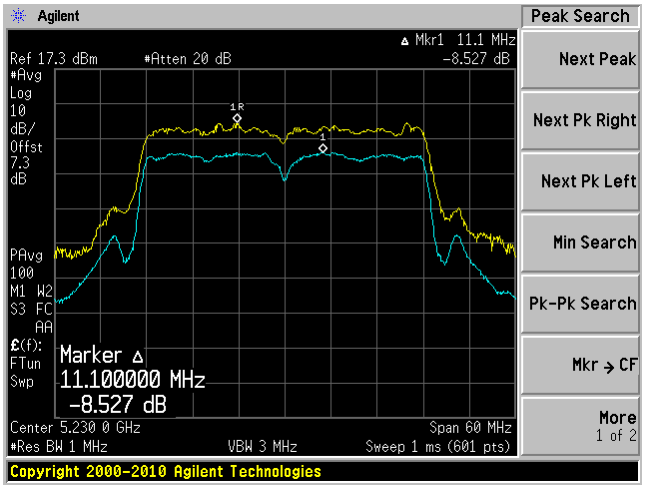
Low channel: 5190 MHz Chain 1



High channel: 5230 MHz Chain 0



High channel: 5230 MHz Chain 1



13 IC RSS-210 §2.3 & RSS-Gen §4.10 - Receiver Spurious Radiated Emissions

13.1 Applicable Standards

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 C63.4-2009.

13.3 Test Procedure

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

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

13.4 Corrected Amplitude & Margin Calculation

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

CA = Ai + AF + CL + Atten – Ga

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

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

Margin = Corrected Amplitude - Limit

13.5 Test Equipment Lists and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	N/R
Sunol Science Corp	Combination Antenna	JB3	A020106-3	2012-06-18	1 year
Hewlett Packard	Pre-amplifier	8447D	2944A06639	2012-06-09	1 year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2012-05-09	1 year
Agilent	Spectrum Analyzer	E4446A	US44300386	2012-09-29	1 year
EMCO	Horn Antenna	3315	9511-4627	2012-10-17	1 year
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2013-03-28	1 year

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

13.6 Test Environmental Conditions

Temperature:	21-25°C
Relative Humidity:	43-46%
ATM Pressure:	101-103 kPa

The testing was performed by Bo Li from 2013-5-6 to 2013-5-9 at 5 meter 3.

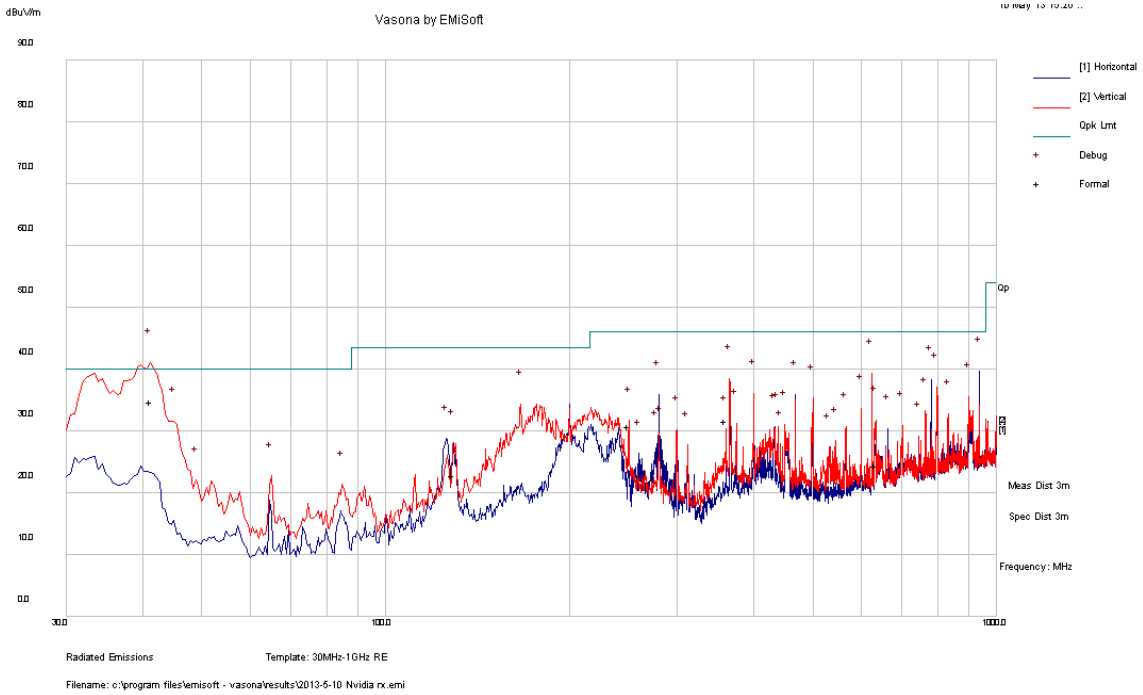
13.7 Summary of Test Results

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

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-5.25	41.22325	Vertical	30-40000

13.8 Test Results and Plots

1) 30-1000 MHz, Measured at 3 meters



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Detector (QP/Ave.)
41.22325	34.75	123	V	224	40	-5.25	QP
633.10975	24.48	155	V	256	46	-21.52	QP
249.982	30.71	98	V	142	46	-15.29	QP
128.857	22.91	220	H	100	43.5	-20.59	QP
360.08925	31.63	98	V	171	46	-14.37	QP

2) Above 1 GHz Measured at 3 meters

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
1553.83	43.857	100	V	211	74	-30.143	Peak
1553.83	44.347	100	H	145	74	-29.653	Peak
1553.83	26.917	100	V	211	54	-27.083	Ave
1553.83	26.337	100	H	145	54	-27.663	Ave
1997.98	53.066	100	V	56	74	-20.934	Peak
1997.98	47.956	100	H	204	74	-26.044	Peak
1997.98	25.816	100	V	56	54	-28.184	Ave
1997.98	24.296	100	H	204	54	-29.704	Ave
15929.5	53.342	100	V	0	74	-20.658	Peak
15929.5	54.032	100	H	0	74	-19.968	Peak
15929.5	38.732	100	V	0	54	-15.268	Ave
15929.5	38.682	100	H	0	54	-15.318	Ave