Lab Code: 200167-0

FCC PART 15.407

IC RSS-210, ISSUE 7, JUNE 2007

TEST AND MEASUREMENT REPORT

For

Ruckus Wireless, Inc.

880 West Maude Ave., Suite 101,

Sunnyvale, CA 94085, USA

FCC ID: S9G-ZF7762X
IC: 5912A-ZF7762X

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

Test Engineers:	Kevin Li
Report Number:	R1005051A-407-DFS
Report Date:	2011-06-23
Reviewed By:	Victor Zhang EMC/RF Lead
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1005051-407-DFS	Original Report	2010-09-23
1	R1005051A-407-DFS	Updated company name	2011-06-23

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 FCC ID: S9G-ZF7762X, IC: 5912A-ZF7762X, model: *ZF7762* or the "EUT" as referred to in this report. The EUT is a dual band Wireless 802.11a/b/g/n industrial access point.

1.2 Mechanical Description of EUT

The "EUT" measures *24cm (L) x 19cm (W) x 6cm (H)*, and weighs approximately *1921.5*g.

The test data gathered are from typical production sample, serial number: 281055003991, provided by the manufacturer.

1.3 Objective

This report is prepared on behalf of *Ruckus Wireless, Inc.* in accordance with Part 2, Subpart J, and Part 15, Subparts B and E of the Federal Communication Commissions rules and IC RSS-210 Issue 7, June 2007.

The objective is to determine compliance with FCC/IC rules for Antenna Requirements, Radiated Spurious Emissions with additional antennas in the DFS bands.

1.4 Related Submittal(s)/Grant(s)

No Related Submittals.

1.5 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.4-2003, 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 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 NIS 81, The Treatment of Uncertainty in EMC Measurements, the values range from +2.0 for Conducted Emissions tests and +4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL.

Detailed instrumentation measurement uncertainties can be found in BACL report QAP-018.

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 sites at BACL have been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has 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 facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission, Industry Canada, and Voluntary Control Council for Interference has the reports on file and is listed under FCC registration number: 90464, IC registration number: 3062A, and VCCI Registration Number: R-2463 and C-2698. The test site has been approved by the FCC, IC, and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at http://ts.nist.gov/Standards/scopes/2001670.htm

2 System 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

N/A

2.3 Equipment Modifications

No modifications were made to the EUT.

2.4 Special Accessories

N/A

2.5 Local Support Equipment

Manufacturer	Description	Model No.	Serial No.
Dell	Laptop	D620	00043-724-254-911

2.6 Power Supply and Line Filters

Manufacturer	Description	Model No.	Serial No.
Ruckus Wireless	AC/DC Power Adapter	ADS-18C-12N	740-64129-011

2.7 Interface Ports and Cabling

Cable Description	Length (m)	From	To
Ethernet cable	< 10m	EUT	Laptop

3 Summary of Test Results

Results reported relate only to the product tested.

FCC & IC Rules	Description of Test	Results
FCC §15.407(f), §2.1091 IC RSS-102	RF Exposure Information	Compliant
FCC §15.203 IC RSS-Gen §7.1.4	Antenna Requirement	Compliant
FCC §15.407(b) IC RSS-Gen §7.2.2	AC Line Conducted Emissions	N/A*
FCC §15.407(b), §15.209 IC RSS-210 §9.3	Radiated Spurious Emissions	Compliant
FCC §15.407(a) IC RSS-210 §9.3	26 dB & 99% Emission Bandwidth	N/A*
FCC §15.407(a) IC RSS-210 §A9.2	Transmitter Power	N/A*
FCC §15.407(b), §15.209 IC RSS-210 §9.3	100 kHz Bandwidth of Frequency Band Edge	N/A*
FCC §15.407(a) IC RSS-210 §9.3	Power Spectral Density	N/A*
IC RSS-210 §2.6 RSS-Gen §4.10	Receiver Spurious Emission	Compliant

Note: N/A*- please refer to test report with IC: 3616C-ZF7762.

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

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 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 (min)
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	$0.158\ f^{0.5}$	$4.21 \times 10\text{ -4 } f^{0.5}$	$6.67 \times 10^{-5}\ f$	$616000 / f^{1.2}$

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

6 dBi External Antenna:

Frequency Band	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	Power Density (mW/cm^2)	Limit (mW/cm^2)/ (W/m^2)	Result
5 GHz	20	21.68	6	0.117	1.0/10	Compliance

23 dBi External Antenna:

Frequency Band	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	Power Density (mW/cm^2)	Limit (mW/cm^2)/ (W/m^2)	Result
5 GHz	20	5.76	23	0.158	1.0/10	Compliance

5 FCC §15.203 & IC RSS-Gen §7.1.4 – 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.

As per IC RSS-Gen §7.1.4: 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

Frequency Band	Antenna Gain (dBi)
5 GHz	6 (External)
5 GHz	16 (External)
5 GHz	23 (External)

6 FCC §15.407(b) & IC RSS-Gen §7.2.2 – AC Line Conducted Emissions

6.1 Applicable Standards

As per FCC §15.207 & RSS-Gen 7.2.2 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 *	56 to 46 *
0.5-5	56	46
5-30	60	50

** Decreases with the logarithm of the frequency.*

6.2 Test Results

N/A, Please refer to IC test report with IC: 3616C-ZF7762.

7 FCC §15.407(b) & IC RSS-210 §A9.3 - Conducted Spurious Emissions at Antenna Terminals

7.1 Applicable Standard

For FCC §15.407(b) and IC RSS-210 §A9.3(1).

7.2 Test Results

N/A, Please refer to IC test report with IC: 3616C-ZF7762.

8 FCC §15.209, §15.407(b) & IC RSS-210 §A9.3 – Unwanted Emissions

8.1 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 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**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

** 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 §15.407 (b) Undesirable emission limits: Except as shown in paragraph (b)(6) of this section, the peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

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

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

(3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz.

(4) For transmitters operating in the 5.725–5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of –17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of –27 dBm/MHz.

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

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

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

(c) The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

8.2 Test Setup

The radiated emissions tests were performed using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15E and IC RSS-210 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.

8.3 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

8.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Cable Loss, Antenna factor and the pre-amplifier gain to the Indicated Reading. The basic equation is as follows:

Corrected Amplitude = Indicated Reading + Cable Loss + Antenna Factor – Pre-Amplifier Gain

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

8.5 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Hewlett Packard	Pre-Amplifier	8447D	2944A06639	2010-06-18
Sunol Science Corp	Combination Antenna	JB3	A0020106-3	2010-06-16
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2010-03-24
Sunol Science Corp	System Controller	SC99V	122303-1	N/R
A.R.A Inc	Horn antenna	DRG-1181A	1132	2009-10-27
Agilent	Spectrum Analyzer	E4440A	MY44303352	2010-05-09
HP	Pre-Amplifier	8449B	3147A00400	2010-02-01

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

8.6 Test Environmental Conditions

Temperature:	18~21 °C
Relative Humidity:	30~35 %
ATM Pressure:	101.2-102.2kPa

The testing was performed by Kevin Li from 2010-09-13 to 2010-09-16 in 5 meter chamber 3.

8.7 Radiated Emissions Test Result Data

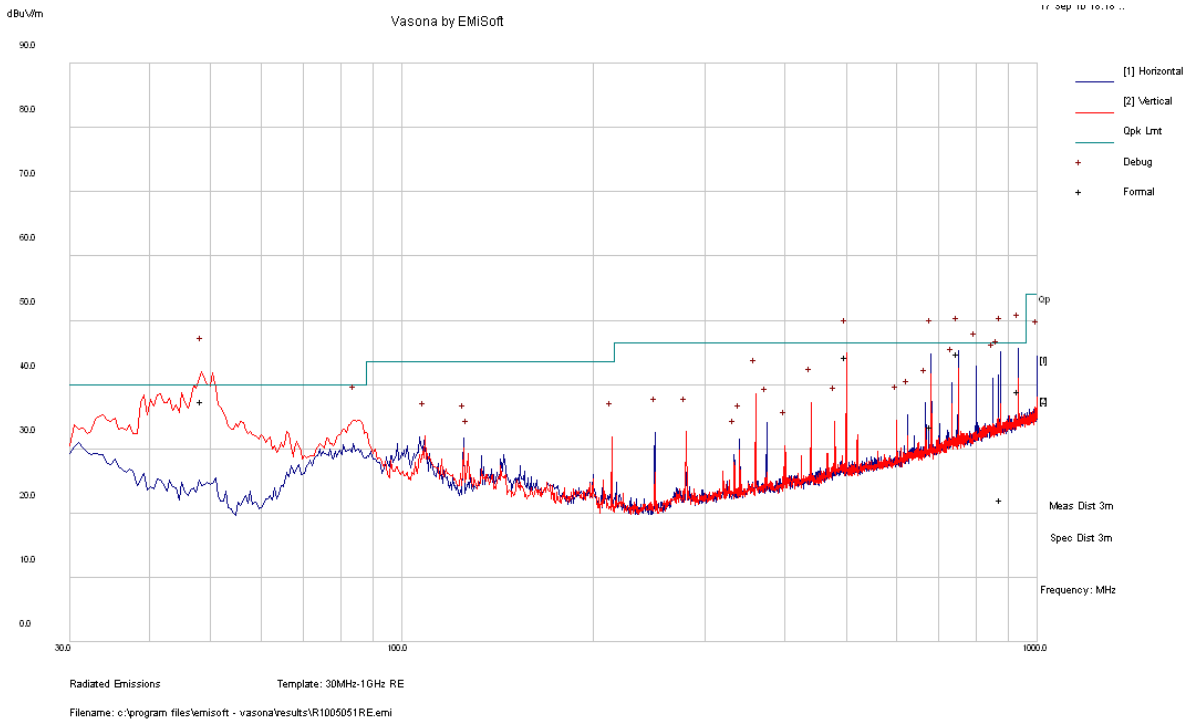
Please refer to the following result tables and plots.

1) 30 MHz – 1 GHz:

Radiated Emission at 3 meters

6 dBi External Antenna, 802.11 a Mode

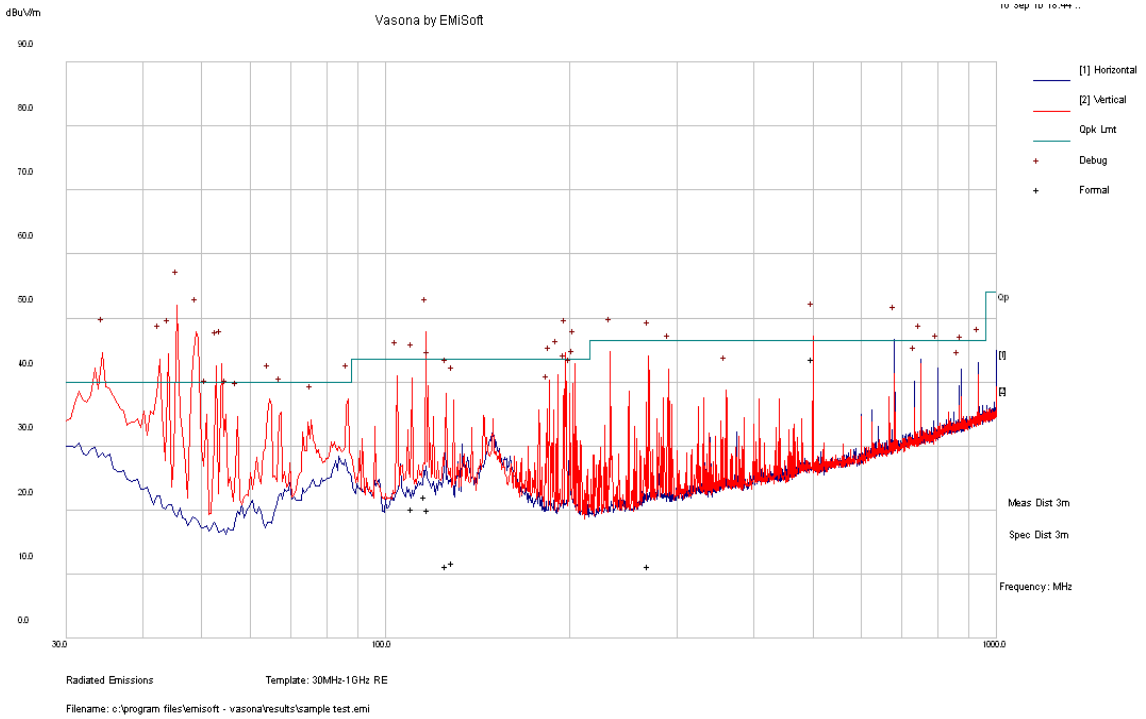
5250-5350 MHz Band, Middle channel (5300 MHz) – POE



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
750.0043	44.89	100	H	233	46	-1.11
499.9998	44.31	100	V	232	46	-1.69
48.414	37.43	100	V	53	40	-2.57
933.3328	39.02	303	H	33	46	-6.98
680.135	33.47	101	H	135	46	-12.53
875.5075	22.12	293	H	296	46	-23.88

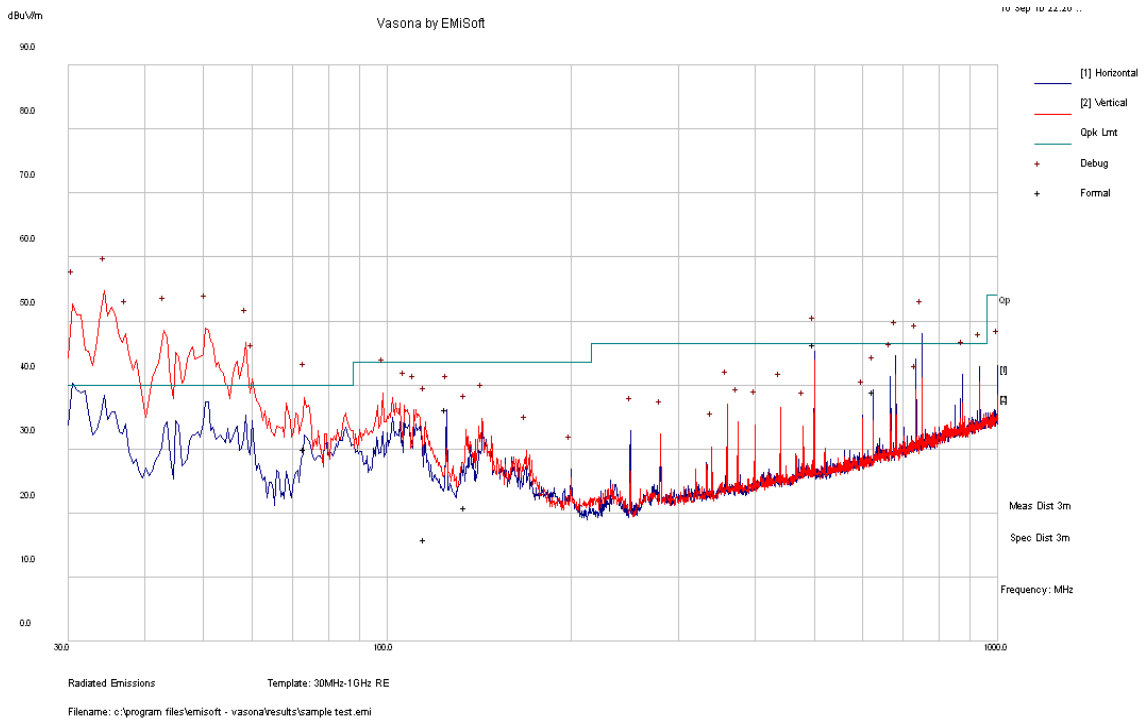
5250-5350 MHz Band, Middle channel (5300 MHz) -DC Power supply



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
500.0143	43.64	100	V	240	46	-2.36
116.1833	22.05	182	V	33	43.5	-21.45
110.421	20.14	114	V	17	43.5	-23.36
117.3853	19.95	104	V	5	43.5	-23.55
129.0208	11.82	340	V	191	43.5	-31.68
125.5098	11.33	136	V	131	43.5	-32.17
269.34	11.33	261	V	211	46	-34.67

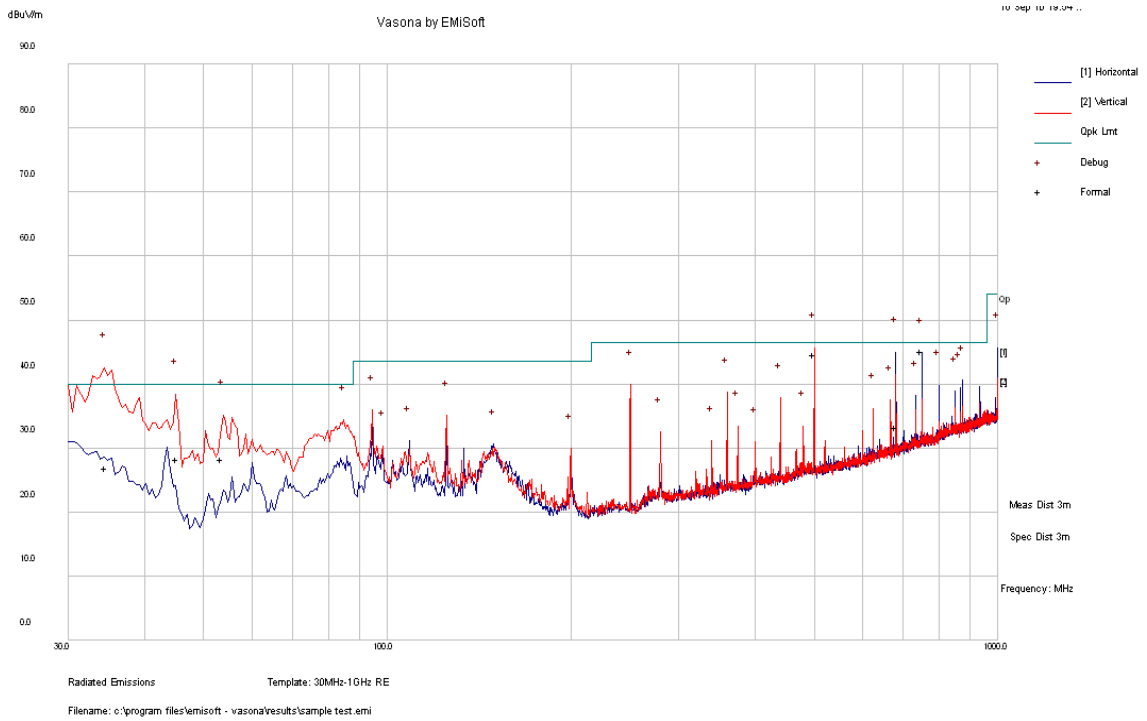
5500-5700 MHz Band, Middle channel (5600 MHz) – POE



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
500.0108	43.38	148	H	180	46	-2.62
625.011	38.95	112	H	190	46	-7.05
124.9883	36.27	255	H	95	43.5	-7.23
73.2125	29.96	100	V	204	40	-10.04
115.2828	15.82	172	V	145	43.5	-27.68

5500-5700 MHz Band, Middle channel (5600 MHz) -DC Power supply

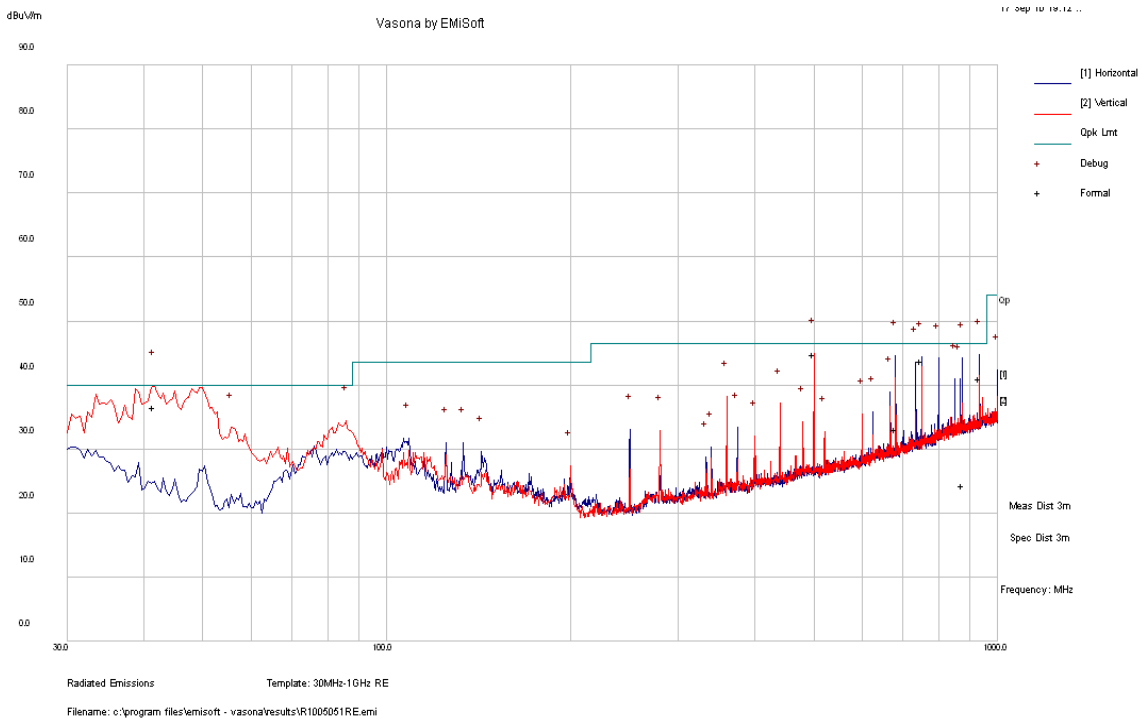


Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
749.999	45.24	100	H	15	46	-0.76
499.9973	44.69	100	V	238	46	-1.31
45.23025	28.35	100	V	76	40	-11.65
680.1408	33.38	110	H	137	46	-12.62
34.501	26.84	110	V	259	40	-13.16

6 dBi External Antenna, 802.11n 40 Mode

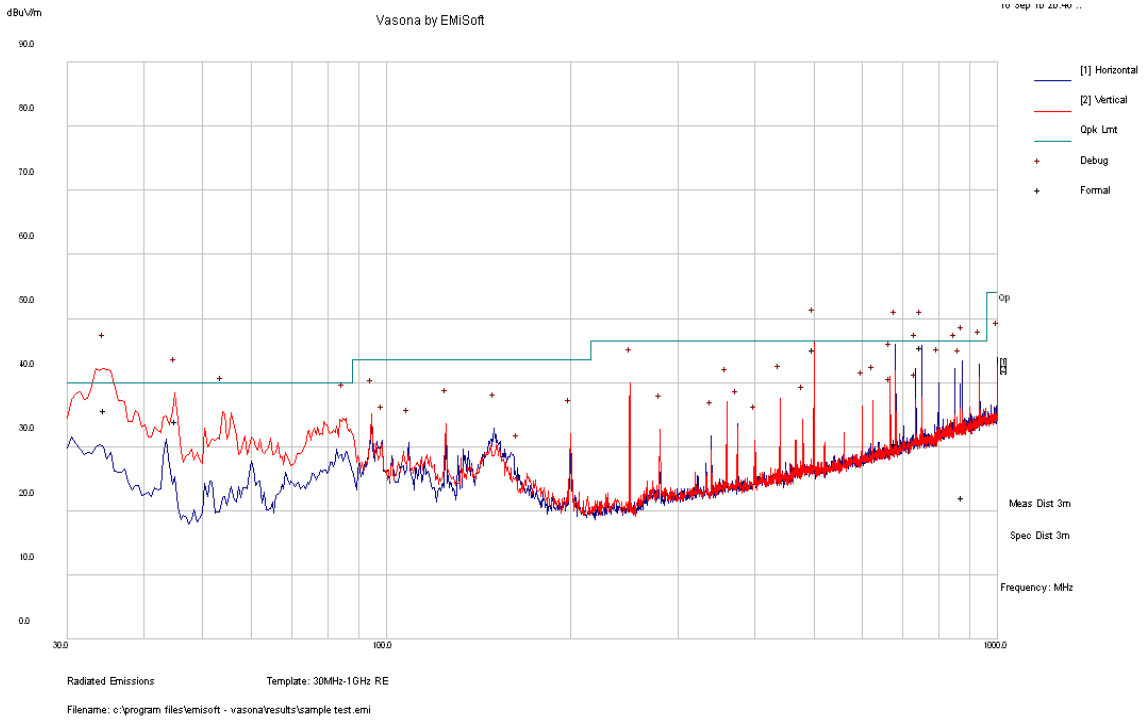
5250-5350 MHz Band, Middle channel (5310 MHz) – POE



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
499.9945	44.88	167	V	359	46	-1.62
749.9805	43.86	100	H	234	46	-2.14
41.60825	36.55	128	V	121	40	-3.45
933.3378	41.05	267	H	58	46	-4.95
680.1395	33.04	100	H	137	46	-12.96
875.1063	24.36	100	H	314	46	-21.64

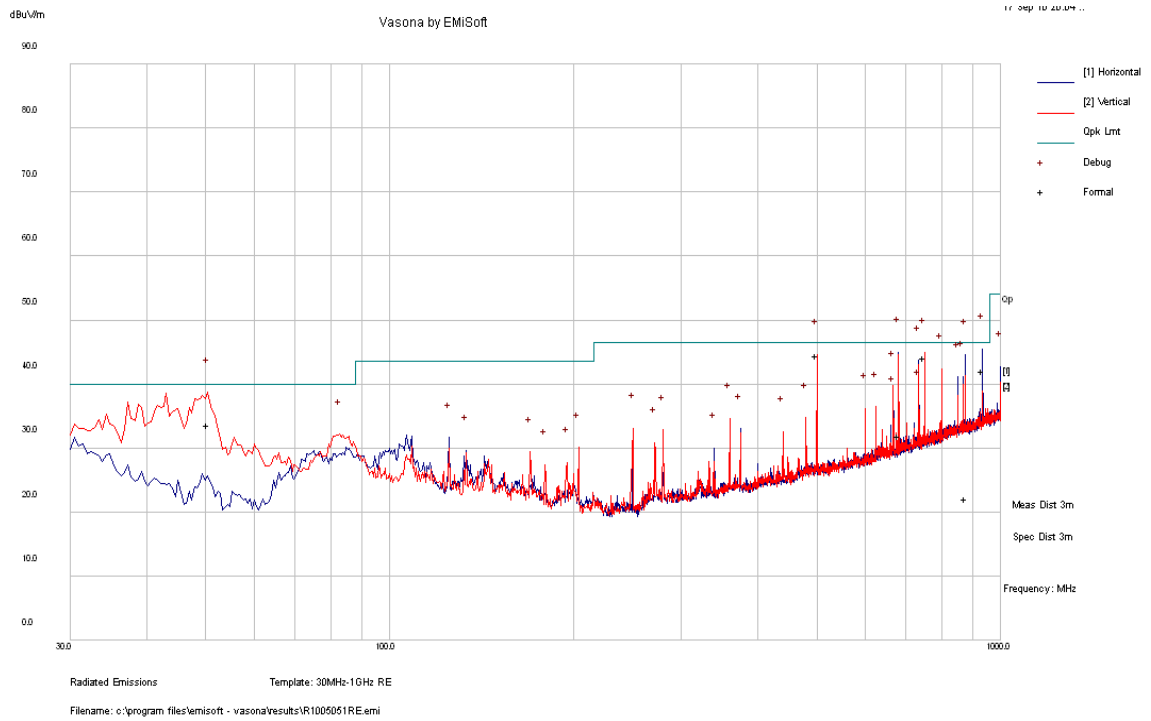
5250-5350 MHz Band, Middle channel (5310 MHz) -DC Power supply



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
499.995	45.78	100	V	240	46	-0.22
499.9708	44.23	100	V	123	46	-1.67
34.31425	35.27	117	V	259	40	-4.73
34.49775	34.92	121	V	272	40	-5.08
680.137	32.44	119	H	135	46	-13.56
680.1388	28.85	116	H	350	46	-17.15

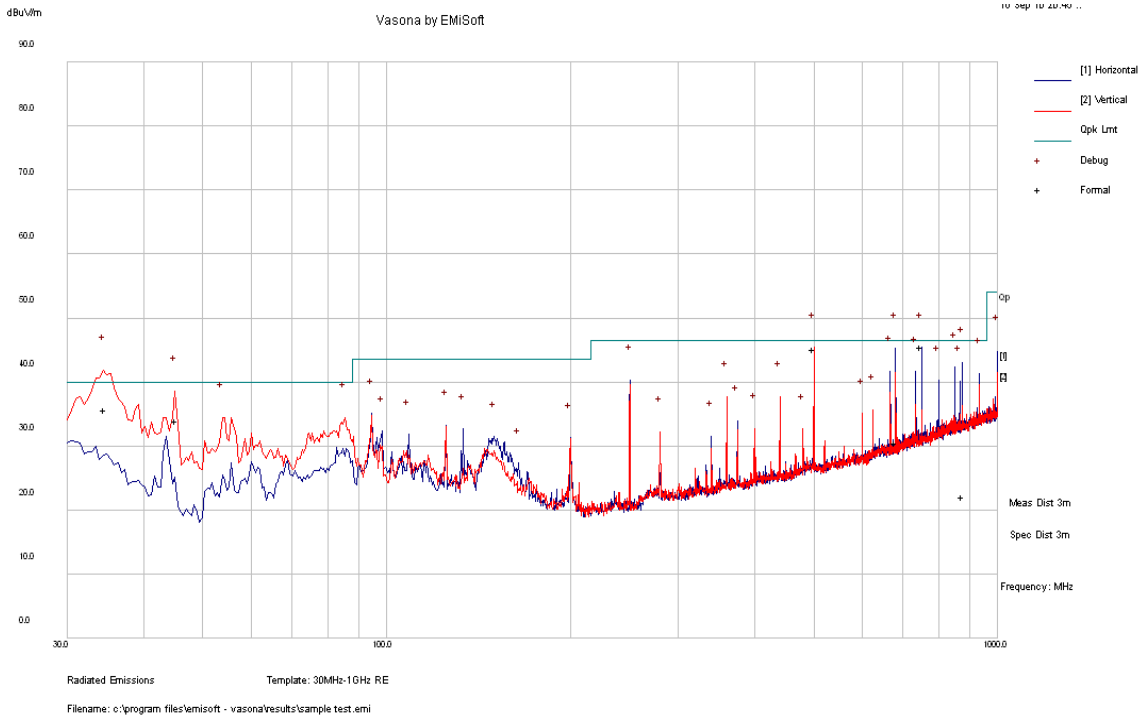
5500-5700 MHz Band, Middle channel (5590 MHz) – POE



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
500.0003	44.56	177	V	351	46	-1.44
750.0045	44.22	100	H	236	46	-1.78
933.354	42.09	200	H	21	46	-3.91
50.311	33.67	106	V	144	40	-6.33
680.1563	31.85	100	H	134	46	-14.15
875.111	22.05	341	H	282	46	-23.95

5500-5700 MHz Band, Middle channel (5590 MHz) -DC Power supply

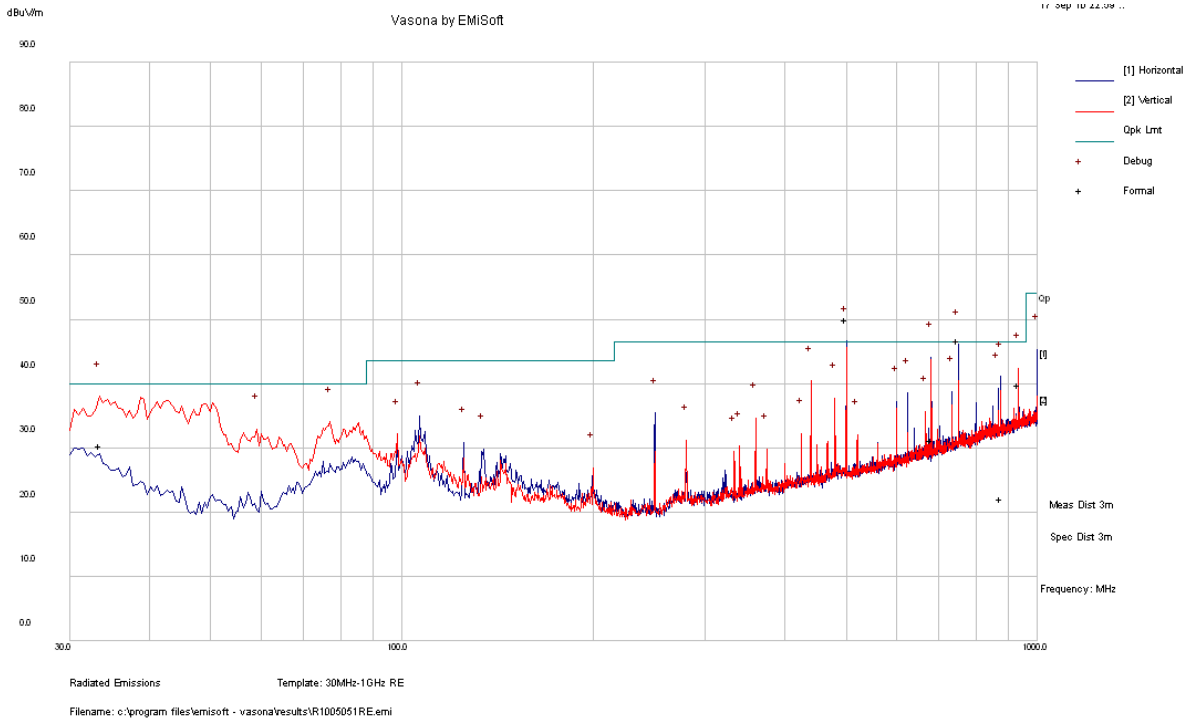


Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
750.0043	45.56	100	H	5	46	-0.44
499.988	45.10	100	V	126	46	-0.90
34.60225	35.77	114	V	5	40	-4.23
45.252	34.02	168	V	46	40	-5.98
680.139	30.59	111	H	233	46	-15.41
875.2513	22.14	260	H	114	46	-23.86

23 dBi External Antenna, 802.11 a Mode

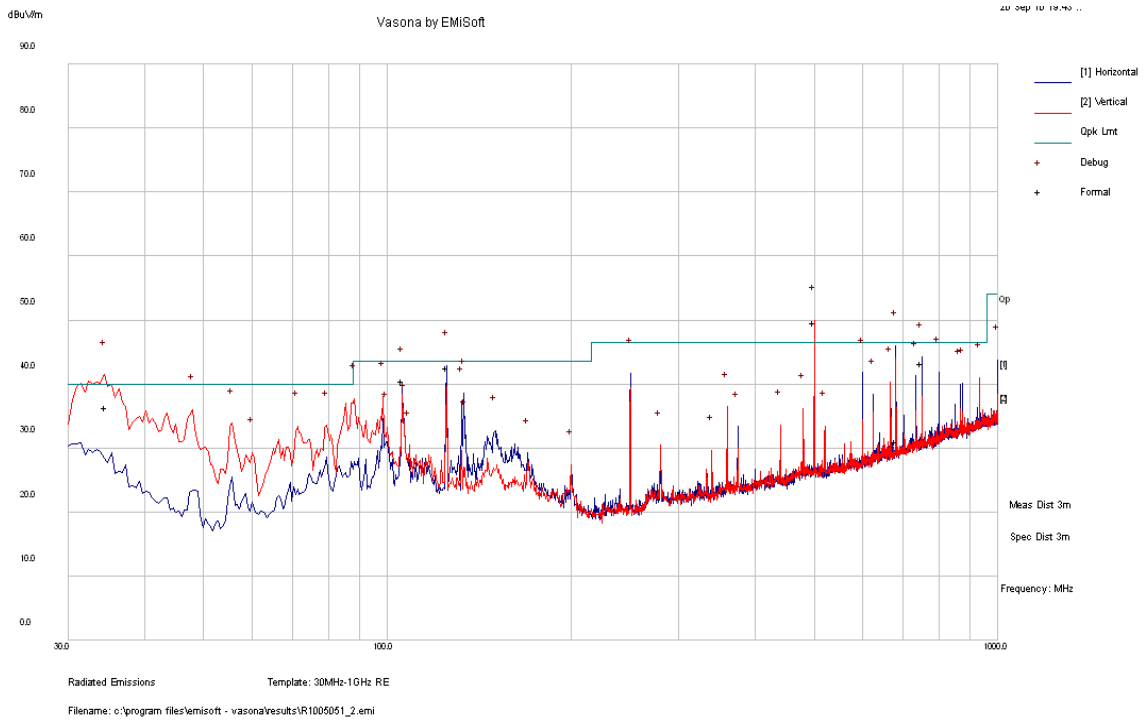
5250-5350 MHz Band, Middle channel (5300 MHz) – POE



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
750.001	45.67	100	H	352	46	-0.33
500	44.03	135	H	0	46	-1.97
933.343	39.76	100	V	330	46	-6.24
33.428	30.36	150	V	24	40	-9.64
680.137	31.25	113	H	207	46	-14.75
875.1058	22.04	308	H	274	46	-23.96

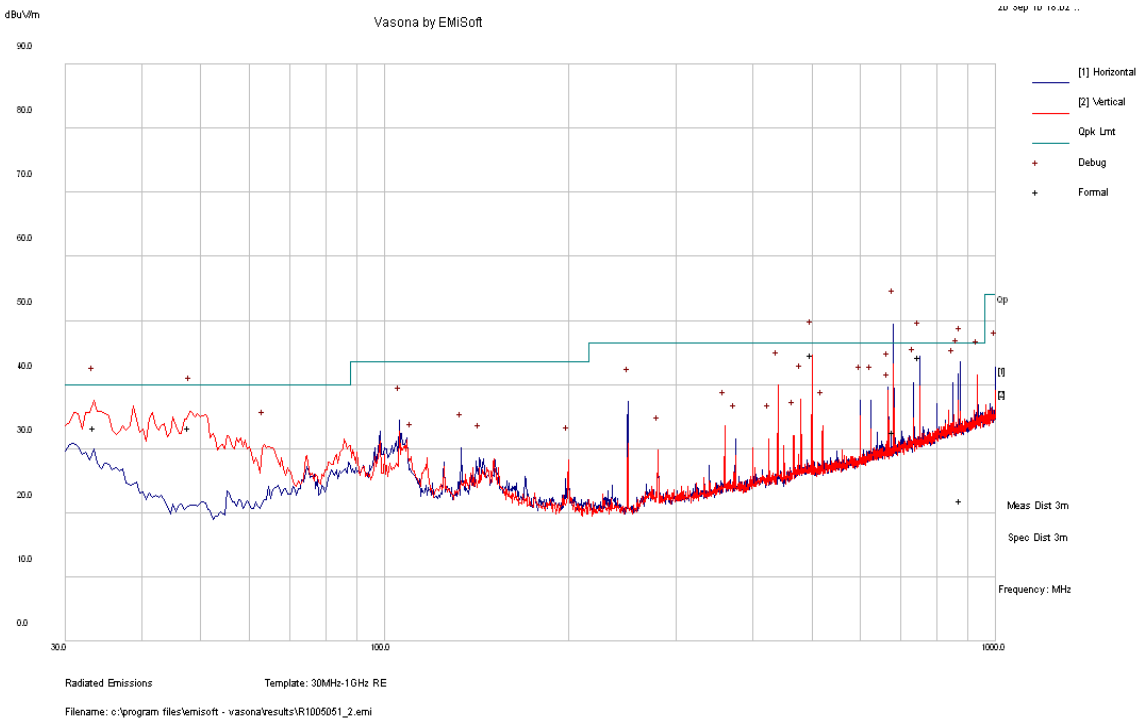
5250-5350 MHz Band, Middle channel (5300 MHz) -DC Power supply



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
500.0003	45.70	100	V	5	46	-0.30
124.996	42.53	260	H	256	43.5	-0.97
750.0063	43.31	100	H	357	46	-2.69
105.708	40.55	264	H	283	43.5	-2.95
34.614	36.43	128	V	27	40	-3.57
680.1358	31.06	274	H	356	46	-14.94

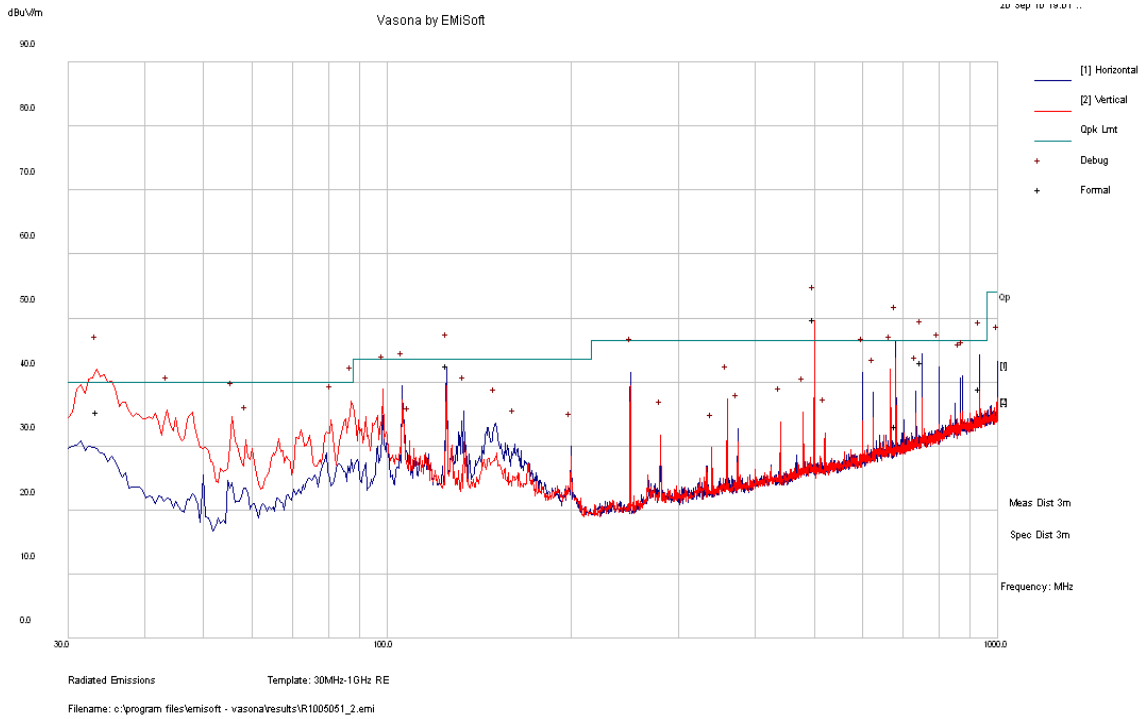
5500-5700 MHz Band, Middle channel (5600 MHz) – POE



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
500.003	44.59	100	V	27	46	-1.41
749.9938	44.40	103	H	17	46	-1.60
47.80775	33.35	103	V	79	40	-6.65
33.44675	33.32	105	V	8	40	-6.68
680.1425	32.55	109	H	347	46	-13.45
875.1888	21.98	345	H	61	46	-24.02

5500-5700 MHz Band, Middle channel (5600 MHz) -DC Power supply

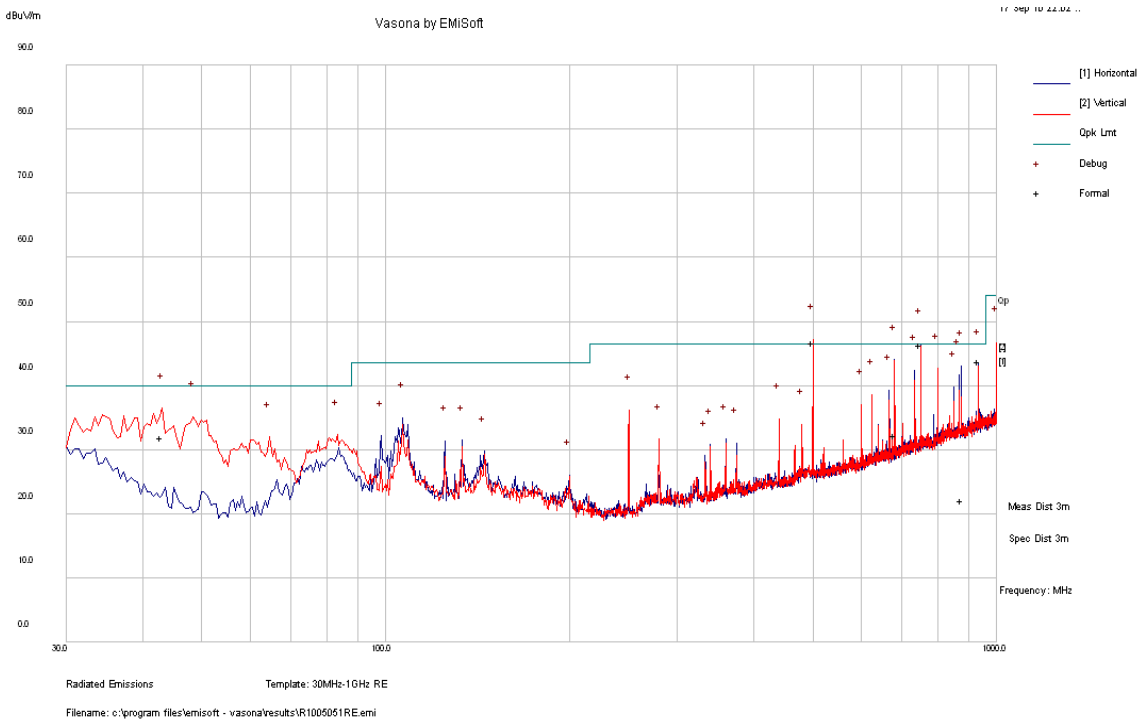


Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
499.9973	45.77	100	V	9	46	-0.23
125.0015	42.52	250	H	247	46	-0.48
750.0158	43.12	100	H	359	46	-2.88
33.4185	35.29	107	V	3	40	-4.71
933.3343	38.98	258	H	76	46	-7.02
680.1423	33.15	126	H	152	46	-12.85

23 dBi External Antenna, 802.11n 40 Mode

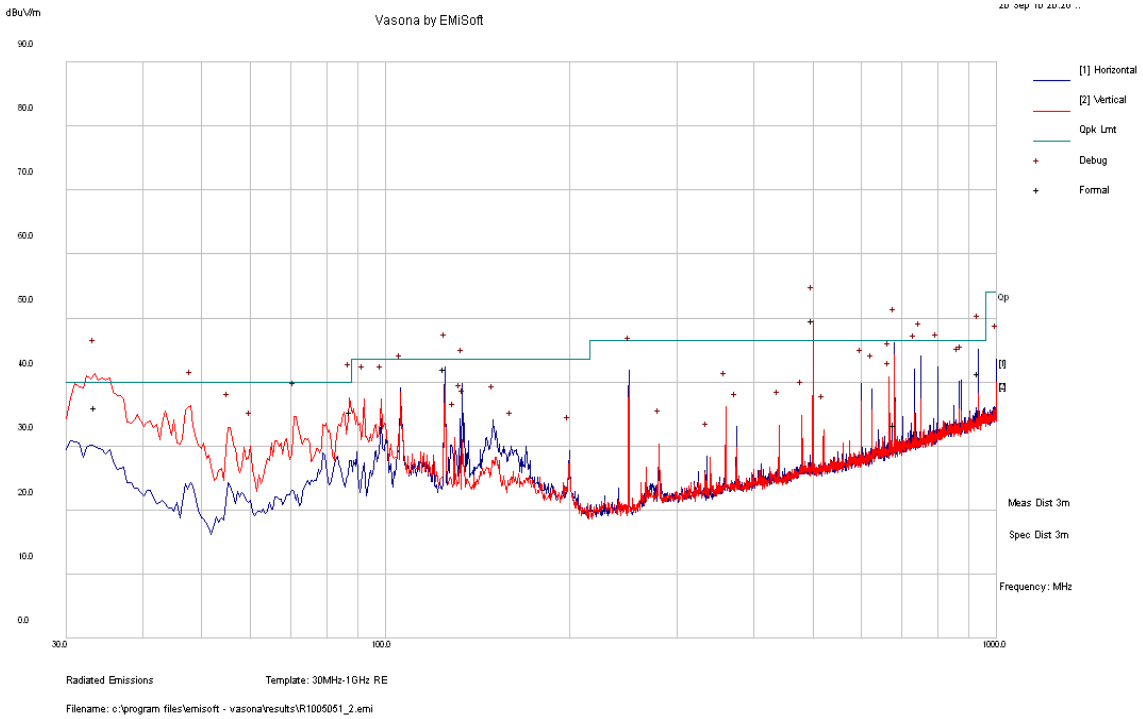
5250-5350 MHz Band, Middle channel (5310 MHz) – POE



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
750.0005	45.40	100	H	358	46	-0.60
499.999	44.64	100	V	342	46	-1.36
933.356	43.81	175	H	84	46	-2.19
42.935	31.87	112	V	115	40	-8.13
680.1368	32.32	100	H	50	46	-13.68
875.3498	22.10	112	H	142	46	-23.90

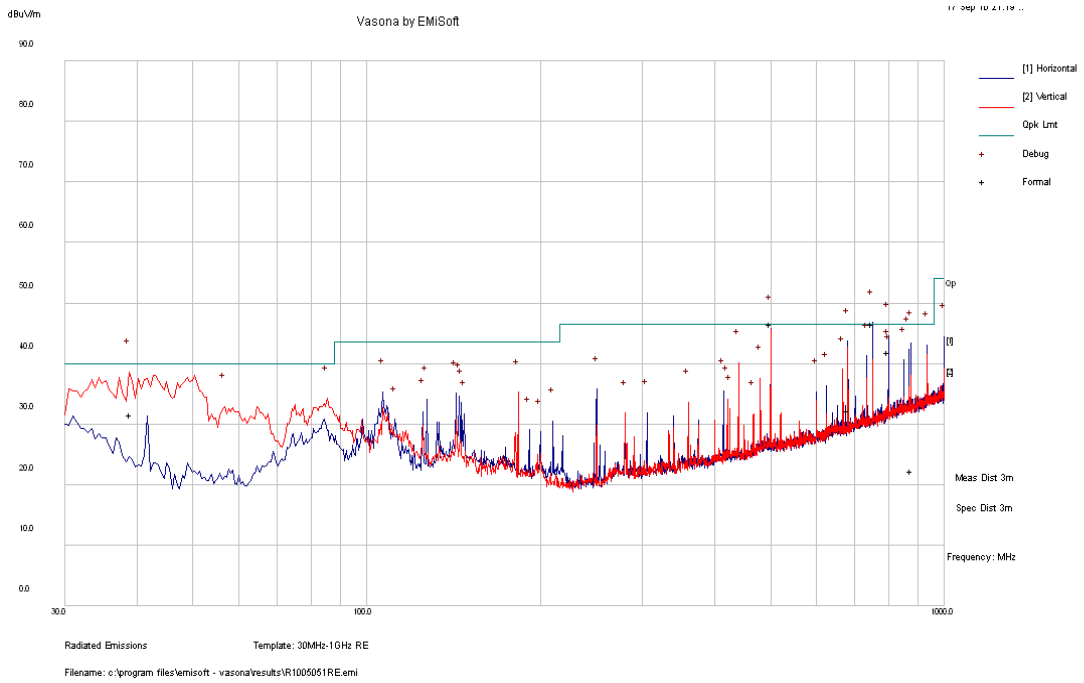
5250-5350 MHz Band, Middle channel (5310 MHz) -DC Power supply



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
499.9965	45.65	100	V	10	46	-0.35
124.982	42.16	228	H	252	43.5	-1.34
33.46825	36.09	100	V	150	40	-3.91
933.3408	41.42	110	H	241	46	-4.58
87.4795	35.30	124	V	217	40	-4.70
680.1468	33.35	100	H	146	46	-12.65

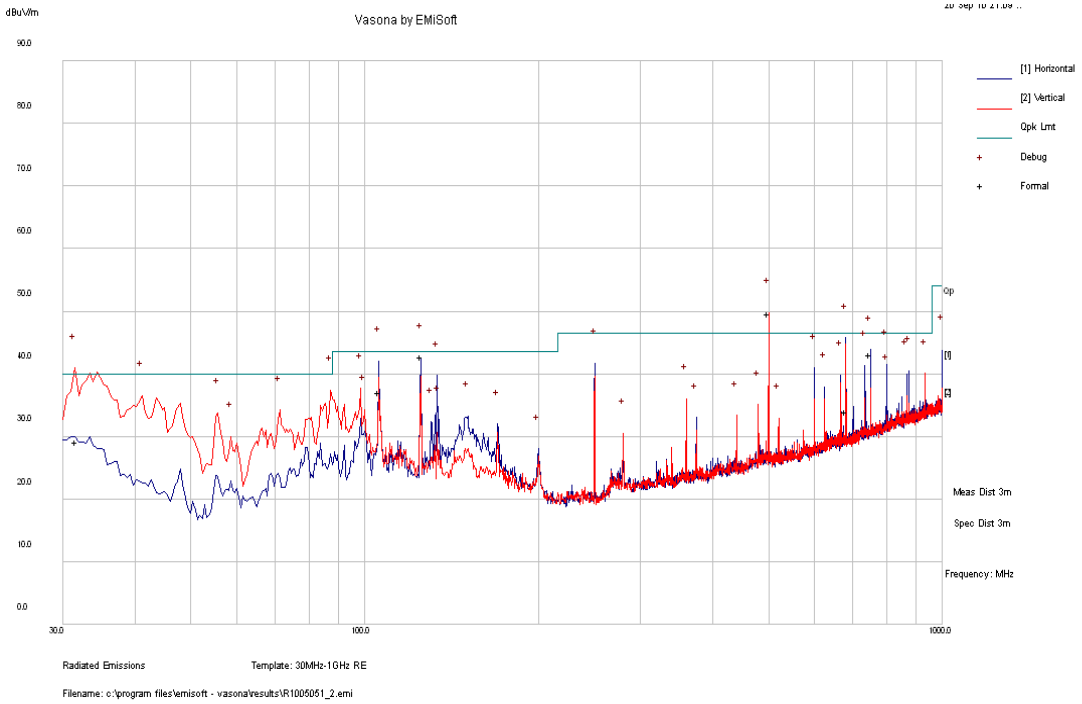
5500-5700 MHz Band, Middle channel (5590 MHz) – POE



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
750.002	45.53	100	H	358	46	-0.47
500.0018	45.62	173	H	194	46	-2.38
799.9885	41.86	100	H	347	46	-4.14
38.93925	31.50	130	V	219	40	-8.50
680.1353	32.31	108	H	51	46	-13.69
875.3258	22.29	100	H	293	46	-23.71

5500-5700 MHz Band, Middle channel (5590 MHz) -DC Power supply



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
499.9973	45.66	100	V	13	46	-0.34
125.004	42.70	239	H	260	43.5	-0.80
750.0098	43.10	101	H	360	46	-2.90
105.665	37.12	283	H	260	43.5	-6.38
31.59775	29.17	141	V	268	40	-10.83
680.137	33.92	108	H	143	46	-12.08

2) 1 – 40 GHz

Radiated Emission at 3 meters

5250-5350 MHz Band:

6 dBi External 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 5260 MHz, measured at 3 meters											
10520	55.19	19	100	V	38.74	7.05	35.35	65.63	74	-8.37	Peak
10520	58.27	334	135	H	38.74	7.05	35.35	68.71	74	-5.29	Peak
10520	39.85	19	100	V	38.74	7.05	35.35	50.29	54	-3.71	Ave
10520	42.27	334	135	H	38.74	7.05	35.35	52.71	54	-1.29	Ave
Middle Channel 5300 MHz, measured at 3 meters											
10600	61.97	11	119	V	38.74	7.05	35.35	72.41	74	-1.59	Peak
10600	59.46	352	106	H	38.74	7.05	35.35	69.9	74	-4.1	Peak
10600	42.29	11	119	V	38.74	7.05	35.35	52.73	54	-1.27	Ave
10600	42.05	352	106	H	38.74	7.05	35.35	52.49	54	-1.51	Ave
High Channel 5320 MHz, measured at 3 meters											
10640	55.31	6	100	V	38.74	7.05	35.35	65.75	74	-8.25	Peak
10640	59.02	352	105	H	38.74	7.05	35.35	69.46	74	-4.54	Peak
10640	39.18	6	100	V	38.74	7.05	35.35	49.62	54	-4.38	Ave
10640	41.68	352	105	H	38.74	7.05	35.35	52.12	54	-1.88	Ave

6 dBi External Antenna, 802.11n20 Mode

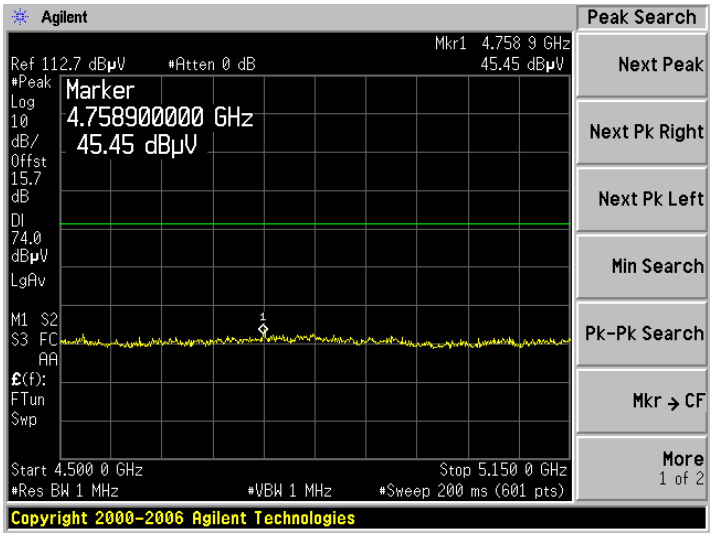
Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5260 MHz, measured at 3 meters											
10520	55.76	10	116	V	38.74	7.05	35.35	66.2	74	-7.8	Peak
10520	56.32	352	100	H	38.74	7.05	35.35	66.76	74	-7.24	Peak
10520	39.15	10	116	V	38.74	7.05	35.35	49.59	54	-4.41	Ave
10520	39.07	352	100	H	38.74	7.05	35.35	49.51	54	-4.49	Ave
Middle Channel 5300 MHz, measured at 3 meters											
10600	57.36	6	100	V	38.74	7.05	35.35	67.8	74	-6.2	Peak
10600	56.91	354	100	H	38.74	7.05	35.35	67.35	74	-6.65	Peak
10600	40.33	6	100	V	38.74	7.05	35.35	50.77	54	-3.23	Ave
10600	39.62	354	100	H	38.74	7.05	35.35	50.06	54	-3.94	Ave
High Channel 5320 MHz, measured at 3 meters											
10640	56.79	10	118	V	38.74	7.05	35.35	67.23	74	-6.77	Peak
10640	57.21	6	110	H	38.74	7.05	35.35	67.65	74	-6.35	Peak
10640	40.05	10	118	V	38.74	7.05	35.35	50.49	54	-3.51	Ave
10640	40.87	6	110	H	38.74	7.05	35.35	51.31	54	-2.69	Ave

6 dBi External Antenna, 802.11n40 Mode

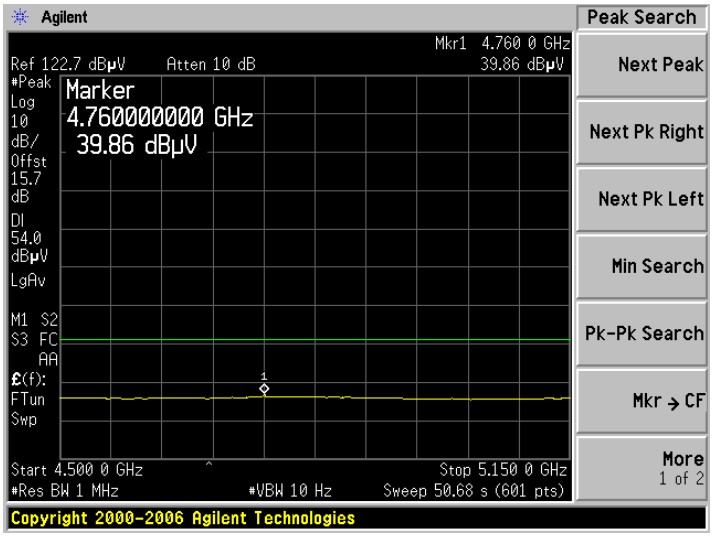
Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5270 MHz, measured at 3 meters											
10540	57.59	52	100	V	38.74	7.05	35.35	68.03	74	-5.97	Peak
10540	55.62	358	100	H	38.74	7.05	35.35	66.06	74	-7.94	Peak
10540	40.15	52	100	V	38.74	7.05	35.35	50.59	54	-3.41	Ave
10540	39.45	358	100	H	38.74	7.05	35.35	49.89	54	-4.11	Ave
Middle Channel 5310 MHz, measured at 3 meters											
10640	56.5	9	143	V	38.74	7.05	35.35	66.94	74	-7.06	Peak
10640	54.38	352	100	H	38.74	7.05	35.35	64.82	74	-9.18	Peak
10640	41.62	9	143	V	38.74	7.05	35.35	52.06	54	-1.94	Ave
10640	39.58	352	100	H	38.74	7.05	35.35	50.02	54	-3.98	Ave

Restricted Band Emissions

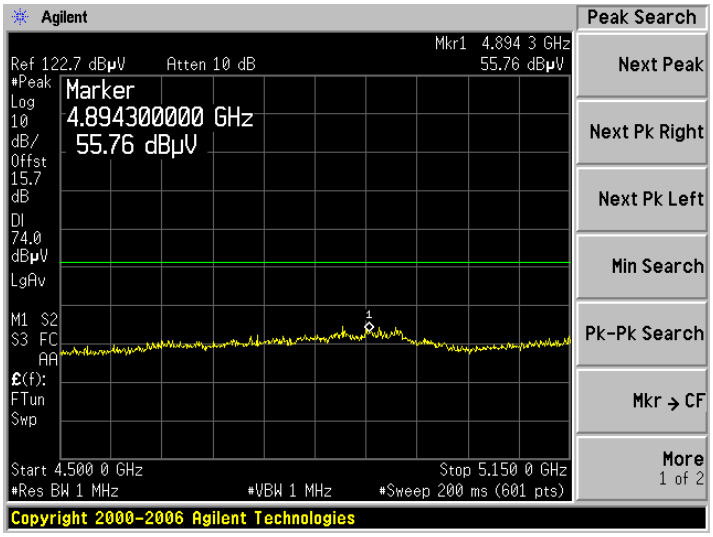
802.11a, Lowest Channel at Horizontal, Peak



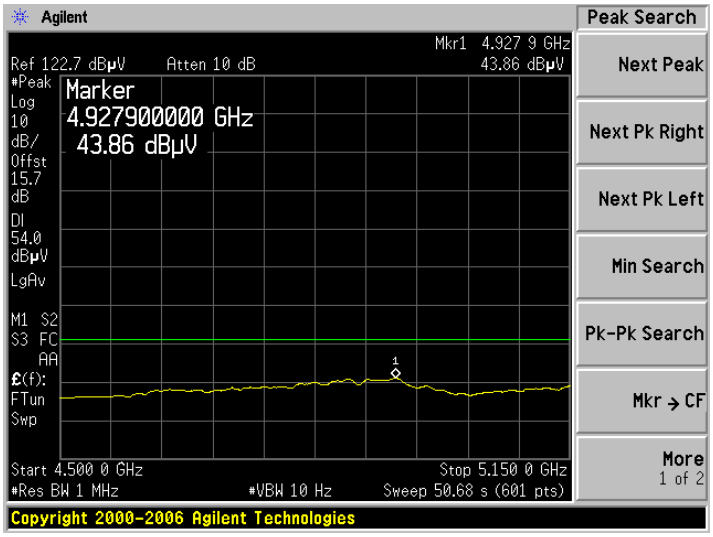
802.11a, Lowest Channel at Horizontal, Average



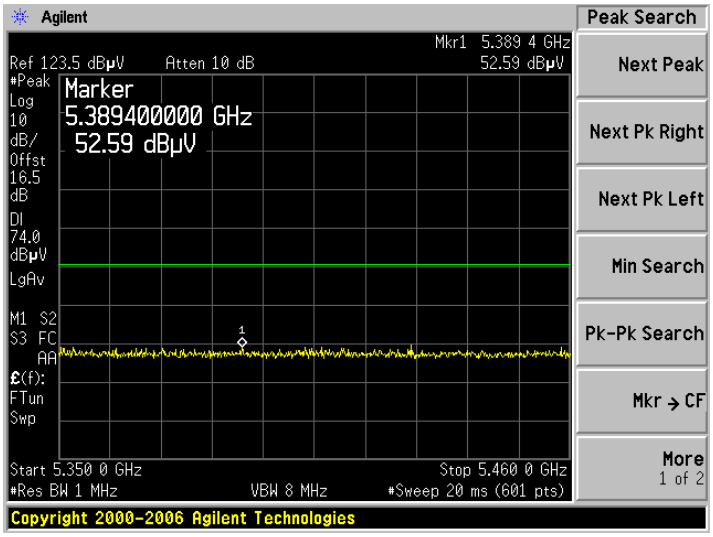
802.11a, Lowest Channel at Vertical, Peak



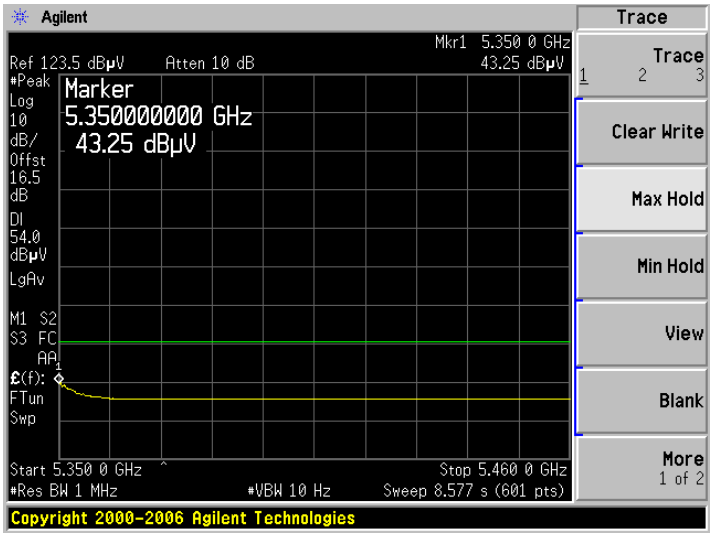
802.11a, Lowest Channel at Vertical, Average



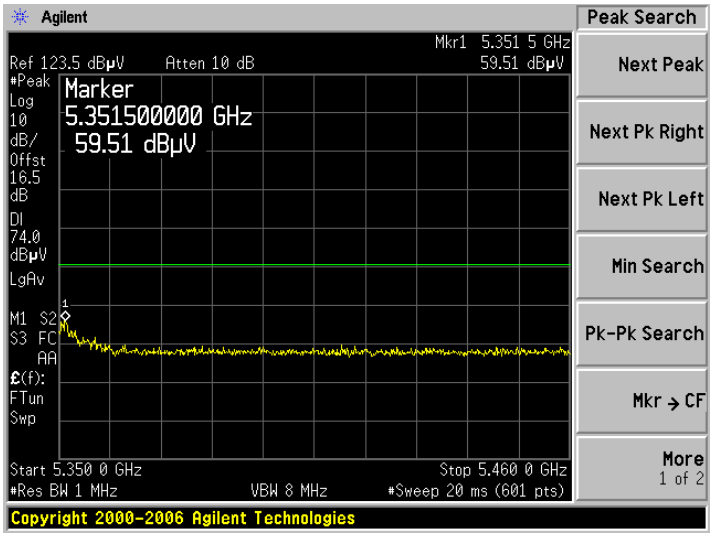
802.11a, Highest Channel at Horizontal, Peak



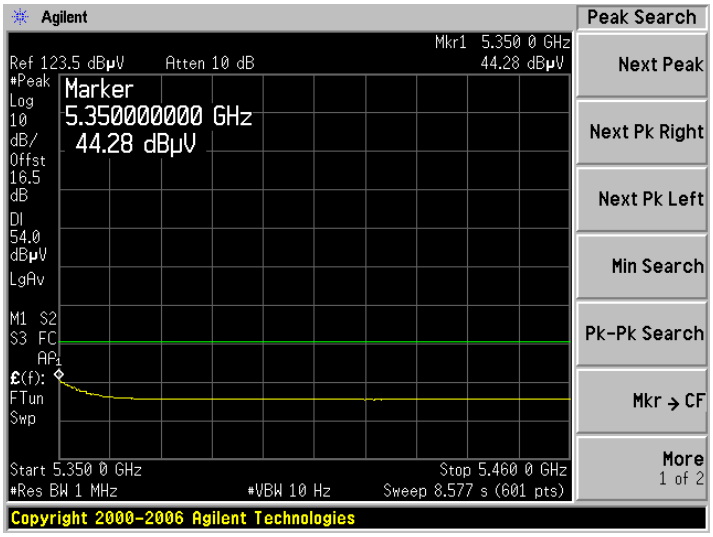
802.11a, Highest Channel at Horizontal, Average



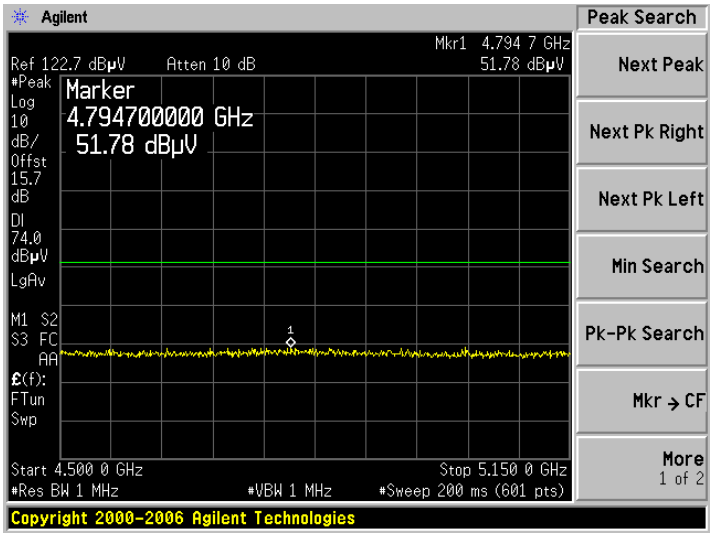
802.11a, Highest Channel at Vertical, Peak



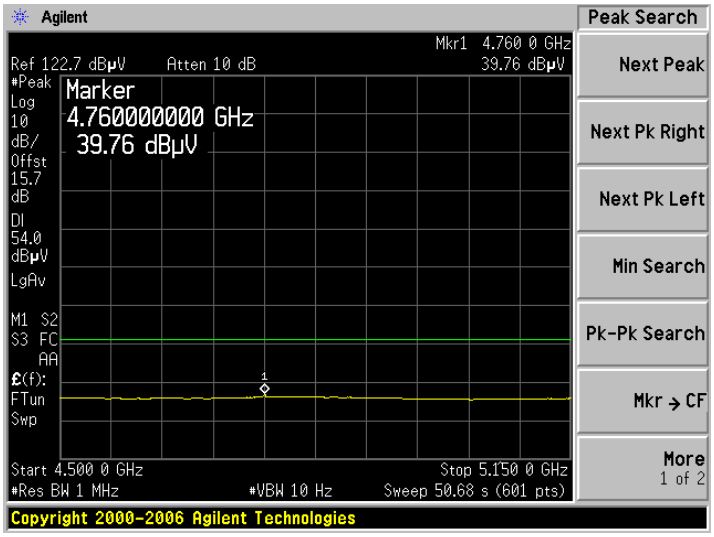
802.11a, Highest Channel at Vertical, Average



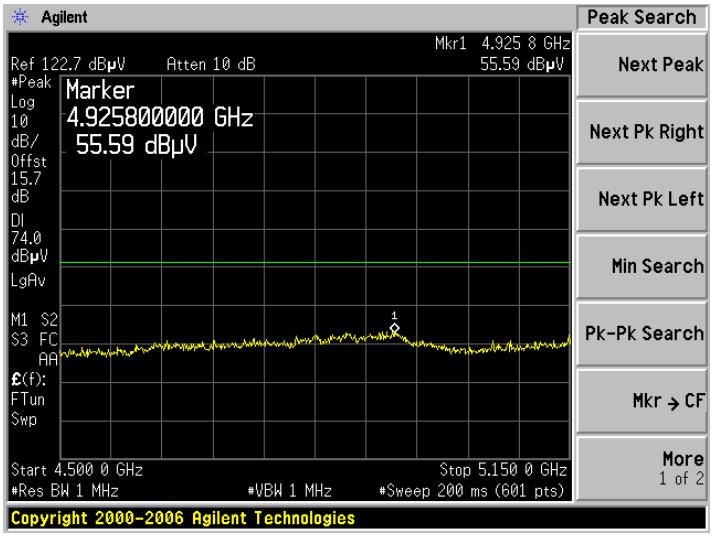
802.11 n20, Lowest Channel at Horizontal, Peak



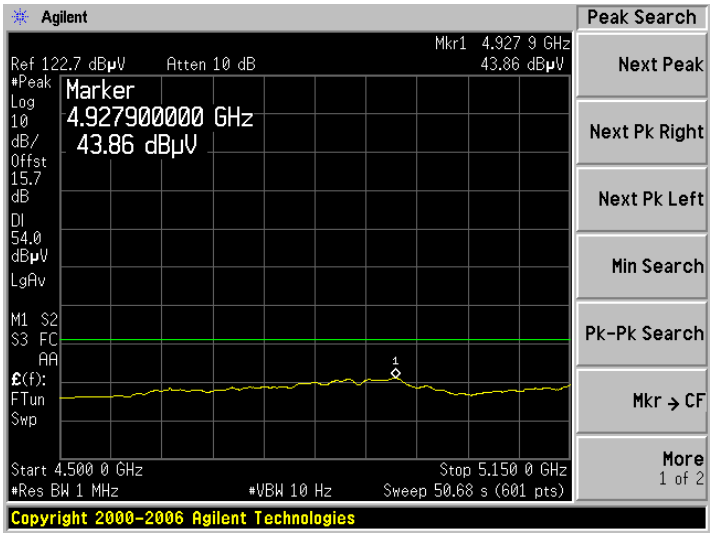
802.11n20, Lowest Channel at Horizontal, Average



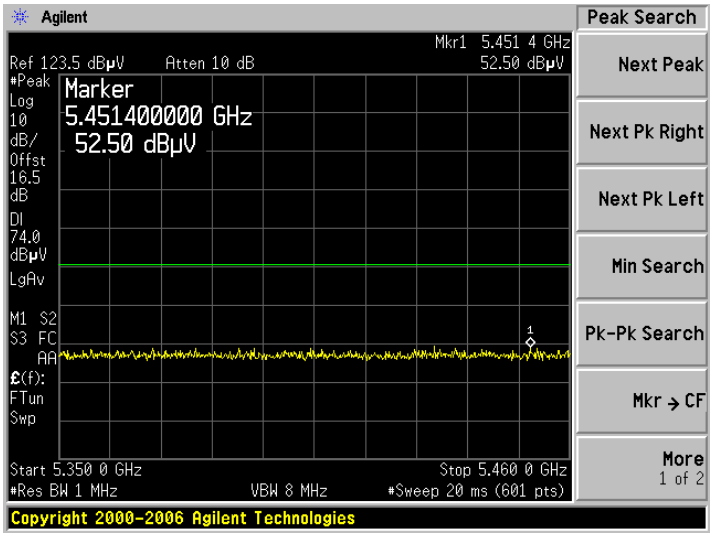
802.11n20, Lowest Channel at Vertical, Peak



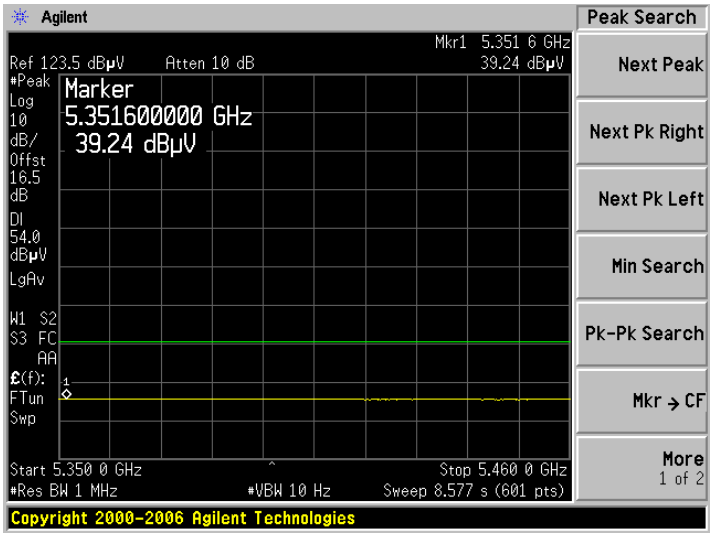
802.11n20, Lowest Channel at Vertical, Average



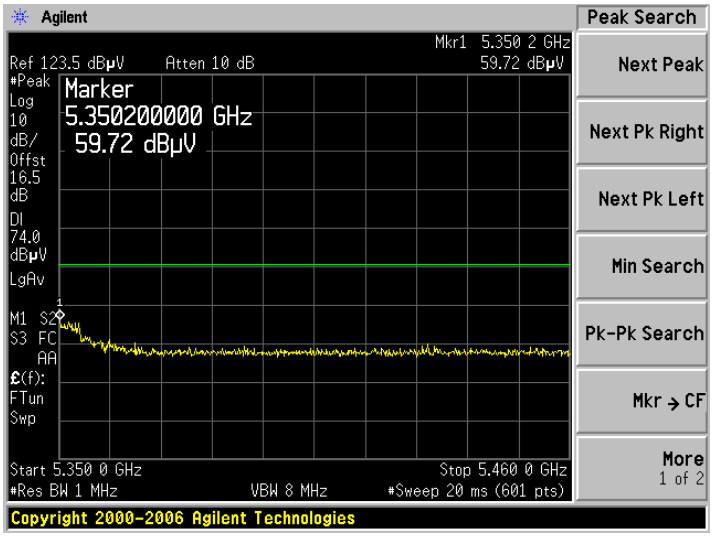
802.11 n20, Highest Channel at Horizontal, Peak



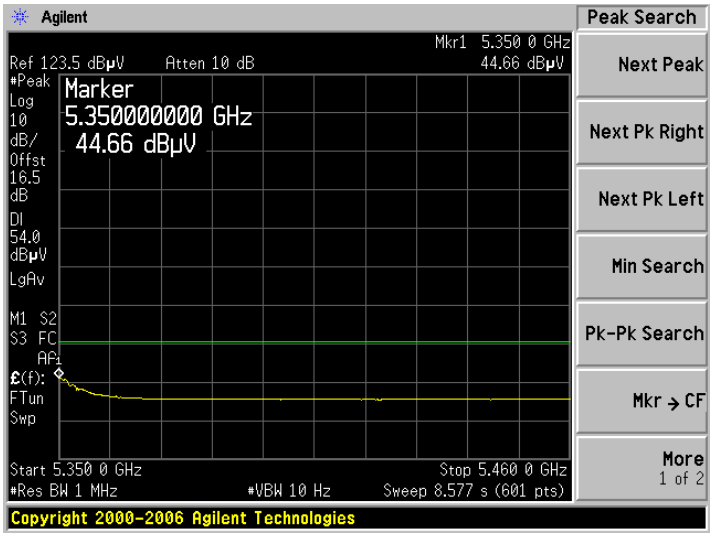
802.11n20, Highest Channel at Horizontal, Average



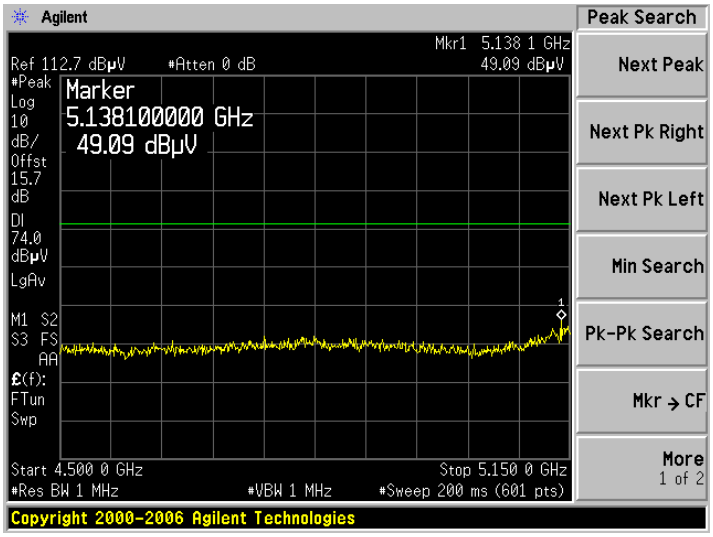
802.11n20, Highest Channel at Vertical, Peak



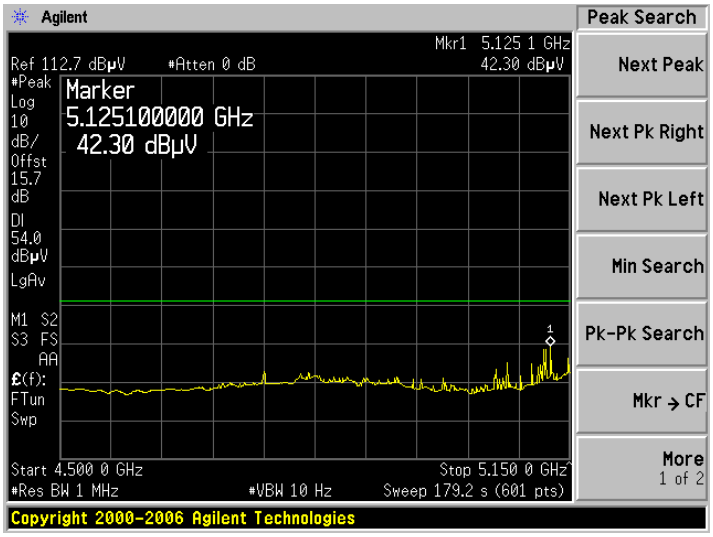
802.11n20, Highest Channel at Vertical, Average



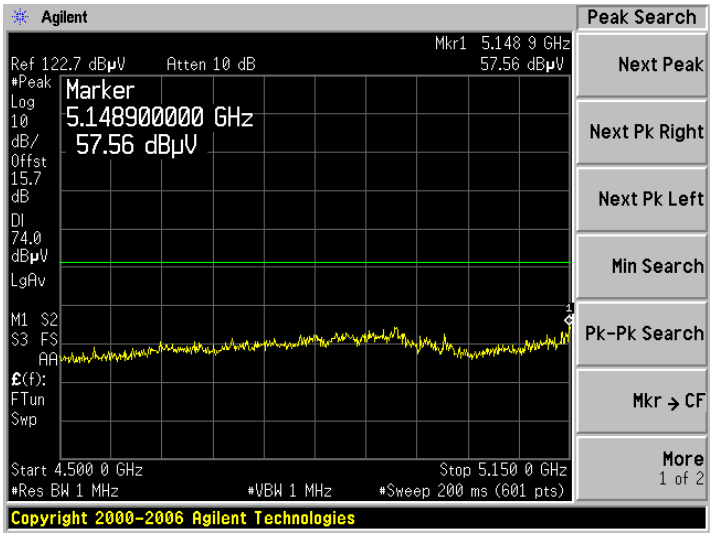
802.11 n40, Lowest Channel at Horizontal, Peak



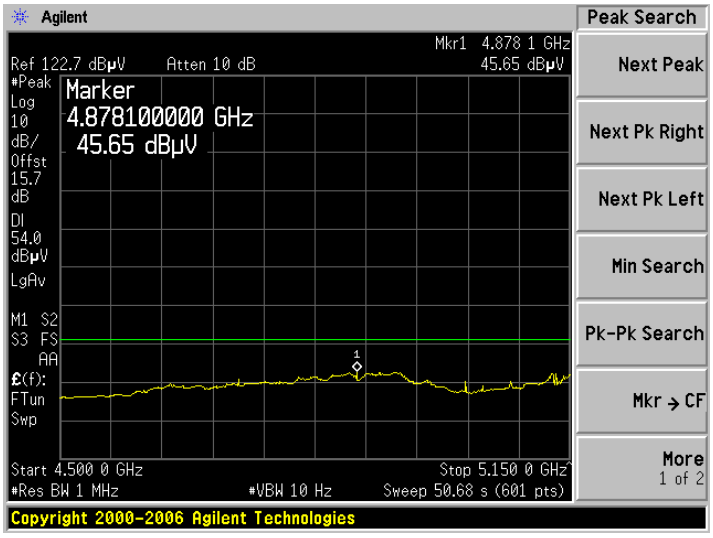
802.11 n40, Lowest Channel at Horizontal, Average



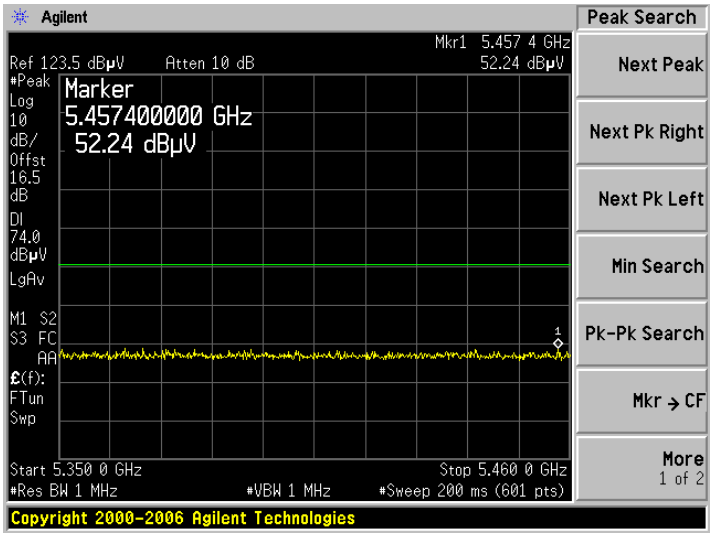
802.11 n40, Lowest Channel at Vertical, Peak



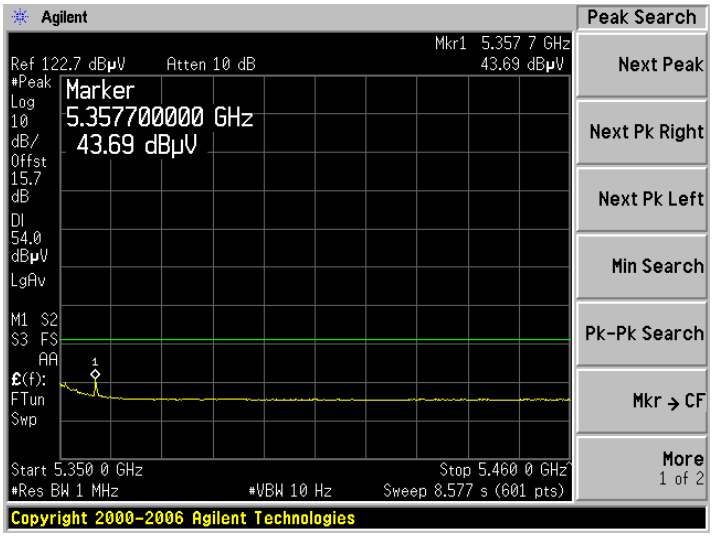
802.11 n40, Lowest Channel at Vertical, Average



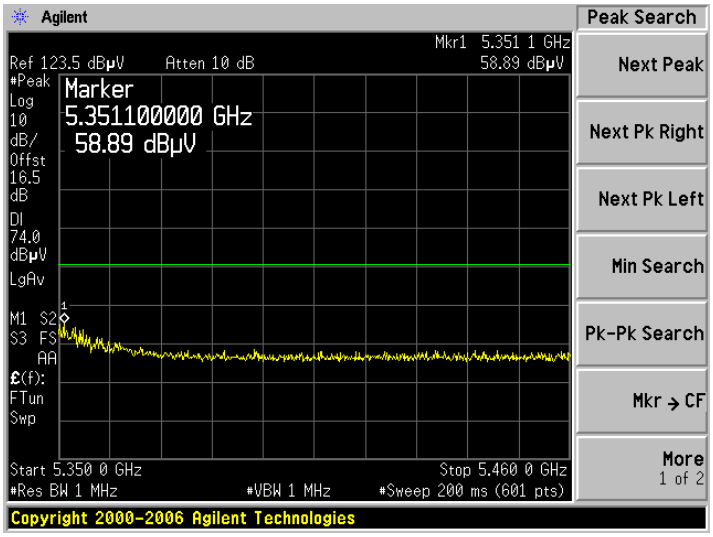
802.11 n40, Highest Channel at Horizontal, Peak



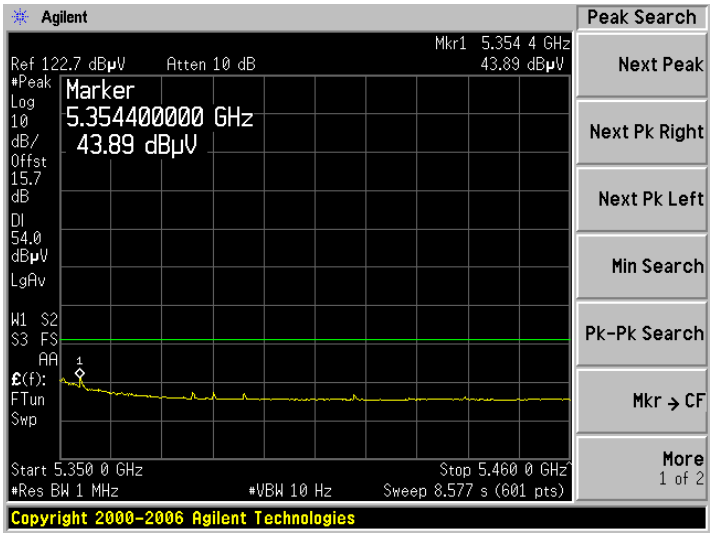
802.11 n40, Highest Channel at Horizontal, Average



802.11 n40, Highest Channel at Vertical, Peak



802.11 n40, Highest Channel at Vertical, Average



23 dBi External Antenna, 802.11a Mode

Frequency (MHz)	S.A. Reading (dBµV)	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											
-	-	-	-	-	-	-	-	-	-	-	-[1]
Middle Channel 5300 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]
High Channel 5320 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]

[1]all emissions are below the noise floor and/or 20 dB under the limit.

23 dBi External Antenna, 802.11n20 Mode

Frequency (MHz)	S.A. Reading (dBµV)	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											
-	-	-	-	-	-	-	-	-	-	-	-[1]
Middle Channel 5300 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]
High Channel 5320 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]

[1]all emissions are below the noise floor and/or 20 dB under the limit.

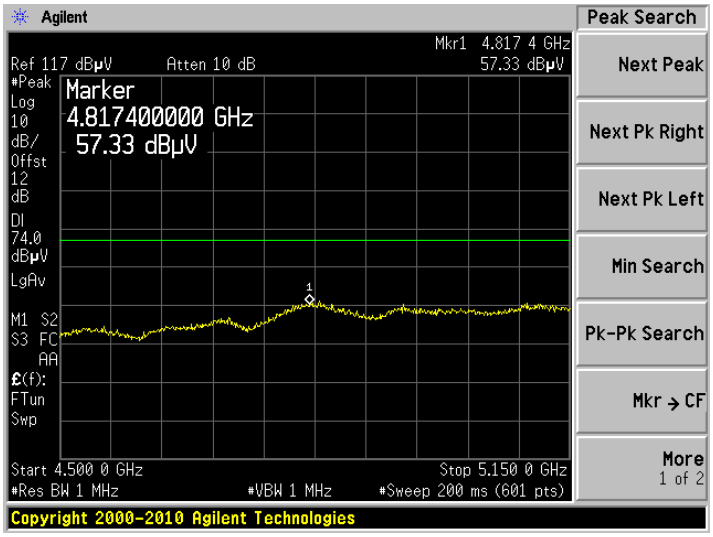
23 dBi External Antenna, 802.11n40 Mode

Frequency (MHz)	S.A. Reading (dBµV)	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											
-	-	-	-	-	-	-	-	-	-	-	-[1]
High Channel 5310 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]

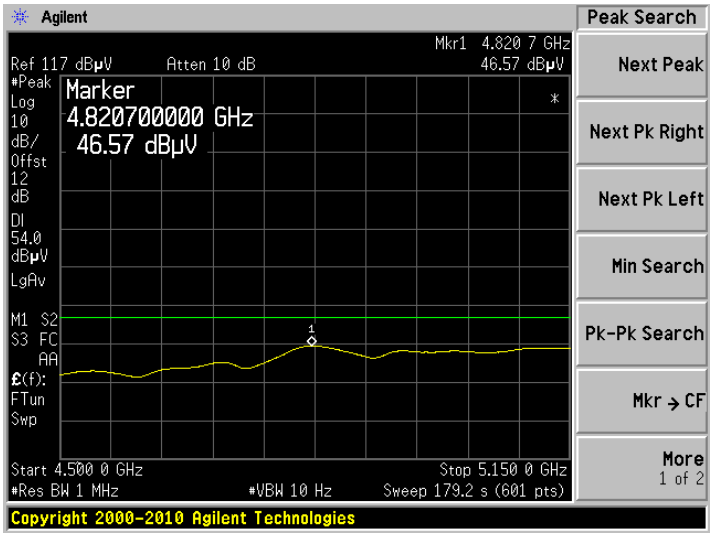
[1]all emissions are below the noise floor and/or 20 dB under the limit.

Restricted Band Emissions:

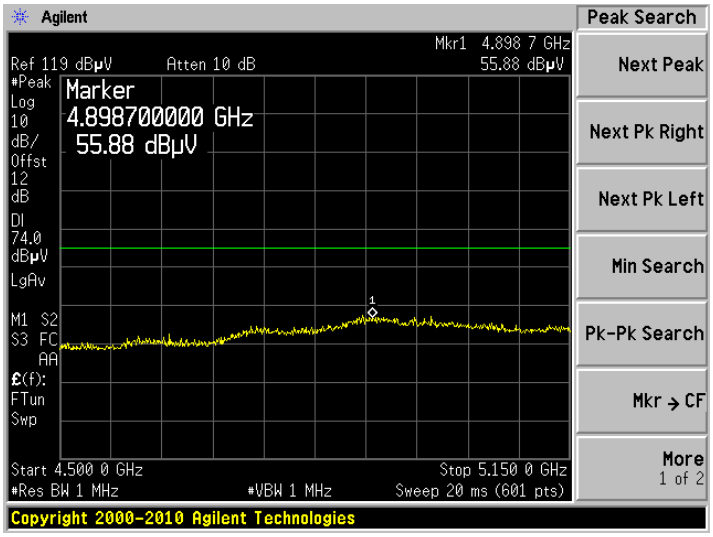
802.11a, Lowest Channel at Horizontal, Peak



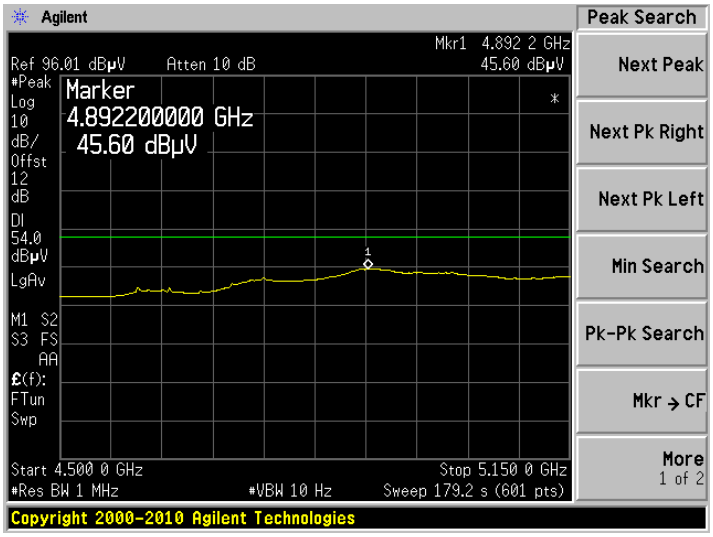
802.11a, Lowest Channel at Horizontal, Average



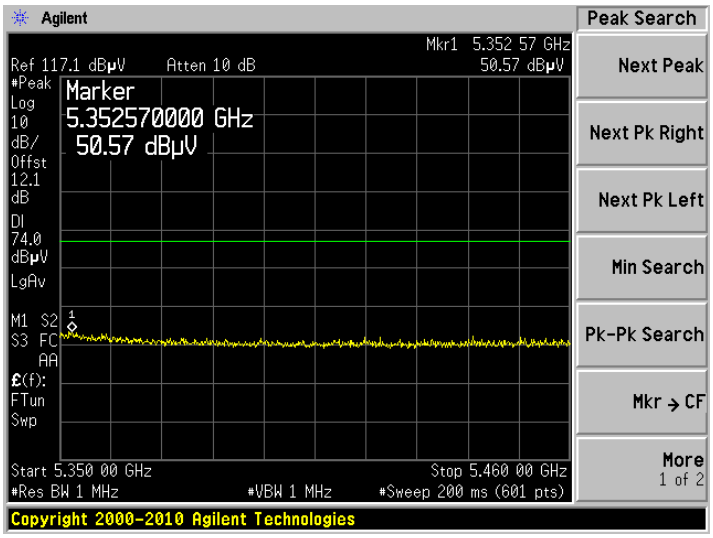
802.11a, Lowest Channel at Vertical, Peak



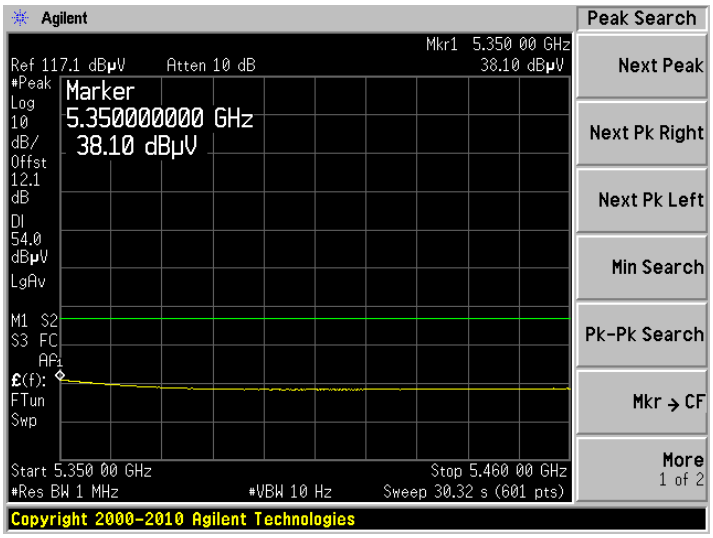
802.11a, Lowest Channel at Vertical, Average



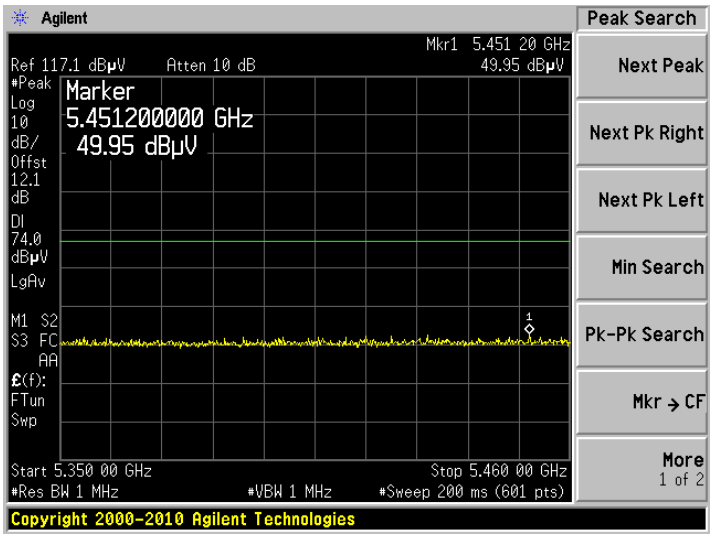
802.11a, Highest Channel at Horizontal, Peak



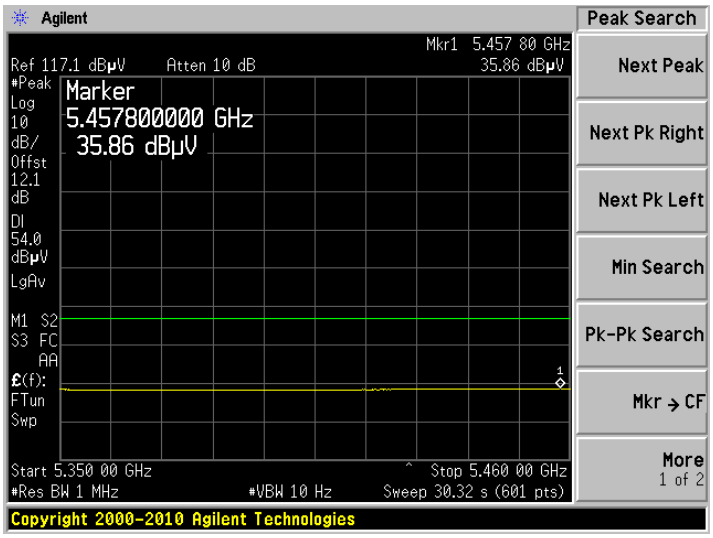
802.11a, Highest Channel at Horizontal, Average



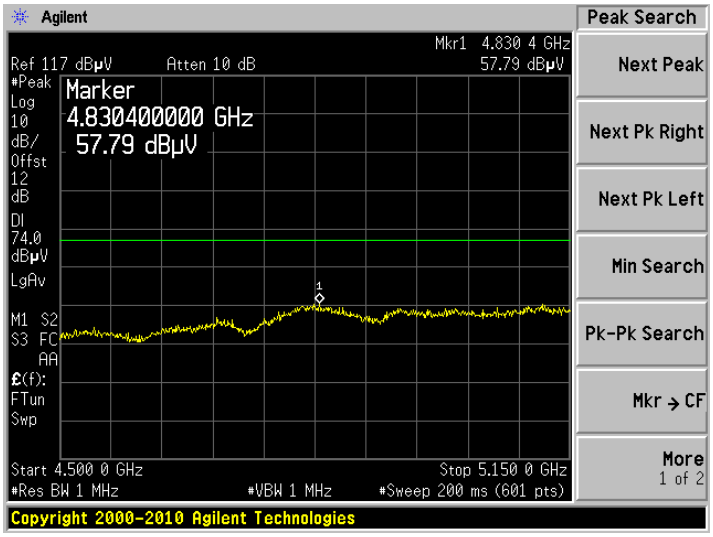
802.11a, Highest Channel at Vertical, Peak



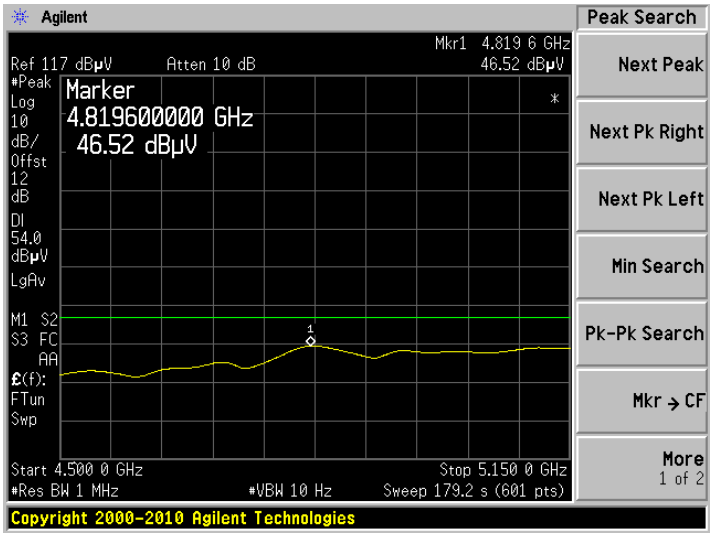
802.11a, Highest Channel at Vertical, Average



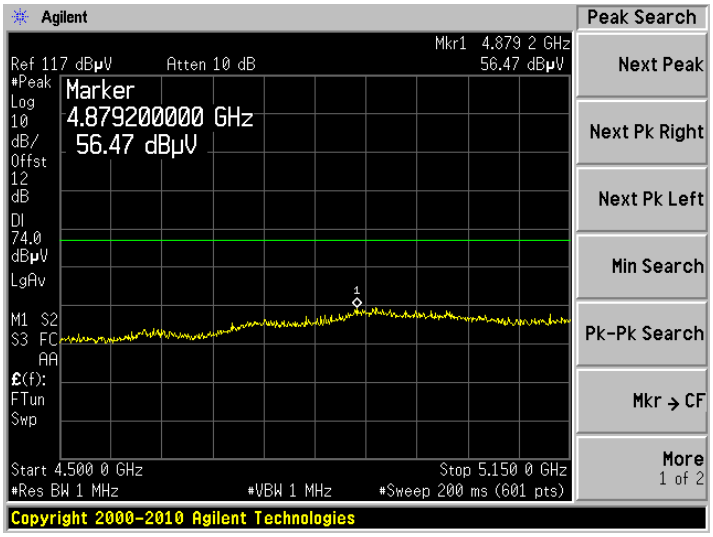
802.11 n20, Lowest Channel at Horizontal, Peak



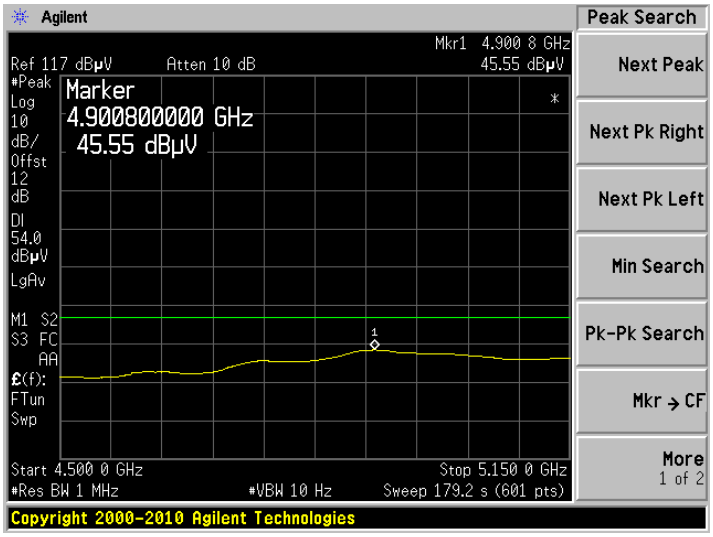
802.11n20, Lowest Channel at Horizontal, Average



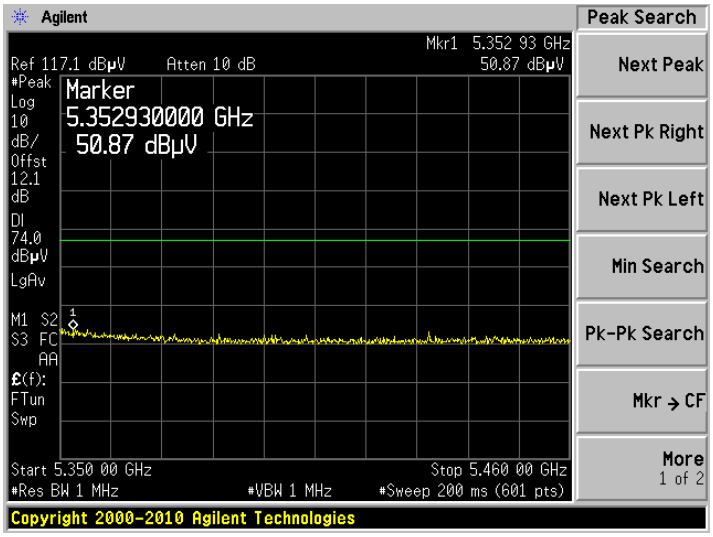
802.11n20, Lowest Channel at Vertical, Peak



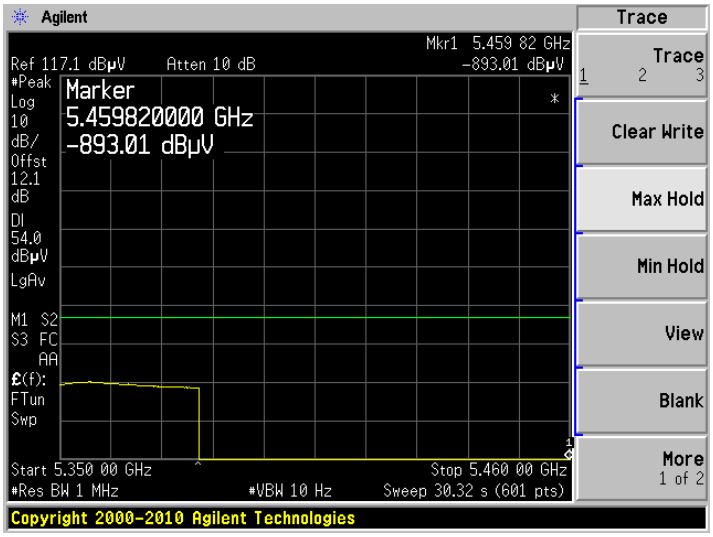
802.11n20, Lowest Channel at Vertical, Average



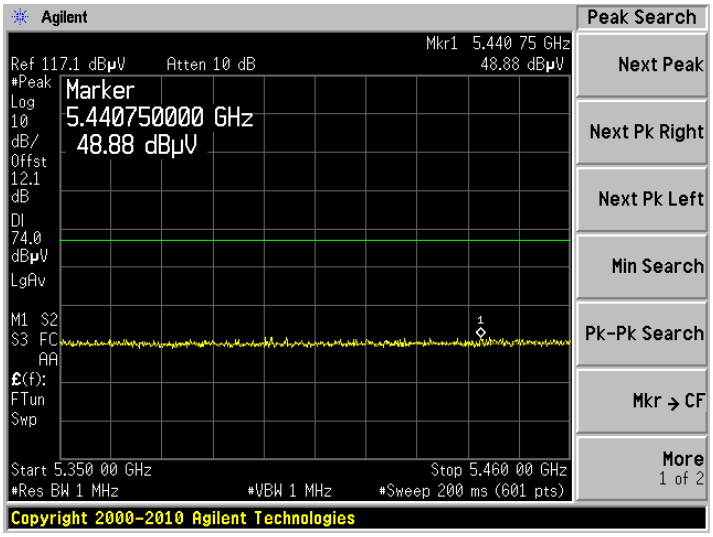
802.11 n20, Highest Channel at Horizontal, Peak



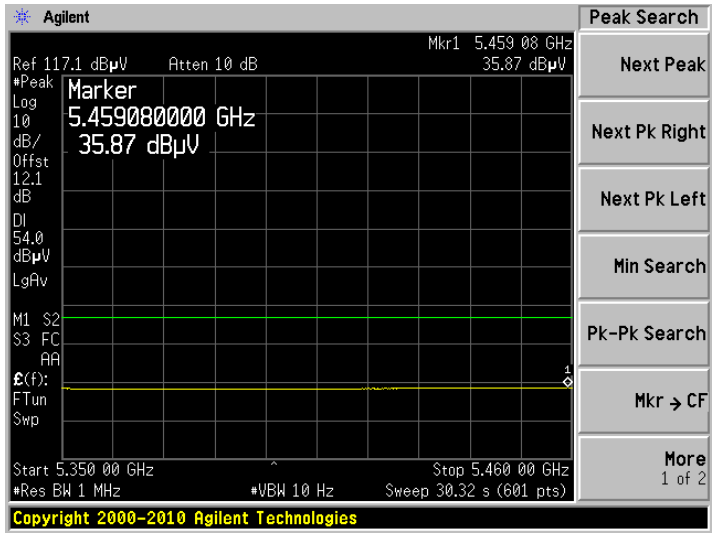
802.11n20, Highest Channel at Horizontal, Average



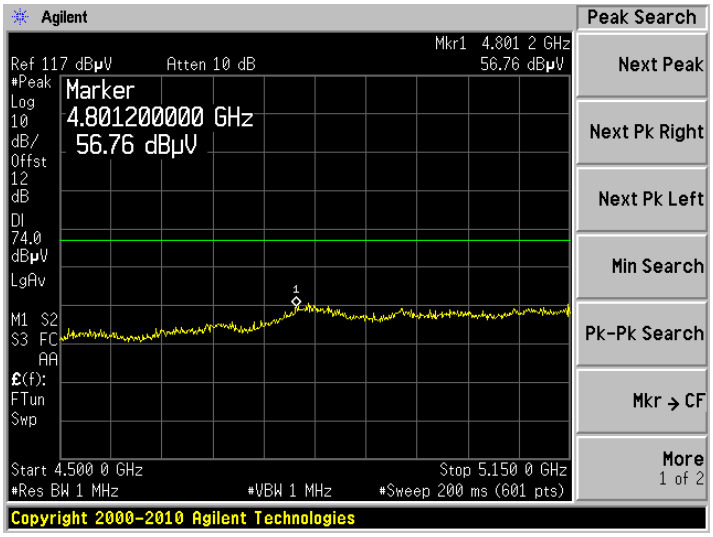
802.11n20, Highest Channel at Vertical, Peak



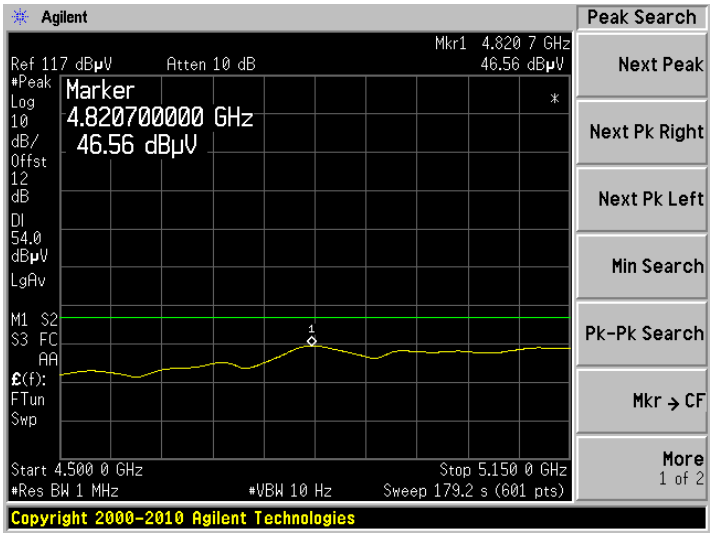
802.11n20, Highest Channel at Vertical, Average



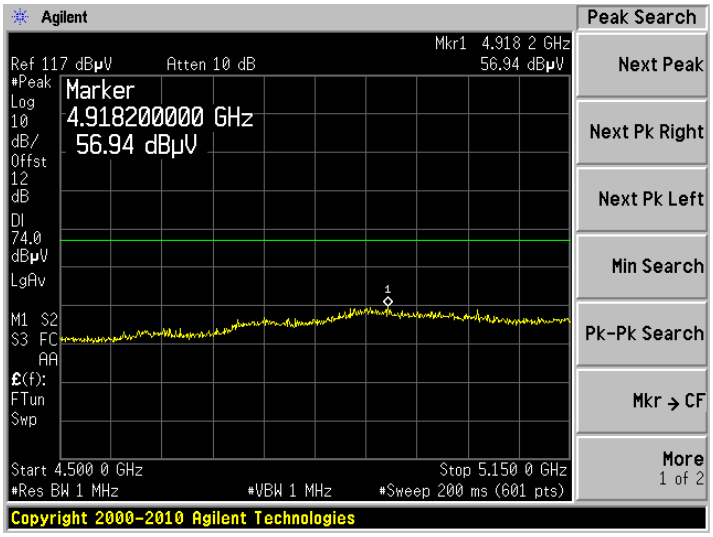
802.11 n40, Lowest Channel at Horizontal, Peak



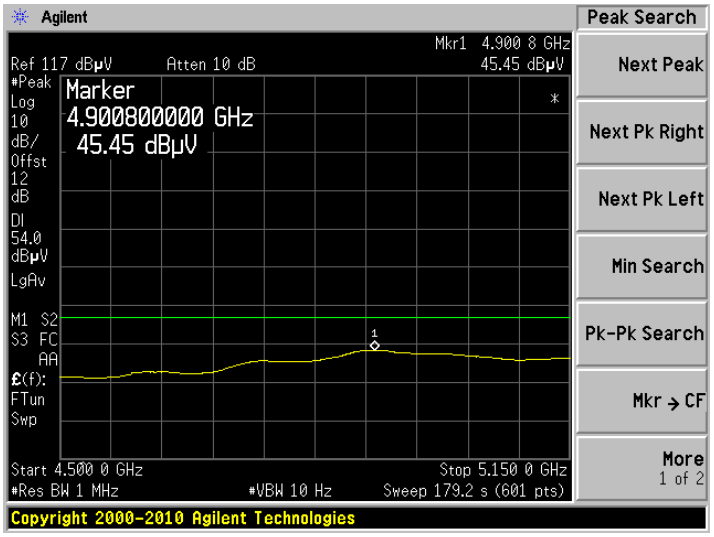
802.11 n40, Lowest Channel at Horizontal, Average



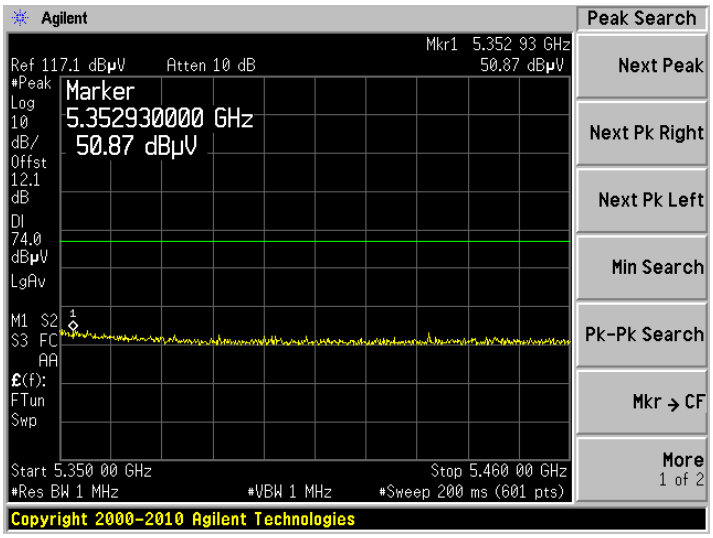
802.11 n40, Lowest Channel at Vertical, Peak



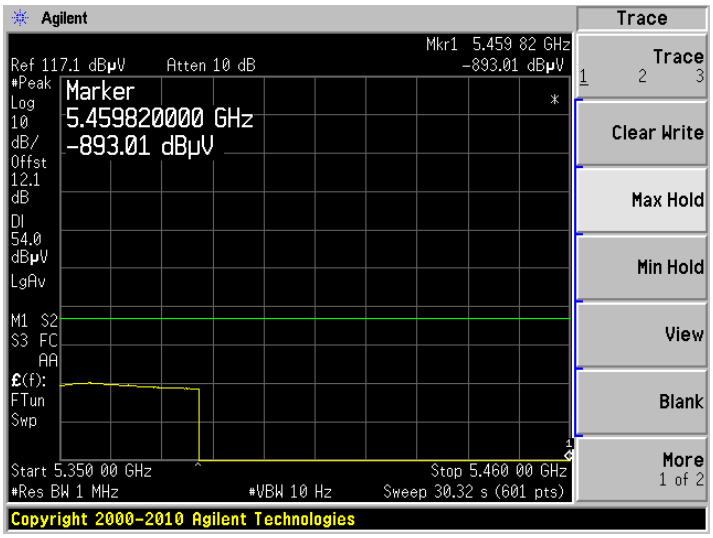
802.11 n40, Lowest Channel at Vertical, Average



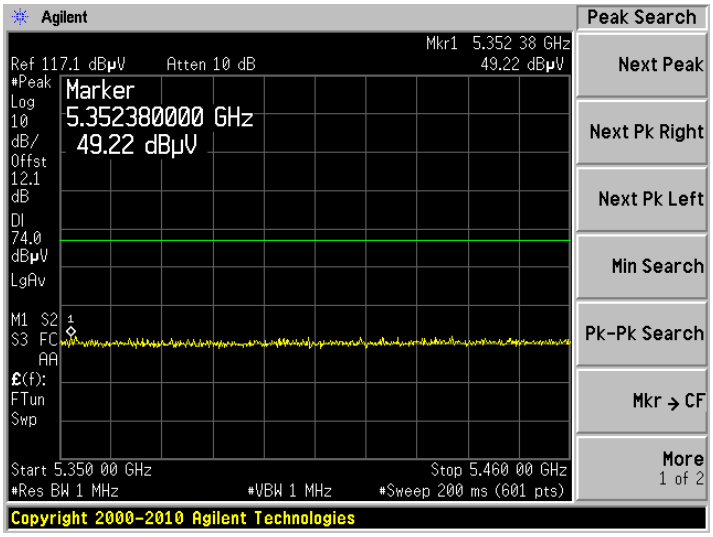
802.11 n40, Highest Channel at Horizontal, Peak



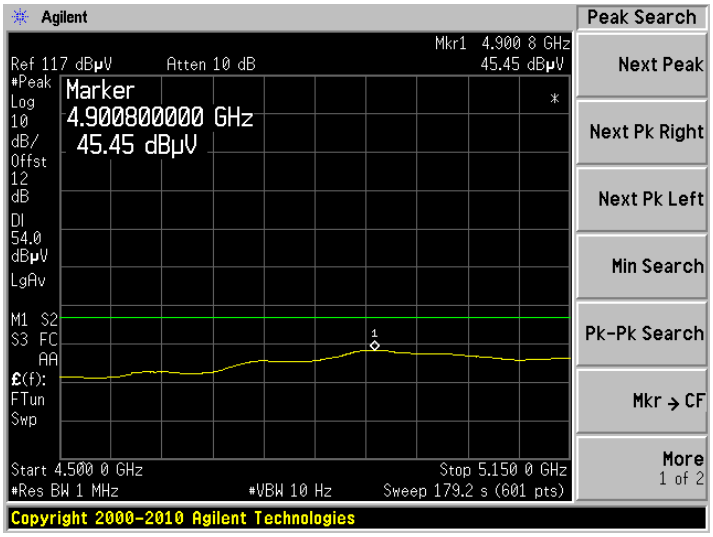
802.11 n40, Highest Channel at Horizontal, Average



802.11 n40, Highest Channel at Vertical, Peak



802.11 n40, Highest Channel at Vertical, Average



5500-5700 MHz Band:

6 dBi External 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											
11000	33.57	350	100	V	39.34	14.55	28	59.46	74	-14.54	Peak
11000	36.06	358	100	H	39.34	14.55	28	61.95	74	-12.05	Peak
11000	16.88	350	100	V	39.34	14.55	28	42.77	54	-11.23	Ave
11000	17.71	358	100	H	39.34	14.55	28	43.6	54	-10.4	Ave
Middle Channel 5600 MHz, measured at 3 meters											
11200	43.18	24	100	V	39.34	14.55	28	69.07	74	-4.93	Peak
11200	43.57	36	100	H	39.34	14.55	28	69.46	74	-4.54	Peak
11200	25.53	24	100	V	39.34	14.55	28	51.42	54	-2.58	Ave
11200	27.01	36	100	H	39.34	14.55	28	52.9	54	-1.1	Ave
High Channel 5700 MHz, measured at 3 meters											
11400	33.31	0	100	V	39.34	14.55	28	59.2	74	-14.8	Peak
11400	32.76	352	100	H	39.34	14.55	28	58.65	74	-15.35	Peak
11400	20.38	0	100	V	39.34	14.55	28	46.27	54	-7.73	Ave
11400	19.42	352	100	H	39.34	14.55	28	45.31	54	-8.69	Ave

6 dBi External Antenna, 802.11n20 Mode

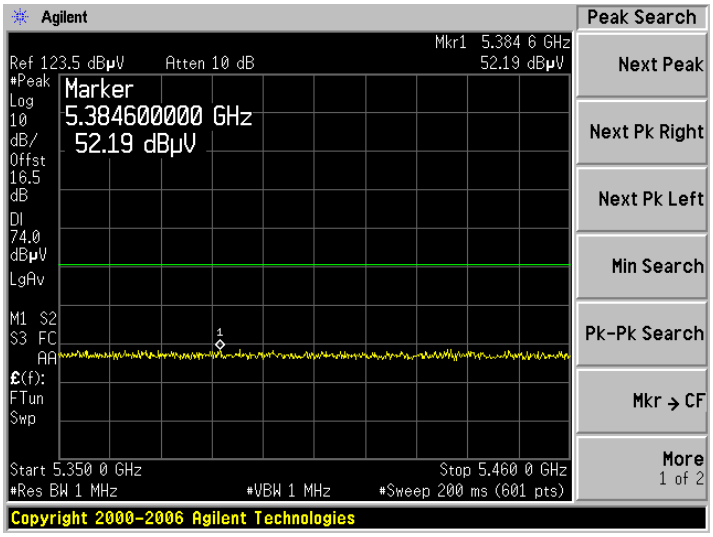
Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5500 MHz, measured at 3 meters											
11000	41.11	321	100	V	39.34	14.55	28	67	74	-7	Peak
11000	41.57	21	100	H	39.34	14.55	28	67.46	74	-6.54	Peak
11000	20.05	321	100	V	39.34	14.55	28	45.94	54	-8.06	Ave
11000	22.01	358	100	H	39.34	14.55	28	47.9	54	-6.1	Ave
Middle Channel 5600 MHz, measured at 3 meters											
11200	45.97	24	100	V	39.34	14.55	28	71.86	74	-2.14	Peak
11200	40.35	36	100	H	39.34	14.55	28	66.24	74	-7.76	Peak
11200	26.83	24	100	V	39.34	14.55	28	52.72	54	-1.28	Ave
11200	26.74	36	100	H	39.34	14.55	28	52.63	54	-1.37	Ave
High Channel 5700 MHz, measured at 3 meters											
11400	35.12	15	100	V	39.34	14.55	28	61.01	74	-12.99	Peak
11400	34.4	343	100	H	39.34	14.55	28	60.29	74	-13.71	Peak
11400	20.16	15	100	V	39.34	14.55	28	46.05	54	-7.95	Ave
11400	21.69	343	100	H	39.34	14.55	28	47.58	54	-6.42	Ave

6 dBi External Antenna, 802.11n40 Mode

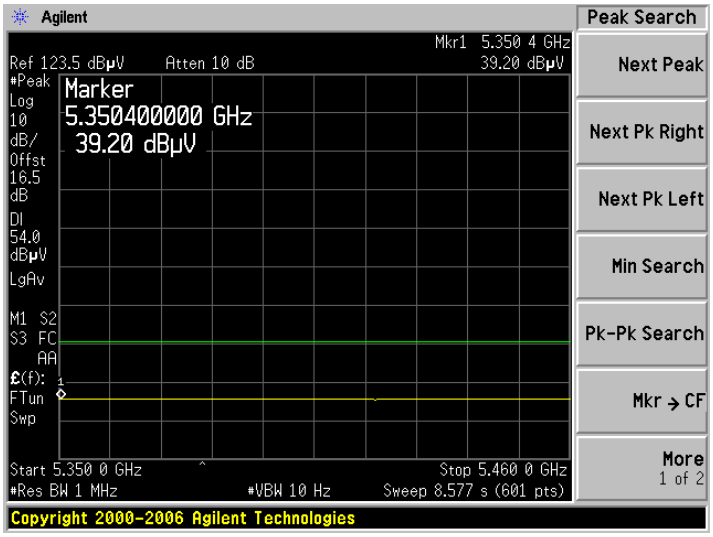
Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5510 MHz, measured at 3 meters											
11020	44.18	21	100	V	39.34	14.55	28	70.07	74	-3.93	Peak
11020	43.69	354	100	H	39.34	14.55	28	69.58	74	-4.42	Peak
11020	25.12	21	100	V	39.34	14.55	28	51.01	54	-2.99	Ave
11020	23.67	354	100	H	39.34	14.55	28	49.56	54	-4.44	Ave
Middle Channel 5590 MHz, measured at 3 meters											
11180	40.69	41	100	V	39.34	14.55	28	66.58	74	-7.42	Peak
11180	42.82	35	100	H	39.34	14.55	28	68.71	74	-5.29	Peak
11180	26.29	41	100	V	39.34	14.55	28	52.18	54	-1.82	Ave
11180	27.24	35	100	H	39.34	14.55	28	53.13	54	-0.87	Ave
High Channel 5670 MHz, measured at 3 meters											
11340	35.12	15	100	V	39.34	14.55	28	61.01	74	-12.99	Peak
11400	34.4	343	100	H	39.34	14.55	28	60.29	74	-13.71	Peak
11400	20.16	15	100	V	39.34	14.55	28	46.05	54	-7.95	Ave
11400	21.69	343	100	H	39.34	14.55	28	47.58	54	-6.42	Ave

Restricted Band Emissions

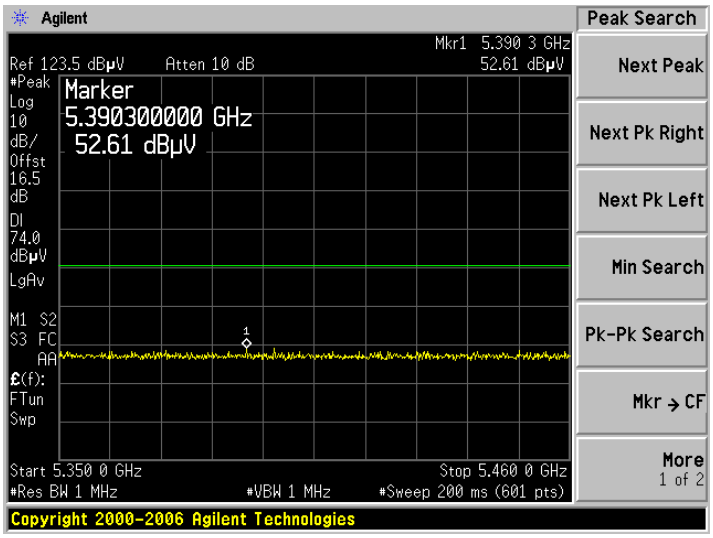
802.11a, Lowest Channel at Horizontal, Peak



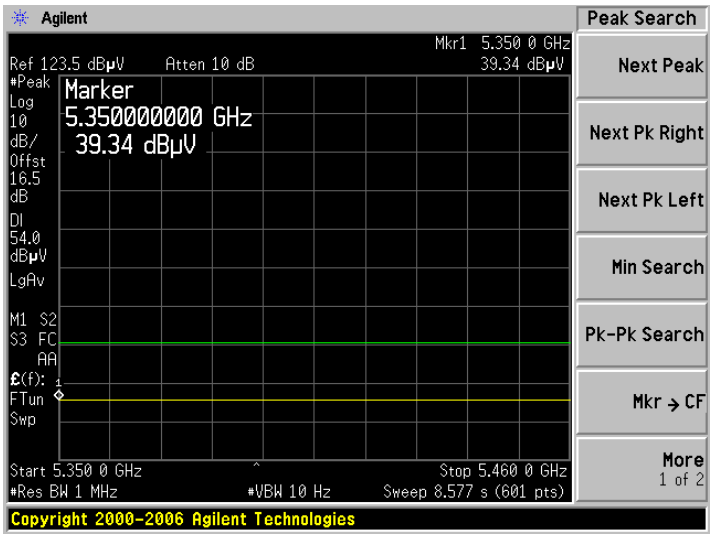
802.11a, Lowest Channel at Horizontal, Average



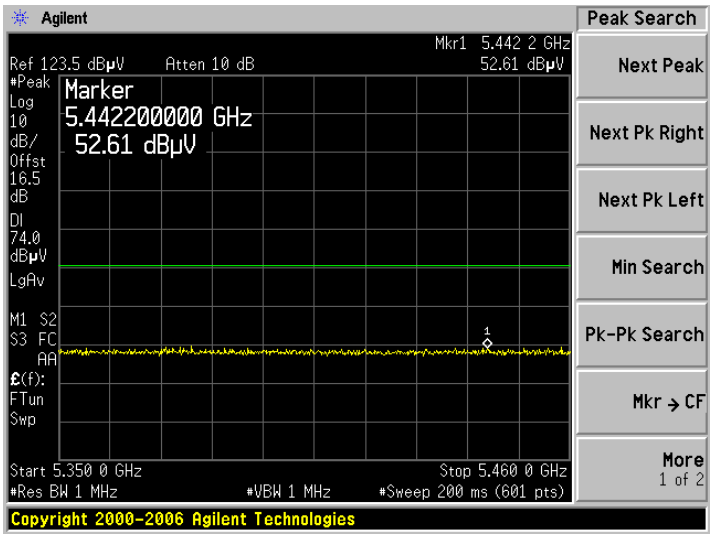
802.11a, Lowest Channel at Vertical, Peak



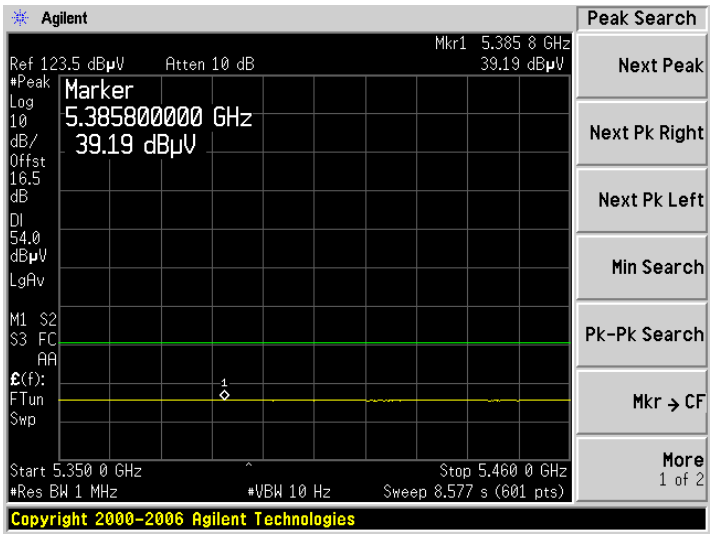
802.11a, Lowest Channel at Vertical, Average



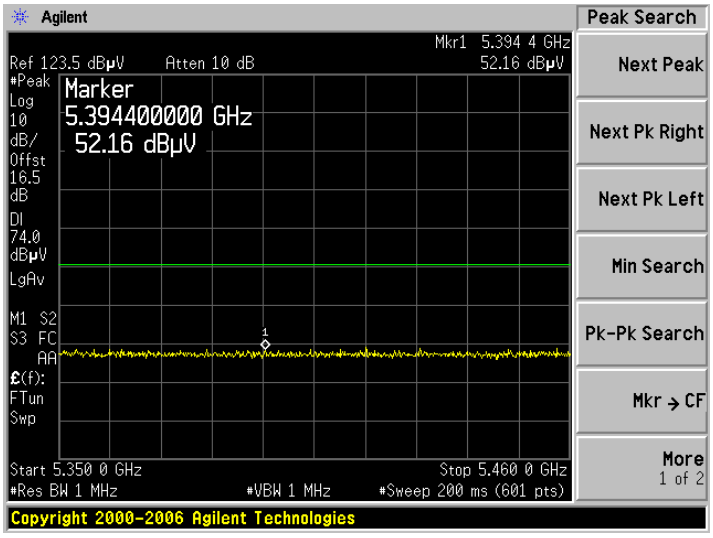
802.11 n20, Lowest Channel at Horizontal, Peak



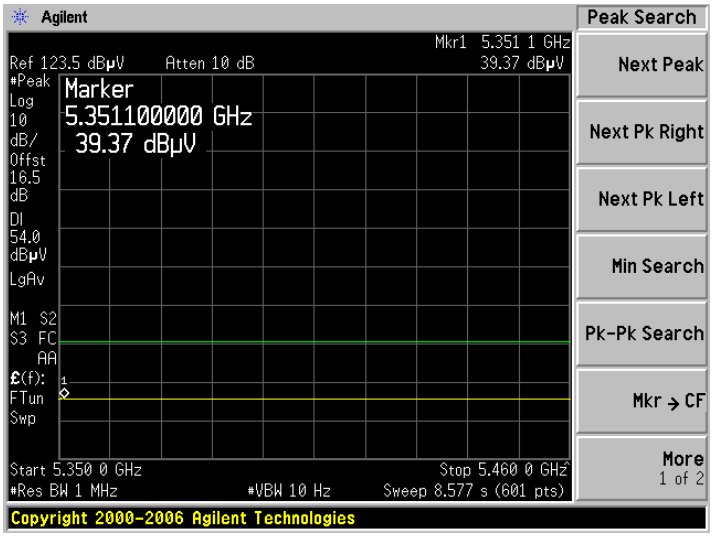
802.11n20, Lowest Channel at Horizontal, Average



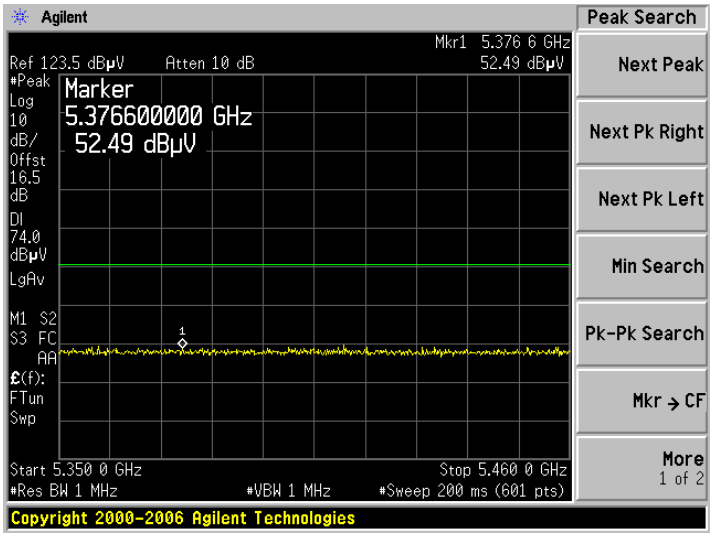
802.11n20, Lowest Channel at Vertical, Peak



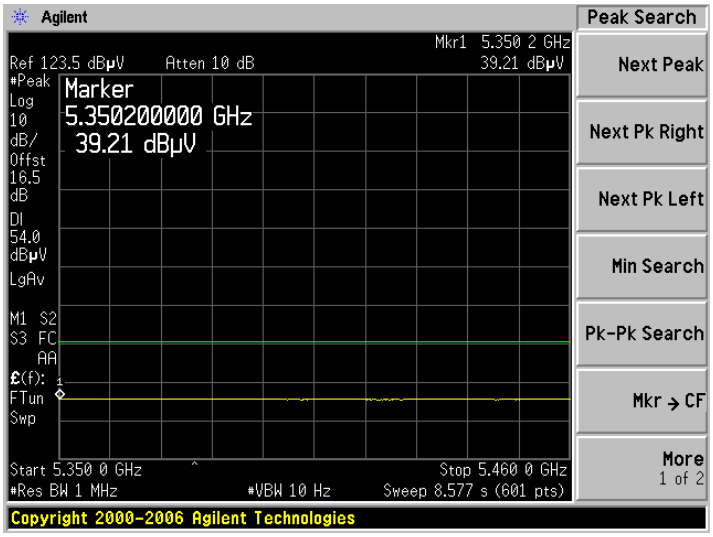
802.11n20, Lowest Channel at Vertical, Average



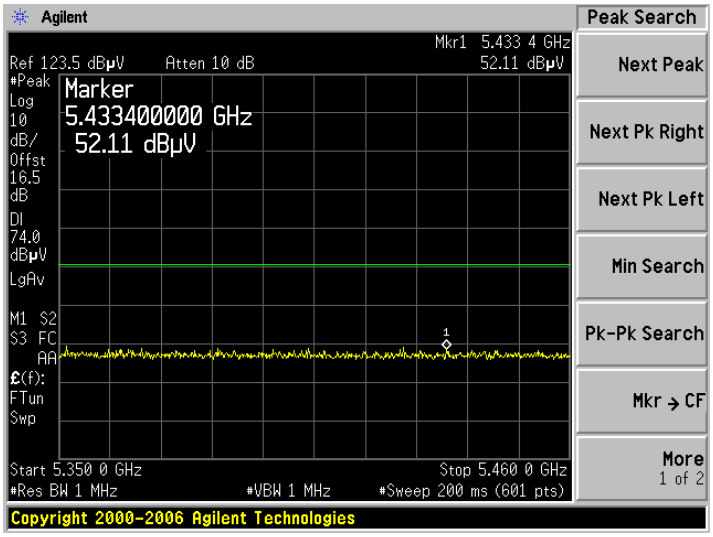
802.11 n40, Lowest Channel at Horizontal, Peak



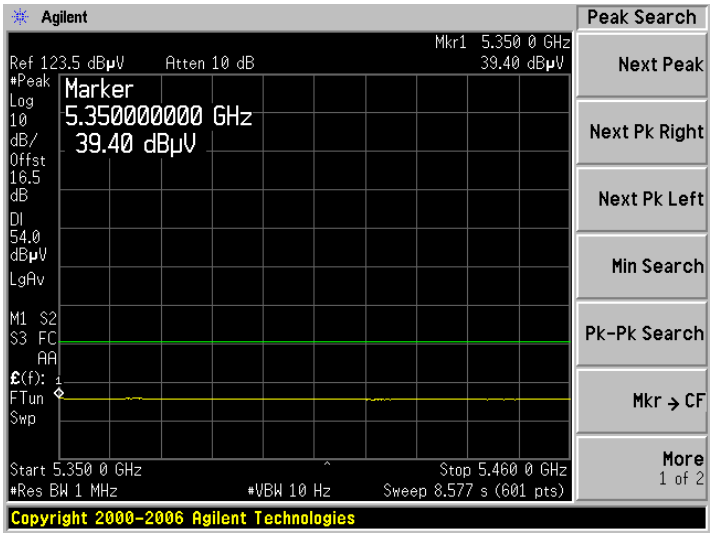
802.11 n40, Lowest Channel at Horizontal, Average



802.11 n40, Lowest Channel at Vertical, Peak



802.11 n40, Lowest Channel at Vertical, Average



23 dBi External Antenna, 802.11a Mode

Frequency (MHz)	S.A. Reading (dBµV)	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											
-	-	-	-	-	-	-	-	-	-	-	-[1]
Middle Channel 5600 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]
High Channel 5700 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]

[1]all emissions are below the noise floor and/or 20 dB under the limit.

23 dBi External Antenna, 802.11n20 Mode

Frequency (MHz)	S.A. Reading (dBµV)	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											
-	-	-	-	-	-	-	-	-	-	-	-[1]
Middle Channel 5600 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]
High Channel 5700 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]

[1]all emissions are below the noise floor and/or 20 dB under the limit.

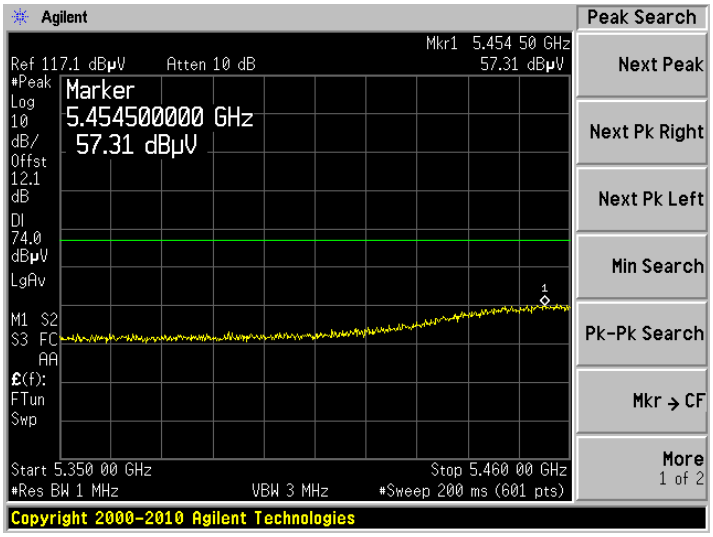
23 dBi External Antenna, 802.11n40 Mode

Frequency (MHz)	S.A. Reading (dBµV)	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											
-	-	-	-	-	-	-	-	-	-	-	-[1]
Middle Channel 5590 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]
High Channel 5670 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]

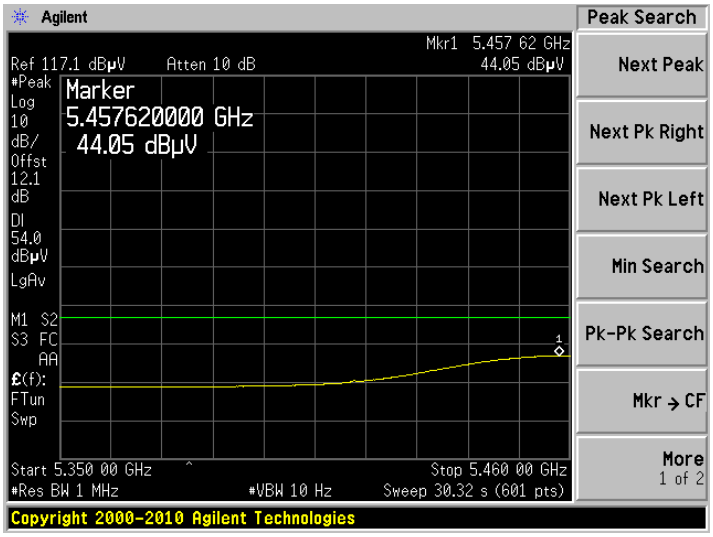
[1]all emissions are below the noise floor and/or 20 dB under the limit.

Restricted Band Emissions:

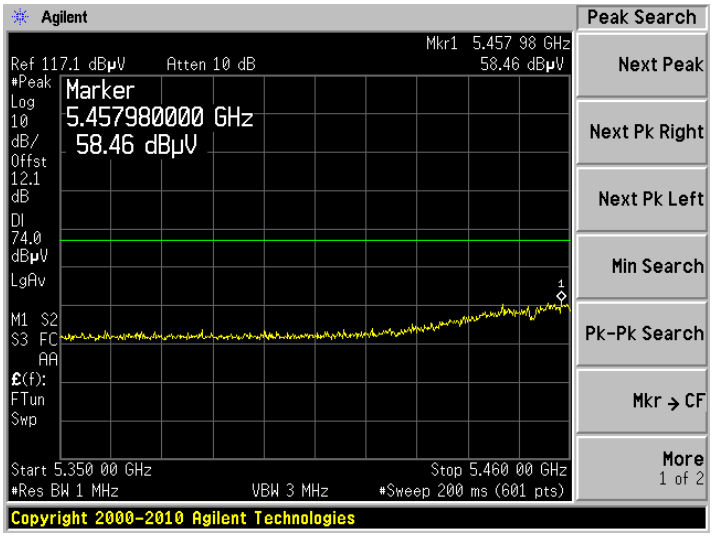
802.11a, Lowest Channel at Horizontal, Peak



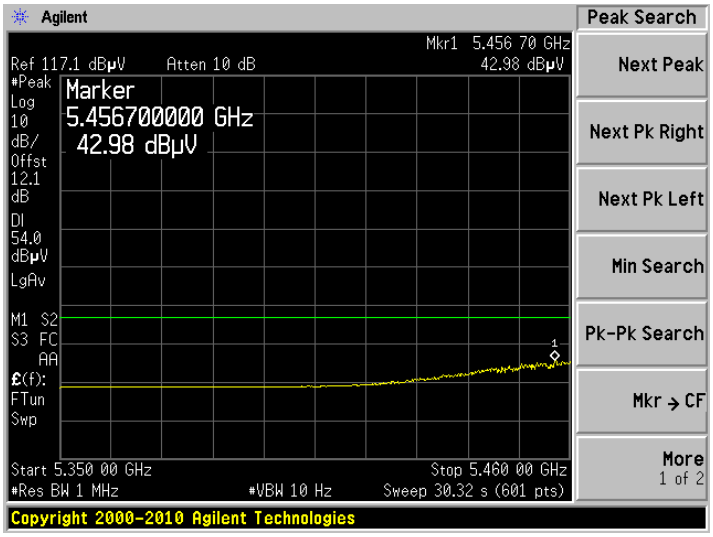
802.11a, Lowest Channel at Horizontal, Average



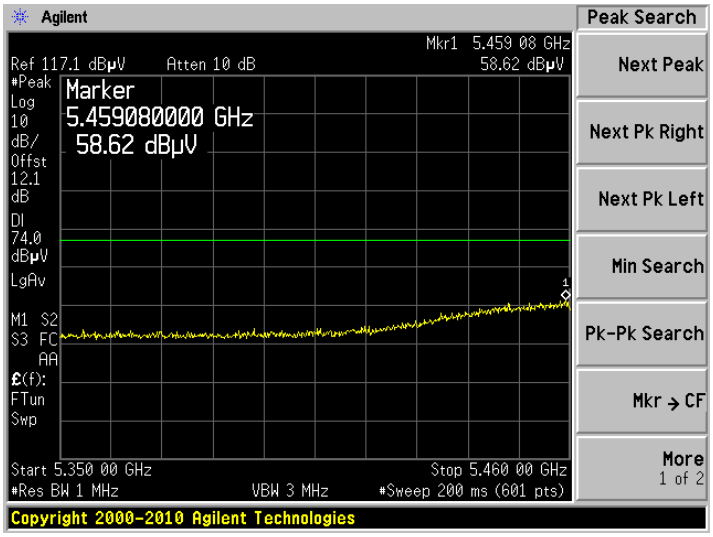
802.11a, Lowest Channel at Vertical, Peak



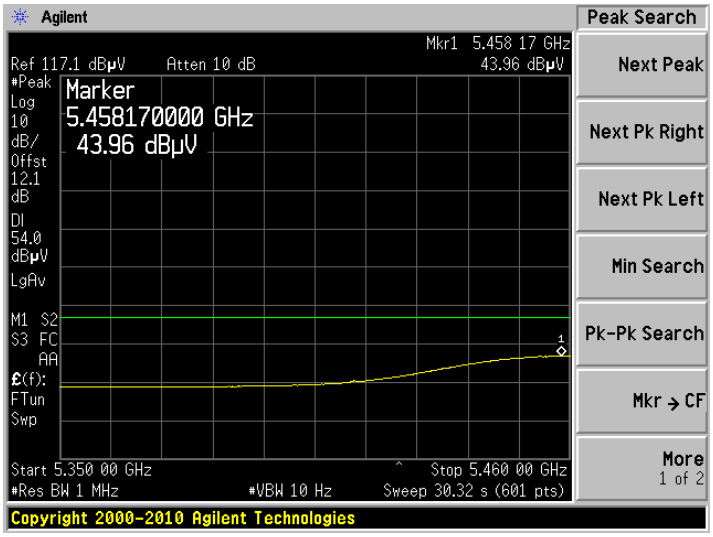
802.11a, Lowest Channel at Vertical, Average



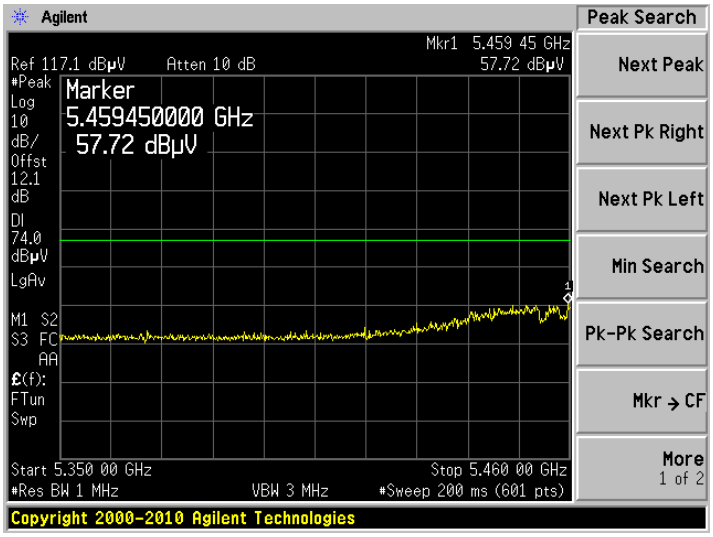
802.11 n20, Lowest Channel at Horizontal, Peak



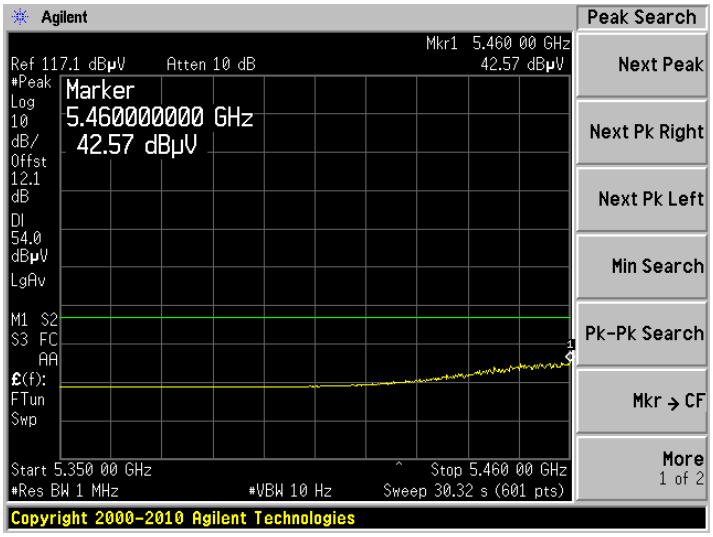
802.11n20, Lowest Channel at Horizontal, Average



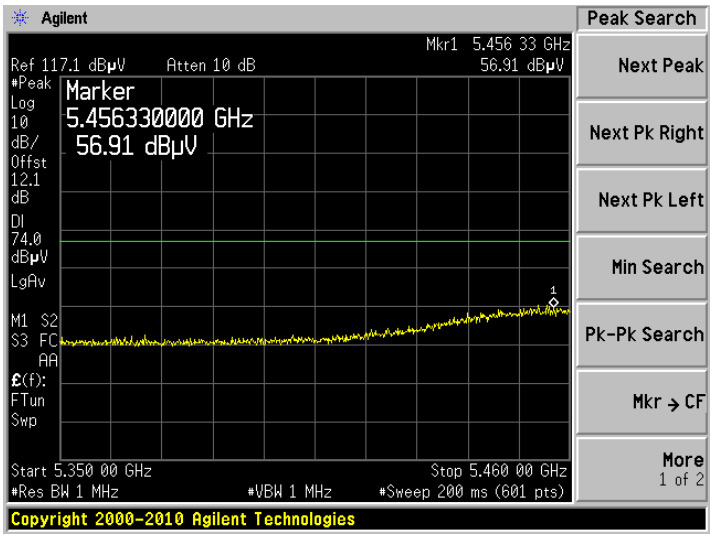
802.11n20, Lowest Channel at Vertical, Peak



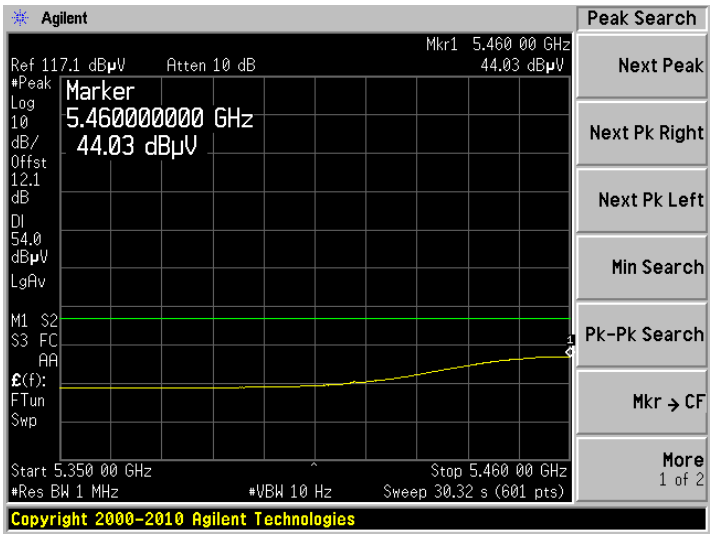
802.11n20, Lowest Channel at Vertical, Average



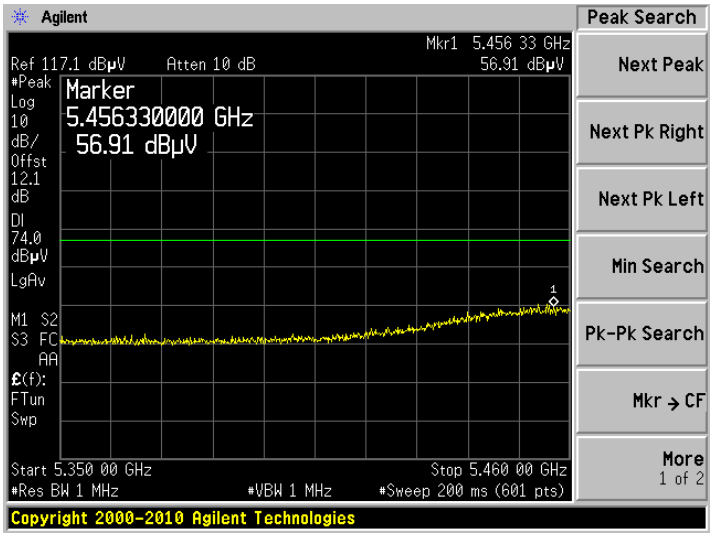
802.11 n40, Lowest Channel at Horizontal, Peak



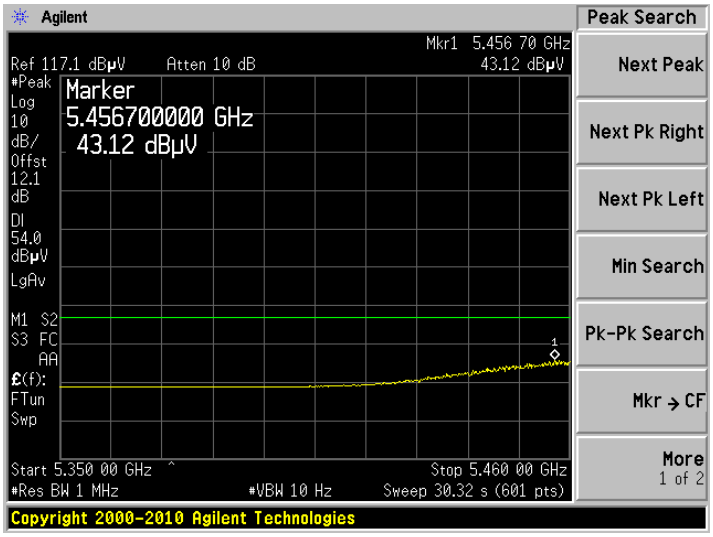
802.11 n40, Lowest Channel at Horizontal, Average



802.11 n40, Lowest Channel at Vertical, Peak



802.11 n40, Lowest Channel at Vertical, Average



9 FCC §407(a) & RSS-210 – 99% & 26 dB Emission Bandwidth

9.1 Applicable Standard

FCC §15.407(a) and RSS-210 A9.2.

9.2 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.

9.3 Test Results

Please refer to IC report with IC: 3616C-ZF7762.

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

10.1 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.

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

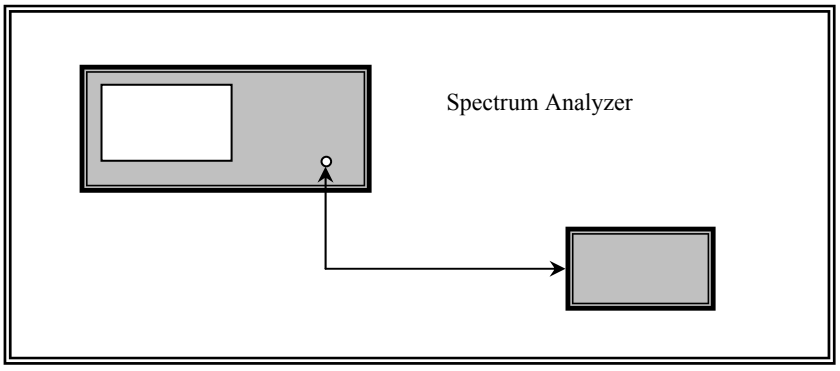
According to IC RSS-210 §9.2:

(1) For the band 5150-5250 MHz, the maximum equivalent isotropically radiated power (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.

(2) For the bands 5250-5350 MHz and 5470-5725 MHz, the maximum conducted output power shall not exceed 250 mW or 11 + 10 log10 B, dBm, whichever power is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

10.2 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.



10.3 Test Equipment Lists and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Agilent	Spectrum Analyzer	E4440A	MY44303352	2010-05-09

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

10.4 Test Environmental Conditions

Temperature:	18~21 °C
Relative Humidity:	30~35 %
ATM Pressure:	101.2-102.2kPa

The testing was performed by Kevin Li from 2010-09-17 to 2010-09-21.

10.5 Power Verification Result

6 dBi Antenna:

Frequency (MHz)/BW	Fixed Limit (dBm)	Antenna Gain (dBi)	Antenna Gain different (dB)	Limit (dBm)
5250-5350	24	6	0	24
5500-5700	24	6	0	24

Mode	Frequency (MHz)	Chain 1 (dBm)	Chain 2 (dBm)	Highest Power (dBm)	Limit (dBm)
802.11 a (20 MHz)	5260	18.68	18.66	18.68	24
	5300	18.70	18.56	18.70	24
	5320	18.53	18.73	18.73	24
	5500	18.68	18.64	18.68	24
	5600	18.63	18.68	18.68	24
	5700	18.67	18.70	18.70	24

Mode	Frequency (MHz)	Chain 1 (dBm)	Chain 2 (dBm)	Total Power (dBm)	Limit (dBm)
802.11n (20 MHz)	5260	18.59	18.64	21.63	24
	5300	18.61	18.68	21.66	24
	5320	18.65	18.63	21.65	24
	5500	18.66	18.61	21.65	24
	5600	18.70	18.64	21.68	24
	5700	18.62	18.70	21.67	24

Mode	Frequency (MHz)	Chain 1 (dBm)	Chain 2 (dBm)	Total Power (dBm)	Limit (dBm)
802.11n (40 MHz)	5270	18.56	18.59	21.59	24
	5310	18.63	18.60	21.63	24
	5510	18.61	18.55	21.59	24
	5590	18.69	18.61	21.66	24
	5670	18.73	18.64	21.70	24

23 dBi Antenna:

Frequency (MHz)/BW	Fixed Limit (dBm)	Antenna Gain (dBi)	Antenna Gain different (dB)	Limit (dBm)
5250-5350	24	23	17	7
5500-5700	24	23	17	7

Mode	Frequency (MHz)	Chain 1 (dBm)	Chain 2 (dBm)	Highest Power (dBm)	Limit (dBm)
802.11 a (20 MHz)	5260	2.78	2.76	2.78	7
	5300	2.69	2.73	2.73	7
	5320	2.85	2.69	2.85	7
	5500	2.74	2.69	2.74	7
	5600	2.75	2.71	2.75	7
	5700	2.81	2.76	2.81	7

Mode	Frequency (MHz)	Chain 1 (dBm)	Chain 2 (dBm)	Total Power (dBm)	Limit (dBm)
802.11n (20 MHz)	2.73	2.71	5.73	7	2.73
	2.67	2.68	5.69	7	2.67
	2.73	2.65	5.70	7	2.73
	2.81	2.69	5.76	7	2.81
	2.78	2.63	5.72	7	2.78
	2.75	2.64	5.71	7	2.75

Mode	Frequency (MHz)	Chain 1 (dBm)	Chain 2 (dBm)	Total Power (dBm)	Limit (dBm)
802.11n (40 MHz)	5270	2.72	2.61	5.68	7
	5310	2.68	2.59	5.65	7
	5510	2.64	2.65	5.66	7
	5590	2.71	2.62	5.68	7
	5670	2.69	2.59	5.65	7

11 FCC §15.407(b) & IC RSS-210 §A9.3 - 100 kHz Bandwidth of Band Edges

11.1 Applicable Standard

According to FCC §15.407(b) and IC RSS-210 §A9.3, 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.

11.2 Test Results

Please refer to IC report with IC: 3616C-ZF7762

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

12.1 Applicable Standard

FCC §15.407(a)(1) and IC RSS-210 §9.2

12.2 Test Results

Please refer to IC report with IC: 3616C-ZF7762

13 IC RSS-210 §2.6 & 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-210 §2.6, Tables 2 and 3 show the general field strength limits of unwanted emissions, where applicable, for transmitters and receivers operating in accordance with the provisions specified in this RSS. Transmitters whose wanted emissions are also within the limits shown in Tables 2 and 3 may operate in any of the frequency bands of Tables 2 and 3, other than the restricted bands of Table 1 and the TV bands, and shall be certified under RSS-210.

Table 2: General Field Strength Limits for Transmitters and Receivers at Frequencies above 30 MHz **(Note)**

Frequency (MHz)	Field Strength Microvolts/m at 3 meters (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Note: Transmitting devices are not permitted in Table 1 bands or in TV bands (54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz, and 614-806 MHz). Prohibition of operation in TV bands does not apply to momentary devices, or to medical telemetry devices in the band 174-216 MHz, and to perimeter protection systems in the bands 54-72 and 76-88 MHz. The perimeter protection devices are to meet Table 3 field strengths limits.

Table 3: General Field Strength Limits for Transmitters at Frequencies below 30 MHz (Transmit)

Frequency (fundamental or spurious)	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/377F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/377F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Note: The emission limits for the bands 9-90 kHz and 110-490 kHz are based on measurements employing an average detector.

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 PK/QP for frequency below 1000 MHz and PK/Average for frequency above 1000 MHz.

13.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corrected Amplitude = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with 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	Serial Number	Calibration Date
Hewlett Packard	Pre amplifier	8447D	2944A06639	2010-06-18
Sunol Science Corp	Combination Antenna	JB3	A0020106-3	2010-06-16
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2010-03-24
Sunol Science Corp	System Controller	SC99V	122303-1	N/R
A.R.A Inc	Horn antenna	DRG-1181A	1132	2009-10-27
Agilent	Spectrum Analyzer	E4440A	MY44303352	2010-05-09
HP	Pre Amplifier	8449B	3147A00400	2010-02-01

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

13.6 Test Environmental Conditions

Temperature:	18~21 °C
Relative Humidity:	30~35 %
ATM Pressure:	101.2-102.2kPa

The testing was performed by Kevin Li from 2010-09-17 to 2010-09-21.

13.7 Summary of Test Results

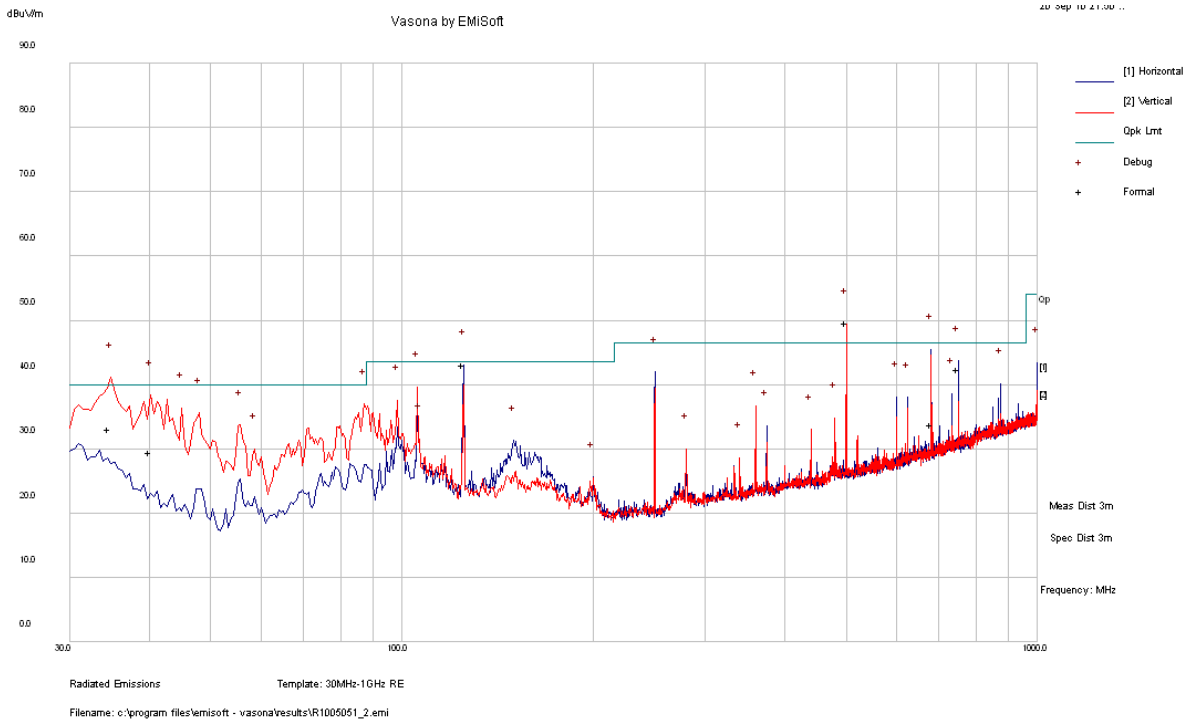
According to the test data,, the EUT complied with the with the RSS-210/RSS-Gen, with the closest margins from the limit listed below:

30-1000 MHz:

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-0.35	124.994	Horizontal	30 to 1000

30 MHz -1GHz, Radiated Emission at 3 meters

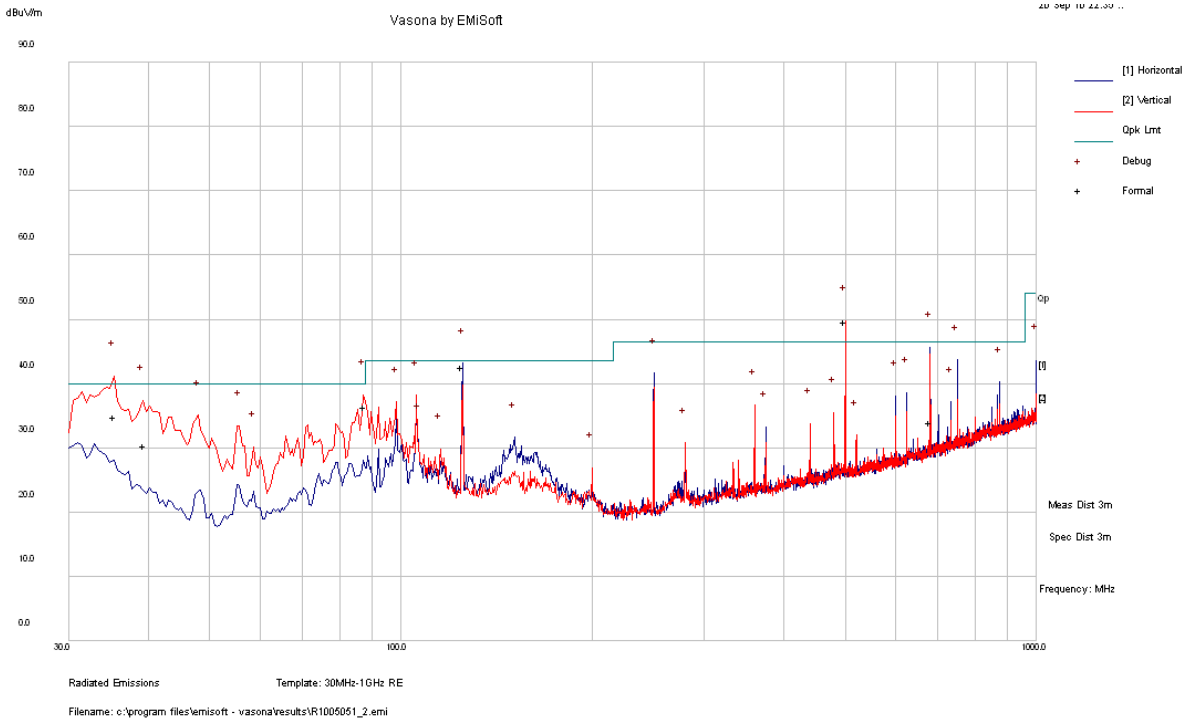
20 MHz (5300 MHz)



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
500.0003	45.69	100	V	13	46	-0.31
34.60225	33.08	201	V	313	40	-6.92
124.994	43.15	255	H	251	43.5	-0.35
680.1363	33.83	100	H	148	46	-12.17
40.14675	29.56	135	V	359	40	-10.44
750.0008	42.48	100	H	345	46	-3.52

40 MHz (5190 MHz)



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
499.994	45.67	100	V	8	46	-0.33
35.346	34.82	100	V	55	40	-5.18
124.9803	42.54	254	H	251	43.5	-0.96
680.137	33.92	118	H	146	46	-12.08
87.47775	36.37	100	V	221	40	-3.63
39.46375	30.42	137	V	17	40	-9.58

Above 1 GHz:

5250-5350 MHz Band, 20 MHz Mode

Frequency (MHz)	S.A. Reading (dBµV)	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											
-	-	-	-	-	-	-	-	-	-	-	-[1]
Middle Channel 5300 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]
High Channel 5320 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]

5500-5700 MHz Band, 20 MHz Mode:

Frequency (MHz)	S.A. Reading (dBµV)	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											
-	-	-	-	-	-	-	-	-	-	-	-[1]
Middle Channel 5600 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]
High Channel 5700 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]

5250-5350 MHz Band, 40 MHz Mode

Frequency (MHz)	S.A. Reading (dBµV)	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											
-	-	-	-	-	-	-	-	-	-	-	-[1]
-	-	-	-	-	-	-	-	-	-	-	-[1]
High Channel 5310 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]

5500-5700 MHz Band, 40 MHz Mode:

Frequency (MHz)	S.A. Reading (dBµV)	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											
-	-	-	-	-	-	-	-	-	-	-	-[1]
Middle Channel 5590 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]
High Channel 5670 MHz, measured at 3 meters											
-	-	-	-	-	-	-	-	-	-	-	-[1]

* All the Restricted Band Frequencies are more than 20 dB below the margin

14 Exhibit A - FCC & IC Equipment Labeling Requirements

14.1 FCC ID Label Requirements

As per FCC §2.925,

(a) Each equipment covered in an application for equipment authorization shall bear a nameplate or label listing the following:

(1) FCC Identifier consisting of the two elements in the exact order specified in §2.926. The FCC Identifier shall be preceded by the term FCC ID in capital letters on a single line, and shall be of a type size large enough to be legible without the aid of magnification.

Example: FCC ID: XXX123

Where: XXX—Grantee Code, 123—Equipment Product Code

As per FCC §15.19,

(a) In addition to the requirements in part 2 of this chapter, a device subject to certification, or verification shall be labeled as follows:

(3) All other devices shall bear the following statement in a conspicuous location on the device:
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

(4) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified above is required to be affixed only to the main control unit. If the EUT is integrated within another device then a label affixed to the host shall also state, “Contains FCC ID: XXXXXX”

(5) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (a) of this section on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

14.2 IC Label Requirements

As per IC RSS-Gen § 5, the certification number shall appear as follows:

IC: XXXXXX-YYYYYYYY

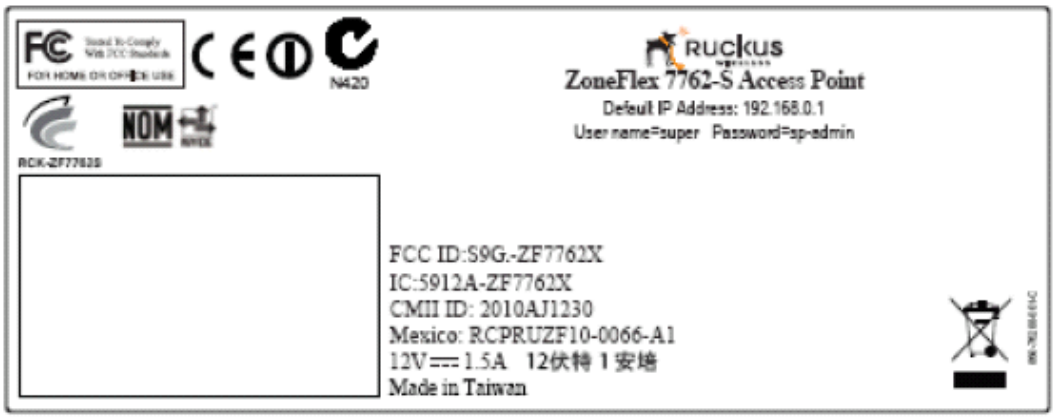
Where:

- "XXXXXX-YYYYYYYY" is the certification number
- "XXXXXX" is the Certificate Holder Number (CHN), made of at most 6 alphanumeric characters (A-Z, 0-9), assigned by Industry Canada; and
- "YYYYYYYY" is the Unique Product Number (UPN), made of at most 11 alphanumeric characters (A-Z, 0-9) assigned by the applicant.
- Note 1: The term "IC" before the equipment certification number only signifies that the Industry Canada technical specifications were met.
- Note 2: Note 1 shall be conspicuously placed in the equipment user manual.
- Note 3: Permitted alphanumeric characters used in the CHN and UPN are limited to capital letters (A-Z) and digits (0-9). Other characters, such as "#", "/" or "-", shall not be used.

As per RSS-Gen §5.2 Equipment Labeling:

Equipment subject to certification under the applicable RSS, shall be permanently labeled on each item, or as an inseparable combination. The label must contain the following information for full compliance:
(a) the certification number, prefixed by the term “IC:”;
(b) the manufacturer's name, trade name or brand name; and
(c) a model name or number.
Equipment for which a certificate has been issued is not considered certified if it is not properly labeled.
The information on the Canadian label can be combined with the manufacturer’s other labeling requirements.
If the device size is too small to put a label, the label can be included in the user’s manual, upon agreement with Industry Canada.

14.3 FCC ID & IC Label Contents

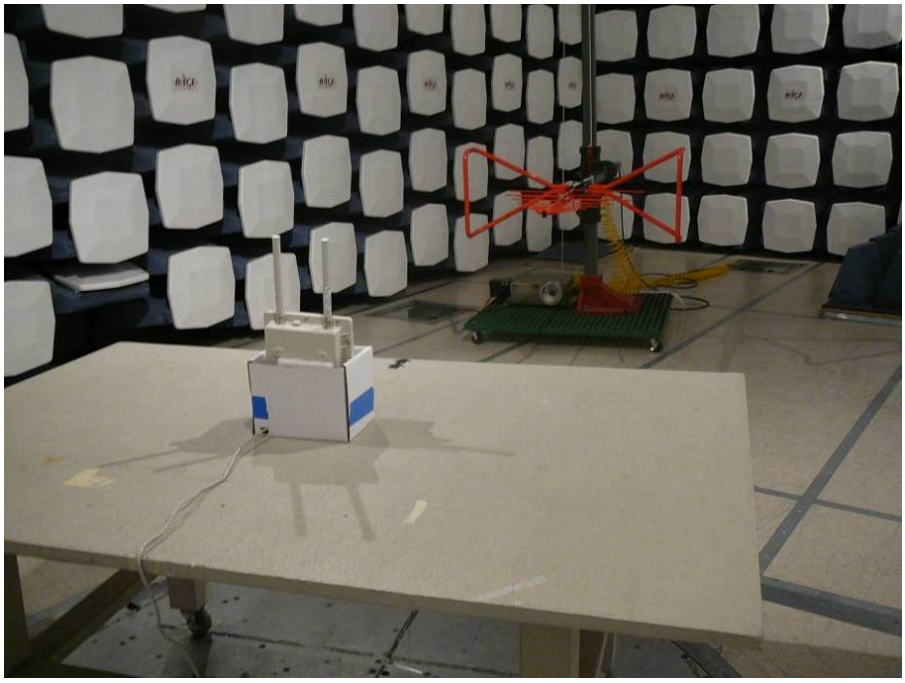


14.4 FCC ID & IC Label Location

15 Exhibit B - Test Setup Photographs

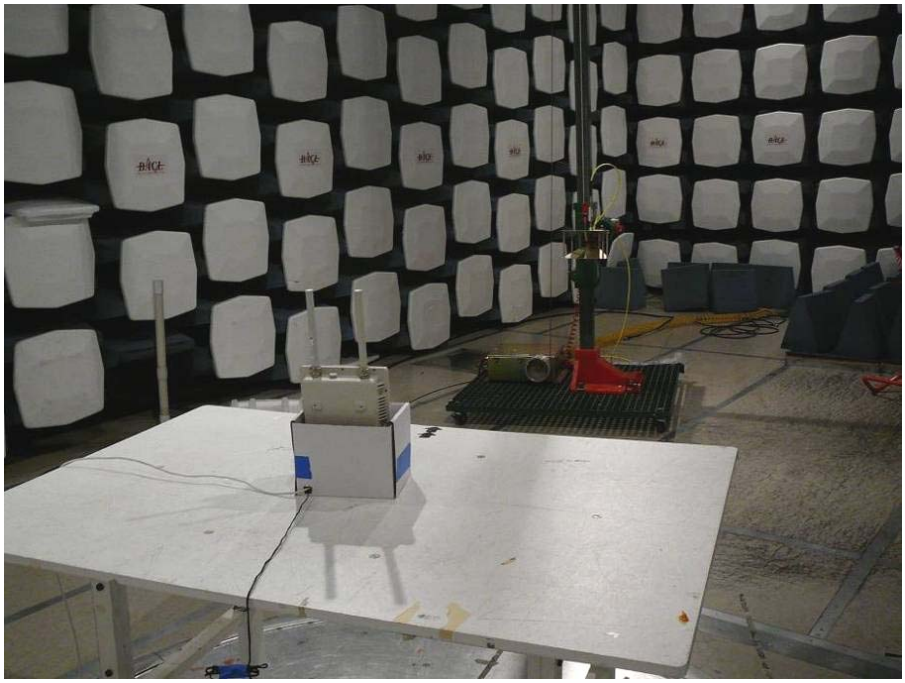
15.1 Radiated Emission below 1 GHz Front View (6 dBi Antenna)

15.2 Radiated Emission below 1 GHz Rear View (6 dBi Antenna)

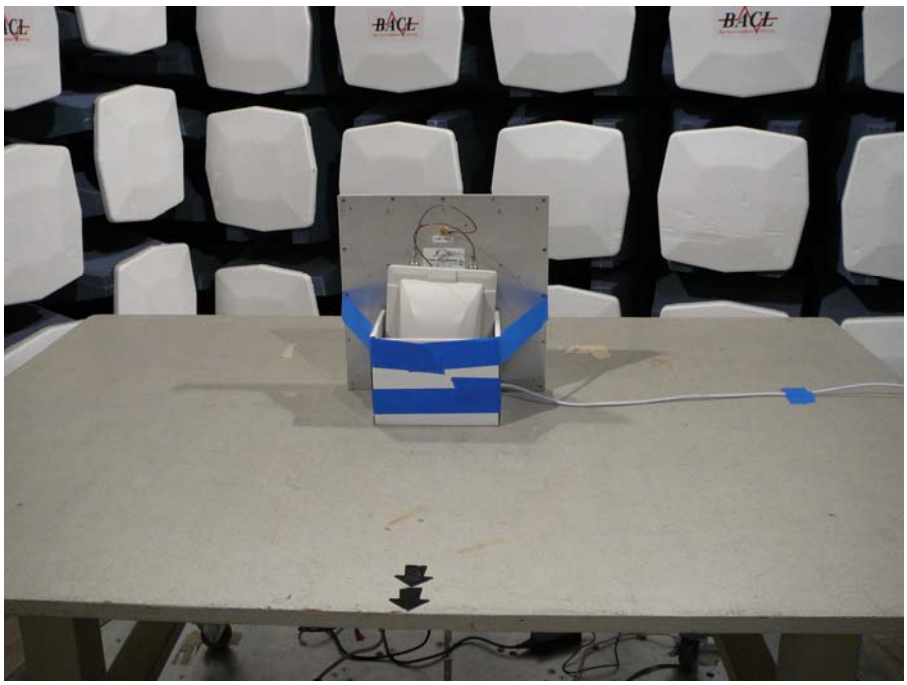


15.3 Radiated Emission above 1 GHz Front View (6 dBi Antenna)

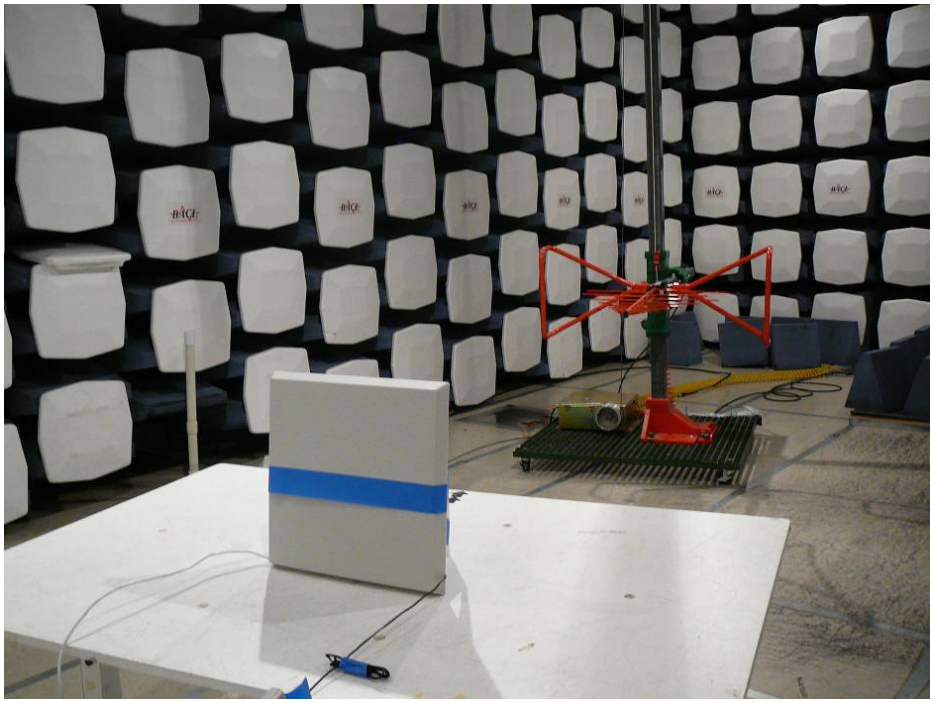
15.4 Radiated Emission above 1 GHz Rear View (6dBi Antenna)



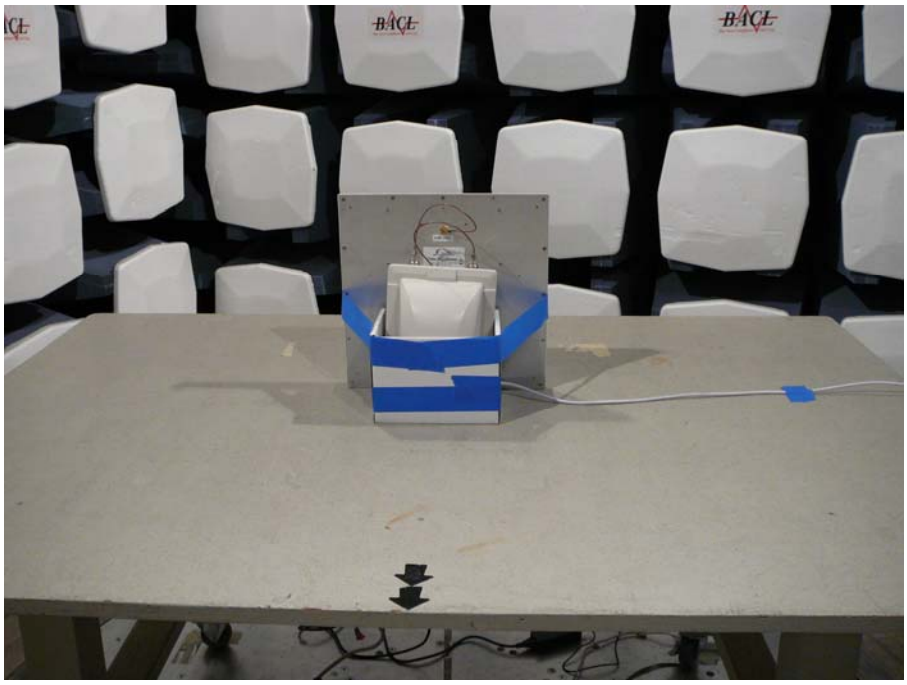
15.5 Radiated Emission below 1 GHz Front View (23 dBi Antenna)



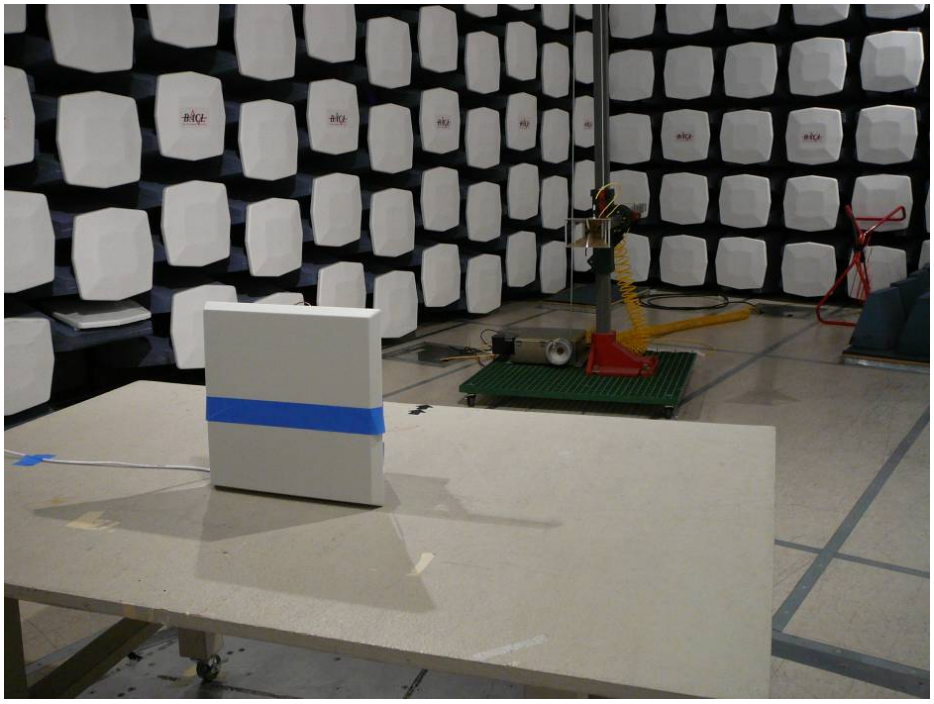
15.6 Radiated Emission below 1 GHz Rear View (23 dBi Antenna)



15.7 Radiated Emission above 1 GHz Front View (23 dBi Antenna)

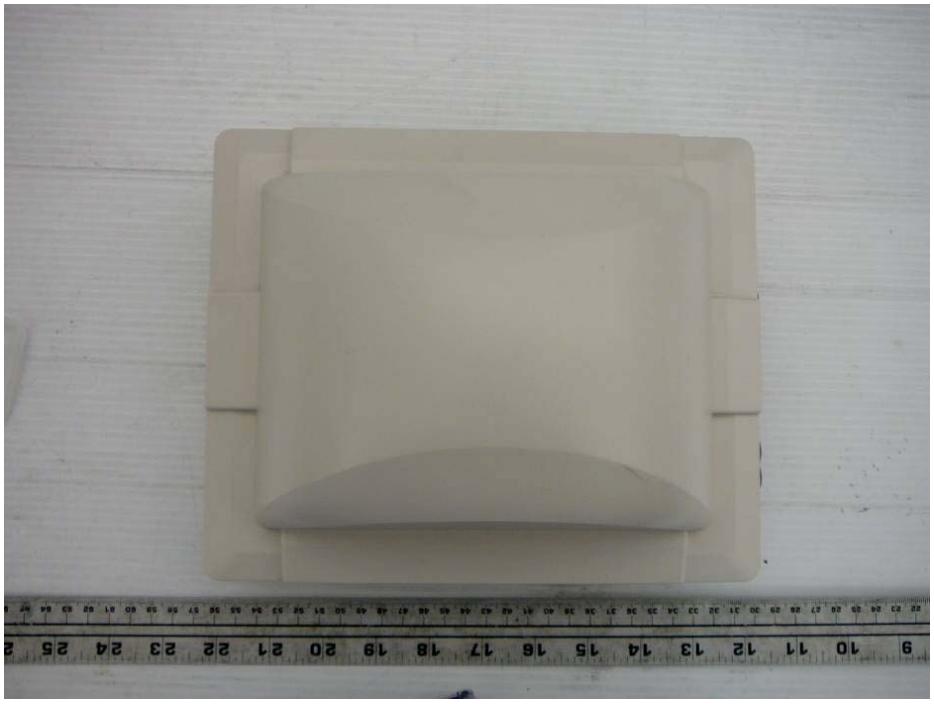


15.8 Radiated Emission above 1 GHz Rear View (23 dBi Antenna)



16 Exhibit C - EUT Photographs

16.1 EUT – Top View



16.2 EUT-Bottom View

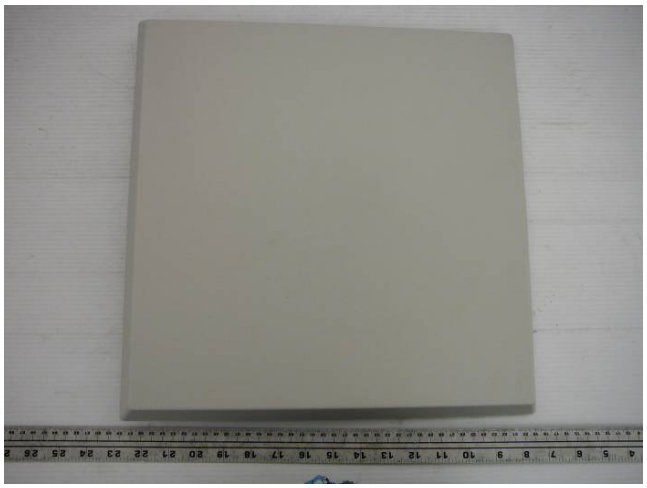
16.3 EUT-Port View

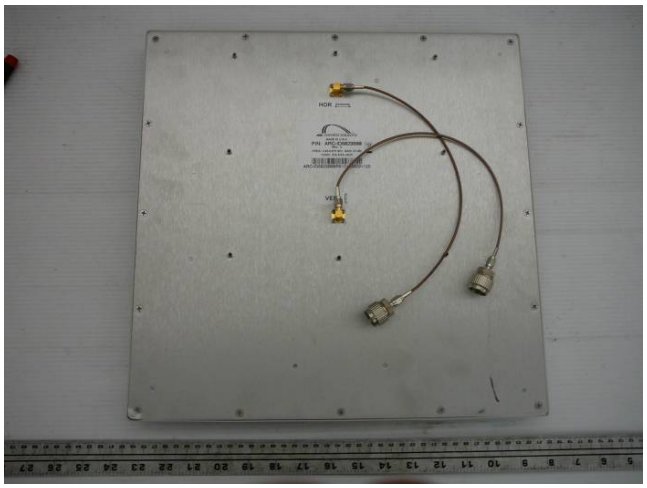
16.4 EUT-Antenna Port View

16.5 EUT – 6 dBi External Antenna

16.6 EUT – 16 dBi External Antenna View

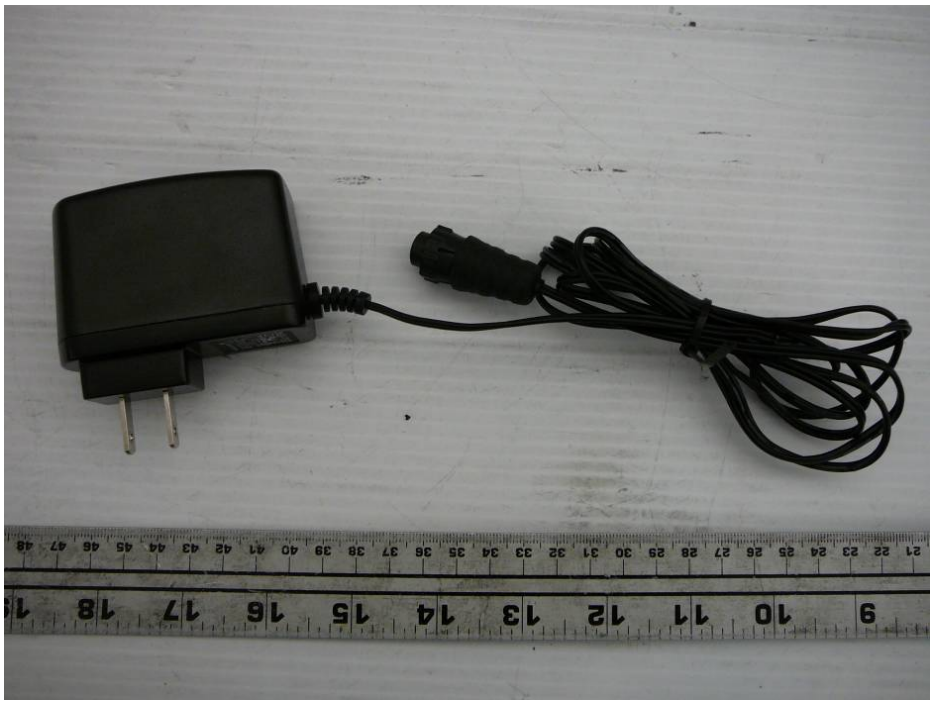
16.7 EUT – 23 dBi External Antenna View



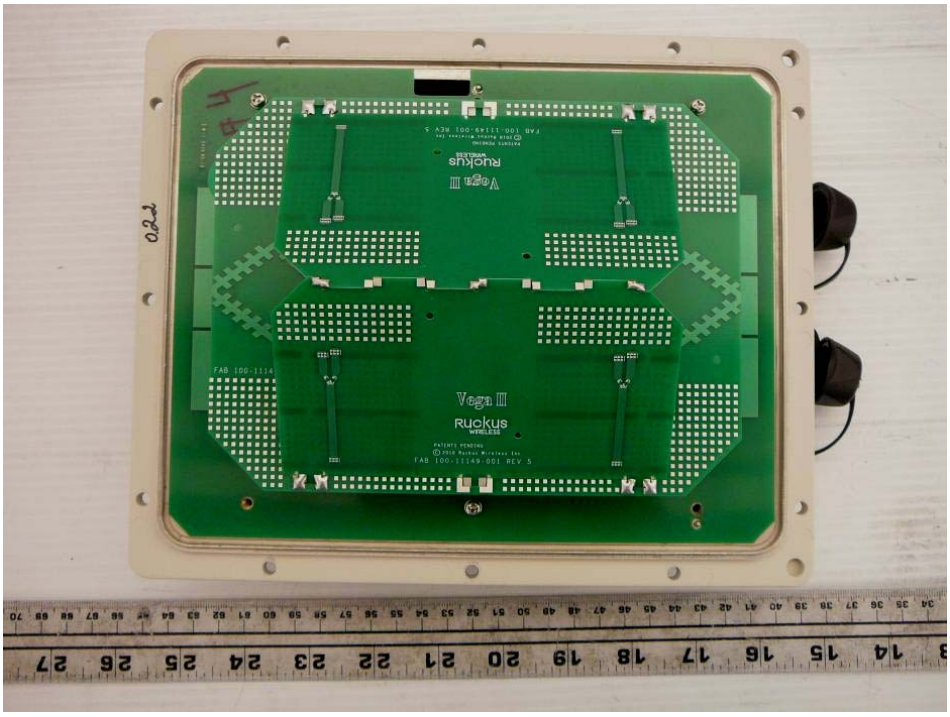


16.8 EUT – Adapter for POE

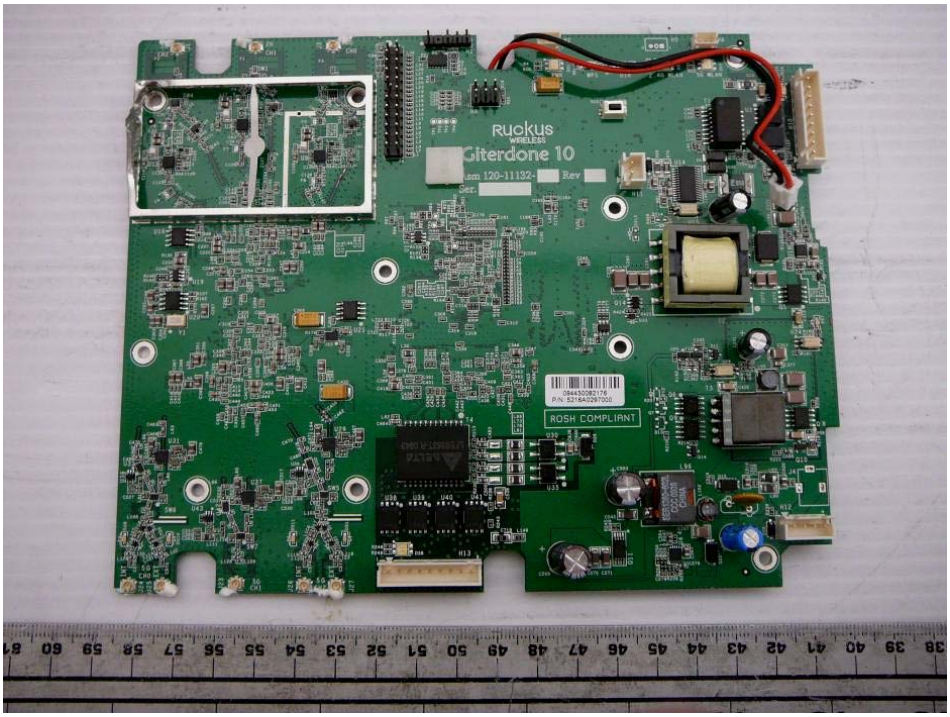
16.9 EUT – AC/DC Power Adapter



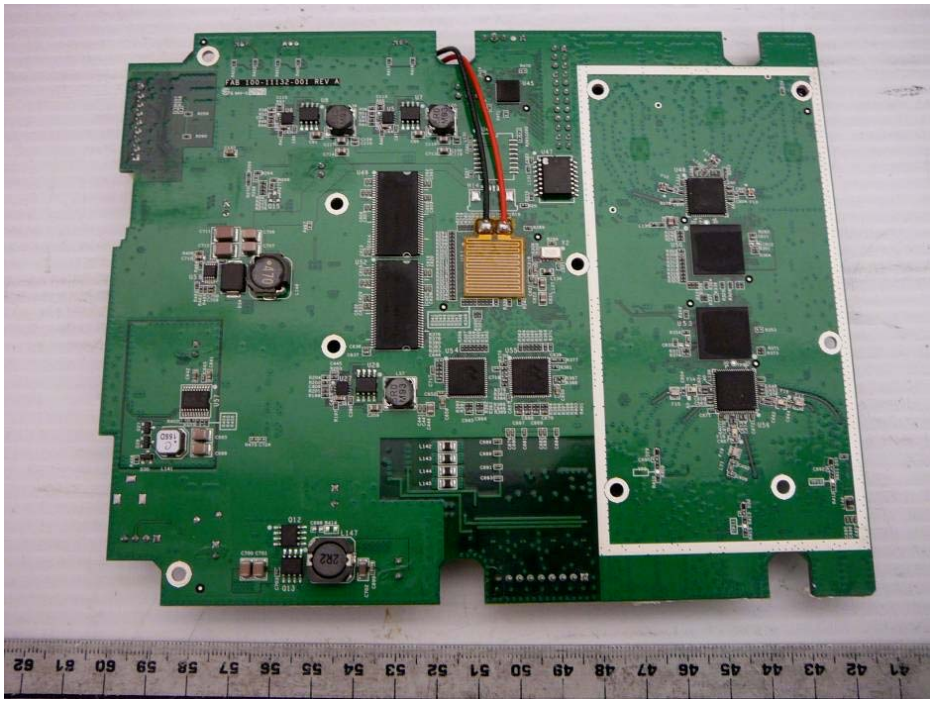
16.10 EUT- Cover off View



16.11 EUT- Main Board Top View



16.12 EUT – Main Board Solder View



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