NVLAP LAB CODE 200707-0

FCC PART 15.247

MEASUREMENT AND TEST REPORT

For

Unigen Corp.

45388 Warm Springs Blvd.,

Fremont, CA94539, USA

FCC ID: R8KUGWDS82

Report Type:	**Product Type:**
Original Report	802.11b/g/n Wi-Fi Module

Test Engineer:	Cookies Bu
Report Number:	RSZ10042101
Report Date:	2010-06-11
Reviewed By:	Merry Zhao EMC Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Unigen Corp.*'s product, model number: *UGWDS82NSM33 (FCC ID: R8KUGWDS82)* or the "EUT" as referred to in this report is a *San Gabriel SMT WiFi 802.11b/g/n Module*. The EUT is measured approximately 11.0 cm L x 6.0 cm W x 0.1 cm H for PCBA, 1.5 cm L x 1.3 cm W x 1.3 cm H for Module. Rated input voltage: DC 5V from PC.

**All measurement and test data in this report was gathered from production sample serial number: 1004047 (Assigned by BACL, Shenzhen). The EUT was received on 2010-04-21.*

Objective

This Type approval report is prepared on behalf of *Unigen Corp.* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15C section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

No related submitted(s).

Test Methodology

All measurements contained in this report were conducted 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.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 21, 2007. 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 has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).

NVLAP LAB CODE 200707-0

The current scope of accreditations can be found at http://ts.nist.gov/Standards/scopes/2007070.htm

SYSTEM TEST CONFIGURATION

Description of Test Configuration

For 802.11b and 802.11g mode, 802.11n20 mode, 11 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/

EUT was tested with Channel 1, 6 and 11.

For 802.11n40 mode, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2422	5	2442
2	2427	6	2447
3	2432	7	2452
4	2437		

EUT was tested with Channel 1, 4 and 7. The 802.11n has 1 transmitter chain and 2 receiver chains.

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

EUT Exercise Software

MP8712.

Equipment Modifications

No modification was made to the unit tested.

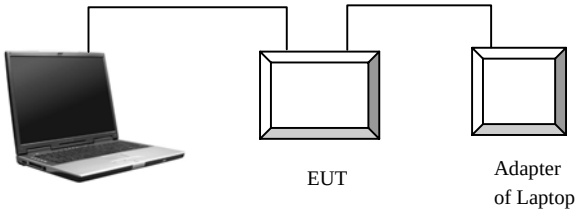
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
COMPAQ	Laptop	EVON610C	N/A	N/A

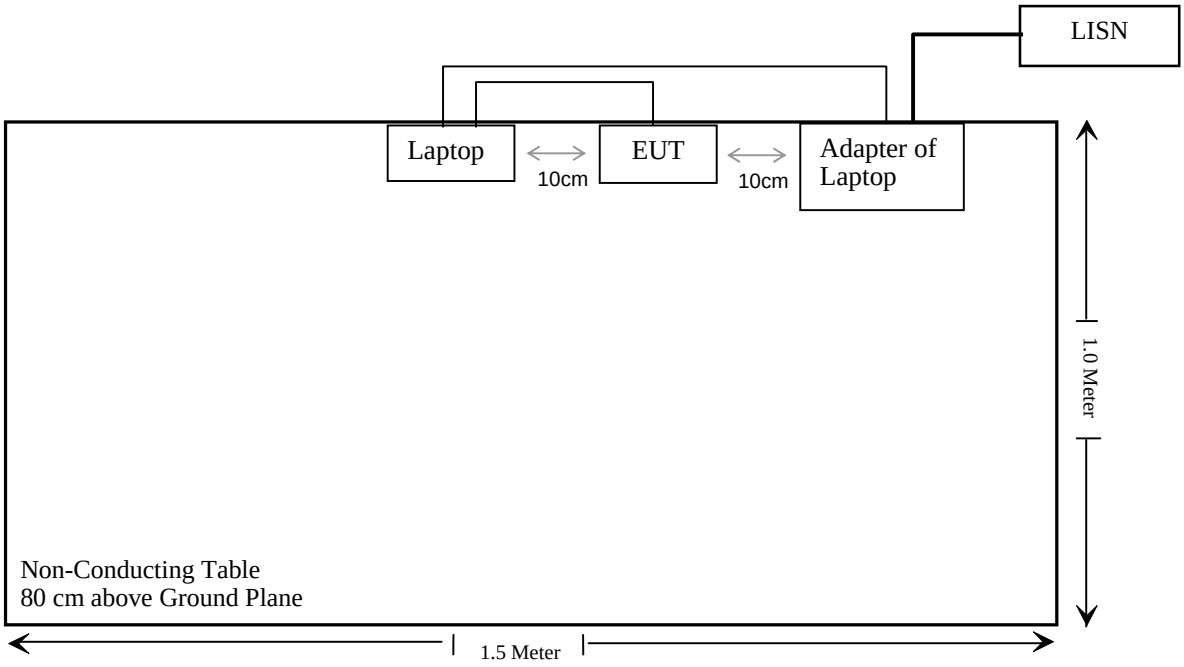
External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded Detachable USB Cable	0.8	USB port of EUT	Laptop

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §1.1307 (b)(1), §2.1091	Maximum Permissible exposure (MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a),	Conducted Emissions	Compliant
§15.247(d)	Spurious Emissions at Antenna Port	Compliant
§15.205, §15.209, §15.247(d)	Spurious Emissions & Restricted Bands	Compliant
§15.247 (a)(2)	6 dB Bandwidth	Compliant
§15.247(b)(3)	Maximum Peak Output Power	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant

FCC §15.247 (i) & §1.1307 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to FCC §15.247 (i), §1.1307 (b)(1) and §2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication 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)**
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

MPE Calculation

Predication of MPE limit at a given distance

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

Where:

S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally ***numeric*** gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
802.11b	2462	0.5	1.122	15.84	38.37	20	0.008565	1
802.11g	2437	0.5	1.122	12.52	17.86	20	0.003987	1
802.11n20	2462	0.5	1.122	12.47	17.66	20	0.003942	1
802.11n40	2452	0.5	1.122	11.82	15.21	20	0.003395	1

Conclusion

The predicted power density level at 20 cm is 0.008565 mw/cm^2 for 802.11b, 0.003987 mw/cm^2 for 802.11g, 0.003942 mw/cm^2 for 802.11n20 and 0.003395 mw/cm^2 for 802.11n40 which is below the uncontrolled exposure limit of 1.0 mw/cm^2, The EUT is used at least 20 cm away from user's body. It is determined as mobile equipment and complies with the MPE limit.

FCC §15.203 - ANTENNA REQUIREMENT

Standard Applicable

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 user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

1) Antenna must be permanently attached to the unit.
2) Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.
And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has two printed antennas on PCB, which complies with the Part 15.203. The maximum antenna gain is 0.5 dBi. Please see EUT photo for details.

Result: Compliant.

FCC §15.207 (a) - CONDUCTED EMISSIONS

Applicable Standard

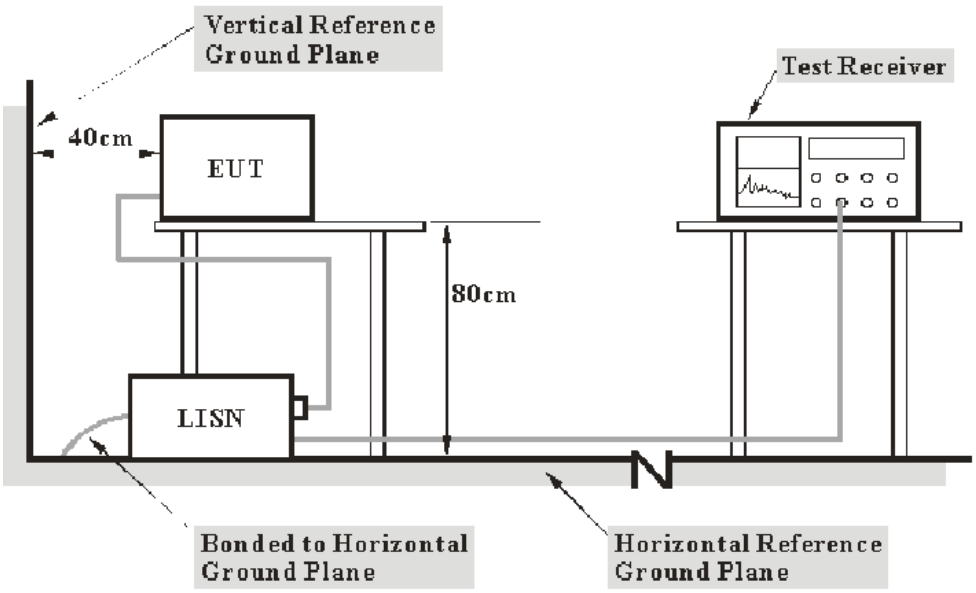
FCC §15.207

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen) is ±2.4 dB.

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	***IF B/W***
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2010-03-03	2011-03-02
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2010-03-09	2011-03-08

*** Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the adapter was connected to the LISN.

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

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

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

13.04 dB at **0.600 MHz** in the **Line** conductor mode
11.88 dB at **0.600 MHz** in the **Neutral** conductor mode

Test Data

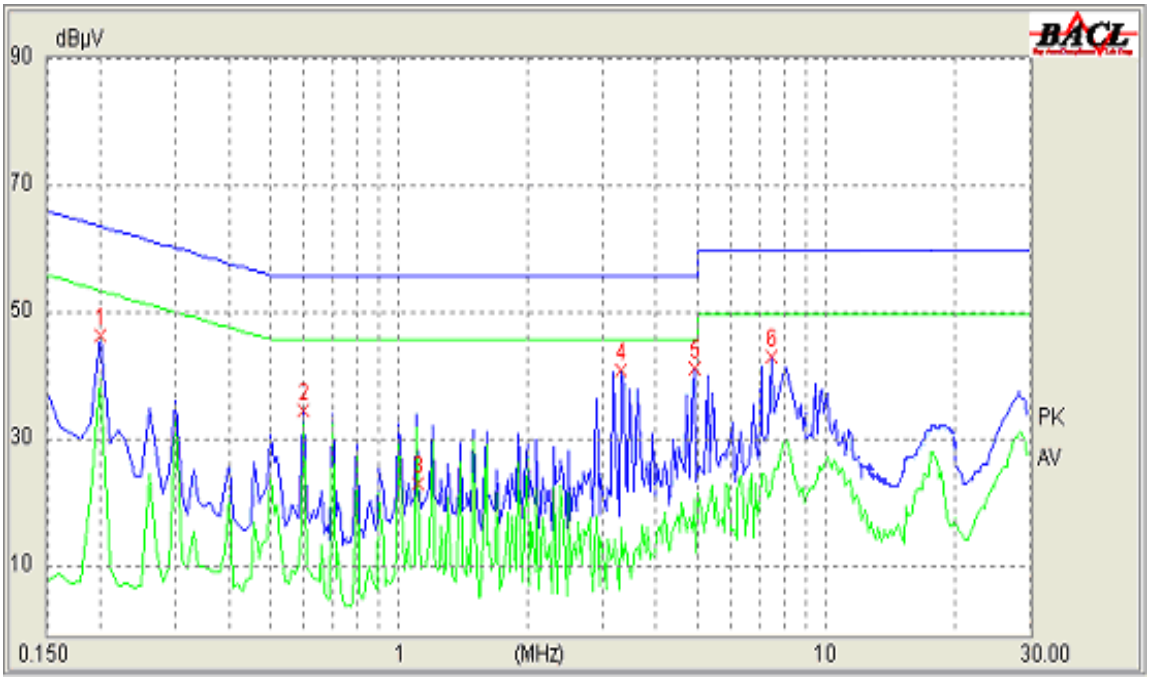
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Cookies Bu on 2010-06-02.

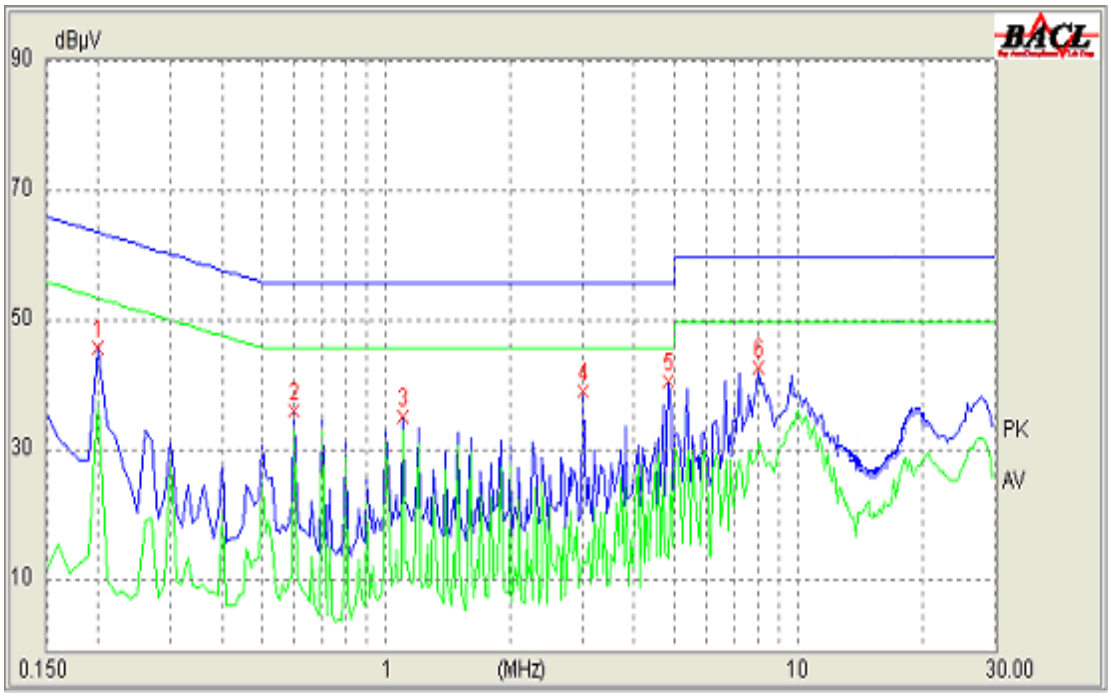
Test Mode: Transmitting (802.11b)

Line:



Conducted Emission			FCC Part 15.207		
Frequency (MHz)	**Correction Factor (dB)**	**Cord. Result (dBµV/m)**	**Limit (dBµV/m)**	**Margin (dB)**	**Detector (QP/AVE)**
0.600	10.10	32.96	46.00	13.04	AVE
0.200	10.10	40.04	53.69	13.65	AVE
0.200	10.10	43.21	63.69	20.48	QP
0.600	10.10	33.64	56.00	22.36	QP
4.910	10.10	21.05	46.00	24.95	AVE
7.430	10.20	21.89	50.00	28.11	AVE
3.310	10.10	16.77	46.00	29.23	AVE
1.120	10.10	14.60	46.00	31.40	AVE
4.910	10.10	21.44	56.00	34.56	QP
3.300	10.10	20.14	56.00	35.86	QP
1.110	10.10	18.28	56.00	37.72	QP
7.450	10.20	21.33	60.00	38.67	QP

Neutral:



Conducted Emission			FCC Part 15.207		
Frequency (MHz)	**Correction Factor (dB)**	**Cord. Result (dBµV/m)**	**Limit (dBµV/m)**	**Margin (dB)**	**Detector (QP/AVE)**
0.600	10.10	34.12	46.00	11.88	AV
1.100	10.10	33.40	46.00	12.60	AV
0.200	10.10	38.04	53.69	15.65	AV
0.600	10.10	34.78	56.00	21.22	QP
1.100	10.10	34.25	56.00	21.75	QP
0.200	10.10	41.11	63.69	22.58	QP
0.200	10.10	41.11	63.69	22.58	QP
8.010	10.20	35.39	60.00	24.61	QP
4.830	10.10	13.94	46.00	32.06	AV
3.000	10.10	13.24	46.00	32.76	AV
4.860	10.10	20.64	56.00	35.36	QP
3.020	10.10	11.36	56.00	44.64	QP

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

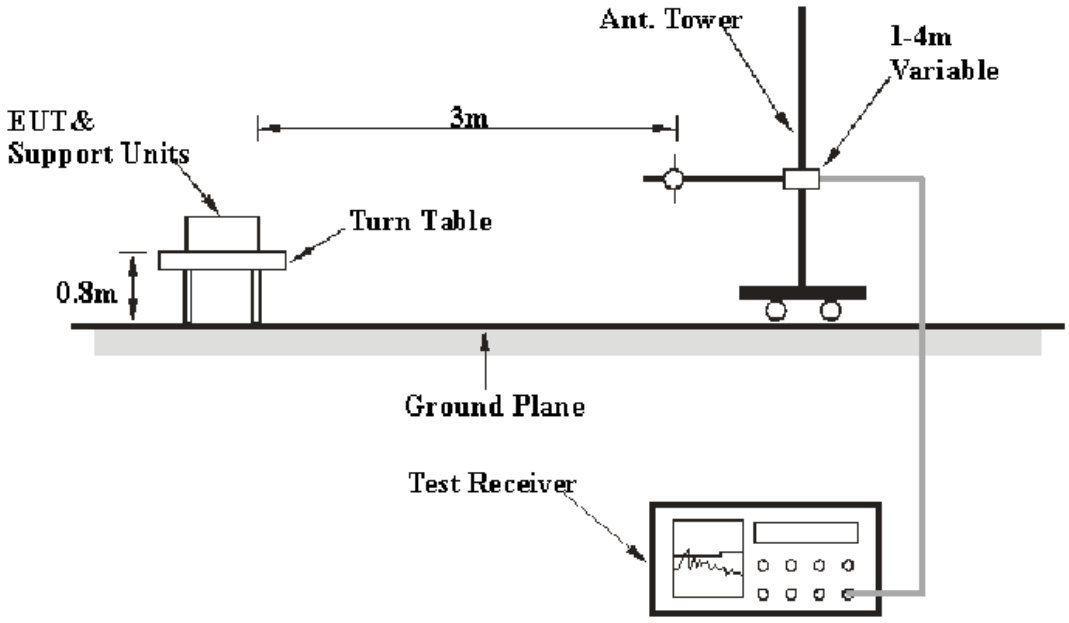
FCC §15.247 (d); §15.209; §15.205

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 best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is ±4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.209, and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	***RBW***	***Video B/W***
30MHz – 1000 MHz	100 kHz	300 kHz
1000 MHz – 25 GHz	1 MHz	3 MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2009-08-02	2010-08-02
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2009-11-24	2010-11-23
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2010-03-11	2011-03-11
HP	Amplifier	2VA-213+	T-E27H	2010-03-08	2011-03-07
Sunol Sciences	Horn Antenna	DRH-118	A052604	2010-05-05	2011-05-04
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2009-07-08	2010-07-08
Agilent	Spectrum Analyzer	E4440A	US45303156	2009-07-23	2010-07-23

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

For the radiated emissions test, the adapter, the adapter 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.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz and peak and Average detection modes for frequencies above 1GHz.

Corrected Amplitude & Margin Calculation

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

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - 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 limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15C, section 15.205, 15.109, 15.209 and 15.247, with the worst margin reading of:

30 -1000 MHz:

802.11b (worst case): **4.0 dB** at **240.018500 MHz** in the **Horizontal** polarization
802.11g (worst case): **4.3 dB** at **379.154500 MHz** in the **Horizontal** polarization
802.11n20 (worst case): **1.3 dB** at **379.189500 MHz** in the **Horizontal** polarization
802.11n40 (worst case): **6.4 dB** at **66.466250 MHz** in the **Vertical** polarization

Above 1 GHz:

802.11b (Low Channel): **0.65 dB** at **4824 MHz** in the **Vertical** polarization
802.11b (Middle Channel): **1.58 dB** at **4874 MHz** in the **Vertical** polarization
802.11b (High Channel): **0.70 dB** at **4924 MHz** in the **Vertical** polarization

802.11g (Low Channel): **15.83 dB** at **4824 MHz** in the **Horizontal** polarization
802.11g (Middle Channel): **11.63 dB** at **2483.7 MHz** in the **Horizontal** polarization
802.11g (High Channel): **15.00 dB** at **4924 MHz** in the **Horizontal** polarization

802.11n20 (Low Channel): **17.16 dB** at **4824 MHz** in the **Vertical** polarization
802.11n20 (Middle Channel): **7.83 dB** at **2483.8 MHz** in the **Vertical** polarization
802.11n20 (High Channel): **15.42 dB** at **4924 MHz** in the **Vertical** polarization

802.11n40 (Low Channel): **17.64 dB** at **4844 MHz** in the **Vertical** polarization
802.11n40 (Middle Channel): **3.68 dB** at **2484.7 MHz** in the **Horizontal** polarization
802.11n40 (High Channel): **18.89 dB** at **4904 MHz** in the **Vertical** polarization

Test Data

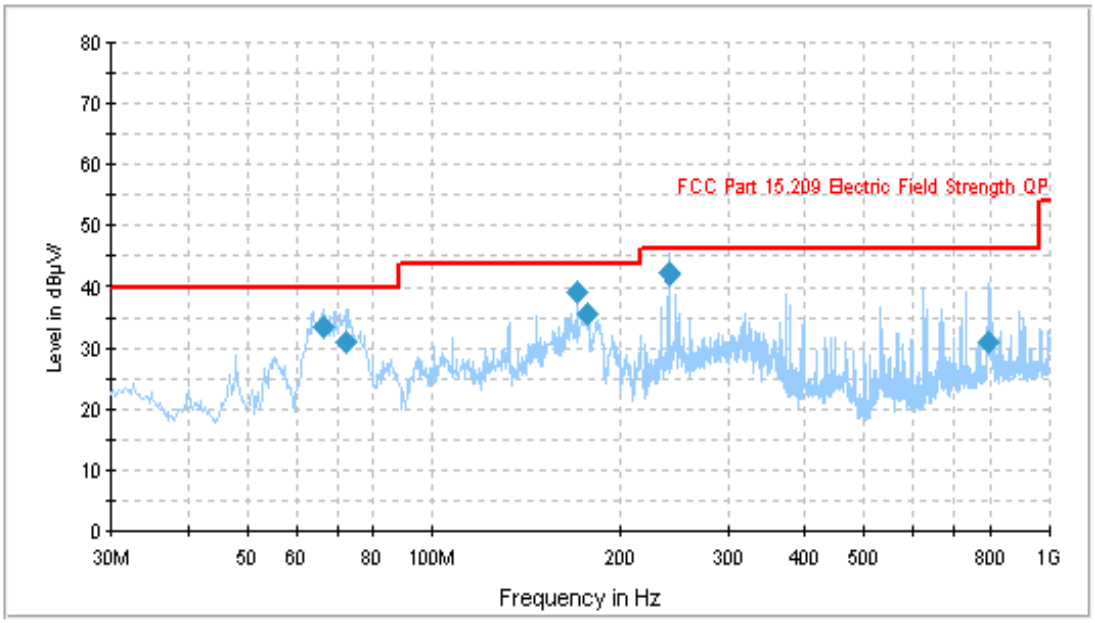
Environmental Conditions

Temperature:	24 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Cookies Bu on 2010-05-11 to 2010-06-04.

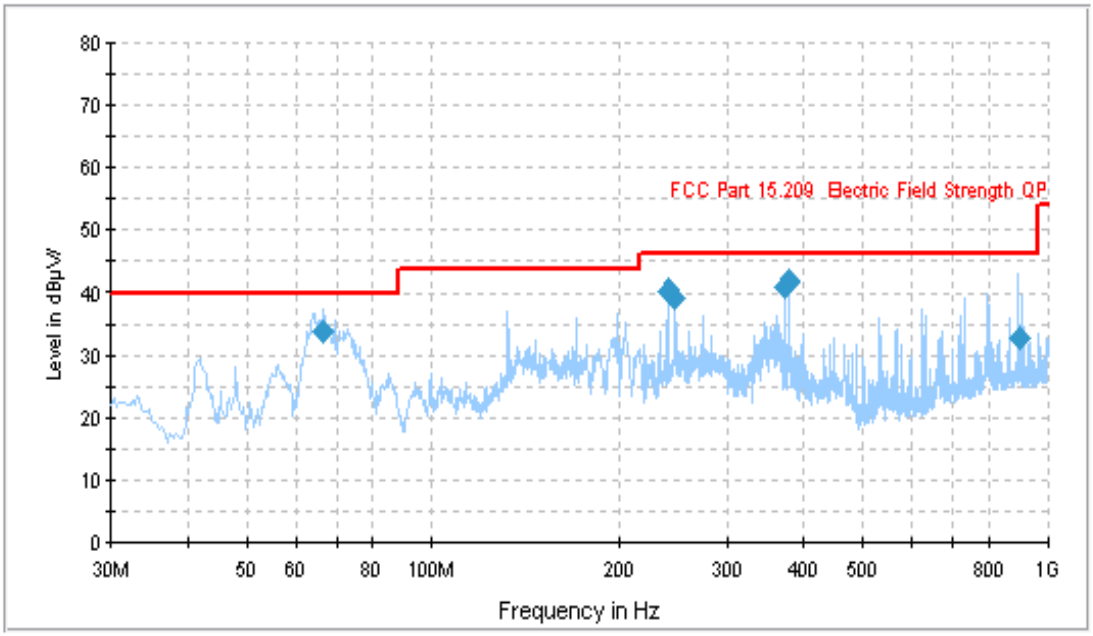
30-1000 MHz:

Test Mode: Transmitting (802.11b worst case)



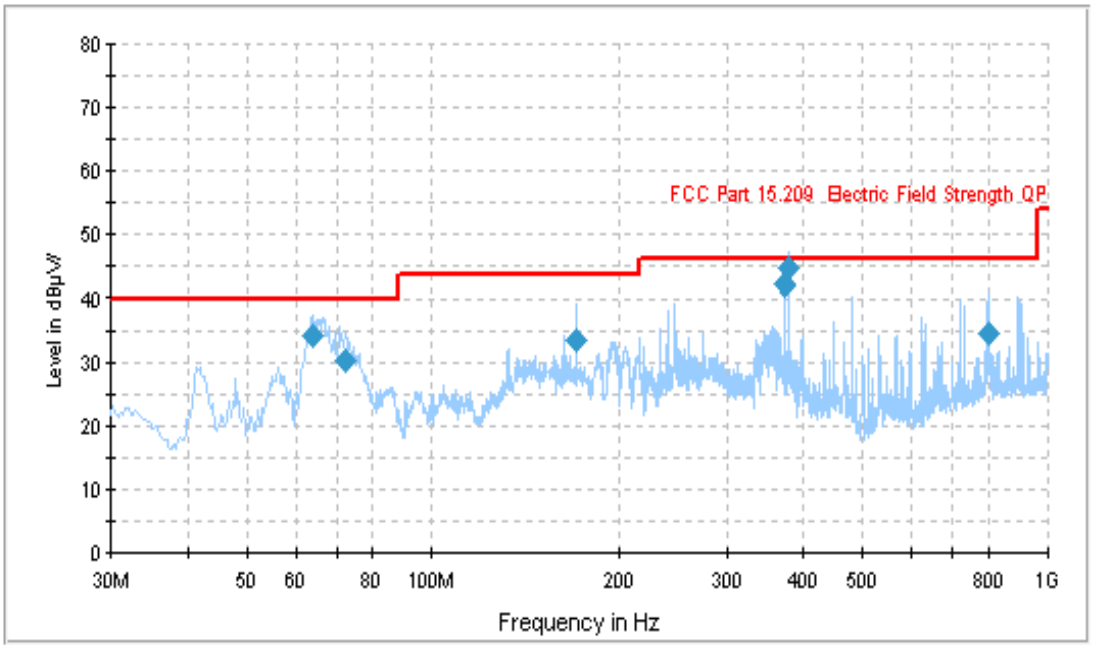
Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
240.018500	42.0	153.0	H	247.0	-15.9	46.0	4.0
170.465750	39.2	172.0	H	253.0	-15.7	43.5	4.3
66.290500	33.6	401.0	V	309.0	-19.6	40.0	6.4
177.445750	35.7	170.0	H	235.0	-15.9	43.5	7.8
72.450500	31.1	401.0	H	228.0	-19.6	40.0	8.9
797.335000	31.0	101.0	V	233.0	-1.4	46.0	15.0

Test Mode: Transmitting (802.11g worst case)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
379.154500	41.7	104.0	H	111.0	-12.8	46.0	4.3
372.164750	41.0	105.0	H	113.0	-12.9	46.0	5.0
240.005500	40.5	156.0	H	279.0	-15.9	46.0	5.5
66.630250	34.0	104.0	V	251.0	-19.6	40.0	6.0
246.992750	39.4	124.0	H	281.0	-15.7	46.0	6.6
894.937500	32.7	105.0	V	305.0	-0.3	46.0	13.3

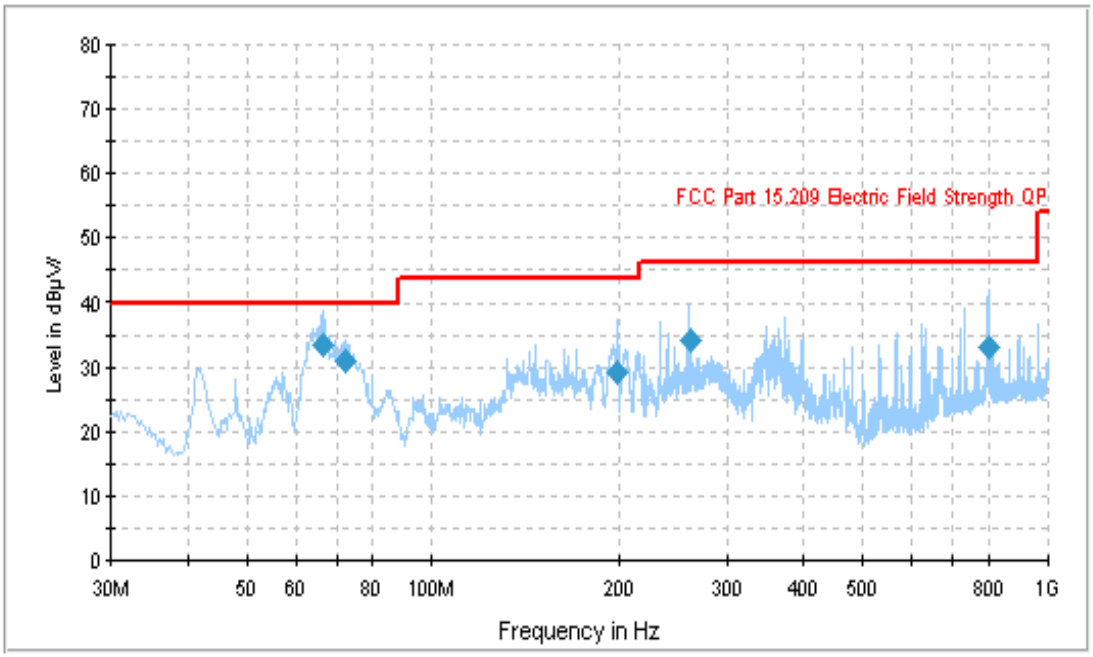
Test Mode: Transmitting (802.11n20 worst case)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
379.189500	44.7	102.0	H	114.0	-12.8	46.0	1.3*
372.214000	42.2	104.0	H	114.0	-12.9	46.0	3.8*
64.262250	34.3	102.0	V	286.0	-19.7	40.0	5.7
72.172250	30.2	103.0	V	304.0	-19.6	40.0	9.8
170.394750	33.5	159.0	H	79.0	-15.7	43.5	10.0
799.455500	34.7	123.0	H	335.0	-1.3	46.0	11.3

** Within measurement uncertainty.*

Test Mode: Transmitting (802.11n40 worst case)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
66.466250	33.6	102.0	V	277.0	-19.6	40.0	6.4
72.203500	31.2	401.0	H	209.0	-19.6	40.0	8.8
260.891000	34.4	124.0	H	279.0	-15.4	46.0	11.6
798.348750	33.2	203.0	H	343.0	-1.4	46.0	12.8
199.009500	29.2	156.0	H	263.0	-14.5	43.5	14.3

Above 1 GHz:

802.11b Mode:

Indicated		Detector (PK/AV)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.247/15.209			
Frequency (MHz)	S.A. Reading (dBµV/m)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comment
Low Channel (2412 MHz)												
4824	41.56	AV	60	1.0	V	35.00	4.3	27.51	53.35	54	0.65*	harmonic
4824	37.85	AV	240	1.1	H	36.30	4.3	27.51	50.94	54	3.06*	harmonic
4824	43.44	PK	60	1.0	V	35.00	4.3	27.51	55.23	74	18.77	harmonic
2389.87	28.58	AV	180	1.0	H	30.90	3.03	27.54	34.97	54	19.03	spurious
2389.87	29.17	AV	60	1.0	V	30.30	3.03	27.54	34.96	54	19.04	spurious
4824	41.68	PK	240	1.1	H	36.30	4.3	27.51	54.77	74	19.23	harmonic
2348.27	41.5	PK	180	1.0	H	30.90	3.03	27.54	47.89	74	26.11	spurious
2349.07	41.77	PK	60	1.0	V	30.30	3.03	27.54	47.56	74	26.44	spurious
Middle Channel (2437 MHz)												
4874	40.63	AV	56	1.0	V	35.00	4.3	27.51	52.42	54	1.58*	harmonic
4874	38.46	AV	240	1.1	H	36.30	4.3	27.51	51.55	54	2.45*	harmonic
2518.2	40.32	AV	180	1.0	H	31.50	3.10	27.54	47.38	54	6.62	spurious
2317.9	37.39	AV	180	1.0	H	30.90	3.03	27.54	43.78	54	10.22	spurious
2316.5	37.42	AV	60	1.0	V	30.30	3.03	27.54	43.21	54	10.79	spurious
2515.2	36.90	AV	60	1.0	V	30.60	3.10	27.54	43.06	54	10.94	spurious
2518.2	49.42	PK	180	1.0	H	31.50	3.10	27.54	56.48	74	17.52	spurious
4874	42.63	PK	240	1.1	H	36.30	4.3	27.51	55.72	74	18.28	harmonic
4874	43.74	PK	56	1.0	V	35.00	4.3	27.51	55.53	74	18.47	harmonic
2317.9	47.29	PK	180	1.0	H	30.90	3.03	27.54	53.68	74	20.32	spurious
2515.2	46.36	PK	60	1.0	V	30.60	3.10	27.54	52.52	74	21.48	spurious
2316.5	46.64	PK	60	1.0	V	30.30	3.03	27.54	52.43	74	21.57	spurious
High Channel (2462 MHz)												
4924	41.51	AV	57	1.3	V	35	4.3	27.51	53.30	54	0.70*	harmonic
4924	40.07	AV	243	1.4	H	36.3	4.3	27.51	53.16	54	0.84*	harmonic
4924	44.40	PK	243	1.4	H	36.3	4.3	27.51	57.49	74	16.51	harmonic
4924	45.43	PK	57	1.3	V	35	4.3	27.51	57.22	74	16.78	harmonic
2490.18	28.11	AV	60	1.0	V	30.3	3.03	27.54	33.90	54	20.10	spurious
2489.94	27.48	AV	180	1.0	H	30.9	3.03	27.54	33.87	54	20.13	spurious
2491.50	40.25	PK	180	1.0	H	30.9	3.03	27.54	46.64	74	27.36	spurious
2491.56	40.01	PK	60	1.0	V	30.3	3.03	27.54	45.80	74	28.20	spurious

** Within measurement uncertainty.*

802.11g Mode:

Indicated		Detector (PK/AV)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.247/15.209			
Frequency (MHz)	S.A. Reading (dBµV/m)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comment
Low Channel (2412 MHz)												
4824	25.08	AV	240	2.0	H	36.30	4.3	27.51	38.17	54	15.83	harmonic
4824	42.63	PK	240	2.0	H	36.30	4.3	27.51	55.72	74	18.28	harmonic
4824	23.18	AV	115	2.0	V	35.00	4.3	27.51	34.97	54	19.03	harmonic
2389.47	28.15	AV	130	2.0	H	30.90	3.03	27.54	34.54	54	19.46	spurious
2389.33	28.73	AV	60	1.0	V	30.30	3.03	27.54	34.52	54	19.48	spurious
4824	40.46	PK	115	2.0	V	35.00	4.3	27.51	52.25	74	21.75	harmonic
2389.20	42.09	PK	60	1.0	V	30.30	3.03	27.54	47.88	74	26.12	spurious
2370.80	40.79	PK	130	2.0	H	30.90	3.03	27.54	47.18	74	26.82	spurious
Middle Channel (2437 MHz)												
2483.7	35.31	AV	120	1.0	H	31.50	3.10	27.54	42.37	54	11.63	spurious
2484.0	33.18	AV	60	1.0	V	30.60	3.10	27.54	39.34	54	14.66	spurious
2389.5	32.50	AV	120	1.0	H	30.90	3.03	27.54	38.89	54	15.11	spurious
2483.7	51.21	PK	120	1.0	H	31.50	3.10	27.54	58.27	74	15.73	spurious
2389.0	32.28	AV	60	1.0	V	30.30	3.03	27.54	38.07	54	15.93	spurious
4874	24.21	AV	250	2.0	H	36.30	4.3	27.51	37.3	54	16.70	harmonic
4874	22.21	AV	120	2.0	V	35.00	4.3	27.51	34	54	20.00	harmonic
2484.0	47.66	PK	60	1.0	V	30.60	3.10	27.54	53.82	74	20.18	spurious
4874	40.35	PK	250	2.0	H	36.30	4.3	27.51	53.44	74	20.56	harmonic
2389.5	47.05	PK	120	1.0	H	30.90	3.03	27.54	53.44	74	20.56	spurious
2389.0	45.49	PK	60	1.0	V	30.30	3.03	27.54	51.28	74	22.72	spurious
4874	37.68	PK	120	2.0	V	35.00	4.3	27.51	49.47	74	24.53	harmonic
High Channel (2462 MHz)												
4924	24.61	AV	245	2.1	H	36.60	4.37	26.58	39	54	15.00	harmonic
4924	22.55	AV	120	2.0	V	35.40	4.37	26.58	35.74	54	18.26	harmonic
4924	41.10	PK	245	2.1	H	36.60	4.37	26.58	55.49	74	18.51	harmonic
2489.83	27.02	AV	130	1.0	H	30.90	3.03	27.54	33.41	54	20.59	spurious
2490.21	27.6	AV	60	1.0	V	30.30	3.03	27.54	33.39	54	20.61	spurious
4924	38.31	PK	120	2.0	V	35.40	4.37	26.58	51.5	74	22.50	harmonic
2486.44	41.55	PK	60	1.0	V	30.30	3.03	27.54	47.34	74	26.66	spurious
2488.42	40.76	PK	130	1.0	H	30.90	3.03	27.54	47.15	74	26.85	spurious

802.11n 20:

Indicated		Detector (PK/AV)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.247/15.209			
Frequency (MHz)	S.A. Reading (dBµV/m)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comment
Low Channel (2412 MHz)												
4824	25.05	AV	310	1.0	V	35.00	4.3	27.51	36.84	54	17.16	harmonic
4824	23.12	AV	120	1.0	H	36.30	4.3	27.51	36.21	54	17.79	harmonic
2389.60	28.13	AV	180	1.0	H	30.90	3.03	27.54	34.52	54	19.48	spurious
2389.60	28.71	AV	120	1.0	V	30.30	3.03	27.54	34.50	54	19.50	spurious
4824	40.42	PK	310	1.0	V	35.00	4.3	27.51	52.21	74	21.79	harmonic
4824	38.52	PK	120	1.0	H	36.30	4.3	27.51	51.61	74	22.39	harmonic
2386.53	41.59	PK	120	1.0	V	30.30	3.03	27.54	47.38	74	26.62	spurious
2390.00	40.76	PK	180	1.0	H	30.90	3.03	27.54	47.15	74	26.85	spurious
Middle Channel (2437 MHz)												
2483.8	60.01	PK	120	1.0	V	30.60	3.10	27.54	66.17	74	7.83	spurious
2483.8	39.64	AV	120	1.0	V	30.60	3.10	27.54	45.8	54	8.20	spurious
2483.7	34.78	AV	130	1.0	H	31.50	3.10	27.54	41.84	54	12.16	spurious
2483.7	54.59	PK	130	1.0	H	31.50	3.10	27.54	61.65	74	12.35	spurious
4874	26.39	AV	305	1.0	V	35.00	4.3	27.51	38.18	54	15.82	harmonic
4874	21.89	AV	120	1.0	H	36.30	4.3	27.51	34.98	54	19.02	harmonic
4874	42.87	PK	305	1.0	V	35.00	4.3	27.51	54.66	74	19.34	harmonic
4874	38.70	PK	120	1.0	H	36.30	4.3	27.51	51.79	74	22.21	harmonic
High Channel (2462 MHz)												
4924	25.39	AV	305	1.1	V	35.40	4.37	26.58	38.58	54	15.42	harmonic
4924	43.23	PK	305	1.1	V	35.40	4.37	26.58	56.42	74	17.58	harmonic
4924	21.97	AV	80	1.0	H	36.60	4.37	26.58	36.36	54	17.64	harmonic
4924	39.85	PK	80	1.0	H	36.60	4.37	26.58	54.24	74	19.76	harmonic
2490.29	27.62	AV	120	1.0	V	30.30	3.03	27.54	33.41	54	20.59	spurious
2489.22	26.99	AV	180	1.0	H	30.90	3.03	27.54	33.38	54	20.62	spurious
2487.70	40.91	PK	180	1.0	H	30.90	3.03	27.54	47.30	74	26.70	spurious
2488.14	41.13	PK	120	1.0	V	30.30	3.03	27.54	46.92	74	27.08	spurious

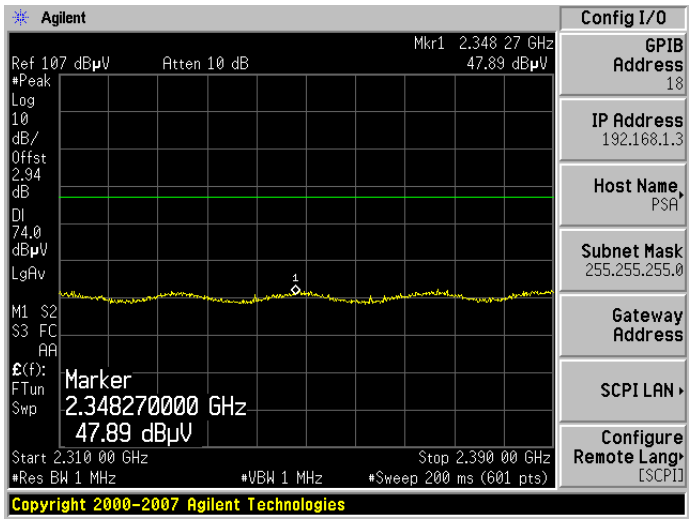
802.11n 40:

Indicated		Detector (PK/AV)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.247/15.209			
Frequency (MHz)	S.A. Reading (dBµV/m)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comment
Low Channel (2422 MHz)												
4844	24.57	AV	308	1.0	V	35.00	4.3	27.51	36.36	54	17.64	harmonic
2389.47	28.57	AV	120	1.0	H	30.90	3.03	27.54	34.96	54	19.04	spurious
2390.00	29.17	AV	60	1.0	V	30.30	3.03	27.54	34.96	54	19.04	spurious
4844	21.58	AV	120	1.0	H	36.30	4.3	27.51	34.67	54	19.33	harmonic
4844	38.33	PK	308	1.0	V	35.00	4.3	27.51	50.12	74	23.88	harmonic
4844	35.49	PK	120	1.0	H	36.30	4.3	27.51	48.58	74	25.42	harmonic
2388.80	42.27	PK	60	1.0	V	30.30	3.03	27.54	48.06	74	25.94	spurious
2369.87	41.00	PK	120	1.0	H	30.90	3.03	27.54	47.39	74	26.61	spurious
Middle Channel (2437 MHz)												
2484.7	63.26	PK	120	1.0	H	31.50	3.10	27.54	70.32	74	3.68*	spurious
2484.4	63.74	PK	130	1.0	V	30.60	3.10	27.54	69.9	74	4.10	spurious
2389.7	42.86	AV	120	1.0	H	30.90	3.03	27.54	49.25	54	4.75	spurious
2389.7	62.01	PK	120	1.0	H	30.90	3.03	27.54	68.4	74	5.60	spurious
2484.4	42.22	AV	130	1.0	V	30.60	3.10	27.54	48.38	54	5.62	spurious
2484.7	40.73	AV	120	1.0	H	31.50	3.10	27.54	47.79	54	6.21	spurious
2389.8	37.53	AV	60	1.0	V	30.30	3.03	27.54	43.32	54	10.68	spurious
2389.8	56.91	PK	60	1.0	V	30.30	3.03	27.54	62.7	74	11.30	spurious
4874	24.52	AV	307	1.0	V	35.00	4.3	27.51	36.31	54	17.69	harmonic
4874	21.60	AV	85	1.0	H	36.30	4.3	27.51	34.69	54	19.31	harmonic
4874	38.49	PK	307	1.0	V	35.00	4.3	27.51	50.28	74	23.72	harmonic
4874	35.46	PK	85	1.0	H	36.30	4.3	27.51	48.55	74	25.45	harmonic
High Channel (2452 MHz)												
4904	23.32	AV	307	1.0	V	35.00	4.3	27.51	35.11	54	18.89	harmonic
2489.83	27.49	AV	120	1.0	H	30.90	3.03	27.54	33.88	54	20.12	spurious
2489.93	28.06	AV	120	1.0	V	30.30	3.03	27.54	33.85	54	20.15	spurious
4904	20.68	AV	120	1.0	H	36.30	4.3	27.51	33.77	54	20.23	harmonic
4904	38.01	PK	307	1.0	V	35.00	4.3	27.51	49.80	74	24.20	harmonic
4904	36.10	PK	120	1.0	H	36.30	4.3	27.51	49.19	74	24.81	harmonic
2486.58	40.98	PK	120	1.0	H	30.90	3.03	27.54	47.37	74	26.63	spurious
2487.79	41.12	PK	120	1.0	V	30.30	3.03	27.54	46.91	74	27.09	spurious

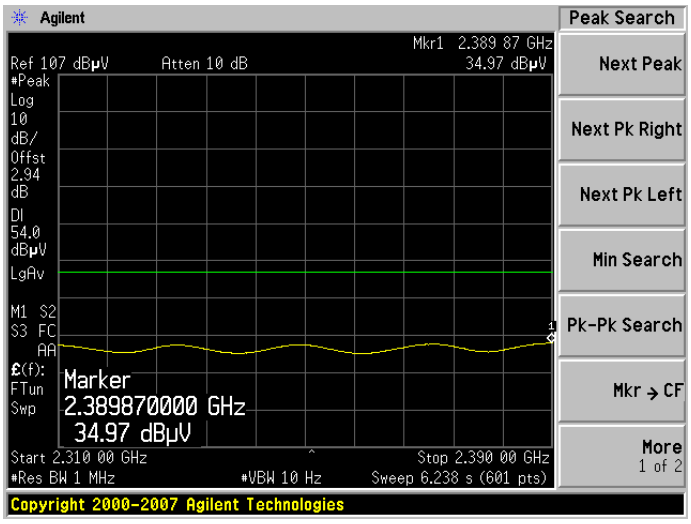
** Within measurement uncertainty.*

Spurious Emissions in Restricted Bands:

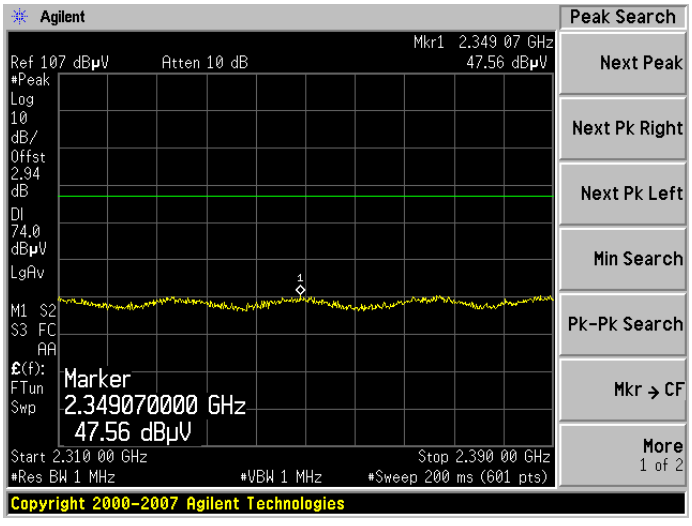
802.11b, Low CH, Horizontal, Peak



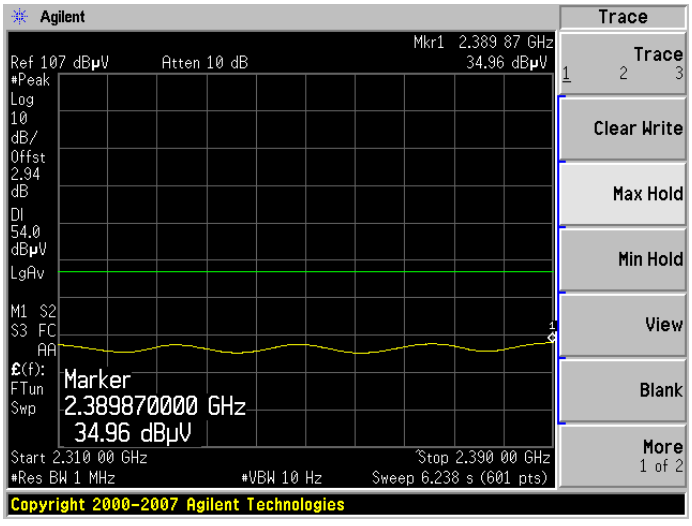
802.11b, Low CH, Horizontal, Average



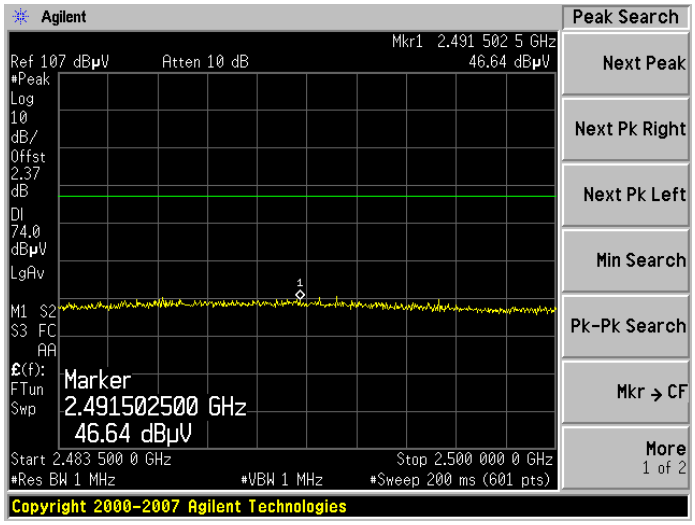
802.11b, Low CH, Vertical, Peak



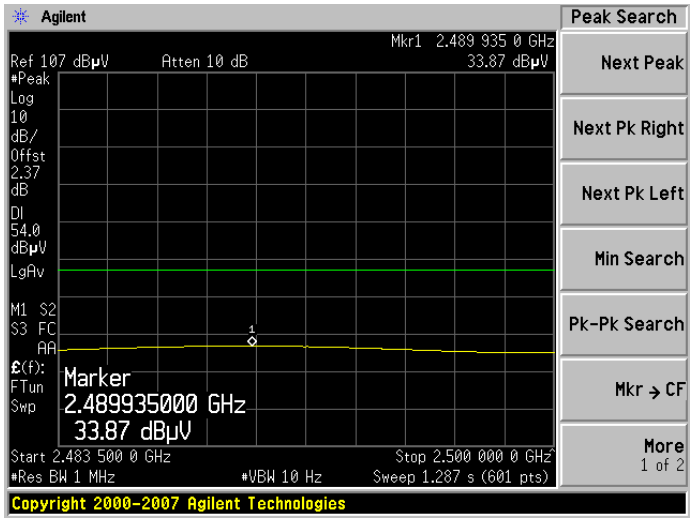
802.11b, Low CH, Vertical, Average



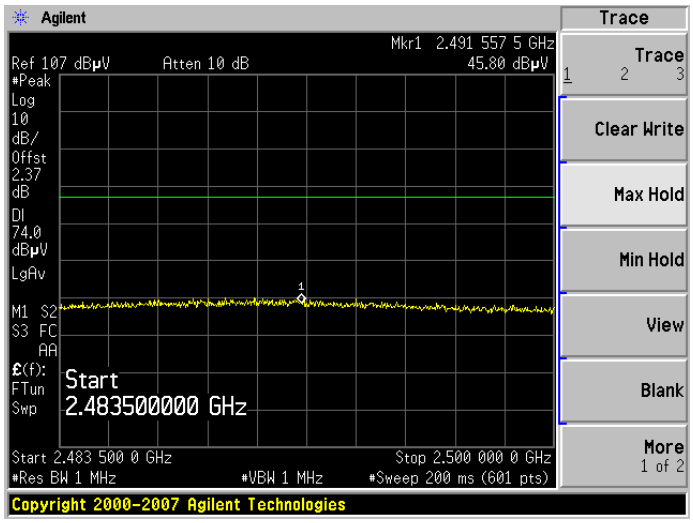
802.11b, High CH, Horizontal, Peak



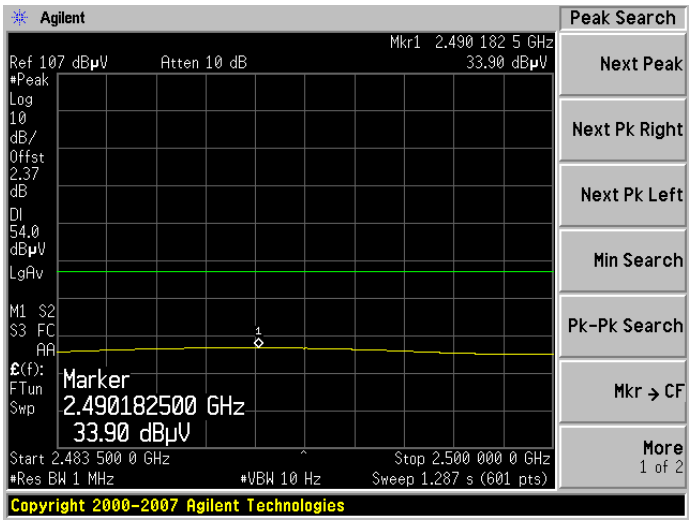
802.11b, High CH, Horizontal, Average



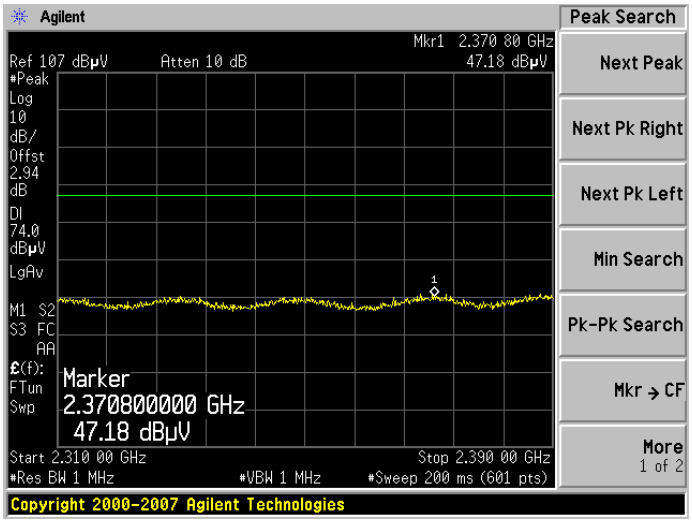
802.11b, High CH, Vertical, Peak



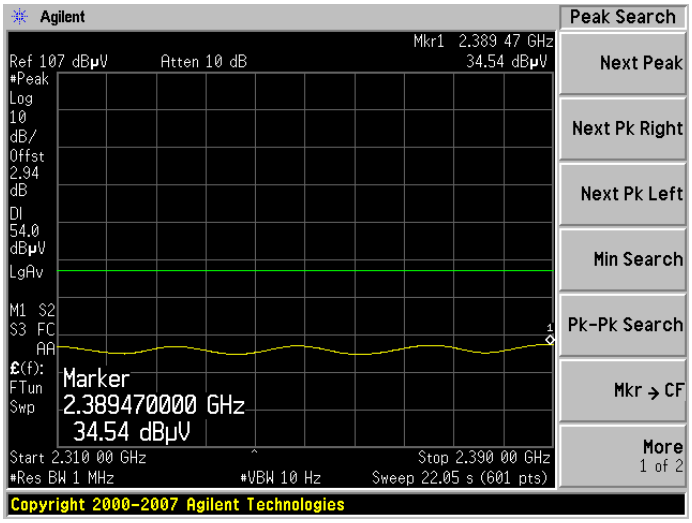
802.11b, High CH, Vertical, Average



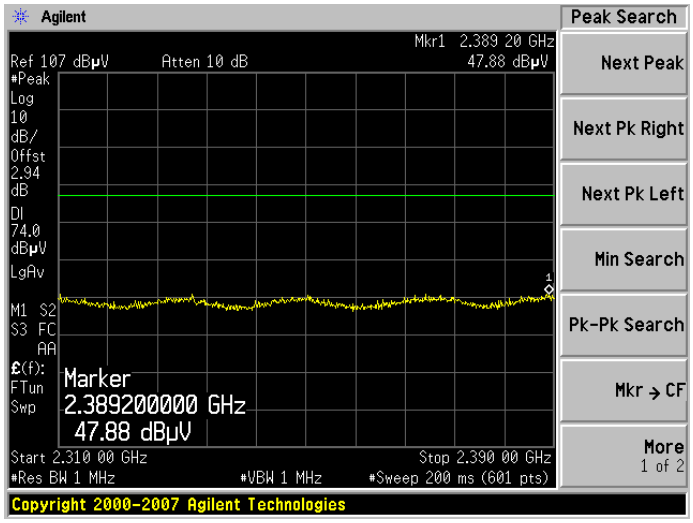
802.11g, Low CH, Horizontal, Peak



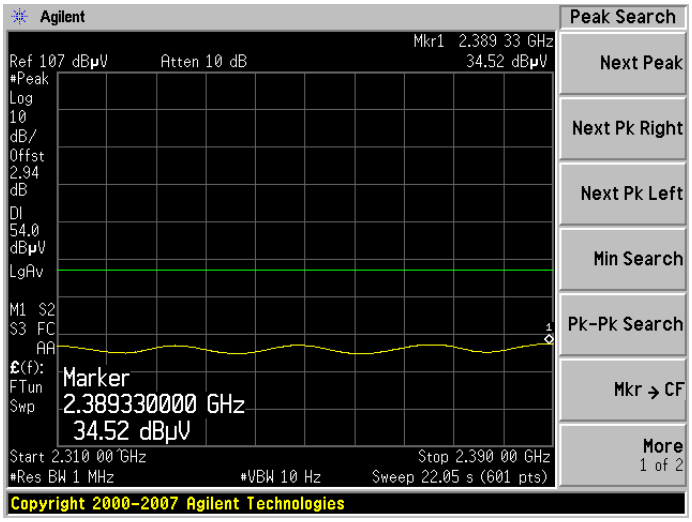
802.11g, Low CH, Horizontal, Average



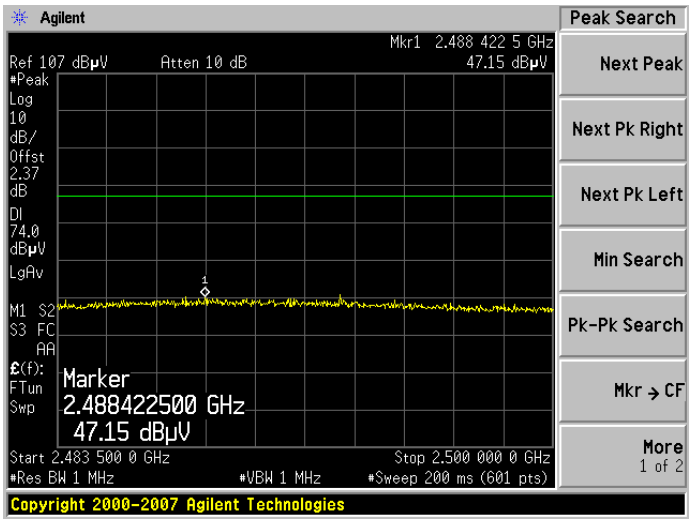
802.11g, Low CH, Vertical, Peak



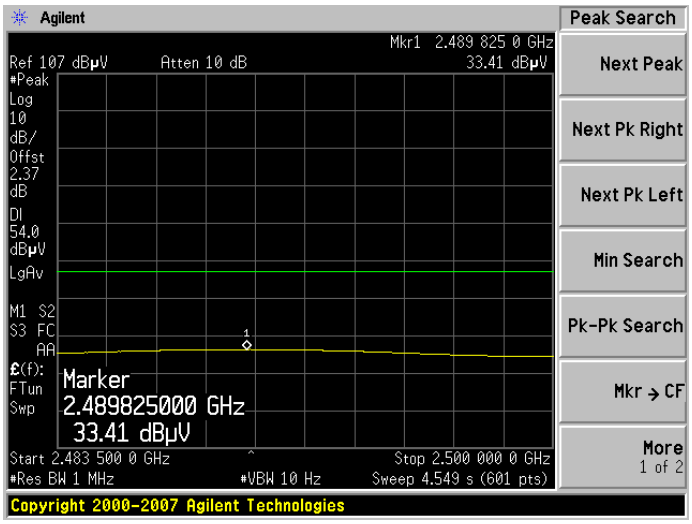
802.11g, Low CH, Vertical, Average



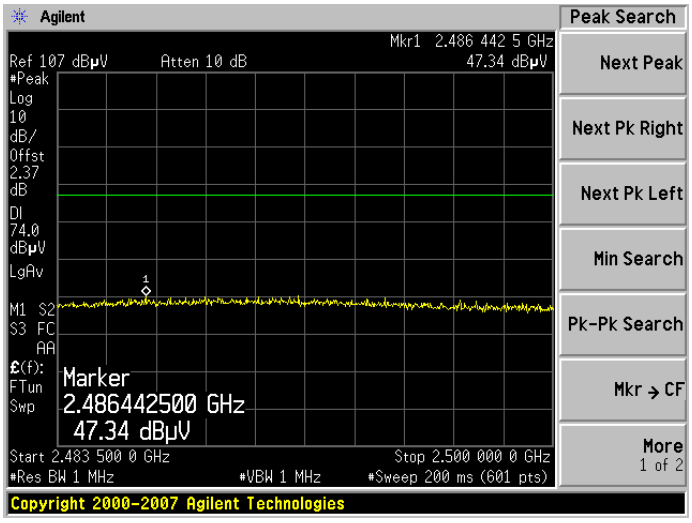
802.11g, High CH, Horizontal, Peak



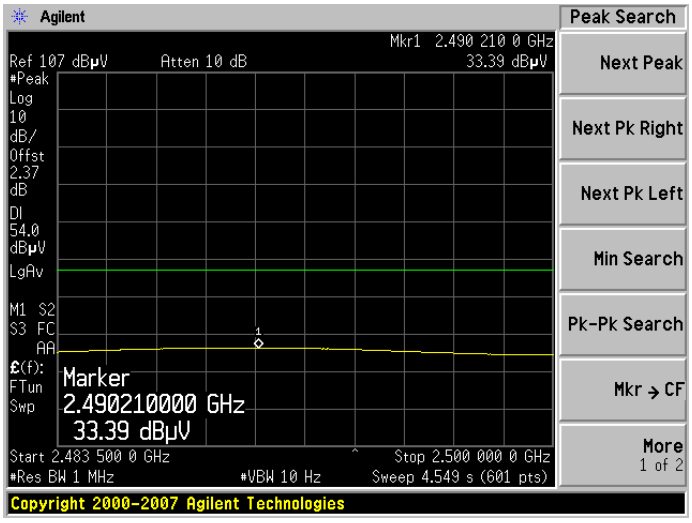
802.11g, High CH, Horizontal, Average



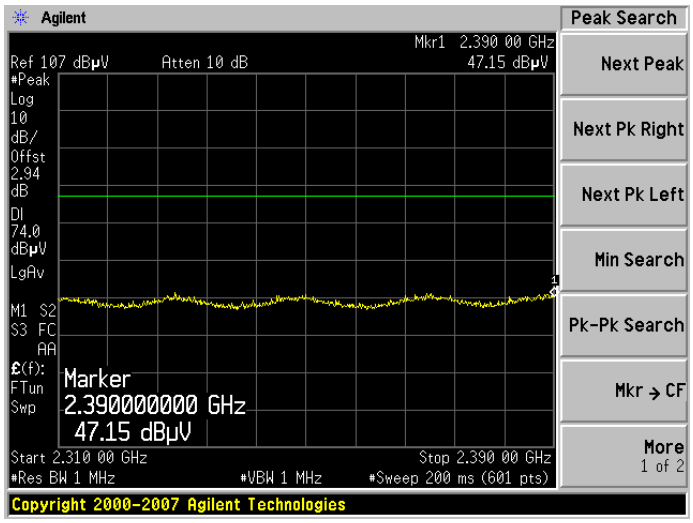
802.11g, High CH, Vertical, Peak



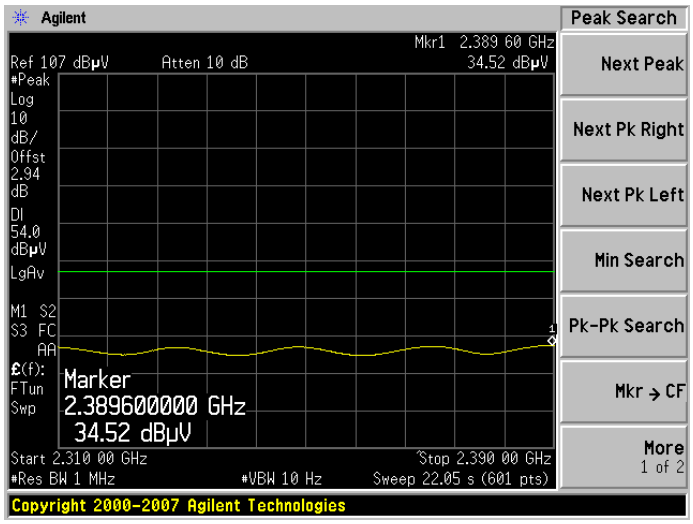
802.11g, High CH, Vertical, Average



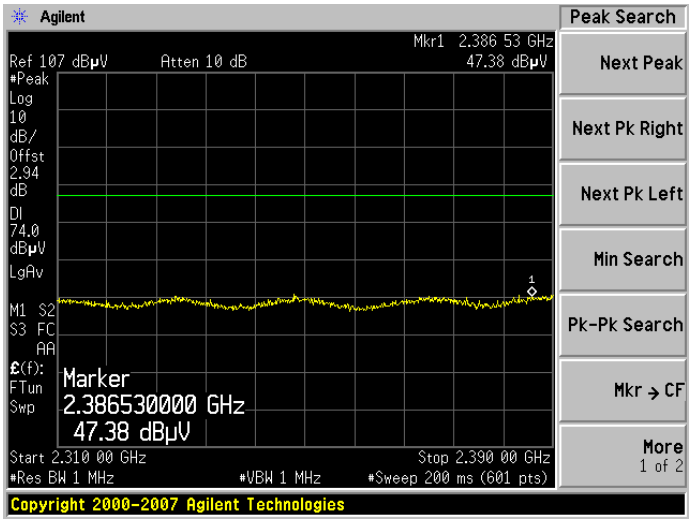
802.11n20, Low CH, Horizontal, Peak



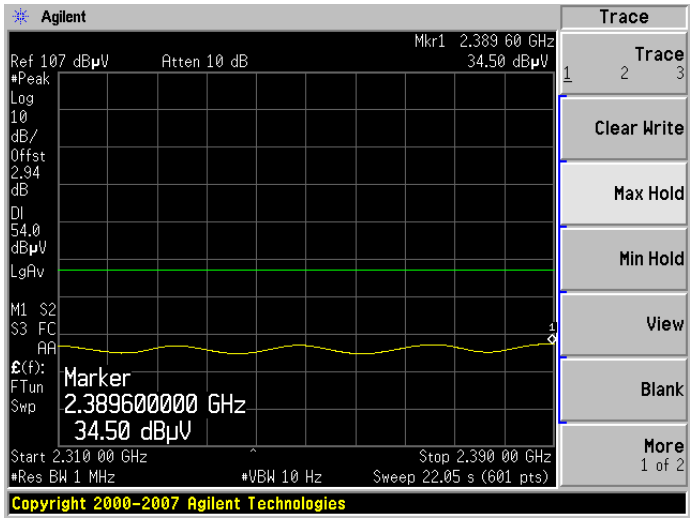
802.11n20, Low CH, Horizontal, Average



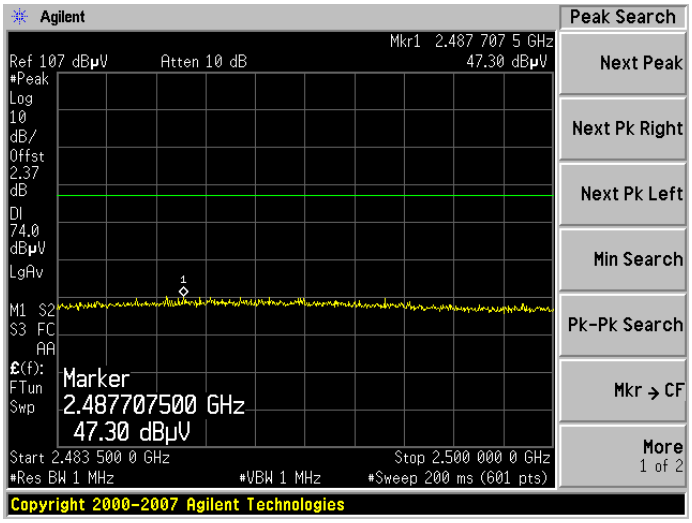
802.11n20, Low CH, Vertical, Peak



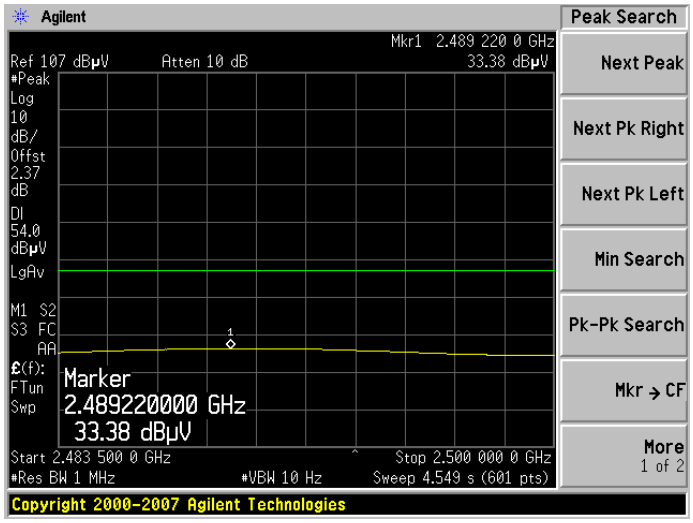
802.11n20, Low CH, Vertical, Average



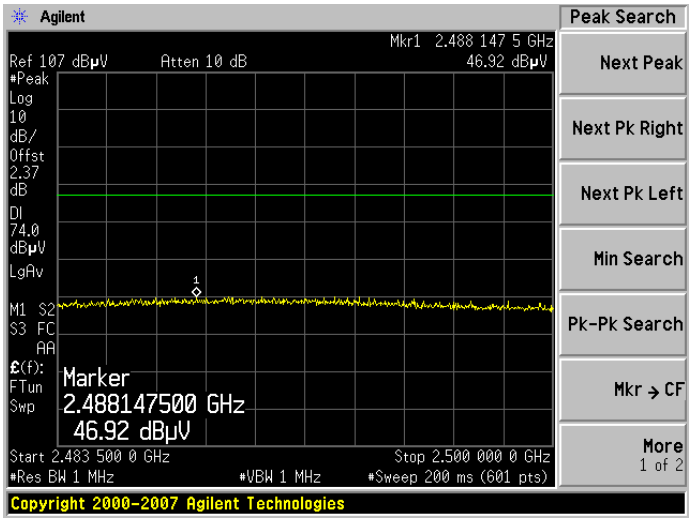
802.11n20, High CH, Horizontal, Peak



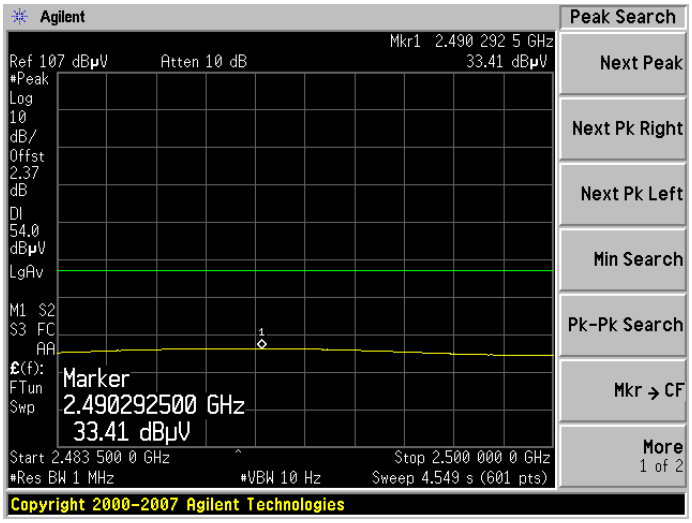
802.11n20, High CH, Horizontal, Average



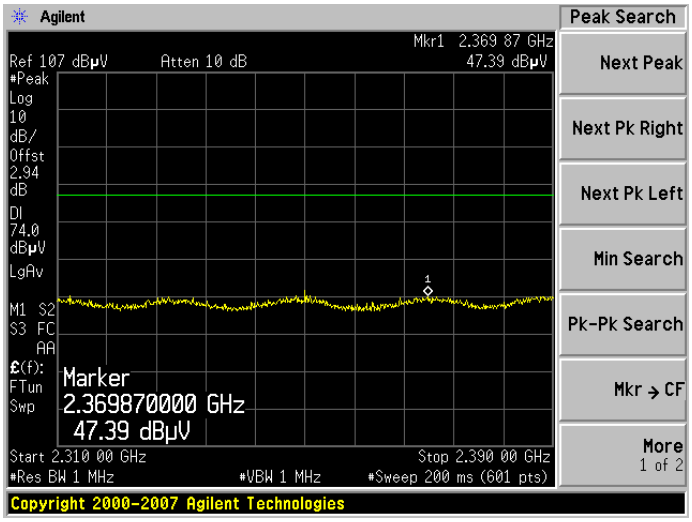
802.11n20, High CH, Vertical, Peak



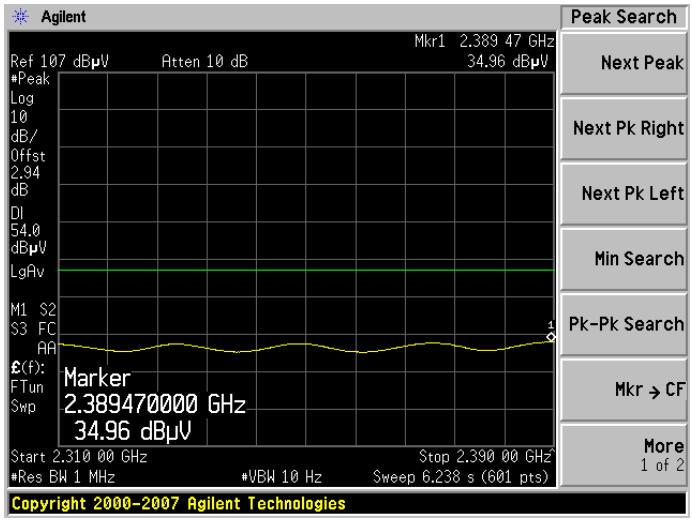
802.11n20, High CH, Vertical, Average



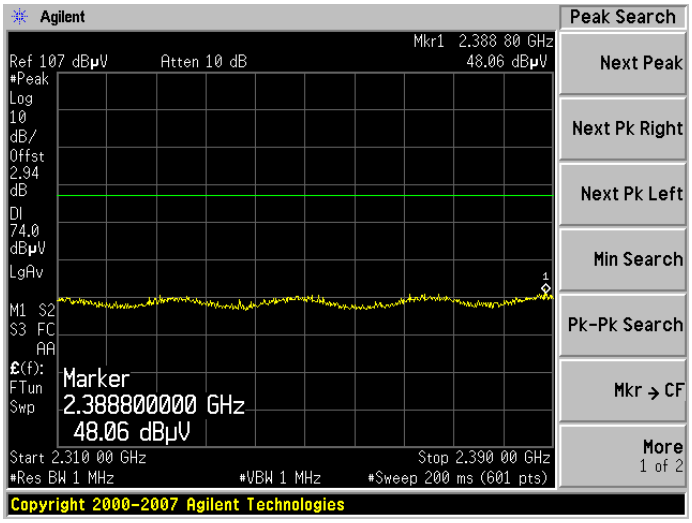
802.11n40, Low CH, Horizontal, Peak



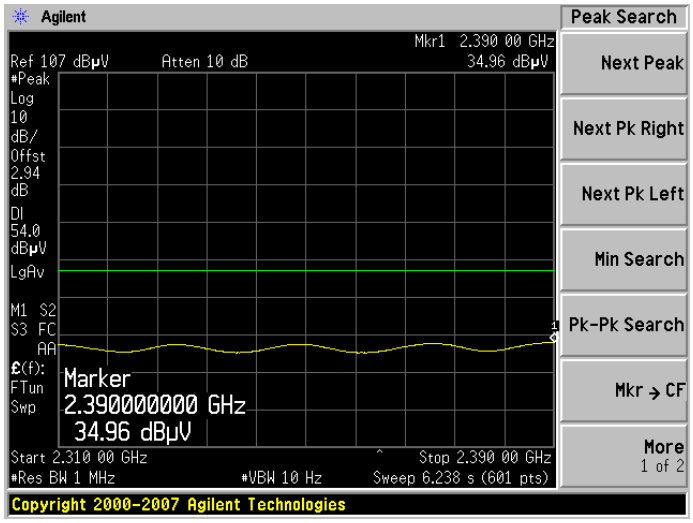
802.11n40, Low CH, Horizontal, Average



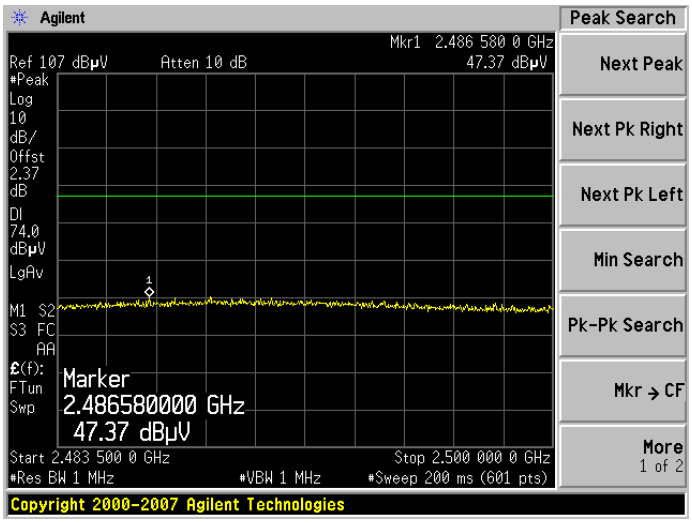
802.11n40, Low CH, Vertical, Peak



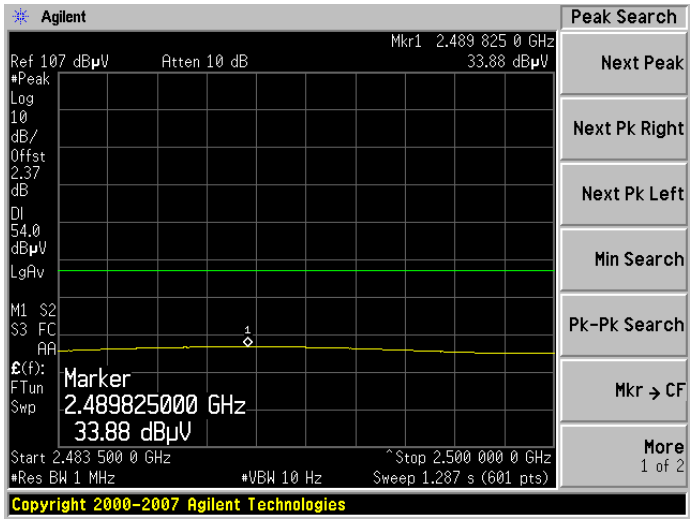
802.11n40, Low CH, Vertical, Average



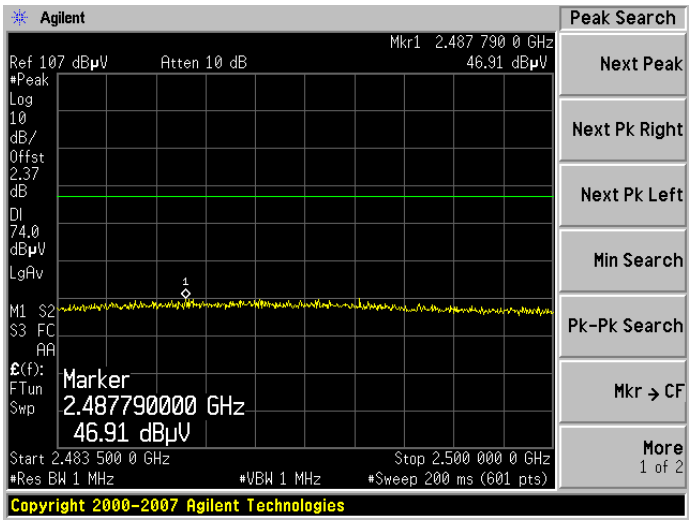
802.11n40, High CH, Horizontal, Peak



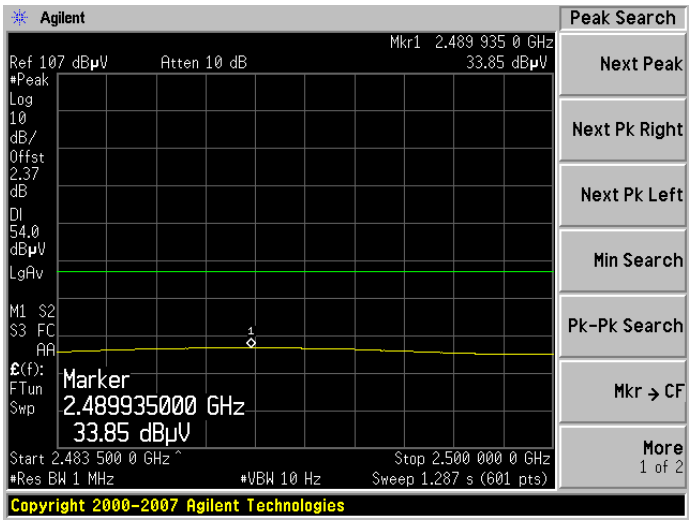
802.11n40, High CH, Horizontal, Average



802.11n40, High CH, Vertical, Peak



802.11n40, High CH, Vertical, Average

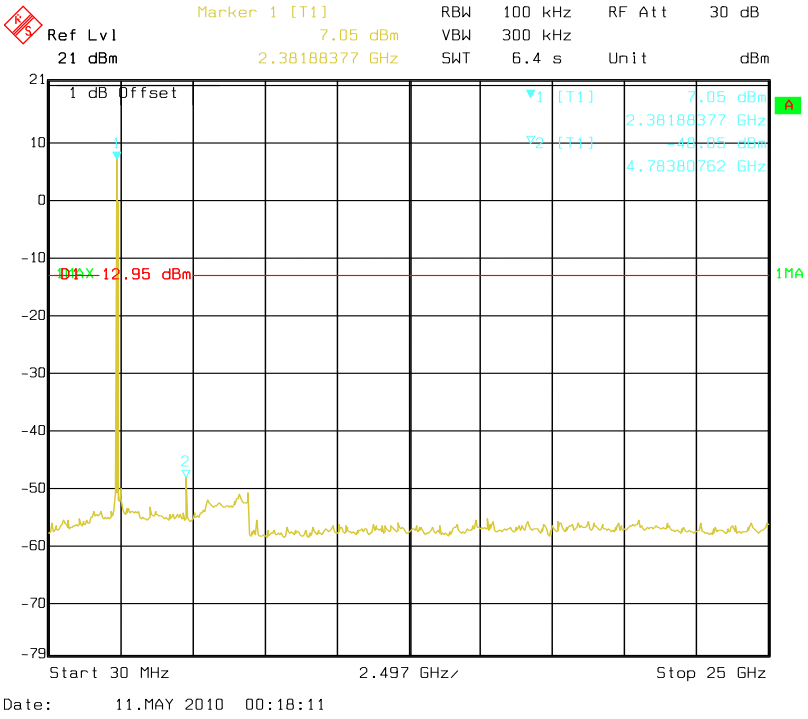


Antenna Port Conducted Spurious Emissions

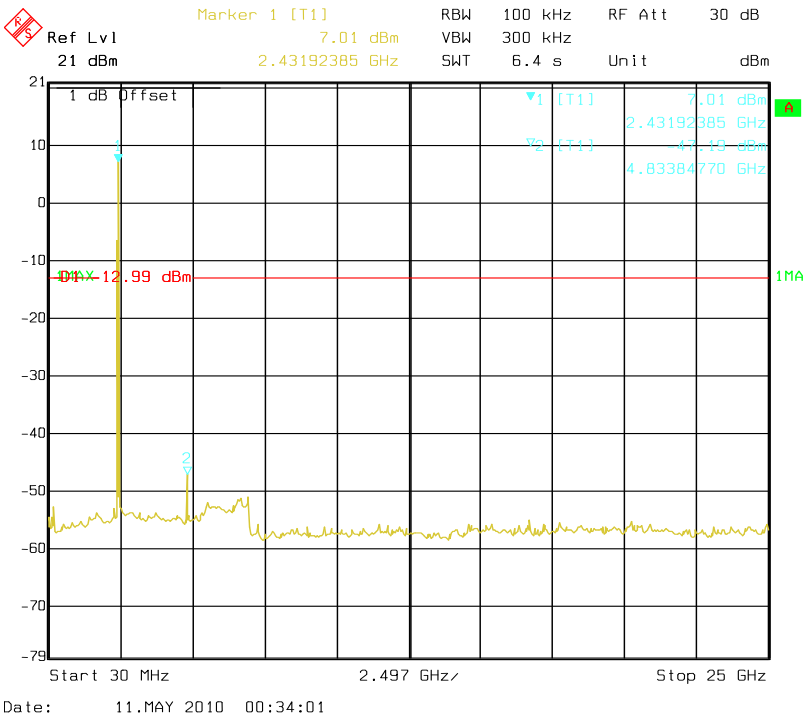
Channel Frequency (MHz)	Delta Value (dBc)	Limit (dBc)	Ref. Plot	Result
802.11g mode				
2412	55.10	20	PLOT1	PASS
2437	54.20	20	PLOT2	PASS
2462	52.66	20	PLOT3	PASS
802.11g mode				
2412	53.45	20	PLOT4	PASS
2437	52.79	20	PLOT5	PASS
2462	54.01	20	PLOT6	PASS
802.11n20 mode				
2412	52.34	20	PLOT7	PASS
2437	52.32	20	PLOT8	PASS
2462	52.20	20	PLOT9	PASS
802.11n40 mode				
2422	48.07	20	PLOT10	PASS
2437	48.73	20	PLOT11	PASS
2452	48.96	20	PLOT12	PASS

Please refer to the following plots.

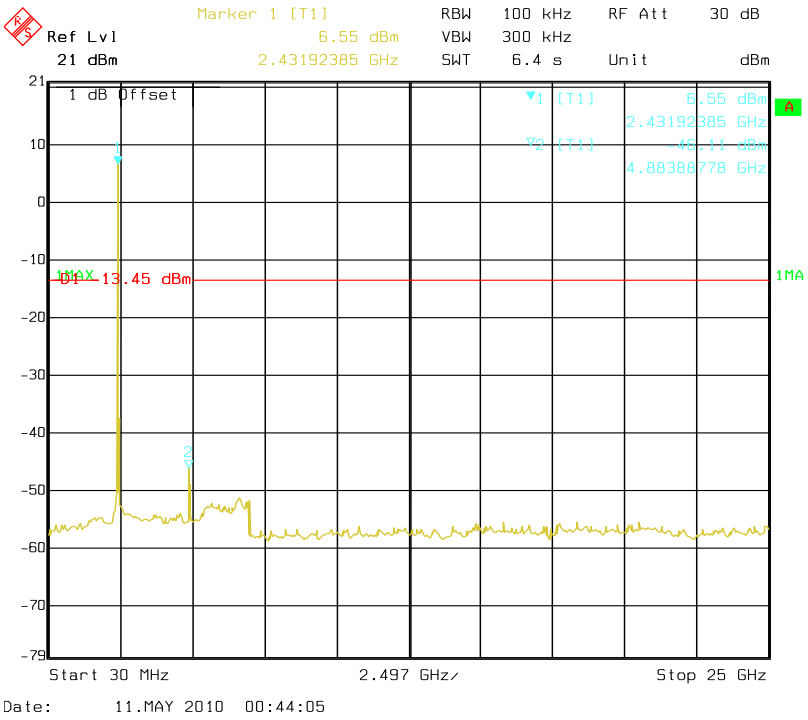
802.11b Low Channel



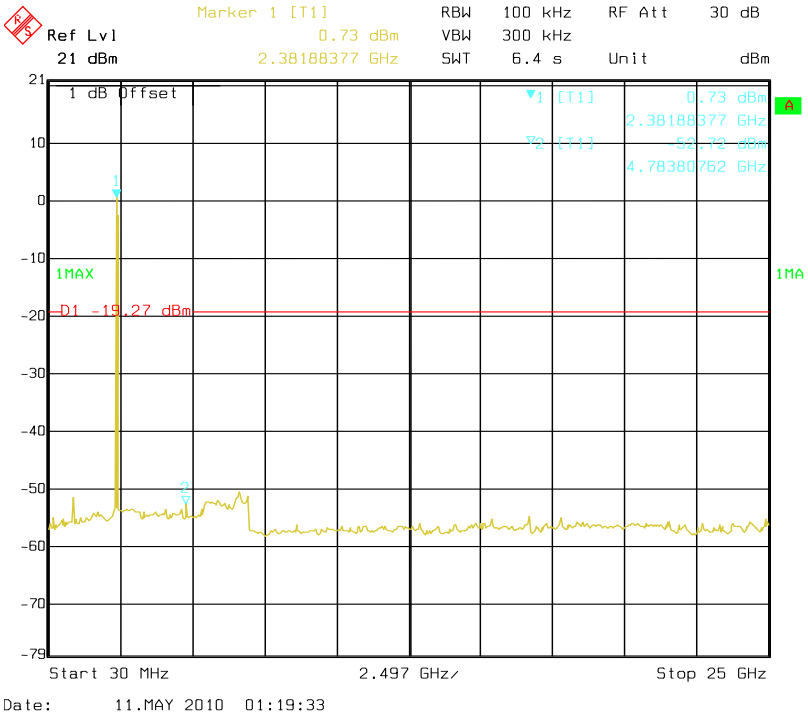
802.11b Middle Channel



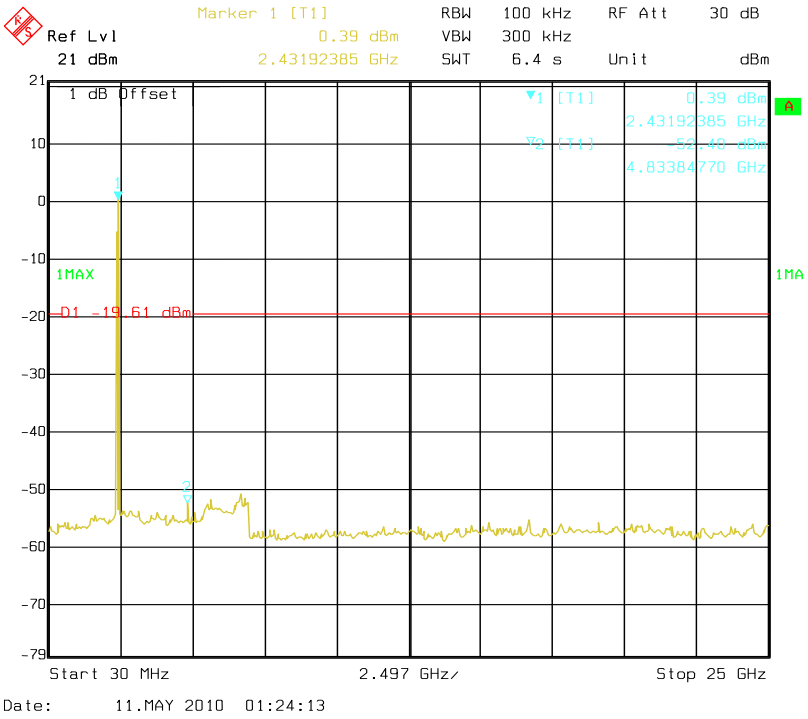
802.11b High Channel



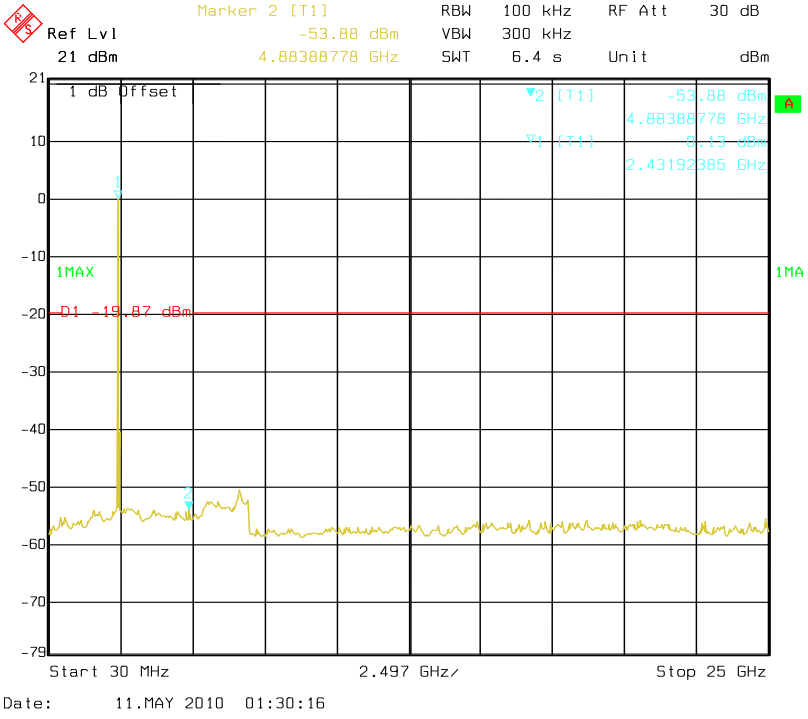
802.11g Low Channel



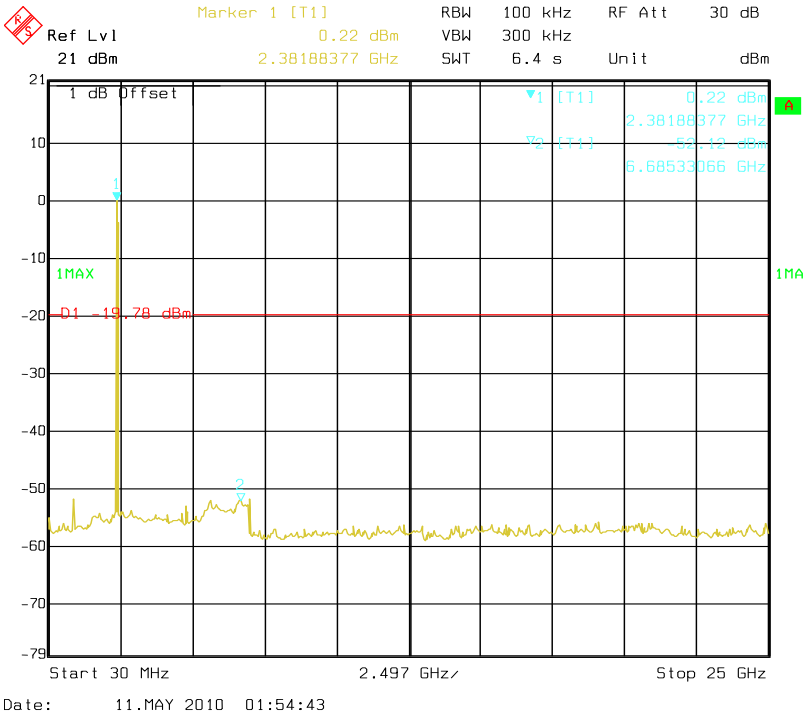
802.11g Middle Channel



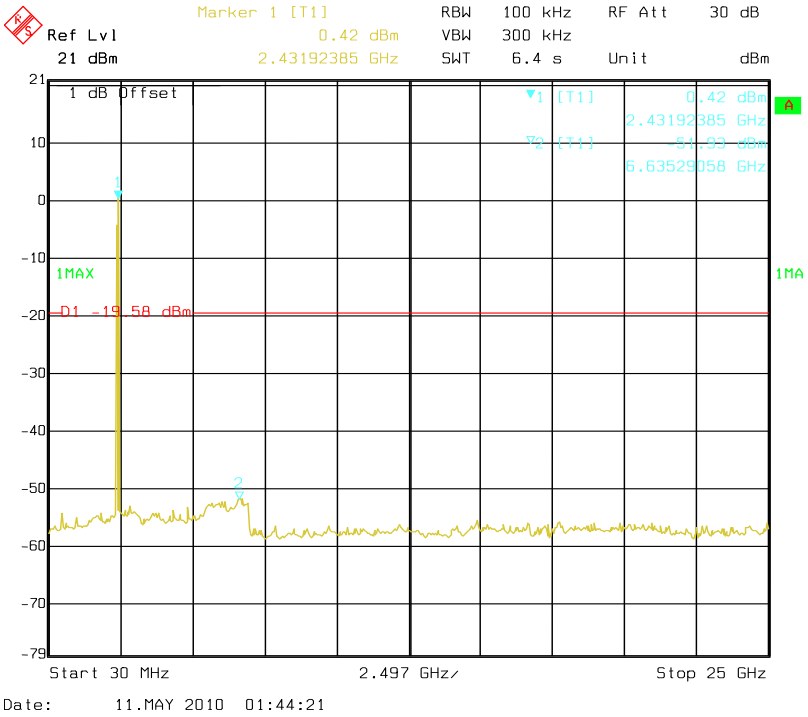
802.11g High Channel



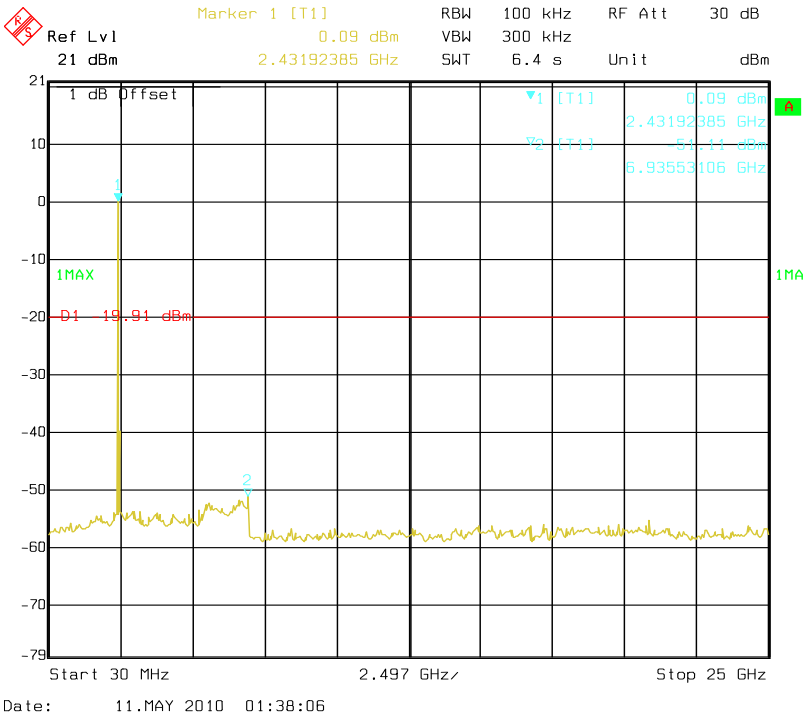
802.11n20 Low Channel



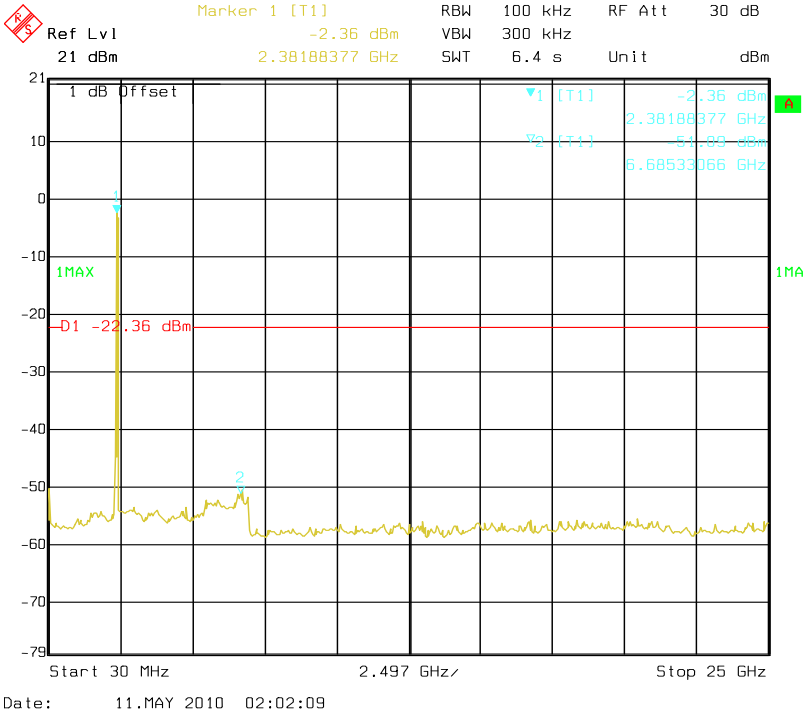
802.11n20 Middle Channel



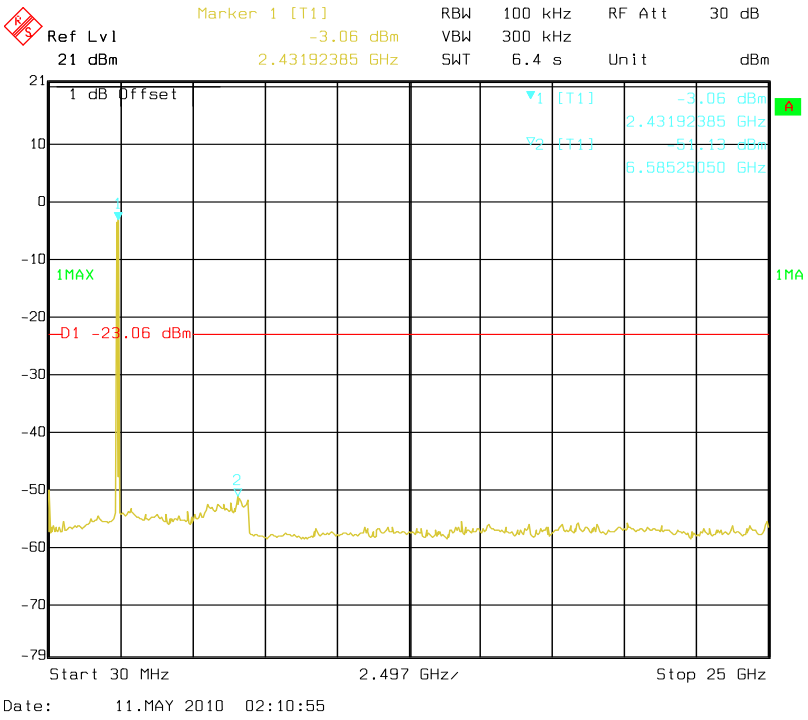
802.11n20 High Channel



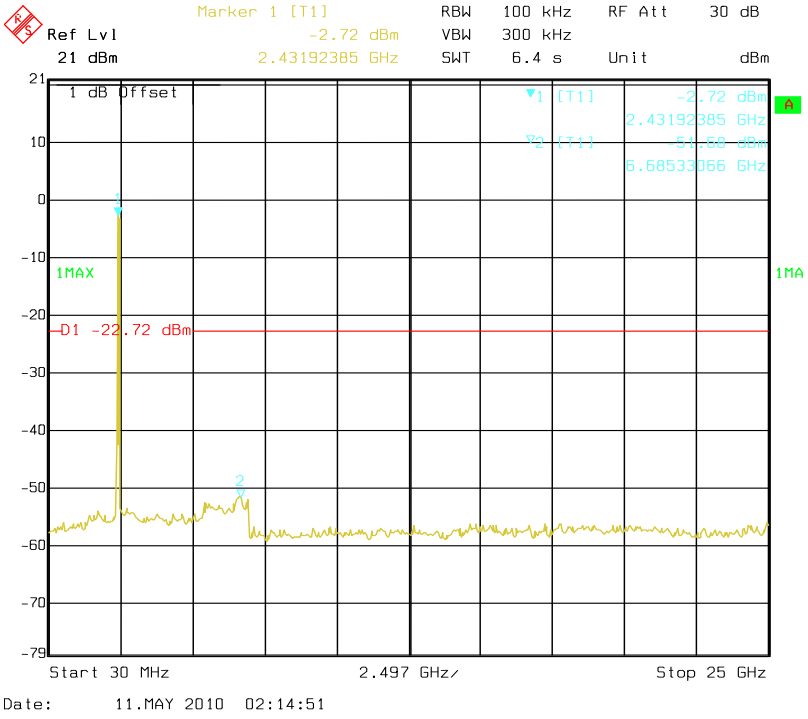
802.11n40 Low Channel



802.11n40 Middle Channel



802.11n40 High Channel



FCC §15.247(a) (2) – 6 dB BANDWIDTH TESTING

Applicable Standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

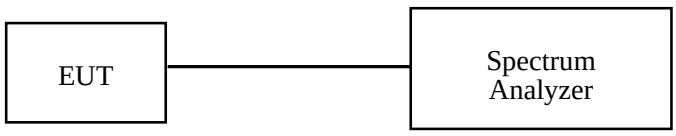
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2009-11-24	2010-11-23

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test 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 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.



Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

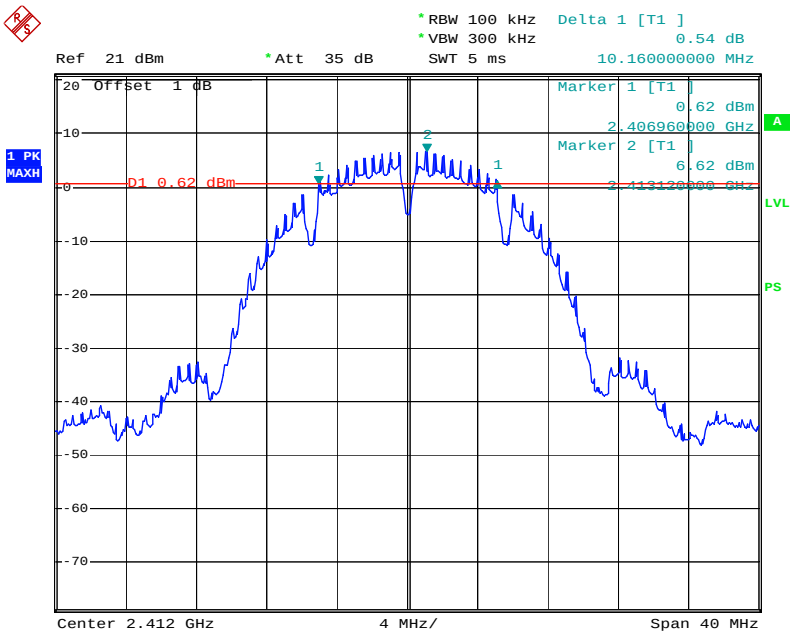
The testing was performed by Cookies Bu on 2010-05-03 to 2010-06-05.

Test Result: Pass.

Please refer to the following tables and plots.

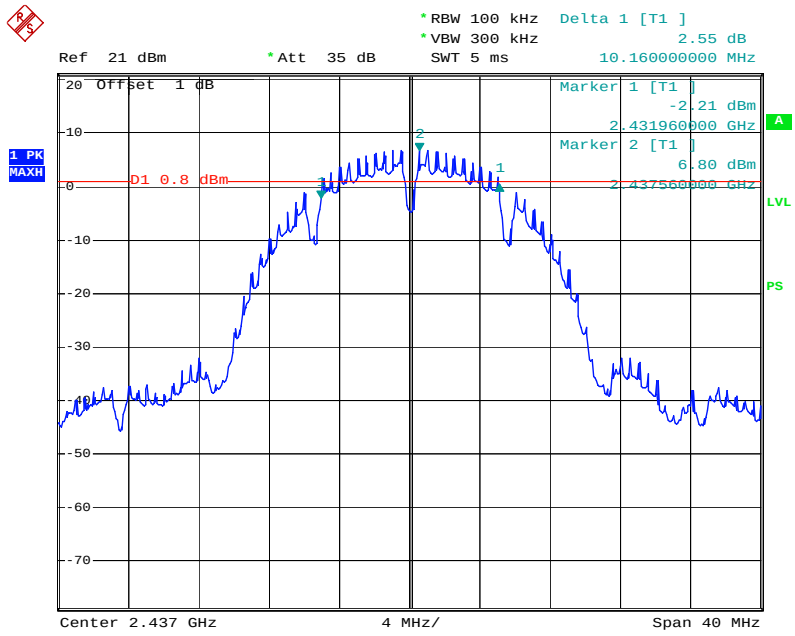
Channel	Channel Frequency (MHz)	Measured 6dB Bandwidth (MHz)	FCC Part 15.247 Limit (kHz)
802.11b mode			
Low	2412	10.16	> 500
Middle	2437	10.16	> 500
High	2462	10.16	> 500
802.11g mode			
Low	2412	16.48	> 500
Middle	2437	16.48	> 500
High	2462	16.48	> 500
802.11n20 mode			
Low	2412	17.52	> 500
Middle	2437	17.52	> 500
High	2462	17.52	> 500
802.11n40 mode			
Low	2422	35.84	> 500
Middle	2437	35.84	> 500
High	2452	35.84	> 500

802.11b Low Channel



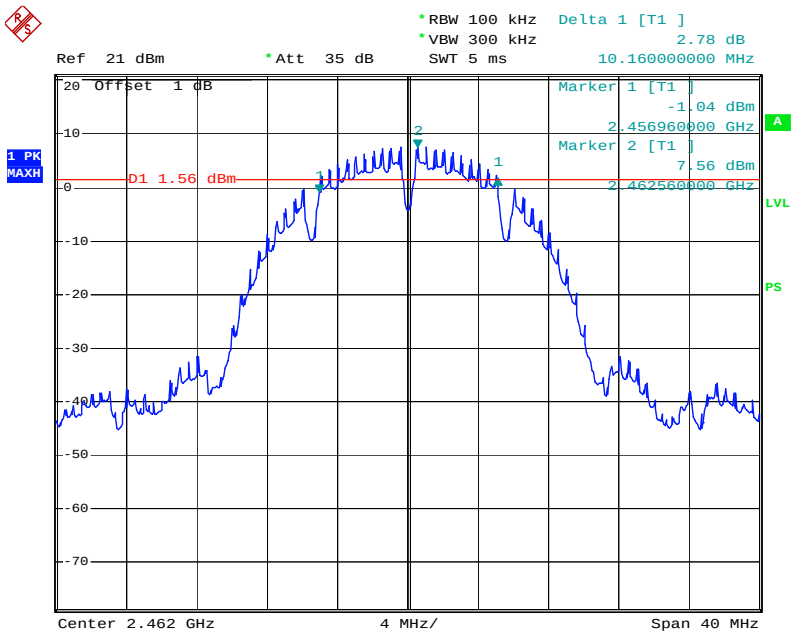
Date: 3.MAY.2010 04:22:23

802.11b Middle Channel



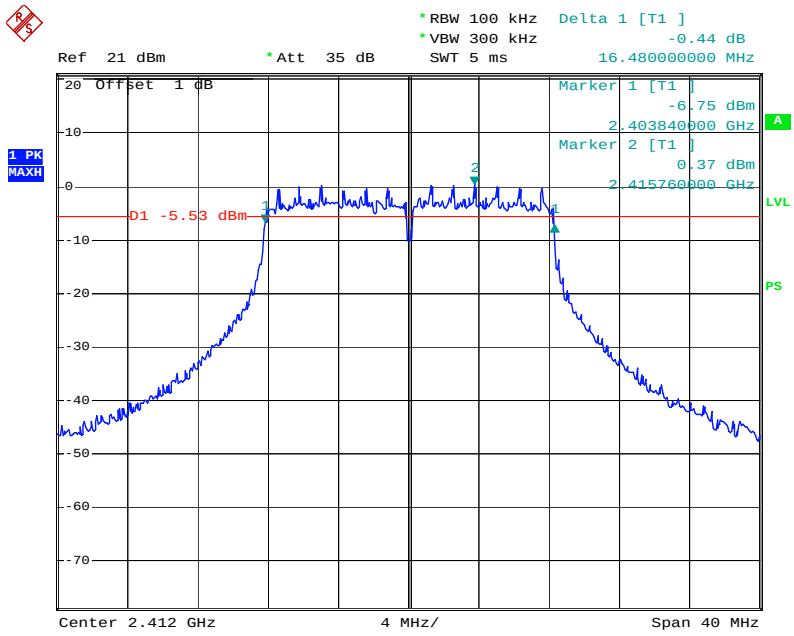
Date: 3.MAY.2010 04:23:51

802.11b High Channel



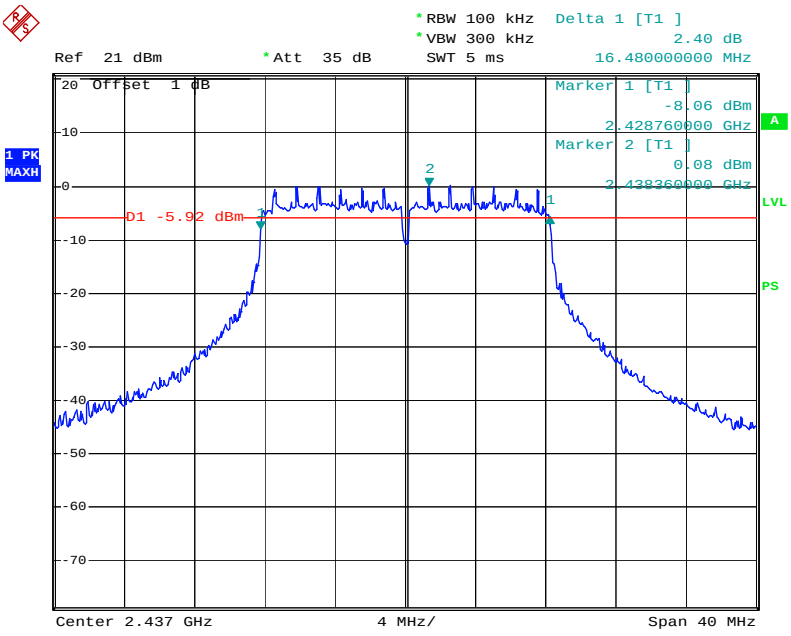
Date: 3.MAY.2010 04:26:44

802.11g Low Channel



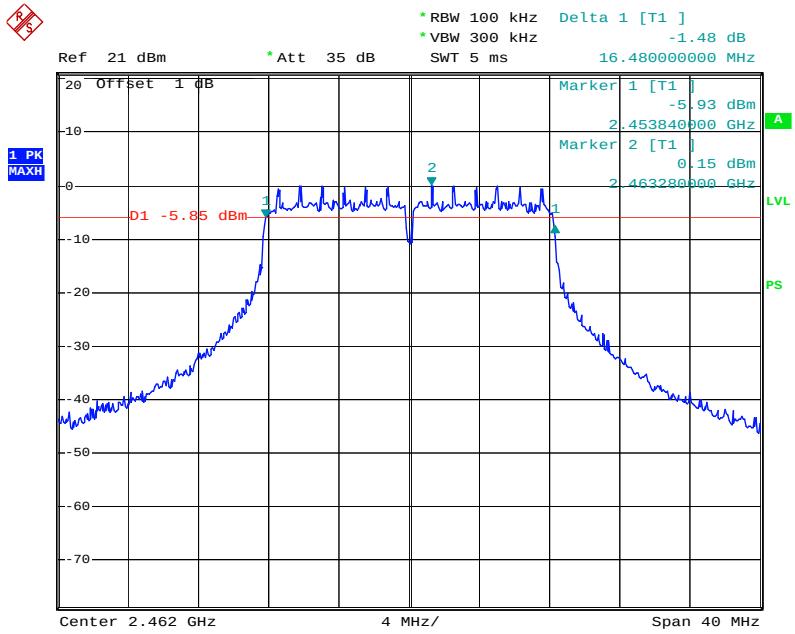
Date: 3.MAY.2010 04:20:38

802.11g Middle Channel



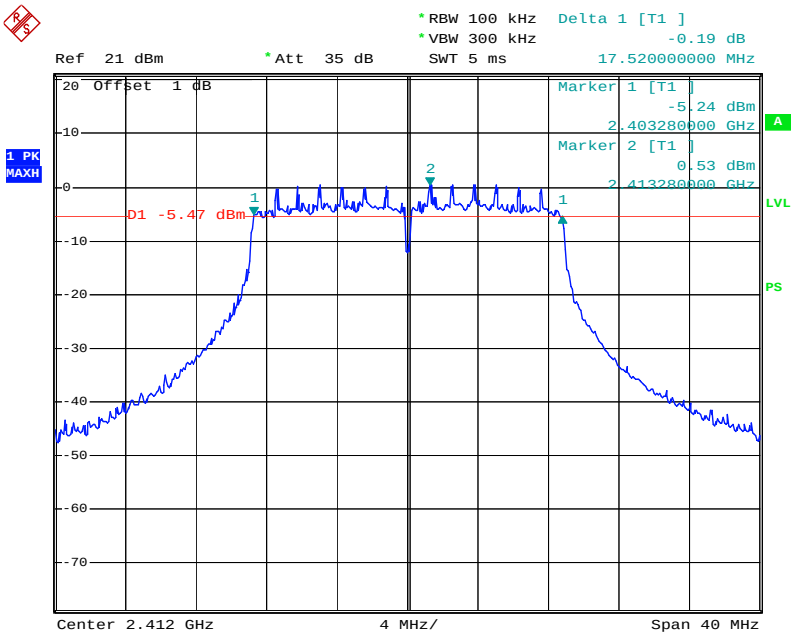
Date: 3.MAY.2010 04:18:57

802.11g High Channel



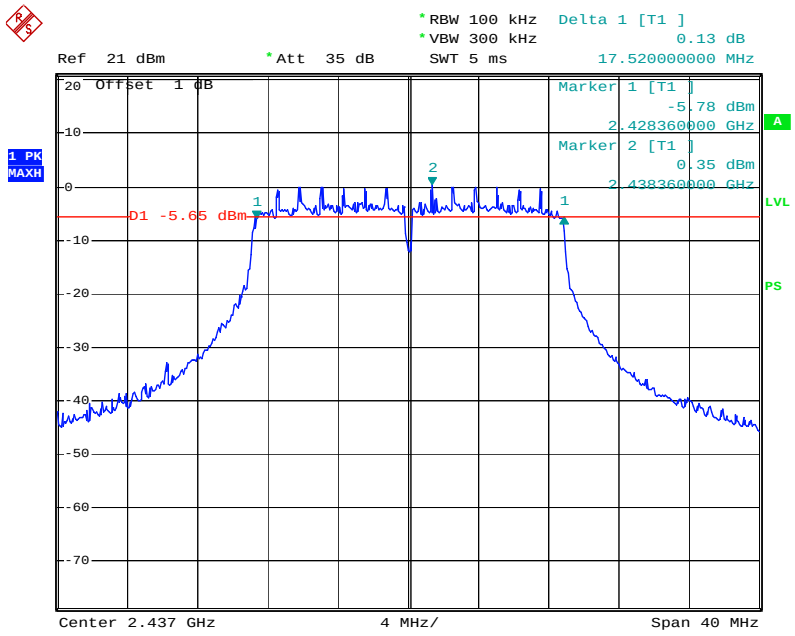
Date: 3.MAY.2010 04:16:24

802.11n20 Low Channel



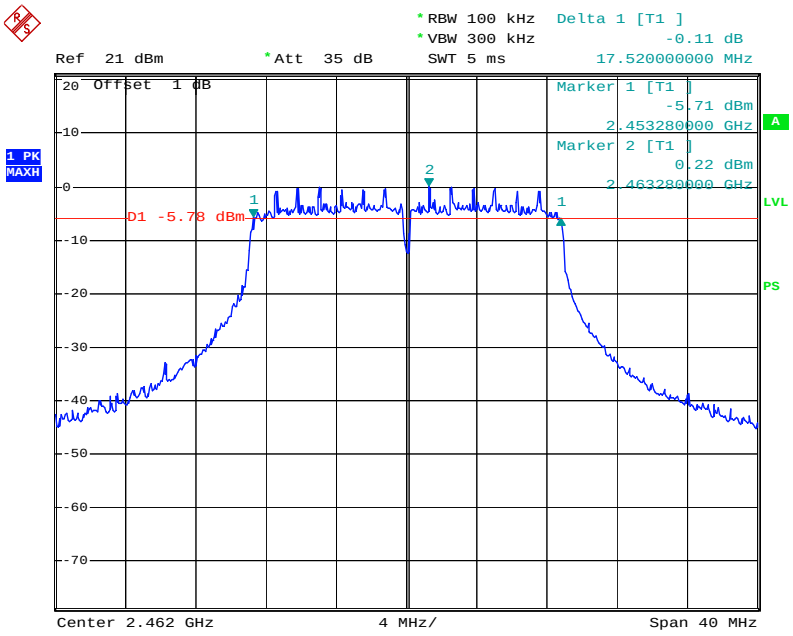
Date: 3.MAY.2010 04:05:59

802.11n20 Middle Channel



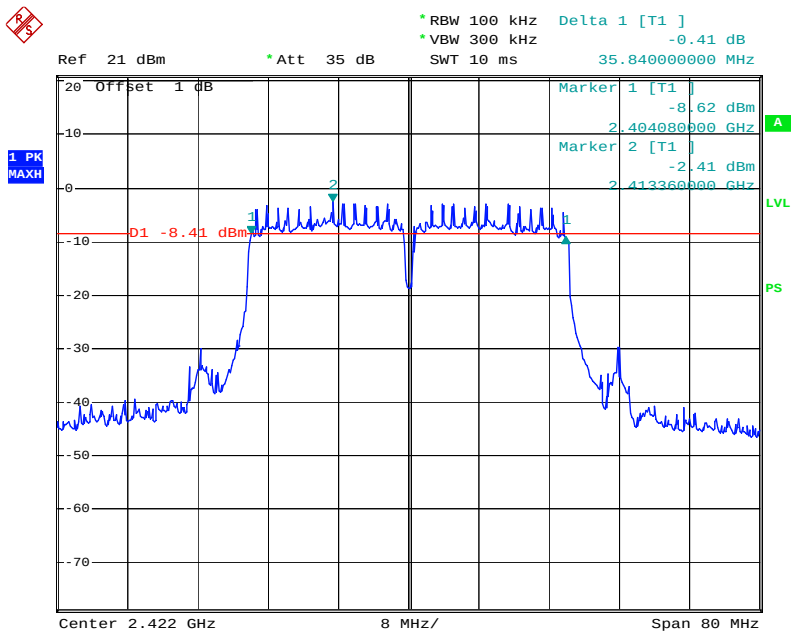
Date: 3.MAY.2010 04:07:22

802.11n20 High Channel



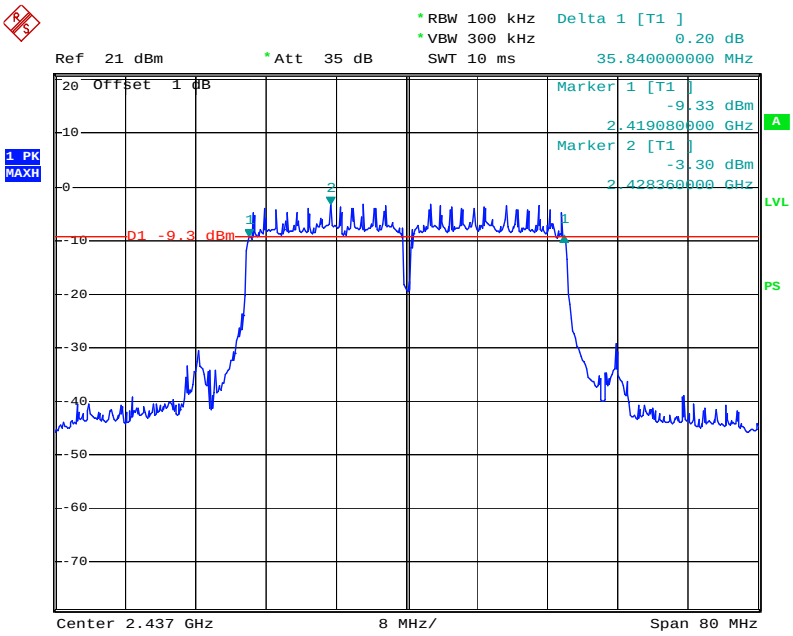
Date: 3.MAY.2010 04:11:39

802.11n40 Low Channel



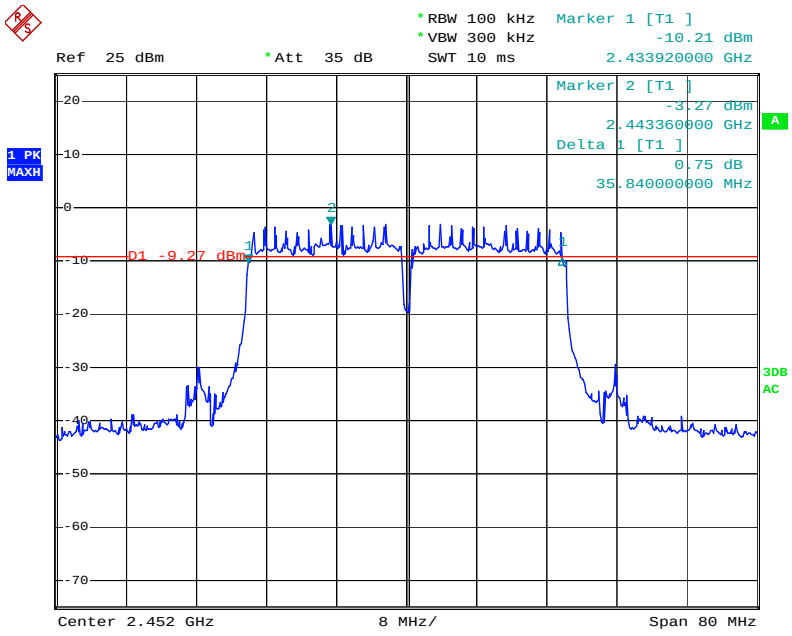
Date: 10.MAY.2010 03:26:56

802.11n40 Middle Channel



Date: 3.MAY.2010 04:01:36

802.11n40 High Channel



Date: 5.JUN.2010 10:16:00

FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER

Applicable Standard

According to §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

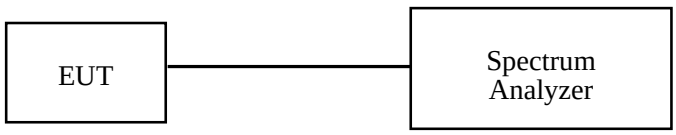
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2009-11-24	2010-11-23

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test 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 an EMI Test Receiver.
3. Add a correction factor to the display.



Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Cookies Bu on 2010-06-01.

Test Mode: Transmitting

802.11b Mode:

Channel	Channel Frequency (MHz)	Output Power (dBm)	Limit (dBm)
Low	2412	15.50	30
Middle	2437	15.72	30
High	2462	15.84	30

802.11g Mode:

Channel	Channel Frequency (MHz)	Output Power (dBm)	Limit (dBm)
Low	2412	12.10	30
Middle	2437	12.52	30
High	2462	12.51	30

802.11n20 Mode:

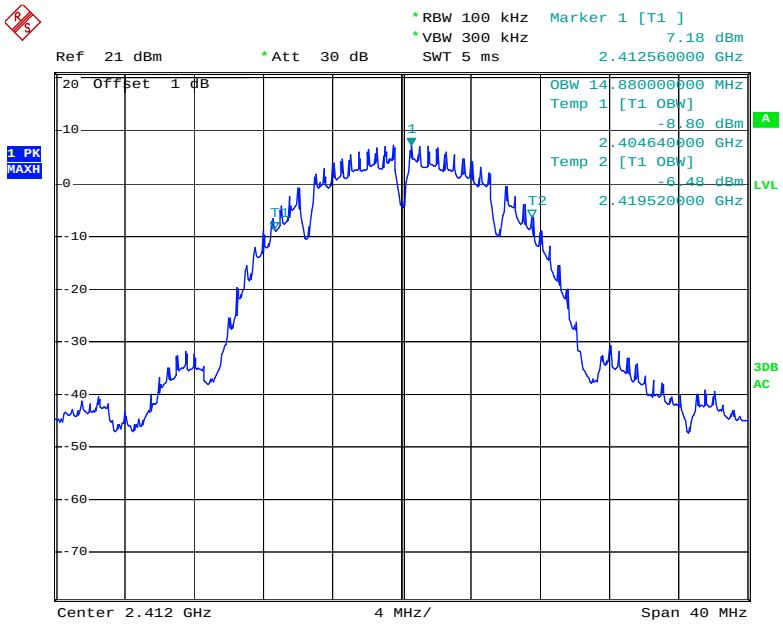
Channel	Channel Frequency (MHz)	Output Power (dBm)	Limit (dBm)
Low	2412	12.08	30
Middle	2437	12.32	30
High	2462	12.47	30

802.11n40 Mode:

Channel	Channel Frequency (MHz)	Output Power (dBm)	Limit (dBm)
Low	2422	11.60	30
Middle	2437	11.72	30
High	2452	11.82	30

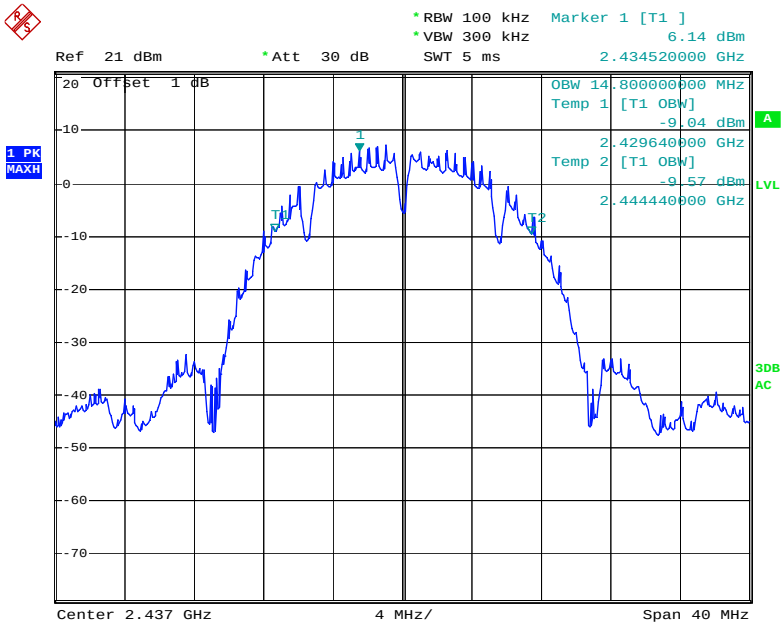
802.11b Mode:

99% Occupied Bandwidth, Low Channel



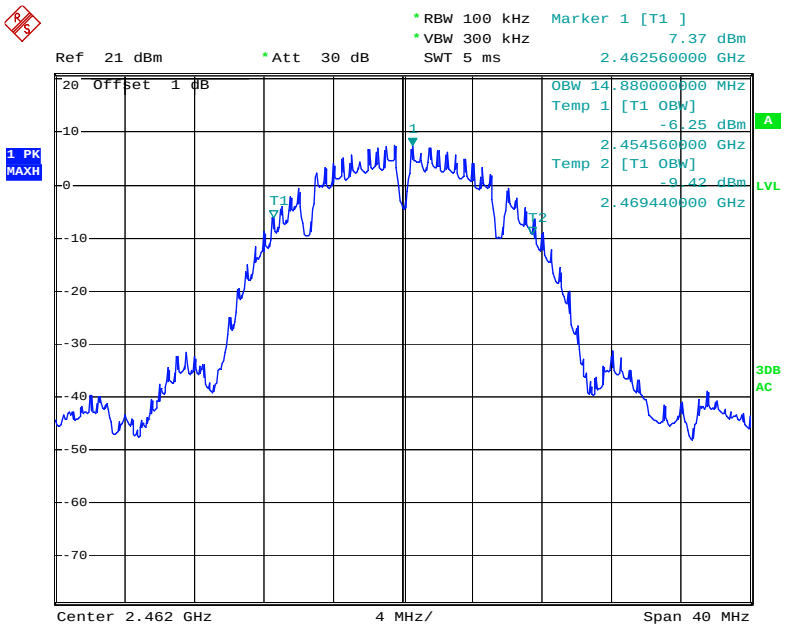
Date: 1.JUN.2010 19:16:05

99% Occupied Bandwidth, Middle Channel



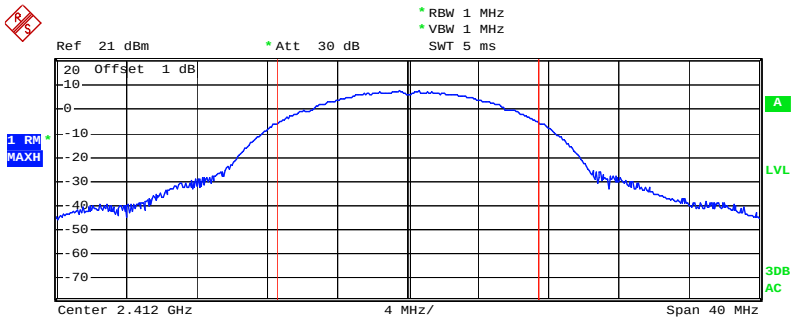
Date: 1.JUN.2010 19:17:29

99% Occupied Bandwidth, High Channel



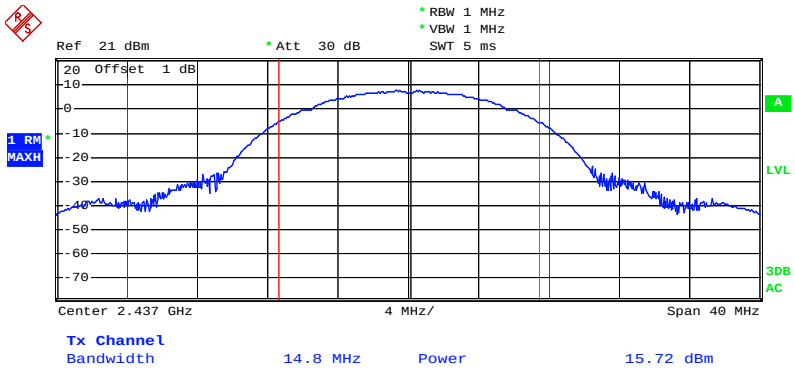
Date: 1.JUN.2010 19:31:21

802.11b RF Output Power, Low Channel



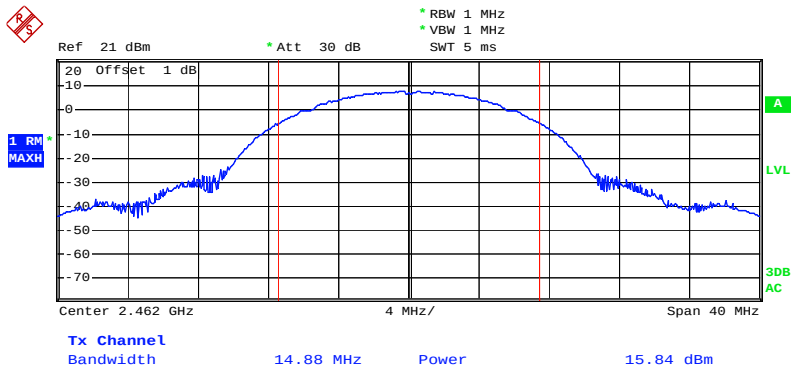
Date: 1.JUN.2010 19:25:33

802.11b RF Output Power, Middle Channel



Date: 1.JUN.2010 19:30:01

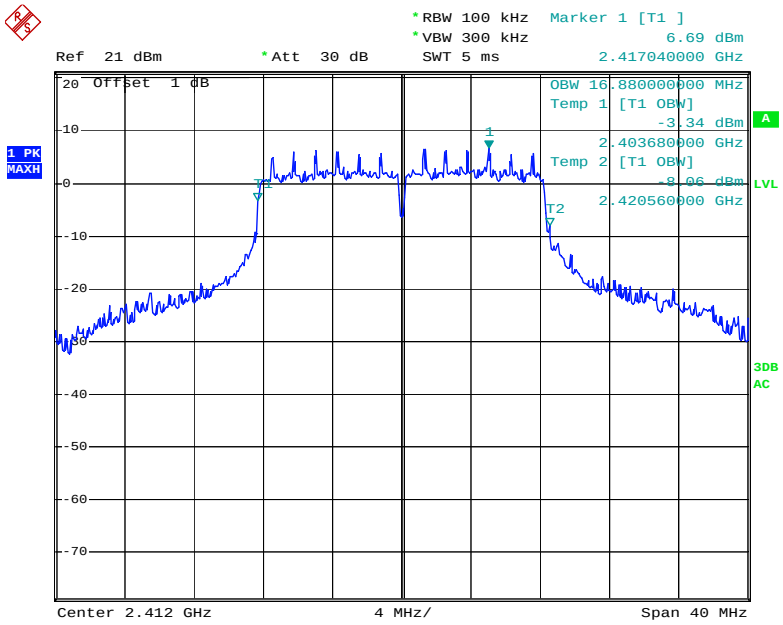
802.11b RF Output Power, High Channel



Date: 1.JUN.2010 19:32:07

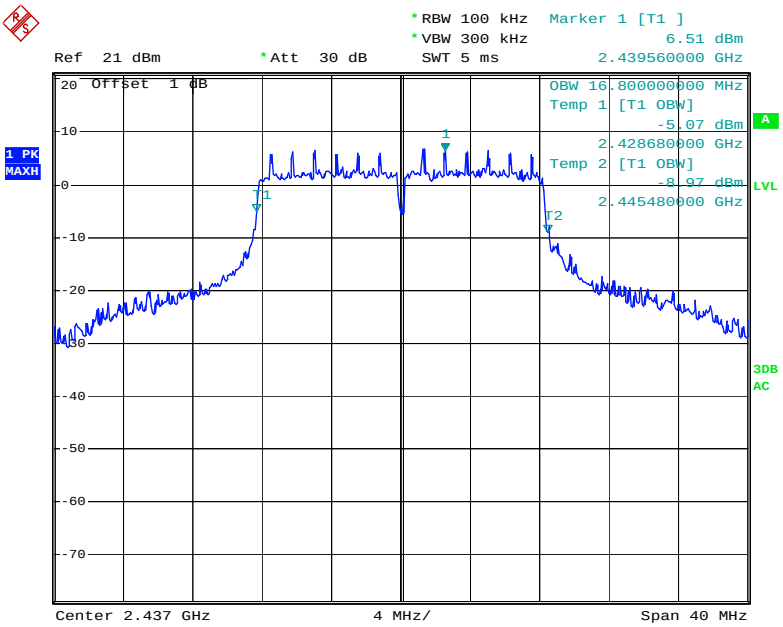
802.11g Mode:

99% Occupied Bandwidth, Low Channel



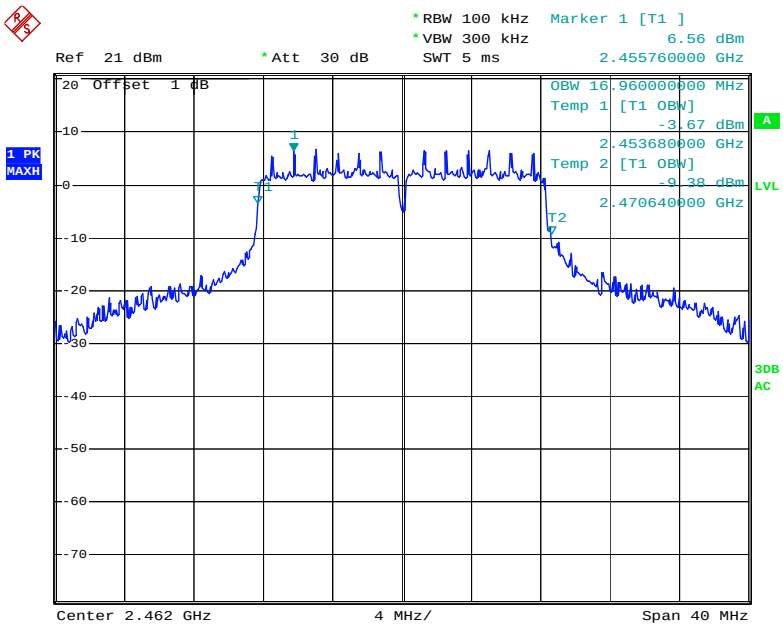
Date: 1.JUN.2010 19:35:26

99% Occupied Bandwidth, Middle Channel



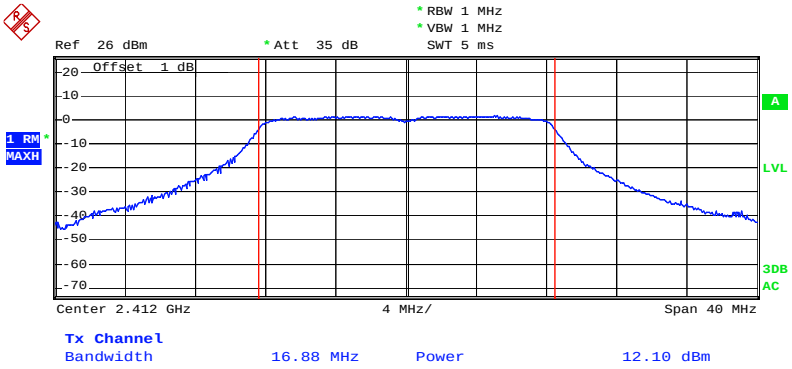
Date: 1.JUN.2010 19:36:11

99% Occupied Bandwidth, High Channel



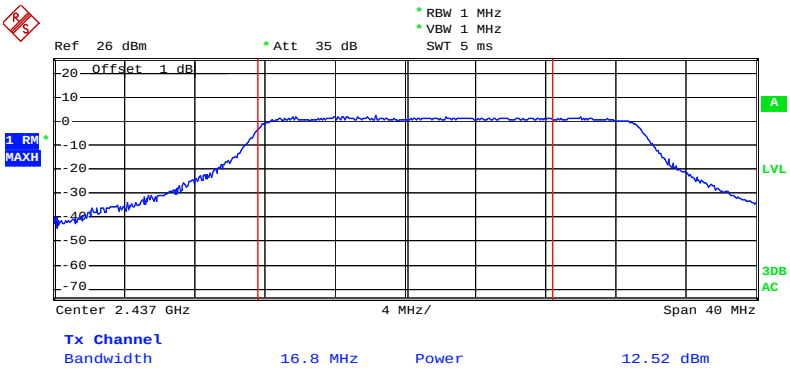
Date: 1.JUN.2010 19:37:35

802.11g RF Output Power, Low Channel



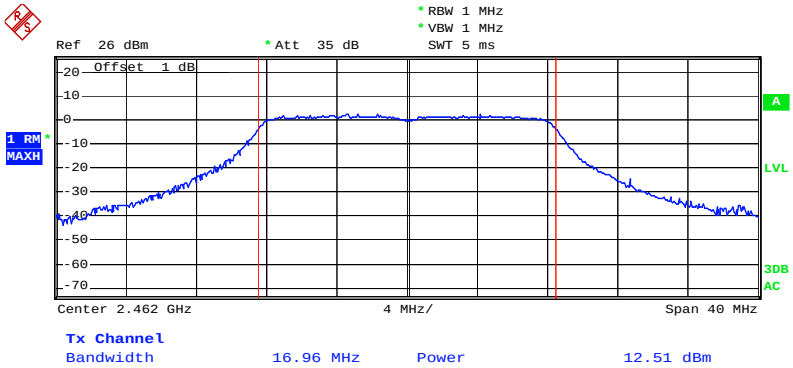
Date: 1.JUN.2010 19:52:49

802.11g RF Output Power, Middle Channel



Date: 1.JUN.2010 19:51:48

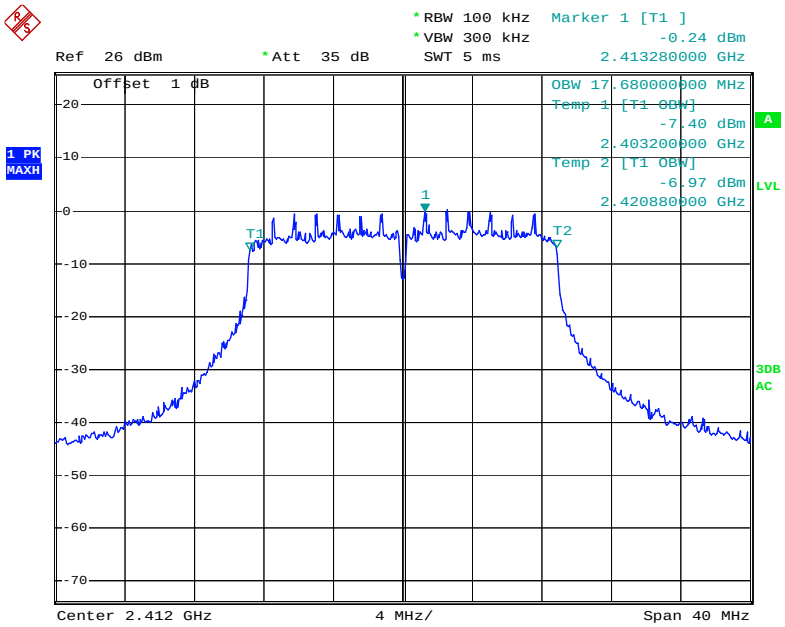
802.11g RF Output Power, High Channel



Date: 1.JUN.2010 19:49:49

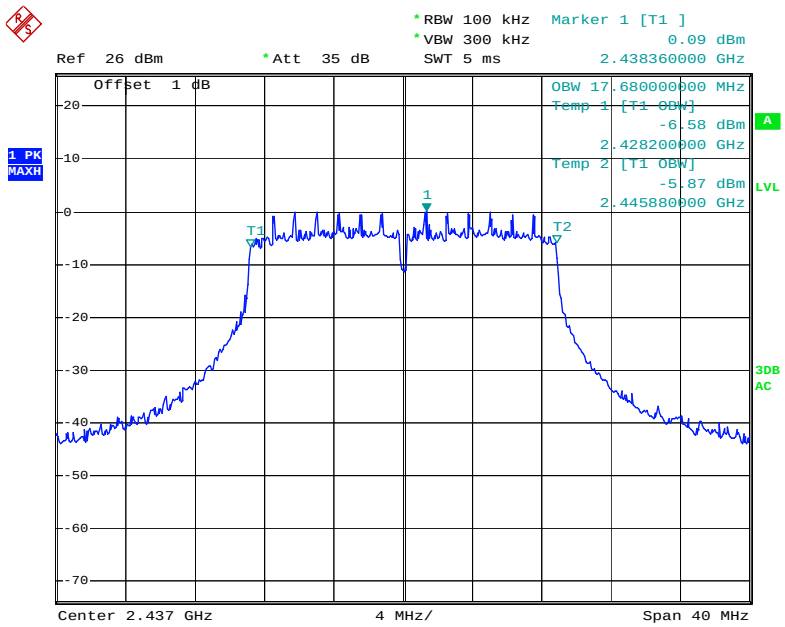
802.11n20 Mode:

99% Occupied Bandwidth, Low Channel



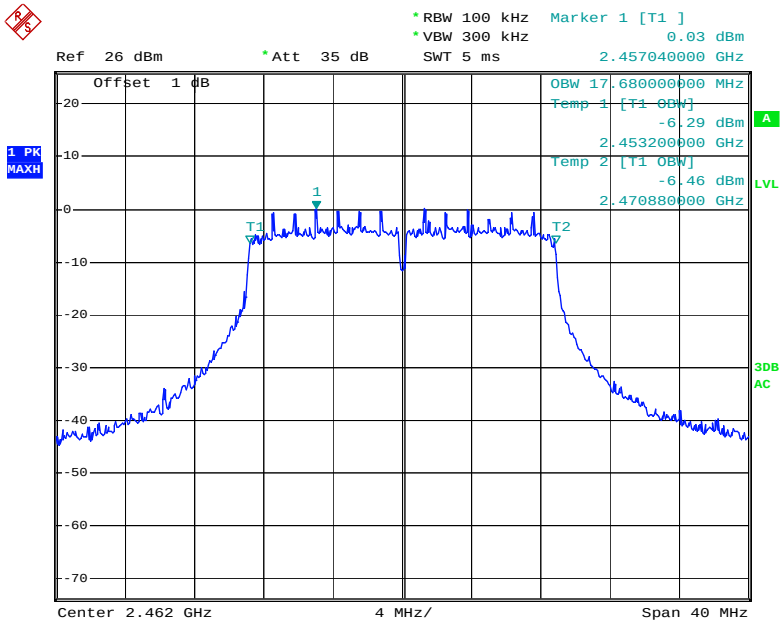
Date: 1.JUN.2010 19:53:58

99% Occupied Bandwidth, Middle Channel



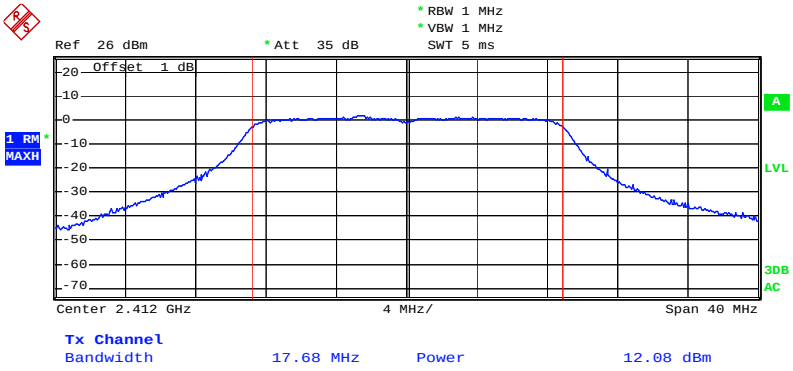
Date: 1.JUN.2010 19:54:32

99% Occupied Bandwidth, High Channel



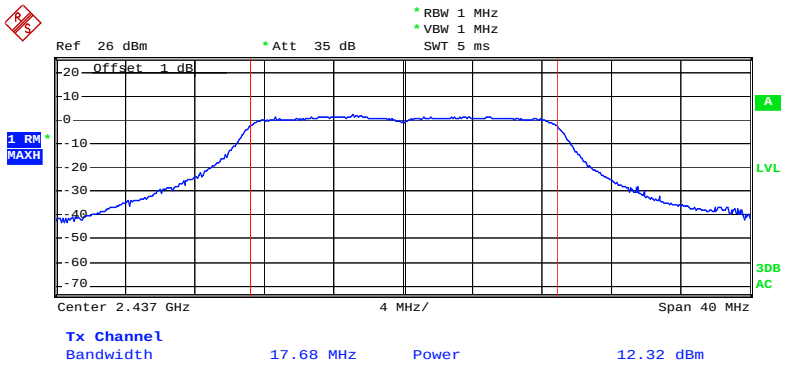
Date: 1.JUN.2010 19:55:33

802.11n20 RF Output Power, Low Channel



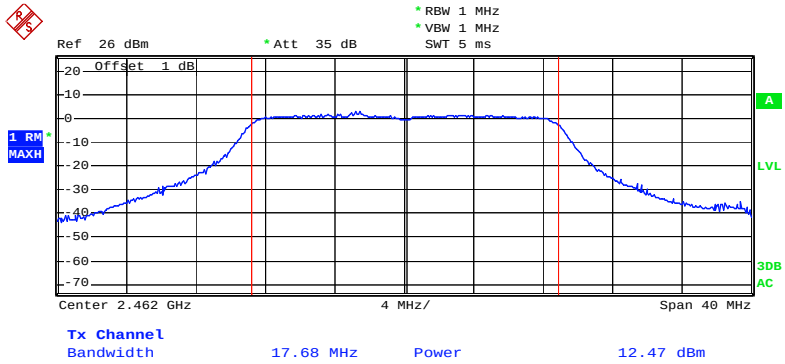
Date: 1.JUN.2010 20:02:51

802.11n20 RF Output Power, Middle Channel



Date: 1.JUN.2010 20:01:20

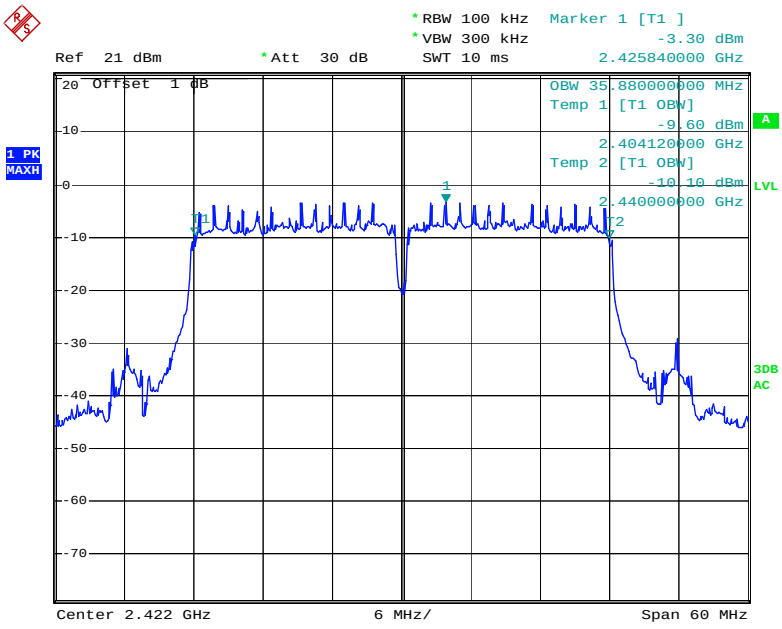
802.11n20 RF Output Power, High Channel



Date: 1.JUN.2010 19:59:16

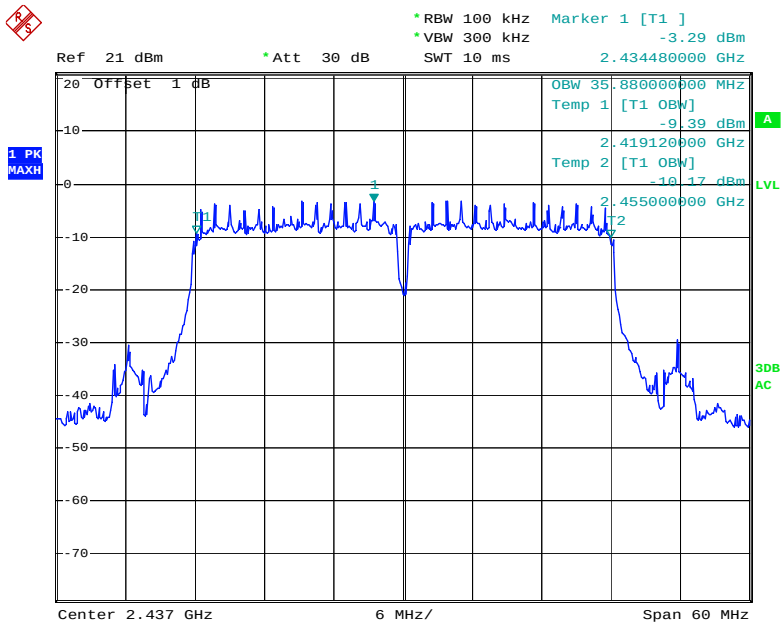
802.11n40 Mode:

99% Occupied Bandwidth, Low Channel



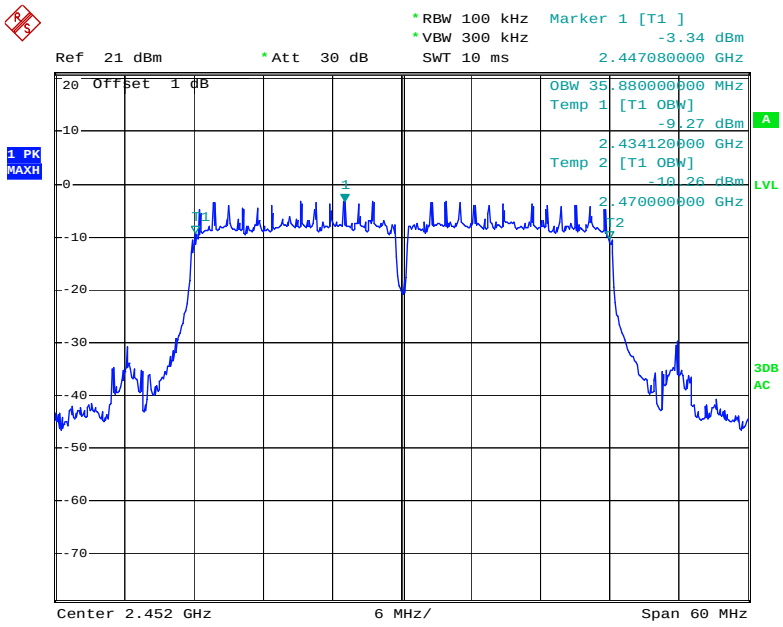
Date: 1.JUN.2010 20:04:33

99% Occupied Bandwidth, Middle Channel



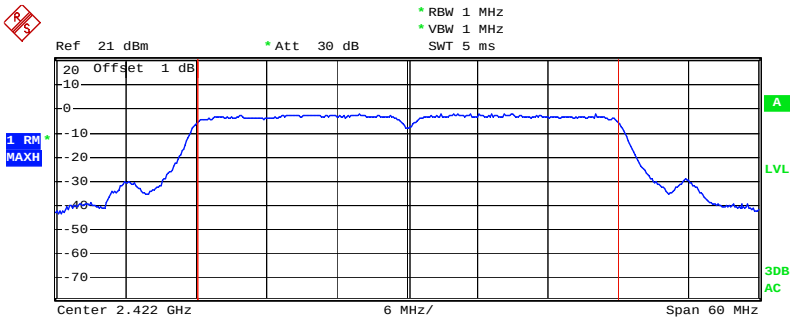
Date: 1.JUN.2010 20:05:14

99% Occupied Bandwidth, High Channel



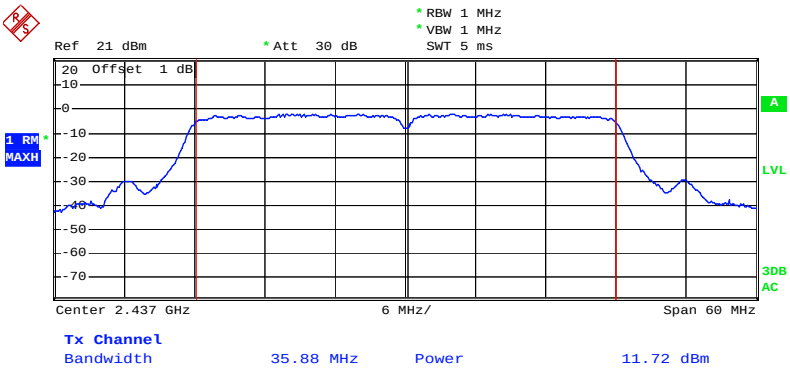
Date: 1.JUN.2010 20:06:43

802.11n40 RF Output Power, Low Channel



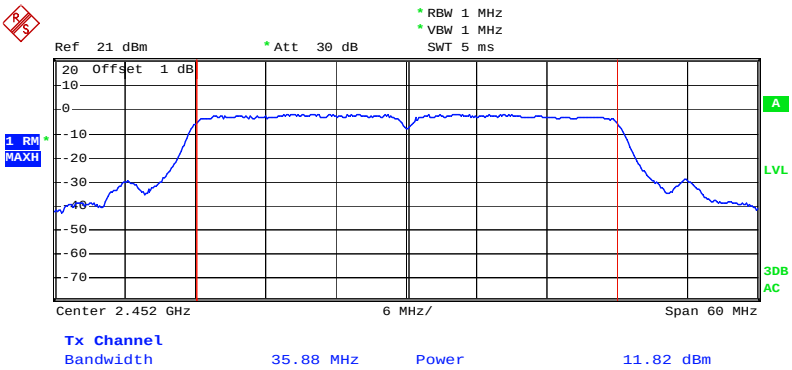
Date: 1.JUN.2010 20:14:41

802.11n40 RF Output Power, Middle Channel



Date: 1.JUN.2010 20:13:50

802.11n40 RF Output Power, High Channel



Date: 1.JUN.2010 20:12:05

FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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 paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2009-11-24	2010-11-23

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 1 MHz and VBW of spectrum analyzer to 1 MHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

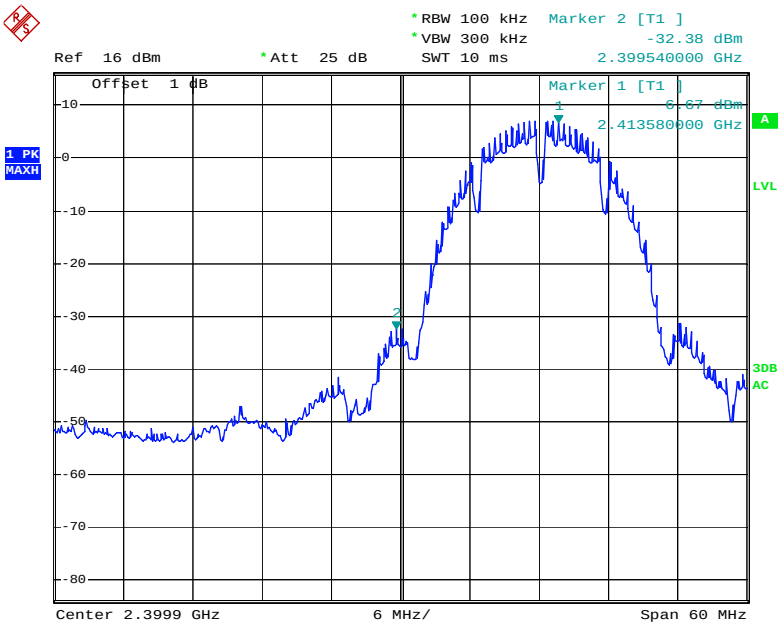
The testing was performed by Cookies Bu on 2010-06-01.

Test Result: *Compliant.*

Frequency (MHz)	Detector （PK/AV）	Delta Value (dBc)	Limit (dBc)	Result
802.11b mode				
2399.54	PK	39.05	20	Pass
2484.08	PK	53.59	20	Pass
802.11g mode				
2399.90	PK	34.28	20	Pass
2483.72	PK	46.10	20	Pass
802.11n20 mode				
2399.90	PK	32.48	20	Pass
2483.96	PK	46.32	20	Pass
802.11n40 mode				
2398.30	PK	27.63	20	Pass
2484.70	PK	40.00	20	Pass

Please refer to following plots.

802.11b: Band Edge, Left Side

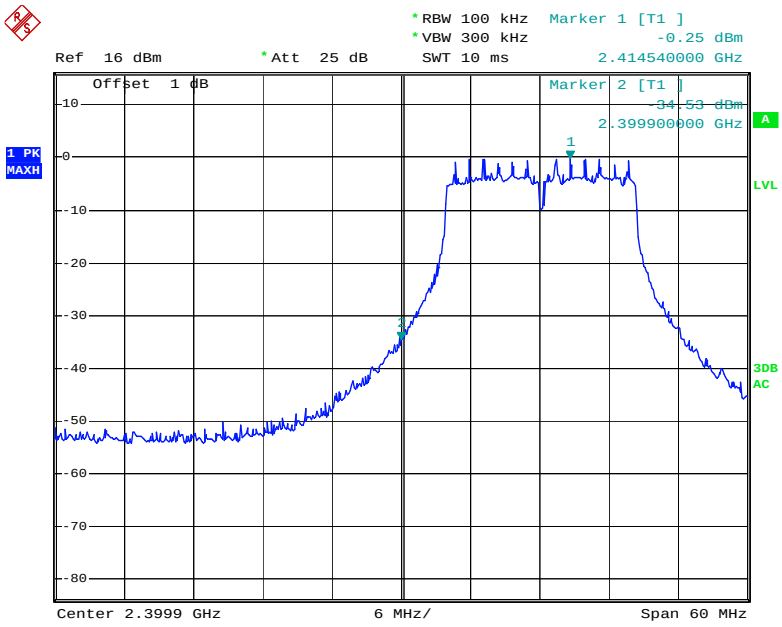


Date: 1.JUN.2010 20:18:38

802.11b: Band Edge, Right Side

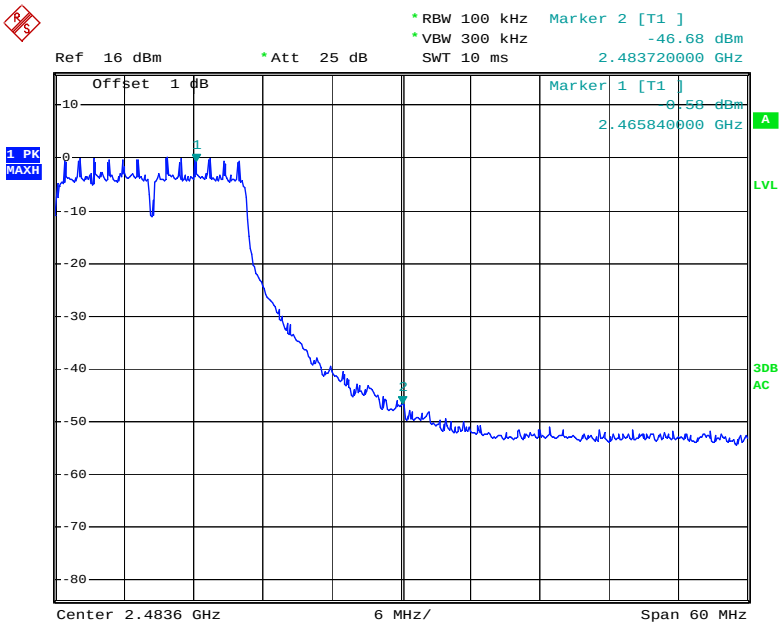
Date: 1.JUN.2010 20:19:27

802.11g: Band Edge, Left Side



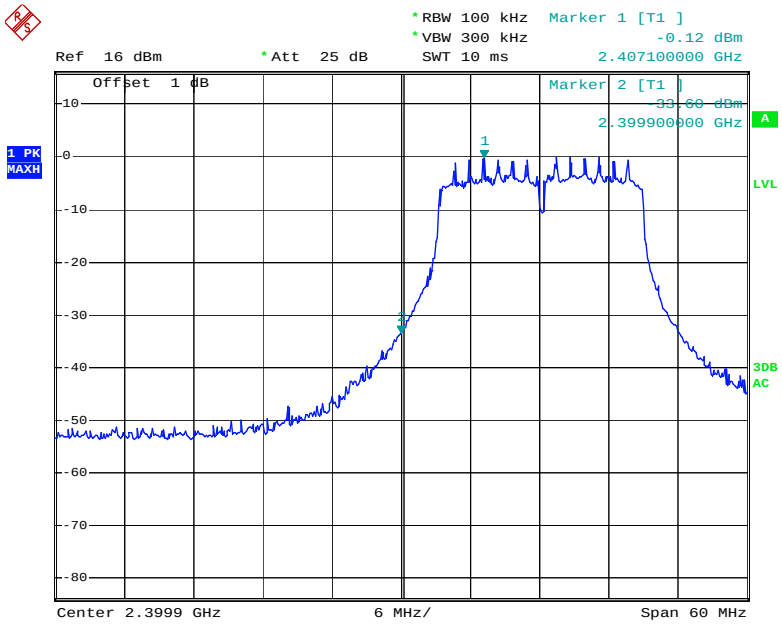
Date: 1.JUN.2010 20:20:18

802.11g: Band Edge, Right Side



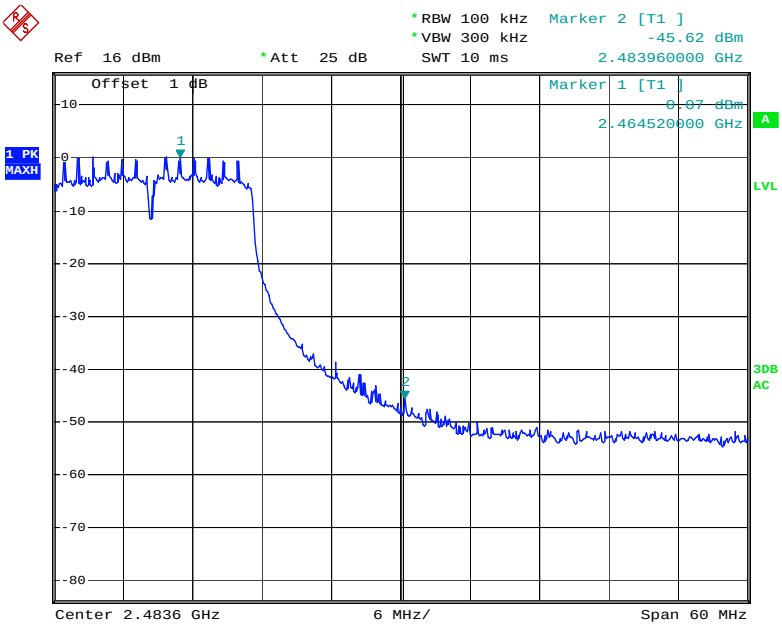
Date: 1.JUN.2010 20:21:25

802.11n20: Band Edge, Left Side



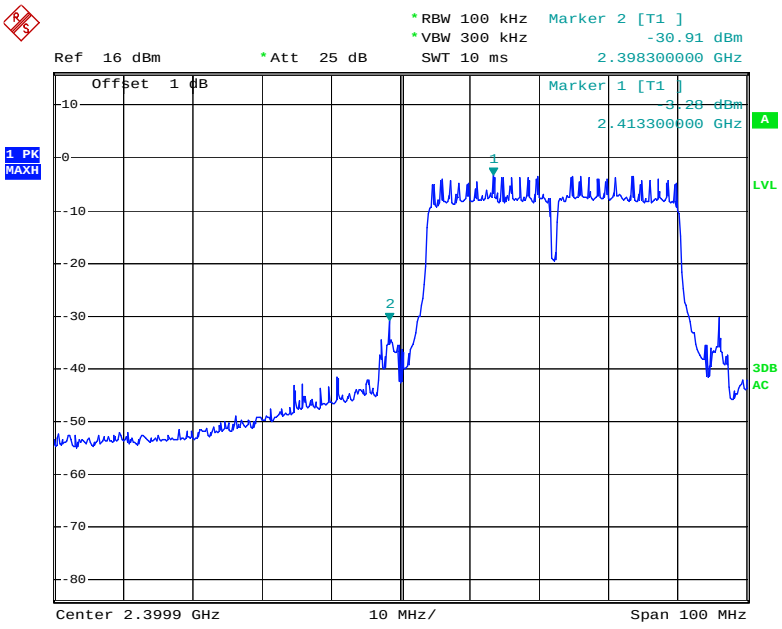
Date: 1.JUN.2010 20:24:34

802.11n20: Band Edge, Right Side



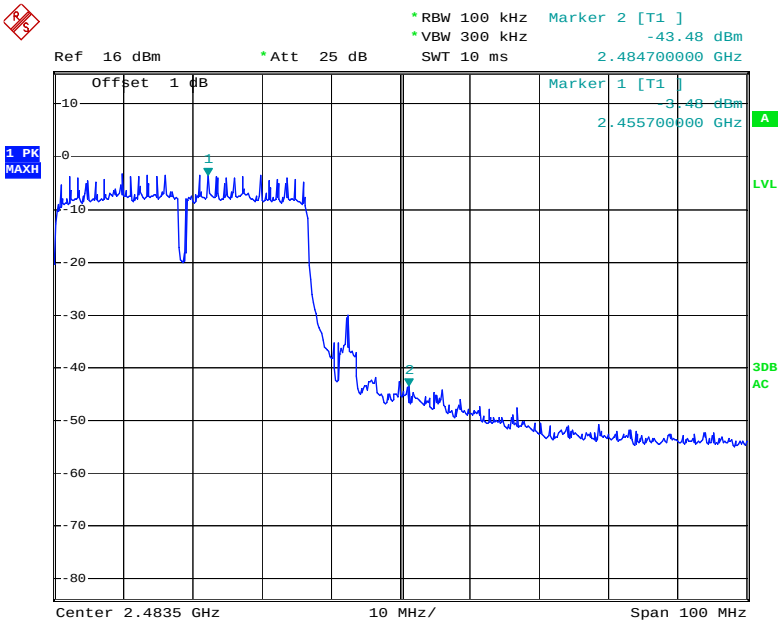
Date: 1.JUN.2010 20:22:32

802.11n40: Band Edge, Left Side



Date: 1.JUN.2010 20:25:26

802.11n40: Band Edge, Right Side



Date: 1.JUN.2010 20:26:37

FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2009-11-24	2010-11-23

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test 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 was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of SA on any frequency be measured and set SA to 1.5MHz span mode. And then, set RBW and VBW of spectrum analyzer to proper value. (DTS)
4. Repeat above procedures until all frequencies measured were complete.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

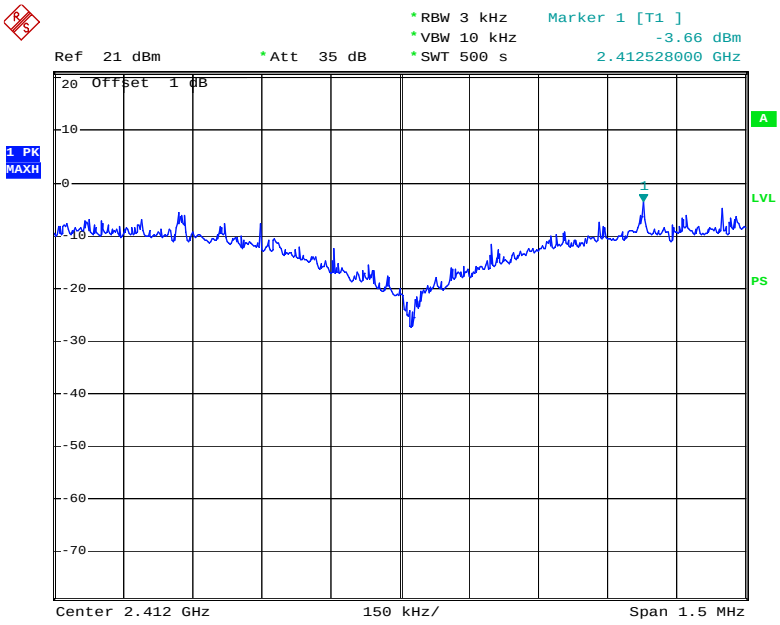
The testing was performed by Cookies Bu on 2010-05-03 to 2010-06-04.

Test Mode: Transmitting

Test Result: Pass

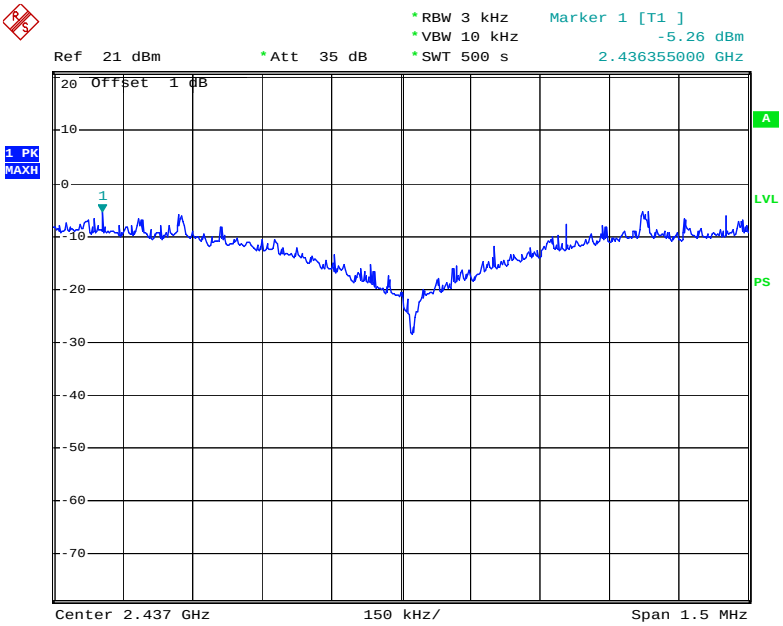
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Part 15.247 Limit (dBm/3kHz)	Result
802.11b mode				
Low	2412	-3.66	8	Pass
Middle	2437	-5.26	8	Pass
High	2462	-4.39	8	Pass
802.11g mode				
Low	2412	-14.14	8	Pass
Middle	2437	-14.62	8	Pass
High	2462	-14.55	8	Pass
802.11n20 mode				
Low	2412	-15.21	8	Pass
Middle	2437	-15.37	8	Pass
High	2462	-14.88	8	Pass
802.11n40 mode				
Low	2422	-18.80	8	Pass
Middle	2437	-18.68	8	Pass
High	2452	-19.48	8	Pass

Power Spectral Density, 802.11b Low Channel



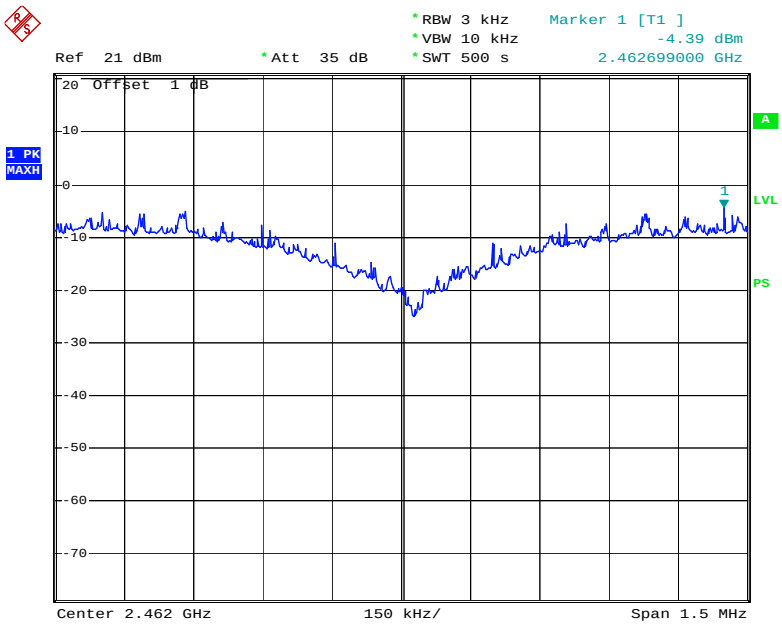
Date: 3.MAY.2010 05:23:06

Power Spectral Density, 802.11b Middle Channel



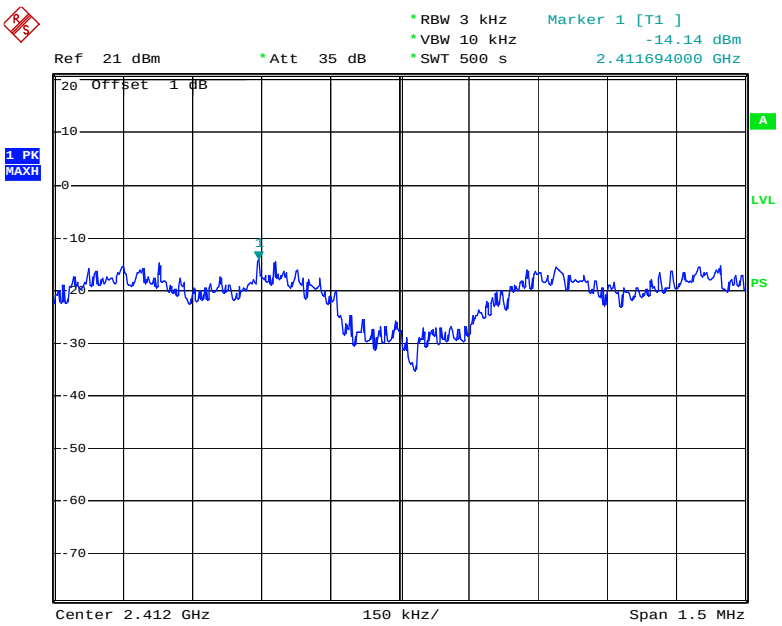
Date: 3.MAY.2010 05:05:50

Power Spectral Density, 802.11b High Channel



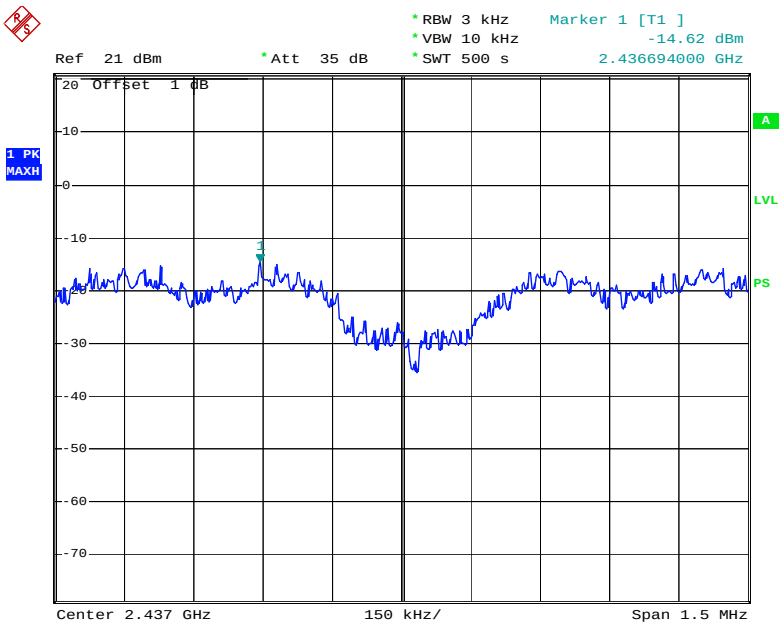
Date: 3.MAY.2010 04:47:25

Power Spectral Density, 802.11g Low Channel



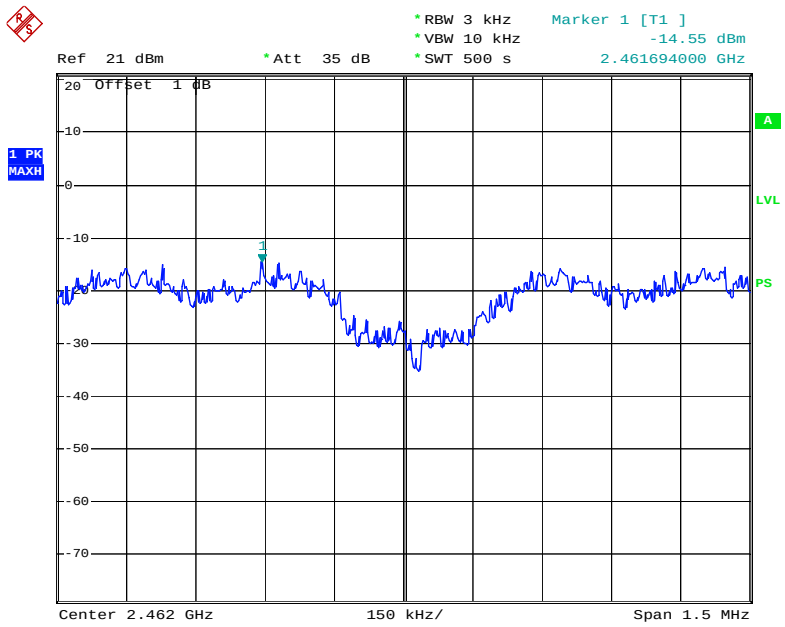
Date: 9.MAY.2010 21:41:14

Power Spectral Density, 802.11g Middle Channel



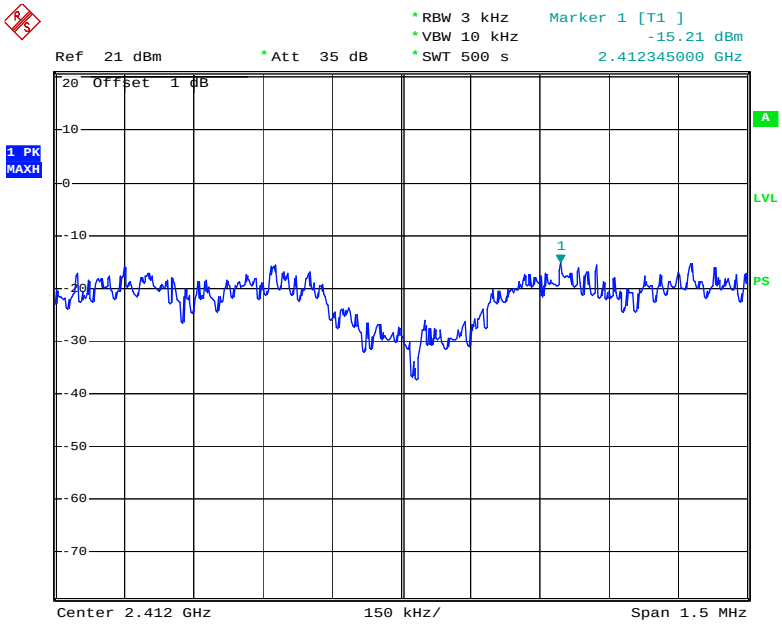
Date: 9.MAY.2010 22:13:18

Power Spectral Density, 802.11g High Channel



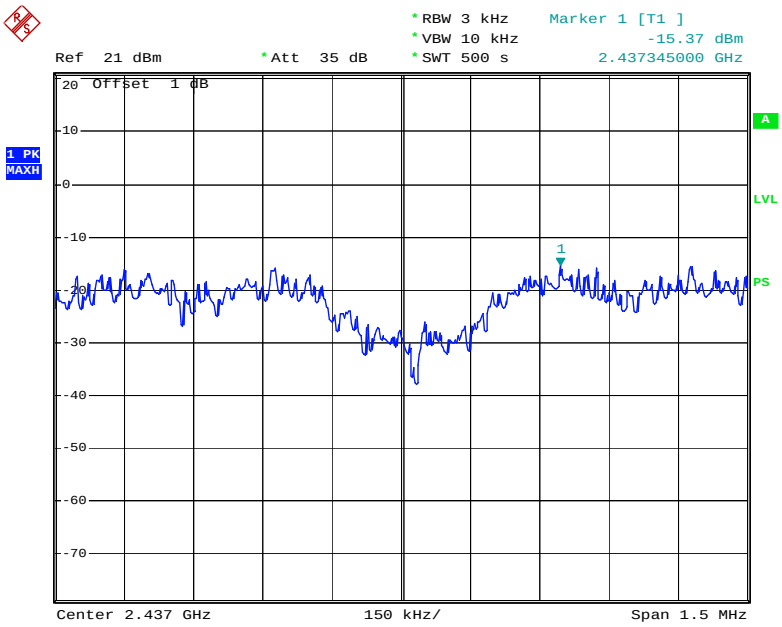
Date: 9.MAY.2010 22:30:50

Power Spectral Density, 802.11n20 Low Channel



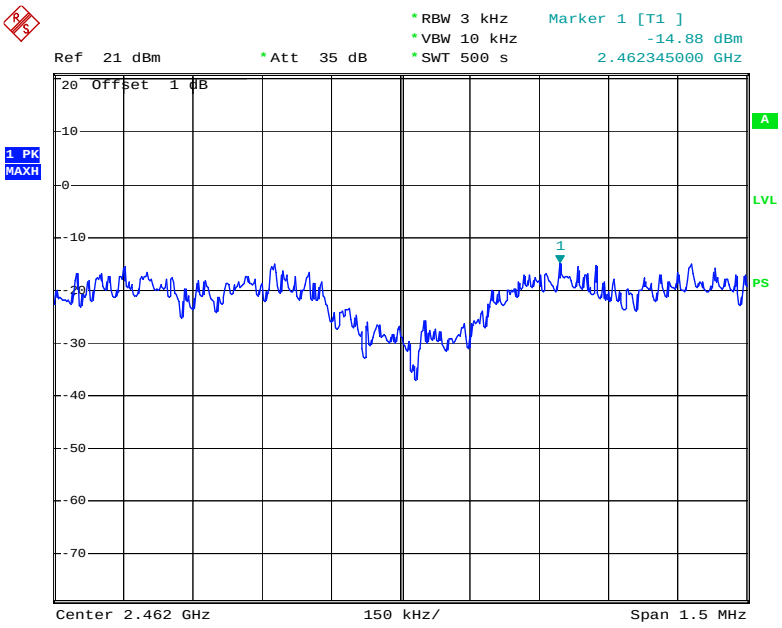
Date: 9.MAY.2010 23:34:36

Power Spectral Density, 802.11n20 Middle Channel



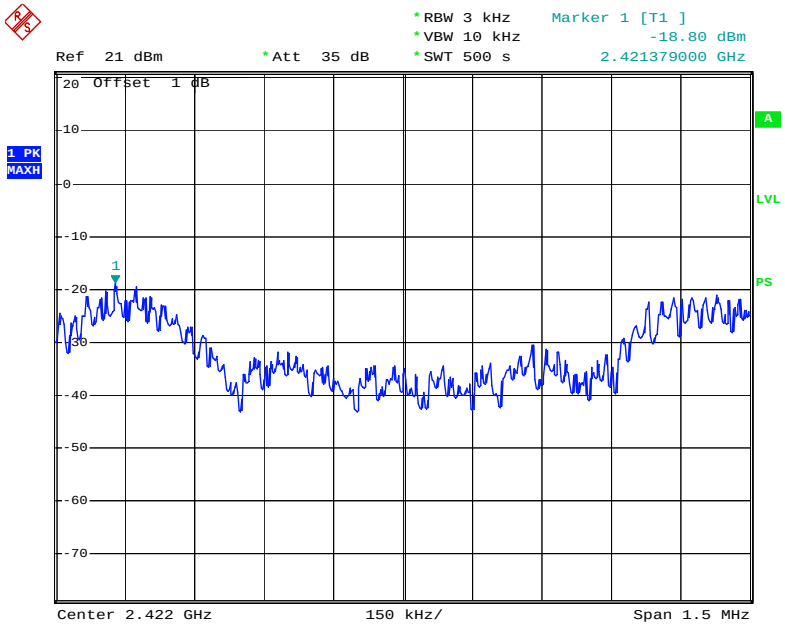
Date: 9.MAY.2010 23:53:26

Power Spectral Density, 802.11n20 High Channel



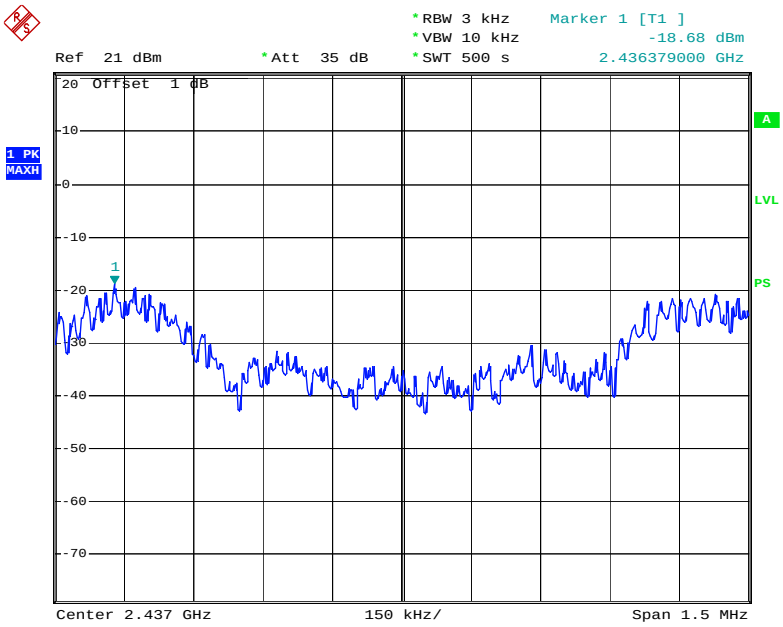
Date: 10.MAY.2010 01:38:13

Power Spectral Density, 802.11n40 Low Channel



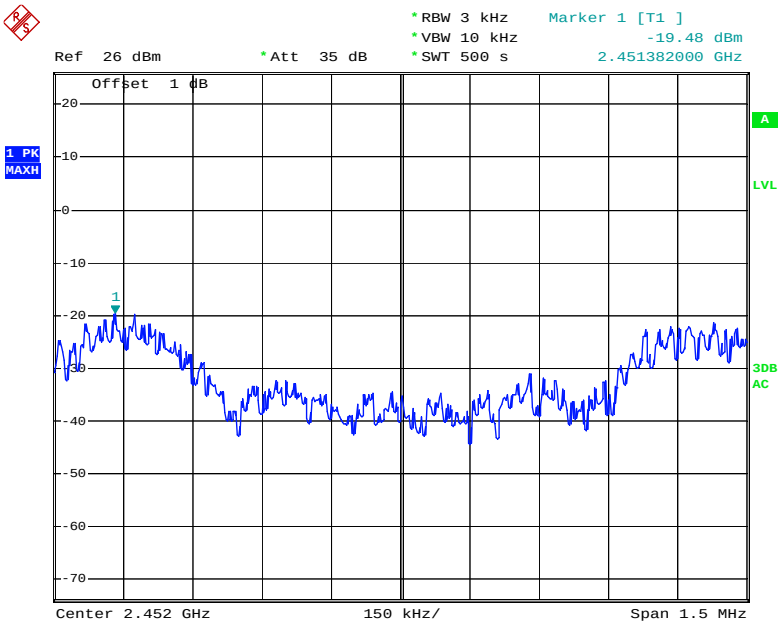
Date: 10.MAY.2010 03:47:03

Power Spectral Density, 802.11n40 Middle Channel



Date: 10.MAY.2010 02:15:19

Power Spectral Density, 802.11n40 High Channel



Date: 4.JUN.2010 10:57:23

******* END OF REPORT *******