Lab Code: 200707-0

FCC PART 15.247

TEST REPORT

For

ALFA NETWORK Inc.

4F-1, No. 106 Rueiguang Rd., Neihu District, Taipei City, Taiwan. R.O.C.

FCC ID: UQ29283

Report Type:	**Product Type:**
Original Report	802.lln Long-Range outdoor AP/CPE

Test Engineer:	Ares Liu
Report Number:	R1DG120228001-00
Report Date:	2012-04-23
Reviewed By:	Ivan Cao EMC Engineer
Test Laboratory:	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 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *ALFA NETWORK Inc.*'s product, model number: N2, OAP2224XS, N2PCB, N2C, Solo-N2H, Solo-N2HC, AWAP02O-N2H, AWAP02O-N2HC, WLO-22412N, RP-WAC5422, NE-WAC5422, APE-2405A-P12, RA-N2401L, WCPEn-2400-OAA-DD *(FCC ID: UQ29283) or* ("EUT") in this report is a 802.11n Long-Range outdoor AP/CPE, which was measured approximately:27.5 cm (L) x 9.2cm (W) x4.7cm (H), rated input voltage: DC 18V from adapter, the operating frequency for 802.11b/g/n20 were 2412-2462 MHz and n40 were 2422-2452MHz.

Adapter information: Sunny
Model: SYS1308-2418-W2
Input: 100-240VAC, 50-60Hz
Output: 18V DC 1.0A

Note: The series product, model number: N2, OAP2224XS, N2PCB, N2C, Solo-N2H, Solo-N2HC, AWAP02O-N2H, AWAP02O-N2HC, WLO-22412N, RP-WAC5422, NE-WAC5422, APE-2405A-P12, RA-N2401L, WCPEn-2400-OAA-DD *are electrically identical, the difference between them is just the name, the details was explained in the attached declaration letter.*

** All measurement and test data in this report was gathered from production sample serial number: 1202281 (Assigned by BACL). The EUT was received on 2012-03-13.*

Objective

This report is prepared on behalf of *ALFA NETWORK Inc.* 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 the compliance of the EUT with FCC Part 15-Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

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

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.

The uncertainty of any RF tests which use conducted method measurement is ±0.96 dB, the uncertainty of any radiation on emissions measurement is ±4.0 dB

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) 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 February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. 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 an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (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, 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 for 802.11b, 802.11g and 802.11 n20 modes were 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	6	2447
2	2427	7	2452
3	2432	/	/
4	2437	/	/
5	2442	/	/

EUT was tested with Channel 1, 4 and 7.

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

EUT Exercise Software

The test was performed under “cmd.exe”

Equipment Modifications

No modification was made to the EUT tested.

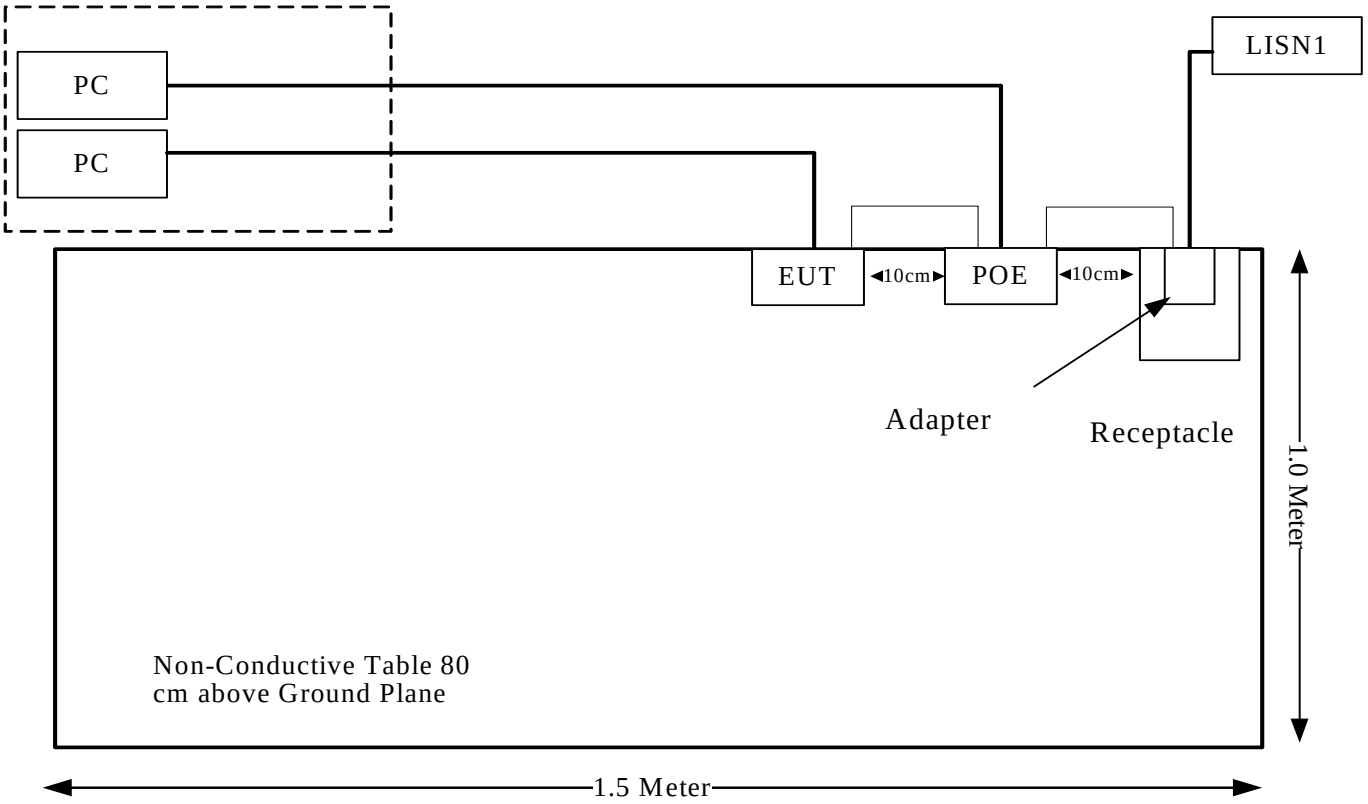
Remote Support Equipment

Manufacturer	Description	Model	Serial Number
DELL	PC	DCNE	CK2Z891
DELL	PC	DCNE	CK2Z677

External Cable

Cable Description	Length (m)	From/Port	To
Un shielded detachable RJ45 cable	1	EUT	Adapter
Un shielded detachable RJ45 cable	10	EUT	PC
Un shielded detachable RJ45 cable	10	POE	PC
Unshielded Power cable	1.8	Adapter	POE

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)	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.247(d)	Spurious Emissions at Antenna Port	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliance
§15.247(b)(3)	Maximum Peak Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

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

Applicable Standard

According to subpart 15.247(i)and subpart §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 Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) 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;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance
$S = PG/4\pi R^2$ = 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);

Calculated Data:

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	10	10	15.77	37.76	20	0.07515	1.0
802.11g	2412	10	10	15.36	34.36	20	0.06838	1.0
802.11n ht20	2437	10	10	18.41	69.34	20	0.13802	1.0
802.11n ht40	2422	10	10	18.06	63.97	20	0.1273	1.0

Result: The device meet FCC MPE at 20cm distance

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to § 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:

a. Antenna must be permanently attached to the unit.
b. 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.

Antenna Connector Construction

The EUT has two integral antennas, which complied with 15.203, the maximum gain is 10dBi, please refer to the internal photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

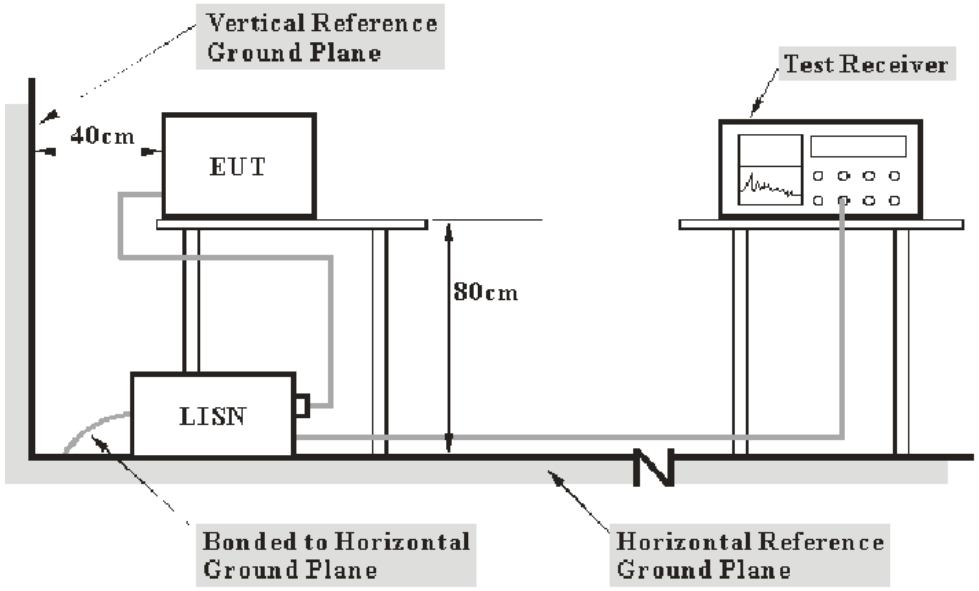
FCC§15.207

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 (k=2, 95% level of confidence).

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 C63.4-2009 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 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2011-11-24	2012-11-23
Rohde & Schwarz	L.I.S.N.1	ESH2-Z5	892107/021	2011-11-17	2012-11-16
Com-Power	L.I.S.N.2	LI-200	12005	N/A	N/A

*** 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 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:

7.28 dB at **20.255 MHz** in the **Line** conducted mode

Test Data

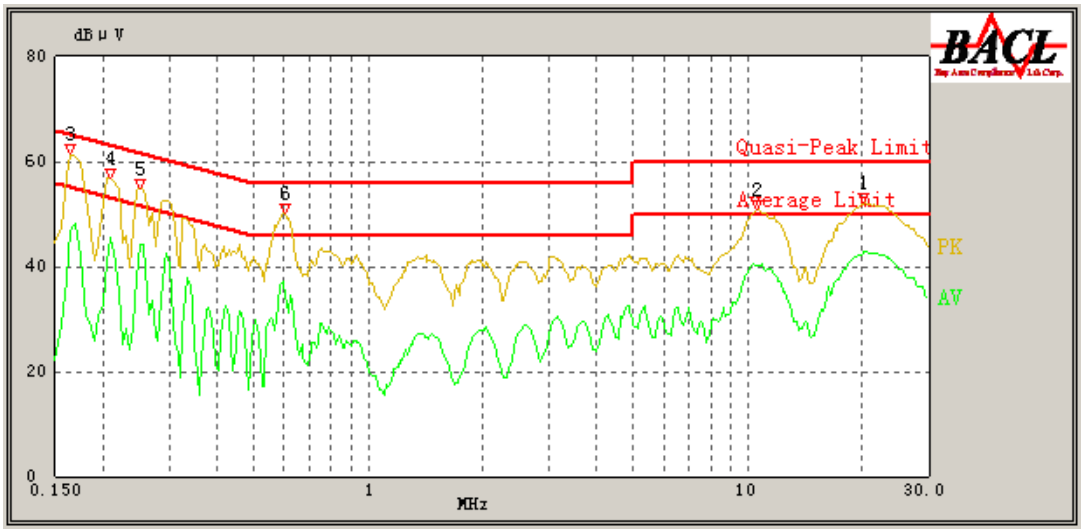
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu on 2012-04-09.

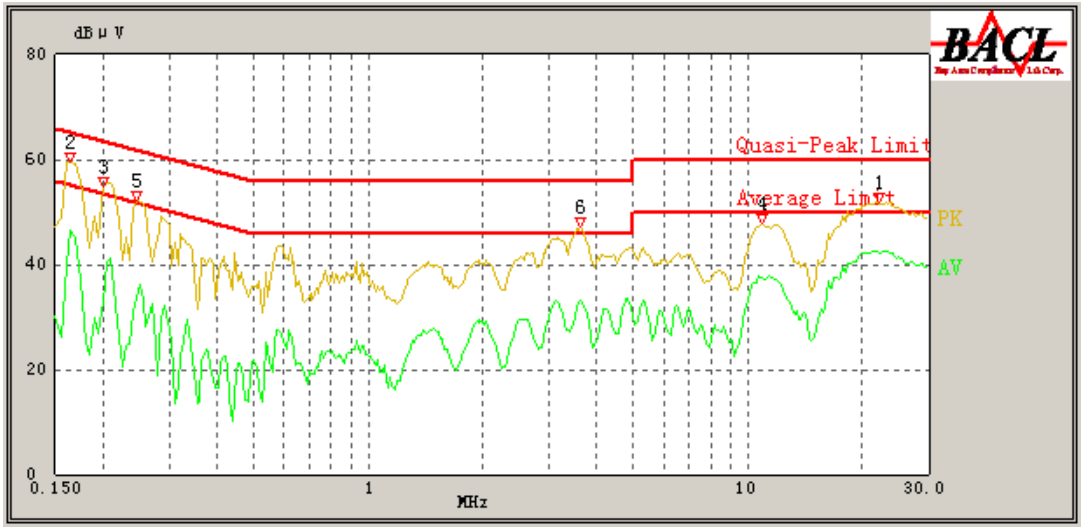
Test Mode: Transmitting

120 V, 60 Hz, Line:



Frequency (MHz)	Corrected Result (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK /QP/Ave.)
20.255	42.72	1.76	50	7.28	Ave.
0.605	48.49	0.43	56	7.51	QP
0.165	57.47	0.41	65.57	8.10	QP
0.21	45.44	0.42	54.29	8.85	Ave.
0.165	46.67	0.41	55.57	8.90	Ave.
0.25	44.1	0.42	53.14	9.04	Ave.
10.545	40.03	0.73	50	9.97	Ave.
0.21	54.29	0.42	64.29	10.00	QP
0.605	34.64	0.43	46	11.36	Ave.
0.25	51.74	0.42	63.14	11.40	QP
20.195	47.17	1.75	60	12.83	QP
10.61	45.13	0.74	60	14.87	QP

120V, 60 Hz, Neutral:



Frequency (MHz)	Corrected Result (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK /QP/Ave.)
21.92	42.48	2	50	7.52	Ave.
0.165	46.45	0.41	55.57	9.12	Ave.
0.165	56.06	0.41	65.57	9.51	QP
10.83	37.6	0.77	50	12.4	Ave.
3.63	33.29	0.5	46	12.71	Ave.
22.085	46.55	2.03	60	13.45	QP
3.635	41.14	0.5	56	14.86	QP
10.85	42.79	0.77	60	17.21	QP
0.245	45.73	0.42	63.29	17.56	QP
0.245	33.98	0.42	53.29	19.31	Ave.
0.2	43.01	0.42	64.57	21.56	QP
0.2	32.9	0.42	54.57	21.67	Ave.

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

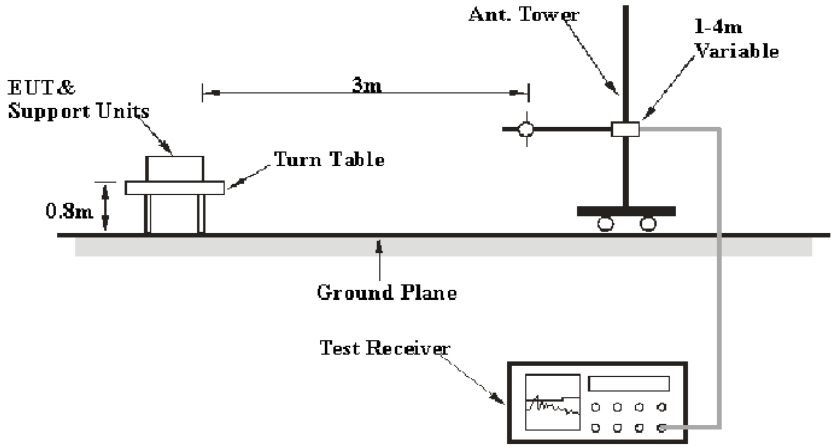
Measurement Uncertainty

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.

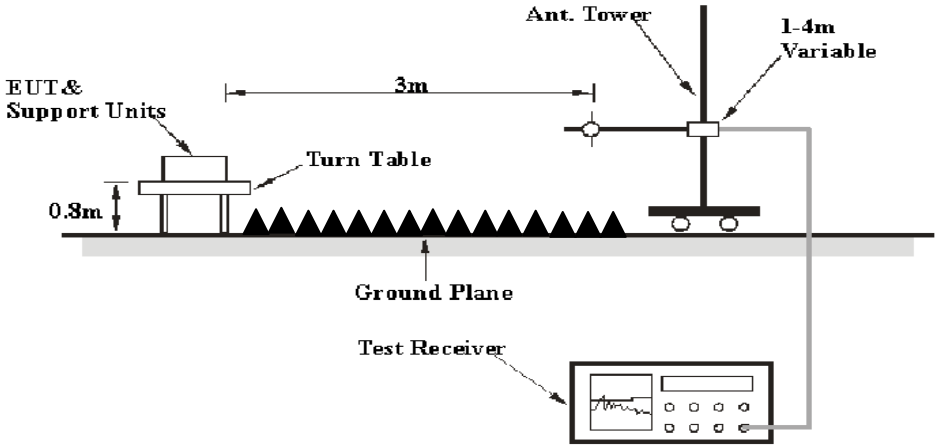
Based on CISPR 16-4-4, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 4.0 dB(k=2, 95% level of confidence) .

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2009. 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***	***Detector***
30 MHz – 1000 MHz	100 kHz	300 kHz	QP
1000 MHz – 25 GHz	1 MHz	3 MHz	PK
1000 MHz – 25 GHz	1 MHz	10 Hz	Ave.

Test Procedure

During the radiated emission test, 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-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

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 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2011-08-02	2012-08-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-07-05	2012-07-04
Mini-circuits	Amplifier	ZVA-213+	T-E27H	2011-11-24	2012-11-23
Sunol Sciences	Horn Antenna	DRH-118	A052604	2011-05-05	2012-05-04
HP	Spectrum Analyzer	8593A	2919A00242	2011-07-09	2012-07-08
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

*** 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 Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Section 15.205, 15.209 and 15.247, with the worst margin reading of:

8.79 dB at **4924 MHz** in the **Vertical** polarization (802.11g mode)

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu from 2012-03-21 to 2012-04-03.

Mode: Transmitting

1) 30MHz-25GHz

802.11b Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Detector (PK/QP/Ave.)	Polar (H/V)	Corrected Factor (dB)	Correction Data (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comment
Low Channel (2412MHz)								
4824.00	13.48	Ave.	H	28.63	42.11	54	11.89	Harmonic
4824.00	13.48	Ave.	V	28.63	42.11	54	11.89	Harmonic
2387.35	13.49	Ave.	H	24.17	37.66	54	16.34	spurious
2387.35	13.49	Ave.	V	24.17	37.66	54	16.34	spurious
4824.00	28.70	PK	H	28.63	57.33	74	16.67	Harmonic
4824.00	28.52	PK	V	28.63	57.15	74	16.85	Harmonic
2387.35	29.03	PK	H	24.17	53.20	74	20.80	spurious
2387.35	28.81	PK	V	24.17	52.98	74	21.02	spurious
257.30	31.87	QP	V	-6.91	24.96	46	21.04	spurious
257.30	31.54	QP	H	-6.91	24.63	46	21.37	spurious
2412.00	77.03	PK	H	31.82	108.85	N/A	N/A	Fundamental
2412.00	61.98	Ave.	H	31.82	93.80	N/A	N/A	Fundamental
2412.00	83.31	PK	V	31.82	115.13	N/A	N/A	Fundamental
2412.00	69.82	Ave.	V	31.82	101.64	N/A	N/A	Fundamental
Middle Channel (2437MHz)								
4874.00	13.49	Ave.	H	28.79	42.28	54	11.72	Harmonic
4874.00	13.49	Ave.	V	28.79	42.28	54	11.72	Harmonic
4874.00	29.52	PK	H	28.79	58.31	74	15.69	Harmonic
4874.00	29.18	PK	V	28.79	57.97	74	16.03	Harmonic
330.90	31.64	QP	V	-3.72	27.92	46	18.08	spurious
330.90	30.95	QP	H	-3.72	27.23	46	18.77	spurious
2437.00	78.61	PK	H	31.99	110.6	N/A	N/A	Fundamental
2437.00	70.09	Ave.	H	31.99	102.08	N/A	N/A	Fundamental
2437.00	82.18	PK	V	31.99	114.17	N/A	N/A	Fundamental
2437.00	61.08	Ave.	V	31.99	93.07	N/A	N/A	Fundamental
High Channel (2462MHz)								
4924.00	13.48	Ave.	H	28.95	42.43	54	11.57	Harmonic
4924.00	13.48	Ave.	V	28.95	42.43	54	11.57	Harmonic
4924.00	28.96	PK	V	28.95	57.91	74	16.09	Harmonic
2484.56	13.49	Ave.	V	24.13	37.62	54	16.38	spurious
2484.56	13.48	Ave.	H	24.13	37.61	54	16.39	spurious
4924.00	28.65	PK	H	28.95	57.60	74	16.40	Harmonic
403.80	31.06	QP	V	-2.52	28.54	46	17.46	spurious
403.80	30.77	QP	H	-2.52	28.25	46	17.75	spurious
2484.56	29.35	PK	V	24.13	53.48	74	20.52	spurious
2484.56	28.61	PK	H	24.13	52.74	74	21.26	spurious
2462.00	80.02	PK	H	32.15	112.17	N/A	N/A	Fundamental
2462.00	70.07	Ave.	H	32.15	102.22	N/A	N/A	Fundamental
2462.00	79.38	PK	V	32.15	111.53	N/A	N/A	Fundamental
2462.00	68.70	Ave.	V	32.15	100.85	N/A	N/A	Fundamental

802.11g Mode:

Frequency	S.A. Reading	Detector	Polar	Corrected Factor	Correction Data	Limit	Margin	Comment
(MHz)	(dBµV)	(PK/QP/Ave.)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
Low Channel (2412MHz)								
4824.00	13.67	Ave.	V	31.35	45.02	54	8.98	Harmonic
4824.00	13.48	Ave.	H	31.35	44.83	54	9.17	Harmonic
4824.00	28.91	PK	H	31.35	60.26	74	13.74	Harmonic
2385.67	13.49	Ave.	H	26.52	40.01	54	13.99	spurious
2385.67	13.49	Ave.	V	26.52	40.01	54	13.99	spurious
4824.00	28.63	PK	V	31.35	59.98	74	14.02	Harmonic
2385.67	29.01	PK	H	26.52	55.53	74	18.47	spurious
2385.67	28.98	PK	V	26.52	55.50	74	18.5	spurious
407.85	30.27	QP	V	-3.80	26.47	46	19.53	spurious
407.85	30.13	QP	H	-3.80	26.33	46	19.67	spurious
2412.00	76.54	PK	H	26.75	103.29	N/A	N/A	Fundamental
2412.00	64.75	Ave.	H	26.75	91.50	N/A	N/A	Fundamental
2412.00	81.09	PK	V	26.75	107.84	N/A	N/A	Fundamental
2412.00	71.67	Ave.	V	26.75	98.42	N/A	N/A	Fundamental
Middle Channel (2437MHz)								
4874.00	13.49	Ave.	H	31.54	45.03	54	8.97	Harmonic
4874.00	13.48	Ave.	V	31.54	45.02	54	8.98	Harmonic
4874.00	28.91	PK	H	31.54	60.45	74	13.55	Harmonic
4874.00	28.44	PK	V	31.54	59.98	74	14.02	Harmonic
113.40	30.65	QP	H	-6.9	23.75	43.5	19.75	spurious
113.40	30.22	QP	V	-6.9	23.32	43.5	20.18	spurious
2437.00	78.07	PK	H	26.88	104.95	N/A	N/A	Fundamental
2437.00	62.78	Ave.	H	26.88	89.66	N/A	N/A	Fundamental
2437.00	81.05	PK	V	26.88	107.93	N/A	N/A	Fundamental
2437.00	71.61	Ave.	V	26.88	98.49	N/A	N/A	Fundamental
High Channel (2462MHz)								
4924.00	13.48	Ave.	V	31.73	45.21	54	8.79	Harmonic
4924.00	13.47	Ave.	H	31.73	45.20	54	8.80	Harmonic
2483.50	13.50	Ave.	V	27.16	40.66	54	13.34	spurious
2483.50	13.49	Ave.	H	27.16	40.65	54	13.35	spurious
4924.00	28.42	PK	V	31.73	60.15	74	13.85	Harmonic
4924.00	28.29	PK	H	31.73	60.02	74	13.98	Harmonic
2483.50	29.81	PK	V	27.16	56.97	74	17.03	spurious
2483.50	29.33	PK	H	27.16	53.46	74	20.54	spurious
328.90	30.74	QP	V	-5.48	25.26	46	20.74	spurious
328.90	29.57	QP	H	-5.48	24.09	46	21.91	spurious
2462.00	76.58	PK	H	27.01	103.59	N/A	N/A	Fundamental
2462.00	61.87	Ave.	H	27.01	88.88	N/A	N/A	Fundamental
2462.00	77.13	PK	V	27.01	104.14	N/A	N/A	Fundamental
2462.00	72.94	Ave.	V	27.01	99.95	N/A	N/A	Fundamental

802.11n20 Mode:

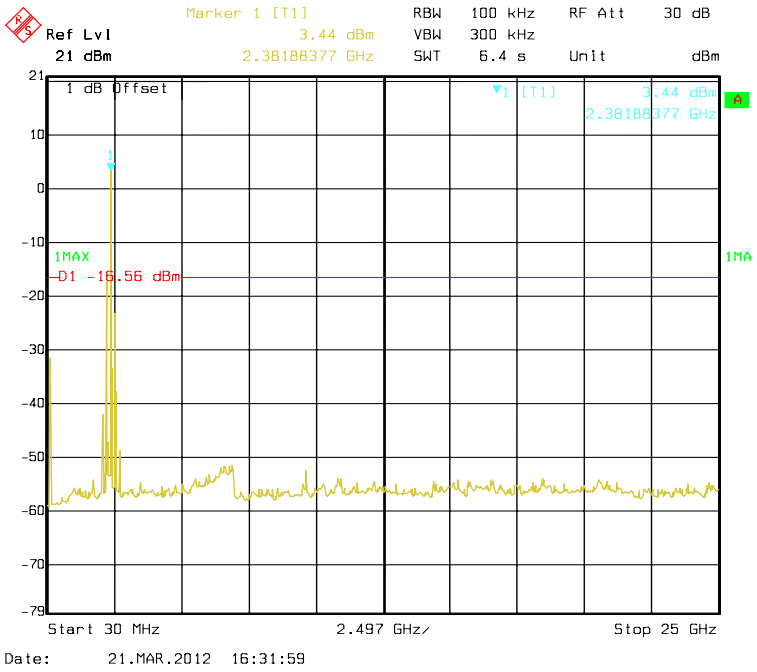
Frequency	S.A. Reading	Detector	Polar	Corrected Factor	Correction Data	Limit	Margin	Comment
(MHz)	(dBµV)	(PK/QP/Ave.)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
Low Channel (2412MHz)								
4824	13.48	Ave.	H	28.63	42.11	54	11.89	Harmonic
4824	13.47	Ave.	V	28.63	42.10	54	11.90	Harmonic
2388.11	13.49	Ave.	H	24.17	37.66	54	16.34	spurious
2388.11	13.48	Ave.	V	24.17	37.65	54	16.35	spurious
4824	28.81	PK	H	28.63	57.44	74	16.56	Harmonic
4824	28.41	PK	V	28.63	57.04	74	16.96	Harmonic
407.85	34.85	QP	V	-3.80	27.94	46	18.06	spurious
407.85	32.15	QP	H	-3.80	25.24	46	20.76	spurious
2388.11	28.94	PK	H	24.17	53.11	74	20.89	spurious
2388.11	28.89	PK	V	24.17	53.06	74	20.94	spurious
2412	73.67	PK	H	31.82	105.49	N/A	N/A	Fundamental
2412	60.40	Ave.	H	31.82	92.22	N/A	N/A	Fundamental
2412	77.41	PK	V	31.82	109.23	N/A	N/A	Fundamental
2412	65.12	Ave.	V	31.82	96.94	N/A	N/A	Fundamental
Middle Channel (2437MHz)								
4874	13.49	Ave.	V	28.79	42.28	54	11.72	Harmonic
4874	13.48	Ave.	H	28.79	42.27	54	11.73	Harmonic
407.85	35.14	QP	V	-3.80	31.42	46	14.58	spurious
4874	28.97	PK	V	28.79	57.76	74	16.24	Harmonic
4874	28.67	PK	H	28.79	57.46	74	16.54	Harmonic
407.85	33.14	QP	H	-3.80	29.42	46	16.58	spurious
2437	76.96	PK	H	31.99	108.95	N/A	N/A	Fundamental
2437	65.86	Ave.	H	31.99	97.85	N/A	N/A	Fundamental
2437	78.22	PK	V	31.99	110.21	N/A	N/A	Fundamental
2437	67.01	Ave.	V	31.99	99.00	N/A	N/A	Fundamental
High Channel (2462MHz)								
4924	14.48	Ave.	V	28.95	43.43	54	10.57	Harmonic
4924	13.48	Ave.	H	28.95	42.43	54	11.57	Harmonic
407.85	35.47	QP	H	-3.80	32.95	46	13.05	spurious
407.85	32.15	QP	V	-3.80	29.63	46	16.37	spurious
2495.6	13.49	Ave.	H	24.13	37.62	54	16.38	spurious
2495.6	13.49	Ave.	V	24.13	37.62	54	16.38	spurious
4924	28.54	PK	H	28.95	57.49	74	16.51	Harmonic
4924	28.49	PK	V	28.95	57.44	74	16.56	Harmonic
2495.6	30.15	PK	V	24.13	54.28	74	19.72	spurious
2495.6	29.30	PK	H	24.13	53.43	74	20.57	spurious
2462	75.76	PK	H	32.15	107.91	N/A	N/A	Fundamental
2462	57.35	Ave.	H	32.15	89.50	N/A	N/A	Fundamental
2462	76.68	PK	V	32.15	108.83	N/A	N/A	Fundamental
2462	58.23	Ave.	V	32.15	90.38	N/A	N/A	Fundamental

802.11n40 Mode:

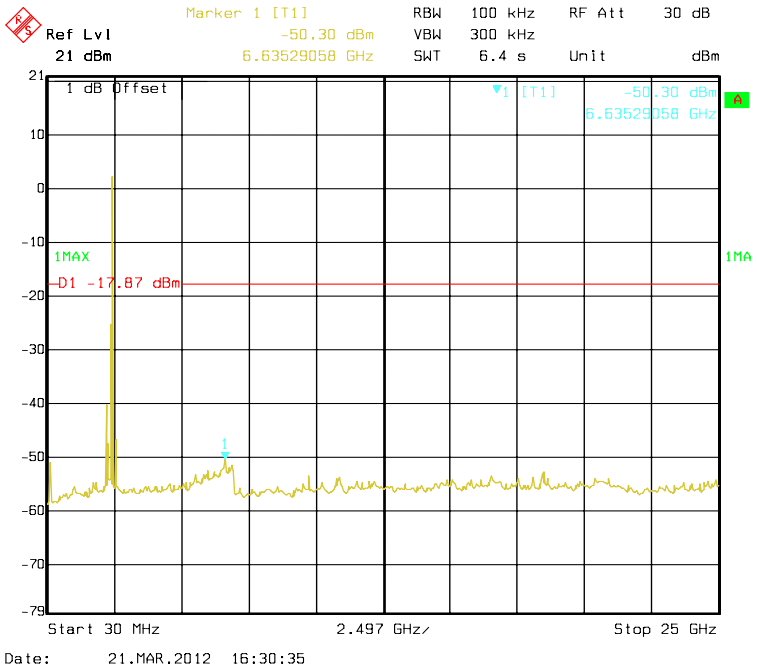
Frequency	S.A. Reading	Detector	Polar	Corrected Factor	Correction Data	Limit	Margin	Comment
(MHz)	(dBμV)	(PK/QP/Ave.)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
Low Channel (2422MHz)								
4844	13.48	Ave.	V	28.63	42.11	54	11.89	Harmonic
4844	13.47	Ave.	H	28.63	42.10	54	11.90	Harmonic
2388.11	15.41	Ave.	H	24.17	39.58	54	14.42	spurious
2388.11	15.41	Ave.	V	24.17	39.58	54	14.42	spurious
4844	29.64	PK	V	28.63	58.27	74	15.73	Harmonic
4844	28.68	PK	H	28.63	57.31	74	16.69	Harmonic
407.85	34.25	QP	H	-3.80	27.34	46	18.66	spurious
2388.11	30.94	PK	H	24.17	55.11	74	18.89	spurious
2388.11	30.15	PK	V	24.17	54.32	74	19.68	spurious
407.85	31.02	QP	V	-3.80	24.11	46	21.89	spurious
2422	69.29	PK	H	31.82	101.11	N/A	N/A	Fundamental
2422	56.82	Ave.	H	31.82	88.64	N/A	N/A	Fundamental
2422	67.41	PK	V	31.82	99.23	N/A	N/A	Fundamental
2422	54.25	Ave.	V	31.82	86.07	N/A	N/A	Fundamental
Middle Channel (2437MHz)								
4874	13.48	Ave.	V	28.79	42.27	54	11.73	Harmonic
4874	13.47	Ave.	H	28.79	42.26	54	11.74	Harmonic
407.85	35.02	QP	H	-3.80	31.30	46	14.70	spurious
4874	29.16	PK	V	28.79	57.95	74	16.05	Harmonic
4874	28.91	PK	H	28.79	57.70	74	16.30	Harmonic
407.85	32.22	QP	V	-3.80	28.50	46	17.50	spurious
2437	69.40	PK	H	31.99	101.39	N/A	N/A	Fundamental
2437	53.58	Ave.	H	31.99	85.57	N/A	N/A	Fundamental
2437	66.94	PK	V	31.99	98.93	N/A	N/A	Fundamental
2437	54.23	Ave.	V	31.99	86.22	N/A	N/A	Fundamental
High Channel (2452MHz)								
4904	13.48	Ave.	H	28.95	42.43	54	11.57	Harmonic
4904	13.47	Ave.	V	28.95	42.42	54	11.58	Harmonic
407.85	33.17	QP	H	-3.8	30.65	46	15.35	spurious
4904	29.52	PK	H	28.95	58.47	74	15.53	Harmonic
4904	28.88	PK	V	28.95	57.83	74	16.17	Harmonic
2483.5	13.48	Ave.	H	24.13	37.61	54	16.39	spurious
2483.5	13.48	Ave.	V	24.13	37.61	54	16.39	spurious
407.85	31.98	QP	H	-3.8	29.46	46	16.54	spurious
2483.5	30.15	PK	V	24.13	54.28	74	19.72	spurious
2483.5	29.96	PK	H	24.13	54.09	74	19.91	spurious
2452	67.96	PK	H	32.15	100.11	N/A	N/A	Fundamental
2452	52.87	Ave.	H	32.15	85.02	N/A	N/A	Fundamental
2452	66.28	PK	V	32.15	98.43	N/A	N/A	Fundamental
2452	53.51	Ave.	V	32.15	85.66	N/A	N/A	Fundamental

Conducted Spurious Emissions at Antenna Port

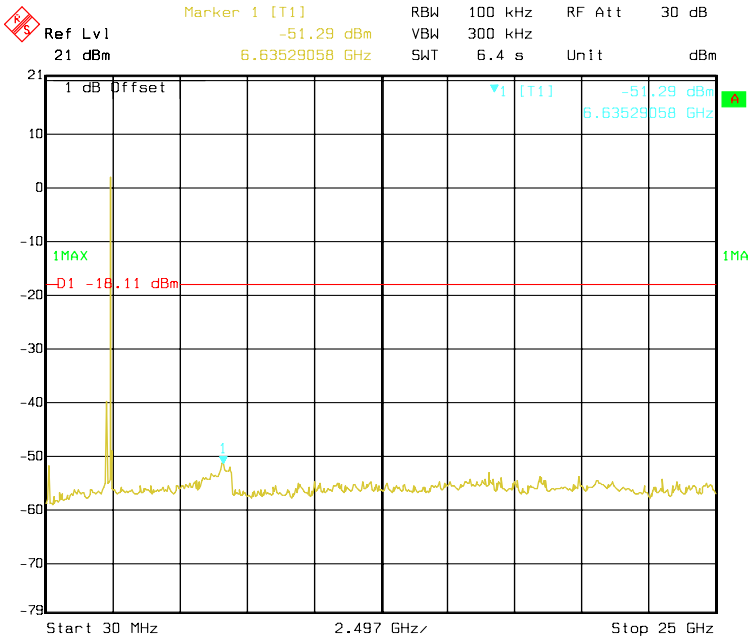
802.11b Low Channel



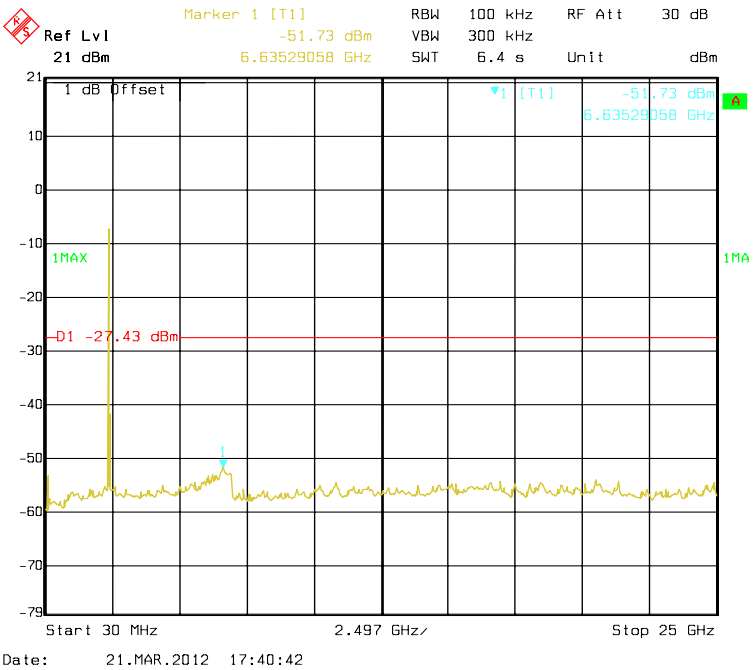
802.11b Middle Channel



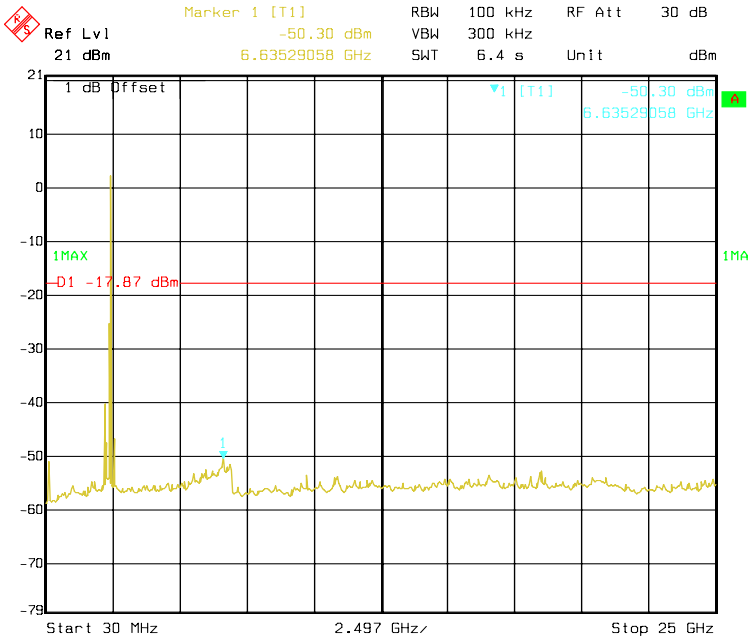
802.11b High Channel



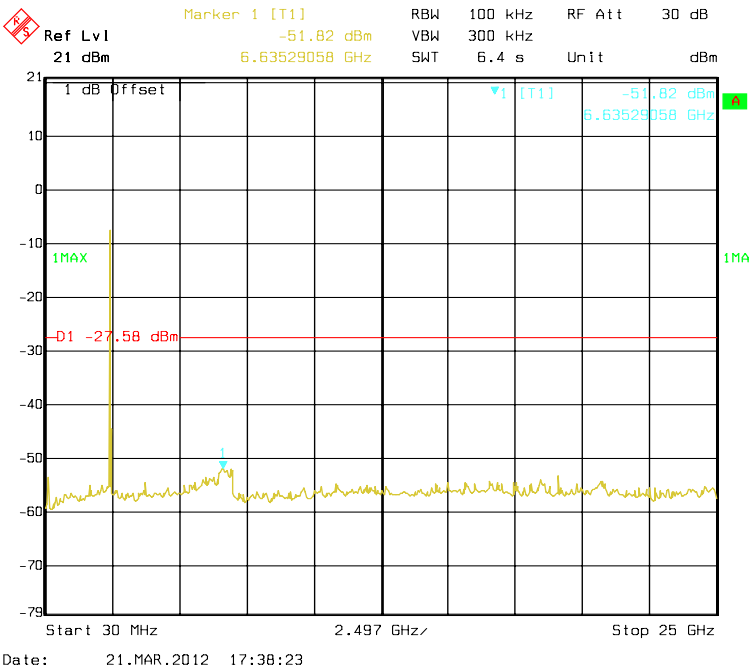
802.11g Low Channel



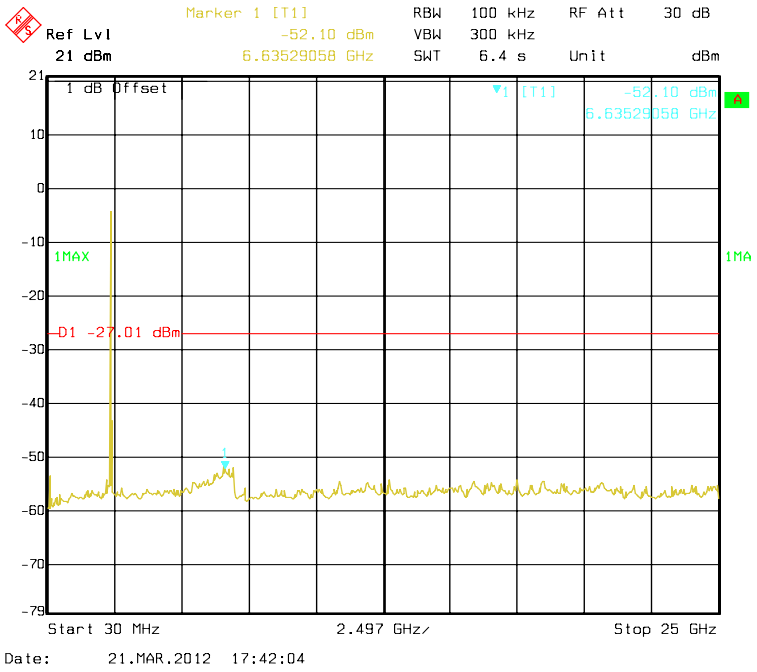
802.11g Middle Channel



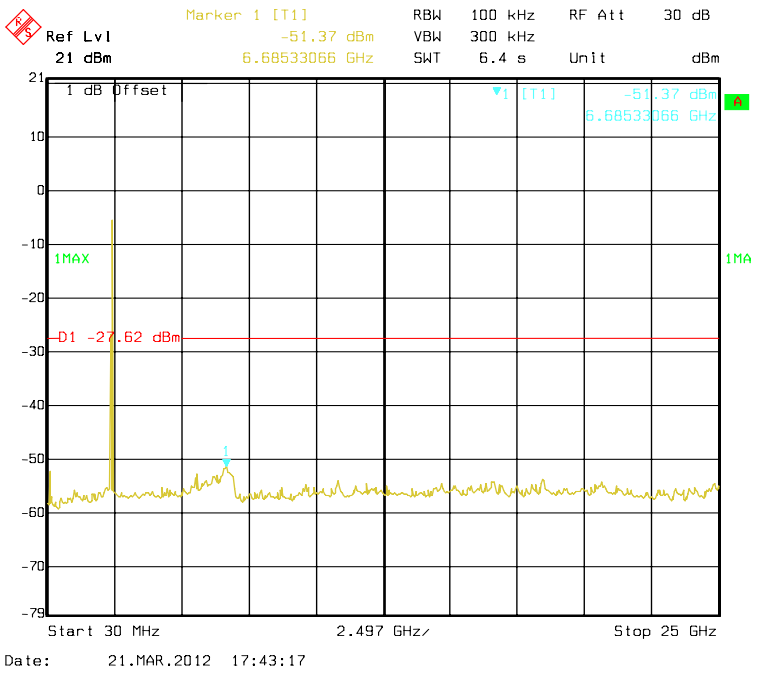
802.11g High Channel



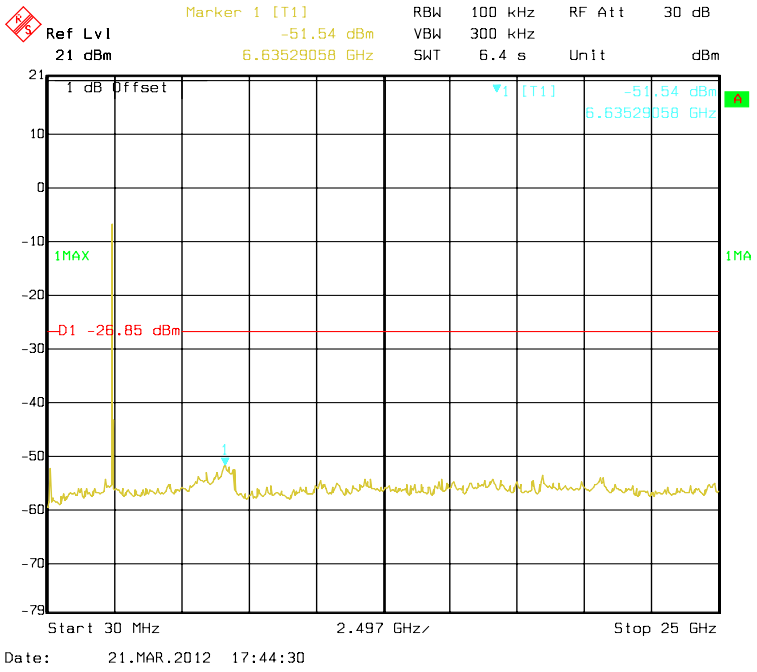
Chain 0: 802.11n20 Low Channel



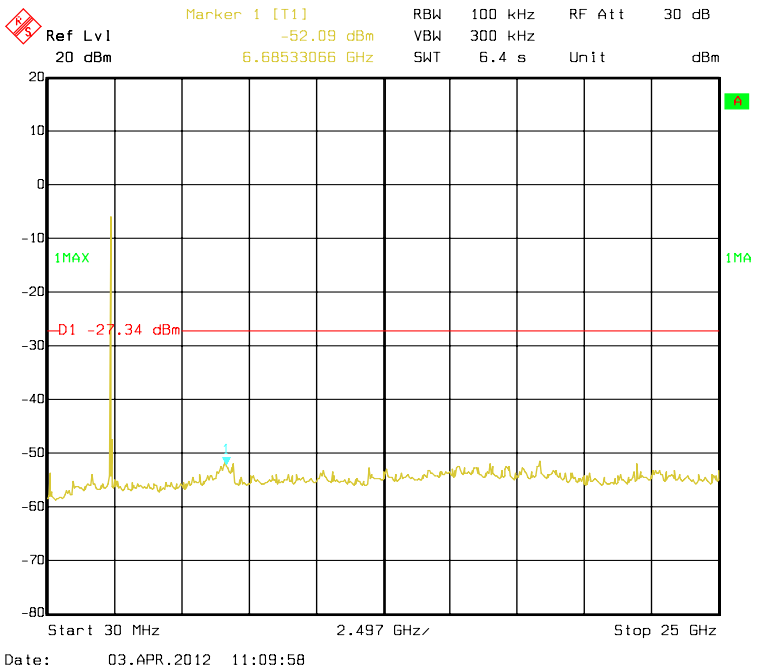
Chain 0: 802.11n20 Middle Channel



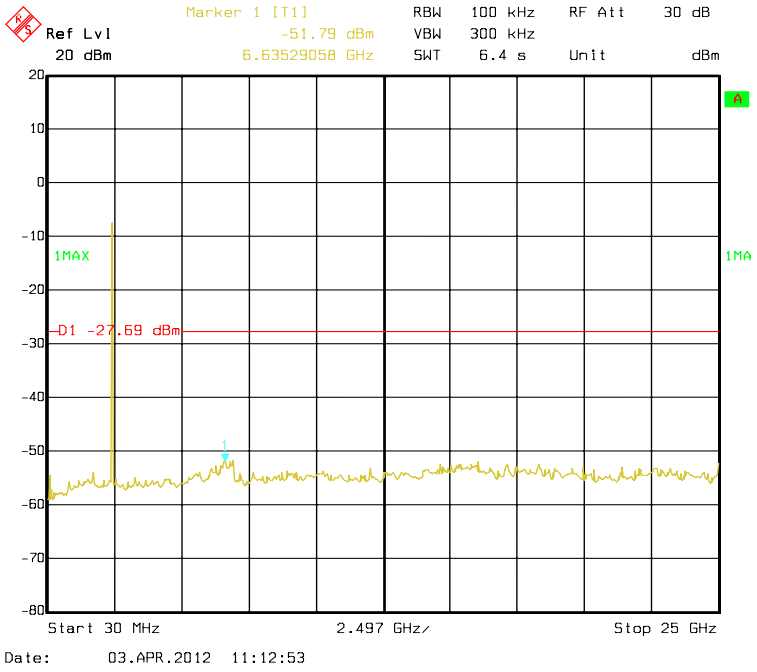
Chain 0: 802.11n20 High Channel



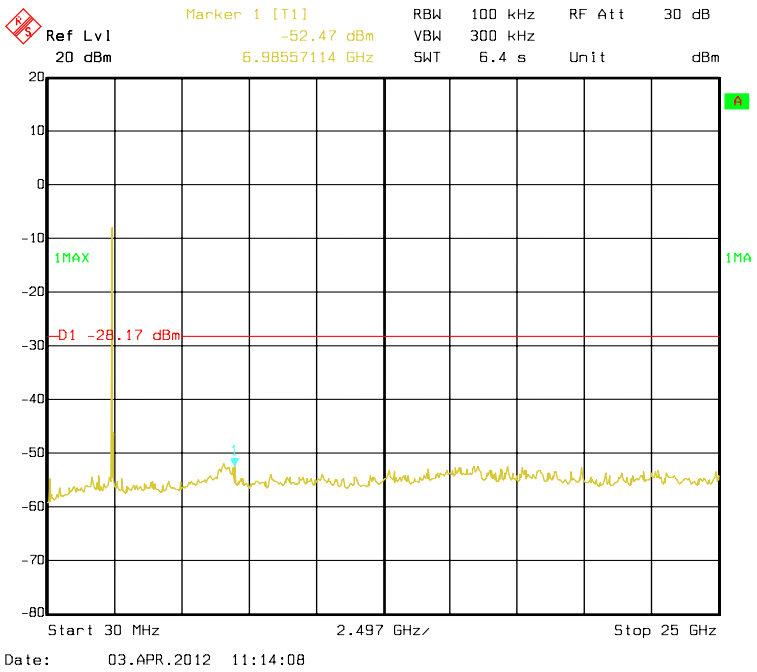
Chain 0: 802.11n40 Low Channel



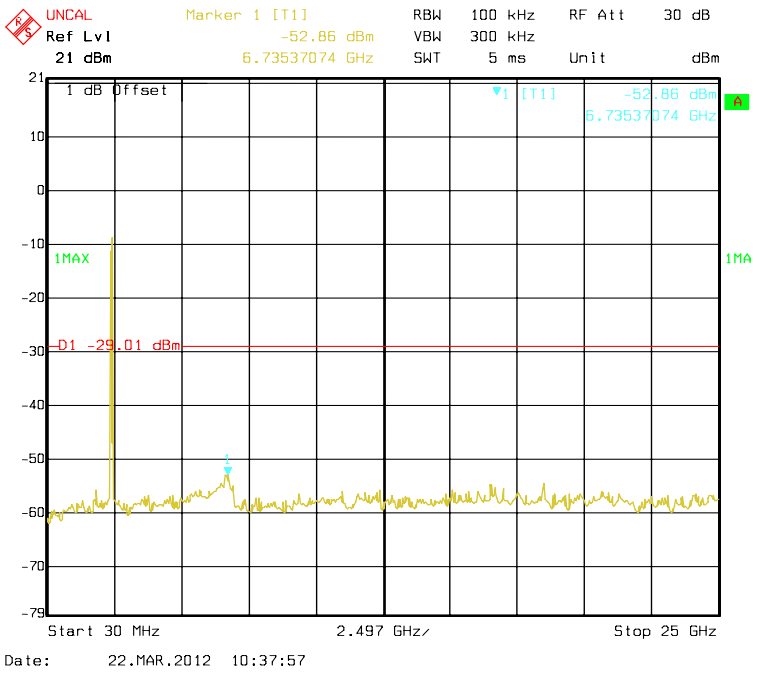
Chain 0: 802.11n40 Middle Channel



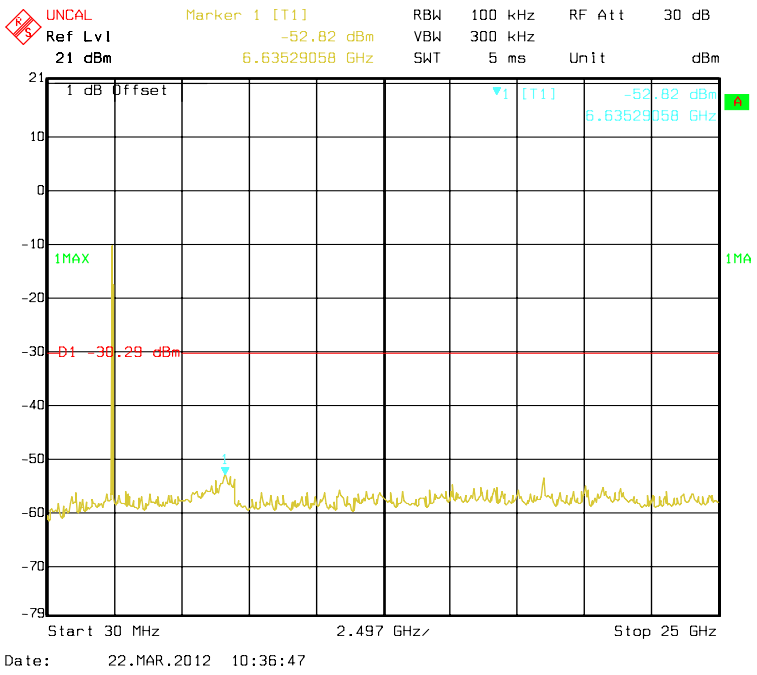
Chain 0: 802.11n40 High Channel



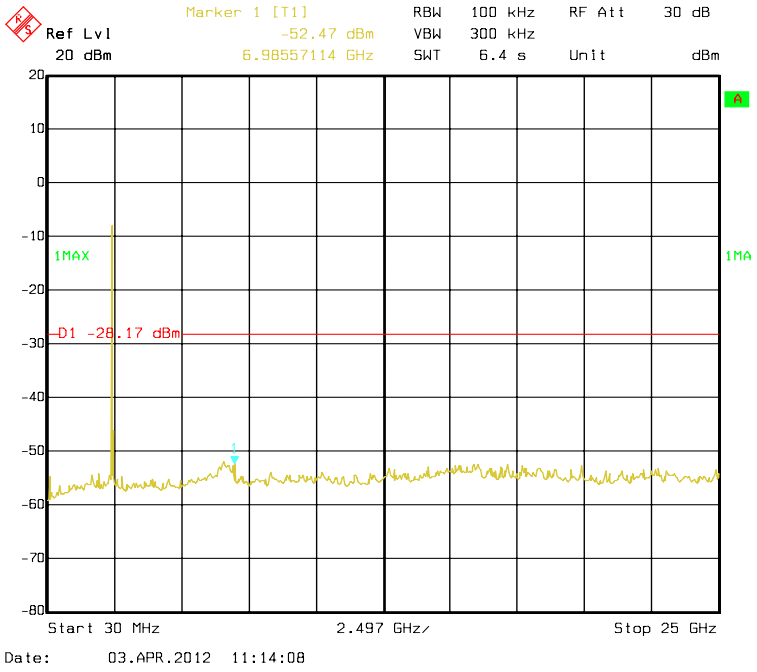
Chain 1: 802.11n20 Low Channel



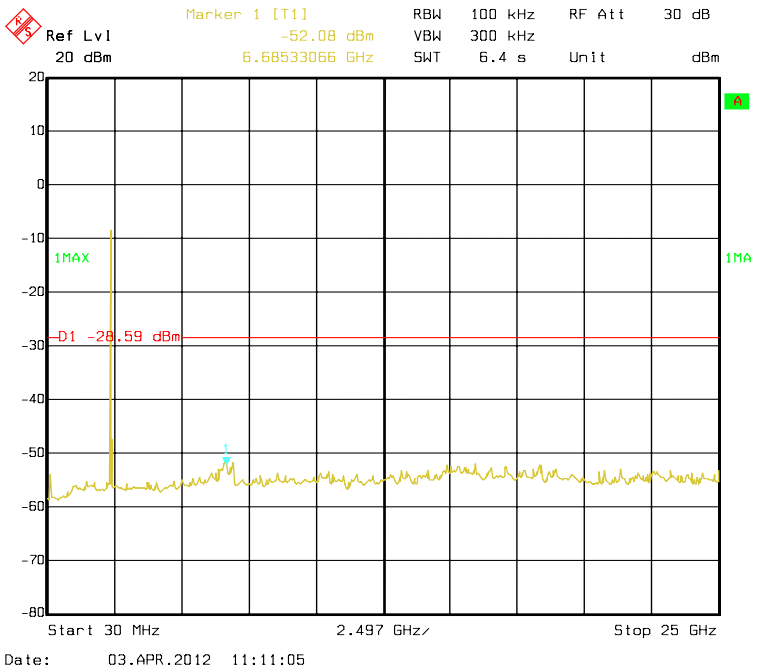
Chain 1: 802.11n20 Middle Channel



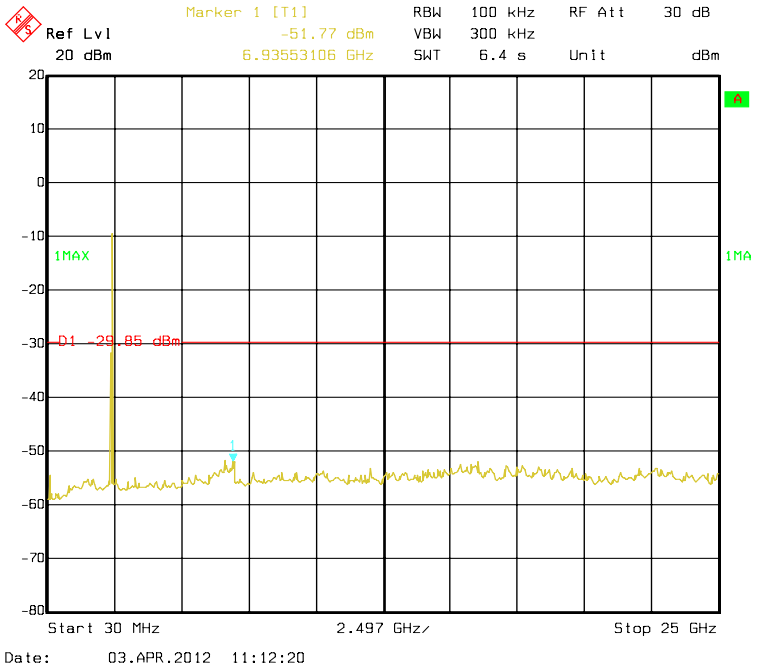
Chain 1: 802.11n20 High Channel



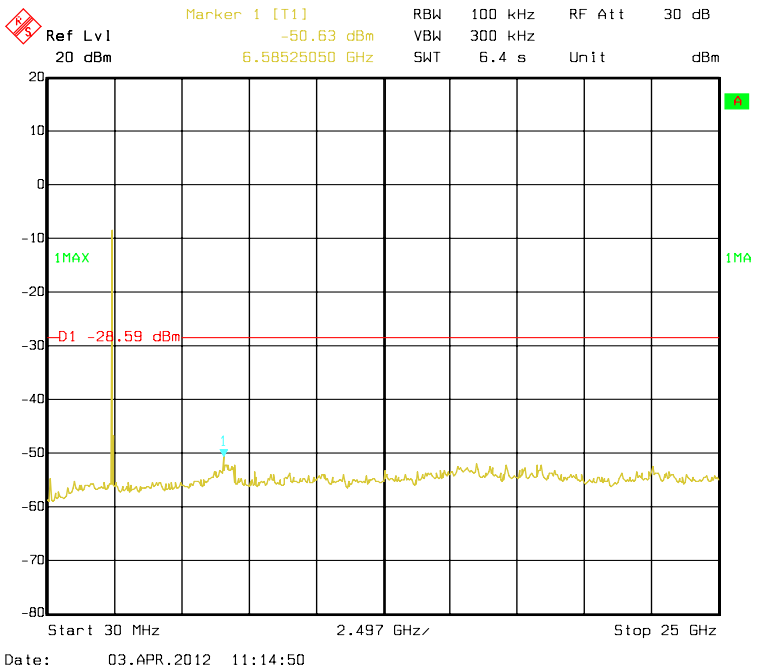
Chain 1: 802.11n40 Low Channel



Chain 1: 802.11n40 Middle Channel



Chain 1: 802.11n40 High Channel



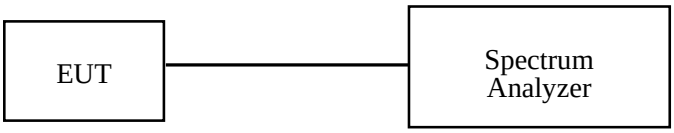
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

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 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

*** 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 Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	48 %
ATM Pressure:	100.0kPa

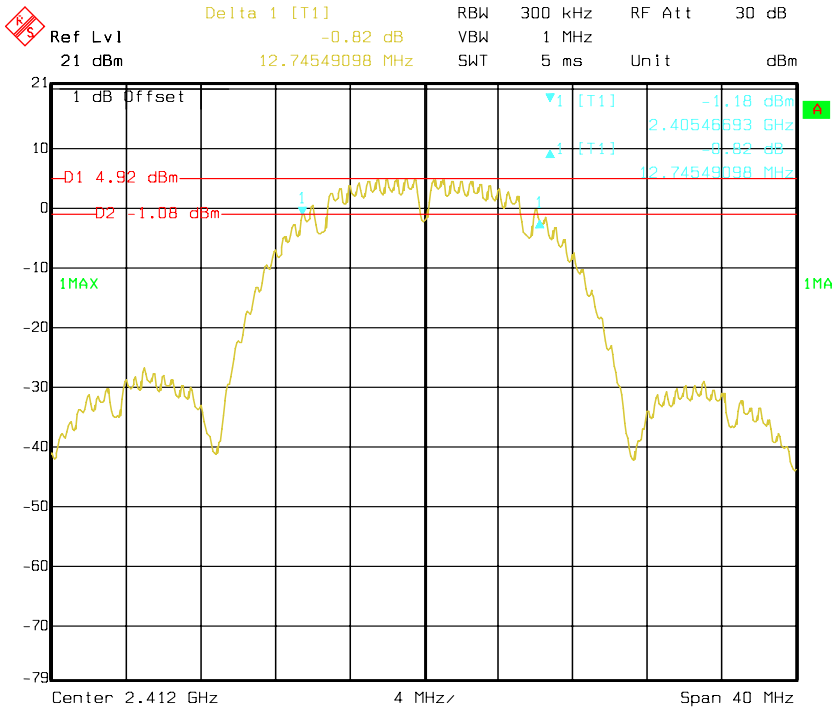
The testing was performed by Ares Liu from 2012-03-21 to 2012-04-23.

Test Result: Pass.

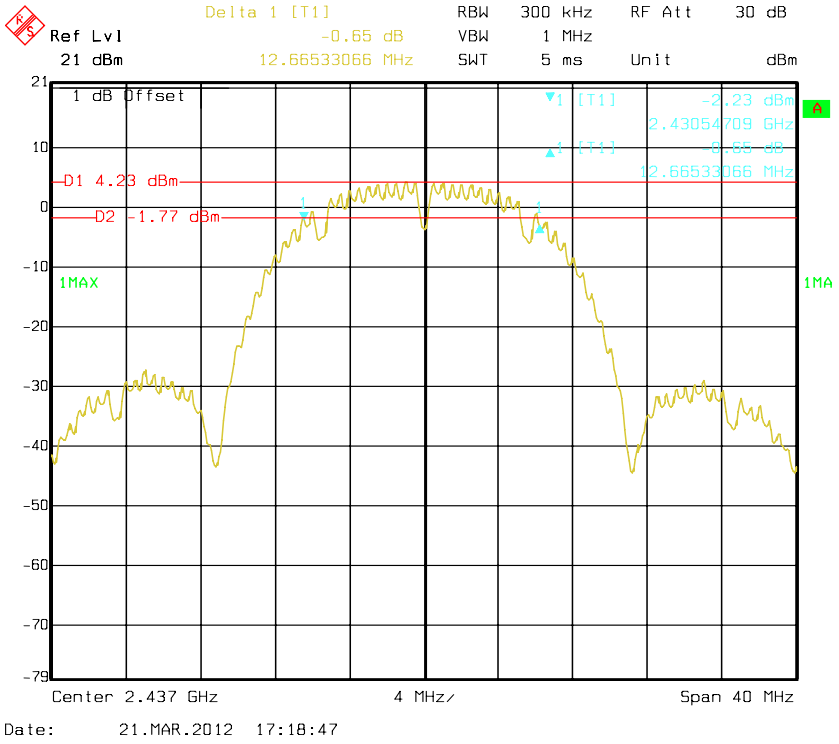
Please refer to the following tables and plots.

Channel	Frequency (MHz)	Data Rate (Mbps)	6 dB Bandwidth (MHz)	Limit (KHz)
Chain 0:802.11b mode				
Low	2412	1	12.75	>500
Middle	2437	1	12.67	>500
High	2462	1	12.75	>500
Chain 0:802.11g mode				
Low	2412	6	16.67	>500
Middle	2437	6	16.67	>500
High	2462	6	16.75	>500
Chain 0 : 802.11n20 mode				
Low	2412	6.5	18.04	>500
Middle	2437	6.5	17.96	>500
High	2462	6.5	18.04	>500
Chain 1 : 802.11n20 mode				
Low	2412	6.5	18.04	>500
Middle	2437	6.5	18.12	>500
High	2462	6.5	18.12	>500
Chain 0 : 802.11n40 mode				
Low	2422	13.5	36.96	>500
Middle	2437	13.5	37.12	>500
High	2452	13.5	36.96	>500
Chain 1 : 802.11n40 mode				
Low	2422	13.5	37.28	>500
Middle	2437	13.5	37.12	>500
High	2452	13.5	37.12	>500

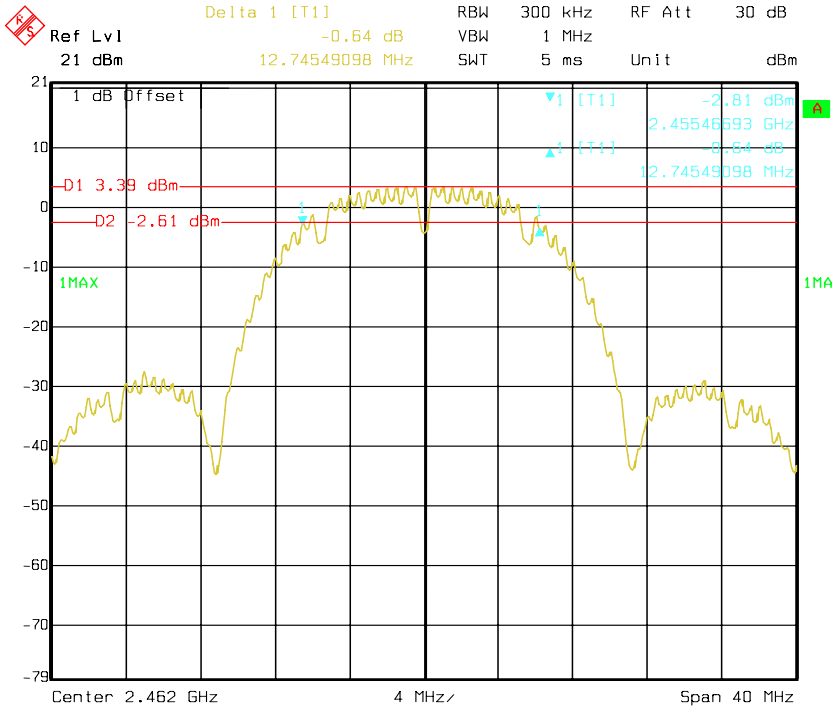
802.11b Low Channel



802.11b Middle Channel

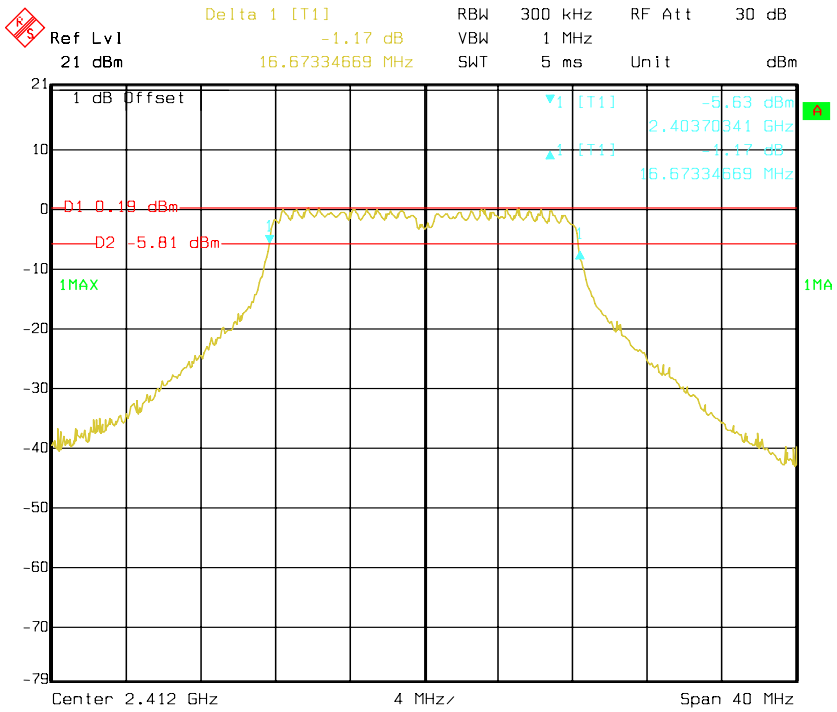


802.11b High Channel



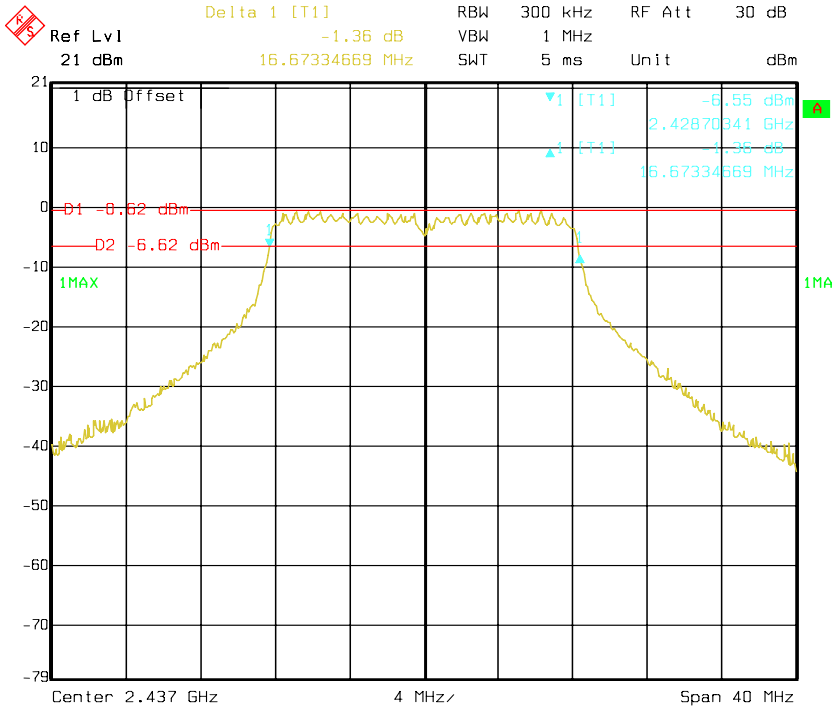
Date: 21.MAR.2012 17:22:12

802.11g Low Channel



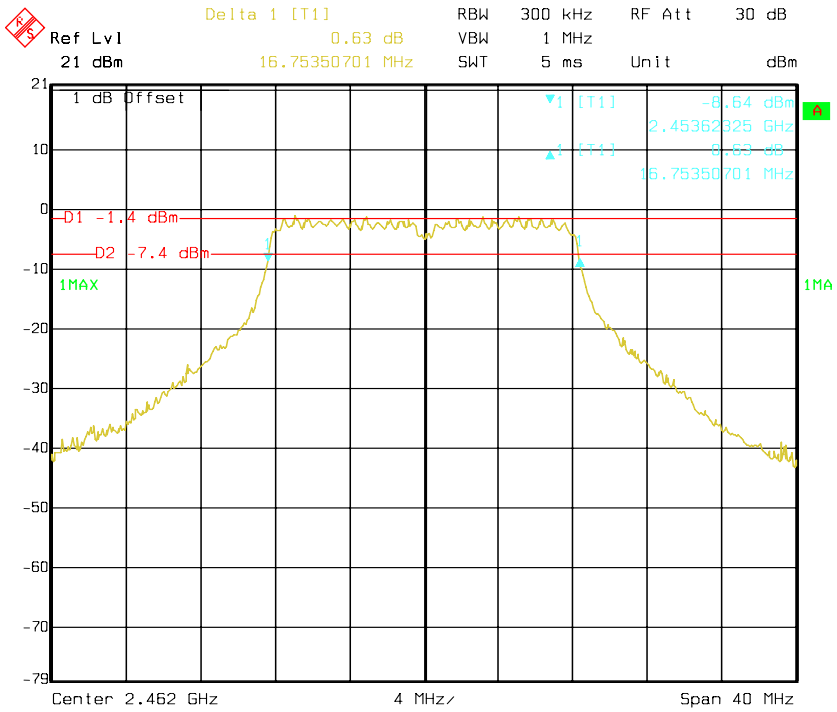
Date: 21.MAR.2012 17:28:49

802.11g Middle Channel



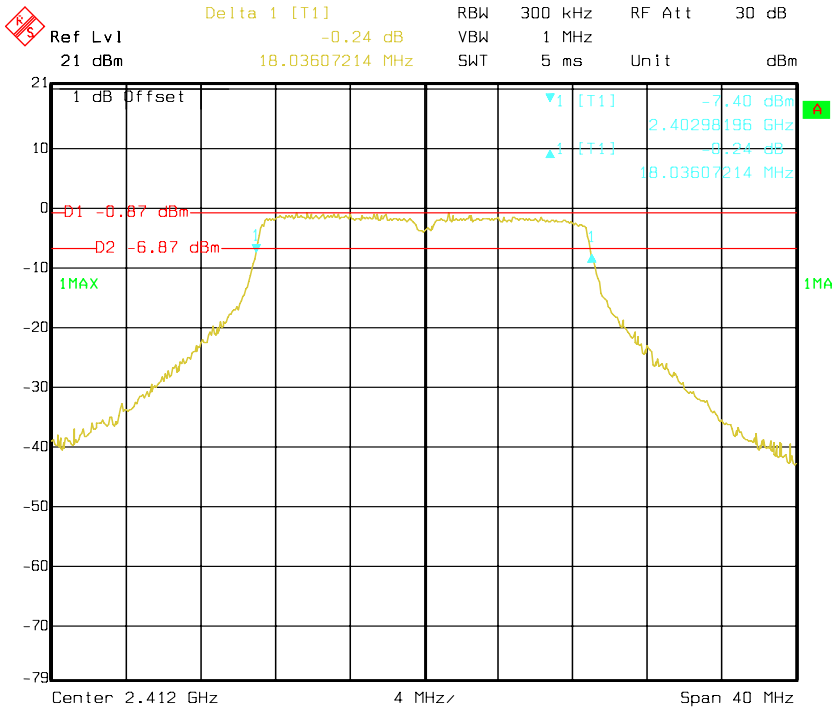
Date: 21.MAR.2012 17:26:43

802.11g High Channel



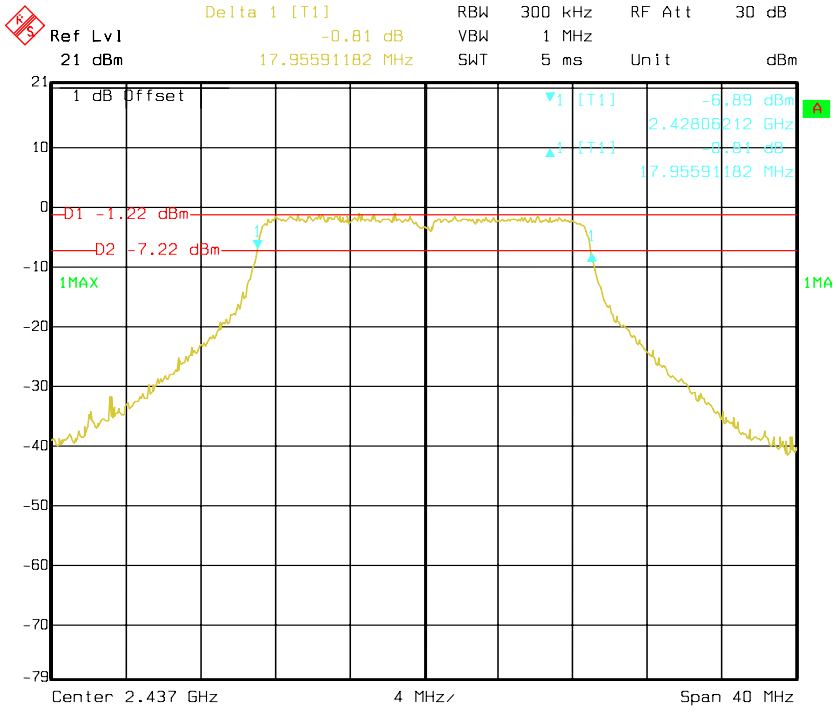
Date: 21.MAR.2012 17:24:53

Chain 0:802.11n20 Low Channel



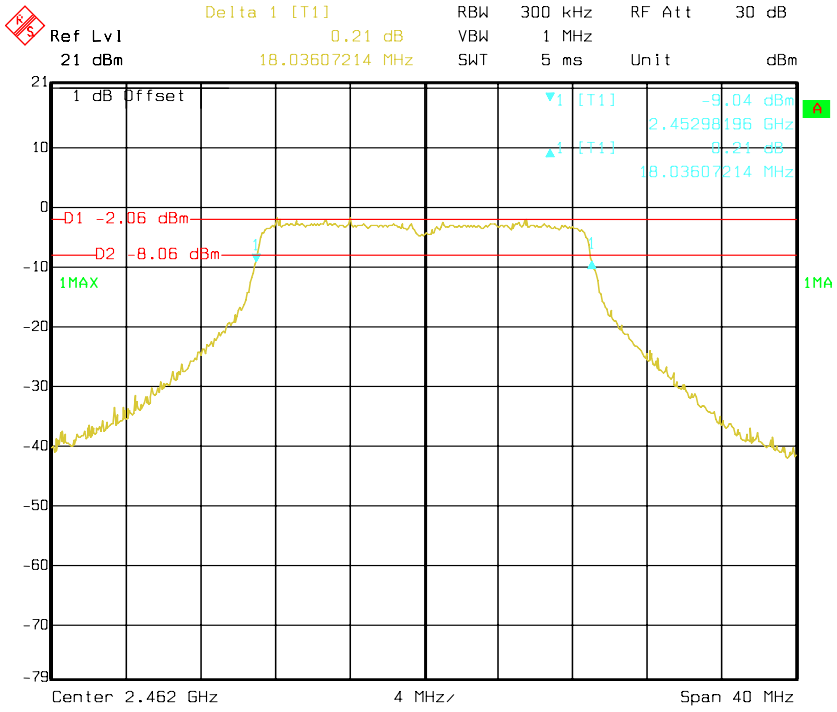
Date: 22.MAR.2012 10:11:29

Chain 0:802.11n20 Middle Channel

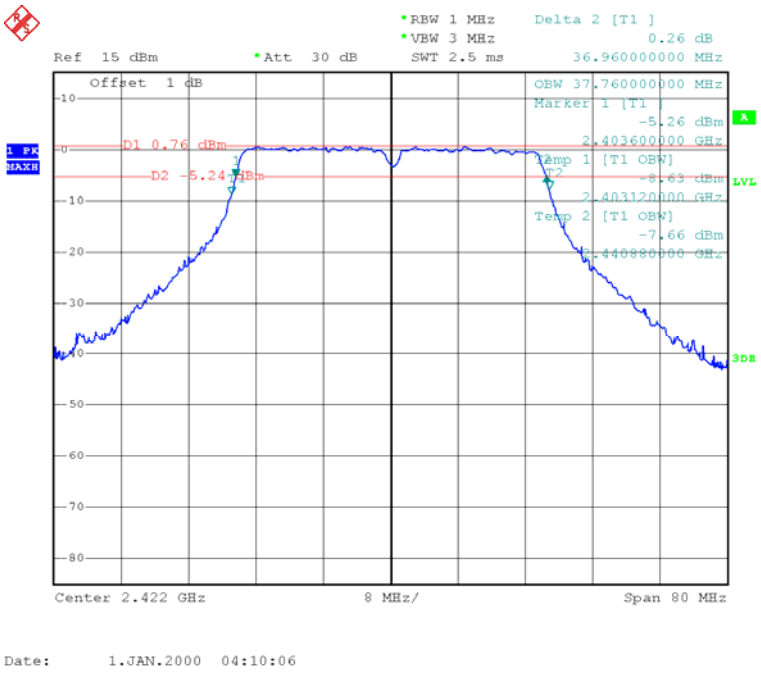


Date: 22.MAR.2012 10:22:32

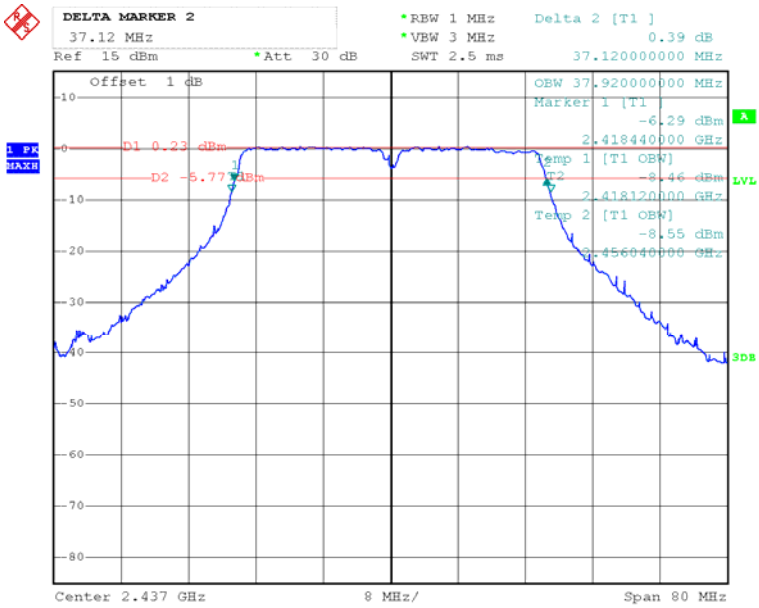
Chain 0:802.11n20 High Channel



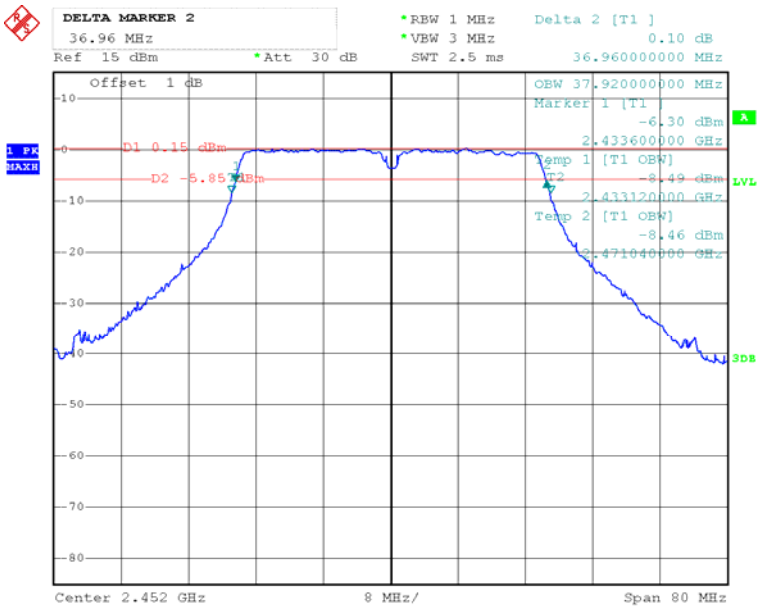
Chain 0:802.11n40 Low Channel



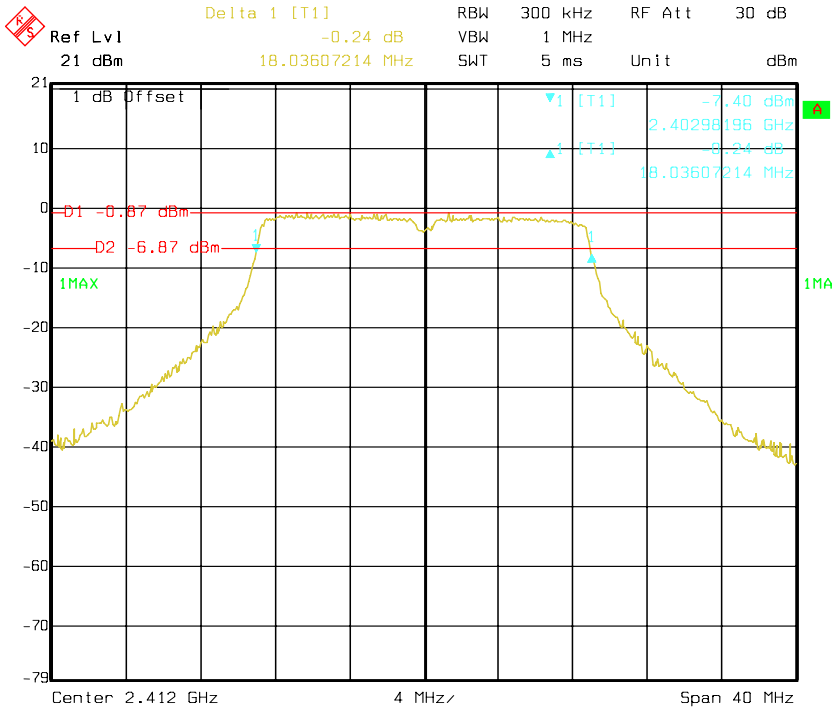
Chain 0:802.11n40 Middle Channel



Chain 0:802.11n40 High Channel

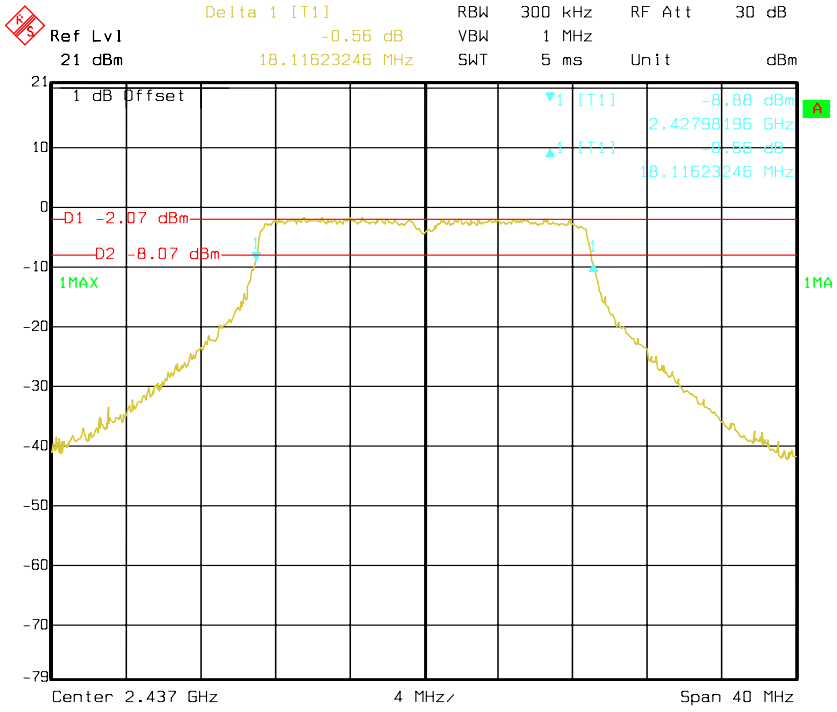


Chain 1:802.11n20 Low Channel



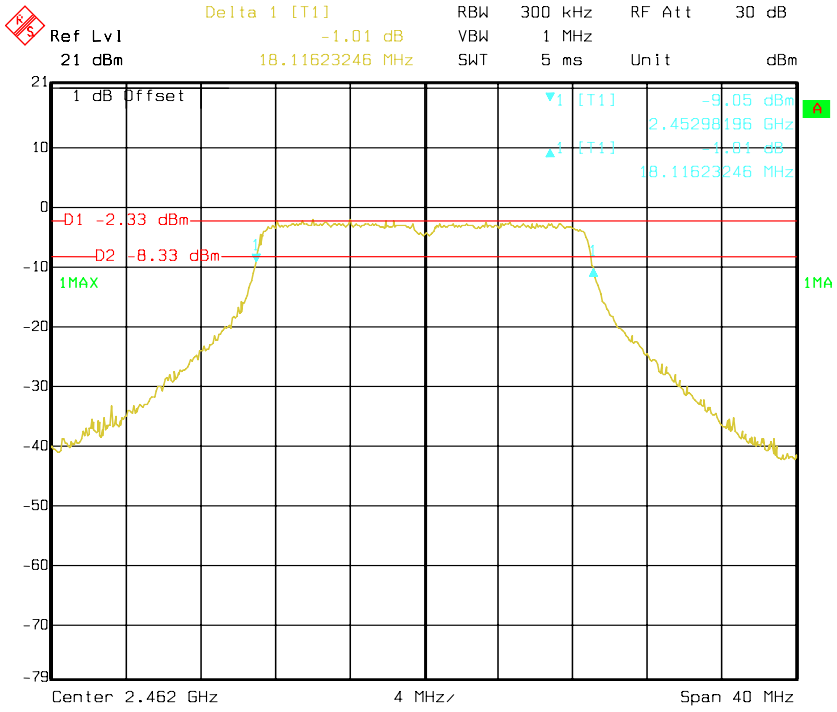
Date: 22.MAR.2012 10:11:29

Chain 1:802.11n20 Middle Channel

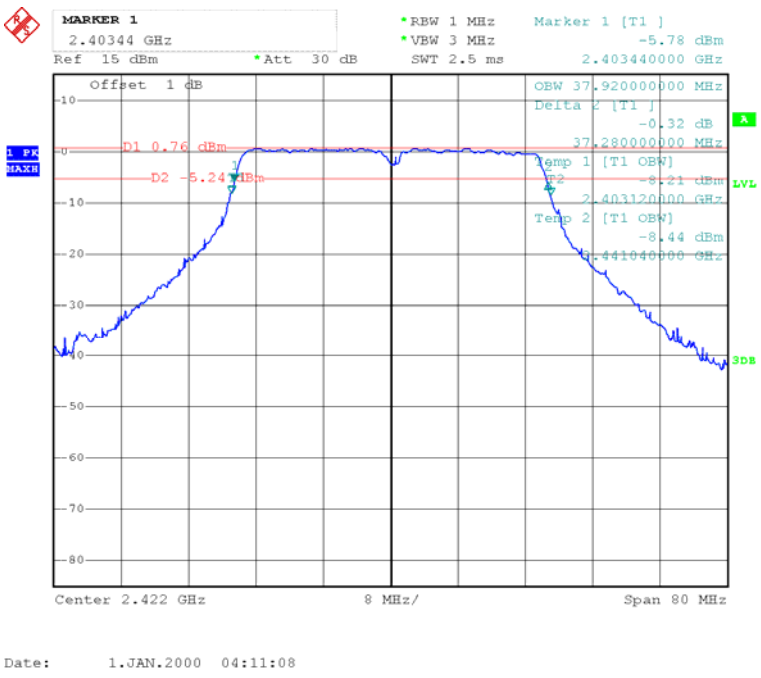


Date: 22.MAR.2012 10:05:13

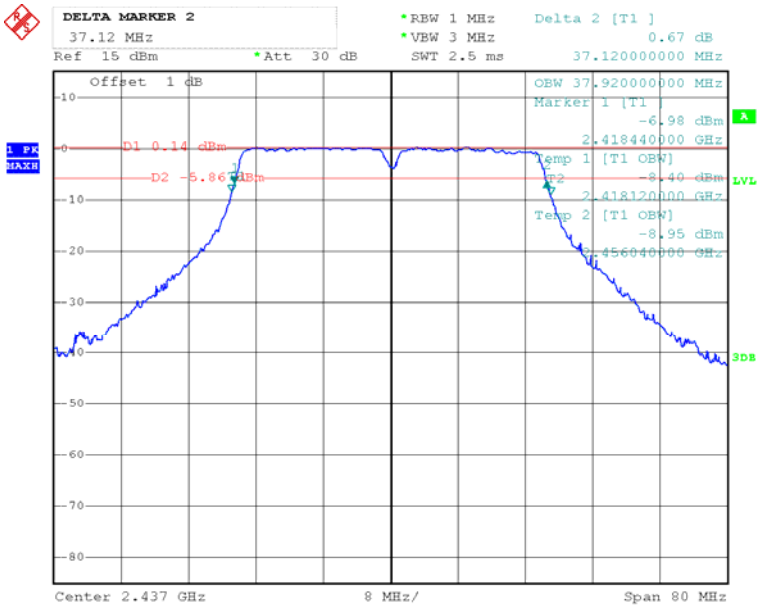
Chain 1:802.11n20 High Channel



Chain 1:802.11n40 Low Channel

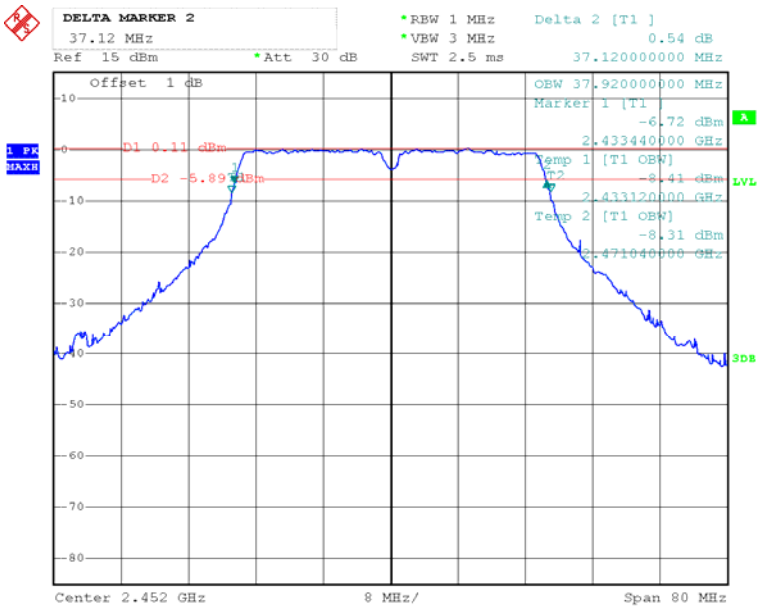


Chain 1:802.11n40 Middle Channel



Date: 1.JAN.2000 04:14:49

Chain 1:802.11n40 High Channel



Date: 1.JAN.2000 04:17:31

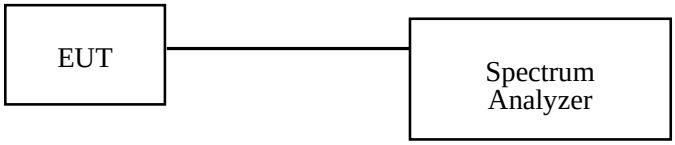
FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER

Applicable Standard

According to FCC §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 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

*** 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 Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu from 2012-03-22 to 2012-04-23.

Test Mode: Transmitting

Channel	Frequency (MHz)	Data Rate (Mbps)	Reading Power (dBm)	Limit (dBm)	Result
Chain 0:802.11b					
Low	2412	1	15. 15	29	pass
Middle	2437	1	14. 04	29	pass
High	2462	1	15. 77	29	pass
Chain 0:802.11g					
Low	2412	6	15.36	29	pass
Middle	2437	6	15.11	29	pass
High	2462	6	15.17	29	pass
Chain 0:802.11n20					
Low	2412	6.5	15.08	29	pass
Middle	2437	6.5	15.58	29	pass
High	2462	6.5	15.04	29	pass
Chain 1:802.11n20					
Low	2412	6.5	15.25	29	pass
Middle	2437	6.5	15.22	29	pass
High	2462	6.5	15.02	29	pass
Chain 0:802.11n40					
Low	2422	13.5	15.04	29	pass
Middle	2437	13.5	14.97	29	pass
High	2452	13.5	15.04	29	pass
Chain 1:802.11n40					
Low	2422	13.5	15.06	29	pass
Middle	2437	13.5	14.99	29	pass
High	2452	13.5	15.00	29	pass

Total power of 802.11n: Chain 0+ Chain 1

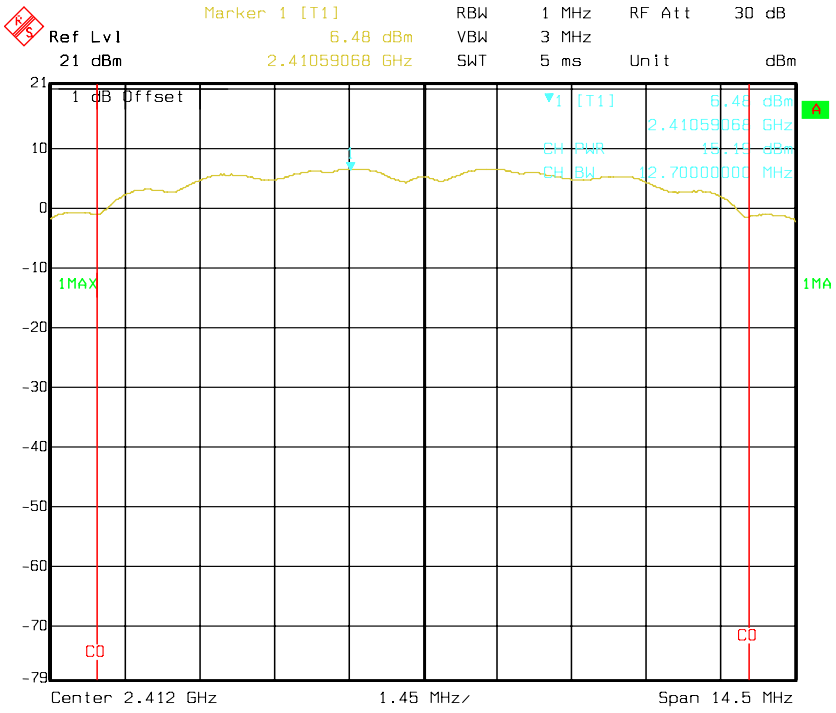
Channel	Frequency (MHz)	Data Rate (Mbps)	Output Power (dBm)	Limit (dBm)
802.11n-HT20 *Chain 0+1*				
Low	2412	6.5	18.17	29
Middle	2437	6.5	18.41	29
High	2462	6.5	18.04	29
802.11n-HT40 *Chain 0+1*				
Low	2422	13.5	18.06	29
Middle	2437	13.5	17.99	29
High	2452	13.5	18.03	29

Note: MIMO technology only for 801.11n.

The antenna gain is 10.0 dBi.

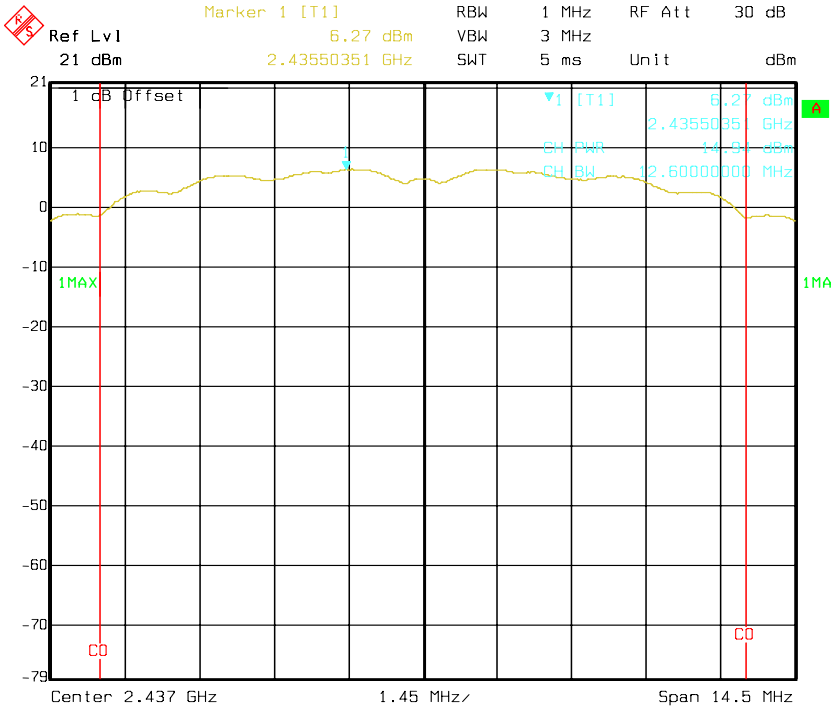
Please refer to the following plots

802.11b RF Output Power, Low Channel



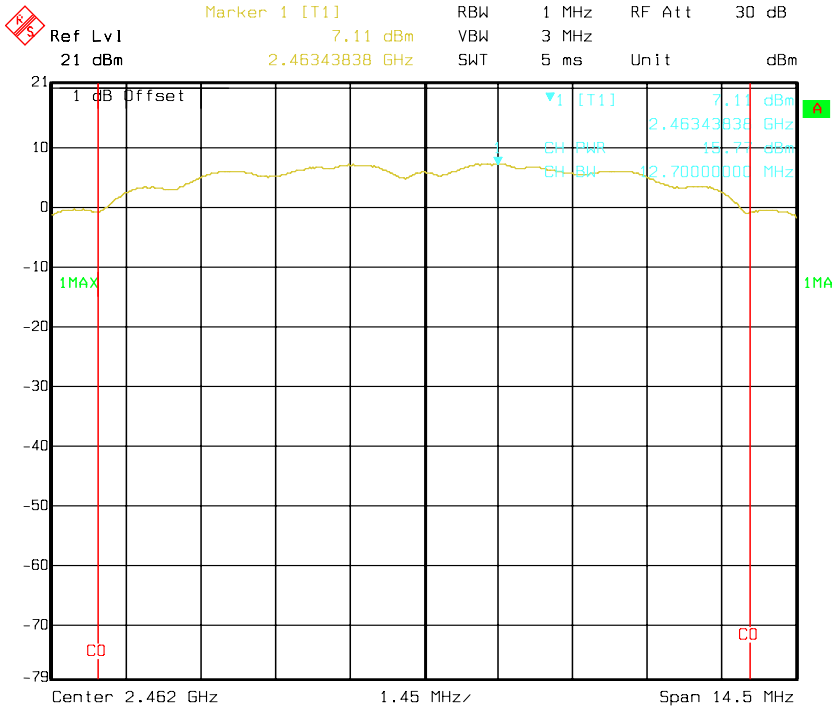
Date: 22.MAR.2012 09:49:22

802.11b RF Output Power, Middle Channel

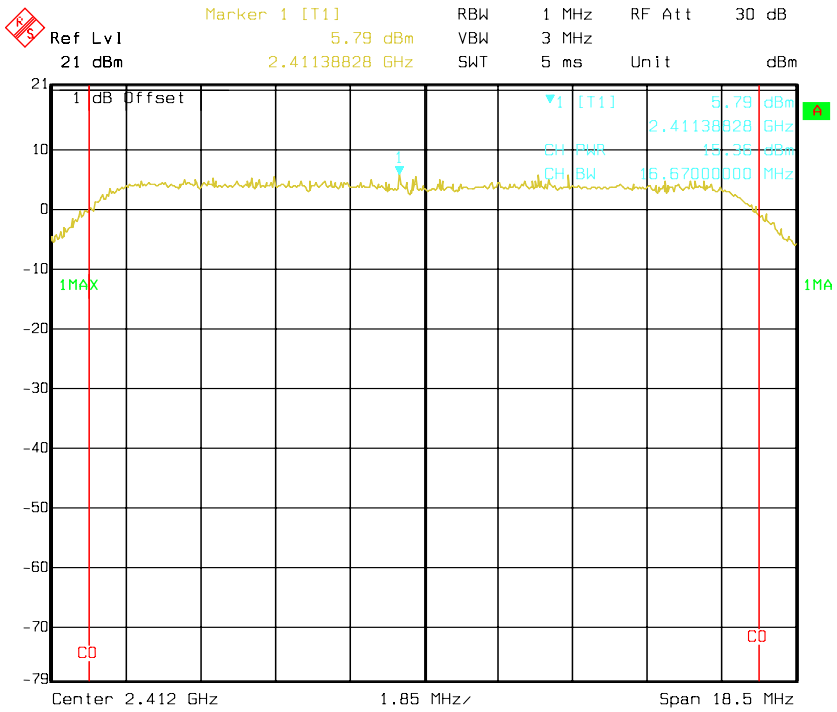


Date: 22.MAR.2012 09:47:14

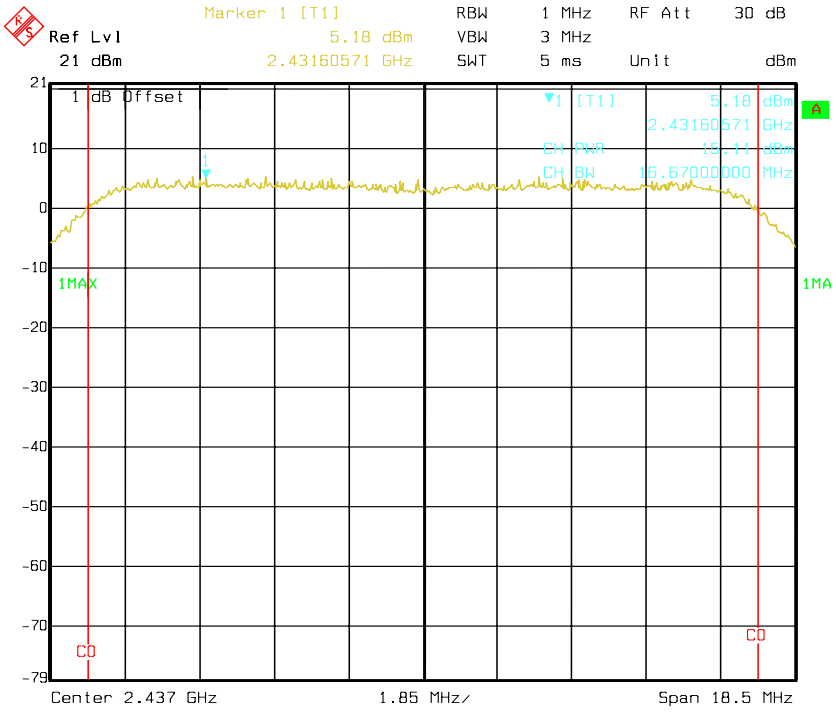
802.11b RF Output Power, High Channel



802.11g RF Output Power, Low Channel

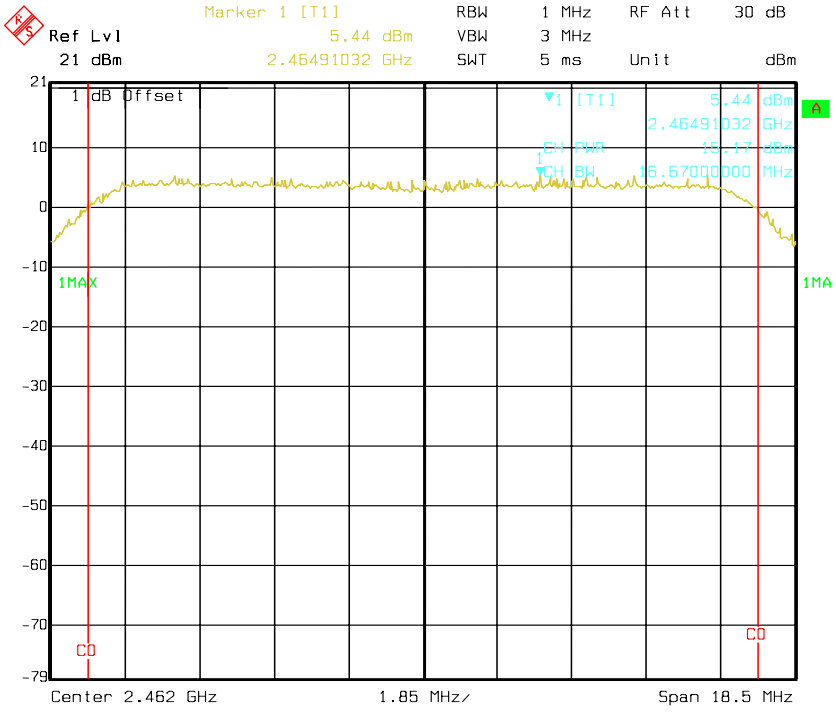


802.11g RF Output Power, Middle Channel



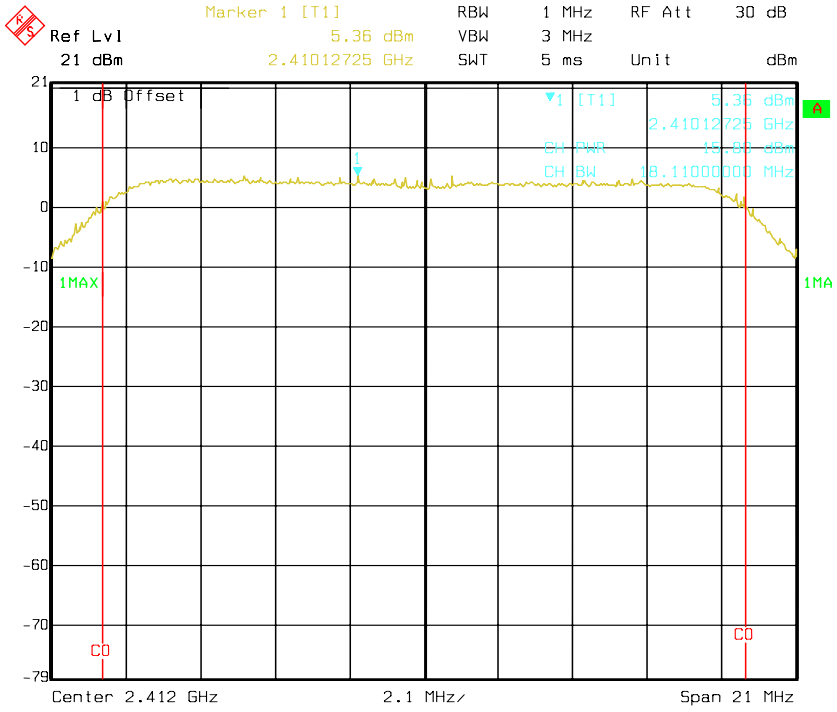
Date: 22.MAR.2012 09:53:44

802.11g RF Output Power, High Channel

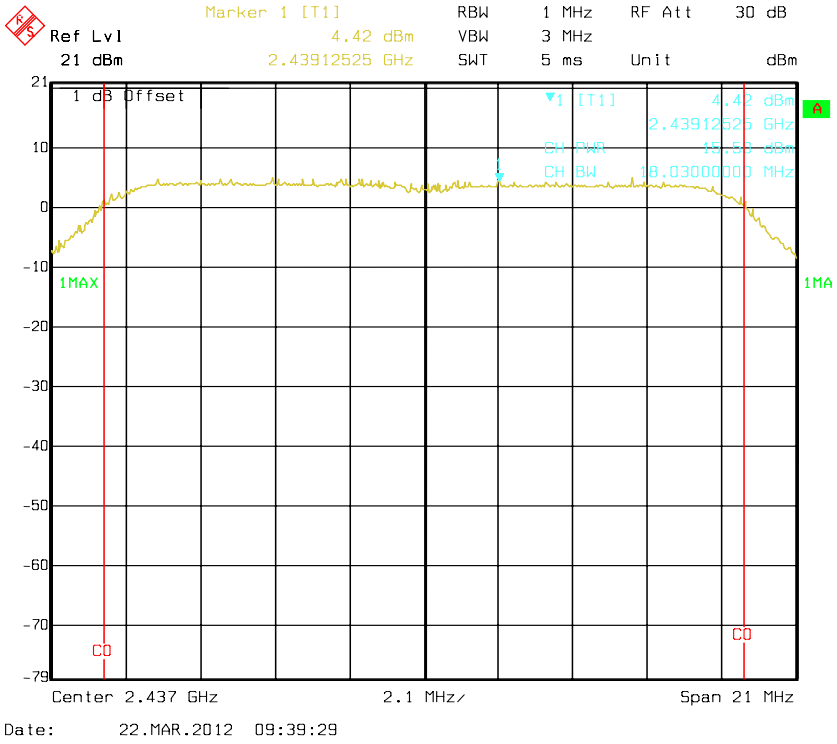


Date: 22.MAR.2012 09:54:50

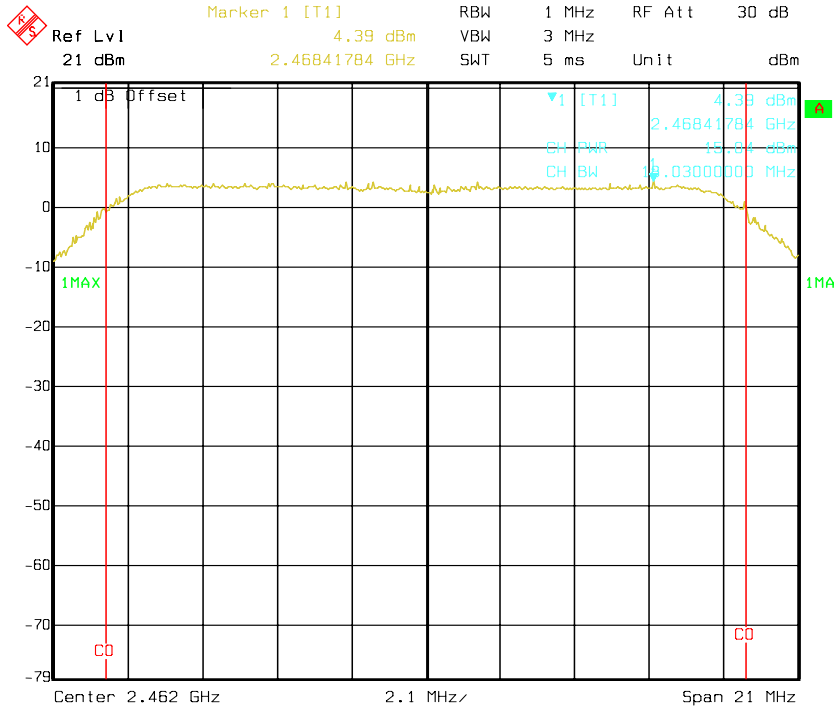
Chain 0:802.11n20 RF Output Power, Low Channel



Chain 0:802.11n20 RF Output Power, Middle Channel

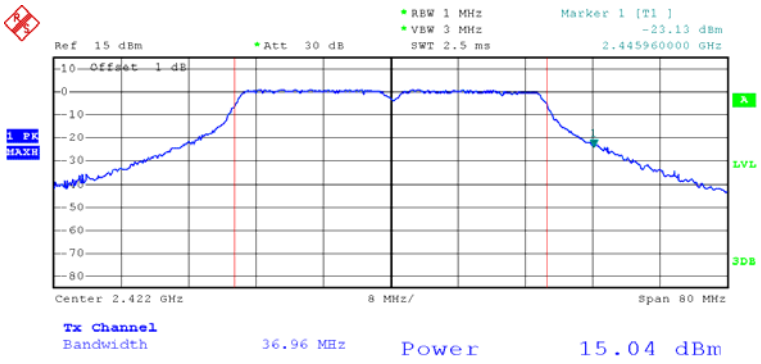


Chain 0:802.11n20 RF Output Power, High Channel



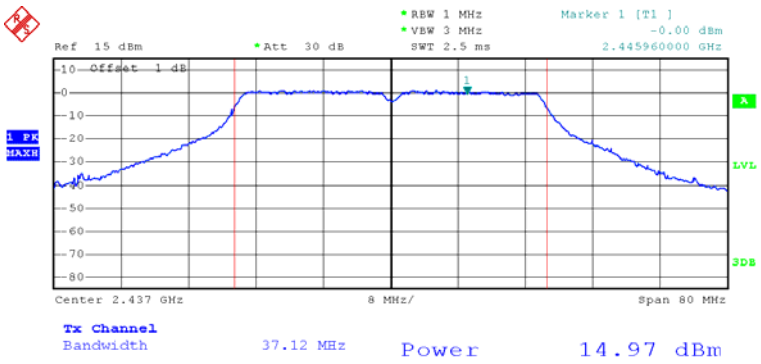
Date: 22.MAR.2012 09:42:07

Chain 0:802.11n40 RF Output Power, Low Channel



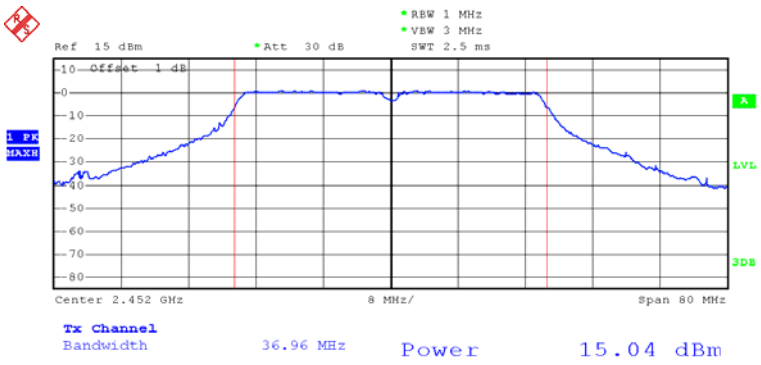
Date: 1.JAN.2000 04:58:20

Chain 0:802.11n40 RF Output Power, Middle Channel



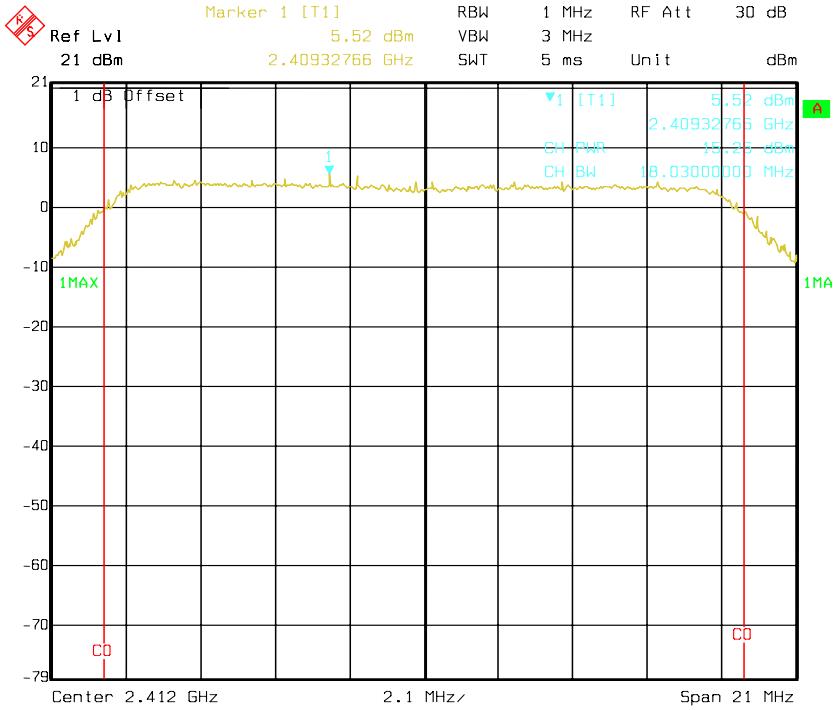
Date: 1.JAN.2000 04:54:53

Chain 0:802.11n40 RF Output Power, High Channel

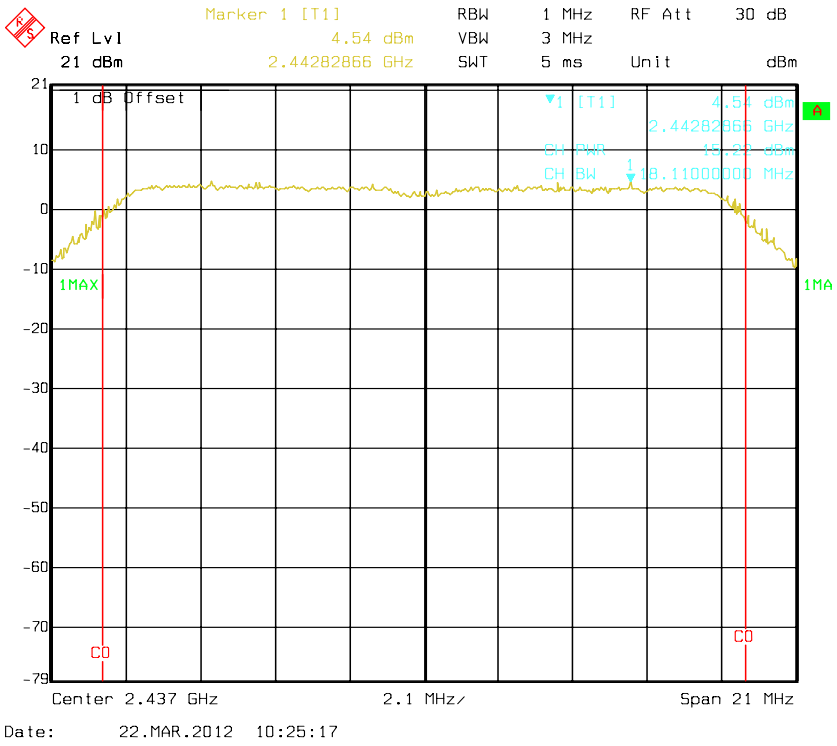


Date: 1.JAN.2000 04:50:06

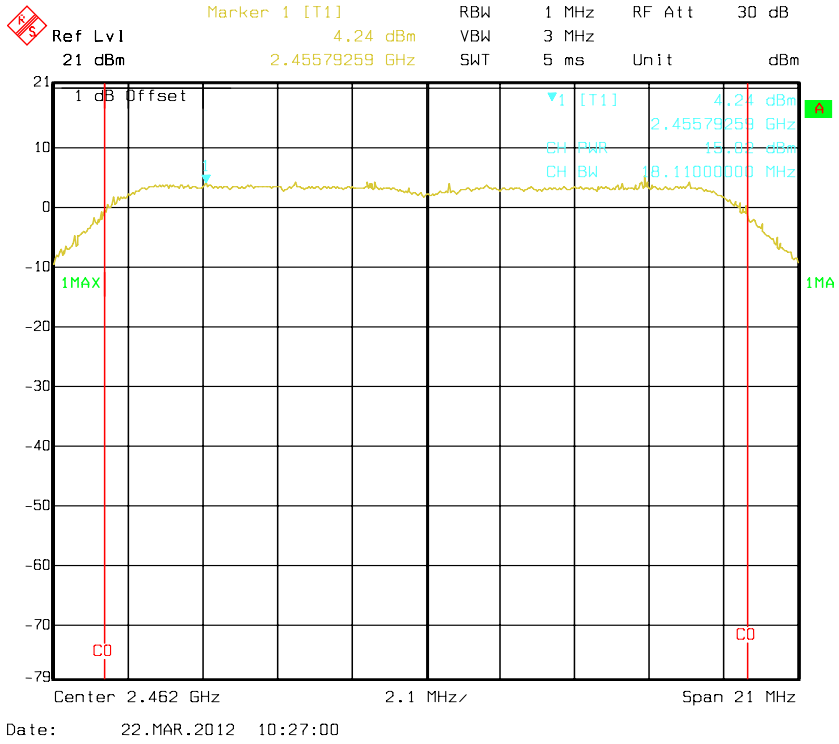
Chain 1:802.11n20 RF Output Power, Low Channel



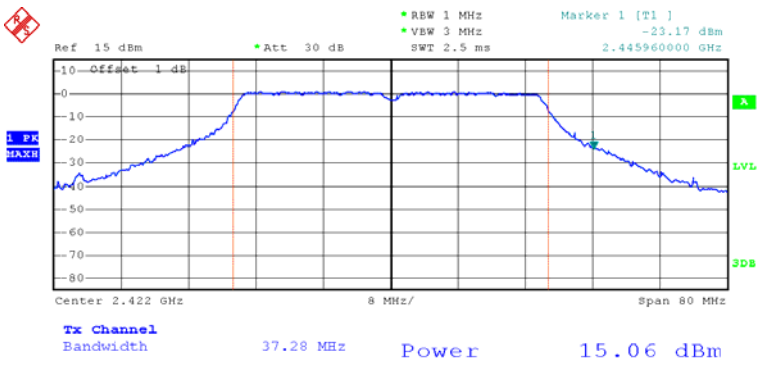
Chain 1:802.11n20 RF Output Power, Middle Channel



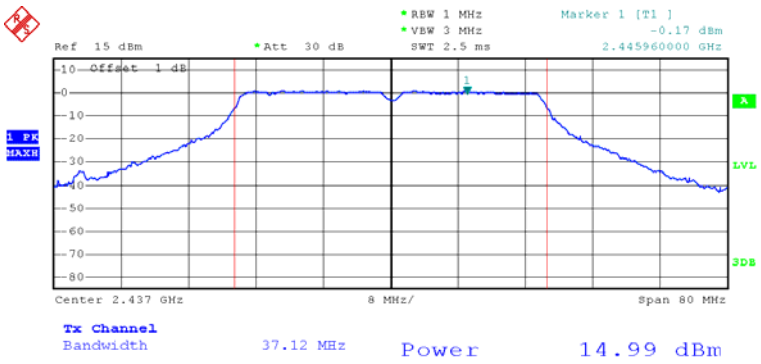
Chain 1:802.11n20 RF Output Power, High Channel



Chain 1:802.11n40 RF Output Power, Low Channel

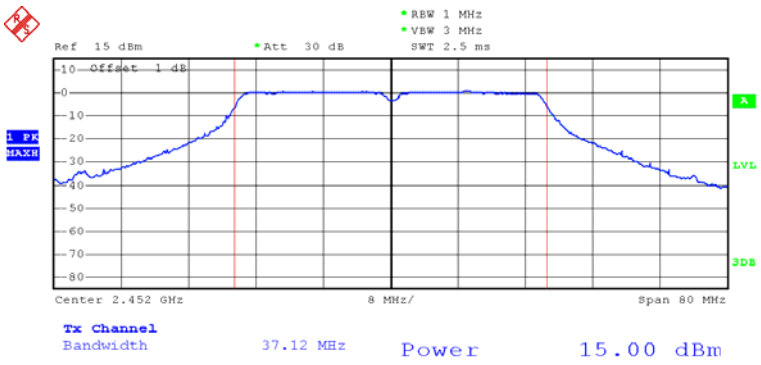


Chain 1:802.11n40 RF Output Power, Middle Channel



Date: 1.JAN.2000 04:57:04

Chain 1:802.11n40 RF Output Power, High Channel



Date: 1.JAN.2000 04:51:56

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 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 100 kHz and VBW of spectrum analyzer to 300 kHz 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10

*** 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 Data

Environmental Conditions

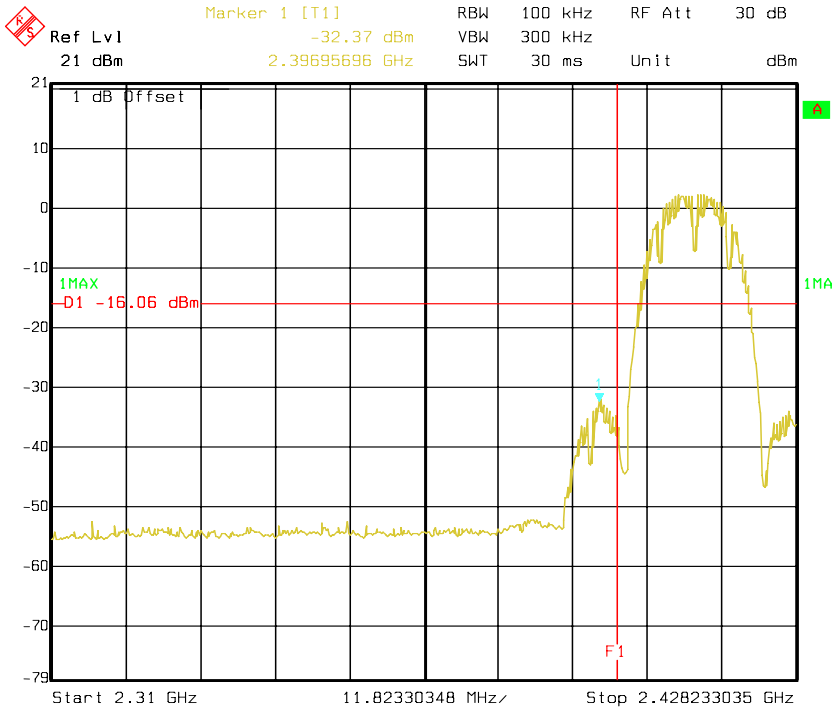
Temperature:	25 ° C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu from 2012-03-21 to 2012-04-11.

Test Result: *Compliance*

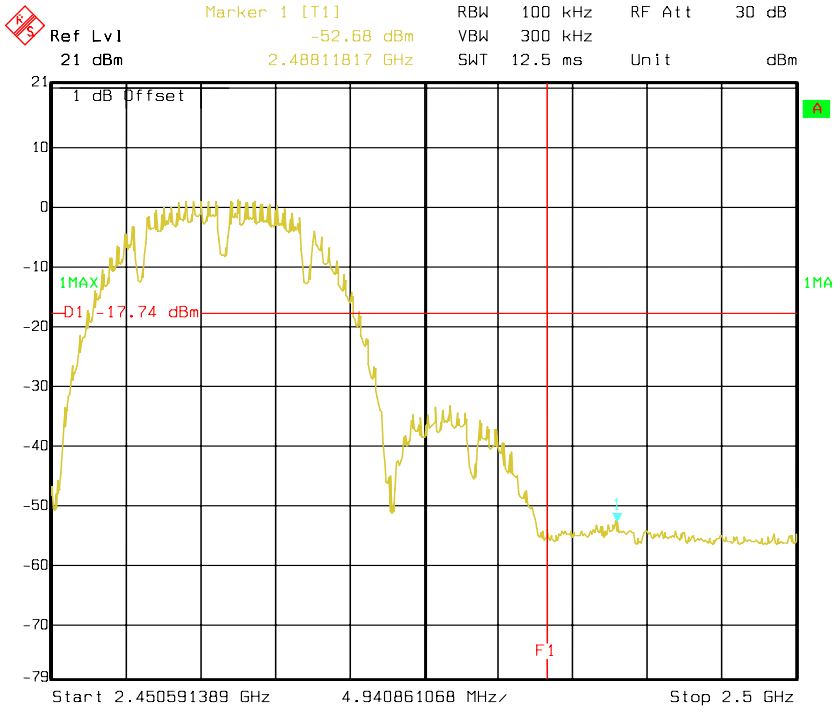
Please refer to following plots.

802.11b: Band Edge, Left Side



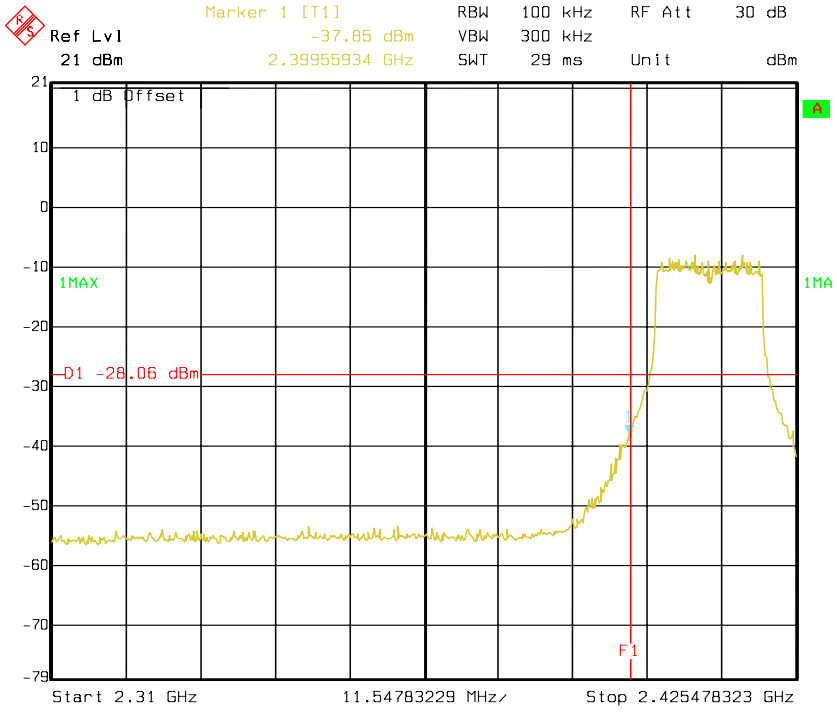
Date: 09.APR.2012 13:30:35

802.11b: Band Edge, Right Side

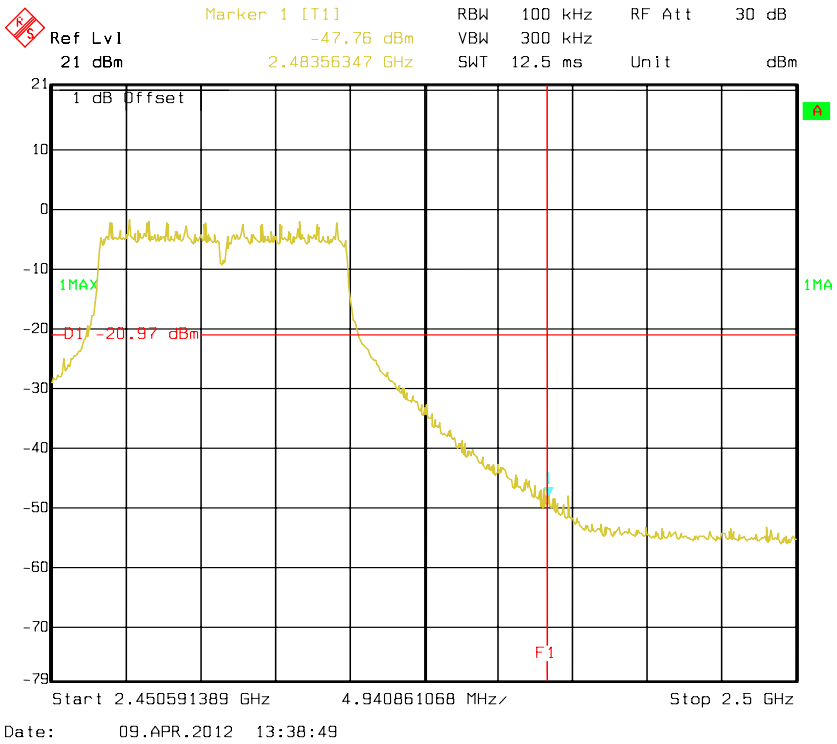


Date: 09.APR.2012 13:35:29

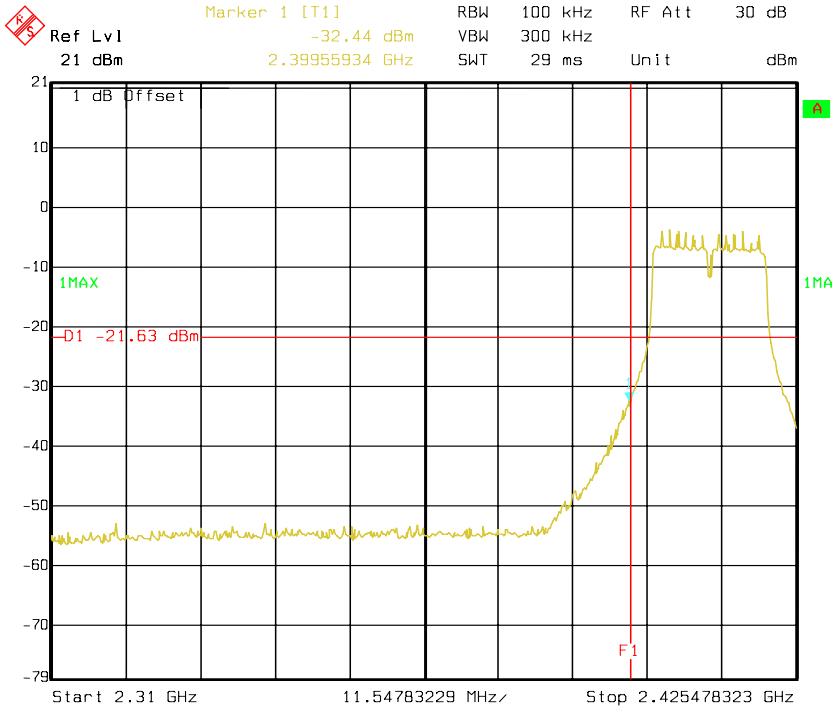
802.11g: Band Edge, Left Side



802.11g: Band Edge, Right Side

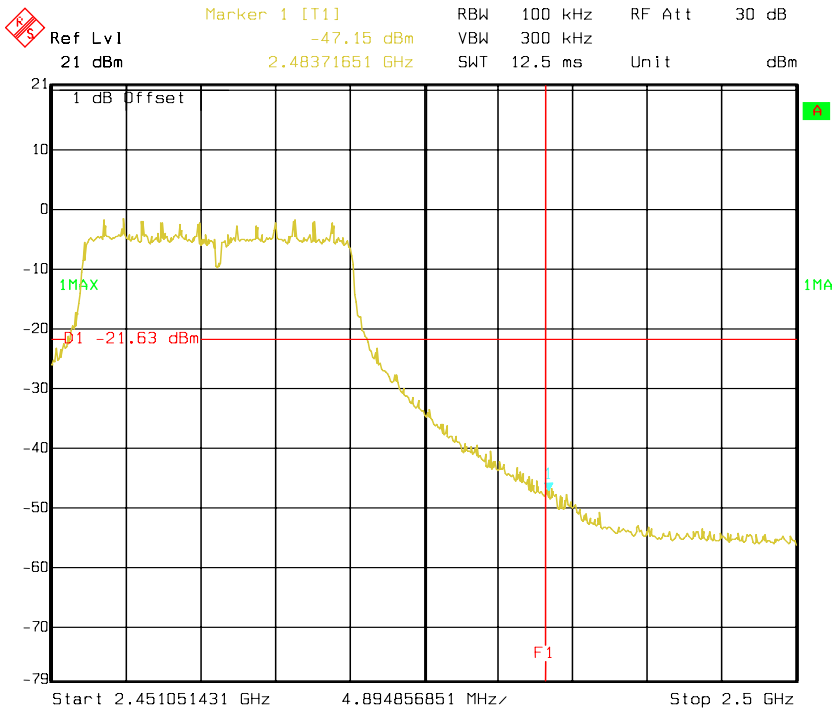


Chain 0:802.11n20: Band Edge, Left Side



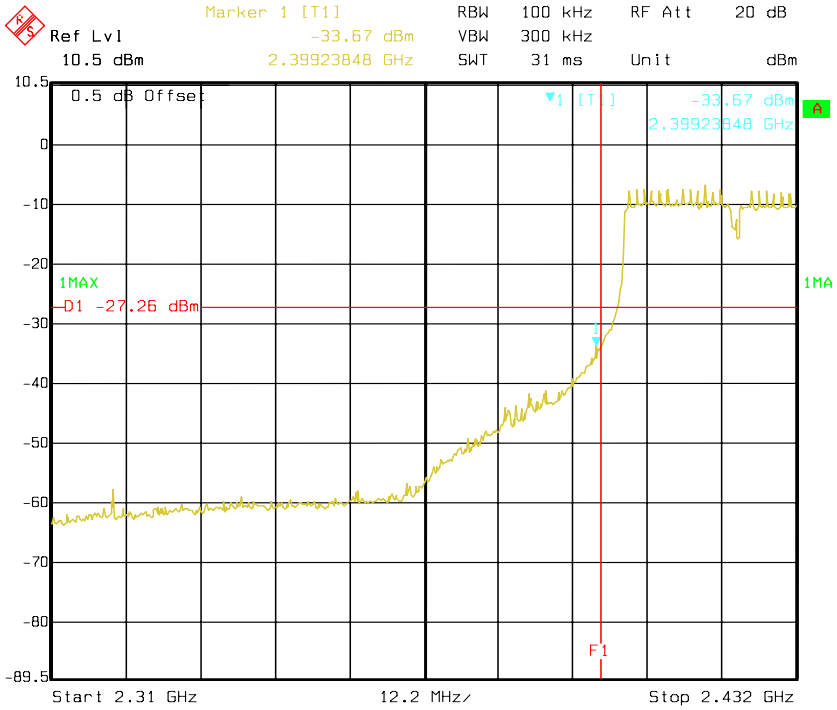
Date: 09.APR.2012 13:46:53

Chain 0:802.11n20: Band Edge, Right Side



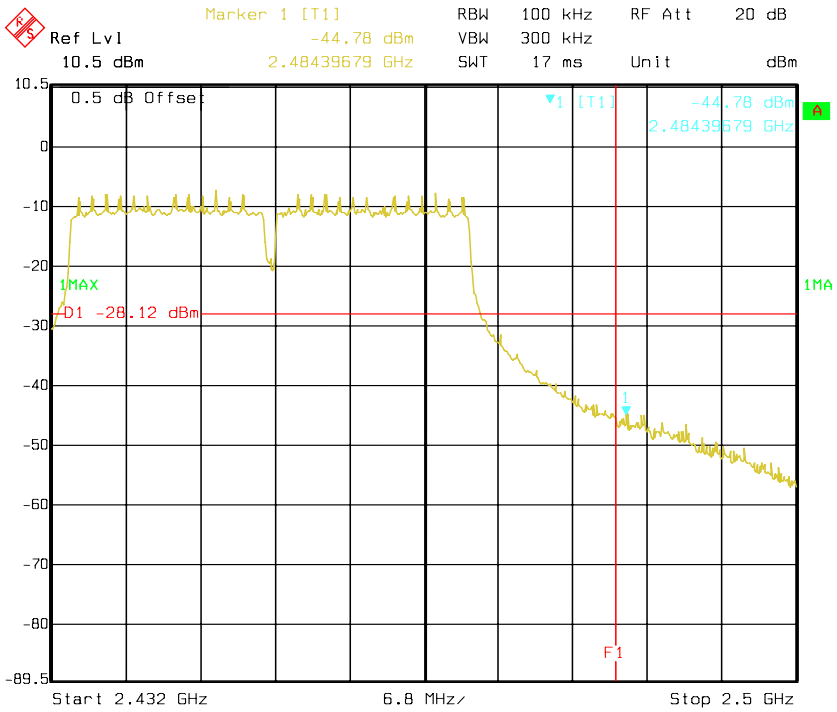
Date: 09.APR.2012 13:54:46

Chain 0:802.11n40: Band Edge, Left Side



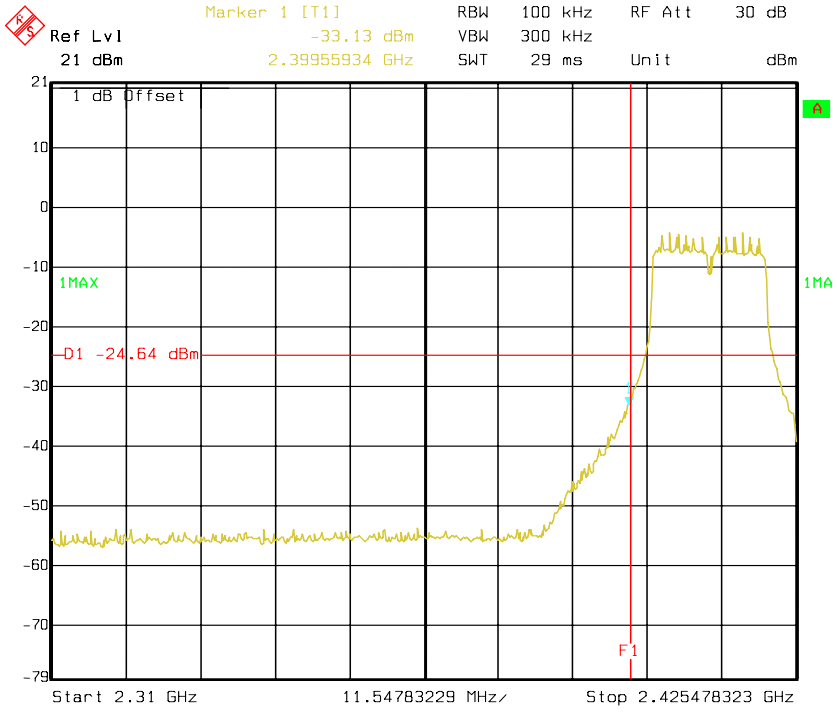
Date: 10.APR.2012 18:17:16

Chain 0:802.11n40: Band Edge, Right Side



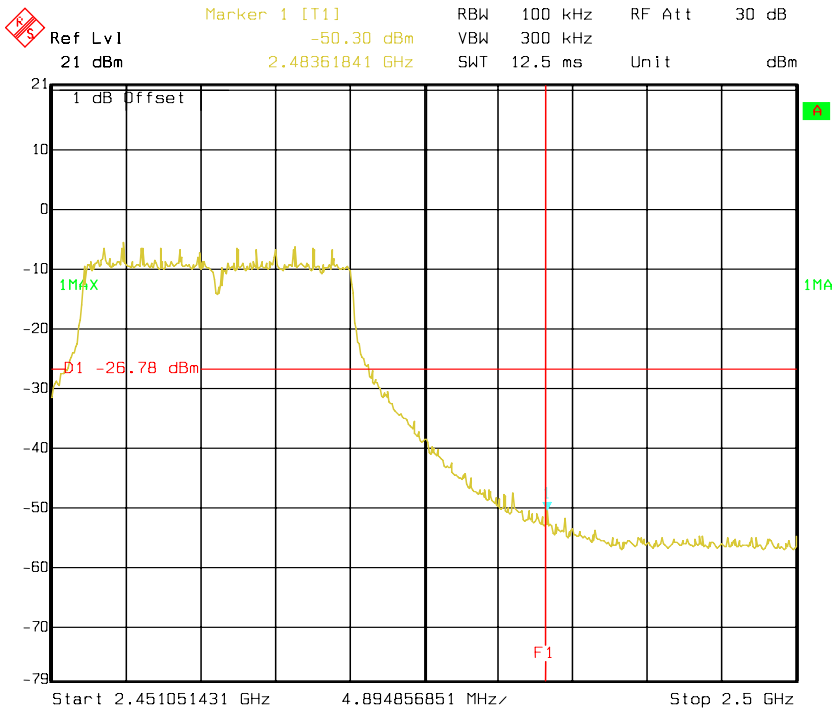
Date: 10.APR.2012 19:01:20

Chain 1:802.11n20: Band Edge, Left Side



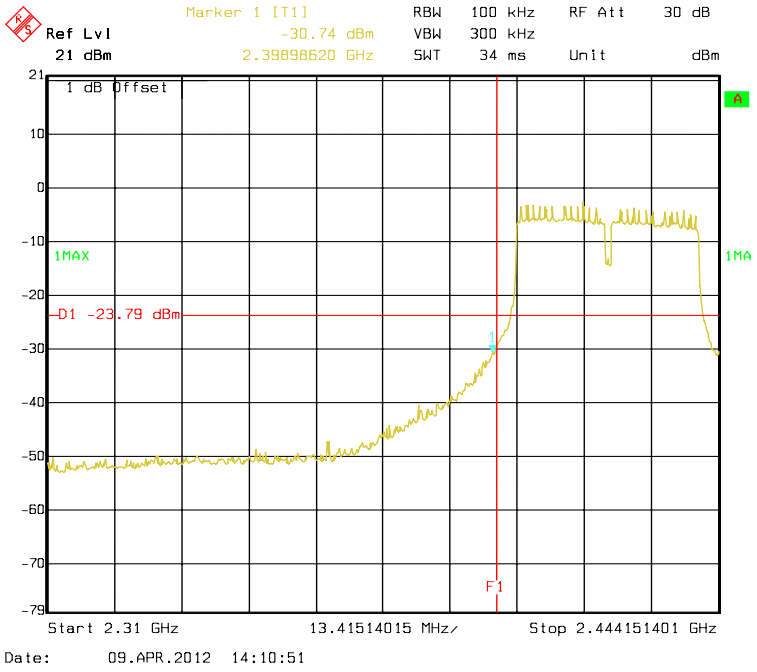
Date: 09.APR.2012 13:49:18

Chain 1:802.11n20: Band Edge, Right Side

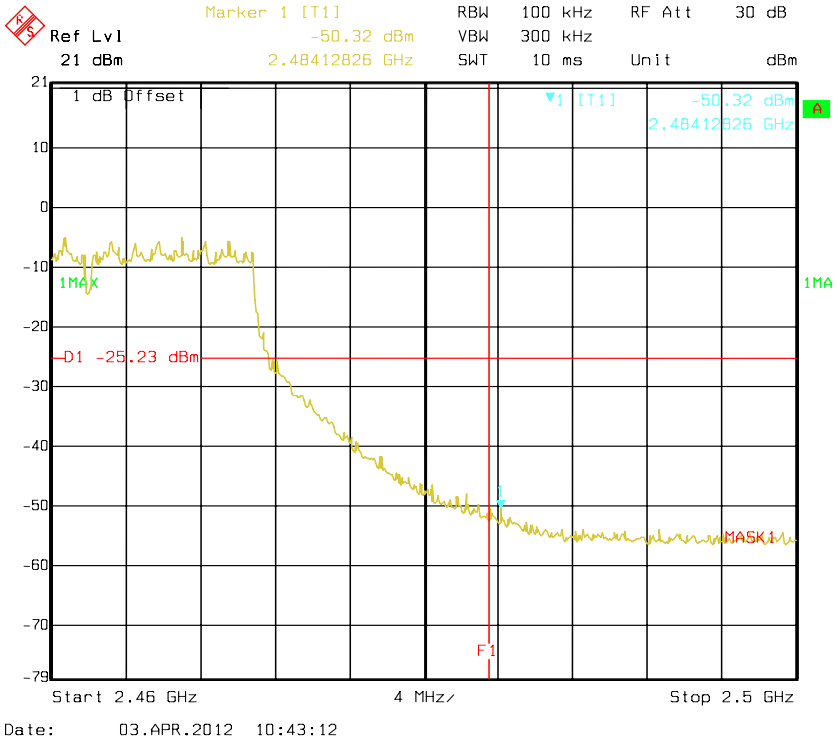


Date: 09.APR.2012 13:56:42

Chain 1:802.11n40: Band Edge, Left Side



Chain 1:802.11n40: Band Edge, Right Side



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 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. According to KDB 558074 D01 DTS Meas Guidance v01, set the RBW = 100 kHz, VBW $\geqslant$ 300 kHz, set the span to 5-30 % greater than the EBW.
4. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
5. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log (3 kHz/100 kHz = -15.2 dB).

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

*** 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 Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu from 2012-03-21 to 2012-04-11.

Test Mode: Transmitting

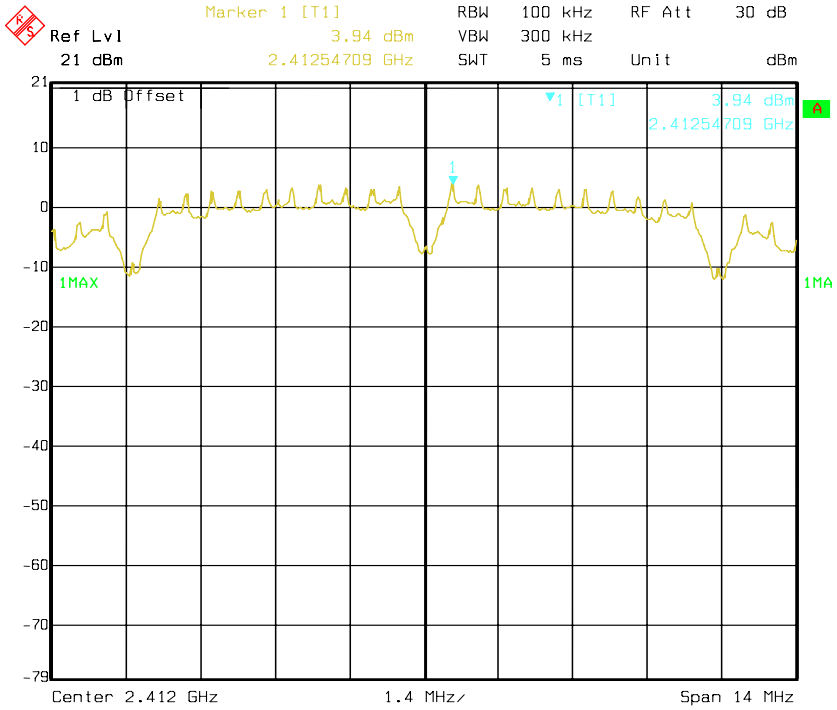
Test Result: Pass

Channel	Frequency (MHz)	Data Rate (Mbps)	Reading Level (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Chain 0:802.11b						
Low	2412	1	3.94	-11.26	8	pass
Middle	2437	1	3.00	-12.2	8	pass
High	2462	1	2.26	-12.94	8	pass
Chain 0:802.11g						
Low	2412	6	7.28	-7.92	8	pass
Middle	2437	6	5.41	-9.79	8	pass
High	2462	6	6.41	-8.79	8	pass
Chain 0:802.11n20						
Low	2412	6.5	-1.63	-16.83	8	pass
Middle	2437	6.5	-0.36	-15.56	8	pass
High	2462	6.5	-1.63	-16.83	8	pass
Chain 1:802.11n20						
Low	2412	6.5	-3.53	-18.73	8	pass
Middle	2437	6.5	-4.5	-19.7	8	pass
High	2462	6.5	-5.4	-20.6	8	pass
Chain 0:802.11n40						
Low	2422	13.5	-4.64	-19.84	8	pass
Middle	2437	13.5	-5.63	-20.83	8	pass
High	2452	13.5	-6.78	-21.98	8	pass
Chain 1:802.11n40						
Low	2422	13.5	-3.79	-18.99	8	pass
Middle	2437	13.5	-5.04	-20.24	8	pass
High	2452	13.5	-5.83	-21.03	8	pass

Note: the antenna gain is 10.0 dBi.

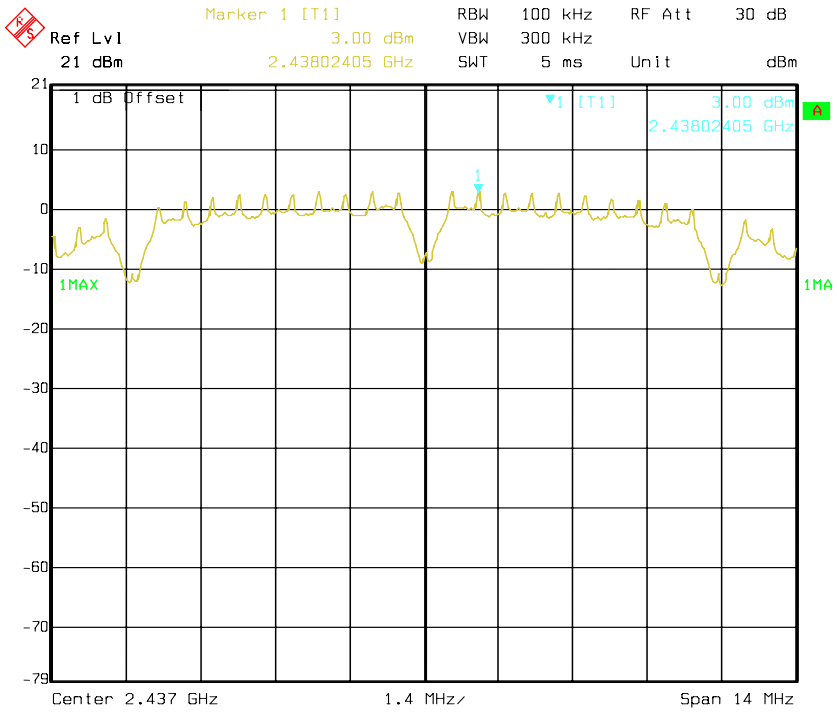
Please refer to the following plots

Power Spectral Density, 802.11b Low Channel



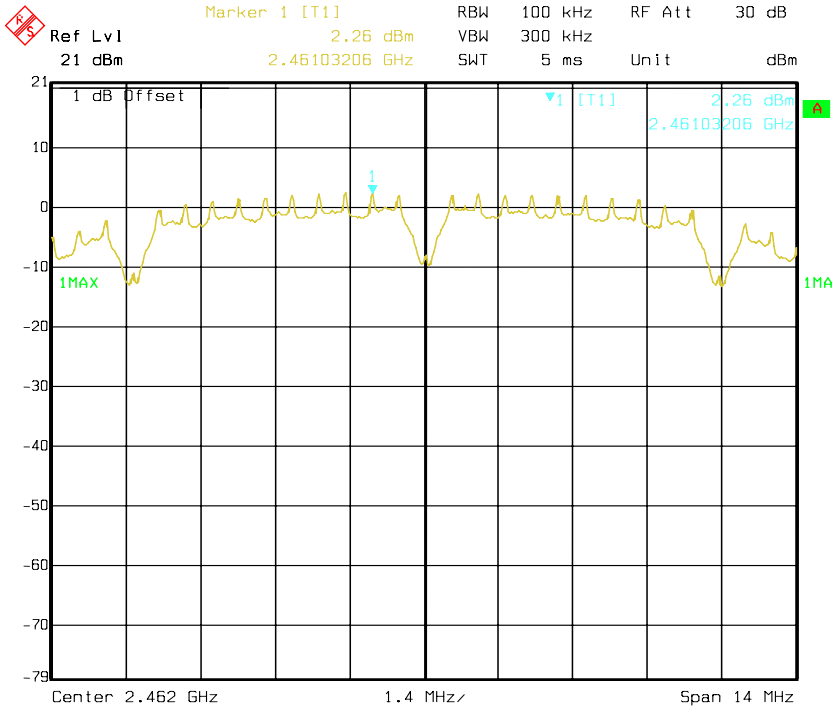
Date: 21.MAR.2012 19:24:55

Power Spectral Density, 802.11b Middle Channel

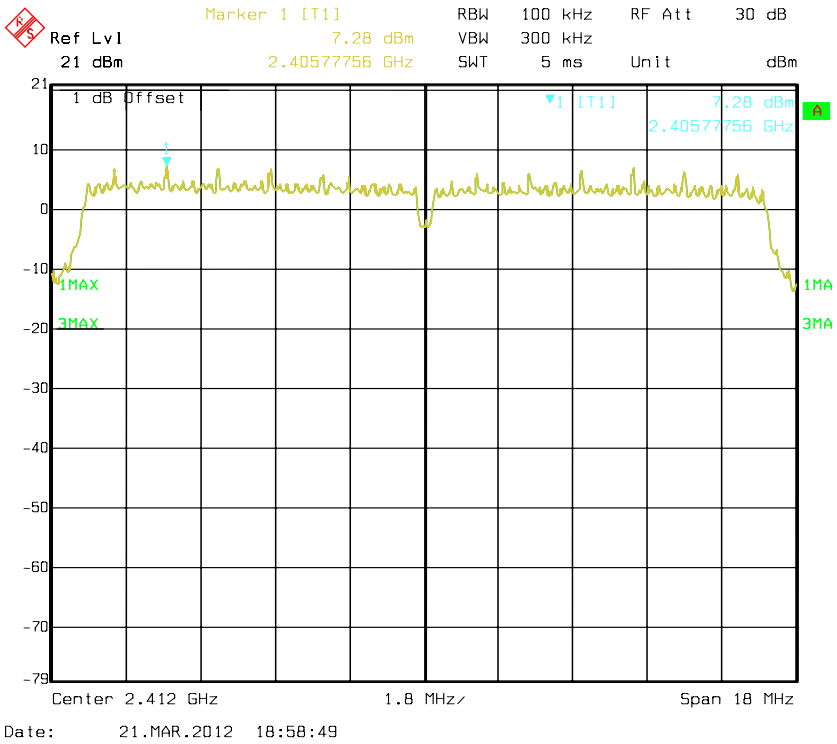


Date: 21.MAR.2012 19:26:50

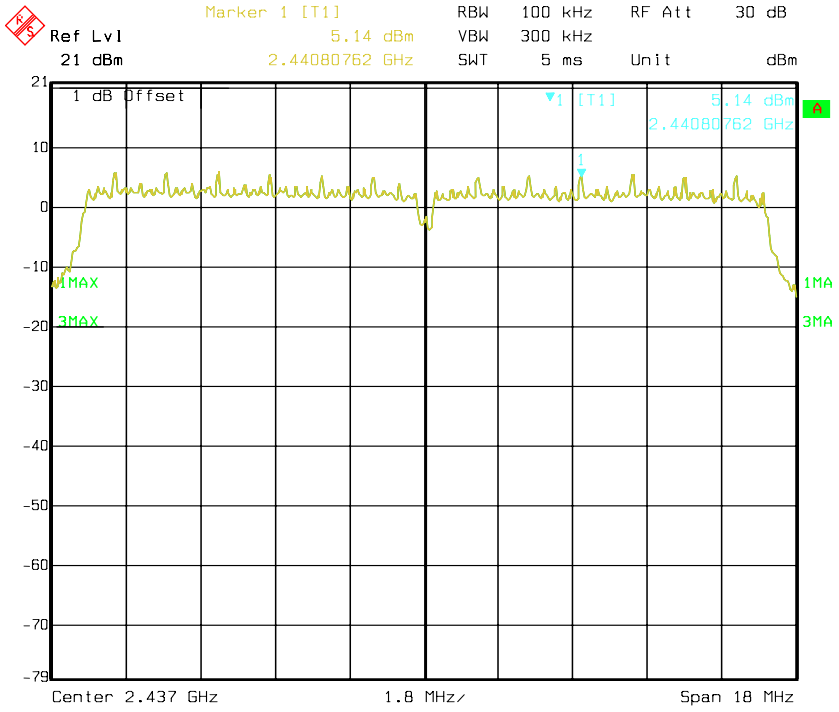
Power Spectral Density, 802.11b High Channel



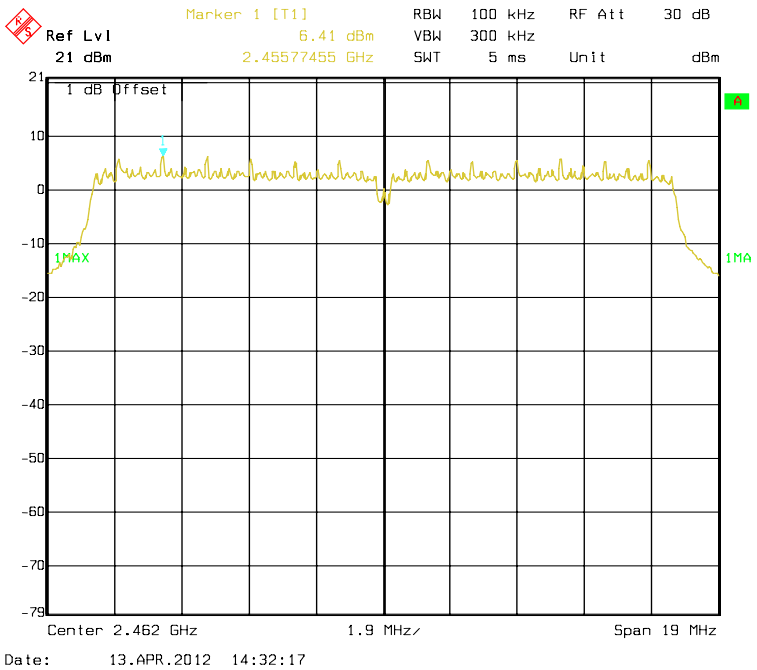
Power Spectral Density, 802.11g Low Channel



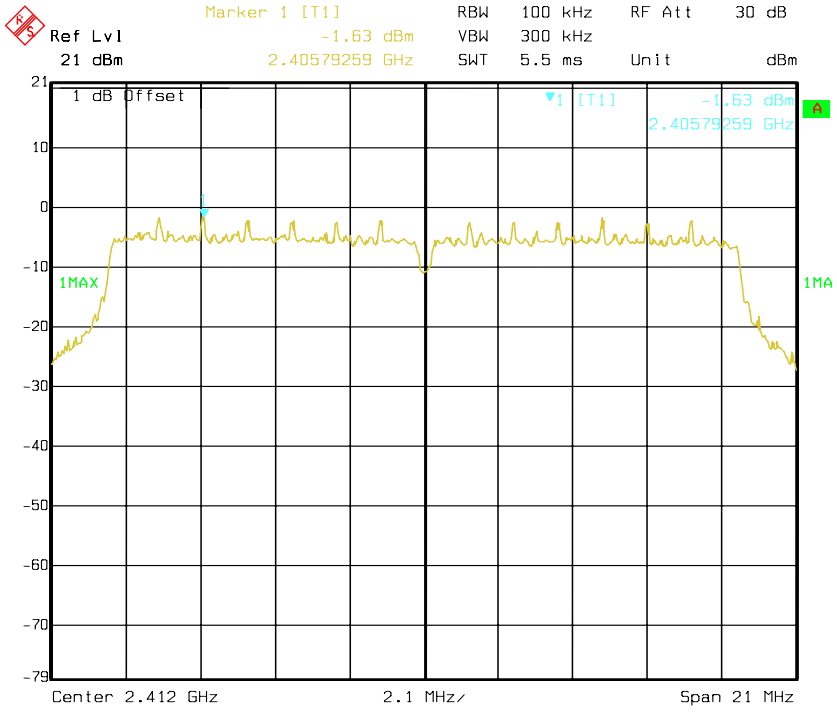
Power Spectral Density, 802.11g Middle Channel



Power Spectral Density, 802.11g High Channel

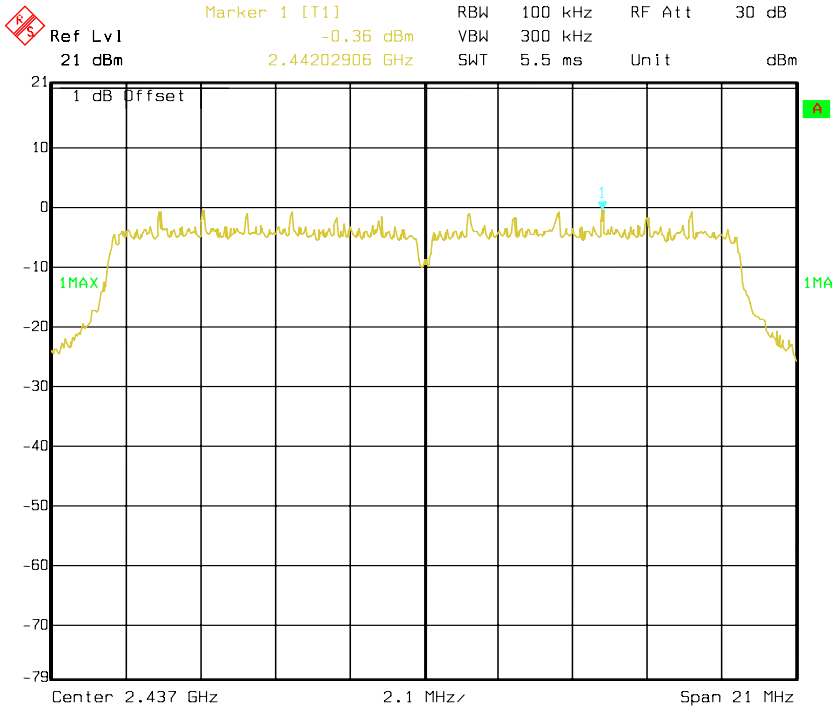


Chain 0:Power Spectral Density, 802.11n20 Low Channel



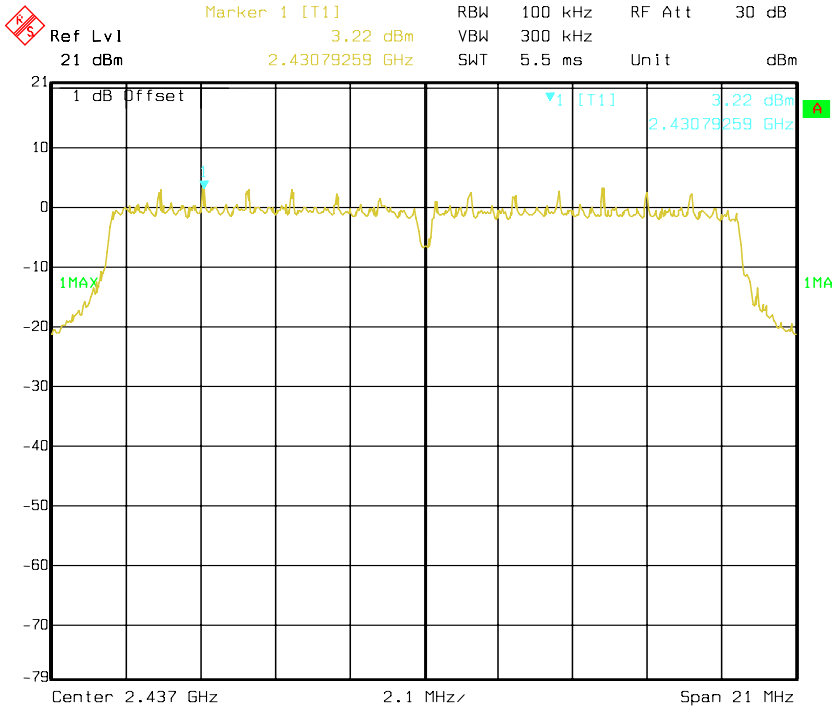
Date: 21.MAR.2012 19:20:49

Chain 0:Power Spectral Density, 802.11n20 Middle Channel



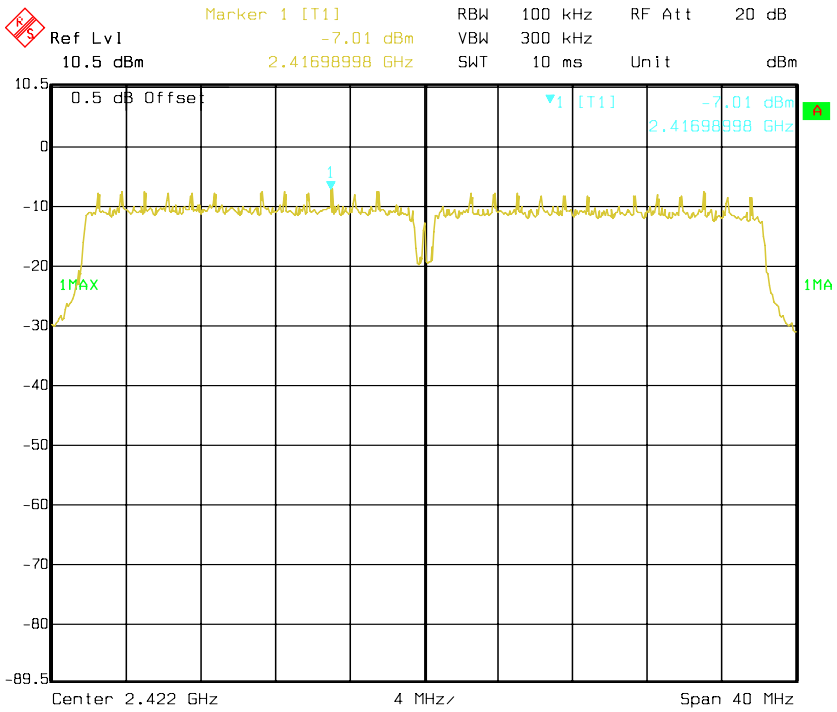
Date: 13.APR.2012 14:36:39

Chain 0:Power Spectral Density, 802.11n20 High Channel



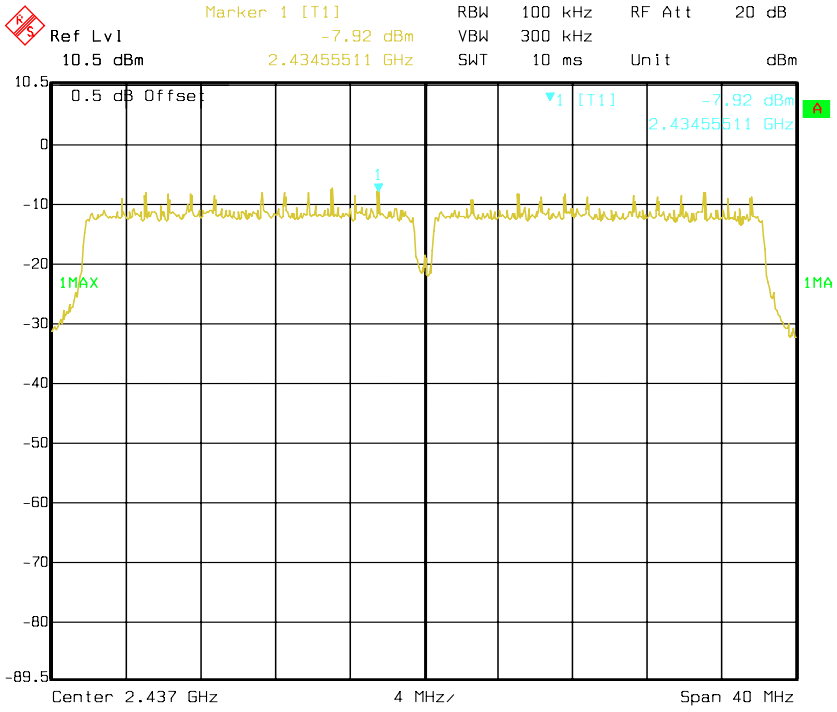
Date: 21.MAR.2012 19:16:33

Chain 0:Power Spectral Density, 802.11n40 Low Channel

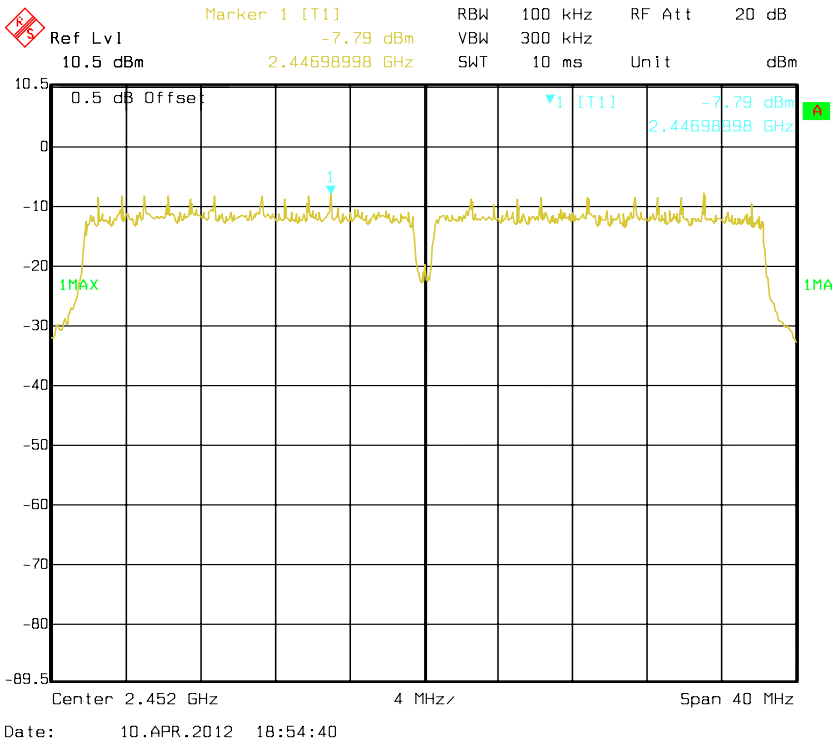


Date: 10.APR.2012 18:08:33

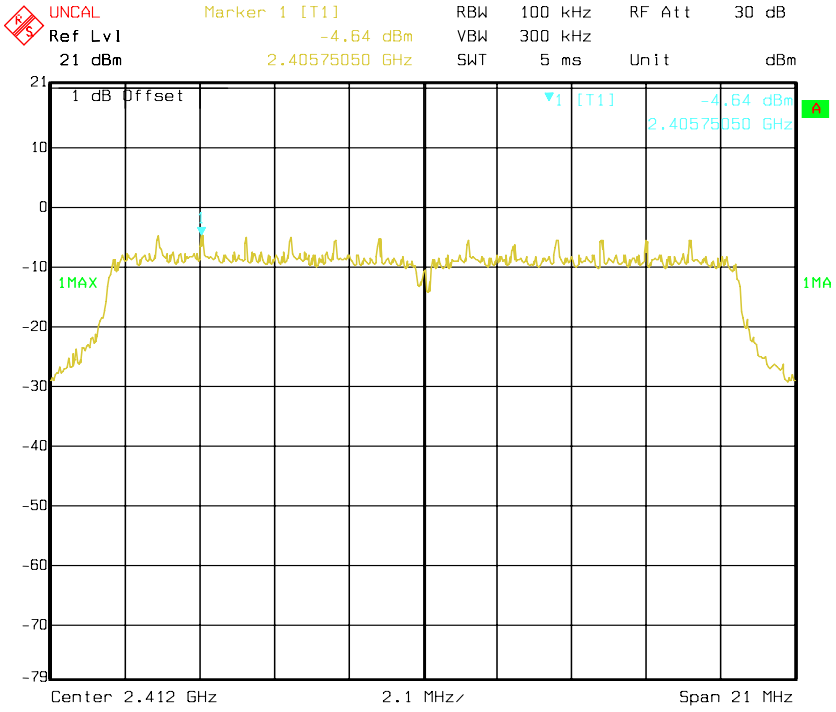
Chain 0:Power Spectral Density, 802.11n40 Middle Channel



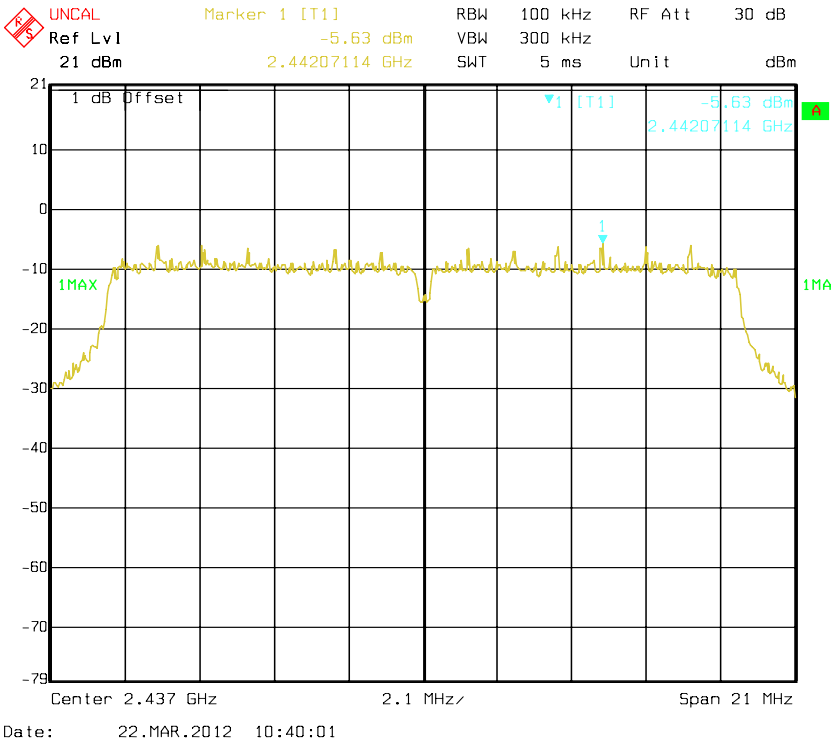
Chain 0:Power Spectral Density, 802.11n40 High Channel



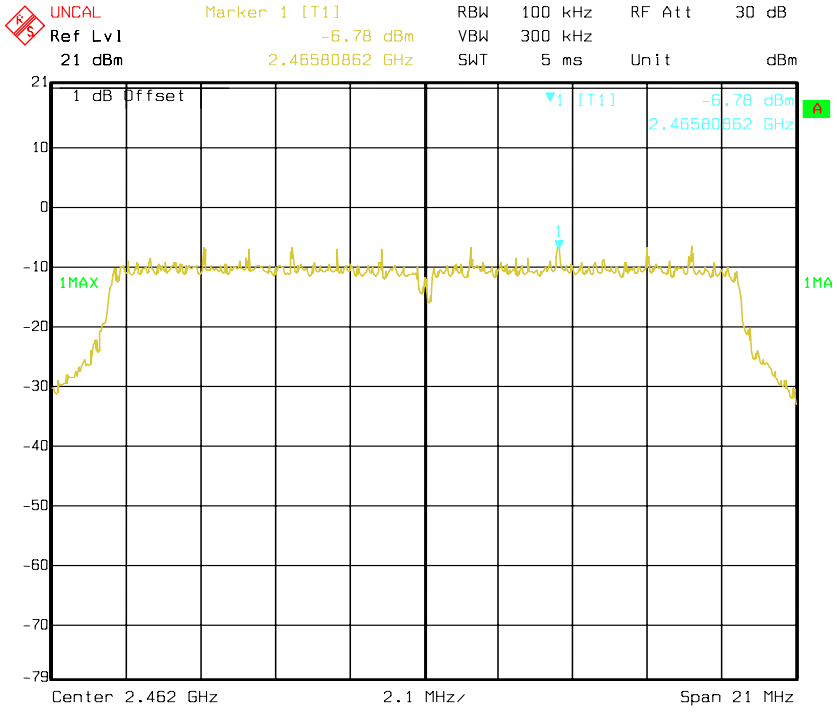
Chain 1:Power Spectral Density, 802.11n20 Low Channel



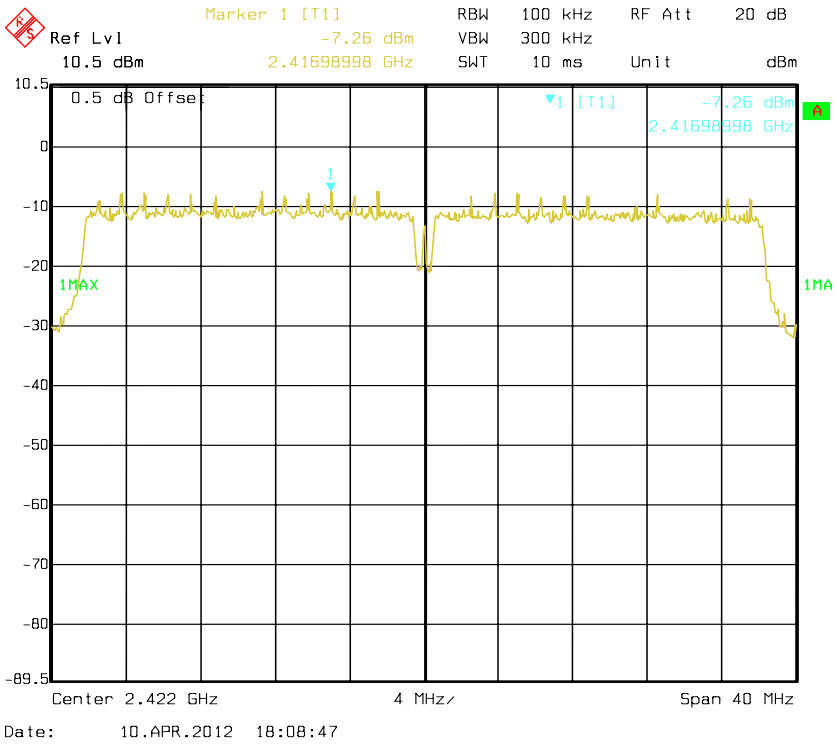
Chain 1:Power Spectral Density, 802.11n20 Middle Channel



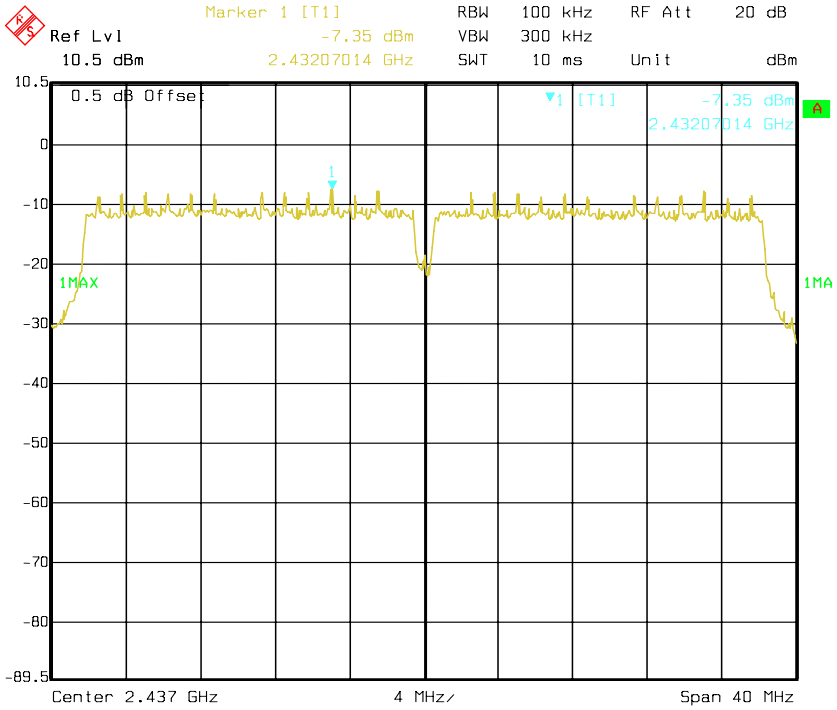
Chain 1:Power Spectral Density, 802.11n20 High Channel



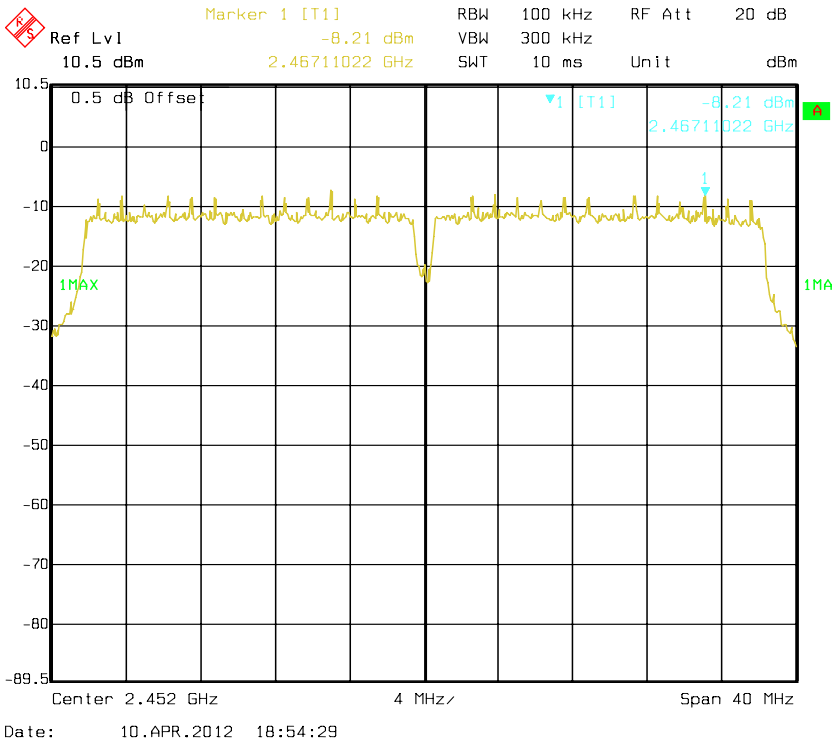
Chain 1:Power Spectral Density, 802.11n40 Low Channel



Chain 1:Power Spectral Density, 802.11n40 Middle Channel



Chain 1:Power Spectral Density, 802.11n40 High Channel



DECLARATION LETTER

ALFA NETWORK Inc.
Add: 4F-1, No. 106 Rueiguang Rd., Neihu District, Taipei City, Taiwan. R.O.C.
Tel: 886-2-27968477 EX:22 Fax: 886-2-27968478

Product Similarity Declaration

To Whom It May Concern,

We, ALFA NETWORK Inc., hereby declare that our product 802.11n Long-Range outdoor AP/CPE, Model Number: OAP2224XS,N2PCB,N2C,Solo-N2H,Solo-N2HC,AWAP02O-N2H,AWAP02O-N2HC,WLO-22412N,RP-WAC5422,NE-WAC5422,APE-2405A-P12,RA-N2401L,WCPEn-2400-OAA-DD are electrically identical with the Model Number: N2, that was certified by BACL. Their differences are that :The model name are different.

The rest are the same.

Please contact me if you have anyquestion.

Jackie Wen

Jackie Wen /Product Manager

Date :2012-4-6

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