Lab Code: 200707-0

FCC PART 15.407

TEST REPORT

For

ALFA NETWORK INC.

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

FCC ID: UQ29280

Report Type:	**Product Type:**
Original Report	802.11an Long-Range AP/CPE

Test Engineer:	Ares Liu
Report Number:	R1DG120228003-00B Rev. A
Report Date:	2012-05-07
Reviewed By:	Ivan Cao EMC Engineer
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TABLE OF CONTENTS

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1DG120228003-00B	Original Report	2012-04-28
Rev. A	R1DG120228003-00B	Updated HT40 data	2012-05-07

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *ALFA NETWORK Inc.*'s product, model number: *N5,OAP2258XS,N5PCB,N5C,SOLO-N5H,SOLO-N5HC,AWAP02O-N5H,AWAP02O-N5HC, OAP2258XS,N5PCB,N5C,Solo-N5H,Solo-N5HC,AWAP02O-N5H,AWAP02O-N5HC,WLO-25814N,RP-WAC5330,NE-WAC5330,APE-5002A-P14,RA-N5001L,WCPEn-5000-OAA-DD (FCC ID: UQ29280)* ("EUT") in this report is a transmitter of 802.11an Long-Range AP/CPE, which was measured approximately:28.5 cm (L) x 9.0cm (W) x4.2cm (H), the operating frequency is 5150~5250MHz, 5725~5850MHz, rated input voltage: DC 18V from adapter.

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

Note: The series product, model number: *N5,OAP2258XS,N5PCB,N5C,SOLO-N5H,SOLO-N5HC,AWAP02O-N5H,AWAP02O-N5HC, OAP2258XS,N5PCB,N5C,Solo-N5H,Solo-N5HC,AWAP02O-N5H,AWAP02O-N5HC,WLO-25814N,RP-WAC5330,NE-WAC5330,APE-5002A-P14,RA-N5001L,WCPEn-5000-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: 1202283 (Assigned by BACL). The EUT was received on 2012-03-02.*

Objective

This type approval 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 compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

Related Submittal(s)/Grant(s)

FCC Part 15C DSS submissions with FCC ID: UQ29280.

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.

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

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

For 5G 802.11a and 802.11n20 mode, 4 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5180	2	5200
3	5220	4	5240

EUT was tested with Channel 1, 3 and 5.

For 802.11n40 mode, 2 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5190	2	5230

EUT was tested with Channel 1, 2.

The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the conducted 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.

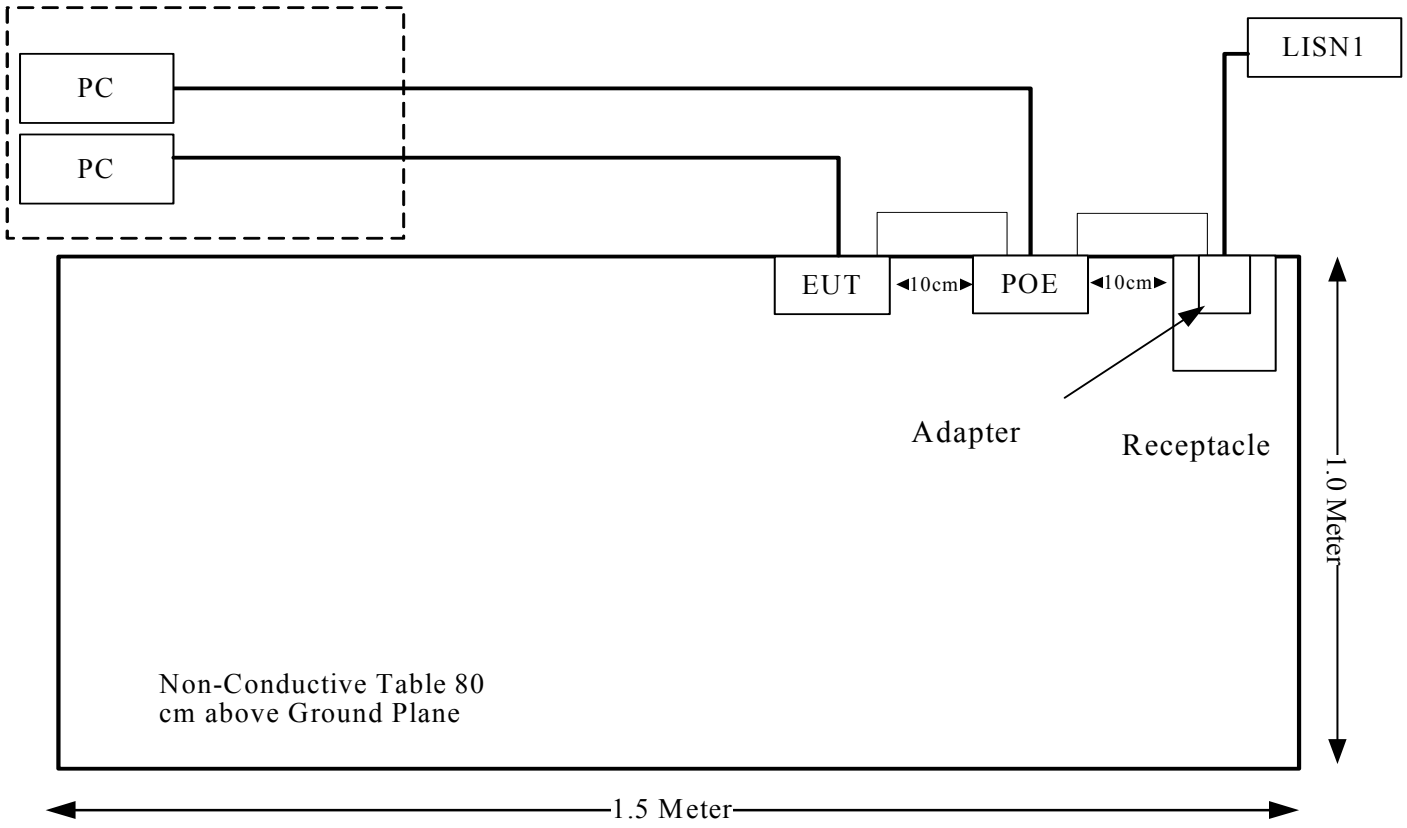
Remote Support Equipment

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
§15.407 (f), §2.1091, §1.1307(b)(1)	RF Exposure Evaluation	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 &§15.407(b) (1),(6),(7)	Undesirable Emission& Restricted Bands	Compliance
§15.407(a) (1)	26 dB Bandwidth	Compliance
§15.407(a)(1),	Conducted Transmitter Output Power	Compliance
§15.407 (a)(1),(5)	Power Spectral Density	Compliance
§15.407(a)(6)	Peak Excursion Ratio	Compliance
§15.407(g)	Frequency Stability	Compliance

FCC §15.407 (f) & §2.1091 – RF EXPOSURE EVALUATION

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/f²)	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.

MPE Calculation

Predication of MPE limit at a given distance

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

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);

MPE Result

Mode	**Frequency (MHz)**	**Antenna Gain**		**Conducted Power**		**Evaluation Distance (cm)**	**Power Density (mW/cm^2)**	**MPE Limit (mW/cm^2)**
		(dBi)	**(numeric)**	**(dBm)**	**(mW)**			
802.11a	5180	11	12.5893	8.87	7.7090	20	0.01932	1.0
802.11n HT20	5180	11	12.5893	9.508	8.9289	20	0.02237	1.0
802.11n HT40	5230	11	12.5893	10.566	11.39	20	0.02855	1.0

Result: The device meets 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.

And according to FCC 47 CFR section 15.407 (a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density 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 integral antennas, which complied with 15.203, the maximum gain is 11.0 dBi, please refer to the internal photos.

Result: Compliance.

FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS

Applicable Standard

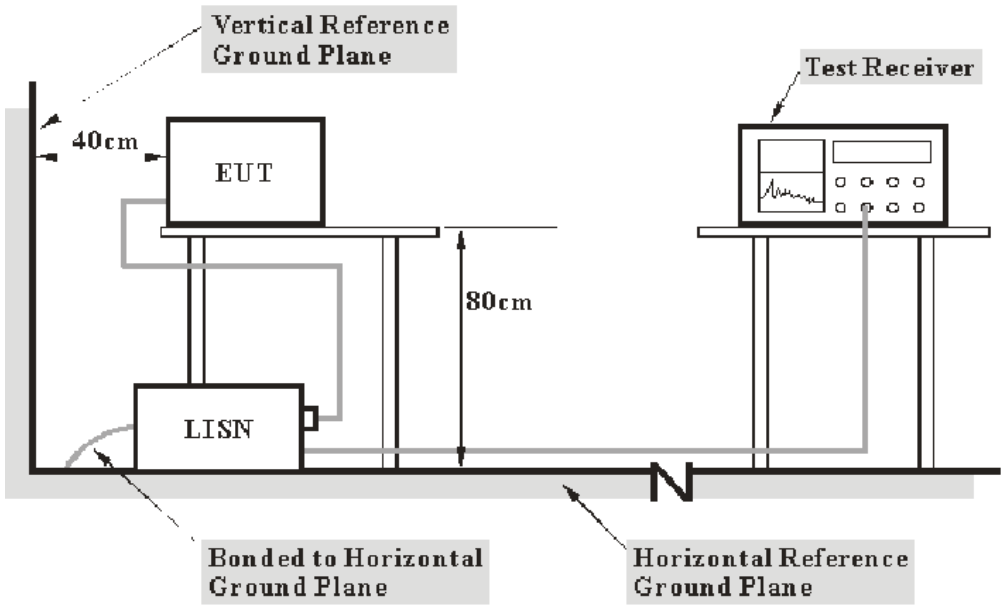
FCC §15.207, §15.407(b) (6)

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, 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 C63.4-2009 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 120VAC/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	100176	2011-11-24	2012-11-23
Rohde & Schwarz	L.I.S.N.1	ESH2-Z5	892107/021	2011-11-17	2012-11-16

***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:

7.33 dB at **0.200 MHz** in the **Neutral** conducted mode

Test Data

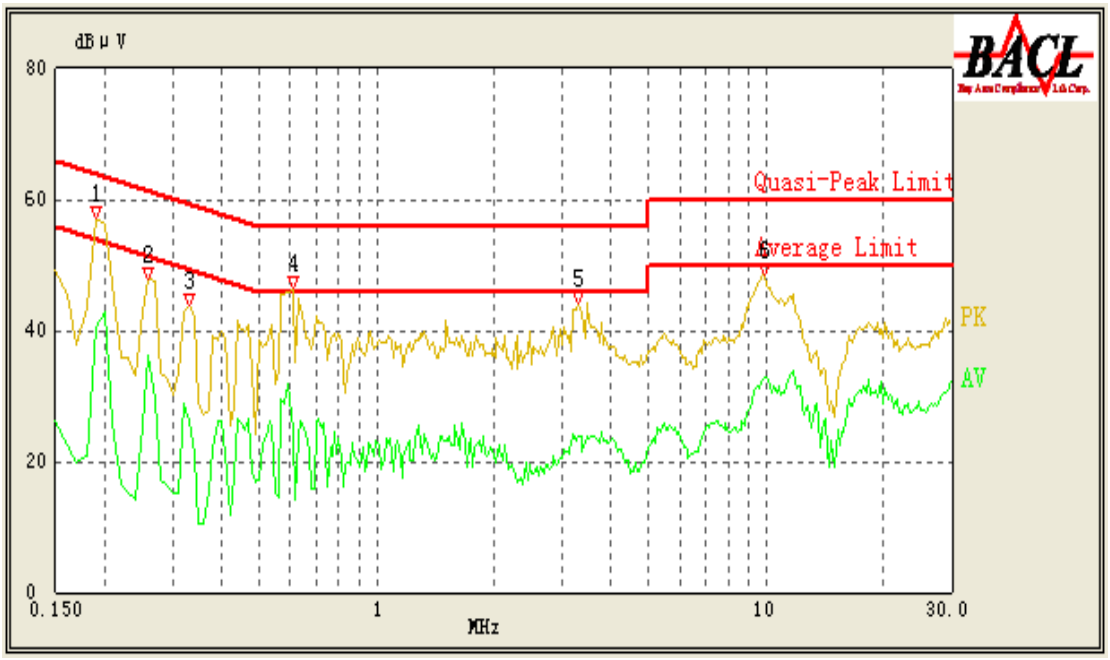
Environmental Conditions

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

The testing was performed by Ares Liu on 2012-03-08.

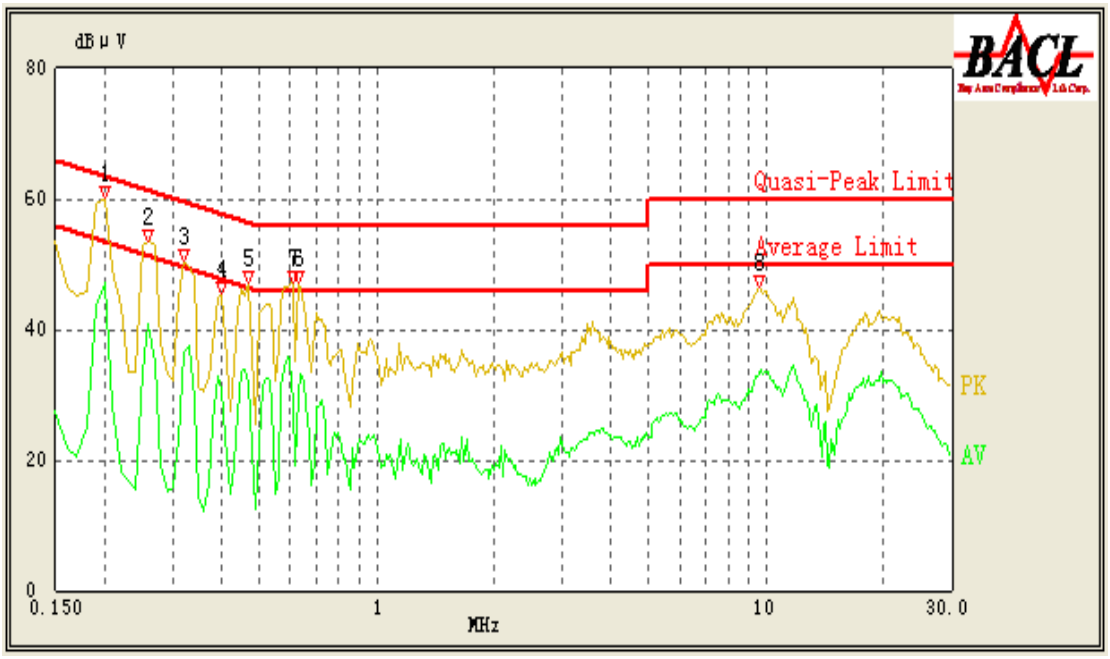
Test Mode: Transmitting

120 V, 60 Hz, Line:



Frequency (MHz)	Corrected Result (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/QP/Ave.)
0.19	54.88	1.1	64.86	9.98	QP
0.61	44.50	1.1	56.00	11.50	QP
0.19	40.51	1.1	54.86	14.35	Ave.
0.26	36.13	1.1	52.86	16.73	Ave.
9.94	32.67	1.1	50.00	17.33	Ave.
9.94	42.61	1.1	60.00	17.39	QP
0.26	45.33	1.1	62.86	17.53	QP
3.29	37.14	1.1	56.00	18.86	QP
0.33	40.07	1.1	60.86	20.79	QP
0.61	24.82	1.1	46.00	21.18	Ave.
3.29	23.73	1.1	46.00	22.27	Ave.
0.33	26.10	1.1	50.86	24.76	Ave.

120V, 60 Hz, Neutral:



Frequency (MHz)	Corrected Result (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/QP/Ave.)
0.2	47.24	1.1	54.57	7.33	Ave.
0.2	56.54	1.1	64.57	8.03	QP
0.63	44.70	1.1	56.00	11.30	QP
0.26	40.99	1.1	52.86	11.87	Ave.
0.26	49.86	1.1	62.86	13.00	QP
0.47	43.31	1.1	56.86	13.55	QP
0.32	36.40	1.1	51.14	14.74	Ave.
0.47	31.69	1.1	46.86	15.17	Ave.
0.32	45.74	1.1	61.14	15.40	QP
0.63	29.71	1.1	46.00	16.29	Ave.
0.4	41.22	1.1	58.86	17.64	QP
0.4	30.68	1.1	48.86	18.18	Ave.

FCC §15.209, §15.205 & §15.407(b) (1) (6) (7) – UNDESIRABLE EMISSION & RESTRICTED BANDS

Applicable Standard

FCC §15.407 (b) (1), (6), (7); §15.209; §15.205;

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

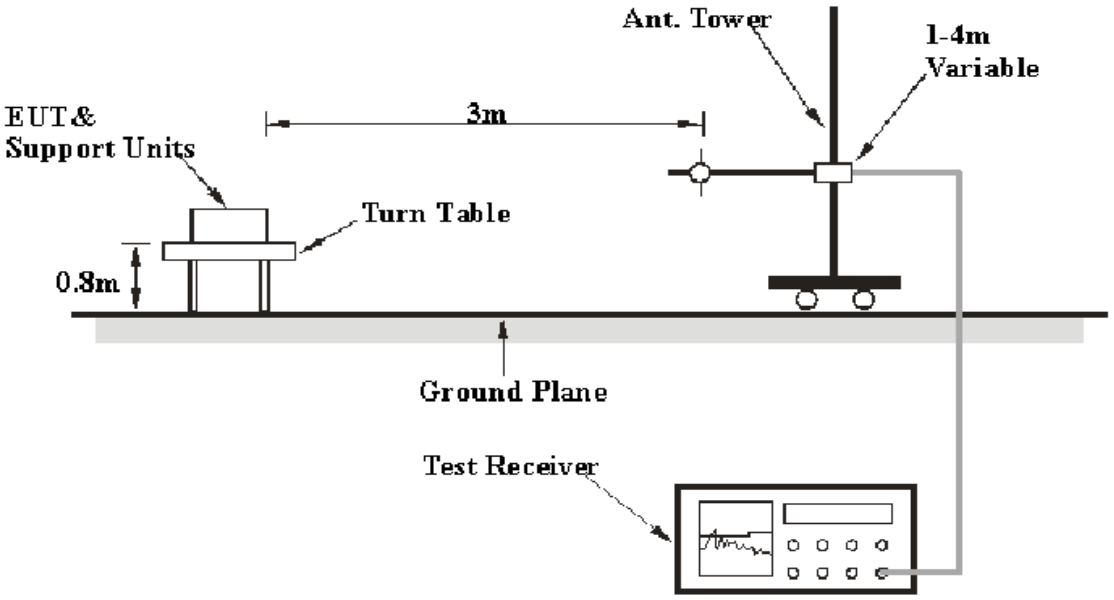
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

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, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC 15.209, and FCC 15.407 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 40 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 – 40 GHz	1 MHz	3 MHz	PK
1000 MHz – 40 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-1GHz, 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 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	A040904-1	2011-07-05	2012-07-04
Sunol Sciences	Horn Antenna	DRH-118	A052604	2011-05-05	2012-05-04
HP	Spectrum Analyzer	8593A	51475684	2011-07-08	2012-07-07
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2011-07-08	2012-07-07
Rohde & Schwarz	Spectrum Analyzer	FSP38	100479	2011-05-27	2012-05-26

*** 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, Subpart C, Section 15.205, 15.209 and 15.407, with the worst margin reading of:

6.18 dB at **10480 MHz** in the **Horizontal** polarization

Test Data

Environmental Conditions

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

The testing was performed by Ares Liu from 2012-04-13 to 2012-04-20.

Mode: Transmitting

802.11a Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Detector (PK/QP/Ave.)	Ant. Polar (H/V)	Cord. Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comment
Low Channel (5180 MHz)								
10360	28.64	PK	V	30.81	59.45	68.3	8.85	Harmonic
10360	28.03	PK	H	30.81	58.84	68.3	9.46	Harmonic
803.55	38.64	QP	H	-5.62	33.02	46.0	12.98	spurious
803.55	37.44	QP	V	-5.62	31.82	46.0	14.18	spurious
5150	32.44	PK	V	20.87	53.31	68.3	14.99	spurious
5150	31.52	PK	H	20.87	52.39	68.3	15.91	spurious
5150	14.25	Ave.	V	20.87	35.12	54.0	18.88	spurious
5150	13.54	Ave.	H	20.87	34.41	54.0	19.59	spurious
5180	79.42	PK	H	20.61	100.03	N/A	N/A	Fund.
5180	68.49	Ave.	H	20.61	89.1	N/A	N/A	Fund.
5180	77.31	PK	V	20.61	97.92	N/A	N/A	Fund.
5180	67.61	Ave.	V	20.61	88.22	N/A	N/A	Fund.
Middle Channel (5200 MHz)								
10400	28.94	PK	V	31.69	60.63	68.3	7.67	Harmonic
10400	28.72	PK	H	31.69	60.41	68.3	7.89	Harmonic
806.28	38.94	QP	H	-5.62	33.32	46.0	12.68	spurious
806.28	37.56	QP	V	-5.62	31.94	46.0	14.06	spurious
5200	78.70	PK	H	20.74	99.44	N/A	N/A	Fund.
5200	68.37	Ave.	H	20.74	89.11	N/A	N/A	Fund.
5200	78.41	PK	V	20.74	99.15	N/A	N/A	Fund.
5200	68.05	Ave.	V	20.74	88.79	N/A	N/A	Fund.
High Channel (5240 MHz)								
10480	30.02	PK	H	32.10	62.12	68.3	6.18	Harmonic
10480	29.14	PK	V	32.10	61.24	68.3	7.06	Harmonic
804.33	39.07	QP	H	-5.62	33.45	46.0	12.55	spurious
804.33	37.95	QP	V	-5.62	32.33	46.0	13.67	spurious
5350	31.74	PK	H	20.96	52.70	68.3	15.60	spurious
5350	31.55	PK	V	20.96	52.51	68.3	15.79	spurious
5350	14.36	Ave.	H	20.96	35.32	54.0	18.68	spurious
5350	14.35	Ave.	V	20.96	35.31	54.0	18.69	spurious
5240	77.77	PK	H	20.8	98.57	N/A	N/A	Fund.
5240	68.31	Ave.	H	20.8	89.11	N/A	N/A	Fund.
5240	77.78	PK	V	20.8	98.58	N/A	N/A	Fund.
5240	67.28	Ave.	V	20.8	88.08	N/A	N/A	Fund.

802.11n HT20 Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Detector (PK/QP/Ave.)	Ant. Polar (H/V)	Cord. Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comment
Low Channel (5180 MHz)								
10360	29.34	PK	V	30.81	60.15	68.3	8.15	Harmonic
10360	28.36	PK	H	30.81	59.17	68.3	9.13	Harmonic
805.26	39.58	QP	H	-5.62	33.96	46.0	12.04	spurious
5150	32.70	PK	V	20.87	53.57	68.3	14.73	spurious
805.26	36.15	QP	V	-5.62	30.53	46.0	15.47	spurious
5150	31.78	PK	H	20.87	52.65	68.3	15.65	spurious
5150	14.25	Ave.	H	20.87	35.12	54.0	18.88	spurious
5150	13.80	Ave.	V	20.87	34.67	54.0	19.33	spurious
5180	79.66	PK	H	20.61	100.27	N/A	N/A	Fund.
5180	68.70	Ave.	H	20.61	89.31	N/A	N/A	Fund.
5180	78.02	PK	V	20.61	98.63	N/A	N/A	Fund.
5180	68.32	Ave.	V	20.61	88.93	N/A	N/A	Fund.
Middle Channel (5200 MHz)								
10400	29.54	PK	H	31.69	61.23	68.3	7.07	Harmonic
10400	28.98	PK	V	31.69	60.67	68.3	7.63	Harmonic
805.37	38.53	QP	H	-5.62	32.91	46.0	13.09	spurious
805.37	37.25	QP	V	-5.62	31.63	46.0	14.37	spurious
5200	78.01	PK	H	20.74	98.75	N/A	N/A	Fund.
5200	66.42	Ave.	H	20.74	87.16	N/A	N/A	Fund.
5200	76.29	PK	V	20.74	97.03	N/A	N/A	Fund.
5200	64.97	Ave.	V	20.74	85.71	N/A	N/A	Fund.
High Channel (5240 MHz)								
10480	29.57	PK	V	32.1	61.67	68.3	6.63	Harmonic
10480	28.78	PK	H	32.1	60.88	68.3	7.42	Harmonic
806.32	39.95	QP	H	-5.62	34.33	46.0	11.67	spurious
806.32	37.42	QP	V	-5.62	31.80	46.0	14.20	spurious
5350	32.07	PK	H	20.96	53.03	68.3	15.27	spurious
5350	31.88	PK	V	20.96	52.84	68.3	15.46	spurious
5350	14.69	Ave.	H	20.96	35.65	54.0	18.35	spurious
5350	14.68	Ave.	V	20.96	35.64	54.0	18.36	spurious
5240	77.67	PK	H	20.80	98.47	N/A	N/A	Fund.
5240	66.32	Ave.	H	20.80	87.12	N/A	N/A	Fund.
5240	75.67	PK	V	20.80	96.47	N/A	N/A	Fund.
5240	64.34	Ave.	V	20.80	85.14	N/A	N/A	Fund.

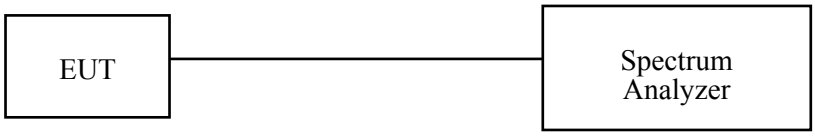
802.11n HT40 Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Detector (PK/QP/Ave.)	Ant. Polar (H/V)	Cord. Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comment
Low Channel (5190 MHz)								
10380	29.78	PK	V	30.81	60.59	68.3	7.71	Harmonic
10380	28.69	PK	H	30.81	59.50	68.3	8.80	Harmonic
806.36	38.15	QP	H	-5.62	32.53	46.0	13.47	spurious
5150	32.59	PK	V	20.87	53.46	68.3	14.84	spurious
806.36	36.26	QP	V	-5.62	30.64	46.0	15.36	spurious
5150	31.67	PK	H	20.87	52.54	68.3	15.76	spurious
5150	14.25	Ave.	H	20.87	35.12	54.0	18.88	spurious
5150	13.69	Ave.	V	20.87	34.56	54.0	19.44	spurious
5190	73.64	PK	H	20.61	94.25	N/A	N/A	Fund.
5190	62.96	Ave.	H	20.61	83.57	N/A	N/A	Fund.
5190	71.64	PK	V	20.61	92.25	N/A	N/A	Fund.
5190	61.38	Ave.	V	20.61	81.99	N/A	N/A	Fund.
High Channel (5230 MHz)								
10460	29.54	PK	H	31.69	61.23	68.3	7.07	Harmonic
10460	28.79	PK	V	31.69	60.48	68.3	7.82	Harmonic
806.36	38.36	QP	H	-5.62	32.74	46.0	13.26	spurious
806.36	36.52	QP	V	-5.62	30.9	46.0	15.10	spurious
5350	31.96	PK	H	20.96	52.92	68.3	15.38	spurious
5350	31.77	PK	V	20.96	52.73	68.3	15.57	spurious
5350	14.58	Ave.	H	20.96	35.54	54.0	18.46	spurious
5350	14.57	Ave.	V	20.96	35.53	54.0	18.47	spurious
5230	76.61	PK	H	20.74	97.35	N/A	N/A	Fund.
5230	66.21	Ave.	H	20.74	86.95	N/A	N/A	Fund.
5230	72.06	PK	V	20.74	92.8	N/A	N/A	Fund.
5230	61.89	Ave.	V	20.74	82.63	N/A	N/A	Fund.

Conducted Spurious Emission at Antenna Port

Test Procedure

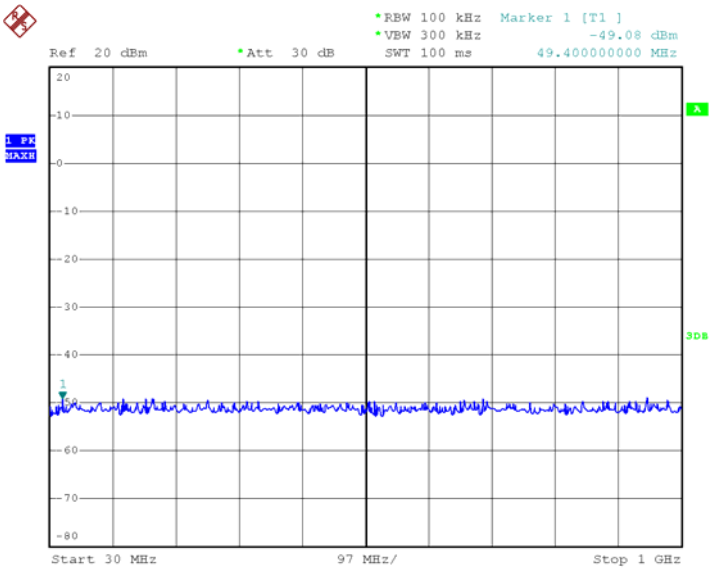
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The Resolution bandwidth is set to 1MHz, The Video bandwidth is set to 1MHz, report the peak value out of the oprating band.
3. Repeat above procedures until all frequencies measured were complete.



Test Data

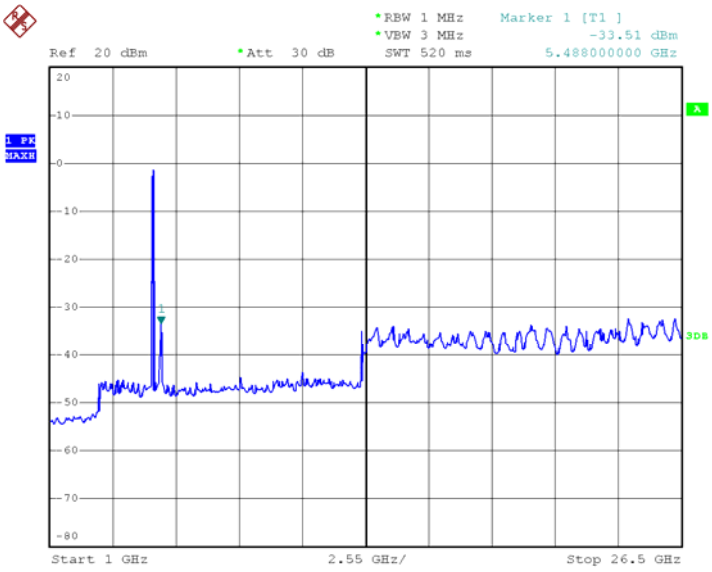
Please refer to the following plots.

802.11a Low Channel Below 1 GHz



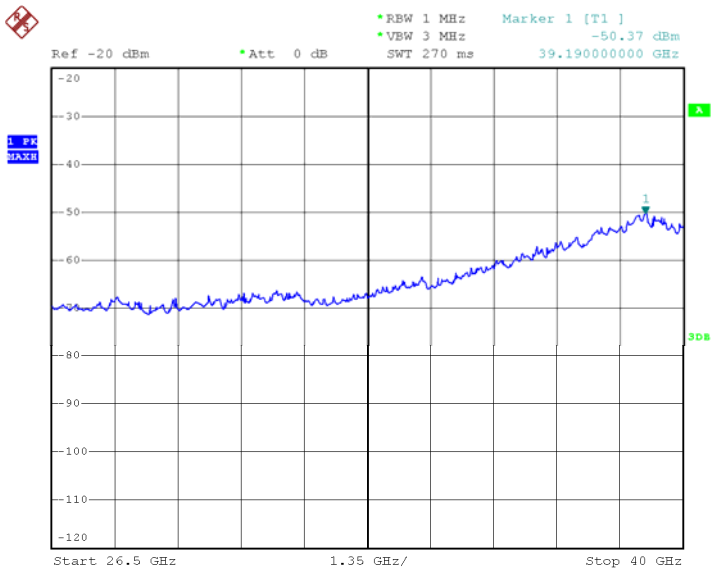
Date: 13.APR.2012 03:53:35

802.11a Low Channel 1GHz-26.5GHz



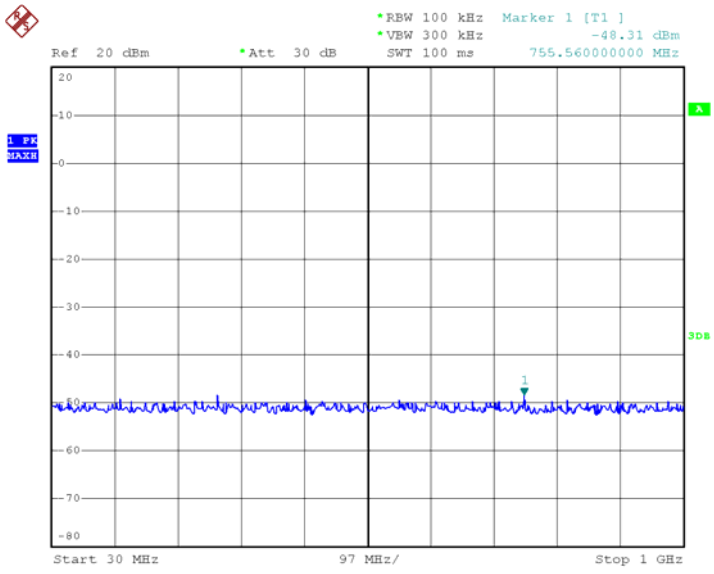
Date: 13.APR.2012 03:54:16

802.11a Low Channel 26.5GHz-40GHz



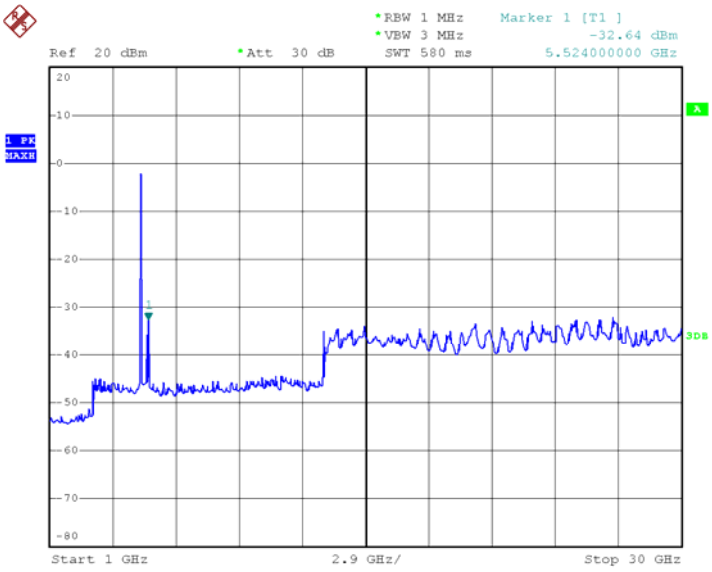
Date: 20.APR.2012 17:58:30

802.11a Middle Channel Below 1 GHz



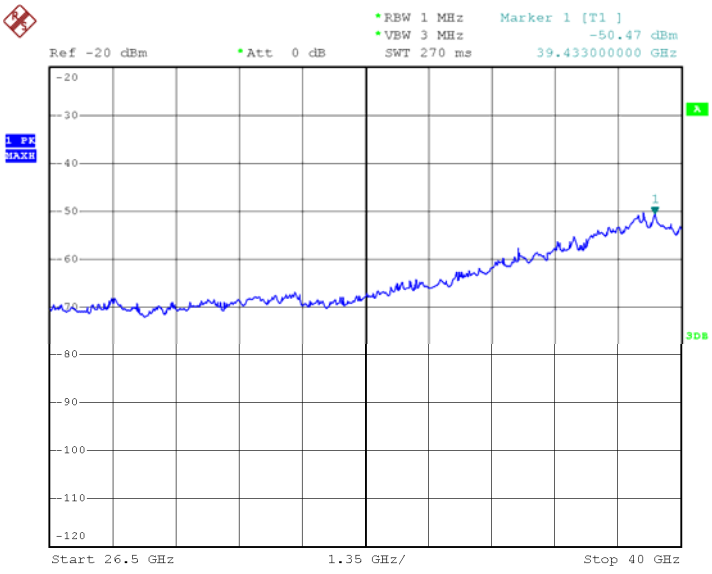
Date: 13.APR.2012 03:57:25

802.11a Middle Channel 1GHz-26.5GHz



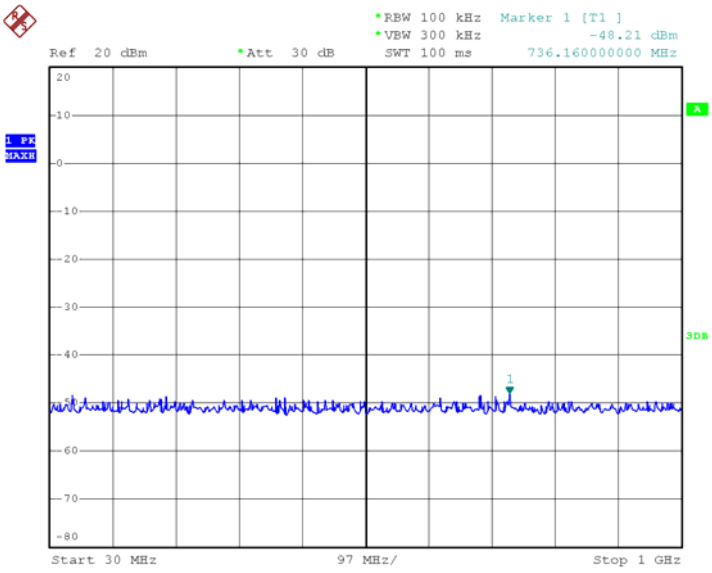
Date: 13.APR.2012 03:56:58

802.11a Middle Channel 26.5GHz-40GHz



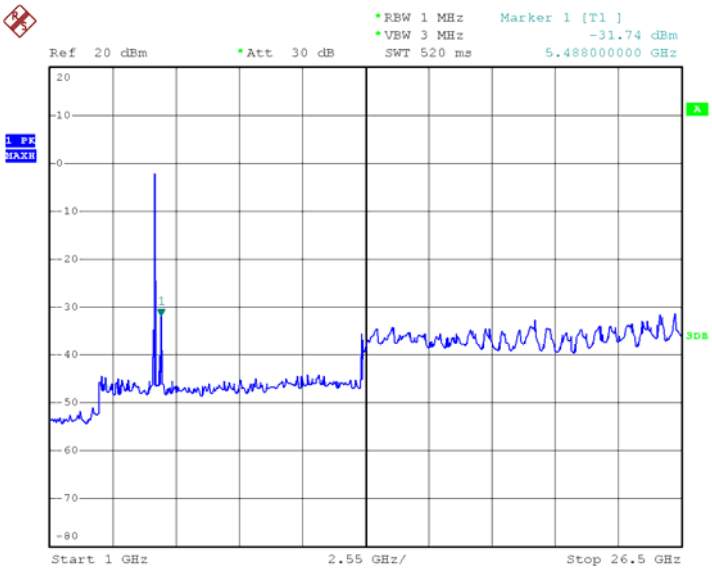
Date: 20.APR.2012 17:58:44

802.11a High Channel Below 1 GHz



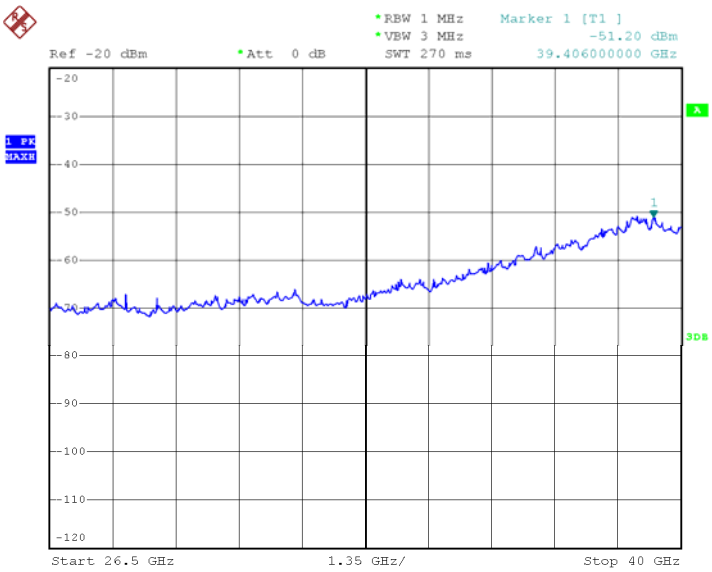
Date: 13.APR.2012 04:08:02

802.11a High Channel 1GHz-26.5GHz



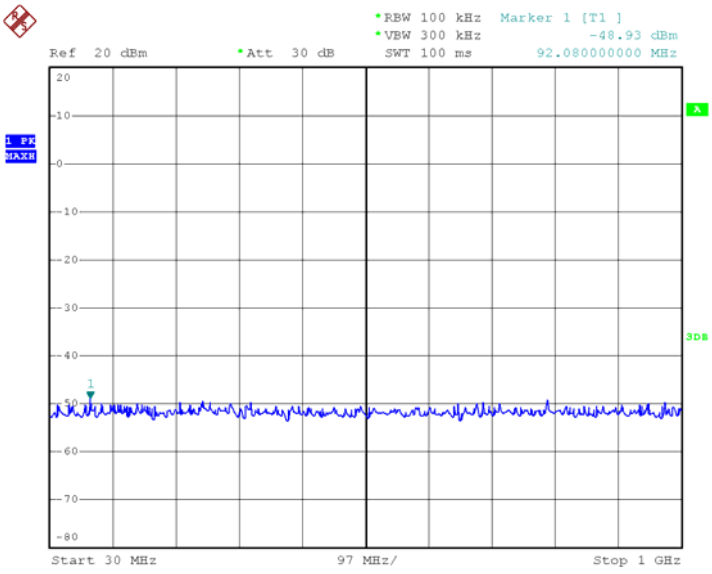
Date: 13.APR.2012 04:08:39

802.11a High Channel 26.5GHz-40GHz



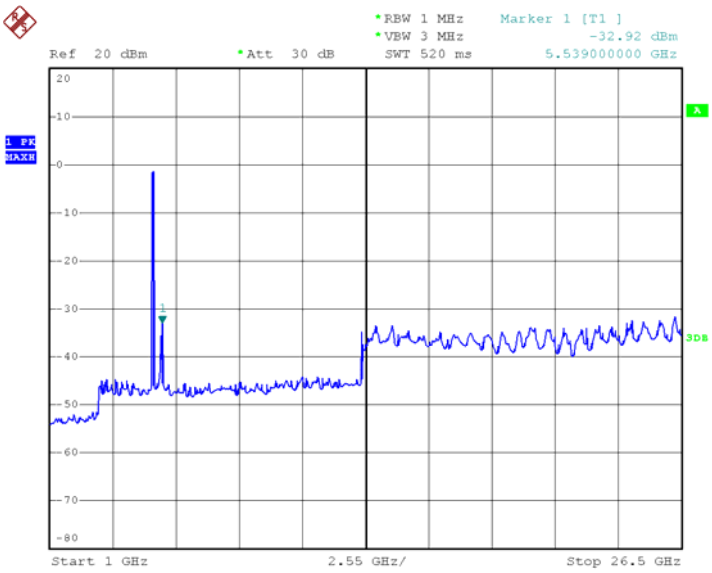
Date: 20.APR.2012 17:59:08

Chain 0 : 802.11n20 Low Channel Below 1 GHz



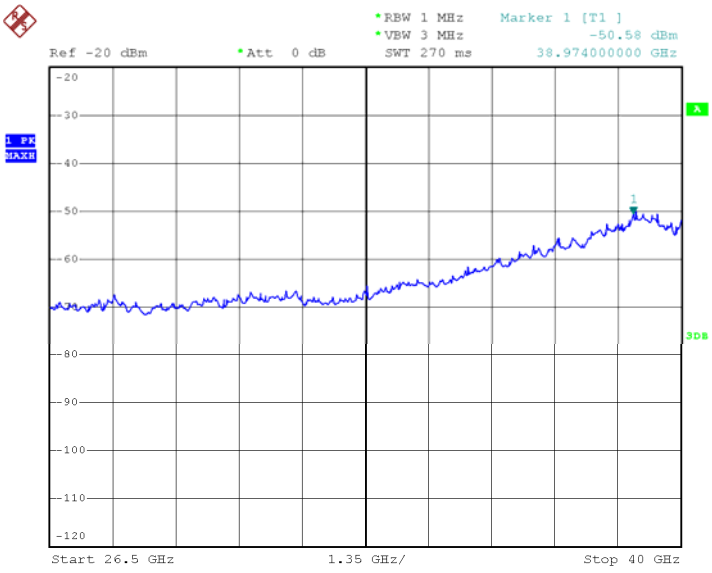
Date: 13.APR.2012 04:49:47

Chain 0 : 802.11n20 Low Channel 1GHz-26.5GHz



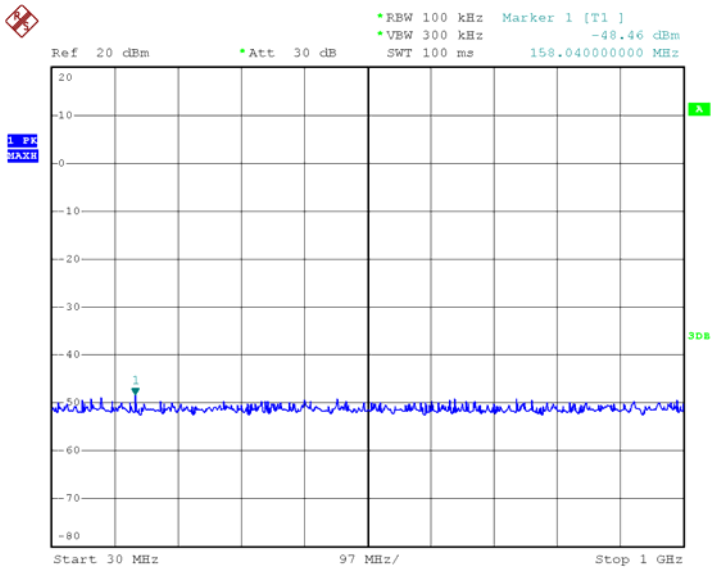
Date: 13.APR.2012 04:50:55

Chain 0 : 802.11n20 Low Channel 26.5GHz-40GHz



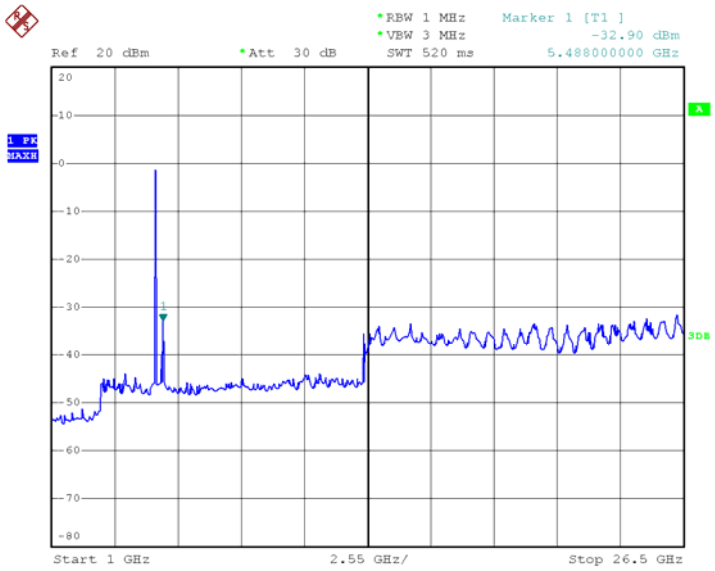
Date: 20.APR.2012 18:02:07

Chain0: 802.11n20 Middle Channel Below 1 GHz



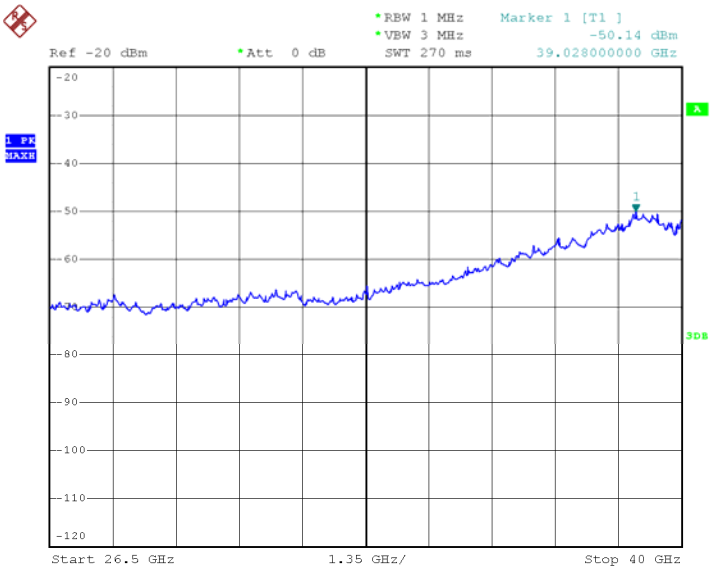
Date: 13.APR.2012 04:27:51

Chain0: 802.11n20 Middle Channel 1GHz-26.5GHz



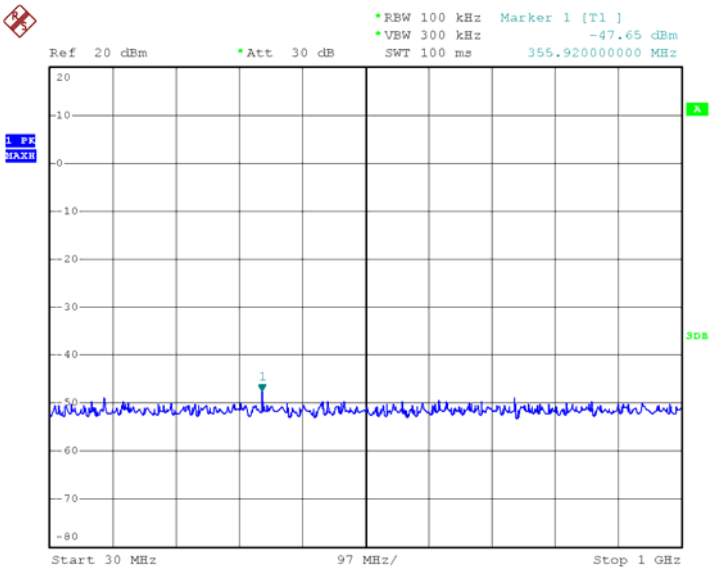
Date: 13.APR.2012 04:27:11

Chain0: 802.11n20 Middle Channel 26.5GHz-40GHz



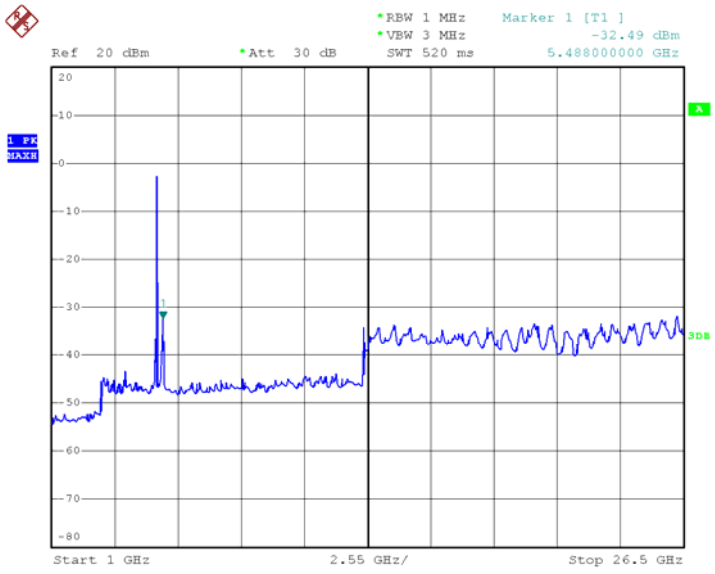
Date: 20.APR.2012 18:02:16

Chain0: 802.11n20 High Channel Below 1 GHz



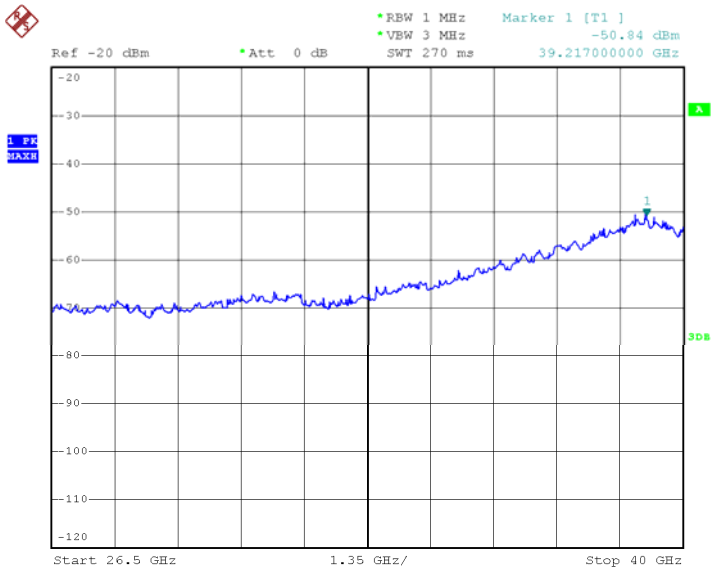
Date: 13.APR.2012 04:25:04

Chain0: 802.11n20 High Channel 1GHz-26.5GHz



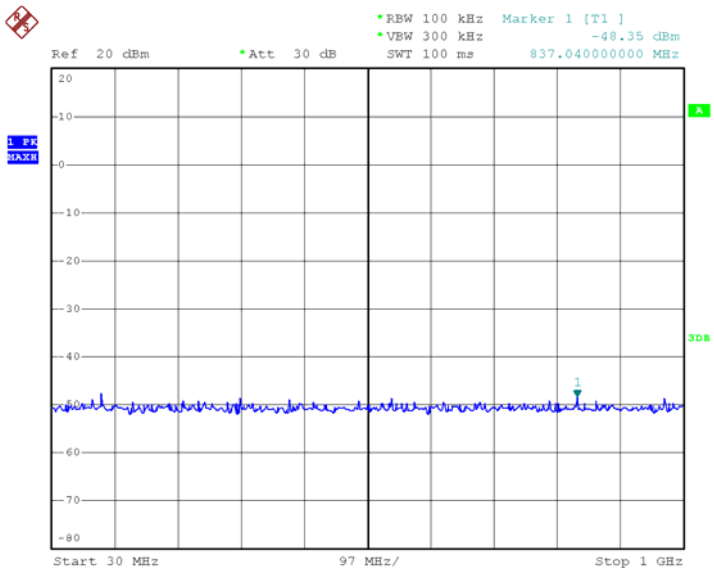
Date: 13.APR.2012 04:25:45

Chain0: 802.11n20 High Channel 26.5GHz-40GHz



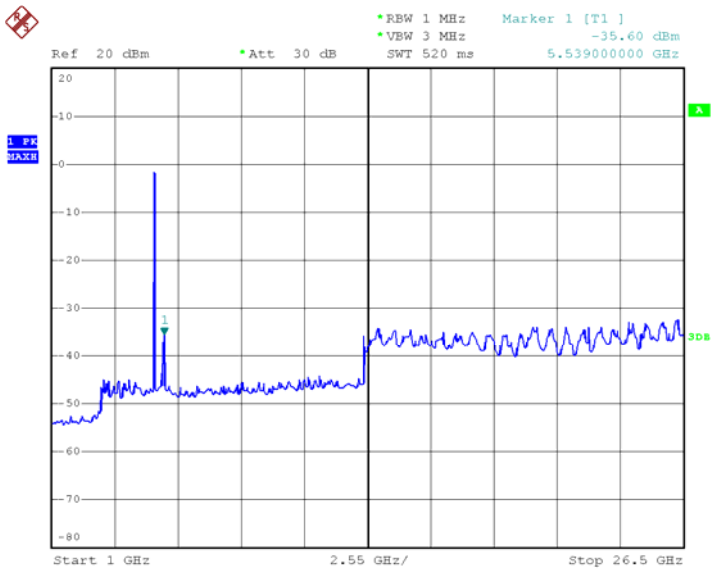
Date: 20.APR.2012 18:02:32

Chain 1 : 802.11n20 Low Channel Below 1GHz



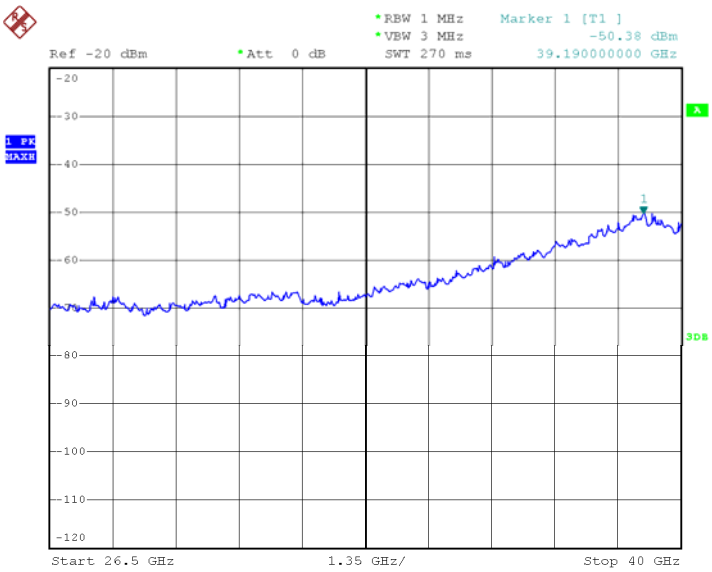
Date: 13.APR.2012 04:50:02

Chain 1 : 802.11n20 Low Channel 1GHz-26.5GHz



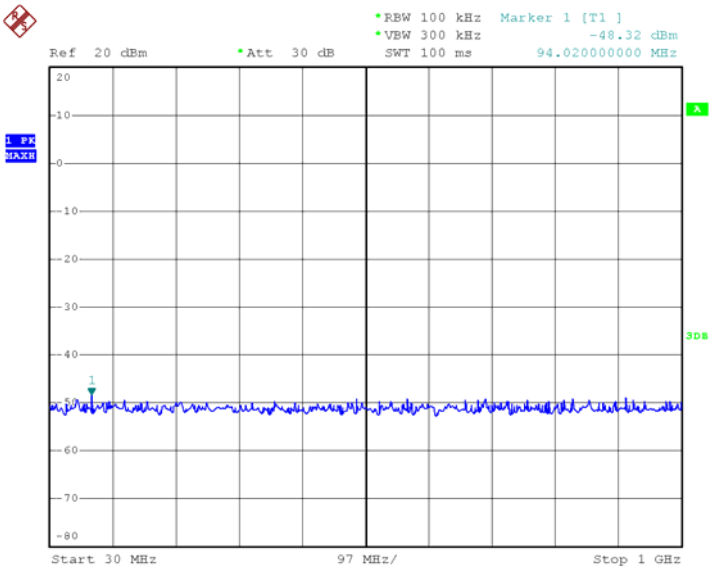
Date: 13.APR.2012 04:50:31

Chain 1 : 802.11n20 Low Channel 26.5GHz-40GHz



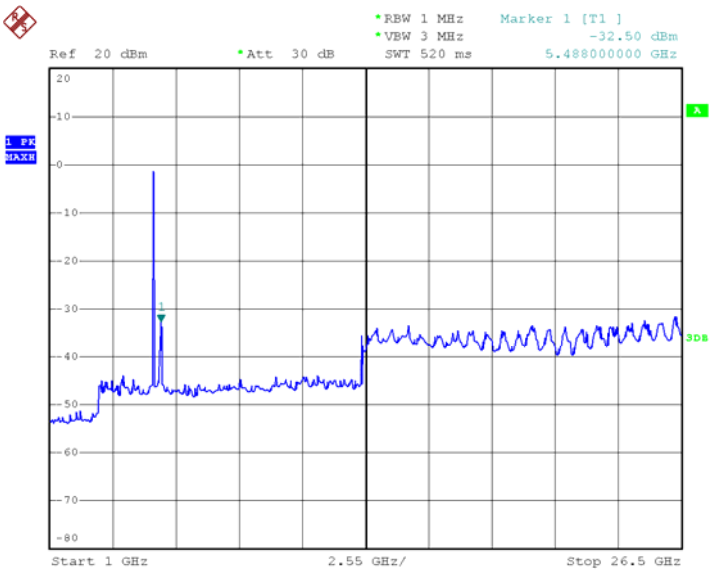
Date: 20.APR.2012 18:03:04

Chain 1: 802.11n20 Middle Channel Below 1 GHz



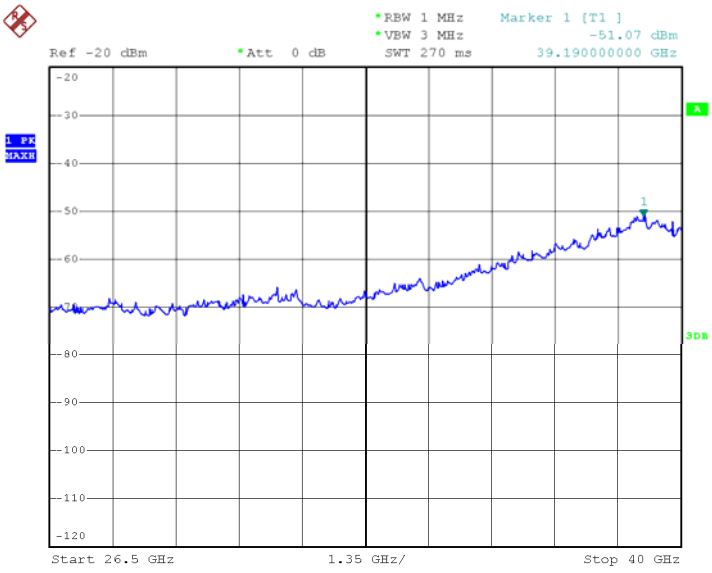
Date: 13.APR.2012 04:28:04

Chain 1: 802.11n20 Middle Channel 1GHz-26.5GHz



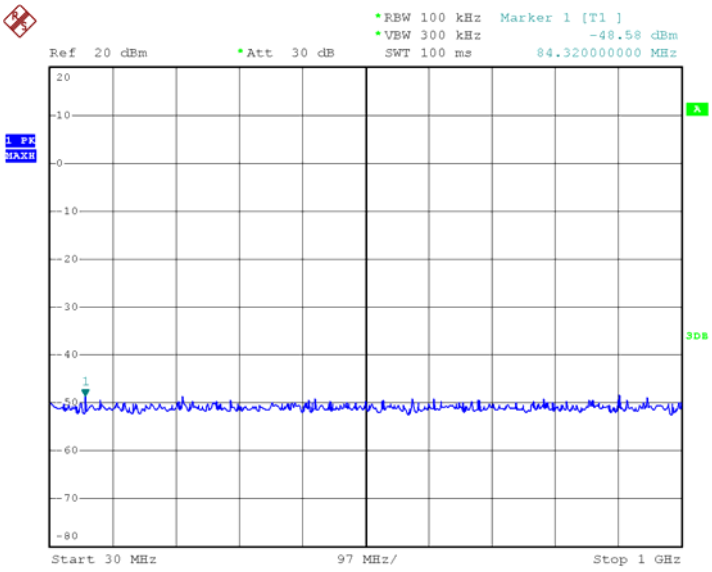
Date: 13.APR.2012 04:27:27

Chain 1: 802.11n20 Middle Channel 26.5GHz-40GHz



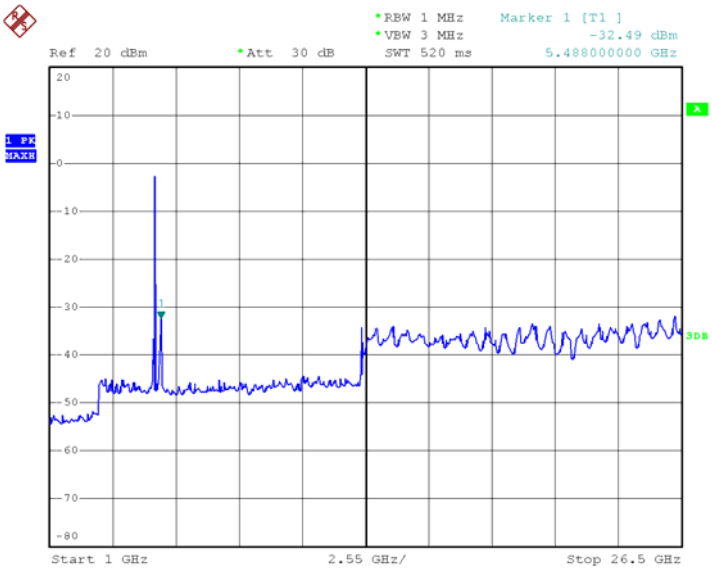
Date: 20.APR.2012 18:03:16

Chain 1: 802.11n20 High Channel Below 1 GHz



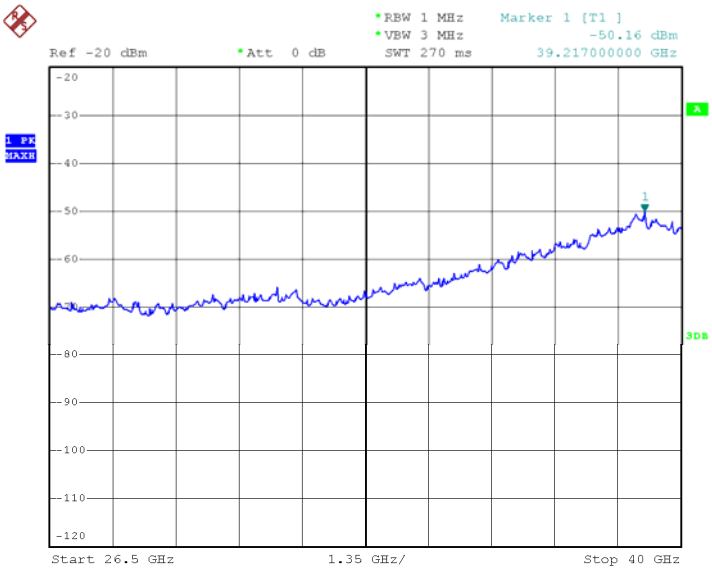
Date: 13.APR.2012 04:12:16

Chain 1: 802.11n20 High Channel 1GHz-26.5GHz



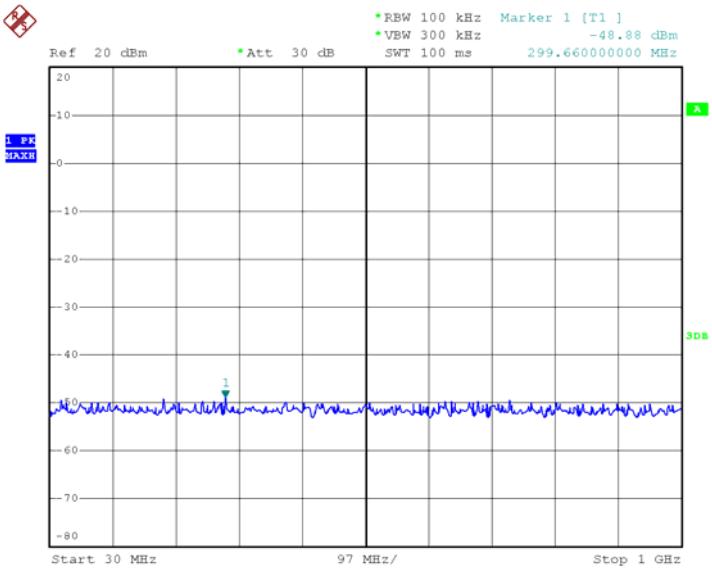
Date: 13.APR.2012 04:25:32

Chain 1: 802.11n20 High Channel 26.5GHz-40GHz



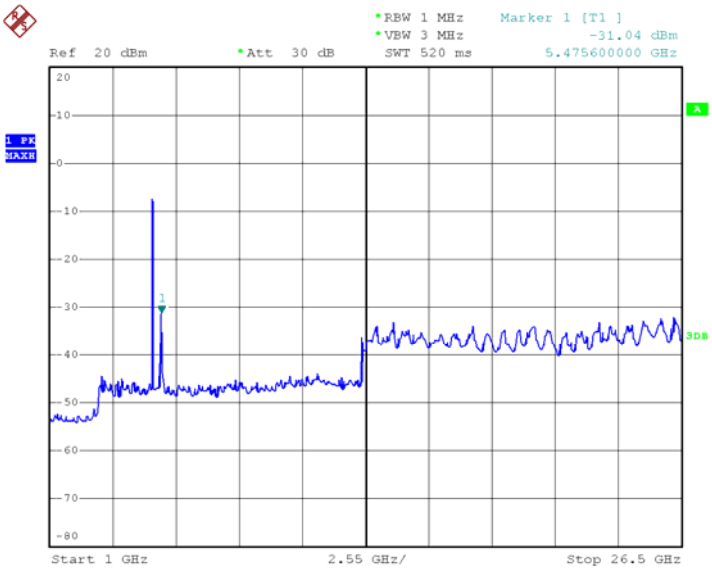
Date: 20.APR.2012 18:03:25

Chain 0: 802.11n40 Low Channel Below 1 GHz



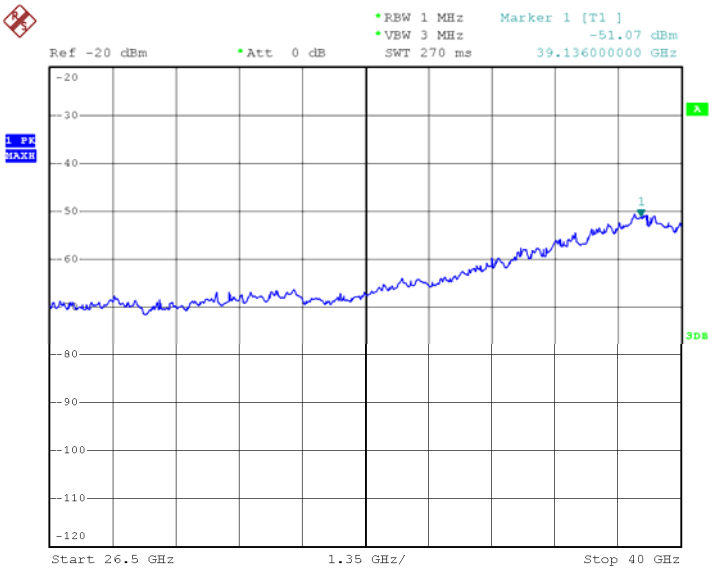
Date: 13.APR.2012 05:12:14

Chain 0: 802.11n40 Low Channel 1GHz-26.5GHz



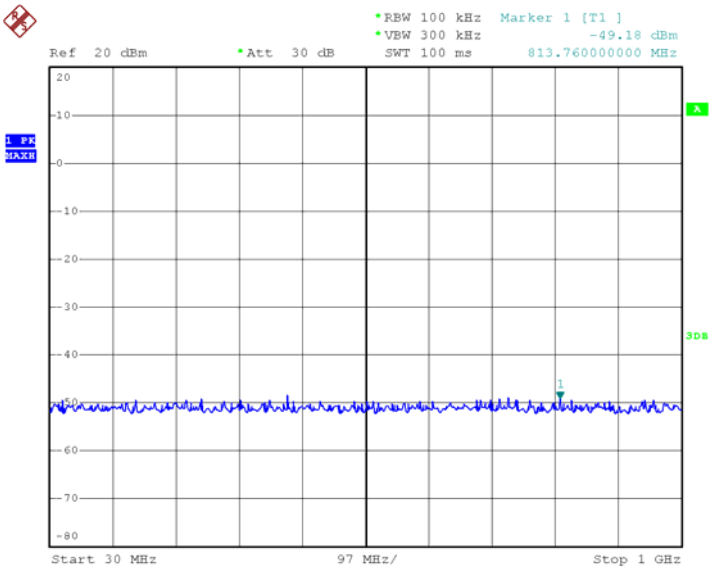
Date: 13.APR.2012 05:11:30

Chain 0: 802.11n40 Low Channel 26.5GHz-40GHz



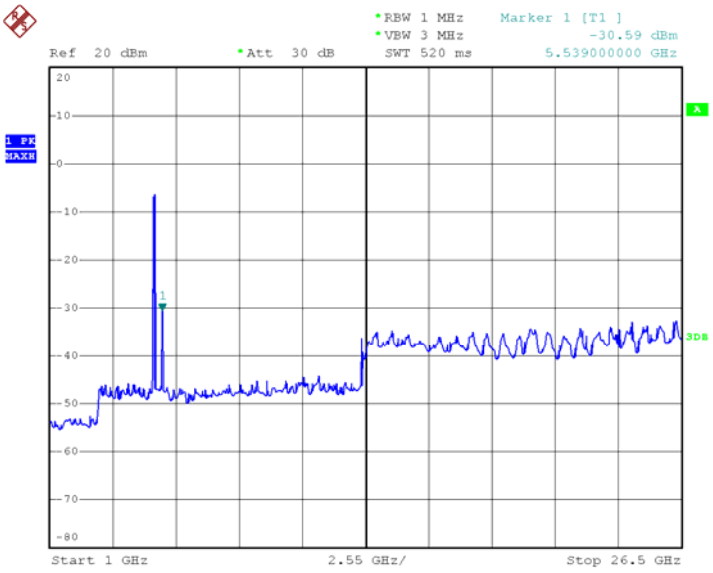
Date: 20.APR.2012 18:04:16

Chain 0: 802.11n40 High Channel Below 1 GHz



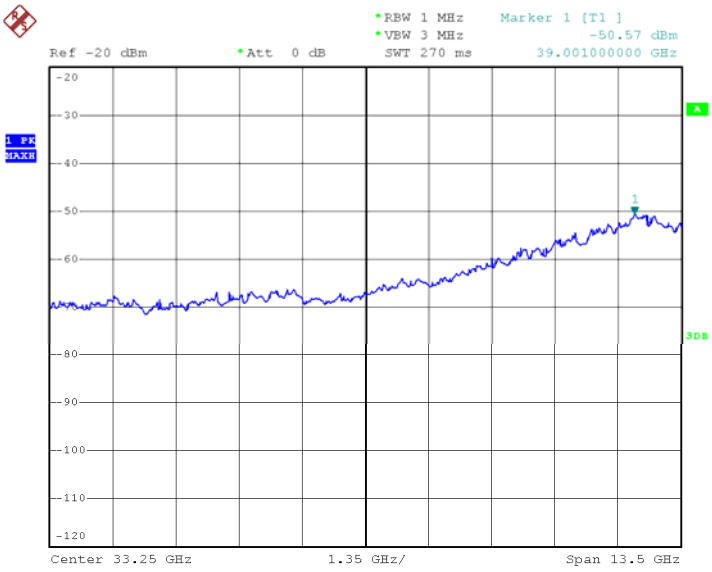
Date: 13.APR.2012 05:19:30

Chain 0: 802.11n40 High Channel 1GHz-26.5GHz



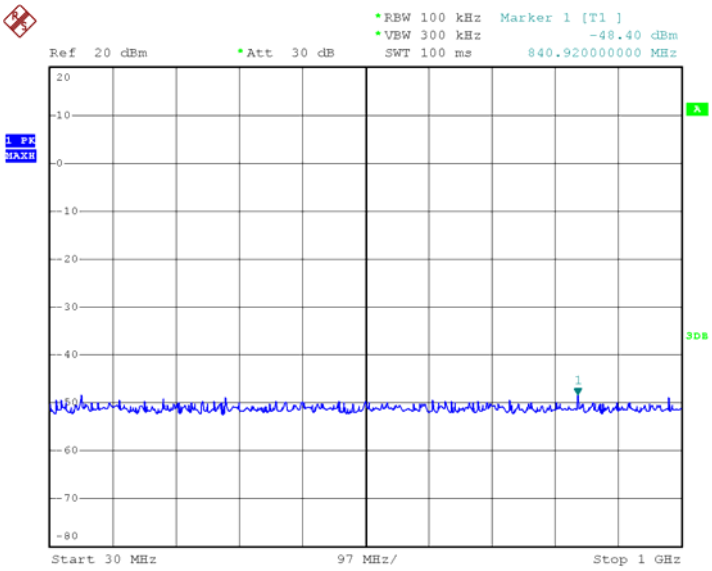
Date: 13.APR.2012 05:21:09

Chain 0: 802.11n40 High Channel 26.5GHz-40GHz



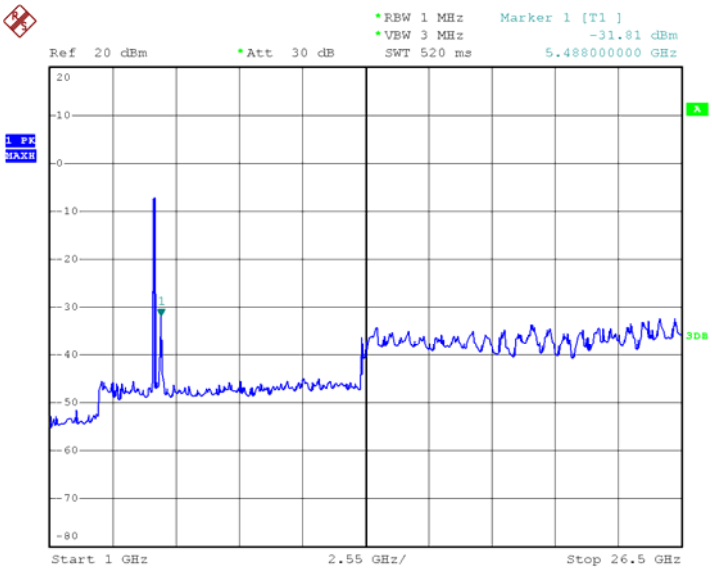
Date: 20.APR.2012 18:04:25

Chain 1: 802.11n40 Low Channel Below 1 GHz



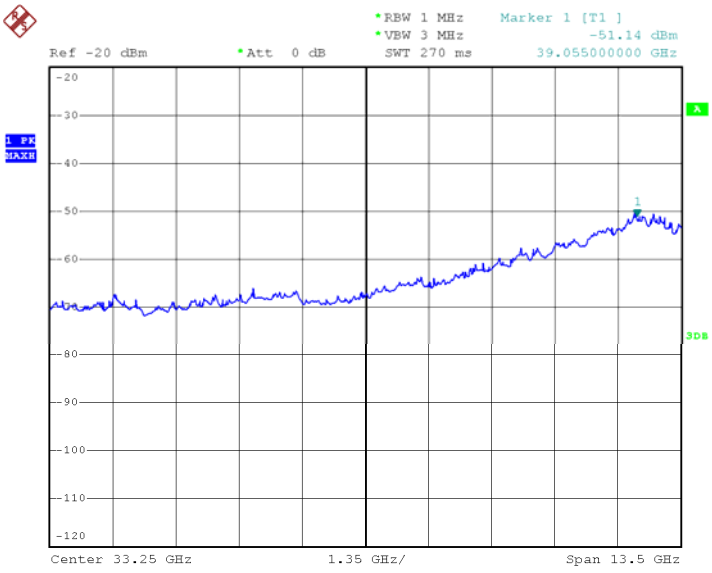
Date: 13.APR.2012 05:12:18

Chain 1: 802.11n40 Low Channel 1GHz-26.5GHz



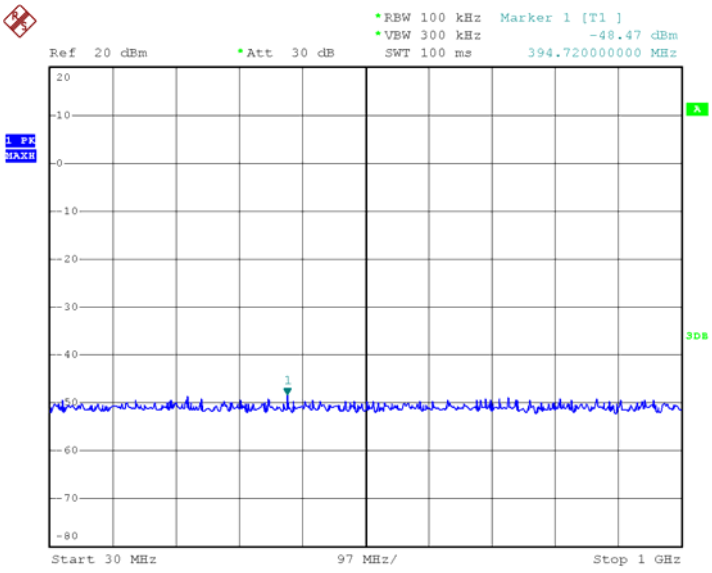
Date: 13.APR.2012 05:20:32

Chain 1: 802.11n40 Low Channel 26.5GHz-40GHz



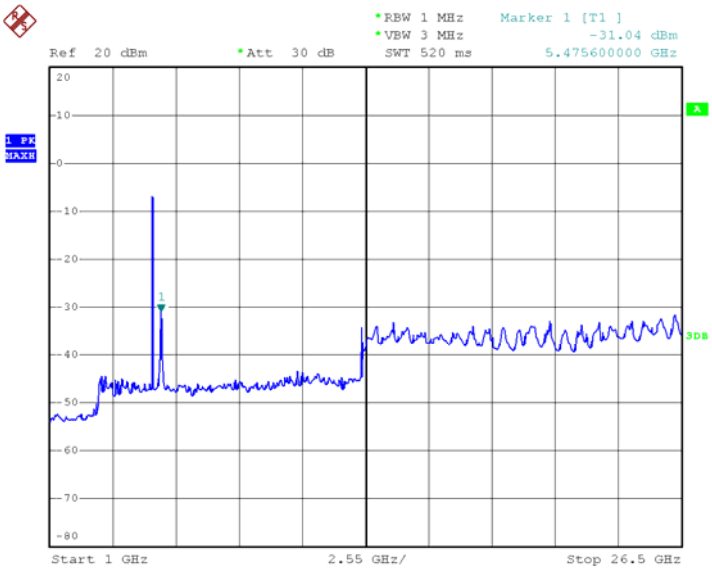
Date: 20.APR.2012 18:04:50

Chain 1: 802.11n40 High Channel Below 1 GHz



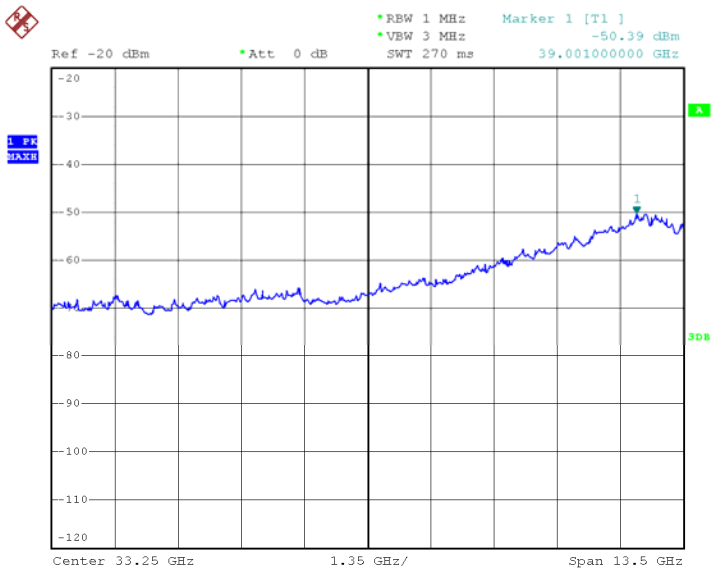
Date: 13.APR.2012 05:19:34

Chain 1: 802.11n40 High Channel 1GHz-26.5GHz



Date: 13.APR.2012 05:11:56

Chain 1: 802.11n40 High Channel 26.5GHz-40GHz



Date: 20.APR.2012 18:05:28

FCC §15.407(a) (1) – 26 dB OCCUPIED BANDWIDTH

Applicable Standard

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

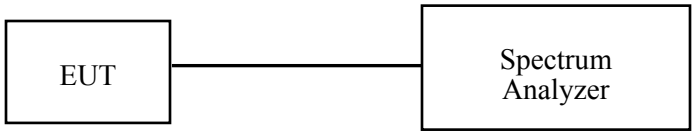
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2011-07-08	2012-07-07

*** 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. Use a RBW = approximately 1% of the emission bandwidth.Set the VBW > RBW. Use a peak detector.Do not use the Max Hold function. Rather, use the viewbutton to capture the emission. Measure maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat, measurement as needed until the RBW/EBW ratio is approximately 1%.
4. Repeat above procedures until all frequencies measured were complete.



Test Data

Environmental Conditions

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

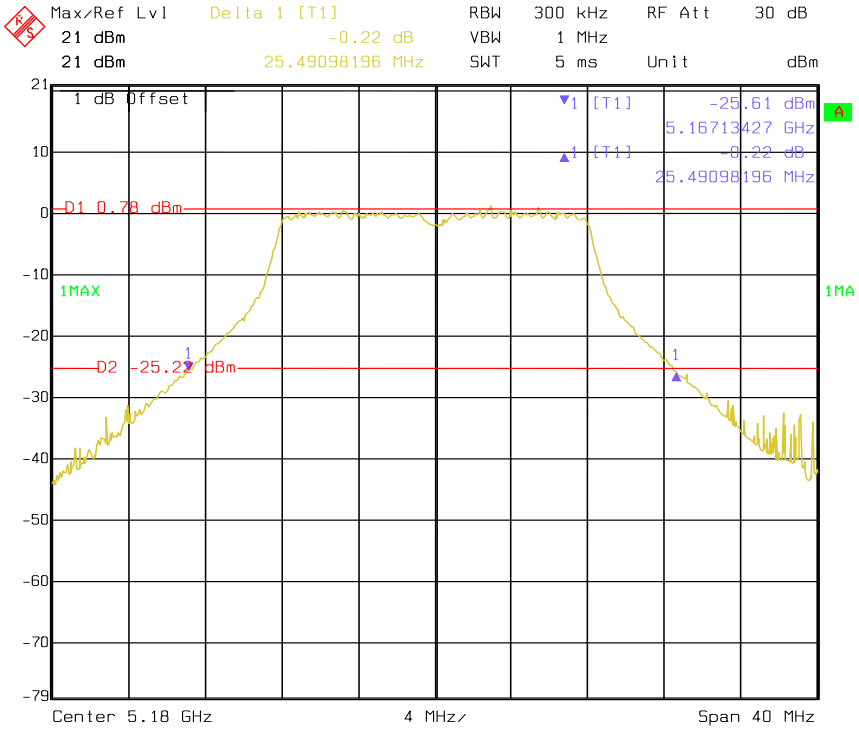
The testing was performed by Ares Liu from 2012-03-09 to 2012-05-07.

Test Result: Pass.

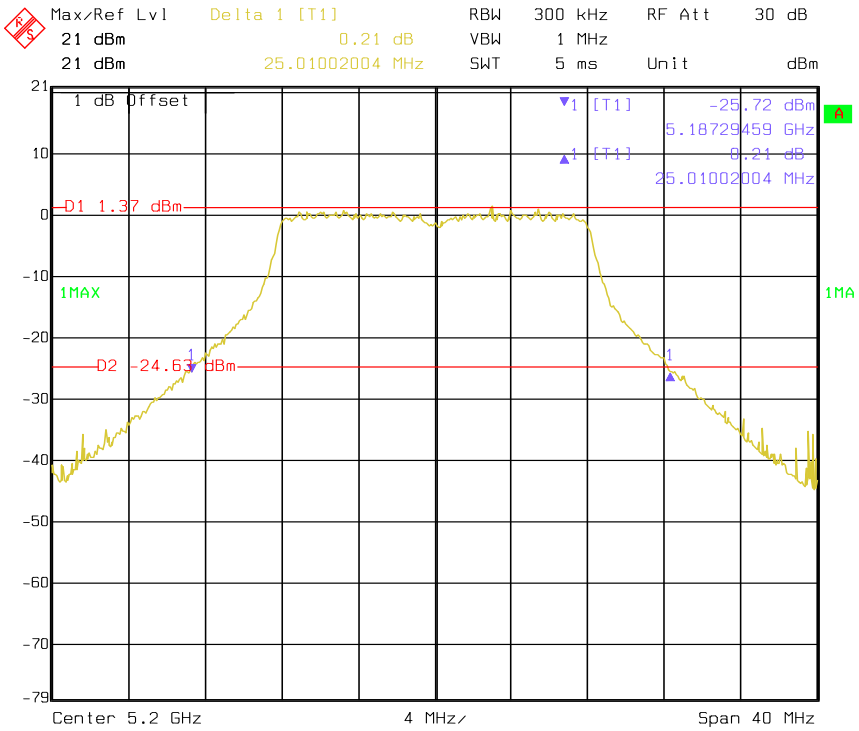
Please refer to the following tables and plots.

Channel	Frequency (MHz)	Data Rate (Mbps)	26 dB Emission Bandwidth (MHz)
802.11a			
Low	5180	6	25.49
Middle	5200	6	25.01
High	5240	6	25.41
Chain 0: 802.11n HT20			
Low	5180	6.5	26.37
Middle	5200	6.5	26.13
High	5240	6.5	26.45
Chain 0: 802.11n HT40			
Low	5190	13.5	48.25
High	5230	13.5	47.13
Chain 1: 802.11n HT20			
Low	5180	6.5	26.21
Middle	5200	6.5	26.45
High	5240	6.5	26.69
Chain 1: 802.11n HT40			
Low	5190	13.5	48.09
High	5230	13.5	47.77

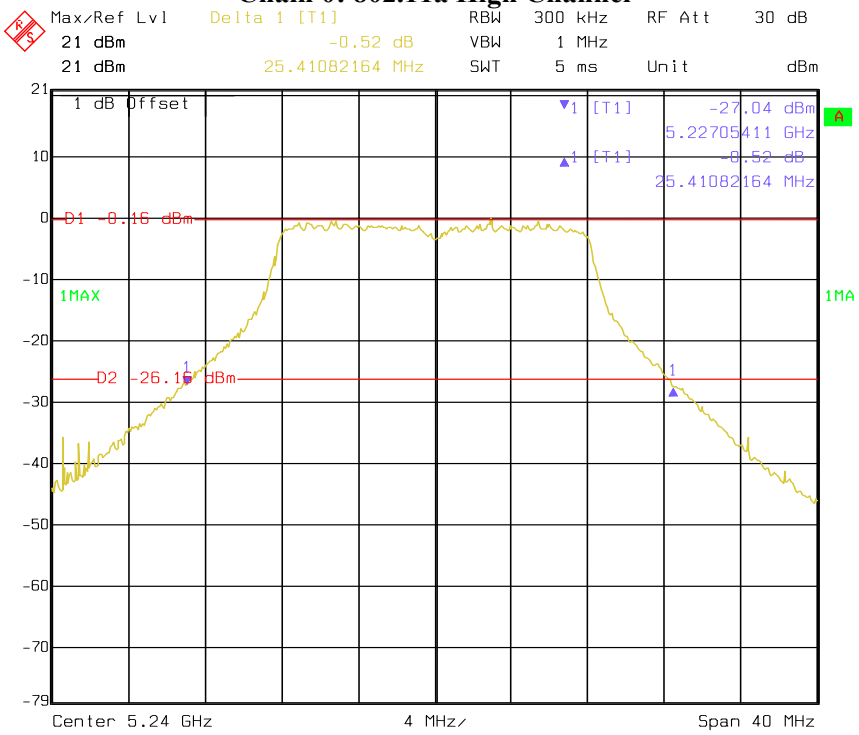
Chain 0: 802.11a Low Channel



Chain 0: 802.11a Middle Channel

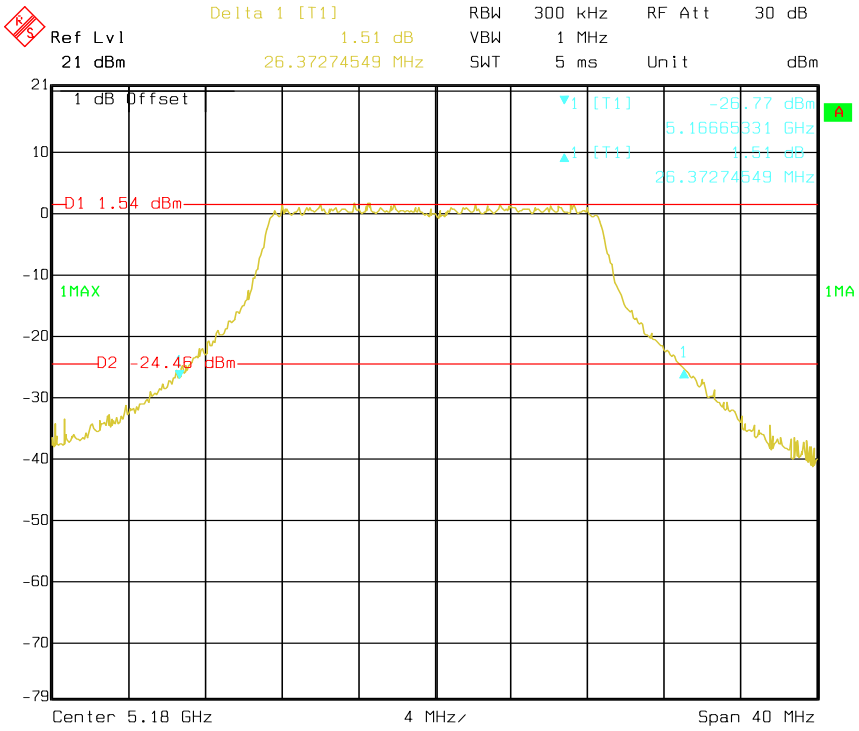


Chain 0: 802.11a High Channel



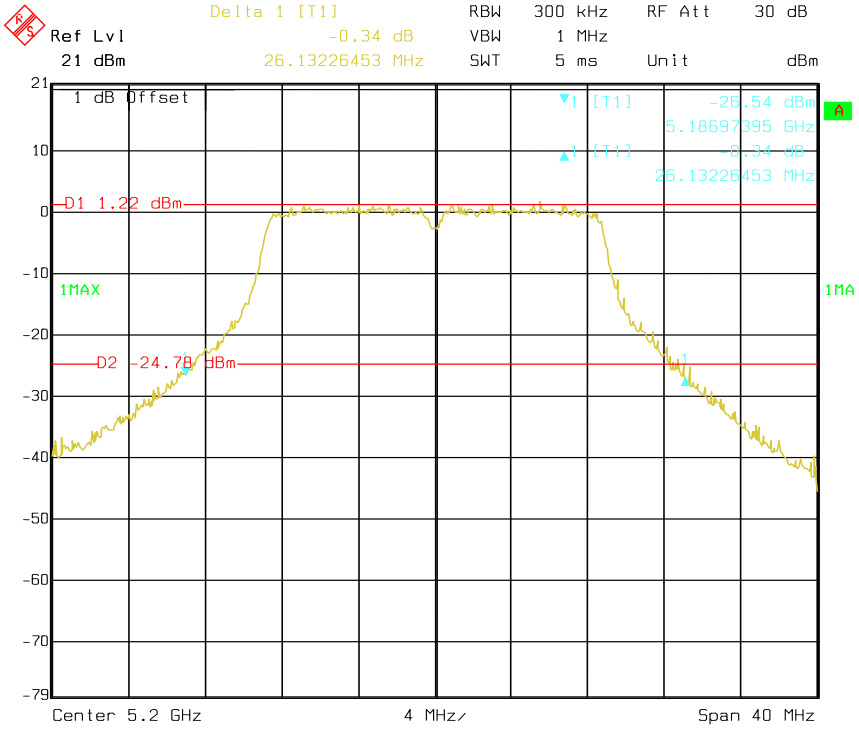
Date: 09.MAR.2012 16:59:44

Chain 0: 802.11n20 Low Channel

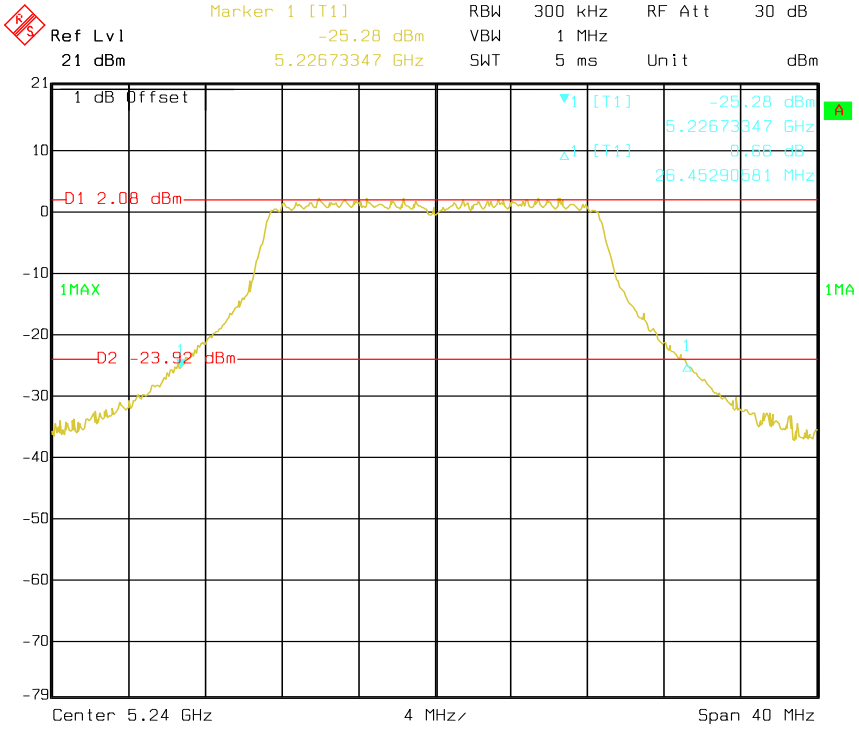


Date: 04.APR.2012 22:39:13

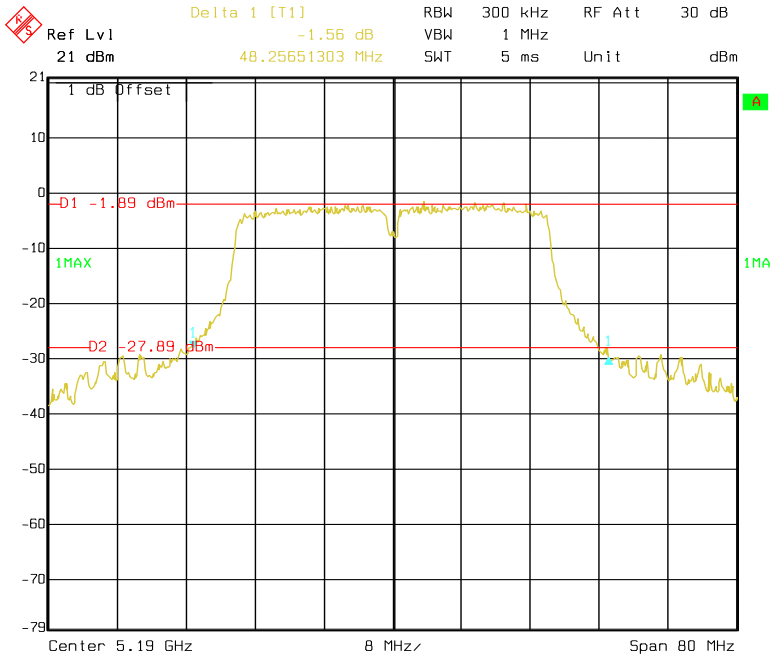
Chain 0: 802.11n20 Middle Channel



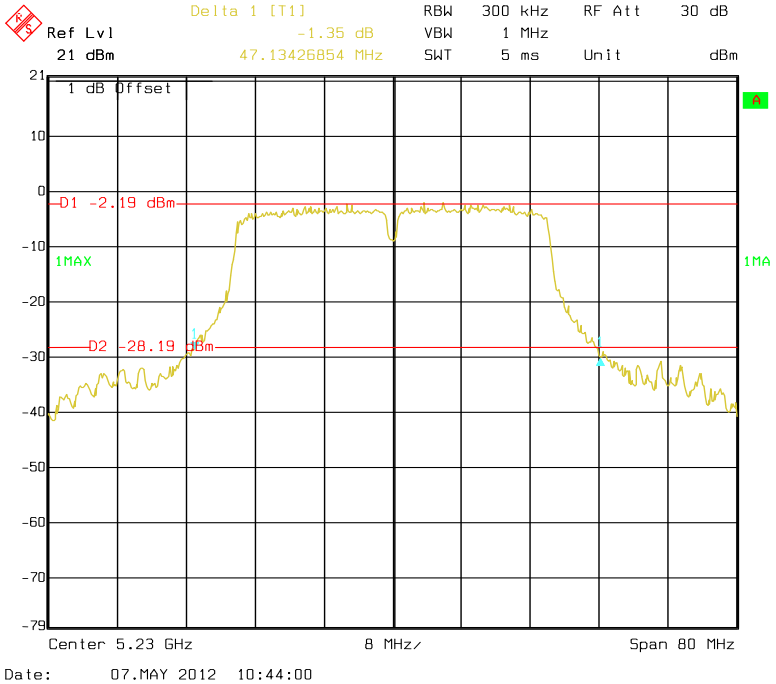
Chain 0: 802.11n20 High Channel



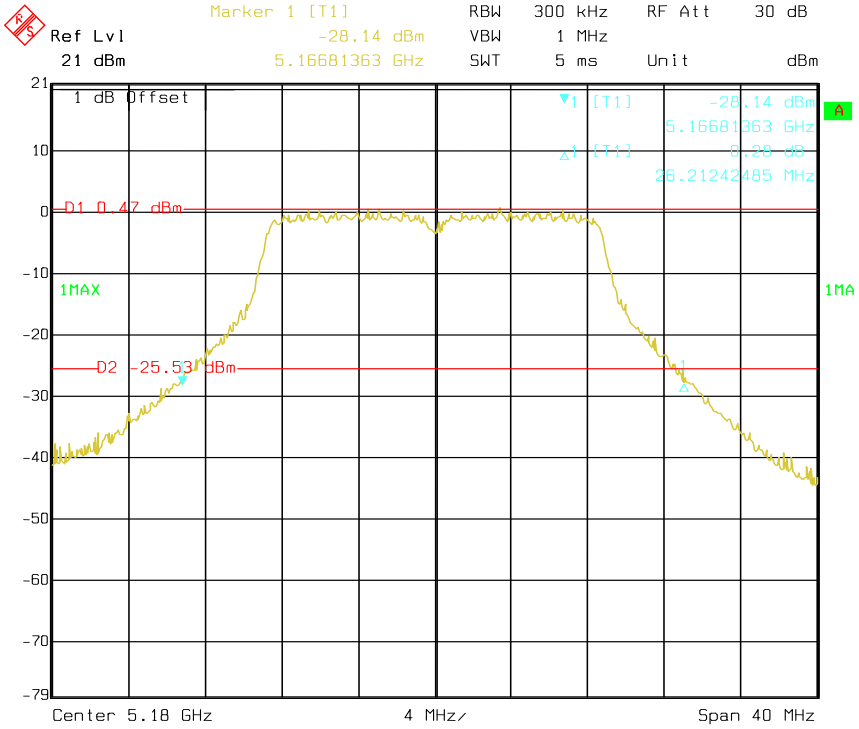
Chain 0: 802.11n40 Low Channel



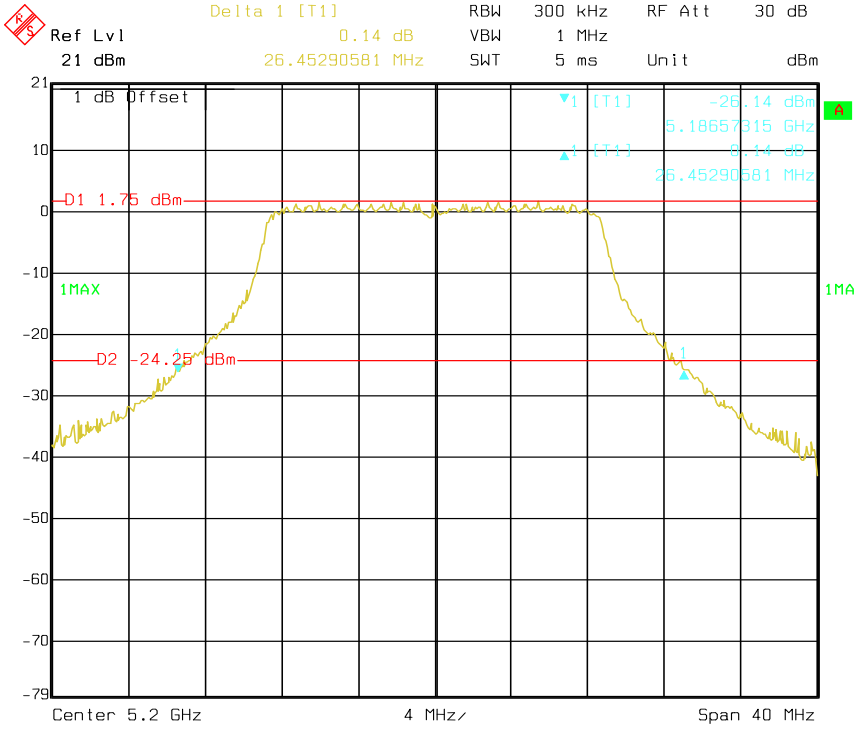
Chain 0: 802.11n40 High Channel



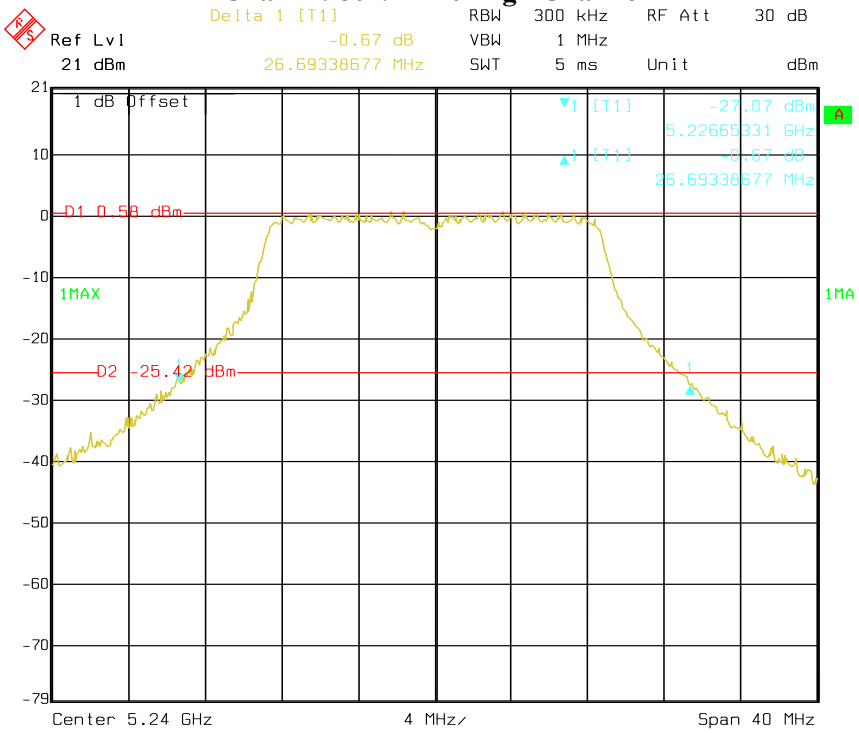
Chain 1: 802.11n20 Low Channel



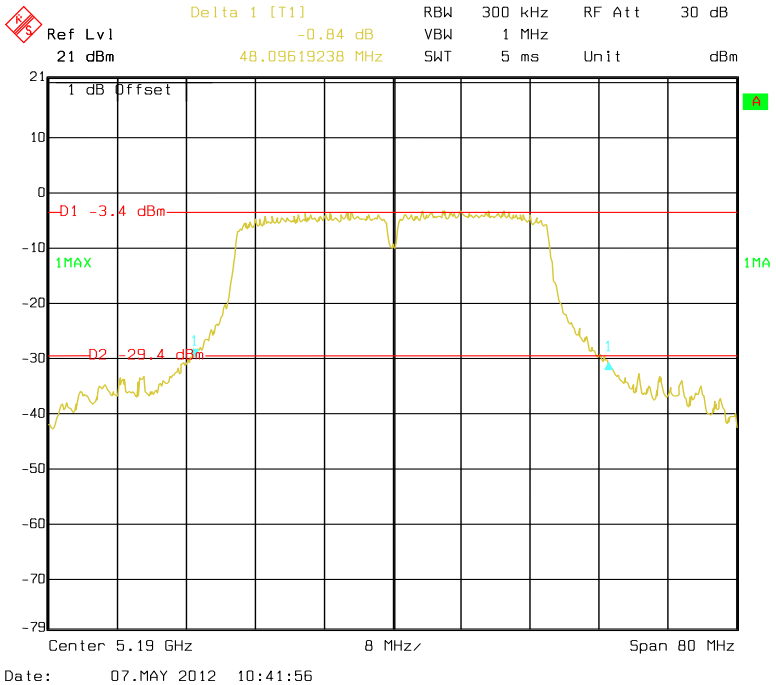
Chain 1: 802.11n20 Middle Channel



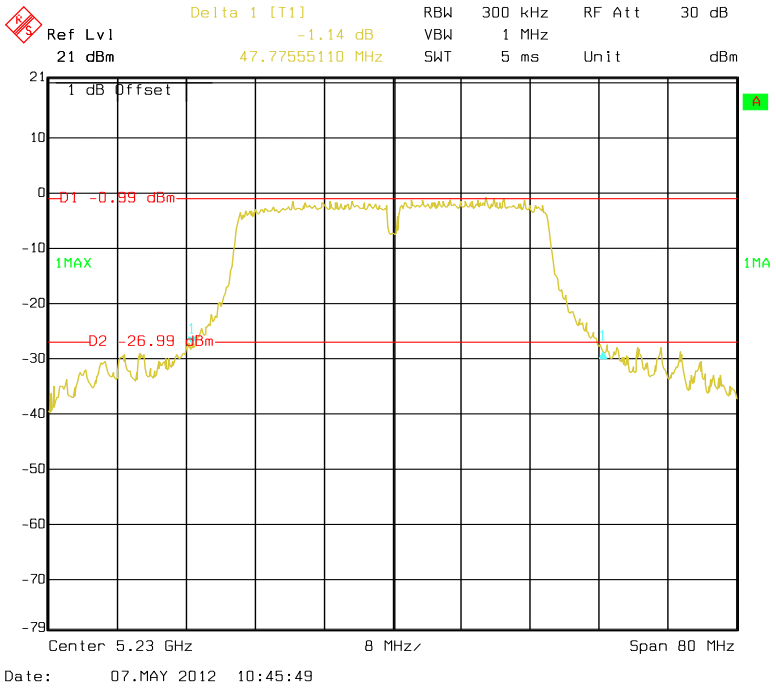
Chain 1: 802.11n20 High Channel



Chain 1: 802.11n40 Low Channel



Chain 1: 802.11n40 High Channel



FCC §15.407(a) (1) – CONDUCTED TRANSMITTER OUTPUT POWER

Applicable Standard

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2011-07-08	2012-07-07

*** 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. Set span = 80MHz (to encompass the entire emission bandwidth (EBW) of the signal). Set RBW = 1 MHz.Set VBW ≥ 3 MHz. Use sample detector mode Use a video trigger with the trigger level set to enable triggering only on full power pulses.Transmitter must operate at full control power for entire sweep of every sweep.If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to “free run”. Trace average 100 traces in power averaging mode.Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer’s band power measurement function with band limits set equal to the EBW band edges or by summing power levels in each 1 MHz band in linear power terms. The 1 MHz band power levels to be summed can be obtained by averaging, in linear power terms, power levels in each frequency bin across the 1 MHz.
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 Ares Liu on 2012-04-13

Test Mode: Transmitting

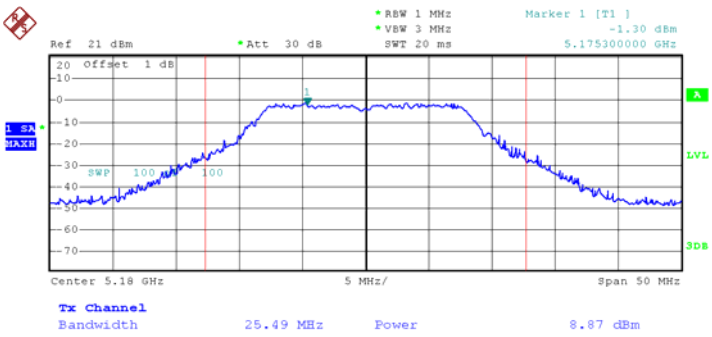
Test Result: Pass, please refer to the following tables and plots.

Channel	Frequency (MHz)	Data Rate (Mbps)	Conducted Output Power (dBm)	Limit (dBm)
Chain 0: 802.11a Mode:				
Low	5180	6	8.87	12.0
Middle	5200	6	7.84	12.0
High	5240	6	7.82	12.0
Chain 0: 802.11n HT20 Mode				
Low	5180	6.5	6.32	12.0
Middle	5200	6.5	5.76	12.0
High	5240	6.5	5.60	12.0
Chain0: 802.11n HT40 Mode				
Low	5190	13.5	7.45	12.0
High	5230	13.5	7.44	12.0
Chain 1: 802.11n HT20 Mode				
Low	5180	6.5	6.67	12.0
Middle	5200	6.5	5.92	12.0
High	5240	6.5	5.74	12.0
Chain 1: 802.11n HT40 Mode				
Low	5190	13.5	7.42	12.0
High	5230	13.5	7.67	12.0

Channel	Frequency (MHz)	Data Rate (Mbps)	Conducted Output Power (dBm)	Limit (dBm)
Chain 0+Chain 1: 802.11n HT20 Mode				
Low	5180	6.5	9.508	12.0
Middle	5200	6.5	8.851	12.0
High	5240	6.5	8.680	12.0
Chain 0+Chain 1: 802.11n HT40 Mode				
Low	5190	13.5	10.445	12.0
High	5230	13.5	10.566	12.0

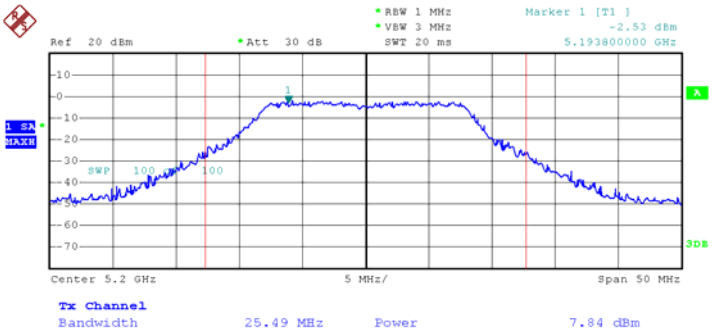
*Note: The antenna Gain is 11 dBi.

802.11a RF Output Power, Low Channel



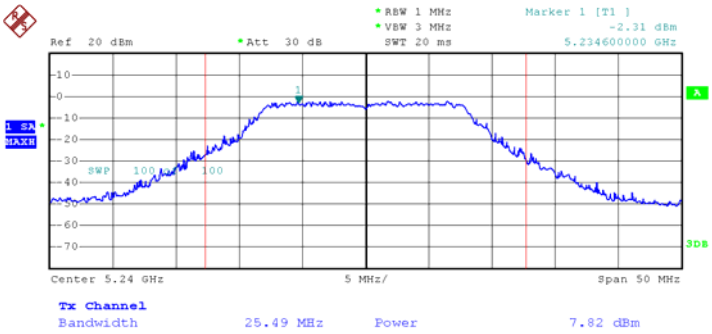
Date: 13.APR.2012 03:46:24

802.11a RF Output Power, Middle Channel



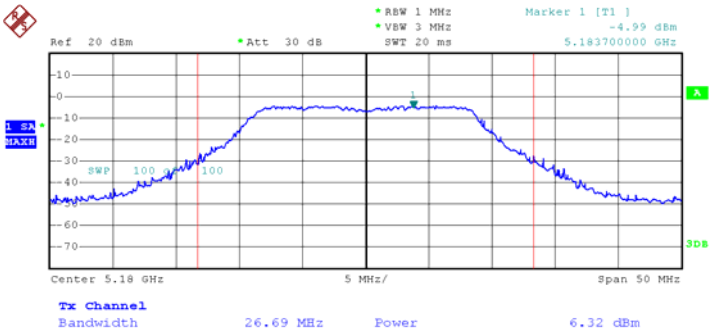
Date: 13.APR.2012 04:00:49

802.11a RF Output Power, High Channel



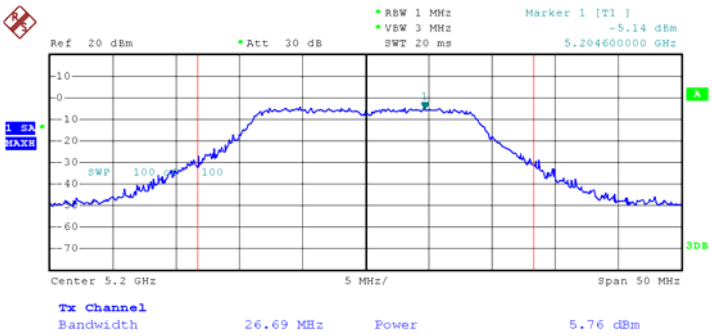
Date: 13.APR.2012 04:06:52

Chain 0: 802.11n HT20 RF Output Power, Low Channel



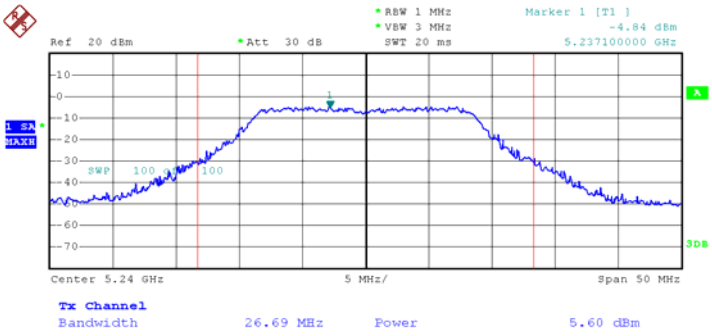
Date: 13.APR.2012 05:31:45

Chain 0: 802.11n HT20 RF Output Power, Middle Channel



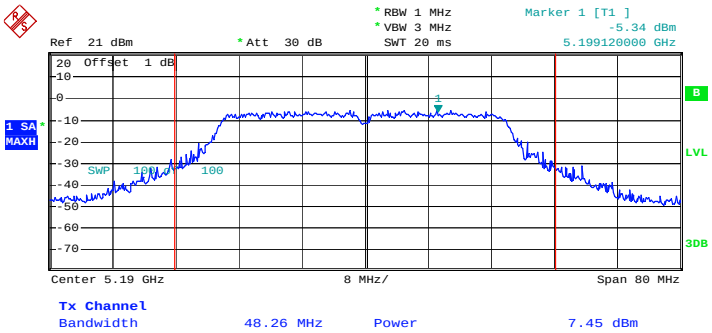
Date: 13.APR.2012 05:30:38

Chain 0: 802.11n HT20 RF Output Power, High Channel



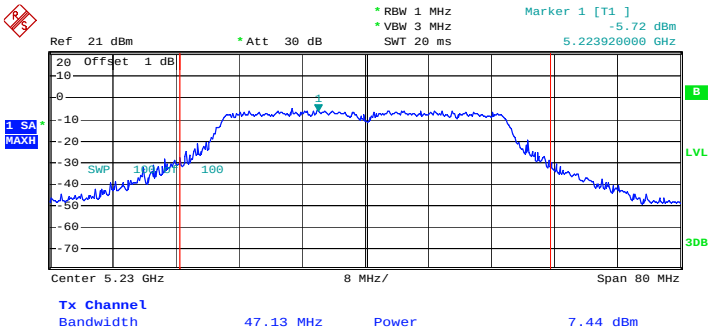
Date: 13.APR.2012 05:26:57

Chain 0: 802.11n HT40 RF Output Power, Low Channel



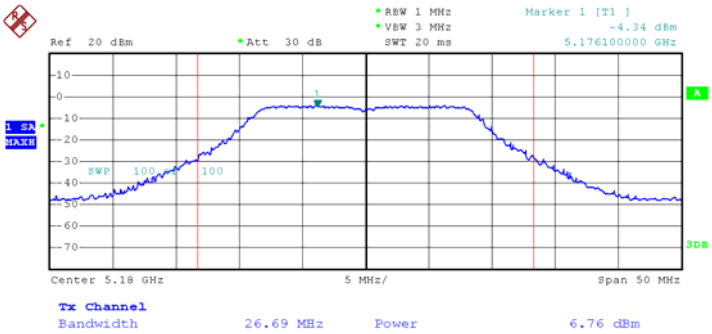
Date: 7.MAY.2012 15:01:15

Chain 0: 802.11n HT40 RF Output Power, High Channel



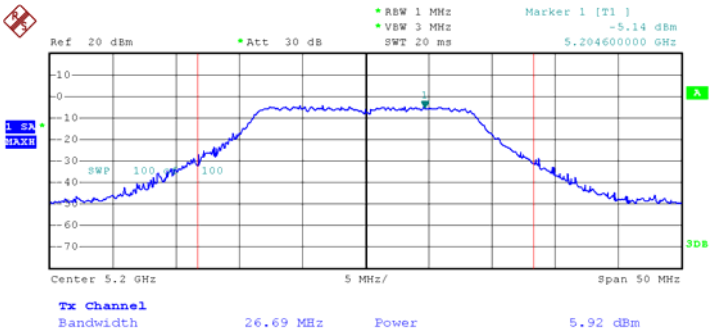
Date: 7.MAY.2012 14:59:41

Chain 1: 802.11n HT20 RF Output Power, Low Channel



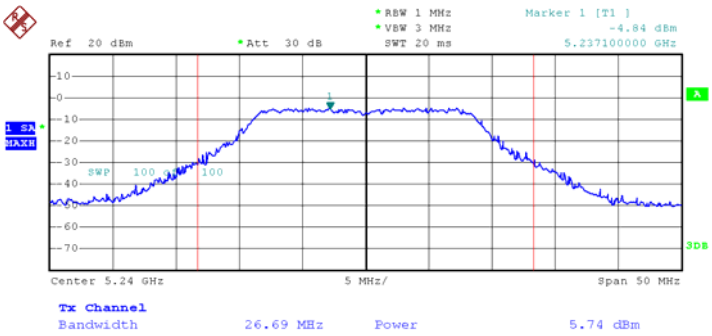
Date: 13.APR.2012 05:33:15

Chain 1: 802.11n HT20 RF Output Power, Middle Channel



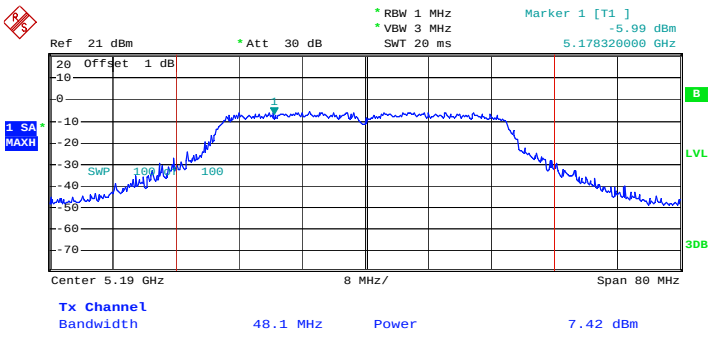
Date: 13.APR.2012 05:30:44

Chain 1: 802.11n HT20 RF Output Power, High Channel



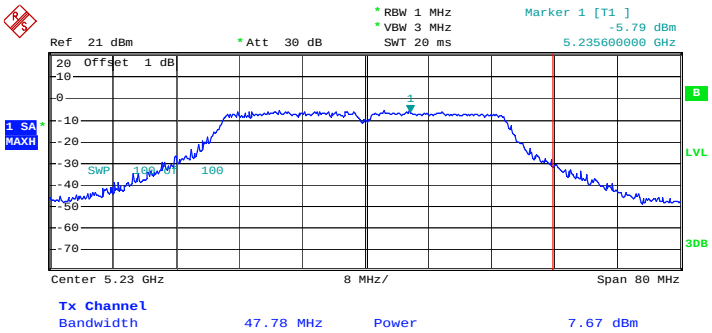
Date: 13.APR.2012 05:27:04

Chain 1: 802.11n HT40 RF Output Power, Low Channel



Date: 7.MAY.2012 15:01:57

Chain 1: 802.11n HT40 RF Output Power, High Channel



Date: 7.MAY.2012 15:00:21

FCC §15.407(a) (1) (5) - POWER SPECTRAL DENSITY

Applicable Standard

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

The peak power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A resolution bandwidth less than the measurement bandwidth can be used, provided that the measured power is integrated to show total power over the measurement bandwidth. If the resolution bandwidth is approximately equal to the measurement bandwidth, and much less than the emission bandwidth of the equipment under test, the measured results shall be corrected to account for any difference between the resolution bandwidth of the test instrument and its actual noise bandwidth.

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. Use sample detector and power averaging (not video averaging) mode. Set RBW= 1 MHz*, VBW > 1 MHz. The PPSD is the highest level found across the emission in any 1-MHz band after 100 sweeps of averaging. This method is permitted only if the transmission pulse or sequence of pulses remains at maximum transmits power throughout each of the 100 sweeps of averaging and that the interval between pulses is not included in any of the sweeps.
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	Spectrum Analyzer	FSEM30	849720/019	2011-07-08	2012-07-07

*** 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:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu on 2012-04-13

Test Mode: Transmitting

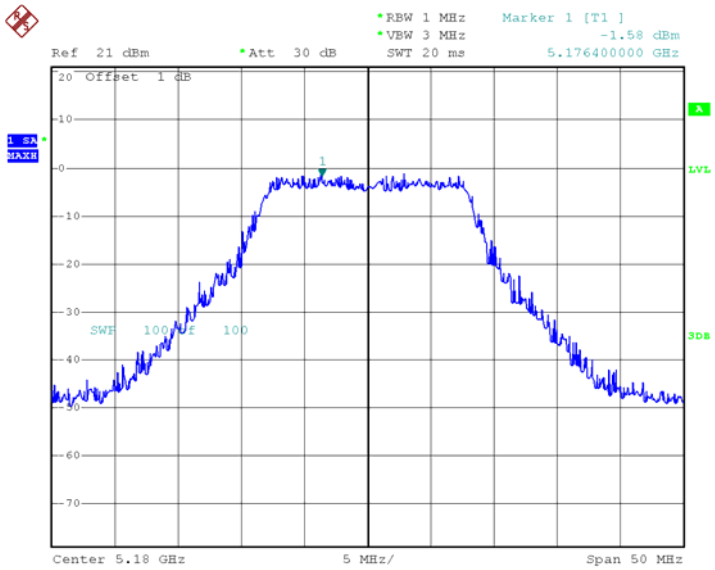
Test Result: Pass

Channel	Frequency (MHz)	Data Rate (Mbps)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
802.11a Mode					
Low	5180	6	-1.58	-1.0	Pass
Middle	5200	6	-2.17	-1.0	Pass
High	5240	6	-2.32	-1.0	Pass
Chain 0: 802.11n HT20 Mode					
Low	5180	6.5	-4.09	-1.0	Pass
Middle	5200	6.5	-4.91	-1.0	Pass
High	5240	6.5	-4.13	-1.0	Pass
Chain 0: 802.11n HT40 Mode					
Low	5190	13.5	-5.49	-1.0	Pass
High	5230	13.5	-5.36	-1.0	Pass
Chain 1: 802.11n HT20 Mode					
Low	5180	6.5	-4.43	-1.0	Pass
Middle	5200	6.5	-4.85	-1.0	Pass
High	5240	6.5	-4.98	-1.0	Pass
Chain 1: 802.11n HT40 Mode					
Low	5190	13.5	-5.69	-1.0	Pass
High	5230	13.5	-5.66	-1.0	Pass

Channel	Frequency (MHz)	Data Rate (Mbps)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
Chain 0+Chain 1: 802.11n HT20 Mode					
Low	5180	6.5	-1.246	-1.0	Pass
Middle	5200	6.5	-1.869	-1.0	Pass
High	5240	6.5	-1.524	-1.0	Pass
Chain 0+Chain 1: 802.11n HT40 Mode					
Low	5190	13.5	-2.578	-1.0	Pass
High	5230	13.5	-2.497	-1.0	Pass

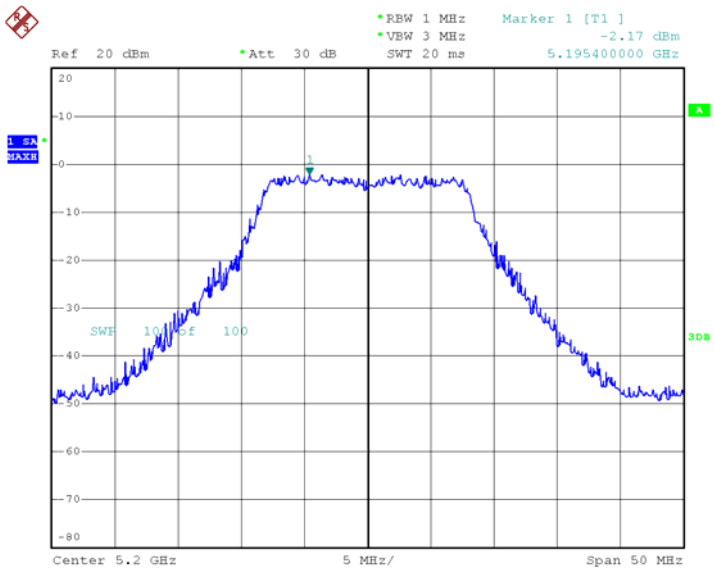
*Note: The antenna Gain is 11dBi.

Power Spectral Density, 802.11a Low Channel



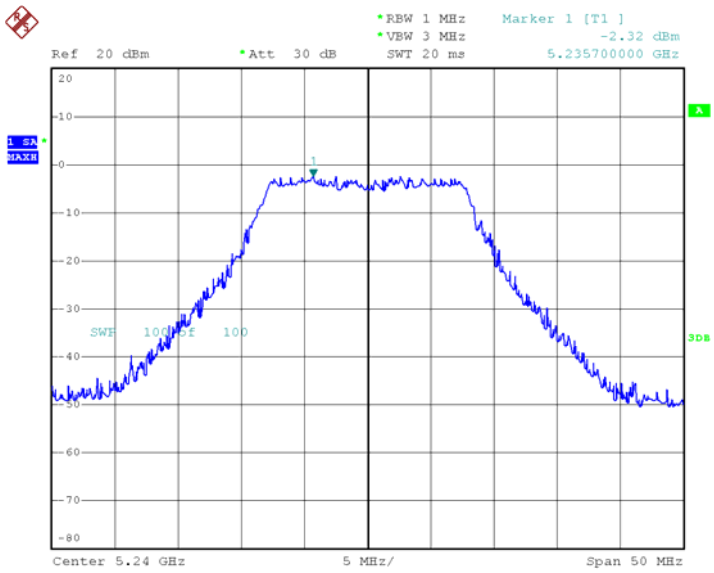
Date: 13.APR.2012 03:46:38

Power Spectral Density, 802.11a Middle Channel



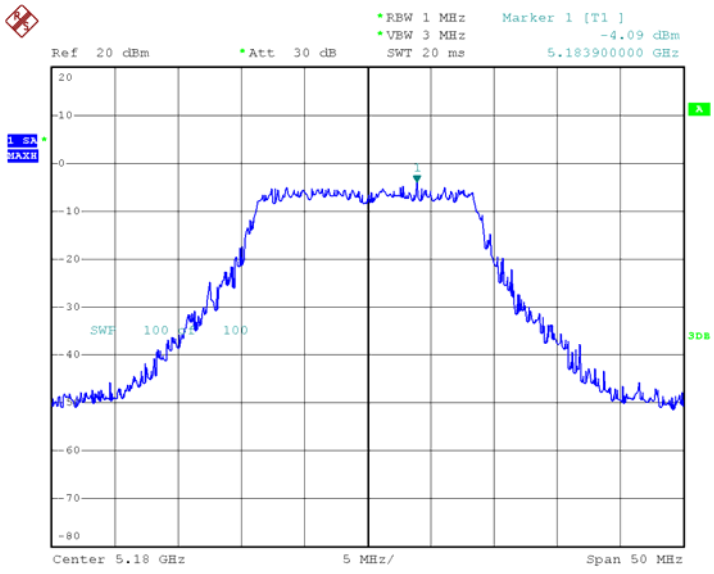
Date: 13.APR.2012 04:01:17

Power Spectral Density, 802.11a High Channel



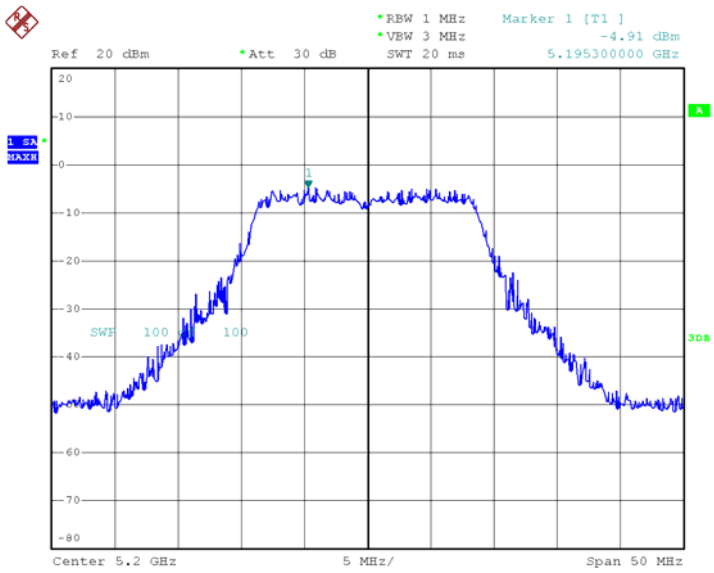
Date: 13.APR.2012 04:07:20

Chain 0: Power Spectral Density, 802.11n HT20 Low Channel



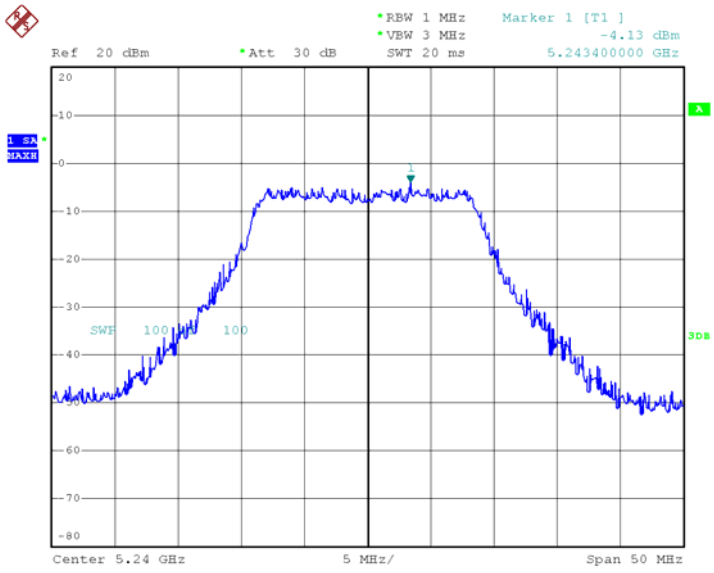
Date: 13.APR.2012 05:33:27

Chain 0: Power Spectral Density, 802.11n HT20 Middle Channel



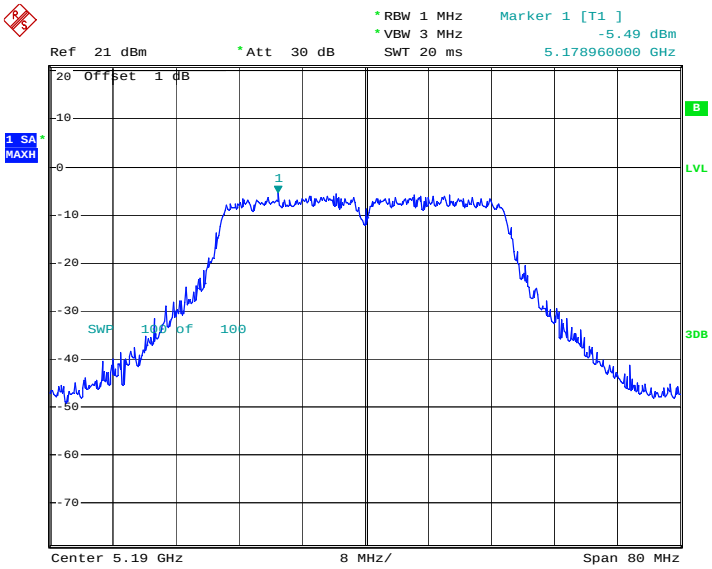
Date: 13.APR.2012 05:30:07

Chain 0: Power Spectral Density, 802.11n HT20 High Channel



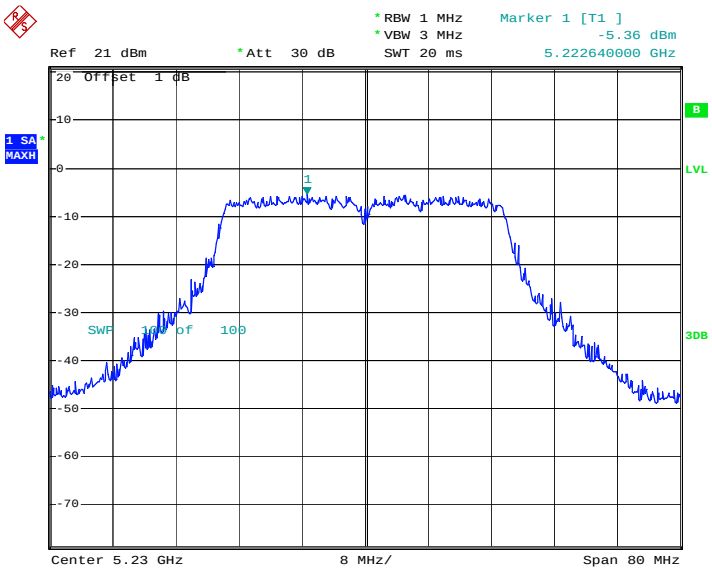
Date: 13.APR.2012 05:25:41

Chain 0: Power Spectral Density, 802.11n HT40 Low Channel



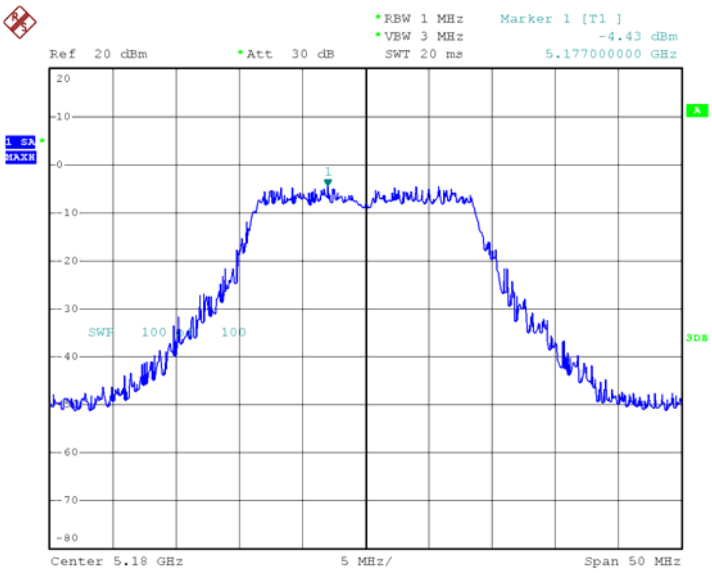
Date: 7.MAY.2012 15:03:00

Chain 0: Power Spectral Density, 802.11n HT40 High Channel



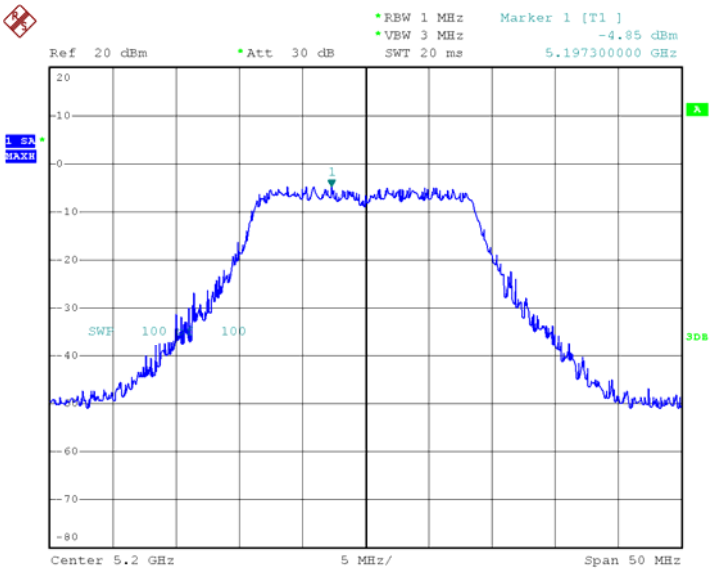
Date: 7.MAY.2012 15:04:29

Chain 1: Power Spectral Density, 802.11n HT20 Low Channel



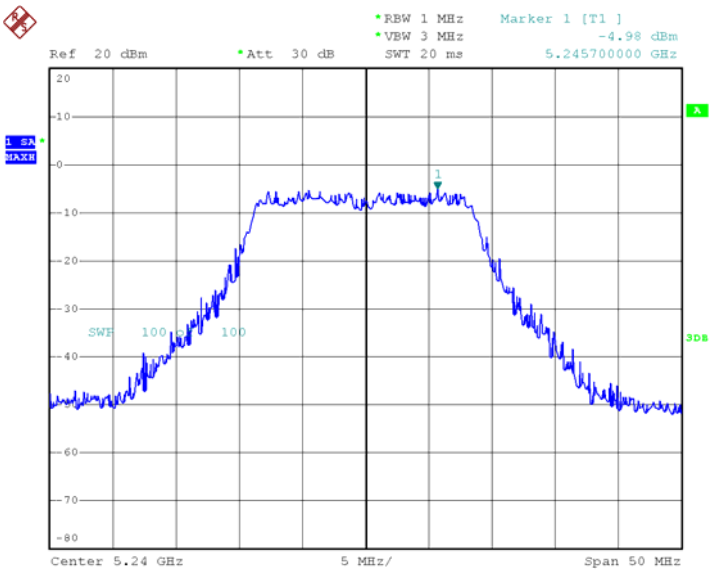
Date: 13.APR.2012 05:33:36

Chain 1: Power Spectral Density, 802.11n HT20 Middle Channel



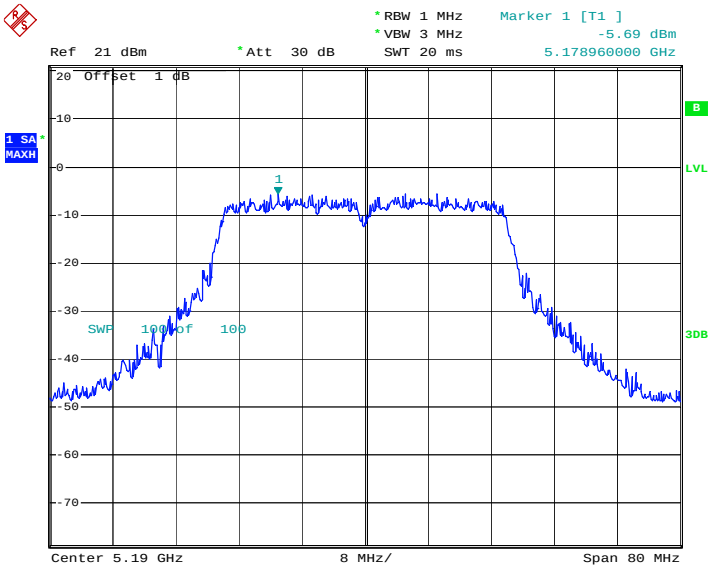
Date: 13.APR.2012 05:30:12

Chain 1: Power Spectral Density, 802.11n HT20 High Channel



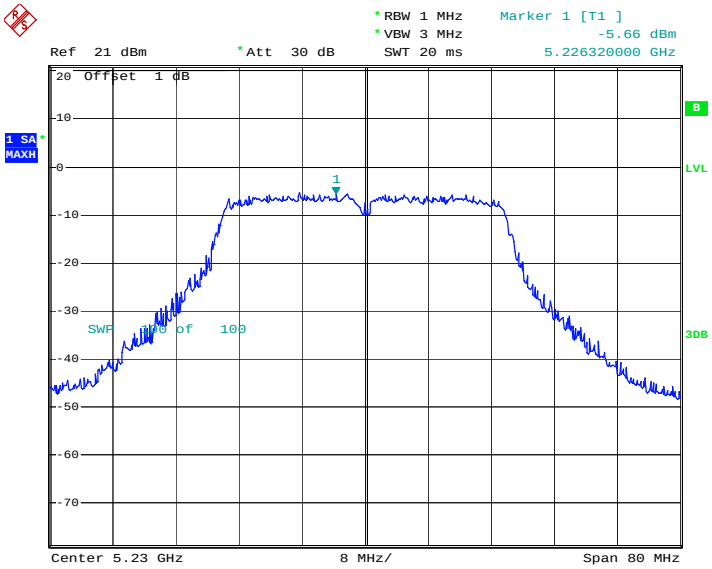
Date: 13.APR.2012 05:25:49

Chain 1: Power Spectral Density, 802.11n HT40 Low Channel



Date: 7.MAY.2012 15:03:19

Chain 1: Power Spectral Density, 802.11n HT40 High Channel



Date: 7.MAY.2012 15:06:27

FCC §15.407(a) (6) – PEAK EXCURSION RATIO

Applicable Standard

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

Test Procedure

Set the spectrum analyzer span to view the entire emission bandwidth.
The largest difference between the following two traces must be ≤ 13 dB for all frequencies across the emission bandwidth. Submit a plot.
1st Trace:

• Set RBW = 1 MHz, VBW ≥ 3 MHz with peak detector and maxhold settings.
2nd Trace:

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

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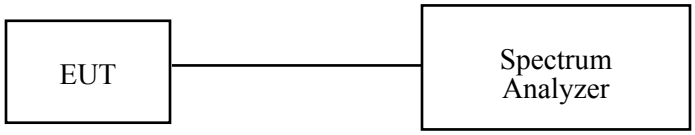


Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2011-07-08	2012-07-07

*** 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

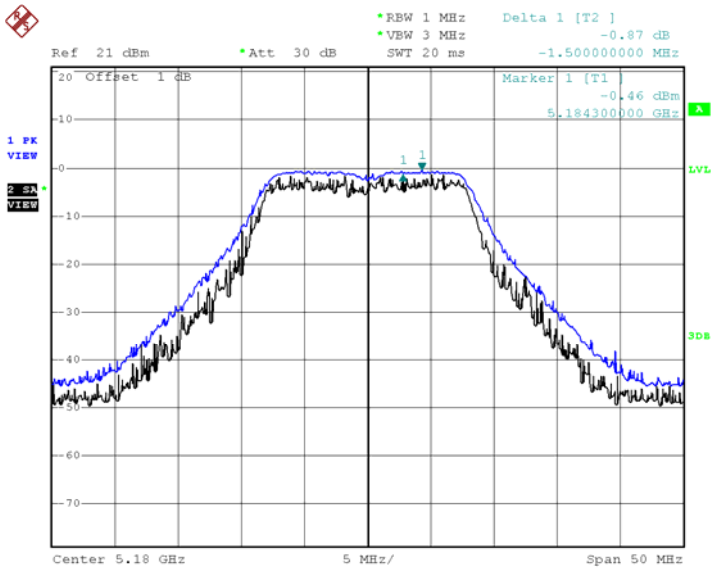
Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu on 2012-04-13.

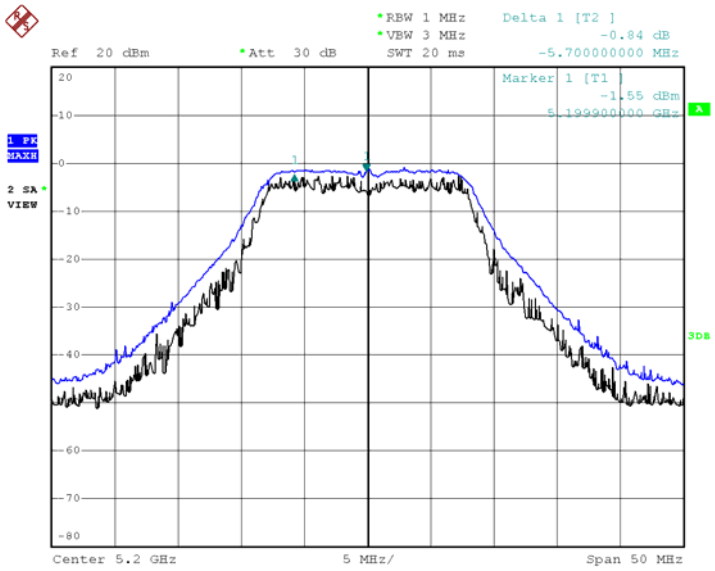
Test Mode: Transmitting

Mode	Frequency (MHz)	Antenna Port	Peak Excursion Ratio (dB)	Limit (dB)
802.11a	Low	Chain 0	0.87	13
	Middle	Chain 0	0.84	13
	High	Chain 0	1.45	13
802.11n HT20	Low	Chain 0	1.09	13
		Chain 1	1.84	13
	Middle	Chain 0	1.27	13
		Chain 1	1.78	13
	High	Chain 0	1.06	13
		Chain 1	1.28	13
802.11n HT40	Low	Chain 0	1.25	13
		Chain 1	1.16	13
	High	Chain 0	1.39	13
		Chain 1	0.83	13

802.11a Low Channel

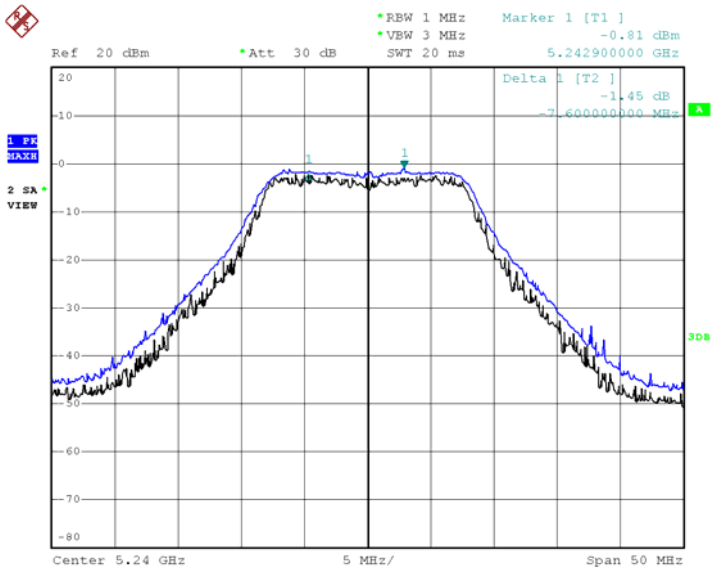


802.11a Middle Channel



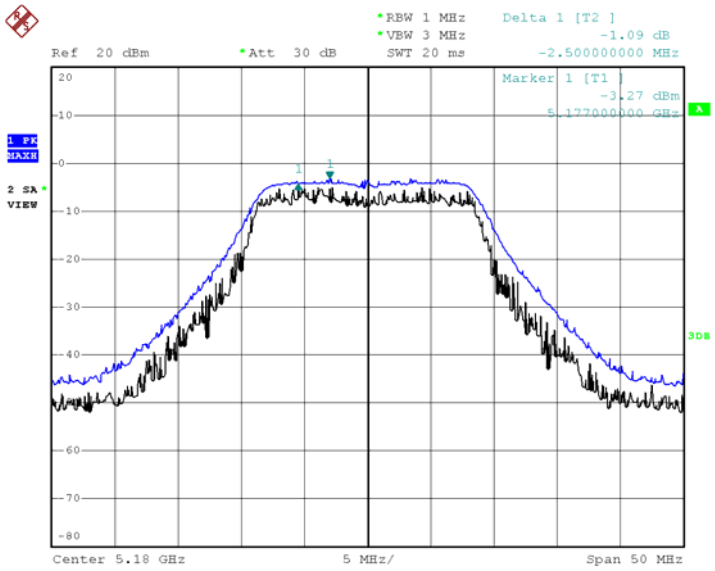
Date: 13.APR.2012 04:03:06

802.11a High Channel



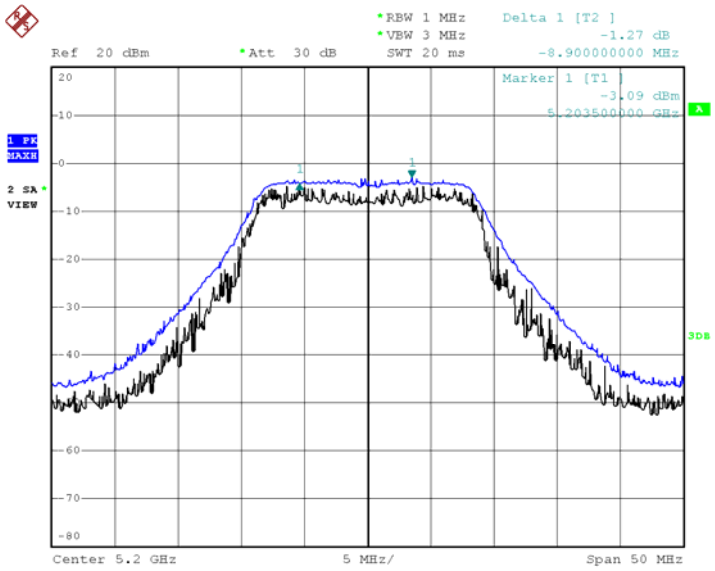
Date: 13.APR.2012 04:05:33

Chain 0: 802.11n20 Low Channel



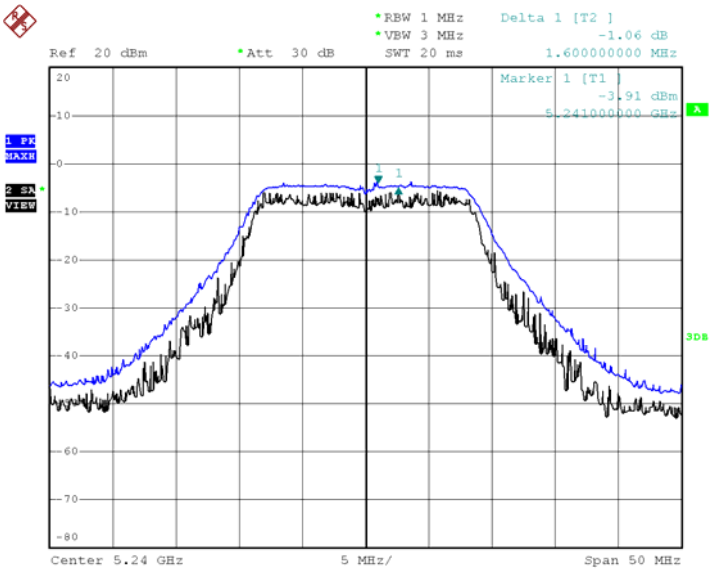
Date: 13.APR.2012 05:35:47

Chain 0: 802.11n20 Middle Channel



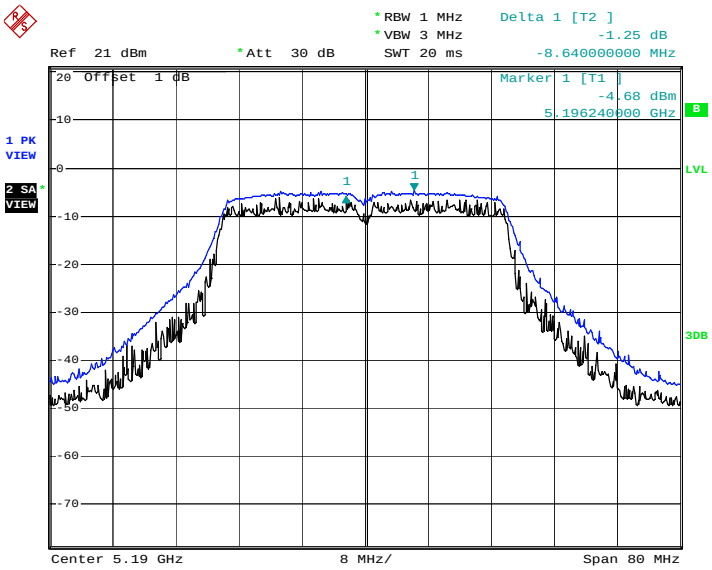
Date: 13.APR.2012 05:29:24

Chain 0: 802.11n20 High Channel



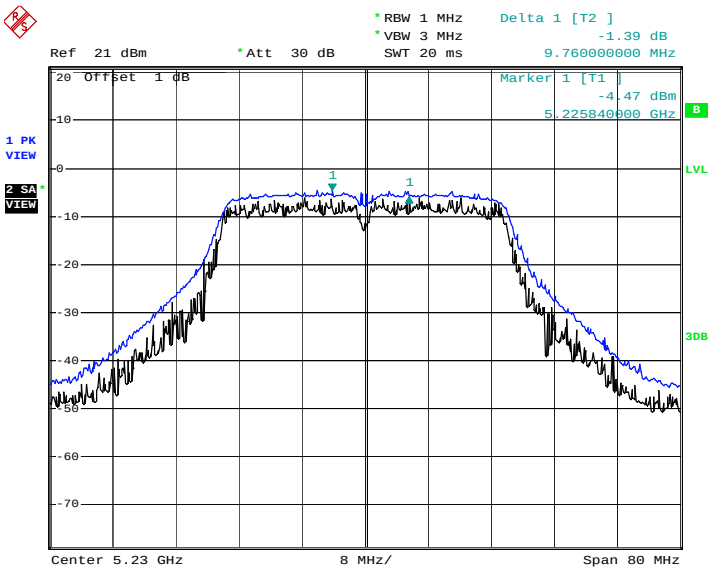
Date: 13.APR.2012 05:28:01

Chain 0: 802.11n40 Low Channel



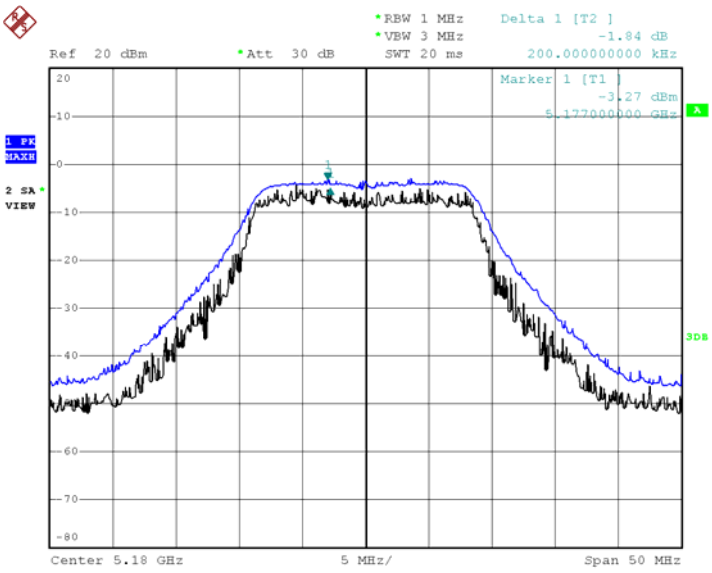
Date: 7.MAY.2012 15:11:46

Chain 0: 802.11n40 High Channel



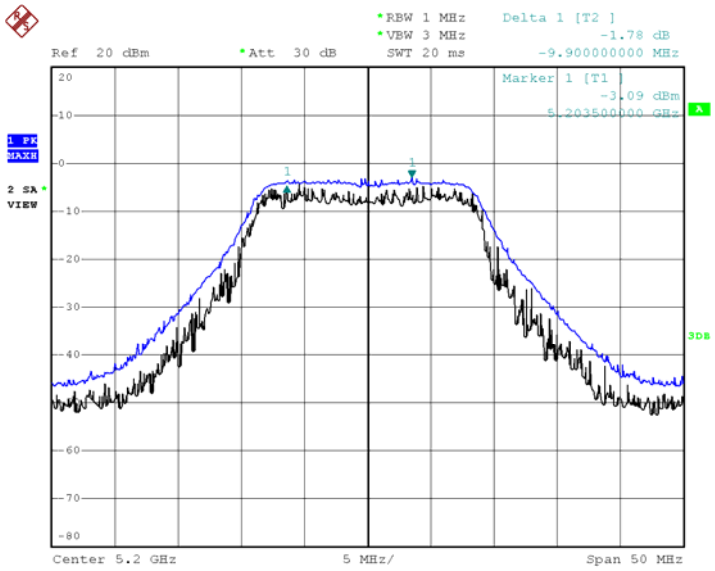
Date: 7.MAY.2012 15:08:44

Chain 1: 802.11n20 Low Channel



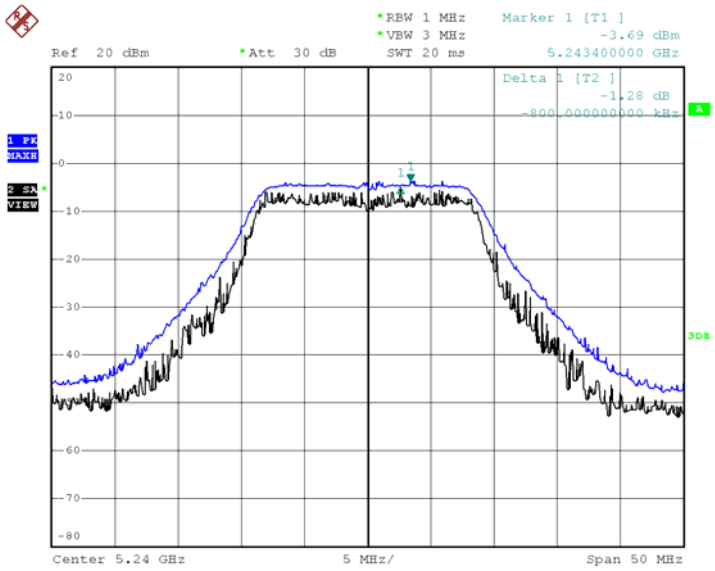
Date: 13.APR.2012 05:35:56

Chain 1: 802.11n20 Middle Channel



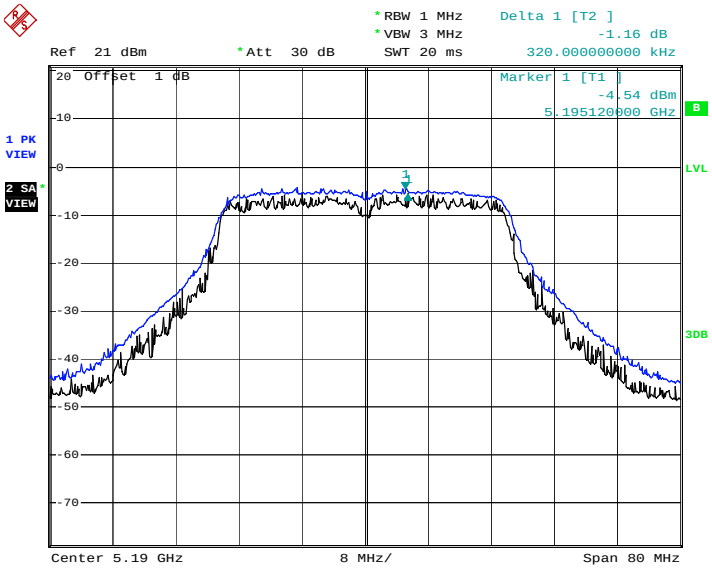
Date: 13.APR.2012 05:29:31

Chain 1: 802.11n20 High Channel



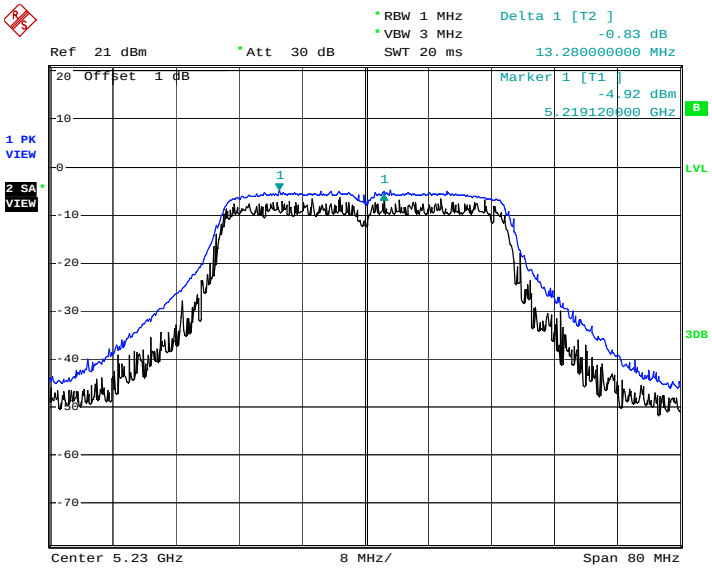
Date: 13.APR.2012 05:28:11

Chain 1: 802.11n40 Low Channel



Date: 7.MAY.2012 15:13:26

Chain 1: 802.11n40 High Channel



Date: 7.MAY.2012 15:09:42

FCC §407(g) - FREQUENCY STABILITY

Applicable Standards

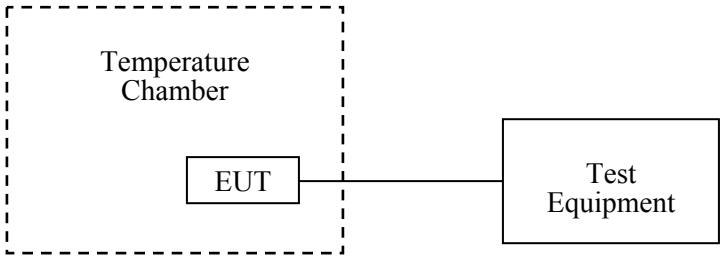
FCC§407(g), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external AC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The AC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable AC power supply was connected to the adaptor terminals of the equipment under test. The voltage was set to 80% and 115% of the nominal value and was then decreased until the transmitter light no longer illuminated. The output frequency was recorded for each voltage.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
WUHUAN	Temperature & Humidity Chamber	HTP205	20021115	2011-06-04	2012-06-03
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2011-07-08	2012-07-07

*** 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:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu from 2012-03-09 to 2012-04-05.

Test Mode: Transmitting

Frequency (MHz)	Power Supply (V_{AC})	Temperature (^{O}C)	Measurement Frequency (MHz)
5180	120	-30	5180.012
		-20	5180.014
		-10	5180.016
		+0	5180.014
		+10	5180.016
		+20	5180.018
		+30	5180.018
		+40	5180.020
		+50	5180.018
	138	+20	5180.016
	96	+20	5180.014

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 802.11an Long-Range outdoor AP/CPE, Model Number: OAP2258XS,N5PCB,N5C,Solo-N5H,Solo-N5HC,AWAP02O-N5H,AWAP02O-N5HC,WLO-25814N,RP-WAC5330,NE-WAC5330,APE-5002A-P14,RA-N5001L,WCPEn-5000-OAA-DD are electrically identical with the Model Number: N5, 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 *******