

FCC PART 15.247

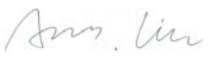
TEST REPORT

For

Archos SA

12 Rue Ampere, Igny 91430, France

FCC ID: SOVAN101G4
Trade Name: ARNOVA

Report Type: Original Report	Product Type: Tablet PC
Test Engineer:	Ares Liu 
Report Number:	R2DG130506001-00A
Report Date:	2013-05-29
Reviewed By:	Ivan Cao  RF Leader
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP*, or any agency of the Federal Government.
* This report may contain data that are not covered by the NVLAP accreditation and shall be marked with an asterisk "★" (Rev.2).
This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

TABLE OF CONTENTS

GENERAL INFORMATION.....	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
OBJECTIVE	4
RELATED SUBMITTAL(S)/GRANT(S).....	4
TEST METHODOLOGY	4
TEST FACILITY	5
SYSTEM TEST CONFIGURATION.....	6
DESCRIPTION OF TEST CONFIGURATION	6
EUT EXERCISE SOFTWARE	6
EQUIPMENT MODIFICATIONS	6
SUPPORT EQUIPMENT LIST AND DETAILS	6
EXTERNAL CABLE.....	7
BLOCK DIAGRAM OF TEST SETUP	7
SUMMARY OF TEST RESULTS	8
FCC §15.247 (i) & §1.1310 & §2.1093- RF EXPOSURE	9
APPLICABLE STANDARD	9
FCC §15.203 - ANTENNA REQUIREMENT.....	10
APPLICABLE STANDARD	10
ANTENNA CONNECTOR CONSTRUCTION	10
FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS	11
APPLICABLE STANDARD	11
MEASUREMENT UNCERTAINTY.....	11
EUT SETUP.....	11
EMI TEST RECEIVER SETUP.....	12
TEST PROCEDURE	12
CORRECTED AMPLITUDE & MARGIN CALCULATION	12
TEST EQUIPMENT LIST AND DETAILS.....	13
TEST RESULTS SUMMARY	13
TEST DATA	13
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS.....	18
APPLICABLE STANDARD	18
MEASUREMENT UNCERTAINTY.....	18
EUT SETUP	18
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	19
TEST PROCEDURE	19
CORRECTED AMPLITUDE & MARGIN CALCULATION	20
TEST EQUIPMENT LIST AND DETAILS.....	20
TEST RESULTS SUMMARY	20
TEST DATA	20
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH.....	31
APPLICABLE STANDARD	31
TEST PROCEDURE	31
TEST EQUIPMENT LIST AND DETAILS.....	31
TEST DATA	31
FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER	39

APPLICABLE STANDARD	39
TEST PROCEDURE	39
TEST EQUIPMENT LIST AND DETAILS.....	39
TEST DATA	40
FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE.....	53
APPLICABLE STANDARD	53
TEST PROCEDURE	53
TEST EQUIPMENT LIST AND DETAILS.....	53
TEST DATA	53
FCC §15.247(e) - POWER SPECTRAL DENSITY	58
APPLICABLE STANDARD	58
TEST PROCEDURE	58
TEST EQUIPMENT LIST AND DETAILS.....	58
TEST DATA	58

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The Archos SA's product, model number: *A101G4 (FCC ID: SOVAN101G4)* (the "EUT") in this report was a *Tablet PC*, which was measured approximately: 27.0 cm (L) x 16.0 cm (W) x 1.0 cm (H), rated input voltage: DC 3.7 V from lithium battery or DC 5V from adapter.

1. Adapter information: HUONIU
Model: HNC050200X
Input: AC 100-240V, 50/60Hz, 0.35A max
Output: DC 5V, 2.0A
2. Adapter information: HONOR
Model: ADS-10B-06 050100
Input: AC 100-240V, 50/60Hz, 0.3A max
Output: DC 5V, 2.0A

** All measurement and test data in this report was gathered from production sample serial number: 130506001 (Assigned by BACL.Dongguan). The EUT was received on 2013-05-07.*

Objective

This report is prepared on behalf of Archos SA 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)

FCC Part 15B JBP submissions with FCC ID: *SOVAN101G4*

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan). 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 C63.4-2003.

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. (Dongguan) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 500069-0).



The current scope of accreditations can be found at <http://ts.nist.gov/standards/scopes/5000690.htm>

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in testing mode, which was provided by manufacturer. For 2.4G band, 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	/	/

For 802.11b, 802.11g, and 802.11n20 modes were tested with Channel 1, 6 and 11.
For 802.11n40 mode were tested with Channel 3, 6 and 9.

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 data rates bandwidths, and modulations.

EUT Exercise Software

The software “MP_Kit_RTL11n_8188E_US” was used.

Equipment Modifications

No equipment modifications used.

Support Equipment List and Details

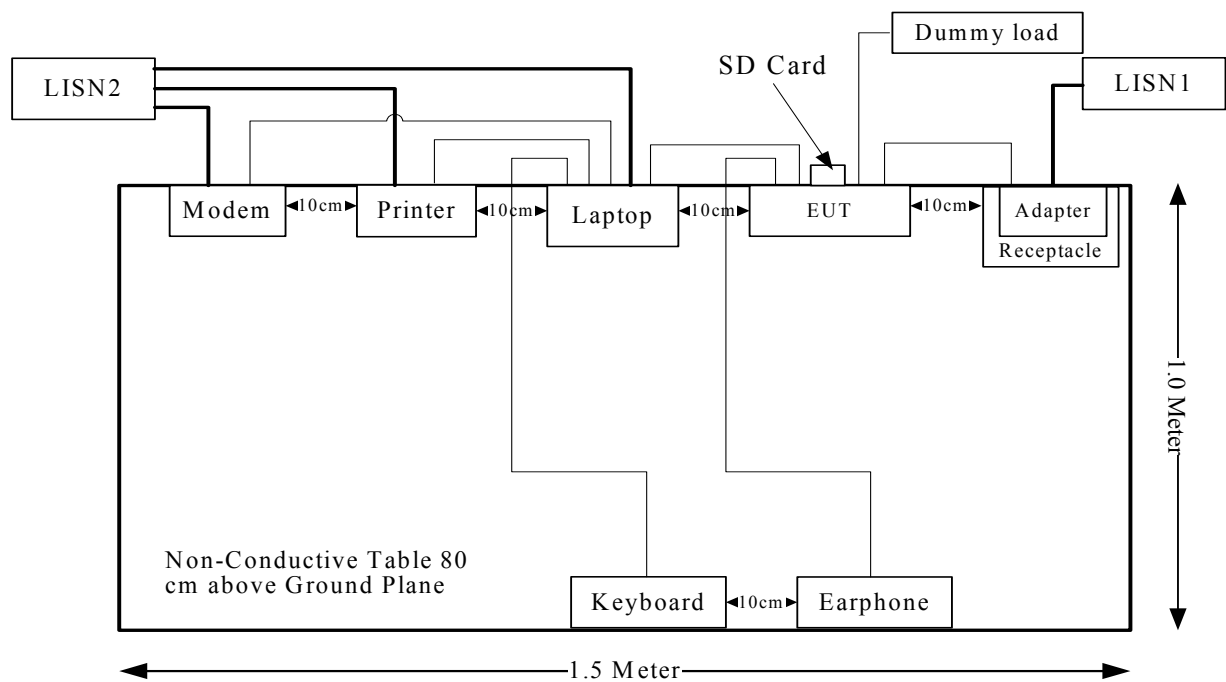
Manufacturer	Description	Model	Serial Number
HP	printer	C3941A	JPTVOB2337
SAST	Modem	AEM-2100	0293
DELL	Keyboard	L100	CNORH656658907BL05DC
DELL	Laptop	PP11L	QDS-BRCM1017
Kinston	Micro SD Card	4G	N/A
N/A	Earphone	N/A	N/A

External Cable

Cable Description	Length (m)	From Port	To
Shielded Detachable Printer Cable	1.2	Parallel Port of Laptop	Printer
Shielded Detachable Serial Cable	1.2	Serial Port of Laptop	Modem
Shielded Detachable Keyboard Cable	1.5	Keyboard Port of Laptop	Keyboard
Shielded Detachable USB Cable	0.8	Laptop	EUT
Un-shielded Detachable Audio Cable	1.2	EUT	Earphone

Block Diagram of Test Setup

USB Downloading:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1093	RF EXPOSURE	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) & §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

According to §15.247(e)(i) and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 Mobile Portable RF Exposure V05 Appendix A, SAR can be exempted if the output power is less than the SAR exclusion threshold:

For $f=2450\text{MHz}$, the output power is less 10mW at distance of 5mm.

Measurement Result

Peak conducted output power= 9.99dBm

Antenna gain = 2.0dBi

SAR exclusion threshold 10 mW (10dBm) > 9.99dBm

So the SAR evaluation is not necessary.

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 an internal antenna, which was permanently attached to the EUT, and the maximum gain is 2dBi, please refer to the internal photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

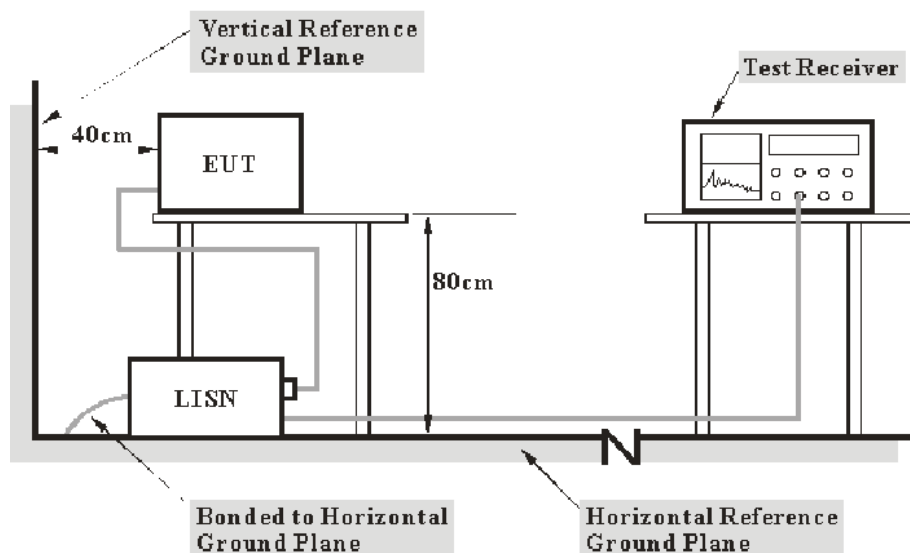
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2-2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cisp}

Measurement	U_{cisp}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

EUT Setup



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

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

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver Setup

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

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

<i>Frequency Range</i>	<i>IF B/W</i>
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second 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.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN

C_f : Correction Factor

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

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI TEST RECIEVER	ESCS 30	830245/006	2013-1-10	2014-1-9
R&S	L.I.S.N	ESH3-Z5	843331/015	2012-9-17	2013-9-16
R&S	L.I.S.N	ESH3-Z5	100113	2012-11-29	2013-11-28
BACL	Test Software	BACL-EMC	V1.0-2010	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

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:

2.85 dB at 0.750 MHz in the **Neutral** of conducted mode

Test Data**Environmental Conditions**

Temperature:	26.8 ° C
Relative Humidity:	65 %
ATM Pressure:	100.2kPa

The testing was performed by Ares Liu on 2013-05-28.

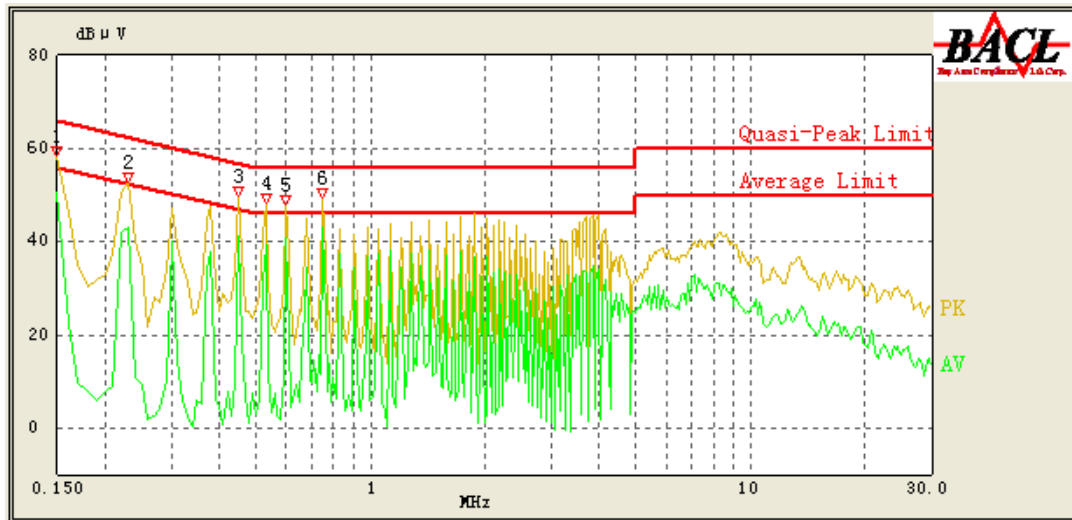
Test Mode: Transmitting

Power Supply from adapter: HNC050200X

120 V, 60 Hz, Line:



Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.150	55.36	1.06	66.00	10.64	QP
0.150	43.22	1.06	56.00	12.78	AV
0.300	45.91	0.81	61.71	15.80	QP
0.300	34.45	0.81	51.71	17.26	AV
0.380	46.35	0.70	59.43	13.08	QP
0.380	34.10	0.70	49.43	15.33	AV
0.450	43.92	0.60	57.43	13.51	QP
0.450	33.97	0.60	47.43	13.46	AV
0.530	48.53	0.52	56.00	7.47	QP
0.530	38.21	0.52	46.00	7.79	AV
3.850	42.09	0.43	56.00	13.91	QP
3.850	36.76	0.43	46.00	9.24	AV

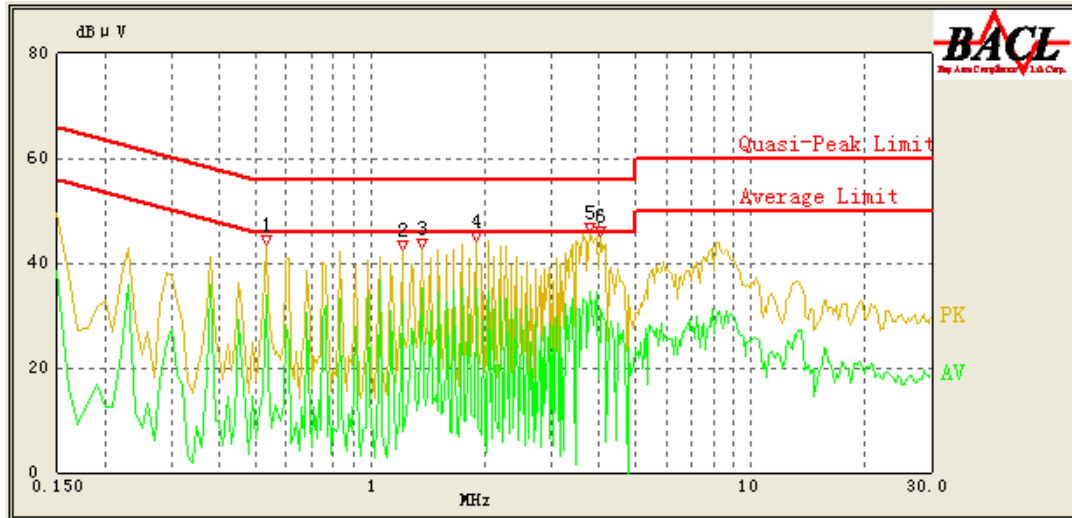
120 V, 60 Hz, Neutral:

Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.150	57.13	1.84	66.00	8.87	QP
0.150	50.50	1.84	56.00	5.50	AV
0.230	51.17	1.43	63.71	12.54	QP
0.230	42.93	1.43	53.71	10.78	AV
0.450	47.82	0.68	57.43	9.61	QP
0.450	41.30	0.68	47.43	6.13	AV
0.530	47.60	0.53	56.00	8.40	QP
0.530	39.15	0.53	46.00	6.85	AV
0.600	44.55	0.49	56.00	11.45	QP
0.600	40.72	0.49	46.00	5.28	AV
0.750	46.33	0.39	56.00	9.67	QP
0.750	43.15	0.39	46.00	2.85*	AV

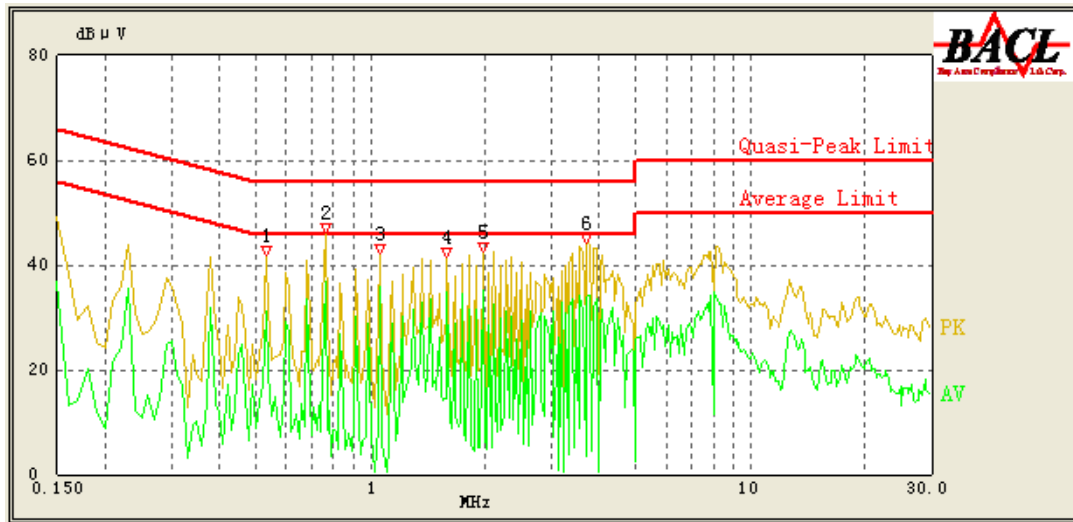
*Within measurement uncertainty!

Power Supply from adapter: ADS-10B-06 050100

120 V, 60 Hz, Line:



Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.530	42.15	0.52	56.00	13.85	QP
0.530	33.77	0.52	46.00	12.23	AV
1.210	40.27	0.33	56.00	15.73	QP
1.210	32.08	0.33	46.00	13.92	AV
1.360	39.09	0.33	56.00	16.91	QP
1.360	35.33	0.33	46.00	10.67	AV
1.890	40.14	0.35	56.00	15.86	QP
1.890	35.21	0.35	46.00	10.79	AV
3.780	34.95	0.42	56.00	21.05	QP
3.780	34.59	0.42	46.00	11.41	AV
4.010	37.73	0.43	56.00	18.27	QP
4.010	31.30	0.43	46.00	14.70	AV

120 V, 60 Hz, Neutral:

Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.530	40.97	0.53	56.00	15.03	QP
0.530	31.28	0.53	46.00	14.72	AV
0.760	43.50	0.38	56.00	12.50	QP
0.760	36.75	0.38	46.00	9.25	AV
1.060	41.57	0.23	56.00	14.43	QP
1.060	35.91	0.23	46.00	10.09	AV
1.590	39.08	0.25	56.00	16.92	QP
1.590	34.80	0.25	46.00	11.20	AV
1.970	40.72	0.27	56.00	15.28	QP
1.970	35.07	0.27	46.00	10.93	AV
3.710	40.07	0.34	56.00	15.93	QP
3.710	33.81	0.34	46.00	12.19	AV

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 2, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 2, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

30M~200MHz: 5.0 dB

200M~1GHz: 6.2 dB

1G~6GHz: 4.45 dB

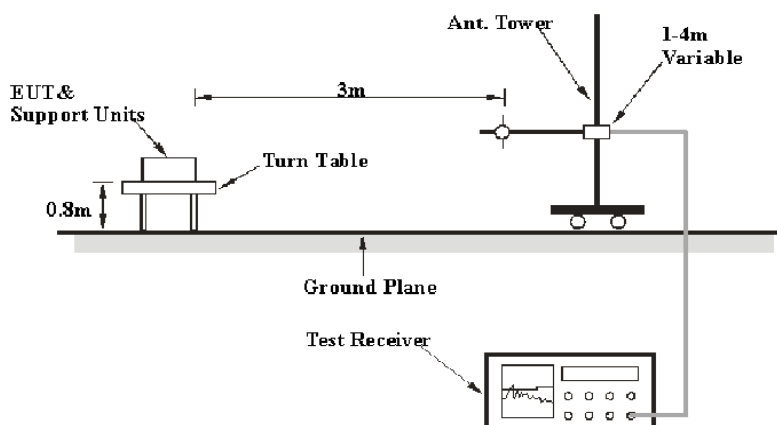
6G~18GHz: 5.23 dB

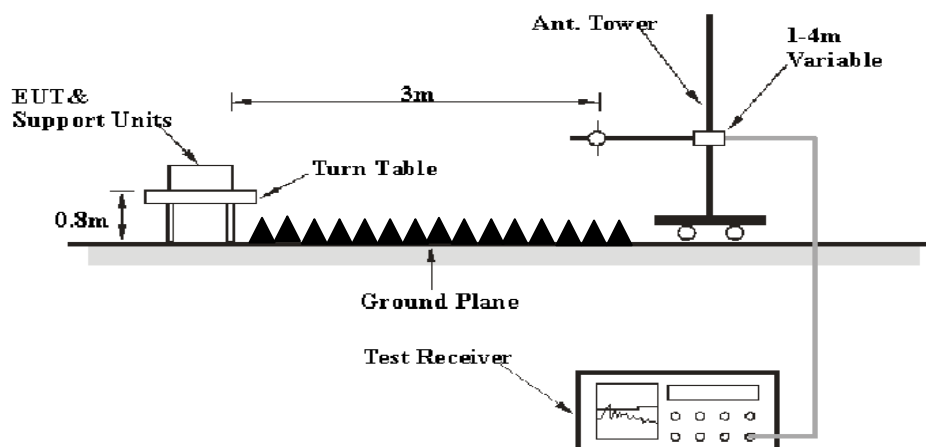
Table 2 – Values of U_{cispr}

Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

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 C63.4-2003. The specification used was the FCC 15.209, and FCC 15.247 limits.

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

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

<u>Frequency Range</u>	<u>RBW</u>	<u>Video B/W</u>	<u>Detector</u>
30 MHz – 1000 MHz	120 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 first AC floor outlet and the other support equipments were connected to the second 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 Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

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:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI TEST RECEIVER	ESCI	100224	2013-5-6	2014-5-5
Sunol Sciences	Antenna	JB3	A060611-1	2012-9-6	2015-9-5
HP	HP AMPLIFIER	8447E	2434A02181	N/A	N/A
R&S	Spectrum analyzer	FSEM 30	849016/001	2012-9-4	2013-9-3
ETS LINDGREN	horn antenna	3115	000 527 35	2012-9-6	2015-9-5
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

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:

8.49 dB at 359.42 MHz in the Horizontal polarization for 802.11n40 Mode

Test Data

Environmental Conditions

Temperature:	22.6~22.8° C
Relative Humidity:	67~68 %
ATM Pressure:	99.8~99.9kPa

The testing was performed by Ares Liu from 2013-05-12 to 2013-05-13.

Mode: Transmitting

Note: the adapter: HNC050200X was worse than ADS-10B-06 050100 recorded in the report

802.11b Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2412 MHz									
2412	67.69	PK	H	25.67	3.93	0.00	97.29	N/A	N/A
2412	63.04	AV	H	25.67	3.93	0.00	92.64	N/A	N/A
2412	68.2	PK	V	25.67	3.93	0.00	97.80	N/A	N/A
2412	63.45	AV	V	25.67	3.93	0.00	93.05	N/A	N/A
2390	28.15	PK	V	25.61	3.84	0.00	57.60	74.00	16.40
2390	14.31	AV	V	25.61	3.84	0.00	43.76	54.00	10.24
4824	36.97	PK	H	30.64	4.73	27.26	45.08	74.00	28.92
4824	31.22	AV	H	30.64	4.73	27.26	39.33	54.00	14.67
7236	33.14	PK	H	34.17	6.56	26.36	47.51	74.00	26.49
7236	20.57	AV	H	34.17	6.56	26.36	34.94	54.00	19.06
9648	33.28	PK	H	36.06	8.70	26.06	51.98	74.00	22.02
9648	19.81	AV	H	36.06	8.70	26.06	38.51	54.00	15.49
3698	34.45	PK	H	28.15	4.60	27.40	39.80	74.00	34.20
3698	20.98	AV	H	28.15	4.60	27.40	26.33	54.00	27.67
329.85	38.8	QP	H	15.58	2.31	21.67	35.02	46.00	10.98
Middle Channel: 2437 MHz									
2437	67.09	PK	H	25.74	3.98	0.00	96.81	N/A	N/A
2437	62.59	AV	H	25.74	3.98	0.00	92.31	N/A	N/A
2437	67.21	PK	V	25.74	3.98	0.00	96.93	N/A	N/A
2437	62.68	AV	V	25.74	3.98	0.00	92.40	N/A	N/A
4874	36.57	PK	H	30.77	4.76	27.26	44.84	74.00	29.16
4874	31.13	AV	H	30.77	4.76	27.26	39.40	54.00	14.60
7311	33.4	PK	H	34.35	6.70	26.51	47.94	74.00	26.06
7311	20.68	AV	H	34.35	6.70	26.51	35.22	54.00	18.78
9748	33.26	PK	H	36.30	8.60	25.68	52.48	74.00	21.52
9748	19.78	AV	H	36.30	8.60	25.68	39.00	54.00	15.00
2227	34.4	PK	H	24.45	3.45	27.09	35.21	74.00	38.79
2227	20.9	AV	H	24.45	3.45	27.09	21.71	54.00	32.29
3698	34.46	PK	H	28.15	4.60	27.40	39.81	74.00	34.19
3698	21.03	AV	H	28.15	4.60	27.40	26.38	54.00	27.62
328.7	38.6	QP	H	15.54	2.30	21.67	34.77	46.00	11.23
High Channel: 2462 MHz									
2462	66.74	PK	H	25.80	3.93	0.00	96.47	N/A	N/A
2462	62.21	AV	H	25.80	3.93	0.00	91.94	N/A	N/A
2462	66.95	PK	V	25.80	3.93	0.00	96.68	N/A	N/A
2462	62.3	AV	V	25.80	3.93	0.00	92.03	N/A	N/A
2483.5	27.21	PK	V	25.86	3.80	0.00	56.87	74.00	17.13
2483.5	13.79	AV	V	25.86	3.80	0.00	43.45	54.00	10.55
4924	36.28	PK	H	30.90	4.70	27.27	44.61	74.00	29.39
4924	31.09	AV	H	30.90	4.70	27.27	39.42	54.00	14.58
7386	33.43	PK	H	34.53	6.84	26.66	48.14	74.00	25.86
7386	20.69	AV	H	34.53	6.84	26.66	35.40	54.00	18.60
9848	33.55	PK	H	36.54	8.49	25.49	53.09	74.00	20.91
9848	19.97	AV	H	36.54	8.49	25.49	39.51	54.00	14.49
3698	34.62	PK	H	28.15	4.60	27.40	39.97	74.00	34.03
3698	21.13	AV	H	28.15	4.60	27.40	26.48	54.00	27.52
325.74	38.5	QP	H	15.83	2.38	21.73	34.98	46.00	11.02

802.11g Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2412 MHz									
2412	68.02	PK	H	25.67	3.93	0.00	97.62	N/A	N/A
2412	56.98	AV	H	25.67	3.93	0.00	86.58	N/A	N/A
2412	68.21	PK	V	25.67	3.93	0.00	97.81	N/A	N/A
2412	57.06	AV	V	25.67	3.93	0.00	86.66	N/A	N/A
2390	28.23	PK	H	25.61	3.84	0.00	57.68	74.00	16.32
2390	14.29	AV	H	25.61	3.84	0.00	43.74	54.00	10.26
4824	36.07	PK	H	30.64	4.73	27.26	44.18	74.00	29.82
4824	27.00	AV	H	30.64	4.73	27.26	35.11	54.00	18.89
7236	33.02	PK	H	34.17	6.56	26.36	47.39	74.00	26.61
7236	20.23	AV	H	34.17	6.56	26.36	34.60	54.00	19.40
9648	32.87	PK	H	36.06	8.70	26.06	51.57	74.00	22.43
9648	19.78	AV	H	36.06	8.70	26.06	38.48	54.00	15.52
3698	34.05	PK	H	28.15	4.60	27.40	39.40	74.00	34.60
3698	20.39	AV	H	28.15	4.60	27.40	25.74	54.00	28.26
325.47	38.5	QP	H	15.83	2.38	21.73	34.98	46.00	11.02
Middle Channel: 2437 MHz									
2437	67.48	PK	H	25.74	3.98	0.00	97.20	N/A	N/A
2437	56.83	AV	H	25.74	3.98	0.00	86.55	N/A	N/A
2437	67.92	PK	V	25.74	3.98	0.00	97.64	N/A	N/A
2437	56.95	AV	V	25.74	3.98	0.00	86.67	N/A	N/A
4874	36.14	PK	H	30.77	4.76	27.26	44.41	74.00	29.59
4874	27.11	AV	H	30.77	4.76	27.26	35.38	54.00	18.62
7311	32.95	PK	H	34.35	6.70	26.51	47.49	74.00	26.51
7311	20.24	AV	H	34.35	6.70	26.51	34.78	54.00	19.22
9748	32.72	PK	H	36.30	8.60	25.68	51.94	74.00	22.06
9748	19.78	AV	H	36.30	8.60	25.68	39.00	54.00	15.00
2227	34.02	PK	H	24.45	3.45	27.09	34.83	74.00	39.17
2227	20.45	AV	H	24.45	3.45	27.09	21.26	54.00	32.74
3698	33.16	PK	H	28.15	4.60	27.40	38.51	74.00	35.49
3698	20.34	AV	H	28.15	4.60	27.40	25.69	54.00	28.31
329.75	39.2	QP	H	15.58	2.31	21.67	35.42	46.00	10.58
High Channel: 2462 MHz									
2462	67.23	PK	H	25.80	3.93	0.00	96.96	N/A	N/A
2462	56.74	AV	H	25.80	3.93	0.00	86.47	N/A	N/A
2462	67.69	PK	V	25.80	3.93	0.00	97.42	N/A	N/A
2462	56.86	AV	V	25.80	3.93	0.00	86.59	N/A	N/A
2483.5	27.57	PK	V	25.86	3.80	0.00	57.23	74.00	16.77
2483.5	13.93	AV	V	25.86	3.80	0.00	43.59	54.00	10.41
4924	36.03	PK	H	30.90	4.70	27.27	44.36	74.00	29.64
4924	26.95	AV	H	30.90	4.70	27.27	35.28	54.00	18.72
7386	33.23	PK	H	34.53	6.84	26.66	47.94	74.00	26.06
7386	20.52	AV	H	34.53	6.84	26.66	35.23	54.00	18.77
9848	32.97	PK	H	36.54	8.49	25.49	52.51	74.00	21.49
9848	19.89	AV	H	36.54	8.49	25.49	39.43	54.00	14.57
3698	34.13	PK	H	28.15	4.60	27.40	39.48	74.00	34.52
3698	20.62	AV	H	28.15	4.60	27.40	25.97	54.00	28.03
325.76	40.2	QP	H	15.83	2.38	21.73	36.68	46.00	9.32

802.11 n20 Mode

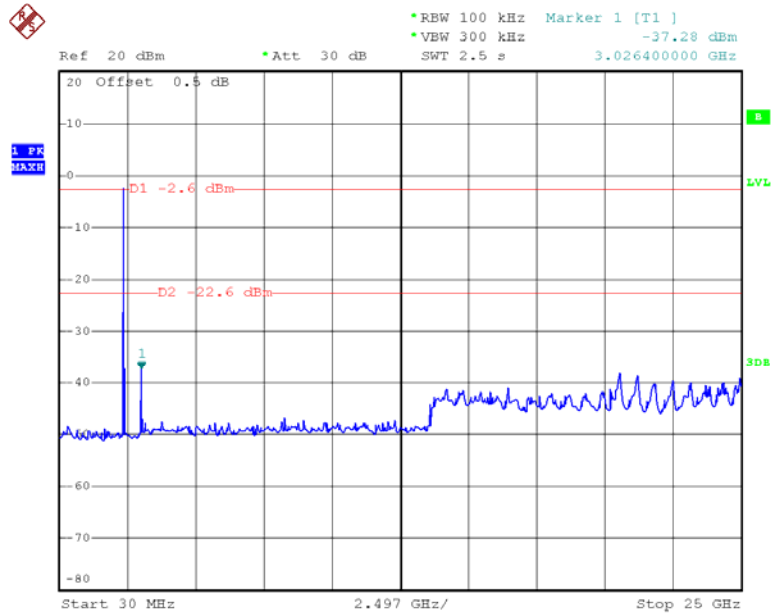
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2412 MHz									
2412	68.52	PK	H	25.67	3.93	0.00	98.12	N/A	N/A
2412	57.34	AV	H	25.67	3.93	0.00	86.94	N/A	N/A
2412	68.79	PK	V	25.67	3.93	0.00	98.39	N/A	N/A
2412	57.48	AV	V	25.67	3.93	0.00	87.08	N/A	N/A
2390	28.36	PK	V	25.61	3.84	0.00	57.81	74.00	16.19
2390	14.31	AV	V	25.61	3.84	0.00	43.76	54.00	10.24
4824	35.3	PK	H	30.64	4.73	27.26	43.41	74.00	30.59
4824	27.05	AV	H	30.64	4.73	27.26	35.16	54.00	18.84
7236	33.01	PK	H	34.17	6.56	26.36	47.38	74.00	26.62
7236	20.27	AV	H	34.17	6.56	26.36	34.64	54.00	19.36
9648	32.67	PK	H	36.06	8.70	26.06	51.37	74.00	22.63
9648	19.33	AV	H	36.06	8.70	26.06	38.03	54.00	15.97
3698	33.77	PK	H	28.15	4.60	27.40	39.12	74.00	34.88
3698	20.47	AV	H	28.15	4.60	27.40	25.82	54.00	28.18
325.86	38.7	QP	H	15.84	2.38	21.73	35.19	46.00	10.81
Middle Channel: 2437 MHz									
2437	67.33	PK	H	25.74	3.98	0.00	97.05	N/A	N/A
2437	56.37	AV	H	25.74	3.98	0.00	86.09	N/A	N/A
2437	67.56	PK	V	25.74	3.98	0.00	97.28	N/A	N/A
2437	56.42	AV	V	25.74	3.98	0.00	86.14	N/A	N/A
4874	35.63	PK	H	30.77	4.76	27.26	43.90	74.00	30.10
4874	27.12	AV	H	30.77	4.76	27.26	35.39	54.00	18.61
7311	33.02	PK	H	34.35	6.70	26.51	47.56	74.00	26.44
7311	20.33	AV	H	34.35	6.70	26.51	34.87	54.00	19.13
9748	32.59	PK	H	36.30	8.60	25.68	51.81	74.00	22.19
9748	19.38	AV	H	36.30	8.60	25.68	38.60	54.00	15.40
2227	33.81	PK	H	24.45	3.45	27.09	34.62	74.00	39.38
2227	20.38	AV	H	24.45	3.45	27.09	21.19	54.00	32.81
3698	33.67	PK	H	28.15	4.60	27.40	39.02	74.00	34.98
3698	20.42	AV	H	28.15	4.60	27.40	25.77	54.00	28.23
329.36	40.3	QP	H	15.57	2.31	21.67	36.51	46.00	9.49
High Channel: 2462 MHz									
2462	68.01	PK	H	25.80	3.93	0.00	97.74	N/A	N/A
2462	57.02	AV	H	25.80	3.93	0.00	86.75	N/A	N/A
2462	68.22	PK	V	25.80	3.93	0.00	97.95	N/A	N/A
2462	57.11	AV	V	25.80	3.93	0.00	86.84	N/A	N/A
2483.5	27.35	PK	V	25.86	3.80	0.00	57.01	74.00	16.99
2483.5	13.93	AV	V	25.86	3.80	0.00	43.59	54.00	10.41
4924	35.72	PK	H	30.90	4.70	27.27	44.05	74.00	29.95
4924	27.31	AV	H	30.90	4.70	27.27	35.64	54.00	18.36
7386	33.09	PK	H	34.53	6.84	26.66	47.80	74.00	26.20
7386	20.34	AV	H	34.53	6.84	26.66	35.05	54.00	18.95
9848	32.77	PK	H	36.54	8.49	25.49	52.31	74.00	21.69
9848	19.62	AV	H	36.54	8.49	25.49	39.16	54.00	14.84
3698	33.95	PK	H	28.15	4.60	27.40	39.30	74.00	34.70
3698	20.6	AV	H	28.15	4.60	27.40	25.95	54.00	28.05
325.42	38.6	QP	H	15.83	2.38	21.73	35.08	46.00	10.92

802.11 n40 Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2422 MHz									
2422	65.35	PK	H	25.70	3.95	0.00	95.00	N/A	N/A
2422	54.24	AV	H	25.70	3.95	0.00	83.89	N/A	N/A
2422	65.57	PK	V	25.70	3.95	0.00	95.22	N/A	N/A
2422	54.43	AV	V	25.70	3.95	0.00	84.08	N/A	N/A
2390	28.21	PK	V	25.61	3.84	0.00	57.66	74.00	16.34
2390	14.18	AV	V	25.61	3.84	0.00	43.63	54.00	10.37
4844	36.21	PK	H	30.69	4.78	27.26	44.42	74.00	29.58
4844	27.16	AV	H	30.69	4.78	27.26	35.37	54.00	18.63
7266	32.86	PK	H	34.24	6.62	26.42	47.30	74.00	26.70
7266	20.14	AV	H	34.24	6.62	26.42	34.58	54.00	19.42
9688	32.16	PK	H	36.15	8.66	25.91	51.06	74.00	22.94
9688	19.24	AV	H	36.15	8.66	25.91	38.14	54.00	15.86
3698	33.25	PK	H	28.15	4.60	27.40	38.60	74.00	35.40
3698	20.17	AV	H	28.15	4.60	27.40	25.52	54.00	28.48
329.42	41.3	QP	H	15.57	2.31	21.67	37.51	46.00	8.49
Middle Channel: 2437 MHz									
2437	65.22	PK	H	25.74	3.98	0.00	94.94	N/A	N/A
2437	54.16	AV	H	25.74	3.98	0.00	83.88	N/A	N/A
2437	65.31	PK	V	25.74	3.98	0.00	95.03	N/A	N/A
2437	54.25	AV	V	25.74	3.98	0.00	83.97	N/A	N/A
4874	35.87	PK	H	30.77	4.76	27.26	44.14	74.00	29.86
4874	27.05	AV	H	30.77	4.76	27.26	35.32	54.00	18.68
7311	32.56	PK	H	34.35	6.70	26.51	47.10	74.00	26.90
7311	20.2	AV	H	34.35	6.70	26.51	34.74	54.00	19.26
9748	32.32	PK	H	36.30	8.60	25.68	51.54	74.00	22.46
9748	19.17	AV	H	36.30	8.60	25.68	38.39	54.00	15.61
2227	33.51	PK	H	24.45	3.45	27.09	34.32	74.00	39.68
2227	20.3	AV	H	24.45	3.45	27.09	21.11	54.00	32.89
3698	33.34	PK	H	28.15	4.60	27.40	38.69	74.00	35.31
3698	20.25	AV	H	28.15	4.60	27.40	25.60	54.00	28.40
325.47	38.7	QP	H	15.83	2.38	21.73	35.18	46.00	10.82
High Channel: 2452 MHz									
2452	64.22	PK	H	25.78	4.00	0.00	93.99	N/A	N/A
2452	53.17	AV	H	25.78	4.00	0.00	82.94	N/A	N/A
2452	64.45	PK	V	25.78	4.00	0.00	94.22	N/A	N/A
2452	53.39	AV	V	25.78	4.00	0.00	83.16	N/A	N/A
2483.5	27.62	PK	V	25.86	3.80	0.00	57.28	74.00	16.72
2483.5	13.87	AV	V	25.86	3.80	0.00	43.53	54.00	10.47
4904	36.22	PK	H	30.85	4.72	27.27	44.52	74.00	29.48
4904	27.12	AV	H	30.85	4.72	27.27	35.42	54.00	18.58
7356	32.64	PK	H	34.45	6.79	26.60	47.28	74.00	26.72
7356	20.28	AV	H	34.45	6.79	26.60	34.92	54.00	19.08
9808	32.41	PK	H	36.44	8.53	25.48	51.90	74.00	22.10
9808	19.43	AV	H	36.44	8.53	25.48	38.92	54.00	15.08
3698	33.56	PK	H	28.15	4.60	27.40	38.91	74.00	35.09
3698	20.29	AV	H	28.15	4.60	27.40	25.64	54.00	28.36
329.87	39.8	QP	H	15.59	2.31	21.67	36.03	46.00	9.97

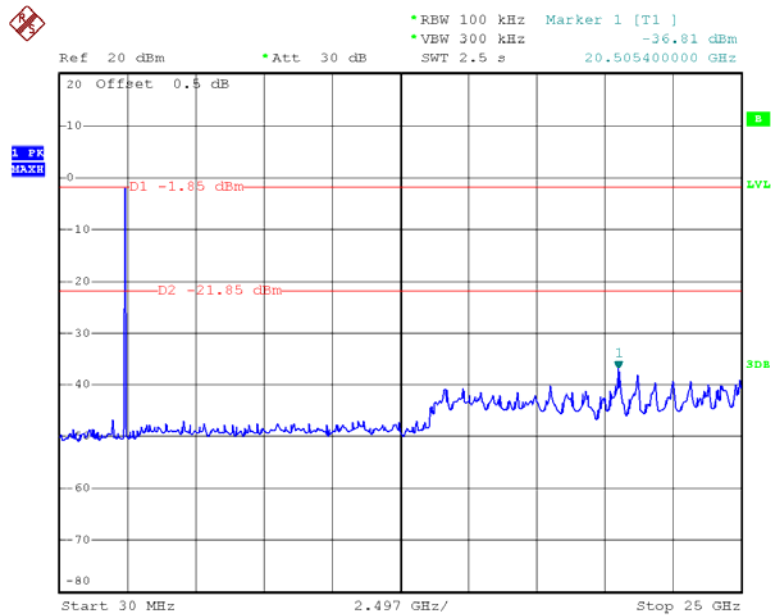
Conducted Spurious Emissions at Antenna Port

802.11b Low Channel



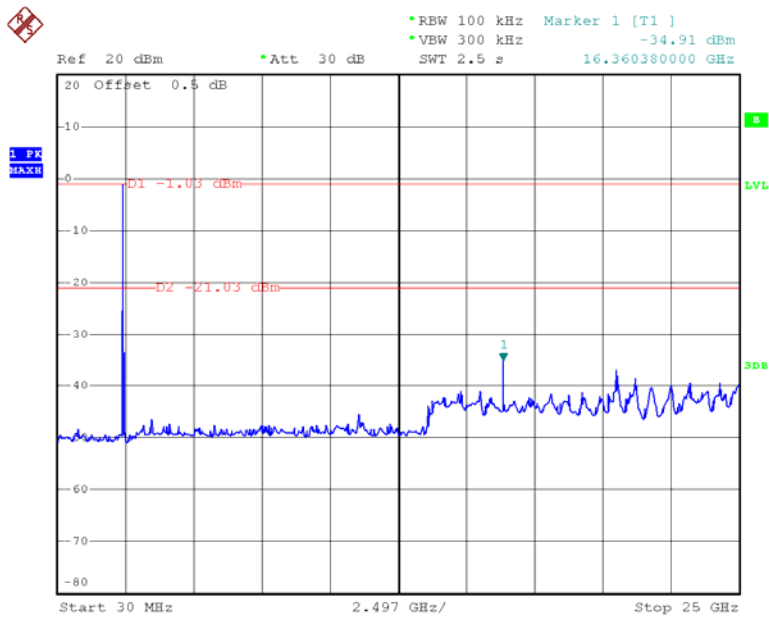
Date: 12.MAY.2013 22:43:17

802.11b Middle Channel



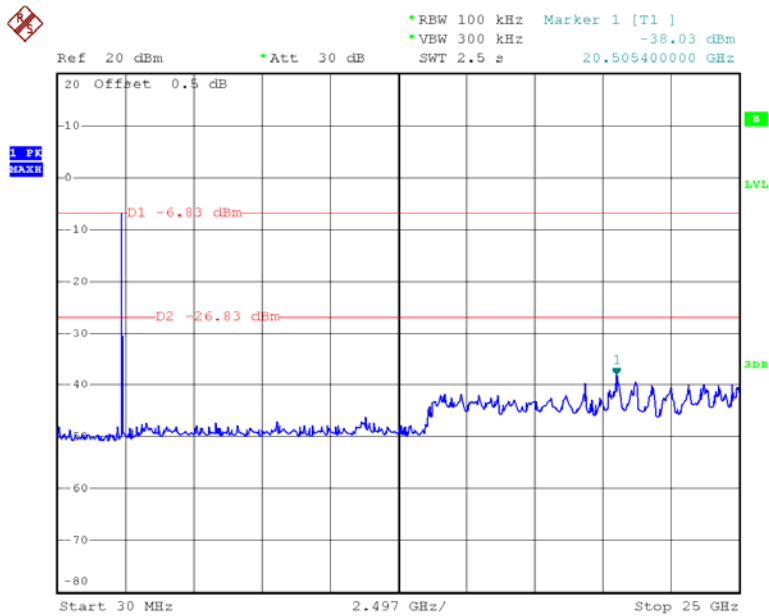
Date: 12.MAY.2013 22:54:44

802.11b High Channel



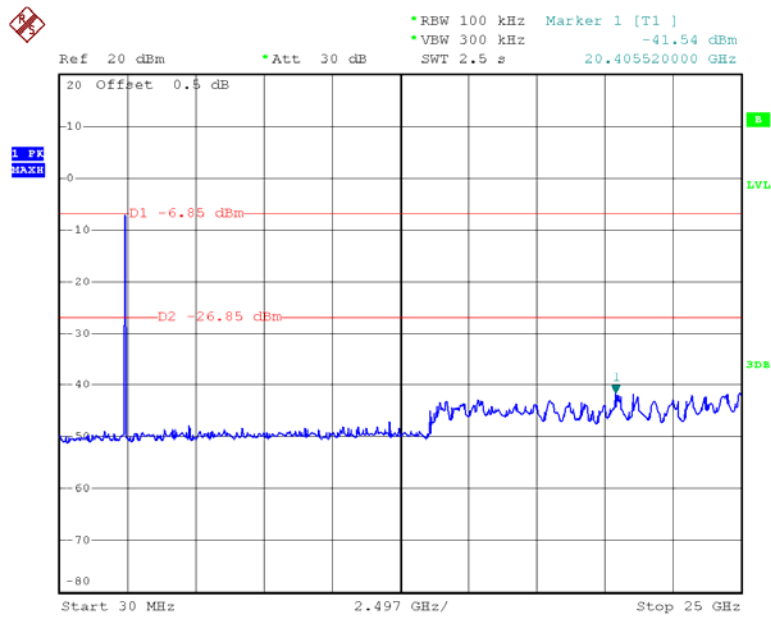
Date: 12.MAY.2013 22:59:11

802.11g Low Channel



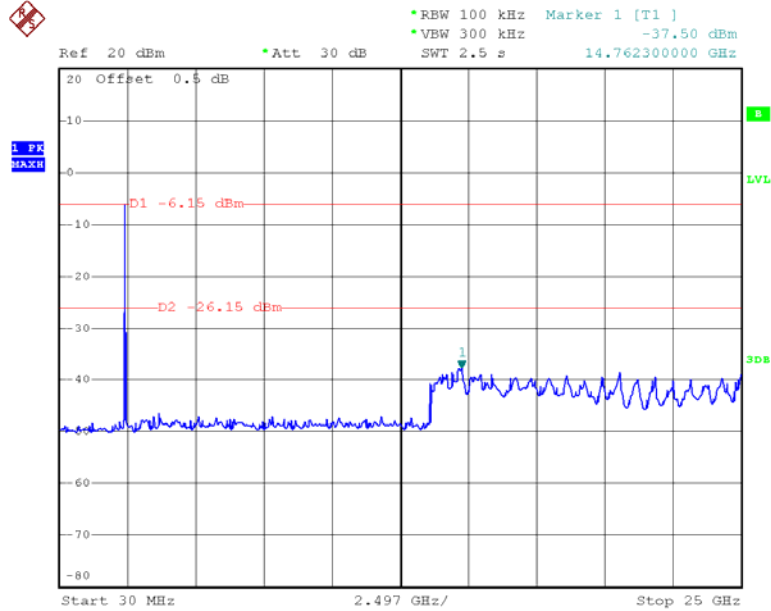
Date: 12.MAY.2013 23:14:04

802.11g Middle Channel



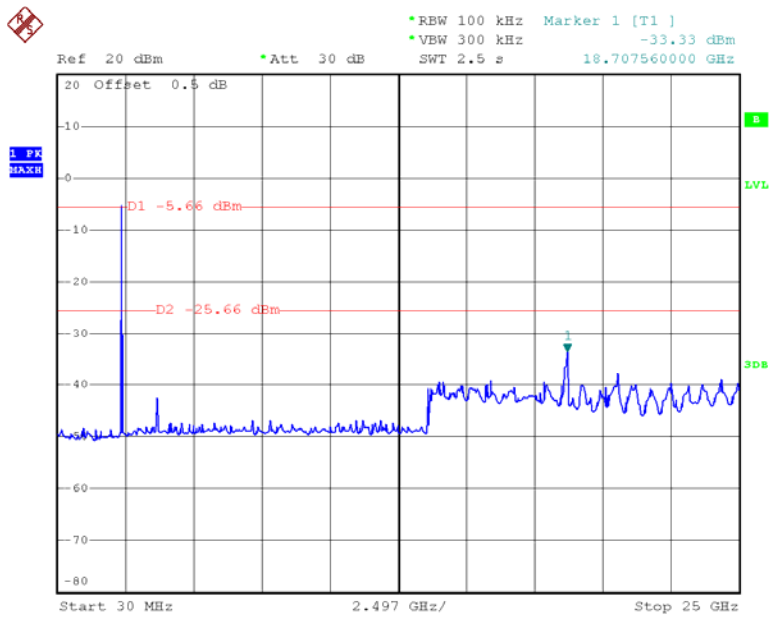
Date: 12.MAY.2013 23:24:46

802.11g High Channel



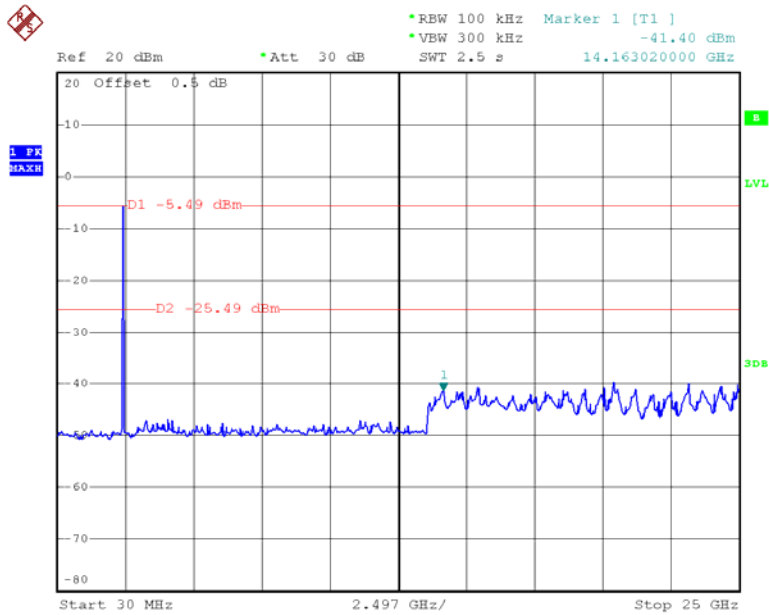
Date: 12.MAY.2013 23:27:53

802.11n20 Low Channel



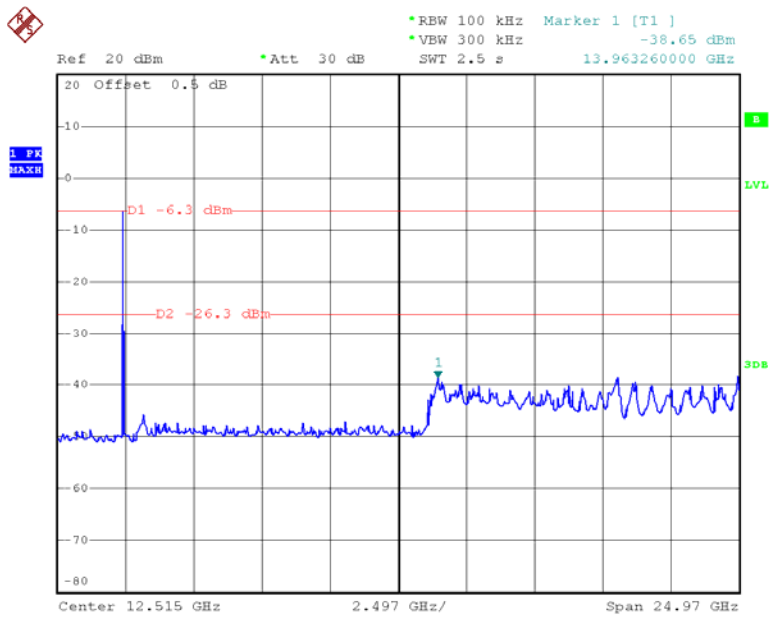
Date: 12.MAY.2013 23:37:58

802.11n20 Middle Channel



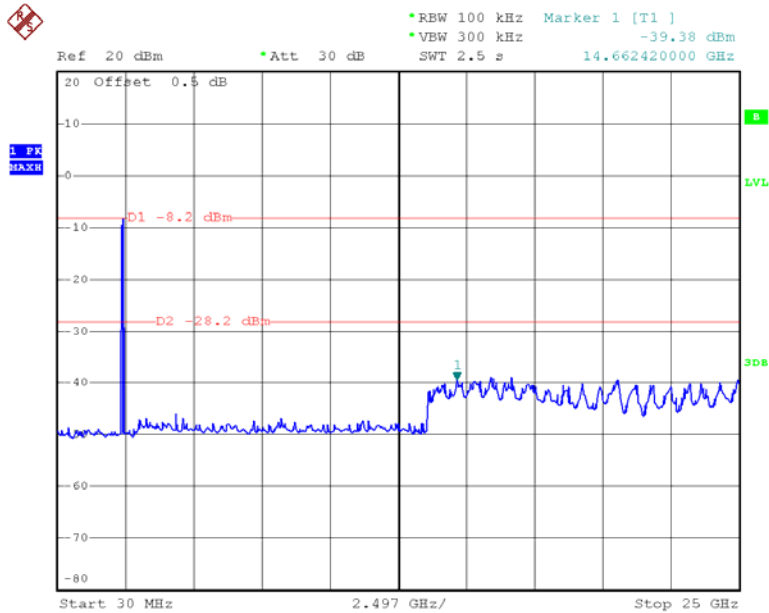
Date: 12.MAY.2013 23:43:11

802.11n20 High Channel



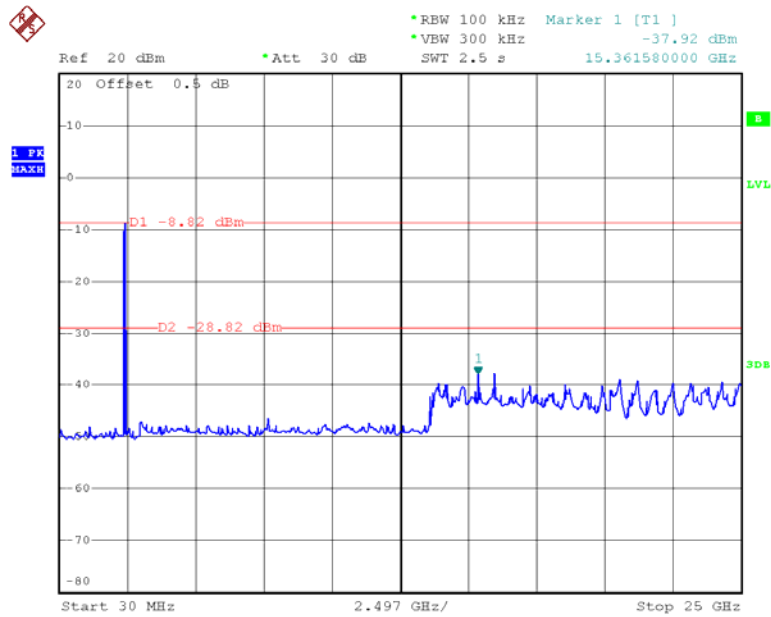
Date: 12.MAY.2013 23:44:44

802.11n40 Low Channel



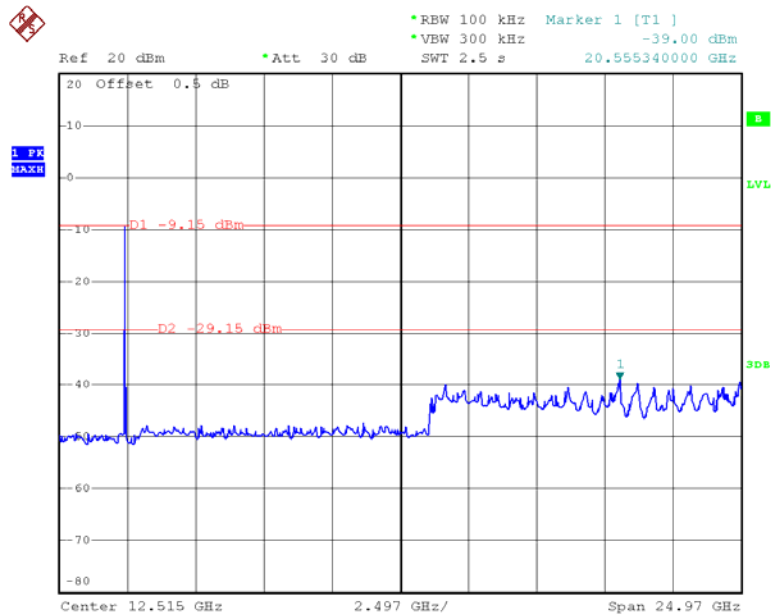
Date: 12.MAY.2013 23:55:28

802.11n40 Middle Channel



Date: 13.MAY.2013 00:01:51

802.11n40 High Channel



Date: 13.MAY.2013 00:03:33

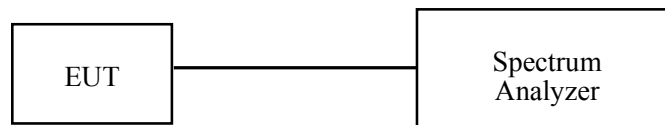
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

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
R&S	Spectrum analyzer	ESPI	100337	2012-11-10	2013-11-9

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	26.2~27.3° C
Relative Humidity:	67~68 %
ATM Pressure:	99.8~99.9kPa

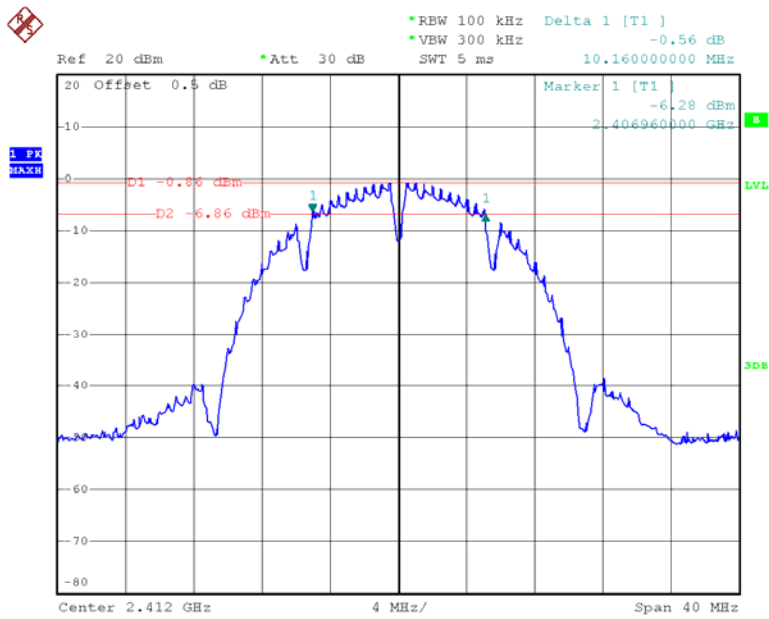
The testing was performed by Ares Liu from 2013-05-12 to 2013-05-13.

Test Result: Pass.

Please refer to the following tables and plots.

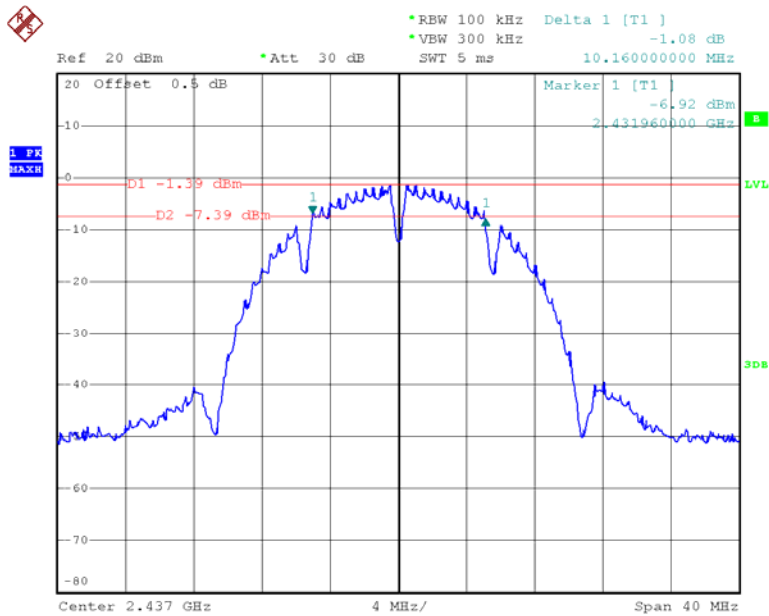
Channel	Frequency	6 dB Bandwidth	Limit
	(MHz)	(MHz)	(kHz)
802.11b mode			
Low	2412	10.16	>500
Middle	2437	10.16	>500
High	2462	10.08	>500
802.11g mode			
Low	2412	16.72	>500
Middle	2437	16.72	>500
High	2462	16.72	>500
802.11n20 mode			
Low	2412	17.92	>500
Middle	2437	17.92	>500
High	2462	17.92	>500
802.11n40 mode			
Low	2422	36.64	>500
Middle	2437	36.64	>500
High	2452	36.64	>500

802.11b Low Channel

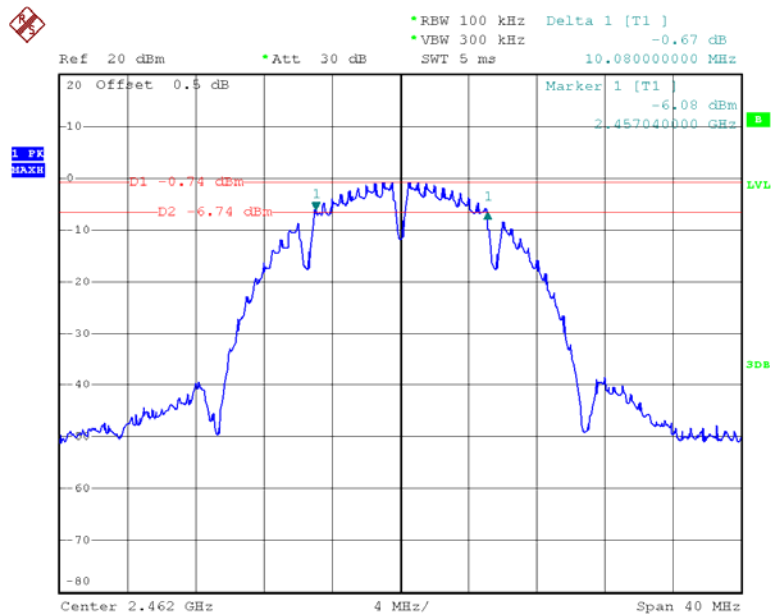


Date: 12.MAY.2013 22:33:06

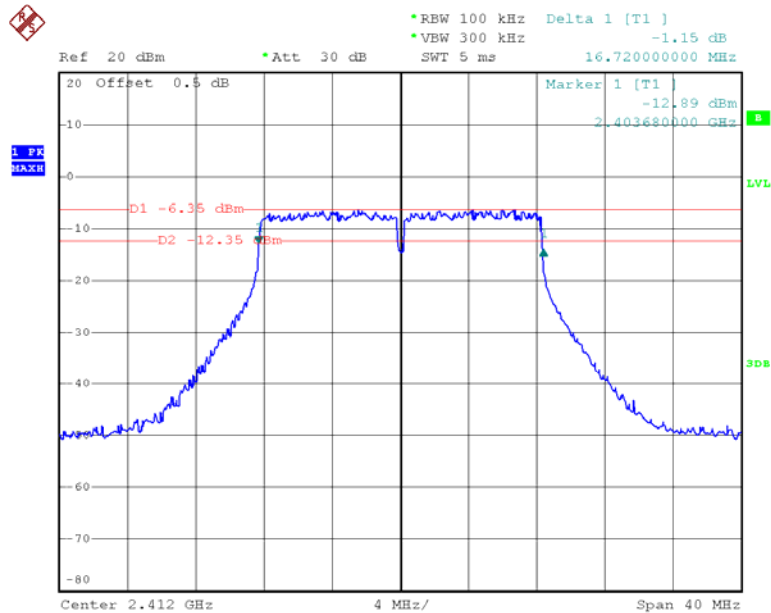
802.11b Middle Channel



Date: 12.MAY.2013 22:51:51

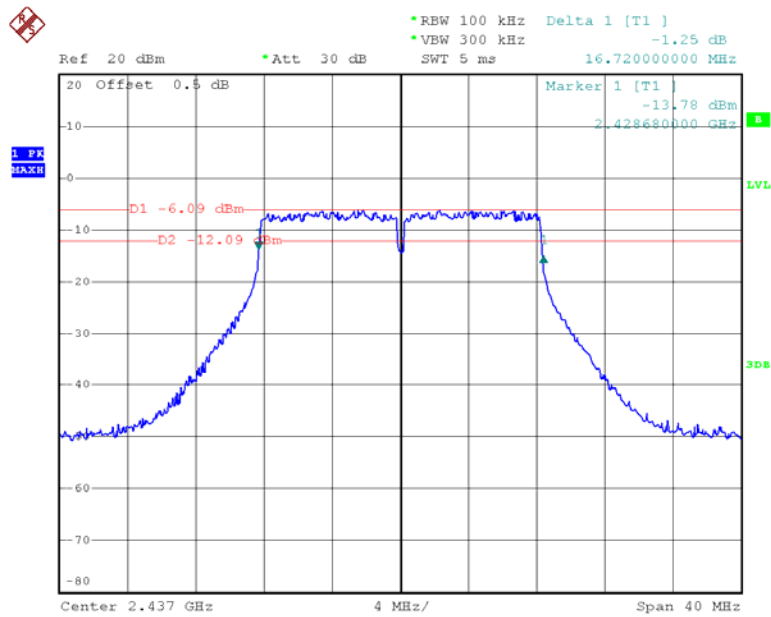
802.11b High Channel

Date: 12.MAY.2013 22:57:27

802.11g Low Channel

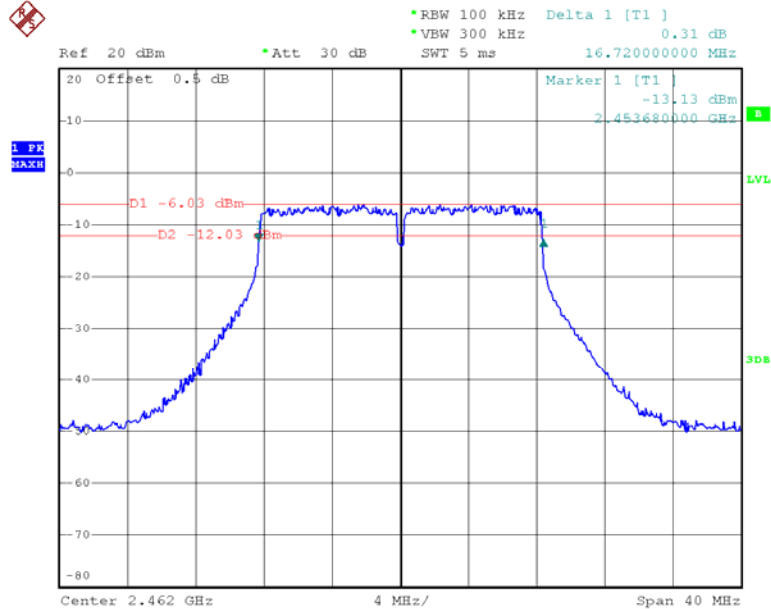
Date: 12.MAY.2013 23:12:43

802.11g Middle Channel



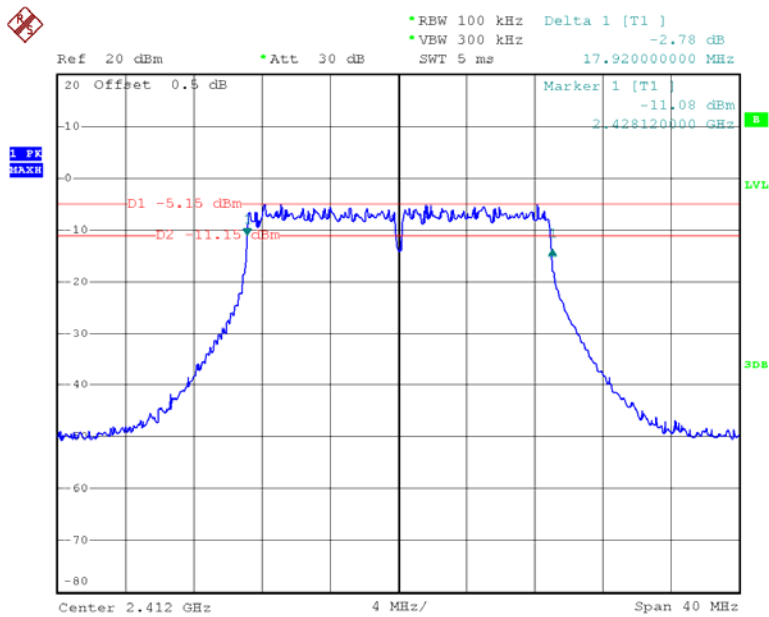
Date: 12.MAY.2013 23:21:04

802.11g High Channel



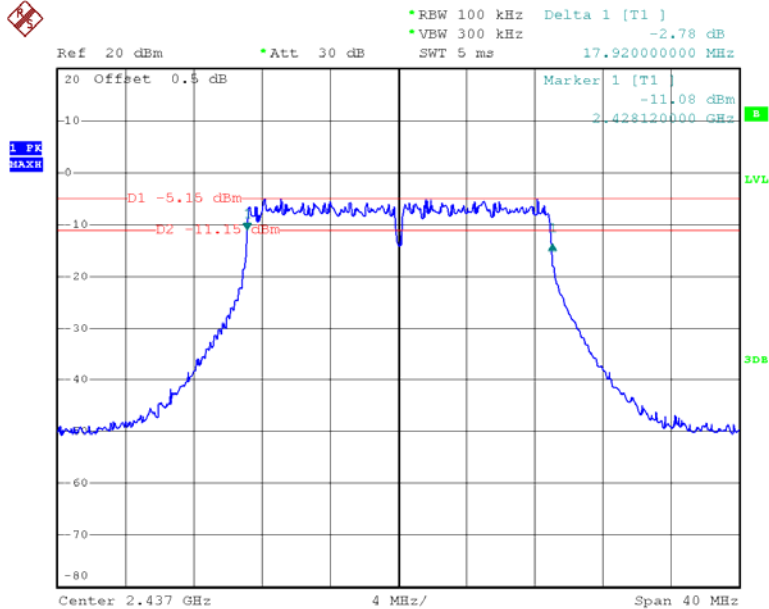
Date: 12.MAY.2013 23:29:58

802.11n20 Low Channel



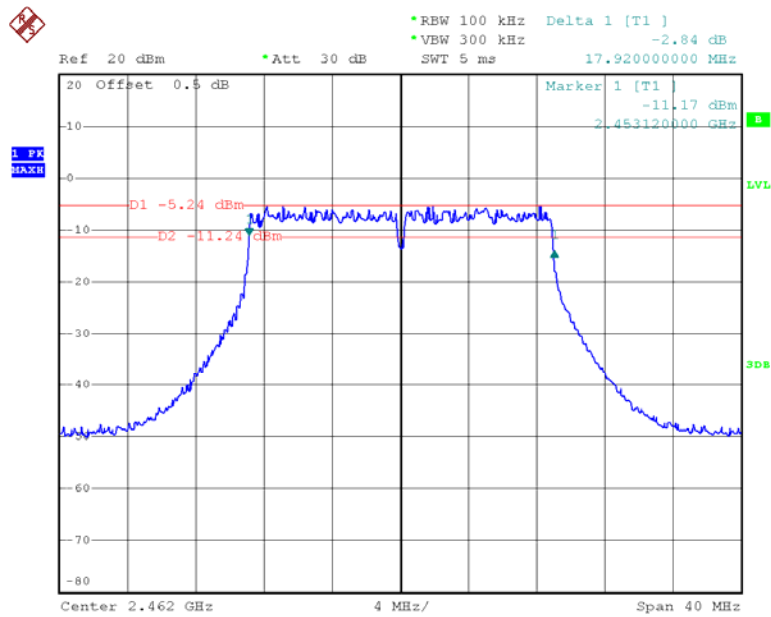
Date: 12.MAY.2013 23:43:32

802.11n20 Middle Channel



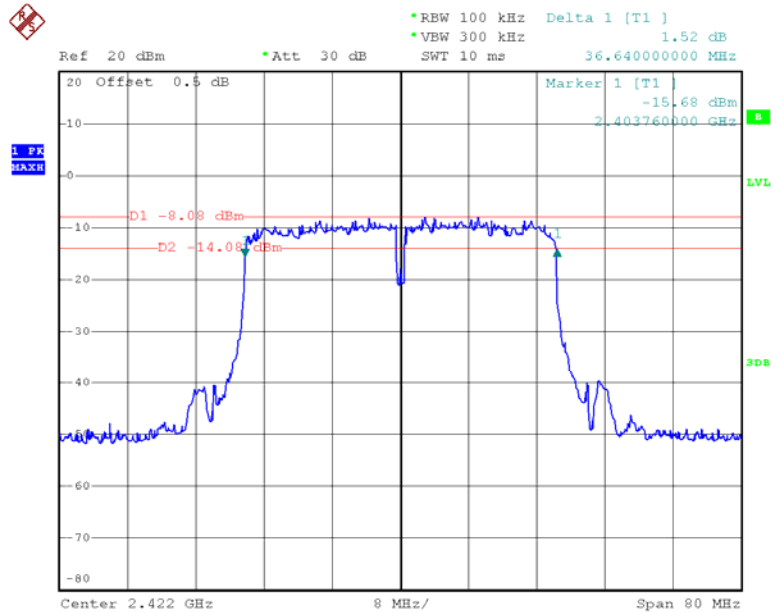
Date: 12.MAY.2013 23:41:32

802.11n20 High Channel



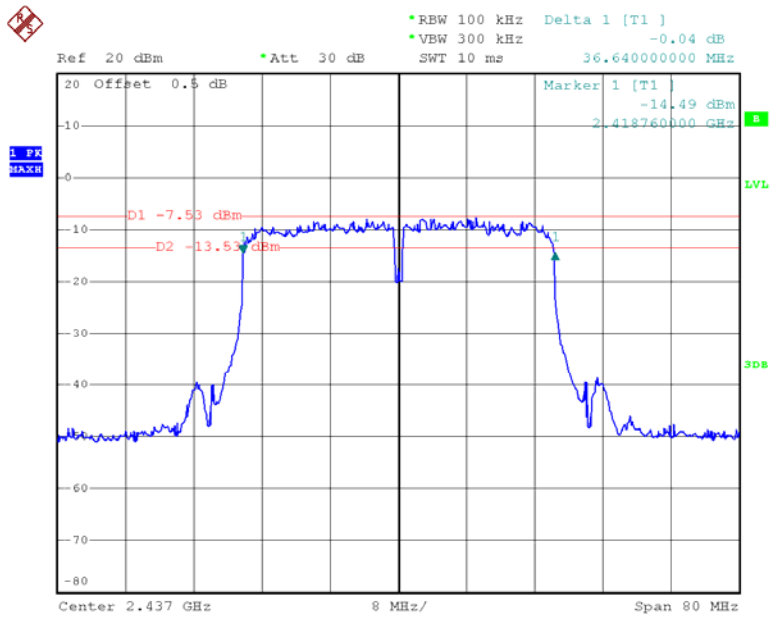
Date: 12.MAY.2013 23:47:07

802.11n40 Low Channel



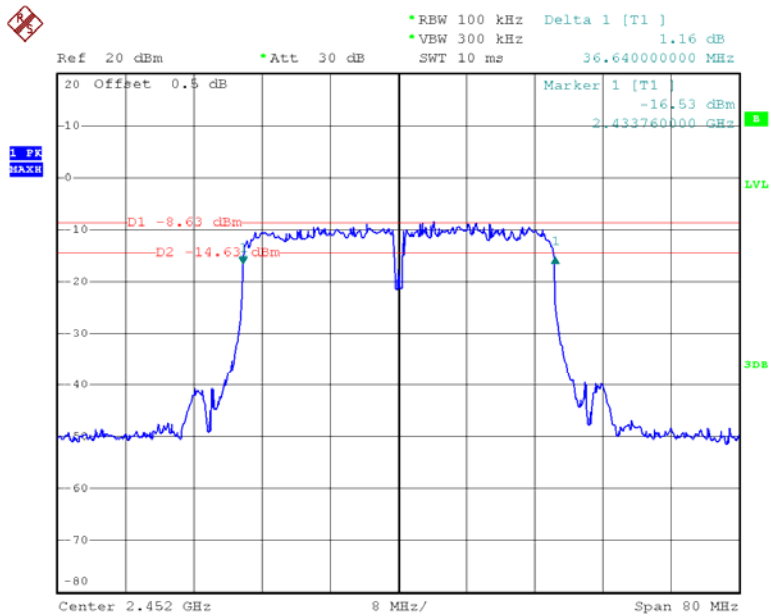
Date: 12.MAY.2013 23:53:45

802.11n40 Middle Channel



Date: 12.MAY.2013 23:59:38

802.11n40 High Channel



Date: 13.MAY.2013 00:05:34

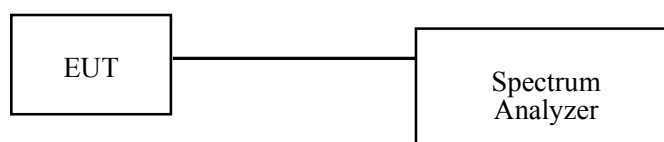
FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER

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.



4. According to KDB 558074 D01 DTS Meas Guidance v02, Section 8.2.1 Option 1:
 - 4.1 Set the analyzer span to a minimum of 1.5 times the EBW.
 - 4.2 Set the RBW = 1 MHz.
 - 4.3 Set the VBW = 3 MHz.
 - 4.4 Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span/RBW}$
 - 4.5 Sweep time = auto couple.
 - 4.6 Detector = power averaging (RMS) or sample detector when RMS not available.
 - 4.7 Employ trace averaging in power averaging (RMS) mode over a minimum of 100 traces.
 - 4.8 Use the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges.

Note: EBW means 26dB bandwidth.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	ESPI	100337	2012-11-10	2013-11-9

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	26.2~27.3° C
Relative Humidity:	67~68 %
ATM Pressure:	99.8~99.9kPa

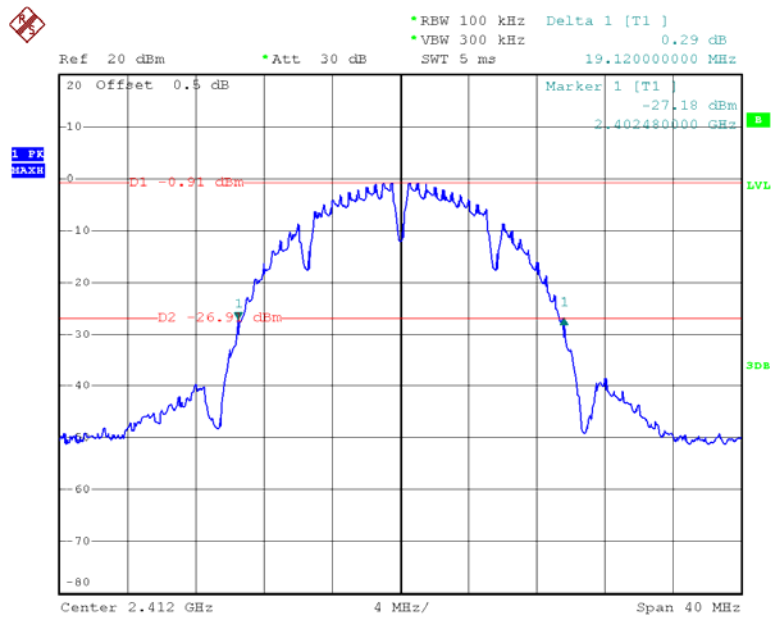
The testing was performed by Ares Liu from 2013-05-12 to 2013-05-13.

Test Mode: Transmitting

Channel	Frequency	Conducted Output Power	Limit	Result
	(MHz)	(dBm)	(dBm)	
802.11b mode				
Low	2412 MHz	9.99	30	PASS
Middle	2437 MHz	9.31	30	PASS
High	2462 MHz	9.99	30	PASS
802.11g mode				
Low	2412 MHz	9.79	30	PASS
Middle	2437 MHz	9.77	30	PASS
High	2462 MHz	9.86	30	PASS
802.11n20 mode				
Low	2412 MHz	9.21	30	PASS
Middle	2437 MHz	9.13	30	PASS
High	2462 MHz	9.19	30	PASS
802.11n40 mode				
Low	2422 MHz	9.21	30	PASS
Middle	2437 MHz	9.44	30	PASS
High	2452 MHz	9.17	30	PASS

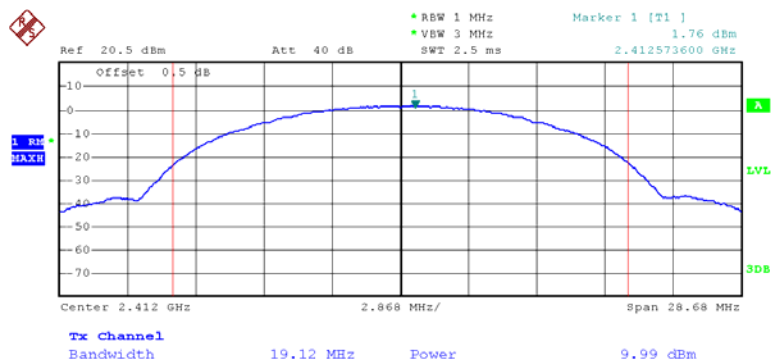
Please refer to the following plots

802.11b 26dB Bandwidth, Low Channel



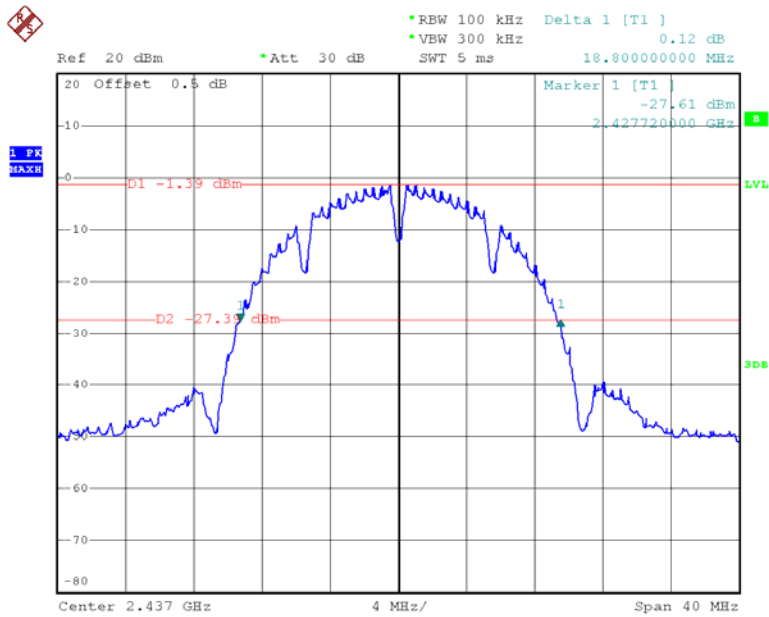
Date: 12.MAY.2013 22:34:58

802.11b RF Output Power, Low Channel



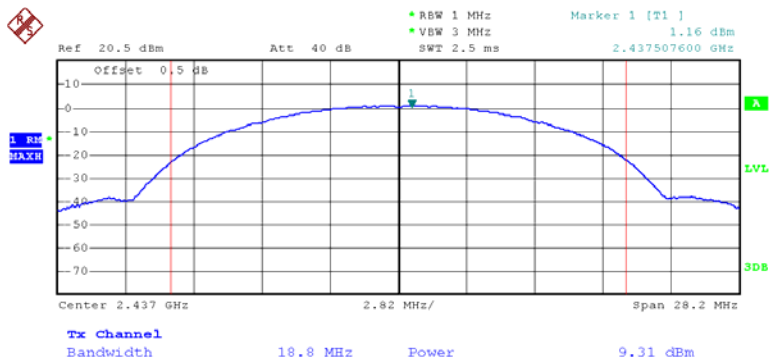
Date: 12.MAY.2013 22:37:42

802.11b 26dB Bandwidth, Middle Channel

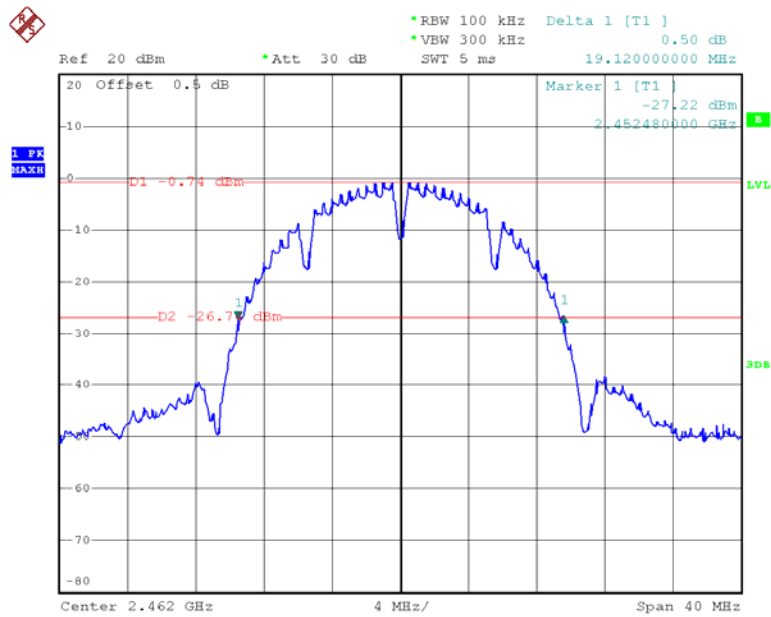


Date: 12.MAY.2013 22:52:36

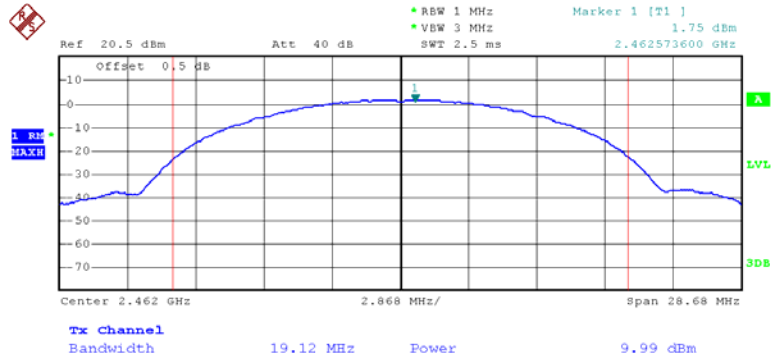
802.11b RF Output Power, Middle Channel



Date: 12.MAY.2013 22:53:27

802.11b 26dB Bandwidth, High Channel

Date: 12.MAY.2013 22:57:49

802.11b RF Output Power, High Channel

Date: 12.MAY.2013 22:58:24

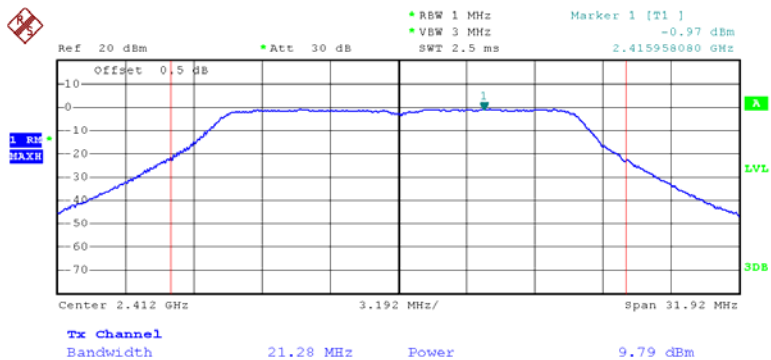
Ref 20 dBm Att 30 dB RBW 100 kHz Delta 1 [T1] -0.54 dB
 VBW 300 kHz SWT 5 ms 21.28000000 MHz

20 Offset 0.5 dB Marker 1 [T1]
 -31.36 dBm
 2.401280000 GHz

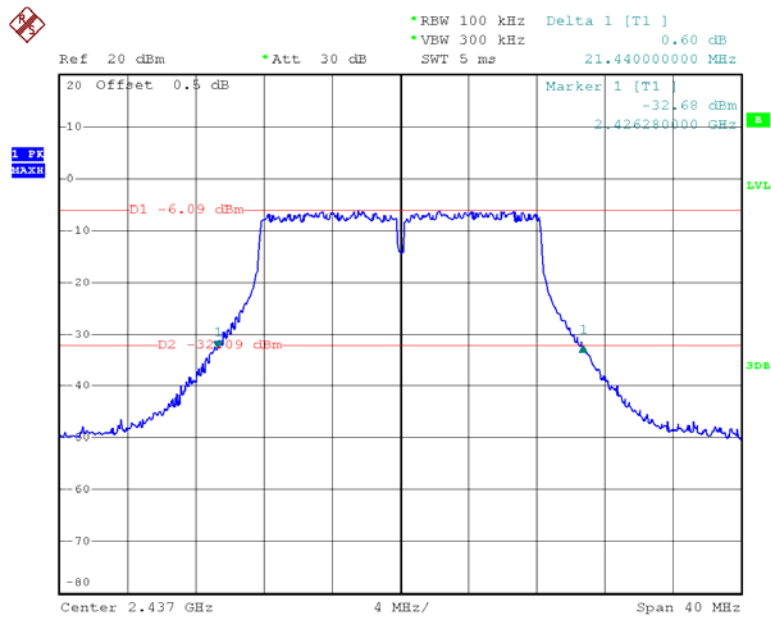
D1 -5.02 dBm
 D2 -31.36 dBm

Center 2.412 GHz 4 MHz/ Span 40 MHz

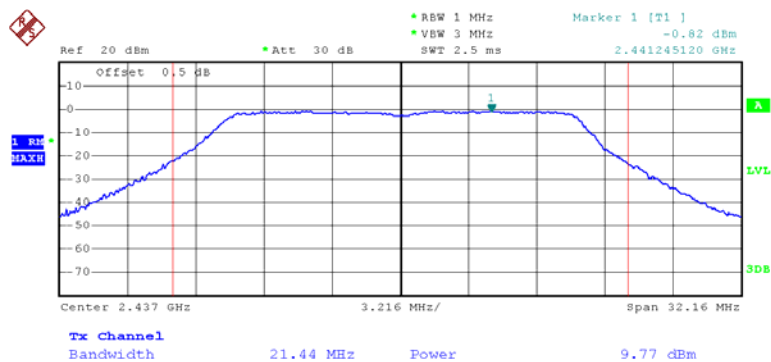
802.11g RF Output Power, Low Channel



Page 44 of 65

802.11g 26dB Bandwidth, Middle Channel

Date: 12.MAY.2013 23:21:33

802.11g RF Output Power, Middle Channel

Date: 12.MAY.2013 23:22:09

Ref 20 dBm • Att 30 dB • RBW 100 kHz Delta 1 [T1] 0.71 dB
SWT 5 ms 21.440000000 MHz

20 Offset 0.5 dB Marker 1 [T1] -33.13 dBm
2.451280000 GHz

1. PK
SEARCH

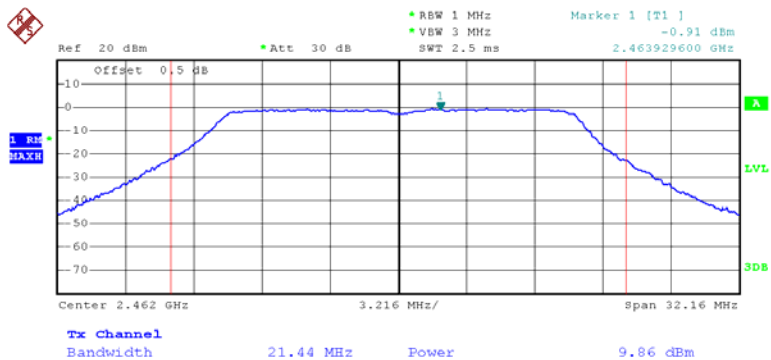
D1 -6.07 dBm
D2 -32.07 dBm

1

LVL
3dB

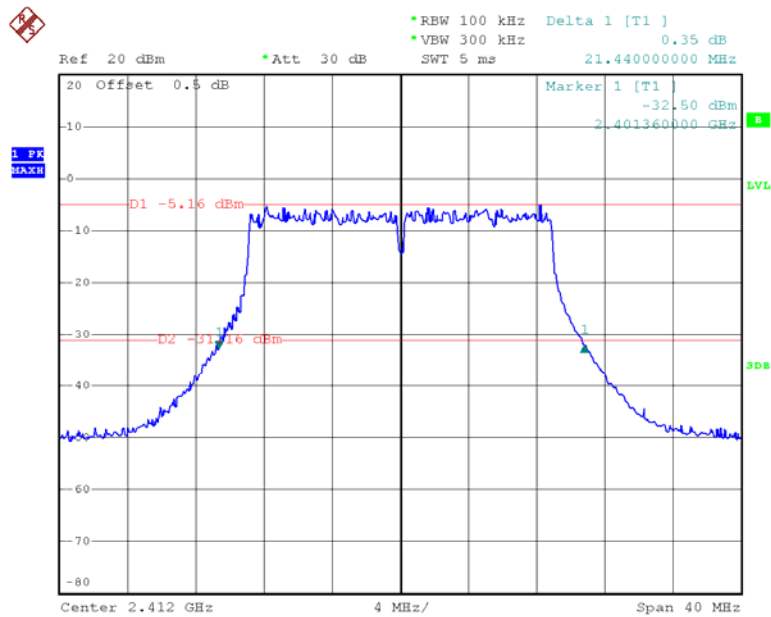
Center 2.462 GHz 4 MHz/ Span 40 MHz

802.11g RF Output Power, High Channel



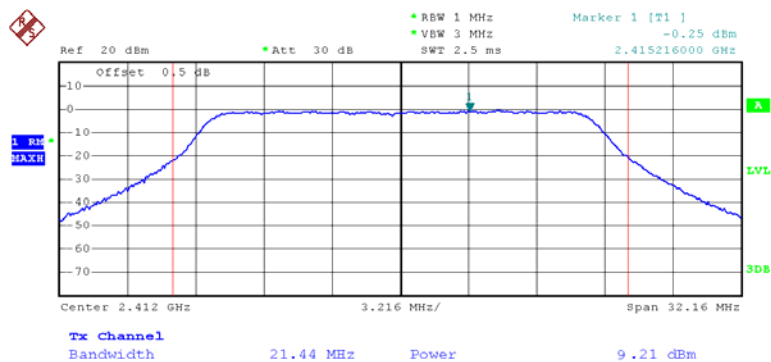
Page 46 of 65

802.11n20 26dB Bandwidth, Low Channel



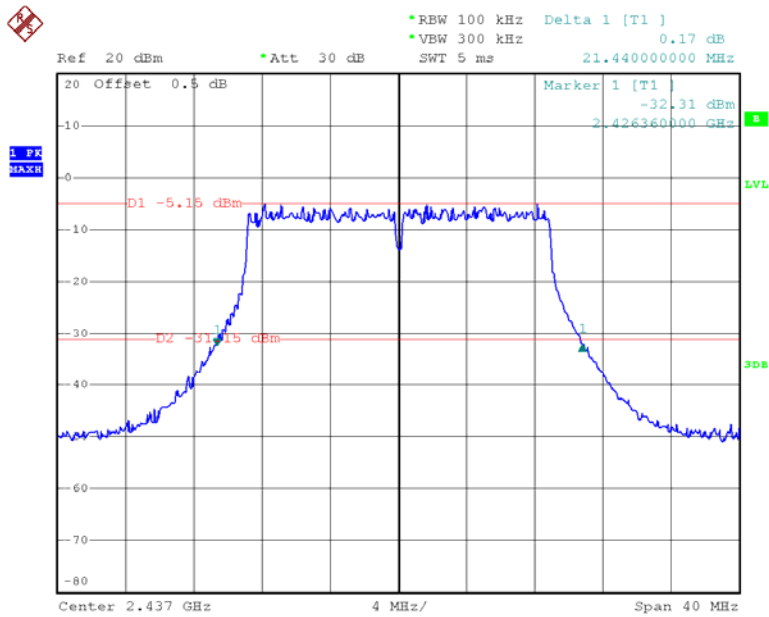
Date: 12.MAY.2013 23:34:35

802.11n20 RF Output Power, Low Channel



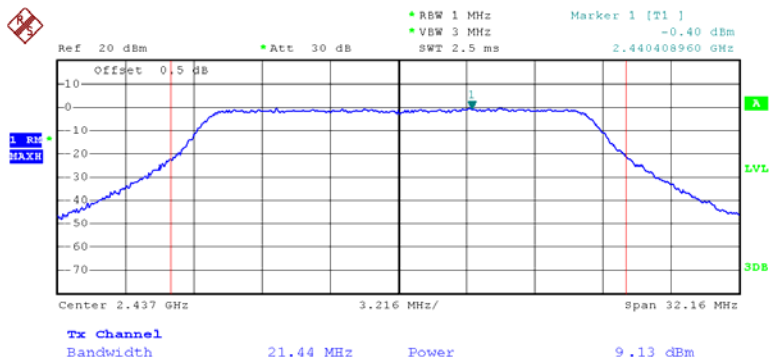
Date: 12.MAY.2013 23:35:20

802.11n20 26dB Bandwidth, Middle Channel



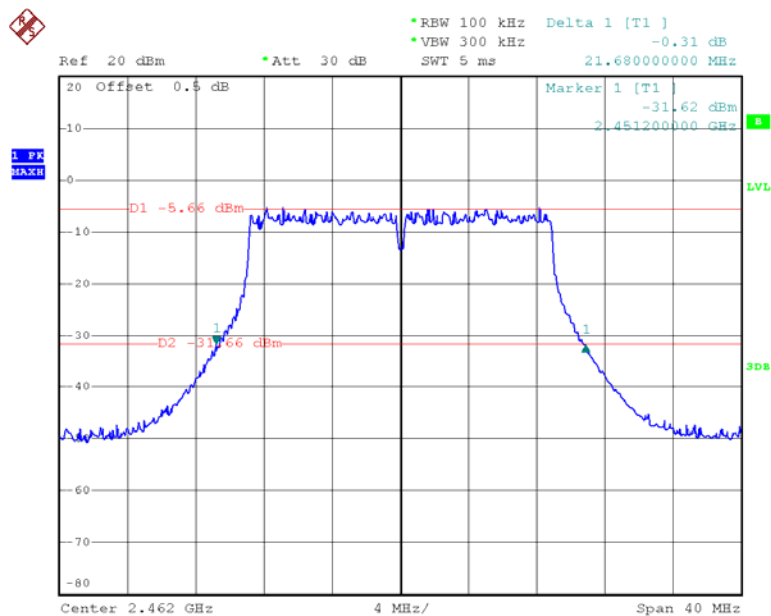
Date: 12.MAY.2013 23:41:01

802.11n20 RF Output Power, Middle Channel



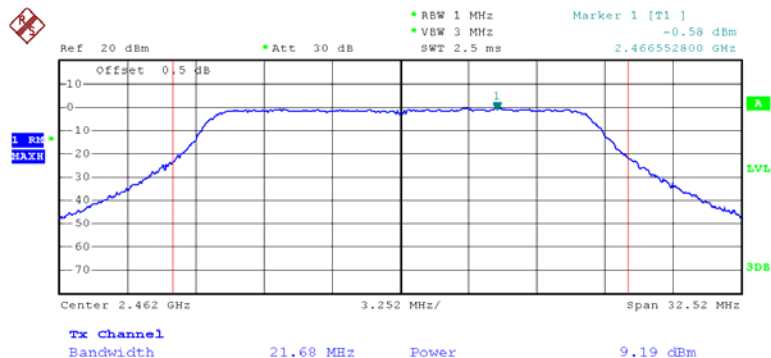
Date: 12.MAY.2013 23:41:08

802.11n20 26dB Bandwidth, High Channel

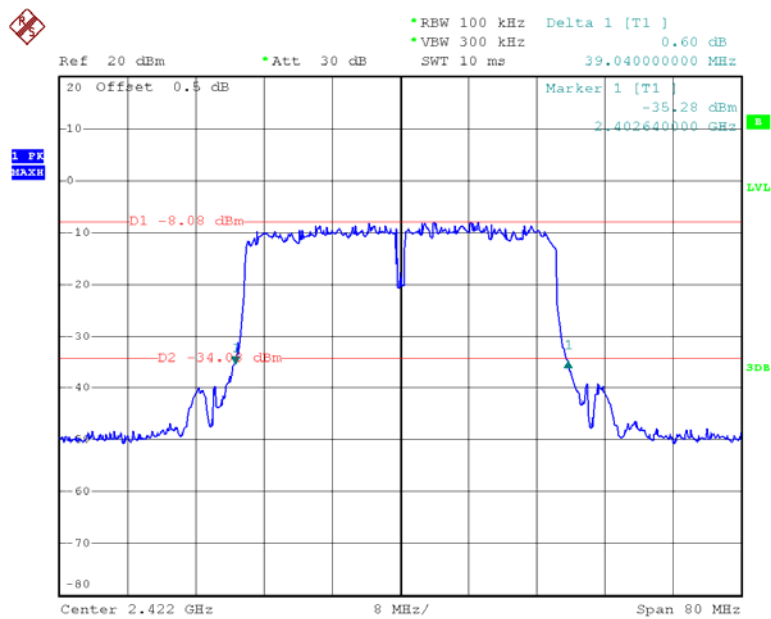


Date: 12.MAY.2013 23:45:32

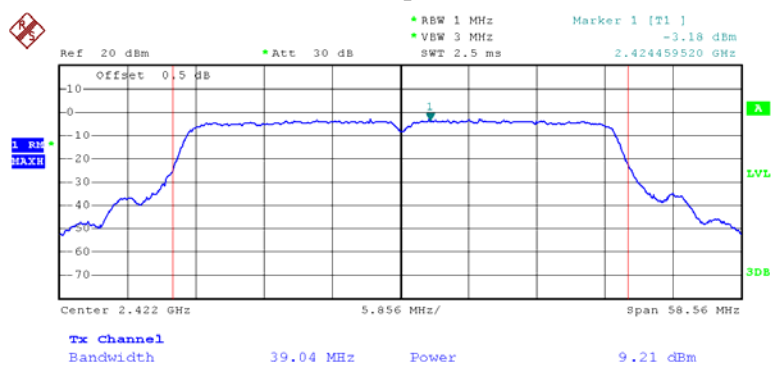
802.11n20 RF Output Power, High Channel



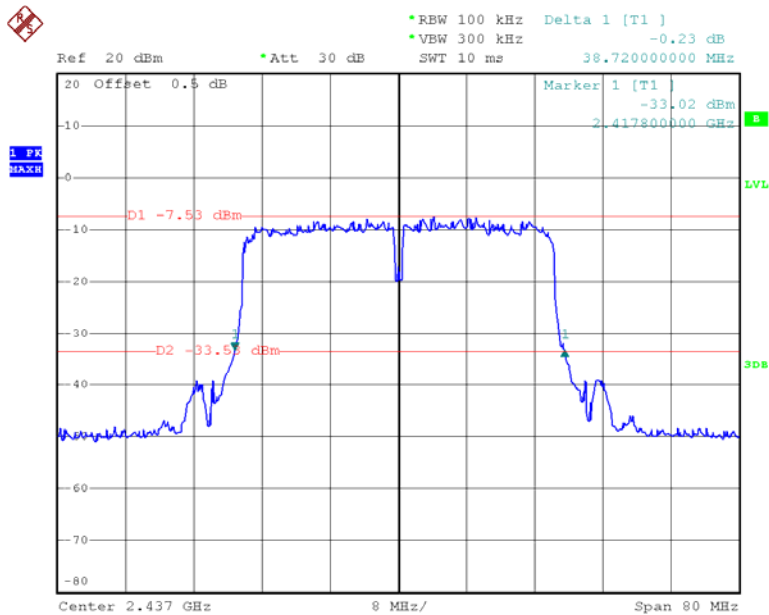
Date: 12.MAY.2013 23:46:04

802.11n40 26dB Bandwidth, Low Channel

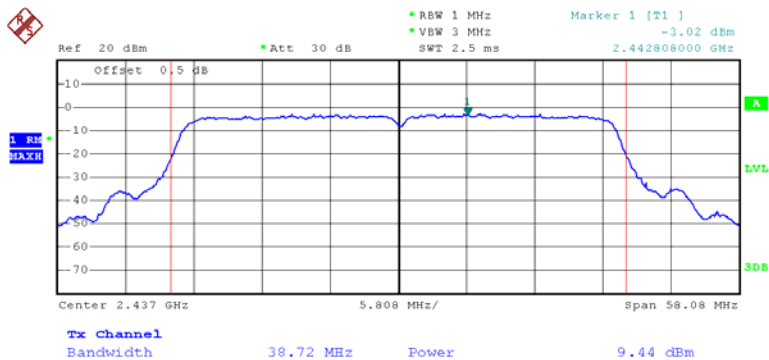
Date: 12.MAY.2013 23:52:14

802.11n40 RF Output Power, Low Channel

Date: 12.MAY.2013 23:52:41

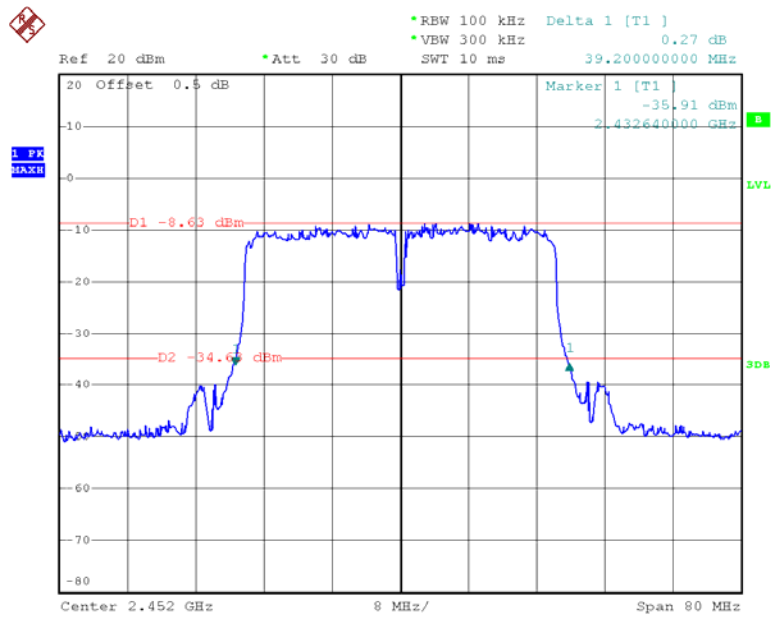
802.11n40 26dB Bandwidth, Middle Channel

Date: 12.MAY.2013 23:58:35

802.11n40 RF Output Power, Middle Channel

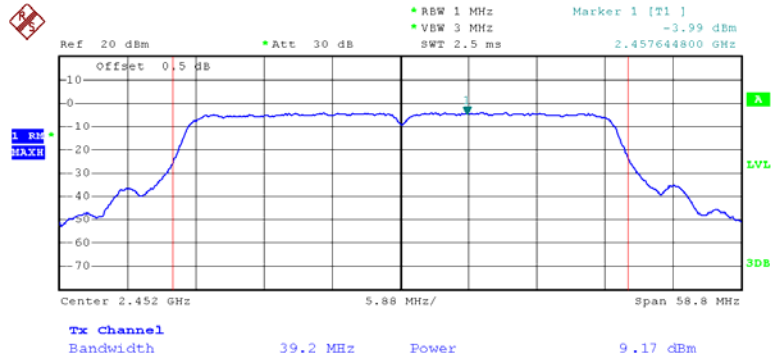
Date: 12.MAY.2013 23:59:02

802.11n40 26dB Bandwidth, High Channel



Date: 13.MAY.2013 00:04:29

802.11n40 RF Output Power, High Channel



Date: 13.MAY.2013 00:05:07

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
R&S	Spectrum analyzer	ESPI	100337	2012-11-10	2013-11-9

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

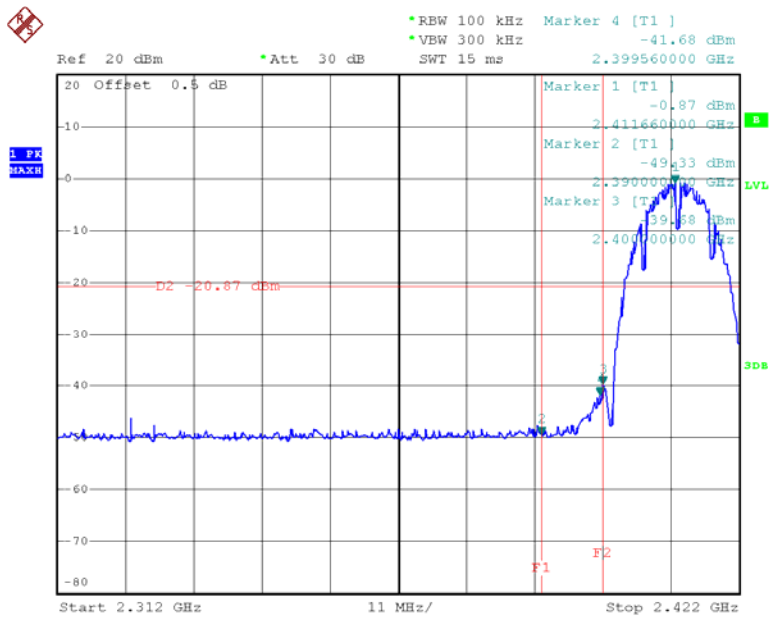
Temperature:	26.2° C
Relative Humidity:	68 %
ATM Pressure:	99.8kPa

The testing was performed by Ares Liu on 2013-05-12.

Test Result: Compliance

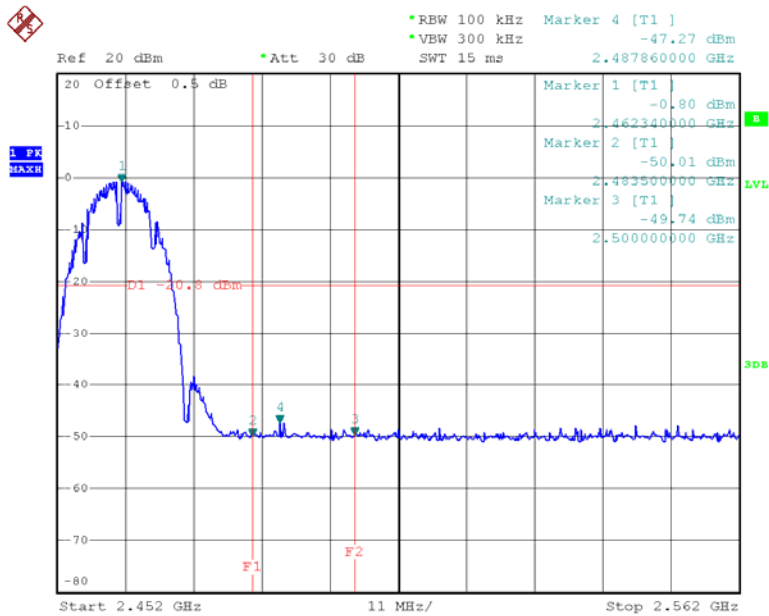
Please refer to following table and plots.

802.11b: Band Edge, Left Side



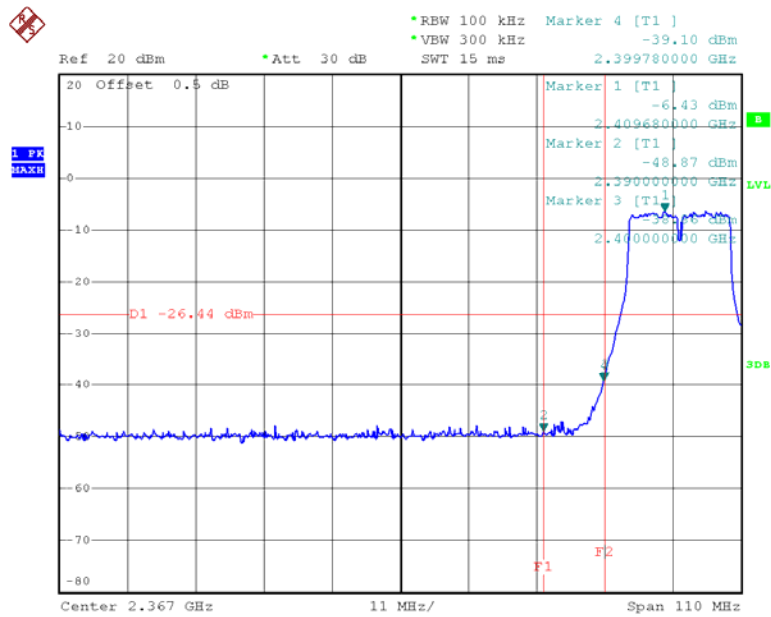
Date: 12.MAY.2013 22:41:16

802.11b: Band Edge, Right Side



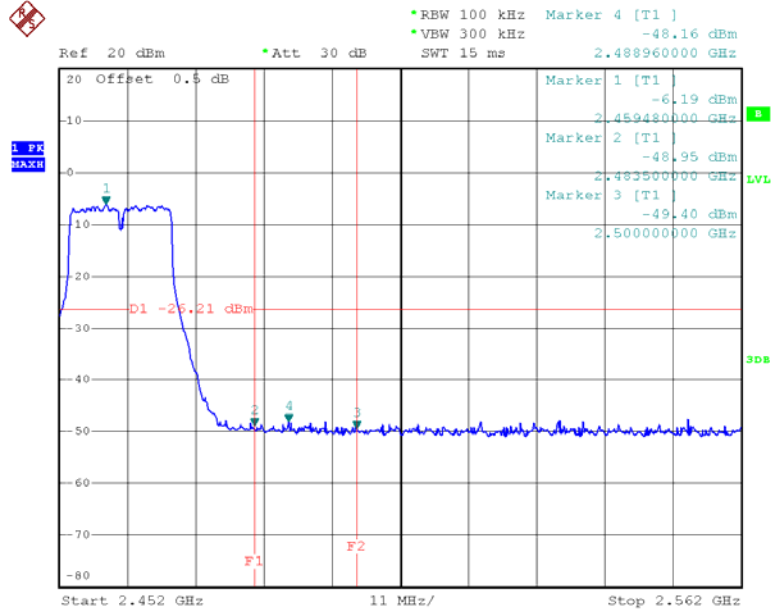
Date: 12.MAY.2013 23:00:45

802.11g: Band Edge, Left Side



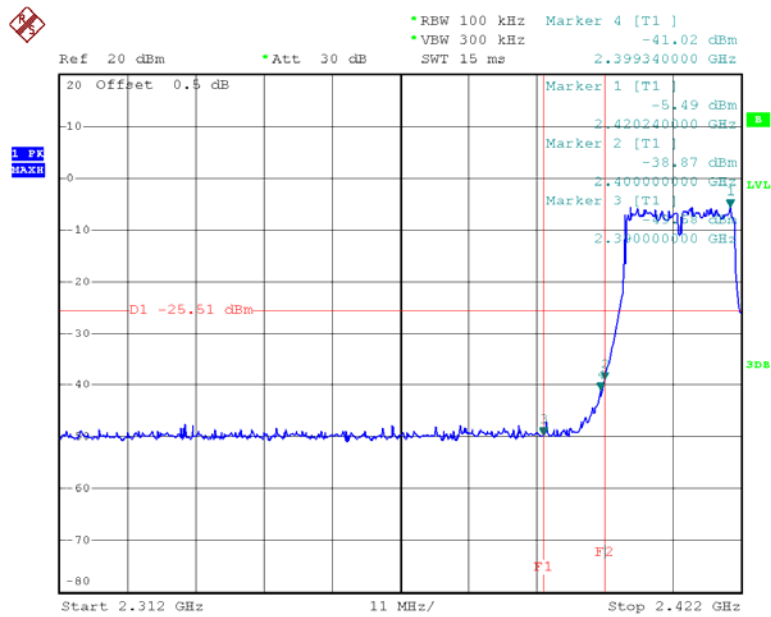
Date: 12.MAY.2013 23:16:31

802.11g: Band Edge, Right Side



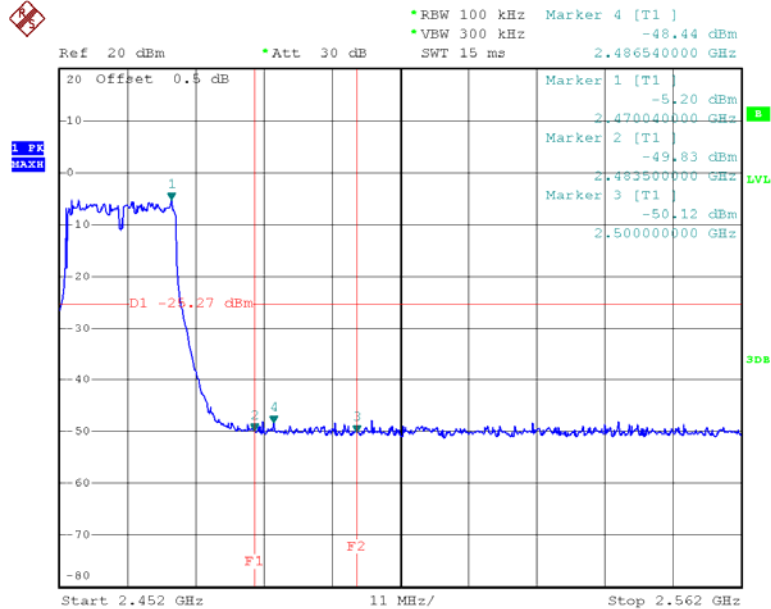
Date: 12.MAY.2013 23:28:57

802.11n20 Band Edge, Left Side



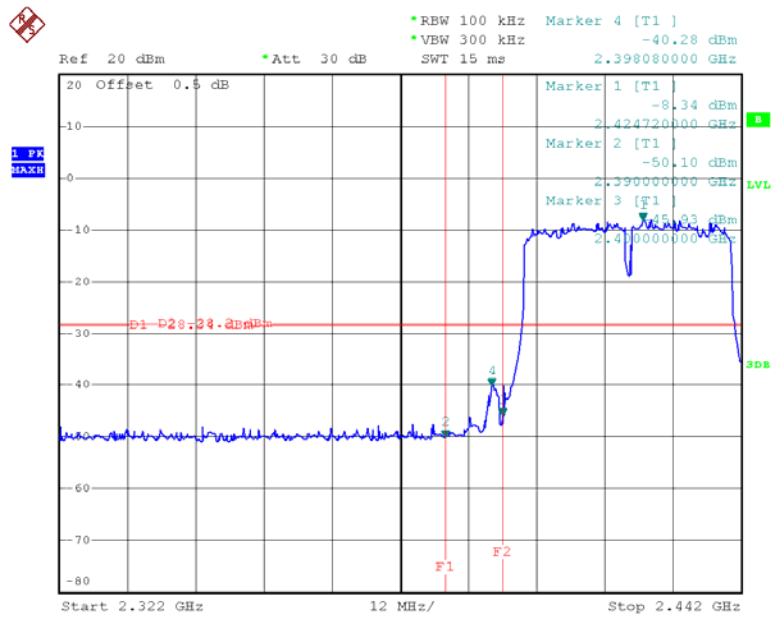
Date: 12.MAY.2013 23:39:31

802.11n20 Band Edge, Right Side



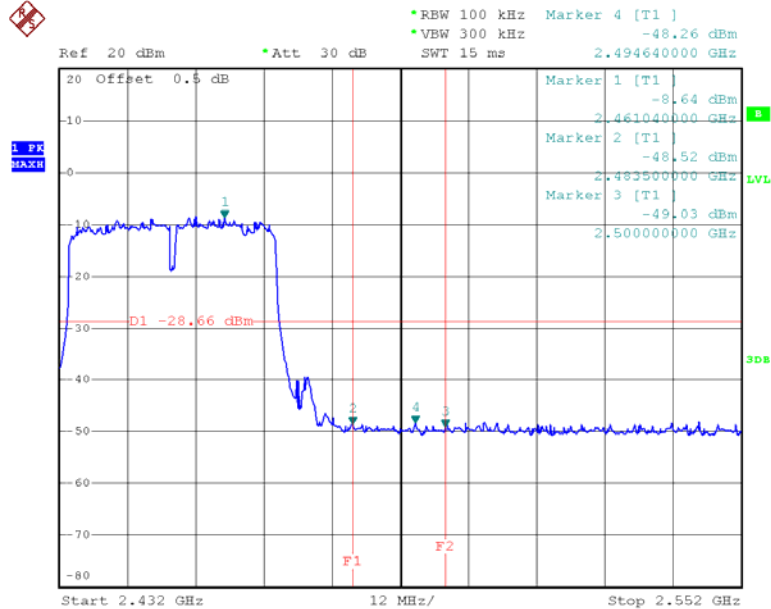
Date: 12.MAY.2013 23:48:27

802.11n40 Band Edge, Left Side



Date: 12.MAY.2013 23:56:26

802.11n40 Band Edge, Right Side



Date: 13.MAY.2013 00:07:12

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 v02, set the RBW = 3 kHz, VBW = 30 kHz, Set the span to 1.5 times the DTS channel bandwidth.
4. Use the peak marker function to determine the maximum power level in any 3 kHz band segment within the fundamental EBW.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	ESPI	100337	2012-11-10	2013-11-9

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	26.2~27.3° C
Relative Humidity:	67~68 %
ATM Pressure:	99.8~99.9kPa

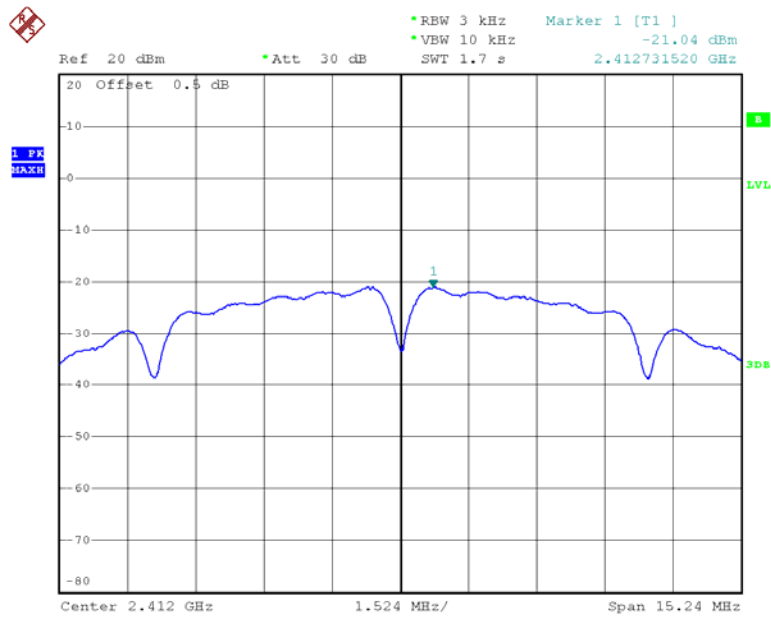
The testing was performed by Ares Liu from 2013-05-12 to 2013-05-13.

*Test Mode: Transmitting***Test Result:** Pass

Channel	PSD	Limit	Result
	(dBm/3kHz)	(dBm/3kHz)	
802.11b mode			
Low	-21.04	8	PASS
Middle	-21.59	8	PASS
High	-20.80	8	PASS
802.11g mode			
Low	-21.13	8	PASS
Middle	-20.50	8	PASS
High	-20.46	8	PASS
802.11n20 mode			
Low	-18.17	8	PASS
Middle	-18.00	8	PASS
High	-18.06	8	PASS
802.11n40 mode			
Low	-20.96	8	PASS
Middle	-20.56	8	PASS
High	-21.65	8	PASS

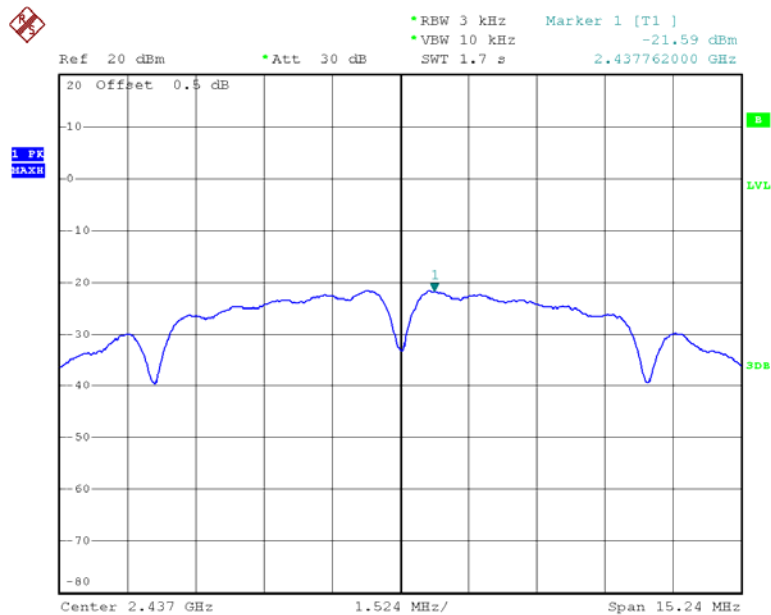
Please refer to the following plots

Power Spectral Density, 802.11b Low Channel



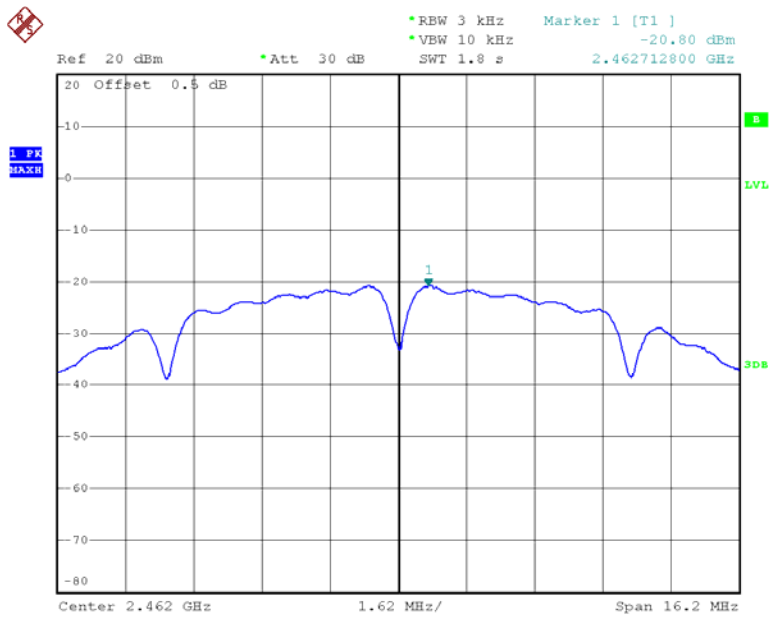
Date: 12.MAY.2013 22:49:30

Power Spectral Density, 802.11b Middle Channel



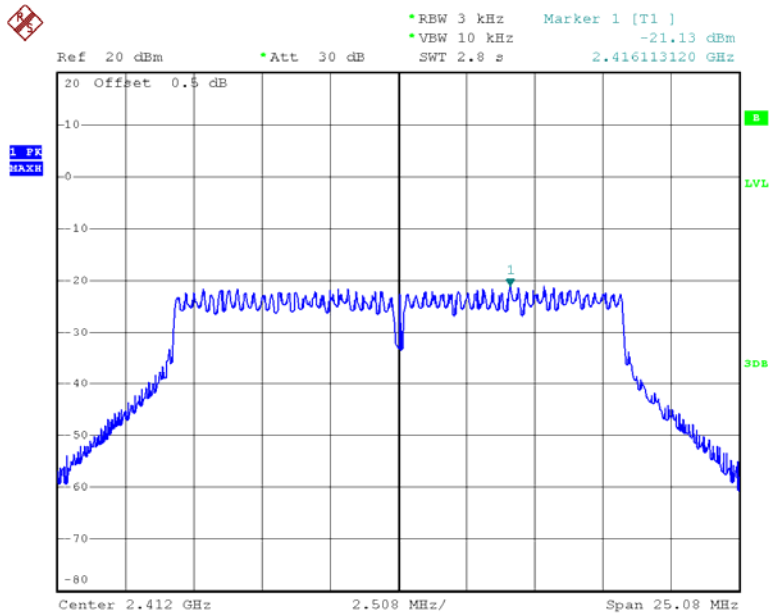
Date: 12.MAY.2013 22:55:48

Power Spectral Density, 802.11b High Channel



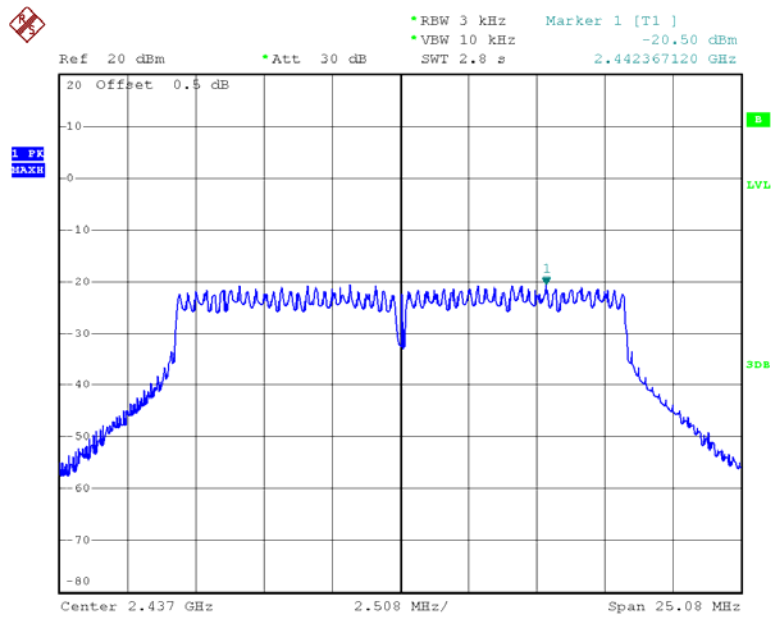
Date: 12.MAY.2013 23:03:10

Power Spectral Density, 802.11g Low Channel



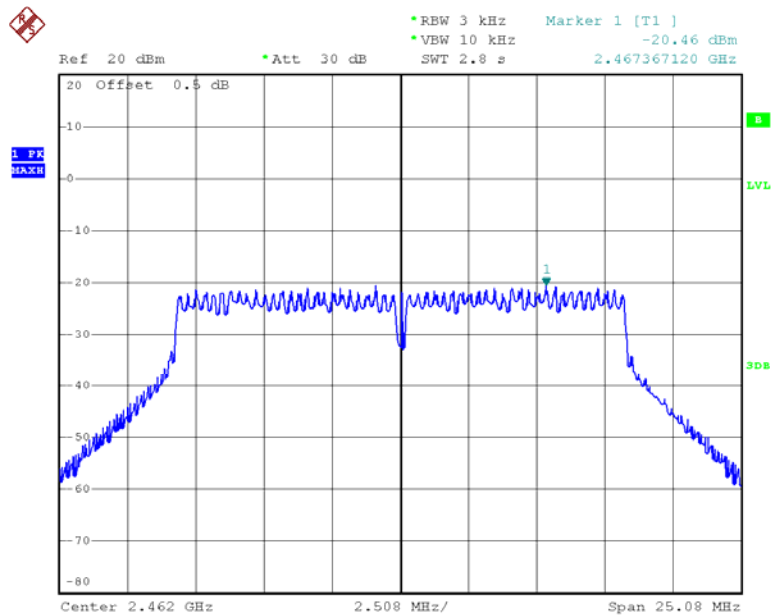
Date: 12.MAY.2013 23:18:50

Power Spectral Density, 802.11g Middle Channel



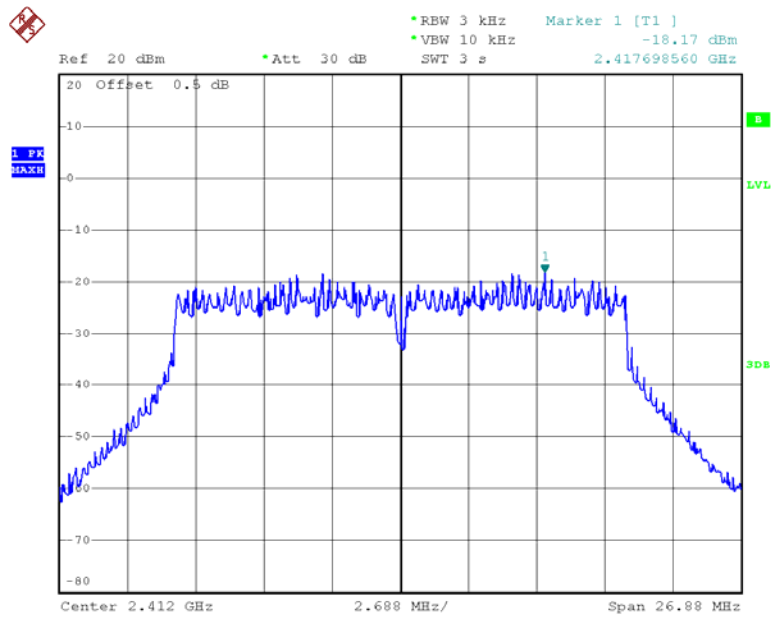
Date: 12.MAY.2013 23:23:03

Power Spectral Density, 802.11g High Channel



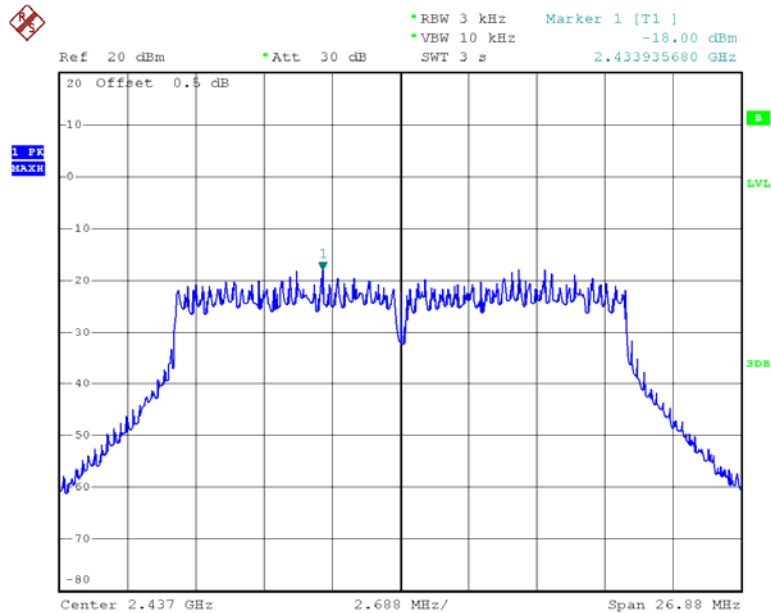
Date: 12.MAY.2013 23:30:25

Power Spectral Density, 802.11n20 Low Channel

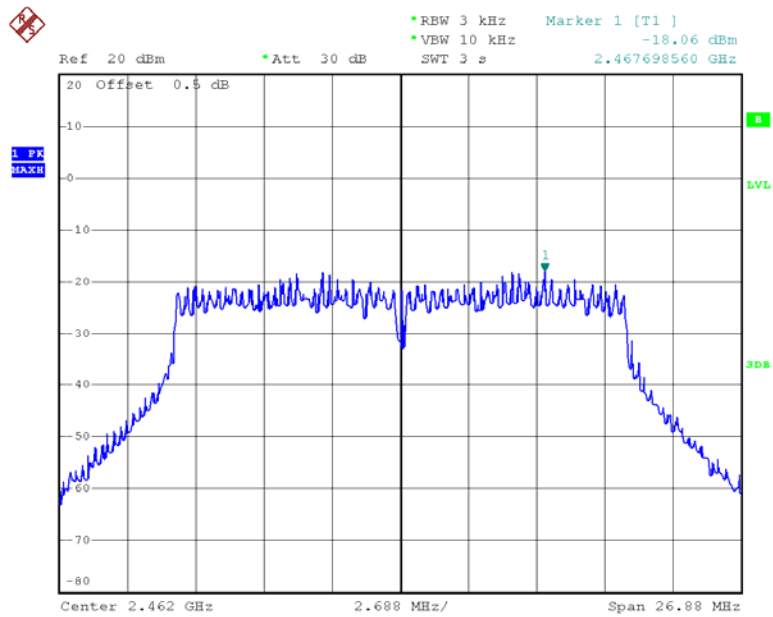


Date: 12.MAY.2013 23:36:58

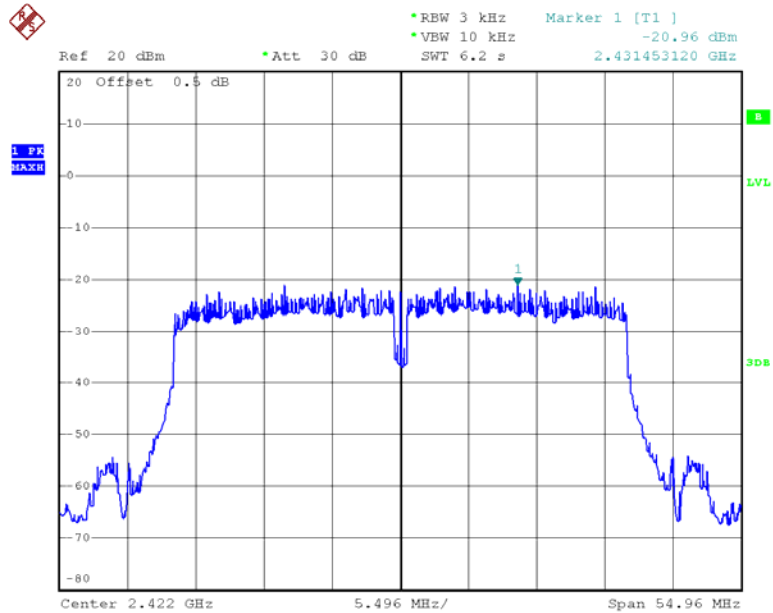
Power Spectral Density, 802.11n20 Middle Channel



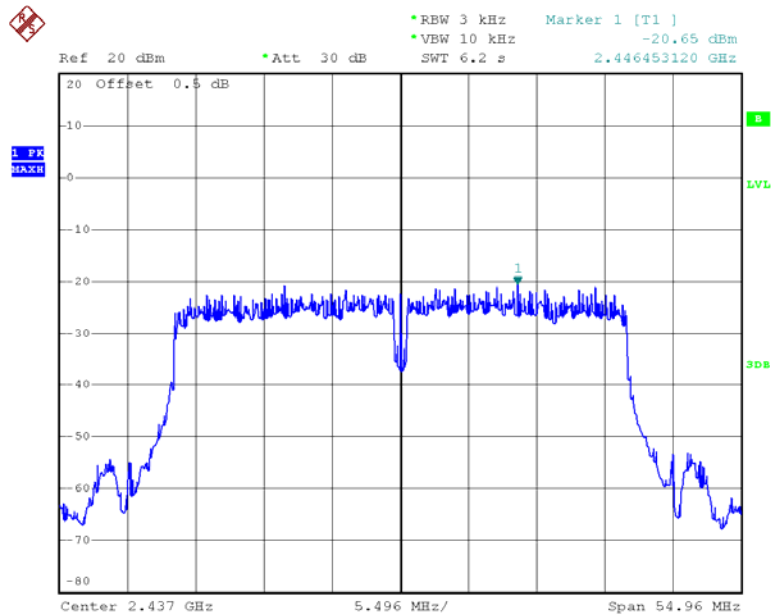
Date: 12.MAY.2013 23:42:21

Power Spectral Density, 802.11n20 High Channel

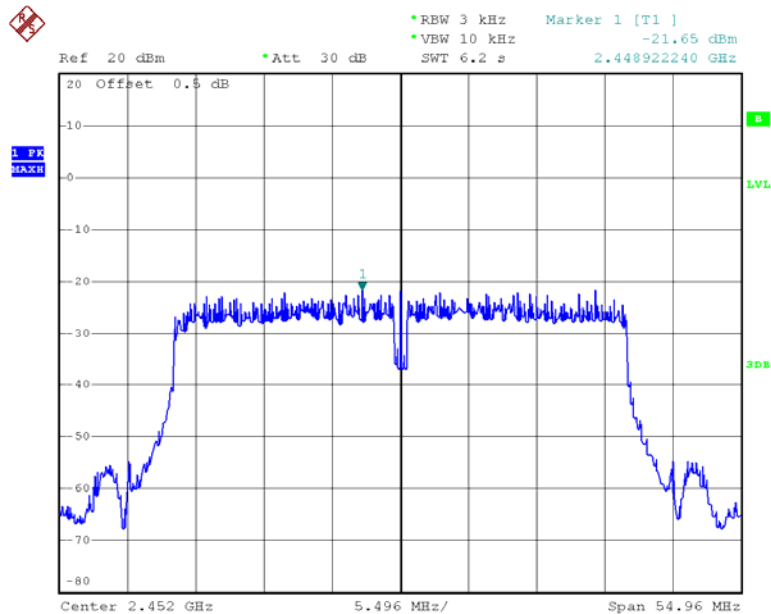
Date: 12.MAY.2013 23:47:34

Power Spectral Density, 802.11n40 Low Channel

Date: 12.MAY.2013 23:54:19

Power Spectral Density, 802.11n40 Middle Channel

Date: 13.MAY.2013 00:00:11

Power Spectral Density, 802.11n40 High Channel

Date: 13.MAY.2013 00:06:06

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