

**FCC PART 15.247**  
**TEST REPORT**

For

**Nexpro International Limitada**

San Jose-Goicoechea, Guadalupe, Barrio Tournon, Frente Al Hotel Villas Tournon, Oficinas Del  
Bufete Facio Y Canas, Costa Rica

**FCC ID: ZYPF5010A**

<b>Report Type:</b> Original Report	<b>Product Type:</b> GSM Mobile Phone
<b>Test Engineer:</b>	Dean Liu <i>Dean Liu</i>
<b>Report Number:</b>	R1DG120426004-00A
<b>Report Date:</b>	2012-05-21
<b>Reviewed By:</b>	Ivan Cao <i>Ivan Cao</i> EMC Engineer
<b>Test Laboratory:</b>	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 <a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a>

**Note:** This test report is prepared for the customer shown above and for the equipment 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 contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

## **TABLE OF CONTENTS**

<b>GENERAL INFORMATION.....</b>	<b>4</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) .....	4
OBJECTIVE .....	4
RELATED SUBMITTAL(S)/GRANT(S) .....	4
TEST METHODOLOGY .....	4
TEST FACILITY .....	5
<b>SYSTEM TEST CONFIGURATION.....</b>	<b>6</b>
DESCRIPTION OF TEST CONFIGURATION .....	6
EUT EXERCISE SOFTWARE .....	6
EQUIPMENT MODIFICATIONS .....	6
BLOCK DIAGRAM OF TEST SETUP .....	7
<b>SUMMARY OF TEST RESULTS .....</b>	<b>8</b>
<b>FCC §15.247 (i) &amp; §1.1307 (b) (1) &amp; §2.1093- RF EXPOSURE.....</b>	<b>9</b>
APPLICABLE STANDARD .....	9
<b>FCC §15.203 - ANTENNA REQUIREMENT.....</b>	<b>10</b>
APPLICABLE STANDARD .....	10
ANTENNA CONNECTOR CONSTRUCTION .....	10
<b>FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS .....</b>	<b>11</b>
APPLICABLE STANDARD .....	11
MEASUREMENT UNCERTAINTY .....	11
EUT SETUP .....	11
EMI TEST RECEIVER SETUP .....	12
TEST PROCEDURE .....	12
TEST EQUIPMENT LIST AND DETAILS .....	12
TEST RESULTS SUMMARY .....	12
TEST DATA .....	12
<b>FCC §15.209, §15.205 &amp; §15.247(d) - SPURIOUS EMISSIONS.....</b>	<b>15</b>
APPLICABLE STANDARD .....	15
MEASUREMENT UNCERTAINTY .....	15
EUT SETUP .....	15
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP .....	16
TEST PROCEDURE .....	16
CORRECTED AMPLITUDE & MARGIN CALCULATION .....	16
TEST EQUIPMENT LIST AND DETAILS .....	17
TEST RESULTS SUMMARY .....	17
TEST DATA .....	17
<b>FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH.....</b>	<b>23</b>
APPLICABLE STANDARD .....	23
TEST PROCEDURE .....	23
TEST EQUIPMENT LIST AND DETAILS .....	23
TEST DATA .....	23
<b>FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER .....</b>	<b>28</b>
APPLICABLE STANDARD .....	28

TEST PROCEDURE .....	28
TEST EQUIPMENT LIST AND DETAILS.....	28
TEST DATA .....	28
<b>FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE.....</b>	<b>33</b>
APPLICABLE STANDARD .....	33
TEST PROCEDURE .....	33
TEST EQUIPMENT LIST AND DETAILS.....	33
TEST DATA .....	33
<b>FCC §15.247(e) - POWER SPECTRAL DENSITY .....</b>	<b>36</b>
APPLICABLE STANDARD .....	36
TEST PROCEDURE .....	36
TEST EQUIPMENT LIST AND DETAILS.....	36
TEST DATA .....	36

## GENERAL INFORMATION

---

### Product Description for Equipment under Test (EUT)

The *Nexpro International Limitada*'s product, model number: *Dolphin F5010a* (FCC ID: ZYPF5010A) or ("EUT") in this report is a GSM Mobile Phone, which was measured approximately: 11.3 cm (L) x 6.3cm (W) x 1.4cm (H), rated input voltage: DC 3.7V Lithium battery or DC 5.0V from adapter for charging.

Adapter Information:

MODEL NO:C325A50070

ADAPTADOR ca/cc

ENTRADA: AC100-240Vca, 50/60 Hz, 120mA

SALIDA: DC5Vcc, 700mA.

*\* All measurement and test data in this report was gathered from production sample serial number: 120426004 (Assigned by BACL, Shenzhen). The EUT was received on 2012-05-08.*

### Objective

This report is prepared on behalf of *Nexpro International Limitada* 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 22H&24E PCE submissions with FCC ID: ZYPF5010A.

FCC Part 15B JBP submissions with FCC ID: ZYPF5010A.

FCC Part 15C DSS submissions with FCC ID: ZYPF5010A for Bluetooth.

### 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., and KDB 558074 D01 DTS Meas Guidance v01, Guidance for Performing Compliance Measurements on Digital Transmission System(DTS) Operating Under §15.247.

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

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

**Test Facility**

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

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



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

---

## SYSTEM TEST CONFIGURATION

---

### Description of Test Configuration

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

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

EUT for 802.11b, 802.11g and 802.11 n20 modes were tested with Channel 1, 6 and 11.

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.

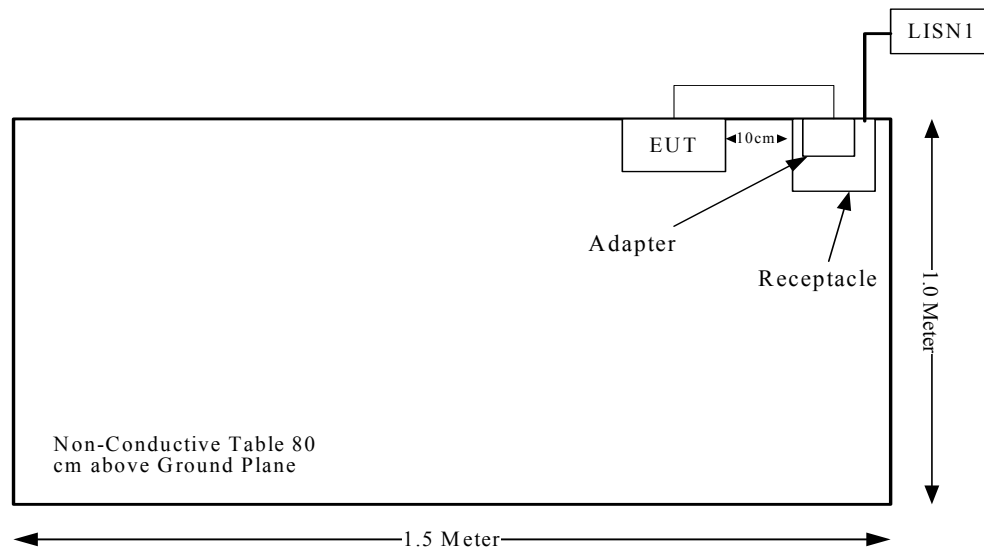
### EUT Exercise Software

No EUT Exercise Software

### Equipment Modifications

No modification was made to EUT.

## Block Diagram of Test Setup



## SUMMARY OF TEST RESULTS

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

**FCC §15.247 (i) & §1.1307 (b) (1) & §2.1093- RF EXPOSURE**

---

**Applicable Standard**

According to §15.247(i) and §1.1307(b)(1), 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 v04, no SAR required if power is lower than the flowing threshold:

When routine evaluation is required for SAR and the output power is  $\leq 60/f(\text{GHz})$  mW, the test reduction and test exclusion procedures given herein, or in KDB 616217 or KDB 648474, are applicable.

A device may be used in portable exposure conditions with no restrictions on host platforms when either the source-based time-averaged output power is  $\leq 60/f(\text{GHz})$  mW or all measured 1-g SAR are  $< 0.4$  W/kg. When SAR evaluation is required, the most conservative exposure conditions for all expected operating configurations must be tested.

**Measurement Result**

The maximum power was 19.46mW and therefore, the SAR evaluation was not required.

## **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 a PIFA antenna, which complied with 15.203, the maximum gain is 1.33dBi, please refer to the internal photos.

**Result:** Compliance.



## 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><b>Frequency Range</b></i>	<i><b>IF BW</b></i>
150 kHz – 30 MHz	9 kHz

## Test Procedure

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

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

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

## Test Equipment List and Details

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2011-11-24	2012-11-23
Rohde & Schwarz	L.I.S.N.	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 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:

**12.92 dB at 3.205 MHz in the Neutral mode**

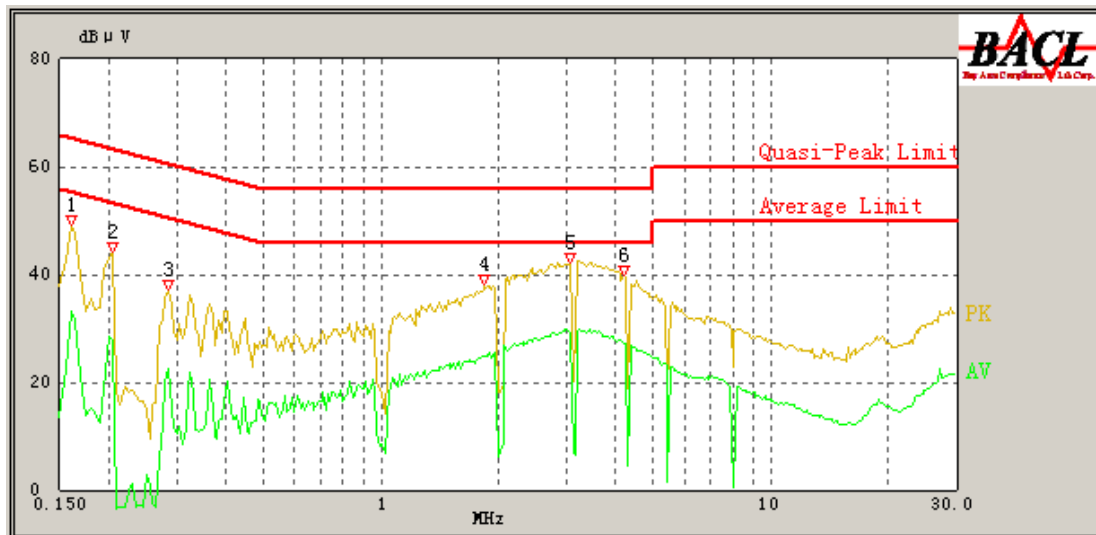
## Test Data

### Environmental Conditions

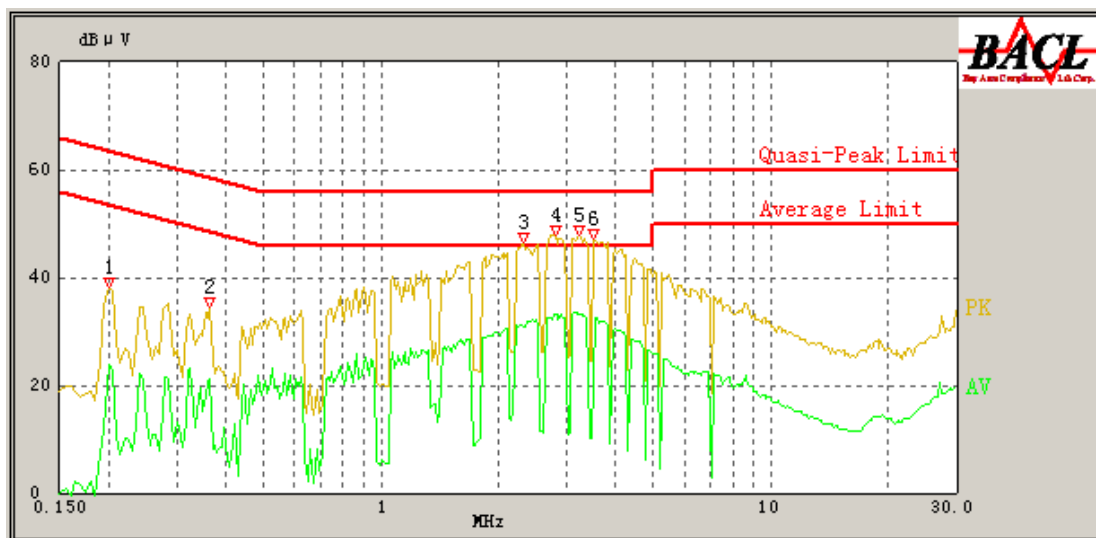
<b>Temperature:</b>	25 ° C
<b>Relative Humidity:</b>	48 %
<b>ATM Pressure:</b>	100.0 kPa

*The testing was performed by Dean Liu on 2012-05-10.*

*Test Mode: Transmitting*

**120 V, 60 Hz, Line:**

Frequency (MHz)	Corrected Result (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/QP/Ave.)
0.160	40.25	0.40	65.71	25.46	QP
0.160	33.28	0.40	55.71	22.43	Ave.
0.205	34.43	0.42	64.43	30.00	QP
0.205	27.97	0.42	54.43	26.46	Ave.
0.285	34.43	0.42	62.14	27.71	QP
0.285	22.54	0.42	52.14	29.60	Ave.
1.845	33.35	0.48	56.00	22.65	QP
1.845	24.93	0.48	46.00	21.07	Ave.
3.065	36.34	0.49	56.00	19.66	QP
3.055	29.20	0.49	46.00	16.80	Ave.
4.215	33.49	0.50	56.00	22.51	QP
4.210	27.05	0.50	46.00	18.95	Ave.

**120V, 60 Hz, Neutral:**

Frequency (MHz)	Corrected Result (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/QP/Ave.)
0.200	34.26	0.42	64.57	30.31	QP
0.200	23.80	0.42	54.57	30.77	Ave.
0.365	31.27	0.42	59.86	28.59	QP
0.365	21.04	0.42	49.86	28.82	Ave.
2.320	38.88	0.48	56.00	17.12	QP
2.315	30.78	0.48	46.00	15.22	Ave.
2.800	40.63	0.49	56.00	15.37	QP
2.780	33.11	0.49	46.00	12.89	Ave.
3.225	40.71	0.49	56.00	15.29	QP
3.205	33.08	0.49	46.00	12.92	Ave.
3.510	39.75	0.50	56.00	16.25	QP
3.530	32.38	0.50	46.00	13.62	Ave.

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

### Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

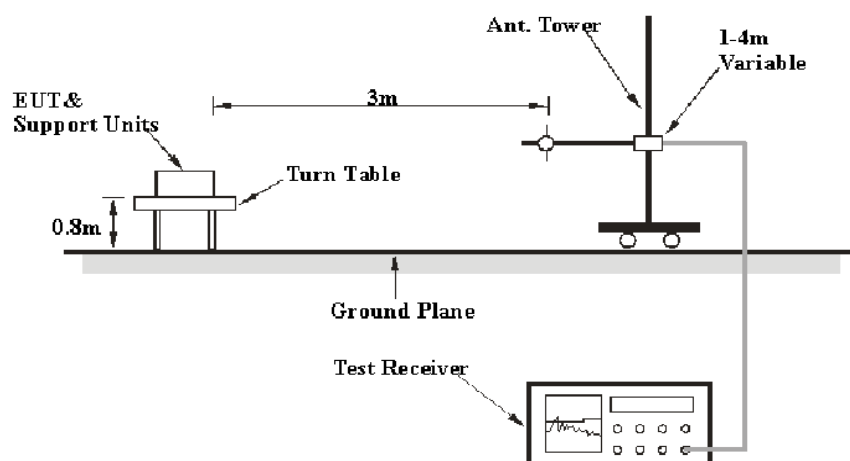
### Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

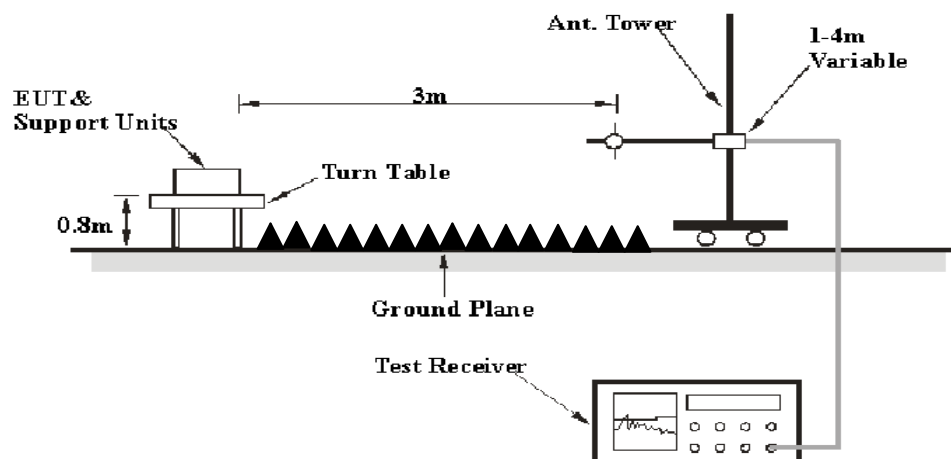
Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 4.0 dB(k=2, 95% level of confidence) .

### EUT Setup

#### Below 1GHz:



#### Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC 15.209, and FCC 15.247 limits.

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

The spacing between the peripherals was 10 cm.

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

### EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

<i>Frequency Range</i>	<i>RBW</i>	<i>Video BW</i>	<i>Detector</i>
30 MHz – 1000 MHz	100 kHz	300 kHz	QP
1000 MHz – 25 GHz	1 MHz	3 MHz	PK
1000 MHz – 25 GHz	1 MHz	10 Hz	Ave

### Test Procedure

During the radiated emission test, the adapter was connected to 120 VAC/60 Hz power source.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

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

### Corrected Amplitude & Margin Calculation

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

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

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
HP	Amplifier	HP8447D	2944A09795	2011-11-24	2012-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
DUCOMMUN Technologies	Pre-amp	ALN-09173030-01	991396-01	2011-11-24	2012-12-23
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2012-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ 26	8386001028	2011-11-24	2012-11-23

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

## Test Results Summary

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

**2.67 dB** at **4874 MHz** in the **Horizontal** polarization (802.11b mode)

## Test Data

### Environmental Conditions

<b>Temperature:</b>	25 ° C
<b>Relative Humidity:</b>	48 %
<b>ATM Pressure:</b>	100.0 kPa

*The testing was performed by Dean Liu on 2012-05-10.*

*Mode: Transmitting (depend on free scan 802.11b mode is the worst case)*

802.11b Mode:

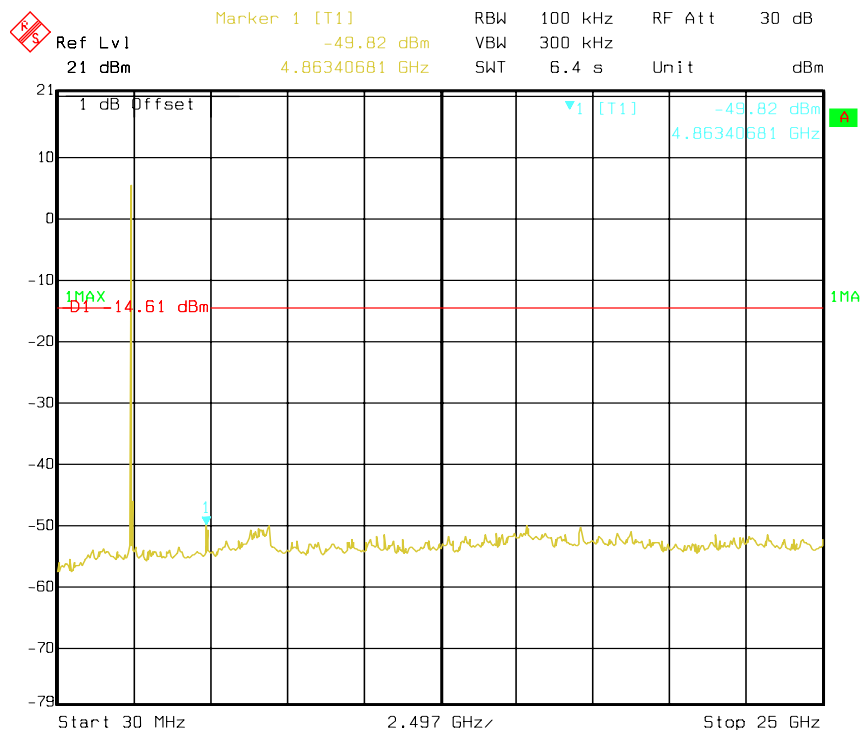
Frequency (MHz)	Reading (dBμV)	Detector (PK/QP /Ave.)	Polar (H/V)	Corrected Amplitude (dB/m)	Correction Data (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Comment
Low Channel (2412MHz)								
4824	30.5	Ave.	H	10.79	41.29	54	12.71	Harmonic
4824	30.2	Ave.	V	10.79	40.99	54	13.01	Harmonic
2386	20	Ave.	H	6.95	26.95	54	27.05	spurious
2386	20.07	Ave.	V	6.95	27.02	54	26.98	spurious
4824	38.68	PK	H	10.79	49.47	74	24.53	Harmonic
4824	36.66	PK	V	10.79	47.45	74	26.55	Harmonic
2386	33.03	PK	H	6.95	39.98	74	34.02	spurious
2386	34.81	PK	V	6.95	41.76	74	32.24	spurious
257.3	31.87	QP	V	-6.91	24.96	46	21.04	spurious
257.3	31.54	QP	H	-6.91	24.63	46	21.37	spurious
2412	64.19	PK	H	35	99.19	N/A	N/A	Fundamental
2412	60.01	Ave.	H	35	95.01	N/A	N/A	Fundamental
2412	64.37	PK	V	35	99.37	N/A	N/A	Fundamental
2412	59.23	Ave.	V	35	94.23	N/A	N/A	Fundamental
Middle Channel (2437MHz)								
4874	35.19	Ave.	H	11.08	46.27	54	7.73	Harmonic
4874	36.11	Ave.	V	11.08	47.19	54	6.81	Harmonic
4874	39.64	PK	H	11.08	50.72	74	23.28	Harmonic
4874	40.31	PK	V	11.08	51.39	74	22.61	Harmonic
330.9	31.64	QP	V	-3.72	27.92	46	18.08	spurious
330.9	30.95	QP	H	-3.72	27.23	46	18.77	spurious
2437	65.88	PK	H	35.2	101.08	N/A	N/A	Fundamental
2437	61.15	Ave.	H	35.2	96.35	N/A	N/A	Fundamental
2437	65.68	PK	V	35.2	100.88	N/A	N/A	Fundamental
2437	60.79	Ave.	V	35.2	95.99	N/A	N/A	Fundamental
High Channel (2462MHz)								
4924	36.42	Ave.	H	10.98	47.4	54	6.6	Harmonic
4924	35.25	Ave.	V	10.98	46.23	54	7.77	Harmonic
4924	39.64	PK	V	10.98	50.62	74	23.38	Harmonic
2483.5	20.45	Ave.	V	7.53	27.98	54	26.02	spurious
2483.5	20.21	Ave.	H	7.53	27.74	54	26.26	spurious
4924	40.11	PK	H	10.98	51.09	74	22.91	Harmonic
403.8	31.06	QP	V	-2.52	28.54	46	17.46	spurious
403.8	30.77	QP	H	-2.52	28.25	46	17.75	spurious
2483.5	32.35	PK	V	7.53	39.88	74	34.12	spurious
2483.5	33.61	PK	H	7.53	41.14	74	32.86	spurious
2462	66.35	PK	H	35.3	101.65	N/A	N/A	Fundamental
2462	62.05	Ave.	H	35.3	97.35	N/A	N/A	Fundamental
2462	66.68	PK	V	35.3	101.98	N/A	N/A	Fundamental
2462	61.24	Ave.	V	35.3	96.54	N/A	N/A	Fundamental

802.11g Mode:

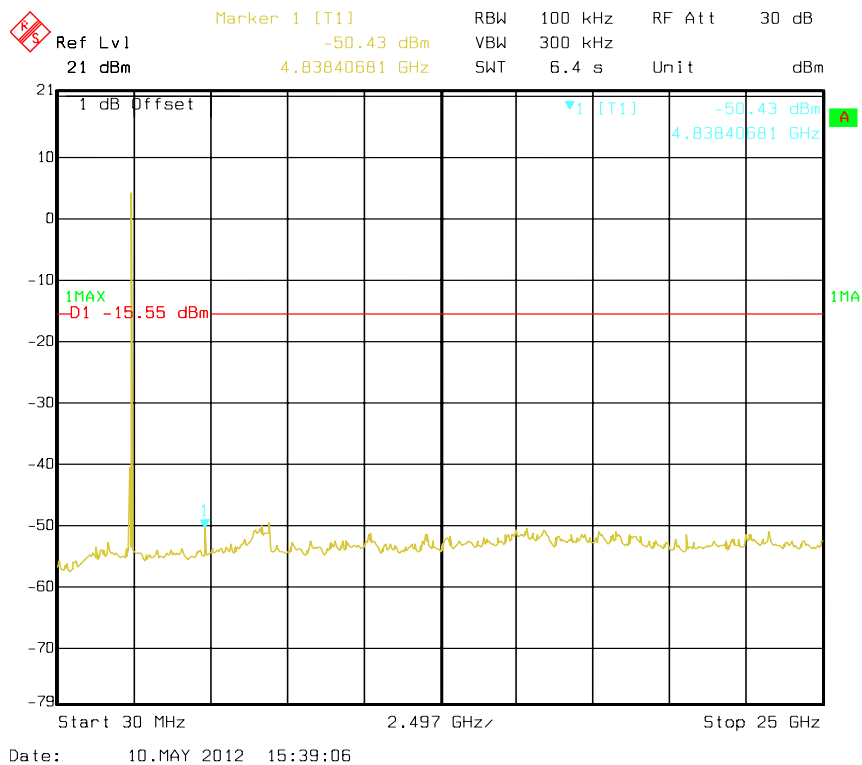
Frequency (MHz)	Reading (dBμV)	Detector (PK/QP /Ave.)	Polar (H/V)	Corrected Amplitude (dBμV/m)	Correction Data (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Comment
Low Channel (2412MHz)								
4824	30.16	Ave.	H	10.79	40.95	54	13.05	Harmonic
4824	29.98	Ave.	V	10.79	40.77	54	13.23	Harmonic
2386	20	Ave.	H	6.95	26.95	54	27.05	spurious
2386	20.14	Ave.	V	6.95	27.09	54	26.91	spurious
4824	38.44	PK	H	10.79	49.23	74	24.77	Harmonic
4824	36.42	PK	V	10.79	47.21	74	26.79	Harmonic
2386	32.3	PK	H	6.95	39.25	74	34.75	spurious
2386	33.63	PK	V	6.95	40.58	74	33.42	spurious
257.3	31.63	QP	V	-6.91	24.72	46	21.28	spurious
257.3	31.54	QP	H	-6.91	24.63	46	21.37	spurious
2412	52.42	PK	H	35	87.42	N/A	N/A	Fundamental
2412	41.8	Ave.	H	35	76.8	N/A	N/A	Fundamental
2412	55.33	PK	V	35	90.33	N/A	N/A	Fundamental
2412	44.17	Ave.	V	35	79.17	N/A	N/A	Fundamental
Middle Channel (2437MHz)								
4874	35.04	Ave.	H	11.08	46.12	54	7.88	Harmonic
4874	35.47	Ave.	V	11.08	46.55	54	7.45	Harmonic
4874	39.49	PK	H	11.08	50.57	74	23.43	Harmonic
4874	40.05	PK	V	11.08	51.13	74	22.87	Harmonic
330.9	31.49	QP	V	-3.72	27.77	46	18.23	spurious
330.9	30.8	QP	H	-3.72	27.08	46	18.92	spurious
2437	53.51	PK	H	35.2	88.71	N/A	N/A	Fundamental
2437	42.7	Ave.	H	35.2	77.9	N/A	N/A	Fundamental
2437	56.26	PK	V	35.2	91.46	N/A	N/A	Fundamental
2437	45.52	Ave.	V	35.2	80.72	N/A	N/A	Fundamental
High Channel (2462MHz)								
4924	36.26	Ave.	H	10.98	47.24	54	6.76	Harmonic
4924	35.11	Ave.	V	10.98	46.09	54	7.91	Harmonic
4924	39.87	PK	V	10.98	50.85	74	23.15	Harmonic
2483.5	20.32	Ave.	V	7.53	27.85	54	26.15	spurious
2483.5	19.85	Ave.	H	7.53	27.38	54	26.62	spurious
4924	40.01	PK	H	10.98	50.99	74	23.01	Harmonic
403.8	30.9	QP	V	-2.52	28.38	46	17.62	spurious
403.8	30.61	QP	H	-2.52	28.09	46	17.91	spurious
2483.5	34.35	PK	V	7.53	41.88	74	32.12	spurious
2483.5	33.61	PK	H	7.53	41.14	74	32.86	spurious
2462	54.59	PK	H	35.3	89.89	N/A	N/A	Fundamental
2462	43.4	Ave.	H	35.3	78.7	N/A	N/A	Fundamental
2462	58.9	PK	V	35.3	94.2	N/A	N/A	Fundamental
2462	46.14	Ave.	V	35.3	81.44	N/A	N/A	Fundamental

## Conducted Spurious Emissions at Antenna Port

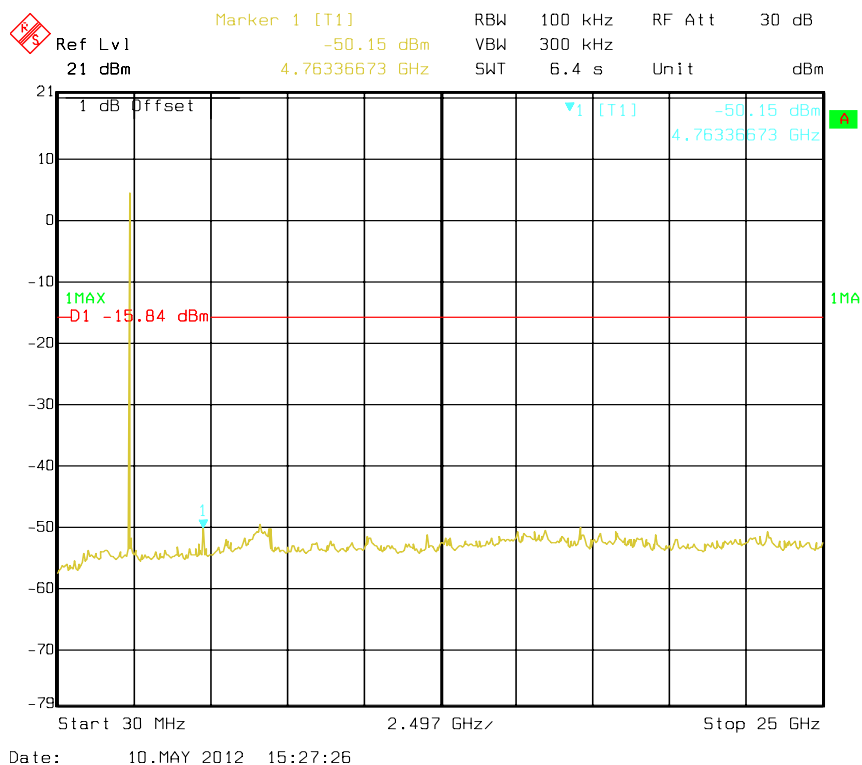
## 802.11b Low Channel



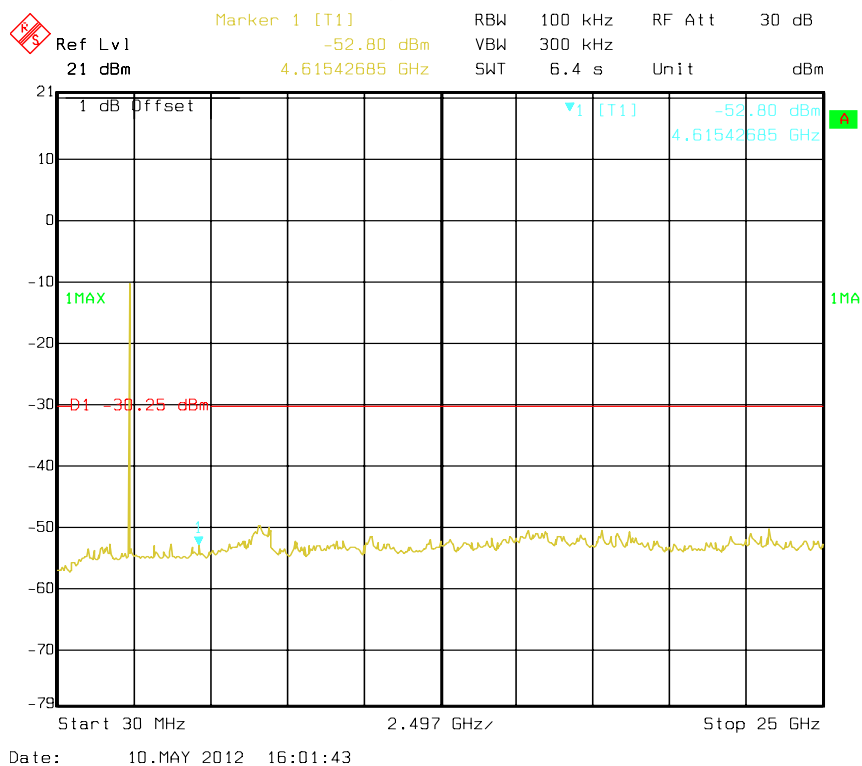
## 802.11b Middle Channel

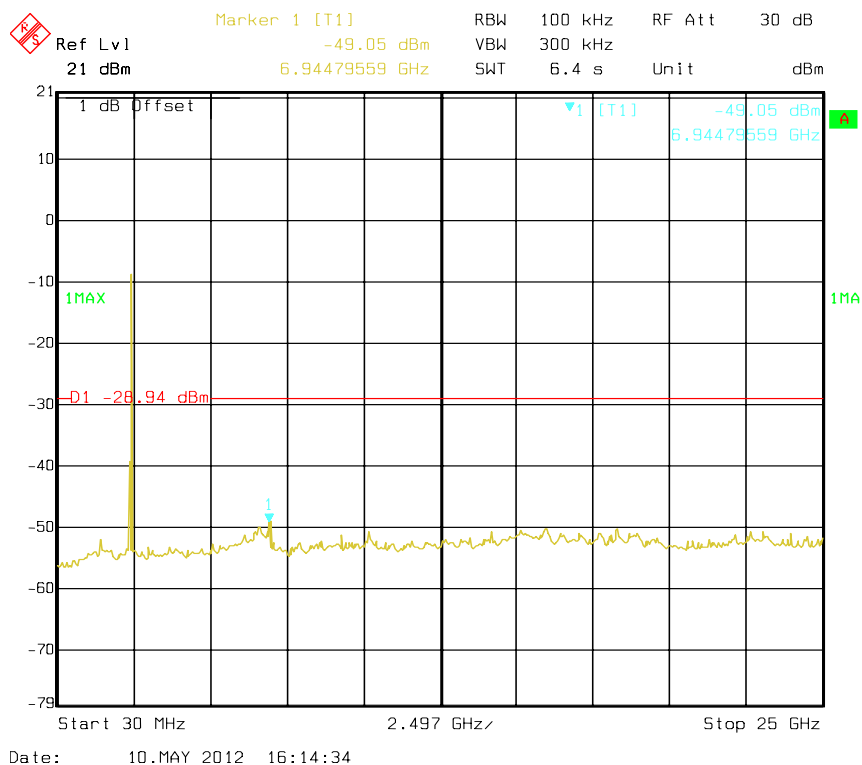
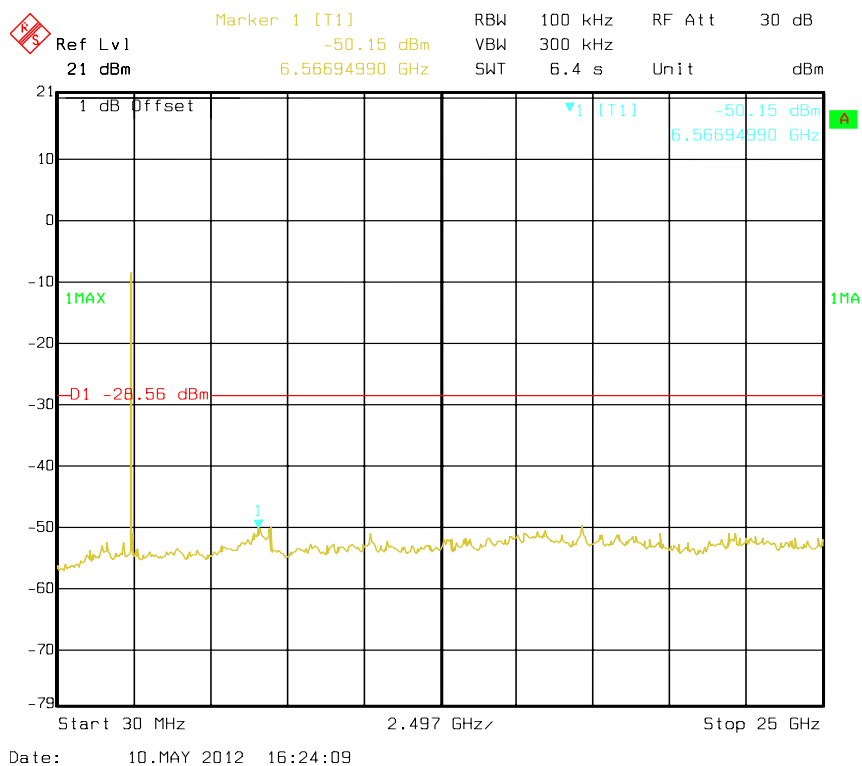


## 802.11b High Channel



## 802.11g Low Channel



**802.11g Middle Channel****802.11g High Channel**

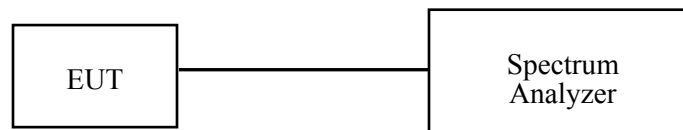
## FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

### Applicable Standard

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

### Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16

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

### Test Data

#### Environmental Conditions

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

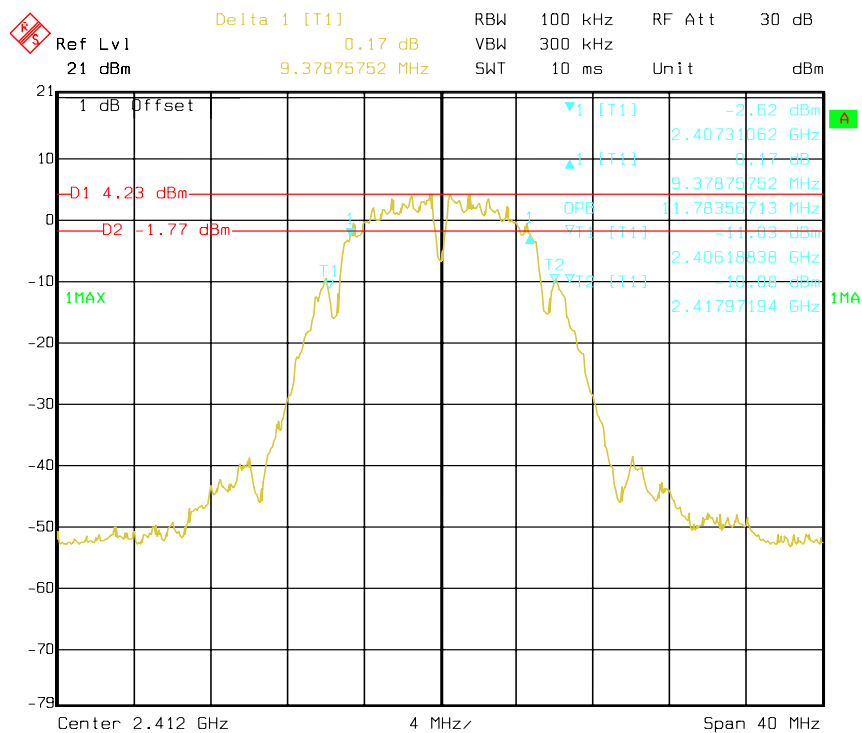
*The testing was performed by Dean Liu from 2012-05-10 to 2012-05-15.*

**Test Result:** Pass.

Please refer to the following tables and plots.

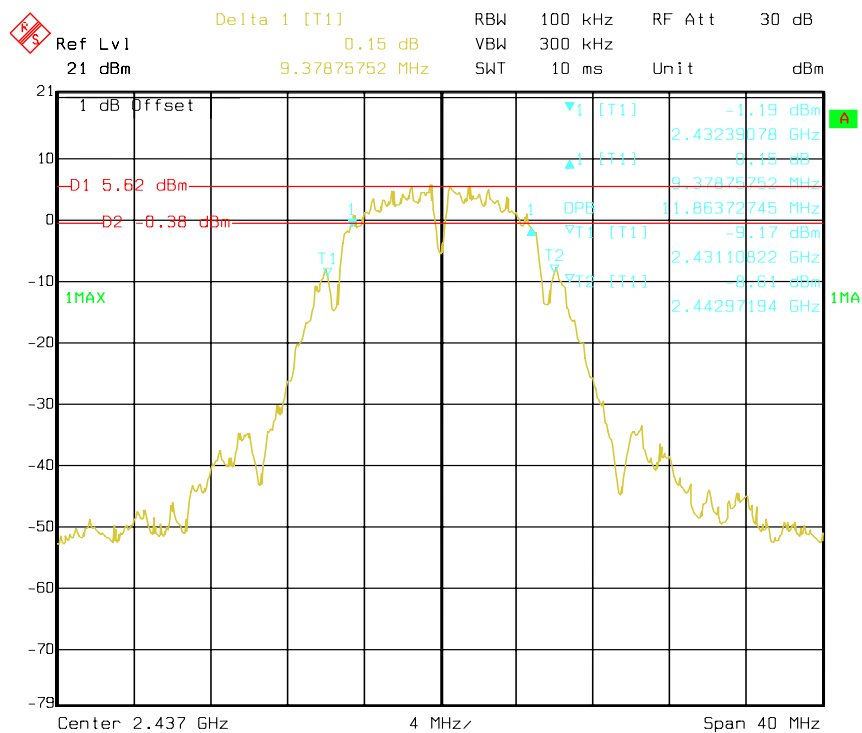
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99% occupied bandwidth	Limit (kHz)
802.11b mode				
Low	2412	9.38	11.78	>500
Middle	2437	9.38	11.86	>500
High	2462	9.38	11.86	>500
802.11g mode				
Low	2412	16.83	17.23	>500
Middle	2437	16.99	17.23	>500
High	2462	16.83	17.07	>500

## 802.11b Low Channel



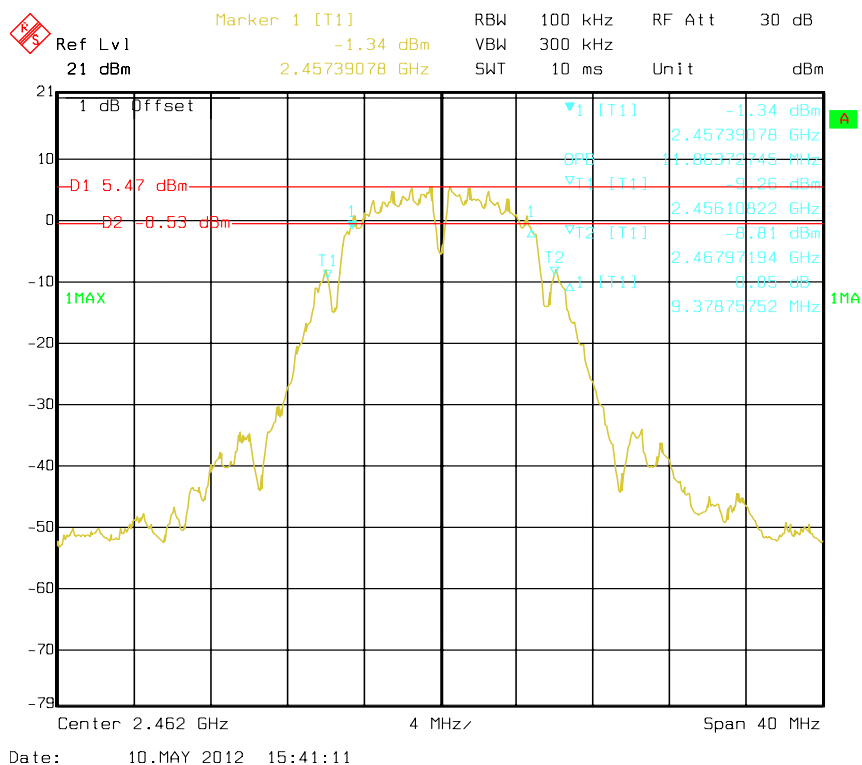
Date: 10.MAY 2012 15:21:36

## 802.11b Middle Channel

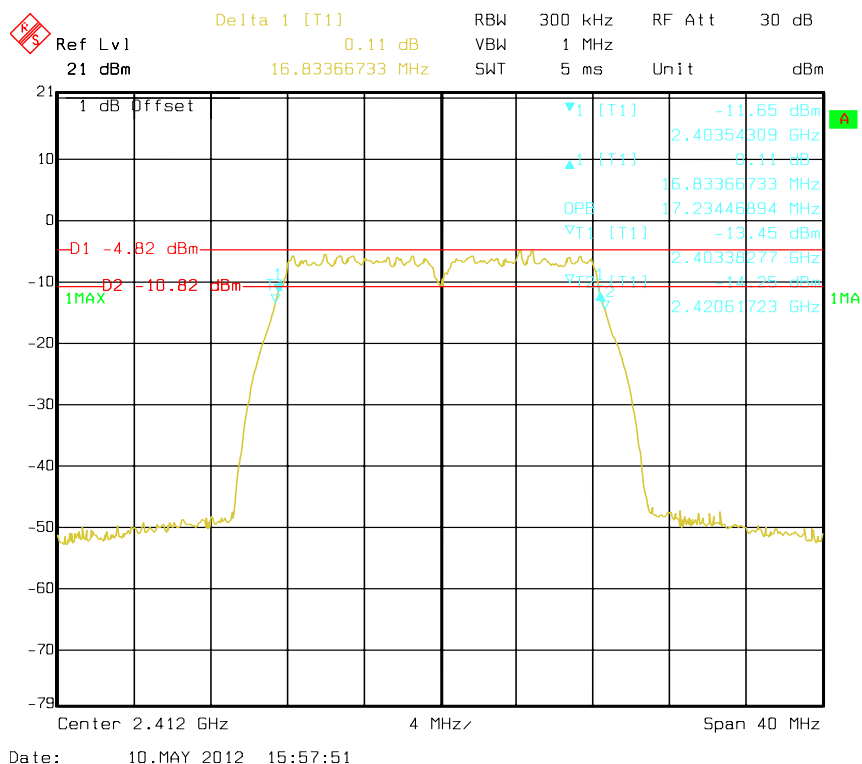


Date: 10.MAY 2012 15:34:40

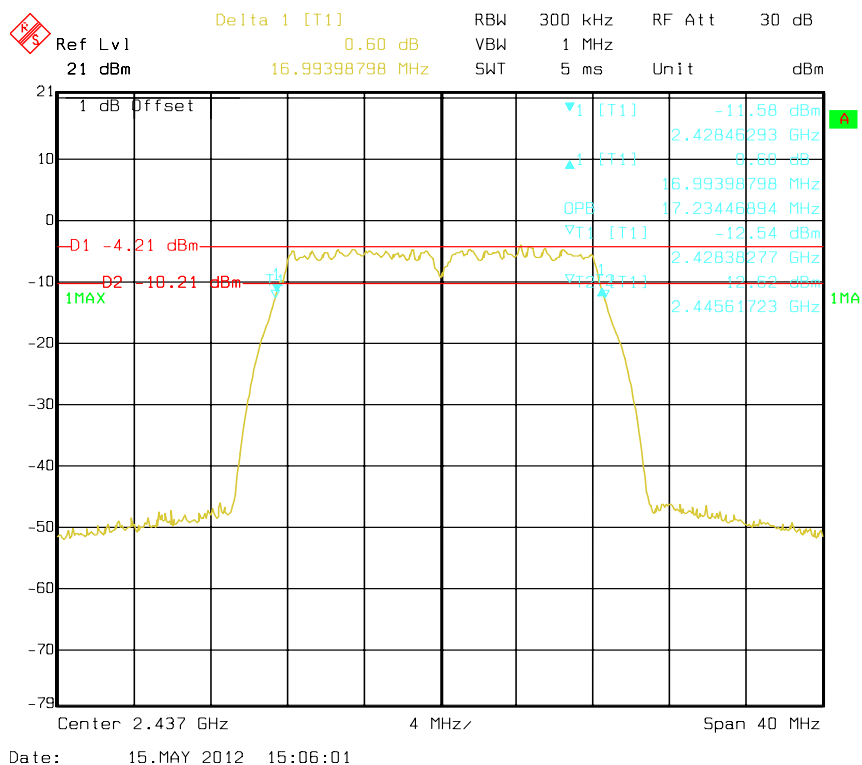
## 802.11b High Channel



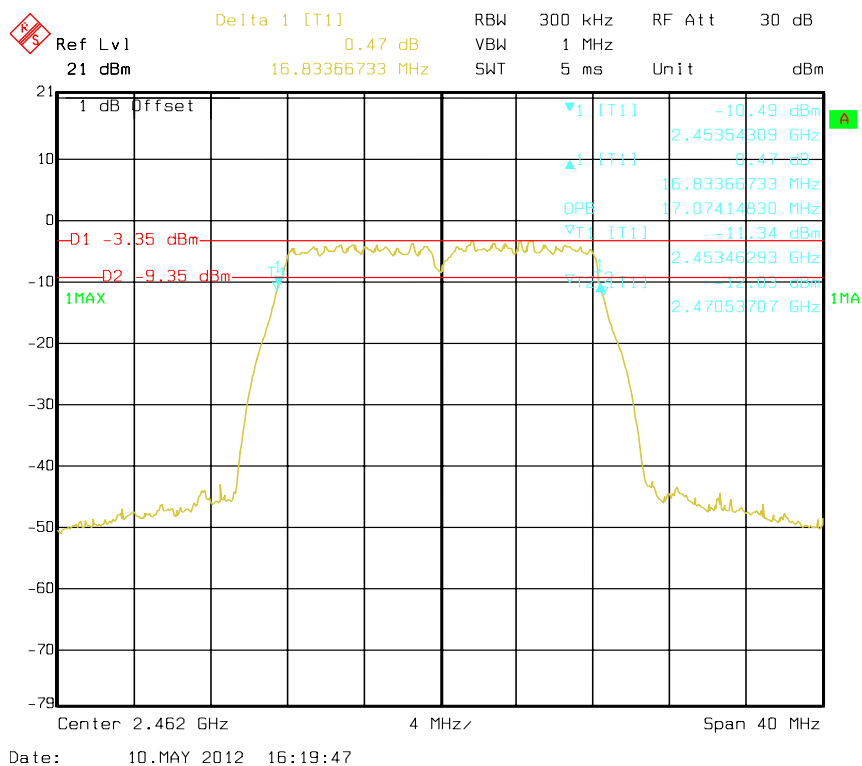
## 802.11g Low Channel



## 802.11g Middle Channel



## 802.11g High Channel



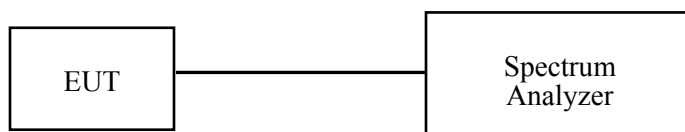
## FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER

### 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 Spectrum Analyzer.
3. Add a correction factor to the display.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16

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

### Test Data

#### Environmental Conditions

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

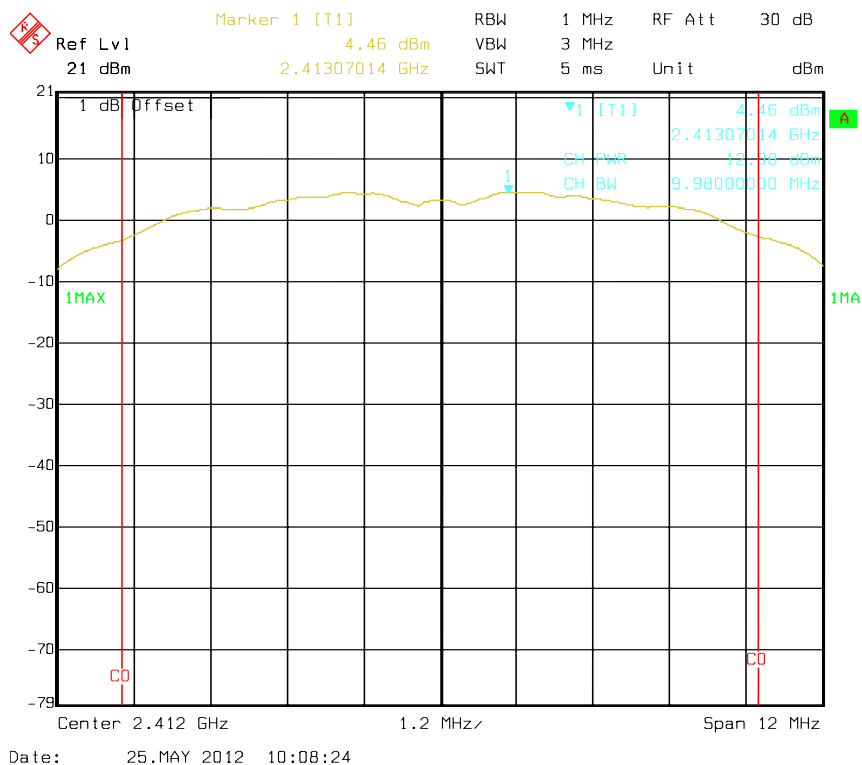
*The testing was performed by Dean Liu on 2012-05-25.*

*Test Mode: Transmitting*

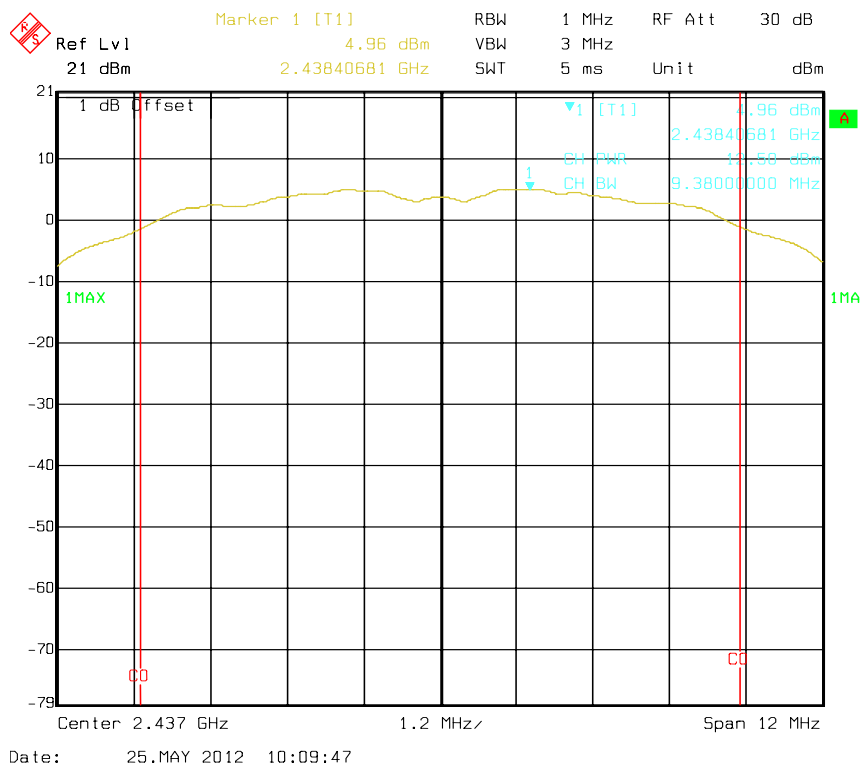
Channel	Frequency (MHz)	Data Rate (Mbps)	Reading Power (dBm)	Limit (dBm)	Result
802.11b					
Low	2412	1	12.57	30	pass
Middle	2437	1	12.58	30	pass
High	2462	1	12.38	30	pass
802.11g					
Low	2412	6	9.71	30	pass
Middle	2437	6	9.98	30	pass
High	2462	6	9.91	30	pass

**Note:** the antenna gain is 1.33 dBi.

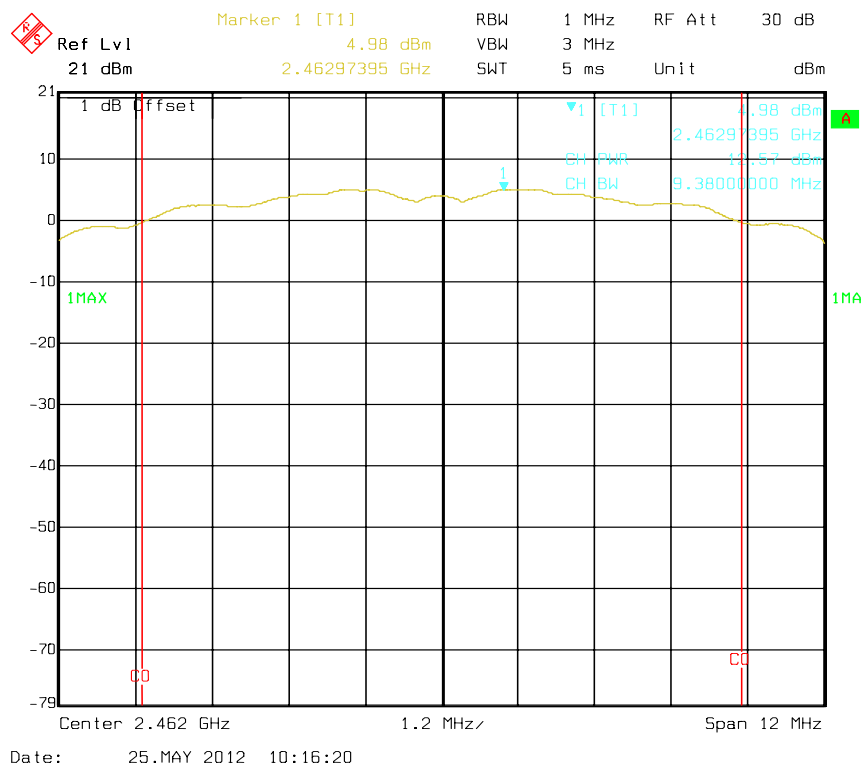
### 802.11b RF Output Power, Low Channel



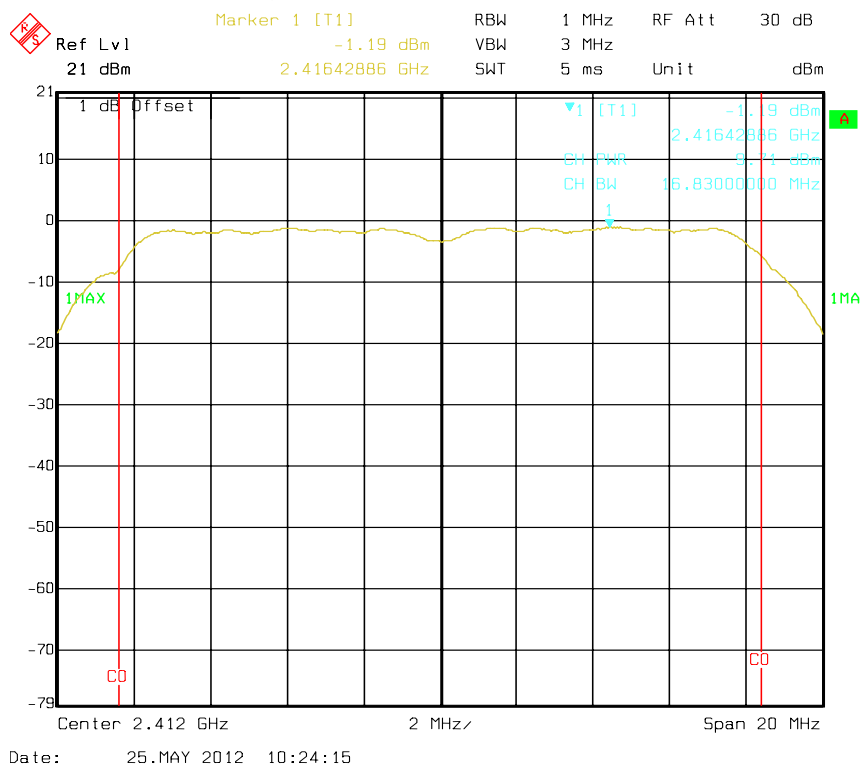
### 802.11b RF Output Power, Middle Channel

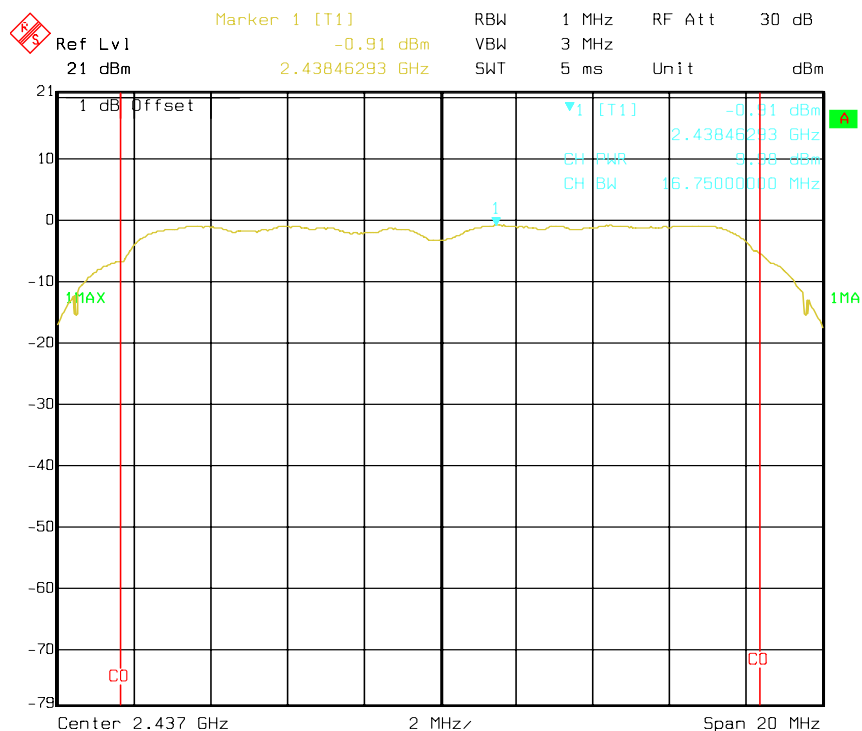


## 802.11b RF Output Power, High Channel

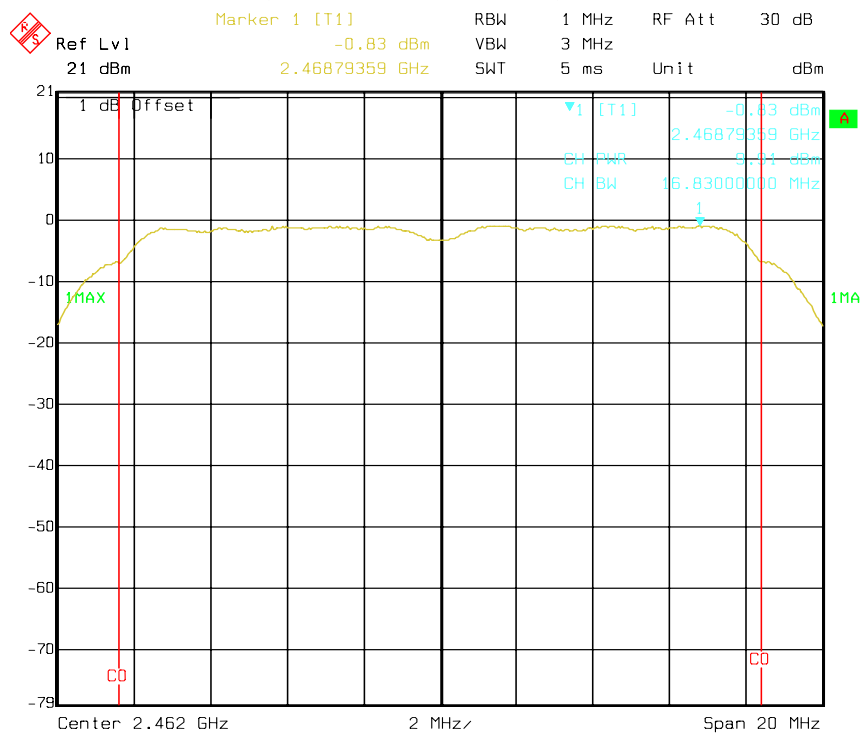


## 802.11g RF Output Power, Low Channel



**802.11g RF Output Power, Middle Channel**

Date: 25.MAY 2012 10:27:42

**802.11g RF Output Power, High Channel**

Date: 25.MAY 2012 10:26:56

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

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

**Test Procedure**

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16

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

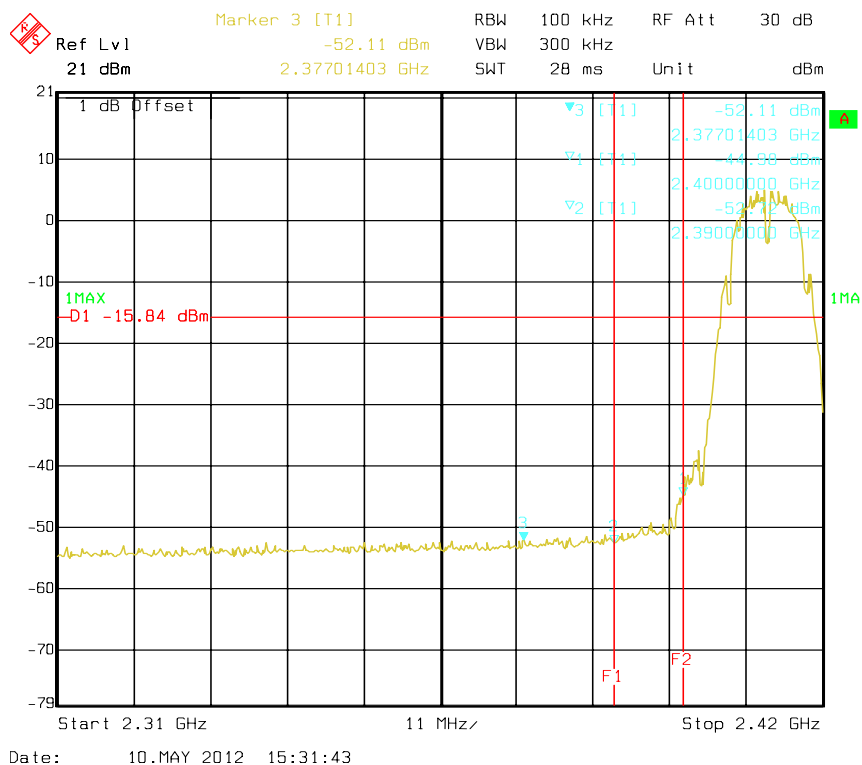
**Test Data****Environmental Conditions**

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

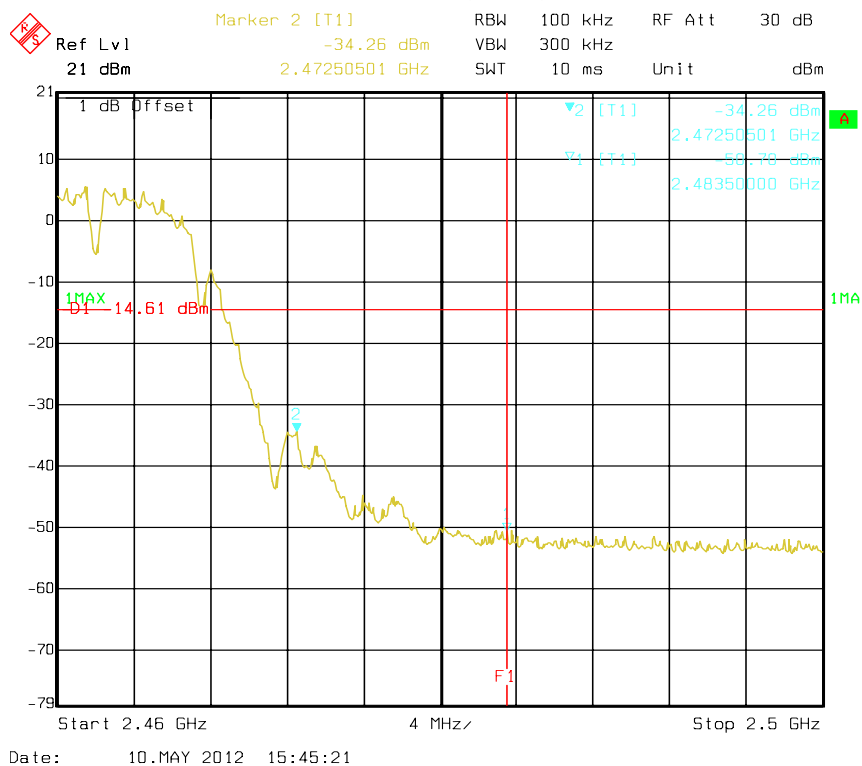
*The testing was performed by Dean Liu on 2012-05-10*

**Test Result:** *Compliance*

## 802.11b: Band Edge, Left Side



## 802.11b: Band Edge, Right Side



Ref Lvl 21 dBm  
 Marker 3 [T1] -52.97 dBm  
 RBW 100 kHz  
 VBW 300 kHz  
 SWT 28 ms  
 RF Att 30 dB  
 Unit dBm

1 dB Offset  
 1MAX  
 D1 -30.25 dBm  
 -52.97 dBm  
 2.35585170 GHz  
 -53.72 dBm  
 2.39000000 GHz  
 -51.32 dBm  
 2.40000000 GHz

Start 2.31 GHz  
 11 MHz  
 Stop 2.42 GHz

Date: 10.MAY 2012 16:03:42

Ref Lvl 21 dBm

Marker 2 [T1] -52.40 dBm

RBW 100 kHz

RF Att 30 dB

VBW 300 kHz

Unit dBm

SWT 10 ms

1 dB Offset

1MAX

D1 -28.56 dBm

2 [T1] -52.40 dBm

2.49655311 GHz

54.86 dBm

2.48350000 GHz

F1

Start 2.46 GHz

4 MHz

Stop 2.5 GHz

Date: 10.MAY 2012 16:26:25

## 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. Set the RBW = 100 kHz, VBW  $\geq$  300 kHz, set the span to 5-30 % greater than the EBW.
4. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
5. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where  $BWCF = 10\log(3\text{ kHz}/100\text{ kHz} = -15.2\text{dB})$ .

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ 26	8386001028	2011-11-24	2012-11-23

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

### Test Data

#### Environmental Conditions

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

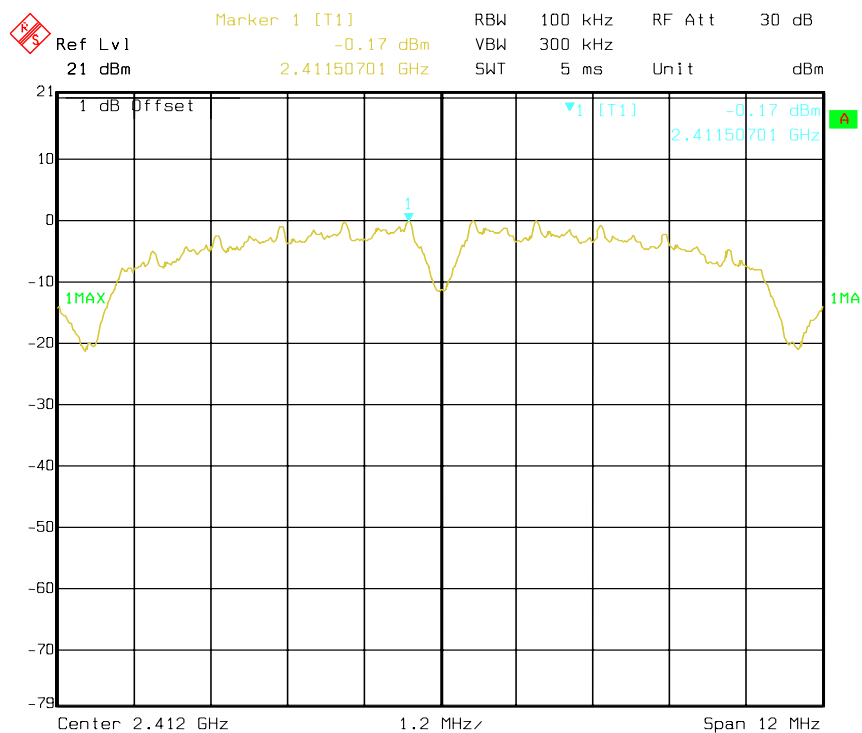
*The testing was performed by Dean Liu on 2012-05-25.*

*Test Mode: Transmitting*

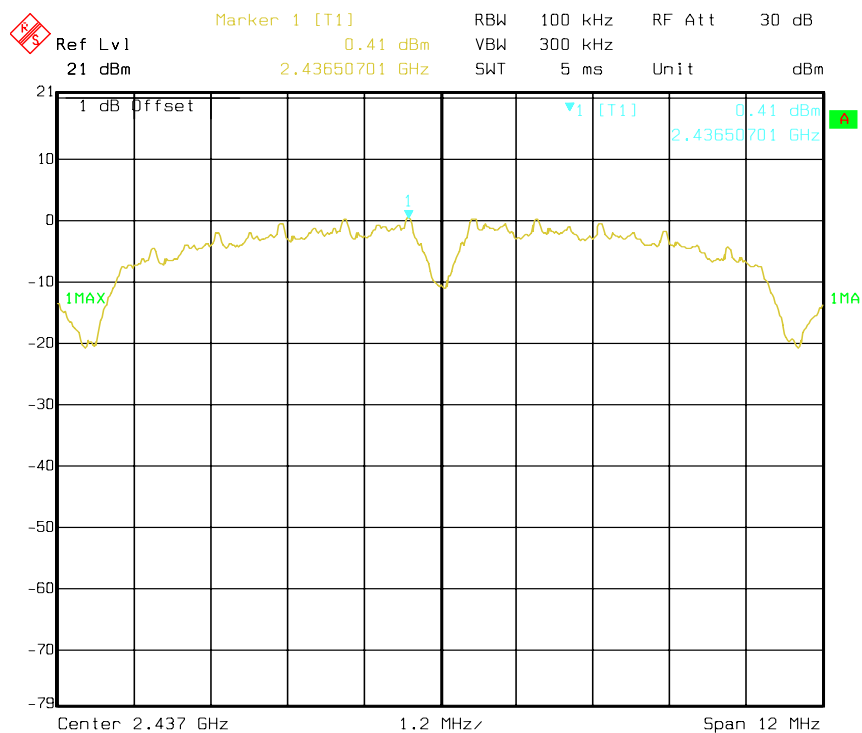
**Test Result:** Pass

Channel	Frequency (MHz)	Data Rate (Mbps)	Reading (dBm)	Reading Power Spectral Density (dBm)	Limit (dBm)	Result
802.11 b						
Low	2412	1	-0.17	-15.37	8	pass
Middle	2437	1	0.41	-14.79	8	pass
High	2462	1	1.34	-13.86	8	pass
802.11 g						
Low	2412	6	-11.77	-26.97	8	pass
Middle	2437	6	-11.16	-26.36	8	pass
High	2462	6	-11.37	-26.57	8	pass

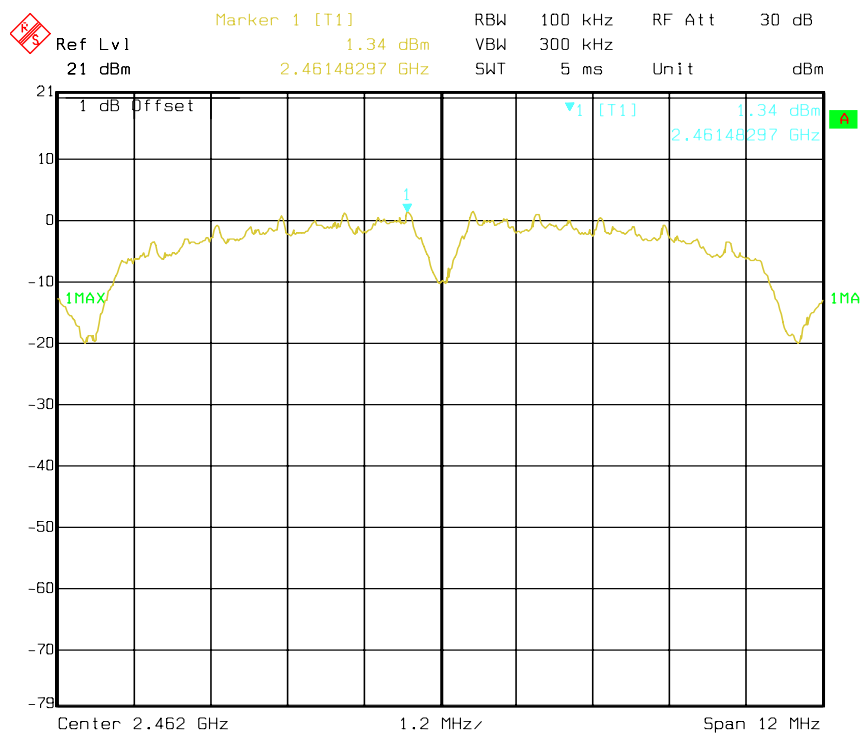
Please refer to the following plots

**Power Spectral Density, 802.11b Low Channel**

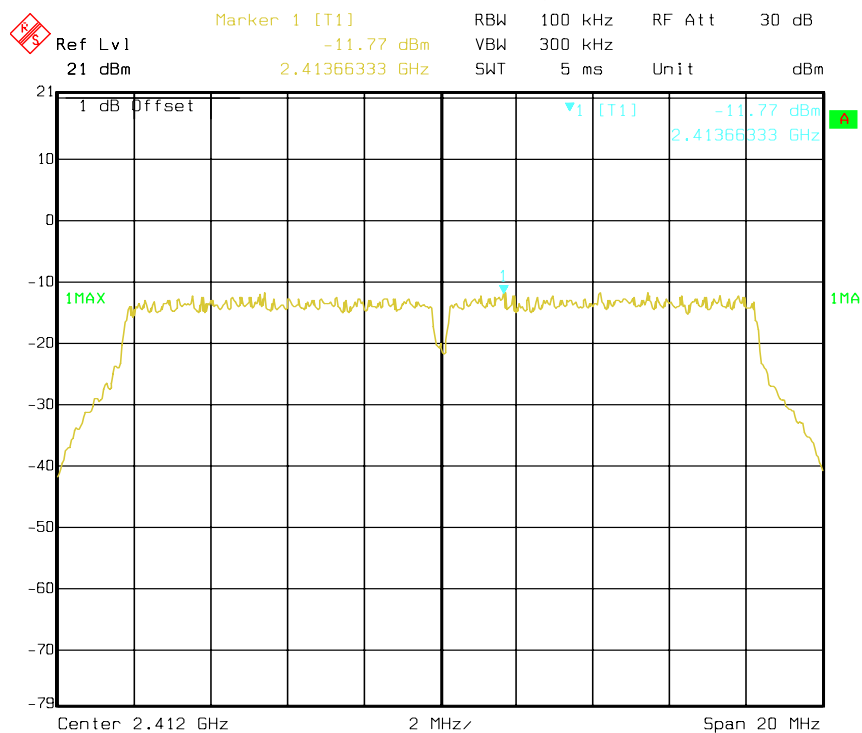
Date: 25.MAY 2012 10:21:39

**Power Spectral Density, 802.11b Middle Channel**

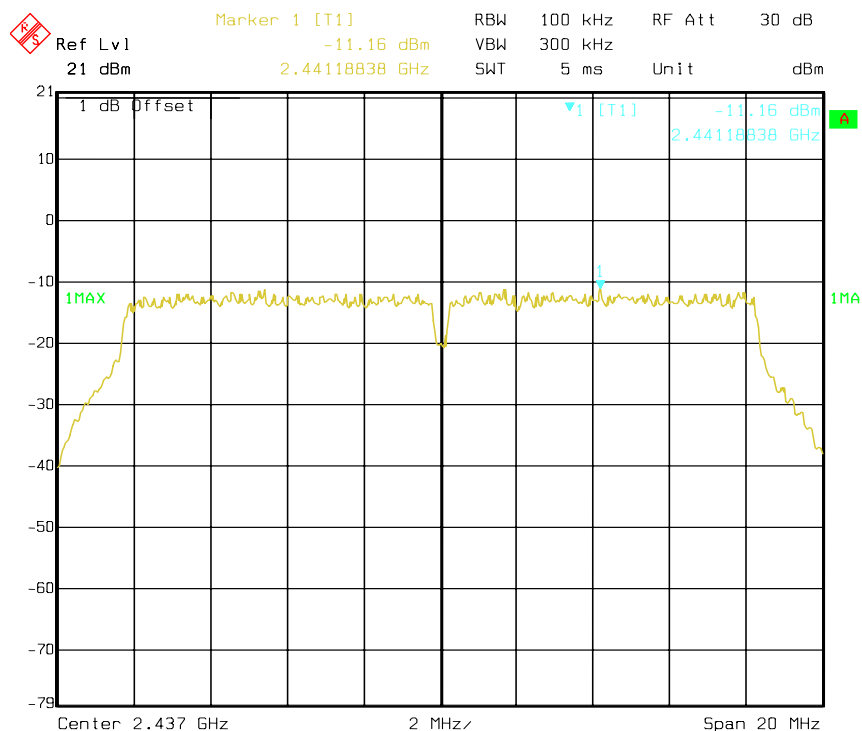
Date: 25.MAY 2012 10:20:47

**Power Spectral Density, 802.11b High Channel**

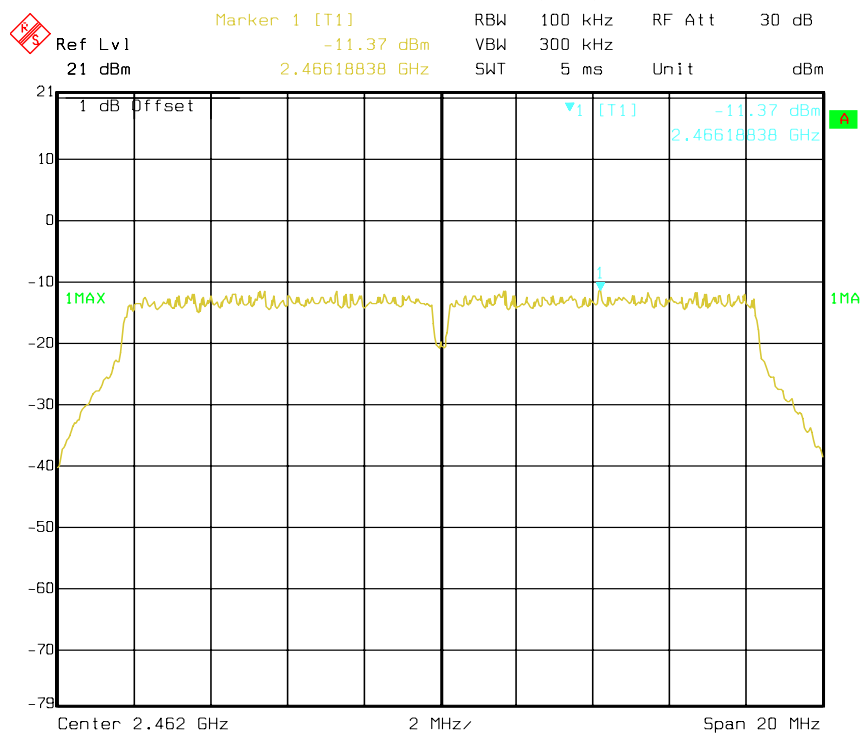
Date: 25.MAY 2012 10:20:08

**Power Spectral Density, 802.11g Low Channel**

Date: 25.MAY 2012 10:28:48

**Power Spectral Density, 802.11g Middle Channel**

Date: 25.MAY 2012 10:28:09

**Power Spectral Density, 802.11g High Channel**

Date: 25.MAY 2012 10:29:19

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